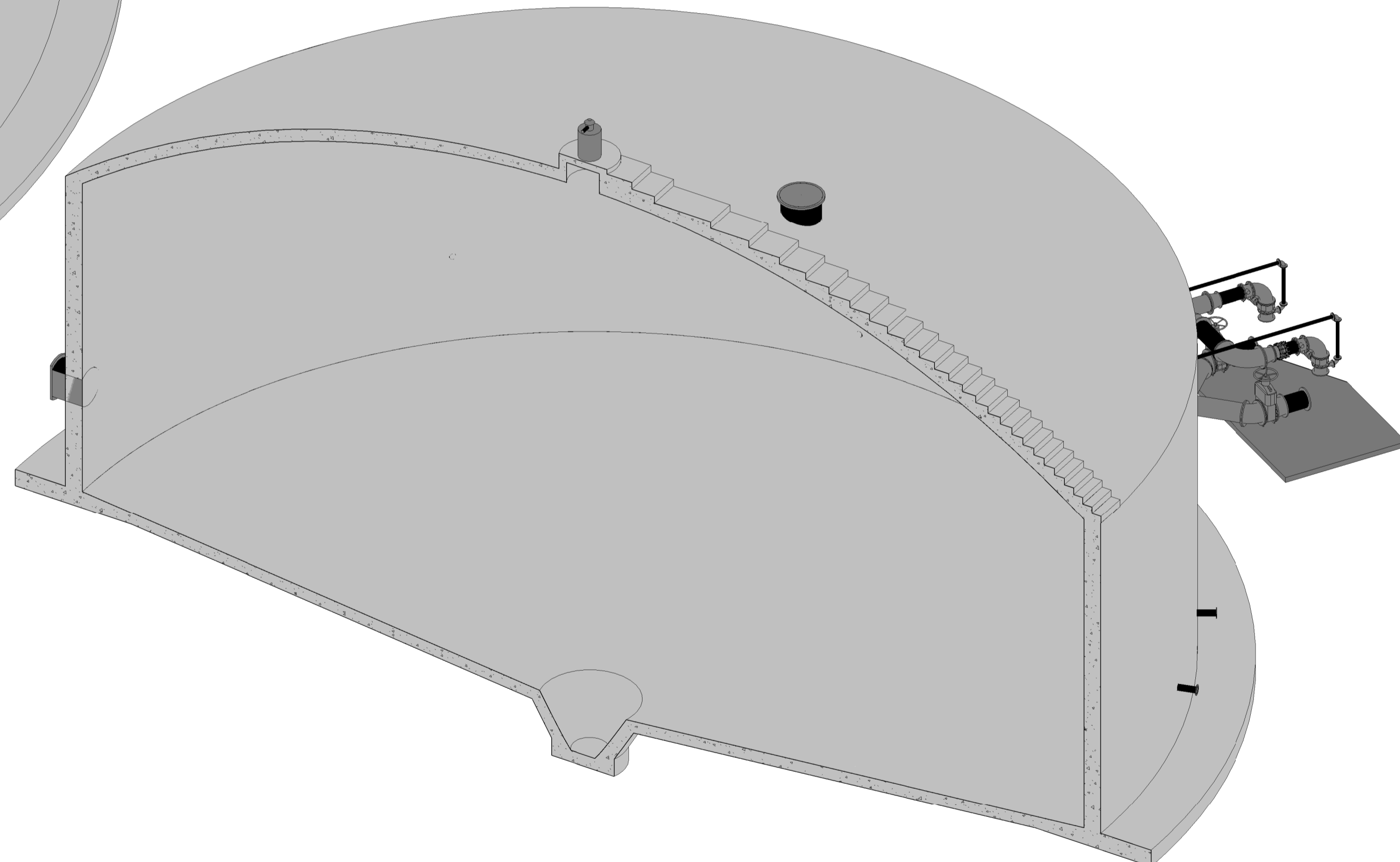


3D



3D SECTION

- NOTES :
- 1.1 THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL GOVERN INCASE 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.
 - 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 SURACES 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:
- 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

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
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CLIENT



CITY OF
Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023/07	ISSUED FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

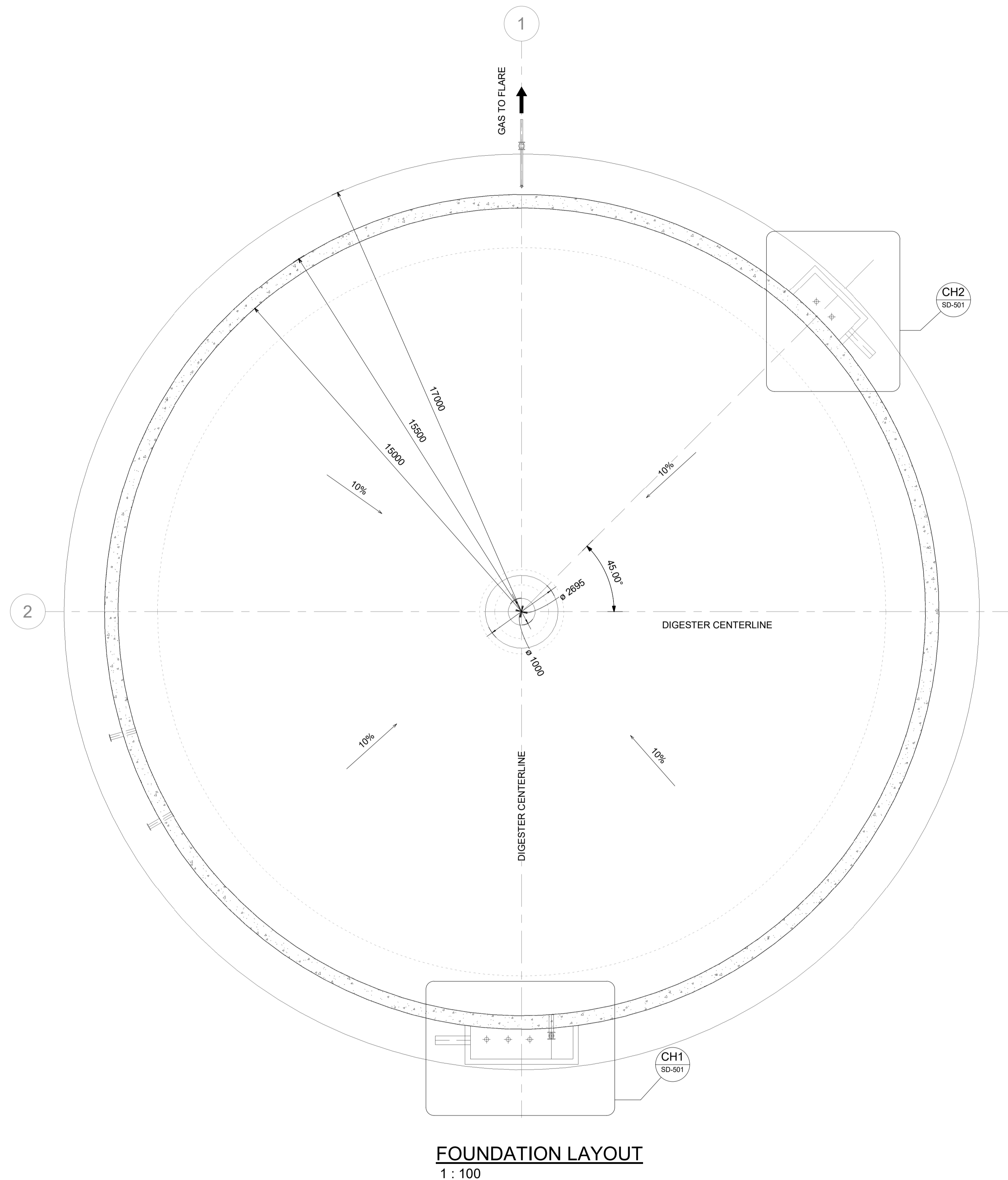
**POLOKWANE REGIONAL
WWTW CONTRACT 2B**

DRAWING DESCRIPTION

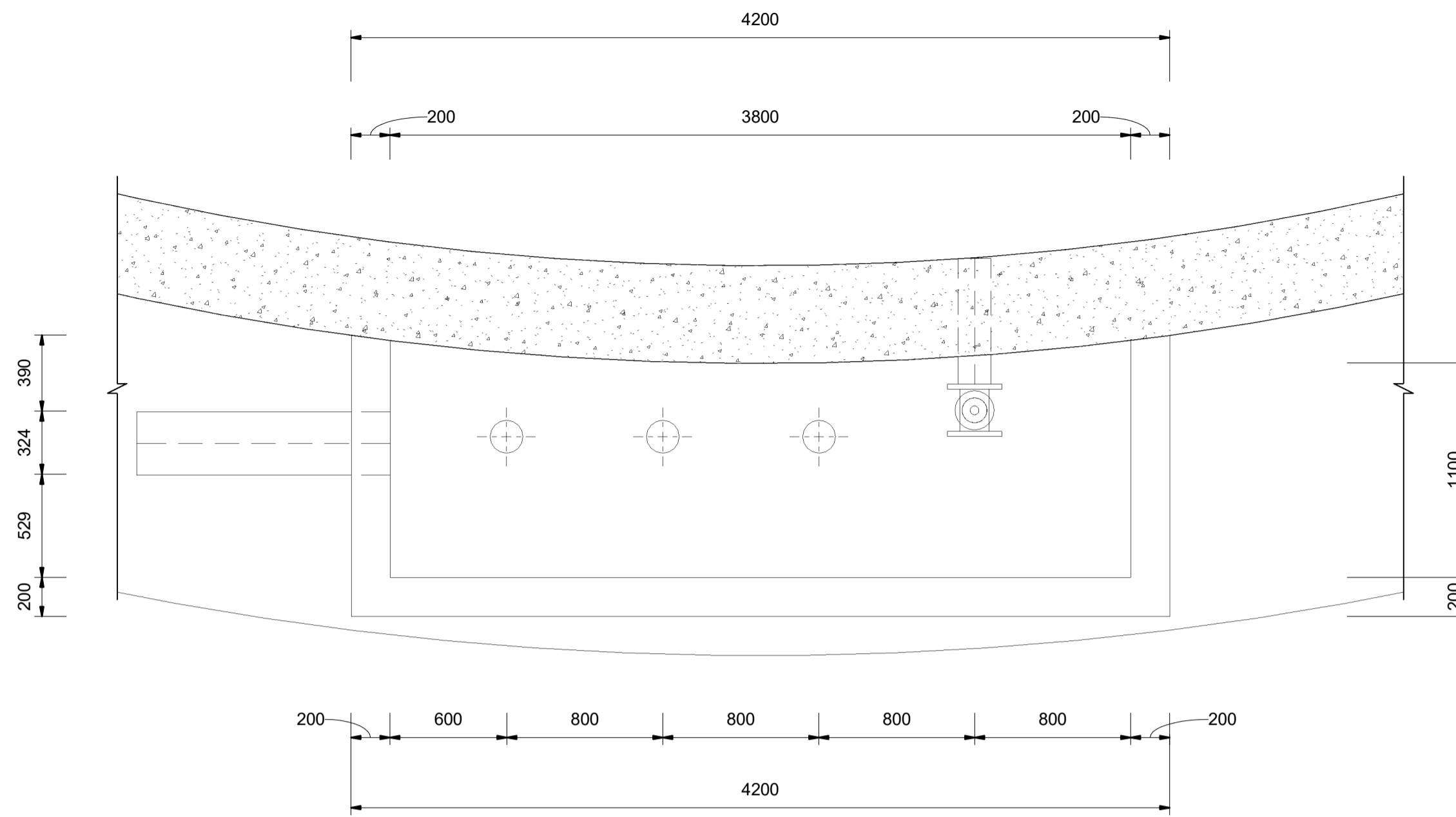
SLUDGE DIGESTER

3D

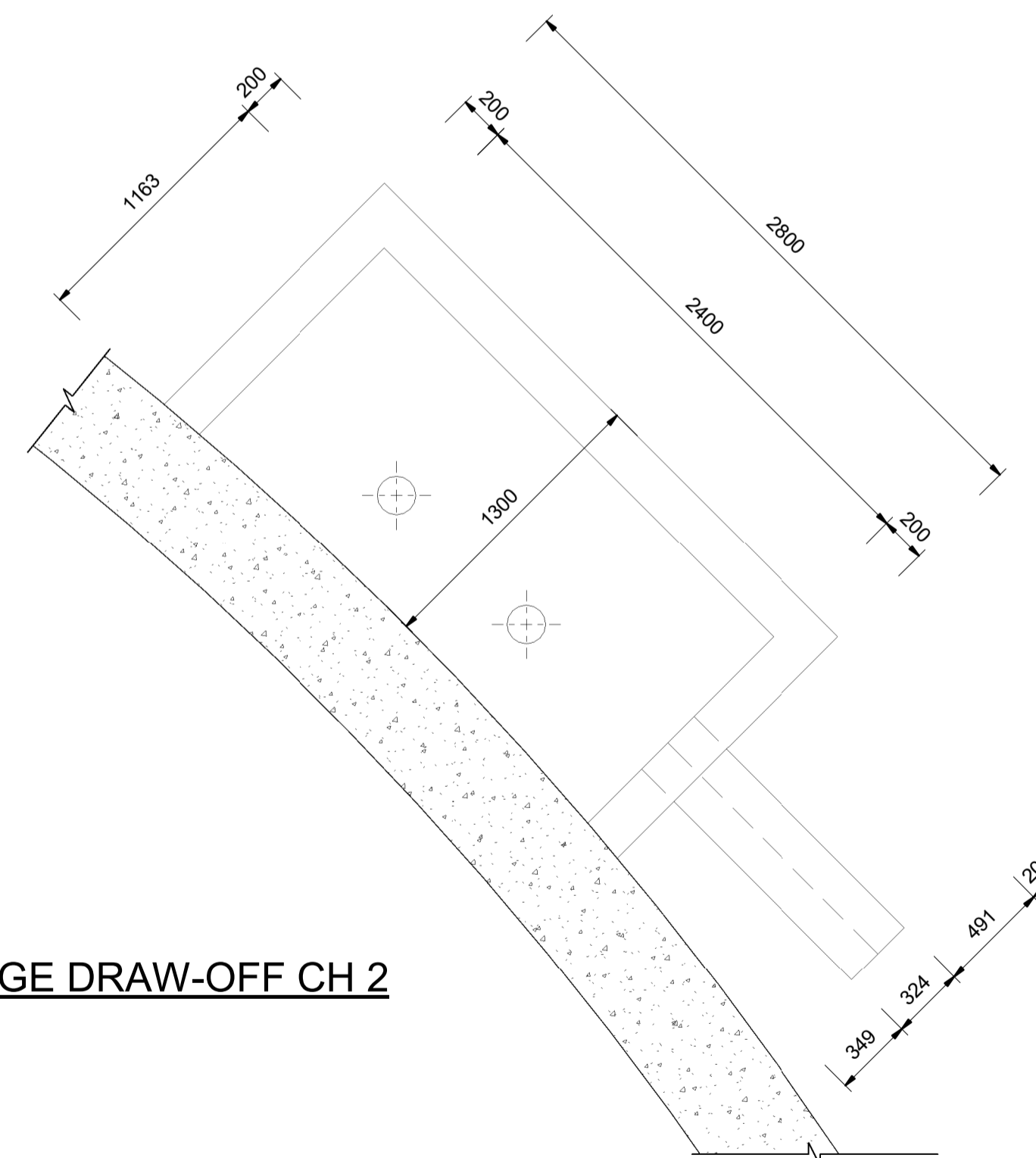
DESIGNED	DRAWN	CHECKED
J.A.B GALANTE	C ROSSOUW	J.A.B GALANTE
REV DATE	SCALE	ORIGINAL SIZE
2023/07		A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-CP-2B-SD-001	0	



FOUNDATION LAYOUT
1 : 100



SLUDGE DRAW-OFF CH 1
1 : 25



SLUDGE DRAW-OFF CH 2
1 : 25

GENERAL NOTES:

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- 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. 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.
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- 2.10 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.: PK278-SP-2B-PST-502 FOR JOINT DETAILS SEE DRAWING PK278-SP-2B-ST-1001.

LEGEND:

- CJ = CONSTRUCTION JOINT
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- TOC = TOP OF CONCRETE
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- UF = UNDERSIDE OF FOOTING

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
J.A.B GALANTE	C. ROSSOUW	J.A.B GALANTE
REV DATE	SCALE	ORIGINAL SIZE
2023/07	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SP-2B-SD-501	0	

NOTES

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REVISION SCHEDULE		
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T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

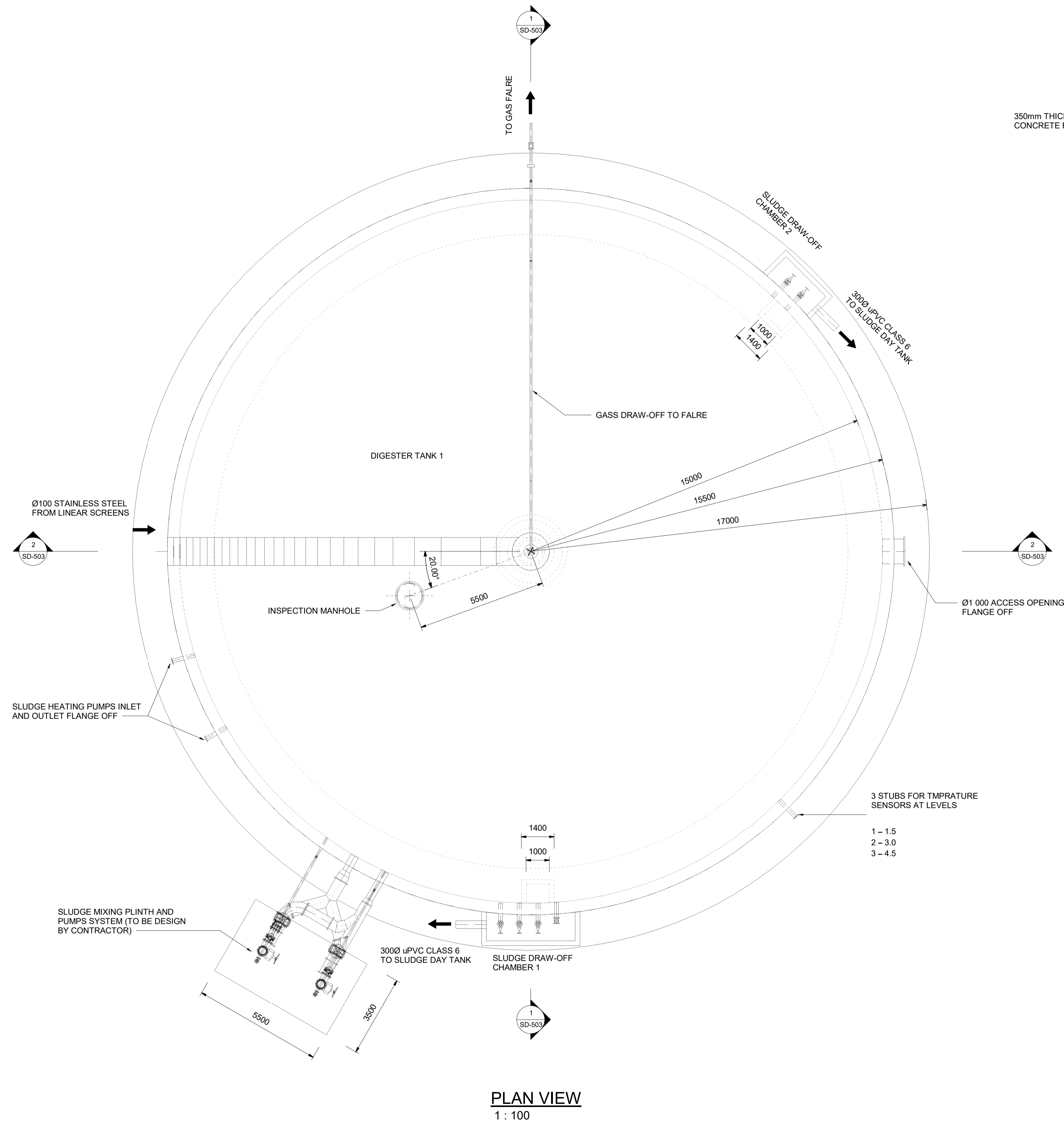
CLIENT _____ DATE _____

PROJECT

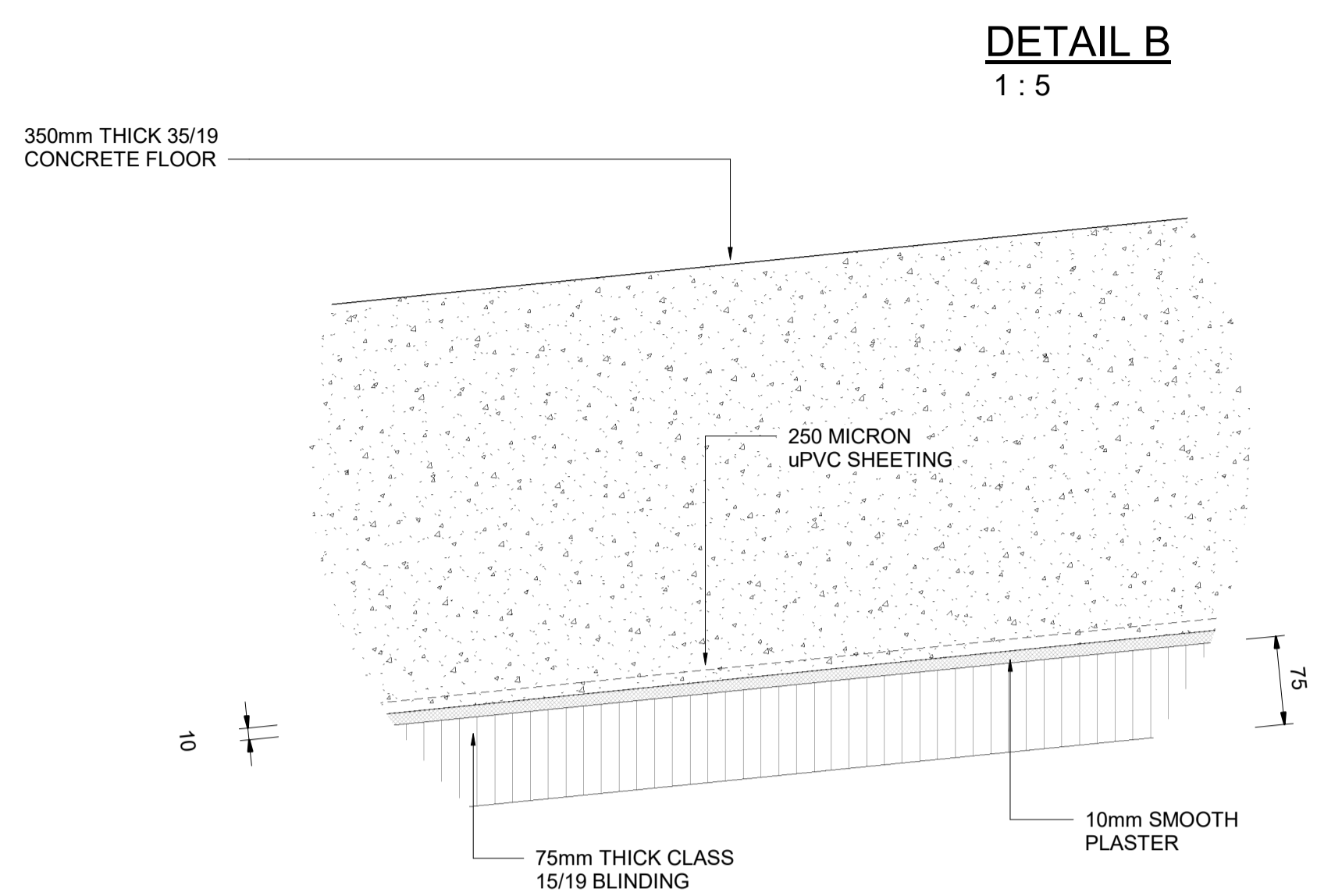
POLOKWANE REGIONAL WWTW CONTRACT 2B

DRAWING DESCRIPTION

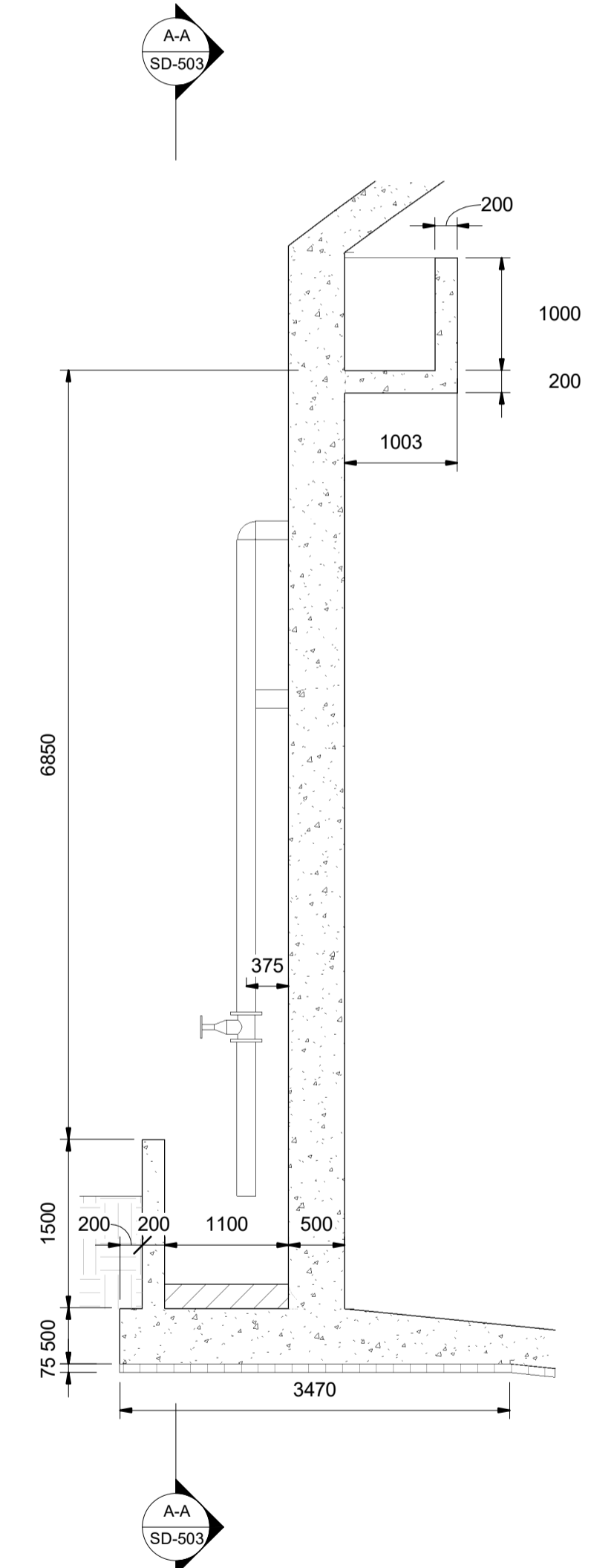
SLUDGE DIGESTERS CONCRETE DETAILS 1



PLAN VIEW
1 : 100



DETAIL B
1 : 5



SECTION - SLUDGE DRAW-OFF DETAILS CHAMBER 1
1 : 50

GENERAL NOTES:

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- 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
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- 2.4 UNLESS OTHERWISE SPECIFIED, THE CONCRETE WALLS TO BE GROUDED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.
- 2.5 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm 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 SURACES SUPPORTING MECHANICAL COMPONENTS.
- 2.8 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.
- 2.9 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.: PK278-SP-2B-PST-502 FOR JOINT DETAILS SEE DRAWING PK278-SP-2B-ST-1001.

LEGEND:

CJ = CONSTRUCTION JOINT
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 IL = INVERT LEVEL
 ND = NOMINAL DIAMETER
 NGL = NATURAL GROUND LEVEL
 TOC = TOP OF CONCRETE
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NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE	
NO.	REVISION DESCRIPTION
0	2023/07 ISSUED FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

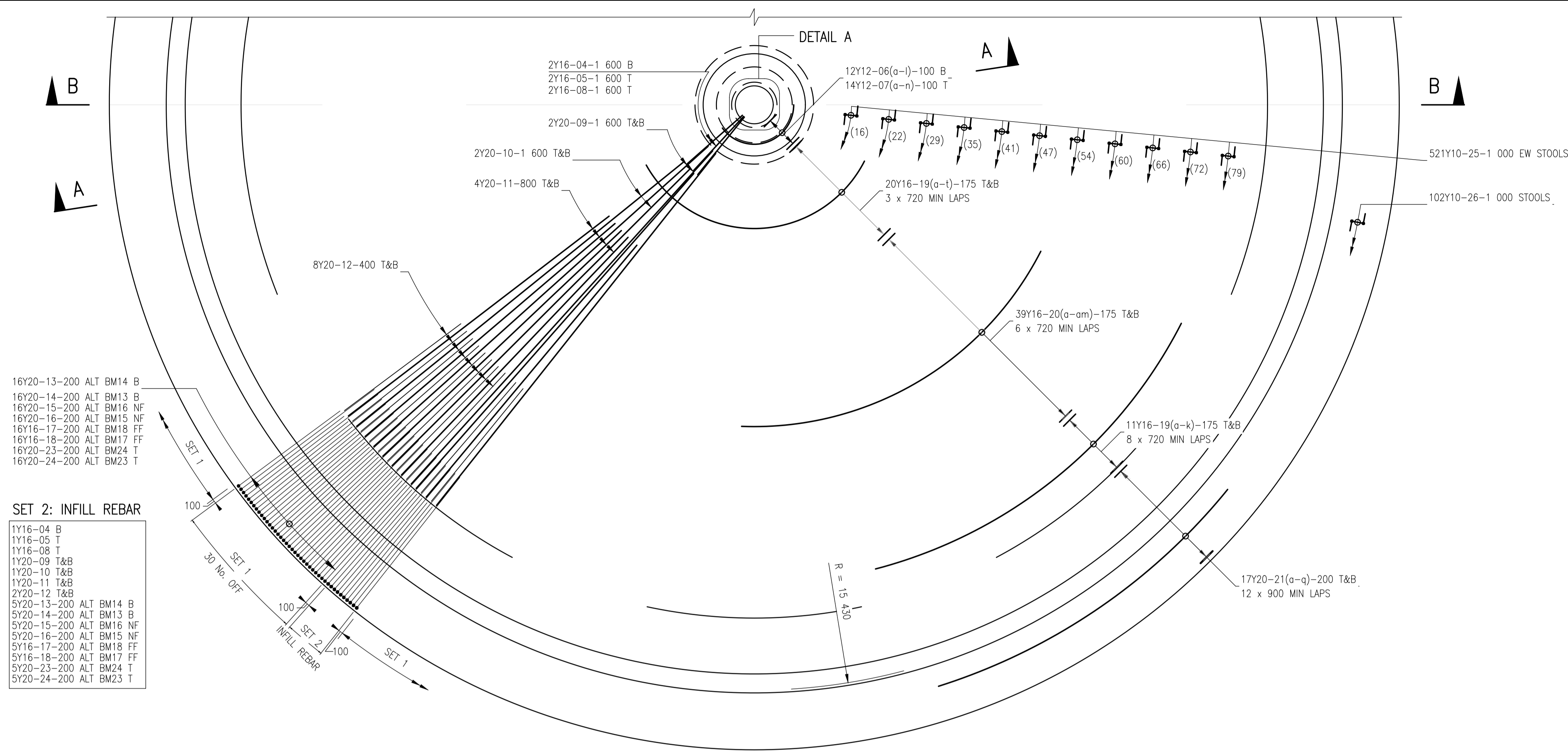
POLOKWANE REGIONAL WWTW CONTRACT 2B

DRAWING DESCRIPTION

SLUDGE DIGESTERS CONCRETE DETAILS 2

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
J.A.B GALANTE	C ROSSOUW	J.A.B GALANTE
REV DATE	SCALE	ORIGINAL SIZE
2023/07	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SP-2B-SD-502	0	

- 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.
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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.:



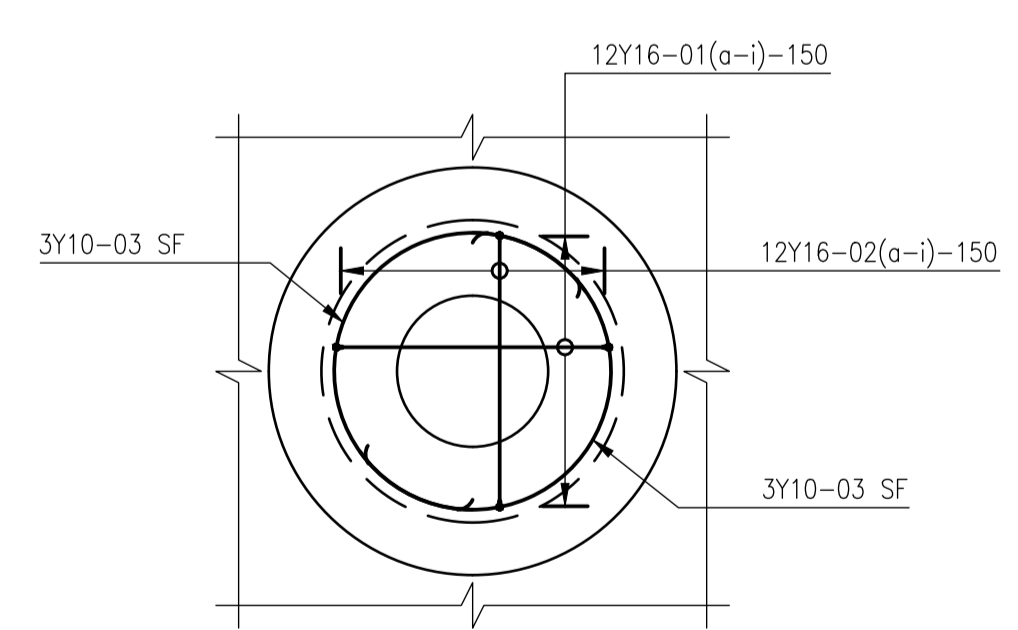
- 16Y20-13-200 ALT BM14 B
 16Y20-14-200 ALT BM13 B
 16Y20-15-200 ALT BM16 NF
 16Y20-16-200 ALT BM15 NF
 16Y16-17-200 ALT BM18 FF
 16Y16-18-200 ALT BM17 FF
 16Y20-23-200 ALT BM24 T
 16Y20-24-200 ALT BM23 T

- SET 2: INFILL REBAR**
- 1Y16-04 B
 1Y16-05 T
 1Y16-08 T
 1Y20-09 T&B
 1Y20-10 T&B
 1Y20-11 T&B
 2Y20-12 T&B
 5Y20-13-200 ALT BM14 B
 5Y20-14-200 ALT BM13 B
 5Y20-15-200 ALT BM16 NF
 5Y20-16-200 ALT BM15 NF
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 5Y20-23-200 ALT BM24 T
 5Y20-24-200 ALT BM23 T

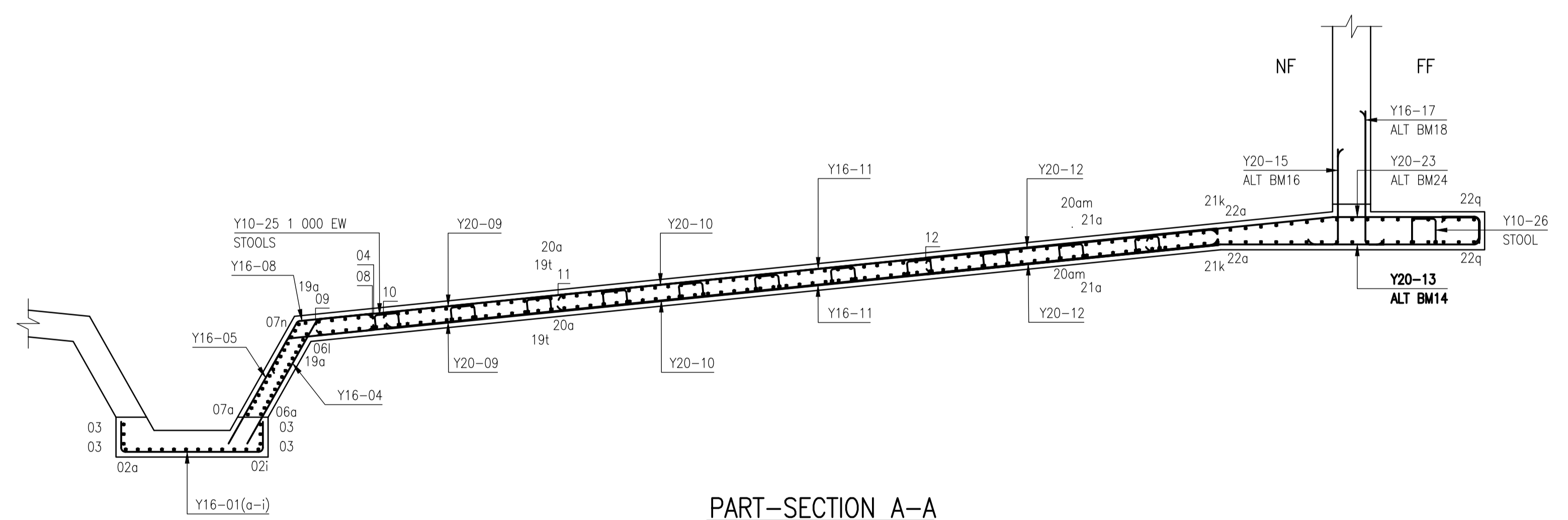
PLAN OF GROUND SLAB

SCALE 1:75

- NOTE: 1. ALL RADIAL BAR SPACING MEASURED AT RADIUS R=15 430
 2. PIT REINFORCEMENT NOT SHOWN FOR CLARITY. SEE DETAIL A



DETAIL A
SCALE 1:50



PART-SECTION A-A

SCALE 1:50

NOTE: BARS PASSING THROUGH OPENINGS TO BE TRIMMED TO SUIT

CONSTRUCTION DRAWING

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

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

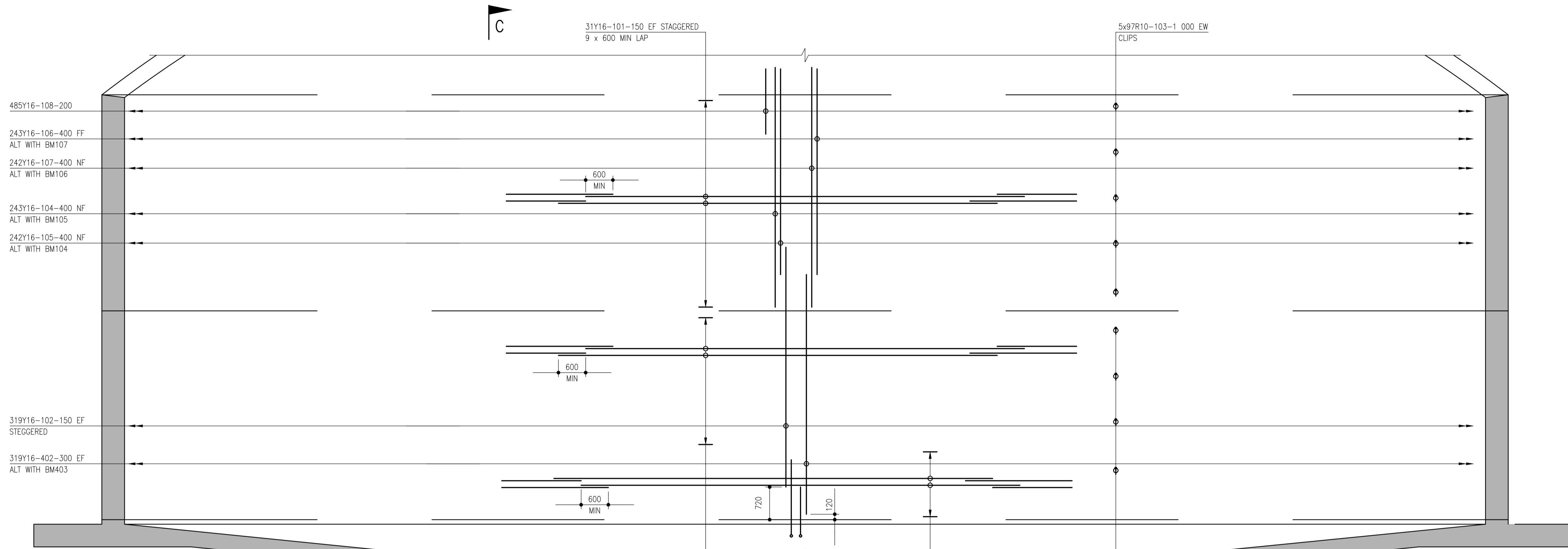
PROJECT

POLOKWANE REGIONAL WWTW CONTRACT 2B

DRAWING DESCRIPTION

SLUDGE DIGESTERS REINFORCEMENT DETAILS 1

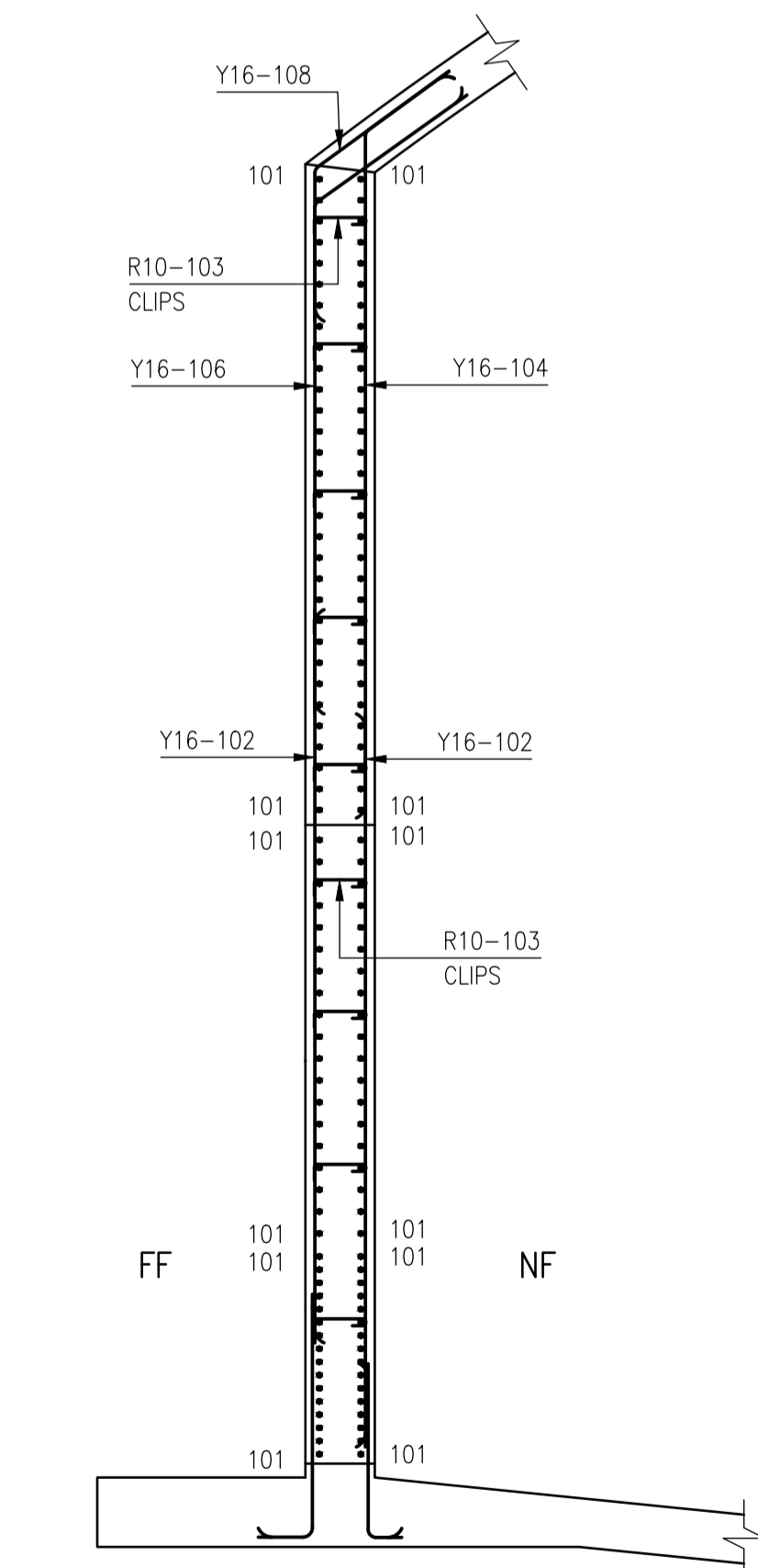
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Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-SP-2B-SD-506		0



SECTIONAL ELEVATION A-A

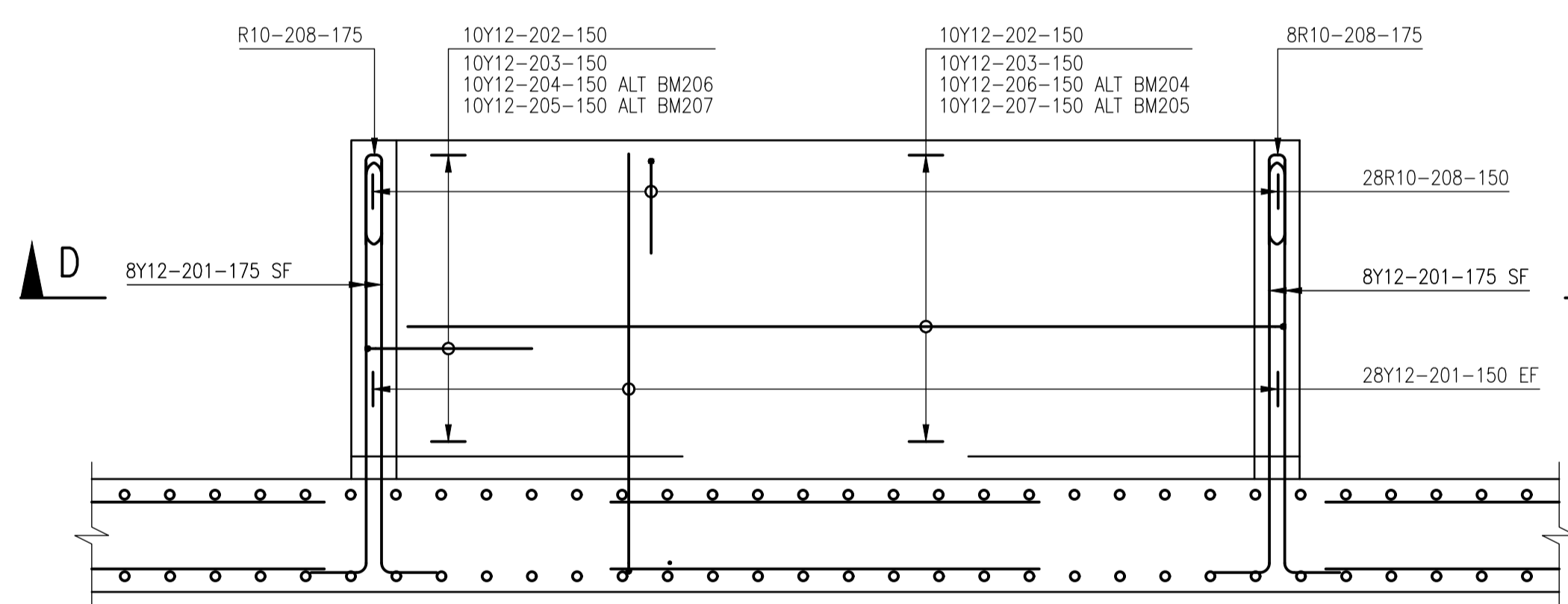
SCALE 1:50

NOTE: CENTRAL COLUMN OMITTED FOR CLARITY



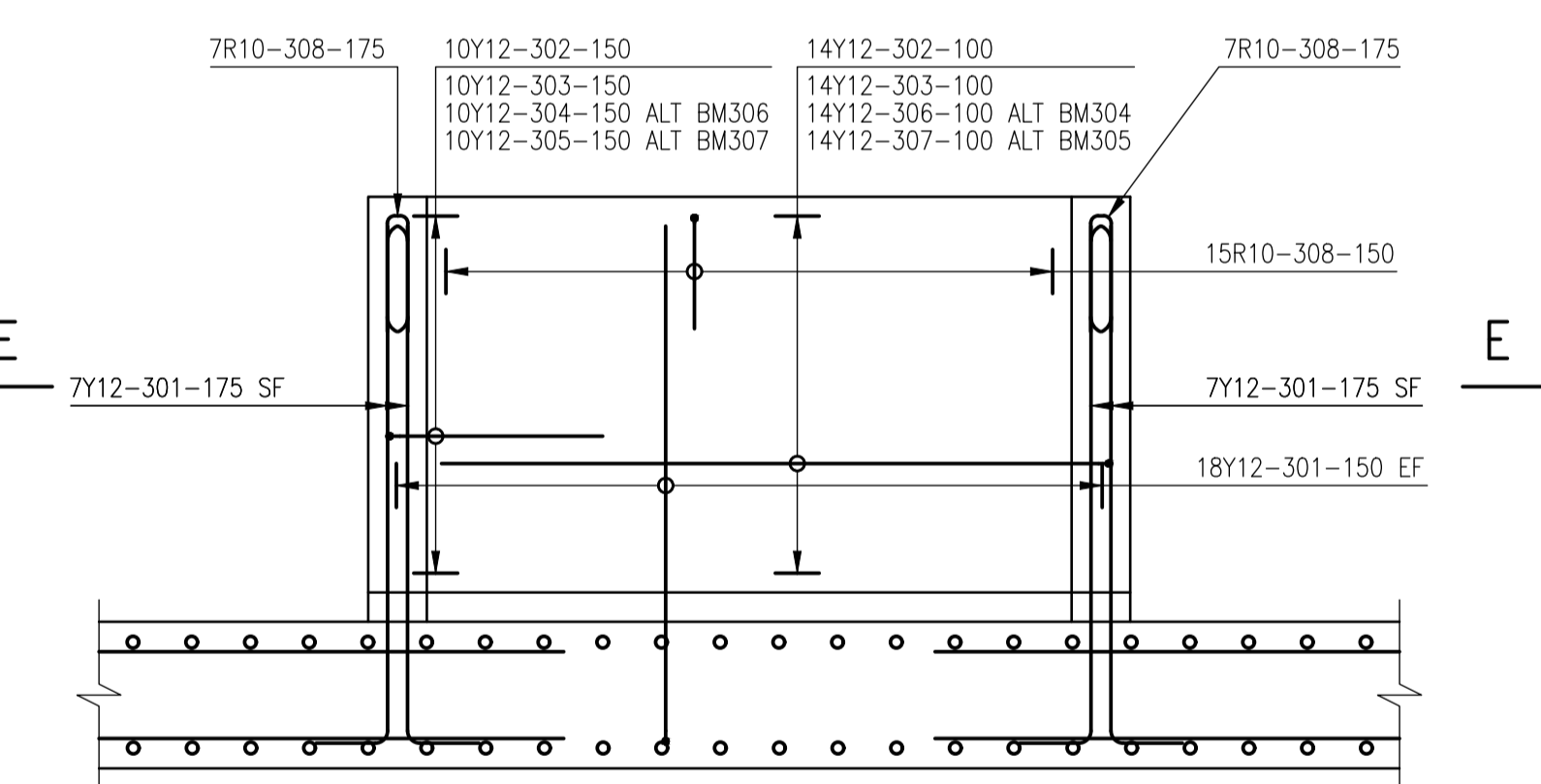
SECTION C-C

SCALE 1:50



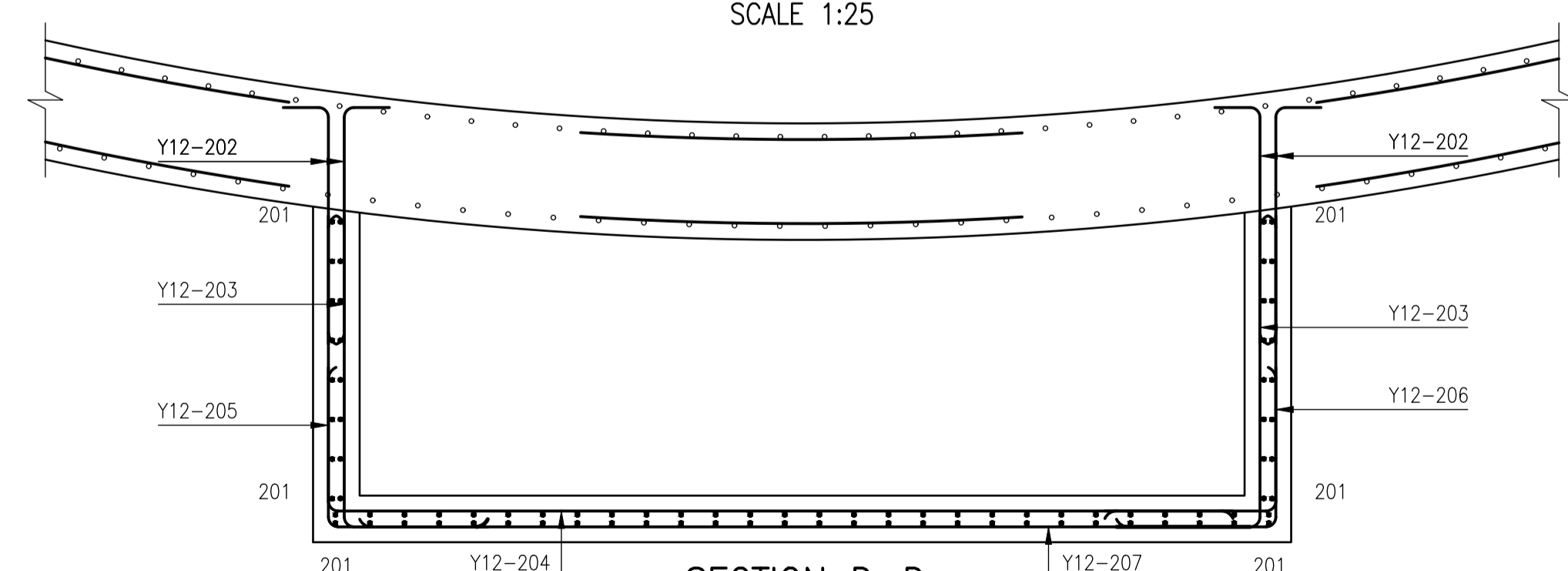
SLUDGE DRAW OFF CHAMBER 1 ELEVATION

SCALE 1:25



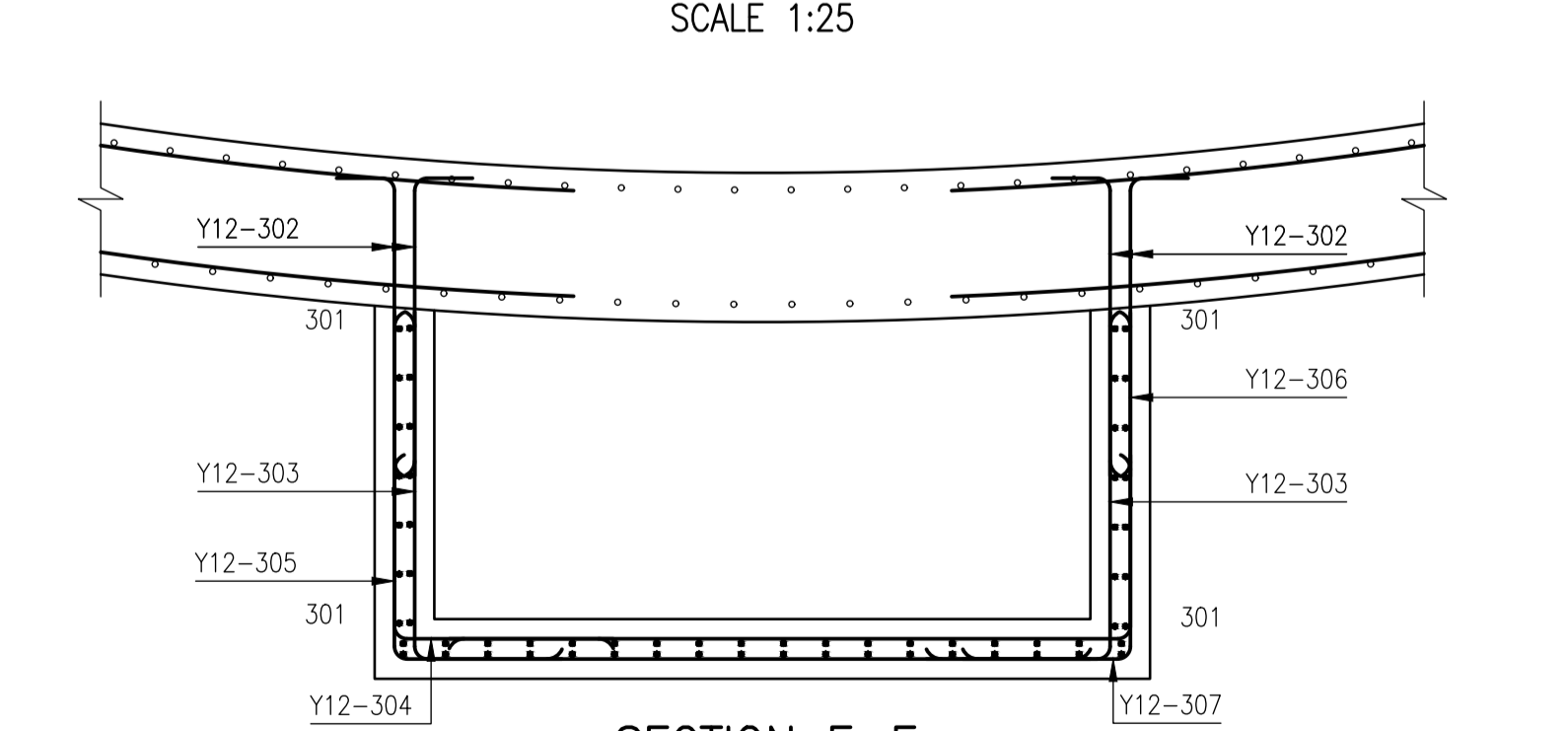
SLUDGE DRAW OFF CHAMBER 2 ELEVATION

SCALE 1:25



SECTION D-D

SCALE 1:25



SECTION E-E

SCALE 1:25

NOTES:

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- 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.:

NOTES
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 CITY OF
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REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
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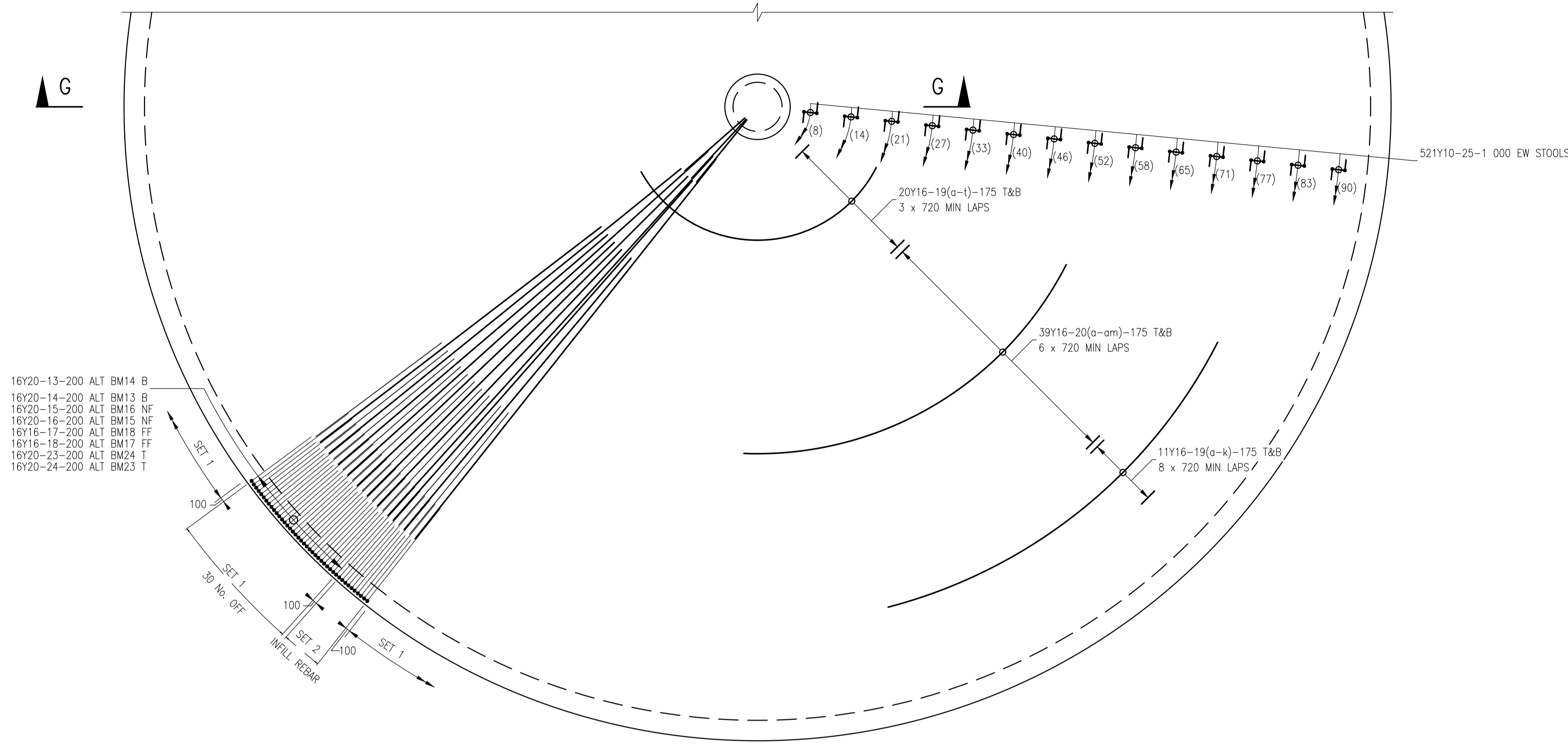
T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____
 CLIENT _____ DATE _____

PROJECT
**POLOKWANE REGIONAL
 WWTW CONTRACT 2B**

DRAWING DESCRIPTION
**SLUDGE DIGESTER
 REINFORCEMENT DETAILS 2**

CONSTRUCTION DRAWING

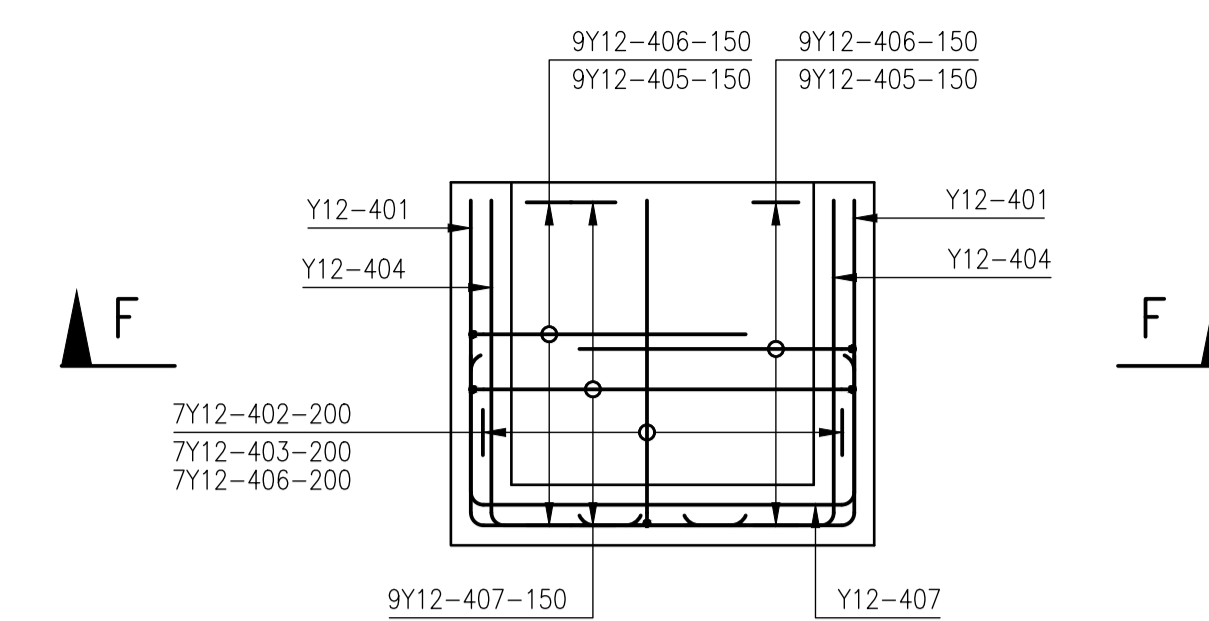
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SP-2B-SD-507	0	



PLAN OF DOME

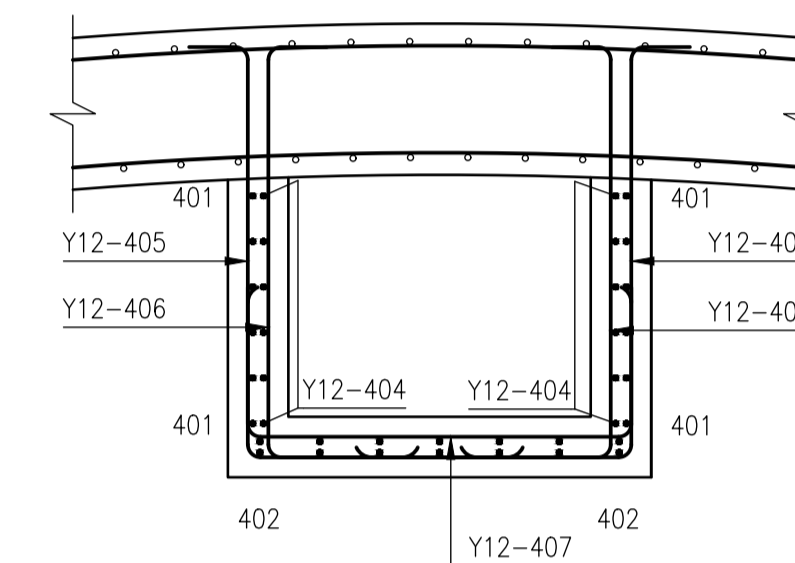
SCALE 1:75

NOTE: 1. ALL RADIAL BAR SPACING MEASURED AT RADIUS R=15 430
2. GROUND WATER PRESSURE RELIEF VALVES OMITTED FOR CLARITY



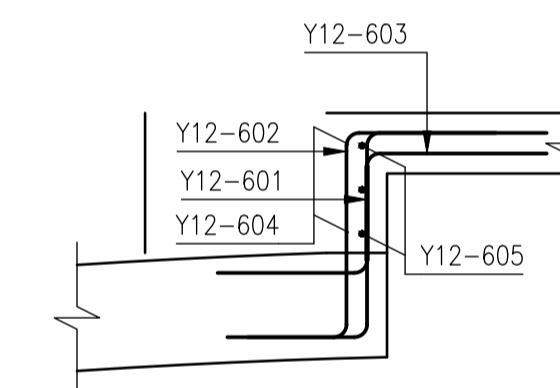
EFFLUENT CHAMBER ELEVATION

SCALE 1:25



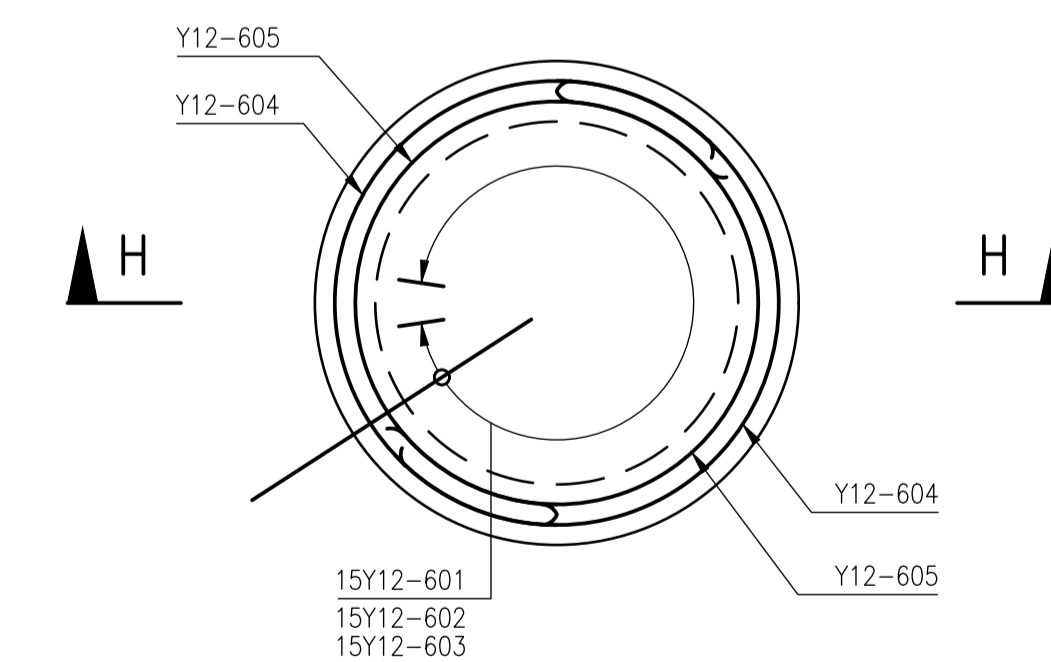
SECTION F-F

SCALE 1:25



SECTION H-H

SCALE 1:25

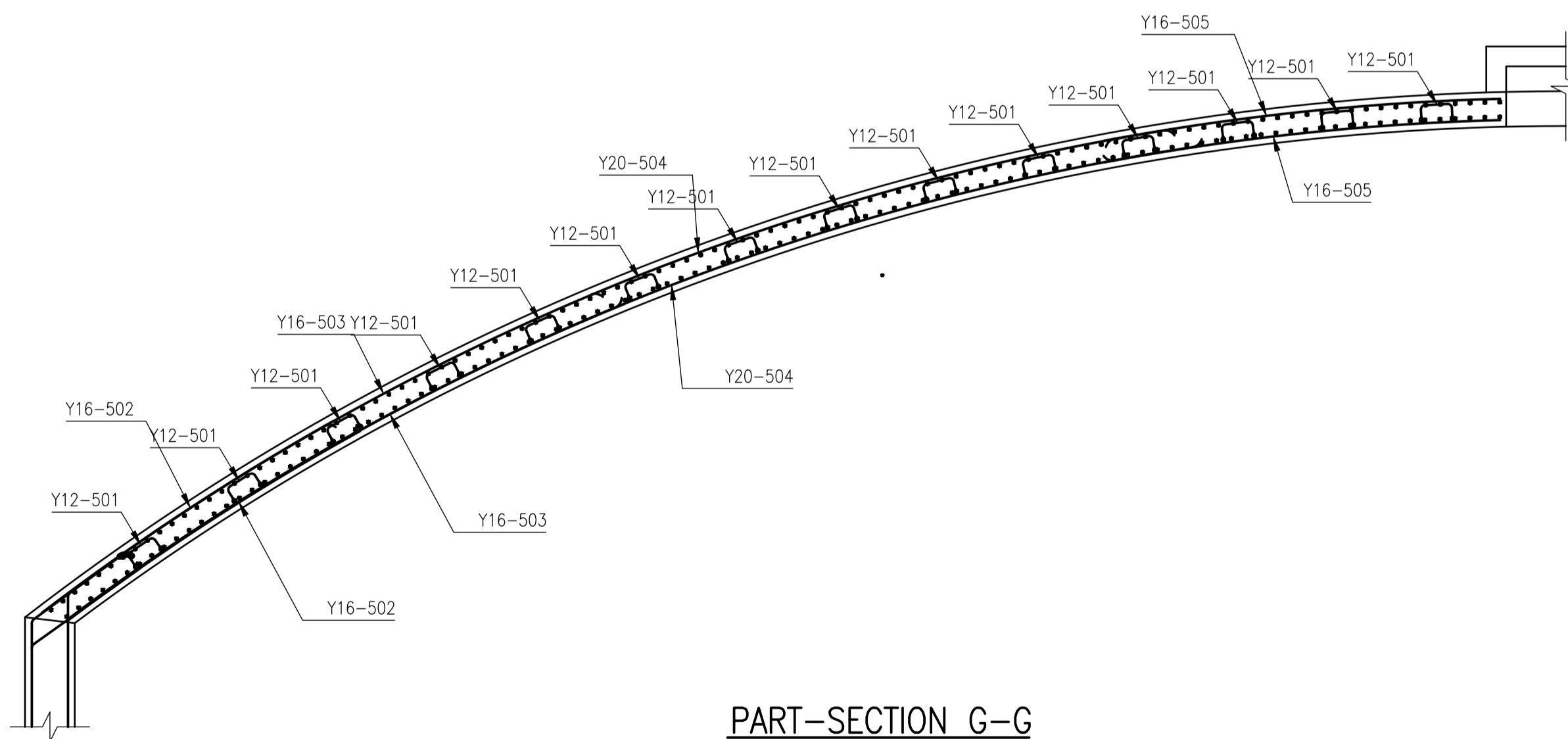


BREATHER VALVE PLATFORM PLAN

SCALE 1:25

NOTES:

