



UMZIMKHULU BULK WATER AUGMENTATION SCHEME: PHASE 2

TENDER N°: UGU-07-1631-2023

**CONSTRUCTION OF THE BACKWASH WATER RECOVERY FACILITY AT
BHOBHOYI WATER TREATMENT WORKS**

CIDB CLASSIFICATION: 8ME OR HIGHER

TENDER DRAWINGS

VOLUME 4 OF 4

ISSUED BY:

Ugu District Municipality

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4240

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PREPARED BY:

Royal HaskoningDHV (Pty) Ltd

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Contact Name : Mr Selemo Sefehle

Telephone : 087 350 6776

Email Address : Selemo.Sefehle@rhdhv.com

APRIL 2023

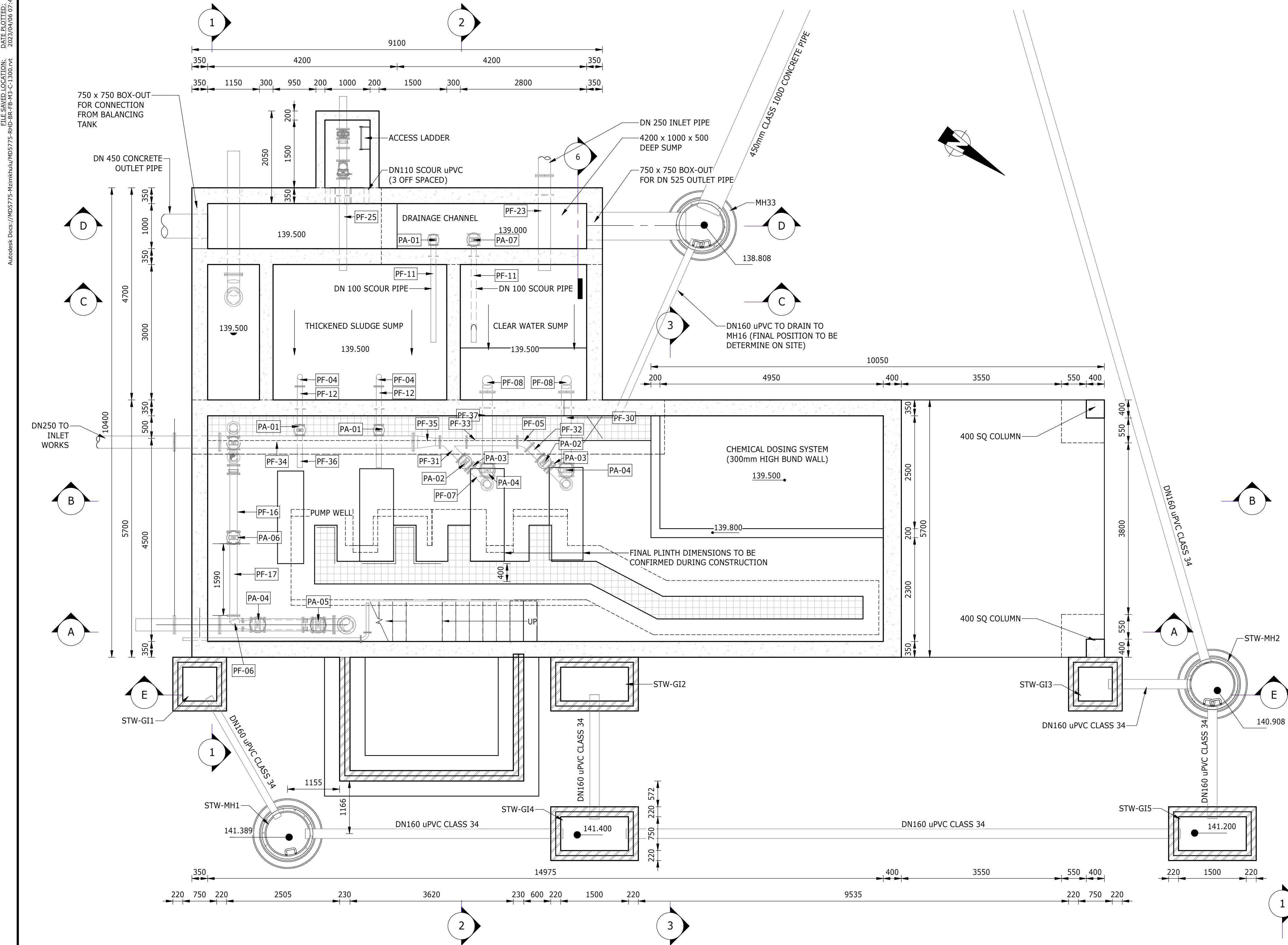
UGU DISTRICT MUNICIPALITY

UMZIMKHULU BULK WATER AUGMENTATION SCHEME: PHASE 2
TENDER N°: UGU-07-1631-2023

CONSTRUCTION OF THE BACKWASH WATER RECOVERY FACILITY AT
BHOBHOYI WATER TREATMENT WORKS

CONTENTS

DRAWING N°	DESCRIPTION
MD5775-RHD-BR-SL-DR-C-1000	BACKWASH WATER RECOVERY SITE LAYOUT
MD5775-RHD-BR-VD-DR-C-1101	VORTEX DEGRITTER
MD5775-RHD-BR-VD-DR-C-1102	VORTEX DEGRITTER
MD5775-RHD-BR-BT-DR-C-1201	BALANCING TANK
MD5775-RHD-BR-BT-DR-C-1202	BALANCING TANK
MD5775-RHD-BR-FB-DR-C-1302	FACILITIES BUILDING
MD5775-RHD-BR-FB-DR-C-1303	FACILITIES BUILDING
MD5775-RHD-BR-FB-DR-C-1304	FACILITIES BUILDING
MD5775-RHD-BR-FB-DR-C-1305	FACILITIES BUILDING
MD5775-RHD-BR-FB-DR-C-1306	FACILITIES BUILDING
MD5775-RHD-BR-FB-DR-C-1307	FACILITIES BUILDING
MD5775-RHD-BR-GT-DR-C-1401	GRAVITY THICKENER TANK
MD5775-RHD-BR-RV-DR-C-1501	4 ML RESERVOIR
MD5775-RHD-BR-RV-DR-C-1502	4 ML RESERVOIR
MD5775-RHD-BR-GH-DR-C-1701	GUARD HOUSE
MD5775-RHD-BR-ZZ-DR-C-1800	STANDARD DETAILS
MD5775-RHD-BR-GR-DR-C-1801	STRUCTURAL JOINTS
MD5775-RHD-BR-ZZ-D-E-4100	SINGLE LINE DIAGRAM & GENERAL ARRANGEMENT
MD5775-RHD-BR-ZZ-D-E-4200	ELECTRICAL TYPICALS
MD5775-RHD-BR-ZZ-D-E-4300	ELECTRICAL LAYOUT
MD5775-RHD-BR-ZZ-D-E-4400	P&ID DRAWING LEGEND
MD5775-RHD-BR-ZZ-D-E-4500	P&ID DRAWING
MD5775-RHD-BR-ZZ-D-E-4600	CONTROL NETWORK
MD5775-RHD-BR-ZZ-D-E-4700	C&I TYPICAL DRAWING

