

3D VIEW

GENERAL NOTES:

- 1.1 THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL GOVERN IN CASE OF ANY CONFLICTS.
- 1.2 ALL SETTING OUT DIMENSIONS SHALL BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES OR UNCLARITIES SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.
- 1.3 BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

CONCRETE NOTES:

- 2.1 THE CONTRACTOR SHALL ENSURE THAT ALL REINFORCEMENT IS PROPERLY HELD IN POSITION AND SHALL ALSO MAINTAIN THE CORRECT CONCRETE COVER UTILIZING APPROVED PATENT SPACERS (NOT STONES, OFFCUT REINFORCEMENT, BRICKS ETC.) AT ALL TIMES.
- 2.2 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN mm AS STATED BELOW:
 WALLS - 60mm
 FLOORS - 50mm
 SLABS - 60mm
- 2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
- 2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION.
- 2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.
- 2.6 ALL EXPOSED CORNERS TO HAVE A 20 x 20mm CHAMFER.
- 2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
- 2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL SURFACES SUPPORTING MECHANICAL COMPONENTS.
- 2.9 STRUCTURE TO BE TESTED FOR WATER-TIGHTNESS AS PER PROJECT SPECIFICATION. RATE OF FILLING NOT TO EXCEED 2m IN 24 HOURS. FOR 0.2mm CRACK WIDTH, STABILIZING PERIOD TO BE 21 DAYS. AFTER ALLOWING FOR EVAPORATION AND RAINFALL, DROPS IN LEVEL NOT TO EXCEED 1/500TH OF AVERAGE DEPTH OF FULL TANK.
- 2.10 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.: PK278-SP-2B-SST-502 FOR JOINT DETAILS SEE DRAWING PK278-SP-2B-ST-1001

LEGEND:

- CJ = CONSTRUCTION JOINT
- FGL = FINISHED GROUND LEVEL
- IL = INVERT LEVEL
- ND = NOMINAL DIAMETER
- NGL = NATURAL GROUND LEVEL
- TOC = TOP OF CONCRETE
- TWL = TYPICAL WATER LEVEL
- UF = UNDERSIDE OF FOOTING

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
C RAUTENBACH	C RAUTENBACH	J PRINSLOO
REV DATE	SCALE	ORIGINAL SIZE
2022/06	1:1	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0013-1001	0	

NOTES

- 1.1 DO NOT SCALE THE DRAWINGS.
- 1.2 ALL DIMENSIONS TO BE VERIFIED ON SITE, PRIOR TO MANUFACTURING OR ORDERING OF EQUIPMENT.
- 1.3 ANY UN-CLARITIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSULTING ENGINEER
- 1.4 THIS DRAWING, OR PART THEREOF, SHALL NOT BE USED FOR ANY OTHER INSTALLATION PROJECT OTHER THAN THIS ONE.
- 1.5 THIS DRAWING FORMS PART OF THE SPECIFICATION AND MUST BE READ IN CONJUNCTION WITH THE SAME.

ZAKUMI
Consulting Engineers

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FAX: +27 15 291 1993

CLIENT



CITY OF
Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE	
NO.	DATE
0	2022/06

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

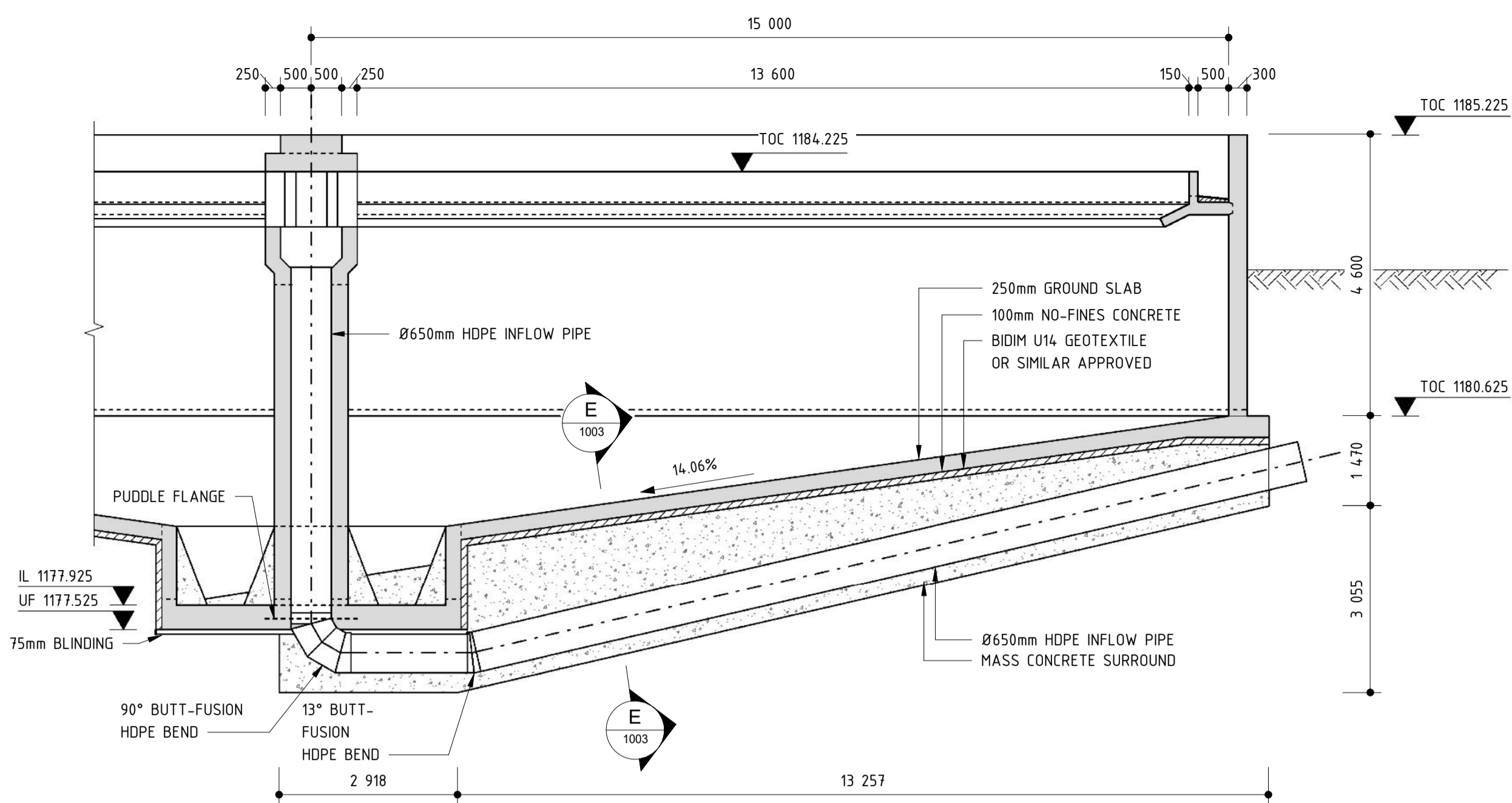
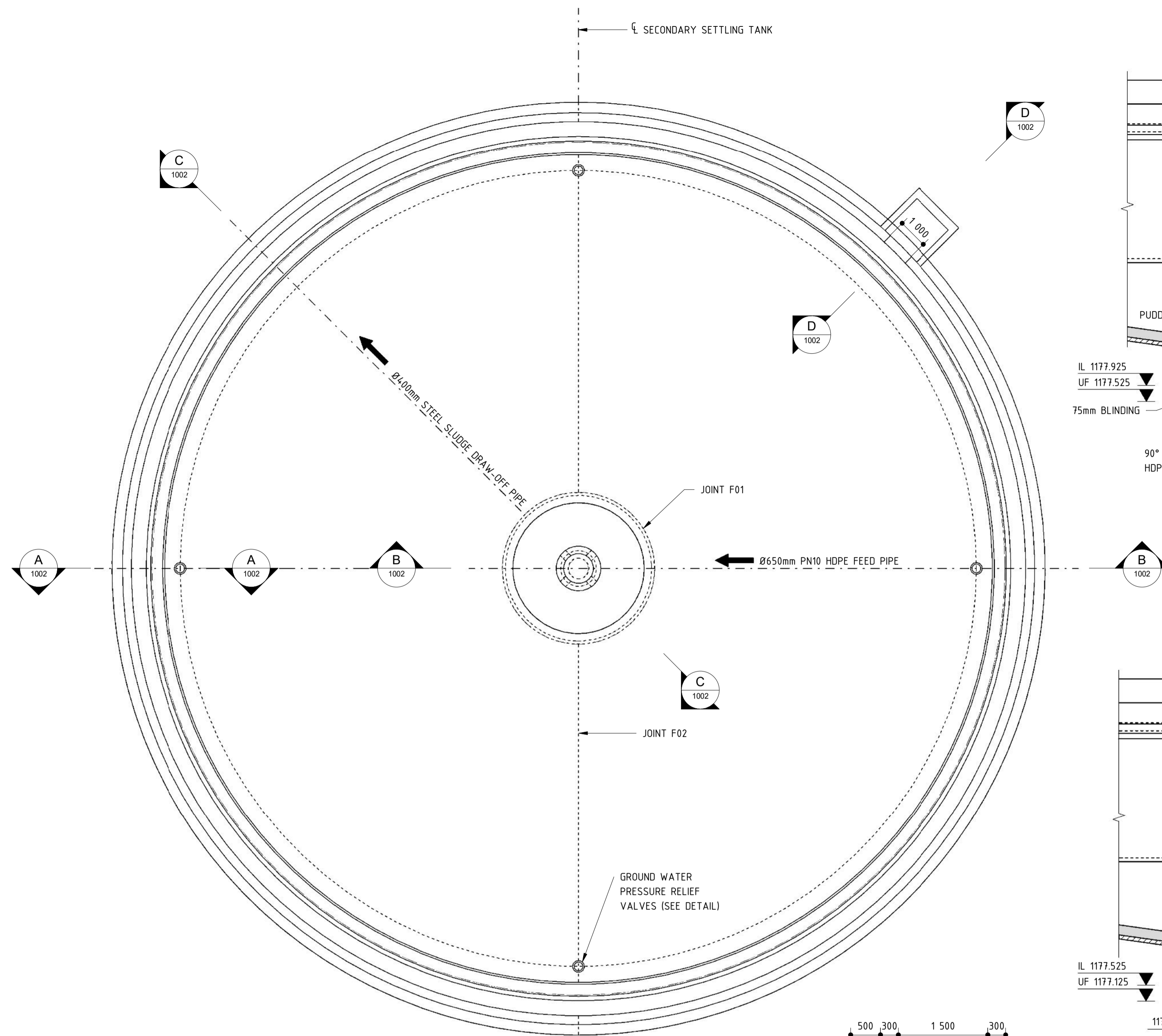
CLIENT _____ DATE _____

PROJECT

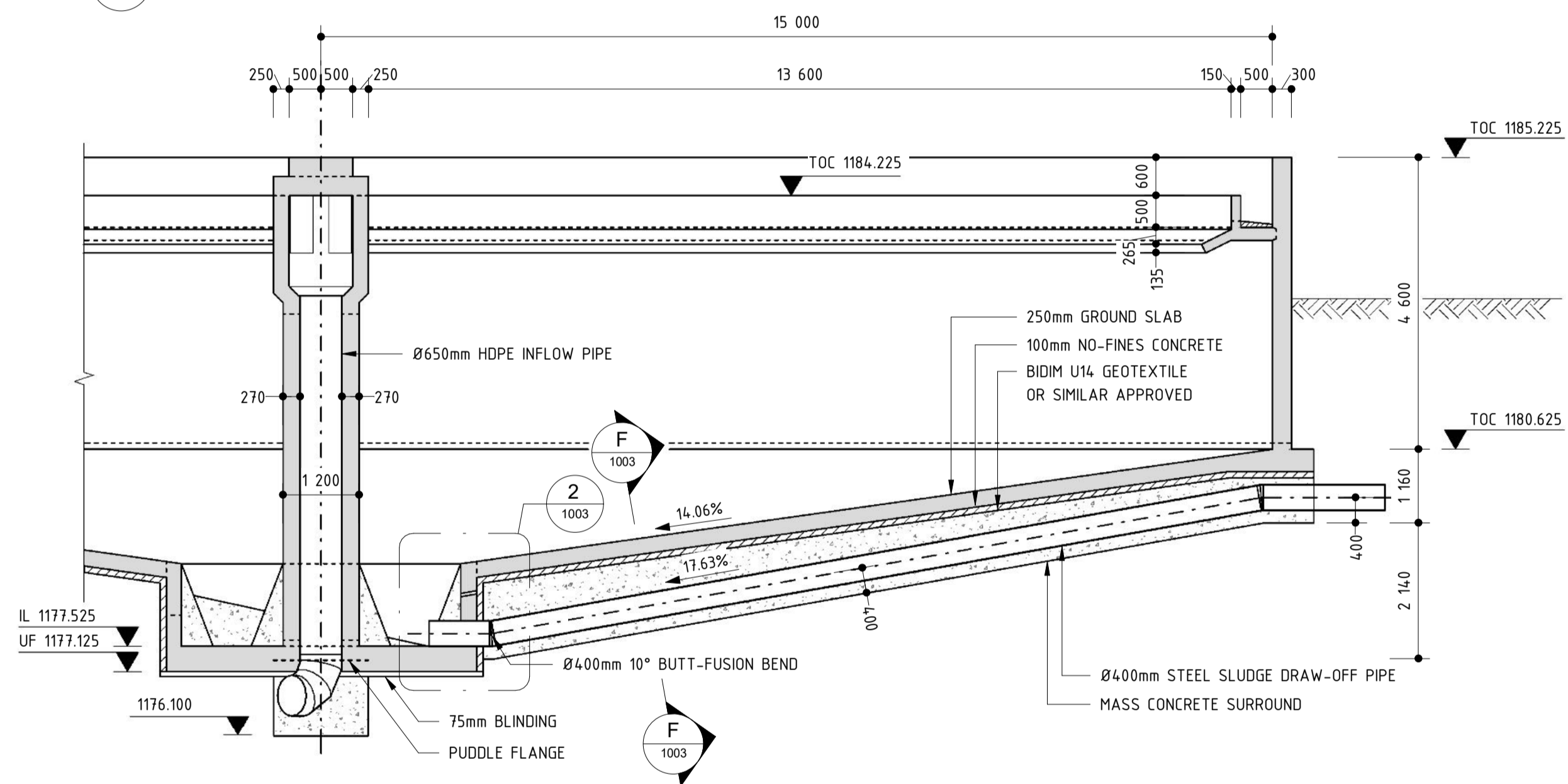
**POLOKWANE
REGIONAL WWTW
CONTRACT 2B**

DRAWING DESCRIPTION

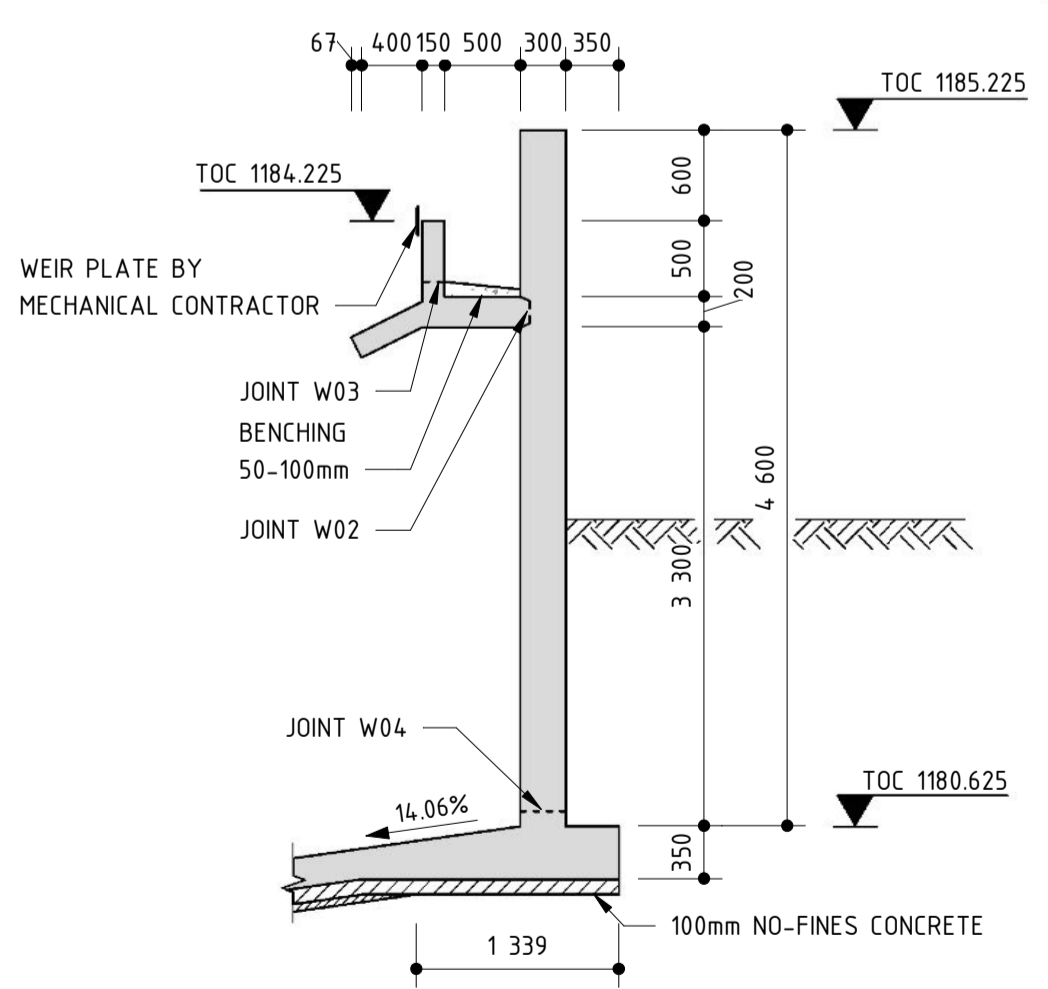
**SECONDARY SETTLER 3D
VIEW**



SECTIONAL ELEVATION B-B
1 : 75

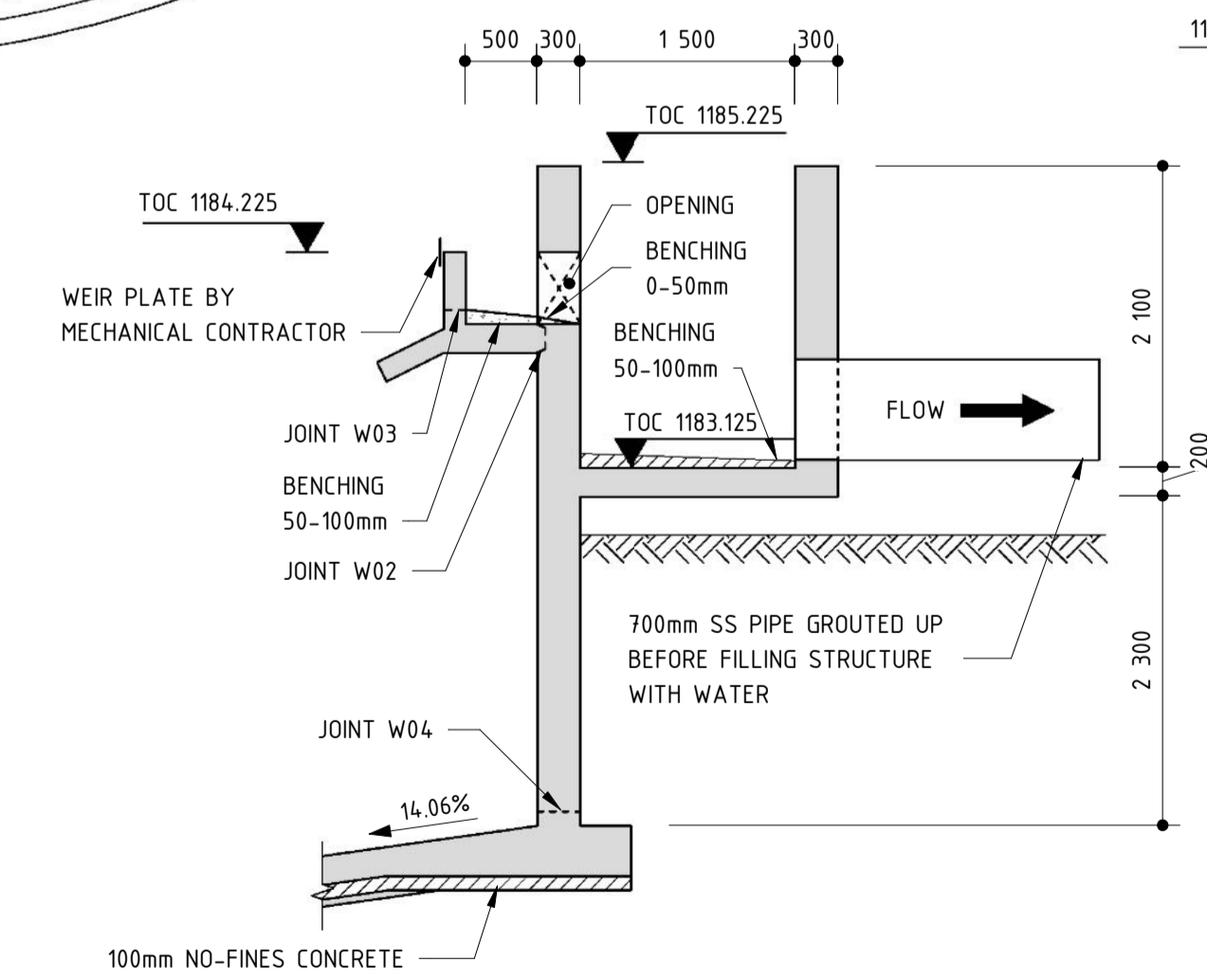


SECTIONAL ELEVATION C-C
1 : 75



SECTION C-C
1 : 50

PLAN
1 : 100



SECTION D-D
1 : 50

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CITY OF
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NATURALLY PROGRESSIVE

REVISION SCHEDULE		
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T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

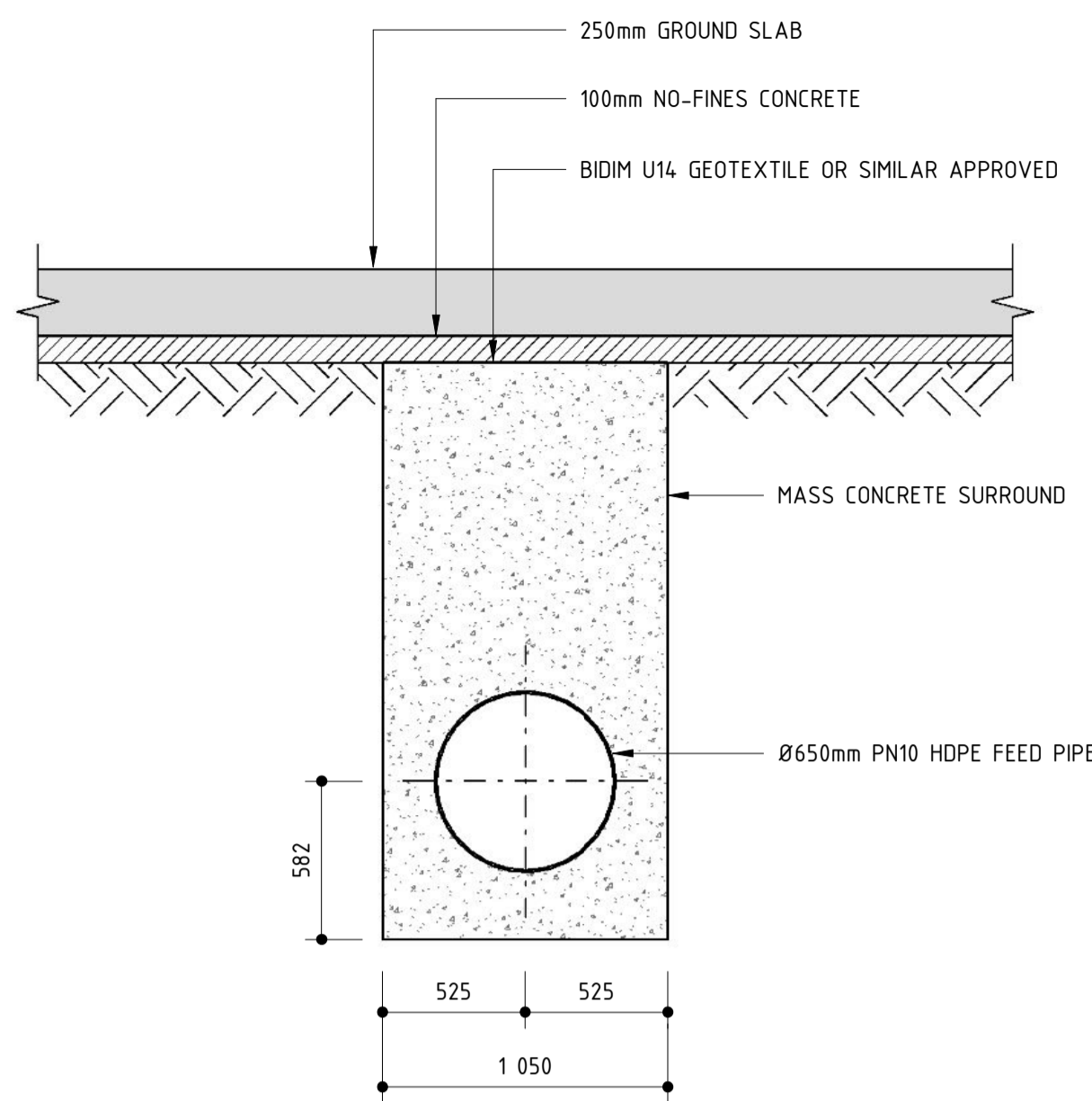
PROJECT

POLOKWANE
REGIONAL WWTW
CONTRACT 2B

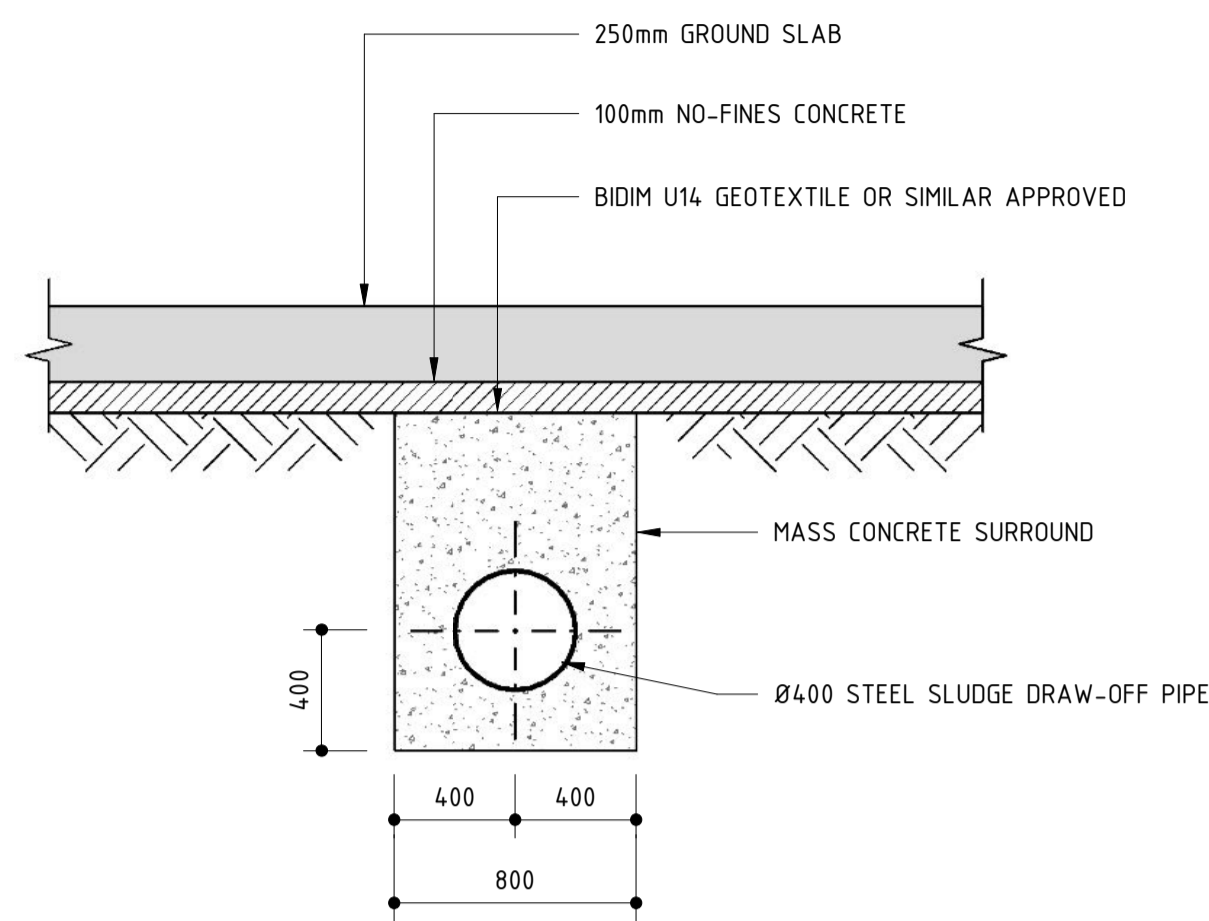
DRAWING DESCRIPTION

SECONDARY SETTLING
TANKS
CONCRETE DETAILS

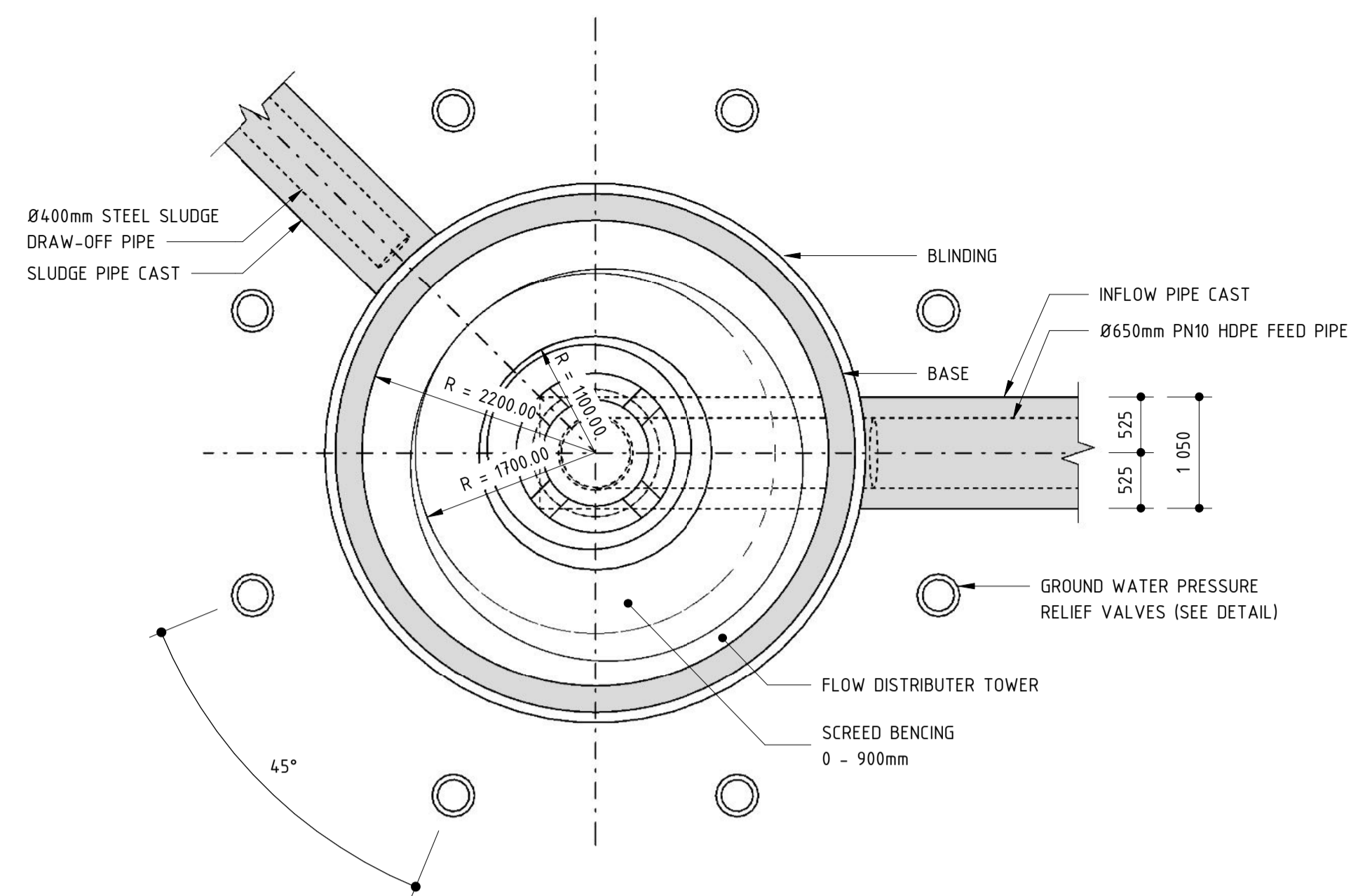
DESIGNED	DRAWN	CHECKED
J.A.B. GALANTE	R. GASNOLA	R.K. DICKSON
REV DATE	SCALE	ORIGINAL SIZE
2022/06	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0013-1002	0	



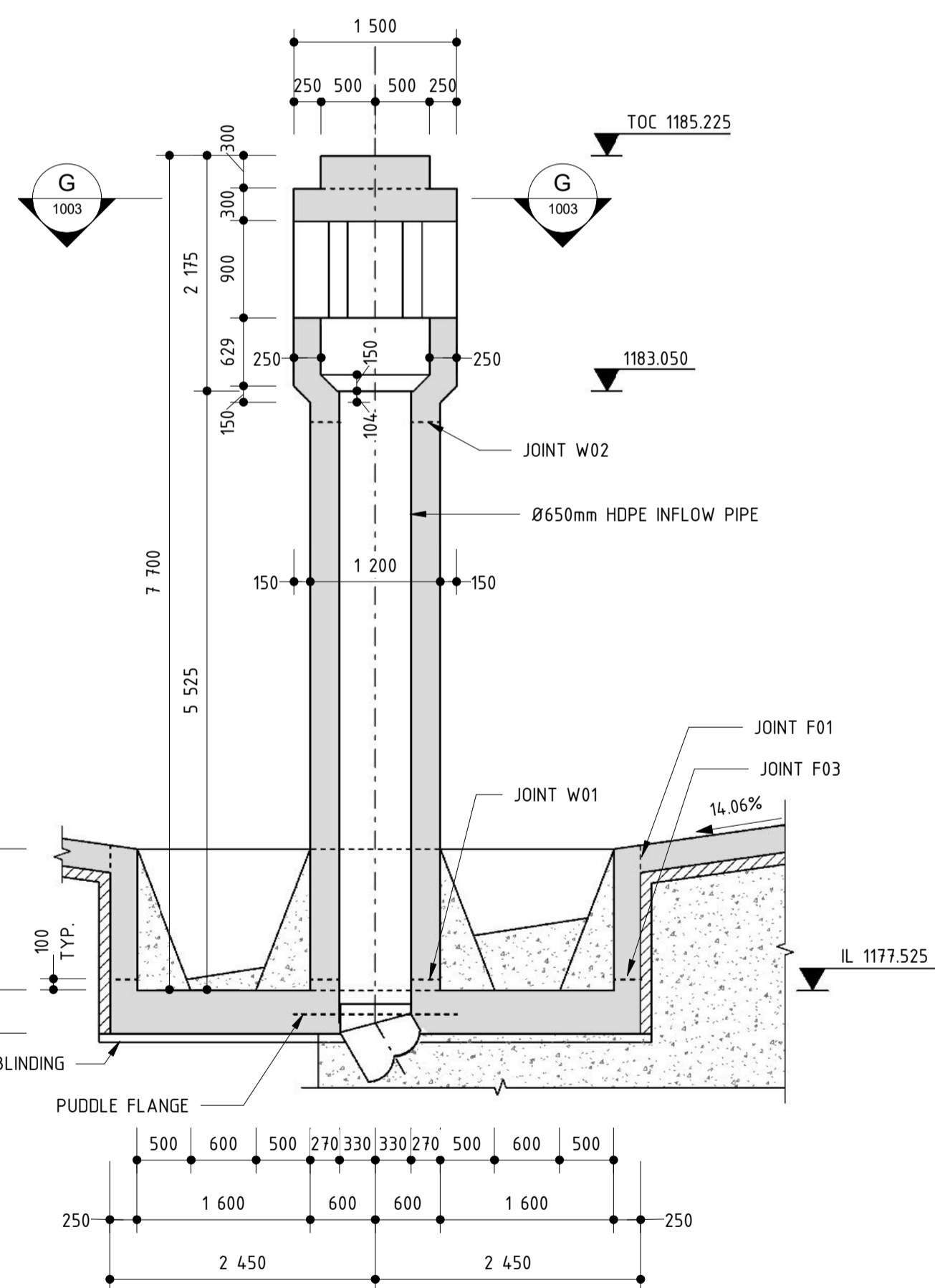
SECTION E-E: SLUDGE DRAW-OFF PIPE
1 : 25



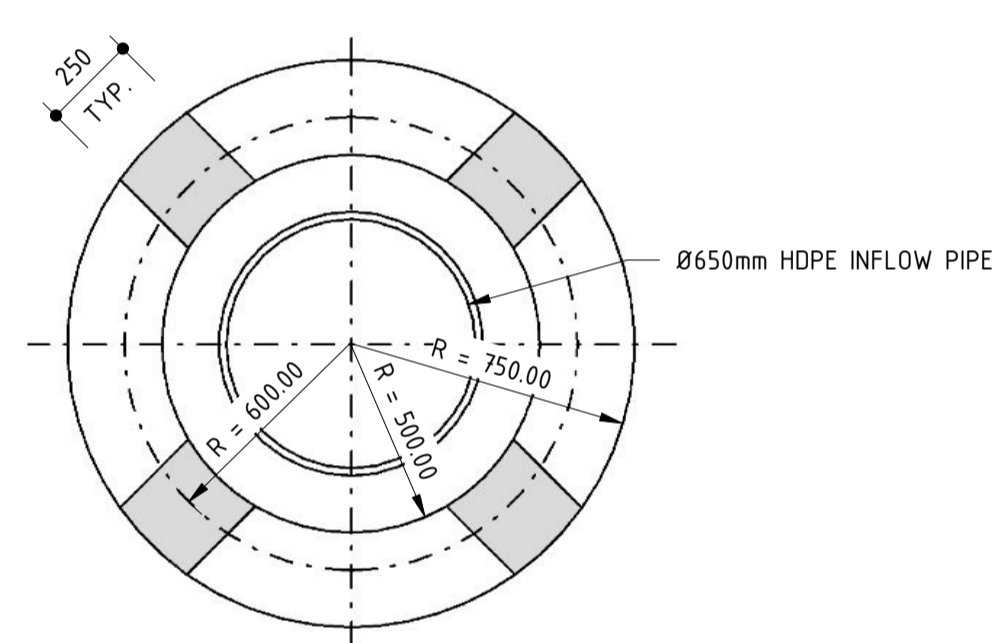
SECTION F-F: FEED PIPE
1 : 25



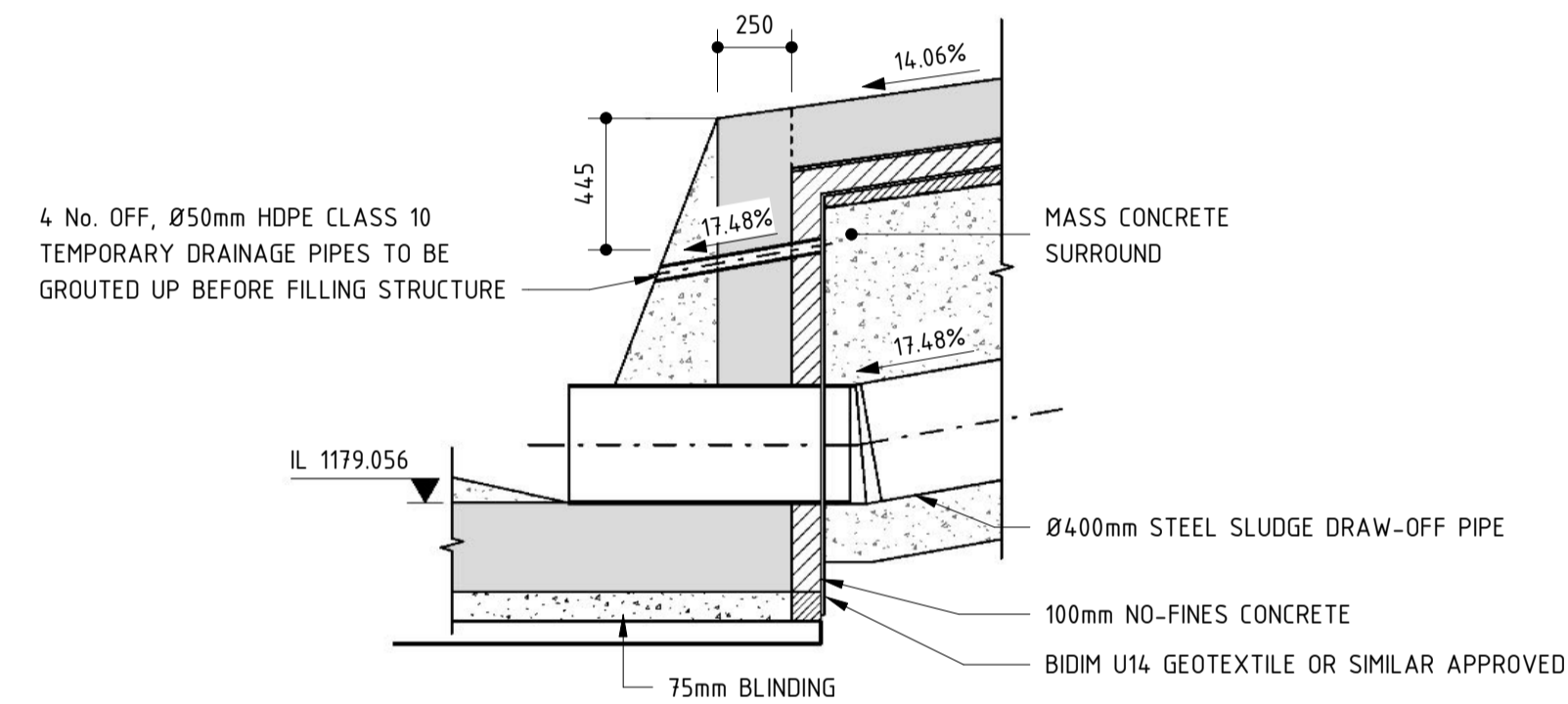
DETAIL CENTRAL HOPPER
1 : 50



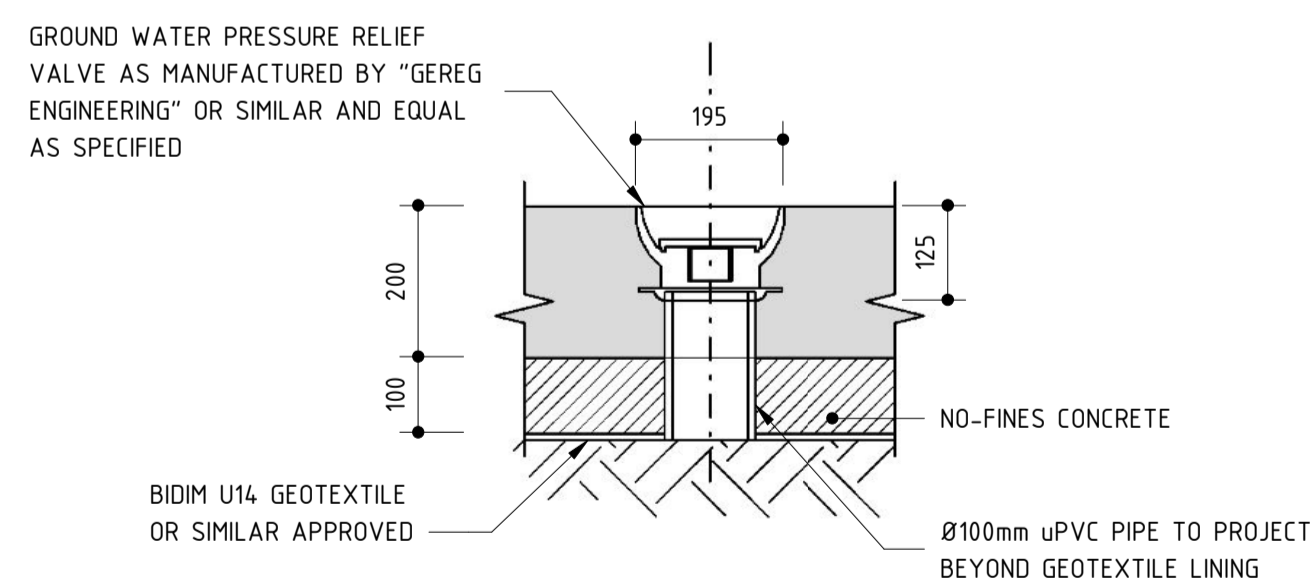
DETAIL 1
1 : 50



SECTION G-G
1 : 20



DETAIL 2
1 : 25



GROUND WATER PRESSURE RELIEF VALVE DETAIL
1 : 10

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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2022/06	ISSUED FOR CONSTRUCTION

T.BANDA ENGINEER	PR ENG no.	DATE
CLIENT		DATE

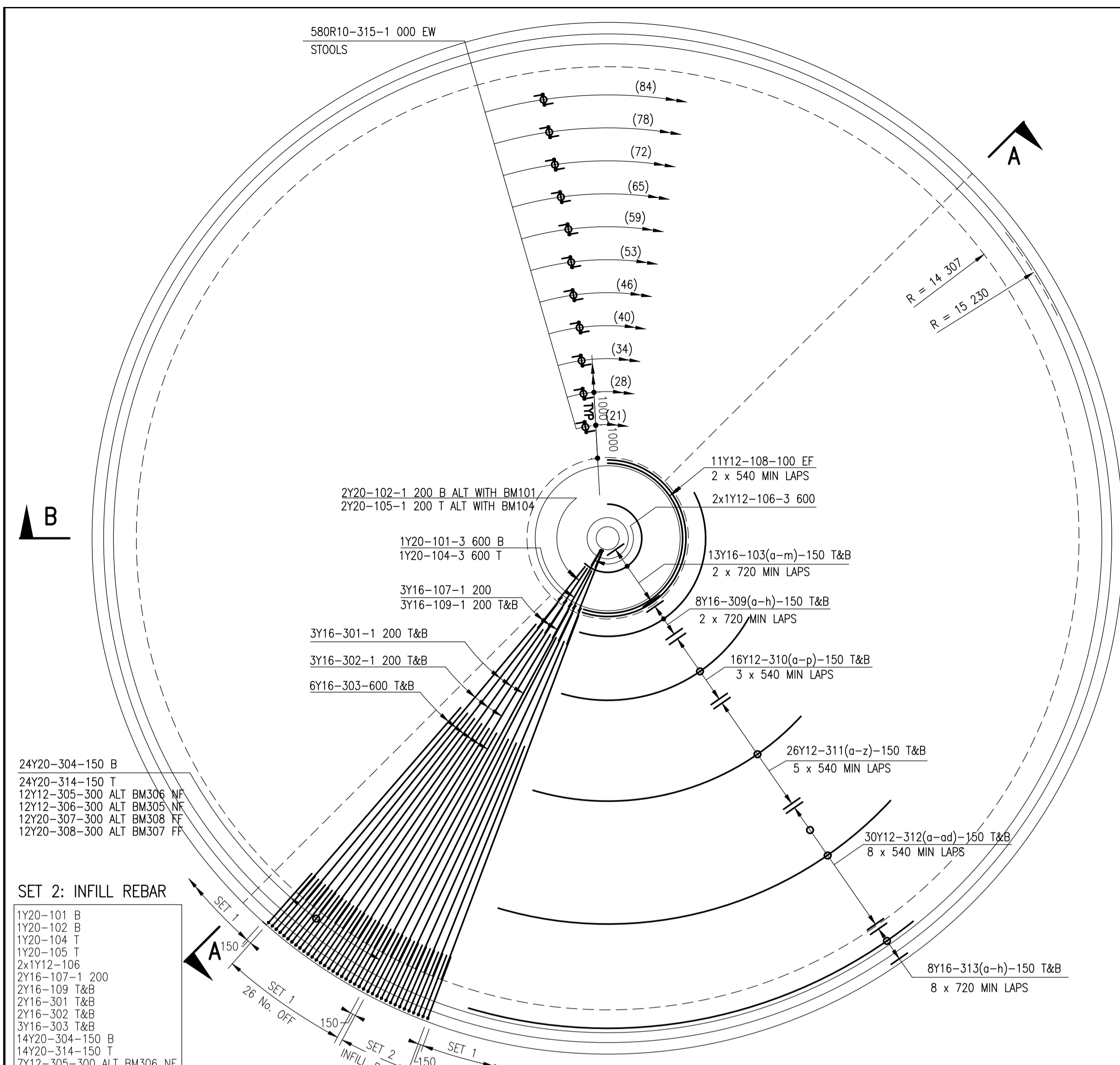
PROJECT

POLOKWANE REGIONAL WWTW CONTRACT 2B

DRAWING DESCRIPTION

SECONDARY SETTLING TANKS CONCRETE DETAILS 2

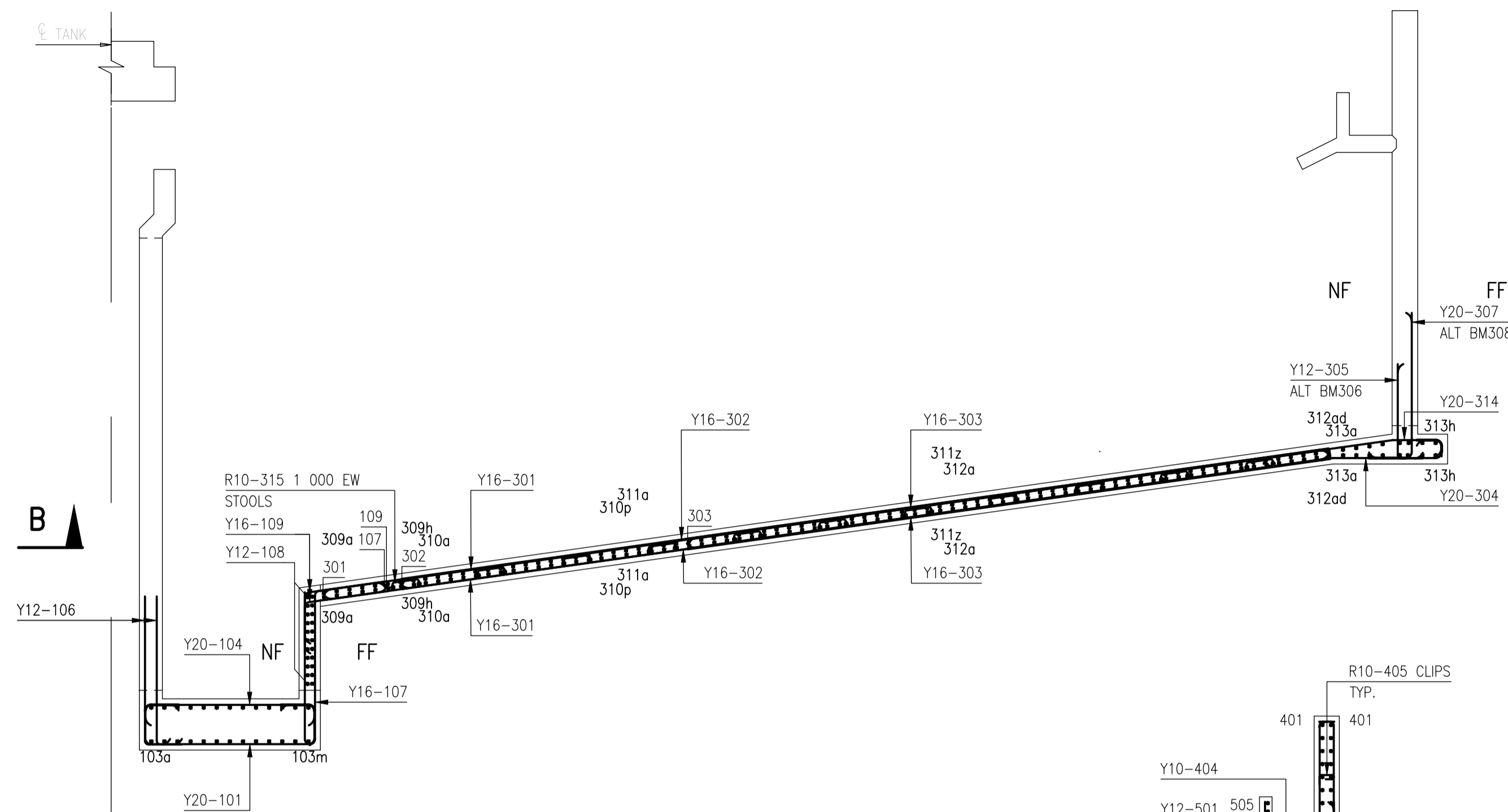
DESIGNED	DRAWN	CHECKED
J.A.B. GALANTE	R. GASNOLA	R.K. DICKSON
REV DATE	SCALE	ORIGINAL SIZE
2022/06	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0013-1003	0	



PLAN OF GROUND SLAB
SCALE 1:100

NOTE: 1. ALL RADIAL BAR SPACING MEASURED AT RADIUS R=15 230
2. GROUND WATER PRESSURE RELIEF VALVES OMITTED FOR CLARITY

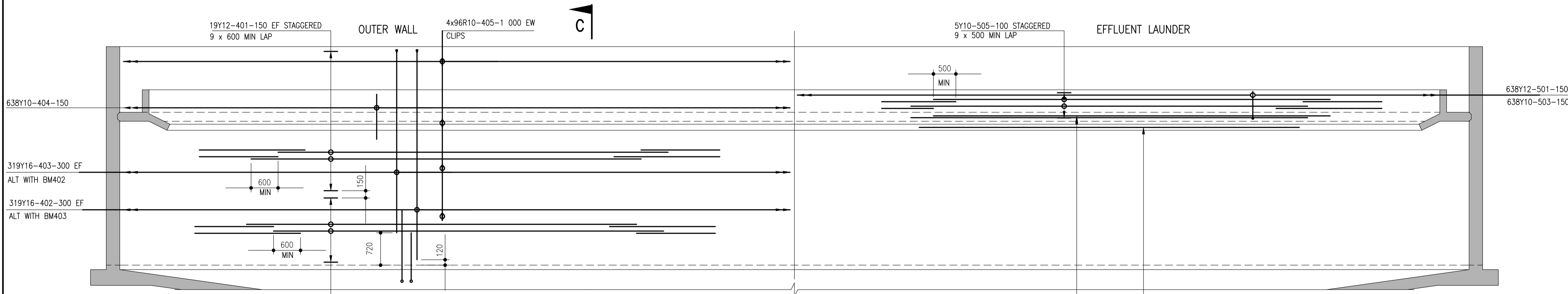
- SET 2: INFILL REBAR**
- 1Y20-101 B
 - 1Y20-102 B
 - 1Y20-104 T
 - 1Y20-105 T
 - 2x1Y12-106
 - 2Y16-107-1 200
 - 2Y16-109 T&B
 - 2Y16-301 T&B
 - 2Y16-302 T&B
 - 3Y16-303 T&B
 - 14Y20-304-150 B
 - 14Y20-314-150 T
 - 7Y12-305-300 ALT BM306 NF
 - 7Y12-306-300 ALT BM305 NF
 - 7Y20-307-300 ALT BM308 FF
 - 7Y20-308-300 ALT BM307 FF



PART-SECTION B-B
SCALE 1:50

NOTE: BARS PASSING THROUGH OPENINGS TO BE TRIMMED TO SUIT

SECTION C-C
SCALE 1:50



SECTIONAL ELEVATION A-A
SCALE 1:50

NOTE: CENTRAL COLUMN OMITTED FOR CLARITY

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WALLS - 60mm
FLOORS - 60mm
SLABS - 60mm
 - 1.3 MINIMUM SPLICE LENGTH TO REINFORCEMENT = 45 x LESSER BAR DIAMETER
 - 1.4 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.:

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ENGINEER		
CLIENT		DATE

PROJECT

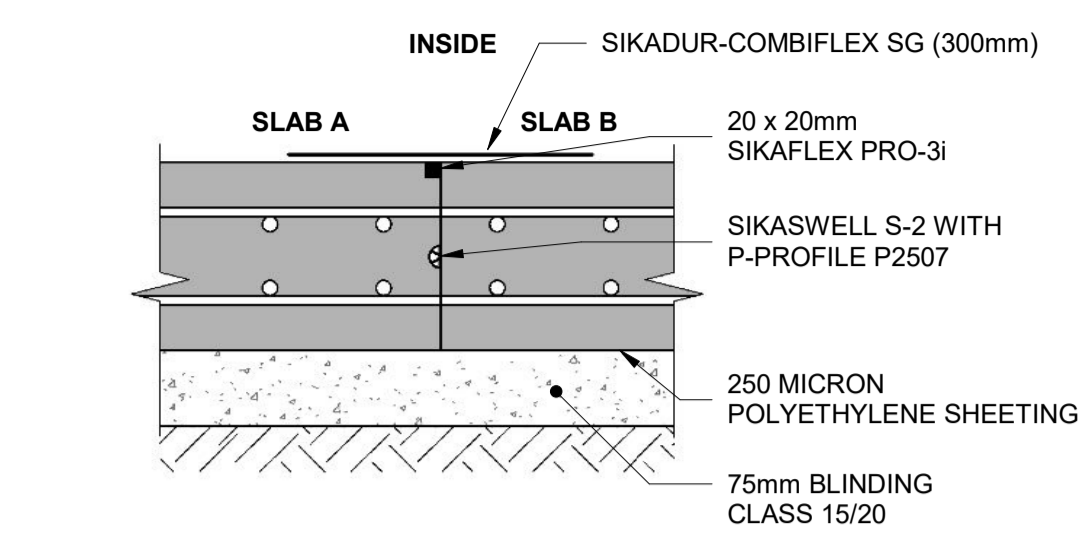
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

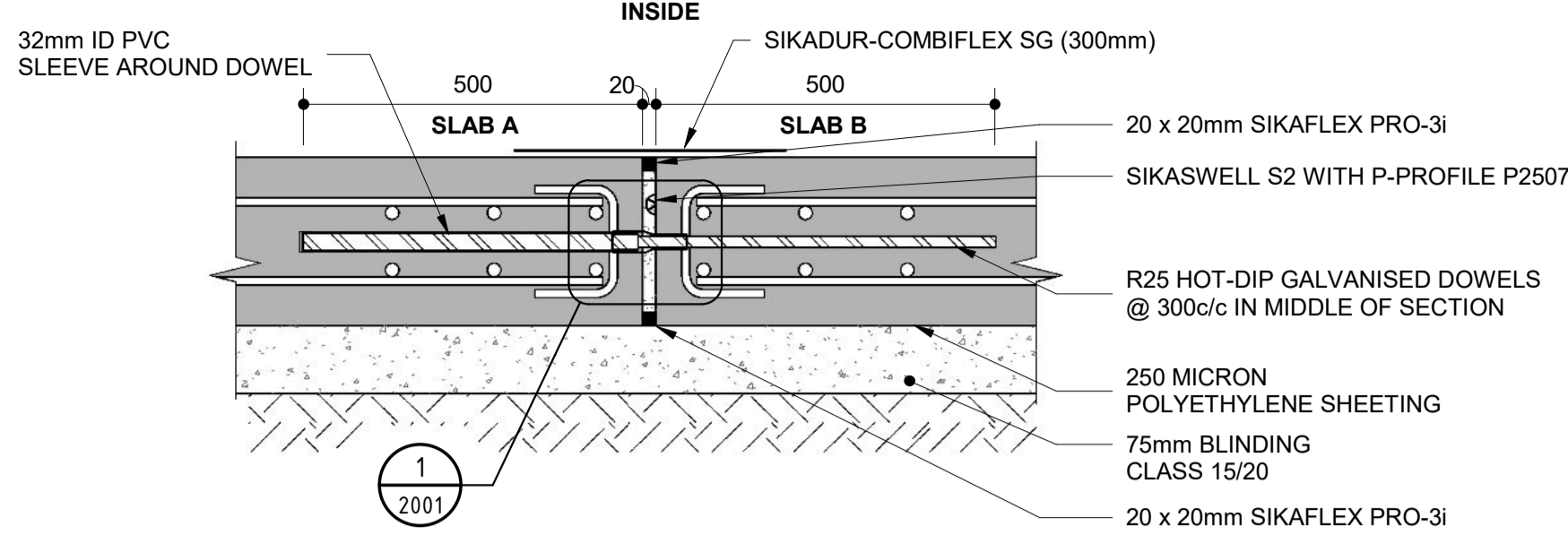
SECONDARY SETTLING TANKS REINFORCEMENT DETAILS 1

CONSTRUCTION DRAWING

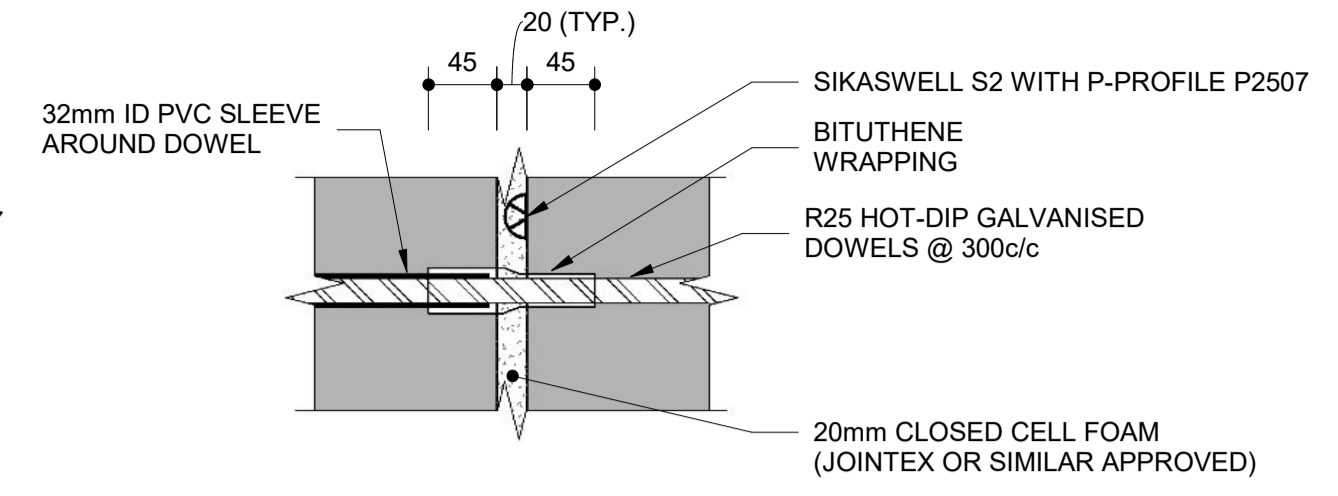
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SP-2B-SST-503	B	



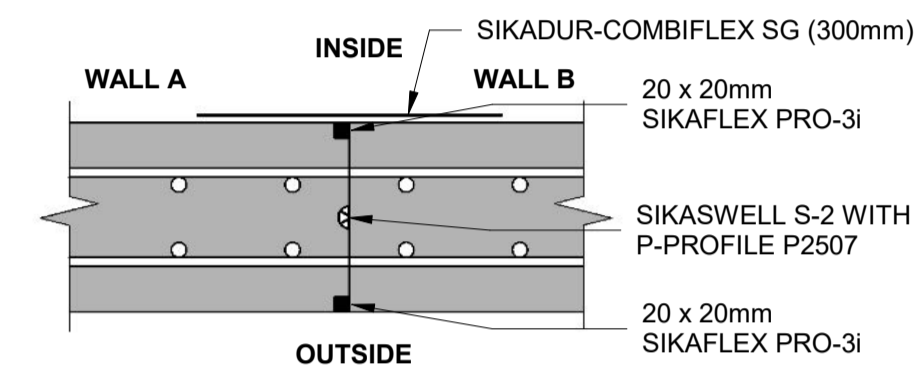
FLOOR CONSTRUCTION JOINT
SCALE 1 : 10



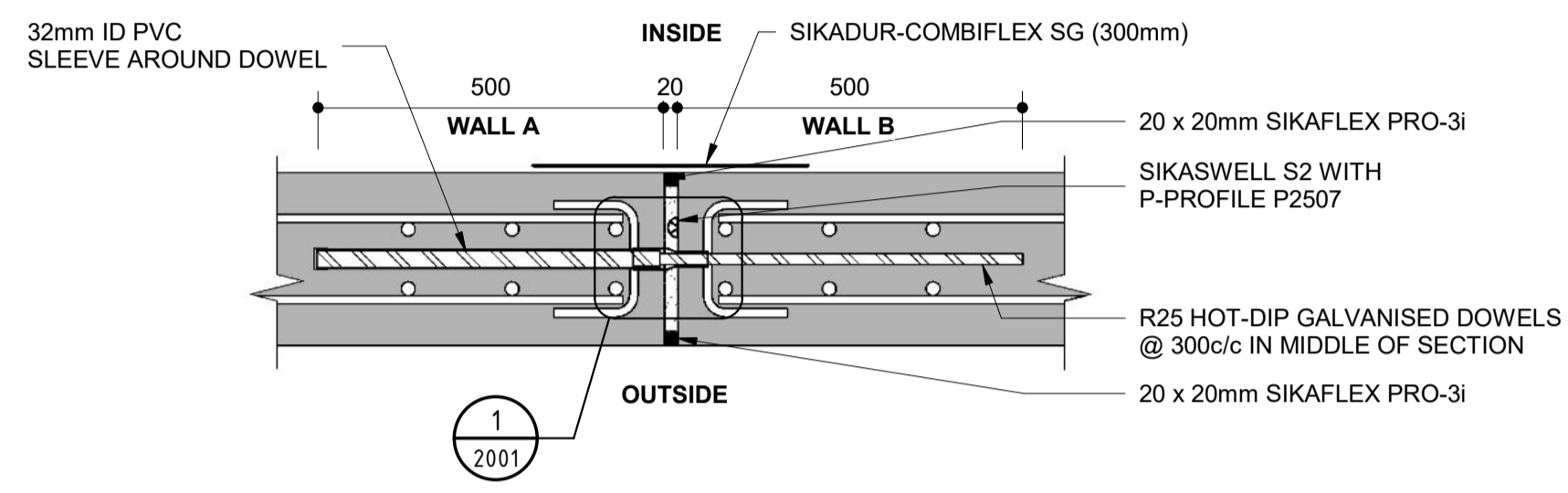
FLOOR MOVEMENT JOINT
SCALE 1 : 10



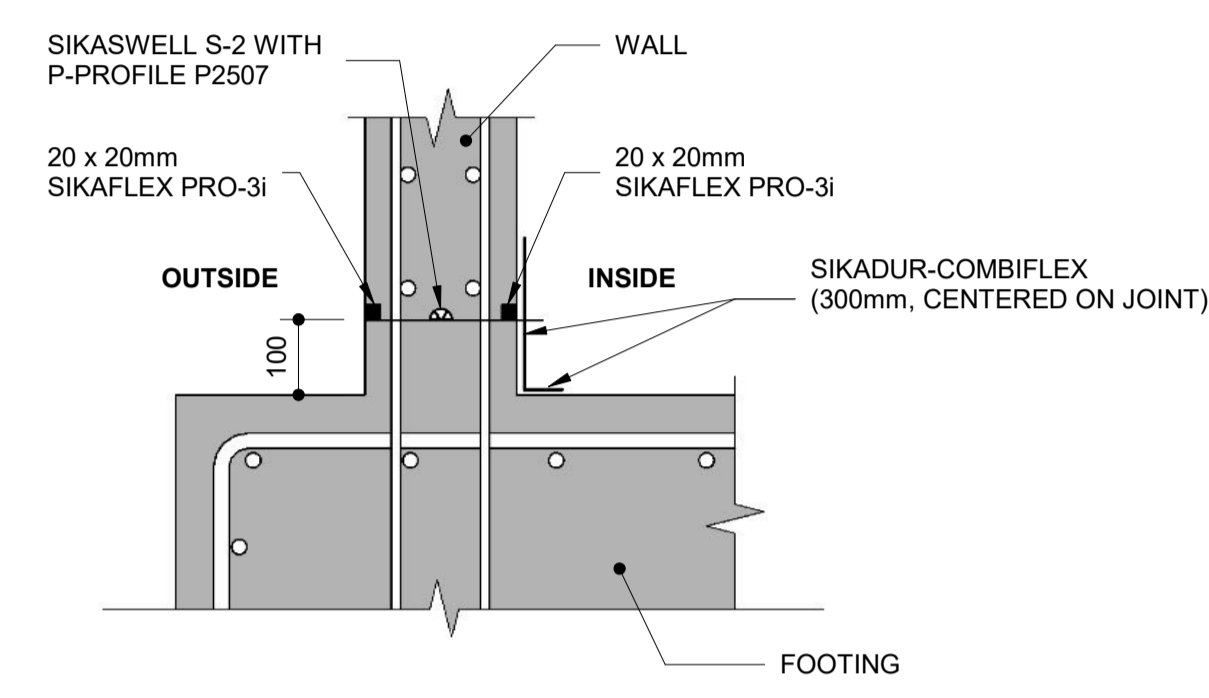
DOWEL DETAIL
SCALE 1 : 5



WALL CONSTRUCTION JOINT (VERTICAL)
SCALE 1 : 10

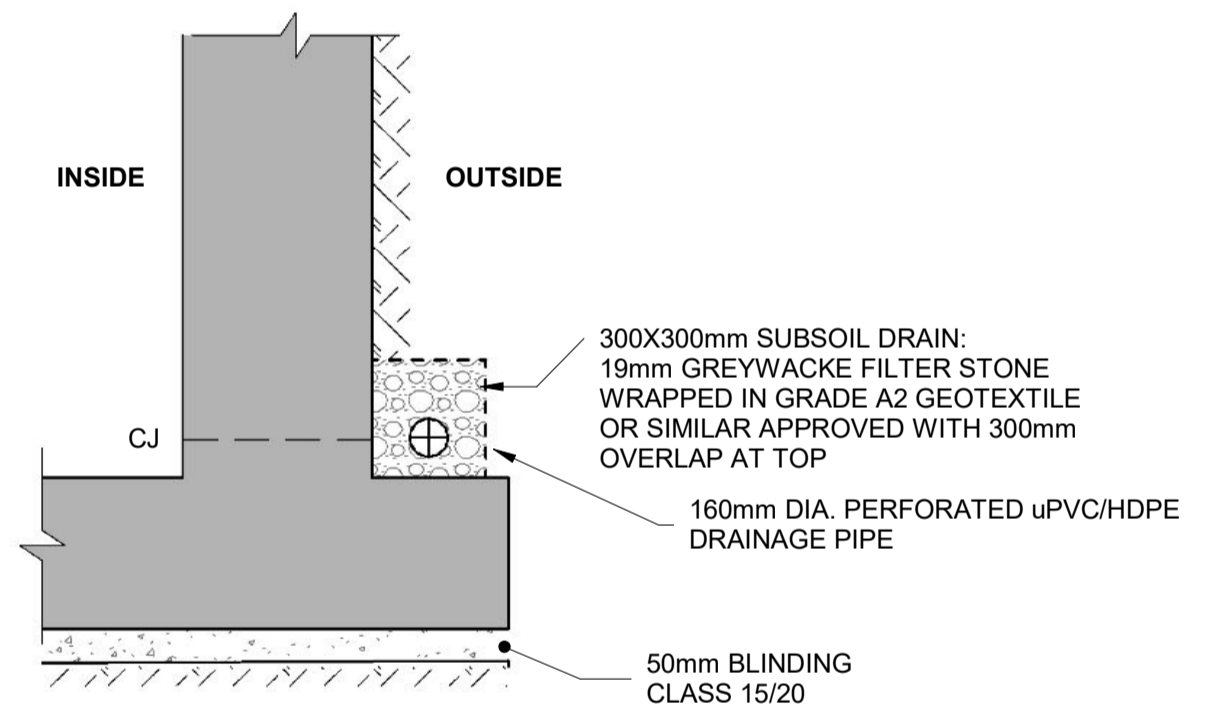


WALL MOVEMENT JOINT (VERTICAL)
SCALE 1 : 10



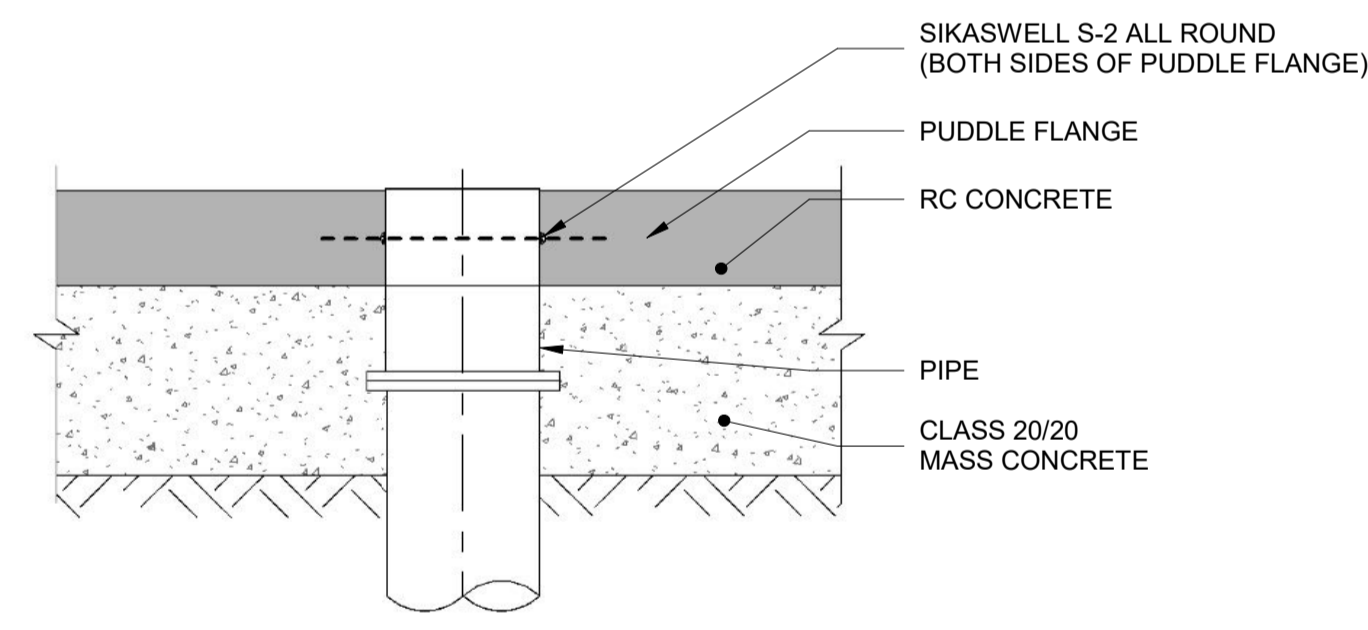
WALL CONSTRUCTION JOINT AT KICKER (HORIZONTAL)
SCALE 1 : 10

NOTE: SURFACE PREPARATION: EXPOSE AGGREGATE USING HYDRO DEMOLITION OR GRIT BLASTING TO ENGINEERS APPROVAL.

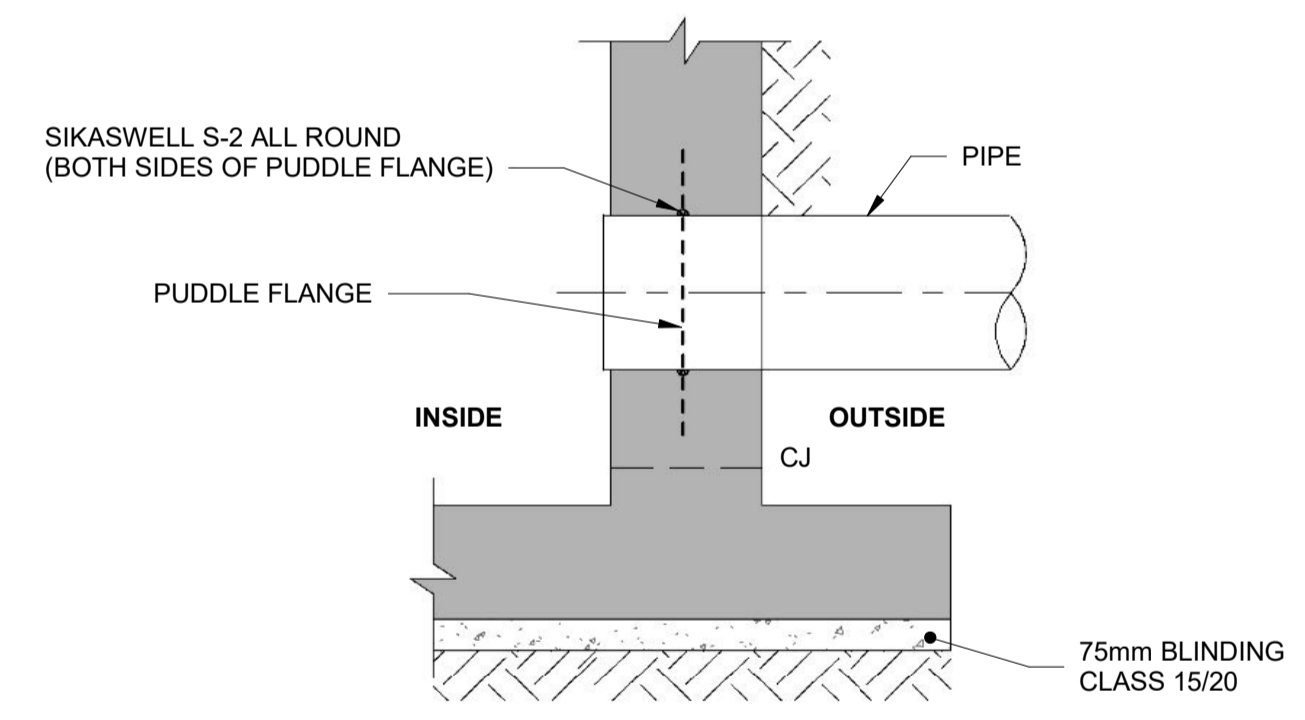


SUB-SOIL DRAIN
SCALE 1 : 20

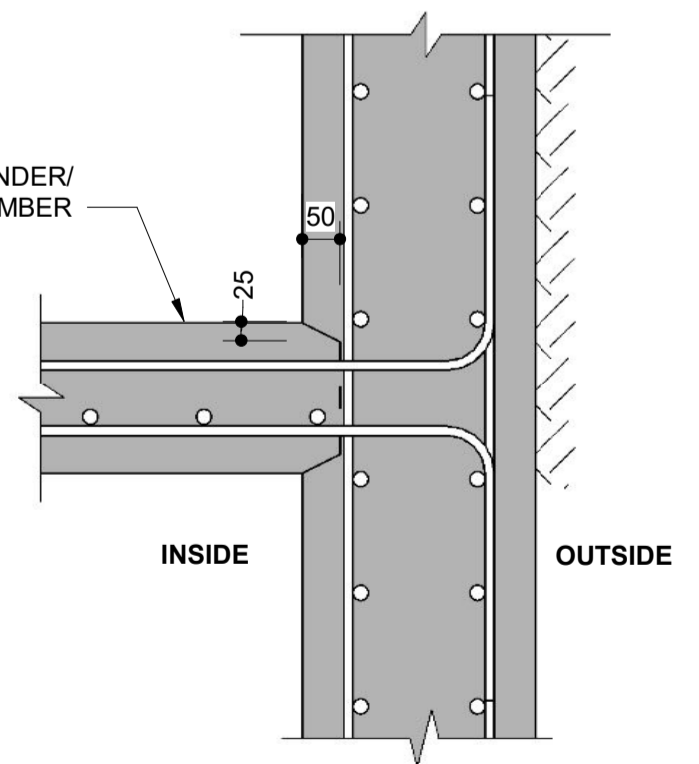
NOTE: DRAINAGE BEHIND EARTH FACE OMITTED FOR CLARITY.



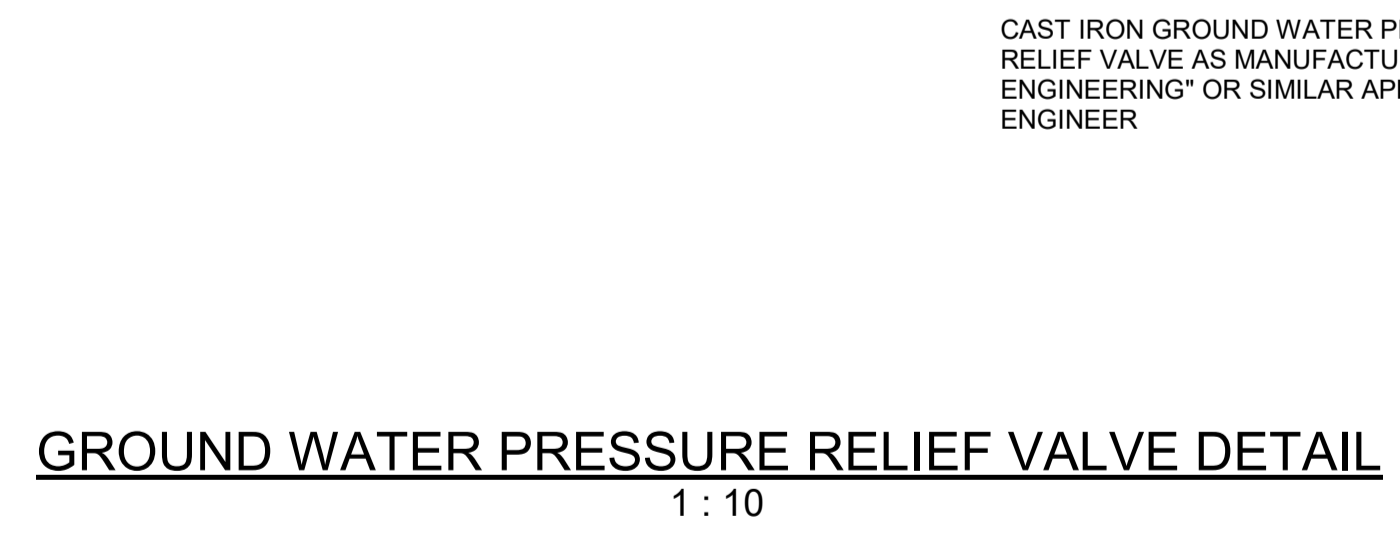
PUDDLE FLANGE DETAIL - FLOOR
SCALE 1 : 20



PUDDLE FLANGE DETAIL - WALL
SCALE 1 : 20



CONSTRUCTION JOINT 2 - WALL SECTION VIEW
SCALE 1 : 10



GROUND WATER PRESSURE RELIEF VALVE DETAIL
1 : 10

NOTE: LEVELLING SCREED OMITTED FOR CLARITY

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 - ALL EXPOSED CORNERS TO HAVE A 20x20mm CHAMFER.
 - NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
 - A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL SURFACES SUPPORTING MECHANICAL COMPONENTS.
 - STRUCTURE TO BE TESTED FOR WATER-TIGHTNESS AS PER PROJECT SPECIFICATION. RATE OF FILLING NOT TO EXCEED 2m IN 24 HOURS. FOR 0.2mm CRACK WIDTH, STABILIZING PERIOD TO BE 21 DAYS, AFTER ALLOWING FOR EVAPORATION AND RAINFALL. DROPS IN LEVEL NOT TO EXCEED 1/500TH OF AVERAGE DEPTH OF FULL TANK.

- LEGEND:**
- I.L. = INVERT LEVEL
 - N.D. = NOMINAL DIAMETER
 - N.G.L. = NATURAL GROUND LEVEL
 - C.J. = CONSTRUCTION JOINT
 - I.D. = INTERNAL DIAMETER

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023/06	ISSUED FOR CONSTRUCTION

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

T. BANDA ENGINEER
PR ENG no. DATE
CLIENT DATE

DRAWING DESCRIPTION

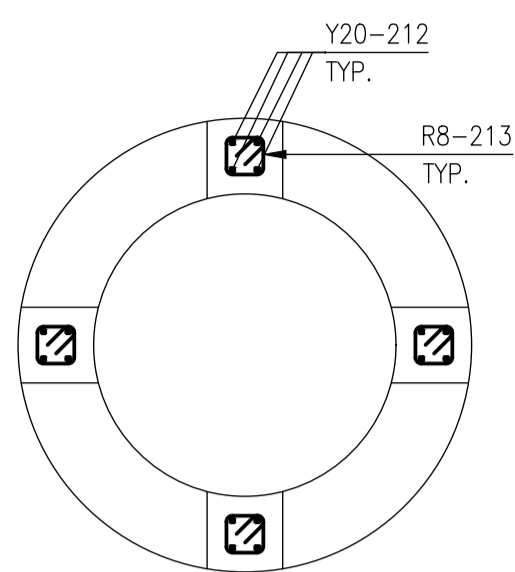
SECONDARY SETTLING TANKS TYPICAL DETAILS

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023/06	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0013-2001	0	

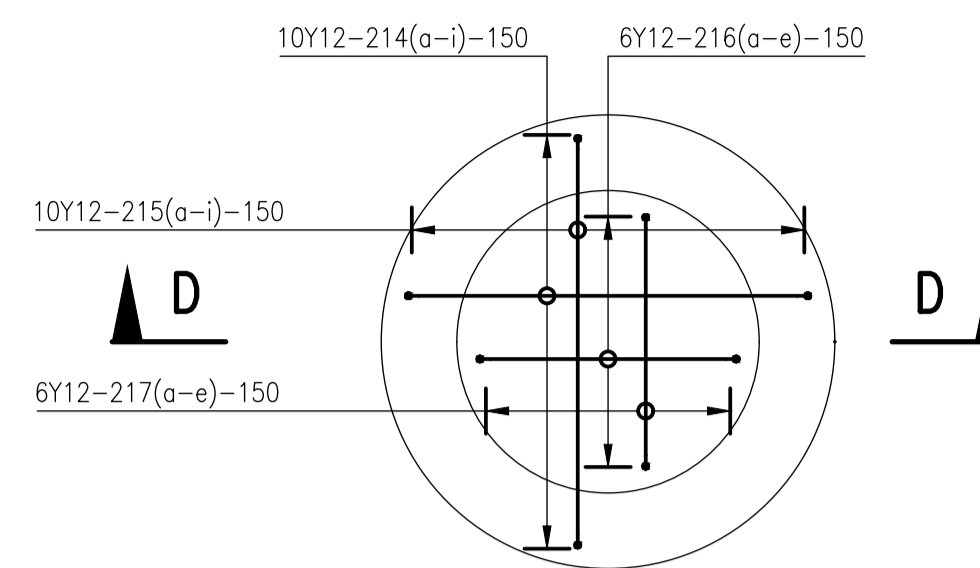
CONSTRUCTION DRAWING

NOTES:

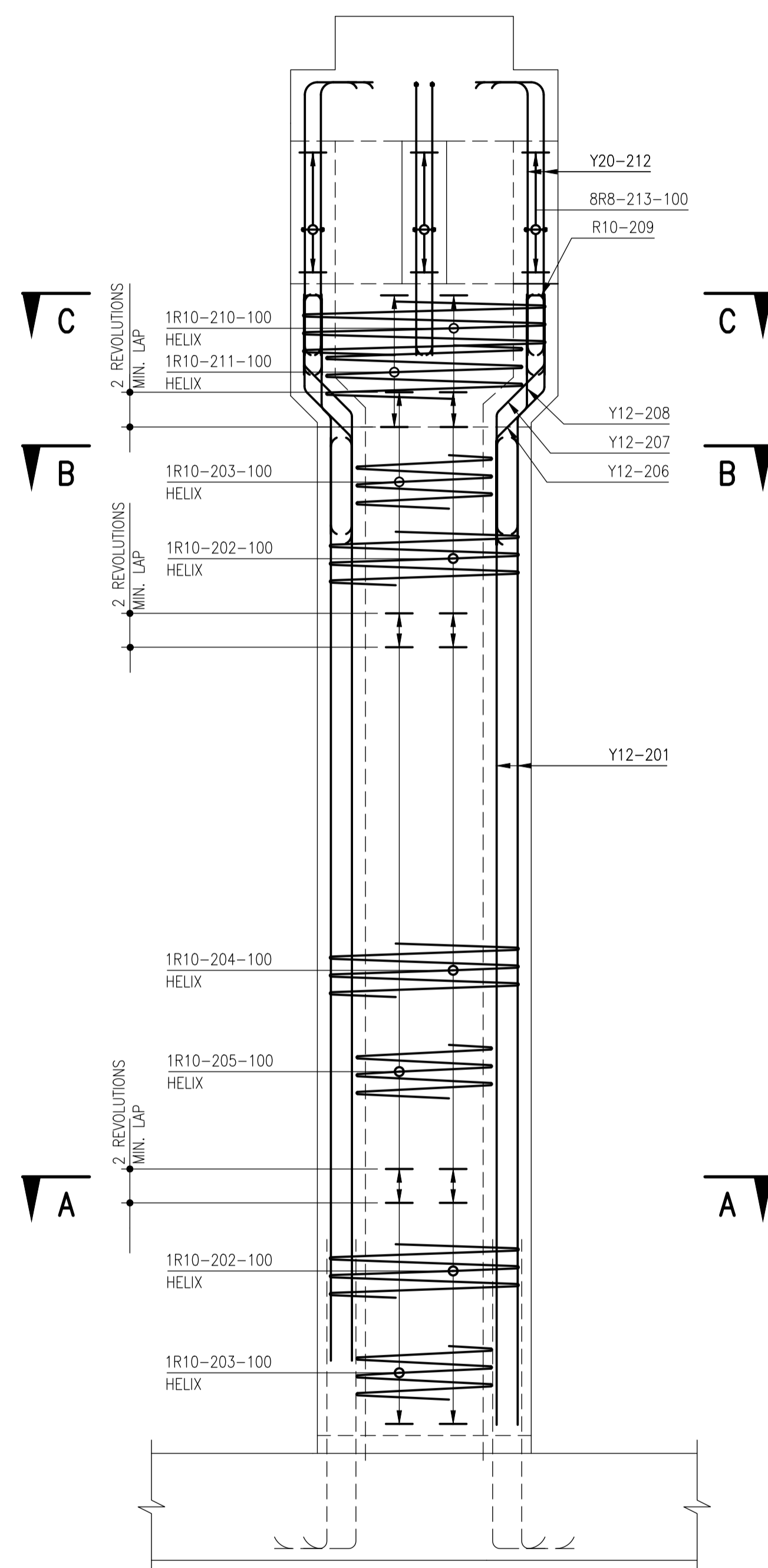
- 1.1 THE CONTRACTOR SHALL ENSURE THAT ALL REINFORCEMENT IS PROPERLY HELD IN POSITION AND SHALL ALSO MAINTAIN THE CORRECT CONCRETE COVER UTILIZING APPROVED PATENT SPACERS (NOT STONES, OFFCUT REINFORCEMENT, BRICKS ETC.) AT ALL TIMES.
- 1.2 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:
 WALLS - 60mm
 FLOORS - 60mm
 SLABS - 60mm
- 1.3 MINIMUM SPLICE LENGTH TO REINFORCEMENT = 45 x LESSER BAR DIAMETER
- 1.4 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.:



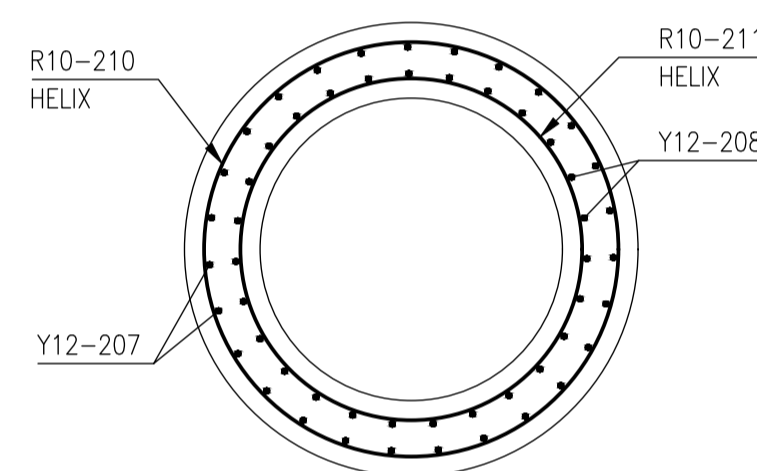
SECTION C-C
SCALE 1:25



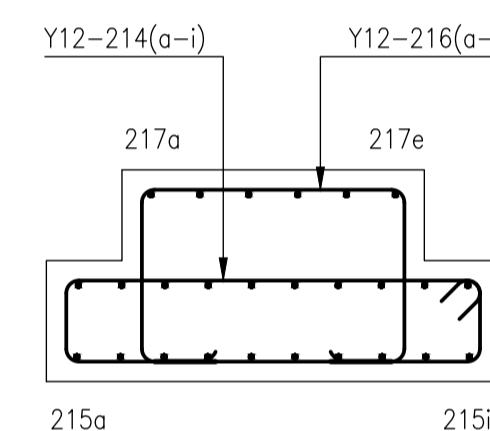
PLAN OF TOWER
SCALE 1:25



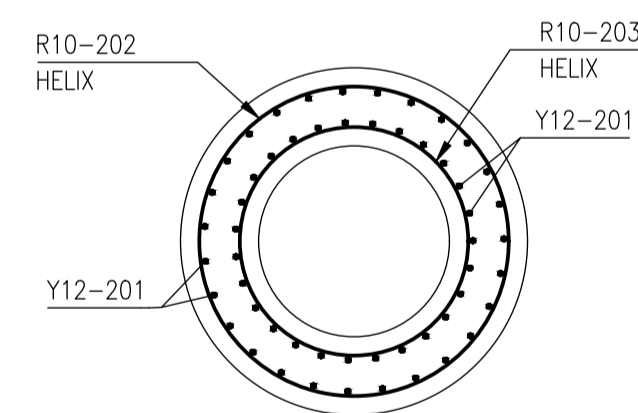
ELEVATION AT TOWER
SCALE 1:25



SECTION B-B
SCALE 1:25



SECTION D-D
SCALE 1:25



SECTION A-A
SCALE 1:25

CONSTRUCTION DRAWING

- NOTES**
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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-06	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SECONDARY SETTLING TANKS REINFORCEMENT DETAILS 2

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SP-2B-SST-504	B	

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SECONDARY SETTLING TANKS					PAGE: 1 OF 7					
REFERENCE DRAWING Nos. PK278-SP-2B-SST-503 & 504		DATE: June 2023 REV: -										
REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (mm)	SHAPE CODE	DIMENSION				
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)
-	PIT											
-	101	Y20	27	2	54	3 550	55	400	470	1 990	470	
-	102	Y20	53	2	106	2 350	38	1 550	470			
-	103a	Y16	4	2	8	2 250	65					480
-	103b	Y16	4	2	8	2 700	65					630
-	103c	Y16	4	2	8	3 200	65					780
-	103d	Y16	4	2	8	3 650	65					930
-	103e	Y16	4	2	8	4 150	65					1 090
-	103f	Y16	4	2	8	4 650	65					1 240
-	103g	Y16	4	2	8	5 200	65					1 390
-	103h	Y16	4	2	8	5 600	65					1 540
-	103i	Y16	4	2	8	6 100	65					1 700
-	103j	Y16	4	2	8	6 550	65					1 850
-	103k	Y16	4	2	8	7 100	65					2 000
-	103l	Y16	4	2	8	7 500	65					2 150
-	103m	Y16	4	2	8	8 000	65					2 300
-	104	Y20	27	2	54	2 400	38	250	1 990			
-	105	Y20	53	2	106	1 750	37	1 550				
-	106	Y12	54	2	108	2 000	37	1 740				
-	107	Y16	80	2	160	4 450	99	840	1 790	130		1 780
-	108	Y12	44	2	88	7 950	65					2 320
-	109	Y16	160	2	320	1 550	93	600	80			
CENTRAL COLUMN												
-	201	Y12	54	2	108	5 550	20					
-	202	R10	2	2	4	47 750	86	1 070	100	1 440		
-	203	R10	2	2	4	35 150	86	790	100	1 440		
-	204	R10	1	2	2	110 250	86	1 070	100	3 320		
-	205	R10	1	2	2	81 200	86	790	100	3 320		
-	206	Y12	27	2	54	1 500	41	600	370			270

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SECONDARY SETTLING TANKS					PAGE: 2 OF 7					
REFERENCE DRAWING Nos. PK278-SP-2B-SST-503 & 504		DATE: June 2023 REV: -										
REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (mm)	SHAPE CODE	DIMENSION				
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)
-	207	Y12	27	2	54	1 450	41	680	370			270
-	208	Y12	27	2	54	1 400	41	670	90			80
-	209	R10	27	2	54	950	38	450	100			
-	210	R10	1	2	2	31 650	86	1 370	100	750		
-	211	R10	1	2	2	26 100	86	1 130	100	750		
-	212	Y20	16	2	32	1 800	37	1 540				
-	213	R8	32	2	64	600	60	120	120			
-	214a	Y12	1	2	2	900	60	100	270			
-	214b	Y12	1	2	2	2 400	60	860	270			
-	214c	Y12	1	2	2	2 950	60	1 140	270			
-	214d	Y12	1	2	2	3 250	60	1 290	270			
-	214e	Y12	2	2	4	3 400	60	1 360	270			
-	214f	Y12	1	2	2	3 250	60	1 290	270			
-	214g	Y12	1	2	2	2 950	60	1 140	270			
-	214h	Y12	1	2	2	2 400	60	860	270			
-	214i	Y12	1	2	2	900	60	100	270			
-	215a	Y12	1	2	2	1 500	60	430	250			
-	215b	Y12	1	2	2	2 500	60	930	250			
-	215c	Y12	1	2	2	3 000	60	1 170	250			
-	215d	Y12	1	2	2	3 250	60	1 300	250			
-	215e	Y12	2	2	4	3 400	60	1 370	250			
-	215f	Y12	1	2	2	3 250	60	1 300	250			
-	215g	Y12	1	2	2	3 000	60	1 170	250			
-	215h	Y12	1	2	2	2 500	60	930	250			
-	215i	Y12	1	2	2	1 500	60	430	250			
-	216a	Y12	1	2	2	1 750	55	250	570	240	570	
-	216b	Y12	1	2	2	2 250	55	250	570	710	570	
-	216c	Y12	2	2	4	2 400	55	250	570	850	570	
-	216d	Y12	1	2	2	2 250	55	250	570	710	570	
-	216e	Y12	1	2	2	1 750	55	250	570	240	570	

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SECONDARY SETTLING TANKS					PAGE: 3 OF 7					
REFERENCE DRAWING Nos. PK278-SP-2B-SST-503 & 504		DATE: June 2023 REV: -										
REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (mm)	SHAPE CODE	DIMENSION				
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)
-	217a	Y12	1	2	2	950	38	350	310			
-	217b	Y12	1	2	2	1 400	38	350	730			
-	217c	Y12	2	2	4	1 500	38	350	860			
-	217d	Y12	1	2	2	1 400	38	350	730			
-	217e	Y12	1	2	2	950	38	350	310			
GROUND SLAB AND WALL FOOTING												
-	301	Y16	160	2	320	11 900	20					
-	302	Y16	160	2	320	11 000	20					
-	303	Y16	318	2	636	7 600	20					
-	304	Y20	638	2	1276	2 550	99	300	220	1 290	830	
-	305	Y12	319	2	638	1 400	37	1 110				
-	306	Y12	319	2	638	2 000	37	1 730				
-	307	Y20	319	2	638	2 200	37	1 710				
-	308	Y20	319	2	638	1 600	37	1 110				
-	309a	Y16	6	2	12	6 050	65					2 520
-	309b	Y16	6	2	12	6 350	65					2 670
-	309c	Y16	6	2	12	6 700	65					2 820
-	309d	Y16	6	2	12	7 000	65					2 970
-	309e	Y16	6	2	12	7 300	65					3 120
-	309f	Y16	6	2	12	7 600	65					3 260
-	309g	Y16	6	2	12	7 900	65					3 410
-	309h	Y16	6	2	12	8 250	65					3 560
-	310a	Y12	6	2	12	8 400	20					
-	310b	Y12	6	2	12	8 700	20					
-	310c	Y12	6	2	12	9 000	20					
-	310d	Y12	6	2	12	9 300	20					
-	310e	Y12	6	2	12	9 600	20					
-	310f	Y12	6	2	12	9 900	20					
-	310g	Y12	6	2	12	10 200	20					
-	310h	Y12	6	2	12	10 550	20					

- NOTE:
- DEFORMED BENT BARS WITH ACUTE ANGLE BENDS ARE DIMENSIONED PERPENDICULAR FROM THE FREE END TO THE TANGENT OF THE OUTER RADIUS OF THE BENT CORNER AND NOT TO THE INTERSECTION OF THE FACES. SEE SHAPE CODES 89, 90, 91, 92, 96, 97 AND 98.

STANDARD HOOKS AND BENT ENDS

MEASUREMENT OF OFFSETS AT FREE ENDS

37, 37B, 37H

'B' OR 'H' SUFFIX TO STANDARD SHAPE CODE

NOTES

- BEND TO 2d RADIUS FOR MILD STEEL BARS AND 3d RADIUS OR 7.5d IF SHAPE CODE IS FOLLOWED BY SUFFIX 'S' FOR HIGH TENSILE STEEL BARS UNLESS LARGER RADIUS ARE INDICATED FOR THE PARTICULAR SHAPE CODE.
- STEEL TO COMPLY WITH SANS 900-2011 EDITION 2.3. MILD STEEL BARS SHALL BE PLAN AND HIGH TENSILE STEEL BARS DEFORMED.
- MILD STEEL BARS ARE IDENTIFIED BY A CAPITAL 'R' AND HIGH TENSILE STEEL BARS BY A CAPITAL 'Y' PREFIXED TO THE DIAMETER IN mm.
- BENDING DIMENSIONS SHALL BE IN ACCORDANCE WITH SANS 282-2011 EDITION 6, EXCEPT AS SHOWN OTHERWISE ON THIS SHEET. WELDING OF BARS IS INDICATED BY 'W' AND LAPPING BY 'LAPPED'.
- ALL BARS SHALL BE BENT COLD. WELDING SHALL NOT BE PERMITTED FOR HIGH TENSILE STEEL BARS.
- WELDING OF MILD STEEL BARS SHALL BE IN ACCORDANCE WITH SANS 10044 AND BS 1856 OR BS 683.
- ALL DIMENSIONS GIVEN ON SHAPE CODES ARE EXTERNAL EXCEPT FOR OFFSETS OF FREE ENDS (SEE SKETCH).
- THE CUTTING LENGTH TOLERANCE IS TAKEN UP IN THE BRACKETED DIMENSIONS OR IN HOOKS OR BENT ENDS WHERE PRESENT.
- SUFFIX 'B' OR 'H' TO A STANDARD SHAPE CODE INDICATES THE ADDITION OF TWO BENT ENDS OR HOOKS TO THE FREE ENDS OF THE STANDARD SHAPE. THEY ARE BENT IN THE SAME DIRECTION AS THE ADJACENT BEND OR CURVE. THE DIMENSIONS IN BRACKETS ARE GIVEN IN THIS CASE.