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- 1.3 MINIMUM SPLICE LENGTH TO REINFORCEMENT = 45 X LESSER BAR DIAMETER
- 1.4 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.:



PART-SECTION G-G

SCALE 1:50

- 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
 - 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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PO BOX 3154, POLOKWANE, LIMPOPO, 0700

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FAX: +27 15 291 1993

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
WWTW CONTRACT 2B

DRAWING DESCRIPTION

SLUDGE REINFORCEMENT
DETAILS 3

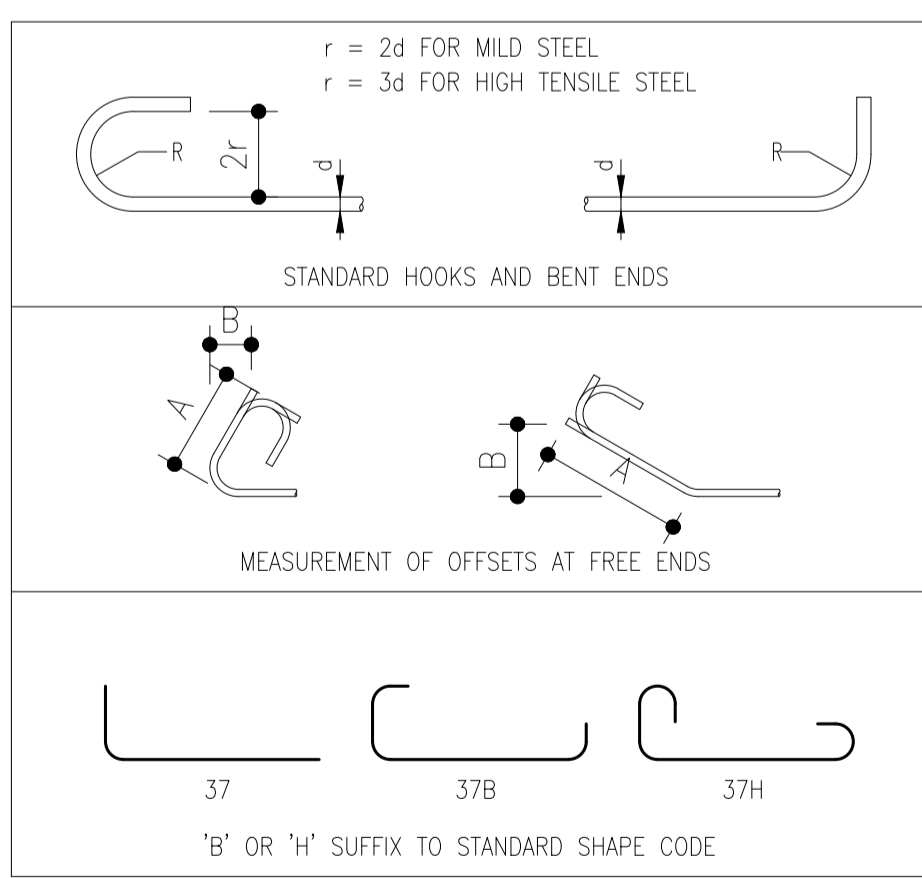
CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-SP-2B-SD-508		0

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SLUDGE DIGESTER		PAGE: 1 OF 7										
REFERENCE DRAWING Nos. PK278-SP-2B-SD-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)		
--	GROUND SLAB													
--	01a	Y16	1	2	2	1 250	38	390	520					
--	01b	Y16	1	2	2	1 850	38	390	1 160					
--	01c	Y16	1	2	2	2 200	38	390	1 480					
--	01d	Y16	1	2	2	2 400	38	390	1 680					
--	01e	Y16	4	2	8	2 500	38	390	1 810					
--	01f	Y16	1	2	2	2 400	38	390	1 680					
--	01g	Y16	1	2	2	2 200	38	390	1 480					
--	01h	Y16	1	2	2	1 850	38	390	1 160					
--	01i	Y16	1	2	2	1 250	38	390	520					
--	02a	Y16	1	2	2	1 400	38	420	650					
--	02b	Y16	1	2	2	1 950	38	420	1 200					
--	02c	Y16	1	2	2	2 250	38	420	1 500					
--	02d	Y16	1	2	2	2 450	38	420	1 690					
--	02e	Y16	4	2	8	2 600	38	420	1 810					
--	02f	Y16	1	2	2	2 450	38	420	1 690					
--	02g	Y16	1	2	2	2 250	38	420	1 500					
--	02h	Y16	1	2	2	1 950	38	420	1 200					
--	02i	Y16	1	2	2	1 400	38	420	650					
--	03	Y10	6	2	12	3 750	65	3 740					910	
--	04	Y16	62	2	124	2 650	93	750	430					
--	05	Y16	62	2	124	2 750	93	1 140	660					
--	06a	Y16	3	2	6	2 500	20							
--	06b	Y16	3	2	6	2 600	20							
--	06c	Y16	3	2	6	2 700	20							
--	06d	Y16	3	2	6	2 800	20							
--	06e	Y16	3	2	6	2 950	20							
--	06f	Y16	3	2	6	3 050	20							
--	06g	Y16	3	2	6	3 150	20							

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SLUDGE DIGESTER		PAGE: 2 OF 7									
REFERENCE DRAWING Nos. PK278-SP-2B-SD-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)	
--	06h	Y16	3	2	6	3 250	20						
--	06i	Y16	3	2	6	3 350	20						
--	06j	Y16	3	2	6	3 500	20						
--	06k	Y16	3	2	6	3 600	20						
--	06l	Y16	3	2	6	3 700	20						
--	07a	Y16	3	2	6	2 050	20						
--	07b	Y16	3	2	6	2 150	20						
--	07c	Y16	3	2	6	2 250	20						
--	07d	Y16	3	2	6	2 400	20						
--	07e	Y16	3	2	6	2 500	20						
--	07f	Y16	3	2	6	2 600	20						
--	07g	Y16	3	2	6	2 700	20						
--	07h	Y16	3	2	6	2 800	20						
--	07i	Y16	3	2	6	2 950	20						
--	07j	Y16	3	2	6	3 050	20						
--	07k	Y16	3	2	6	3 150	20						
--	07l	Y16	3	2	6	3 250	20						
--	07m	Y16	3	2	6	3 400	20						
--	07n	Y16	3	2	6	3 500	20						
--	08	Y16	62	2	124	1 750	93	750	430				
--	09	Y20	124	2	248	11 900	20						
--	10	Y20	124	2	248	11 000	20						
--	11	Y16	244	2	488	8 750	20						
--	12	Y20	486	2	972	3 850	20						
--	13	Y20	485	2	970	5 200	99	500	370	3 410	1 030	90	
--	14	Y20	485	2	970	4 100	38	3 300	370				
--	15	Y20	485	2	970	1 600	37	1 260					
--	16	Y16	485	2	970	1 500	37	1 260					
--	17	Y16	485	2	970	2 000	37	1 760					
--	18	Y20	485	2	970	2 100	37	1 760					

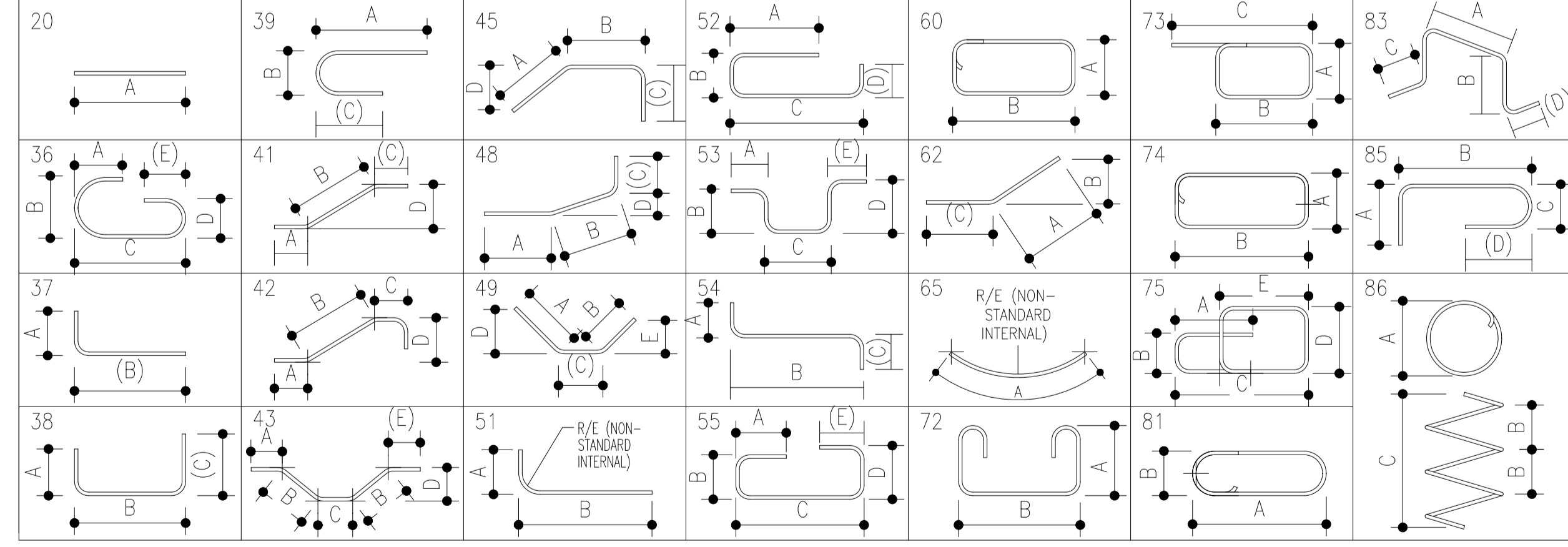
ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SLUDGE DIGESTER		PAGE: 3 OF 7									
REFERENCE DRAWING Nos. PK278-SP-2B-SD-503 & 504		DATE: June 2023		REV: -									
REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (mm)	SHAPE CODE	DIMENSION					
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)	
--	19a	Y16	6	2	12	4 000	65						1 510
--	19b	Y16	6	2	12	4 400	65						1 710
--	19c	Y16	6	2	12	4 750	65						1 890
--	19d	Y16	6	2	12	5 100	65						2 060
--	19e	Y16	6	2	12	5 450	65						2 230
--	19f	Y16	6	2	12	5 850	65						2 410
--	19g	Y16	6	2	12	6 200	65						2 580
--	19h	Y16	6	2	12	6 550	65						2 760
--	19i	Y16	6	2	12	6 950	65						2 930
--	19j	Y16	6	2	12	7 300	65						3 100
--	19k	Y16	6	2	12	7 650	65						3 270
--	19l	Y16	6	2	12	8 000	65						3 450
--	19m	Y16	6	2	12	8 350	65						3 620
--	19n	Y16	6	2	12	8 750	65						3 800
--	19o	Y16	6	2	12	9 100	65						3 970
--	19p	Y16	6	2	12	9 450	65						4 140
--	19q	Y16	6	2	12	9 850	65						4 320
--	19r	Y16	6	2	12	10 200	65						4 490
--	19s	Y16	6	2	12	10 550	65						4 660
--	19t	Y16	6	2	12	10 900	65						4 840
--	20a	Y16	12	2	24	6 000	20						
--	20b	Y16	12	2	24	6 150	20						
--	20c	Y16	12	2	24	6 350	20						
--	20d	Y16	12	2	24	6 550	20						
--	20e	Y16	12	2	24	6 700	20						
--	20f	Y16	12	2	24	6 900	20						
--	20g	Y16	12	2	24	7 100	20						
--	20h	Y16	12	2	24	7 250	20						
--	20i	Y16	12	2	24	7 450	20						
--	20j	Y16	12	2	24	7 600	20						

NOTE:
 1. 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.

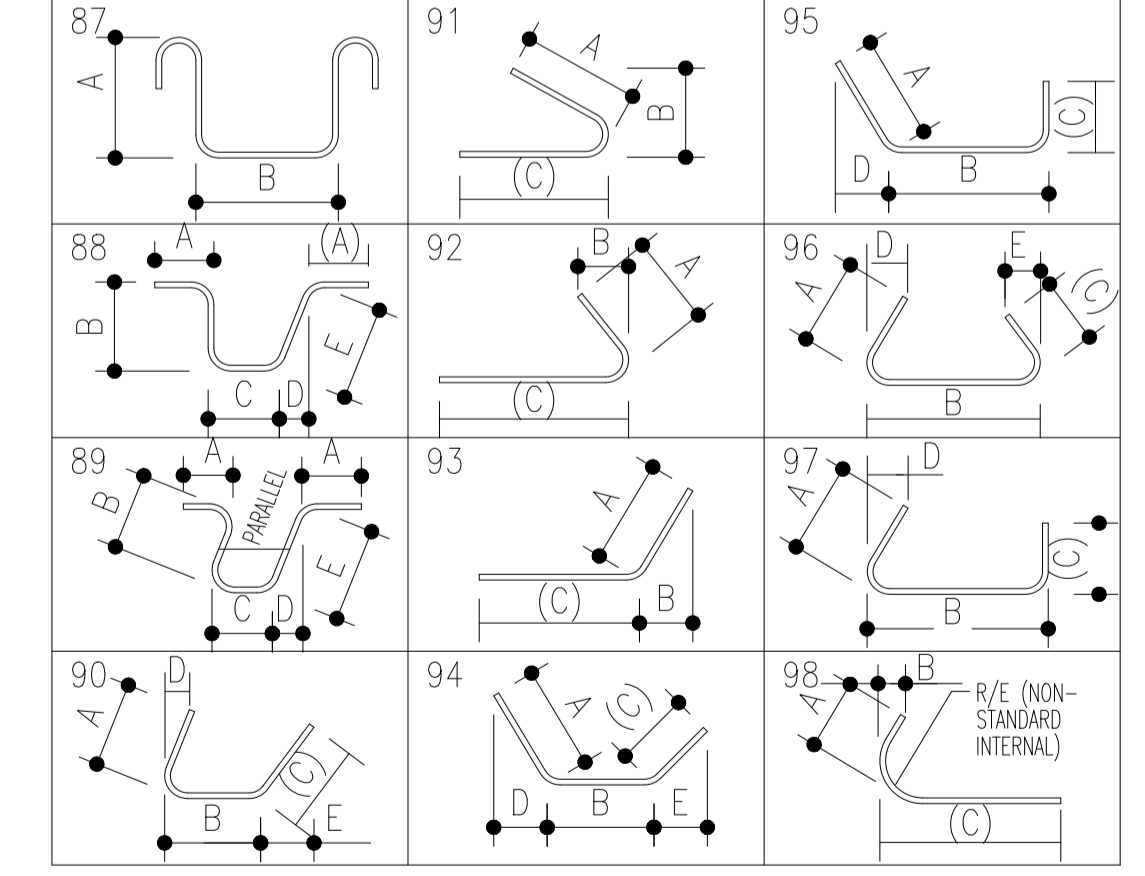


NOTES
 1. BEND TO 2d RADIUS FOR MILD STEEL BARS AND 3d RADIUS OR 7,5d IF SHAPE CODE IS FOLLOWED BY SUFFIX 'S' FOR HIGH TENSILE STEEL BARS UNLESS LARGER RADII ARE INDICATED FOR THE PARTICULAR SHAPE CODE.
 2. STEEL TO COMPLY WITH SANS 920-2011 EDITION 2.3. MILD STEEL BARS SHALL BE PLAIN AND HIGH TENSILE STEEL BARS DEFORMED.
 3. MILD STEEL BARS ARE IDENTIFIED BY A CAPITAL 'R' AND HIGH TENSILE STEEL BARS BY A CAPITAL 'Y' PREFIXED TO THE DIAMETER IN mm.
 4. 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'.
 5. ALL BARS SHALL BE BENT COLD. WELDING SHALL NOT BE PERMITTED FOR HIGH TENSILE STEEL BARS.
 6. WELDING OF MILD STEEL BARS SHALL BE IN ACCORDANCE WITH SANS 10044 AND BS 1856 OR BS 693.
 7. ALL DIMENSIONS GIVEN ON SHAPE CODES ARE EXTERNAL EXCEPT FOR OFFSETS OF FREE ENDS (SEE SKETCH).
 8. THE CUTTING LENGTH TOLERANCE IS TAKEN UP IN THE BRACKETED DIMENSIONS OR IN HOOKS OR BENT ENDS WHERE PRESENT.
 9. 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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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 WWTW CONTRACT 2B

DRAWING DESCRIPTION
SLUDGE DIGESTERS BENDING SCHEDULES 1

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker</

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SLUDGE DIGESTER					PAGE: 4 OF 7						
REFERENCE DRAWING Nos. PK278-SP-2B-SD-503 & 504		DATE: June 2023											
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)	
-	20k	Y16	12	2	24	7 800	20						
-	20l	Y16	12	2	24	8 000	20						
-	20m	Y16	12	2	24	8 150	20						
-	20n	Y16	12	2	24	8 350	20						
-	20o	Y16	12	2	24	8 550	20						
-	20p	Y16	12	2	24	8 700	20						
-	20q	Y16	12	2	24	8 900	20						
-	20r	Y16	12	2	24	9 100	20						
-	20s	Y16	12	2	24	9 250	20						
-	20t	Y16	12	2	24	9 450	20						
-	20u	Y16	12	2	24	9 600	20						
-	20v	Y16	12	2	24	9 800	20						
-	20w	Y16	12	2	24	10 000	20						
-	20x	Y16	12	2	24	10 150	20						
-	20y	Y16	12	2	24	10 350	20						
-	20z	Y16	12	2	24	10 550	20						
-	20aa	Y16	12	2	24	10 700	20						
-	20ab	Y16	12	2	24	10 900	20						
-	20ac	Y16	12	2	24	11 050	20						
-	20ad	Y16	12	2	24	11 250	20						
-	20ae	Y16	12	2	24	11 450	20						
-	20af	Y16	12	2	24	11 600	20						
-	20ag	Y16	12	2	24	11 800	20						
-	20ah	Y16	12	2	24	12 000	20						
-	20ai	Y16	12	2	24	12 150	20						
-	20aj	Y16	12	2	24	12 350	20						
-	20ak	Y16	12	2	24	12 550	20						
-	20al	Y16	12	2	24	12 700	20						
-	20am	Y16	12	2	24	12 900	20						
-	21a	Y16	16	2	32	10 000	20						

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SLUDGE DIGESTER					PAGE: 5 OF 7						
REFERENCE DRAWING Nos. PK278-SP-2B-SD-503 & 504		DATE: June 2023											
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)	
-	21b	Y16	16	2	32	10 150	20						
-	21c	Y16	16	2	32	10 250	20						
-	21d	Y16	16	2	32	10 400	20						
-	21e	Y16	16	2	32	10 550	20						
-	21f	Y16	16	2	32	10 650	20						
-	21g	Y16	16	2	32	10 800	20						
-	21h	Y16	16	2	32	10 950	20						
-	21i	Y16	16	2	32	11 050	20						
-	21j	Y16	16	2	32	11 200	20						
-	21k	Y16	16	2	32	11 350	20						
-	22a	Y20	24	2	48	8 100	20						
-	22b	Y20	24	2	48	8 200	20						
-	22c	Y20	24	2	48	8 300	20						
-	22d	Y20	24	2	48	8 400	20						
-	22e	Y20	24	2	48	8 500	20						
-	22f	Y20	24	2	48	8 600	20						
-	22g	Y20	24	2	48	8 700	20						
-	22h	Y20	24	2	48	8 800	20						
-	22i	Y20	24	2	48	8 900	20						
-	22j	Y20	24	2	48	9 000	20						
-	22k	Y20	24	2	48	9 150	20						
-	22l	Y20	24	2	48	9 250	20						
-	22m	Y20	24	2	48	9 350	20						
-	22n	Y20	24	2	48	9 450	20						
-	22o	Y20	24	2	48	9 550	20						
-	22p	Y20	24	2	48	9 650	20						
-	22q	Y20	24	2	48	9 750	20						
-	23	Y20	485	2	970	4 650	45	2 420	1 930			260	
-	24	Y20	485	2	970	3 600	45	1 370	1 930			160	
-	25	Y10	521	2	1042	1 400	83	330	180	400			

ZAKUMI Consulting Engineers		POLOKWANE NEW REGIONAL WWTW SLUDGE DIGESTER					PAGE: 6 OF 7						
REFERENCE DRAWING Nos. PK278-SP-2B-SD-503 & 504		DATE: June 2023											
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)	
-	26	Y10	102	2	204	1 700	83	330	330	400			
OUTER WALL													
-	101	Y16	1188	2	2376	11 550	20						
-	102	Y16	970	2	1940	5 300	20						
-	103	R10	873	2	1746	600	85	120	370	60			
-	104	Y16	243	2	486	5 700	93	750	440				
-	105	Y16	242	2	484	4 950	93	750	440				
-	106	Y16	243	2	486	5 050	93	1 350	790				
-	107	Y16	242	2	484	5 800	93	1 350	790				
-	108	Y16	485	2	970	2 300	93	1 100	650				
CHAMBER 1													
-	201	Y12	88	2	176	2 050	37	1 810					
-	202	Y12	40	2	80	1 200	37	1 010					
-	203	Y12	20	2	40	1 950	37	1 340					
-	204	Y12	10	2	20	5 150	37	3 880					
-	205	Y12	10	2	20	1 350	37	690					
-	206	Y12	10	2	20	2 000	37	1 280					
-	207	Y12	10	2	20	4 600	37	3 930					
-	208	R10	44	2	88	850	38	400	70				
CHAMBER 2													
-	301	Y12	64	2	128	2 000	37	1 760					
-	302	Y12	48	2	96	1 200	37	1 010					
-	303	Y12	24	2	48	1 650	37	1 170					
-	304	Y12	10	2	20	1 800	37	1 100					
-	305	Y12	10	2	20	3 000	37	2 330					
-	306	Y12	14	2	28	3 350	37	2 280					
-	307	Y12	14	2	28	1 350	37	690					
-	308	R10	29	2	58	850	38	400	70				
EFFLUENT BOX													
-	401	Y12	12	4	48	1 950	37	1 070					

NOTES

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CLIENT

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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 _____

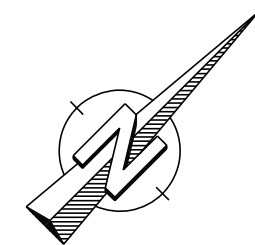
PROJECT

POLOKWANE REGIONAL WWTW CONTRACT 2B

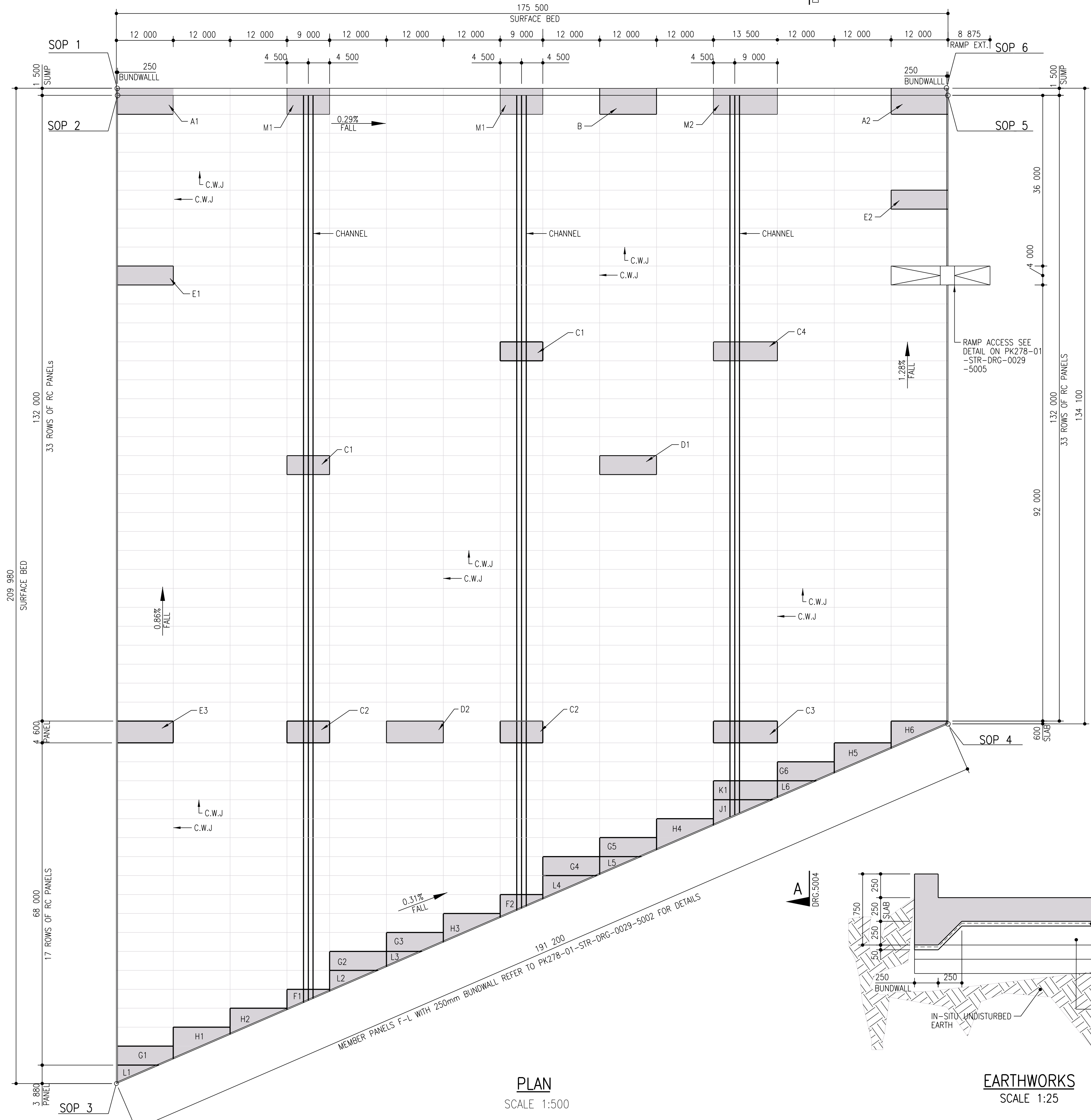
DRAWING DESCRIPTION

SLUDGE DIGESTERS BENDING SCHEDULES 2

CONSTRUCTION DRAWING		
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-SP-2B-SD-510	0	



DRG.5004



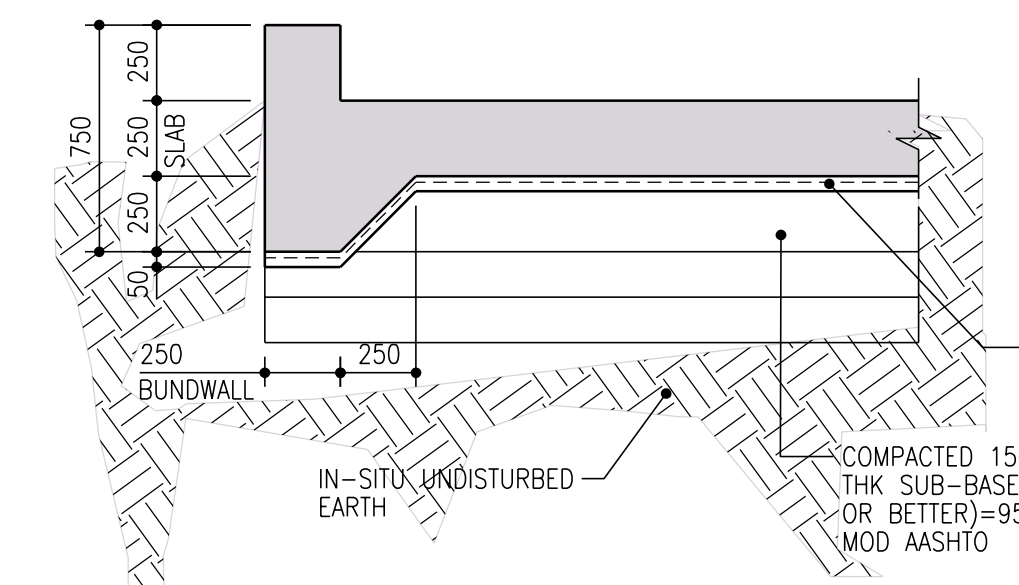
PLAN
SCALE 1:500

SOP	Y	X	SLAB T.O.C
SOP 1	-2633170.934	46265.762	-
SOP 2	-2633171.464	46266.293	1197.250
SOP 3	-2633319.412	46414.240	1199.050
SOP 4	-2633141.659	46484.682	1998.450
SOP 5	-2633047.367	46390.390	1196.750
SOP 6	-2633046.836	46389.859	-

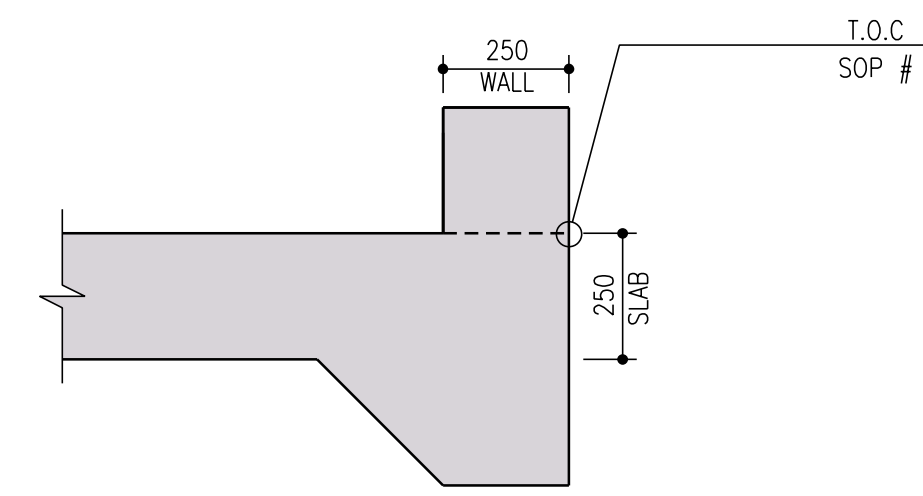
NOTE: TABULATED T.O.C VALUES EXCLUDE(BUNDWALL VALUES).

PANEL	(A)	(B)	(C)	(D)	(E)
F1	4315	9000	424		3500
F2	4859	9000	967		3500
G1	4000	11750	2692	8725	
G2	4000	12000	3236	10233	
G3	4000	12000	2047	7483	
G4	4000	12000	3779	11489	
G5	4000	12000	2591	8740	
G6	4000	12000	2377	8246	
H1	6692	12000	1504		
H2	5504	12000	315		
H3	6047	12000	859		
H4	6591	12000	1402		
H5	6377	12000	1188		
H6	5788	11750	708		
J1	5402	12494			6994
K1	4000	13500	3556	12494	3500
L1	3773	8725			
L2	4424	10233			
L3	3236	7483			
L4	4967	11489			
L5	3779	8740			
L6	3565	8246			

NOTE:
1. REFER TO PK278-01-STR-DRG-0029-5002 FOR PROJECT LAYOUT DETAILS.
2. ALL DIMENSIONS REPORTED IN DRAWING ARE IN MILLIMETRES ("mm").
3. PANEL ("A1") INDEX SHALL BE READ AS FOLLOWS:
A-TYPICAL PANEL LAYOUT TYPE.
1-PANEL INDEX NUMBER.



EARTHWORKS
SCALE 1:25



TYPICAL SOP DETAIL
SCALE:1:15

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 - CONCRETE FACES TO UNFORMED FACES:
ALL SURFACES CLASS-U2
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 - BACKFILL AND COMPACTION OF SELECT G5+ FILL LAYERS (G7 MATERIAL OR BETTER) TO BE CONSTRUCTED NOT THICKER THAN 150mm TO 93% MOD AASHTO. MINIMUM DESIGN CBR OF LAYER WORK = 15.
- 3. CONCRETE NOTES:**
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 - CONCRETE SHALL BE "STRENGTH GRADE CONCRETE (MPA)" / "MAXIMUM STONE SIZE (MM)" AS SPECIFIED BELOW UNLESS OTHERWISE STATED IN ACCORDANCE WITH PROJECT SPECIFICATION (U.N.O.):
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WALLS 40/19
SLABS 40/19
GROUT 40/19
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- 5. LEGEND:**
- SOP-SETTING OUT POINT
 - C.W.J-CONSTRUCTION WATER JOINT
 - T.O.C-TOP OF CONCRETE
 - F.G.L-FINISH GROUND LEVEL
 - N.G.L-NATURAL GROUND LEVEL
 - O.D-OUTER DIAMETER
 - RC-REINFORCED CONCRETE
 - EXT-EXTENSION
 - NO-NUMBER
 - CO-COMMERCIAL QUALITY
 - EQA-EQUAL LEG LENGTH

NOTES

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ZAKUMI
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PO BOX 3154, POLOKWANE, LIMPOPO, 0700
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CLIENT

CITY OF
Polokwane
NATURALLY PROGRESSIVE

NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

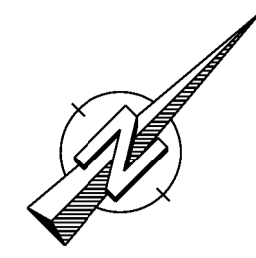
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

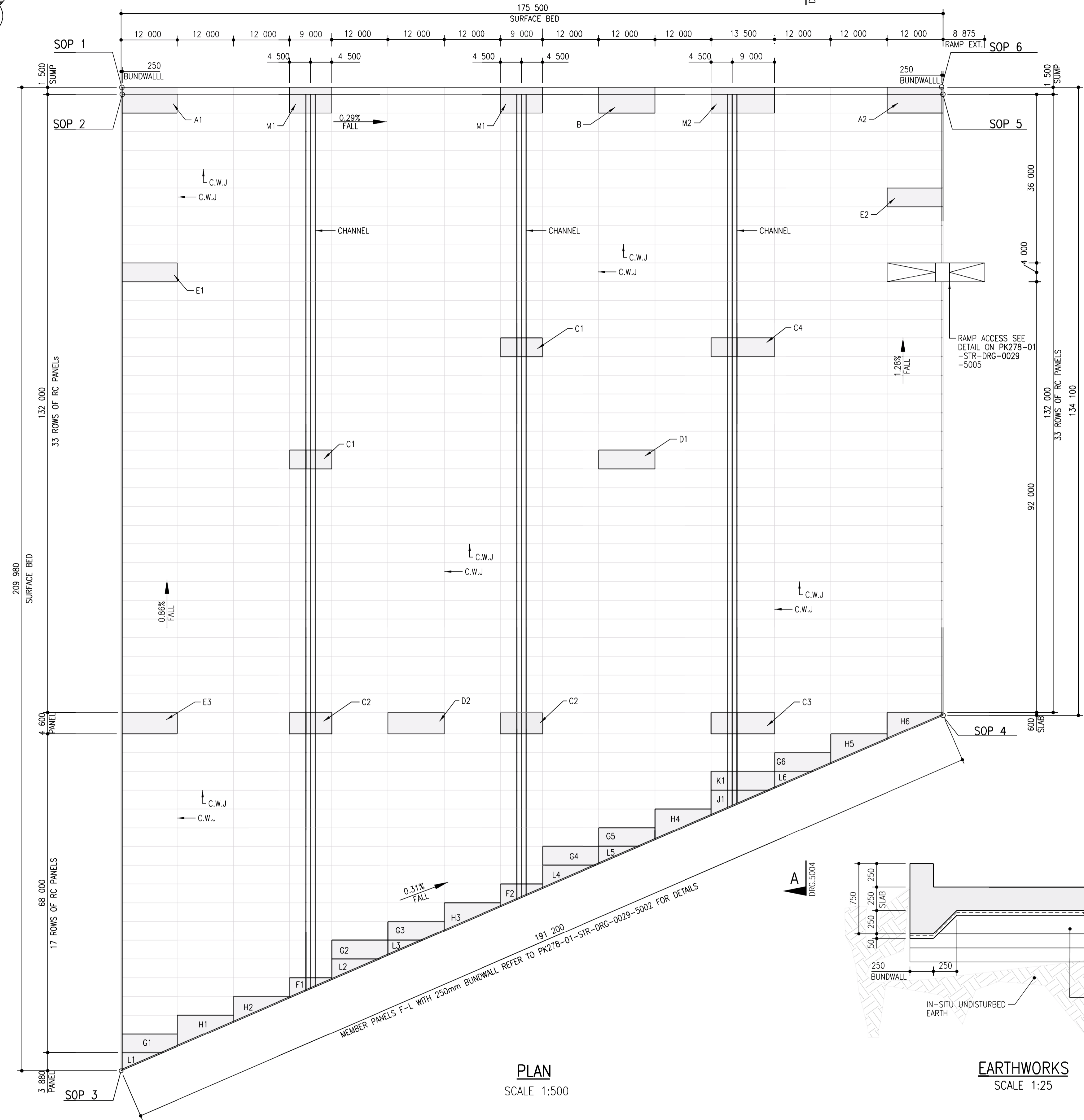
DRAWING DESCRIPTION

**SLUDGE DRYING BED
CONCRETE LAYOUT**

DESIGNED	DRAWN	CHECKED
L.RAMOSHABA	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5001	00	



DRG.5004
A



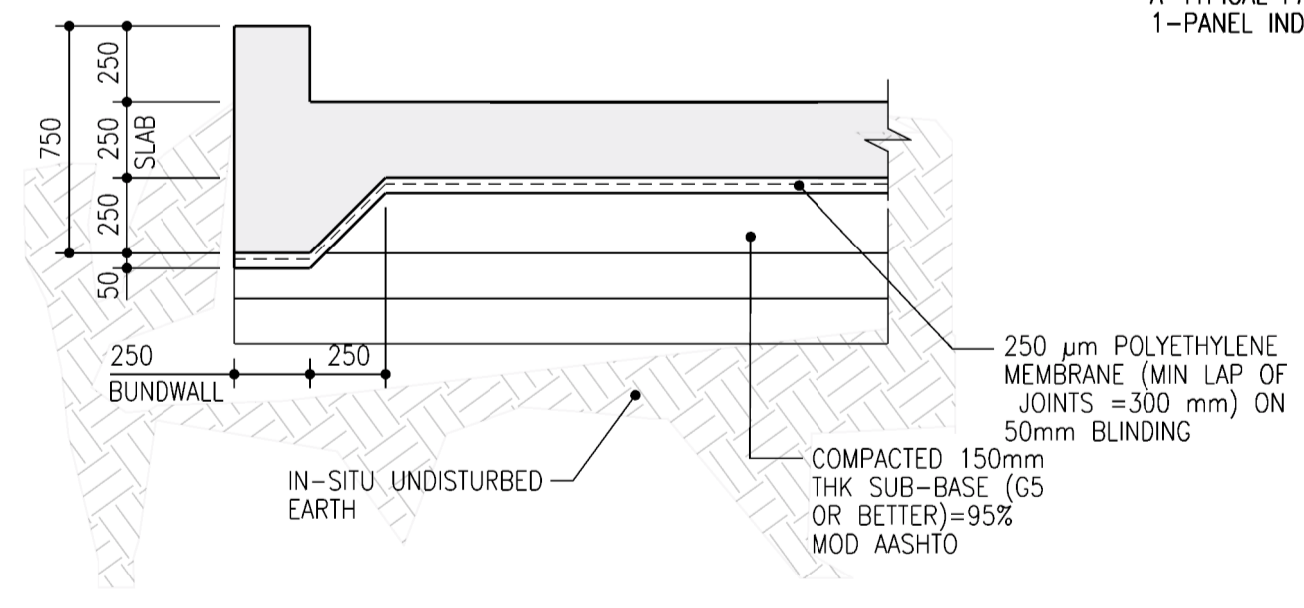
PLAN
SCALE 1:500

SETTING OUT CO-ORDINATES (WGS84 Lo29')			
	Y	X	SLAB T.O.C
SOP 1	-2633170.934	46265.762	-
SOP 2	-2633047.896	46390.919	1197.250
SOP 3	-2633319.412	46414.240	1199.050
SOP 4	-2633141.659	46484.682	1998.450
SOP 5	-2633171.996	46266.819	1196.750
SOP 6	-2633046.836	46389.859	-

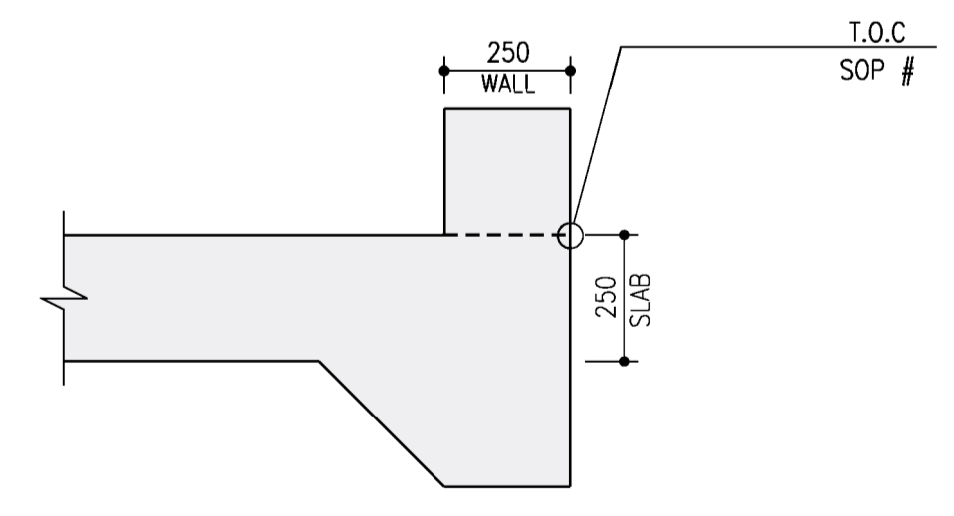
NOTE: TABULATED T.O.C VALUES EXCLUDE(BUNDWALL VALUES).

SCHEDULE					
MEMBER LIST OF NON-REGULAR PANELS					
PANEL	(A)	(B)	(C)	(D)	(E)
F1	4315	9000	424		3500
F2	4859	9000	967		3500
G1	4000	11750	2692	8725	
G2	4000	12000	3236	10233	
G3	4000	12000	2047	7483	
G4	4000	12000	3779	11489	
G5	4000	12000	2591	8740	
G6	4000	12000	2377	8246	
H1	6692	12000	1504		
H2	5504	12000	315		
H3	6047	12000	859		
H4	6591	12000	1402		
H5	6377	12000	1188		
H6	5788	11750	708		
J1	5402	12494			6994
K1	4000	13500	3556	12494	3500
L1	3773	8725			
L2	4424	10233			
L3	3236	7483			
L4	4967	11489			
L5	3779	8740			
L6	3565	8246			

NOTE:
1. REFER TO PK278-01-STR-DRG-0029-5002 FOR PROJECT LAYOUT DETAILS.
2. ALL DIMENSIONS REPORTED IN DRAWING ARE IN MILLIMETRES ("mm").
3. PANEL ("A1") INDEX SHALL BE READ AS FOLLOWS:
A-TYPICAL PANEL LAYOUT TYPE.
1-PANEL INDEX NUMBER.



EARTHWORKS
SCALE 1:25



TYPICAL SOP DETAIL
SCALE:1:15

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CLIENT

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Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
02	2024-07-11	UPDATE TO SOPs 2 & 5
01	2024-07-10	UPDATE TO DPM SPECIFICATION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

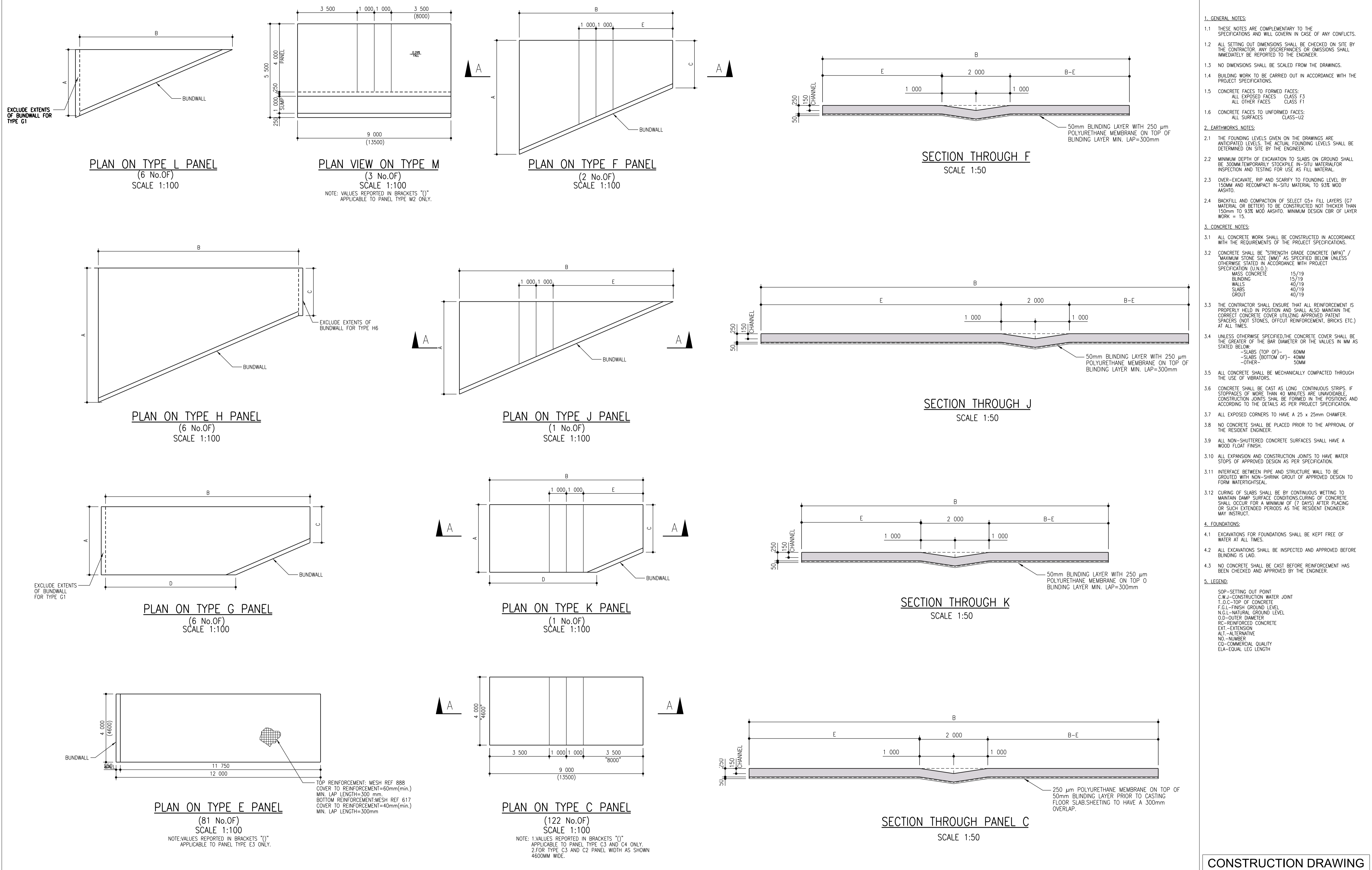
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SLUDGE DRYING BED
CONCRETE LAYOUT**

CONSTRUCTION DRAWING		
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PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5001	02	



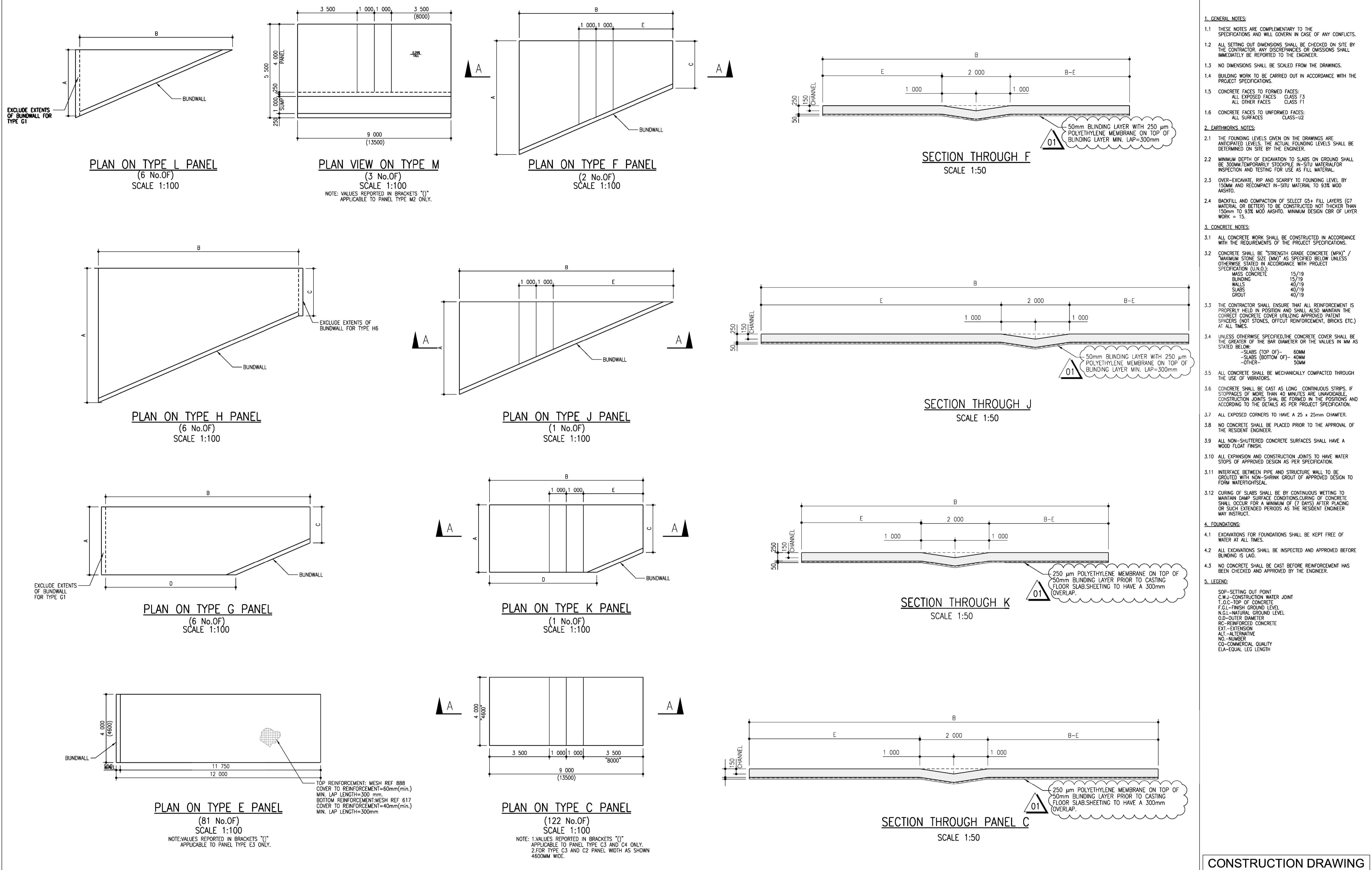
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CONSTRUCTION DRAWING

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 - CURING OF SLABS SHALL BE BY CONTINUOUS WETTING TO MAINTAIN DAMP SURFACE CONDITIONS. CURING OF CONCRETE SHALL OCCUR FOR A MINIMUM OF (7 DAYS) AFTER PLACING OR SUCH EXTENDED PERIODS AS THE RESIDENT ENGINEER MAY INSTRUCT.
- 4. FOUNDATIONS:**
- EXCAVATIONS FOR FOUNDATIONS SHALL BE KEPT FREE OF WATER AT ALL TIMES.
 - ALL EXCAVATIONS SHALL BE INSPECTED AND APPROVED BEFORE BLINDING IS LAID.
 - NO CONCRETE SHALL BE CAST BEFORE REINFORCEMENT HAS BEEN CHECKED AND APPROVED BY THE ENGINEER.
- 5. LEGEND:**
- SOP-SETTING OUT POINT
C.W.J-CONSTRUCTION WATER JOINT
T.O.C-TOP OF CONCRETE
F.G.L-FINISH GROUND LEVEL
N.G.L-NATURAL GROUND LEVEL
O.D-OUTER DIAMETER
RC-REINFORCED CONCRETE
EXT-EXTENSION
ALT-ALTERNATIVE
NO-NUMBER
CQ-COMMERCIAL QUALITY
ELA-EQUAL LEG LENGTH

CONSTRUCTION DRAWING

NOTES

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FAX: +27 15 291 1933

CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
01	2024-07-10	UPDATE TO DPM SPECIFICATION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

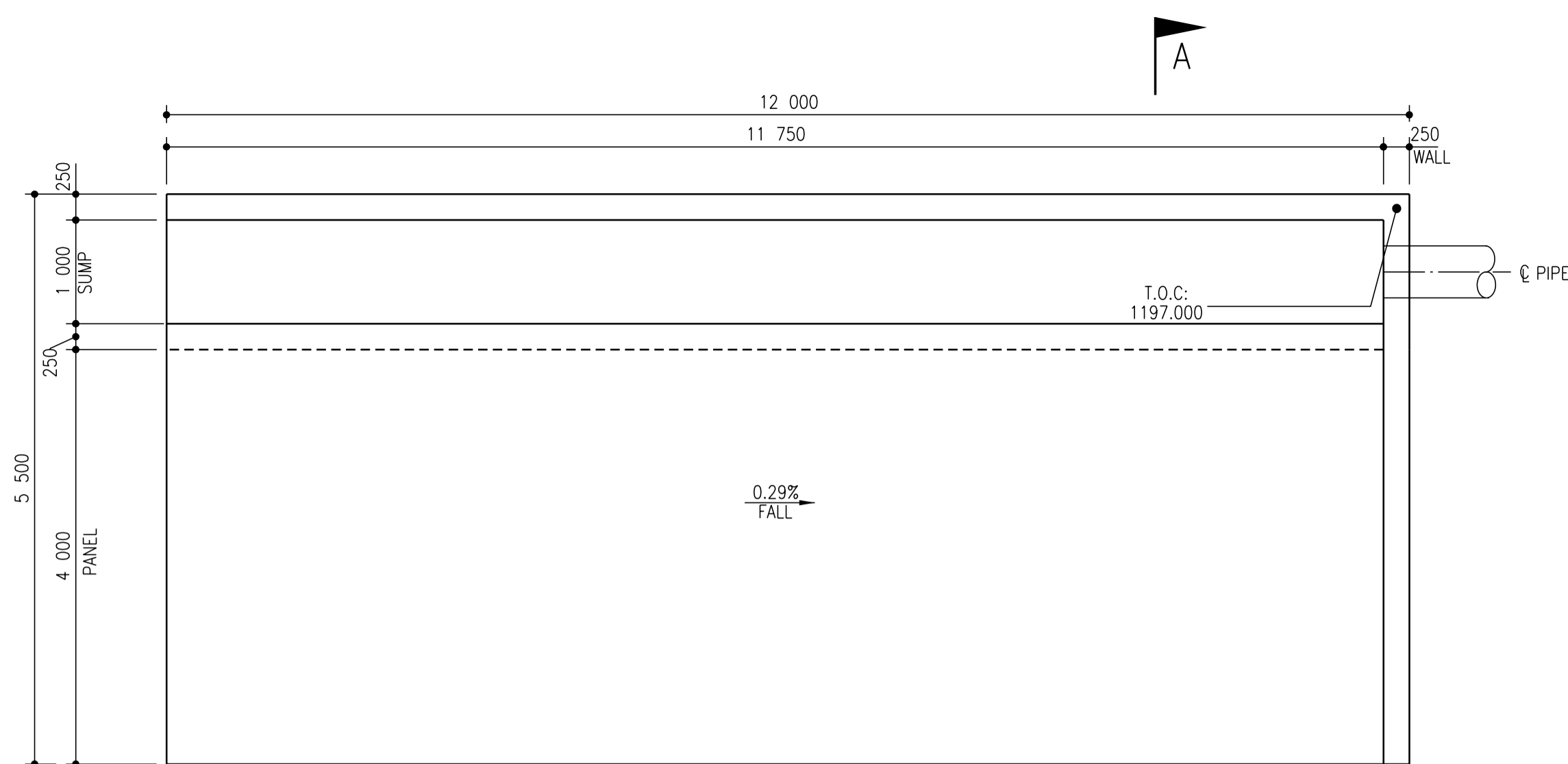
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

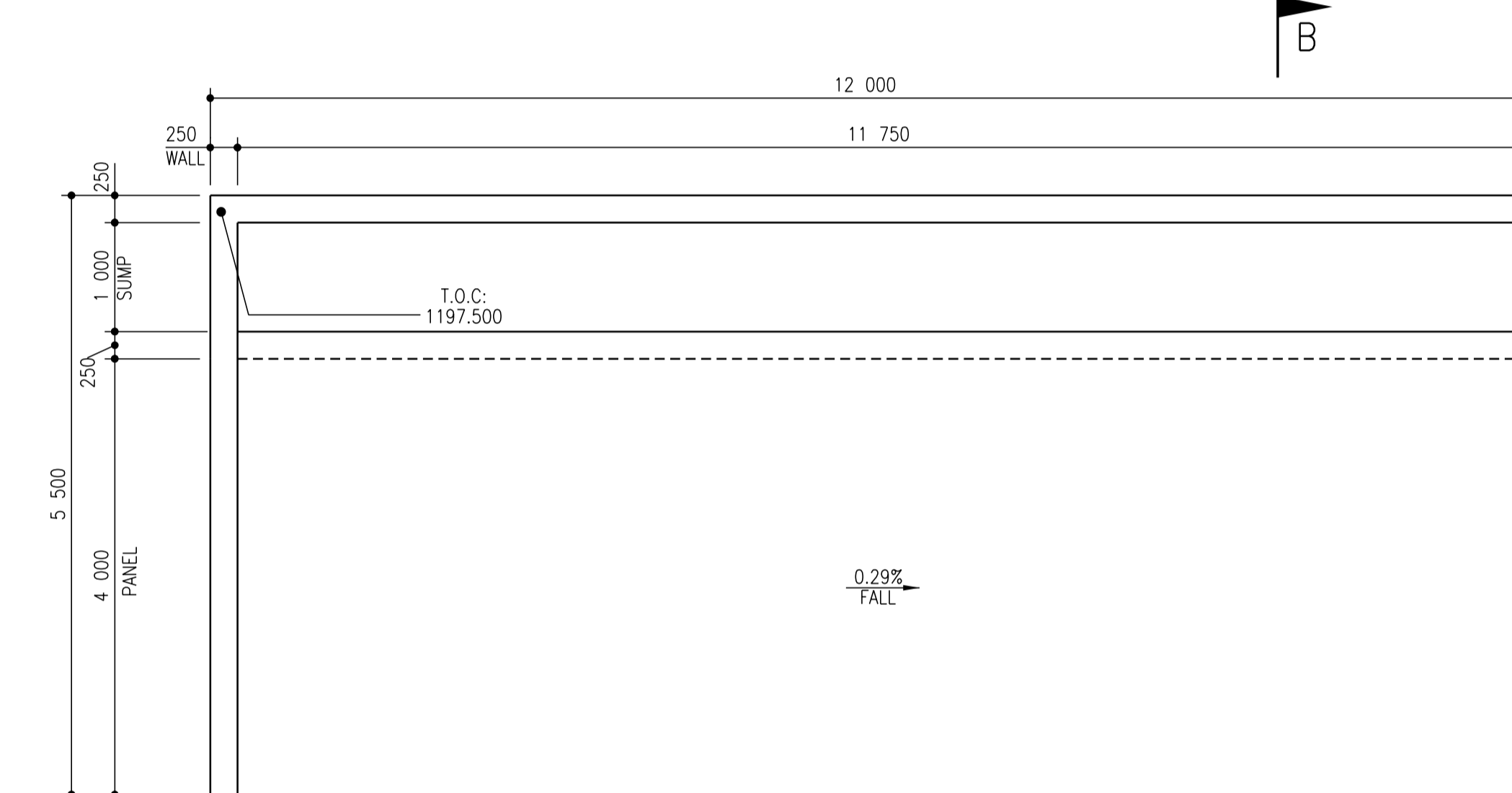
DRAWING DESCRIPTION

SLUDGE DRYING BED CONCRETE PANEL DETAILS

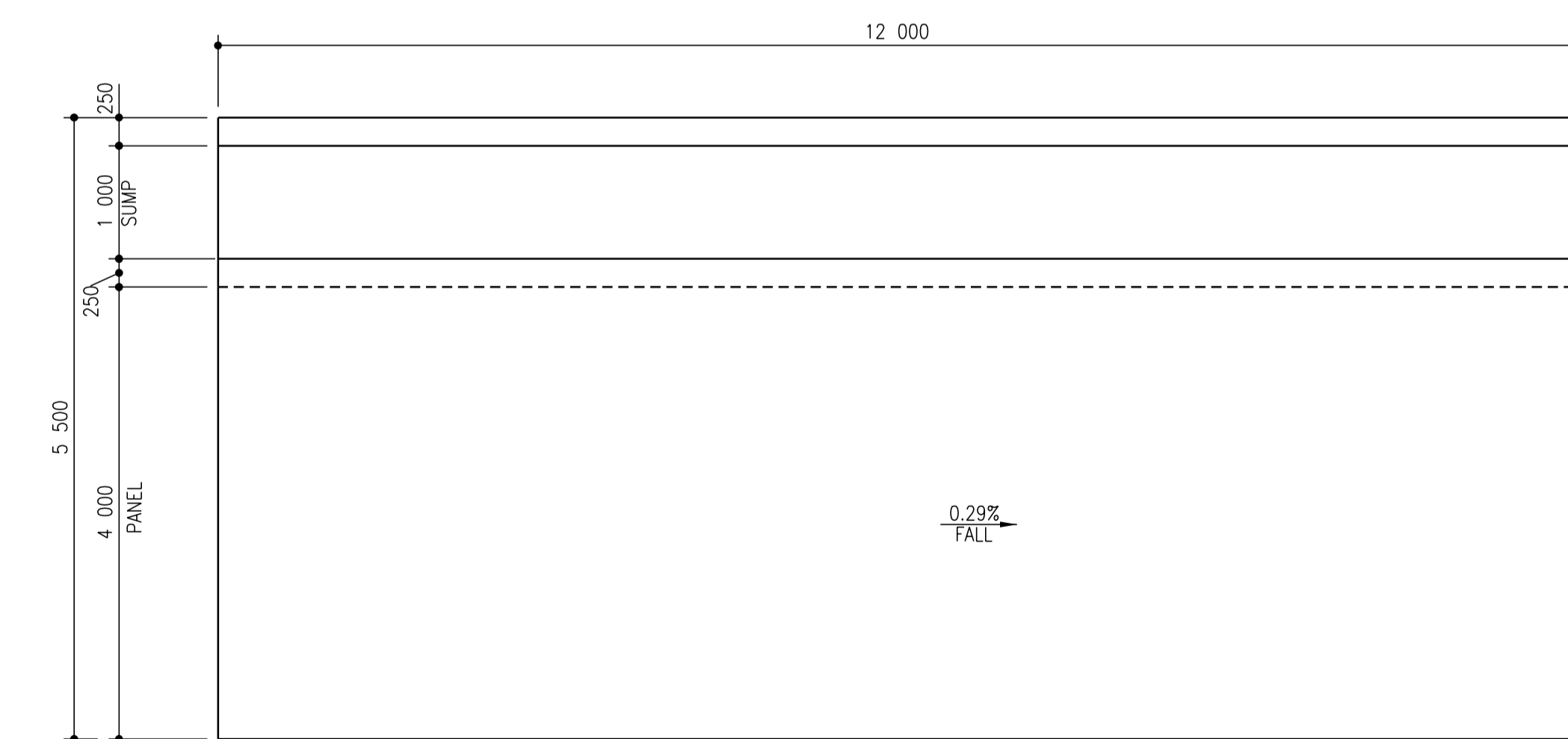
DESIGNED	DRAWN	CHECKED
L.RAMOSHABA	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-07-10	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	SCALE	REV
PK278-01-STR-DRG-0029-5002		01



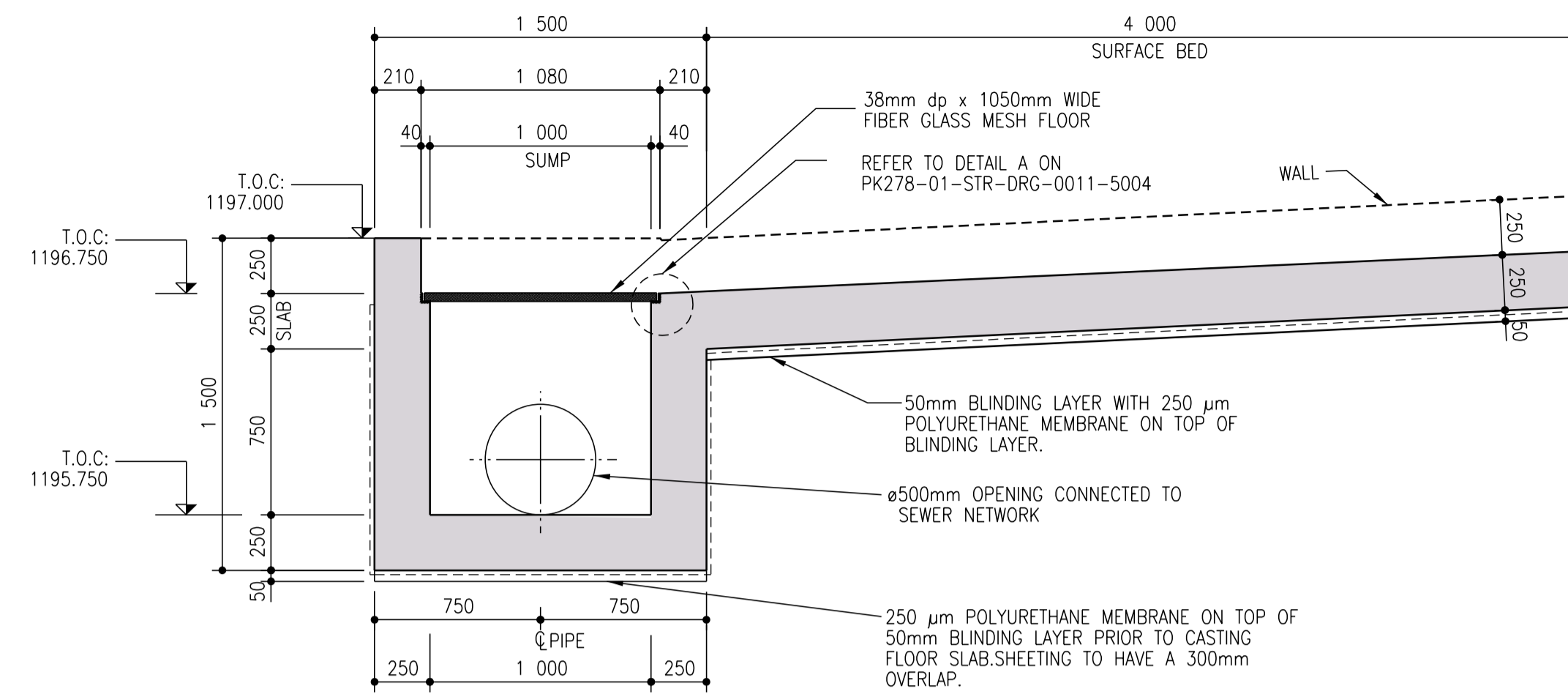
PLAN VIEW ON TYPE A2
(1 NO.OF)
SCALE:1:50



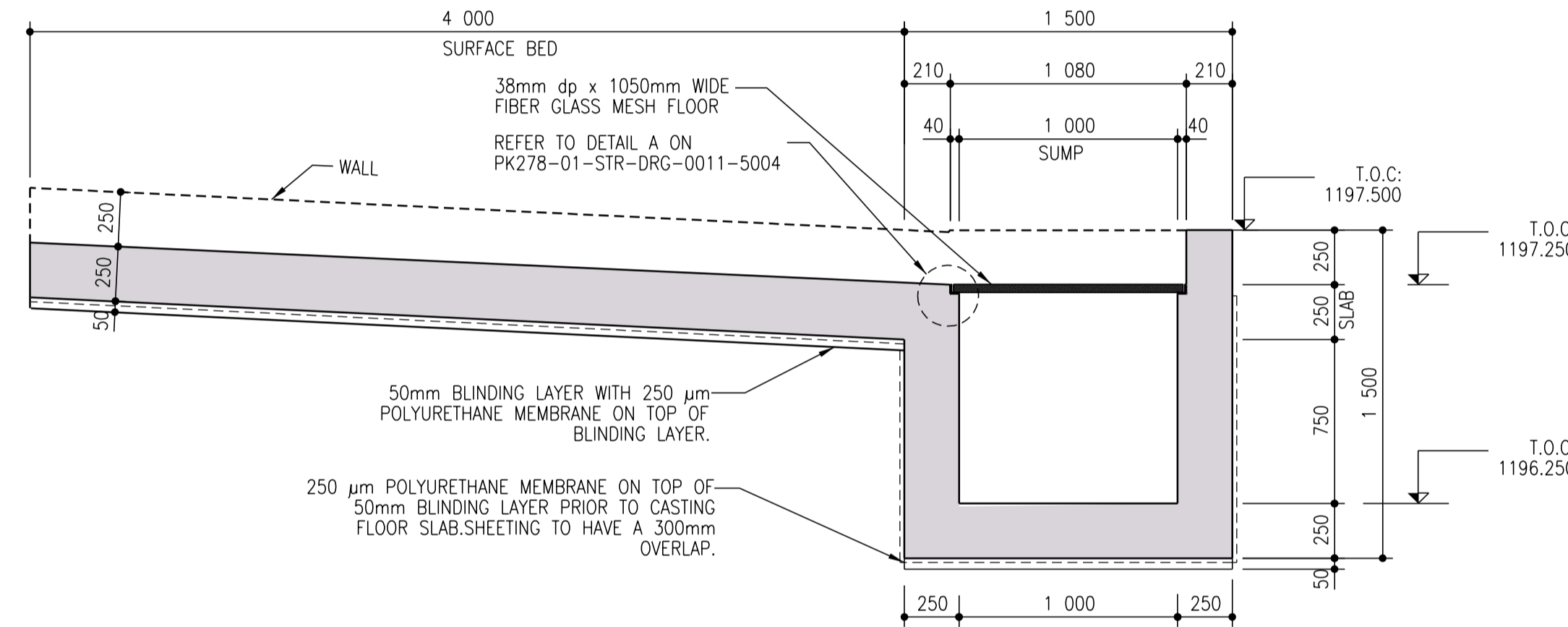
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SCALE:1:50



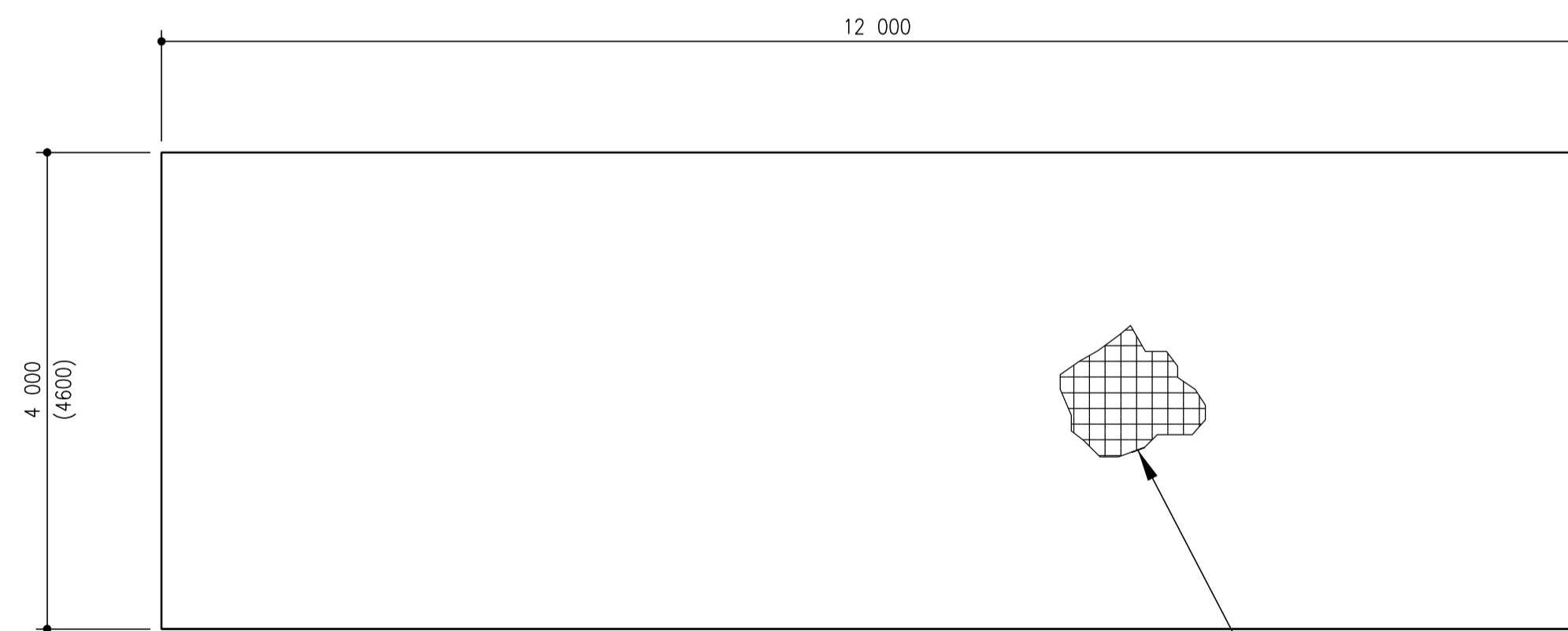
PLAN VIEW ON TYPE B
(10 NO.OF)
SCALE:1:50



SECTION A-A THROUGH SUMP
SCALE 1:25



SECTION B-B THROUGH SUMP
SCALE 1:25



PLAN VIEW ON TYPE D
(415 NO.OF)
SCALE:1:50

*NOTE: VALUES REPORTED IN BRACKETS
"()" APPLICABLE TO PANEL TYPE D2 ONLY.