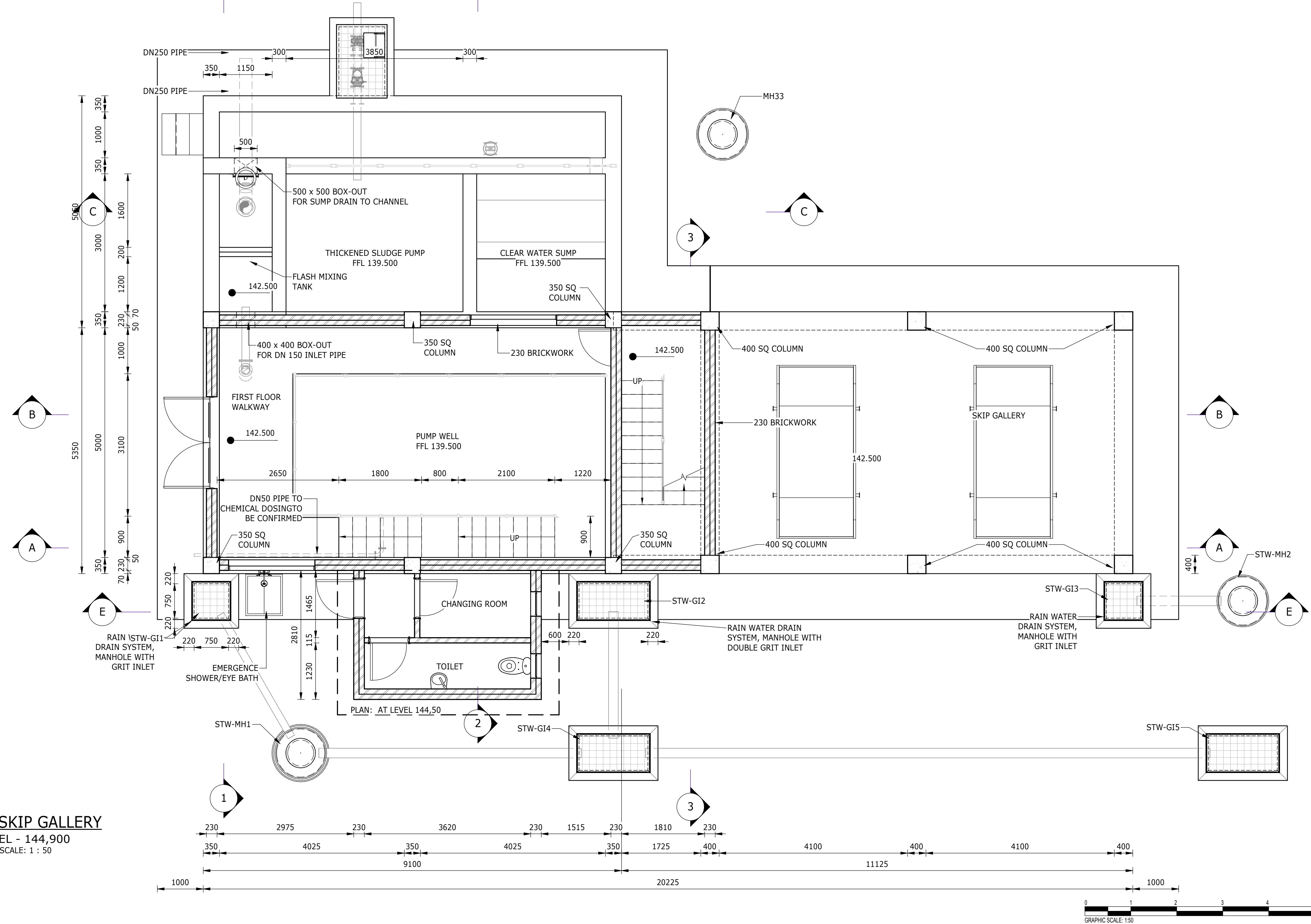


LEVEL - 141,900
PLAN: PUMP WELL

SCALE: 1 : 50

PIPE SCHEDULE		
ITEM No.	DESCRIPTION	COUNT
Casework		1
PA-01	DN100 D/F L WEDGE GATE VALVE	3
PA-02	DN150 D/F L WEDGE GATE VALVE	2
PA-03	DN150 D/F L NON-RETURN VALVE	2
PA-04	DN200 D/F L WEDGE GATE VALVE	3
PA-05	DN200 D/F L FLOW CONTROL VALVE	1
PA-06	DN200 D/F L MAGFLOW METER	1
PA-07	DN100 D/F L WEDGE GATE VALVE	1
PF-01	DN200 X DN150 D/F L 180mm LONG REDUCER	1
PF-03	DN250 X DN200 D/F L 200mm LONG REDUCER	1
PF-04	DN100 PE/FL X 90 DEGREE 3 SEGMENTS BEND, 230mm C/F	2
PF-05	DN150 D/F L X 90 DEGREE 3 SEGMENTS BEND, 230mm C/F	1
PF-06	DN150 D/F L X 90 DEGREE 3 SEGMENTS BEND, 230mm C/F	2
PF-07	DN150 D/F L X 90 DEGREE 3 SEGMENTS BEND, 475mm C/F	2
PF-08	DN200 PE/FL X 90 DEGREE 3 SEGMENTS BEND, 230mm C/F	2
PF-10	DN250 D/F L X 90 DEGREE 3 SEGMENTS BEND, 230mm C/F	2
PF-11	DN100 PE/FL 2150mm LONG STEEL PIPE WITH PUDDLE FLANGE 250mm FROM FLANGE	2
PF-12	DN100 D/F L 850mm LONG STEEL PIPE WITH CENTRAL PUDDLE FLANGE	2
PF-13	DN150 PE/FL 1265mm LONG STEEL PIPE WITH PUDDLE FLANGE 275mm FROM PE	1
PF-14	DN150 D/F L 600mm LONG STEEL PIPE WITH CENTRAL PUDDLE FLANGE	1
PF-15	DN150 D/F L 1800mm LONG STEEL PIPE	1
PF-16	DN150 D/F L 1335mm LONG STEEL PIPE	1
PF-17	DN150 D/F L 1590mm LONG STEEL PIPE	1
PF-19	DN200 DISMANTLING JOINT, 194mm F/F	1
PF-20	DN250 D/F L 780mm LONG STEEL PIPE	1
PF-21	DN250 D/F L 2530mm LONG STEEL PIPE	1
PF-22	DN250 D/F L 1000mm LONG STEEL PIPE WITH CENTRAL PUDDLE FLANGE	2
PF-23	DN250 PE/FL 2100mm LONG STEEL PIPE WITH PUDDLE FLANGE 425mm FROM FLANGE END	1
PF-24	DN250 PE 350mm LONG STEEL PIPE WITH CENTRAL PUDDLE FLANGE	1
PF-25	DN150 PE/FL 2100mm LONG STEEL PIPE WITH PUDDLE FLANGE 425mm FROM FLANGE END	1
PF-28	DN200 D/F L 855mm LONG STEEL PIPE	1
PF-29	DN100 PE/FL 710mm LONG STEEL PIPE	1
PF-30	DN200 D/F L 1925mm LONG STEEL PIPE WITH PUDDLE FLANGE 350mm FROM ONE END	1
PF-31	DN150 D/F L LATERAL TEE	1
PF-32	DN150 D/F L 305mm LONG STEEL PIPE	1
PF-33	DN150 D/F L 1120mm LONG STEEL PIPE	1
PF-34	DN250 D/F L 3630mm LONG STEEL PIPE	1
PF-35	DN250 X DN150 D/F L 585mm LONG REDUCER SPOOL	1
PF-36	DN100 PE/FL 710mm LONG STEEL PIPE	1
PF-37	DN200 D/F L 1925mm LONG STEEL PIPE WITH PUDDLE FLANGE 350mm FROM ONE END	1
PF-38	DN150 D/F L X 90 DEGREE 3 SEGMENTS BEND, 230mm C/F	1

PLAN: SKIP GALLERY
LEVEL - 144,900
SCALE: 1 : 50



NOTES

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REF. DWG No.	REFERENCE DRAWING DESCRIPTION

APPROVED:
PROJECT PRINCIPAL: _____
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PROJECT PRINCIPAL: _____
(SIGNATURE)
DATE: (DD/MM/YYYY) _____

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Approved:
Water Services Provider: _____ Date: _____
Implementing Agent: _____ Date: _____
Water Services Authority: _____ Date: _____


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PROJECT
UMZIMKHULU BULK WATER AUGMENTATION SCHEME : STAGE 2
BACKWASH WATER RECOVERY FACILITY
BHOBOYI WATER TREATMENT WORKS

