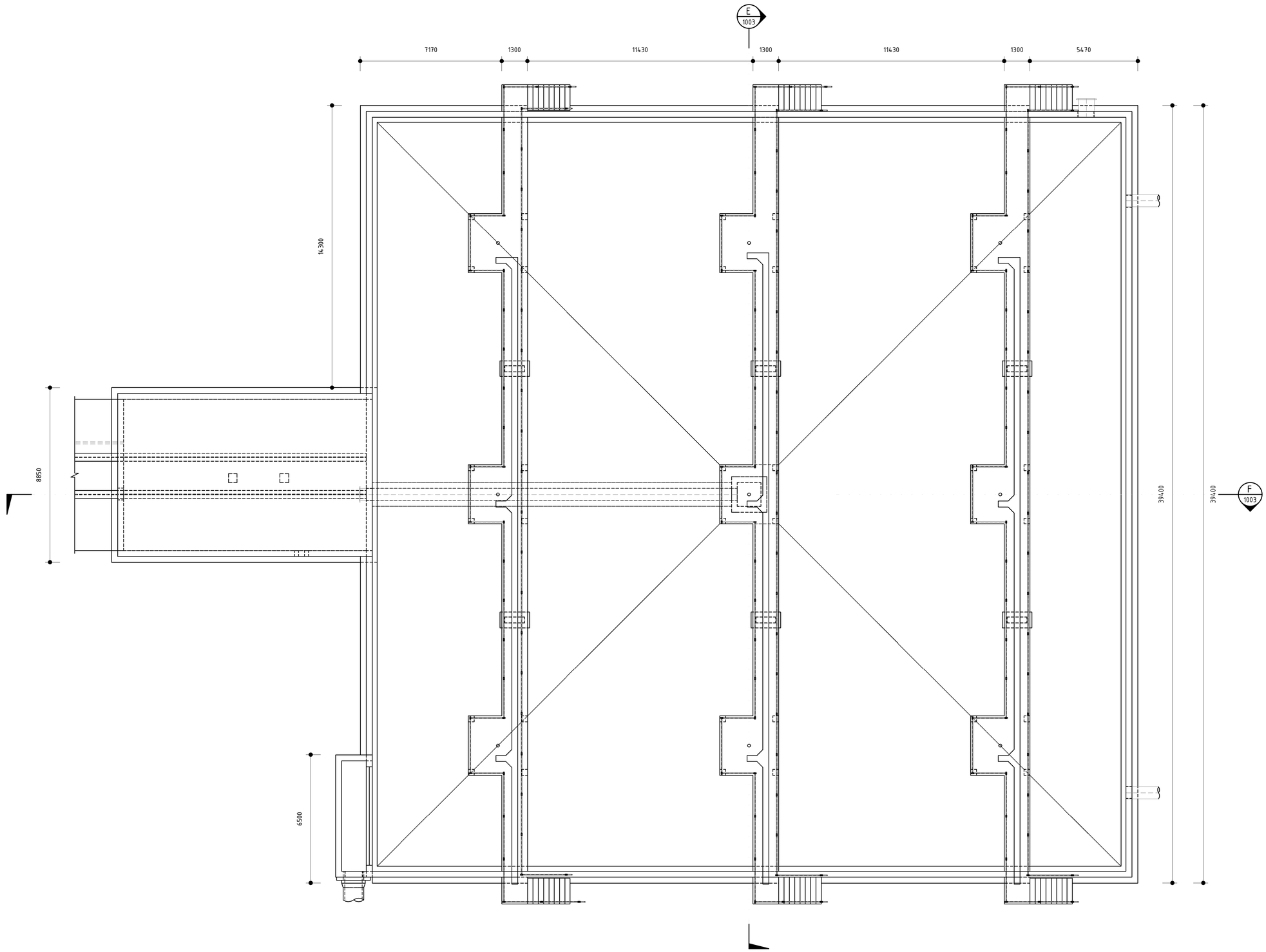


GENERAL NOTES

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.

1.4 ANY ERRORS, DIMENSIONS OR DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.

1.5 TOLERANCES SHALL BE DEGREE OF ACCURACY UNLESS OTHERWISE SPECIFIED.

1.6 ALL OVER - EXCAVATION SHALL BE MADE GOOD USING MASS CONCRETE FOR THE CONTRACTORS ACCOUNT.

CONCRETE

2.1 NO-FINES CONCRETE, WHERE STRUCTURAL CONCRETE IS TO BE PLACED ON TOP, SHALL BE FINISHED WITH A SKIMMED COAT OF MORTAR TO LIMIT BLEEDING OF TRUCTURALCONCRETE AND OR BLINDING OF THE NO-FINE LAYER.

2.2

2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.

2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION

2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.

2.6 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.

2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER

2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL 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.

REINFORCEMENT

3.1 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.

3.2 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

3.3 WELDING, HEATING TREATMENT AND GAS CUTTING OF REINFORCEMENT SHALL BE PERMITTED.

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 Consulting Engineers

21 COMPENATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700

WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
A	2022/01/20	ISSUED FOR TENDER
0	2023/03/08	ISSUED FOR CONSTRUCTION
1	2023/03/24	WALL THICKNESSES UPDATED

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

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

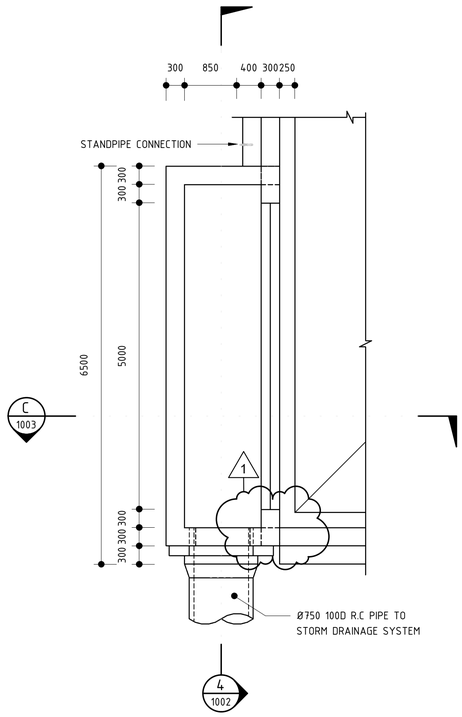
PLAN VIEW

BALANCING TANK

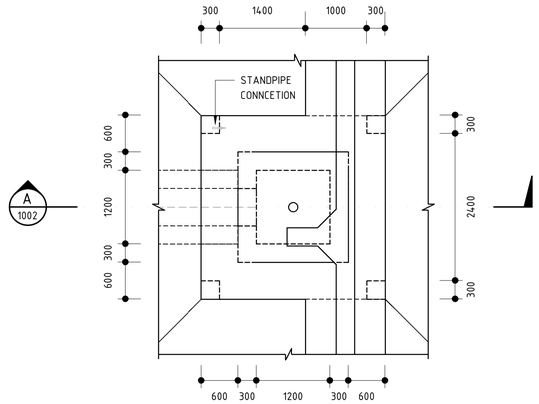
DESIGNED	DRAWN	CHECKED
DESIGNER	DRAFTER	L MIDDELBERG
REV DATE	SCALE	ORIGINAL SIZE
2023/03/24	As indicated	A1

DRAWING NUMBER

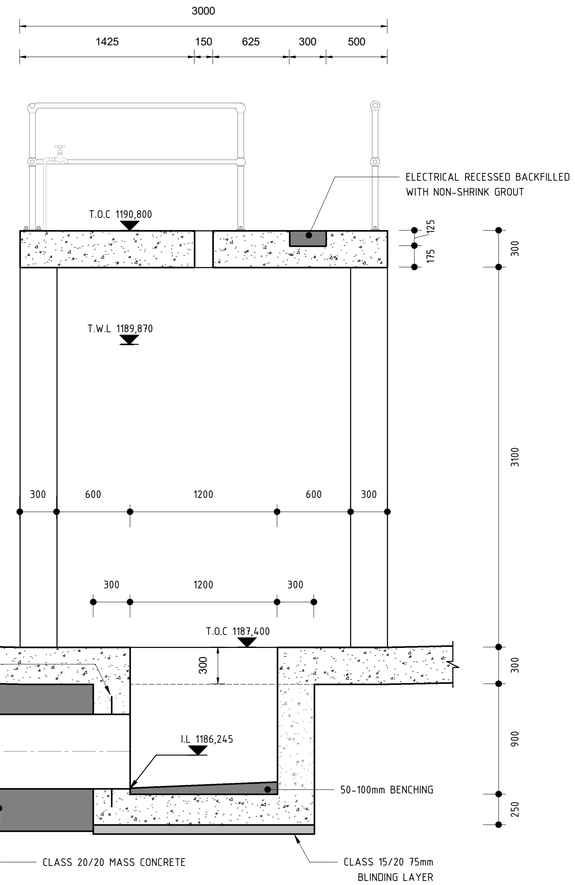
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278--STR-DRG-0002-1001	1



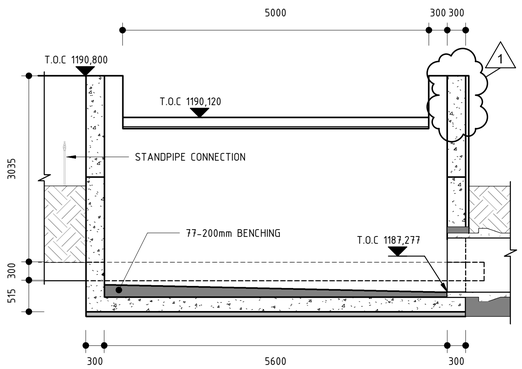
DETAIL 1
SCALE 1 : 50



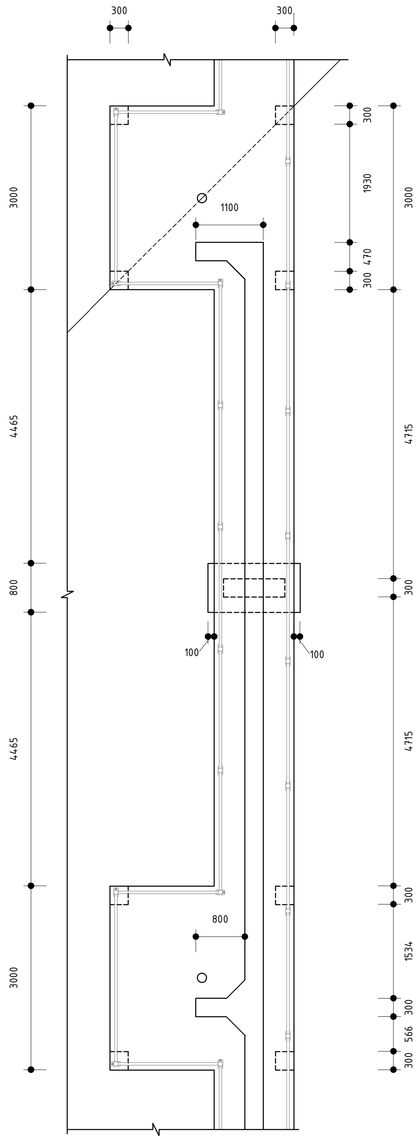
DETAIL 2
SCALE 1 : 50



SECTION A
SCALE 1 : 25
1002



SECTION 4
SCALE 1 : 50
1002



DETAIL 3
SCALE 1 : 50

GENERAL 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.

1.4 ANY ERRORS, DIMENSIONS OR DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.

1.5 TOLERANCES SHALL BE DEGREE OF ACCURACY UNLESS OTHERWISE SPECIFIED.

1.6 ALL OVER - EXCAVATION SHALL BE MADE GOOD USING MASS CONCRETE FOR THE CONTRACTORS ACCOUNT.

CONCRETE

2.1 NO-FINES CONCRETE, WHERE STRUCTURAL CONCRETE IS TO BE PLACED ON TOP, SHALL BE FINISHED WITH A SKIMMED COAT OF MORTAR TO LIMIT BLEEDING OF TRUCTURALCONCRETE AND OR BLINDING OF THE NO-FINE LAYER.

2.2

2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.

2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION

2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.

2.6 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.

2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER

2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL 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.

REINFORCEMENT

3.1 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.

3.2 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

3.3 WELDING, HEATING TREATMENT AND GAS CUTTING OF REINFORCEMENT SHALL BE PERMITTED.

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 Consulting Engineers
21 COMPENATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
A	2022/01/20	ISSUED FOR TENDER
0	2023/03/08	ISSUED FOR CONSTRUCTION
1	2023/03/24	WALL THICKNESSES UPDATED

T.BANDA ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

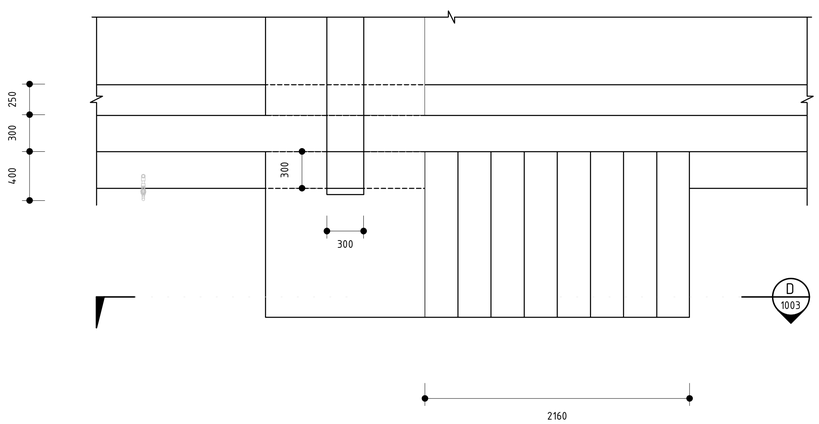
DETAILS AND SECTION 1

BALANCING TANK

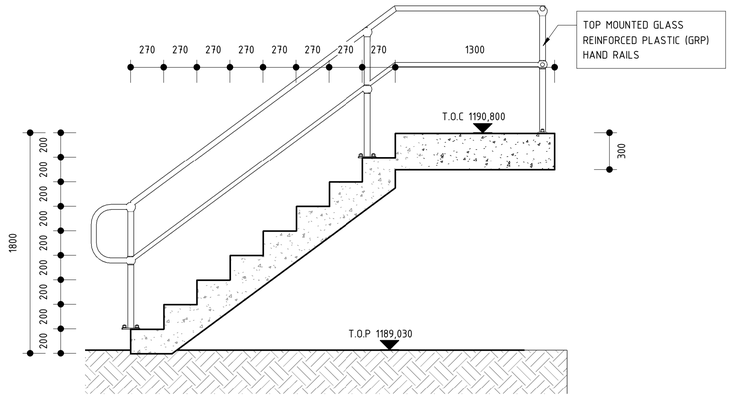
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023/03/24	As indicated	A1

DRAWING NUMBER

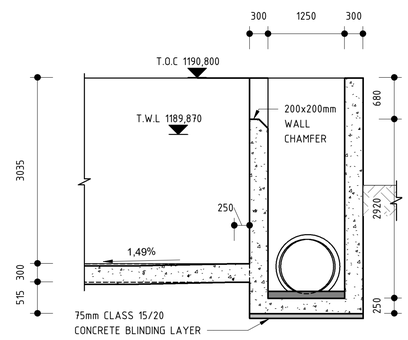
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278--STR-DRG-0002-1002	1



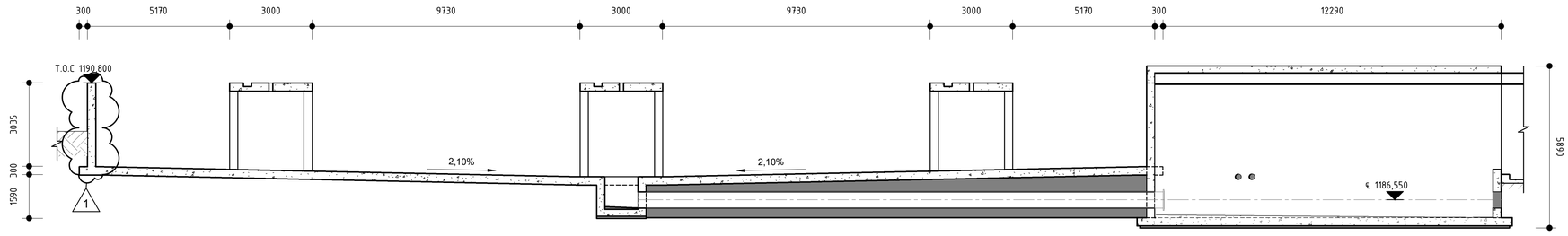
DETAIL
SCALE 1 : 25 — 4



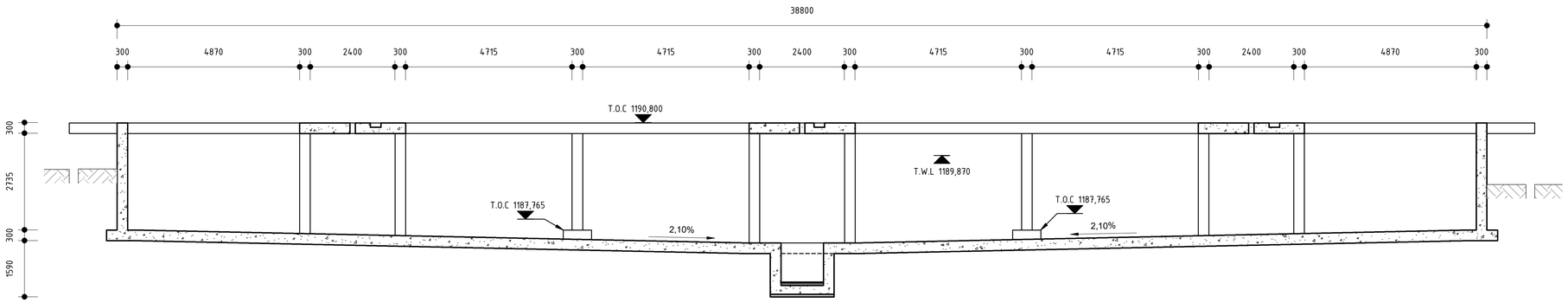
SECTION
SCALE 1 : 25 — D 1003



SECTION
SCALE 1 : 50 — C 1002



SECTION
SCALE 1 : 100 — F 1001



SECTION
SCALE 1 : 75 — E 1001

GENERAL 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.

1.4 ANY ERRORS, DIMENSIONS OR DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.

1.5 TOLERANCES SHALL BE DEGREE OF ACCURACY UNLESS OTHERWISE SPECIFIED.

1.6 ALL OVER - EXCAVATION SHALL BE MADE GOOD USING MASS CONCRETE FOR THE CONTRACTORS ACCOUNT.

CONCRETE

2.1 NO-FINES CONCRETE, WHERE STRUCTURAL CONCRETE IS TO BE PLACED ON TOP, SHALL BE FINISHED WITH A SKIMMED COAT OF MORTAR TO LIMIT BLEEDING OF TRUCTURALCONCRETE AND OR BLINDING OF THE NO-FINE LAYER.

2.2

2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.

2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION

2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.

2.6 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.

2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER

2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL 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.

REINFORCEMENT

3.1 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.

3.2 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

3.3 WELDING, HEATING TREATMENT AND GAS CUTTING OF REINFORCEMENT SHALL BE PERMITTED.

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 Consulting Engineers
21 COMPENATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
A	2022/01/20	ISSUED FOR TENDER
0	2023/03/08	ISSUED FOR CONSTRUCTION
1	2023/03/24	WALL THICKNESSES UPDATED

T.BANDA
ENGINEER — PR ENG no. — DATE

CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

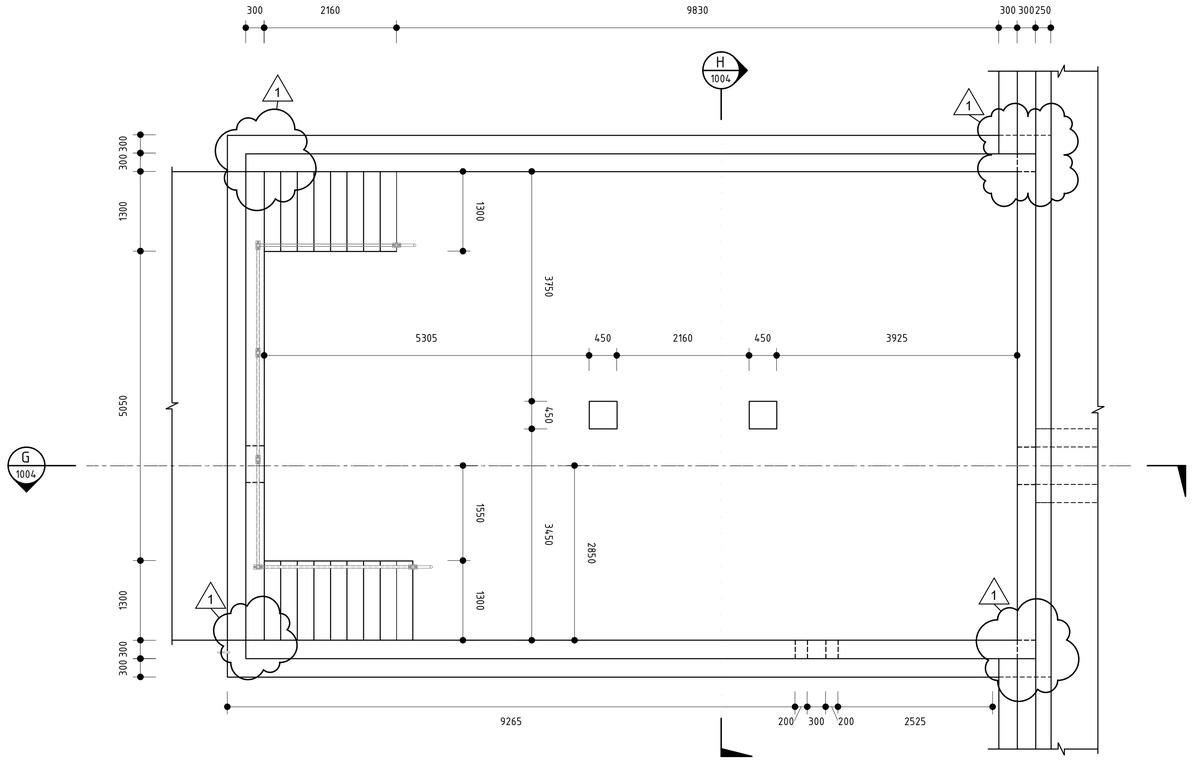
DETAILS AND SECTION 2

BALANCING TANK

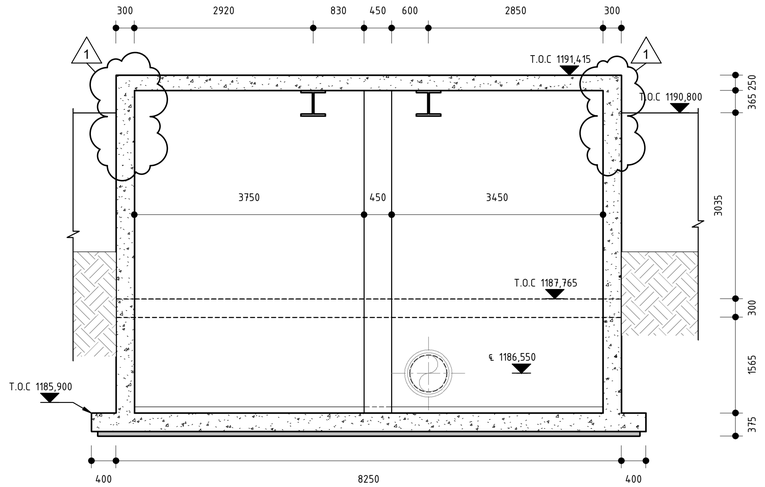
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023/03/24	As indicated	A1

DRAWING NUMBER

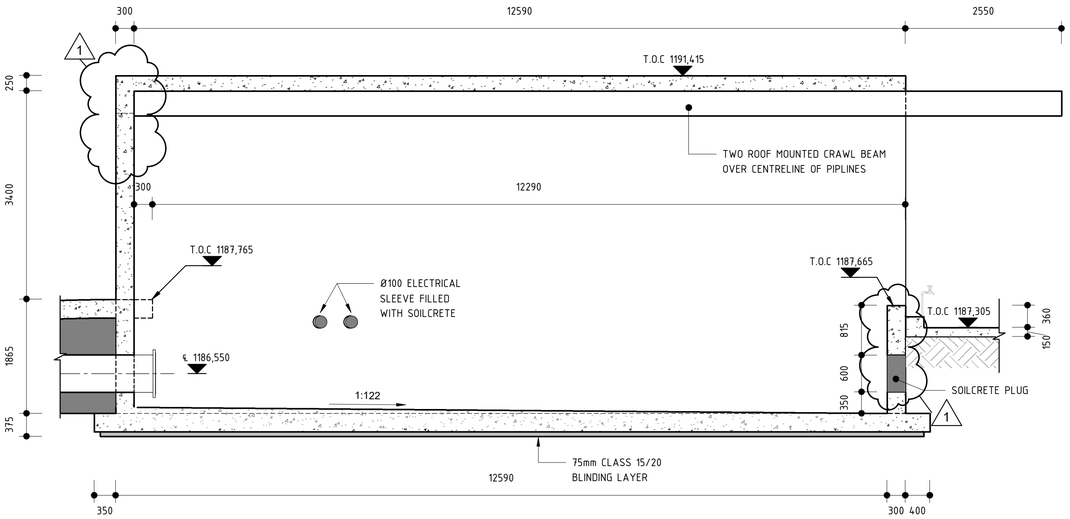
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278--STR-DRG-0002-1003	1



DETAIL 5 - VALVE CHAMBER LAYOUT
SCALE 1 : 50



SECTION H
SCALE 1 : 50 — 1004



SECTION G
SCALE 1 : 50 — 1004

GENERAL 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.

1.4 ANY ERRORS, DIMENSIONS OR DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.

1.5 TOLERANCES SHALL BE DEGREE OF ACCURACY UNLESS OTHERWISE SPECIFIED.

1.6 ALL OVER - EXCAVATION SHALL BE MADE GOOD USING MASS CONCRETE FOR THE CONTRACTORS ACCOUNT.

CONCRETE

2.1 NO-FINES CONCRETE, WHERE STRUCTURAL CONCRETE IS TO BE PLACED ON TOP, SHALL BE FINISHED WITH A SKIMMED COAT OF MORTAR TO LIMIT BLEEDING OF TRUCTURALCONCRETE AND OR BLINDING OF THE NO-FINE LAYER.

2.2

2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.

2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION

2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.

2.6 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.

2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER

2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL 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.

REINFORCEMENT

3.1 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.

3.2 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

3.3 WELDING, HEATING TREATMENT AND GAS CUTTING OF REINFORCEMENT SHALL BE PERMITTED.

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 Consulting Engineers
21 COMPENATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT
CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
A	2022/01/20	ISSUED FOR TENDER
0	2023/03/08	ISSUED FOR CONSTRUCTION
1	2023/03/24	WALL THICKNESSES UPDATED

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

_____ _____
CLIENT DATE

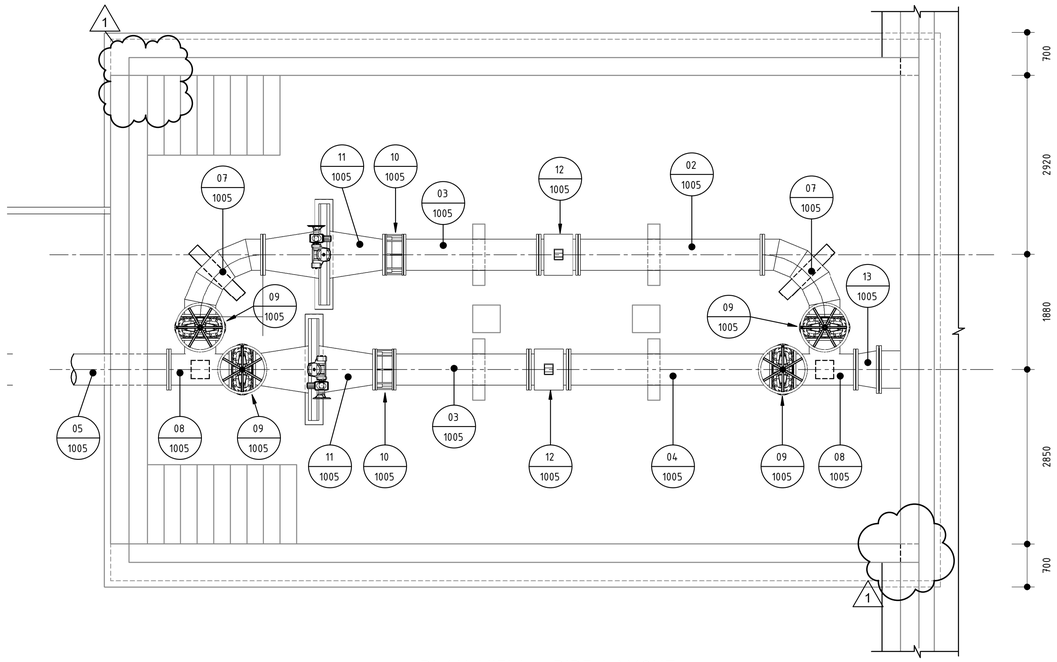
PROJECT
POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION
PLAN VIEW, DETAILS AND SECTION
BALANCING TANK

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023/03/24	As indicated	A1

DRAWING NUMBER

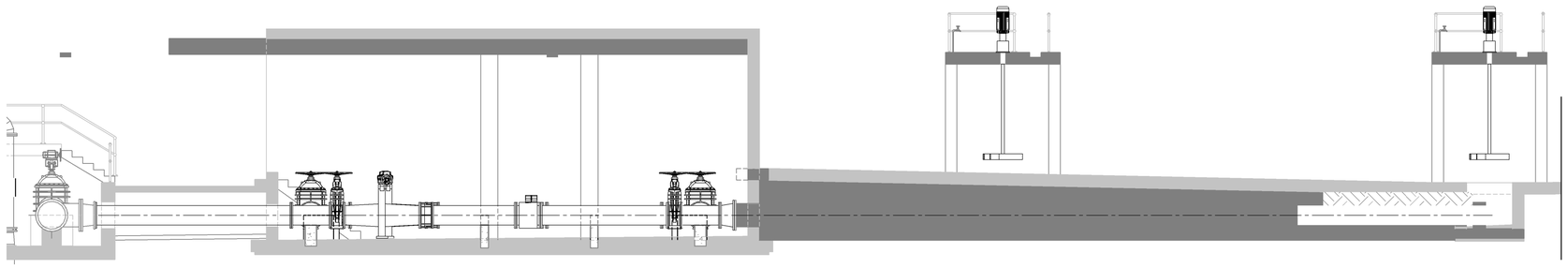
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278--STR-DRG-0002-1004	1



PLAN VIEW - PIPE LAYOUT
SCALE 1 : 50

PIPE SCHEDULE

MARK	DIAMETER	MATERIAL	DESCRIPTION	NO.
01/1005	Ø500mm	MILD STEEL 4.5mm W.T	FBE COATED AND LINED PIPE 2 000mm FLANGED BOTH ENDS	1.0
02/1005	Ø500mm	MILD STEEL 4.5mm W.T	FBE COATED AND LINED PIPE 3 000mm FLANGED BOTH ENDS	1.0
03/1005	Ø500mm	MILD STEEL 4.5mm W.T	FBE COATED AND LINED PIPE 2 200mm FLANGED BOTH ENDS (NOTE: REQUIRED PIPE LENGTH TO BE MEASURED ON SITE)	2.0
04/1005	Ø500mm	MILD STEEL 4.5mm W.T	FBE COATED AND LINED PIPE 3 316mm FLANGED BOTH ENDS	1.0
05/1005	Ø500mm	MILD STEEL 4.5mm W.T	FBE COATED AND LINED PIPE 5 175mm O.A FLANGED BOTH ENDS (NOTE: REQUIRED PIPE LENGTH TO BE MEASURED ON SITE)	1.0
06/1005	Ø500mm	MILD STEEL 4.5mm W.T	19 150mm PIPE. ONE END FLANGED AND THE OTHER END PLAIN WITH P.F. 150mm FROM PLAIN END	1.0
07/1005	Ø500mm	MILD STEEL 4.5mm W.T	FBE COATED AND LINED 90° BEND 1 020mm CENTRE TO FLANGE. FLANGED BOTH ENDS	2.0
08/1005	Ø500mm	MILD STEEL 4.5mm W.T	FBE COATED AND LINED 90° FLANGED BOTH ENDS EQUAL TEE 510mm CENTRE TO FLANGE	2.0
09/1005	Ø500mm	CARBON STEEL	D.F PN10 RESILENT SEAL GATE VALVE 350mm O.A COMPLETE WITH HAND WHEEL	4.0
10/1005	Ø500mm	CARBON STEEL	D.F PIPE DECOPELING JOINT TO SUIT Ø500 MILD STEEL PIPES	2.0
11/1005	Ø500mm	CONTRACTOR DESIGN	ACTUATED PINCH VALVE TO BE SUPPLIED BY MECHANICAL CONTRACTOR	2.0
12/1005	Ø500mm	CONTRACTOR DESIGN	MAGNETIC FLOW METER TO BE SUPPLIED BY ELECTRICAL CONTRACTOR	2.0
13/1005	Ø500mm - 600mm	MILD STEEL 4.5mm W.T	FBE COATED AND LINED Ø600mm TO Ø500mm CONCENTRIC REDUCER 380mm FLANG TO FLANGE	2.0



SECTION 1
SCALE 1 : 75

GENERAL 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.

1.4 ANY ERRORS, DIMENSIONS OR DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.

1.5 TOLERANCES SHALL BE DEGREE OF ACCURACY UNLESS OTHERWISE SPECIFIED.

1.6 ALL OVER - EXCAVATION SHALL BE MADE GOOD USING MASS CONCRETE FOR THE CONTRACTORS ACCOUNT.

CONCRETE

2.1 NO-FINES CONCRETE, WHERE STRUCTURAL CONCRETE IS TO BE PLACED ON TOP, SHALL BE FINISHED WITH A SKIMMED COAT OF MORTAR TO LIMIT BLEEDING OF TRUCTURALCONCRETE AND OR BLINDING OF THE NO-FINE LAYER.

2.2

2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.

2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION

2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.

2.6 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER.

2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER

2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL 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.

REINFORCEMENT

3.1 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.

3.2 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

3.3 WELDING, HEATING TREATMENT AND GAS CUTTING OF REINFORCEMENT SHALL BE PERMITTED.

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 Consulting Engineers
21 COMPENATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700

WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
A	2022/01/20	ISSUED FOR TENDER
0	2023/03/08	ISSUED FOR CONSTRUCTION
1	2023/03/24	WALL THICKNESSES UPDATED

T.BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

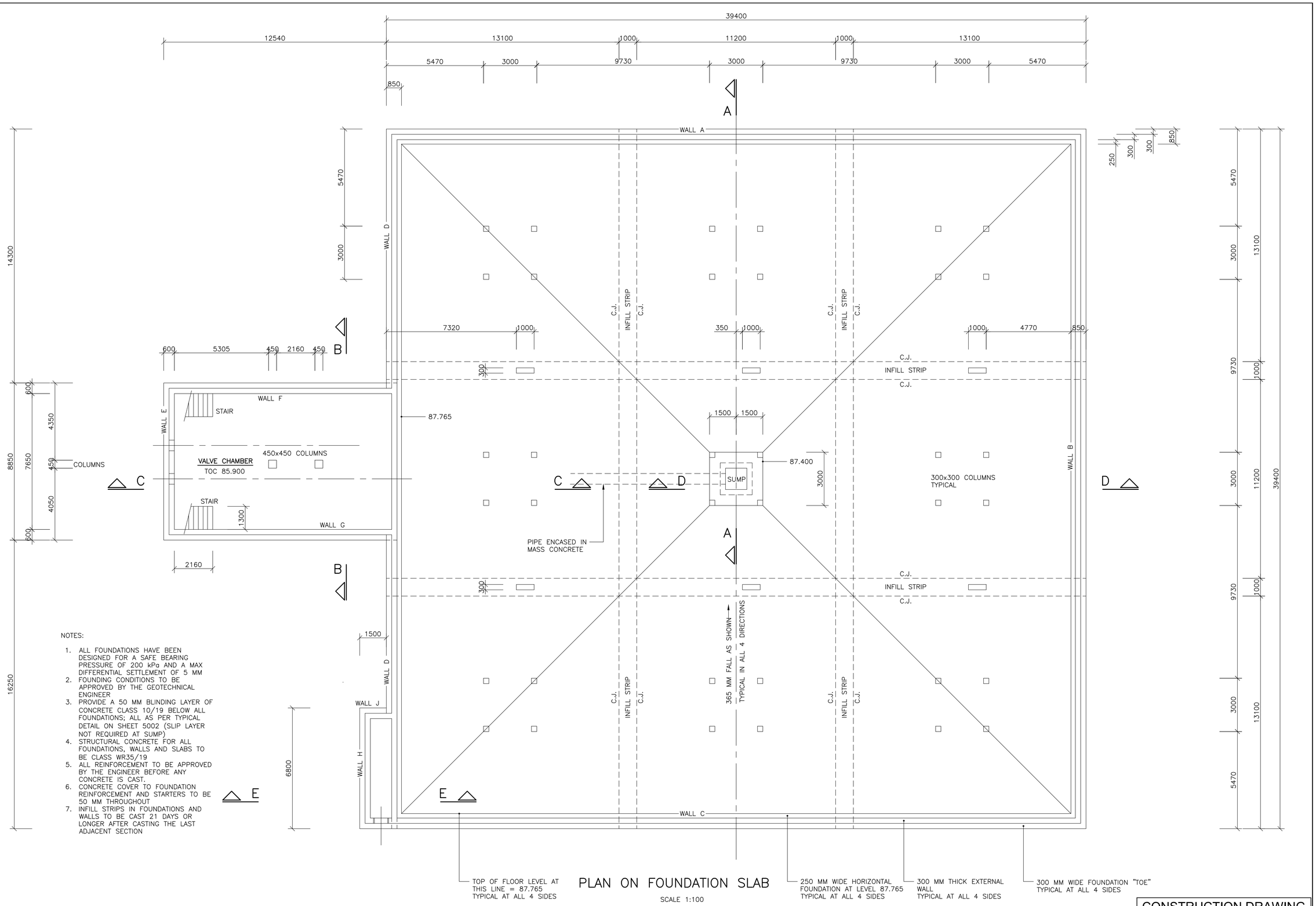
PIPE LAYOUT AND SCHEDULE

BALANCING TANK

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023/03/24	As indicated	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278--STR-DRG-0002-1005	1



NOTES:

1. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 200 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
2. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
3. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 10/19 BELOW ALL FOUNDATIONS; ALL AS PER TYPICAL DETAIL ON SHEET 5002 (SLIP LAYER NOT REQUIRED AT SUMP)
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
7. INFILL STRIPS IN FOUNDATIONS AND WALLS TO BE CAST 21 DAYS OR LONGER AFTER CASTING THE LAST ADJACENT SECTION

TOP OF FLOOR LEVEL AT THIS LINE = 87.765 TYPICAL AT ALL 4 SIDES

250 MM WIDE HORIZONTAL FOUNDATION AT LEVEL 87.765 TYPICAL AT ALL 4 SIDES

300 MM THICK EXTERNAL WALL TYPICAL AT ALL 4 SIDES

300 MM WIDE FOUNDATION "TOE" TYPICAL AT ALL 4 SIDES

PLAN ON FOUNDATION SLAB

SCALE 1:100

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE, NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA — ENGINEER — PR ENG no. — DATE

CLIENT — DATE

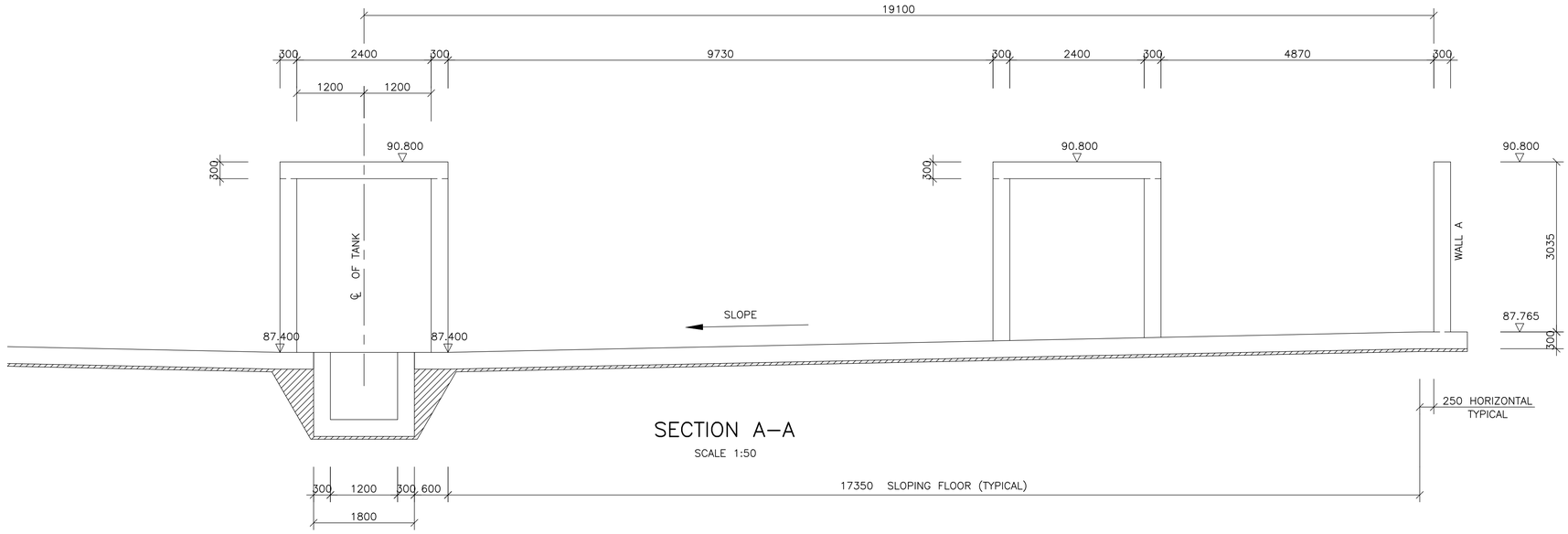
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BALANCING TANK CONCRETE DETAILS FOUNDATION SLAB

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

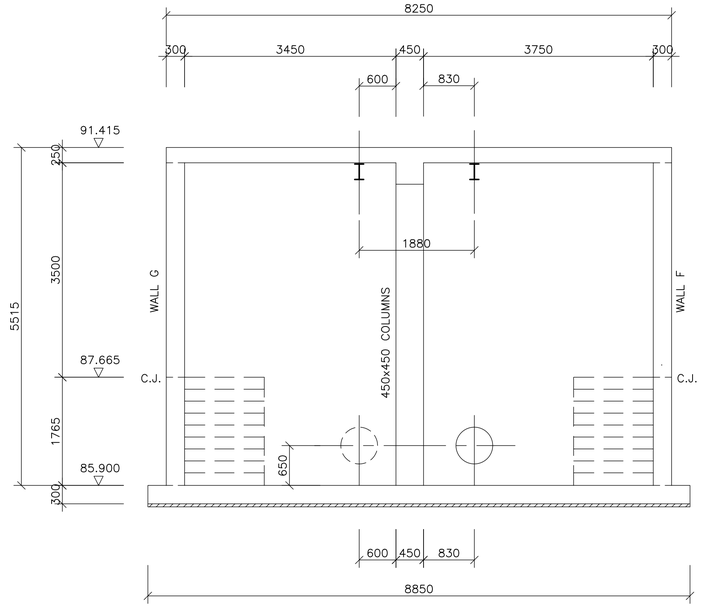
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5001	0



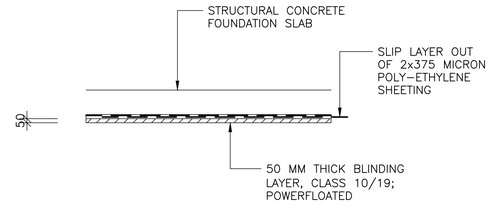
SECTION A–A

SCALE 1:50



SECTION B–B

SCALE 1:50



BLINDING / SLIP LAYER DETAIL

SCALE 1:37.5 TYPICAL DETAIL

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA
ENGINEER PR ENG no. DATE

CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

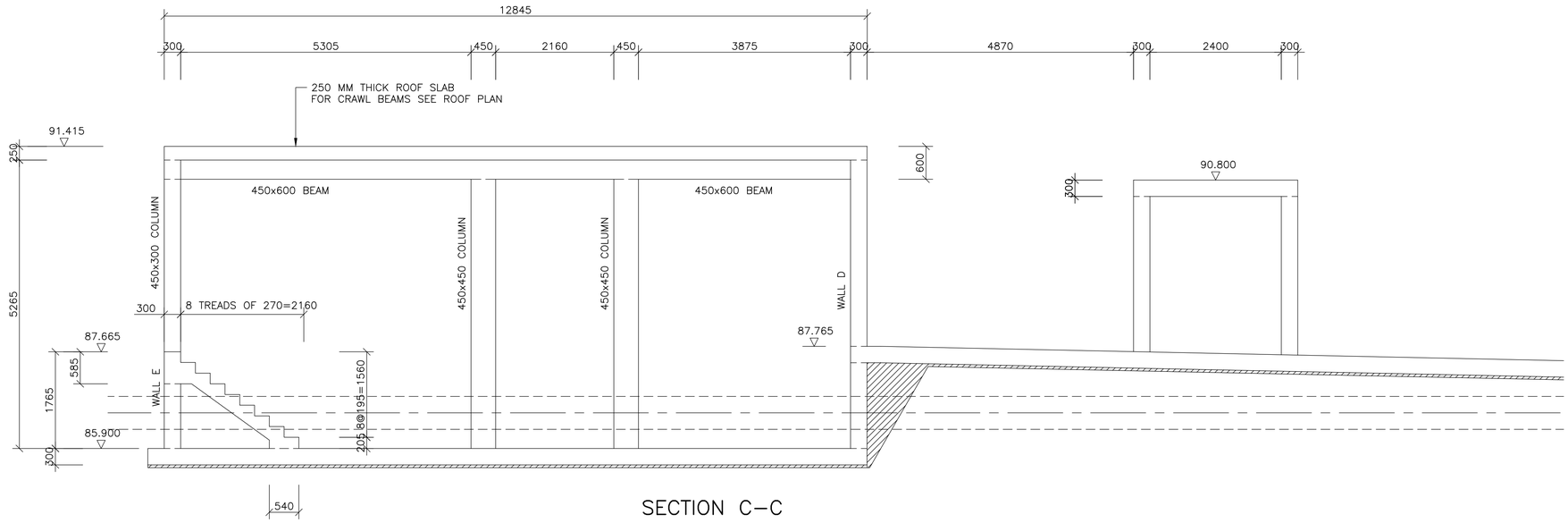
DRAWING DESCRIPTION

BALANCING TANK CONCRETE DETAILS SECTIONS A-A AND B-B

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

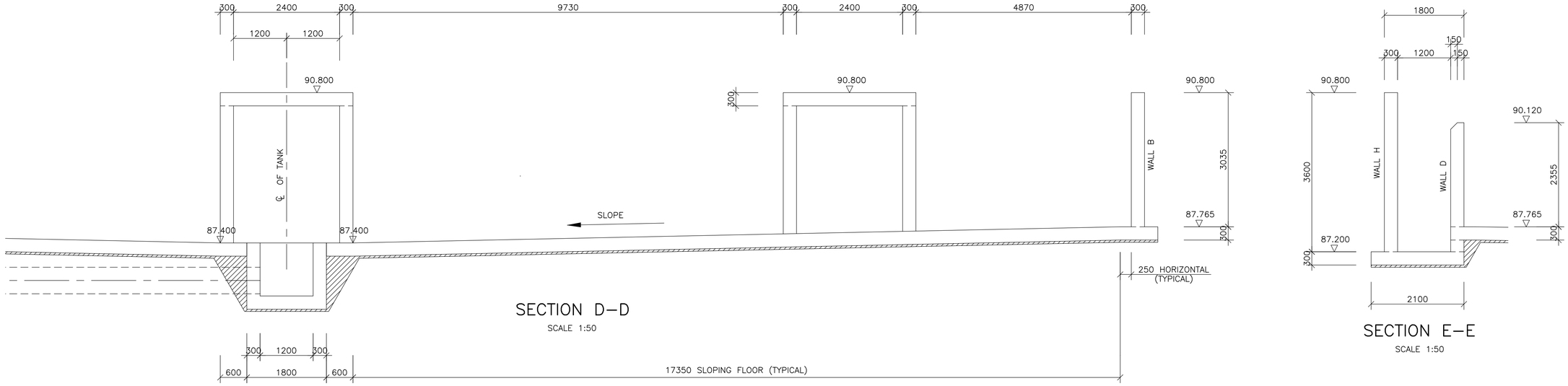
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5002	0



SECTION C–C

SCALE 1:50



SECTION E–E

SCALE 1:50

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

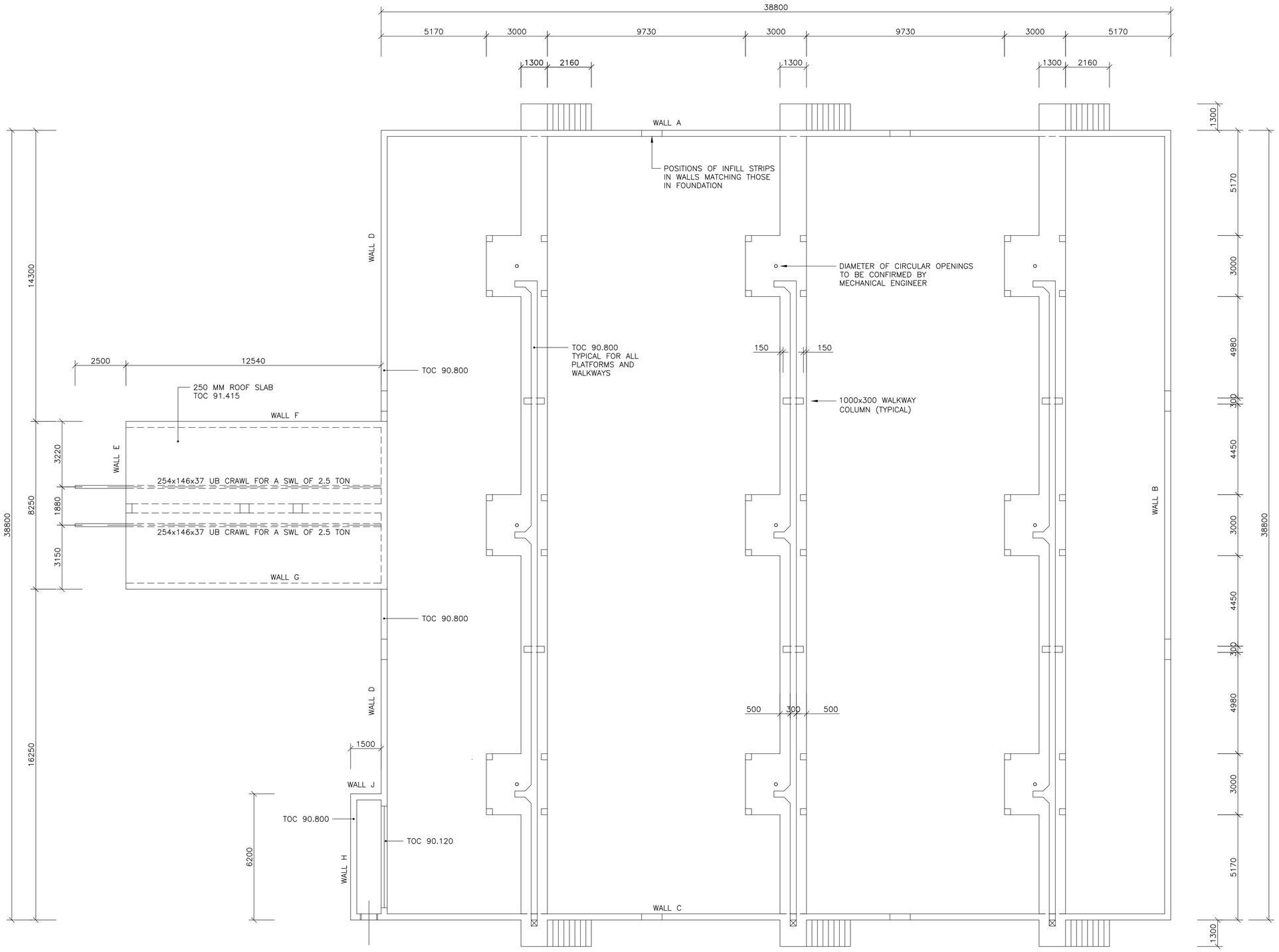
DRAWING DESCRIPTION

BALANCING TANK CONCRETE DETAILS SECTIONS C-C TO E-E

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

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5003	0



STRUCTURAL PLAN ON PLATFORMS AND CHAMBER ROOF

SCALE 1:100

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700

WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

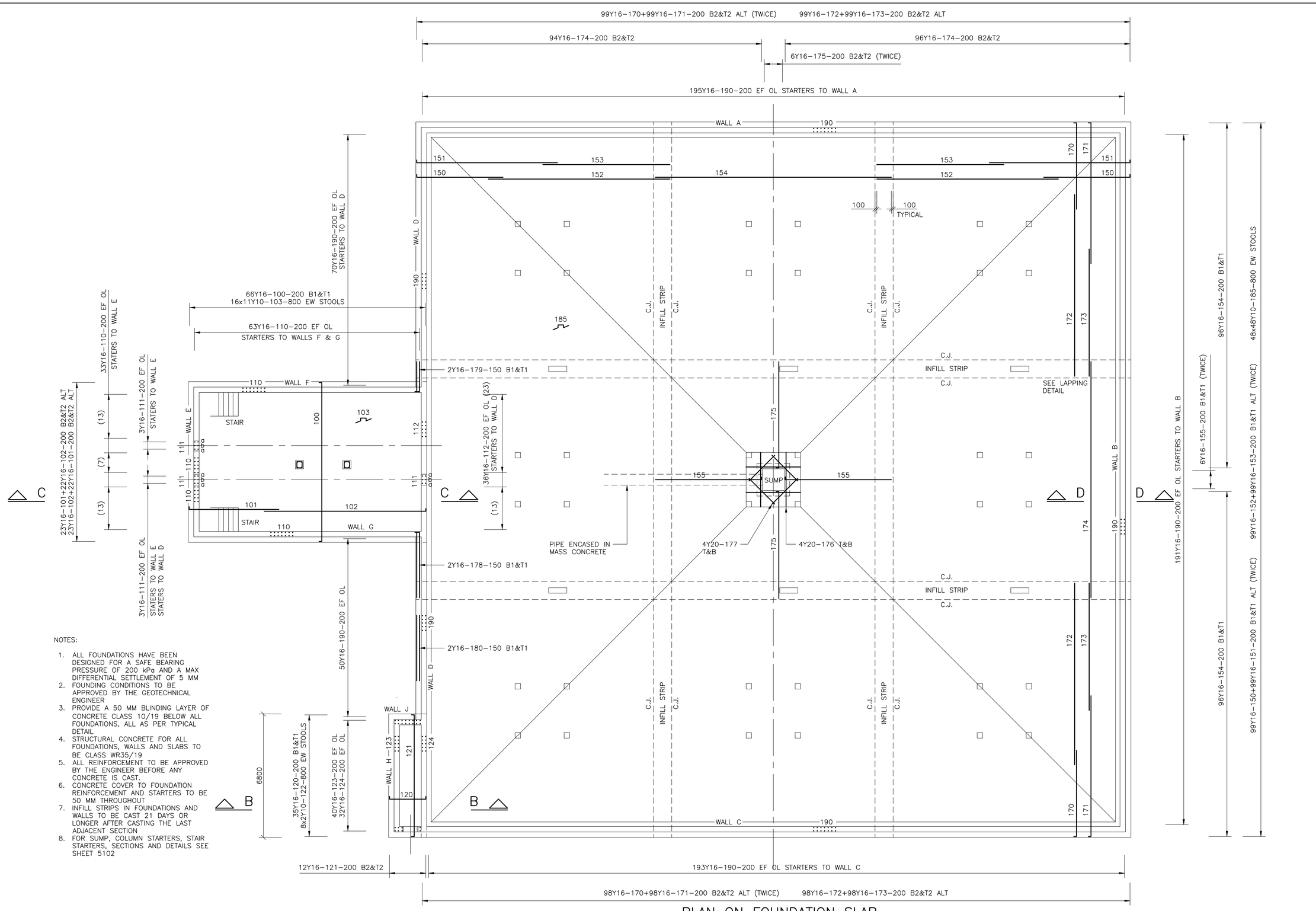
DRAWING DESCRIPTION

BALANCING TANK CONCRETE DETAILS PLATFORMS AND CHAMBER ROOF

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

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5004	0



NOTES:

1. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 200 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
2. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
3. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 10/19 BELOW ALL FOUNDATIONS, ALL AS PER TYPICAL DETAIL
4. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR35/19
5. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
6. CONCRETE COVER TO FOUNDATION REINFORCEMENT AND STARTERS TO BE 50 MM THROUGHOUT
7. INFILL STRIPS IN FOUNDATIONS AND WALLS TO BE CAST 21 DAYS OR LONGER AFTER CASTING THE LAST ADJACENT SECTION
8. FOR SUMP, COLUMN STARTERS, STAIR STARTERS, SECTIONS AND DETAILS SEE SHEET 5102

PLAN ON FOUNDATION SLAB

SCALE 1:100

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA — ENGINEER — PR ENG no. — DATE

CLIENT — DATE

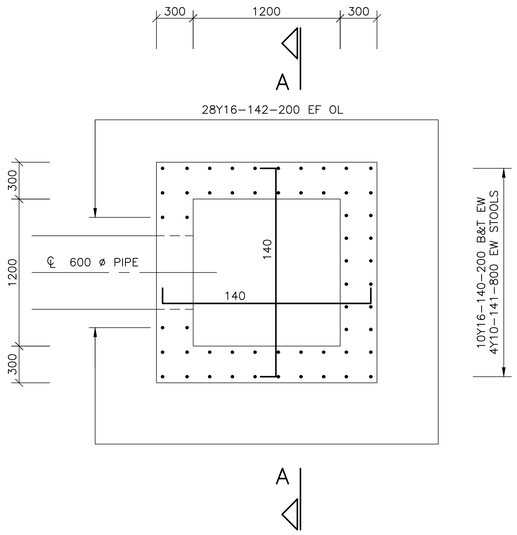
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BALANCING TANK LAYOUT OF FOUNDATION REINFORCEMENT

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

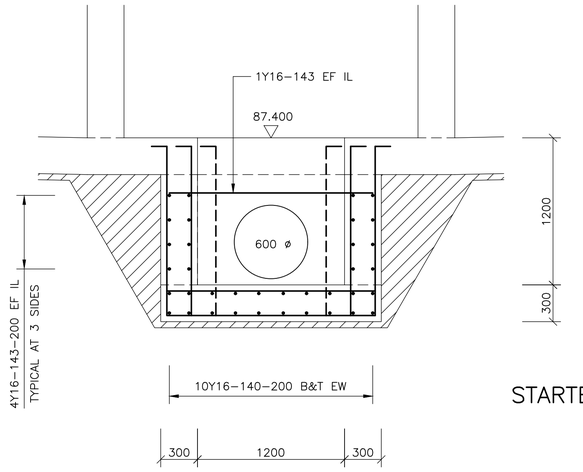
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5101	0



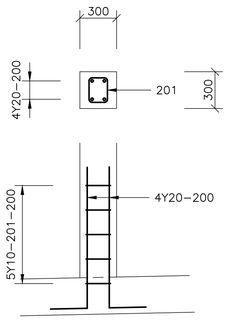
PLAN ON SUMP FOUNDATION

SCALE 1:25



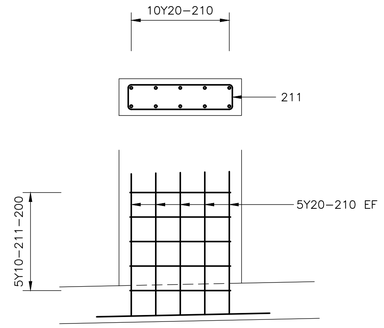
SUMP SECTION/ELEVATION A–A

SCALE 1:25



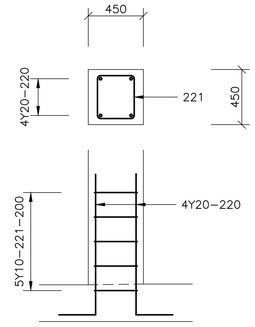
STARTERS FOR PLATFORM COLUMNS

SCALE 1:25 9 PLATFORMS; 36 COLUMNS



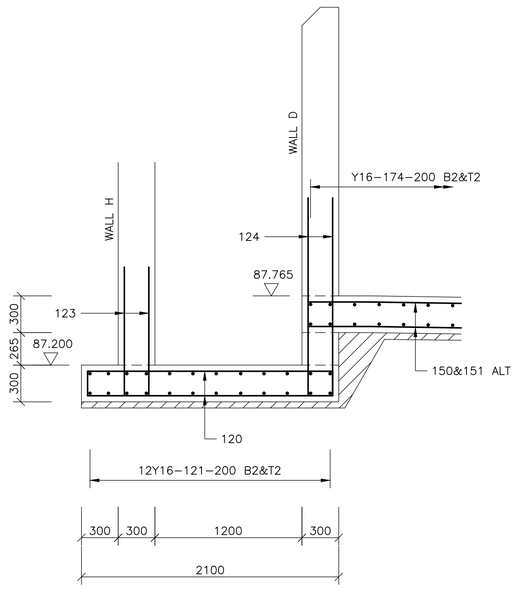
STARTERS FOR WALKWAY COLUMNS

SCALE 1:25 6 COLUMNS



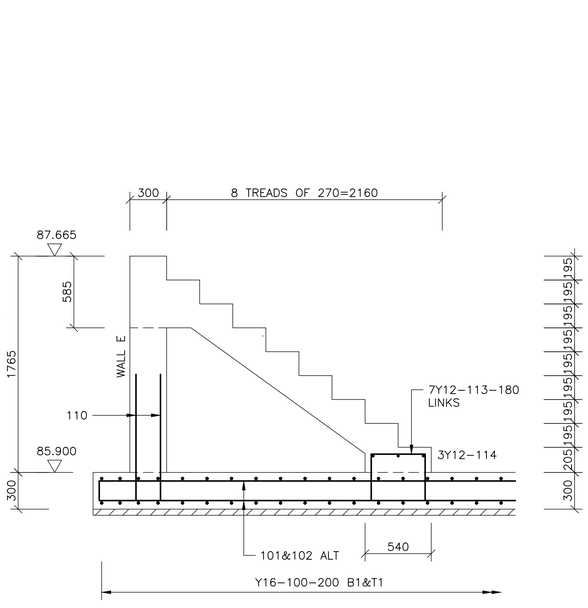
STARTERS FOR VALVE CHAMBER COLUMNS

SCALE 1:25 2 COLUMNS



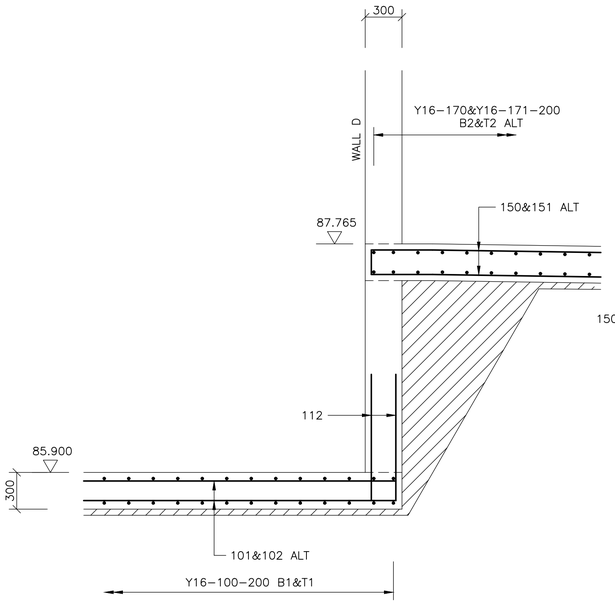
SECTION B–B

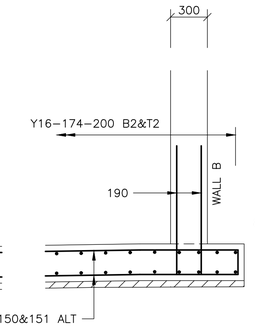
SCALE 1:25



SECTION C–C

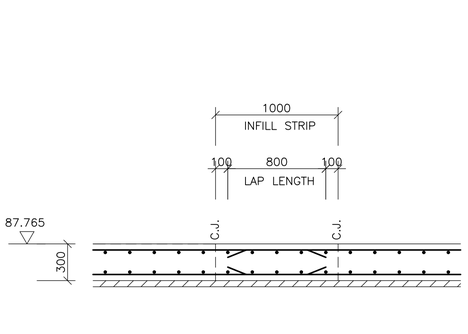
SCALE 1:25





SECTION D–D

SCALE 1:25



TYPICAL DETAIL OF REBAR LAPPING IN INFILL STRIP

SCALE 1:25

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA
ENGINEER PR ENG no. DATE

CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

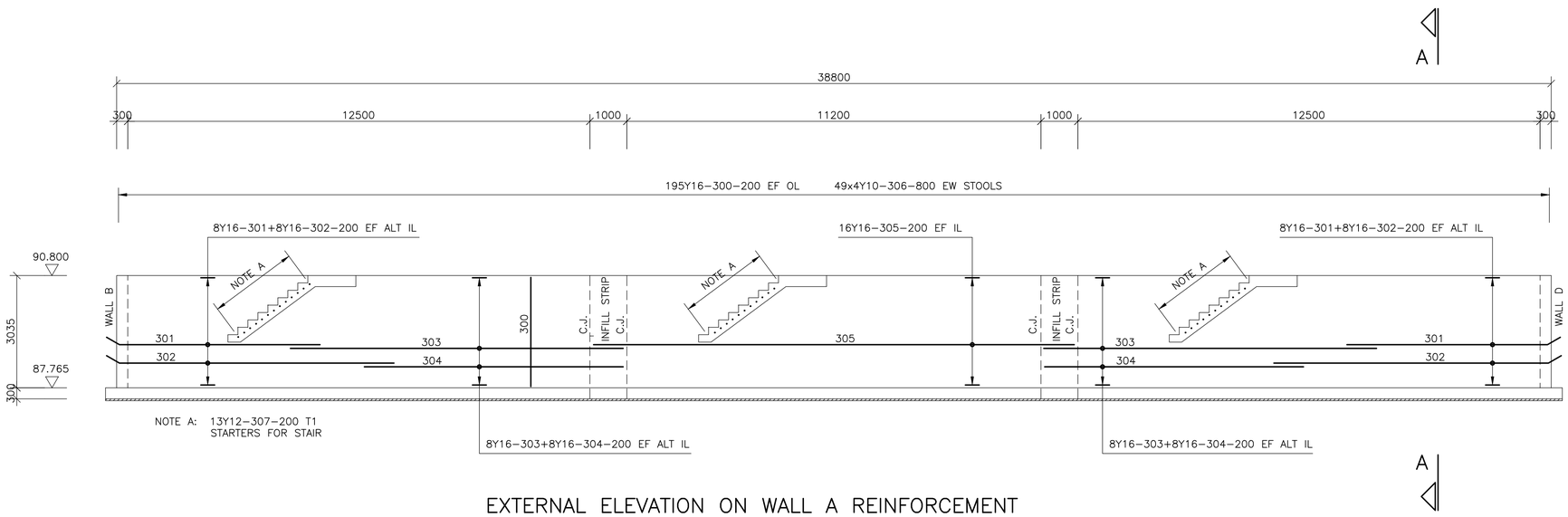
DRAWING DESCRIPTION

BALANCING TANK
DETAILS OF FOUNDATION REINFORCEMENT

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

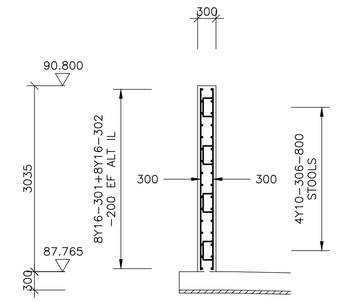
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5102	0



