

Volume	1	2	3	4			
Part	<i>T1</i>		T2	C1	C2	C3	C4

Johannesburg Water (SOC) Ltd



VOLUME 4 DRAWINGS

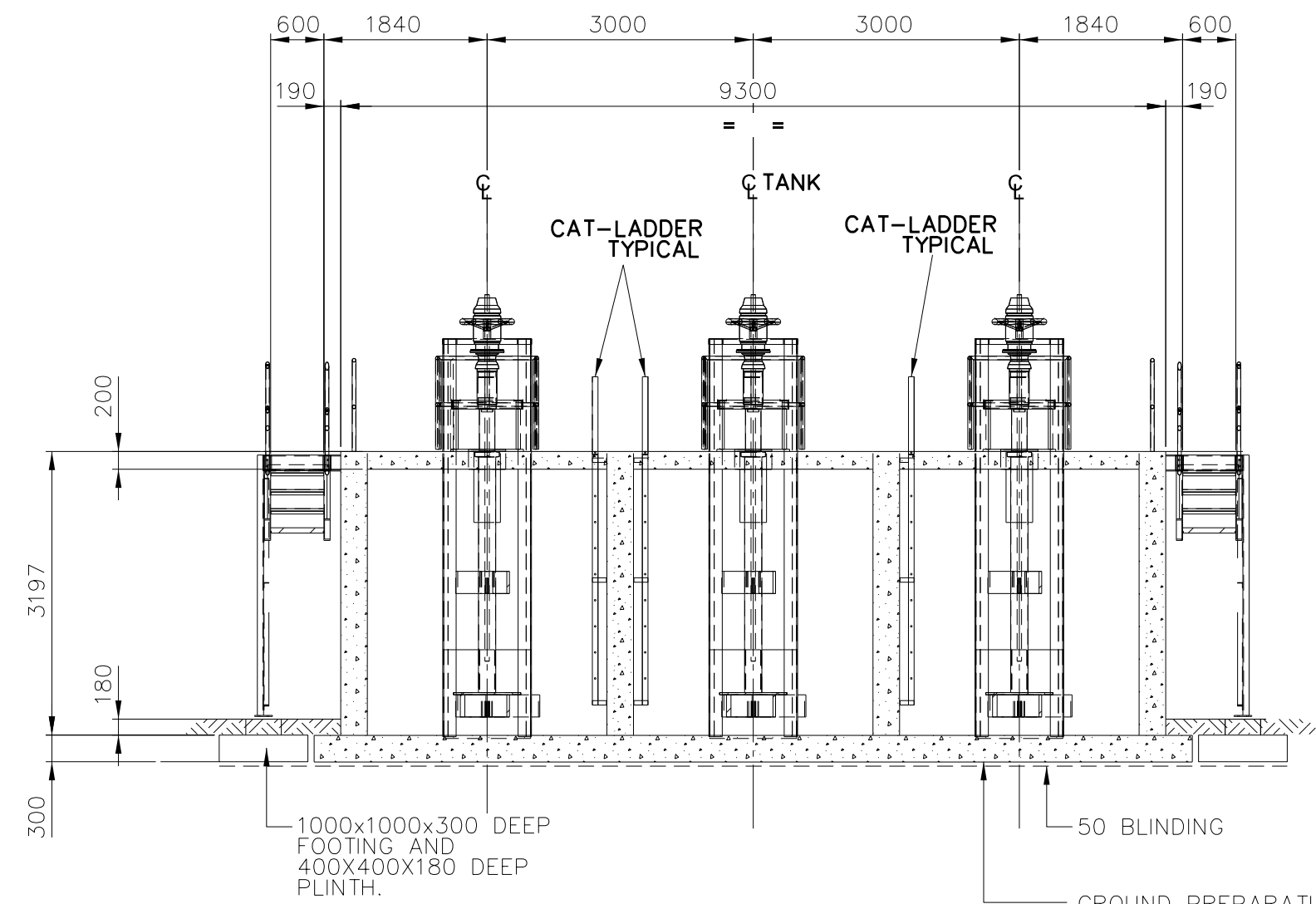
JW 13599

NORTHERN WASTEWATER TREATMENT WORKS (NWWTW): UNIT 4- LIQUOR TREATMENT PLANT (U4-LTP)

Date: June 2018

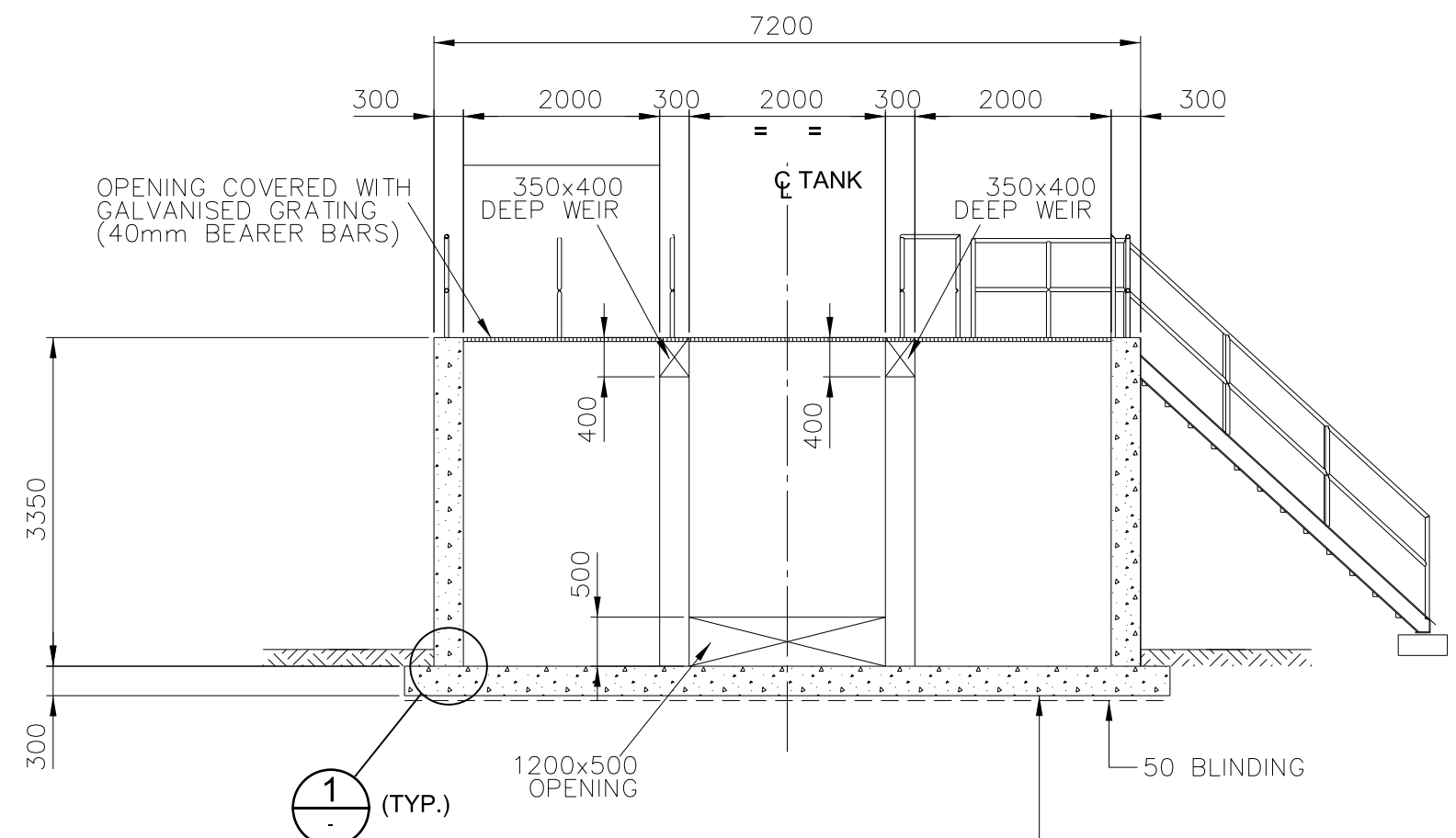


Employer:		Contractor:	
Witness:		Witness:	



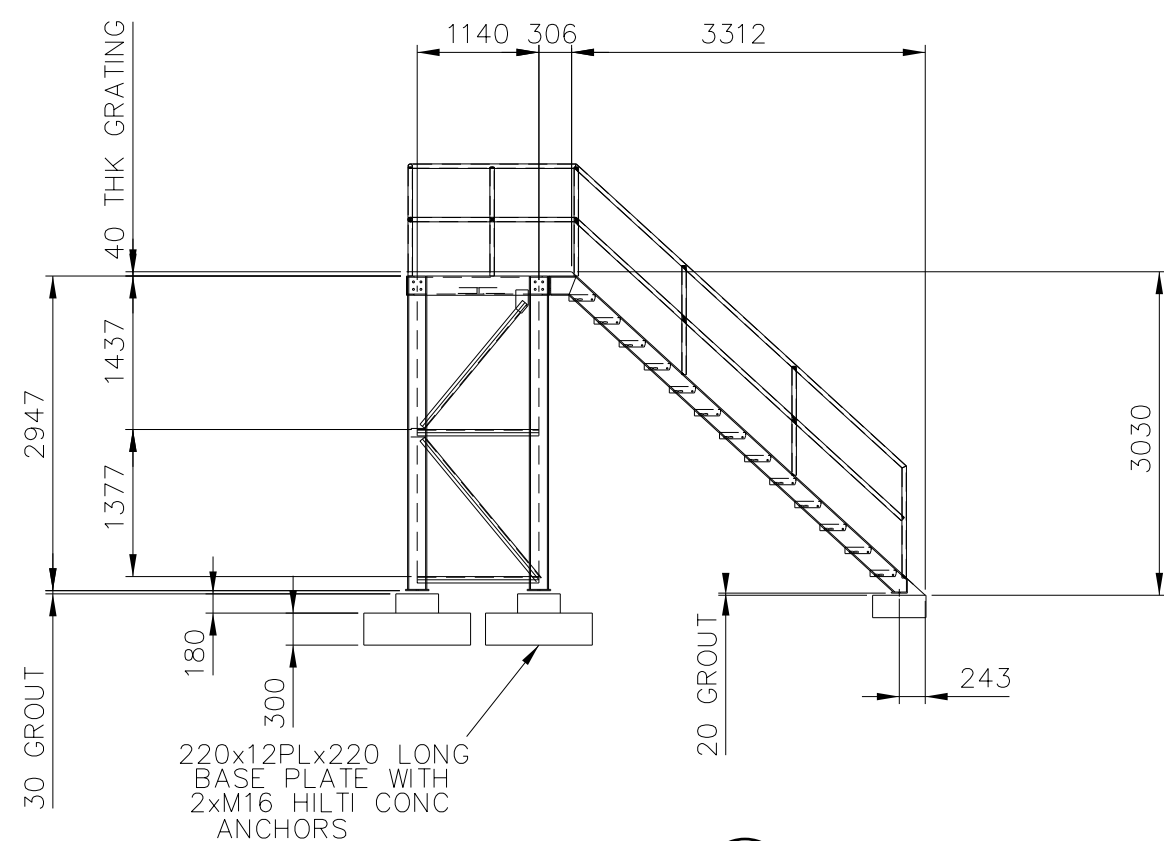
SECTION D
SCALE 1:50
H349523-231-270-0004-0001

- GROUND PREPARATION:
1. REMOVE 300mm OF MATERIAL FROM BELOW THE FLOORS/GROUND SLAB.
 2. COMPACT BASE TO APPROXIMATELY 95% MODIFIED AASHTO DENSITY OPTIMUM MOISTURE CONTENT.
 3. REPLACE WITH G7, OR BETTER, MATERIAL WHICH IS AVAILABLE ON SITE COMPACTED IN 2x150 LAYERS TO 95% MODIFIED AASHTO DENSITY AT OPTIMUM MOISTURE CONTENT UP TO THE REQUIRED FOUNDING LEVEL.



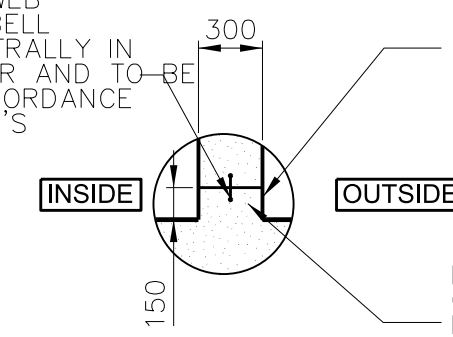
SECTION E
SCALE 1:50

- GROUND PREPARATION:
1. REMOVE 300mm OF MATERIAL FROM BELOW THE FLOORS/GROUND SLAB.
 2. COMPACT BASE TO APPROXIMATELY 95% MODIFIED AASHTO DENSITY OPTIMUM MOISTURE CONTENT.
 3. REPLACE WITH G7, OR BETTER, MATERIAL WHICH IS AVAILABLE ON SITE COMPACTED IN 2x150 LAYERS TO 95% MODIFIED AASHTO DENSITY AT OPTIMUM MOISTURE CONTENT UP TO THE REQUIRED FOUNDING LEVEL.

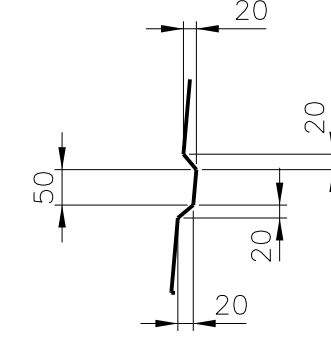


SECTION F
SCALE 1:50

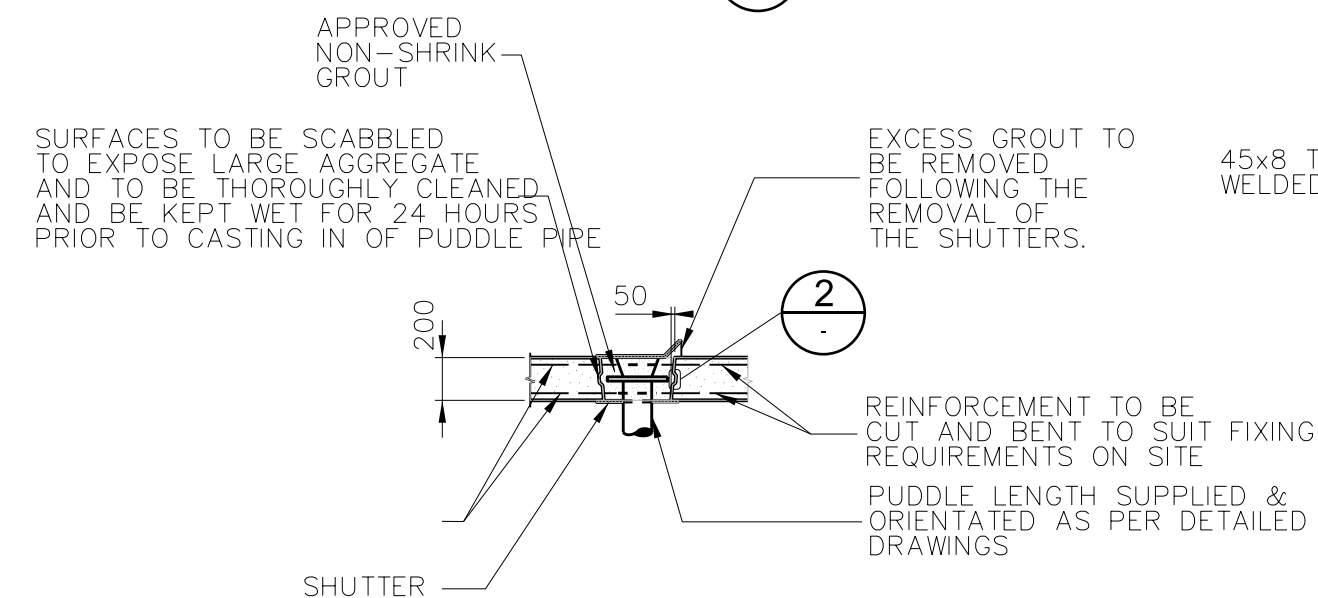
ABE TYPE B 150 PLAIN WEB DURAJOINT RUBBER DUMBBELL WATERSTOP PLACED CENTRALLY IN WALLS AND ABOUT KICKER AND TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.



DETAIL 1
SCALE 1:25

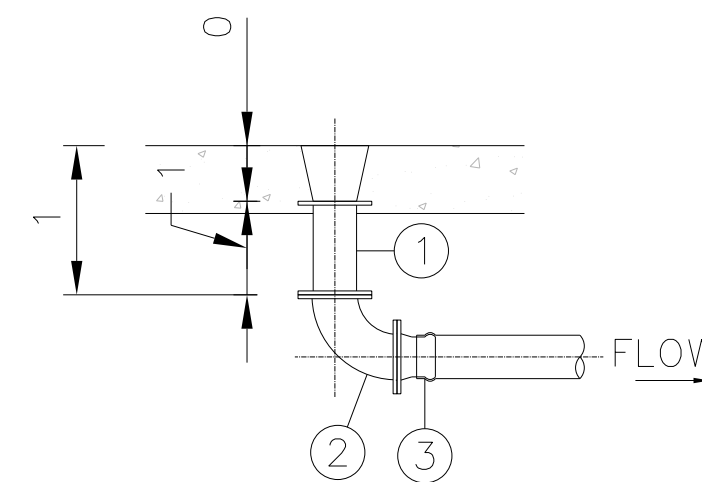


DETAIL 2
SCALE 1:5

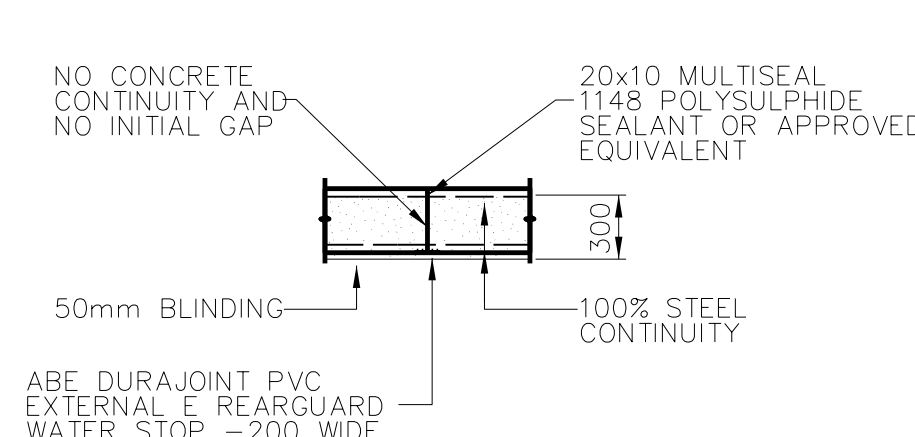


PUDDLE PIPE GROUTING DETAIL
SCALE 1:25

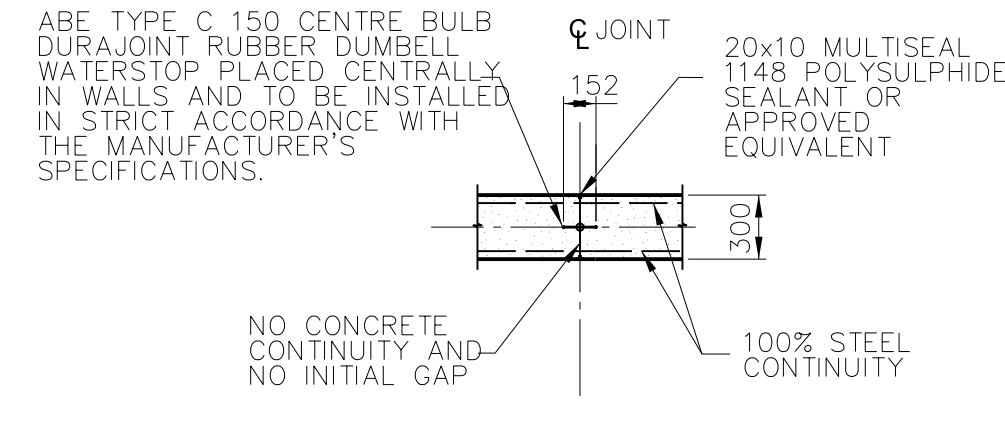
DETAIL 3
SCALE 1:5



TYPICAL PIPEWORK OUTLET DETAIL
NOT TO SCALE



FOUNDATION CONSTRUCTION JOINT (CJ)
SCALE 1:25



WALL CONSTRUCTION JOINT (CJ)
SCALE 1:25

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

HATCH

SURVEYED	-
DESIGNED	T. NAGAR
DRAWN	S. WESSON
CHECKED	S. MANGANYI
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

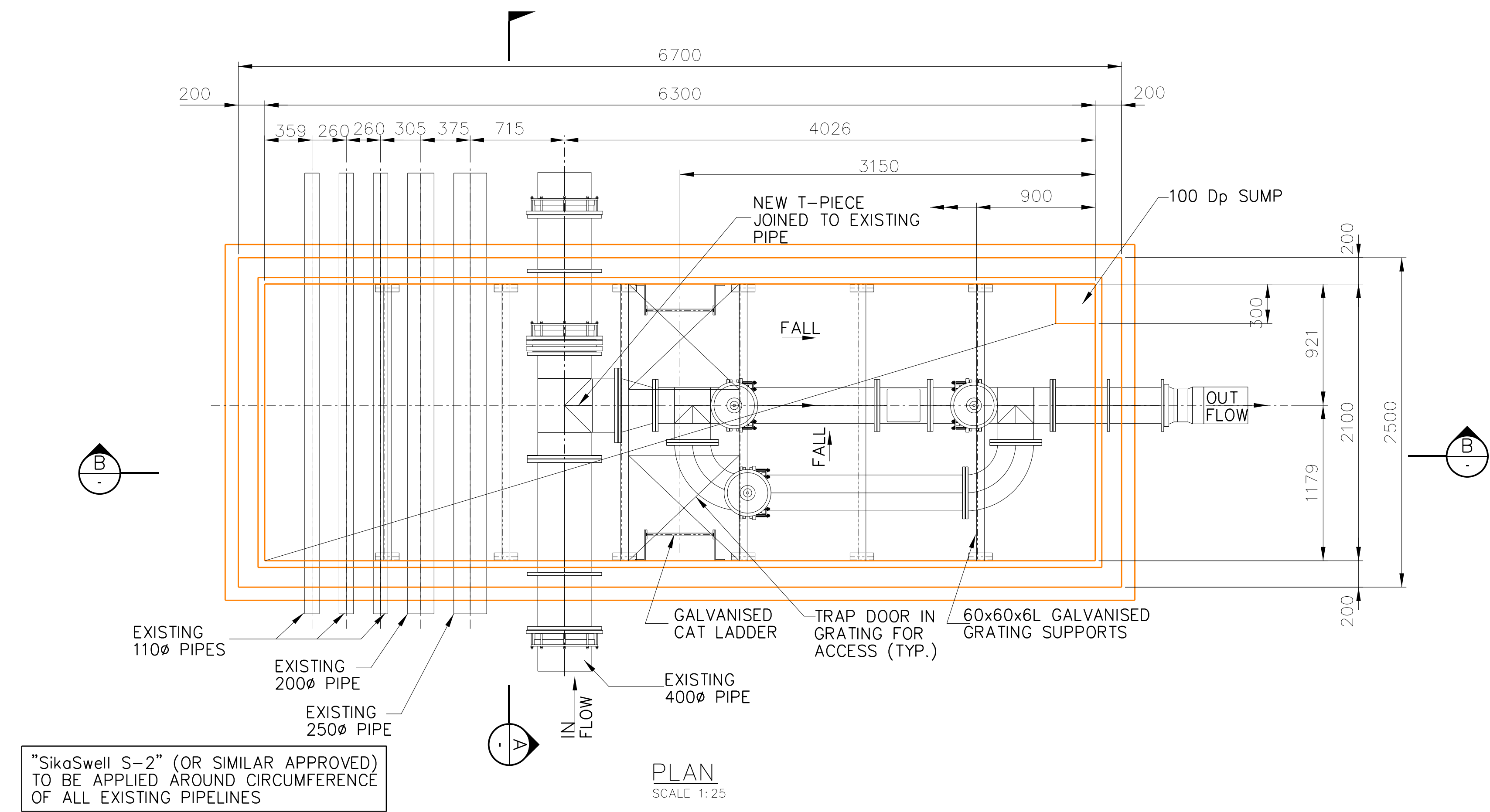
JOHANNESBURG WATER (PTY) LTD	
17 HARRISON STREET MARSHALLTOWN 2107	
Johannesburg Water	
TEL: (011) 688-1400 FAX: (011) 688-1529	

CITY OF JOHANNESBURG

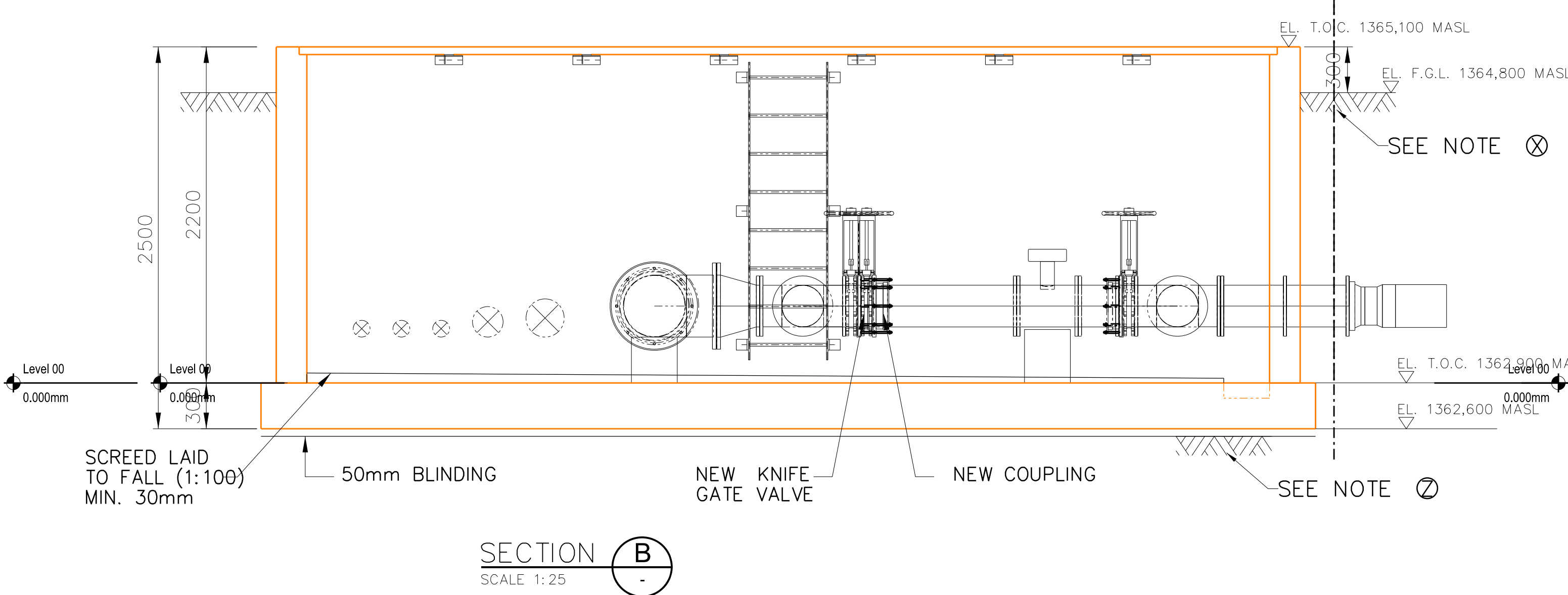
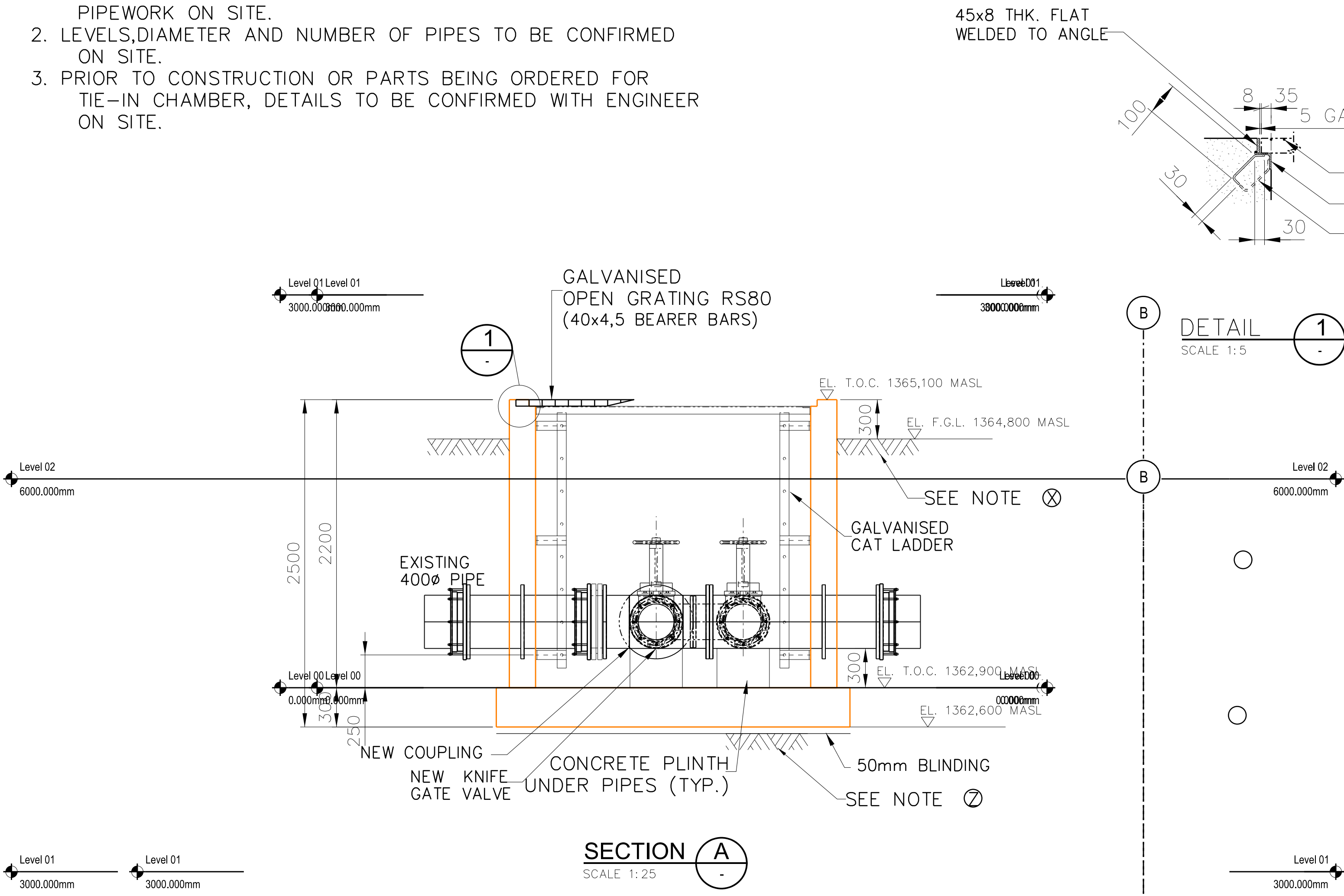
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
LIME REACTOR – CONCRETE LAYOUT AND DETAILS

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J. PRINSLOO	1:50	T00 ISSUED FOR TENDER	J. PRINSLOO	26.06.18	JW NUMBER
		T01 ISSUED FOR TENDER	J. PRINSLOO	08.02.19	JW13599-CE-009
		T02 ISSUED FOR TENDER	J. PRINSLOO	10.10.19	CONSULTANT'S NUMBER
		T03 ISSUED FOR TENDER	J. PRINSLOO	19.07.21	H349523-CE-009
					FILE No
					BWW 1402

Approved for Bid



- NOTE:
- HAND EXCAVATION TO BE UNDERTAKEN TO EXPOSE EXISTING PIPEWORK ON SITE.
 - LEVELS, DIAMETER AND NUMBER OF PIPES TO BE CONFIRMED ON SITE.
 - PRIOR TO CONSTRUCTION OR PARTS BEING ORDERED FOR TIE-IN CHAMBER, DETAILS TO BE CONFIRMED WITH ENGINEER ON SITE.



DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

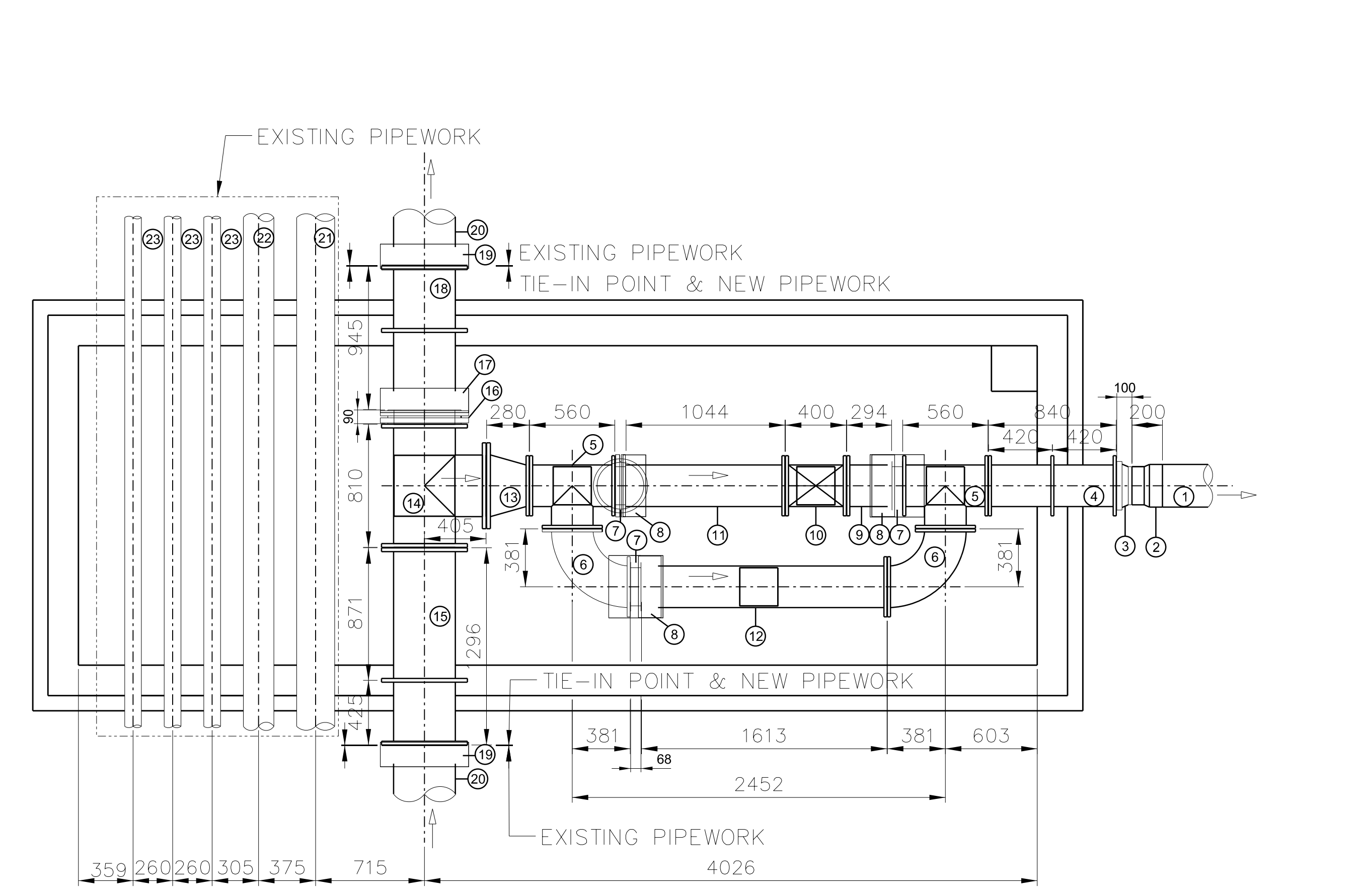
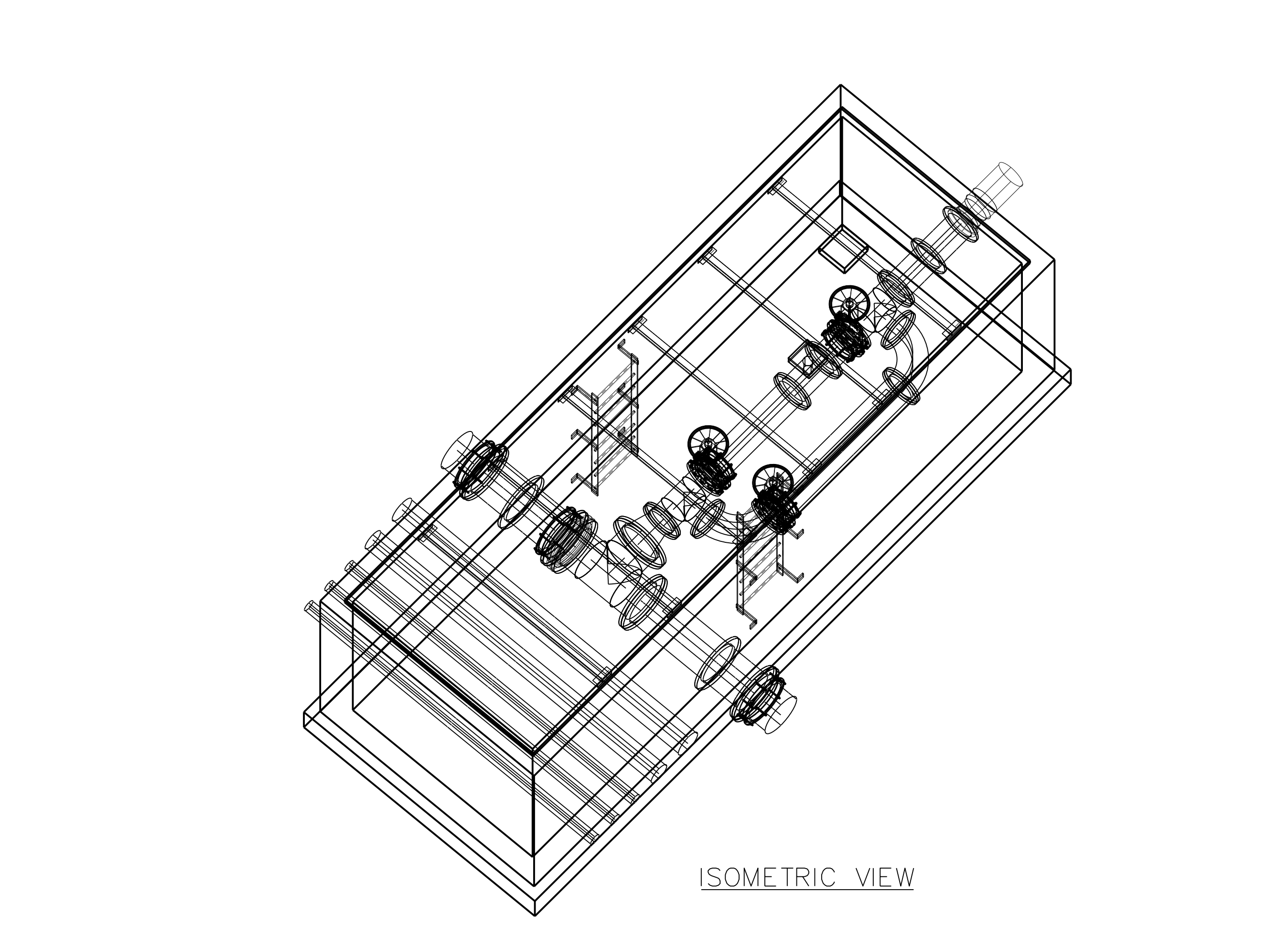


SURVEYED	-
DESIGNED	S. WESSON
DRAWN	T. NAGAR
CHECKED	S. MANGANYI
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

JOHANNESBURG WATER (PTY) LTD

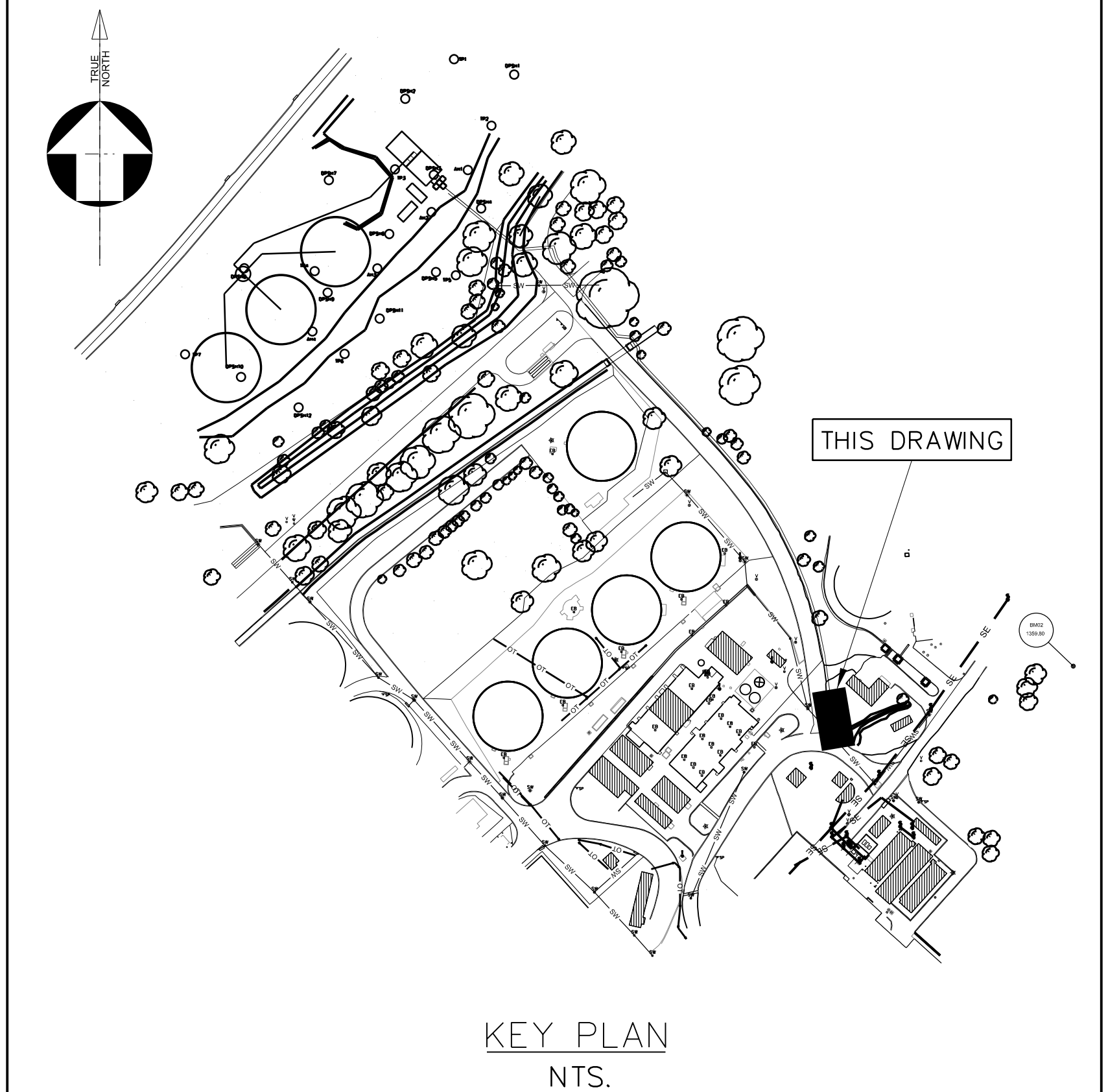
17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400
FAX: (011) 688-1529



Pipe Numbering	DN (mm)	Description	Drilling Table	Quantity	Material Type & Wall Thickness
1	280	Proposed Rising Main to Unit 4 Liquor Treatment Plant	-	1	HDPE / SDR17 / PN10
2	280 - 250	Concentric Reducer, L = 200mm	-	1	HDPE / SDR17
3	250	Stub Flange with Backing Slip-On Flange (HDE steel), L = 100mm	SANS 1123 - Table 1000/3	1	HDPE
4	250	Pipe Spool, Flanged Both Ends with Puddle Flange, L = 840mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
5	250	Equal Tee to SANS 719, Flanged all Ends	SANS 1123 - Table 1000/3	2	SANS 719, GRADE B, t = 6mm
6	250	Flanged Steel 90 Degree Elbow Long Radius - ANSI (ASA) B16.9	SANS 1123 - Table 1000/3	2	SANS 719, GRADE B, t = 6mm
7	250	Knife Gate Valve (Non-Rising Stem)	SANS 1123 - Table 1000/3	3	-
8	250	Flange Adaptor	SANS 1123 - Table 1000/3	3	-
9	250	Pipe Spool, Flanged One End, Plain Ended Other, L = 269mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
10	250	Electromagnetic Flow Meter	SANS 1123 - Table 1000/3	1	-
11	250	Pipe Spool, Flanged One End, Plain Ended Other, L = 1019mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
12	250	Pipe Spool, Flanged One End, Plain Ended Other, L = 1588mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
13	400 - 250	Concentric Reducer to SANS 719, Flanged Both Ends, L = 280mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
14	400	Equal Tee to SANS 719, Flanged all Ends	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
15	400	Pipe Spool, Flanged Both Ends, with Puddle Flange, L = 1296mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
16	400	Knife Gate Valve (Non-Rising Stem)	SANS 1123 - Table 1000/3	1	-
17	400	Flange Adaptor	SANS 1123 - Table 1000/3	1	-
18	400	Pipe Spool, Flanged One End, Plain Ended Other with Puddle Flange, L = 920mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
19	400	Mechanical Viking Johnson Type Coupling to connect with existing DN400 PVC pipe	SANS 1123 - Table 1000/3	2	-
20	400	Existing DN400 Upvc Pipe	-	1	Upvc
21	250	Existing DN250 Upvc Pipe	-	1	Upvc
22	200	Existing DN200 Upvc Pipe	-	1	Upvc
23	110	Existing DN110 Upvc Pipe	-	3	Upvc

- NOTES
- CORROSION:-
 - SYSTEM "E1 - SOLVENT FREE EPOXY" TO APPLY;
 - SURFACE PREPARATION : BLAST CLEAN SA3 PROFILE 50 - 100 um;
 - COATING AND LINING SYSTEM: 1-2 COATS SOLVENT FREE EPOXY FOR UNDERWATER USE; AND
 - REQUIREMENTS: DFT 300 MIN, MAX 450um NO EIDs WET SPONGE 90v 10 MEGAOHMS.
 - ALL FLANGES TO BE FACED.
 - ALL GASKETS, 3mm THICK , RAISED PTFE.



- GENERAL NOTES:
- A FULL SET OF DRAWINGS SHALL BE KEPT ON SITE.
 - ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE.
 - DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
 - LARGE SCALE DETAILS TO BE USED WHERE AVAILABLE.
 - ALL LAYOUTS TO BE READ IN CONJUNCTION WITH ANY RELEVANT CIVIL STRUCTURAL OR OTHER DRAWINGS.
 - ANY ERRORS OR DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE ENGINEERING SERVICES MANAGER(ESM) FOR CORRECTION BEFORE WORK IS UNDERTAKEN.
 - UNDERGROUND SERVICES ON SITE TO BE IDENTIFIED & EXPOSED WHERE RELEVANT.
 - CONSTRUCTION TO BE IN ACCORDANCE WITH THE CONTRACT SPECIFICATION , OR RELEVANT SABS 1200 SPECIFICATION.
 - STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH SERVICES DRAWINGS AND ANY DISCREPANCIES MUST IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEERING SERVICES MANAGER.
 - ALL DIMENSIONS SHOWN ARE IN mm

- CONCRETE
- ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENT OF SABS 1200 G.
 - PROVIDE A 25MM X 25MM CHAMFER TO ALL EXPOSED CORNERS.
 - ALL EXPOSED CONCRETE WORK TO BE SMOOTH FINISH.
 - ALL INSIDE LEVELS REFER TO CONCRETE AND NOT TO FINISHED FLOOR EXCEPT WHERE OTHERWISE INDICATED.
 - THE GRADES OF CONCRETE AT 28 DAYS, UNLESS OTHERWISE INDICATED SHALL BE AS FOLLOWS :
- | | |
|-----------------------|-------------|
| SLABS / BEAMS / WALLS | CLASS 30/19 |
| FOUNDATIONS / PLINTHS | CLASS 30/19 |
| SURFACE BEDS | CLASS 30/19 |
| STAIRS | CLASS 30/19 |
| BLINDING LAYERS | CLASS 10/19 |
| MASS CONCRETE | CLASS 10/19 |
- UNFORMED SURFACE FINISHES:
- | | |
|------------------------|---------------|
| TOP OF FLOOR SLABS | POWERFLOAT. |
| TOP OF WALLS & PLINTHS | STEELFLOAT. |
| TRENCH FLOORS | STEELFLOAT. |
| TOP OF BASES | WOOD FLOATED. |

- FOUNDATIONS
- BEFORE CONCRETING TAKES PLACE ALL FOUNDATION EXCAVATIONS ARE TO BE INSPECTED ON SITE BY A COMPETENT PERSON AND APPROVED.
 - ALL FOUNDATIONS TO BE FOUNDED ON SUITABLE MATERIAL AS SPECIFIED IN THE GEO-TECHNICAL REPORT. FOUNDING MATERIAL IS TO BE CHECKED APPROVED BY THE ENGINEER ONSITE BEFORE COMMENCING WITH THE AND BLINDING LAYER.
 - IF EXTERNAL CONCRETE IS NOT FORMED, 25mm of CONCRETE IS TO BE ADDED TO CREATE COVER OF 75mm.
 - BACKFILL TO ALL ROCK FACES TO BE DONE WITH 2MPa SOILCRETE.

NOTE X :
BACKFILL TO CHAMBER TO BE 93% MODAASHTO AND IN 150mm LAYERS. MATERIAL TO COMPLY WITH SANS 1200D:
EARTHWORKS SUB-SECTION 3.2.3 " MATERIAL SUITABLE FOR BACKFILL OR FILL AGAINST STRUCTURES".

NOTE Z :
REMOVE 300mm OF MATERIAL FROM BELOW THE FLOORS/GROUND SLAB.
COMPACT BASE TO APPROXIMATELY 95% MODIFIED AASHTO DENSITY OPTIMUM MOISTURE CONTENT
REPLACE WITH G7, OR BETTER MATERIAL WHICH IS AVAILABLE ON SITE COMPACTED IN 2x150mm LAYERS TO 95% MODIFIED AASHTO DENSITY AT OPTIMUM MOISTURE CONTENT UP TO THE REQUIRED FOUNDING LEVEL.

CITY OF JOHANNESBURG

NORTHERN WASTE WATER TREATMENT WORKS
UNIT4 - LIQUOR TREATMENT PLANT
CONCRETE LAYOUT AND PIPEWORK DETAILS

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J PRINSLOO	AS NOTED	T00 ISSUED FOR TENDER T01 ISSUED FOR RETENDER T02 ISSUED FOR RETENDER T03 ISSUED FOR RETENDER	J. PRINSLOO J. PRINSLOO J. PRINSLOO J. PRINSLOO	26.06.18 08.02.19 10.10.19 19.07.21	JW13599-CE-010 CONSULTANT'S NUMBER H349523-CE-010 FILE No BWW1402
DATE 2019/10/10					

Approved for Bid

USER NAMES
DATES
SITES

MATERIAL REQUIREMENTS								
SURFACING : AC (CONTINUOUSLY MEDIUM GRADED) WITH 13,2mm CHIPS								
No	LAYER DESCRIPTION	TRH 14 MATERIAL TYPE	SECTION OF SPEC.	COMPACTION (% MOD. AASHTO DENSITY)	PLASTICITY INDEX	GM (MIN)	UCS/CBR@% (OF MOD. AASHTO DENSITY)	MAX CBR SWELL
1	200mm NATURAL GRAVEL BASE (GRAVEL WEARING COURSE – MAX SIZE 37.5mm)	G4	3400	98%	6 MAX	>1,5	15 @ 98%	–
2	200mm JOINTED CONCRETE PAVEMENT	PCC	7100	–	–	–	–	–
3	150mm / 200mm CEMENTED NATURAL GRAVEL	C4	3400&3500	95%	–	1.5	0.75–1.5MPa@100%	1,5
4	150mm SELECTED LAYER	G5 OR G7	3400	93%	3 GM+10	0.75	15 @ 93%	1,5
5	150mm INSITU ROADBED	G9	3400	90% (IN SITU)	18	0.75	3 @ 90%	1,5

NOTE: FOR SANDY MATERIAL COMPACT TO 100% MOD AASHTO DENSITY.



ACCESS ROADS – LAYOUT PLAN
SCALE 1:500

CONSULTING ENGINEERS

SURVEYED	–
DESIGNED	E. BALEGAMIRE
DRAWN	E. BALEGAMIRE
CHECKED	C. WEIDEMAN
SERVICES CHECKED	J. PRINSLOO
GEOTECHNICAL INVESTIGATION	–
SERVITUDES	–
APPROVED	–
Pr. Eng. No.	–
DATE	–

JOHANNESBURG WATER (PTY) LTD

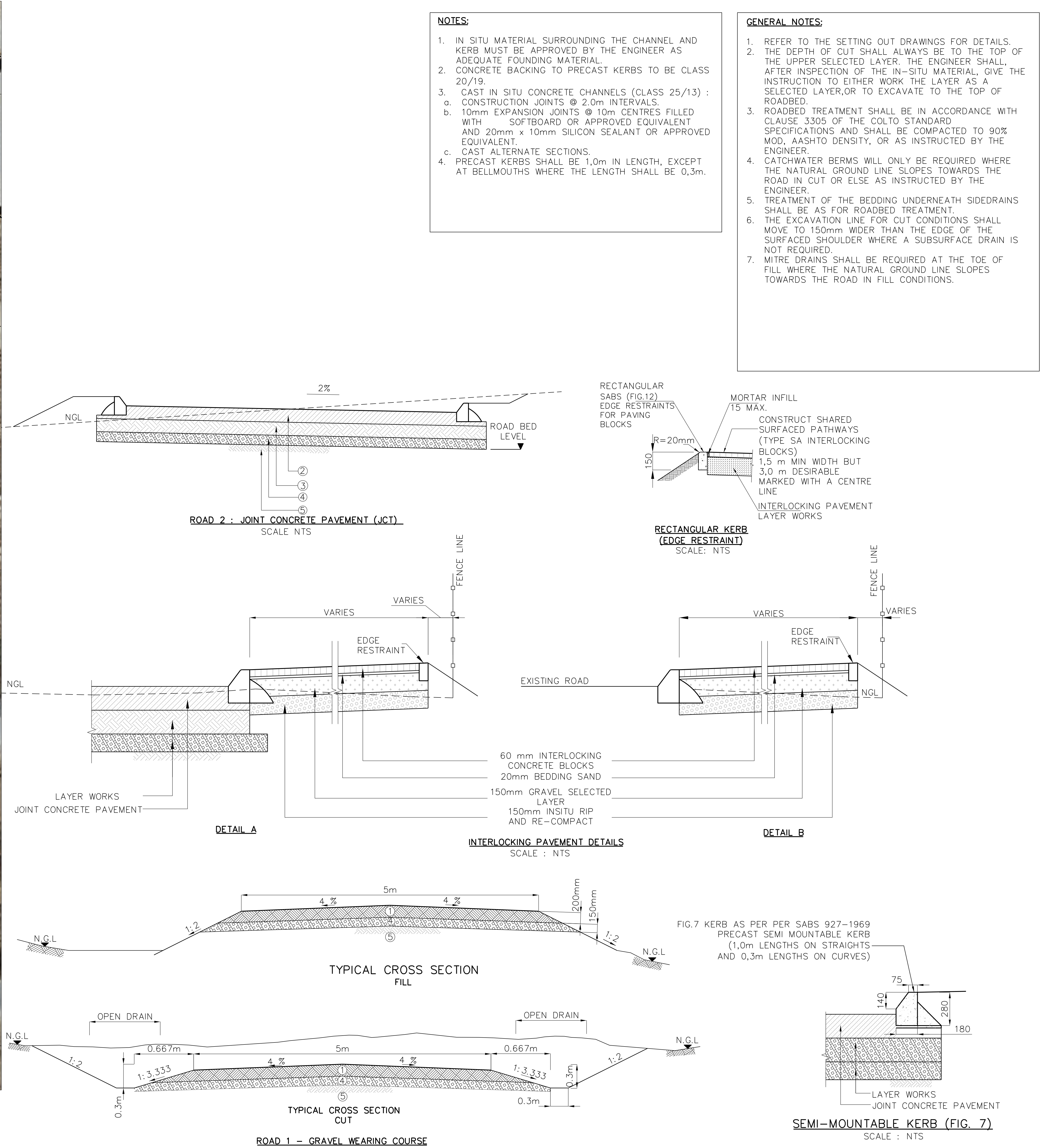
17 HARRISON STREET
MARSHALLTOWN
2107

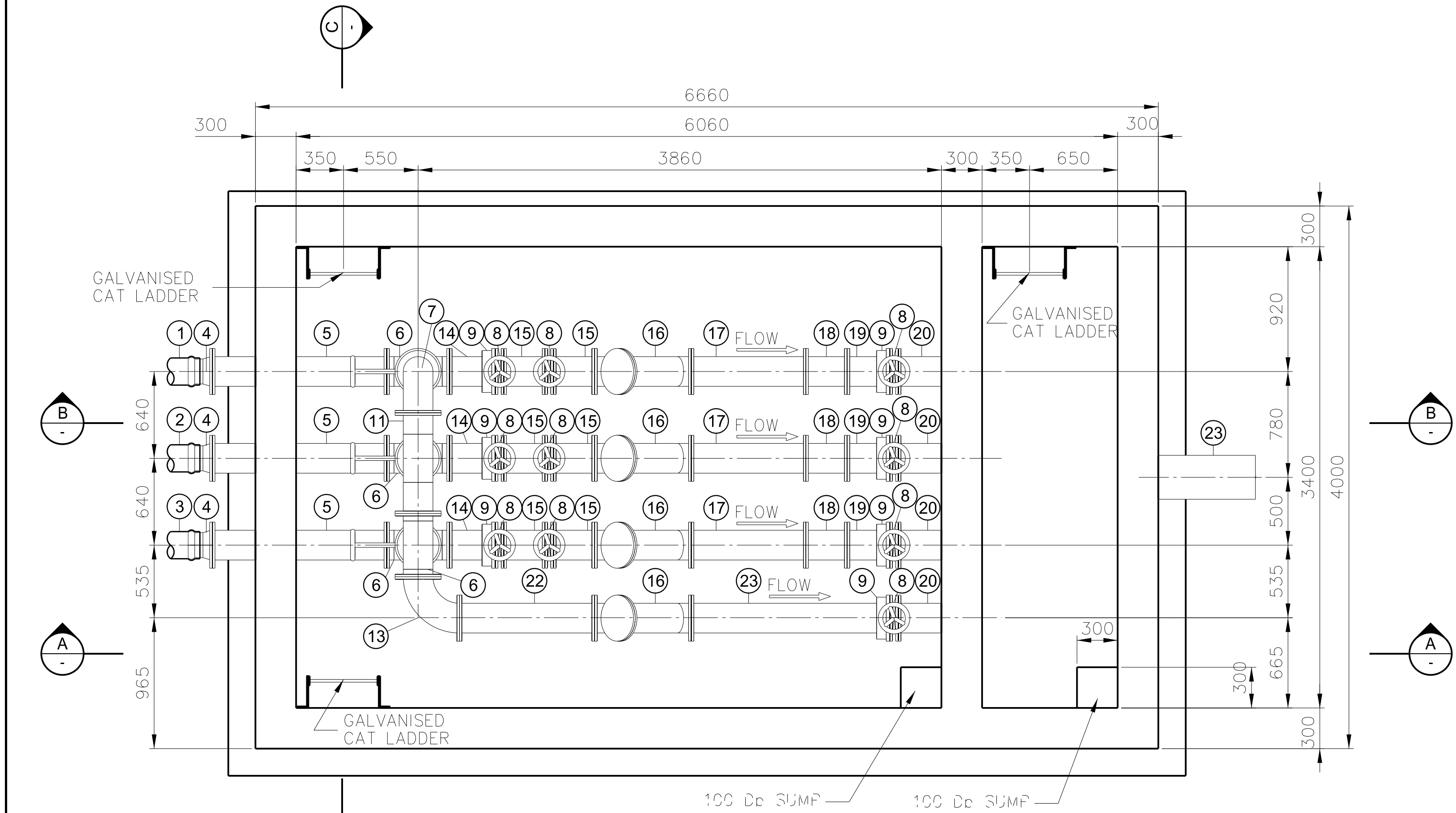
TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 LIQUOR TREATMENT PLANT
GENERAL ARRANGEMENTS
ACCESS ROADS