SHAPE CODES 20 - 86

SHAPE CODES 87 - 99

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REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-06	ISSUED FOR CONSTRUCTION

T. BANDA ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SECONDARY SETTLING TANKS BENDING SCHEDULES 1

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SP-2B-SST-505	B	

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SECONDARY SETTLING TANKS					PAGE: 4 OF 7							
REFERENCE DRAWING Nos. PK278-SP-2B-SST-503 & 504		DATE: June 2023 REV: -												
REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (mm)	SHAPE CODE	DIMENSION						
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)		
-	310i	Y12	6	2	12	10 850	20							
-	310j	Y12	6	2	12	11 150	20							
-	310k	Y12	6	2	12	11 450	20							
-	310l	Y12	6	2	12	11 750	20							
-	310m	Y12	6	2	12	12 050	20							
-	310n	Y12	6	2	12	12 350	20							
-	310o	Y12	6	2	12	12 700	20							
-	310p	Y12	6	2	12	13 000	20							
-	311a	Y12	10	2	20	8 250	20							
-	311b	Y12	10	2	20	8 450	20							
-	311c	Y12	10	2	20	8 600	20							
-	311d	Y12	10	2	20	8 800	20							
-	311e	Y12	10	2	20	9 000	20							
-	311f	Y12	10	2	20	9 200	20							
-	311g	Y12	10	2	20	9 350	20							
-	311h	Y12	10	2	20	9 550	20							
-	311i	Y12	10	2	20	9 750	20							
-	311j	Y12	10	2	20	9 950	20							
-	311k	Y12	10	2	20	10 100	20							
-	311l	Y12	10	2	20	10 300	20							
-	311m	Y12	10	2	20	10 500	20							
-	311n	Y12	10	2	20	10 700	20							
-	311o	Y12	10	2	20	10 850	20							
-	311p	Y12	10	2	20	11 050	20							
-	311q	Y12	10	2	20	11 250	20							
-	311r	Y12	10	2	20	11 450	20							
-	311s	Y12	10	2	20	11 600	20							
-	311t	Y12	10	2	20	11 800	20							
-	311u	Y12	10	2	20	12 000	20							
-	311v	Y12	10	2	20	12 200	20							

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SECONDARY SETTLING TANKS					PAGE: 5 OF 7							
REFERENCE DRAWING Nos. PK278-SP-2B-SST-503 & 504		DATE: June 2023 REV: -												
REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (mm)	SHAPE CODE	DIMENSION						
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)		
-	311w	Y12	10	2	20	12 400	20							
-	311x	Y12	10	2	20	12 550	20							
-	311y	Y12	10	2	20	12 750	20							
-	311z	Y12	10	2	20	12 950	20							
-	312a	Y12	16	2	32	8 400	20							
-	312b	Y12	16	2	32	8 500	20							
-	312c	Y12	16	2	32	8 650	20							
-	312d	Y12	16	2	32	8 750	20							
-	312e	Y12	16	2	32	8 850	20							
-	312f	Y12	16	2	32	9 000	20							
-	312g	Y12	16	2	32	9 100	20							
-	312h	Y12	16	2	32	9 200	20							
-	312i	Y12	16	2	32	9 350	20							
-	312j	Y12	16	2	32	9 450	20							
-	312k	Y12	16	2	32	9 550	20							
-	312l	Y12	16	2	32	9 700	20							
-	312m	Y12	16	2	32	9 800	20							
-	312n	Y12	16	2	32	9 900	20							
-	312o	Y12	16	2	32	10 050	20							
-	312p	Y12	16	2	32	10 150	20							
-	312q	Y12	16	2	32	10 250	20							
-	312r	Y12	16	2	32	10 400	20							
-	312s	Y12	16	2	32	10 500	20							
-	312t	Y12	16	2	32	10 600	20							
-	312u	Y12	16	2	32	10 750	20							
-	312v	Y12	16	2	32	10 850	20							
-	312w	Y12	16	2	32	10 950	20							
-	312x	Y12	16	2	32	11 100	20							
-	312y	Y12	16	2	32	11 200	20							
-	312z	Y12	16	2	32	11 350	20							

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SECONDARY SETTLING TANKS					PAGE: 6 OF 7							
REFERENCE DRAWING Nos. PK278-SP-2B-SST-503 & 504		DATE: June 2023 REV: -												
REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (mm)	SHAPE CODE	DIMENSION						
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)		
-	312aa	Y12	16	2	32	11 450	20							
-	312ab	Y12	16	2	32	11 550	20							
-	312ac	Y12	16	2	32	11 700	20							
-	312ad	Y12	16	2	32	11 800	20							
-	313a	Y16	16	2	32	12 100	20							
-	313b	Y16	16	2	32	12 200	20							
-	313c	Y16	16	2	32	12 350	20							
-	313d	Y16	16	2	32	12 450	20							
-	313e	Y16	16	2	32	12 600	20							
-	313f	Y16	16	2	32	12 700	20							
-	313g	Y16	16	2	32	12 800	20							
-	313h	Y16	16	2	32	12 950	20							
-	314	Y20	638	2	1276	2 250	45	1 500	580			230		
-	315	R10	580	2	1160	1 200	83	330	80	400				
OUTER WALL														
-	401	Y12	666	2	1332	11 250	20							
-	402	Y12	638	2	1276	4 850	37	4 680						
-	403	Y12	638	2	1276	4 250	37	4 080						
-	404	Y10	638	2	1276	2 650	99	500	820	80			820	
-	405	R10	384	2	768	400	85	120	170	60				
EFFLUENT LAUNDER														
-	501	Y12	638	2	1276	1 050	37	570						
-	502a	Y10	18	2	36	10 650	20							
-	502b	Y10	36	2	72	10 750	20							
-	502c	Y10	18	2	36	10 900	20							
-	502d	Y10	36	2	72	11 000	20							
-	503	Y10	638	2	1276	1 050	62	500	230					
-	504a	Y10	18	2	36	10 300	20							
-	504b	Y10	18	2	36	10 450	20							
-	504c	Y10	9	2	18	10 600	20							

NOTES

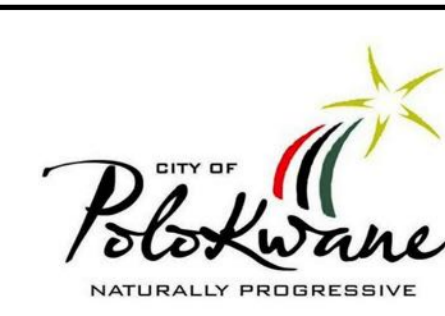
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CLIENT



CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-06	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

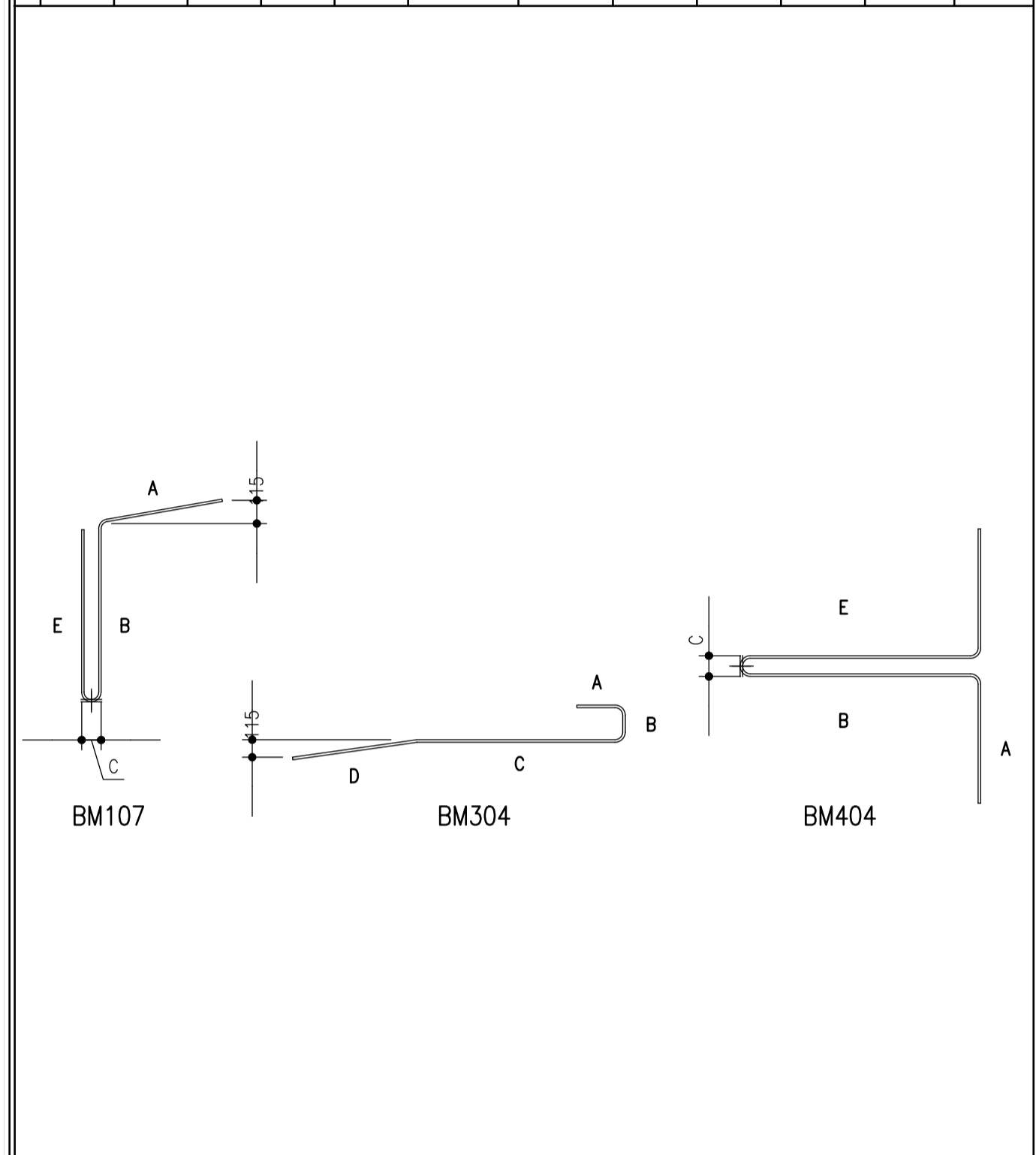
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SECONDARY SETTLING TANKS BENDING SCHEDULES 2

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SP-2B-SST-506	B	

REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (m)	SHAPE CODE	DIMENSION						
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)		
-	505	Y10	45	2	90	10 600	20							



R6	R8	R10	R12	R16	R20	R25	R32	R40	Total	Y6	Y8	Y10	Y12	Y16	Y20	Y25	Y32	Y40	Total
0	15	1592	0	0	0	0	0	0	1607	0	0	5525	43736	28126	23126	0	0	0	100513

CONSTRUCTION DRAWING

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 NATURALLY PROGRESSIVE

REVISION SCHEDULE

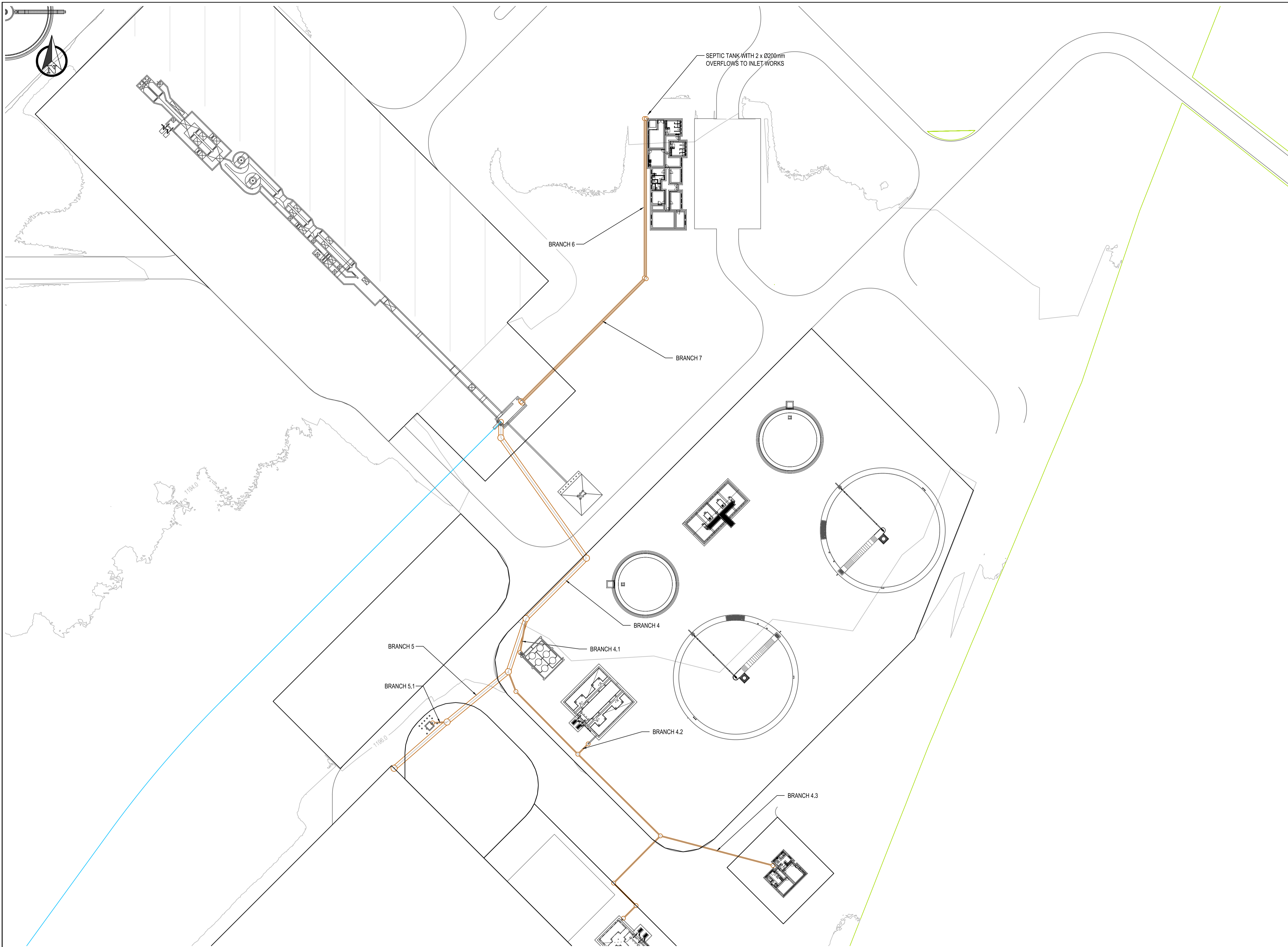
NO.	DATE	REVISION DESCRIPTION
0	2023-06	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____
 CLIENT _____ DATE _____

PROJECT
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION
SECONDARY SETTLING TANKS BENDING SCHEDULES 3

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SP-2B-SST-507	B	



NOTES


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CITY OF
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REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

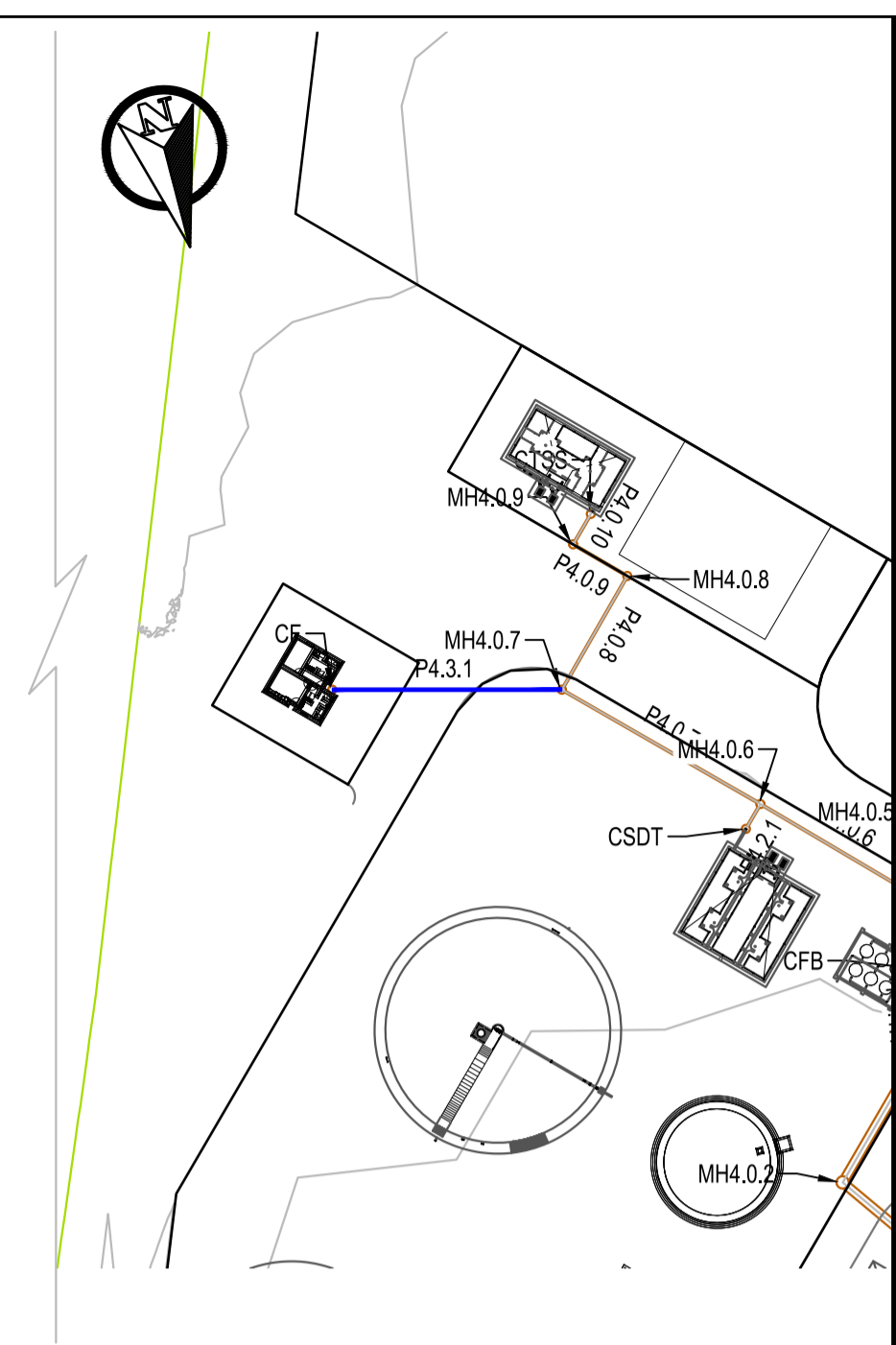
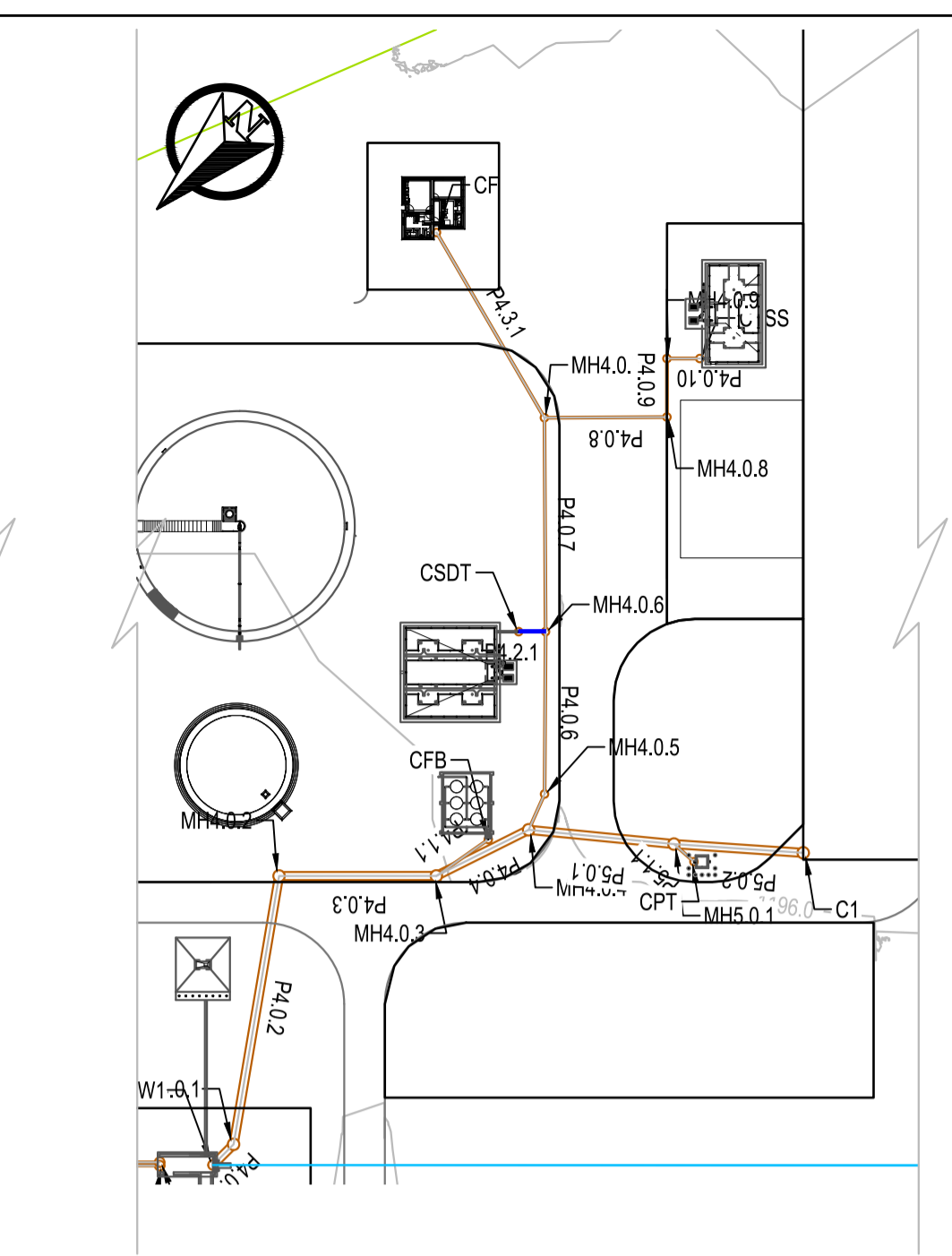
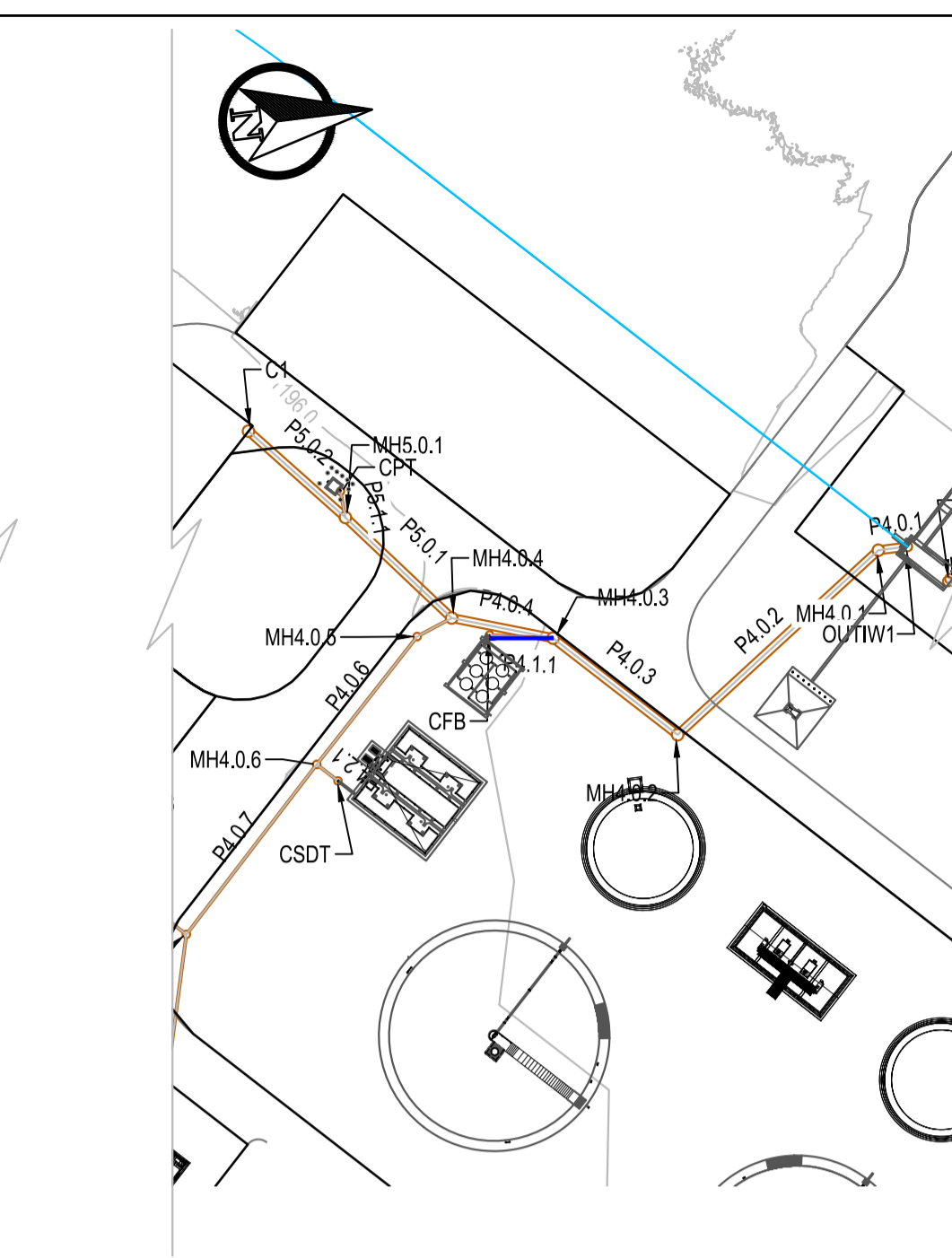
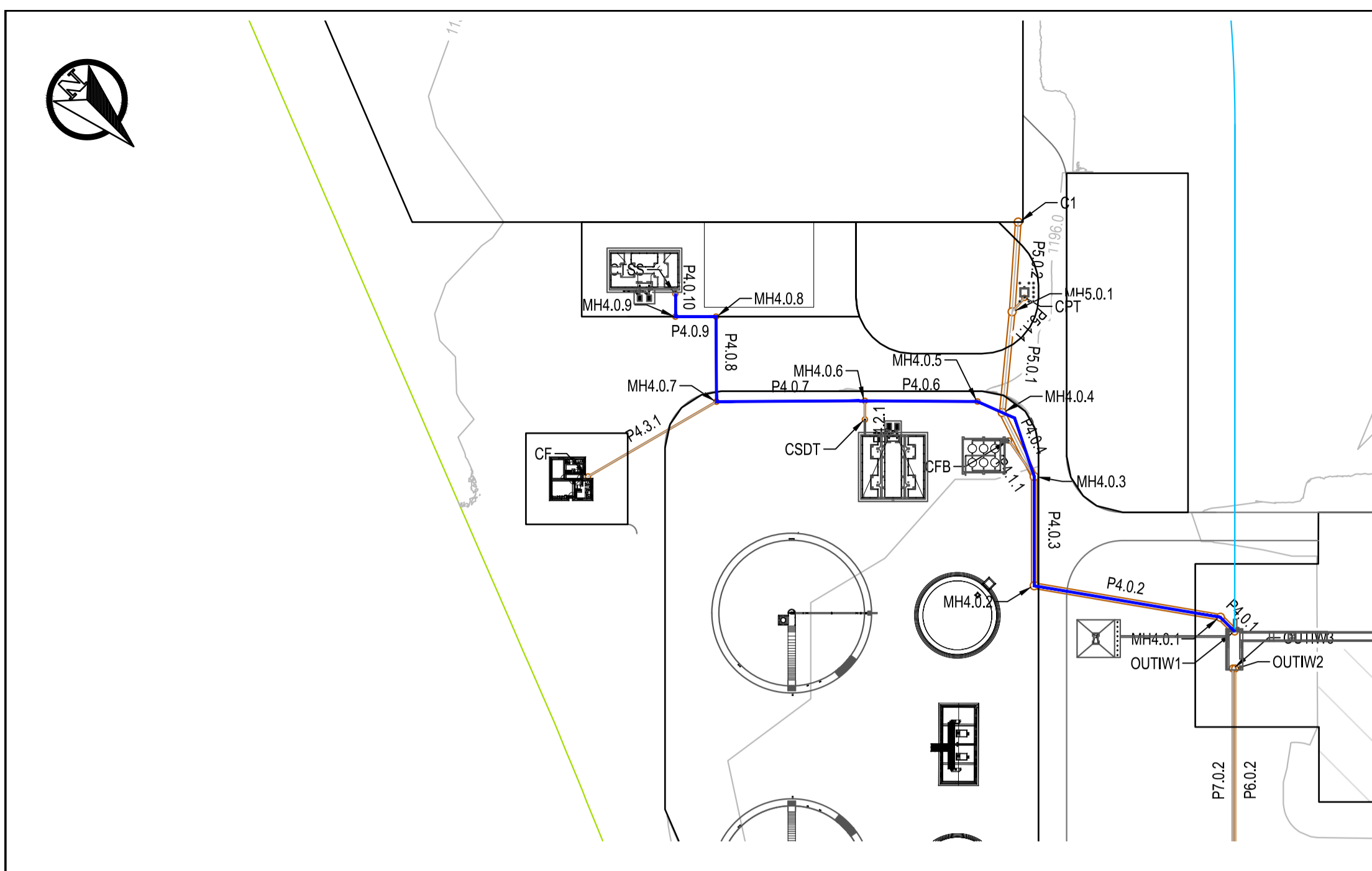
**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SEWER WATER
NETWORK
GENERAL LAYOUT**

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:2000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2003-0001	0	



NGL - - - - -
 EGL - - - - -
 HGL - - - - -
 HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	CHAINAGE (m)	FINISHED PLATFORM LEVEL	PIPE INVERT LEVEL	DEPTH TO INVERT	COVER	SLOPE / LENGTH	HYDRAULICS
CTSS	0.000	1197.149	1195.276	1.873	1.429	1:150.0 4.86m	DESIGN Q(l/s) 1.00 V(m/s) 0.9 MAX. (0.8D) Q(l/s) 0.9 V(m/s) 1.0
MH4.0.9	4.861	1195.244	1195.244	1.802	1.369	1:150.0 8.64m	DESIGN Q(l/s) 31.00 V(m/s) 0.9 MAX. (0.8D) Q(l/s) 30.87 V(m/s) 1.0
Ø250 STR WALL HDPE	13.505	1195.107	1195.107	1.878	1.434	1:150.0 18.09m	DESIGN Q(l/s) 31.00 V(m/s) 0.9 MAX. (0.8D) Q(l/s) 30.87 V(m/s) 1.0
MH4.0.8	31.595	1196.090	1194.906	1.174	0.730	1:155.7 31.58m	DESIGN Q(l/s) 39.15 V(m/s) 0.8 MAX. (0.8D) Q(l/s) 38.98 V(m/s) 0.9
Ø250 STR WALL HDPE	63.179	1196.071	1194.623	1.448	1.004	1:143.1 23.97m	DESIGN Q(l/s) 40.89 V(m/s) 0.9 MAX. (0.8D) Q(l/s) 40.89 V(m/s) 1.2
MH4.0.6	87.149	1196.070	1194.375	1.694	1.260	98.8 15.23m	DESIGN Q(l/s) 1288.97 V(m/s) 1.6 MAX. (0.8D) Q(l/s) 1482.06 V(m/s) 1.6
Ø250 STR WALL HDPE	92.324	1196.025	1194.237	1.828	1.383	1:400.0 23.24m	DESIGN Q(l/s) 1315.67 V(m/s) 1.6 MAX. (0.8D) Q(l/s) 1596.91 V(m/s) 1.7
MH4.0.5	108.159	1195.952	1193.503	2.488	1.298	1:400.0 40.18m	DESIGN Q(l/s) 1315.67 V(m/s) 1.6 MAX. (0.8D) Q(l/s) 1596.91 V(m/s) 1.7
MH4.0.4	131.396	1195.541	1193.423	2.168	1.378		
MH4.0.3	171.576	1195.000	1193.365	1.635	1.355		
Ø1200 STR WALL HDPE	175.882	1195.000	1193.285	1.715	1.438		
MH4.0.2	175.882	1195.000	1193.095	1.905	1.715		
MH4.0.1	175.882	1195.000	1193.095	1.905	1.715		
OUTW1	175.882	1195.000	1193.095	1.905	1.715		

BRANCH4

NGL - - - - -
 EGL - - - - -
 HGL - - - - -
 HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	CHAINAGE (m)	FINISHED PLATFORM LEVEL	PIPE INVERT LEVEL	DEPTH TO INVERT	COVER	SLOPE / LENGTH	HYDRAULICS
CFB	0.000	1195.028	1194.664	1.364	0.920	1:150.7 9.37m	DESIGN Q(l/s) 26.70 V(m/s) 0.9 MAX. (0.8D) Q(l/s) 38.89 V(m/s) 1.0
MH4.0.3	9.372	1195.993	1194.602	1.391	0.947		
Ø250 STR WALL HDPE	9.372	1195.993	1194.602	1.391	0.947		

BRANCH4.1

NGL - - - - -
 EGL - - - - -
 HGL - - - - -
 HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	CHAINAGE (m)	FINISHED PLATFORM LEVEL	PIPE INVERT LEVEL	DEPTH TO INVERT	COVER	SLOPE / LENGTH	HYDRAULICS
CSDT	0.000	1195.058	1194.649	1.409	0.995	1:150.0 3.97m	DESIGN Q(l/s) 14.00 V(m/s) 0.8 MAX. (0.8D) Q(l/s) 38.99 V(m/s) 1.0
MH4.0.6	3.974	1195.071	1194.623	1.448	1.005		
Ø250 STR WALL HDPE	3.974	1195.071	1194.623	1.448	1.005		

BRANCH4.2

NGL - - - - -
 EGL - - - - -
 HGL - - - - -
 HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	CHAINAGE (m)	FINISHED PLATFORM LEVEL	PIPE INVERT LEVEL	DEPTH TO INVERT	COVER	SLOPE / LENGTH	HYDRAULICS
CF	0.000	1197.459	1195.373	2.086	1.779	1:80.0 31.65m	DESIGN Q(l/s) 26.00 V(m/s) 1.1 MAX. (0.8D) Q(l/s) 53.37 V(m/s) 1.3
MH4.0.7	31.653	1196.090	1194.978	1.102	0.796		
Ø250 STR WALL HDPE	31.653	1196.090	1194.978	1.102	0.796		

BRANCH4.3

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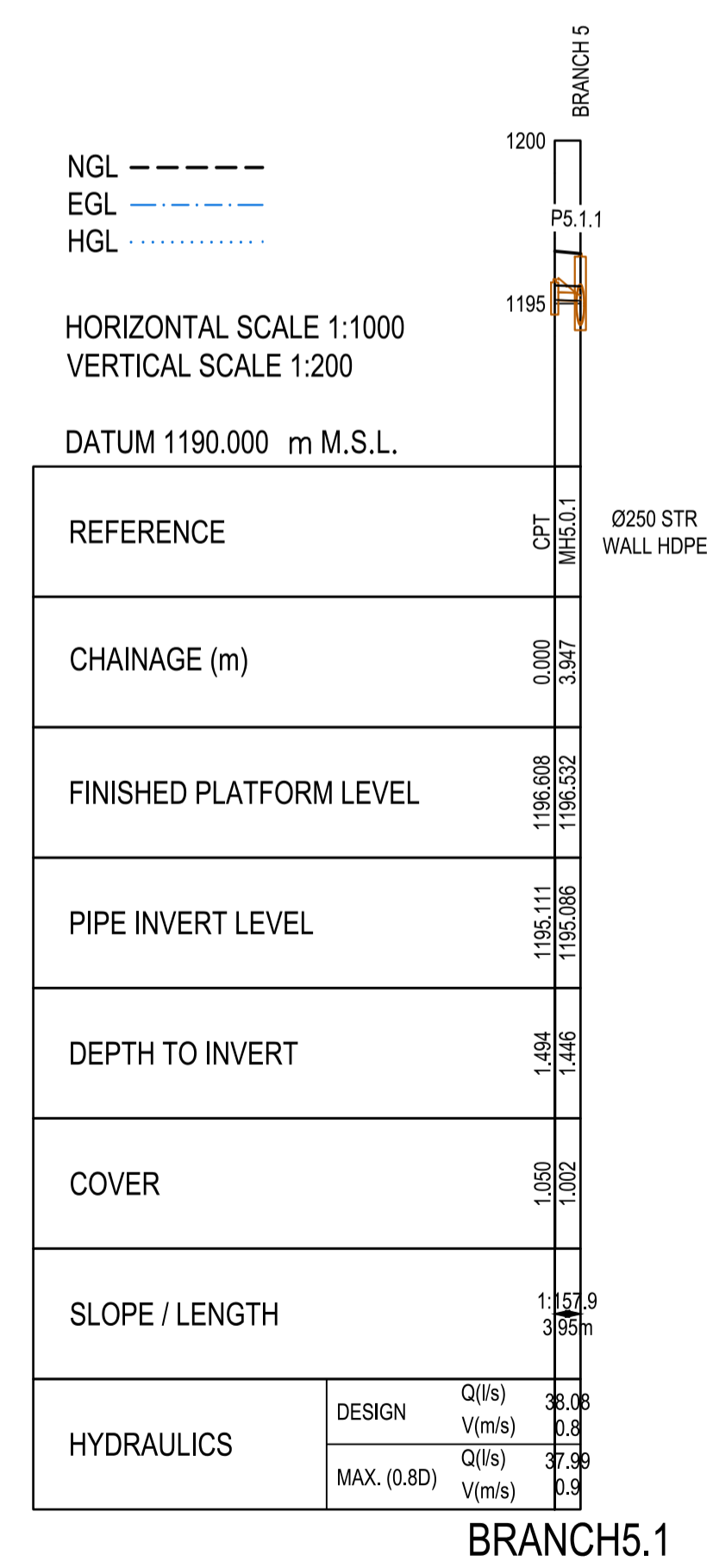
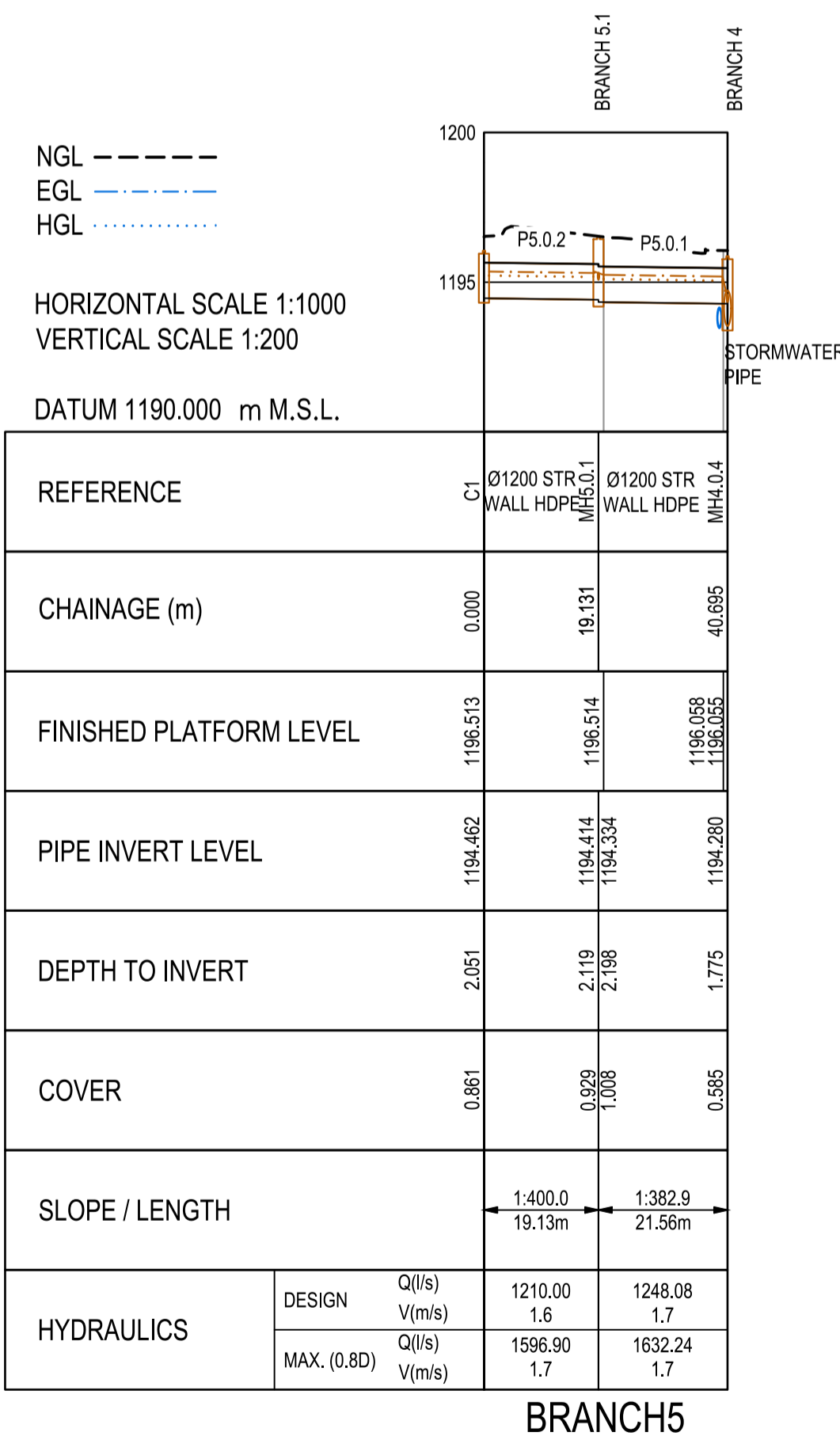
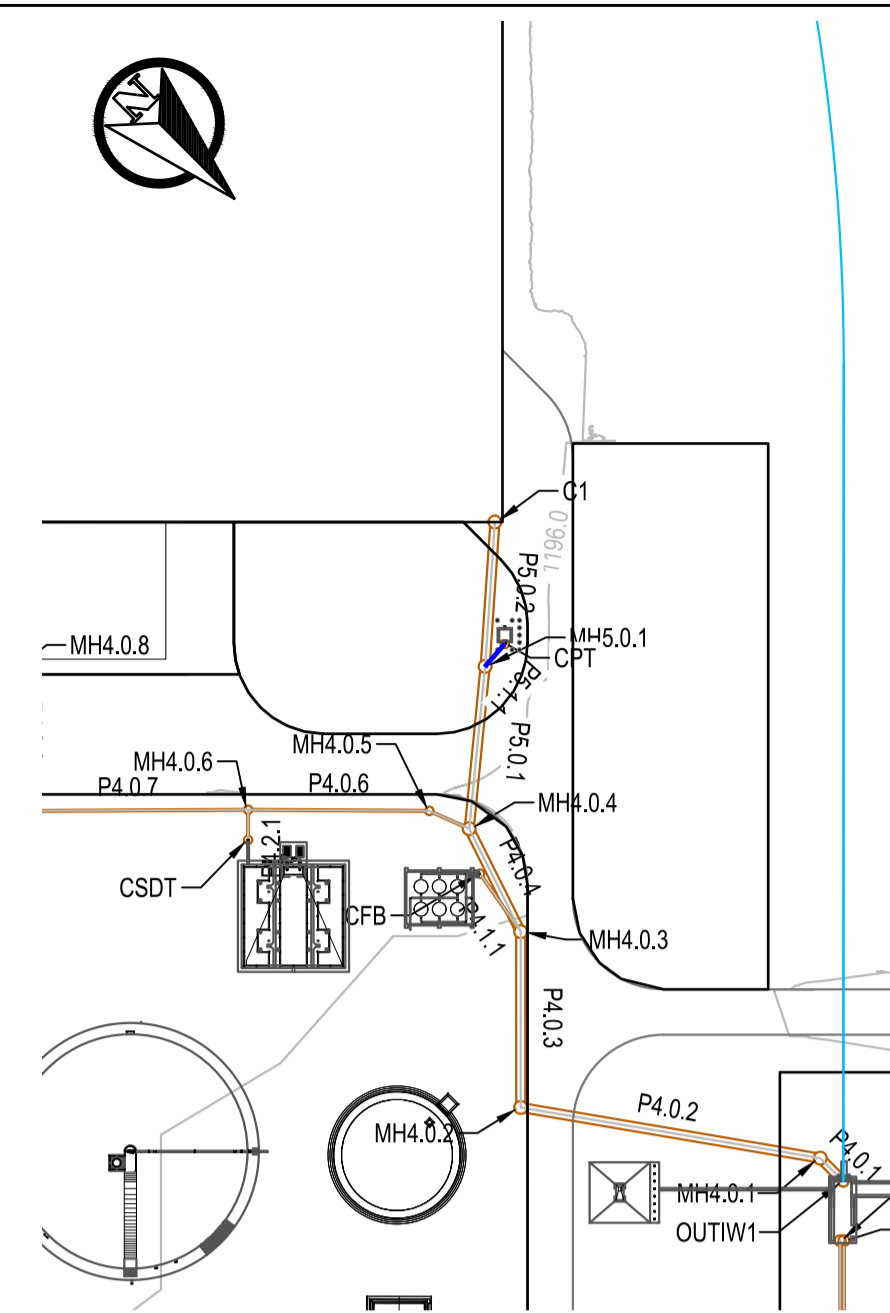
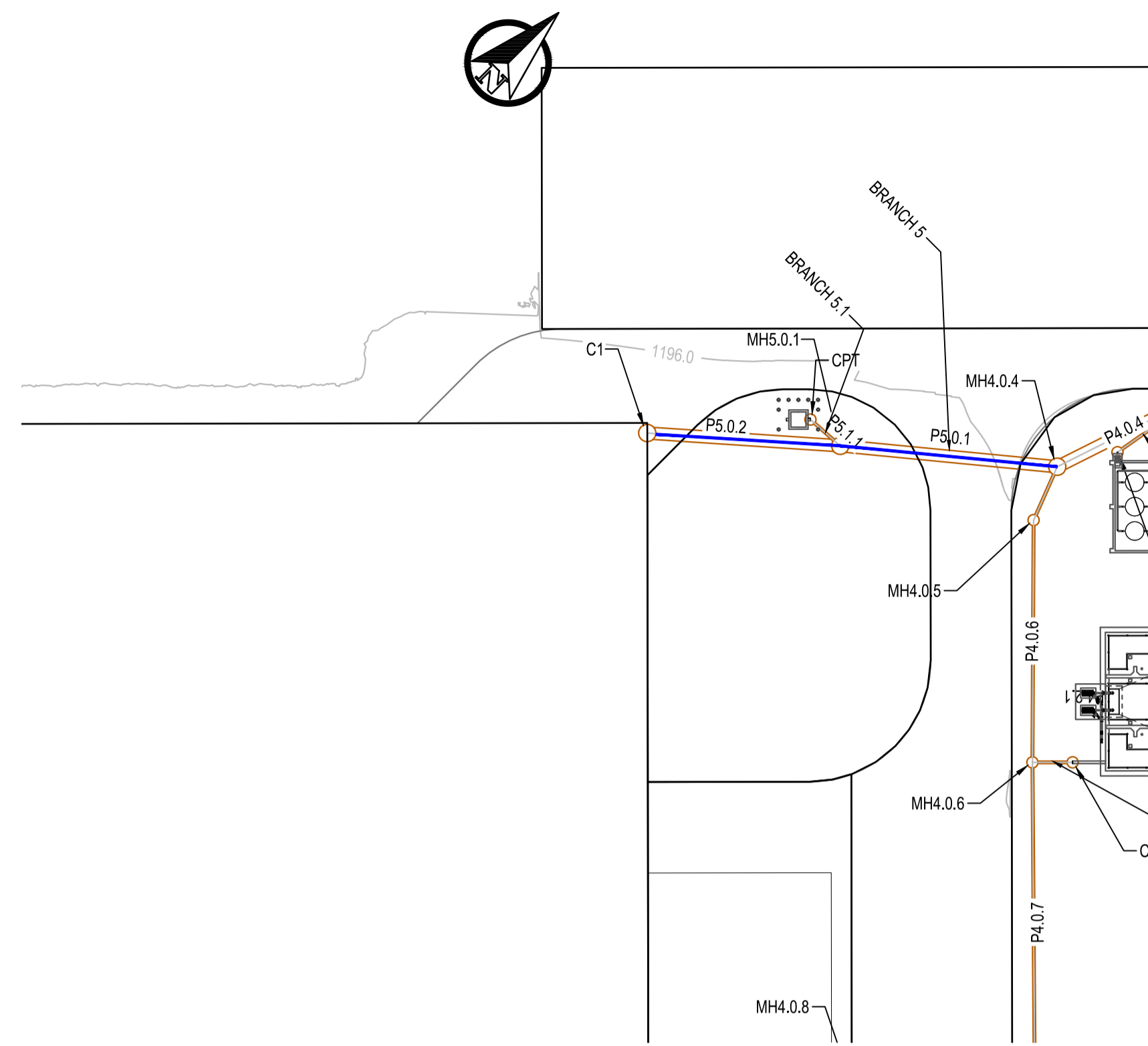
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. --- DATE ---
 CLIENT --- DATE ---

PROJECT
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION
SEWER WATER NETWORK BRANCHES 4 TO 4.3 PROFILE

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-CIV-DRG-2003-0002		0



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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SEWER WATER NETWORK BRANCHES 5 AND 5.1 PROFILE

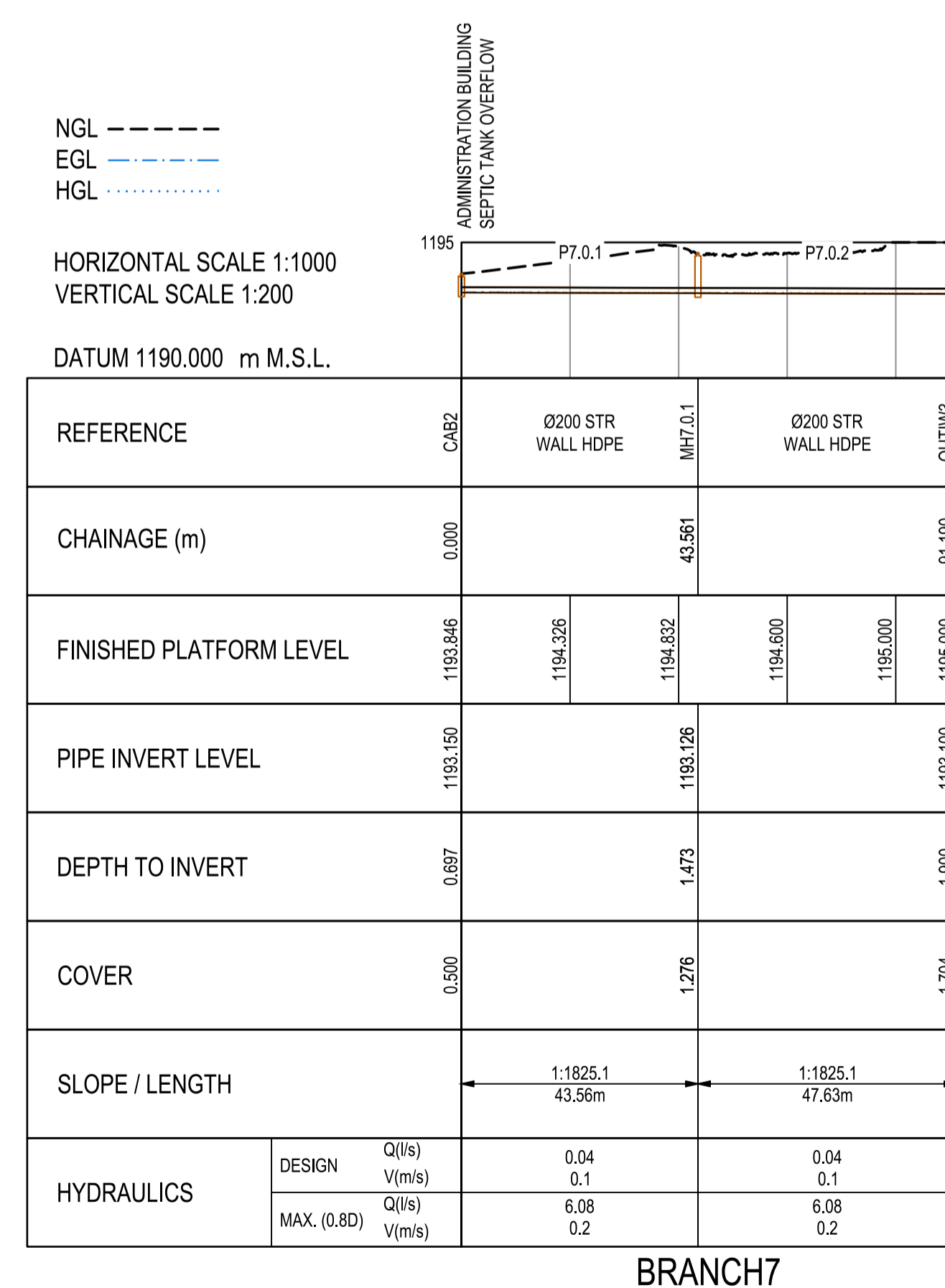
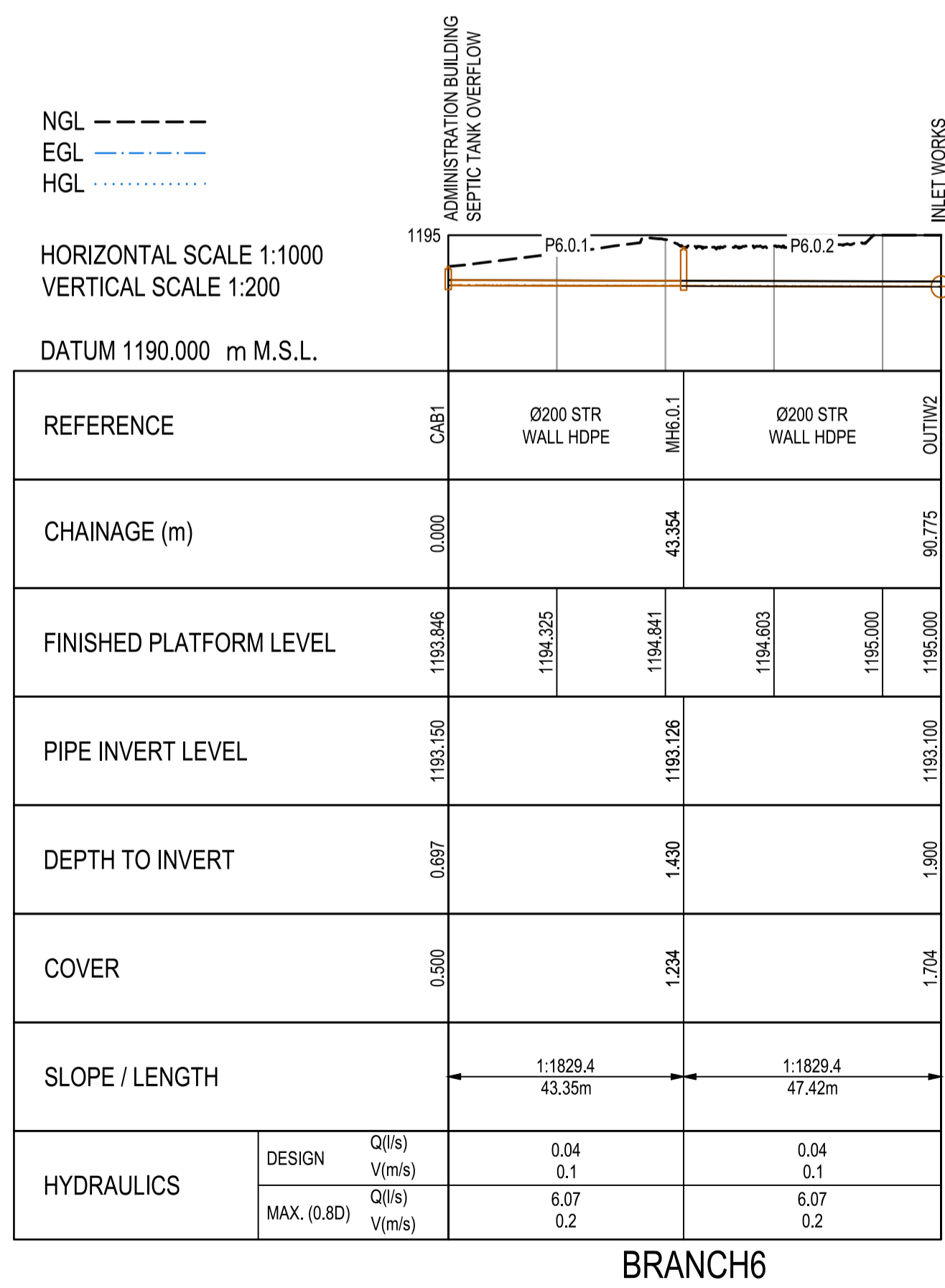
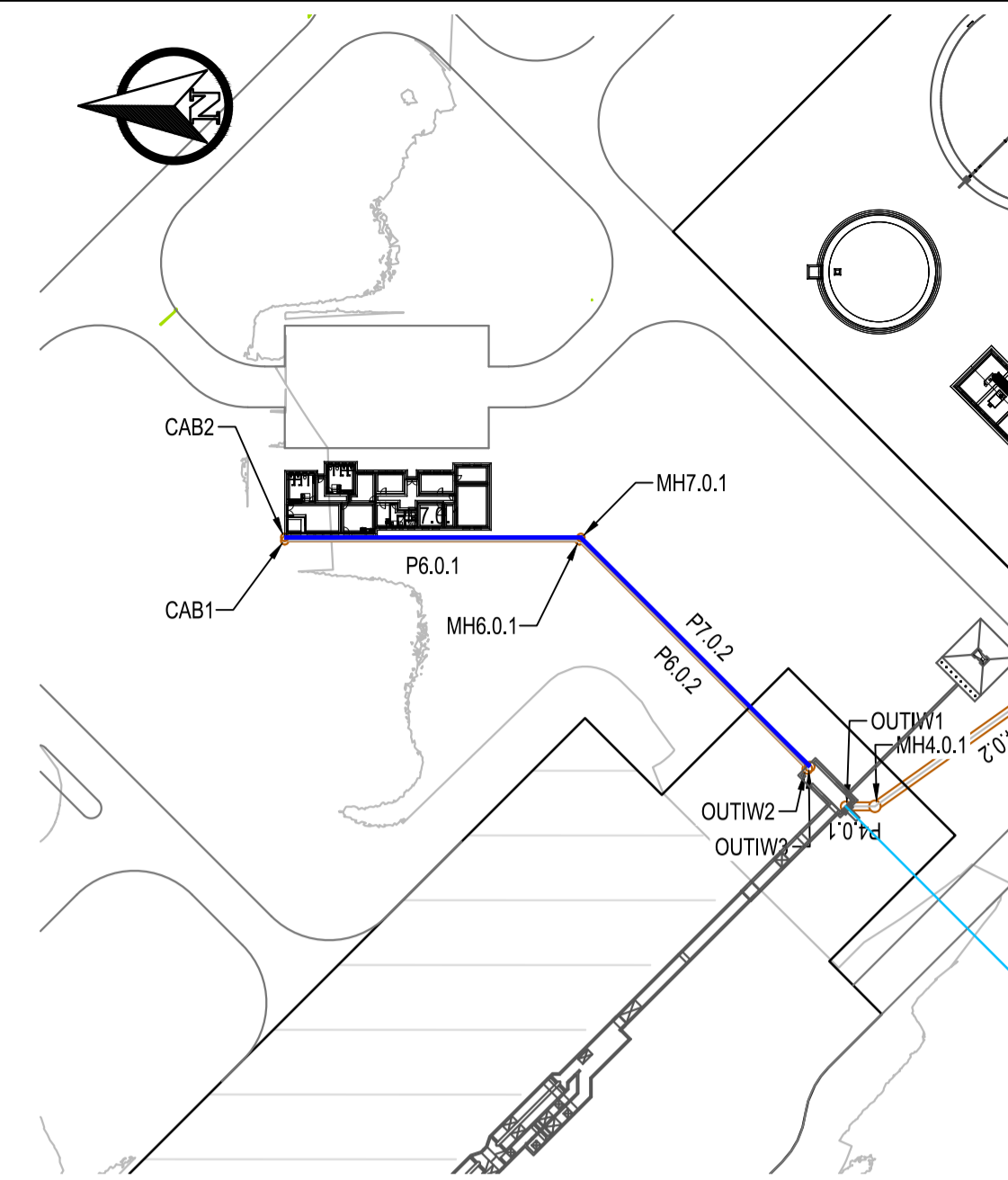
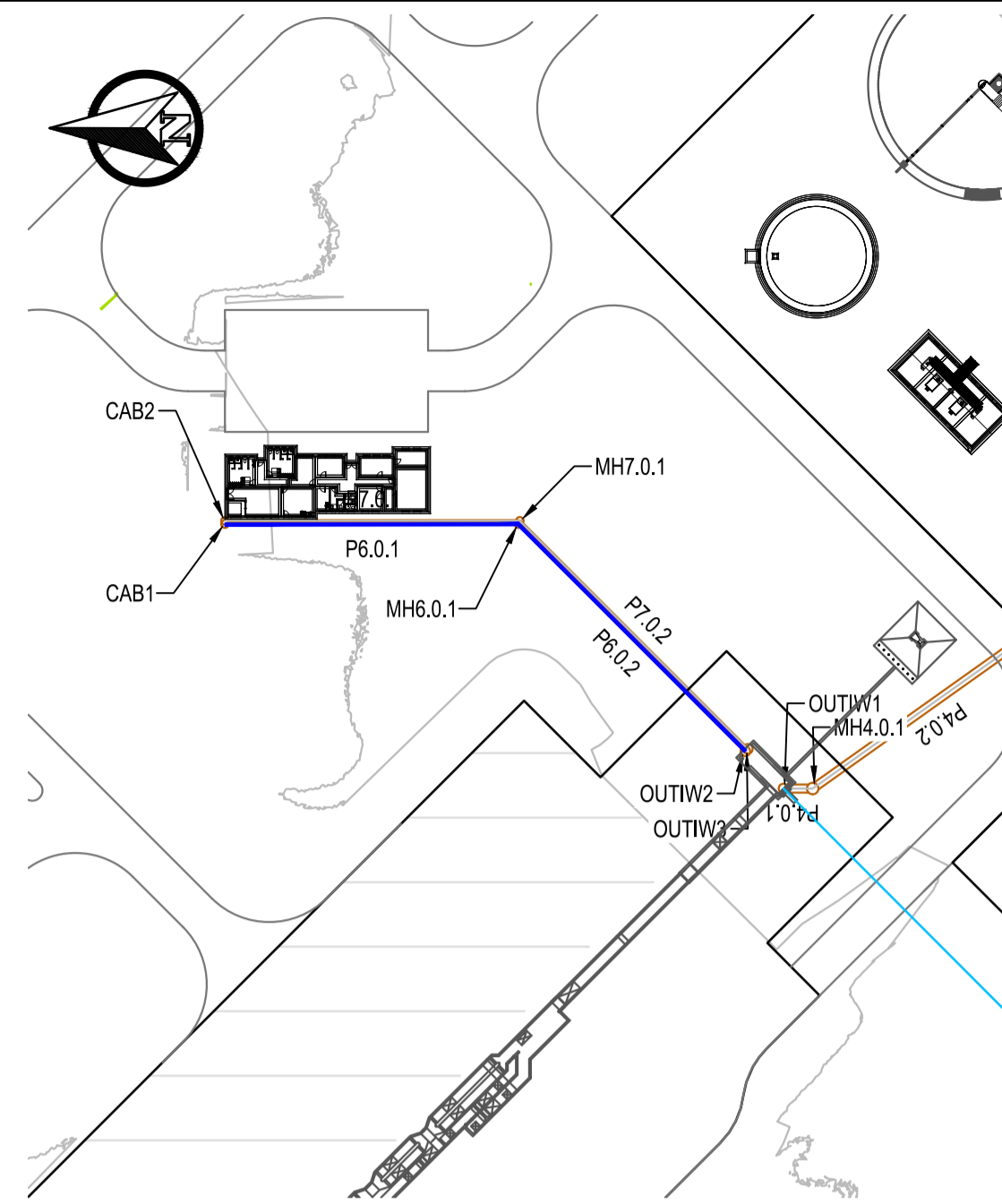
DESIGNED Designer
DRAWN Author
CHECKED Checker

REV DATE 2024-03
SCALE 1:1000
ORIGINAL SIZE A1

DRAWING NUMBER
PK278-01-CIV-DRG-2003-0003

REV 0

CONSTRUCTION DRAWING



CONSTRUCTION DRAWING

NOTES

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NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SEWER WATER NETWORK BRANCHES 6 AND 7 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-CIV-DRG-2003-0004		0

STRUCTURE LIST-SEWERNETWORK1					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
C1	-2 633 047.543	46 390.566	1196.052	1194.462 1.590	P5.0.2-INV OUT 1194.462
CF	-2 633 074.002	46 493.616	1197.459	1195.413 2.046	P4.3.1-INV OUT 1195.413
CFB	-2 633 016.055	46 424.845	1195.409	1194.262 1.147	P4.1.1-INV OUT 1194.762
CPT	-2 633 035.205	46 401.054	1195.750	1194.809 0.941	P5.1.1-INV OUT 1195.103
CSDT	-2 633 040.911	46 443.364	1196.060	1194.747 1.313	P4.2.1-INV OUT 1194.747
CTSS	-2 633 088.348	46 452.959	1196.021	1195.374 0.647	P4.0.10-INV OUT 1195.374
MH4.0.1	-2 632 957.630	46 419.621	1195.000	1193.104 1.896	P4.0.2-INV IN 1193.184 P4.0.1-INV OUT 1193.104
MH4.0.2	-2 632 990.387	46 442.889	1194.959	1193.285 1.674	P4.0.3-INV IN 1193.365 P4.0.2-INV OUT 1193.285
MH4.0.3	-2 633 006.824	46 426.464	1195.486	1193.423 2.063	P4.0.4-INV IN 1193.503 P4.1.1-INV IN 1194.700 P4.0.3-INV OUT 1193.423
MH4.0.4	-2 633 021.275	46 421.641	1195.866	1193.536 2.332	P4.0.5-INV IN 1194.335 P5.0.1-INV IN 1194.278 P4.0.4-INV OUT 1193.536
MH4.0.5	-2 633 026.666	46 423.711	1196.069	1194.393 1.676	P4.0.6-INV IN 1194.473 P4.0.5-INV OUT 1194.393
MH4.0.6	-2 633 043.722	46 440.553	1196.071	1194.641 1.431	P4.0.7-INV IN 1194.721 P4.2.1-INV IN 1194.721 P4.0.6-INV OUT 1194.641
MH4.0.7	-2 633 065.933	46 463.008	1196.080	1194.924 1.156	P4.0.8-INV IN 1195.004 P4.3.1-INV IN 1195.018 P4.0.7-INV OUT 1194.924
MH4.0.8	-2 633 078.796	46 450.287	1196.985	1195.125 1.860	P4.0.9-INV IN 1195.205 P4.0.8-INV OUT 1195.125
MH4.0.9	-2 633 084.910	46 456.396	1195.989	1195.262 0.726	P4.0.10-INV IN 1195.342 P4.0.9-INV OUT 1195.262
MH5.0.1	-2 633 034.961	46 404.978	1196.537	1194.334 2.203	P5.0.2-INV IN 1194.414 P5.1.1-INV IN 1195.078 P5.0.1-INV OUT 1194.334
OUTW1	-2 632 953.324	46 419.621	1195.000	1193.093 1.907	P4.0.1-INV IN 1193.093

PIPE LIST-SEWERNETWORK1					
PIPE NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	SLOPE	DIAMETER AND CLASS
P4.0.1	1193.104	1193.093	3.209	0.250%	1200mm
P4.0.2	1193.285	1193.184	38.583	0.250%	1200mm
P4.0.3	1193.423	1193.365	21.640	0.250%	1200mm
P4.0.4	1193.536	1193.503	13.637	0.215%	1200mm
P4.0.5	1194.393	1194.335	4.478	1.002%	250mm
P4.0.6	1194.641	1194.473	22.973	0.699%	250mm
P4.0.7	1194.924	1194.721	30.586	0.642%	250mm
P4.0.8	1195.125	1195.004	17.093	0.667%	250mm
P4.0.9	1195.262	1195.205	7.645	0.663%	250mm
P4.0.10	1195.374	1195.342	3.863	0.667%	250mm
P4.1.1	1194.762	1194.700	8.074	0.664%	250mm
P4.2.1	1194.747	1194.721	2.976	0.667%	250mm
P4.3.1	1195.413	1195.018	30.659	1.250%	250mm
P5.0.1	1194.334	1194.278	19.967	0.261%	1200mm
P5.0.2	1194.462	1194.414	17.534	0.250%	1200mm
P5.1.1	1195.103	1195.078	2.633	0.633%	250mm

STRUCTURE LIST-SEWERWATER2					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
CAB1	-2 632 870.807	46 458.652	1193.846	1193.150 0.697	P6.0.1-INV OUT 1193.150
CAB2	-2 632 870.807	46 459.152	1193.846	1193.150 0.697	P7.0.1-INV OUT 1193.150
MH6.0.1	-2 632 914.161	46 458.652	1194.556	1193.126 1.430	P6.0.1-INV IN 1193.126 P6.0.2-INV OUT 1193.126
MH7.0.1	-2 632 914.368	46 459.152	1194.599	1193.126 1.473	P7.0.1-INV IN 1193.126 P7.0.2-INV OUT 1193.126
OUTW2	-2 632 947.693	46 425.120	1195.000	1193.100 1.900	P6.0.2-INV IN 1193.100
OUTW3	-2 632 948.046	46 425.474	1195.000	1193.100 1.900	P7.0.2-INV IN 1193.100

PIPE LIST-SEWERWATER2					
PIPE NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	SLOPE	DIAMETER AND CLASS
P6.0.1	1193.150	1193.126	42.354	0.055%	200mm
P6.0.2	1193.126	1193.100	46.622	0.055%	200mm
P7.0.1	1193.150	1193.126	42.561	0.055%	200mm
P7.0.2	1193.126	1193.100	46.829	0.055%	200mm

CONSTRUCTION DRAWING

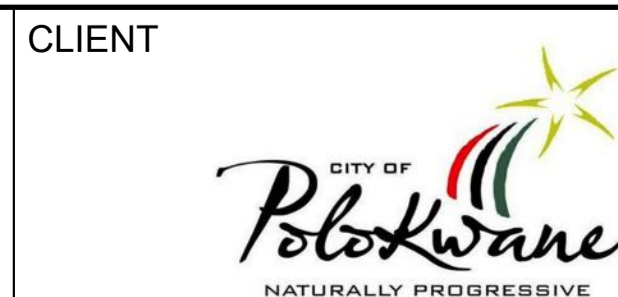
NOTES

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ZAKUMI
Consulting Engineers

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WEBSITE: www.zoe.co.za
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FAX: +27 15 291 1993



REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-09	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. DATE

CLIENT DATE

PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SEWER WATER NEWTORK
JUNCTION AND PIPE
DETAILS**

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-09	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2003-0005	0	



Y: -45 750
X: 2 632 500

Y: -45 750
X: 2 632 750

Y: -45 750
X: 2 633 000

Y: -45 750
X: 2 633 250

Y: -46 000
X: 2 632 500

Y: -46 250
X: 2 632 750

Y: -46 000
X: 2 633 000

Y: -46 000
X: 2 633 250

SERVICE WATER LIFTING STATION

BRANCH 1.1

BRANCH 1

BRANCH 1.2

BRANCH 2

BRANCH 3

BRANCH 4

BRANCH 4.2

BRANCH 5

BRANCH 4.1

BRANCH 6.1

BRANCH 6

BRANCH 1.3

OUTFALL SEWER PIPELINE

100 YEAR FLOODLINE

Y: -46 750
X: 2 632 500

Y: -46 750
X: 2 632 750

Y: -46 750
X: 2 633 000

Y: -46 750
X: 2 633 250

Y: -47 000
X: 2 632 500

Y: -47 000
X: 2 632 750

Y: -47 000
X: 2 633 000

Y: -47 000
X: 2 633 250

CONSTRUCTION DRAWING

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CLIENT

 CITY OF
Polokwane
 NATURALLY PROGRESSIVE

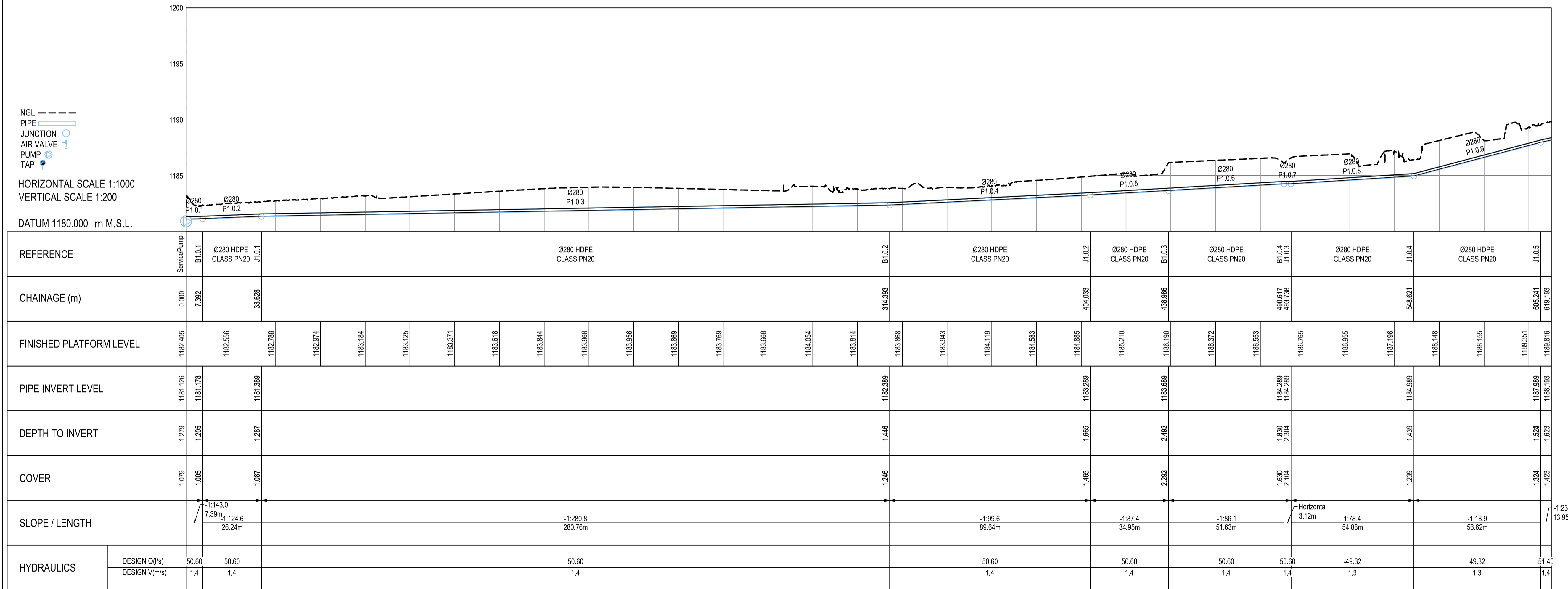
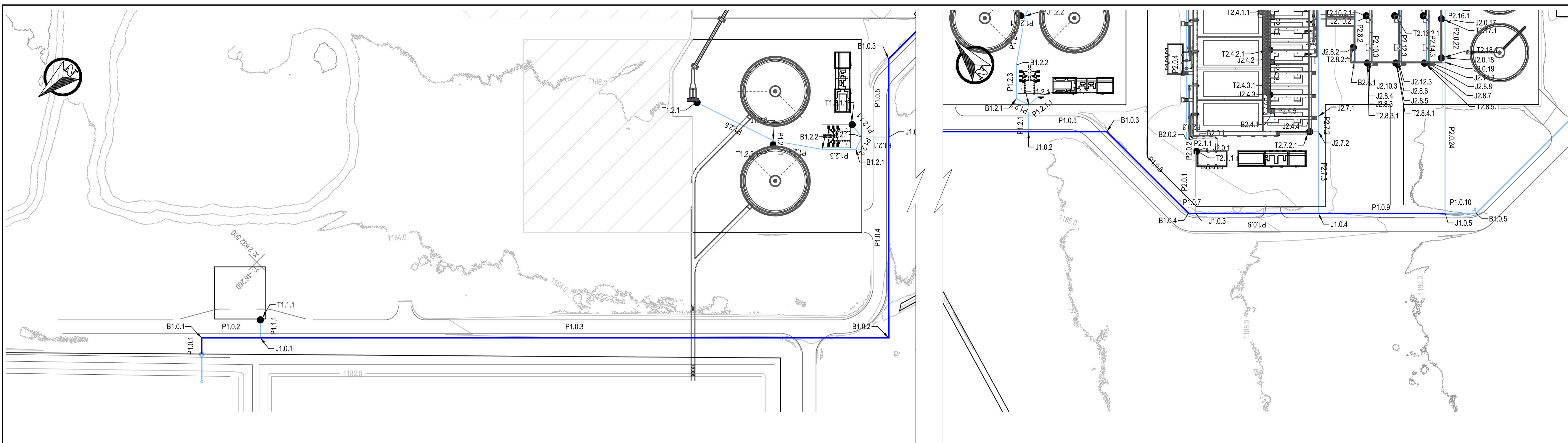
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION
 SERVICE WATER
 GENERAL LAYOUT

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:2000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0001	0	



BRANCH 1

CONSTRUCTION DRAWING

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Polokwane
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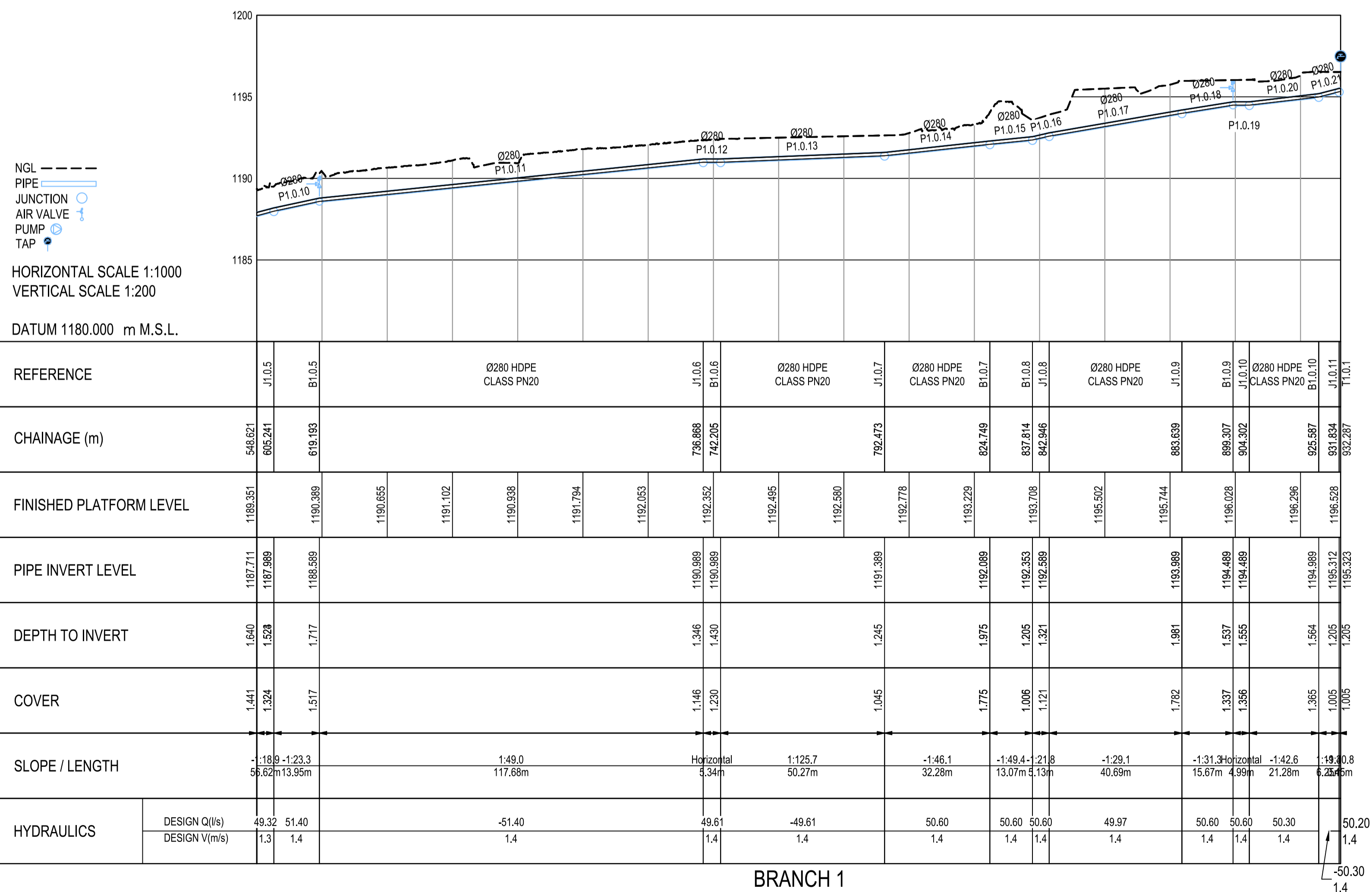
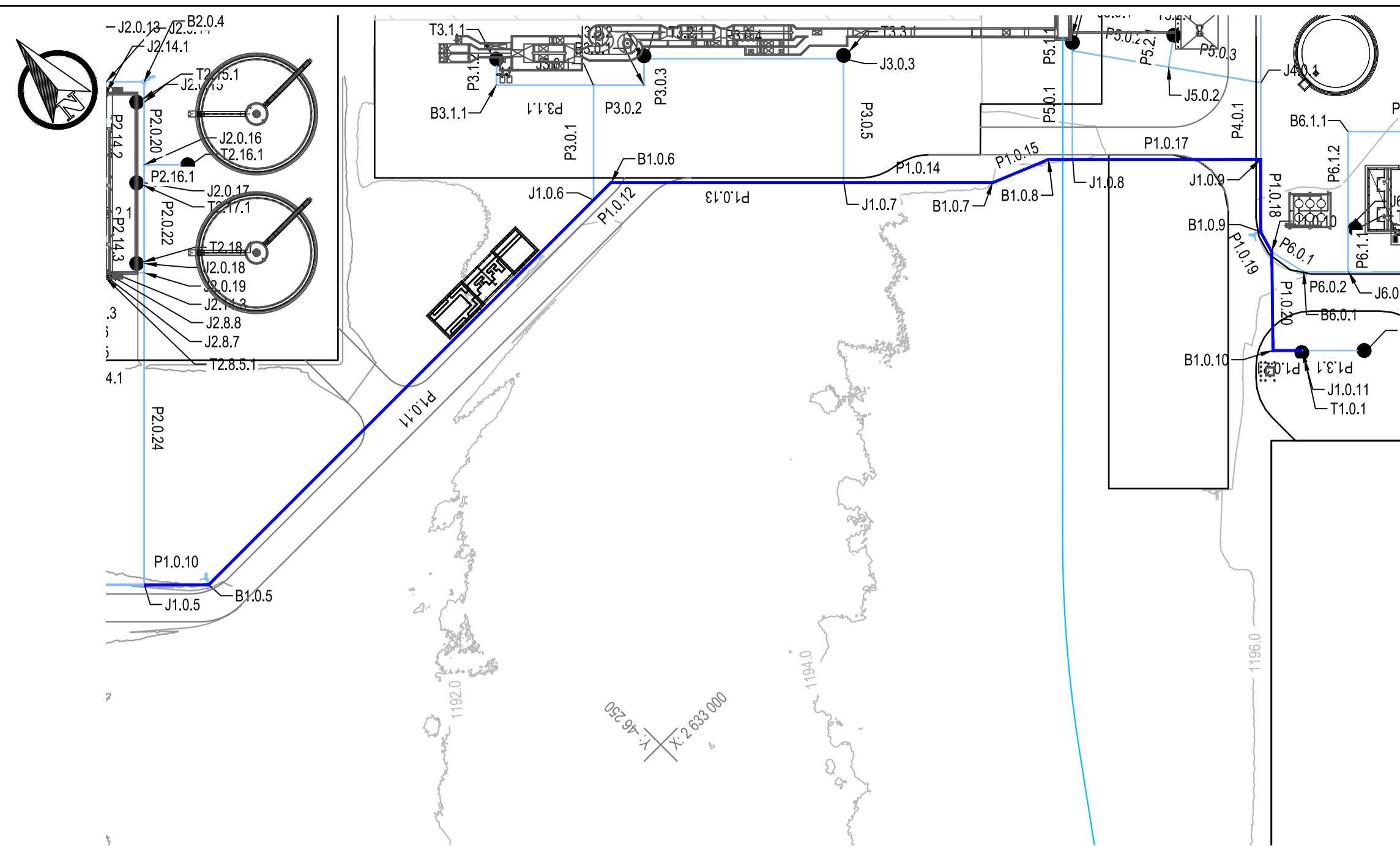
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____
 CLIENT _____ DATE _____

PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION
 SERVICE WATER
 BRANCH 1 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0002	0	



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CITY OF Polokwane
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REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

PROJECT

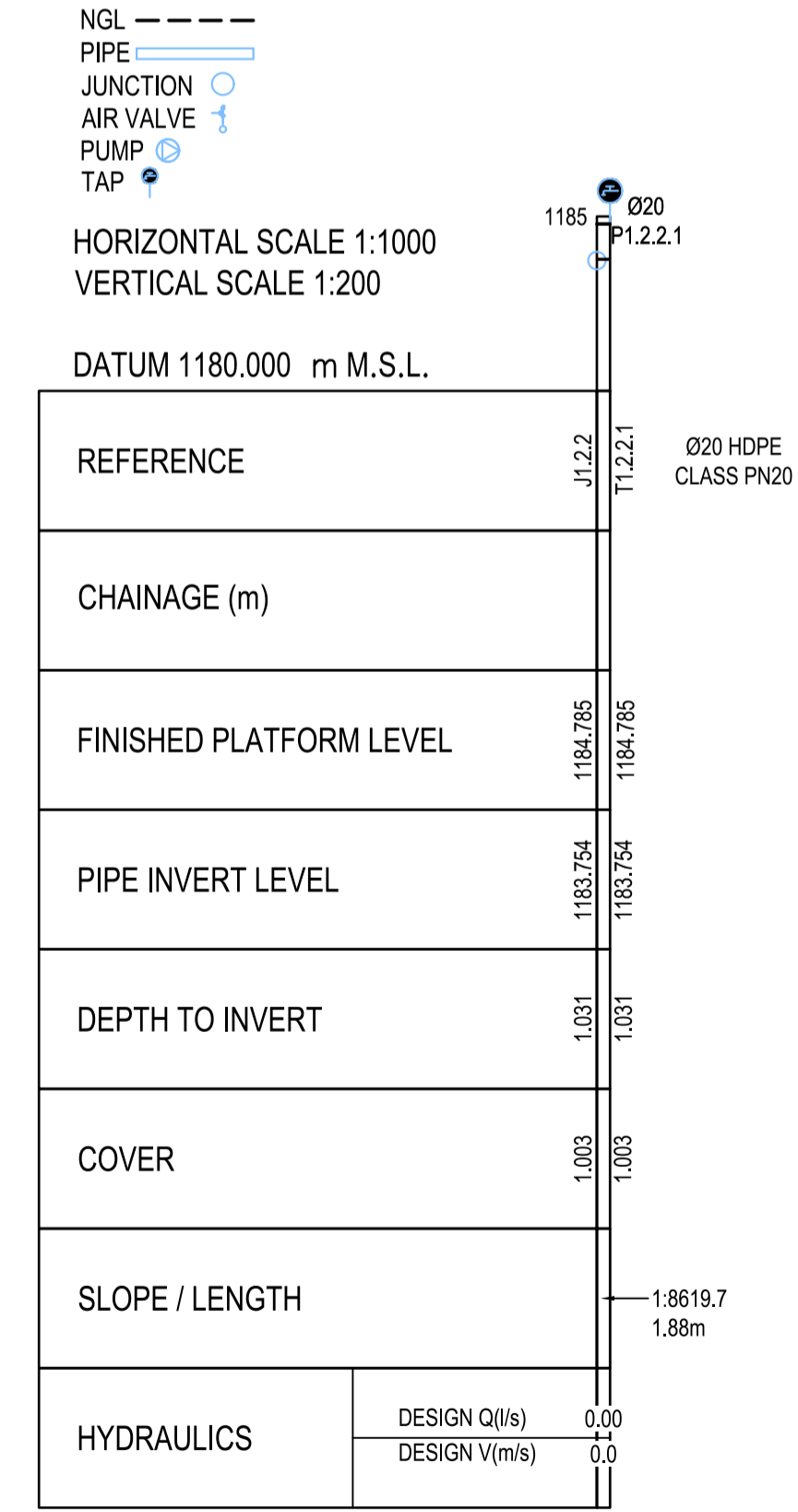
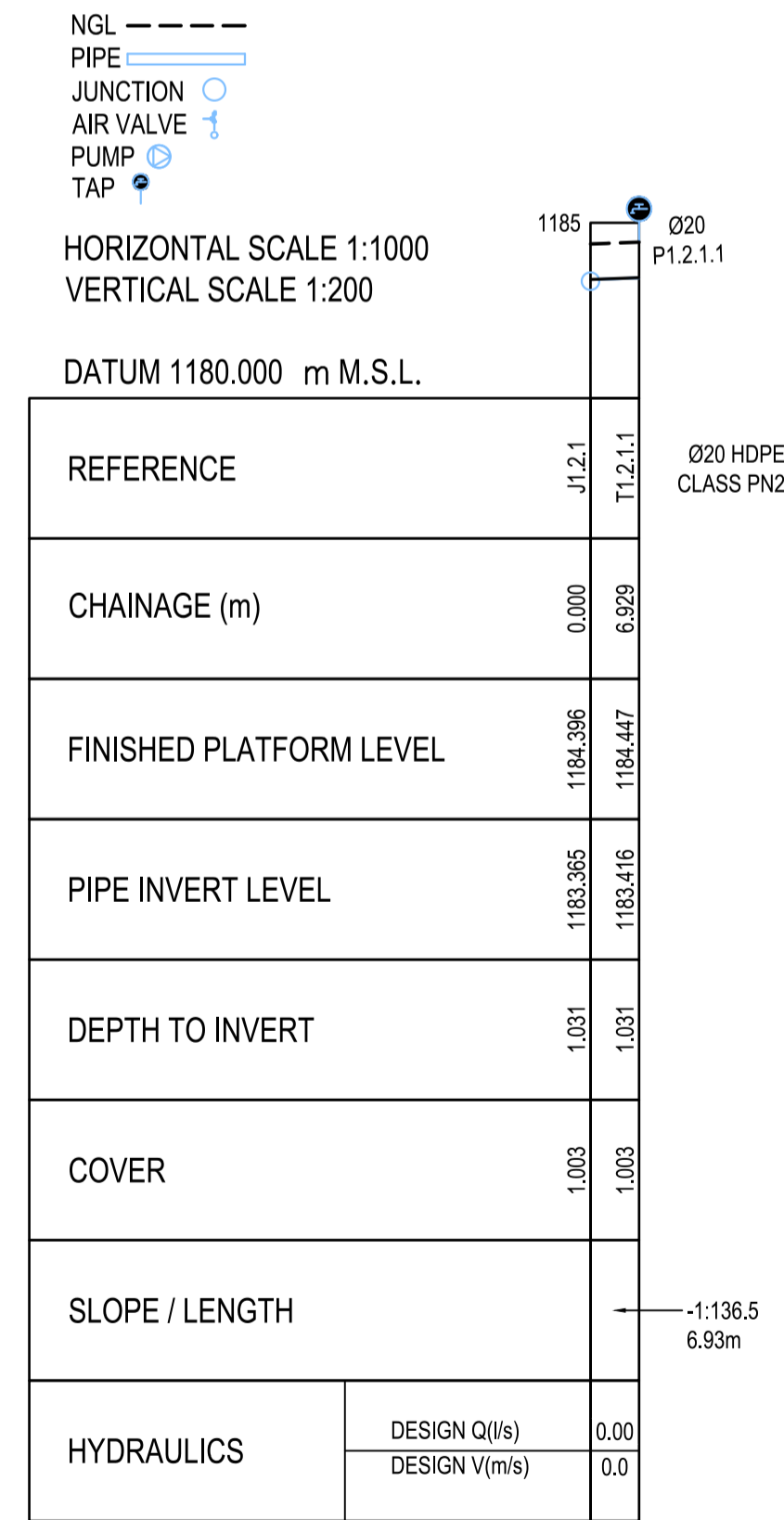
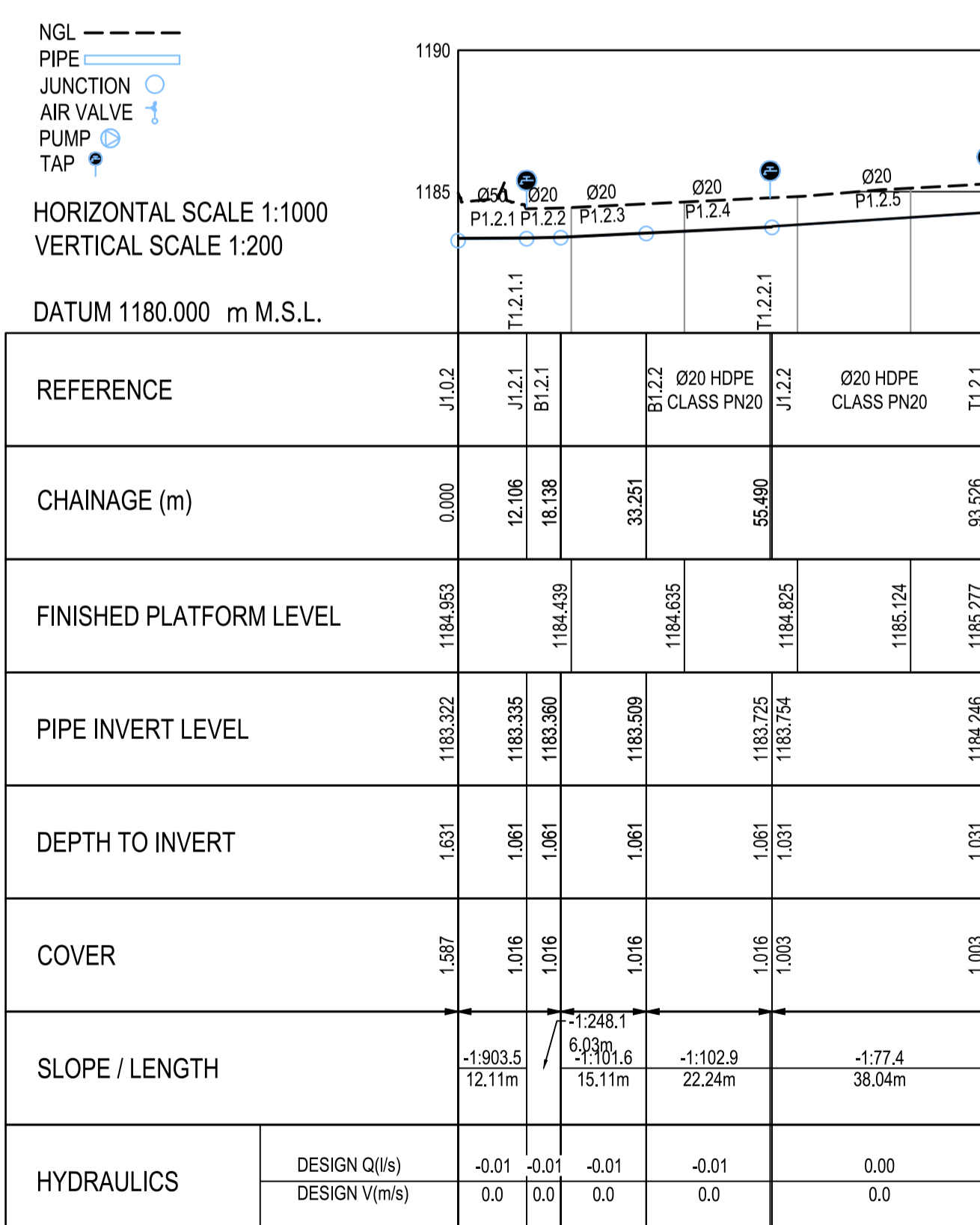
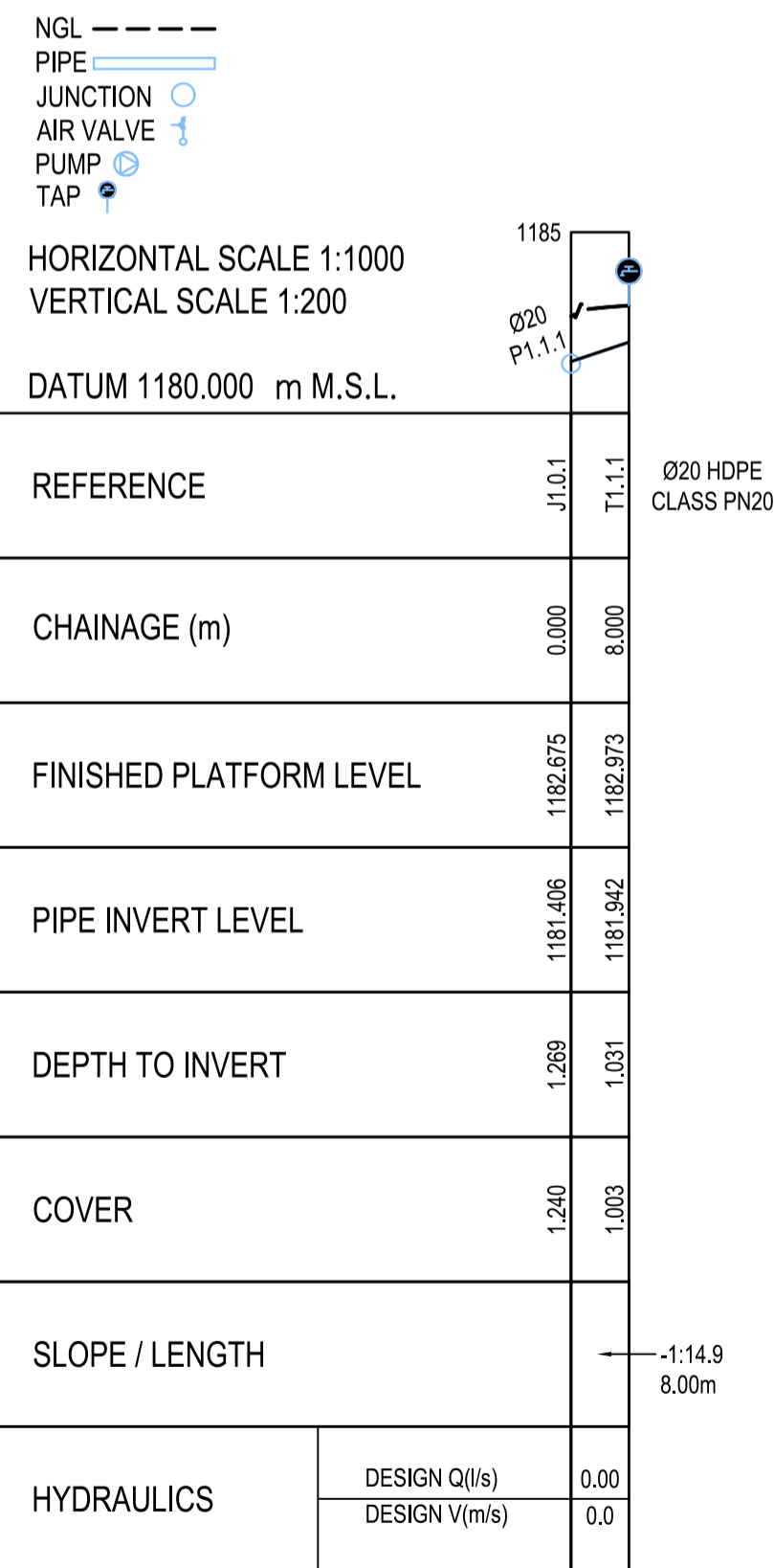
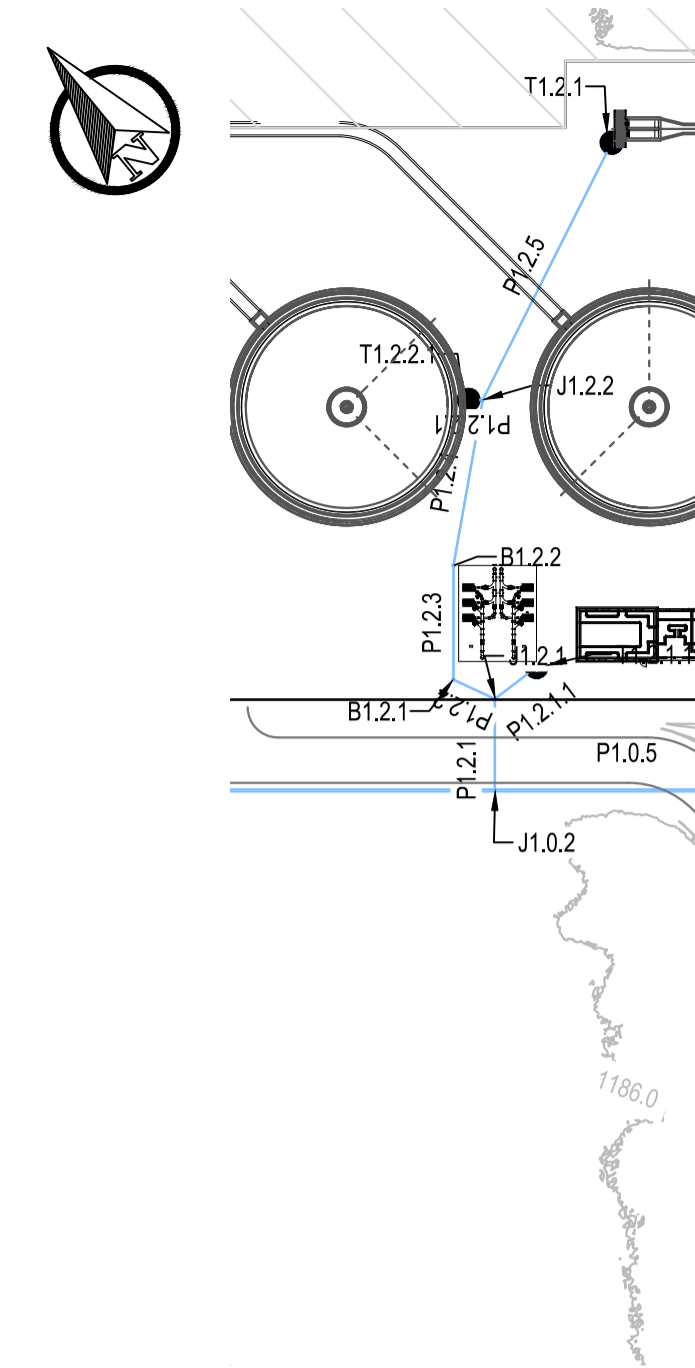
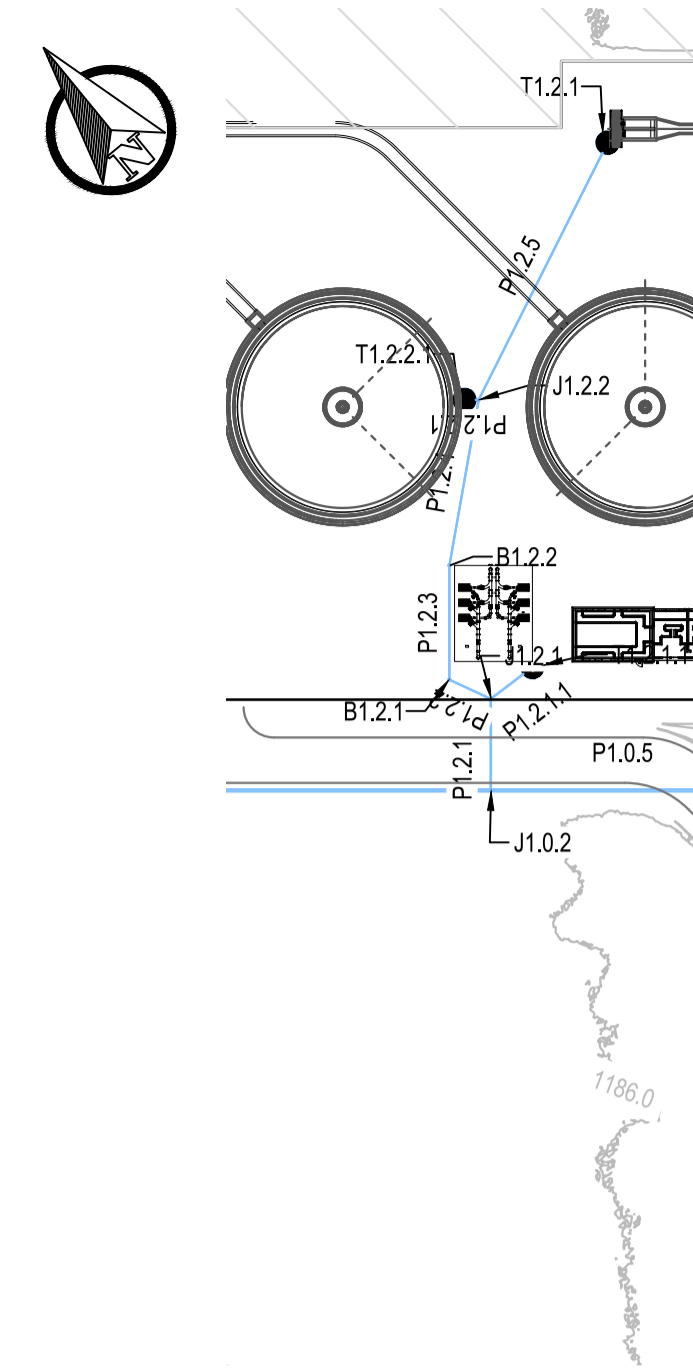
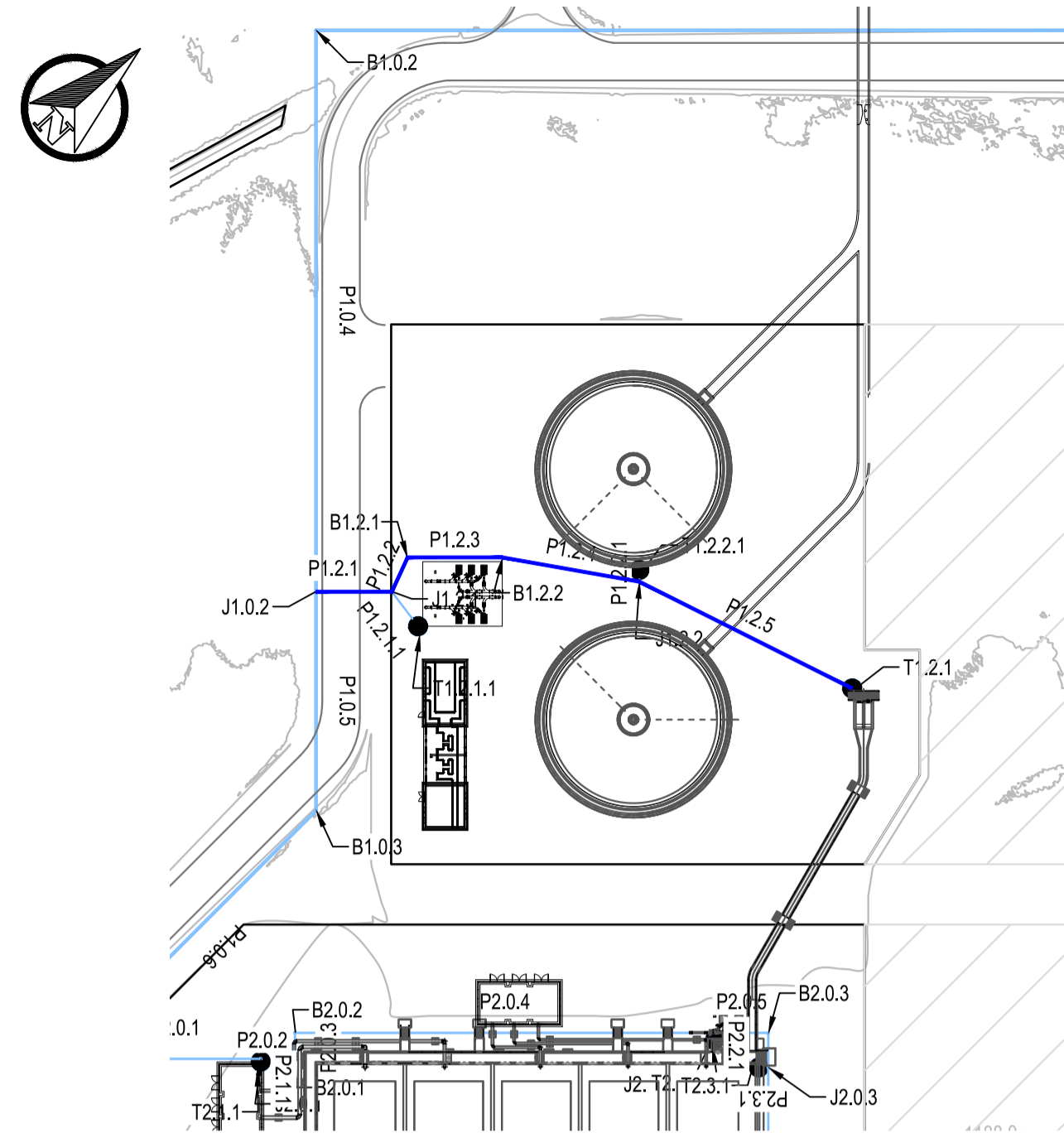
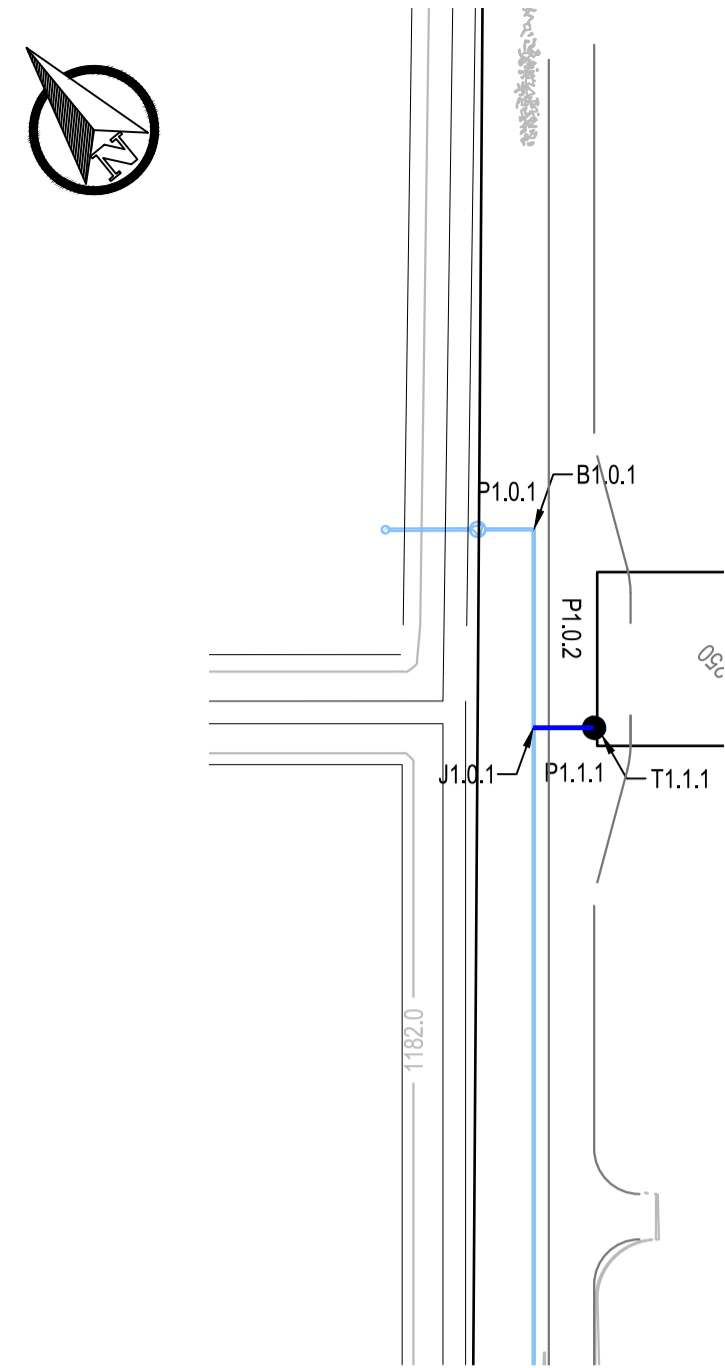
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SERVICE WATER BRANCH 1 PROFILE

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0003	0	



CONSTRUCTION DRAWING

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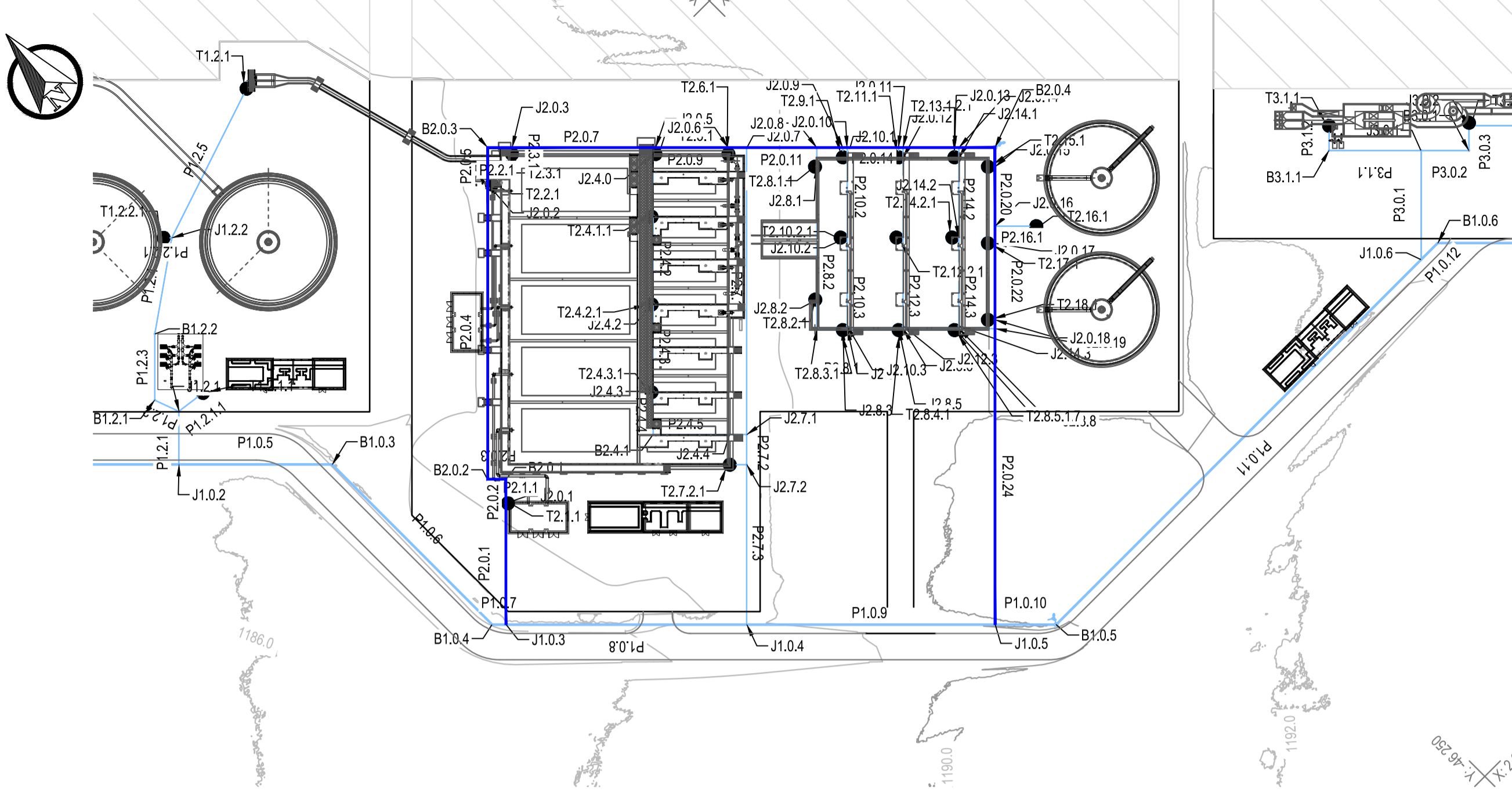
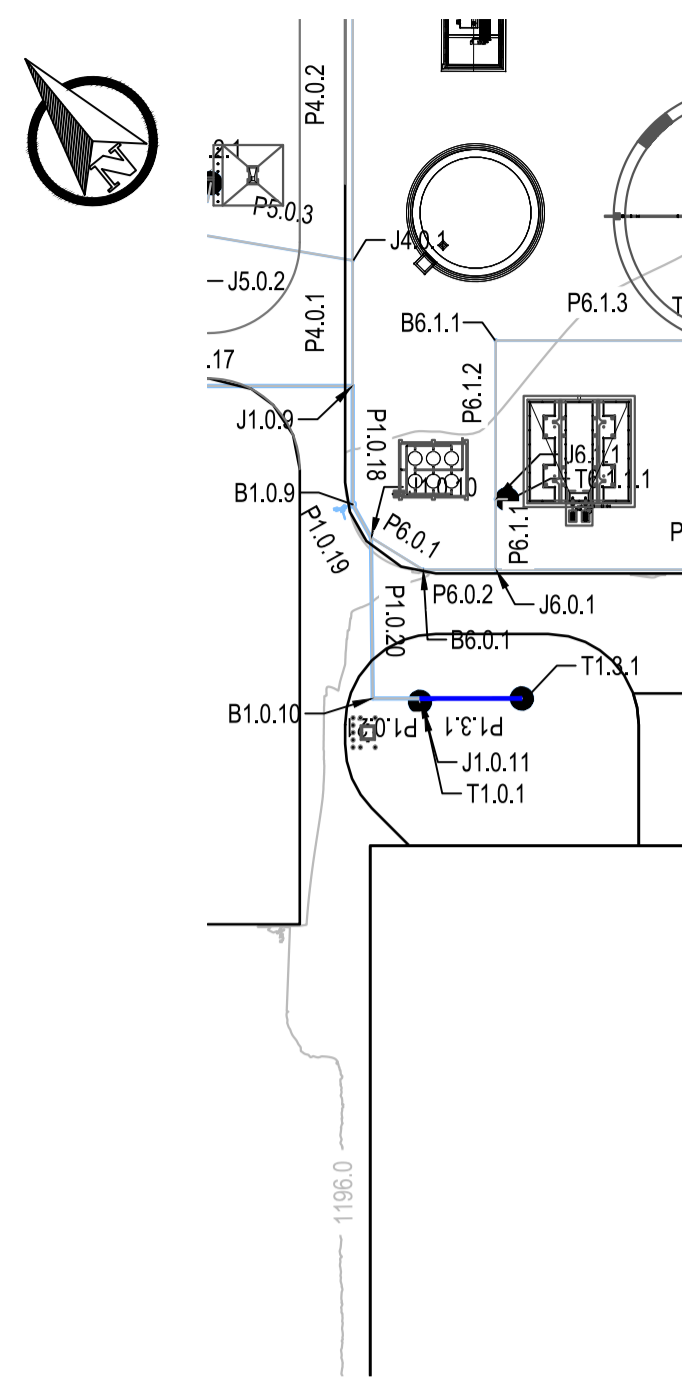
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT
**POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS**

DRAWING DESCRIPTION
**SERVICE WATER
 BRANCHES 1.1 TO 1.2
 PROFILE**

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-CIV-DRG-2004-0004		0



- NGL - - - - -
- PIPE - - - - -
- JUNCTION ○
- AIR VALVE ○
- PUMP ○
- TAP ○

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1195.000 m M.S.L.