TOP REINFORCEMENT: MESH REF 888
COVER TO REINFORCEMENT=60mm(min.)
MIN. LAP LENGTH=300 mm.
BOTTOM REINFORCEMENT:MESH REF 617
COVER TO REINFORCEMENT=40mm(min.)
MIN. LAP LENGTH=300mm

- 1. GENERAL NOTES:**
- THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL GOVERN IN CASE OF ANY CONFLICTS.
 - ALL SETTING OUT DIMENSIONS SHALL BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES OR OMISSIONS SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.
 - NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS.
 - BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - CONCRETE FACES TO FORMED FACES:
ALL EXPOSED FACES CLASS F3
ALL OTHER FACES CLASS F1
 - CONCRETE FACES TO UNFORMED FACES:
ALL SURFACES CLASS-U2
- 2. EARTHWORKS NOTES:**
- THE FOUNDING LEVELS GIVEN ON THE DRAWINGS ARE ANTICIPATED LEVELS. THE ACTUAL FOUNDING LEVELS SHALL BE DETERMINED ON SITE BY THE ENGINEER.
 - MINIMUM DEPTH OF EXCAVATION TO SLABS ON GROUND SHALL BE 300MM TEMPORARILY STOCKPILE IN-SITU MATERIAL FOR INSPECTION AND TESTING FOR USE AS FILL MATERIAL.
 - OVER-EXCAVATE, RIP AND SCARIFY TO FOUNDING LEVEL BY 150MM AND RECOMPACT IN-SITU MATERIAL TO 93% MOD AASHTO.
 - BACKFILL AND COMPACTION OF SELECT G5+ FILL LAYERS (G7 MATERIAL OR BETTER) TO BE CONSTRUCTED NOT THICKER THAN 150mm TO 93% MOD AASHTO. MINIMUM DESIGN CBR OF LAYER WORK = 15.
- 3. CONCRETE NOTES:**
- ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
 - CONCRETE SHALL BE "STRENGTH GRADE CONCRETE (MPA)" / "MAXIMUM STONE SIZE (MM)" AS SPECIFIED BELOW UNLESS OTHERWISE STATED IN ACCORDANCE WITH PROJECT SPECIFICATION (U.N.O.):
MASS CONCRETE 15/19
BLINDING 15/19
WALLS 40/19
SLABS 40/19
GROUT 40/19
 - 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.
 - UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:
-SLABS (TOP OF)- 60MM
-SLABS (BOTTOM OF)- 40MM
-OTHER- 50MM
 - ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
 - CONCRETE SHALL BE CAST AS LONG CONTINUOUS STRIPS. 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.
 - ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.
 - NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
 - ALL NON-SHUTTERED CONCRETE SURFACES SHALL HAVE A WOOD FLOAT FINISH.
 - ALL EXPANSION AND CONSTRUCTION JOINTS TO HAVE WATER STOPS OF APPROVED DESIGN AS PER SPECIFICATION.
 - INTERFACE BETWEEN PIPE AND STRUCTURE WALL TO BE GROUTED WITH NON-SHRINK GROUT OF APPROVED DESIGN TO FORM WATERTIGHT SEAL.
 - CURING OF SLABS SHALL BE BY CONTINUOUS WETTING TO MAINTAIN DAMP SURFACE CONDITIONS. CURING OF CONCRETE SHALL OCCUR FOR A MINIMUM OF (7 DAYS) AFTER PLACING OR SUCH EXTENDED PERIODS AS THE RESIDENT ENGINEER MAY INSTRUCT.
- 4. FOUNDATIONS:**
- EXCAVATIONS FOR FOUNDATIONS SHALL BE KEPT FREE OF WATER AT ALL TIMES.
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RC-REINFORCED CONCRETE
EXT.-EXTENSION
ALT.-ALTERNATIVE
NO.-NUMBER
CQ-COMMERCIAL QUALITY
ELA-EQUAL LEG LENGTH

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
L.RAMOSHABA	O.MOHOLOANE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	SCALE	REV
PK278-01-STR-DRG-0029-5003		00

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

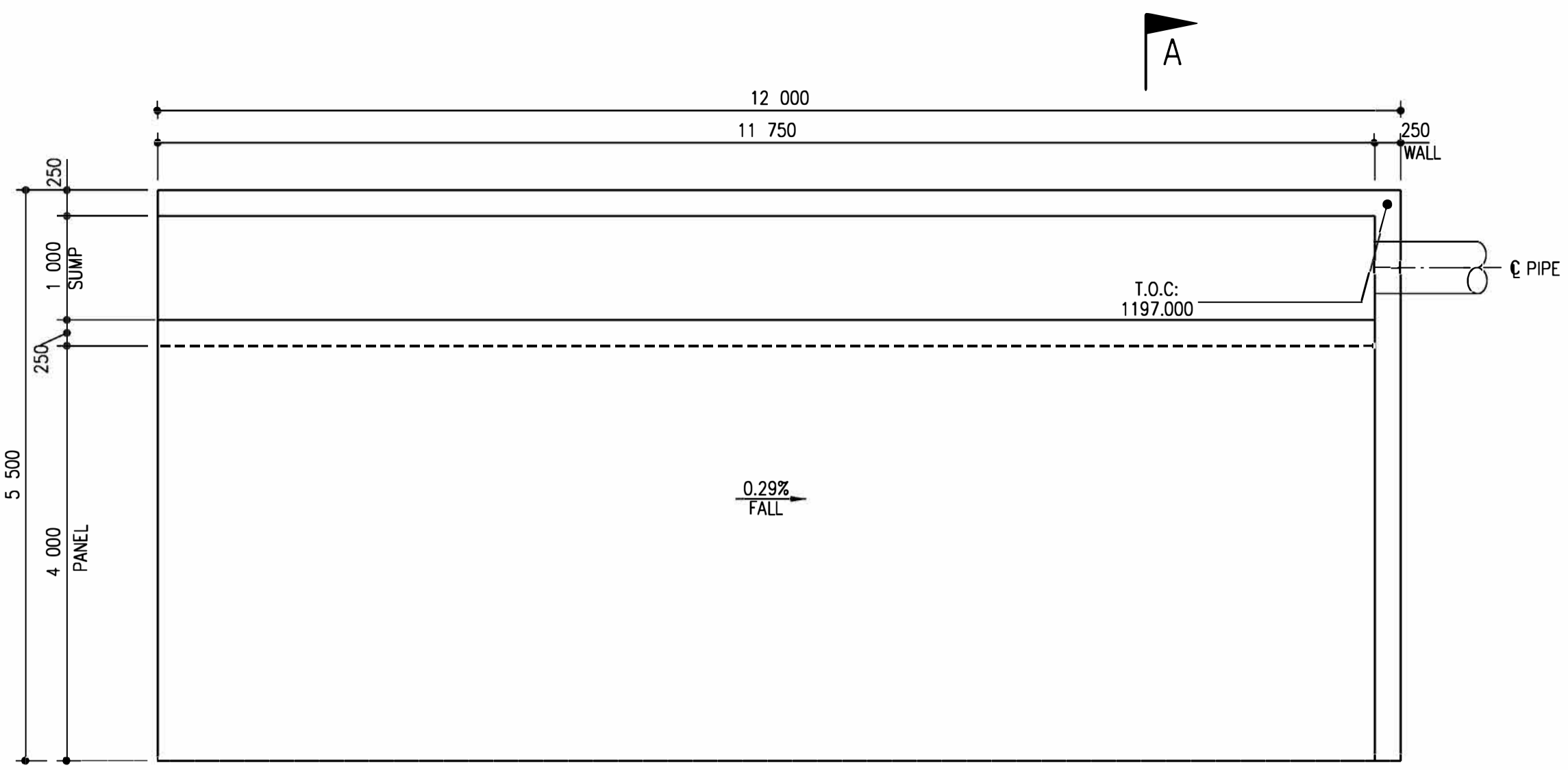
CLIENT _____ DATE _____

PROJECT

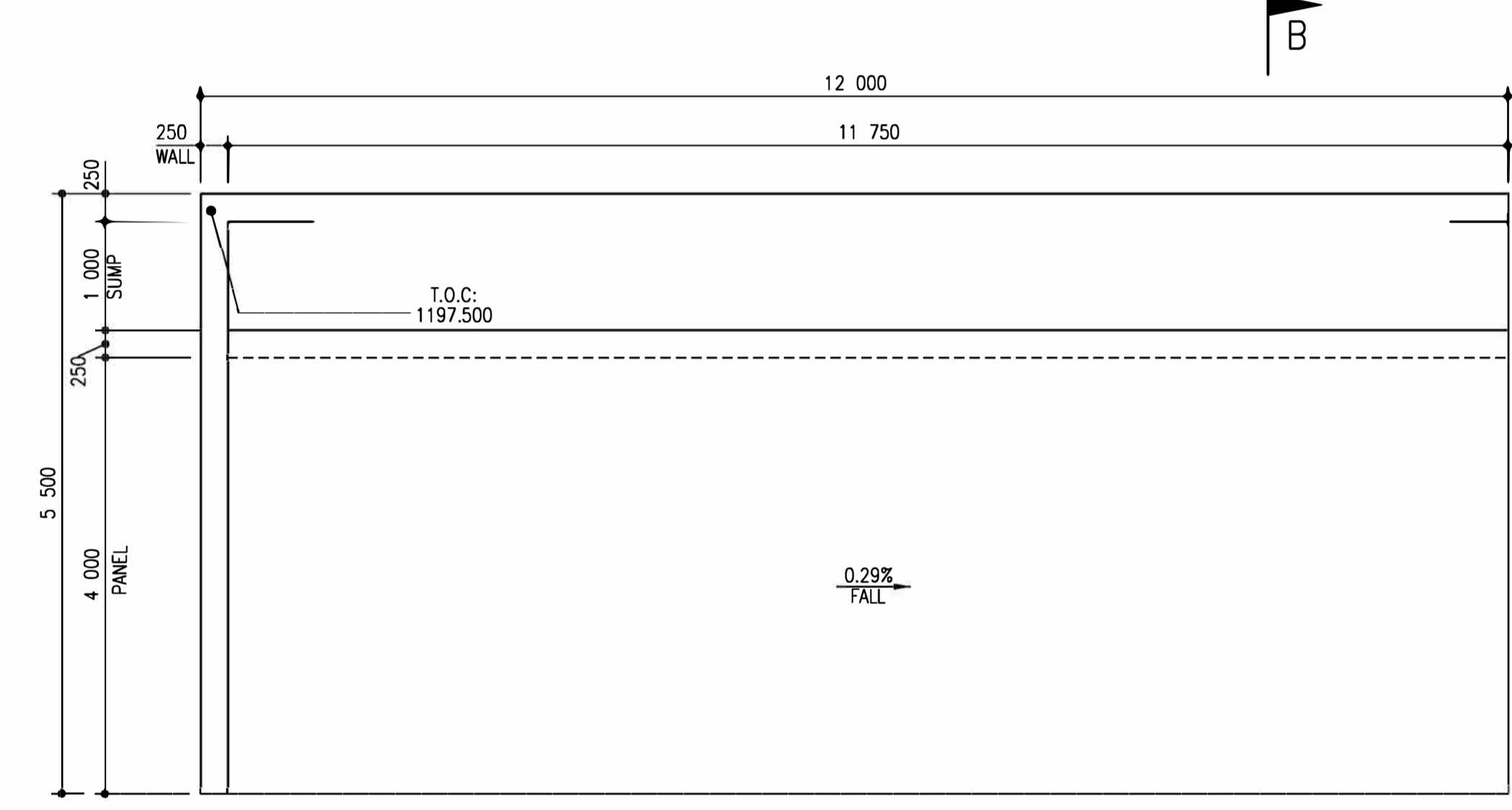
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

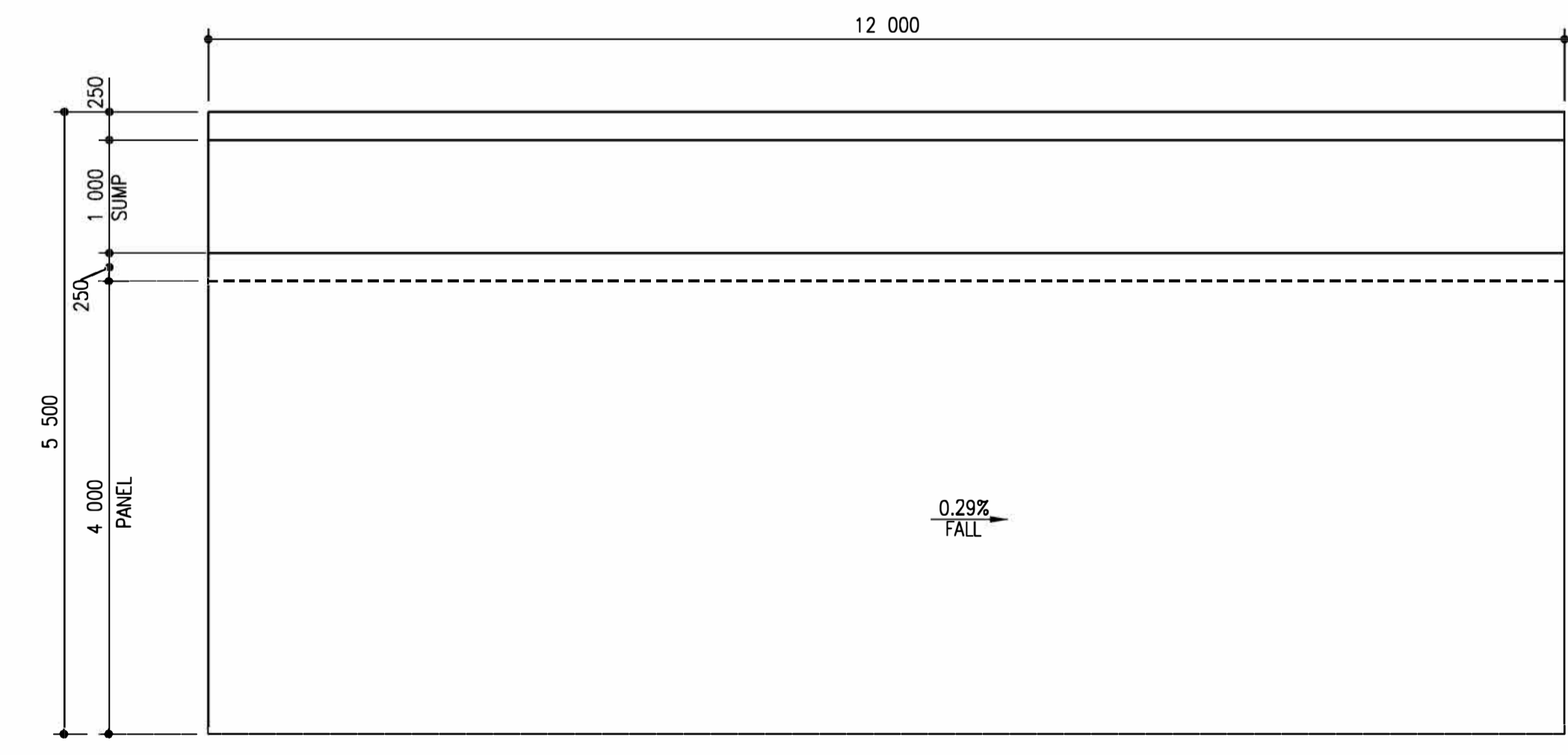
SLUDGE DRYING BED PANEL DETAILS



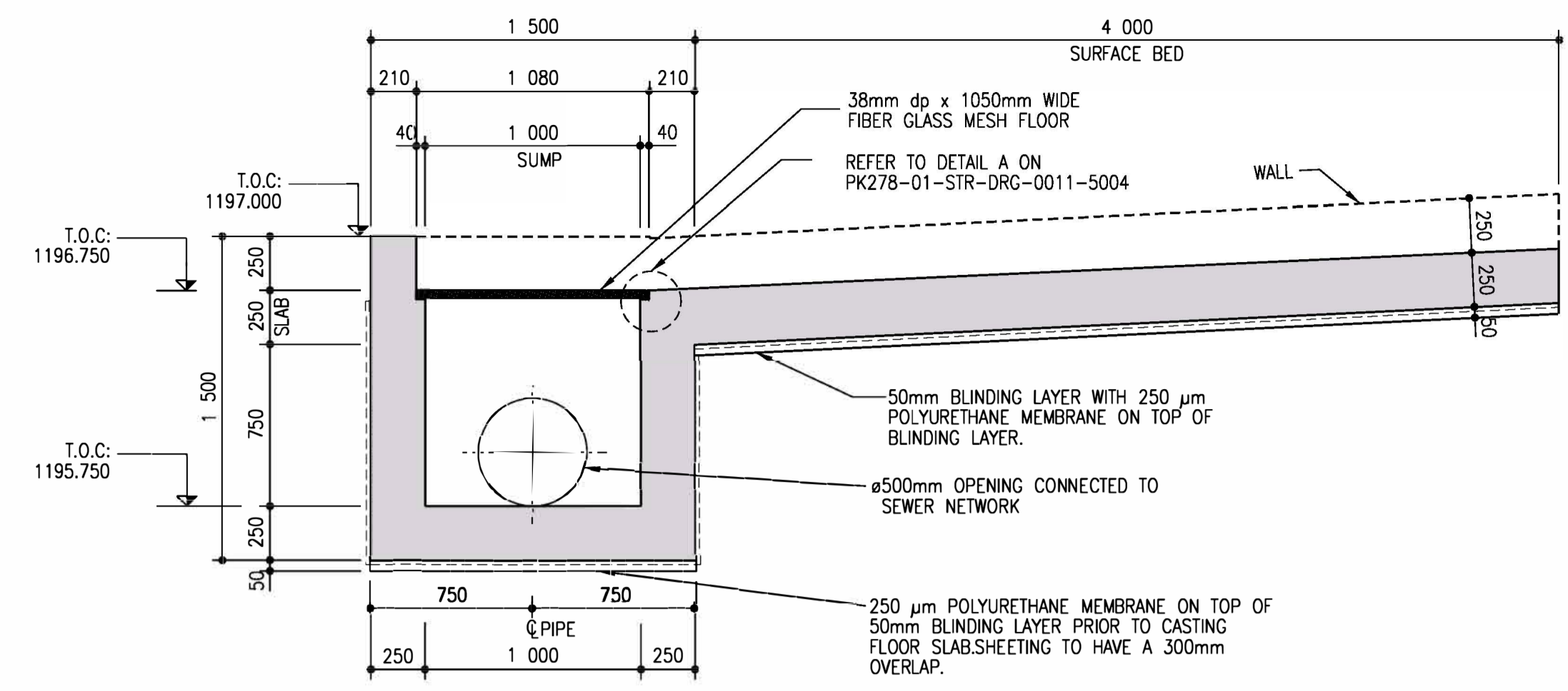
PLAN VIEW ON TYPE A2
(1 NO.OF)
SCALE:1:50



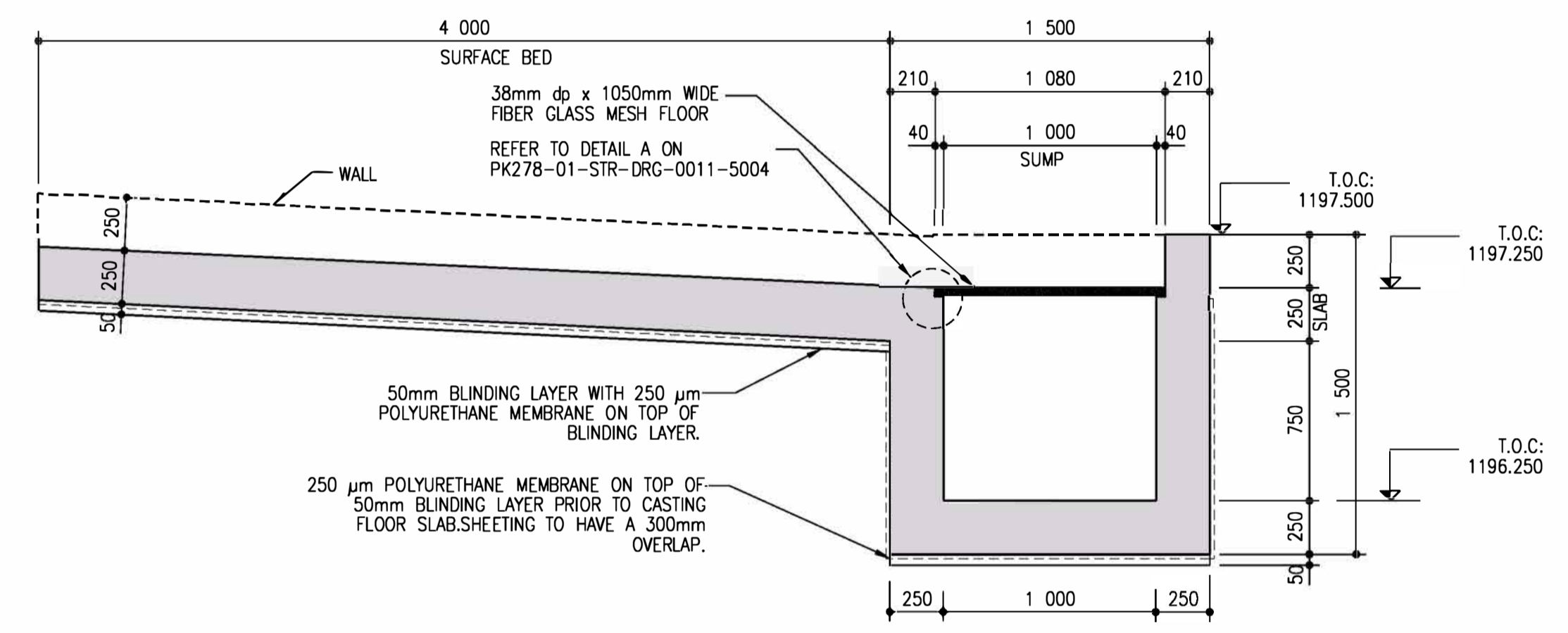
PLAN VIEW ON TYPE A1
(1 NO.OF)
SCALE:1:50



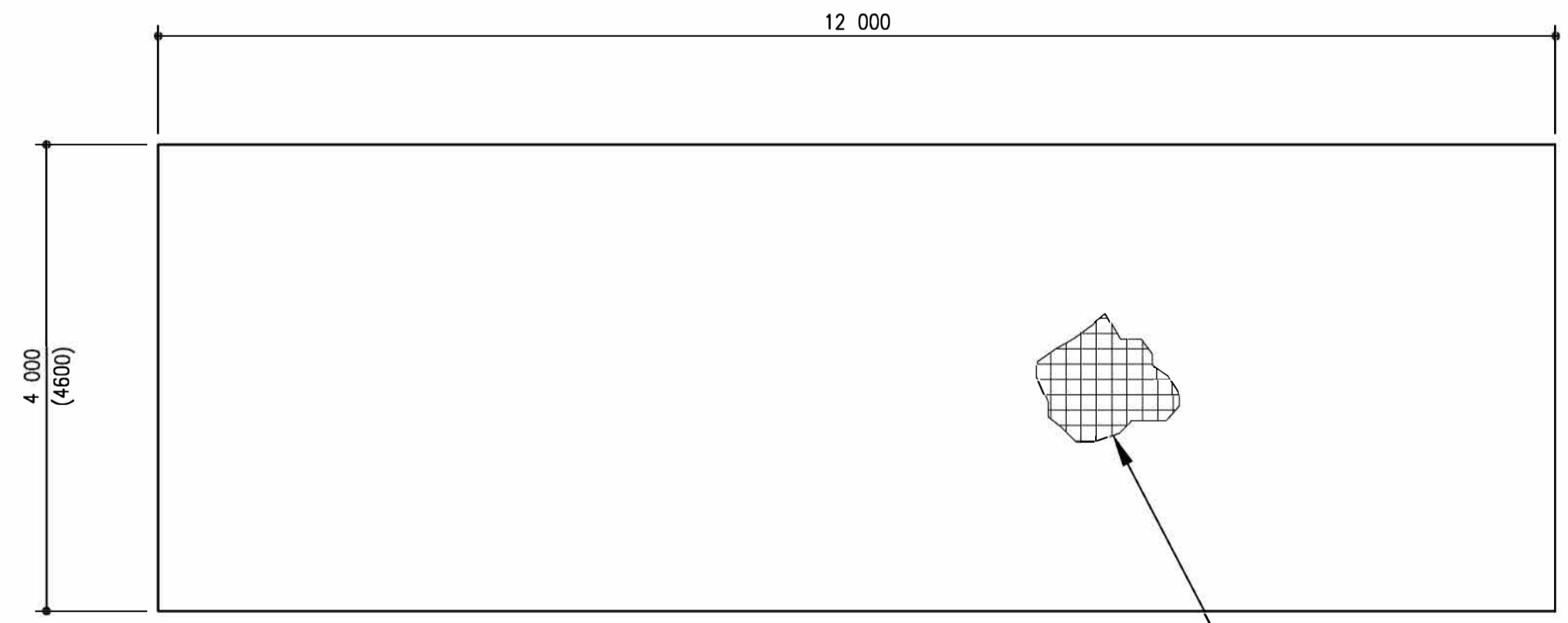
PLAN VIEW ON TYPE B
(10 NO.OF)
SCALE:1:50



SECTION A-A THROUGH SUMP
SCALE 1:25



SECTION B-B THROUGH SUMP
SCALE 1:25



PLAN VIEW ON TYPE D
(415 NO.OF)
SCALE:1:50

*NOTE: VALUES REPORTED IN BRACKETS
"()" APPLICABLE TO PANEL TYPE D2 ONLY.

TOP REINFORCEMENT: MESH REF 888
COVER TO REINFORCEMENT=60mm(min.)
MIN. LAP LENGTH=300 mm.
BOTTOM REINFORCEMENT: MESH REF 617
COVER TO REINFORCEMENT=40mm(min.)
MIN. LAP LENGTH=300mm

- 1. GENERAL NOTES:**
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ALL OTHER FACES CLASS F1
 - CONCRETE FACES TO UNFORMED FACES:
ALL SURFACES CLASS-U2
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 - OVER-EXCAVATE, RIP AND SCARIFY TO FOUNDING LEVEL BY 150MM AND RECOMPACT IN-SITU MATERIAL TO 93% MOD AASHTO.
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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

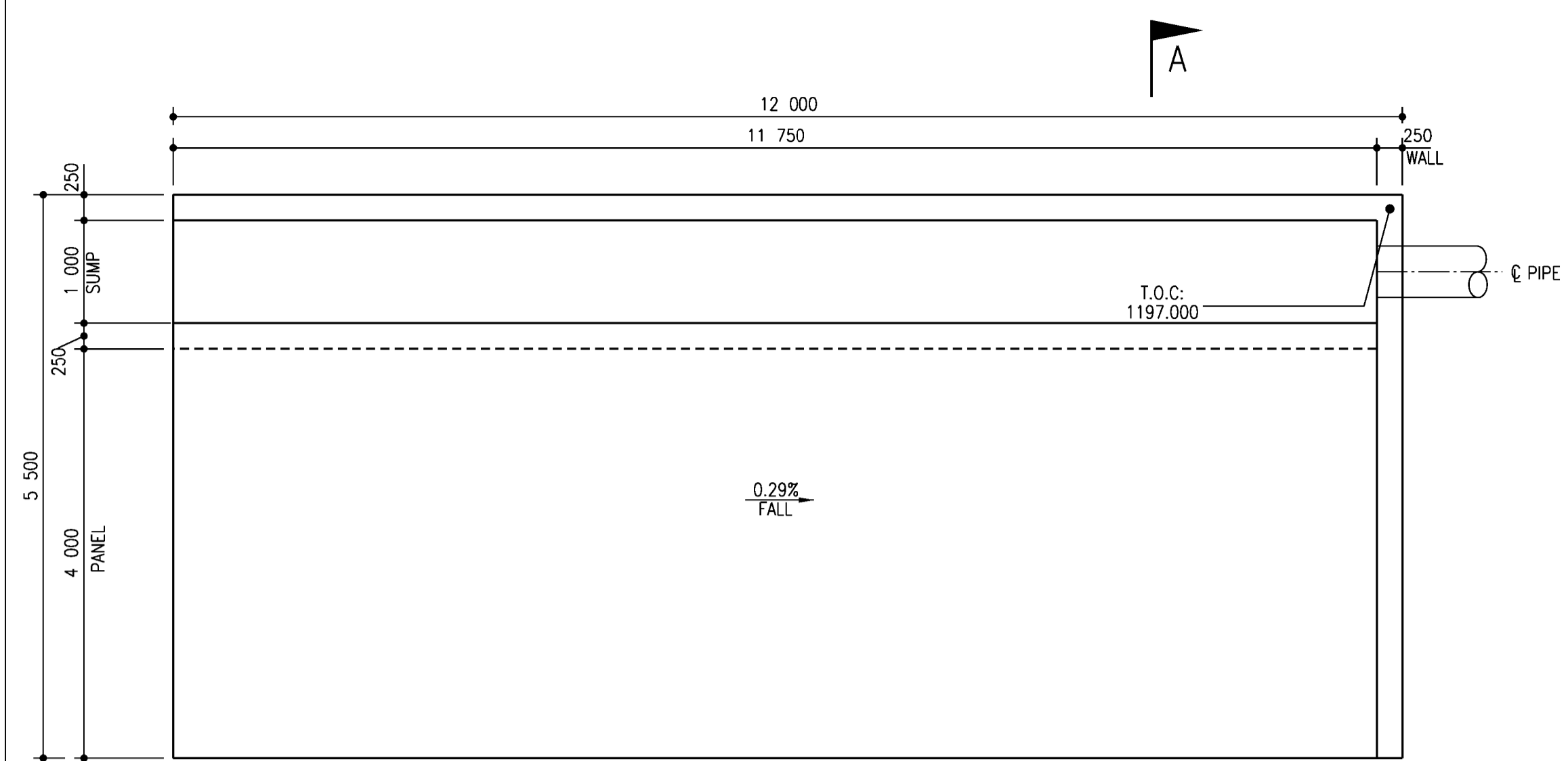
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

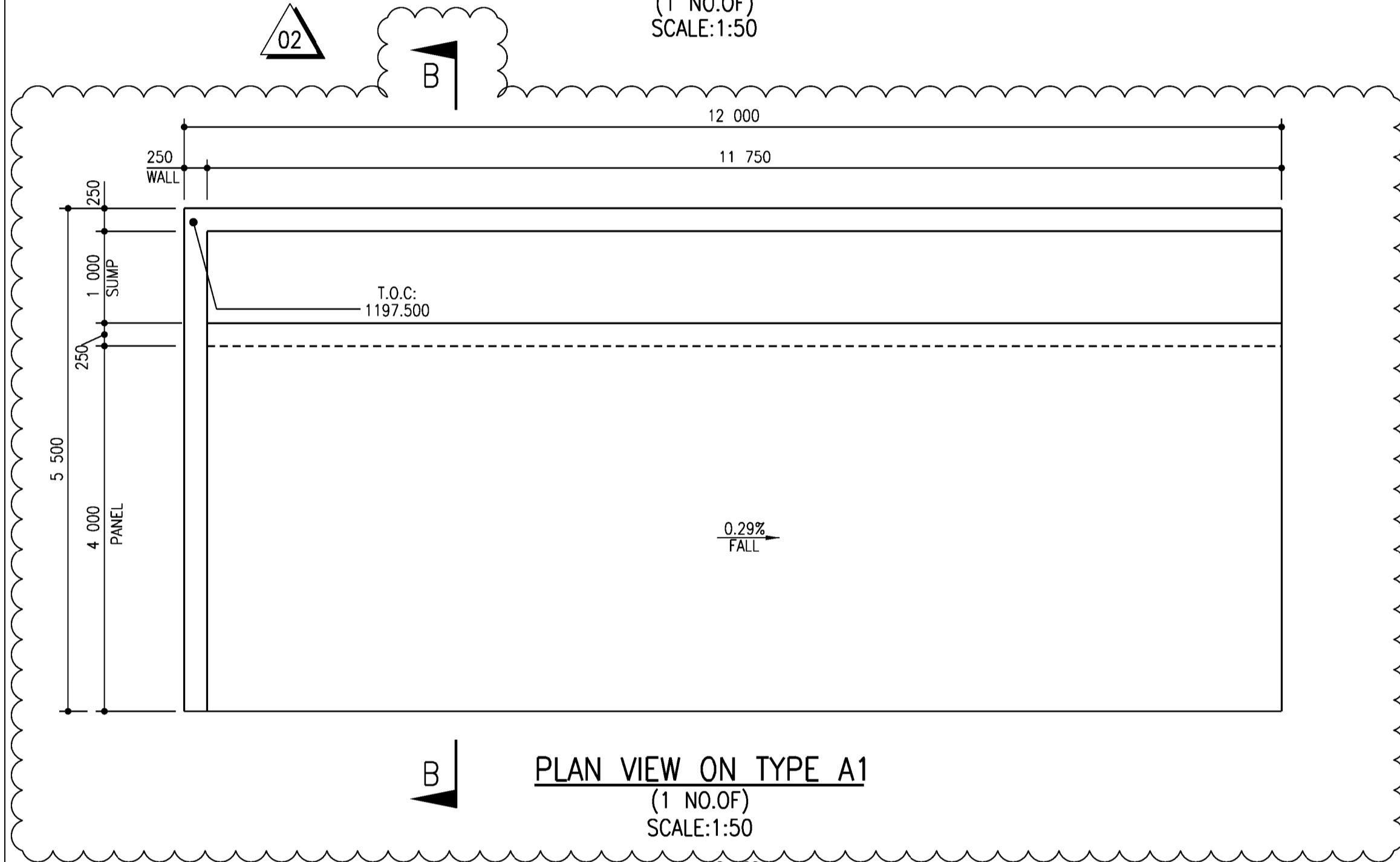
DRAWING DESCRIPTION

SLUDGE DRYING BED ONCRETE PANEL DETAILS

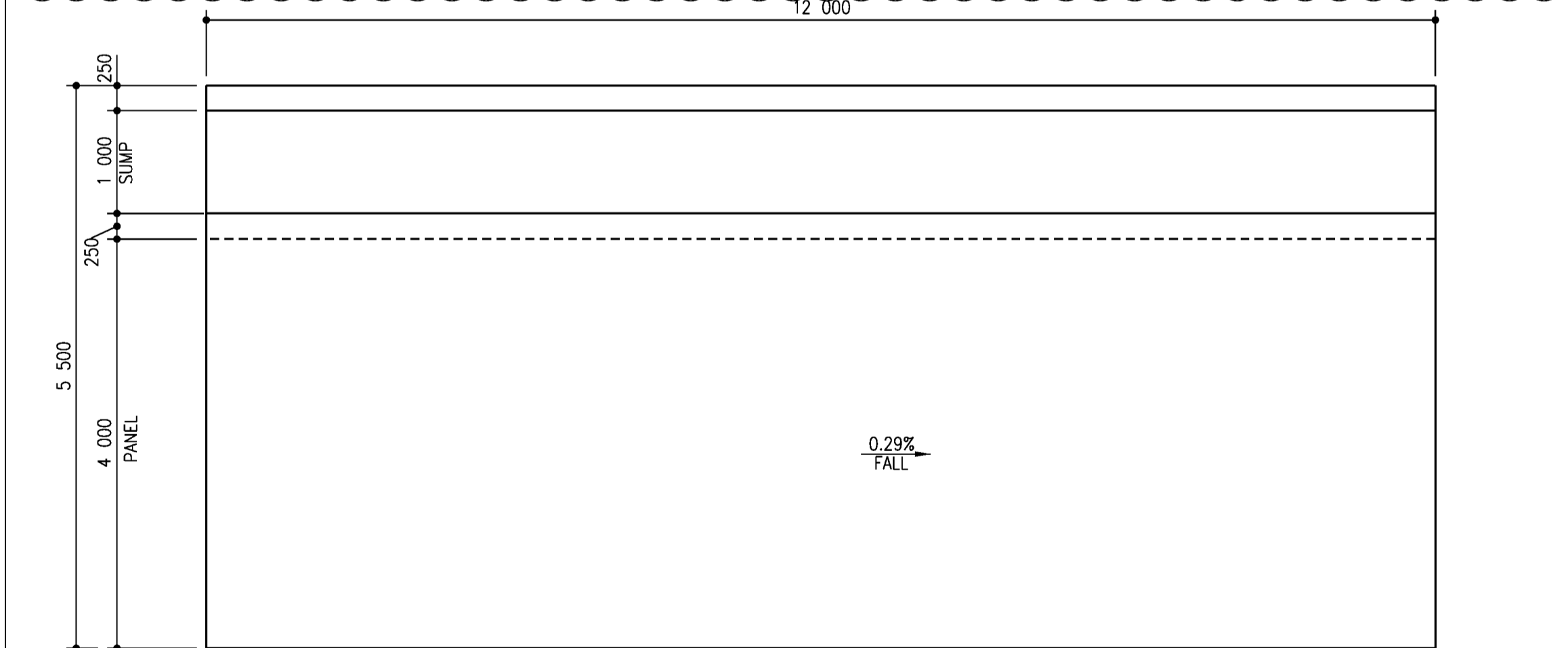
CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
L.RAMOSHABA	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5003	00	



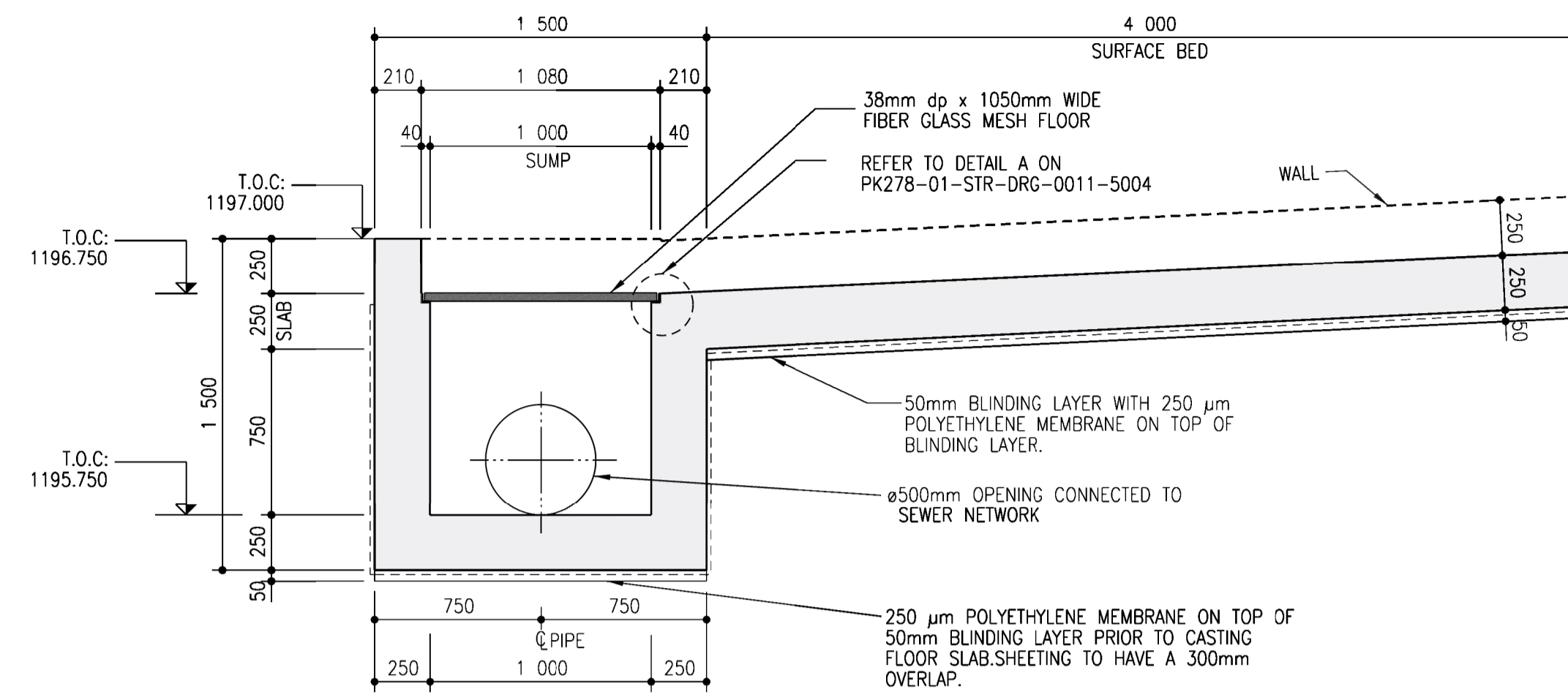
PLAN VIEW ON TYPE A2
(1 NO.OF)
SCALE:1:50



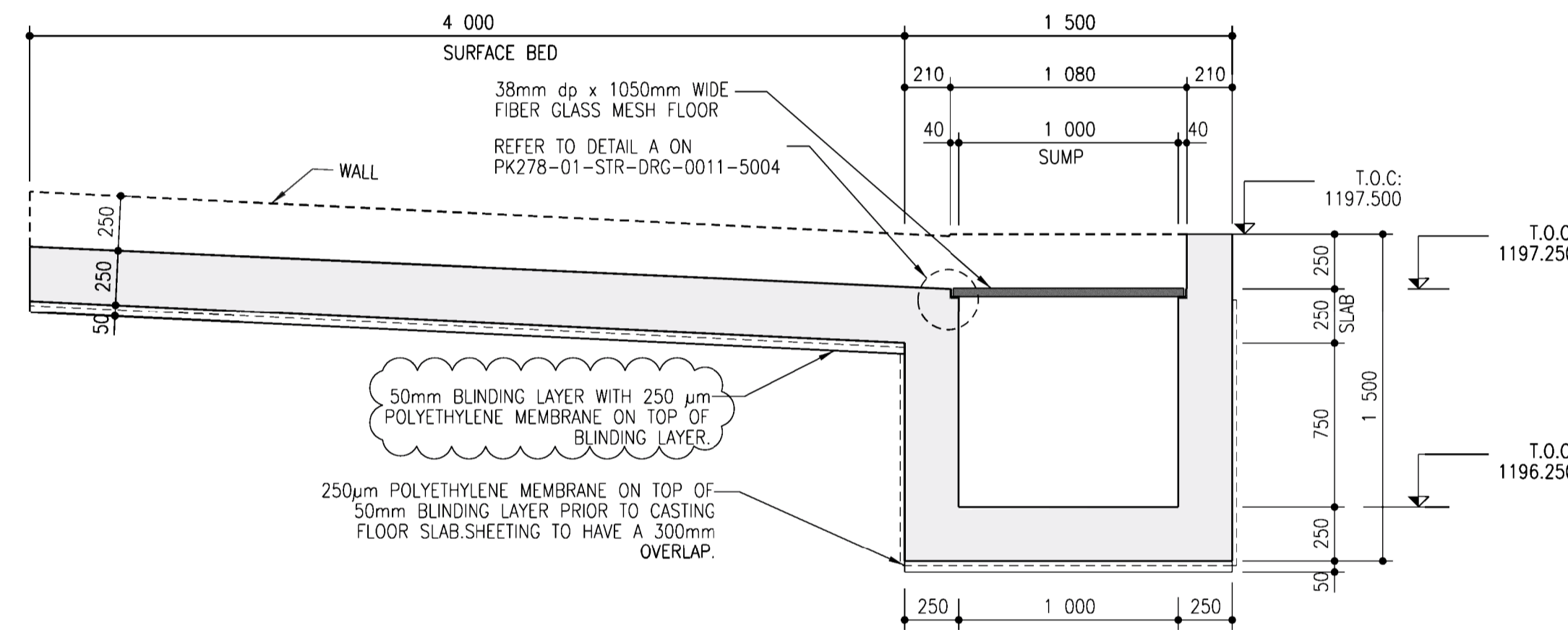
PLAN VIEW ON TYPE A1
(1 NO.OF)
SCALE:1:50



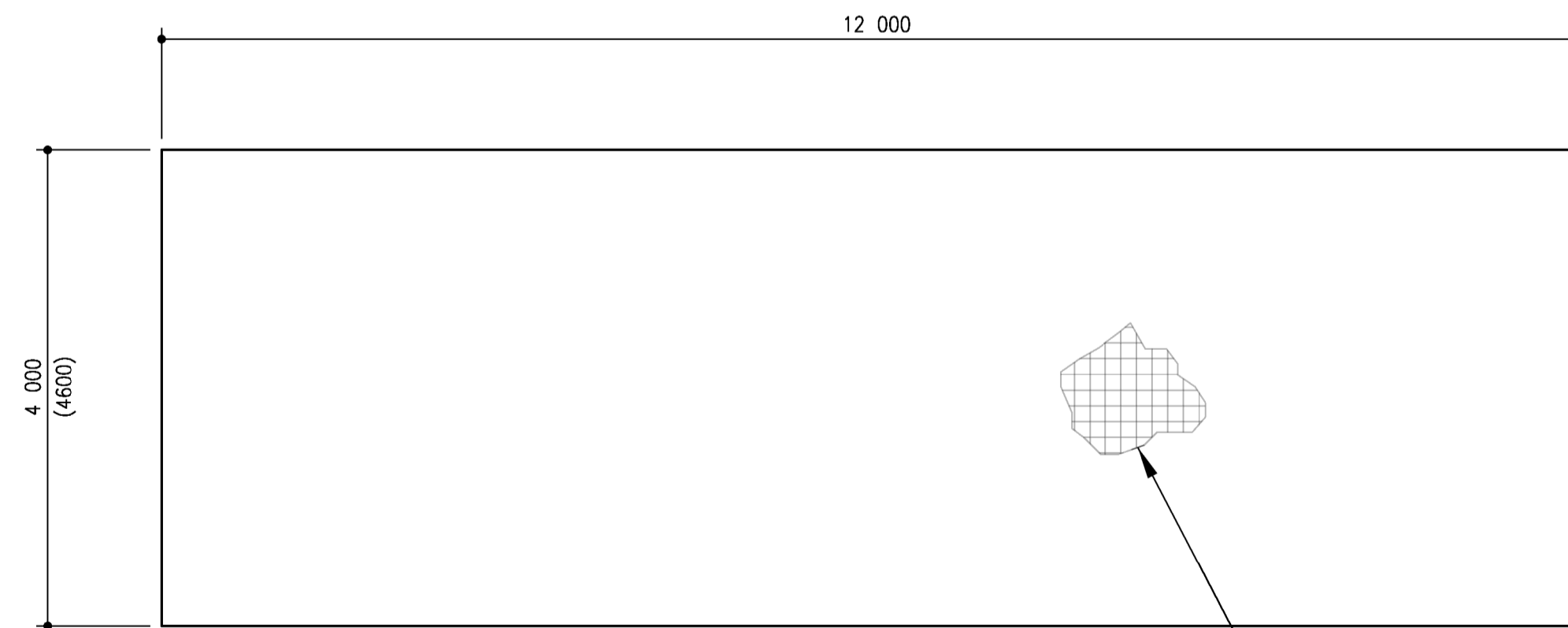
PLAN VIEW ON TYPE B
(10 NO.OF)
SCALE:1:50



SECTION A-A THROUGH SUMP
SCALE 1:25



SECTION B-B THROUGH SUMP
SCALE 1:25



PLAN VIEW ON TYPE D
(405 NO.OF)
SCALE:1:50

*NOTE: VALUES REPORTED IN BRACKETS
"()" APPLICABLE TO PANEL TYPE D2 ONLY.

TOP REINFORCEMENT: MESH REF 888
COVER TO REINFORCEMENT=60mm(min.)
MIN. LAP LENGTH=300 mm.
BOTTOM REINFORCEMENT:MESH REF 617
COVER TO REINFORCEMENT=40mm(min.)
MIN. LAP LENGTH=300mm

- 1. GENERAL NOTES:**
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MASS CONCRETE	15/19
BLINDING	15/19
WALLS	40/19
SLABS	40/19
GROUT	40/19
 - 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.
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SLABS (TOP OF)	60mm
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 - ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
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O.D-OUTER DIAMETER
RC-REINFORCED CONCRETE
EXT.-EXTENSION
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NO.-NUMBER
CQ-COMMERCIAL QUALITY
ELA-EQUAL LEG LENGTH

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
L.RAMOSHABA	O.MOHLLOANE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-07-16	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	SCALE	REV
PK278-01-STR-DRG-0029-5003		02

NOTES

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- ANY IN-CLARITIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSULTING ENGINEER
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- THIS DRAWING FORMS PART OF THE SPECIFICATION AND MUST BE READ IN CONJUNCTION WITH THE SAME.

ZAKUMI
Consulting Engineers

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TEL: +27 15 291 1176
FAX: +27 15 291 1933

CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
02	2024-07-16	UPDATE TO TYPE A1 SECTION SYMBOL
01	2024-07-10	UPDATE TO DPM SPECIFICATION
00	2024-03-13	FOR CONSTRUCTION

DESIGNED: T.BANDA ENGINEER

DRAWN: PR ENG no.

CHECKED: DATE

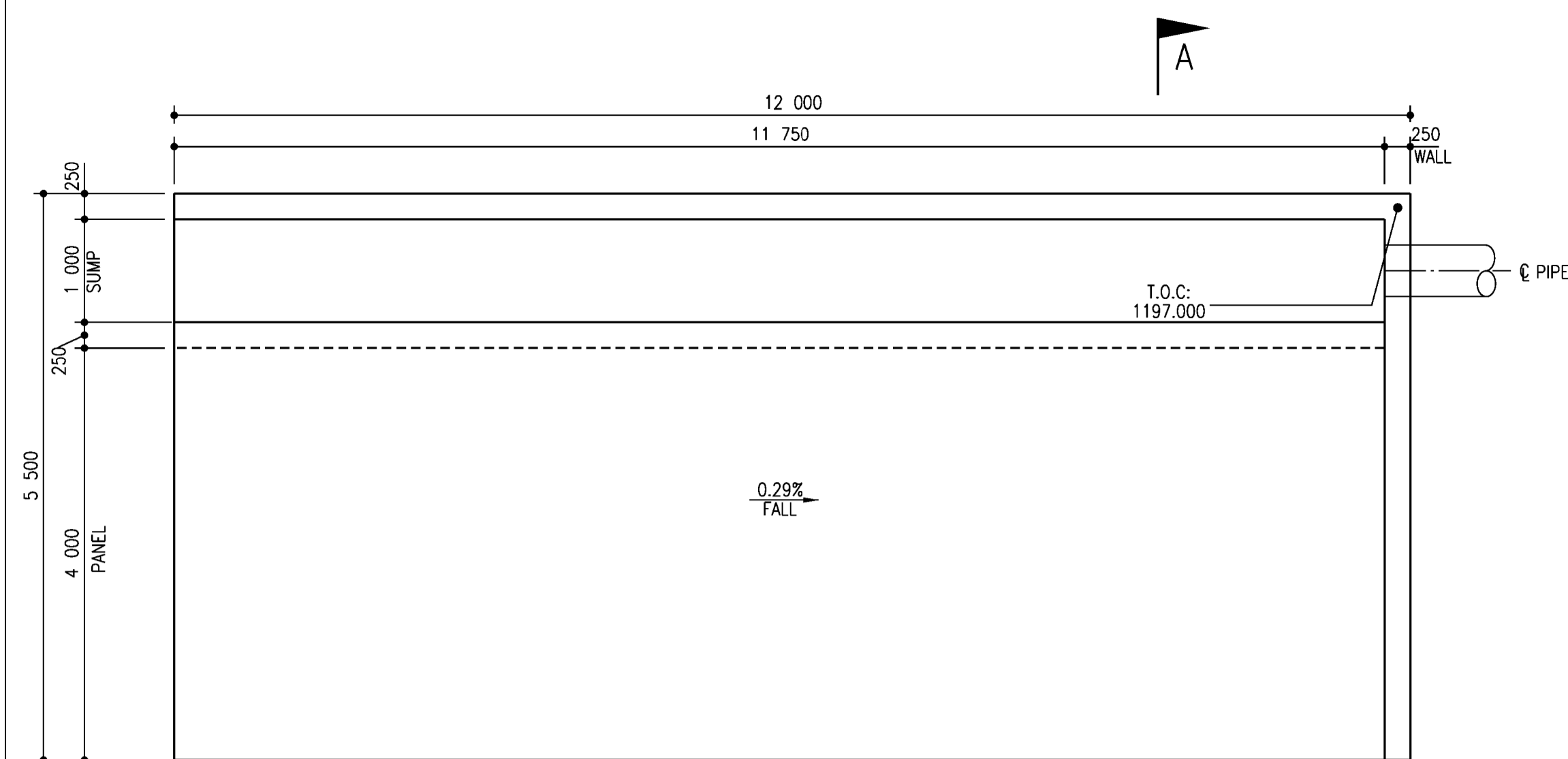
CLIENT: DATE

PROJECT

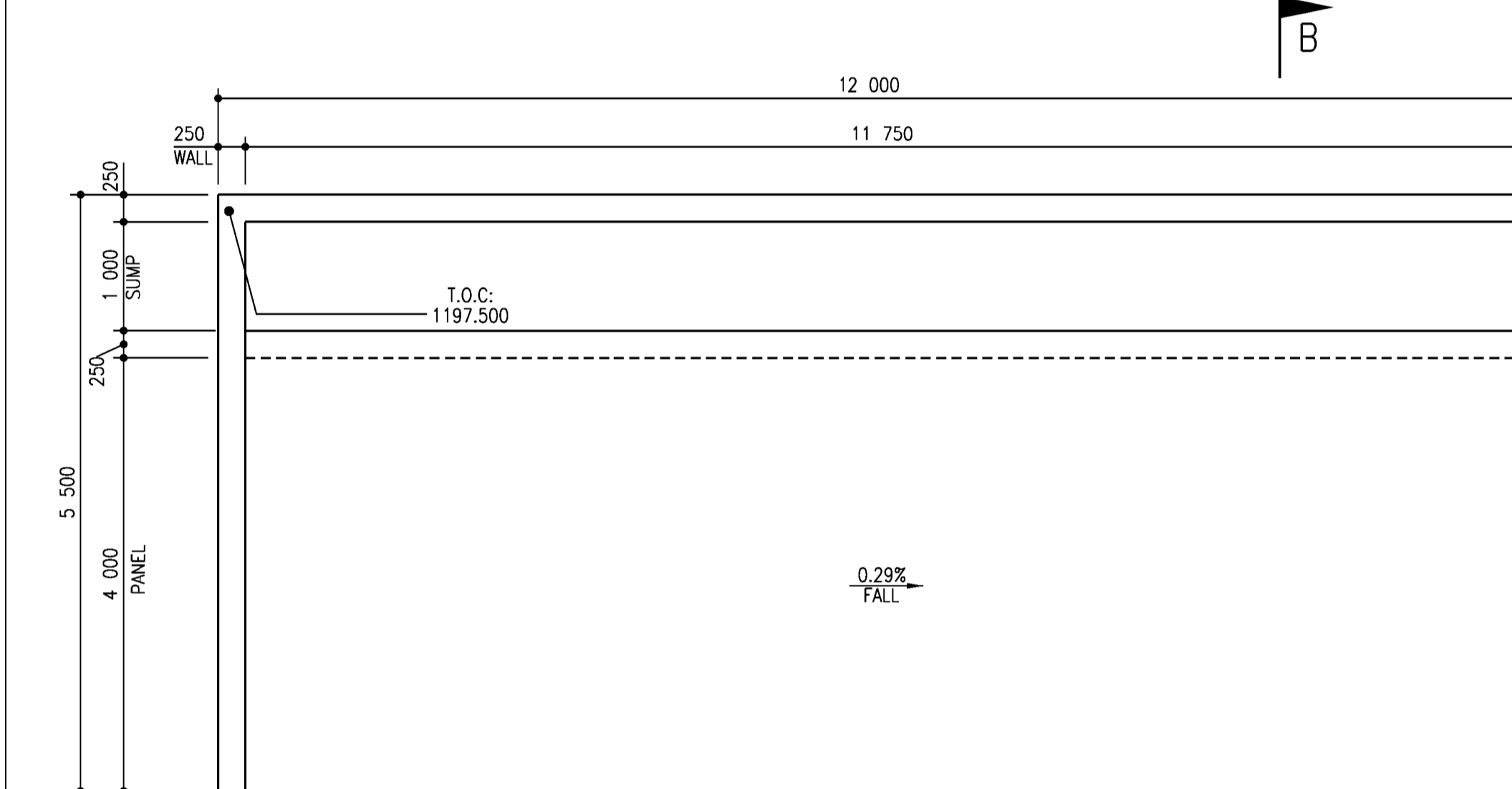
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

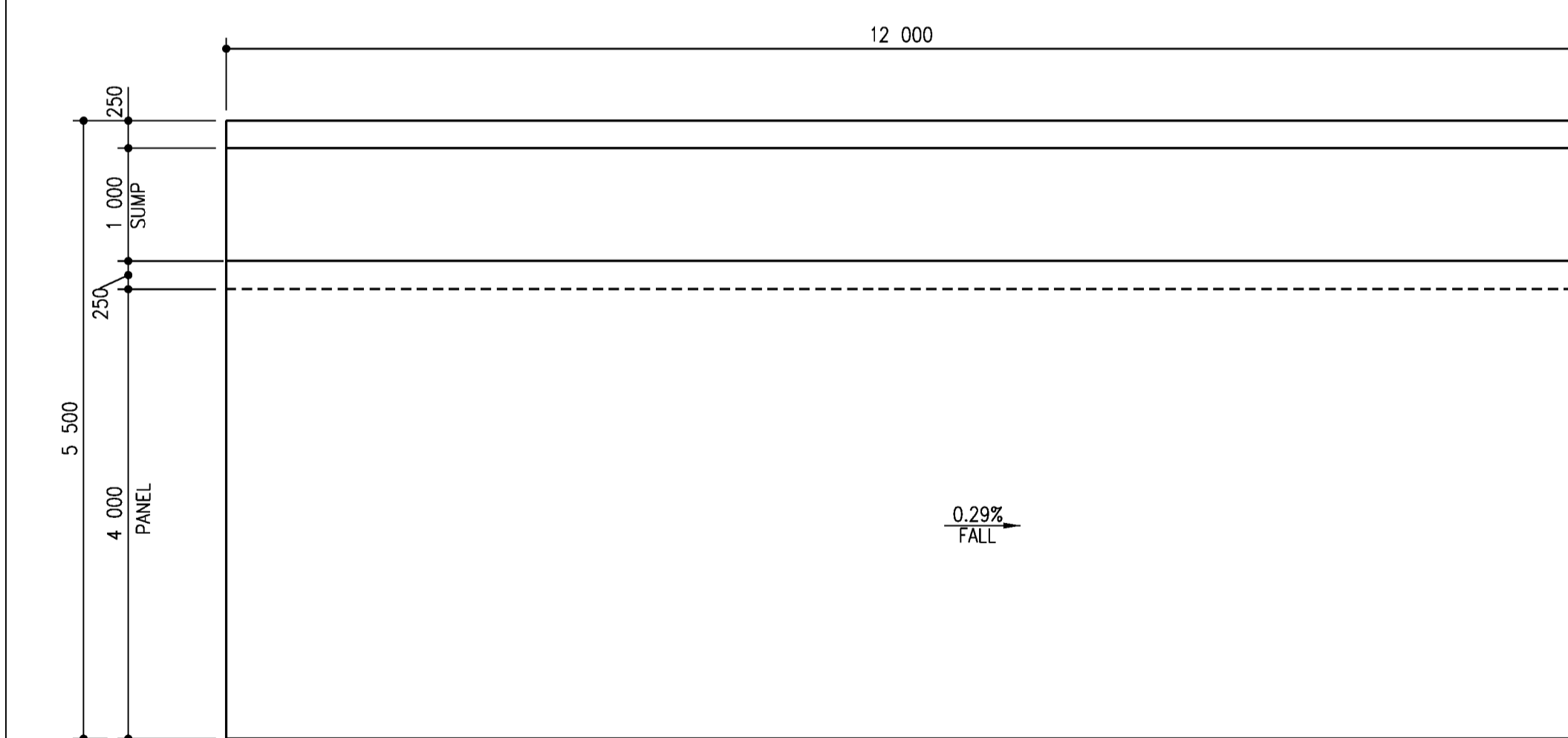
SLUDGE DRYING BED PANEL DETAILS



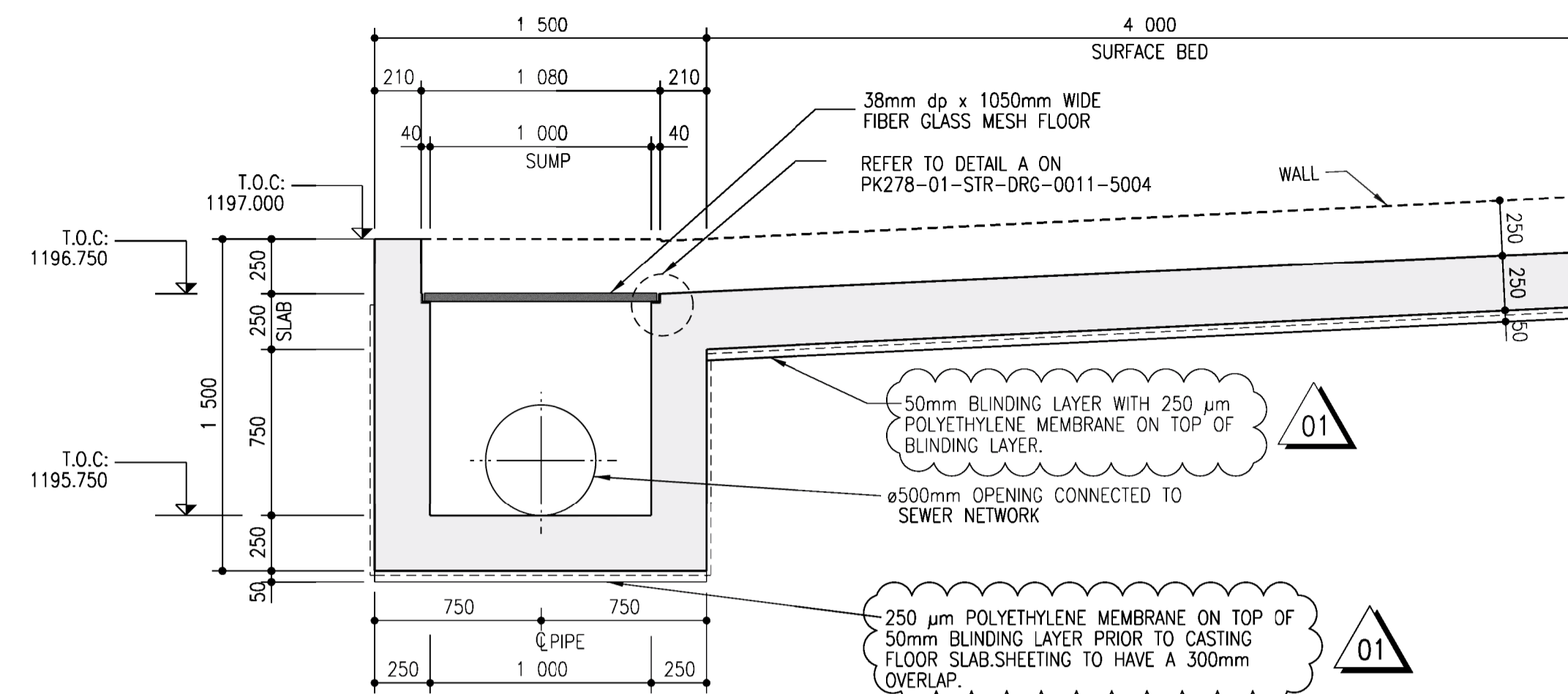
PLAN VIEW ON TYPE A2
(1 NO.OF)
SCALE:1:50



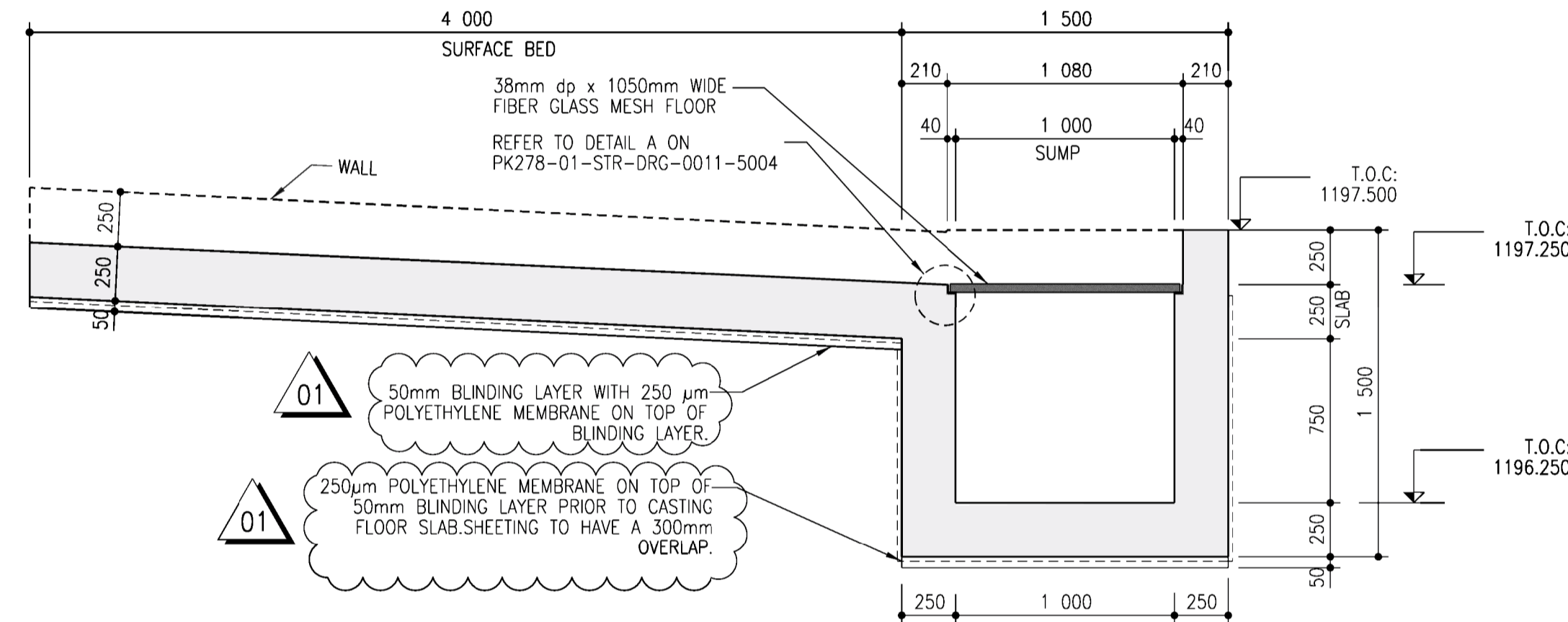
PLAN VIEW ON TYPE A1
(1 NO.OF)
SCALE:1:50



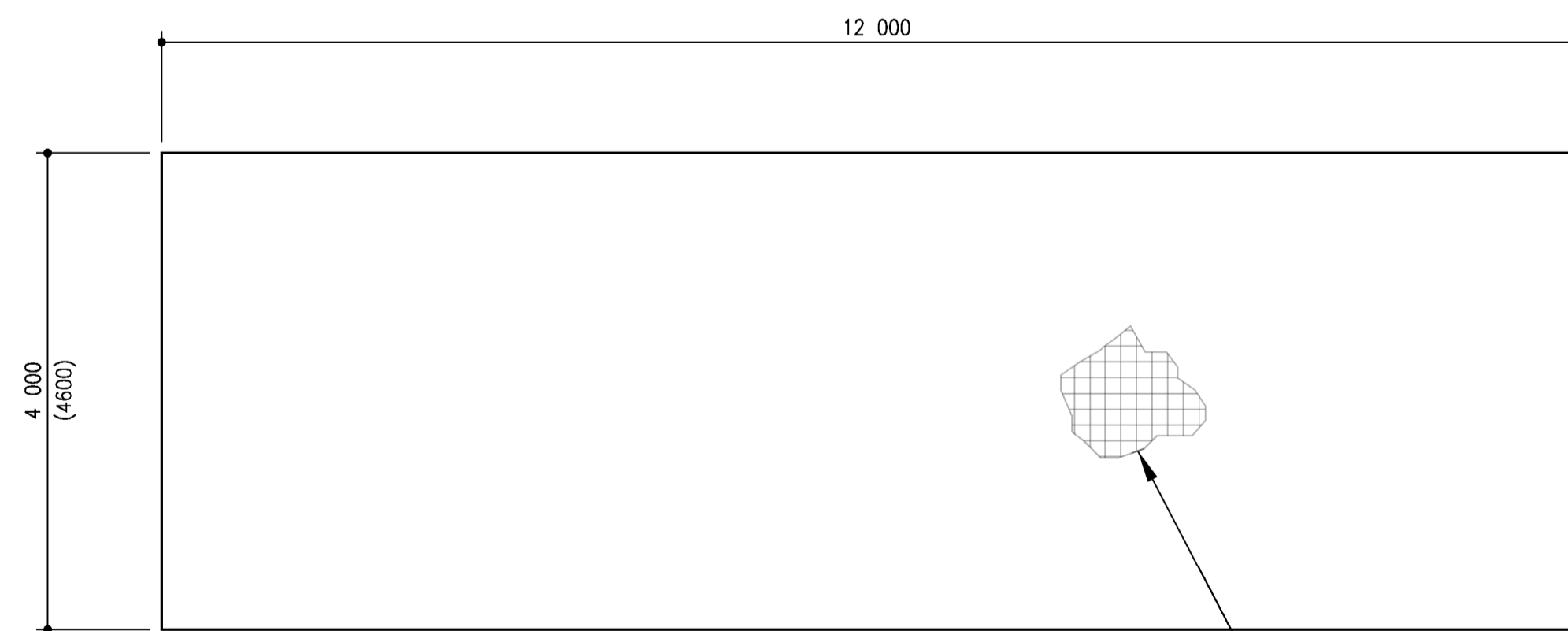
PLAN VIEW ON TYPE B
(10 NO.OF)
SCALE:1:50



SECTION A-A THROUGH SUMP
SCALE 1:25



SECTION B-B THROUGH SUMP
SCALE 1:25



PLAN VIEW ON TYPE D
(405 NO.OF)
SCALE:1:50

*NOTE: VALUES REPORTED IN BRACKETS
"()" APPLICABLE TO PANEL TYPE D2 ONLY.