EXTERNAL ELEVATION ON WALL A REINFORCEMENT

SCALE 1:75

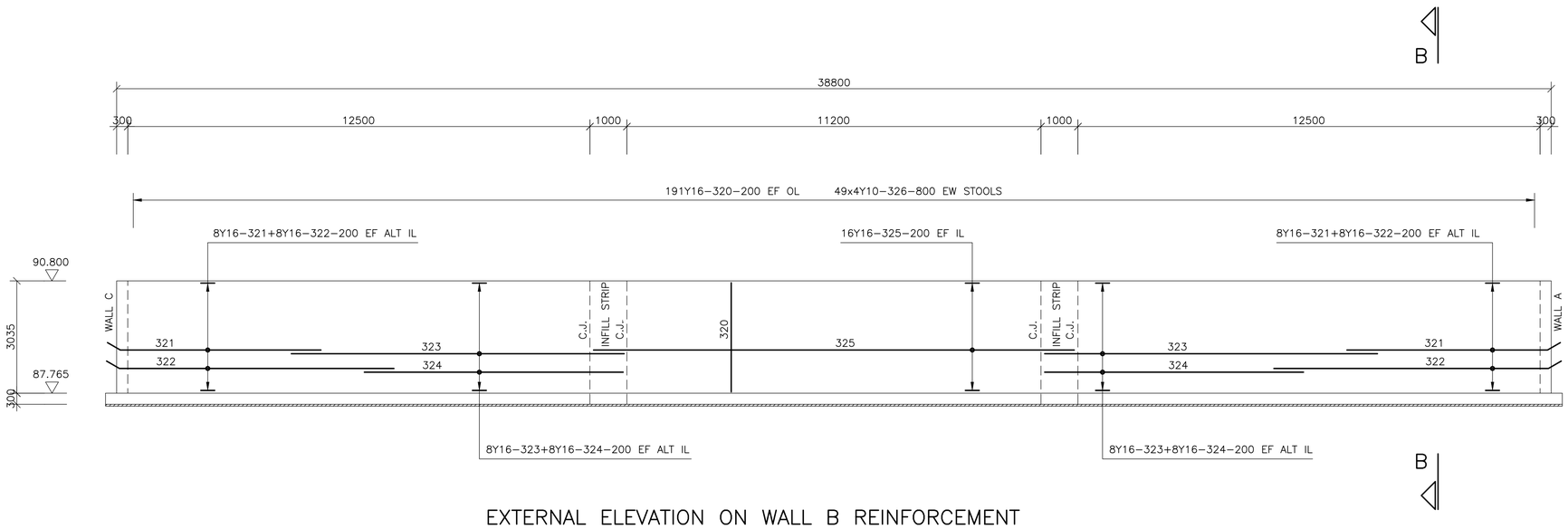


SECTION A–A

SCALE 1:50

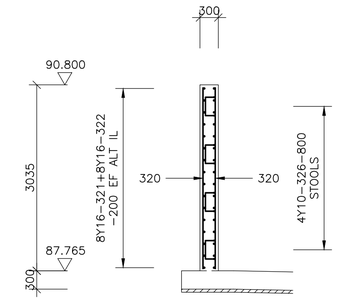
NOTES:

1. CONCRETE COVER TO VERTICAL WALL REINFORCEMENT TO BE 50 MM
2. INFILL STRIPS TO BE CAST 21 DAYS OR LONGER AFTER CASTING THE LAST ADJACENT SECTION



EXTERNAL ELEVATION ON WALL B REINFORCEMENT

SCALE 1:75



SECTION B–B

SCALE 1:50

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

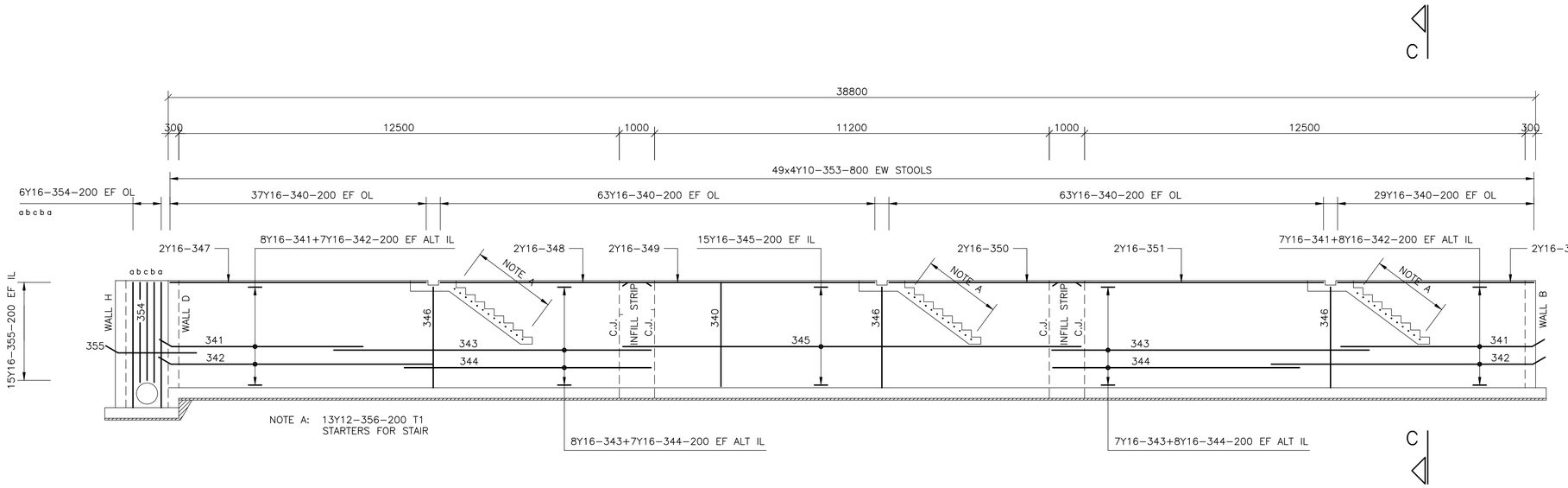
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BALANCING TANK REINFORCEMENT OF WALLS A & B

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

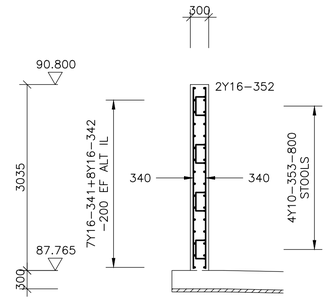
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5103	0



EXTERNAL ELEVATION ON WALL C REINFORCEMENT

SCALE 1:75

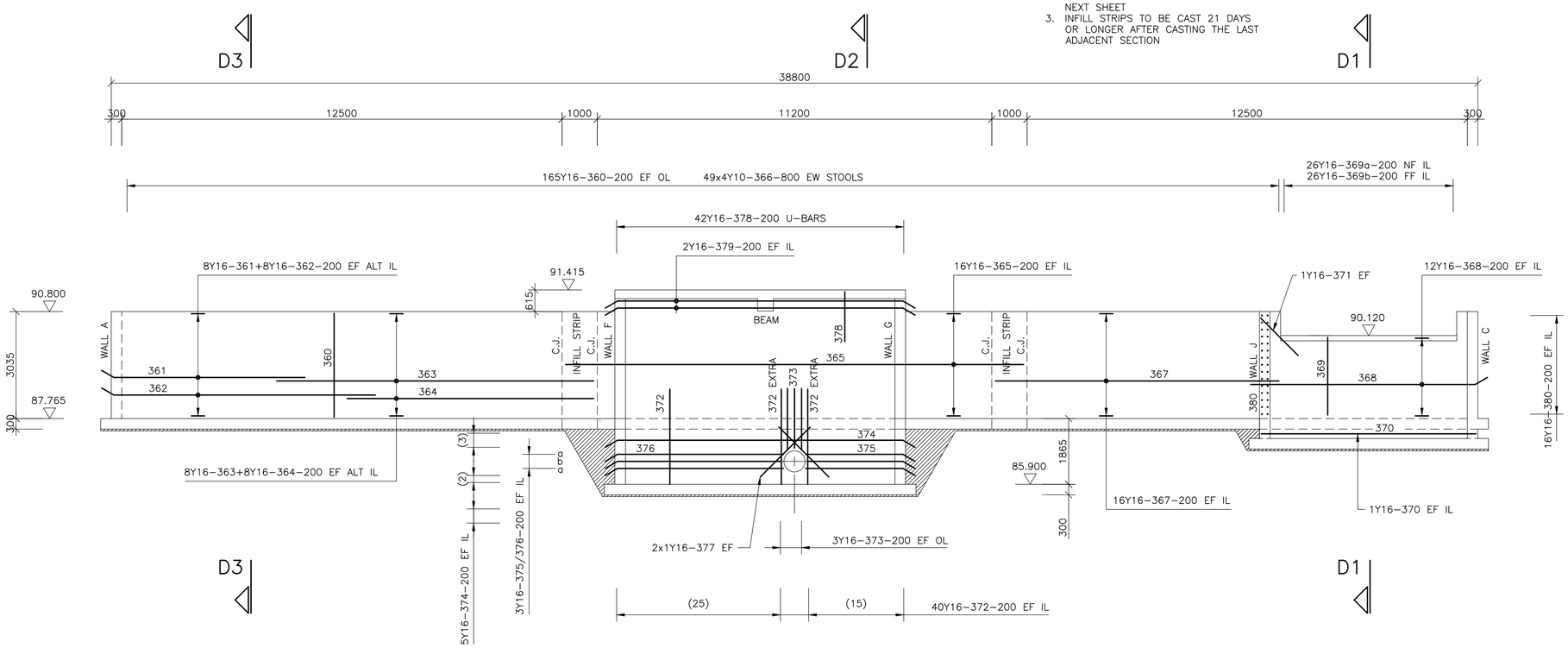


SECTION C–C

SCALE 1:50

NOTES:

1. CONCRETE COVER TO VERTICAL WALL REINFORCEMENT TO BE 50 MM
2. FOR SECTIONS D1–D1 TO D3–D3 SEE NEXT SHEET
3. INFILL STRIPS TO BE CAST 21 DAYS OR LONGER AFTER CASTING THE LAST ADJACENT SECTION



EXTERNAL ELEVATION ON WALL D REINFORCEMENT

SCALE 1:75

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE, NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA — ENGINEER — PR ENG no. — DATE

CLIENT — DATE

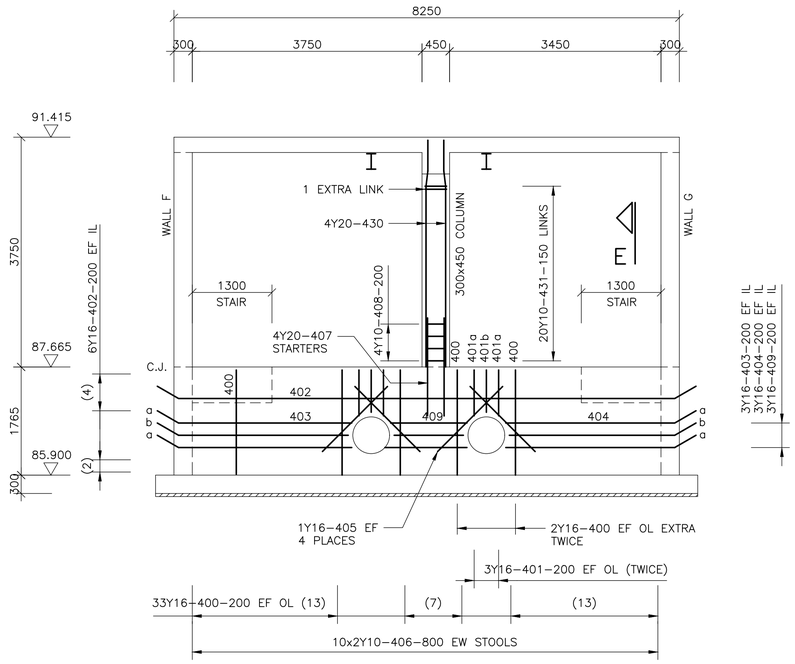
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BALANCING TANK REINFORCEMENT OF WALLS C & D

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

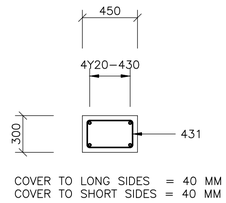
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5104	0



EXTERNAL ELEVATION ON WALL E REINFORCEMENT

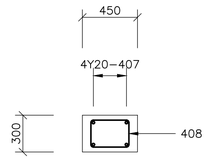
SCALE 1:50



COVER TO LONG SIDES = 40 MM
COVER TO SHORT SIDES = 40 MM

SECTION ON 300x450 COLUMN MAIN BARS

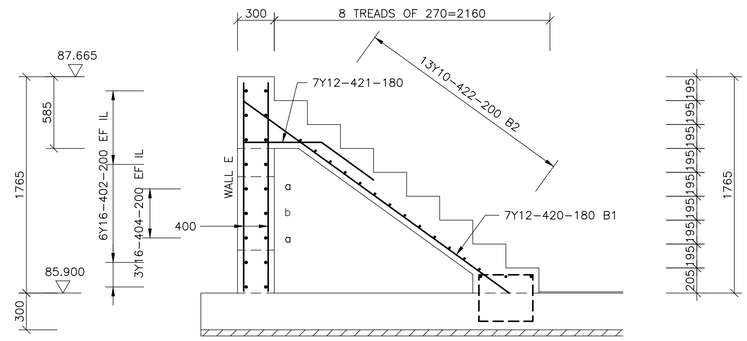
SCALE 1:25



COVER TO LONG SIDES = 40 MM
COVER TO SHORT SIDES = 70 MM

SECTION ON 300x450 COLUMN STARTERS

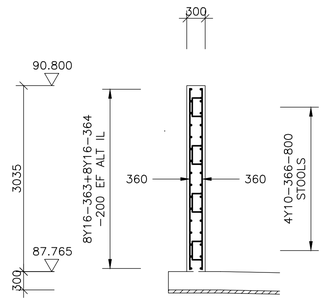
SCALE 1:25



SECTION E–E

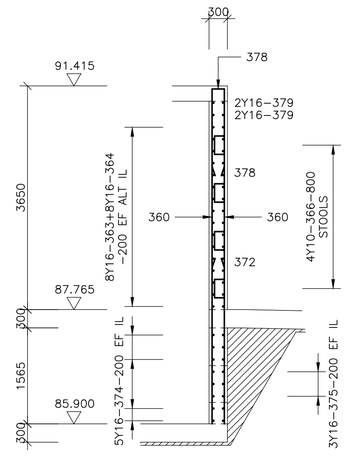
SCALE 1:25

E



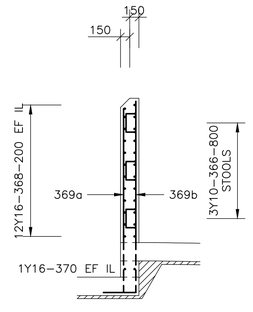
SECTION D3–D3

SCALE 1:50



SECTION D2–D2

SCALE 1:50



SECTION D1–D1

SCALE 1:50

NOTES:

1. CONCRETE COVER TO VERTICAL WALL REINFORCEMENT TO BE 50 MM

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 Consulting Engineers

21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700

WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

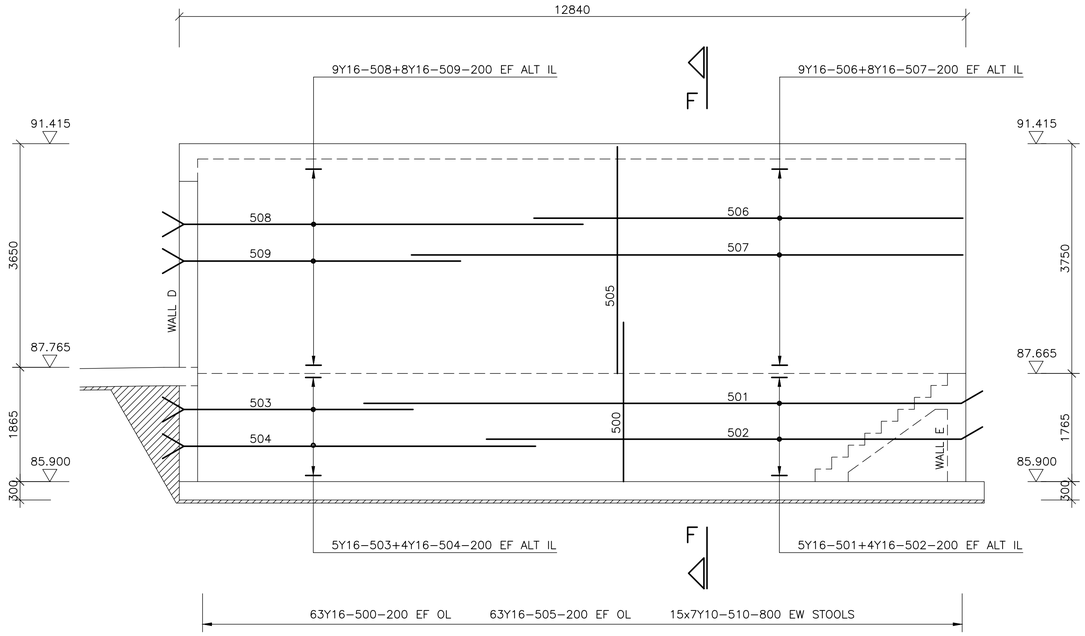
DRAWING DESCRIPTION

BALANCING TANK REINFORCEMENT OF WALL E AND SECTIONS D1 TO D3

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

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5105	0

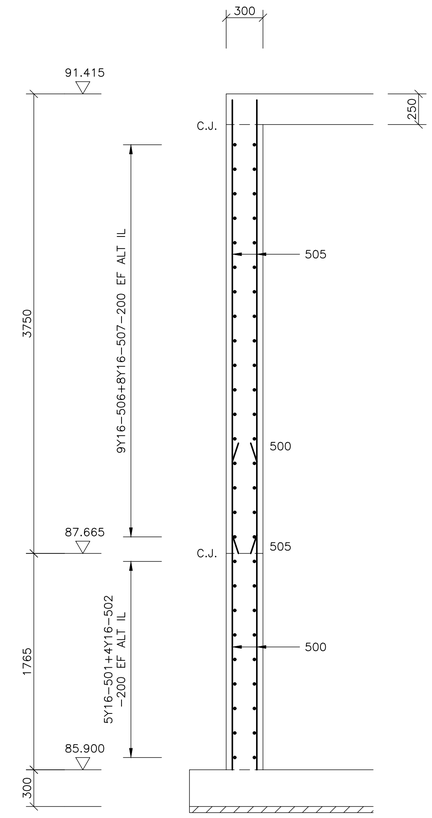


EXTERNAL ELEVATION ON WALL F REINFORCEMENT

SCALE 1:50 WALL G TO BE IDENTICAL

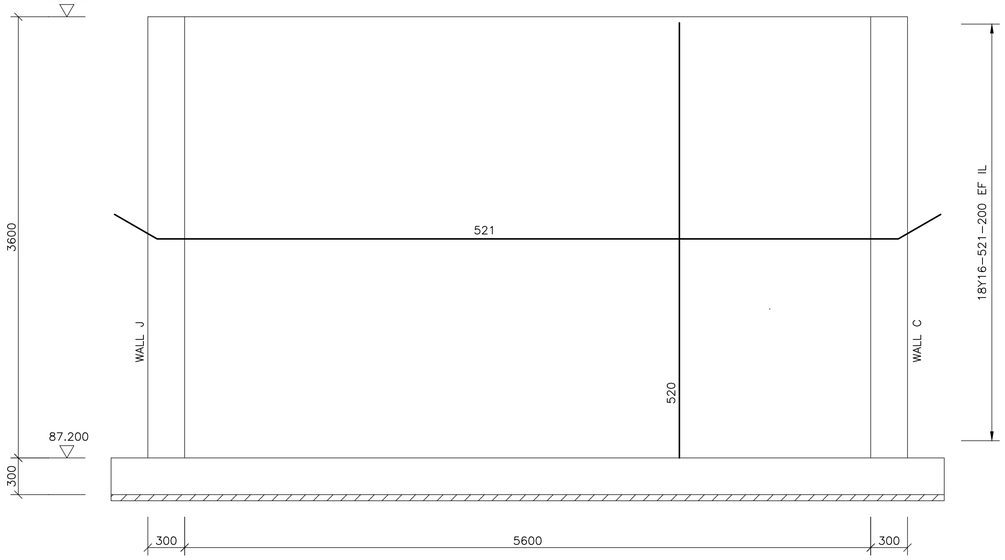
NOTES:

1. CONCRETE COVER TO VERTICAL WALL REINFORCEMENT TO BE 50 MM



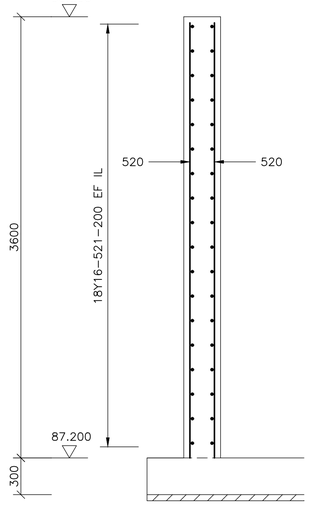
SECTION F–F

SCALE 1:25



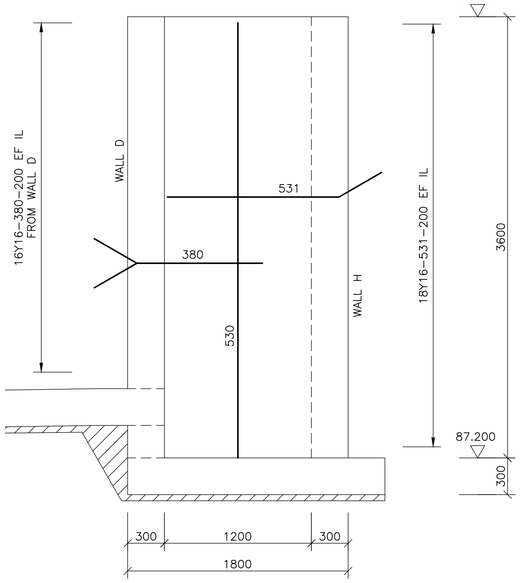
EXTERNAL ELEVATION ON WALL H REINFORCEMENT

SCALE 1:25



SECTION H–H

SCALE 1:25



ELEVATION ON WALL J REINFORCEMENT

SCALE 1:25

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA
ENGINEER PR ENG no. DATE

CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

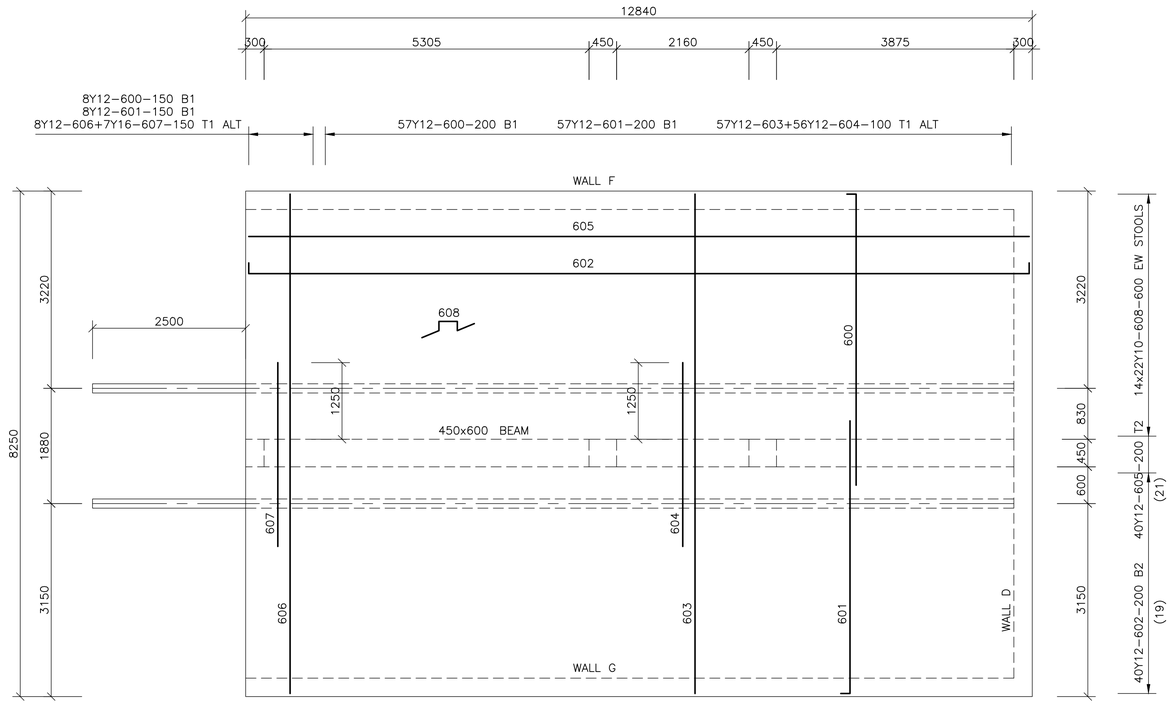
DRAWING DESCRIPTION

BALANCING TANK REINFORCEMENT OF WALLS F, G, H & J

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

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5106	0

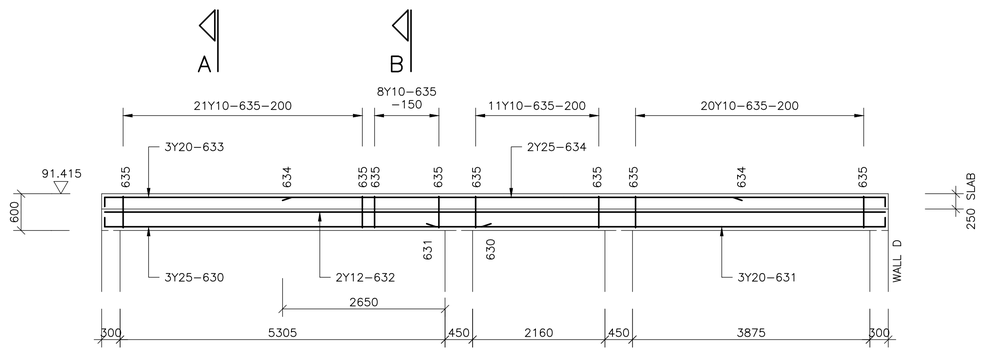


REINFORCEMENT FOR ROOF OVER VALVE CHAMBER

SCALE 1:50

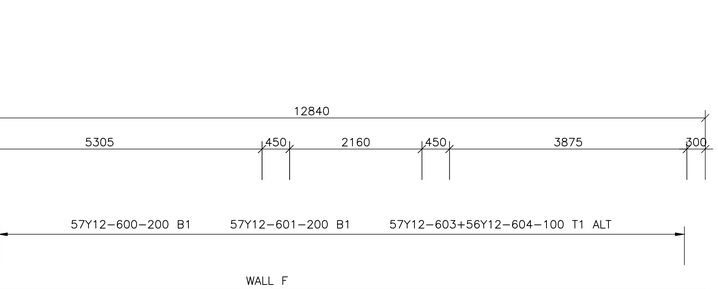
NOTES:

1. CONCRETE COVER TO SLAB REINFORCEMENT TO BE 50 MM



ELEVATION ON BEAM REINFORCEMENT

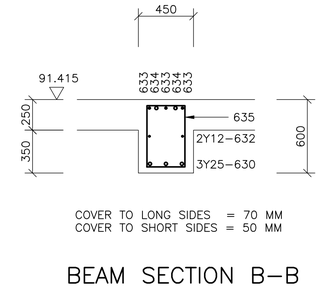
SCALE 1:50



COVER TO LONG SIDES = 70 MM
COVER TO SHORT SIDES = 50 MM

BEAM SECTION A–A

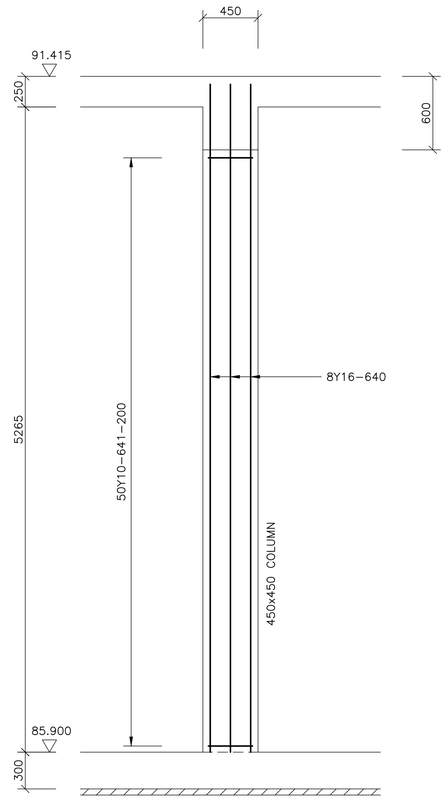
SCALE 1:25



COVER TO LONG SIDES = 70 MM
COVER TO SHORT SIDES = 50 MM

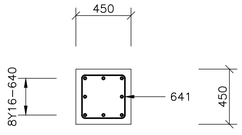
BEAM SECTION B–B

SCALE 1:25



COLUMN ELEVATION

SCALE 1:25



COLUMN SECTION

SCALE 1:25

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA — ENGINEER — PR ENG no. — DATE

CLIENT — DATE

PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BALANCING TANK REINFORCEMENT OF CHAMBER ROOF

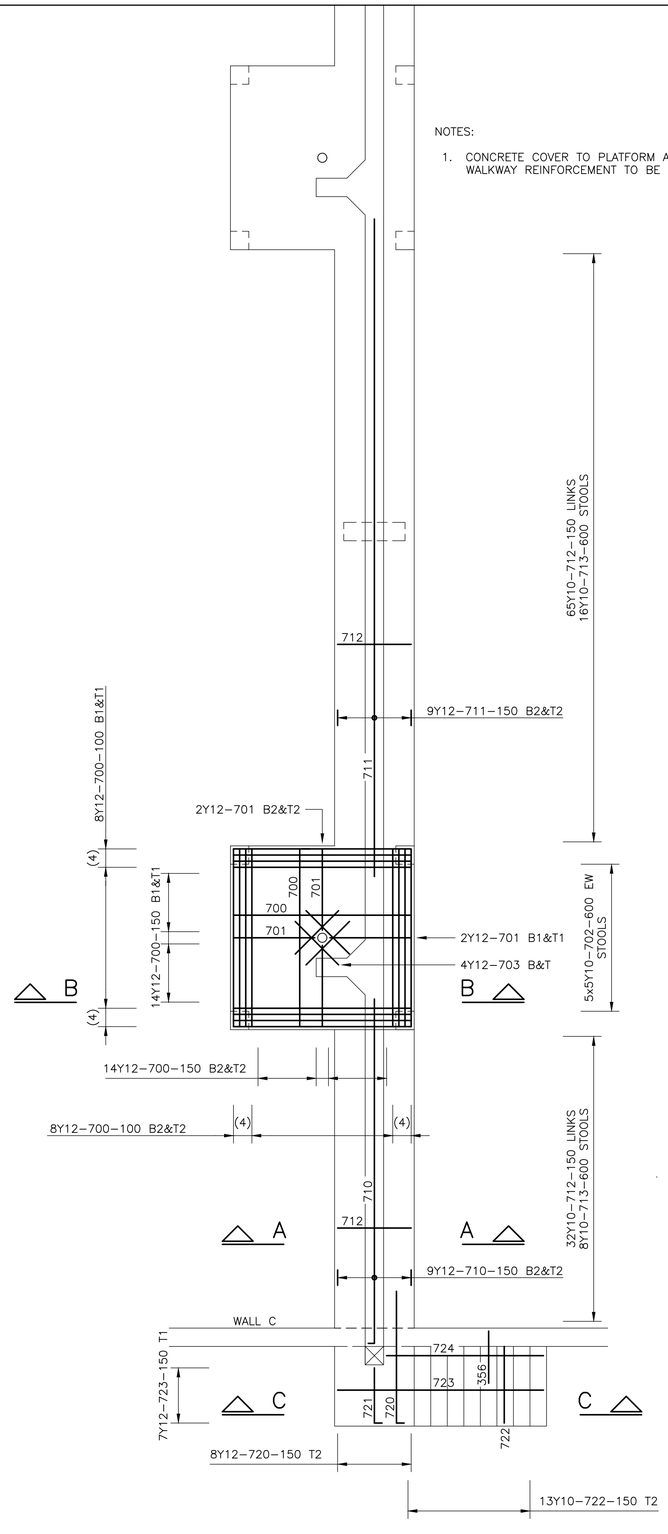
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-04	AS SHOWN	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5107	0

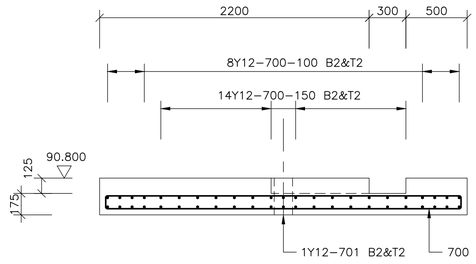
NOTES:

1. CONCRETE COVER TO PLATFORM AND WALKWAY REINFORCEMENT TO BE 50 MM



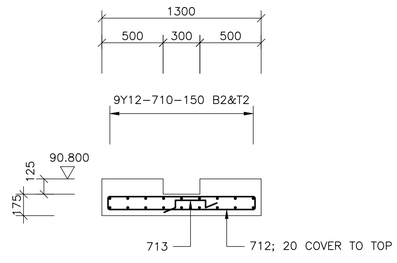
PLAN ON PLATFORM REINFORCEMENT

SCALE 1:50



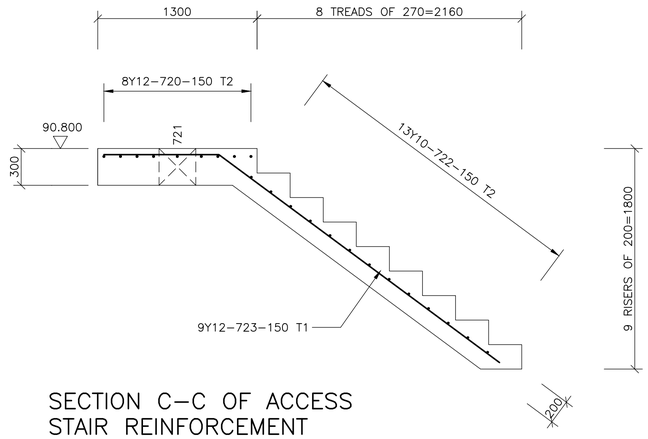
PLATFORM SECTION B–B

SCALE 1:25



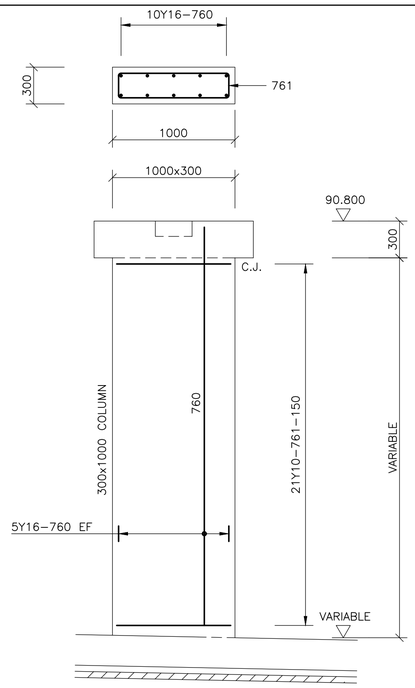
WALKWAY SECTION A–A

SCALE 1:25



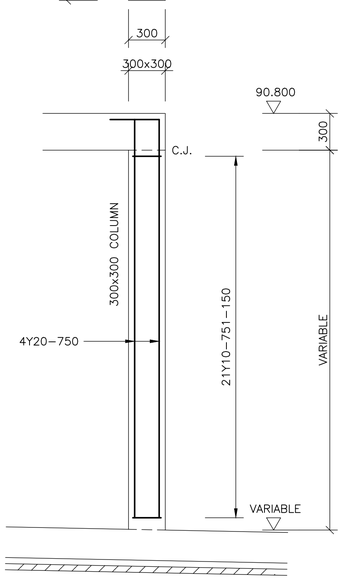
SECTION C–C OF ACCESS STAIR REINFORCEMENT

SCALE 1:25



TYPICAL ELEVATION OF WALKWAY COLUMN REINFORCEMENT

SCALE 1:25 6 PLACES



TYPICAL ELEVATION OF PLATFORM COLUMN REINFORCEMENT

SCALE 1:25 36 PLACES

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 Consulting Engineers

21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700

WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

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

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

BALANCING TANK PLATFORM AND WALKWAY REINFORCEMENT

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

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0002-5108	0

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Foundation	1	132	Y16	9000	132	100	38	150	8750	(150)		
		90	Y16	5000	90	101	37	150	(4900)			
		90	Y16	9000	90	102	37	150	(8900)			
		176	Y10	1200	176	103	83	300	150	350	(350)	
		324	Y16	1300	324	110	37	300	(1050)			
		12	Y16	800	12	111a	37	300	(550)			
		6	Y16	750	6	111b	37	300	(500)			
		66	Y16	1300	66	112	37	300	(1050)			
		14	Y12	1750	14	113	60	440	380			
		6	Y12	1200	6	114	20	(1200)				
		70	Y16	2250	70	120	38	150	2000	(150)		
		24	Y16	6950	24	121	38	150	6700	(150)		
		16	Y10	1200	16	122	83	300	150	350	(350)	
		80	Y16	1300	80	123	37	300	(1050)			
		64	Y16	1900	64	124	37	300	(1650)			
		40	Y16	1950	40	140	38	150	1700	(150)		
		4	Y10	1200	4	141	83	300	150	350	(350)	
		56	Y16	1900	56	142	54	300	1375	(300)		
		26	Y16	2000	26	143	38	200	1650	(200)		
		396	Y16	4850	396	150	37	150	(4750)			
		396	Y16	7850	396	151	37	150	(7750)			
		396	Y16	10000	396	152	20	(10000)				
		396	Y16	7000	396	153	20	(7000)				
		384	Y16	13000	384	154	20	(13000)				
		24	Y16	5850	24	155	20	(5850)				
		392	Y16	4850	392	170	37	150	(4750)			
		392	Y16	7850	392	171	37	150	(7750)			
		392	Y16	10000	392	172	20	(10000)				
		392	Y16	7000	392	173	20	(7000)				
		384	Y16	13000	384	174	20	(13000)				
		24	Y16	5850	24	175	20	(5850)				
		8	Y20	3000	8	176	20	(3000)				
		8	Y20	2000	8	177	20	(2000)				
		4	Y16	3700	4	178	37	150	(3600)			
		4	Y16	1750	4	179	37	150	(1650)			
		4	Y16	7450	4	180	20	(7450)				
		2304	Y10	1200	2304	185	83	300	150	350	(350)	
		1398	Y16	1350	1398	190	37	300	(1100)			

	8	10	12	16	20	25	32	40	TOT
R									
Y		1850	28	62128	99				64104
TOT		1850	28	62128	99				64104

Date	2023/04/15
Det. by	Koos Bultman
Ref Dwg	5101 & 5102
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Balancing Tank
Foundations

Revision	1
Schedule No	100

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Platform starters	36	4	Y20	1500	144	200	37	300	(1250)			
		5	Y10	850	180	201	60	200	150			
Walkway starters	6	10	Y20	1500	60	210	37	300	(1250)			
		5	Y10	2250	30	211	60	850	200			
Valve chamber column starters	2	4	Y20	1500	8	220	37	300	(1250)			
		5	Y10	1450	10	221	60	350	300			
Wall A	1	390	Y16	2950	390	300	20	(2950)				
		32	Y16	5700	32	301	37	300	(5450)			
		32	Y16	7700	32	302	37	300	(7450)			
		32	Y16	9000	32	303	20	(9000)				
		32	Y16	7000	32	304	20	(7000)				
		32	Y16	13000	32	305	20	(13000)				
		196	Y10	1200	196	306	83	300	150	350	(350)	
		39	Y12	1300	39	307	37	300	(1000)			
Wall B	1	382	Y16	2950	382	320	20	(2950)				
		32	Y16	5700	32	321	37	300	(5450)			
		32	Y16	7700	32	322	37	300	(7450)			
		32	Y16	9000	32	323	20	(9000)				
		32	Y16	7000	32	324	20	(7000)				
		32	Y16	13000	32	325	20	(13000)				
		196	Y10	1200	196	326	83	300	150	350	(350)	
Wall C	1	384	Y16	2950	384	340	20	(2950)				
		30	Y16	5700	30	341	37	300	(5450)			
		30	Y16	7700	30	342	37	300	(7450)			
		30	Y16	9000	30	343	20	(9000)				
		30	Y16	7000	30	344	20	(7000)				
		30	Y16	13000	30	345	20	(13000)				
		6	Y16	2850	6	346	20	(2850)				
		2	Y16	7250	2	347	20	(7250)				
		2	Y16	6000	2	348	20	(6000)				
		2	Y16	7150	2	349	20	(7150)				
		2	Y16	5450	2	350	20	(5450)				
		2	Y16	7700	2	351	20	(7700)				
		2	Y16	5500	2	352	20	(5500)				
		196	Y10	1200	196	353	83	300	150	350	(350)	
		4	Y16	3550	4	354a	20	(3550)				
		4	Y16	2800	4	354b	20	(2800)				
		2	Y16	2750	2	354c	20	(2750)				
		30	Y16	2500	30	355	37	300	(2250)			
		39	Y12	1300	39	356	37	300	(1000)			

	8	10	12	16	20	25	32	40	TOT
R									
Y		580	90	11990	784				13445
TOT		580	90	11990	784				13445

Date	2023/04/15
Det. by	Koos Bultman
Ref Dwg	5102 - 5104
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Balancing Tank
Column starters and walls A, B & C

Revision	1
Schedule No	101

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall D	1	330	Y16	2950	330	360	20	(2950)				
		16	Y16	5700	16	361	37	300	(5450)			
		16	Y16	7700	16	362	37	300	(7450)			
		16	Y16	9000	16	363	20	(9000)				
		16	Y16	7000	16	364	20	(7000)				
		32	Y16	13000	32	365	20	(13000)				
		196	Y10	1200	196	366	83	300	150	350	(350)	
		32	Y16	8000	32	367	20	(8000)				
		24	Y16	6650	24	368	37	300	(6400)			
		26	Y16	2200	26	369a	20	(2200)				
		26	Y16	2300	26	369b	20	(2300)				
		2	Y16	6100	2	370	20	(6100)				
		2	Y16	1500	2	371	20	(1500)				
		84	Y16	2700	84	372	20	(2700)				
		6	Y16	1750	6	373	20	(1750)				
		10	Y16	8650	10	374	38	300	8100	(300)		
		4	Y16	3000	4	375a	37	300	(2750)			
		2	Y16	2950	2	375b	37	300	(2700)			
		4	Y16	4950	4	376a	37	300	(4700)			
		2	Y16	4900	2	376b	37	300	(4650)			
		4	Y16	2000	4	377	20	(2000)				
		42	Y16	2950	42	378	38	1400	200	(1400)		
		4	Y16	8650	4	379	38	300	8100	(300)		
		32	Y16	1300	32	380	37	300	(1050)			
Wall E	1	66	Y16	1700	66	400	20	(1700)				
		8	Y16	750	8	401a	20	(750)				
		4	Y16	700	4	401b	20	(700)				
		12	Y16	8650	12	402	38	300	8100	(300)		
		4	Y16	3050	4	403a	37	300	(2800)			
		2	Y16	3000	2	403b	37	300	(2750)			
		4	Y16	3000	4	404a	37	300	(2750)			
		2	Y16	2950	2	404b	37	300	(2700)			
		8	Y16	1500	8	405	20	(1500)				
		20	Y10	1200	20	406	83	300	150	350	(350)	
		4	Y20	2000	4	407	20	(2000)				
		4	Y10	1200	4	408	60	310	220			
		4	Y16	1250	4	409a	20	(1250)				
		2	Y16	1100	2	409b	20	(1100)				
Stairs	2	7	Y12	2650	14	420	20	(2650)				
		7	Y12	1000	14	421	62	500	310			
		13	Y10	1200	26	422	20	(1200)				
Column on wall E	1	4	Y20	3700	4	430	41	500	250	(2950)	50	
		21	Y10	1300	21	431	60	370	220			

	8	10	12	16	20	25	32	40	TOT
R									
Y		199	45	5157	56				5457
TOT		199	45	5157	56				5457

Date	2023/04/15
Det. by	Koos Bultman
Ref Dwg	5104 & 5105
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Balancing Tank
Walls D & E

Revision	1
Schedule No	102

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Walls	2	126	Y16	2600	252	500	20	(2600)				
F & G		10	Y16	10000	20	501	37	300	(9750)			
		8	Y16	8000	16	502	37	300	(7750)			
		10	Y16	4000	20	503	37	300	(3750)			
		8	Y16	6000	16	504	37	300	(5750)			
		126	Y16	3700	252	505	20	(3700)				
		18	Y16	7000	36	506	20	(7000)				
		16	Y16	9000	32	507	20	(9000)				
		18	Y16	6750	36	508	37	300	(6500)			
		16	Y16	4750	32	509	37	300	(4500)			
		105	Y10	1200	210	510	83	300	150	350	(350)	
Wall H	1	66	Y16	3550	66	520	20	(3550)				
		36	Y16	6600	36	521	38	300	6050	(300)		
		40	Y10	1200	40	522	83	300	150	350	(350)	
Wall J	1	12	Y16	3550	12	530	20	(3550)				
		36	Y16	1650	36	531	37	300	(1400)			
		12	Y10	1200	12	532	83	300	150	350	(350)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		194		5683					5877
TOT		194		5683					5877

Date	2023/04/15
Det. by	Koos Bultman
Ref Dwg	5106
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Balancing Tank
Walls F, G, H & J

Revision	1
Schedule No	103

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Roof slab	1	65	Y12	5000	65	600	37	125	(4900)			
over valve		65	Y12	4500	65	601	37	125	(4400)			
chamber		40	Y12	13000	40	602	38	150	12750	(150)		
		57	Y12	8150	57	603	20	(8150)				
		56	Y12	3000	56	604	20	(3000)				
		40	Y12	12750	40	605	20	(12750)				
		8	Y12	8150	8	606	20	(8150)				
		7	Y16	3000	7	607	20	(3000)				
		308	Y10	1150	308	608	83	300	115	350	(350)	
Beam	1	3	Y25	6500	3	630	37	200	(6350)			
		3	Y20	7650	3	631	37	175	(7500)			
		2	Y12	12650	2	632	20	(12650)				
		3	Y20	13000	3	633	38	175	12700	(200)		
		2	Y25	7500	2	634	20	(7500)				
		60	Y10	1750	60	635	60	500	310			
Columns	2	8	Y16	5450	16	640	20	(5450)				
		50	Y10	1600	100	641	60	370	370			

	8	10	12	16	20	25	32	40	TOT
R									
Y		382	2105	171	153	133			2943
TOT		382	2105	171	153	133			2943

Date	2023/04/15
Det. by	Koos Bultman
Ref Dwg	5107
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Balancing Tank
Roof over Valve Chamber

Revision	1
Schedule No	104

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Platforms	9	88	Y12	3100	792	700	38	125	2900	(125)		
		8	Y12	1400	72	701	37	125	(1300)			
		25	Y10	900	225	702	83	250	70	300	(300)	
		8	Y12	1000	72	703	20	(1000)				
Walkways	6	18	Y12	5750	108	710	37	125	(5650)			
		18	Y12	11000	108	711	20	(11000)				
		97	Y10	2750	582	712	60	1200	105			
		24	Y10	900	144	713	83	250	70	300	(300)	
Stairs	6	8	Y12	2250	48	720	37	125	(2150)			
		1	Y12	1000	6	721	37	125	(900)			
		13	Y10	1250	78	722	20	(1250)				
		9	Y12	3800	54	723	62	950	575	(2850)		
		1	Y12	2850	6	724	20	(2850)				
Platform columns	36	4	Y20	3400	144	750	37	200	(3250)			
		21	Y10	950	756	751	60	200	200			
Walkway columns	6	10	Y16	3400	60	760	37	200	(3250)			
		21	Y10	2350	126	761	60	900	200			

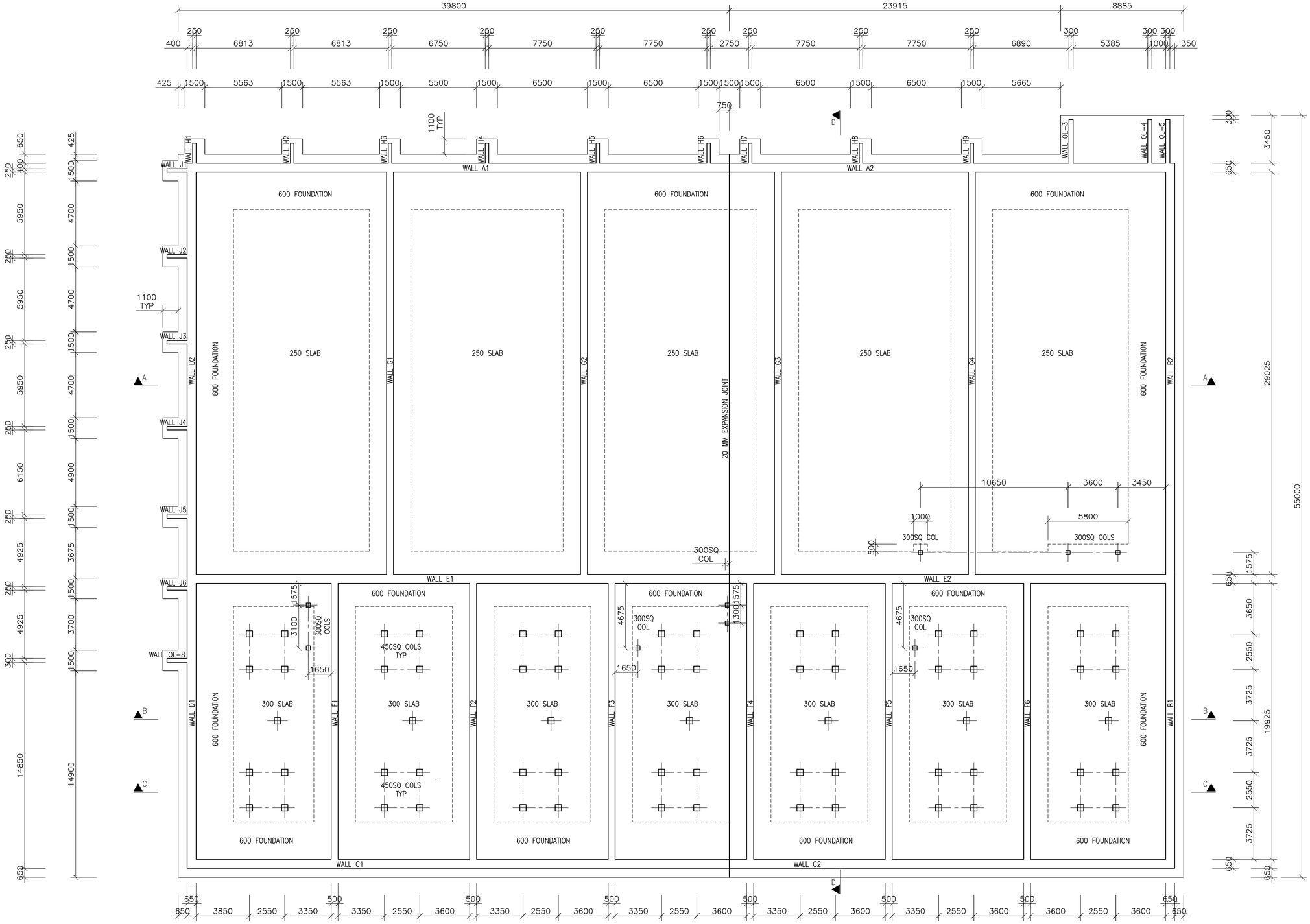
	8	10	12	16	20	25	32	40	TOT
R									
Y		1877	4238	322	1207				7644
TOT		1877	4238	322	1207				7644

Date	2023/04/15
Det. by	Koos Bultman
Ref Dwg	5108
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Balancing Tank
Platforms and walkways

Revision	1
Schedule No	105



FOUNDATION SLAB

SCALE 1:150

NOTES:

1. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
2. FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 250 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
3. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
4. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 15/19 AND A SLIP LAYER CONSISTING OF 2 LAYERS OF 300 MICRON PVC SHEETING BELOW ALL FOUNDATIONS AND FOUNDATION SLABS
5. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
6. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
7. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
8. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
9. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

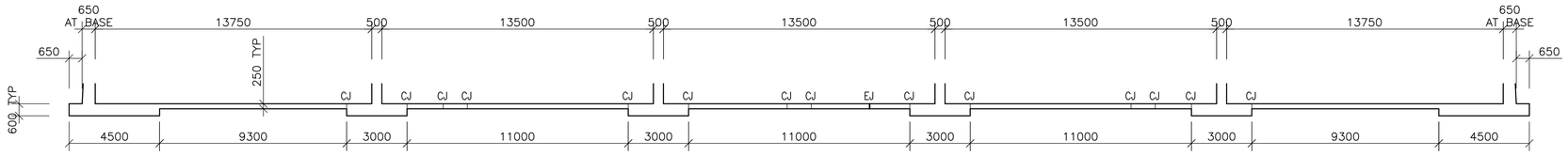
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS FOUNDATION SLAB

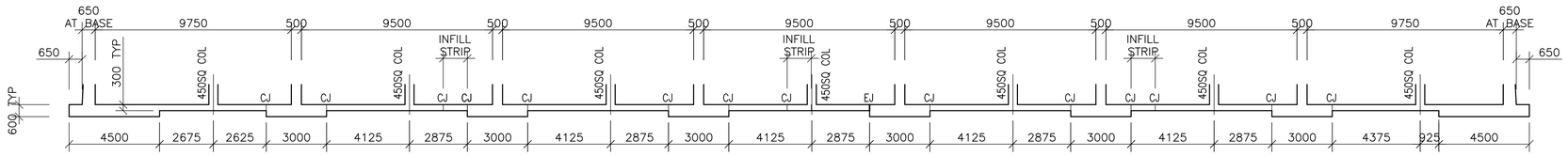
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	1:150	A1

DRAWING NUMBER

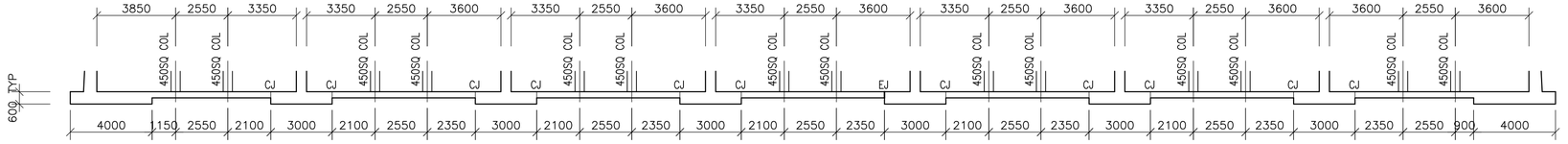
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5000	0



SECTION A–A
SCALE 1:150

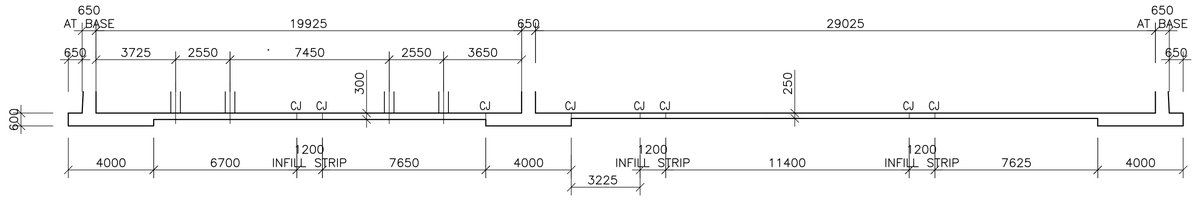


SECTION B–B
SCALE 1:150



SECTION C–C
INFILL STRIPS NOT SHOWN

SCALE 1:150



SECTION D–D
SCALE 1:150

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

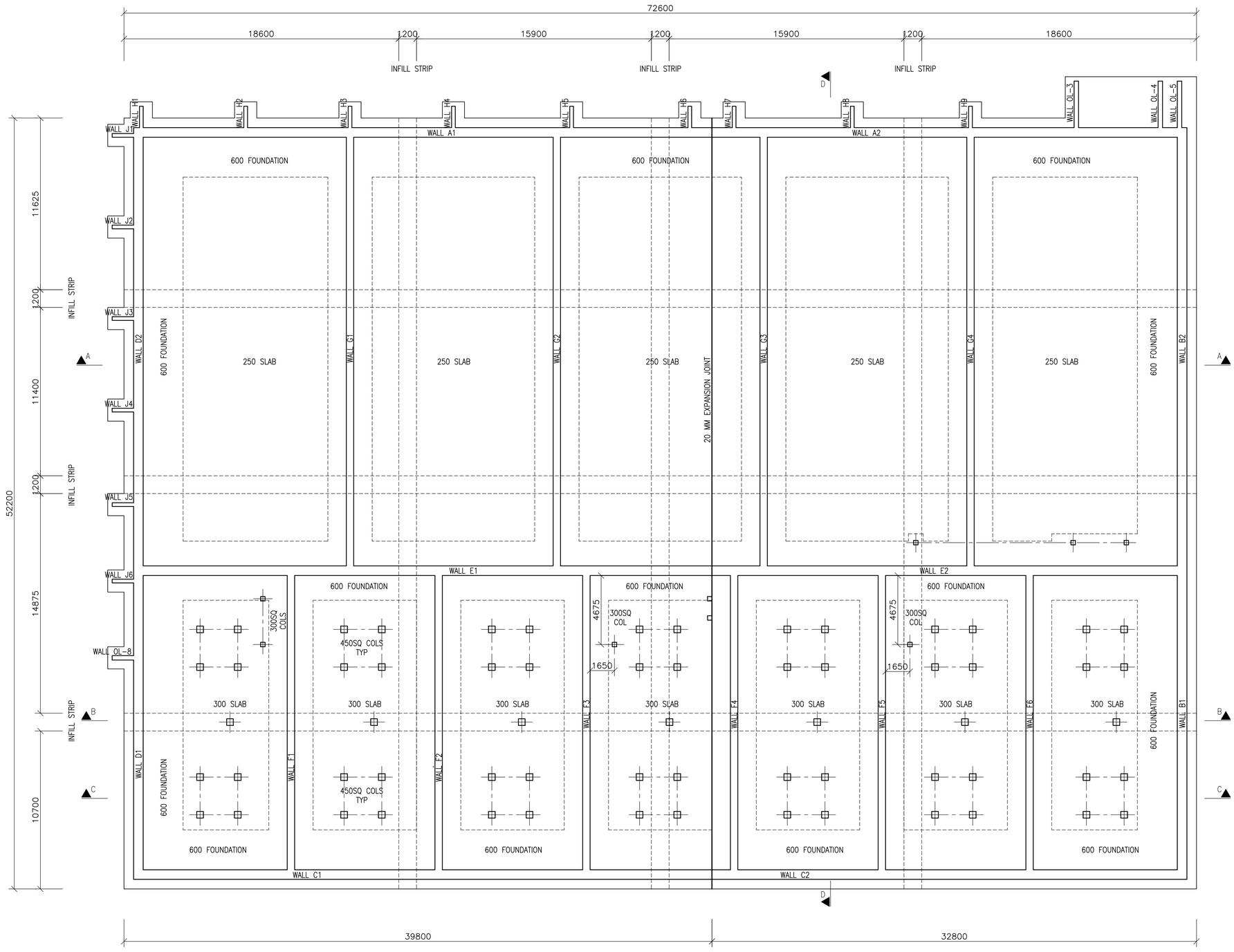
BIOLOGICAL REACTOR CONCRETE DETAILS SECTIONS A-A TO D-D

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	1:150	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5001	0



FOUNDATION SLAB – JOINT LAYOUT AND INFILL STRIP LAYOUT

SCALE 1:150

NOTE:
ALL INFILL STRIPS TO CONTINUE VERTICALLY INTO WALLS AND SLABS ABOVE

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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
XXXXXXXX — PR ENG no.
23/06 — DATE
CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

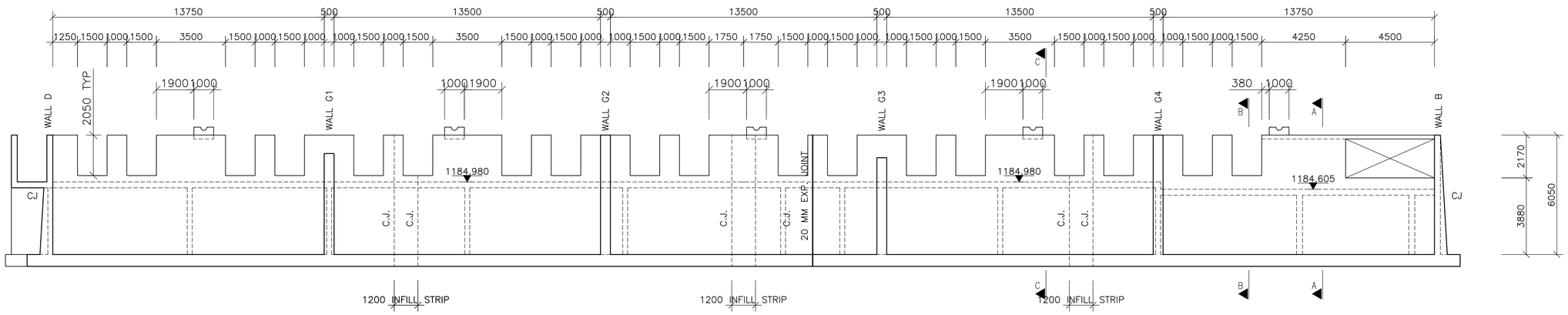
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS JOINT LAYOUT

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

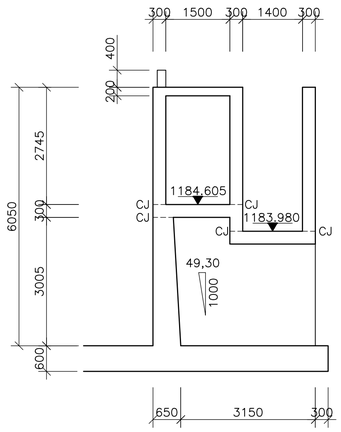
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5002	0



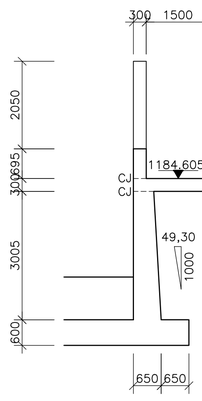
INTERNAL ELEVATION ON WALL A

SCALE 1:125



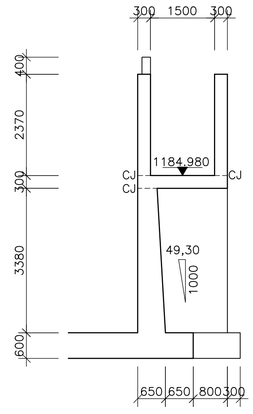
SECTION A–A

SCALE 1:75



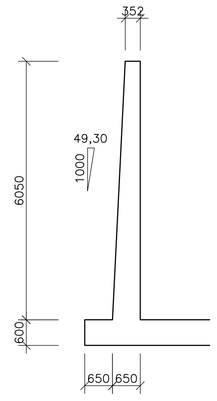
SECTION B–B

SCALE 1:75



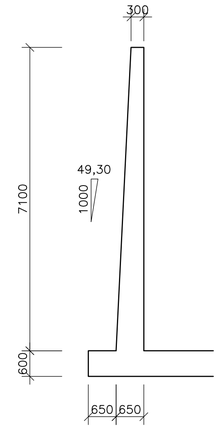
SECTION C–C

SCALE 1:75



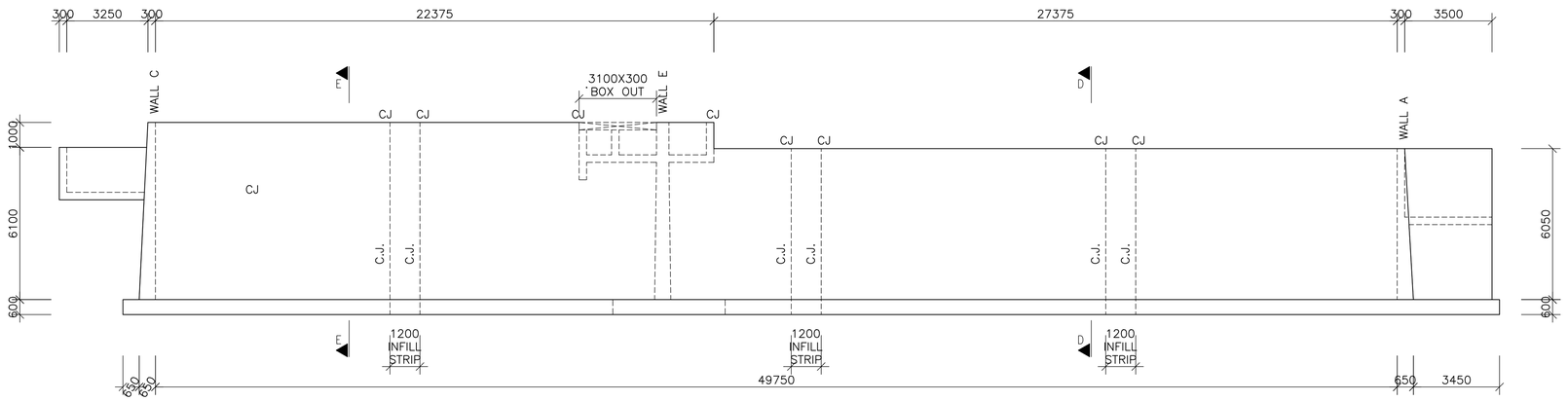
SECTION D–D

SCALE 1:75



SECTION E–E

SCALE 1:75



EXTERNAL ELEVATION ON WALL B

SCALE 1:125

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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
XXXXXXXX — PR ENG no.
23/06 — DATE
CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

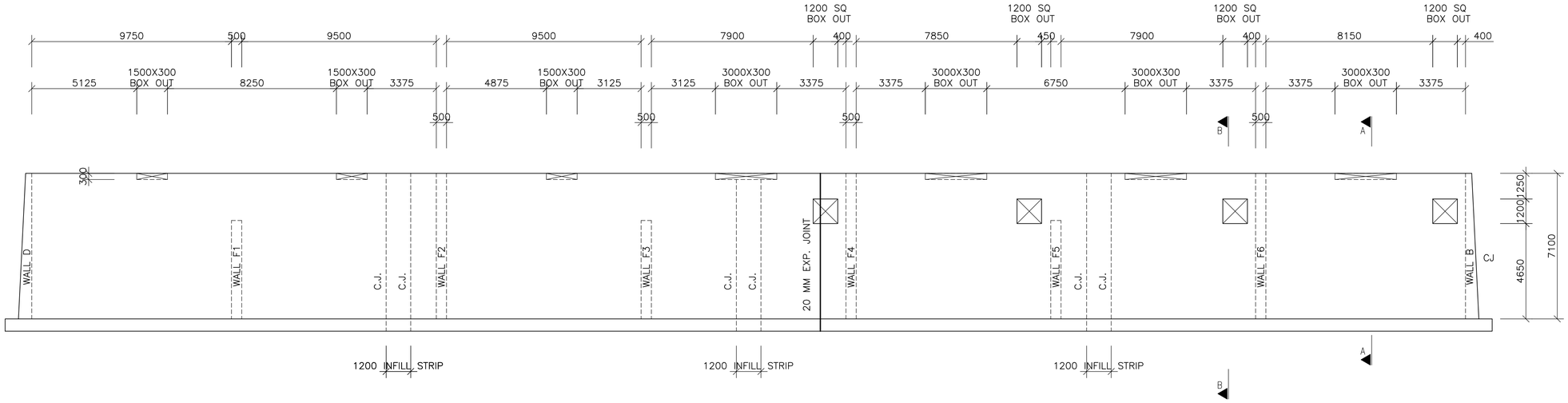
BIOLOGICAL REACTOR CONCRETE DETAILS WALL A & B

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

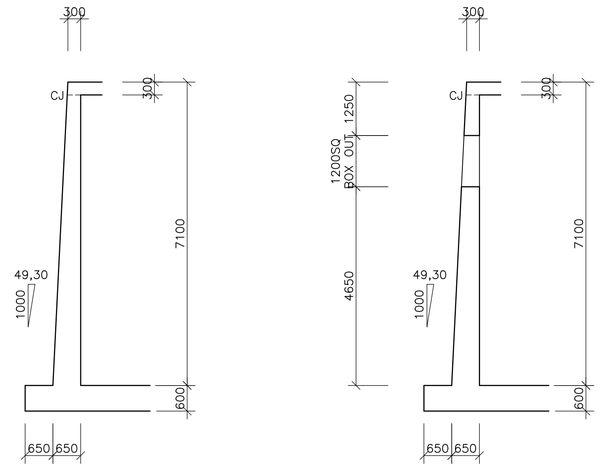
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5003	0