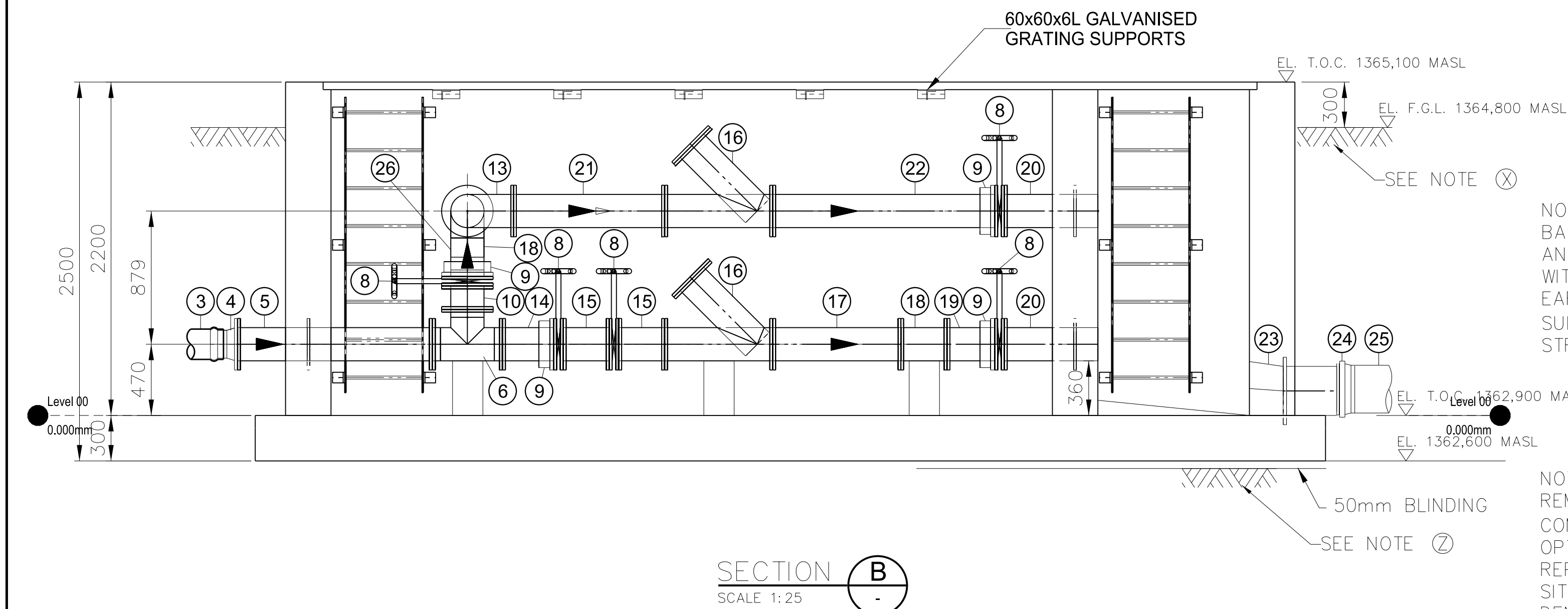
DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J. PRINSLOO	AS SHOWN	T00 ISSUED FOR TENDER T01 ISSUED FOR RETENDER T02 ISSUED FOR RETENDER T03 ISSUED FOR RETENDER	J. PRINSLOO J. PRINSLOO J. PRINSLOO J. PRINSLOO	26.06.18 08.02.19 10.10.19 19.07.21	JW NUMBER JW13599–CE–011 CONSULTANT'S NUMBER H349523–CE–011 FILE No BWW1402





PLAN
SCALE 1:25

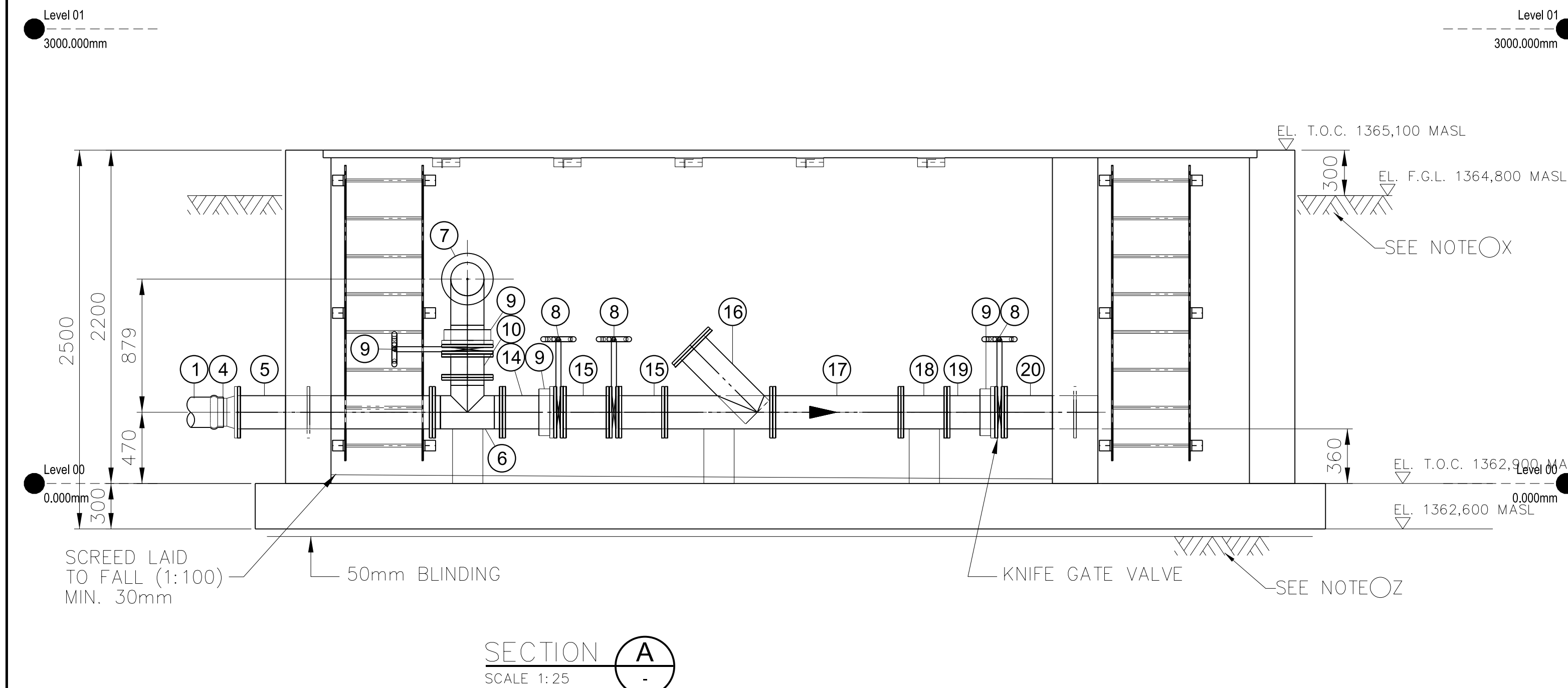
- NOTE:
- HAND EXCAVATION TO BE UNDERTAKEN TO EXPOSE EXISTING PIPEWORK ON SITE.
 - LEVELS, DIAMETER AND NUMBER OF PIPES TO BE CONFIRMED ON SITE.
 - PRIOR TO CONSTRUCTION OR PARTS BEING ORDERED FOR TIE-IN CHAMBER, DETAILS TO BE CONFIRMED WITH ENGINEER ON SITE.



SECTION B
SCALE 1:25

NOTE X :
BACKFILL TO CHAMBER TO BE 93% MODAASHTO AND IN 150mm LAYERS. MATERIAL TO COMPLY WITH SANS 1200D: EARTHWORKS SUB-SECTION 3.2.3 " MATERIAL SUITABLE FOR BACKFILL OR FILL AGAINST STRUCTURES".

NOTE Z :
REMOVE 300mm OF MATERIAL FROM BELOW THE FLOORS/GROUND SLAB. COMPACT BASE TO APPROXIMATELY 95% MODIFIED AASHTO DENSITY OPTIMUM MOISTURE CONTENT. REPLACE WITH G7, OR BETTER MATERIAL WHICH IS AVAILABLE ON SITE. COMPACTED IN 2x150mm LAYERS TO 95% MODIFIED AASHTO DENSITY AT OPTIMUM MOISTURE CONTENT UP TO THE REQUIRED FOUNDING LEVEL.



SECTION A
SCALE 1:25

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

HATCH

SURVEYED	-
DESIGNED	S. WESSON
DRAWN	T. NAGAR
CHECKED	S. MANGANYI
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

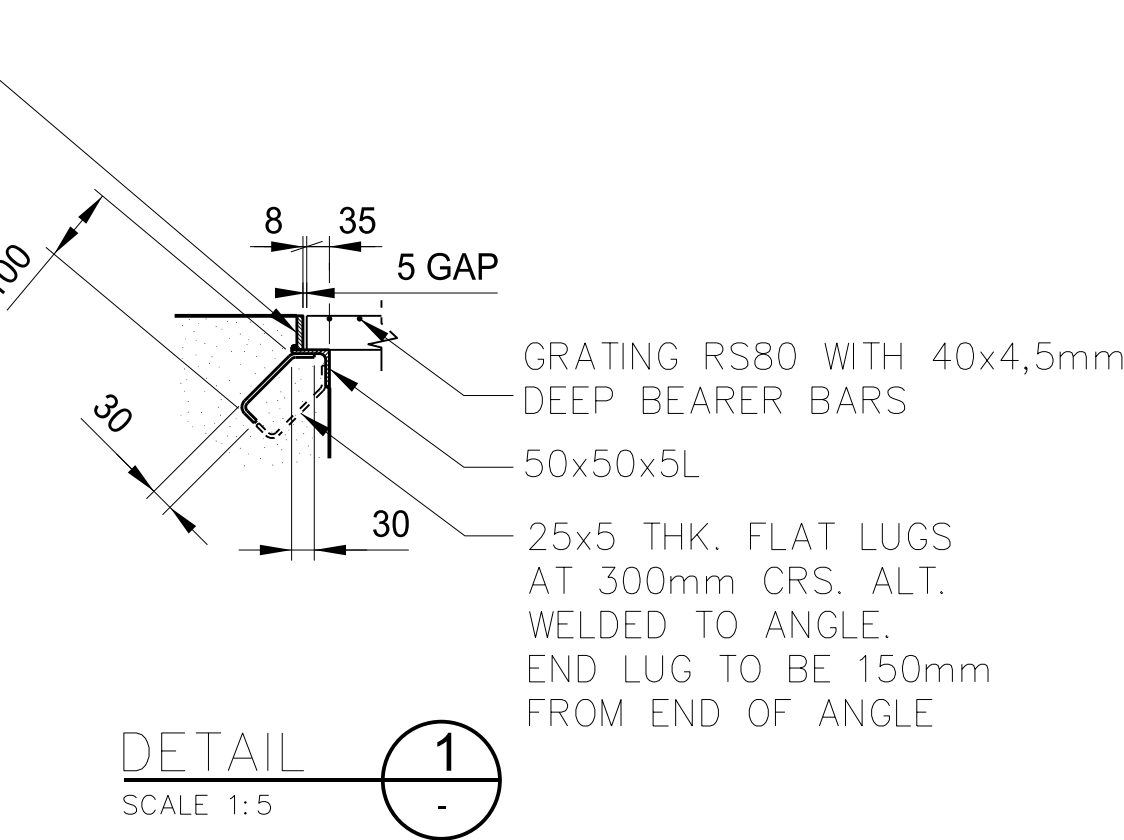
JOHANNESBURG WATER (PTY) LTD

**17 HARRISON STREET
MARSHALLTOWN
2107**

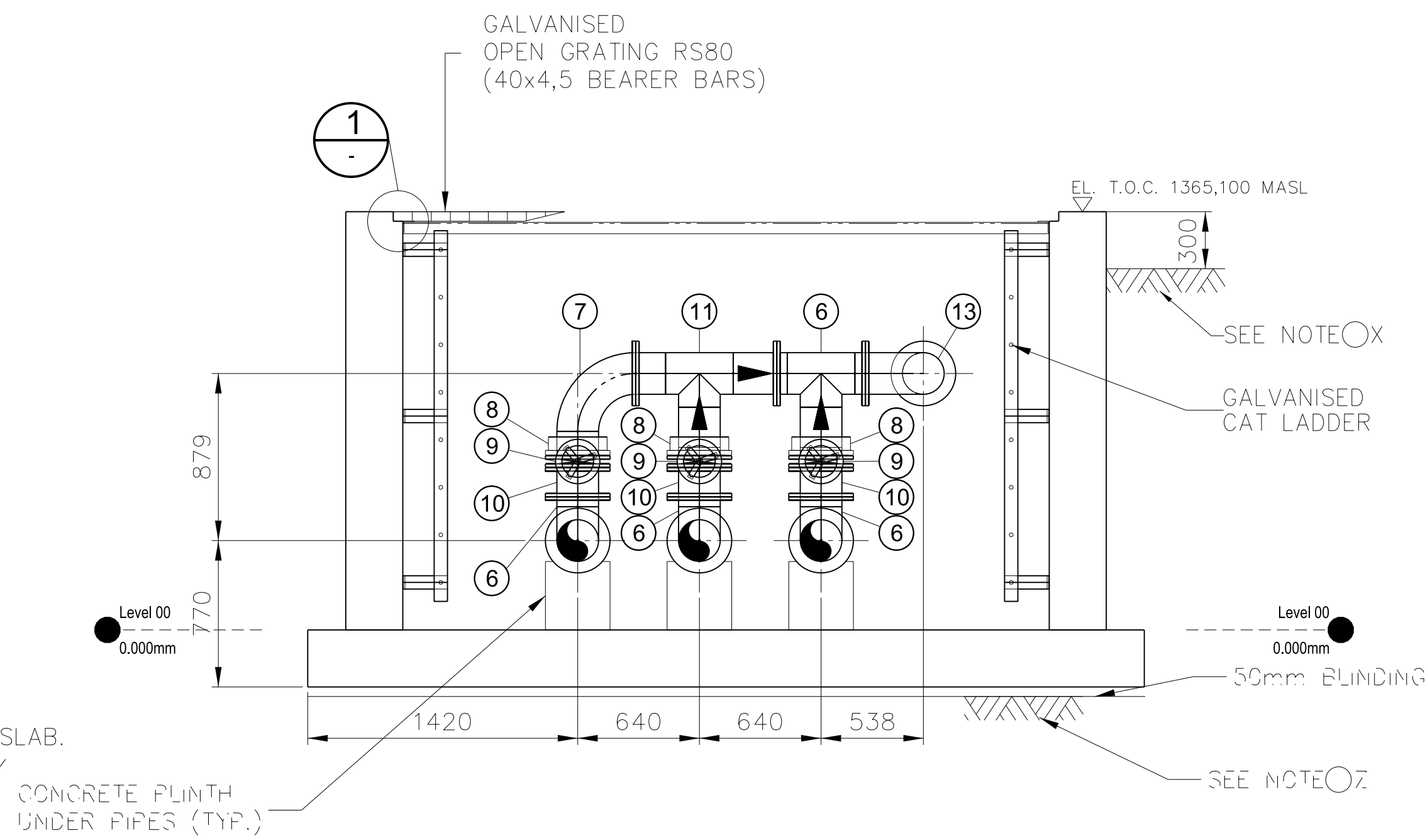
Johannesburg Water

TEL: (011) 688-1400
FAX: (011) 688-1529

Pipe Numbering	DN (mm)	Description	Drilling Table	Quantity	Material Type & Wall Thickness
1	200	uPVC Pipe from Clarifier 1	-	1	Upvc (Class 6)
2	200	uPVC Pipe from Clarifier 2	-	1	Upvc (Class 6)
3	200	uPVC Pipe from Clarifier 3	-	1	Upvc (Class 6)
4	200	Steel to uPVC SG Iron Flange Adaptor	SANS 1123 - Table 1000/3	3	-
5	200	Pipe Spool, Flanged both Ends, L = 1283 mm, Puddle Flange at 466mm from end.	SANS 1123 - Table 1000/3	3	SANS 719, GRADE B, t = 6mm
6	200	Equal Tee to SANS 719, Flanged all Ends	SANS 1123 - Table 1000/3	5	SANS 719, GRADE B, t = 6mm
7	200	Flanged Steel 90 Degree Elbow Long Radius - ANSI (ASA) B16.9, Spool piece 100mm long welded to plain end	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
8	200	Knife Gate Valve (Non-Rising Stem)	SANS 1123 - Table 1000/3	13	-
9	200	Flange Adaptor	SANS 1123 - Table 1000/3	10	-
10	200	Pipe Spool, Flanged both Ends, L = 150 mm	SANS 1123 - Table 1000/3	3	SANS 719, GRADE B, t = 6mm
11	200	Pipe Spool, Flanged both Ends, L = 99 mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
13	200	Flanged Steel Both Ends 90 Degree Elbow Long Radius - ANSI (ASA) B16.9	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
14	200	Pipe Spool, Flanged One End, Plain Ended Other, L = 315 mm	SANS 1123 - Table 1000/3	3	SANS 719, GRADE B, t = 6mm
15	200	Pipe Spool, Flanged Both Ends, L = 300 mm	SANS 1123 - Table 1000/3	6	SANS 719, GRADE B, t = 6mm
16	200	Standard 45 Degree Lateral, SANS 719, Flanged all Ends, Including Blank Flange Added to Lateral End	SANS 1123 - Table 1000/3	4	SANS 719, GRADE B, t = 6mm
17	200	Pipe Spool, Flanged Both Ends, L = 844 mm	SANS 1123 - Table 1000/3	3	SANS 719, GRADE B, t = 6mm
18	200	Electromagnetic Flow Meter	SANS 1123 - Table 1000/3	3	-
19	200	Pipe Spool, Flanged One End, Plain Ended Other, L = 288 mm	SANS 1123 - Table 1000/3	3	SANS 719, GRADE B, t = 6mm
20	200	Pipe Spool, Flanged One End, Plain Ended Other, L = 616 mm, Puddle Flange 150 mm from plain end	SANS 1123 - Table 1000/3	3	SANS 719, GRADE B, t = 6mm
21	200	Pipe Spool, Flanged both Ends, L = 992 mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
22	200	Pipe Spool, Flanged One End, Plain Ended Other, L = 1493 mm	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
23	350 - 300	Eccentric Reducer, DN350 to DN300, with puddle flange and spool piece L = 777 mm Flanged	SANS 1123 - Table 1000/3	1	SANS 719, GRADE B, t = 6mm
24	315	Stub Flange with Backing Slip-On Flange (HDE steel), L = 100mm	SANS 1123 - Table 1000/3	1	HDPE
25	315	HDPE Sludge Line	-	1	HDPE
26	200	Equal Tee to SANS 719, Flanged, Spool piece 200 mm long welded to plain end	SANS 1123 - Table 1000/3	2	SANS 719, GRADE B, t = 6mm



DETAIL 1
SCALE 1:5



SECTION C
SCALE 1:25

NOTES

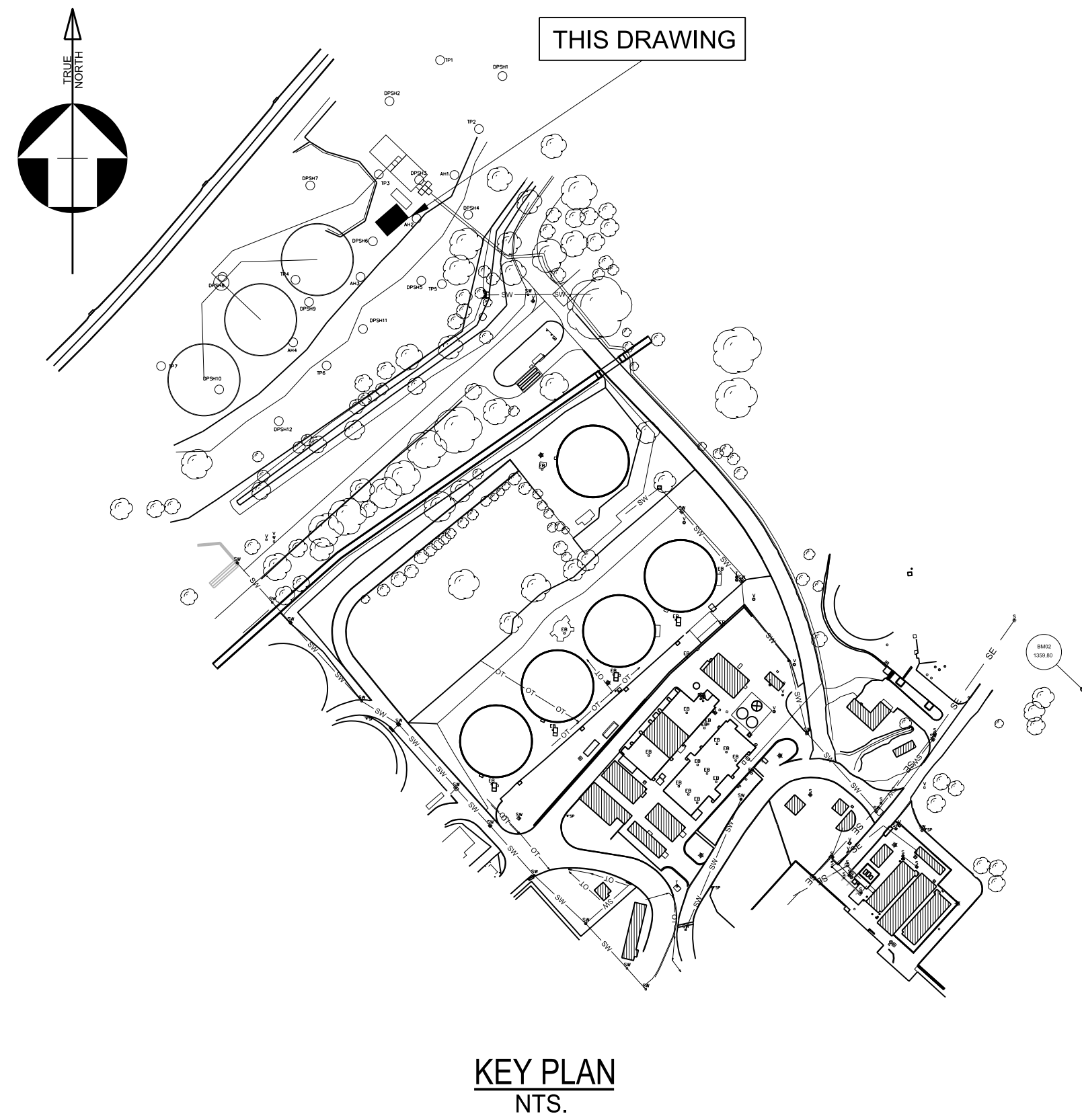
- CORROSION: -
 - SYSTEM "E1 - SOLVENT FREE EPOXY" TO APPLY;
 - SURFACE PREPARATION : BLAST CLEAN SA3 PROFILE 50 - 100 um;
 - COATING AND LINING SYSTEM: 1-2 COATS SOLVENT FREE EPOXY FOR UNDERWATER USE; AND REQUIREMENTS: DFT 300 MIN, MAX 450um NO EIDS WET SPONGE 90v 10 MEGAOHMS.
- ALL FLANGES TO BE FACED.
- ALL GASKETS, 3mm THICK , RAISED PTFE.

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 - LIQUOR TREATMENT PLANT
SLUDGE CHAMBER
CONCRETE LAYOUT AND PIPEWORK DETAILS

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J. PRINSLOO	AS NOTED	100 ISSUED FOR TENDER	J. PRINSLOO	26.06.18	JW NUMBER
		101 ISSUED FOR RETENDER	J. PRINSLOO	08.02.19	JW13599-CE-012
		102 ISSUED FOR RETENDER	J. PRINSLOO	10.10.19	CONSULTANT'S NUMBER
		103 ISSUED FOR RETENDER	J. PRINSLOO	19.07.21	H349523-CE-012
					FILE No
					BWW 1402

Approved for Bid



KEY PLAN
NTS.

GENERAL NOTES:

- A FULL SET OF DRAWINGS SHALL BE KEPT ON SITE.
- ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE.
- DO NOT SCALE, USE FIGURED DIMENSIONS ONLY.
- LARGE SCALE DETAILS TO BE USED WHERE AVAILABLE.
- ALL LAYOUTS TO BE READ IN CONJUNCTION WITH ANY RELEVANT CIVIL STRUCTURAL OR OTHER DRAWINGS.
- ANY ERRORS OR DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE ENGINEERING SERVICES MANAGER(ESM) FOR CORRECTION BEFORE WORK IS UNDERTAKEN.
- UNDERGROUND SERVICES ON SITE TO BE IDENTIFIED & EXPOSED WHERE RELEVANT.
- CONSTRUCTION TO BE IN ACCORDANCE WITH THE CONTRACT SPECIFICATION, OR RELEVANT SABS 1200 SPECIFICATION.
- STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH SERVICES DRAWINGS AND ANY DISCREPANCIES MUST IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEERING SERVICES MANAGER.
- ALL DIMENSIONS SHOWN ARE IN mm

CONCRETE

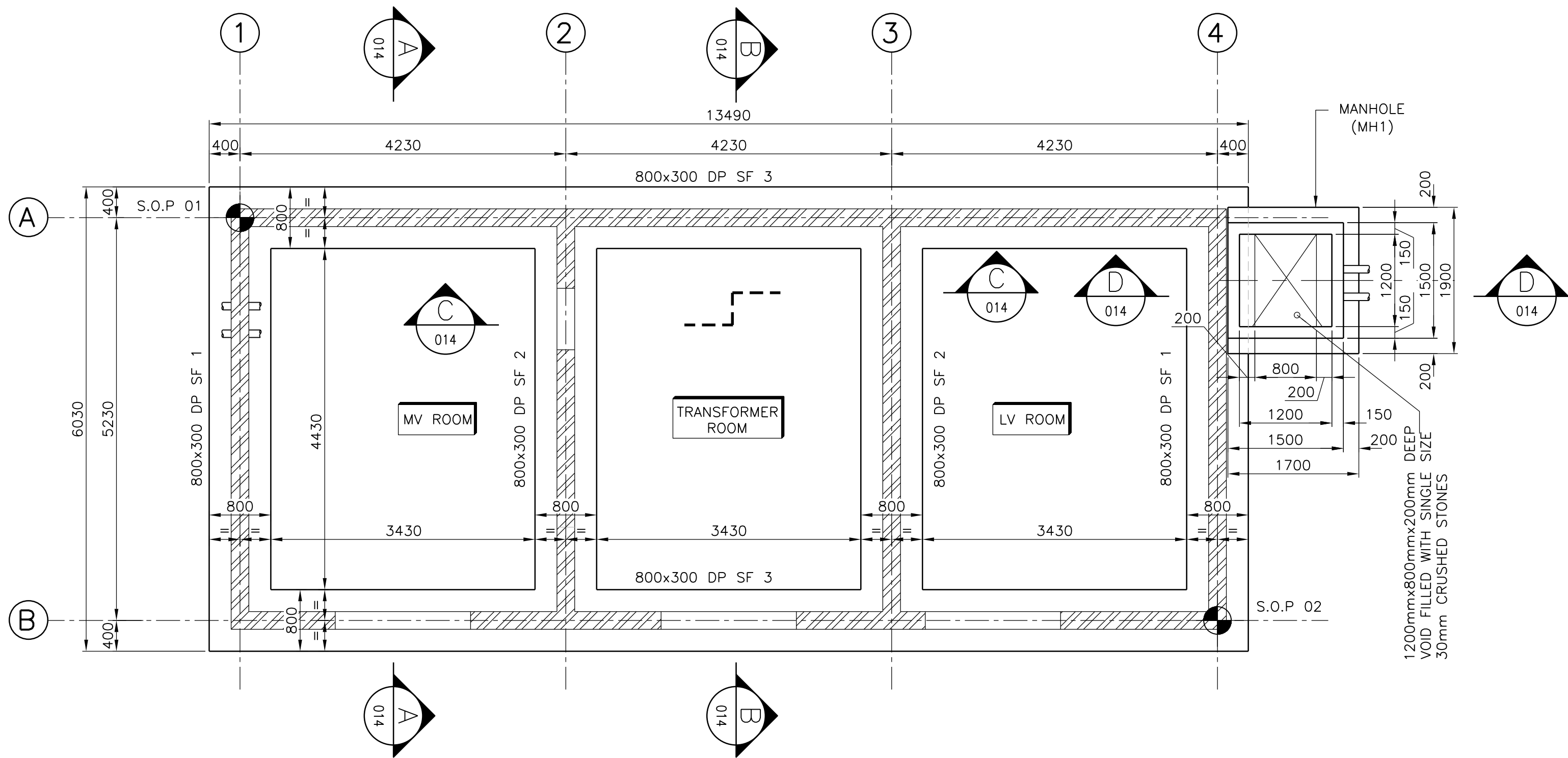
- ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENT OF SABS 1200 C.
- PROVIDE A 25MM X 25MM CHAMFER TO ALL EXPOSED CORNERS.
- ALL EXPOSED CONCRETE WORK TO BE SMOOTH FINISH.
- ALL INSIDE LEVELS REFER TO CONCRETE AND NOT TO FINISHED FLOOR EXCEPT WHERE OTHERWISE INDICATED.
- THE GRADES OF CONCRETE AT 28 DAYS, UNLESS OTHERWISE INDICATED SHALL BE AS FOLLOWS:

SLABS/BEAMS/WALLS	CLASS 30/19
FOUNDATIONS/ PLINTHS	CLASS 30/19
SURFACE BEDS	CLASS 30/19
STAIRS	CLASS 30/19
BLINDING LAYERS	CLASS 10/19
MASS CONCRETE	CLASS 10/19
- UNFORMED SURFACE FINISHES:

TOP OF FLOOR SLABS	POWERFLOAT.
TOP OF WALLS & PLINTHS	STEELFLOAT.
TRENCH FLOORS	STEELFLOAT.
TOP OF BASES	WOOD FLOATED.