TOP REINFORCEMENT: MESH REF 888
COVER TO REINFORCEMENT=60mm(min.)
MIN. LAP LENGTH=300 mm.
BOTTOM REINFORCEMENT:MESH REF 617
COVER TO REINFORCEMENT=40mm(min.)
MIN. LAP LENGTH=300mm

- 1. GENERAL NOTES:**
- THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL PREVAIL IN CASE OF ANY CONFLICTS.
 - ALL SETTING OUT DIMENSIONS SHALL BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES OR OMISSIONS SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.
 - NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS.
 - BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - CONCRETE FACES TO FORMED FACES: ALL EXPOSED FACES CLASS F3 ALL OTHER FACES CLASS F1
 - CONCRETE FACES TO UNFORMED FACES: ALL SURFACES CLASS-U2
- 2. EARTHWORKS NOTES:**
- THE FOUNDING LEVELS GIVEN ON THE DRAWINGS ARE ANTICIPATED LEVELS. THE ACTUAL FOUNDING LEVELS SHALL BE DETERMINED ON SITE BY THE ENGINEER.
 - MINIMUM DEPTH OF EXCAVATION TO SLABS ON GROUND SHALL BE 300MM TEMPORARILY STOCKPILE IN-SITU MATERIAL FOR INSPECTION AND TESTING FOR USE AS FILL MATERIAL.
 - OVER-EXCAVATE, RIP AND SCARIFY TO FOUNDING LEVEL BY 150MM AND RECOMPACT IN-SITU MATERIAL TO 93% MOD AASHTO.
 - BACKFILL AND COMPACTION OF SELECT G5+ FILL LAYERS (G7 MATERIAL OR BETTER) TO BE CONSTRUCTED NOT THICKER THAN 150mm TO 93% MOD AASHTO. MINIMUM DESIGN CBR OF LAYER WORK = 15.
- 3. CONCRETE NOTES:**
- ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
 - CONCRETE SHALL BE "STRENGTH GRADE CONCRETE (MPA)" / "MAXIMUM STONE SIZE (MM)" AS SPECIFIED UNLESS OTHERWISE STATED IN ACCORDANCE WITH PROJECT SPECIFICATION (U.N.O.):

MASS CONCRETE	15/19
BLINDING	15/19
WALLS	40/19
SLABS	40/19
GROUT	40/19
 - 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.
 - UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:

SLABS (TOP OF)-	60MM
SLABS (BOTTOM OF)-	40MM
OTHER-	50MM
 - ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
 - CONCRETE SHALL BE CAST AS LONG CONTINUOUS STRIPS. 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.
 - ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.
 - NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
 - ALL NON-SHUTTERED CONCRETE SURFACES SHALL HAVE A WOOD FLOAT FINISH.
 - ALL EXPANSION AND CONSTRUCTION JOINTS TO HAVE WATER STOPS OF APPROVED DESIGN AS PER SPECIFICATION.
 - INTERFACE BETWEEN PIPE AND STRUCTURE WALL TO BE GROUTED WITH NON-SHRINK GROUT OF APPROVED DESIGN TO FORM WATER TIGHT SEAL.
 - CURING OF SLABS SHALL BE BY CONTINUOUS WETTING TO MAINTAIN DAMP SURFACE CONDITIONS. CURING OF CONCRETE SHALL OCCUR FOR A MINIMUM OF (7 DAYS) AFTER PLACING OR SUCH EXTENDED PERIODS AS THE RESIDENT ENGINEER MAY INSTRUCT.
- 4. FOUNDATIONS:**
- EXCAVATIONS FOR FOUNDATIONS SHALL BE KEPT FREE OF WATER AT ALL TIMES.
 - ALL EXCAVATIONS SHALL BE INSPECTED AND APPROVED BEFORE BLINDING IS Laid.
 - NO CONCRETE SHALL BE CAST BEFORE REINFORCEMENT HAS BEEN CHECKED AND APPROVED BY THE ENGINEER.
- 5. LEGEND:**
- SOP-SETTING OUT POINT
C.W.-CONSTRUCTION WATER JOINT
T.O.C.-TOP OF CONCRETE
F.G.L-FINISH GROUND LEVEL
N.G.L-NATURAL GROUND LEVEL
O.D-OUTER DIAMETER
RC-REINFORCED CONCRETE
EXT.-EXTENSION
ALT.-ALTERNATIVE
NO.-NUMBER
CQ-COMMERCIAL QUALITY
ELA-EQUAL LEG LENGTH

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
L.RAMOSHABA	O.MOHLLOANE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-07-10	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	SCALE	REV
PK278-01-STR-DRG-0029-5003		01

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
01	2024-07-10	UPDATE TO DPM SPECIFICATION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

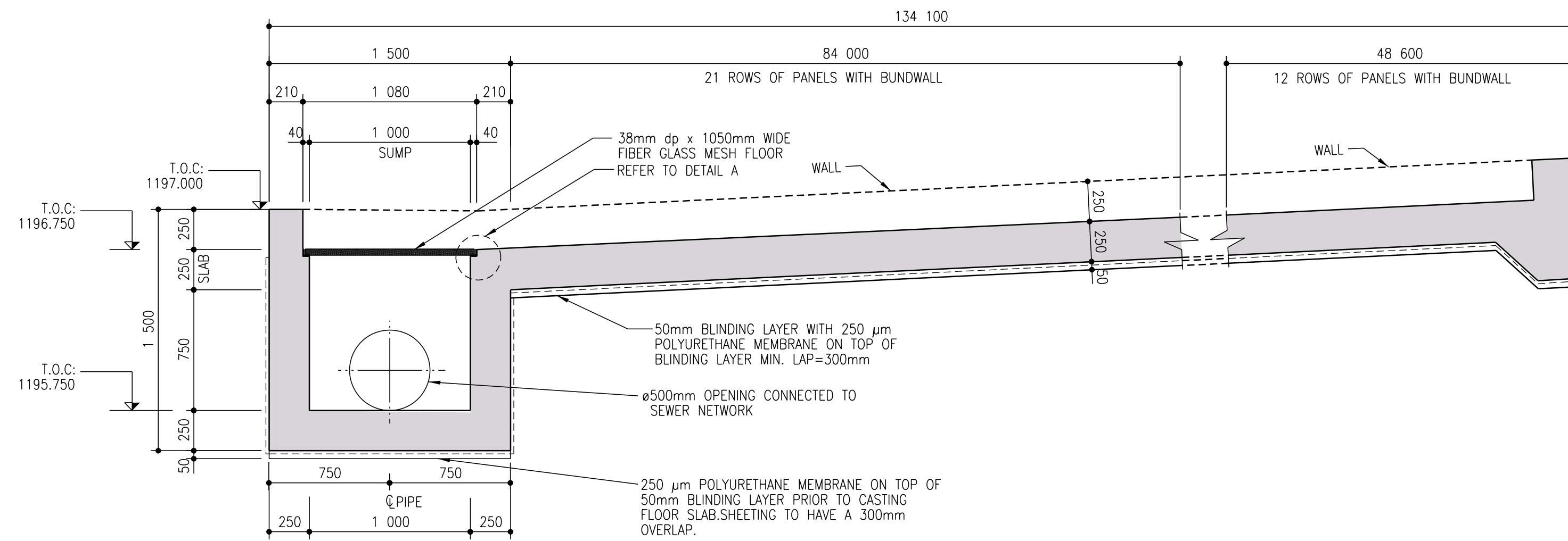
CLIENT _____ DATE _____

PROJECT

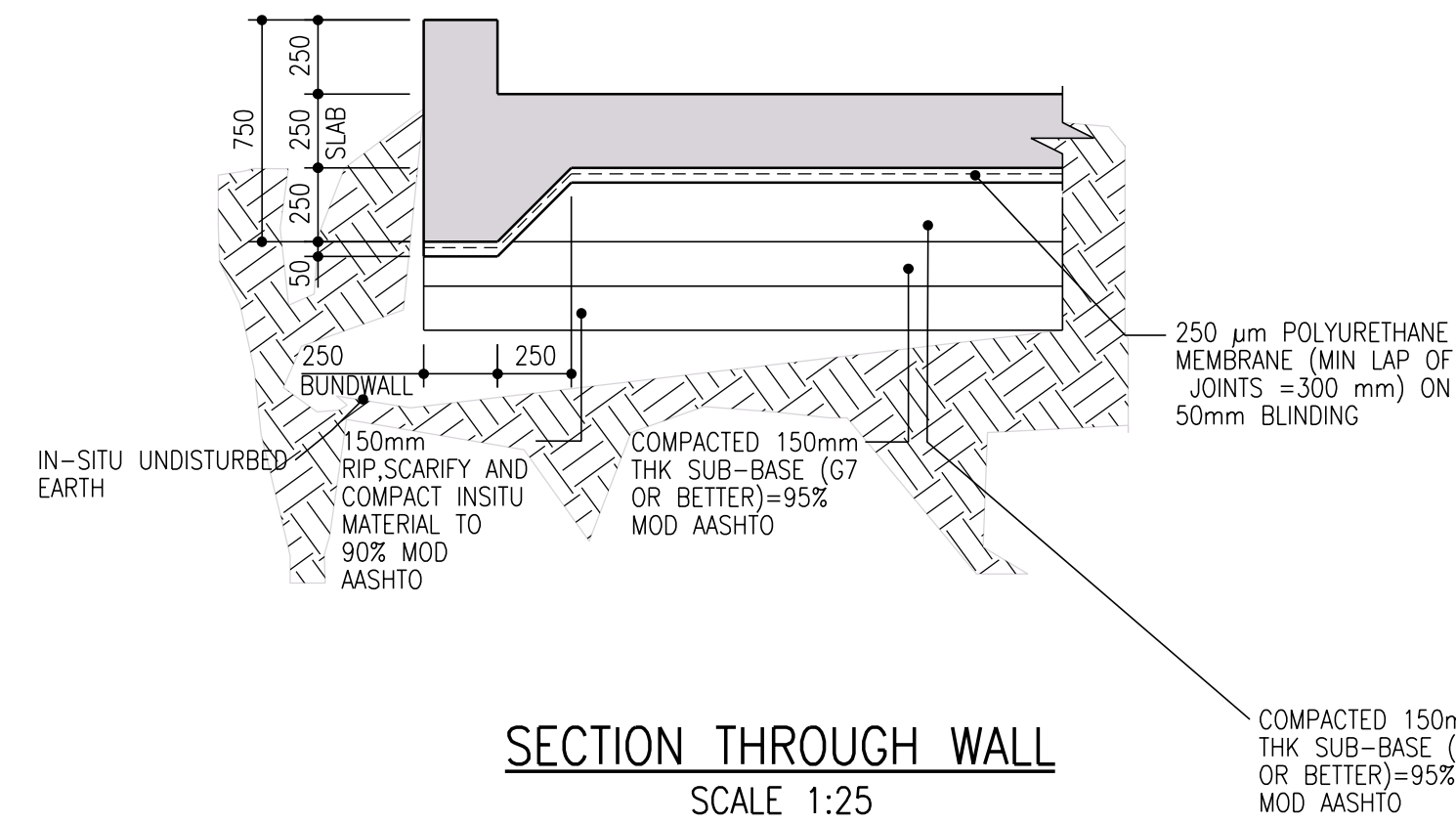
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

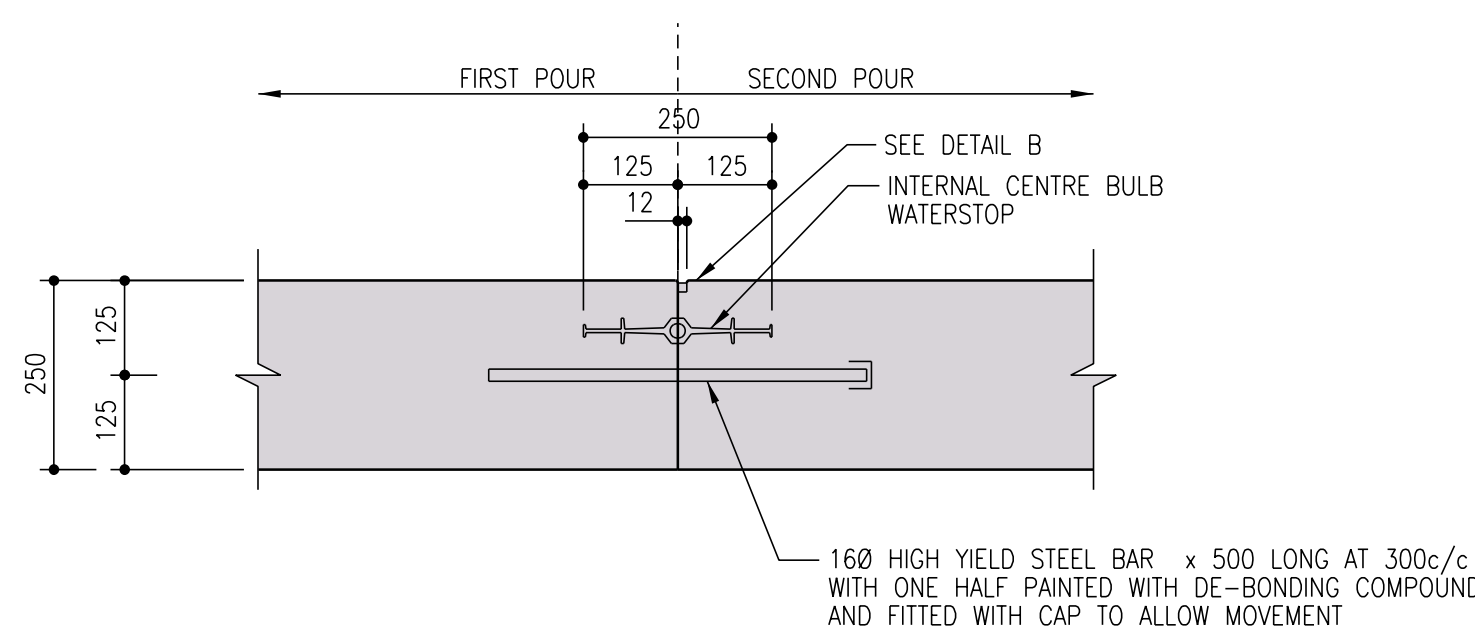
SLUDGE DRYING BED PANEL DETAILS



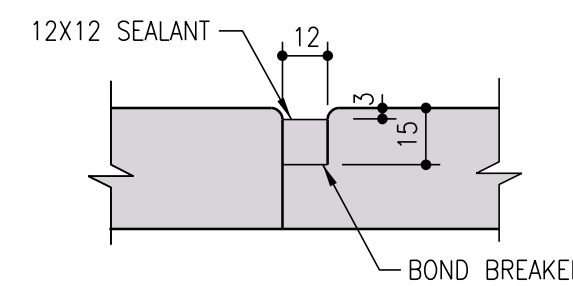
SECTION A-A THROUGH SUMP
SCALE 1:25



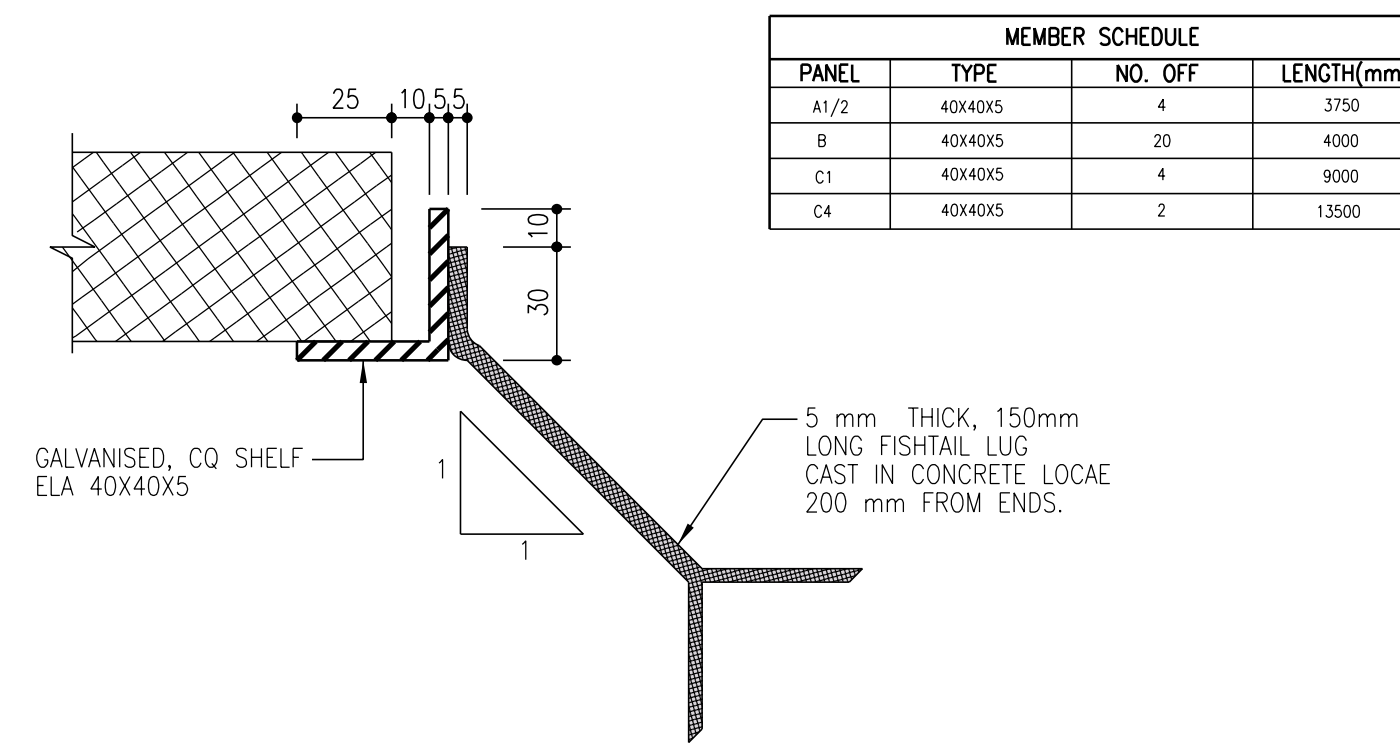
SECTION THROUGH WALL
SCALE 1:25



DETAIL A: TYPICAL DETAIL ON
CONSTRUCTION WATER JOINT
SCALE 1:10



DETAIL B
SCALE 1:2



DETAIL A: FLOOR GRATING SUPPORT
SCALE 1:2

MEMBER SCHEDULE			
PANEL	TYPE	NO. OFF	LENGTH(mm)
A1/2	40x40x5	4	3750
B	40x40x5	20	4000
C1	40x40x5	4	9000
C4	40x40x5	2	13500

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 - NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS.
 - BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - CONCRETE FACES TO FORMED FACES:
ALL EXPOSED FACES CLASS F3
ALL OTHER FACES CLASS F1
 - CONCRETE FACES TO UNFORMED FACES:
ALL SURFACES CLASS-U2

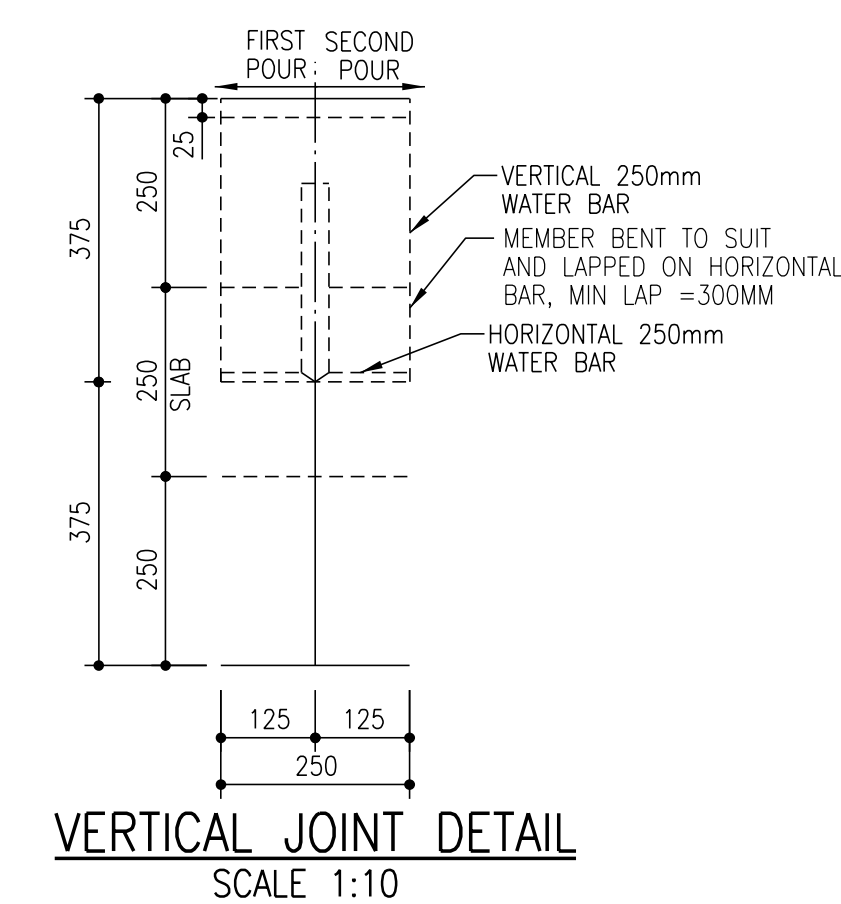
2. EARTHWORKS NOTES:
- THE FOUNDING LEVELS GIVEN ON THE DRAWINGS ARE ANTICIPATED LEVELS. THE ACTUAL FOUNDING LEVELS SHALL BE DETERMINED ON SITE BY THE ENGINEER.
 - MINIMUM DEPTH OF EXCAVATION TO SLABS ON GROUND SHALL BE 300MM. TEMPORARILY STOCKPILE IN-SITU MATERIAL FOR INSPECTION AND TESTING FOR USE AS FILL MATERIAL.
 - OVER-EXCAVATE, RIP AND SCARIFY TO FOUNDING LEVEL BY 150MM AND RECOMPACT IN-SITU MATERIAL TO 93% MOD AASHTO.
 - BACKFILL AND COMPACTION OF SELECT G5+ FILL LAYERS (G7 MATERIAL OR BETTER) TO BE CONSTRUCTED NOT THICKER THAN 150mm TO 93% MOD AASHTO. MINIMUM DESIGN CBR OF LAYER WORK = 15.

3. CONCRETE NOTES:
- ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
 - CONCRETE SHALL BE "STRENGTH GRADE CONCRETE (MPA)" / "MAXIMUM STONE SIZE (MM)" AS SPECIFIED BELOW UNLESS OTHERWISE STATED IN ACCORDANCE WITH PROJECT SPECIFICATION (U.N.D.):
MASS CONCRETE 15/19
BLINDING 15/19
WALLS 40/19
SLABS 40/19
GROUT 40/19
 - 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.
 - UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:
-SLABS (TOP OF)- 60MM
-SLABS (BOTTOM OF)- 40MM
-OTHER- 50MM

- ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
- CONCRETE SHALL BE CAST AS LONG CONTINUOUS STRIPS. 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.
- ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.
- NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
- ALL NON-SHUTTERED CONCRETE SURFACES SHALL HAVE A WOOD FLOAT FINISH.
- ALL EXPANSION AND CONSTRUCTION JOINTS TO HAVE WATER STOPS OF APPROVED DESIGN AS PER SPECIFICATION.
- INTERFACE BETWEEN PIPE AND STRUCTURE WALL TO BE GROUTED WITH NON-SHRINK GROUT OF APPROVED DESIGN TO FORM WATER TIGHT SEAL.
- CURING OF SLABS SHALL BE BY CONTINUOUS WETTING TO MAINTAIN DAMP SURFACE CONDITIONS. CURING OF CONCRETE SHALL OCCUR FOR A MINIMUM OF (7 DAYS) AFTER PLACING OR SUCH EXTENDED PERIODS AS THE RESIDENT ENGINEER MAY INSTRUCT.

4. FOUNDATIONS:
- EXCAVATIONS FOR FOUNDATIONS SHALL BE KEPT FREE OF WATER AT ALL TIMES.
 - ALL EXCAVATIONS SHALL BE INSPECTED AND APPROVED BEFORE BLINDING IS LAID.
 - NO CONCRETE SHALL BE CAST BEFORE REINFORCEMENT HAS BEEN CHECKED AND APPROVED BY THE ENGINEER.

5. LEGEND:
- SOP-SETTING OUT POINT
 - C.W.J-CONSTRUCTION WATER JOINT
 - T.O.C-TOP OF CONCRETE
 - F.G.L-FINISH GROUND LEVEL
 - N.G.L-NATURAL GROUND LEVEL
 - O.D-OUTER DIAMETER
 - RC-REINFORCED CONCRETE
 - EXT-EXTENSION
 - ALT-ALTERNATIVE
 - NO-NUMBER
 - CO-COMMERCIAL QUALITY
 - ELA-EQUAL LEG LENGTH



VERTICAL JOINT DETAIL
SCALE 1:10

CONSTRUCTION DRAWING

- NOTES
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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

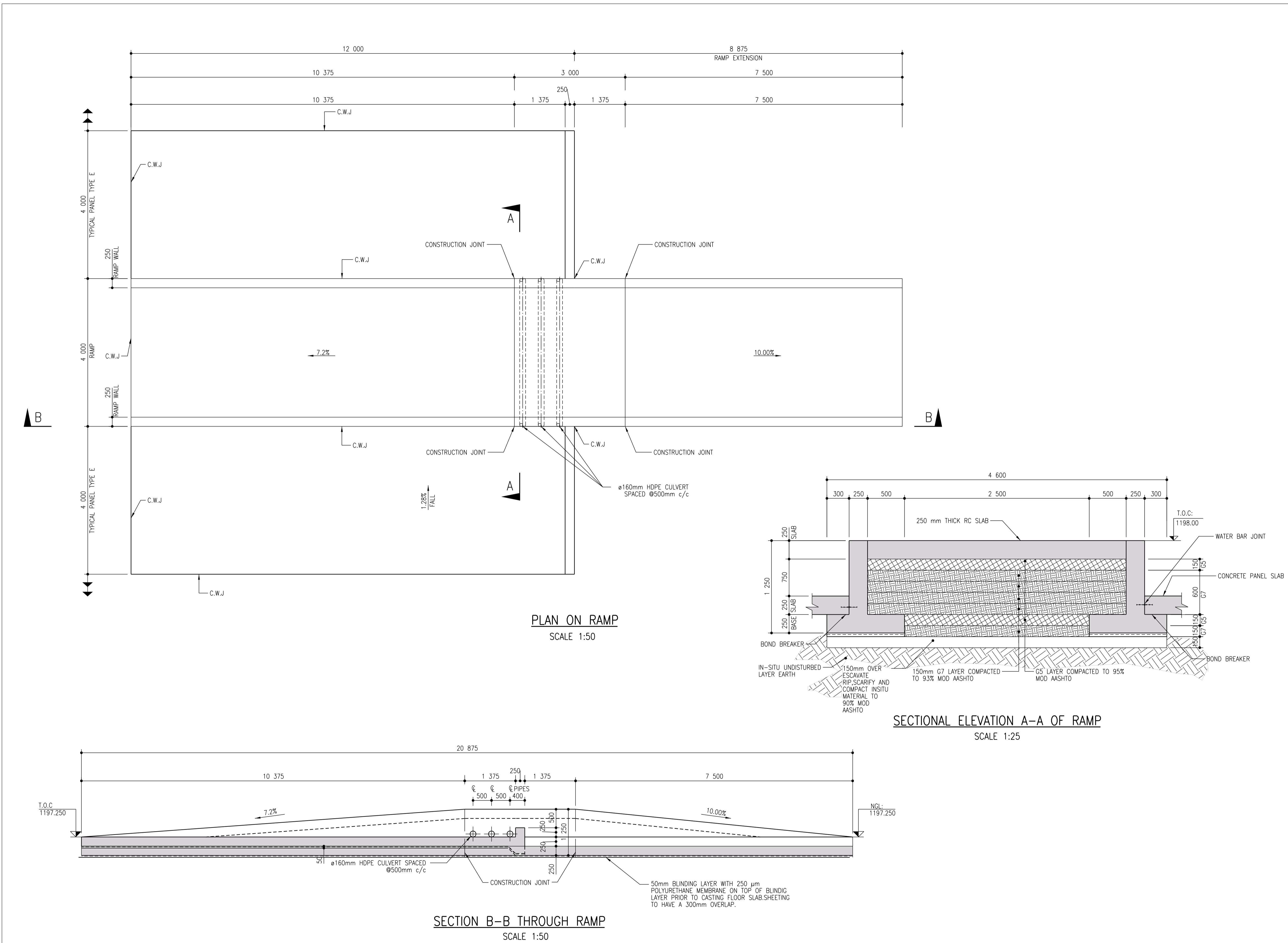
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SLUDGE DRYING BED
CONCRETE DETAILS**

DESIGNED	DRAWN	CHECKED
L.RAMOSHABA	O.MOHOLOANE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-STR-DRG-00029-5004		00



- 1. GENERAL NOTES:**
- 1.1 THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL COVER IN CASE OF ANY CONFLICTS.
 - 1.2 ALL SETTING OUT DIMENSIONS SHALL BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES OR OMISSIONS SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.
 - 1.3 NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS.
 - 1.4 BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - 1.5 CONCRETE FACES TO FORMED FACES:
 - ALL EXPOSED FACES CLASS F3
 - ALL OTHER FACES CLASS F1
 - 1.6 CONCRETE FACES TO UNFORMED FACES:
 - ALL SURFACES CLASS-U2
- 2. EARTHWORKS NOTES:**
- 2.1 THE FOUNDING LEVELS GIVEN ON THE DRAWINGS ARE ANTICIPATED LEVELS. THE ACTUAL FOUNDING LEVELS SHALL BE DETERMINED ON SITE BY THE ENGINEER.
 - 2.2 MINIMUM DEPTH OF EXCAVATION TO SLABS ON GROUND SHALL BE 300MM TEMPORARILY STOCKPILE IN-SITU MATERIAL FOR INSPECTION AND TESTING FOR USE AS FILL MATERIAL.
 - 2.3 OVER-EXCAVATE, RIP AND SCARIFY TO FOUNDING LEVEL BY 150MM AND RECOMPACT IN-SITU MATERIAL TO 93% MOD AASHTO.
 - 2.4 BACKFILL AND COMPACTION OF SELECT G5+ FILL LAYERS (G7 MATERIAL OR BETTER) TO BE CONSTRUCTED NOT THICKER THAN 150mm TO 93% MOD AASHTO. MINIMUM DESIGN CBR OF LAYER WORK = 15.
- 3. CONCRETE NOTES:**
- 3.1 ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
 - 3.2 CONCRETE SHALL BE "STRENGTH GRADE CONCRETE (MPA)" / "MAXIMUM STONE SIZE (MM)" AS SPECIFIED BELOW UNLESS OTHERWISE STATED IN ACCORDANCE WITH PROJECT SPECIFICATION (U.N.O.):

MASS CONCRETE	15/19
BLINDING	15/19
WALLS	40/19
SLABS	40/19
GROUT	40/19
 - 3.3 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.
 - 3.4 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:
 - SLABS (TOP OF) - 60MM
 - SLABS (BOTTOM OF) - 40MM
 - OTHER - 50MM
 - 3.5 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
 - 3.6 CONCRETE SHALL BE CAST AS LONG CONTINUOUS STRIPS. 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.
 - 3.7 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.
 - 3.8 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
 - 3.9 ALL NON-SHUTTERED CONCRETE SURFACES SHALL HAVE A WOOD FLOAT FINISH.
 - 3.10 ALL EXPANSION AND CONSTRUCTION JOINTS TO HAVE WATER STOPS OF APPROVED DESIGN AS PER SPECIFICATION.
 - 3.11 INTERFACE BETWEEN PIPE AND STRUCTURE WALL TO BE GROUTED WITH NON-SHRINK GROUT OF APPROVED DESIGN TO FORM WATER TIGHT SEAL.
 - 3.12 CURING OF SLABS SHALL BE BY CONTINUOUS WETTING TO MAINTAIN DAMP SURFACE CONDITIONS. CURING OF CONCRETE SHALL OCCUR FOR A MINIMUM OF 7 DAYS AFTER PLACING OR SUCH EXTENDED PERIODS AS THE RESIDENT ENGINEER MAY INSTRUCT.
- 4. FOUNDATIONS:**
- 4.1 EXCAVATIONS FOR FOUNDATIONS SHALL BE KEPT FREE OF WATER AT ALL TIMES.
 - 4.2 ALL EXCAVATIONS SHALL BE INSPECTED AND APPROVED BEFORE BLINDING IS Laid.
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- 5. LEGEND:**
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 - C.W.J - CONSTRUCTION WATER JOINT
 - T.O.C - TOP OF CONCRETE
 - F.G.L - FINISH GROUND LEVEL
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 - O.D - OUTER DIAMETER
 - RC - REINFORCED CONCRETE
 - EXT - EXTENSION
 - ALT - ALTERNATIVE
 - NO - NUMBER
 - CQ - COMMERCIAL QUALITY
 - ELA - EQUAL LEG LENGTH

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.
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CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

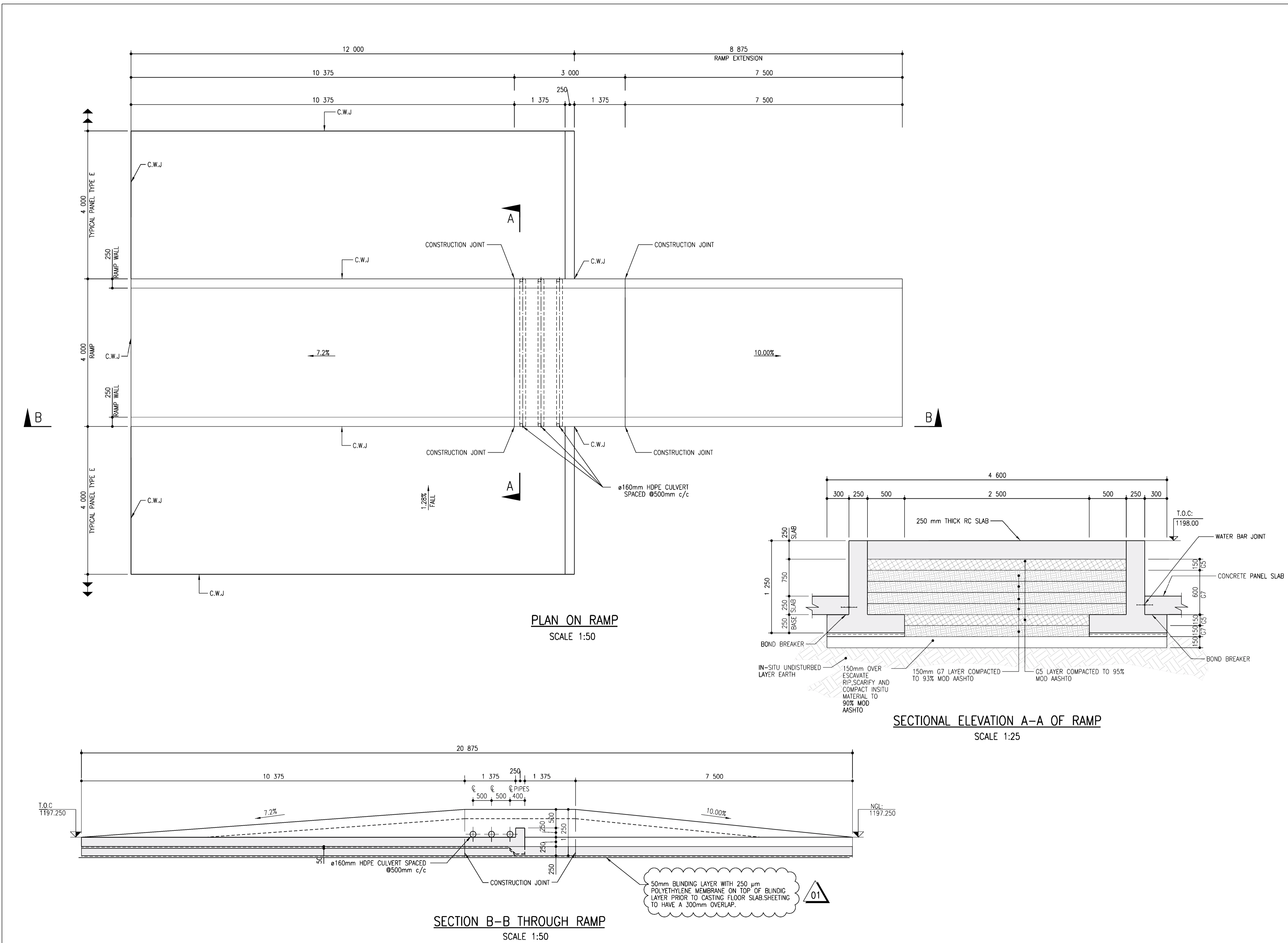
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SLUDGE DRYING BED RAMP CONCRETE DETAILS

DESIGNED	DRAWN	CHECKED
L.RAMOSHABA	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-STR-DRG-0029-5005		00



- 1. GENERAL NOTES:**
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 - 1.4 BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
 - 1.5 CONCRETE FACES TO FORMED FACES:
ALL EXPOSED FACES CLASS F3
ALL OTHER FACES CLASS F1
 - 1.6 CONCRETE FACES TO UNFORMED FACES:
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- 2. EARTHWORKS NOTES:**
- 2.1 THE FOUNDING LEVELS GIVEN ON THE DRAWINGS ARE ANTICIPATED LEVELS. THE ACTUAL FOUNDING LEVELS SHALL BE DETERMINED ON SITE BY THE ENGINEER.
 - 2.2 MINIMUM DEPTH OF EXCAVATION TO SLABS ON GROUND SHALL BE 50MM TEMPORARILY STOCKPILE IN-SITU MATERIAL FOR INSPECTION AND TESTING FOR USE AS FILL MATERIAL.
 - 2.3 OVER-EXCAVATE, RIP AND SCARIFY TO FOUNDING LEVEL BY 150MM AND RECOMPACT IN-SITU MATERIAL TO 93% MOD AASHTO.
 - 2.4 BACKFILL AND COMPACTION OF SELECT G5+ FILL LAYERS (G7 MATERIAL OR BETTER) TO BE CONSTRUCTED NOT THICKER THAN 150mm TO 93% MOD AASHTO. MINIMUM DESIGN CBR OF LAYER WORK = 15.
- 3. CONCRETE NOTES:**
- 3.1 ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
 - 3.2 CONCRETE SHALL BE "STRENGTH GRADE CONCRETE (MPA)" / MAXIMUM STONE SIZE (MM) AS SPECIFIED BELOW UNLESS OTHERWISE STATED IN ACCORDANCE WITH PROJECT SPECIFICATION (U.N.O.):
MASS CONCRETE 15/19
BLINDING 15/19
WALLS 40/19
SLABS 40/19
GROUT 40/19
 - 3.3 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.
 - 3.4 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:
-SLABS (TOP OF) - 60MM
-SLABS (BOTTOM OF) - 40MM
-OTHER- 50MM
 - 3.5 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
 - 3.6 CONCRETE SHALL BE CAST AS LONG CONTINUOUS STRIPS. 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.
 - 3.7 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.
 - 3.8 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
 - 3.9 ALL NON-SHUTTERED CONCRETE SURFACES SHALL HAVE A WOOD FLOAT FINISH.
 - 3.10 ALL EXPANSION AND CONSTRUCTION JOINTS TO HAVE WATER STOPS OF APPROVED DESIGN AS PER SPECIFICATION.
 - 3.11 INTERFACE BETWEEN PIPE AND STRUCTURE WALL TO BE GROUTED WITH NON-SHRINK GROUT OF APPROVED DESIGN TO FORM WATER TIGHT SEAL.
 - 3.12 CURING OF SLABS SHALL BE BY CONTINUOUS WETTING TO MAINTAIN DAMP SURFACE CONDITIONS. CURING OF CONCRETE SHALL OCCUR FOR A MINIMUM OF (7 DAYS) AFTER PLACING OR SUCH EXTENDED PERIODS AS THE RESIDENT ENGINEER MAY INSTRUCT.
- 4. FOUNDATIONS:**
- 4.1 EXCAVATIONS FOR FOUNDATIONS SHALL BE KEPT FREE OF WATER AT ALL TIMES.
 - 4.2 ALL EXCAVATIONS SHALL BE INSPECTED AND APPROVED BEFORE BLINDING IS LAD.
 - 4.3 NO CONCRETE SHALL BE CAST BEFORE REINFORCEMENT HAS BEEN CHECKED AND APPROVED BY THE ENGINEER.
- 5. LEGEND:**
- SOP-SETTING OUT POINT
 - C.W.J-CONSTRUCTION WATER JOINT
 - T.O.C-TOP OF CONCRETE
 - F.G.L-FINISH GROUND LEVEL
 - N.G.L-NATURAL GROUND LEVEL
 - O.D-OUTER DIAMETER
 - RC-REINFORCED CONCRETE
 - EXT-EXTENSION
 - ALT-ALTERNATIVE
 - NO-NUMBER
 - CO-COMMERCIAL QUALITY
 - ELA-EQUAL LEG LENGTH

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
- 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
01	2024-07-10	UPDATE TO DPM SPECIFICATION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

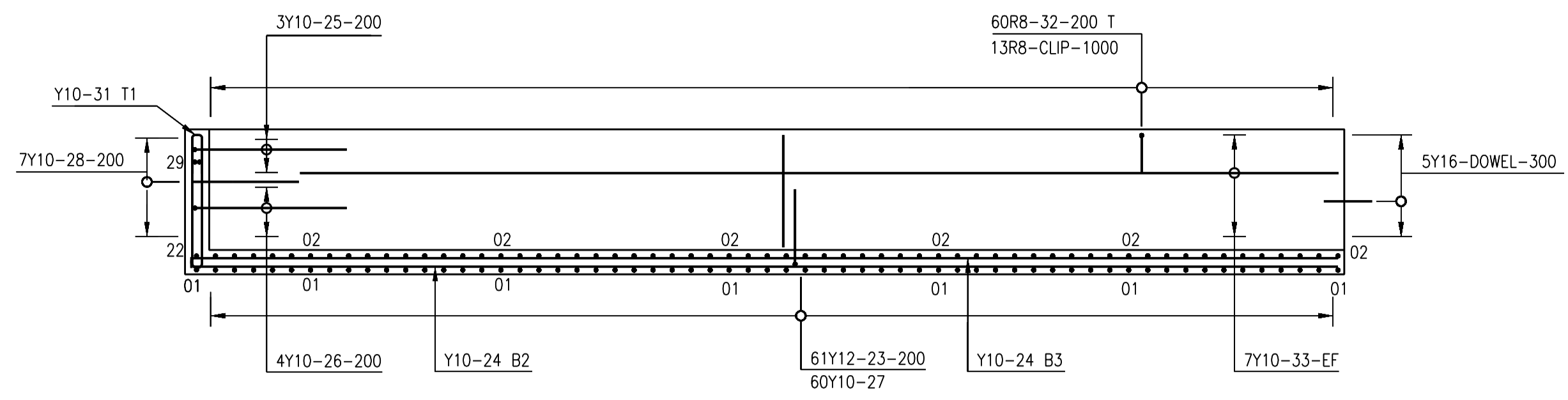
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

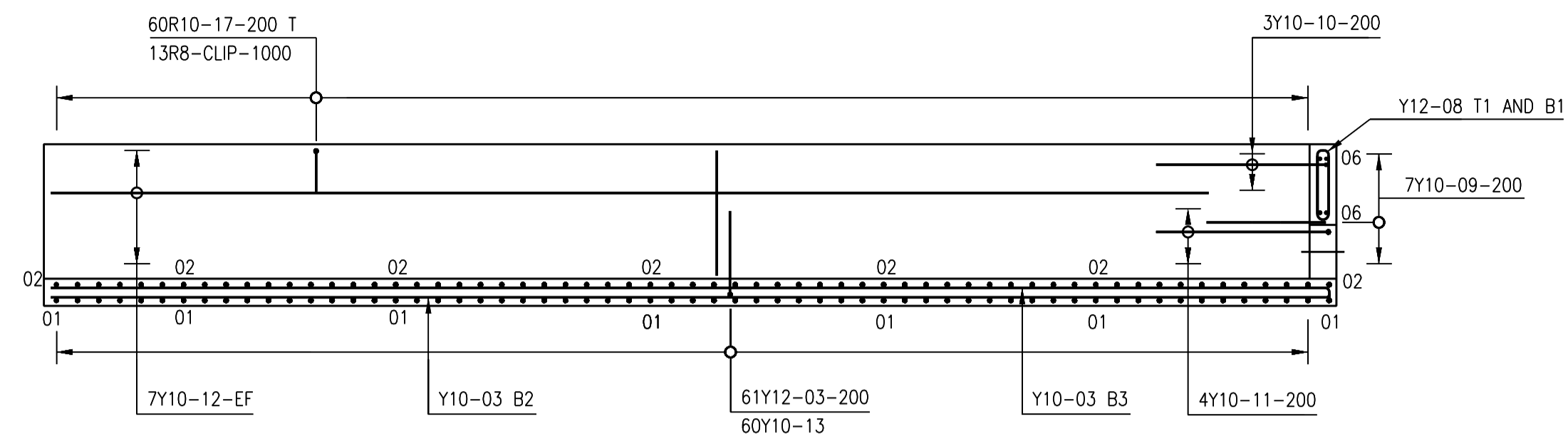
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SLUDGE DRYING BED RAMP CONCRETE DETAILS

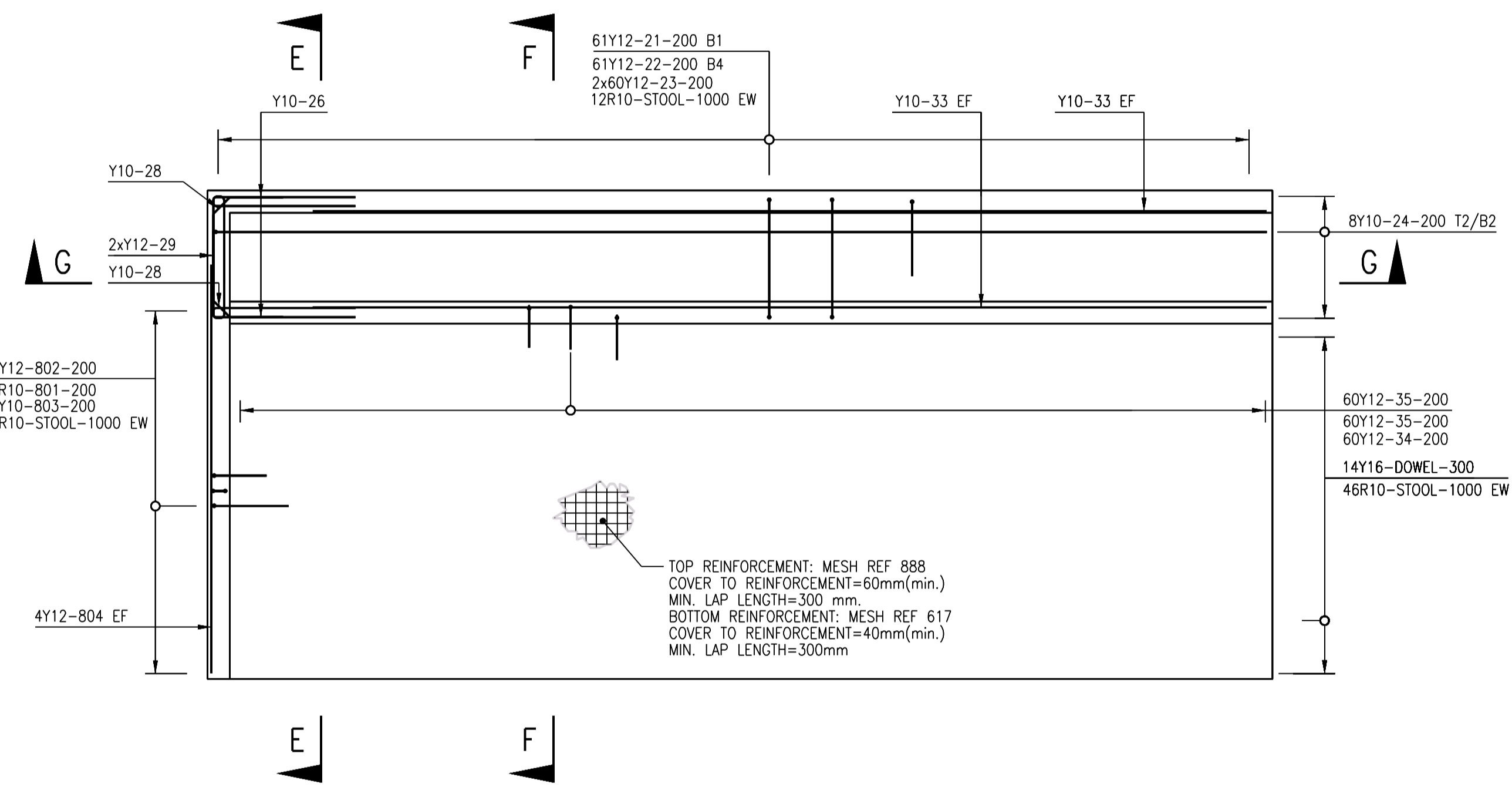
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L.RAMOSHABA	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-07-10	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5005	01	



SECTION G-G PANEL TYPE A1 SUMP
1 No. OFF
SCALE 1:50

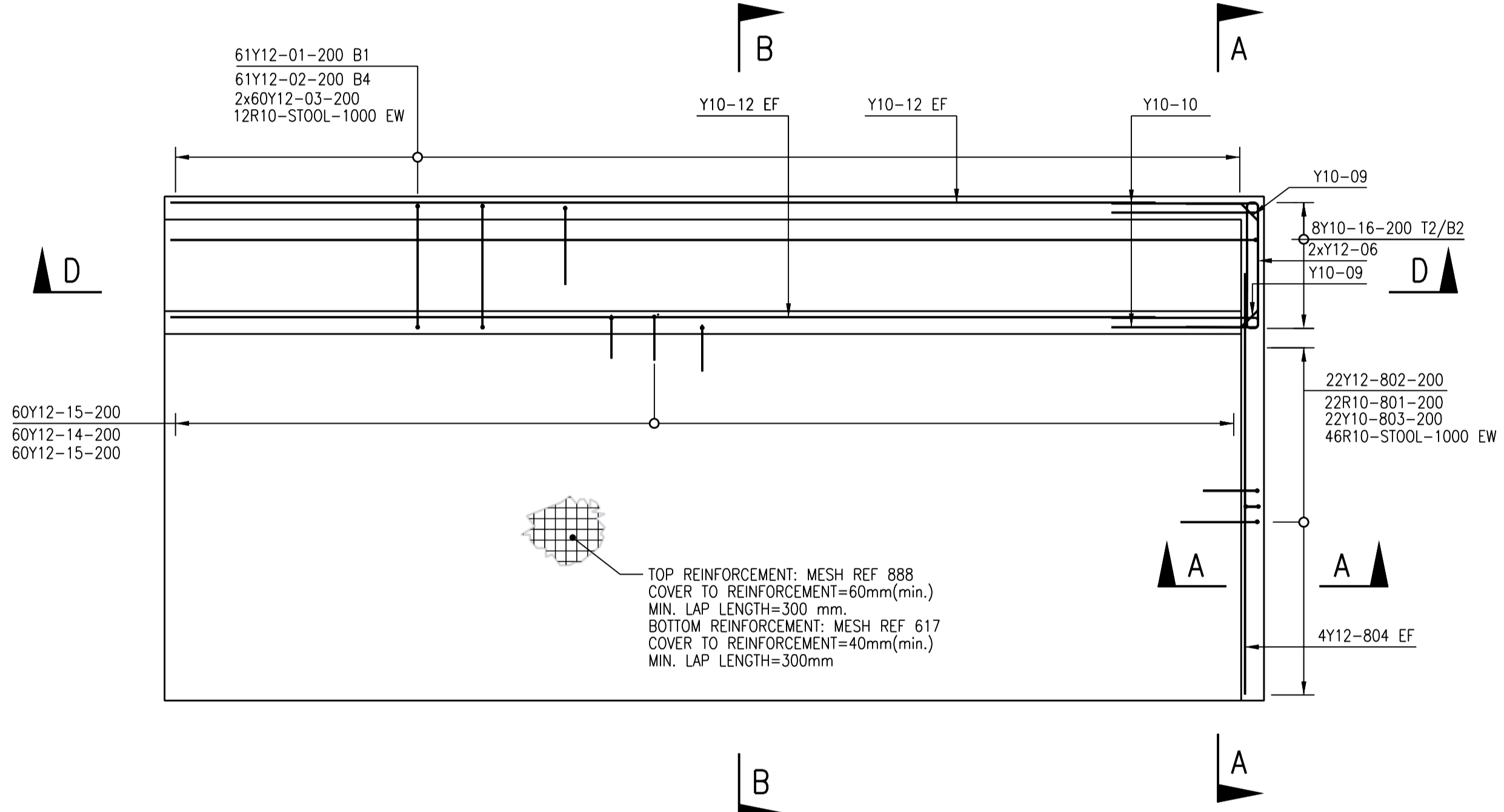


SECTION D-D PANEL TYPE A2 SUMP
1 No. OFF
SCALE 1:50



PLAN VIEW ON PANEL TYPE A1
1 No. OFF
SCALE 1:50

NOTE: VERTICAL BARS IN SUMP WALL OMITTED FOR CLARITY



PLAN VIEW ON PANEL TYPE A2
1 No. OFF
SCALE 1:50

NOTE: VERTICAL BARS IN SUMP WALL OMITTED FOR CLARITY

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- 2. REINFORCEMENT NOTES:**
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MILD STEEL BARS 250 MPa
HIGH YIELD STEEL BARS(85008) 500 MPa
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No. OFF: BAR TYPE: BAR DIA (BAR SHAPE) - BAR MARK - PITCH : POSITION AND/OR COMMENT.
e.g. 7#20(20)-09-125 B
9R25(20)-37-900 DOWELS
 - BAR DESIGNATION IS AS FOLLOWS:
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Y = GRADE B500B DEFORMED HIGH YIELD BARS COMPLYING WITH SANS 920:2011
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T = TOP FACE, B = BOTTOM FACE, NF = NEAR FACE, FF = FAR FACE.
EF = EACH FACE (BOTH NEAR AND FAR FACES).
ABR = ALTERNATE BARS REVERSED.
STG = ALTERNATE BARS STAGGERED BY THE AMOUNTS SHOWN
ALT = ALTERNATIVELY PLACED.
ADDITIONALLY, WHERE 3 OR MORE LAYERS OF REINFORCEMENT ARE USED, A NUMERICAL SUFFIX HAS BEEN USED TO INDICATE THE LAYER POSITION. LAYERS HAVE BEEN NUMBERED FROM OUTERMOST LAYER INWARDS UNLESS NOTED OTHERWISE.
 - BENDING AND SCHEDULING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH SANS 282.
 - MINIMUM ANCHORAGE AND LAP LENGTHS SHALL MEET THE CODE REQUIREMENTS. LAP LENGTHS FOR GRADE Y REINFORCEMENT IS 15 X BAR DIAMETER OF 300mm UNLESS NOTED OTHERWISE.
 - ALL REINFORCEMENT TO BE HOT-DIP GALVANISED IN ACCORDANCE WITH EN ISO 1461.

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

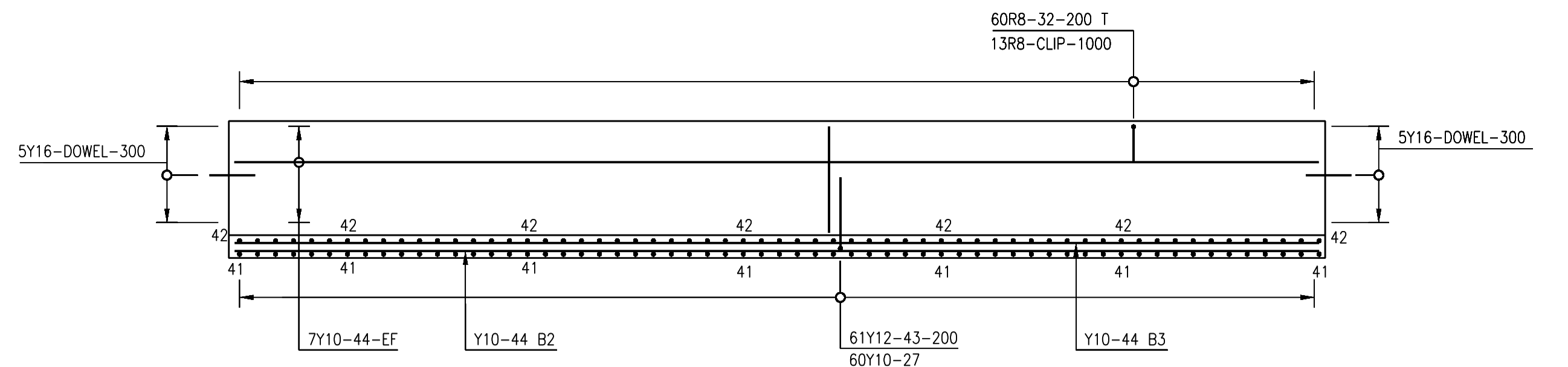
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

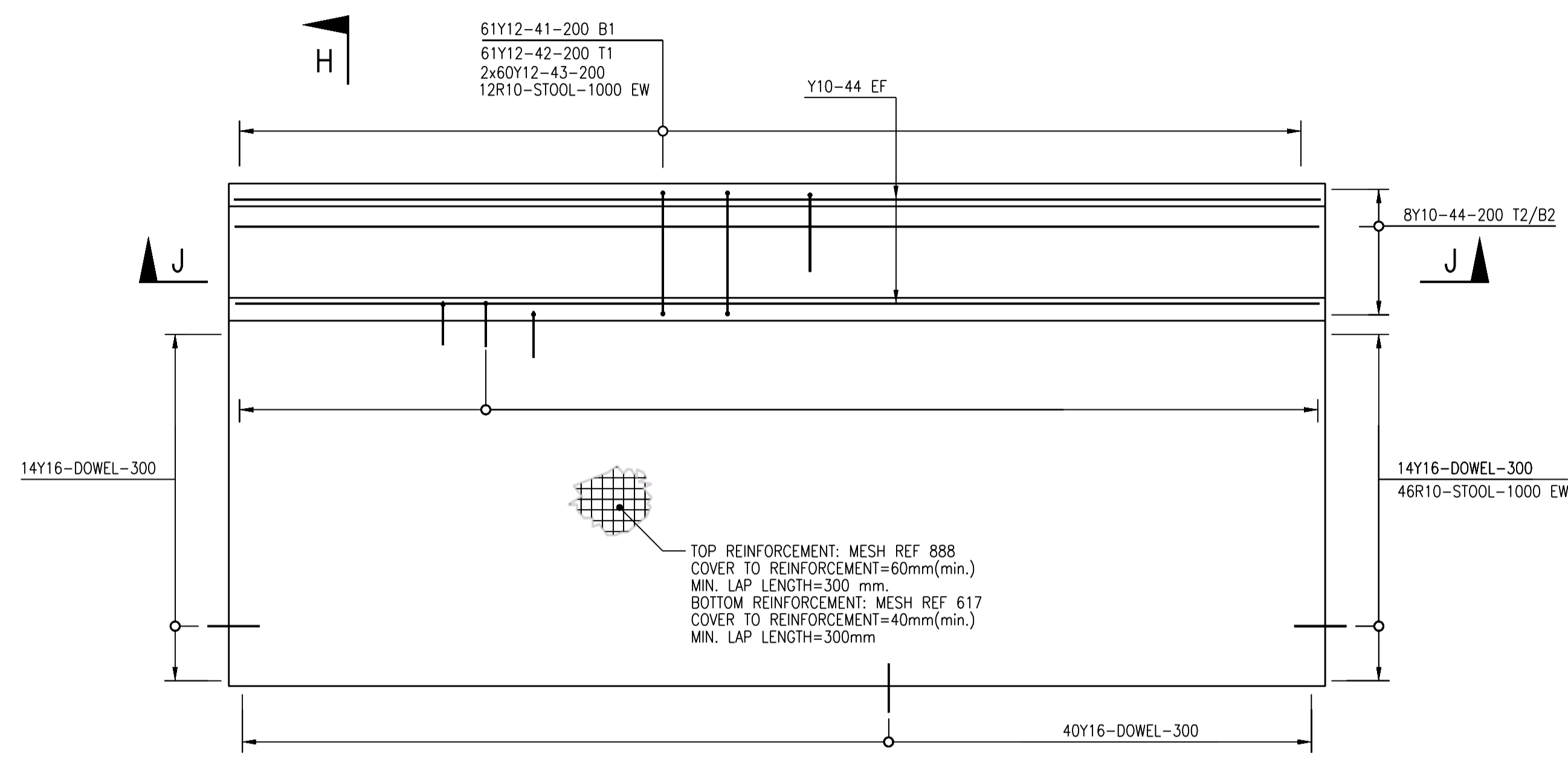
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SLUDGE DRYING BED PANEL REINFORCEMENT LAYOUT 1

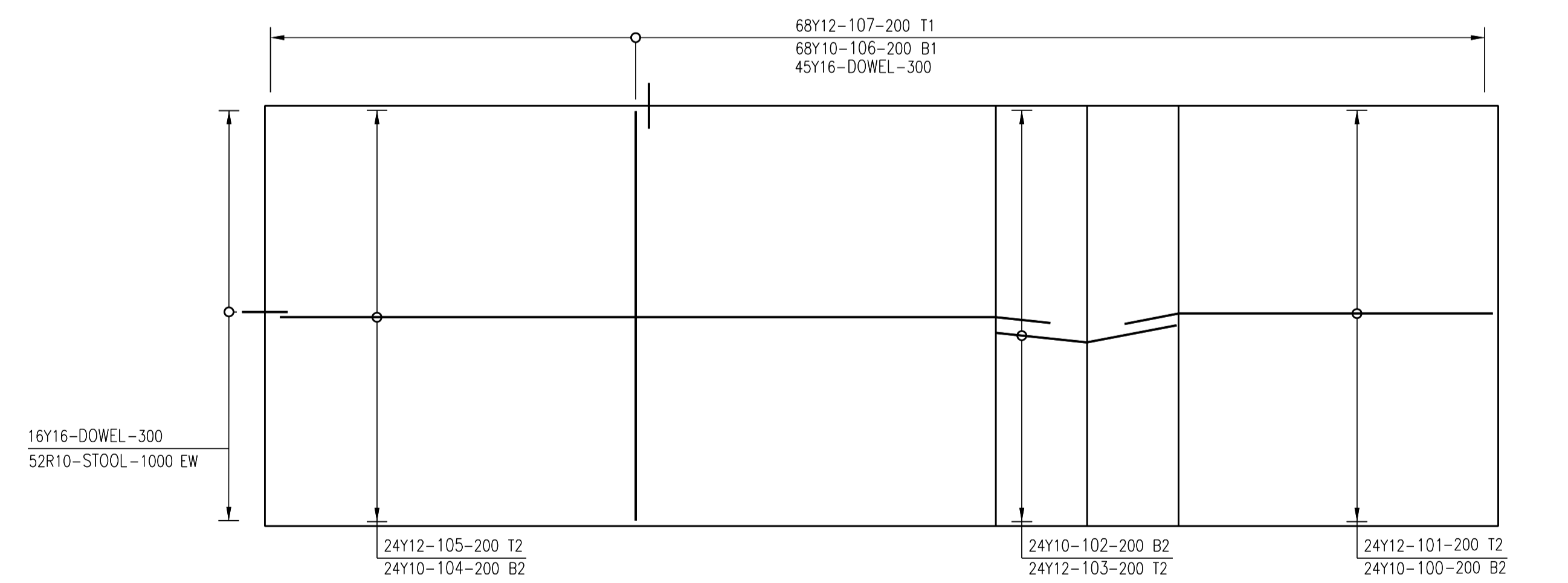
CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5006	00	



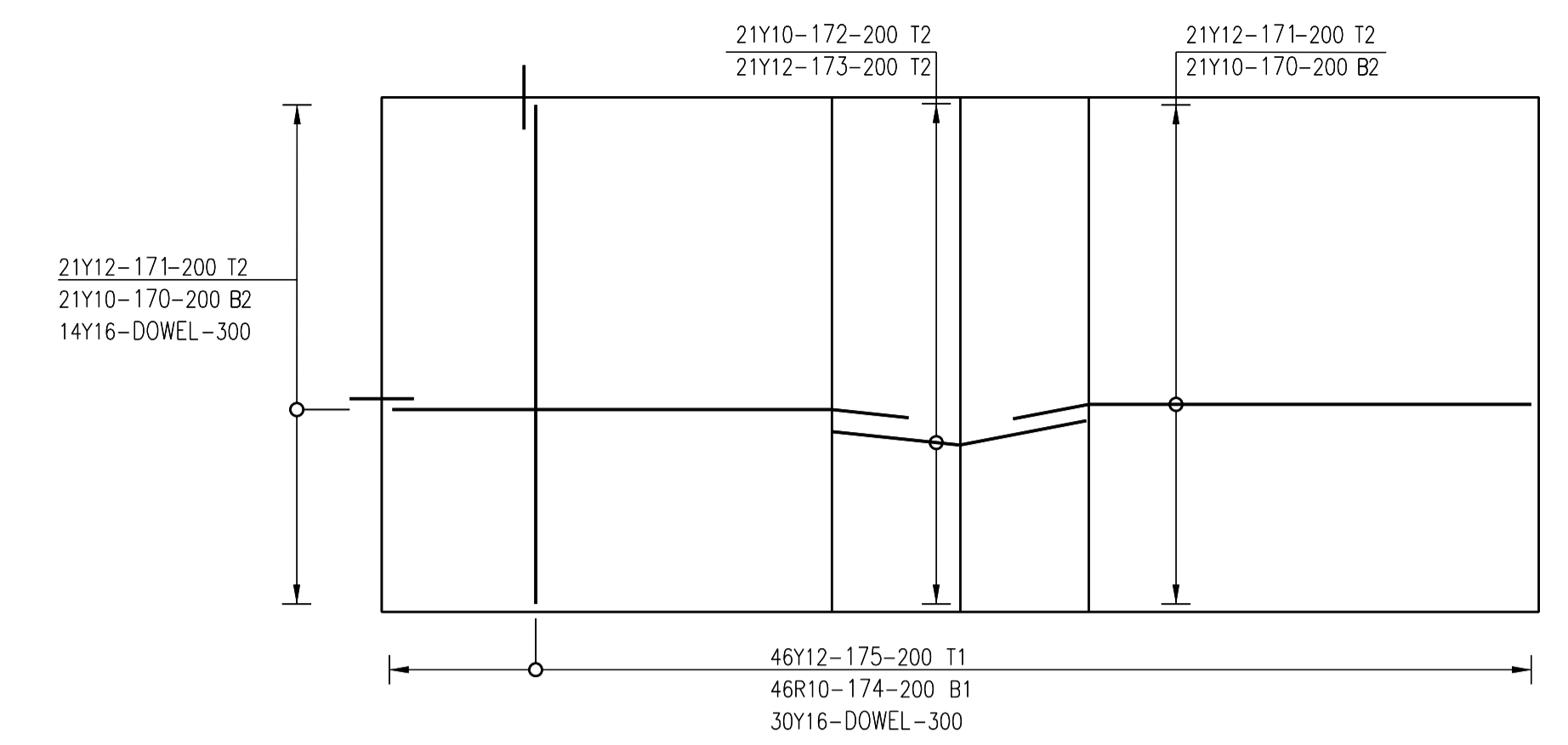
SECTION J-J PANEL TYPE B SUMP
10 No. OFF
SCALE 1:50



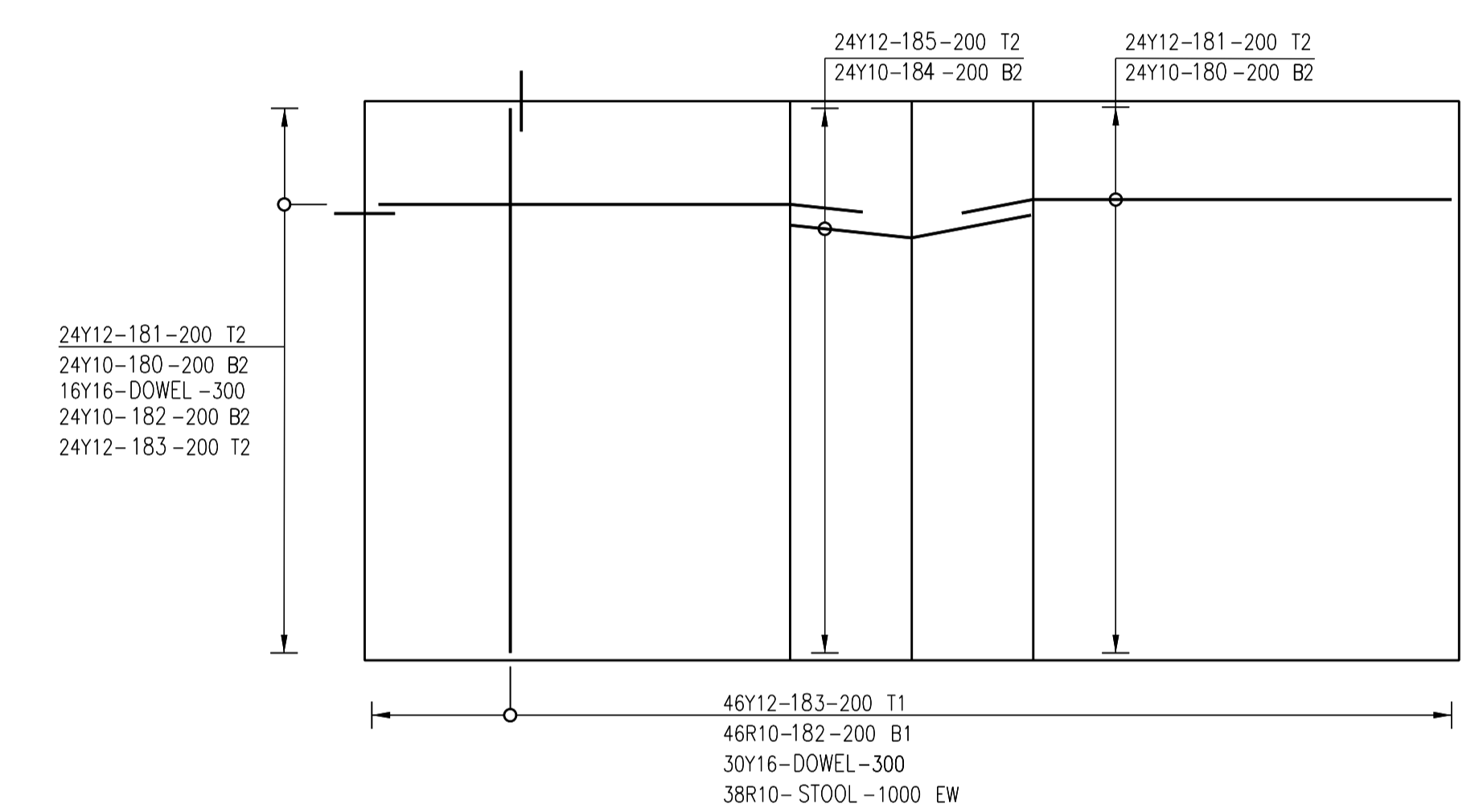
PLAN VIEW ON PANEL TYPE B
1 No. OFF
SCALE 1:50
NOTE: VERTICAL BARS IN SUMP WALL OMITTED FOR CLARITY



