

Volume	1	2	3	4	Part	T1	T2	C1	C2	C3	C4
--------	---	---	---	---	------	----	----	----	----	----	----

Johannesburg Water (SOC) Ltd



CONTRACT N: JW OPS 066/24

BUSHKOPPIE WASTEWATER TREATMENT WORKS

RECTIFICATION OF CONTRACT JW13504 – CONSTRUCTION OF A BALANCING TANK

THROUGH MIXERS (15 MIXERS) REDESIGN AND REINSTALLATION, AND

REINSTATEMENT OF ASSOCIATED ANCILLARIES

VOLUME 4

CONTRACT: DRAWINGS

Prepared by
PMU
PO Box 61542
Marshalltown
2107

V2.0
August 2023

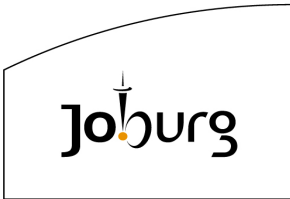


Volume	1	2	3	4	Part	T1	T2	C1	C2	C3	C4
--------	---	---	---	---	------	----	----	----	----	----	----

DRAWING REGISTER

No.			No		
1	JW13504-CE-001-000	Locality And Site Layout Plan	25	JW13504-S-002-00-	Site Layout Plan
2	JW13504-S-016-00	Typical Contract Name Board.	26	JW13504-CE-010-010_	Balancing tank - Concrete
3	JW13504-E-153-01	Balancing Tank Inlet Penstock General Arrangement	27	JW13504-C-160-01	Valve Chamber General Arrangement
4	JW13504-A-150-02	Balancing Tank Pump Station Cable Route and Rack Detail General Arrangement	28	JW13504-CE-007-	Balancing tank - Concrete
5	JW13504-A-150-03	Galvanised Access Platform General Arrangement	29	JW13504-A-150-10-16	Delivery Pipeline Platform GA
6	JW13504-A-150-04	Sump Drainage Pump General Arrangement			
7	JW13504-A-150-10-16	Delivery Pipeline Platform General Arrangement			
8	JW13504-C-160-01	Valve Chamber A General Arrangement			
9	JW13504-C-160-02	Valve Chamber B General Arrangement			
10	JW13504-D-153-01	Pump Station Penstock General Arrangement			
11	JW13504-D-153-02	Penstock Detail General Arrangement			
12	JW13504-D-153-03	Pump Station Sump Platform General Arrangement			
13	JW13504-D-153-04	Pump Station Sump Platform Sections			
14	JW13504-E-153-01	Balancing Tank Inlet Penstock General Arrangement			
15	JW13504-E-153-02	Balancing Tank Inlet Penstock Detail			
16	JW13504-S-016-00	Balancing Tank Pump Station MCC SLD			
17	JW13504-E-602-003	Balancing Tank MCC SLD			
18	JW13504-E-026-00	Balancing tank- Wash Water System.			
19	JW13504-E-602-008	Balancing tank - Balancing Tank and Pump Station Site Layout Plan			
20	JW13504-E-602-008	Balancing Tank MCC Room Small Power and Lighting Layout			
21	JW13504-S-016-00	Typical Contract Name Board.			
22	JW13504-ING-014-01	Control and Instrumentation Cable Room Diagram			
23	JW13504-E-602-002	Balancing Tank Electrical Cable Route			
24	JW13504-CE-011-010_	General Arrangement Drawing OF 11kw Mixers			

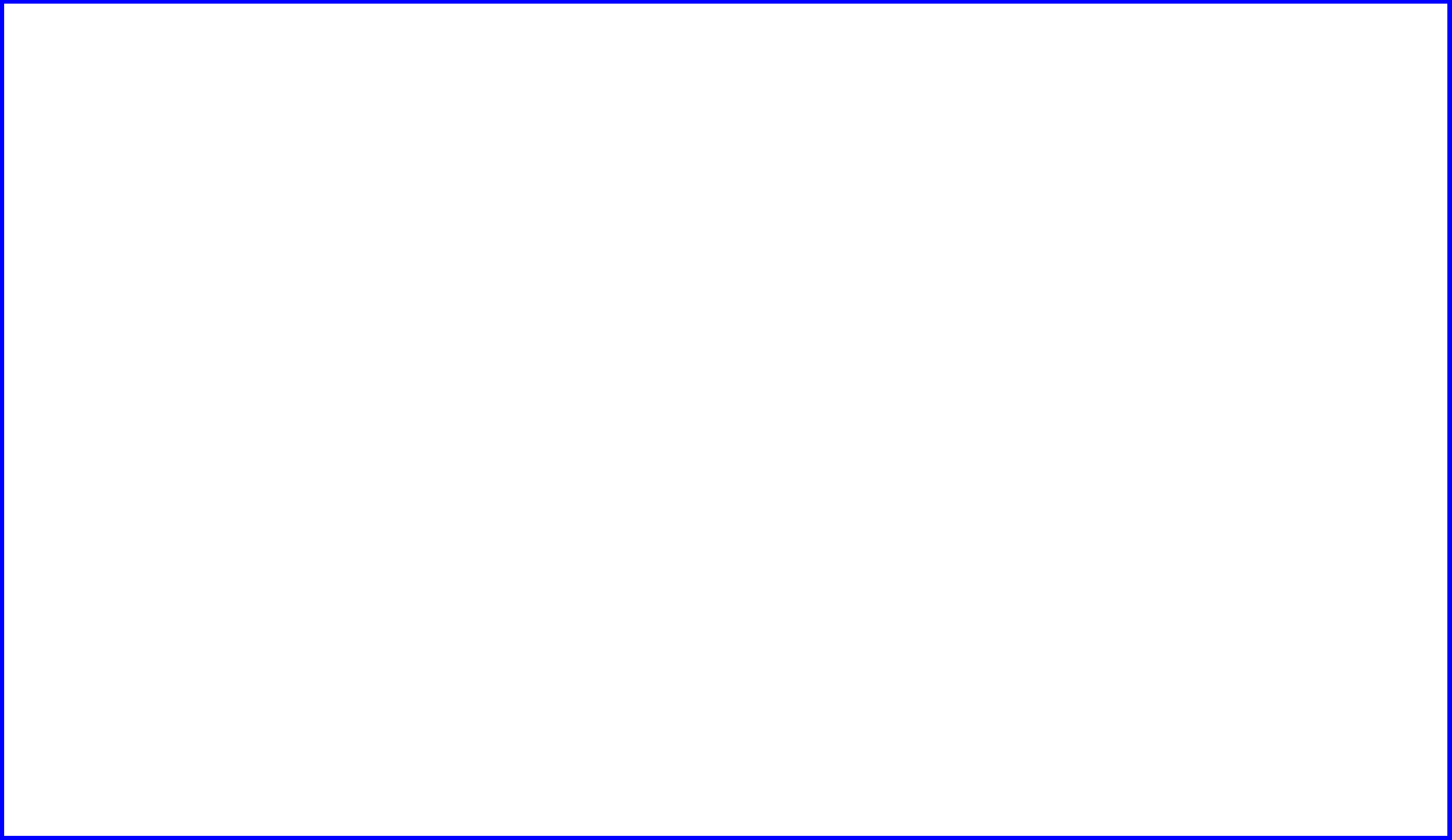
Prepared by
PMU
PO Box 61542
Marshalltown
2107



Contract No JW13504
Bushkoppie Wastewater Treatment Works
Rectification Of Contract JW13504 – Construction of A Balancing Tank
through Mixers (15 mixers) redesign and reinstallation, and
reinstatement of Associated Ancillaries
Volume 4 Contract Data
Part 4: Drawings

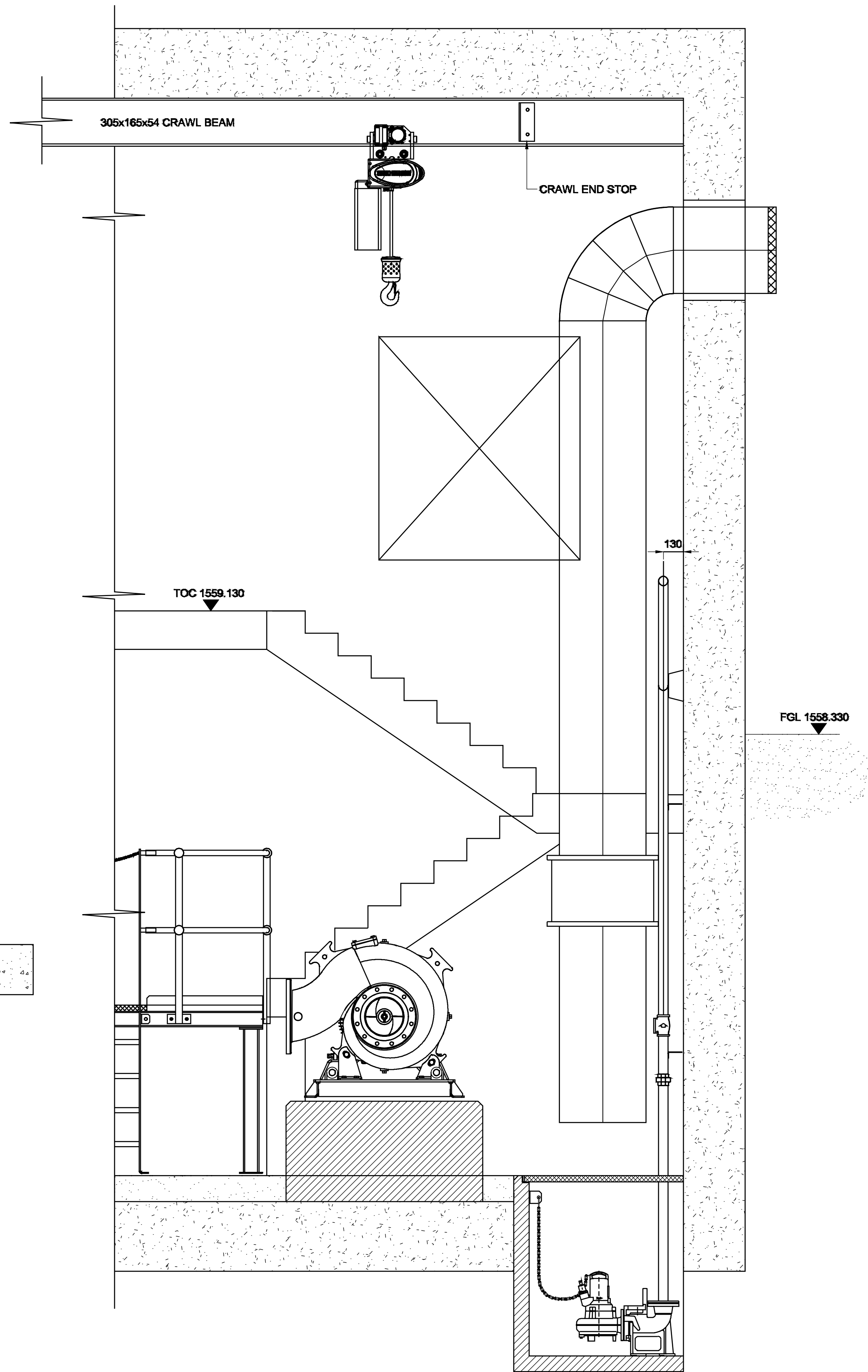
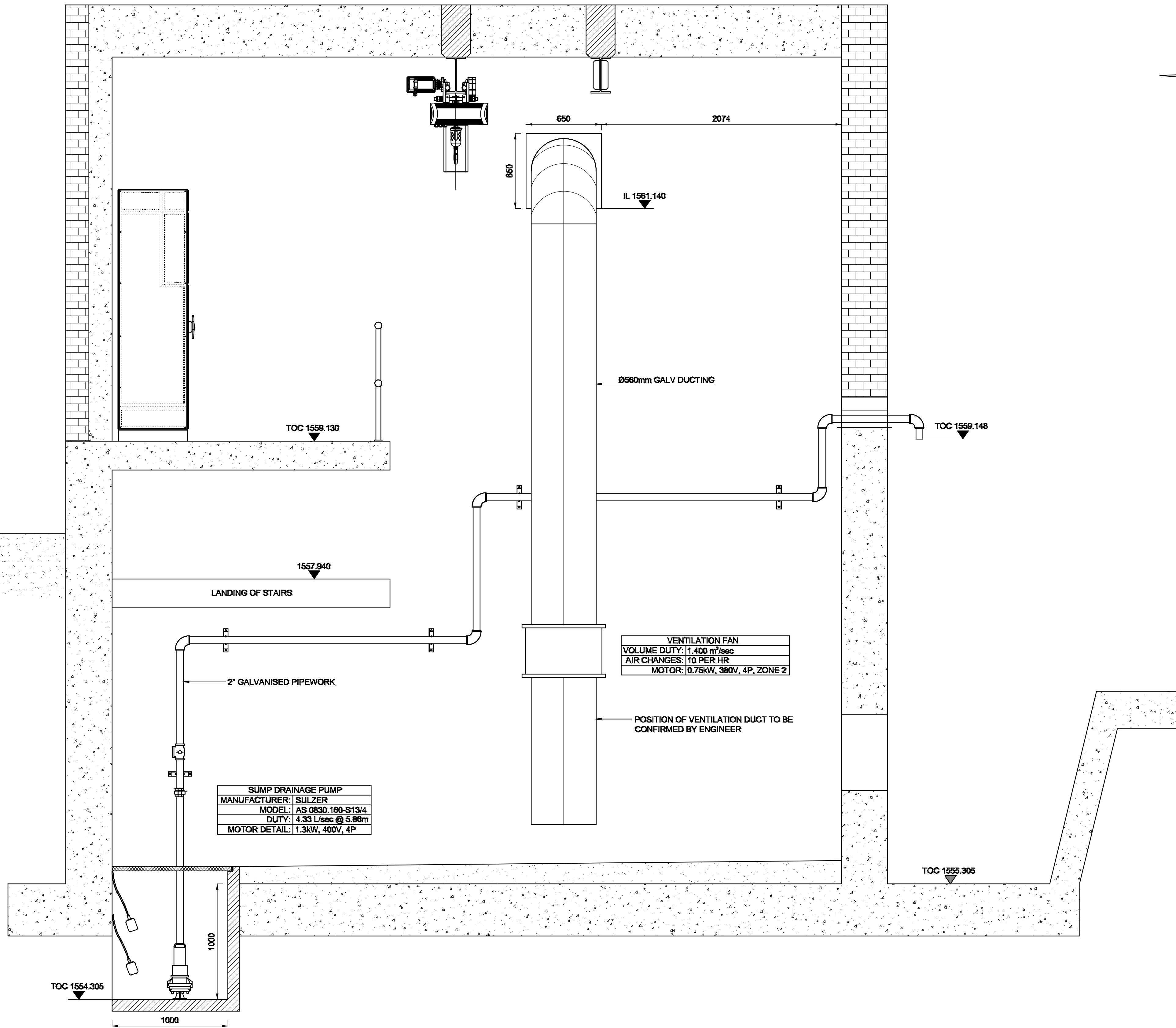


Volume	1	2	3	4	Part	T1	T2	C1	C2	C3	C4
--------	---	---	---	---	------	----	----	----	----	----	----





SCALE	AMENDMENTS					DRAWING No: JW13504-A-150-03	
N.T.S	REV	DESCRIPTION	DATE	BY	APV	BW0602 CIV — A PROJECT No. DISCIPLINARY REV. A1 SHEET 1 OF 1 ORIGINAL PAGE SIZE FILE No.	
	A	ISSUED FOR INFORMATION	2024/06/29	M.M	S.M		



(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

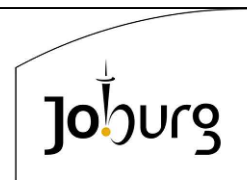
CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED		Date:
DRAWN	K. KOLBERG	Date:
CHECKED	S. MANGANYI	Date:
APPROVED BY:	V. KRISHNADUTT	Date:
SIGNATURE:		ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



a world class African city

Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
SUMP DRAINAGE PUMP

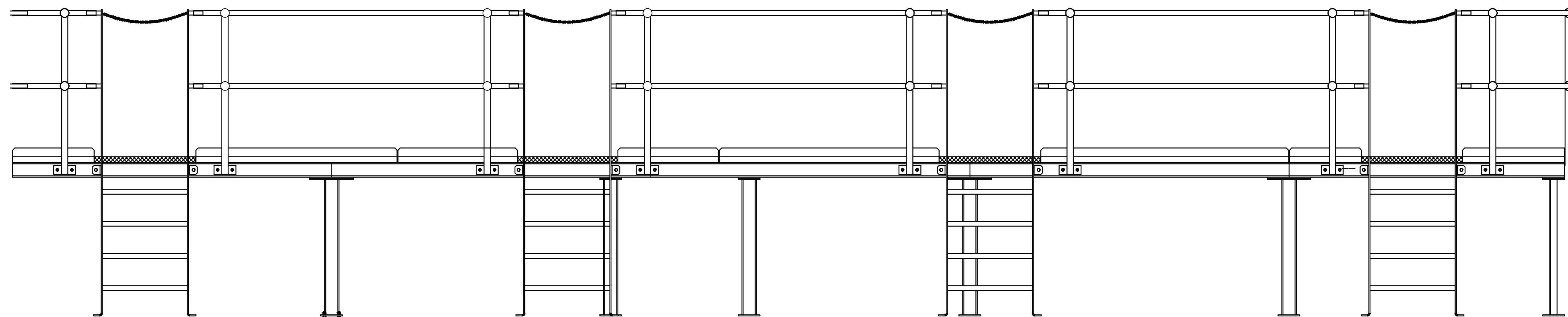
SCALE

AMENDMENTS

REV	DESCRIPTION	DATE	BY	APV
A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M

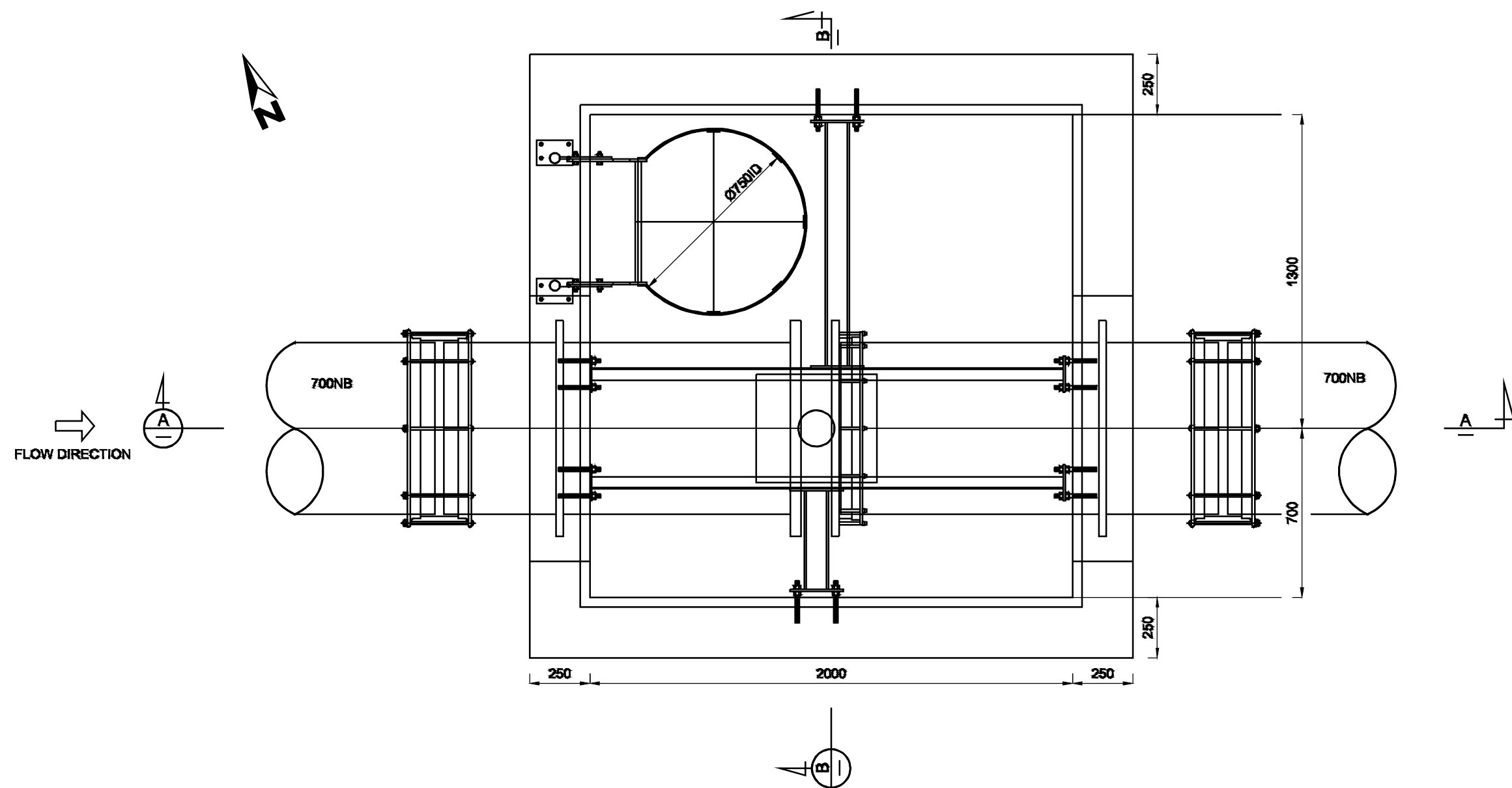
DRAWING No: JW13504-A-150-04

BW0602	CIV	A
PROJECT No:	DISCIPLINARY	REV.
A1	SHEET	1 OF 1
ORIGINAL PAGE SIZE		
FILE No:		



ISSUED FOR TENDER
PURPOSE ONLY

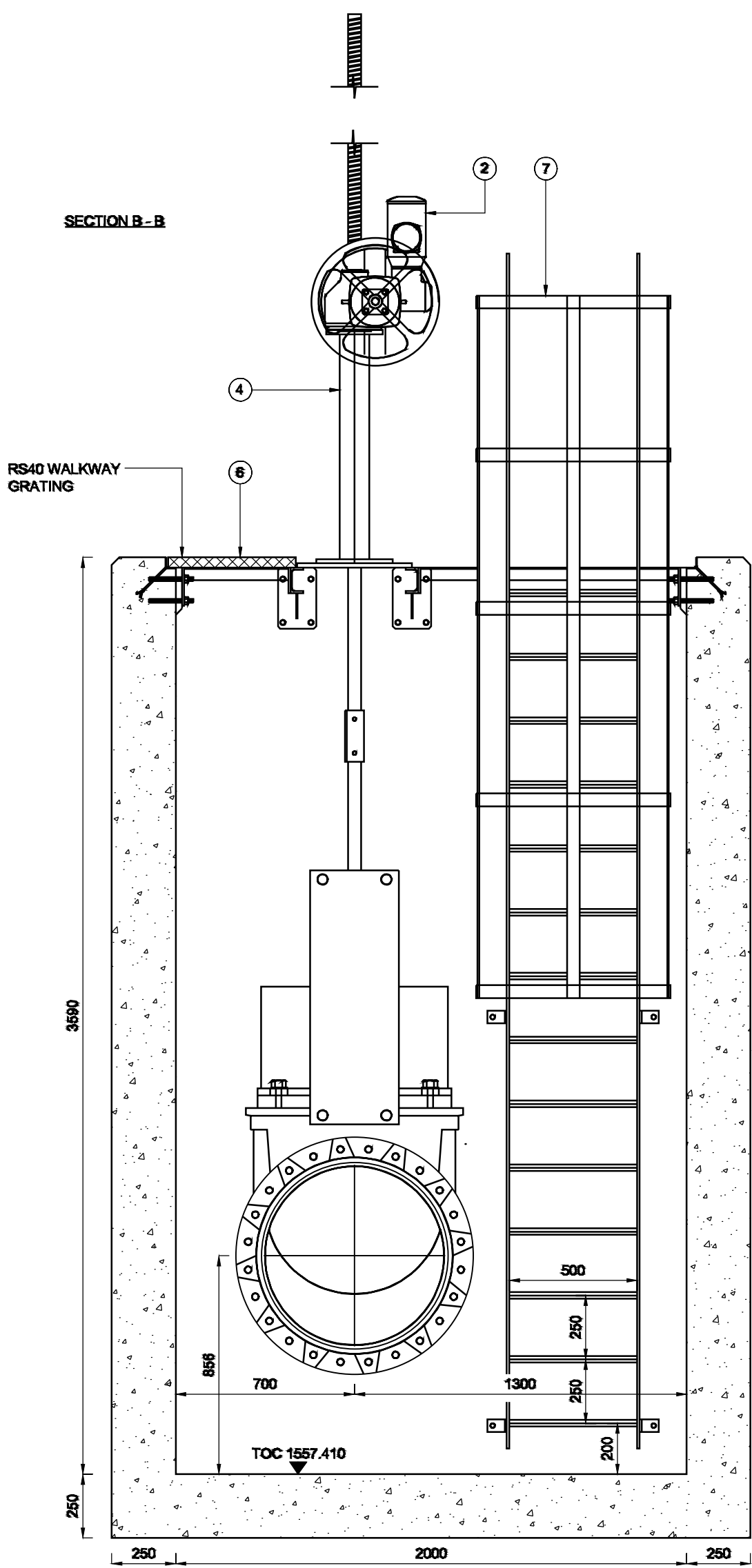
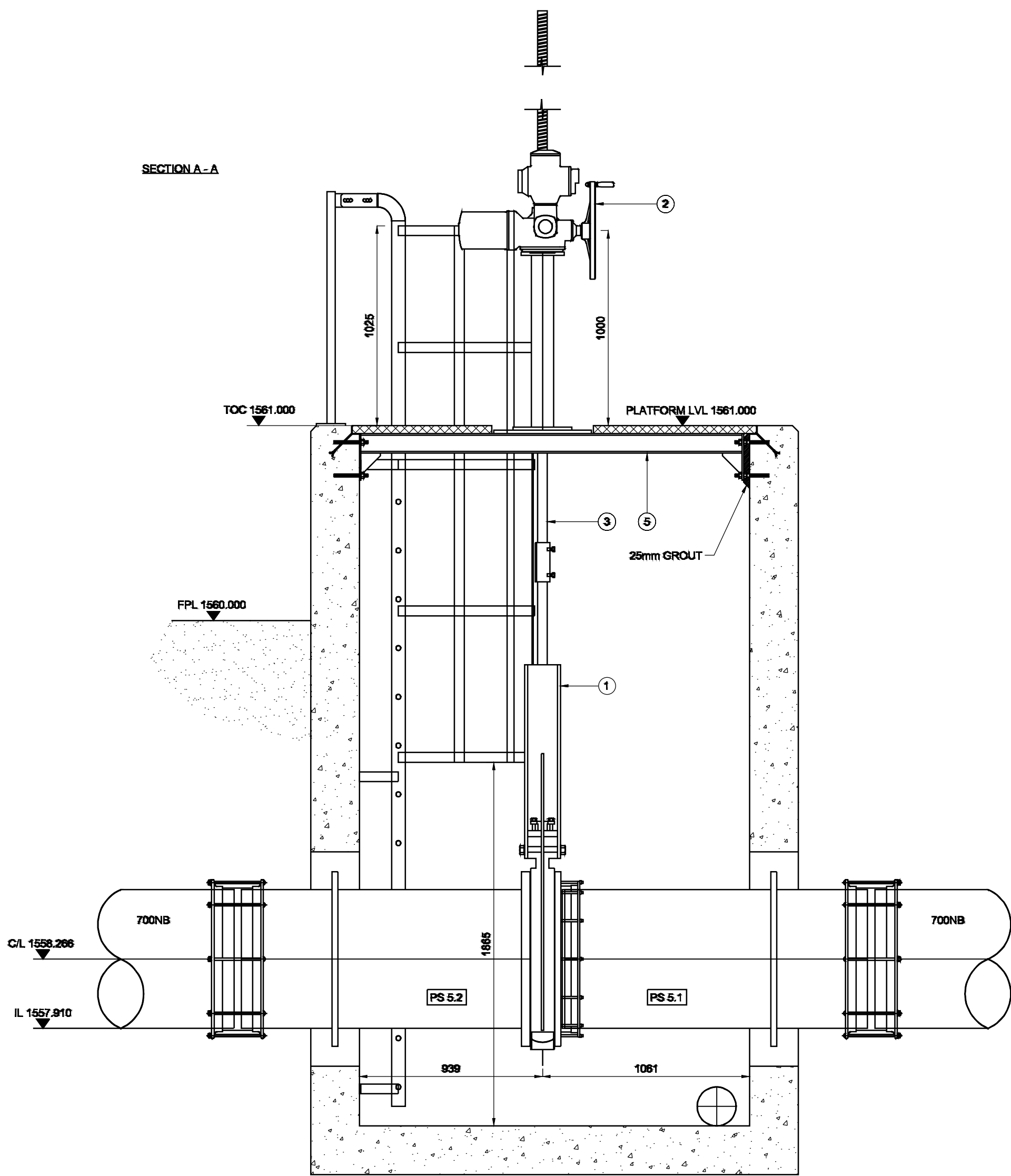
SCALE	AMENDMENTS					DRAWING No: JW13504-A-150-05-09	
N.T.S	REV	DESCRIPTION	DATE	BY	APV	BW0602 CIV — A PROJECT No. DISCIPLINARY REV. A1 SHEET 1 OF 1 ORIGINAL PAGE SIZE FILE No.	
		A	ISSUED FOR INFORMATION	2024/06/29	M.M	S.M	



ITEM	DESCRIPTION	QUANTITY	MATERIAL	CORROSION PROTECTION
1	700NB KNIFE GATE VALVE, 5 BAR, SANS 1123 T1000/3, 122mm F/F	1 OFF	SEE LIST	MANUFACTURERS STANDARD
2	AUMA ACTUATOR, SAR16.2, 400V, 4-20mA CONTROL AND FEEDBACK	1 OFF	AUMA STANDARD	MANUFACTURERS STANDARD
3	SPINDLE EXTENSION	1 OFF	304 STAINLESS STEEL	PICKLE AND PASSIVATE
4	ACTUATOR PEDESTAL SUPPORT	1 OFF	S355JR MILD STEEL	HOT DIP GALVANISED
5	GRATING PLATFORM SUPPORT FRAME	1 OFF	S355JR MILD STEEL	HOT DIP GALVANISED
6	GRATING PLATFORM	1 OFF	MILD STEEL	HOT DIP GALVANISED
7	CAT LADDER	1 OFF	304 STAINLESS STEEL	PICKLE AND PASSIVATE