REFERENCE	J1.0.11	T1.3.1	Ø20 HDPE CLASS PN20
CHAINAGE (m)	0.000	13.473	
FINISHED PLATFORM LEVEL	1195.517	1195.443	
PIPE INVERT LEVEL	1195.486	1195.412	
DEPTH TO INVERT	1.031	1.031	
COVER	1.003	1.003	
SLOPE / LENGTH	-1:181.3 13.47m		
HYDRAULICS	DESIGN Q(l/s) DESIGN V(m/s)	-0.10 0.6	

BRANCH 1.3

- NGL - - - - -
- PIPE - - - - -
- JUNCTION ○
- AIR VALVE ○
- PUMP ○
- TAP ○

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1180.000 m M.S.L.

REFERENCE	J1.0.4	J2.0.1	J2.0.2	J2.0.3	J2.0.4	J2.0.5	J2.0.6	J2.0.7	J2.0.8	J2.0.9	J2.0.10	J2.0.11	J2.0.12	J2.0.13	J2.0.14	J2.0.15	J2.0.16	J2.0.17	J2.0.18	J2.0.19	J2.0.20	J2.0.21	J2.0.22	J2.0.23	J2.0.24	J1.0.5	
CHAINAGE (m)	0.000	27.676	33.145	37.283	104.454	112.869	118.410	150.596	151.110	167.721	171.910	187.915	193.655	194.655	206.565	207.565	219.295	220.295	228.530	232.910	246.460	250.360	267.810	269.810	337.281		
FINISHED PLATFORM LEVEL	1185.593	1185.505	1185.505	1185.177	1186.055	1186.055	1186.090	1186.056	1187.077	1186.797	1185.757	1186.800	1186.532	1186.532	1186.566	1187.307	1187.307	1188.056	1188.056	1188.007	1188.007	1188.007	1188.007	1188.007	1188.007	1188.007	1188.512
PIPE INVERT LEVEL	1184.307	1184.707	1184.707	1184.707	1184.907	1184.907	1185.007	1185.757	1185.757	1186.007	1185.100	1186.700	1186.300	1186.300	1187.307	1187.307	1188.007	1188.007	1188.007	1188.007	1188.007	1188.007	1188.007	1188.007	1188.007	1188.007	1188.007
DEPTH TO INVERT	2.286	1.358	1.471	1.334	1.199	1.236	1.253	1.156	1.166	1.199	1.176	2.157	1.994	2.000	1.666	1.672	1.351	1.345	2.593	2.493	2.493	2.493	2.493	2.493	2.493	2.493	1.506
COVER	2.286	1.278	1.391	1.334	1.119	1.156	1.173	1.076	1.087	1.119	1.096	2.077	1.914	1.920	1.666	1.666	1.302	1.295	2.513	2.413	2.413	2.413	2.413	2.413	2.413	2.413	1.426
SLOPE / LENGTH		-1:69.2 27.68m	Horizontal 5.47m	Horizontal 4.14m	-1:335.9 67.17m	Horizontal 8.43m	-1:35.2 32.19m	-1:42.9 16.61m	-1:66.4 16.61m	-1:44.9 4.19m	-1:26.7 16.00m	-1:28.8 11.73m	-1:29.3 8.24m	-1:41.2 11.73m	Horizontal 13.55m	Horizontal 17.45m	Horizontal 3.90m	Horizontal 2.00m	Horizontal 3.90m	Horizontal 17.45m	Horizontal 3.90m	Horizontal 17.45m	Horizontal 3.90m	Horizontal 17.45m	Horizontal 3.90m	Horizontal 17.45m	Horizontal 67.47m
HYDRAULICS	DESIGN Q(l/s) DESIGN V(m/s)	4.77 1.3	1.28 0.3	1.28 0.3	1.28 0.3	1.28 0.3	1.28 0.3	1.28 0.3	3.26 0.9	3.26 0.9	3.44 0.9	3.3 0.9	3.58 1.0	3.58 1.0	3.55 0.9	3.55 0.9	3.55 0.9	3.51 0.9	3.51 0.9	3.51 0.9	3.51 0.9	3.51 0.9	3.51 0.9	3.51 0.9	3.51 0.9	3.66 1.0	

BRANCH 2

CONSTRUCTION DRAWING

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

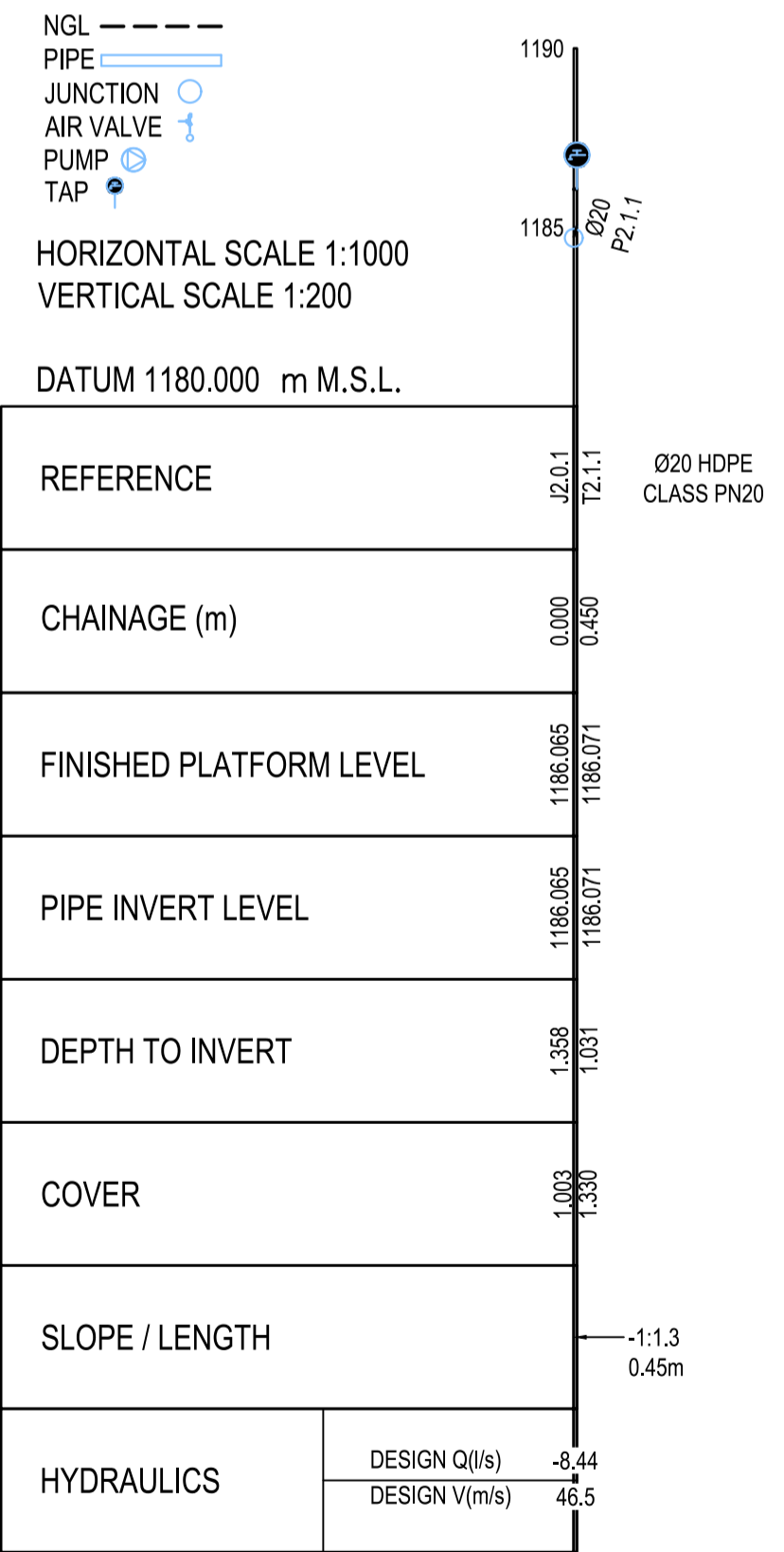
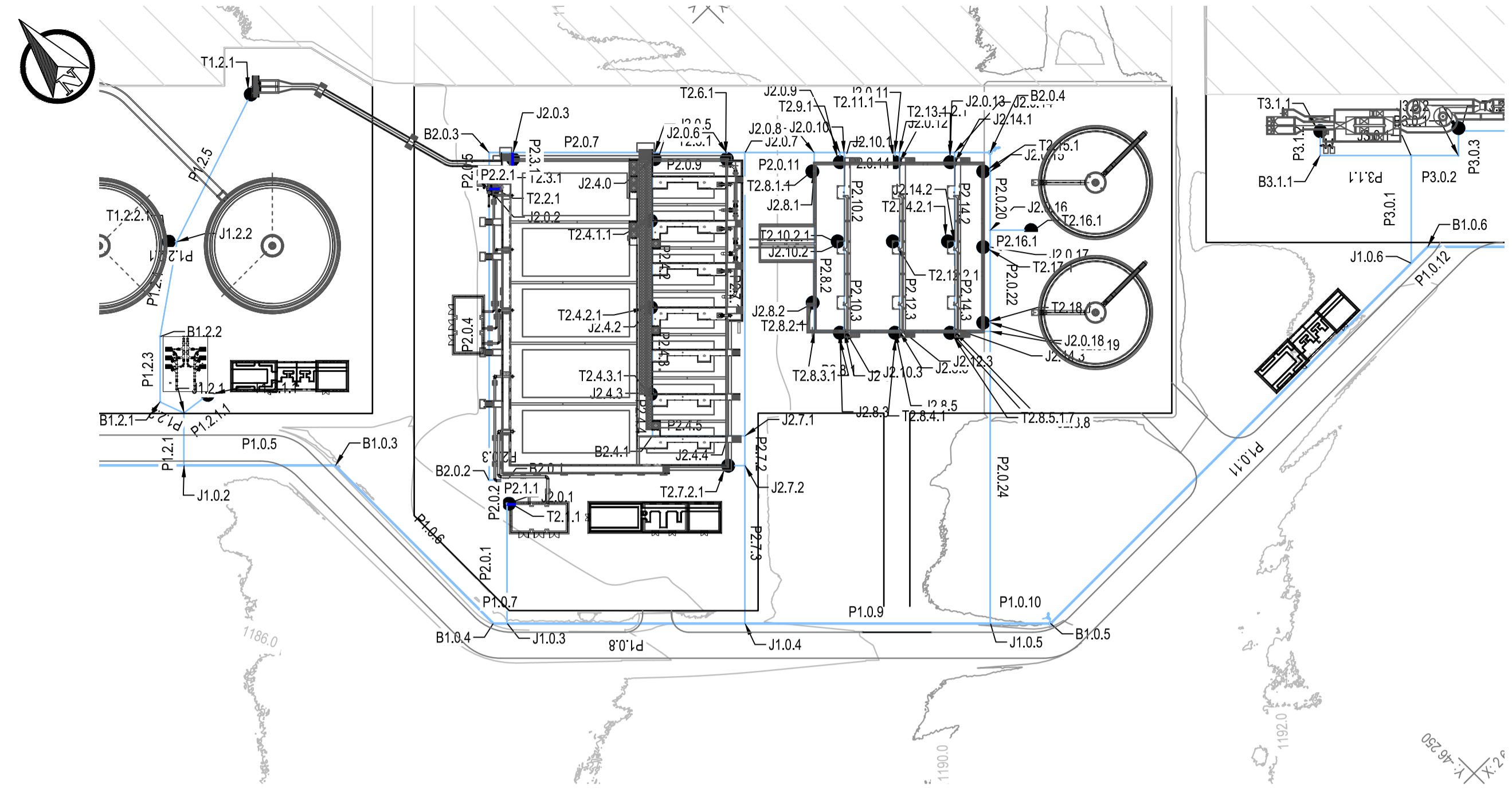
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

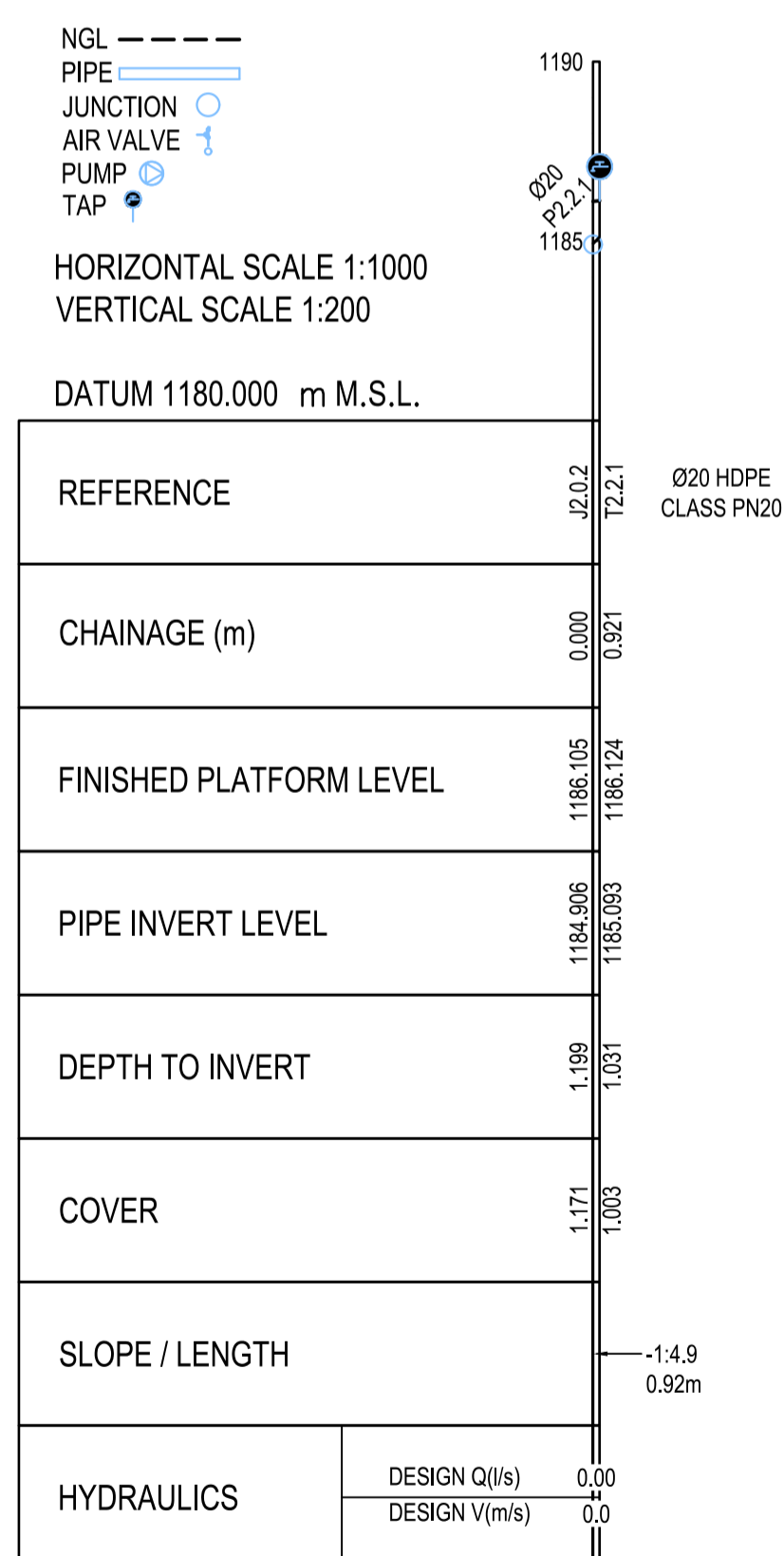
DRAWING DESCRIPTION

SERVICE WATER BRANCHES 1.3 & 2 PROFILE

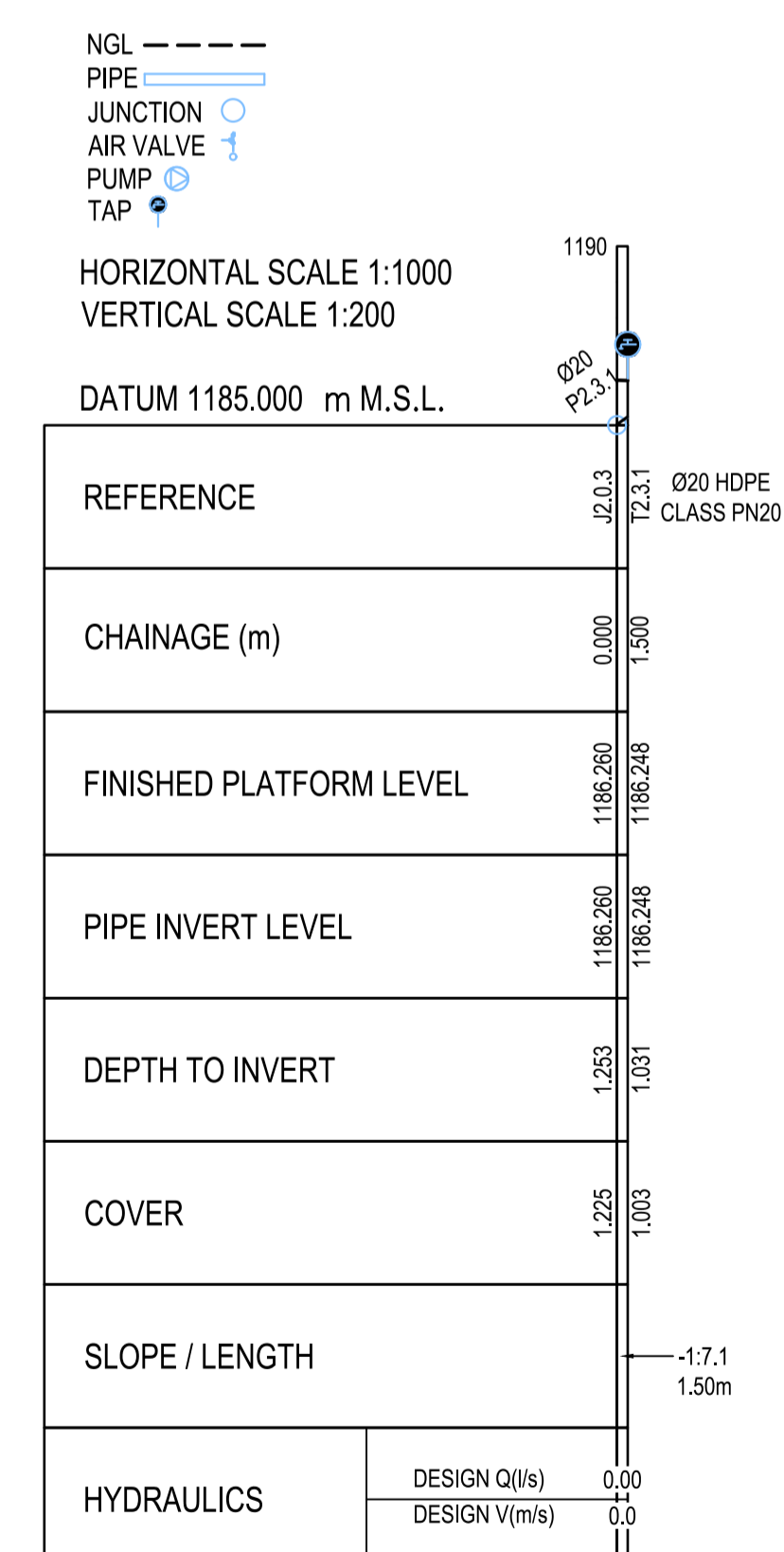
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0005	0	



BRANCH 2.1



BRANCH 2.2



BRANCH 2.3

CONSTRUCTION DRAWING

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REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

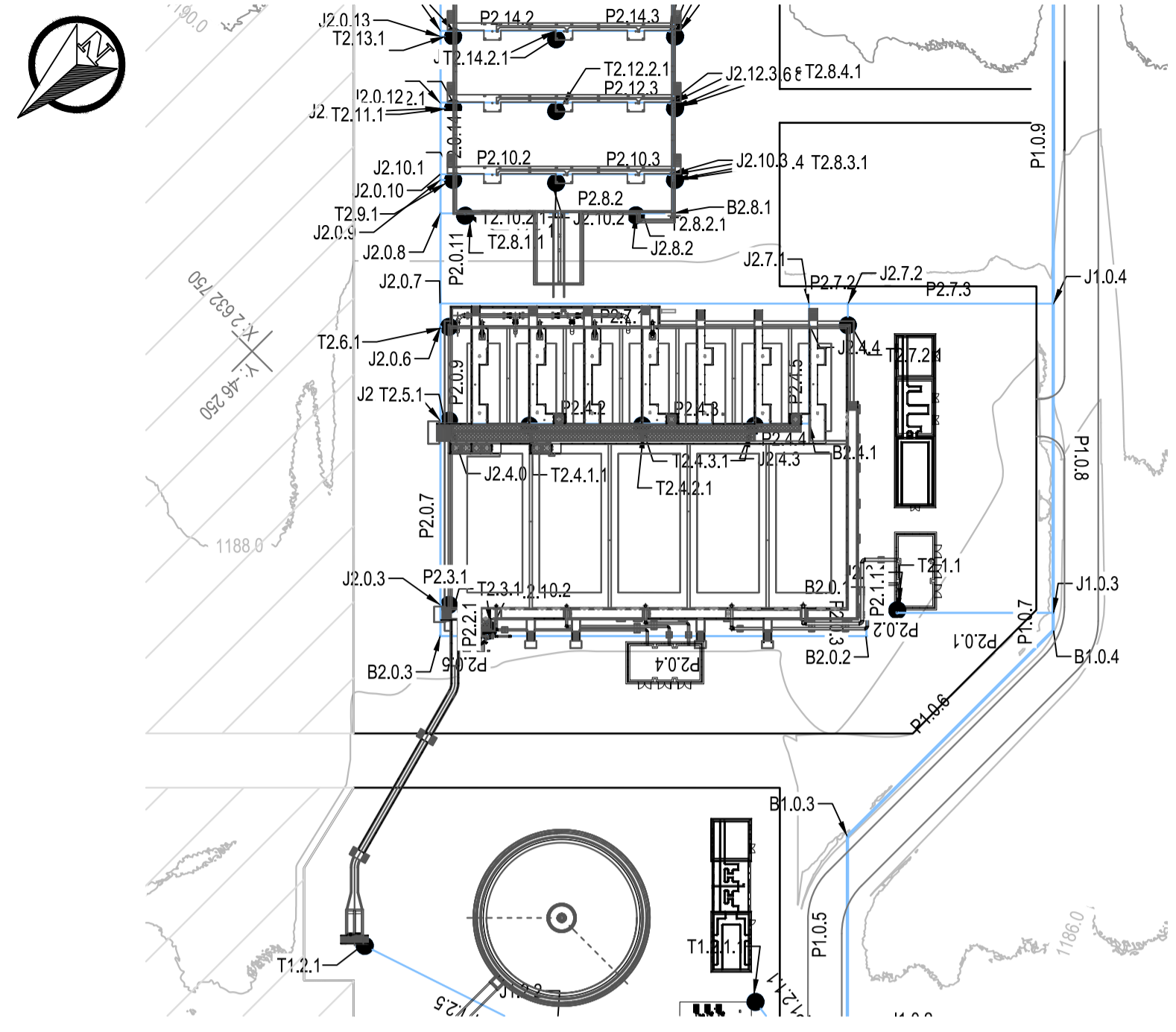
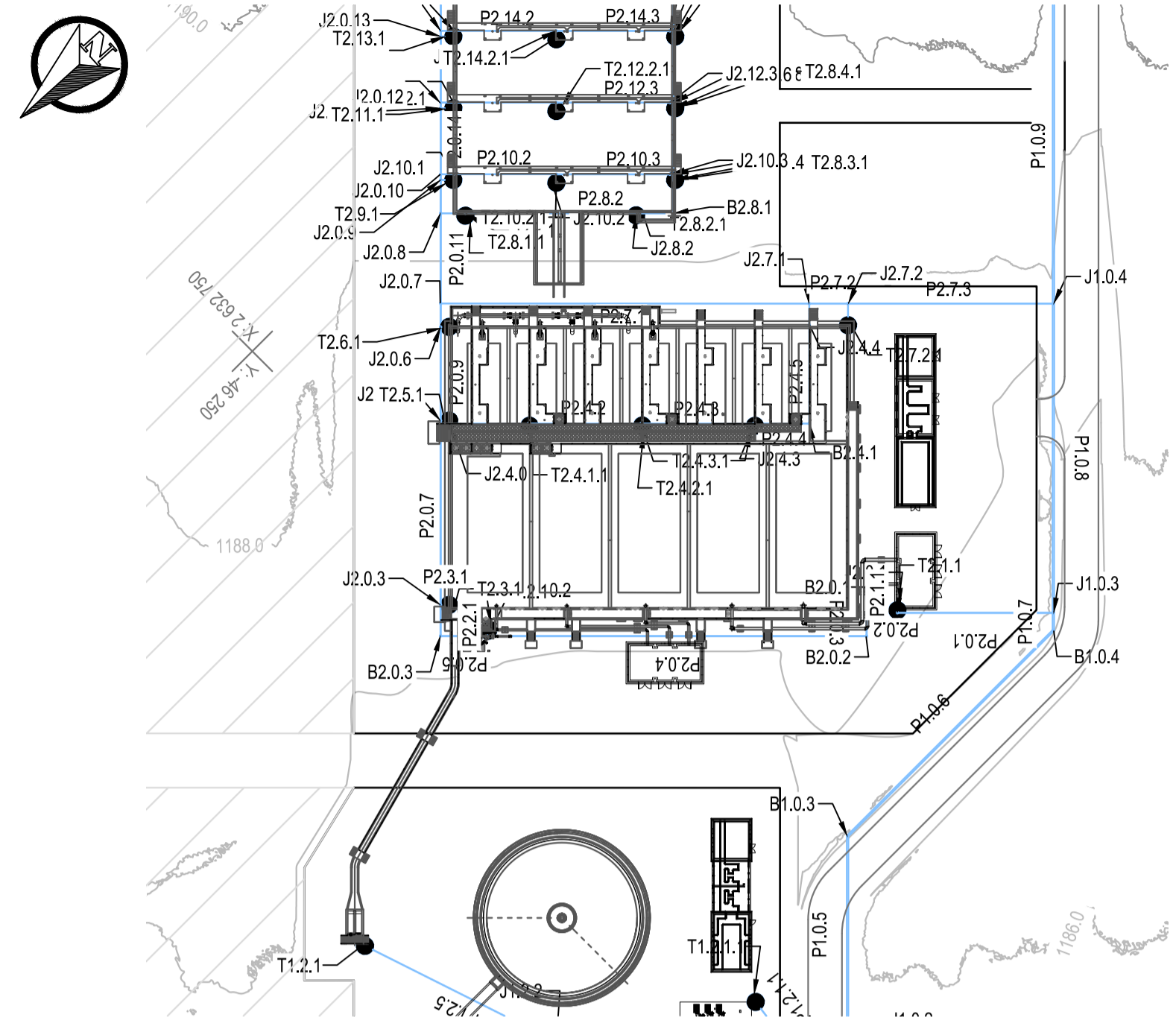
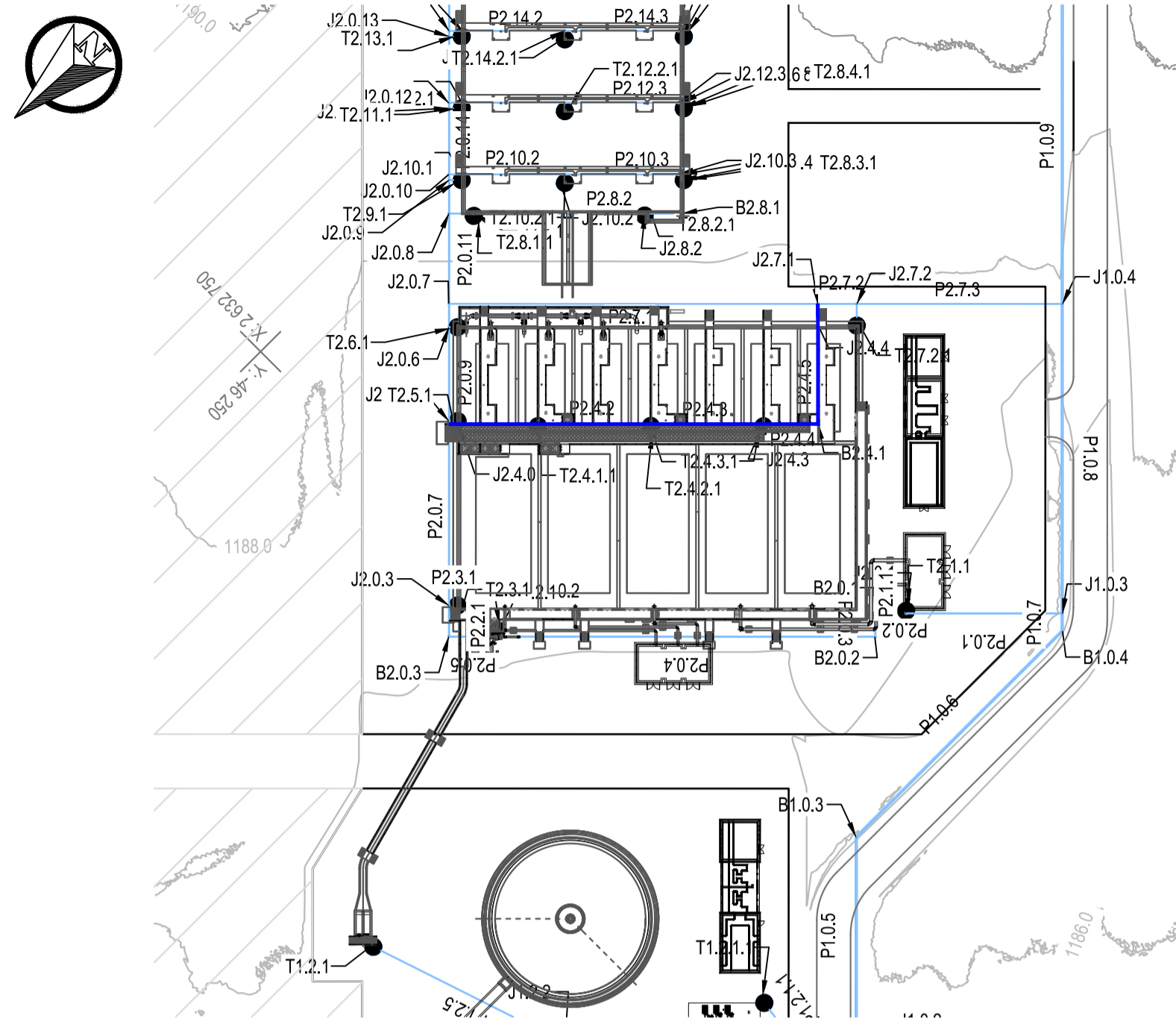
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SERVICE WATER
BRANCHES 2.1 - 2.3
PROFILE**

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0006	0	



- NGL - - - - -
- PIPE - - - - -
- JUNCTION ○
- AIR VALVE ↓
- PUMP ⚙
- TAP ⚙

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.4	J2.0.5	J2.0.6	J2.0.7	J2.0.8	J2.0.9	J2.0.10	J2.0.11	J2.0.12	J2.0.13
CHAINAGE (m)	0.000	1.500	15.585	35.575	55.574	65.405	82.875	86.725		
FINISHED PLATFORM LEVEL	1186.913	1186.913	1186.844	1186.832	1186.832	1186.865	1187.067	1187.160		
PIPE INVERT LEVEL	1186.802	1186.913	1186.859	1186.832	1186.832	1186.865	1187.106	1187.160		
DEPTH TO INVERT	1.140	-1.493	-1.541	-1.568	-1.568	-1.535	-1.294	-1.338		
COVER	1.086	1.337	1.585	1.612	1.580	1.580	1.338	1.293		
SLOPE / LENGTH	-1.0.6 1.55m	Horizontal 14.03m	Horizontal 19.99m	Horizontal 20.00m	Horizontal 9.85m	Horizontal 17.45m	Horizontal 3.65m			
HYDRAULICS	DESIGN Q(l/s)	-0.39	-0.39	-0.39	-0.39	0.43	0.43	0.43		
	DESIGN V(m/s)	0.1	2.2	2.2	2.2	2.4	2.4	2.4		

BRANCH 2.4

- NGL - - - - -
- PIPE - - - - -
- JUNCTION ○
- AIR VALVE ↓
- PUMP ⚙
- TAP ⚙

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.5	J2.0.6	J2.0.7	J2.0.8	J2.0.9	J2.0.10	J2.0.11	J2.0.12	J2.0.13
CHAINAGE (m)	0.000	1.500							
FINISHED PLATFORM LEVEL	1186.923	1186.918							
PIPE INVERT LEVEL	1186.923	1186.918							
DEPTH TO INVERT	1.167	1.037							
COVER	1.138	1.003							
SLOPE / LENGTH	-1.11.5 1.50m								
HYDRAULICS	DESIGN Q(l/s)	0.00							
	DESIGN V(m/s)	0.0							

BRANCH 2.5

- NGL - - - - -
- PIPE - - - - -
- JUNCTION ○
- AIR VALVE ↓
- PUMP ⚙
- TAP ⚙

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.6	J2.0.7	J2.0.8	J2.0.9	J2.0.10	J2.0.11	J2.0.12	J2.0.13
CHAINAGE (m)	0.000	1.500						
FINISHED PLATFORM LEVEL	1187.206	1187.207						
PIPE INVERT LEVEL	1186.006	1186.176						
DEPTH TO INVERT	1.200	1.031						
COVER	1.171	1.003						
SLOPE / LENGTH	-1.8.9 1.50m							
HYDRAULICS	DESIGN Q(l/s)	0.00						
	DESIGN V(m/s)	0.0						

BRANCH 2.6

CONSTRUCTION DRAWING

- NOTES**
- DO NOT SCALE THE DRAWINGS.
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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SERVICE WATER BRANCHES 2.4 - 2.6 PROFILE

DESIGNED

T. BANDA
ENGINEER

DRAWN

PR ENG no. _____
DATE _____

CHECKED

DATE _____

DESIGNER

2024-03

AUTHOR

1:1000

CHECKER

A1

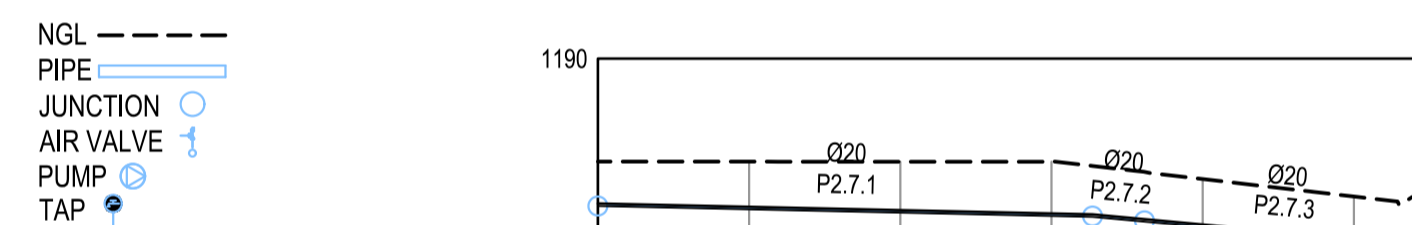
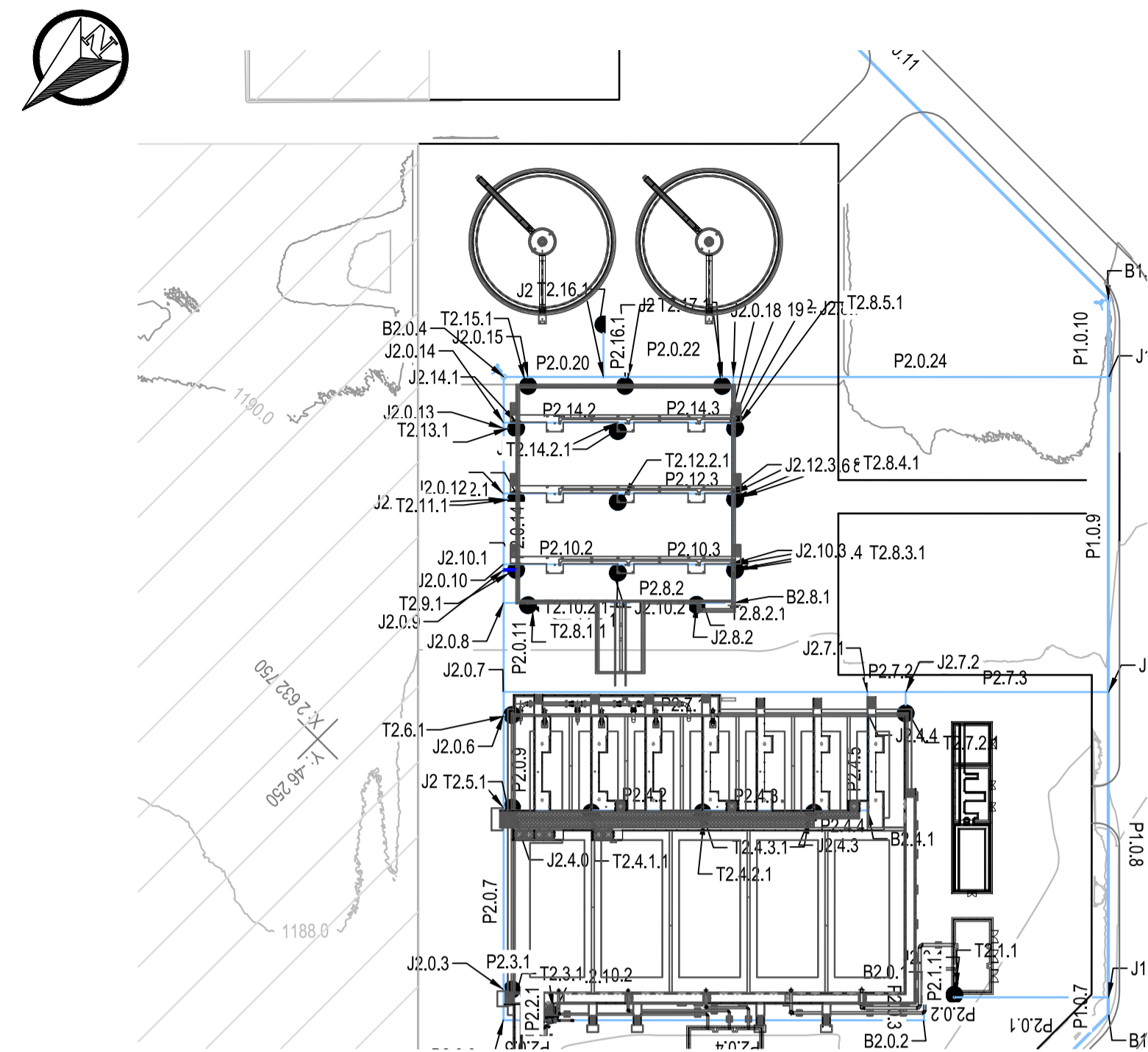
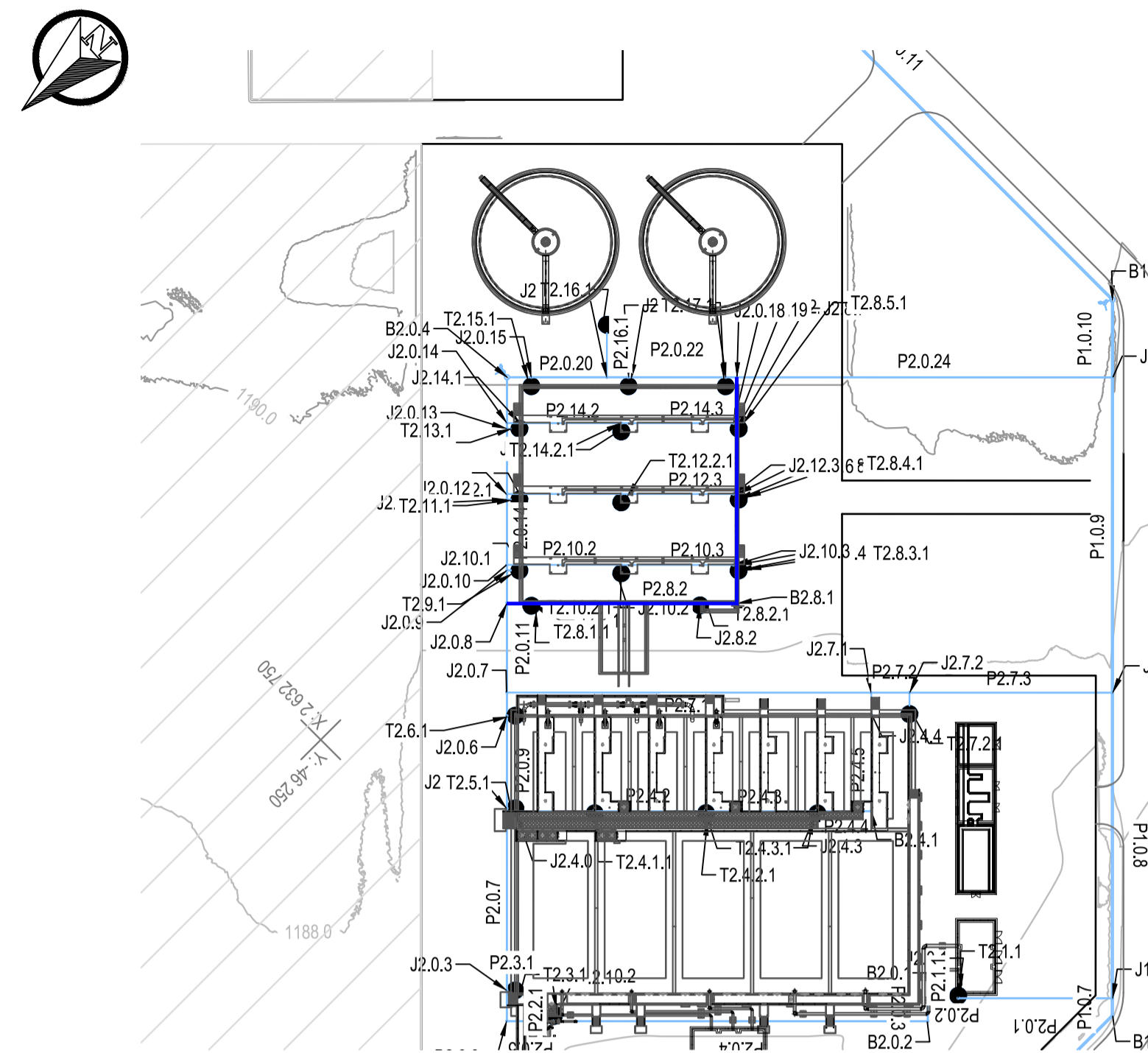
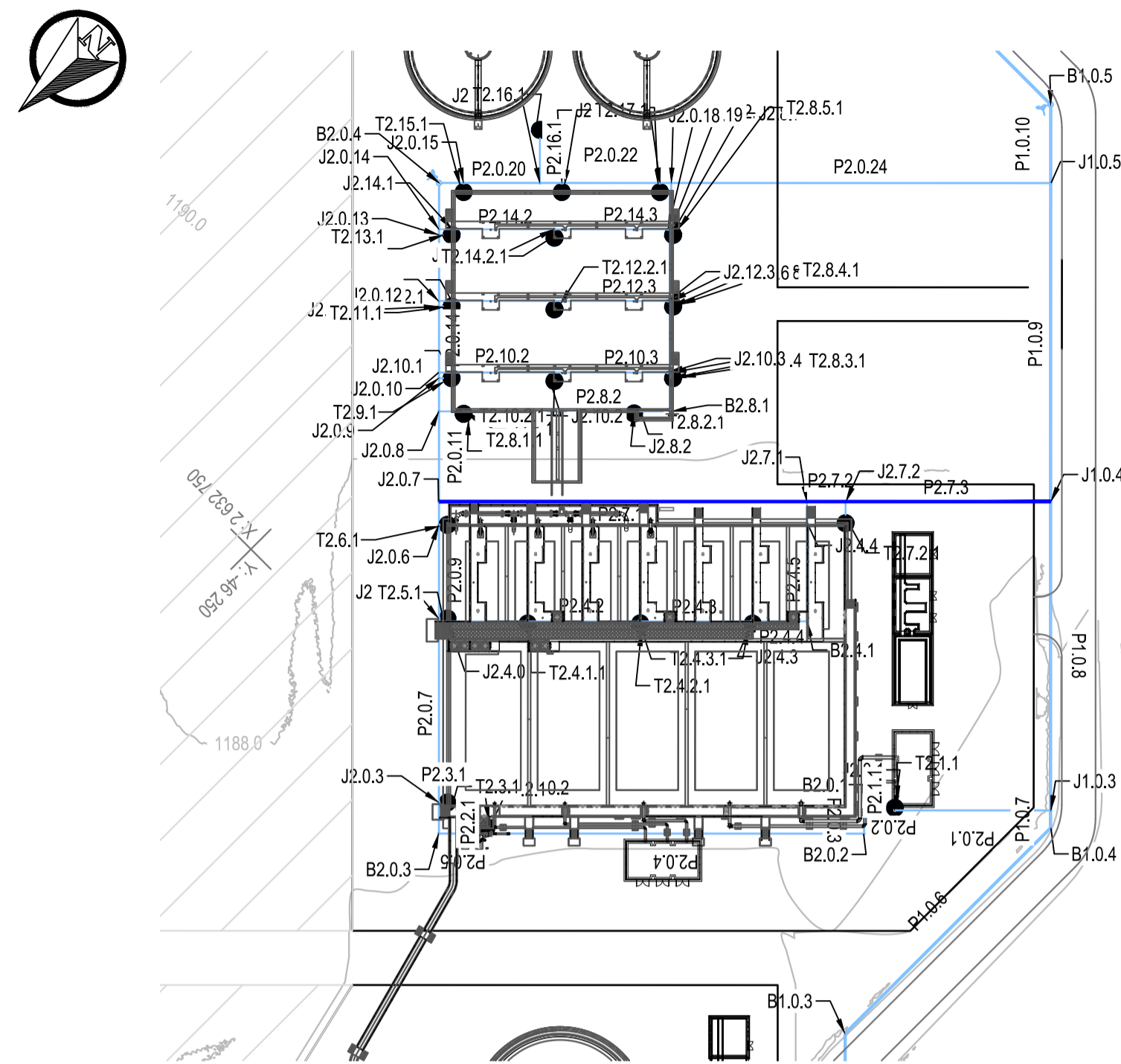
DRAWING NUMBER

PK278-01-CIV-DRG-2004-0007

REV

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DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
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DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-CIV-DRG-2004-0007		0

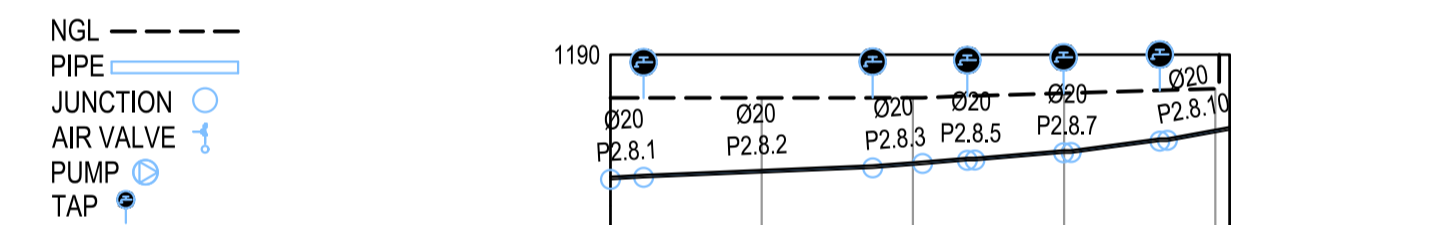


HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1180.000 m M.S.L.

REFERENCE	J2.0.7	J2.7.1	J2.7.2	J1.0.4
CHAINAGE (m)	0.000	65.425	72.800	108.751
FINISHED PLATFORM LEVEL	1187.276	1187.271	1186.813	1186.427
PIPE INVERT LEVEL	1187.276	1187.160	1187.003	1186.427
DEPTH TO INVERT	1.176	1.347	1.317	1.415
COVER	1.109	1.281	1.251	1.348
SLOPE / LENGTH		1:227.5 65.43m	1:54.2 6.88m	1:54.2 36.45m
HYDRAULICS	DESIGN Q(l/s)	0.18	0.25	0.25
	DESIGN V(m/s)	1.0	1.4	1.4

BRANCH 2.7



HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1180.000 m M.S.L.

REFERENCE	J2.0.8	J2.8.1	J2.8.2	J2.8.3	J2.8.4	J2.8.5	J2.8.6	J2.8.7	J2.8.19
CHAINAGE (m)	0.000	4.380	34.680	41.280	47.200	48.200	59.900	60.900	81.955
FINISHED PLATFORM LEVEL	1188.857	1188.857	1188.859	1187.200	1187.200	1187.200	1187.400	1187.400	1189.097
PIPE INVERT LEVEL	1186.700	1186.750	1187.000	1187.200	1187.200	1187.200	1187.400	1187.712	1188.012
DEPTH TO INVERT	2.157	2.107	1.858	1.700	1.579	1.555	1.348	1.348	2.488
COVER	2.090	2.040	1.792	1.693	1.637	1.543	1.319	1.319	2.421
SLOPE / LENGTH			-1.59.2 5.92m	-1.96.1 6.60m	-1.96.1 6.60m	-1.96.1 6.60m	-1.37.5 11.73m	-1.37.5 11.73m	0.10 8.24m
HYDRAULICS	DESIGN Q(l/s)	0.03	0.02	0.03	0.03	0.02	0.1	0.06	0.15
	DESIGN V(m/s)	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.8

BRANCH 2.8



HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.9	T2.9.1
CHAINAGE (m)	0.000	2.230
FINISHED PLATFORM LEVEL	1188.894	1188.894
PIPE INVERT LEVEL	1186.900	1187.663
DEPTH TO INVERT	1.994	1.031
COVER	1.965	1.003
SLOPE / LENGTH		-1.2.3 2.23m
HYDRAULICS	DESIGN Q(l/s)	0.00
	DESIGN V(m/s)	0.0

BRANCH 2.9

CONSTRUCTION DRAWING

NOTES

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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

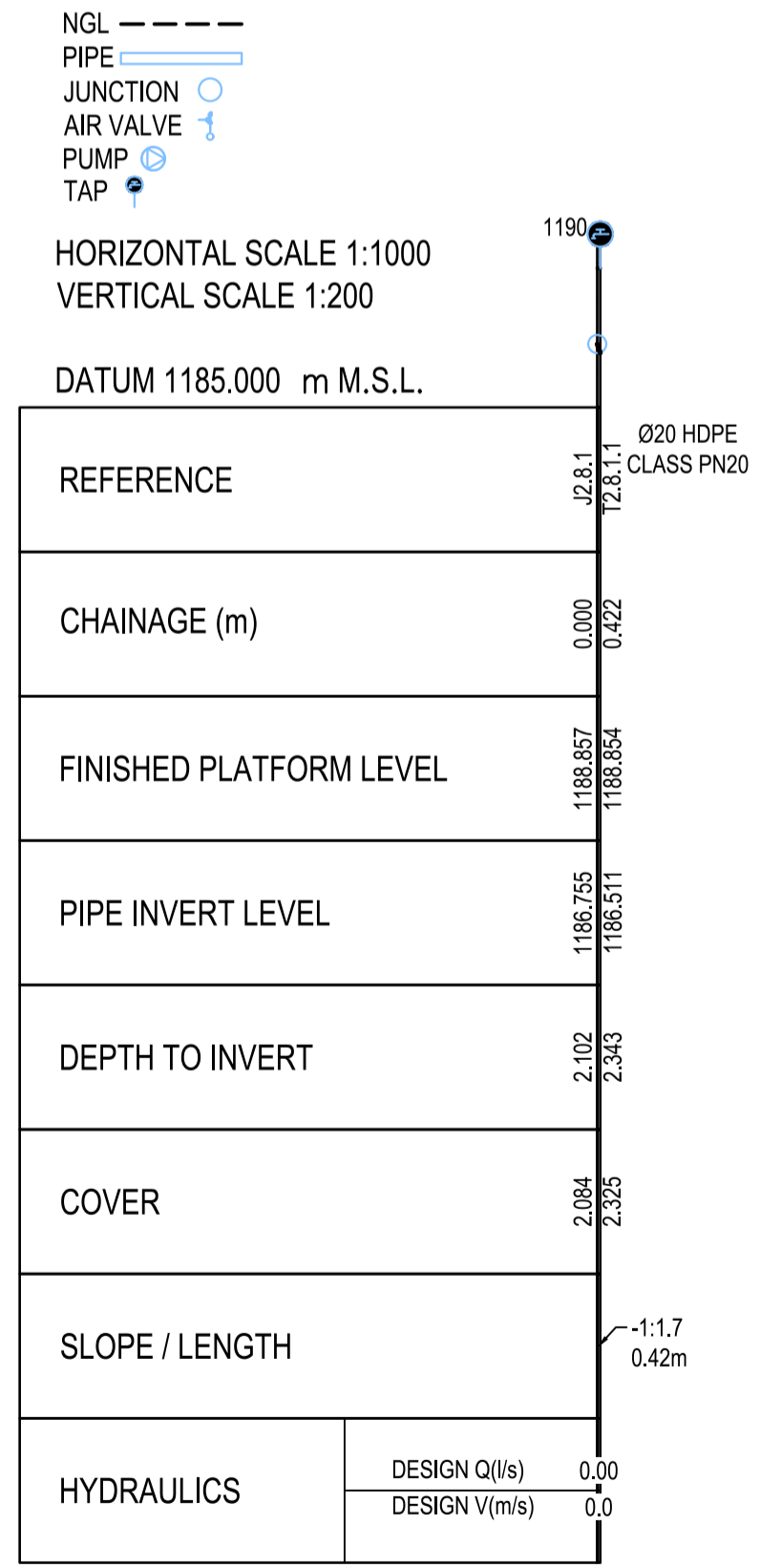
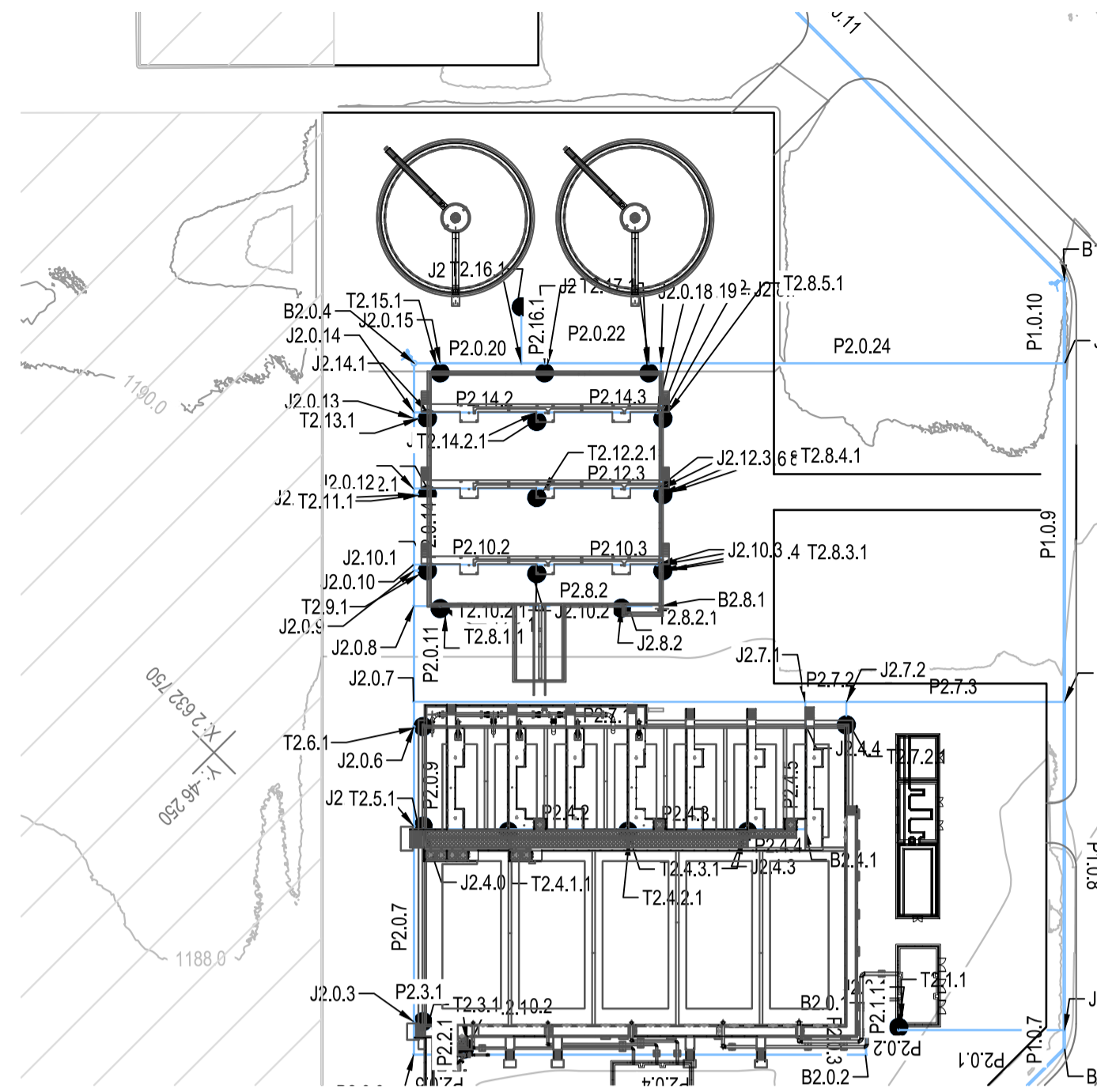
PROJECT

POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

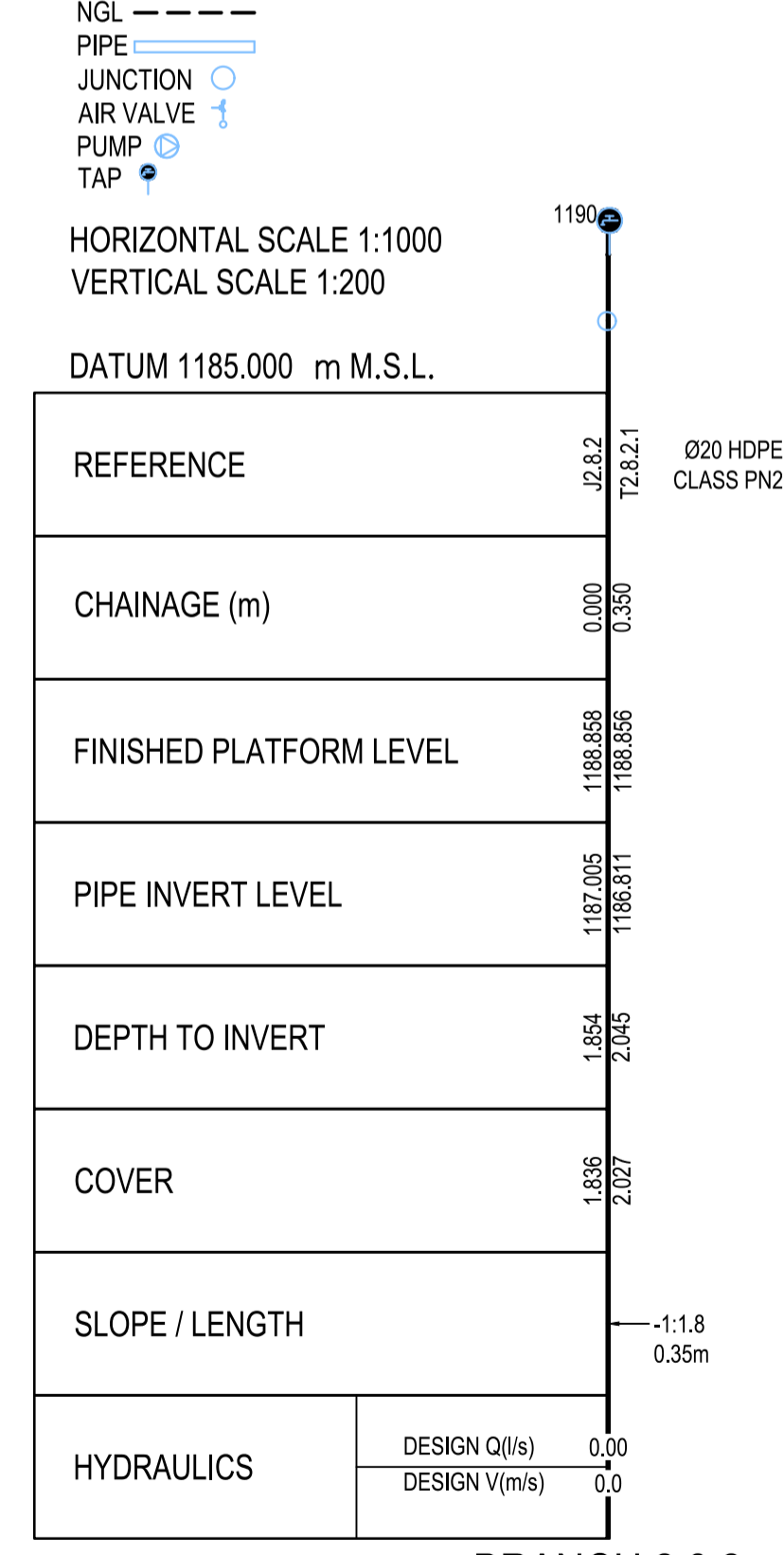
DRAWING DESCRIPTION

SERVICE WATER
BRANCHES 2.7 - 2.9
PROFILE

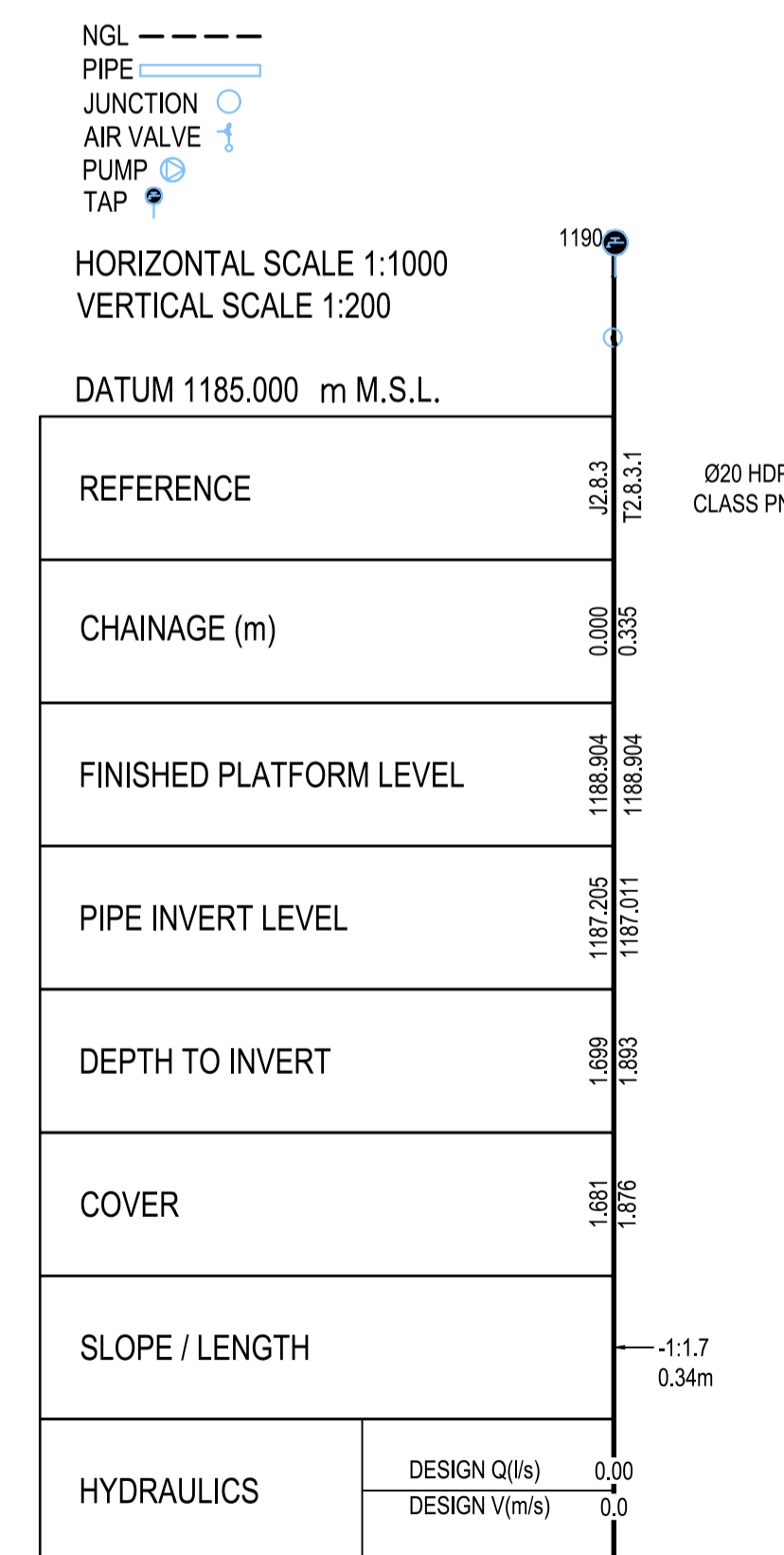
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
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DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0009	0	



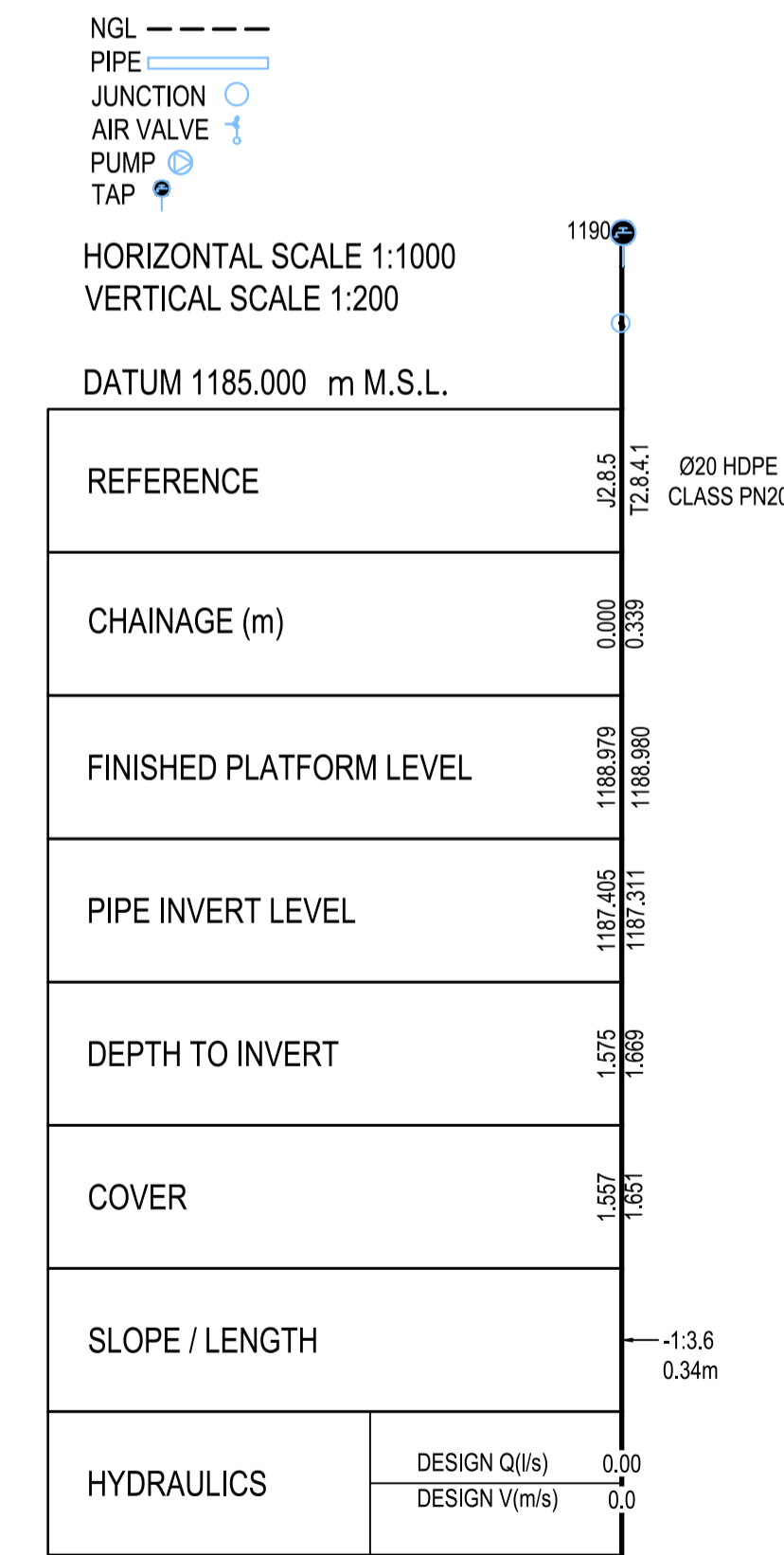
BRANCH 2.8.1



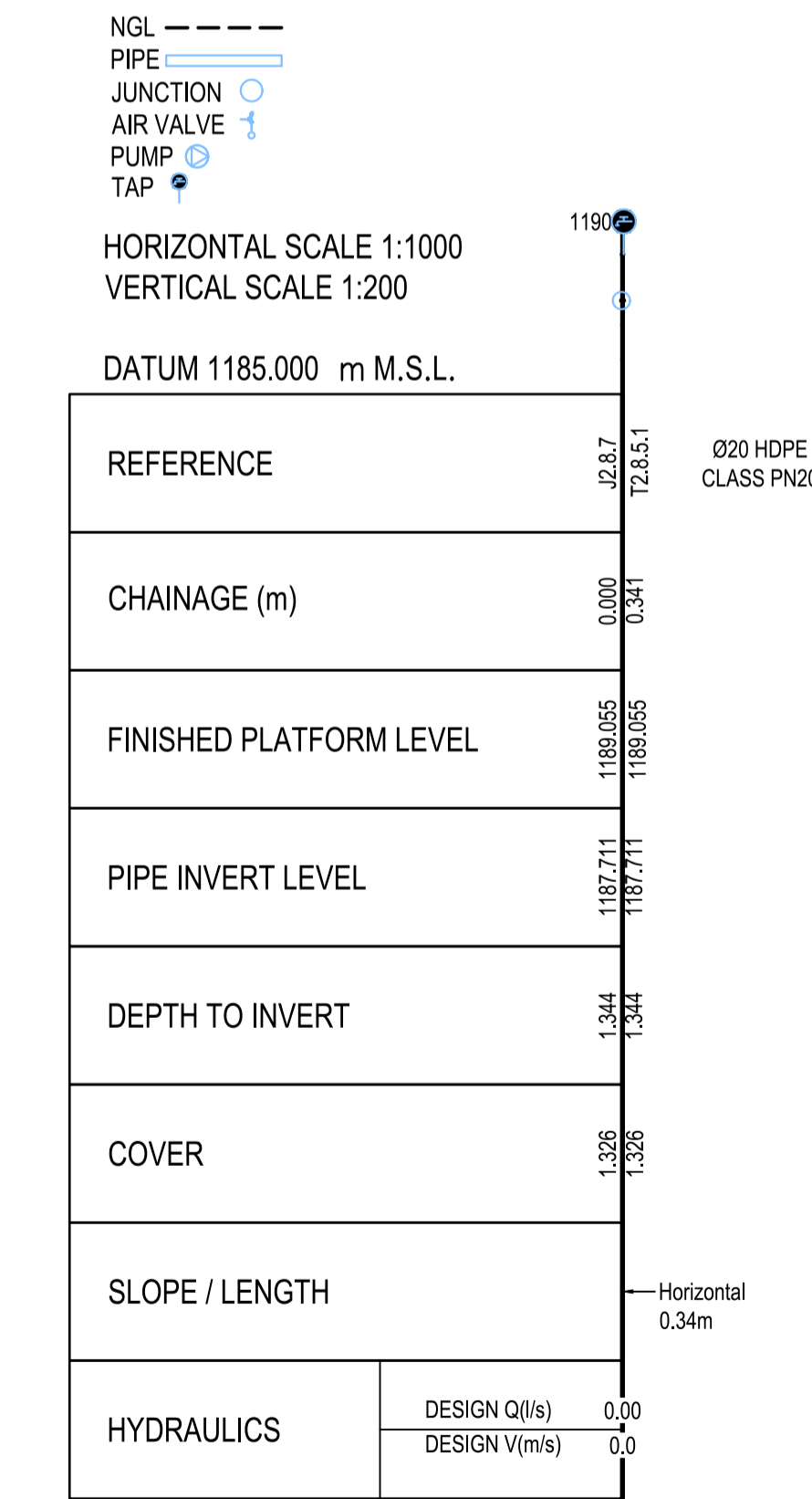
BRANCH 2.8.2



BRANCH 2.8.3



BRANCH 2.8.4



BRANCH 2.8.5

CONSTRUCTION DRAWING

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

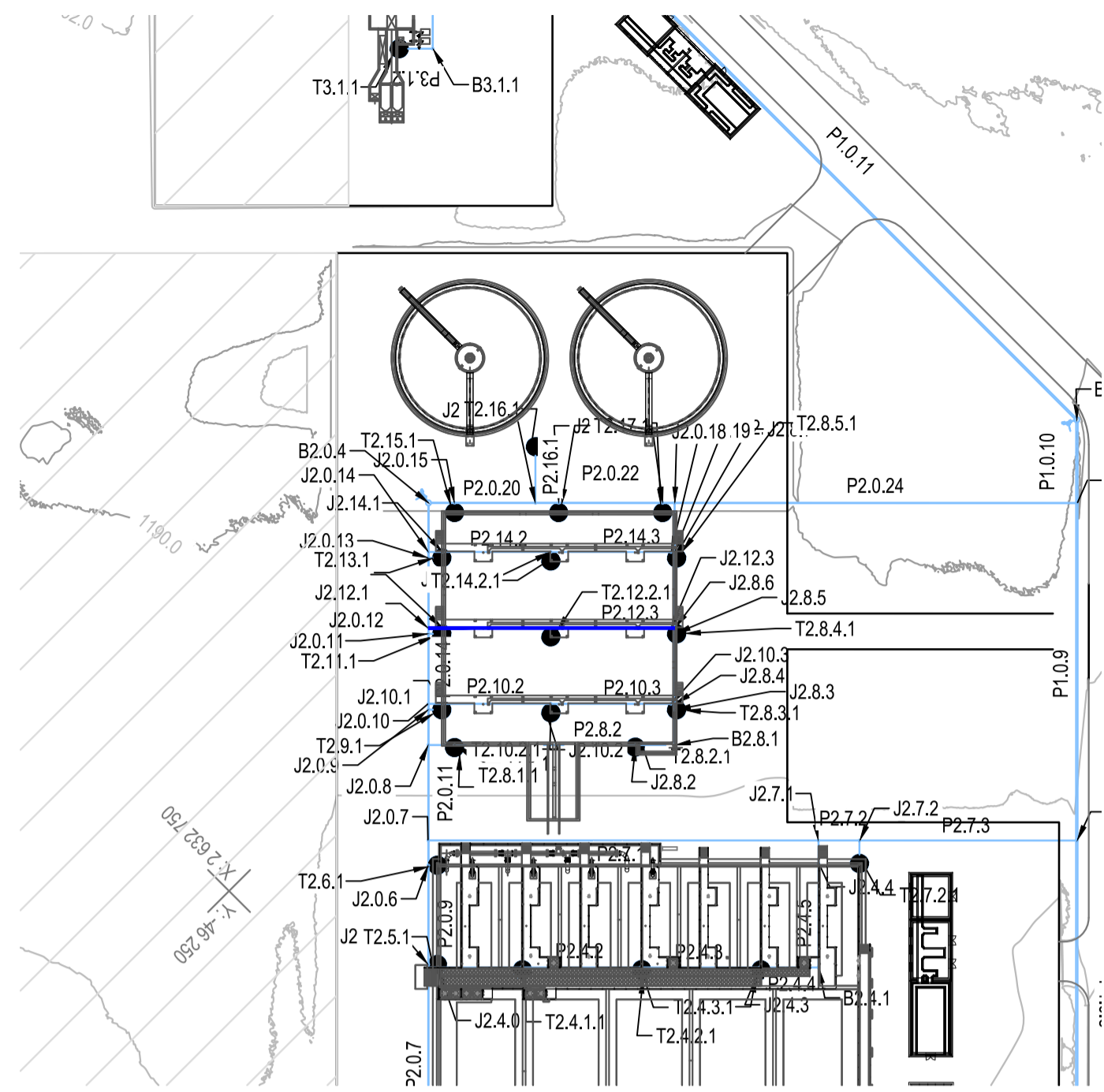
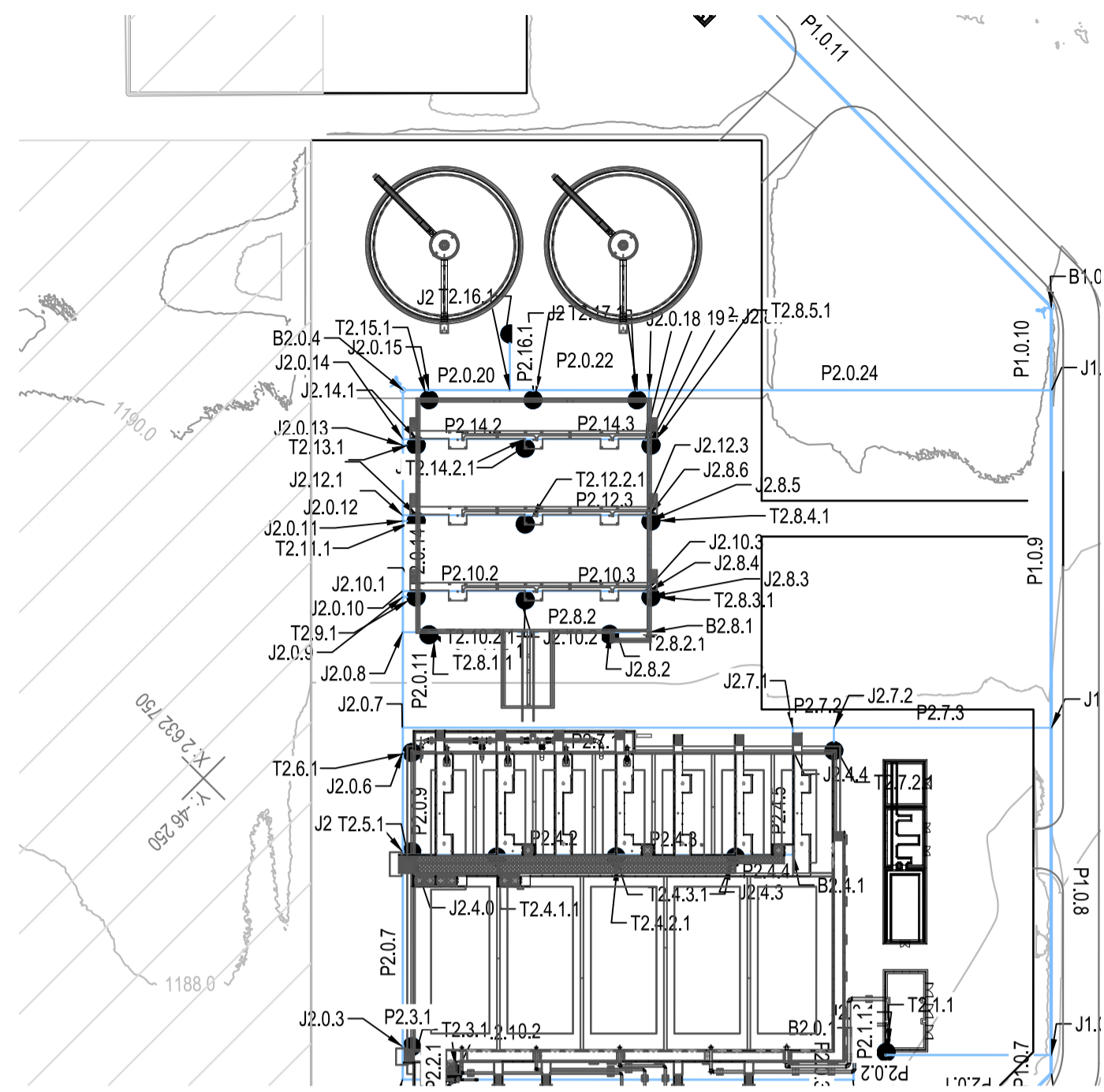
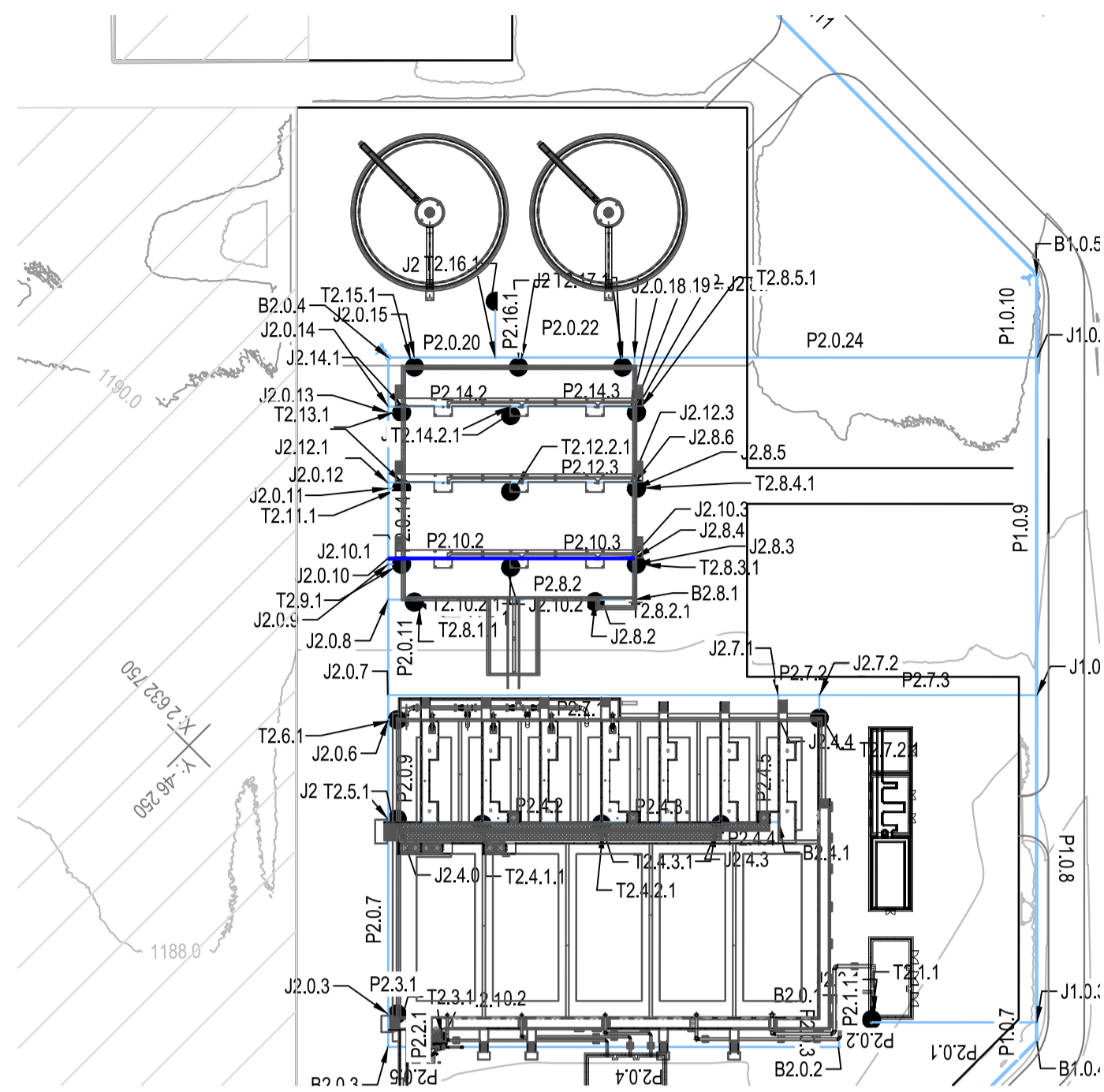
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SERVICE WATER BRANCHES 2.8.1 - 2.8.5 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0010	0	



- NGL - - - - -
- PIPE - - - - -
- JUNCTION ○
- AIR VALVE ↓
- PUMP ⊙
- TAP ⊙

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.10	J2.10.1 Ø20 HDPE CLASS PN20	J2.10.2 Ø50 HDPE CLASS PN20	J2.10.3 Ø50 HDPE CLASS PN20	J2.8.4
CHAINAGE (m)	0.000	2.380	20.530	40.680	41.280
FINISHED PLATFORM LEVEL	1188.900	1188.900	1188.900	1188.908	1188.910
PIPE INVERT LEVEL	1186.900	1190.800	1190.800	1190.800	1187.200
DEPTH TO INVERT	2.000	-1.900	-1.900	-1.881	1.710
COVER	1.955	1.945	1.945	1.936	1.695
SLOPE / LENGTH		Horizontal 18.15m	Horizontal 20.15m	Horizontal 20.15m	1:0.2 0.60m
HYDRAULICS	DESIGN Q(l/s)	0.05	0.05	0.04	0.04
	DESIGN V(m/s)	0.3	0.3	0.0	0.2

BRANCH 2.10

- NGL - - - - -
- PIPE - - - - -
- JUNCTION ○
- AIR VALVE ↓
- PUMP ⊙
- TAP ⊙

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.11	J2.11.1 Ø20 HDPE CLASS PN20
CHAINAGE (m)	0.000	2.230
FINISHED PLATFORM LEVEL	1188.972	1188.972
PIPE INVERT LEVEL	1187.306	1187.306
DEPTH TO INVERT	1.666	1.666
COVER	1.638	1.638
SLOPE / LENGTH		Horizontal 20.23m
HYDRAULICS	DESIGN Q(l/s)	0.00
	DESIGN V(m/s)	0.0

BRANCH 2.11

- NGL - - - - -
- PIPE - - - - -
- JUNCTION ○
- AIR VALVE ↓
- PUMP ⊙
- TAP ⊙

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.12	J2.12.1 Ø20 HDPE CLASS PN20	J2.12.2 Ø20 HDPE CLASS PN20	J2.12.3 Ø20 HDPE CLASS PN20	J2.8.6
CHAINAGE (m)	0.000	2.380	20.530	40.680	41.280
FINISHED PLATFORM LEVEL	1188.979	1188.979	1188.979	1188.983	1188.985
PIPE INVERT LEVEL	1187.322	1190.800	1190.800	1190.800	1187.400
SLOPE / LENGTH		Horizontal 18.15m	Horizontal 20.15m	Horizontal 20.15m	1:0.2 0.60m
DEPTH TO INVERT	1.657	1.881	1.881	1.816	1.581
COVER	1.612	1.866	1.866	1.860	1.541
HYDRAULICS	DESIGN Q(l/s)	0.03	0.03	0.04	0.04
	DESIGN V(m/s)	0.2	0.2	0.2	0.2

BRANCH 2.12

CONSTRUCTION DRAWING

NOTES
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CLIENT
CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

PROJECT: **POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS**

DRAWING DESCRIPTION: **SERVICE WATER BRANCHES 2.10 - 2.12 PROFILE**

DESIGNED: T. BANDA ENGINEER
DRAWN: PR ENG no.
CHECKED: DATE
DATE

DESIGNED: Designer
DRAWN: Author
CHECKED: Checker
REV DATE: 2024-03
SCALE: 1:1000
ORIGINAL SIZE: A1