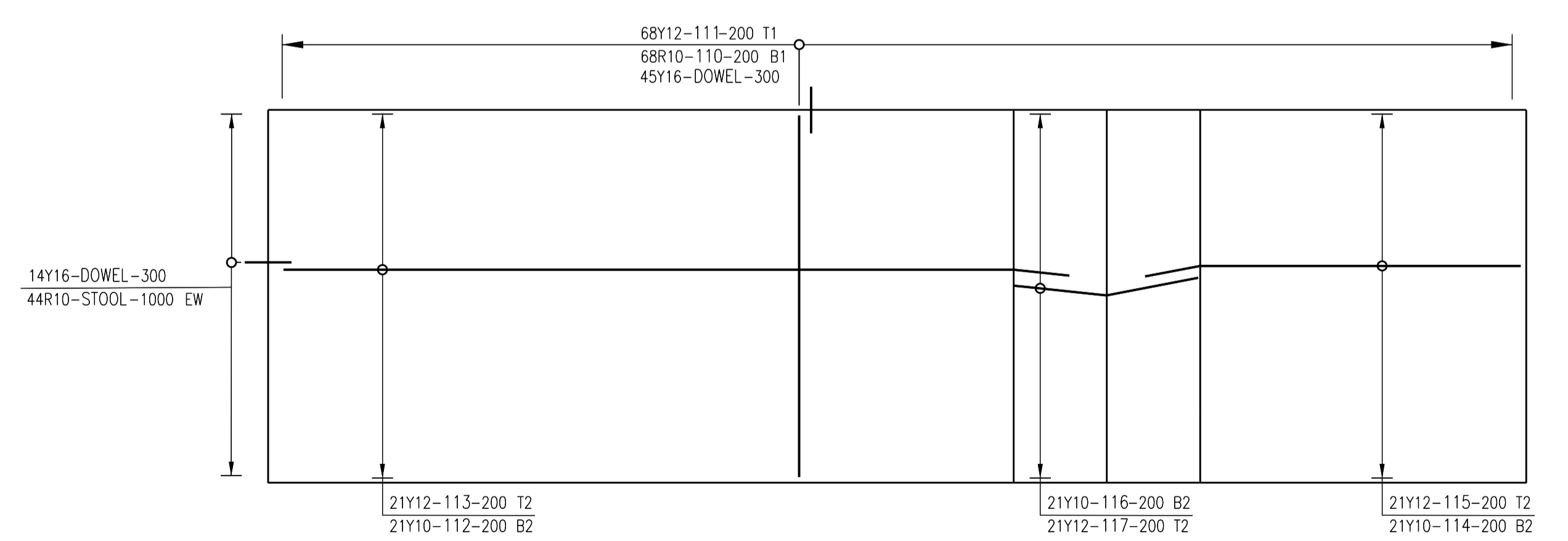
PLAN ON PANEL TYPE C3
1 No. OFF
SCALE 1:50



PLAN ON PANEL TYPE C1
85 No. OFF
SCALE 1:50



PLAN ON PANEL TYPE C2
2 No. OFF
SCALE 1:50



PLAN ON PANEL TYPE C4 AND K1
35 No. OFF
SCALE 1:50

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e.g. 7x20(20)-09-125 B
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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. DATE

CLIENT DATE

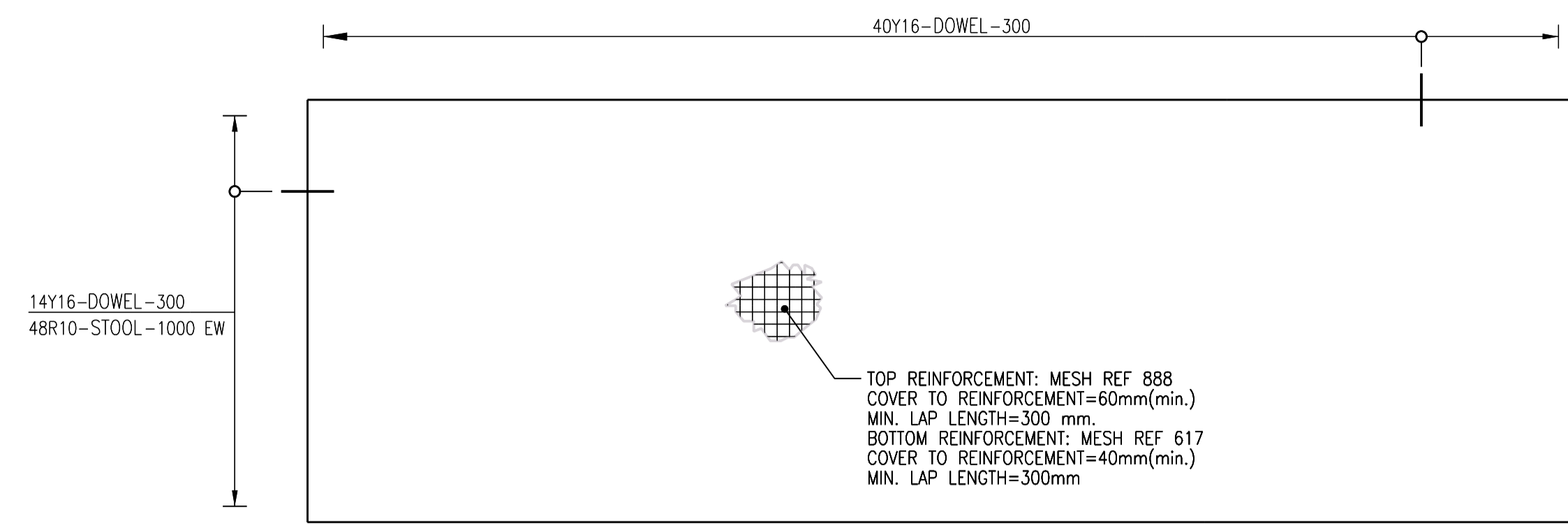
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

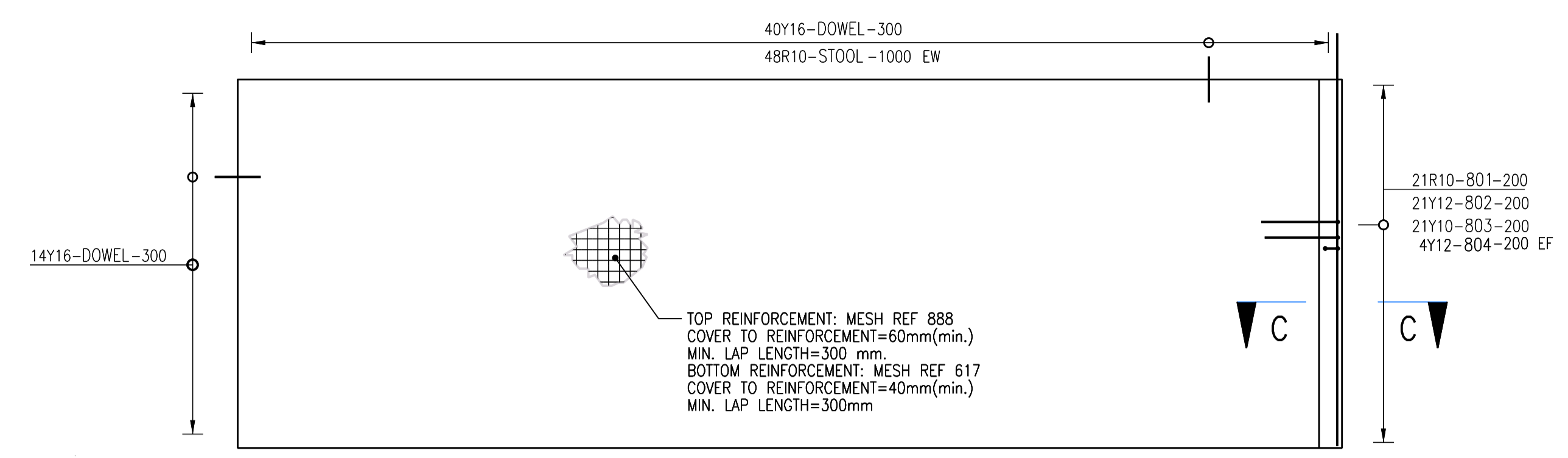
DRAWING DESCRIPTION

SLUDGE DRYING BED PANEL REINFORCEMENT LAYOUT 2

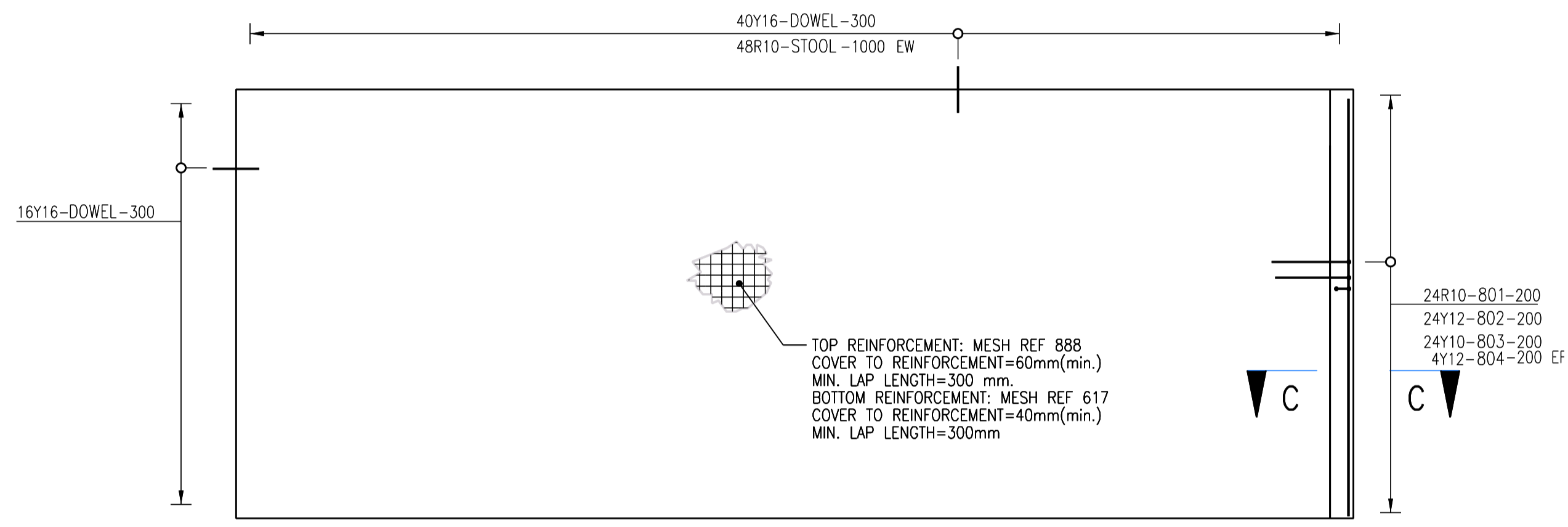
CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHOLOANE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5007	00	



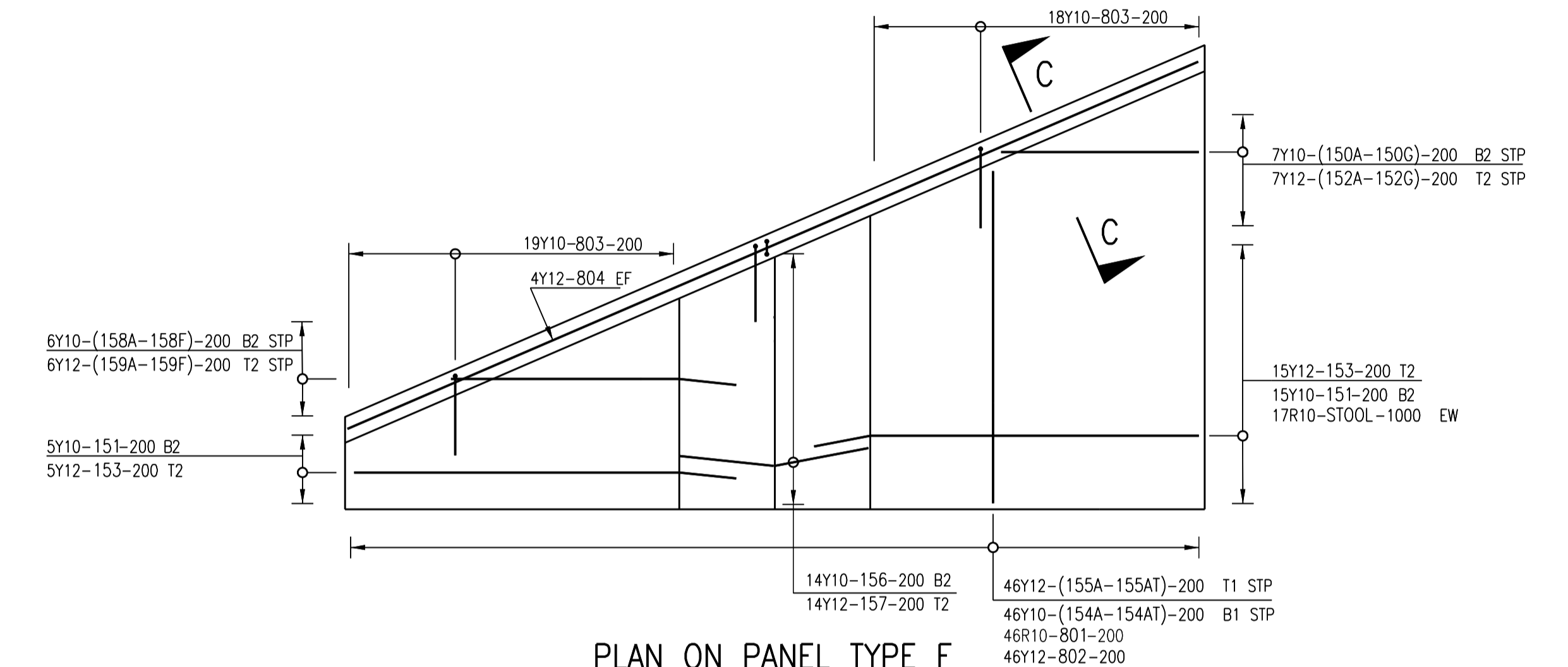
PLAN ON PANEL TYPE D
405 No. OFF
SCALE 1:50



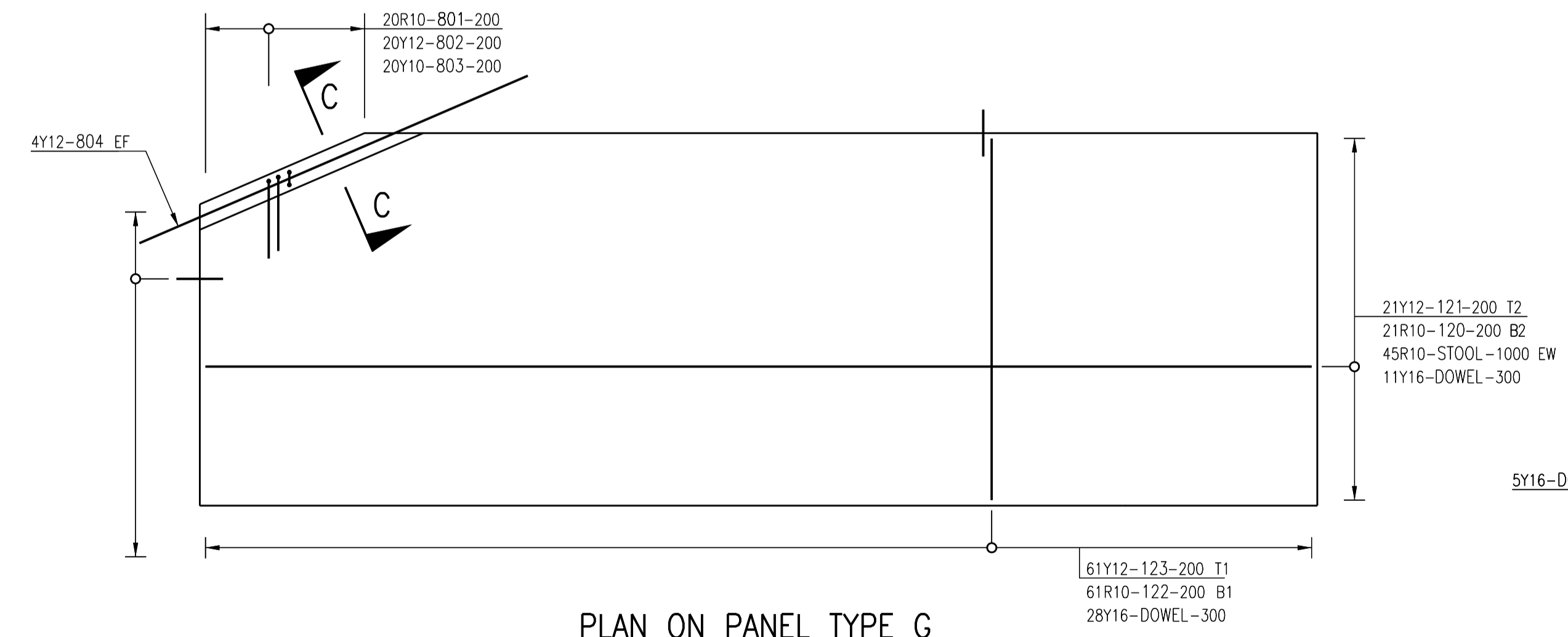
PLAN ON PANEL TYPE E
79 No. OFF
SCALE 1:50



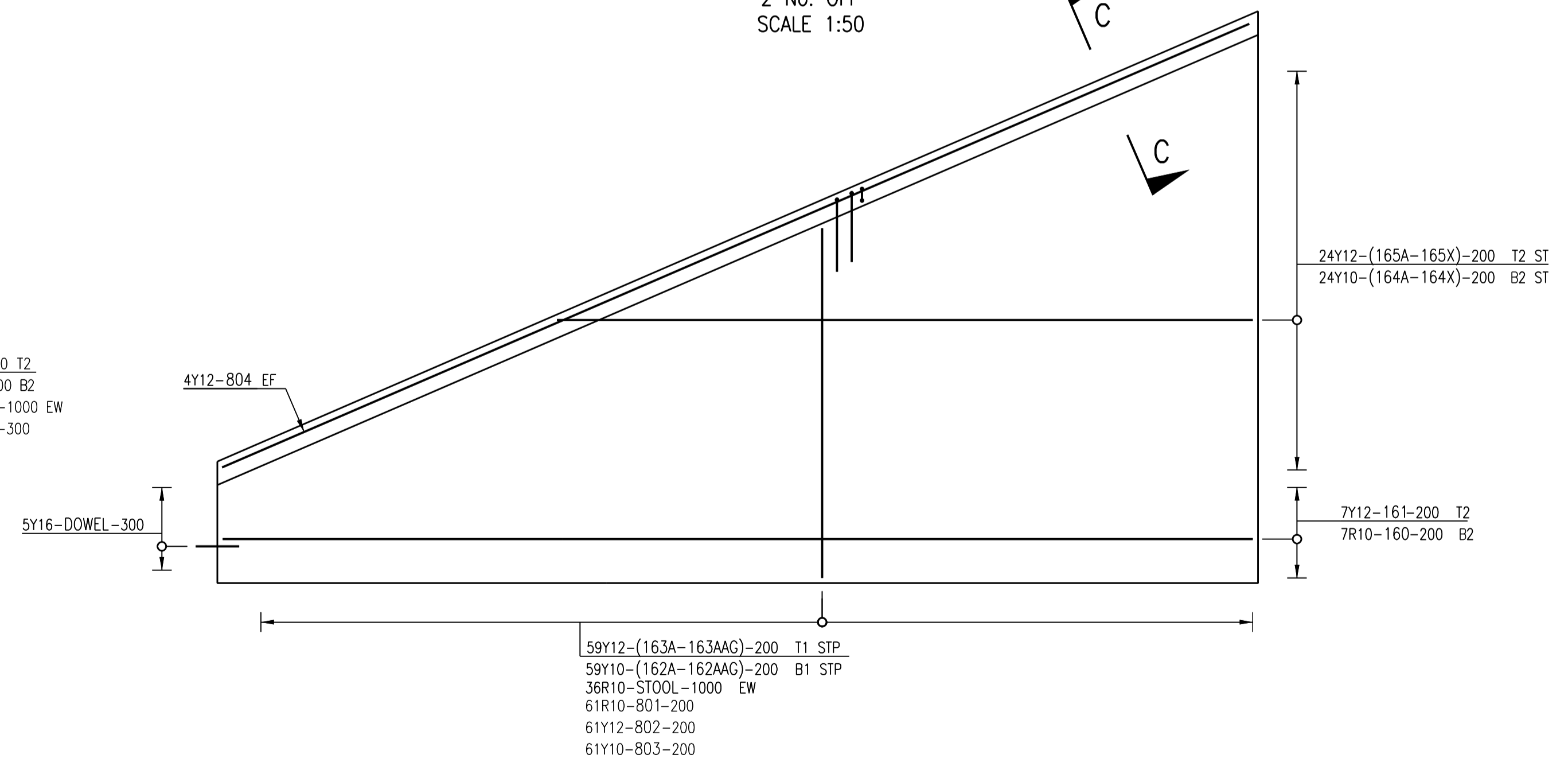
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SCALE 1:50



PLAN ON PANEL TYPE F
2 No. OFF
SCALE 1:50



PLAN ON PANEL TYPE G
6 No. OFF
SCALE 1:50



PLAN ON PANEL TYPE H
6 No. OFF
SCALE 1:50

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9R25(20)-37-900 DOWELS
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CONSTRUCTION DRAWING

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REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

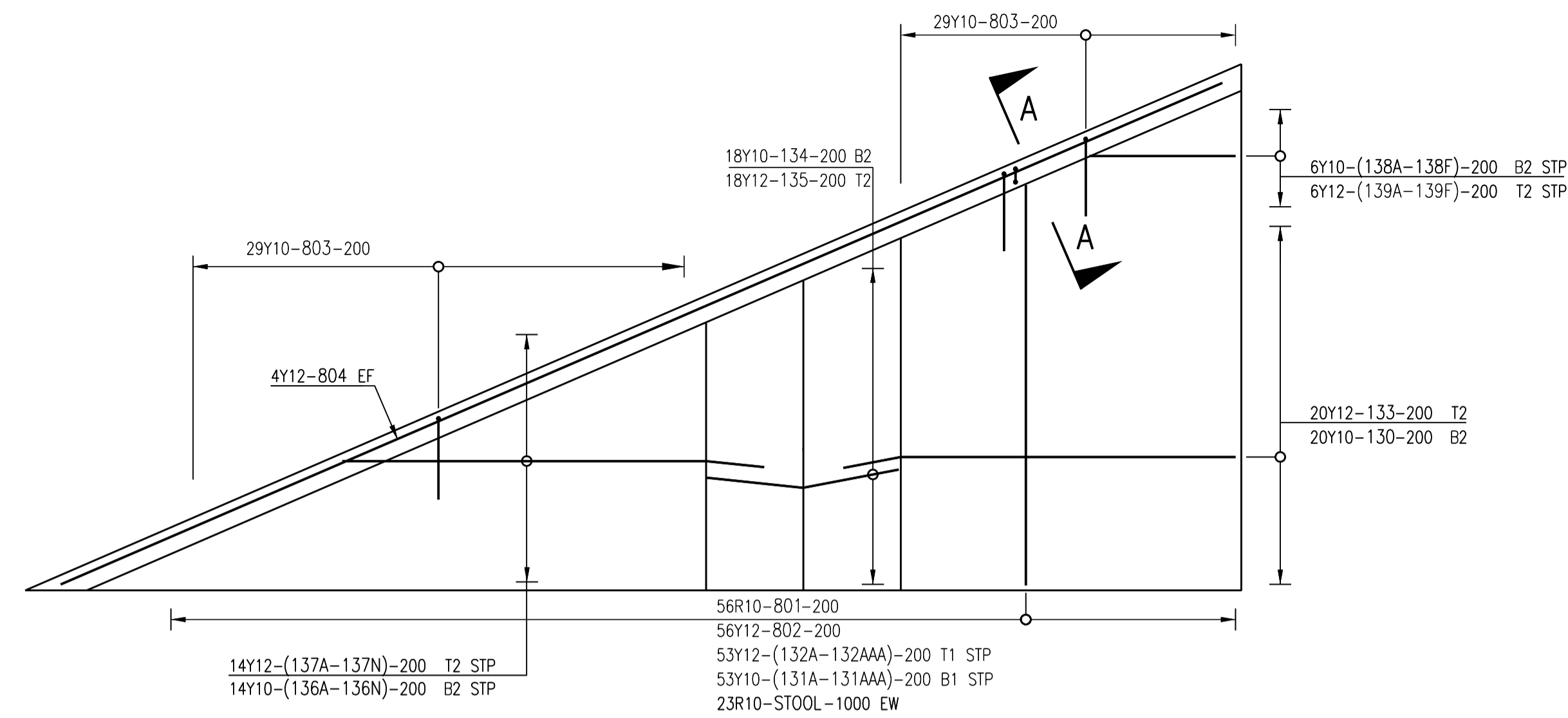
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

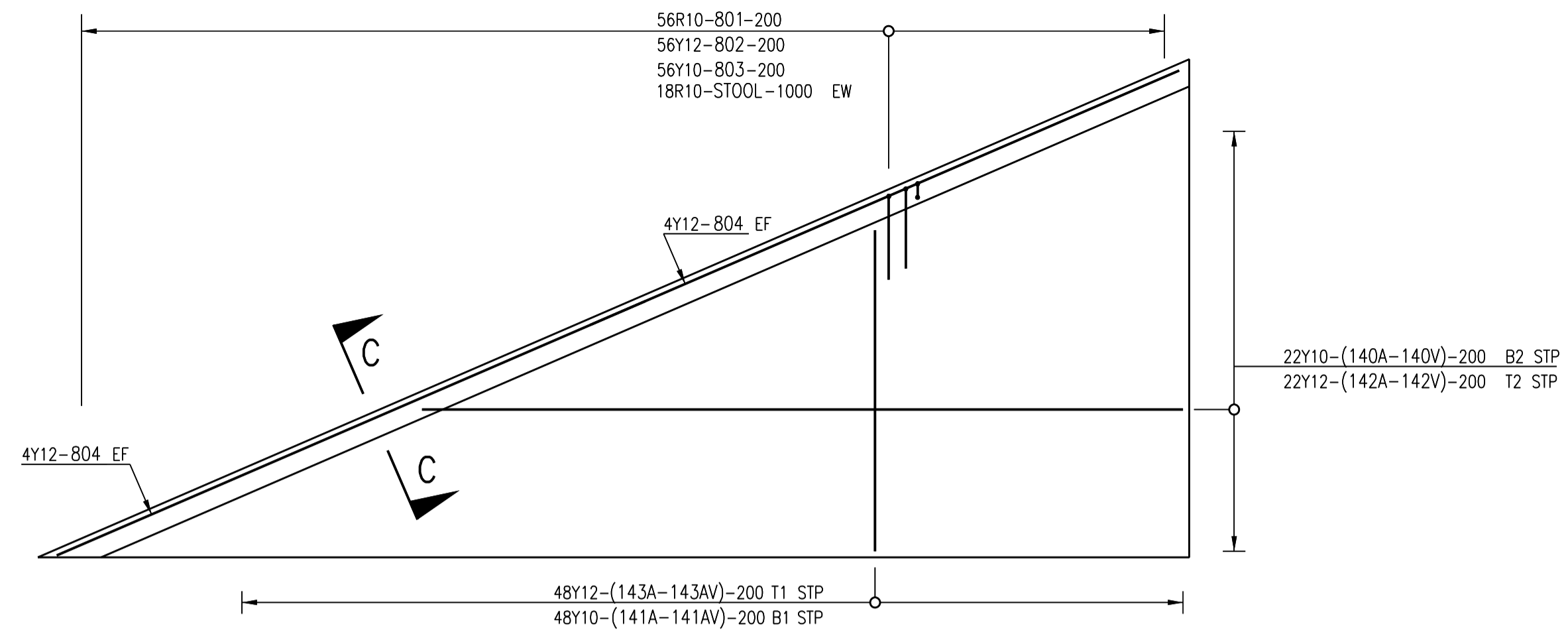
SLUDGE DRYING BED PANEL REINFORCEMENT LAYOUT 3

DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHOLOANE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)		REV
PK278-01-STR-DRG-0029-5008		00



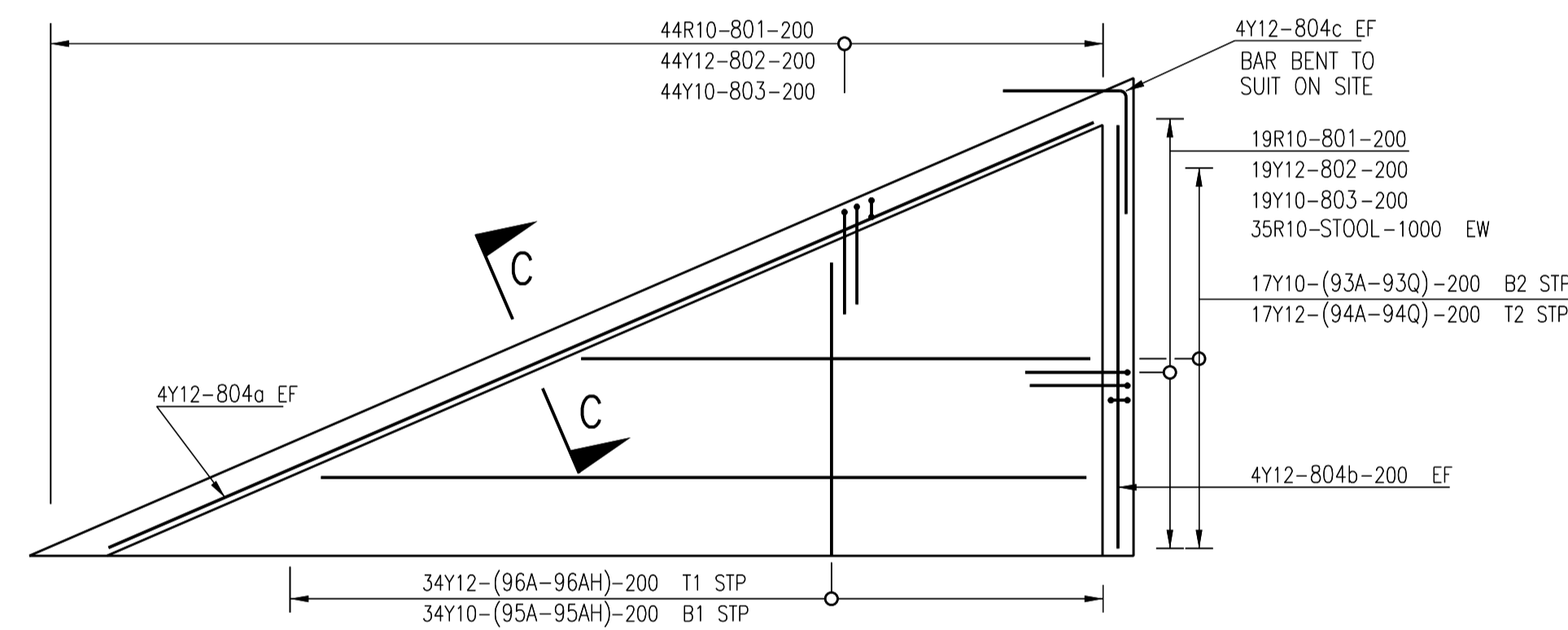
PLAN ON PANEL TYPE J1

1 No. OFF
SCALE 1:50



PLAN ON PANEL TYPE L

5 No. OFF
SCALE 1:50



PLAN ON PANEL TYPE L1

1 No. OFF
SCALE 1:50

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- ADDITIONALLY, WHERE 3 OR MORE LAYERS OF REINFORCEMENT ARE USED, A NUMERICAL SUFFIX HAS BEEN USED TO INDICATE THE LAYER POSITION. LAYERS HAVE BEEN NUMBERED FROM OUTERMOST LAYER INWARDS UNLESS NOTED OTHERWISE.
- BENDING AND SCHEDULING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH SANS 282.
 - MINIMUM ANCHORAGE AND LAP LENGTHS SHALL MEET THE CODE REQUIREMENTS. LAP LENGTHS FOR GRADE Y REINFORCEMENT IS 15 X BAR DIAMETER OF 300mm UNLESS NOTED OTHERWISE.
 - ALL REINFORCEMENT TO BE HOT-DIP GALVANISED IN ACCORDANCE WITH EN ISO 1461.

CONSTRUCTION DRAWING

NOTES

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CLIENT

CITY OF
Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

T.BANDA ENGINEER	PR ENG no.	DATE
CLIENT		DATE

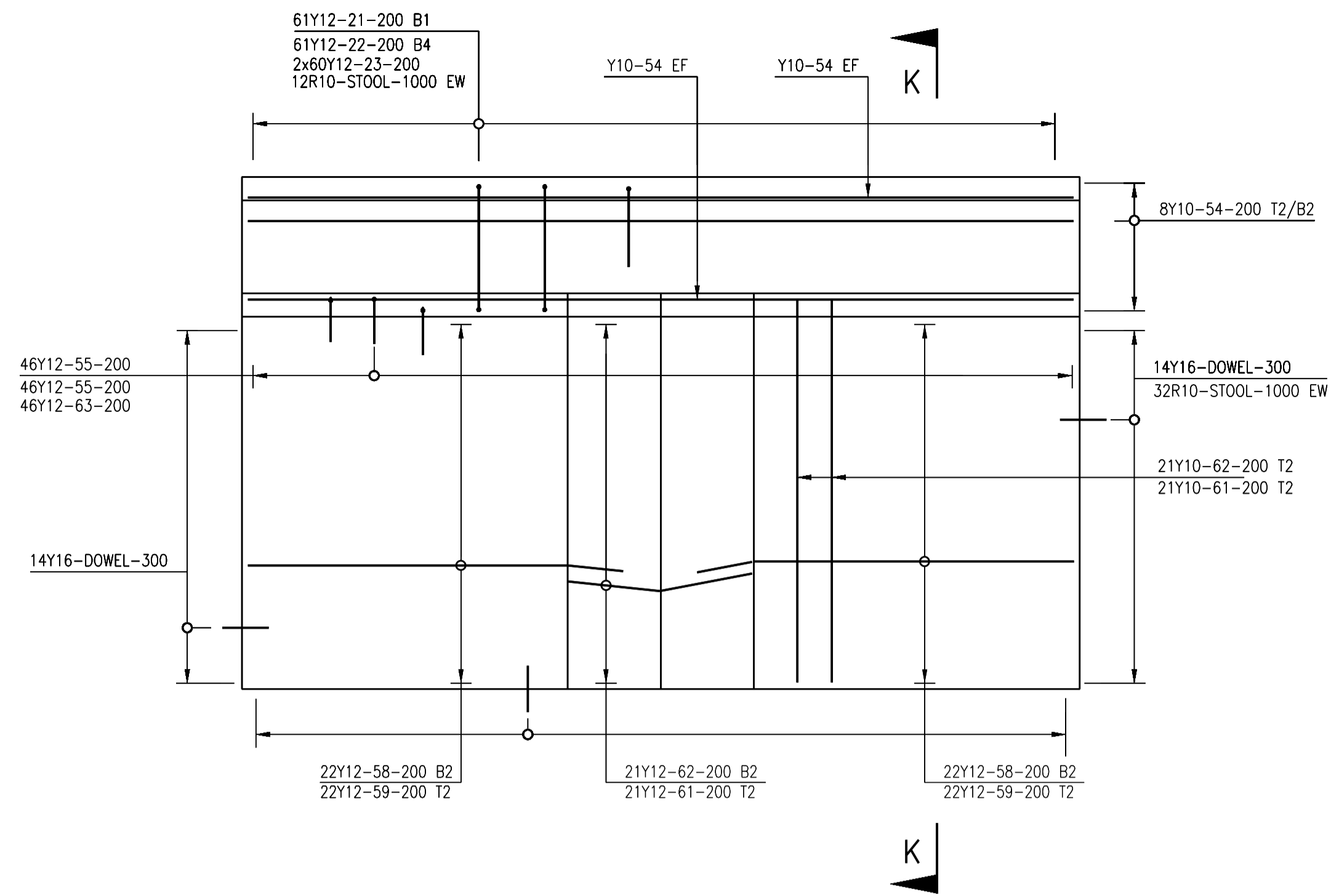
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SLUDGE DRYING BED
PANEL REINFORCEMENT
LAYOUT 4**

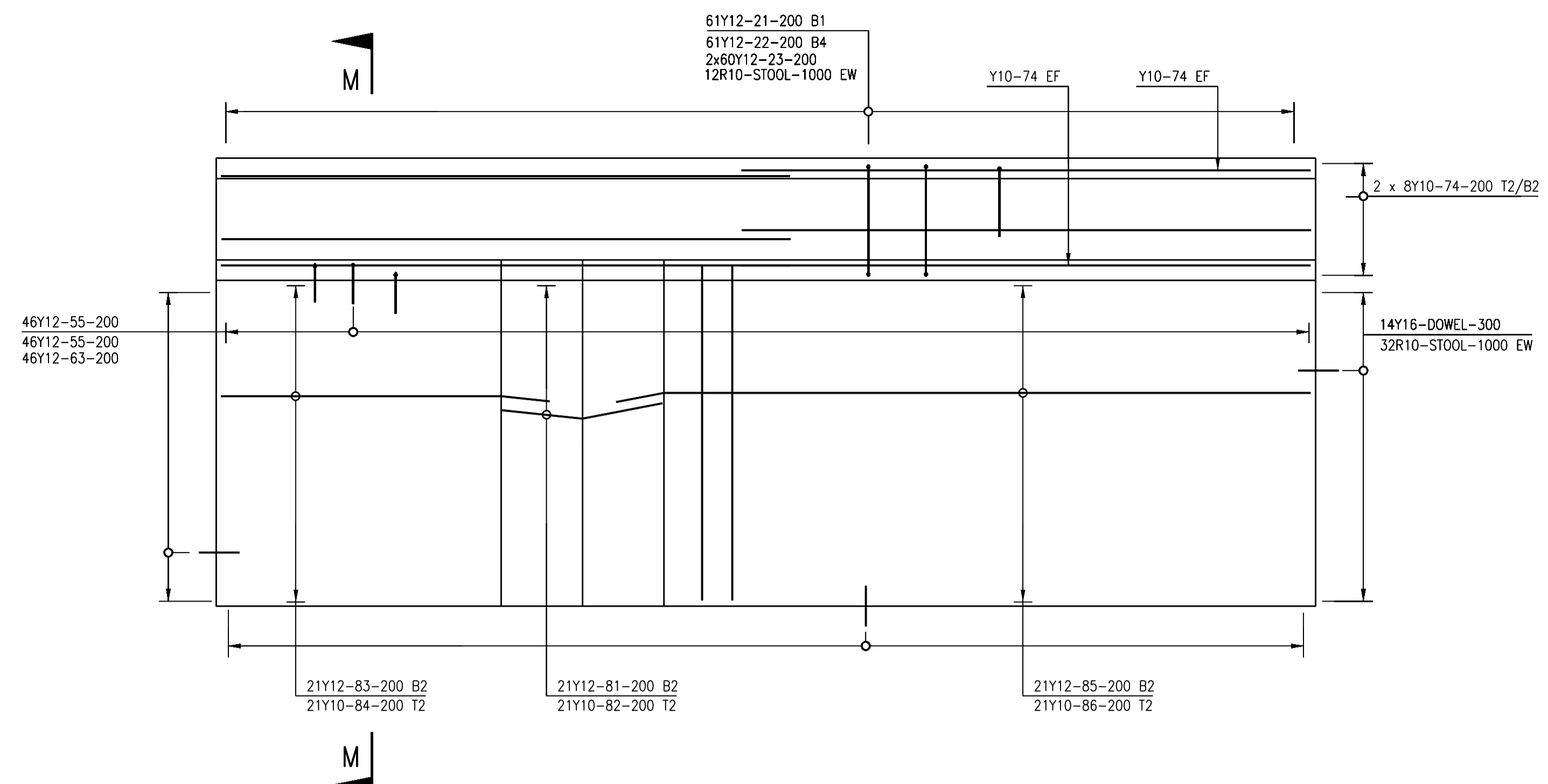
DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5009	00	



PLAN VIEW ON PANEL TYPE M1

1 No. OFF
SCALE 1:50

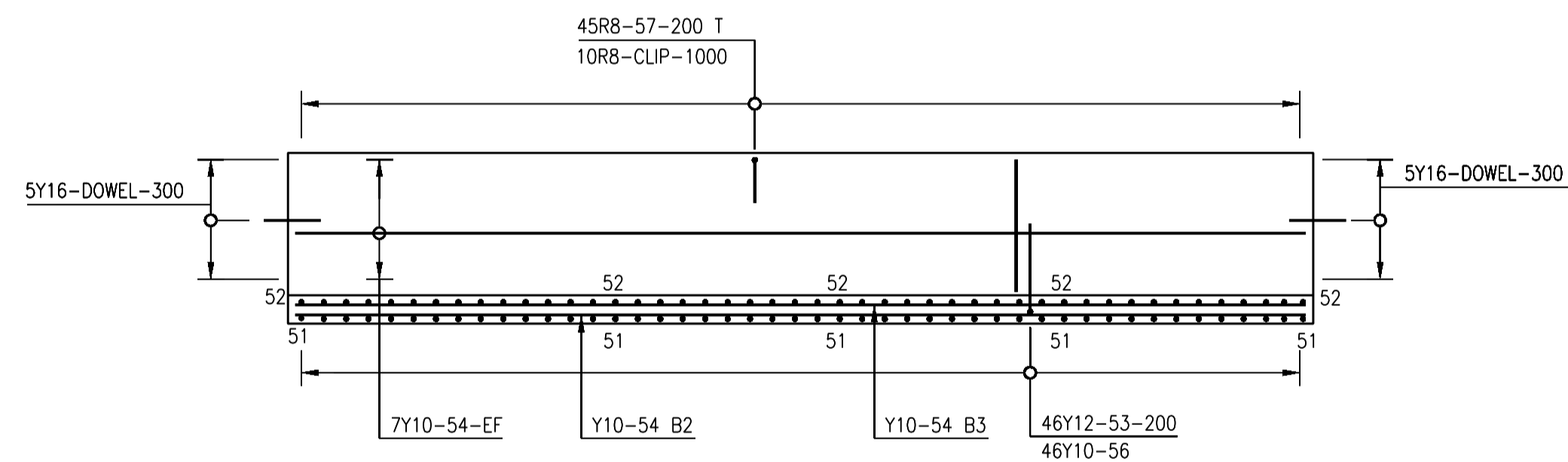
NOTE: VERTICAL BARS IN SUMP WALL OMITTED FOR CLARITY



PLAN VIEW ON PANEL TYPE M2

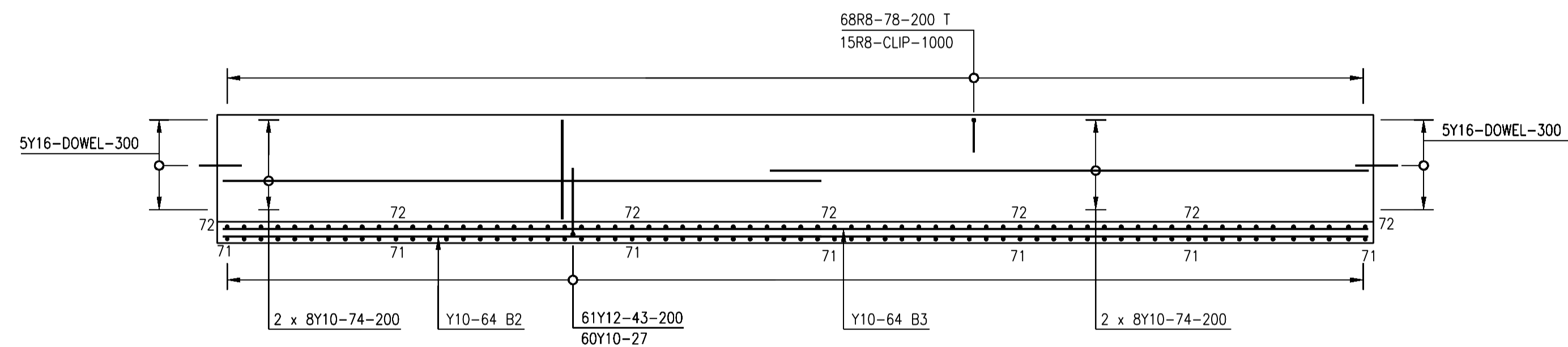
1 No. OFF
SCALE 1:50

NOTE: VERTICAL BARS IN SUMP WALL OMITTED FOR CLARITY



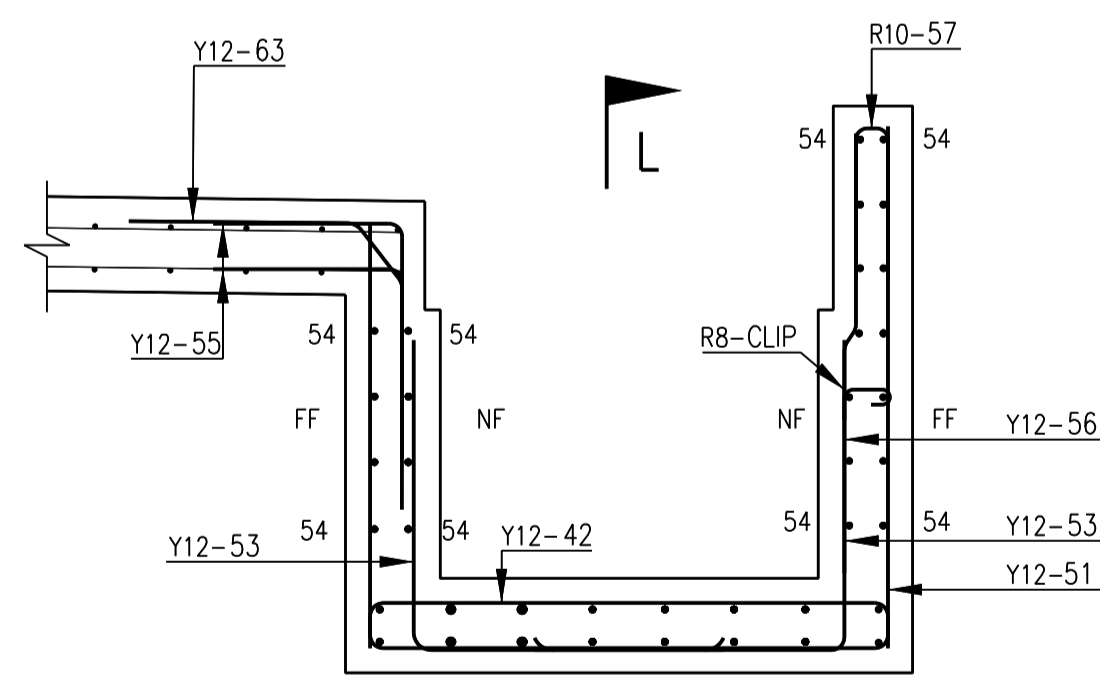
SECTION L-L PANEL TYPE M1 SUMP

2 No. OFF
SCALE 1:50



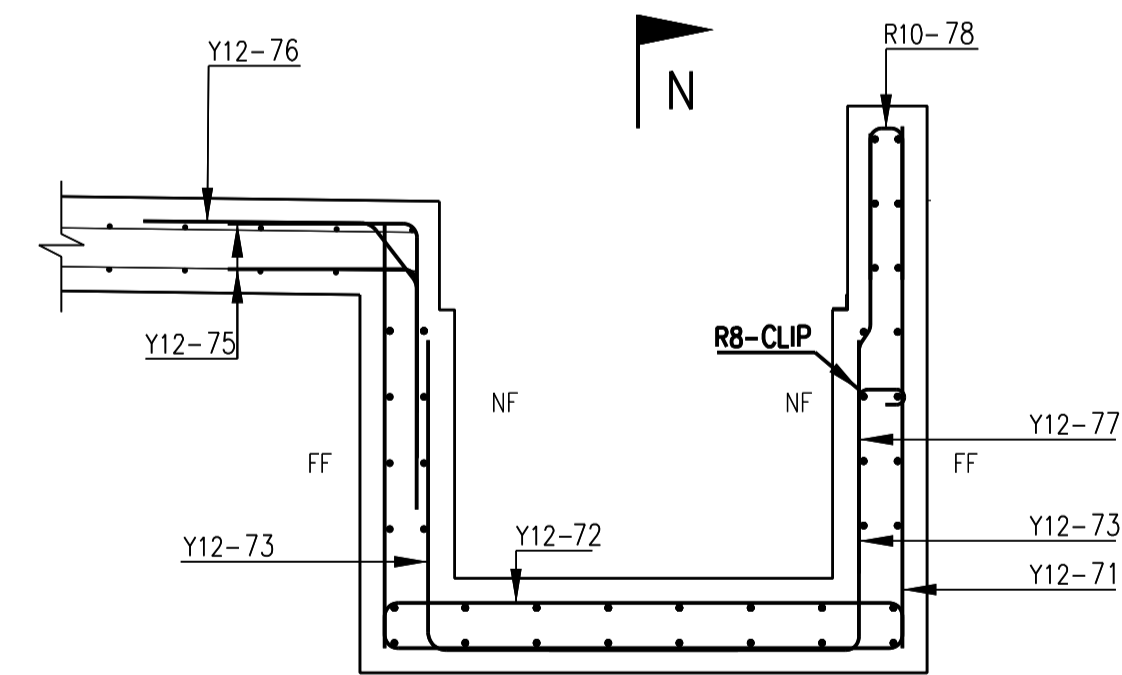
SECTION N-N PANEL TYPE M2 SUMP

1 No. OFF
SCALE 1:50



SECTION K-K THROUGH PANEL TYPE M1 SUMP

SCALE 1:20



SECTION M-M THROUGH PANEL TYPE M2 SUMP

SCALE 1:20

1. GENERAL NOTES:

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 - 1.3 NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS.
 - 1.4 BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. REINFORCEMENT NOTES:
- 2.1 WELDED MESH FABRIC SHALL CONFIRM TO SANS-1024:2006
 - 2.2 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:
- SLABS (TOP OF) - 60MM
 - 2.3 REINFORCEMENT TO BE HOT ROLLED AND TO COMPLY WITH SANS 920:2011 SPECIFICATIONS FOR STEEL BARS FOR CONCRETE REINFORCEMENT THE STANDARD MINIMUM CHARACTERISTIC STRENGTH (fy)
MILD STEEL BARS (B500B) 250 MPa
HIGH YIELD STEEL BARS (B500B) 500 MPa
 - 2.4 REINFORCEMENT BARS, INCLUDING HELICAL REINFORCEMENT AND DOWELS, BUT NOT FABRIC REINFORCEMENT, ARE CALLED UP ON THE DRAWINGS IN THE FOLLOWING MANNER:
No. OFF; BAR TYPE; BAR DIA (BAR SHAPE) - BAR MARK - PITCH - POSITION AND/OR COMMENT.
e.g. 7H20(20)-09-125 B
9R25(20)-37-900 DOWELS
 - 2.5 BAR DESIGNATION IS AS FOLLOWS:
R = GRADE 250 PLAIN ROUND MILD STEEL BARS COMPLYING WITH SANS 920:2011
Y = GRADE B500B DEFORMED HIGH YIELD STEEL BARS COMPLYING WITH SANS 920:2011
 - 2.6 POSITION / COMMENT IS DESIGNATED AS FOLLOWS:
T = TOP FACE, B = BOTTOM FACE, NF = NEAR FACE, FF = FAR FACE.
EF = EACH FACE (BOTH NEAR AND FAR FACES).
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CONSTRUCTION DRAWING

NOTES

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00	2024-03-13	FOR CONSTRUCTION

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CLIENT		DATE

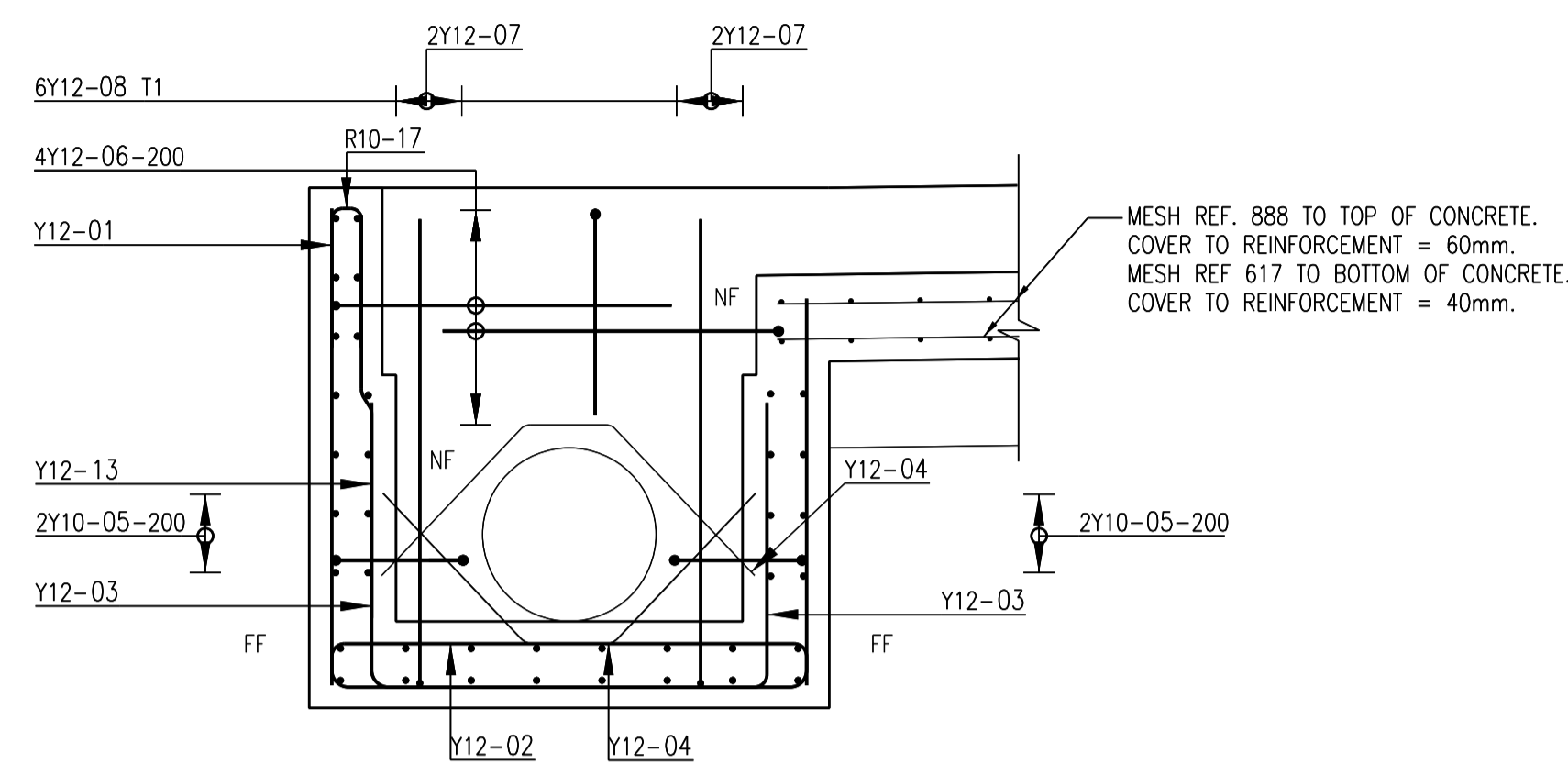
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

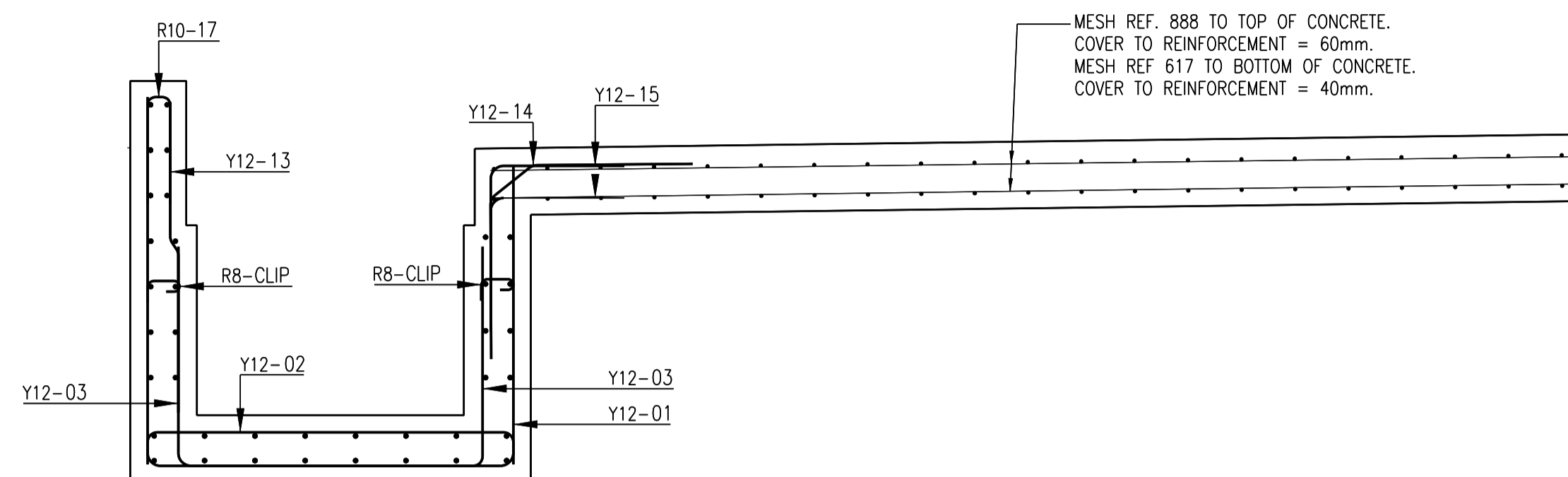
DRAWING DESCRIPTION

SLUDGE DRYING BED PANEL REINFORCEMENT LAYOUT 5

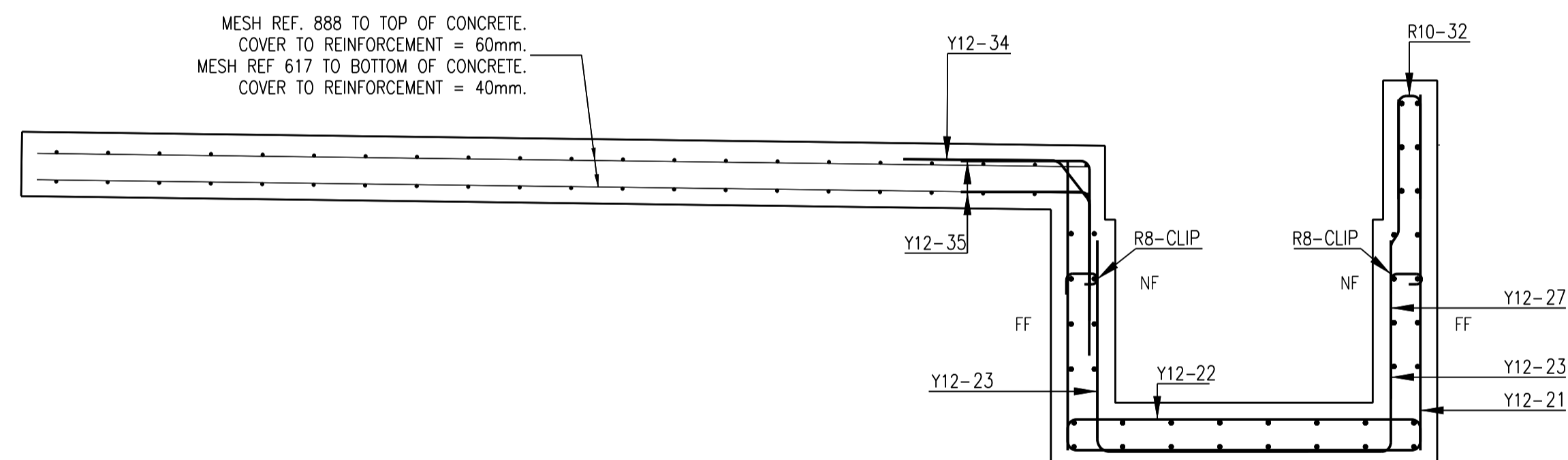
DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5010	00	



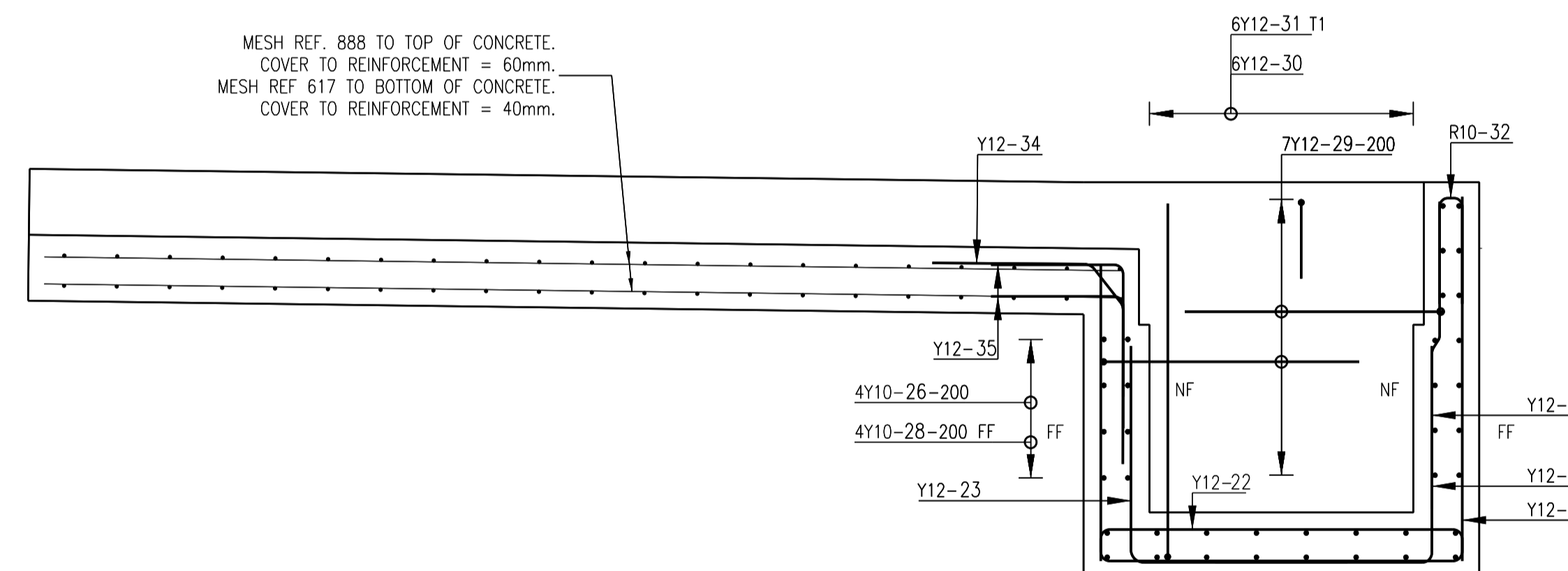
**SECTION A-A THROUGH
SUMP AND WALL OUTLET**
SCALE 1:20



**SECTION B-B THROUGH
PANEL TYPE A2 AND SUMP**
SCALE 1:20



**SECTION F-F THROUGH
PANEL TYPE A1 AND SUMP**
SCALE 1:20



**SECTION E-E THROUGH
PANEL TYPE A1 AND SUMP**
SCALE 1:20

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9R25(20)-37-900 DOWELS
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CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5011	00	

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REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
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T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

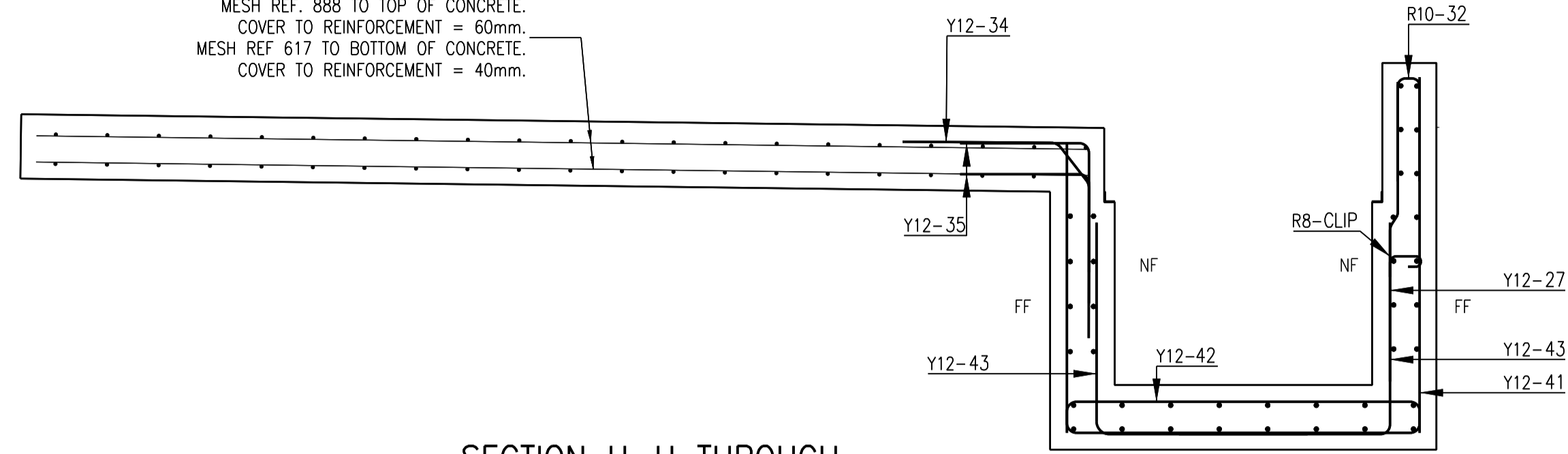
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

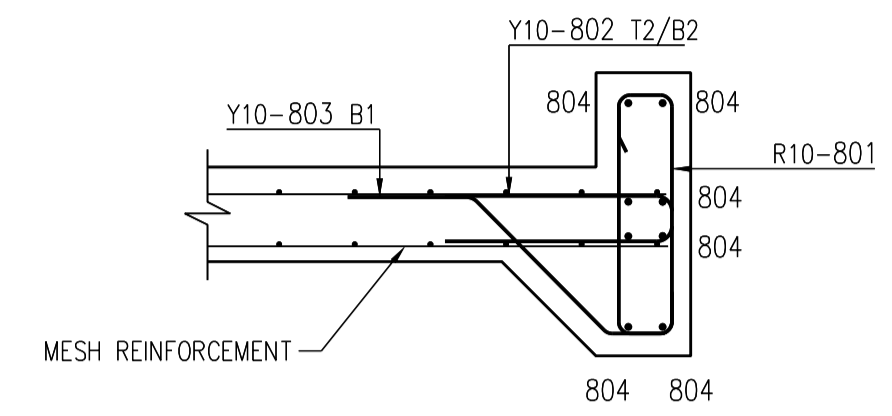
DRAWING DESCRIPTION

**SLUDGE DRYING BED
PANEL REINFORCEMENT
LAYOUT 6**

MESH REF. 888 TO TOP OF CONCRETE.
COVER TO REINFORCEMENT = 60mm.
MESH REF 617 TO BOTTOM OF CONCRETE.
COVER TO REINFORCEMENT = 40mm.