DRAWING DESCRIPTION
PLANS AND SECTIONS

FACILITY DESCRIPTION
FACILITIES BUILDING

TENDER DRAWINGS

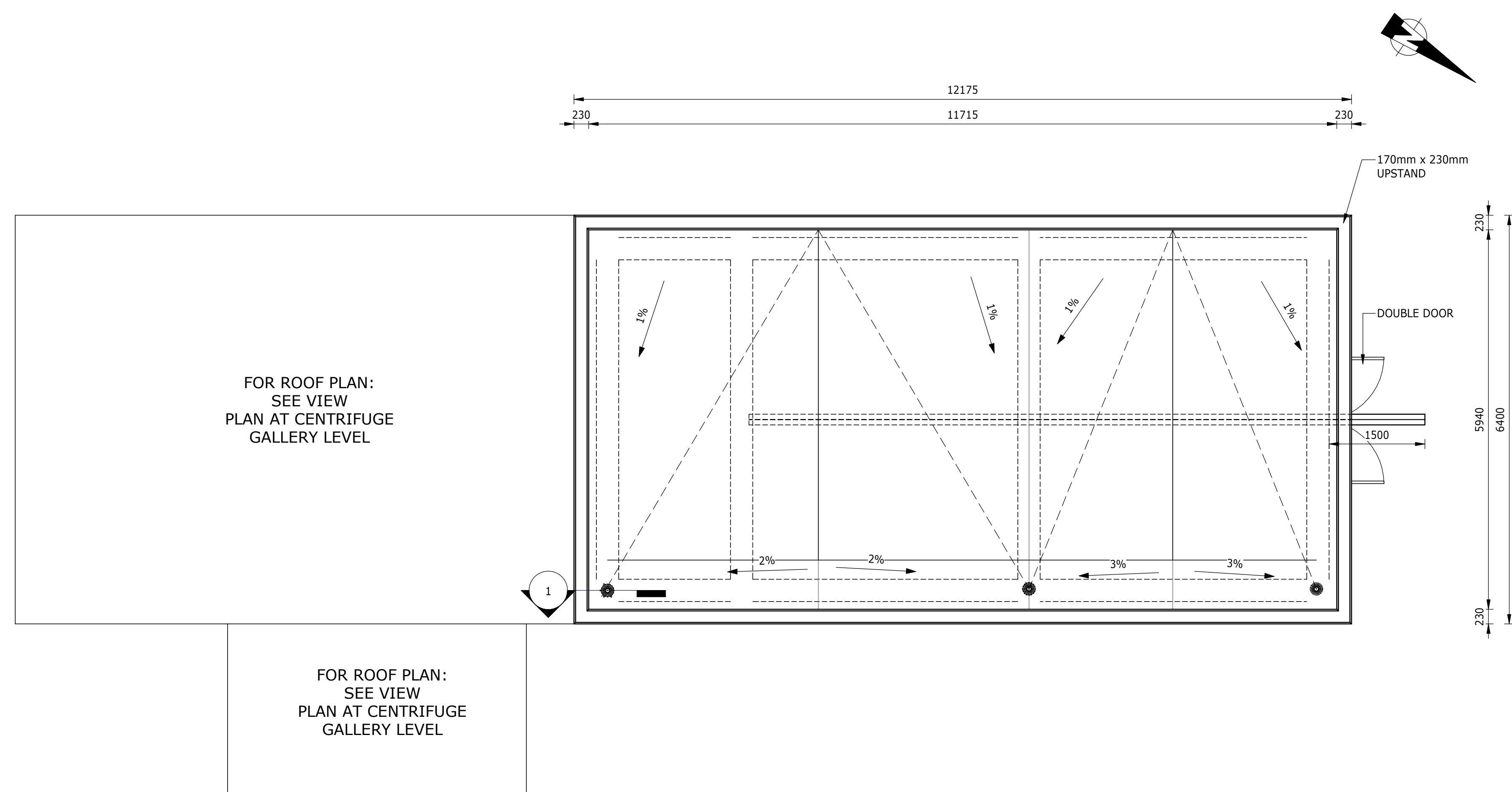
DESIGNED	SIGNATURE AND DATE
S. MUSTINGA	
DRAWN	SIGNATURE AND DATE
B. MANS	
DRAWING CHECKED	SIGNATURE AND DATE
S. MUSTINGA	
DESIGN CHECKED	SIGNATURE AND DATE
N. MKANDLA	
PROJ. MANAGER / APPROVED	SIGNATURE AND DATE
S. NGOBESHE	

No.	DATE	REVISION DESCRIPTION	CHK	APP
C01	APR 2023	ISSUED FOR TENDER	S.M.	N.M.

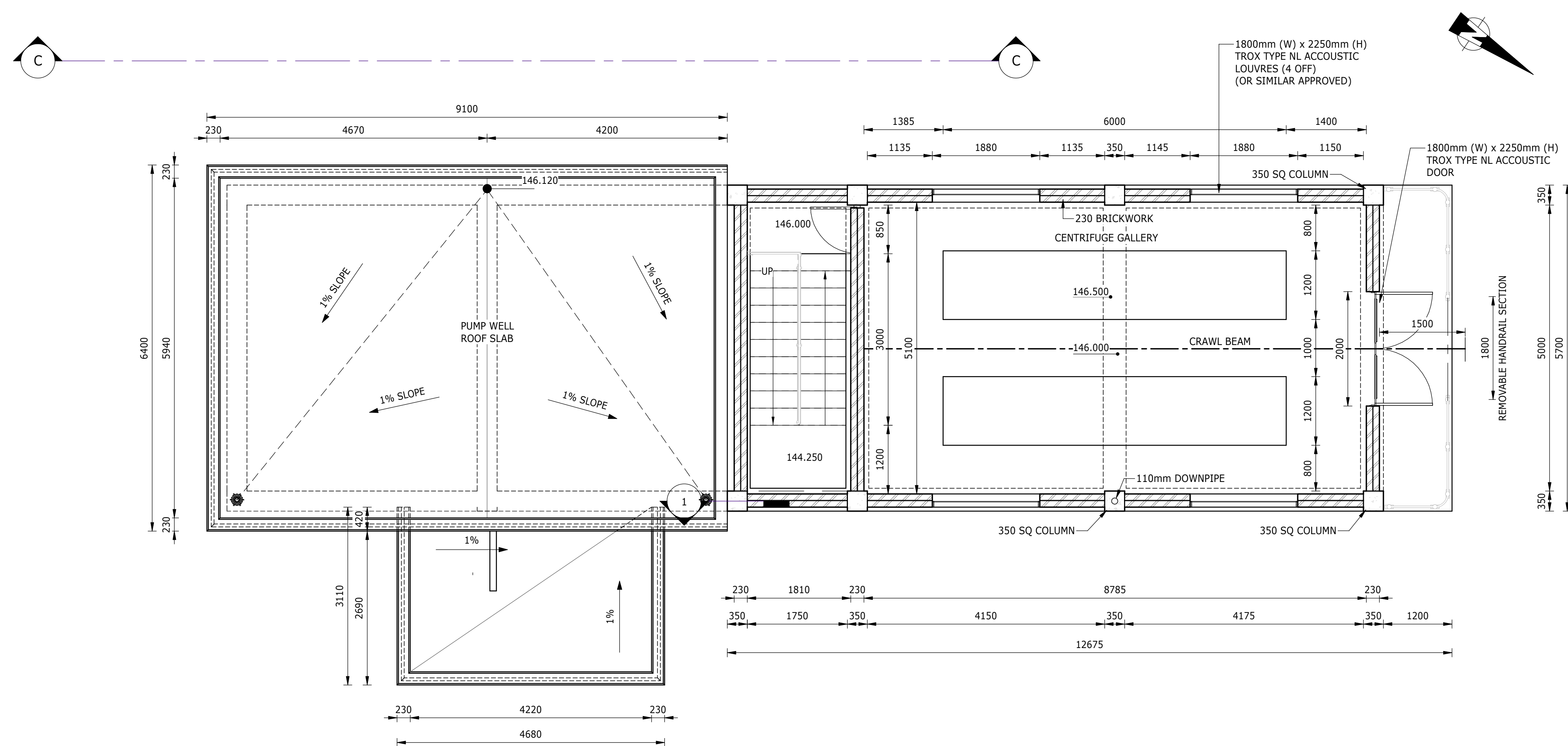
PROJECT No. **MD5775** CONTRACT No. **UGU-07-1631-2023**

SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
SHEET 1 OF 6	CIVIL	A0	1 : 50

DRAWING No. **MD5775-RHD-BR-FB-DR-C-1302** REV. **C01**
PROJECT No. | ORIG. | VIS. | LA | TYPE | ROLE | DWG No.