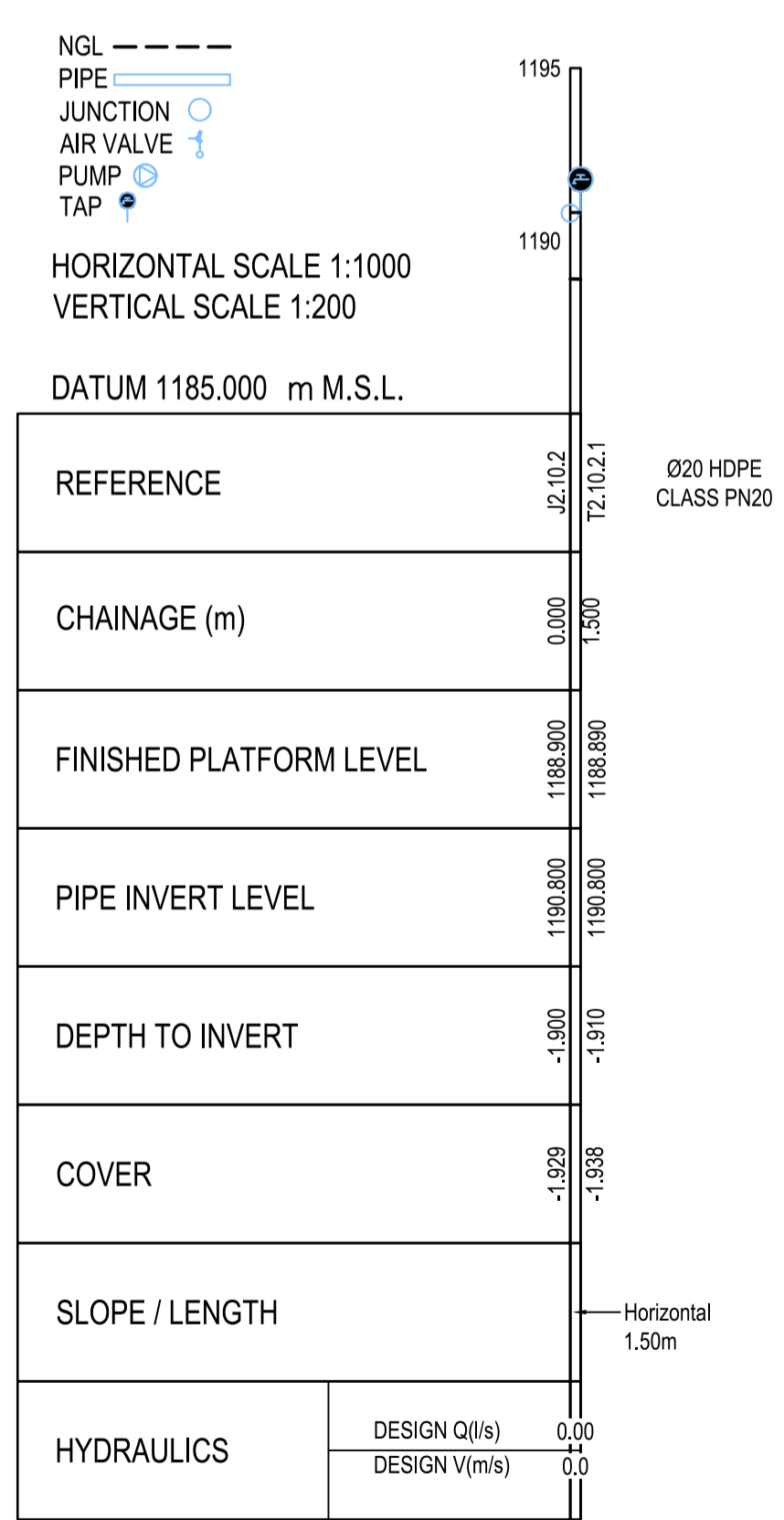
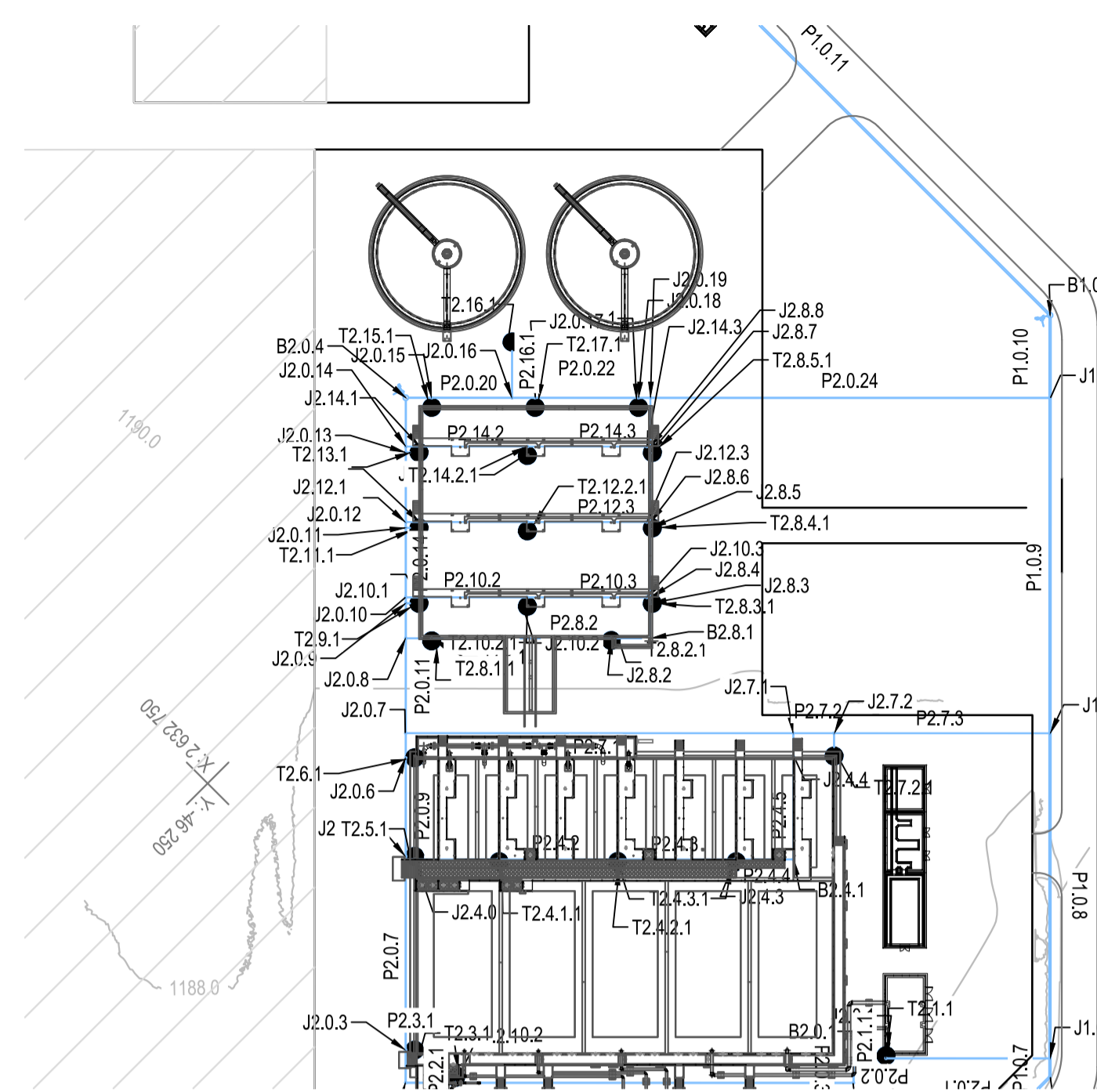
DRAWING NUMBER: PK278-01-CIV-DRG-2004-0011
REV: 0

DESIGNED: Designer
DRAWN: Author
CHECKED: Checker
REV DATE: 2024-03
SCALE: 1:1000
ORIGINAL SIZE: A1

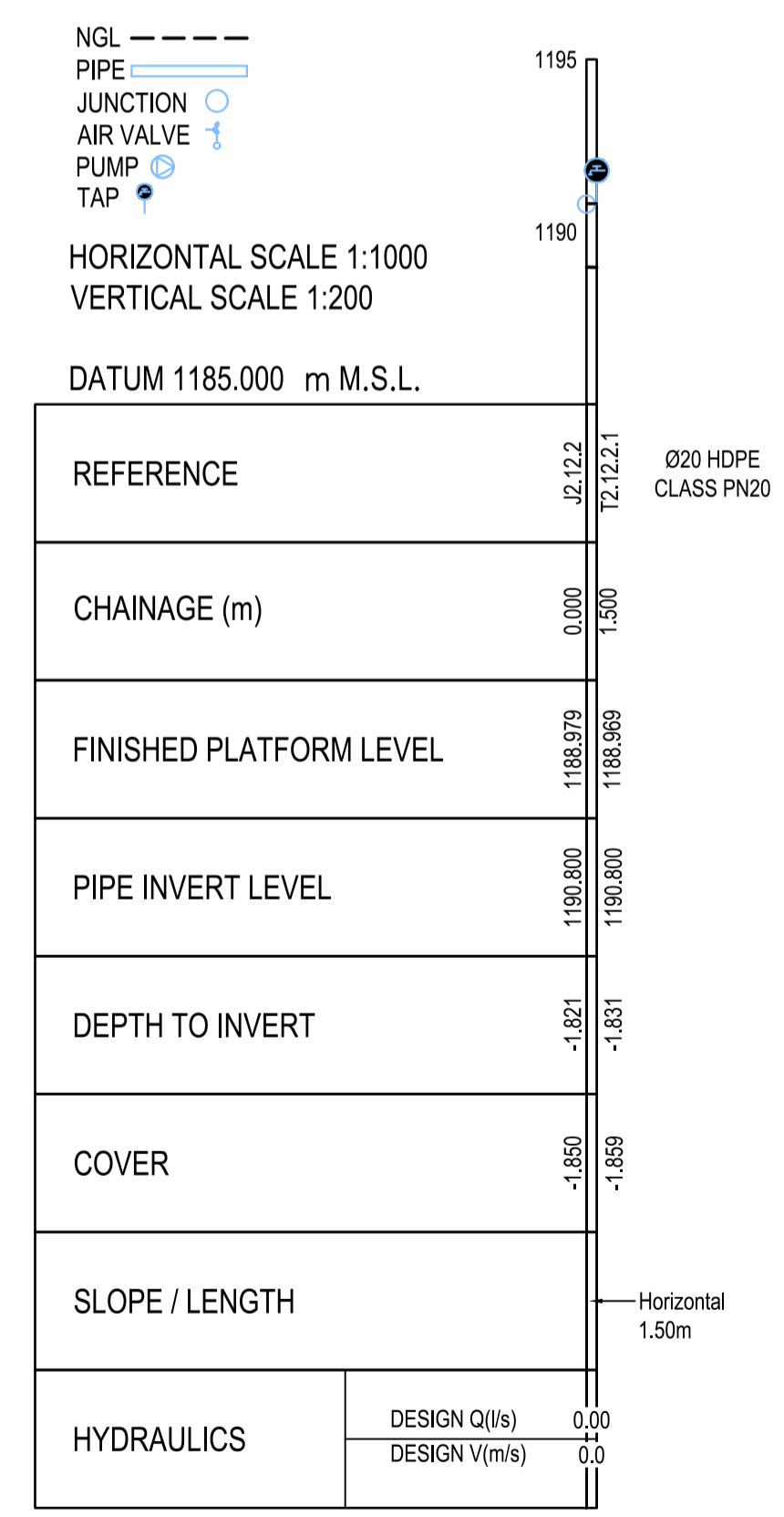
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REV: 0

DESIGNED: Designer
DRAWN: Author
CHECKED: Checker
REV DATE: 2024-03
SCALE: 1:1000
ORIGINAL SIZE: A1

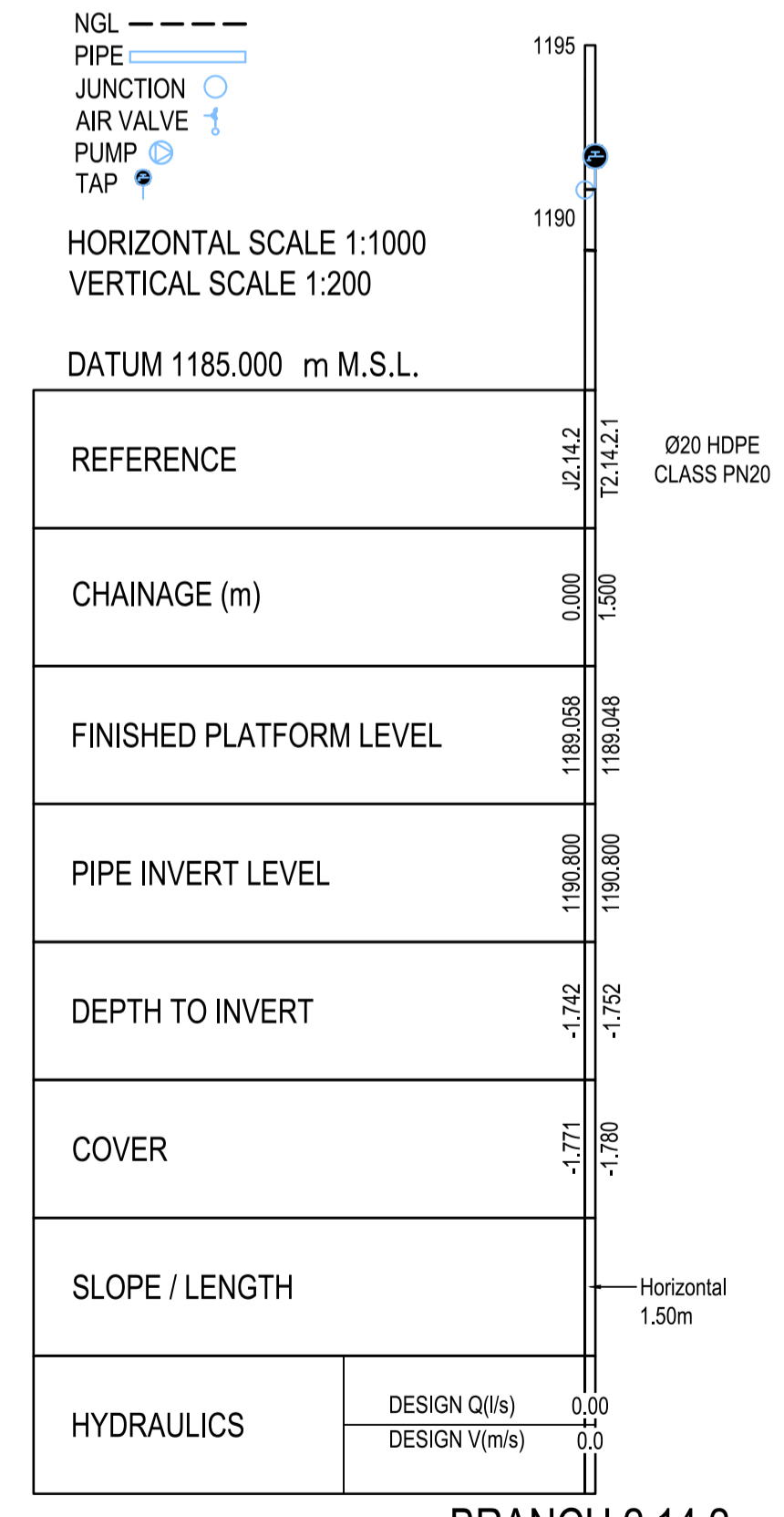
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REV: 0



BRANCH 2.10.2



BRANCH 2.12.2



BRANCH 2.14.2

CONSTRUCTION DRAWING

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CLIENT

CITY OF Polokwane
 NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
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T. BANDA
 ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

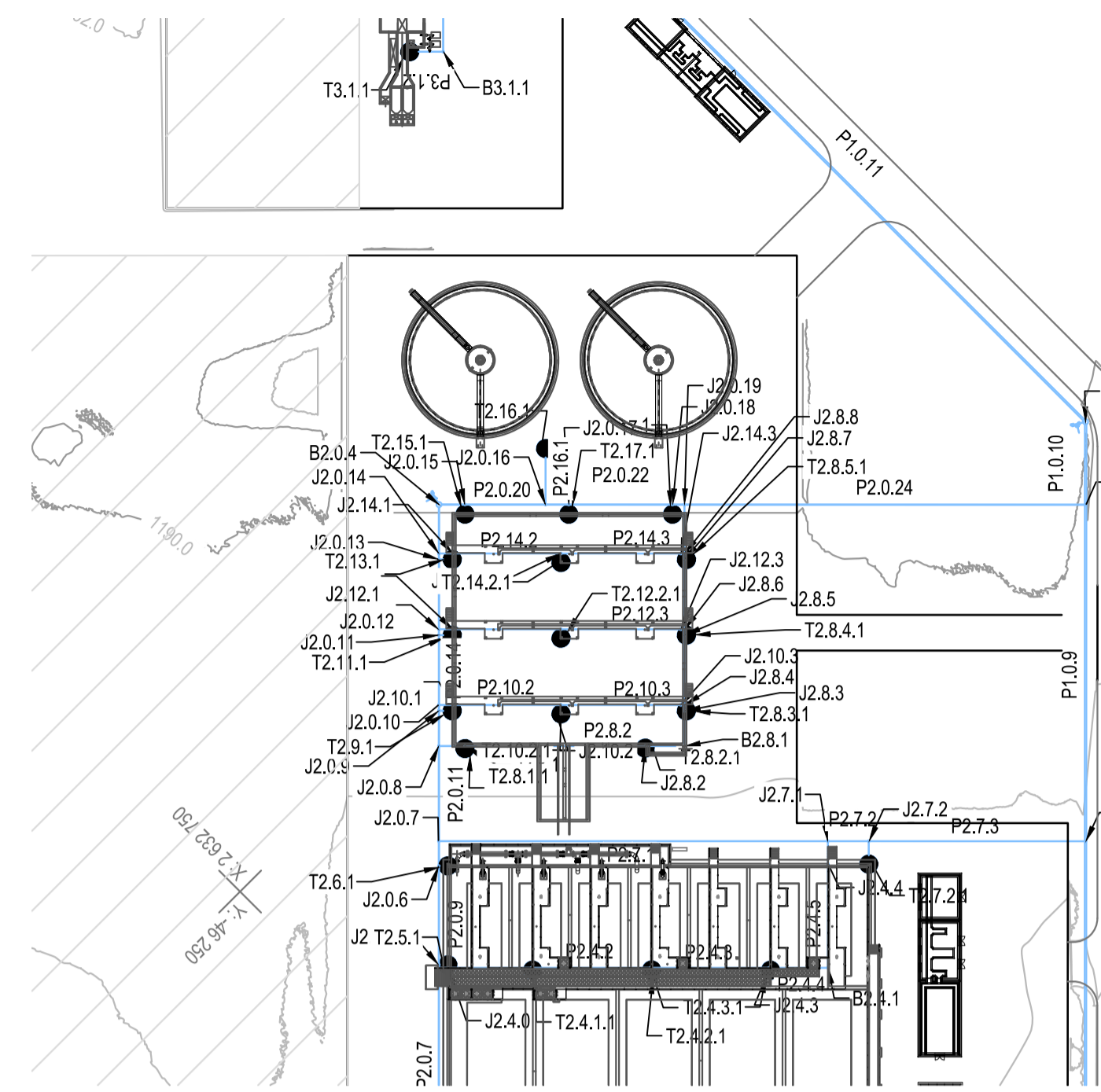
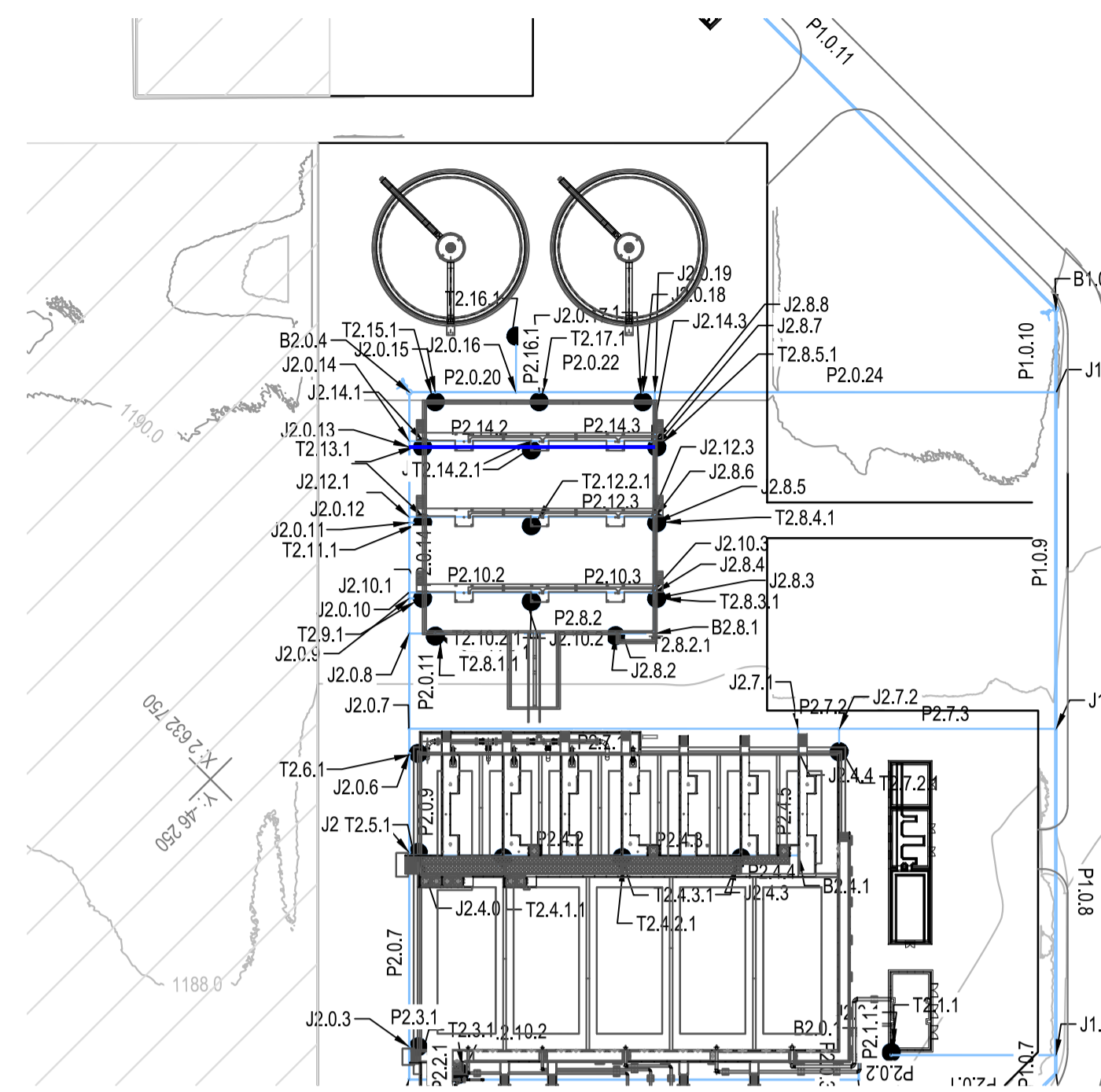
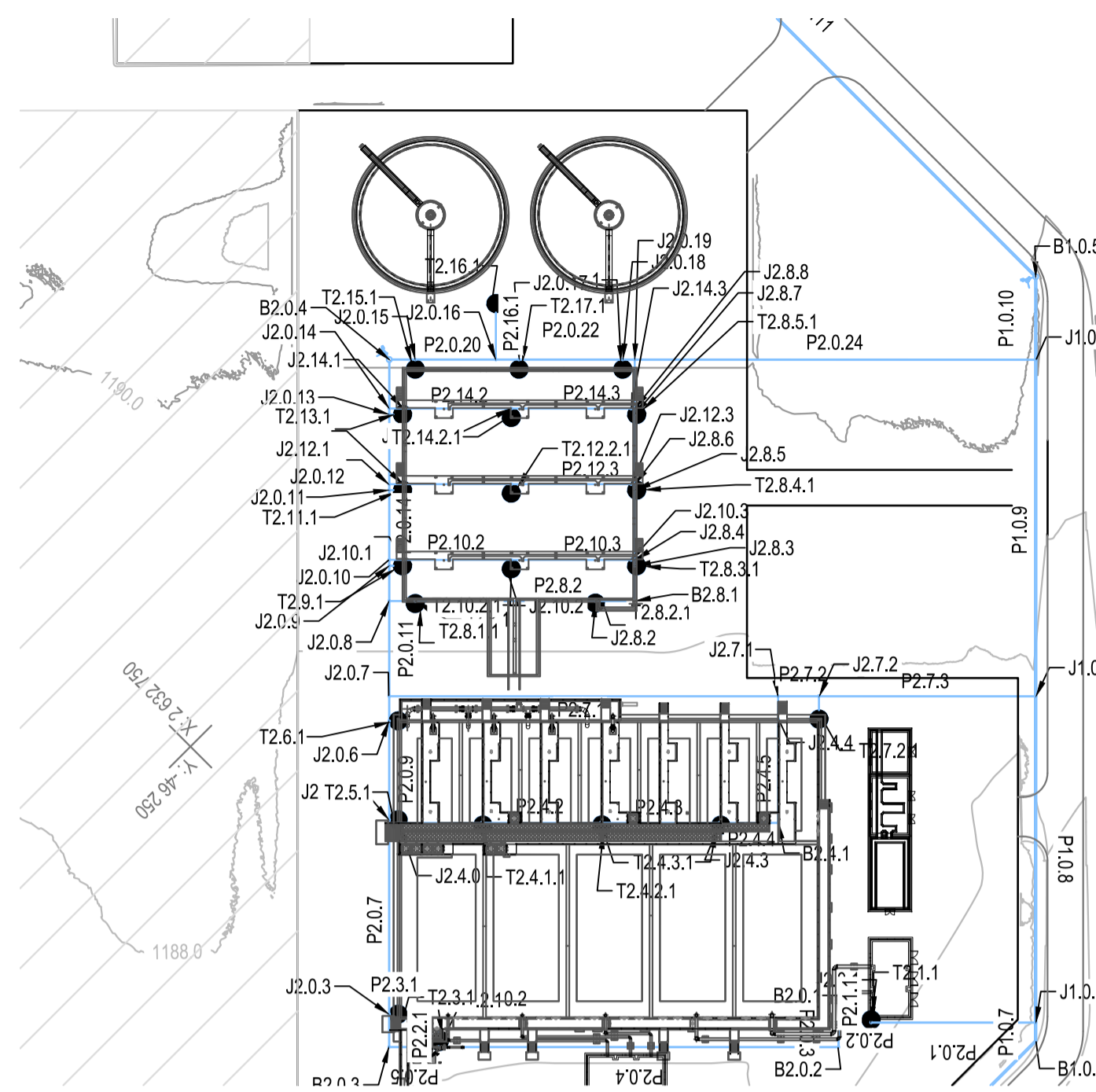
PROJECT

**POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS**

DRAWING DESCRIPTION

**SERVICE WATER
 BRANCHES 2.10.2, 2.12.2 &
 2.14.2 PROFILE**

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0012	0	



- NGL - - - - -
- PIPE ———
- JUNCTION ○
- AIR VALVE ⊕
- PUMP ⊕
- TAP ⊕

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.13	Ø20 HDPE CLASS PN20
CHAINAGE (m)	0.000	2.250
FINISHED PLATFORM LEVEL	1189.051	1189.051
PIPE INVERT LEVEL	1187.706	1187.706
DEPTH TO INVERT	1.345	1.345
COVER	1.317	1.317
SLOPE / LENGTH	Horizontal 2.23m	
HYDRAULICS	DESIGN Q(l/s)	0.00
	DESIGN V(m/s)	0.0

BRANCH 2.13

- NGL - - - - -
- PIPE ———
- JUNCTION ○
- AIR VALVE ⊕
- PUMP ⊕
- TAP ⊕

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.14	Ø50 HDPE CLASS PN20	J2.14.1	Ø50 HDPE CLASS PN20	J2.14.3	J2.8.8
CHAINAGE (m)	0.000	2.380	20.530	40.680	41.280	
FINISHED PLATFORM LEVEL	1189.058	1189.058	1189.058	1189.059	1189.061	
PIPE INVERT LEVEL	1187.722	1187.722	1189.800	1189.892	1189.892	
DEPTH TO INVERT	1.336	1.336	1.742	1.760	1.760	
COVER	1.281	1.281	1.787	1.785	1.785	
SLOPE / LENGTH	-1.0.8 2.38m		Horizontal 18.15m		Horizontal 20.15m	
HYDRAULICS	DESIGN Q(l/s)	0.04	0.04	0.05	0.05	
	DESIGN V(m/s)	0.2	0.2	0.3	0.3	

BRANCH 2.14

- NGL - - - - -
- PIPE ———
- JUNCTION ○
- AIR VALVE ⊕
- PUMP ⊕
- TAP ⊕

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.15	Ø20 HDPE CLASS PN20
CHAINAGE (m)	0.000	1.675
FINISHED PLATFORM LEVEL	1190.500	1189.069
PIPE INVERT LEVEL	1188.006	1188.006
DEPTH TO INVERT	2.494	1.062
COVER	2.465	1.064
SLOPE / LENGTH	Horizontal 1.62m	
HYDRAULICS	DESIGN Q(l/s)	0.00
	DESIGN V(m/s)	0.0

BRANCH 2.15

- NGL - - - - -
- PIPE ———
- JUNCTION ○
- AIR VALVE ⊕
- PUMP ⊕
- TAP ⊕

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.16	Ø20 HDPE CLASS PN20
CHAINAGE (m)	0.000	9.428
FINISHED PLATFORM LEVEL	1190.500	1190.500
PIPE INVERT LEVEL	1188.006	1188.006
DEPTH TO INVERT	2.494	2.494
COVER	2.465	2.465
SLOPE / LENGTH	Horizontal 9.43m	
HYDRAULICS	DESIGN Q(l/s)	0.00
	DESIGN V(m/s)	0.0

BRANCH 2.16

- NGL - - - - -
- PIPE ———
- JUNCTION ○
- AIR VALVE ⊕
- PUMP ⊕
- TAP ⊕

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1185.000 m M.S.L.

REFERENCE	J2.0.17	Ø20 HDPE CLASS PN20
CHAINAGE (m)	0.000	1.675
FINISHED PLATFORM LEVEL	1190.500	1189.069
PIPE INVERT LEVEL	1188.006	1188.006
DEPTH TO INVERT	2.494	1.092
COVER	2.465	1.064
SLOPE / LENGTH	Horizontal 1.62m	
HYDRAULICS	DESIGN Q(l/s)	0.00
	DESIGN V(m/s)	0.0

BRANCH 2.17

NOTES

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FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

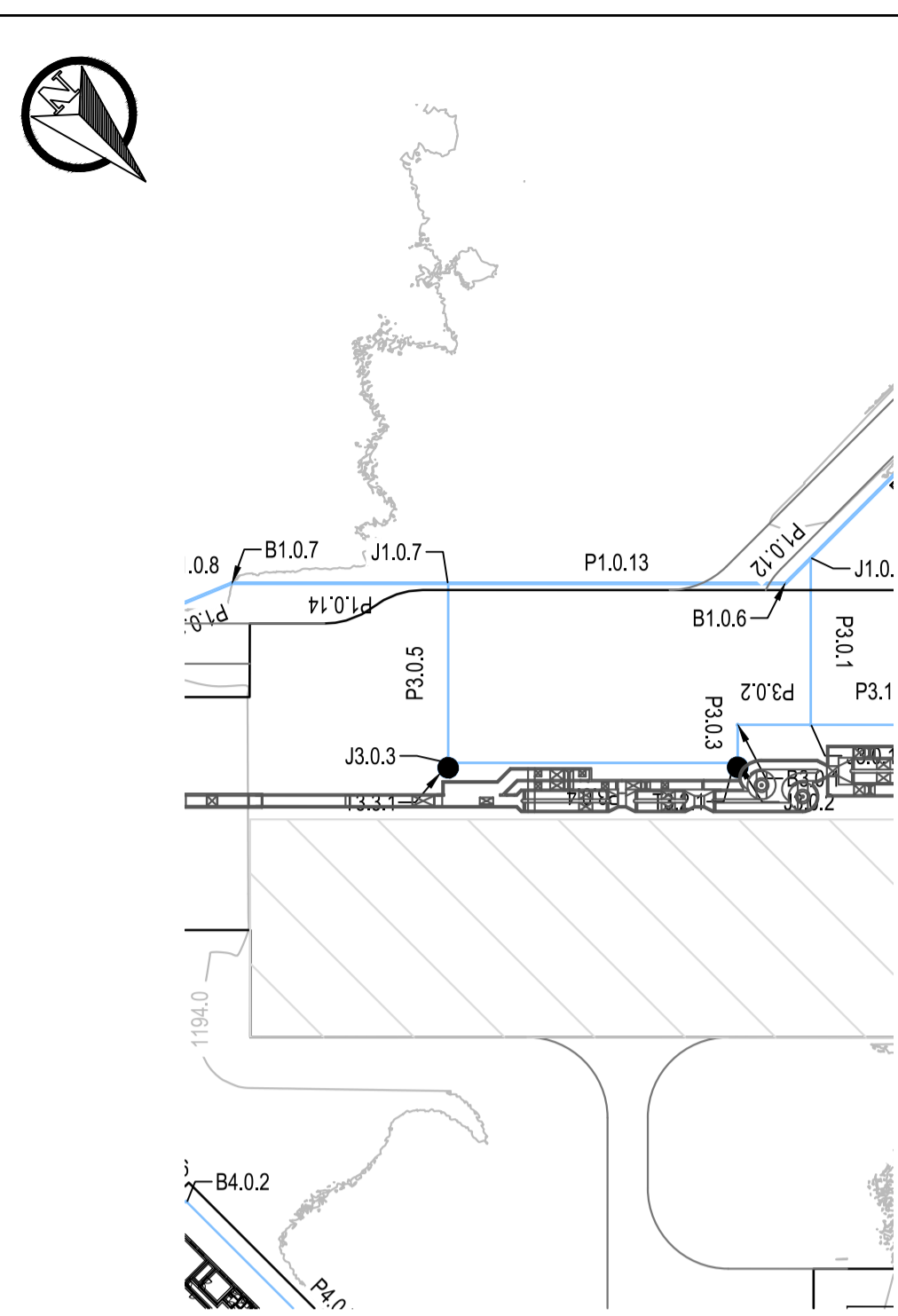
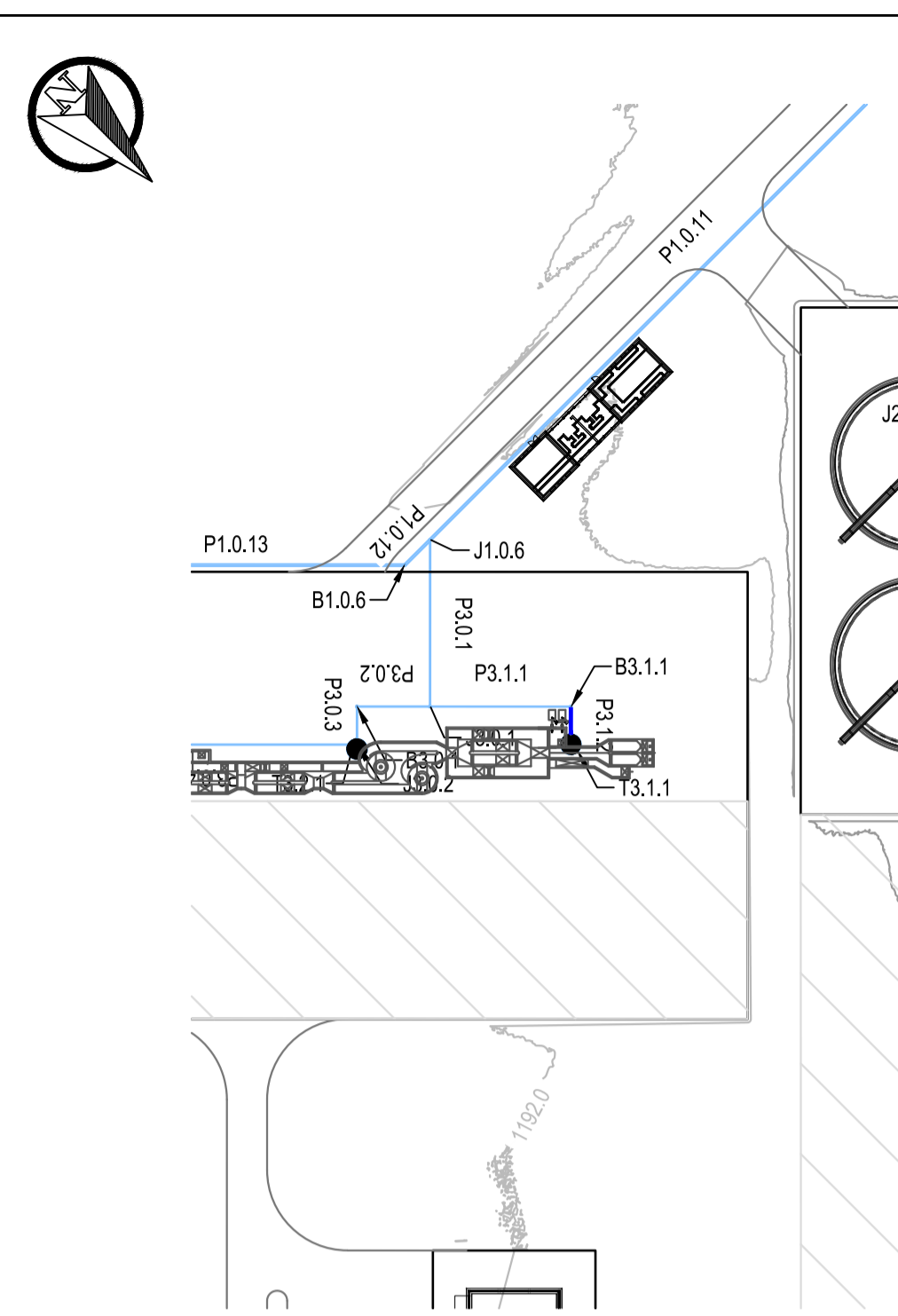
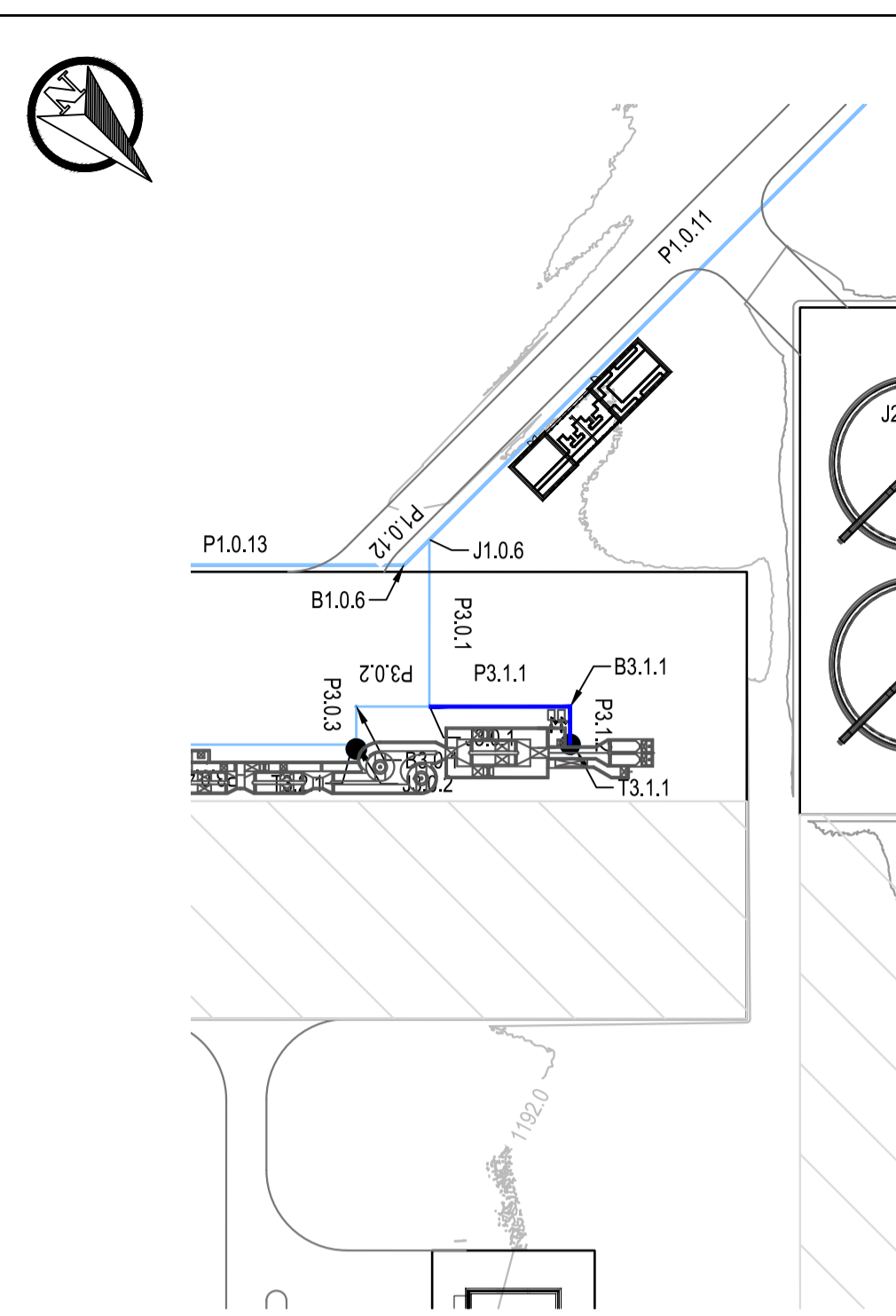
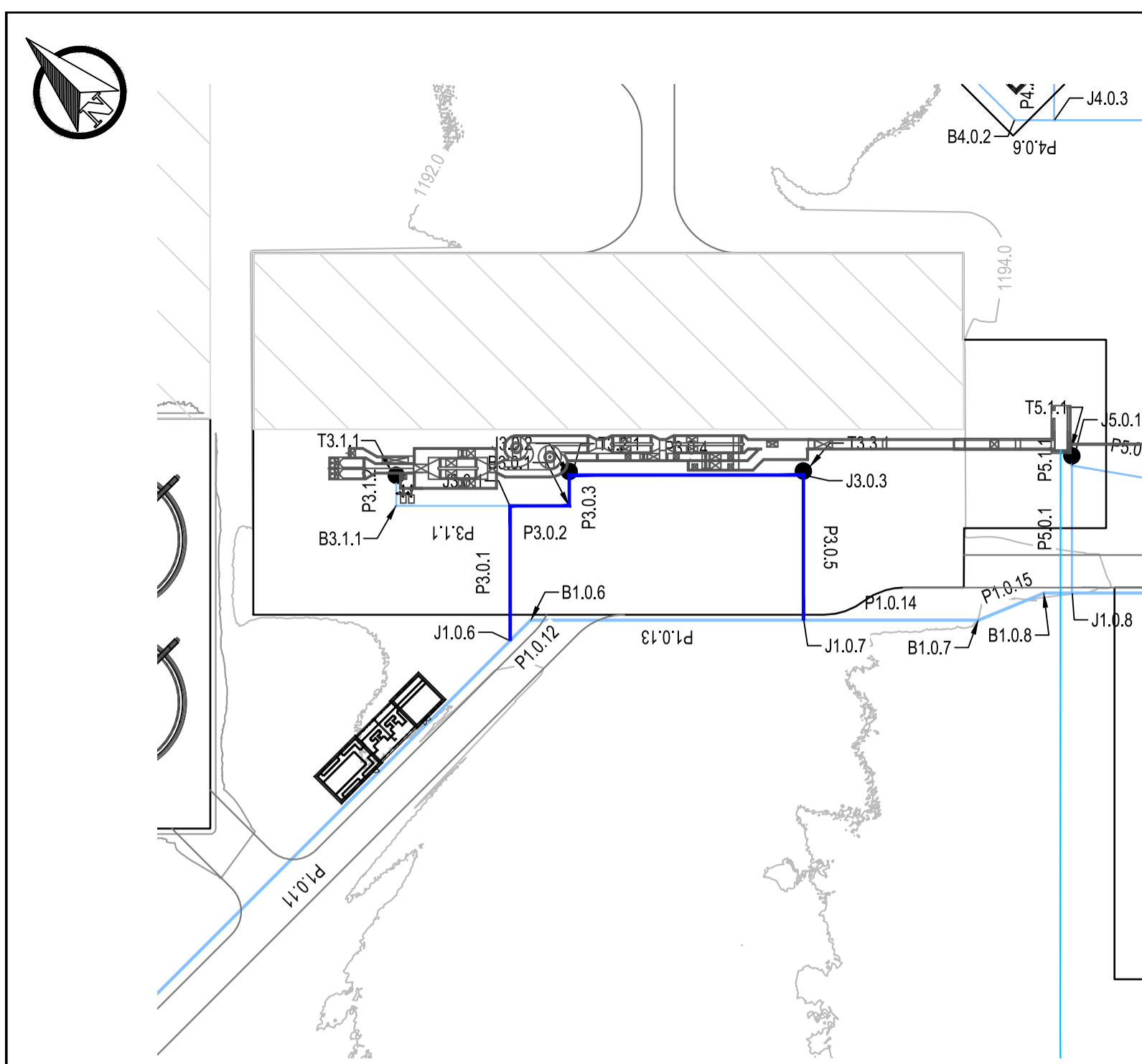
**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SERVICE WATER
BRANCHES 2.13 - 2.17
PROFILE**

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0013	0	



NGL ---
 PIPE ---
 JUNCTION ○
 AIR VALVE ↓
 PUMP ●
 TAP ●

HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1185.000 m M.S.L.

REFERENCE	J1.0.6	J3.0.1	B3.0.1	J3.0.2	J3.0.3	J1.0.7
CHAINAGE (m)	0.000	24.849	35.740	41.417	84.567	111.319
FINISHED PLATFORM LEVEL	1192.335	1192.212	1192.260	1192.328	1192.400	1192.634
PIPE INVERT LEVEL	1191.007	1191.139	1191.182	1191.184	1191.334	1191.407
DEPTH TO INVERT	1.328	1.076	1.076	1.076	1.076	1.227
COVER	1.248	0.996	0.996	0.996	0.996	1.147
SLOPE / LENGTH		-1:188.3 24.85m	-1:252.2 10.89m	-1:2326.9 5.68m	-1:289.1 43.15m	-1:365.8 26.75m
HYDRAULICS	DESIGN Q(l/s)	1.99	1.99	1.99	0.99	0.99
	DESIGN V(m/s)	0.8	0.8	0.8	0.4	0.4

BRANCH 3

NGL ---
 PIPE ---
 JUNCTION ○
 AIR VALVE ↓
 PUMP ●
 TAP ●

HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	J3.0.1	B3.1.1	T3.1.1
CHAINAGE (m)	0.000	20.989	26.614
FINISHED PLATFORM LEVEL	1192.215	1192.138	1192.139
PIPE INVERT LEVEL	1191.184	1191.103	1191.108
DEPTH TO INVERT	1.031	1.031	1.031
COVER	1.003	1.003	1.003
SLOPE / LENGTH		1:260.8 20.99m	-1:1119.4 5.63m
HYDRAULICS	DESIGN Q(l/s)	0.00	0.00
	DESIGN V(m/s)	0.0	0.0

BRANCH 3.1

NGL ---
 PIPE ---
 JUNCTION ○
 AIR VALVE ↓
 PUMP ●
 TAP ●

HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	J3.0.2	T3.2.1
CHAINAGE (m)	0.000	0.660
FINISHED PLATFORM LEVEL	1192.260	1192.260
PIPE INVERT LEVEL	1191.229	1191.230
DEPTH TO INVERT	1.031	1.031
COVER	1.003	1.003
SLOPE / LENGTH		-1:2250.5 0.66m
HYDRAULICS	DESIGN Q(l/s)	0.00
	DESIGN V(m/s)	0.0

BRANCH 3.2

NGL ---
 PIPE ---
 JUNCTION ○
 AIR VALVE ↓
 PUMP ●
 TAP ●

HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	J3.0.3	T3.3.1
CHAINAGE (m)	0.000	0.739
FINISHED PLATFORM LEVEL	1192.409	1192.409
PIPE INVERT LEVEL	1191.379	1191.376
DEPTH TO INVERT	1.031	1.031
COVER	1.003	1.003
SLOPE / LENGTH		-1:1911.8 0.74m
HYDRAULICS	DESIGN Q(l/s)	0.00
	DESIGN V(m/s)	0.0

BRANCH 3.3

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CITY OF Polokwane
NATURALLY PROGRESSIVE

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ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

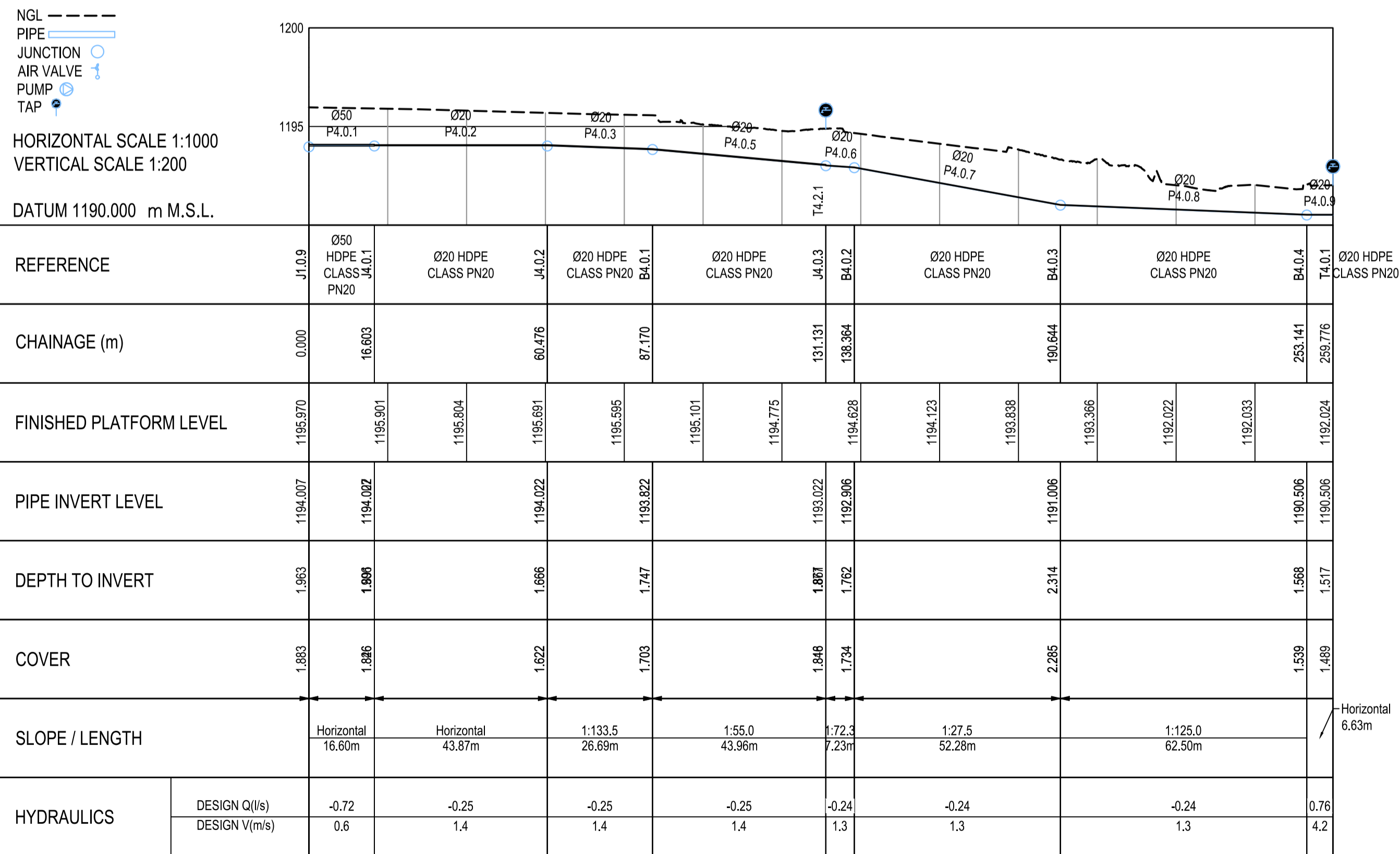
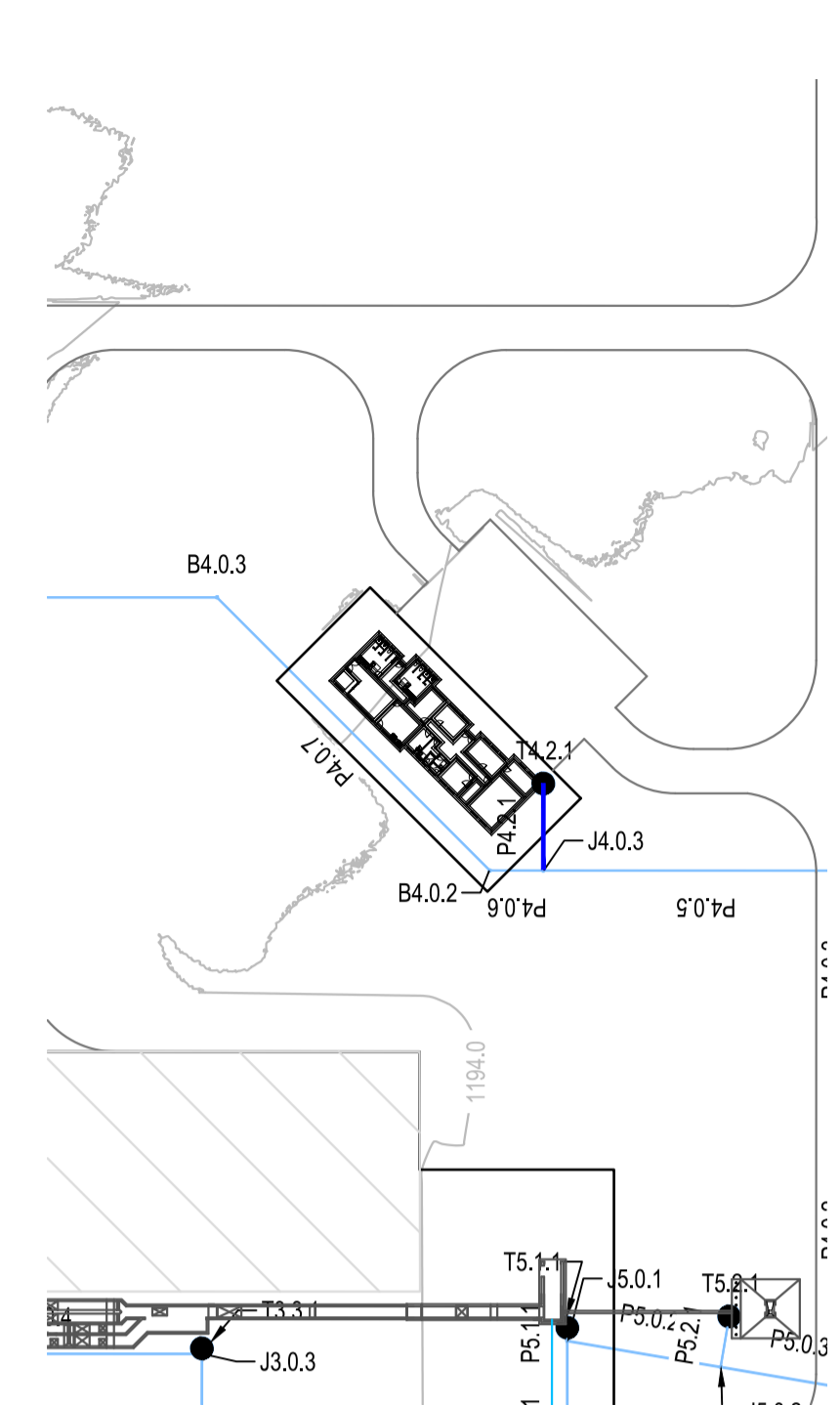
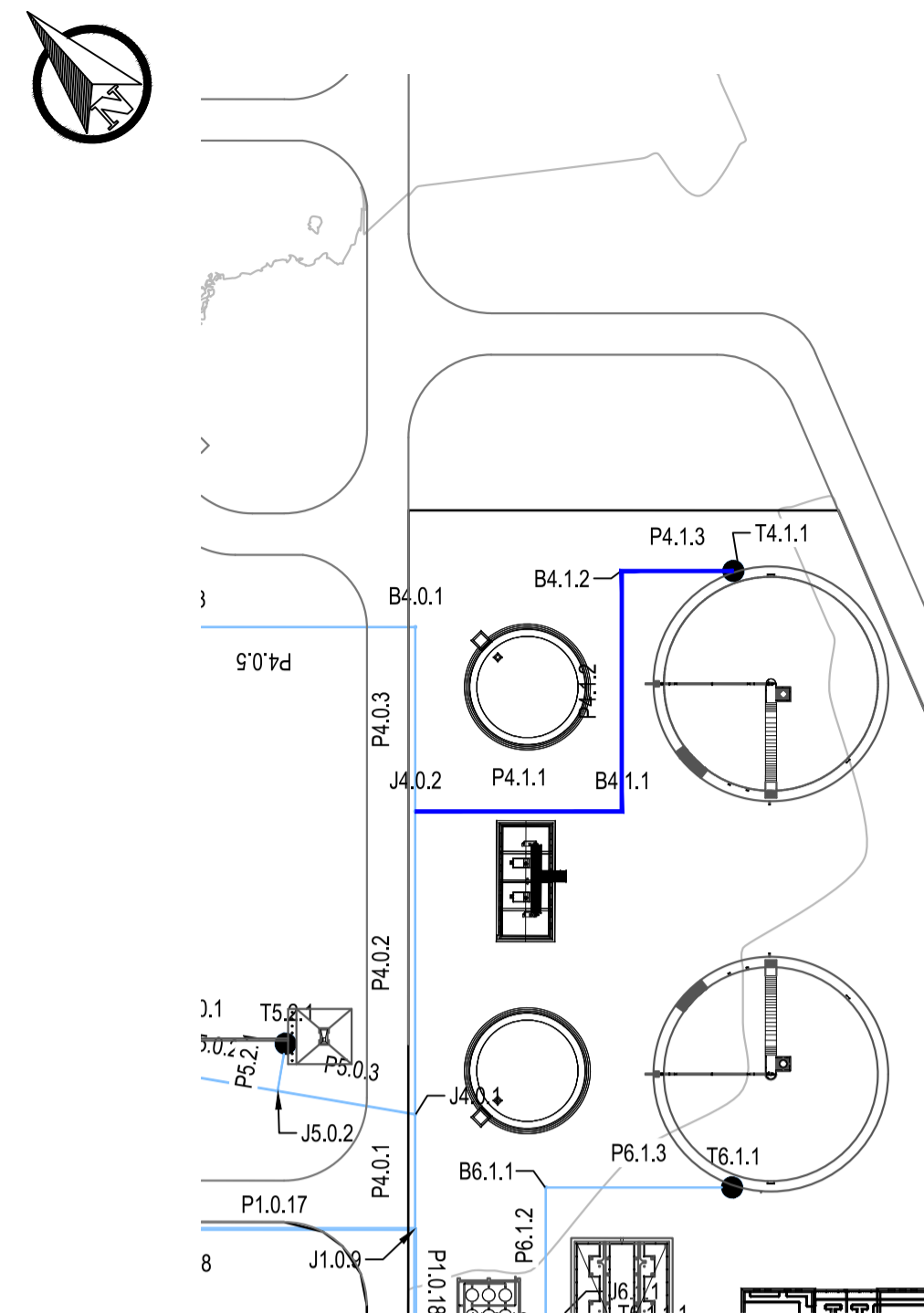
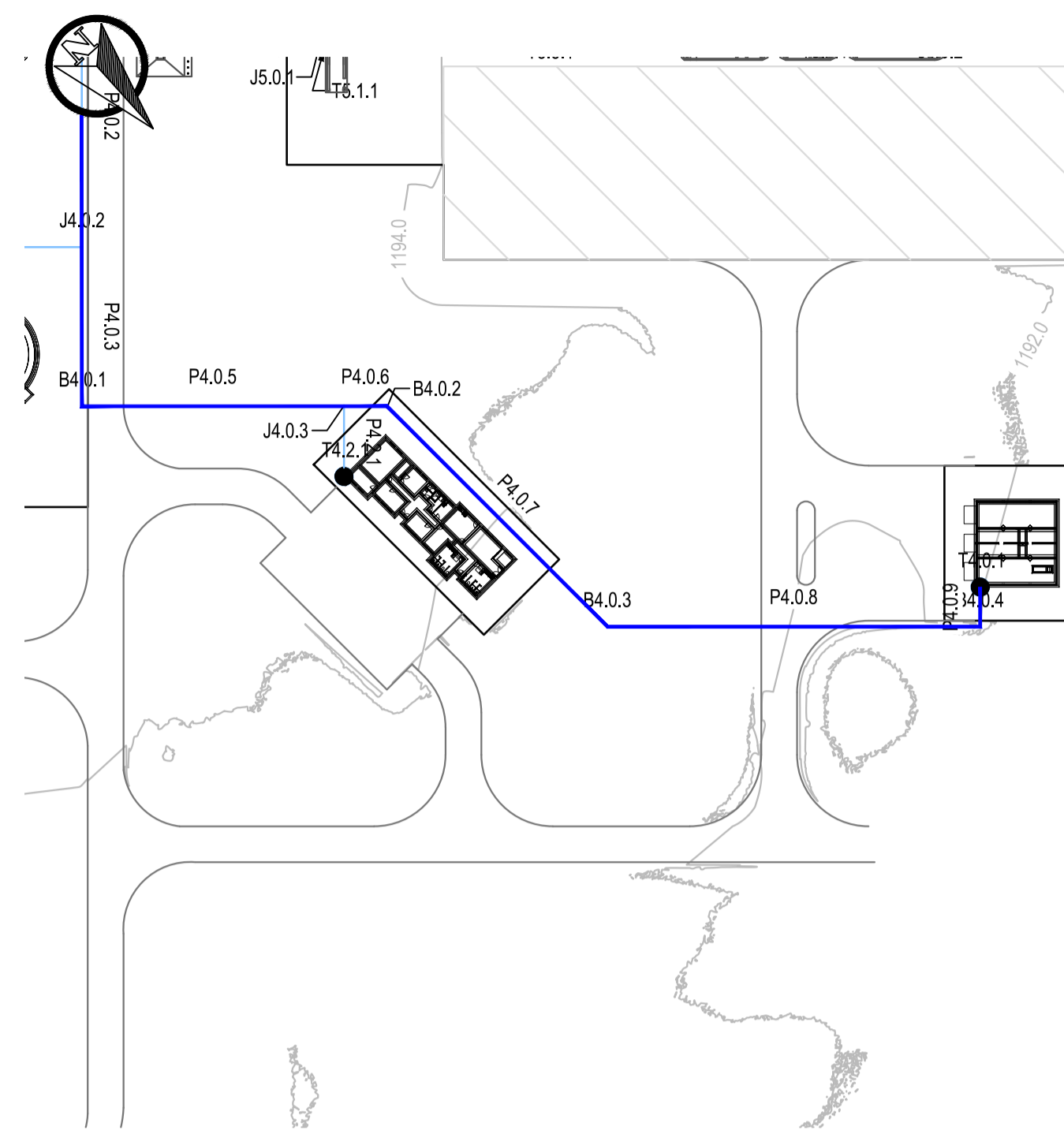
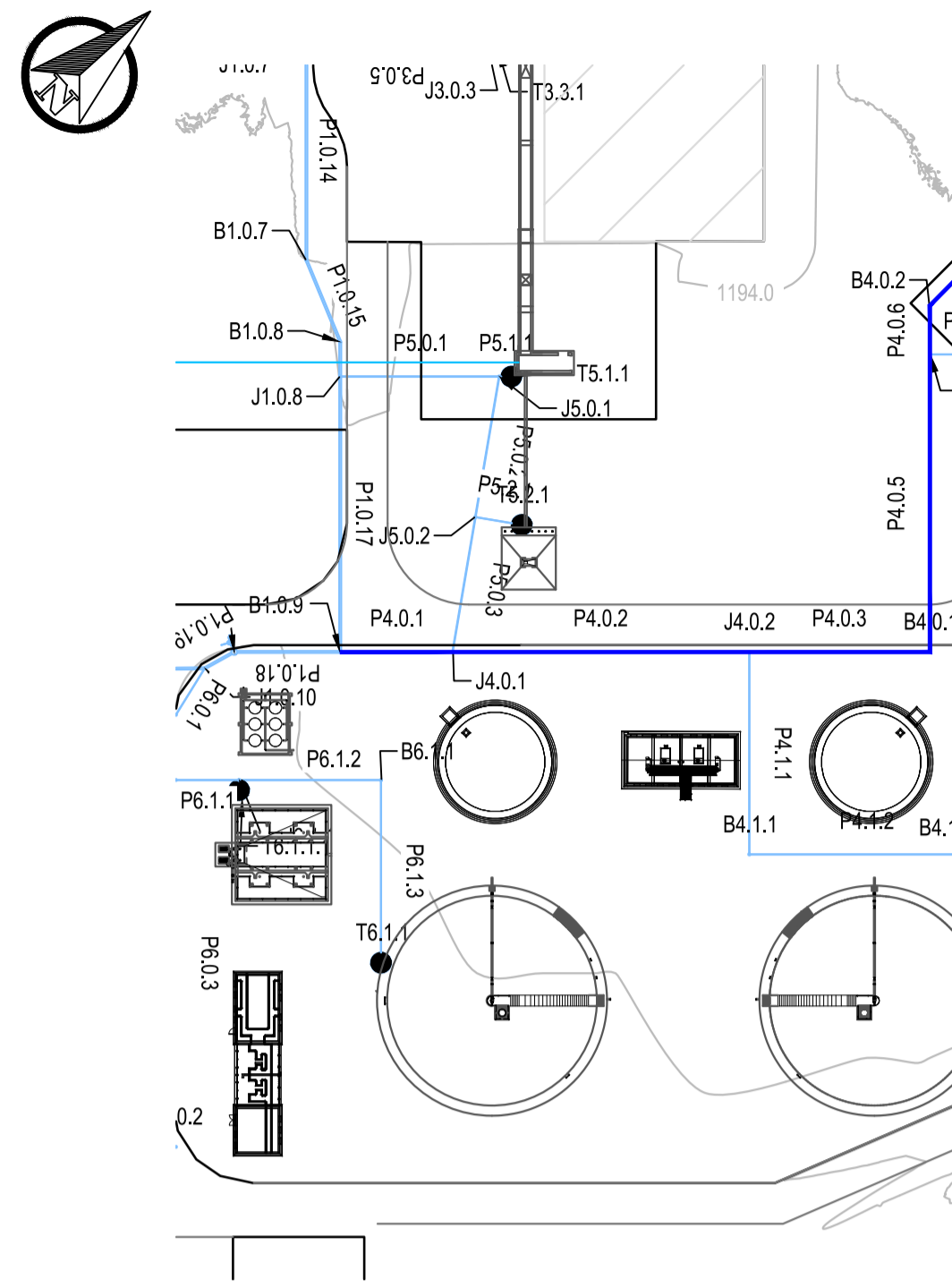
POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION

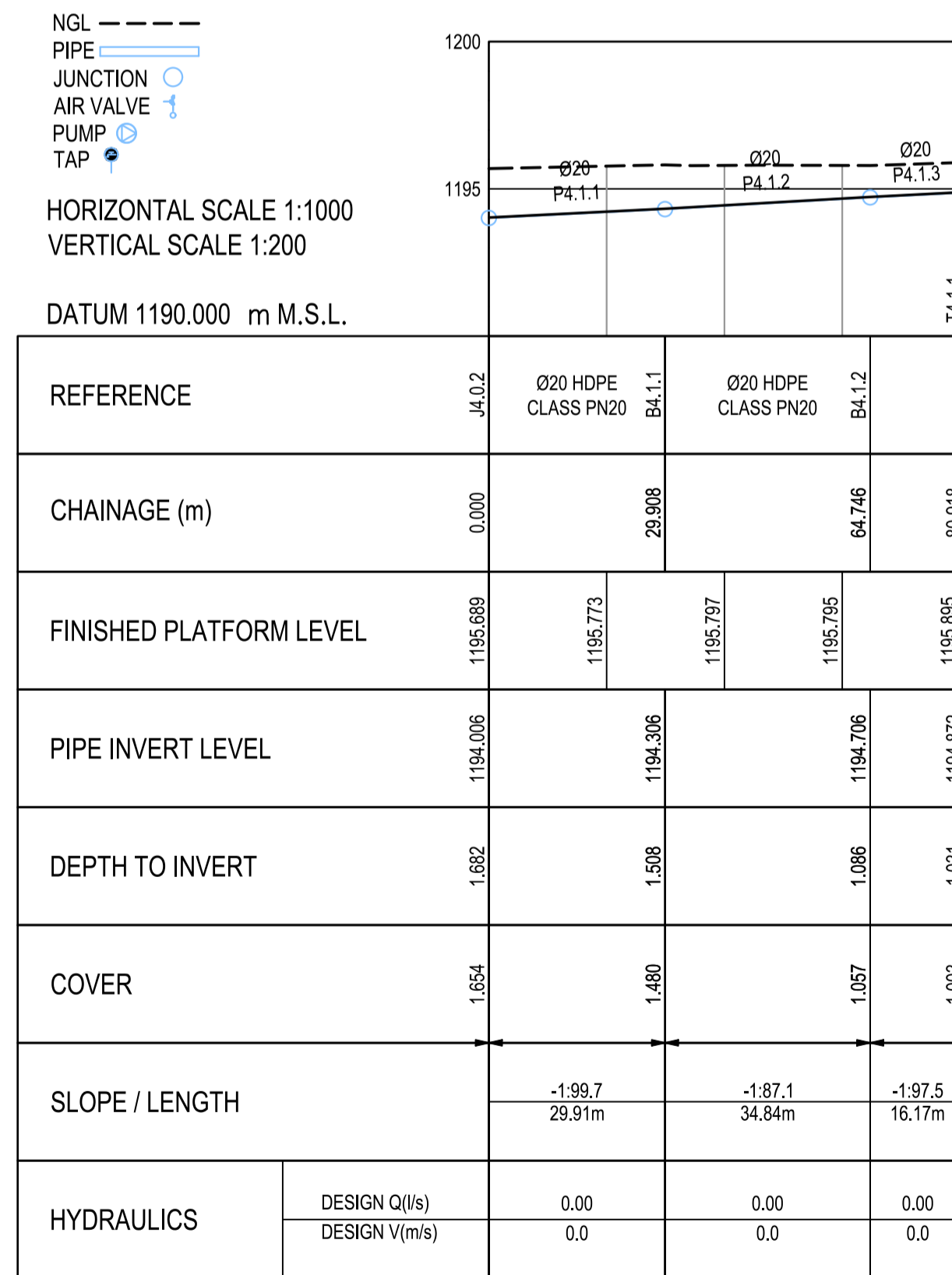
SERVICE WATER
BRANCHES 3 & 3.1 - 3.3
PROFILE

CONSTRUCTION DRAWING

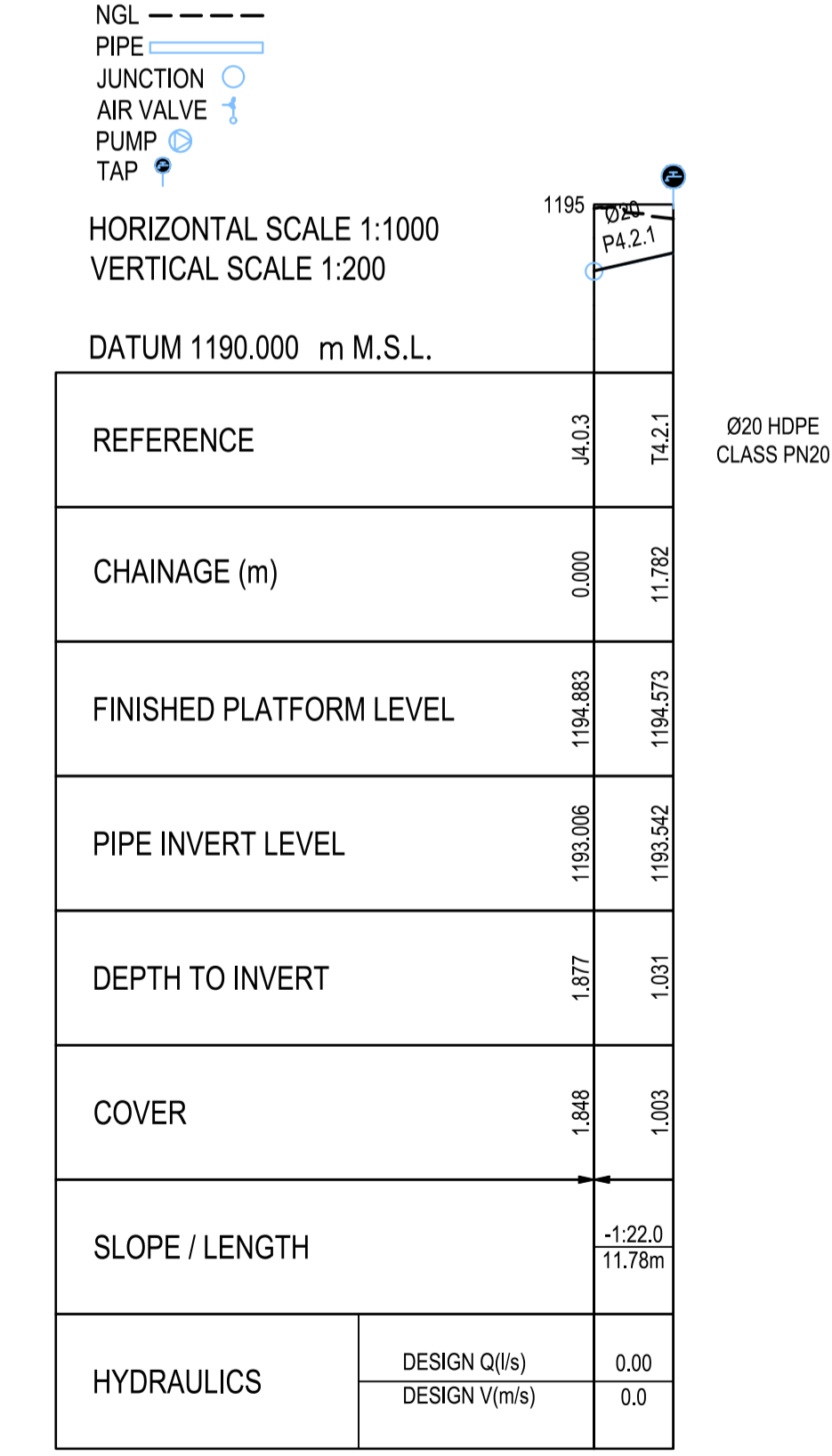
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0014	0	



BRANCH 4



BRANCH 4.1



BRANCH 4.2

CONSTRUCTION DRAWING

NOTES

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CITY OF Polokwane
NATURALLY PROGRESSIVE

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CLIENT _____ DATE _____

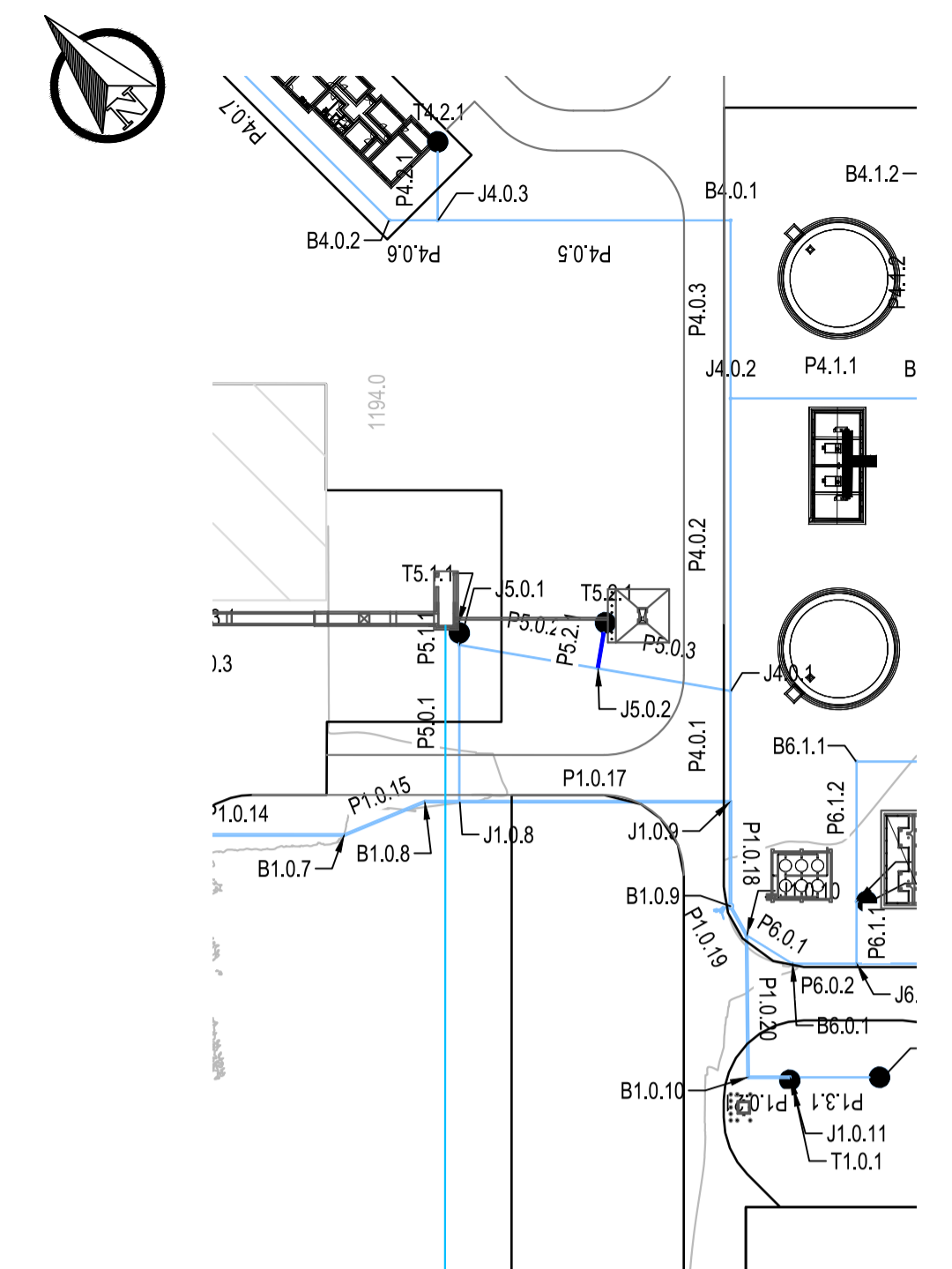
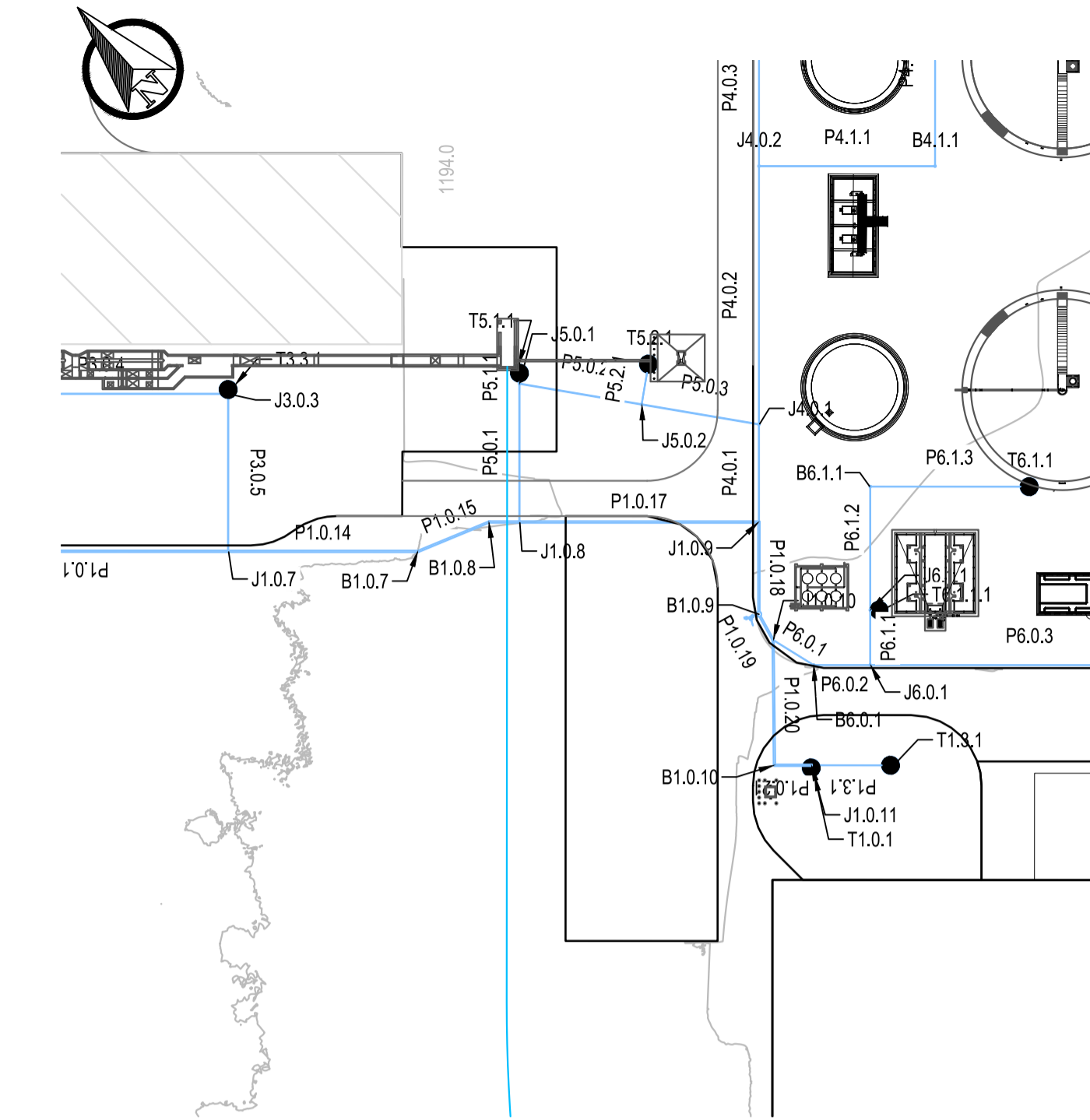
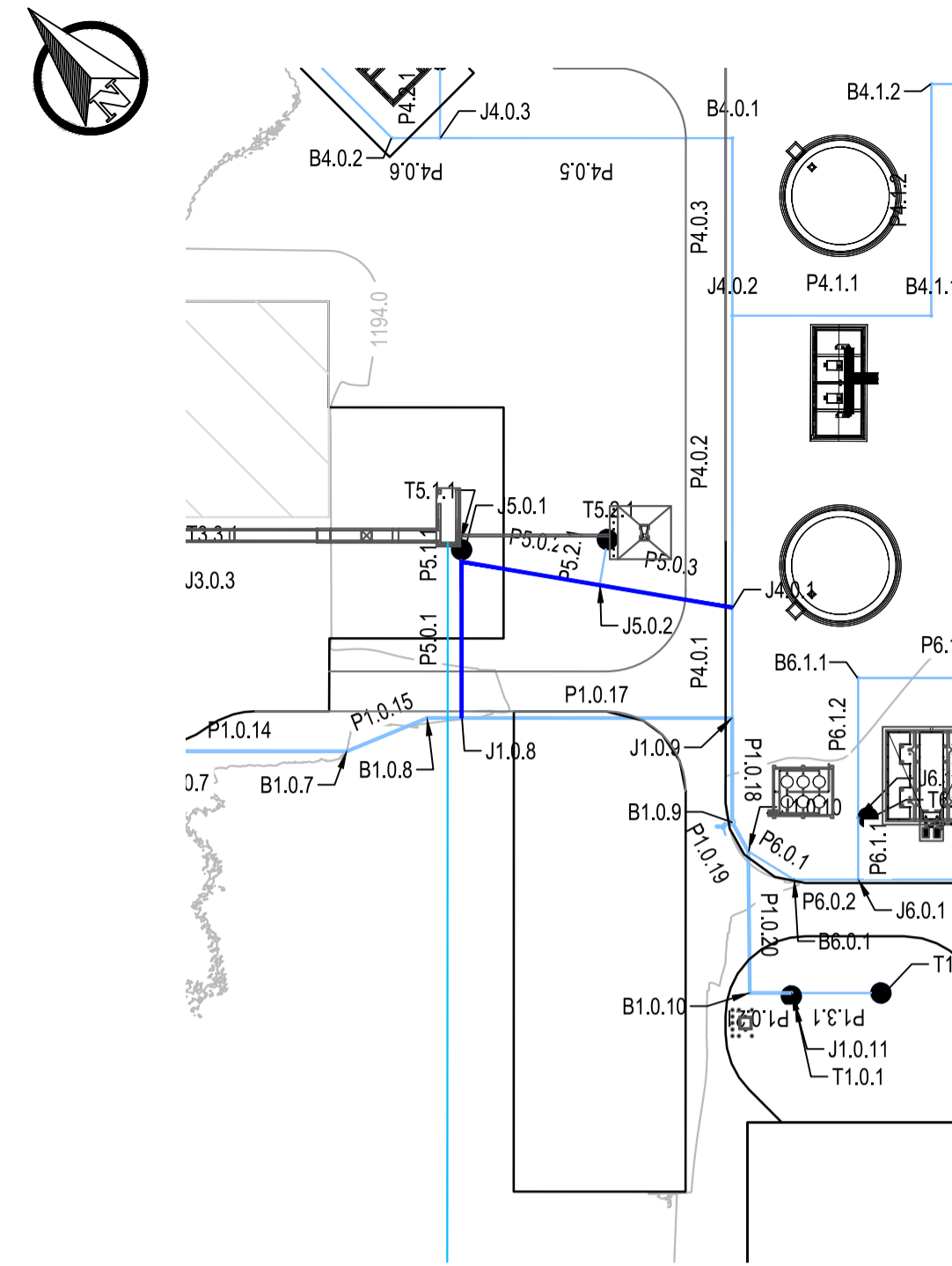
PROJECT

POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION

SERVICE WATER
BRANCHES 4 & 4.1 - 4.2
PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0015	0	



NGL ---
 PIPE ---
 JUNCTION ○
 AIR VALVE ◡
 PUMP ⊕
 TAP ●

HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	J1.0.8	Ø75 HDPE CLASS PN20 J5.0.1	Ø75 HDPE CLASS PN20 J5.0.2	Ø75 HDPE CLASS PN20 J4.0.1
CHAINAGE (m)	0.000	23.495	44.551	64.767
FINISHED PLATFORM LEVEL	1193.909	1195.000	1195.385	1195.614 1195.913
PIPE INVERT LEVEL	1192.807	1193.807	1193.507	1194.007
DEPTH TO INVERT	1.302	1.993	1.945	1.906
COVER	1.223	1.913	1.865	1.826
SLOPE / LENGTH		-1:58.7 23.49m	-1:42.1 21.06m	-1:40.4 20.22m
HYDRAULICS	DESIGN Q(l/s)	0.63	0.63	0.63
	DESIGN V(m/s)	0.2	0.2	0.2

BRANCH 5

NGL ---
 PIPE ---
 JUNCTION ○
 AIR VALVE ◡
 PUMP ⊕
 TAP ●

HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	J5.0.1	T5.1.1	Ø20 HDPE CLASS PN20 P5.1.1
CHAINAGE (m)	0.000	7.803	
FINISHED PLATFORM LEVEL	1195.000	1195.000	
PIPE INVERT LEVEL	1192.999	1192.999	
DEPTH TO INVERT	2.001	2.001	
COVER	1.956	1.956	
SLOPE / LENGTH		Horizontal 1.80m	
HYDRAULICS	DESIGN Q(l/s)	0.00	
	DESIGN V(m/s)	0.0	

BRANCH 5.1

NGL ---
 PIPE ---
 JUNCTION ○
 AIR VALVE ◡
 PUMP ⊕
 TAP ●

HORIZONTAL SCALE 1:1000
 VERTICAL SCALE 1:200
 DATUM 1190.000 m M.S.L.

REFERENCE	J5.0.2	T5.2.1	Ø20 HDPE CLASS PN20 P5.2.1
CHAINAGE (m)	0.000	6.950	
FINISHED PLATFORM LEVEL	1195.452	1195.523	
PIPE INVERT LEVEL	1193.499	1193.499	
DEPTH TO INVERT	1.952	2.023	
COVER	1.908	1.979	
SLOPE / LENGTH		Horizontal 6.95m	
HYDRAULICS	DESIGN Q(l/s)	0.00	
	DESIGN V(m/s)	0.0	

BRANCH 5.2

CONSTRUCTION DRAWING

NOTES
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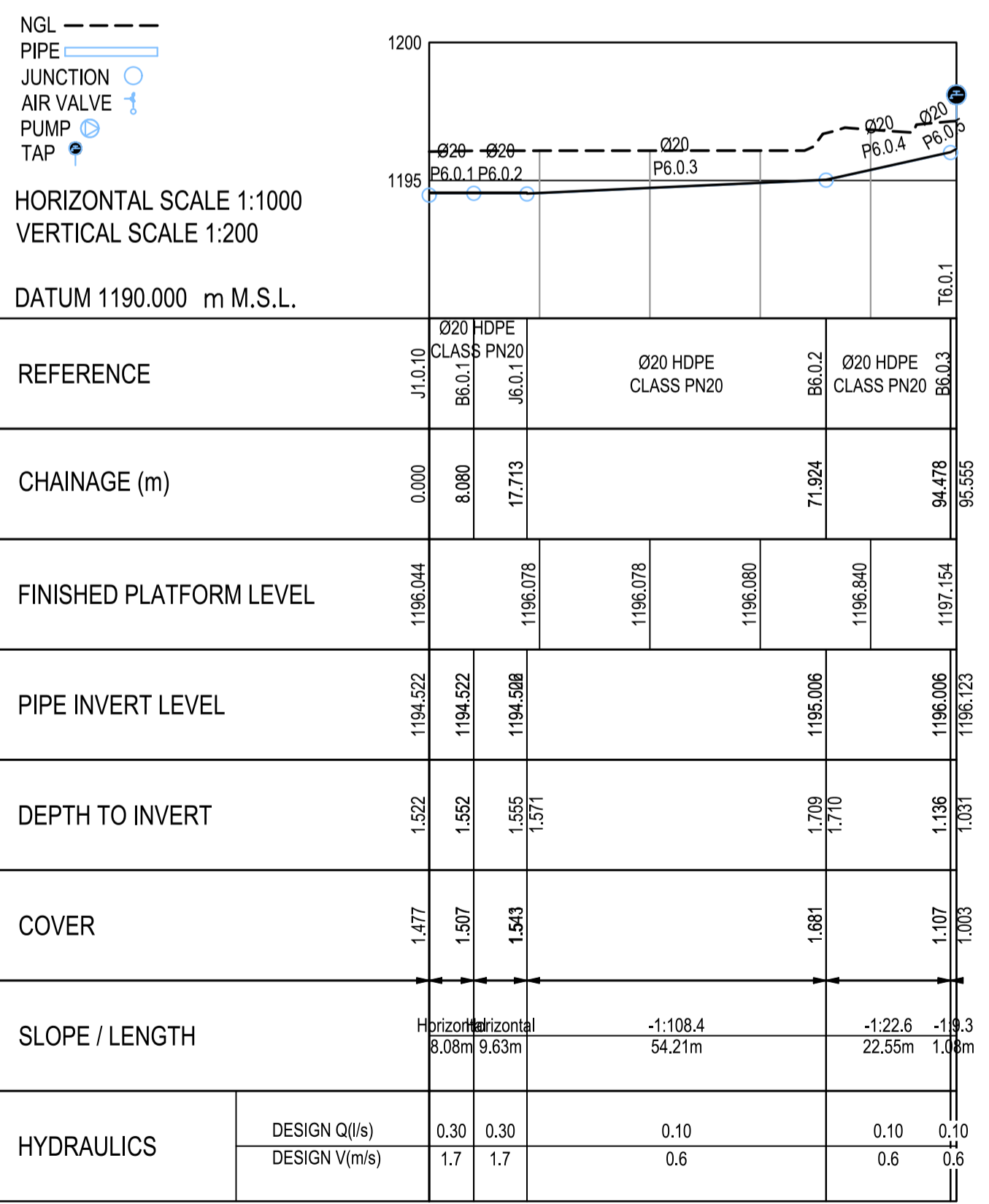
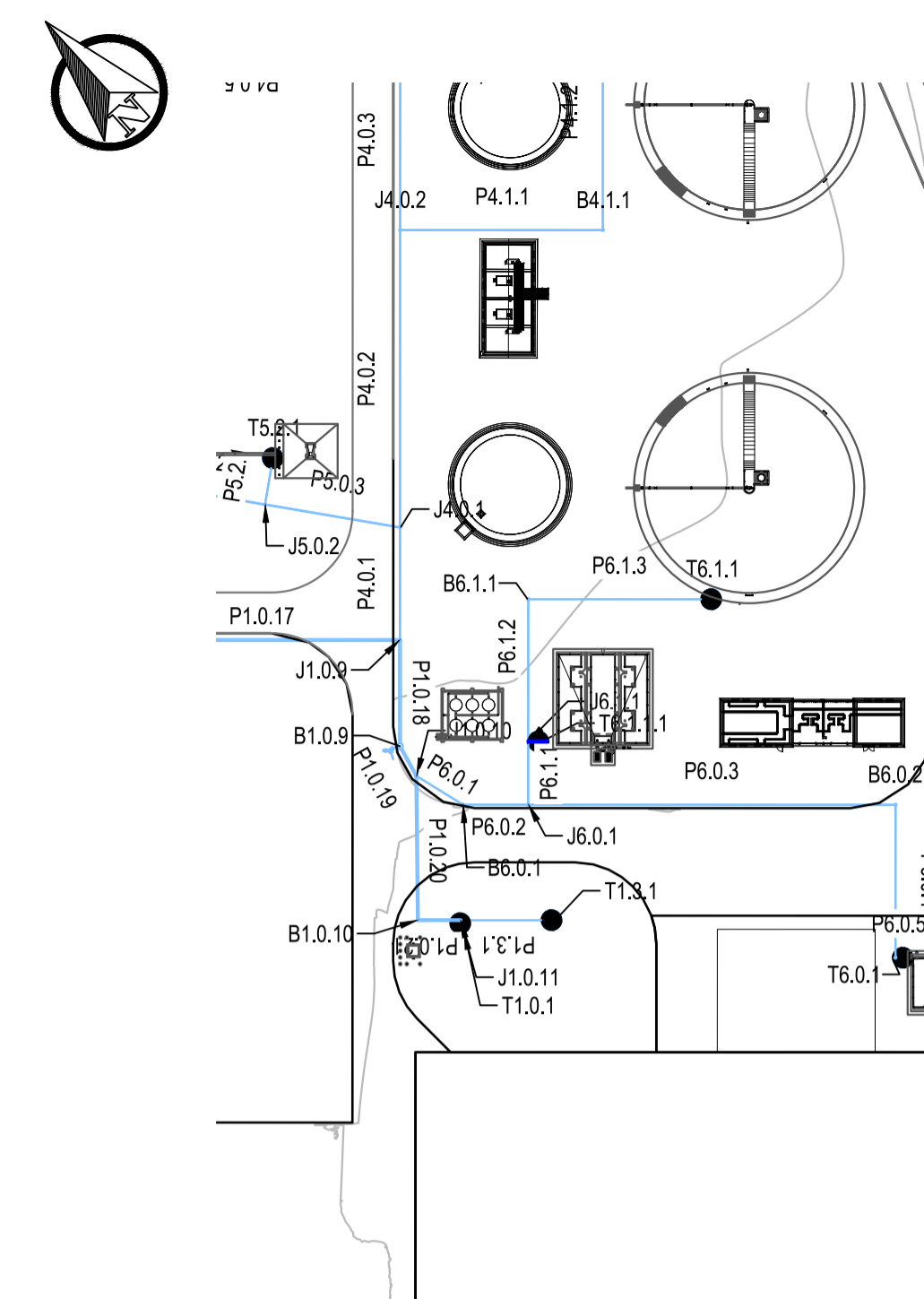
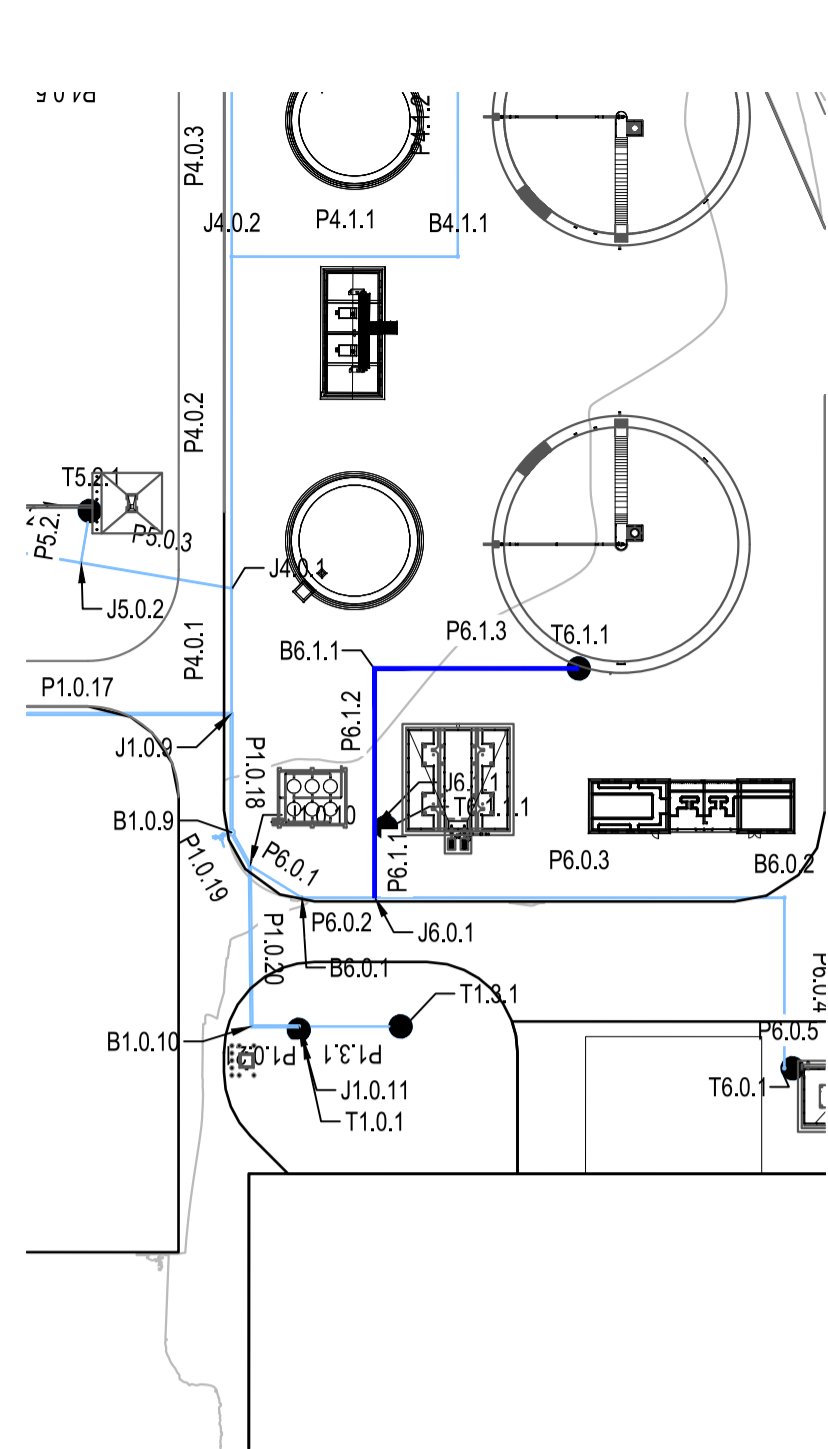
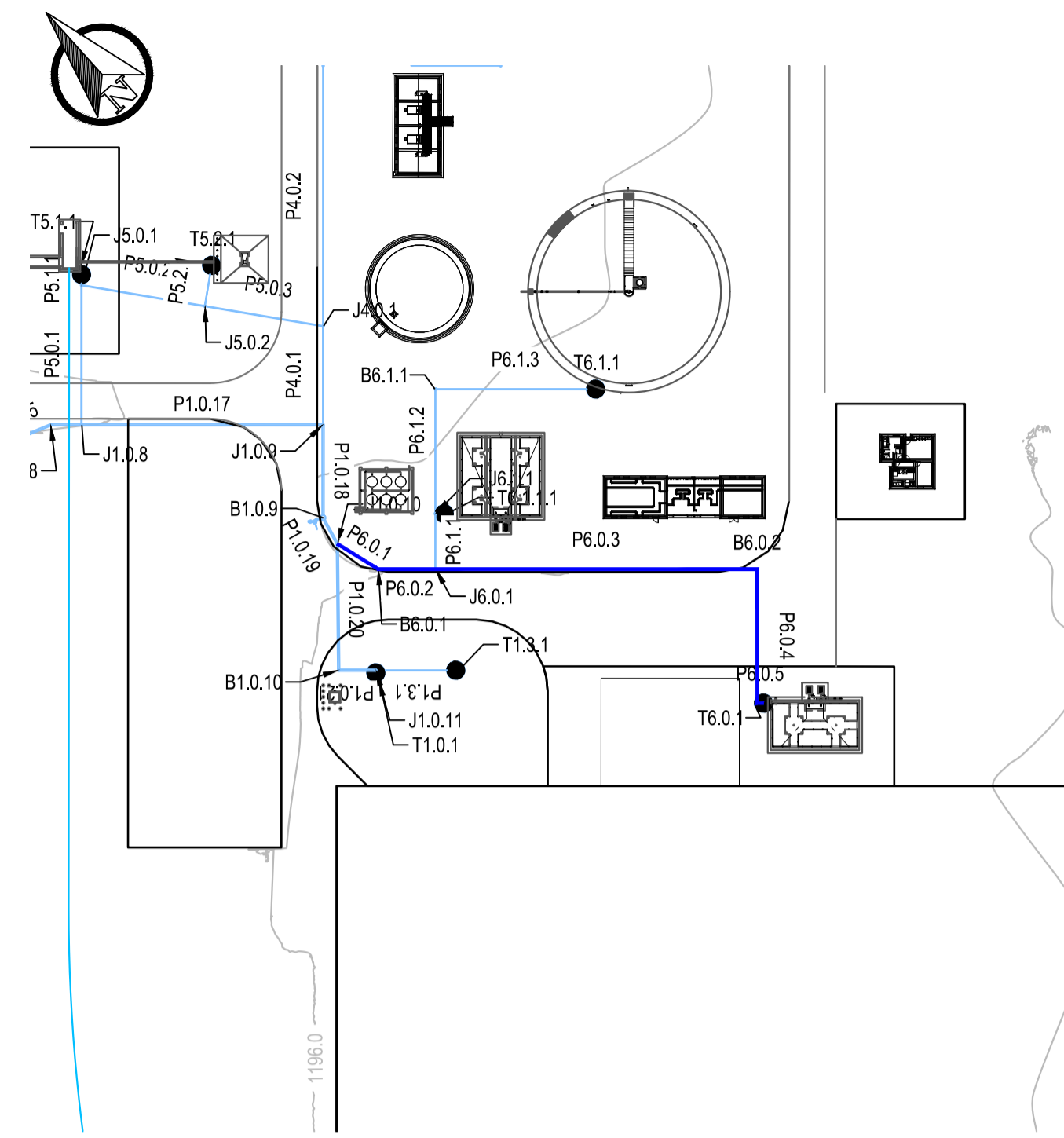
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____
 CLIENT _____ DATE _____

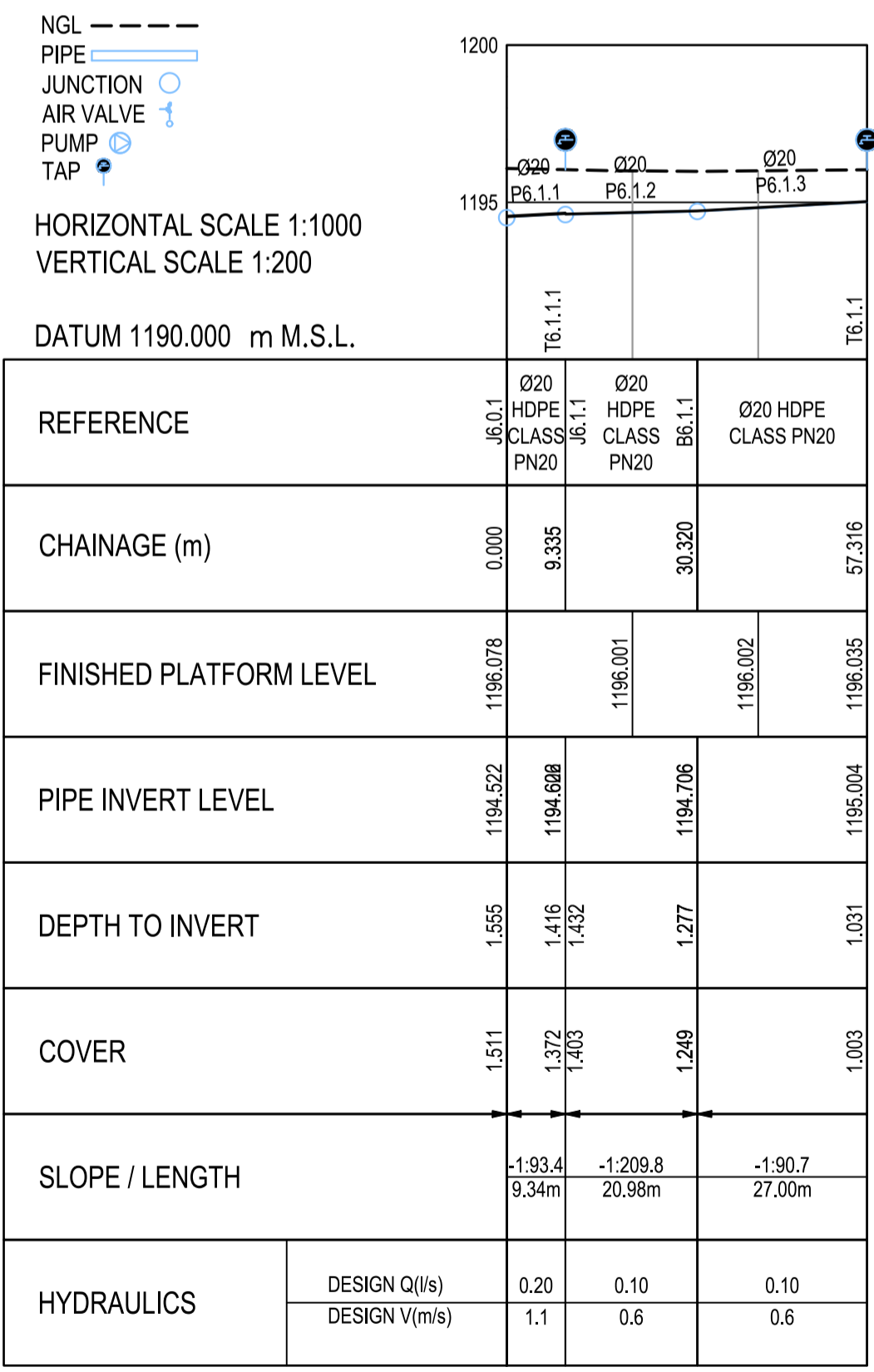
PROJECT
**POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS**