EXTERNAL ELEVATION ON WALL C

SCALE 1:125

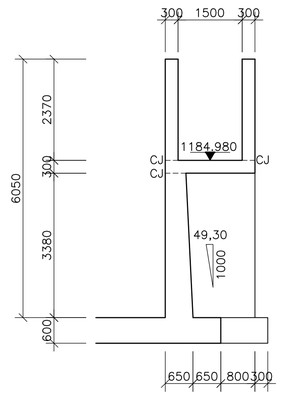


SECTION A–A

SCALE 1:75

SECTION B–B

SCALE 1:75



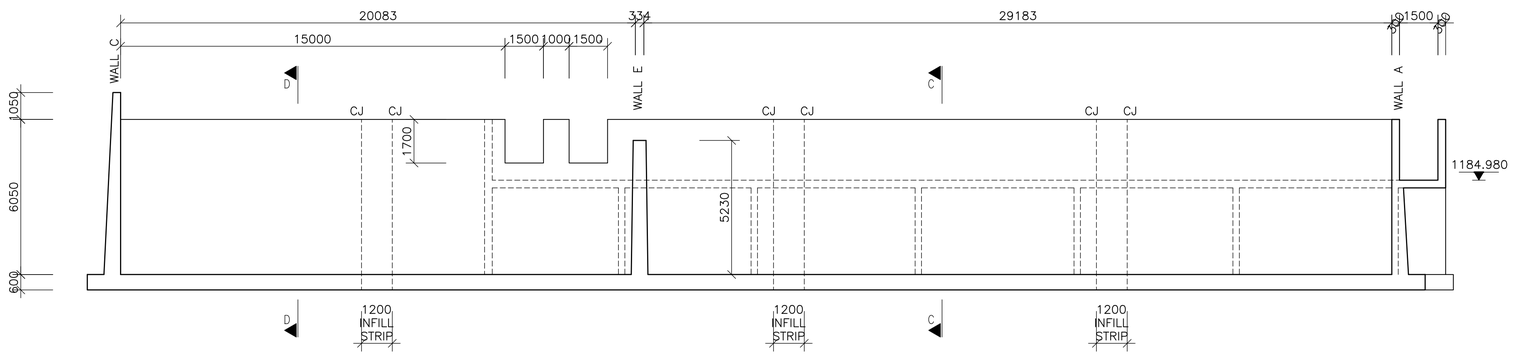
SECTION C–C

SCALE 1:75



SECTION D–D

SCALE 1:75



INTERNAL ELEVATION ON WALL D

SCALE 1:125

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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
XXXXXXXX — PR ENG no.
23/06 — DATE
CLIENT
DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

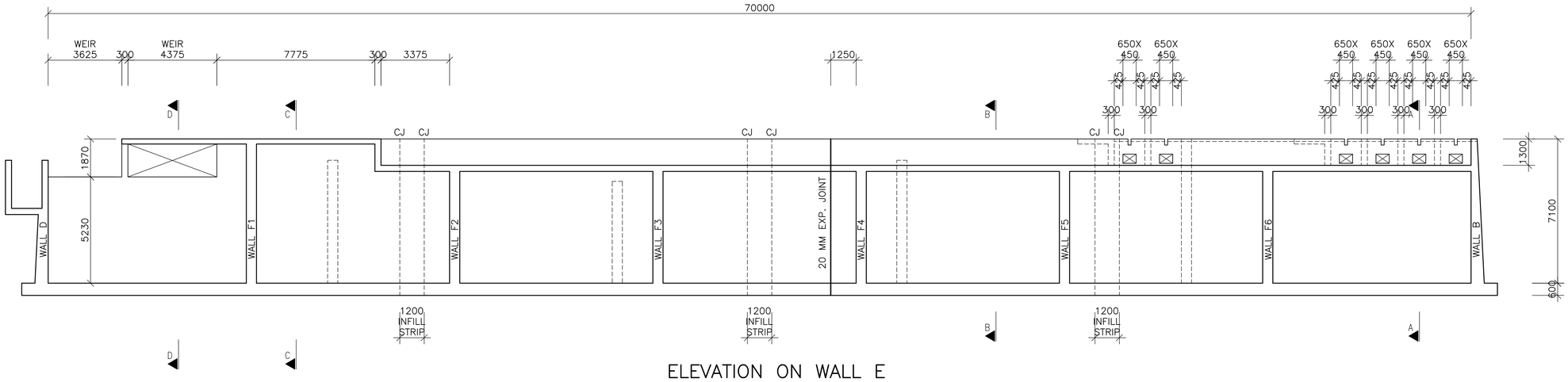
BIOLOGICAL REACTOR CONCRETE DETAILS WALL C & D

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

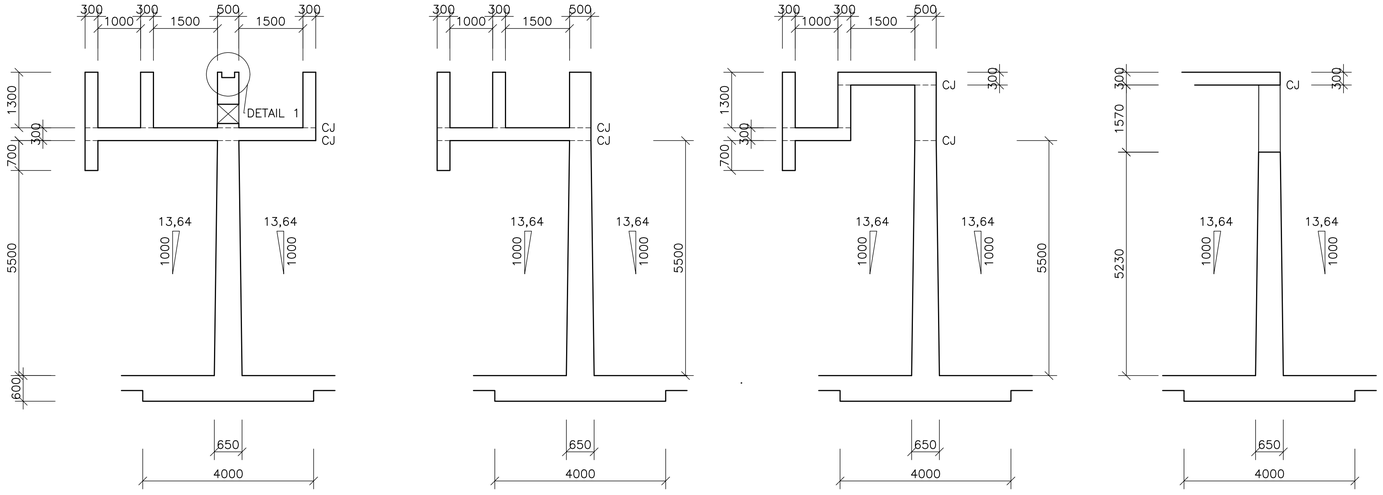
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5004	0



ELEVATION ON WALL E

SCALE 1:125



SECTION A–A

SCALE 1:75

SECTION B–B

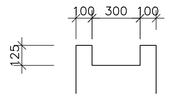
SCALE 1:75

SECTION C–C

SCALE 1:75

SECTION D–D

SCALE 1:75



DETAIL 1

SCALE 1:20

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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
XXXXXXXX — PR ENG no.
23/06 — DATE
CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

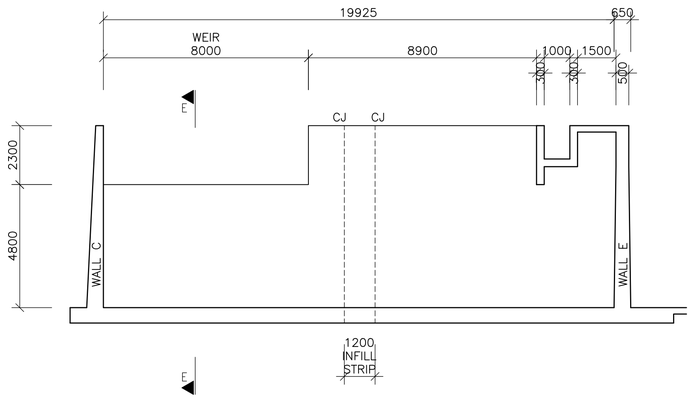
BIOLOGICAL REACTOR CONCRETE DETAILS WALL E

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

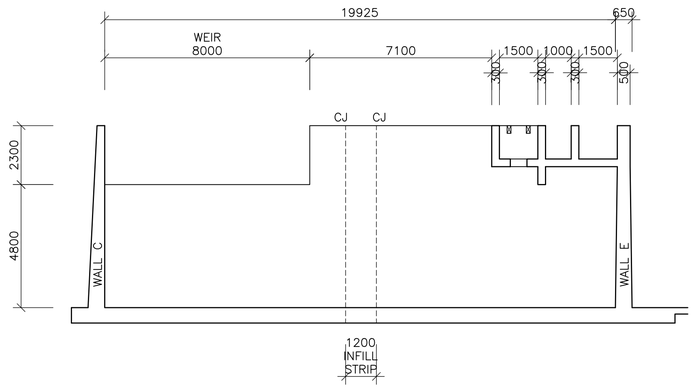
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5005	0



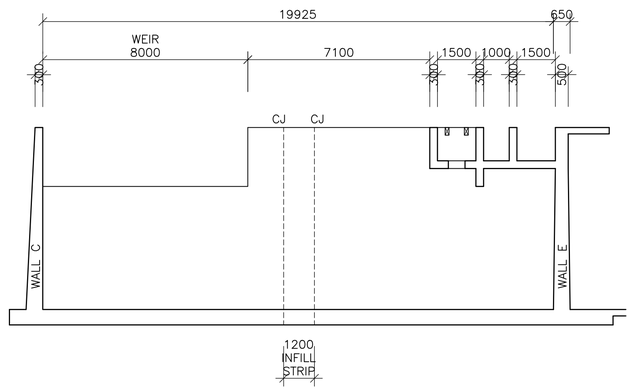
ELEVATION ON WALL F1

SCALE 1:125



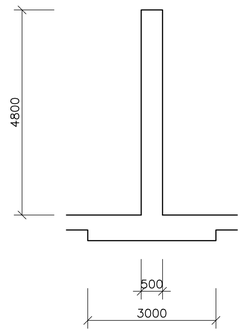
ELEVATION ON WALL F3

SCALE 1:125



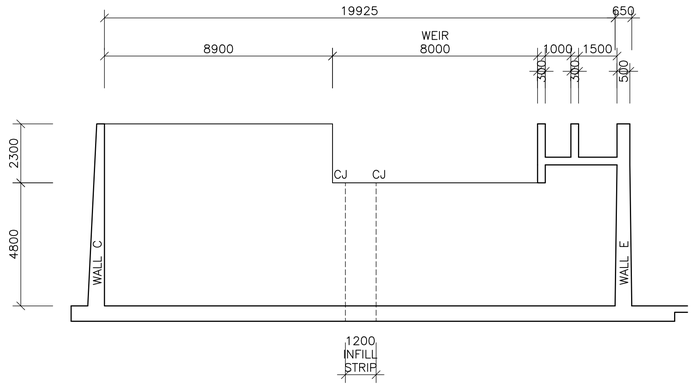
ELEVATION ON WALL F5

SCALE 1:125



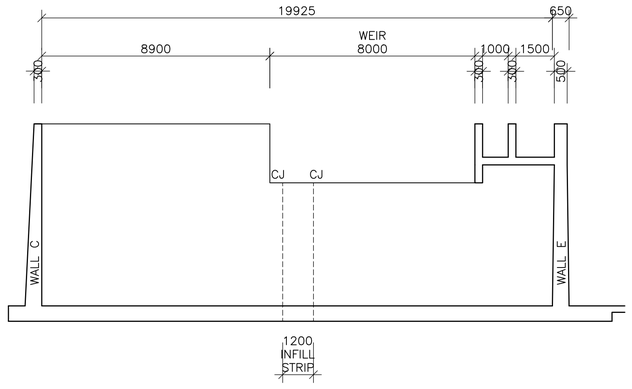
SECTION E–E

SCALE 1:75



ELEVATION ON WALL F2

SCALE 1:125



ELEVATION ON WALL F4 & F6

SCALE 1:125

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
Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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
XXXXXXXX — PR ENG no.
23/06 — DATE
CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

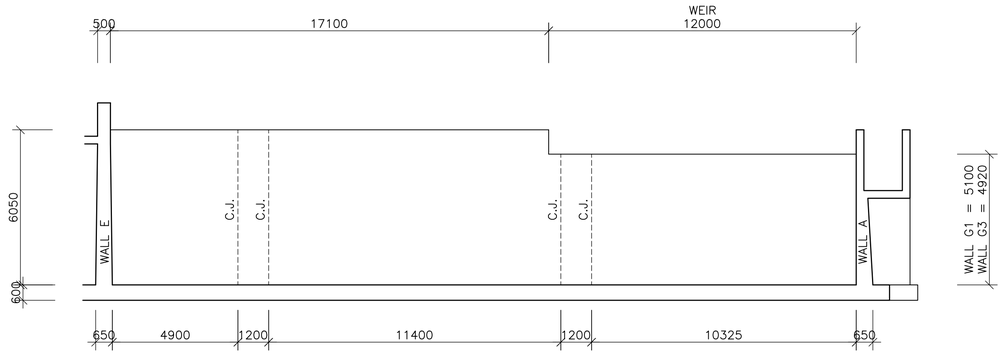
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS WALL F1 TO F6

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

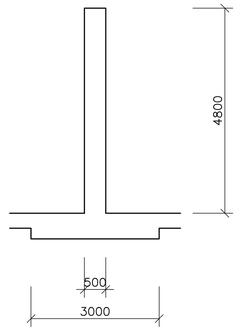
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5006	0



ELEVATION ON WALLS G1 & G3

SCALE 1:125

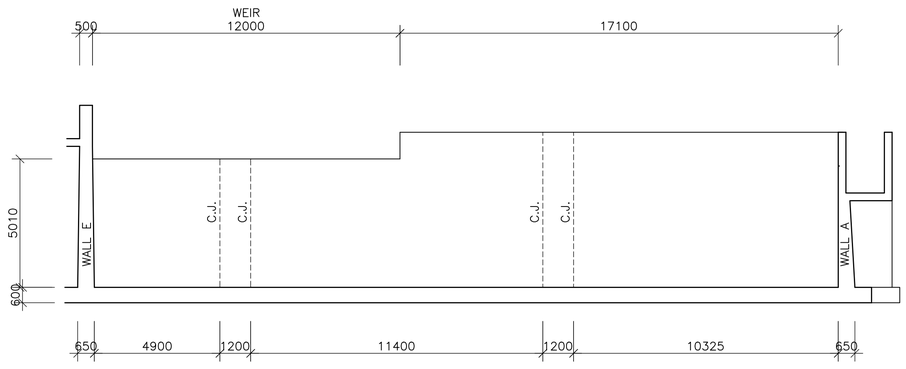


SECTION A–A

SCALE 1:75

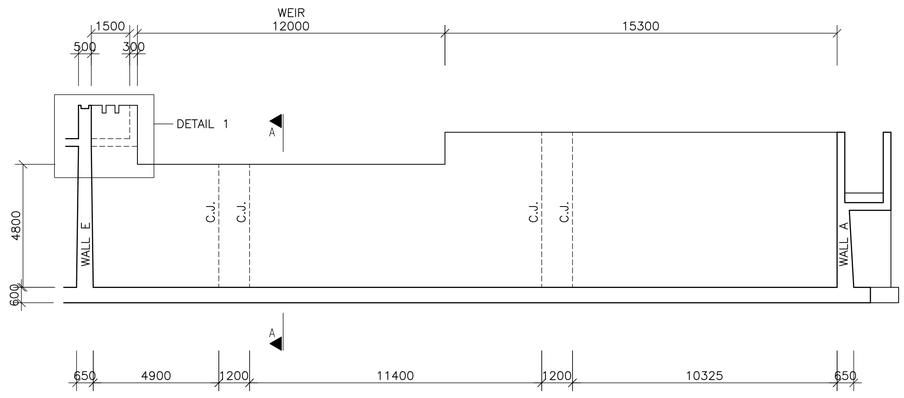
DETAIL 1

SCALE 1:50



ELEVATION ON WALLS G2

SCALE 1:125



ELEVATION ON WALLS G4

SCALE 1:125

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

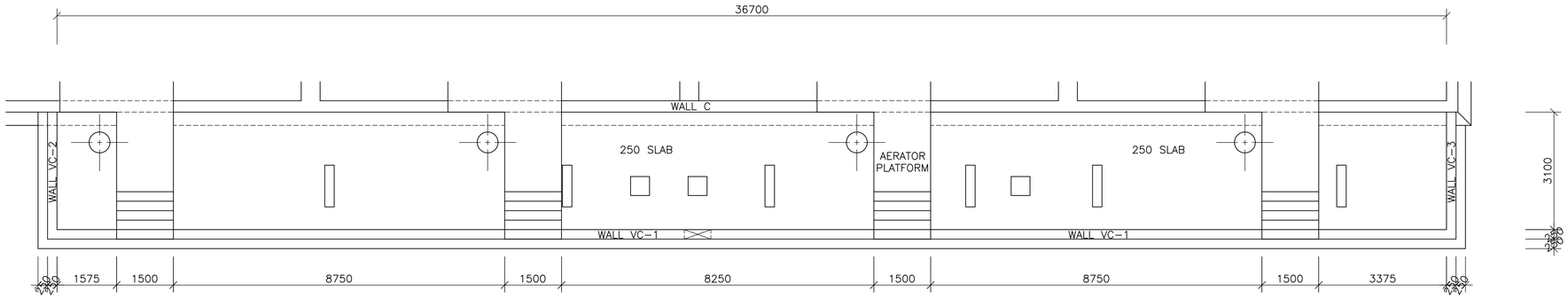
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS WALL G1 TO G4

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

DRAWING NUMBER

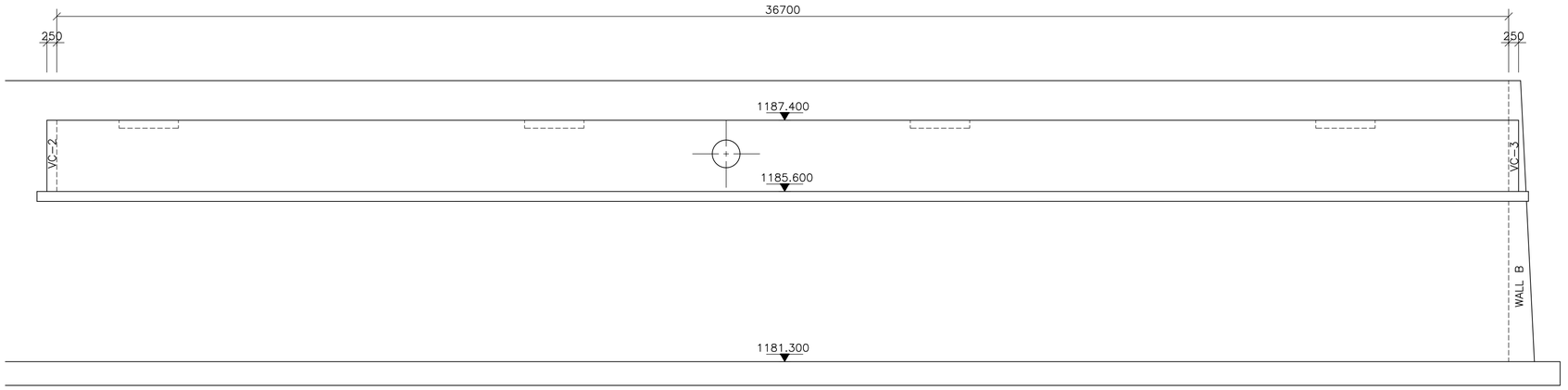
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5007	0



PLAN ON VALVE CHAMBER

SCALE 1:75

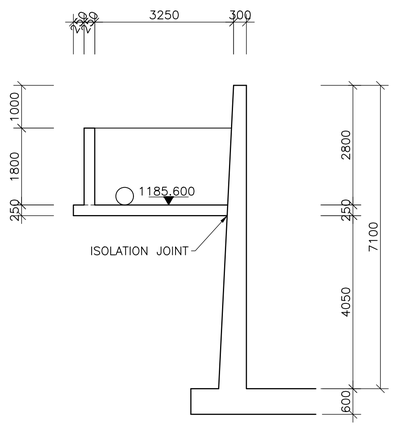
NOTE:
PIPE OPENINGS AND PLINTHS AS PER PIPE LAYOUT DRAWING



EXTERNAL ELEVATION ON WALL VC-1

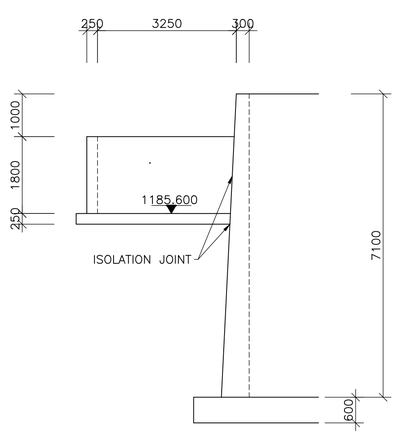
SCALE 1:75

NOTE:
PIPE OPENINGS AND PLINTHS AS PER PIPE LAYOUT DRAWING



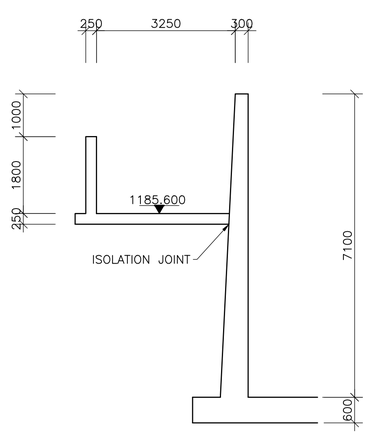
INTERNAL ELEVATION ON WALL VC-2

SCALE 1:75



EXTERNAL ELEVATION ON WALL VC-3

SCALE 1:75



TYPICAL SECTION THROUGH CHANNEL

SCALE 1:75

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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
XXXXXXXX — PR ENG no.
23/06 — DATE
CLIENT
DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

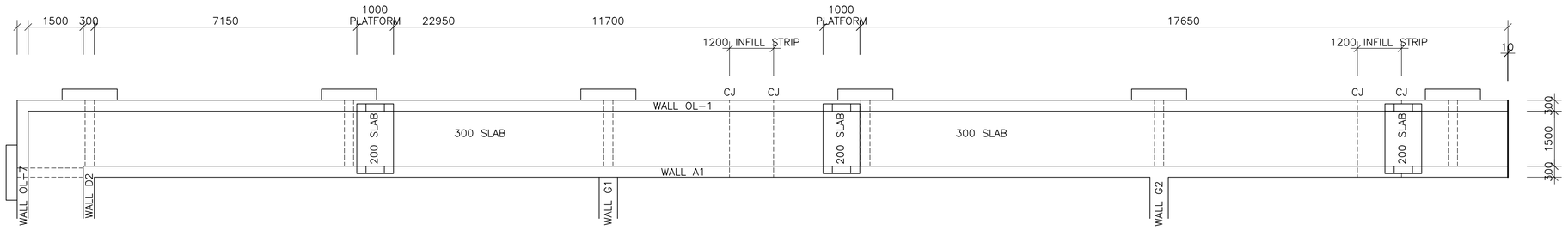
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS VALVE CHAMBER

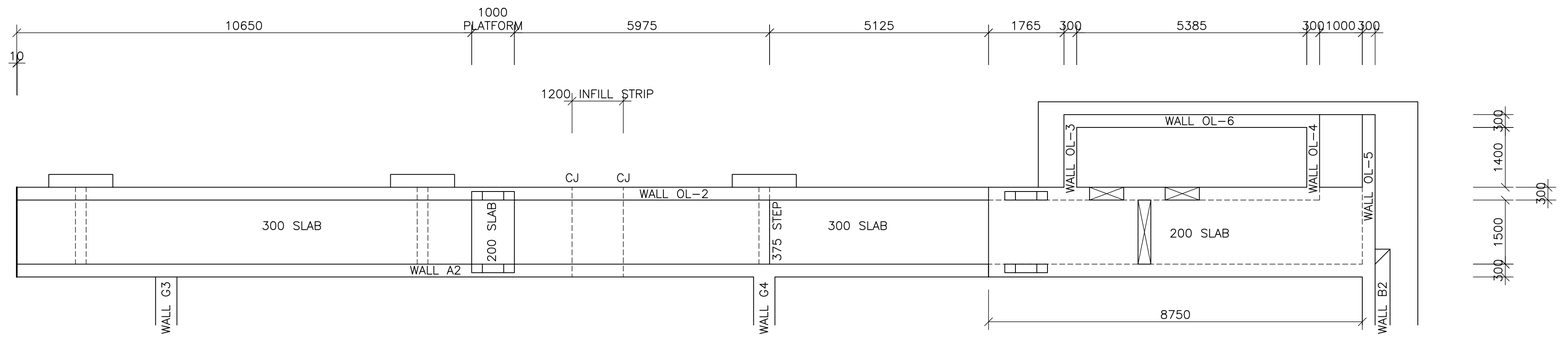
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

DRAWING NUMBER

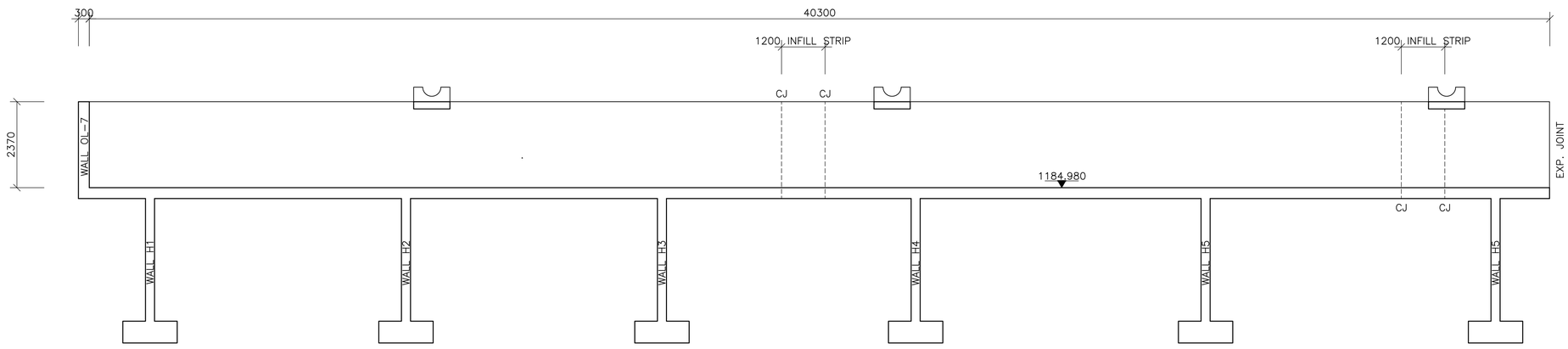
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5008	0



PLAN ON OUTLET CHANNEL
NEXT TO WALL A1
SCALE 1:75



PLAN ON OUTLET CHANNEL
NEXT TO WALL A2
SCALE 1:75



INTERNAL ELEVATION ON OL-1
SCALE 1:75

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
Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

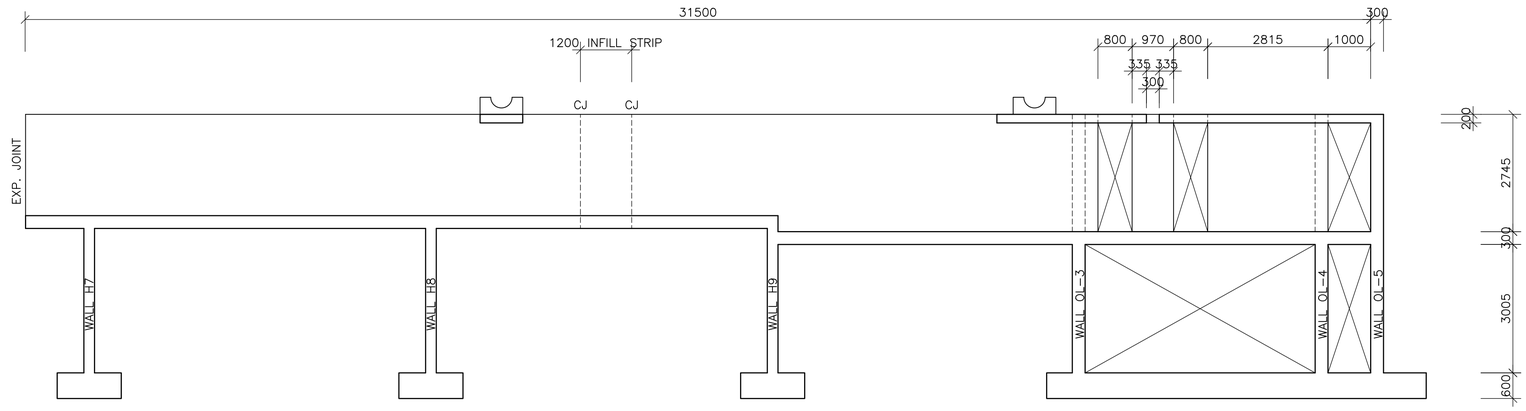
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS OUTLET CHANNEL
1/3

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

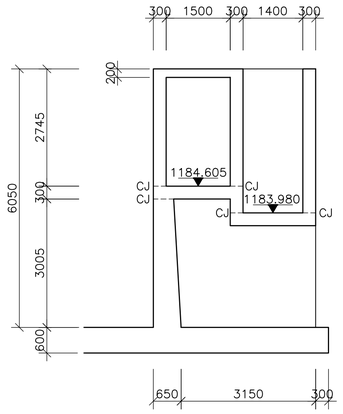
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5009	0



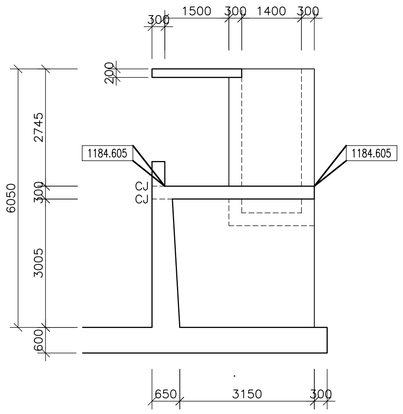
INTERNAL ELEVATION ON OL–2

SCALE 1:75



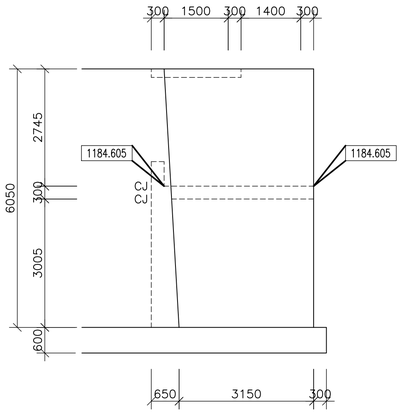
ELEVATION WALL OL–3

SCALE 1:75



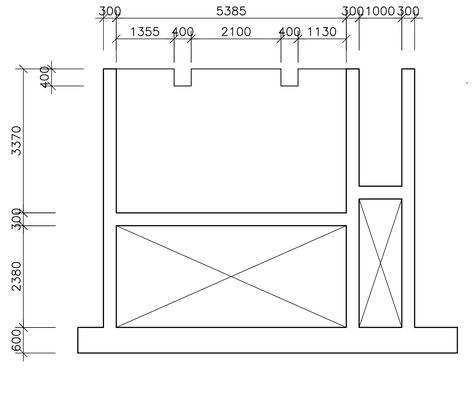
ELEVATION WALL OL–4

SCALE 1:75



EXTERNAL ELEVATION WALL OL–5

SCALE 1:75



INTERNAL ELEVATION WALL OL–6

SCALE 1:75

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

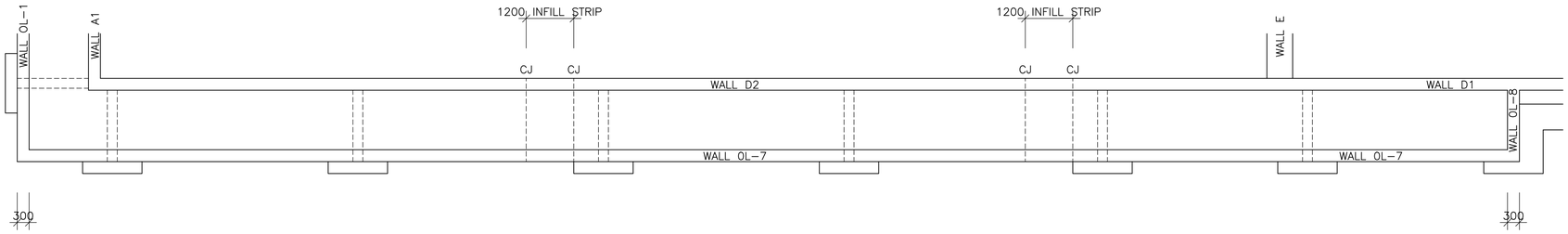
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS OUTLET CHANNEL 2/3

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

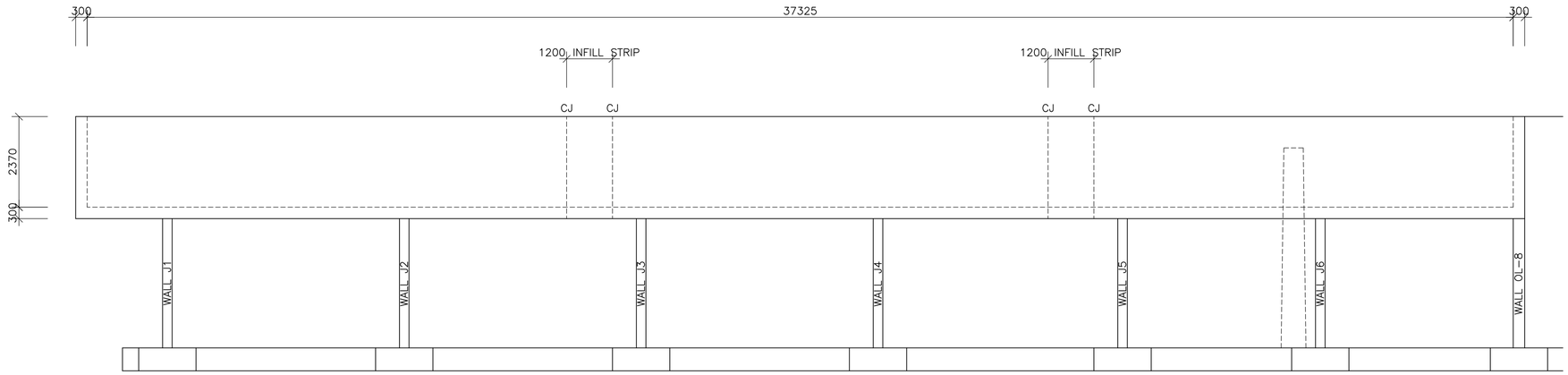
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5010	0



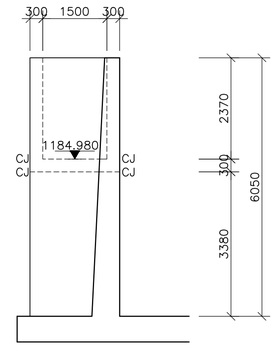
PLAN ON OUTLET CHANNEL NEXT TO WALL D

SCALE 1:75



EXTERNAL ELEVATION ON OL–7

SCALE 1:75



ELEVATION ON WALL OL–8

SCALE 1:75

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

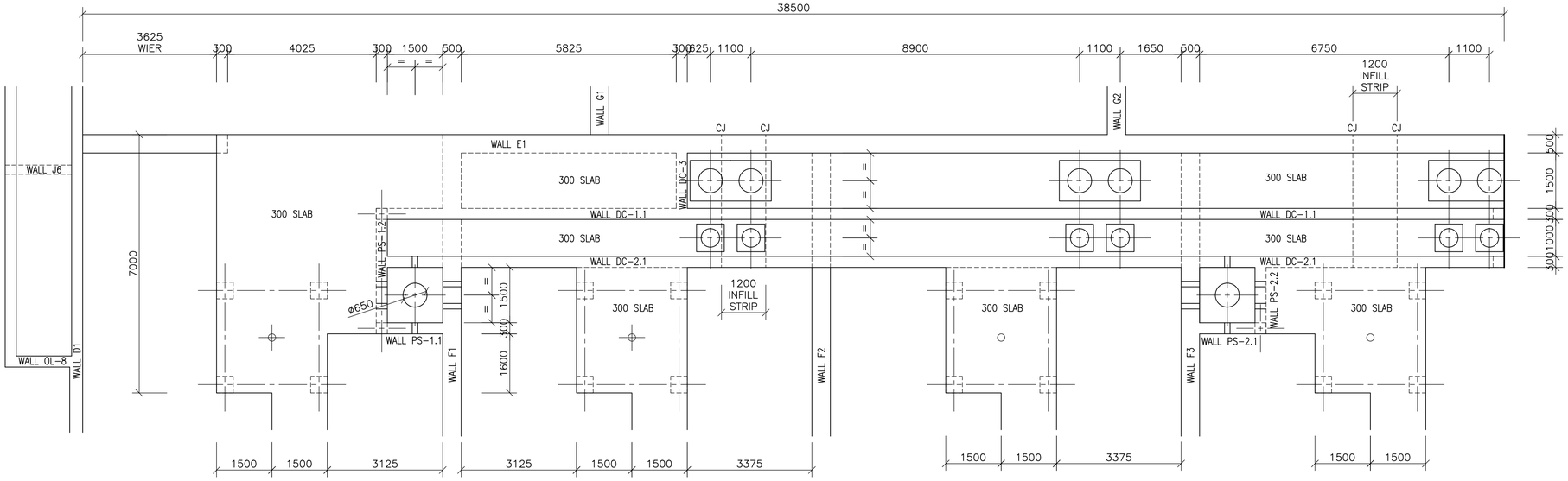
BIOLOGICAL REACTOR CONCRETE DETAILS OUTLET CHANNEL 3/3

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

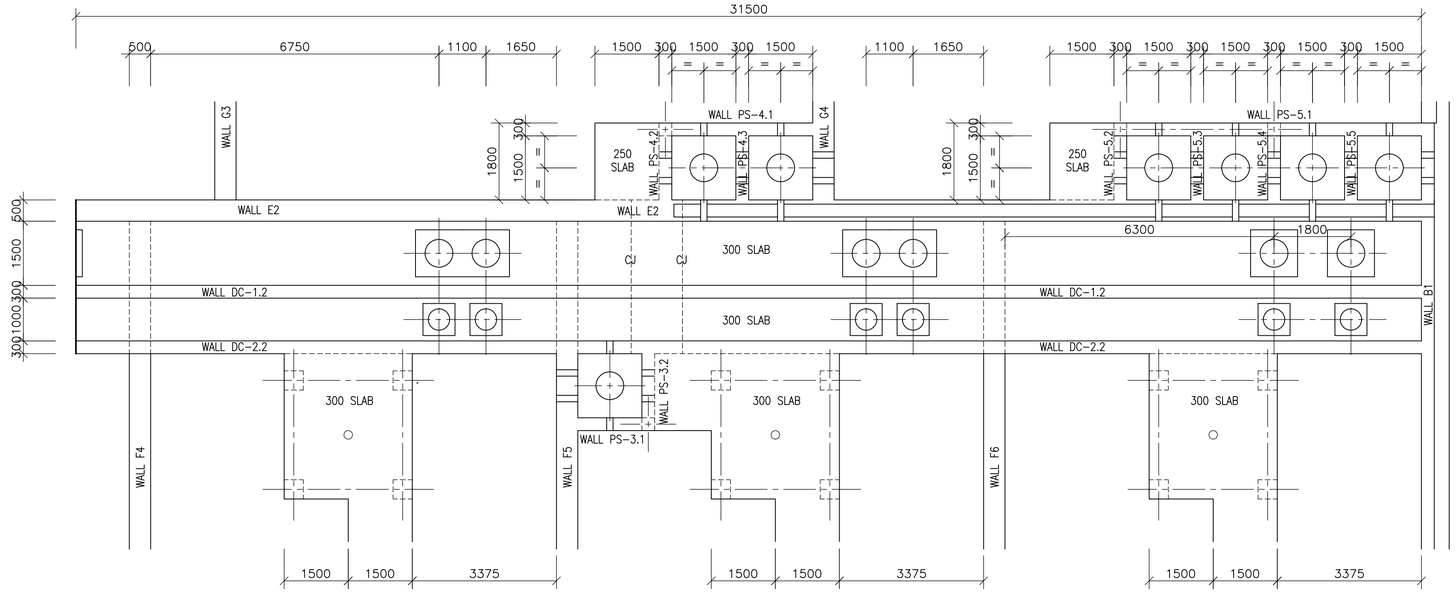
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5011	0



PLAN ON DISTRIBUTION CHANNEL ON WALL E1

SCALE 1:75



PLAN ON DISTRIBUTION CHANNEL ON WALL E2

SCALE 1:75

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

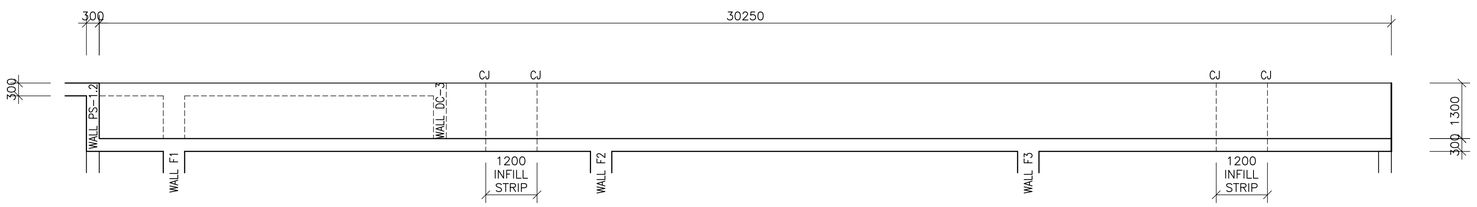
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS DISTRIBUTION CHANNEL 1/3

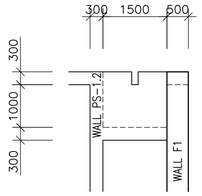
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

DRAWING NUMBER

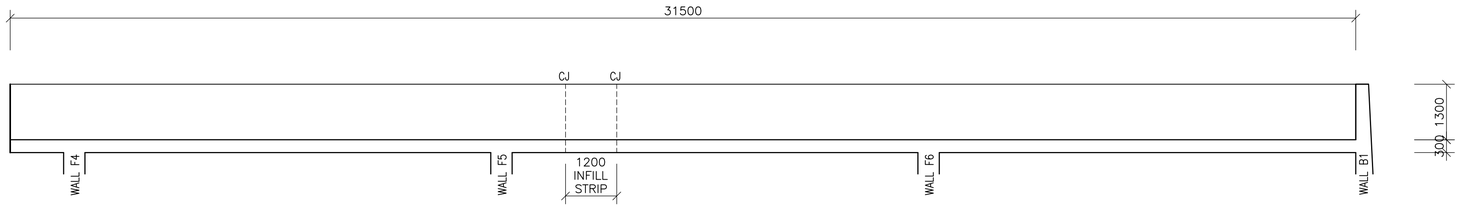
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5012	0



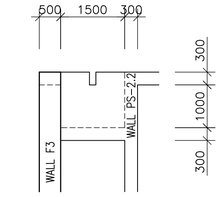
ELEVATION ON WALL DC-1.1
SCALE 1:75



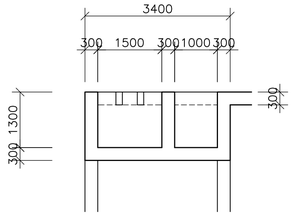
ELEVATION ON WALL PS-1.1
SCALE 1:75



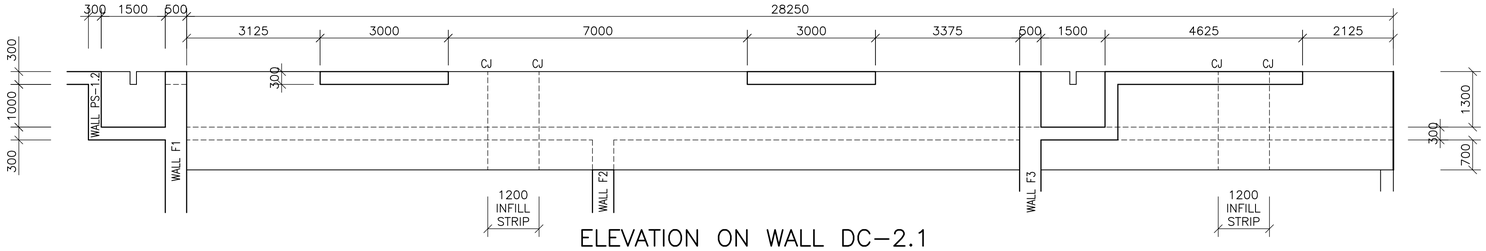
ELEVATION ON WALL DC-1.2
SCALE 1:75



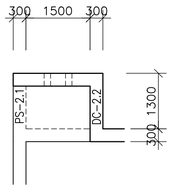
ELEVATION ON WALL PS-2.1
SCALE 1:75
WALL PS-3.1 SIMILAR



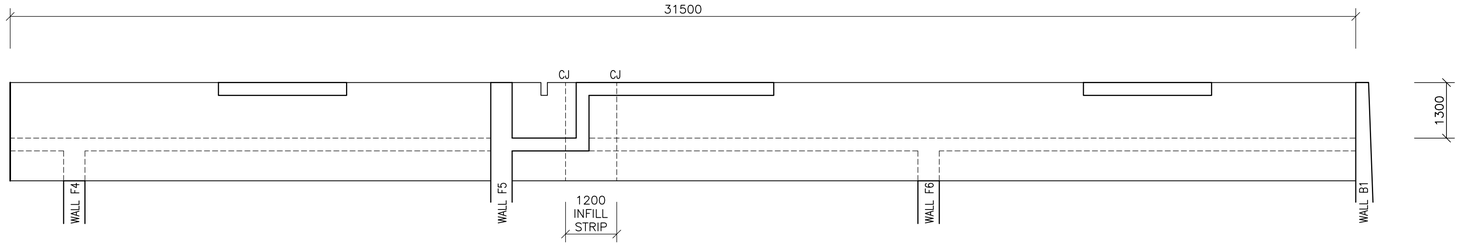
ELEVATION ON WALL PS-1.2
SCALE 1:75



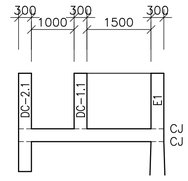
ELEVATION ON WALL DC-2.1
SCALE 1:75



ELEVATION ON WALL PS-2.2
SCALE 1:75
WALL PS-3.2 SIMILAR



ELEVATION ON WALL DC-2.2
SCALE 1:75



ELEVATION ON WALL DC-3
SCALE 1:75

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

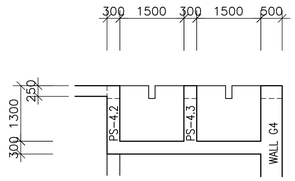
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS DISTRIBUTION CHANNEL 2/3

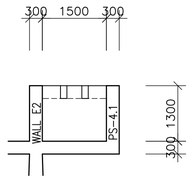
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

DRAWING NUMBER

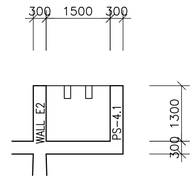
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5013	0



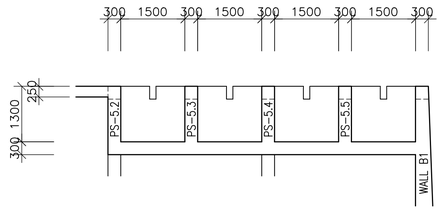
ELEVATION ON WALL PS-4.1
SCALE 1:75



ELEVATION ON WALL PS-4.2
SCALE 1:75
WALL PS-5.2 SIMILAR



ELEVATION ON WALL PS-4.3
SCALE 1:75
WALL PS-5.3, 5.4 & 5.5 SIMILAR



ELEVATION ON WALL PS-5.1
SCALE 1:75

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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	XXXXXXXX	23/06
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

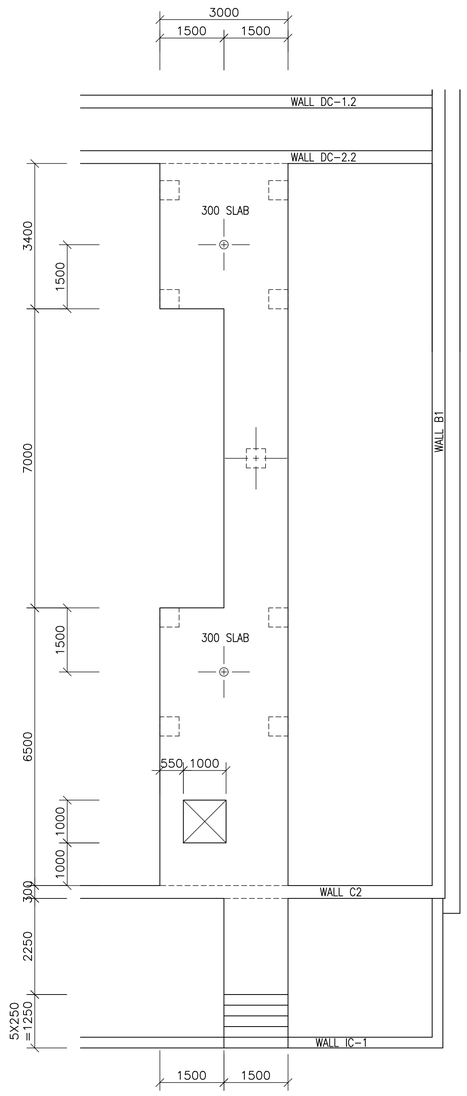
DRAWING DESCRIPTION

BIOLOGICAL REACTOR CONCRETE DETAILS DISTRIBUTION CHANNEL 3/3

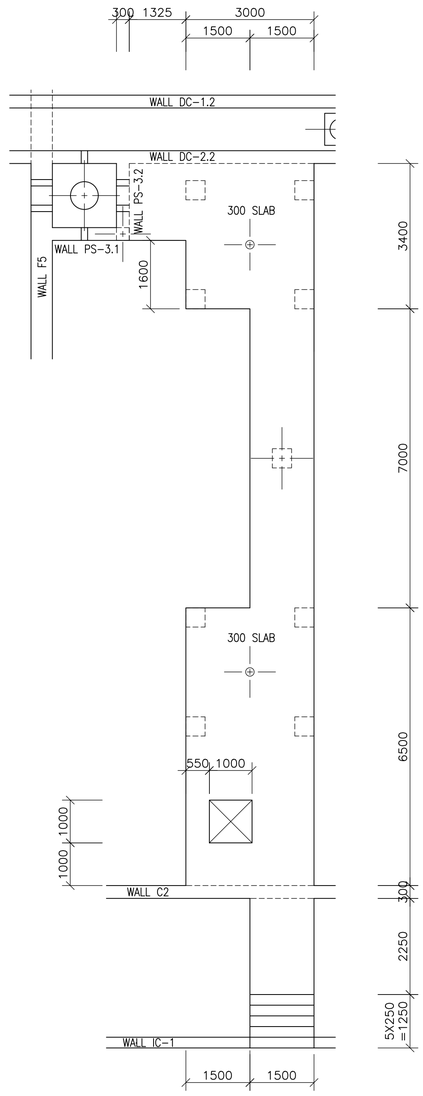
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

DRAWING NUMBER

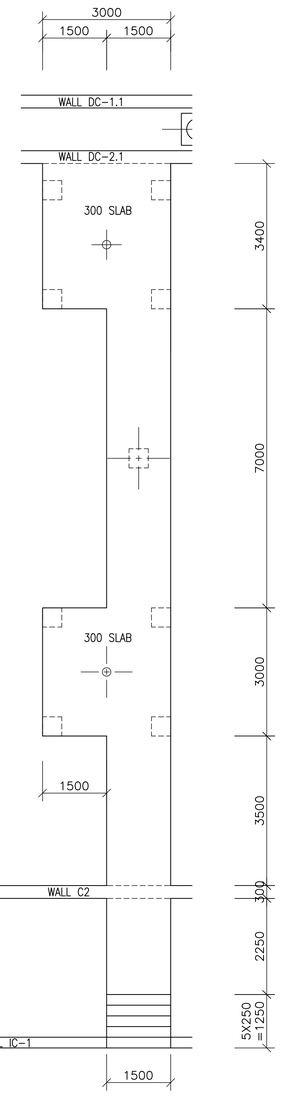
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5014	0



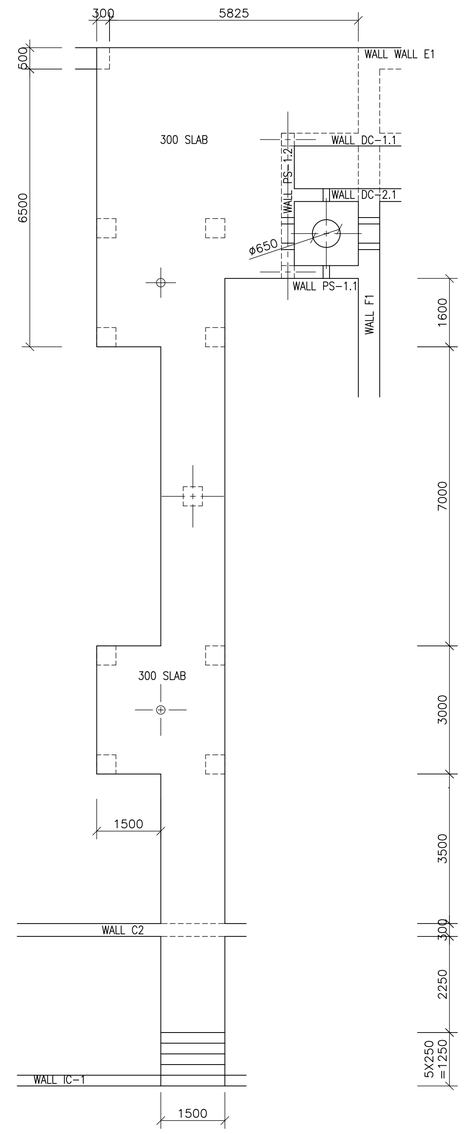
PLAN ON MIXER PLATFORM
ZONE 1
SCALE 1:75
PLATFORM AT ZONE 3 SIMILAR



PLAN ON MIXER PLATFORM
ZONE 2
SCALE 1:75
PLATFORM AT ZONE 4 SIMILAR



PLAN ON MIXER PLATFORM
ZONE 5
SCALE 1:75
PLATFORM AT ZONE 6 SIMILAR



PLAN ON MIXER PLATFORM
ZONE 7
SCALE 1:75

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
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
XXXXXXXX — PR ENG no.
23/06 — DATE
CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

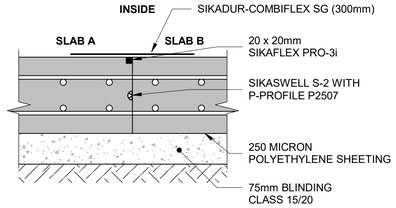
BIOLOGICAL REACTOR CONCRETE DETAILS MIXER PLATFORMS

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-06	AS SHOWN	A1

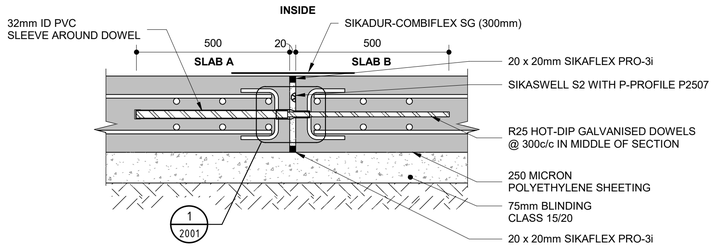
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5015	0



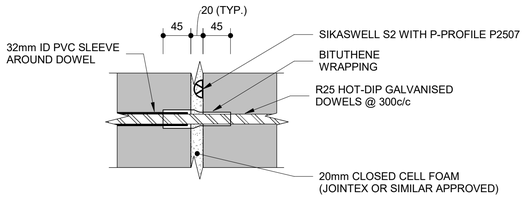
FLOOR CONSTRUCTION JOINT

SCALE 1 : 10



FLOOR MOVEMENT JOINT

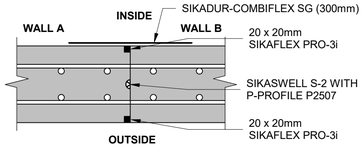
SCALE 1 : 10



1
2001

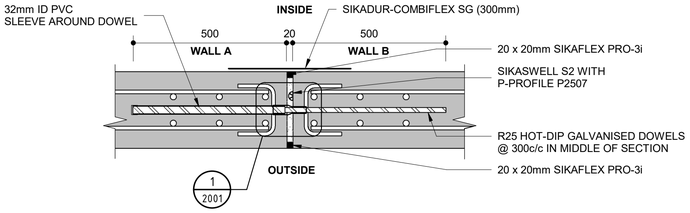
DOWEL DETAIL

SCALE 1 : 5



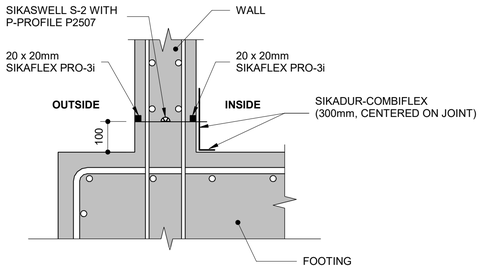
WALL CONSTRUCTION JOINT (VERTICAL)

SCALE 1 : 10



WALL MOVEMENT JOINT (VERTICAL)

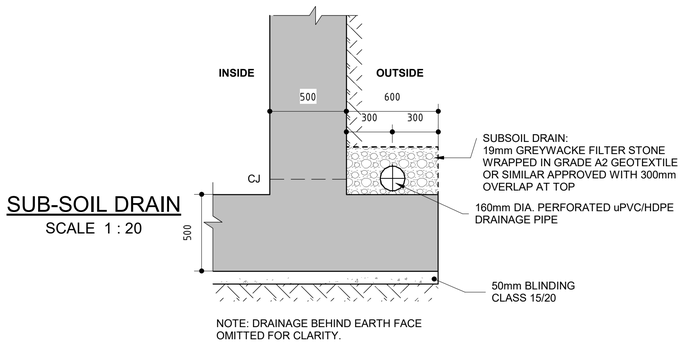
SCALE 1 : 10



WALL CONSTRUCTION JOINT AT KICKER (HORIZONTAL)

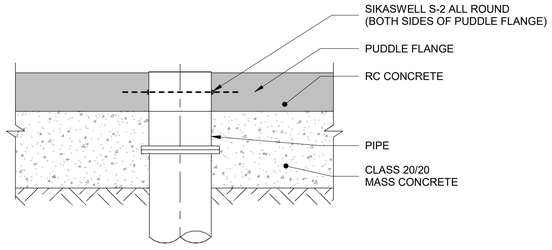
SCALE 1 : 10

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



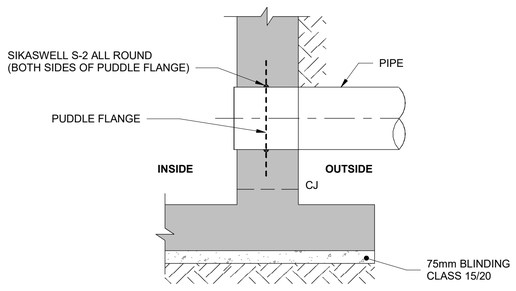
SUB-SOIL DRAIN

SCALE 1 : 20



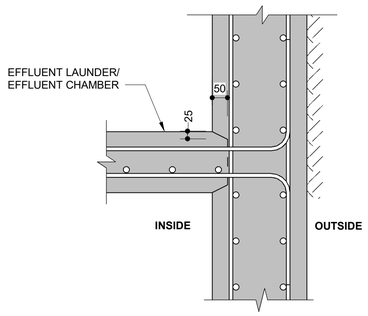
PUDDLE FLANGE DETAIL - FLOOR

SCALE 1 : 20



PUDDLE FLANGE DETAIL - WALL

SCALE 1 : 20



CONSTRUCTION JOINT 2 - WALL SECTION VIEW

SCALE 1 : 10

GENERAL 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.

CONCRETE NOTES:

2.1 THE CONTRACTOR SHALL ENSURE THAT ALL REINFORCEMENT IS PROPERLY HELD IN POSITION AND SHALL ALSO MAINTAIN THE CORRECT CONCRETE COVER UTILIZING APPROVED PATENT SPACERS (NOT STONES, OFFCUT REINFORCEMENT, BRICKS ETC.) AT ALL TIMES.

2.2 UNLESS OTHERWISE SPECIFIED,THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN mm AS STATED BELOW:

WALLS	- 60mm
FLOORS	- 50mm
SLABS	- 60mm

2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.

2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION.