MATERIALS OF CONSTRUCTION	
VALVE BODY	CAST IRON
BLADE	304 STAINLESS STEEL
BORE LINING	SOFT NATURAL RUBBER
GLAND	CAST STEEL
GLAND SEAL	NITRILE RUBBER
SCRAPERS	PTFE
FASTENERS	304 STAINLESS STEEL
SPINDLE	304 STAINLESS STEEL
DRIVE NUT	L22 BRONZE

VALVE COATING	
BODY INTERNAL	EPOXY RESIN PAINT 300µm MINIMUM
BODY EXTERNAL	EPOXY RESIN PAINT 400µm MINIMUM
FINAL COLOUR	BLUE RAL 5010



CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED		Date:
DRAWN	K. KOLBERG	Date:
CHECKED	S. MANGANYI	Date:
APPROVED BY:	V. KRISHNADUTT	Date:
SIGNATURE:		ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
VALVE CHAMBER A

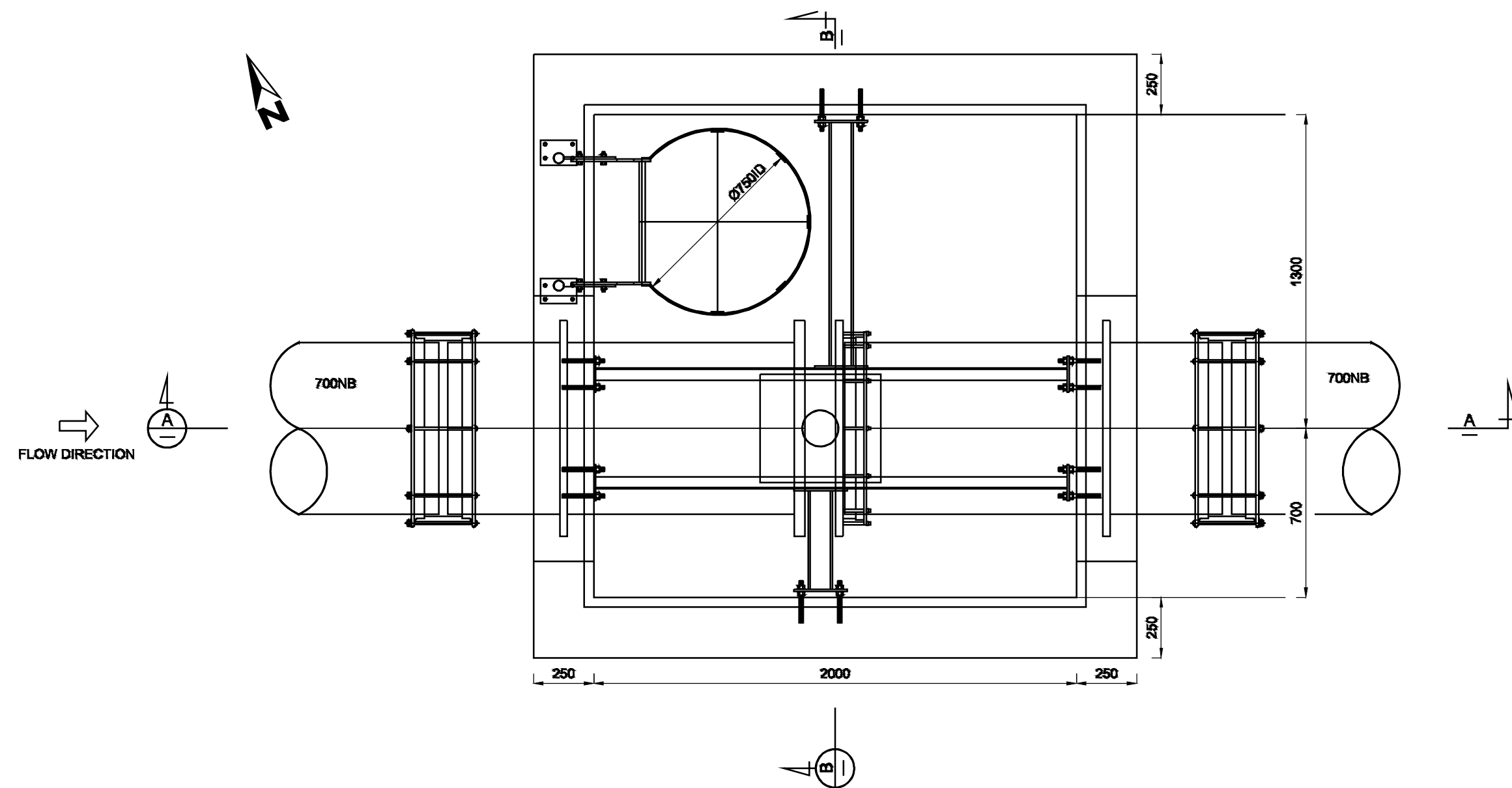
SCALE

AMENDMENTS

DRAWING No: JW13504-C-160-01

REV	DESCRIPTION	DATE	BY	APV
A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M

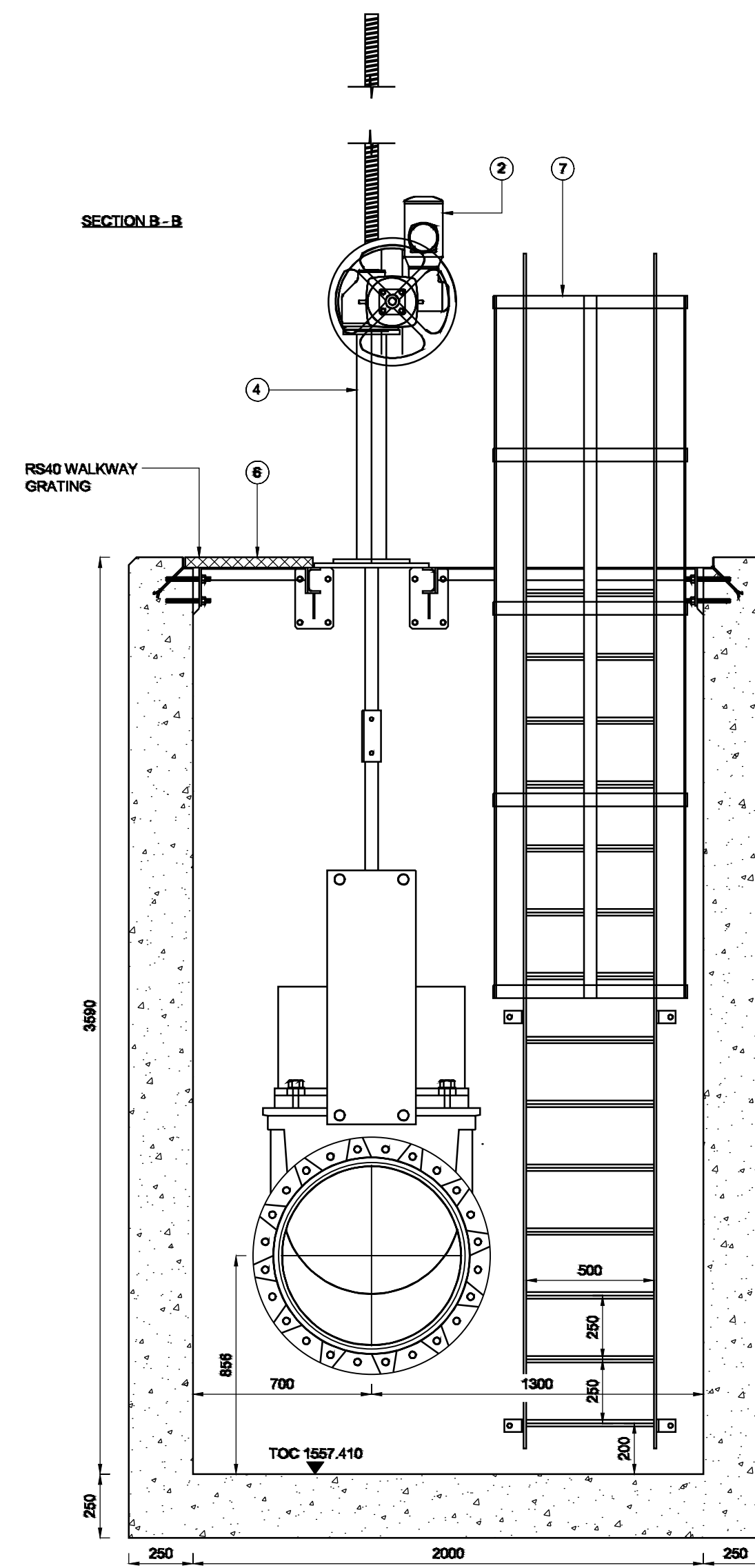
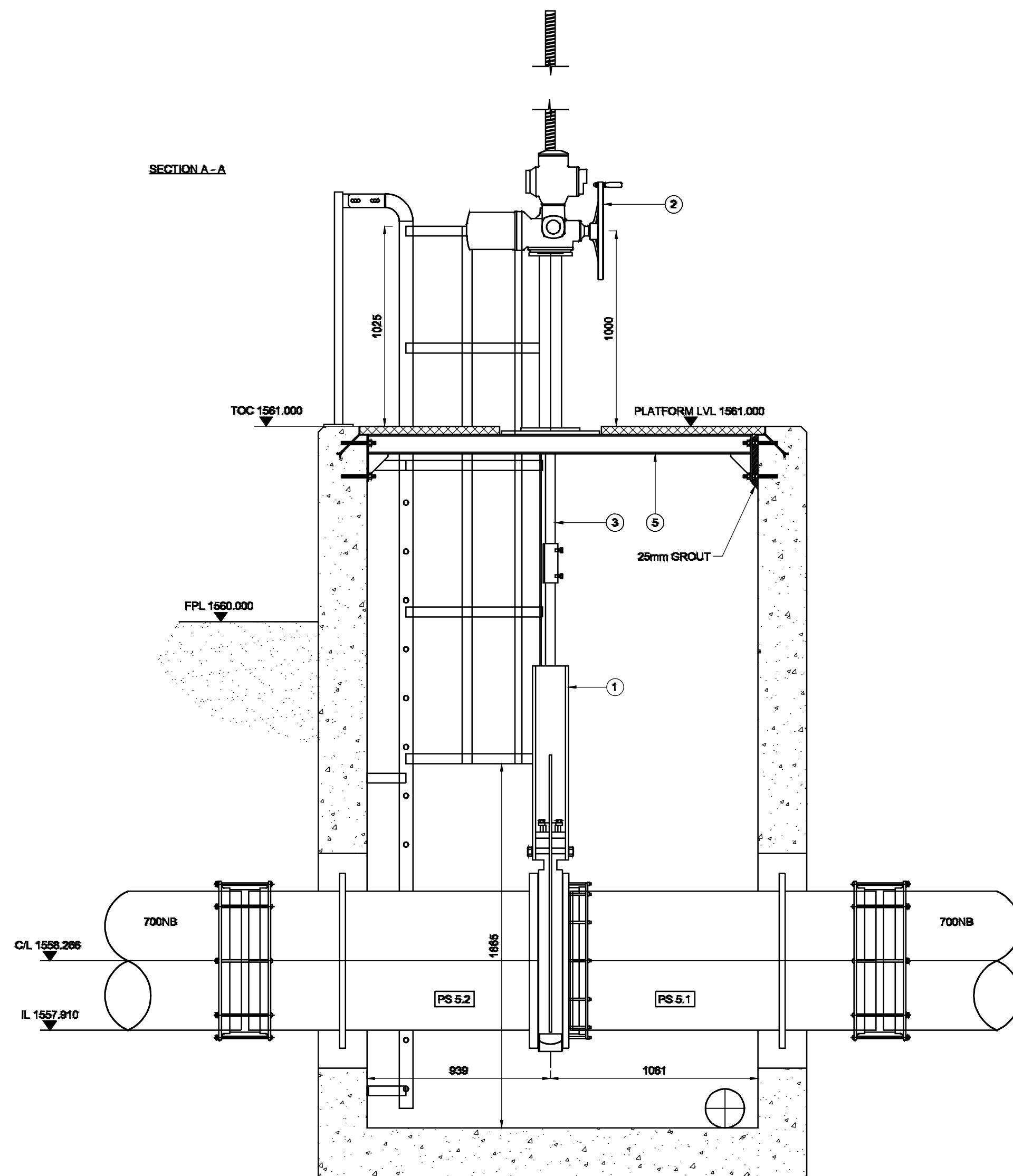
BW0602	CIV	A
PROJECT No:	DISCIPLINARY	REV.
A1	SHEET 1	OF 1
ORIGINAL PAGE SIZE		
FILE No:		



ITEM	DESCRIPTION	QUANTITY	MATERIAL	CORROSION PROTECTION
1	700NB KNIFE GATE VALVE, 5 BAR, SANS 1123 T1000/3, 122mm F/F	1 OFF	SEE LIST	MANUFACTURERS STANDARD
2	AUMA ACTUATOR, SAR16.2, 400V, 4-20mA CONTROL AND FEEDBACK	1 OFF	AUMA STANDARD	MANUFACTURERS STANDARD
3	SPINDLE EXTENSION	1 OFF	304 STAINLESS STEEL	PICKLE AND PASSIVATE
4	ACTUATOR PEDESTAL SUPPORT	1 OFF	S355JR MILD STEEL	HOT DIP GALVANISED
5	GRATING PLATFORM SUPPORT FRAME	1 OFF	S355JR MILD STEEL	HOT DIP GALVANISED
6	GRATING PLATFORM	1 OFF	MILD STEEL	HOT DIP GALVANISED
7	CAT LADDER	1 OFF	304 STAINLESS STEEL	PICKLE AND PASSIVATE

MATERIALS OF CONSTRUCTION	
VALVE BODY	CAST IRON
BLADE	304 STAINLESS STEEL
BORE LINING	SOFT NATURAL RUBBER
GLAND	CAST STEEL
GLAND SEAL	NITRILE RUBBER
SCRAPERS	PTFE
FASTENERS	304 STAINLESS STEEL
SPINDLE	304 STAINLESS STEEL
DRIVE NUT	L22 BRONZE

VALVE COATING	
BODY INTERNAL	EPOXY RESIN PAINT 300um MINIMUM
BODY EXTERNAL	EPOXY RESIN PAINT 400um MINIMUM
FINAL COLOUR	BLUE RAL 5010



(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED		Date:
DRAWN	K. KOLBERG	Date:
CHECKED	S. MANGANYI	Date:
APPROVED BY:	V. KRISHNADUTT	Date:
SIGNATURE:		ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:

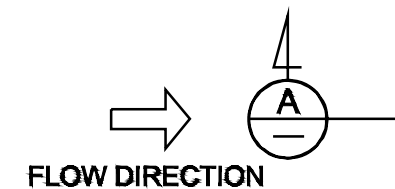


Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
VALVE CHAMBER A

SCALE	AMENDMENTS					
	REV	DESCRIPTION	DATE	BY	APV	
N.T.S	A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M	

DRAWING No: JW13504-C-160-01	
BW0602	CIV - A
PROJECT No:	DISCIPLINARY
A1	1 OF 1
ORIGINAL PAGE SIZE	
FILE No:	

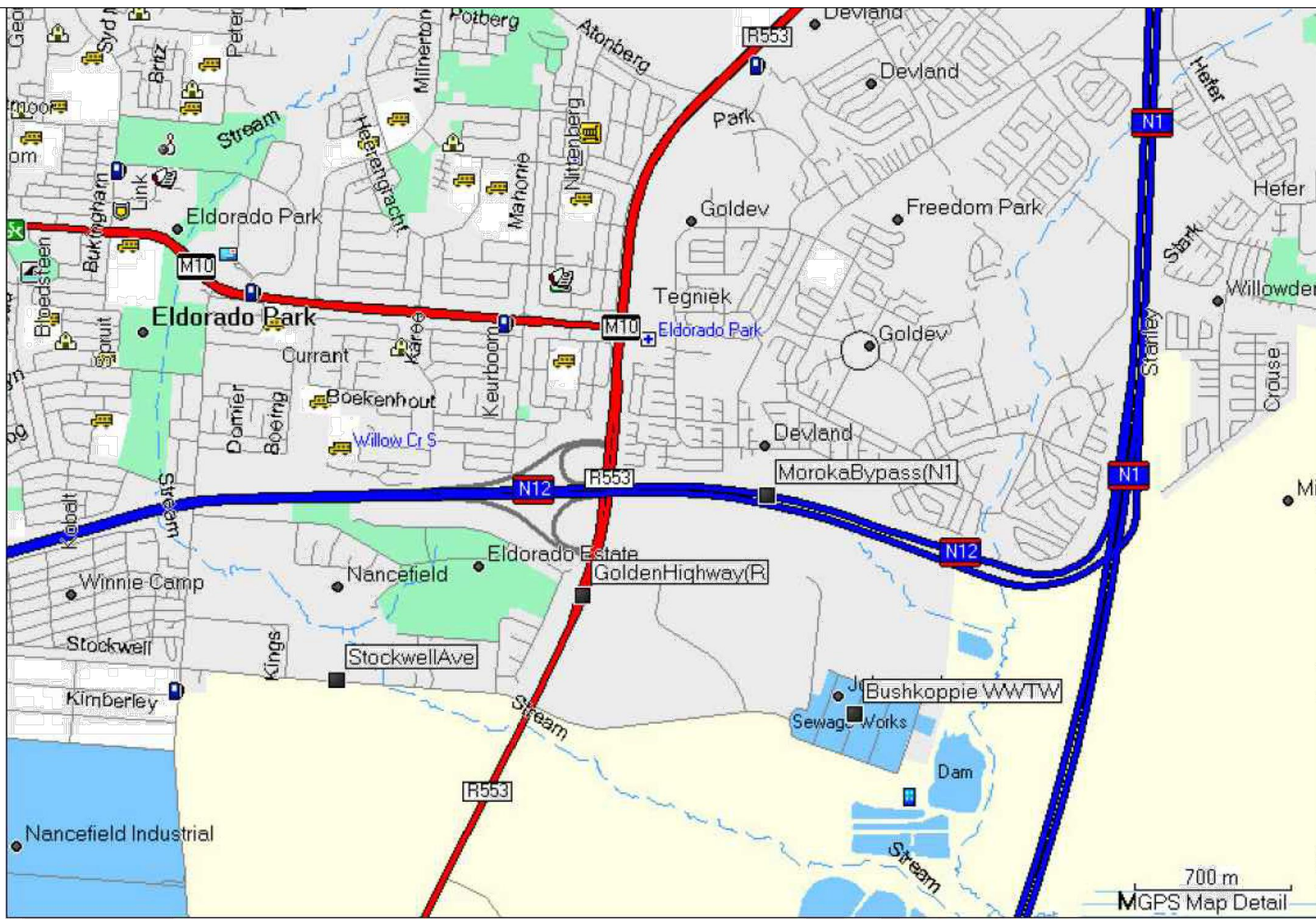


MATERIALS OF CONSTRUCTION	
VALVE BODY	CAST IRON
BLADE	304 STAINLESS STEEL
BORE LINING	SOFT NATURAL RUBBER
GLAND	CAST STEEL
GLAND SEAL	NITRILE RUBBER
SCRAPERS	PTFE
FASTENERS	304 STAINLESS STEEL
SPINDLE	304 STAINLESS STEEL
DRIVE NUT	Lg2 BRONZE

(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED	Date:	 Johannesburg Water	JOHANNESBURG WATER SOC Ltd TURBINE HALL 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113 TEL: +27 (0)11 688 1400 FAX: +27(0)11 688-1528	Municipality:	 a world class African city	SCALE	AMENDMENTS					DRAWING No: JW13504-C-160-02	
	DRAWN	K. KOLBERG						Date:	REV	DESCRIPTION	DATE	BY		APV
	CHECKED	S.MANGANYI						Date:	A	ISSUED FOR INFORMATION	2024/08/29	M.M		S.M
	APPROVED BY:	V. KRISHNADUTT						Date:						
Project description:				BUSHKOPPIES WASTEWATER TREATMENT WORKS VALVE CHAMBER B					PROJECT No. BW0602 DISCIPLINARY CIV - REV. SHEET A1 OF 1 ORIGINAL PAGE SIZE FILE No.					



LOCALITY PLAN

NTS



LOCALITY PLAN SHOWING SPOIL SITE

NTS

CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED		Date:
DRAWN	SIGNATURE:	Date:
CHECKED	SIGNATURE:	Date:
APPROVED BY:	SIGNATURE:	Date:
	SIGNATURE:	ECSA REG. No:



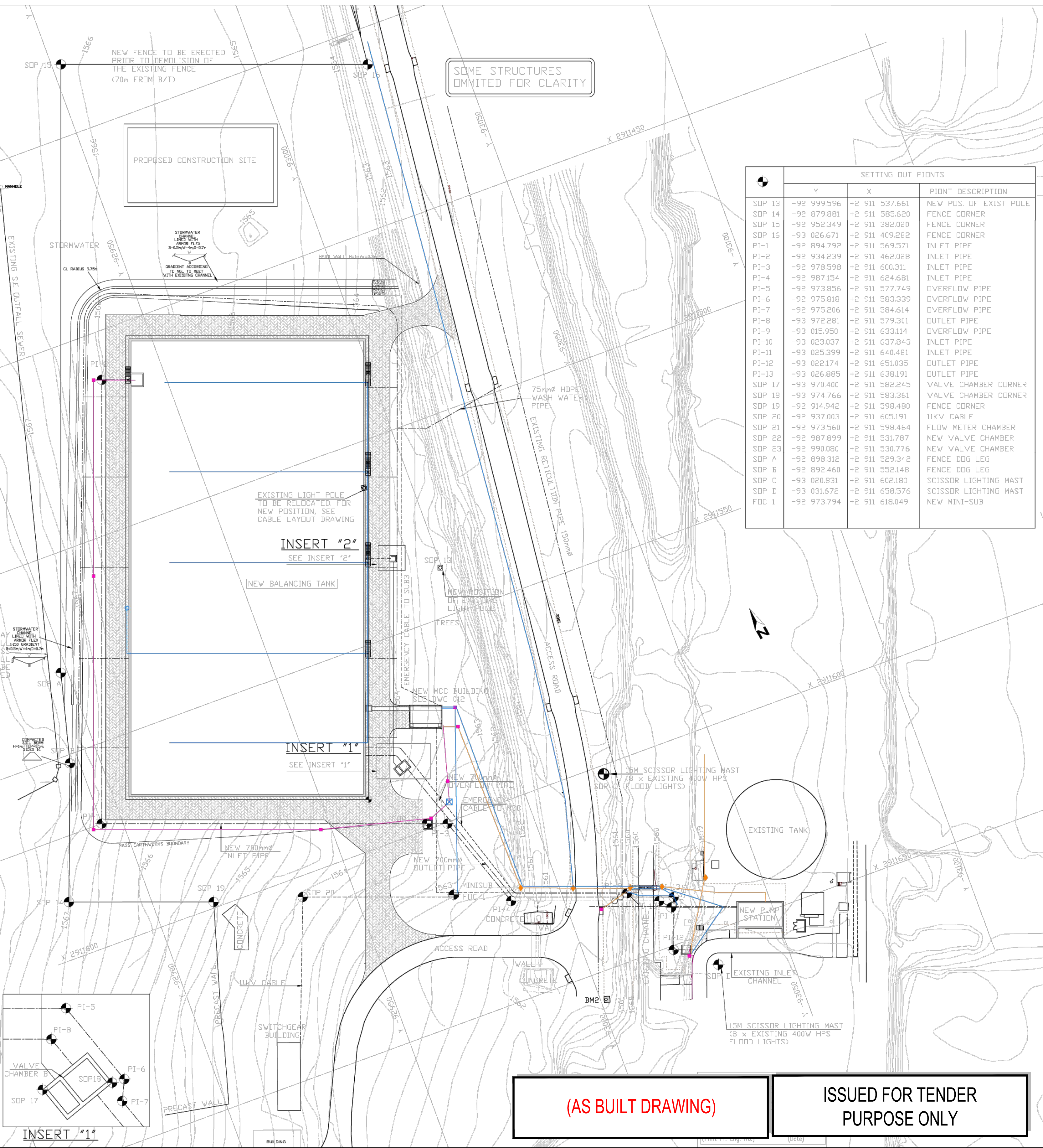
JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:

Project description:



BUSHKOPPIES WASTEWATER TREATMENT WORKS
LOCALITY AND SITE LAYOUT PLAN



SETTING OUT POINTS			
	Y	X	POINT DESCRIPTION
SDP 13	-92 999.596	+2 911 537.661	NEW POS. OF EXIST. POLE
SDP 14	-92 879.881	+2 911 585.620	FENCE CORNER
SDP 15	-92 952.349	+2 911 382.020	FENCE CORNER
SDP 16	-93 026.671	+2 911 409.282	FENCE CORNER
PI-1	-92 894.792	+2 911 569.571	INLET PIPE
PI-2	-92 934.239	+2 911 462.028	INLET PIPE
PI-3	-92 978.598	+2 911 600.311	INLET PIPE
PI-4	-92 987.154	+2 911 624.681	INLET PIPE
PI-5	-92 973.856	+2 911 577.749	OVERFLOW PIPE
PI-6	-92 975.818	+2 911 583.339	OVERFLOW PIPE
PI-7	-92 975.206	+2 911 584.614	OVERFLOW PIPE
PI-8	-93 972.281	+2 911 579.301	OUTLET PIPE
PI-9	-93 015.950	+2 911 633.114	OVERFLOW PIPE
PI-10	-93 023.037	+2 911 637.843	INLET PIPE
PI-11	-93 025.399	+2 911 640.481	INLET PIPE
PI-12	-93 022.174	+2 911 651.035	OUTLET PIPE
PI-13	-93 026.885	+2 911 638.191	OUTLET PIPE
SDP 17	-93 970.400	+2 911 582.245	VALVE CHAMBER CORNER
SDP 18	-93 974.766	+2 911 583.361	VALVE CHAMBER CORNER
SDP 19	-92 914.942	+2 911 598.480	FENCE CORNER
SDP 20	-92 937.003	+2 911 605.191	11KV CABLE
SDP 21	-92 973.560	+2 911 598.464	FLOW METER CHAMBER
SDP 22	-92 987.899	+2 911 531.787	NEW VALVE CHAMBER
SDP 23	-92 990.080	+2 911 530.776	NEW VALVE CHAMBER
SDP A	-92 898.312	+2 911 529.342	FENCE DOG LEG
SDP B	-92 892.460	+2 911 552.148	FENCE DOG LEG
SDP C	-93 020.831	+2 911 602.180	SCISSOR LIGHTING MAST
SDP D	-93 031.672	+2 911 658.576	SCISSOR LIGHTING MAST
FDC 1	-92 973.794	+2 911 618.049	NEW MINI-SUB