DRAWING DESCRIPTION
**SERVICE WATER
 BRANCHES 5 & 5.1 - 5.2
 PROFILE**

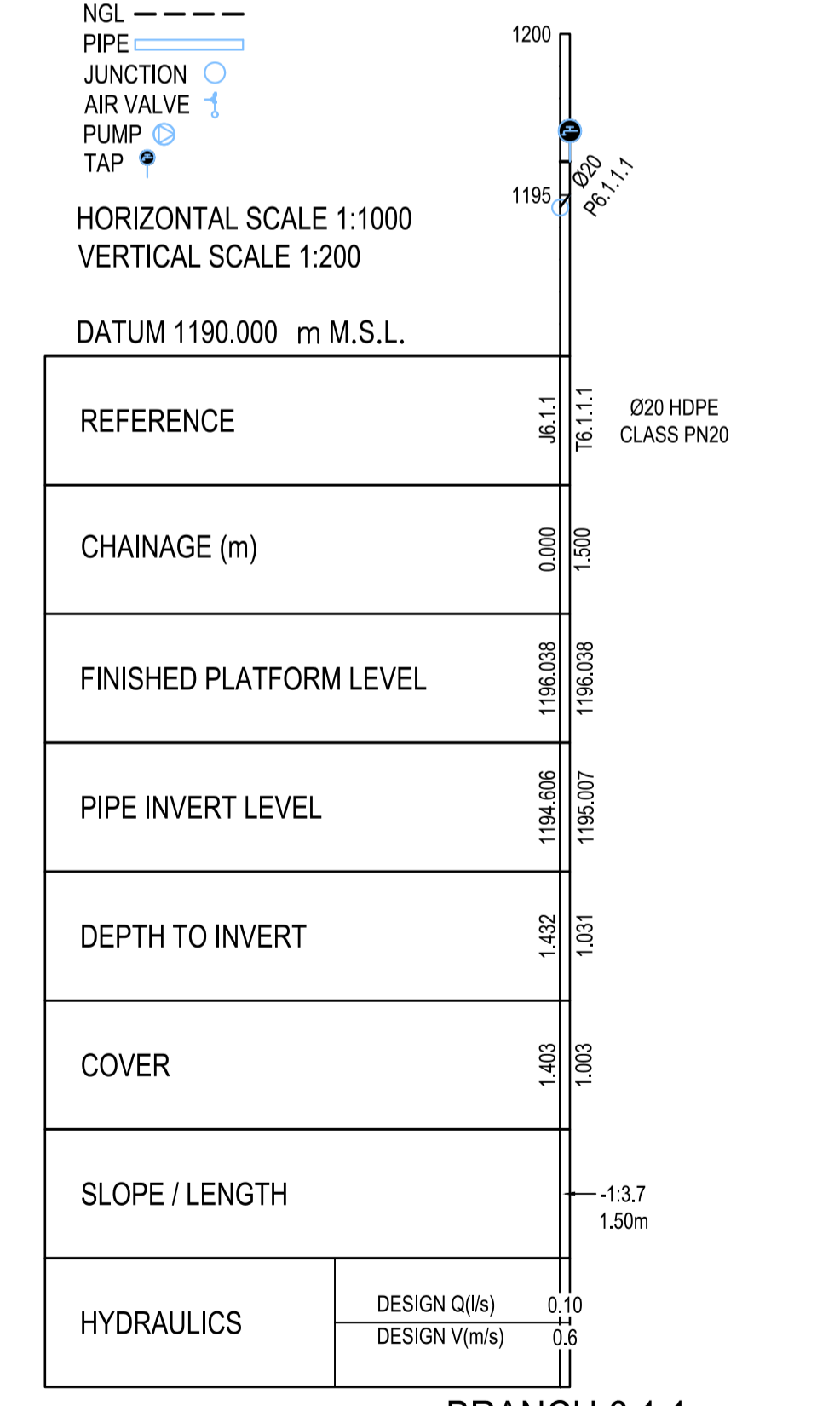
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0016	0	



BRANCH 6



BRANCH 6.1



BRANCH 6.1.1

NOTES

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 ENGINEER

PR ENG no. --- DATE ---

CLIENT --- DATE ---

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SERVICE WATER BRANCHES 6, 6.1 & 6.1.1 PROFILE

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0017	0	

STRUCTURE LIST-SERVICENETWORK					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
B1.0.1	-2 632 458.716	46 243.424	1182.383	1181.157 1.227	P1.0.1-INV IN 1181.157 P1.0.2-INV IN 1181.157
B1.0.2	-2 632 675.799	46 026.342	1183.835	1182.367 1.467	P1.0.3-INV IN 1182.367 P1.0.4-INV IN 1182.367
B1.0.3	-2 632 763.900	46 114.443	1186.181	1183.667 2.514	P1.0.6-INV IN 1183.667 P1.0.5-INV IN 1183.667
B1.0.4	-2 632 815.530	46 114.443	1186.118	1184.267 1.851	P1.0.7-INV IN 1184.267 P1.0.8-INV IN 1184.267
B1.0.5	-2 632 906.447	46 205.360	1190.305	1188.567 1.738	P1.0.11-INV IN 1188.567 P1.0.10-INV IN 1188.567
B1.0.6	-2 632 906.447	46 328.372	1192.419	1190.967 1.451	P1.0.13-INV IN 1190.967 P1.0.12-INV IN 1190.967
B1.0.7	-2 632 964.814	46 386.739	1194.063	1192.067 1.996	P1.0.14-INV IN 1192.067 P1.0.15-INV IN 1192.067
B1.0.8	-2 632 969.814	46 398.810	1193.558	1192.332 1.227	P1.0.15-INV IN 1192.332 P1.0.16-INV IN 1192.332
B1.0.9	-2 633 013.296	46 420.134	1196.025	1194.467 1.558	P1.0.19-INV IN 1194.467 P1.0.18-INV IN 1194.467
B1.0.10	-2 633 033.312	46 403.868	1196.553	1194.967 1.586	P1.0.21-INV IN 1194.967 P1.0.20-INV IN 1194.967
B1.2.1	-2 632 724.961	46 096.209	1184.420	1183.371 1.049	P1.2.2-INV IN 1183.371 P1.2.3-INV IN 1183.371
B1.2.2	-2 632 714.275	46 106.895	1184.569	1183.520 1.049	P1.2.3-INV IN 1183.520 P1.2.4-INV IN 1183.520
B2.0.1	-2 632 794.300	46 140.087	1186.178	1184.707 1.471	P2.0.3-INV IN 1184.707 P2.0.2-INV IN 1184.707
B2.0.2	-2 632 791.374	46 137.161	1186.121	1184.707 1.414	P2.0.4-INV IN 1184.707 P2.0.3-INV IN 1184.707
B2.0.3	-2 632 737.912	46 190.622	1186.143	1184.907 1.236	P2.0.6-INV IN 1184.907 P2.0.5-INV IN 1184.907
B2.0.4	-2 632 819.683	46 272.393	1190.625	1187.907 2.718	P2.0.19-INV IN 1187.907 P2.0.18-INV IN 1187.907
B2.4.1	-2 632 810.848	46 171.033	1188.458	1188.412 0.046	P2.4.5-INV IN 1188.412 P2.4.4-INV IN 1188.412
B2.8.1	-2 632 820.153	46 214.484	1188.859	1187.121 1.738	P2.8.3-INV IN 1187.121 P2.8.4-INV IN 1187.121
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B3.1.1	-2 632 874.035	46 325.765	1192.134	1191.096 1.038	P3.1.1-INV IN 1191.096 P3.1.2-INV IN 1191.096
B4.0.1	-2 632 940.578	46 492.851	1195.569	1193.834 1.735	P4.0.3-INV IN 1193.834 P4.0.5-INV IN 1193.834
B4.0.2	-2 632 904.379	46 456.652	1194.668	1192.911 1.757	P4.0.6-INV IN 1192.911 P4.0.7-INV IN 1192.911
B4.0.3	-2 632 852.099	46 456.652	1193.320	1191.011 2.309	P4.0.7-INV IN 1191.011 P4.0.8-INV IN 1191.011
B4.0.4	-2 632 807.906	46 412.460	1192.074	1190.511 1.563	P4.0.8-INV IN 1190.511 P4.0.9-INV IN 1190.511
B4.1.1	-2 632 980.602	46 495.124	1195.814	1194.311 1.503	P4.1.2-INV IN 1194.311 P4.1.1-INV IN 1194.311


STRUCTURE LIST-SERVICENETWORK					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
B4.1.2	-2 632 955.968	46 519.758	1195.792	1194.711 1.081	P4.1.3-INV IN 1194.711 P4.1.2-INV IN 1194.711
B6.0.1	-2 633 025.960	46 420.602	1196.074	1194.534 1.540	P6.0.2-INV IN 1194.534 P6.0.1-INV IN 1194.534
B6.0.2	-2 633 071.105	46 465.747	1196.716	1195.011 1.705	P6.0.4-INV IN 1195.011 P6.0.3-INV IN 1195.011
B6.0.3	-2 633 087.053	46 449.799	1197.142	1196.011 1.131	P6.0.5-INV IN 1196.011 P6.0.4-INV IN 1196.011
B6.1.1	-2 633 011.333	46 448.853	1195.984	1194.711 1.273	P6.1.3-INV IN 1194.711 P6.1.2-INV IN 1194.711
J1.0.1	-2 632 477.268	46 224.872	1182.675	1181.367 1.308	P1.0.3-INV IN 1181.367 P1.0.2-INV IN 1181.367 P1.1.1-INV IN 1181.411
J1.0.2	-2 632 739.184	46 089.727	1184.953	1183.267 1.686	P1.0.5-INV IN 1183.267 P1.0.4-INV IN 1183.267 P1.2.1-INV IN 1183.322
J1.0.3	-2 632 817.737	46 116.649	1186.593	1184.267 2.326	P1.0.8-INV IN 1184.267 P1.0.7-INV IN 1184.267 P2.0.1-INV IN 1184.307
J1.0.4	-2 632 856.545	46 155.458	1187.012	1184.967 2.045	P1.0.9-INV IN 1184.967 P1.0.8-INV IN 1184.967 P2.7.3-INV IN 1185.034
J1.0.5	-2 632 896.582	46 195.494	1189.512	1187.967 1.545	P1.0.10-INV IN 1187.967 P1.0.9-INV IN 1187.967 P2.0.24-INV IN 1188.007
J1.0.6	-2 632 906.447	46 323.035	1192.335	1190.967 1.367	P1.0.12-INV IN 1190.967 P1.0.11-INV IN 1190.967 P3.0.1-INV IN 1191.012
J1.0.7	-2 632 941.991	46 363.916	1192.634	1191.367 1.266	P1.0.14-INV IN 1191.367 P1.0.13-INV IN 1191.367 P3.0.5-INV IN 1191.412
J1.0.8	-2 632 973.442	46 402.439	1193.909	1192.567 1.342	P1.0.16-INV IN 1192.567 P1.0.17-INV IN 1192.567 P5.0.1-INV IN 1192.612
J1.0.9	-2 633 002.216	46 431.213	1195.970	1193.967 2.003	P1.0.17-INV IN 1193.967 P4.0.1-INV IN 1194.022 P1.0.18-INV IN 1193.967
J1.0.10	-2 633 018.096	46 418.752	1196.044	1194.467 1.577	P6.0.1-INV IN 1194.534 P1.0.19-INV IN 1194.467 P1.0.20-INV IN 1194.467
J1.0.11	-2 633 037.729	46 408.286	1196.517	1195.290 1.227	P1.3.1-INV IN 1195.491 P1.0.21-INV IN 1195.290 P1.0.22-INV IN 1195.290
J1.2.1	-2 632 730.623	46 098.288	1184.396	1183.335 1.061	P1.2.1-INV IN 1183.335 P1.2.2-INV IN 1183.347 P1.2.1.1-INV IN 1183.370
J1.2.2	-2 632 701.528	46 125.118	1184.785	1183.736 1.049	P1.2.4-INV IN 1183.736 P1.2.5-INV IN 1183.759 P1.2.2.1-INV OUT 1183.759
J2.0.1	-2 632 798.167	46 136.219	1186.065	1184.707 1.358	P2.0.2-INV IN 1184.707 P2.0.1-INV IN 1184.707 P2.1.1-INV IN 1184.711
J2.0.2	-2 632 743.877	46 164.658	1186.105	1184.907 1.199	P2.0.5-INV IN 1184.907 P2.0.4-INV IN 1184.907 P2.2.1-INV IN 1184.911
J2.0.3	-2 632 741.816	46 194.526	1186.260	1185.007 1.253	P2.0.7-INV IN 1185.007 P2.0.6-INV IN 1185.007 P2.3.1-INV IN 1185.011
J2.0.4	-2 632 764.575	46 217.285	1186.913	1185.757 1.156	P2.0.8-INV IN 1185.757 P2.0.7-INV IN 1185.757 P2.4.0-INV IN 1185.762
J2.0.5	-2 632 764.939	46 217.649	1186.923	1185.757 1.166	P2.0.9-INV IN 1185.757 P2.0.8-INV IN 1185.757 P2.5.1-INV IN 1185.761
J2.0.6	-2 632 776.685	46 229.395	1187.206	1186.007 1.199	P2.0.10-INV IN 1186.007 P2.0.9-INV IN 1186.007 P2.6.1-INV IN 1186.011
J2.0.7	-2 632 779.647	46 232.357	1187.276	1186.100 1.176	P2.0.11-INV IN 1186.100 P2.7.1-INV IN 1186.121 P2.0.10-INV IN 1186.100

STRUCTURE LIST-SERVICENETWORK					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
J2.0.8	-2 632 790.964	46 243.674	1188.857	1186.700 2.157	P2.0.12-INV IN 1186.700 P2.0.11-INV IN 1186.700 P2.8.1-INV IN 1186.721
J2.0.9	-2 632 795.150	46 247.860	1188.894	1186.878 2.016	P2.0.13-INV IN 1186.878 P2.0.12-INV IN 1186.878 P2.9.1-INV IN 1186.878
J2.0.10	-2 632 795.857	46 248.567	1188.900	1186.900 2.000	P2.0.14-INV IN 1186.900 P2.0.13-INV IN 1186.900 P2.10.1-INV IN 1186.912
J2.0.11	-2 632 804.151	46 256.861	1188.972	1187.307 1.666	P2.0.15-INV IN 1187.307 P2.0.14-INV IN 1187.307 P2.11.1-INV IN 1187.311
J2.0.12	-2 632 804.858	46 257.568	1188.979	1187.307 1.672	P2.0.16-INV IN 1187.307 P2.0.15-INV IN 1187.307 P2.12.1-INV IN 1187.334
J2.0.13	-2 632 813.153	46 265.863	1189.051	1187.707 1.345	P2.0.17-INV IN 1187.707 P2.0.16-INV IN 1187.707 P2.13.1-INV IN 1187.711
J2.0.14	-2 632 813.860	46 266.570	1189.058	1187.707 1.351	P2.0.18-INV IN 1187.707 P2.0.17-INV IN 1187.707 P2.14.1-INV IN 1187.734
J2.0.15	-2 632 822.780	46 269.296	1190.500	1188.007 2.493	P2.0.20-INV IN 1188.007 P2.0.19-INV IN 1188.007 P2.15.1-INV IN 1188.011
J2.0.16	-2 632 832.362	46 259.714	1190.500	1188.007 2.493	P2.0.21-INV IN 1188.007 P2.0.20-INV IN 1188.007 P2.16.1-INV IN 1188.011
J2.0.17	-2 632 835.119	46 256.957	1190.500	1188.007 2.493	P2.0.22-INV IN 1188.007 P2.0.21-INV IN 1188.007 P2.17.1-INV IN 1188.011
J2.0.18	-2 632 847.458	46 244.618	1190.500	1188.007 2.493	P2.0.23-INV IN 1188.007 P2.0.22-INV IN 1188.007 P2.18.1-INV IN 1188.011
J2.0.19	-2 632 848.872	46 243.203	1190.500	1188.007 2.493	P2.0.24-INV IN 1188.007 P2.0.23-INV IN 1188.007 P2.8.10-INV IN 1188.034
J2.4.0	-2 632 765.671	46 216.189	1188.458	1188.390 0.068	P2.4.1-INV IN 1188.412 P2.4.0-INV IN 1188.390
J2.4.1	-2 632 775.598	46 206.267	1188.458	1188.405 0.053	P2.4.2-INV IN 1188.412 P2.4.1-INV IN 1188.412 P2.4.1-INV IN 1188.405
J2.4.2	-2 632 789.736	46 192.135	1188.458	1188.405 0.053	P2.4.3-INV IN 1188.412 P2.4.2-INV IN 1188.412 P2.4.2.1-INV IN 1188.405
J2.4.3	-2 632 803.880	46 177.997	1188.458	1188.405 0.053	P2.4.4-INV IN 1188.412 P2.4.3-INV IN 1188.412 P2.4.3.1-INV IN 1188.405
J2.4.4	-2 632 823.187	46 183.372	1188.458	1188.412 0.046	P2.4.6-INV IN 1188.412 P2.4.5-INV IN 1188.412
J2.7.1	-2 632 825.909	46 186.094	1185.880	1185.834 0.046	P2.4.6-INV IN 1185.834 P2.7.1-INV IN 1185.834 P2.7.2-INV IN 1185.834
J2.7.2	-2 632 830.770	46 181.233	1187.003	1185.707 1.296	P2.7.2-INV IN 1185.707 P2.7.3-INV IN 1185.707 P2.7.2.1-INV OUT 1186.879
J2.8.1	-2 632 794.061	46 240.576	1188.857	1186.755 2.102	P2.8.1-INV IN 1186.771 P2.8.2-INV IN 1186.771 P2.8.1.1-INV IN 1186.755
J2.8.2	-2 632 815.486	46 219.151	1188.858	1187.005 1.854	P2.8.2-INV IN 1187.021 P2.8.3-INV IN 1187.021 P2.8.2.1-INV IN 1187.005
J2.8.3	-2 632 824.339	46 218.670	1188.904	1187.205 1.699	P2.8.4-INV IN 1187.221 P2.8.5-INV IN 1187.221 P2.8.3.1-INV IN 1187.205
J2.8.4	-2 632 825.046	46 219.377	1188.910	1187.212 1.698	P2.8.5-INV IN 1187.221 P2.8.6-INV IN 1187.221 P2.10.4-INV IN 1187.212
J2.8.5	-2 632 833.341	46 227.672	1188.979	1187.405 1.575	P2.8.6-INV IN 1187.421 P2.8.7-INV IN 1187.421 P2.8.4.1-INV IN 1187.405
J2.8.6	-2 632 834.048	46 228.379	1188.985	1187.412 1.574	P2.8.7-INV IN 1187.421 P2.8.8-INV IN 1187.421 P2.12.4-INV IN 1187.412

CONSTRUCTION DRAWING

NOTES
1.1 DO NOT SCALE THE DRAWINGS.
1.2 ALL DIMENSIONS TO BE VERIFIED ON SITE, PRIOR TO MANUFACTURING OR ORDERING OF EQUIPMENT.
1.3 ANY IN-CLEARITIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSULTING ENGINEER
1.4 THIS DRAWING, OR PART THEREOF, SHALL NOT BE USED FOR ANY OTHER INSTALLATION PROJECT OTHER THAN THIS ONE.
1.5 THIS DRAWING FORMS PART OF THE SPECIFICATION AND MUST BE READ IN CONJUNCTION WITH THE SAME.

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CLIENT

CITY OF
Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER
PR ENG no. _____ DATE _____
CLIENT _____ DATE _____

PROJECT
**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION
**SERVICE WATER
JUNCTION DETAILS**

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	N/A	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0018		

STRUCTURE LIST-SERVICENETWORK					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
J2.8.7	-2 632 842.342	46 236.673	1189.055	1187.711 1.344	P2.8.8-INV IN 1187.734 P2.8.9-INV IN 1187.734 P2.8.5.1-INV IN 1187.711
J2.8.8	-2 632 843.049	46 237.380	1189.061	1187.734 1.327	P2.8.9-INV IN 1187.734 P2.8.10-INV IN 1187.734 P2.14.4-INV IN 1187.734
J2.10.1	-2 632 797.540	46 246.884	1190.845	1190.812 0.034	P2.10.2-INV IN 1190.812 P2.10.1-INV IN 1190.812
J2.10.2	-2 632 810.374	46 234.050	1190.845	1190.800 0.045	P2.10.3-INV IN 1190.800 P2.10.2-INV IN 1190.812 P2.10.2.1-INV IN 1190.805
J2.10.3	-2 632 824.622	46 219.802	1190.845	1190.800 0.045	P2.10.4-INV IN 1190.812 P2.10.3-INV IN 1190.800
J2.12.1	-2 632 806.541	46 255.885	1190.845	1190.812 0.034	P2.12.2-INV IN 1190.812 P2.12.1-INV IN 1190.812
J2.12.2	-2 632 819.375	46 243.051	1190.845	1190.805 0.041	P2.12.3-INV IN 1190.812 P2.12.2-INV IN 1190.812 P2.12.1.1-INV IN 1190.805
J2.12.3	-2 632 833.623	46 228.803	1190.845	1190.812 0.034	P2.12.4-INV IN 1190.812 P2.12.3-INV IN 1190.812
J2.14.1	-2 632 815.543	46 264.887	1190.845	1190.812 0.034	P2.14.2-INV IN 1190.812 P2.14.1-INV IN 1190.812
J2.14.2	-2 632 828.377	46 252.053	1190.845	1190.805 0.041	P2.14.3-INV IN 1190.812 P2.14.2-INV IN 1190.812 P2.14.2.1-INV IN 1190.805
J2.14.3	-2 632 842.625	46 237.804	1190.845	1190.812 0.034	P2.14.4-INV IN 1190.812 P2.14.3-INV IN 1190.812
J3.0.1	-2 632 888.876	46 340.606	1192.215	1191.144 1.070	P3.0.1-INV IN 1191.144 P3.0.2-INV IN 1191.144 P3.1.1-INV IN 1191.177
J3.0.2	-2 632 892.563	46 352.321	1192.260	1191.190 1.070	P3.0.3-INV IN 1191.190 P3.0.4-INV IN 1191.190 P3.2.1-INV IN 1191.234
J3.0.3	-2 632 923.075	46 382.833	1192.409	1191.339 1.070	P3.0.4-INV IN 1191.339 P3.0.5-INV IN 1191.339 P3.3.1-INV IN 1191.383
J4.0.1	-2 632 990.476	46 442.953	1195.913	1194.012 1.900	P4.0.1-INV IN 1194.022 P4.0.2-INV IN 1194.034 P5.0.3-INV IN 1194.012
J4.0.2	-2 632 959.454	46 473.976	1195.689	1194.011 1.677	P4.0.2-INV IN 1194.034 P4.0.3-INV IN 1194.034 P4.1.1-INV IN 1194.011
J4.0.3	-2 632 909.493	46 461.766	1194.883	1193.011 1.872	P4.0.5-INV IN 1193.034 P4.0.6-INV IN 1193.011 P4.2.1-INV IN 1193.011
J5.0.1	-2 632 956.829	46 419.052	1195.000	1193.011 1.989	P5.0.1-INV IN 1193.012 P5.0.2-INV IN 1193.012 P5.1.1-INV IN 1193.011
J5.0.2	-2 632 973.995	46 431.245	1195.452	1193.511 1.940	P5.0.2-INV IN 1193.512 P5.0.3-INV IN 1193.512 P5.2.1-INV IN 1193.511
J6.0.1	-2 633 032.772	46 427.414	1196.078	1194.511 1.566	P6.0.3-INV IN 1194.511 P6.0.2-INV IN 1194.534 P6.1.1-INV IN 1194.534
J6.1.1	-2 633 026.172	46 434.015	1196.038	1194.611 1.427	P6.1.2-INV IN 1194.611 P6.1.1-INV IN 1194.634 P6.1.1.1-INV IN 1194.611
Ponds	-2 632 444.891	46 229.532	1181.250	1180.054 1.196	P_intake-INV OUT 1180.054
ServicePump	-2 632 453.489	46 238.198	1183.300	1180.929 2.371	P1.0.1-INV IN 1181.105 P_intake-INV IN 1180.929
T1.0.1	-2 633 038.049	46 407.965	1196.528	1195.302 1.227	P1.0.22-INV IN 1195.302
T1.1.1	-2 632 482.925	46 230.529	1182.973	1181.947 1.026	P1.1.1-INV IN 1181.947

STRUCTURE LIST-SERVICENETWORK					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
T1.2.1	-2 632 689.541	46 161.216	1185.277	1184.250 1.026	P1.2.5-INV IN 1184.250
T1.2.1.1	-2 632 731.549	46 105.154	1184.447	1183.420 1.026	P1.2.1.1-INV IN 1183.420
T1.2.2.1	-2 632 700.200	46 123.791	1184.785	1183.759 1.026	P1.2.2.1-INV IN 1183.759
T1.3.1	-2 633 047.256	46 417.812	1196.443	1195.416 1.026	P1.3.1-INV IN 1195.416
T2.1.1	-2 632 798.485	46 136.538	1186.071	1185.045 1.026	P2.1.1-INV IN 1185.045
T2.2.1	-2 632 744.528	46 185.309	1186.124	1185.098 1.026	P2.2.1-INV IN 1185.098
T2.3.1	-2 632 742.877	46 193.466	1186.309	1185.222 1.087	P2.3.1-INV IN 1185.222
T2.4.1.1	-2 632 775.457	46 205.873	1188.429	1188.405 0.025	P2.4.1.1-INV IN 1188.405
T2.4.2.1	-2 632 789.633	46 191.749	1188.429	1188.405 0.025	P2.4.2.1-INV IN 1188.405
T2.4.3.1	-2 632 803.744	46 177.576	1188.429	1188.405 0.025	P2.4.3.1-INV IN 1188.405
T2.5.1	-2 632 765.999	46 216.588	1186.918	1185.892 1.026	P2.5.1-INV IN 1185.892
T2.6.1	-2 632 777.773	46 228.361	1187.207	1186.180 1.026	P2.6.1-INV IN 1186.180
T2.7.2.1	-2 632 828.048	46 178.510	1186.952	1186.828 0.124	P2.7.2.1-INV IN 1186.828
T2.8.1.1	-2 632 793.762	46 240.278	1188.850	1186.511 2.339	P2.8.1.1-INV OUT 1186.511
T2.8.2.1	-2 632 815.239	46 218.904	1188.864	1186.811 2.053	P2.8.2.1-INV OUT 1186.811
T2.8.3.1	-2 632 824.576	46 218.433	1188.904	1187.011 1.893	P2.8.3.1-INV IN 1187.011
T2.8.4.1	-2 632 833.580	46 227.432	1188.980	1187.311 1.669	P2.8.4.1-INV IN 1187.311
T2.8.5.1	-2 632 842.583	46 236.432	1189.055	1187.711 1.344	P2.8.5.1-INV IN 1187.711
T2.9.1	-2 632 796.727	46 246.283	1188.894	1187.840 1.053	P2.9.1-INV IN 1187.840
T2.10.2.1	-2 632 809.313	46 232.989	1190.829	1190.805 0.025	P2.10.2.1-INV IN 1190.805
T2.11.1	-2 632 805.728	46 255.284	1188.972	1187.311 1.661	P2.11.1-INV IN 1187.311
T2.12.2.1	-2 632 818.315	46 241.991	1190.829	1190.805 0.025	P2.12.1.1-INV IN 1190.805
T2.13.1	-2 632 814.729	46 264.286	1189.051	1187.711 1.340	P2.13.1-INV IN 1187.711
T2.14.2.1	-2 632 827.316	46 250.992	1190.829	1190.805 0.025	P2.14.2.1-INV IN 1190.805
T2.15.1	-2 632 821.638	46 268.154	1190.492	1188.011 2.481	P2.15.1-INV IN 1188.011

STRUCTURE LIST-SERVICENETWORK					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
T2.16.1	-2 632 839.031	46 266.379	1190.500	1188.011 2.489	P2.16.1-INV IN 1188.011
T2.17.1	-2 632 833.977	46 255.815	1190.491	1188.011 2.479	P2.17.1-INV IN 1188.011
T2.18.1	-2 632 846.316	46 243.475	1190.501	1188.011 2.490	P2.18.1-INV IN 1188.011
T3.1.1	-2 632 870.057	46 329.742	1192.139	1191.113 1.026	P3.1.2-INV IN 1191.113
T3.2.1	-2 632 892.097	46 352.790	1192.260	1191.234 1.026	P3.2.1-INV IN 1191.234
T3.3.1	-2 632 922.553	46 383.355	1192.409	1191.383 1.026	P3.3.1-INV IN 1191.383
T4.0.1	-2 632 812.598	46 407.768	1192.024	1190.511 1.512	P4.0.9-INV IN 1190.511
T4.1.1	-2 632 967.403	46 531.193	1195.903	1194.877 1.026	P4.1.3-INV IN 1194.877
T4.2.1	-2 632 901.162	46 470.097	1194.879	1193.547 1.332	P4.2.1-INV IN 1193.547
T5.1.1	-2 632 955.554	46 420.327	1195.000	1193.011 1.989	P5.1.1-INV IN 1193.011
T5.2.1	-2 632 969.970	46 436.911	1195.523	1193.511 2.012	P5.2.1-INV IN 1193.511
T6.0.1	-2 633 087.815	46 450.561	1197.154	1196.127 1.026	P6.0.5-INV IN 1196.127
T6.1.1	-2 633 030.423	46 467.943	1196.035	1195.009 1.026	P6.1.3-INV IN 1195.009
T6.1.1.1	-2 633 027.232	46 435.076	1196.038	1195.012 1.026	P6.1.1.1-INV IN 1195.012

CONSTRUCTION DRAWING

NOTES

1.1 DO NOT SCALE THE DRAWINGS.
1.2 ALL DIMENSIONS TO BE VERIFIED ON SITE, PRIOR TO MANUFACTURING OR ORDERING OF EQUIPMENT.
1.3 ANY IN-CLEARITIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSULTING ENGINEER
1.4 THIS DRAWING, OR PART THEREOF, SHALL NOT BE USED FOR ANY OTHER INSTALLATION PROJECT OTHER THAN THIS ONE.
1.5 THIS DRAWING FORMS PART OF THE SPECIFICATION AND MUST BE READ IN CONJUNCTION WITH THE SAME.

ZAKUMI
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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SERVICE WATER JUNCTION DETAILS

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	N/A	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2004-0019	0	

PIPE LIST-SERVICENETWORK					
PIPE NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	SLOPE	DIAMETER AND CLASS
P_Intake	1180.054	1180.929	12.174	-7.17%	315mm Class PN20
P1.0.1	1181.105	1181.157	7.343	-0.70%	280mm Class PN20
P1.0.2	1181.157	1181.367	26.189	-0.80%	280mm Class PN20
P1.0.3	1181.367	1182.367	280.717	-0.36%	280mm Class PN20
P1.0.4	1182.367	1183.267	89.597	-1.00%	280mm Class PN20
P1.0.5	1183.267	1183.667	34.908	-1.14%	280mm Class PN20
P1.0.6	1183.667	1184.267	51.607	-1.16%	280mm Class PN20
P1.0.7	1184.267	1184.267	3.070	0.00%	280mm Class PN20
P1.0.8	1184.967	1184.267	54.841	1.28%	280mm Class PN20
P1.0.9	1184.967	1187.967	56.864	-5.30%	280mm Class PN20
P1.0.10	1187.967	1188.567	13.935	-4.30%	280mm Class PN20
P1.0.11	1190.967	1188.567	117.671	2.04%	280mm Class PN20
P1.0.12	1190.967	1190.967	5.307	0.00%	280mm Class PN20
P1.0.13	1191.367	1190.967	50.220	0.80%	280mm Class PN20
P1.0.14	1191.367	1192.067	32.239	-2.17%	280mm Class PN20
P1.0.15	1192.067	1192.332	13.040	-2.03%	280mm Class PN20
P1.0.16	1192.332	1192.567	5.099	-4.59%	280mm Class PN20
P1.0.17	1192.567	1193.967	40.676	-3.44%	280mm Class PN20
P1.0.18	1193.967	1194.467	15.644	-3.19%	280mm Class PN20
P1.0.19	1194.467	1194.467	4.963	0.00%	280mm Class PN20
P1.0.20	1194.467	1194.967	21.247	-2.35%	280mm Class PN20
P1.0.21	1195.290	1194.967	6.220	5.17%	280mm Class PN20
P1.0.22	1195.290	1195.302	0.409	-2.45%	280mm Class PN20
P1.1.1	1181.411	1181.947	7.968	-6.70%	20mm Class PN20
P1.2.1	1183.322	1183.335	12.056	-0.11%	50mm Class PN20
P1.2.1.1	1183.370	1183.420	6.899	-0.73%	20mm Class PN20
P1.2.2	1183.347	1183.371	5.999	-0.40%	20mm Class PN20
P1.2.2.1	1183.759	1183.759	1.837	0.01%	20mm Class PN20
P1.2.3	1183.371	1183.520	15.063	-0.98%	20mm Class PN20
P1.2.4	1183.520	1183.736	22.199	-0.97%	20mm Class PN20
P1.2.5	1183.759	1184.250	38.006	-1.29%	20mm Class PN20
P1.3.1	1195.416	1195.491	13.422	-0.55%	20mm Class PN20
P2.0.1	1184.307	1184.707	27.630	-1.45%	90mm Class PN20
P2.0.2	1184.707	1184.707	5.418	0.00%	90mm Class PN20
P2.0.3	1184.707	1184.707	4.087	0.00%	90mm Class PN20
P2.0.4	1184.707	1184.907	67.121	-0.30%	90mm Class PN20
P2.0.5	1184.907	1184.907	8.384	0.00%	90mm Class PN20
P2.0.6	1184.907	1185.007	5.473	-1.81%	90mm Class PN20
P2.0.7	1185.007	1185.757	32.146	-2.33%	90mm Class PN20
P2.0.8	1185.757	1185.757	0.464	0.00%	90mm Class PN20
P2.0.9	1185.757	1186.007	16.564	-1.51%	90mm Class PN20
P2.0.10	1186.007	1186.100	4.141	-2.23%	90mm Class PN20
P2.0.11	1186.100	1186.700	15.969	-3.75%	90mm Class PN20
P2.0.12	1186.700	1186.900	5.876	-3.38%	90mm Class PN20
P2.0.13	1186.900	1186.900	0.949	0.00%	90mm Class PN20
P2.0.14	1186.900	1187.307	11.689	-3.47%	90mm Class PN20
P2.0.15	1187.307	1187.307	0.949	0.00%	90mm Class PN20
P2.0.16	1187.307	1187.707	11.689	-3.41%	90mm Class PN20
P2.0.17	1187.707	1187.707	0.949	0.00%	90mm Class PN20
P2.0.18	1187.707	1187.907	8.196	-2.43%	90mm Class PN20


PIPE LIST-SERVICENETWORK					
PIPE NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	SLOPE	DIAMETER AND CLASS
P2.0.19	1187.907	1188.007	4.339	-2.28%	90mm Class PN20
P2.0.20	1188.007	1188.007	13.499	0.00%	90mm Class PN20
P2.0.21	1188.007	1188.007	3.849	0.00%	90mm Class PN20
P2.0.22	1188.007	1188.007	17.399	0.00%	90mm Class PN20
P2.0.23	1188.007	1188.007	1.949	0.00%	90mm Class PN20
P2.0.24	1188.007	1188.007	67.420	0.00%	90mm Class PN20
P2.1.1	1184.711	1185.045	0.526	-74.12%	20mm Class PN20
P2.2.1	1184.911	1185.098	0.892	-20.30%	20mm Class PN20
P2.3.1	1185.011	1185.222	1.466	-14.03%	20mm Class PN20
P2.4.0	1185.762	1188.390	3.104	-169.54%	75mm Class PN20
P2.4.1	1188.412	1188.412	13.984	0.00%	20mm Class PN20
P2.4.1.1	1188.405	1188.405	0.386	0.00%	20mm Class PN20
P2.4.2	1188.412	1188.412	19.940	0.00%	20mm Class PN20
P2.4.2.1	1188.405	1188.405	0.368	0.00%	20mm Class PN20
P2.4.3	1188.412	1188.412	19.948	0.00%	20mm Class PN20
P2.4.3.1	1188.405	1188.405	0.410	0.00%	20mm Class PN20
P2.4.4	1188.412	1188.412	9.801	0.00%	20mm Class PN20
P2.4.5	1188.412	1188.412	17.399	0.00%	20mm Class PN20
P2.4.6	1188.412	1185.834	4.597	66.96%	20mm Class PN20
P2.5.1	1185.761	1185.892	1.457	-8.71%	20mm Class PN20
P2.6.1	1186.011	1186.180	1.463	-11.28%	20mm Class PN20
P2.7.1	1186.121	1185.834	65.375	0.44%	20mm Class PN20
P2.7.2	1185.834	1185.707	6.826	1.85%	20mm Class PN20
P2.7.2.1	1186.879	1186.828	3.800	1.33%	20mm Class PN20
P2.7.3	1185.707	1185.034	36.407	1.85%	20mm Class PN20
P2.8.1	1186.721	1186.771	4.330	-1.14%	20mm Class PN20
P2.8.1.1	1186.511	1186.755	0.446	-57.67%	20mm Class PN20
P2.8.2	1186.771	1187.021	30.250	-0.83%	20mm Class PN20
P2.8.2.1	1186.811	1187.005	0.357	-55.31%	20mm Class PN20
P2.8.3	1187.021	1187.121	6.550	-1.52%	20mm Class PN20
P2.8.3.1	1187.011	1187.205	0.346	-57.71%	20mm Class PN20
P2.8.4	1187.121	1187.221	5.870	-1.69%	20mm Class PN20
P2.8.4.1	1187.311	1187.405	0.305	-27.60%	20mm Class PN20
P2.8.5	1187.221	1187.221	0.949	0.00%	20mm Class PN20
P2.8.5.1	1187.711	1187.711	0.291	0.00%	20mm Class PN20
P2.8.6	1187.221	1187.421	11.681	-1.71%	20mm Class PN20
P2.8.7	1187.421	1187.421	0.949	0.00%	20mm Class PN20
P2.8.8	1187.421	1187.734	11.684	-2.66%	20mm Class PN20
P2.8.9	1187.734	1187.734	0.949	0.00%	20mm Class PN20
P2.8.10	1187.734	1188.034	8.191	-3.64%	20mm Class PN20
P2.9.1	1186.878	1187.840	2.413	-43.16%	90mm Class PN20
P2.10.1	1186.912	1190.812	4.552	-163.86%	20mm Class PN20
P2.10.2	1190.812	1190.812	18.099	0.00%	20mm Class PN20
P2.10.2.1	1190.805	1190.805	1.449	0.00%	20mm Class PN20
P2.10.3	1190.800	1190.800	20.099	0.00%	50mm Class PN20
P2.10.4	1190.812	1187.212	3.648	600.00%	20mm Class PN20
P2.11.1	1187.311	1187.311	2.179	0.00%	20mm Class PN20
P2.12.1	1187.334	1190.812	4.195	-146.12%	20mm Class PN20
P2.12.1.1	1190.805	1190.805	1.449	0.00%	20mm Class PN20
P2.12.2	1190.812	1190.812	18.099	0.00%	20mm Class PN20

PIPE LIST-SERVICENETWORK					
PIPE NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	SLOPE	DIAMETER AND CLASS
P2.12.3	1190.812	1190.812	20.099	0.00%	20mm Class PN20
P2.12.4	1190.812	1187.412	3.461	566.67%	20mm Class PN20
P2.13.1	1187.711	1187.711	2.179	0.00%	20mm Class PN20
P2.14.1	1187.734	1190.812	3.870	-129.32%	20mm Class PN20
P2.14.2	1190.812	1190.812	18.099	0.00%	20mm Class PN20
P2.14.2.1	1190.805	1190.805	1.449	0.00%	20mm Class PN20
P2.14.3	1190.812	1190.812	20.099	0.00%	20mm Class PN20
P2.14.4	1190.812	1187.734	3.141	512.99%	20mm Class PN20
P2.15.1	1188.011	1188.011	1.565	0.00%	20mm Class PN20
P2.16.1	1188.011	1188.011	9.378	0.00%	20mm Class PN20
P2.17.1	1188.011	1188.011	1.565	0.00%	20mm Class PN20
P2.18.1	1188.011	1188.011	1.565	0.00%	20mm Class PN20
P3.0.1	1191.012	1191.144	24.799	-0.53%	75mm Class PN20
P3.0.2	1191.144	1191.188	10.840	-0.40%	75mm Class PN20
P3.0.3	1191.188	1191.190	5.626	-0.04%	75mm Class PN20
P3.0.4	1191.190	1191.339	43.100	-0.35%	75mm Class PN20
P3.0.5	1191.339	1191.412	26.701	-0.27%	75mm Class PN20
P3.1.1	1191.177	1191.096	20.938	0.38%	50mm Class PN20
P3.1.2	1191.108	1191.113	5.575	-0.09%	20mm Class PN20
P3.2.1	1191.234	1191.234	0.610	-0.04%	20mm Class PN20
P3.3.1	1191.383	1191.383	0.688	0.05%	20mm Class PN20
P4.0.1	1194.022	1194.022	16.552	0.00%	50mm Class PN20
P4.0.2	1194.034	1194.034	43.822	0.00%	20mm Class PN20
P4.0.3	1194.034	1193.834	26.645	0.75%	20mm Class PN20
P4.0.5	1193.834	1193.034	43.918	1.82%	20mm Class PN20
P4.0.6	1193.011	1192.911	7.183	1.38%	20mm Class PN20
P4.0.7	1192.911	1191.011	52.285	3.63%	20mm Class PN20
P4.0.8	1191.011	1190.511	62.449	0.80%	20mm Class PN20
P4.0.9	1190.511	1190.511	6.584	0.00%	20mm Class PN20
P4.1.1	1194.011	1194.311	28.859	-1.00%	20mm Class PN20
P4.1.2	1194.311	1194.711	34.790	-1.15%	20mm Class PN20
P4.1.3	1194.711	1194.877	16.122	-1.03%	20mm Class PN20
P4.2.1	1193.011	1193.547	11.744	-4.55%	20mm Class PN20
P5.0.1	1192.612	1193.012	23.449	-1.70%	75mm Class PN20
P5.0.2	1193.012	1193.512	21.022	-2.37%	75mm Class PN20
P5.0.3	1193.512	1194.012	20.183	-2.47%	75mm Class PN20
P5.1.1	1193.011	1193.011	1.753	0.00%	20mm Class PN20
P5.2.1	1193.511	1193.511	6.908	0.00%	20mm Class PN20
P6.0.1	1194.534	1194.534	8.048	0.00%	20mm Class PN20
P6.0.2	1194.534	1194.534	9.583	0.00%	20mm Class PN20
P6.0.3	1194.511	1195.011	54.163	-0.92%	20mm Class PN20
P6.0.4	1195.011	1196.011	22.526	-4.43%	20mm Class PN20
P6.0.5	1196.011	1196.127	1.035	-10.80%	20mm Class PN20
P6.1.1	1194.534	1194.634	9.285	-1.07%	20mm Class PN20
P6.1.1.1	1194.611	1195.012	1.505	-26.71%	20mm Class PN20
P6.1.2	1194.611	1194.711	20.934	-0.48%	20mm Class PN20
P6.1.3	1194.711	1195.009	26.948	-1.10%	20mm Class PN20

CONSTRUCTION DRAWING

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CLIENT

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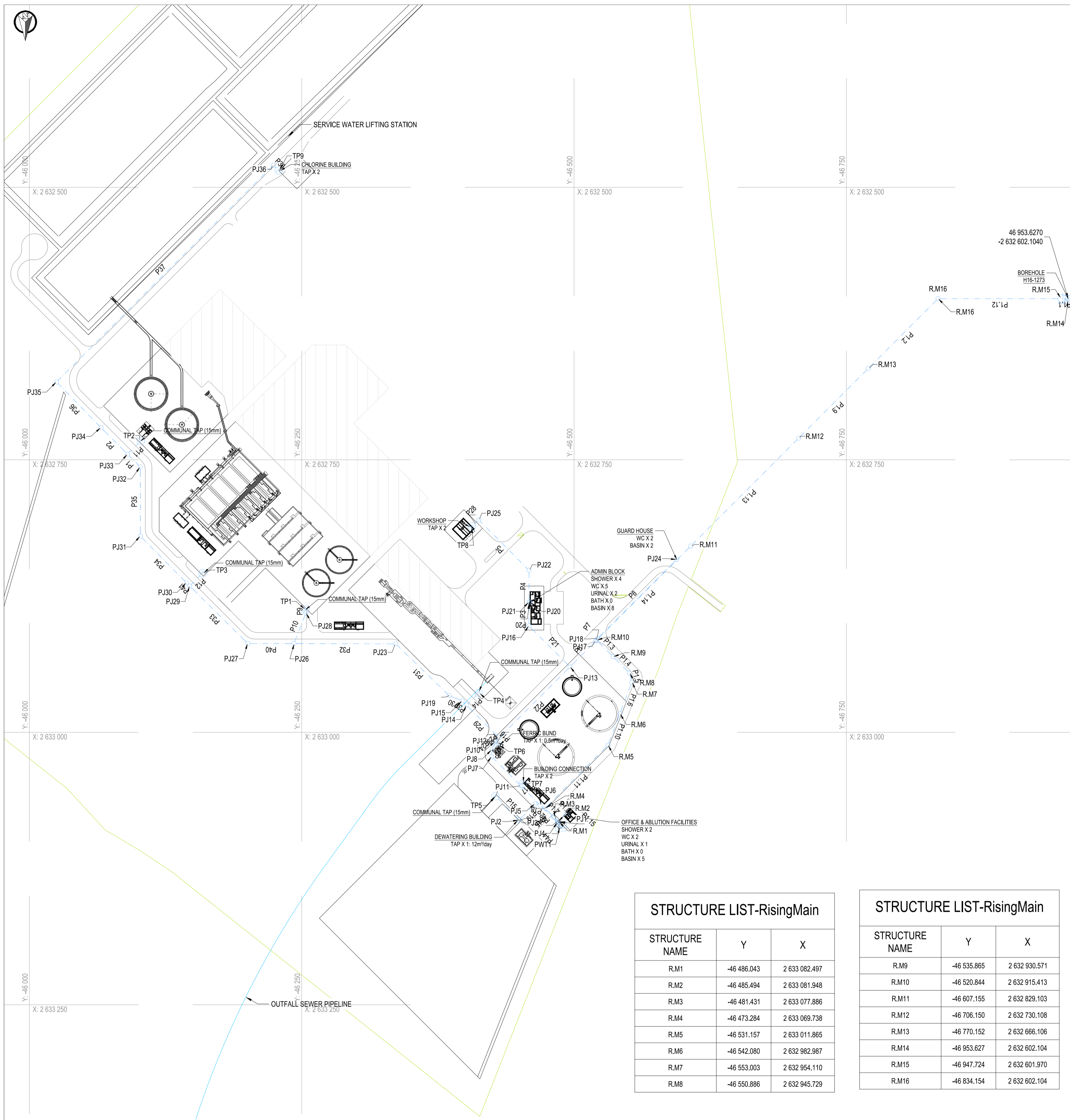
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER
PR ENG no. _____ DATE _____
CLIENT _____ DATE _____

PROJECT
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION
SERVICE WATER PIPE DETAILS

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	N/A	A1
DRAWING NUMBER		



STRUCTURE LIST-PotableWaterGravity		
STRUCTURE NAME	Y	X
PJ1	-46 492.945	2 633 074.498
PJ2	-46 449.280	2 633 080.616
PJ3	-46 449.634	2 633 080.262
PJ4	-46 484.787	2 633 082.656
PJ5	-46 464.174	2 633 065.722
PJ6	-46 469.115	2 633 066.984
PJ7	-46 424.435	2 633 022.303
PJ8	-46 424.435	2 633 016.177
PJ9	-46 427.513	2 633 008.744
PJ10	-46 427.580	2 633 008.678
PJ11	-46 451.159	2 633 049.027
PJ12	-46 431.213	2 633 005.045
PJ13	-46 496.266	2 632 939.992
PJ14	-46 401.283	2 632 975.143
PJ15	-46 397.335	2 632 971.203
PJ16	-46 458.652	2 632 902.379
PJ17	-46 519.851	2 632 916.305
PJ18	-46 521.584	2 632 913.762
PJ19	-46 385.325	2 632 966.228
PJ20	-46 459.632	2 632 880.635
PJ21	-46 458.652	2 632 880.635
PJ22	-46 458.652	2 632 851.270
PJ23	-46 336.259	2 632 918.798
PJ24	-46 594.173	2 632 841.418
PJ25	-46 412.460	2 632 805.078
PJ26	-46 242.866	2 632 918.604
PJ27	-46 200.506	2 632 918.503
PJ28	-46 253.762	2 632 890.610
PJ29	-46 147.197	2 632 865.734
PJ30	-46 144.211	2 632 862.785
PJ31	-46 101.851	2 632 820.034
PJ32	-46 101.872	2 632 756.529
PJ33	-46 090.099	2 632 744.800
PJ34	-46 065.717	2 632 720.511
PJ35	-46 024.928	2 632 678.627
PJ36	-46 223.870	2 632 479.685
PWT1	-46 487.785	2 633 085.580
TP1	-46 253.762	2 632 887.305
TP2	-46 102.290	2 632 732.610
TP3	-46 159.017	2 632 853.949
TP4	-46 412.538	2 632 963.888
TP5	-46 427.930	2 633 058.558
TP6	-46 430.437	2 633 011.536
TP7	-46 452.945	2 633 047.241
TP8	-46 406.283	2 632 811.254
TP9	-46 228.820	2 632 484.634

PIPE LIST-PotableWaterGravity				
NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	DIAMETER AND CLASS
P1	1185.413	1184.399	16.600	32mm Class PN10
P2	1184.397	1183.853	34.370	25mm Class PN10
P3	1194.000	1192.786	21.750	40mm Class PN10
P4	1193.233	1192.444	29.346	25mm Class PN10
P5	1192.444	1190.978	65.292	25mm Class PN10
P6	1194.738	1193.816	33.389	25mm Class PN10
P7	1193.816	1193.661	3.042	25mm Class PN10
P8	1193.659	1191.716	102.452	25mm Class PN10
P9	1188.108	1188.811	3.354	25mm Class PN10
P10	1190.358	1188.108	30.093	25mm Class PN10
P11	1183.768	1184.402	17.202	25mm Class PN10
P12	1184.989	1186.829	16.744	25mm Class PN10
P14	1193.723	1192.839	15.892	25mm Class PN10
P15	1195.181	1195.738	30.649	25mm Class PN10
P16	1194.725	1194.720	3.991	25mm Class PN10
P17	1194.790	1194.794	2.476	25mm Class PN10
P18	1194.792	1194.792	5.068	40mm Class PN10
P19	1194.792	1195.727	20.536	40mm Class PN10
P20	1192.786	1192.784	0.950	32mm Class PN10
P21	1194.000	1194.390	53.145	40mm Class PN10
P22	1194.390	1194.879	91.949	40mm Class PN10
P23	1194.671	1194.689	5.088	75mm Class PN10
P24	1194.689	1194.690	0.043	75mm Class PN10
P25	1194.730	1194.744	6.096	75mm Class PN10
P26	1194.744	1194.772	37.743	75mm Class PN10
P27	1194.772	1194.772	25.343	75mm Class PN10
P28	1191.249	1190.978	8.689	25mm Class PN10
P29	1194.682	1192.827	42.299	50mm Class PN10
P30	1193.398	1193.139	12.969	40mm Class PN10
P31	1193.139	1191.824	68.206	40mm Class PN10
P32	1191.824	1190.348	93.376	40mm Class PN10
P33	1189.537	1186.822	75.010	40mm Class PN10
P34	1187.132	1186.458	60.136	32mm Class PN10
P35	1186.458	1185.413	63.484	32mm Class PN10
P36	1183.853	1183.224	58.418	25mm Class PN10
P37	1183.224	1182.224	281.298	25mm Class PN10
P38	1182.224	1182.304	6.950	25mm Class PN10
P39	1193.653	1193.398	5.535	40mm Class PN10
P40	1190.348	1189.537	42.339	40mm Class PN10
P41	1187.236	1187.132	4.149	32mm Class PN10
P42	1196.023	1194.745	22.155	90mm Class PN10
P43	1196.074	1196.180	11.487	32mm Class PN10
P44	1196.142	1196.023	4.107	90mm Class PN10
P45	1195.731	1195.740	0.460	32mm Class PN10
P46	1194.690	1194.730	8.012	75mm Class PN10

STRUCTURE LIST-RisingMain		
STRUCTURE NAME	Y	X
R.M1	-46 486.043	2 633 082.497
R.M2	-46 485.494	2 633 081.948
R.M3	-46 481.431	2 633 077.886
R.M4	-46 473.284	2 633 069.738
R.M5	-46 531.157	2 633 011.865
R.M6	-46 542.080	2 632 982.987
R.M7	-46 553.003	2 632 954.110
R.M8	-46 550.886	2 632 945.729

STRUCTURE LIST-RisingMain		
STRUCTURE NAME	Y	X
R.M9	-46 535.865	2 632 930.571
R.M10	-46 520.844	2 632 915.413
R.M11	-46 607.155	2 632 829.103
R.M12	-46 706.150	2 632 730.108
R.M13	-46 770.152	2 632 666.106
R.M14	-46 953.627	2 632 602.104
R.M15	-46 947.724	2 632 601.970
R.M16	-46 834.154	2 632 602.104

PIPE LIST-RisingMain				
NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	DIAMETER AND CLASS
P1.1	1185.633	1185.503	5.891	90mm Class PN10
P1.2	1184.935	1185.447	90.464	90mm Class PN10
P1.3	1193.367	1193.861	21.297	90mm Class PN10
P1.4	1193.861	1194.375	21.298	90mm Class PN10
P1.5	1194.375	1194.507	8.615	90mm Class PN10
P1.6	1194.507	1194.978	30.846	90mm Class PN10
P1.7	1196.697	1196.873	11.474	90mm Class PN10
P1.8	1196.873	1196.961	5.697	90mm Class PN10

PIPE LIST-RisingMain				
NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	DIAMETER AND CLASS
P1.9	1185.447	1187.389	90.485	90mm Class PN10
P1.10	1194.978	1195.449	30.846	90mm Class PN10
P1.11	1195.449	1196.697	81.805	90mm Class PN10
P1.12	1185.503	1184.935	113.557	90mm Class PN10
P1.13	1187.389	1190.923	139.996	90mm Class PN10
P1.14	1190.923	1193.367	122.037	90mm Class PN10
P1.15	1196.961	1206.538	10.558	90mm Class PN10

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

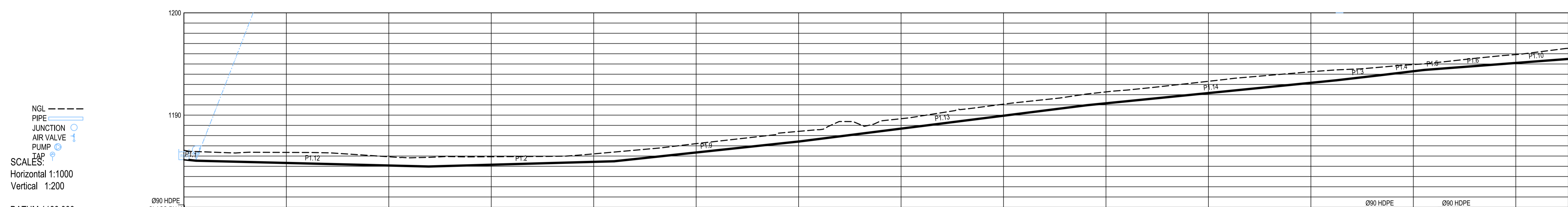
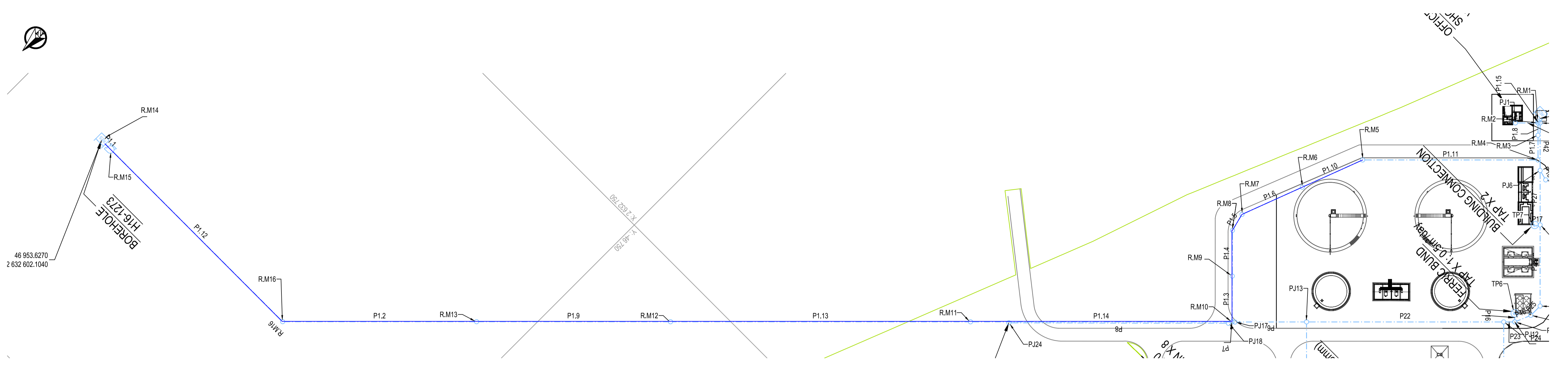
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

POTABLE WATER NETWORK GENERAL LAYOUT AND DETAILS

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:2000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-CP-2B-CIV-IR-100		0



REFERENCE	R.M.14	R.M.15	Ø90 HDPE CLASS PN10	R.M.16	Ø90 HDPE CLASS PN10	R.M.13	Ø90 HDPE CLASS PN10	R.M.12	Ø90 HDPE CLASS PN10	R.M.11	Ø90 HDPE CLASS PN10	R.M.10	Ø90 HDPE CLASS PN10	R.M.9	Ø90 HDPE CLASS PN10	R.M.8	Ø90 HDPE CLASS PN10	R.M.7	Ø90 HDPE CLASS PN10	R.M.6	Ø90 HDPE CLASS PN10	R.M.5				
FINISHED PLATFORM LEVEL	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566	1186.566			
PIPE INVERT LEVEL	1185.633	1185.503	1185.503	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935	1184.935			
DEPTH TO INVERT	0.935	0.936	0.936	1.074	0.899	0.935	0.828	0.623	0.944	0.910	1.033	1.010	1.170	1.139	1.157	1.193	1.125	1.059	0.874	0.740	0.694	0.637	0.686	0.664	0.860	1.083
COVER	0.000	0.052	0.052	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850
SLOPE / LENGTH	2.21%	1.45%	1.45%	0.50%	0.50%	0.50%	-0.57%	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9	-1.176.9
HYDRAULICS	DESIGN Q(l/s)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
	DESIGN V(m/s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

LONGSECTION BRANCH 1.1A
FROM 0.000 TO 675.632

CONSTRUCTION DRAWING

- NOTES**
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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

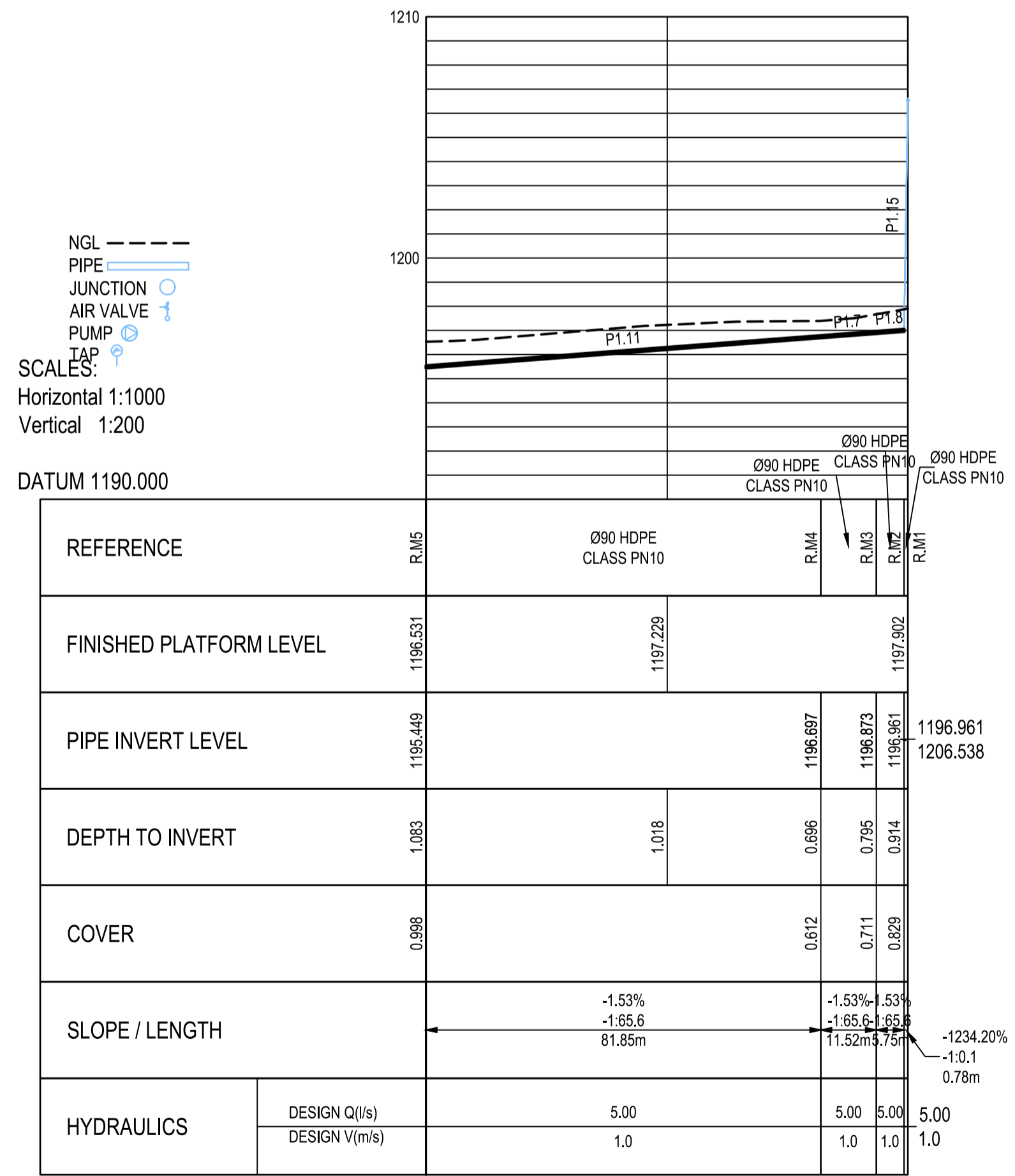
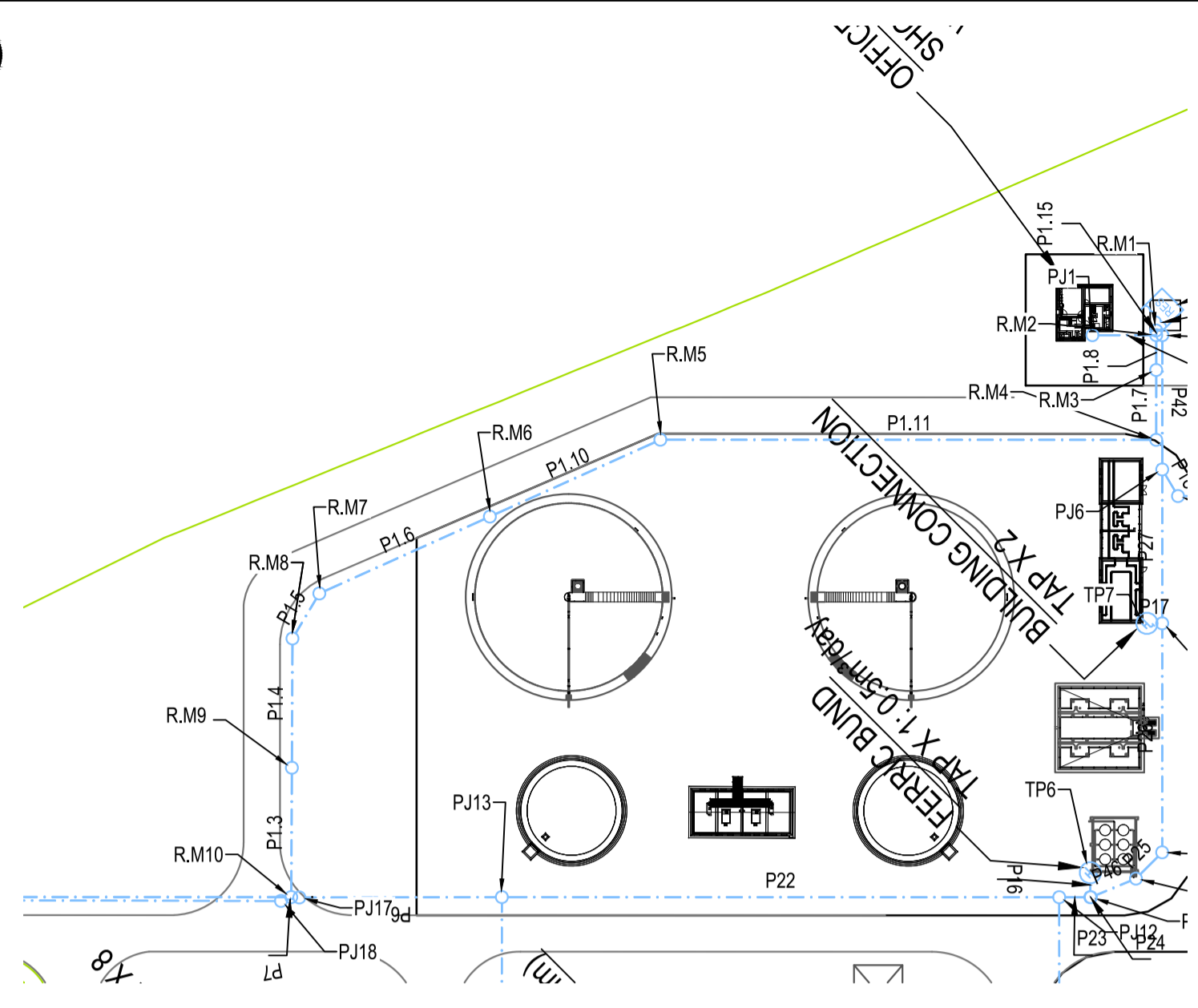
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

POTABLE WATER POTABLE NETWORK PUMPING BRANCH 1.1A PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-101	0	



LONGSECTION BRANCH 1.1B
FROM 0.000 TO 99.889

CONSTRUCTION DRAWING

NOTES

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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

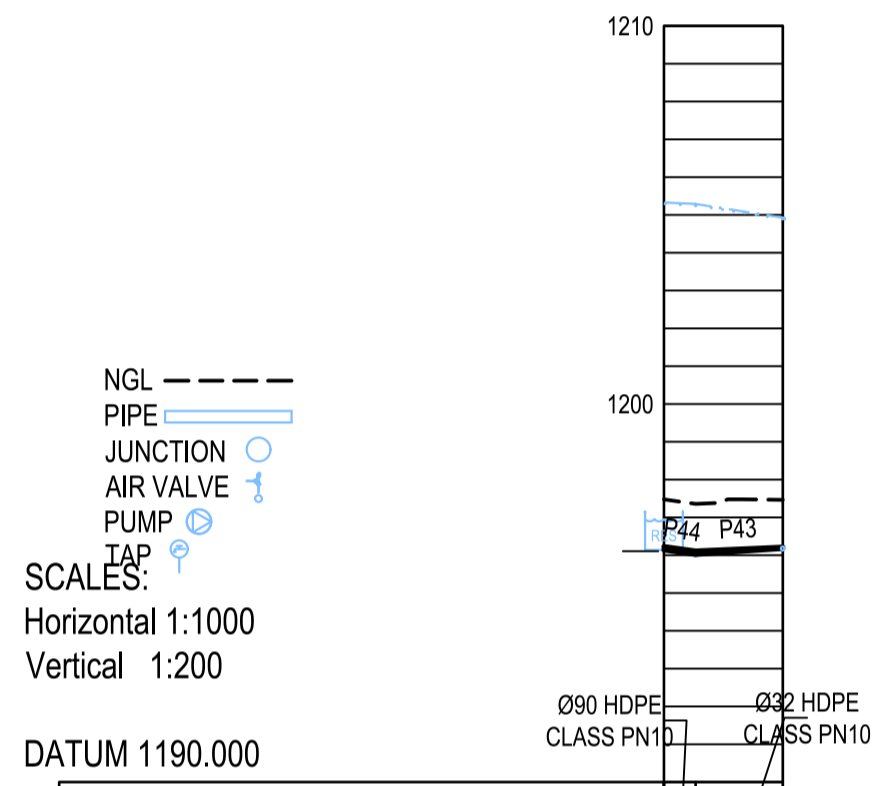
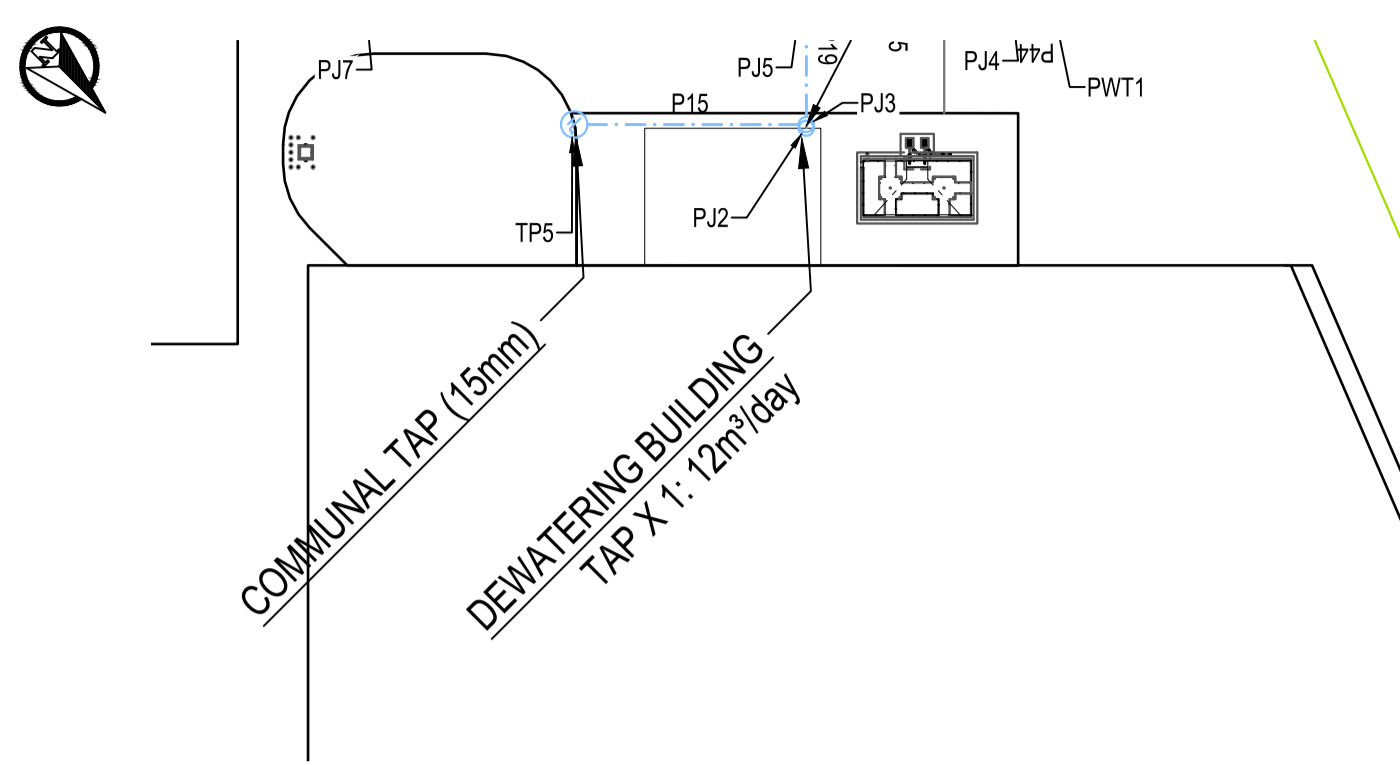
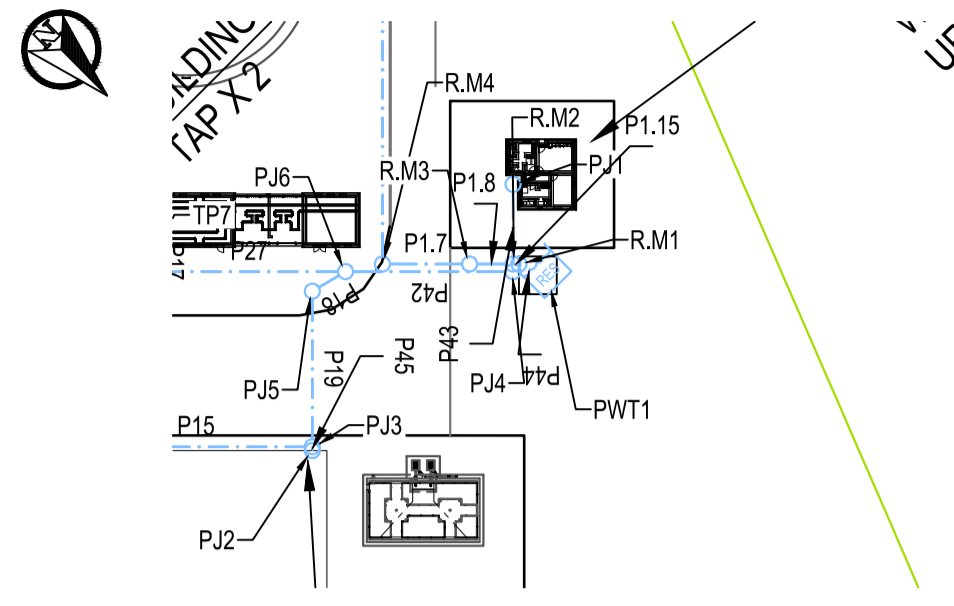
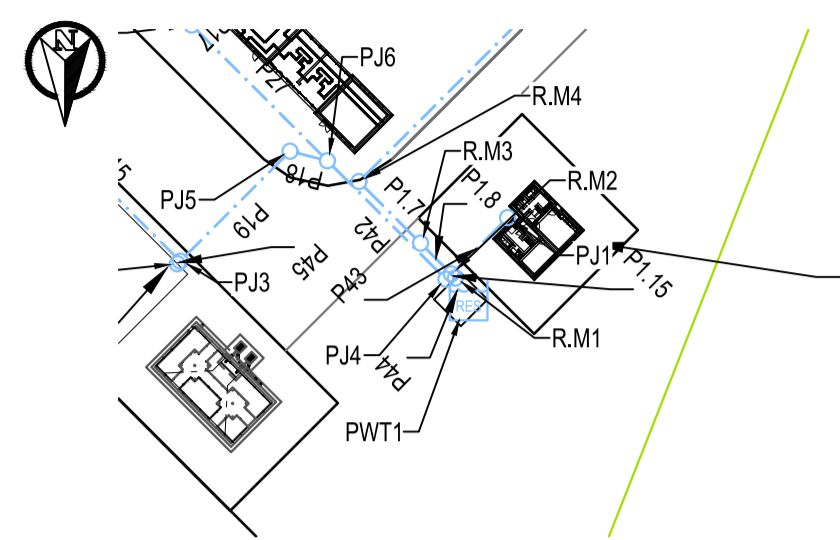
PROJECT

POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION

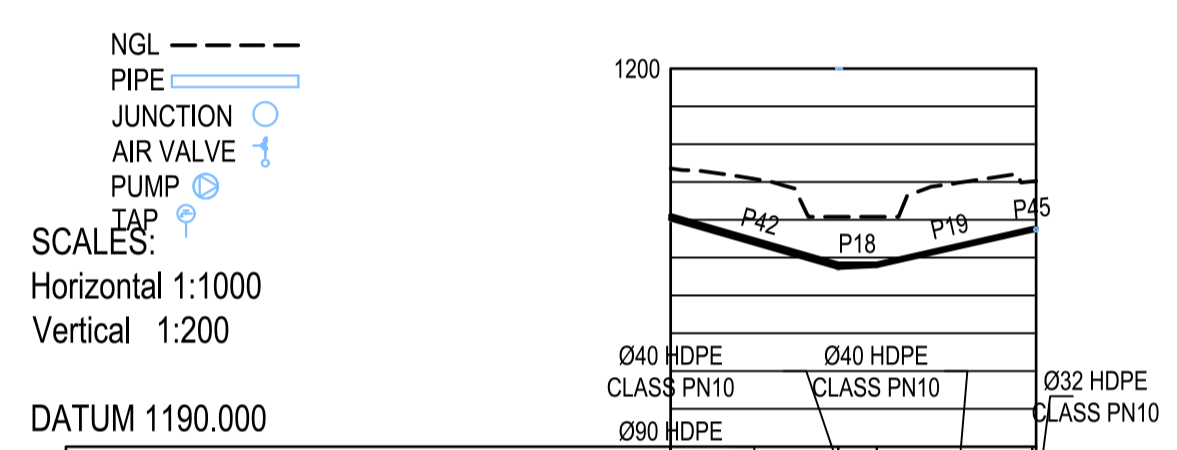
POTABLE WATER
NETWORK PUMPING
BRANCH 1.1B PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-102	0	



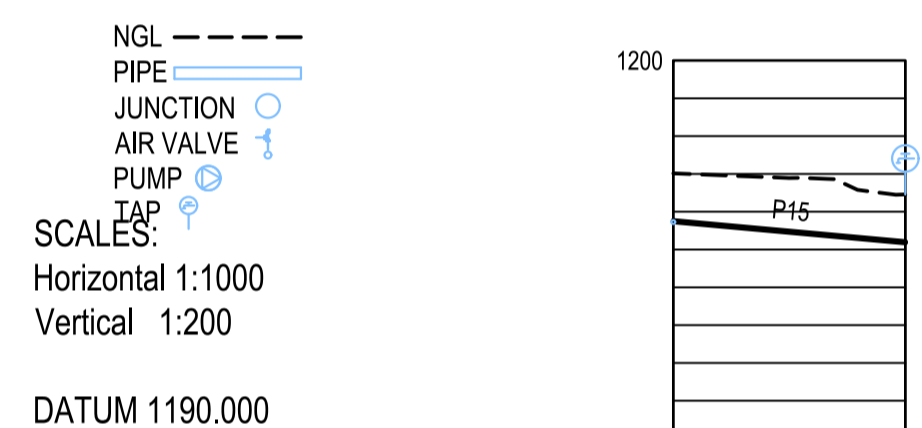
REFERENCE	PWT1	PJ4	PJ1
FINISHED PLATFORM LEVEL	1197.476		1197.464
PIPE INVERT LEVEL	1196.142 1196.024		1196.180
DEPTH TO INVERT	1.335 1.335		1.284
COVER	1.250		1.254
SLOPE / LENGTH	2.83% -0.92% 1.3541-108.7 4.19m 1.54m		
HYDRAULICS	DESIGN Q(l/s)	4.1	0.50
	DESIGN V(m/s)	0.8	0.8

LONGSECTION BRANCH 1
FROM 0.000 TO 15.725



REFERENCE	P.14	P.16	P.18	P.19	P.20	P.21	P.22
FINISHED PLATFORM LEVEL	1197.358	1194.792	1194.792				1197.024
PIPE INVERT LEVEL	1196.023	1194.745					1195.731 1195.740
DEPTH TO INVERT	1.335	1.335					1.288 1.284
COVER	1.250	1.250					1.250 1.254
SLOPE / LENGTH	5.77% 0.00% -4.55% -1.32% 1.17.3 Horizontal -1.22.0 -1.32.1 22.16m 5.10m 20.56m 0.33m						
HYDRAULICS	DESIGN Q(l/s)	3.61	0.88	0.86	0.51		
	DESIGN V(m/s)	0.7	0.9	0.9	1.0		

LONGSECTION BRANCH 2
FROM 0.000 TO 48.326



REFERENCE	P.15	TP5
FINISHED PLATFORM LEVEL	1197.015	1196.658
PIPE INVERT LEVEL	1195.738	1195.181
DEPTH TO INVERT	1.277	1.277
COVER	1.254	1.254
SLOPE / LENGTH	-1.81% -1.55.1 30.69m	
HYDRAULICS	DESIGN Q(l/s)	-0.25
	DESIGN V(m/s)	0.7

LONGSECTION BRANCH 3
FROM 0.000 TO 30.694

NOTES

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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

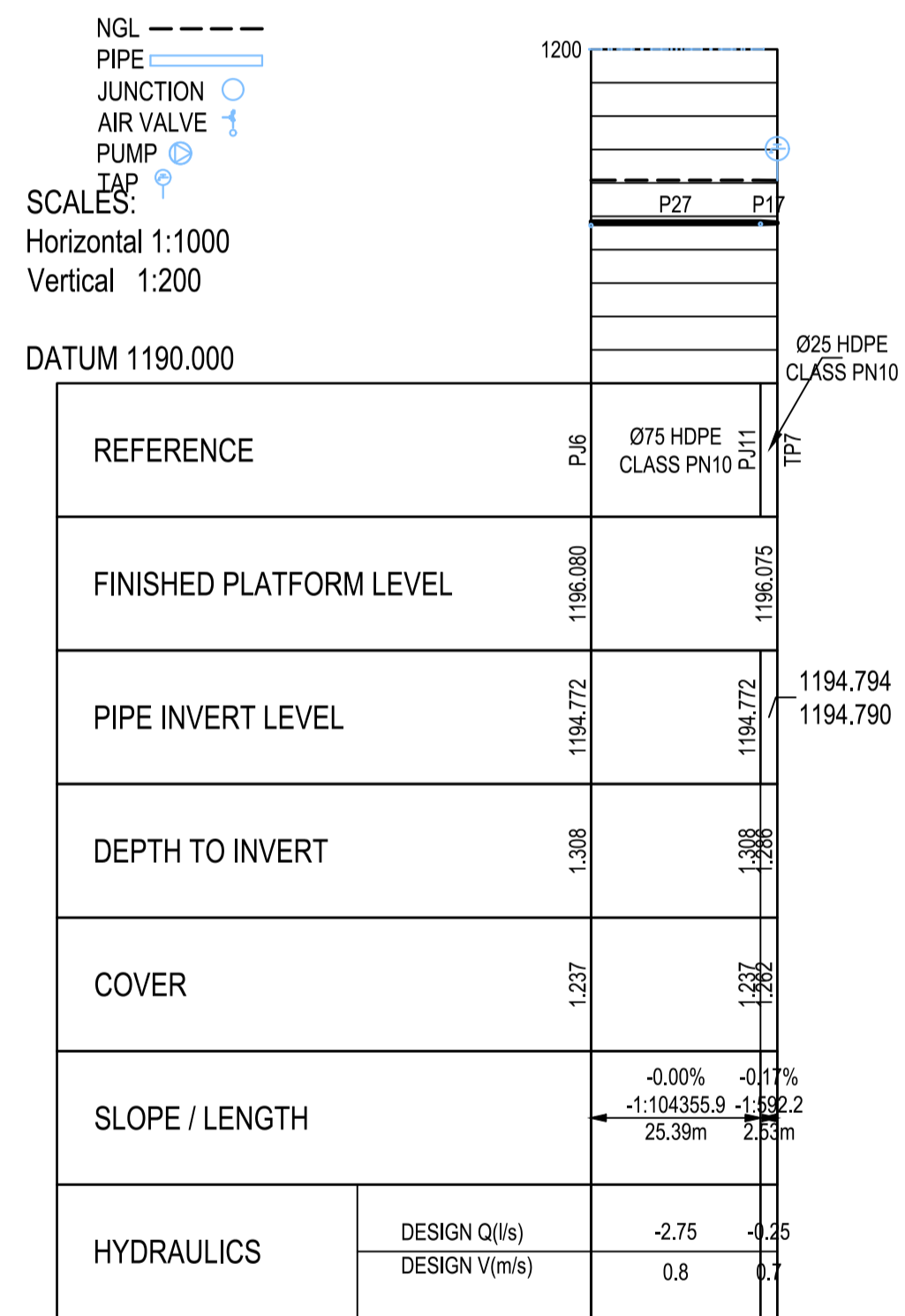
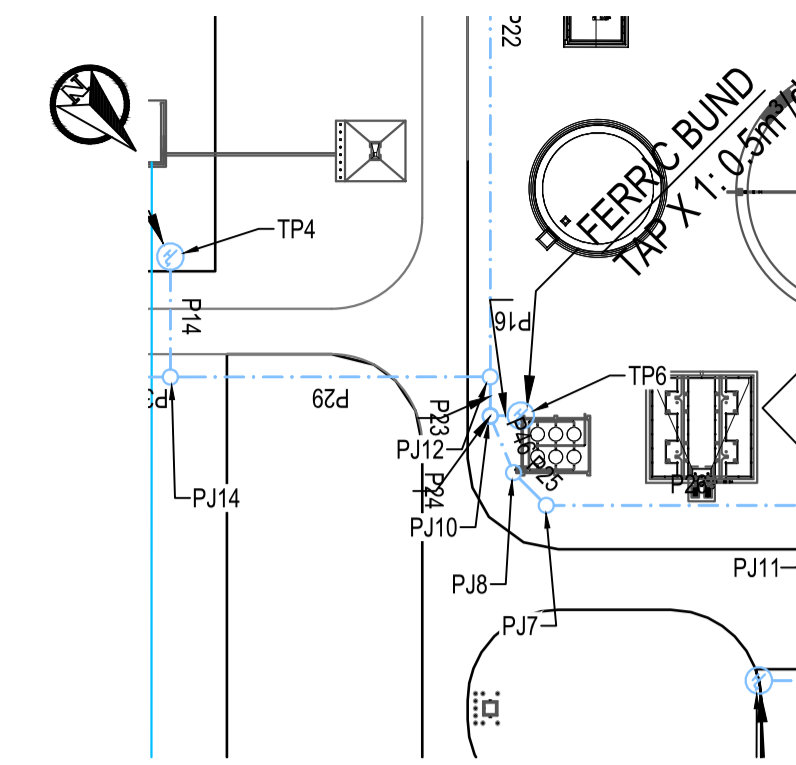
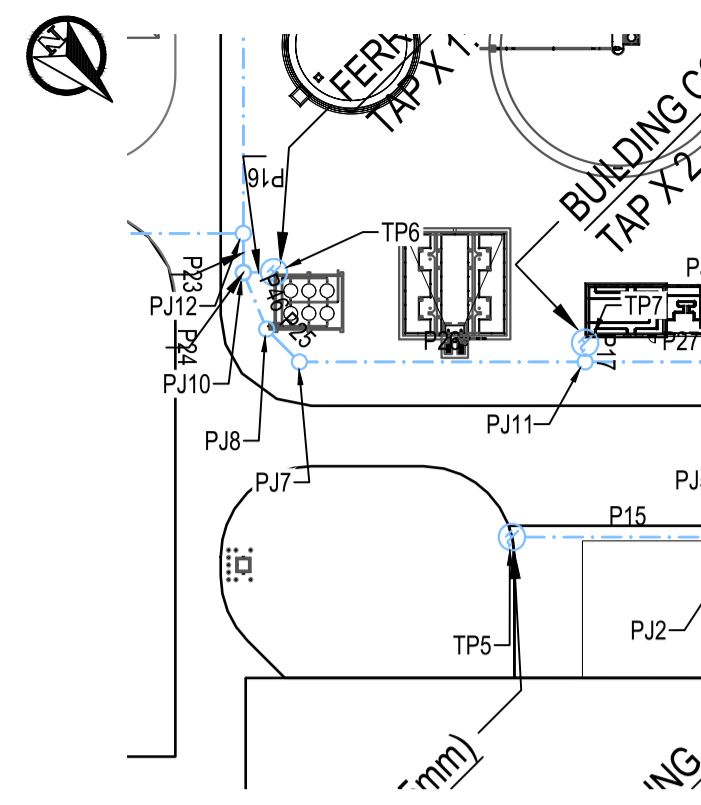
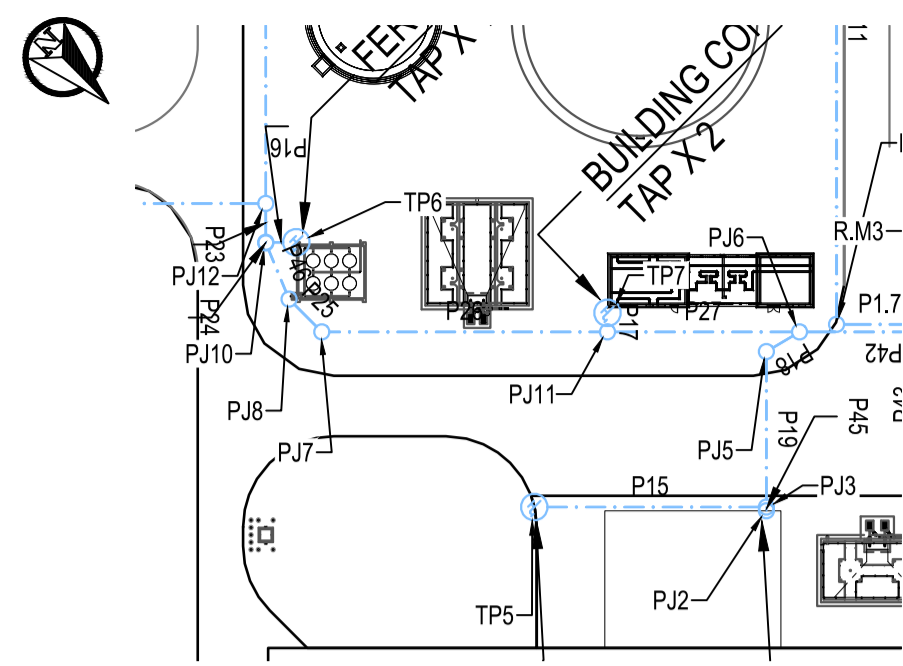
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

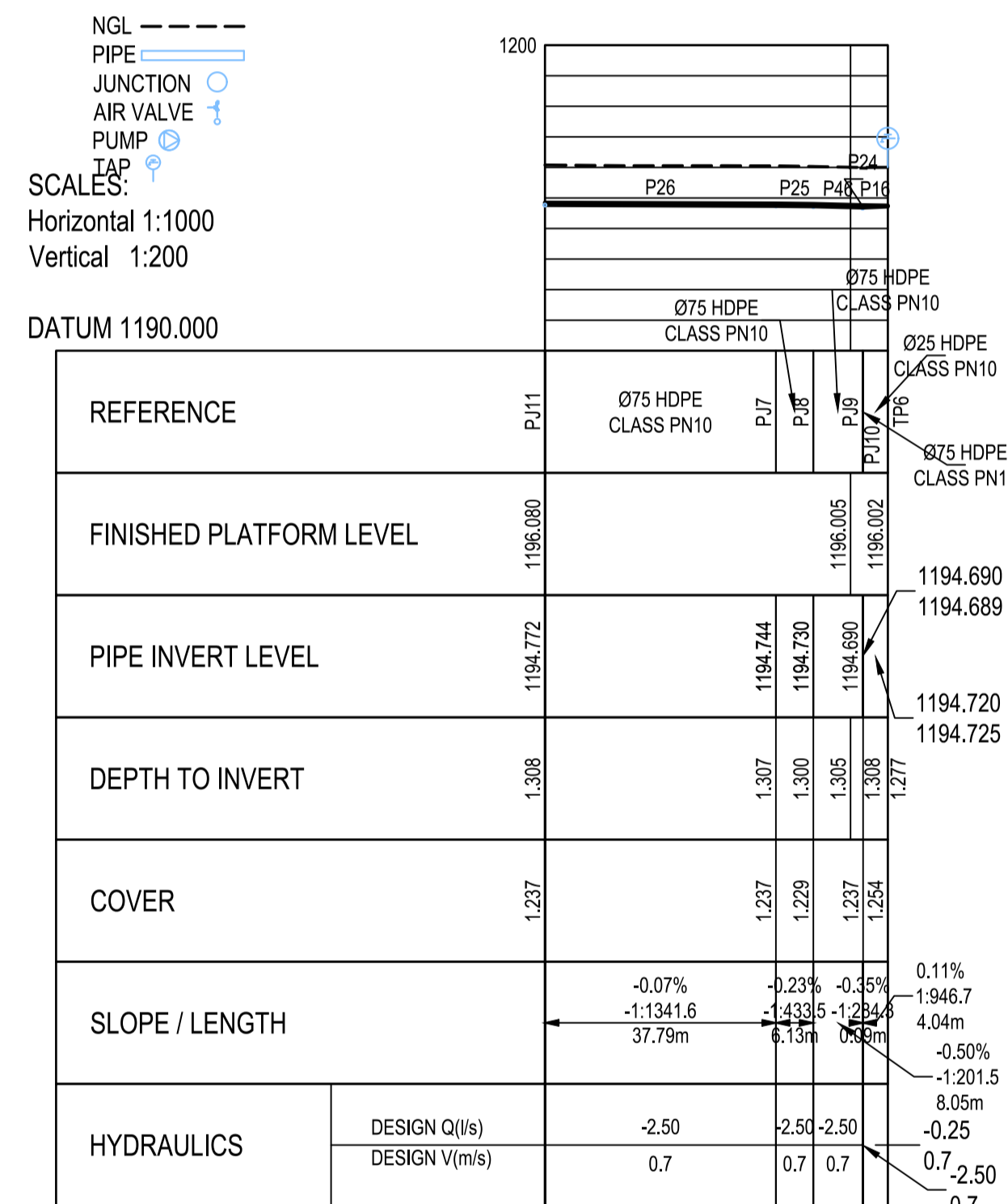
POTABLE WATER NETWORK BRANCHES 1, 2 & 3 PROFILE

CONSTRUCTION DRAWING

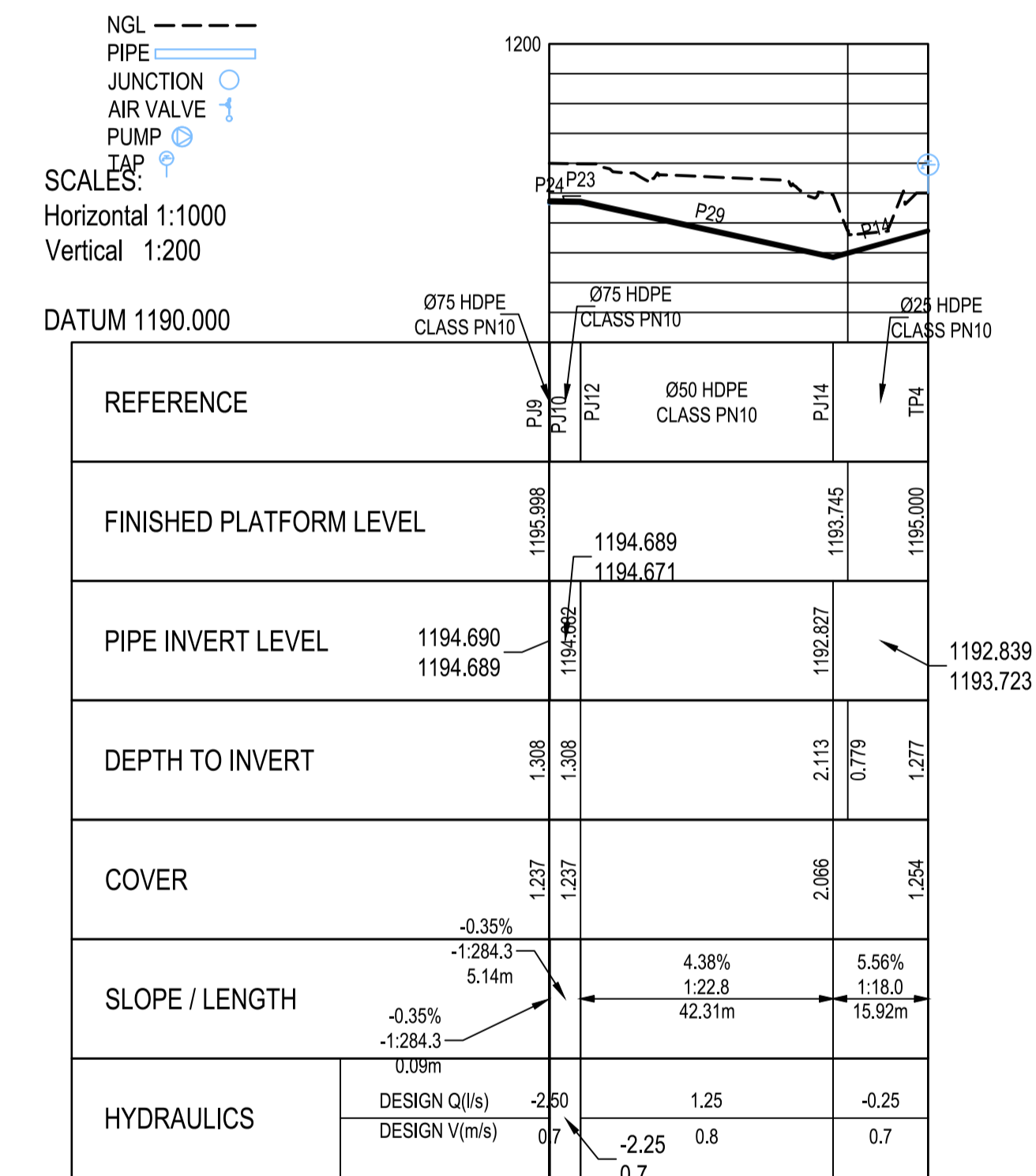
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-103	0	