2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.
2.6 ALL EXPOSED CORNERS TO HAVE A 20x 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:

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

CONSTRUCTION DRAWING

NOTES

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

ZAKUMI
Consulting Engineers
21 COMPENSATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
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

DRAWING DESCRIPTION

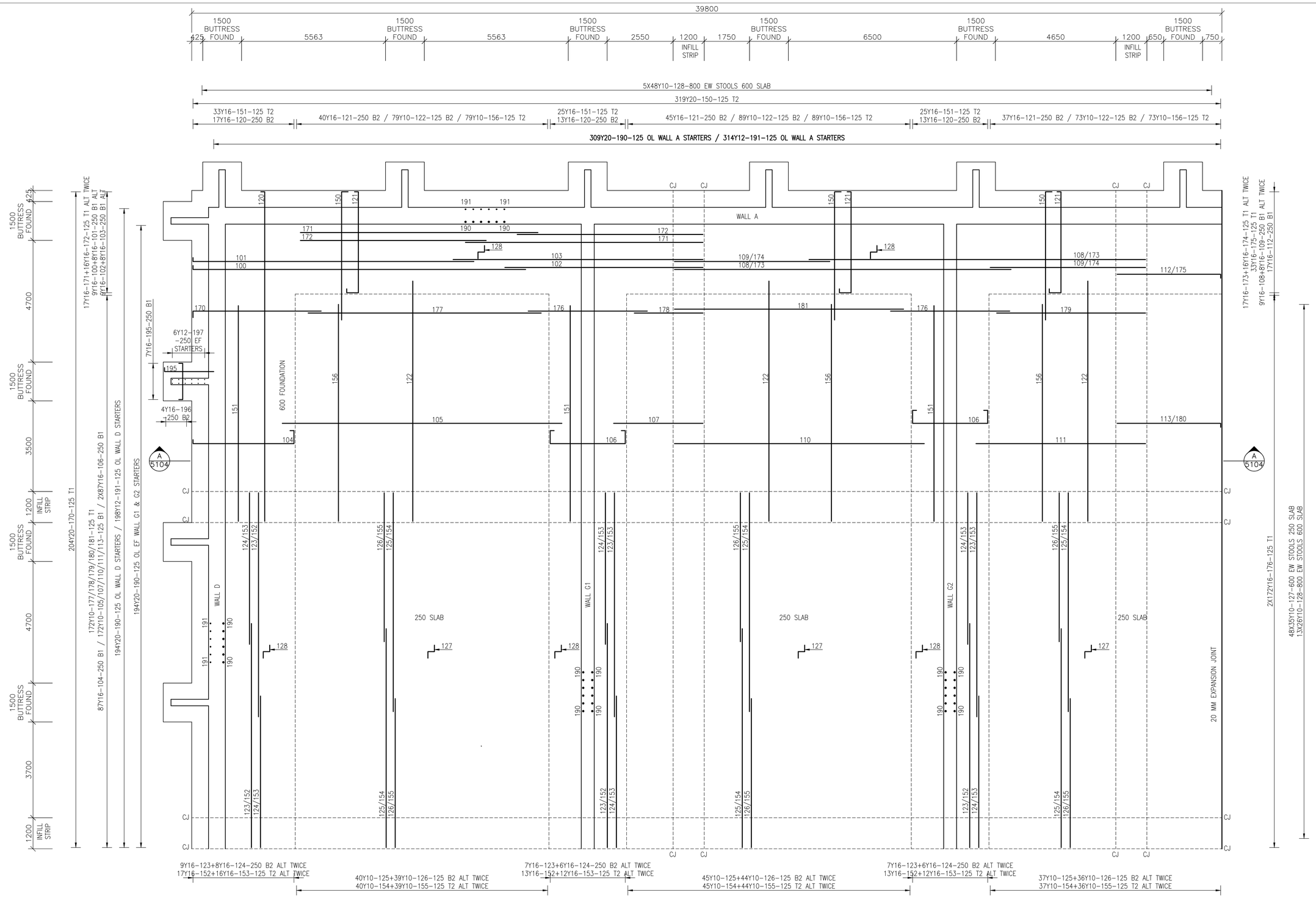
BIO-REACTOR

TYPICAL DETAILS

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023/06	As indicated	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-2001	0



FOUNDATION SLAB REINFORCEMENT
SEGMENT 1

SCALE 1:75

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 250 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
4. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
5. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 15/19 AND A SLIP LAYER CONSISTING OF 2 LAYERS OF 300 MICRON PVC SHEETING BELOW ALL FOUNDATIONS AND FOUNDATION SLABS
6. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
7. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
8. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
9. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
10. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
11. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
12. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

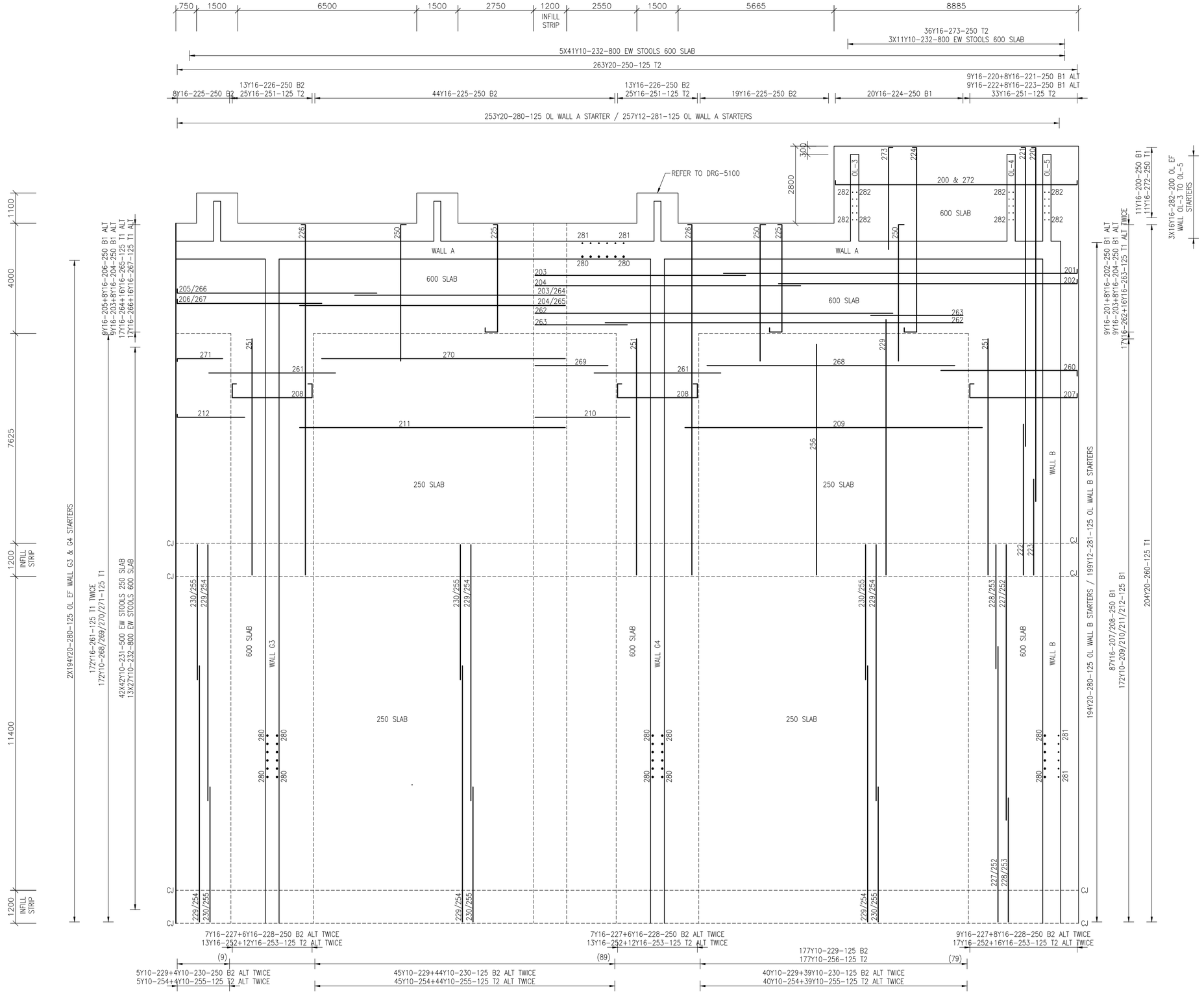
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS FOUNDATION SLAB SEGMENT 1

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	1:75	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5100	0



FOUNDATION SLAB REINFORCEMENT
SEGMENT 2

SCALE 1:75

NOTES:

1. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
2. FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 250 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
3. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
4. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 15/19 AND A SLIP LAYER CONSISTING OF 2 LAYERS OF 300 MICRON PVC SHEETING BELOW ALL FOUNDATIONS AND FOUNDATION SLABS
5. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
6. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
7. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
8. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
9. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
10. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
11. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

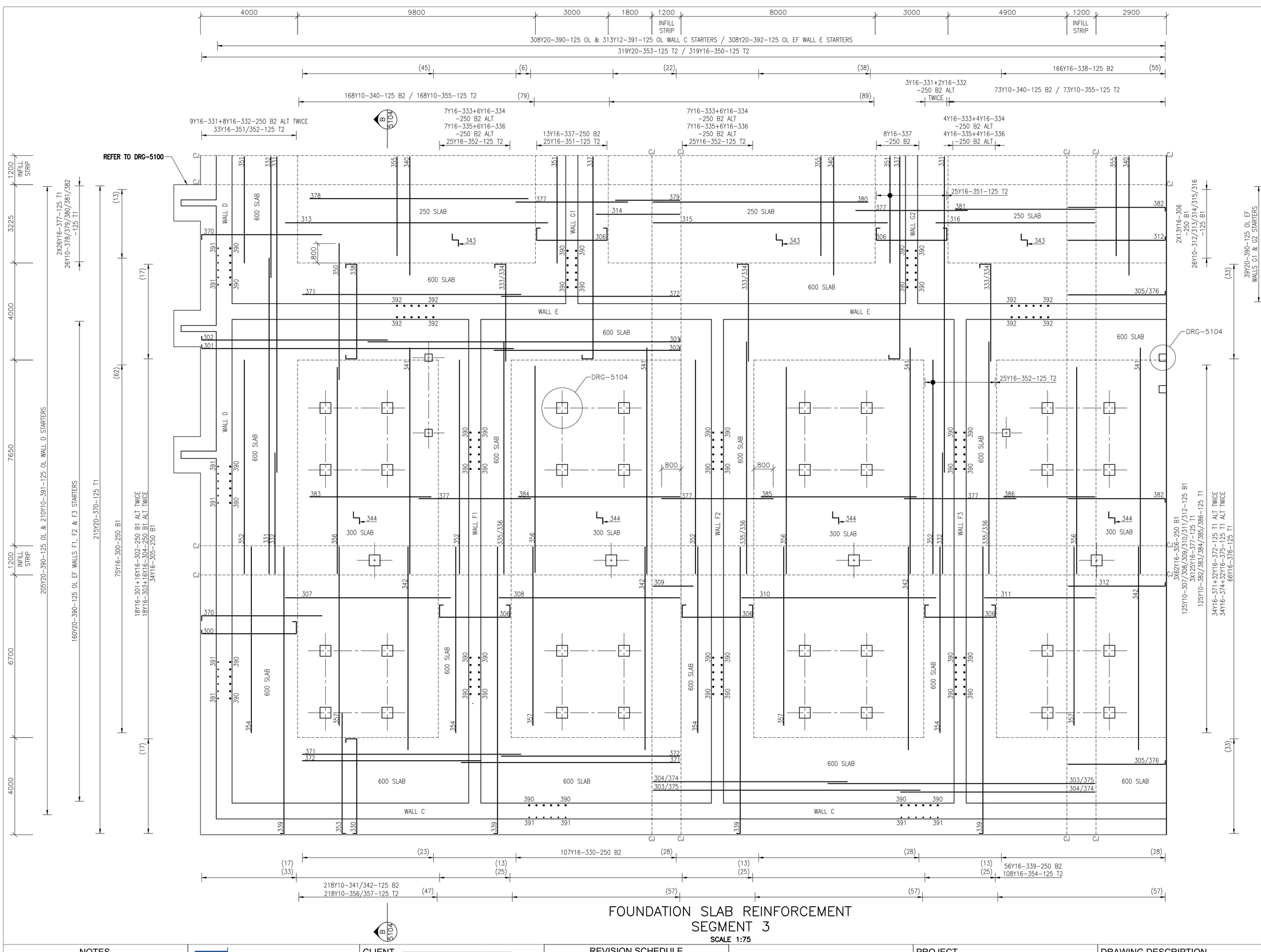
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS FOUNDATION SLAB SEGMENT 2

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	1:75	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5101	0



FOUNDATION SLAB REINFORCEMENT SEGMENT 3

SCALE 1:75

NOTES:

1. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
2. FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 250 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
3. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
4. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 15/19 AND A SLIP LAYER CONSISTING OF 2 LAYERS OF 300 MICRON PVC SHEETING BELOW ALL FOUNDATIONS AND FOUNDATION SLABS
5. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
6. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
7. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
8. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
9. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
10. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
11. PROVIDE STOOLS AS FOLLOWS:

11.1.	250 SLAB	MK343 @ 500 c/c
11.2.	300 SLAB	MK344 @ 500 c/c
11.3.	600 SLAB	MK345 @ 800 c/c

12. COLUMN STARTER BARS ON DRG-5104
13. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

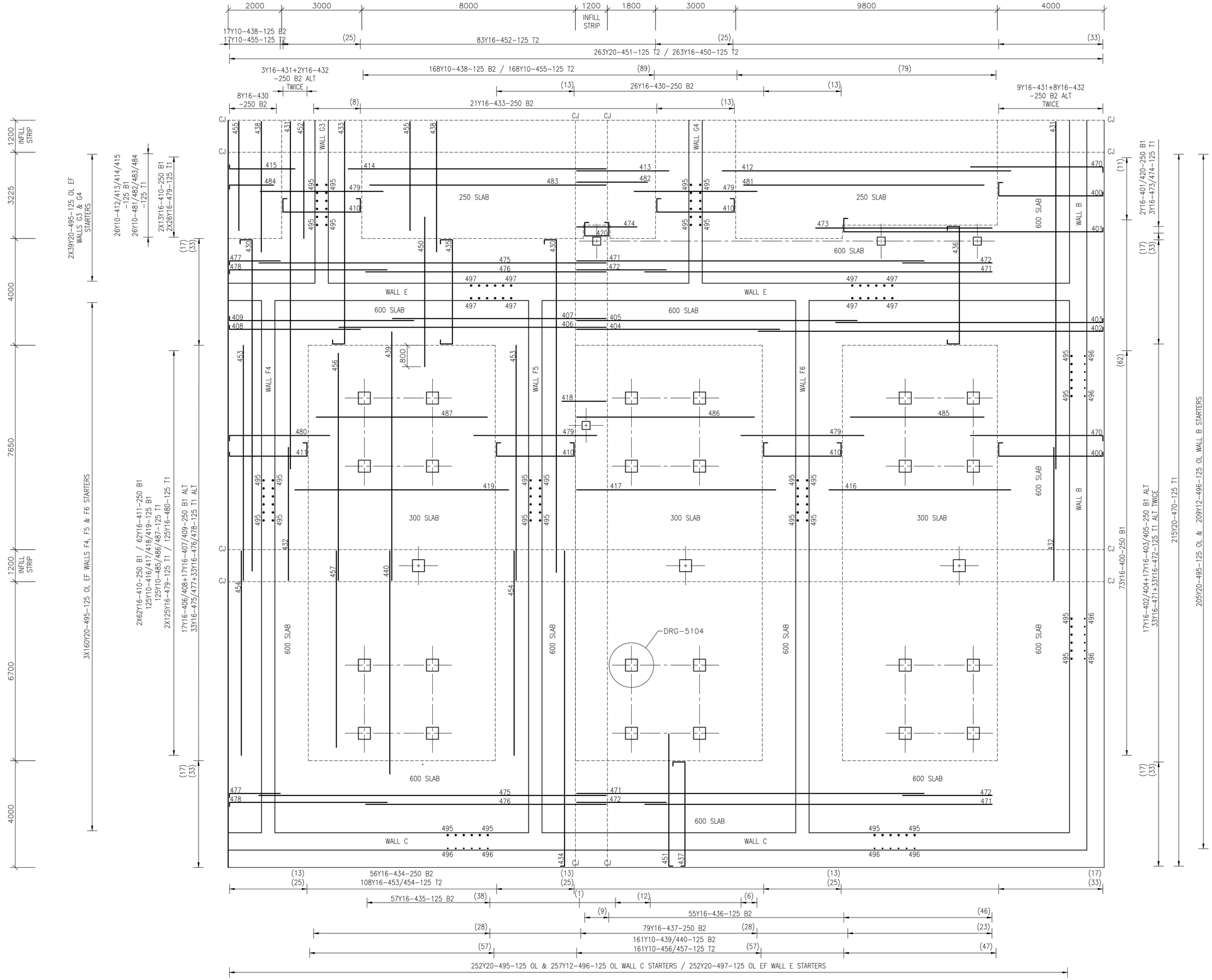
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS FOUNDATION SLAB SEGMENT 3

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	1:75	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5102	0



FOUNDATION SLAB REINFORCEMENT
SEGMENT 4

SCALE 1:75

NOTES:

1. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
2. FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 250 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
3. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
4. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 15/19 AND A SLIP LAYER CONSISTING OF 2 LAYERS OF 300 MICRON PVC SHEETING BELOW ALL FOUNDATIONS AND FOUNDATION SLABS
5. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
6. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
7. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
8. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
9. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
10. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
11. PROVIDE STOOLS AS FOLLOWS:

11.1. 250 SLAB MK441 @ 500 c/c
11.2. 300 SLAB MK442 @ 500 c/c
11.3. 600 SLAB MK443 @ 800 c/c

12. COLUMN STARTER BARS ON DRG-5104
13. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

City of Polokwane — Naturally Progressive

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

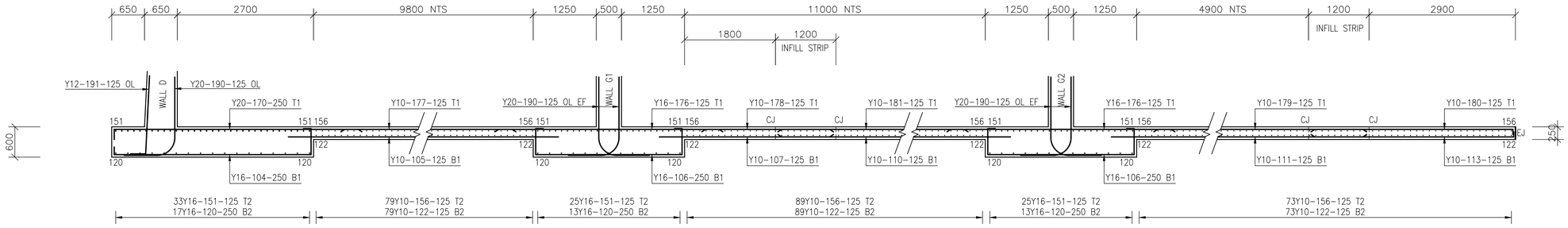
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS FOUNDATION SLAB SEGMENT 4

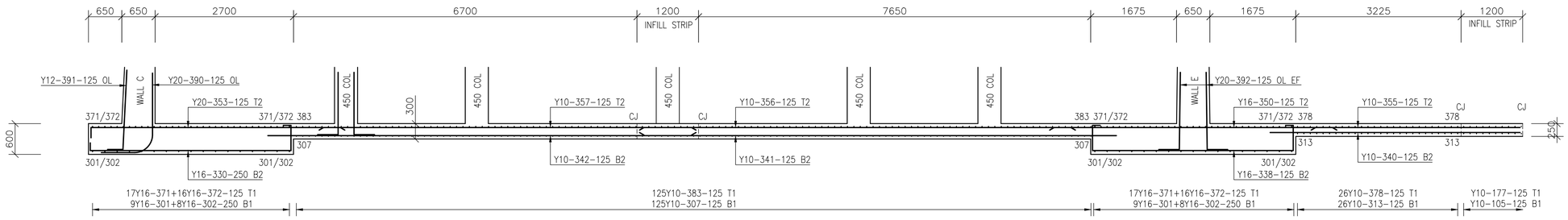
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	1:75	A1

DRAWING NUMBER

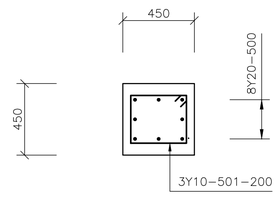
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5103	0



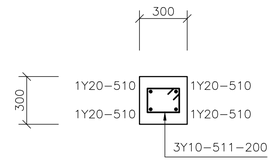
SECTION A–A
SCALE 1:50
DRG–5100



SECTION B–B
SCALE 1:50
DRG–5102



450 SQ COLUMN STARTER BARS PLAN
SCALE 1:20
63 OFF



300 SQ COLUMN STARTER BARS PLAN
SCALE 1:20
9 OFF

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda — ENGINEER
XXXXXXXX — PR ENG no.
23/05 — DATE

CLIENT — DATE

PROJECT
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

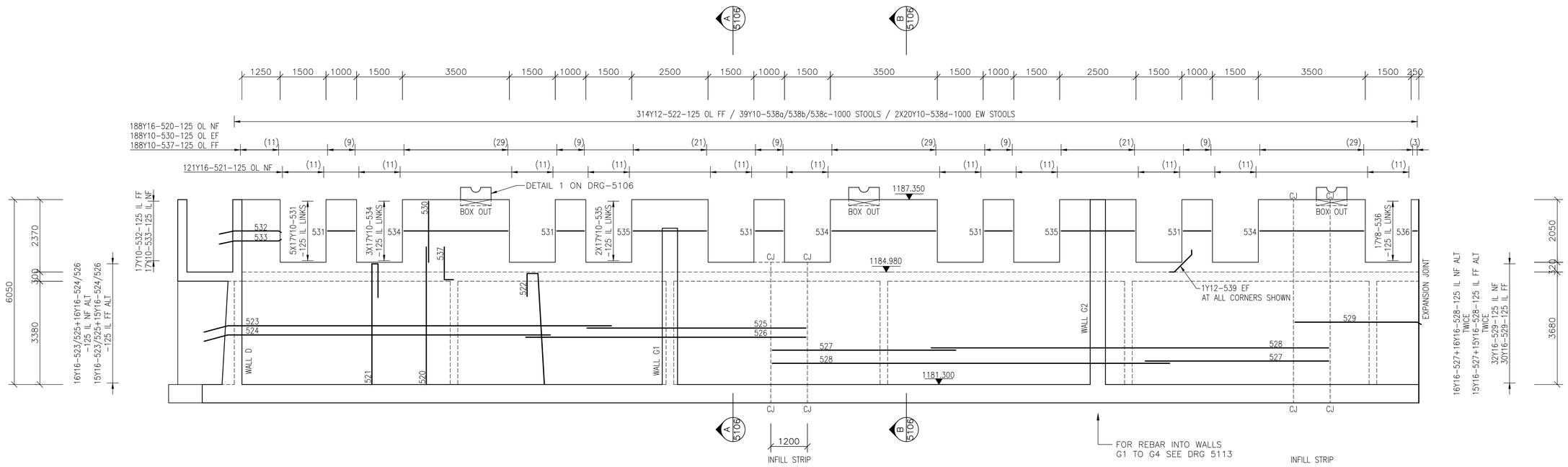
DRAWING DESCRIPTION
BIOLOGICAL REACTOR REINFORCEMENT DETAILS FOUNDATION SLAB SECTIONS

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

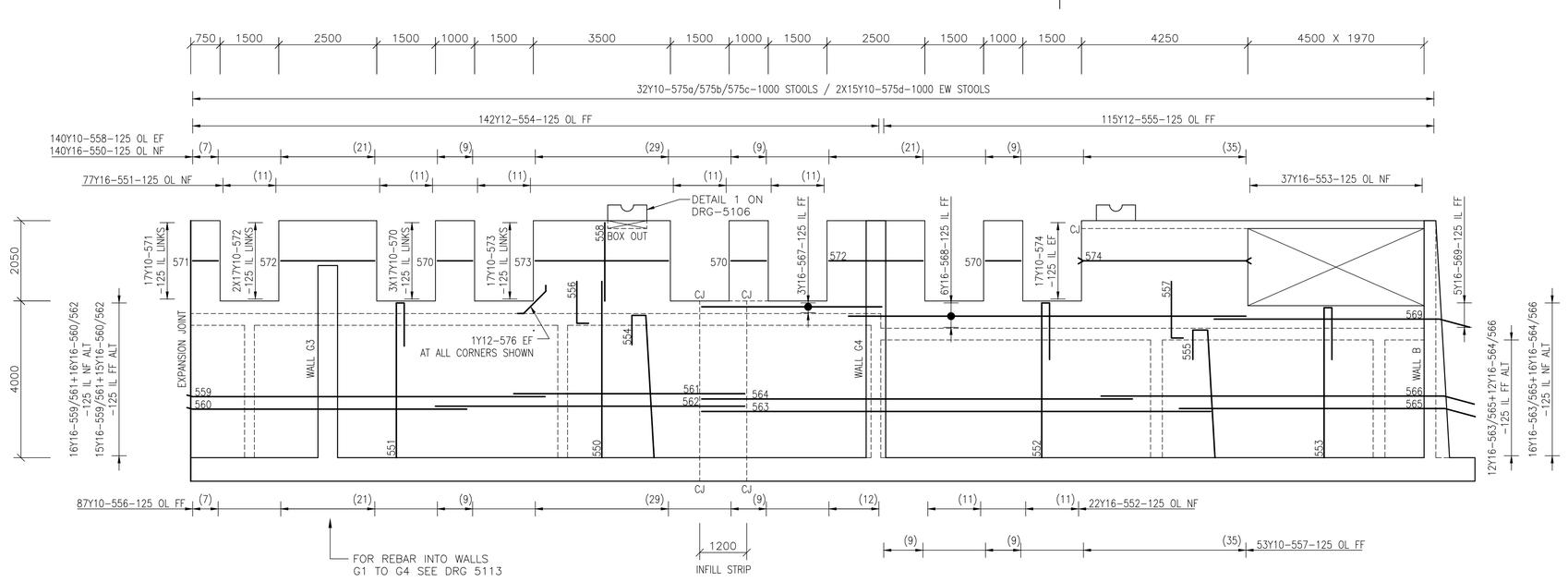
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5104	0



INTERNAL ELEVATION ON WALL A1

SCALE 1:75



INTERNAL ELEVATION ON WALL A2

SCALE 1:75

C 5106

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE, NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

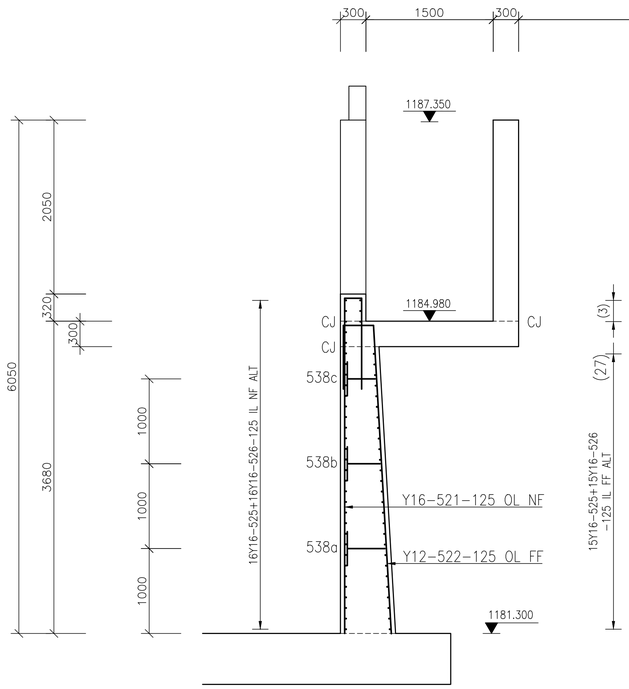
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BIOLOGICAL REACTOR REINFORCEMENT DETAILS WALL A

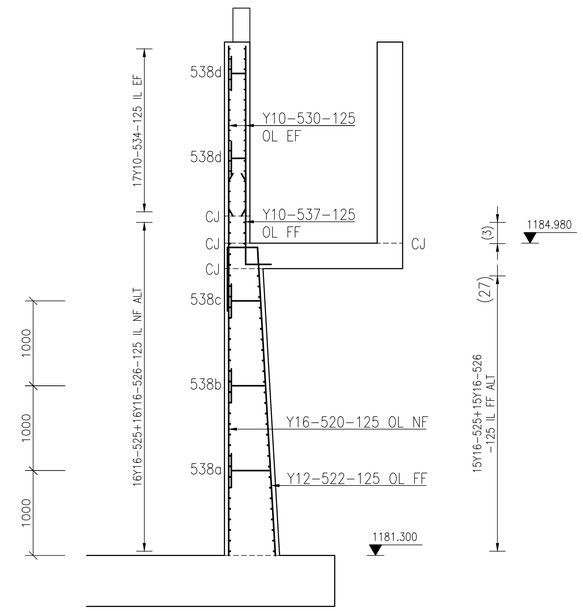
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

DRAWING NUMBER

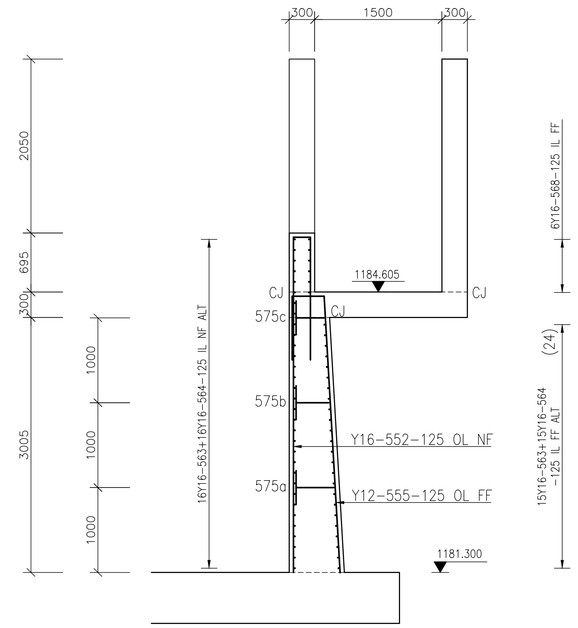
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5105	0



SECTION A–A
SCALE 1:37.5



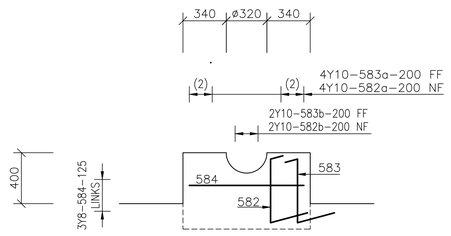
SECTION B–B
SCALE 1:37.5



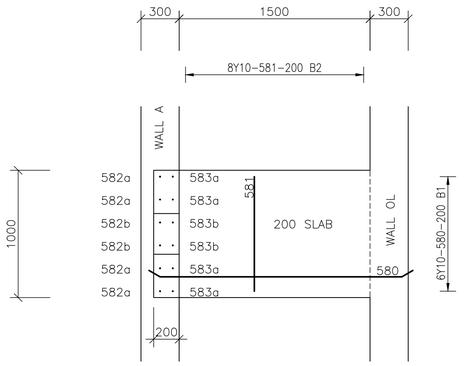
SECTION C–C
SCALE 1:37.5

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER



DETAIL 1
ELEVATION
SCALE 1:25



DETAIL 1
PLAN
SCALE 1:25

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda — ENGINEER
XXXXXXXX — PR ENG no.
23/05 — DATE
CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

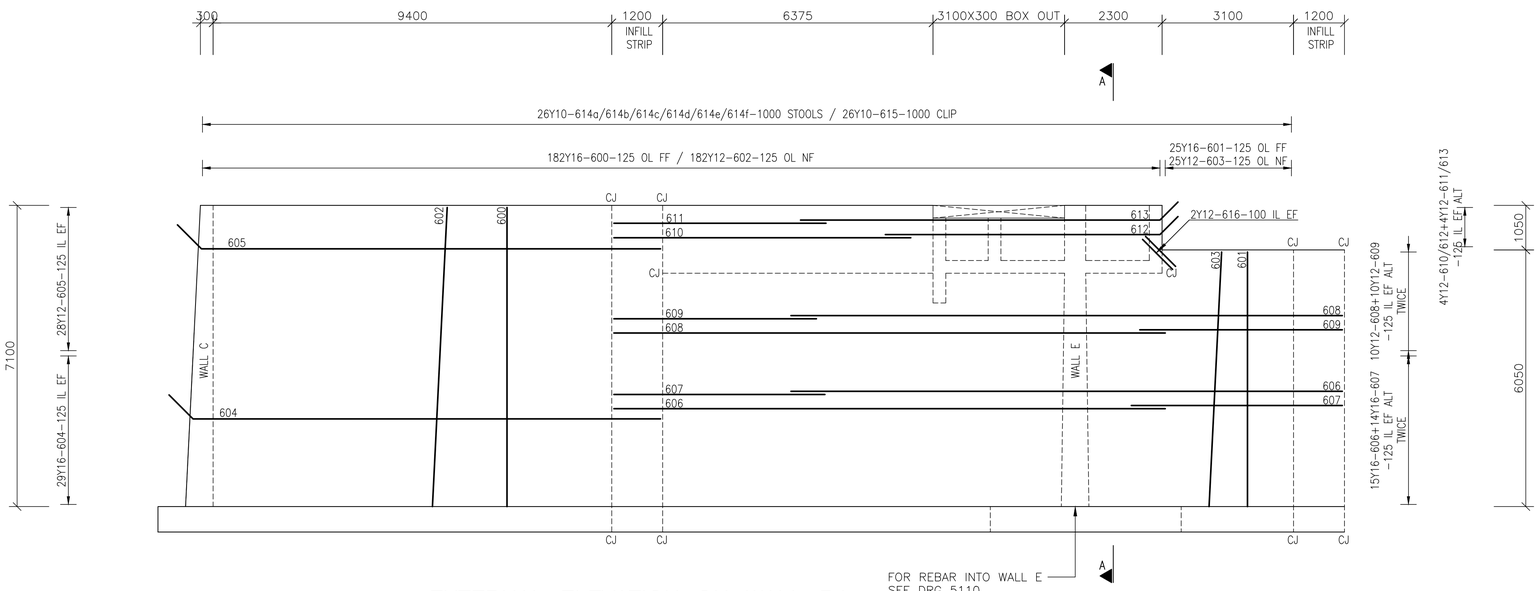
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS WALL A SECTIONS AND DETAILS

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

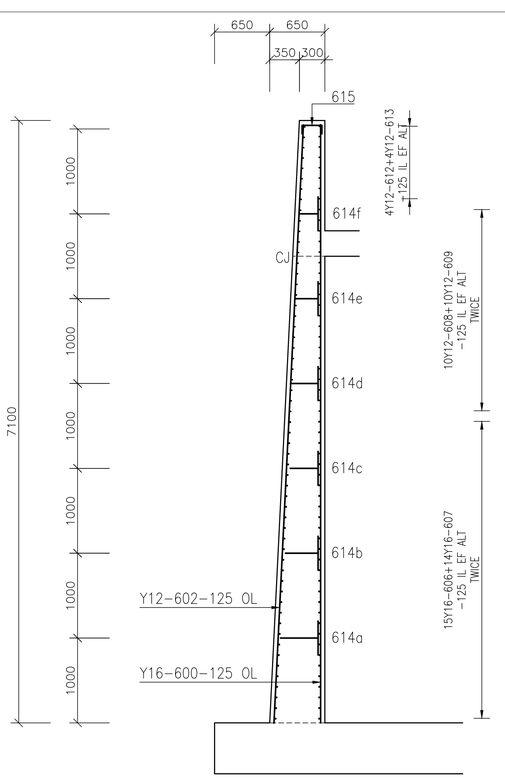
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5106	0



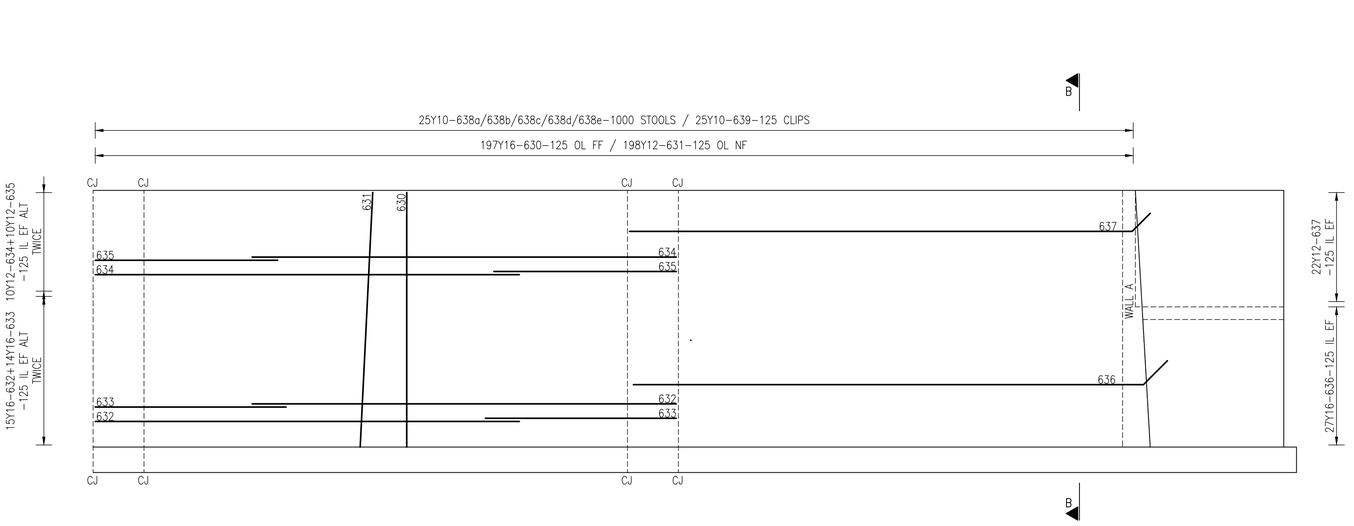
EXTERNAL ELEVATION ON WALL B1

SCALE 1:75



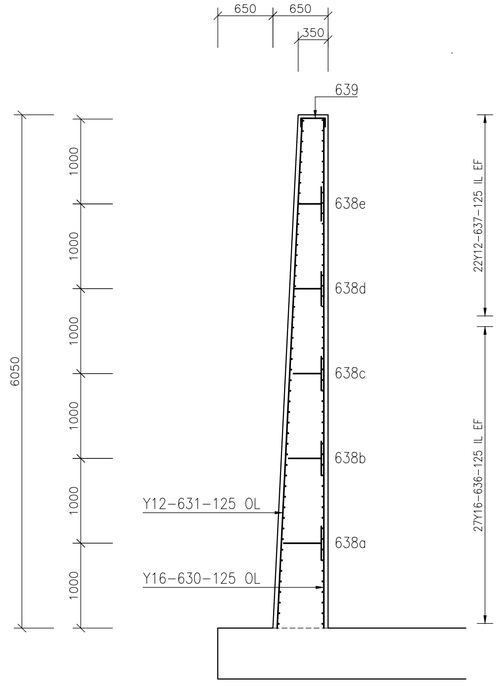
SECTION A–A

SCALE 1:37.5



EXTERNAL ELEVATION ON WALL B2

SCALE 1:75



SECTION B–B

SCALE 1:37.5

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

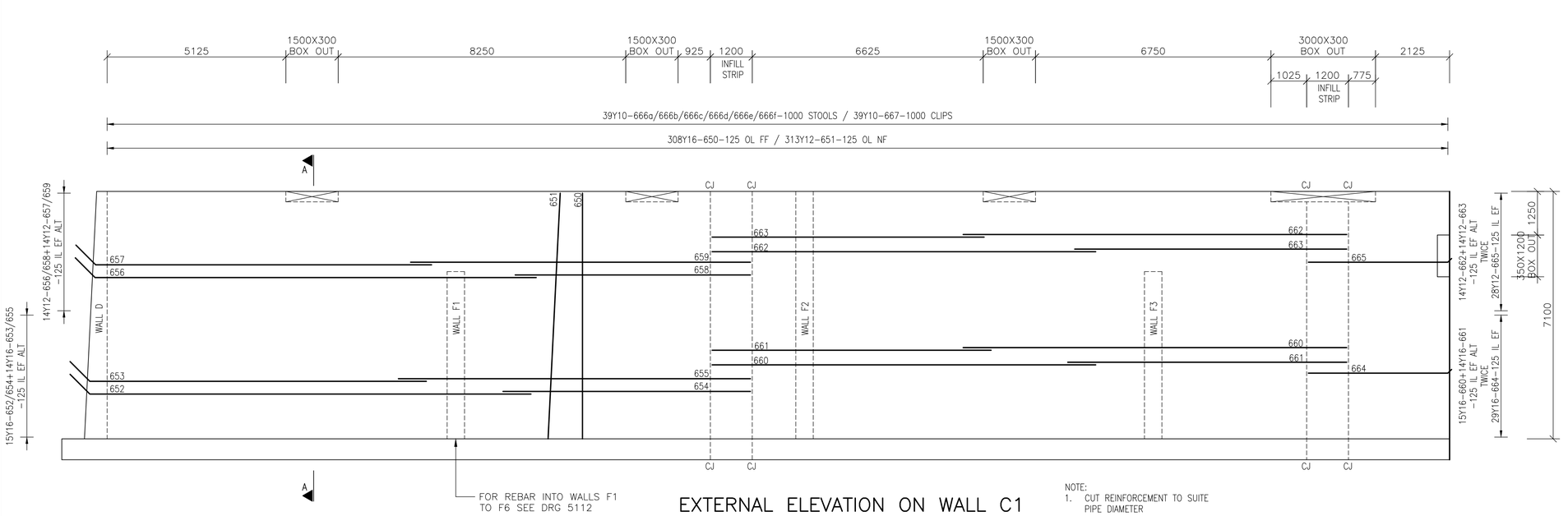
BIOLOGICAL REACTOR REINFORCEMENT DETAILS WALL B

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

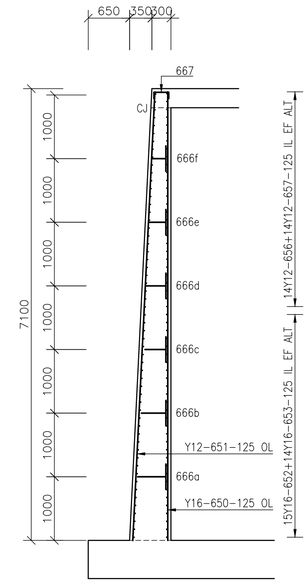
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5107	0

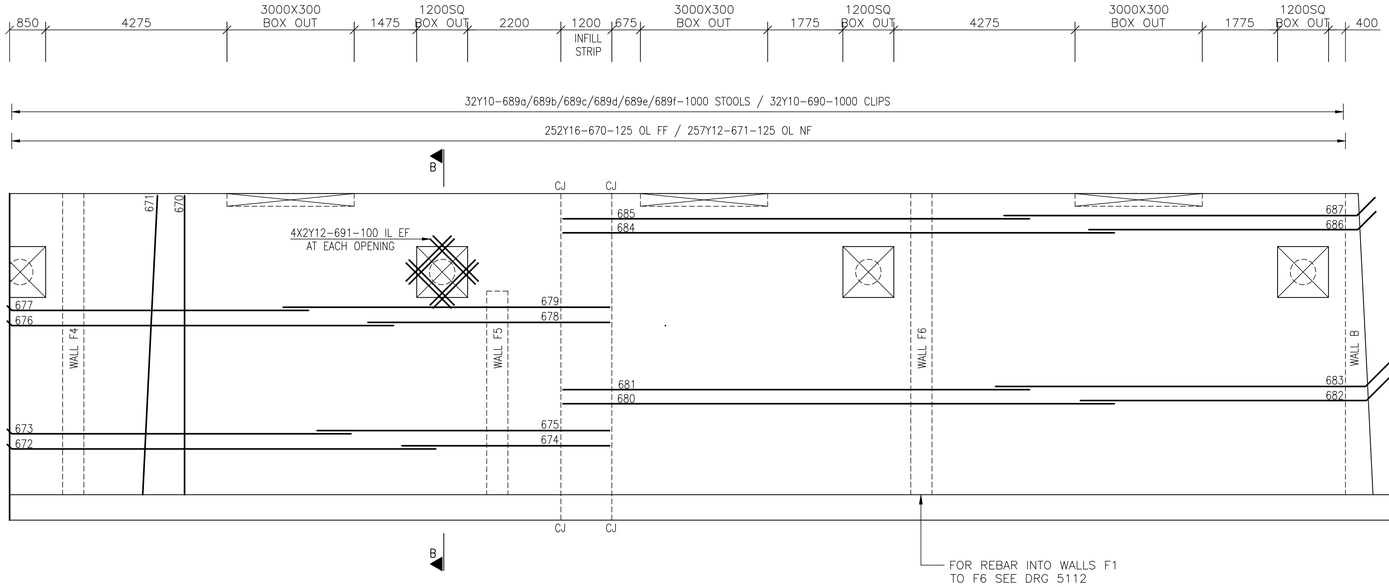


EXTERNAL ELEVATION ON WALL C1
SCALE 1:75

NOTE:
1. CUT REINFORCEMENT TO SUITE PIPE DIAMETER

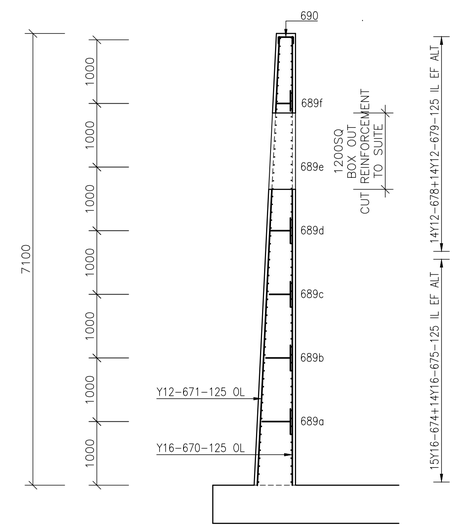


SECTION A–A
SCALE 1:50



EXTERNAL ELEVATION ON WALL C2
SCALE 1:75

NOTE:
1. CUT REINFORCEMENT TO SUITE PIPE DIAMETER



SECTION B–B
SCALE 1:50

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda — ENGINEER
XXXXXXXX — PR ENG no.
23/05 — DATE
CLIENT
DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

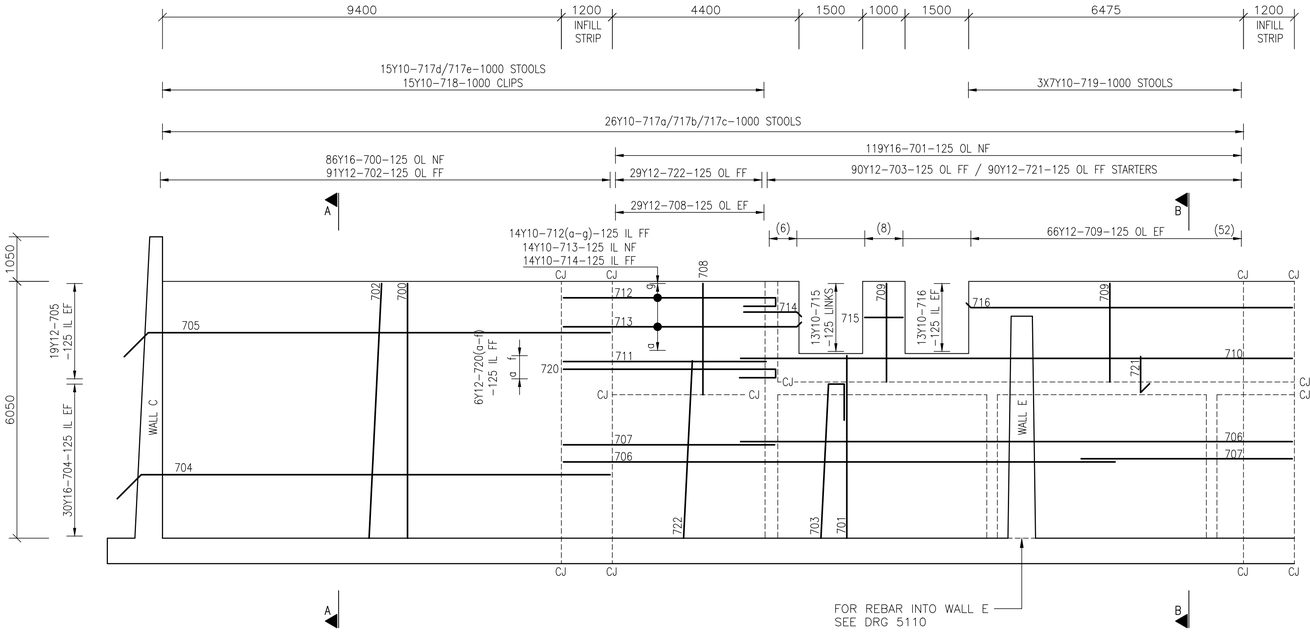
BIOLOGICAL REACTOR REINFORCEMENT DETAILS WALL C

CONSTRUCTION DRAWING

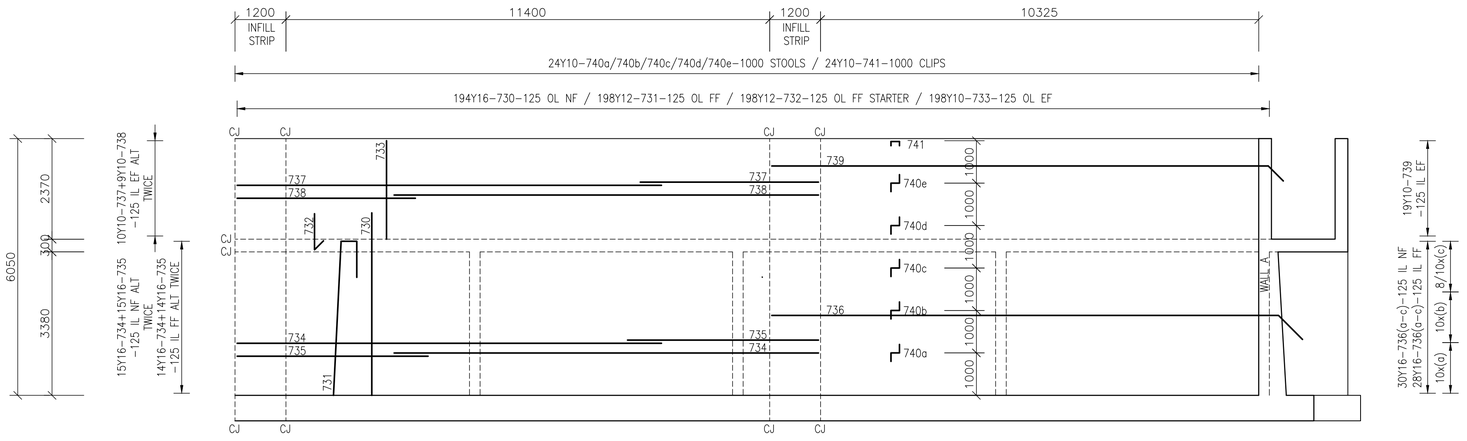
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

DRAWING NUMBER

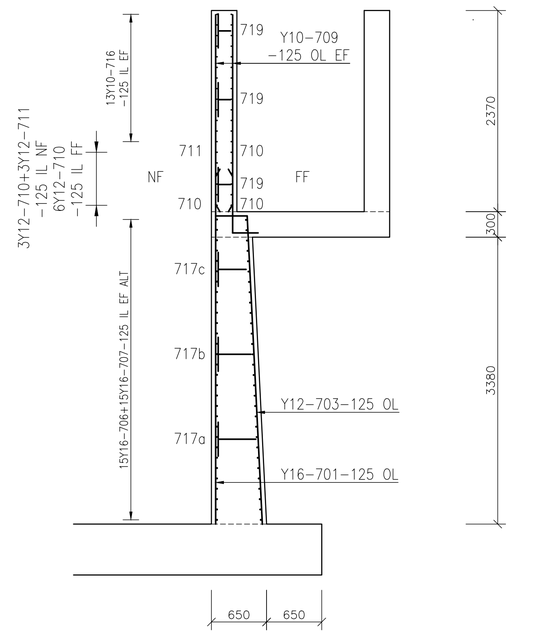
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5108	0



INTERNAL ELEVATION ON WALL D2
SCALE 1:75



SECTION A–A
SCALE 1:37.5



SECTION B–B
SCALE 1:37.5

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

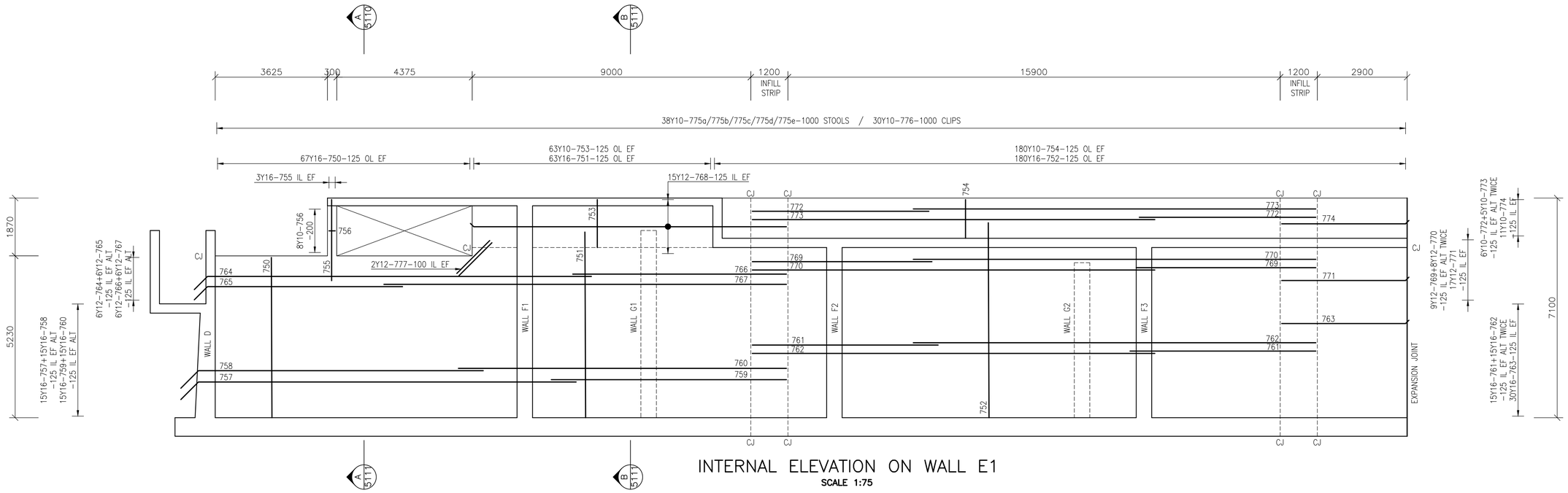
DRAWING DESCRIPTION: BIOLOGICAL REACTOR REINFORCEMENT DETAILS WALL D

CONSTRUCTION DRAWING

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

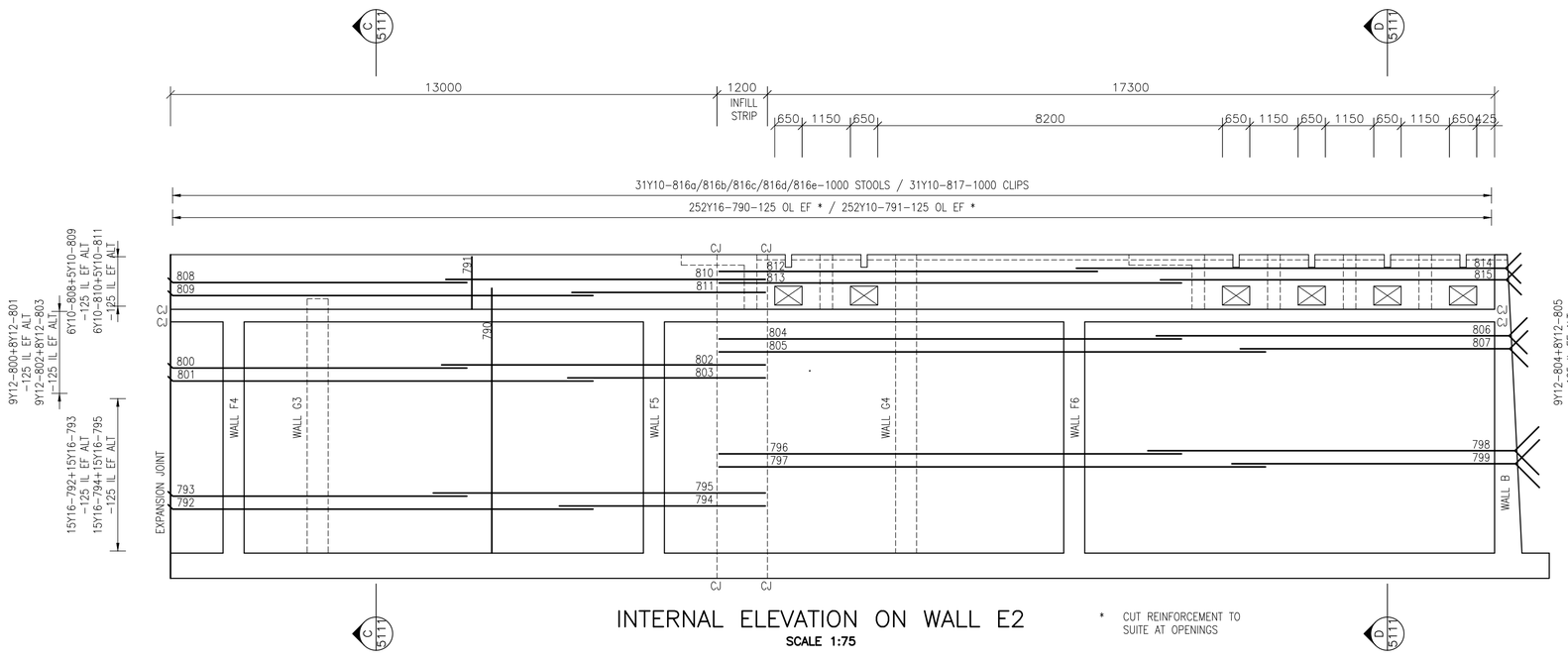
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5109	0



INTERNAL ELEVATION ON WALL E1

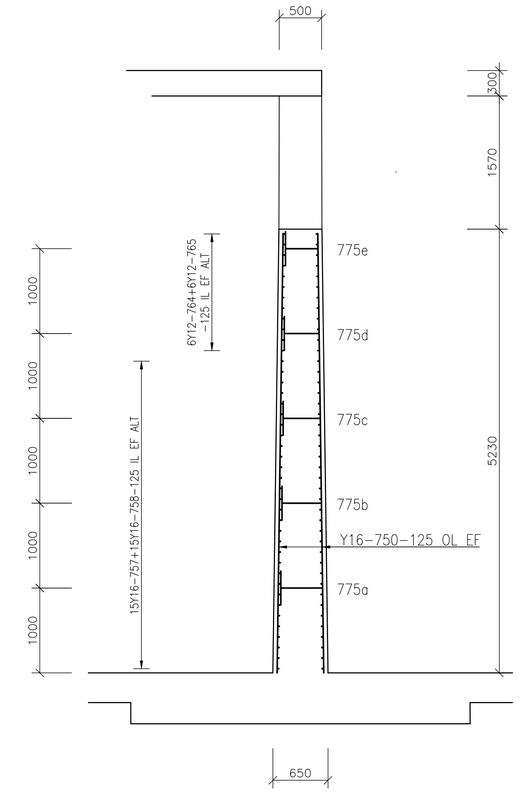
SCALE 1:75



INTERNAL ELEVATION ON WALL E2

SCALE 1:75

* CUT REINFORCEMENT TO SUITE AT OPENINGS



SECTION A–A

SCALE 1:37.5
ON DRG–5110

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

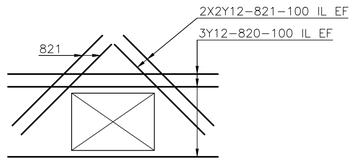
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BIOLOGICAL REACTOR REINFORCEMENT DETAILS WALL E

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

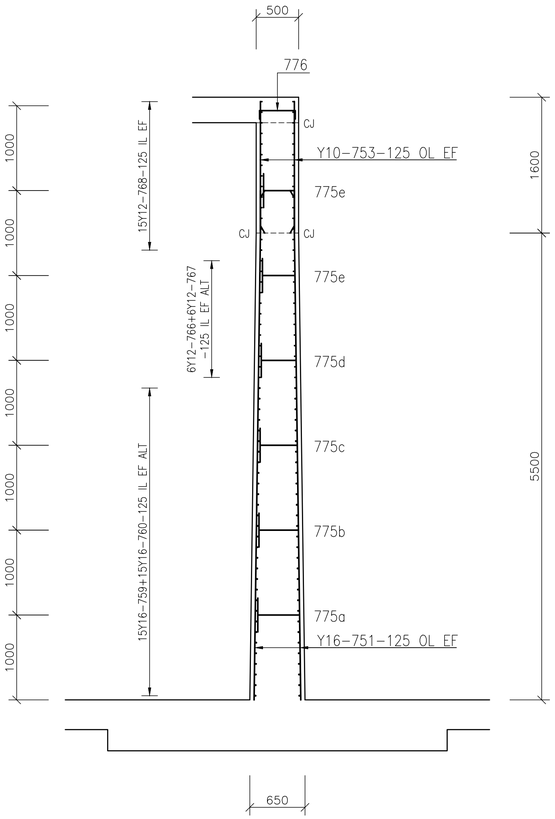
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5110	0



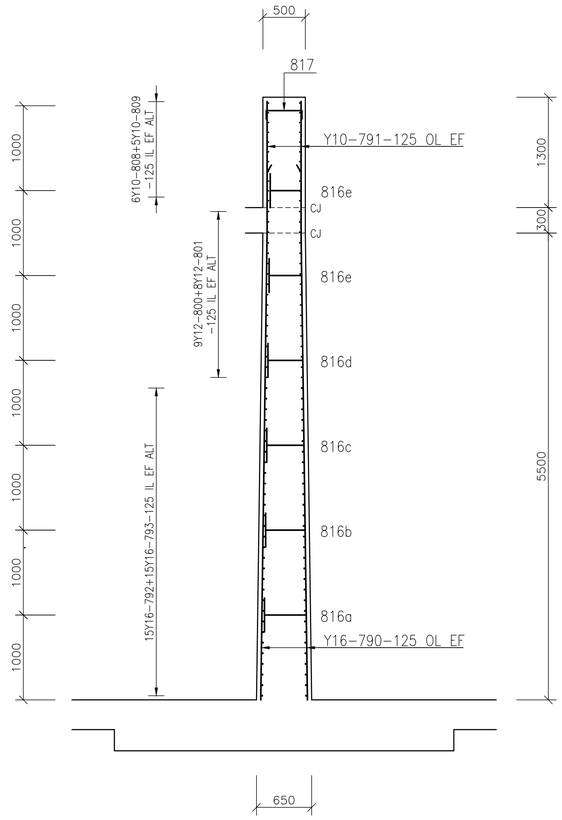
REINFORCEMENT AT OPENINGS

SCALE 1:25
6 OFF



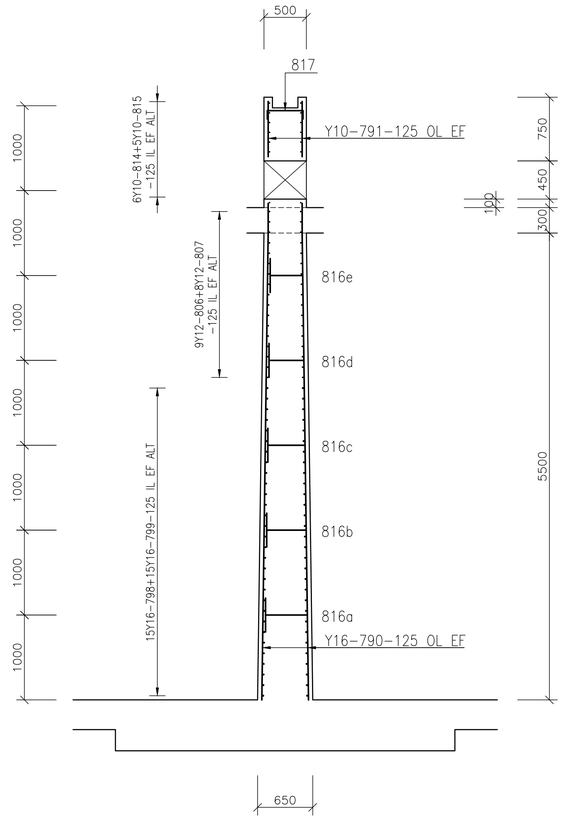
SECTION B–B

SCALE 1:37.5
ON DRG–5110



SECTION C–C

SCALE 1:37.5
ON DRG–5110



SECTION D–D

SCALE 1:50
ON DRG–5110

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

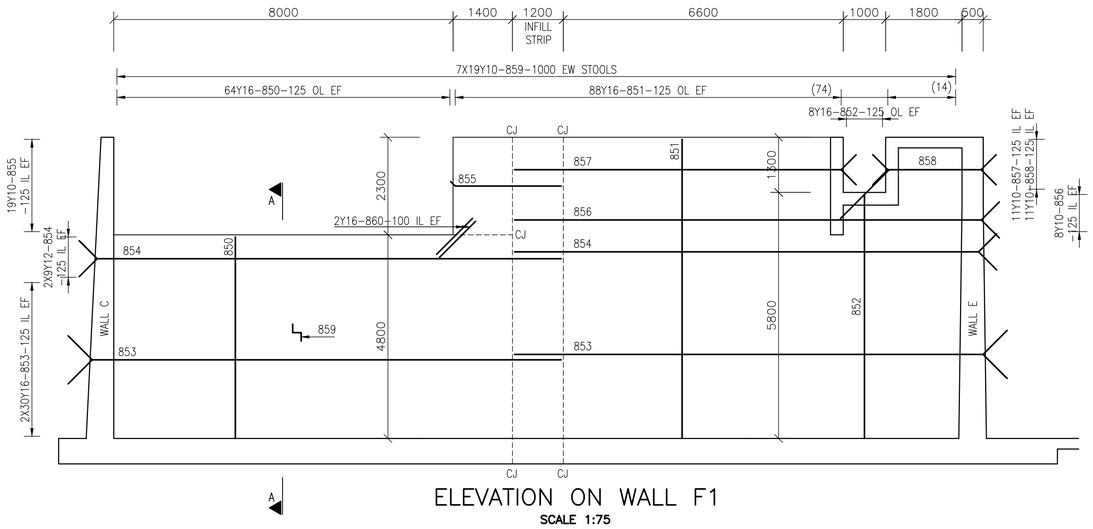
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT SECTIONS WALL E

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

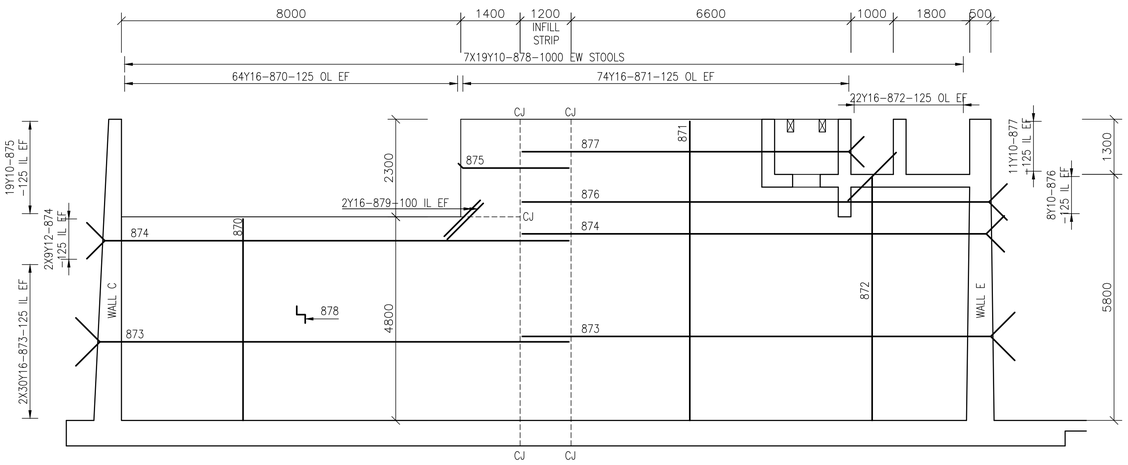
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5111	0



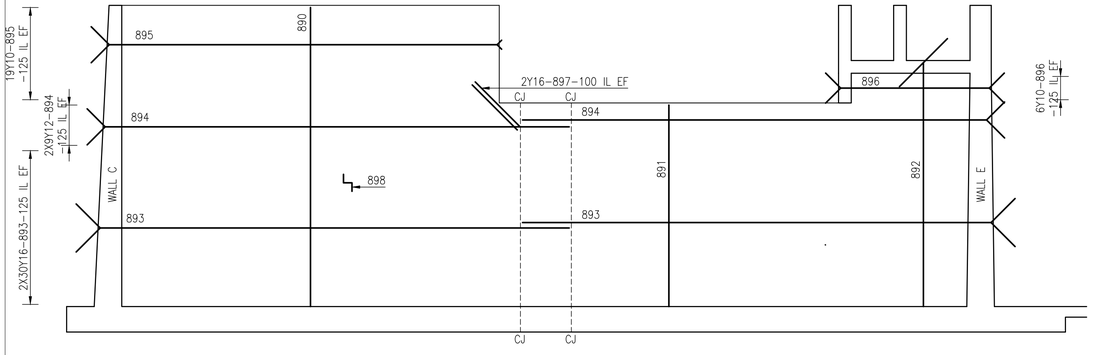
ELEVATION ON WALL F1

SCALE 1:75
1 OFF



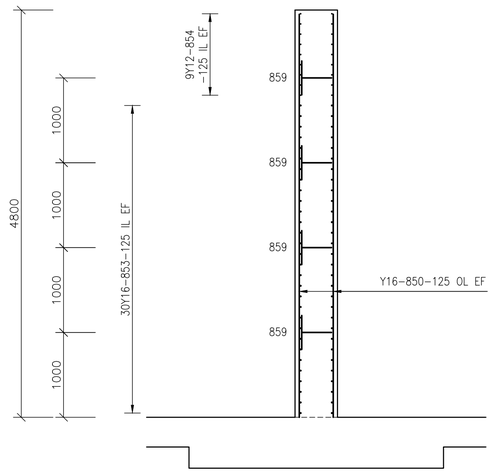
ELEVATION ON WALL F3

SCALE 1:75
WALL F5 SIMILAR
2 OFF



ELEVATION ON WALL F2

SCALE 1:75
WALLS F4 & F6 SIMILAR
3 OFF



SECTION A–A

SCALE 1:37.5
TYPICAL WALL SECTION AT WEIR

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda — ENGINEER
XXXXXXXX — PR ENG no.
23/05 — DATE
CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

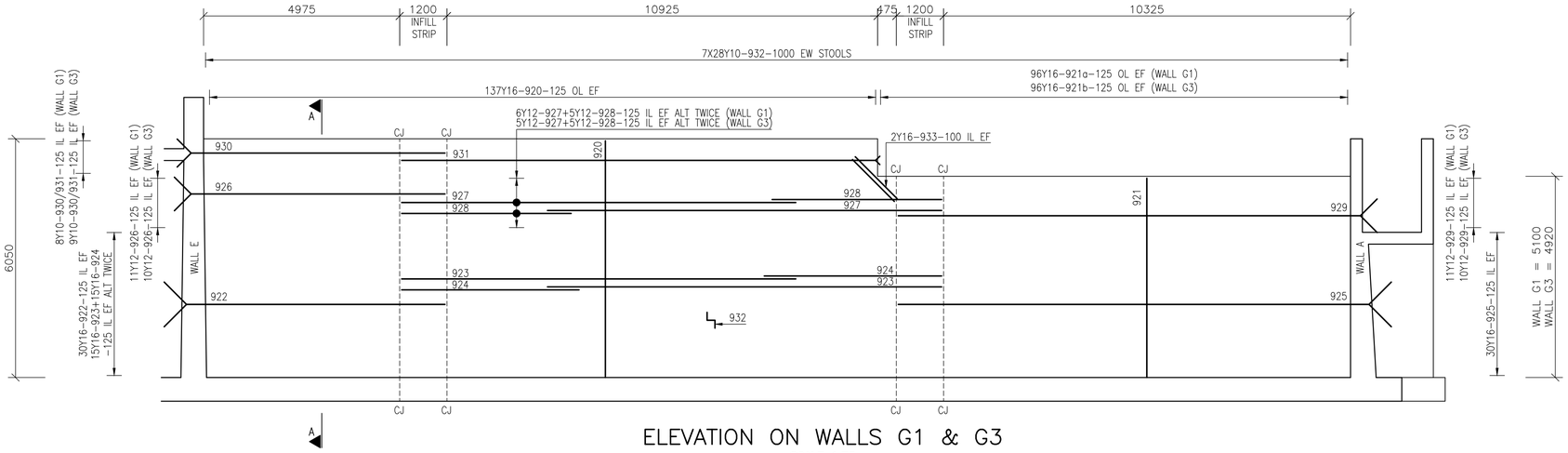
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS WALLS F

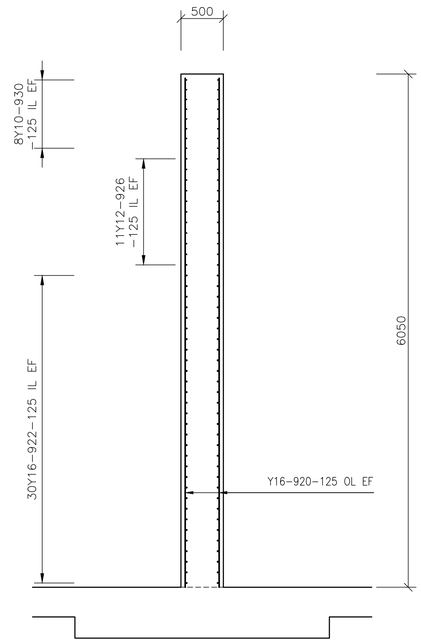
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

DRAWING NUMBER

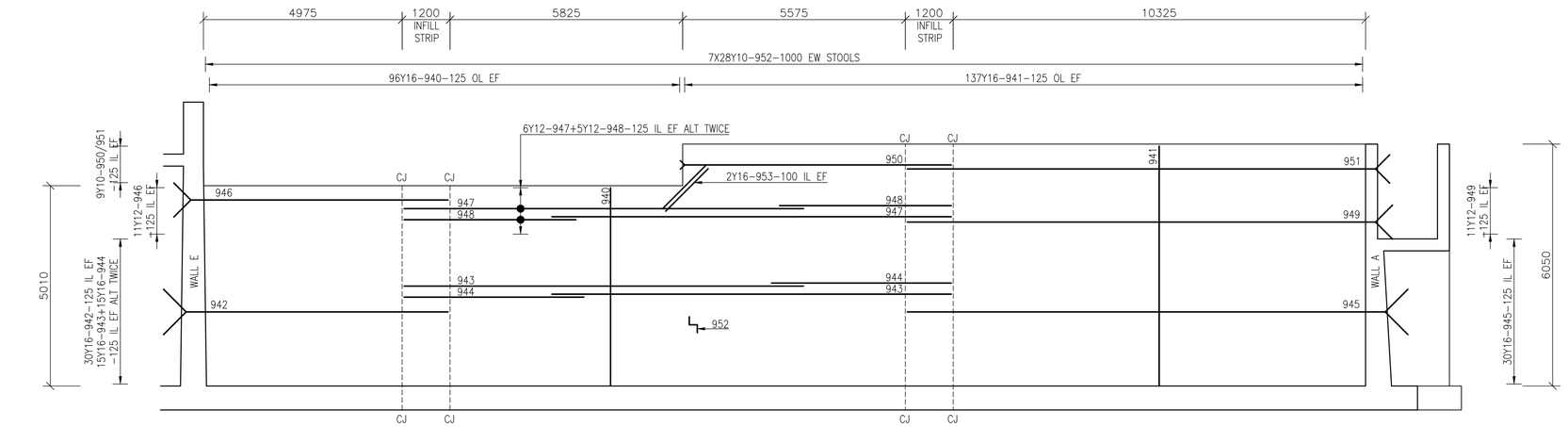
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5112	0