(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

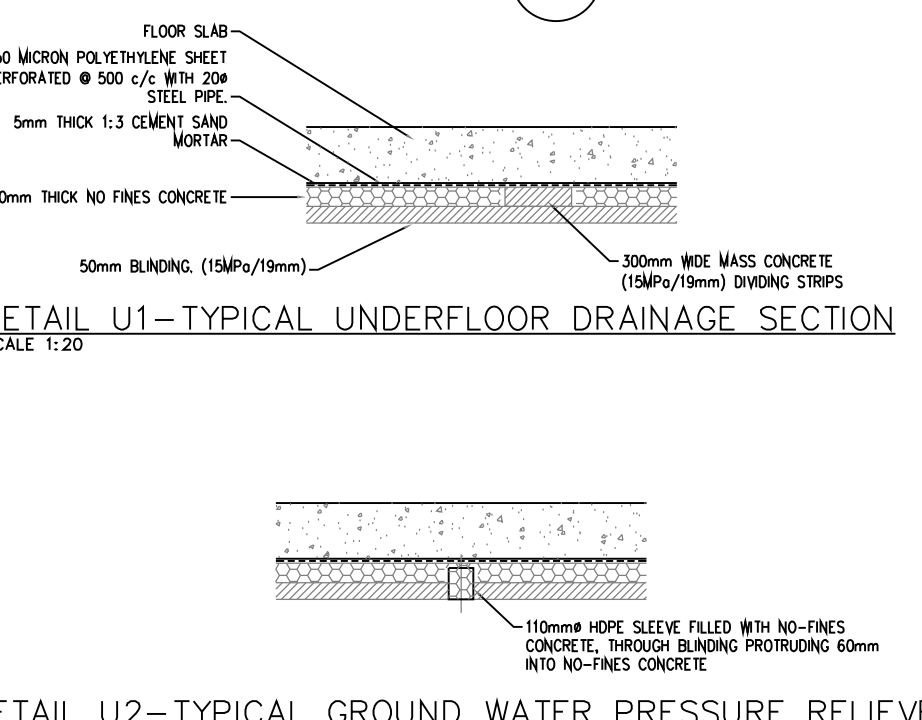
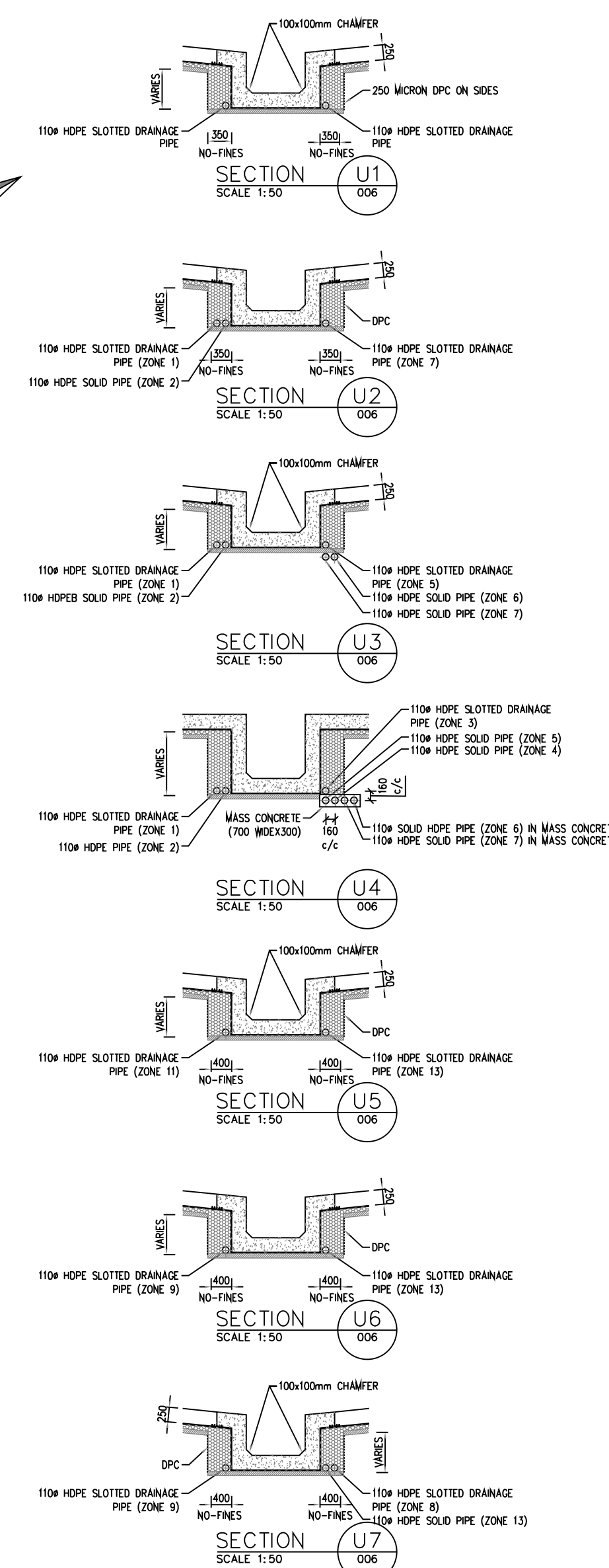
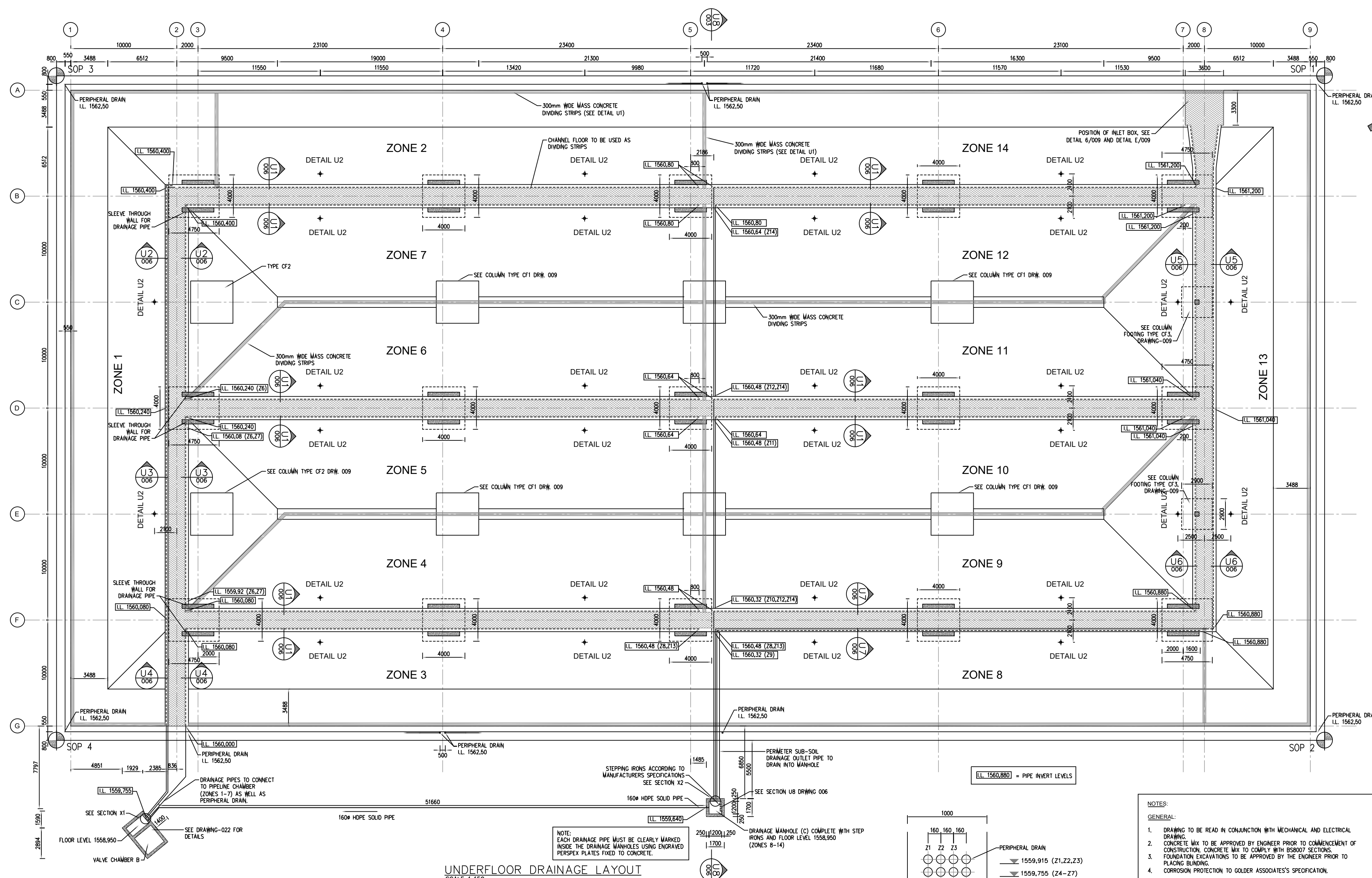
SCALE

AMENDMENTS

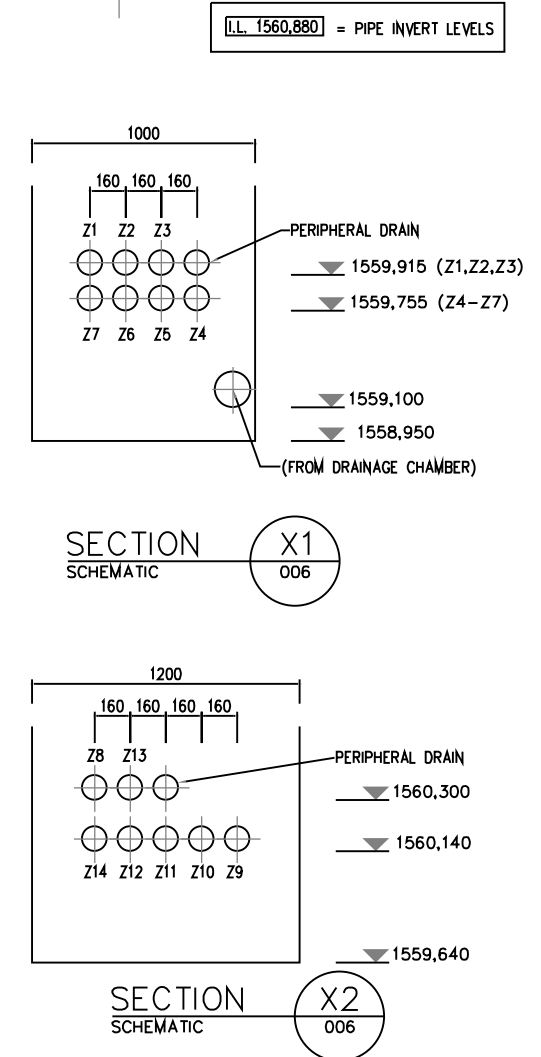
DRAWING No: JW13504-CE-001-000

REV	DESCRIPTION	DATE	BY	APV
A	ISSUED FOR INFORMATION	2024/08/29	M.M.	S.M.

BW0602	CIV	A
PROJECT No:	DISCIPLINARY	REV.
A1	SHEET	1 OF 1
ORIGINAL PAGE SIZE		
FILE No.		



- NOTES:**
- GENERAL:**
- DRAWING TO BE READ IN CONJUNCTION WITH MECHANICAL AND ELECTRICAL DRAWING.
 - CONCRETE MIX TO BE APPROVED BY ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONCRETE MIX TO COMPLY WITH BS2007 SECTIONS.
 - FOUNDATION EXCAVATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO PLACING BLINDING.
 - CORROSION PROTECTION TO FOLLOW ASSOCIATE'S SPECIFICATION.
- CONCRETE:**
- CONCRETE: CLASS 35/19 STRIP FOOTINGS CLASS 35/19 STRIP FOOTINGS CLASS 20/19
 - ALL VISIBLE CONCRETE FACE FINISHES SHALL BE SMOOTH AND CONCEALED MEMBERS SHALL BE ROUGH (SABS 2006 5.2).
 - ALL EXPOSED CONCRETE EDGES TO HAVE A 25x25 CHAMFER.
 - UNDERSTANDING TO BE COMPILED ON SITE.
 - CONCRETE WORK TO COMPLY WITH SABS 12000.
 - CURING METHOD STATEMENT TO BE APPROVED BY ENGINEER.
 - ONLY STEEL SHUTTER TO BE USED.
- WATERSTOP:**
- WATERSTOP TO BE HELD FIRMLY IN POSITION AS INDICATED ON THE DRAWINGS.
 - SEALAGE OF CONCRETE THROUGH SHUTTERS AT WATERSTOP POSITIONS TO BE PREVENTED.
 - CONCRETE AROUND WATERSTOP TO BE PROPERLY VIBRATED AND CONTRACTOR TO ENSURE THAT NO POCKETS ARE FORMED BELOW THE WATERSTOP.
 - ONLY WIRE JOINTS AND BUTT JOINTS MAY BE MANUFACTURED ON SITE. ALL OTHER JOINTS TO BE FACTORY MANUFACTURED.
 - SITE JOINTING TO BE DONE BY HEAT WELDING, ACCORDING TO SUPPLIERS SPECIFICATIONS.
- CONSTRUCTION JOINTS:**
- NO VERTICAL CONSTRUCTION JOINTS WILL BE PERMITTED IN WALLS.
 - POSITION OF HORIZONTAL CONSTRUCTION JOINTS AND CONSTRUCTION JOINTS IN FLOORS TO BE APPROVED BY ENGINEER.
 - CONSTRUCTION JOINTS IN FLOOR TO BE FORMED BY EXPOSING SAW AGGREGATES IN THE EXISTING SLAB THROUGH CHIPPING OR GREEN CUT (3 HOURS AFTER PLACING), PRIOR TO PLACING NEW CONCRETE, THE EXISTING CONCRETE MUST BE CLEANED AND THOROUGHLY WETTED.
- LIGHTNING PROTECTION:**
- TO BE DETAILED BY ELECTRICAL CONTRACTOR.



UNDERFLOOR DRAINAGE LAYOUT
SCALE 1:150

SECTION UB
SCALE 1:150

SECTION X1
SCHEMATIC

SECTION X2
SCHEMATIC

AS BUILT DRAWINGS
And final inspection by

W. Mouton	(Signature)
20/10/20	20-11-2019
(Print Name)	(Date)

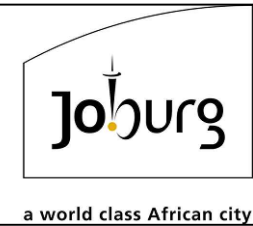
CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED	Date:
	DRAWN	Signature: K. KOLBERG Date:
	CHECKED	Signature: S. MANGANYI Date:
	APPROVED BY:	Signature: V. KRISHANDUTT Date:
		Signature: ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

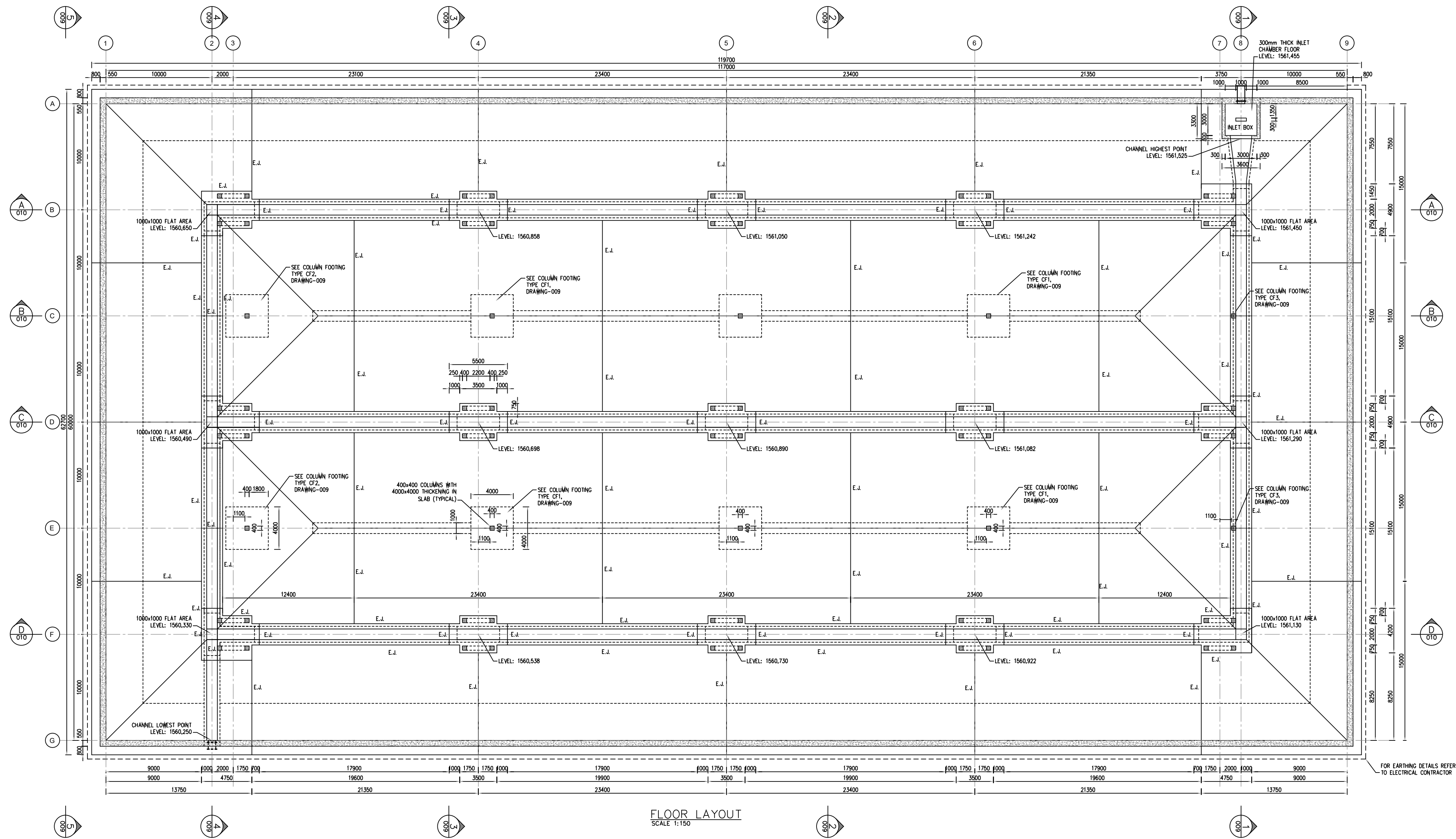
Municipality:

Project description:

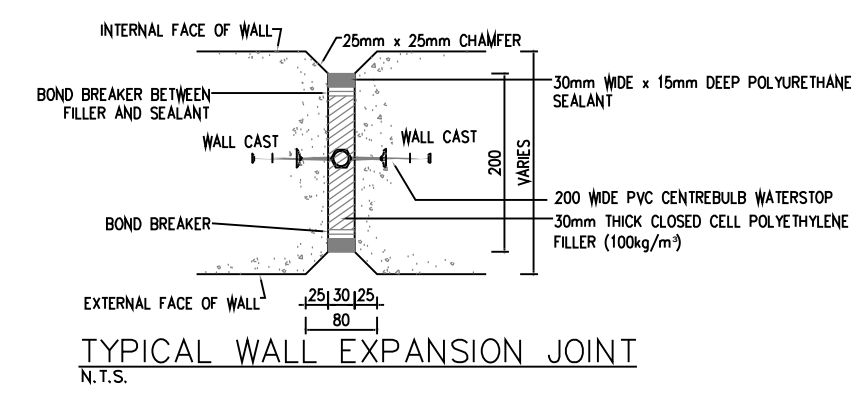
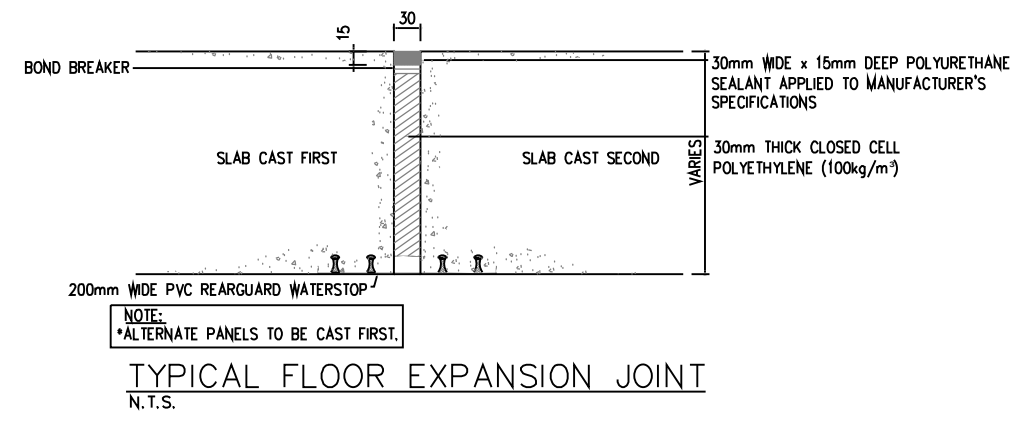
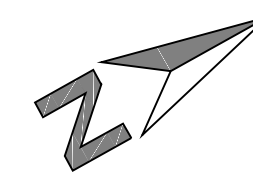


BUSHKOPPIES WASTEWATER TREATMENT WORKS
BALANCING TANK SUBFLOOR DRAINAGE

(AS BUILT DRAWING)						ISSUED FOR TENDER PURPOSE ONLY						
SCALE	AMENDMENTS					DRAWING No: JW13504-CE-006-010						
	N.T.S	REV	DESCRIPTION	DATE	BY	APV	PROJECT No: BW0602 CIV - A DISCIPLINARY REV. A1 SHEET 1 OF 1 ORIGINAL PAGE SIZE FILE No.					
		A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M						



- NOTES:
- GENERAL:
- DRAWING TO BE READ IN CONJUNCTION WITH MECHANICAL AND ELECTRICAL DRAWING.
 - CONCRETE MIX TO BE APPROVED BY ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONCRETE MIX TO COMPLY WITH SABS007 SECTIONS.
 - FOUNDATION EXCAVATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO PLACING BLINDING.
 - CORROSION PROTECTION TO GOLDER ASSOCIATES'S SPECIFICATION.
- CONCRETE:
- CONCRETE: CLASS 35/19
STRUCTURAL CONCRETE 15MPa (28 DAYS)
BLINDING AND SCREED CLASS W/F9
NO FINES CLASS W/F9
STRIP FOOTINGS CLASS 20/19
 - ALL VISIBLE CONCRETE FACE FINISHES SHALL BE SMOOTH AND CONCEALED. MEMBERS SHALL BE ROUGH (SABS2000 6.2).
 - ALL EXPOSED CONCRETE EDGES TO HAVE A 25x25 CHAMFER.
 - DIMENSIONS TO BE CONFIRMED ON SITE.
 - CONCRETE WORK TO COMPLY WITH SABS 1200G.
 - CURING METHOD STATEMENT TO BE APPROVED BY ENGINEER.
 - ONLY STEEL SHUTTER TO BE USED.
- WATERSTOP:
- WATERSTOP TO BE HELD FIRMLY IN POSITION AS INDICATED ON THE DRAWINGS, DURING CONSTRUCTION.
 - SEEPAGE OF CONCRETE THROUGH SHUTTERS AT WATERSTOP POSITIONS TO BE PREVENTED.
 - CONCRETE AROUND WATERSTOP TO BE PROPERLY VIBRATED AND CONTRAST TO ENSURE THAT NO POCKETS ARE FORMED BELOW THE WATERSTOP.
 - ONLY WIRE-JOINTS AND BUTT-JOINTS MAY BE MANUFACTURED ON SITE. ALL OTHER JOINTS TO BE FACTORY MANUFACTURED.
 - SITE JOINTING TO BE DONE BY HEAT WELDING, ACCORDING TO SUPPLIERS SPECIFICATIONS.
- CONSTRUCTION JOINTS:
- NO VERTICAL CONSTRUCTION JOINTS WILL BE PERMITTED IN WALLS.
 - POSITION OF HORIZONTAL CONSTRUCTION JOINTS AND CONSTRUCTION JOINTS IN FLOORS TO BE APPROVED BY ENGINEER.
 - CONSTRUCTION JOINTS IN FLOOR TO BE FORMED BY EXPOSING 50mm AGGREGATES IN THE EXISTING SLAB THROUGH CHIPPING OR GREEN CUT (3 HOURS AFTER PLACING). PRIOR TO PLACING NEW CONCRETE, THE EXISTING CONCRETE MUST BE CLEANED AND THOROUGHLY WETTED.
- LIGHTNING PROTECTION:
- TO BE DETAILLED BY ELECTRICAL CONTRACTOR.



(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:	
	DRAWN	K. KOLBERG	Date:	
	CHECKED	S. MANGANYI	Date:	
	APPROVED BY:	V. KRISHANDUTT	Date:	
	SIGNATURE:		ECSA REG. No:	

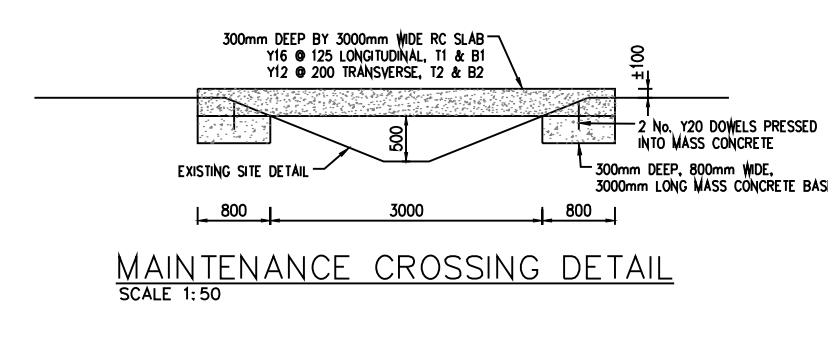
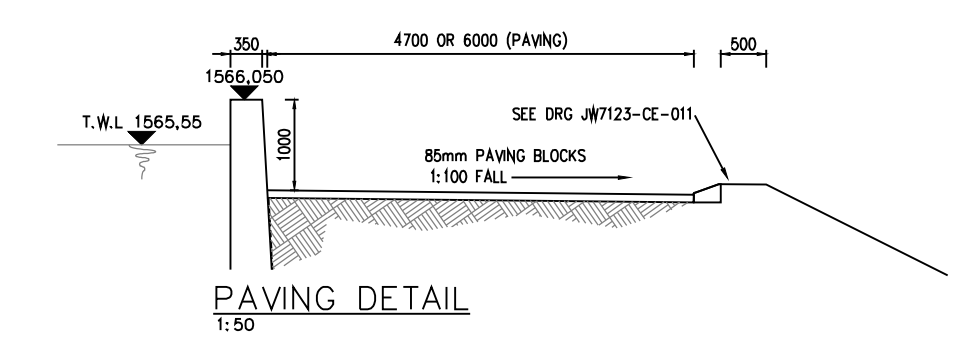


JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

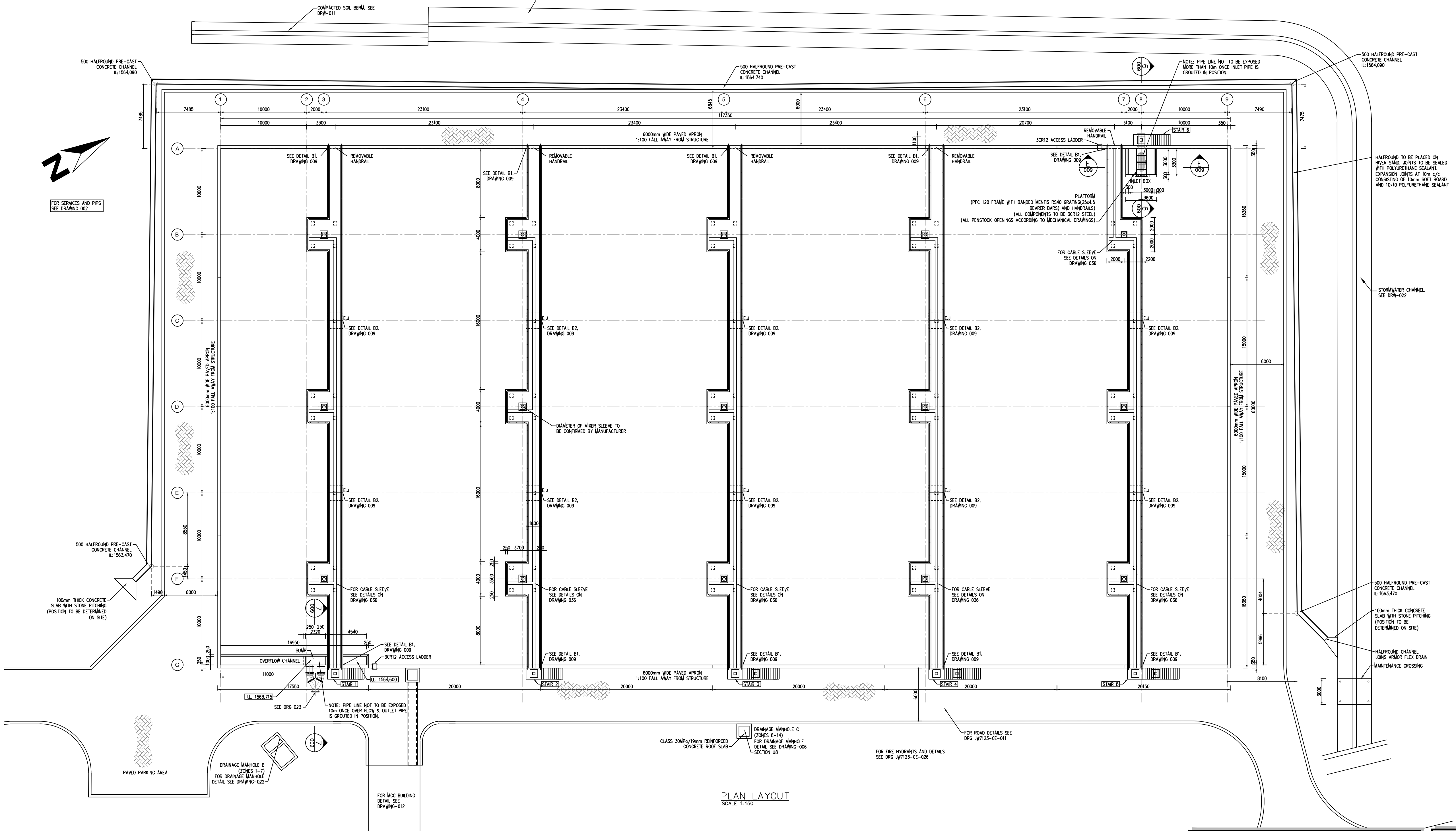


BUSHKOPPIES WASTEWATER TREATMENT WORKS
BALANCING TANK FLOOR PLAN AND JOINTS

SCALE		AMENDMENTS					DRAWING No: JW13504-CE-007-010														
N.T.S	REV	DESCRIPTION		DATE	BY	APV	BW0602			CIV			-			A					
	A	ISSUED FOR INFORMATION		2024/08/29	M.M	S.M													PROJECT No.		
							A1			SHEET			1			OF			1		
						ORIGINAL PAGE SIZE															
							FILE No.														



- NOTES:**
- GENERAL:**
- DRAWING TO BE READ IN CONJUNCTION WITH MECHANICAL AND ELECTRICAL DRAWINGS.
 - CONCRETE MIX TO BE APPROVED BY ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONCRETE MIX TO COMPLY WITH BS8547 SECTION 3.
 - FOUNDATION EXCAVATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO PLACING BLINDING.
 - CORROSION PROTECTION TO FOLLOW ASSOCIATE'S SPECIFICATION.
- CONCRETE:**
- CONCRETE: CLASS 35/19 15MPa (28 DAYS) CLASS NP10 NO-FINES STRIP FOOTINGS
 - ALL VISIBLE CONCRETE FACE FINISHES SHALL BE SMOOTH AND CONCEALED. MEMBERS SHALL BE ROUGH (SABS2000 5.2).
 - ALL EXPOSED CONCRETE EDGES TO HAVE A 25x25 CHAMFER.
 - DIMENSIONS TO BE COMPIRED ON SITE.
 - CONCRETE WORK TO COMPLY WITH SABS 1200G.
 - CURING METHOD STATEMENT TO BE APPROVED BY ENGINEER.
 - ONLY STEEL SHUTTER TO BE USED.
- WATERSTOP:**
- WATERSTOP TO BE HELD FIRMLY IN POSITION AS INDICATED ON THE DRAWINGS.
 - SEPARATE OF CONCRETE THROUGH SHUTTERS AT WATERSTOP POSITIONS TO BE PREVENTED.
 - CONCRETE AROUND WATERSTOP TO BE PROPERLY VIBRATED AND CONTRACTOR TO ENSURE THAT NO POCKETS ARE FORMED BELOW THE WATERSTOP.
 - ONLY WIRE-JOINTS AND BUT-JOINTS MAY BE MANUFACTURED ON SITE. ALL OTHER JOINTS TO BE FACTORY MANUFACTURED.
 - SITE JOINTING TO BE DONE BY HEAT WELDING, ACCORDING TO SUPPLIERS SPECIFICATIONS.
- CONSTRUCTION JOINTS:**
- NO VERTICAL CONSTRUCTION JOINTS WILL BE PERMITTED IN WALLS.
 - POSITION OF HORIZONTAL CONSTRUCTION JOINTS AND CONSTRUCTION JOINTS IN FLOORS TO BE APPROVED BY ENGINEER.
 - CONSTRUCTION JOINTS IN FLOOR TO BE FORMED BY EXPOSING SAW AGGREGATES IN THE EXISTING SLAB THROUGH CHIPPING OR GREEN CUT (3 HOURS AFTER PLACING), PRIOR TO PLACING NEW CONCRETE. THE EXISTING CONCRETE MUST BE CLEANED AND THOROUGHLY WETTED.
- LIGHTNING PROTECTION:**
- TO BE DETAILED BY ELECTRICAL CONTRACTOR.