LONGSECTION BRANCH 4
FROM 0.000 TO 27.921



LONGSECTION BRANCH 5
FROM 0.000 TO 56.100



LONGSECTION BRANCH 6
FROM 0.000 TO 63.456

NOTES

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FAX: +27 15 291 1993

CLIENT



REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT

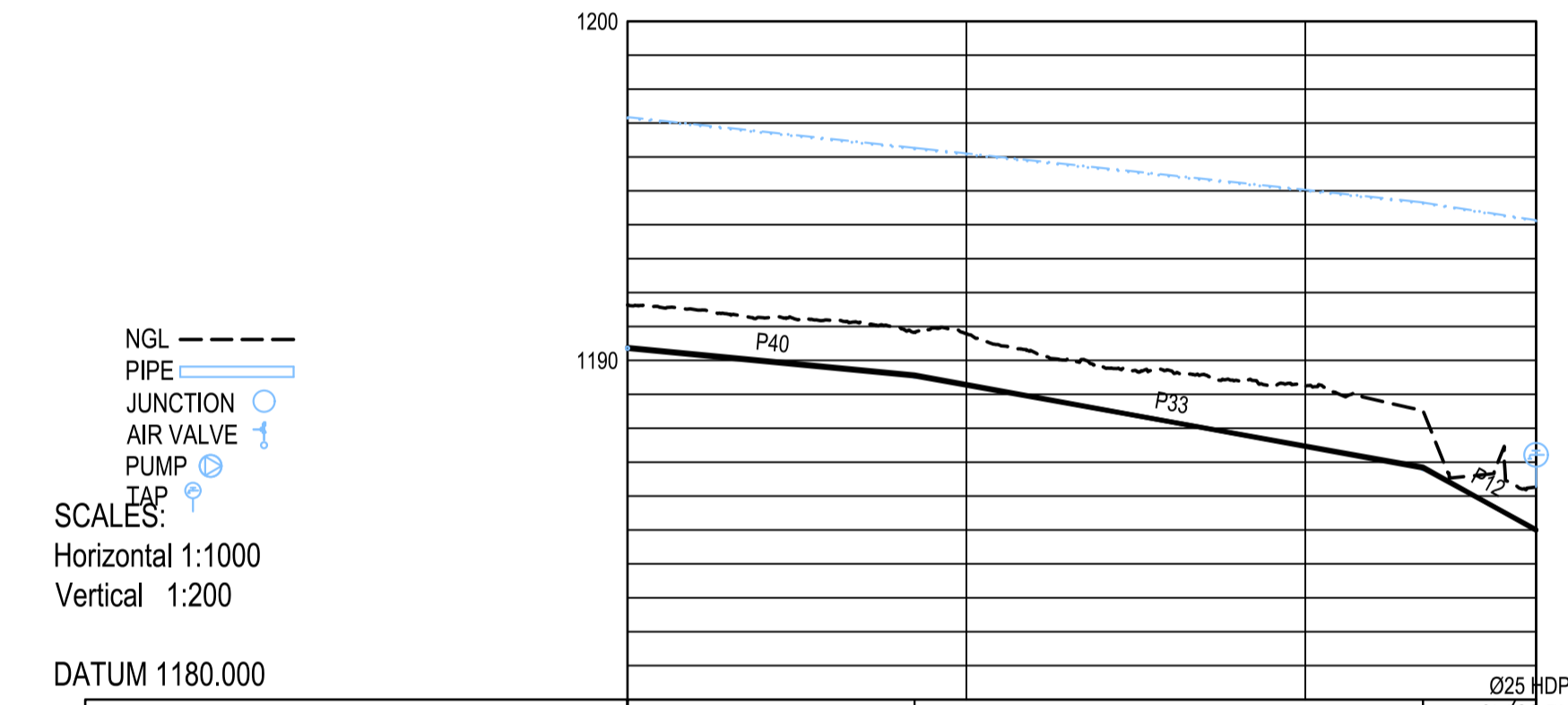
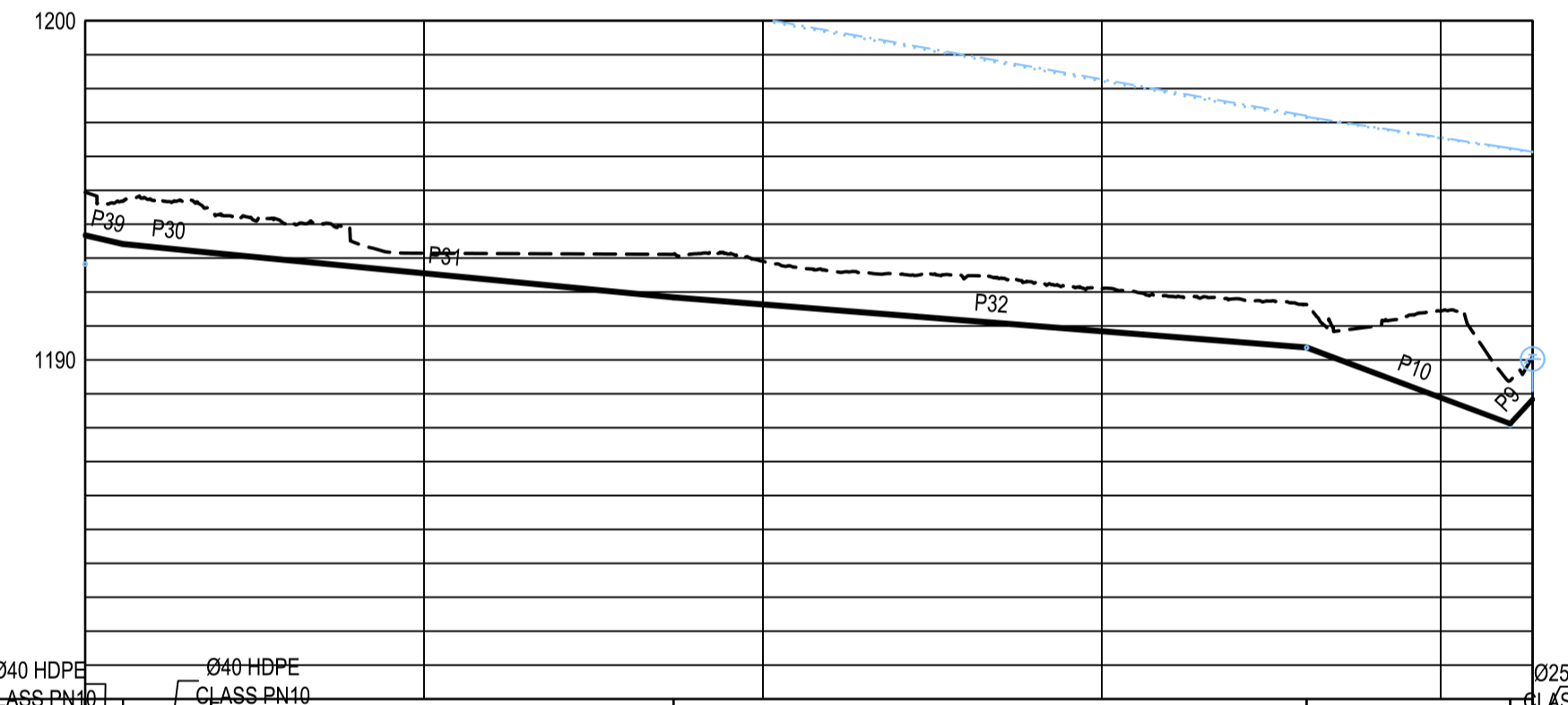
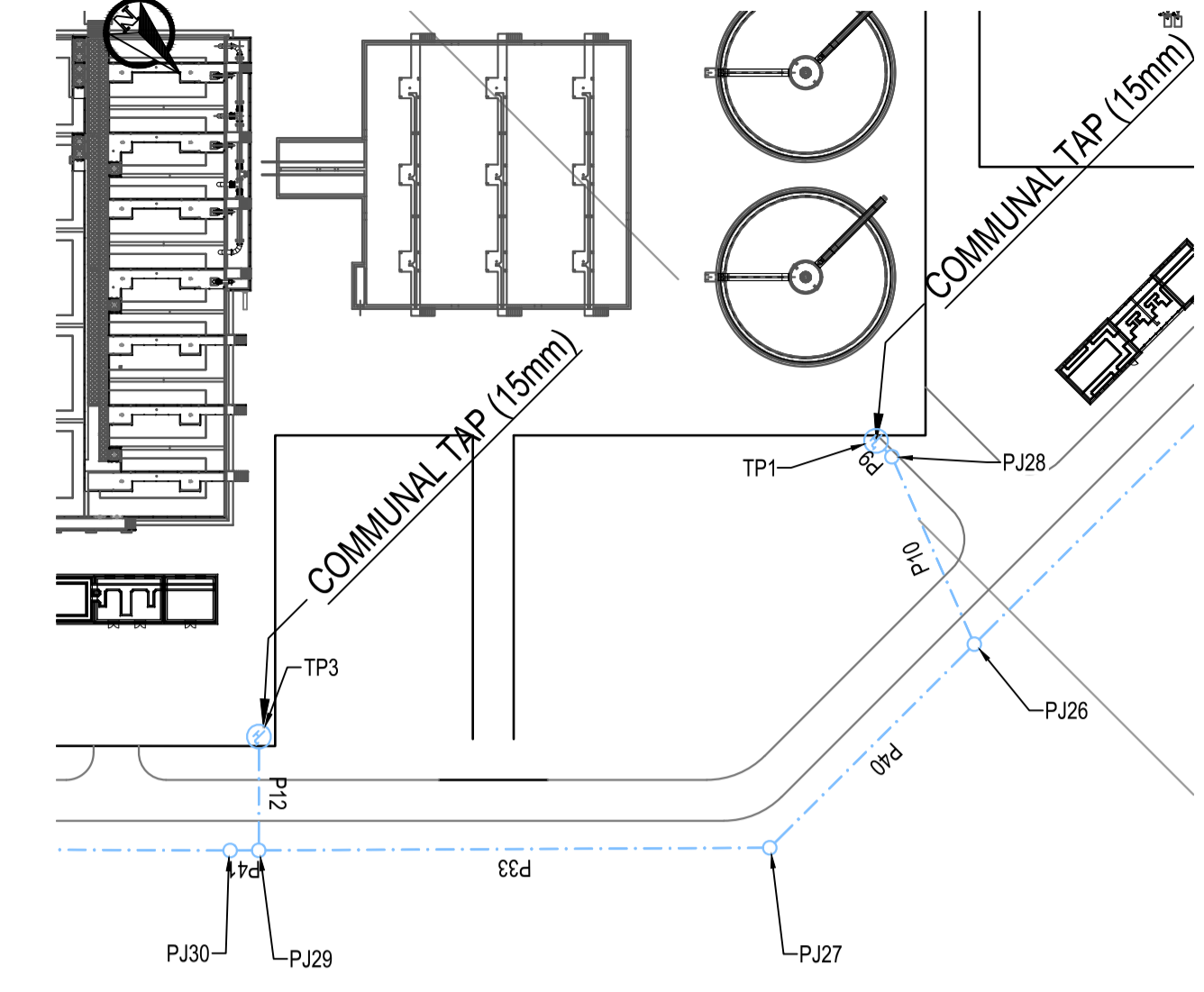
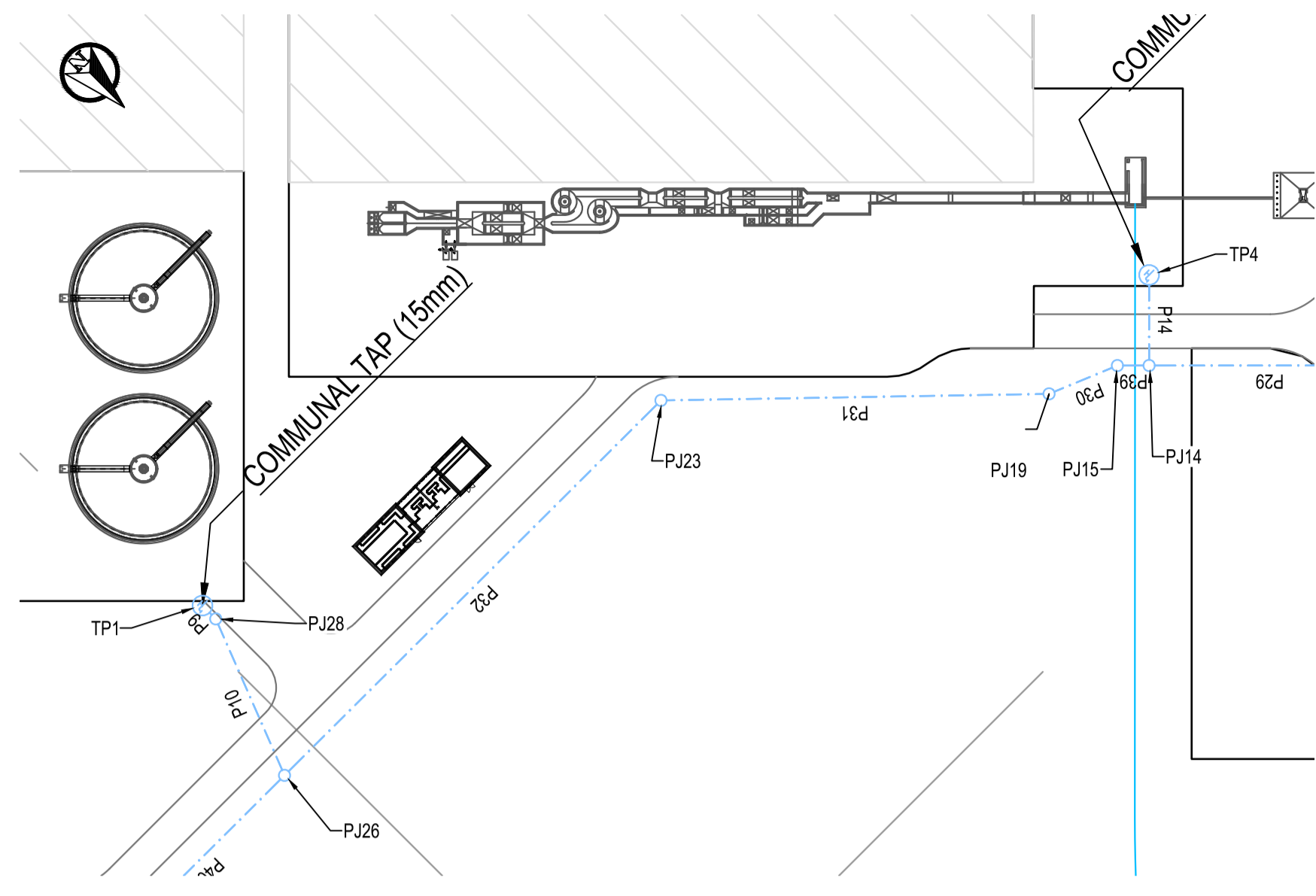
POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION

POTABLE WATER
NETWORK BRANCHES
4, 5 & 6 PROFILE

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-CP-2B-CIV-IR-104		0



SCALES:
Horizontal 1:1000
Vertical 1:200

SCALES:
Horizontal 1:1000
Vertical 1:200

REFERENCE	PJ14	PJ15	PJ19	PJ23	PJ26	PJ28	TP4
FINISHED PLATFORM LEVEL	1194.940	1193.398	1193.139	1192.912	1192.087	1191.445	1190.097
PIPE INVERT LEVEL	1193.653	1192.398	1193.139	1191.824	1190.348	1188.108	1186.108
DEPTH TO INVERT	1.288	1.288	1.288	0.611	1.288	1.262	1.273
COVER	1.250	1.250	1.250	1.250	1.250	1.254	1.250
SLOPE / LENGTH	4.57% 21.9m	1.99% 1:50.3 3.58m	1.93% 1:51.9 68.24m	1.58% 1:63.3 93.39m	7.49% 1:13.3 30.04m	-2.27% 1:44.7 3.81m	
HYDRAULICS	DESIGN Q(l/s)	1.00	1.00	1.00	1.00	0.25	0.25
	DESIGN V(m/s)	1.0	1.0	1.0	1.0	0.7	0.7

REFERENCE	PJ26	PJ27	PJ29	TP3
FINISHED PLATFORM LEVEL	1191.635	1190.789	1189.238	1186.265
PIPE INVERT LEVEL	1190.348	1188.557	1186.828	1184.989
DEPTH TO INVERT	1.288	1.288	1.758	1.277
COVER	1.250	1.250	1.701	1.254
SLOPE / LENGTH		1.91% 1:52.2 42.36m	3.62% 1:27.6 75.01m	-11.03% 1:9.1 16.69m
HYDRAULICS	DESIGN Q(l/s)	0.75	0.75	-0.25
	DESIGN V(m/s)	0.8	0.8	0.7

LONGSECTION BRANCH 7
FROM 0.000 TO 213.559

LONGSECTION BRANCH 8
FROM 0.000 TO 134.061

CONSTRUCTION DRAWING

NOTES
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NATURALLY PROGRESSIVE

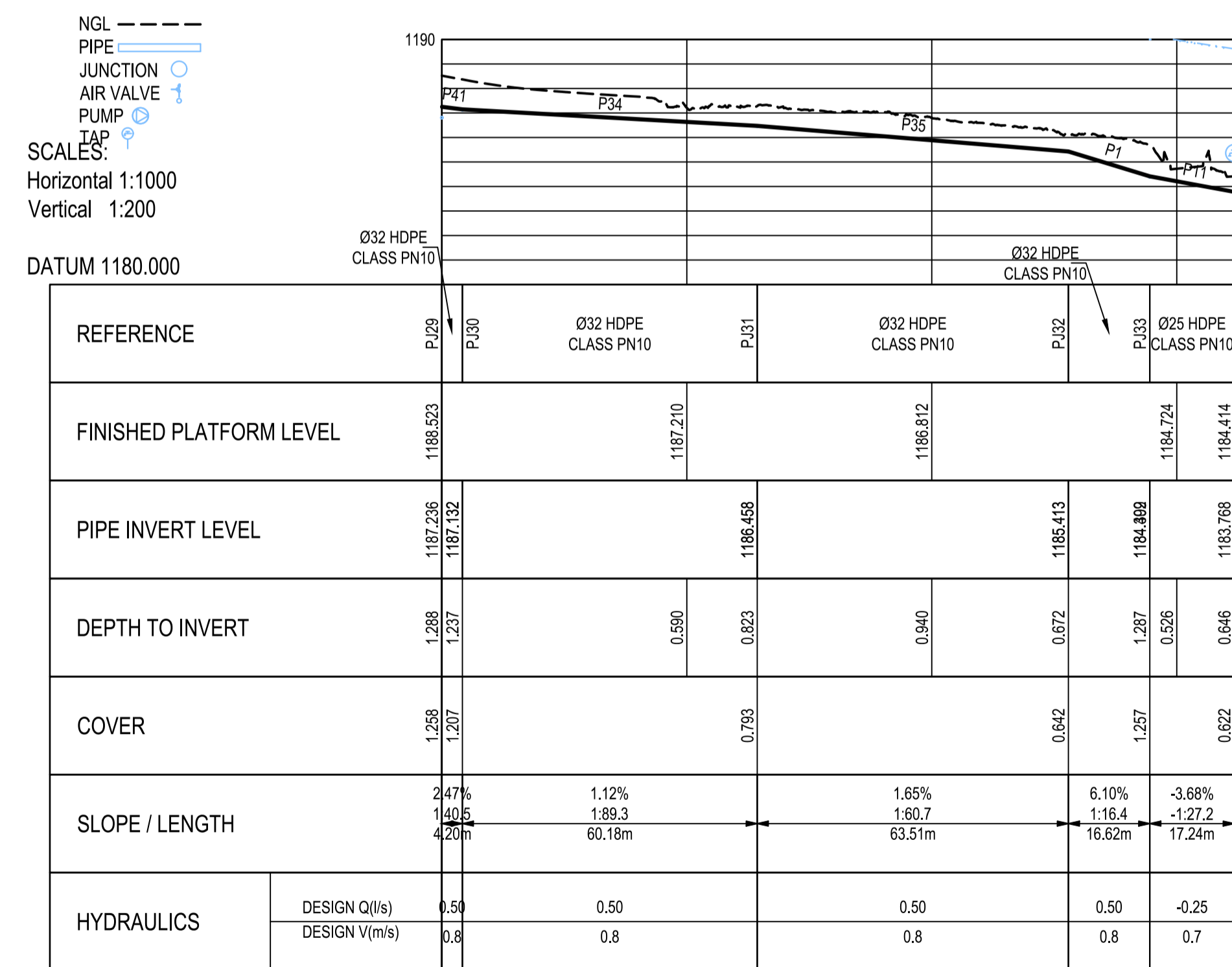
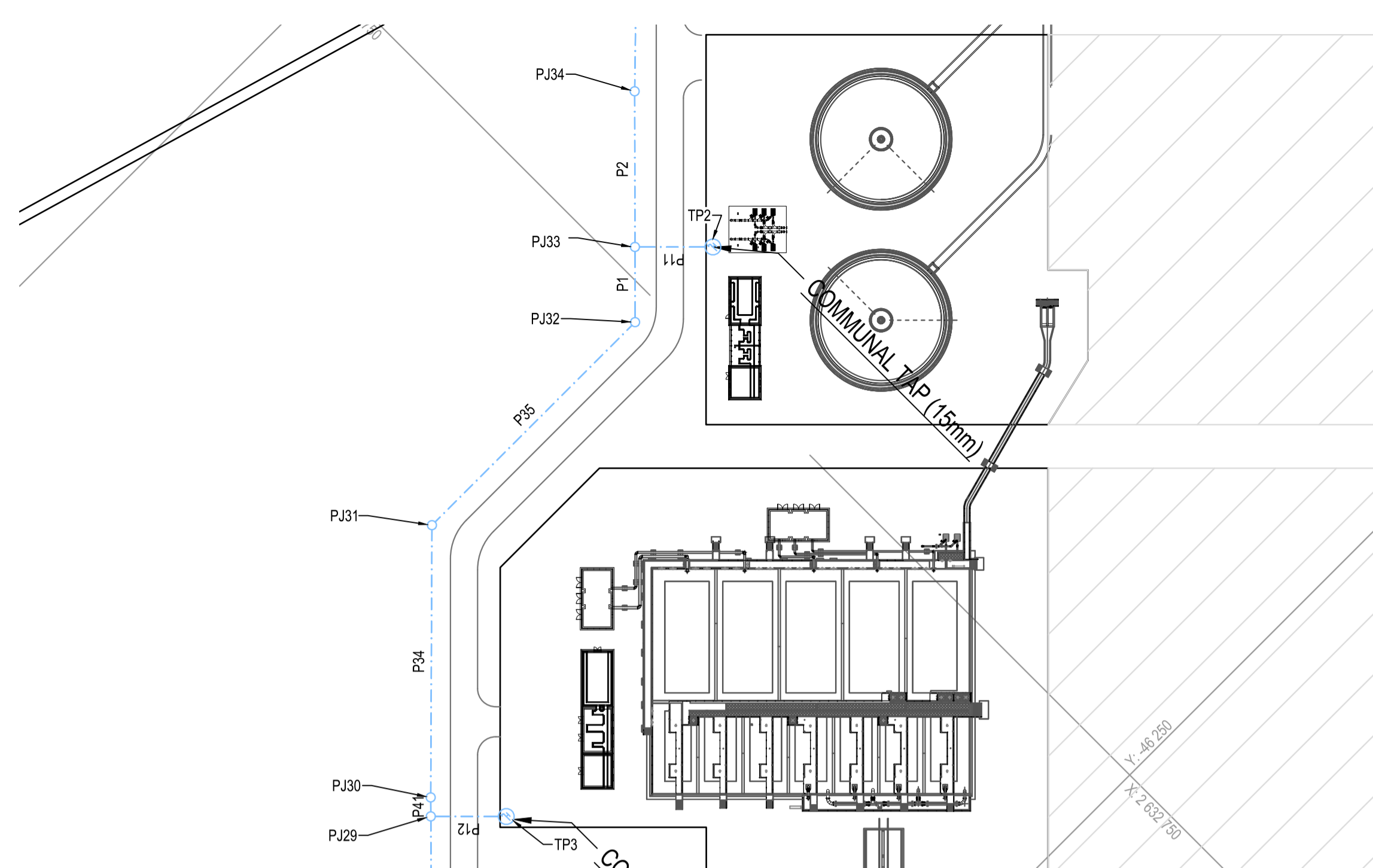
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT
POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION
POTABLE WATER
NETWORK BRANCHES
7 & 8 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-CP-2B-CIV-IR-105		0



LONGSECTION BRANCH 9
FROM 0.000 TO 161.743

CONSTRUCTION DRAWING

NOTES

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0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____
 CLIENT _____ DATE _____

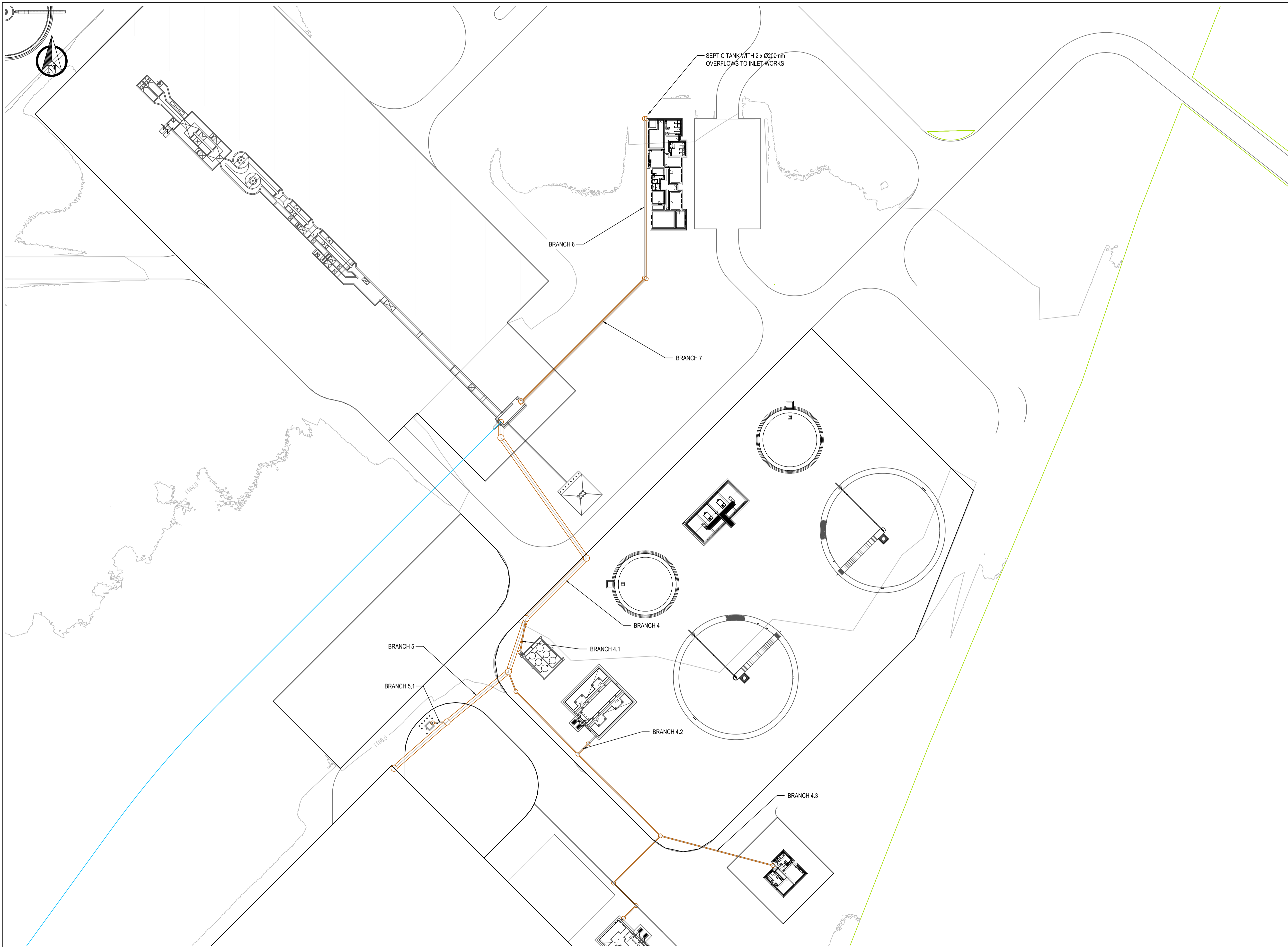
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**POTABLE WATER
NETWORK BRANCH
9 PROFILE**

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-106	0	



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T. BANDA
ENGINEER

PR ENG no. DATE

CLIENT DATE

PROJECT

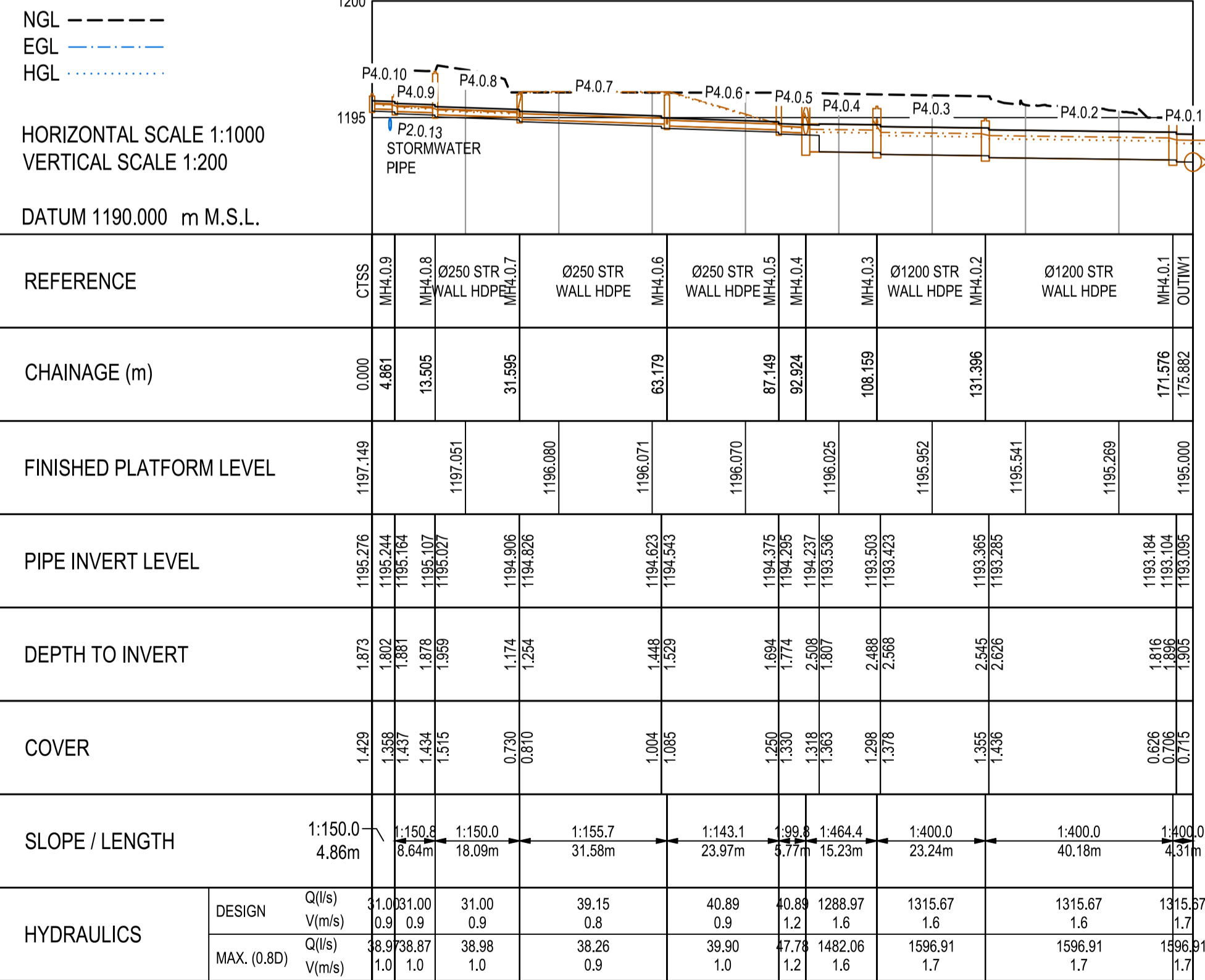
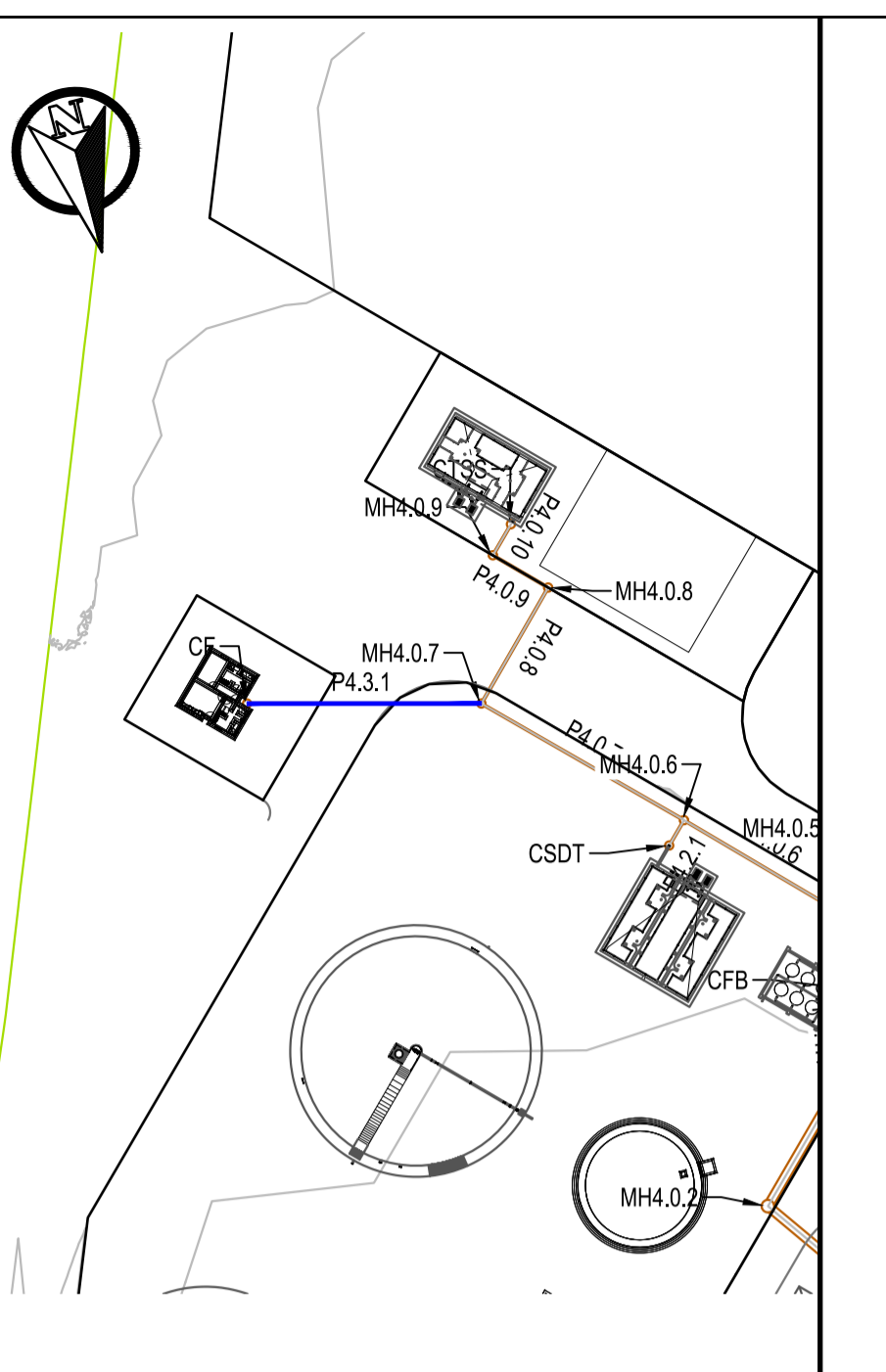
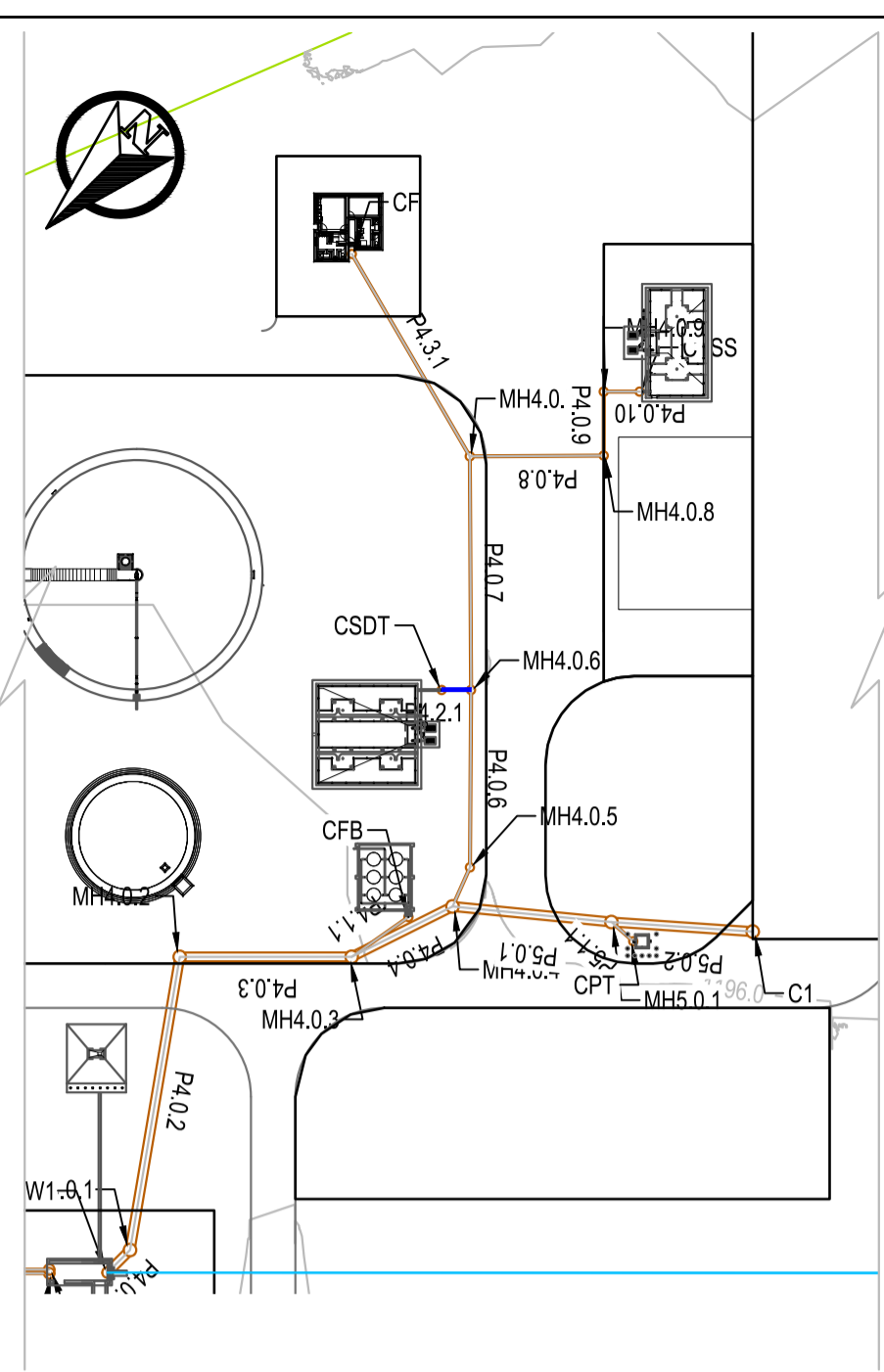
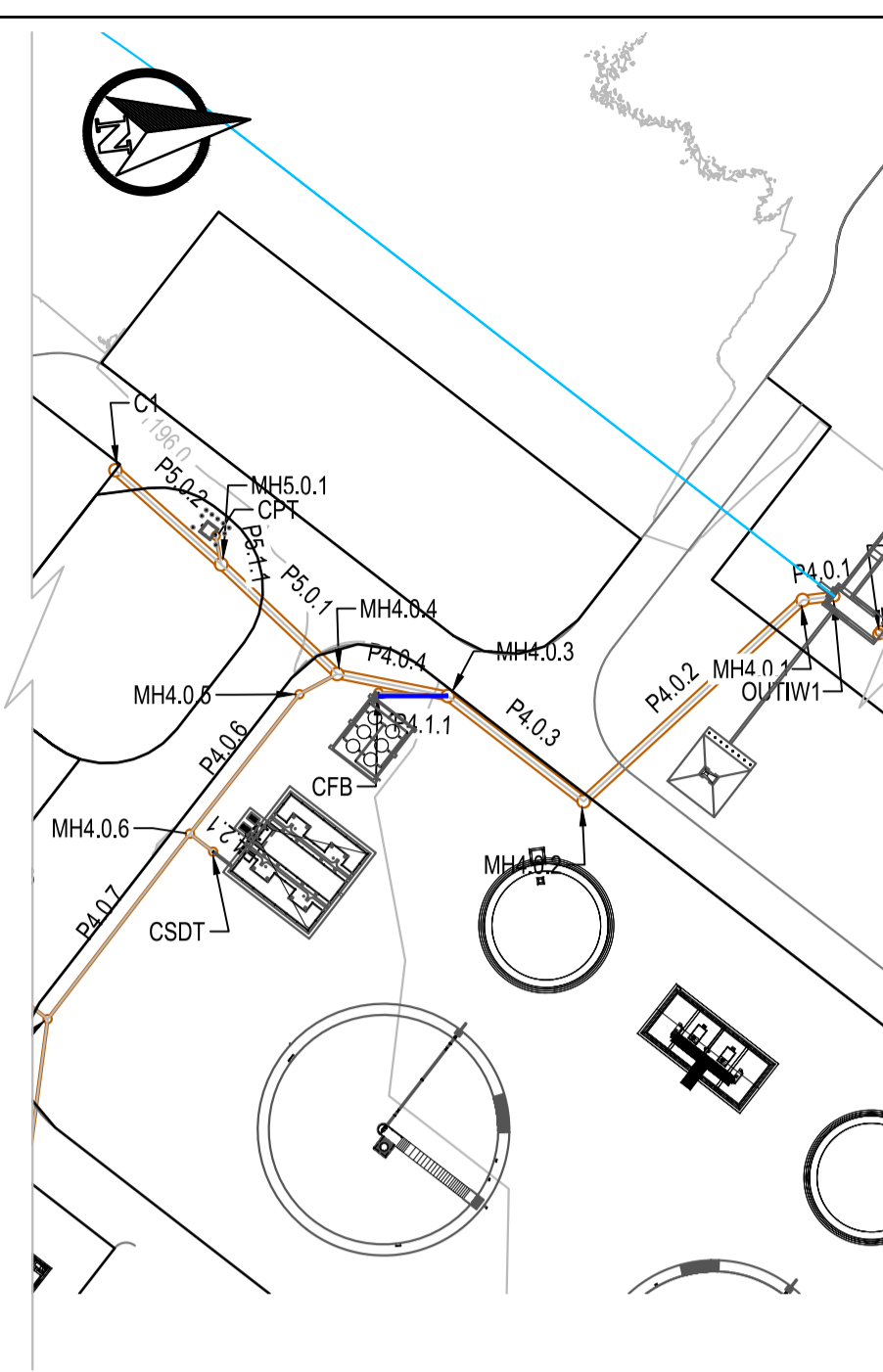
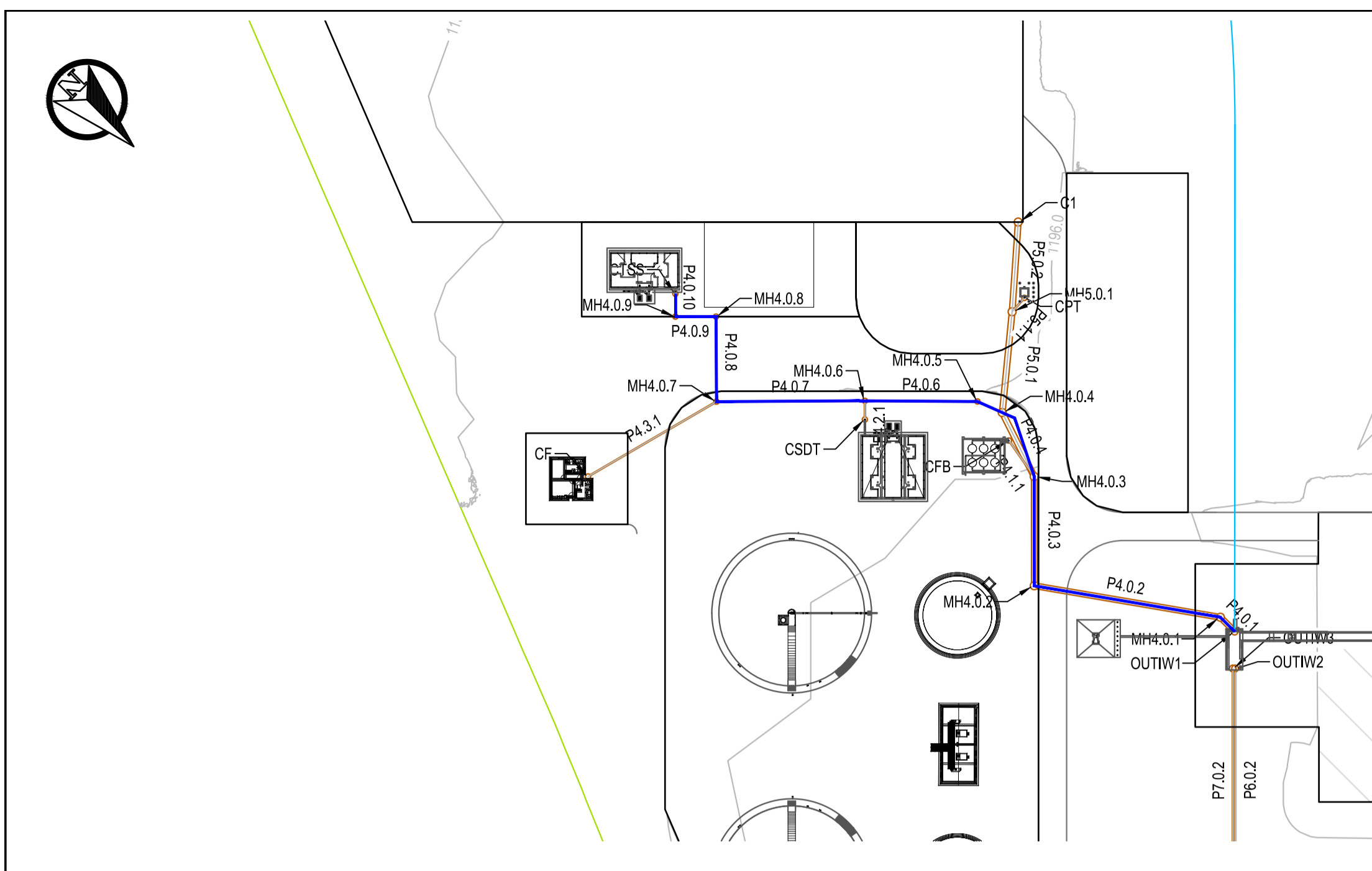
**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

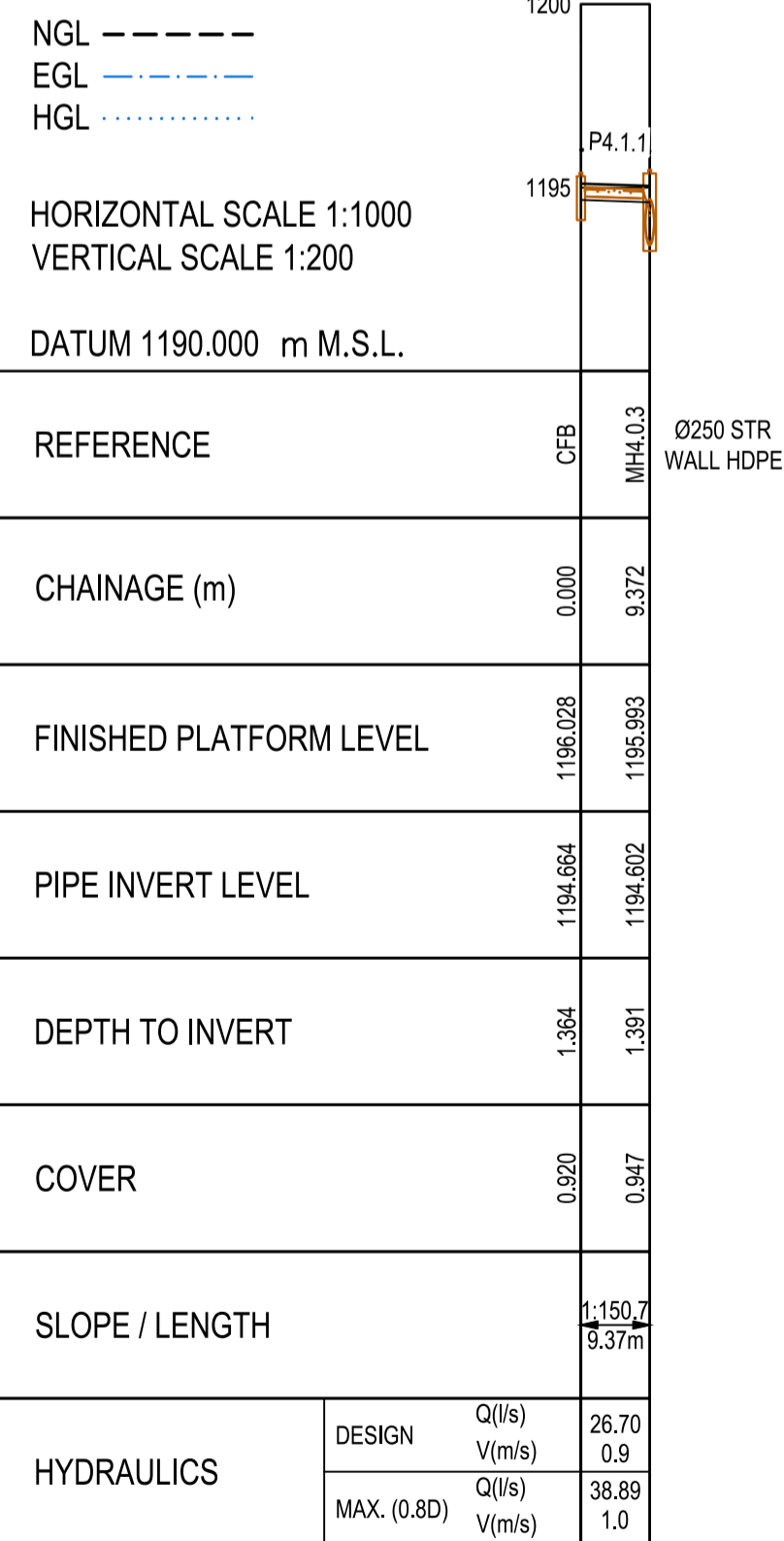
**SEWER WATER
NETWORK
GENERAL LAYOUT**

CONSTRUCTION DRAWING

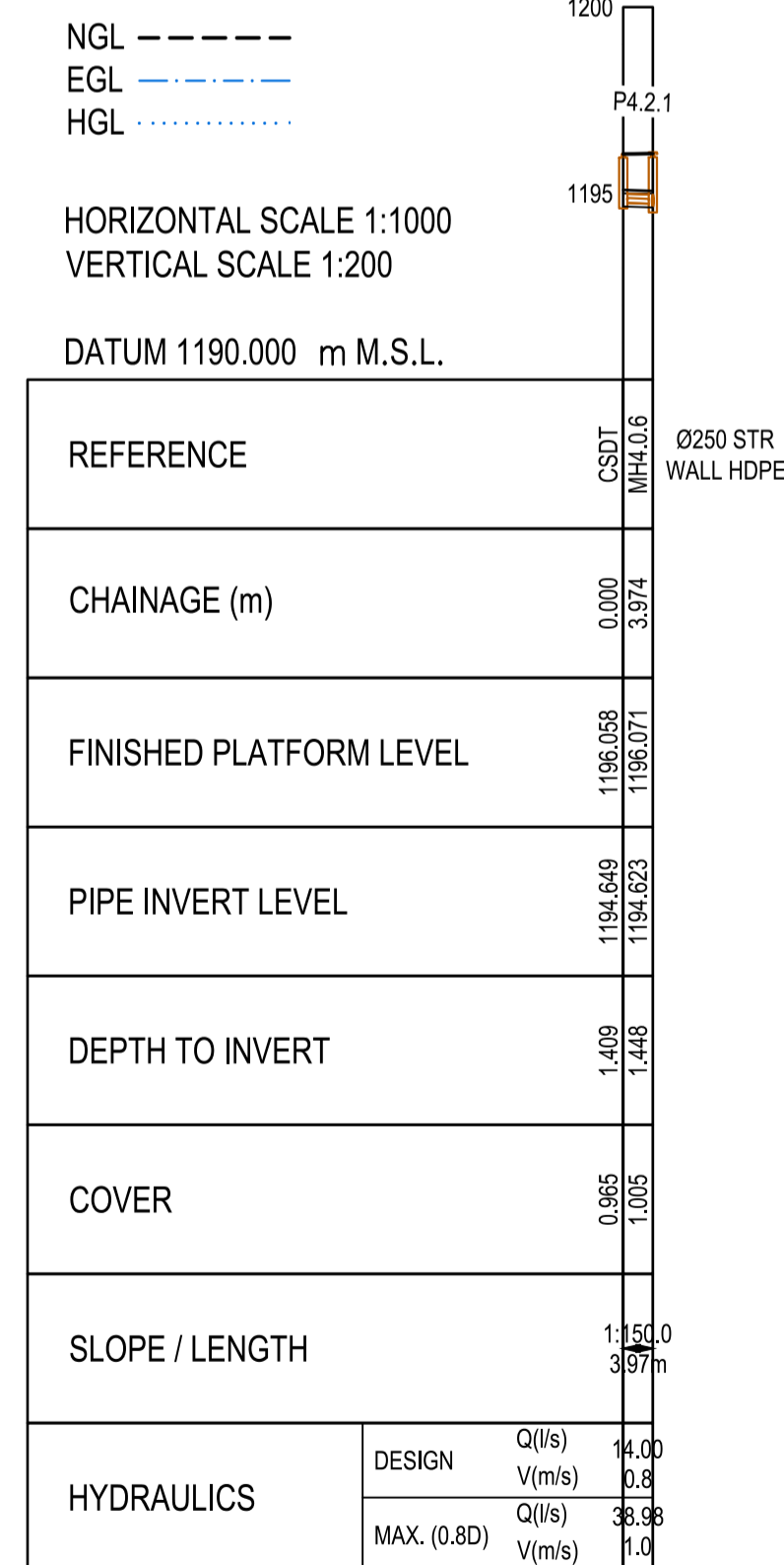
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Designer	Author	Checker
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DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2003-0001	0	



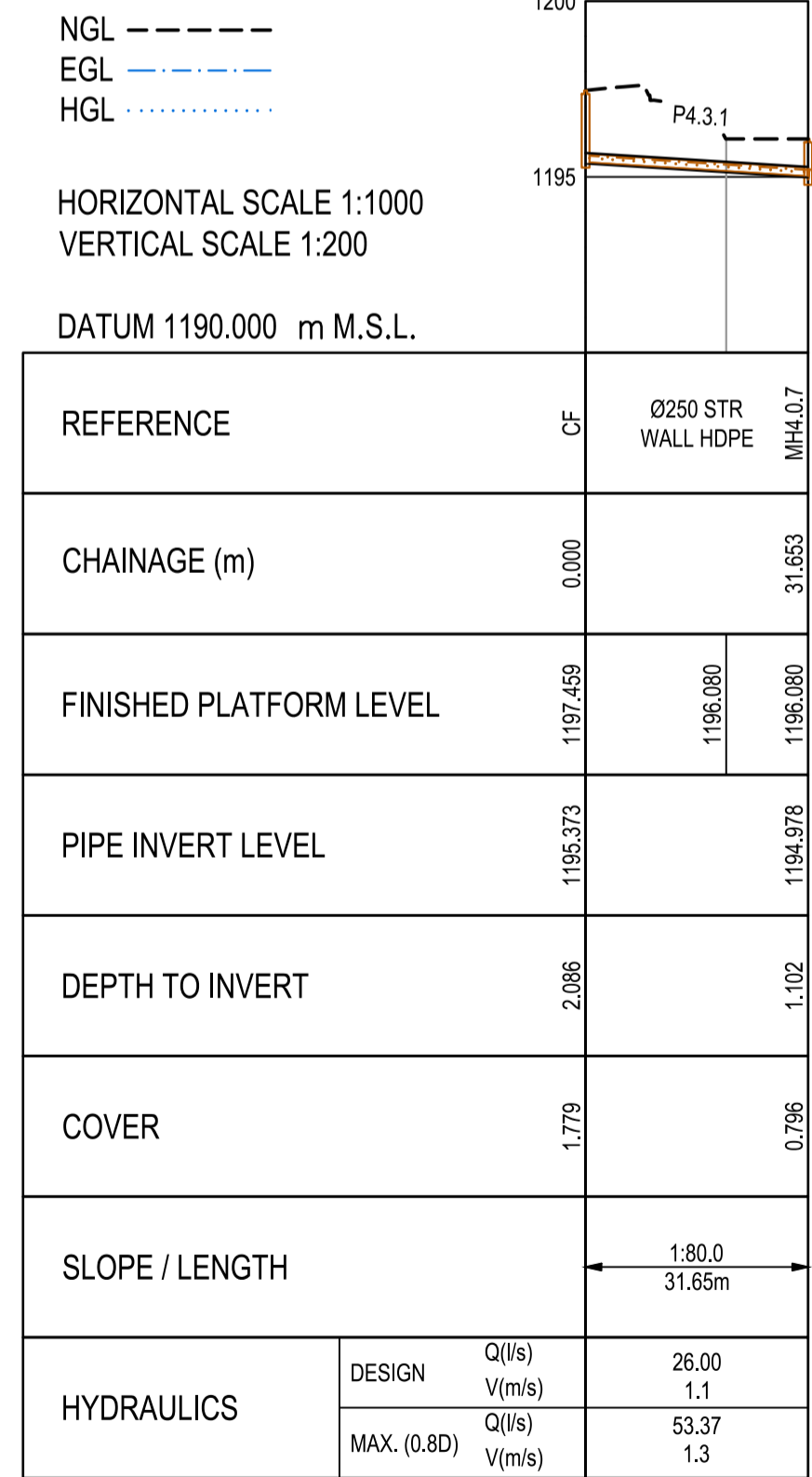
BRANCH4



BRANCH4.1



BRANCH4.2



BRANCH4.3

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REVISION SCHEDULE

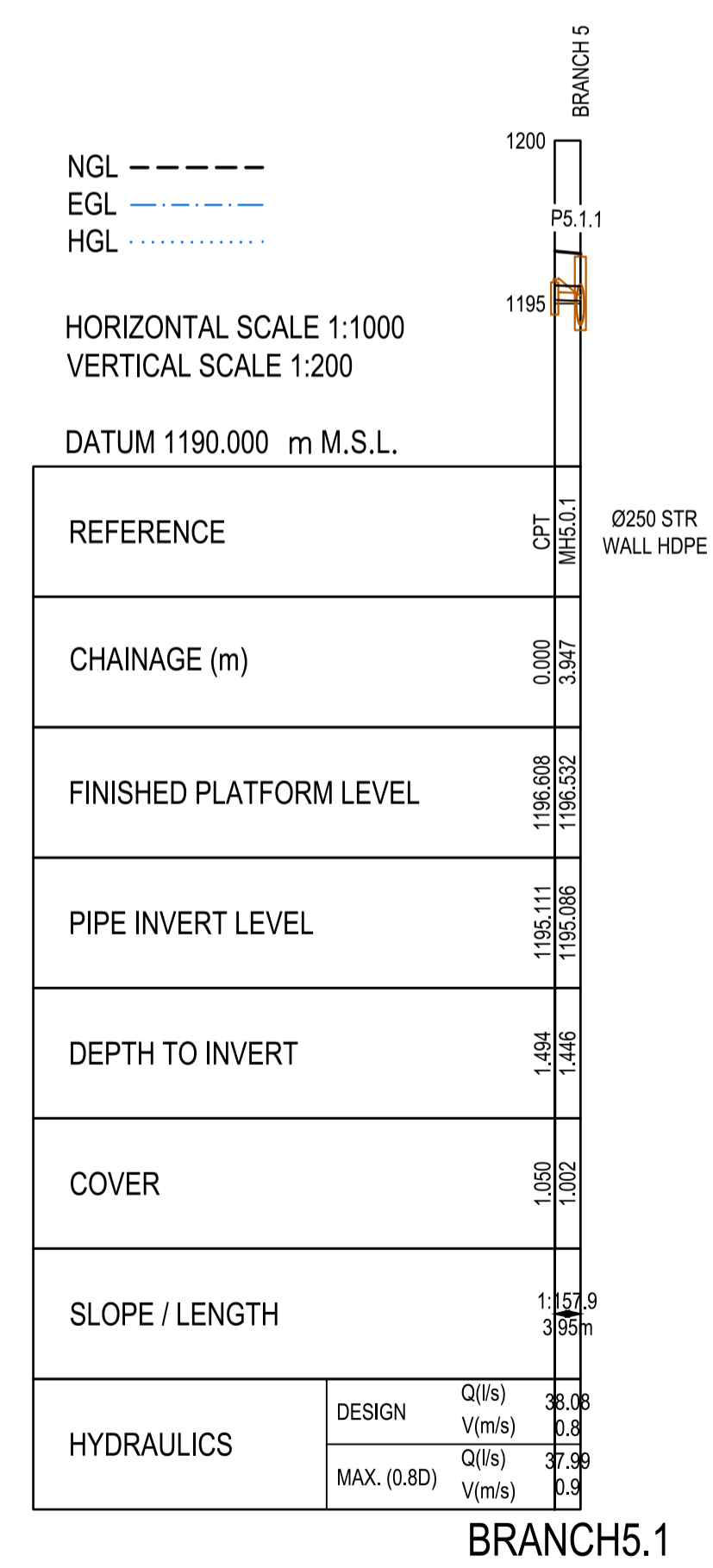
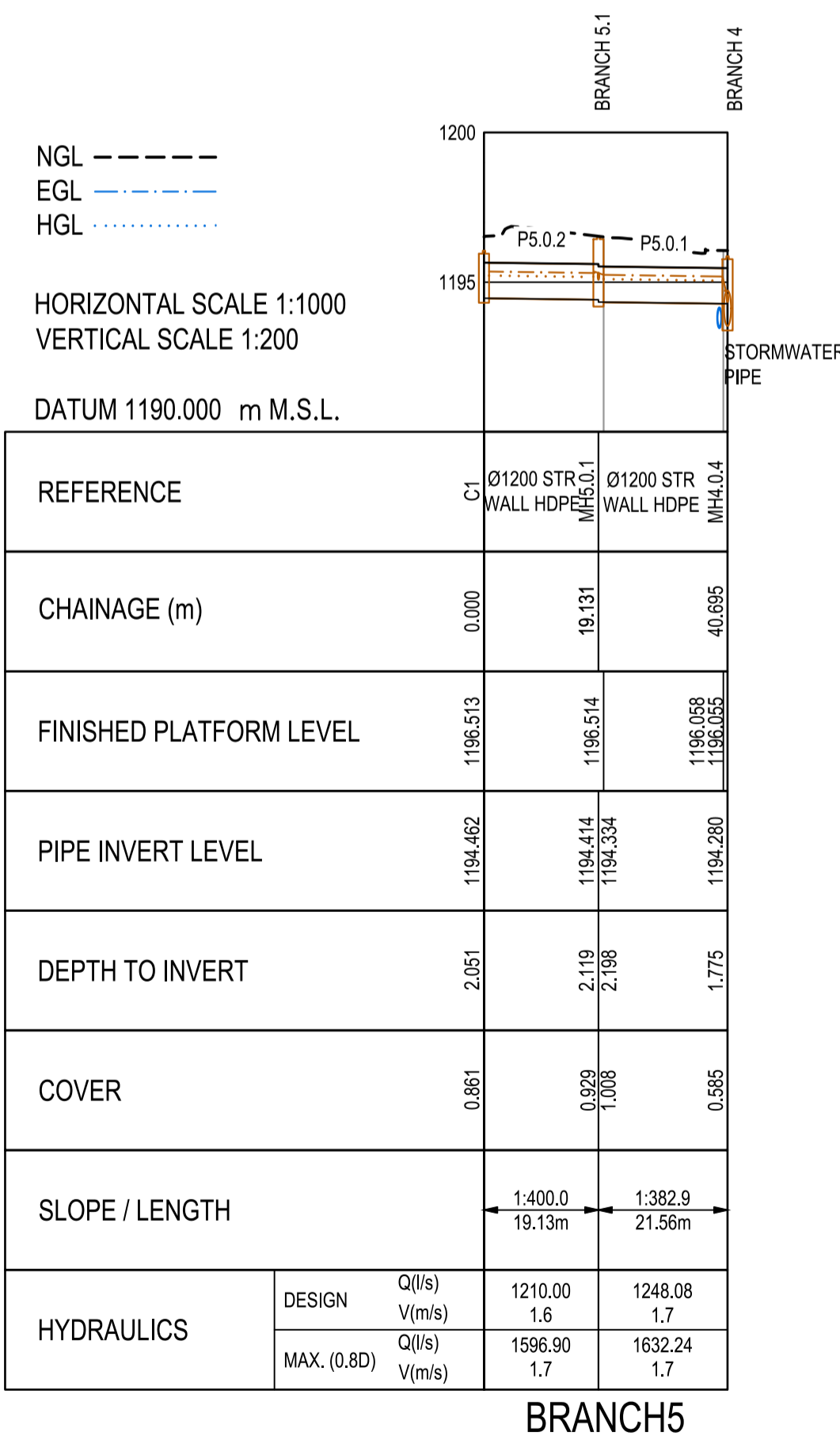
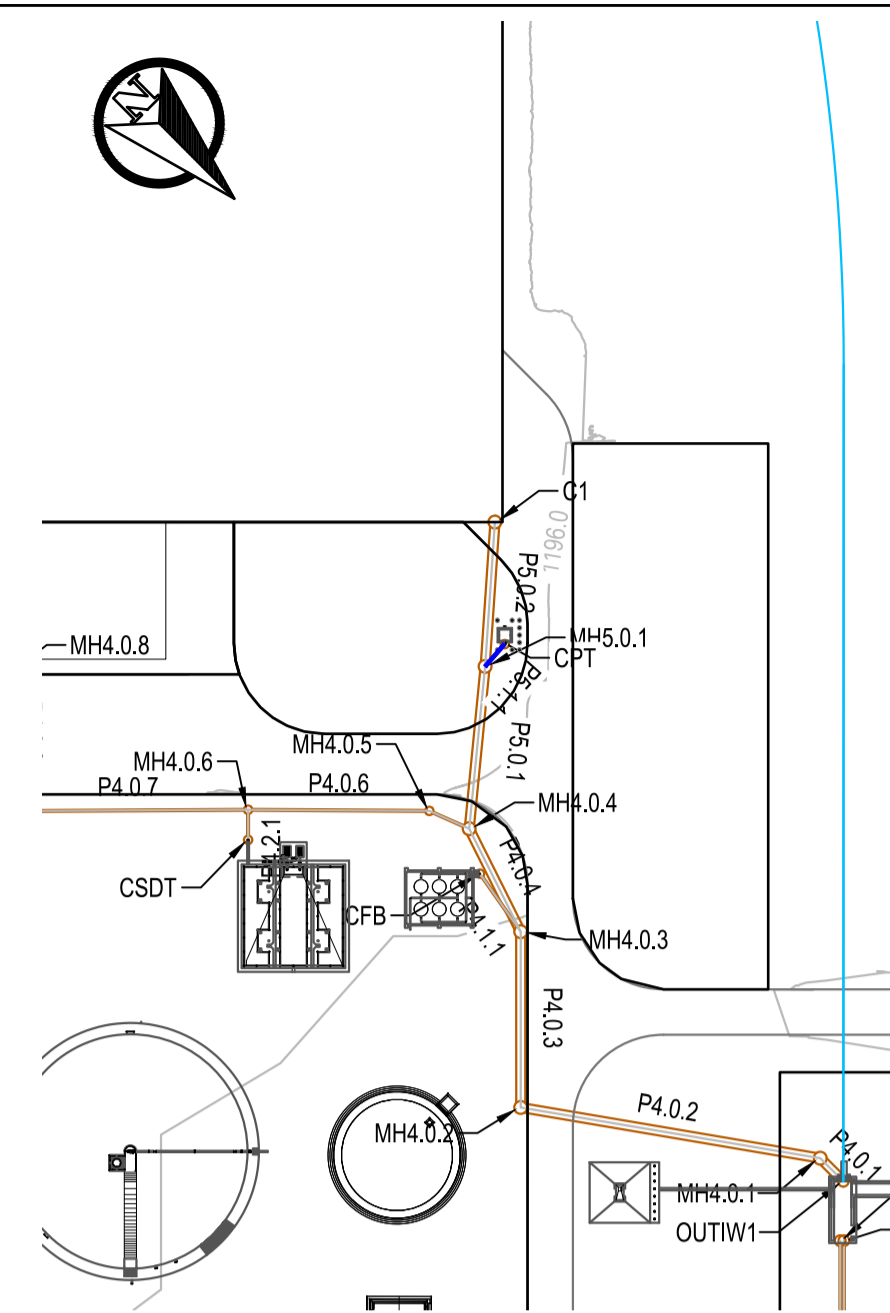
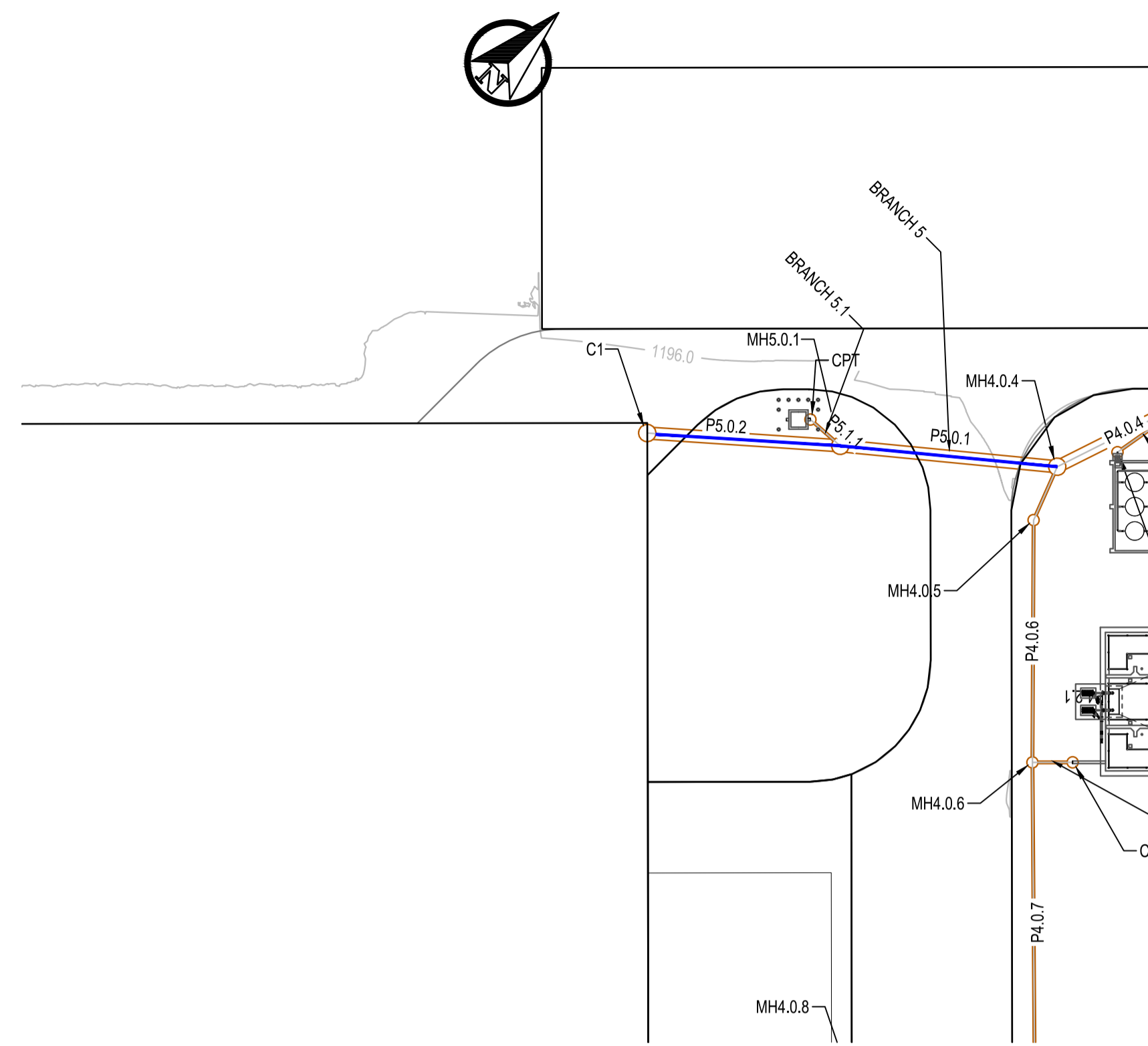
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

PROJECT
 POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION
 SEWER WATER NETWORK BRANCHES 4 TO 4.3 PROFILE

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-CIV-DRG-2003-0002		0



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REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

PROJECT

T. BANDA
ENGINEER

PR ENG no. DATE

CLIENT DATE

PROJECT

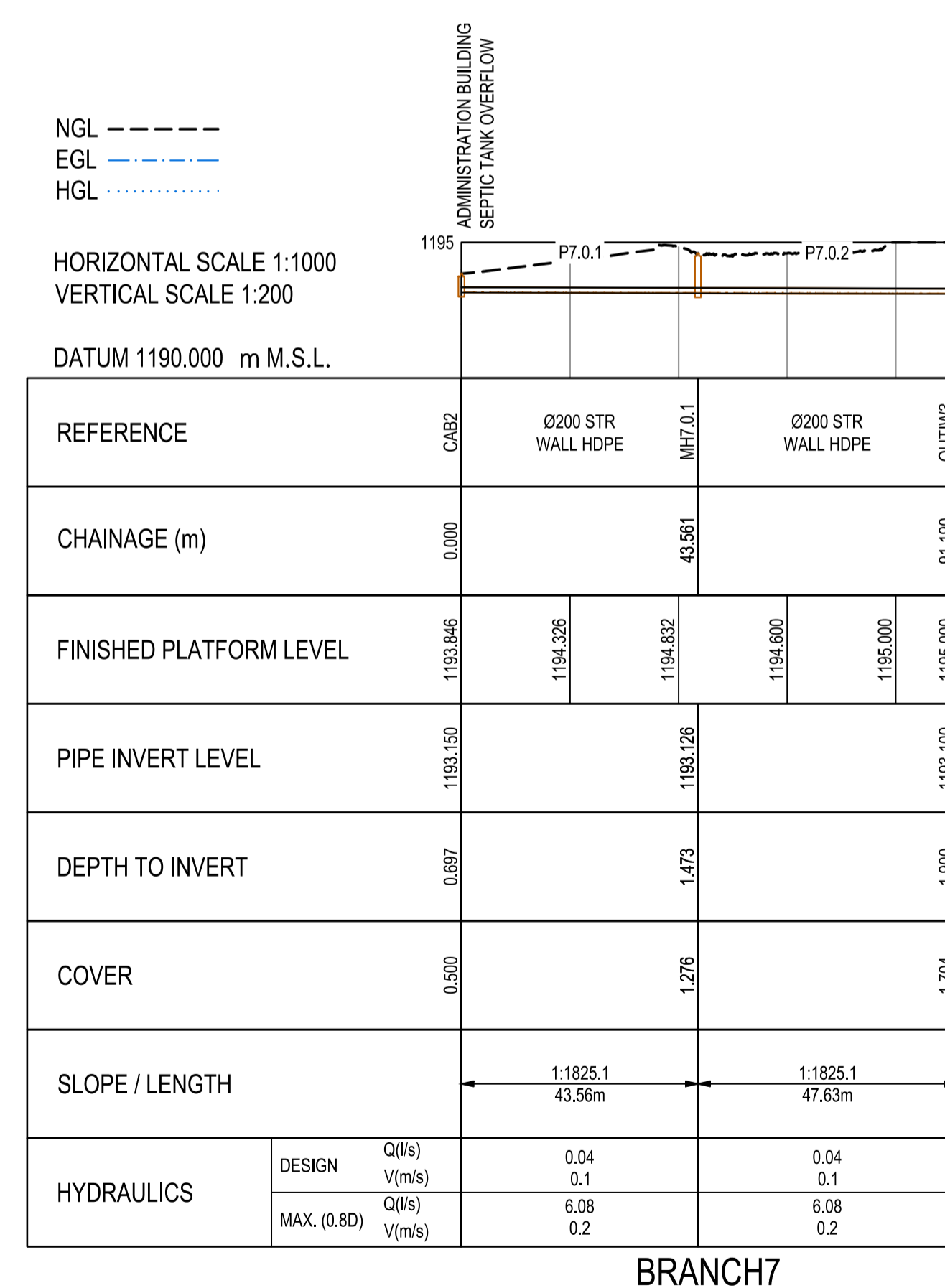
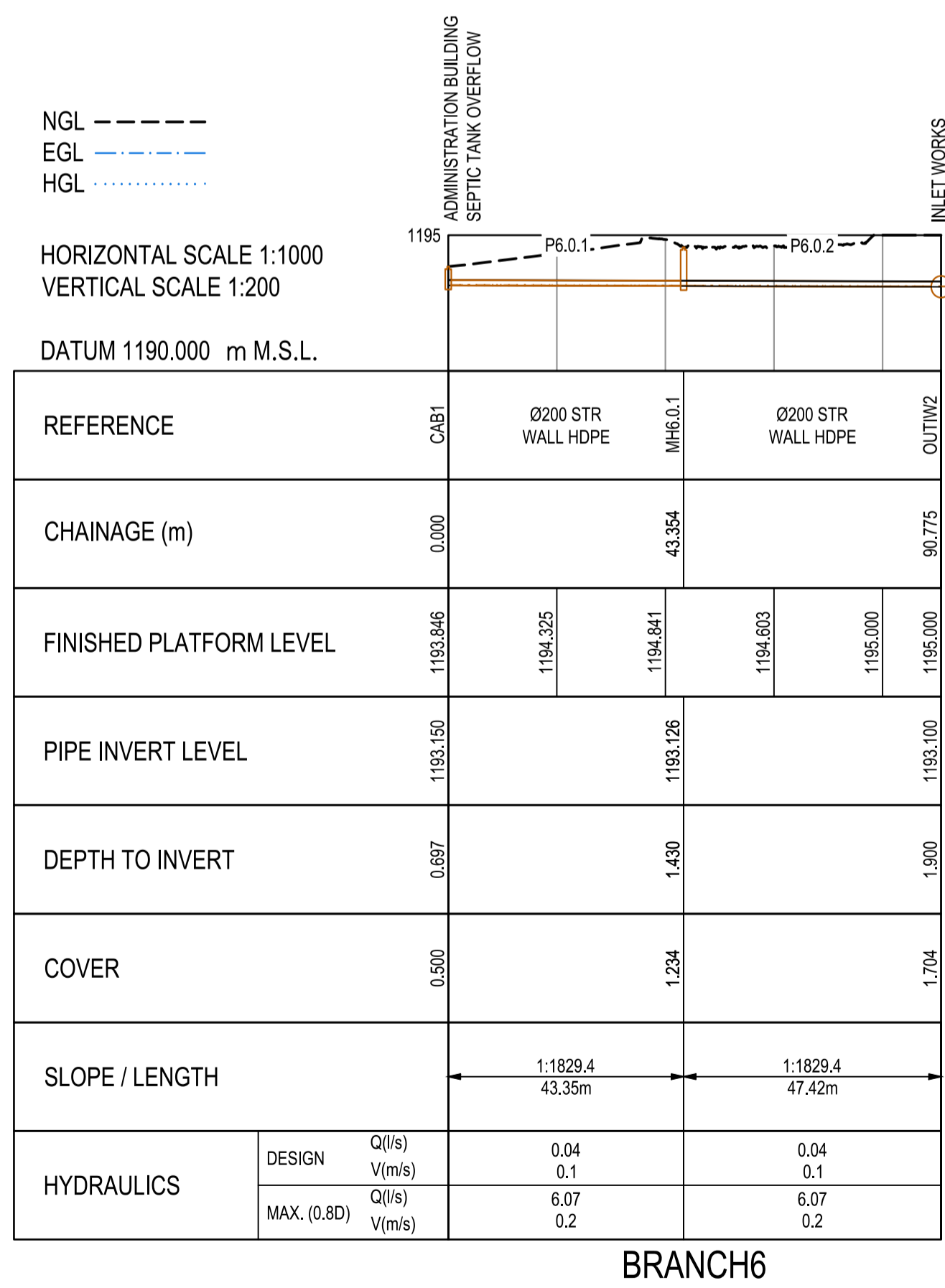
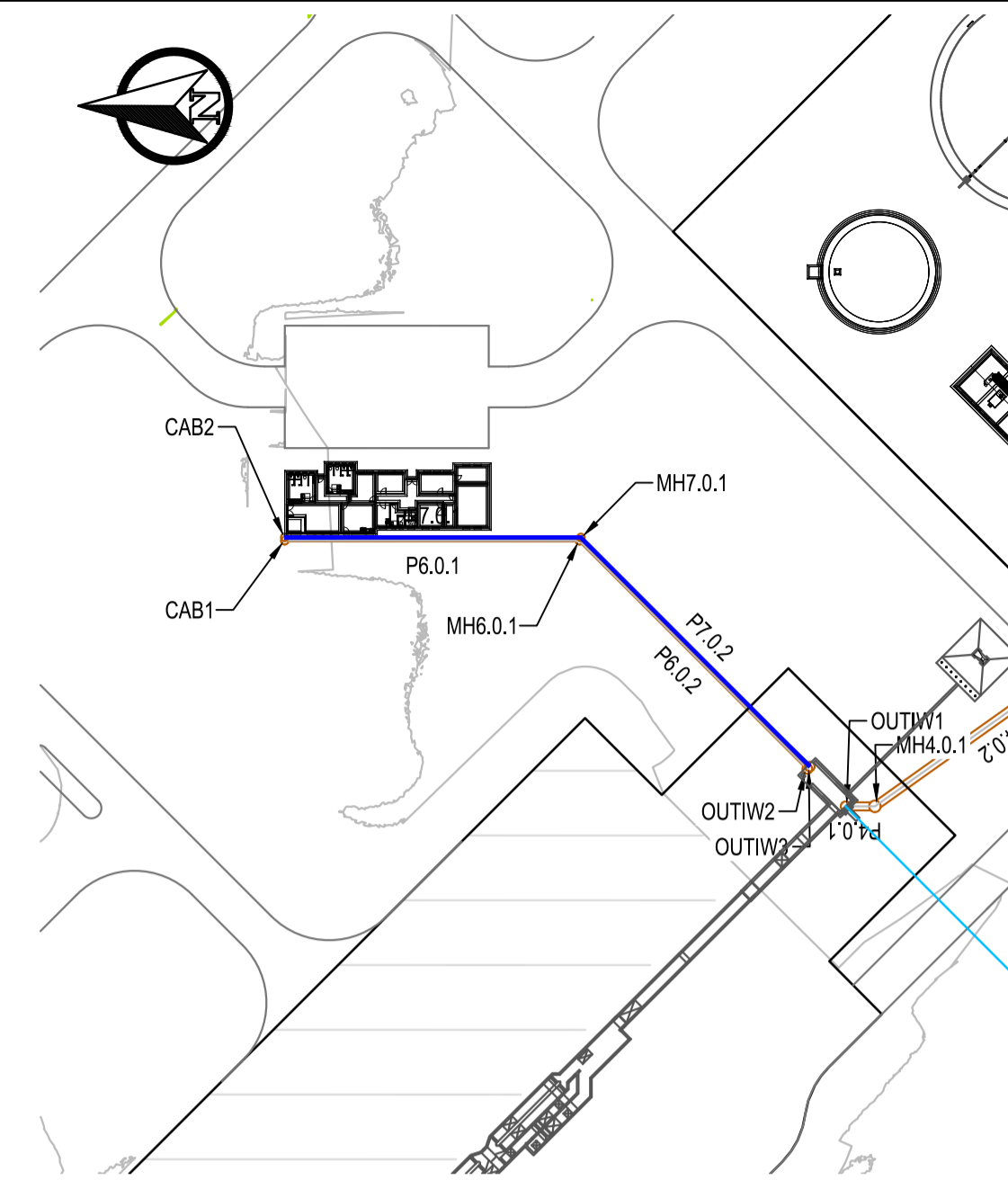
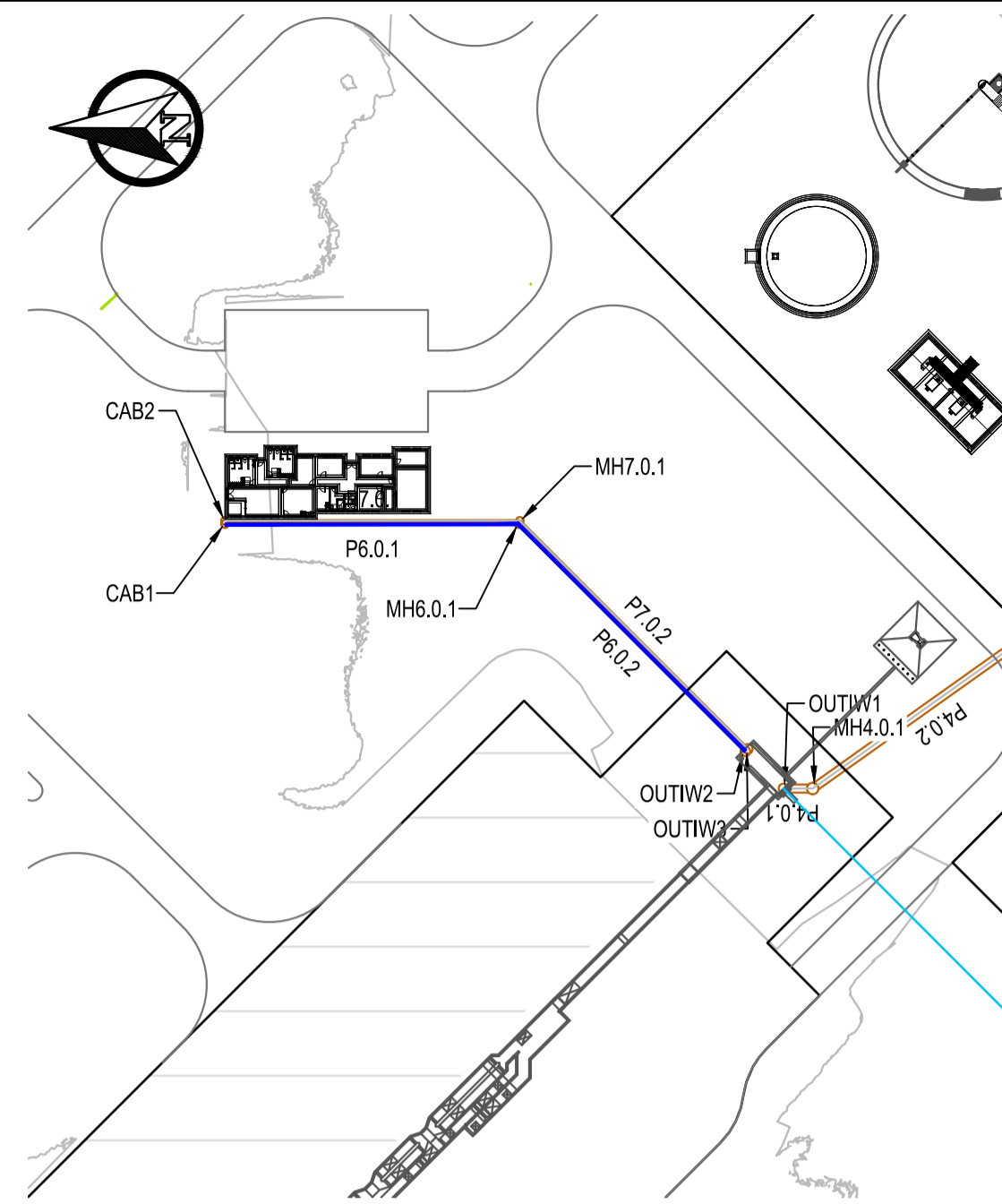
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SEWER WATER NETWORK BRANCHES 5 AND 5.1 PROFILE

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2003-0003	0	



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PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SEWER WATER NETWORK BRANCHES 6 AND 7 PROFILE

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Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2003-0004	0	

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DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2003-0004	0	

STRUCTURE LIST-SEWERNETWORK1					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
C1	-2 633 047.543	46 390.566	1196.052	1194.462 1.590	P5.0.2-INV OUT 1194.462
CF	-2 633 074.002	46 493.616	1197.459	1195.413 2.046	P4.3.1-INV OUT 1195.413
CFB	-2 633 016.055	46 424.845	1195.409	1194.262 1.147	P4.1.1-INV OUT 1194.762
CPT	-2 633 035.205	46 401.054	1195.750	1194.809 0.941	P5.1.1-INV OUT 1195.103
CSDT	-2 633 040.911	46 443.364	1196.060	1194.747 1.313	P4.2.1-INV OUT 1194.747
CTSS	-2 633 088.348	46 452.959	1196.021	1195.374 0.647	P4.0.10-INV OUT 1195.374
MH4.0.1	-2 632 957.630	46 419.621	1195.000	1193.104 1.896	P4.0.2-INV IN 1193.184 P4.0.1-INV OUT 1193.104
MH4.0.2	-2 632 990.387	46 442.889	1194.959	1193.285 1.674	P4.0.3-INV IN 1193.365 P4.0.2-INV OUT 1193.285
MH4.0.3	-2 633 006.824	46 426.464	1195.486	1193.423 2.063	P4.0.4-INV IN 1193.503 P4.1.1-INV IN 1194.700 P4.0.3-INV OUT 1193.423
MH4.0.4	-2 633 021.275	46 421.641	1195.866	1193.536 2.332	P4.0.5-INV IN 1194.335 P5.0.1-INV IN 1194.278 P4.0.4-INV OUT 1193.536
MH4.0.5	-2 633 026.666	46 423.711	1196.069	1194.393 1.676	P4.0.6-INV IN 1194.473 P4.0.5-INV OUT 1194.393
MH4.0.6	-2 633 043.722	46 440.553	1196.071	1194.641 1.431	P4.0.7-INV IN 1194.721 P4.2.1-INV IN 1194.721 P4.0.6-INV OUT 1194.641
MH4.0.7	-2 633 065.933	46 463.008	1196.080	1194.924 1.156	P4.0.8-INV IN 1195.004 P4.3.1-INV IN 1195.018 P4.0.7-INV OUT 1194.924
MH4.0.8	-2 633 078.796	46 450.287	1196.985	1195.125 1.860	P4.0.9-INV IN 1195.205 P4.0.8-INV OUT 1195.125
MH4.0.9	-2 633 084.910	46 456.396	1195.989	1195.262 0.726	P4.0.10-INV IN 1195.342 P4.0.9-INV OUT 1195.262
MH5.0.1	-2 633 034.961	46 404.978	1196.537	1194.334 2.203	P5.0.2-INV IN 1194.414 P5.1.1-INV IN 1195.078 P5.0.1-INV OUT 1194.334
OUTW1	-2 632 953.324	46 419.621	1195.000	1193.093 1.907	P4.0.1-INV IN 1193.093

PIPE LIST-SEWERNETWORK1					
PIPE NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	SLOPE	DIAMETER AND CLASS
P4.0.1	1193.104	1193.093	3.209	0.250%	1200mm
P4.0.2	1193.285	1193.184	38.583	0.250%	1200mm
P4.0.3	1193.423	1193.365	21.640	0.250%	1200mm
P4.0.4	1193.536	1193.503	13.637	0.215%	1200mm
P4.0.5	1194.393	1194.335	4.478	1.002%	250mm
P4.0.6	1194.641	1194.473	22.973	0.699%	250mm
P4.0.7	1194.924	1194.721	30.586	0.642%	250mm
P4.0.8	1195.125	1195.004	17.093	0.667%	250mm
P4.0.9	1195.262	1195.205	7.645	0.663%	250mm
P4.0.10	1195.374	1195.342	3.863	0.667%	250mm
P4.1.1	1194.762	1194.700	8.074	0.664%	250mm
P4.2.1	1194.747	1194.721	2.976	0.667%	250mm
P4.3.1	1195.413	1195.018	30.659	1.250%	250mm
P5.0.1	1194.334	1194.278	19.967	0.261%	1200mm
P5.0.2	1194.462	1194.414	17.534	0.250%	1200mm
P5.1.1	1195.103	1195.078	2.633	0.633%	250mm

STRUCTURE LIST-SEWERWATER2					
STRUCTURE NAME	Y	X	RIM ELEVATION	SUMP ELEVATION SUMP DEPTH	INVERT ELEVATION
CAB1	-2 632 870.807	46 458.652	1193.846	1193.150 0.697	P6.0.1-INV OUT 1193.150
CAB2	-2 632 870.807	46 459.152	1193.846	1193.150 0.697	P7.0.1-INV OUT 1193.150
MH6.0.1	-2 632 914.161	46 458.652	1194.556	1193.126 1.430	P6.0.1-INV IN 1193.126 P6.0.2-INV OUT 1193.126
MH7.0.1	-2 632 914.368	46 459.152	1194.599	1193.126 1.473	P7.0.1-INV IN 1193.126 P7.0.2-INV OUT 1193.126
OUTW2	-2 632 947.693	46 425.120	1195.000	1193.100 1.900	P6.0.2-INV IN 1193.100
OUTW3	-2 632 948.046	46 425.474	1195.000	1193.100 1.900	P7.0.2-INV IN 1193.100

PIPE LIST-SEWERWATER2					
PIPE NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	SLOPE	DIAMETER AND CLASS
P6.0.1	1193.150	1193.126	42.354	0.055%	200mm
P6.0.2	1193.126	1193.100	46.622	0.055%	200mm
P7.0.1	1193.150	1193.126	42.561	0.055%	200mm
P7.0.2	1193.126	1193.100	46.829	0.055%	200mm

CONSTRUCTION DRAWING

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REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
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T. BANDA
ENGINEER

PR ENG no. DATE

CLIENT DATE

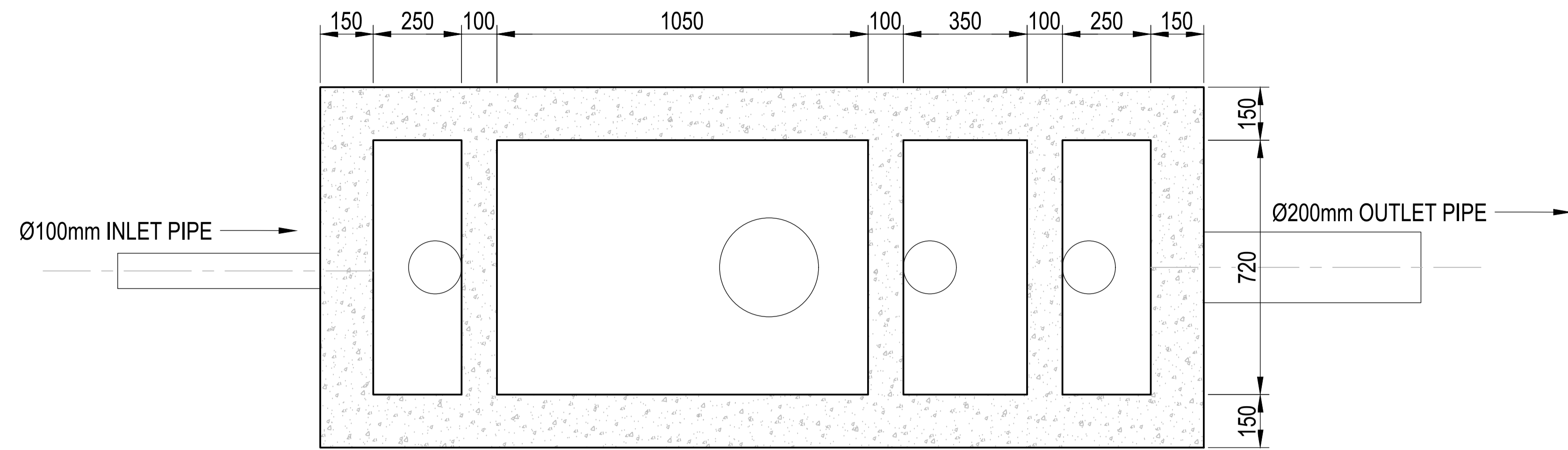
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

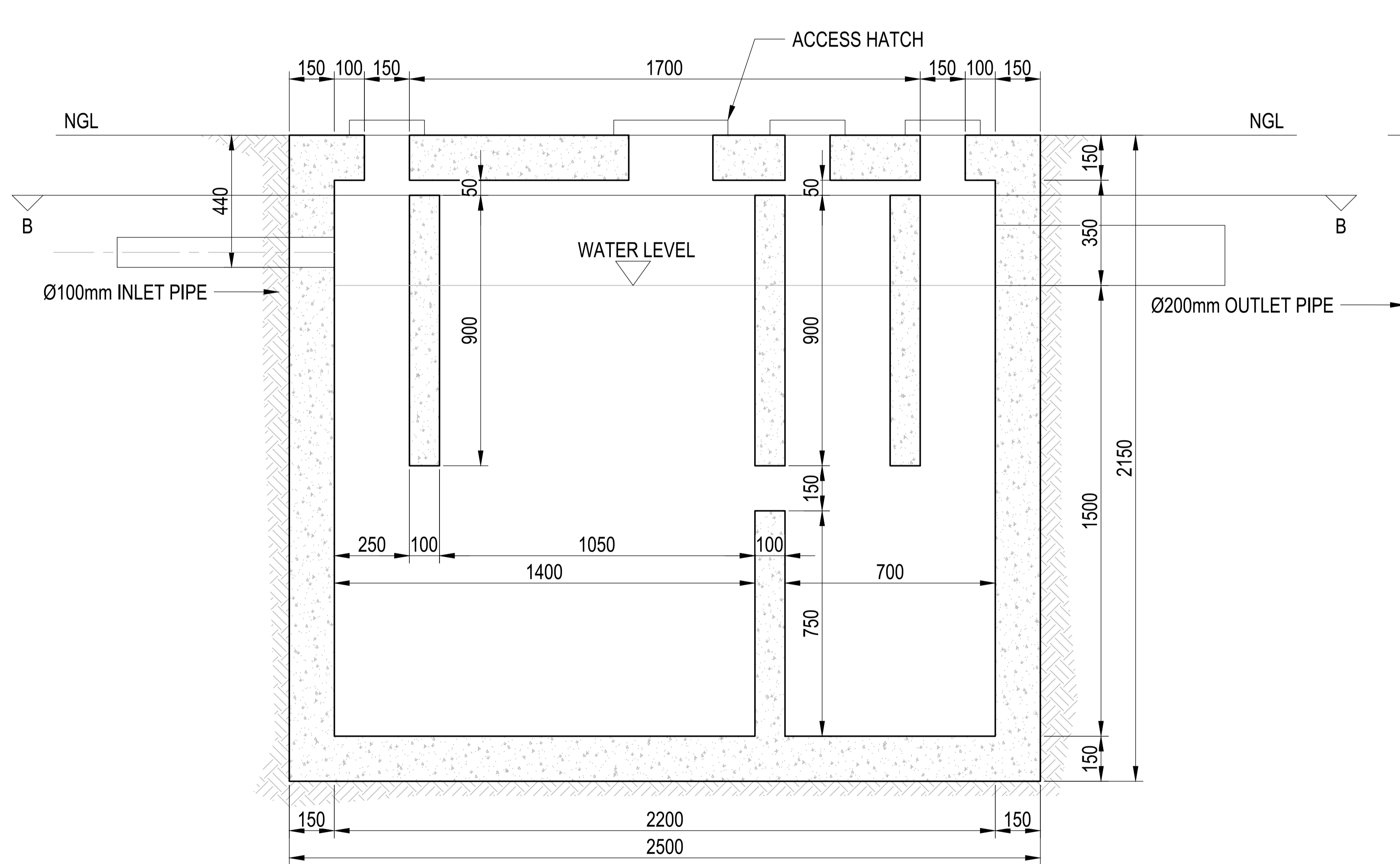
DRAWING DESCRIPTION

**SEWER WATER NEWTORK
JUNCTION AND PIPE
DETAILS**

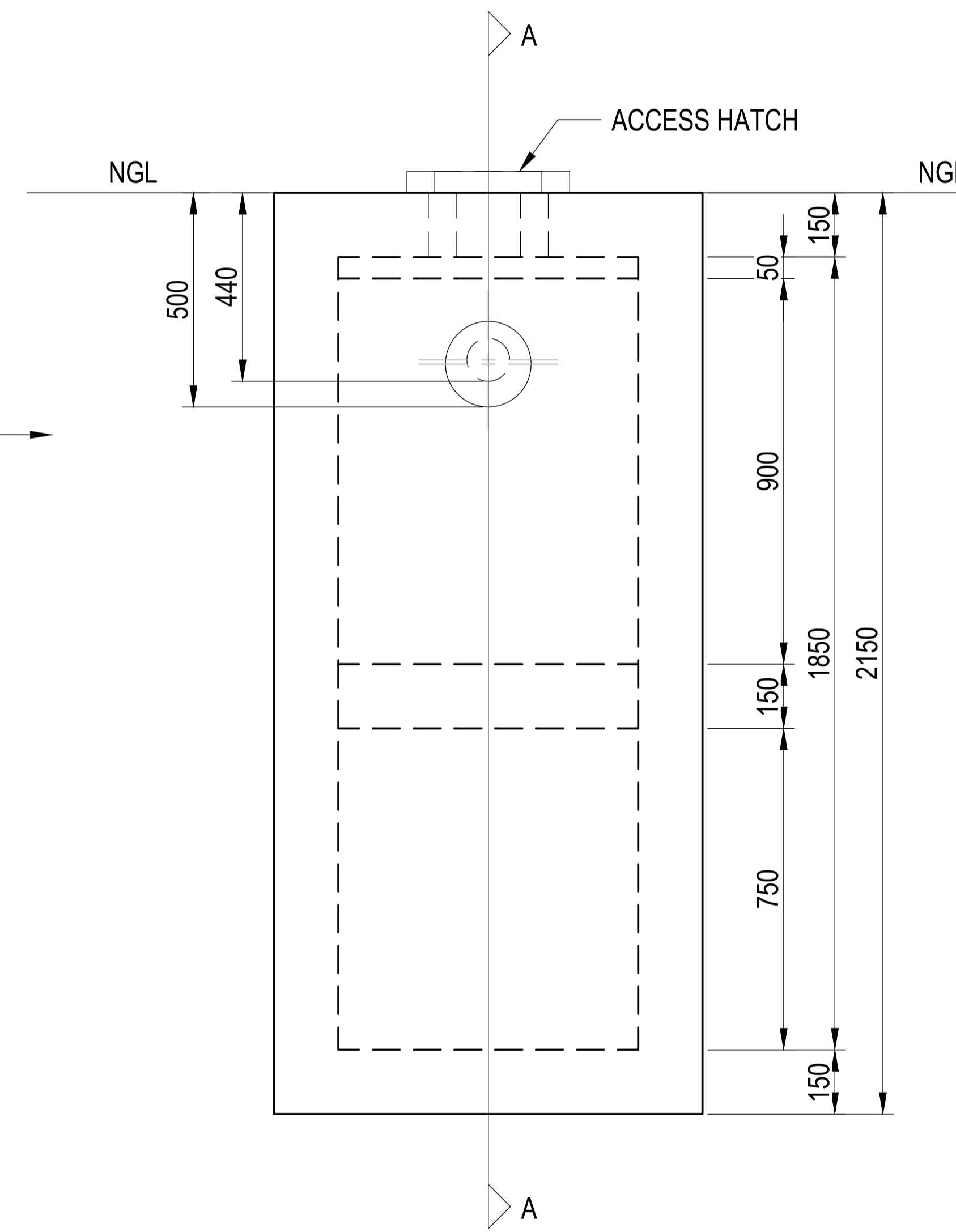
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Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
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DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2003-0005	0	



SECTION B-B



SECTION A-A



SIDE VIEW

CONSTRUCTION DRAWING

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 CITY OF
Polokwane
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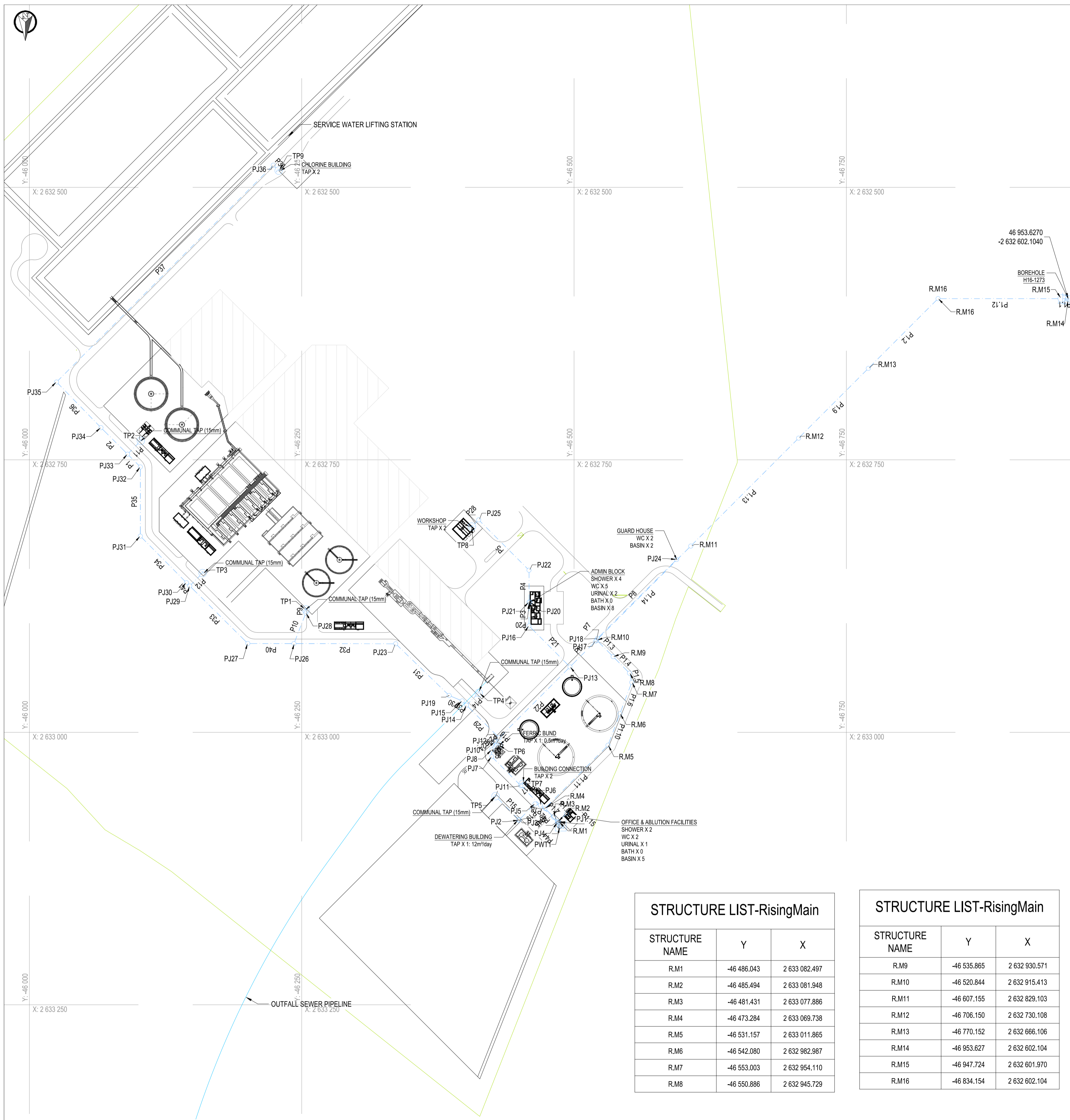
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT
**POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS**

DRAWING DESCRIPTION
**SEWER WATER
 SEPTIC TANK**

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-CIV-DRG-2003-0006	0	



STRUCTURE LIST-PotableWaterGravity			
STRUCTURE NAME	Y	X	
PJ1	-46 492.945	2 633 074.498	
PJ2	-46 449.280	2 633 080.616	
PJ3	-46 449.634	2 633 080.262	
PJ4	-46 484.787	2 633 082.656	
PJ5	-46 464.174	2 633 065.722	
PJ6	-46 469.115	2 633 066.984	
PJ7	-46 424.435	2 633 022.303	
PJ8	-46 424.435	2 633 016.177	
PJ9	-46 427.513	2 633 008.744	
PJ10	-46 427.580	2 633 008.678	
PJ11	-46 451.159	2 633 049.027	
PJ12	-46 431.213	2 633 005.045	
PJ13	-46 496.266	2 632 939.992	
PJ14	-46 401.283	2 632 975.143	
PJ15	-46 397.335	2 632 971.203	
PJ16	-46 458.652	2 632 902.379	
PJ17	-46 519.851	2 632 916.305	
PJ18	-46 521.584	2 632 913.762	
PJ19	-46 385.325	2 632 966.228	
PJ20	-46 459.632	2 632 880.635	
PJ21	-46 458.652	2 632 880.635	
PJ22	-46 458.652	2 632 851.270	
PJ23	-46 336.259	2 632 918.798	
PJ24	-46 594.173	2 632 841.418	
PJ25	-46 412.460	2 632 805.078	
PJ26	-46 242.866	2 632 918.604	
PJ27	-46 200.506	2 632 918.503	
PJ28	-46 253.762	2 632 890.610	
PJ29	-46 147.197	2 632 865.734	
PJ30	-46 144.211	2 632 862.785	
PJ31	-46 101.851	2 632 820.034	
PJ32	-46 101.872	2 632 756.529	
PJ33	-46 090.099	2 632 744.800	
PJ34	-46 065.717	2 632 720.511	
PJ35	-46 024.928	2 632 678.627	
PJ36	-46 223.870	2 632 479.685	
PWT1	-46 487.785	2 633 085.580	
TP1	-46 253.762	2 632 887.305	
TP2	-46 102.290	2 632 732.610	
TP3	-46 159.017	2 632 853.949	
TP4	-46 412.538	2 632 963.888	
TP5	-46 427.930	2 633 058.558	
TP6	-46 430.437	2 633 011.536	
TP7	-46 452.945	2 633 047.241	
TP8	-46 406.283	2 632 811.254	
TP9	-46 228.820	2 632 484.634	