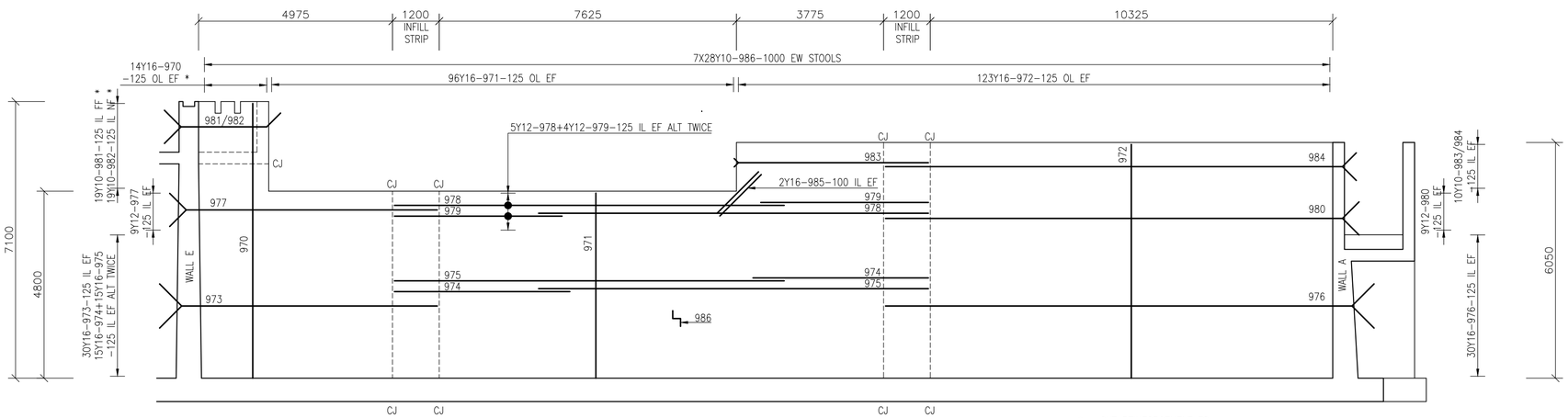
ELEVATION ON WALLS G1 & G3
SCALE 1:75



SECTION A–A
SCALE 1:37.5



ELEVATION ON WALL G2
SCALE 1:75



ELEVATION ON WALL G4
SCALE 1:75

* CUT REINFORCEMENT TO SUITE AT OPENINGS

NOTES:

1. ALL DRAWINGS FOR THIS STRUCTURE TO BE READ IN CONJUNCTION WITH EACH OTHER AS WELL AS ALL THE GA DRAWINGS
2. FOUNDATION SLAB TOP OF CONCRETE TO BE AT A CONSTANT LEVEL OF 1181.300
3. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR 35/19
4. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
5. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
6. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
7. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
8. INFILL STRIPS TO BE CAST AT A TIME NOT LESS THAN 28 DAYS AFTER THE LAST ADJACENT PANEL WAS CAST
9. MINIMUM REINFORCEMENT LAP AND ANCHOR LENGTHS TO BE 50 TIMES THE SMALLER BAR DIAMETER

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-05-31	ISSUED FOR CONSTRUCTION

T Banda	XXXXXXXX	23/05
ENGINEER	PR ENG no.	DATE
CLIENT		DATE

PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BIOLOGICAL REACTOR REINFORCEMENT DETAILS WALLS G

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-05-31	AS SHOWN	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5113	0

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Foundation	1	9	Y16	13000	9	100	37	12850	(200)			
slab		8	Y16	11000	8	101	37	10850	(200)			
Segment 1		9	Y16	7650	9	102	20	(7650)				
B1		8	Y16	9650	8	103	20	(9650)				
		87	Y16	4600	87	104	52	150	500	3900	(150)	
		172	Y10	10800	172	105	20	(10800)				
		174	Y16	4050	174	106	55	150	500	2900	500	(150)
		172	Y10	3450	172	107	20	(3450)				
		17	Y16	13000	17	108	20	(13000)				
		17	Y16	6000	17	109	20	(6000)				
		172	Y10	9650	172	110	20	(9650)				
		172	Y10	6550	172	111	20	(6550)				
		17	Y16	4100	17	112	37	4000	(150)			
		172	Y10	4100	172	113	37	4000	(100)			
B2		43	Y16	12800	43	120	37	12700	(150)			
		122	Y16	4550	122	121	52	150	450	3900	(150)	
		241	Y10	9300	241	122	20	(9300)				
		43	Y16	8650	43	123	20	(8650)				
		43	Y16	5850	43	124	20	(5850)				
		241	Y10	8450	241	125	20	(8450)				
		241	Y10	5750	241	126	20	(5750)				
		1680	Y10	850	1680	127	83	200	120	250	(250)	
		578	Y10	1750	578	128	83	250	445	350	(350)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		8660		5647					14306
TOT		8660		5647					14306

Date	2023/06/06
Det. by	Johan Bultman
Ref Dwg	5100
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Segment 1(1)

Revision	1
Schedule No	600

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Foundation	1	319	Y20	5150	319	150	37	4950	(250)			
Slab		83	Y16	8600	83	151	20	(8600)				
Segment 1		83	Y16	8650	83	152	20	(8650)				
T2		83	Y16	5850	83	153	20	(5850)				
		241	Y10	8450	241	154	20	(8450)				
		241	Y10	5750	241	155	20	(5750)				
		241	Y10	8300	241	156	20	(8300)				
T1	1	204	Y20	5150	204	170	37	4950	(250)			
		33	Y16	9200	33	171	20	(9200)				
		33	Y16	7200	33	172	20	(7200)				
		33	Y16	13000	33	173	20	(13000)				
		33	Y16	6000	33	174	20	(6000)				
		33	Y16	4100	33	175	37	4000	(150)			
		344	Y16	4600	344	176	20	(4600)				
		172	Y10	9000	172	177	20	(9000)				
		172	Y10	2650	172	178	20	(2650)				
		172	Y10	5750	172	179	20	(5750)				
		172	Y10	4150	172	180	37	4000	(150)			
		172	Y10	8850	172	181	20	(8850)				
Starters	1	1279	Y20	2100	1279	190	51	600	(1600)			200
Segment 1		512	Y12	1500	512	191	37	1200	(300)			
Buttress	16	7	Y16	2000	112	195	37	1900	(150)			
foundation		4	Y16	1650	64	196	38	150	1400	(150)		
All segments		12	Y12	1500	192	197	37	1200	(300)			

	8	10	12	16	20	25	32	40	TOT
R									
Y		6567	938	8101	13266				28872
TOT		6567	938	8101	13266				28872

Date	2023/06/06
Det. by	Johan Bultman
Ref Dwg	5100
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Segment 1(2)

Revision	1
Schedule No	601

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
Foundation	1	11	Y16	9000	11	200	38	150	8750	(150)		
slab		9	Y16	13000	9	201	37	12900	(150)			
Segment 2		8	Y16	11000	8	202	37	10900	(150)			
B1		18	Y16	7650	18	203	20	(7650)				
		16	Y16	9650	16	204	20	(9650)				
		9	Y16	7350	9	205	37	7250	(150)			
		8	Y16	5350	8	206	37	5250	(150)			
		87	Y16	4600	87	207	52	150	500	3900	(150)	
		174	Y16	4050	174	208	55	150	500	2900	500	(150)
		172	Y10	10800	172	209	20	(10800)				
		172	Y10	3450	172	210	20	(3450)				
		172	Y10	9650	172	211	20	(9650)				
		172	Y10	2550	172	212	37	2450	(100)			
B2	1	9	Y16	13000	9	220	37	12900	(150)			
		8	Y16	11000	8	221	37	10900	(150)			
		9	Y16	5500	9	222	20	(5500)				
		8	Y16	3500	8	223	20	(3500)				
		20	Y16	7350	20	224	52	150	450	6700	(150)	
		71	Y16	4550	71	225	52	150	450	3900	(150)	
		26	Y16	12800	26	226	37	12700	(150)			
		43	Y16	10000	43	227	20	(10000)				
		43	Y16	4500	43	228	20	(4500)				
		354	Y10	9300	354	229	20	(9300)				
		177	Y10	4900	177	230	20	(4900)				
		1764	Y10	900	1764	231	83	250	120	250	(250)	
		589	Y10	1850	589	232	83	250	440	400	(400)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		7020		5554					12574
TOT		7020		5554					12574

Date	2023/06/06
Det. by	Johan Bultman
Ref Dwg	5101
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Segment 2(1)

Revision	1
Schedule No	602

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
Foundation	1	263	Y20	5100	263	250	37	4950	(200)			
slab		83	Y16	8600	83	251	20	(8600)				
Segment 2		83	Y16	10000	83	252	20	(10000)				
T2		83	Y16	4500	83	253	20	(4500)				
		177	Y10	9300	177	254	20	(9300)				
		177	Y10	4900	177	255	20	(4900)				
		177	Y10	8300	177	256	20	(8300)				
T1	1	204	Y20	5100	204	260	37	4950	(200)			
		344	Y16	4600	344	261	20	(4600)				
		33	Y16	13000	33	262	20	(13000)				
		33	Y16	3350	33	263	20	(3350)				
		17	Y16	7650	17	264	20	(7650)				
		16	Y16	9650	16	265	20	(9650)				
		17	Y16	7350	17	266	37	7250	(150)			
		16	Y16	5350	16	267	37	5250	(150)			
		172	Y10	9000	172	268	20	(9000)				
		172	Y10	2650	172	269	20	(2650)				
		172	Y10	8850	172	270	20	(8850)				
		172	Y10	1750	172	271	37	1650	(100)			
		11	Y16	9000	11	272	38	150	8750	(150)		
		36	Y16	3800	36	273	37	150	(3700)			
Starters	1	1223	Y20	2100	1223	280	51	600	(1600)			200
		456	Y12	1500	456	281	37	1200	(300)			
		96	Y16	1650	96	282	37	1400	(300)			

	8	10	12	16	20	25	32	40	TOT
R									
Y		4815	607	7779	12207				25408
TOT		4815	607	7779	12207				25408

Date	2023/06/06
Det. by	Johan Bultman
Ref Dwg	5101
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Segment 2(2)

Revision	1
Schedule No	603

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Foundation	1	75	Y16	4600	75	300	52	150	500	3900	(150)	
slab		34	Y16	12950	34	301	37	12850	(150)			
Segment 3		34	Y16	7750	34	302	37	7650	(150)			
B1		34	Y16	11000	34	303	20	(11000)				
		34	Y16	8000	34	304	20	(8000)				
		34	Y16	4100	34	305	37	4000	(150)			
		212	Y16	4050	212	306	55	150	500	2900	500	(150)
		125	Y10	6800	125	307	20	(6800)				
		125	Y10	7450	125	308	20	(7450)				
		125	Y10	1650	125	309	20	(1650)				
		125	Y10	8000	125	310	20	(8000)				
		125	Y10	4550	125	311	20	(4550)				
		151	Y10	4100	151	312	37	4000	(100)			
		26	Y10	10800	26	313	20	(10800)				
		26	Y10	3450	26	314	20	(3450)				
		26	Y10	9650	26	315	20	(9650)				
		26	Y10	6550	26	316	20	(6550)				
B2	1	107	Y16	4550	107	330	52	150	450	3900	(150)	
		22	Y16	13000	22	331	20	(13000)				
		22	Y16	5000	22	332	20	(5000)				
		18	Y16	4650	18	333	52	150	450	4000	(150)	
		16	Y16	6650	16	334	52	150	450	6000	(150)	
		18	Y16	9550	18	335	20	(9550)				
		16	Y16	7550	16	336	20	(7550)				
		21	Y16	8850	21	337	38	8300	450	(150)		
		166	Y16	4950	166	338	55	150	450	3900	450	(150)
		56	Y16	11900	56	339	37	11800	(150)			
		241	Y10	4900	241	340	20	(4900)				
		218	Y10	9300	218	341	20	(9300)				
		218	Y10	8350	218	342	20	(8350)				
		540	Y10	900	540	343	83	250	120	250	(250)	
		1674	Y10	1000	1674	344	83	250	170	250	(250)	
		925	Y10	1750	925	345	83	250	445	350	(350)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		8492		9048					17540
TOT		8492		9048					17540

Date	2023/06/06
Det. by	Johan Bultman
Ref Dwg	5102
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Segment 3(1)

Revision	1
Schedule No	604

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
Foundation	1	319	Y16	5600	319	350	20	(5600)				
slab		83	Y16	4400	83	351	20	(4400)				
Segment 3		108	Y16	8800	108	352	20	(8800)				
T2		319	Y20	5150	319	353	37	5000	(200)			
		108	Y16	7650	108	354	20	(7650)				
		241	Y10	4100	241	355	20	(4100)				
		218	Y10	8500	218	356	20	(8500)				
		218	Y10	7350	218	357	20	(7350)				
Foundation	1	215	Y20	5100	215	370	37	4950	(200)			
Slab		66	Y16	9000	66	371	20	(9000)				
T1		66	Y16	7350	66	372	20	(7350)				
		66	Y16	8000	66	374	20	(8000)				
		66	Y16	11000	66	375	20	(11000)				
		66	Y16	4100	66	376	37	4000	(150)			
		427	Y16	4600	427	377	20	(4600)				
		26	Y10	9000	26	378	20	(9000)				
		26	Y10	2650	26	379	20	(2650)				
		26	Y10	8850	26	380	20	(8850)				
		26	Y10	5750	26	381	20	(5750)				
		151	Y10	4100	151	382	37	4000	(100)			
		125	Y10	5000	125	383	20	(5000)				
		125	Y10	6650	125	384	20	(6650)				
		125	Y10	6400	125	385	20	(6400)				
		125	Y10	3750	125	386	20	(3750)				
Starters	1	1629	Y20	2100	1629	390	51	600	(1600)			200
		523	Y12	1400	523	391	37	1100	(300)			
		616	Y20	1950	616	392	37	400	(1600)			

	8	10	12	16	20	25	32	40	TOT
R									
Y		5222	650	13410	18154				37436
TOT		5222	650	13410	18154				37436

Date	2023/04/26
Det. by	Johan Bultman
Ref Dwg	5102
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Segment 3(2)

Revision	1
Schedule No	605

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Foundation	1	73	Y16	4600	73	400	52	150	500	3900	(150)	
Slab		2	Y16	10400	2	401	52	150	500	9700	(150)	
Segment 4		17	Y16	13000	17	402	37	12900	(150)			
B1		17	Y16	10100	17	403	37	10000	(150)			
		17	Y16	7700	17	404	20	(7700)				
		17	Y16	10500	17	405	20	(10500)				
		17	Y16	10000	17	406	20	(10000)				
		17	Y16	8000	17	407	20	(8000)				
		17	Y16	5000	17	408	37	4900	(150)			
		17	Y16	7000	17	409	37	6900	(150)			
		150	Y16	4050	150	410	55	150	500	2900	500	(150)
		62	Y16	3600	62	411	52	150	500	2900	(150)	
		26	Y10	10800	26	412	20	(10800)				
		26	Y10	3450	26	413	20	(3450)				
		26	Y10	9650	26	414	20	(9650)				
		26	Y10	2550	26	415	37	2450	(100)			
		125	Y10	6800	125	416	20	(6800)				
		125	Y10	7450	125	417	20	(7450)				
		125	Y10	1650	125	418	20	(1650)				
		125	Y10	8000	125	419	20	(8000)				
		2	Y16	2050	2	420	55	150	500	900	500	(150)
Foundation	1	34	Y16	13000	34	430	38	12450	450	(150)		
Slab		22	Y16	13000	22	431	20	(13000)				
B2		22	Y16	5000	22	432	20	(5000)				
		21	Y16	8850	21	433	38	8300	450	(150)		
		56	Y16	11900	56	434	37	11800	(150)			
		57	Y16	4950	57	435	55	150	450	3900	450	(150)
		55	Y16	5450	55	436	55	150	450	4400	450	(150)
		79	Y16	4550	79	437	52	150	450	3900	(150)	
		185	Y10	4900	185	438	20	(4900)				
		161	Y10	9300	161	439	20	(9300)				
		161	Y10	8350	161	440	20	(8350)				
		264	Y10	900	264	441	83	250	120	250	(250)	
		1209	Y10	1000	1209	442	83	250	170	250	(250)	
		802	Y10	1750	802	443	83	250	445	350	(350)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		6334		7947					14281
TOT		6334		7947					14281

Date	2023/06/06
Det. by	Johan Bultman
Ref Dwg	5103
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Segment 4(1)

Revision	1
Schedule No	606

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
Foundation	1	263	Y16	5600	263	450	20	(5600)				
Slab		263	Y20	5100	263	451	37	4950	(200)			
Segment 4		83	Y16	4400	83	452	20	(4400)				
T2		108	Y16	8800	108	453	20	(8800)				
		108	Y16	7650	108	454	20	(7650)				
		185	Y10	4100	185	455	20	(4100)				
		161	Y10	8500	161	456	20	(8500)				
		161	Y10	7350	161	457	20	(7350)				
Foundation	1	215	Y20	5100	215	470	37	4950	(200)			
Slab		66	Y16	13000	66	471	20	(13000)				
T1		66	Y16	3350	66	472	20	(3350)				
		3	Y16	6600	3	473	20	(6600)				
		3	Y16	2250	3	474	20	(2250)				
		33	Y16	13000	33	475	20	(13000)				
		33	Y16	9000	33	476	20	(9000)				
		33	Y16	2000	33	477	37	1900	(150)			
		33	Y16	6000	33	478	37	5900	(150)			
		302	Y16	4600	302	479	20	(4600)				
		125	Y16	3900	125	480	37	3750	(200)			
		26	Y10	9000	26	481	20	(9000)				
		26	Y10	2650	26	482	20	(2650)				
		26	Y10	8850	26	483	20	(8850)				
		26	Y10	1750	26	484	37	1650	(100)			
		125	Y10	5000	125	485	20	(5000)				
		125	Y10	6650	125	486	20	(6650)				
		125	Y10	6400	125	487	20	(6400)				
Starters	1	1573	Y20	2100	1573	495	51	600	(1600)			200
		466	Y12	1500	466	496	37	1200	(300)			
		504	Y20	2550	504	497	37	1000	(1600)			

	8	10	12	16	20	25	32	40	TOT
R									
Y		3789	621	11975	17328				33712
TOT		3789	621	11975	17328				33712

Date	2023/06/06
Det. by	Johan Bultman
Ref Dwg	5103
Job No	PK278

PROKON Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Segment 4(2)

Revision	1
Schedule No	607

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
450 x 450 Column Starters	63	8 3	Y20 Y10	1650 1450	504 189	500 501	37 60	1300 300	(400) 350			
300 x 300 Column Starters	9	4 3	Y20 Y10	1650 850	36 27	510 511	37 60	1300 160	(400) 200			

	8	10	12	16	20	25	32	40	TOT
R									
Y		183			2197				2380
TOT		183			2197				2380

Date	2023/06/06
Det. by	Johan Bultman
Ref Dwg	5104
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Foundation Column Starters

Revision	1
Schedule No	608

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall A1	1	188	Y16	4500	188	520	20	(4500)				
		121	Y16	5150	121	521	38	3950	200	(1070)		
		314	Y12	4700	314	522	38	3630	350	(750)		
		31	Y16	13000	31	523	37	12550	(500)			
.		31	Y16	11000	31	524	37	10550	(500)			
		31	Y16	7200	31	525	20	(7200)				
		31	Y16	9200	31	526	20	(9200)				
		62	Y16	6000	62	527	20	(6000)				
		62	Y16	13000	62	528	20	(13000)				
		62	Y16	4100	62	529	37	4000	(150)			
		376	Y10	2000	376	530	20	(2000)				
		85	Y10	2300	85	531	60	180	900			
		17	Y10	2000	17	532	38	500	1450	(100)		
		17	Y10	2000	17	533	54	500	1450	(100)		
		51	Y10	7300	51	534	60	180	3400			
		34	Y10	5300	34	535	60	180	2400			
		17	Y8	800	17	536	60	180	150			
		188	Y10	1400	188	537	37	1100	(300)			
		39	Y10	1500	39	538a	83	200	445	250	(250)	
		39	Y10	1400	39	538b	83	200	390	250	(250)	
		39	Y10	1250	39	538c	83	200	330	250	(250)	
		40	Y10	950	40	538d	83	200	170	250	(250)	
		44	Y12	1100	44	539	48	150	800	(150)	565	

	8	10	12	16	20	25	32	40	TOT
R									
Y	5	1252	1353	6556					9167
TOT	5	1252	1353	6556					9167

Date	2023/06/07
Det. by	Johan Bultman
Ref Dwg	5105
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall A1

Revision	1
Schedule No	610

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall A2	1	140	Y16	4500	140	550	20	(4500)				
		55	Y16	5200	55	551	38	3950	200	(1100)		
		22	Y16	5550	22	552	38	3950	200	(1450)		
		37	Y16	5300	37	553	38	3830	200	(1350)		
		142	Y12	4650	142	554	38	3625	340	(750)		
		115	Y12	4300	115	555	38	3250	360	(750)		
		87	Y10	1400	87	556	37	1100	(300)			
		53	Y10	1750	53	557	37	1450	(300)			
		280	Y10	2000	280	558	20	(2000)				
		31	Y16	9100	31	559	37	9000	(150)			
		31	Y16	7100	31	560	37	7000	(150)			
		31	Y16	5900	31	561	20	(5900)				
		31	Y16	7900	31	562	20	(7900)				
		28	Y16	13000	28	563	20	(13000)				
		28	Y16	11000	28	564	20	(11000)				
		28	Y16	7250	28	565	37	6800	(500)			
		28	Y16	9250	28	566	37	8800	(500)			
		3	Y16	4600	3	567	20	(4600)				
		6	Y16	10150	6	568	20	(10150)				
		5	Y16	6200	5	569	37	5750	(500)			
		51	Y10	2300	51	570	60	180	900			
		17	Y10	1800	17	571	60	180	650			
		34	Y10	5300	34	572	60	180	2400			
		17	Y10	7300	17	573	60	180	3400			
		34	Y10	4350	34	574	38	100	4200	(100)		
		32	Y10	1500	32	575a	83	200	445	250	(250)	
		32	Y10	1400	32	575b	83	200	390	250	(250)	
		32	Y10	1250	32	575c	83	200	330	250	(250)	
		30	Y10	950	30	575d	83	200	170	250	(250)	
		30	Y12	1100	30	576	48	150	800	(150)	565	
Detail 1	4	6	Y10	2050	24	580	38	100	1900	(100)		
		8	Y10	900	32	581	20	(900)				
		4	Y10	850	16	582a	38	100	500	(300)		
		2	Y10	700	8	582b	38	100	340	(300)		
		4	Y10	850	16	583a	54	100	500	(300)		
		2	Y10	700	8	583b	54	100	340	(300)		
		3	Y8	2150	12	584	60	100	900			

	8	10	12	16	20	25	32	40	TOT
R									
Y	10	1019	1055	5372					7456
TOT	10	1019	1055	5372					7456

Date	2023/06/07
Det. by	Johan Bultman
Ref Dwg	5105
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall A2 and detail

Revision	1
Schedule No	611

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall B1	1	182	Y16	7050	182	600	20	(7050)				
		25	Y16	6000	25	601	20	(6000)				
.		182	Y12	7050	182	602	20	(7050)				
		25	Y12	6000	25	603	20	(6000)				
		58	Y16	11350	58	604	37	10900	(500)			
		56	Y12	11100	56	605	37	10750	(350)			
		58	Y16	13000	58	606	20	(13000)				
		58	Y16	5000	58	607	20	(5000)				
		40	Y12	13000	40	608	20	(13000)				
		40	Y12	4800	40	609	20	(4800)				
		8	Y12	7000	8	610	20	(7000)				
		8	Y12	5000	8	611	20	(5000)				
		8	Y12	8850	8	612	37	8500	(350)			
		8	Y12	6850	8	613	37	6500	(350)			
		26	Y10	1500	26	614a	83	200	455	250	(250)	
		26	Y10	1400	26	614b	83	200	405	250	(250)	
		26	Y10	1300	26	614c	83	200	355	250	(250)	
		26	Y10	1250	26	614d	83	200	310	250	(250)	
		26	Y10	1150	26	614e	83	200	260	250	(250)	
		26	Y10	1050	26	614f	83	200	210	250	(250)	
		26	Y10	350	26	615	38	100	190	(100)		
		4	Y12	1500	4	616	20	(1500)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		128	2658	4949					7735
TOT		128	2658	4949					7735

Date	2023/06/07
Det. by	Johan Bultman
Ref Dwg	5107
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall B1

Revision	1
Schedule No	612

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall B2	1	197	Y16	6000	197	630	20	(6000)				
		198	Y12	6000	198	631	20	(6000)				
		58	Y16	10000	58	632	20	(10000)				
		58	Y16	4500	58	633	20	(4500)				
		40	Y12	10000	40	634	20	(10000)				
		40	Y12	4300	40	635	20	(4300)				
		54	Y16	12450	54	636	37	12000	(500)			
		44	Y12	12450	44	637	37	11850	(600)			
		25	Y10	1500	25	638a	83	200	455	250	(250)	
		25	Y10	1400	25	638b	83	200	405	250	(250)	
		25	Y10	1300	25	638c	83	200	355	250	(250)	
		25	Y10	1250	25	638d	83	200	310	250	(250)	
		25	Y10	1150	25	638e	83	200	260	250	(250)	
		25	Y10	400	25	639	38	100	250	(100)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		108	2049	4254					6411
TOT		108	2049	4254					6411

Date	2023/06/07
Det. by	Johan Bultman
Ref Dwg	5107
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall B2

Revision	1
Schedule No	613

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall C1	1	308	Y16	7050	308	650	20	(7050)				
		313	Y16	7050	313	651	20	(7050)				
		29	Y16	13000	29	652	37	12550	(500)			
		29	Y16	10000	29	653	37	9550	(500)			
		29	Y16	10300	29	654	20	(10300)				
		29	Y16	7300	29	655	20	(7300)				
		28	Y12	13000	28	656	37	12650	(350)			
		28	Y12	10000	28	657	37	9650	(350)			
		28	Y12	7000	28	658	20	(7000)				
		28	Y12	10000	28	659	20	(10000)				
		58	Y16	11000	58	660	20	(11000)				
		58	Y16	8000	58	661	20	(8000)				
		56	Y12	11000	56	662	20	(11000)				
		56	Y12	7800	56	663	20	(7800)				
		58	Y16	4100	58	664	37	4000	(150)			
		56	Y12	4150	56	665	37	4000	(150)			
		39	Y10	1500	39	666a	83	200	450	250	(250)	
		39	Y10	1400	39	666b	83	200	400	250	(250)	
		39	Y10	1300	39	666c	83	200	350	250	(250)	
		39	Y10	1250	39	666d	83	200	310	250	(250)	
		39	Y10	1150	39	666e	83	200	260	250	(250)	
		39	Y10	1050	39	666f	83	200	210	250	(250)	
		39	Y10	350	39	667	38	100	190	(100)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		192	2135	10883					13211
TOT		192	2135	10883					13211

Date	2023/06/07
Det. by	Johan Bultman
Ref Dwg	5108
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall C1

Revision	1
Schedule No	614

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall C2	1	252	Y16	7050	252	670	20	(7050)				
		257	Y12	7050	257	671	20	(7050)				
		29	Y16	10100	29	672	37	10000	(150)			
		29	Y16	8100	29	673	37	8000	(150)			
		29	Y16	4900	29	674	20	(4900)				
		29	Y16	6900	29	675	20	(6900)				
		28	Y12	9150	28	676	37	9000				
		28	Y12	7150	28	677	37	7000				
		28	Y12	5700	28	678	20	(5700)				
		28	Y12	7700	28	679	20	(7700)				
		29	Y16	13000	29	680	20	(13000)				
		29	Y16	11000	29	681	20	(11000)				
		29	Y16	7350	29	682	37	6900	(500)			
		29	Y16	9350	29	683	37	8900	(500)			
		28	Y12	13000	28	684	20	(13000)				
		28	Y12	11000	28	685	20	(11000)				
		28	Y12	7100	28	686	37	6500	(600)			
		28	Y12	9100	28	687	37	8500	(600)			
		32	Y10	1500	32	689a	83	200	450	250	(250)	
		32	Y10	1400	32	689b	83	200	400	250	(250)	
		32	Y10	1300	32	689c	83	200	350	250	(250)	
		32	Y10	1250	32	689d	83	200	310	250	(250)	
		32	Y10	1150	32	689e	83	200	260	250	(250)	
		32	Y10	1050	32	689f	83	200	210	250	(250)	
		32	Y10	350	32	690	38	100	190	(100)		
		64	Y12	1500	64	691	20	(1500)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		158	3431	6040					9629
TOT		158	3431	6040					9629

Date	2023/06/08
Det. by	Johan Bultman
Ref Dwg	5108
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall C2

Revision	1
Schedule No	615

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall D1	1	86	Y16	6000	86	700	20	(6000)				
		119	Y16	4300	119	701	20	(4300)				
		91	Y12	6000	91	702	20	(6000)				
		90	Y12	5450	90	703	38	4300	370	(850)		
		60	Y16	11350	60	704	37	10900	(500)			
		38	Y12	11150	38	705	37	10800	(350)			
		60	Y16	13000	60	706	20	(13000)				
		60	Y16	5000	60	707	20	(5000)				
		58	Y12	2600	58	708	20	(2600)				
		132	Y12	2300	132	709	20	(2300)				
		12	Y12	13000	12	710	20	(13000)				
		6	Y12	4800	6	711	20	(4800)				
		2	Y10	6000	2	712a	38	5000	300	(750)		
		2	Y10	6000	2	712b	38	5000	285	(750)		
		2	Y10	6000	2	712c	38	5000	275	(750)		
		2	Y10	5950	2	712d	38	5000	260	(750)		
		2	Y10	5950	2	712e	38	5000	250	(750)		
		2	Y10	5950	2	712f	38	5000	235	(750)		
		2	Y10	5950	2	712g	38	5000	225	(750)		
		14	Y10	5600	14	713	37	5500	(100)			
		14	Y10	1350	14	714	37	1250	(100)			
		13	Y10	2300	13	715	60	180	900			
		26	Y10	7650	26	716	37	7550	(100)			
		26	Y10	1500	26	717a	83	200	450	250	(250)	
		26	Y10	1400	26	717b	83	200	400	250	(250)	
		26	Y10	1300	26	717c	83	200	350	250	(250)	
		15	Y10	1250	15	717d	83	200	310	250	(250)	
		15	Y10	1150	15	717e	83	200	260	250	(250)	
		15	Y10	350	15	718	38	100	190	(100)		
		21	Y10	950	21	719	83	200	180	250	(250)	
		1	Y12	6150	1	720a	38	5000	335	(850)		
		1	Y12	6150	1	720b	38	5000	330	(850)		
		1	Y12	6150	1	720c	38	5000	325	(850)		
		1	Y12	6100	1	720d	38	5000	320	(850)		
		1	Y12	6100	1	720e	38	5000	315	(850)		
		1	Y12	6100	1	720f	38	5000	310	(850)		
		90	Y12	1150	90	721	37	850	(300)			
		29	Y12	4200	29	722	20	(4200)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		358	2097	4402					6856
TOT		358	2097	4402					6856

Date	2023/06/08
Det. by	Johan Bultman
Ref Dwg	5109
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall D1

Revision	1
Schedule No	616

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall D2	1	194	Y16	4300	194	730	20	(4300)				
		198	Y12	4800	198	731	38	3630	370	(850)		
		198	Y12	1150	198	732	37	850	(300)			
		392	Y10	2300	392	733	20	(2300)				
		58	Y16	10000	58	734	20	(10000)				
		58	Y16	4500	58	735	20	(4500)				
		20	Y16	12400	20	736a	37	11950	(500)			
		20	Y16	12350	20	736b	37	11900	(500)			
		18	Y16	12300	18	736c	37	11850	(500)			
		38	Y10	10000	38	737	20	(10000)				
		38	Y10	4200	38	738	20	(4200)				
		38	Y10	12200	38	739	37	11700	(500)			
		24	Y10	1450	24	740a	83	200	450	250	(200)	
		24	Y10	1400	24	740b	83	200	400	250	(250)	
		24	Y10	1300	24	740c	83	200	350	250	(250)	
		24	Y10	1250	24	740d	83	200	310	250	(250)	
		24	Y10	1150	24	740e	83	200	260	250	(250)	
		24	Y10	350	24	741	38	100	190	(100)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		1276	1046	3775					6097
TOT		1276	1046	3775					6097

Date	2023/06/08
Det. by	Johan Bultman
Ref Dwg	5109
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall D2

Revision	1
Schedule No	617

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall E1	1	134	Y16	5150	134	750	20	(5150)				
		126	Y16	6000	126	751	20	(6000)				
		360	Y16	6300	360	752	20	(6300)				
		126	Y10	1550	126	753	20	(1550)				
		360	Y10	1250	360	754	20	(1250)				
		6	Y16	2600	6	755	20	(2600)				
		8	Y10	1350	8	756	60	200	400			
		30	Y16	13000	30	757	37	12550	(500)			
		30	Y16	10000	30	758	37	9550	(500)			
		30	Y16	7400	30	759	20	(7400)				
		30	Y16	10400	30	760	20	(10400)				
		60	Y16	6000	60	761	20	(6000)				
		60	Y16	13000	60	762	20	(13000)				
		60	Y16	4100	60	763	37	4000	(150)			
		12	Y12	13000	12	764	37	12650	(350)			
		12	Y12	7000	12	765	37	6650	(350)			
		12	Y12	6650	12	766	20	(6650)				
		12	Y12	12750	12	767	20	(12750)				
		30	Y12	10250	30	768	37	10100	(150)			
		34	Y12	5800	34	769	20	(5800)				
		34	Y12	13000	34	770	20	(13000)				
		34	Y12	4150	34	771	37	4000	(150)			
		22	Y10	5700	22	772	20	(5700)				
		22	Y10	13000	22	773	20	(13000)				
		22	Y10	4100	22	774	37	4000	(100)			
		38	Y10	1550	38	775a	83	200	470	250	(250)	
		38	Y10	1500	38	775b	83	200	445	250	(250)	
		38	Y10	1450	38	775c	83	200	410	250	(250)	
		38	Y10	1400	38	775d	83	200	395	250	(250)	
		68	Y10	1350	68	775e	83	200	365	250	(250)	
		30	Y10	550	30	776	38	100	400	(100)		
		4	Y12	1500	4	777	20	(1500)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		919	1391	10006					12316
TOT		919	1391	10006					12316

Date	2023/06/08
Det. by	Johan Bultman
Ref Dwg	5110
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall E1

Revision	1
Schedule No	620

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall E2	1	504	Y16	6300	504	790	20	(6300)				
		504	Y10	1250	504	791	20	(1250)				
		30	Y16	10100	30	792	37	10000	(150)			
		30	Y16	7100	30	793	37	7000	(150)			
		30	Y16	4900	30	794	20	(4900)				
		30	Y16	7900	30	795	20	(7900)				
		30	Y16	11000	30	796	20	(11000)				
		30	Y16	13000	30	797	20	(13000)				
		30	Y16	9300	30	798	37	8850	(500)			
		30	Y16	7300	30	799	37	6850	(500)			
		17	Y12	7150	17	800	37	7000	(150)			
		17	Y12	10150	17	801	37	10000	(150)			
		17	Y12	7700	17	802	20	(7700)				
		17	Y12	4700	17	803	20	(4700)				
		17	Y12	11000	17	804	20	(11000)				
		17	Y12	13000	17	805	20	(13000)				
		17	Y12	8850	17	806	37	8500	(350)			
		17	Y12	6850	17	807	37	6500	(350)			
		11	Y10	7100	11	808	37	7000	(100)			
		11	Y10	10100	11	809	37	10000	(100)			
		11	Y10	7600	11	810	20	(7600)				
		11	Y10	4600	11	811	20	(4600)				
		11	Y10	9000	11	812	20	(9000)				
		11	Y10	11000	11	813	20	(11000)				
		11	Y10	10600	11	814	37	10300	(300)			
		11	Y10	8600	11	815	37	8300	(300)			
		31	Y10	1550	31	816a	83	200	470	250	(250)	
		31	Y10	1500	31	816b	83	200	445	250	(250)	
		31	Y10	1450	31	816c	83	200	410	250	(250)	
		31	Y10	1400	31	816d	83	200	395	250	(250)	
		62	Y10	1350	62	816e	83	200	365	250	(250)	
		31	Y10	550	31	817	38	100	400	(100)		
Add rebar at openings	6	6	Y12	1650	36	820	20	(1650)				
		8	Y12	1000	48	821	20	(1000)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		1029	1143	8354					10526
TOT		1029	1143	8354					10526

Date	2023/06/08
Det. by	Johan Bultman
Ref Dwg	5110
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall E2

Revision	1
Schedule No	621

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall F1	1	128	Y16	4750	128	850	20	(4750)				
		176	Y16	7050	176	851	20	(7050)				
		16	Y16	5950	16	852	37	5700	(300)			
		120	Y16	11400	120	853	37	10950	(500)			
		36	Y12	11500	36	854	37	10900	(600)			
		38	Y10	2600	38	855	37	2500	(100)			
		16	Y10	11200	16	856	37	10900	(300)			
		22	Y10	8000	22	857	37	7650	(350)			
		22	Y10	2650	22	858	38	300	2100	(300)		
		120	Y10	1300	120	859	83	200	350	250	(250)	
		4	Y16	1500	4	860	20	(1500)				
Wall F3	2	128	Y16	4750	256	870	20	(4750)				
Wall F5		148	Y16	7050	296	871	20	(7050)				
		44	Y16	5950	88	872	37	5700	(300)			
		120	Y16	11400	240	873	37	10950	(500)			
		36	Y12	11500	72	874	37	10900	(600)			
		38	Y10	2600	76	875	37	2500	(100)			
		16	Y10	11200	32	876	37	10900	(300)			
		22	Y10	8000	44	877	37	7650	(350)			
		115	Y10	1300	230	878	83	200	350	250	(250)	
		4	Y16	1500	8	879	20	(1500)				
Wall F2	3	144	Y16	7050	432	890	20	(7050)				
Wall F4		128	Y16	4750	384	891	20	(4750)				
Wall F6		50	Y16	5950	150	892	37	5700	(300)			
		120	Y16	11400	360	893	37	10950	(500)			
		36	Y12	11250	108	894	37	10900	(350)			
		38	Y10	9450	114	895	54	300	9075	(100)		
		12	Y10	4000	36	896	38	300	3450	(300)		
		4	Y16	1500	12	897	20	(1500)				
		120	Y10	1300	360	898	83	200	350	250	(250)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		2198	2181	31214					35593
TOT		2198	2181	31214					35593

Date	2023/06/08
Det. by	Johan Bultman
Ref Dwg	5112
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall F1 to F6

Revision	1
Schedule No	622

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall G1	2	274	Y16	6000	548	920	20	(6000)				
Wall G3	1	192	Y16	5050	192	921a	20	(5050)				
		192	Y16	4850	192	921b	20	(4850)				
	2	60	Y16	7000	120	922	37	6550	(500)			
		60	Y16	10000	120	923	20	(10000)				
		60	Y16	4500	120	924	20	(4500)				
		60	Y16	12250	120	925	37	11800	(500)			
	1	42	Y12	6850	42	926	37	6500	(350)			
		42	Y12	10000	42	927	20	(10000)				
		42	Y12	4300	42	928	20	(4300)				
		42	Y12	12050	42	929	37	11700	(350)			
		34	Y10	6800	34	930	37	6500	(300)			
		34	Y10	12100	34	931	37	12000	(100)			
	2	184	Y10	1300	368	932	83	200	350	250	(250)	
	2	4	Y16	1500	8	933	20	(1500)				
Wall G2	1	192	Y16	4950	192	940	20	(4950)				
		274	Y16	6000	274	941	20	(6000)				
		60	Y16	7000	60	942	37	6550	(500)			
		60	Y16	10000	60	943	20	(10000)				
		60	Y16	4500	60	944	20	(4500)				
		60	Y16	12250	60	945	37	11800	(500)			
		22	Y12	6850	22	946	37	6500	(350)			
		22	Y12	10000	22	947	20	(10000)				
		22	Y12	4300	22	948	20	(4300)				
		22	Y12	12000	22	949	37	11675	(350)			
		18	Y10	6750	18	950	37	6675	(100)			
		18	Y10	11950	18	951	37	11675	(300)			
		184	Y10	1300	184	952	83	200	350	250	(250)	
		4	Y16	1500	4	953	20	(1500)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		1046	1885	21901					24833
TOT		1046	1885	21901					24833

Date	2023/06/08
Det. by	Johan Bultman
Ref Dwg	5113
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Walls G1 to G3

Revision	1
Schedule No	623

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall G4	1	28	Y16	7050	28	970	20	(7050)				
		192	Y16	4750	192	971	20	(4750)				
		246	Y16	6000	246	972	20	(6000)				
		60	Y16	6900	60	973	37	500	(6450)			
		60	Y16	4500	60	974	20	(4500)				
		60	Y16	10000	60	975	20	(10000)				
		60	Y16	12250	60	976	37	11800	(500)			
		18	Y12	6850	18	977	37	6500	(350)			
		18	Y12	10000	18	978	20	(10000)				
		18	Y12	4300	18	979	20	(4300)				
.		18	Y12	12000	18	980	37	11650	(350)			
		19	Y10	2700	19	981	38	300	2150	(300)		
		19	Y10	2700	19	982	54	300	2150	(300)		
		20	Y10	4950	20	983	37	4850	(100)			
		20	Y10	12000	20	984	37	11650	(350)			
		4	Y16	1500	4	985	20	(1500)				
		184	Y10	1300	184	986	83	200	350	250	(250)	

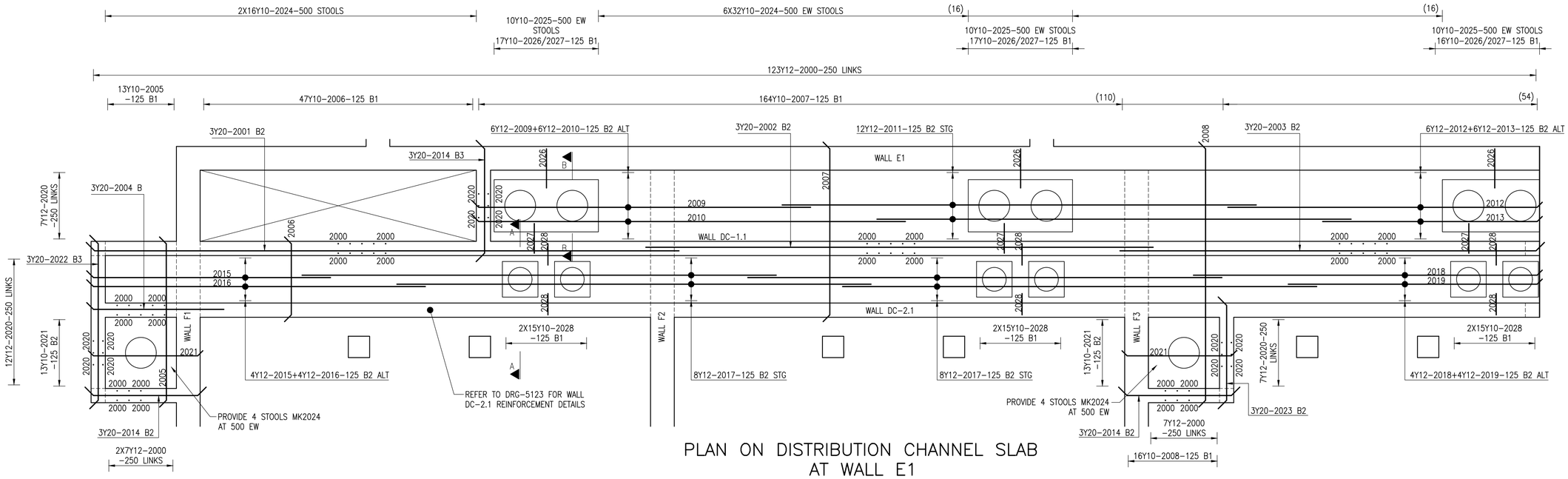
	8	10	12	16	20	25	32	40	TOT
R									
Y		420	530	7277					8226
TOT		420	530	7277					8226

Date	2023/06/08
Det. by	Johan Bultman
Ref Dwg	5113
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

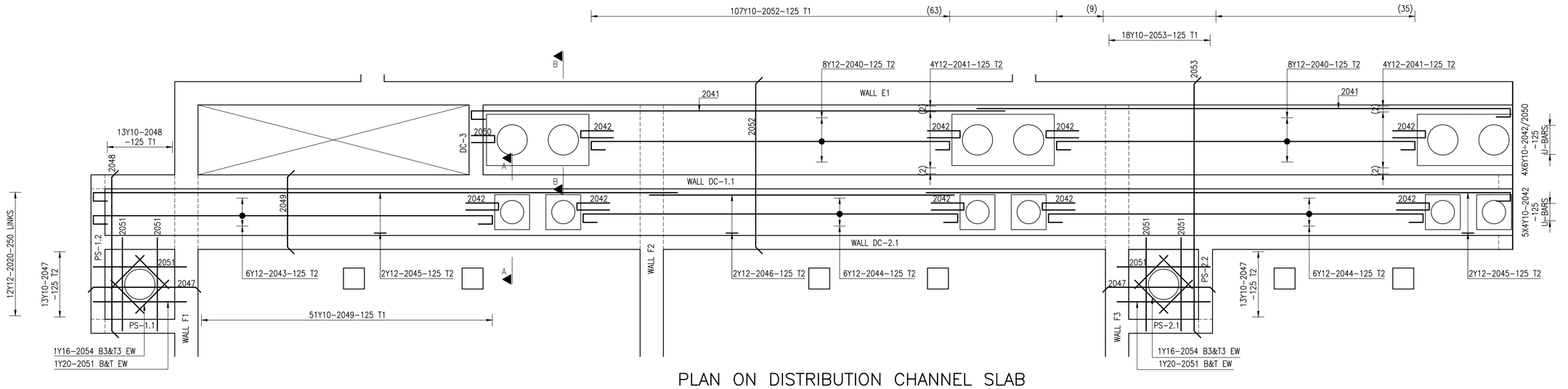
Polokwane Regional WWTW
Biological Reactor
Wall G4

Revision	1
Schedule No	624



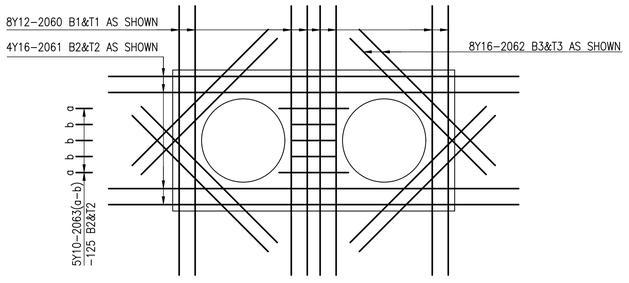
PLAN ON DISTRIBUTION CHANNEL SLAB AT WALL E1 BOTTOM REINFORCEMENT

SCALE 1:50



PLAN ON DISTRIBUTION CHANNEL SLAB AT WALL E1 TOP REINFORCEMENT

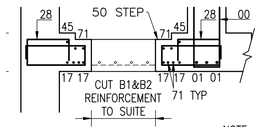
SCALE 1:50



REINFORCEMENT AT LARGE OPENINGS

SCALE 1:25

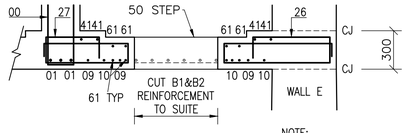
5 PLACES (2 ON DRG-5121)



SECTION A-A

SCALE 1:25

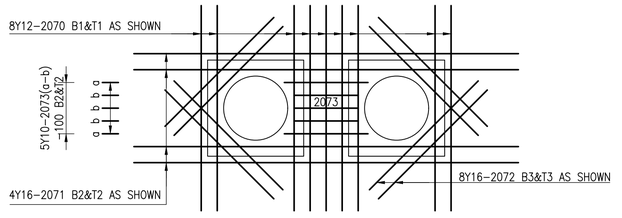
NOTE: BAR MARKS SHOWN HAVE A BASE NO. OF 2000



SECTION B-B

SCALE 1:25

NOTE: BAR MARKS SHOWN HAVE A BASE NO. OF 2000



REINFORCEMENT AT SMALL OPENINGS

SCALE 1:25

5 PLACES (2 ON DRG-5121)

NOTES:

1. STRUCTURAL CONCRETE FOR WALLS AND SLABS TO BE CLASS WR 35/19
2. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
3. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
4. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
5. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
6. FOR WALL DC-2.1 REINFORCEMENT REFER TO DRG-5123

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

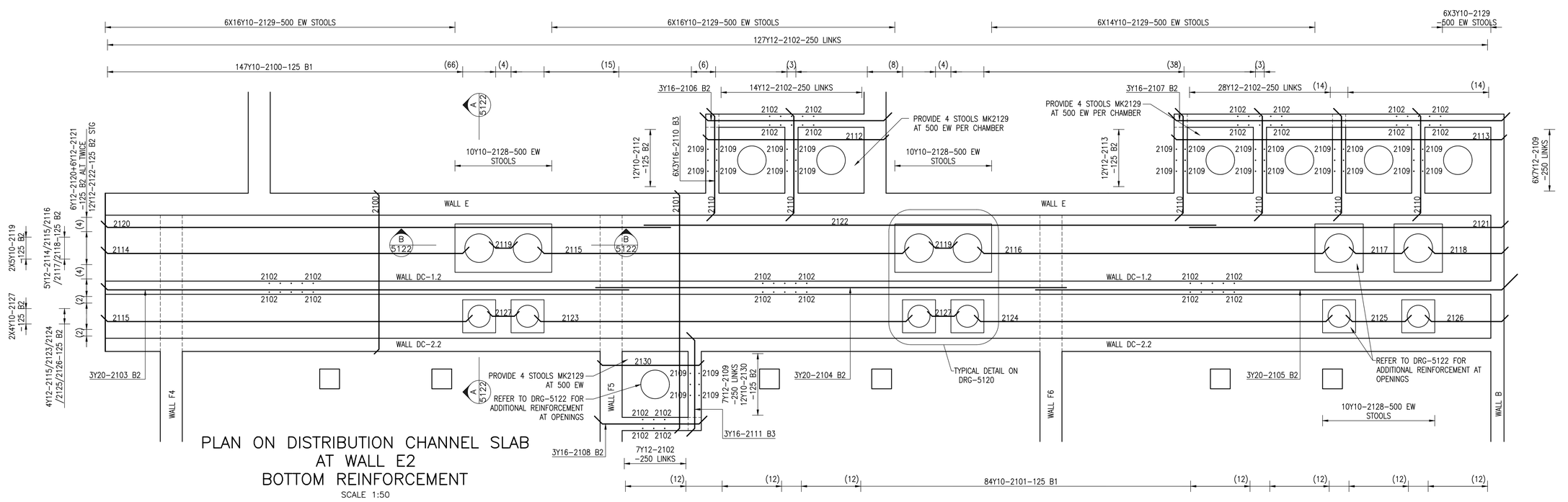
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS DISTRIBUTION CHANNEL SLAB AT WALL E1

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

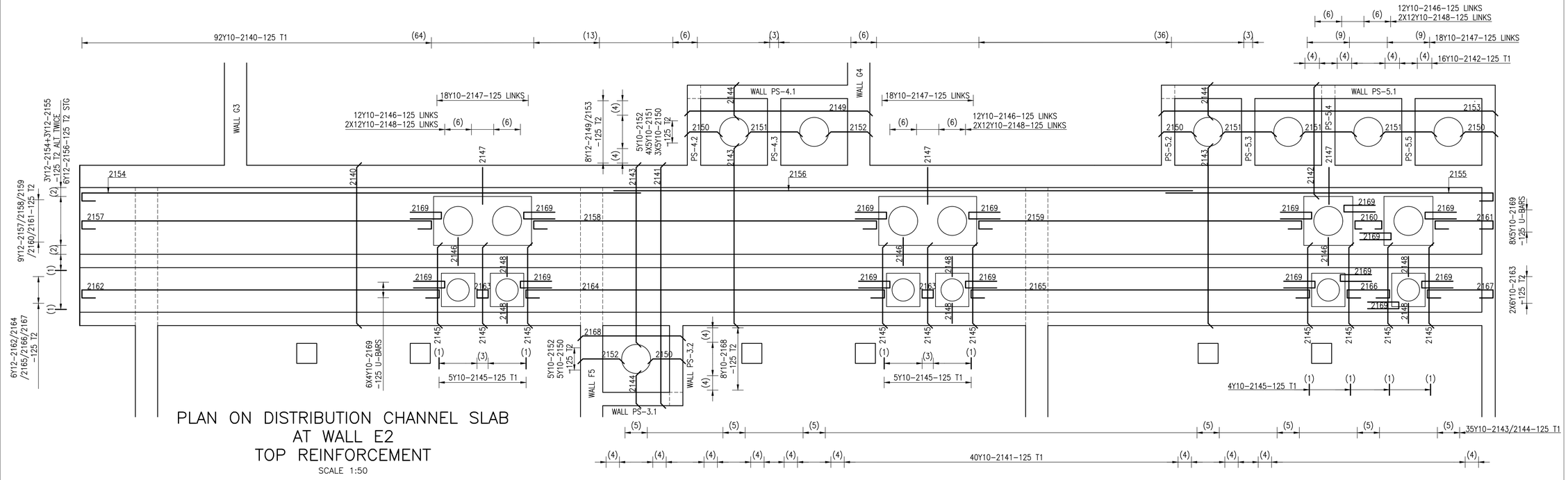
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5120	0



PLAN ON DISTRIBUTION CHANNEL SLAB AT WALL E2 BOTTOM REINFORCEMENT

SCALE 1:50



PLAN ON DISTRIBUTION CHANNEL SLAB AT WALL E2 TOP REINFORCEMENT

SCALE 1:50

NOTES:

1. STRUCTURAL CONCRETE FOR WALLS AND SLABS TO BE CLASS WR 35/19
2. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
3. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
4. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
5. CONSTRUCTION JOINTS TO BE GREEN CUT OR SCABBLED TO EXPOSE AGGREGATE AND THOROUGHLY WETTED BEFORE CASTING OF THE ADJACENT SECTION
6. FOR TYPICAL REINFORCEMENT DETAILS AT SLAB OPENINGS INSIDE CHANNELS REFER TO DRG-5120 AND DRG-5122
7. FOR TYPICAL REINFORCEMENT DETAILS AT SLAB OPENINGS INSIDE PUMP STATIONS REFER TO DRG-5122

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA ENGINEER | PR ENG no. | DATE

CLIENT | DATE

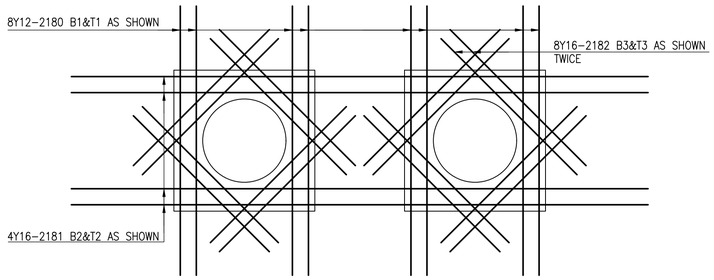
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BIOLOGICAL REACTOR REINFORCEMENT DETAILS DISTRIBUTION CHANNEL SLAB AT WALL E2

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

DRAWING NUMBER

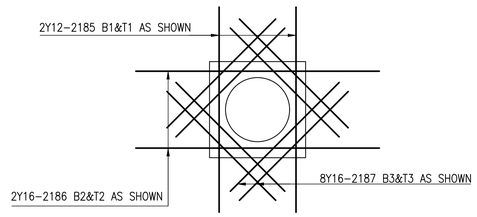
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5121	0



REINFORCEMENT AT LARGE OPENINGS

SCALE 1:25

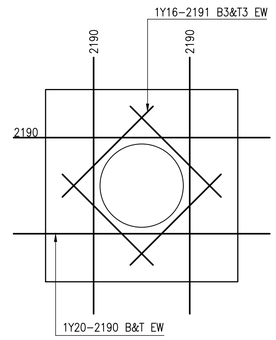
1 PLACE



REINFORCEMENT AT SMALL OPENING

SCALE 1:25

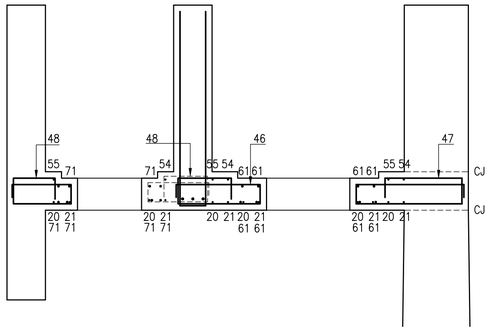
2 PLACE



REINFORCEMENT AT PUMP STATION OPENINGS

SCALE 1:25

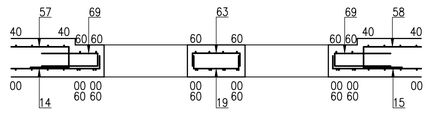
7 PLACES



SECTION A–A

SCALE 1:25

NOTE:
BAR MARKS SHOWN HAVE
A BASE NO. OF 2100



SECTION B–B

SCALE 1:25

NOTE:
BAR MARKS SHOWN HAVE
A BASE NO. OF 2100

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
Consulting Engineers

21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

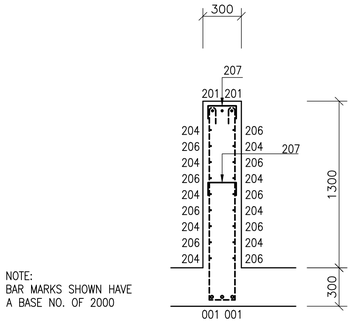
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS DISTRIBUTION CHANNEL SLAB AT WALL E2 SECTIONS

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

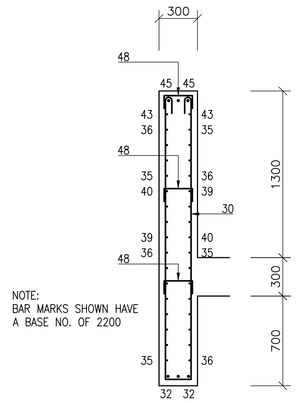
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5122	0



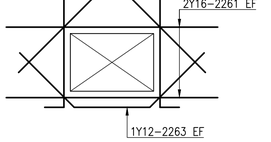
NOTE:
BAR MARKS SHOWN HAVE
A BASE NO. OF 2000

SECTION A–A
SCALE 1:25

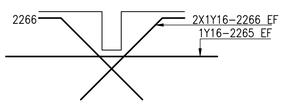


NOTE:
BAR MARKS SHOWN HAVE
A BASE NO. OF 2200

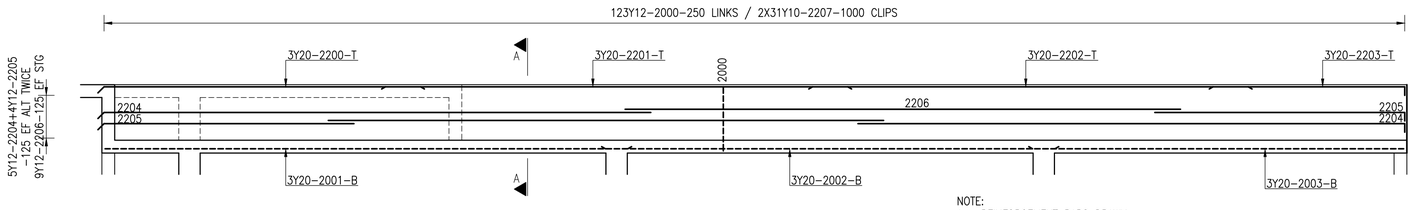
SECTION B–B
SCALE 1:25



650X450 OPENING ADD REINFORCEMENT
SCALE 1:25
3 OFF

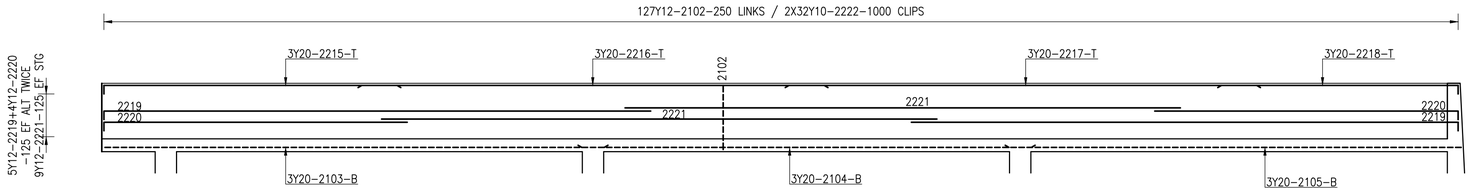


150X300 NOTCH ADD REINFORCEMENT
SCALE 1:25
3 OFF



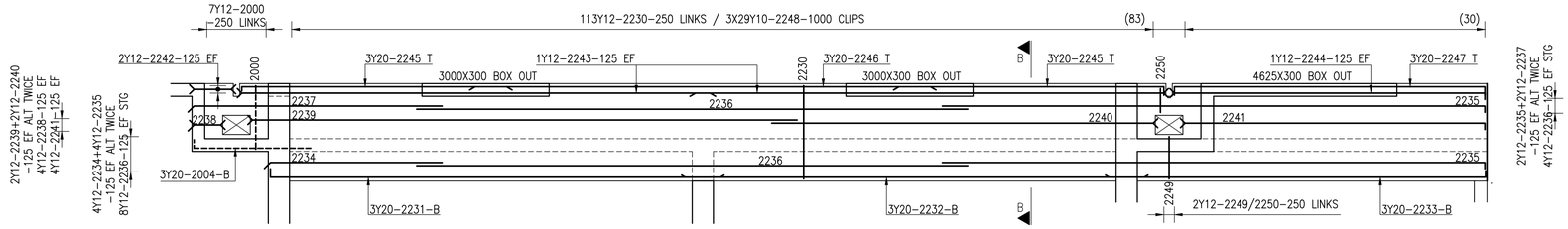
WALL DC–1.1 REINFORCEMENT
SCALE 1:75

NOTE:
1. REINFORCEMENT BARS DRAWN IN DASHED LINES ARE DETAILED ON DRG–5120

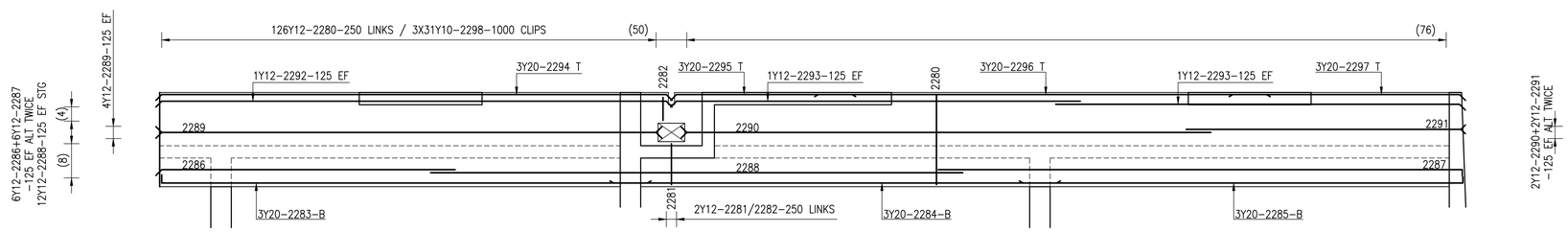


WALL DC–1.2 REINFORCEMENT
SCALE 1:75

NOTE:
1. REINFORCEMENT BARS DRAWN IN DASHED LINES ARE DETAILED ON DRG–5121



WALL DC–2.1 REINFORCEMENT
SCALE 1:75



WALL DC–2.2 REINFORCEMENT
SCALE 1:75

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT
CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

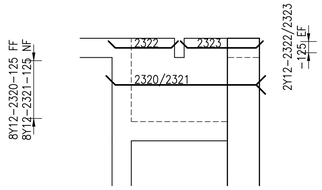
PROJECT
POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION
BIOLOGICAL REACTOR REINFORCEMENT DETAILS DISTRIBUTION CHANNEL WALLS DC-1 & DC-2

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

DRAWING NUMBER

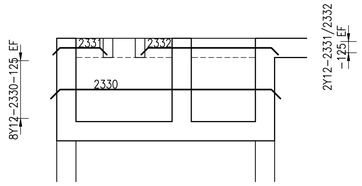
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5123	0



NOTE:
1. VERTICAL REINFORCEMENT, MKs 2000 & 2102, DETAILED ON DRG-5120 & DRG-5121
2. ADDITIONAL REINFORCEMENT AT NOTCH REFER TO DETAIL 1
3. PROVIDE 2 CLIPS MK 2324 500 C/C

WALL PS-1.1 REINFORCEMENT

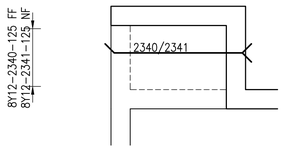
SCALE 1:50
WALLS PS-2.1 & PS-3.1 SIMILAR



NOTE:
1. VERTICAL REINFORCEMENT, MK 2020, DETAILED ON DRG-5120
2. ADDITIONAL REINFORCEMENT AT NOTCH REFER TO DETAIL 2
3. PROVIDE 6 CLIPS MK 2333 500 C/C

WALL PS-1.2 REINFORCEMENT

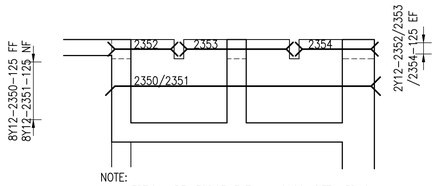
SCALE 1:50



NOTE:
1. VERTICAL REINFORCEMENT, MKs 2020 & 2109, DETAILED ON DRG-5120 & DRG-5121
2. PROVIDE 2 CLIPS MK 2342 AT 500 C/C

WALL PS-2.2 REINFORCEMENT

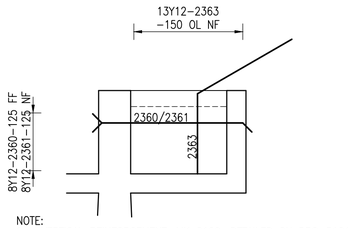
SCALE 1:50
WALL PS-3.2 SIMILAR



NOTE:
1. VERTICAL REINFORCEMENT, MK 2102, DETAILED ON DRG-5121
2. ADDITIONAL REINFORCEMENT AT NOTCHES REFER TO DETAIL 1
3. PROVIDE 8 CLIPS MK 2355 500 EW

WALL PS-4.1 REINFORCEMENT

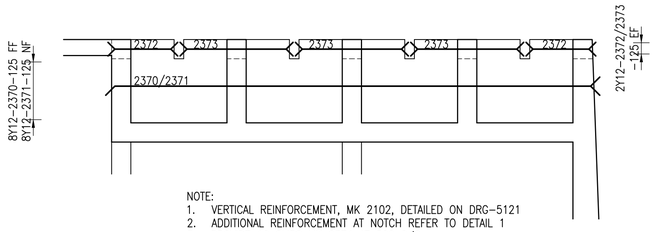
SCALE 1:50



NOTE:
1. VERTICAL REINFORCEMENT, MK 2109, DETAILED ON DRG-5121
2. PROVIDE 2 CLIPS MK 2362 AT 500 C/C

WALL PS-4.2 REINFORCEMENT

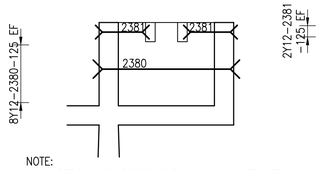
SCALE 1:50
PS-5.2 SIMILAR



NOTE:
1. VERTICAL REINFORCEMENT, MK 2102, DETAILED ON DRG-5121
2. ADDITIONAL REINFORCEMENT AT NOTCH REFER TO DETAIL 1
3. PROVIDE 16 CLIPS MK 2374 AT 500 C/C

WALL PS-5.1 REINFORCEMENT

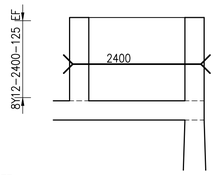
SCALE 1:50



NOTE:
1. VERTICAL REINFORCEMENT, MK 2109, DETAILED ON DRG-5121
2. ADDITIONAL REINFORCEMENT AT NOTCH REFER TO DETAIL 2
3. PROVIDE 2 CLIPS MK 2382 500 C/C

WALL PS-4.3 REINFORCEMENT

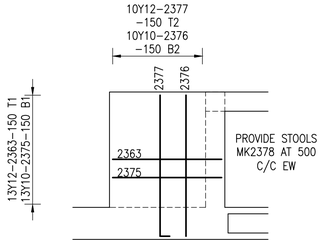
SCALE 1:50
PS-5.3, PS-5.4 & PS-5.5 SIMILAR