**SECTION H-H THROUGH
PANEL TYPE B SUMP**
SCALE 1:20



**TYPICAL SECTION C-C
THROUGH BUNDWALL**
SCALE 1:20

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HIGH YIELD STEEL BARS(85008) 500 MPa
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AND/OR COMMENT.
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9R25(20)-37-900 DOWELS
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CLIENT



REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
00	2024-03-13	FOR CONSTRUCTION

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

PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SLUDGE DRYING BED
PANEL REINFORCEMENT
LAYOUT 7**

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-13	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5012	00	

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS SLUDGE DRYING BED												PAGE: 1 OF 32			
ZAKUMI Consulting Engineers												REFERENCE DRAWING Nos. PK278-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)			
TYPE A1															
-	21	Y12	61	1	61	3800	38	1380	1370	[1120]					
-	22	Y12	61	1	61	1550	38	120	1370	[120]					
-	23	Y12	120	1	120	1600	37	820	[820]						
-	24	Y10	16	1	16	11950	37	100	[11870]						
-	25	Y10	3	1	3	3250	38	1600	80	[1600]					
-	26	Y10	8	1	8	3250	38	1600	100	[1600]					
-	27	Y10	60	1	60	1150	41	600	50	[510]	30				
-	28	Y10	11	1	11	1450	49	600	600	[260]	420	420			
-	29	Y12	14	1	14	2050	38	980	120	[980]					
-	30	Y12	6	1	6	2750	38	1350	100	[1350]					
-	31	Y12	6	1	6	650	38	300	100	[300]					
-	32	Y10	60	1	60	850	38	400	80	[400]					
-	33	Y10	22	1	22	10750	20	[10750]							
-	34	Y12	60	1	60	1400	49	600	600	[200]	370	470			
-	35	Y12	120	1	120	1000	37	500	[500]						
-	801	R10	22	1	22	1700	60	140	630						
-	802	Y12	22	1	22	1250	38	600	120	[600]					
-	803	Y10	22	1	22	1100	42	330	500	170	360				
-	804	Y12	8	1	8	4600	20	[4600]							
-	CLIP	R8	26	1	26	250	85	80	120	40	[50]				
-	DOWEL	Y16	59	1	59	500	20	[500]							
-	STOOL	R10	58	1	58	900	83	250	100	250	[250]				
TYPE A2															
-	01	Y12	61	1	61	3800	38	1380	1370	[1120]					
-	02	Y12	61	1	61	1550	38	120	1370	[120]					
-	03	Y12	120	1	120	1600	37	820	[820]						
-	04	Y12	4	1	4	1450	49	600	600	[250]	430	430			
-	05	Y10	4	1	4	1150	60	390	120						

POLOKWANE REGIONAL WATER WATER TREATMENT WORKS SLUDGE DRYING BED												PAGE: 2 OF 32			
ZAKUMI Consulting Engineers												REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)			
-	06	Y12	8	1	8	2050	38	980	120	[980]					
-	07	Y12	4	1	4	2750	38	1350	100	[1350]					
-	08	Y12	8	1	8	1250	38	590	100	[590]					
-	09	Y10	11	1	11	1450	49	600	600	[260]	420	420			
-	10	Y10	3	1	3	3250	38	1600	80	[1600]					
-	11	Y10	8	1	8	3250	38	1600	100	[1600]					
-	12	Y10	22	1	22	10750	20	[10750]							
-	13	Y10	60	1	60	1150	41	600	50	[510]	30				
-	14	Y12	60	1	60	1400	49	600	600	[200]	370	470			
-	15	Y12	120	1	120	1000	37	500	[500]						
-	16	Y10	16	1	16	11950	37	100	[11870]						
-	17	R10	60	1	60	850	38	400	80	[400]					
-	801	R10	22	1	22	1700	60	140	630						
-	802	Y12	22	1	22	1250	38	600	120	[600]					
-	803	Y10	22	1	22	1100	42	330	500	170	360				
-	804	Y12	8	1	8	4600	20	[4600]							
-	CLIP	R8	26	1	26	250	85	80	120	40	[50]				
-	STOOL	R10	58	1	58	900	83	250	100	250	[250]				
TYPE B															
-	27	Y10	60	10	600	1150	41	600	50	[510]	30				
-	32	Y10	60	10	600	850	38	400	80	[400]					
-	34	Y12	60	10	600	1400	49	600	600	[200]	370	470			
-	35	Y12	120	10	1200	1000	37	500	[500]						
-	41	Y12	61	10	610	3800	38	1380	1370	[1120]					
-	42	Y12	61	10	610	1550	38	120	1370	[120]					
-	43	Y12	122	10	1220	1600	37	820	[820]						
-	44	Y10	38	10	380	11900	20	[11870]							
-	CLIP	R8	26	10	260	250	85	80	120	40	[50]				
-	DOWEL	Y16	59	10	590	500	20	[500]							
-	STOOL	R10	58	10	580	900	83	250	100	250	[250]				

POLOKWANE REGIONAL WATER WATER TREATMENT WORKS SLUDGE DRYING BED												PAGE: 3 OF 32			
ZAKUMI Consulting Engineers												REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)			
TYPE C1															
-	170	Y10	42	85	3570	4050	62	590	80	[3440]					
-	171	Y12	42	85	3570	4050	62	590	80	[3440]					
-	172	Y10	21	85	1785	2000	62	1000	290	[1000]					
-	173	Y12	21	85	1785	2000	62	1000	290	[1000]					
-	174	R10	46	85	3910	3900	20	[3880]							
-	175	Y12	46	85	3910	3900	20	[3880]							
-	DOWEL	Y16	44	85	3740	500	20	[500]							
-	STOOL	R10	32	85	2720	900	83	250	100	250	[250]				
TYPE C2															
-	180	Y10	48	2	96	4050	62	590	80	[3440]					
-	181	Y12	48	2	96	4050	62	590	80	[3440]					
-	182	Y10	46	2	92	4500	20	[4480]							
-	183	Y12	46	2	92	4500	20	[4480]							
-	184	Y10	24	2	48	2000	62	1000	290	[1000]					
-	185	Y12	24	2	48	2000	62	1000	290	[1000]					
-	DOWEL	Y16	46	2	92	500	20	[500]							
-	STOOL	R10	38	2	76	900	83	250	100	250	[250]				
TYPE C3															
-	100	Y10	24	1	24	4050	62	590	80	[3440]					
-	101	Y12	24	1	24	4050	62	590	80	[3440]					
-	102	Y10	24	1	24	2000	62	1000	290	[1000]					
-	103	Y12	24	1	24	2000	62	1000	290	[1000]					
-	104	Y10	24	1	24	8550	62	590	80	[7940]					
-	105	Y12	24	1	24	8550	62	590	80	[7940]					
-	106	Y10	68	1	68	4500	20	[4480]							
-	107	Y12	68	1	68	4500	20	[4480]							
-	DOWEL	Y16	61	1	61	500	20	[500]							
-	STOOL	R10	52	1	52	900	83	250	100	250	[250]				

- NOTES**
- DO NOT SCALE THE DRAWINGS.
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ZAKUMI
Consulting Engineers

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FAX: 012 803 7943

CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SLUDGE DRYING BED REINFORCEMENT BENDING SCHEDULE

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5013	0	

POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED														
ZAKUMI Consulting Engineers														
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012														
DATE: 13 March 2024														
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)		
TYPE C4 + K1														
-	110	R10	68	35	2380	3900	20	[3880]						
-	111	Y12	68	35	2380	3900	20	[3880]						
-	112	Y10	21	35	735	8550	62	590	80	[7940]				
-	113	Y12	21	35	735	8550	62	590	80	[7940]				
-	114	Y10	21	35	735	4050	62	590	80	[3440]				
-	115	Y12	21	35	735	4050	62	590	80	[3440]				
-	116	Y10	21	35	735	2000	62	1000	290	[1000]				
-	117	Y12	21	35	735	2000	62	1000	290	[1000]				
-	DOWEL	Y16	59	35	2065	500	20	[500]						
-	STOOL	R10	44	35	1540	900	83	250	100	250	[250]			
TYPE D														
-	DOWEL	Y16	54	415	22410	500	20	[500]						
-	STOOL	R10	48	415	19920	900	83	250	100	250	[250]			
TYPE E														
-	801	R10	21	79	3318	1700	60	140	630					
-	802	Y12	21	79	3318	1250	38	600	120	[600]				
-	803	Y10	21	79	1659	1100	42	330	500	170	360			
-	804	Y12	8	79	632	3900	20	[3880]						
-	DOWEL	Y16	54	79	4266	500	20	[500]						
-	STOOL	R10	48	79	3792	900	83	250	100	250	[250]			
TYPE E3														
-	801	R10	24	1	24	1700	60	140	630					
-	802	Y12	24	1	24	1250	38	600	120	[600]				
-	803	Y10	24	1	24	1100	42	330	500	170	360			
-	804	Y12	8	1	1	4500	20	4480						
-	DOWEL	Y16	56	1	56	500	20	[500]						
-	STOOL	R10	48	1	48	900	83	250	100	250	[250]			
TYPE G														
-	120	R10	21	6	126	11900	20	[11880]						

POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED														
ZAKUMI Consulting Engineers														
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012														
DATE: 13 March 2024														
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)		
-	121	Y12	21	6	126	11900	20	[11880]						
-	122	R10	61	6	366	3900	20	[3880]						
-	123	Y12	61	6	366	3900	20	[3880]						
-	801	R10	20	6	120	1700	60	140	630					
-	802	Y12	20	6	120	1250	38	600	120	[600]				
-	803	Y10	20	6	120	1100	42	330	500	170	360			
-	804	Y12	8	6	48	4550	20	[4540]						
-	DOWEL	Y16	39	6	234	500	20	[500]						
-	STOOL	R10	45	6	270	900	83	250	100	250	[250]			
TYPE M1														
-	51	Y12	46	2	92	3800	38	1380	1370	[1120]				
-	52	Y12	46	2	92	1550	38	120	1370	[120]				
-	53	Y12	92	2	184	1600	37	820	[820]					
-	54	Y10	38	2	76	8900	20	[8870]						
-	55	Y12	92	2	184	1000	37	500	[500]					
-	56	Y10	46	2	92	1150	41	600	50	[510]	30			
-	57	Y10	46	2	92	850	38	400	80	[400]				
-	58	Y12	44	2	88	4050	62	590	80	[3440]				
-	59	Y10	44	2	88	4050	62	590	80	[3440]				
-	61	Y12	21	2	42	2000	62	1000	290	[1000]				
-	62	Y10	21	2	42	2000	62	1000	290	[1000]				
-	63	Y12	46	2	92	1400	49	600	600	[200]	370	470		
-	64	Y12	46	2	92	4100	20	[4110]						
-	65	R10	46	2	92	4100	20	[4110]						
-	CLIP	R8	20	2	40	250	85	80	120	40	[50]			
-	DOWEL	Y16	49	2	98	500	20	[500]						
-	STOOL	R10	44	2	88	900	83	250	100	250	[250]			
TYPE M2														
-	71	Y12	68	1	68	3800	38	1380	1370	[1120]				
-	72	Y12	68	1	68	1550	38	120	1370	[120]				

POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED														
ZAKUMI Consulting Engineers														
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012														
DATE: 13 March 2024														
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)		
-	73	Y12	136	1	136	1600	37	820	[820]					
-	74	Y10	76	1	76	7000	20	[6990]						
-	75	Y12	136	1	136	1000	37	500	[500]					
-	76	Y12	68	1	68	1400	49	600	600	[200]	370	470		
-	77	Y10	68	1	68	1150	41	600	50	[510]	30			
-	78	Y10	68	1	68	850	38	400	80	[400]				
-	79	Y12	68	1	68	4100	20	[4110]						
-	80	Y10	68	1	68	4100	20	[4110]						
-	81	Y10	21	1	21	2000	62	1000	290	[1000]				
-	82	Y12	21	1	21	2000	62	1000	290	[1000]				
-	83	Y12	21	1	21	4050	62	590	80	[3440]				
-	84	Y10	21	1	21	4050	62	590	80	[3440]				
-	85	Y12	21	1	21	8550	62	590	80	[7940]				
-	86	Y10	21	1	21	8550	62	590	80	[7940]				
-	CLIP	R8	30	1	30	250	85	80	120	40	[50]			
-	DOWEL	Y16	64	1	64	500	20	[500]						
-	STOOL	R10	65	1	65	900	83	250	100	250	[250]			
R8	R10	Total	Y8	Y10	Y12	Y16	Y20	Y25	Y32	Y40	Total			
34	16240	16274	0	44884	66570	26623	0	0	0	0	138077			

- NOTES**
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ZAKUMI Consulting Engineers

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. DATE

CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SLUDGE DRYING BED REINFORCEMENT BENDING SCHEDULE

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5014	0	

ZAKUMI Consulting Engineers														
POLOKWANE REGIONAL WATER WATER TREATMENT WORKS SLUDGE DRYING BED														
PAGE: 4 OF 32														
REFERENCE DRAWING Nos. DATE: 10 July 2024														
PK279-01-STR-DRG-0029-5006 to 5012 REV: 1														
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)		
TYPE C4 + K1														
-	110	R10	68	35	2380	3900	20	[3880]						
-	111	Y12	68	35	2380	3900	20	[3880]						
-	112	Y10	21	35	735	8550	62	590	80	[7940]				
-	113	Y12	21	35	735	8550	62	590	80	[7940]				
-	114	Y10	21	35	735	4050	62	590	80	[3440]				
-	115	Y12	21	35	735	4050	62	590	80	[3440]				
-	116	Y10	21	35	735	2000	62	1000	290	[1000]				
-	117	Y12	21	35	735	2000	62	1000	290	[1000]				
-	DOWEL	Y16	59	35	2065	500	20	[500]						
-	STOOL	R10	44	35	1540	900	83	250	100	250	[250]			
TYPE D														
1	DOWEL	Y16	54	405	22410	500	20	[500]						
1	STOOL	R10	48	405	19920	900	83	250	100	250	[250]			
TYPE E														
-	801	R10	21	79	3318	1700	60	140	630					
-	802	Y12	21	79	3318	1250	38	600	120	[600]				
-	803	Y10	21	79	1659	1100	42	330	500	170	360			
-	804	Y12	8	79	632	3900	20	[3880]						
-	DOWEL	Y16	54	79	4266	500	20	[500]						
-	STOOL	R10	48	79	3792	900	83	250	100	250	[250]			
TYPE E3														
-	801	R10	24	1	24	1700	60	140	630					
-	802	Y12	24	1	24	1250	38	600	120	[600]				
-	803	Y10	24	1	24	1100	42	330	500	170	360			
-	804	Y12	8	1	1	4500	20	4480						
-	DOWEL	Y16	56	1	56	500	20	[500]						
-	STOOL	R10	48	1	48	900	83	250	100	250	[250]			
TYPE G														
-	120	R10	21	6	126	11900	20	[11880]						

ZAKUMI Consulting Engineers														
POLOKWANE REGIONAL WATER WATER TREATMENT WORKS SLUDGE DRYING BED														
PAGE: 5 OF 32														
REFERENCE DRAWING Nos. DATE: 13 March 2024														
PK279-01-STR-DRG-0029-5006 to 5012 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)		
-	121	Y12	21	6	126	11900	20	[11880]						
-	122	R10	61	6	366	3900	20	[3880]						
-	123	Y12	61	6	366	3900	20	[3880]						
-	801	R10	20	6	120	1700	60	140	630					
-	802	Y12	20	6	120	1250	38	600	120	[600]				
-	803	Y10	20	6	120	1100	42	330	500	170	360			
-	804	Y12	8	6	48	4550	20	[4540]						
-	DOWEL	Y16	39	6	234	500	20	[500]						
-	STOOL	R10	45	6	270	900	83	250	100	250	[250]			
TYPE M1														
-	51	Y12	46	2	92	3800	38	1380	1370	[1120]				
-	52	Y12	46	2	92	1550	38	120	1370	[120]				
-	53	Y12	92	2	184	1600	37	820	[820]					
-	54	Y10	38	2	76	8900	20	[8870]						
-	55	Y12	92	2	184	1000	37	500	[500]					
-	56	Y10	46	2	92	1150	41	600	50	[510]	30			
-	57	Y10	46	2	92	850	38	400	80	[400]				
-	58	Y12	44	2	88	4050	62	590	80	[3440]				
-	59	Y10	44	2	88	4050	62	590	80	[3440]				
-	61	Y12	21	2	42	2000	62	1000	290	[1000]				
-	62	Y10	21	2	42	2000	62	1000	290	[1000]				
-	63	Y12	46	2	92	1400	49	600	600	[200]	370	470		
-	64	Y12	46	2	92	4100	20	[4110]						
-	65	R10	46	2	92	4100	20	[4110]						
-	CLIP	R8	20	2	40	250	85	80	120	40	[50]			
-	DOWEL	Y16	49	2	98	500	20	[500]						
-	STOOL	R10	44	2	88	900	83	250	100	250	[250]			
TYPE M2														
-	71	Y12	68	1	68	3800	38	1380	1370	[1120]				
-	72	Y12	68	1	68	1550	38	120	1370	[120]				

ZAKUMI Consulting Engineers														
POLOKWANE REGIONAL WATER WATER TREATMENT WORKS SLUDGE DRYING BED														
PAGE: 6 OF 32														
REFERENCE DRAWING Nos. DATE: 13 March 2024														
PK279-01-STR-DRG-0029-5006 to 5012 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)		
-	73	Y12	136	1	136	1600	37	820	[820]					
-	74	Y10	76	1	76	7000	20	[6990]						
-	75	Y12	136	1	136	1000	37	500	[500]					
-	76	Y12	68	1	68	1400	49	600	600	[200]	370	470		
-	77	Y10	68	1	68	1150	41	600	50	[510]	30			
-	78	Y10	68	1	68	850	38	400	80	[400]				
-	79	Y12	68	1	68	4100	20	[4110]						
-	80	Y10	68	1	68	4100	20	[4110]						
-	81	Y10	21	1	21	2000	62	1000	290	[1000]				
-	82	Y12	21	1	21	2000	62	1000	290	[1000]				
-	83	Y12	21	1	21	4050	62	590	80	[3440]				
-	84	Y10	21	1	21	4050	62	590	80	[3440]				
-	85	Y12	21	1	21	8550	62	590	80	[7940]				
-	86	Y10	21	1	21	8550	62	590	80	[7940]				
-	CLIP	R8	30	1	30	250	85	80	120	40	[50]			
-	DOWEL	Y16	64	1	64	500	20	[500]						
-	STOOL	R10	65	1	65	900	83	250	100	250	[250]			
R8	R10	Total	Y8	Y10	Y12	Y16	Y20	Y25	Y32	Y40	Total			
34	15974	16008	0	44884	66570	26197	0	0	0	0	137651			



NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
1	2024-07-11	UPDATE TO TYPE D NO OFF & TONNAGE
0	2024-03-13	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SLUDGE DRYING BED REINFORCEMENT BENDING SCHEDULE

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5014	1	

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS SLUDGE DRYING BED														
ZAKUMI Consulting Engineers														
REFERENCE DRAWING Nos. PK278-01-STR-DRG-0029-5006 to 5012										DATE: 13 March 2024 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)		
-														
		TYPE F												
-	150A	Y10	1	2	2	3850	20	[3850]						
-	150B	Y10	1	2	2	3400	20	[3400]						
-	150C	Y10	1	2	2	2950	20	[2955]						
-	150D	Y10	1	2	2	2500	20	[2505]						
-	150E	Y10	1	2	2	2050	20	[2060]						
-	150F	Y10	1	2	2	1600	20	[1610]						
-	150G	Y10	1	2	2	1200	20	[1165]						
-	151	Y10	20	2	40	4050	62	590	80	[3440]				
-	152A	Y12	1	2	2	3850	20	[3850]						
-	152B	Y12	1	2	2	3400	20	[3400]						
-	152C	Y12	1	2	2	2950	20	[2955]						
-	152D	Y12	1	2	2	2500	20	[2505]						
-	152E	Y12	1	2	2	2050	20	[2060]						
-	152F	Y12	1	2	2	1600	20	[1610]						
-	152G	Y12	1	2	2	1200	20	[1165]						
-	153	Y12	20	2	40	4050	62	590	80	[3440]				
-	154A	Y10	1	2	2	4400	20	[4400]						
-	154B	Y10	1	2	2	4300	20	[4315]						
-	154C	Y10	1	2	2	4250	20	[4230]						
-	154D	Y10	1	2	2	4150	20	[4145]						
-	154E	Y10	1	2	2	4050	20	[4060]						
-	154F	Y10	1	2	2	4000	20	[3975]						
-	154G	Y10	1	2	2	3900	20	[3890]						
-	154H	Y10	1	2	2	3800	20	[3805]						
-	154I	Y10	1	2	2	3750	20	[3720]						
-	154J	Y10	1	2	2	3650	20	[3635]						
-	154K	Y10	1	2	2	3550	20	[3550]						
-	154L	Y10	1	2	2	3500	20	[3465]						

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS SLUDGE DRYING BED														
ZAKUMI Consulting Engineers														
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012										DATE: 13 March 2024 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)		
-	154M	Y10	1	2	2	3400	20	[3380]						
-	154N	Y10	1	2	2	3300	20	[3295]						
-	154O	Y10	1	2	2	3200	20	[3210]						
-	154P	Y10	1	2	2	3150	20	[3125]						
-	154Q	Y10	1	2	2	3050	20	[3040]						
-	154R	Y10	1	2	2	2950	20	[2955]						
-	154S	Y10	1	2	2	2900	20	[2870]						
-	154T	Y10	1	2	2	2800	20	[2785]						
-	154U	Y10	1	2	2	2700	20	[2700]						
-	154V	Y10	1	2	2	2600	20	[2615]						
-	154W	Y10	1	2	2	2550	20	[2530]						
-	154X	Y10	1	2	2	2450	20	[2445]						
-	154Y	Y10	1	2	2	2350	20	[2360]						
-	154Z	Y10	1	2	2	2300	20	[2275]						
-	154AA	Y10	1	2	2	2200	20	[2190]						
-	154AB	Y10	1	2	2	2100	20	[2105]						
-	154AC	Y10	1	2	2	2050	20	[2020]						
-	154AD	Y10	1	2	2	1950	20	[1940]						
-	154AE	Y10	1	2	2	1850	20	[1855]						
-	154AF	Y10	1	2	2	1800	20	[1770]						
-	154AG	Y10	1	2	2	1700	20	[1685]						
-	154AH	Y10	1	2	2	1600	20	[1600]						
-	154AI	Y10	1	2	2	1500	20	[1515]						
-	154AJ	Y10	1	2	2	1450	20	[1430]						
-	154AK	Y10	1	2	2	1350	20	[1345]						
-	154AL	Y10	1	2	2	1250	20	[1260]						
-	154AM	Y10	1	2	2	1200	20	[1175]						
-	154AN	Y10	1	2	2	1100	20	[1090]						
-	154AO	Y10	1	2	2	1000	20	[1005]						
-	154AP	Y10	1	2	2	950	20	[920]						

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS SLUDGE DRYING BED														
ZAKUMI Consulting Engineers														
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012										DATE: 13 March 2024 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)		
-	154AQ	Y10	1	2	2	850	20	[835]						
-	154AR	Y10	1	2	2	750	20	[750]						
-	154AS	Y10	1	2	2	700	20	[665]						
-	154AT	Y10	1	2	2	600	20	[580]						
-	155A	Y12	1	2	2	4400	20	[4400]						
-	155B	Y12	1	2	2	4300	20	[4315]						
-	155C	Y12	1	2	2	4250	20	[4230]						
-	155D	Y12	1	2	2	4150	20	[4145]						
-	155E	Y12	1	2	2	4050	20	[4060]						
-	155F	Y12	1	2	2	4000	20	[3975]						
-	155G	Y12	1	2	2	3900	20	[3890]						
-	155H	Y12	1	2	2	3800	20	[3805]						
-	155I	Y12	1	2	2	3750	20	[3720]						
-	155J	Y12	1	2	2	3650	20	[3635]						
-	155K	Y12	1	2	2	3550	20	[3550]						
-	155L	Y12	1	2	2	3500	20	[3465]						
-	155M	Y12	1	2	2	3400	20	[3380]						
-	155N	Y12	1	2	2	3300	20	[3295]						
-	155O	Y12	1	2	2	3200	20	[3210]						
-	155P	Y12	1	2	2	3150	20	[3125]						
-	155Q	Y12	1	2	2	3050	20	[3040]						
-	155R	Y12	1	2	2	2950	20	[2955]						
-	155S	Y12	1	2	2	2900	20	[2870]						
-	155T	Y12	1	2	2	2800	20	[2785]						
-	155U	Y12	1	2	2	2700	20	[2700]						
-	155V	Y12	1	2	2	2600	20	[2615]						
-	155W	Y12	1	2	2	2550	20	[2530]						
-	155X	Y12	1	2	2	2450	20	[2445]						
-	155Y	Y12	1	2	2	2350	20	[2360]						
-	155Z	Y12	1	2	2	2300	20	[2275]						

- NOTES**
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 - THIS DRAWING FORMS PART OF THE SPECIFICATION AND MUST BE READ IN CONJUNCTION WITH THE SAME.

ZAKUMI
Consulting Engineers

230 ALBERTUS st, LA MONTAGNE
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FAX: 012 803 7943

CLIENT

CITY OF
Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION

SLUDGE DRYING BED
REINFORCEMENT
BENDING SCHEDULE

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5015	0	

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 13 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	131AB	Y10	1	1	1	2850	20	[2845]					
-	131AC	Y10	1	1	1	2750	20	[2760]					
-	131AD	Y10	1	1	1	2700	20	[2675]					
-	131AE	Y10	1	1	1	2600	20	[2590]					
-	131AF	Y10	1	1	1	2500	20	[2505]					
-	131AG	Y10	1	1	1	2400	20	[2415]					
-	131AH	Y10	1	1	1	2350	20	[2330]					
-	131AI	Y10	1	1	1	2250	20	[2245]					
-	131AJ	Y10	1	1	1	2150	20	[2160]					
-	131AK	Y10	1	1	1	2100	20	[2075]					
-	131AL	Y10	1	1	1	2000	20	[1990]					
-	131AM	Y10	1	1	1	1900	20	[1905]					
-	131AN	Y10	1	1	1	1800	20	[1815]					
-	131AO	Y10	1	1	1	1750	20	[1730]					
-	131AP	Y10	1	1	1	1650	20	[1645]					
-	131AQ	Y10	1	1	1	1550	20	[1560]					
-	131AR	Y10	1	1	1	1500	20	[1475]					
-	131AS	Y10	1	1	1	1400	20	[1390]					
-	131AT	Y10	1	1	1	1300	20	[1305]					
-	131AU	Y10	1	1	1	1200	20	[1215]					
-	131AV	Y10	1	1	1	1150	20	[1130]					
-	131AW	Y10	1	1	1	1050	20	[1045]					
-	131AX	Y10	1	1	1	950	20	[960]					
-	131AY	Y10	1	1	1	900	20	[875]					
-	131AZ	Y10	1	1	1	800	20	[790]					
-	131AAA	Y10	1	1	1	700	20	[705]					
-	132A	Y12	1	1	1	5150	20	[5160]					
-	132B	Y12	1	1	1	5100	20	[5075]					
-	132C	Y12	1	1	1	5000	20	[4990]					
-	132D	Y12	1	1	1	4900	20	[4905]					

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 14 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	132E	Y12	1	1	1	4800	20	[4815]					
-	132F	Y12	1	1	1	4750	20	[4730]					
-	132G	Y12	1	1	1	4650	20	[4645]					
-	132H	Y12	1	1	1	4550	20	[4560]					
-	132I	Y12	1	1	1	4500	20	[4475]					
-	132J	Y12	1	1	1	4400	20	[4390]					
-	132K	Y12	1	1	1	4300	20	[4305]					
-	132L	Y12	1	1	1	4200	20	[4215]					
-	132M	Y12	1	1	1	4150	20	[4130]					
-	132N	Y12	1	1	1	4050	20	[4045]					
-	132O	Y12	1	1	1	3950	20	[3960]					
-	132P	Y12	1	1	1	3900	20	[3875]					
-	132Q	Y12	1	1	1	3800	20	[3790]					
-	132R	Y12	1	1	1	3700	20	[3705]					
-	132S	Y12	1	1	1	3600	20	[3615]					
-	132T	Y12	1	1	1	3550	20	[3530]					
-	132U	Y12	1	1	1	3450	20	[3445]					
-	132V	Y12	1	1	1	3350	20	[3360]					
-	132W	Y12	1	1	1	3300	20	[3275]					
-	132X	Y12	1	1	1	3200	20	[3190]					
-	132Y	Y12	1	1	1	3100	20	[3105]					
-	132Z	Y12	1	1	1	3000	20	[3015]					
-	132AA	Y12	1	1	1	2950	20	[2930]					
-	132AB	Y12	1	1	1	2850	20	[2845]					
-	132AC	Y12	1	1	1	2750	20	[2760]					
-	132AD	Y12	1	1	1	2700	20	[2675]					
-	132AE	Y12	1	1	1	2600	20	[2590]					
-	132AF	Y12	1	1	1	2500	20	[2505]					
-	132AG	Y12	1	1	1	2400	20	[2415]					
-	132AH	Y12	1	1	1	2350	20	[2330]					

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 15 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	132AI	Y12	1	1	1	2250	20	[2245]					
-	132AJ	Y12	1	1	1	2150	20	[2160]					
-	132AK	Y12	1	1	1	2100	20	[2075]					
-	132AL	Y12	1	1	1	2000	20	[1990]					
-	132AM	Y12	1	1	1	1900	20	[1905]					
-	132AN	Y12	1	1	1	1800	20	[1815]					
-	132AO	Y12	1	1	1	1750	20	[1730]					
-	132AP	Y12	1	1	1	1650	20	[1645]					
-	132AQ	Y12	1	1	1	1550	20	[1560]					
-	132AR	Y12	1	1	1	1500	20	[1475]					
-	132AS	Y12	1	1	1	1400	20	[1390]					
-	132AT	Y12	1	1	1	1300	20	[1305]					
-	132AU	Y12	1	1	1	1200	20	[1215]					
-	132AV	Y12	1	1	1	1150	20	[1130]					
-	132AW	Y12	1	1	1	1050	20	[1045]					
-	132AX	Y12	1	1	1	950	20	[960]					
-	132AY	Y12	1	1	1	900	20	[875]					
-	132AZ	Y12	1	1	1	800	20	[790]					
-	132AAA	Y12	1	1	1	700	20	[705]					
-	133	Y12	20	1	20	4050	62	590	80	[3440]			
-	134	Y10	18	1	18	2000	62	1000	290	[1000]			
-	135	Y12	18	1	18	2000	62	1000	290	[1000]			
-	136A	Y10	1	1	1	7100	62	590	80	[6520]			
-	136B	Y10	1	1	1	6650	62	590	80	[6065]			
-	136C	Y10	1	1	1	6200	62	590	80	[5610]			
-	136D	Y10	1	1	1	5750	62	590	80	[5155]			
-	136E	Y10	1	1	1	5300	62	590	80	[4700]			
-	136F	Y10	1	1	1	4850	62	590	80	[4245]			
-	136G	Y10	1	1	1	4400	62	590	80	[3790]			
-	136H	Y10	1	1	1	3950	62	590	80	[3330]			

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ZAKUMI Consulting Engineers
 230 ALBERTUS st, LA MONTAGNE
 PO BOX 72927,
 LYNNWOOD RIDGE, 0040
 WEBSITE: www.smecc.com
 TEL: 012 481 3800
 FAX: 012 803 7943

CLIENT



REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____

 CLIENT DATE _____

PROJECT

POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION

SLUDGE DRYING BED
 REINFORCEMENT
 BENDING SCHEDULE

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5017	0	

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 16 OF 32
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)
-	136I	Y10	1	1	1	3500	62	590	80	[2875]		
-	136J	Y10	1	1	1	3000	62	590	80	[2420]		
-	136K	Y10	1	1	1	2550	62	590	80	[1965]		
-	136L	Y10	1	1	1	2100	62	590	80	[1510]		
-	136M	Y10	1	1	1	1650	62	590	80	[1055]		
-	136N	Y10	1	1	1	1200	62	590	80	[600]		
-	137A	Y12	1	1	1	7100	62	590	80	[6520]		
-	137B	Y12	1	1	1	6650	62	590	80	[6065]		
-	137C	Y12	1	1	1	6200	62	590	80	[5610]		
-	137D	Y12	1	1	1	5750	62	590	80	[5155]		
-	137E	Y12	1	1	1	5300	62	590	80	[4700]		
-	137F	Y12	1	1	1	4850	62	590	80	[4245]		
-	137G	Y12	1	1	1	4400	62	590	80	[3790]		
-	137H	Y12	1	1	1	3950	62	590	80	[3330]		
-	137I	Y12	1	1	1	3500	62	590	80	[2875]		
-	137J	Y12	1	1	1	3000	62	590	80	[2420]		
-	137K	Y12	1	1	1	2550	62	590	80	[1965]		
-	137L	Y12	1	1	1	2100	62	590	80	[1510]		
-	137M	Y12	1	1	1	1650	62	590	80	[1055]		
-	137N	Y12	1	1	1	1200	62	590	80	[600]		
-	138A	Y10	1	1	1	2700	20	[2700]				
-	138B	Y10	1	1	1	2250	20	[2240]				
-	138C	Y10	1	1	1	1800	20	[1780]				
-	138D	Y10	1	1	1	1350	20	[1320]				
-	138E	Y10	1	1	1	850	20	[860]				
-	138F	Y10	1	1	1	400	20	[400]				
-	139A	Y12	1	1	1	2700	20	[2700]				
-	139B	Y12	1	1	1	2250	20	[2240]				
-	139C	Y12	1	1	1	1800	20	[1780]				
-	139D	Y12	1	1	1	1350	20	[1320]				

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 17 OF 32
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)
-	139E	Y12	1	1	1	850	20	[860]				
-	139F	Y12	1	1	1	400	20	[400]				
-	801	Y10	112	1	112	1700	60	140	630			
-	802	Y12	112	1	112	1250	38	600	120	[600]		
-	803	Y10	48	1	48	1100	42	330	500	170	360	
-	804	Y12	8	1	8	13000	20	[13000]				
-	STOOL	R10	23	1	23	900	83	250	100	250	[250]	

R8	R10	Total	Y8	Y10	Y12	Y16	Y20	Y25	Y32	Y40	Total
0	13	13	0	360	519	0	0	0	0	0	878

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 18 OF 32
REFERENCE DRAWING Nos. PK278-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)
TYPE H												
-	160	Y10	7	6	42	11900	20	[11880]				
-	161	Y12	7	6	42	11900	20	[11880]				
-	162A	Y10	1	6	6	1250	20	[1240]				
-	162B	Y10	1	6	6	1350	20	[1325]				
-	162C	Y10	1	6	6	1400	20	[1410]				
-	162D	Y10	1	6	6	1500	20	[1495]				
-	162E	Y10	1	6	6	1600	20	[1580]				
-	162F	Y10	1	6	6	1700	20	[1665]				
-	162G	Y10	1	6	6	1750	20	[1750]				
-	162H	Y10	1	6	6	1850	20	[1835]				
-	162I	Y10	1	6	6	1950	20	[1920]				
-	162J	Y10	1	6	6	2000	20	[2005]				
-	162K	Y10	1	6	6	2100	20	[2090]				
-	162L	Y10	1	6	6	2200	20	[2175]				
-	162M	Y10	1	6	6	2250	20	[2260]				
-	162N	Y10	1	6	6	2350	20	[2345]				
-	162O	Y10	1	6	6	2450	20	[2430]				
-	162P	Y10	1	6	6	2500	20	[2515]				
-	162Q	Y10	1	6	6	2600	20	[2600]				
-	162R	Y10	1	6	6	2700	20	[2685]				
-	162S	Y10	1	6	6	2800	20	[2770]				
-	162T	Y10	1	6	6	2850	20	[2855]				
-	162U	Y10	1	6	6	2950	20	[2940]				
-	162V	Y10	1	6	6	3050	20	[3025]				
-	162W	Y10	1	6	6	3100	20	[3110]				
-	162X	Y10	1	6	6	3200	20	[3195]				
-	162Y	Y10	1	6	6	3300	20	[3280]				
-	162Z	Y10	1	6	6	3400	20	[3365]				

- NOTES**
- DO NOT SCALE THE DRAWINGS.
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ZAKUMI Consulting Engineers
 230 ALBERTUS st, LA MONTAGNE
 PO BOX 72927,
 LYNNWOOD RIDGE, 0040
 WEBSITE: www.smecc.com
 TEL: 012 481 3800
 FAX: 012 803 7943

CLIENT



REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

T. BANDA
 ENGINEER
 PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

**POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS**

DRAWING DESCRIPTION

**SLUDGE DRYING BED
 REINFORCEMENT
 BENDING SCHEDULE**

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5018	0	

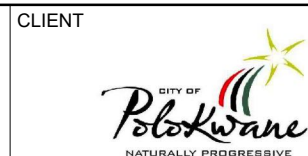
ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 19 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 REV: -											
REV	BAR MARK	TYPE AND DIAM.	NO. PER UNIT	NO. OF UNITS	TOTAL NO.	CUTTING LENGTH (mm)	SHAPE CODE	DIMENSION					
								A (mm)	B (mm)	C (mm)	D (mm)	E/R (mm)	
-	162AA	Y10	1	6	6	3450	20	[3450]					
-	162AB	Y10	1	6	6	3550	20	[3535]					
-	162AC	Y10	1	6	6	3650	20	[3620]					
-	162AD	Y10	1	6	6	3700	20	[3705]					
-	162AE	Y10	1	6	6	3800	20	[3790]					
-	162AF	Y10	1	6	6	3900	20	[3875]					
-	162AG	Y10	1	6	6	3950	20	[3960]					
-	162AH	Y10	1	6	6	4050	20	[4045]					
-	162AI	Y10	1	6	6	4150	20	[4130]					
-	162AJ	Y10	1	6	6	4200	20	[4215]					
-	162AK	Y10	1	6	6	4300	20	[4300]					
-	162AL	Y10	1	6	6	4400	20	[4385]					
-	162AM	Y10	1	6	6	4500	20	[4470]					
-	162AN	Y10	1	6	6	4550	20	[4555]					
-	162AO	Y10	1	6	6	4650	20	[4640]					
-	162AP	Y10	1	6	6	4750	20	[4725]					
-	162AQ	Y10	1	6	6	4800	20	[4810]					
-	162AR	Y10	1	6	6	4900	20	[4895]					
-	162AS	Y10	1	6	6	5000	20	[4980]					
-	162AT	Y10	1	6	6	5100	20	[5065]					
-	162AU	Y10	1	6	6	5150	20	[5150]					
-	162AV	Y10	1	6	6	5250	20	[5235]					
-	162AW	Y10	1	6	6	5350	20	[5320]					
-	162AX	Y10	1	6	6	5400	20	[5405]					
-	162AY	Y10	1	6	6	5500	20	[5490]					
-	162AZ	Y10	1	6	6	5600	20	[5575]					
-	162AAA	Y10	1	6	6	5650	20	[5660]					
-	162AAB	Y10	1	6	6	5750	20	[5745]					
-	162AAC	Y10	1	6	6	5850	20	[5830]					
-	162AAD	Y10	1	6	6	5900	20	[5915]					

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 20 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	162AAE	Y10	1	6	6	6000	20	[6000]					
-	162AAF	Y10	1	6	6	6100	20	[6085]					
-	162AAG	Y10	1	6	6	6200	20	[6170]					
-	163A	Y12	1	6	6	1250	20	[1240]					
-	163B	Y12	1	6	6	1350	20	[1325]					
-	163C	Y12	1	6	6	1400	20	[1410]					
-	163D	Y12	1	6	6	1500	20	[1495]					
-	163E	Y12	1	6	6	1600	20	[1580]					
-	163F	Y12	1	6	6	1700	20	[1665]					
-	163G	Y12	1	6	6	1750	20	[1750]					
-	163H	Y12	1	6	6	1850	20	[1835]					
-	163I	Y12	1	6	6	1950	20	[1920]					
-	163J	Y12	1	6	6	2000	20	[2005]					
-	163K	Y12	1	6	6	2100	20	[2090]					
-	163L	Y12	1	6	6	2200	20	[2175]					
-	163M	Y12	1	6	6	2250	20	[2260]					
-	163N	Y12	1	6	6	2350	20	[2345]					
-	163O	Y12	1	6	6	2450	20	[2430]					
-	163P	Y12	1	6	6	2500	20	[2515]					
-	163Q	Y12	1	6	6	2600	20	[2600]					
-	163R	Y12	1	6	6	2700	20	[2685]					
-	163S	Y12	1	6	6	2800	20	[2770]					
-	163T	Y12	1	6	6	2850	20	[2855]					
-	163U	Y12	1	6	6	2950	20	[2940]					
-	163V	Y12	1	6	6	3050	20	[3025]					
-	163W	Y12	1	6	6	3100	20	[3110]					
-	163X	Y12	1	6	6	3200	20	[3195]					
-	163Y	Y12	1	6	6	3300	20	[3280]					
-	163Z	Y12	1	6	6	3400	20	[3365]					
-	163AA	Y12	1	6	6	3450	20	[3450]					

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 21 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	163AB	Y12	1	6	6	3550	20	[3535]					
-	163AC	Y12	1	6	6	3650	20	[3620]					
-	163AD	Y12	1	6	6	3700	20	[3705]					
-	163AE	Y12	1	6	6	3800	20	[3790]					
-	163AF	Y12	1	6	6	3900	20	[3875]					
-	163AG	Y12	1	6	6	3950	20	[3960]					
-	163AH	Y12	1	6	6	4050	20	[4045]					
-	163AI	Y12	1	6	6	4150	20	[4130]					
-	163AJ	Y12	1	6	6	4200	20	[4215]					
-	163AK	Y12	1	6	6	4300	20	[4300]					
-	163AL	Y12	1	6	6	4400	20	[4385]					
-	163AM	Y12	1	6	6	4500	20	[4470]					
-	163AN	Y12	1	6	6	4550	20	[4555]					
-	163AO	Y12	1	6	6	4650	20	[4640]					
-	163AP	Y12	1	6	6	4750	20	[4725]					
-	163AQ	Y12	1	6	6	4800	20	[4810]					
-	163AR	Y12	1	6	6	4900	20	[4895]					
-	163AS	Y12	1	6	6	5000	20	[4980]					
-	163AT	Y12	1	6	6	5100	20	[5065]					
-	163AU	Y12	1	6	6	5150	20	[5150]					
-	163AV	Y12	1	6	6	5250	20	[5235]					
-	163AW	Y12	1	6	6	5350	20	[5320]					
-	163AX	Y12	1	6	6	5400	20	[5405]					
-	163AY	Y12	1	6	6	5500	20	[5490]					
-	163AZ	Y12	1	6	6	5600	20	[5575]					
-	163AAA	Y12	1	6	6	5650	20	[5660]					
-	163AAB	Y12	1	6	6	5750	20	[5745]					
-	163AAC	Y12	1	6	6	5850	20	[5830]					
-	163AAD	Y12	1	6	6	5900	20	[5915]					
-	163AAE	Y12	1	6	6	6000	20	[6000]					

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REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

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

PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION
 SLUDGE DRYING BED
 REINFORCEMENT
 BENDING SCHEDULE

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5019	0	

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 22 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	163AF	Y12	1	6	6	6100	20	[6085]					
-	163AG	Y12	1	6	6	6200	20	[6170]					
-	164A	Y10	1	6	6	11900	20	[11880]					
-	164B	Y10	1	6	6	11400	20	[11395]					
-	164C	Y10	1	6	6	10900	20	[10915]					
-	164D	Y10	1	6	6	10450	20	[10430]					
-	164E	Y10	1	6	6	9950	20	[9950]					
-	164F	Y10	1	6	6	9500	20	[9465]					
-	164G	Y10	1	6	6	9000	20	[8985]					
-	164H	Y10	1	6	6	8500	20	[8500]					
-	164I	Y10	1	6	6	8050	20	[8020]					
-	164J	Y10	1	6	6	7550	20	[7535]					
-	164K	Y10	1	6	6	7050	20	[7055]					
-	164L	Y10	1	6	6	6600	20	[6570]					
-	164M	Y10	1	6	6	6100	20	[6090]					
-	164N	Y10	1	6	6	5600	20	[5605]					
-	164O	Y10	1	6	6	5150	20	[5125]					
-	164P	Y10	1	6	6	4650	20	[4640]					
-	164Q	Y10	1	6	6	4150	20	[4160]					
-	164R	Y10	1	6	6	3700	20	[3675]					
-	164S	Y10	1	6	6	3200	20	[3195]					
-	164T	Y10	1	6	6	2700	20	[2710]					
-	164U	Y10	1	6	6	2250	20	[2230]					
-	164V	Y10	1	6	6	1750	20	[1745]					
-	164W	Y10	1	6	6	1300	20	[1265]					
-	164X	Y10	1	6	6	800	20	[780]					
-	165A	Y12	1	6	6	11900	20	[11880]					
-	165B	Y12	1	6	6	11400	20	[11395]					
-	165C	Y12	1	6	6	10900	20	[10915]					
-	165D	Y12	1	6	6	10450	20	[10430]					

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 23 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	165E	Y12	1	6	6	9950	20	[9950]					
-	165F	Y12	1	6	6	9500	20	[9465]					
-	165G	Y12	1	6	6	9000	20	[8985]					
-	165H	Y12	1	6	6	8500	20	[8500]					
-	165I	Y12	1	6	6	8050	20	[8020]					
-	165J	Y12	1	6	6	7550	20	[7535]					
-	165K	Y12	1	6	6	7050	20	[7055]					
-	165L	Y12	1	6	6	6600	20	[6570]					
-	165M	Y12	1	6	6	6100	20	[6090]					
-	165N	Y12	1	6	6	5600	20	[5605]					
-	165O	Y12	1	6	6	5150	20	[5125]					
-	165P	Y12	1	6	6	4650	20	[4640]					
-	165Q	Y12	1	6	6	4150	20	[4160]					
-	165R	Y12	1	6	6	3700	20	[3675]					
-	165S	Y12	1	6	6	3200	20	[3195]					
-	165T	Y12	1	6	6	2700	20	[2710]					
-	165U	Y12	1	6	6	2250	20	[2230]					
-	165V	Y12	1	6	6	1750	20	[1745]					
-	165W	Y12	1	6	6	1300	20	[1265]					
-	165X	Y12	1	6	6	800	20	[780]					
-	801	Y10	61	6	366	1700	60	140	630				
-	802	Y12	61	6	366	1250	38	600	120	[600]			
-	803	Y10	61	6	366	1100	42	330	500	170	360		
-	804	Y12	8	6	48	12900	20	[12900]					
-	DOWEL	Y16	5	6	30	500	20	[500]					
-	STOOL	R10	36	6	216	900	83	250	100	250	[250]		
R8	R10	Total	Y8	Y10	Y12	Y16	Y20	Y25	Y32	Y40	Total		
0	120	120	0	2314	3378	24	0	0	0	0	5716		

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 24 OF 32	
REFERENCE DRAWING Nos. PK278-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	TYPE L												
-	140A	Y10	1	5	5	10900	20	[10870]					
-	140B	Y10	1	5	5	10400	20	[10410]					
-	140C	Y10	1	5	5	9950	20	[9945]					
-	140D	Y10	1	5	5	9500	20	[9485]					
-	140E	Y10	1	5	5	9050	20	[9020]					
-	140F	Y10	1	5	5	8550	20	[8560]					
-	140G	Y10	1	5	5	8100	20	[8095]					
-	140H	Y10	1	5	5	7650	20	[7635]					
-	140I	Y10	1	5	5	7200	20	[7170]					
-	140J	Y10	1	5	5	6700	20	[6710]					
-	140K	Y10	1	5	5	6250	20	[6250]					
-	140L	Y10	1	5	5	5800	20	[5785]					
-	140M	Y10	1	5	5	5350	20	[5325]					
-	140N	Y10	1	5	5	4850	20	[4860]					
-	140O	Y10	1	5	5	4400	20	[4400]					
-	140P	Y10	1	5	5	3950	20	[3935]					
-	140Q	Y10	1	5	5	3500	20	[3475]					
-	140R	Y10	1	5	5	3000	20	[3010]					
-	140S	Y10	1	5	5	2550	20	[2550]					
-	140T	Y10	1	5	5	2100	20	[2085]					
-	140U	Y10	1	5	5	1650	20	[1625]					
-	140V	Y10	1	5	5	1200	20	[1165]					
-	141A	Y10	1	5	5	4550	20	[4520]					
-	141B	Y10	1	5	5	4450	20	[4435]					
-	141C	Y10	1	5	5	4350	20	[4350]					
-	141D	Y10	1	5	5	4250	20	[4260]					
-	141E	Y10	1	5	5	4200	20	[4175]					
-	141F	Y10	1	5	5	4100	20	[4090]					

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FAX: 012 803 7943

CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SLUDGE DRYING BED REINFORCEMENT BENDING SCHEDULE

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5020	0	


ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 25 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	141G	Y10	1	5	5	4000	20	[4005]					
-	141H	Y10	1	5	5	3950	20	[3920]					
-	141I	Y10	1	5	5	3850	20	[3830]					
-	141J	Y10	1	5	5	3750	20	[3745]					
-	141K	Y10	1	5	5	3650	20	[3660]					
-	141L	Y10	1	5	5	3600	20	[3575]					
-	141M	Y10	1	5	5	3500	20	[3485]					
-	141N	Y10	1	5	5	3400	20	[3400]					
-	141O	Y10	1	5	5	3300	20	[3315]					
-	141P	Y10	1	5	5	3250	20	[3230]					
-	141Q	Y10	1	5	5	3150	20	[3145]					
-	141R	Y10	1	5	5	3050	20	[3055]					
-	141S	Y10	1	5	5	3000	20	[2970]					
-	141T	Y10	1	5	5	2900	20	[2885]					
-	141U	Y10	1	5	5	2800	20	[2800]					
-	141V	Y10	1	5	5	2700	20	[2715]					
-	141W	Y10	1	5	5	2650	20	[2625]					
-	141X	Y10	1	5	5	2550	20	[2540]					
-	141Y	Y10	1	5	5	2450	20	[2455]					
-	141Z	Y10	1	5	5	2400	20	[2370]					
-	141AA	Y10	1	5	5	2300	20	[2280]					
-	141AB	Y10	1	5	5	2200	20	[2195]					
-	141AC	Y10	1	5	5	2100	20	[2110]					
-	141AD	Y10	1	5	5	2050	20	[2025]					
-	141AE	Y10	1	5	5	1950	20	[1940]					
-	141AF	Y10	1	5	5	1850	20	[1850]					
-	141AG	Y10	1	5	5	1800	20	[1765]					
-	141AH	Y10	1	5	5	1700	20	[1680]					
-	141AI	Y10	1	5	5	1600	20	[1595]					
-	141AJ	Y10	1	5	5	1500	20	[1510]					

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 26 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	141AK	Y10	1	5	5	1450	20	[1420]					
-	141AL	Y10	1	5	5	1350	20	[1335]					
-	141AM	Y10	1	5	5	1250	20	[1250]					
-	141AN	Y10	1	5	5	1200	20	[1165]					
-	141AO	Y10	1	5	5	1100	20	[1075]					
-	141AP	Y10	1	5	5	1000	20	[990]					
-	141AQ	Y10	1	5	5	900	20	[905]					
-	141AR	Y10	1	5	5	850	20	[820]					
-	141AS	Y10	1	5	5	750	20	[735]					
-	141AT	Y10	1	5	5	650	20	[645]					
-	141AU	Y10	1	5	5	550	20	[560]					
-	141AV	Y10	1	5	5	500	20	[475]					
-	142A	Y12	1	5	5	10900	20	[10870]					
-	142B	Y12	1	5	5	10400	20	[10410]					
-	142C	Y12	1	5	5	9950	20	[9945]					
-	142D	Y12	1	5	5	9500	20	[9485]					
-	142E	Y12	1	5	5	9050	20	[9020]					
-	142F	Y12	1	5	5	8550	20	[8560]					
-	142G	Y12	1	5	5	8100	20	[8095]					
-	142H	Y12	1	5	5	7650	20	[7635]					
-	142I	Y12	1	5	5	7200	20	[7170]					
-	142J	Y12	1	5	5	6700	20	[6710]					
-	142K	Y12	1	5	5	6250	20	[6250]					
-	142L	Y12	1	5	5	5800	20	[5785]					
-	142M	Y12	1	5	5	5350	20	[5325]					
-	142N	Y12	1	5	5	4850	20	[4860]					
-	142O	Y12	1	5	5	4400	20	[4400]					
-	142P	Y12	1	5	5	3950	20	[3935]					
-	142Q	Y12	1	5	5	3500	20	[3475]					
-	142R	Y12	1	5	5	3000	20	[3010]					

ZAKUMI Consulting Engineers		POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED										PAGE: 27 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024 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)	
-	142S	Y12	1	5	5	2550	20	[2550]					
-	142T	Y12	1	5	5	2100	20	[2085]					
-	142U	Y12	1	5	5	1650	20	[1625]					
-	142V	Y12	1	5	5	1200	20	[1165]					
-	143A	Y12	1	5	5	4550	20	[4520]					
-	143B	Y12	1	5	5	4450	20	[4435]					
-	143C	Y12	1	5	5	4350	20	[4350]					
-	143D	Y12	1	5	5	4250	20	[4260]					
-	143E	Y12	1	5	5	4200	20	[4175]					
-	143F	Y12	1	5	5	4100	20	[4090]					
-	143G	Y12	1	5	5	4000	20	[4005]					
-	143H	Y12	1	5	5	3950	20	[3920]					
-	143I	Y12	1	5	5	3850	20	[3830]					
-	143J	Y12	1	5	5	3750	20	[3745]					
-	143K	Y12	1	5	5	3650	20	[3660]					
-	143L	Y12	1	5	5	3600	20	[3575]					
-	143M	Y12	1	5	5	3500	20	[3485]					
-	143N	Y12	1	5	5	3400	20	[3400]					
-	143O	Y12	1	5	5	3300	20	[3315]					
-	143P	Y12	1	5	5	3250	20	[3230]					
-	143Q	Y12	1	5	5	3150	20	[3145]					
-	143R	Y12	1	5	5	3050	20	[3055]					
-	143S	Y12	1	5	5	3000	20	[2970]					
-	143T	Y12	1	5	5	2900	20	[2885]					
-	143U	Y12	1	5	5	2800	20	[2800]					
-	143V	Y12	1	5	5	2700	20	[2715]					
-	143W	Y12	1	5	5	2650	20	[2625]					
-	143X	Y12	1	5	5	2550	20	[2540]					
-	143Y	Y12	1	5	5	2450	20	[2455]					
-	143Z	Y12	1	5	5	2400	20	[2370]					

- NOTES**
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 WEBSITE: www.smecc.com
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 FAX: 012 803 7943

CLIENT

 CITY OF Polokwane
 NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

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

PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION
 SLUDGE DRYING BED
 REINFORCEMENT
 BENDING SCHEDULE

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5021	0	


POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED												PAGE: 28 OF 32			
ZAKUMI Consulting Engineers												REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024	
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)			
-	143AA	Y12	1	5	5	2300	20	[2280]							
-	143AB	Y12	1	5	5	2200	20	[2195]							
-	143AC	Y12	1	5	5	2100	20	[2110]							
-	143AD	Y12	1	5	5	2050	20	[2025]							
-	143AE	Y12	1	5	5	1950	20	[1940]							
-	143AF	Y12	1	5	5	1850	20	[1850]							
-	143AG	Y12	1	5	5	1800	20	[1765]							
-	143AH	Y12	1	5	5	1700	20	[1680]							
-	143AI	Y12	1	5	5	1600	20	[1595]							
-	143AJ	Y12	1	5	5	1500	20	[1510]							
-	143AK	Y12	1	5	5	1450	20	[1420]							
-	143AL	Y12	1	5	5	1350	20	[1335]							
-	143AM	Y12	1	5	5	1250	20	[1250]							
-	143AN	Y12	1	5	5	1200	20	[1165]							
-	143AO	Y12	1	5	5	1100	20	[1075]							
-	143AP	Y12	1	5	5	1000	20	[990]							
-	143AQ	Y12	1	5	5	900	20	[905]							
-	143AR	Y12	1	5	5	850	20	[820]							
-	143AS	Y12	1	5	5	750	20	[735]							
-	143AT	Y12	1	5	5	650	20	[645]							
-	143AU	Y12	1	5	5	550	20	[560]							
-	143AV	Y12	1	5	5	500	20	[475]							
-	801	Y10	56	5	280	1700	60	140	630						
-	802	Y12	56	5	280	1250	38	600	120	[600]					
-	803	Y10	56	5	280	1100	42	330	500	170	360				
-	804	Y12	16	5	80	6400	20	[6400]							
-	STOOL	R10	18	5	90	900	83	250	100	250	[250]				
R8	R10	Total	Y8	Y10	Y12	Y16	Y20	Y25	Y32	Y40	Total				
0	50	50	0	1263	1888	0	0	0	0	0	3152				

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS SLUDGE DRYING BED												PAGE: 29 OF 32			
ZAKUMI Consulting Engineers												REFERENCE DRAWING Nos. PK278-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024	
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)			
TYPE L1															
-	93A	Y10	1	1	1	7450	20	[7460]							
-	93B	Y10	1	1	1	7050	20	[7045]							
-	93C	Y10	1	1	1	6650	20	[6630]							
-	93D	Y10	1	1	1	6200	20	[6210]							
-	93E	Y10	1	1	1	5800	20	[5795]							
-	93F	Y10	1	1	1	5400	20	[5380]							
-	93G	Y10	1	1	1	4950	20	[4960]							
-	93H	Y10	1	1	1	4550	20	[4545]							
-	93I	Y10	1	1	1	4150	20	[4130]							
-	93J	Y10	1	1	1	3700	20	[3715]							
-	93K	Y10	1	1	1	3300	20	[3300]							
-	93L	Y10	1	1	1	2900	20	[2880]							
-	93M	Y10	1	1	1	2500	20	[2465]							
-	93N	Y10	1	1	1	2050	20	[2050]							
-	93O	Y10	1	1	1	1650	20	[1630]							
-	93P	Y10	1	1	1	1200	20	[1215]							
-	93Q	Y10	1	1	1	800	20	[800]							
-	94A	Y12	1	1	1	7450	20	[7460]							
-	94B	Y12	1	1	1	7050	20	[7045]							
-	94C	Y12	1	1	1	6650	20	[6630]							
-	94D	Y12	1	1	1	6200	20	[6210]							
-	94E	Y12	1	1	1	5800	20	[5795]							
-	94F	Y12	1	1	1	5400	20	[5380]							
-	94G	Y12	1	1	1	4950	20	[4960]							
-	94H	Y12	1	1	1	4550	20	[4545]							
-	94I	Y12	1	1	1	4150	20	[4130]							
-	94J	Y12	1	1	1	3700	20	[3715]							
-	94K	Y12	1	1	1	3300	20	[3300]							

POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED												PAGE: 30 OF 32			
ZAKUMI Consulting Engineers												REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012		DATE: 13 March 2024	
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)			
-	94L	Y12	1	1	1	2900	20	[2880]							
-	94M	Y12	1	1	1	2500	20	[2465]							
-	94N	Y12	1	1	1	2050	20	[2050]							
-	94O	Y12	1	1	1	1650	20	[1630]							
-	94P	Y12	1	1	1	1200	20	[1215]							
-	94Q	Y12	1	1	1	800	20	[800]							
-	95A	Y10	1	1	1	3300	20	[3310]							
-	95B	Y10	1	1	1	3250	20	[3225]							
-	95C	Y10	1	1	1	3150	20	[3140]							
-	95D	Y10	1	1	1	3050	20	[3055]							
-	95E	Y10	1	1	1	3000	20	[2965]							
-	95F	Y10	1	1	1	2900	20	[2880]							
-	95G	Y10	1	1	1	2800	20	[2795]							
-	95H	Y10	1	1	1	2700	20	[2710]							
-	95I	Y10	1	1	1	2650	20	[2625]							
-	95J	Y10	1	1	1	2550	20	[2540]							
-	95K	Y10	1	1	1	2450	20	[2450]							
-	95L	Y10	1	1	1	2400	20	[2365]							
-	95M	Y10	1	1	1	2300	20	[2280]							
-	95N	Y10	1	1	1	2200	20	[2195]							
-	95O	Y10	1	1	1	2100	20	[2110]							
-	95P	Y10	1	1	1	2050	20	[2025]							
-	95Q	Y10	1	1	1	1950	20	[1940]							
-	95R	Y10	1	1	1	1850	20	[1850]							
-	95S	Y10	1	1	1	1800	20	[1765]							
-	95T	Y10	1	1	1	1700	20	[1680]							
-	95U	Y10	1	1	1	1600	20	[1595]							
-	95V	Y10	1	1	1	1500	20	[1510]							
-	95W	Y10	1	1	1	1450	20	[1425]							
-	95X	Y10	1	1	1	1350	20	[1340]							

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 CITY OF Polokwane
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REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

ENGINEER
 T. BANDA
 PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION
 SLUDGE DRYING BED
 REINFORCEMENT
 BENDING SCHEDULE

CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5022	0	

ZAKUMI Consulting Engineers										POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED					PAGE: 31 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012										DATE: 13 March 2024 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)				
-	95Y	Y10	1	1	1	1250	20	[1250]								
-	95Z	Y10	1	1	1	1200	20	[1165]								
-	95AA	Y10	1	1	1	1100	20	[1080]								
-	95AB	Y10	1	1	1	1000	20	[995]								
-	95AC	Y10	1	1	1	900	20	[910]								
-	95AD	Y10	1	1	1	850	20	[825]								
-	95AE	Y10	1	1	1	750	20	[735]								
-	95AF	Y10	1	1	1	650	20	[650]								
-	95AG	Y10	1	1	1	600	20	[565]								
-	95AH	Y10	1	1	1	500	20	[480]								
-	96A	Y12	1	1	1	3300	20	[3310]								
-	96B	Y12	1	1	1	3250	20	[3225]								
-	96C	Y12	1	1	1	3150	20	[3140]								
-	96D	Y12	1	1	1	3050	20	[3055]								
-	96E	Y12	1	1	1	3000	20	[2965]								
-	96F	Y12	1	1	1	2900	20	[2880]								
-	96G	Y12	1	1	1	2800	20	[2795]								
-	96H	Y12	1	1	1	2700	20	[2710]								
-	96I	Y12	1	1	1	2650	20	[2625]								
-	96J	Y12	1	1	1	2550	20	[2540]								
-	96K	Y12	1	1	1	2450	20	[2450]								
-	96L	Y12	1	1	1	2400	20	[2365]								
-	96M	Y12	1	1	1	2300	20	[2280]								
-	96N	Y12	1	1	1	2200	20	[2195]								
-	96O	Y12	1	1	1	2100	20	[2110]								
-	96P	Y12	1	1	1	2050	20	[2025]								
-	96Q	Y12	1	1	1	1950	20	[1940]								
-	96R	Y12	1	1	1	1850	20	[1850]								
-	96S	Y12	1	1	1	1800	20	[1765]								
-	96T	Y12	1	1	1	1700	20	[1680]								

ZAKUMI Consulting Engineers										POLOKWANE REGIONAL WATER TREATMENT WORKS SLUDGE DRYING BED					PAGE: 32 OF 32	
REFERENCE DRAWING Nos. PK279-01-STR-DRG-0029-5006 to 5012										DATE: 13 March 2024 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)				
-	96U	Y12	1	1	1	1600	20	[1595]								
-	96V	Y12	1	1	1	1500	20	[1510]								
-	96W	Y12	1	1	1	1450	20	[1425]								
-	96X	Y12	1	1	1	1350	20	[1340]								
-	96Y	Y12	1	1	1	1250	20	[1250]								
-	96Z	Y12	1	1	1	1200	20	[1165]								
-	96AA	Y12	1	1	1	1100	20	[1080]								
-	96AB	Y12	1	1	1	1000	20	[995]								
-	96AC	Y12	1	1	1	900	20	[910]								
-	96AD	Y12	1	1	1	850	20	[825]								
-	96AE	Y12	1	1	1	750	20	[735]								
-	96AF	Y12	1	1	1	650	20	[650]								
-	96AG	Y12	1	1	1	600	20	[565]								
-	96AH	Y12	1	1	1	500	20	[480]								
-	801	Y10	126	1	126	1700	60	140	630							
-	802	Y12	126	1	126	1250	38	600	120	[600]						
-	803	Y10	63	1	63	1100	42	330	500	170	360					
-	804a	Y12	8	1	8	8750	20	[8720]								
-	804b	Y12	8	1	8	3450	20	[3430]								
-	804c	Y12	8	1	8	2000	37	1000	[1000]							
-	STOOL	R10	35	1	35	900	83	250	100	250	[250]					
R8	R10	Total	Y8	Y10	Y12	Y16	Y20	Y25	Y32	Y40	Total					
0	19	19	0	192	291	0	0	0	0	0	483					

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Consulting Engineers

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CLIENT

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Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-03-13	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

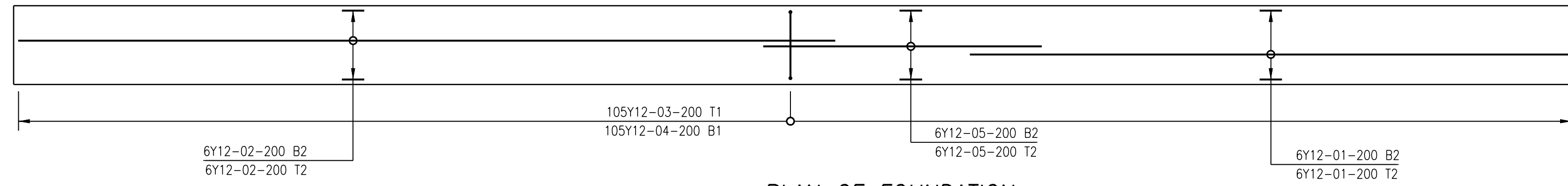
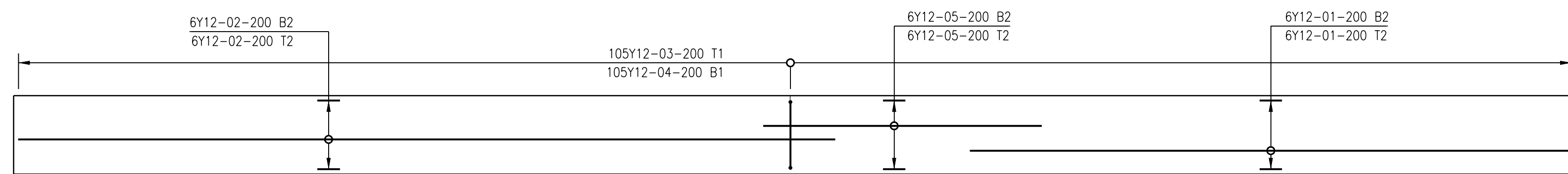
POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS

DRAWING DESCRIPTION

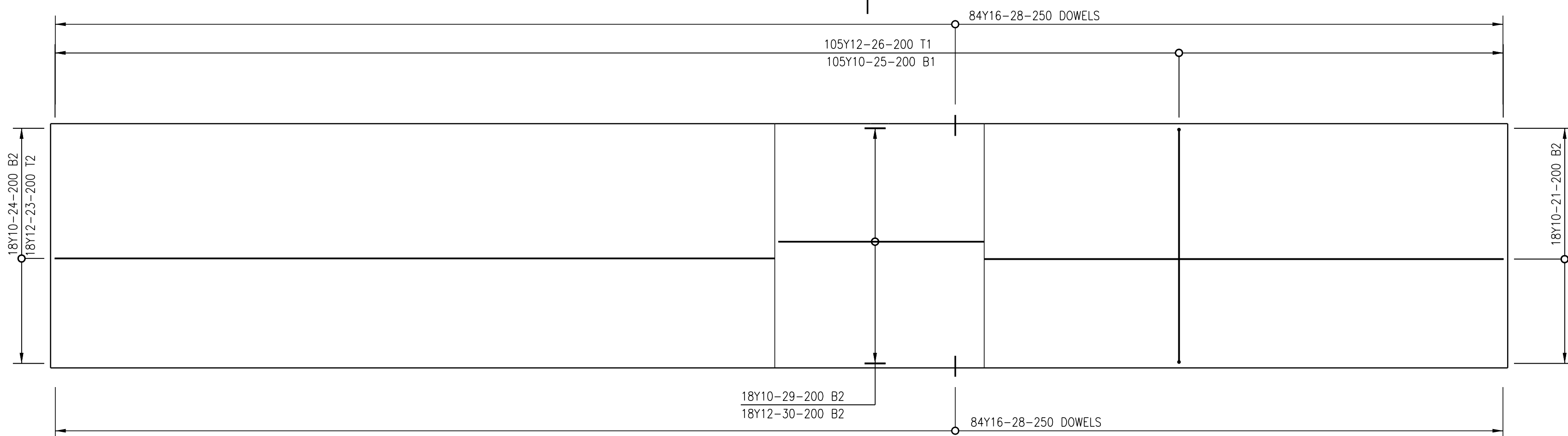
SLUDGE DRYING BED
REINFORCEMENT
BENDING SCHEDULE

CONSTRUCTION DRAWING

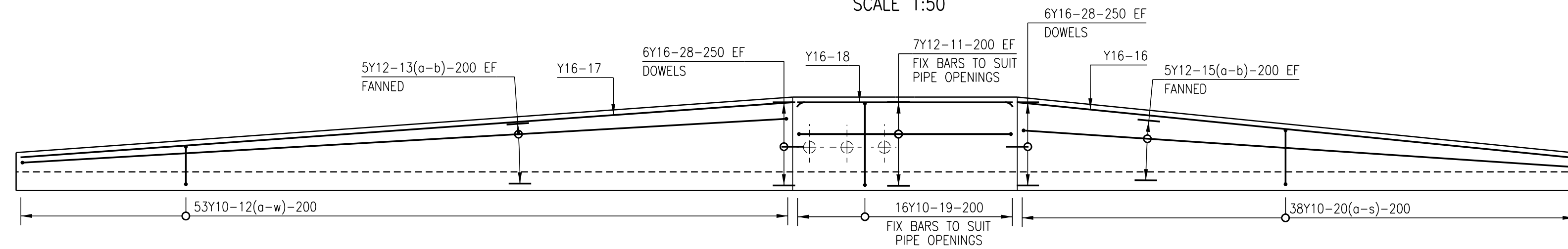
DESIGNED	DRAWN	CHECKED
T. TSITSI	T. TSITSI	-
REV DATE	SCALE	ORIGINAL SIZE
AS SHOWN	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-SMEC-01-STR-DRG-0029-5023	0	



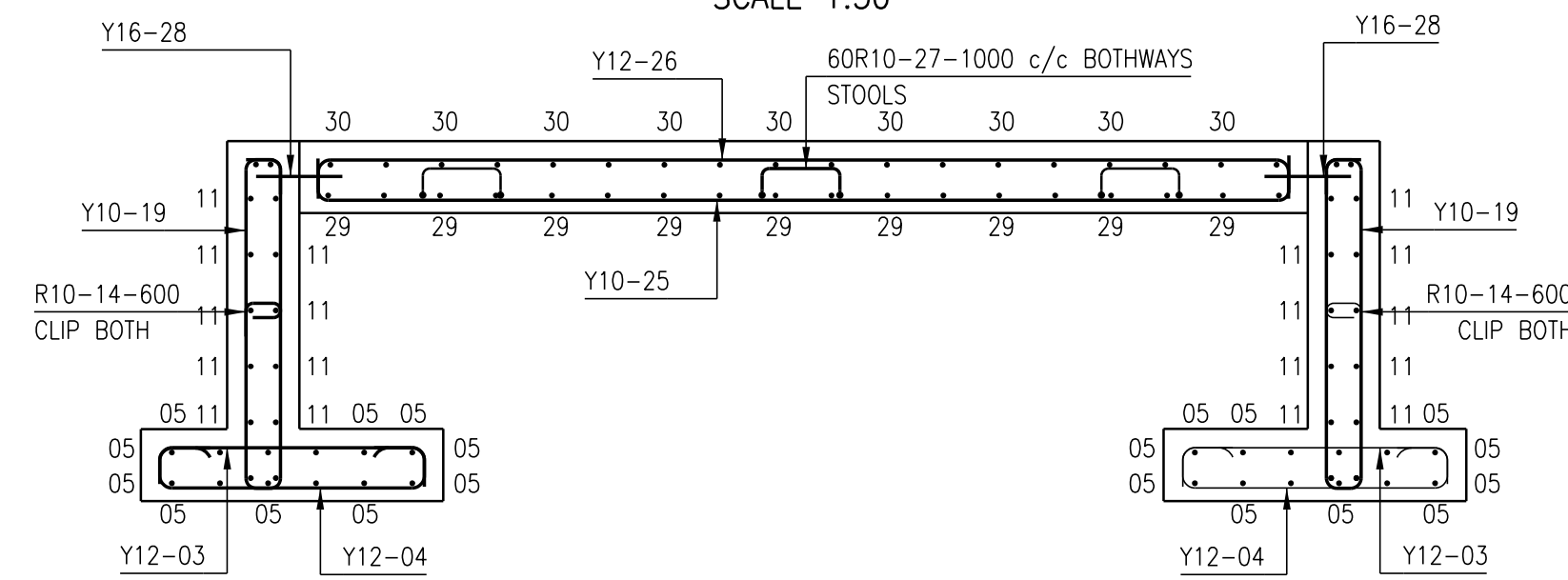
PLAN OF FOUNDATION
SCALE 1:50



PLAN OF SLAB
SCALE 1:50



ELEVATION OF RAMP WALL
2 NO. OFF
SCALE 1:50



SECTIONAL ELEVATION OF RAMP
SCALE 1:25

- 1. 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 OMISSIONS SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.
 - 1.3 NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS.
 - 1.4 BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- 2. REINFORCEMENT NOTES:**
- 2.1 WELDED MESH FABRIC SHALL CONFIRM TO SANS-1024:2006
 - 2.2 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:
- SLABS (TOP OF) - 60MM
- SLABS (BOTTOM OF) - 40MM
 - 2.3 REINFORCEMENT TO BE HOT ROLLED AND TO COMPLY WITH SANS 920:2011 SPECIFICATIONS FOR STEEL BARS FOR CONCRETE REINFORCEMENT THE STANDARD MINIMUM CHARACTERISTIC STRENGTH (fy)
MILD STEEL BARS 250 MPa
HIGH YIELD STEEL BARS (S5008) 500 MPa
 - 2.4 REINFORCEMENT BARS, INCLUDING HELICAL REINFORCEMENT AND DOWELS, BUT NOT FABRIC REINFORCEMENT, ARE CALLED UP ON THE DRAWINGS IN THE FOLLOWING MANNER:
No OFF: BAR TYPE: BAR DIA (BAR SHAPE) - BAR MARK - FITCH : POSITION AND/OR COMMENT.
e.g. 7H20(20)-09-125 B
9R25(20)-37-900 DOWELS
 - 2.5 BAR DESIGNATION IS AS FOLLOWS:
R = GRADE 250 PLAIN ROUND MILD STEEL BARS COMPLYING WITH SANS 920:2011
Y = GRADE S5008 DEFORMED HIGH YIELD BARS COMPLYING WITH SANS 920:2011
POSITION / COMMENT IS DESIGNATED AS FOLLOWS:
T = TOP FACE, B = BOTTOM FACE, NF = NEAR FACE, FF = FAR FACE.
EF = EACH FACE (BOTH NEAR AND FAR FACES).
ABR = ALTERNATE BARS REVERSED.
STG = ALTERNATE BARS STAGGERED BY THE AMOUNTS SHOWN
ALT = ALTERNATIVELY PLACED.
ADDITIONALLY, WHERE 3 OR MORE LAYERS OF REINFORCEMENT ARE USED, A NUMERICAL SUFFIX HAS BEEN USED TO INDICATE THE LAYER POSITION. LAYERS HAVE BEEN NUMBERED FROM OUTERMOST LAYER INWARDS UNLESS NOTED OTHERWISE.
 - 2.7 BENDING AND SCHEDULING OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH SANS 282.
 - 2.8 MINIMUM ANCHORAGE AND LAP LENGTHS SHALL MEET THE CODE REQUIREMENTS. LAP LENGTHS FOR GRADE Y REINFORCEMENT IS 15 X BAR DIAMETER OF 300mm UNLESS NOTED OTHERWISE.
 - 2.9 ALL REINFORCEMENT TO BE HOT-DIP GALVANISED IN ACCORDANCE WITH EN ISO 1461.