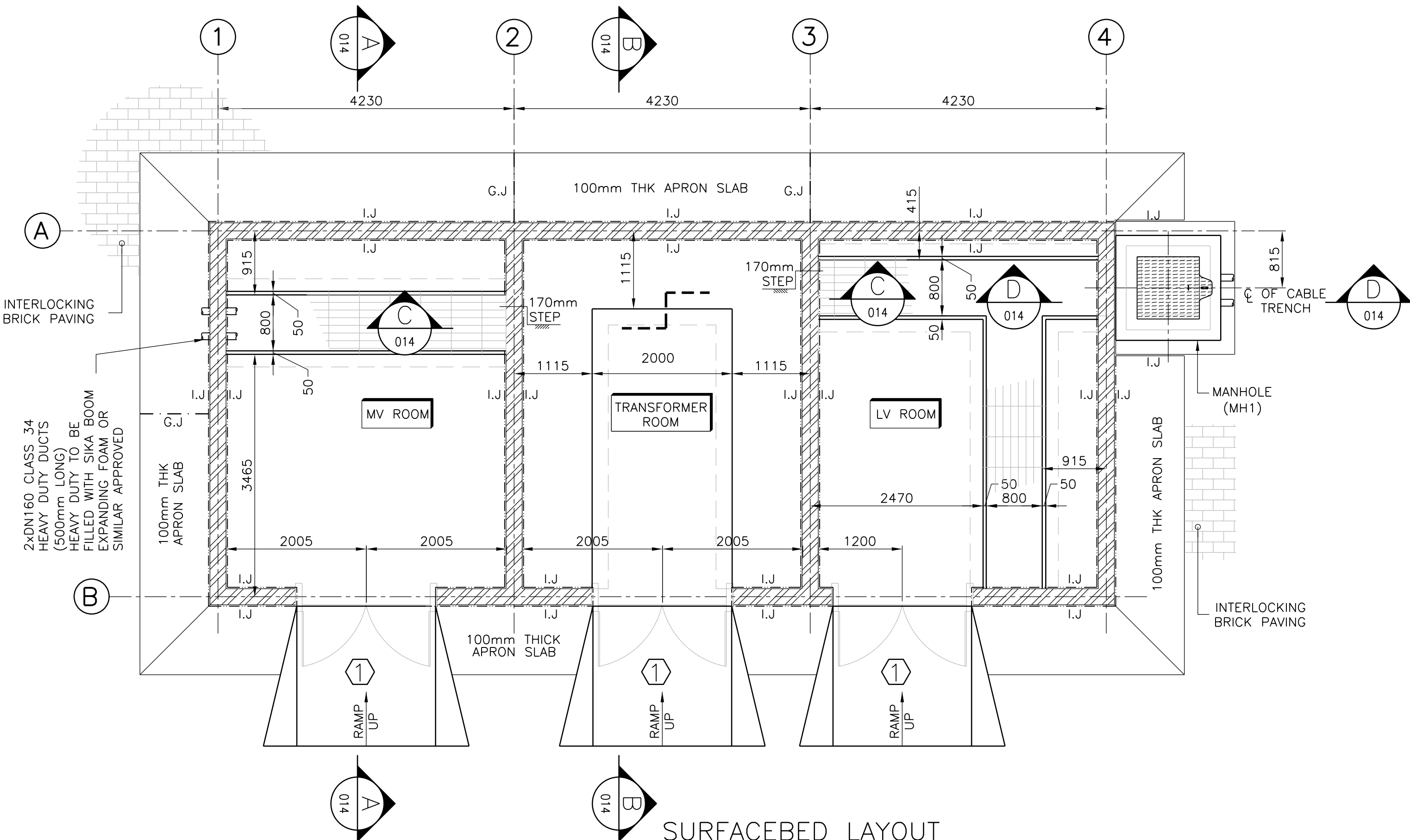
FOUNDATIONS

- BEFORE CONCRETING TAKES PLACE ALL FOUNDATION EXCAVATIONS ARE TO BE INSPECTED ON SITE BY A COMPETENT PERSON AND APPROVED.
- ALL FOUNDATIONS TO BE FOUNDED ON SUITABLE MATERIAL AS SPECIFIED IN THE GEO-TECHNICAL REPORT. FOUNDING MATERIAL IS TO BE CHECKED AND APPROVED BY THE ENGINEER ONSITE BEFORE COMMENCING WITH THE BLINDING LAYER.
- IF EXTERNAL CONCRETE IS NOT FORMED, 25mm OF CONCRETE IS TO BE ADDED TO CREATE COVER OF 75mm.
- BACKFILL TO ALL ROCK FACES TO BE DONE WITH 2MPa SOLOCRETE.



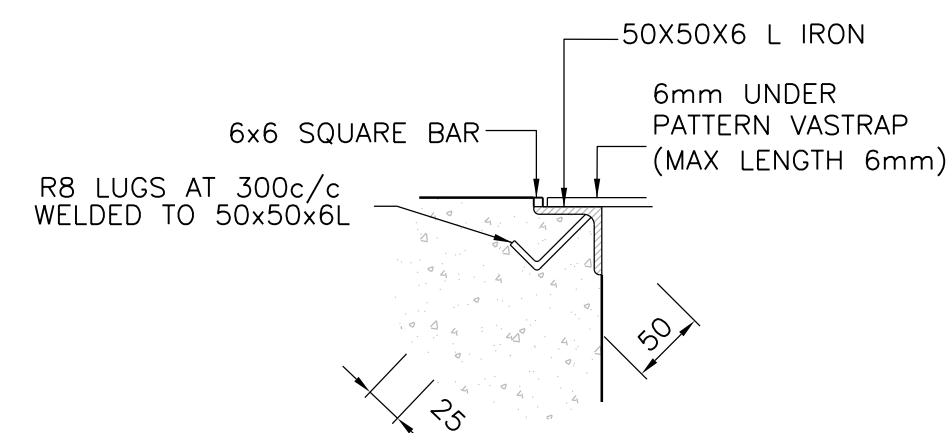
FOUNDATION LAYOUT

SCALE 1:50



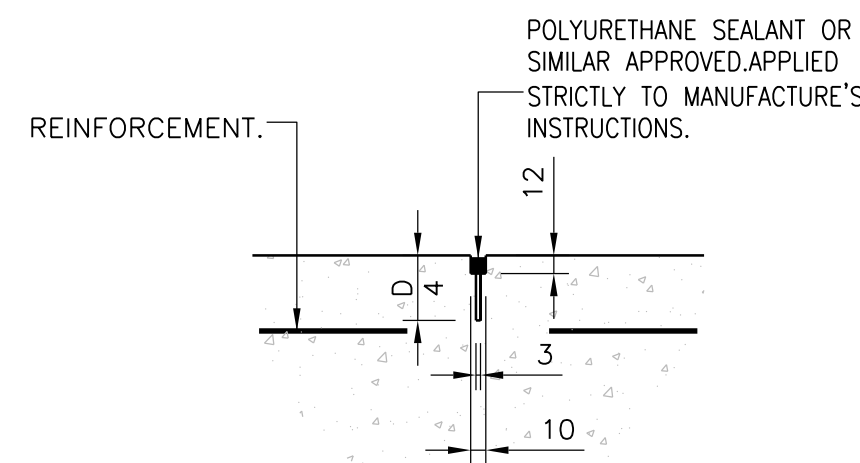
SURFACE BED LAYOUT

SCALE 1:50



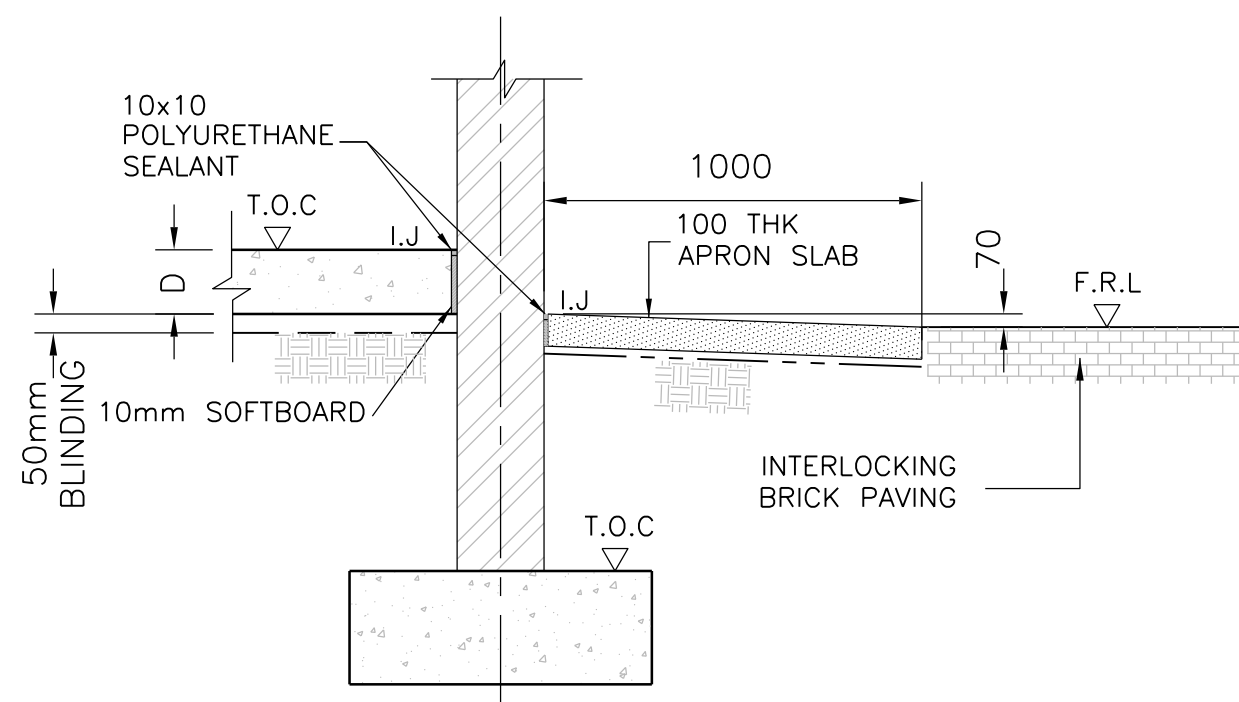
DETAIL 1

SCALE 1:5



GROOVED JOINT (G.J)

SCALE 1:5



ISOLATION JOINT (I.J)

SCALE 1:20

LEGEND

- G.J = GROOVED JOINT
--- I.J = ISOLATION JOINT
--- EDGE OF CONCRETE
--- T.O.C = TOP OF CONCRETE
--- U.S.C = UNDERSIDE OF CONCRETE
--- SF = STRIP FOOTING
--- F.R.L = FINISH ROAD LEVEL

GENERAL NOTES:

1. A FULL SET OF DRAWINGS SHALL BE KEPT ON SITE.
2. ALL LEVELS AND DIMENSIONS TO BE VERIFIED ON SITE.
3. DO NOT SCALE, USE FIGURED DIMENSIONS ONLY.
4. LARGE SCALE DETAILS TO BE USED WHERE AVAILABLE.
5. ALL LAYOUTS TO BE READ IN CONJUNCTION WITH ANY RELEVANT CIVIL, STRUCTURAL OR OTHER DRAWINGS.
6. ANY ERRORS OR DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE ENGINEERING SERVICES MANAGER(ESM) FOR CORRECTION BEFORE WORK IS UNDERTAKEN.
7. UNDERGROUND SERVICES ON SITE TO BE IDENTIFIED & EXPOSED WHERE RELEVANT.
8. CONSTRUCTION TO BE IN ACCORDANCE WITH THE CONTRACT SPECIFICATION, OR RELEVANT SABS 1200 SPECIFICATION.
9. STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH SERVICES DRAWINGS AND ANY DISCREPANCIES MUST IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEERING SERVICES MANAGER.
10. ALL DIMENSIONS ARE IN MM.

FOUNDATION PREPARATION:

1. REMOVE 300mm OF MATERIAL FROM BELOW THE FLOORS/GROUND SLAB.
2. COMPACT BASE TO APPROXIMATELY 95% MODAASHTO DENSITY OPTIMUM MOISTURE CONTENT.
3. REPLACE WITH WITH G7 OR BETTER MATERIAL WHICH IS AVAILABLE ON SITE COMPACTED IN 2x150mm LAYERS TO 95% MODAASHTO DENSITY AT OPTIMUM MOISTURE CONTENT UP TO THE REQUIRED FOUNDING LEVEL

CONCRETE:

1. ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENT OF SABS 1200 G.
2. PROVIDE A 25MM X 25MM CHAMFER TO ALL EXPOSED CORNERS.
3. ALL EXPOSED CONCRETE WORK TO BE SMOOTH FINISH.
4. ALL INSIDE LEVELS REFER TO CONCRETE AND NOT TO FINISHED FLOOR EXCEPT WHERE OTHERWISE INDICATED.
5. THE GRADES OF CONCRETE AT 28 DAYS, UNLESS OTHERWISE INDICATED SHALL BE AS FOLLOWS :

SLABS / BEAMS/ WALLS	CLASS 30/19
FOUNDATIONS/ PLINTHS	CLASS 30/19
SURFACE BEDS	CLASS 30/19
STAIRS	CLASS 30/19
BLINDING LAYERS	CLASS 10/19
MASS CONCRETE	CLASS 10/19
6. UNFORMED SURFACE FINISHES:

TOP OF FLOOR SLABS	POWERFLOAT.
TOP OF WALLS & PLINTHS	STEELFLOAT
TRENCH FLOORS	STEELFLOAT.
TOP OF BASES	WOOD FLOATED.

FOUNDATIONS:

1. BEFORE CONCRETING TAKES PLACE ALL FOUNDATION EXCAVATIONS ARE TO BE INSPECTED ON SITE BY A COMPETENT PERSON AND APPROVED.
2. ALL FOUNDATION TO BE FOUNDED ON SOFT ROCK-WEATHERED GNEISS.DESIGN BEARING PRESSURE 500KPa. WHERE THIS IS NOT ENCOUNTERED AT FOUNDING LEVEL OVER EXCAVATE AND BACKFILL WITH 10MPa MASS CONCRETE.
3. ALL INTERNAL AND EXPOSED CONCRETE IS TO BE FORMED.
4. IF EXTERNAL CONCRETE IS NOT FORMED, 25MM OF CONCRETE IS TO BE ADDED TO CREATE COVER OF 75MM.
5. BACKFILL TO ROCK FACES AT PIPE TRENCH ENDS WITH 2MPa SOILCRETE

BRICKWORK NOTES

1. INTERIOR WALLS TO BE CLAY STOCK BRICKS.
2. EXTERIOR WALLS TO BE MAKORO DARK FACE BRICKS.
3. ALL BRICKS USED TO COMPLY WITH SABS 227 AND SABS 0164
4. MIN. REQUIRED CRUSHING STRENGTH 14MPa HARD BURNT COMMONS 28MPa FACE BRICKS.
5. CONTRACTOR TO SUPPLY BRICKS TO SABS FOR TESTING OF STRENGTH AND SOUNDNESS AND PROVIDE TEST RESULTS.
6. MORTAR TO BE CLASS II TO SABS 0164.
7. SAND USED FOR MORTAR TO COMPLY WITH REQUIREMENTS OF SABS 1090.
8. ALL PIERS , INTERSECTIONS AND RETAINING WALLS TO BE PROPERLY BONDED WITH MAIN WALLS AT EVERY SECOND COURSE.
9. NO VIBRATING ROLLER SHALL BE USED TO COMPACT SOIL NEAR NEWLY CONSTRUCTED WALLS.
10. ALL WALLS TO BE BUILT IN THE CONVENTIONAL STRETCHER COURSE SYSTEM.
11. BRICK REINFORCEMENT :
 - a. BRICKFORCE GENERALLY EVERY 5th COURSE EXCEPT OVER WINDOWS AND DOORS WHERE BRICKFORCE SHALL BE LAID EVERY COURSE FOR FOUR COURSES.
 - b. PROVIDE BRICKFORCE AT EVERY COURSE FROM TOP OF STRIP FOOTING TO 510mm ABOVE F.F.L. TO ALL BRICKWALLS.
12. ALL INTERNAL WALLS TO BE CONNECTED TO EXTERNAL WALLS WITH 1,6x30x900 LONG GALVANISED MILD STEEL L-STRAPS EVERY FOURTH COURSE FOR FULL HEIGHT INCLUDING CONNECTING TO RING BEAM WHERE APPLICABLE.
13. THE THICKNESS OF THE BED JOINT SHALL IN NO CASE EXCEED 13mm.
14. THE HEIGHT OF WALLING BUILT IN ONE DAY SHALL NOT EXCEED 1500mm.
15. ALL BRICKWALLS SHOWN ON THIS DRAWING ARE 230mm THICK U.O.N.

REFERENCE DRAWINGS

- H349523-CE-014 SECTIONS AND DETAILS
H349523-GEN-001 SITE LAYOUT

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

HATCH

SURVEYED	.
DESIGNED	W.SMITH
DRAWN	G.NGOMA
CHECKED	S.WESSON
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

JOHANNESBURG WATER (PTY) LTD



17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

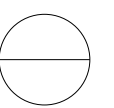
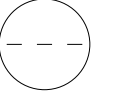
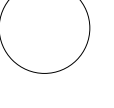
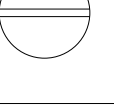
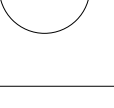
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
LIQUOR TREATMENT PLANT / VILLAGE SUBSTATION
FOUNDATION,SURFACEBED LAYOUT AND DETAILS

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J. PRINSLOO	AS SHOWN	T00 ISSUED FOR RETENDER T01 ISSUED FOR RETENDER	J. PRINSLOO J. PRINSLOO	10/10/2019 19.07.21	JW NUMBER JW13599-CE-013 CONSULTANT'S NUMBER H349523-CE-013 FILE No BWW1402
DATE					

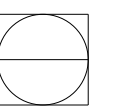
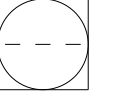
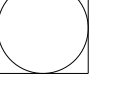
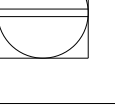
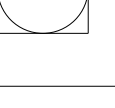
PIPE LINE NUMBERING				SPECIALTY PIPING ITEM TAG SYSTEM		ABBREVIATIONS				INSTRUMENT IDENTIFICATION LETTERS				
224-AAA-6000-CA1A-150-HCXX HEAT TRACING (Only if required) INSULATION TYPE LINE SIZE (DN) PIPING MATERIAL SPECIFICATION (Project Specific) SEQUENTIAL NUMBER SERVICE CODE AREA (Pipeline Originating Area)				SPECIALTY PIPING ITEM SPECIALTY PIPING ITEM CODE TYPE COMMON NUMBER FOR SAME TYPE THROUGHOUT PLANT SP-20086 224-SP-012 PLANT AREA SPECIALTY PIPING ITEM SEQUENCE NUMBER		AC A/M AS BD BL CO CAM CCR D DE DP DWG E/I ES ESD E/P FC FL FL/DO FL/DC FO FP GO GS HC HLL HOA HP HPT HPV HRN IA ID I/P LC LO LP LPD LPT LLL MP MS MW NC NMF NO NS NLL OD O/F PA PNL PV REV RTD SG SP SQ RT SS TL TSO T/T TV UF VE WS WV HS IP L/R RSP RST S/S AIR COMPRESSED AUTO/MANUAL AIR SUPPLY BLOW DOWN BATTERY LIMIT CHAIN OPERATED CAMERA CENTRAL CONTROL ROOM DRAIN DE-ENERGIZE DIFFERENTIAL PRESSURE DRAWING VOLTAGE IN/CURRENT OUT ELECTRICAL SUPPLY EMERGENCY SHUTDOWN VOLTAGE IN/PNEUMATIC OUT FAIL CLOSED FAIL LAST FAIL LAST - DRIFT OPEN FAIL LAST - DRIFT CLOSED FAIL OPEN FULL PORT GEAR OPERATOR GAS SUPPLY HOSE CONNECTION HIGH LIQUID LEVEL HAND-OFF-AUTOMATIC HIGH PRESSURE HIGH POINT HIGH POINT VENT HORN INSTRUMENT AIR INSIDE DIAMETER CURRENT IN/PNEUMATIC OUT LOCKED CLOSED LOCKED OPEN LOW PRESSURE LOW POINT DRAIN LOW POINT LOW LIQUID LEVEL MEDIUM PRESSURE METAL SEATED VALVE MANWAY NORMALLY CLOSED NORMALLY NO FLOW NORMALLY OPEN NITROGEN SUPPLY NORMAL LIQUID LEVEL OUTSIDE DIAMETER OVERFLOW PLANT AIR PANEL PROCESS VARIABLE REVERSE ACTING RESISTANCE/TEMPERATURE DETECTOR SPECIFIC GRAVITY SET POINT SQUARE ROOT SOFT SEAT VALVE TANGENT LINE TIGHT SHUT OFF TANGENT TO TANGENT TOTAL VOLUME UNDER FLOW WITH EQUIPMENT WATER SUPPLY WORKING VOLUME HYDRAULIC SUPPLY INSPECTION PORT LOCAL/REMOTE REMOTE SET POINT RESET STOP/START				LT 1234A INSTRUMENT IDENTIFICATION LETTERS SEQUENCE NUMBER (WITH PARALLEL INDICATOR IF REQUIRED) HH H L LL ILA 1000 FUNCTIONAL LETTERS OUTSIDE OF SQUARE DENOTE HIGH AND LOW ALARMS PLUS RECORDING SOFTWARE FUNCTIONALITY. INSTRUMENT SUPPLIED BY EQUIPMENT VENDOR, IN ADDITION TO FUNCTION SHOWN INSIDE CIRCLE IN THIS CASE DETAIL XX DETAIL REFERS TO "TYPICALS" PRIMARY ELEMENT & TRANSMITTER SYMBOLS GENERIC PRIMARY ELEMENT TRANSMITTER WITH INTEGRAL PRIMARY ELEMENT BUBBLE FORMAT TRANSMITTER WITH CLOSE COUPLED PRIMARY ELEMENT BUBBLE FORMAT TRANSMITTER WITH REMOTE PRIMARY ELEMENT BUBBLE FORMAT TRANSMITTER WITH INTEGRAL PRIMARY ELEMENT BUBBLE/GRAPHIC FORMAT TRANSMITTER WITH CLOSE-COUPLED PRIMARY ELEMENT BUBBLE/GRAPHIC FORMAT TRANSMITTER WITH REMOTE PRIMARY ELEMENT BUBBLE/GRAPHIC FORMAT NOTES TYPE OF ELEMENT FROM TABLE MEASUREMENT SYMBOLS: (*) = MEASUREMENT NOTATION (P&ID LENGEND SHEET 3) ? = MEASURED VARIABLE FROM INSTRUMENT IDENTIFICATION LETTERS TABLE # = PRIMARY ELEMENT SYMBOL				
SERVICE IDENTIFICATION		PIPE MATERIAL CLASS		SPECIALTY PIPING ITEM TAG CODES		GENERAL SYMBOLS								
A BD BFW CD CWS CWR D DO DMW DS DSP DSS DWV F FG FLG FP FW H H2S HS HSC IA LSC LO LS MSC MS N NA NG NHG O OH OWS OX P PA PAL PG PO PVG PW RRG RV RW RWM S SAA SWS SS TW V VS WD WR ACID RELIEF & BLOWDOWN BOILER FEED WATER CLOSED DRAIN COOLING WATER SUPPLY COOLING WATER RETURN DRAIN DIESEL OIL DEMUMERALISED WATER SANITARY DRAIN PUMPED SEWAGE STORM DRAIN DRAINS, WASTE & VENTS FLARE FUEL GAS FLUE GAS FIRE PROTECTION FIRE WATER HYDROGEN HYDROGEN SULPHIDE HIGH PRESSURE STEAM HIGH PRESSURE STEAM CONDENSATE INSTRUMENT AIR LOW PRESSURE STEAM CONDENSATE LUBE OIL LOW PRESSURE STEAM MEDIUM PRESSURE STEAM CONDENSATE MEDIUM PRESSURE STEAM NITROGEN CAUSTIC NATURAL GAS AMMONIA GAS OIL HYDRAULIC OIL OILY WATER SEWER OXYGEN GENERAL PROCESS PLANT AIR LOW PRESSURE PROCESS AIR PURGE GAS POTABLE WATER PURGE & VENT GASES PROCESS WATER RETORT RECYLCE GAS RELIEF RAW WATER RAW OIL/WATER MIX, ESP & KNOCKOUT STEAM SULPHURIC ACID SOUR WATER SANITARY SEWER TREATED WATER PROCESS VENT VENT STEAM WASTE DISCHARGE RECYCLE WATER		C A 1 A SEQUENCE PRESSURE CLASS MATERIAL GRADE MATERIAL TYPE PIPE MATERIAL TYPE & GRADE REFER TO IPAS MP PIPING MATERIAL CLASS GUIDE "PI-G-021" (Found in Major Project Toolkit) TO BE POPULATED AS PER SPECIFIC PROJECT REQUIREMENTS. C CARBON STEEL B ASTM A53 GR. B D ASTM A106 GR. B G API-5L GR. B ERW S STAINLESS STEEL A 304 (UNS S30400) C 304L (UNS S30403) D 316 (UNS S31600) F 316L (UNS S31603) OR DUEL CERTIFIED		TYPE CODE DESCRIPTION 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 HOSES HOSE ADAPTORS FILTRATION/STRAINERS SAFETY ITEMS FLEXIBILITY ITEMS DRAINAGE/OVERFLOW FIRE WATER ITEMS TANK/VESSEL ITEMS NON REGISTERED VESSELS SILENCERS DAMPERS/RELIEF DEVICES COUPLINGS & FLANGES (NON-STD) EXTENSION DEVICES/OPERATORS SPACERS/BLINDS (NON-STD) VENTS SAFETY/SHOWER/EYEWASH HEATING/COOLING DEVICES SPECIAL PIPE FITTINGS SIPHON/VACUUM BREAKERS LAUNDERS MISCELLANEOUS VALVE TAG SYSTEM 50 VGA-027 VALVE TYPE VALVE DATA SHEET NUMBER VALVE PRESSURE CLASS 224-V-132 PLANT AREA VALVE SEQUENCE NUMBER HAND OPERATED VALVE		TIE-IN POINT OR CONNECTION TP 001 P = Piping (TP) J = Instrumentation (TJ) Sequential Number DRAWING SHEET CONNECTOR Service To/From Equipment Tag 0000-75-000-XXXX SPEC CHANGE CA1A SF1G								
INSULATION & HEAT TRACING CODES		PIPE MATERIAL CLASS		VALVE TYPE CODES		GENERAL SYMBOLS								
TYPE CODE DESCRIPTION AS PP HC25 HC50 HC75 HC100 SR ST ET NA NI ANTI SWEAT PERSONAL PROTECTION HEAT CONSERVATION 25mm THICK HEAT CONSERVATION 50mm THICK HEAT CONSERVATION 75 mm THICK HEAT CONSERVATION 100mm THICK SOLAR RADIATION STEAM TRACING ELECTRICAL TRACING NOISE ABATEMENT NO INSULATION		REFER TO IPAS MP PIPING MATERIAL CLASS GUIDE "PI-G-021" (Found in Major Project Toolkit) TO BE POPULATED AS PER SPECIFIC PROJECT REQUIREMENTS. TYPE CODE DESCRIPTION 1 2 3 4 5 6 7 8 9 CLASS 150 CLASS 2500 CLASS 300 CLASS 3000 CLASS 1500 CLASS 800 NON ANSI CLASS 800 CLASS 900		TYPE CODE DESCRIPTION VAN VBA VBF VCH VCK VDI VDT VGA VGL VKG VNE VPI VPL VRA VSL VSP VSS ANGLE BALL BUTTERFLY CHECK CHOKE DIAPHRGRAM DART GATE GLOBE KNIFE GATE NEEDLE PINCH PLUG RAM SLUICE SPECIAL SLURRY		TIE-IN POINT OR CONNECTION TP 001 P = Piping (TP) J = Instrumentation (TJ) Sequential Number DRAWING SHEET CONNECTOR Service To/From Equipment Tag 0000-75-000-XXXX SPEC CHANGE CA1A SF1G								
DEPARTMENT	APPROVED	DESIGNATION	DATE	SPECIALTY PIPING ITEM TAG CODES		GENERAL SYMBOLS								

CONSULTING ENGINEERS				SURVEYED		JOHANNESBURG WATER (PTY) LTD		CITY OF JOHANNESBURG		DESIGN MANAGER		SCALE		AMENDMENTS		APPROVED		DATE		DRAWING No.	
HATCH				DESIGNED		A DU TOIT		17 HARRISON STREET MARSHALLTOWN 2107		J PRINSLOO		NTS		T00		J PRINSLOO		26.06.18		JW NUMBER	
				DRAWN		T MALEBANE								T01		J PRINSLOO		08.02.19		CONSULTANT'S NUMBER	
				CHECKED		A DU TOIT								T02		J PRINSLOO		10.10.19		H349523-CI-001	
				SERVICES CHECKED		J PRINSLOO								T03		J PRINSLOO		19.07.21		FILE No	
				GEOTECHNICAL INVESTIGATION																BWW1402	
				APPROVED																	
				Pr. Eng. No.																	
				DATE						DATE		10.10.19									

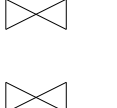
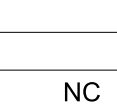
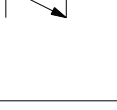
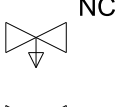
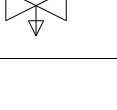
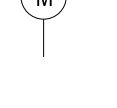
DISCRETE INSTRUMENTS

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	PRIMARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR
	FIELD MOUNTED
	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR
	HEAT/COOL TRACED INSTRUMENT

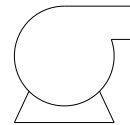
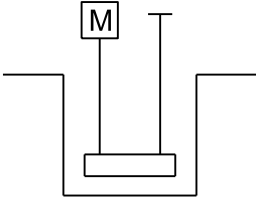
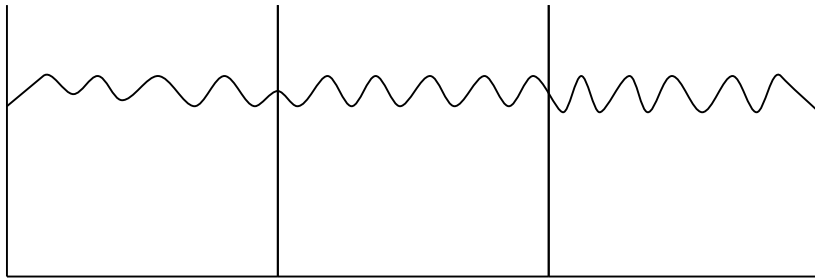
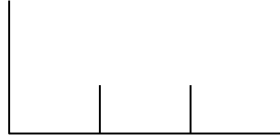
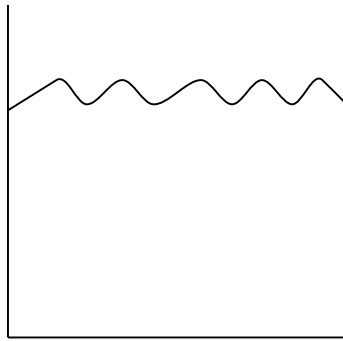
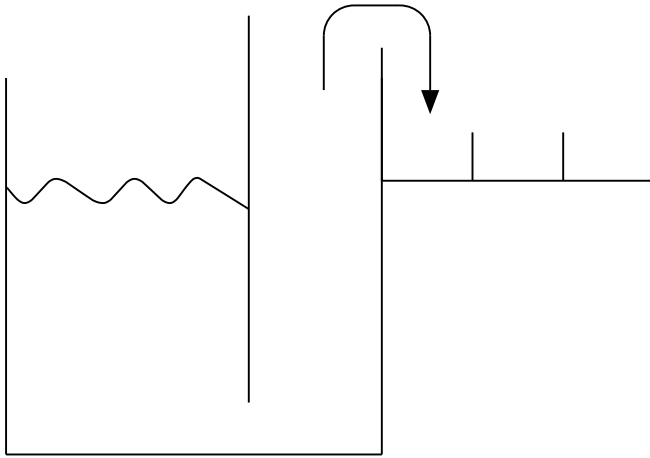
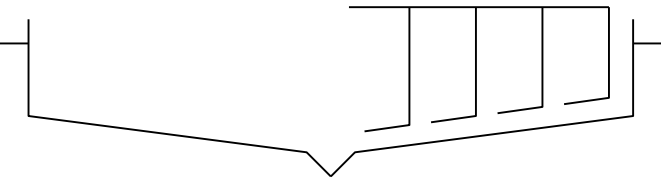
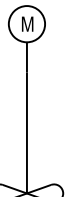
SHARED DISPLAY
PRIMARY CHOICE OR BASIC PCS