NOTE:
1. VERTICAL REINFORCEMENT, MK 2020, DETAILED ON DRG-5120
2. PROVIDE 2 CLIPS MK 2401 AT 500 C/C

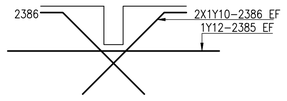
WALL DC-3 REINFORCEMENT

SCALE 1:50



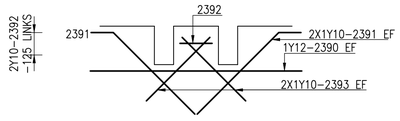
PLATFORM REINFORCEMENT PLAN

SCALE 1:50
2 OFF



DETAIL 1 ADD REINFORCEMENT

SCALE 1:25
9 OFF



DETAIL 2 ADD REINFORCEMENT

SCALE 1:25
5 OFF

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

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

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS PUMP STATION WALLS & WALL DC-3

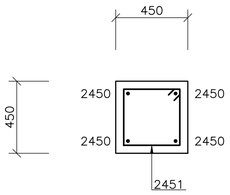
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

DRAWING NUMBER

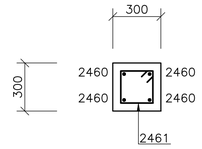
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5124	0

NOTES:

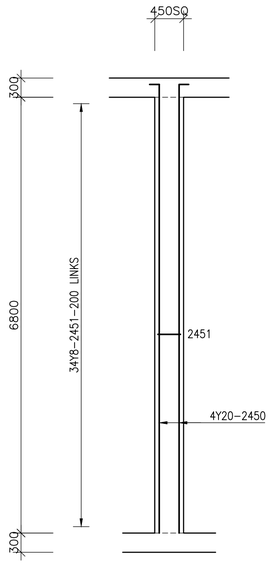
1. STRUCTURAL CONCRETE FOR COLUMNS TO BE CLASS WR 35/19
2. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
3. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
4. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES



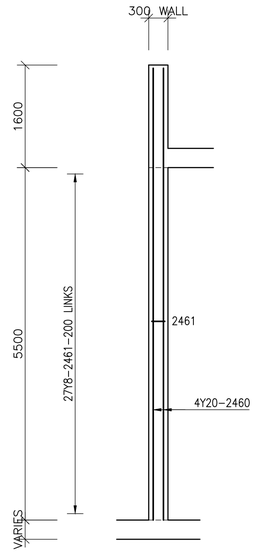
450SQ COL SECTION
SCALE 1:20



300 SQ COL SECTION
SCALE 1:20



450SQ COLUMN REINFORCEMENT
SCALE 1:50
63 OFF



300SQ COLUMN REINFORCEMENT
SCALE 1:50
9 OFF

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

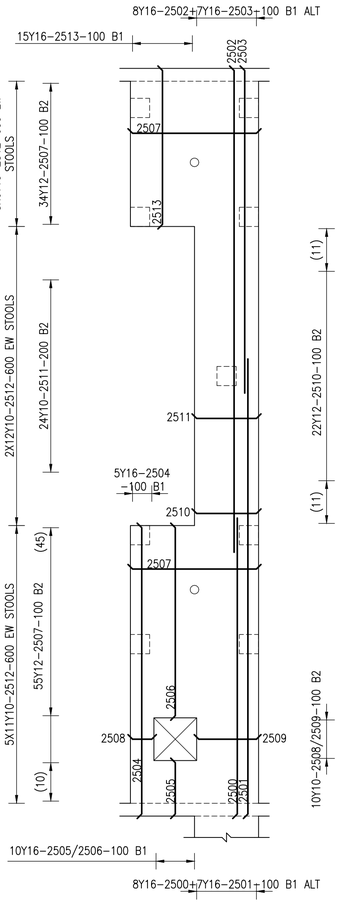
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS COLUMNS

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

DRAWING NUMBER

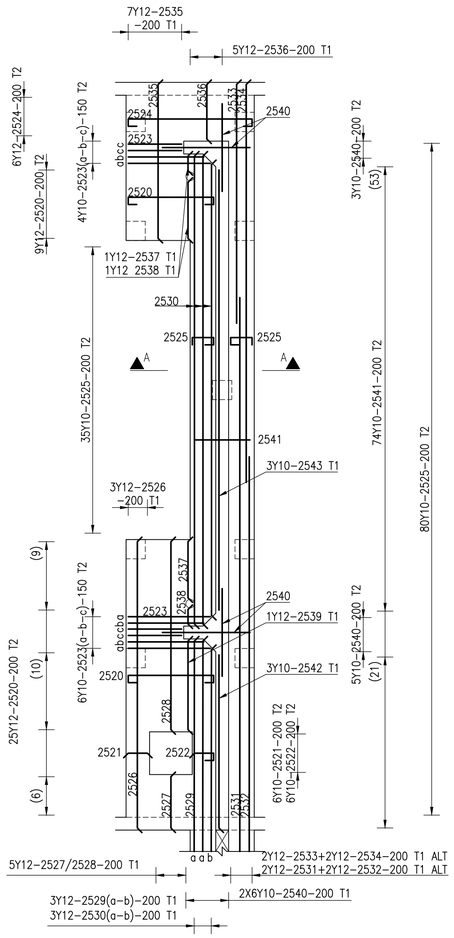
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5125	0



ZONE 1 MIXER PLATFORM BOTTOM REINFORCEMENT

SCALE 1:75

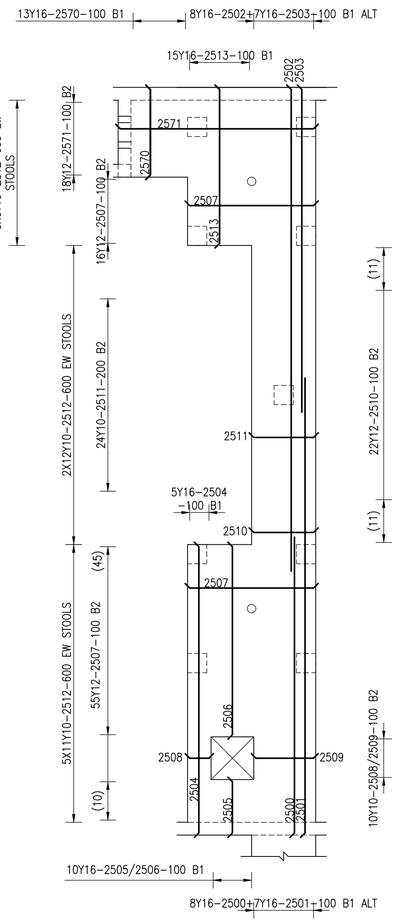
PLATFORM AT ZONE 3 SIMILAR



ZONE 1 MIXER PLATFORM TOP REINFORCEMENT

SCALE 1:75

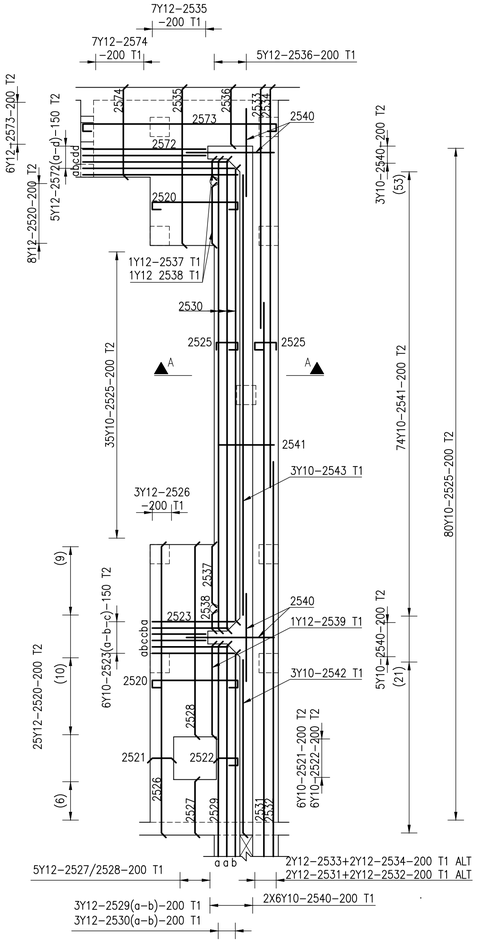
PLATFORM AT ZONE 3 SIMILAR



ZONE 2 MIXER PLATFORM BOTTOM REINFORCEMENT

SCALE 1:75

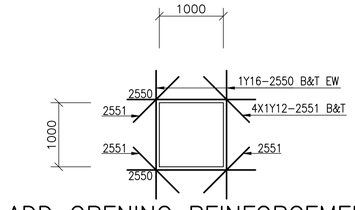
PLATFORM AT ZONE 4 SIMILAR



ZONE 2 MIXER PLATFORM TOP REINFORCEMENT

SCALE 1:75

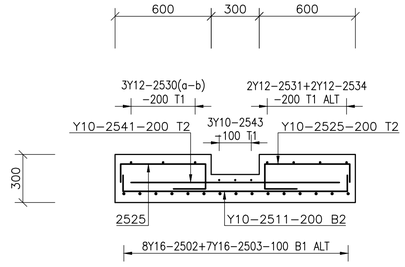
PLATFORM AT ZONE 4 SIMILAR



ADD OPENING REINFORCEMENT

SCALE 1:50

TOTAL 4 OFF



SECTION A–A

SCALE 1:20

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAWINGS DRG–5127 & DRG–5128
2. STRUCTURAL CONCRETE FOR SLAB TO BE CLASS WR 35/19
3. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
4. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
5. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
6. FOR MIXER PLATFORM STAIR REINFORCEMENT REFER TO DRG–5128
7. MIXER PLATFORM DESIGNED FOR A VARIABLE UNIFORMLY DISTRIBUTED LOAD OF 5,0 kPa AND A VARIABLE POINT LOAD OF 10 kN APPLIED AT MID–SPAN

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

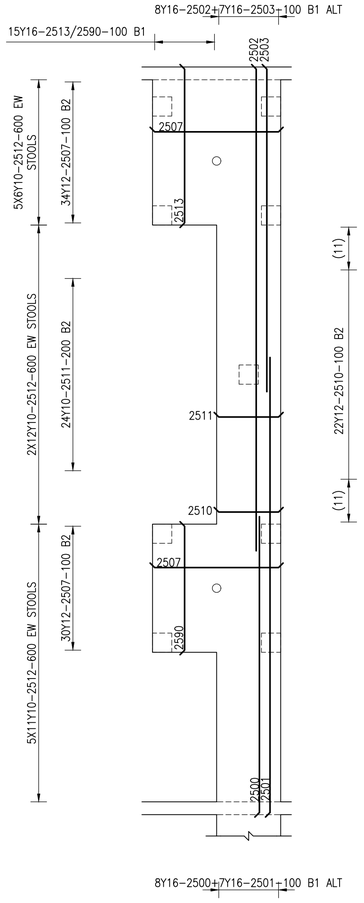
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS MIXER PLATFORMS ZONES 1 TO 4

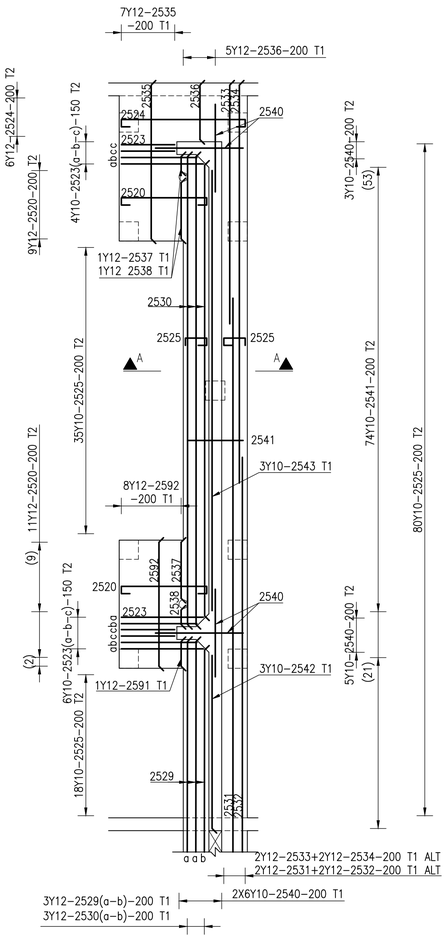
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

DRAWING NUMBER

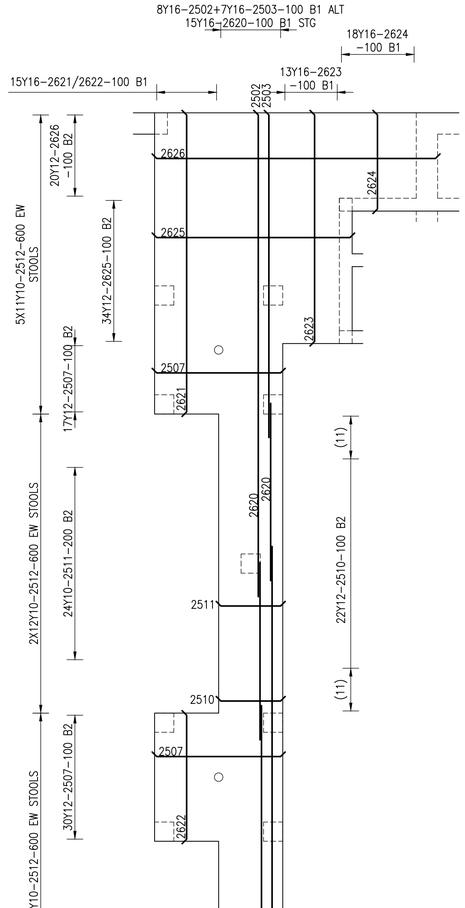
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5126	0



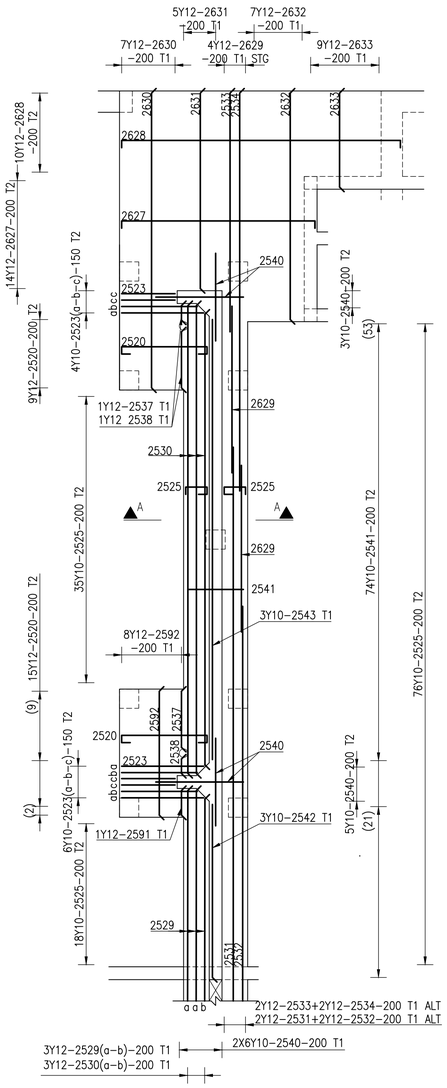
ZONE 5 MIXER PLATFORM
BOTTOM REINFORCEMENT
SCALE 1:75
PLATFORM AT ZONE 6 SIMILAR



ZONE 5 MIXER PLATFORM
TOP REINFORCEMENT
SCALE 1:75
PLATFORM AT ZONE 6 SIMILAR



ZONE 7 MIXER PLATFORM
BOTTOM REINFORCEMENT
SCALE 1:75



ZONE 7 MIXER PLATFORM
TOP REINFORCEMENT
SCALE 1:75

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAWINGS DRG-5126 & DRG-5128
2. STRUCTURAL CONCRETE FOR SLAB TO BE CLASS WR 35/19
3. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
4. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
5. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
6. FOR MIXER PLATFORM STAIR REINFORCEMENT REFER TO DRG-5128
7. MIXER PLATFORM DESIGNED FOR A VARIABLE UNIFORMLY DISTRIBUTED LOAD OF 5,0 kPa AND A VARIABLE POINT LOAD OF 10 kN APPLIED AT MID-SPAN

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

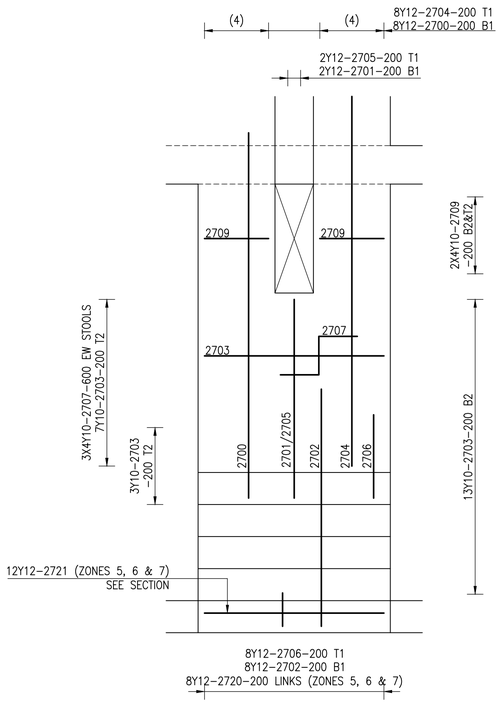
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS MIXER PLATFORMS ZONES 5 TO 7

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

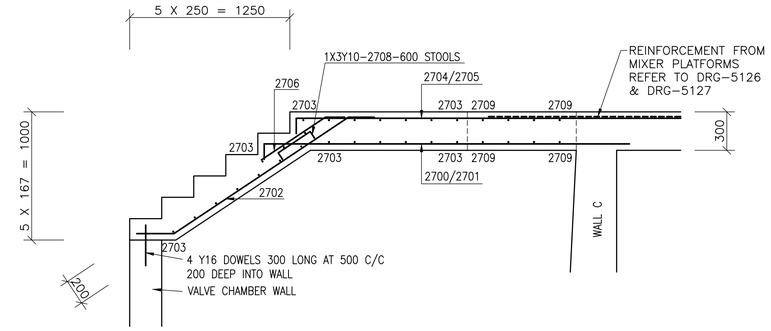
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5127	0



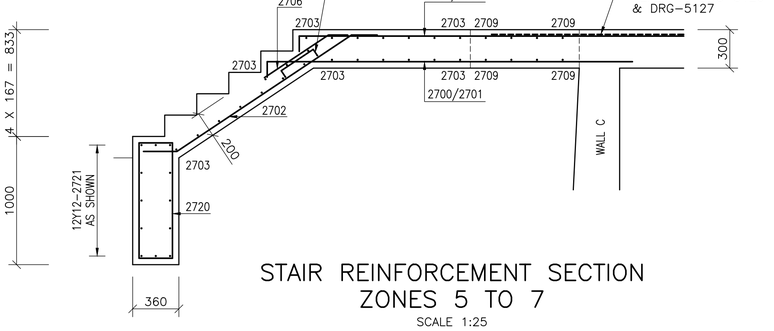
STAIR REINFORCEMENT ZONES 1 TO 7

SCALE 1:25
7 OFF



STAIR REINFORCEMENT SECTION ZONES 1 TO 4

SCALE 1:25



STAIR REINFORCEMENT SECTION ZONES 5 TO 7

SCALE 1:25

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRAWINGS DRG–5126 & DRG–5127
2. STRUCTURAL CONCRETE FOR SLAB TO BE CLASS WR 35/19
3. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
4. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
5. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES

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
Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

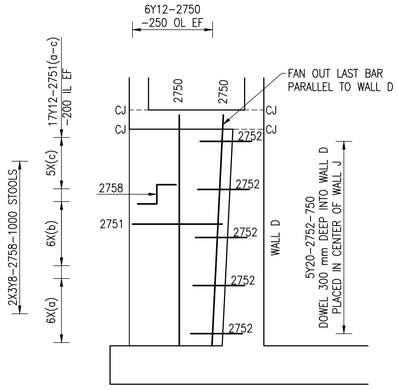
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS MIXER PLATFORMS STAIRS

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

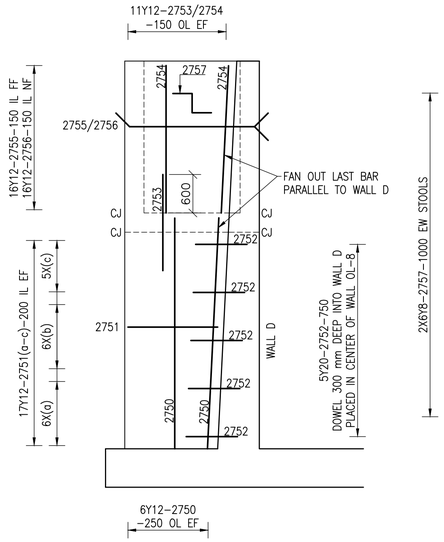
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5128	0



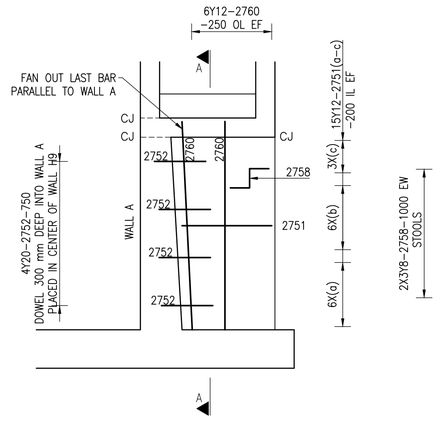
WALLS J1 TO J6 REINFORCEMENT
WALLS H1 TO H8 SIMILAR

SCALE 1:50
TOTAL 14 OFF



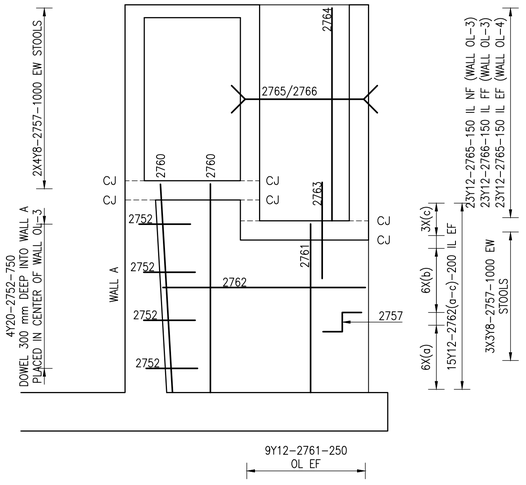
WALL OL–8

SCALE 1:50



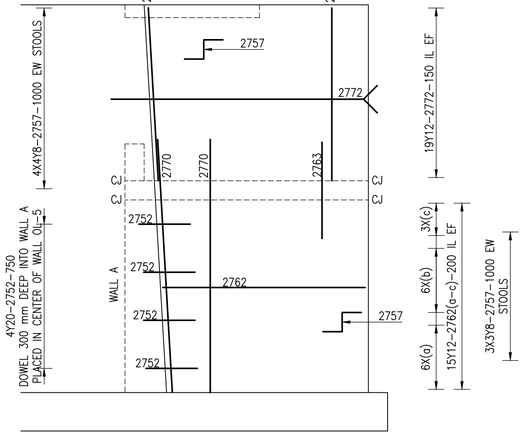
WALL H9 REINFORCEMENT

SCALE 1:50



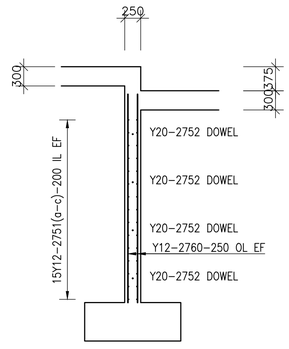
WALL OL–3 REINFORCEMENT
WALL OL–4 SIMILAR

SCALE 1:50
TOTAL 2 OFF



WALL OL–5 REINFORCEMENT

SCALE 1:50



SECTION A–A

SCALE 1:50

NOTES:

1. STRUCTURAL CONCRETE FOR SLAB TO BE CLASS WR 35/19
2. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
3. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
4. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES
5. WALL THICKNESS TO BE AS FOLLOW:
   - 5.1. J1–J6 250 mm
   - 5.2. H1–H9 250 mm
   - 5.3. OL–3, –4, –5 & –8 300 mm

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
Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

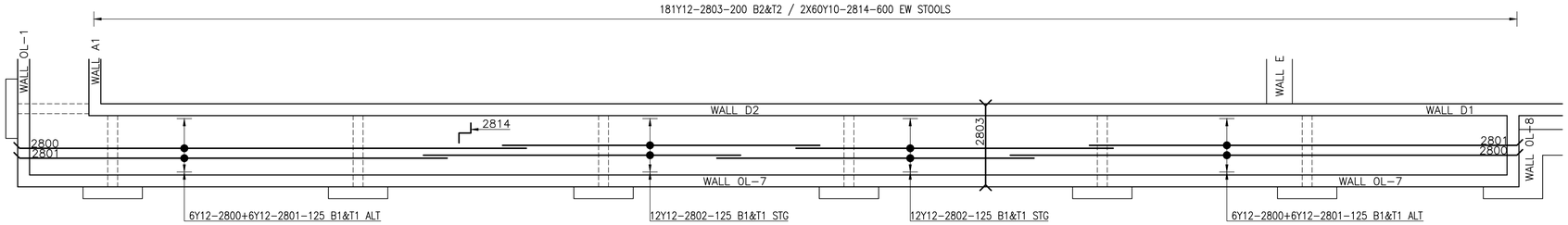
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS OUTLET CHANNEL SUPPORT WALLS

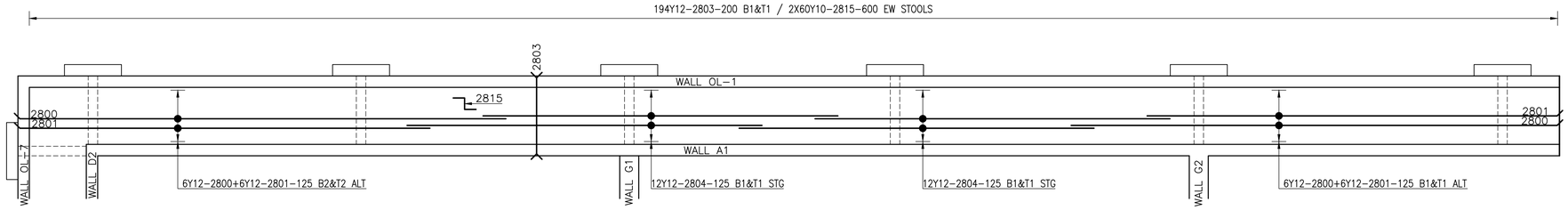
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

DRAWING NUMBER

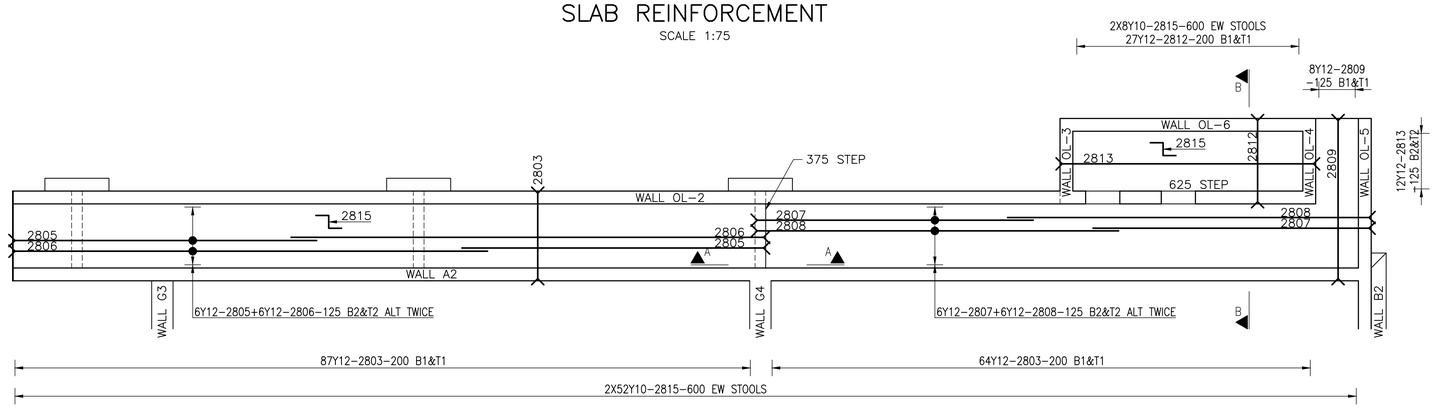
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5129	0



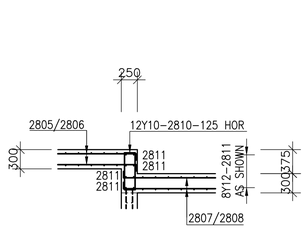
OUTLET CHANNEL AT WALL D
SLAB REINFORCEMENT
SCALE 1:75



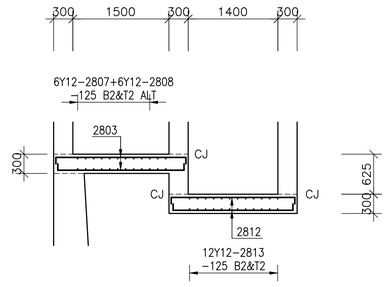
OUTLET CHANNEL AT WALL A1
SLAB REINFORCEMENT
SCALE 1:75



OUTLET CHANNEL AT WALL A2
SLAB REINFORCEMENT
SCALE 1:75



SECTION A–A
SCALE 1:50



SECTION B–B
SCALE 1:50

NOTES:

1. WALL REINFORCEMENT REFER TO DRG-5131 & -5132
2. STRUCTURAL CONCRETE FOR SLABS TO BE CLASS WR 35/19
3. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
4. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
5. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

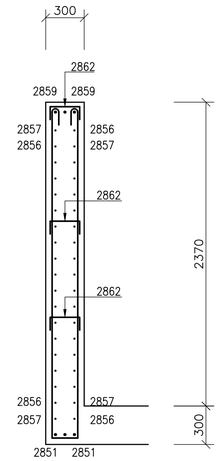
DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS OUTLET CHANNEL FLOOR SLAB

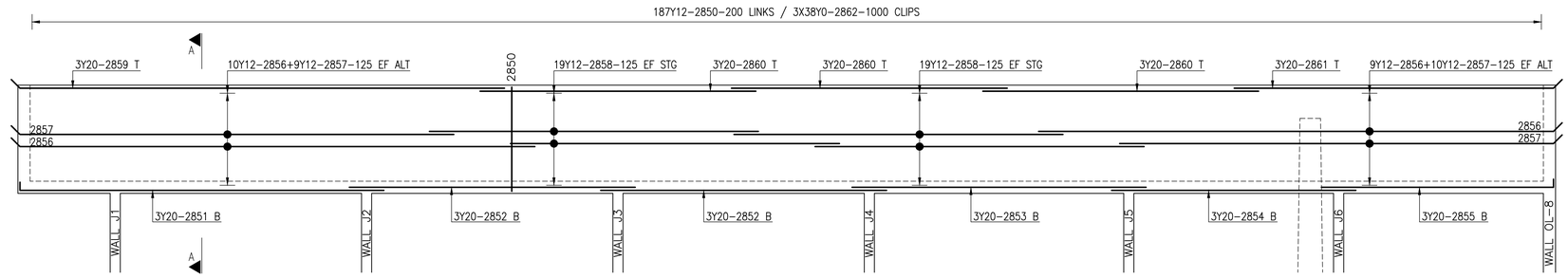
DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

DRAWING NUMBER

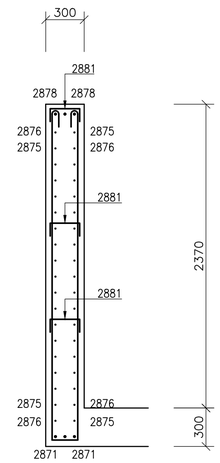
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5130	0



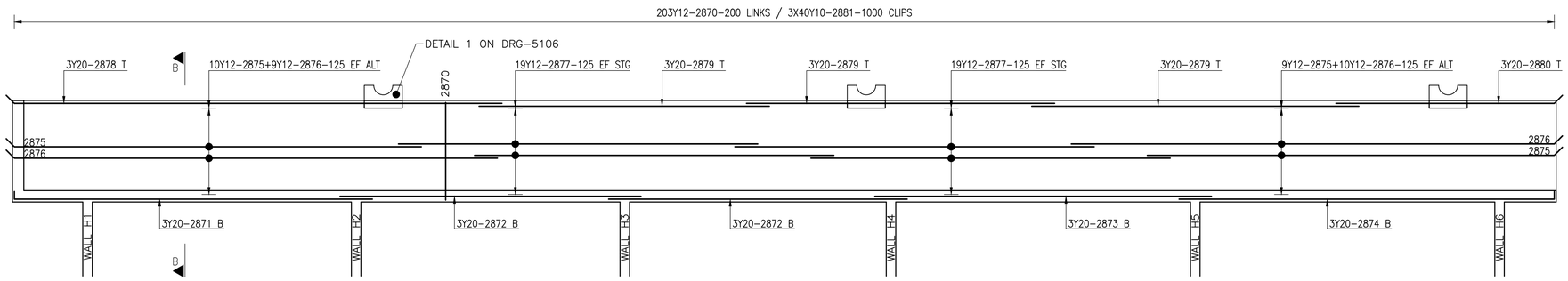
SECTION A–A
SCALE 1:25



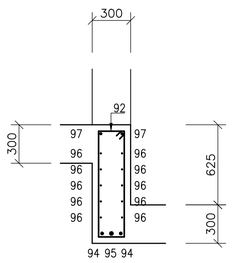
WALL OL–7 REINFORCEMENT
EXTERNAL ELEVATION
SCALE 1:75



SECTION B–B
SCALE 1:25

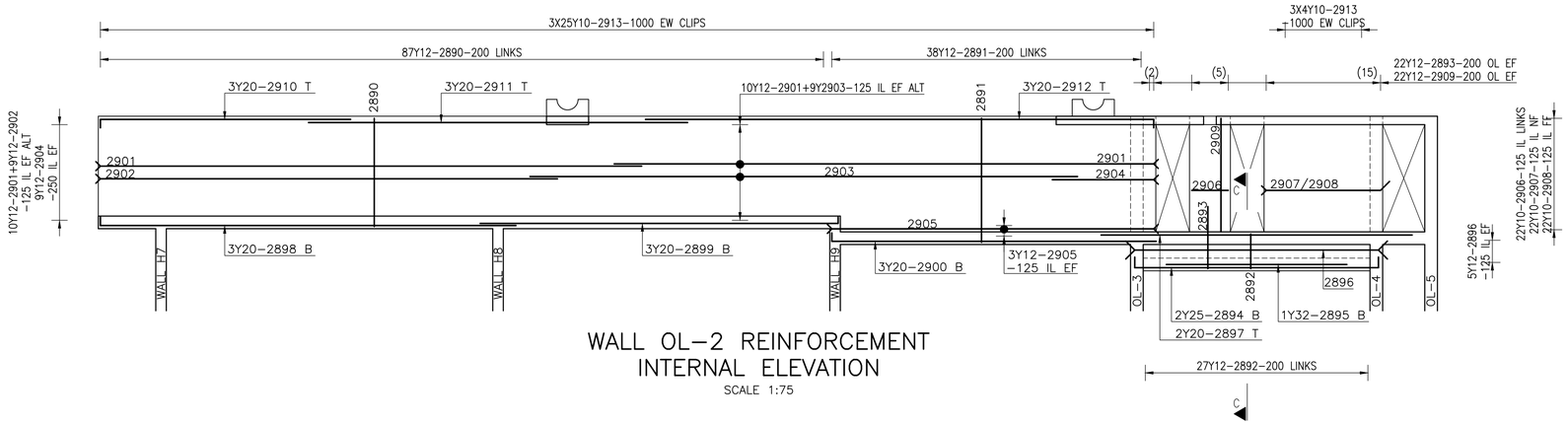


WALL OL–1 REINFORCEMENT
INTERNAL ELEVATION
SCALE 1:75



NOTE:
BAR MARKS SHOWN HAVE
A BASE NO. OF 2800

SECTION C–C
SCALE 1:25



WALL OL–2 REINFORCEMENT
INTERNAL ELEVATION
SCALE 1:75

NOTES:

1. STRUCTURAL CONCRETE FOR WALLS TO BE CLASS WR 35/19
2. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
3. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
4. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA — ENGINEER | PR ENG no. | DATE

CLIENT | DATE

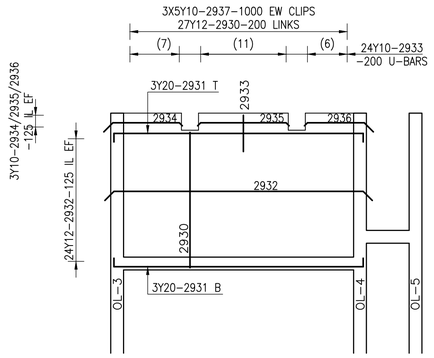
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: BIOLOGICAL REACTOR REINFORCEMENT DETAILS OUTLET CHANNEL WALLS OL-1, -2 & -7

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

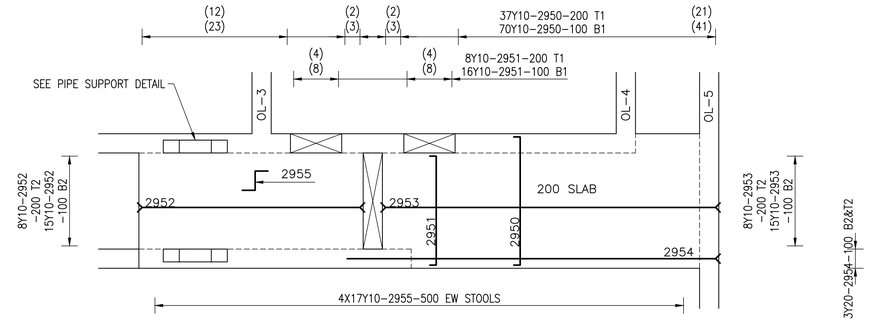
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5131	0



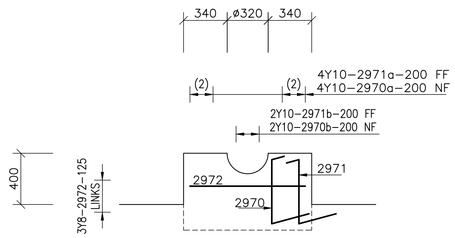
WALL OL-6 REINFORCEMENT INTERNAL ELEVATION

SCALE 1:75



WALKWAY SLAB REINFORCEMENT

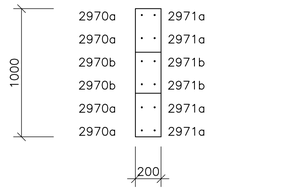
SCALE 1:50



PIPE SUPPORT DETAIL ELEVATION

SCALE 1:25

2 OFF



PIPE SUPPORT DETAIL PLAN

SCALE 1:25

2 OFF

NOTES:

1. STRUCTURAL CONCRETE TO BE CLASS WR 35/19
2. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
3. CONCRETE COVER TO REINFORCEMENT TO BE 50 MM THROUGHOUT
4. PROVIDE A 20 mm CHAMFER IN CONCRETE ELEMENTS AT ALL EXPOSED EDGES

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: WWW.ZCE.CO.ZA
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-07-11	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

BIOLOGICAL REACTOR REINFORCEMENT DETAILS OUTLET CHANNEL WALL OL-6 & WALKWAY

DESIGNED	DRAWN	CHECKED
JG. BULTMAN	JG. BULTMAN	K. BULTMAN
REV DATE	SCALE	ORIGINAL SIZE
2023-07-11	AS SHOWN	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0003-5132	0

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
DC Slab	1	144	Y12	3450	144	2000	72	1500	200			
Bottom		3	Y20	12550	3	2001	37	12350	(250)			
		3	Y20	10700	3	2002	20	(10700)				
		3	Y20	9000	3	2003	37	8800	(250)			
		3	Y20	2950	3	2004	37	2750	(250)			
		13	Y10	3550	13	2005	38	150	3300	(150)		
		47	Y10	1750	47	2006	38	150	1500	(150)		
		164	Y10	3750	164	2007	38	150	3500	(150)		
		16	Y10	5550	16	2008	38	150	5300	(150)		
		6	Y12	7200	6	2009	37	7000	(200)			
		6	Y12	9200	6	2010	37	9000	(200)			
		12	Y12	10000	12	2011	20	(10000)				
		6	Y12	6700	6	2012	37	6550	(150)			
		6	Y12	4700	6	2013	37	4550	(150)			
		9	Y20	2600	9	2014	38	250	2200	(250)		
		4	Y12	5200	4	2015	37	5000	(200)			
		4	Y12	7200	4	2016	37	7000	(200)			
		16	Y12	10000	16	2017	20	(10000)				
		4	Y12	7400	4	2018	37	7250	(150)			
		4	Y12	5400	4	2019	37	5250	(150)			
		26	Y12	3350	26	2020	72	1450	200			
		26	Y10	2450	26	2021	38	150	2200	(150)		
		3	Y20	3650	3	2022	38	250	3250	(250)		
		3	Y20	2350	3	2023	38	250	1950	(250)		
		232	Y10	850	232	2024	83	200	165	200	(200)	
		30	Y10	750	30	2025	83	200	110	200	(200)	
		50	Y10	2750	50	2026	75	150	600	200	825	150
		50	Y10	2200	50	2027	75	150	415	200	640	150
		90	Y10	1700	90	2028	75	150	325	200	450	150

	8	10	12	16	20	25	32	40	TOT
R									
Y		935	1005		363				2302
TOT		935	1005		363				2302

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5120
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
DC Slab

Revision	1
Schedule No	630

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
DC Slab	1	16	Y12	8550	16	2040	55	300	180	7700	180	(300)
Top		8	Y12	11950	8	2041	38	11500	180	(300)		
		44	Y10	1700	44	2042	38	800	125	(800)		
		6	Y12	9450	6	2043	55	300	180	8575	180	(300)
		12	Y12	8900	12	2044	55	300	180	8050	180	(300)
		4	Y12	13000	4	2045	38	12550	180	(300)		
		2	Y12	6550	2	2046	20	(6550)				
		26	Y10	2450	26	2047	38	150	2200	(150)		
		13	Y10	3550	13	2048	38	150	3300	(150)		
		51	Y10	1750	51	2049	38	150	1500	(150)		
		6	Y10	1100	6	2050	38	500	125	(500)		
		16	Y20	2000	16	2051	20	(2000)				
		107	Y10	3750	107	2052	38	150	3500	(150)		
		18	Y10	5550	18	2053	38	150	5300	(150)		
		16	Y16	1200	16	2054	20	(1200)				
Openings	5	16	Y12	2100	80	2060	20	(2100)				
Large		8	Y16	3200	40	2061	20	(3200)				
		16	Y16	1500	80	2062	20	(1500)				
		4	Y10	700	20	2063a	38	100	540	(100)		
		6	Y10	500	30	2063b	38	100	350	(100)		
Openings	5	16	Y12	1600	80	2070	20	(1600)				
Small		8	Y16	3000	40	2071	20	(3000)				
		16	Y16	1200	80	2072	20	(1200)				
		4	Y10	800	20	2073a	38	100	650	(100)		
		6	Y10	650	30	2073b	38	100	500	(100)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		522	672	763	79				2035
TOT		522	672	763	79				2035

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5120
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
DC Slab

Revision	1
Schedule No	631

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
DC Slab	1	147	Y10	3750	147	2100	38	150	3500	(150)		
Bottom		84	Y10	5550	84	2101	38	150	5300	(150)		
.		176	Y12	3450	176	2102	72	1500	200			
		3	Y20	12000	3	2103	37	11850	(200)			
		3	Y20	10700	3	2104	20	(10700)				
		3	Y20	11050	3	2105	37	10600	(500)			
		3	Y16	4400	3	2106	38	250	3950	(250)		
		3	Y16	7800	3	2107	38	250	7350	(250)		
		3	Y16	2600	3	2108	38	250	2150	(250)		
		49	Y12	3350	49	2109	72	1450	200			
		18	Y16	2600	18	2110	38	250	2150	(250)		
		3	Y16	2400	3	2111	38	250	1950	(250)		
		12	Y12	4250	12	2112	38	150	4000	(150)		
		12	Y12	7650	12	2113	38	150	7400	(150)		
		5	Y12	8350	5	2114	38	150	8075	(150)		
		9	Y12	8400	9	2115	38	150	8150	(150)		
		5	Y12	7950	5	2116	38	150	7700	(150)		
		5	Y12	1300	5	2117	38	150	1050	(150)		
		5	Y12	1750	5	2118	38	150	1500	(150)		
		10	Y10	500	10	2119	38	100	350	(100)		
		12	Y12	12950	12	2120	37	12800	(150)			
		12	Y12	7250	12	2121	37	7100	(150)			
		12	Y12	13000	12	2122	20	(13000)				
		4	Y12	8550	4	2123	38	150	8300	(150)		
		4	Y12	8100	4	2124	38	150	7850	(150)		
		4	Y12	1450	4	2125	38	150	1200	(150)		
		4	Y12	1850	4	2126	38	150	1600	(150)		
		8	Y10	650	8	2127	38	100	500	(100)		
		30	Y10	750	30	2128	83	200	110	200	(200)	
		322	Y10	850	322	2129	83	200	165	200	(200)	
		12	Y10	2450	12	2130	38	150	2200	(150)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		834	1389	155	250				2628
TOT		834	1389	155	250				2628

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5121
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
DC Slab

Revision	1
Schedule No	632

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
DC Slab	1	92	Y10	3750	92	2140	38	150	3500	(150)		
Top		40	Y10	5550	40	2141	38	150	5300	(150)		
		16	Y10	2650	16	2142	38	150	2400	(150)		
		35	Y10	4200	35	2143	38	150	3925	(150)		
		35	Y10	900	35	2144	38	150	625	(150)		
		14	Y10	1950	14	2145	38	150	1700	(150)		
		36	Y10	2150	36	2146	75	150	415	200	625	150
		54	Y10	2750	54	2147	75	150	600	200	825	150
		72	Y10	1700	72	2148	75	150	325	200	450	150
		8	Y12	4250	8	2149	38	150	4000	(150)		
		20	Y10	900	20	2150	38	150	625	(150)		
		20	Y10	1300	20	2151	38	150	1050	(150)		
		10	Y10	1100	10	2152	38	150	825	(150)		
		8	Y12	7650	8	2153	38	150	7400	(150)		
		6	Y12	13000	6	2154	38	12550	180	(300)		
		6	Y12	7800	6	2155	38	7350	180	(300)		
		6	Y12	13000	6	2156	20	(13000)				
		9	Y12	8700	9	2157	55	300	180	7850	180	(300)
		9	Y12	8550	9	2158	55	300	180	7700	180	(300)
		9	Y12	8100	9	2159	55	300	180	7250	180	(300)
		9	Y12	1450	9	2160	55	300	180	600	180	(300)
		9	Y12	2150	9	2161	55	300	180	1300	180	(300)
		6	Y12	8900	6	2162	55	300	180	8025	180	(300)
		12	Y12	1000	12	2163	60	180	250			
		6	Y12	8900	6	2164	55	300	180	8050	180	(300)
		6	Y12	8450	6	2165	55	300	180	7600	180	(300)
		6	Y12	1800	6	2166	55	300	180	950	180	(300)
		6	Y12	2050	6	2167	55	33	180	1475	180	(300)
		8	Y10	2450	8	2168	38	150	2200	(150)		
		72	Y10	1700	72	2169	38	800	125	(800)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		839	667						1506
TOT		839	667						1506

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5121
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
DC Slab

Revision	1
Schedule No	633

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
Large opening	1	16	Y12	2100	16	2180	20	(2100)				
Details		8	Y16	4500	8	2181	20	(4500)				
		32	Y16	1500	32	2182	20	(1500)				
Small opening	2	4	Y12	1600	8	2185	20	(1600)				
Details		4	Y16	1900	8	2186	20	(1900)				
		16	Y16	1200	32	2187	20	(1200)				
Pump	7	8	Y20	2000	56	2190	20	(2000)				
		8	Y16	1600	56	2191	20	(1600)				

	8	10	12	16	20	25	32	40	TOT
R									
Y			41	359	276				676
TOT			41	359	276				676

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5122
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
DC Slab

Revision	1
Schedule No	634

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall DC-1.1	1	3	Y20	7650	3	2200	37	7500	(200)			
		3	Y20	11000	3	2201	20	(11000)				
		3	Y20	10400	3	2202	20	(10400)				
		3	Y20	4700	3	2203	37	4550	(200)			
		18	Y12	13000	18	2204	37	12800	(200)			
		18	Y12	6050	18	2205	37	5850	(200)			
		18	Y12	13000	18	2206	20	(13000)				
		62	Y10	350	62	2207	38	100	200	(100)		
Wall DC-1.2	1	3	Y20	7100	3	2215	37	6950	(200)			
		3	Y20	11000	3	2216	20	(11000)				
		3	Y20	11150	3	2217	20	(11150)				
		3	Y20	5750	3	2218	37	5600	(200)			
		18	Y12	13000	18	2219	37	12800	(200)			
		18	Y12	7400	18	2220	37	7200	(200)			
		18	Y12	13000	18	2221	20	(13000)				
		64	Y10	350	64	2222	38	100	200	(100)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		27	1046		509				1582
TOT		27	1046		509				1582

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5123
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Walls DC-1.1 & DC-1.2

Revision	1
Schedule No	635

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall DC-2.1	1	113	Y12	4850	113	2230	72	2200	200			
		3	Y20	10850	3	2231	37	10700	(200)			
		3	Y20	11000	3	2232	20	(11000)				
		3	Y20	9100	3	2233	37	8950	(200)			
		16	Y12	4250	16	2234	37	4050	(200)			
		24	Y12	13000	24	2235	37	12800	(200)			
		24	Y12	13000	24	2236	20	(13000)				
		8	Y12	6050	8	2237	37	5850	(200)			
		8	Y12	850	8	2238	54	150	600	(150)		
		8	Y12	13000	8	2239	37	12850	(150)			
		8	Y12	9150	8	2240	37	9000	(150)			
		8	Y12	7300	8	2241	38	150	7050	(150)		
		4	Y12	1150	4	2242	38	150	875	(150)		
		4	Y12	11350	4	2243	37	11200	(150)			
		2	Y12	7550	2	2244	38	150	7300	(150)		
		6	Y20	6550	6	2245	37	6400	(200)			
		3	Y20	11000	3	2246	20	(11000)				
		3	Y20	7600	3	2247	38	200	7300	(200)		
		87	Y10	350	87	2248	38	100	200	(100)		
		2	Y12	2500	2	2249	60	1000	200			
		2	Y12	1750	2	2250	72	650	200			
650X450 Opening	3	4	Y12	1150	12	2260	37	1000	(150)			
		4	Y16	1600	12	2261	20	(1600)				
		4	Y12	1000	12	2262	20	(1000)				
		2	Y12	1800	6	2263	49	600	600	(590)	425	425
150X300 Notch	3	2	Y16	1600	6	2265	20	(1600)				
		4	Y16	1200	12	2266	62	900	635	(300)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		19	1457	68	464				2007
TOT		19	1457	68	464				2007

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5123
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall DC-2.1

Revision	1
Schedule No	636

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall DC-2.2	1	126	Y12	4850	126	2280	72	2200	200			
		2	Y12	2500	2	2281	60	1000	200			
		2	Y12	1750	2	2282	72	650	200			
		3	Y20	12100	3	2283	37	11950	(200)			
		3	Y20	11000	3	2284	20	(11000)				
		3	Y20	11000	3	2285	37	10850	(200)			
		24	Y12	7400	24	2286	37	7200	(200)			
		24	Y12	13000	24	2287	37	12800	(200)			
		24	Y12	13000	24	2288	20	(13000)				
		8	Y12	12400	8	2289	38	200	12050	(200)		
		8	Y12	13000	8	2290	37	12800	(200)			
		8	Y12	6950	8	2291	37	6750	(200)			
		2	Y12	12650	2	2292	38	200	12300	(200)		
		4	Y12	10100	4	2293	37	9900	(200)			
		3	Y20	12600	3	2294	38	200	12300	(200)		
		3	Y20	4550	3	2295	37	4400	(200)			
		3	Y20	11150	3	2296	20	(11150)				
		3	Y20	5800	3	2297	37	5650	(200)			
		93	Y10	350	93	2298	38	100	200	(100)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		20	1550		505				2074
TOT		20	1550		505				2074

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	DRG-5123
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall DC-2.2

Revision	1
Schedule No	637

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall PS-1.1	3	8	Y12	2500	24	2320	38	200	2150	(200)		
PS-2.1		8	Y12	2500	24	2321	54	200	2150	(200)		
PS-3.1		4	Y12	1100	12	2322	38	150	850	(150)		
		4	Y12	1300	12	2323	38	150	1050	(150)		
		2	Y8	300	6	2324	85	75	190	50	(50)	
Wall PS-1.2	1	16	Y12	3550	16	2330	38	200	3200	(200)		
		4	Y12	850	4	2231	38	150	600	(150)		
		4	Y12	2100	4	2332	38	150	1850	(150)		
		6	Y8	300	6	2333	85	75	190	50	(50)	
Wall PS-2.2	2	8	Y12	2250	16	2340	38	200	1900	(200)		
PS-3.2		8	Y12	2250	16	2341	54	200	1900	(200)		
		2	Y8	300	4	2342	85	75	190	50	(50)	
Wall PS-4.1	1	8	Y12	4250	8	2350	54	200	3900	(200)		
		8	Y12	4250	8	2351	38	200	3900	(200)		
		4	Y12	1100	4	2352	38	150	850	(150)		
		4	Y12	1800	4	2353	38	150	1550	(150)		
		4	Y12	1300	4	2354	38	150	1050	(150)		
		8	Y8	300	8	2355	85	75	190	50	(50)	
Wall PS-4.2	2	8	Y12	2450	16	2360	54	200	2100	(200)		
PS-5.2		8	Y12	2450	16	2361	38	200	2100	(200)		
		2	Y8	300	4	2362	85	75	190	50	(50)	
		13	Y12	2950	26	2363	37	1250	(1700)			
Wall PS-5.1	1	8	Y12	7650	8	2370	54	200	7300	(200)		
		8	Y12	7650	8	2371	38	200	7300	(200)		
		8	Y12	1100	8	2372	38	150	850	(150)		
		12	Y12	1800	12	2373	38	150	1550	(150)		
		16	Y8	300	16	2374	85	75	190	50	(50)	
Platform	2	13	Y10	1700	26	2375	20	(1700)				
		10	Y10	2200	20	2376	20	(2200)				
		10	Y12	2350	20	2377	37	2200	(150)			
		6	Y10	900	12	2378	83	250	115	250	(250)	

	8	10	12	16	20	25	32	40	TOT
R									
Y	5	61	647						714
TOT	5	61	647						714

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5124
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Pump station (PS) walls

Revision	1
Schedule No	638

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall PS-4.3	4	16	Y12	2300	64	2380	38	200	1950	(200)		
PS-5.3		8	Y12	850	32	2381	38	150	600	(150)		
PS-5.4		2	Y8	300	8	2382	85	75	190	50	(50)	
PS-5.5												
Detail 1	9	2	Y12	1000	18	2385	20	(1000)				
		4	Y10	1100	36	2386	62	900	635	(200)		
Detail 2	5	2	Y12	1200	10	2390	20	(1200)				
		4	Y10	1100	20	2391	62	900	635	(200)		
		2	Y10	1000	10	2392	60	170	250			
		4	Y10	700	20	2393	20	(700)				
Wall DC-3	1	16	Y12	2300	16	2400	38	200	1950	(200)		
		2	Y8	300	2	2401	85	75	190	50	(50)	

	8	10	12	16	20	25	32	40	TOT
R									
Y	1	53	214						268
TOT	1	53	214						268

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5124
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Wall PS-4.3, 5.3, 5.4, 5.5 & Wall DC-3

Revision	1
Schedule No	639

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
450SQ Col	63	4	Y20	7150	252	2450	37	7000	(200)			
		34	Y8	1550	2142	2451	60	350	350			
300SQ Col	9	4	Y20	7000	36	2460	20	(7000)				
		28	Y8	950	252	2461	60	200	200			

	8	10	12	16	20	25	32	40	TOT
R									
Y	1405				5065				6470
TOT	1405				5065				6470

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5125
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Columns

Revision	1
Schedule No	640

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Mix platform	7	8	Y16	7100	56	2500	37	7000	(150)			
Zones 1, 2,		7	Y16	10750	49	2501	37	10650	(150)			
3, 4, 5, 6 & 7		8	Y16	11400	56	2502	37	11300	(150)			
		7	Y16	7650	49	2503	37	7550	(150)			
	4	5	Y16	6900	20	2504	38	150	6650	(150)		
		10	Y16	1450	40	2505	38	150	1200	(150)		
		10	Y16	4650	40	2506	38	150	4400	(150)		
	1	495	Y12	3150	495	2507	38	150	2900	(150)		
	4	10	Y10	600	40	2508	38	100	450	(100)		
	4	10	Y10	1500	40	2509	38	100	1350	(100)		
	7	22	Y12	1650	154	2510	38	150	1400	(150)		
		24	Y10	1550	168	2511	38	100	1400	(100)		
	1	788	Y10	950	788	2512	83	300	160	200	(200)	
	6	15	Y16	3800	90	2513	38	150	3600	(105)		
	1	194	Y12	2650	194	2520	55	200	170	2000	170	(200)
	4	6	Y10	600	24	2521	38	100	450	(100)		
		6	Y10	850	24	2522	52	200	170	450	(100)	
	1	19	Y10	2550	19	2523a	55	200	170	1920	170	(200)
	1	19	Y10	2400	19	2523b	55	200	170	1770	170	(200)
	1	24	Y10	1900	24	2523c	55	200	170	1250	170	(200)
	4	6	Y12	3550	24	2524	55	200	170	2900	170	(200)
	1	801	Y10	900	801	2525	52	200	170	500	(100)	
	4	3	Y12	6900	12	2526	38	150	6650	(150)		
		5	Y12	1450	20	2527	38	150	1200	(150)		
		5	Y12	4650	20	2528	38	150	4400	(150)		
	7	2	Y12	5550	14	2529a	37	5400	(150)			
		1	Y12	5350	7	2529b	37	5200	(150)			
		2	Y12	11200	14	2530a	38	150	10950	(150)		
		1	Y12	10800	7	2530b	38	150	10550	(150)		
		2	Y12	13000	14	2531	20	(13000)				
		2	Y12	9750	14	2532	20	(9750)				
		2	Y12	5750	14	2533	37	5600	(150)			
		2	Y12	9500	14	2534	37	9350	(150)			
	6	7	Y12	3800	42	2535	38	150	3550	(150)		
		5	Y12	1500	30	2536	38	150	1250	(150)		
	7	2	Y12	1550	14	2537	38	150	1300	(150)		
	7	2	Y12	550	14	2538	38	150	300	(150)		
	4	1	Y12	2300	4	2539	38	150	2050	(150)		
	7	20	Y10	2000	140	2540	20	(2000)				
		74	Y10	1300	518	2541	20	(1300)				
		3	Y10	4150	21	2542	37	4050	(100)			
		3	Y10	10300	21	2543	20	(10300)				
Openings	4	8	Y16	2200	32	2550	20	(2200)				
1000 SQ		8	Y12	1200	32	2551	20	(1200)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		2001	3355	4312					9667
TOT		2001	3355	4312					9667

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5126/5127
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Mixer platforms

Revision	1
Schedule No	641

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Zones 2 & 4	2	13	Y16	2250	26	2570	38	150	2000	(150)		
Extra		18	Y12	4750	36	2571	38	150	4500	(150)		
		1	Y12	4250	2	2572a	55	200	170	3625	170	(200)
		1	Y12	4200	2	2572b	55	200	170	3545	170	(200)
		1	Y12	4050	2	2572c	55	200	170	3395	170	(200)
		2	Y12	3500	4	2572d	55	200	170	2875	170	(200)
		6	Y12	4750	12	2573	38	150	4475	(150)		
		7	Y12	2250	14	2574	38	150	2000	(150)		
Zones 5 & 6	2	15	Y16	3100	30	2590	38	150	2875	(150)		
		1	Y12	850	2	2591	38	150	575	(150)		
		8	Y12	3150	16	2592	38	150	2875	(150)		
Zone 7	1	15	Y16	4150	15	2620	20	(4150)				
		15	Y16	7150	15	2621	38	150	6925	(150)		
		15	Y16	3100	15	2622	38	150	2875	(150)		
		13	Y16	5550	13	2623	38	150	5300	(150)		
		18	Y16	2450	18	2624	38	150	2200	(150)		
		34	Y12	4750	34	2625	38	150	4525	(105)		
		20	Y12	6800	20	2626	38	150	6525	(150)		
		14	Y12	4800	14	2627	38	150	4525	(150)		
		10	Y12	6800	10	2628	38	150	6525	(150)		
		4	Y12	3900	4	2629	20	(3900)				
		7	Y12	7150	7	2630	38	150	6900	(150)		
		5	Y12	4850	5	2631	38	150	4575	(150)		
		7	Y12	5550	7	2632	38	150	5300	(150)		
		9	Y12	2450	9	2633	38	150	2200	(150)		

	8	10	12	16	20	25	32	40	TOT
R									
Y			829	764					1593
TOT			829	764					1593

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5126
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Mixer platforms

Revision	1
Schedule No	642

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
Mixer stairs	7	8	Y12	2950	56	2700	37	2850	(130)			
Zones 1 to 7		2	Y12	1600	14	2701	37	1500	(130)			
		8	Y12	2050	56	2702	41	200	1620	(200)	900	
		23	Y10	1400	161	2703	20	(1400)				
		8	Y12	3650	56	2704	37	3500	(150)			
		2	Y12	1400	14	2705	37	1250	(150)			
		8	Y12	1000	56	2706	62	600	330	(400)		
+		12	Y10	1150	84	2707	83	300	160	300	(300)	
		3	Y10	950	21	2708	83	300	60	300	(300)	
		16	Y10	500	112	2709	20	(500)				
Mixer stairs	3	8	Y12	2450	24	2720	60	900	260			
Zones 5 to 7		12	Y12	1400	36	2721	20	(1400)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		245	614						859
TOT		245	614						859

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5128
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Mixer platforms stairs

Revision	1
Schedule No	643

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall J1 - J6	14	12	Y12	3600	168	2750	20	(3600)				
Wall H1 - H8		12	Y12	1350	168	2751a	20	(1350)				
		12	Y12	1400	168	2751b	20	(1400)				
		10	Y12	1450	140	2751c	20	(1450)				
		5	Y20	800	70	2752	20	(800)				
		6	Y8	1050	84	2758	83	300	110	300	(300)	
Wall OL-8	1	12	Y12	3600	12	2750	20	(3600)				
		12	Y12	1350	12	2751a	20	(1350)				
		12	Y12	1400	12	2751b	20	(1400)				
		10	Y12	1450	10	2751c	20	(1450)				
		5	Y20	800	5	2752	20	(800)				
		22	Y12	1500	22	2753	20	(1500)				
		22	Y12	2300	22	2754	20	(2300)				
		16	Y12	2500	16	2755	38	300	1950	(300)		
		16	Y12	2500	16	2756	54	300	1950	(300)		
		12	Y8	1150	12	2757	83	300	160	300	(300)	
Wall H9	1	12	Y12	1350	12	2751a	20	(1350)				
		12	Y12	1400	12	2751b	20	(1400)				
		6	Y12	1450	6	2751c	20	(1450)				
		4	Y20	800	4	2752	20	(800)				
		12	Y12	3250	12	2760	20	(3250)				
		6	Y8	1050	6	2758	83	300	110	300	(300)	
Wall OL-3	2	4	Y20	800	8	2752	20	(800)				
OL-4		17	Y8	1150	34	2757	83	300	160	300	(300)	
		10	Y12	3250	20	2760	20	(3250)				
		18	Y12	2600	36	2761	20	(2600)				
		12	Y12	3050	24	2762a	20	(3050)				
		12	Y12	3100	24	2762b	20	(3100)				
		6	Y12	1500	12	2762c	20	(1500)				
		18	Y12	1500	36	2763	20	(1500)				
		18	Y12	3300	36	2764	20	(3300)				
	3	23	Y12	2400	69	2765	38	300	1850	(300)		
	1	23	Y12	2400	23	2766	54	300	1850	(300)		
Wall OL-5	1	4	Y20	800	4	2752	20	(800)				
		25	Y8	1150	25	2757	83	300	160	300	(300)	
		12	Y12	3050	12	2762a	20	(3050)				
		12	Y12	3100	12	2762b	20	(3100)				
		6	Y12	3150	6	2762c	20	(3150)				
		22	Y12	1500	22	2763	20	(1500)				
		24	Y16	3950	24	2770	20	(3950)				
		46	Y12	2700	46	2771	20	(2700)				
		38	Y12	4150	38	2772	37	4050	(130)			

	8	10	12	16	20	25	32	40	TOT
R									
Y	70		2424	150	180				2823
TOT	70		2424	150	180				2823

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5129
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Outlet channel

Revision	1
Schedule No	644

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
Outlet	1	48	Y12	13000	48	2800	37	12800	(200)			
Channel		48	Y12	11000	48	2801	37	10800	(200)			
Slab		40	Y12	8050	40	2802	20	(8050)				
		1052	Y12	2350	1052	2803	38	200	2000	(200)		
		48	Y12	9350	48	2804	20	(9350)				
		24	Y12	7300	24	2805	37	7100	(200)			
		24	Y12	11300	24	2806	37	11100	(200)			
		24	Y12	6700	24	2807	37	6500	(200)			
		24	Y12	8700	24	2808	37	8500	(200)			
		16	Y12	4050	16	2809	38	200	3700	(200)		
		12	Y10	1550	12	2810	60	550	150			
		8	Y12	2250	8	2811	38	150	2000	(150)		
		54	Y12	2250	54	2812	38	200	1900	(200)		
		16	Y12	6150	16	2813	38	200	5800	(200)		
		120	Y10	1050	120	2814	83	300	160	250	(250)	
		240	Y10	1100	240	2815	83	250	160	300	(300)	

	8	10	12	16	20	25	32	40	TOT
R									
Y		252	4895						5147
TOT		252	4895						5147

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5130
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Outlet channel floor slab

Revision	1
Schedule No	645

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall OL-7	1	187	Y12	5550	187	2850	72	2550	200			
		3	Y20	9150	3	2851	37	9000	(200)			
		6	Y20	7100	6	2852	20	(7100)				
		3	Y20	7250	3	2853	20	(7250)				
		3	Y20	6000	3	2854	20	(6000)				
		3	Y20	5900	3	2855	37	5750	(200)			
		38	Y12	13000	38	2856	37	12700	(300)			
		38	Y12	11000	38	2857	37	10700	(300)			
		76	Y12	8150	76	2858	20	(8150)				
		3	Y20	12200	3	2859	37	11950	(300)			
		9	Y20	6800	9	2860	20	(6800)				
		3	Y20	8150	3	2861	37	7900	(300)			
		114	Y10	350	114	2862	38	100	200	(100)		
Wall OL-1	1	203	Y12	5600	203	2870	72	2570	200			
		3	Y20	9600	3	2871	37	9450	(200)			
		6	Y20	8000	6	2872	20	(8000)				
		3	Y20	8850	3	2873	20	(8850)				
		3	Y20	10050	3	2874	37	9900	(200)			
		38	Y12	11000	38	2875	37	10700	(300)			
		38	Y12	13000	38	2876	37	12700	(300)			
		76	Y12	9450	76	2877	20	(9450)				
		3	Y20	13000	3	2878	37	12750	(300)			
		9	Y20	8200	9	2879	20	(8200)				
		3	Y20	6000	3	2880	37	5750	(300)			
		120	Y10	350	120	2881	38	100	200	(100)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		50	4738		1268				6056
TOT		50	4738		1268				6056

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5131
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Outlet channel wall OL-1 & OL-7

Revision	1
Schedule No	646

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall OL-2	1	87	Y12	5600	87	2890	72	2570	200			
		38	Y12	6350	38	2891	72	2940	200			
		27	Y12	2150	27	2892	60	825	200			
		44	Y12	1500	44	2893	20	(1500)				
		2	Y25	6250	2	2894	38	250	5880	(250)		
		1	Y32	4300	1	2895	20	(4300)				
		10	Y12	6400	10	2896	38	300	5850	(300)		
		2	Y20	7400	2	2897	20	(7400)				
		3	Y20	10050	3	2898	37	9900	(200)			
		3	Y20	8650	3	2899	37	8500	(200)			
		3	Y20	7850	3	2900	37	7700	(200)			
		38	Y12	13000	38	2901	37	12850	(150)			
		19	Y12	11000	19	2902	37	10850	(150)			
		19	Y12	13000	19	2903	20	(13000)				
		19	Y12	2600	19	2904	37	2450	(150)			
		6	Y12	8000	6	2905	38	300	7600	(150)		
		22	Y10	2200	22	2906	60	870	170			
		22	Y10	3100	22	2907	38	300	2690	(150)		
		22	Y10	3100	22	2908	54	300	2690	(150)		
		44	Y12	2700	44	2909	20	(2700)				
		3	Y20	6100	3	2910	37	5950	(200)			
		3	Y20	9000	3	2911	20	(9000)				
		3	Y20	12250	3	2912	37	12100	(200)			
		87	Y10	350	87	2913	38	100	200	(100)		

	8	10	12	16	20	25	32	40	TOT
R									
Y		133	1849		435	48	27		2492
TOT		133	1849		435	48	27		2492

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5131
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Outlet channel wall OL-2

Revision	1
Schedule No	647

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Wall OL-6	1	27	Y12	6800	27	2930	72	3170	200			
		6	Y20	6100	6	2931	38	200	5800	(200)		
		48	Y12	6250	48	2932	38	300	5800	(200)		
		24	Y10	1850	24	2933	38	850	200	(850)		
		6	Y10	1900	6	2934	38	300	1540	(100)		
		6	Y10	2150	6	2935	38	100	2000	(100)		
		6	Y10	1650	6	2936	38	300	1300	(100)		
		15	Y10	350	15	2937	38	100	200	(100)		
Walkway Slab	1	107	Y10	2150	107	2950	38	100	2000	(100)		
		24	Y10	1850	24	2951	38	100	1700	(100)		
		23	Y10	3550	23	2952	38	100	3400	(100)		
		23	Y10	5300	23	2953	38	100	5150	(100)		
		6	Y20	5900	6	2954	37	5750	(200)			
		68	Y10	750	68	2955	83	300	70	200	(200)	
Pipe Support	2	4	Y10	850	8	2970a	38	100	500	(300)		
		2	Y10	700	4	2970b	38	100	340	(300)		
		4	Y10	850	8	2971a	54	100	500	(300)		
		2	Y10	700	4	2971b	54	100	340	(300)		
		3	Y8	2150	6	2972	60	100	900			

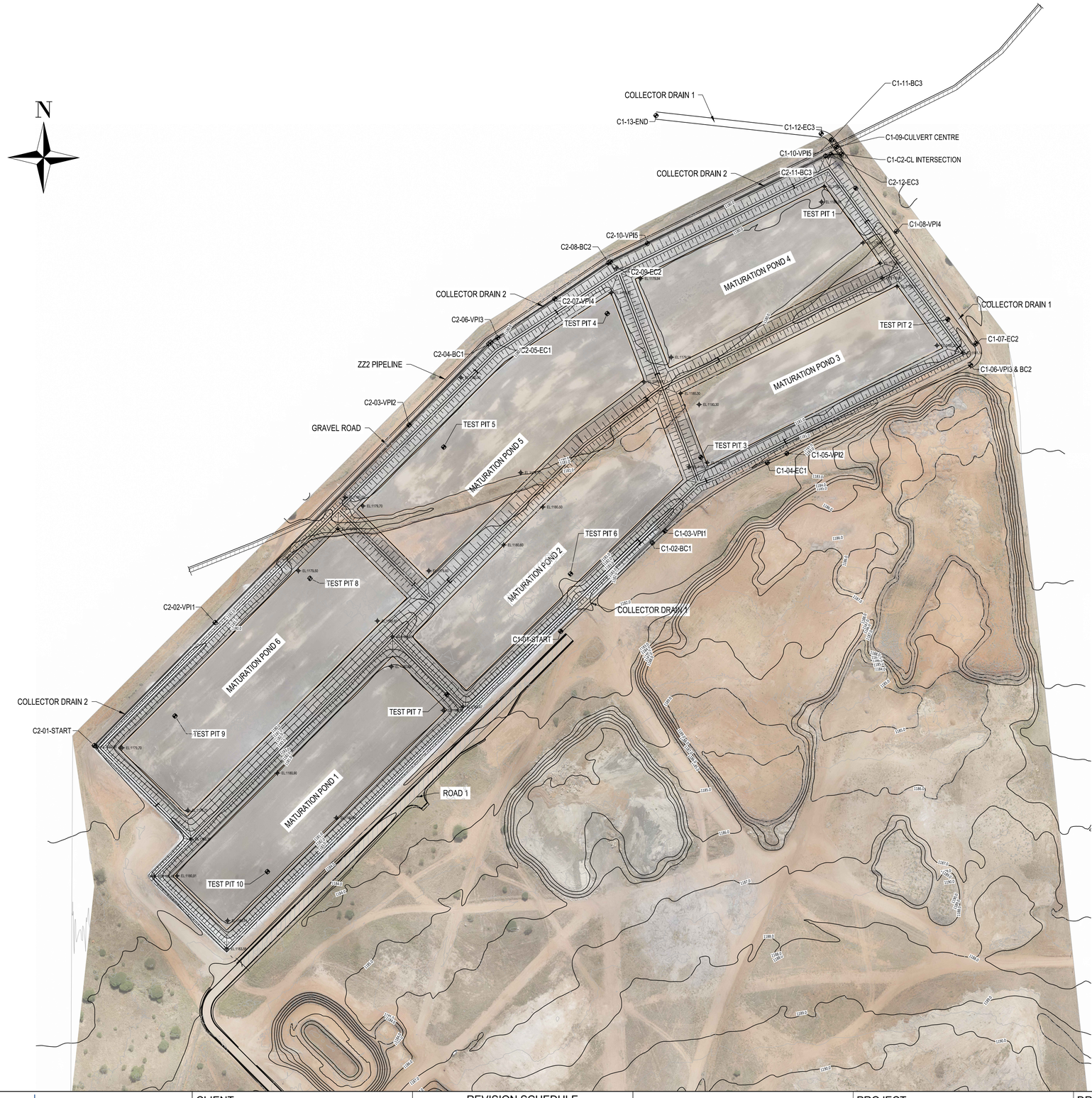
	8	10	12	16	20	25	32	40	TOT
R									
Y	5	390	429		178				1002
TOT	5	390	429		178				1002

Date	2023/07/06
Det. by	Johan Bultman
Ref Dwg	5132
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Biological Reactor
Outlet channel wall OL-6

Revision	1
Schedule No	648



TEST PIT COORDINATES

POINT NAME	Y	X	POINT NUMBER
test pit 1	-46 488.372	2 632 108.461	227
test pit 2	-46 551.806	2 632 198.914	228
test pit 3	-46 381.399	2 632 294.115	229
test pit 4	-46 316.757	2 632 194.974	230
test pit 5	-46 203.920	2 632 287.036	231
test pit 6	-46 291.420	2 632 374.524	232
test pit 7	-46 206.096	2 632 457.735	233
test pit 8	-46 111.593	2 632 377.648	234
test pit 9	-46 018.407	2 632 472.551	235
test pit 10	-46 082.171	2 632 579.976	236

COLLECTOR DRAINS SETTING OUT COORDINATES

POINT NAME	Y	X	POINT NUMBER
c1-01-start	-46 284.603	2 632 414.228	1
c1-02-bc1	-46 347.890	2 632 353.115	2
c1-03-vpi1	-46 356.700	2 632 344.937	3
c1-04-ec1	-46 427.240	2 632 297.863	4
c1-05-vpi2	-46 440.682	2 632 291.393	5
c1-06-vpi3 & bc2	-46 567.462	2 632 230.378	6
c1-07-ec2	-46 571.280	2 632 215.578	7
c1-08-vpi4	-46 516.378	2 632 138.237	8
c1-09-culvert centre	-46 475.072	2 632 080.048	9
c1-10-vpi5	-46 471.772	2 632 075.400	10
c1-11-bc3	-46 471.519	2 632 075.044	11
c1-12-ec3	-46 464.458	2 632 070.892	12
c1-13-end	-46 350.412	2 632 058.350	13
c2-01-start	-45 962.743	2 632 492.986	14
c2-02-vpi1	-46 046.132	2 632 408.096	15
c2-03-vpi2	-46 179.983	2 632 271.837	16
c2-04-bc1	-46 234.876	2 632 215.957	17
c2-05-ec1	-46 236.420	2 632 214.673	18
c2-06-vpi3	-46 241.111	2 632 211.510	19
c2-07-vpi4	-46 280.654	2 632 184.851	20
c2-08-bc2	-46 317.634	2 632 159.920	21
c2-09-ec2	-46 318.816	2 632 159.236	22
c2-10-vpi5	-46 344.496	2 632 146.622	23
c2-11-bc3	-46 467.410	2 632 086.251	24
c2-12-ec3	-46 471.345	2 632 085.238	25
c1-c2-cl intersection	-46 478.514	2 632 084.898	26

ADDITIONAL NOTES:

1. THE SURVEY DATUM IS HARTEBEESTHOEK 94 LO29
2. GROUND SHAPING ON BOTH SIDES OF ALL CHANNELS AND CHANNEL SECTIONS MUST BE DONE SUCH THAT WATER WILL FLOW INTO THE DRAINS. IN AREAS WHERE THE CHANNEL EXTENDS ABOVE THE NATURAL GROUND LEVEL, ADDITIONAL FILL AS WELL AS SHAPING WILL BE REQUIRED. ALL SHAPING SHALL BE DONE TO THE SATISFACTION OF THE ENGINEER ON SITE.
3. AT TRANSITIONS FROM GRASS TO GROUTED STONE PITCHING; A 2m TRANSITION (ALSO GROUTED STONE PITCHING) MUST BE CONSTRUCTED BEGINNING 2m UPSTREAM FROM WHERE THE STONE PITCHING IS INDICATED. THIS IS ALSO APPLICABLE WHERE COLLECTOR DRAIN 2 JOINS COLLECTOR DRAIN 1. ALL TRANSITIONS SHALL BE DONE TO THE SATISFACTION OF THE ENGINEER ON SITE.