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
- 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
00	2024-03-28	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

DRAWING DESCRIPTION

**SLUDGE DRYING BED RAMP
REINFORCEMENT DETAILS**

DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-28	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5024	00	

POLOKWANE REGIONAL WWTW SLUDGE DRYING BED RAMP											PAGE: 1 OF 3	
ZAKUMI Consulting Engineers											REFERENCE DRAWING Nos. DATE: 28 March 2024	
PK278-01-STR-DRG-0029-5025											REV: -	
R E V	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)
FOUNDATION												
-	01	Y12	24	1	24	8 050	20					
-	02	Y12	24	1	24	10 900	20					
-	03	Y12	210	1	210	1 100	38	130	920			
-	04	Y12	210	1	210	1 450	55	170	140	920	140	
-	05	Y12	24	1	24	3 750	20					
WALL												
-	11	Y12	14	2	28	3 050	38	120	2 870	120		
-	12a	Y10	2	2	4	2 550	60	1 100	120			
-	12b	Y10	2	2	4	2 500	60	1 070	120			
-	12c	Y10	2	2	4	2 450	60	1 050	120			
-	12d	Y10	2	2	4	2 400	60	1 020	120			
-	12e	Y10	3	2	6	2 350	60	980	120			
-	12f	Y10	2	2	4	2 250	60	950	120			
-	12g	Y10	3	2	6	2 200	60	910	120			
-	12h	Y10	2	2	4	2 150	60	880	120			
-	12i	Y10	2	2	4	2 050	60	850	120			
-	12j	Y10	3	2	6	2 000	60	810	120			
-	12k	Y10	2	2	4	1 950	60	780	120			
-	12l	Y10	3	2	6	1 850	60	740	120			
-	12m	Y10	2	2	4	1 800	60	710	120			
-	12n	Y10	3	2	6	1 700	60	670	120			
-	12o	Y10	2	2	4	1 650	60	640	120			
-	12p	Y10	3	2	6	1 550	60	600	120			
-	12q	Y10	2	2	4	1 500	60	570	120			
-	12r	Y10	3	2	6	1 450	60	530	120			
-	12s	Y10	2	2	4	1 350	60	500	120			
-	12t	Y10	2	2	4	1 300	60	470	120			
-	12u	Y10	3	2	6	1 250	60	430	120			

POLOKWANE REGIONAL WWTW SLUDGE DRYING BED RAMP											PAGE: 2 OF 3	
ZAKUMI Consulting Engineers											REFERENCE DRAWING Nos. DATE: 28 March 2024	
PK278-01-STR-DRG-0029-5025											REV: -	
R E V	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)
-	12v	Y10	2	2	4	1 150	60	400	120			
-	12w	Y10	1	2	2	1 150	60	380	120			
-	13a	Y12	8	2	16	10 450	38	120	10 250	120		
-	13b	Y12	2	2	4	200	38	120	10 250	120		
-	14	R10	36	2	72	350	85	120	120	60		
-	15a	Y12	8	2	16	7 550	38	120	7 370	120		
-	15b	Y12	2	2	4	200	38	120	7 390	120		
-	16	Y16	2	2	4	7 500	20					
-	17	Y16	2	2	4	10 350	20					
-	18	Y16	2	2	4	2 900	20					
-	19	Y10	16	2	32	2 650	60	1 140	120			
-	20a	Y10	2	2	4	1 150	60	380	120			
-	20b	Y10	2	2	4	1 200	60	420	120			
-	20c	Y10	2	2	4	1 300	60	460	120			
-	20d	Y10	2	2	4	1 350	60	500	120			
-	20e	Y10	2	2	4	1 450	60	540	120			
-	20f	Y10	2	2	4	1 550	60	580	120			
-	20g	Y10	2	2	4	1 600	60	620	120			
-	20h	Y10	2	2	4	1 700	60	660	120			
-	20i	Y10	2	2	4	1 750	60	700	120			
-	20j	Y10	2	2	4	1 850	60	740	120			
-	20k	Y10	2	2	4	1 950	60	780	120			
-	20l	Y10	2	2	4	2 000	60	820	120			
-	20m	Y10	2	2	4	2 100	60	860	120			
-	20n	Y10	2	2	4	2 150	60	900	120			
-	20o	Y10	2	2	4	2 250	60	930	120			
-	20p	Y10	2	2	4	2 300	60	970	120			
-	20q	Y10	2	2	4	2 400	60	1 010	120			
-	20r	Y10	2	2	4	2 450	60	1 050	120			
-	20s	Y10	2	2	4	2 550	60	1 090	120			

POLOKWANE REGIONAL WWTW SLUDGE DRYING BED RAMP											PAGE: 3 OF 3	
ZAKUMI Consulting Engineers											REFERENCE DRAWING Nos. DATE: 28 March 2024	
PK278-01-STR-DRG-0029-5025											REV: -	
R E V	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)
SLAB												
-	21	Y10	18	1	18	7 450	20					
-	22	Y12	18	1	18	7 450	20					
-	23	Y12	18	1	18	10 300	20					
-	24	Y10	18	1	18	10 300	20					
-	25	Y10	105	1	105	3 600	38	150	3 370			
-	26	Y12	105	1	105	3 600	38	130	3 370			
-	27	R10	60	1	60	1 000	83	270	100	300		
-	28	Y16	192	1	192	300	20					
-	29	Y10	18	1	18	4 200	49	610	610		70	50
-	30	Y12	18	1	18	4 200	49	610	610		70	60

R6	R8	R10	R12	R16	R20	R25	R32	R40	Total	Y6	Y8	Y10	Y12	Y16	Y20	Y25	Y32	Y40	Total
0	0	53	0	0	0	0	0	0	53	0	0	737	1979	222	0	0	0	0	2938

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- SLABS (BOTTOM OF) - 40MM
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MILD STEEL BARS 250 MPa
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No. OFF: BAR TYPE: BAR DIA (BAR SHAPE) - BAR MARK - PITCH : POSITION AND/OR COMMENT.
e.g. 7#20(20)-09-125 B
9R25(20)-37-900 DOWELS
 - BAR DESIGNATION IS AS FOLLOWS:
R = GRADE 250 PLAIN ROUND MILD STEEL BARS COMPLYING WITH SANS 920:2011
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CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
T.TSITSI	O.MOHLAONE	T.TSITSI
REV DATE	SCALE	ORIGINAL SIZE
2024-03-28	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0029-5025	00	

- NOTES
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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
00	2024-03-28	FOR CONSTRUCTION

T.BANDA
ENGINEER

PR ENG no. DATE

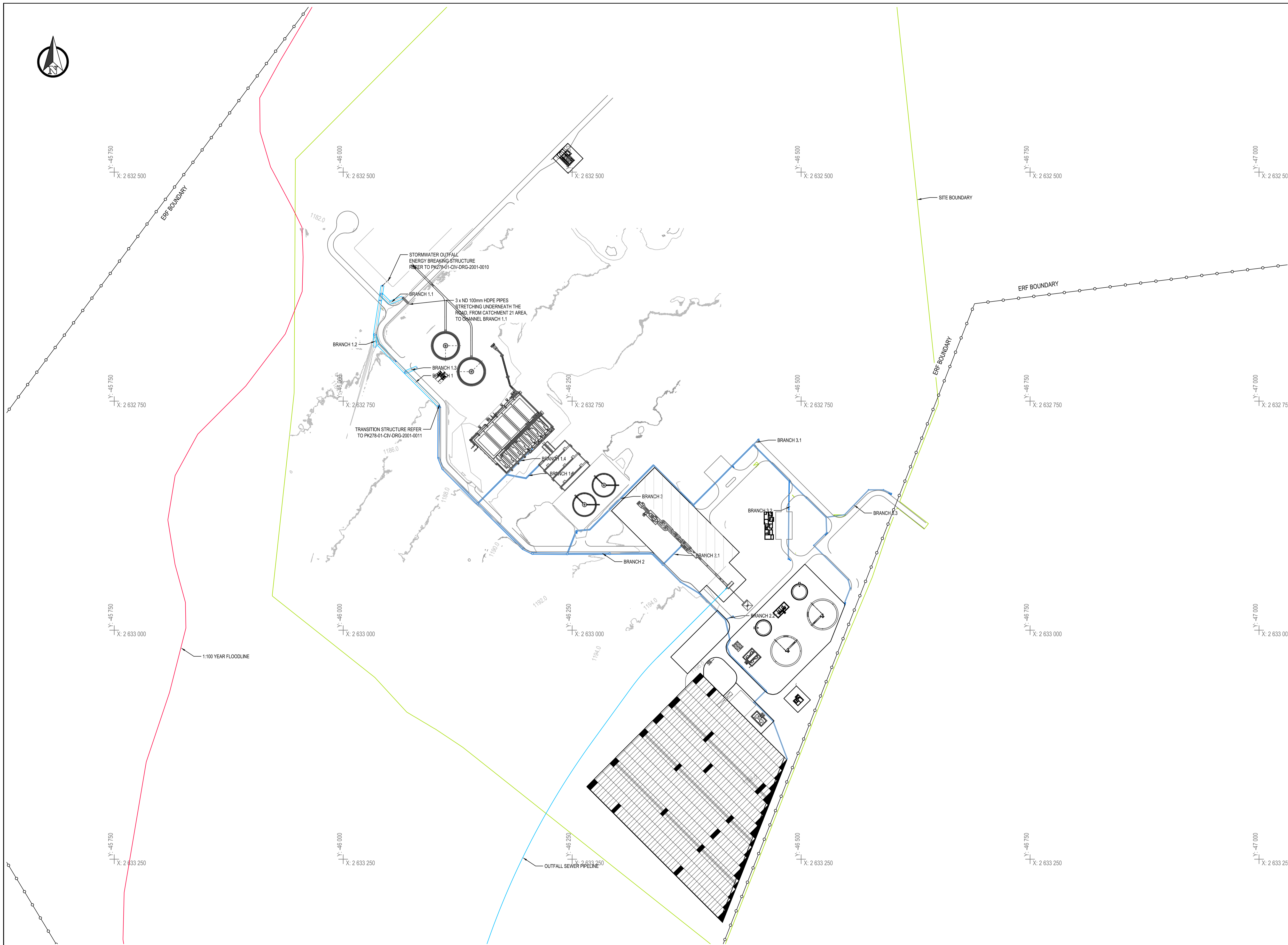
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

SLUDGE DRYING BED RAMP BENDING SCHEDULES



CONSTRUCTION DRAWING

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-07	ISSUED FOR CONSTRUCTION
1	2024-08	SLUDGE DRYING BEDS ADDED TO LAYOUT

T. BANDA	ENGINEER	PR ENG no.	DATE
CLIENT			DATE

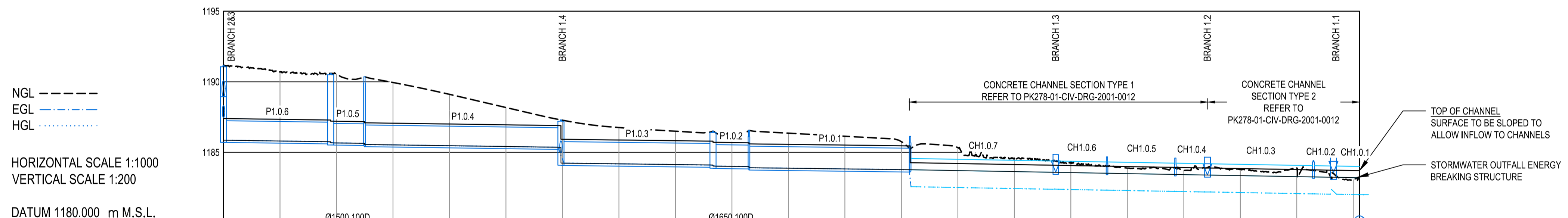
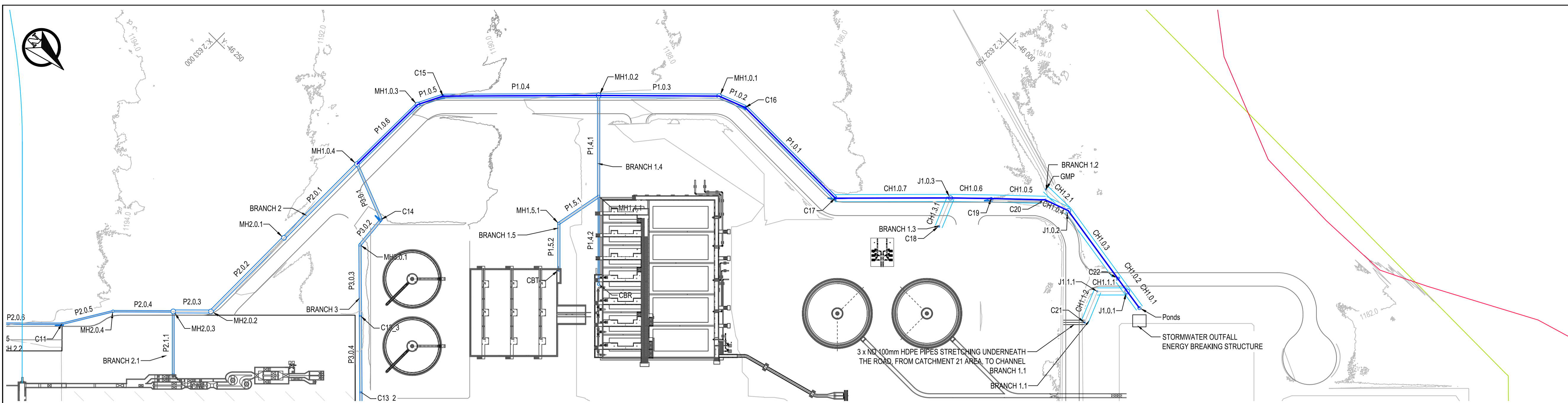
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

STORMWATER GENERAL LAYOUT

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-08	1:2000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2001-0002	1	



REFERENCE	MH1.0.4	Ø1500 1000 CONCRETE PIPE		MH1.0.2	Ø1650 1000 CONCRETE PIPE		C17	J1.0.3	C19	C20	J1.0.2	C22	J1.0.1	Ponds									
FINISHED PLATFORM LEVEL	1191.164	1190.703	1190.542	1189.951	1189.112	1188.177	1187.281	1186.759	1186.498	1186.077	1186.359	1186.140	1185.756	1185.337	1184.545	1184.255	1183.883	1183.716	1183.802	1183.969	1183.050	1183.300	
PIPE INVERT LEVEL	1185.861	1185.753	1185.673	1185.358	1184.103	1184.023	1183.911	1183.768	1183.584	1183.519	1183.433	1183.389	1183.238	1183.233	1183.200					1183.238	1183.233	1183.200	1183.200
DEPTH TO INVERT	3.303	4.848	4.928	4.718	1.944	3.065	2.482	2.401	2.566	2.846	0.877	0.957	0.792	0.523	0.451	0.524	0.000	0.000	0.000	0.450	0.285	0.100	0.000
COVER	3.767	3.392	3.312	3.182	0.408	1.376	0.712	0.793	0.877	0.957	0.954	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SLOPE / LENGTH		1:350.0 37.95m	1:350.0 11.96m	1:350.0 69.56m	1:400.0 53.84m	1:400.0 12.73m	1:400.0 57.06m	1:280.0 51.54m	1:280.0 18.17m	1:280.0 24.19m	1:280.0 11.34m	1:280.0 37.57m	1:280.0 7.06m	1:280.0 9.21m									
HYDRAULICS	DESIGN	Q(m³/s) 1.96	1.96	2.03	2.81	2.81	2.97	2.57	2.57	2.56	2.55	2.58	2.56	2.57							2.56	2.57	
	MAX. (0.8D)	V(m/s) 2.58	2.58	2.58	3.12	3.12	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CONSTRUCTION DRAWING

NOTES

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

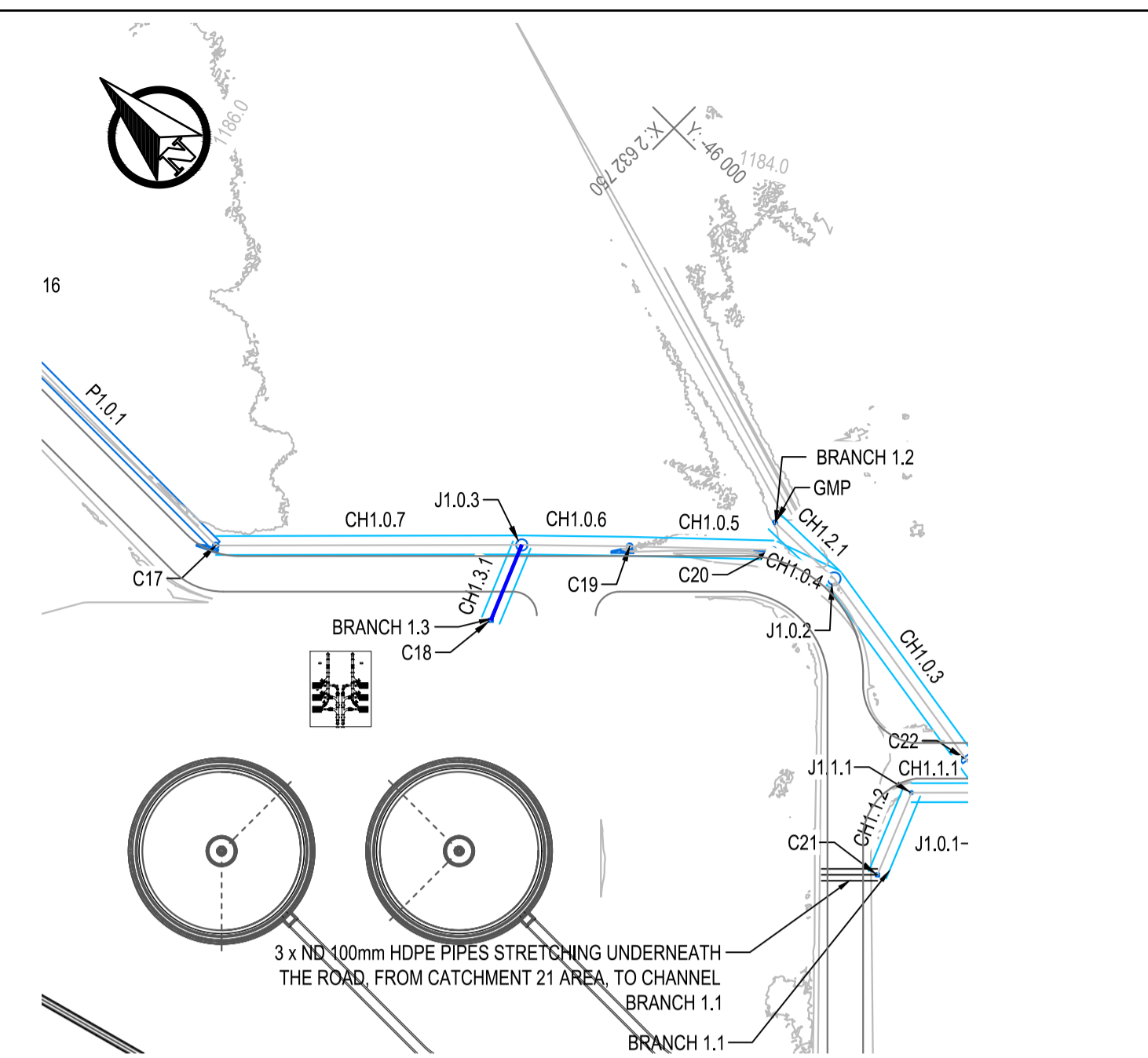
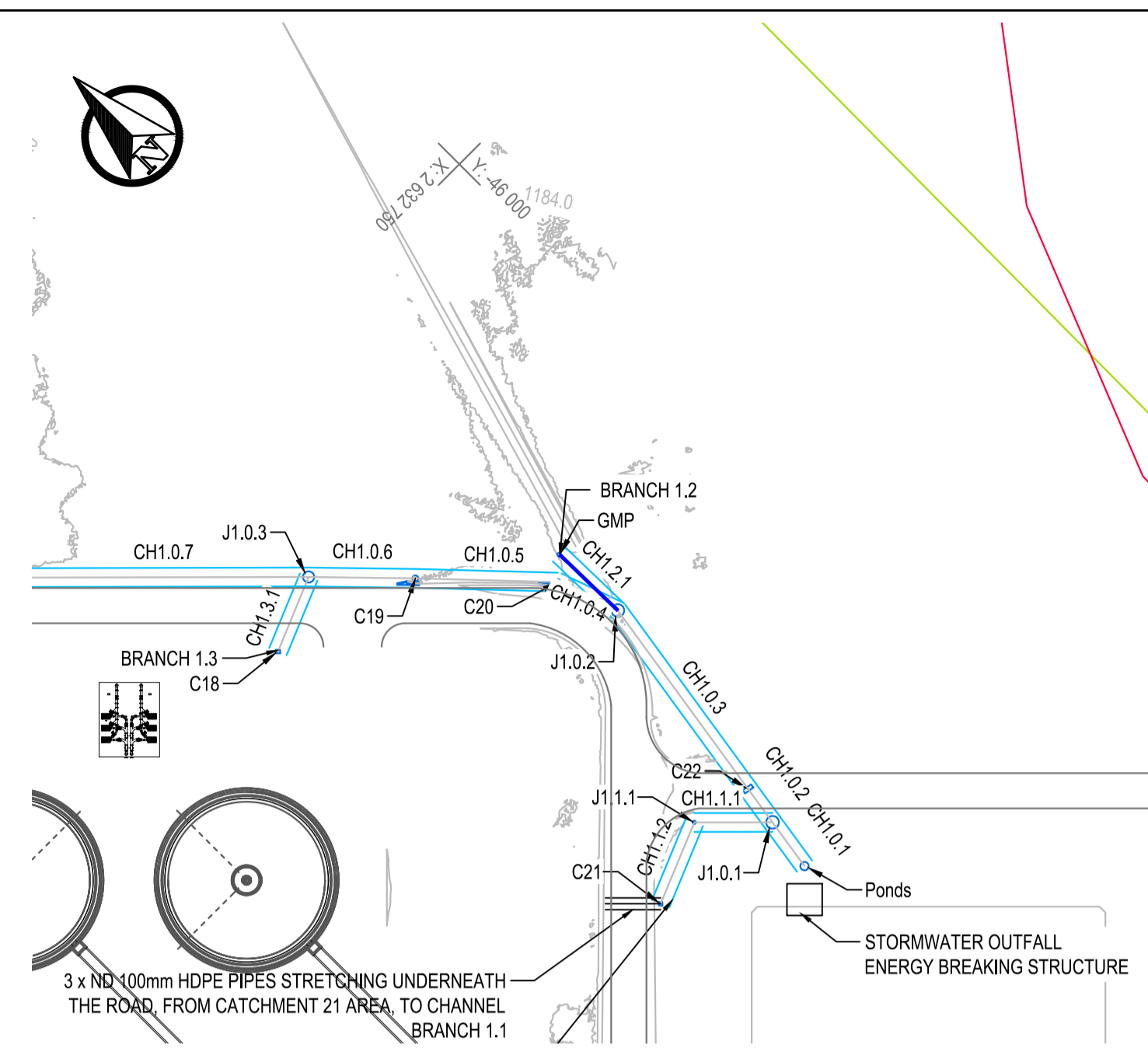
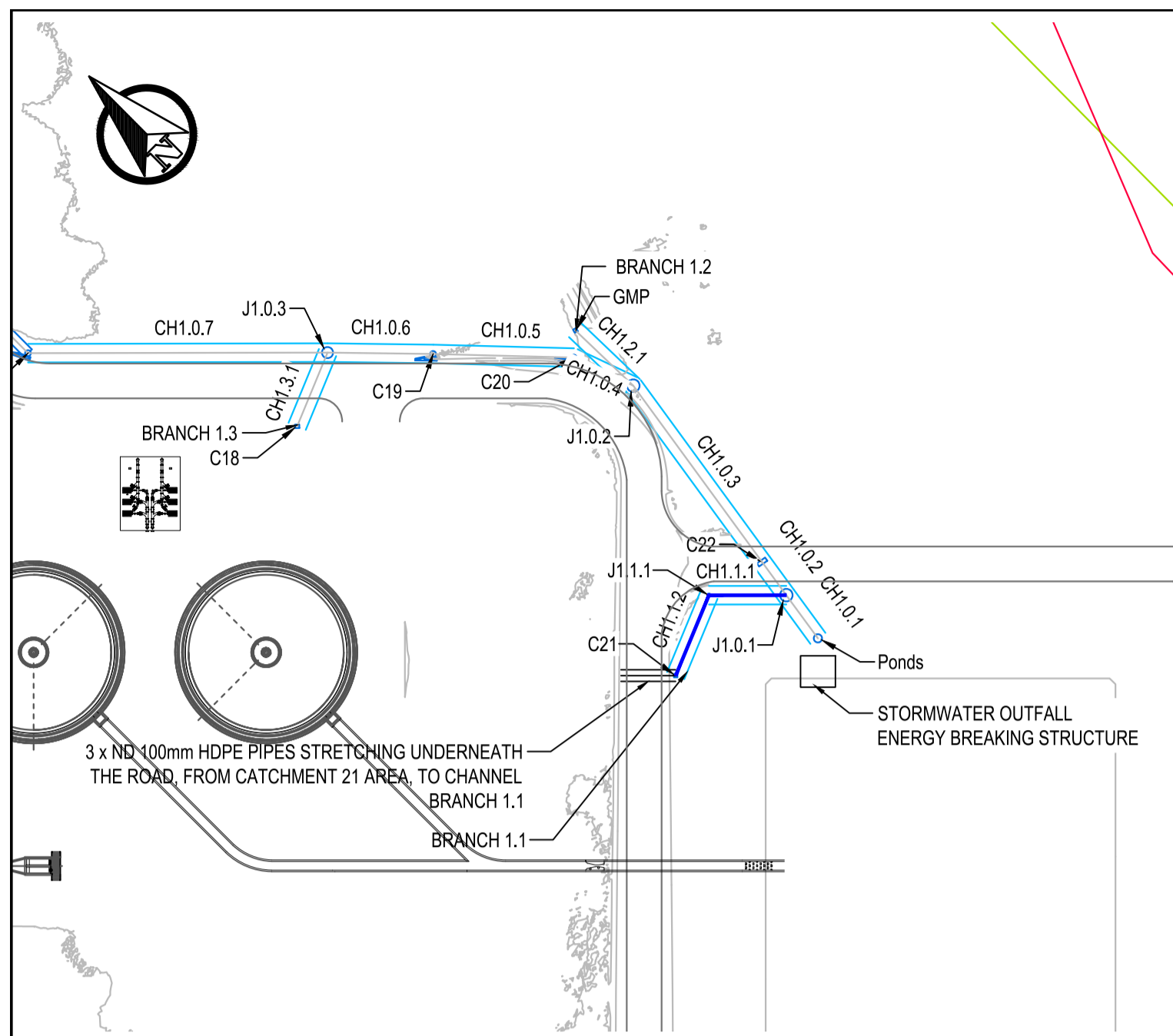
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

STORMWATER BRANCH 1 PROFILE

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-07	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2001-0003	0	



CHANNEL SECTION TYPE 3
REFER TO PK278-01-CIV-DRG-2001-0012

NGL - - - - -
EGL - - - - -
HGL - - - - -

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1180.000 m M.S.L.

REFERENCE	C21	J1.1.1	J1.0.1	
FINISHED PLATFORM LEVEL	1183.464	1183.700	1183.499	
PIPE INVERT LEVEL	1183.700	1183.566	1183.559	
DEPTH TO INVERT	-0.237	0.114 0.112	-0.060	
COVER	0.000	0.000 0.000	0.000	
SLOPE / LENGTH	1:200.0 14.97m	1:200.0 13.32m		
HYDRAULICS	DESIGN	Q(m ³ /s) V(m/s)	0.02 0.7	0.02 0.7
	MAX. (0.8D)	Q(m ³ /s) V(m/s)	0.00 0.0	0.00 0.0

CHANNEL SECTION TYPE 3
REFER TO PK278-01-CIV-DRG-2001-0012

NGL - - - - -
EGL - - - - -
HGL - - - - -

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1180.000 m M.S.L.

REFERENCE	GMP	J1.0.2	
FINISHED PLATFORM LEVEL	1184.087	1183.917	
PIPE INVERT LEVEL	1183.462	1183.393	
DEPTH TO INVERT	0.625	0.524	
COVER	0.000	0.000	
SLOPE / LENGTH	1:200.0 13.78m		
HYDRAULICS	DESIGN	Q(m ³ /s) V(m/s)	0.22 1.2
	MAX. (0.8D)	Q(m ³ /s) V(m/s)	0.00 0.0

CHANNEL SECTION TYPE 4
REFER TO PK278-01-CIV-DRG-2001-0012

NGL - - - - -
EGL - - - - -
HGL - - - - -

HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

DATUM 1180.000 m M.S.L.

REFERENCE	C18	J1.0.3	
FINISHED PLATFORM LEVEL	1184.305	1184.376	
PIPE INVERT LEVEL	1183.666	1183.597	
DEPTH TO INVERT	0.639	0.779	
COVER	0.000	0.000	
SLOPE / LENGTH	1:200.0 13.72m		
HYDRAULICS	DESIGN	Q(m ³ /s) V(m/s)	0.29 1.3
	MAX. (0.8D)	Q(m ³ /s) V(m/s)	0.00 0.0

NOTES

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Consulting Engineers

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CLIENT

CITY OF Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

PROJECT

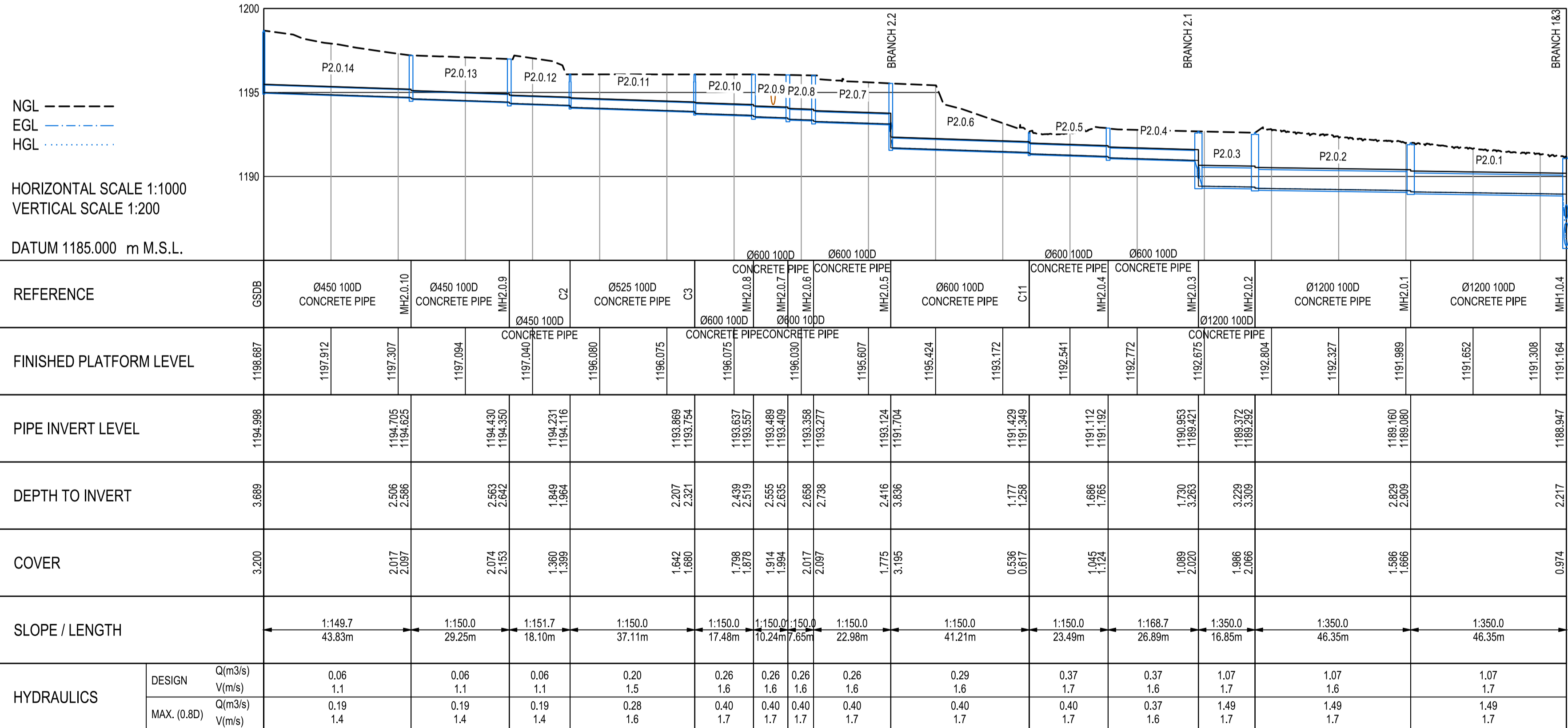
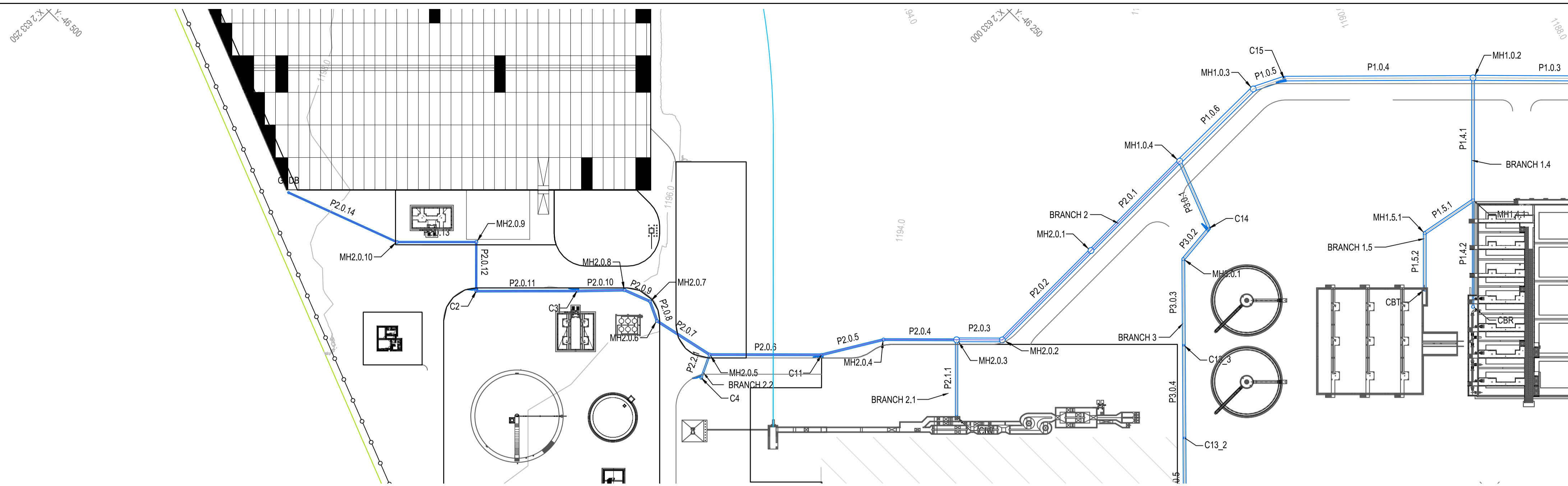
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

STORMWATER BRANCHES 1.1-1.3 PROFILES

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-07	1:1000	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2001-0004	0	



CONSTRUCTION DRAWING

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CITY OF
Polokwane
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07	ISSUED FOR CONSTRUCTION
1	2024-08	SLUDGE DRYING BEDS ADDED TO LAYOUT

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____

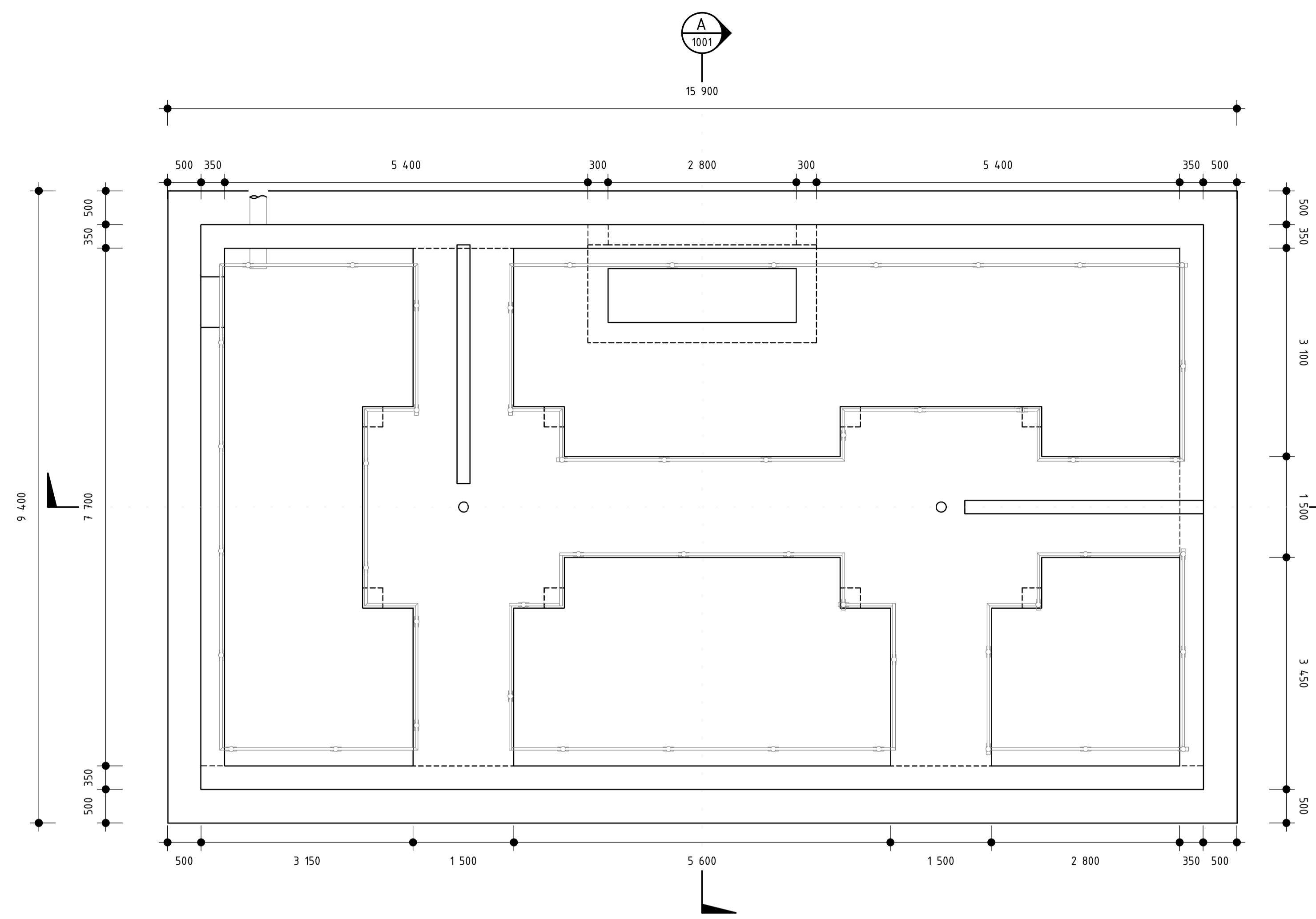
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

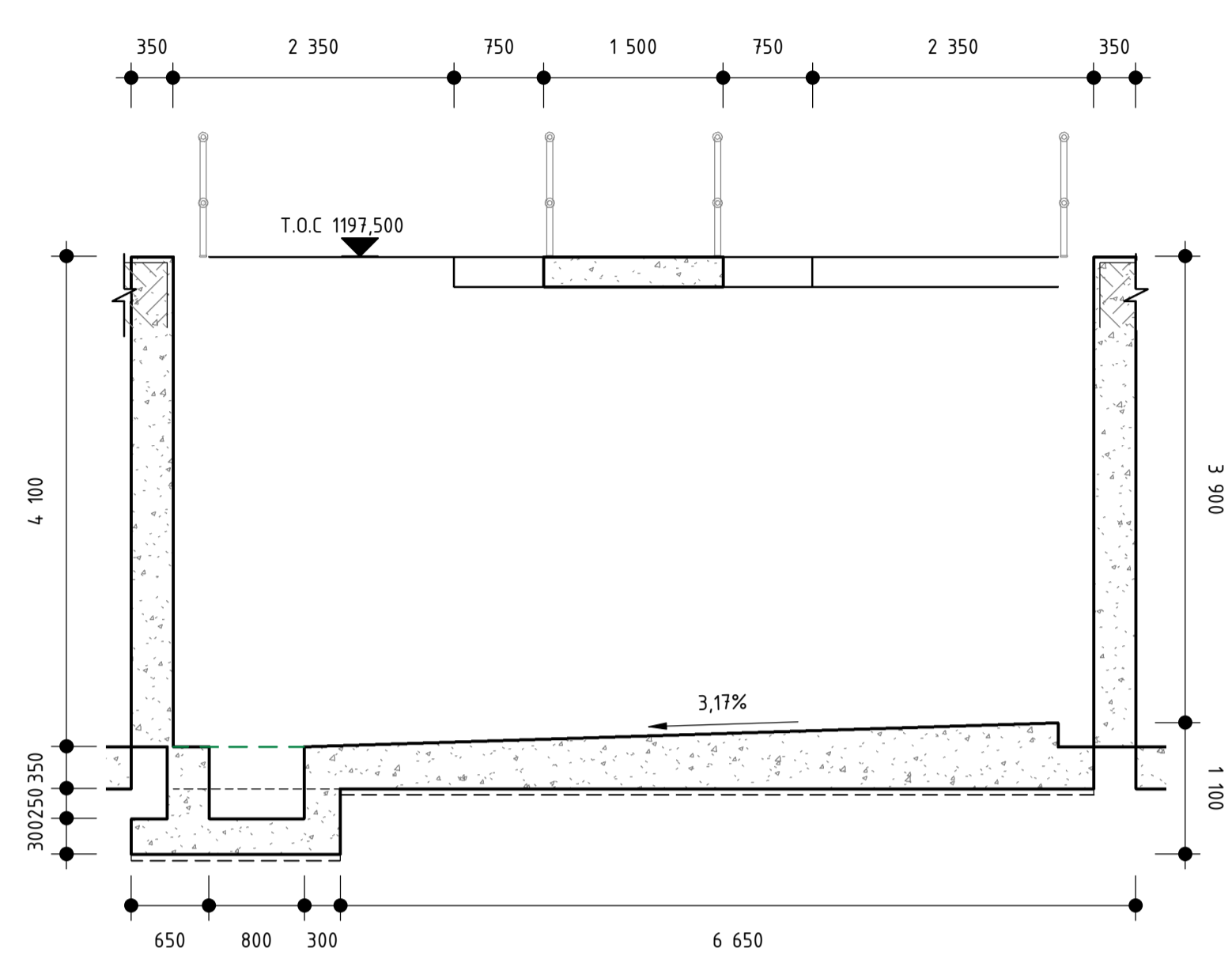
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**STORMWATER
BRANCH 2 PROFILE**

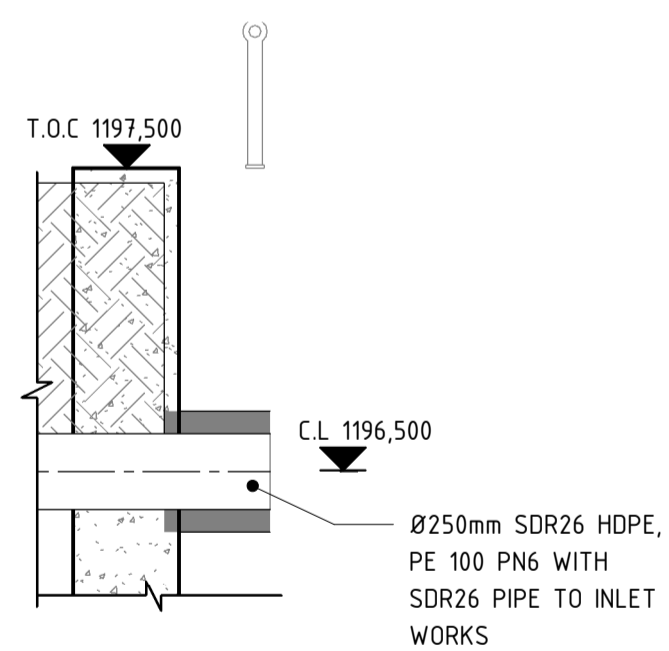
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Designer	Author	Checker
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DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-CIV-DRG-2001-0006	1	



PLAN VIEW
SCALE 1 : 50



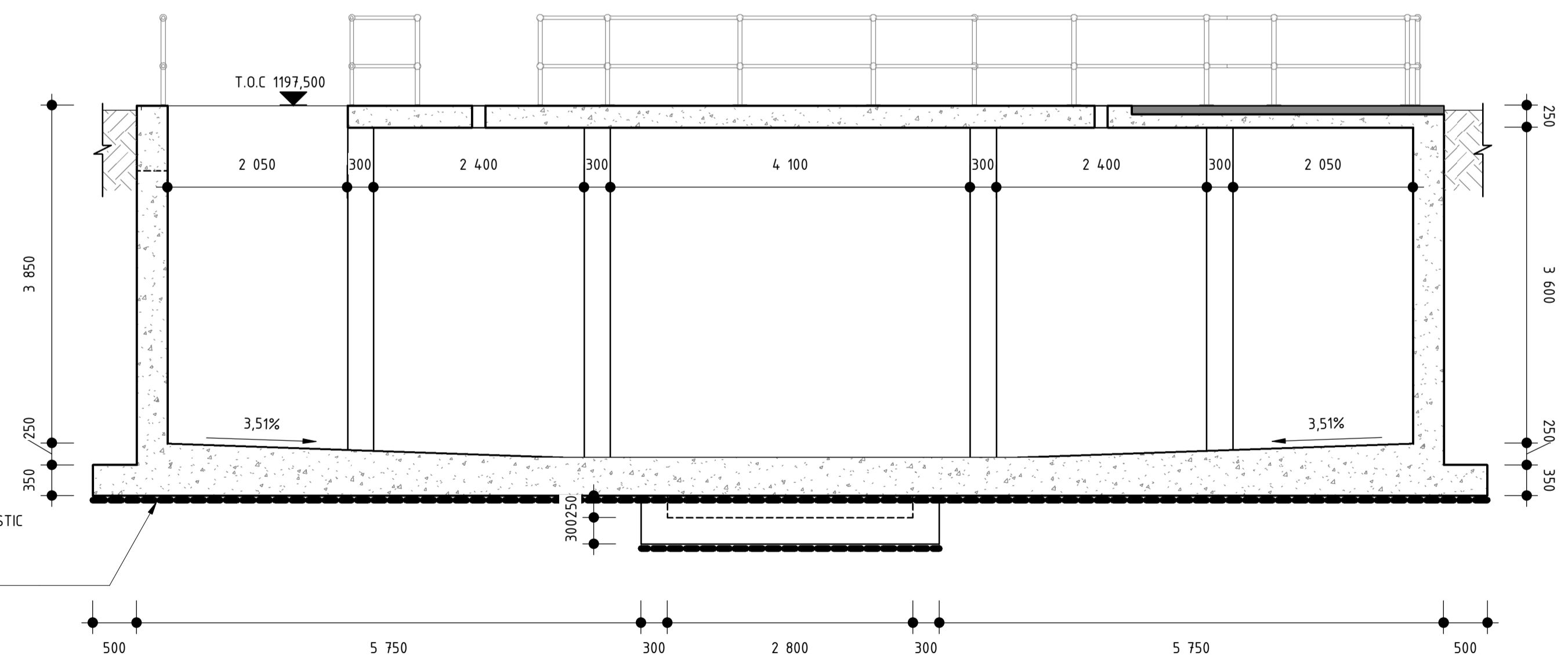
SECTION A
SCALE 1 : 50



SECTION C
SCALE 1 : 25

200mm LAYER OF EXISTING SOIL TO BE RIPPED AND COMPACTED TO MIN 95% MOD AASSHTOAT OPTIMUM MOISTURE

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



SECTION B
SCALE 1 : 50

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

- CONCRETE NOTES:**
- 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.
 - 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
 - ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
 - 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.
 - 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 25 x 25mm 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:**
- 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

NOTES

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CLIENT
CITY OF Polokwane
NATURALLY PROGRESSIVE

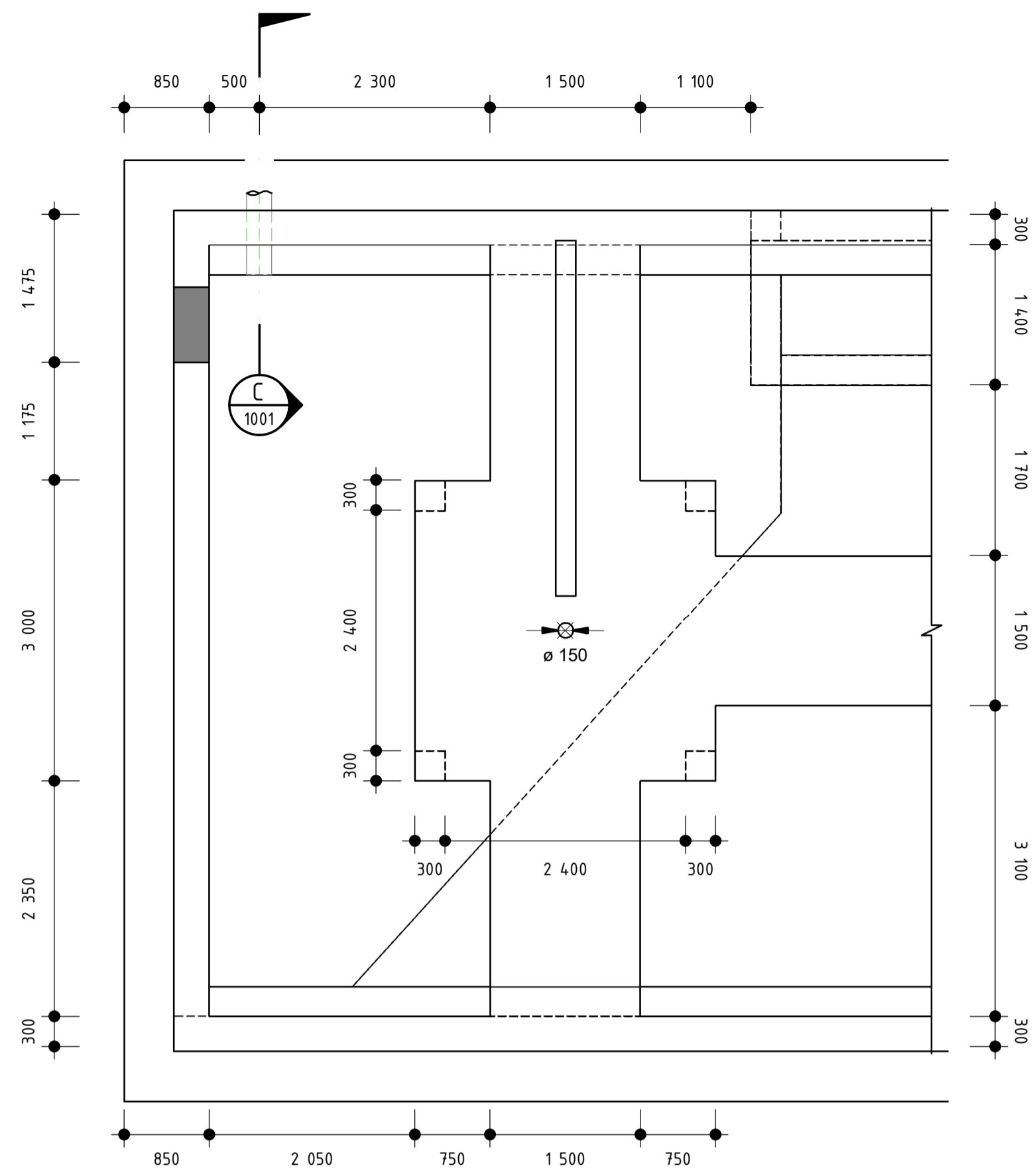
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NO.	REVISION DESCRIPTION
0	ISSUED FOR CONSTRUCTION

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

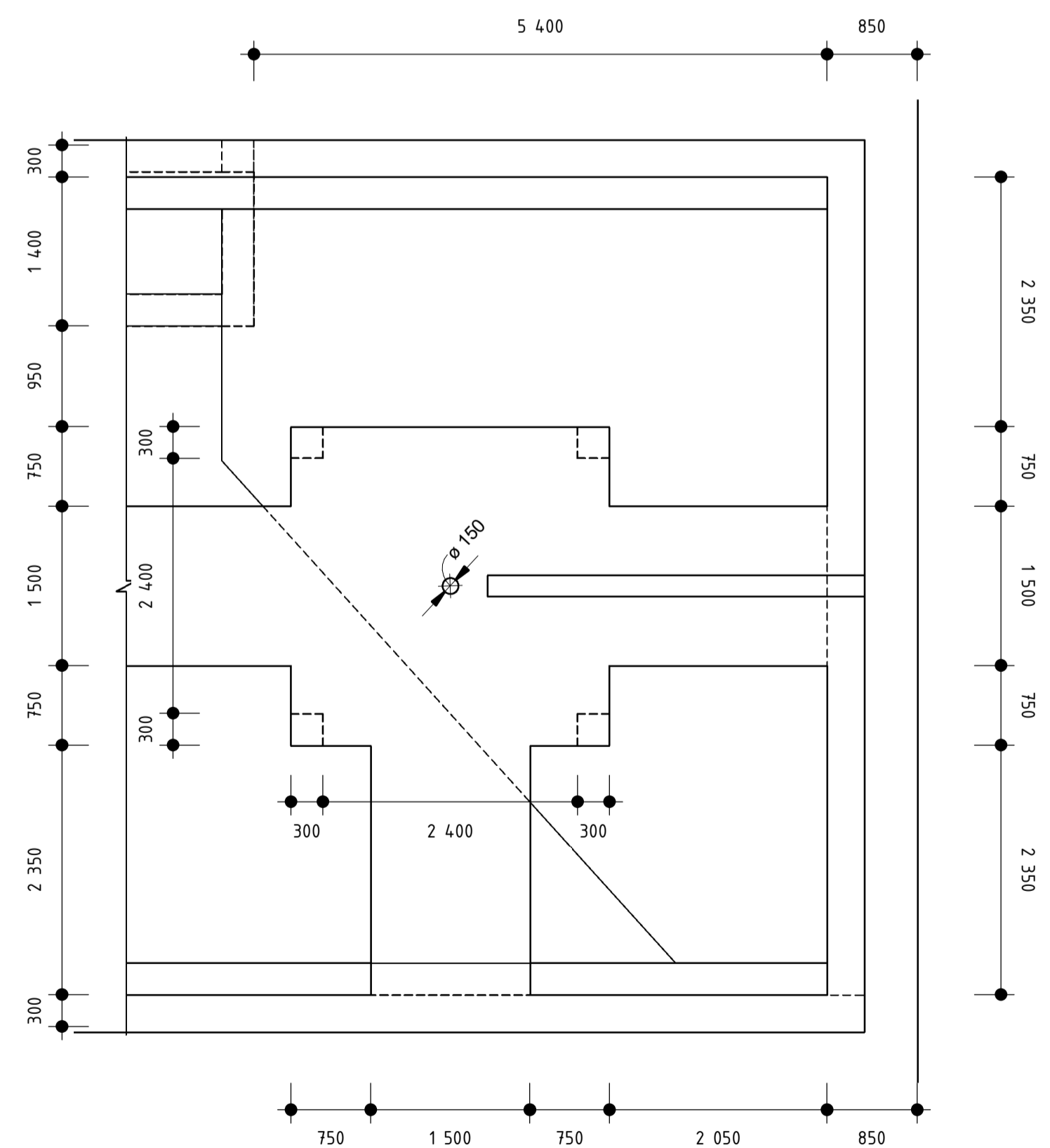
PROJECT
POLOKWANE REGIONAL
WASTEWATER TREATMENT
WORKS

DRAWING DESCRIPTION
PLAN VIEW
THICK SLUDGE SUMP

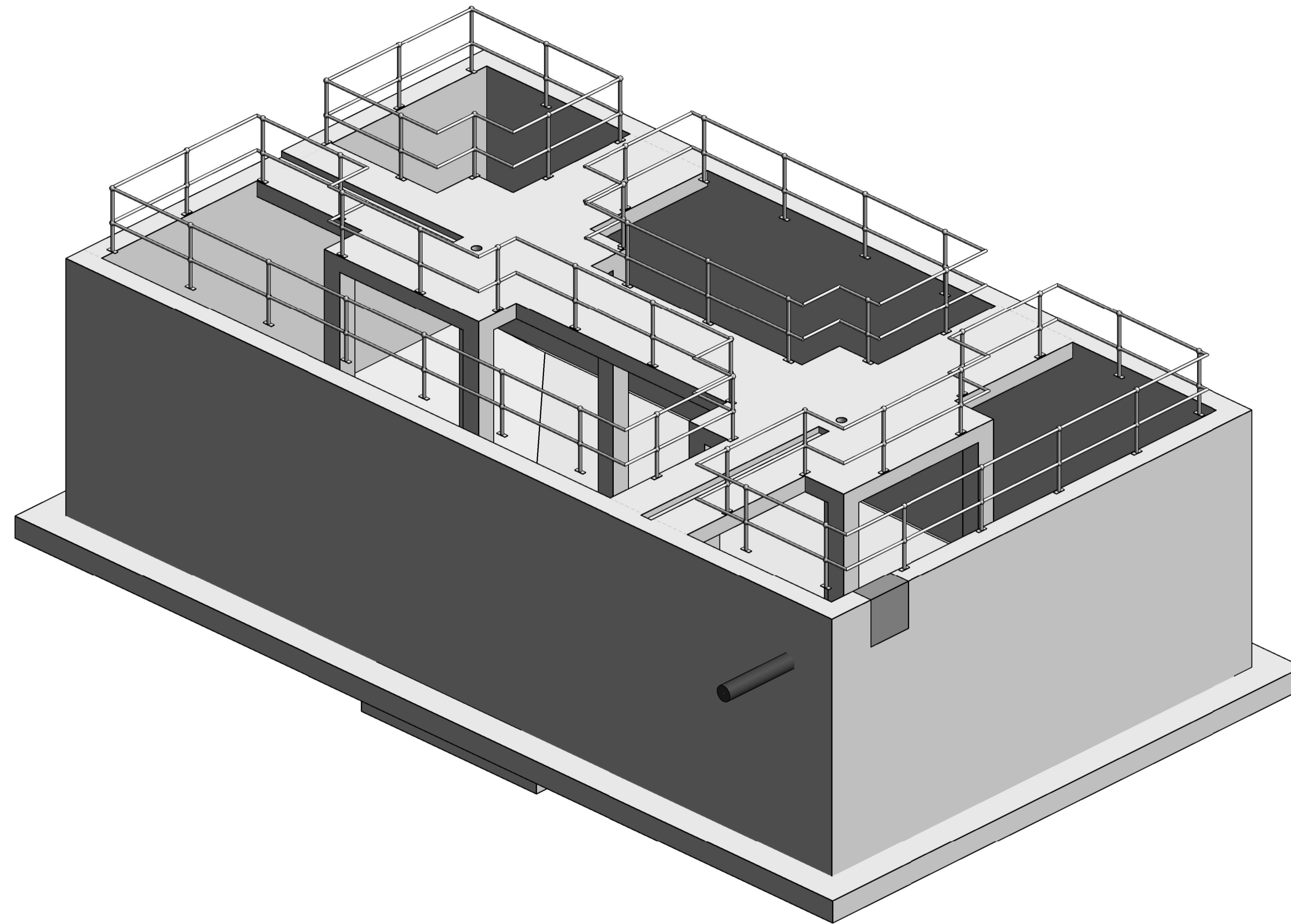
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DESIGNER	DRAFTER	L MIDDLEBERG
REV DATE	SCALE	ORIGINAL SIZE
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DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0017-1001	0	



PLAN VIEW - MIXER PLATFORM A
SCALE 1 : 50



PLAN VIEW - MIXER PLATFORM B
SCALE 1 : 50



GENERAL NOTES:

- 1.11 THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL GOVERN IN CASE OF ANY CONFLICTS.
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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.
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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.
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- 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.