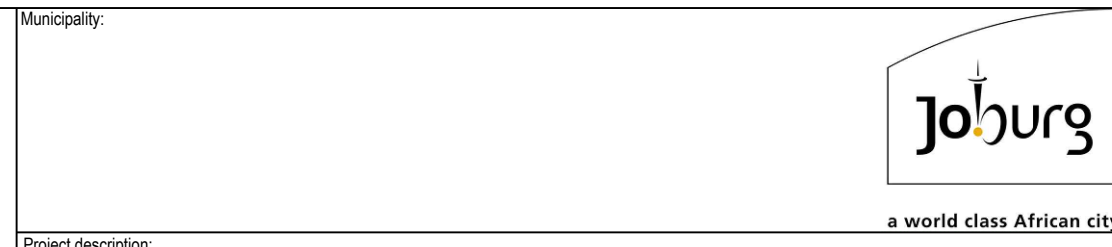
(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:
	DRAWN	K. KOLBERG	Date:
	CHECKED	S. MANGANYI	Date:
	APPROVED BY:	V. KRISHNADUTT	Date:
		SIGNATURE:	ECSA REG. No:



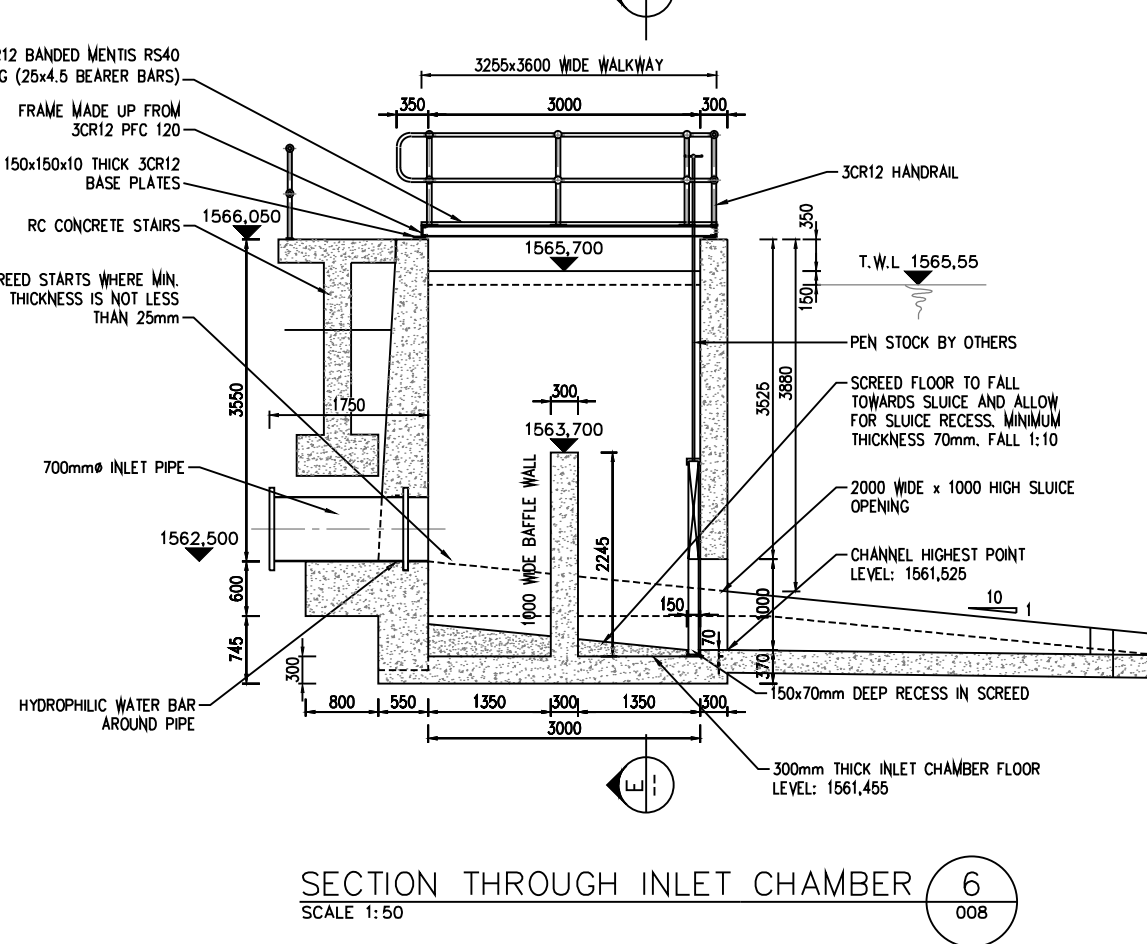
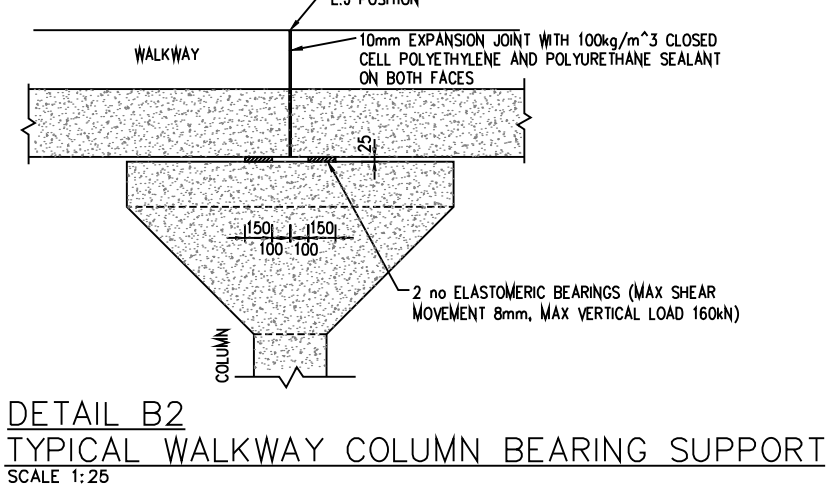
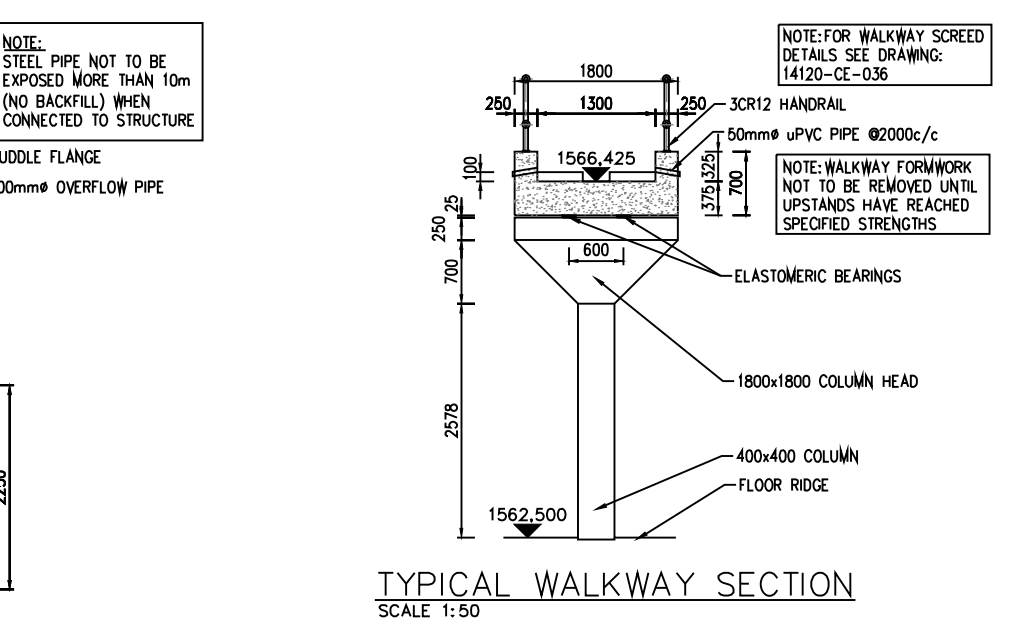
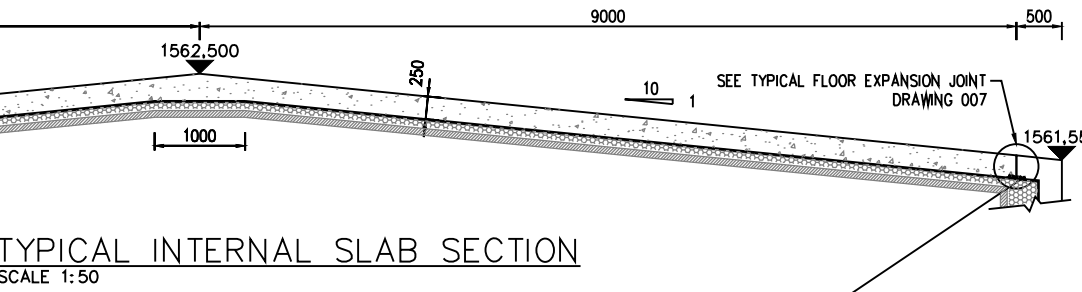
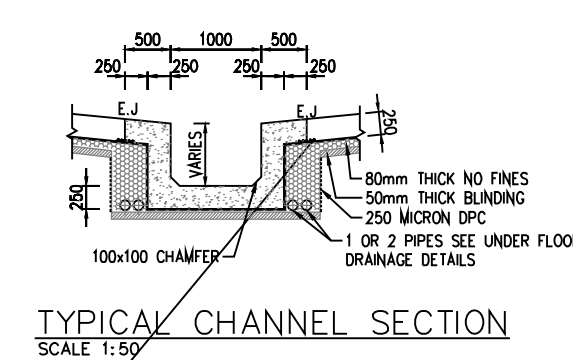
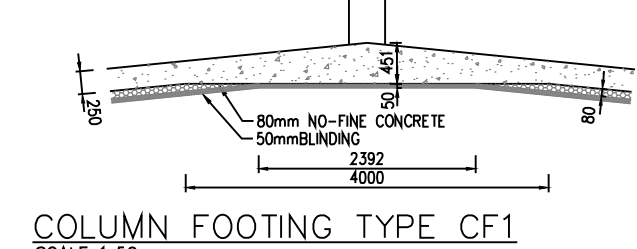
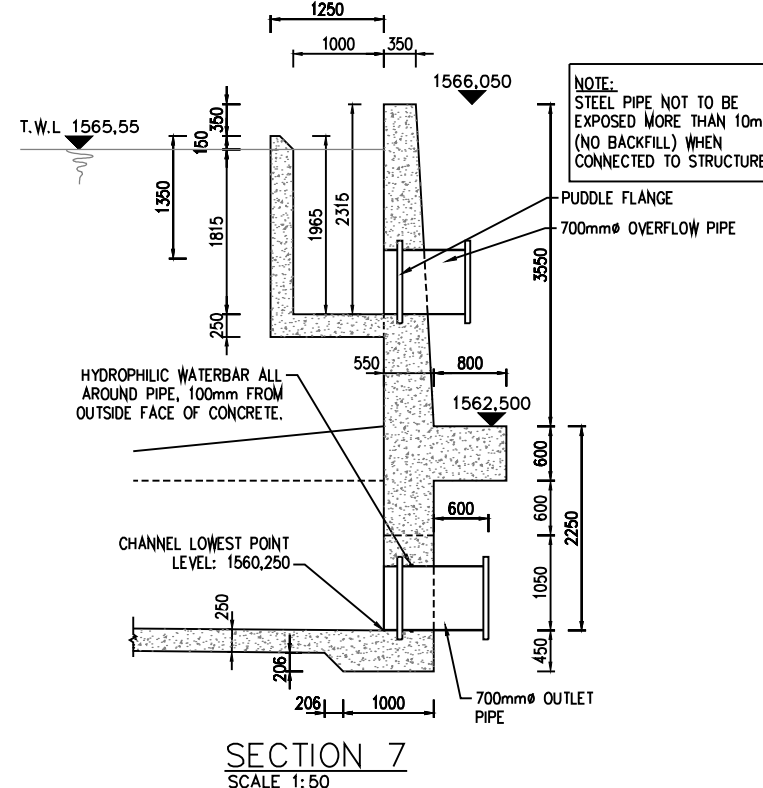
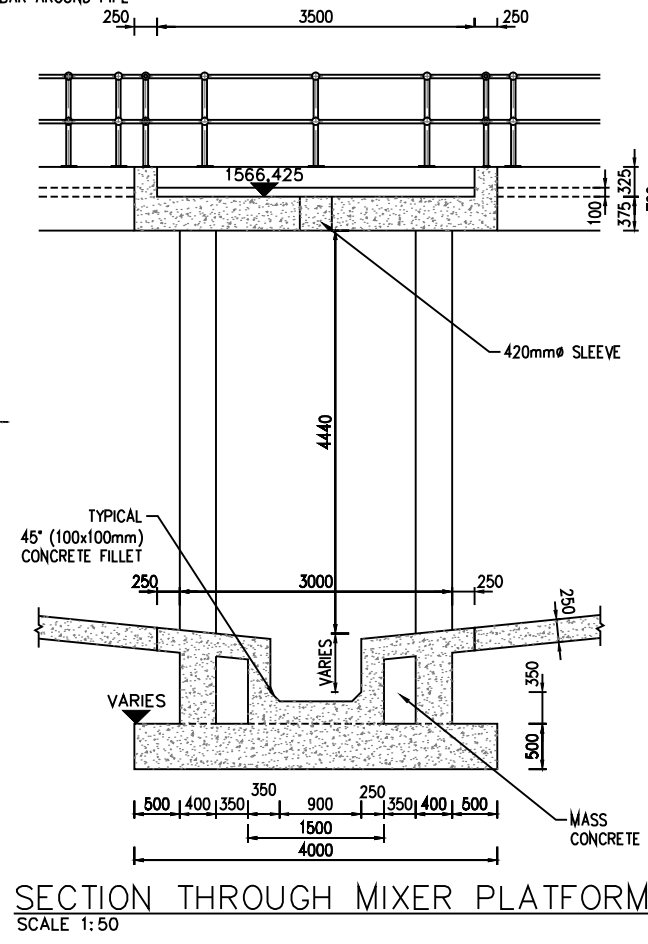
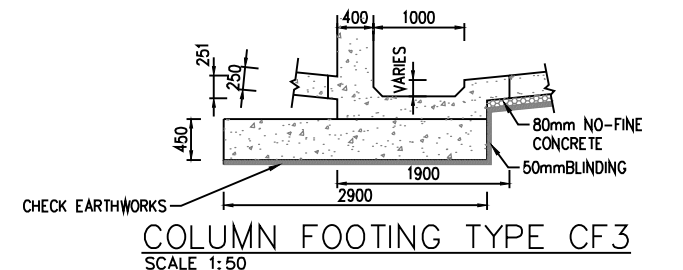
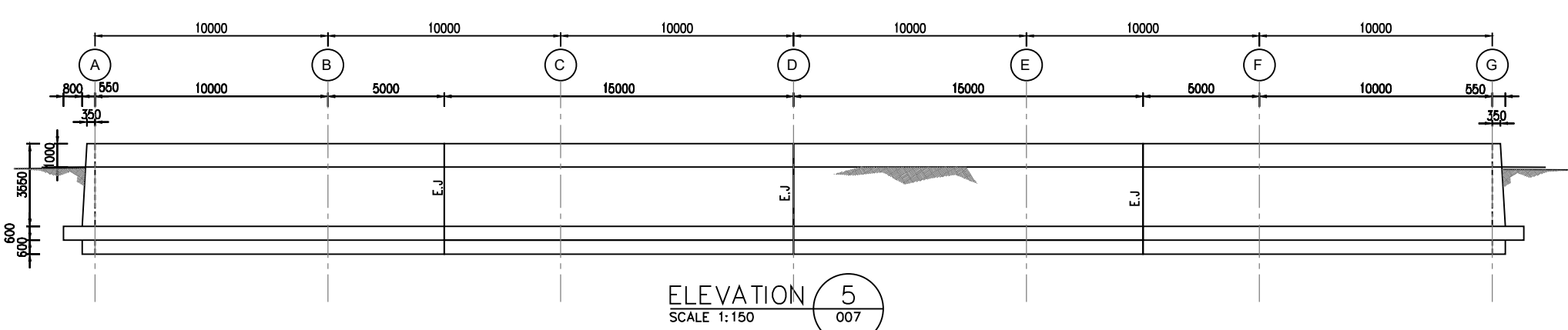
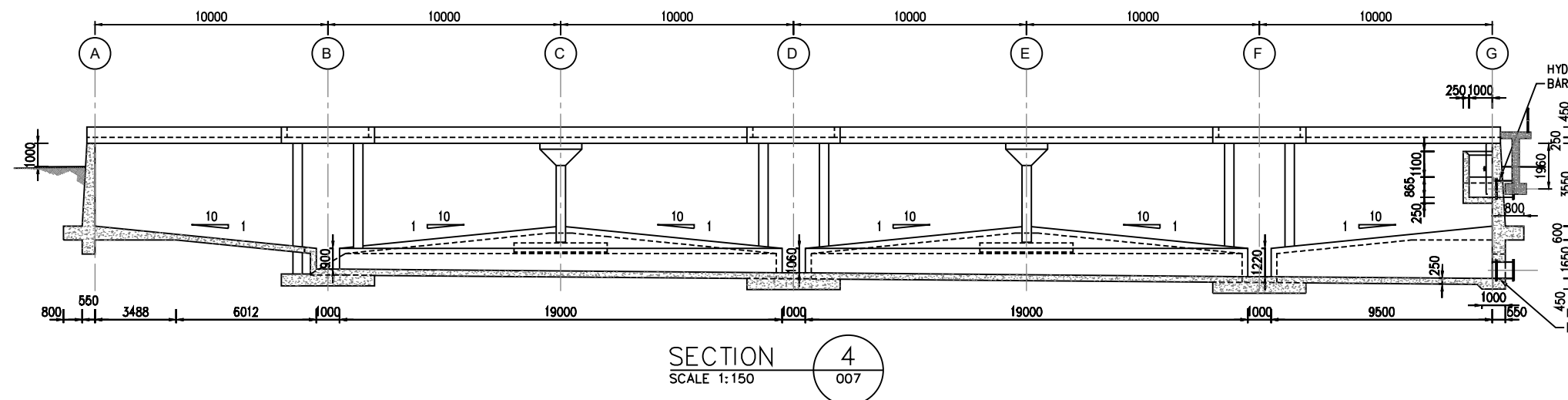
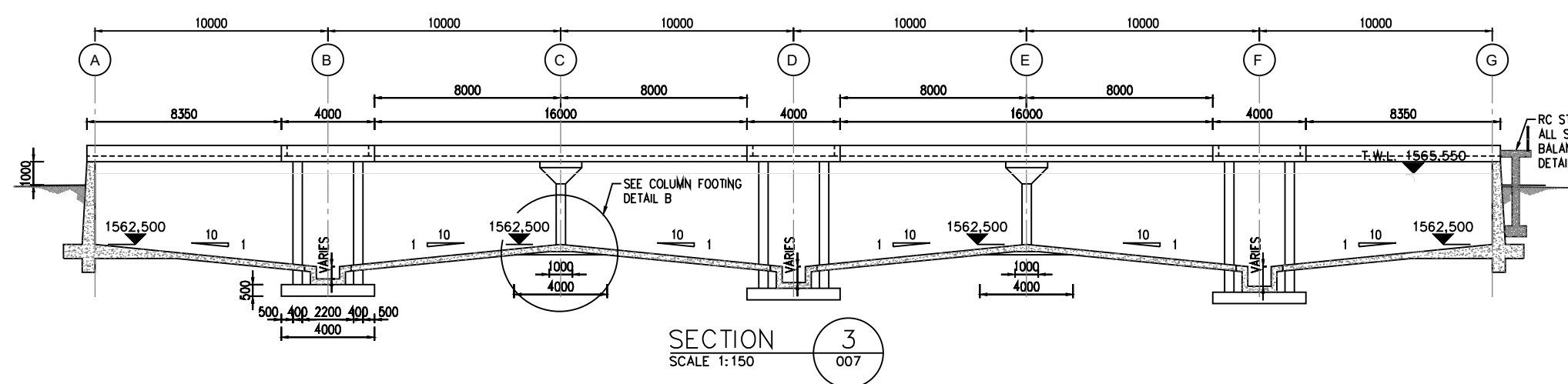
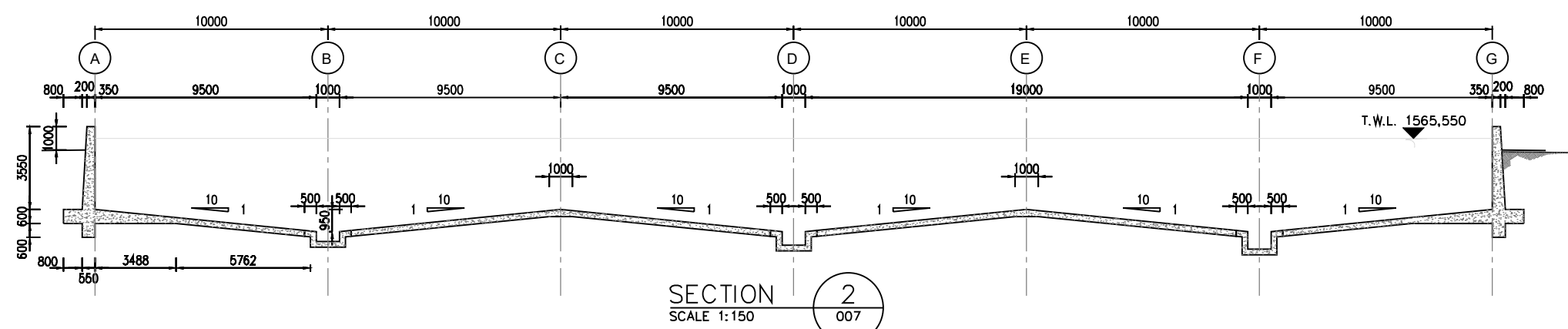
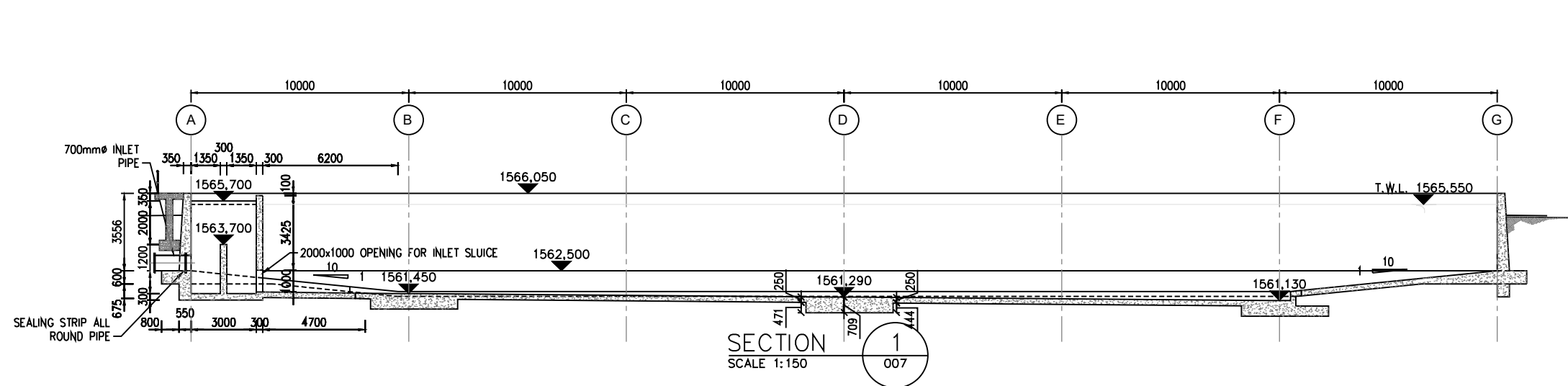
JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528



BUSHKOPPIES WASTEWATER TREATMENT WORKS
BALANCING TANK PLAN LAYOUT AND WALKWAY

SCALE	AMENDMENTS					
	REV	DESCRIPTION	DATE	BY	APV	
N.T.S	A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M	

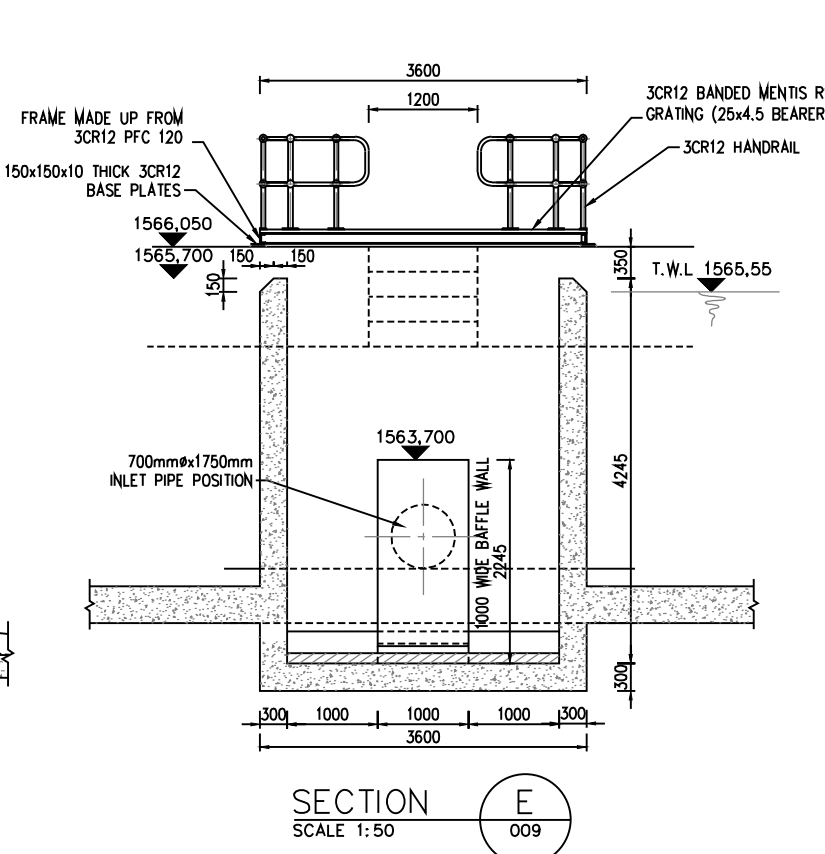
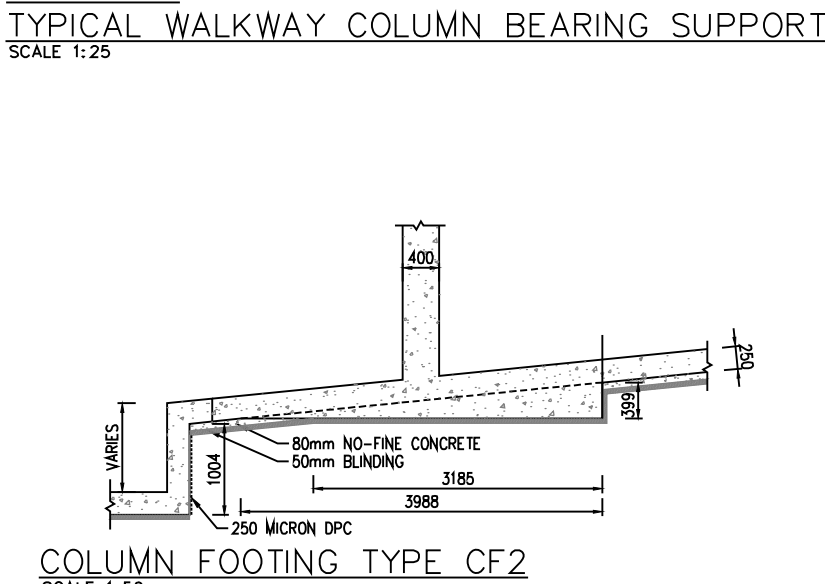
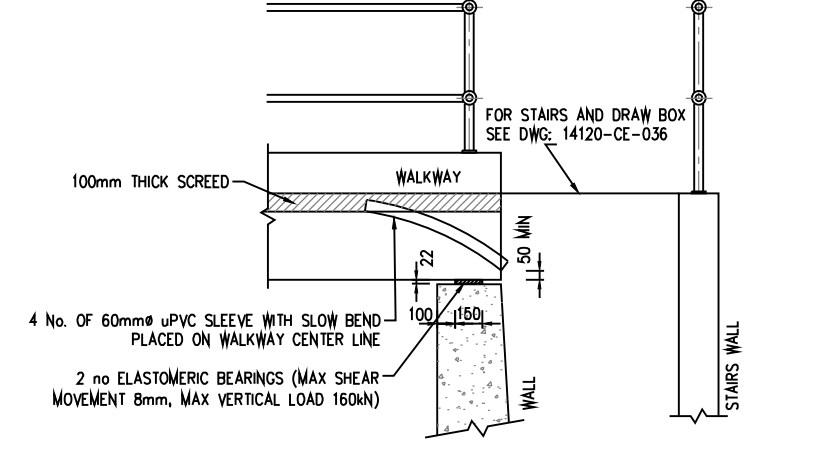
DRAWING No:	JW13504-CE-008-010				
BW0602	CIV	-	A	REV.	
PROJECT No:	A1	SHEET	1	OF	1
ORIGINAL PAGE SIZE					
FILE No.					