PIPE LIST-PotableWaterGravity				
NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	DIAMETER AND CLASS
P1	1185.413	1184.399	16.600	32mm Class PN10
P2	1184.397	1183.853	34.370	25mm Class PN10
P3	1194.000	1192.786	21.750	40mm Class PN10
P4	1193.233	1192.444	29.346	25mm Class PN10
P5	1192.444	1190.978	65.292	25mm Class PN10
P6	1194.738	1193.816	33.389	25mm Class PN10
P7	1193.816	1193.661	3.042	25mm Class PN10
P8	1193.659	1191.716	102.452	25mm Class PN10
P9	1188.108	1188.811	3.354	25mm Class PN10
P10	1190.358	1188.108	30.093	25mm Class PN10
P11	1183.768	1184.402	17.202	25mm Class PN10
P12	1184.989	1186.829	16.744	25mm Class PN10
P14	1193.723	1192.839	15.892	25mm Class PN10
P15	1195.181	1195.738	30.649	25mm Class PN10
P16	1194.725	1194.720	3.991	25mm Class PN10
P17	1194.790	1194.794	2.476	25mm Class PN10
P18	1194.792	1194.792	5.068	40mm Class PN10
P19	1194.792	1195.727	20.536	40mm Class PN10
P20	1192.786	1192.784	0.950	32mm Class PN10
P21	1194.000	1194.390	53.145	40mm Class PN10
P22	1194.390	1194.879	91.949	40mm Class PN10
P23	1194.671	1194.689	5.088	75mm Class PN10
P24	1194.689	1194.690	0.043	75mm Class PN10
P25	1194.730	1194.744	6.096	75mm Class PN10
P26	1194.744	1194.772	37.743	75mm Class PN10
P27	1194.772	1194.772	25.343	75mm Class PN10
P28	1191.249	1190.978	8.689	25mm Class PN10
P29	1194.682	1192.827	42.299	50mm Class PN10
P30	1193.398	1193.139	12.969	40mm Class PN10
P31	1193.139	1191.824	68.206	40mm Class PN10
P32	1191.824	1190.348	93.376	40mm Class PN10
P33	1189.537	1186.822	75.010	40mm Class PN10
P34	1187.132	1186.458	60.136	32mm Class PN10
P35	1186.458	1185.413	63.484	32mm Class PN10
P36	1183.853	1183.224	58.418	25mm Class PN10
P37	1183.224	1182.224	281.298	25mm Class PN10
P38	1182.224	1182.304	6.950	25mm Class PN10
P39	1193.653	1193.398	5.535	40mm Class PN10
P40	1190.348	1189.537	42.339	40mm Class PN10
P41	1187.236	1187.132	4.149	32mm Class PN10
P42	1196.023	1194.745	22.155	90mm Class PN10
P43	1196.074	1196.180	11.487	32mm Class PN10
P44	1196.142	1196.023	4.107	90mm Class PN10
P45	1195.731	1195.740	0.460	32mm Class PN10
P46	1194.690	1194.730	8.012	75mm Class PN10

STRUCTURE LIST-RisingMain			
STRUCTURE NAME	Y	X	
R.M1	-46 486.043	2 633 082.497	
R.M2	-46 485.494	2 633 081.948	
R.M3	-46 481.431	2 633 077.886	
R.M4	-46 473.284	2 633 069.738	
R.M5	-46 531.157	2 633 011.865	
R.M6	-46 542.080	2 632 982.987	
R.M7	-46 553.003	2 632 954.110	
R.M8	-46 550.886	2 632 945.729	

STRUCTURE LIST-RisingMain			
STRUCTURE NAME	Y	X	
R.M9	-46 535.865	2 632 930.571	
R.M10	-46 520.844	2 632 915.413	
R.M11	-46 607.155	2 632 829.103	
R.M12	-46 706.150	2 632 730.108	
R.M13	-46 770.152	2 632 666.106	
R.M14	-46 953.627	2 632 602.104	
R.M15	-46 947.724	2 632 601.970	
R.M16	-46 834.154	2 632 602.104	

PIPE LIST-RisingMain				
NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	DIAMETER AND CLASS
P1.1	1185.633	1185.503	5.891	90mm Class PN10
P1.2	1184.935	1185.447	90.464	90mm Class PN10
P1.3	1193.367	1193.861	21.297	90mm Class PN10
P1.4	1193.861	1194.375	21.298	90mm Class PN10
P1.5	1194.375	1194.507	8.615	90mm Class PN10
P1.6	1194.507	1194.978	30.846	90mm Class PN10
P1.7	1196.697	1196.873	11.474	90mm Class PN10
P1.8	1196.873	1196.961	5.697	90mm Class PN10

PIPE LIST-RisingMain				
NAME	START INVERT LEVEL	END INVERT LEVEL	3D LENGTH TO INSIDE EDGES	DIAMETER AND CLASS
P1.9	1185.447	1187.389	90.485	90mm Class PN10
P1.10	1194.978	1195.449	30.846	90mm Class PN10
P1.11	1195.449	1196.697	81.805	90mm Class PN10
P1.12	1185.503	1184.935	113.557	90mm Class PN10
P1.13	1187.389	1190.923	139.996	90mm Class PN10
P1.14	1190.923	1193.367	122.037	90mm Class PN10
P1.15	1196.961	1206.538	10.558	90mm Class PN10

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

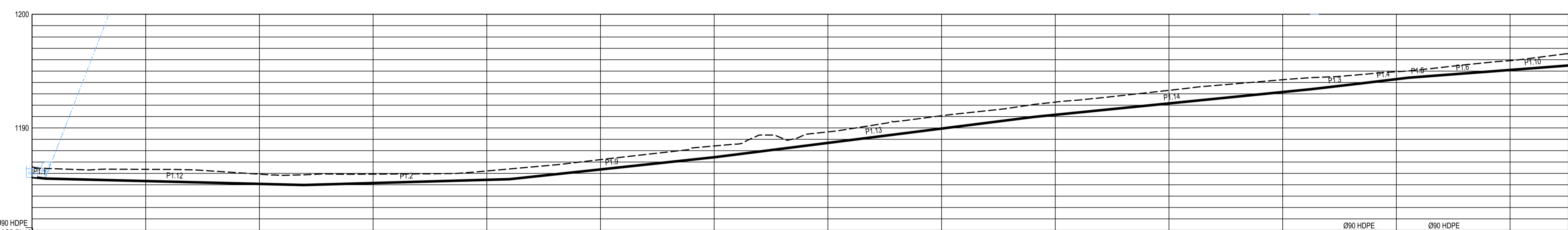
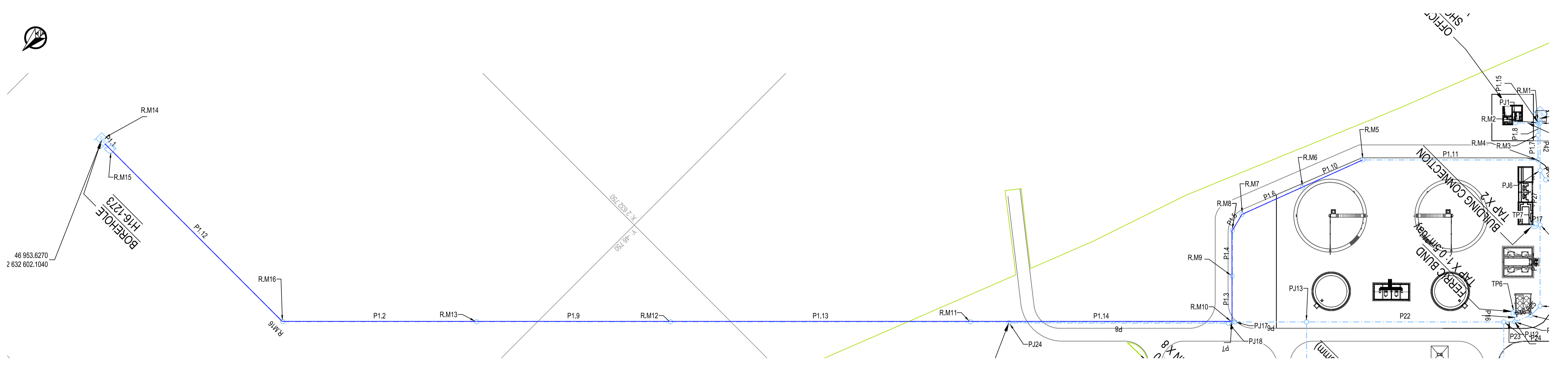
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

POTABLE WATER NETWORK GENERAL LAYOUT AND DETAILS

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:2000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-CP-2B-CIV-IR-100		0



NGL ---
 PIPE ---
 JUNCTION ○
 AIR VALVE ⊕
 PUMP ⊕
 TAP ⊕
 SCALES:
 Horizontal 1:1000
 Vertical 1:200
 DATUM 1180.000

REFERENCE	R.M.14	R.M.15	Ø90 HDPE CLASS PN10	R.M.16	Ø90 HDPE CLASS PN10	R.M.13	Ø90 HDPE CLASS PN10	R.M.12	Ø90 HDPE CLASS PN10	R.M.11	Ø90 HDPE CLASS PN10	R.M.10	Ø90 HDPE CLASS PN10	R.M.9	R.M.8	R.M.7	Ø90 HDPE CLASS PN10	R.M.6	Ø90 HDPE CLASS PN10	R.M.5	
FINISHED PLATFORM LEVEL	1186.566	1186.566	1186.566	1186.532	1186.536	1186.213	1187.215	1188.413	1189.649	1191.071	1192.271	1193.308	1194.240	1194.943	1194.943	1194.918	1195.918	1195.449	1195.531		
PIPE INVERT LEVEL	1185.633	1185.503	1184.935	1184.935	1184.935	1184.447	1187.389	1187.389	1189.649	1191.071	1192.271	1193.308	1194.240	1194.943	1194.943	1194.918	1195.449	1195.449	1195.531		
DEPTH TO INVERT	0.935	0.936	1.074	0.899	0.935	0.828	0.823	0.944	0.910	1.035	1.033	1.010	1.170	1.139	1.157	1.193	1.125	1.059	0.874	0.825	0.694
COVER	0.800	0.852	0.850	0.850	0.850	0.880	0.849	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.855
SLOPE / LENGTH	2.21%	1.45%	0.50%	-1.176.9	-0.57%	-1.176.9	-2.15%	-1.46.6	-2.52%	-1.39.6	-1.43.2	-1.41.5	-1.65.6	-1.53%	-1.53%	-1.53%	-1.53%	-1.53%	-1.53%	-1.53%	-1.53%
HYDRAULICS	DESIGN Q(l/s) 5.00	DESIGN V(m/s) 1.0	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

LONGSECTION BRANCH 1.1A
FROM 0.000 TO 675.632

CONSTRUCTION DRAWING

NOTES
 1.1 DO NOT SCALE THE DRAWINGS.
 1.2 ALL DIMENSIONS TO BE VERIFIED ON SITE, PRIOR TO MANUFACTURING OR ORDERING OF EQUIPMENT.
 1.3 ANY IN-CLARITIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSULTING ENGINEER
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CLIENT

 CITY OF
Polokwane
 NATURALLY PROGRESSIVE

REVISION SCHEDULE

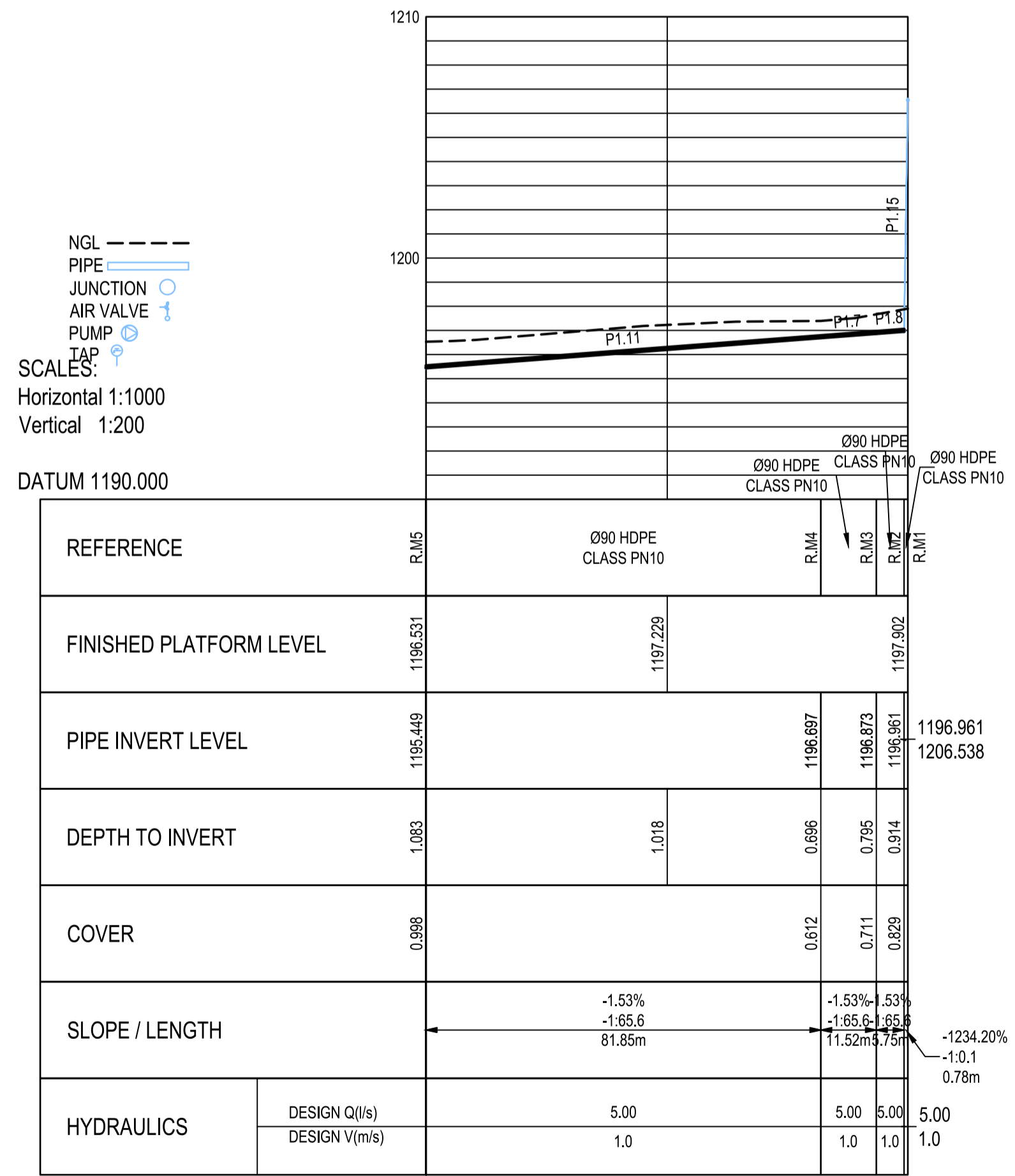
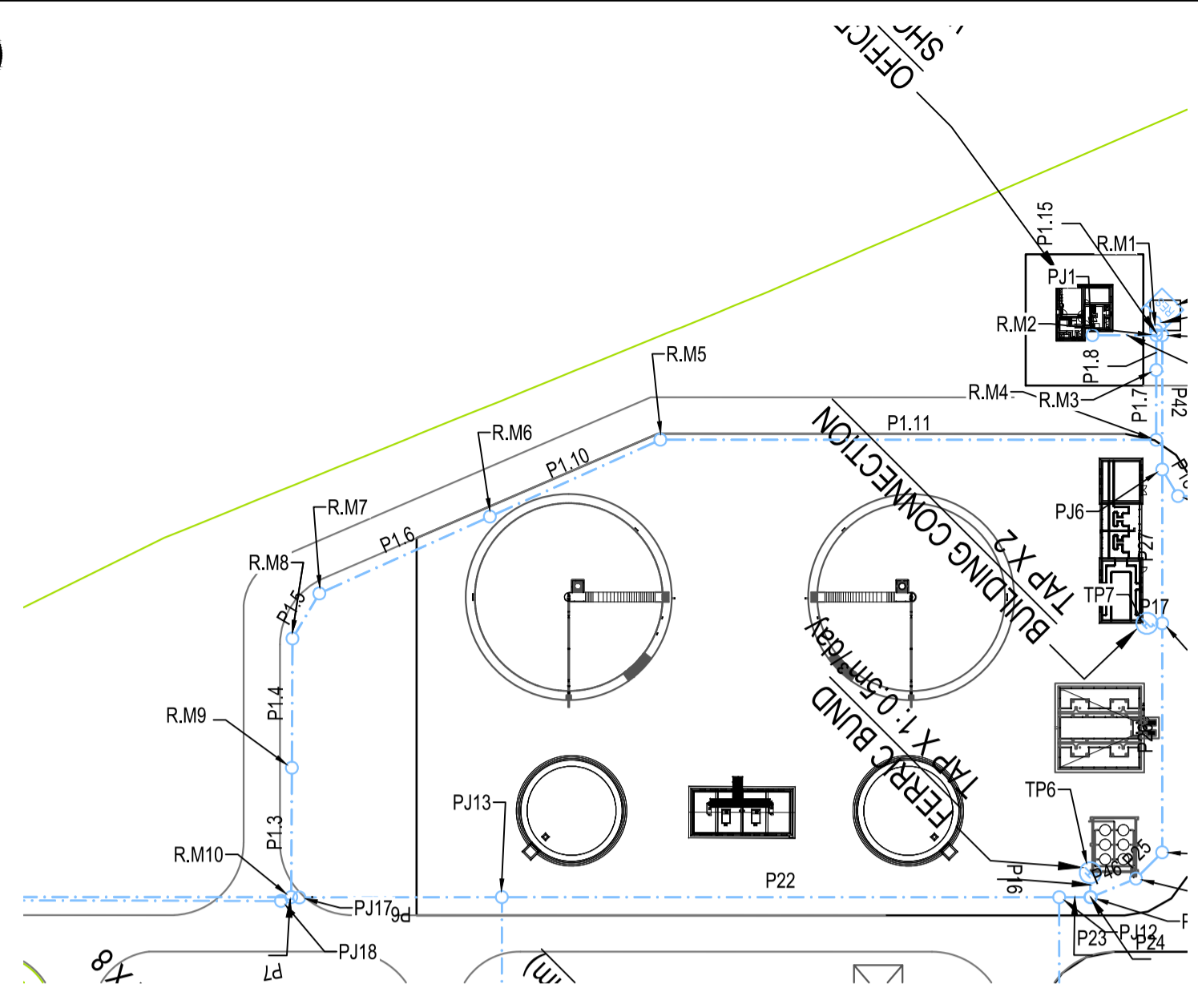
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____
 CLIENT _____ DATE _____

PROJECT
**POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS**

DRAWING DESCRIPTION
**POTABLE WATER POTABLE
 NETWORK PUMPING
 BRANCH 1.1A PROFILE**

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-101	0	



LONGSECTION BRANCH 1.1B
FROM 0.000 TO 99.889

CONSTRUCTION DRAWING

NOTES

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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

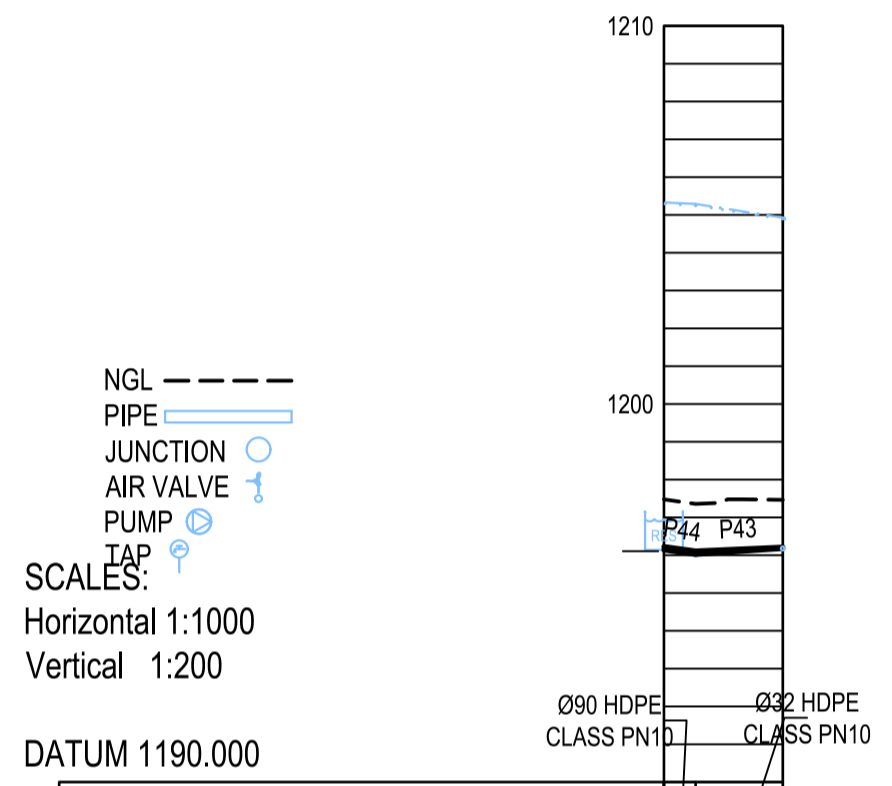
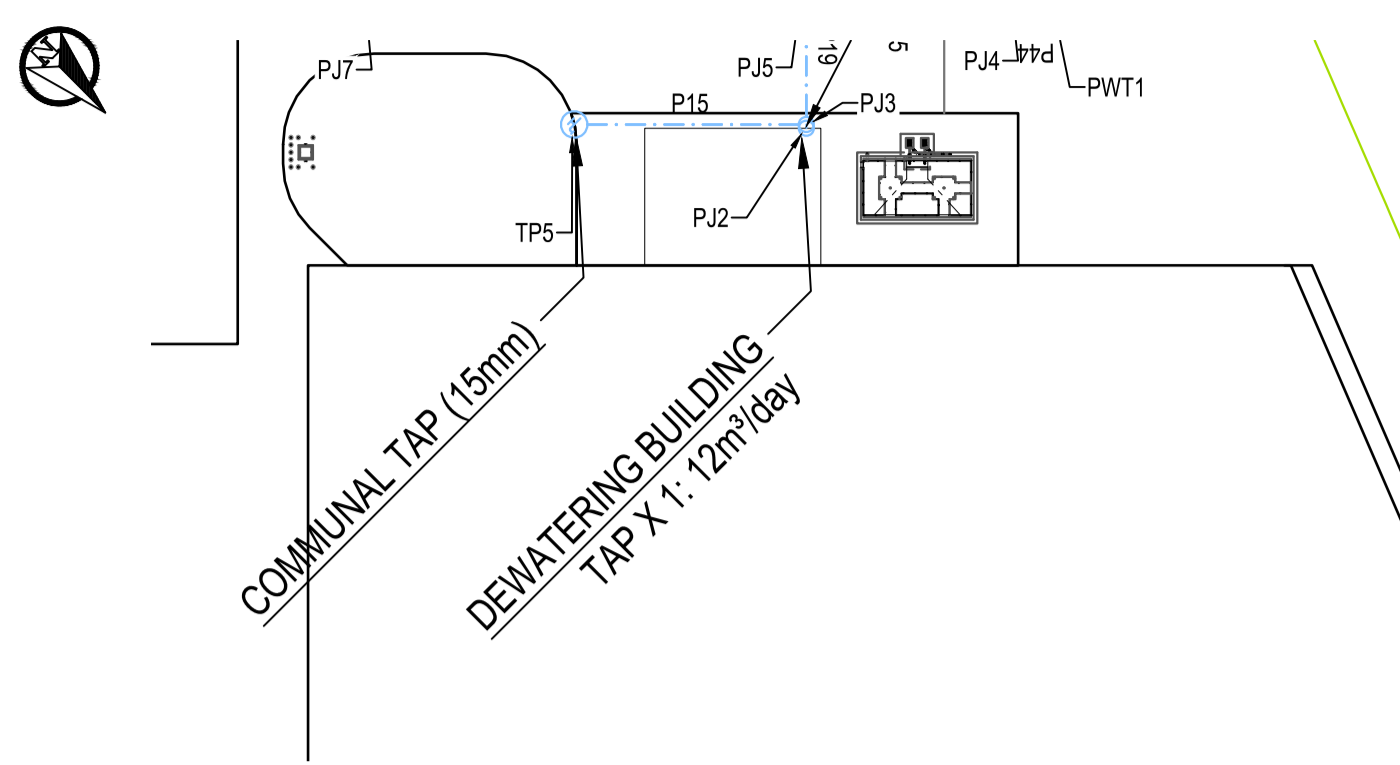
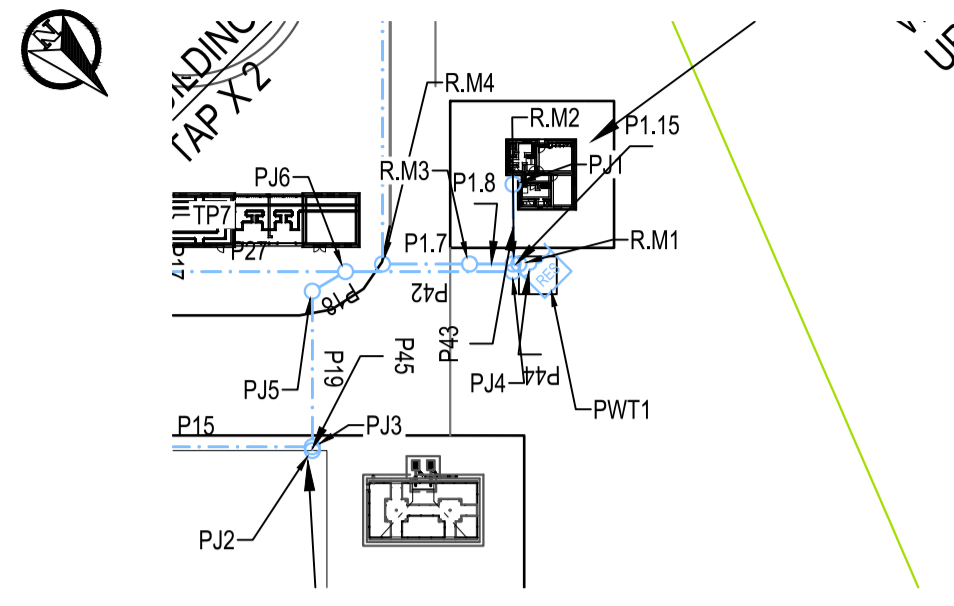
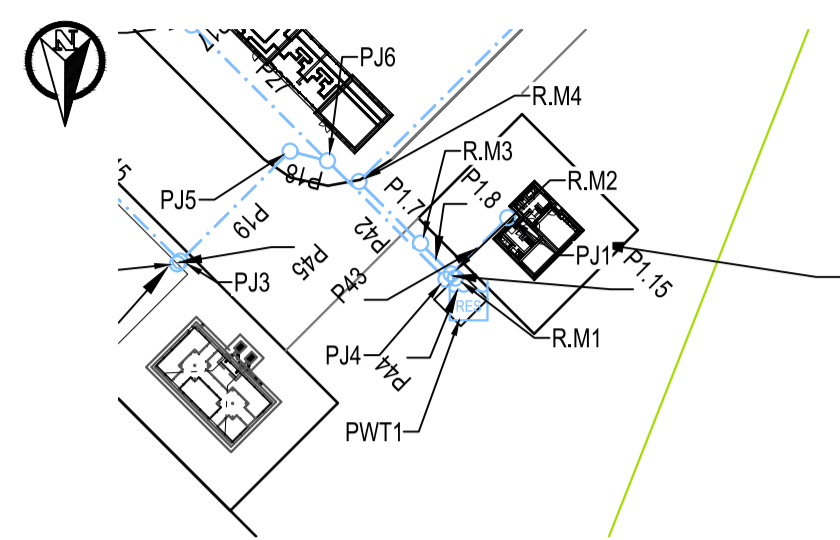
PROJECT

POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION

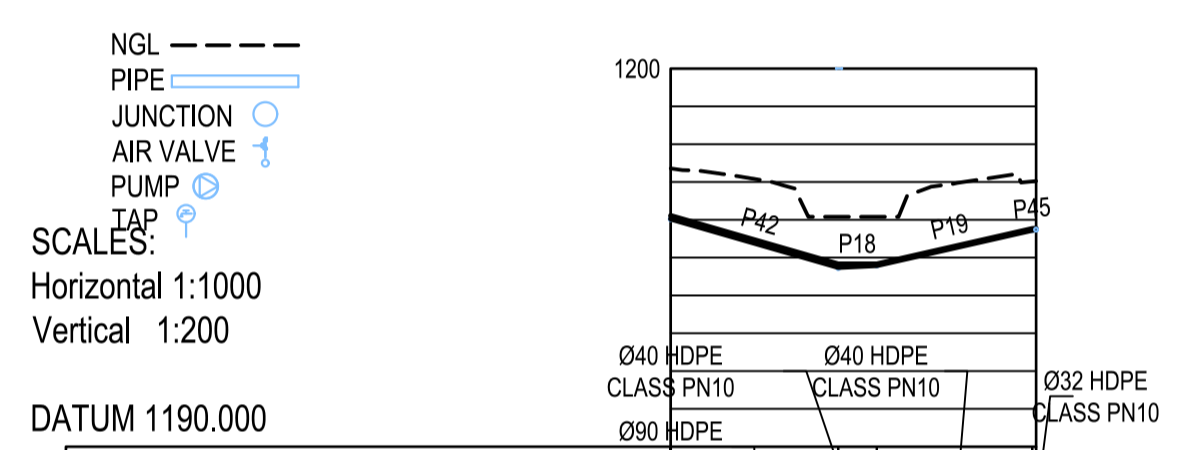
POTABLE WATER
NETWORK PUMPING
BRANCH 1.1B PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-102	0	



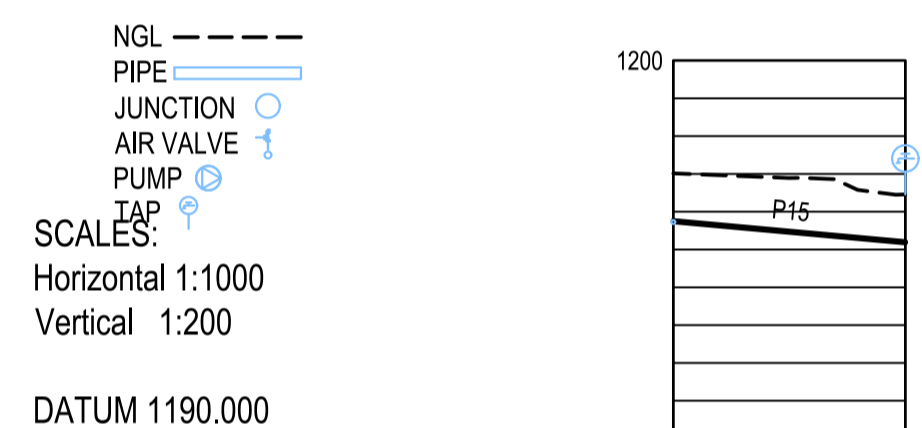
REFERENCE	PWT1	P.J4	P.J1
FINISHED PLATFORM LEVEL	1197.476		1197.464
PIPE INVERT LEVEL	1196.142 1196.024		1196.180
DEPTH TO INVERT	1.335 1.335		1.284
COVER	1.250 1.250		1.254
SLOPE / LENGTH	2.83%+0.92% 1.35%+1.08.7 4.19%+1.54m		
HYDRAULICS	DESIGN Q(l/s)	4.1	0.50
	DESIGN V(m/s)	0.8	0.8

LONGSECTION BRANCH 1
FROM 0.000 TO 15.725



REFERENCE	P.J4	P.J6	P.J5	P.J3	P.J2
FINISHED PLATFORM LEVEL	1197.358	1194.792	1194.792		1197.024
PIPE INVERT LEVEL	1196.023	1194.745		1195.731 1195.740	
DEPTH TO INVERT	1.335	1.335	1.288	1.288 1.284	
COVER	1.250	1.250	1.250	1.250 1.254	
SLOPE / LENGTH		5.77% 1.17.3 22.16m	0.00% Horizontal 5.10m	-4.55% -1.22.0 20.56m	-1.32% -1.32.1 0.33m
HYDRAULICS	DESIGN Q(l/s)	3.61	0.86	0.86	0.51
	DESIGN V(m/s)	0.7	0.9	0.9	1.0

LONGSECTION BRANCH 2
FROM 0.000 TO 48.326



REFERENCE	P.J3	TP5
FINISHED PLATFORM LEVEL	1197.015	1196.658
PIPE INVERT LEVEL	1195.738	1195.181
DEPTH TO INVERT	1.277	1.277
COVER	1.254	1.254
SLOPE / LENGTH		-1.81% -1.55.1 30.69m
HYDRAULICS	DESIGN Q(l/s)	-0.25
	DESIGN V(m/s)	0.7

LONGSECTION BRANCH 3
FROM 0.000 TO 30.694

NOTES

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T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

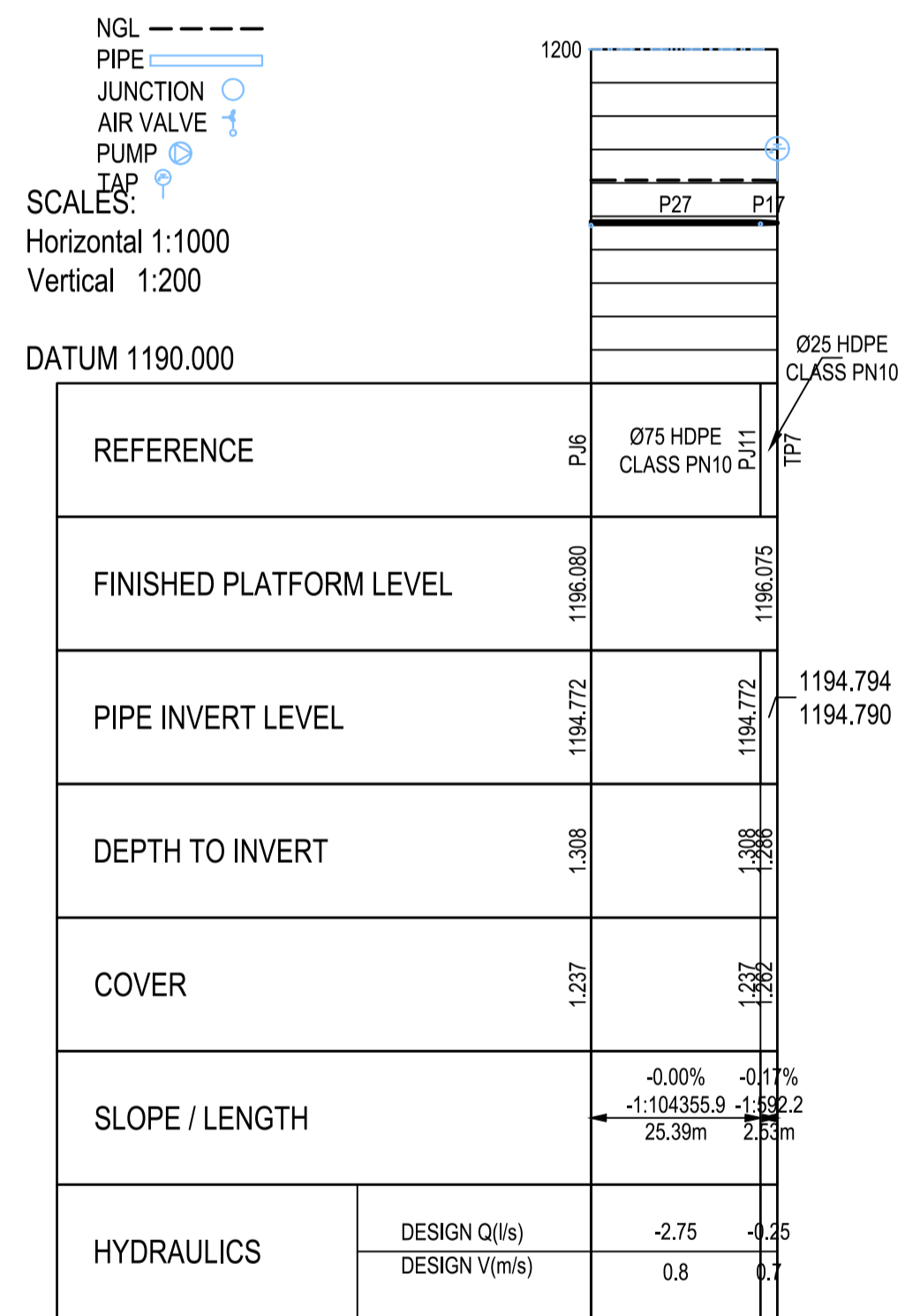
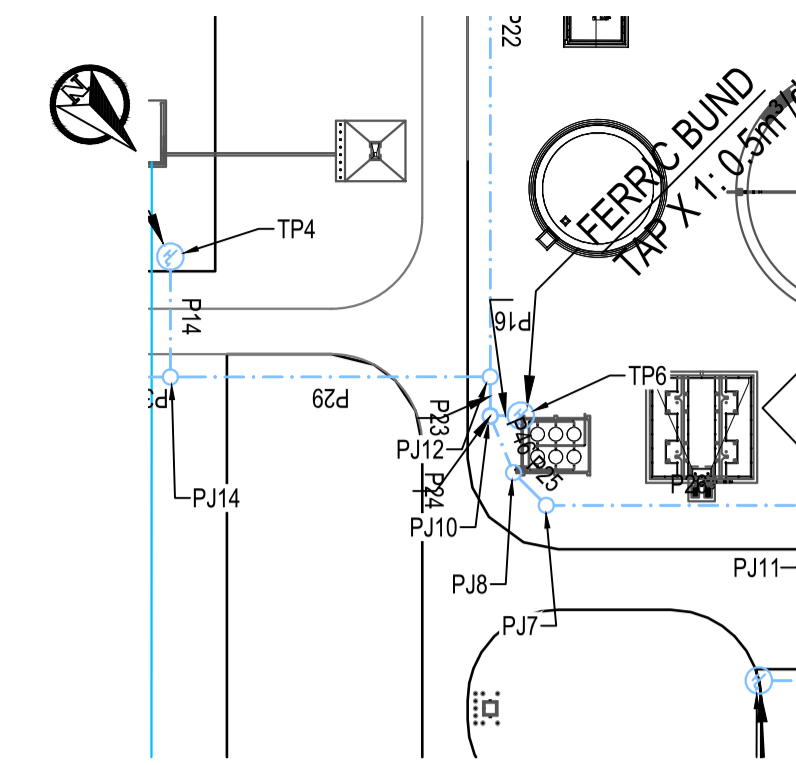
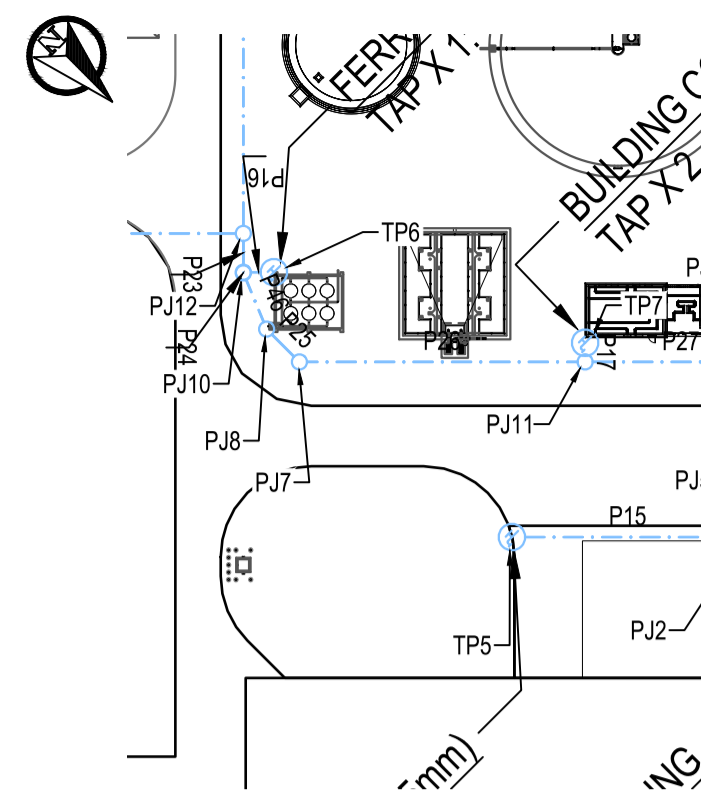
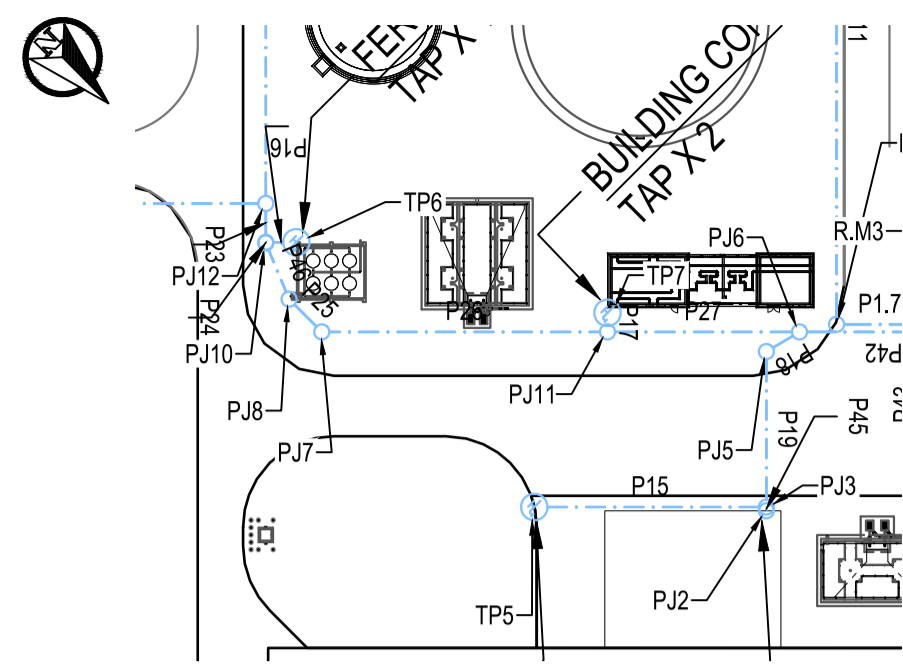
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

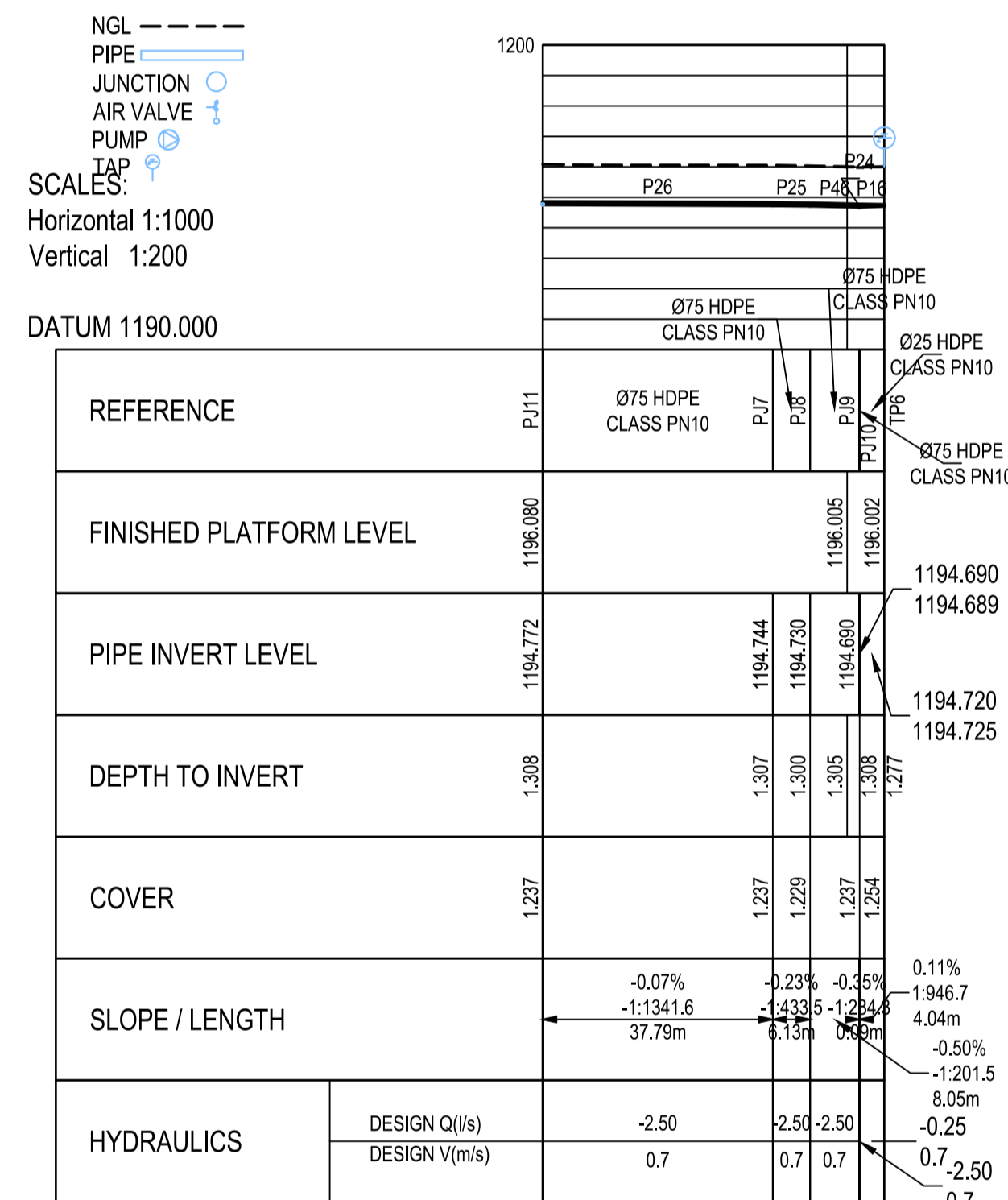
POTABLE WATER NETWORK BRANCHES 1, 2 & 3 PROFILE

CONSTRUCTION DRAWING

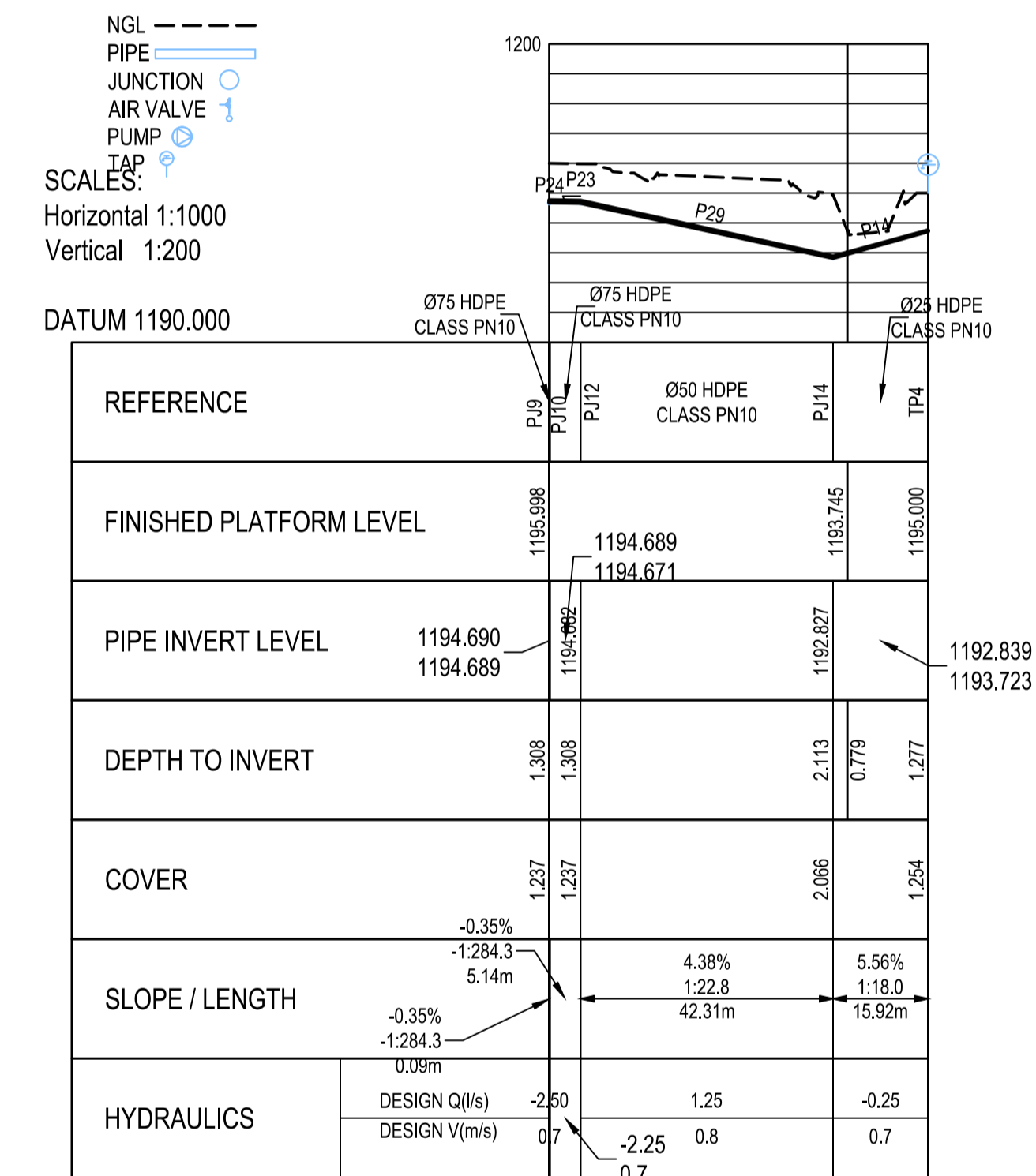
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
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DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-103	0	



LONGSECTION BRANCH 4
FROM 0.000 TO 27.921



LONGSECTION BRANCH 5
FROM 0.000 TO 56.100



LONGSECTION BRANCH 6
FROM 0.000 TO 63.456

NOTES

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T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT

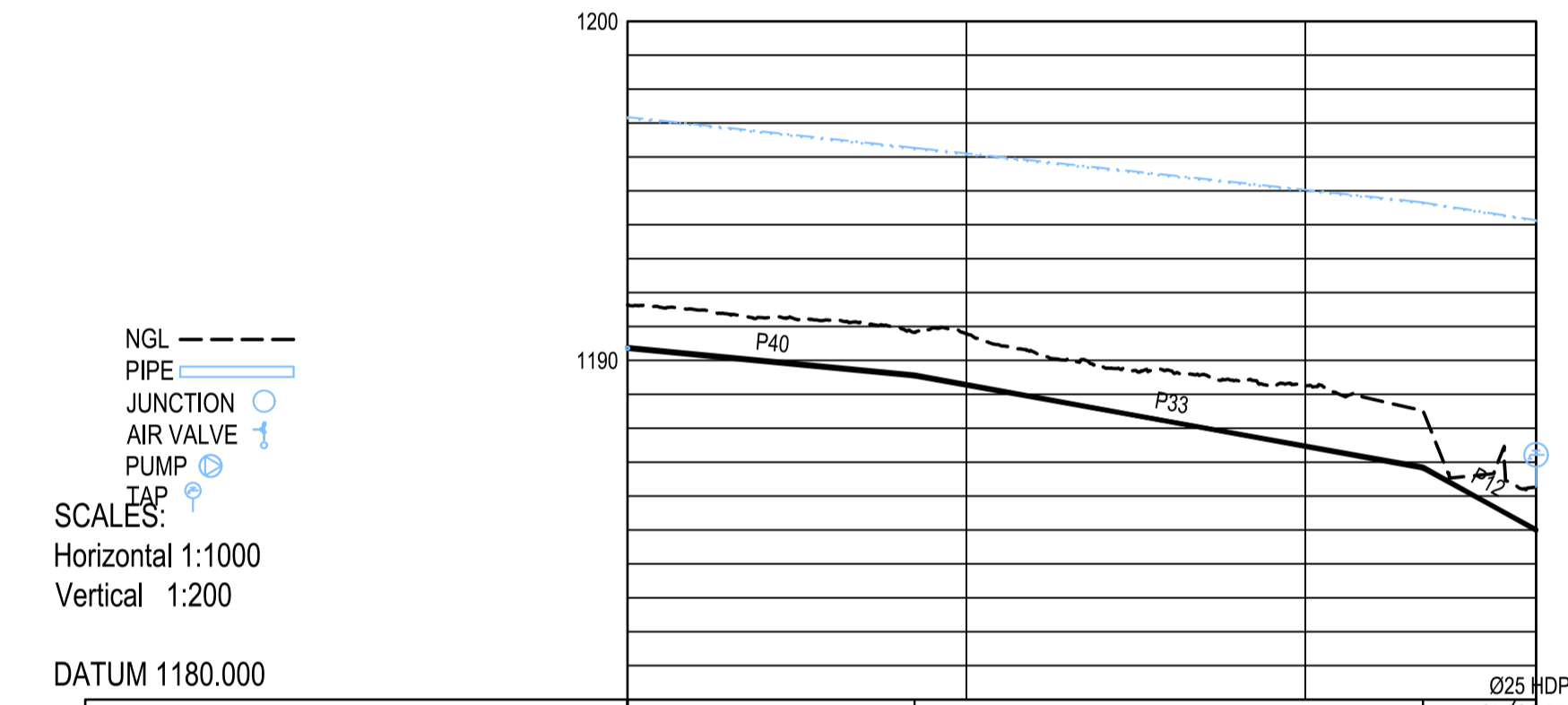
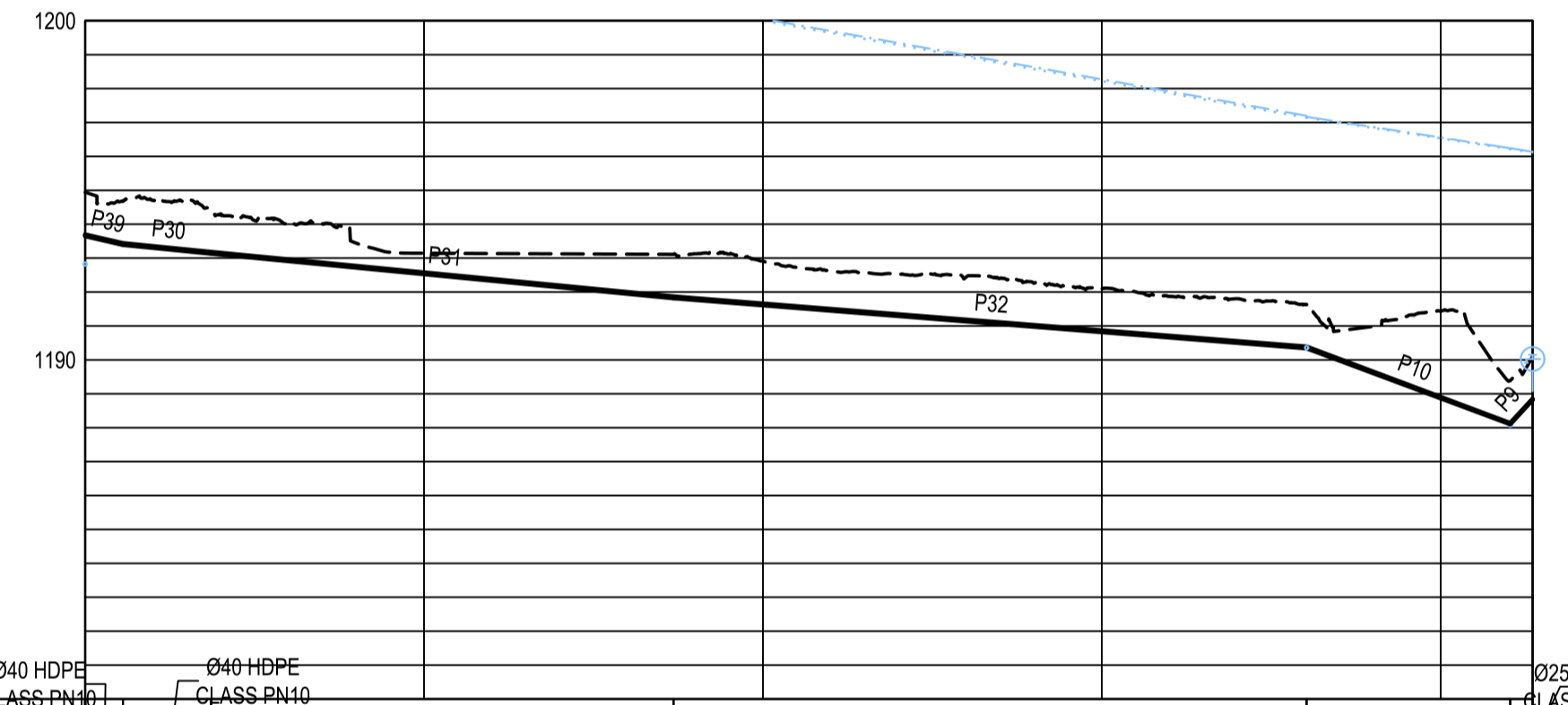
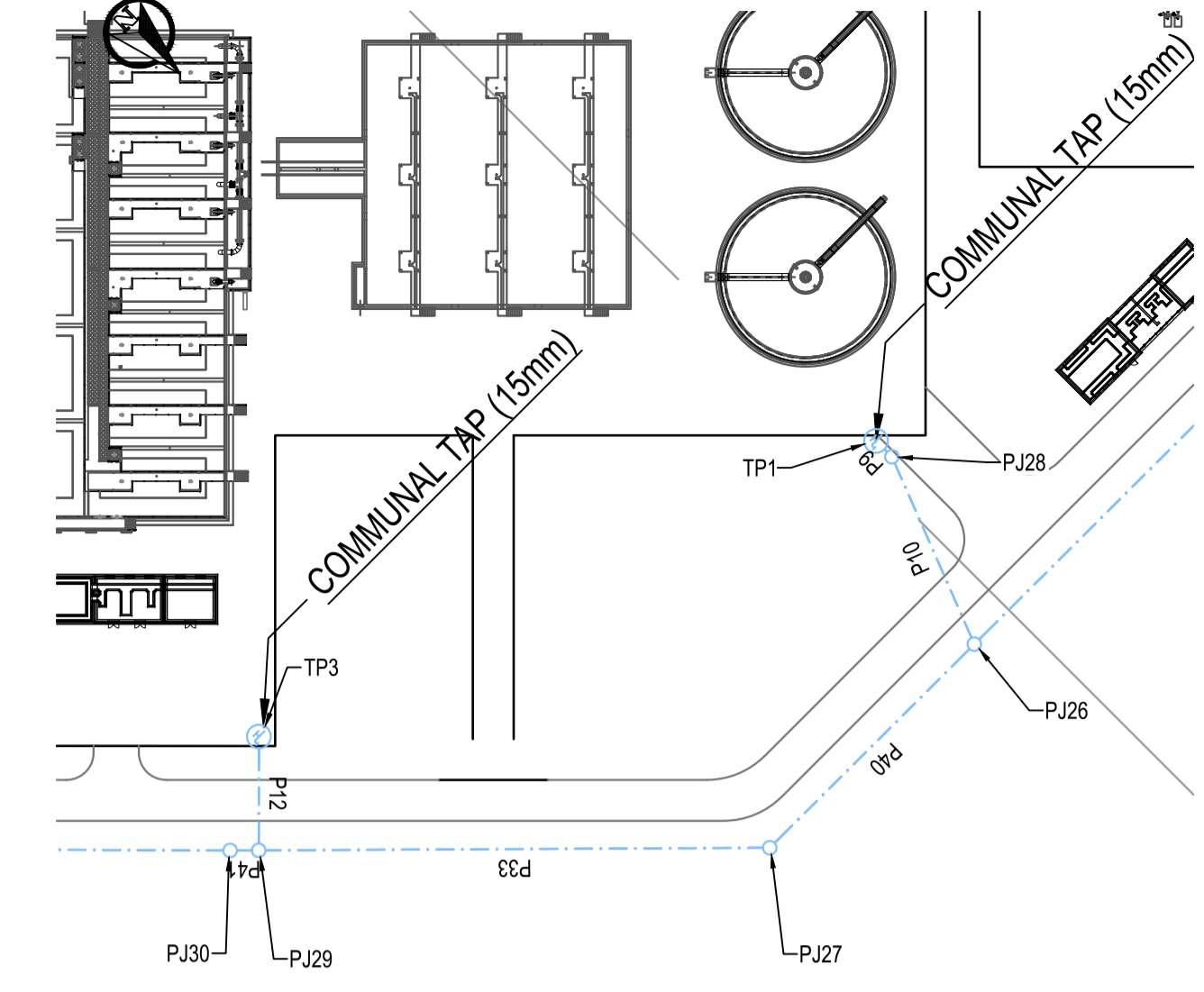
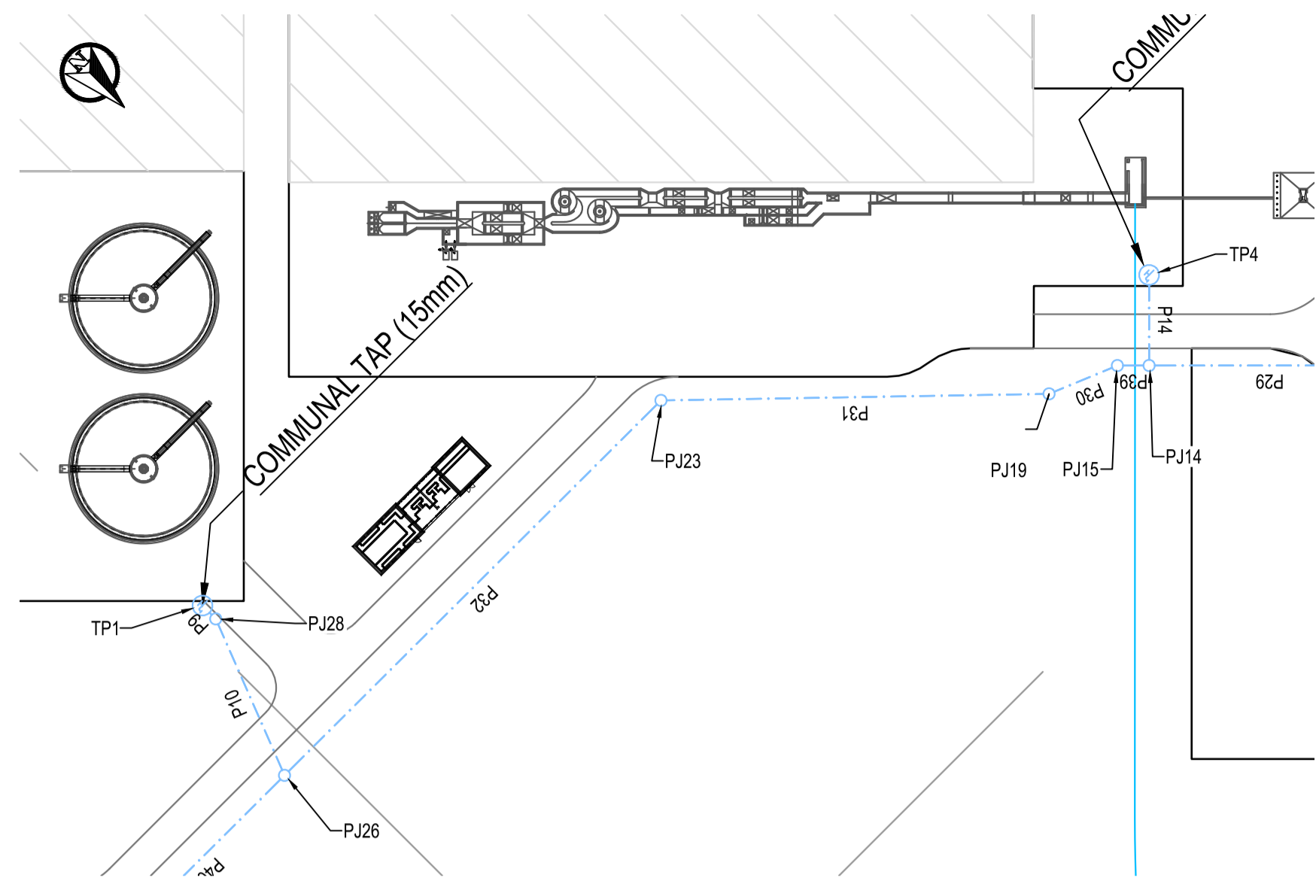
POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION

POTABLE WATER
NETWORK BRANCHES
4, 5 & 6 PROFILE

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-CP-2B-CIV-IR-104		0



SCALES:
Horizontal 1:1000
Vertical 1:200

SCALES:
Horizontal 1:1000
Vertical 1:200

REFERENCE	PJ14	PJ15	PJ19	PJ23	PJ26	PJ28	TP1
FINISHED PLATFORM LEVEL	1194.940	1193.398	1193.139	1192.912	1192.087	1191.445	1190.097
PIPE INVERT LEVEL	1193.653	1193.398	1193.139	1191.824	1190.348	1188.108	1186.108
DEPTH TO INVERT	1.288	1.288	1.288	0.611	1.288	1.262	1.273
COVER	1.250	1.250	1.250	1.250	1.250	1.254	1.250
SLOPE / LENGTH	4.57% 21.9m	1.99% 1:50.3 3.58m	1.93% 1:51.9 68.24m	1.58% 1:63.3 93.39m	7.49% 1:13.3 30.04m	-2.27% 1:44.7 3.81m	
HYDRAULICS	DESIGN Q(l/s)	1.00	1.00	1.00	1.00	0.25	0.25
	DESIGN V(m/s)	1.0	1.0	1.0	1.0	0.7	0.7

REFERENCE	PJ26	PJ27	PJ29	TP3
FINISHED PLATFORM LEVEL	1191.635	1190.789	1189.238	1186.265
PIPE INVERT LEVEL	1190.348	1189.537	1188.828	1184.989
DEPTH TO INVERT	1.288	1.288	1.758	1.277
COVER	1.250	1.250	1.701	1.254
SLOPE / LENGTH		1.91% 1:52.2 42.36m	3.62% 1:27.6 75.01m	-11.03% 1:9.1 16.69m
HYDRAULICS	DESIGN Q(l/s)	0.75	0.75	-0.25
	DESIGN V(m/s)	0.8	0.8	0.7

LONGSECTION BRANCH 7
FROM 0.000 TO 213.559

LONGSECTION BRANCH 8
FROM 0.000 TO 134.061

CONSTRUCTION DRAWING

NOTES
1.1 DO NOT SCALE THE DRAWINGS.
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ZAKUMI
Consulting Engineers
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WEBSITE: www.zoe.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CITY OF Polokwane
NATURALLY PROGRESSIVE

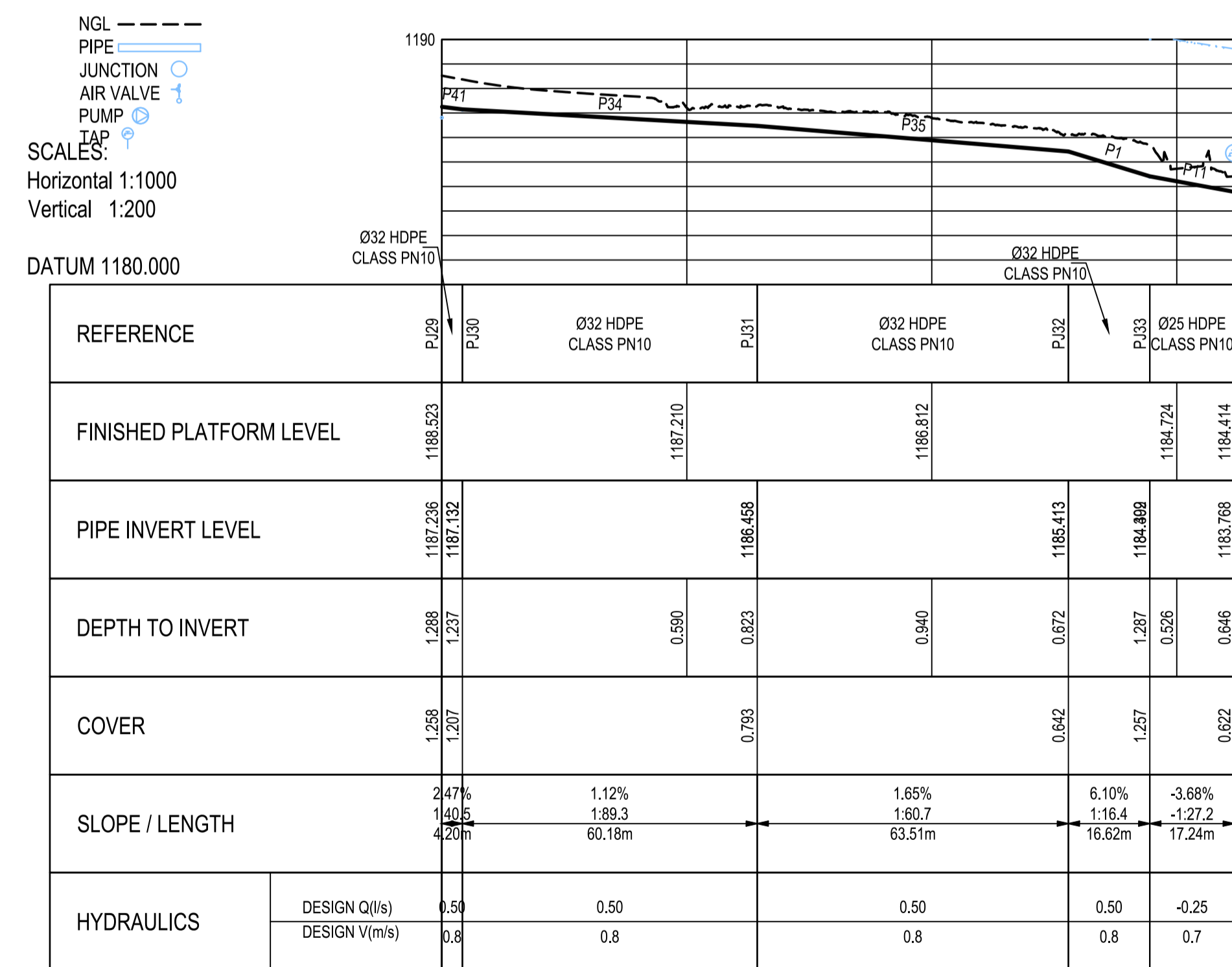
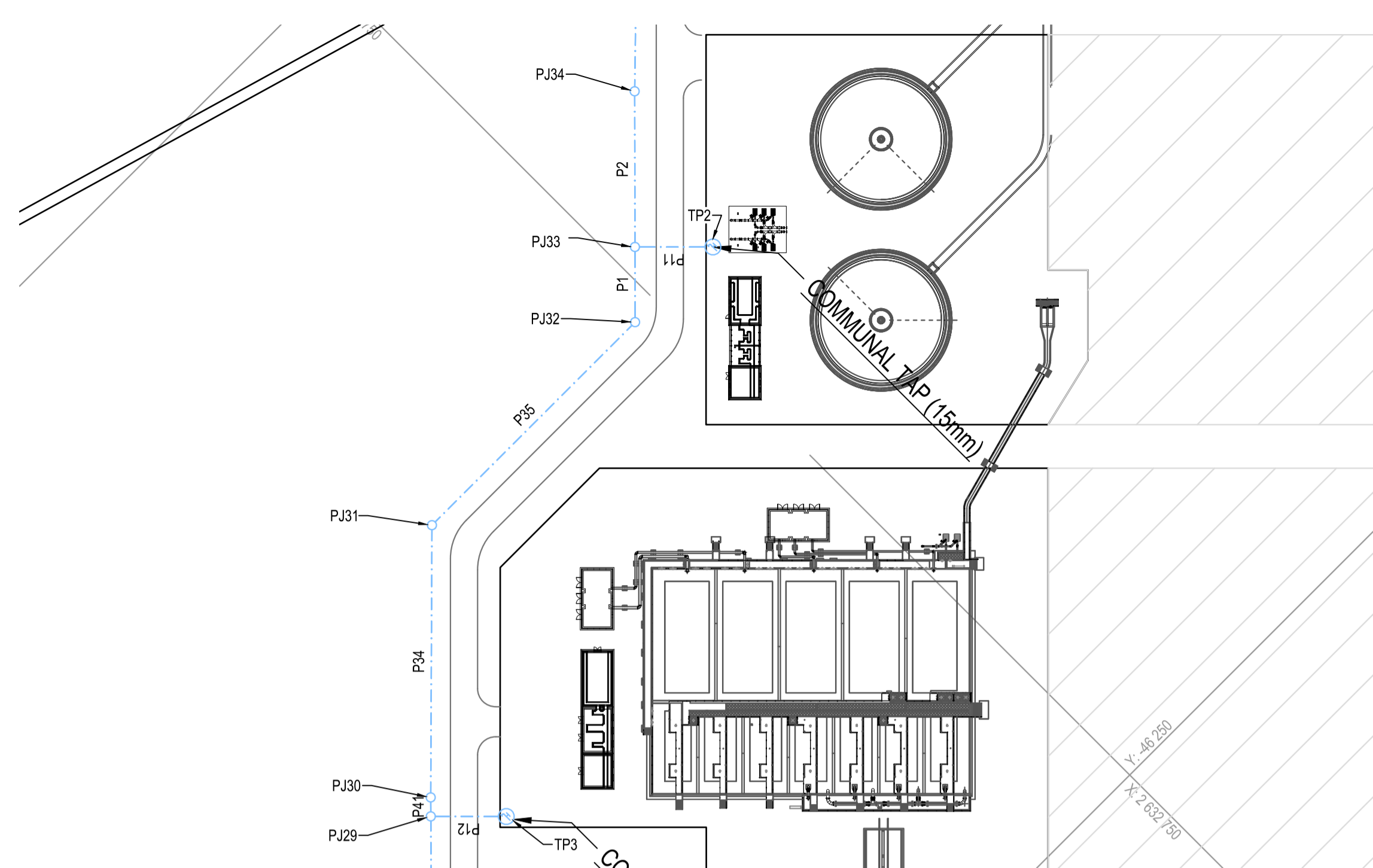
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT
POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION
POTABLE WATER
NETWORK BRANCHES
7 & 8 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-CP-2B-CIV-IR-105		0



LONGSECTION BRANCH 9
FROM 0.000 TO 161.743

CONSTRUCTION DRAWING

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

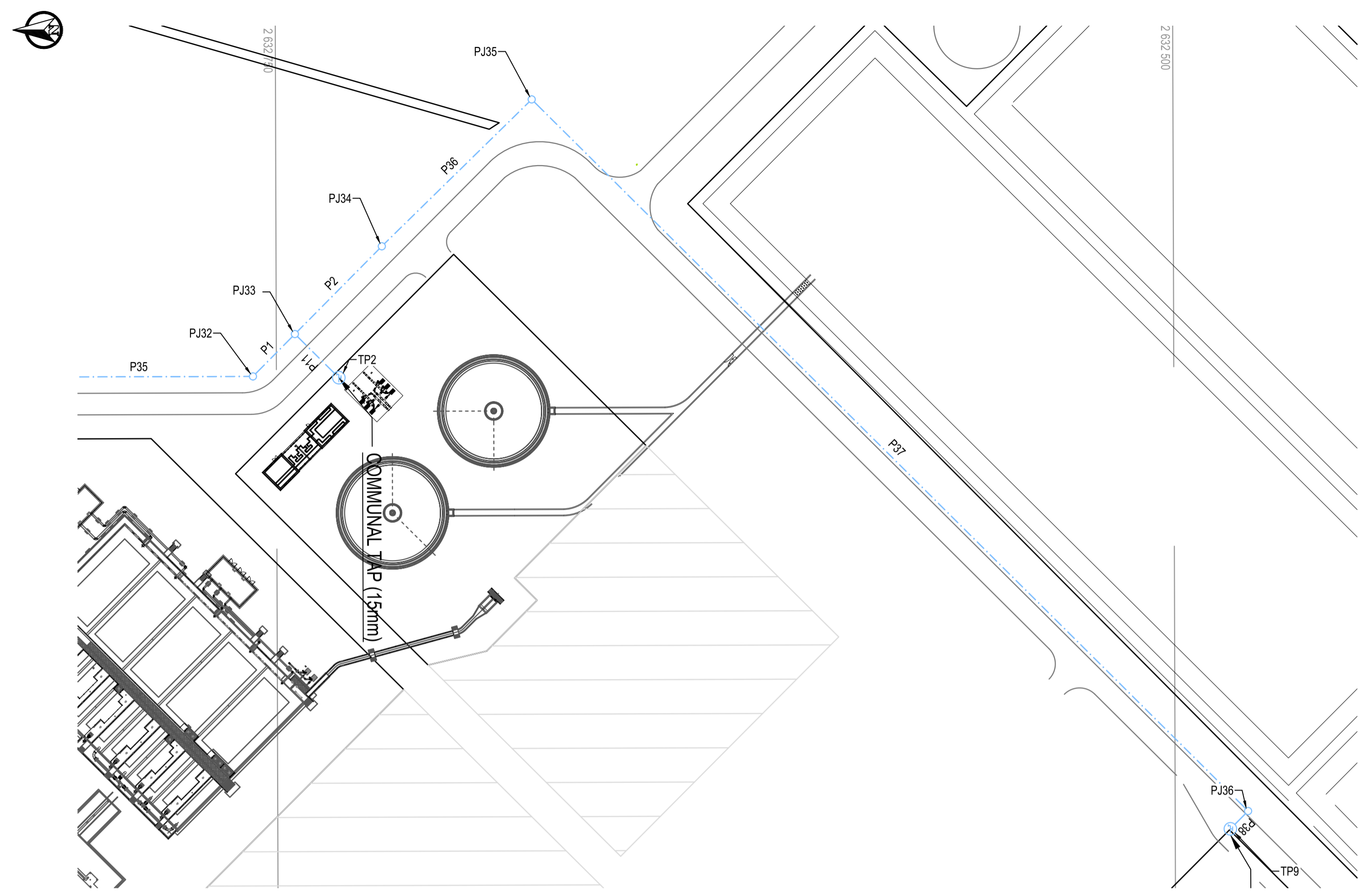
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

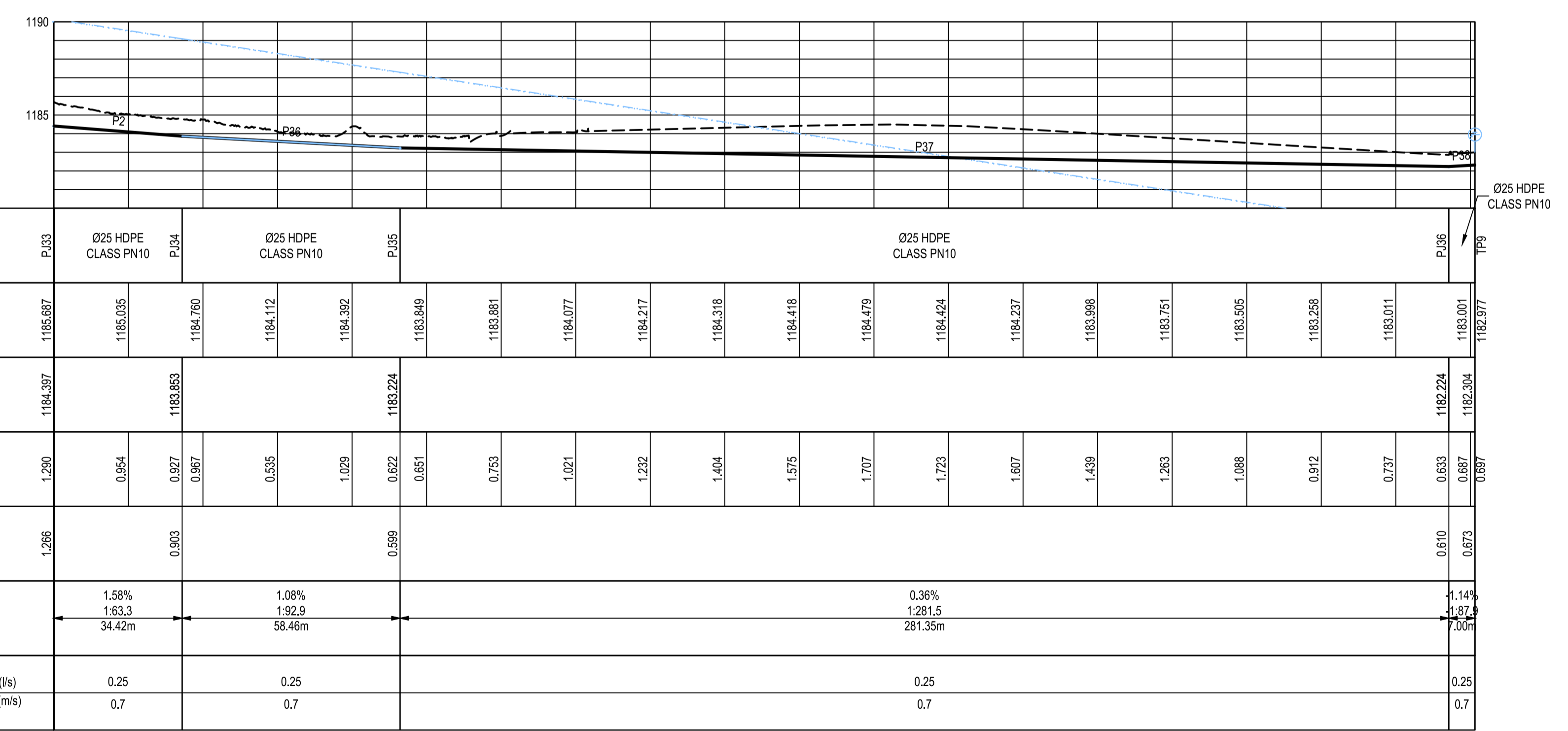
DRAWING DESCRIPTION

POTABLE WATER NETWORK BRANCH 9 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-106	0	



NGL - - - -
 PIPE - - - -
 JUNCTION ○
 AIR VALVE ⊕
 PUMP ⊕
 TAP ⊕
 SCALES:
 Horizontal 1:1000
 Vertical 1:200
 DATUM 1180.000



LONGSECTION BRANCH 10 FROM 0.000 TO 381.227

CONSTRUCTION DRAWING

NOTES
 1.1 DO NOT SCALE THE DRAWINGS.
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CLIENT

 CITY OF Polokwane
 NATURALLY PROGRESSIVE

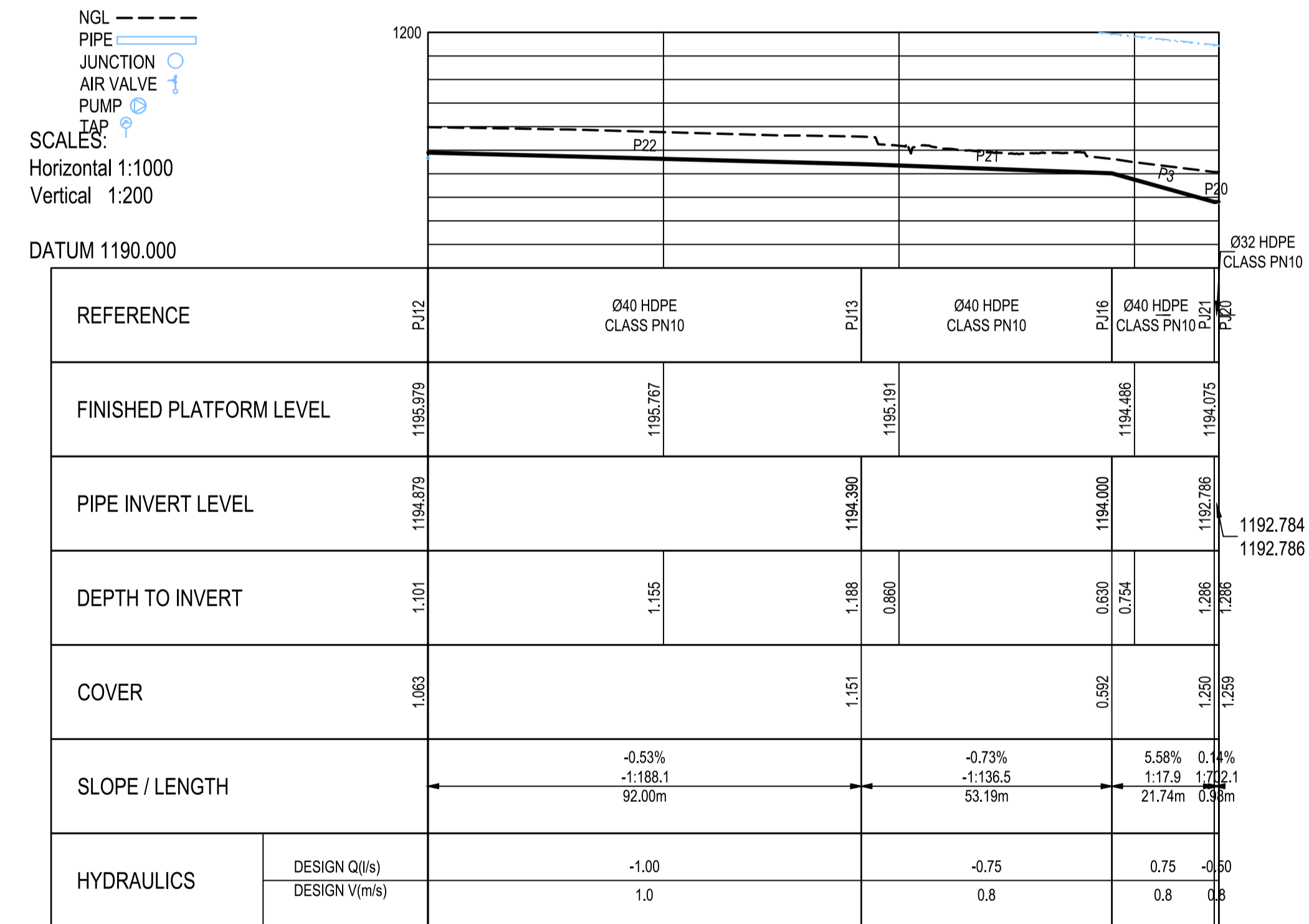
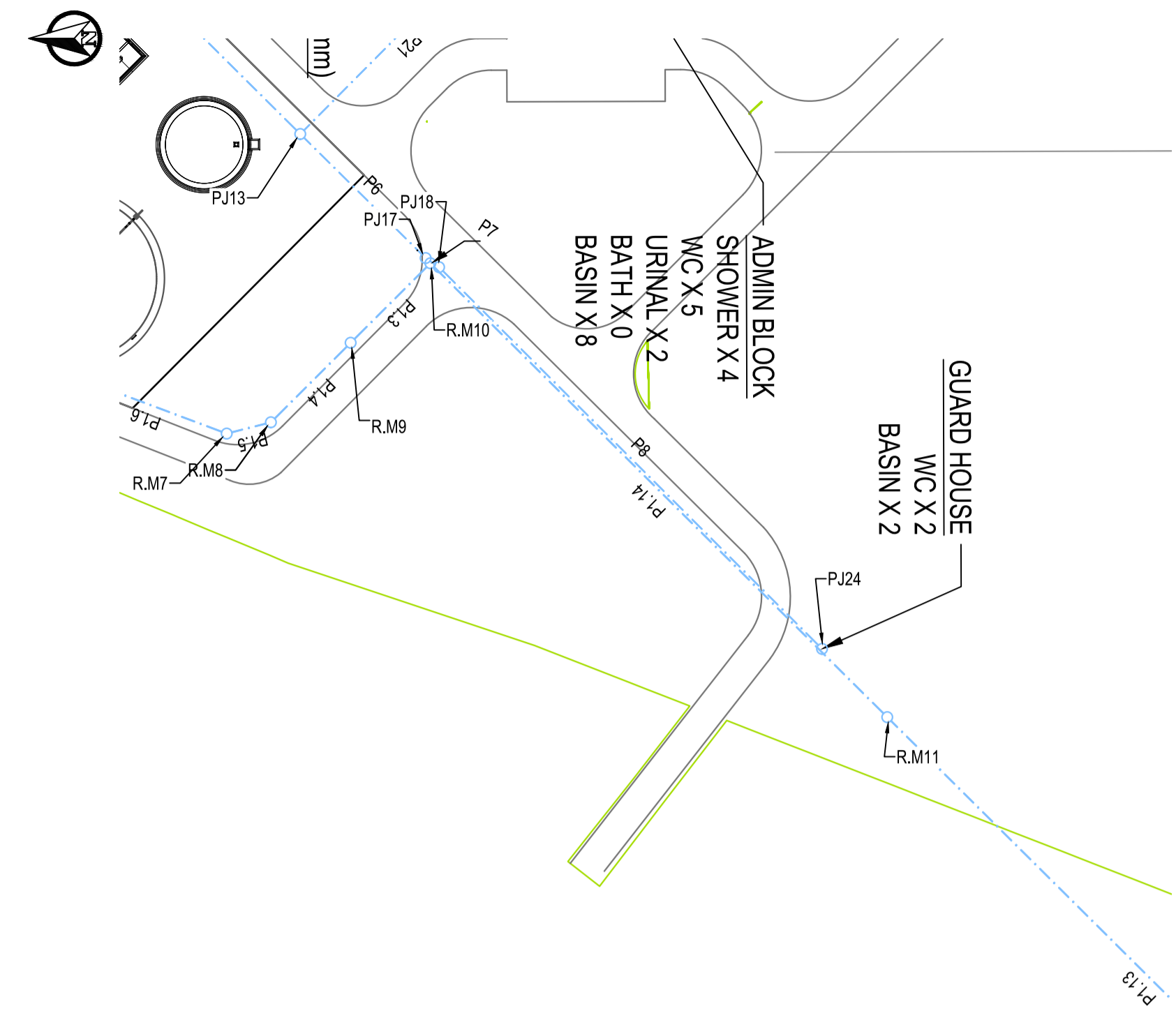
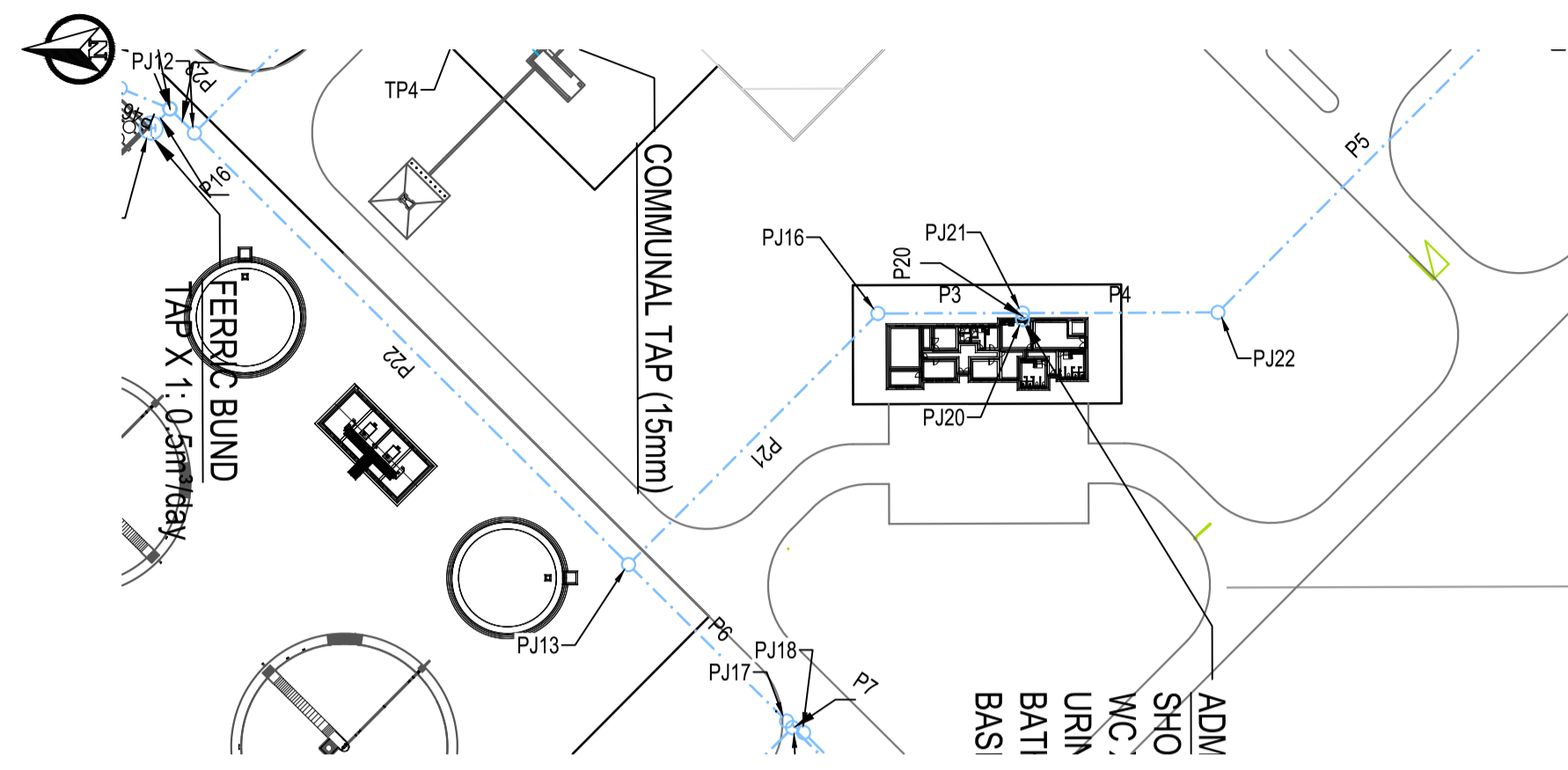
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____
 CLIENT _____ DATE _____

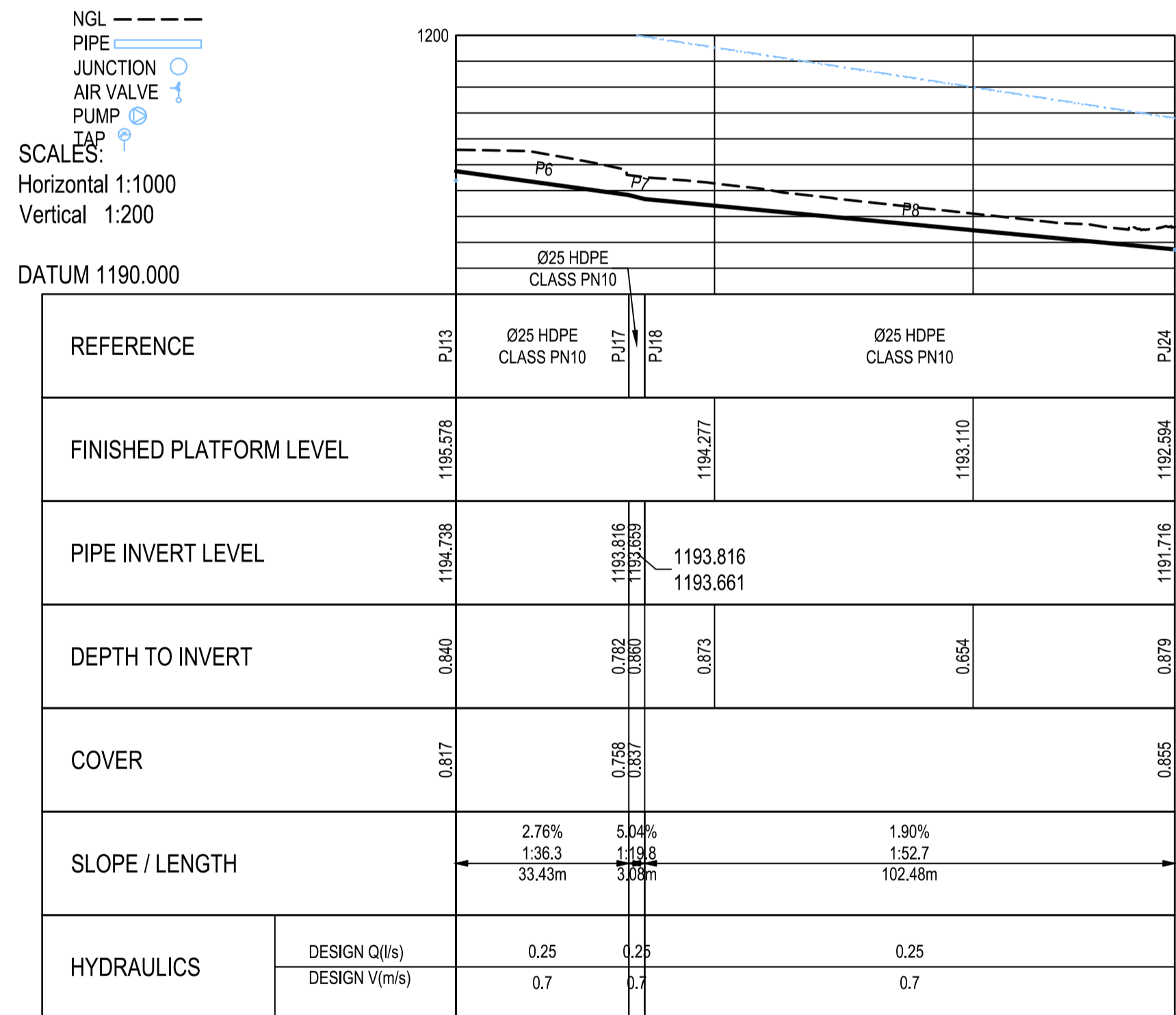
PROJECT
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION
POTABLE WATER NETWORK BRANCH 10 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-107	0	



LONGSECTION BRANCH 11
FROM 0.000 TO 167.916



LONGSECTION BRANCH 12
FROM 0.000 TO 138.987

CONSTRUCTION DRAWING

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

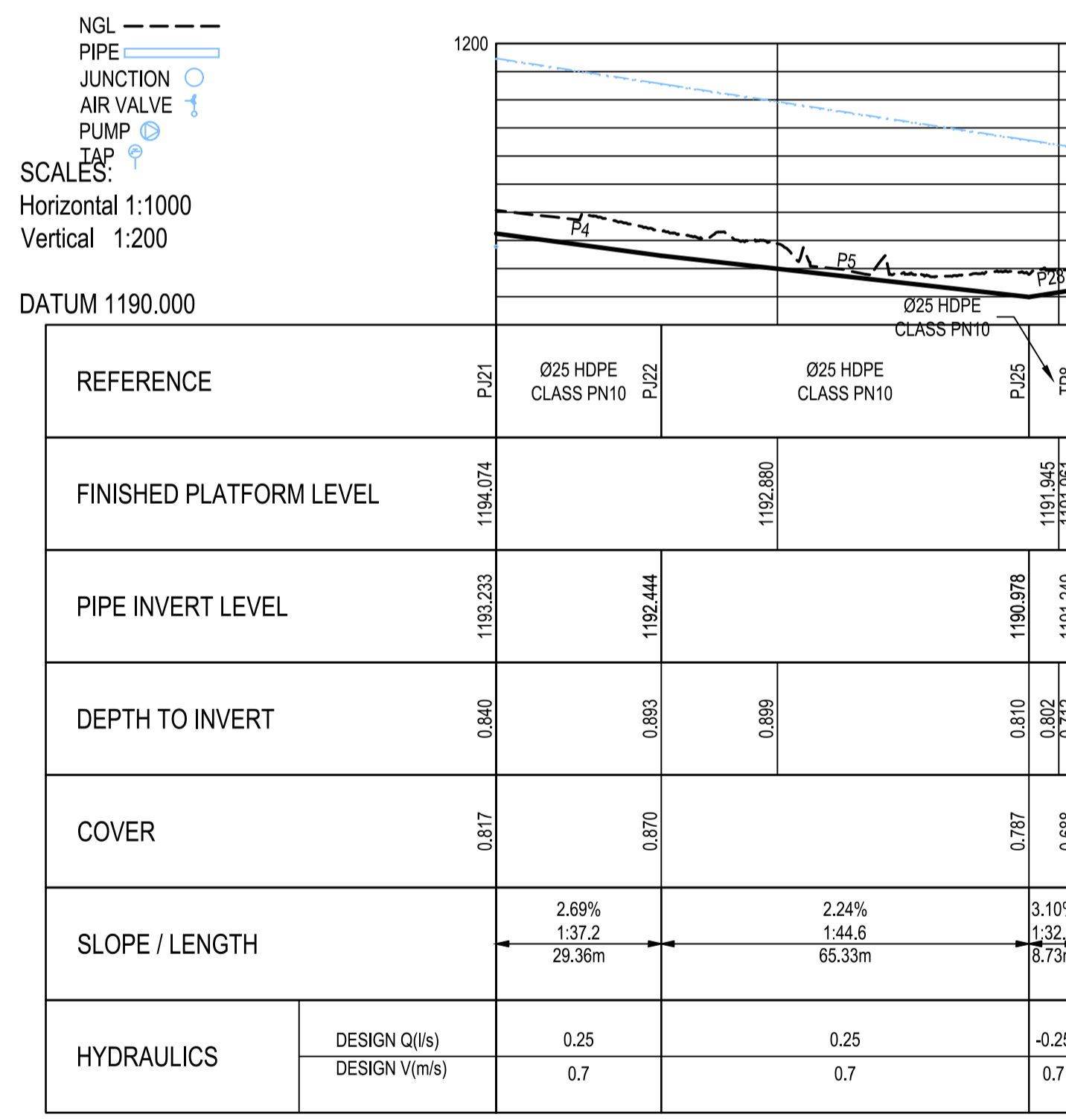
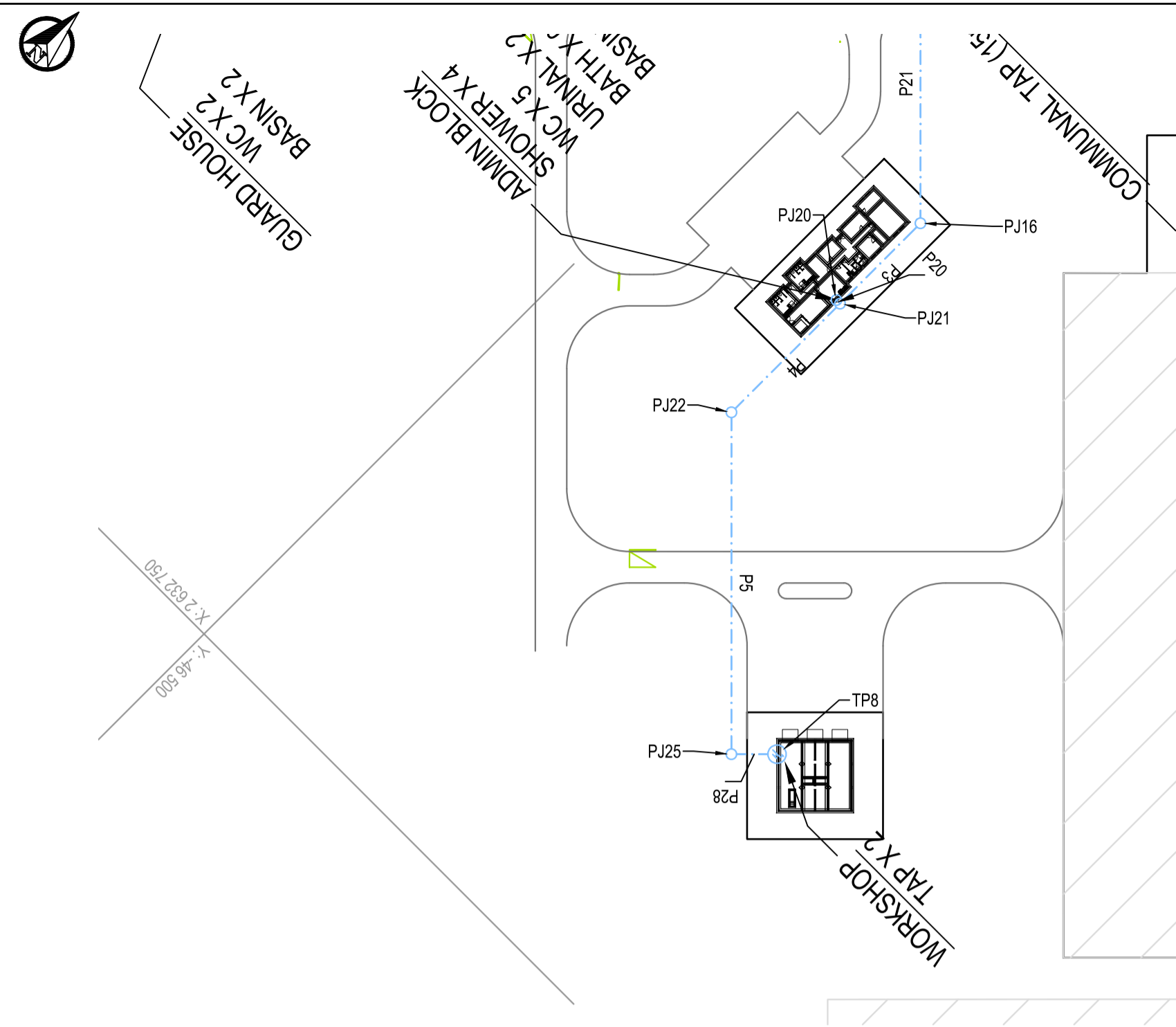
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

POTABLE WATER NETWORK BRANCHES 11 & 12 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-108	0	



LONGSECTION BRANCH 13
FROM 0.000 TO 103.425

CONSTRUCTION DRAWING

NOTES

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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

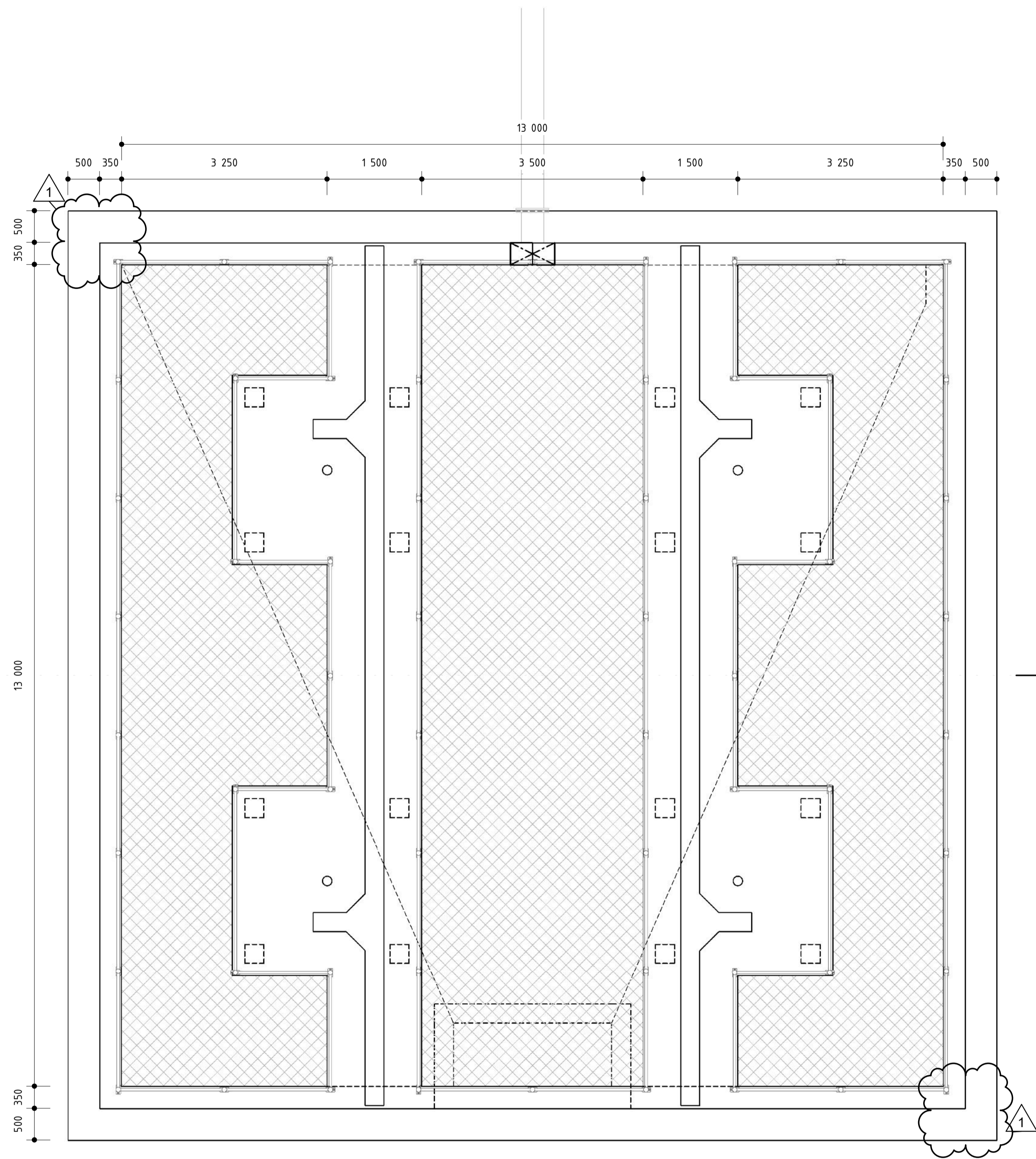
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

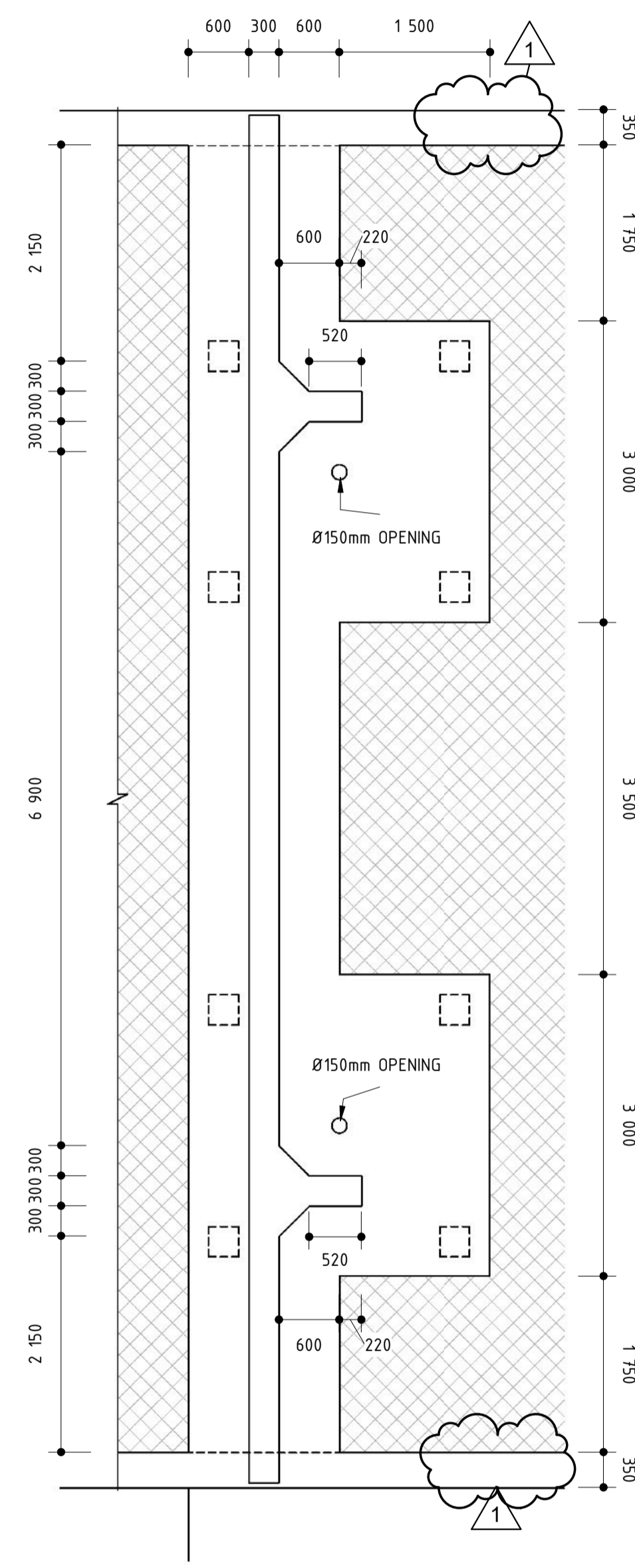
DRAWING DESCRIPTION

**POTABLE WATER
NETWORK
BRANCH 13
PROFILE**

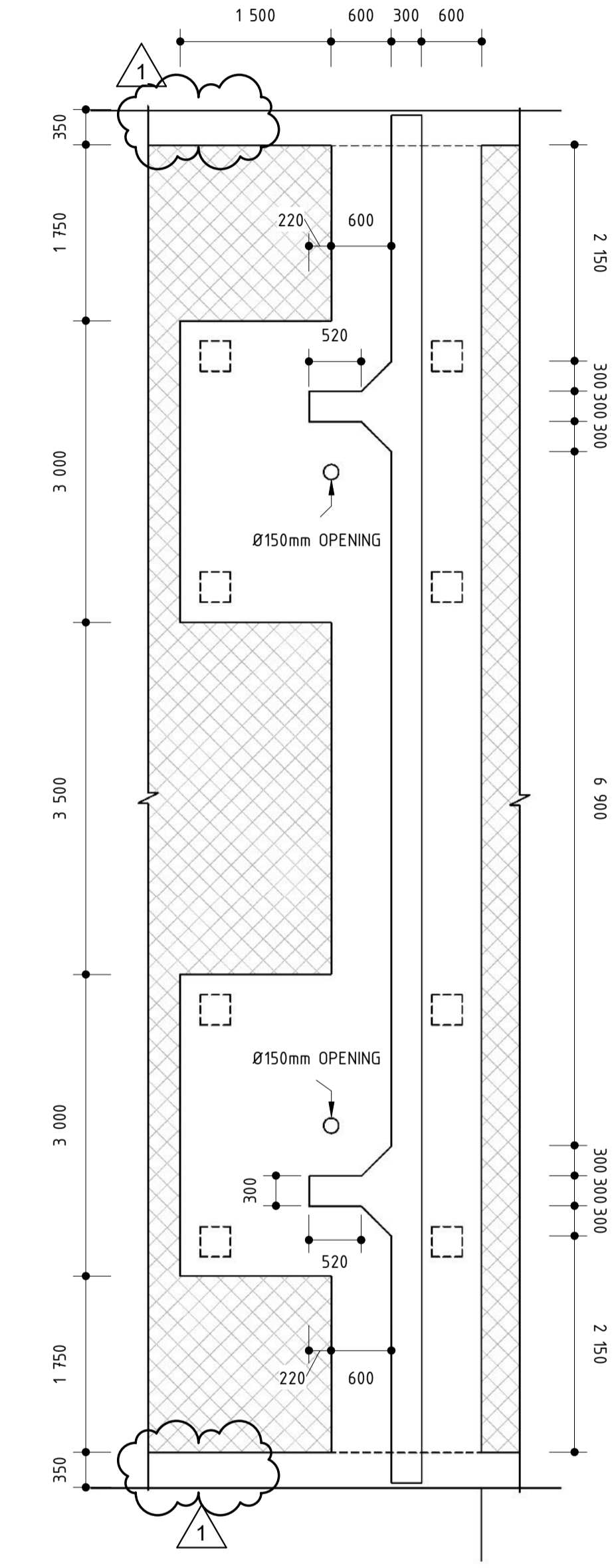
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-03	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-CIV-IR-109	0	



PLAN VIEW
SCALE 1 : 50



PLAN VIEW - MIXER PLATFORM B
SCALE 1 : 50



PLAN VIEW - MIXER PLATFORM A
SCALE 1 : 50

GENERAL NOTES:

- 1.11 THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL GOVERN IN CASE OF ANY CONFLICTS.
- 1.2 ALL SETTING OUT DIMENSIONS SHALL BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES OR UNCLARITIES SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.
- 1.3 BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

CONCRETE NOTES:

- 2.1 THE CONTRACTOR SHALL ENSURE THAT ALL REINFORCEMENT IS PROPERLY HELD IN POSITION AND SHALL ALSO MAINTAIN THE CORRECT CONCRETE COVER UTILIZING APPROVED PATENT SPACERS (NOT STONES, OFFCUT REINFORCEMENT, BRICKS ETC.) AT ALL TIMES.
- 2.2 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN mm AS STATED BELOW:
 WALLS - 60mm
 FLOORS - 50mm
 SLABS - 60mm
- 2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
- 2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION.
- 2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.
- 2.6 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.
- 2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
- 2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL SURFACES SUPPORTING MECHANICAL COMPONENTS.
- 2.9 STRUCTURE TO BE TESTED FOR WATER-TIGHTNESS AS PER PROJECT SPECIFICATION. RATE OF FILLING NOT TO EXCEED 2m IN 24 HOURS. FOR 0.2mm CRACK WIDTH, STABILIZING PERIOD TO BE 21 DAYS. AFTER ALLOWING FOR EVAPORATION AND RAINFALL, DROPS IN LEVEL NOT TO EXCEED 1/500TH OF AVERAGE DEPTH OF FULL TANK.
- 2.10 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.: PK278-SP-2B-PS11-502 FOR JOINT DETAILS SEE DRAWING PK278-SP-2B-ST-1001.