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
	PRIMARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR
	FIELD MOUNTED
	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR

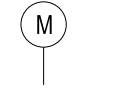
VALVES

	NC (Normally Closed)
	GATE VALVE
	(Normally Open)
	NC (Normally Closed)
	BUTTERFLY VALVE
	(Normally Open)
	CHECK VALVE
	NC (Normally Closed)
	KNIFE VALVE
	(Normally Open)

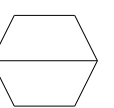
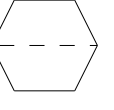
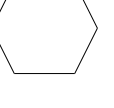
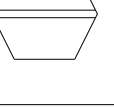
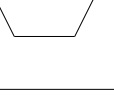
MECHANICAL EQUIPMENT

	CENTRIFUGAL PUMP
	SUMP PUMP
	REACTOR
	CLASSIFIER SPLITTER BOX
	SUMP
	REACTOR SPLITTER BOX
	CENTRIFUGAL PUMP
	AGITATOR

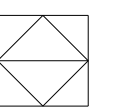
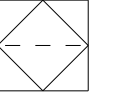
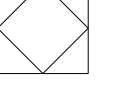
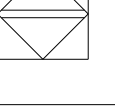
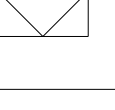
ACTUATORS

	ELECTRIC
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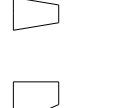
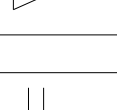
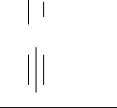
COMPUTER SYSTEM & SOFTWARE

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
	PRIMARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR
	FIELD MOUNTED
	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR

SHARED DISPLAY
ALTERNATE CHOICE OR SIS

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
	PRIMARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR
	FIELD MOUNTED
	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR

PIPE FITTINGS

	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	FLANGE / BLIND
	REDUCING FLANGE
	UNION

INSTRUMENT CONNECTION

	SOCKET WELDED INSTRUMENT CONNECTION
	WELDED INSTRUMENT CONNECTION

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

HATCH

SURVEYED	
DESIGNED	A DU TOIT
DRAWN	T MALEBANE
CHECKED	A DU TOIT
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

JOHANNESBURG WATER (PTY) LTD



17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
LEGEND SHEET – COMPONENTS & MECHANICAL EQUIPMENT

DESIGN
MANAGER

J PRINSLOO

DATE 10.10.19

SCALE

NTS

AMENDMENTS

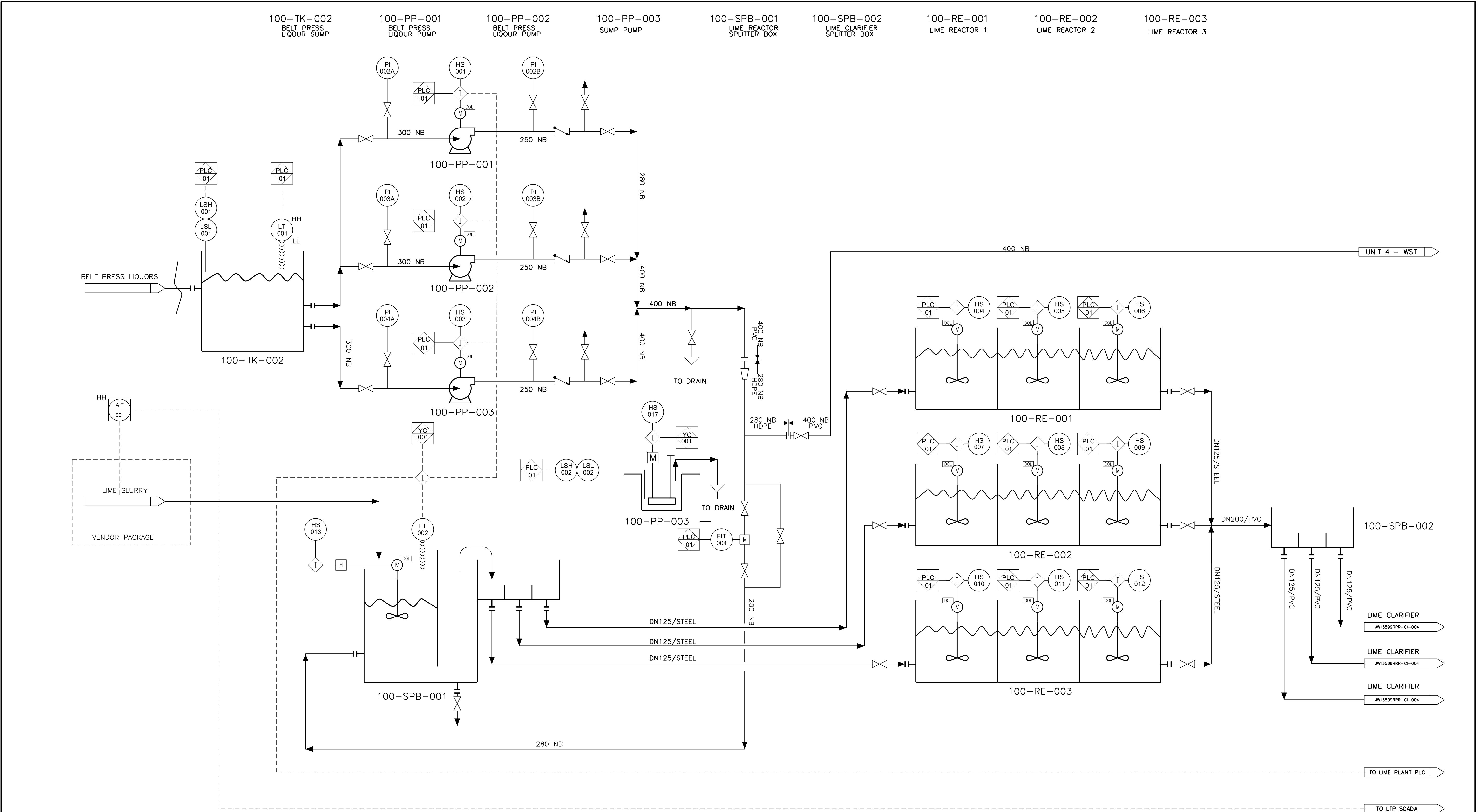
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T01	ISSUED FOR RETENDER	J PRINSLOO	08.02.19		
T02	ISSUED FOR RETENDER	J PRINSLOO	10.10.19		
T03	ISSUED FOR RETENDER	J PRINSLOO	19.07.21		

APPROVED

DATE

DRAWING No.

JW NUMBER
JW13599–CI–002
CONSULTANT'S NUMBER
H349523–CI–002
FILE No
BWW1402



DEPARTMENT	APPROVED	DESIGNATION	DATE

HATCH

SURVEYED	-
DESIGNED	M MOHAPI
DRAWN	M MOHAPI
CHECKED	D VISSER
SERVICES CHECKED	J PRINSLOO
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

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Johannesburg Water

17 HARRISON STREET
MARSHALLTOWN
2107

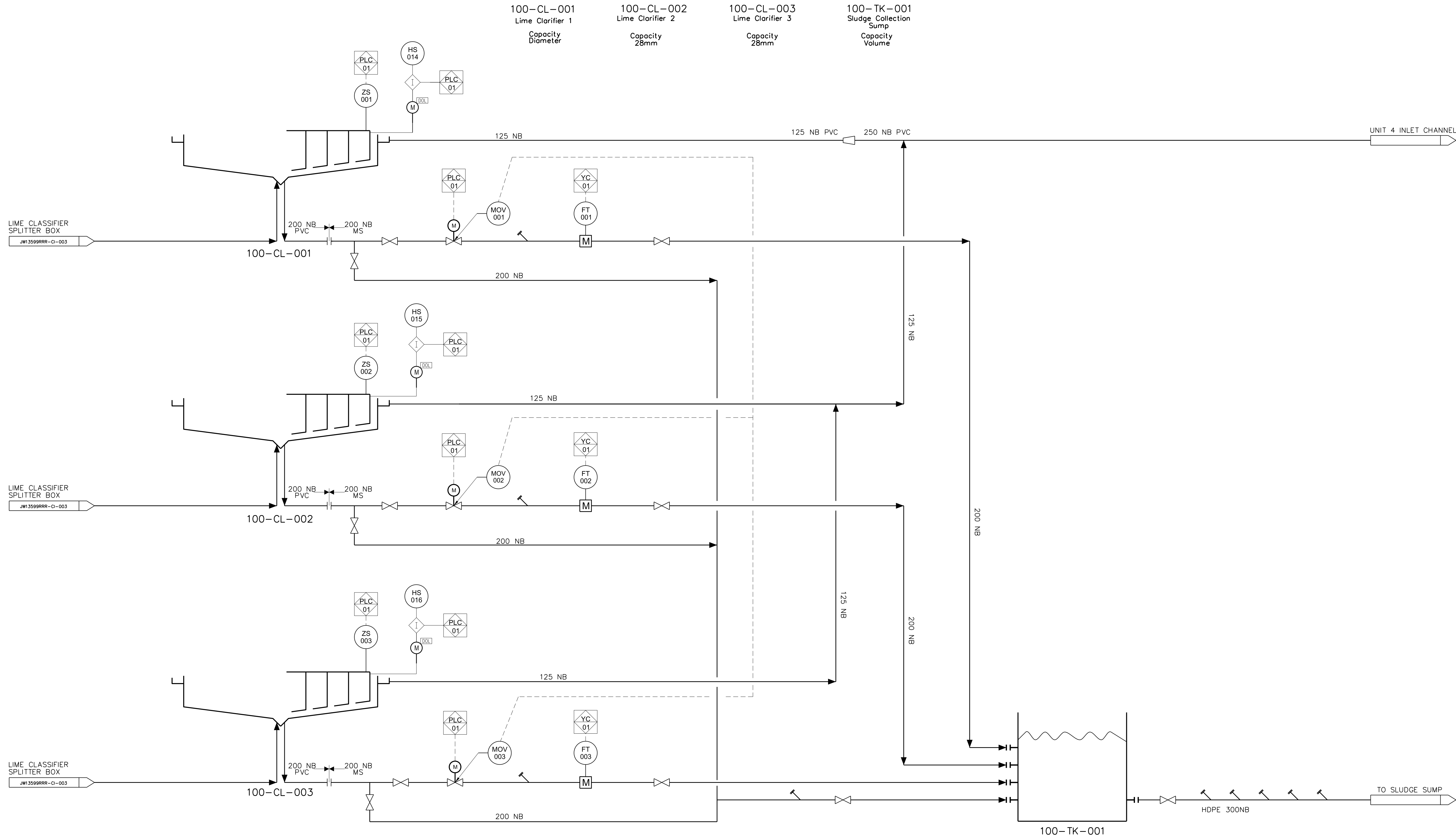
TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR PLANT

PIPING & INSTRUMENTATION DIAGRAM

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J PRINSLOO	NTS	T00 ISSUED FOR TENDER	J PRINSLOO	26.06.18	JW NUMBER
		T01 ISSUED FOR RETENDER	J PRINSLOO	01.02.19	JW13599-CI-003
		T02 ISSUED FOR RETENDER	J PRINSLOO	10.10.19	CONSULTANT'S NUMBER
		T03 ISSUED FOR RETENDER	J PRINSLOO	19.07.21	H349523-CI-003
DATE 10.10.19					FILE No
					BWW1402



DEPARTMENT	APPROVED	DESIGNATION	DATE

HATCH

SURVEYED	-
DESIGNED	A DU TOIT
DRAWN	M MOHAPI
CHECKED	D VISSER
SERVICES CHECKED	J PRINSLOO
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

JOHANNESBURG WATER (PTY) LTD



17 HARRISON STREET
MARSHALLTOWN
2107

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FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
PIPING AND INSTRUMENTATION DIAGRAM

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J PRINSLOO	NTS	T00 ISSUED FOR TENDER	J PRINSLOO	26.06.18	JW NUMBER JW13599-CI-004
		T01 ISSUED FOR RETENDER	J PRINSLOO	01.02.19	CONSULTANT'S NUMBER H349523-CI-004
		T02 ISSUED FOR RETENDER	J PRINSLOO	10.10.19	FILE No BWW1402
		T03 ISSUED FOR RETENDER	J PRINSLOO	19.07.21	
DATE 10.10.19					

CONTRACT JW13599
NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT

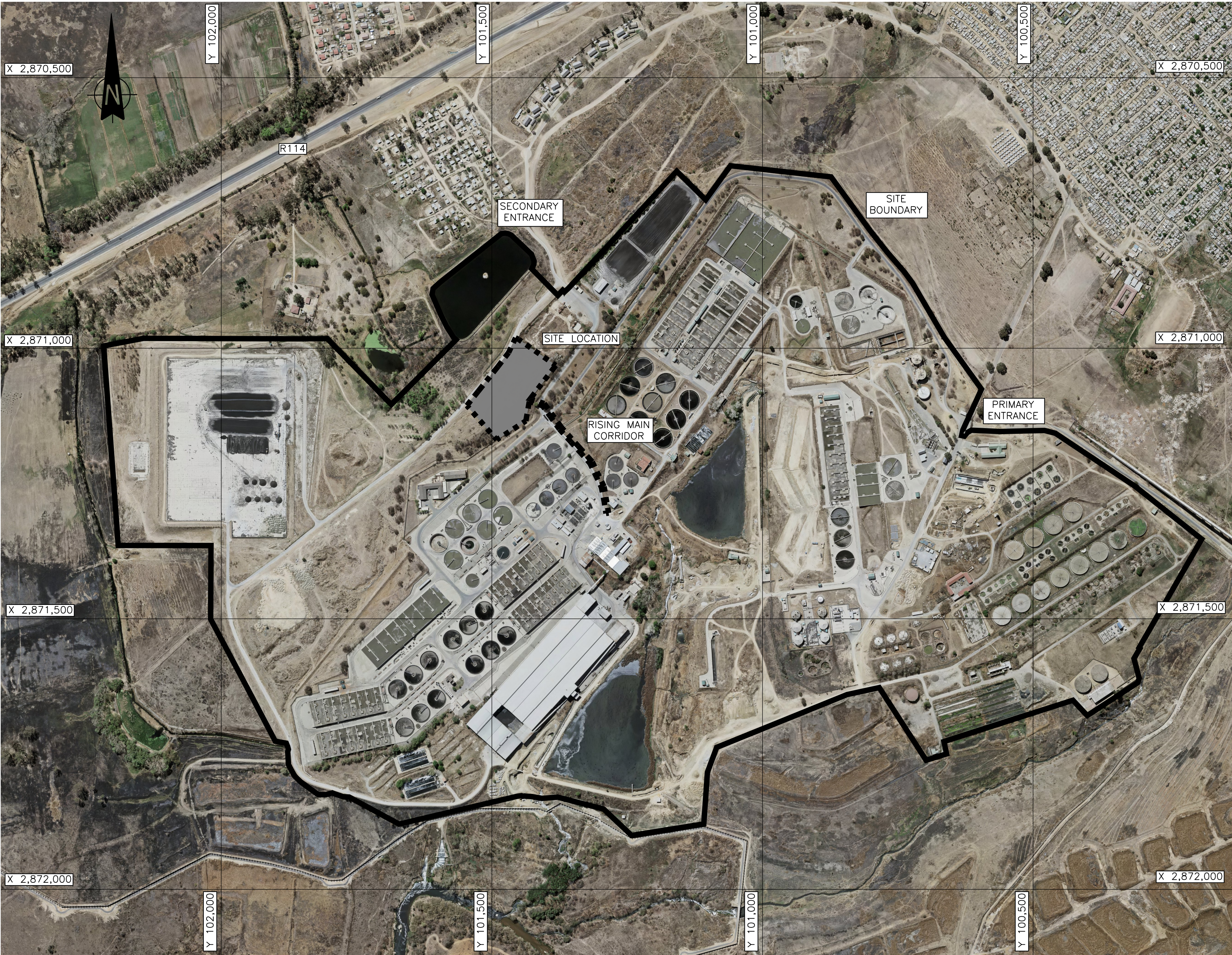
NO.	DESCRIPTION	REV	SHEET	DWG No.
A	GENERAL DRAWINGS			
A.1	LIST OF DRAWINGS	T03	1 OF 1	JW13599-GEN-001
A.2	LOCALITY PLAN	T03	1 OF 1	JW13599-GEN-002
A.3	TYPICAL NAME BOARD	T03	1 OF 1	JW13599-GEN-003
A.4	HYDRAULIC PROFILE	T03	1 OF 1	JW13599-GEN-004
B	CIVIL ENGINEERING			
B.1	GENERAL ARRANGEMENT OF PLANT LAYOUT	T03	1 OF 1	JW13599-CE-001
B.2	GENERAL ARRANGEMENT OF PIPEWORK LAYOUT	T03	1 OF 1	JW13599-CE-002
B.3	CLARIFIER – EARTHWORKS – LAYOUTS AND SECTIONS	T03	1 OF 1	JW13599-CE-003
B.4	CLARIFIER – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	1 OF 2	JW13599-CE-004
B.5	CLARIFIER – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	2 OF 2	JW13599-CE-005
B.6	MCC ROOM – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	1 OF 1	JW13599-CE-006
B.7	MORNING GLORY SPILLWAY – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	1 OF 1	JW13599-CE-007
B.8	LIME REACTOR – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	1 OF 2	JW13599-CE-008
B.9	LIME REACTOR – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	2 OF 2	JW13599-CE-009
B.10	TIE-IN CHAMBER – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	1 OF 1	JW13599-CE-010
B.11	ACCESS ROAD – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	1 OF 1	JW13599-CE-011
B.12	SLUDGE DISCHARGE CHAMBER – GENERAL ARRANGEMENT AND TYPICAL DETAILS	T03	1 OF 1	JW13599-CE-012
B.13	NEW LTP / VILLAGE SUBSTATION – FOUNDATION, SURFACEBED LAYOUT AND DETAILS	T01	1 OF 2	JW13599-CE-013
B.14	NEW LTP / VILLAGE SUBSTATION – SECTIONS AND DETAILS	T01	2 OF 2	JW13599-CE-014
C	ELECTRICAL AND MECHANICAL			
C.1	ELECTRICAL SITE LAYOUT	T03	1 OF 1	JW13599-ME-001
C.2	UNIT 4 LTP SUBSTATION – MCC SINGLE LINE DIAGRAM	T03	1 OF 2	JW13599-ME-002
C.3	UNIT 4 LTP SUBSTATION – MCC SINGLE LINE DIAGRAM	T03	2 OF 2	JW13599-ME-003
C.4	TYPICAL INCOMER SCHEMATIC DIAGRAM	T03	1 OF 1	JW13599-ME-004
C.5	TYPICAL CONTROL TRANSFORMER SCHEMATIC DIAGRAM	T03	1 OF 1	JW13599-ME-005
C.6	TYPICAL D.O.L. SCHEMATIC DIAGRAM	T03	1 OF 1	JW13599-ME-006
C.7	MCC ROOM – LIGHTING AND SMALL POWER LAYOUT	T03	1 OF 1	JW13599-ME-007
C.8	TYPICAL WSO FEEDER – SCHEMATIC DIAGRAM	T03	1 OF 1	JW13599-ME-008
C.9	NEW LTP & VILLAGE SUBSTATION – SINGLE LINE DIAGRAM	T01	1 OF 1	JW13599-ME-009
C.10	NEW LTP & VILLAGE SUBSTATION – LIGHTING AND SMALL POWER LAYOUT	T01	1 OF 1	JW13599-ME-010
C.11	GENERAL ARRANGEMENT OF THE BELT PRESS LIQUOR PUMP STATION	T01	1 OF 1	JW13599-ME-011
D	CONTROL AND INSTRUMENTATION			
D.1	LEGEND SHEET – ASSET TAGGING, PIPING AND INSTRUMENTATION DIAGRAM	T03	1 OF 1	JW13599-CI-001
D.2	LEGEND SHEET – COMPONENTS AND MECHANICAL EQUIPMENT PIPING AND INSTRUMENTATION DIAGRAM	T03	1 OF 1	JW13599-CI-002
D.3	LIQUOR TREATMENT PLANT (RISING MAIN) PIPING AND INSTRUMENTATION DIAGRAM	T03	1 OF 1	JW13599-CI-003
D.4	LIQUOR TREATMENT PLANT (GRAVITY MAIN) PIPING AND INSTRUMENTATION DIAGRAM	T03	1 OF 1	JW13599-CI-004
E	STANDARD DRAWINGS			
E.1	TYPICAL CAT LADDER DETAILS	T03	1 OF 1	JW13599-STD-001
E.2	TYPICAL STEEL STAIRS AND HANDRAILS DETAILS	T03	1 OF 1	JW13599-STD-002
E.3	TYPICAL PVC _u PIPELINES RODDING EYE DETAILS	T03	1 OF 1	JW13599-STD-003
E.4	TYPICAL HDPE PIPELINE RODDING EYE DETAILS	T03	1 OF 1	JW13599-STD-004
E.5	ACCESS GATE	T03	1 OF 1	JW13599-STD-005

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS		JOHANNESBURG WATER (PTY) LTD		CITY OF JOHANNESBURG		DESIGN MANAGER	SCALE	AMENDMENTS		APPROVED	DATE	DRAWING No.			
		SURVEYED	-		17 HARRISON STREET MARSHALLTOWN 2107			NORTHERN WASTEWATER TREATMENT WORKS UNIT 4 – LIQUOR TREATMENT PLANT LIST OF DRAWINGS		T03	ISSUED FOR TENDER	J. PRINSLOO	26.06.18	JW NUMBER	
		DESIGNED	S. WESSON							T03	ISSUED FOR RETENDER	J. PRINSLOO	08.02.19	JW13599–GEN–001	
		DRAWN	S. WESSON							T03	ISSUED FOR RETENDER	J. PRINSLOO	10.10.19	CONSULTANT'S NUMBER	
		CHECKED	J. PRINSLOO							T03	ISSUED FOR RETENDER	J. PRINSLOO	19.07.21	H349523–GEN–001	
		SERVICES CHECKED												FILE No	
		GEOTECHNICAL INVESTIGATION												BWW1402	
		SERVITUDES													
		APPROVED				DATE 2019/10/10									
		Pr. Eng. No.													
		DATE													



NORTHERN WASTEWATER TREATMENT WORKS LOCALITY
SCALE 1: 20,000



NORTHERN WASTEWATER TREATMENT WORKS SITE
SCALE 1:5000

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

HATCH

SURVEYED	-
DESIGNED	S. WESSON
DRAWN	S. WESSON
CHECKED	J. PRINSLOO
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

JOHANNESBURG WATER (PTY) LTD



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MARSHALLTOWN
2107

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FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
LOCALITY PLAN

DESIGN
MANAGER

J. PRINSLOO

DATE 2019/10/10

SCALE

AS SHOWN

AMENDMENTS

T00	ISSUED FOR TENDER	J. PRINSLOO	26.06.18
T01	ISSUED FOR RETENDER	J. PRINSLOO	08.02.19
T02	ISSUED FOR RETENDER	J. PRINSLOO	10.10.19
T03	ISSUED FOR RETENDER	J. PRINSLOO	19.07.21

APPROVED

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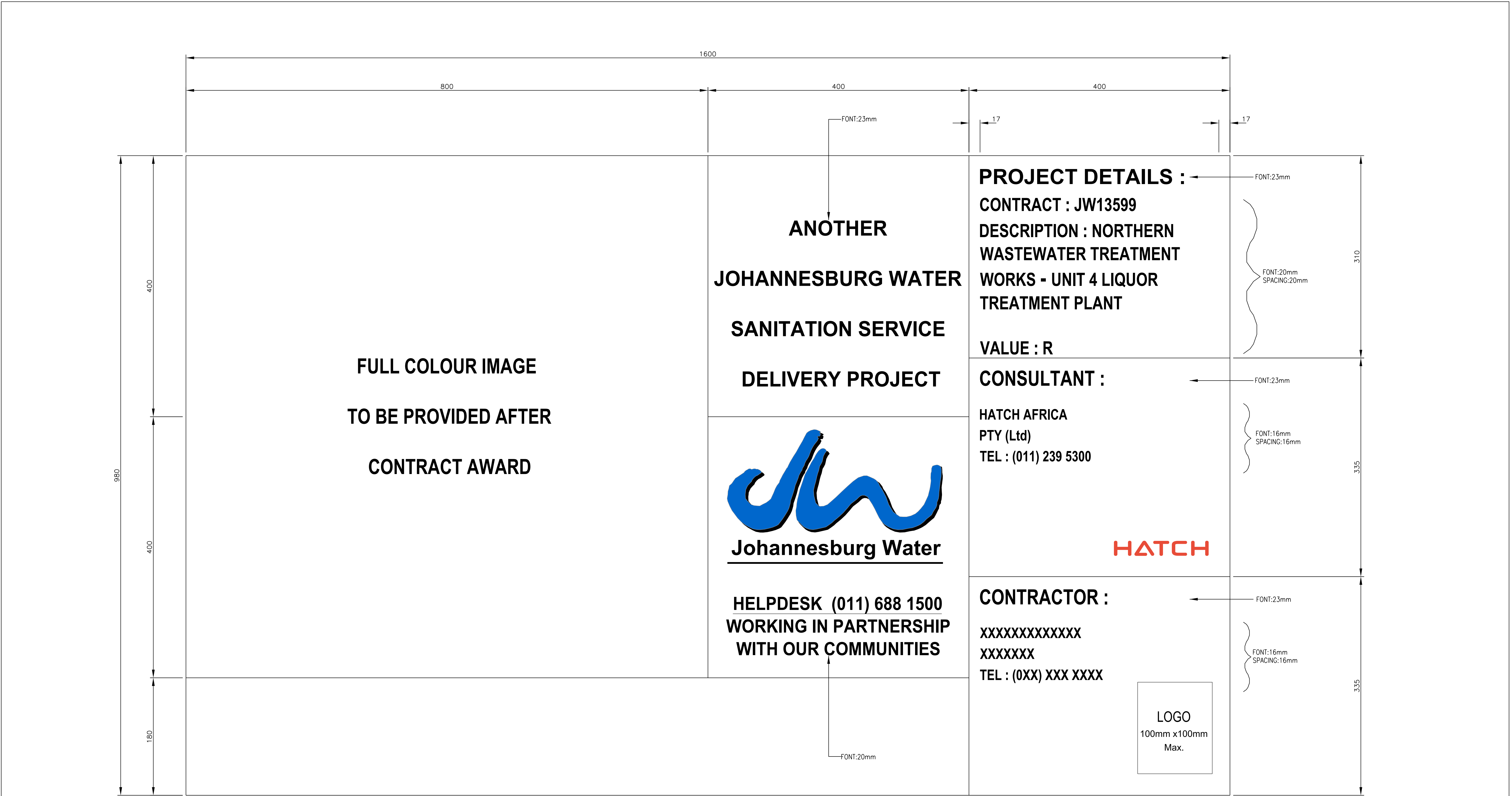
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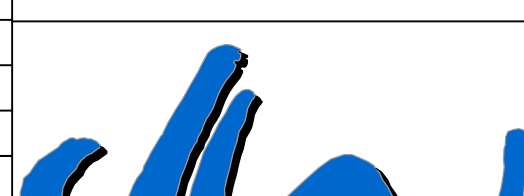
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J. PRINSLOO

J. PRINSLOO



DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS			JOHANNESBURG WATER (PTY) LTD		CITY OF JOHANNESBURG		DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.				
			 Johannesburg Water		17 HARRISON STREET MARSHALLTOWN 2107 NORTHERN WASTEWATER TREATMENT WORKS UNIT 4 – LIQUOR TREATMENT PLANT NAME BOARD								J. PRINSLOO		N T S	
							SURVEYED		.							
							DESIGNED		S.WESSON							
							DRAWN		S.WESSON							
							CHECKED		J. PRINSLOO							
							SERVICES CHECKED									
							GEOTECHNICAL INVESTIGATION									
							SERVITUDES									
							APPROVED									
							Pr. Eng. No.									
DATE																
							DATE 2019/10/10									