ROOF PLAN : CENTRIFUGE AREA
LEVEL 148,450
SCALE: 1 : 50



PLAN: CENTRIFUGE GALLERY
LEVEL 148,450
SCALE: 1 : 50

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PROJECT PRINCIPAL: _____
(PRINT NAME)

PROJECT PRINCIPAL: _____
(SIGNATURE)

DATE: _____
(DD/MM/YYYY)

CLIENT	
Approved:	
Water Services Provider:	_____ Date: _____
Implementing Agent:	_____ Date: _____
Water Services Authority:	_____ Date: _____



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PROJECT

**UMZIMKHULU BULK WATER
AUGMENTATION SCHEME :
STAGE 2**

BACKWASH WATER RECOVERY FACILITY
BHOBOYI WATER TREATMENT WORKS

DRAWING DESCRIPTION	ROOF LAYOUT PLANS
FACILITY DESCRIPTION	FACILITIES BUILDING

TENDER DRAWINGS

DESIGNED S. MUSINGA	SIGNATURE AND DATE
DRAWN B. MANS / J.H.APPELGRYIN	SIGNATURE AND DATE
DRAWING CHECKED S. MUJINGA	SIGNATURE AND DATE
DESIGN CHECKED N. MKANDILA	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. NGOBESE	SIGNATURE AND DATE

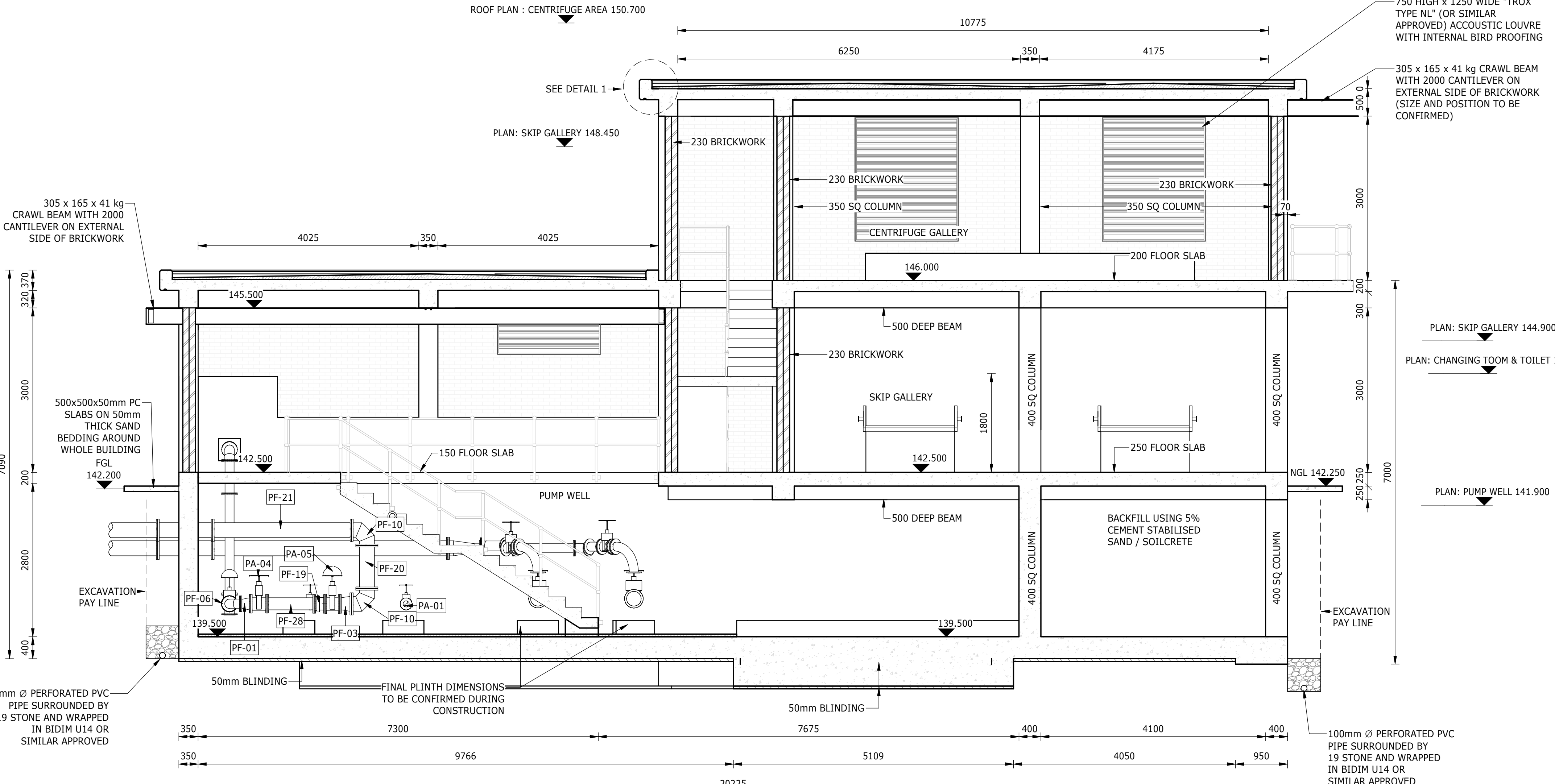
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C01	APR 2023	ISSUED FOR TENDER	S.M.	N.M.