(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

- NOTES:
- GENERAL:
- DRAWING TO BE READ IN CONJUNCTION WITH MECHANICAL AND ELECTRICAL DRAWING.
 - CONCRETE MIX TO BE APPROVED BY ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONCRETE MIX TO COMPLY WITH SABS07 SECTIONS.
 - FOUNDATION EXCAVATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO PLACING BLINDING.
 - CORROSION PROTECTION TO FOLLOW ASSOCIATE'S SPECIFICATION.
- CONCRETE:
- CONCRETE: CLASS 35/19 15MPa (28 DAYS) NO-FINES CLASS W19 STRIP FOOTINGS MEMBERS SHALL BE ROUGH (SABS2000 5.2).
 - ALL EXPOSED CONCRETE EDGES TO HAVE A 25x25 CHAMFER.
 - DIMENSIONS TO BE CONFIRMED ON SITE.
 - ALL CONCRETE WORK TO COMPLY WITH SABS 12000.
 - DURING METHOD STATEMENT TO BE APPROVED BY ENGINEER.
 - ONLY STEEL SHUTTER TO BE USED.
- WATERSTOP:
- WATERSTOP TO BE HELD FIRMLY IN POSITION AS INDICATED ON THE DRAWINGS, DURING CONSTRUCTION.
 - SEEPAGE OF CONCRETE THROUGH SHUTTERS AT WATERSTOP POSITIONS TO BE PREVENTED.
 - CONCRETE AROUND WATERSTOP TO BE PROPERLY VIBRATED AND CONTRACTOR TO ENSURE THAT NO PROCKETS ARE FORMED BELOW THE WATERSTOP.
 - ONLY WIRE-JOINTS AND BUT-JOINTS MAY BE MANUFACTURED ON SITE. ALL OTHER JOINTS TO BE FACTORY MANUFACTURED.
 - SITE JOINTING TO BE DONE BY HEAT WELDING, ACCORDING TO SUPPLIERS SPECIFICATIONS.
- CONSTRUCTION JOINTS:
- NO VERTICAL CONSTRUCTION JOINTS WILL BE PERMITTED IN WALLS.
 - POSITION OF HORIZONTAL CONSTRUCTION JOINTS AND CONSTRUCTION JOINTS IN FLOORS TO BE APPROVED BY ENGINEER.
 - CONSTRUCTION JOINTS IN FLOOR TO BE FORMED BY EXPOSING SAW AGGREGATES IN THE EXISTING SLAB THROUGH CHIPPING OR GREEN OUT (3 HOURS AFTER PLACING) PRIOR TO PLACING NEW CONCRETE. THE EXISTING CONCRETE MUST BE CLEANED AND THOROUGHLY WETTED.
- LIGHTNING PROTECTION:
- TO BE DETAILED BY ELECTRICAL CONTRACTOR.



CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:
	DRAWN	K. KOLBERG	Date:
	CHECKED	S. MANGANYI	Date:
	APPROVED BY:	V. KRISHNADUTT	Date:
		SIGNATURE:	ECSA REG. No:



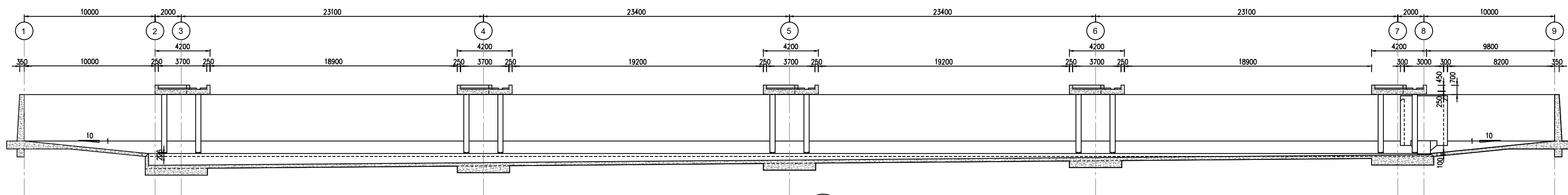
JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528



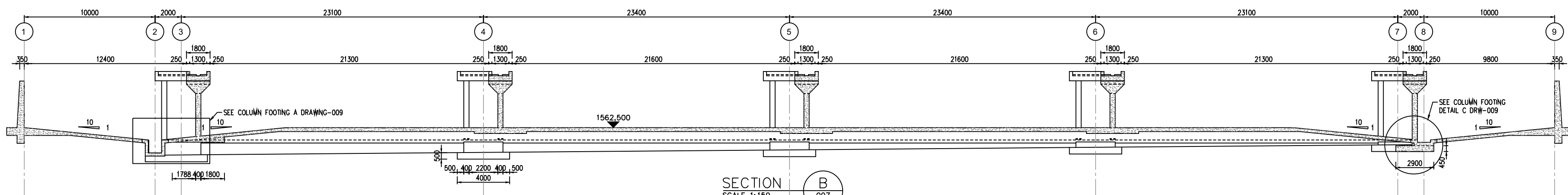
BUSHKOPPIES WASTEWATER TREATMENT WORKS
BALANCING TANK CONCRETE SECTION SHEET 1 OF 2

SCALE	AMENDMENTS				
REV	DESCRIPTION	DATE	BY	APV	
A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M	
N.T.S					

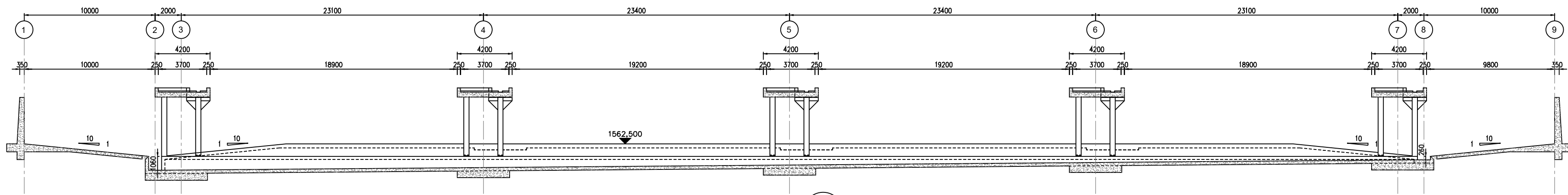
DRAWING No:	JW13504-CE-009-010				
BW0602	CIV	A	PROJECT No:		
A1	SHEET	1	OF	1	REV.
ORIGINAL PAGE SIZE					
FILE No:					



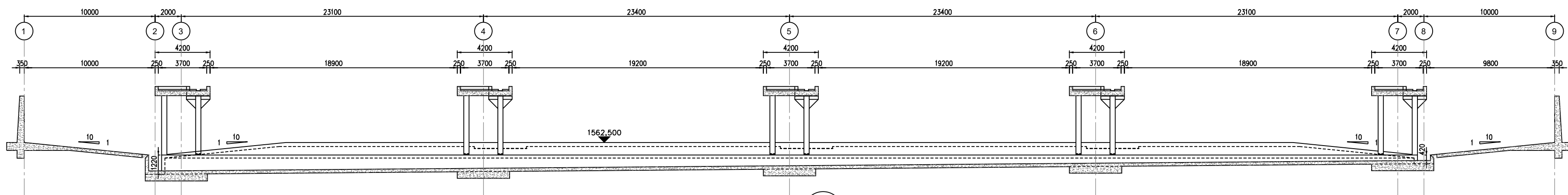
SECTION A
SCALE 1:150



SECTION B
SCALE 1:150



SECTION C
SCALE 1:150



SECTION D
SCALE 1:150

- NOTES:
- GENERAL:
- DRAWING TO BE READ IN CONJUNCTION WITH MECHANICAL AND ELECTRICAL DRAWINGS.
 - CONCRETE MIX TO BE APPROVED BY ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONCRETE MIX TO COMPLY WITH SABS007 SECTIONS.
 - FOUNDATION EXCAVATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO PLACING BLINDING.
 - CORROSION PROTECTION TO FOLLOW ASSOCIATE'S SPECIFICATION.
- CONCRETE:
- CONCRETE:
 - STRUCTURAL CONCRETE CLASS 35/19
 - BLINDING AND SCREED CLASS 20/19
 - NO-FINES CLASS M7.5
 - STRIP FOOTINGS CLASS 20/19
 - ALL VISIBLE CONCRETE FACE FINISHES SHALL BE SMOOTH AND CONCEALED MEMBERS SHALL BE ROUGH (SABS1200C 5.2).
 - ALL EXPOSED CONCRETE EDGES TO HAVE A 25x25 CHAMFER.
 - DIMENSIONS TO BE CONFIRMED ON SITE.
 - CONCRETE WORK TO COMPLY WITH SABS 1200C.
 - CURING METHOD STATEMENT TO BE APPROVED BY ENGINEER.
 - ONLY STEEL SHUTTER TO BE USED.
- WATERSTOP:
- WATERSTOP TO BE HELD FIRMLY IN POSITION AS INDICATED ON THE DRAWINGS.
 - DURING CONSTRUCTION, SEEPAGE OF CONCRETE THROUGH SHUTTERS AT WATERSTOP POSITIONS TO BE PREVENTED.
 - CONCRETE AROUND WATERSTOP TO BE PROPERLY VIBRATED AND CONTRACTOR TO ENSURE THAT NO POCKETS ARE FORMED BELOW THE WATERSTOP.
 - ONLY WIRE JOINTS AND BUTT JOINTS MAY BE MANUFACTURED ON SITE. ALL OTHER JOINTS TO BE FACTORY MANUFACTURED.
 - SITE JOINTING TO BE DONE BY HEAT WELDING, ACCORDING TO SUPPLIERS SPECIFICATIONS.
- CONSTRUCTION JOINTS:
- NO VERTICAL CONSTRUCTION JOINTS WILL BE PERMITTED IN WALLS.
 - POSITION OF HORIZONTAL CONSTRUCTION JOINTS AND CONSTRUCTION JOINTS IN FLOORS TO BE APPROVED BY ENGINEER.
 - CONSTRUCTION JOINTS IN FLOOR TO BE FORMED BY EXPOSING 3MM AGGREGATES IN THE EXISTING SLAB THROUGH CHIPPING OR GREEN CUT (15 HOURS AFTER PLACING), PRIOR TO PLACING NEW CONCRETE, THE EXISTING CONCRETE MUST BE CLEANED AND THOROUGHLY WETTED.
- LIGHTNING PROTECTION:
- TO BE DETAIL BY ELECTRICAL CONTRACTOR.

(AS BUILT DRAWING)

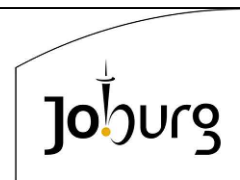
ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:
	DRAWN	K. KOLBERG	Date:
	CHECKED	S.MANGANYI	Date:
	APPROVED BY:	V. KRISHNADUTT	Date:
		SIGNATURE:	ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:

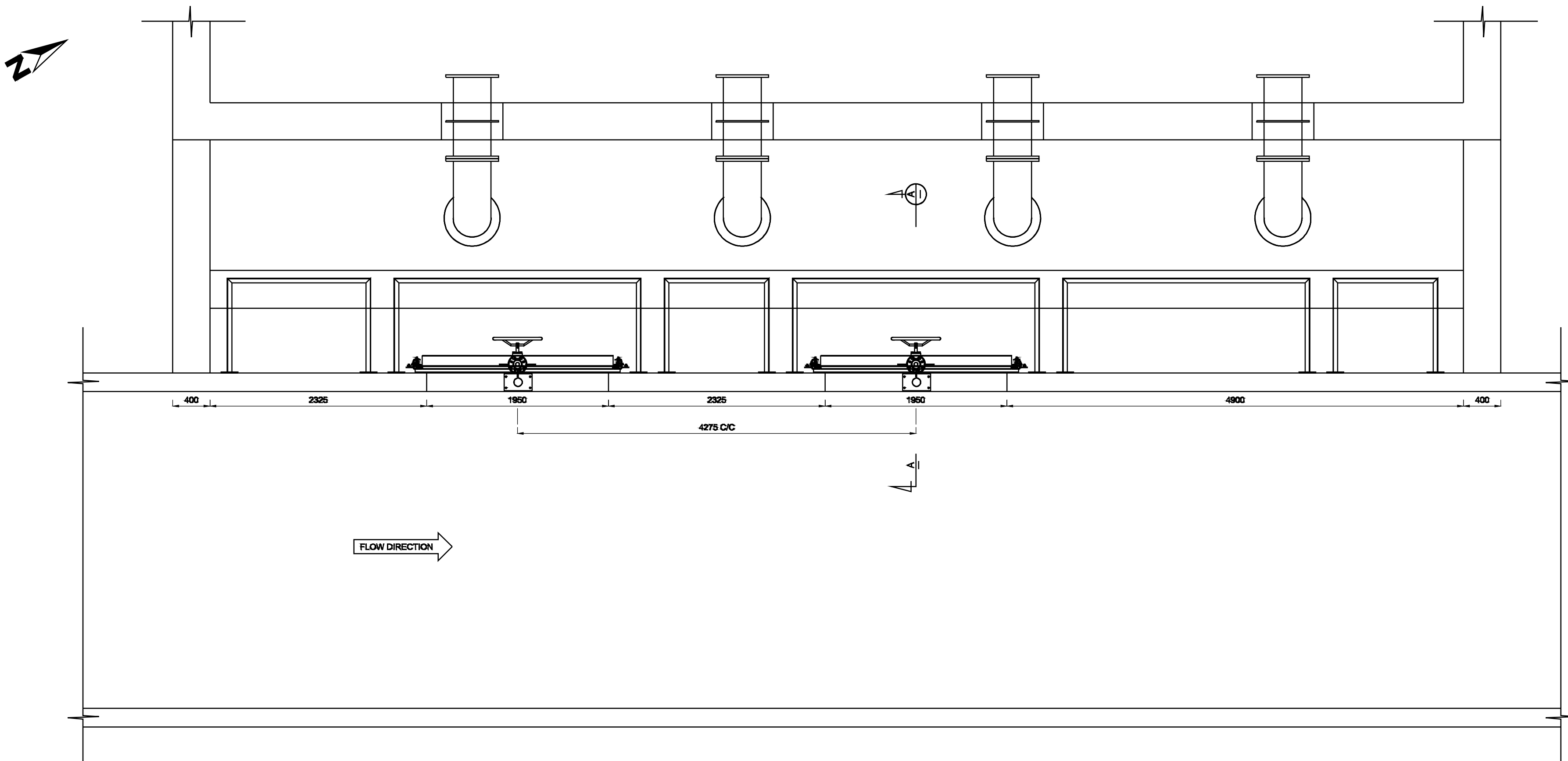


a world class African city

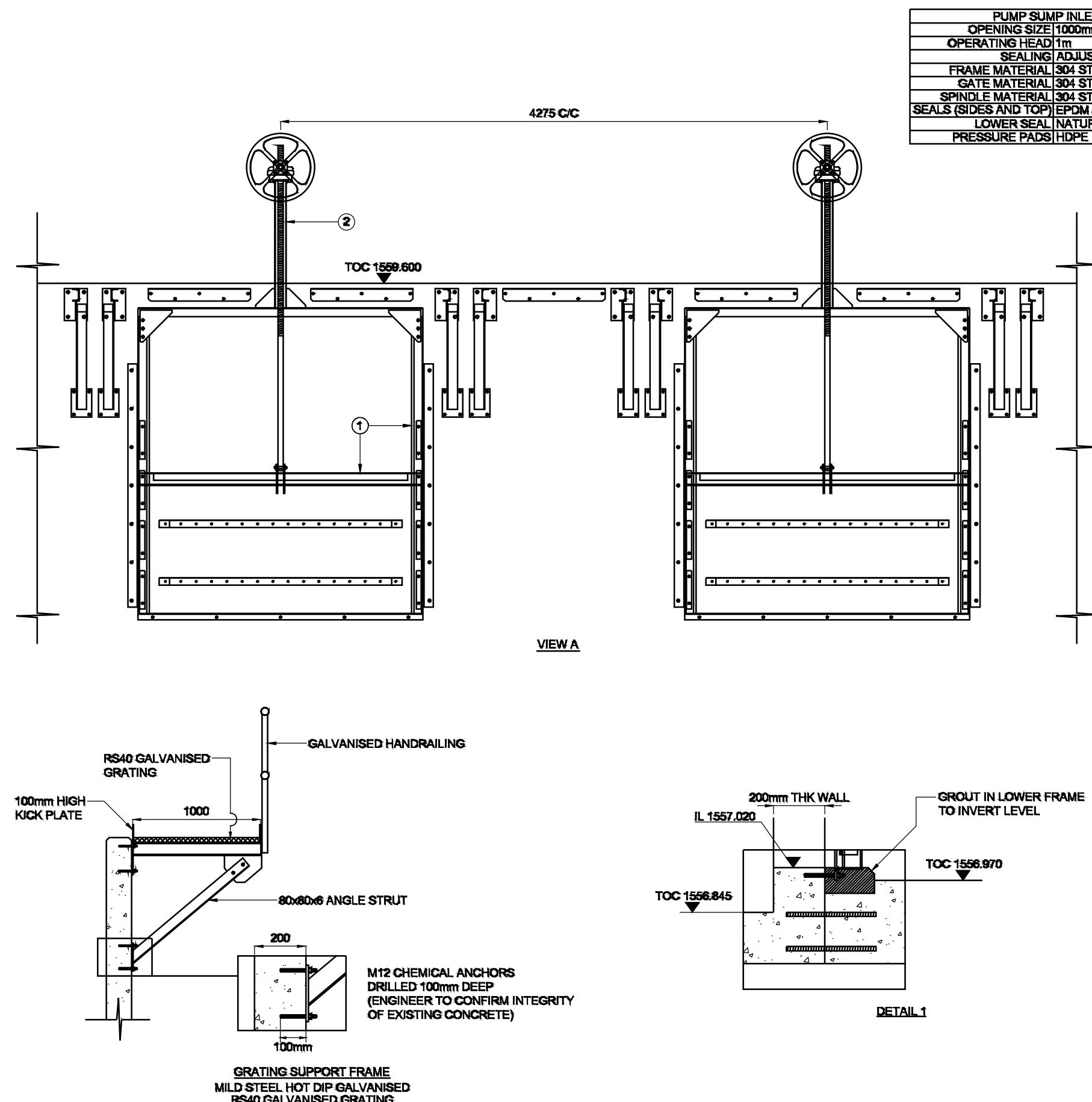
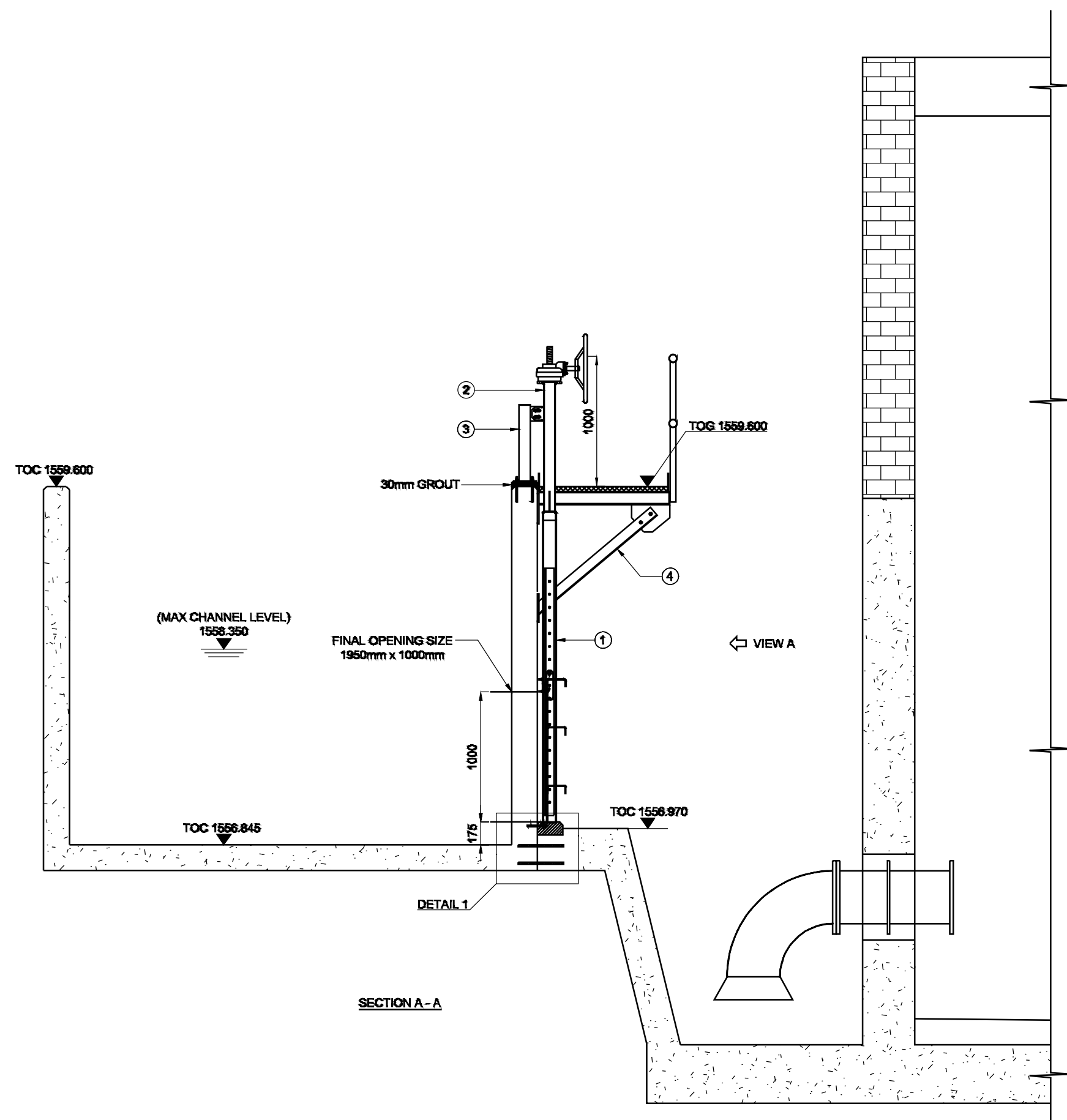
Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
BALANCING TANK CONCRETE SECTION SHEET 1 OF 2

SCALE	AMENDMENTS					DRAWING No: JW13504-CE-010-010			
	REV	DESCRIPTION	DATE	BY	APV				
N.T.S	A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M				
						PROJECT No: BW0602			
						CIV - A			
						PROJECT No: A1			
						SHEET 1 OF 1			
						ORIGINAL PAGE SIZE			
						FILE No:			



ITEM	DESCRIPTION	QUANTITY	MATERIAL	CORROSION PROTECTION
1	PENSTOCK FRAME AND GATE	2 OFF	304 STAINLESS STEEL	PICKLE AND PASSIVATE
2	HANDWHEEL PEDESTAL	2 OFF	304 STAINLESS STEEL	PICKLE AND PASSIVATE
3	PEDESTAL SUPPORT POST	2 OFF	304 STAINLESS STEEL	PICKLE AND PASSIVATE
4	WALKWAY PLATFORM FRAME	SET	S355JR MILD STEEL	HOT DIP GALVANISE



PUMP SUMP INLET PENSTOCK
OPENING SIZE 1000mm x 2000mm
OPERATING HEAD 1m
SEALING ADJUSTABLE OFF-SEAT
FRAME MATERIAL 304 STAINLESS STEEL
GATE MATERIAL 304 STAINLESS STEEL
SPINDLE MATERIAL 304 STAINLESS STEEL, Ø40mm
SEALS (GDS AND TOP/EPDM) J SEAL
LOWER SEAL NATURAL RUBBER GPM6
PRESSURE PADS HDPE

(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

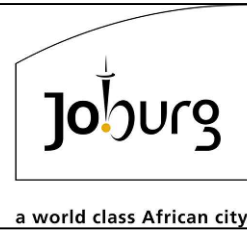
CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED		Date:
DRAWN	K. KOLBERG	Date:
CHECKED	S. MANGANYI	Date:
APPROVED BY:	V. KRISHNADUTT	Date:
SIGNATURE:		ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



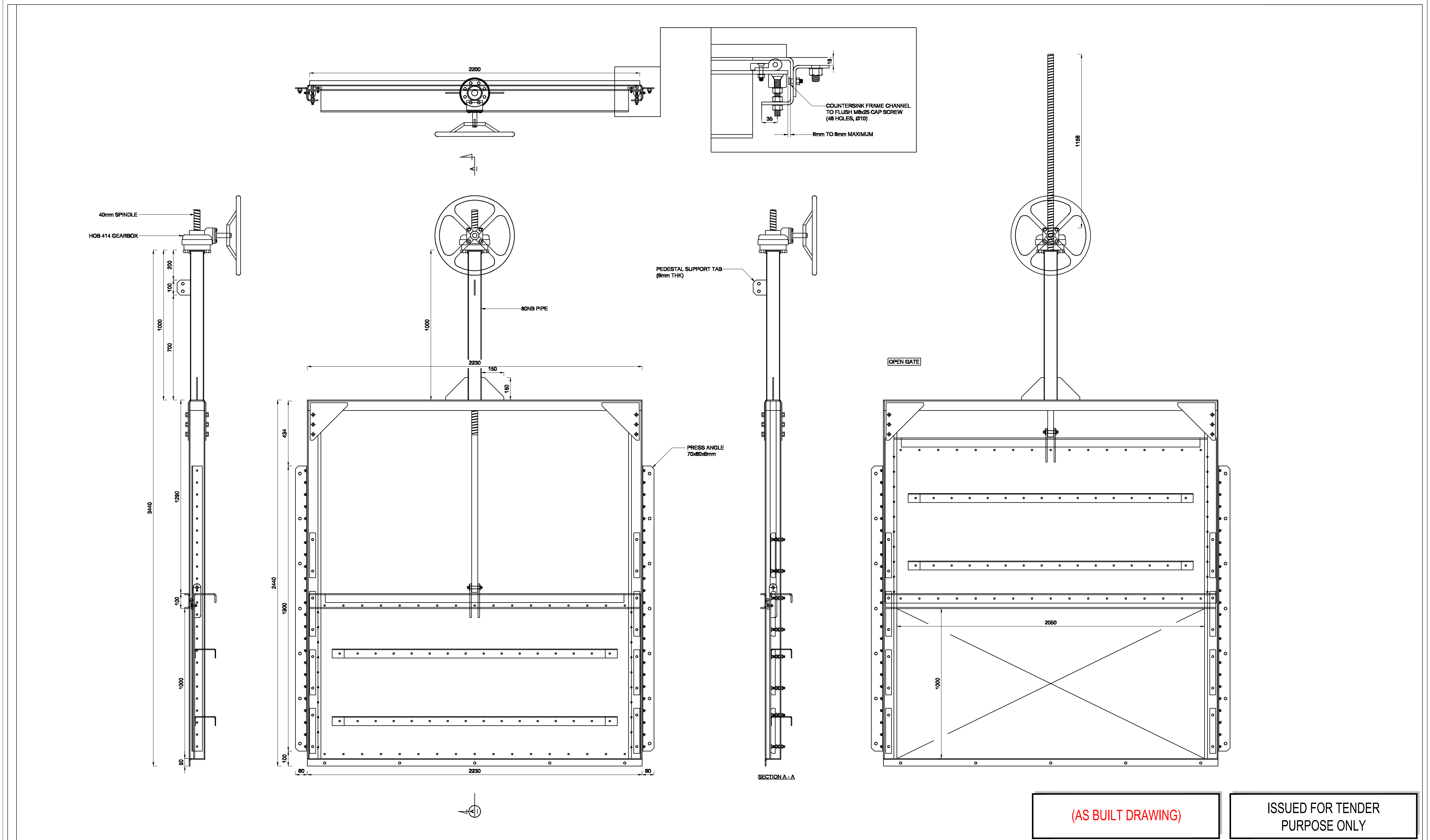
Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
PUMP STATION PENSTOCK

SCALE	AMENDMENTS
REV	DESCRIPTION
A	ISSUED FOR INFORMATION

DRAWING No: JW13504-D-153-01

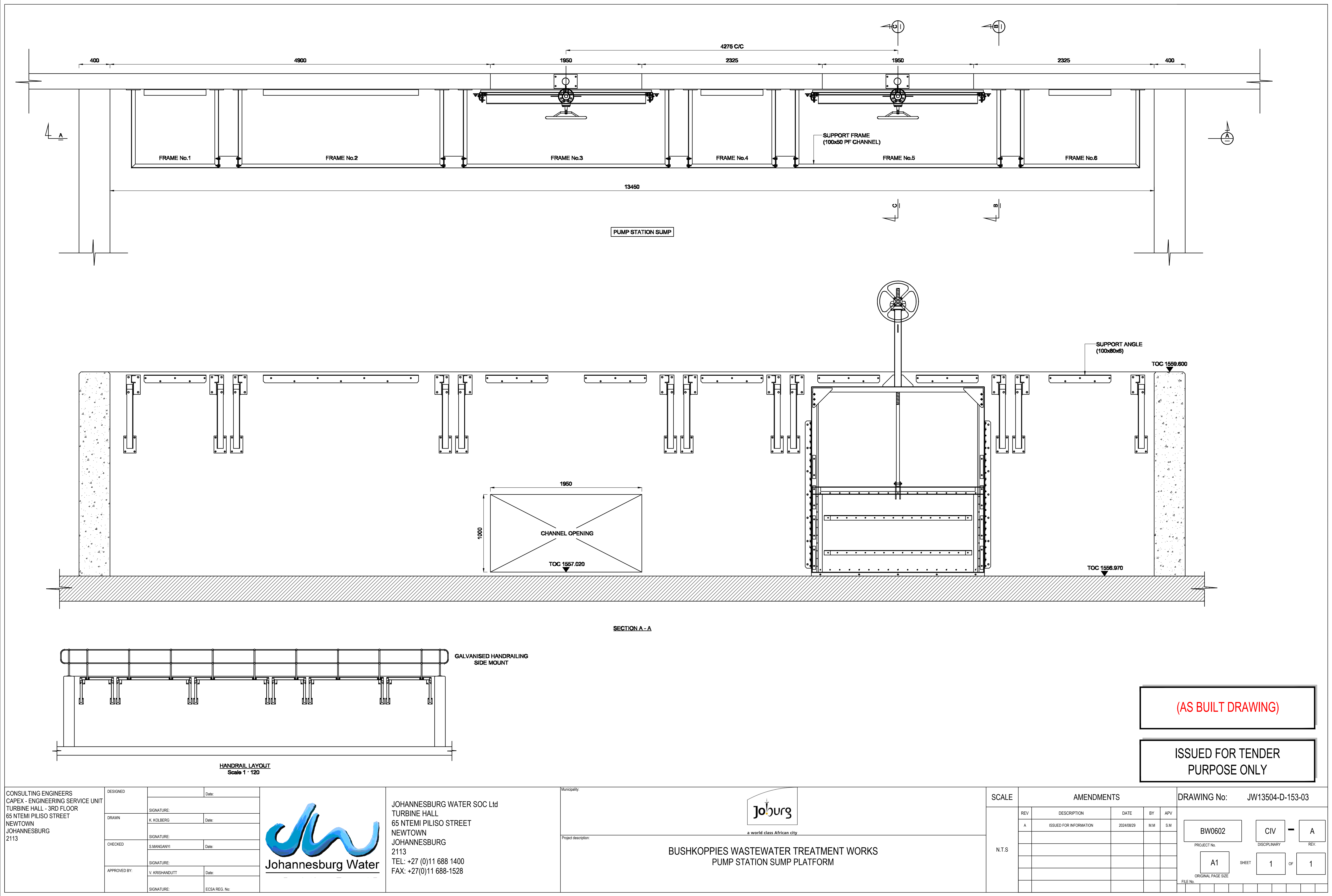
BW0602	CIV	A
PROJECT No:	DISCIPLINARY	REV.
A1	SHEET	1 OF 1
ORIGINAL PAGE SIZE		
FILE No:		