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-05	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

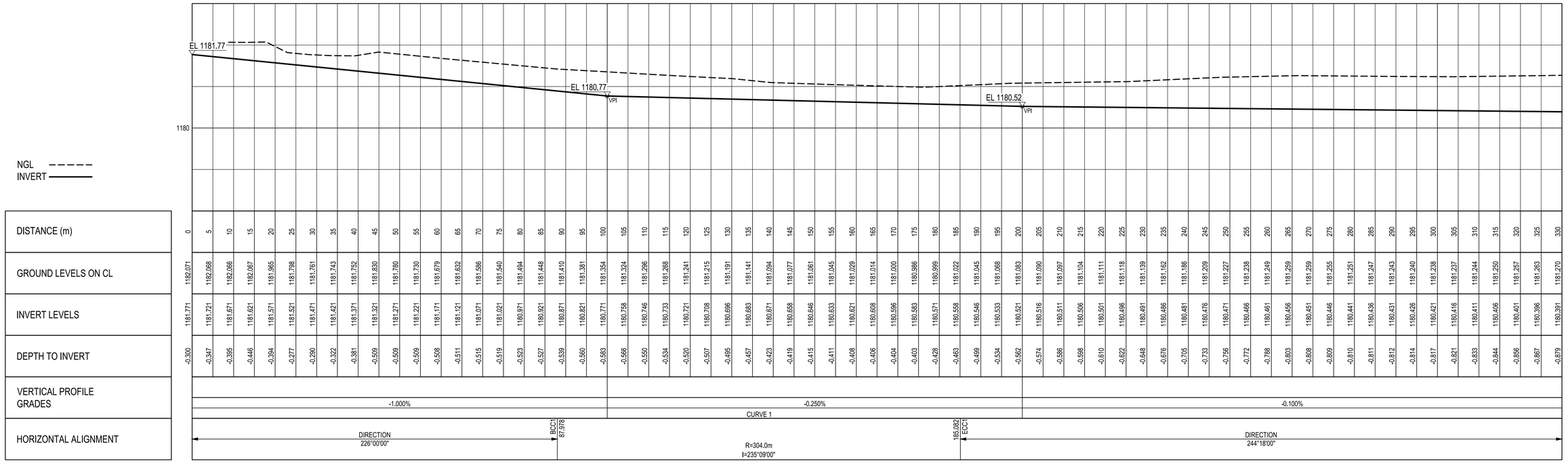
DRAWING DESCRIPTION

TEST PIT LOCATIONS AND COLLECTOR DRAINS PLAN LAYOUT

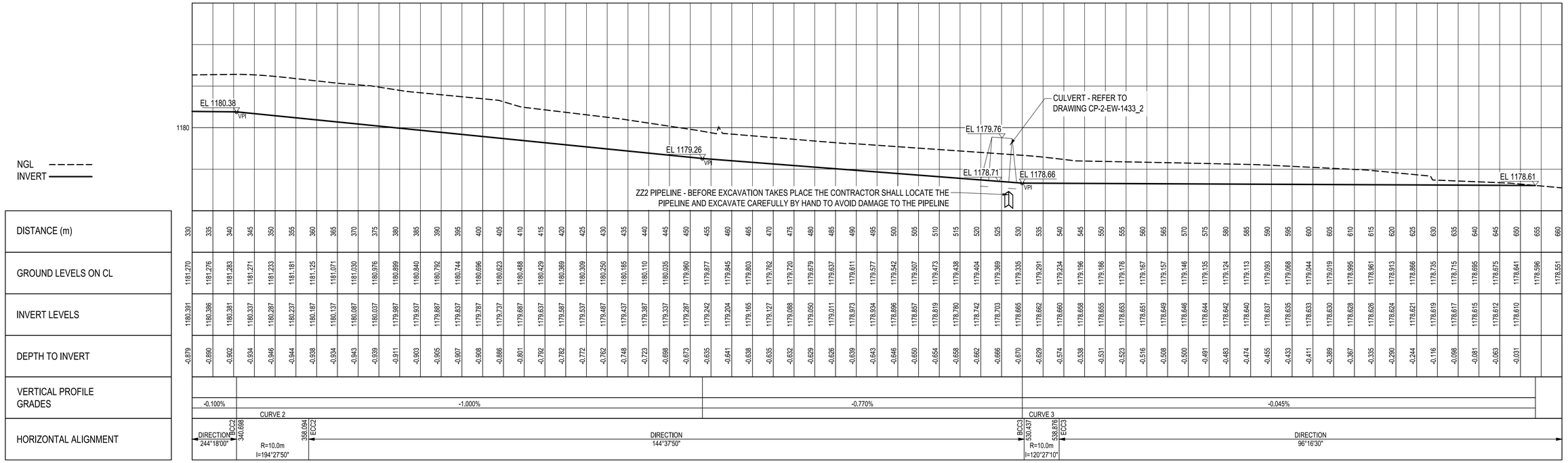
DESIGNED	DRAWN	CHECKED
NF	NF	DVC
REV DATE	SCALE	ORIGINAL SIZE
2024-05	1:1500	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2-EW-1431	0



LONGSECTION COLLECTOR DRAIN 1 - SOUTH
FROM 0.000 TO 330.000



LONGSECTION COLLECTOR DRAIN 1 - SOUTH
FROM 330.000 TO 660.000

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE, NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-05	ISSUED FOR CONSTRUCTION

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

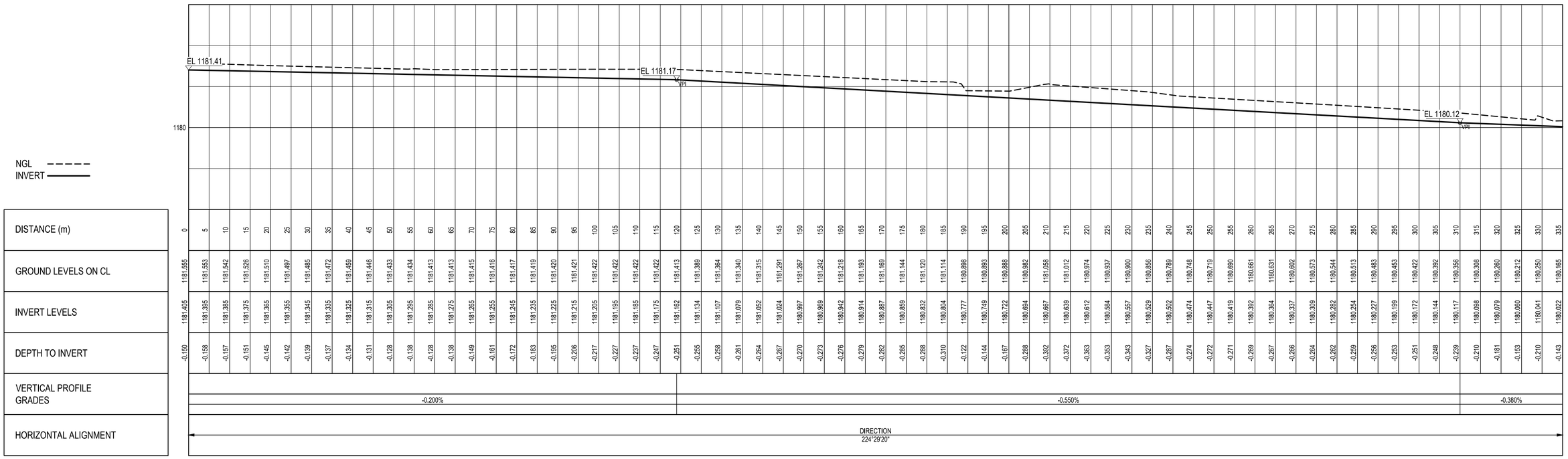
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: COLLECTOR DRAIN 1 LONG SECTION

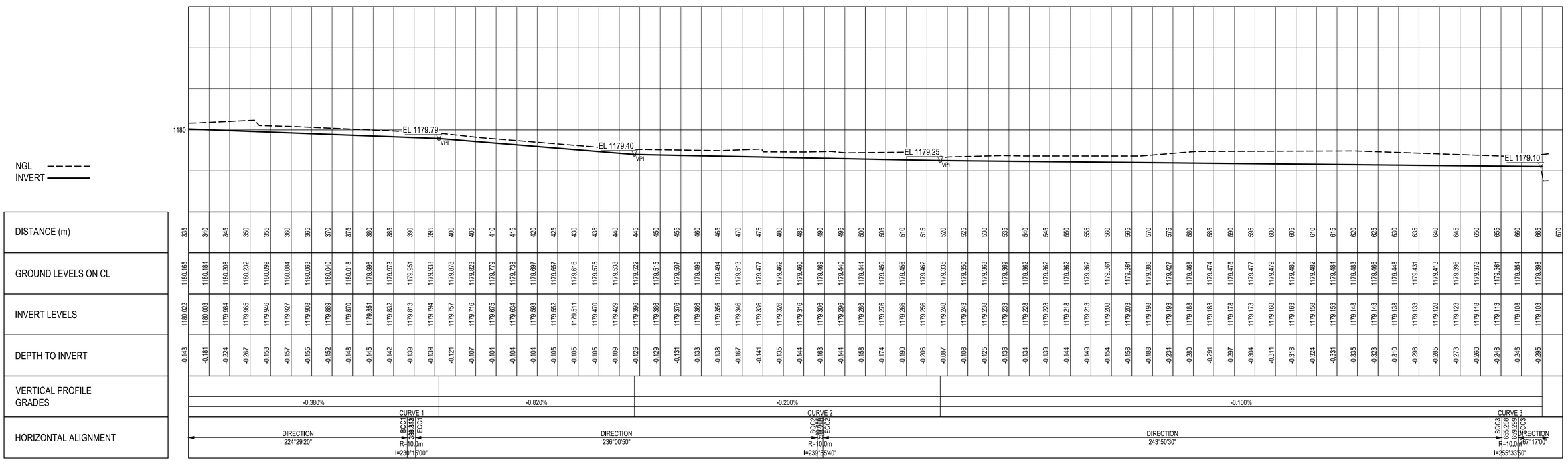
DESIGNED	DRAWN	CHECKED
NF	NF	DVC
REV DATE	SCALE	ORIGINAL SIZE
2024-05	1:500	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2-EW-1431_1	0



LONGSECTION COLLECTOR DRAIN 2 - NORTH
FROM 0.000 TO 335.000



LONGSECTION COLLECTOR DRAIN 2 - NORTH
FROM 335.000 TO 670.000

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-05	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

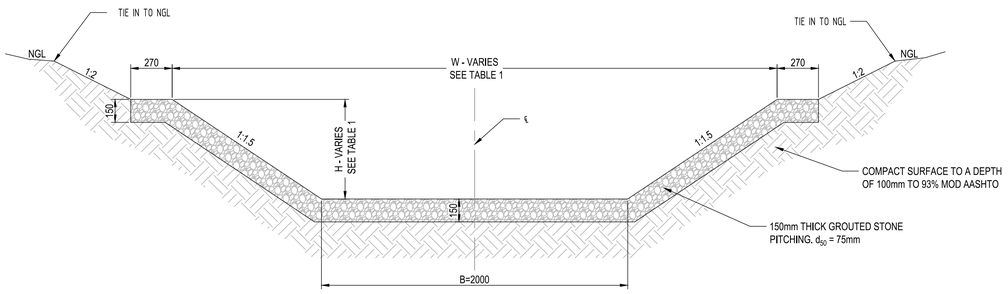
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: COLLECTOR DRAIN 2 LONG SECTION

DESIGNED	DRAWN	CHECKED
NF	NF	DVC
REV DATE	SCALE	ORIGINAL SIZE
2024-05	1:500	A1

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2-EW-1431_2	0



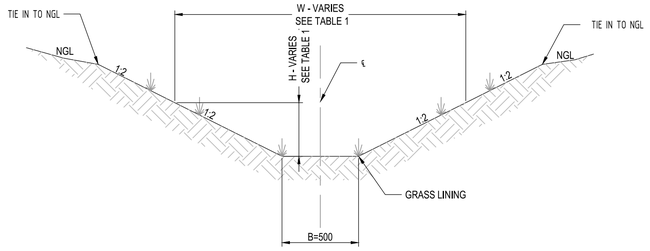
COLLECTOR DRAIN 1 (SOUTH) DETAIL
STONE PITCHED SECTIONS
SCALE 1:20

TABLE 1 - COLLECTOR DRAIN 1 GEOMETRICS

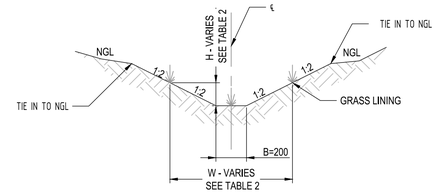
SECTION	MATERIAL	SLOPE (%)	MIN H (m)	MIN B (m)	MIN W (m)	CHANNEL SIDE SLOPE (1V:H)
START - VPI1	GRASS	1.000%	0.250	0.5	1.50	2
VPI1 - VPI2	GRASS	0.250%	0.350	0.5	1.90	2
VPI2 - VPI3	GRASS	0.100%	0.450	0.5	2.30	2
VPI3 - VPI4	STONE PITCHING	1.000%	0.650	2.0	3.95	1.5
VPI4 - VPI5	STONE PITCHING	0.770%	0.675	2.0	4.03	1.5
VPI5 - END	GRASS	0.045%	NA	5.0	NA	3

TABLE 2 - COLLECTOR DRAIN 2 GEOMETRICS

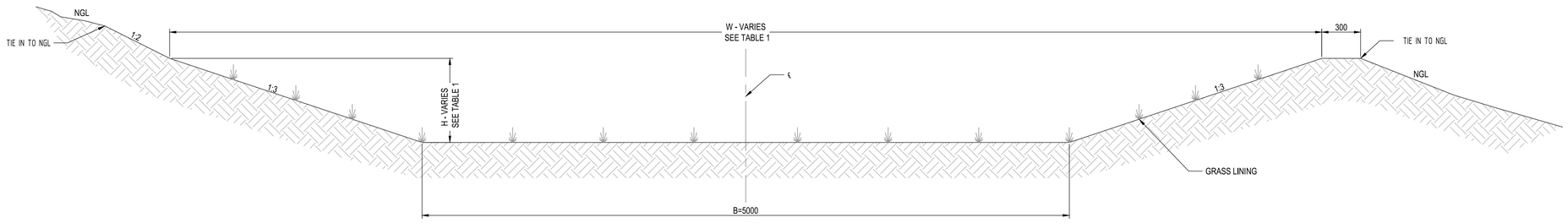
SECTION	MATERIAL	SLOPE (%)	MIN H (m)	MIN B (m)	MIN W (m)	CHANNEL SIDE SLOPE (1V:H)
START - VPI1	GRASS	0.200%	0.125	0.2	0.70	2
VPI1 - VPI2	GRASS	0.550%	0.100	0.2	0.60	2
VPI2 - VPI3	GRASS	0.380%	0.100	0.2	0.60	2
VPI3 - VPI4	GRASS	0.820%	0.100	0.2	0.60	2
VPI4 - VPI5	GRASS	0.200%	0.125	0.2	0.70	2
VPI5 - DRAIN 1	GRASS	0.100%	0.150	0.2	0.80	2



COLLECTOR DRAIN 1 (SOUTH) DETAIL
GRASSED SECTIONS
SCALE 1:20



COLLECTOR DRAIN 2 (NORTH) DETAIL
GRASSED SECTIONS
SCALE 1:20



COLLECTOR DRAIN 1 (SOUTH) DETAIL
GRASSED DISCHARGE CHANNEL
SCALE 1:20

ADDITIONAL NOTES:

1. THE SURVEY DATUM IS HARTEBEESTHOEK 94 LO29
2. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE INDICATED
3. GROUND SHAPING ON BOTH SIDES OF ALL CHANNELS AND CHANNEL SECTIONS MUST BE DONE SUCH THAT WATER WILL FLOW INTO THE DRAINS. IN AREAS WHERE THE CHANNEL EXTENDS ABOVE THE NATURAL GROUND LEVEL, ADDITIONAL FILL AS WELL AS SHAPING WILL BE REQUIRED. ALL SHAPING SHALL BE DONE TO THE SATISFACTION OF THE ENGINEER ON SITE.
4. AT TRANSITIONS FROM GRASS TO GROUTED STONE PITCHING; A 2m TRANSITION (ALSO GROUTED STONE PITCHING) MUST BE CONSTRUCTED BEGINNING 2m UPSTREAM FROM WHERE THE STONE PITCHING IS INDICATED. THIS IS ALSO APPLICABLE WHERE COLLECTOR DRAIN 2 JOINS COLLECTOR DRAIN 1. ALL TRANSITIONS SHALL BE DONE TO THE SATISFACTION OF THE ENGINEER ON SITE.

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-05	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

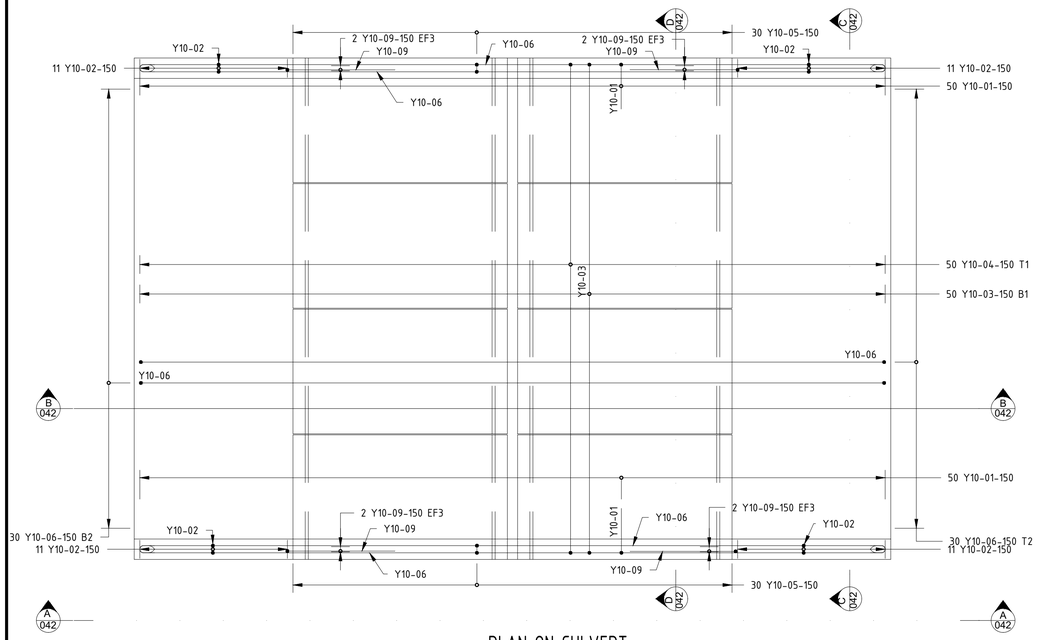
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: COLLECTOR DRAIN AND DISCHARGE CHANNEL DETAILS

DESIGNED	DRAWN	CHECKED
NF	NF	DVC
REV DATE	SCALE	ORIGINAL SIZE
2024-05	1:20	A1

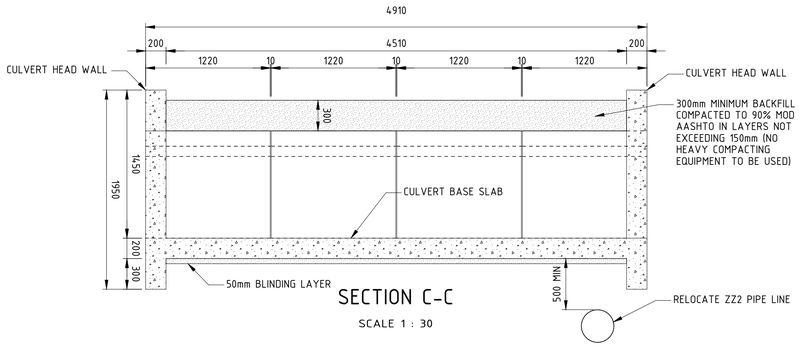
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2-EW-1433_1	0



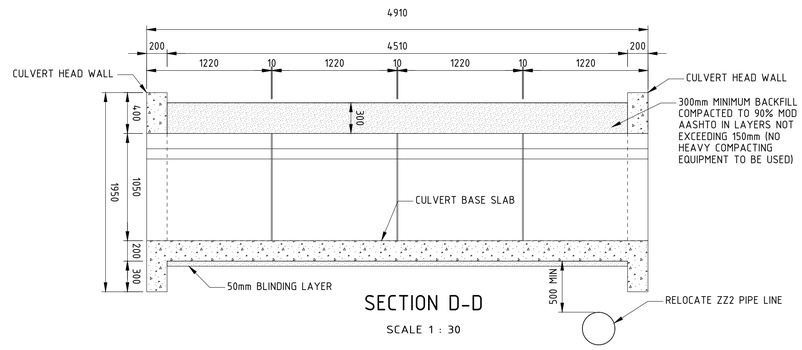
PLAN ON CULVERT

SCALE 1 : 30



SECTION C-C

SCALE 1 : 30



SECTION D-D

SCALE 1 : 30

NOTES:

CONCRETE NOTES:

1. CONCRETE GRADE: 35 MPa CUBE STRENGTH AT 28 DAYS
2. COVER TO REINFORCING: BASE BOTTOM 75mm, ALL OTHER FACES 50mm
3. 5 MPa LEAN MIX BACKFILL

REINFORCING NOTES:

1. DEFORMED BAR TO SANS 920
2. YIELD STRENGTH: 450 MPa

FORMWORK NOTES:

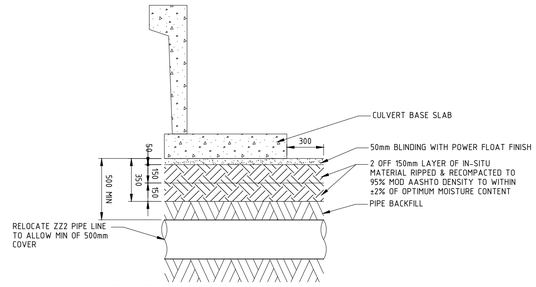
1. USE STEEL FORMWORK

CONCRETE SURFACE FINISHES:

1. OFF SHUTTER STEEL FINISH FOR ALL WALLS
2. STEEL TROWEL FINISH FOR ALL FLOORS/SLABS

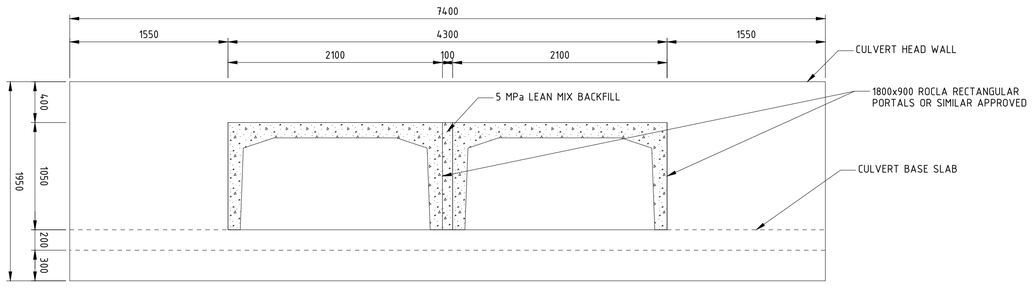
CULVERT NOTES:

1. RECTANGULAR PORTAL CULVERT MUST COMPLY WITH SANS 986
2. INSTALLATION OF PORTAL CULVERTS MUST COMPLY WITH THE SUPPLIERS RECOMMENDATIONS



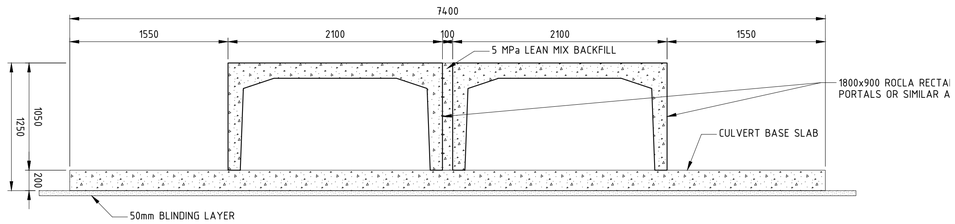
ROAD CULVERT LAYERWORKS

NTS



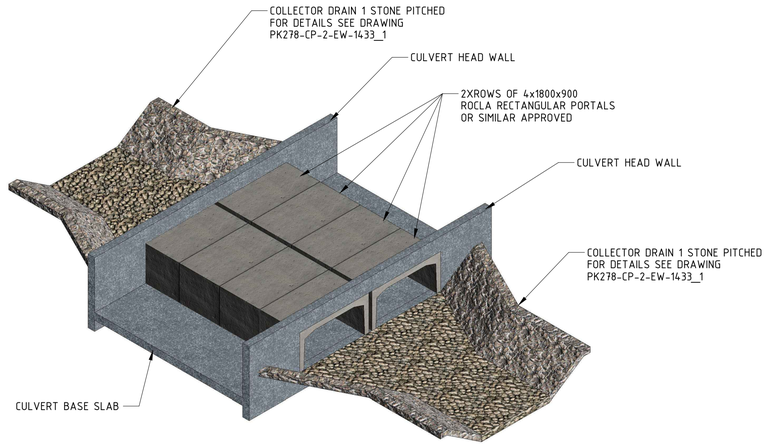
ELEVATION A-A

SCALE 1 : 30



SECTION B-B

SCALE 1 : 30



ISOMETRIC VIEW

SCALE 1:50

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.		REVISION DESCRIPTION
0	2024-05	ISSUED FOR CONSTRUCTION

T. BANDA — ENGINEER — PR ENG no. — DATE

CLIENT — DATE

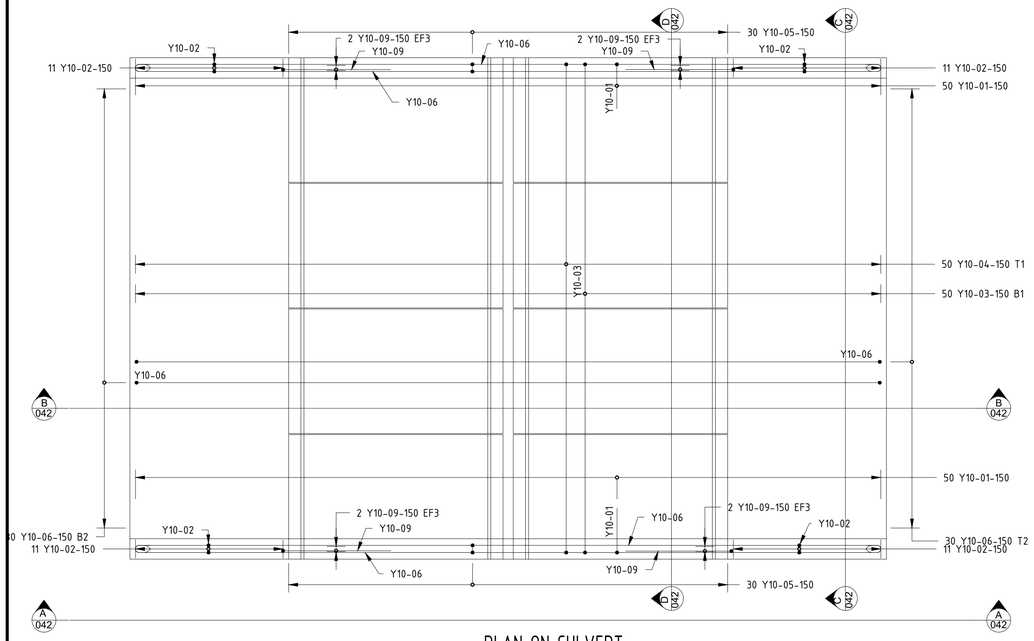
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: CULVERT AT CUT-OFF DRAIN DETAILS

DESIGNED	DRAWN	CHECKED
NF	NC	DVC
REV DATE	SCALE	ORIGINAL SIZE
2024-05	AS	A1

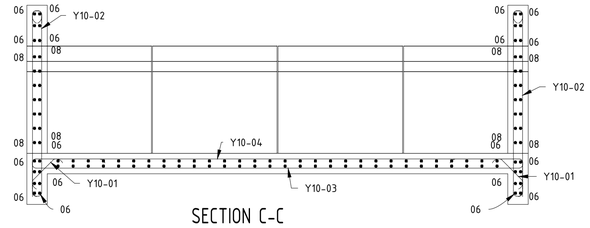
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2-EW-1434_1	0



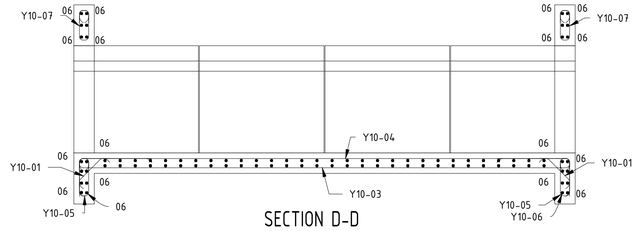
PLAN ON CULVERT

SCALE 1 : 30



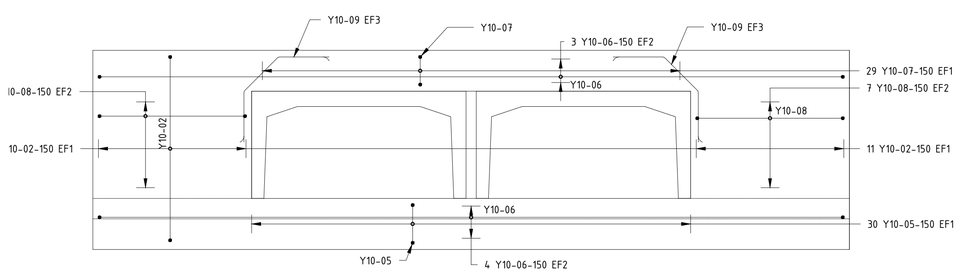
SECTION C-C

SCALE 1 : 30



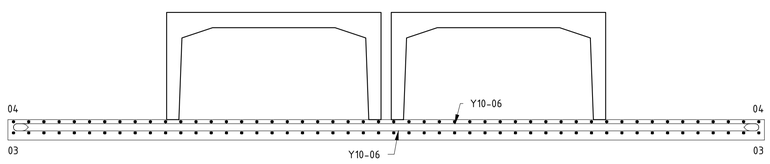
SECTION D-D

SCALE 1 : 30



ELEVATION A-A

SCALE 1 : 30



OUTSIDE ELEVATION ON WALL 2

SCALE 1 : 30

NOTES:

CONCRETE NOTES:

1. CONCRETE GRADE: 40 MPa CUBE STRENGTH AT 28 DAYS
2. COVER TO REINFORCING: BASE BOTTOM 75mm, ALL OTHER FACES 50mm
3. BINDER:
   CONCRETE MEMBER THICKNESS < 750mm : 50/50 GGBS/CEM I
   CONCRETE MEMBER THICKNESS > 750mm : 70/30 GGBS/CEM I
   WATER TO BINDER RATIO: 0.45
   MINIMUM BINDER CONTENT: 420 kg/m^{3}LARGE AGGREGATE: WELL GRADED STONE [6mm THROUGH 26mm]
   SAND: WELL GRADED SAND
   MAXIMUM AIR CONTENT: 8%
   CURING REQUIREMENTS: 7 DAYS
   PLACING TEMPERATURE: NO GREATER THAN 25°C

REINFORCING NOTES:

1. DEFORMED BAR TO SANS 920
2. YIELD STRENGTH: 450 MPa

FORMWORK NOTES:

1. USE STEEL FORMWORK

CONCRETE SURFACE FINISHES:

1. OFF SHUTTER STEEL FINISH FOR ALL WALLS
2. STEEL TROWEL FINISH FOR ALL FLOORS/SLABS

MEMBER	No Of	BARS PER MEMB.	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING A	B	C	D	E/r
CULVERT	1	100	Y10	950	100	01	48	500	300		220	
	1	44	Y10	4 050	44	02	74	1 830	100			
	1	50	Y10	5 500	50	03	55	300	100	4 810	100	
	1	50	Y10	5 350	50	04	38	300	4 810			
	1	60	Y10	1 150	60	05	74	380	100			
	1	88	Y10	7 700	88	06	55	150	80	7 310	80	
	1	58	Y10	1 000	58	07	74	300	100			
	1	56	Y10	1 850	56	08	55	150	80	1 460	80	
	1	8	Y10	1 500	8	09	48	500	480		340	

	8	10	12	16	20	25	32	40	TOT
R	0	0	0	0	0	0	0	0	0
Y	0	1071	0	0	0	0	0	0	1071
TOT.	0	1071	0	0	0	0	0	0	1071

Date	1 December 20
Det. by	
Ref Dwg	CP-2-EW-1434-(2)
Job No	
Revision	–
Schedule No	PK278-SH1

ZAKUMI Consulting Engineers

CULVERT REINFORCING DETAILS

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.		REVISION DESCRIPTION
0	2024-05	ISSUED FOR CONSTRUCTION

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

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

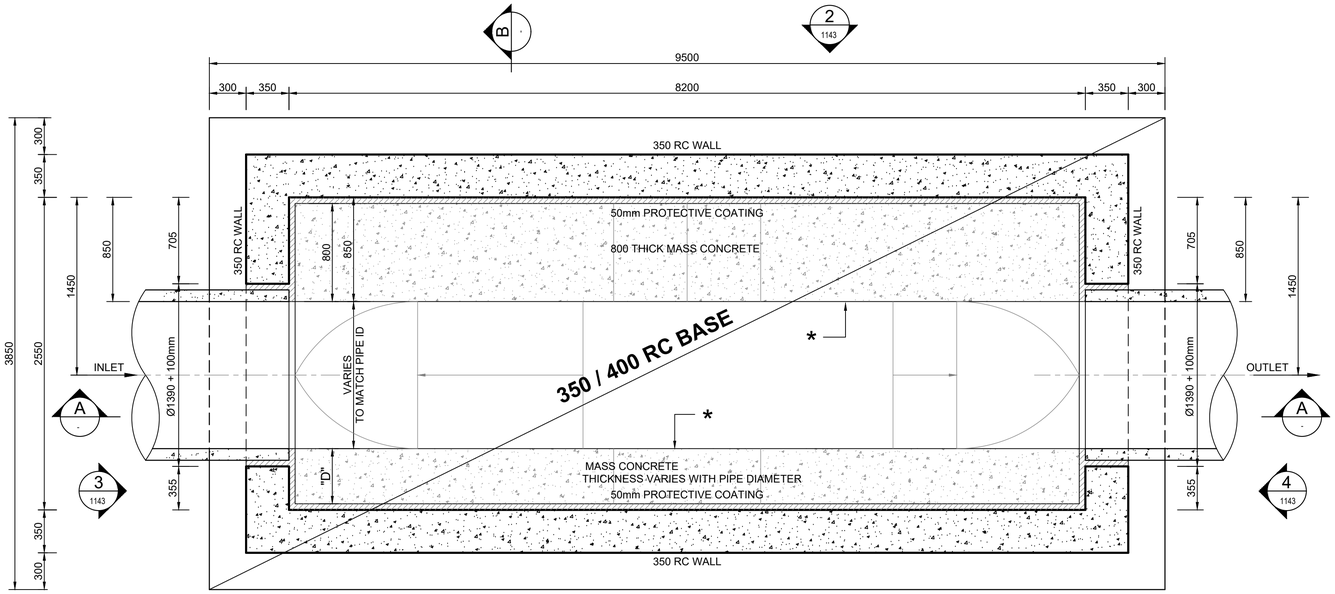
DRAWING DESCRIPTION

CULVERT AT CUT-OFF DRAIN REINFORCING DETAILS

DESIGNED	DRAWN	CHECKED
NF	NF	DVC
REV DATE	SCALE	ORIGINAL SIZE
2024-05	1:30	A1

DRAWING NUMBER

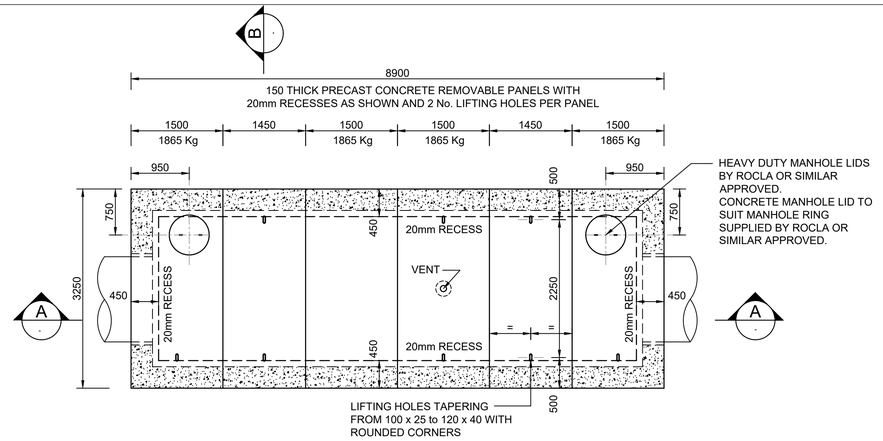
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2-EW-1434_2	0



PLAN

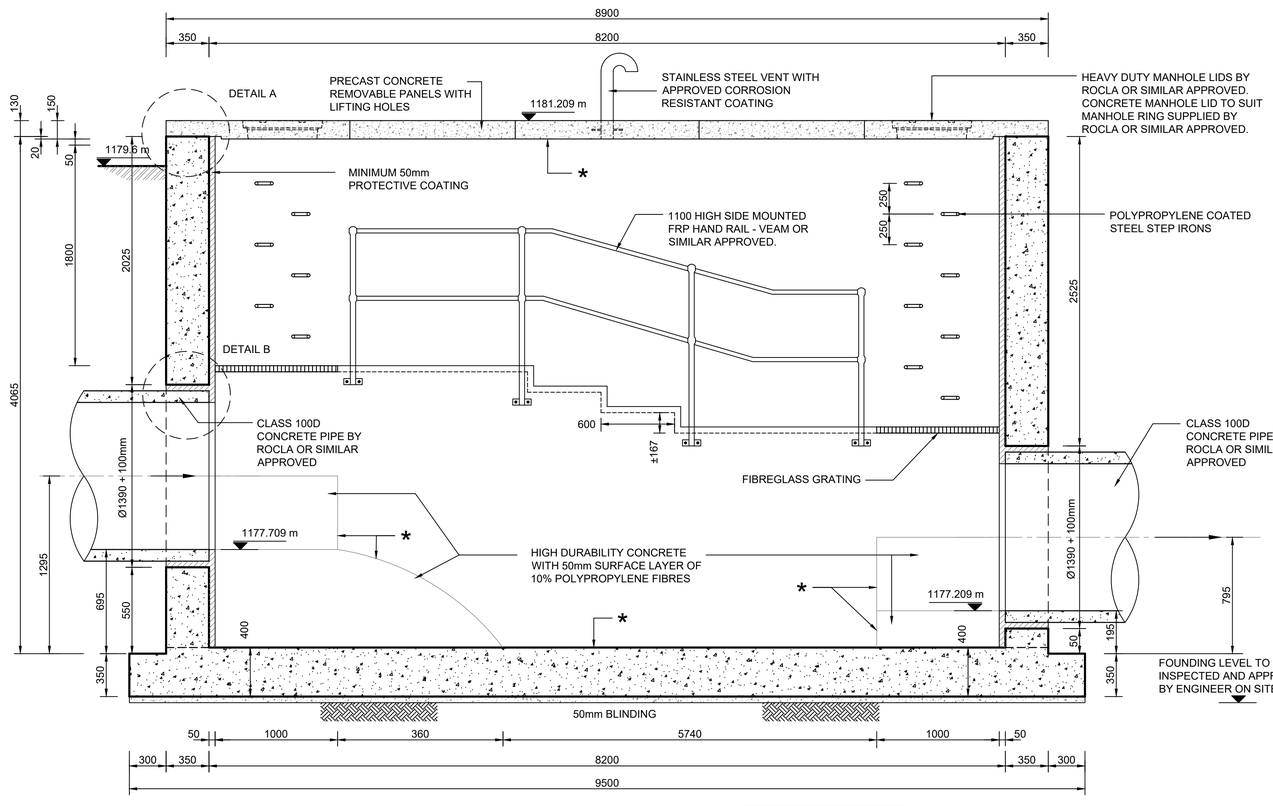
SCALE 1:25

* - DENOTES SURFACE TO BE TREATED WITH 2mm Sikagard 720 EpoCem + 2 COATS Sikagard 63N APPLIED AS PER MANUFACTURERS SPECIFICATION.



PLAN OF PRECAST CONCRETE PANELS

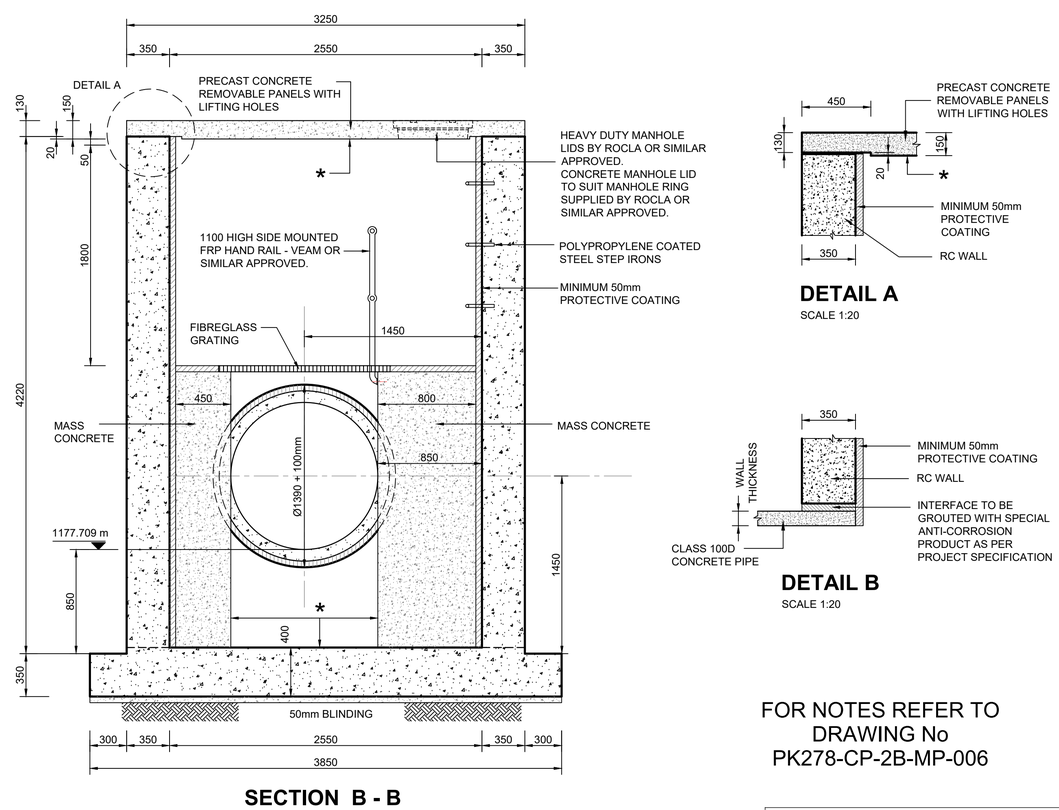
SCALE 1:50



SECTION A - A

SCALE 1:25

LEVEL A - LEVEL B = 500mm



SECTION B - B

SCALE 1:25

SCALE 1:20

FOR NOTES REFER TO DRAWING No PK278-CP-2B-MP-006

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-05	ISSUED FOR CONSTRUCTION

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

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WWTW

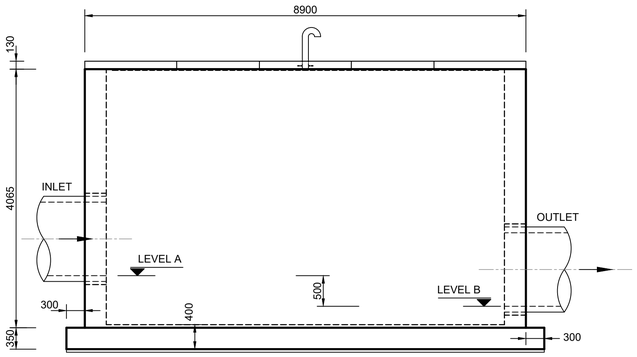
DRAWING DESCRIPTION

0.5m DROP STRUCTURE
RC LAYOUTS
SECTIONS AND DETAILS

DESIGNED	DRAWN	CHECKED
A.M. FERREIRA	Y. PARUK	C. MEYER
REV DATE	SCALE	ORIGINAL SIZE
2024-05	AS SHOWN	A1

DRAWING NUMBER

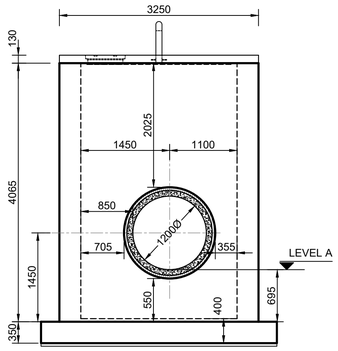
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2B-MP-005	0



ELEVATION 1

SCALE 1:50

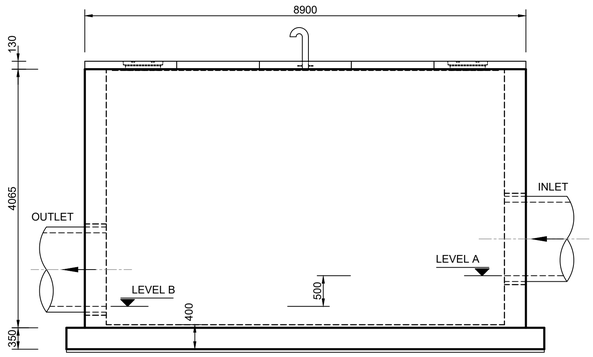
LEVEL A - LEVEL B = 500mm



ELEVATION 3

SCALE 1:50

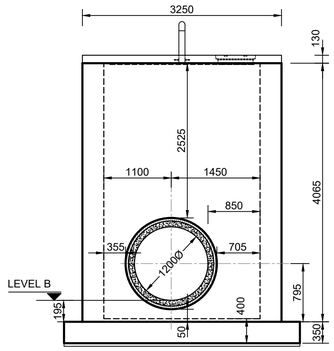
1200Ø CONCRETE PIPE



ELEVATION 2

SCALE 1:50

LEVEL A - LEVEL B = 500mm



ELEVATION 4

SCALE 1:50

1200Ø CONCRETE PIPE

GENERAL NOTES:

1.1 THESE NOTES ARE COMPLEMENTARY TO THE SPECIFICATIONS AND WILL GOVERN IN CASE OF ANY CONFLICTS.
1.2 ALL SETTING OUT DIMENSIONS SHALL BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES OR UNCLARITIES SHALL IMMEDIATELY BE REPORTED TO THE ENGINEER.
1.3 BUILDING WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
1.4 FILL LAYERS TO BE CONSTRUCTED NOT THICKER THAN 150mm AND TO A COMPACTION OF 95% MOD AASHTO. CEMENT STABILISATION TO BE SPECIFIED BY THE STRUCTURAL ENGINEER AS PER DESIGN REQUIREMENTS AND SUITABILITY OF IN-SITU MATERIAL.
1.5 ALL EXCAVATED AREAS TO FORM A LOAD BEARING SURFACE MUST BE COMPACTED TO 93% MOD AASHTO OR OTHERWISE SPECIFIED ON THE DRAWINGS OR BY THE ENGINEER. CEMENT STABILISATION TO BE SPECIFIED BY THE STRUCTURAL ENGINEER.
1.6 NO SCALED MEASUREMENTS FROM THE DRAWINGS SHALL BE DONE.CONTRACTOR TO CONSTRUCT ACCORDING TO ANNOTATED DIMENSIONS.

CONCRETE NOTES:

2.1 ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
2.2 CONCRETE SHALL BE SPECIAL DESIGN MIX BASED "STRENGTH GRADE CONCRETE (MPA)" / MAXIMUM STONE (DOLOMITIC AGGREGATE) SIZE (MM)" AS SPECIFIED BELOW UNLESS OTHERWISE STATED:
MASS CONCRETE - 15/19
BLINDING - 15/19
BASE / FLOORS - 40/19
WALLS - 40/19
SLABS - 40/19
2.3 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.
2.4 UNLESS OTHERWISE SPECIFIED, THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN MM AS STATED BELOW:
WALLS - 60mm
BASE / FLOORS - 60mm
- 60 / 110mm TOP
SLABS - 60mm
2.5 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
2.6 CONCRETE SHALL BE CAST CONTINUOUSLY.
2.7 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH SPECIAL ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.
2.8 CONCRETE CLASS AS SPECIFIED 40/19.
2.9 ALL EXPOSED CORNERS TO HAVE A 25 x 25mm CHAMFER
2.10 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER
2.11 ALL NON-SHUTTERED CONCRETE SURFACES SHALL HAVE A WOOD FLOAT FINISH.
2.12 50mm LAYER OF POLYPROPYLENE FIBRE FLOOR HARDENERS TO BE USED ON EXPOSED FLOOR, SILL AND SPILLWAY SURFACES AS PER SPECIFICATION.
2.13 INTERFACE BETWEEN PIPE AND STRUCTURE WALL TO BE GROUTED WITH SPECIAL ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION.
2.14 STRUCTURE TO BE TESTED FOR WATERTIGHTNESS AS PER PROJECT SPECIFICATIONS. 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, DROP IN LEVEL NOT TO EXCEED 1 / 500 th OF THE AVERAGE DEPTH OF THE FULL TANK.
2.15 ADD 50mm ANTI-CORROSION LAYER AS PER THE PROJECT SPECIFICATION.