NOTES

1. NOT TO BE USED AS A CONSTRUCTION DRAWING

2. VELOCITIES ARE INDICATIVE

3. PIPELINE LENGTHS ROUNDED TO WHOLE NUMBER AND INDICATIVE

4. ALL LEVELS IN MASL

ABBREVIATIONS

TOC = TOP OF CONCRETE

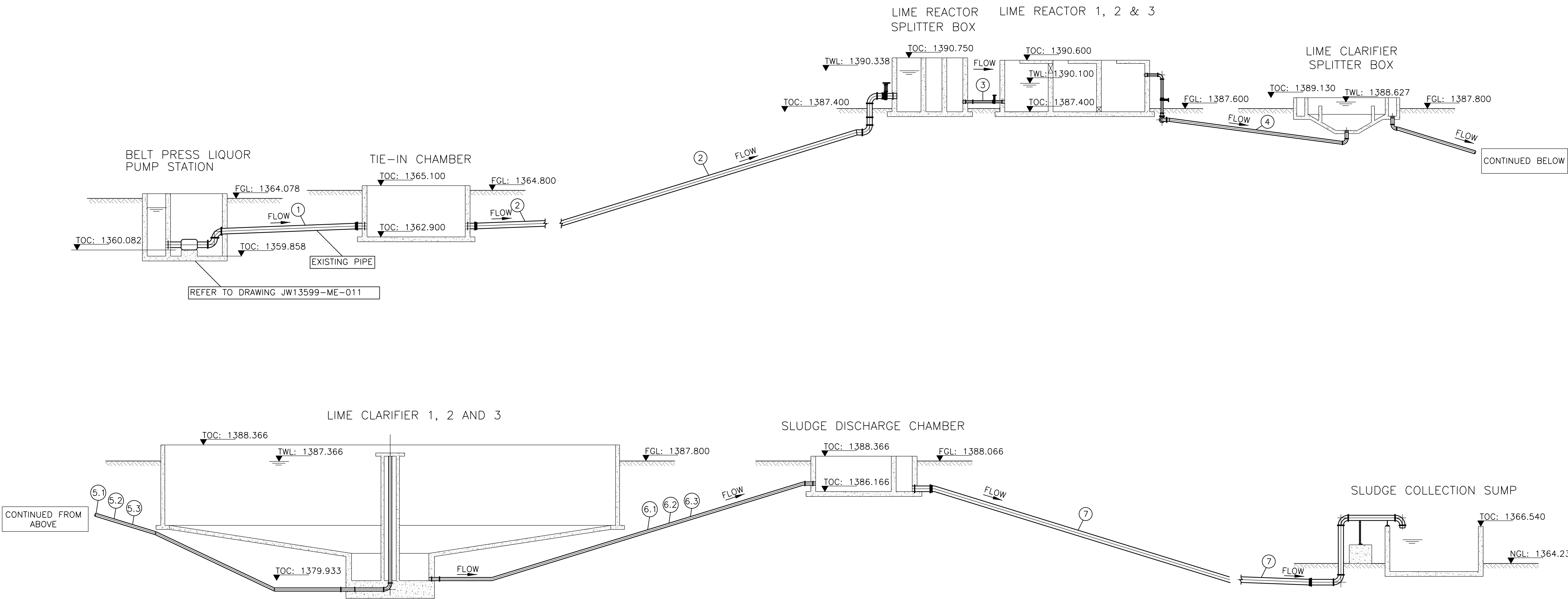
TOW = TOP OF WEIR

TWL = TOP WATER LEVEL

NGL = NATURAL GROUND LEVEL

IL = INVERT LEVEL

PIPE TABLE												
PIPE	PIPE NUMBER											
	1	2	3	4	5.1	5.2	5.3	6.1	6.2	6.3	7	
LENGTH (M)	-	287	5	53	39	19	39	105	105	105		
DIAMETER (MM)	400	280	125	200	125	125	125	200	200	200	300	
VELOCITY (M/S)	-	1.14	1.61	1.89	1.61	1.61	1.61	1.46	1.46	1.46		
MATERIAL	PVC	HDPE	MS	PVC	PVC	PVC	PVC	PVC	PVC	PVC	HDPE	



DEPARTMENT	APPROVED	DESIGNATION	DATE

HATCH

SURVEYED	
DESIGNED	S. WESSON
DRAWN	S. WESSON
CHECKED	J. PRINSLOO
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

JOHANNESBURG WATER (PTY) LTD

Johannesburg Water

17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400
FAX: (011) 688-1529

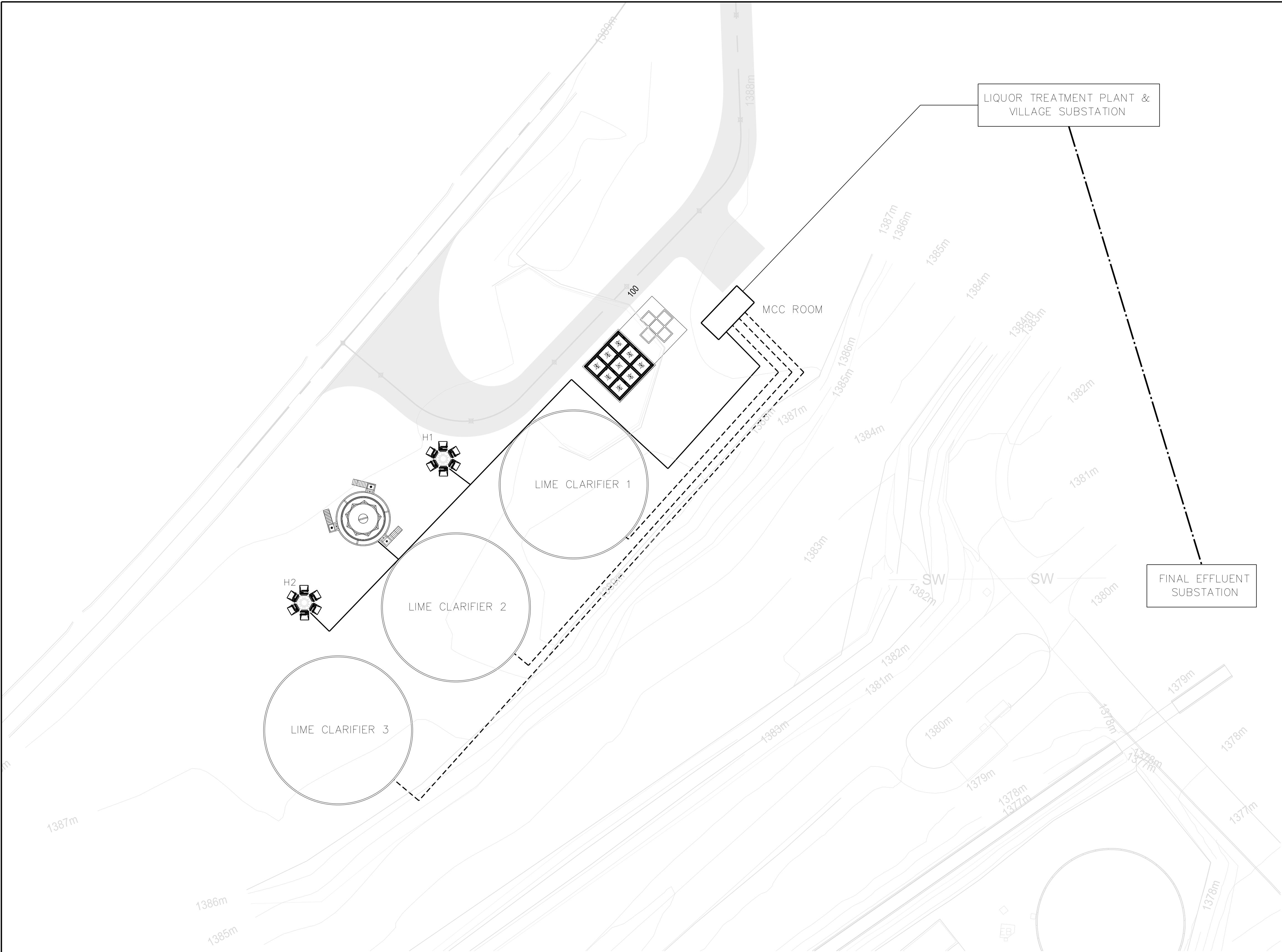
CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS

UNIT 4 – LIQUOR TREATMENT PLANT

SITE WIDE
HYDRAULIC PROFILE
SCHEMATIC DIAGRAM

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J. PRINSLOO	NA	T00 ISSUED FOR TENDER	J. PRINSLOO	26.06.18	JW NUMBER
		T01 ISSUED FOR RETENDER	J. PRINSLOO	08.02.19	JW13599-GEN-004
		T02 ISSUED FOR RETENDER	J. PRINSLOO	10.10.19	CONSULTANT'S NUMBER
		T03 ISSUED FOR RETENDER	J. PRINSLOO	19.07.21	H349523-GEN-004
					FILE No
DATE 2019/10/10					BWW1402



LEGEND

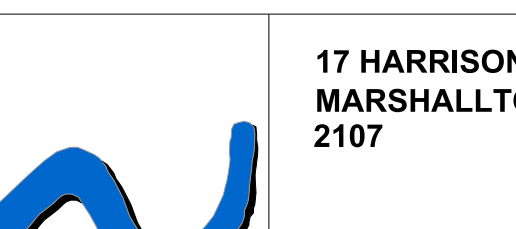
10mm sq, 4CORE PVC/SWA/PVC CABLE

120mm sq, 4CORE
Cu/PVC/SWA/PVC CABLE
+ 70mm BCEW

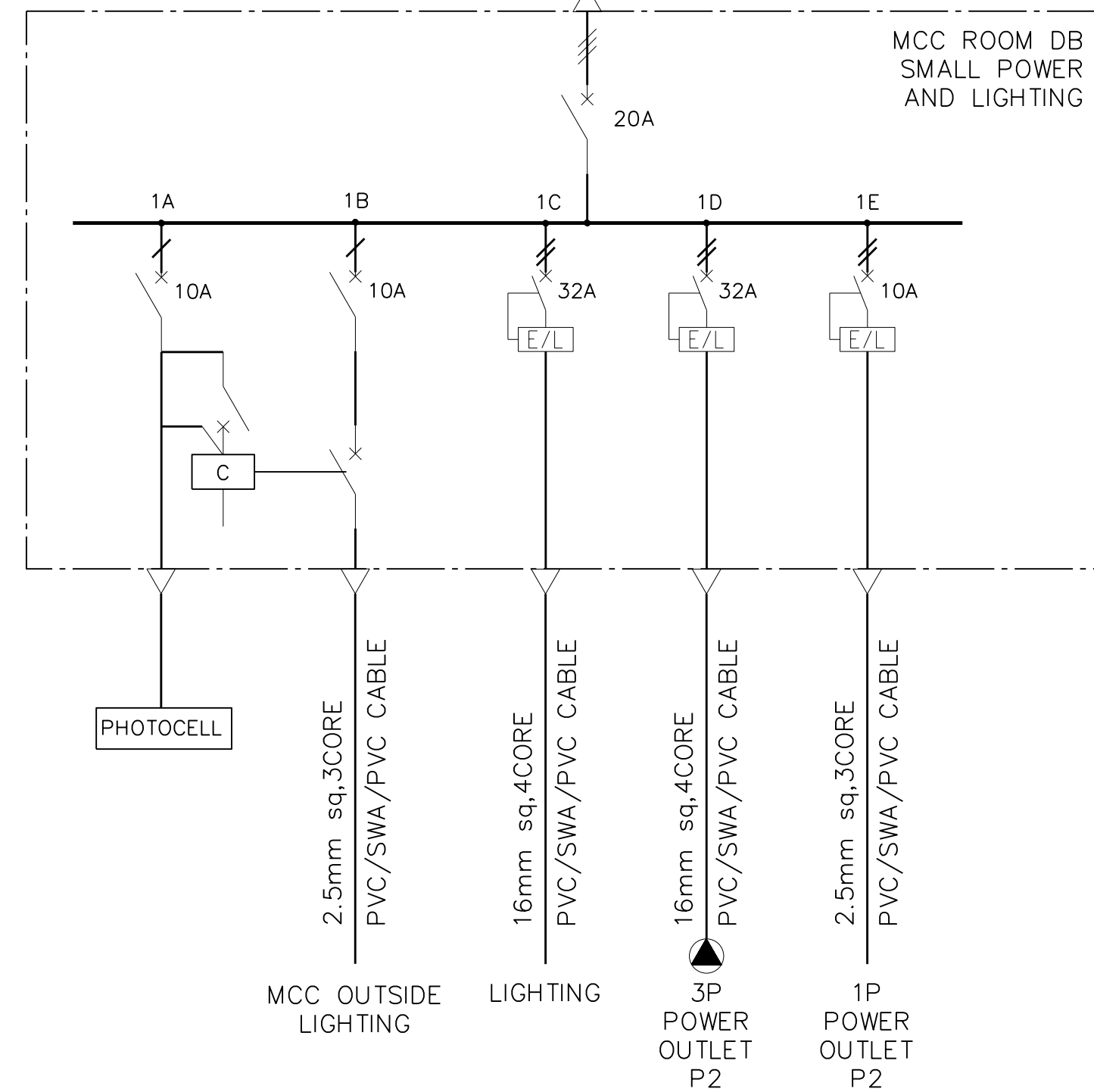
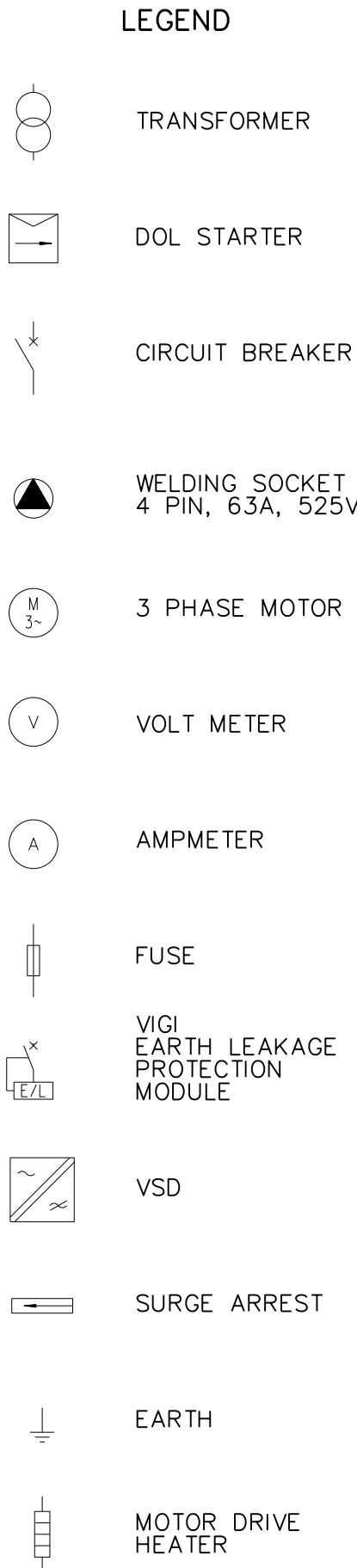
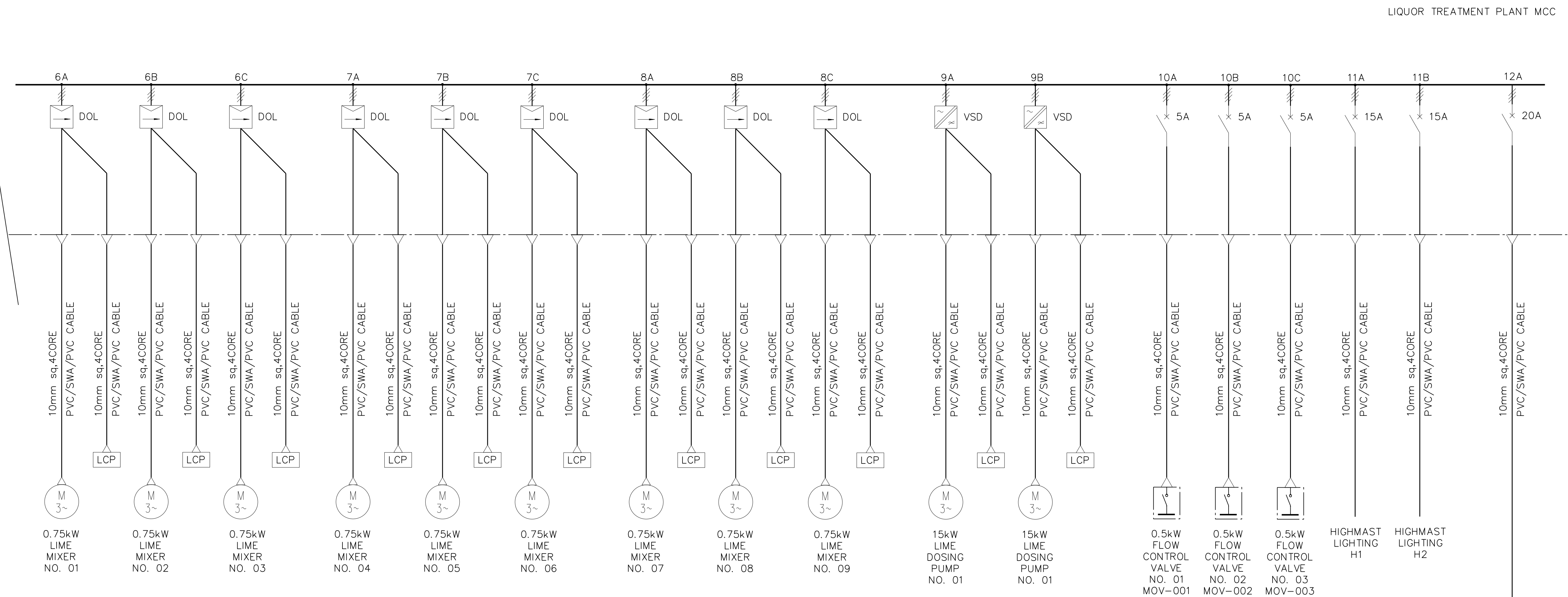
185mm sq, 3CORE
Cu/XLPE/SWA/PVC CABLE

400W HPS FLOOD LIGHTS
ON 36m HIGHMAST

DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS HATCH		SURVEYED		-	JOHANNESBURG WATER (PTY) LTD  17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529		CITY OF JOHANNESBURG NIORTHERN WASTEWATER TREATMENT WORKS UNIT 4 – LIQUOR TREATMENT WORKS ELECTRICAL SITE LAYOUT		DESIGN MANAGER J PRINSLOO DATE 10.10.2019		SCALE 1:400		AMENDMENTS T00 ISSUED FOR TENDER T01 ISSUED FOR RETENDER T02 ISSUED FOR RETENDER T03 ISSUED FOR RETENDER		APPROVED J.PRINSLOO J.PRINSLOO J.PRINSLOO J.PRINSLOO		DATE 26.06.18 02.2019 10.10.19 19.07.21		DRAWING No. JW NUMBER JW13599–ME–001 CONSULTANT'S NUMBER H349523–ME–001 FILE No BWW1402	
		DESIGNED		M MOHAPI																
		DRAWN		M MOHAPI																
		CHECKED		D VISSER																
		SERVICES CHECKED																		
		GEOTECHNICAL INVESTIGATION																		
		SERVITUDES																		
APPROVED																				
Pr. Eng. No.																				
DATE																				

REFER TO DRAWING NUMBER:
H349523-ME-002



DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

HATCH

SURVEYED	
DESIGNED	M MOHAPI
DRAWN	M MOHAPI
CHECKED	D VISSER
SERVICES CHECKED	J PRINSLOO
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No. J PRINSLOO	
DATE	

JOHANNESBURG WATER (PTY) LTD



17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
SINGLE LINE DIAGRAM – LTP MCC

DESIGN
MANAGER

J PRINSLOO

DATE 10.10.2019

SCALE

NTS

AMENDMENTS

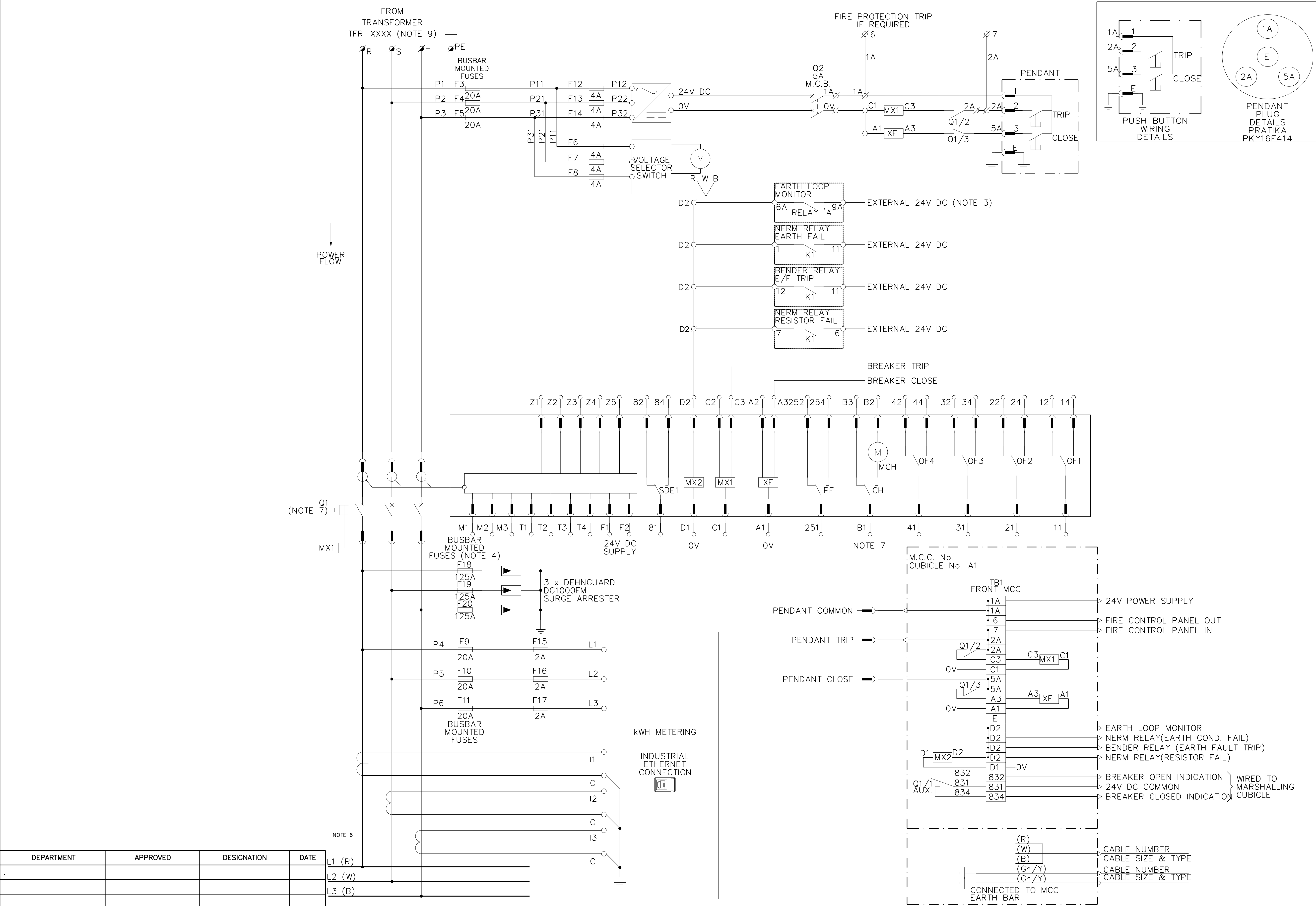
T00	ISSUED FOR TENDER	J.PRINSLOO	26.06.18
T01	ISSUED FOR RETENDER	J.PRINSLOO	02.2019
T02	ISSUED FOR RETENDER	J.PRINSLOO	10.10.19
T03	ISSUED FOR RETENDER	J.PRINSLOO	19.07.21

APPROVED

DATE

DRAWING No.

JW NUMBER
JW13599-ME-003
CONSULTANT'S NUMBER
H349523-ME-003
FILE No
BWW1402



NOTES:

- ALL INTERNAL WIRING TO BE PREFIXED BY THE RELEVANT CUBICLE No.
- SURGE ARRESTER FUSE TO BE RATED ACCORDINGLY
- REFER TO RELEVANT SINGLE LINE DIAGRAMS FOR CT RATIOS OF ELSPEC METER
- REFER TO RELEVANT SINGLE LINE DIAGRAMS FOR INCOMER BUSBAR SIZES
- MOTOR FOR CLOSING SPRING CHARGE WILL NOT BE CONNECTED OR BE USED
- REFER TO RELEVANT SINGLE LINE DIAGRAM FOR BREAKER SIZE AND MODEL.
- REFER TO RELEVANT SINGLE LINE DIAGRAM FOR TRANSFORMER NUMBER, SIZE AND CABLE INFORMATION
- ALL CONTROL SIGNALS TO PLC TO BE WIRED THROUGH TO MARSHALLING CUBICLE.
- BREAKER Q1 WILL BE REVERSE FED THROUGH MCC INCOMER.

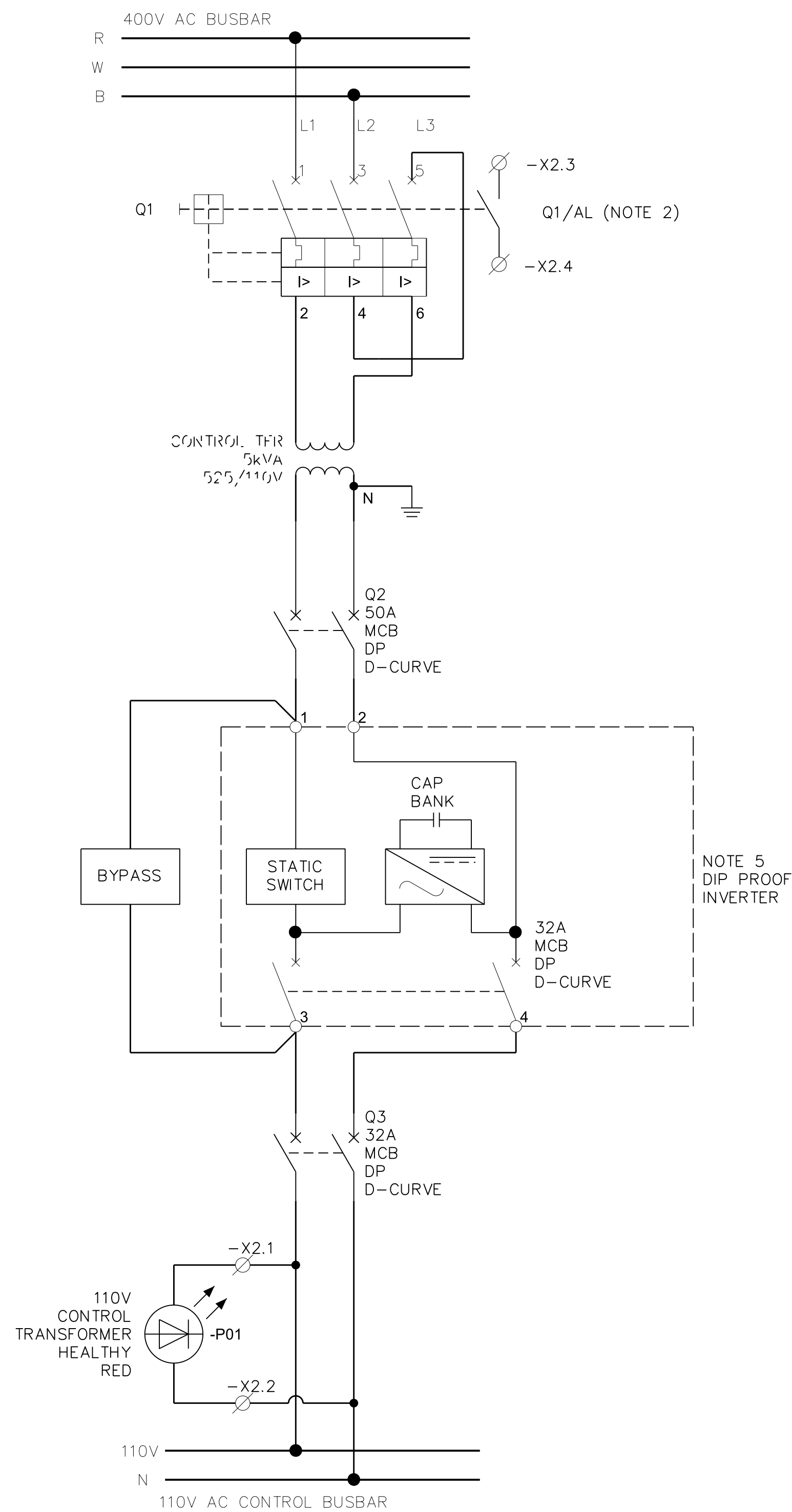
TERMINAL LEGEND:

- Ø DENOTES TERMINAL IN FRONT OF M.C.C.
- DENOTES TERMINAL IN REAR OF M.C.C.
- DENOTES TERMINAL IN FIELD
- DENOTES CONNECTION
- DENOTES EQUIPMENT TERMINAL

LEGEND:

- EARTH
- XF CLOSING COIL
- MX1 TRIP COIL No.1
- MX2 TRIP COIL No.2
- CURRENT TRANSFORMER
- 24V DC POWER SUPPLY
- VOLT METER
- PLUG AND SOCKET
- HOLD IN TYPE PUSH BUTTON
- NORMALLY OPEN CONTACT
- NORMALLY CLOSE CONTACT
- ELECTRICAL FUSE
- CIRCUIT BREAKER

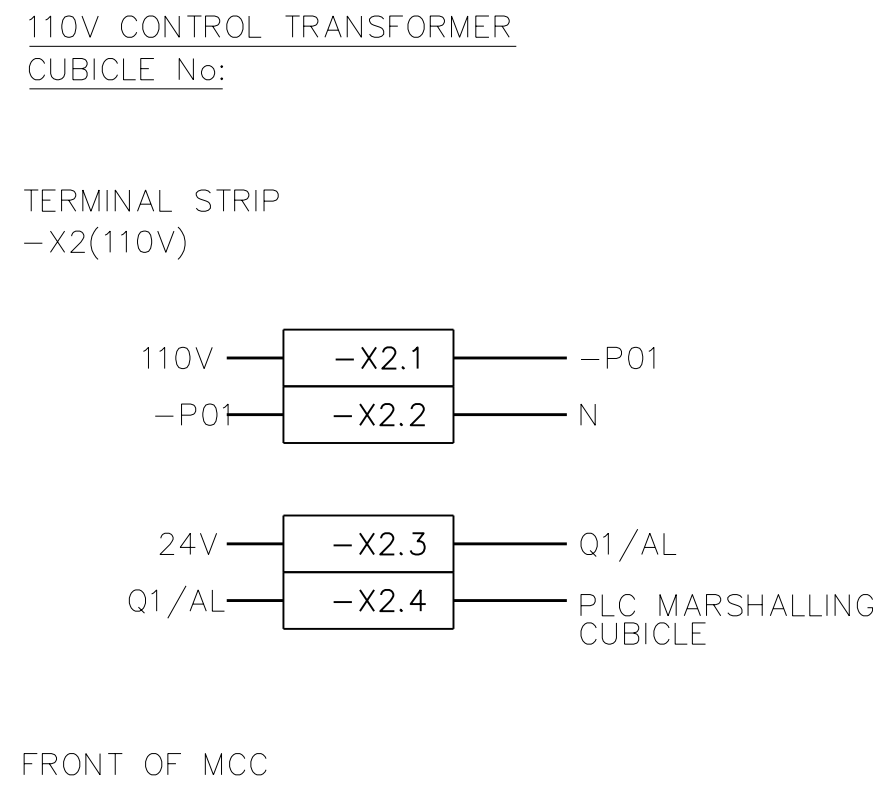
CONSULTING ENGINEERS HATCH		SURVEYED		-	JOHANNESBURG WATER (PTY) LTD		 Johannesburg Water		CITY OF JOHANNESBURG		DESIGN MANAGER		SCALE		AMENDMENTS		APPROVED		DATE		DRAWING No.	
		DESIGNED		CVDW																		
		DRAWN		CVDW	17 HARRISON STREET MARSHALLTOWN 2107		NORHORN WASTEWATER TREATMENT WORKS UNIT 4 – LIQUOR TREATMENT PLANT TYPICAL INCOMER – SCHEMATIC DIAGRAM		J.PRINSLOO		NTS		T00		ISSUED FOR TENDER	J.PRINSLOO	26.06.18	JW NUMBER				
		CHECKED		D VISSER									T01		ISSUED FOR TENDER	J.PRINSLOO	02.19	JW13599–ME–004				
		SERVICES CHECKED			TEL: (011) 688-1400 FAX: (011) 688-1529		DATE 10.10.2019				T02		ISSUED FOR TENDER	J.PRINSLOO	10.10.19	CONSULTANT'S NUMBER						
		GEOTECHNICAL INVESTIGATION									T03		ISSUED FOR TENDER	J.PRINSLOO	19.07.21	H349523–ME–004						
		SERVIDUTES													FILE No							
		APPROVED													BWW1402							
		Pr. Eng. No.																				
		DATE																				



- NOTES:
- ALL INTERNAL WIRING TO BE PREFIXED BY THE RELEVANT CUBICLE No.
 - Q1/AL DENOTES ALARM CONTACT WHICH CHANGES STATE IN THE TRIPPED POSITION ONLY.
 - REFER TO RELEVANT SINGLE LINE DIAGRAM FOR INCOMER.BUSBAR SIZES AND RATING.
 - DIP PROOF INVERTER TO BE SIZED CORRECTLY BY VENDOR AND ALLOW FOR 20% SPARE.