PROJECT No.	CONTRACT No.
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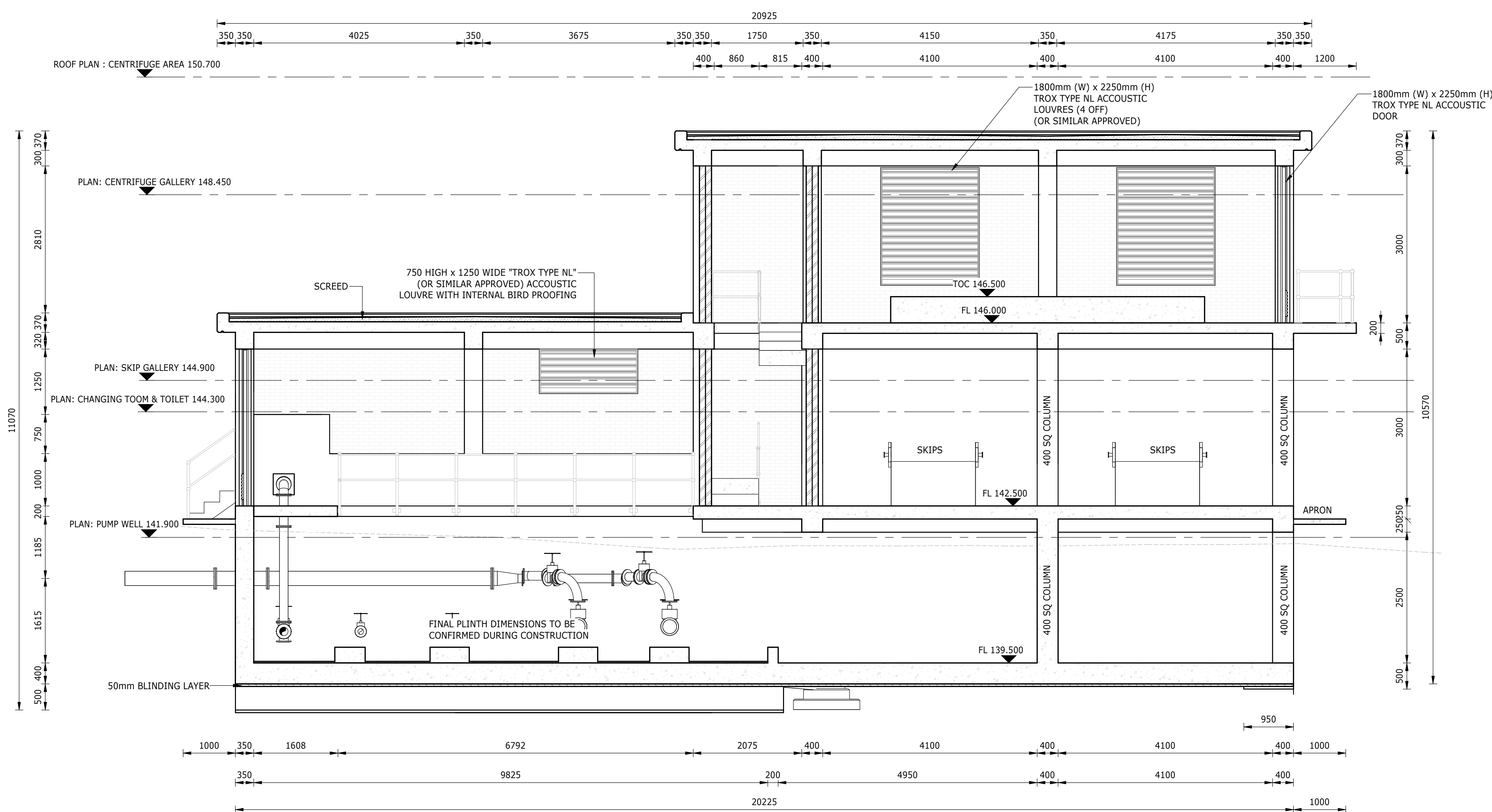
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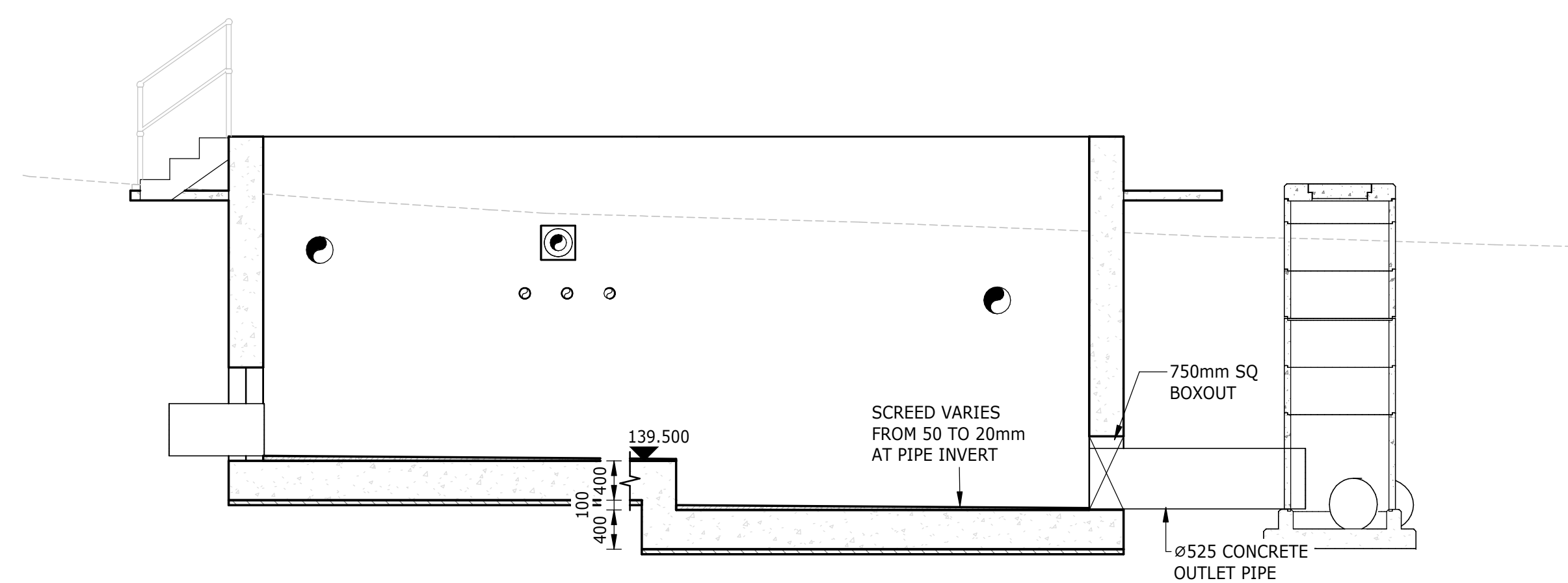
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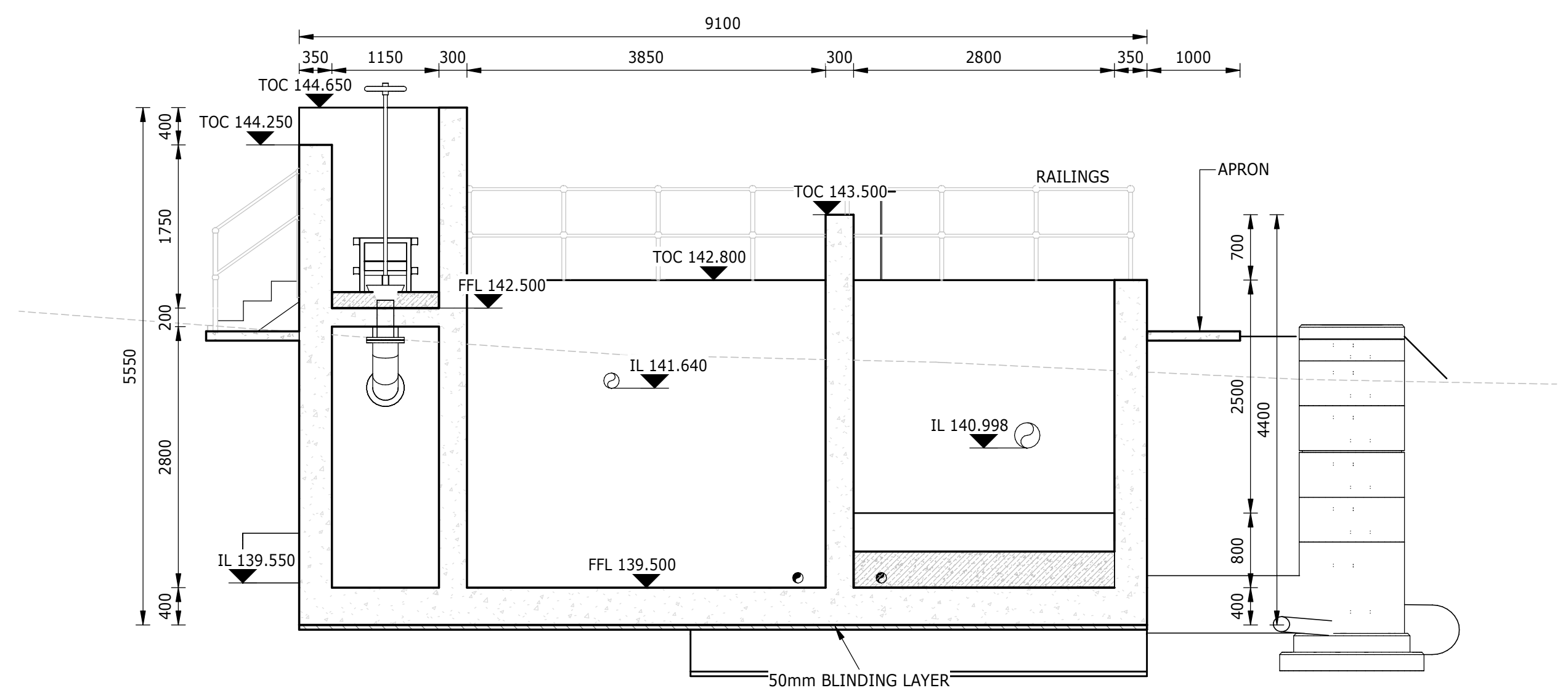
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SCALE: 1 : 50



SECTION B-B
(SEE DWG. MD5775-RHD-BR-FB-DR-C-1302)
SCALE: 1 : 50



SECTION D-D
(SEE DWG. MD5775-RHD-BR-FB-DR-C-1302)
SCALE: 1 : 50



SECTION C-C
(SEE DWG. MD5775-RHD-BR-FB-DR-C-1302)
SCALE: 1 : 50

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PROJECT PRINCIPAL:

PROJECT PRINCIPAL:

DATE:



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Water Services Authority: _____ Date: _____



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PROJECT

**UMZIMKHULU BULK WATER
AUGMENTATION SCHEME :
STAGE 2**

BACKWASH WATER RECOVERY FACILITY
BHOBOYI WATER TREATMENT WORKS

DRAWING DESCRIPTION

FACILITY DESCRIPTION

FACILITIES BUILDING

TENDER DRAWINGS

DESIGNED S. MUSINGA	SIGNATURE AND DATE
DRAWN J.H.APPELGRYN	SIGNATURE AND DATE
DRAWING CHECKED S. MUJINGA	SIGNATURE AND DATE
DESIGN CHECKED N. MKANDLA	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. NGOBESE	SIGNATURE AND DATE

No.	DATE	REVISION DESCRIPTION	CHK
C01	APR 2023	ISSUED FOR TENDER	S.M.