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2024-05	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE
REGIONAL WWTW

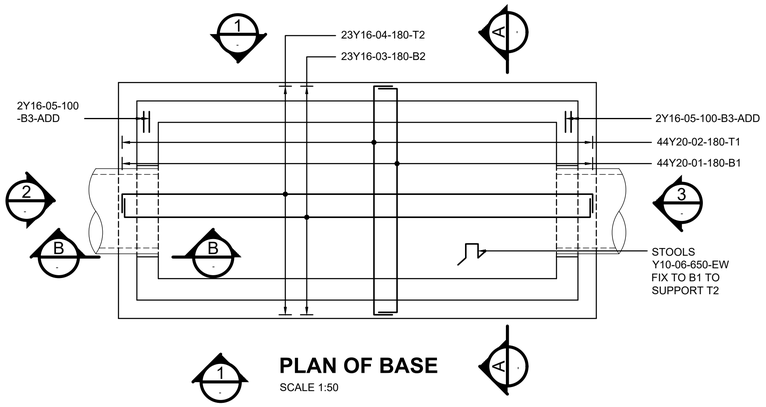
DRAWING DESCRIPTION

0.5m DROP STRUCTURE
RC ELEVATIONS

DESIGNED	DRAWN	CHECKED
A.M. FERREIRA	Y. PARUK	C. MEYER
REV DATE	SCALE	ORIGINAL SIZE
2024-05	AS SHOWN	A1

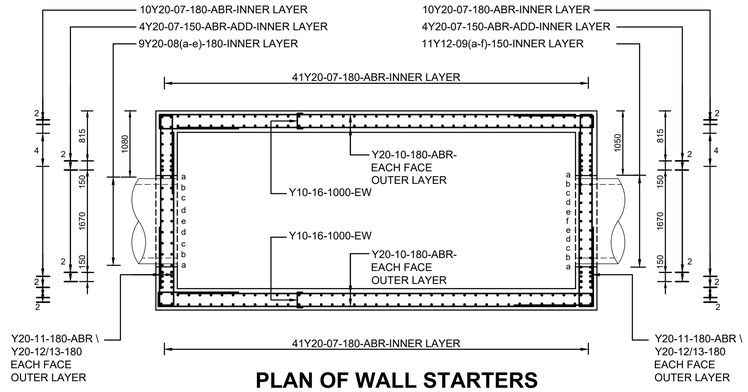
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2B-MP-006	0



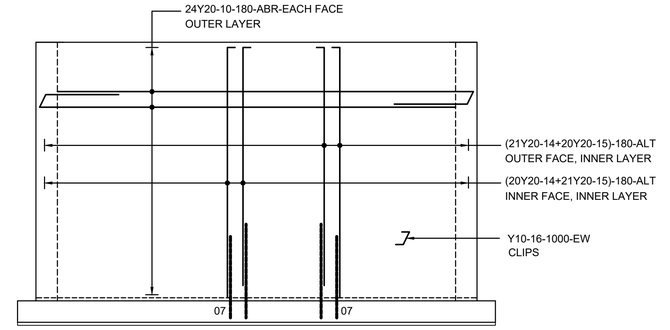
PLAN OF BASE

SCALE 1:50



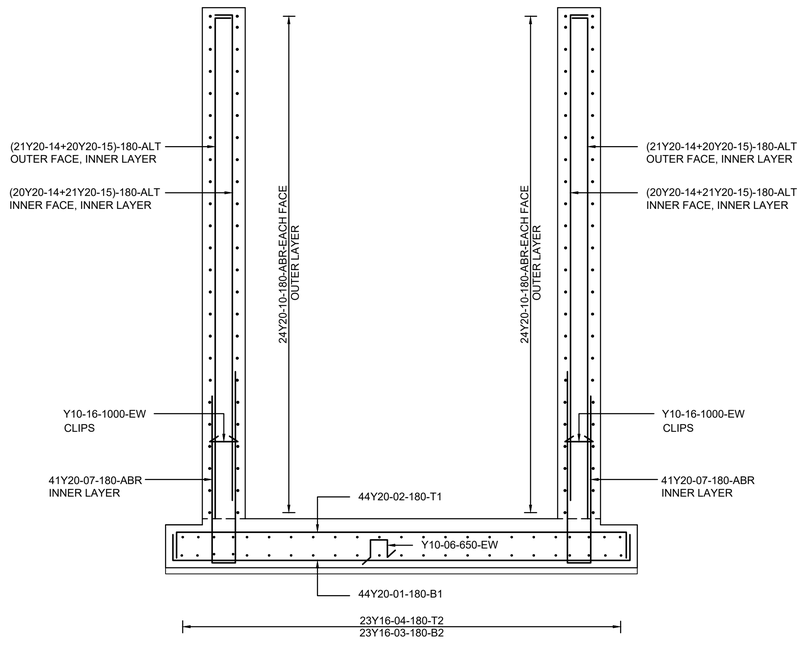
PLAN OF WALL STARTERS

SCALE 1:50



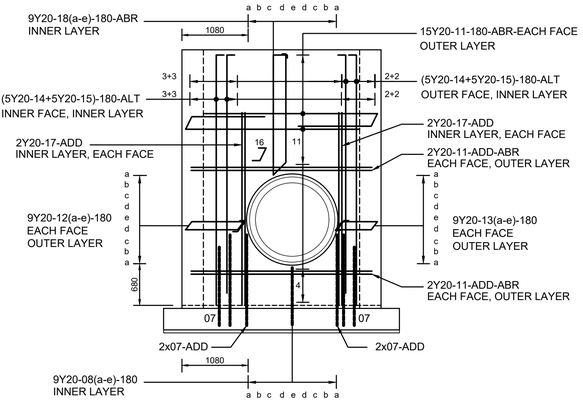
ELEVATION 1

SCALE 1:50



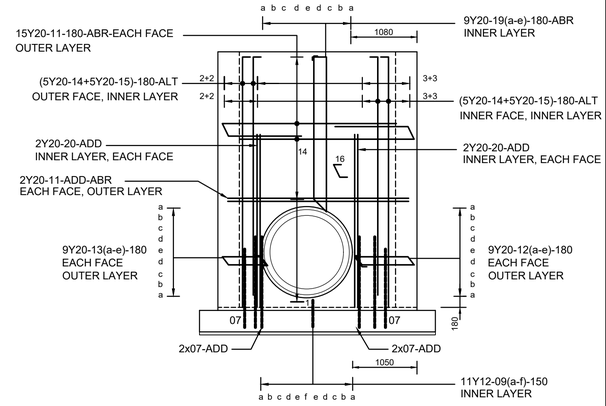
SECTION A - A

SCALE 1:25



ELEVATION 2

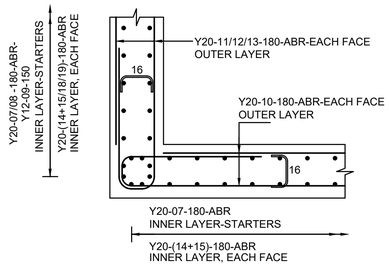
SCALE 1:50



ELEVATION 3

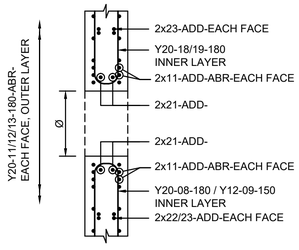
SCALE 1:50

MEMBER		REINFORCEMENT					BENDING DIMENSIONS FOR SHAPE CODES TO SANS - 282 - 2004					
MEMBER AND SIZE	No. OFF	No./ UNIT	TYPE AND SIZE	BAR MARK	TOTAL	LENGTH	SHAPE CODES	A	B	C	D	E/R
	1	44	Y20	01	44	4090	38	230	3730	230		
		44	Y20	02	44	4090	38	230	3730	230		
		23	Y16	03	23	7980	38	190	7680	190		
		23	Y16	04	23	7980	38	190	7680	190		
		4	Y16	05	4	3700	20					
		45	Y10	06	45	1200	83	300	175	320		
		110	Y20	07	110	3000	38	1350	190	1550		
		2	Y20	08a	2	3350	74	1340	190			
		2	Y20	08b	2	2900	74	1110	190			
		2	Y20	08c	2	2650	74	990	190			
		2	Y20	08d	2	2550	74	930	190			
		1	Y20	08e	1	2500	74	910	190			
		2	Y12	09a	2	2550	74	920	190			
		2	Y12	09b	2	2050	74	680	190			
		2	Y12	09c	2	1800	74	550	190			
		2	Y12	09d	2	1650	74	470	190			
		2	Y12	09e	2	1550	74	430	190			
		1	Y12	09f	1	1500	74	410	190			
		96	Y20	10	96	8250	38	6800	230	1320		
		72	Y20	11	72	4300	38	2850	230	1320		
		4	Y20	12a	4	3550	74	1360	230			
		4	Y20	12b	4	3050	74	1130	230			
		4	Y20	12c	4	2850	74	1010	230			
		4	Y20	12d	4	2700	74	950	230			
		2	Y20	12e	2	2650	74	930	230			
		4	Y20	13a	4	2850	74	1010	230			
		4	Y20	13b	4	2350	74	780	230			
		4	Y20	13c	4	2150	74	660	230			
		4	Y20	13d	4	2000	74	600	230			
		2	Y20	13e	2	1950	74	580	230			
		102	Y20	14	102	4240	37	4100	190			
		102	Y20	15	102	4040	37	3900	190			
		64	Y10	16	64	400	38	120	210	120		
		8	Y20	17	8	3200	20					
		2	Y20	18a	2	5250	60	2330	190			
		2	Y20	18b	2	4800	60	2100	190			
		2	Y20	18c	2	4550	60	1980	190			
		2	Y20	18d	2	4450	60	1920	190			
		1	Y20	18e	1	4400	60	1900	190			
		2	Y20	19a	2	6200	60	2830	190			
		2	Y20	19b	2	5750	60	2600	190			
		2	Y20	19c	2	5500	60	2480	190			
		2	Y20	19d	2	5400	60	2420	190			
		1	Y20	19e	1	5350	60	2400	190			
		8	Y20	20	8	3000	20					
		8	Y20	21	8	4000	65	4000				850
		8	Y20	22	8	2000	62	1300	920			
		24	Y20	23	24	2000	20					



PLAN OF WALL JUNCTION

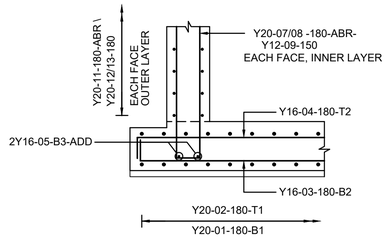
SCALE 1:20



TYPICAL SECTION

CUT OUT THROUGH WALL

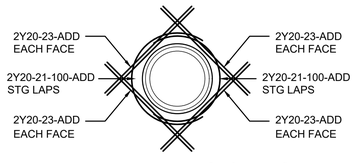
SCALE 1:25



SECTION B - B

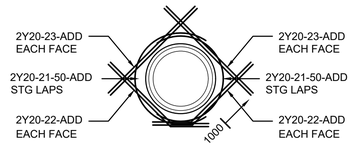
MIRROR FOR OPPOSITE END

SCALE 1:25



ADD REBAR TO CUT-OUT ELEVATION 2

SCALE 1:50



ADD REBAR TO CUT-OUT ELEVATION 3

SCALE 1:50

FOR PRECAST CONCRETE
REMOVABLE PANELS REFER TO
DWG. No. PK278-CP-2B-MP-008 & 009

THIS DRAWING IS TO BE READ IN CONJUNCTION
WITH DRAWING Nos PK278-CP-2B-MP-005 & 006

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.com
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
1	2024-05	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

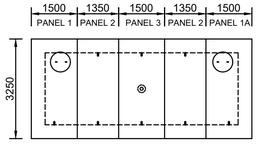
DRAWING DESCRIPTION

0.5m DROP STRUCTURE
1200Ø PIPE
REINFORCING DETAILS

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-05	AS SHOWN	A1

DRAWING NUMBER

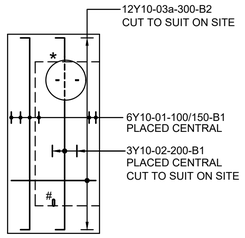
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2B-MP-008	0



PLAN OF PRECAST CONCRETE PANELS

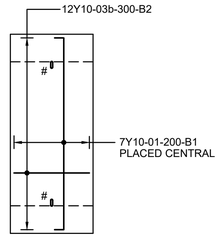
SCALE 1:100

0,5m DROP STRUCTURE
REF. DWG : PK278-SD-1-1142



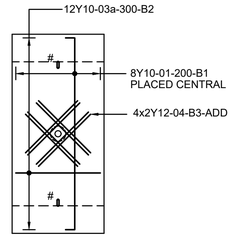
PANEL 1

SCALE 1:50



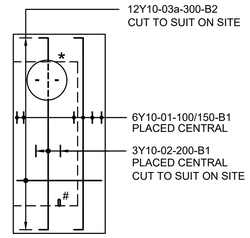
PANEL 2

SCALE 1:50



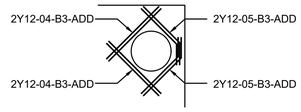
PANEL 3

SCALE 1:50



PANEL 1A

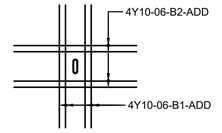
SCALE 1:50



* ADD REBAR TO MH CUT-OUT

MIRROR FOR OPPOSITE END

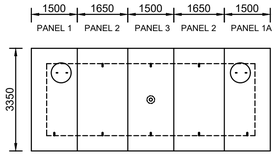
SCALE 1:50



ADD REBAR LIFTING HOLES

SCALE 1:25

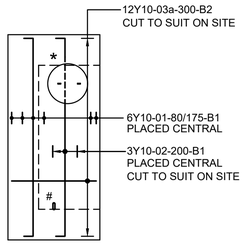
MEMBER		REINFORCEMENT					BENDING DIMENSIONS FOR SHAPE CODES TO SABS - 82					
MEMBER AND SIZE	No. OFF	No./ UNIT	TYPE AND SIZE	BAR MARK	TOTAL	LENGTH	SHAPE CODES	A	B	C	D	E/R
0,5m DROP STRUCTURE PANEL 1 & 1A	2	6	Y10	01	12	3280	38	100	3130	100		
		3	Y10	02	6	3280	38	100	3130	100		
		12	Y10	03a	24	1380	20					
		4	Y12	04	8	1200	20					
		4	Y12	05	8	1200	62	760	540			
		8	Y10	06	16	1000	20					
0,5m DROP STRUCTURE PANEL 2	2	7	Y10	01	14	3280	38	100	3130	100		
		12	Y10	03b	24	1230	20					
		16	Y10	06	32	1000	20					
0,5m DROP STRUCTURE PANEL 3	1		Y10	01	8	3280	38	100	3130	100		
			Y10	03a	12	1380	20					
			Y12	04	8	1200	20					
			Y10	06	16	1000	20					



PLAN OF PRECAST CONCRETE PANELS

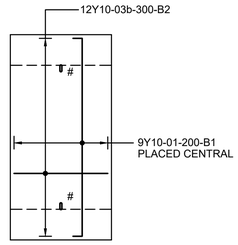
SCALE 1:100

1,0m DROP STRUCTURE
REF. DWG : PK278-SD-1-1152



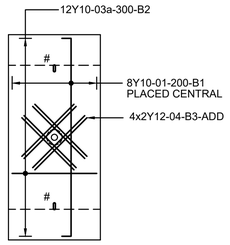
PANEL 1

SCALE 1:50



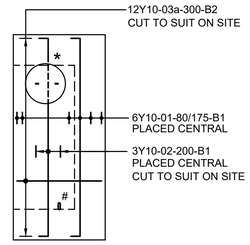
PANEL 2

SCALE 1:50



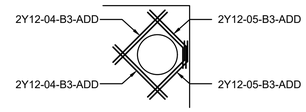
PANEL 3

SCALE 1:50



PANEL 1A

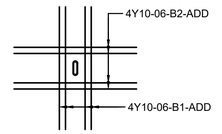
SCALE 1:50



* ADD REBAR TO MH CUT-OUT

MIRROR FOR OPPOSITE END

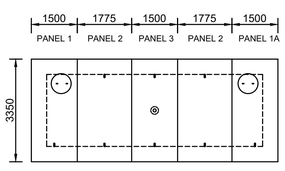
SCALE 1:50



ADD REBAR LIFTING HOLES

SCALE 1:25

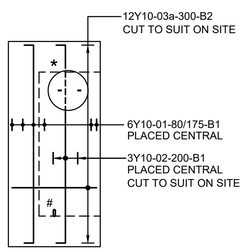
MEMBER		REINFORCEMENT					BENDING DIMENSIONS FOR SHAPE CODES TO SABS - 82					
MEMBER AND SIZE	No. OFF	No./ UNIT	TYPE AND SIZE	BAR MARK	TOTAL	LENGTH	SHAPE CODES	A	B	C	D	E/R
1,0m DROP STRUCTURE PANEL 1 & 1A	2	6	Y10	01	12	3380	38	100	3230	100		
		3	Y10	02	6	3380	38	100	3230	100		
		12	Y10	03a	24	1380	20					
		4	Y12	04	8	1200	20					
		4	Y12	05	8	1200	62	760	540			
		8	Y10	06	16	1000	20					
1,0m DROP STRUCTURE PANEL 2	2	9	Y10	01	18	3380	38	100	3230	100		
		12	Y10	03b	24	1530	20					
		16	Y10	06	32	1000	20					
1,0m DROP STRUCTURE PANEL 3	1		Y10	01	8	3380	38	100	3230	100		
			Y10	03a	12	1380	20					
			Y12	04	8	1200	20					
			Y10	06	16	1000	20					



PLAN OF PRECAST CONCRETE PANELS

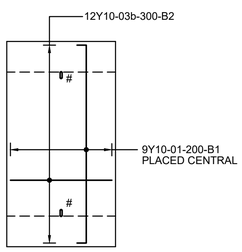
SCALE 1:100

1,5m DROP STRUCTURE
REF. DWG : PK278-SD-1-1162



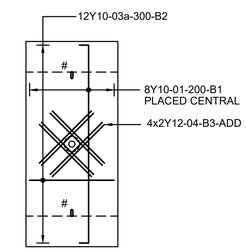
PANEL 1

SCALE 1:50



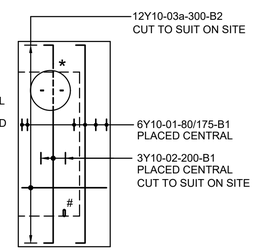
PANEL 2

SCALE 1:50



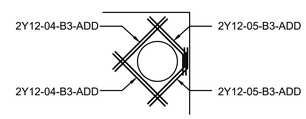
PANEL 3

SCALE 1:50



PANEL 1A

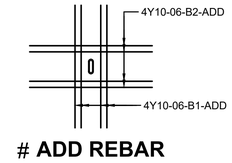
SCALE 1:50



* ADD REBAR TO MH CUT-OUT

MIRROR FOR OPPOSITE END

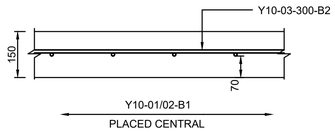
SCALE 1:50



ADD REBAR LIFTING HOLES

SCALE 1:25

MEMBER		REINFORCEMENT					BENDING DIMENSIONS FOR SHAPE CODES TO SABS - 82					
MEMBER AND SIZE	No. OFF	No./ UNIT	TYPE AND SIZE	BAR MARK	TOTAL	LENGTH	SHAPE CODES	A	B	C	D	E/R
1,5m DROP STRUCTURE PANEL 1 & 1A	2	6	Y10	01	12	3380	38	100	3230	100		
		3	Y10	02	6	3380	38	100	3230	100		
		12	Y10	03a	24	1380	20					
		4	Y12	04	8	1200	20					
		4	Y12	05	8	1200	62	760	540			
		8	Y10	06	16	1000	20					
1,5m DROP STRUCTURE PANEL 2	2	9	Y10	01	18	3380	38	100	3230	100		
		12	Y10	03b	24	1650	20					
		16	Y10	06	32	1000	20					
1,5m DROP STRUCTURE PANEL 3	1		Y10	01	8	3380	38	100	3230	100		
			Y10	03a	12	1380	20					
			Y12	04	8	1200	20					
			Y10	06	16	1000	20					



TYPICAL SECTION

SCALE 1:10

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 Consulting Engineers

21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700

WEBSITE: www.zce.com
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
1	2024-05	ISSUED FOR CONSTRUCTION

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

_____ CLIENT _____ DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

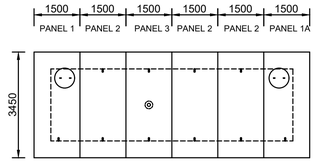
DRAWING DESCRIPTION

PRECAST CONCRETE PANELS
REINFORCING DETAILS
SHEET 1 OF 2

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-05	AS SHOWN	A1

DRAWING NUMBER

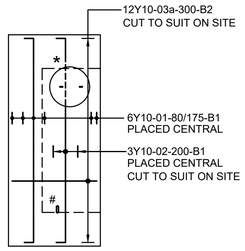
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2B-MP-008	0



PLAN OF PRECAST CONCRETE PANELS

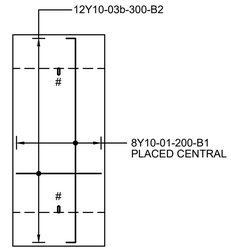
SCALE 1:100

2,0m DROP STRUCTURE
REF. DWG : PK278-SD-1-1172



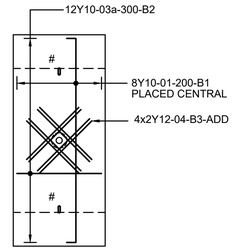
PANEL 1

SCALE 1:50



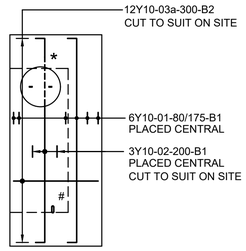
PANEL 2

SCALE 1:50



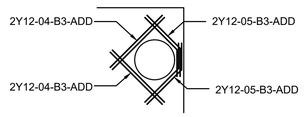
PANEL 3

SCALE 1:50



PANEL 1A

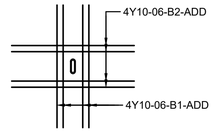
SCALE 1:50



* ADD REBAR TO MH CUT-OUT

MIRROR FOR OPPOSITE END

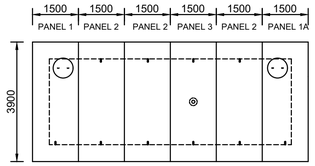
SCALE 1:50



ADD REBAR LIFTING HOLES

SCALE 1:25

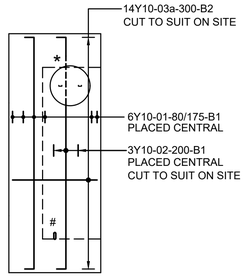
MEMBER		REINFORCEMENT					BENDING DIMENSIONS FOR SHAPE CODES TO SABS - 82					
MEMBER AND SIZE	No. OFF	No./ UNIT	TYPE AND SIZE	BAR MARK	TOTAL	LENGTH	SHAPE CODES	A	B	C	D	E/R
2,0m DROP STRUCTURE PANEL 1 & 1A	2	6	Y10	01	12	3480	38	100	3330	100		
		3	Y10	02	6	3480	38	100	3330	100		
		12	Y10	03a	24	1380	20					
		4	Y12	04	8	1200	20					
		4	Y12	05	8	1200	62	760	540			
		8	Y10	06	16	1000	20					
2,0m DROP STRUCTURE PANEL 2	3	8	Y10	01	24	3480	38	100	3330	100		
		12	Y10	03b	36	1380	20					
		16	Y10	06	48	1000	20					
2,0m DROP STRUCTURE PANEL 3	1		Y10	01	8	3480	38	100	3330	100		
			Y10	03a	12	1380	20					
			Y12	04	8	1200	20					
			Y10	06	16	1000	20					



PLAN OF PRECAST CONCRETE PANELS

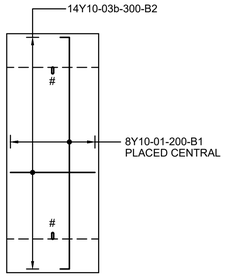
SCALE 1:100

1,5m MAIN OUTFALL DROP STRUCTURE
REF. DWG : PK278-SD-1-1182



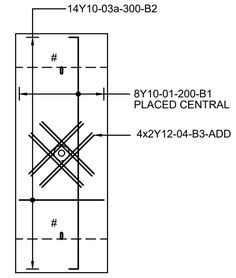
PANEL 1

SCALE 1:50



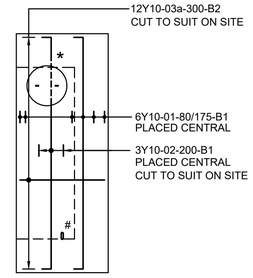
PANEL 2

SCALE 1:50



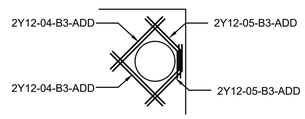
PANEL 3

SCALE 1:50



PANEL 1A

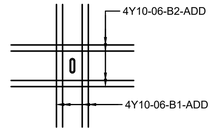
SCALE 1:50



* ADD REBAR TO MH CUT-OUT

MIRROR FOR OPPOSITE END

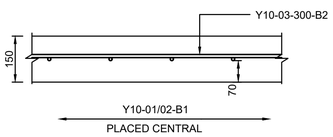
SCALE 1:50



ADD REBAR LIFTING HOLES

SCALE 1:25

MEMBER		REINFORCEMENT					BENDING DIMENSIONS FOR SHAPE CODES TO SABS - 82					
MEMBER AND SIZE	No. OFF	No./ UNIT	TYPE AND SIZE	BAR MARK	TOTAL	LENGTH	SHAPE CODES	A	B	C	D	E/R
1,5m MAIN OUTFALL DROP STRUCTURE PANEL 1 & 1A	2	6	Y10	01	12	3930	38	100	3780	100		
		3	Y10	02	6	3930	38	100	3780	100		
		14	Y10	03a	28	1380	20					
		4	Y12	04	8	1200	20					
		4	Y12	05	8	1200	62	760	540			
		8	Y10	06	16	1000	20					
1,5m MAIN OUTFALL DROP STRUCTURE PANEL 2	3	8	Y10	01	24	3930	38	100	3780	100		
		14	Y10	03b	42	1380	20					
		16	Y10	06	48	1000	20					
1,5m MAIN OUTFALL DROP STRUCTURE PANEL 3	1		Y10	01	8	3930	38	100	3780	100		
			Y10	03a	14	1380	20					
			Y12	04	8	1200	20					
			Y10	06	16	1000	20					



TYPICAL SECTION

SCALE 1:10

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 Consulting Engineers

21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700

WEBSITE: www.zce.com
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
1	2024-05	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

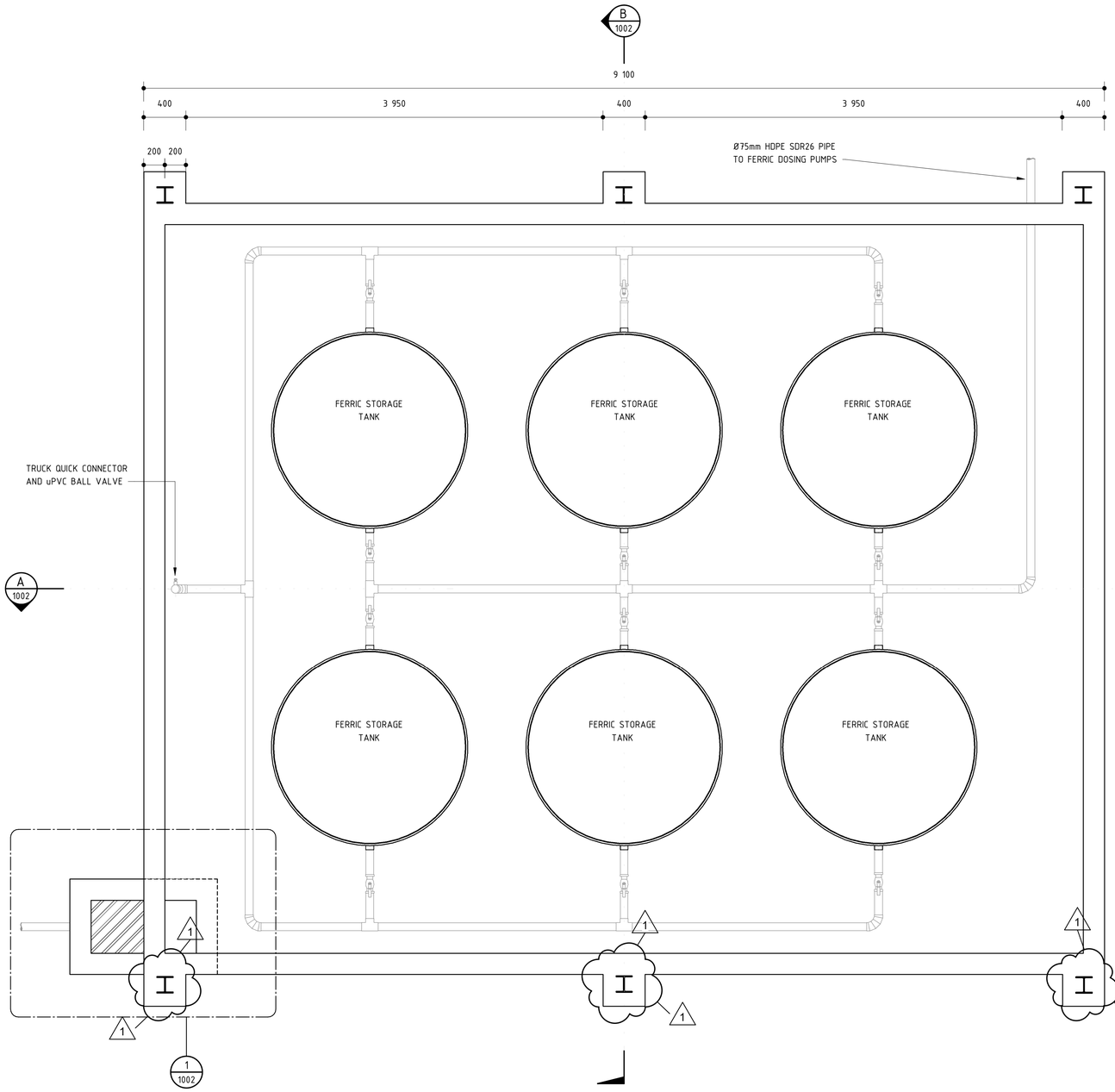
DRAWING DESCRIPTION

PRECAST CONCRETE PANELS
REINFORCING DETAILS
SHEET 2 OF 2

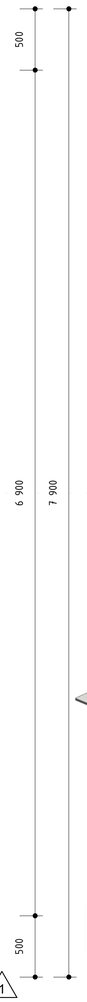
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2024-05	AS SHOWN	A1

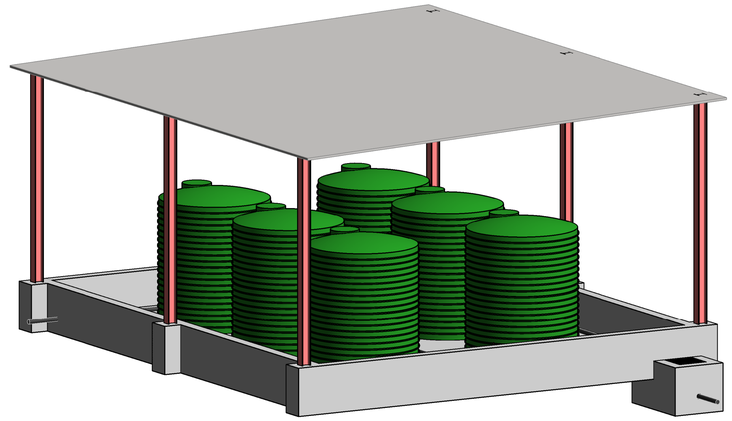
DRAWING NUMBER

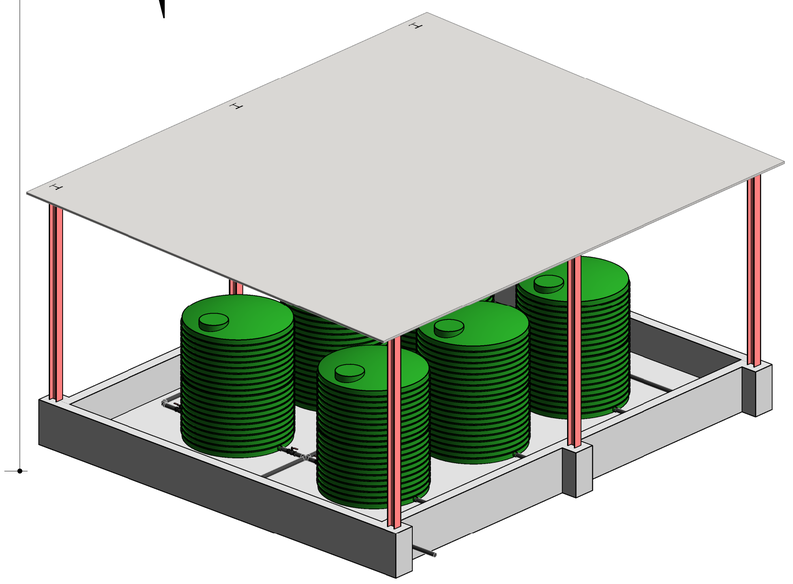
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-CP-2B-MP-009	0



PLAN VIEW
1 : 25







GENERAL 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.

CONCRETE NOTES:

2.1 THE CONTRACTOR SHALL ENSURE THAT ALL REINFORCEMENT IS PROPERLY HELD IN POSITION AND SHALL ALSO MAINTAIN THE CORRECT CONCRETE COVER UTILIZING APPROVED PATENT SPACERS (NOT STONES, OFFCUT REINFORCEMENT, BRICKS ETC.) AT ALL TIMES.
2.2 UNLESS OTHERWISE SPECIFIED,THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN mm AS STATED BELOW:

WALLS	- 60mm
FLOORS	- 50mm
SLABS	- 60mm

2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION.
2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.
2.6 ALL EXPOSED CORNERS TO HAVE A 20 x 20mm CHAMFER.
2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL 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.
2.10 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.: PK278-SP-2B-PST1-502
FOR JOINT DETAILS SEE DRAWING PK278-SP-2B-ST-1001.

LEGEND:

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

CONSTRUCTION DRAWING

NOTES

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

ZAKUMI Consulting Engineers
21 COMPENSATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
T	2022-03	ISSUED FOR TENDER
0	2023-03-08	ISSUED FOR CONSTRUCTION
1	2023-03-24	REVISED STRUCTURAL DETAILS

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

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

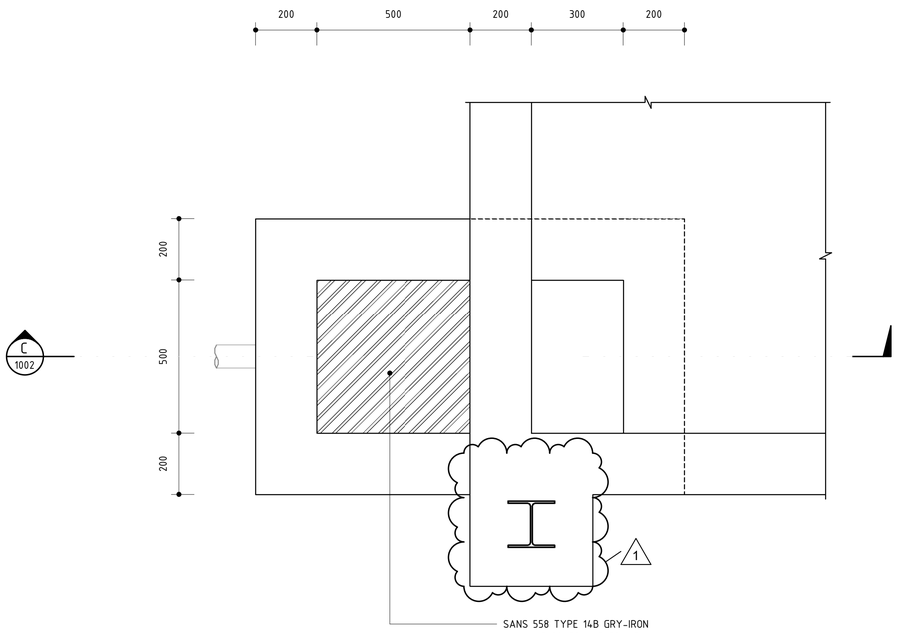
PLAN VIEW AND 3D VIEW

FERRIC STORAGE TANK BUND

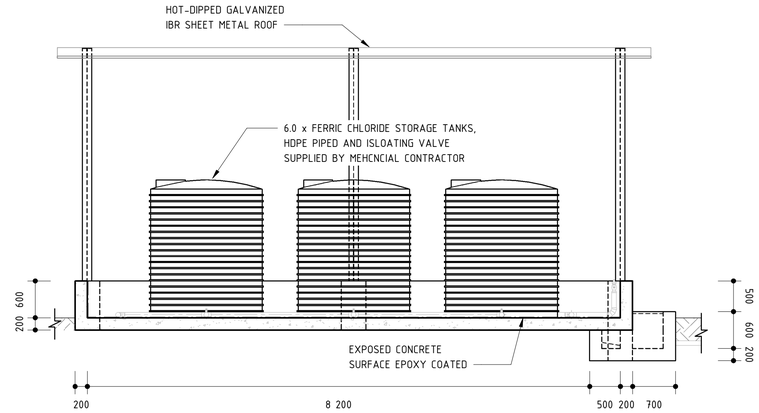
DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-03-24	As indicated	A1

DRAWING NUMBER

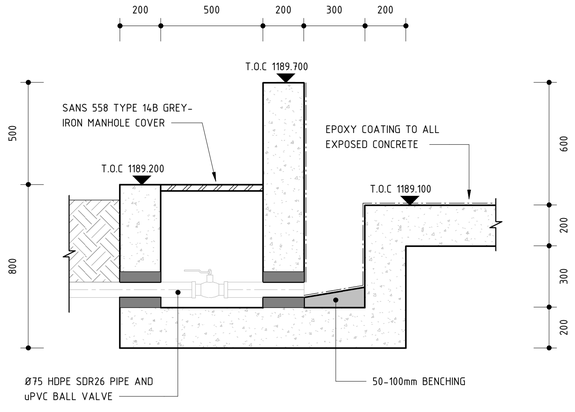
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0005-1001	1



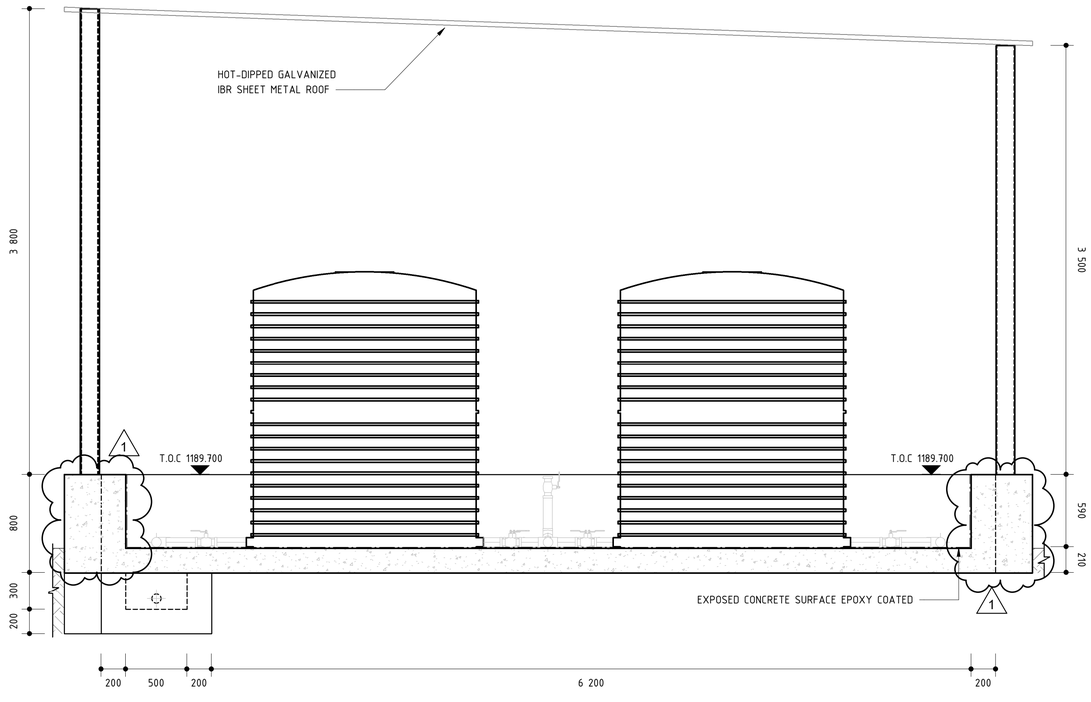
DETAIL
SCALE 1 : 10 — 1 / 1001



SECTION
SCALE 1 : 50 — A / 1001



SECTION
SCALE 1 : 15 — C / 1002



SECTION
SCALE 1 : 25 — B / 1001

GENERAL 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.

CONCRETE NOTES:

2.1 THE CONTRACTOR SHALL ENSURE THAT ALL REINFORCEMENT IS PROPERLY HELD IN POSITION AND SHALL ALSO MAINTAIN THE CORRECT CONCRETE COVER UTILIZING APPROVED PATENT SPACERS (NOT STONES, OFFCUT REINFORCEMENT, BRICKS ETC.) AT ALL TIMES.
2.2 UNLESS OTHERWISE SPECIFIED,THE CONCRETE COVER SHALL BE THE GREATER OF THE BAR DIAMETER OR THE VALUES IN mm AS STATED BELOW:
WALLS - 60mm
FLOORS - 50mm
SLABS - 60mm
2.3 ALL CONCRETE SHALL BE MECHANICALLY COMPACTED THROUGH THE USE OF VIBRATORS.
2.4 CONCRETE SHALL BE CAST CONTINUOUSLY. IF STOPPAGES OF MORE THAN 40 MINUTES ARE UNAVOIDABLE, CONSTRUCTION JOINTS SHALL BE FORMED IN THE POSITIONS AND ACCORDING TO THE DETAILS AS PER PROJECT SPECIFICATION.
2.5 OPENINGS IN THE CONCRETE WALLS TO BE GROUTED CLOSED WITH ANTI-CORROSION PRODUCT AS PER PROJECT SPECIFICATION AFTER THE INSTALLATION OF THE PIPEWORK.
2.6 ALL EXPOSED CORNERS TO HAVE A 20 x 20mm CHAMFER.
2.7 NO CONCRETE SHALL BE PLACED PRIOR TO THE APPROVAL OF THE RESIDENT ENGINEER.
2.8 A CLASS U3 SURFACE FINISH, INCLUDING STEEL FLOAT TO A SMOOTH SURFACE WITHIN 2mm OF LEVEL, SHALL BE PROVIDED TO ALL TOP OF WALL 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.
2.10 DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No.: PK278-SP-2B-PST1-502
FOR JOINT DETAILS SEE DRAWING PK278-SP-2B-ST-1001.

LEGEND:

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

CONSTRUCTION DRAWING

NOTES

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

ZAKUMI Consulting Engineers
21 COMPENSATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE
NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
T	2022-03	ISSUED FOR TENDER
0	2023-03-08	ISSUED FOR CONSTRUCTION
1	2023-03-24	REVISED STRUCTURAL DETAILS

T. BANDA
ENGINEER — PR ENG no. — DATE

CLIENT — DATE

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

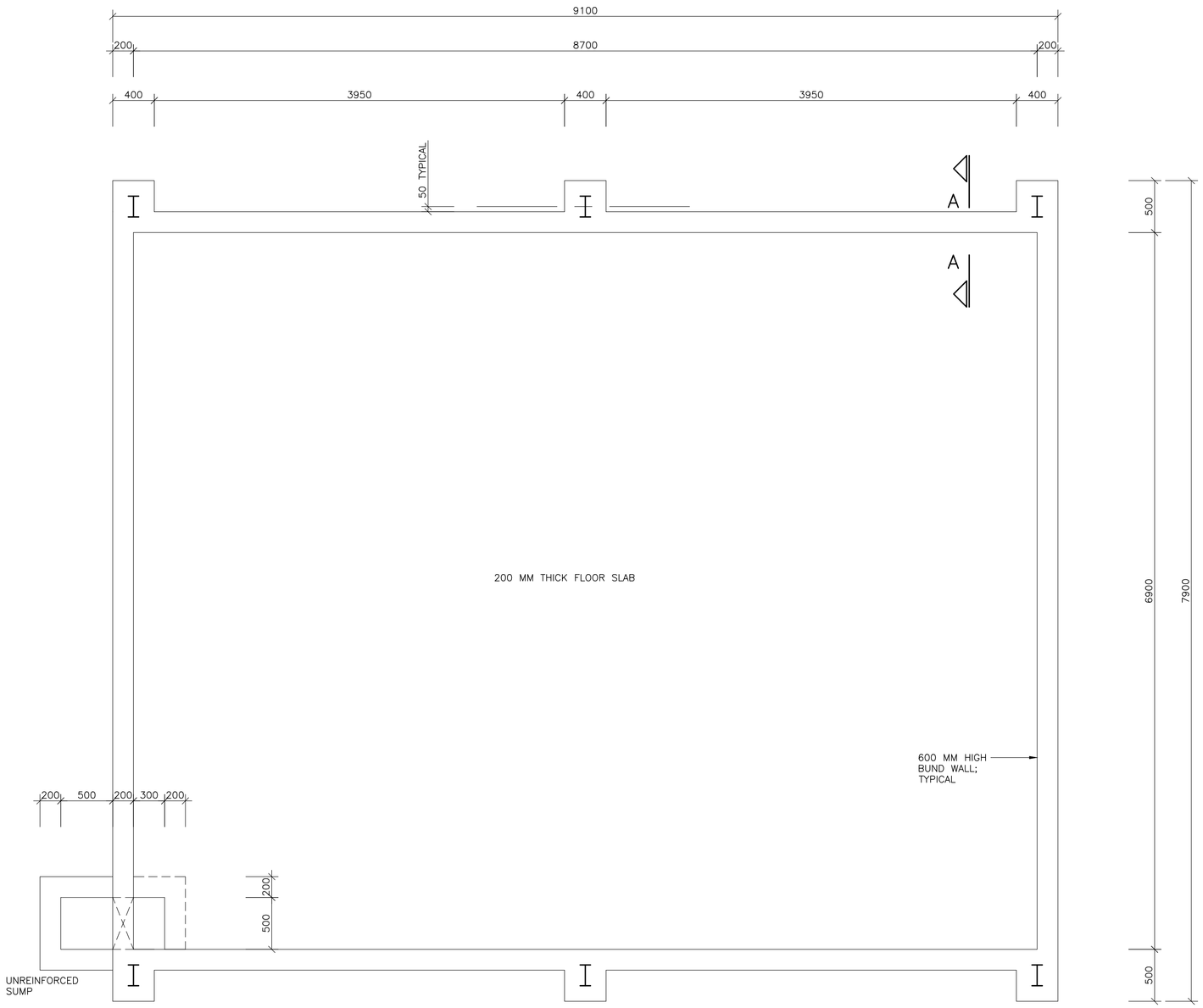
SECTIONS AND DETAILS

FERRIC STORAGE TANK BUND

DESIGNED	DRAWN	CHECKED
Designer	Author	Checker
REV DATE	SCALE	ORIGINAL SIZE
2023-03-24	As indicated	A1

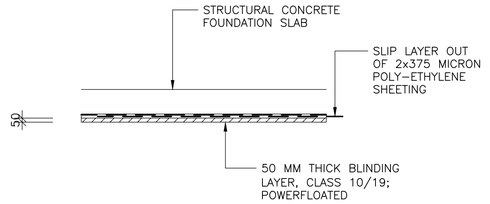
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0005-1002	1



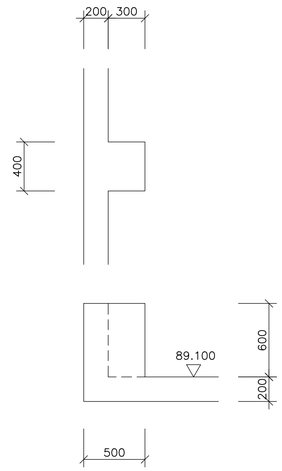
PLAN ON FOUNDATION

SCALE 1:25



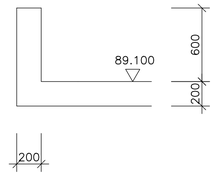
BLINDING / SLIP LAYER DETAIL

SCALE 1:37.5 TYPICAL DETAIL



COLUMN STUB DETAIL

SCALE 1:25



BUND WALL SECTION A–A

SCALE 1:25

NOTES:

1. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR A SAFE BEARING PRESSURE OF 200 kPa AND A MAX DIFFERENTIAL SETTLEMENT OF 5 MM
2. FOUNDING CONDITIONS TO BE APPROVED BY THE GEOTECHNICAL ENGINEER
3. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 10/19 BELOW SLAB, ALL AS PER DETAIL ON THIS SHEET
4. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS AND WALLS TO BE CLASS WR35/19
5. CONSTANT TO ALL LEVELS = 1100.000

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.com
TEL: +21 15 291 1176
FAX: +21 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-04-21	ISSUED FOR CONSTRUCTION

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

CLIENT _____ DATE _____

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

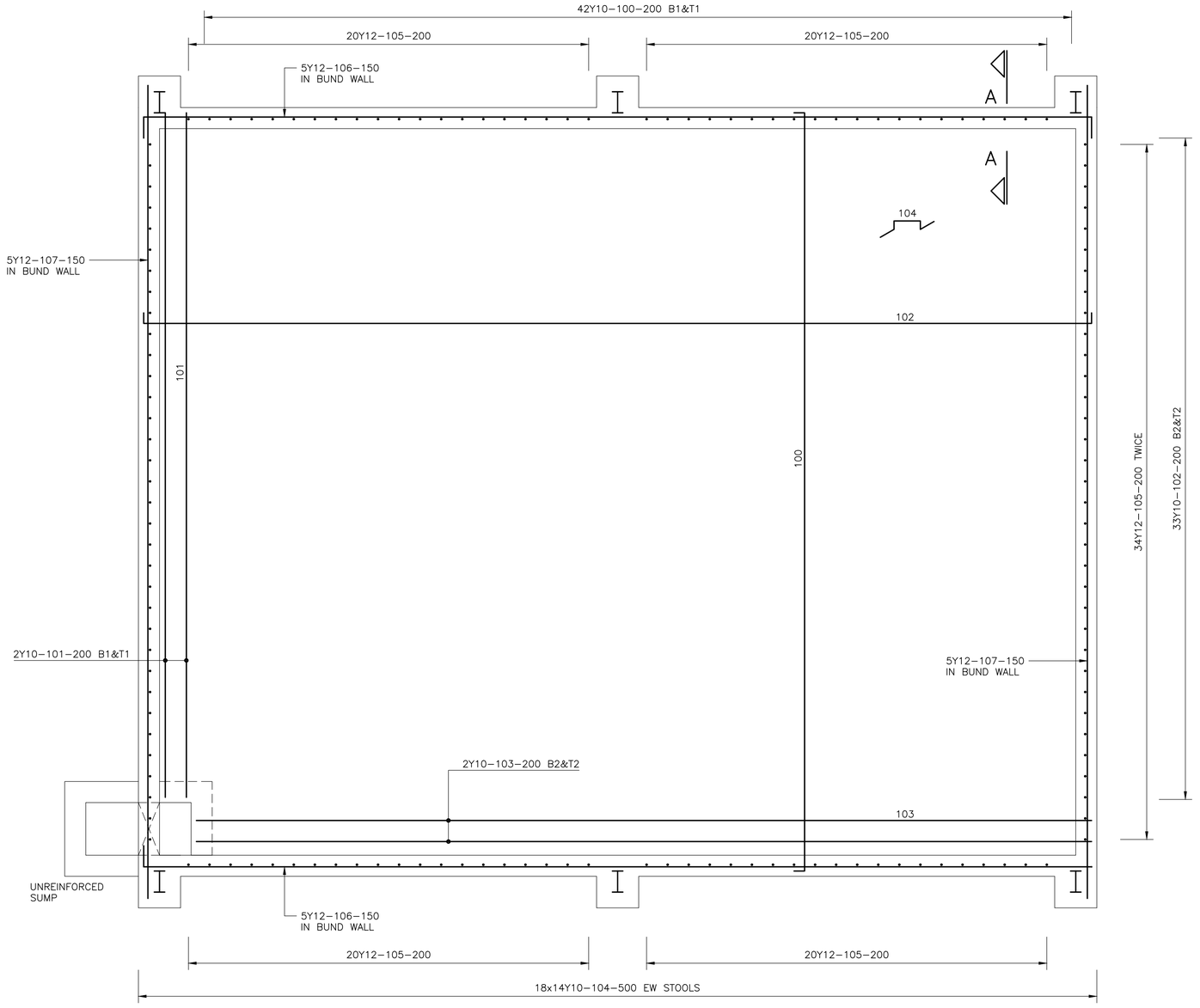
DRAWING DESCRIPTION

FERRIC CHLORIDE STORAGE BUND CONCRETE DETAILS

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

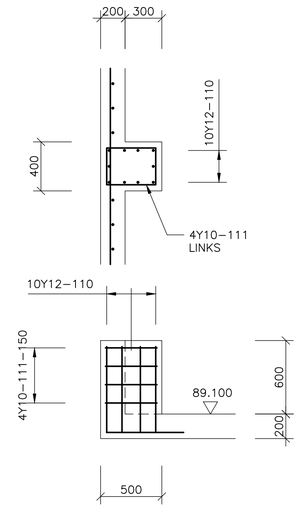
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0005-5001	0



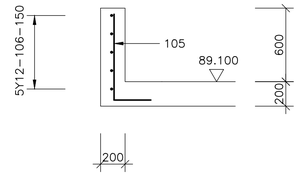
PLAN ON FOUNDATION

SCALE 1:25



COLUMN STUB DETAIL

SCALE 1:25



BUND WALL SECTION A–A

SCALE 1:25

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.com
TEL: +21 15 291 1176
FAX: +21 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-04-21	ISSUED FOR CONSTRUCTION

T. BANDA
ENGINEER | PR ENG no. | DATE

CLIENT | DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

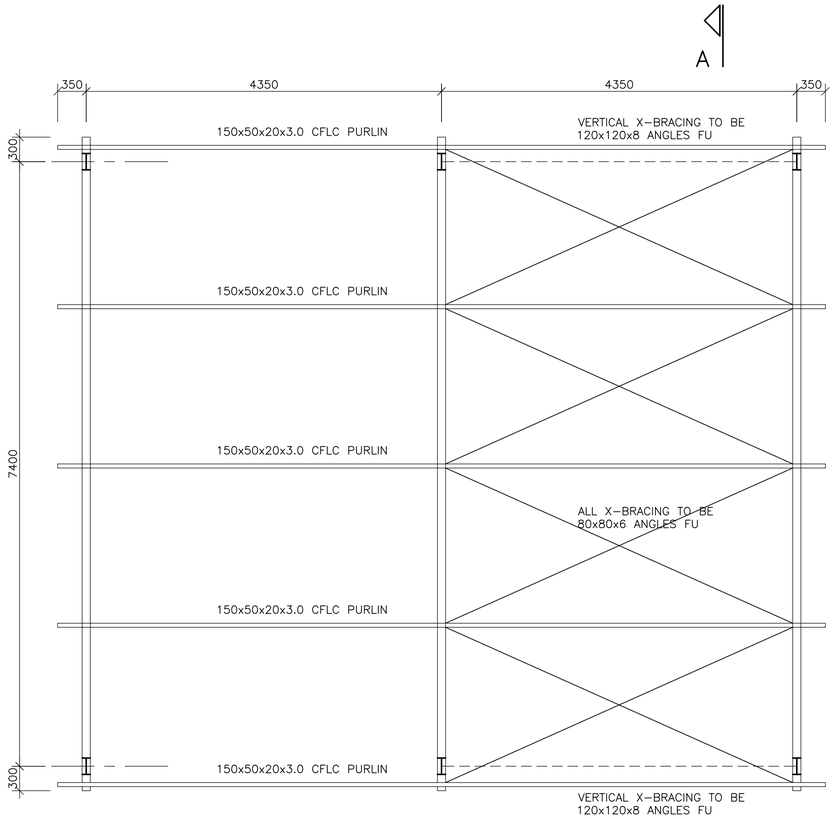
DRAWING DESCRIPTION

FERRIC CHLORIDE STORAGE BUND REINFORCEMENT DETAILS

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

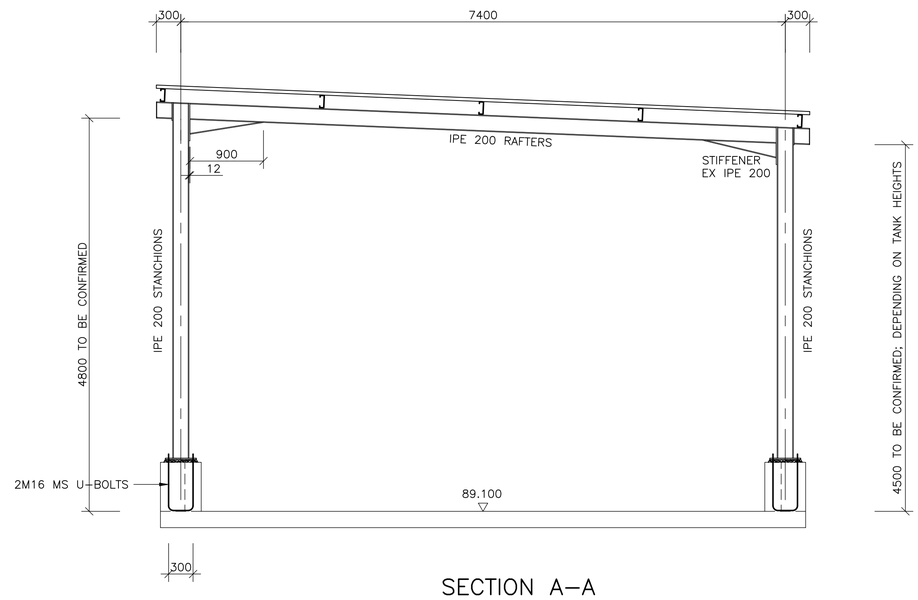
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0005-5101	0



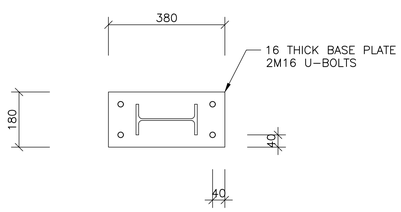
PLAN ON ROOF STRUCTURE

SCALE 1:37.5



SECTION A-A

SCALE 1:37.5



PLAN ON BASE PLATE

SCALE 1:10

STRUCTURAL STEEL NOTES:

1 ALL STRUCTURAL STEELWORK TO BE EXECUTED IN ACCORDANCE WITH SANS 2001-CS1:2005
2 SPECIFICATION DATA ASSOCIATED WITH SANS 2001 ARE LISTED BELOW
3 THE GRADES OF STEEL TO BE USED ARE AS FOLLOWS:
  a) ALL HOT ROLLED STEEL TO BE GRADE 355 JR ACCORDING TO EN 10025
  b) ALL COLD FORMED STEELWORK TO HAVE A MINIMUM YIELD STRESS OF 275 MPa
4 ALL BOLTS TO BE CLASS 8.8
5 ALL WELD THICKNESSES TO BE 6 MM
6 ATTACHMENTS TO FACILITATE ERECTION MAY NOT REMAIN PART OF THE PERMANENT STRUCTURE
7 WASHERS ARE REQUIRED UNDER ALL NUTS AND BOLT HEADS
8 ULTRASONIC OR RADIOGRAPHIC EXAMINATION IS REQUIRED ON ALL MAJOR CONNECTIONS
9 DYE PENETRATION TESTING IS REQUIRED ON 10 % OF ALL WELDED CONNECTIONS
10 ALL TESTING TO BE UNDERTAKEN BY AN APPROVED INDEPENDENT THIRD PARTY, WHO MUST ISSUE A CERTIFICATE OF COMPLIANCE
11 COATING TO BE AS FOLLOWS:
  a PRIME COAT ZINC CHROMATE OF 30 MICRON IN SHOP
  b UNIVERSAL UNDERCOAT OF 30 MICRON IN SHOP
  c SECOND UNIVERSAL UNDERCOAT OF 30 MICRON IN SHOP
  d FINAL COAT OF 30 MICRON ENAMEL PAINT

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.com
TEL: +21 15 291 1176
FAX: +21 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-04-21	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

FERRIC CHLORIDE STORAGE BUND ROOF STRUCTURES

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

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0005-5102	0

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Foundation	1	84	Y10	7350	84	100	38	100	7200	(100)		
		4	Y10	6650	4	101	38	100	6500	(100)		
		66	Y10	9150	66	102	38	100	9000	(100)		
		4	Y10	8650	4	103	38	100	8500	(100)		
		252	Y10	900	252	104	83	250	70	300	(300)	
		148	Y12	1000	148	105	37	325	(700)			
		10	Y12	9350	10	106	38	200	9000	(200)		
		10	Y12	7700	10	107	20	(7700)				
Column	6	10	Y12	1000	60	110	37	325	(700)			
Stubs		4	Y10	1550	24	111	60	400	300			

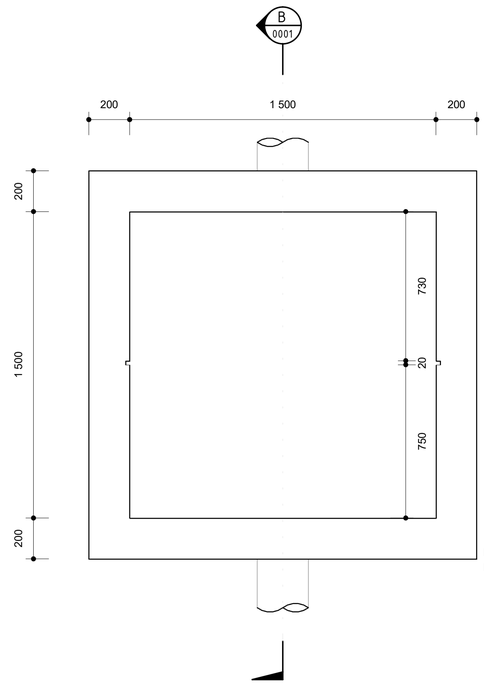
	8	10	12	16	20	25	32	40	TOT
R									
Y		953	336						1290
TOT		953	336						1290

Date	2023/04/20
Det. by	Koos Bultman
Ref Dwg	5101
Job No	PK278

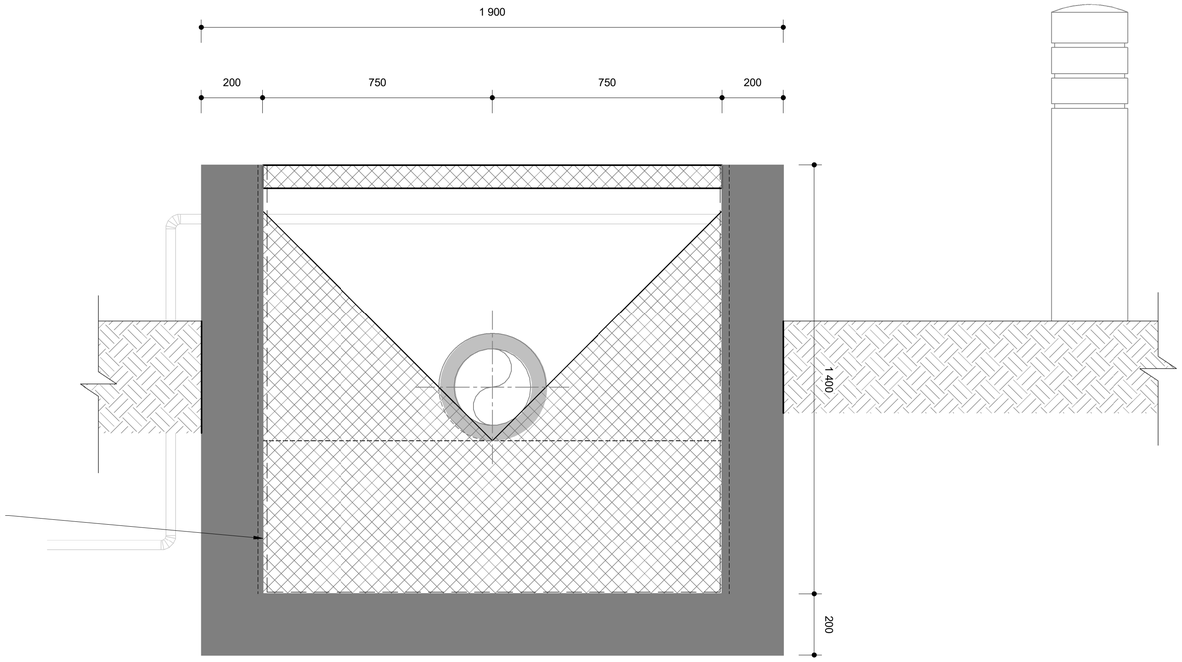
PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Ferric Storage Bund
Foundations

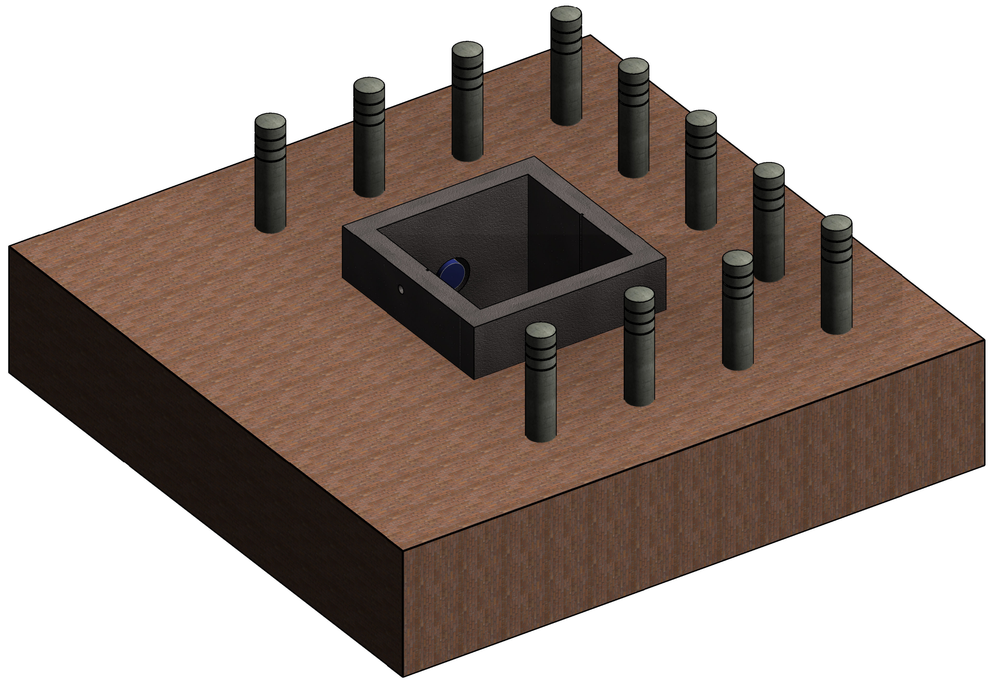
Revision	1
Schedule No	550

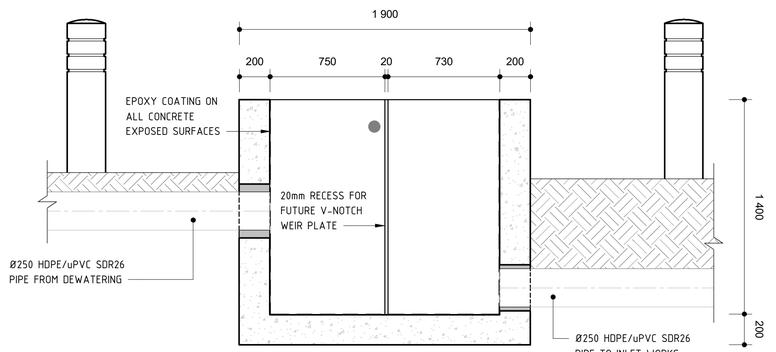


PLAN VIEW
SCALE 1 : 15



SECTION A
SCALE 1 : 10





SECTION B
SCALE 1 : 20
0001

GENERAL 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.

1.4 ANY ERRORS, DIMENSIONS OR DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.

1.5 TOLERANCES SHALL BE DEGREE OF ACCURACY UNLESS OTHERWISE SPECIFIED.

1.6 ALL OVER - EXCAVATION SHALL BE MADE GOOD USING MASS CONCRETE FOR THE CONTRACTORS ACCOUNT.

CONCRETE

2.1 NO-FINES CONCRETE, WHERE STRUCTURAL CONCRETE IS TO BE PLACED ON TOP, SHALL BE FINISHED WITH A SKIMMED COAT OF MORTAR TO LIMIT BLEEDING OF TRUCTURALCONCRETE AND OR BLINDING OF THE NO-FINE LAYER.

2.2

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.

REINFORCEMENT

3.1 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.

3.2 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

3.3 WELDING, HEATING TREATMENT AND GAS CUTTING OF REINFORCEMENT SHALL BE PERMITTED.

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 Consulting Engineers
21 COMPENSATIE str, POLOKWANE, LIMPOPO, 0699
P.O. BOX 3154, POLOKWANE, LIMPOPO, 0700

WEBSITE: www.zce.co.za
TEL: +27 15 291 1176
FAX: +27 15 291 1993

CLIENT

CITY OF Polokwane NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
T	2022-03	ISSUED FOR TENDER
0	2023-03-08	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTEWATER TREATMENT WORKS

DRAWING DESCRIPTION

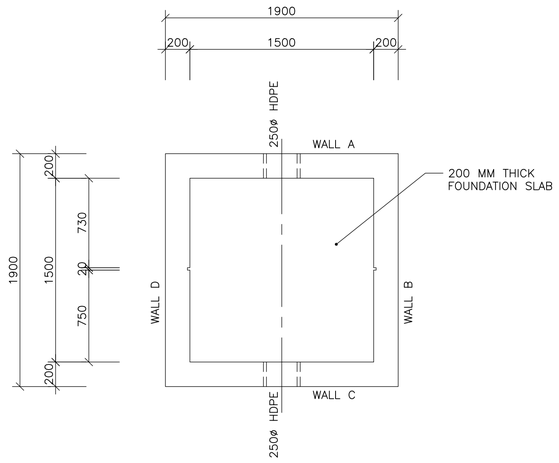
PLAN VIEW AND SECTIONS

FERRIC DOSING TANK

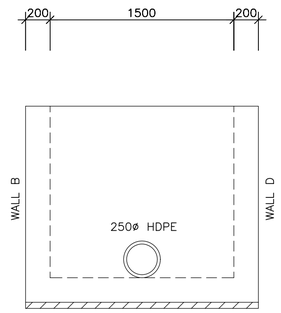
DESIGNED	DRAWN	CHECKED
C RAUTENBACH	C RAUTENBACH	L MIDDELBERG
REV DATE	SCALE	ORIGINAL SIZE
2023-03-08	As indicated	A1

DRAWING NUMBER

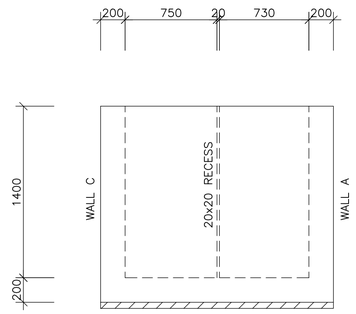
PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0009-0001	0



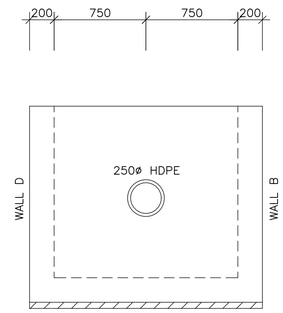
PLAN ON FOUNDATION
SCALE 1:25



ELEVATION ON WALL A
SCALE 1:25



ELEVATION ON WALL B
SCALE 1:25 WALL D IDENTICAL



ELEVATION ON WALL C
SCALE 1:25

NOTES:

1. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 10/19 BELOW FOUNDATION; SLIP LAYER NOT REQUIRED
2. STRUCTURAL CONCRETE FOR ALL FOUNDATIONS, WALLS AND SLABS TO BE CLASS WR35/19

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.com
TEL: +27 15 291 1178
FAX: +27 15 291 1993

CLIENT: CITY OF POLOKWANE — NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-04-21	ISSUED FOR CONSTRUCTION

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

_____ CLIENT _____ DATE

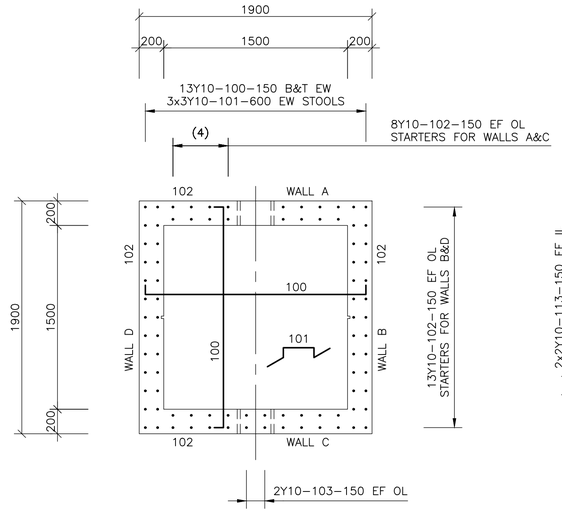
PROJECT: POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION: FERRIC DOSING TANK CONCRETE DETAILS

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

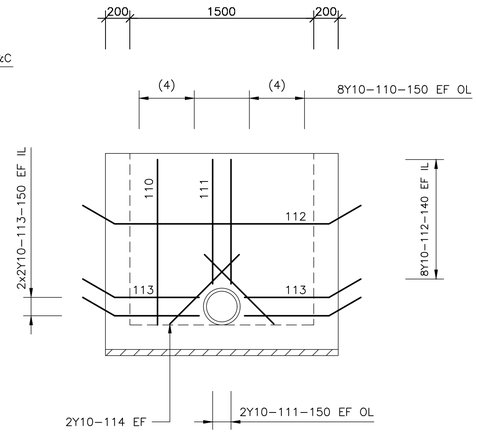
DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0009-5001	0



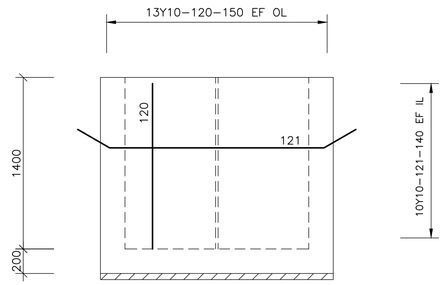
PLAN ON FOUNDATION

SCALE 1:25



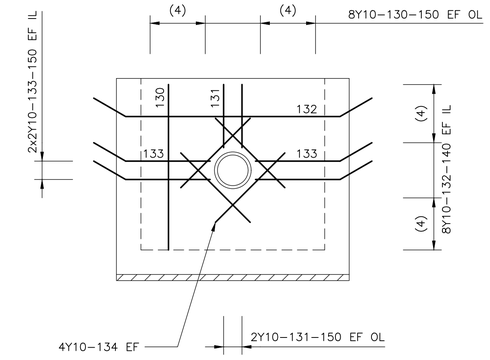
ELEVATION ON WALL A REINFORCEMENT

SCALE 1:25



ELEVATION ON WALL B REINFORCEMENT

SCALE 1:25 WALL D IDENTICAL



ELEVATION ON WALL C REINFORCEMENT

SCALE 1:25

NOTES:

1. PROVIDE A 50 MM BLINDING LAYER OF CONCRETE CLASS 10/19 BELOW FOUNDATION; SLIP LAYER NOT REQUIRED
2. STRUCTURAL CONCRETE FOR ALL FOUNDATION, WALLS AND SLAB TO BE CLASS WR35/19
3. ALL REINFORCEMENT TO BE APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
4. CONCRETE COVER TO FOUNDATION REINFORCEMENT AND STARTERS TO BE 50 MM THROUGHOUT
5. PROVIDE CLIPS MARK 104 AT 9 PER WALL

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 Consulting Engineers
21 COMPENSATIE STR, POLOKWANE, LIMPOPO, 0699
PO BOX 3154, POLOKWANE, LIMPOPO, 0700
WEBSITE: www.zce.com
TEL: +27 15 291 1178
FAX: +27 15 291 1993

CLIENT

CITY OF POLOKWANE NATURALLY PROGRESSIVE

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
0	2023-04-21	ISSUED FOR CONSTRUCTION

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

_____ _____
CLIENT DATE

PROJECT

POLOKWANE REGIONAL WASTE WATER TREATMENT WORKS

DRAWING DESCRIPTION

FERRIC DOSING TANK REINFORCEMENT DETAILS

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

DRAWING NUMBER

PROJ No - DISCIPLINE - SERV - SEQ No - (SHEET)	REV
PK278-01-STR-DRG-0009-5101	0

MEMBER	No OF	BARS PER MEMB	DIA.	LENGTH	TOTAL NUM-BER	MARK	S C	BENDING				
								A	B	C	D	E/r
Foundations	1	52	Y10	1950	52	100	38	100	1800	(100)		
		9	Y10	900	9	101	83	250	70	300	(300)	
		84	Y10	1050	84	102	37	300	(750)			
		4	Y10	950	4	103	37	300	(650)			
Wall clips	1	36	Y10	900	36	104	83	250	70	300	(300)	
Wall A	1	16	Y10	1350	16	110	20	(1350)				
		4	Y10	1000	4	111	20	(1000)				
		16	Y10	2100	16	112	38	200	1750	(200)		
		8	Y10	850	8	113	37	200	(675)			
		4	Y10	800	4	114	20	(800)				
Walls B & D	2	26	Y10	1350	52	120	20	(1350)				
		20	Y10	2100	40	121	38	200	1750	(200)		
Wall C	1	16	Y10	1350	16	130	20	(1350)				
		4	Y10	500	4	131	20	(500)				
		16	Y10	2100	16	132	38	200	1750	(200)		
		8	Y10	850	8	133	37	200	(675)			
		8	Y10	800	8	134	20	(800)				

	8	10	12	16	20	25	32	40	TOT
R									
Y		325							325
TOT		325							325

Date	2023/04/20
Det. by	Koos Bultman
Ref Dwg	5101
Job No	PK278

PROKON
Software Consultants (Pty) Ltd
http://www.prokon.com

Polokwane Regional WWTW
Ferric Dosing Tank
Foundations and Walls

Revision	1
Schedule No	500