LEGEND:

- CJ = CONSTRUCTION JOINT
- FGL = FINISHED GROUND LEVEL
- IL = INVERT LEVEL
- ND = NOMINAL DIAMETER
- NGL = NATURAL GROUND LEVEL
- TOC = TOP OF CONCRETE
- TWL = TYPICAL WATER LEVEL
- UF = UNDERSIDE OF FOOTING

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
DESIGNER	DRAFTER	CHECKER
REV DATE	SCALE	ORIGINAL SIZE
2023/04/17	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0014-1001	1	

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE	
NO.	DATE
A	2022/01/20
0	2023/03/08
1	2023/04/17

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

**PLAN VIEWS
SLUDGE DAY TANK**

GENERAL NOTES:

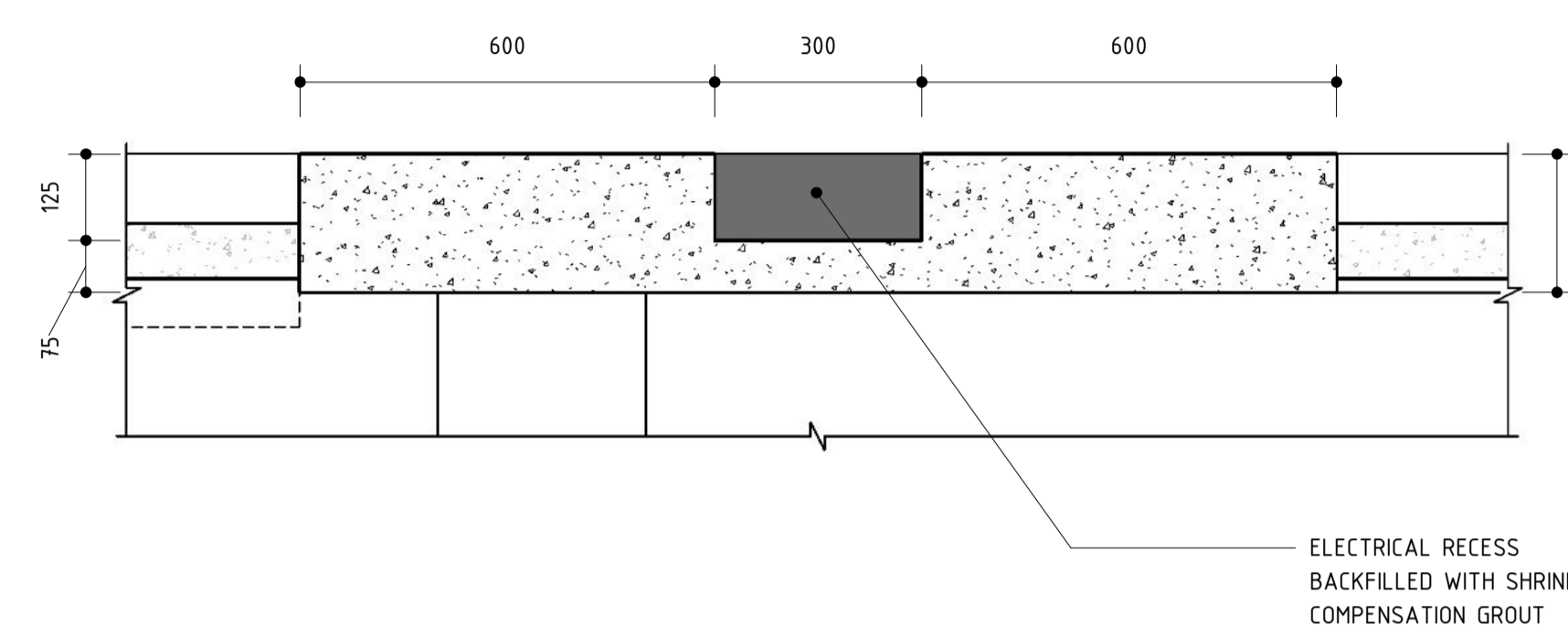
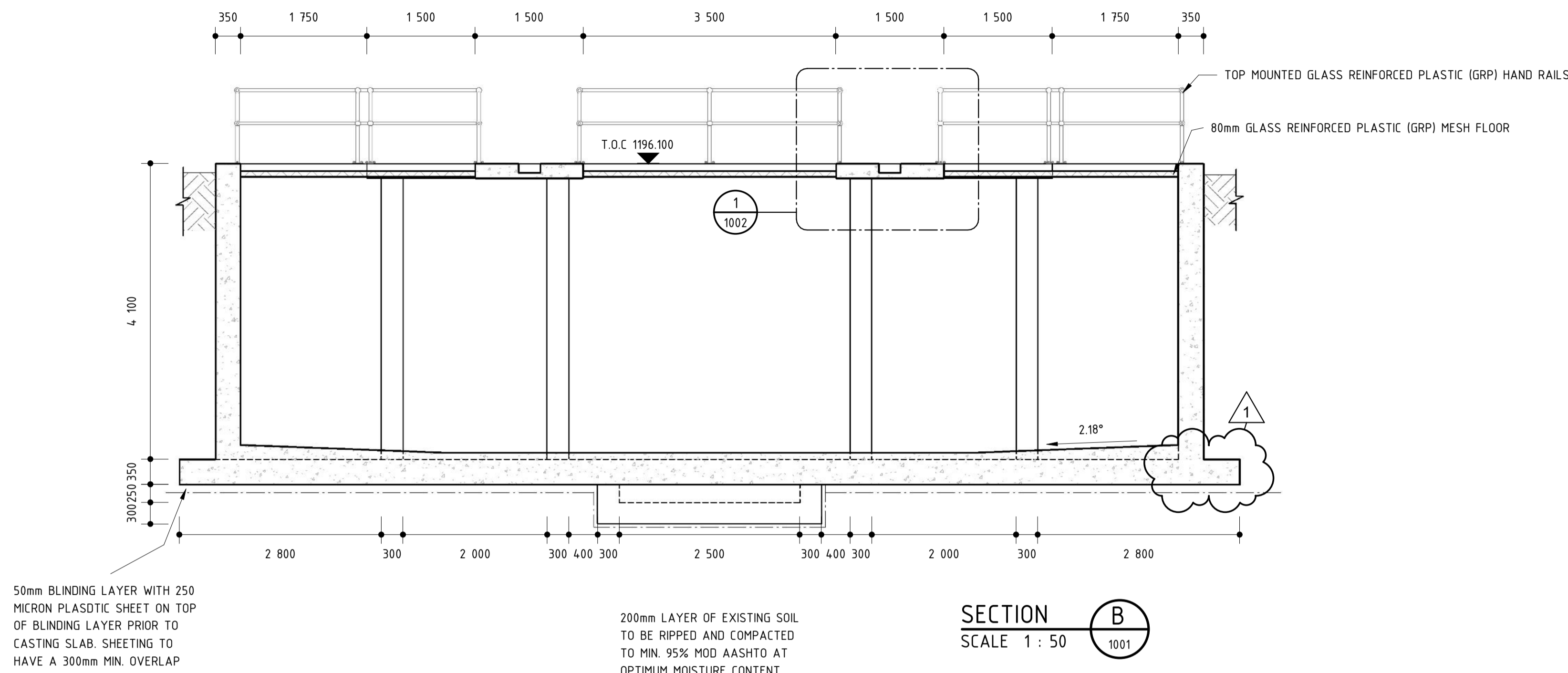
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- 1.3 IMMEDIATELY BE REPORTED TO THE ENGINEER. BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

CONCRETE NOTES:

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- 2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK. ALL EXPOSED CORNERS TO HAVE A 20 x 20mm CHAMFER.
- 2.6 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
- 2.7 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL SURFACES SUPPORTING MECHANICAL COMPONENTS.
- 2.9 STRUCTURE TO BE TESTED FOR WATER-TIGHTNESS AS PER PROJECT SPECIFICATION. RATE OF FILLING NOT TO EXCEED 2m IN 24 HOURS. FOR 0.2mm CRACK WIDTH. STABILIZING PERIOD TO BE 21 DAYS. AFTER ALLOWING FOR EVAPORATION AND RAINFALL, DROPS IN LEVEL NOT TO EXCEED 1/500TH OF AVERAGE DEPTH OF FULL TANK.

LEGEND:

- I.L. = INVERT LEVEL
- N.D. = NOMINAL DIAMETER
- N.G.L. = NATURAL GROUND LEVEL
- C.J. = CONSTRUCTION JOINT
- I.D. = INTERNAL DIAMETER

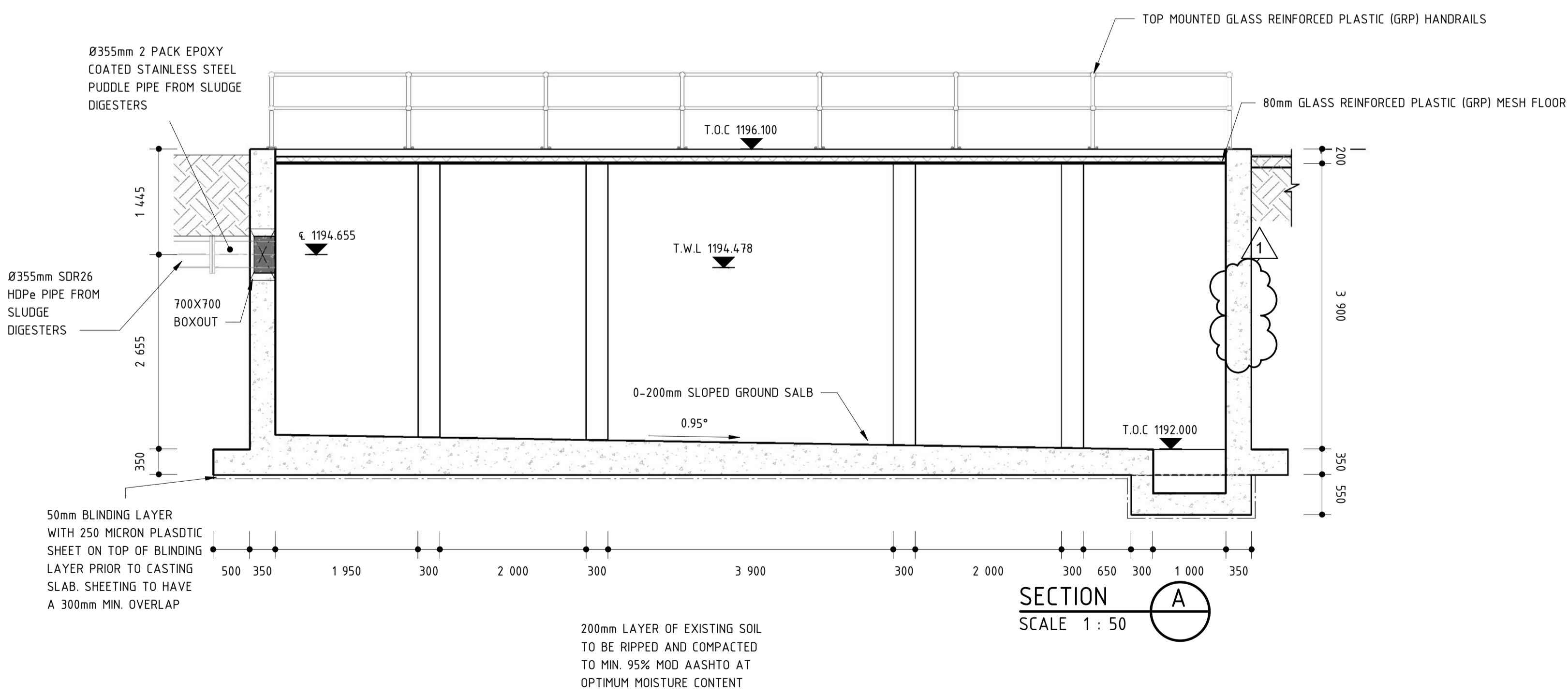


DETAIL 1
SCALE 1 : 10

50mm BLINDING LAYER WITH 250 MICRON PLASOTIC SHEET ON TOP OF BLINDING LAYER PRIOR TO CASTING SLAB. SHEETING TO HAVE A 300mm MIN. OVERLAP

200mm LAYER OF EXISTING SOIL TO BE RIPPED AND COMPACTED TO MIN. 95% MOD AASHTO AT OPTIMUM MOISTURE CONTENT

SECTION B
SCALE 1 : 50



50mm BLINDING LAYER WITH 250 MICRON PLASOTIC SHEET ON TOP OF BLINDING LAYER PRIOR TO CASTING SLAB. SHEETING TO HAVE A 300mm MIN. OVERLAP

200mm LAYER OF EXISTING SOIL TO BE RIPPED AND COMPACTED TO MIN. 95% MOD AASHTO AT OPTIMUM MOISTURE CONTENT

SECTION A
SCALE 1 : 50

CONSTRUCTION DRAWING

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
A	2022/01/20	ISSUED FOR TENDER
0	2023/03/08	ISSUED FOR CONSTRUCTION
1	2023/04/17	REVISED STRUCTURAL DETAILS

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

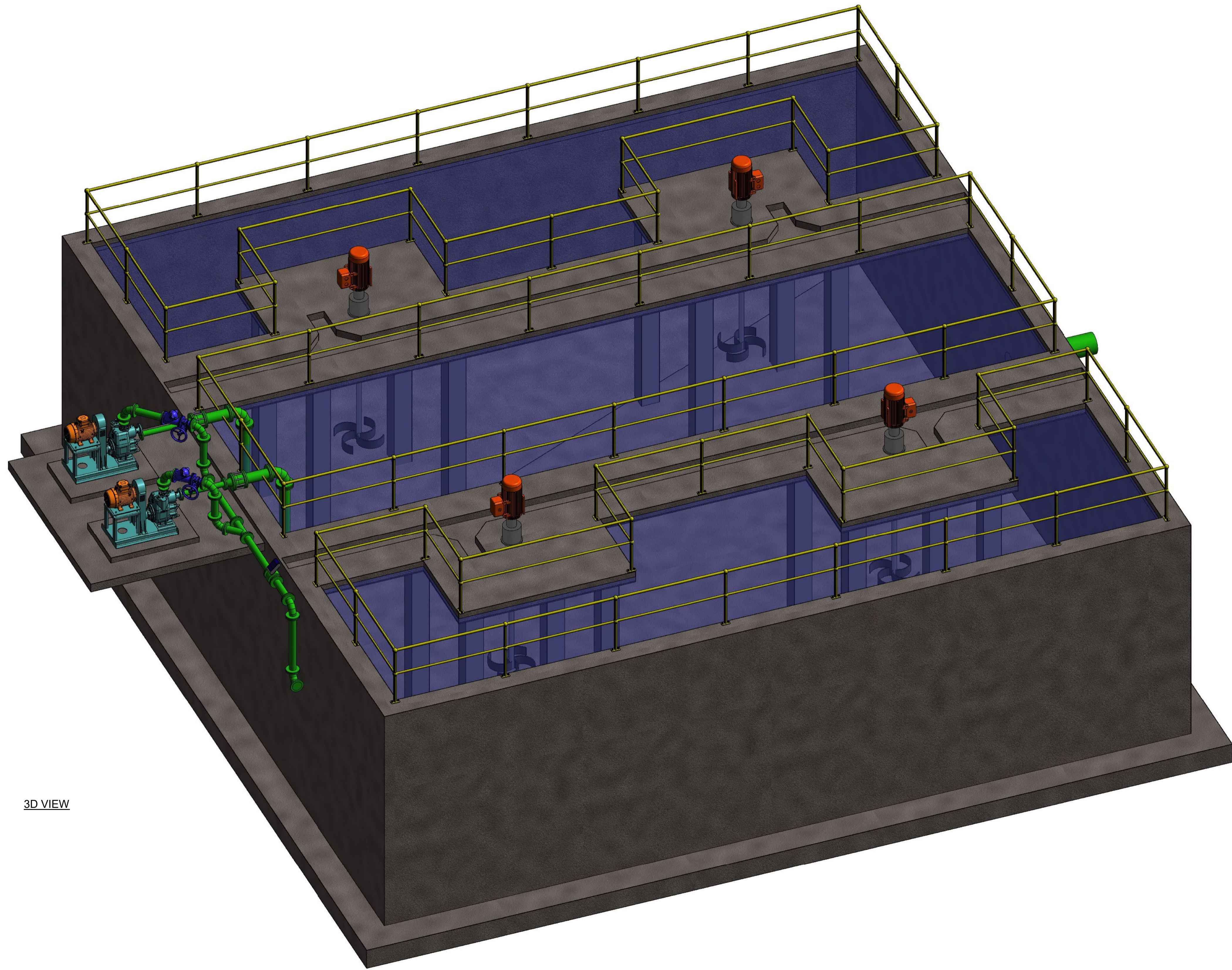
POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

SECTIONS AND DETAILS

SLUDGE DAY TANK

DESIGNED	DRAWN	CHECKED
DESIGNER	DRAUGHTER	CHECKER
REV DATE	SCALE	ORIGINAL SIZE
2023/04/17	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0014-1002	1	



3D VIEW

- GENERAL NOTES:**
- 1.11 THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL GOVERN IN CASE OF ANY CONFLICTS.
 - 1.2 ALL SETTING OUT DIMENSIONS SHALL BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES OR UNCLARITIES SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.
 - 1.3 BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- CONCRETE NOTES:**
- 2.1 THE CONTRACTOR SHALL ENSURE THAT ALL REINFORCEMENT IS PROPERLY HELD IN POSITION AND SHALL ALSO MAINTAIN THE CORRECT CONCRETE COVER UTILIZING APPROVED PATENT SPACERS (NOT STONES, OFFCUT REINFORCEMENT, BRICKS ETC.) AT ALL TIMES.
 - 2.2 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN mm AS STATED BELOW:
 WALLS - 60mm
 FLOORS - 50mm
 SLABS - 60mm
 - 2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
 - 2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION.
 - 2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.
 - 2.6 ALL EXPOSED CORNERS TO HAVE A 20 x 20mm CHAMFER.
 - 2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
 - 2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL SURFACES SUPPORTING MECHANICAL COMPONENTS.
 - 2.9 STRUCTURE TO BE TESTED FOR WATER-TIGHTNESS AS PER PROJECT SPECIFICATION. RATE OF FILLING NOT TO EXCEED 2m IN 24 HOURS. FOR 0.2mm CRACK WIDTH, STABILIZING PERIOD TO BE 21 DAYS. AFTER ALLOWING FOR EVAPORATION AND RAINFALL, DROPS IN LEVEL NOT TO EXCEED 1/500TH OF AVERAGE DEPTH OF FULL TANK.

- LEGEND:**
- I.L. = INVERT LEVEL
 - N.D. = NOMINAL DIAMETER
 - N.G.L. = NATURAL GROUND LEVEL
 - C.J. = CONSTRUCTION JOINT
 - I.D. = INTERNAL DIAMETER

CONSTRUCTION DRAWING

NOTES

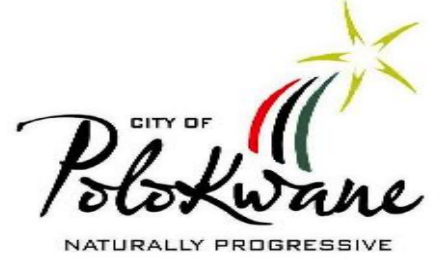
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CLIENT



CITY OF
Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE	
NO.	DATE
A	2022/01/20
0	2023/03/08
1	2023/04/17

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

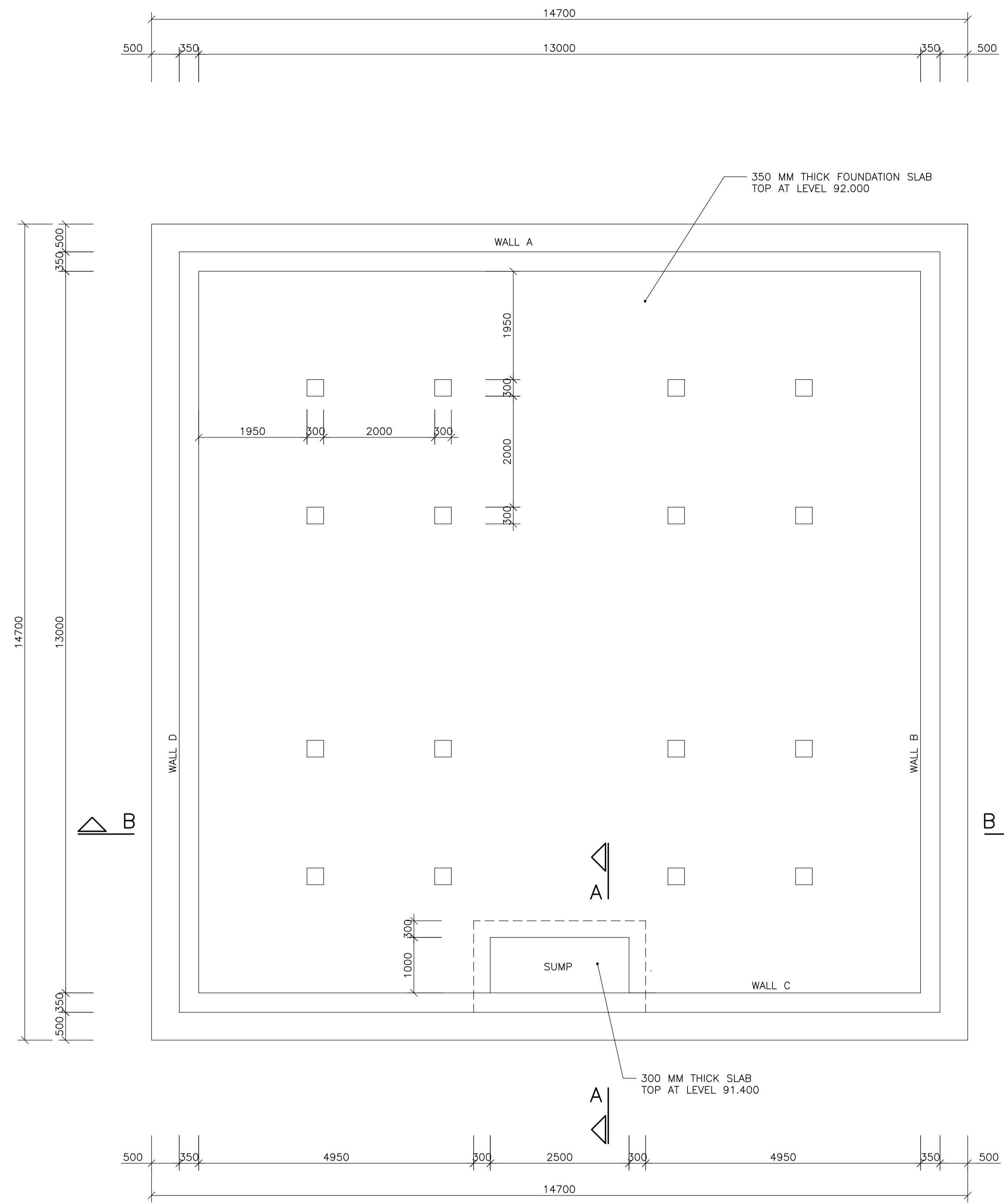
PROJECT

**POLOKWANE REGIONAL
WASTEWATER TREATMENT
WORKS**

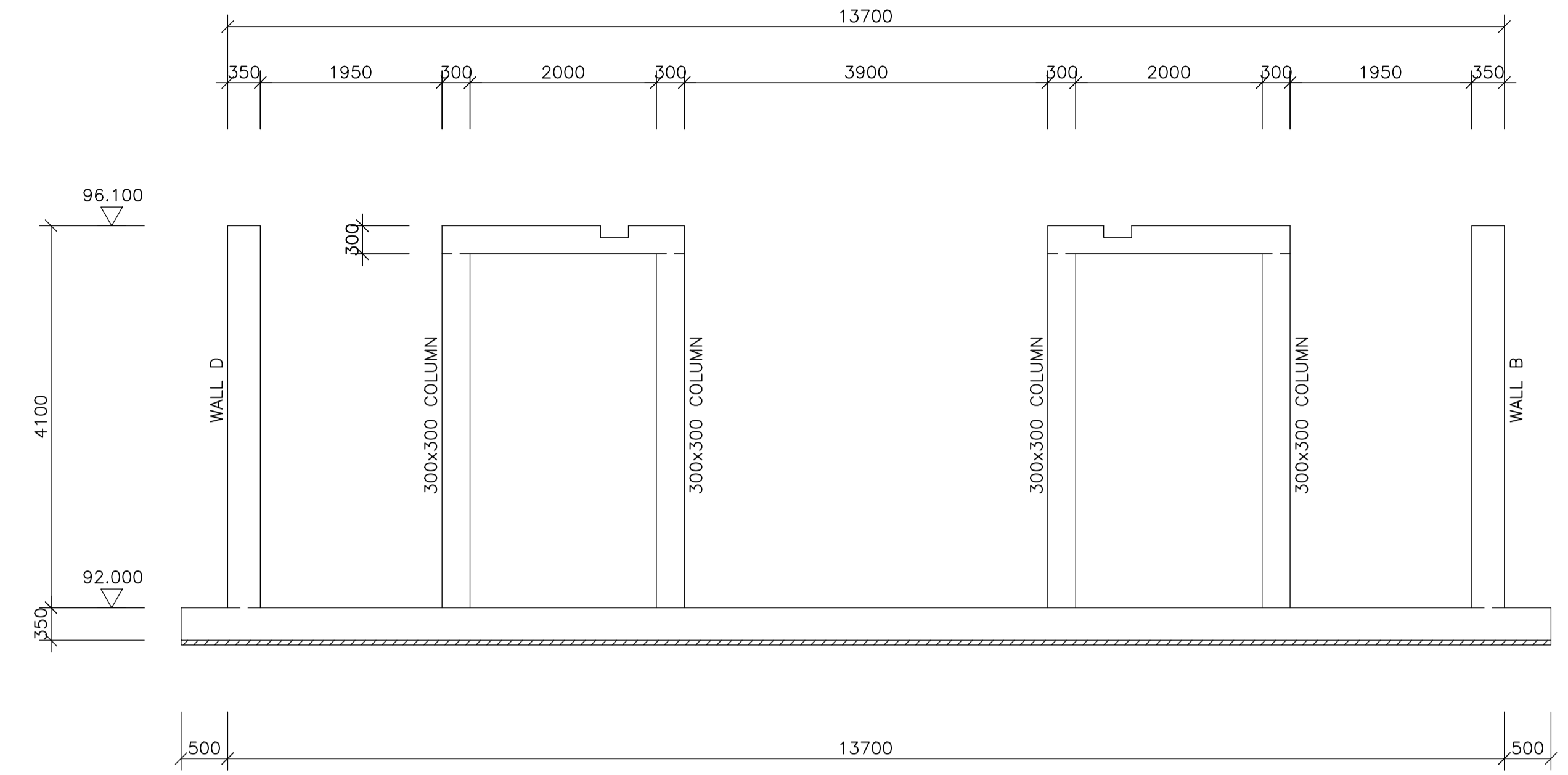
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SLUDGE DAY TANK 3D VIEW

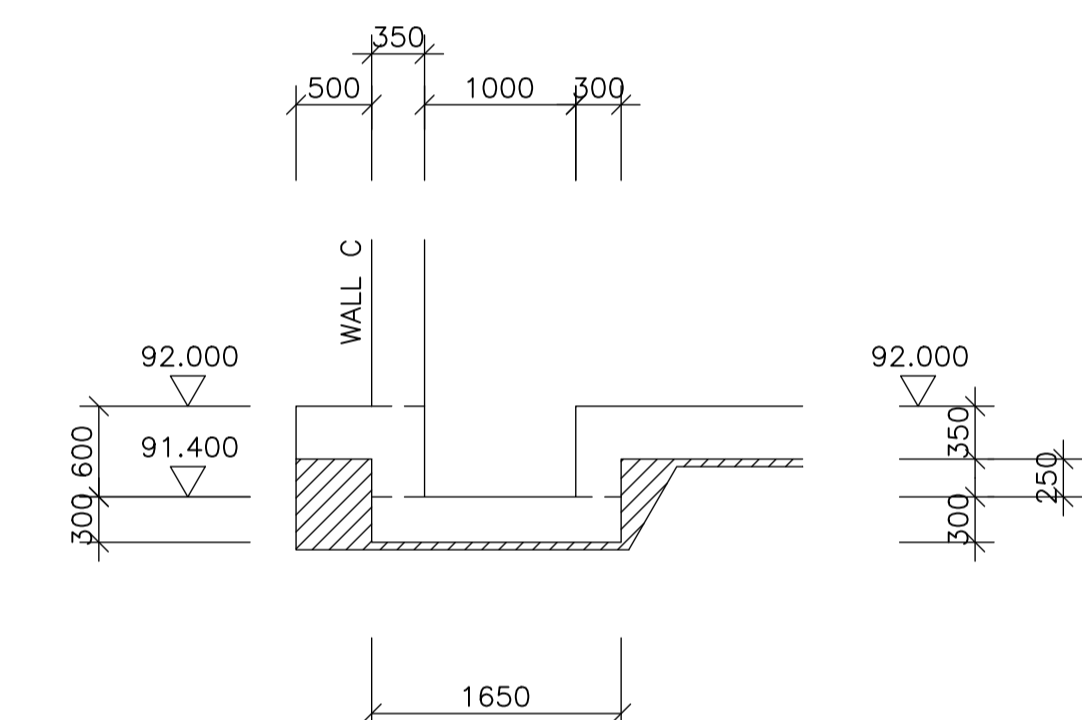
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DESIGNER	DRAUGHTER	CHECKER
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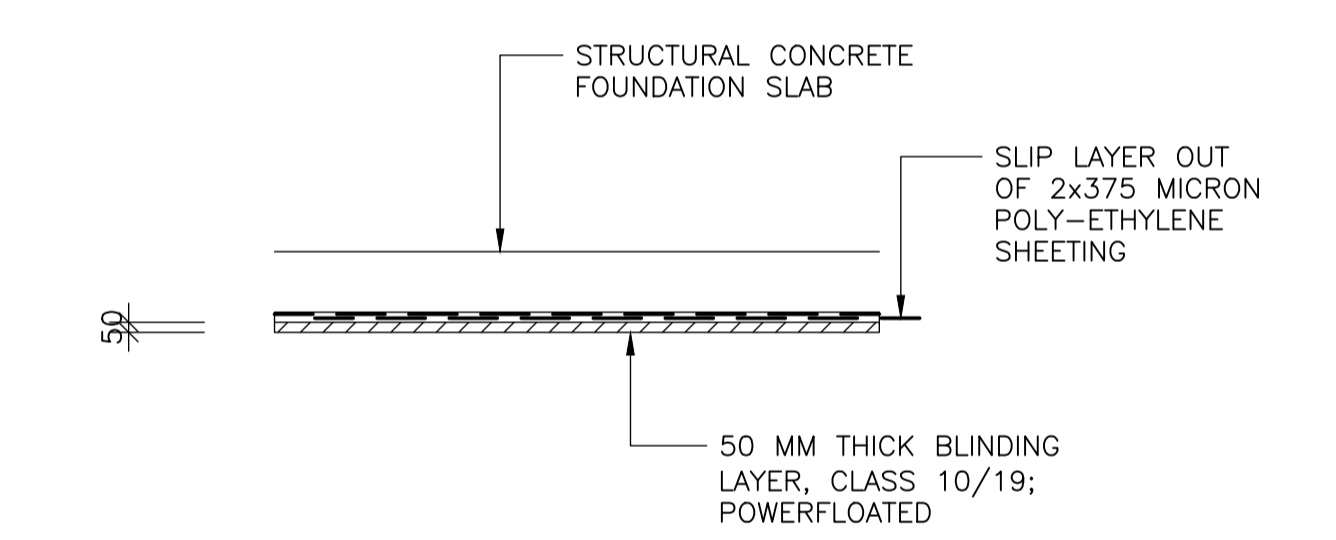
PLAN ON FOUNDATION SLAB
SCALE 1:50



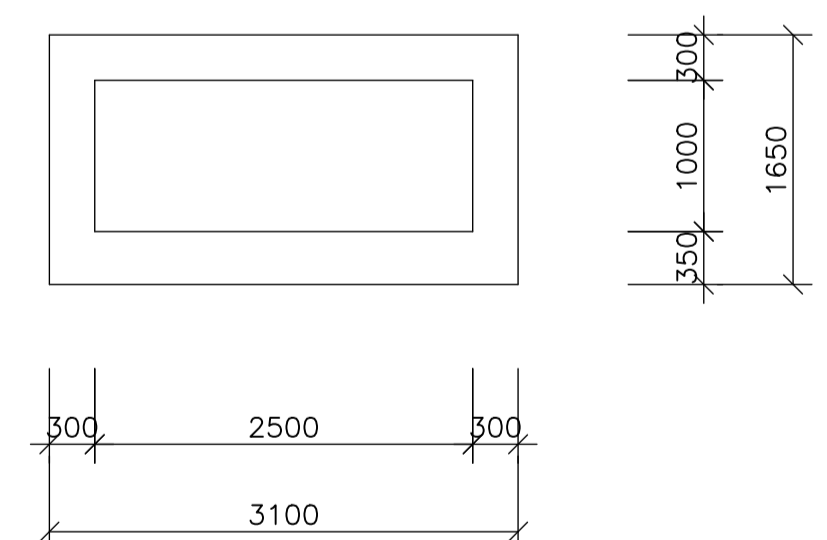
SECTION B-B
SCALE 1:50



SUMP SECTION A-A
SCALE 1:50



BLINDING / SLIP LAYER DETAIL
SCALE 1:37.5 TYPICAL DETAIL



PLAN ON SUMP
SCALE 1:50

- NOTES:
1. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 200 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
 2. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
 3. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 10/19 AND SLIP LAYER BELOW FOUNDATIONS; ALL AS PER DETAIL. (SLIP LAYER NOT REQUIRED AT SUMP)
 4. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR35/19
 5. CONSTANT TO ALL LEVELS = 1100.000

NOTES

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CITY OF Polokwane
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REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-04-18	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

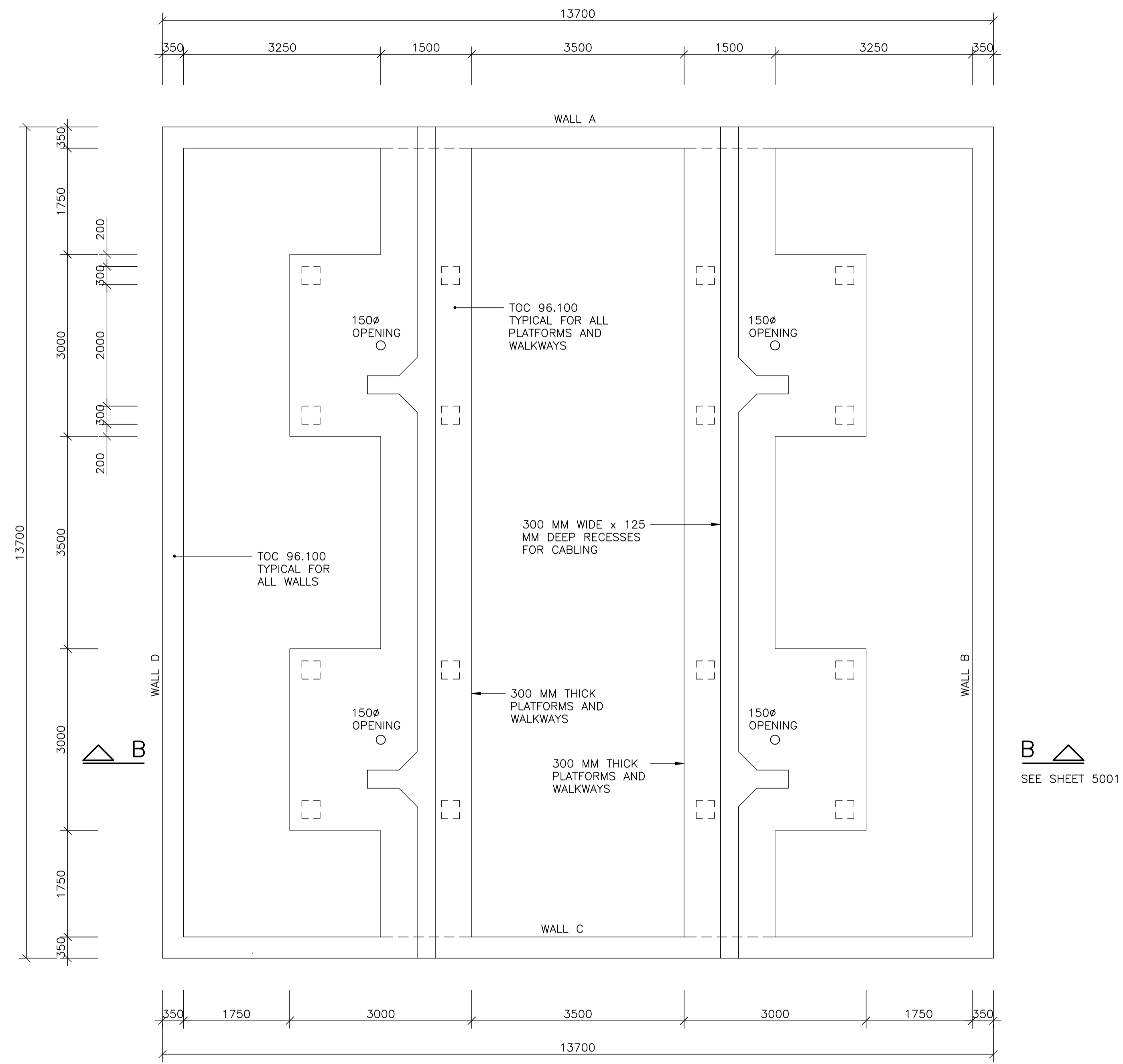
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SLUDGE DAY TANK CONCRETE DETAILS 1

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-04	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-STR-DRG-0014-5001		0



STRUCTURAL KEY PLAN ON PLATFORMS
SCALE 1:50

CONSTRUCTION DRAWING

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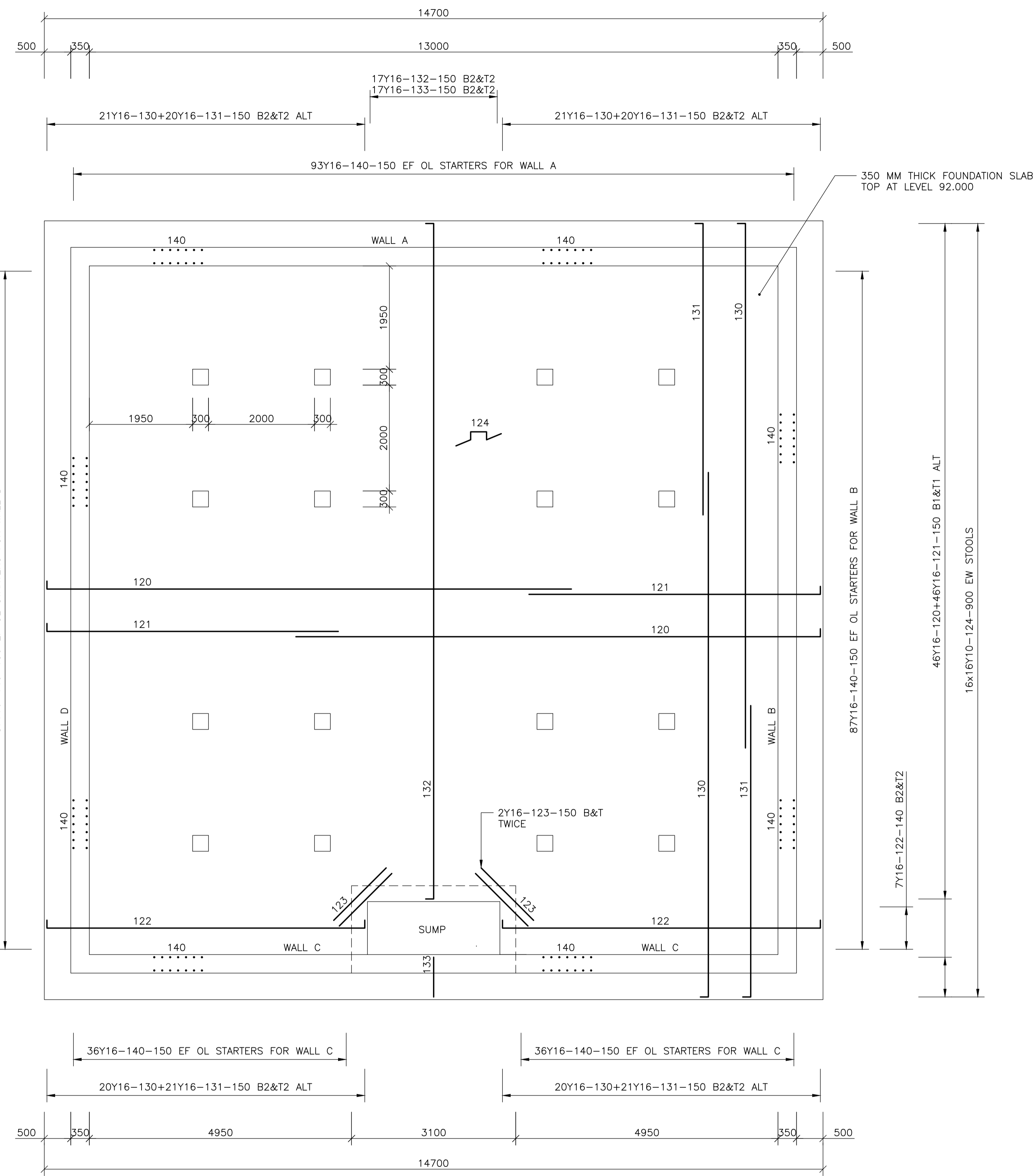
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NO.	DATE	REVISION DESCRIPTION
0	2023-04-18	ISSUED FOR CONSTRUCTION

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

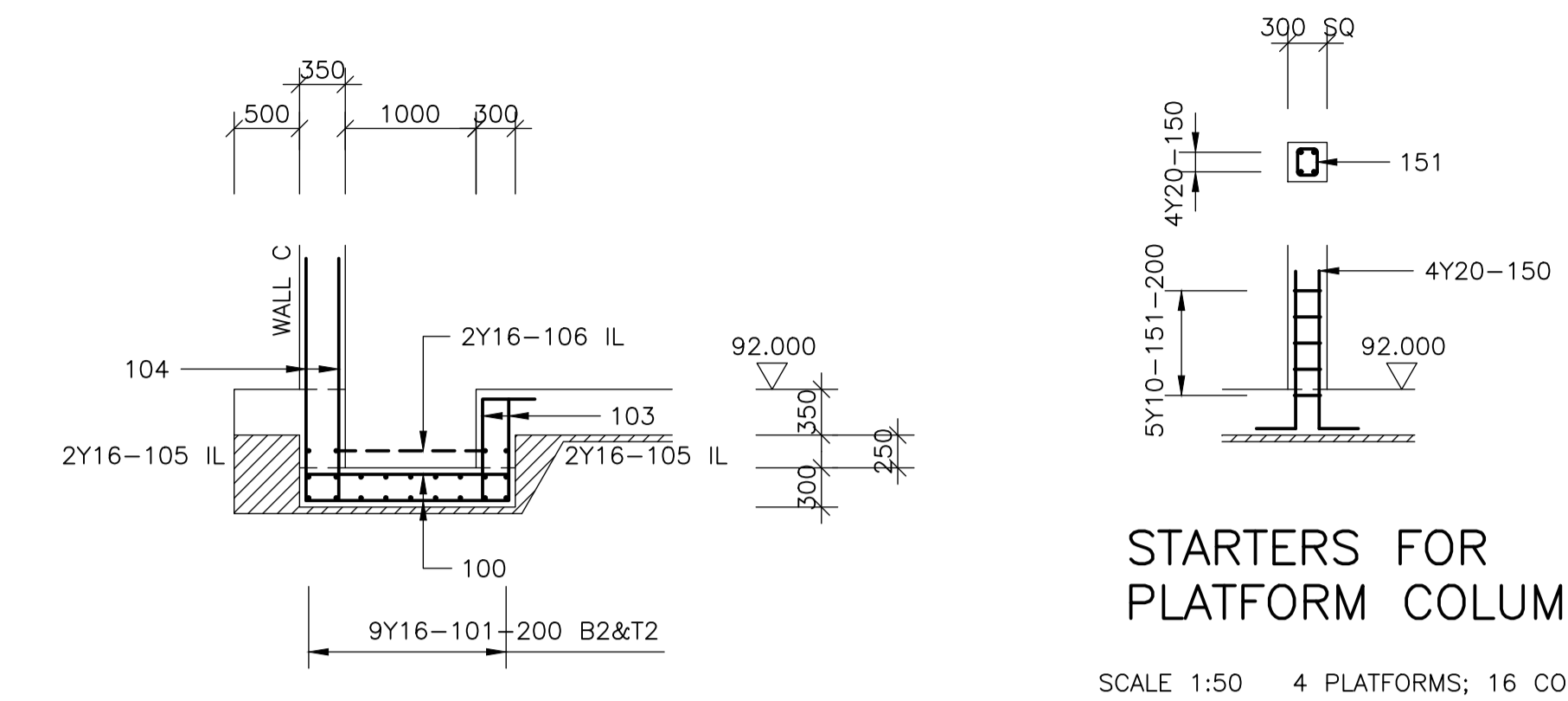
PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION
 SLUDGE DAY TANK
 CONCRETE DETAILS 2

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-04	AS SHOWN	A1
DRAWING NUMBER		
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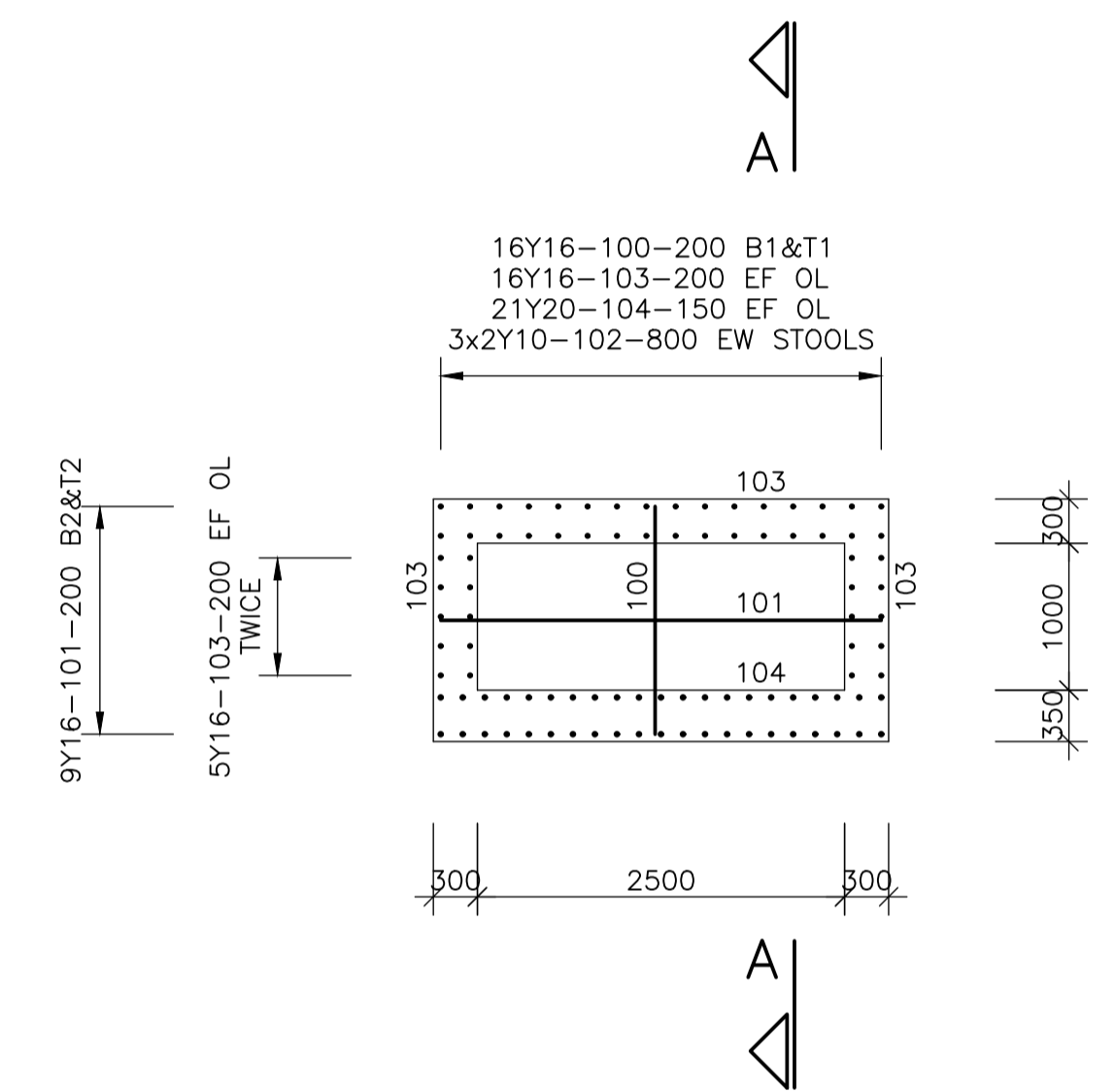


PLAN ON FOUNDATION SLAB
SCALE 1:50



SUMP SECTION A-A
SCALE 1:50

STARTERS FOR PLATFORM COLUMNS
SCALE 1:50 4 PLATFORMS; 16 COLUMNS



PLAN ON SUMP
SCALE 1:50

- NOTES:
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 2. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
 3. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 10/19 BELOW ALL FOUNDATIONS; AS PER DETAIL
 4. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR35/19
 5. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST
 6. CONCRETE COVER TO FOUNDATION REINFORCEMENT AND STARTERS TO BE 50 MM THROUGHOUT

CONSTRUCTION DRAWING

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REVISION SCHEDULE		
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T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

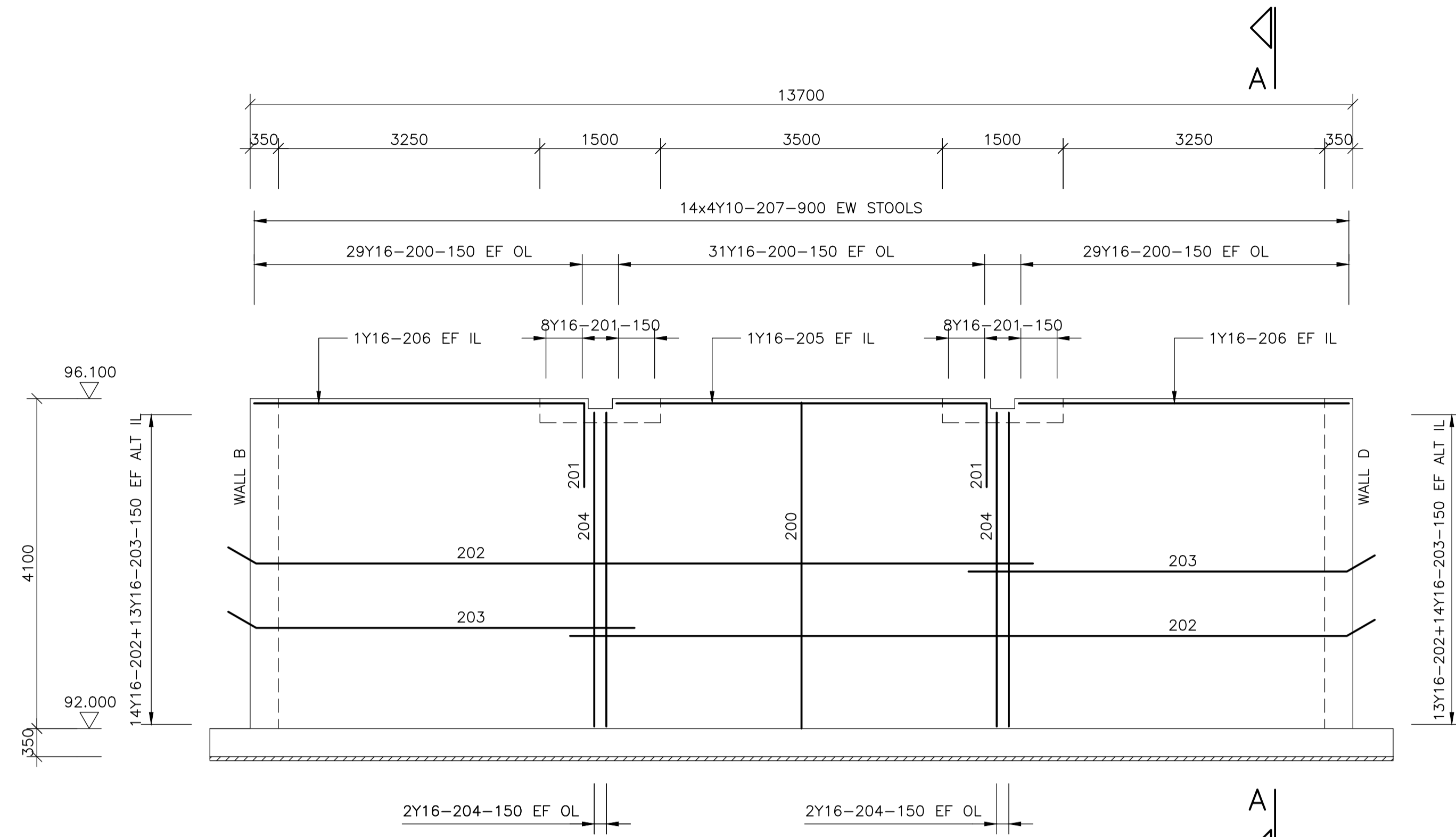
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

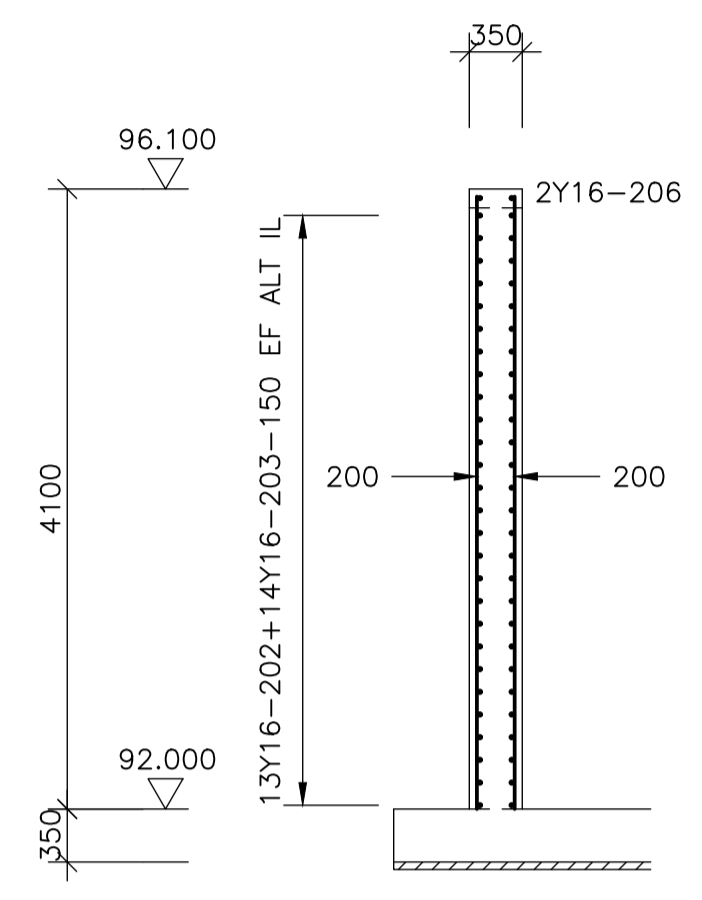
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SLUDGE DAY TANK FOUNDATION REINFORCEMENT

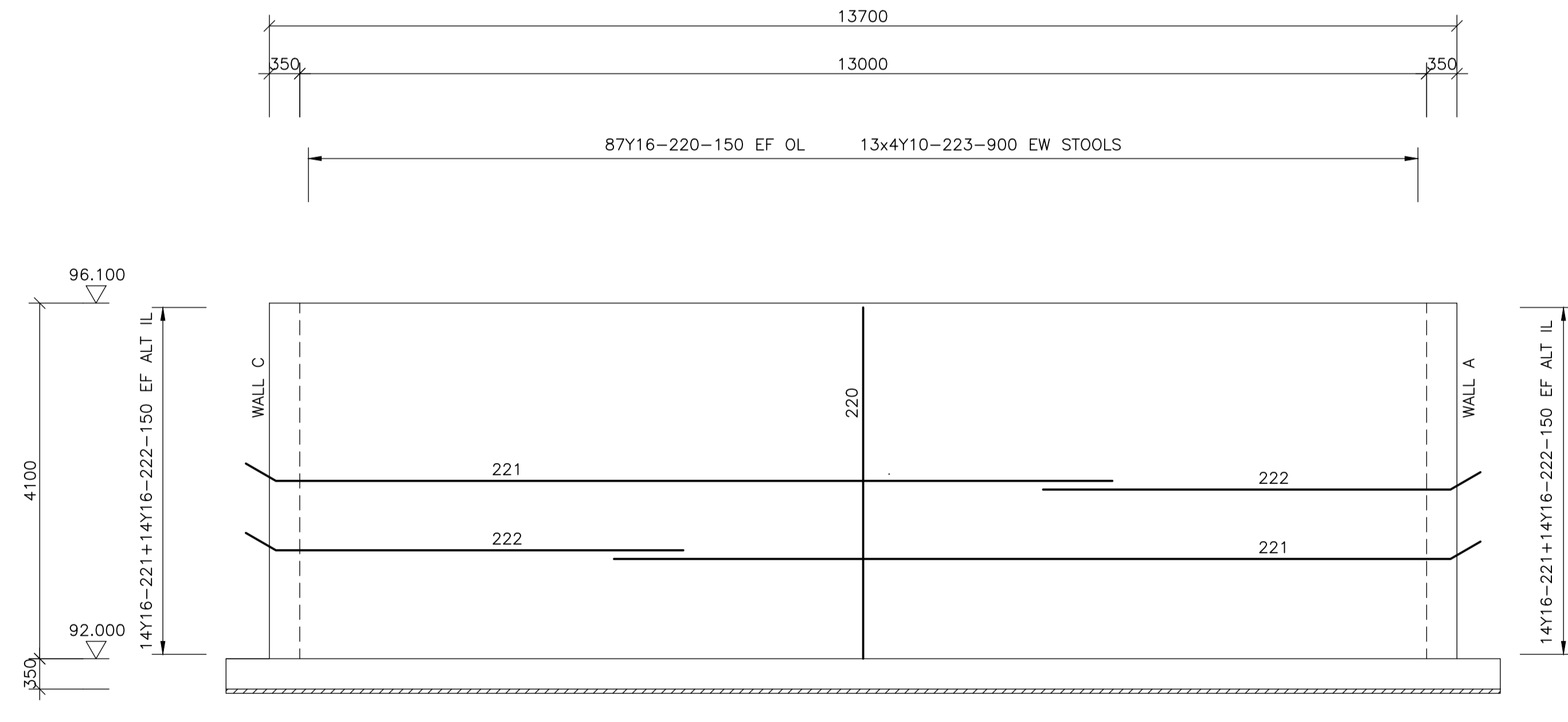
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Designer	Author	Checker
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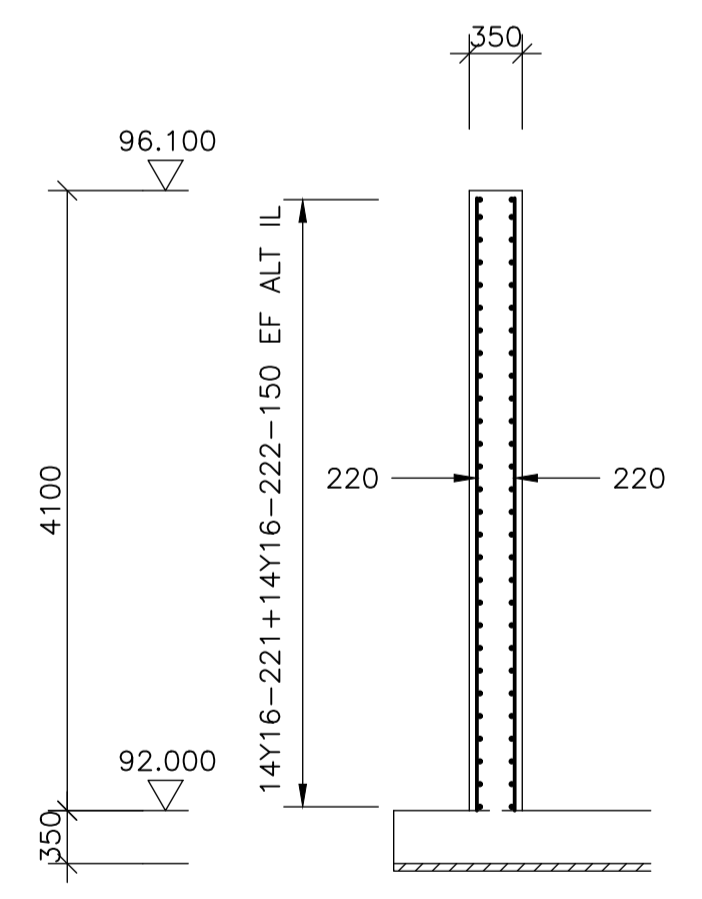
EXTERNAL ELEVATION ON WALL A REINFORCEMENT
SCALE 1:50



SECTION A-A
SCALE 1:50



EXTERNAL ELEVATION ON WALL B REINFORCEMENT
SCALE 1:50



SECTION B-B
SCALE 1:50

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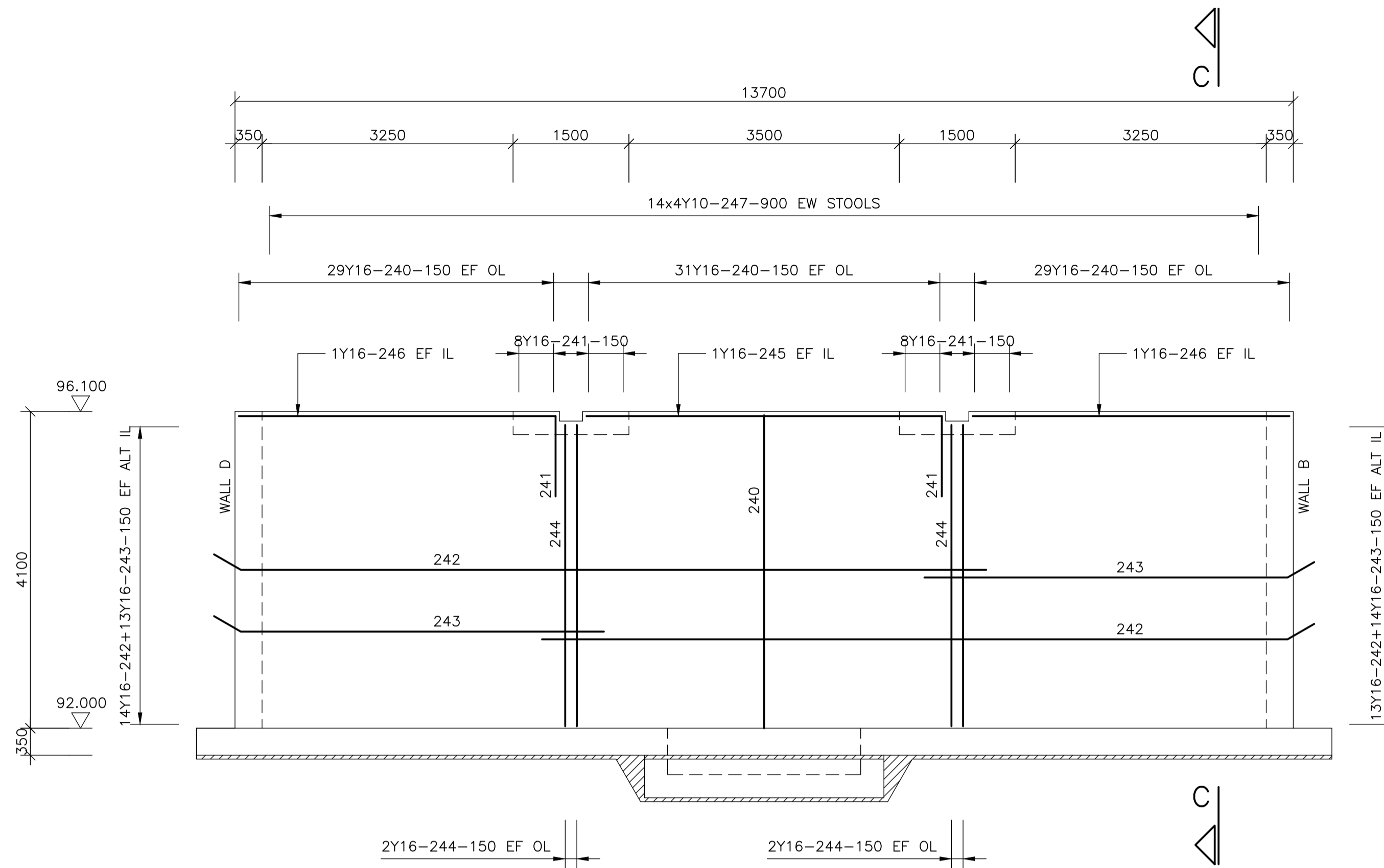
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NO.	DATE	REVISION DESCRIPTION
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T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____
 CLIENT _____ DATE _____

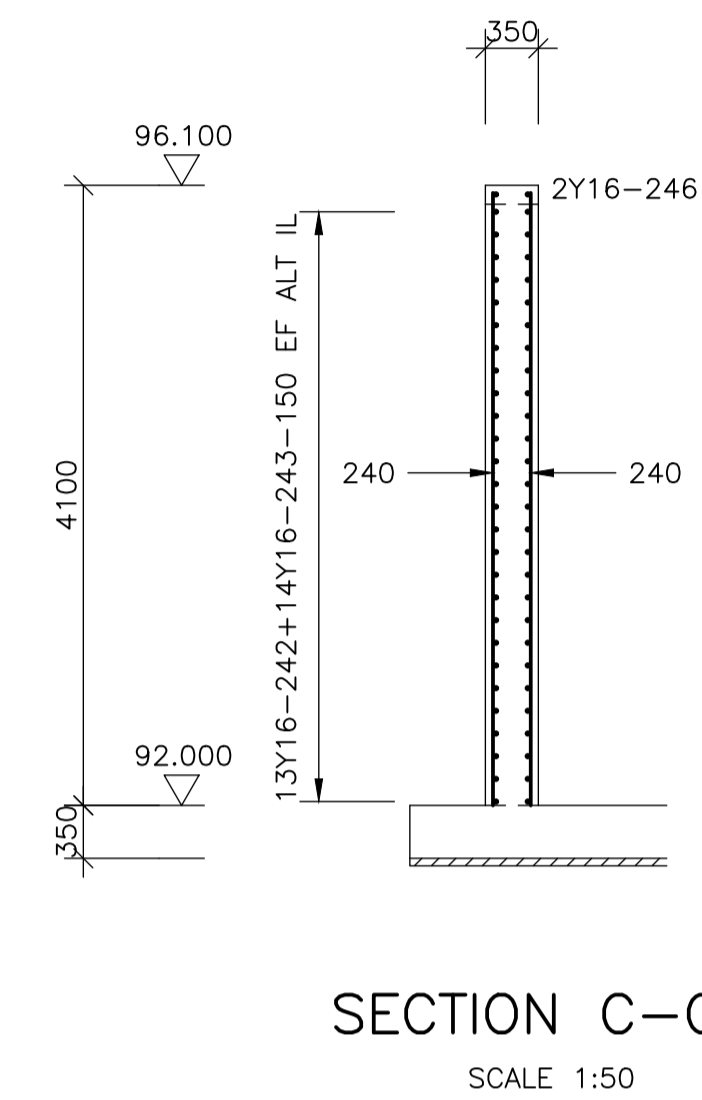
PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION
 SLUDGE DAY TANK
 REINFORCEMENT
 WALLS A & B

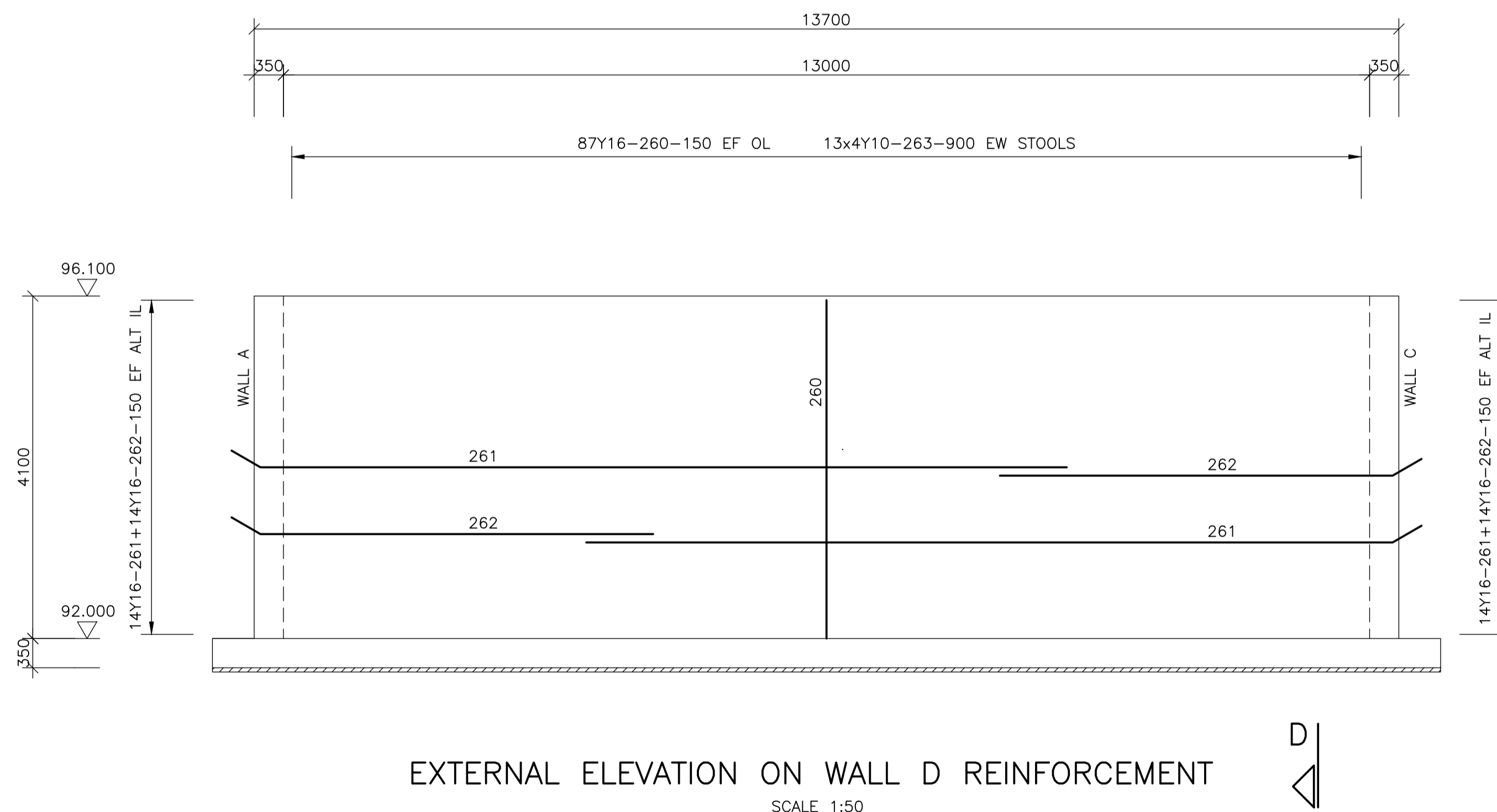
CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
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DRAWING NUMBER		
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PK278-01-STR-DRG-0014-5102	0	



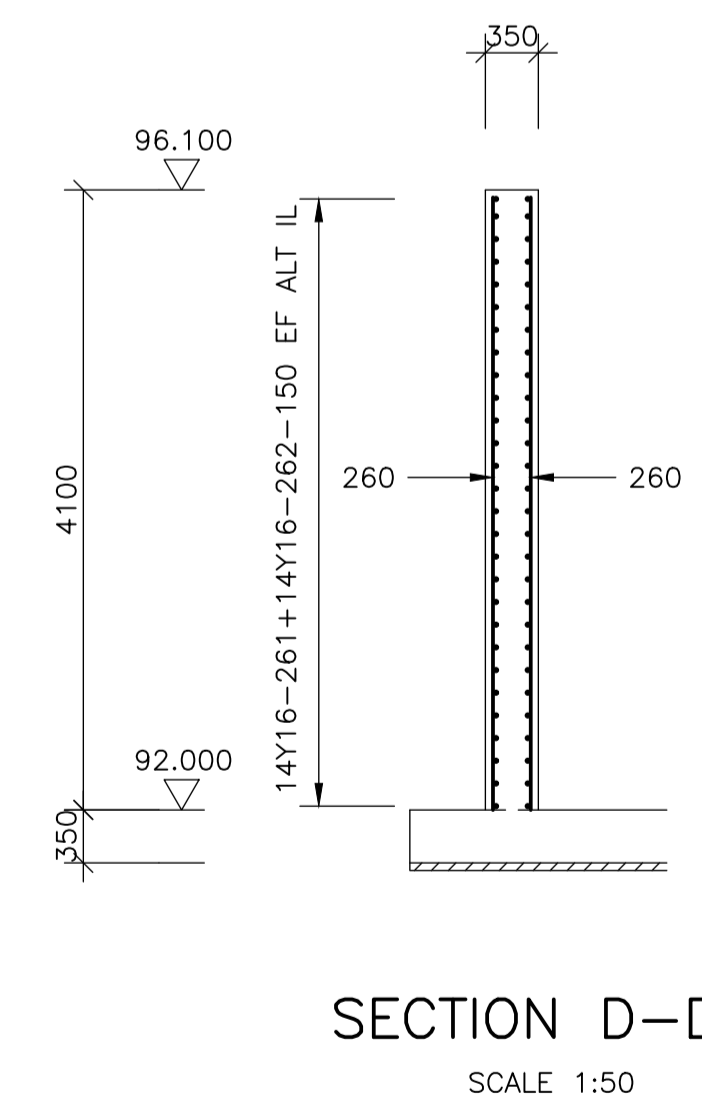
EXTERNAL ELEVATION ON WALL C REINFORCEMENT
SCALE 1:50



SECTION C-C
SCALE 1:50




EXTERNAL ELEVATION ON WALL D REINFORCEMENT
SCALE 1:50



SECTION D-D
SCALE 1:50

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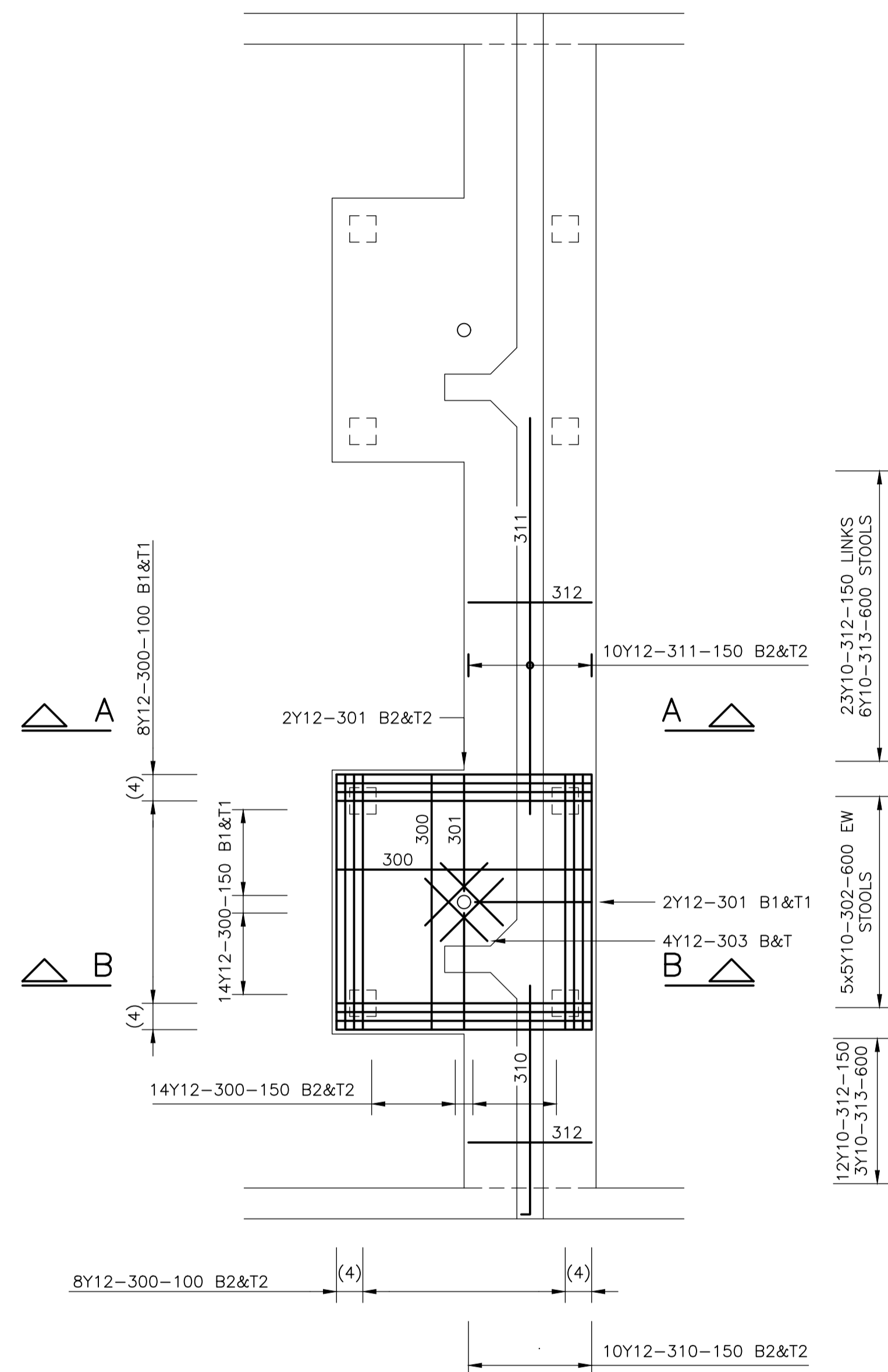
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-04-18	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
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 CLIENT _____ DATE _____

PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

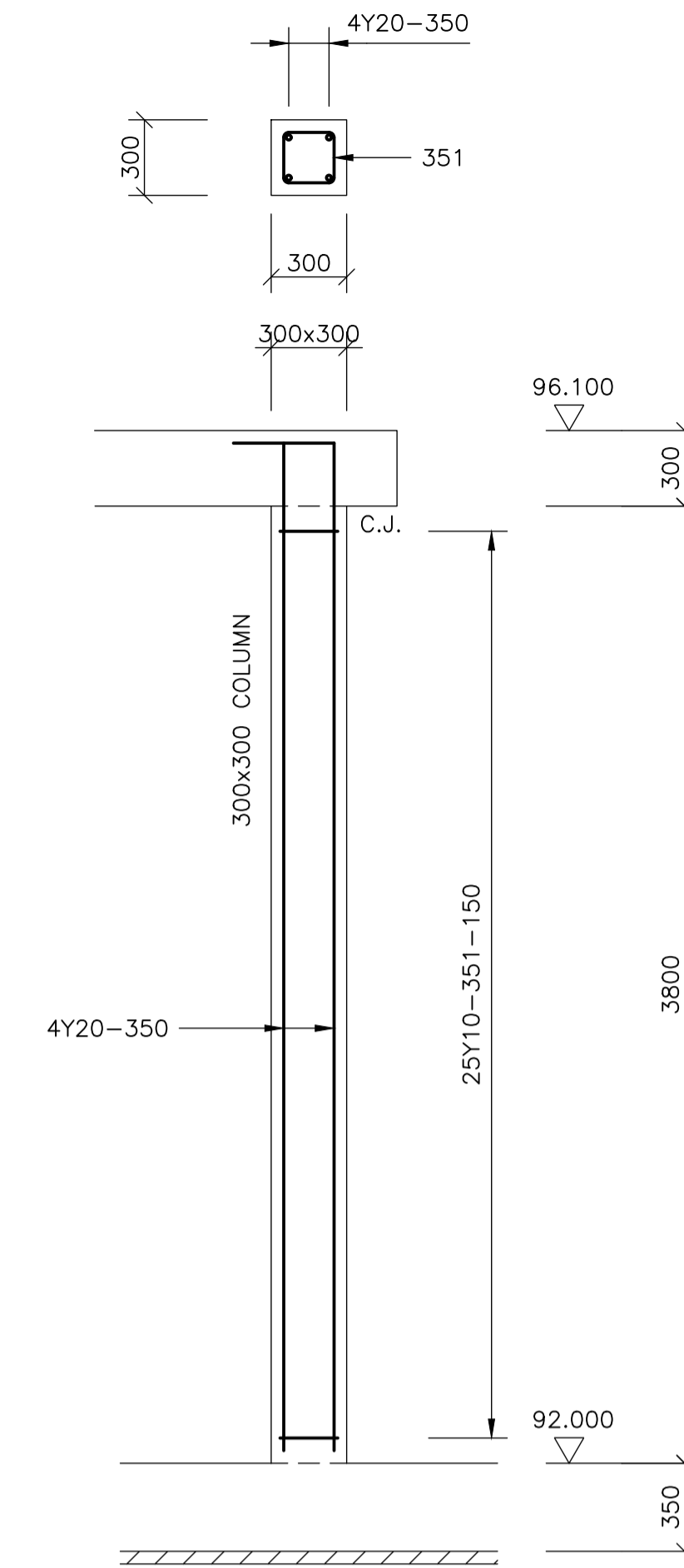
DRAWING DESCRIPTION
 SLUDGE DAY TANK
 REINFORCEMENT
 WALLS C & D

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
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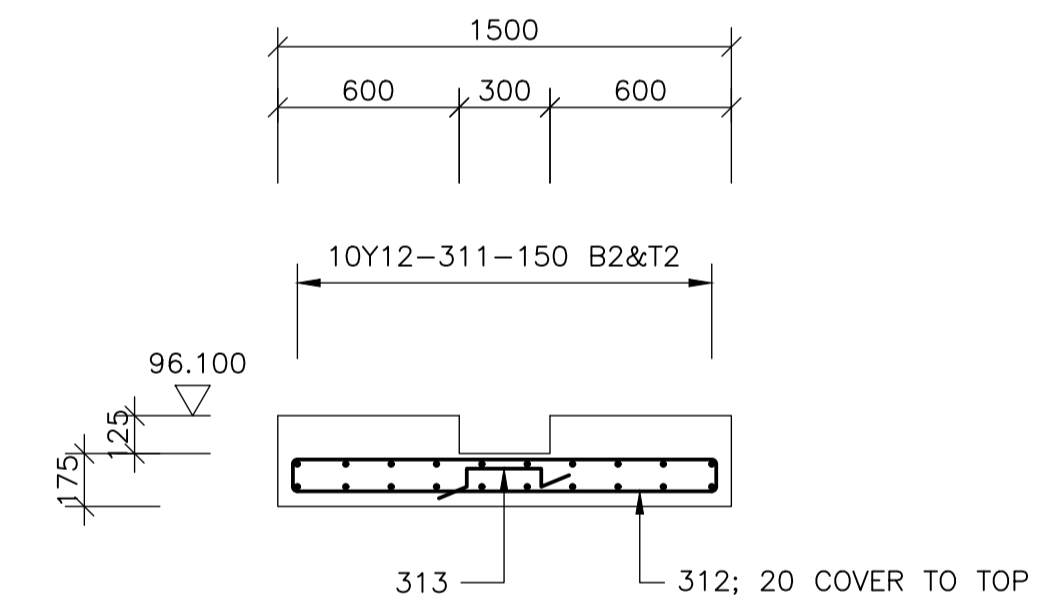
PLAN ON PLATFORM REINFORCEMENT

SCALE 1:50



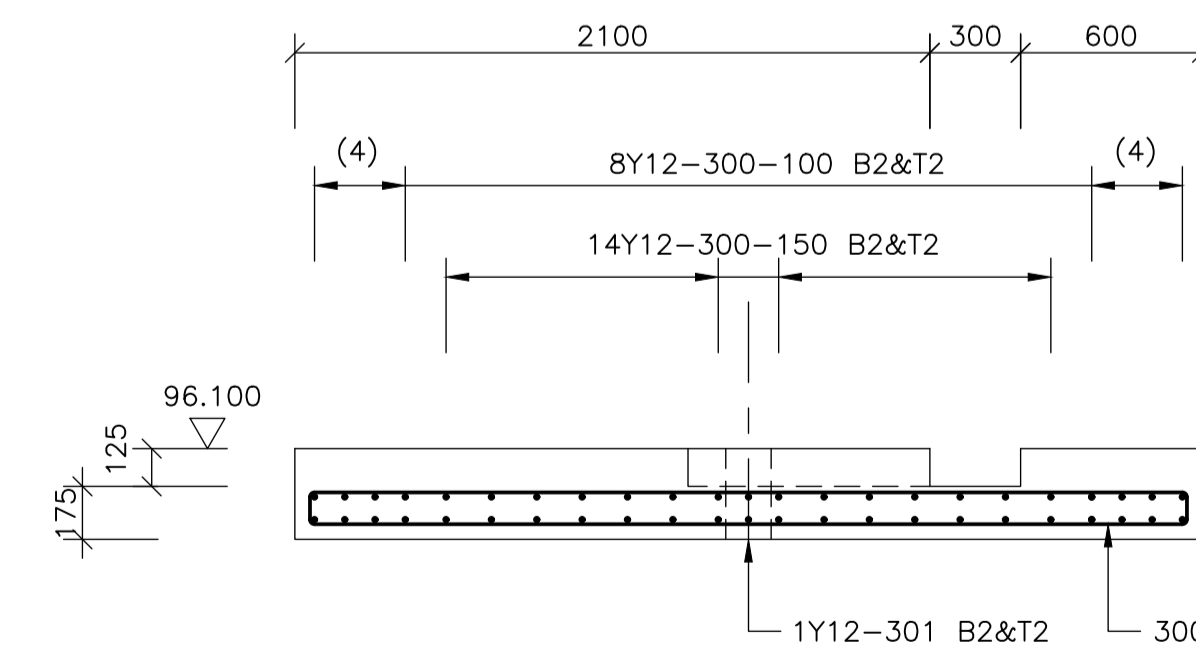
TYPICAL ELEVATION OF PLATFORM COLUMN REINFORCEMENT

SCALE 1:25 16 PLACES



WALKWAY SECTION A-A

SCALE 1:25



PLATFORM SECTION B-B

SCALE 1:25

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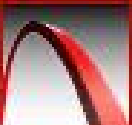
T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

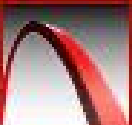
PROJECT
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

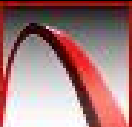
DRAWING DESCRIPTION
SLUDGE DAY TANK PLATFORM REINFORCEMENT

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-04	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0014-5104	0	

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUMBER	MARK	S C	BENDING				
								A	B	C	D	E/r
Foundation Sump	1	32	Y16	1800	32	100	38	150	1550	(150)	(350)	
		18	Y16	3250	18	101	38	150	3000	(150)		
		6	Y10	1200	6	102	83	300	150	350		
		52	Y16	1300	52	103	54	300	775	(300)		
		42	Y20	2100	42	104	37	300	(1850)			
		4	Y16	3500	4	105	38	300	2950	(300)		
		4	Y16	2050	4	106	38	300	1500	(300)		
Foundations Main slab	1	184	Y16	10000	184	120	37	150	(9900)		(300)	
		184	Y16	5600	184	121	37	150	(5500)			
		28	Y16	6250	28	122	38	150	6000	(150)		
		8	Y16	1500	8	123	20	(1500)				
		256	Y10	1150	256	124	83	250	200	300		
	1	164	Y16	10000	164	130	37	150	(9900)			
		164	Y16	5600	164	131	37	150	(5500)			
		34	Y16	13000	34	132	38	150	12750	(150)		
		34	Y16	1000	34	133	38	150	750	(150)		
	Wall starters	1	678	Y16	1350	678	140	37	300	(1100)		
Column starters	16	4	Y20	1600	64	150	37	300	(1350)			
		5	Y10	850	80	151	60	200	160			
	8	10	12	16	20	25	32	40	TOT	Date	2023/04/15	
R										Det. by	Koos Bultman	
Y		228		11385	470				12082	Ref Dwg	5101	
TOT		228		11385	470				12082	Job No	PK278	
		PROKON Software Consultants (Pty) Ltd http://www.prokon.com				Polokwane Regional WWTW Sludge Day Tank Foundations				Revision		1
										Schedule No		200

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM- BER	MARK	S C	BENDING									
								A	B	C	D	E/r					
Wall A	1	178	Y16	4050	178	200	20	(4050)									
		16	Y16	1800	16	201	38	800	250	(800)							
		54	Y16	10000	54	202	37	400	(9650)								
		54	Y16	5000	54	203	37	350	(4700)								
		8	Y16	3900	8	204	20	(3900)									
		2	Y16	4600	2	205	20	(4600)									
		4	Y16	4100	4	206	20	(4100)									
		56	Y10	1300	56	207	83	300	200	350	(350)						
Wall B	1	174	Y16	4050	174	220	20	(4050)									
		56	Y16	10000	56	221	37	400	(9650)								
		56	Y16	5000	56	222	37	350	(4700)								
		52	Y10	1300	52	223	83	300	200	350	(350)						
Wall C	1	178	Y16	4050	178	240	20	(4050)									
		16	Y16	1800	16	241	38	800	250	(800)							
		54	Y16	10000	54	242	37	400	(9650)								
		54	Y16	5000	54	243	37	350	(4700)								
		8	Y16	3900	8	244	20	(3900)									
		2	Y16	4600	2	245	20	(4600)									
		4	Y16	4100	4	246	20	(4100)									
		56	Y10	1300	56	247	83	300	200	350	(350)						
Wall D	1	174	Y16	4050	174	260	20	(4050)									
		56	Y16	10000	56	261	37	400	(9650)								
		56	Y16	5000	56	262	37	350	(4700)								
		52	Y10	1300	52	263	83	300	200	350	(350)						
	8	10	12	16	20	25	32	40	TOT	Date	2023/04/15						
R										Det. by	Koos Bultman						
Y		173		9979					10152	Ref Dwg	5102 - 5103						
TOT		173		9979					10152	Job No	PK278						
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										Schedule No		201					

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUMBER	MARK	S C	BENDING					
								A	B	C	D	E/r	
Platforms	4	88	Y12	3100	352	300	38	125	2900	(125)			
		8	Y12	1400	32	301	37	125	(1300)				
		25	Y10	900	100	302	83	250	70	300	(300)		
		8	Y12	1000	32	303	20	(1000)					
Walkways	4	20	Y12	2700	80	310	37	125	(2600)				
		2	Y12	4500	40	311	20	(4500)					
		1	Y10	3150	94	312	60	1400	105				
		1	Y10	900	24	313	83	250	70	300	(300)		
Platform columns	16	4	Y20	4250	64	350	37	300	(4000)				
		25	Y10	950	400	351	60	200	200				
	8	10	12	16	20	25	32	40	TOT	Date	2023/04/15		
R										Det. by	Koos Bultman		
Y		486	1389		671				2545	Ref Dwg	5104		
TOT		486	1389		671				2545	Job No	PH278		
 PROKON Software Consultants (Pty) Ltd http://www.prokon.com										Polokwane Regional WWTW Sludge Day Tank Platforms and Walkways		Revision	1
										Schedule No		202	