PROJECT N

CONTRACT No. _____

MD5775

UGU-07-1631-2023

SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
SHEET 3 OF 6	CIVIL	A0	1 : 5

DRAWING No.

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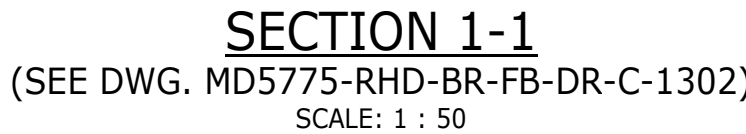
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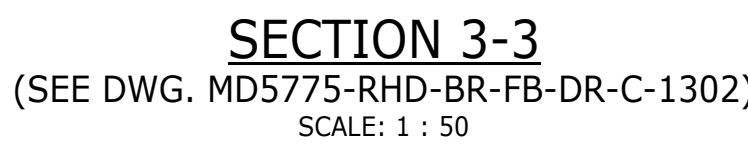
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SECTION E-E
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SECTION 2-2
(SEE DWG. MD5775-RHD-BR-FB-DR-C-1302)
SCALE: 1 : 50



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PROJECT
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PROJECT
(SIGNAL)DATE:
(DD/MM)

CLIENT

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Water S

Water S



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U

**UMZIMKHULU BULK WATER
AUGMENTATION SCHEME :
STAGE 2**

BACKWASH WATER RECOVERY FACILITY
BHOBOYI WATER TREATMENT WORKS

DRAWING DESCRIPTION

FACILITY DESCRIPTION

FACILITIES BUILDING

TENDER DRAWINGS

DESIGNED	SIGNATURE AND DATE
Designer	
DRAWN	SIGNATURE AND DATE
Author	
DRAWING CHECKED	SIGNATURE AND DATE
Checker	
DESIGN CHECKED	SIGNATURE AND DATE
N. MKANDLA	
PROJ. MANAGER / APPROVED	SIGNATURE AND DATE
Approver	

No.	DATE	REVISION DESCRIPTION	CHK	AP
C01	APR 2023	ISSUED FOR TENDER	S.M.	N.M.