(AS BUILT DRAWING)

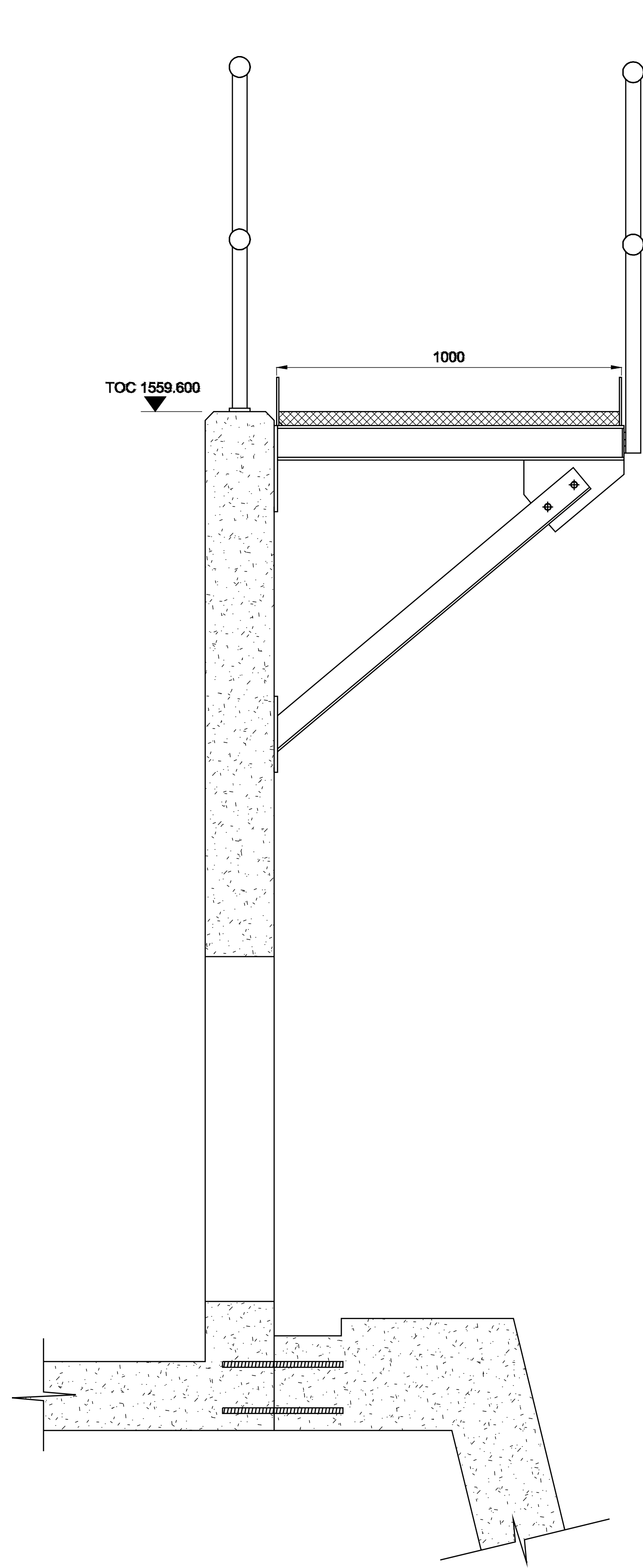
ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:	 Johannesburg Water	JOHANNESBURG WATER SOC Ltd TURBINE HALL 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113 TEL: +27 (0)11 688 1400 FAX: +27(0)11 688-1528	Municipality:  a world class African city	Project description: BUSHKOPPIES WASTEWATER TREATMENT WORKS PENSTOCK DETAIL	SCALE N.T.S	AMENDMENTS					DRAWING No: JW13504-D-153-02																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	DRAWN	K. KOLBERG	Date:						REV	DESCRIPTION	DATE	BY	APV	BW0602 PROJECT No: A1 ORIGINAL PAGE SIZE FILE No:	CIV DISCIPLINARY SHEET	A REV. 1 OF 1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	CHECKED	S. MANGANYI	Date:						A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	APPROVED BY:	V. KRISHANDUTT	Date:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
		SIGNATURE:	ECOSA REG. No:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

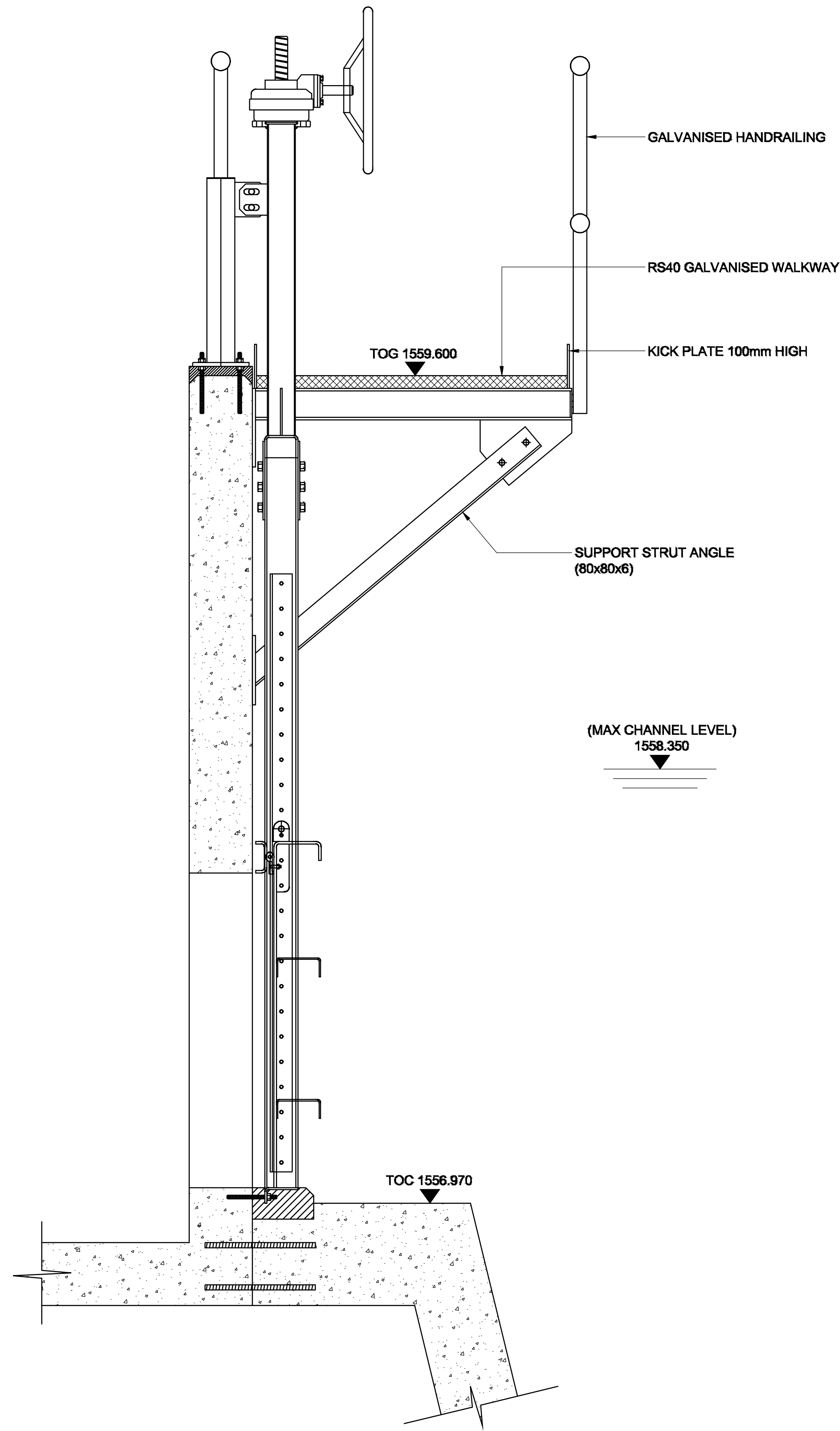


(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY



SECTION B - B



SECTION C - C

(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED		Date:
DRAWN	K. KOLBERG	Date:
CHECKED	S.MANGANYI	Date:
APPROVED BY:	V. KRISHNADUTT	Date:
	SIGNATURE:	ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



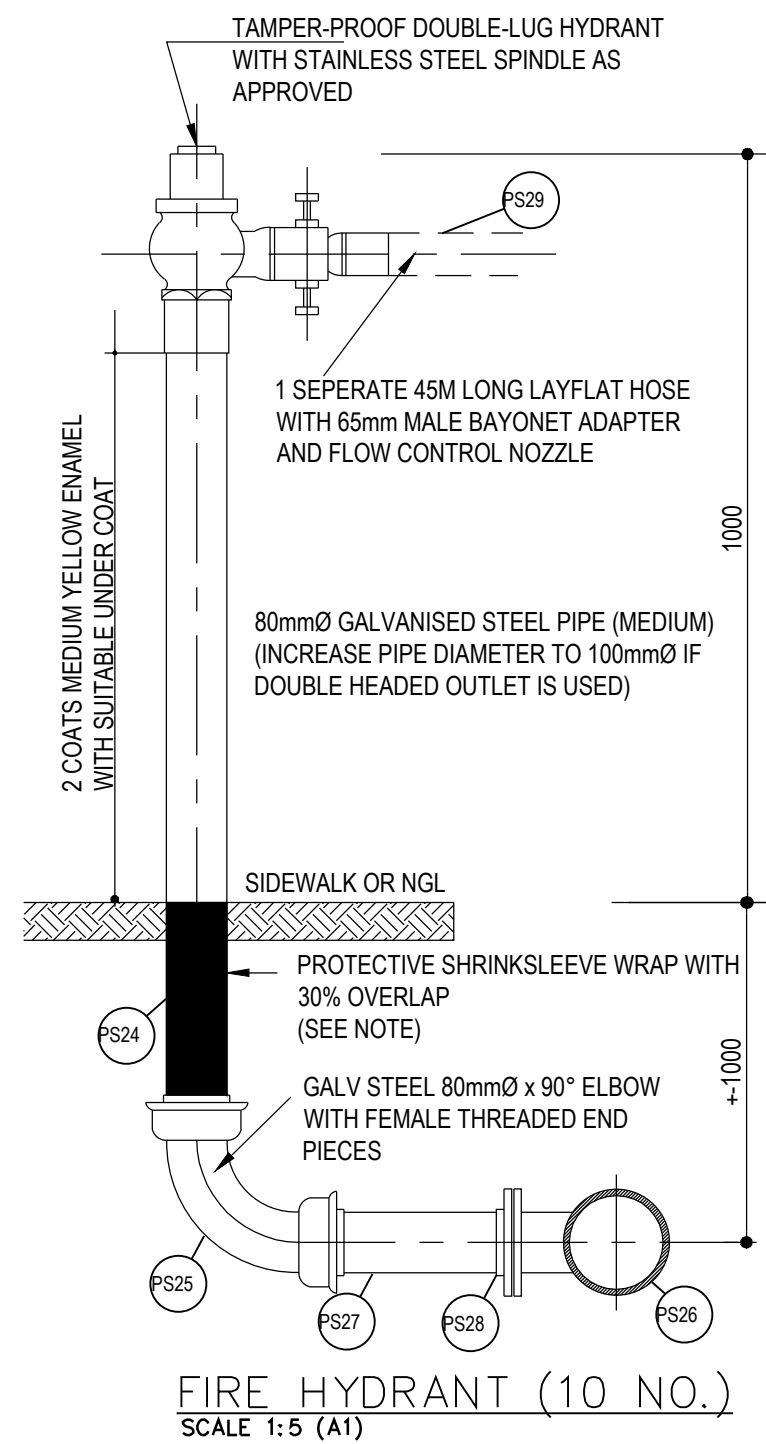
Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
PUMP STATION SUMP PLATFORM SECTIONS

SCALE	AMENDMENTS				
N.T.S	REV	DESCRIPTION	DATE	BY	APV
	A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M

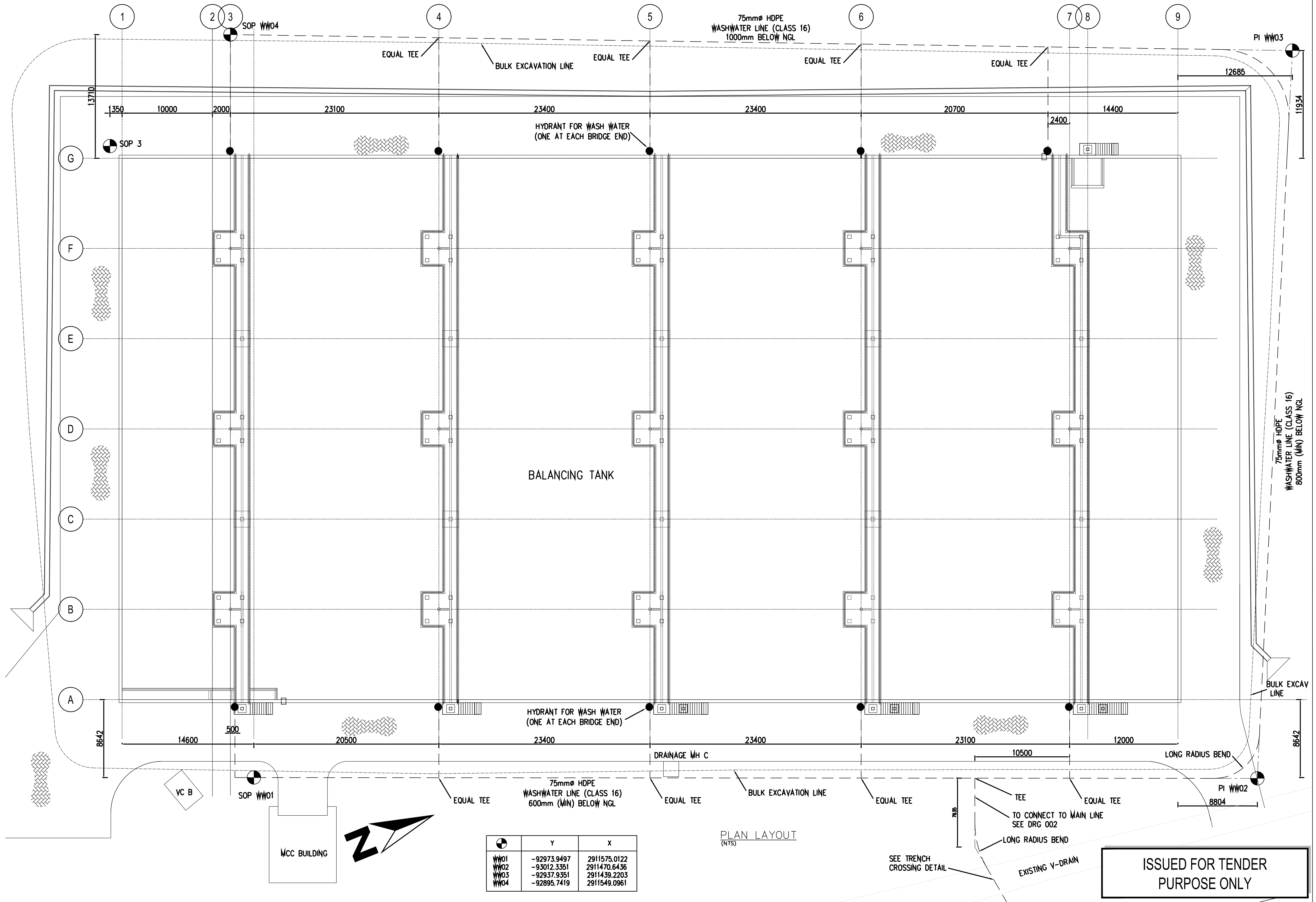
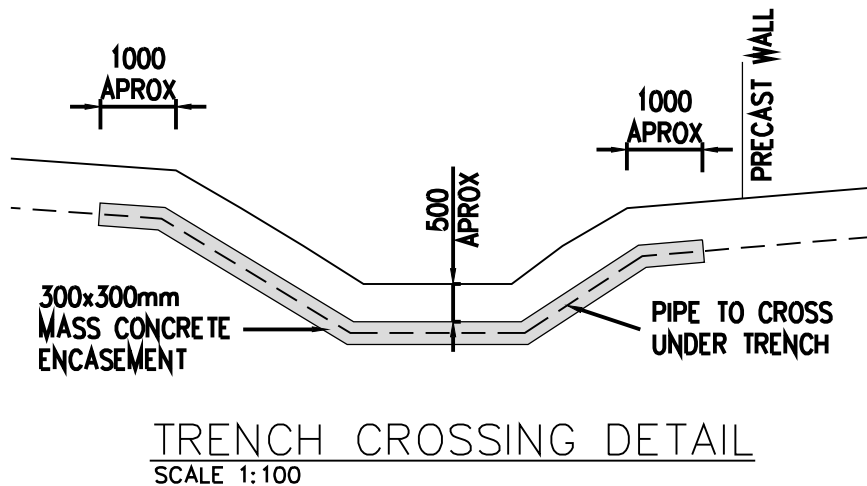
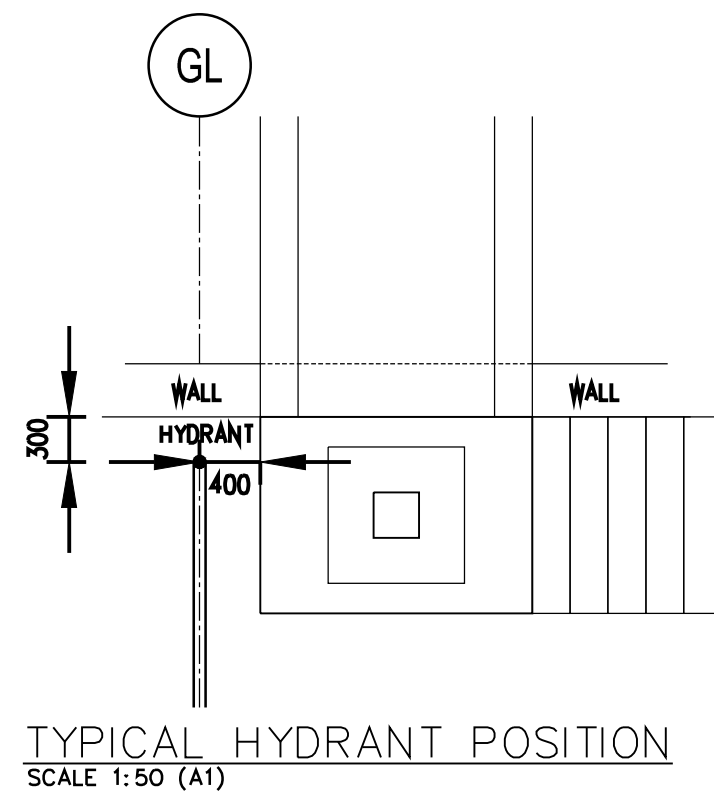
DRAWING No: JW13504-D-153-04

BW0602	CIV	A
PROJECT No:	DISCIPLINARY	REV.
A1	SHEET 1 OF 1	
ORIGINAL PAGE SIZE		
FILE No:		

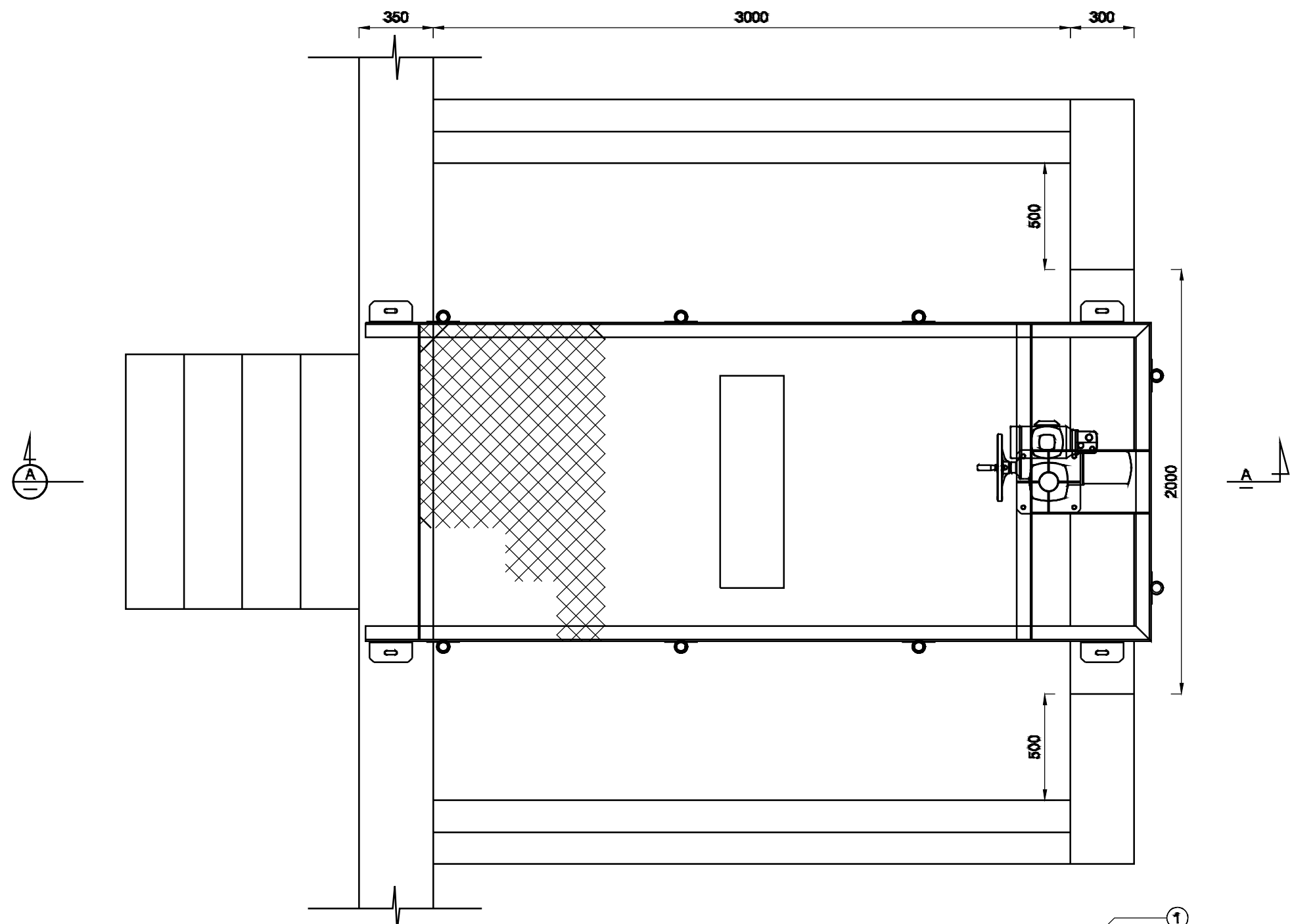


NOTES :

1. STEEL PIPES AND FITTINGS BELOW GROUND SHALL BE WRAPPED WITH A SHRINK WRAP SYSTEM SIMILAR TO BUTT WELD PROTECTION FOR DN 700 MILD STEEL PIPES, 30% OVERLAP.

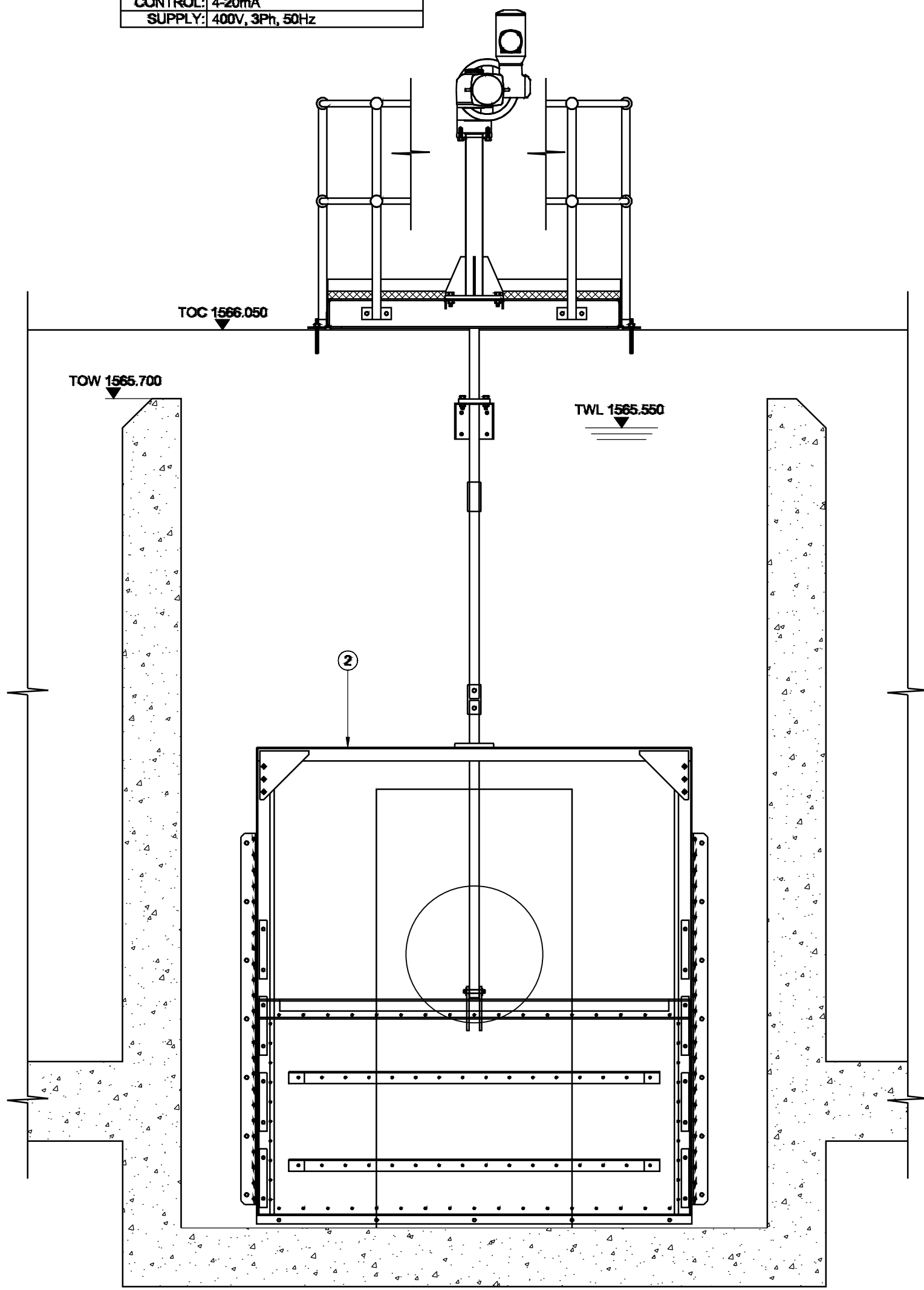
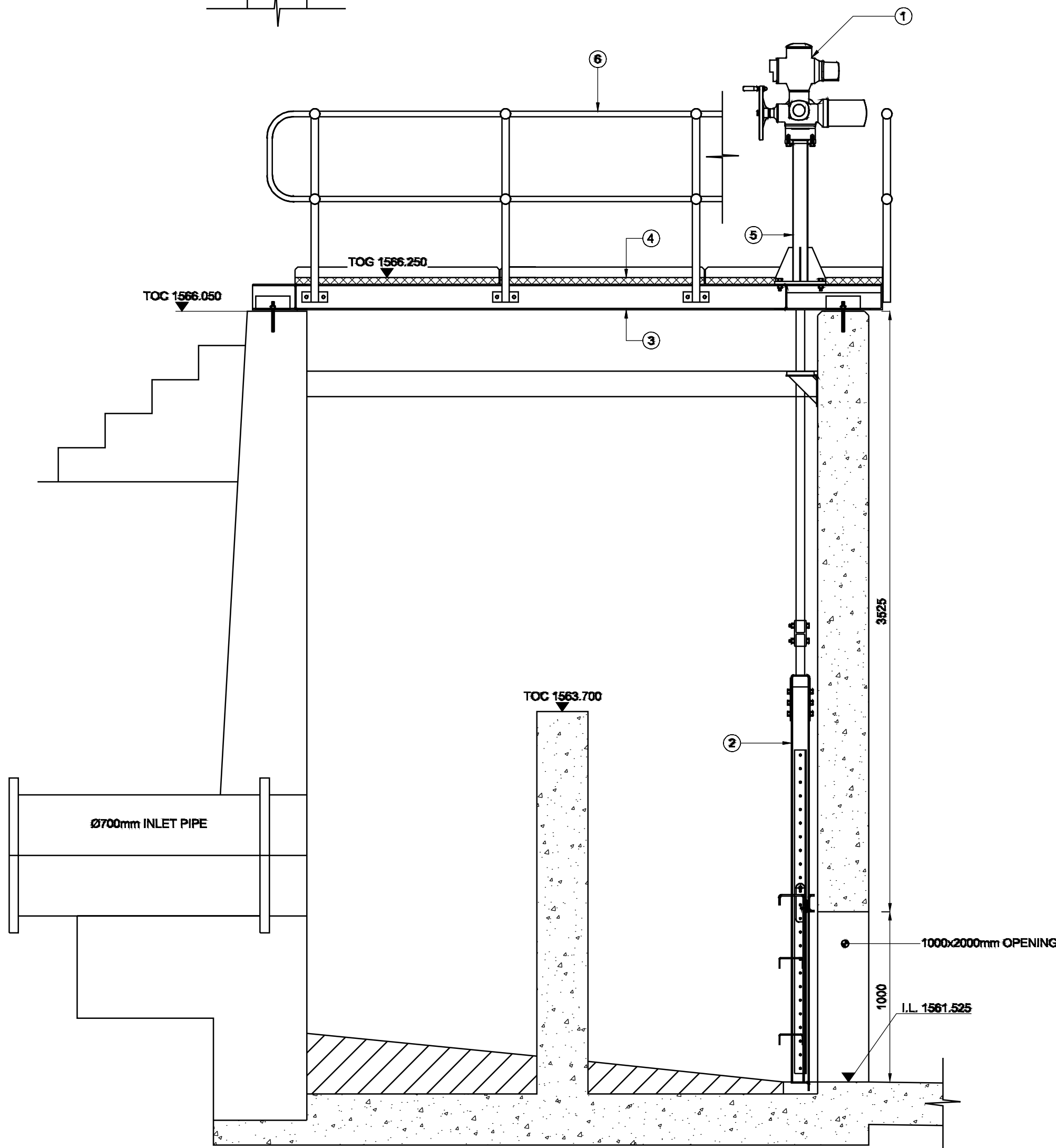


CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:	 Johannesburg Water	JOHANNESBURG WATER SOC Ltd TURBINE HALL 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113 TEL: +27 (0)11 688 1400 FAX: +27(0)11 688-1528	Municipality:  a world class African city	Project description: BUSHKOPPIES WASTEWATER TREATMENT WORKS WASHWATER SYSTEM	SCALE N.T.S	AMENDMENTS					DRAWING No: JW13504-S-026-00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	DRAWN	K. KOLBERG	Date:						REV	DESCRIPTION	DATE	BY	APV	BW0602 CIV A PROJECT No: DISCIPLINARY REV: A1 SHEET 1 OF 1 ORIGINAL PAGE SIZE FILE No:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
									A	ISSUED FOR TENDER	2024/08/29	M.M	S.M																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	CHECKED	S.MANGANYI	Date:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	APPROVED BY:	V. KRISHNADUTT	Date:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	SIGNATURE:		ECSA REG. No:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		



ITEM	DESCRIPTION	MATERIAL	QUANTITY
1	AUMA ACTUATOR MODEL SAR14.6	MANUFACTURERS STANDARD	1 OFF
2	PENSTOCK 1000x2000mm	304 STAINLESS STEEL	1 OFF
3	SUPPORT PLATFORM	3CR12	1 OFF
4	RS40 WALKWAY GRID WITH KICKPLATE	3CR12	1 OFF
5	ACTUATOR PEDESTAL	304 STAINLESS STEEL	1 OFF
6	HANDRAILING	304 STAINLESS STEEL	1 OFF

MODULATING ACTUATOR	
MAKE:	AUMA
MODEL:	SAR 14.6 F14A - 22 rpm
DUTY:	MODULATING 900 STARTS
MATIC:	AC 01.2 POSITIONER VERSION
FEEDBACK:	4-20mA
CONTROL:	4-20mA
SUPPLY:	400V, 3Ph, 50Hz



(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED		Date:
DRAWN	K. KOLBERG	Date:
CHECKED	S. MANGANYI	Date:
APPROVED BY:	V. KRISHNADUTT	Date:
		ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



a world class African city

Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
BALANCING TANK INLET PENSTOCK

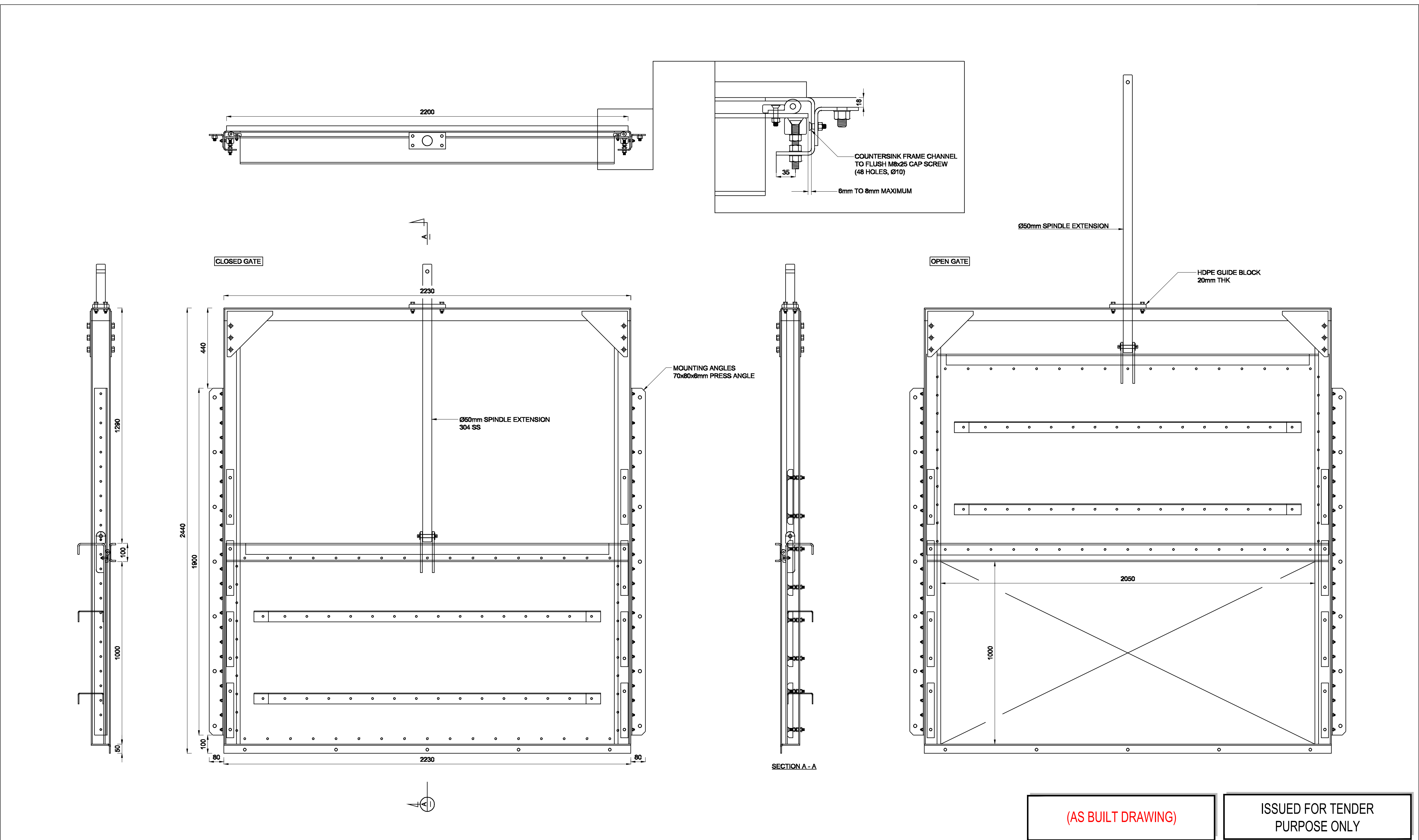
SCALE

AMENDMENTS

REV	DESCRIPTION	DATE	BY	APV
A	ISSUED FOR INFORMATION	2024/08/29	M.M	S.M

DRAWING No: JW13504-E-153-01

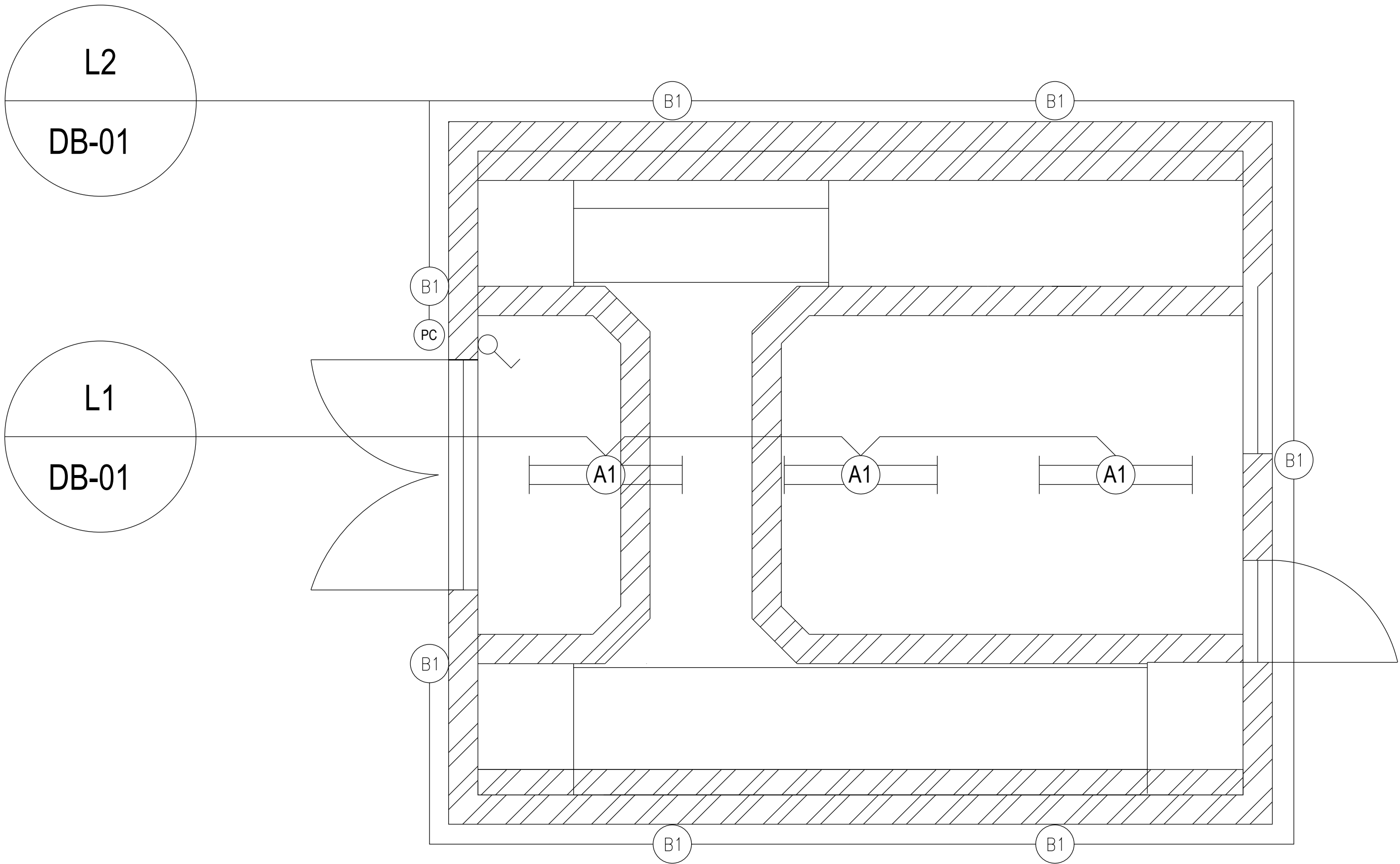
BW0602	CIV	A
PROJECT No:	DISCIPLINARY	REV.
A1	SHEET 1 OF 1	
ORIGINAL PAGE SIZE		
FILE No:		



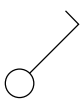
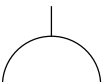
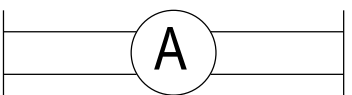
(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:	 Johannesburg Water	JOHANNESBURG WATER SOC Ltd TURBINE HALL 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113 TEL: +27 (0)11 688 1400 FAX: +27(0)11 688-1528	Municipality:  a world class African city	Project description: BUSHKOPPIES WASTEWATER TREATMENT WORKS BALANCING TANK INLET PENSTOCK DETAIL	SCALE N.T.S	AMENDMENTS					DRAWING No: JW13504-E-153-02	
	DRAWN	K. KOLBERG	Date:						REV	DESCRIPTION	DATE	BY	APV	BW0602 PROJECT No: CIV DISCIPLINARY A REV. A1 ORIGINAL PAGE SIZE SHEET 1 OF 1 FILE No. </	

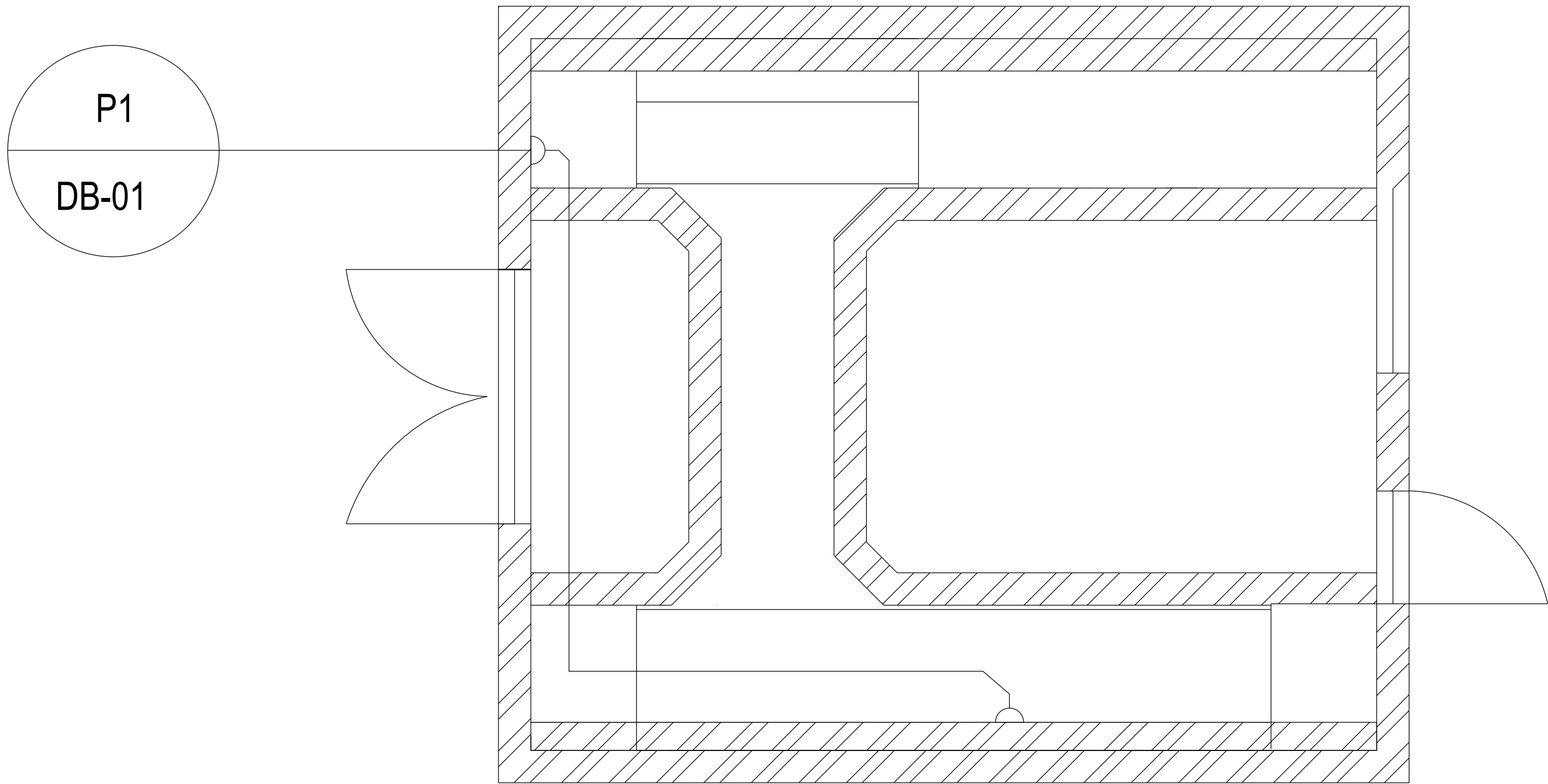


ELECTRICAL LEGEND

-  DISTRIBUTION BOARD
-  SINGLE LEVER 1 WAY LIGHT SWITCH
-  SINGLE SWITCH SOCKET OUTLET
-  2X18W BULKHEAD
-  PHOTO CELL
-  2 X 58W FLUORESCENT LUMINAIRE

MCC BUILDING LIGHTING LAYOUT

1:30

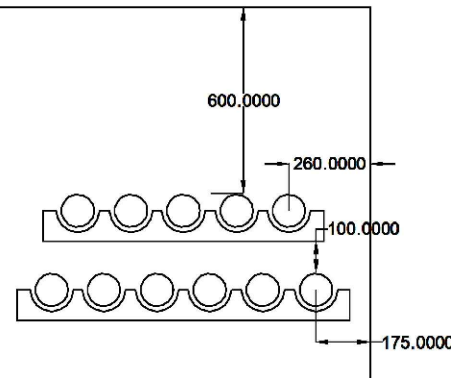
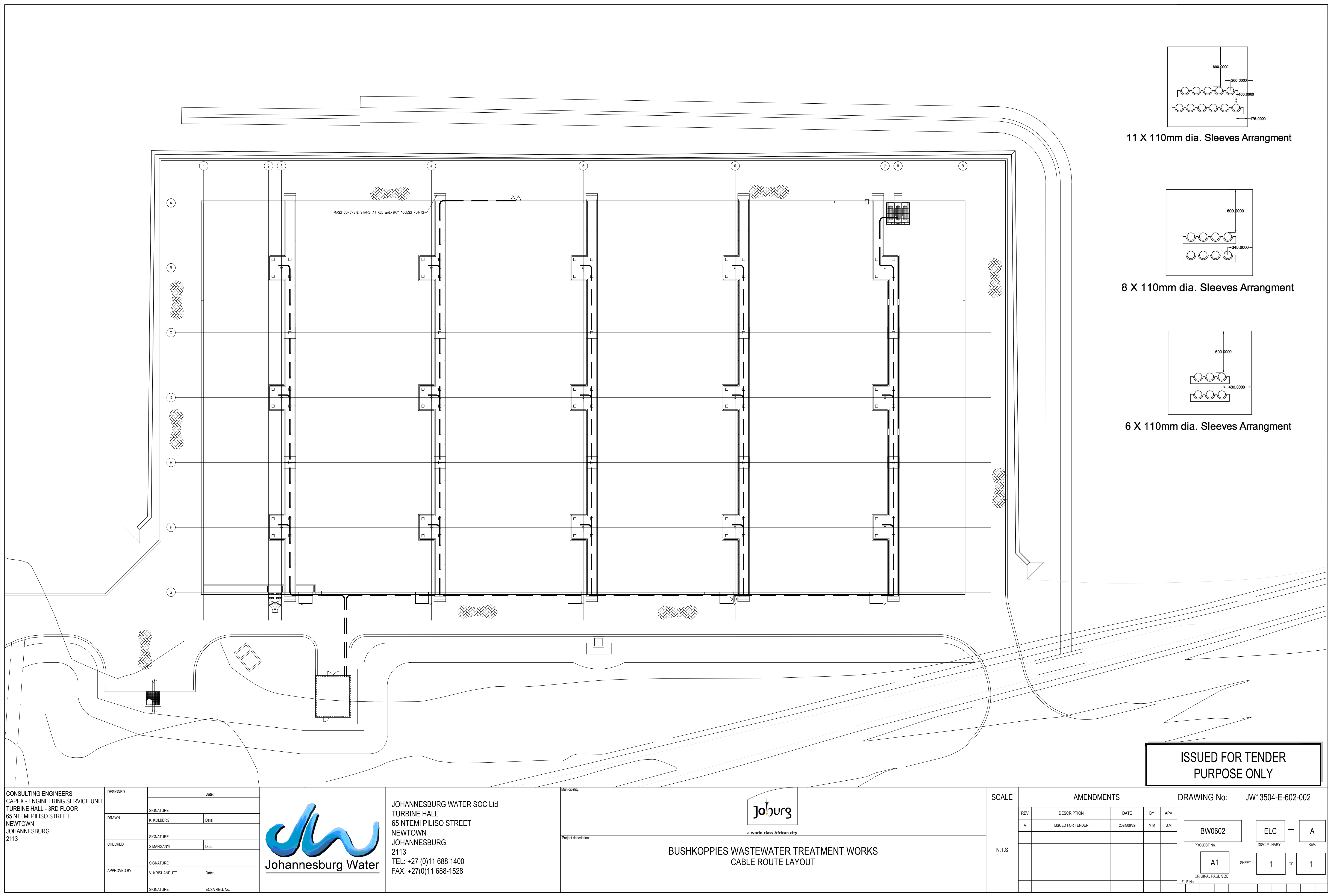


MCC BUILDING SMALL POWER LAYOUT

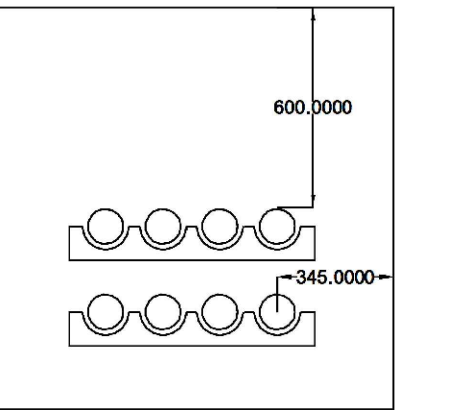
1:30

ISSUED FOR TENDER
PURPOSE ONLY

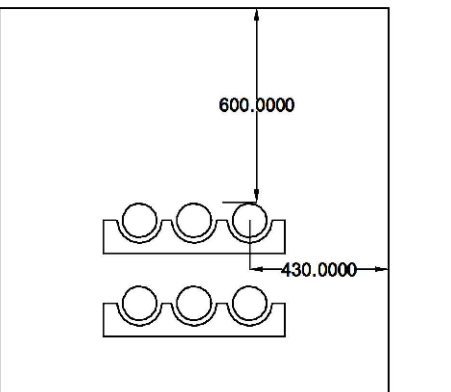
CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:	 Johannesburg Water	JOHANNESBURG WATER SOC Ltd TURBINE HALL 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113 TEL: +27 (0)11 688 1400 FAX: +27(0)11 688-1528	Municipality:  a world class African city	Project description: BUSHKOPPIES WASTEWATER TREATMENT WORKS BALANCING TANK MCC ROOM - LIGHTING AND SMALL POWER LAYOUT	SCALE N.T.S	AMENDMENTS					DRAWING No: JW13504-E-602-007																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	DRAWN	K. KOLBERG	Date:						REV	DESCRIPTION	DATE	BY	APV	BW0602 PROJECT No: A1 ORIGINAL PAGE SIZE FILE No:	CIV DISCIPLINARY SHEET 1	A REV. OF 1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	CHECKED	S.MANGANYI	Date:						A	ISSUED FOR TENDER	2024/08/29	M.M	S.M																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	APPROVED BY:	V. KRISHNADUTT	Date:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	SIGNATURE:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					



11 X 110mm dia. Sleeves Arrangement



8 X 110mm dia. Sleeves Arrangement



6 X 110mm dia. Sleeves Arrangement

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:
	DRAWN	K. KOLBERG	Date:
	CHECKED	S.MANGANYI	Date:
	APPROVED BY:	V. KRISHANDUTT	Date:
		SIGNATURE:	ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:


a world class African city

Project description:
**BUSHKOPPIES WASTEWATER TREATMENT WORKS
CABLE ROUTE LAYOUT**

SCALE	AMENDMENTS					
	REV	DESCRIPTION	DATE	BY	APV	
	A	ISSUED FOR TENDER	2024/08/29	M.M	S.M	
N.T.S						

DRAWING No: JW13504-E-602-002

BW0602

PROJECT No:

ELC

DISCIPLINARY

A

REV.

A1

SHEET

1

OF

1

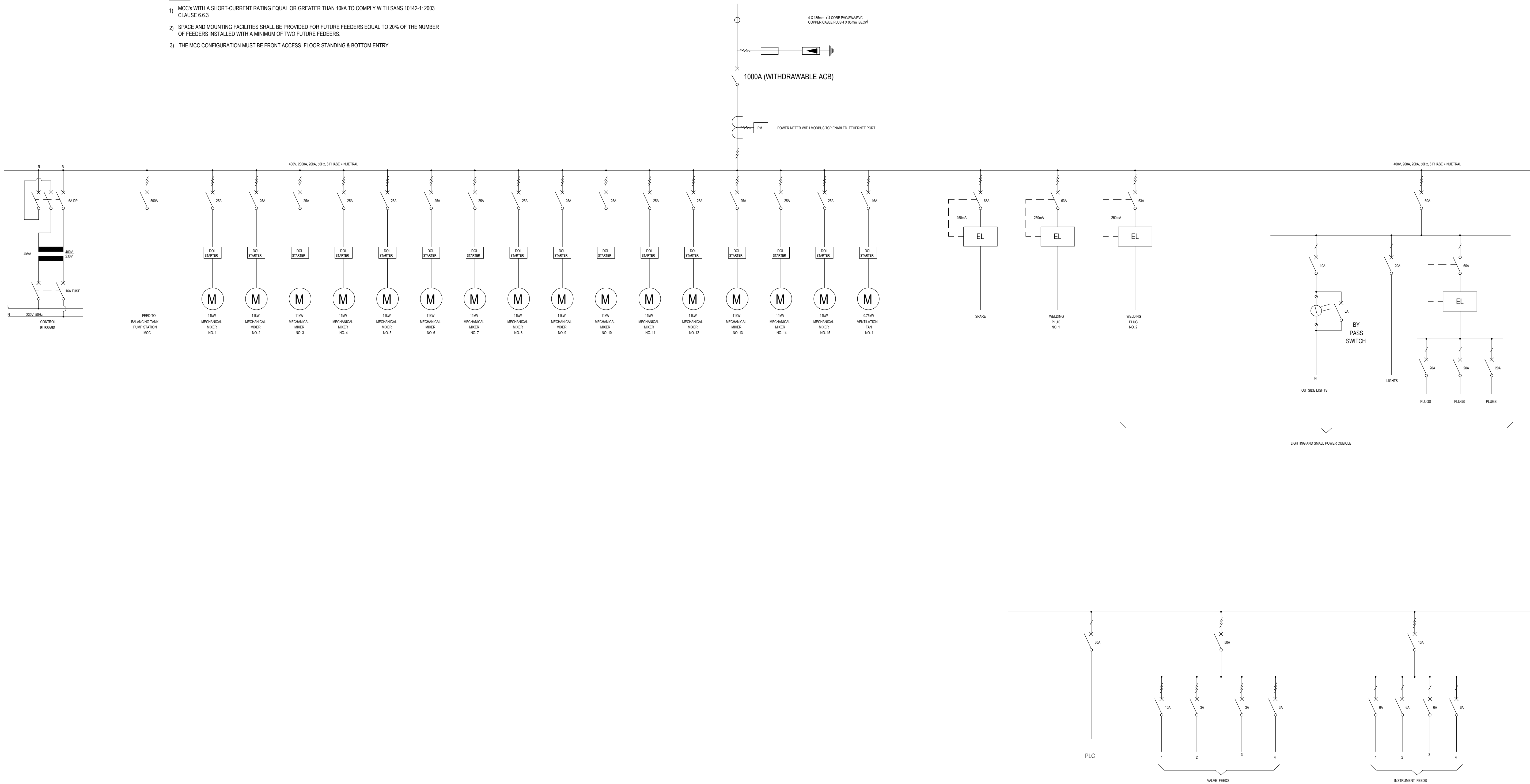
ORIGINAL PAGE SIZE

FILE No:

NOTES

- MCC's WITH A SHORT-CURRENT RATING EQUAL OR GREATER THAN 10kA TO COMPLY WITH SANS 10142-1:2003 CLAUSE 6.6.3
- SPACE AND MOUNTING FACILITIES SHALL BE PROVIDED FOR FUTURE FEEDERS EQUAL TO 20% OF THE NUMBER OF FEEDERS INSTALLED WITH A MINIMUM OF TWO FUTURE FEEDERS.
- THE MCC CONFIGURATION MUST BE FRONT ACCESS, FLOOR STANDING & BOTTOM ENTRY.