- TERMINAL LEGEND:
- Ø DENOTES TERMINAL IN FRONT OF M.C.C.
 - ⊗ DENOTES TERMINAL IN REAR OF M.C.C.
 - DENOTES TERMINAL IN FIELD
 - DENOTES CONNECTION
 - DENOTES EQUIPMENT TERMINAL

- LEGEND:
- EARTH
 - 110V INVERTER
 - NORMALLY OPEN CONTACT
 - NORMALLY CLOSE CONTACT
 - CIRCUIT BREAKER



DEPARTMENT	APPROVED	DESIGNATION	DATE

HATCH

SURVEYED	-
DESIGNED	CVDW
DRAWN	CVDW
CHECKED	D VISSER
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	



JOHANNESBURG WATER (PTY) LTD

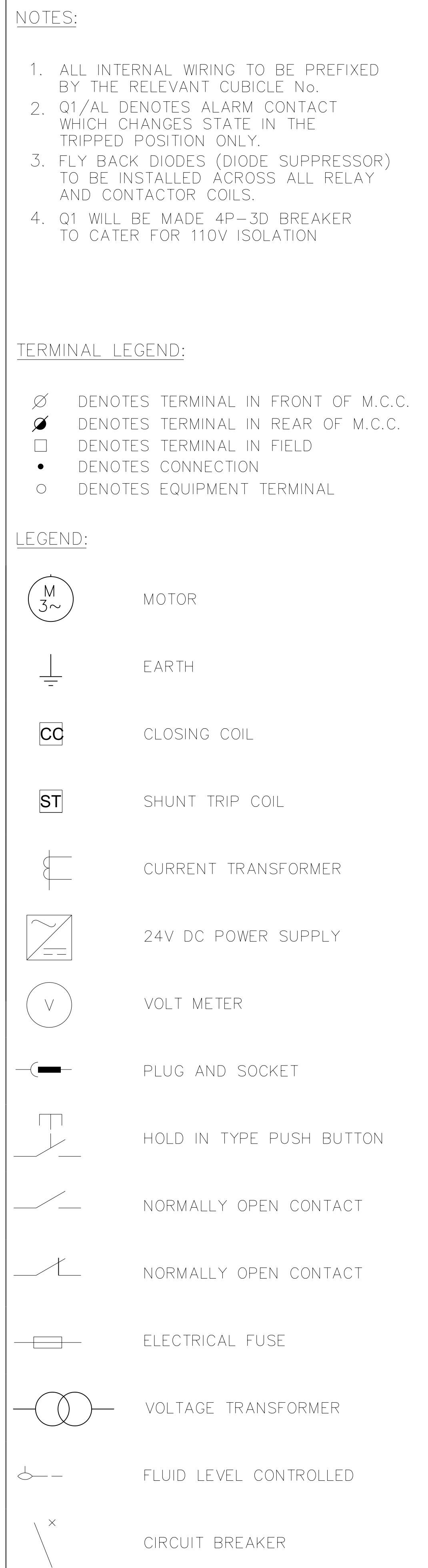
17 HARRISON STREET
MARSHALLTOWN
2107

TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
SCHEMATIC DIAGRAM
TYPICAL CONTROL TRANSFORMER

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J.PRINSLOO	NTS	T00 ISSUED FOR TENDER	J.PRINSLOO	26.06.18	JW NUMBER JW13599–ME–005
		T01 ISSUED FOR RETENDER	J.PRINSLOO	02.19	CONSULTANT'S NUMBER H349523–ME–005
		T02 ISSUED FOR RETENDER	J.PRINSLOO	10.10.19	FILE No BWW1402
		T03 ISSUED FOR RETENDER	J.PRINSLOO	19.07.21	
DATE 10.10.19					



SURVEYED	-
DESIGNED	CDVD
DRAWN	CDVD
CHECKED	D VISSER
SERVICES CHECKED	
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS

UNIT 4 – LIQUOR TREATMENT PLANT

SCHEMATIC DIAGRAM – TYPICAL D.O.L

DESIGN MANAGER	SCALE	AMENDMENTS		APPROVED	DATE	DRAWING No.				
	NTS	T00	ISSUED FOR TENDER	J.PRINSLOO	26.06.18	JW NUMBER				
		T01	ISSUED FOR RETENDER	J.PRINSLOO	02.19	JW13599-ME-006				
		T02	ISSUED FOR RETENDER	J.PRINSLOO	10.10.19	CONSULTANT'S NUMBER				
		T03	ISSUED FOR RETENDER	J.PRINSLOO	19.07.21	H349523-ME-006				
						FILE No				
						BWW1402				
DATE	10.10.2019									

LEGEND-EQUIPMENT

2 X 18W BULK HEAD
SURFACE MOUNTED AT
A OF 2.7m

2 X 58W FLOURESCENT
LIGHT FITTING SURFACE
MOUNTED AT A HEIGHT
OF 2.5m

1 PHASE SSO SURFACE
MOUNTED 1300mm ABOVE
FLOOR LEVEL

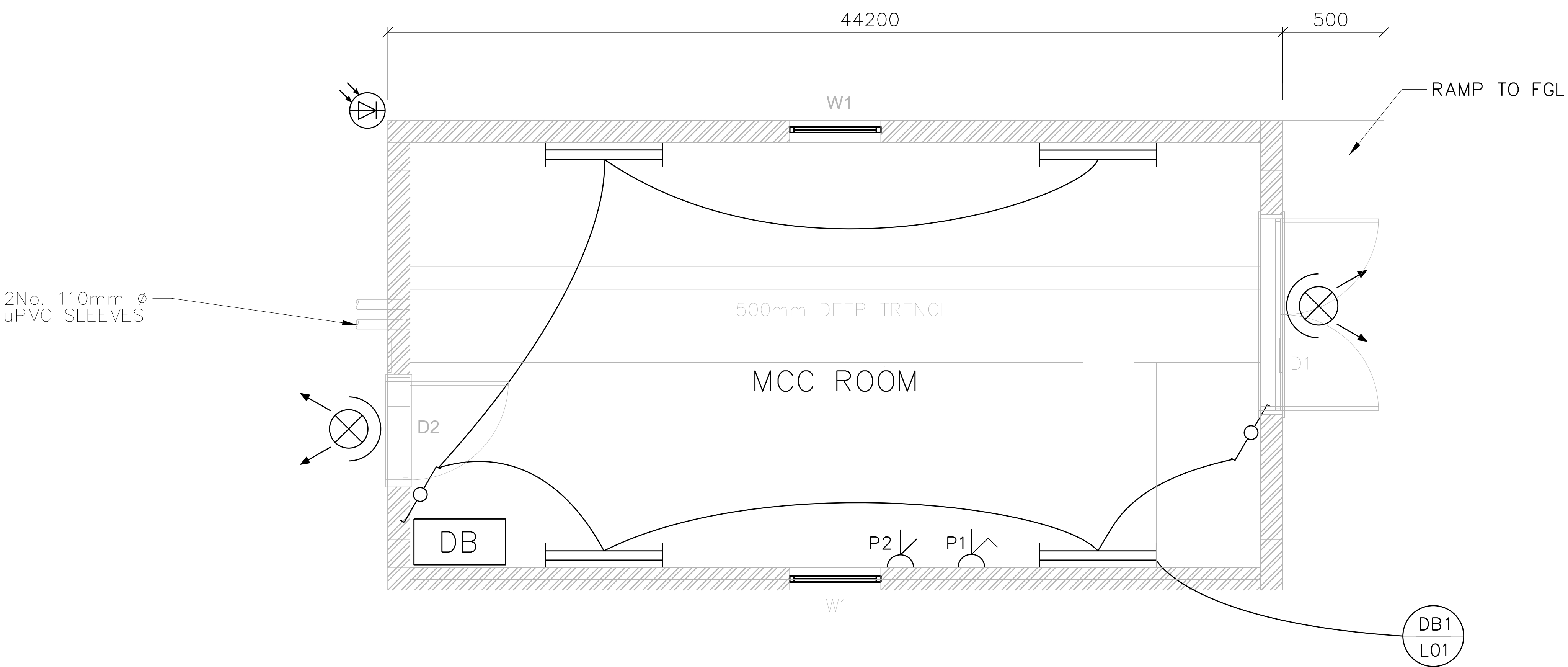
3 PHASE WELDING PLUG
SURFACE MOUNTED 1300mm
ABOVE FLOOR LEVEL

DB

DISTRIBUTION
BOARD (DB)

TWO WAY SINGLE LEVER
LIGHT SWITCH MOUNTED
1300mm ABOVE FLOOR
LEVEL

PHOTOCELL

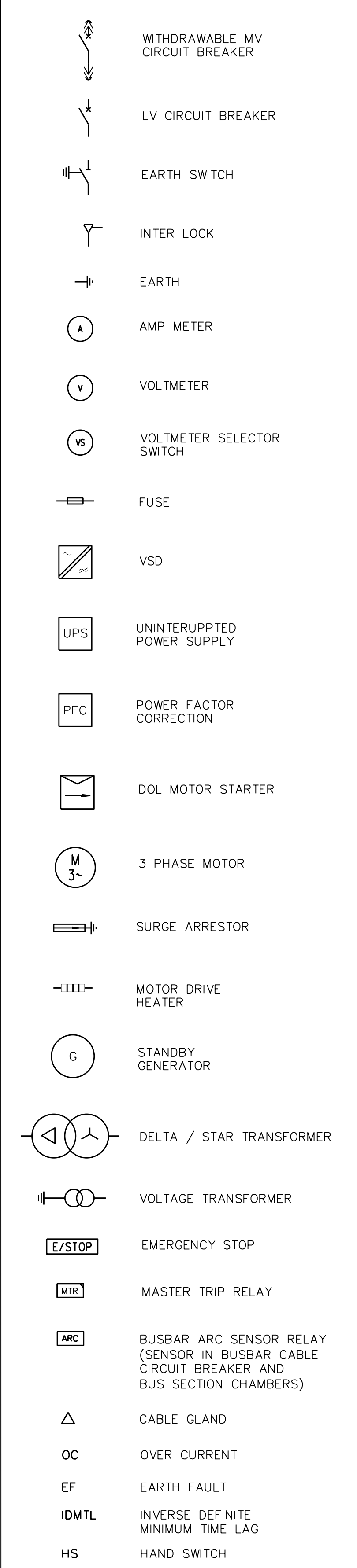


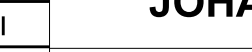
MCC ROOM SMALL POWER AND LIGHTING LAYOUT

SCALE 1:100

DEPARTMENT	APPROVED	DESIGNATION	DATE

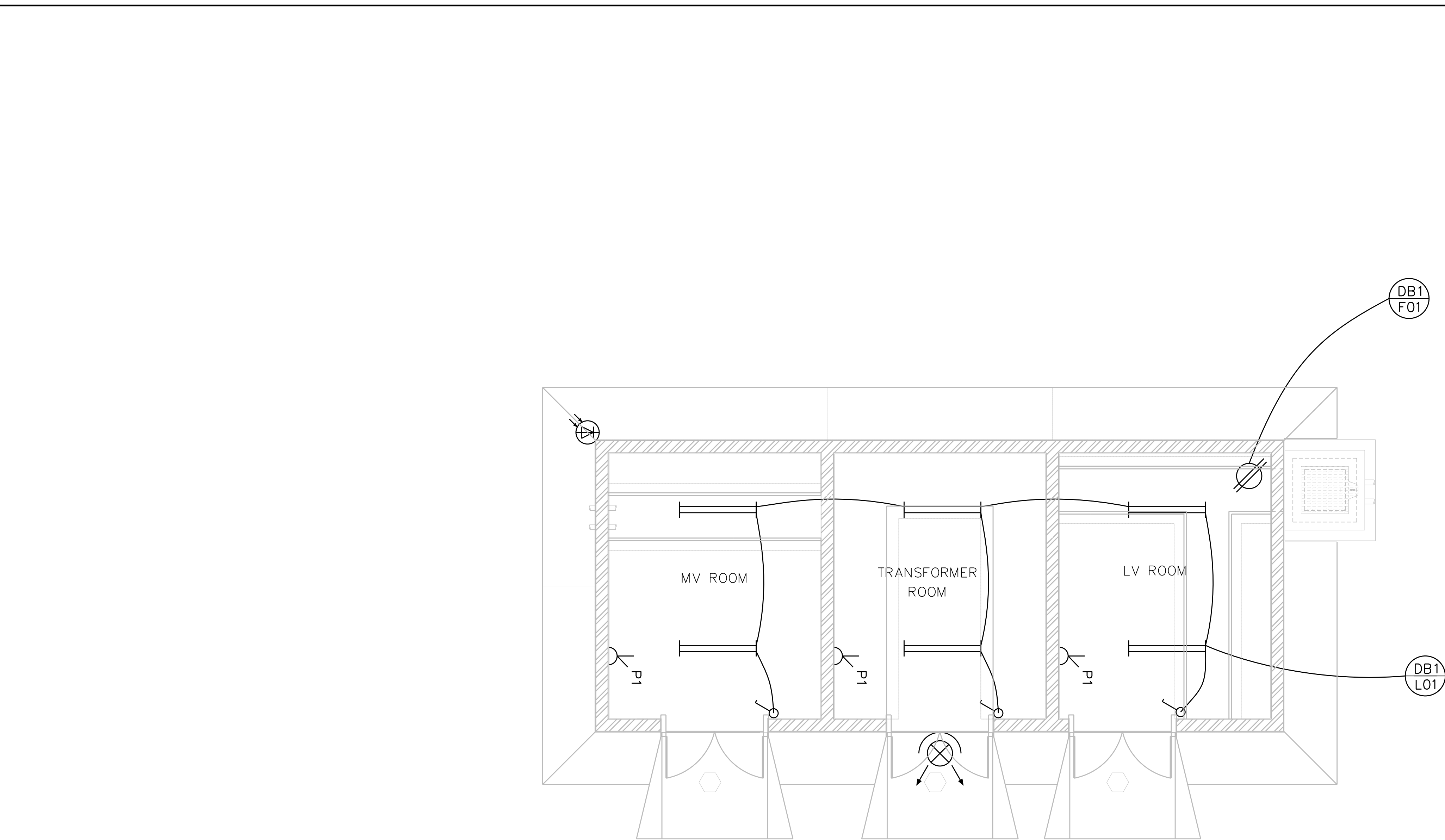
CONSULTING ENGINEERS		JOHANNESBURG WATER (PTY) LTD		CITY OF JOHANNESBURG		DESIGN MANAGER	SCALE	AMENDMENTS		APPROVED	DATE	DRAWING No.							
HATCH		SURVEYED	-	 Johannesburg Water	17 HARRISON STREET MARSHALLTOWN 2107			NORTHERN WASTEWATER TREATMENT WORKS UNIT 4 – LIQUOR TREATMENT WORKS SMALL POWER & LIGHTING LAYOUT MCC ROOM	J.PRINSLOO			NTS	T00	ISSUED FOR TENDER	J.PRINSLOO	26.06.18	JW NUMBER		
		DESIGNED	M. MOHAPI			T01	ISSUED FOR RETENDER			J.PRINSLOO	02.19		JW13599–ME–007						
		DRAWN	M. MOHAPI			T02	ISSUED FOR RETENDER			J.PRINSLOO	10.10.19		CONSULTANT'S NUMBER						
		CHECKED	D. VISSER			T03	ISSUED FOR RETENDER			J.PRINSLOO	19.07.21		H349523–ME–007						
		SERVICES CHECKED											FILE No						
		GEOTECHNICAL INVESTIGATION											BWW1402						
		SERVITUDES																	
		APPROVED								Johannesburg Water			DATE 10.10.2019						
Pr. Eng. No.																			
DATE																			



CONSULTING ENGINEERS		SURVEYED	-	JOHANNESBURG W.
	DESIGNED	M. MOHAPI		
	DRAWN	M. MOHAPI		
	CHECKED	D. VISSER		
	SERVICES CHECKED			
	GEOTECHNICAL INVESTIGATION			
	SERVITUDES			
APPROVED				
Pr. Eng. No.				
DATE				

	CITY OF JOHANNESBURG NORTHERN WASTEWATER TREATMENT WORKS UNIT 4 – LIQUOR TREATMENT WORKS NEW VILLAGE SUBSTATION SINGLE LINE DIAGRAM
--	--

DESIGN MANAGER J PRINSLOO DATE 10.10.19	SCALE		AMENDMENTS		APPROVED	DATE	DRAWING No.	
	TOO	ISSUED FOR RETENDER		J PRINSLOO	10.10.19	JW NUMBER		
	TO1	ISSUED FOR RETENDER		J PRINSLOO	19.07.21	JW1 3599 – ME – 009		
						CONSULTANT'S NUMBER		
						H349523 – ME – 009		
						FILE No		
						BWW1402		

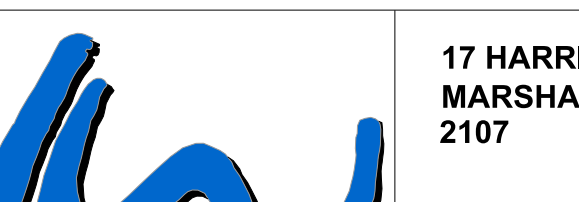


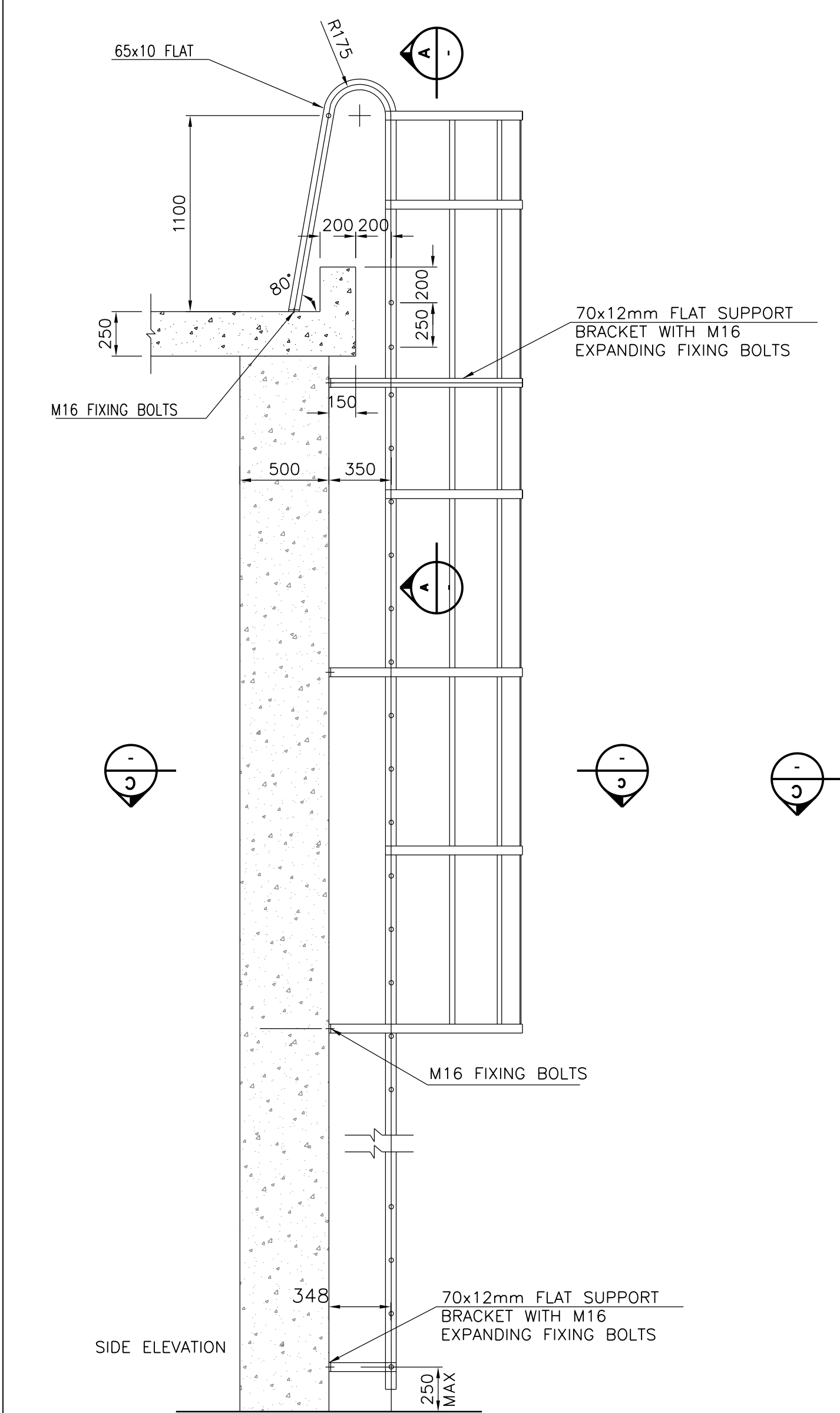
LEGEND—EQUIPMENT	
	2 X 18W BULK HEAD SURFACE MOUNTED AT A OF 2.7m
	2 X 58W FLOURESCENT LIGHT FITTING SURFACE MOUNTED AT A HEIGHT OF 2.5m
	1 PHASE SSO SURFACE MOUNTED 1300mm ABOVE FLOOR LEVEL
	DISTRIBUTION BOARD (DB)
	1 LEVER SINGLE LEVER LIGHT SWITCH MOUNTED 1300mm ABOVE FLOOR LEVEL
	2 POLE 20A INDUSTRIAL TYPE ROTARY LOCKABLE ISOLATOR
	PHOTOCELL

SMALL POWER AND LIGHTING LAYOUT

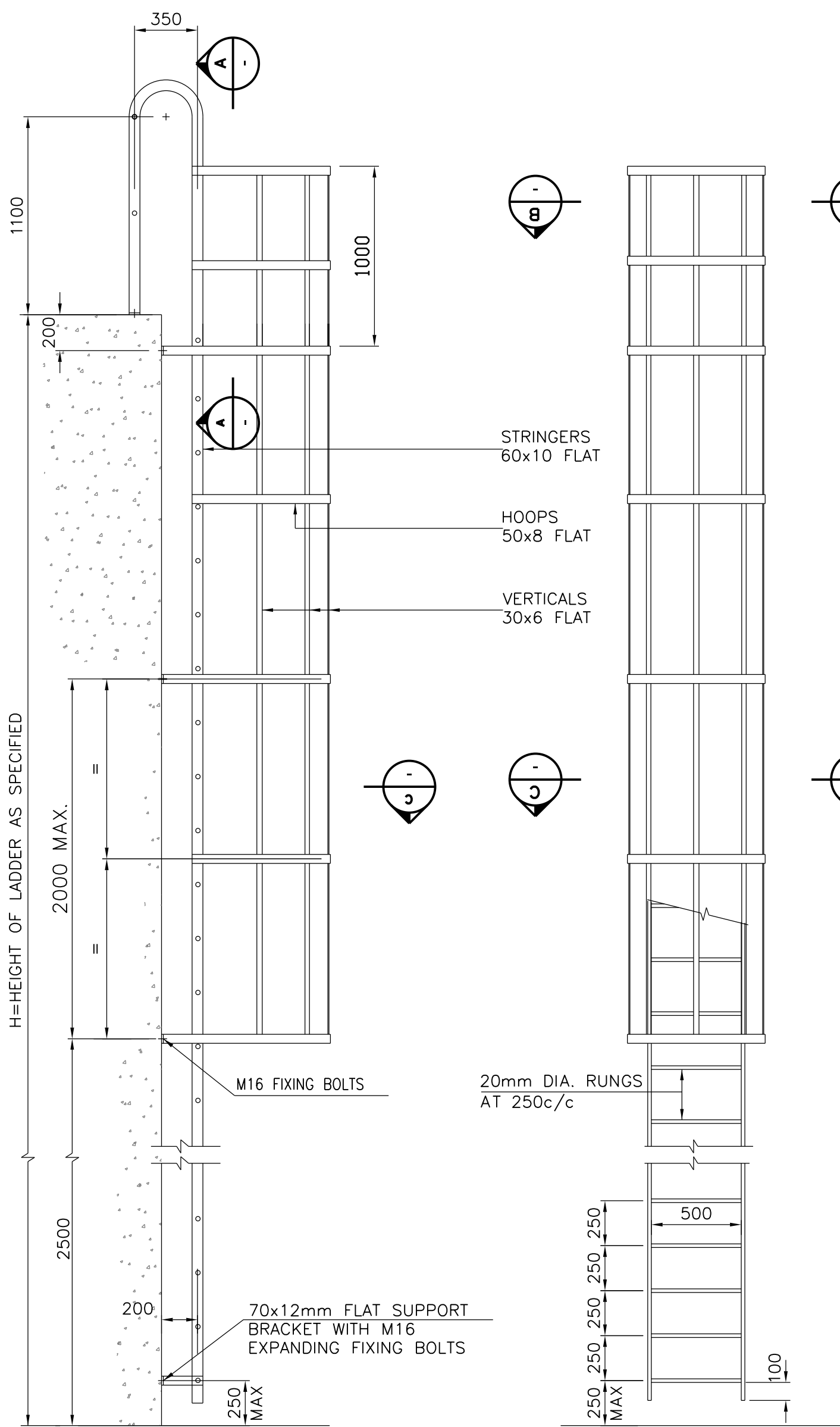
SCALE 1:50

DEPARTMENT	APPROVED	DESIGNATION	DATE

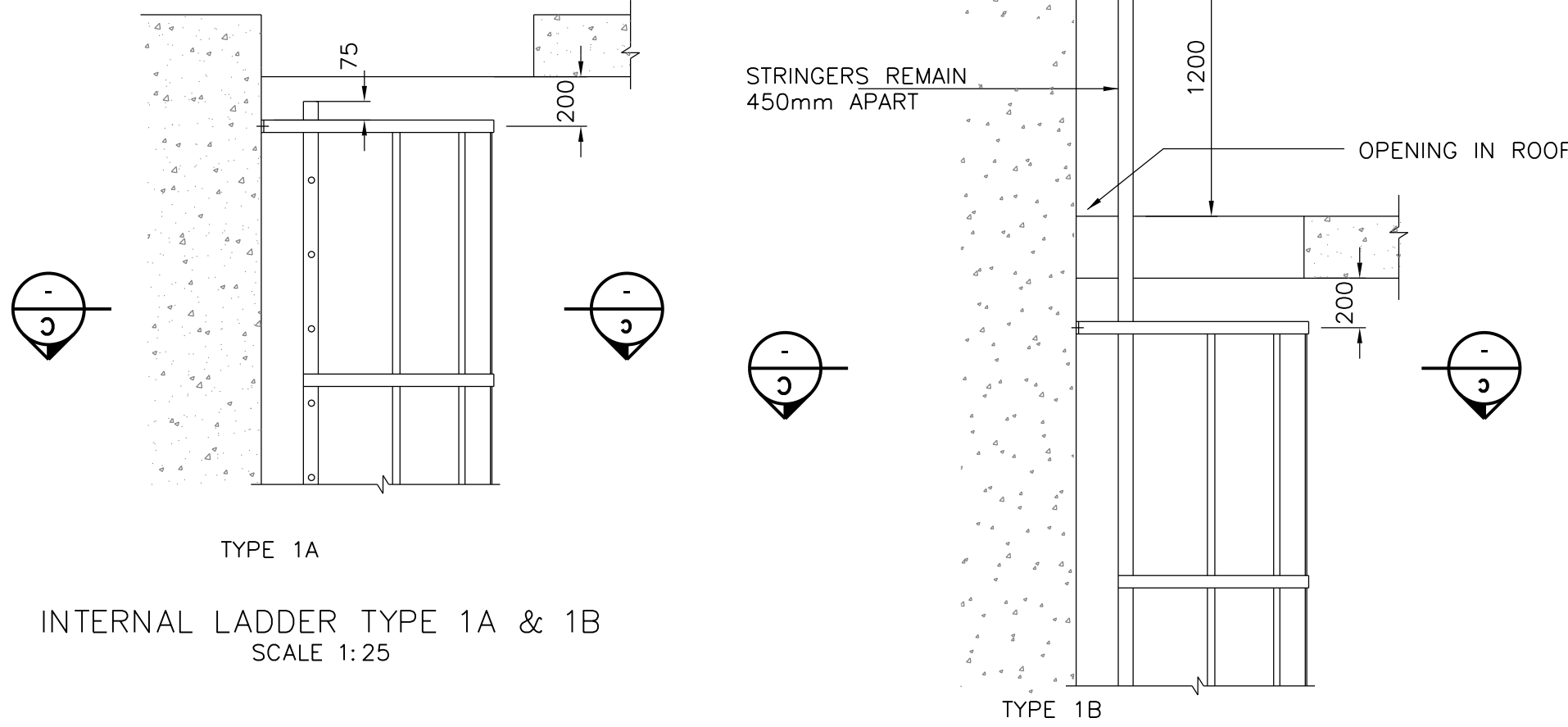
CONSULTING ENGINEERS		JOHANNESBURG WATER (PTY) LTD		CITY OF JOHANNESBURG		DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.	
	SURVEYED	-		17 HARRISON STREET MARSHALLTOWN 2107	NORTHERN WASTEWATER TREATMENT WORKS UNIT 4 – LIQUOR TREATMENT WORKS NEW VILLAGE SUBSTATION SMALL POWER AND LIGHTING LAYOUT							J PRINSLOO
	DESIGNED	M MOHAPI				T01	ISSUED FOR RETENDER	J PRINSLOO	19.07.21	JW13599–ME–010		
	DRAWN	M MOHAPI								CONSULTANT'S NUMBER		
	CHECKED	D VISSER								H349523–ME–010		
	SERVICES CHECKED									FILE No		
	GEOTECHNICAL INVESTIGATION									BW1402		
	SERVITUDES											
	APPROVED											
Pr. Eng. No.												
DATE												