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CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
DESIGNER	DRAFTER	L MIDDELBERG
REV DATE	SCALE	ORIGINAL SIZE
2023/06	As indicated	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0017-1002	0	

NOTES

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FAX: +27 15 291 1993

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 _____

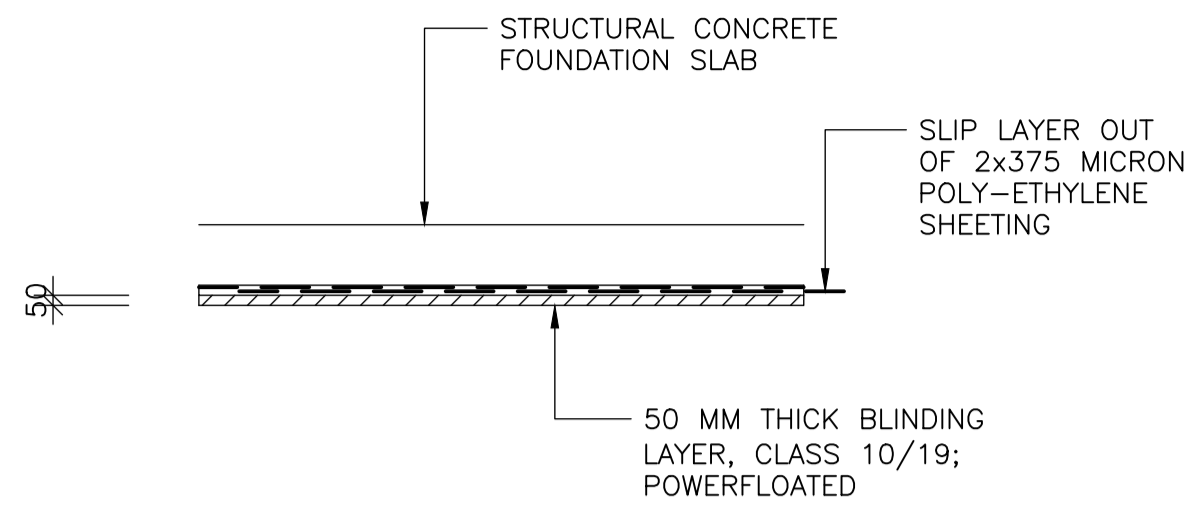
PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

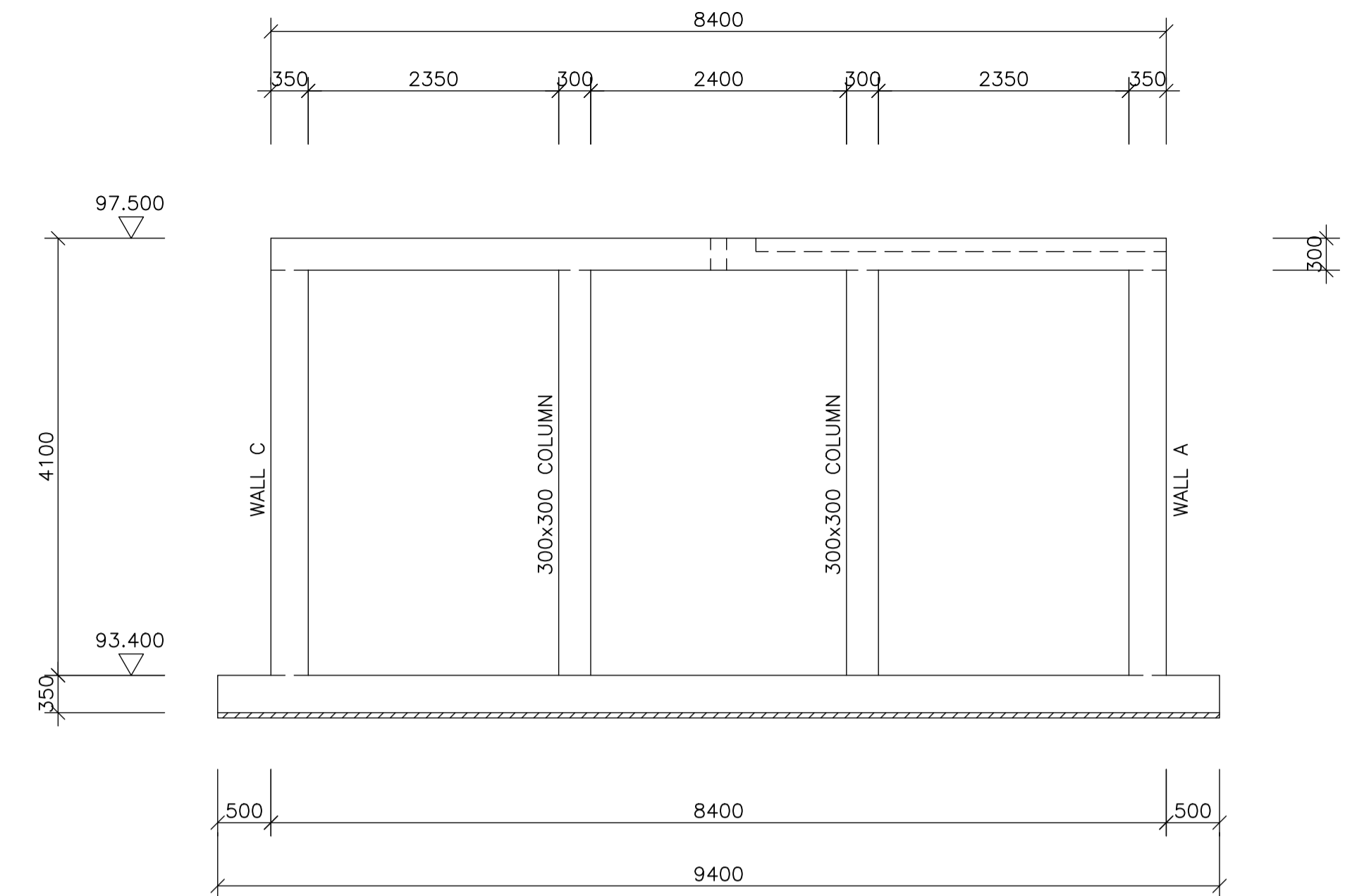
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PLAN VIEWS & 3D VIEW

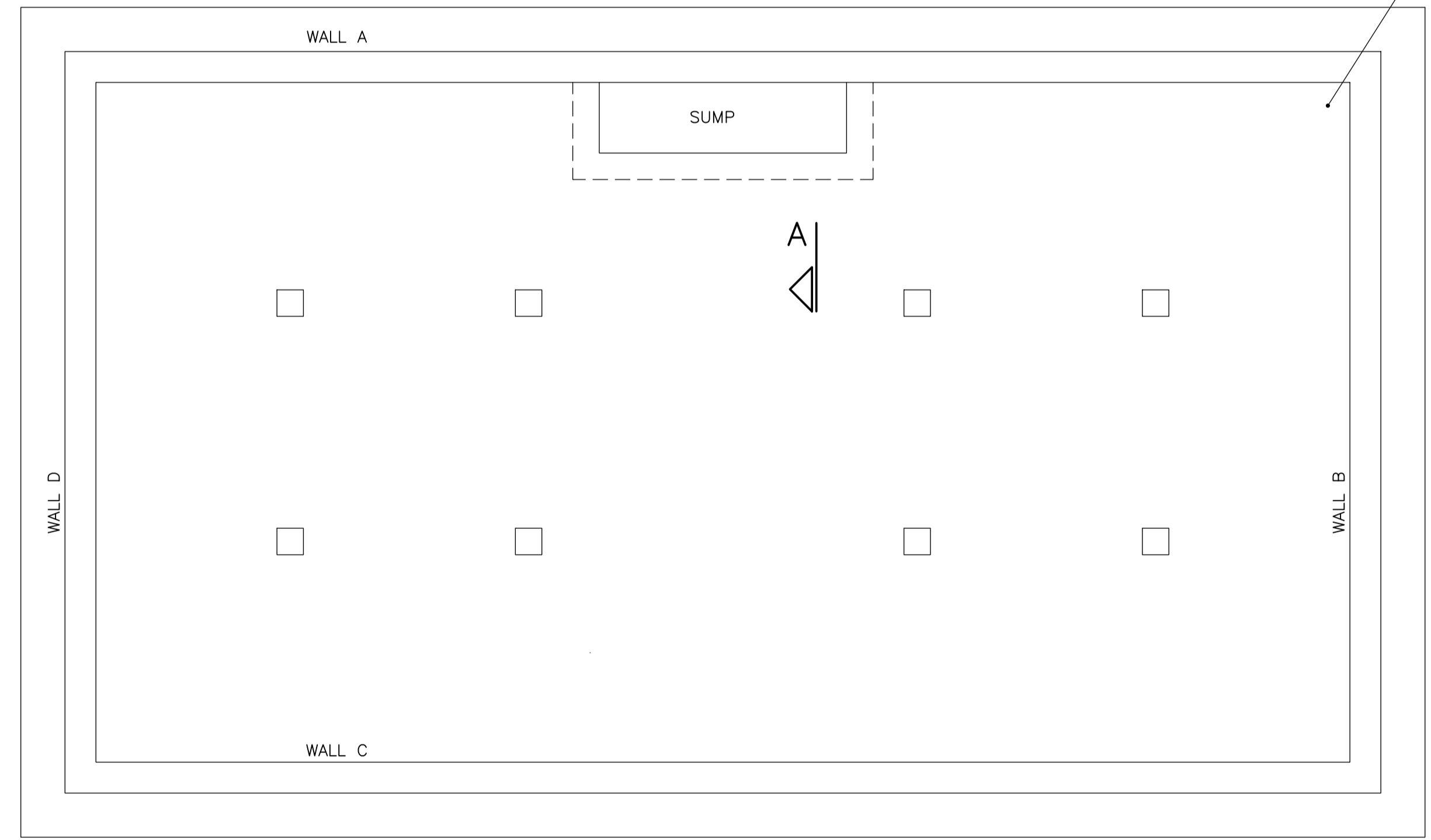
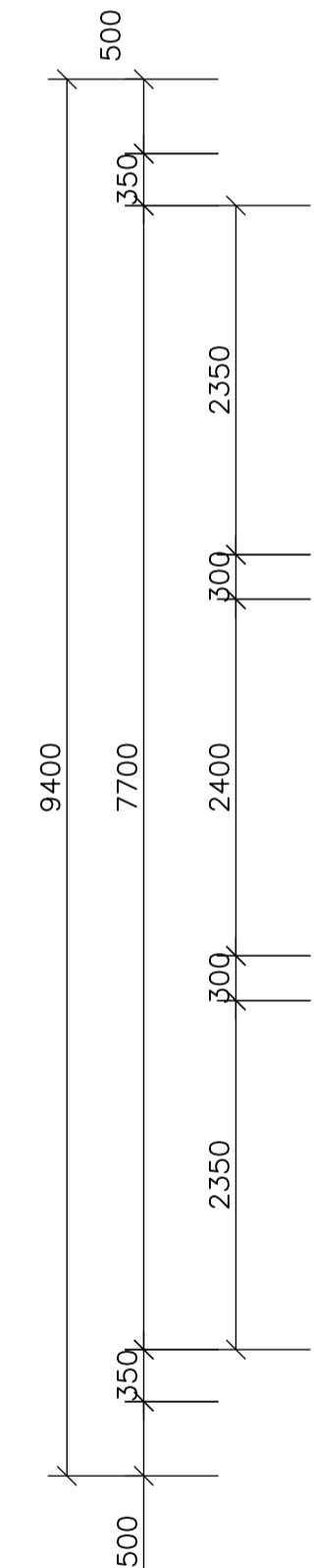
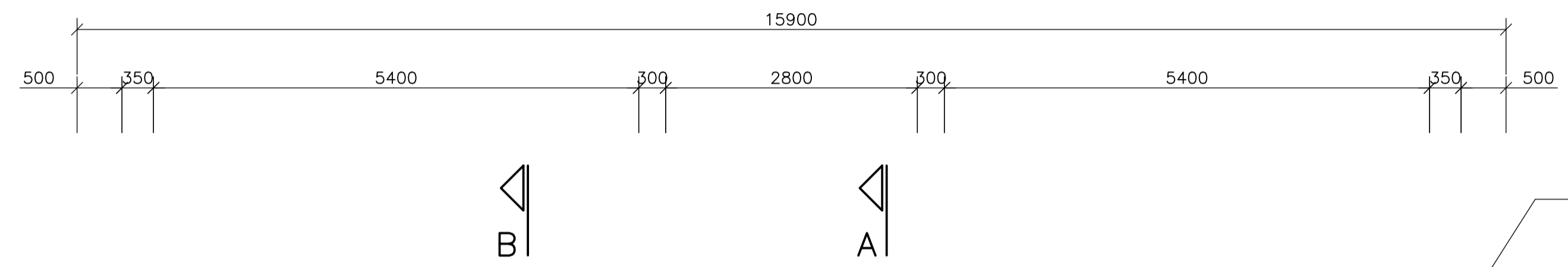
THICK SLUDGE SUMP



BLINDING / SLIP LAYER DETAIL
SCALE 1:37.5 TYPICAL DETAIL

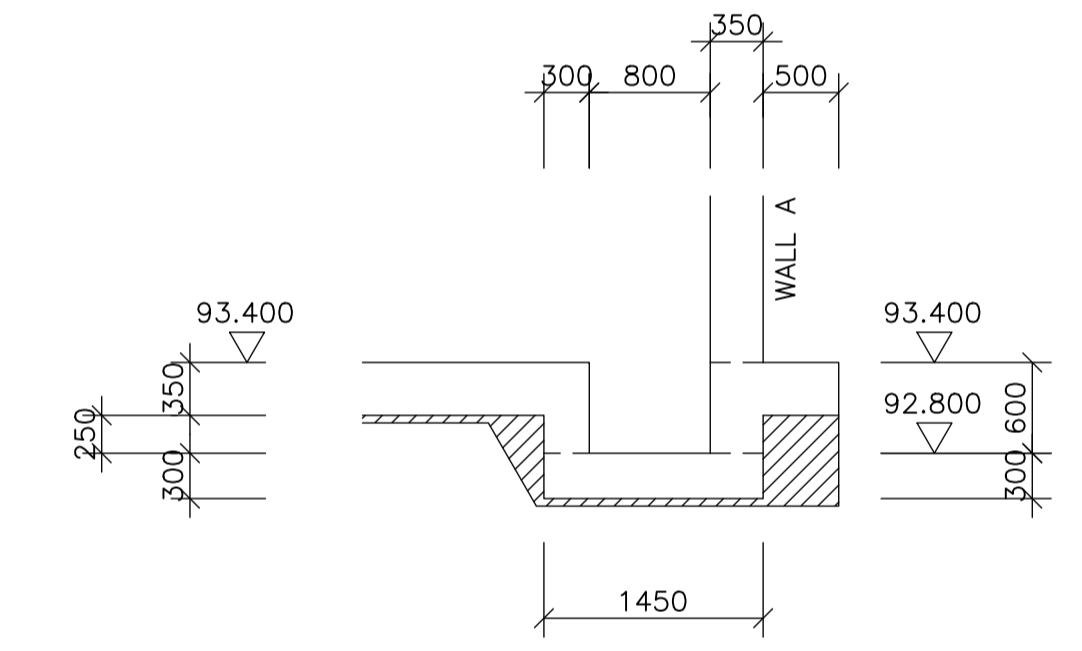


SECTION B-B
SCALE 1:50

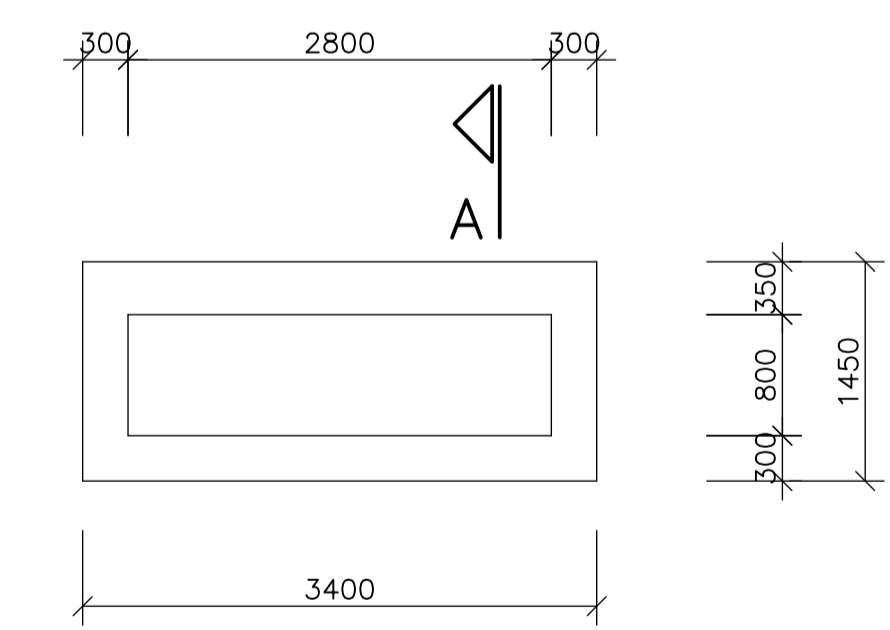


PLAN ON FOUNDATION SLAB
SCALE 1:50

350 MM THICK FOUNDATION SLAB TOP AT LEVEL 93.400



SUMP SECTION A-A
SCALE 1:50



PLAN ON SUMP
SCALE 1:50

- NOTES:**
1. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 150 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
 2. FOUNDDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
 3. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 10/19 AND SLIP LAYER BELOW BELOW FOUNDATIONS; ALL AS PER DETAILS. (SLIP LAYER NOT REQUIRED AT SUMP)
 4. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR35/19
 5. CONSTANT TO LEVELS = 1100.000

NOTES

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CITY OF Polokwane
NATURALLY PROGRESSIVE

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

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

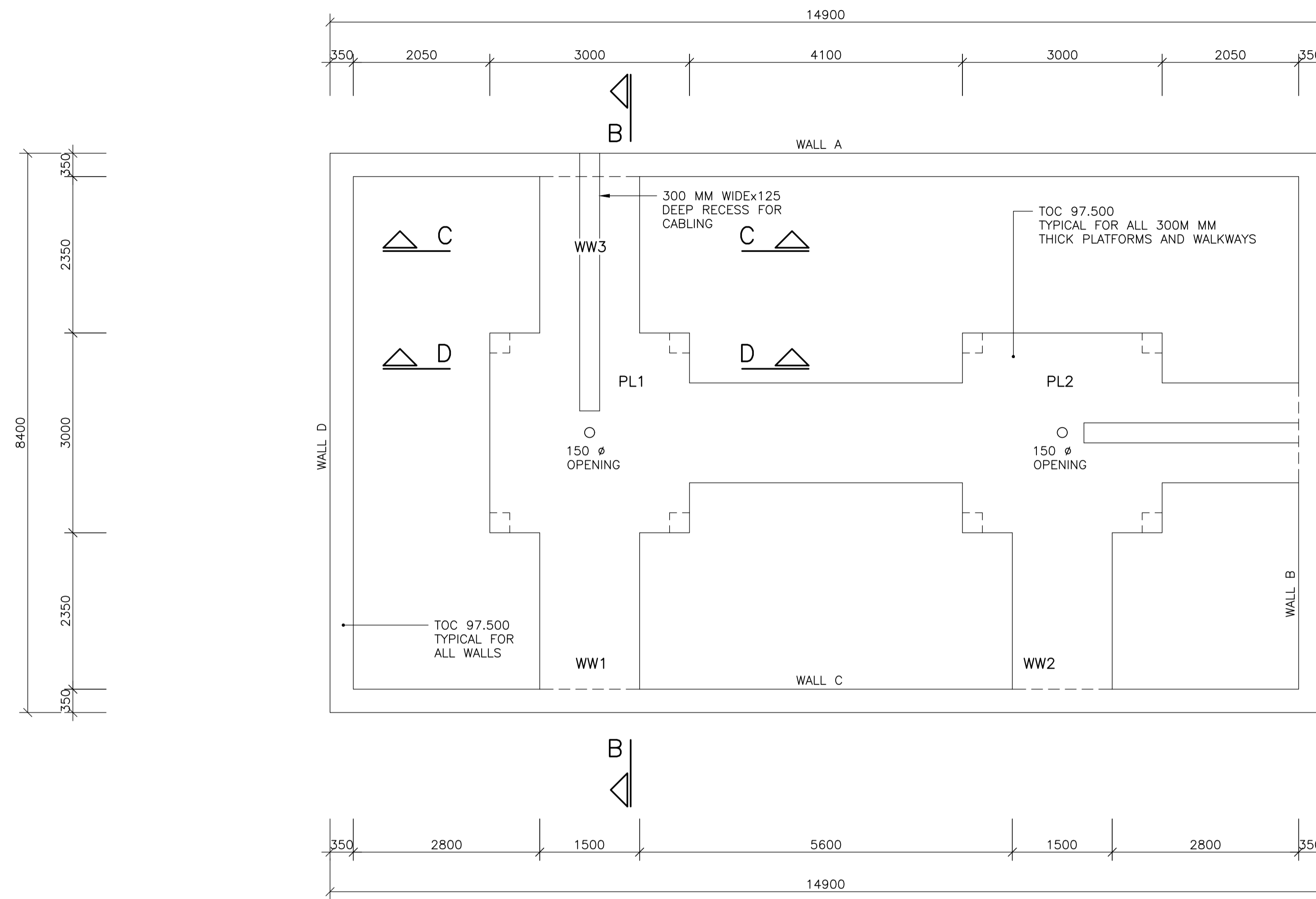
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

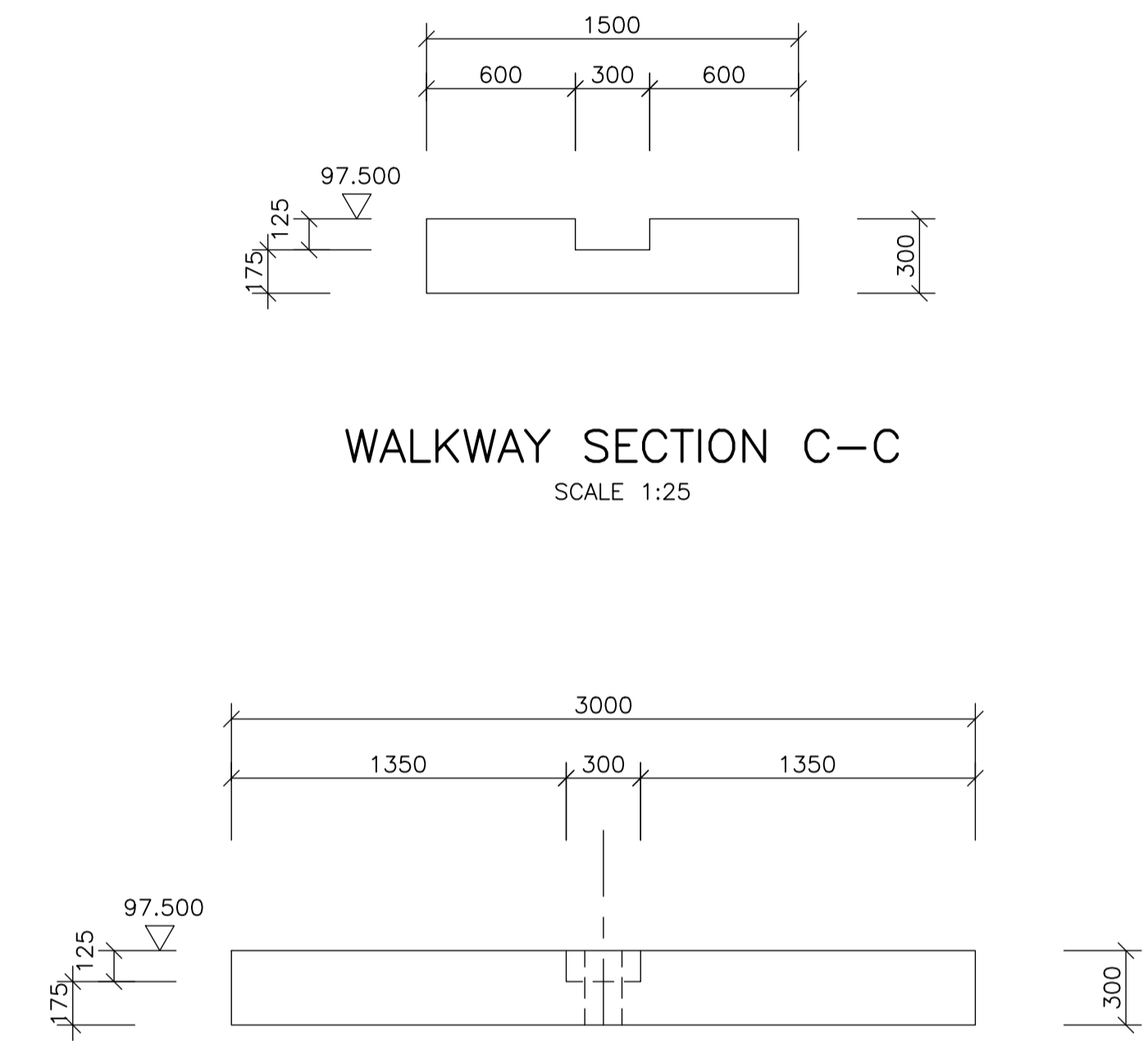
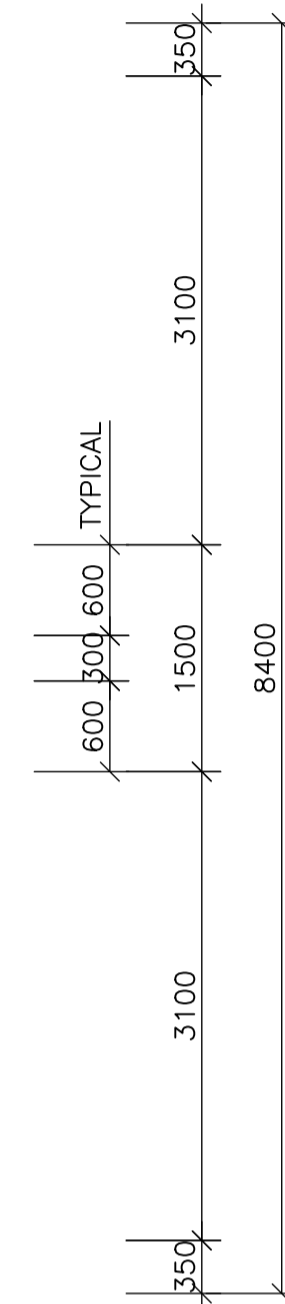
DRAWING DESCRIPTION

THICK SLUDGE SUMP CONCRETE DETAILS 1

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Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0017-5001	0	



PLAN ON PLATFORMS
SCALE 1:50



WALKWAY SECTION C-C
SCALE 1:25

PLATFORM SECTION D-D
SCALE 1:25

NOTES

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

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

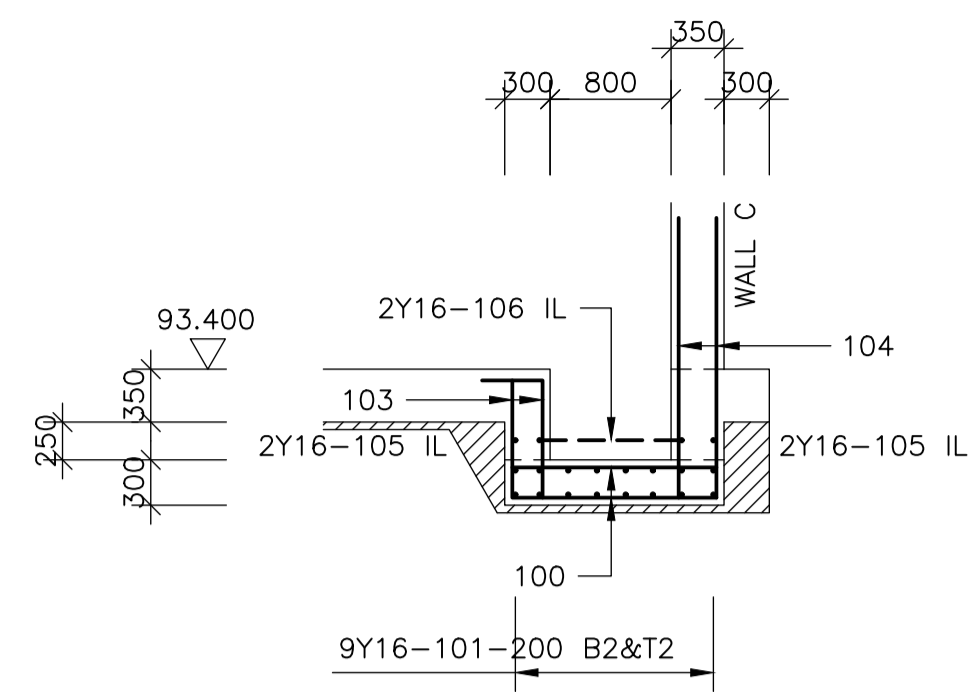
PROJECT

**POLOKWANE REGIONAL
WASTE WATER TREATMENT
WORKS**

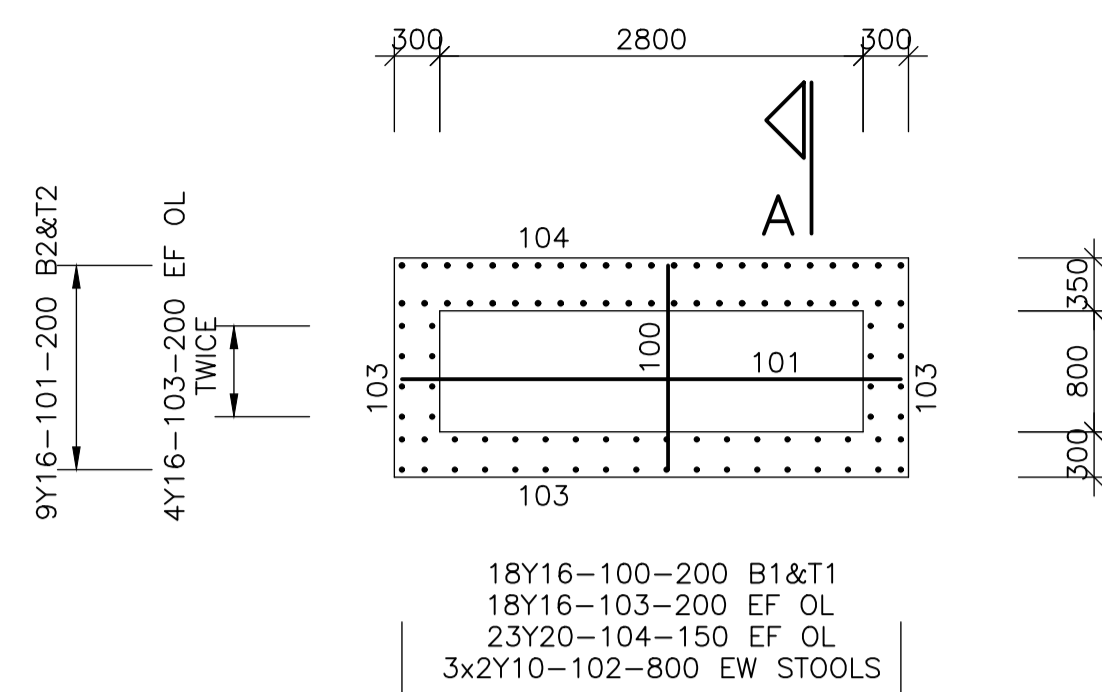
DRAWING DESCRIPTION

**THICK SLUDGE SUMP
CONCRETE DETAILS 2**

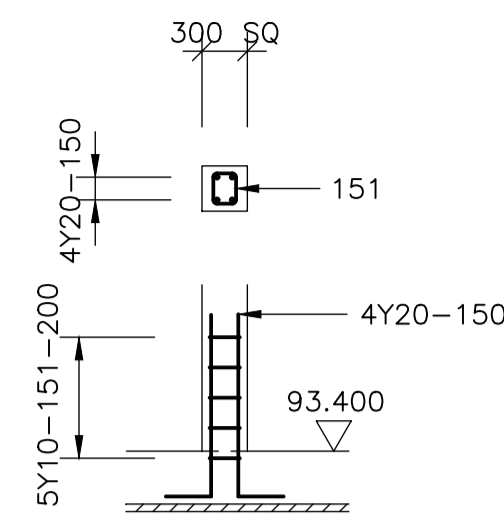
CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0017-5002	0	



SUMP SECTION A-A
SCALE 1:50



PLAN ON SUMP
SCALE 1:50

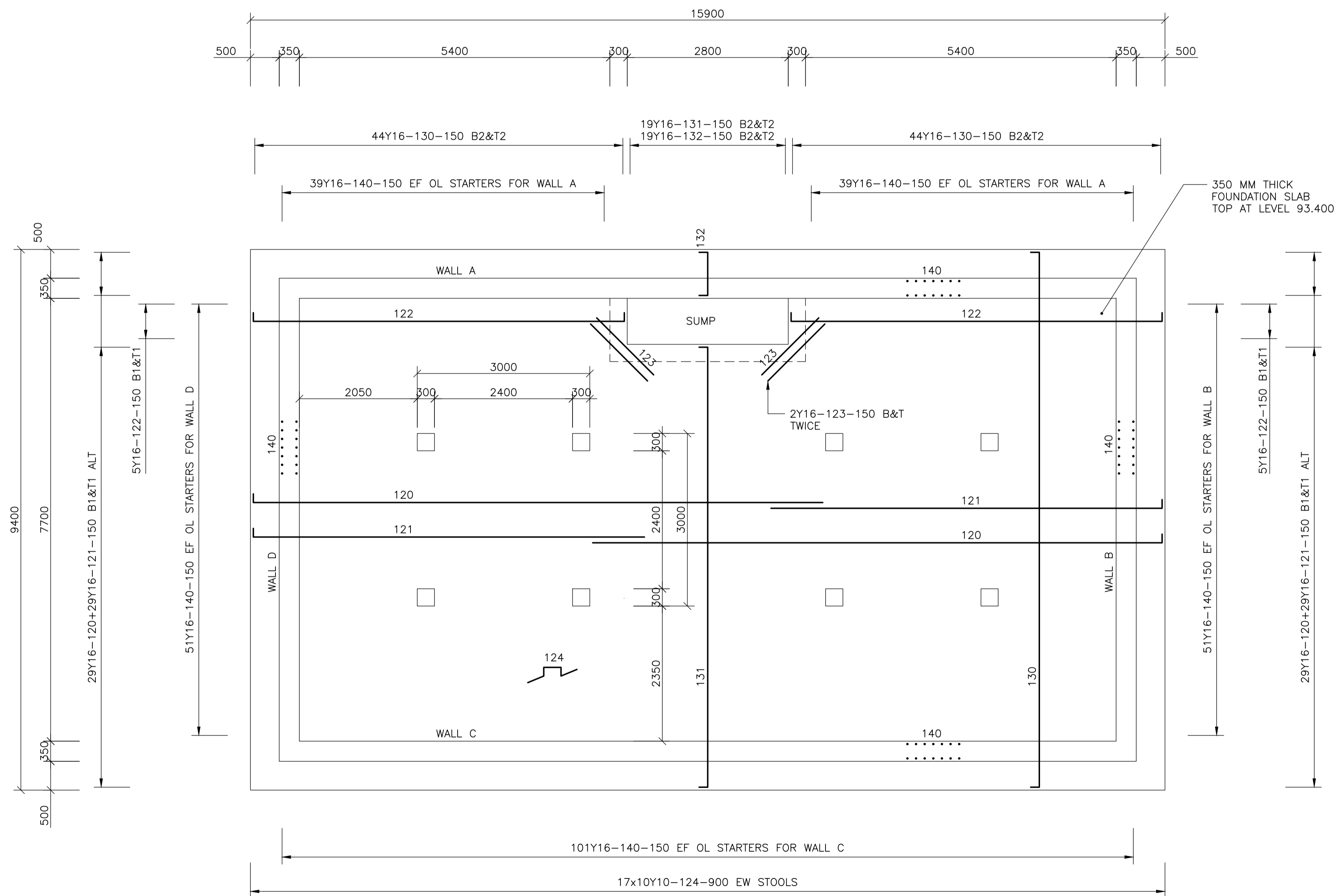


STARTERS FOR PLATFORM COLUMNS

SCALE 1:50 4 PLATFORMS; 16 COLUMNS

NOTES:

1. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 150 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 BELOW ALL FOUNDATIONS
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



PLAN ON FOUNDATION SLAB
SCALE 1:50

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

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

PROJECT

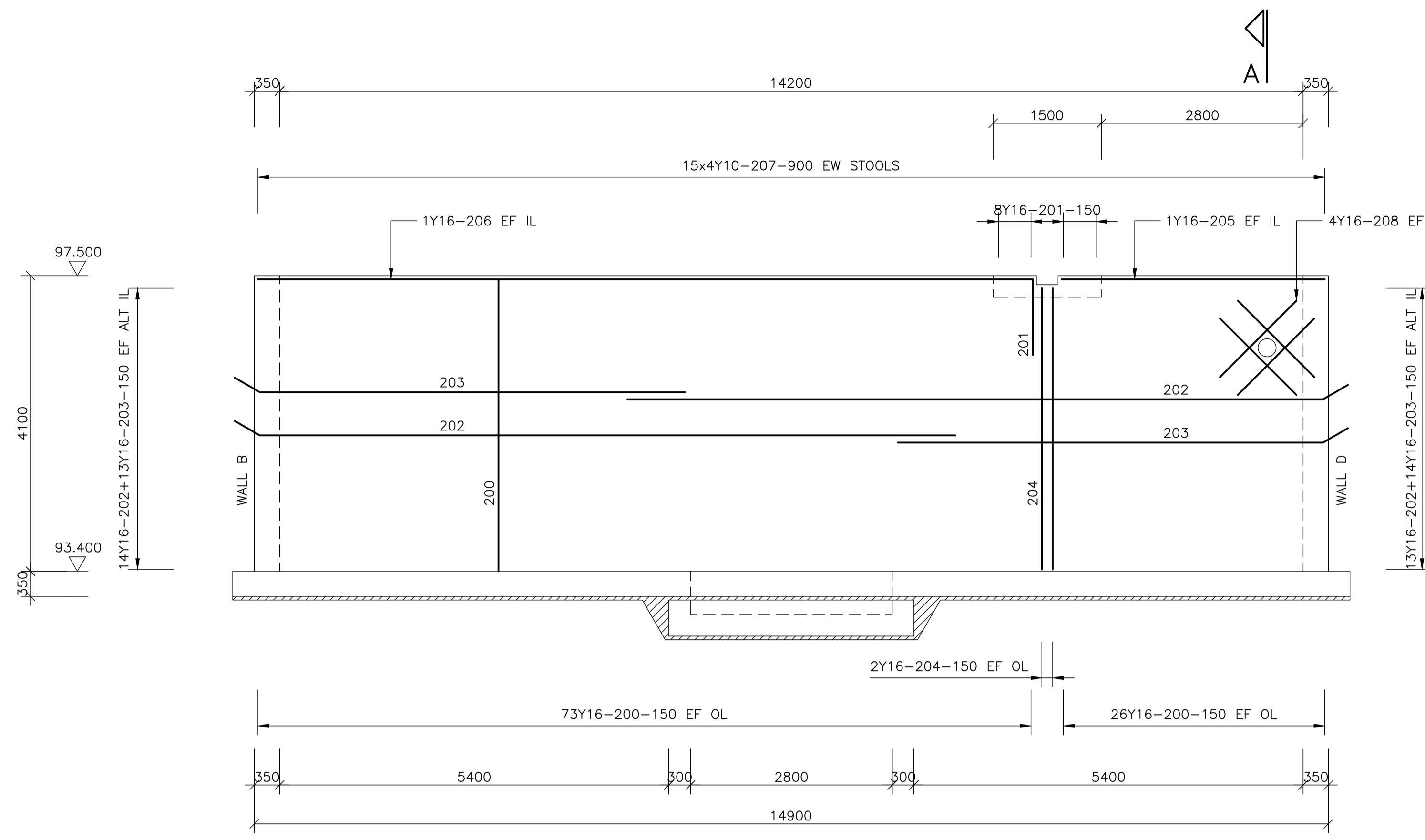
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

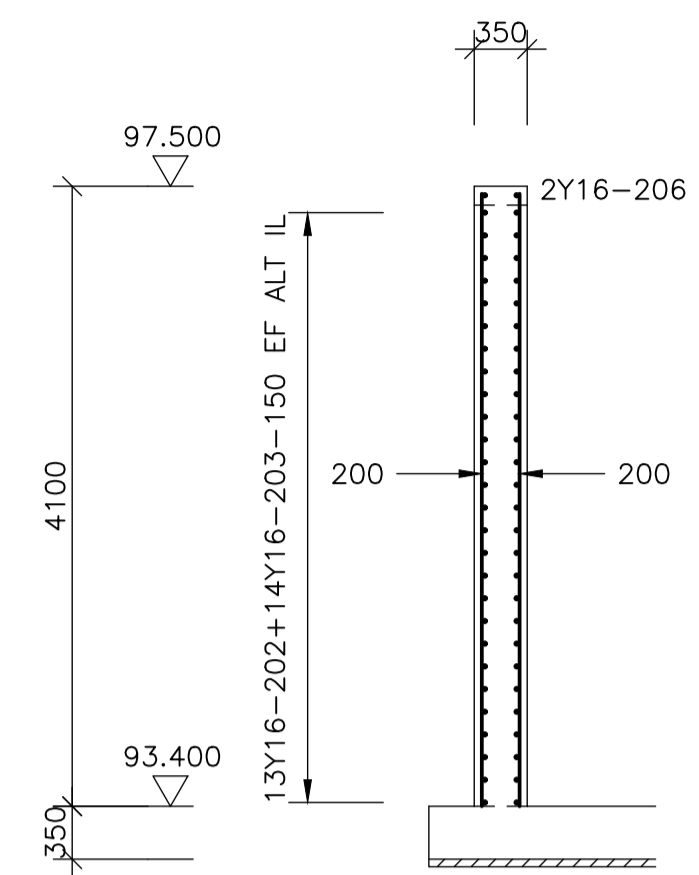
THICK SLUDGE SUMP FOUNDATION REINFORCEMENT

CONSTRUCTION DRAWING

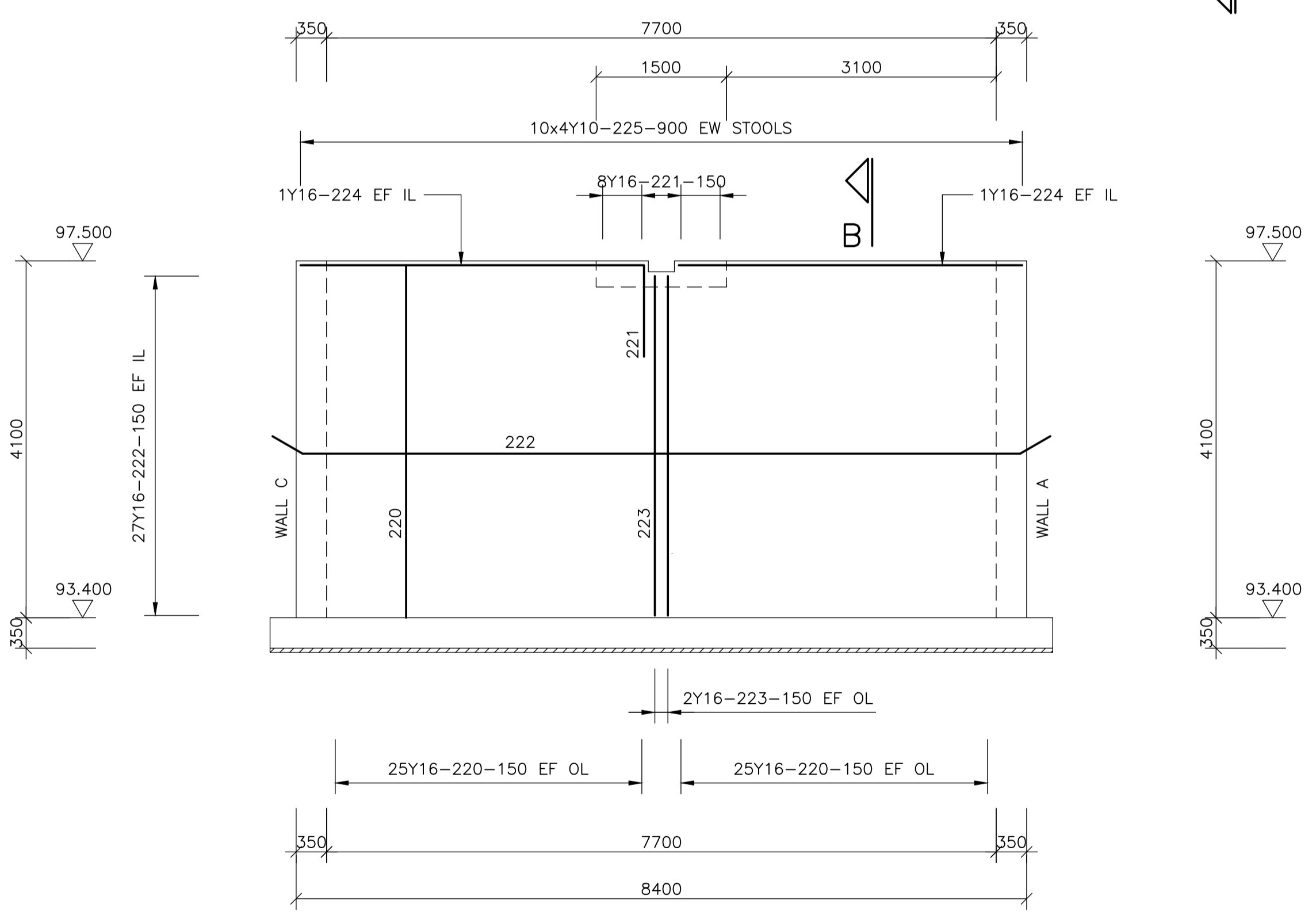
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Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
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DRAWING NUMBER		
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PK278-01-STR-DRG-0017-5101	0	



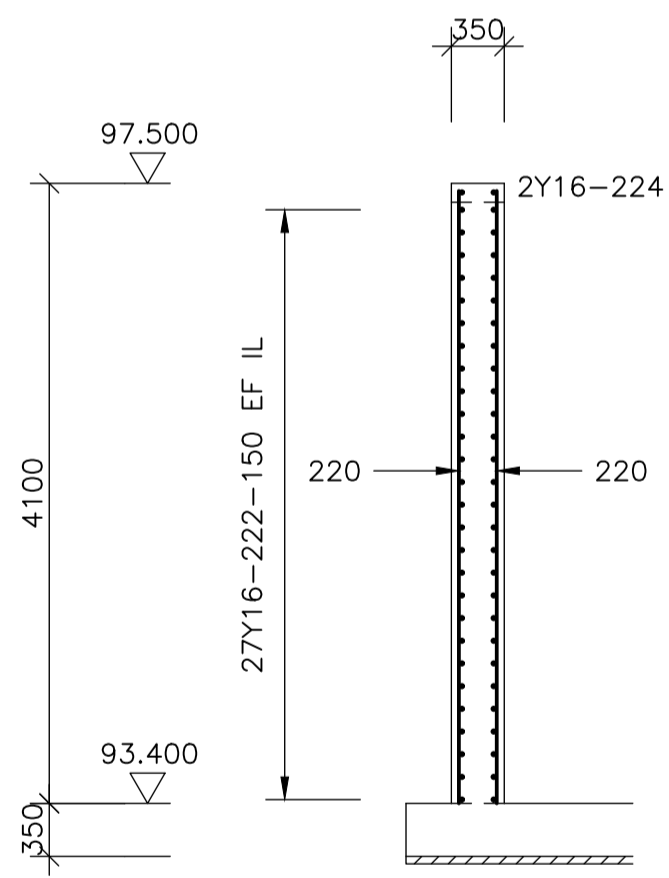
EXTERNAL ELEVATION ON WALL A REINFORCEMENT
SCALE 1:50



SECTION A-A
SCALE 1:50



EXTERNAL ELEVATION ON WALL B REINFORCEMENT
SCALE 1:50



SECTION B-B
SCALE 1:50

NOTES

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CITY OF Polokwane
NATURALLY PROGRESSIVE

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

T. BANDA	PR ENG no.	DATE
ENGINEER		
CLIENT		DATE

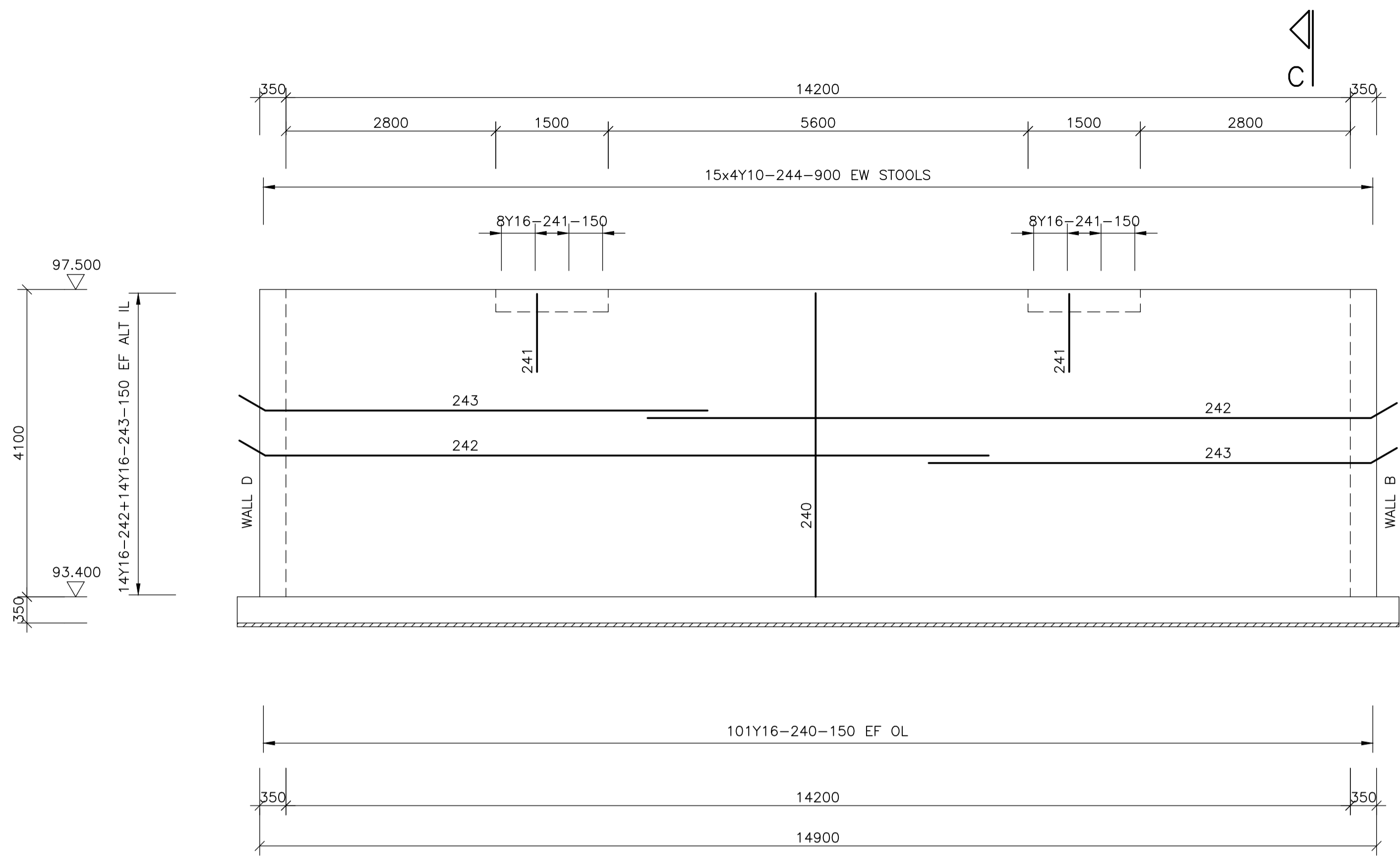
PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

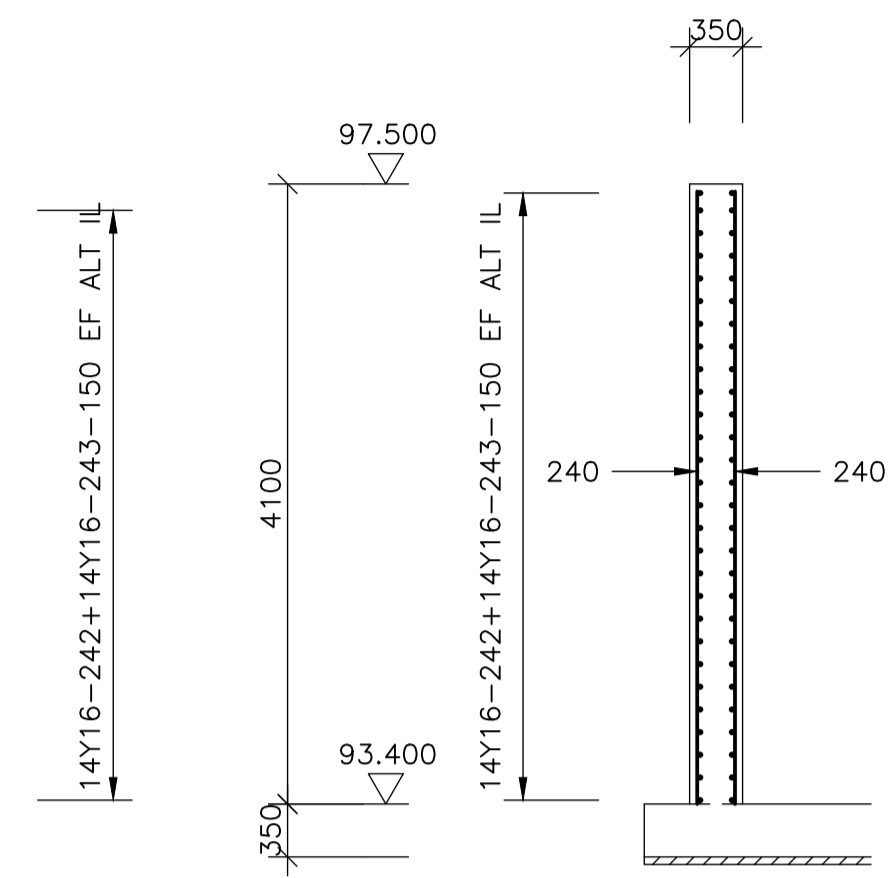
DRAWING DESCRIPTION

THICK SLUDGE SUMP REINFORCEMENT WALLS A & B

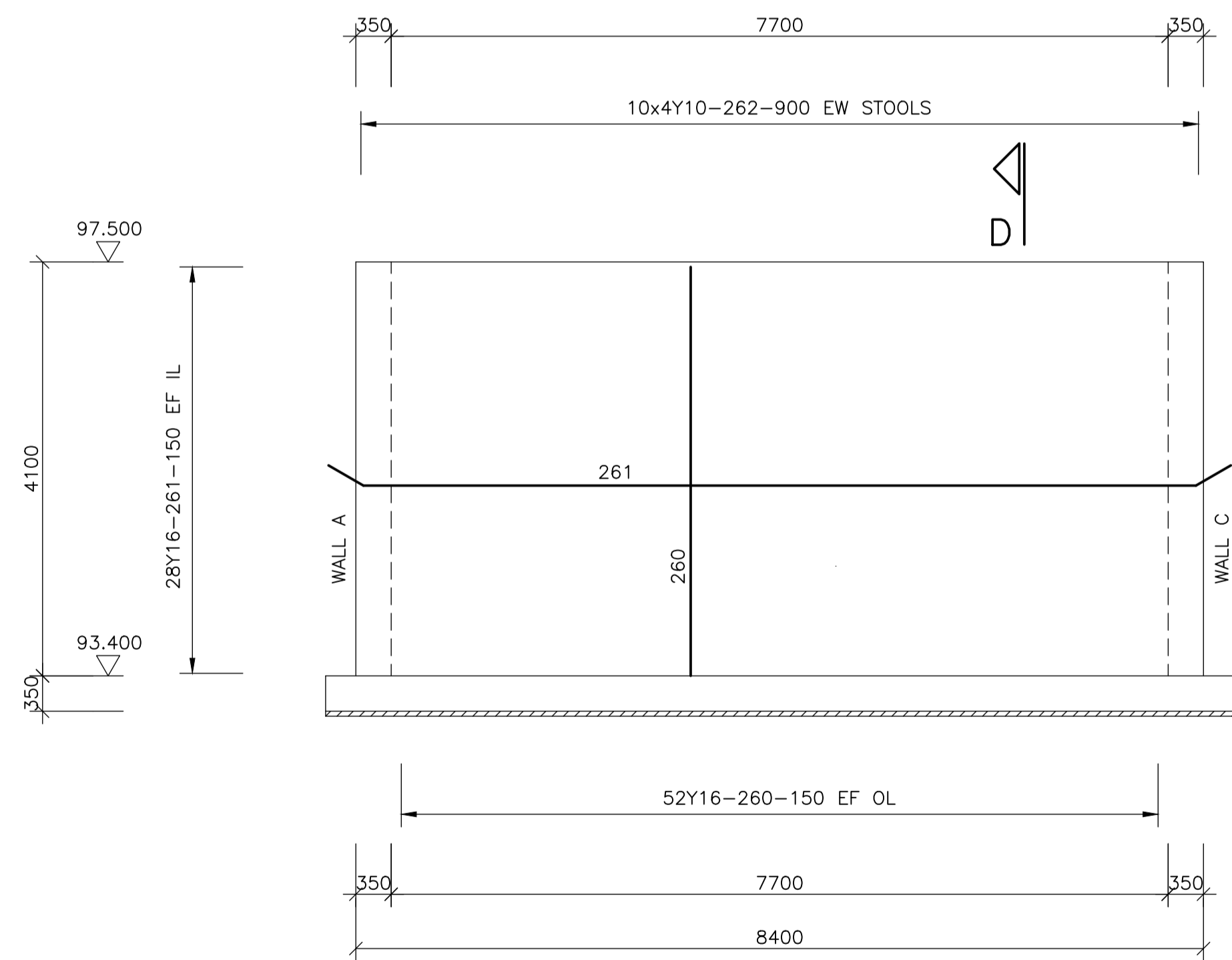
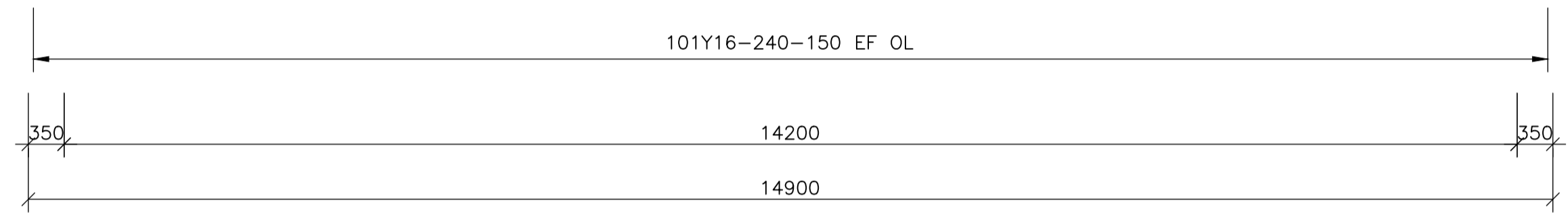
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DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
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PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
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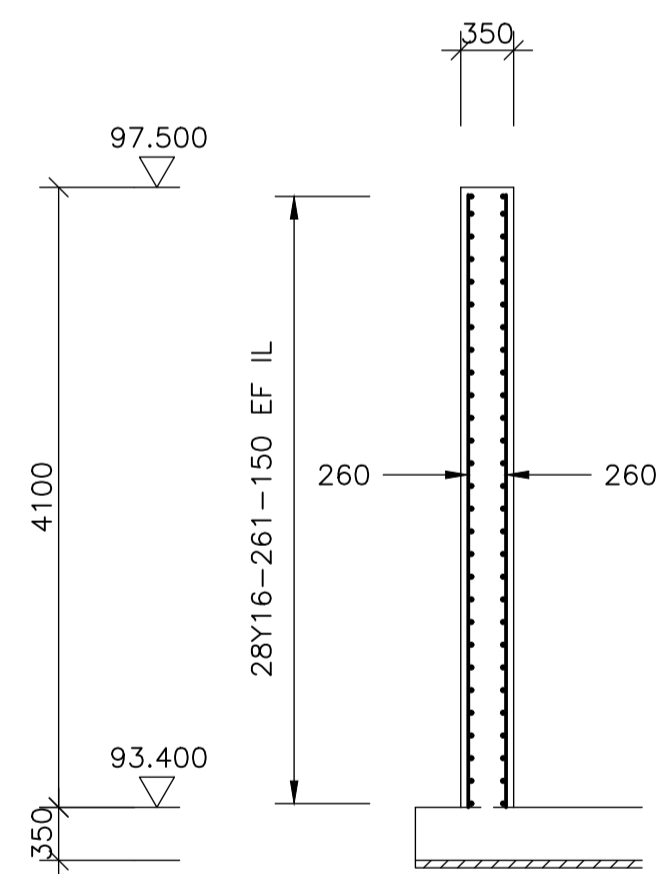
EXTERNAL ELEVATION ON WALL C REINFORCEMENT
SCALE 1:50



SECTION C-C
SCALE 1:50



EXTERNAL ELEVATION ON WALL D REINFORCEMENT
SCALE 1:50



SECTION D-D
SCALE 1:50

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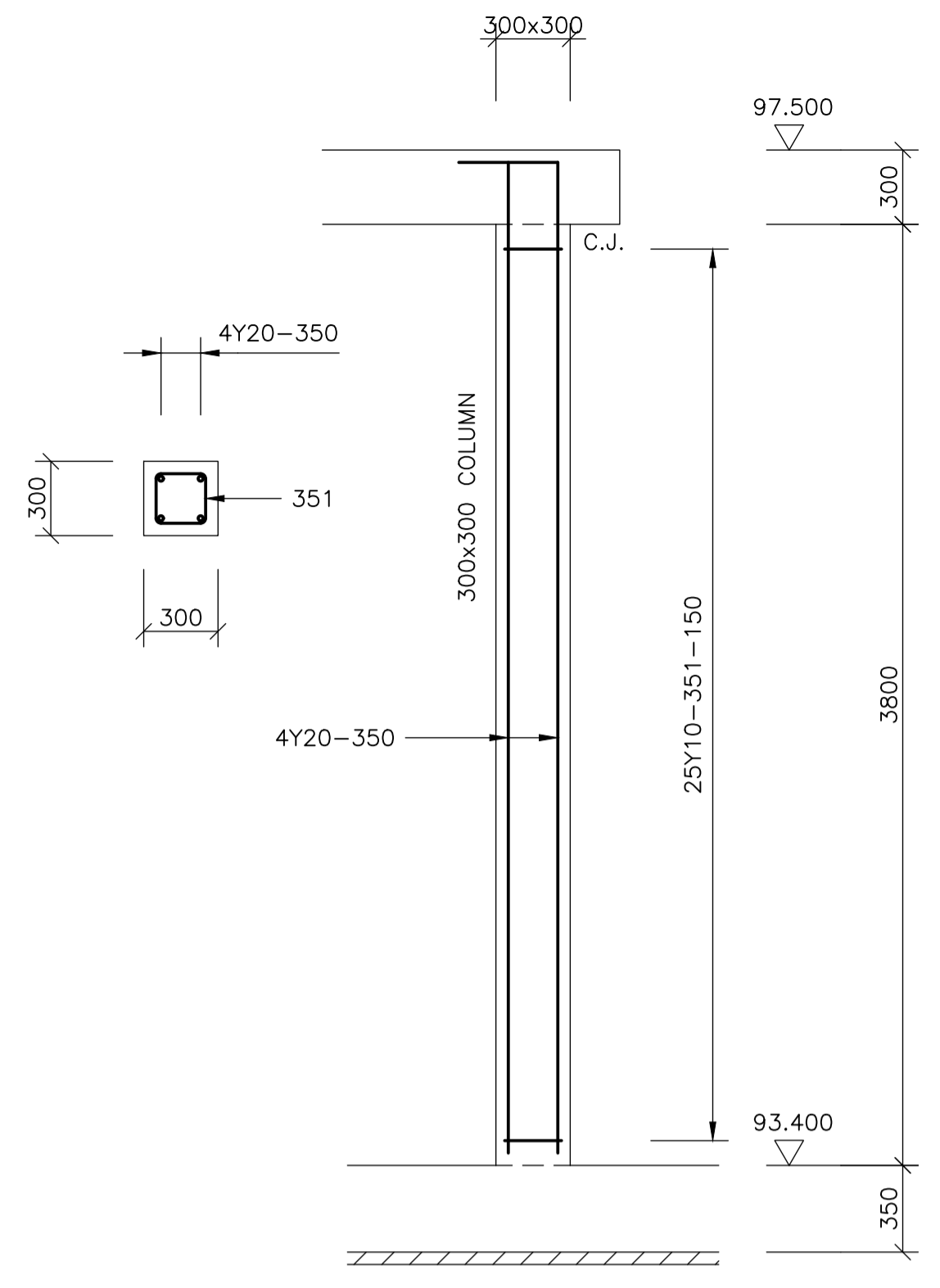
REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-06-06	ISSUED FOR CONSTRUCTION

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

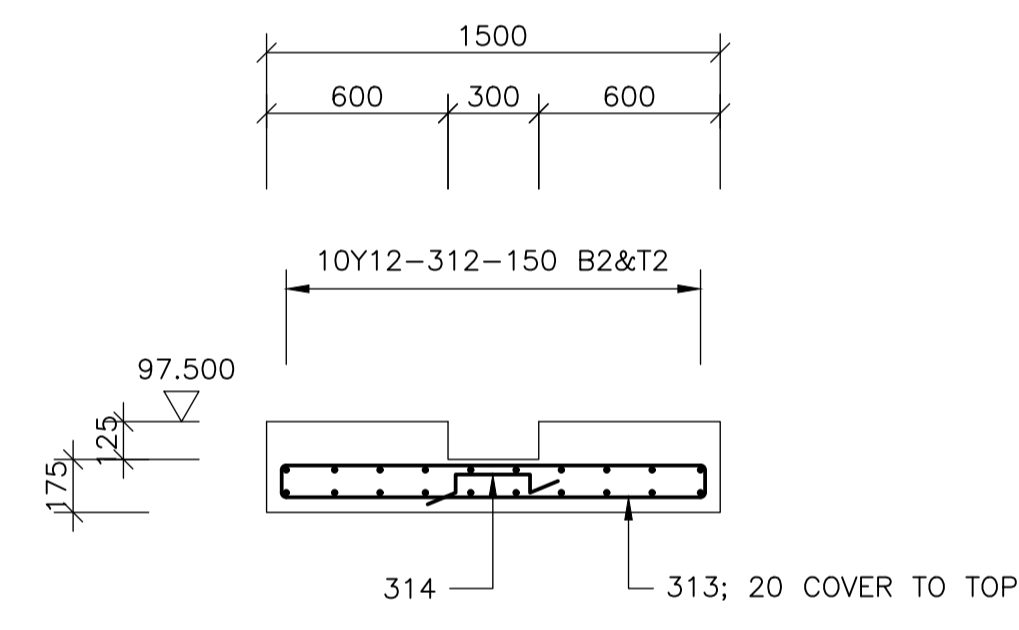
PROJECT
 POLOKWANE REGIONAL
 WASTE WATER TREATMENT
 WORKS

DRAWING DESCRIPTION
 THICK SLUDGE SUMP
 REINFORCEMENT
 WALLS C & D

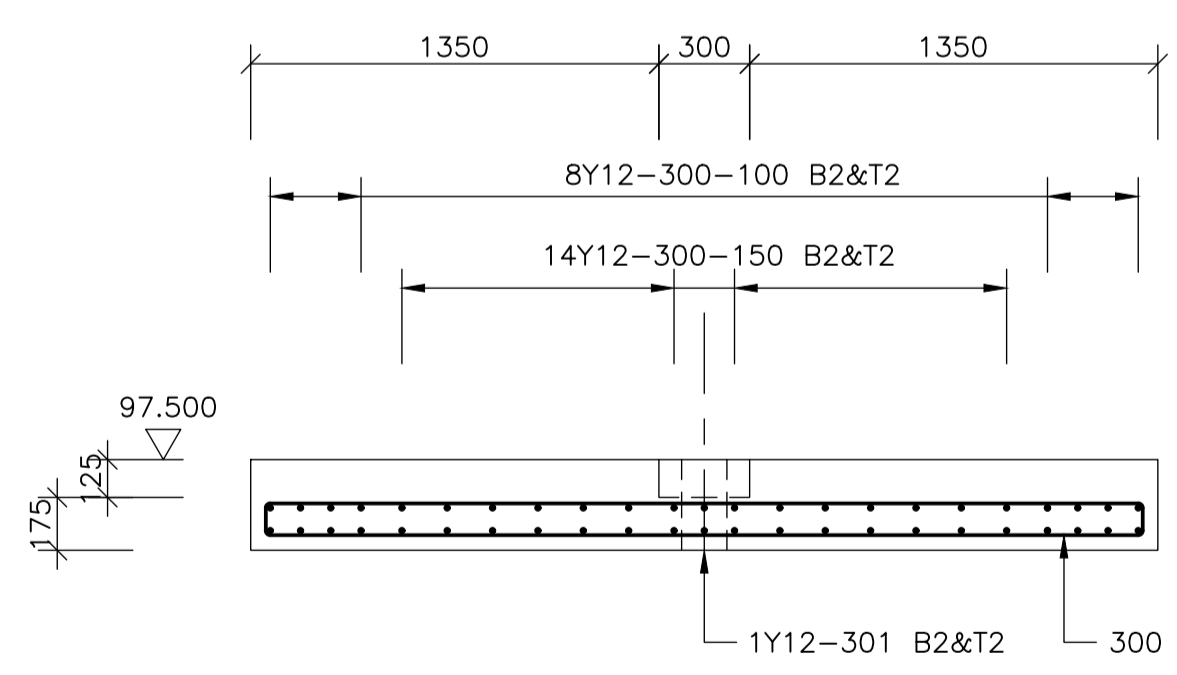
CONSTRUCTION DRAWING		
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1
DRAWING NUMBER		
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV	
PK278-01-STR-DRG-0017-5103	0	



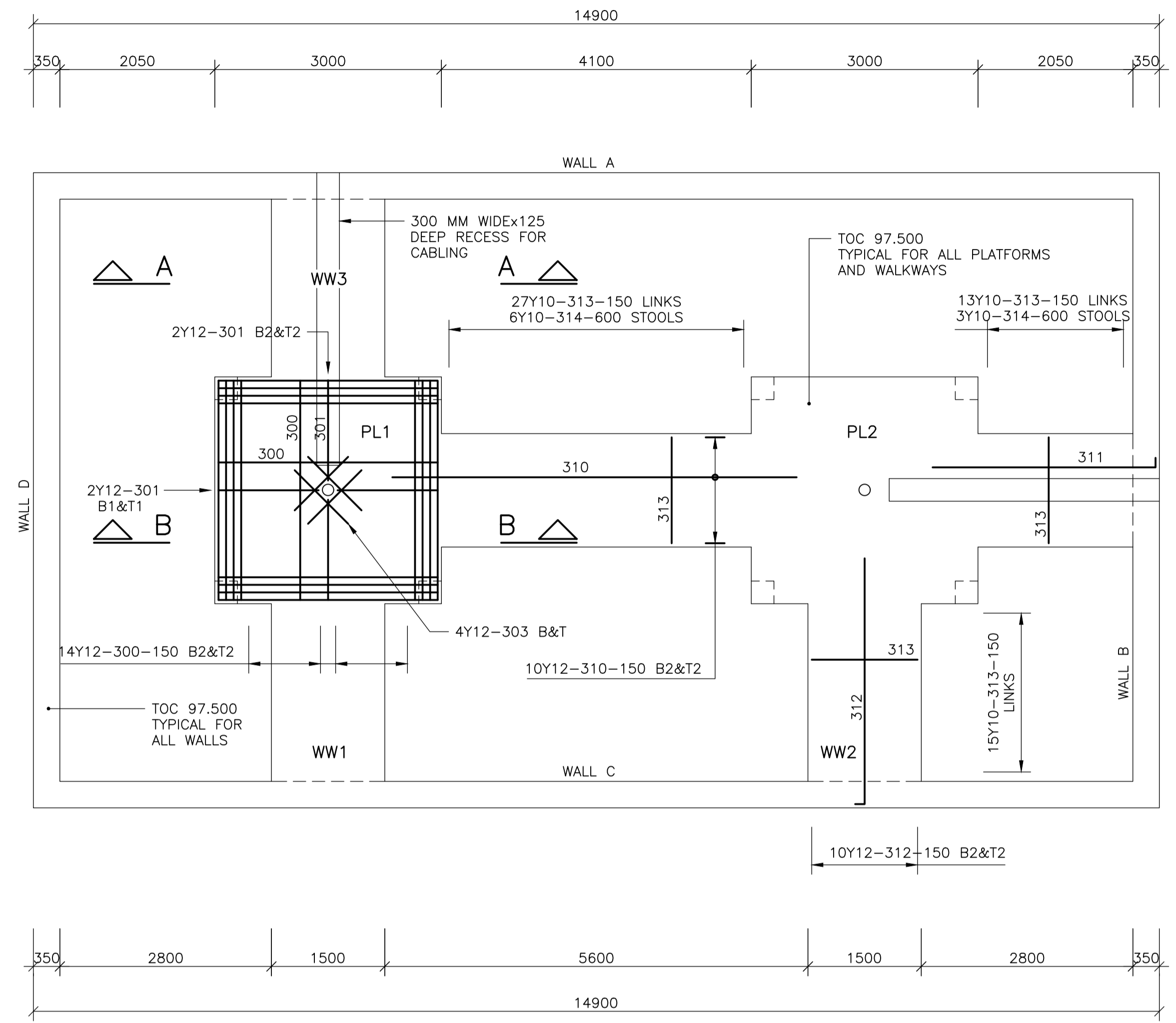
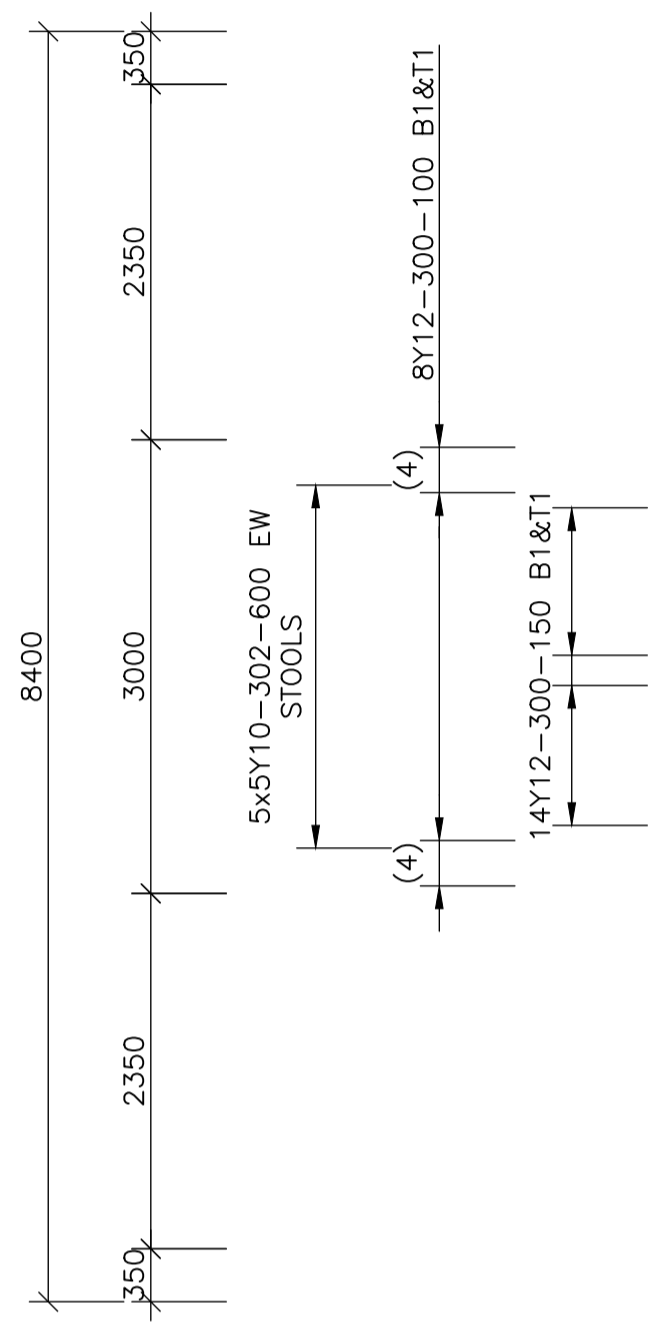
TYPICAL ELEVATION OF PLATFORM COLUMN REINFORCEMENT
SCALE 1:25 8 PLACES



WALKWAY SECTION A-A
SCALE 1:25



PLATFORM SECTION B-B
SCALE 1:25



PLAN ON PLATFORMS
SCALE 1:50

- NOTES:
- REBAR FOR PLATFORMS PL1 AND PL2 TO BE IDENTICAL
 - REBAR FOR WALKWAYS WW1 TO WW3 TO BE IDENTICAL

- NOTES
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NATURALLY PROGRESSIVE

REVISION SCHEDULE		
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0	2023-06-06	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER

PR ENG no. _____ DATE _____

CLIENT _____ DATE _____


PROJECT


POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS


DRAWING DESCRIPTION

THICK SLUDGE SUMP PLATFORM REINFORCEMENT

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	
PK278-01-STR-DRG-0017-5104	0	

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUMBER	MARK	S C	BENDING								
								A	B	C	D	E/r				
Foundation Sump	1	36	Y16	1600	36	100	38	150	1350	(150)	(350)					
		18	Y16	3550	18	101	38	150	3300	(150)						
		6	Y10	1200	6	102	83	300	150	350						
		52	Y16	1300	52	103	54	300	775	(300)						
		46	Y20	2100	46	104	37	300	(1850)							
		4	Y16	3800	4	105	38	300	3250	(300)						
		4	Y16	1850	4	106	38	300	1300	(300)						
Main Foundations	1	116	Y16	10000	116	120	37	150	(9900)		(300)					
		116	Y16	7000	116	121	37	150	(6900)							
		20	Y16	6700	20	122	38	150	6450	(150)						
		8	Y16	1400	8	123	20	(1400)								
		170	Y10	1150	170	124	83	250	200	300						
Main Foundation	1	176	Y16	9550	176	130	38	150	9300	(150)						
		38	Y16	7900	38	131	38	150	7650	(150)						
		38	Y16	1000	38	132	38	150	750	(150)						
Wall starters	1	562	Y16	1350	562	140	37	300	(1100)							
Column starters	16	4	Y20	1550	64	150	37	300	(1300)							
		5	Y10	850	80	151	60	200	150							
	8	10	12	16	20	25	32	40	TOT	Date	2023/04/20					
R										Det. by	Koos Bultman					
Y		167		8060	483				8710	Ref Dwg	5101					
TOT		167		8060	483				8710	Job No	PK278					
 PROKON Software Consultants (Pty) Ltd http://www.prokon.com										Polokwane Regional WWTW			Revision		1	
										Thick Sludge Sump Foundations			Schedule No		300	

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUMBER	MARK	S C	BENDING											
								A	B	C	D	E/r							
Wall A	1	198	Y16	4050	198	200	20	(4050)											
		8	Y16	2200	8	201	38	1000	250	(1000)									
		54	Y16	10000	54	202	37	400	(9650)										
		54	Y16	6250	54	203	37	400	(5900)										
		4	Y16	3900	4	204	20	(3900)											
		2	Y16	3650	2	205	20	(3650)											
		2	Y16	10750	2	206	20	(10750)											
		60	Y10	1150	60	207	83	250	200	300	(300)								
		8	Y16	1500	8	208	20	(1500)											
Wall B	1	100	Y16	4050	100	220	20	(4050)											
		8	Y16	2200	8	221	38	1000	250	(1000)									
		54	Y16	9000	54	222	38	400	8250	(400)									
		4	Y16	3900	4	223	20	(3900)											
		4	Y16	3950	4	224	20	(3950)											
		40	Y10	1150	40	225	83	250	200	300	(300)								
Wall C	1	202	Y16	4050	202	240	20	(4050)											
		16	Y16	2200	16	241	38	1000	250	(1000)									
		56	Y16	10000	56	242	37	400	(9650)										
		56	Y16	6250	56	243	37	400	(5900)										
		60	Y10	1150	60	244	83	250	200	300	(300)								
Wall D	1	104	Y16	4050	104	260	20	(4050)											
		56	Y16	9000	56	261	38	400	8250	(400)									
		40	Y10	1150	40	262	83	250	200	300	(300)								
	8	10	12	16	20	25	32	40	TOT	Date	2023/04/20								
R										Det. by	Koos Bultman								
Y		142		8494					8636	Ref Dwg	5102 - 5102								
TOT		142		8494					8636	Job No	PK278								
 PROKON Software Consultants (Pty) Ltd http://www.prokon.com										Polokwane Regional WWTW Thick Sludge Sump Walls					Revision		1		
										Schedule No		301							

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING					
								A	B	C	D	E/r	
Platforms	2	88	Y12	3100	176	300	38	125	2900	(125)			
		8	Y12	1400	16	301	37	125	(1300)				
		25	Y10	900	50	302	83	250	70	300	(300)		
		8	Y12	1000	16	303	20	(1000)					
Walkways	1	20	Y12	5350	20	310	20	(5350)					
		20	Y12	3050	20	311	37	125	(2950)				
		60	Y12	3350	60	312	37	125	(3250)				
		85	Y10	3150	85	313	60	1400	105				
		18	Y10	900	18	314	83	250	70	300	(300)		
Columns	8	4	Y20	4150	32	350	37	200	(4000)				
		25	Y10	950	200	351	60	200	200				
	8	10	12	16	20	25	32	40	TOT	Date	2023/04/20		
R										Det. by	Koos Bultman		
Y		320	846		328				1494	Ref Dwg	5104		
TOT		320	846		328				1494	Job No	PK278		
 PROKON Software Consultants (Pty) Ltd http://www.prokon.com										Polokwane Regional WWTW		Revision	1
										Thick Sludge Sump		Schedule No	
Platforms & Walkways													