SUPPLIED FROM NEW 630kVA MNISUB



ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED		Date:
DRAWN	K. KOLBERG	Date:
CHECKED	S.MANGANYI	Date:
APPROVED BY:	V. KRISHNADUTT	Date:
	SIGNATURE:	ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



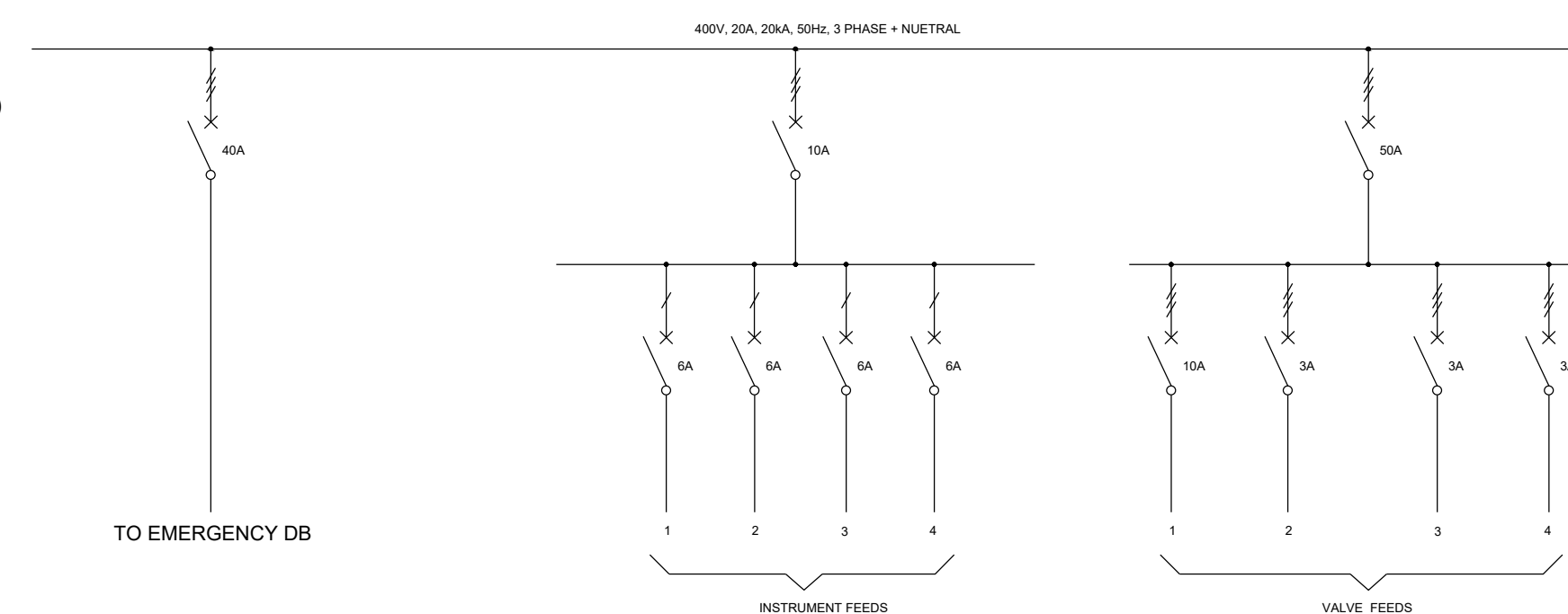
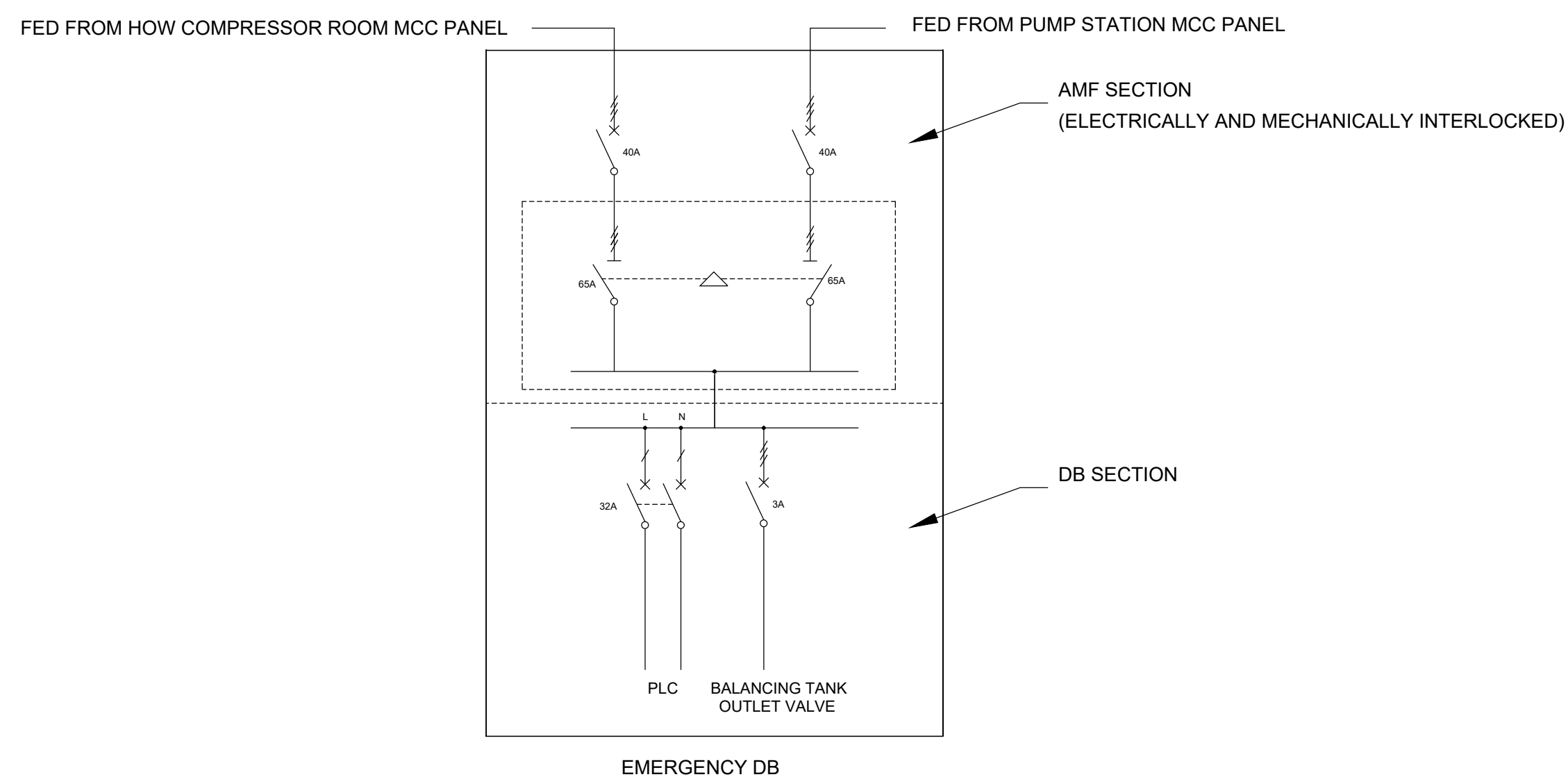
a world class African city

Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
MOTOR CONTROL CENTRE SINGLE LINE DIAGRAM (BALANCING TANK MCC)

SCALE	AMENDMENTS					DRAWING No: JW13504-E-602-003												
N.T.S	REV	DESCRIPTION	DATE	BY	APV	BW0602 PROJECT No: A1 ORIGINAL PAGE SIZE FILE No: CIV DISCIPLINARY REV. A SHEET 1 OF 1												
	A	ISSUED FOR TENDER	2024/08/29	M.M	S.M													

- 1) MCC's WITH A SHORT-CURRENT RATING EQUAL OR GREATER THAN 10kA TO COMPLY WITH SANS 10142-1: 2003 CLAUSE 6.6.3
- 2) SPACE AND MOUNTING FACILITIES SHALL BE PROVIDED FOR FUTURE FEEDERS EQUAL TO 20% OF THE NUMBER OF FEEDERS INSTALLED WITH A MINIMUM OF TWO FUTURE FEEDERS
- 3) THE MCC CONFIGURATION MUST BE FRONT ACCESS, FLOOR STANDING & BOTTOM ENTRY.



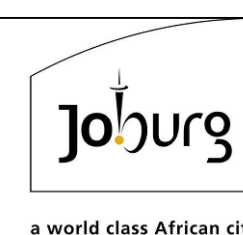
ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:
	DRAWN	K. KOLBERG	Date:
		SIGNATURE:	
	CHECKED	S.MANGANYI	Date:
	APPROVED BY:	SIGNATURE:	
		V. KRISHANDUTT	Date:
		SIGNATURE:	FCSA REG. No



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



Project description:	
----------------------	--

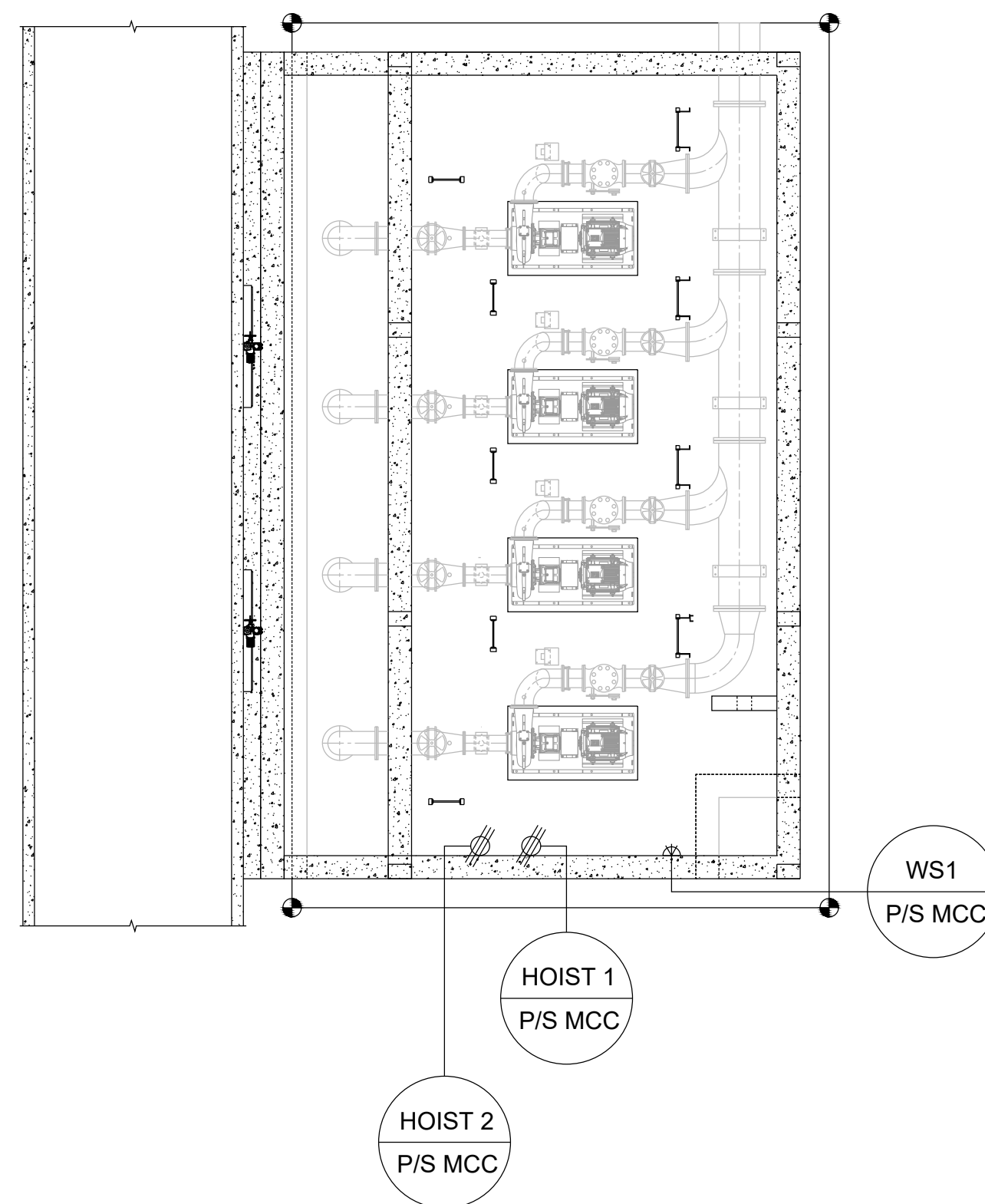
BUSHKOPPIES WASTEWATER TREATMENT WORKS
MOTOR CONTROL CENTRE SINGLE LINE DIAGRAM (BALANCING TANK PUMP STATION MCC)

SCALE

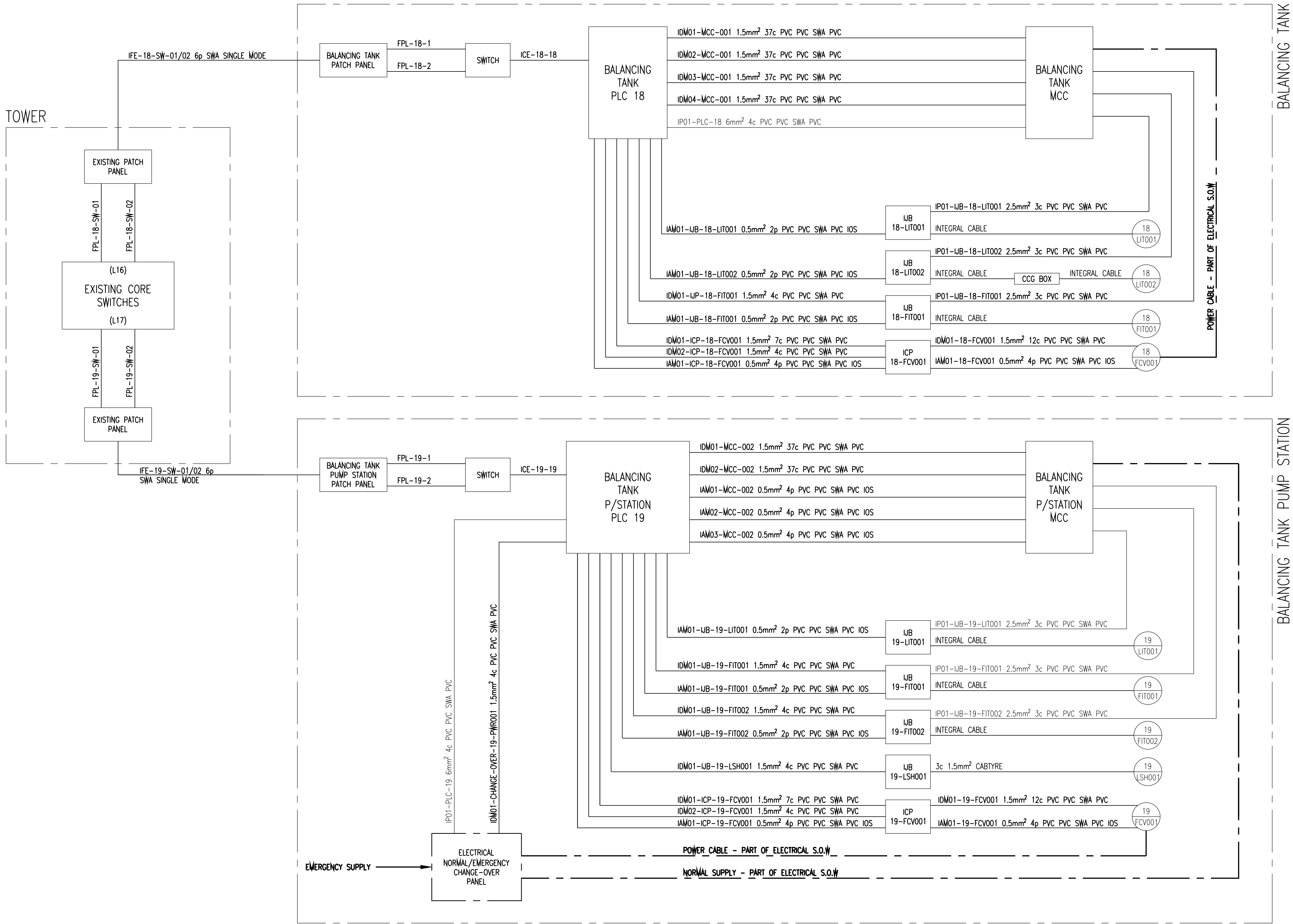
AMENDMENTS

DRAWING No:JW13504-E-602-003

[illegible]



CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED	Date:	 Johannesburg Water	JOHANNESBURG WATER SOC LTD TURBINE HALL 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113 TEL: +27 (0)11 688 1400 FAX: +27(0)11 688-1528	Municipality:	 a world class African city	SCALE	AMENDMENTS					DRAWING No: JW13504-E-602-008	
	DRAWN	K. KOLBERG						Date:	REV	DESCRIPTION	DATE	BY		APV
	CHECKED	S.MANGANYI						Date:	A	ISSUED FOR TENDER	2024/08/29	M.M		S.M
	APPROVED BY:	V. KRISHHANDUTT						Date:						
Project description:					BUSHKOPPIES WASTEWATER TREATMENT WORKS BALANCING TANK PUMP STATION LIGHTING AND SMALL POWER					BW0602 PROJECT No: CIV SHEET A OF A1 FILE No: 1 OF 1 ORIGINAL PAGE SIZE				



ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:
	DRAWN	K. KOLBERG	Date:
	CHECKED	S.MANGANYI	Date:
	APPROVED BY:	V. KRISHNADUTT	Date:
		SIGNATURE:	ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



Project description:

BUSHKOPPIES WASTEWATER TREATMENT WORKS
CONTROL AND INSTRUMENTATION
CABLE ROOM DIAGRAM

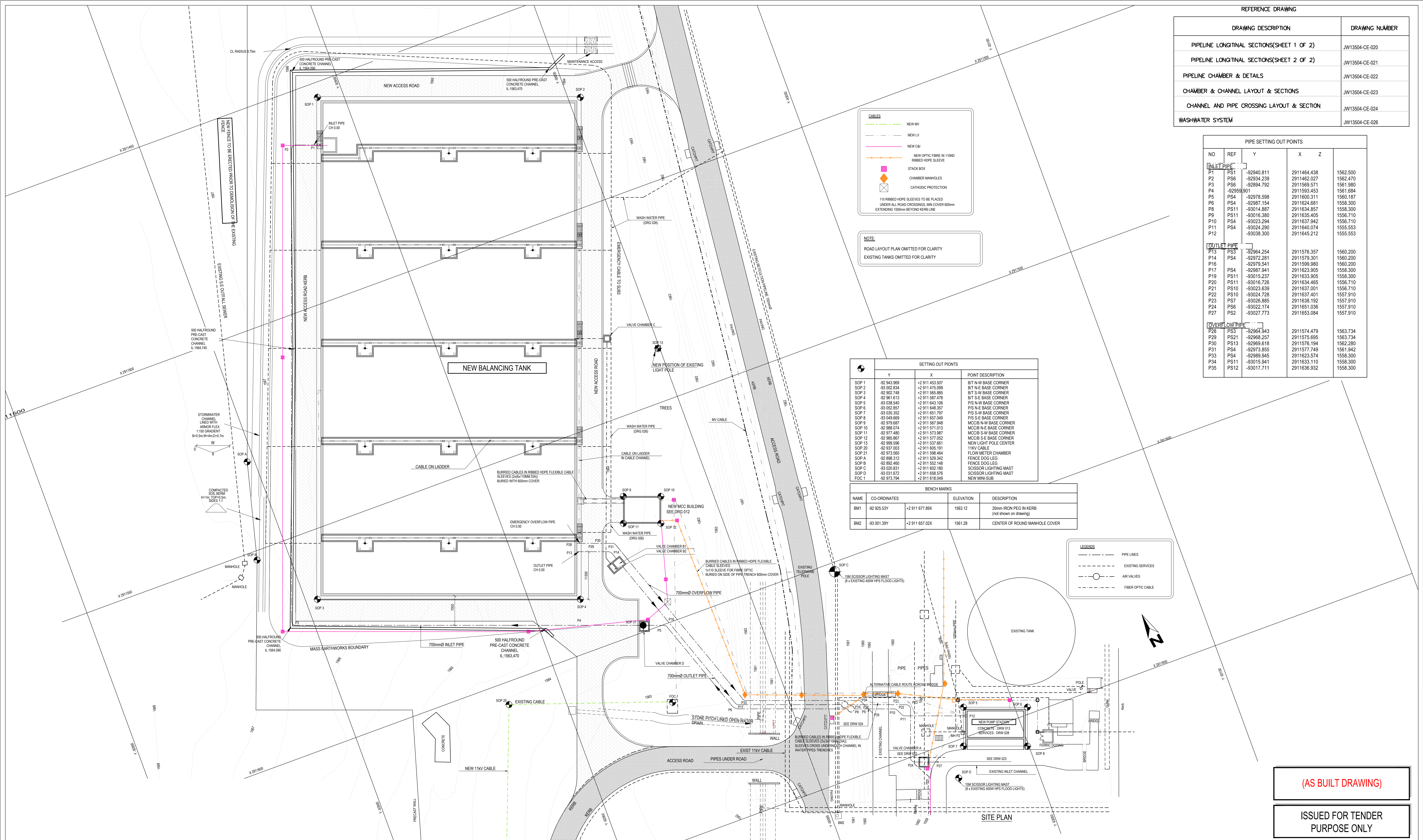
SCALE

AMENDMENTS

REV	DESCRIPTION	DATE	BY	APV
A	ISSUED FOR TENDER	2024/08/29	M.M	S.M

DRAWING No: JW13504-ING-014-01

BW0602	ELC	A
PROJECT No:	DISCIPLINARY	REV.
A1	SHEET	1 OF 1
ORIGINAL PAGE SIZE		
FILE No:		



REFERENCE DRAWING	
DRAWING DESCRIPTION	DRAWING NUMBER
PIPELINE LONGITINAL SECTIONS(SHEET 1 OF 2)	JW13504-CE-020
PIPELINE LONGITINAL SECTIONS(SHEET 2 OF 2)	JW13504-CE-021
PIPELINE CHAMBER & DETAILS	JW13504-CE-022
CHAMBER & CHANNEL LAYOUT & SECTIONS	JW13504-CE-023
CHANNEL AND PIPE CROSSING LAYOUT & SECTION	JW13504-CE-024
WASHWATER SYSTEM	JW13504-CE-026

PIPE SETTING OUT POINTS				
NO	REF	Y	X	Z
INLET PIPE				
P1	PS1	-92940.811	2911464.438	1562.500
P2	PS6	-92834.239	2911462.027	1562.470
P3	PS6	-92894.792	2911569.571	1561.980
P4	-92959.901		2911593.453	1561.864
P5	PS4	-92978.598	2911600.311	1560.187
P6	PS4	-92987.154	2911624.681	1558.300
P8	PS11	-93014.887	2911634.857	1558.300
P9	PS11	-93016.380	2911635.405	1556.710
P10	PS4	-93023.284	2911637.942	1556.710
P11	PS4	-93024.290	2911640.074	1555.553
P12		-93038.300	2911645.212	1555.553
OUTLET PIPE				
P13	PS3	-92964.254	2911576.357	1560.200
P14	PS4	-92972.281	2911579.301	1560.200
P16		-92979.541	2911599.980	1560.200
P17	PS4	-92987.941	2911623.905	1558.300
P19	PS11	-93015.237	2911633.905	1558.300
P20	PS11	-93016.726	2911634.465	1556.710
P21	PS10	-93023.639	2911637.001	1556.710
P22	PS10	-93024.728	2911637.401	1557.910
P23	PS7	-93026.885	2911638.192	1557.910
P24	PS6	-93022.174	2911651.036	1557.910
P27	PS2	-93027.773	2911653.084	1557.910
OVERFLOW PIPE				
P28	PS3	-92964.943	2911574.479	1563.734
P29	PS21	-92968.257	2911575.695	1563.734
P30	PS13	-92969.818	2911576.194	1562.280
P31	PS4	-92973.855	2911577.749	1561.942
P33	PS4	-92989.945	2911623.574	1558.300
P34	PS11	-93015.941	2911633.110	1558.300
P35	PS12	-93017.711	2911636.932	1558.300

SETTING OUT POINTS			
	Y	X	POINT DESCRIPTION
SOP 1	-92 943.969	+2 911 433.507	BIT N-W BASE CORNER
SOP 2	-93 002.834	+2 911 475.099	BIT N-E BASE CORNER
SOP 3	-92 902.748	+2 911 565.886	BIT S-W BASE CORNER
SOP 4	-92 861.613	+2 911 587.178	BIT S-E BASE CORNER
SOP 5	-93 028.540	+2 911 643.106	PS N-W BASE CORNER
SOP 6	-93 062.687	+2 911 648.357	PS N-E BASE CORNER
SOP 7	-93 036.352	+2 911 651.797	PS S-W BASE CORNER
SOP 8	-93 045.669	+2 911 657.049	PS S-E BASE CORNER
SOP 9	-92 979.687	+2 911 567.348	MCOR N-W BASE CORNER
SOP 10	-92 988.074	+2 911 571.013	MCOR N-E BASE CORNER
SOP 11	-92 977.480	+2 911 573.987	MCOR S-W BASE CORNER
SOP 12	-92 986.867	+2 911 577.032	MCOR S-E BASE CORNER
SOP 13	-92 999.596	+2 911 537.661	NEW LIGHT POLE CENTER
SOP 20	-92 907.003	+2 911 608.191	11KV CABLE
SOP 21	-92 973.560	+2 911 586.464	FLOW METER CHAMBER
SOP A	-92 888.312	+2 911 529.342	FENCE DOG LEG
SOP B	-92 882.400	+2 911 532.148	FENCE DOG LEG
SOP C	-93 020.831	+2 911 602.180	SCISSOR LIGHTING MAST
SOP D	-93 021.672	+2 911 608.576	SCISSOR LIGHTING MAST
FOC1	-92 973.754	+2 911 618.045	NEW MINI-SUB

BENCH MARKS				
NAME	CO-ORDINATES		ELEVATION	DESCRIPTION
BM1	-92 925.53Y	+2 911 677.88X	1563.12	20mm IRON PEG IN KERB (not shown on drawing)
BM2	-93 001.39Y	+2 911 667.02X	1561.28	CENTER OF ROUND MANHOLE COVER

LEGENDS	
---	PIPE LINES
---	EXISTING SERVICES
○	AIR VALVES
---	FIBER OPTIC CABLE

(AS BUILT DRAWING)

ISSUED FOR TENDER
PURPOSE ONLY

CONSULTING ENGINEERS
CAPEX - ENGINEERING SERVICE UNIT
TURBINE HALL - 3RD FLOOR
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113

DESIGNED
Date: _____
SIGNATURE: _____
DRAWN
K. KOLBERG
Date: _____
SIGNATURE: _____
CHECKED
S. MANGANYI
Date: _____
SIGNATURE: _____
APPROVED BY:
V. KRISHANDUTT
Date: _____
SIGNATURE: _____
ECSA REG. No: _____



Johannesburg Water

JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality: _____
Project description: _____



a world class African city

BUSHKOPPIES WASTEWATER TREATMENT WORKS
SITE LAYOUT PLAN

SCALE: _____
N.T.S.

AMENDMENTS				
REV	DESCRIPTION	DATE	BY	APV
A	ISSUED FOR TENDER	2024/08/29	M.M	S.M

DRAWING No: JW13504-S-002-00

BW0602

CIV

A

PROJECT No: _____

A1

SHEET

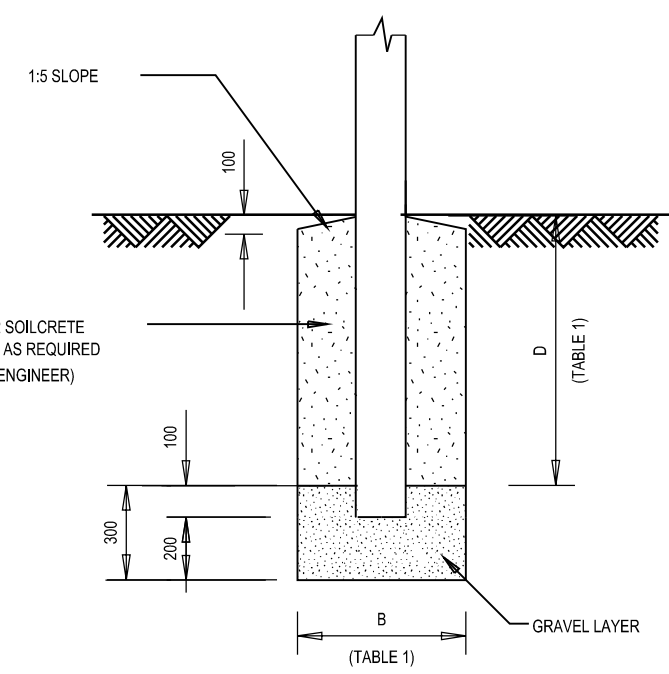
1

OF

1

ORIGINAL PAGE SIZE

FILE No: _____



Technical drawing of a breakaway post assembly. The drawing shows a vertical post and a diagonal support post connected by a galvanized bolt. The vertical post has "BREAK-AWAY HOLES" and is labeled "VARIES" with a dimension "H". The support post is at a 30-degree angle to the vertical and has "BREAK-AWAY HOLES" at a 60-degree angle to the horizontal. Both posts are embedded in concrete bases. Dimensions include 100, 40 Min, and 100. Labels include GALVANISED BOLT, SUPPORT POST, and BREAK-AWAY HOLES.

Technical drawings of a timber post and rail system, showing side elevation, cross-section, and detail views.

Side Elevation View:

- Timber post with a 1:10 MAX SLOPE.
- 10mm THICK STEEL PLATE, 150 OR CHROMADEK® OR SIMILAR.
- 4.5mm RIVETS @ 150mm c/c MAX.
- M10 GALVANISED BOLT OR U BOLT.
- TIMBER POST OR D SECTION STEEL POST (SEE TABLE 1).

Cross-section View:

- Timber post dimensions: 300x300xL.
- Steel plate and rivets details.

Detail View:

- Timber post end dimensions: 25x25x2.
- Steel plate and rivets details.

Technical drawing of a vertical rectangular plate. The plate has a total width of 12 and a total height of 300. It features three horizontal slots: a top slot, a middle slot, and a bottom slot. The top slot is 100 high and 225 wide. The middle slot is 100 high and 225 wide. The bottom slot is 100 high and 225 wide. The plate has a thickness of 5. The distance from the top edge to the top slot is 25. The distance from the bottom edge to the bottom slot is 25. The distance between the top and middle slots is 100. The distance between the middle and bottom slots is 100. The plate is labeled with dimensions 12, 300, 100, 225, 25, 5, and 100. It also includes a scale bar labeled 0/12.

32 x 52 x 2mm

100

TIMBER POST

M10 GALVANISED U-BOLT

30 x 30 x 5mm

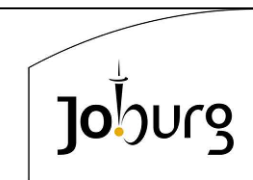
TABLE 1				
ERECTION DETAILS				
TYPE POST	UPRIGHT	STAY	D	B
TIMBER POST AND STAY	100mm	80mm	600mm	850mm
TIMBER POST	180mm	-	1000mm	1450mm
D SECTION STEEL POST	100mm x 4mm	-	1000mm	1450mm

CONSULTING ENGINEERS CAPEX - ENGINEERING SERVICE UNIT TURBINE HALL - 3RD FLOOR 65 NTEMI PILISO STREET NEWTOWN JOHANNESBURG 2113	DESIGNED		Date:
		SIGNATURE:	
	DRAWN	K. KOLBERG	Date:
		SIGNATURE:	
	CHECKED	S. MANGANYI	Date:
		SIGNATURE:	
	APPROVED BY:	V. KRISHANDUTT	Date:
		SIGNATURE:	ECSA REG. No:



JOHANNESBURG WATER SOC Ltd
TURBINE HALL
65 NTEMI PILISO STREET
NEWTOWN
JOHANNESBURG
2113
TEL: +27 (0)11 688 1400
FAX: +27(0)11 688-1528

Municipality:



a world class African city

BUSHKOPPIES WASTEWATER TREATMENT WORKS
TYPICAL CONTRACT NAME BOARD

[illegible]

DRAWING No: JW13504-S-016-00

PROJECT No.		DISCIPLINARY		REV.	
BW0602		CIV		A	
PROJECT No.		DISCIPLINARY		REV.	
A1		1		1	
ORIGINAL PAGE SIZE		SHEET		OF	
FILE No.					