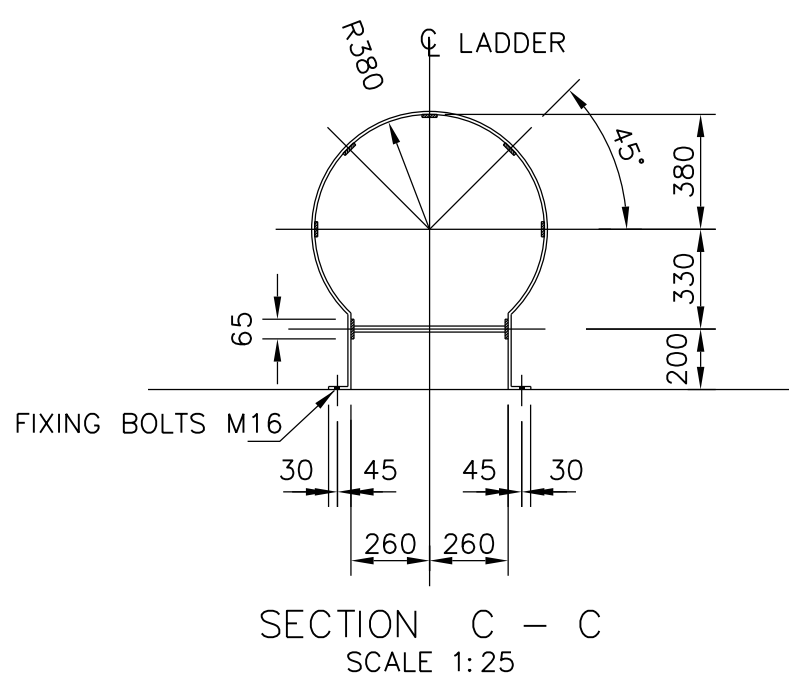
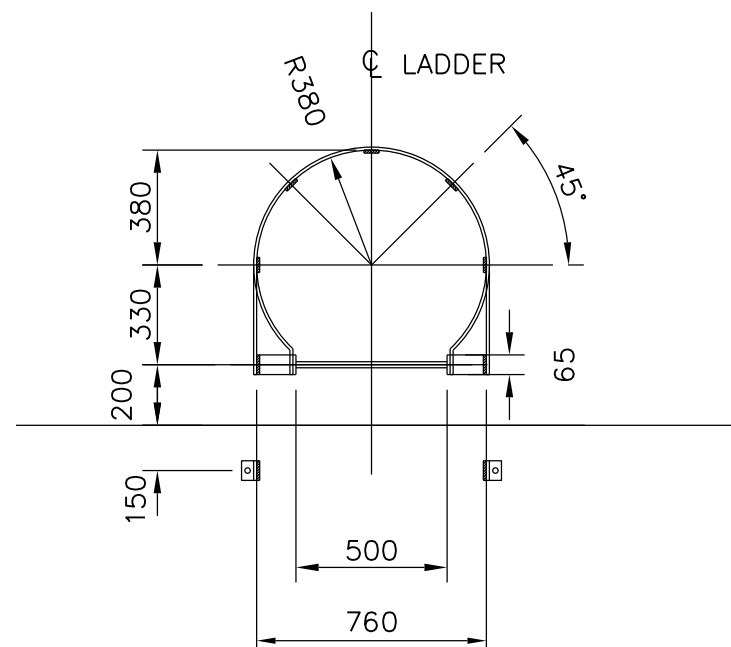
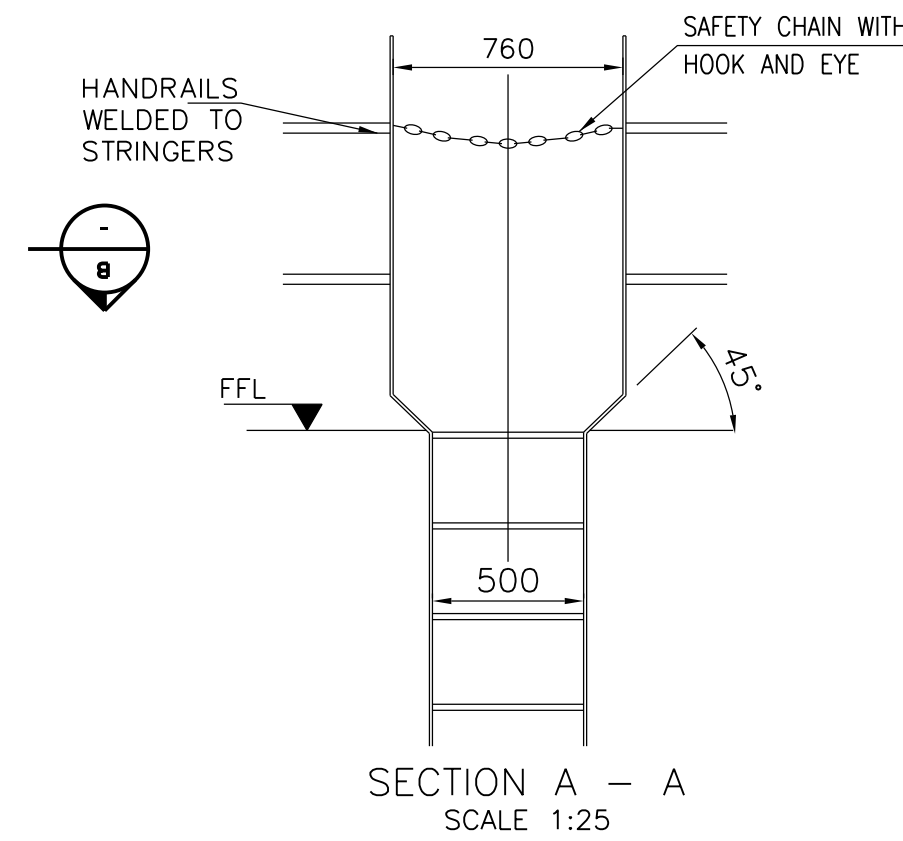
EXTERNAL LADDER TYPE 1
TYPICAL RESERVOIR ROOF DETAIL
HEIGHT GREATER THAN 5.0 METERS



EXTERNAL LADDER TYPE 1
HEIGHT GREATER THAN 5.0 METERS



INTERNAL LADDER TYPE 1A & 1B
SCALE 1:25

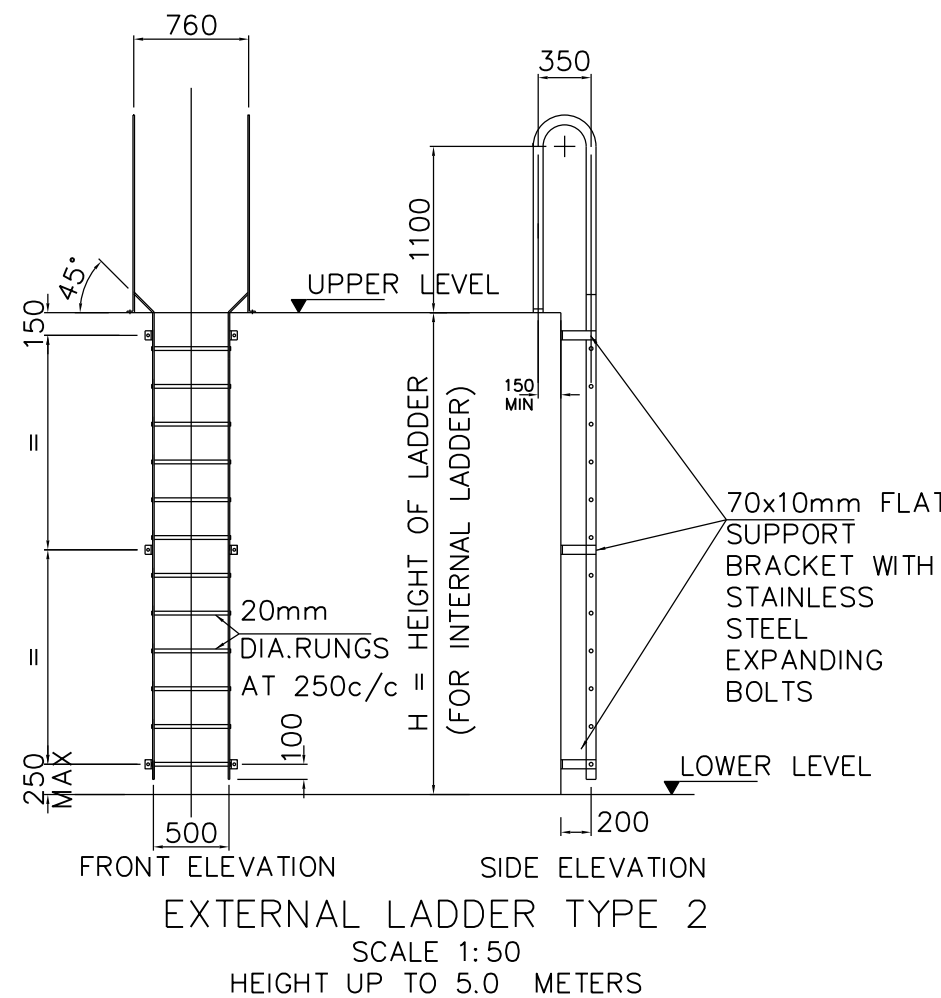


STEEL NOTES

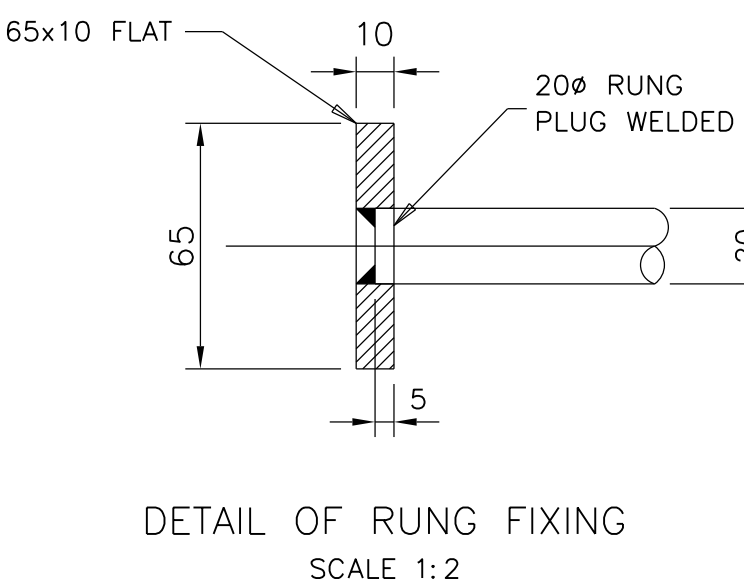
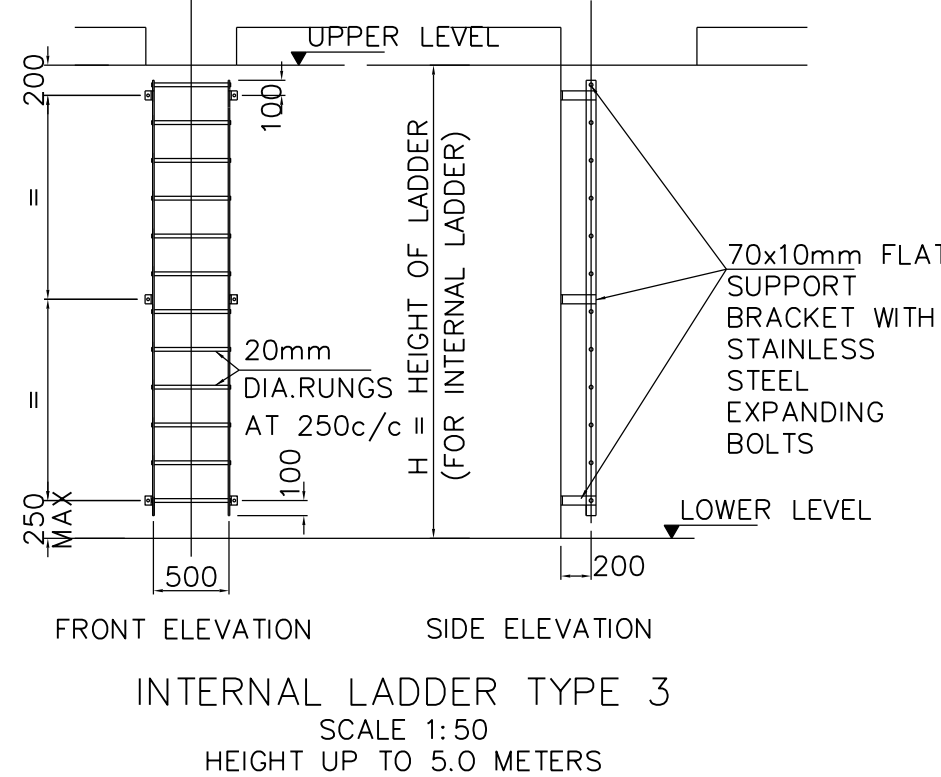
- UNLESS OTHERWISE NOTED ALL LADDERS TO BE GRADE 350WA STEEL & HOT DIPPED GALVANISED (HEAVY DUTY)
- LADDERS IN CONTACT WITH WATER (INTERNAL LADDERS TO RESERVOIRS, FEEDER AND BREAK PRESSURE TANKS) TO BE OF STAINLESS STEEL 304L
- ALL WORK TO BE IN ACCORDANCE WITH SABS 1200H LATEST EDITION AND PARTICULAR SPECIFICATIONS: LC- STRUCTURAL STEELWORK LD- STRUCTURAL WELDING
- TOLERANCES IN FABRICATION AND ERECTION OF CRANE BEAMS TO BE IN ACCORDANCE WITH SANS 2001:CS1
- SHOP DRAWINGS TO BE SUBMITTED FOR APPROVAL AT LEAST 3 WEEKS BEFORE MANUFACTURE IS DUE TO COMMENCE.
- ALL TRUSS MEMBERS TO HAVE SOP'S ON THEIR CENTROIDAL AXES.
- FABRICATOR TO ENSURE THAT CENTRE .F GRAVITY OF MEMBERS INTERSECT AT NODE POINTS.
- ALL WELDS TO BE 6mm CONTINUOUS FILLET WELD UNLESS OTHERWISE NOTED.
- ALL BOLTS GR 4.8 UNLESS OTHERWISE NOTED AND TO BE GALVANISED. MINIMUM OF TWO BOLTS TO BE PROVIDED PER CONNECTION.
- ALL BOLTS TO BE PROVIDED WITH TWO WASHERS & NUT.
- THREAD IN BOLT MUST BE CLEAR SHEAR PLANE. FULL THREAD BOLTS ARE NOT PERMITTED.
- PAINTING OF STRUCTURAL STEELWORK TO BE IN ACCORDANCE WITH PARTICULAR SPECIFICATION CS 168.
- HOT DIPPED GALVANISING OF STRUCTURAL STEELWORK TO BE IN ACCORDANCE WITH SABS-ISO 1461.

NOTES:

- LADDERS OF ALL WELDED CONSTRUCTION
- SUPPORT BRACKETS AT 2.0m c/c MAX.
- UNLESS OTHERWISE SHOWN, LADDERS WITH A HEIGHT OF MORE THAN 5m SHALL BE FITTED WITH A SAFETY CAGE.
- REPAIR TO HOT DIP GALVANISING TO BE UNDERTAKEN AS FOLLOWS:
 - SURFACE TO BE REPAIRED TO CLEANED BY STAINLESS WIRE BRUSHING & CLEARED OF ALL DUST AND DEBRIS;
 - DRY FILM THICKNESS TO BE AT LEAST 100µm OR EQUAL TO THE MINIMUM SURROUNDING COATING THICKNESS; &
 - "ZINCFIX" OR "GALVPATCH" OR SIMILAR APPROVED PRODUCT TO BE UTILISED.



SUPPORT BRACKET DETAIL
SCALE 1:5



DEPARTMENT	APPROVED	DESIGNATION	DATE

CONSULTING ENGINEERS

HATCH

SURVEYED	
DESIGNED	S. WESSON
DRAWN	S. WESSON
CHECKED	S. MANGANYI
SERVICES CHECKED	J. PRINSLOO
GEOTECHNICAL INVESTIGATION	
SERVITUDES	
APPROVED	
Pr. Eng. No.	
DATE	

JOHANNESBURG WATER (PTY) LTD



17 HARRISON STREET
MARSHALLTOWN
2107

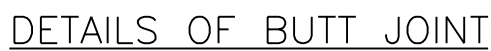
TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
TYPICAL CAT LADDER DETAILS

DESIGN MANAGER	SCALE	AMENDMENTS	APPROVED	DATE	DRAWING No.
J. PRINSLOO	AS SHOWN	T00 ISSUED FOR TENDER	J. PRINSLOO	26.06.18	JW NUMBER
		T01 ISSUED FOR RETENDER	J. PRINSLOO	08.02.19	JW13599-STD-001
		T02 ISSUED FOR RETENDER	J. PRINSLOO	10.10.19	CONSULTANT'S NUMBER
		T03 ISSUED FOR RETENDER	J. PRINSLOO	19.07.21	H349523-STD-001
					FILE No
					BWW1402

DATE 2019/10/10



- ### NOTES:
1. LADDERS OF ALL WELDED CONSTRUCTION.
 2. SUPPORT BRACKETS AT 2.0m c/c MAX.
 3. ALL HANDRAILS ALONG PLATFORMS, WORKWAYS AND LANDINGS TO HAVE 100mm HIGH KICK PLATES.
 4. UNLESS OTHERWISE SHOWN, ALL STEELWORK SHALL BE HOT DIPPED GALVANISED (COMMERICAL GRADE) MILD STEEL.
 5. ALL STEEL BOLTS, U-BOLTS AND NUTS SHALL BE GRADE 8.8 HOT DIPPED GALVANISED.
 6. REFER SPECIFICATION PAINTING & CORROSION FOR CORROSION PROTECTION.
 7. ALL ANCHOR BOLTS INTO CONCRETE ARE TO BE CHEMICAL ANCHOR TYPE.

CONSULTING ENGINEERS

JOHANNESBURG WATER (PTY) LTD

TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 – LIQUOR TREATMENT PLANT
STEEL STAIRS AND HANDRAILS

DESIGN MANAGER

J. PRINSLOO

DATE 2019/10/10

SCALE

AS SHOWN

AMENDMENTS

APPROVED

DATE _____

DRAWING No.

JW NUMBER
JW13599-STD-002

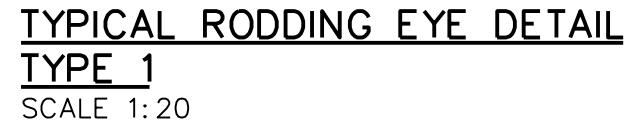
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H349423-STD-002

FILE No
BWW1402

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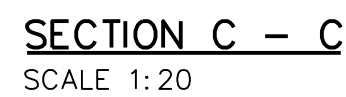
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TYPICAL RODDING EYE DETAIL
TYPE 2



TYPICAL RODDING EYE DETAIL TYPE 3
TYPE 3
SCALE 1:20



NOTES:

- (1) ALL STEEL PIPEWORK TO BE STAINLESS STEEL 316 PN10 (1000 kPa).
- (2) ALL FLANGES TO BE AS PER SANS 1123-1977 TABLE (1000/3).
- (3) RODDING EYES APPLY TO "PIPELINE LENGTH 4 - CLARIFIER SLUDGE TO SLUDGE CHAMBER"

CONSULTING ENGINEERS

JOHANNESBURG WATER (PTY) LTD

TEL: (011) 688-1400
FAX: (011) 688-1529

CITY OF JOHANNESBURG

NORTHERN WASTEWATER TREATMENT WORKS
UNIT 4 LIQUOR TREATMENT PLANT
RODDING EYE DETAIL
PVC PIPELINES

DESIGN MANAGER

J. PRINSLOO

DATE 2019/10/10

SCALE

AS SHOWN

AMENDMENTS

APPROVED

DATE _____

DRAWING No.

JW NUMBER
JW13599-STD-003

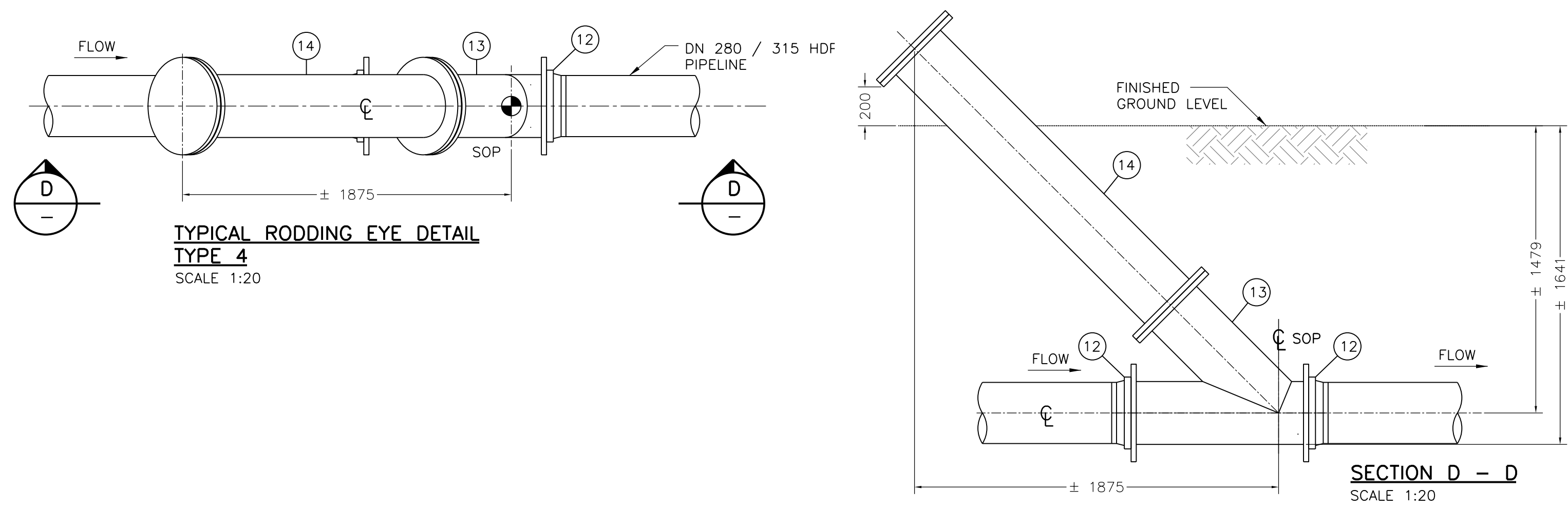
CONSULTANT'S NUMB

H349523-STD-003

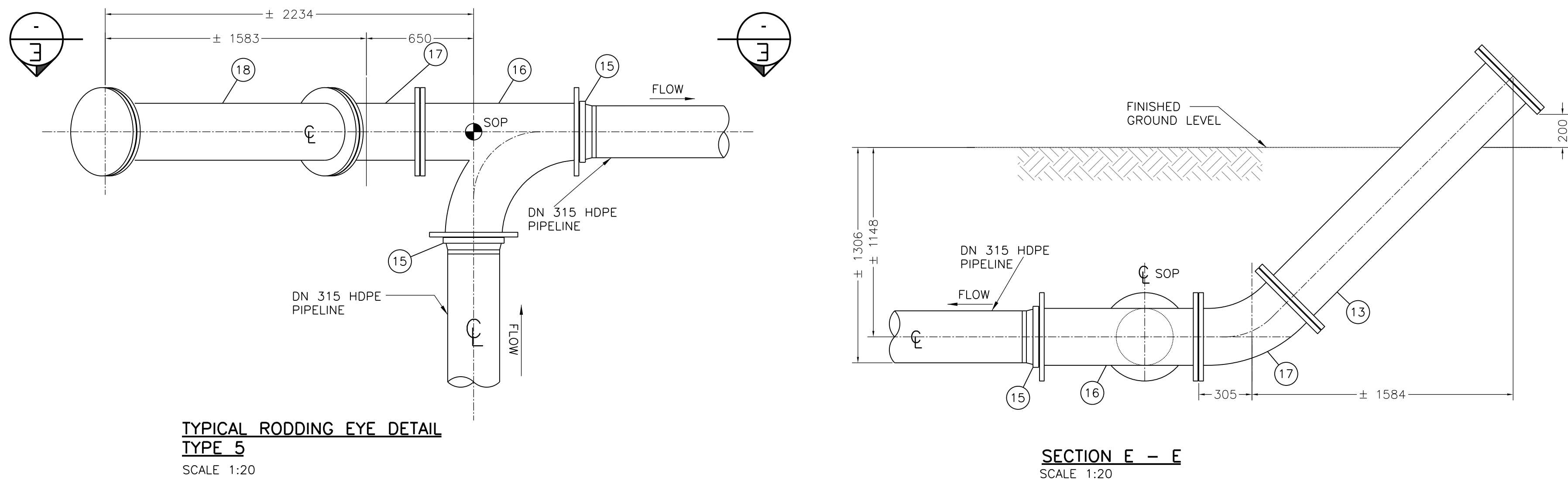
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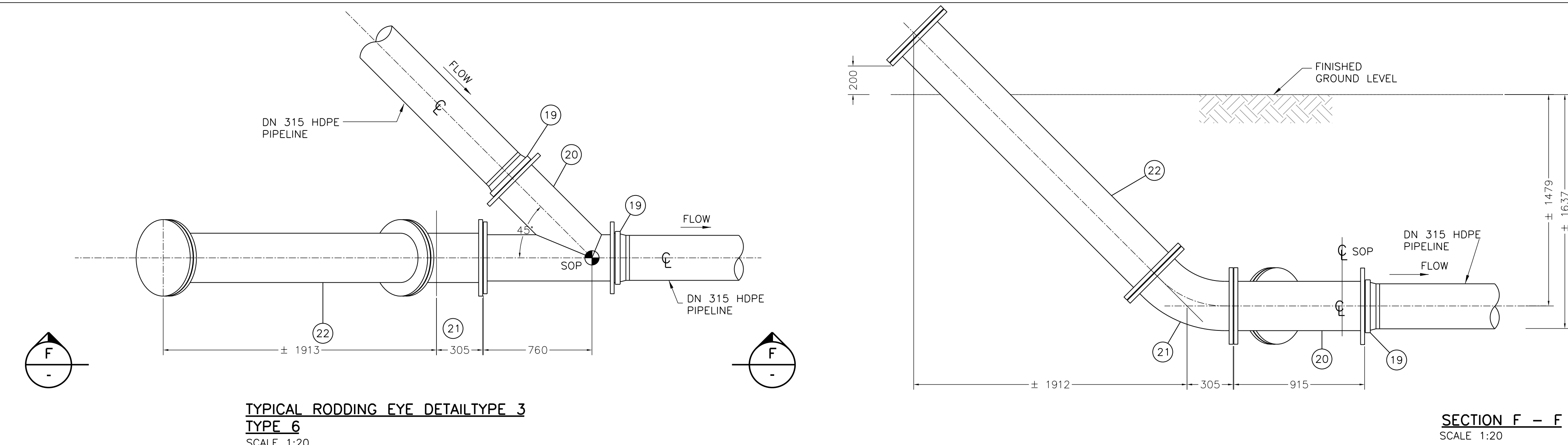
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TYPE 4 – TYPICAL RODDING EYE DETAIL HDPE PIPELINE PIPE AND FITTINGS SCHEDULE				
ITEM No.	ITEM.	DIA.	No. OFF	DESCRIPTION
12		315	2	STUB FLANGE WITH BACKING SLIP ON FLANGE (HDE STEEL)
13		315	1	FLANGED STAINLESS STEEL "316" 45° LATERAL TEE (SANS 719)
14		315	1	FLANGED STAINLESS STEEL "316" PIPE ±1867 mm F/F ALONG WITH BLANK FLANGE AT END OF PIPE.



TYPE 5 – TYPICAL RODDING EYE DETAIL HDPE PIPELINE PIPE AND FITTINGS SCHEDULE				
ITEM No.	ITEM.	DIA.	No. OFF	DESCRIPTION
15		315	2	STUB FLANGE WITH BACKING SLIP ON FLANGE
16		315	1	FLANGED STAINLESS STEEL "316" SWEEP TEE
17		315	1	FLANGED STAINLESS STEEL "316" MEDIUM RADIUS 45° BEND
18		315	1	FLANGED STAINLESS STEEL "316" PIPE 1867 mm F/F ALONG WITH BLANK FLANGE AT END OF PIPE.



TYPE 6 – TYPICAL RODDING EYE DETAIL HDPE PIPELINE PIPE AND FITTINGS SCHEDULE				
ITEM No.	ITEM.	DIA.	No. OFF	DESCRIPTION
19		315	2	STUB FLANGE WITH BACKING SLIP ON FLANGE
20		315	1	FLANGED STAINLESS STEEL "316" 45° LATERAL TEE (SANS 719)
21		315	1	FLANGED STAINLESS STEEL "316" MEDIUM RADIUS 45° BEND
22		315	1	FLANGED STAINLESS STEEL "316" PIPE 1867 mm F/F ALONG WITH BLANK FLANGE AT END OF PIPE.

DEPARTMENT	APPROVED	DESIGNATION	DATE	NOTES: (1) ALL STEEL PIPEWORK TO BE STAINLESS STEEL 316 PN10 (1000 kPa). (2) ALL FLANGES TO BE AS PER SANS 1123 TABLE (1000/3). (3) RODDING EYES APPLY TO SLUDGE CHAMBER TO SLUDGE DISCHARGE POINT.																										
CONSULTING ENGINEERS				SURVEYED	-	JOHANNESBURG WATER (PTY) LTD				CITY OF JOHANNESBURG				DESIGN MANAGER DATE 2019/10/10	SCALE	AMENDMENTS		APPROVED	DATE	DRAWING No. JW NUMBER JW13599-STD-004 CONSULTANT'S NUMBER H349523-STD-004 FILE No BWW1402 <table><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>										
				DESIGNED	S. WESSON	 Johannesburg Water				17 HARRISON STREET MARSHALLTOWN 2107 TEL: (011) 688-1400 FAX: (011) 688-1529															NORTHERN WASTEWATER TREATMENT WORKS UNIT 4 LIQUOR TREATMENT PLANT RODDING EYE DETAIL HDPE PIPELINES					
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