PROJEC

CONTRACT N°

MD5775

UGU-07-1631-202

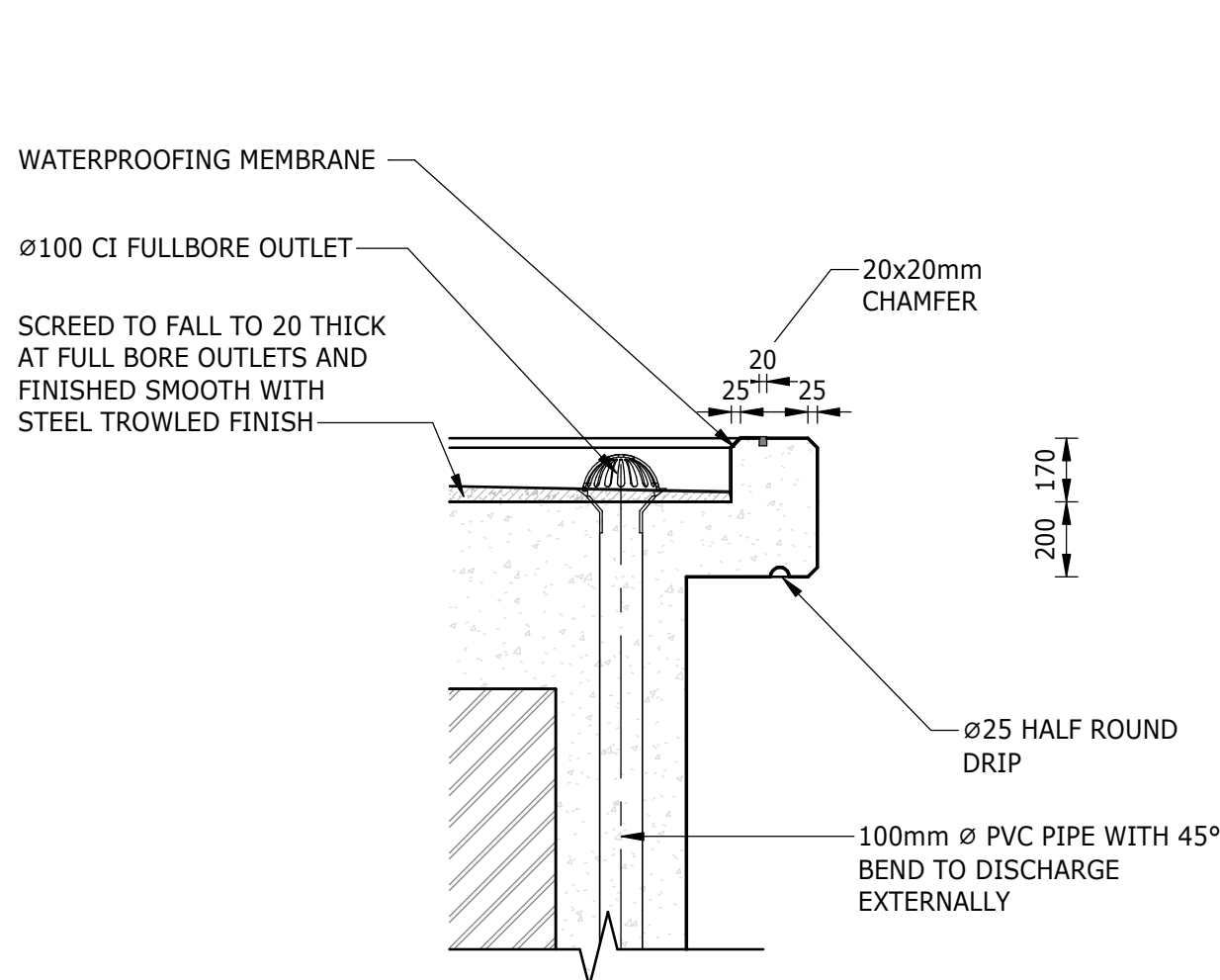
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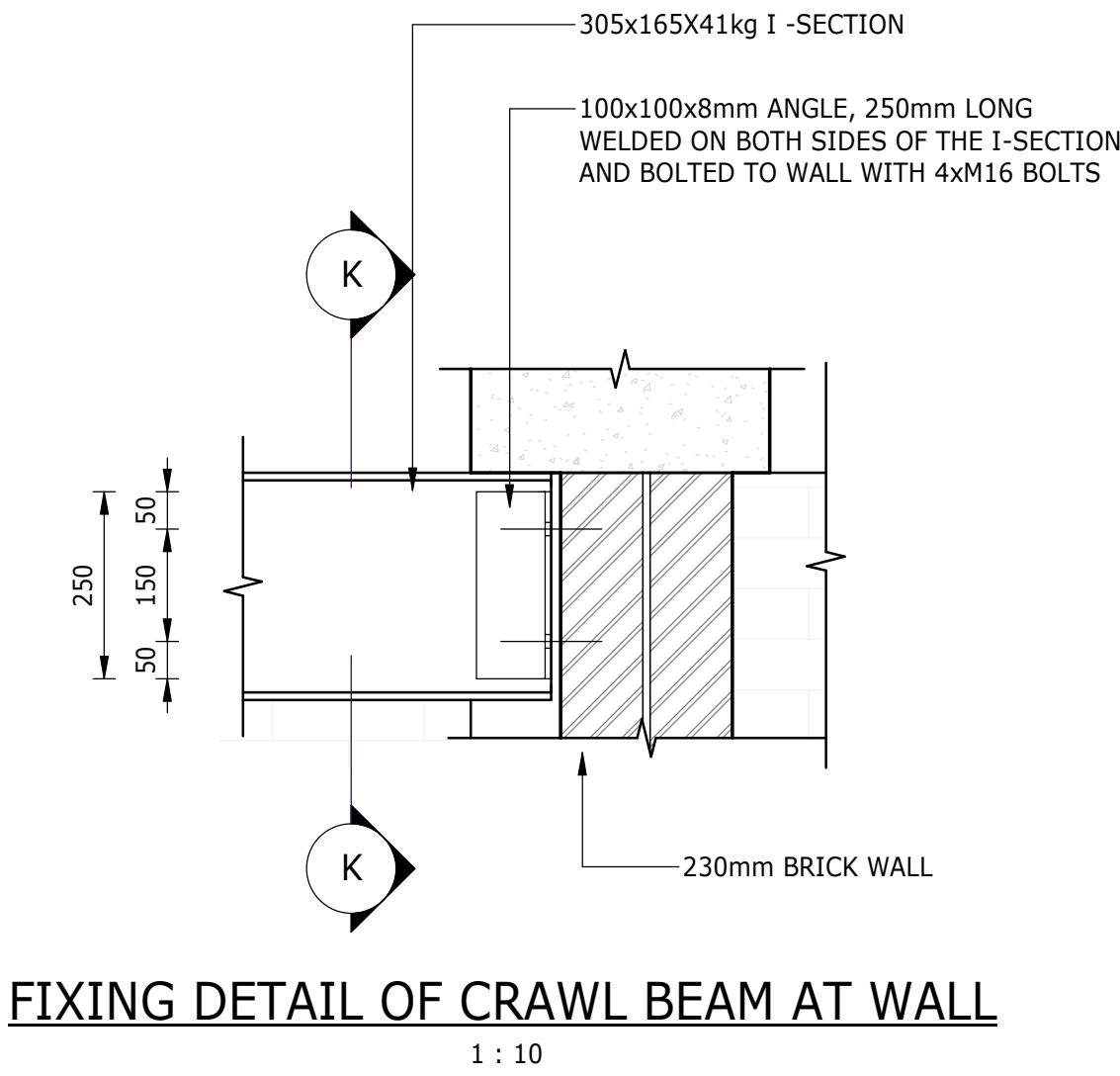
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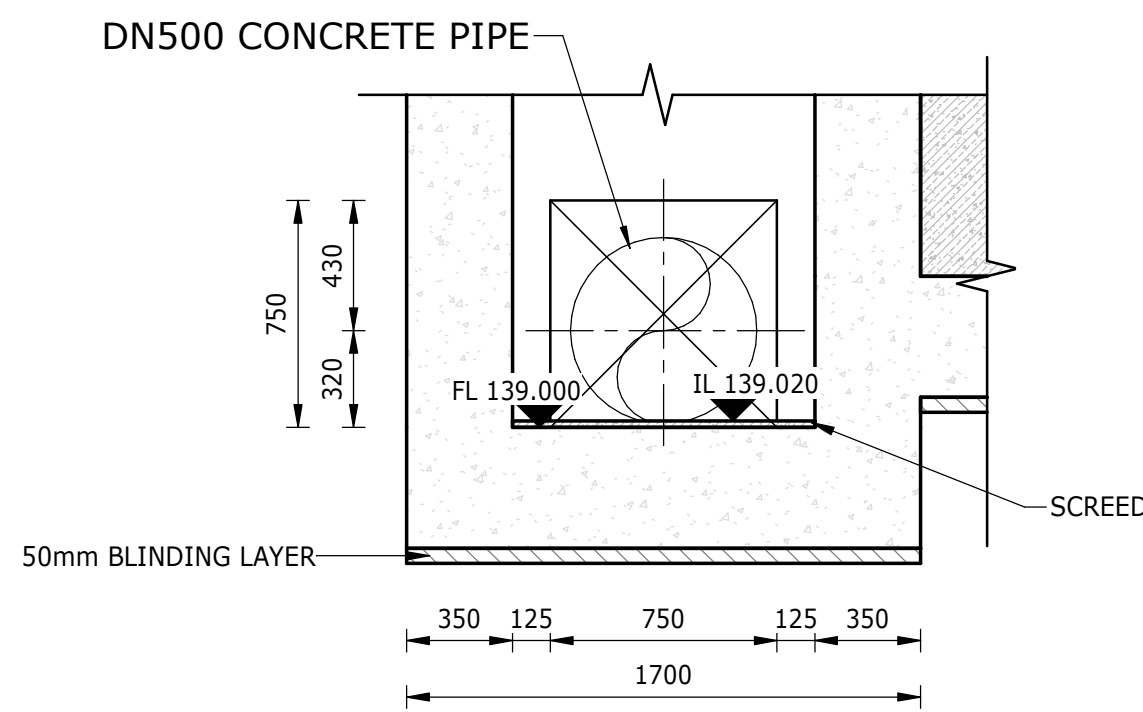
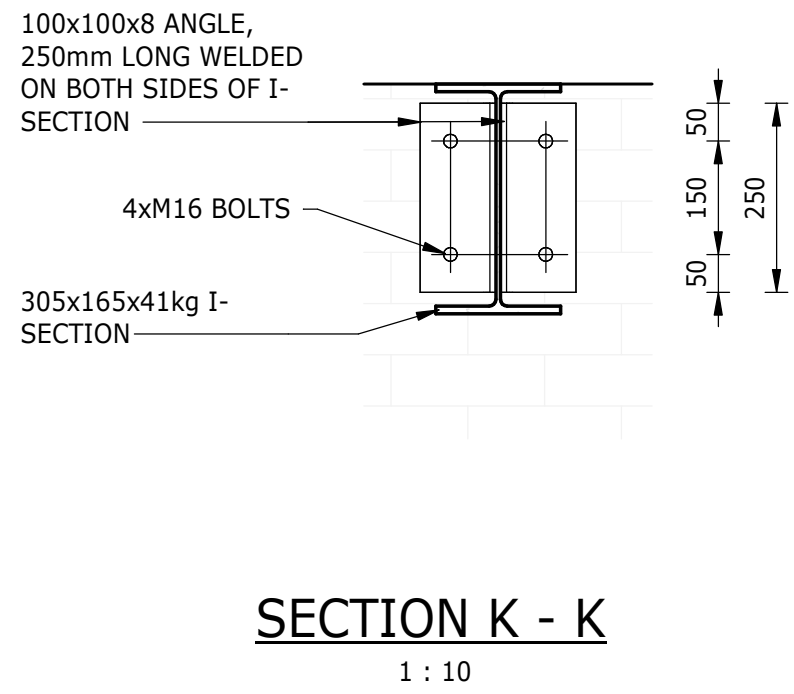
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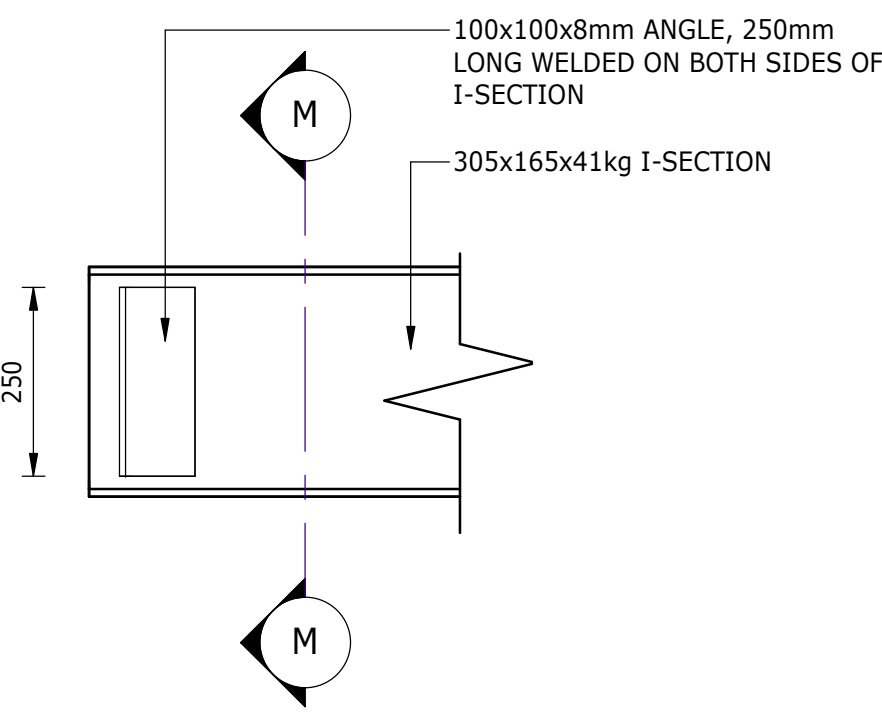
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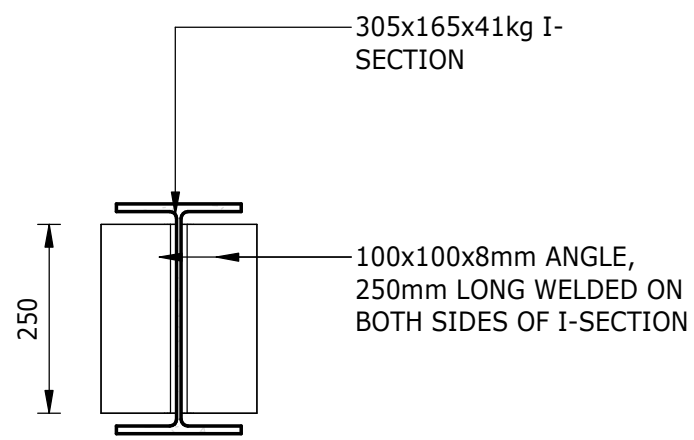
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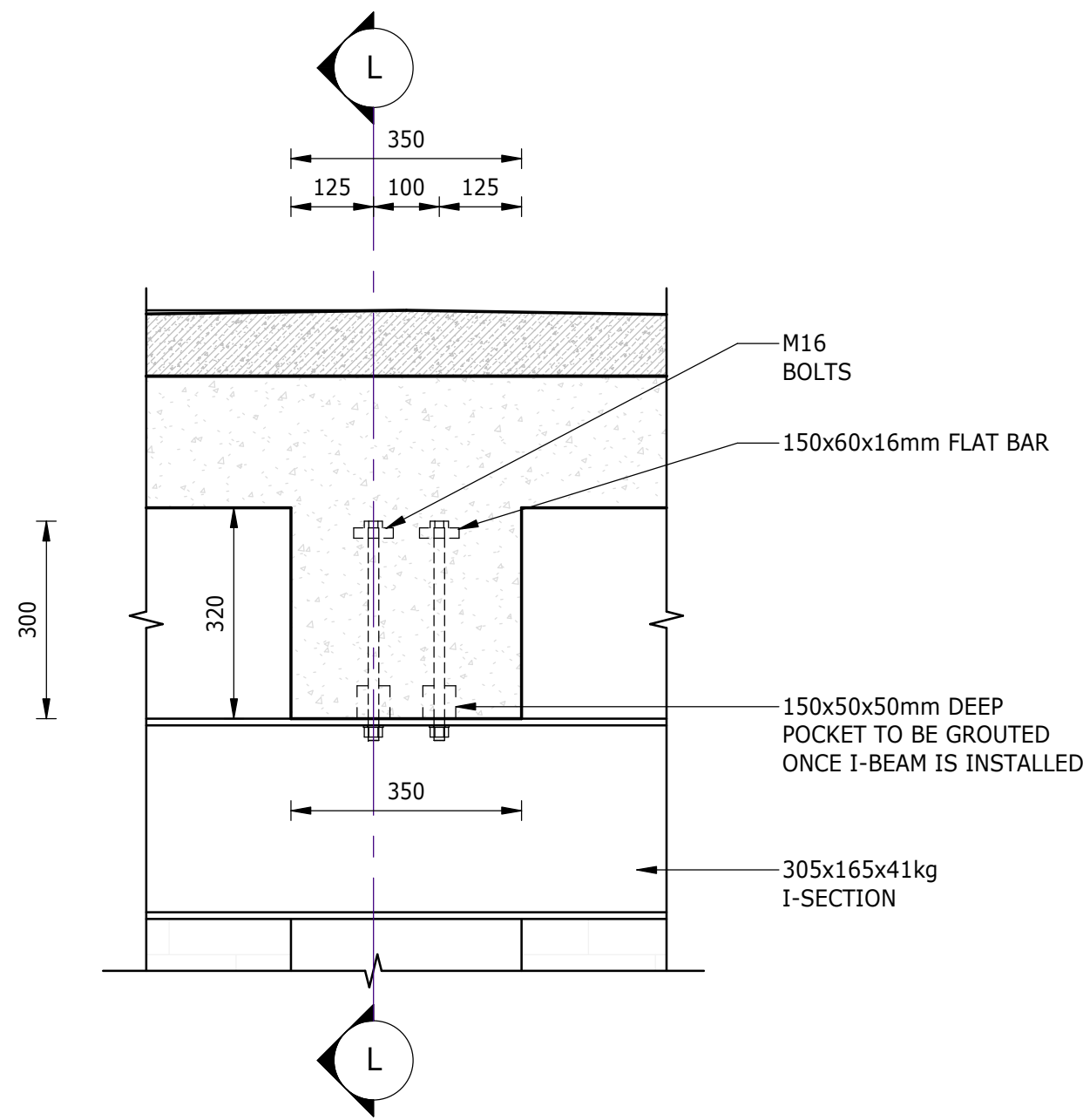
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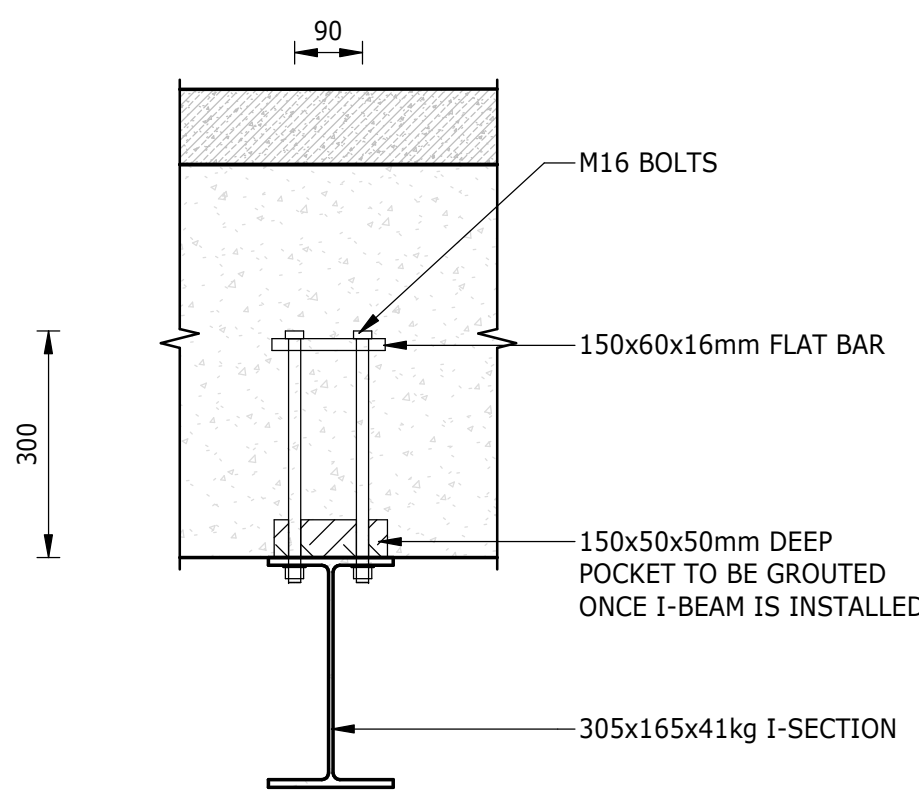
DETAIL 2: STOP END ON CRAWL BEAM AT CANTILEVERED END
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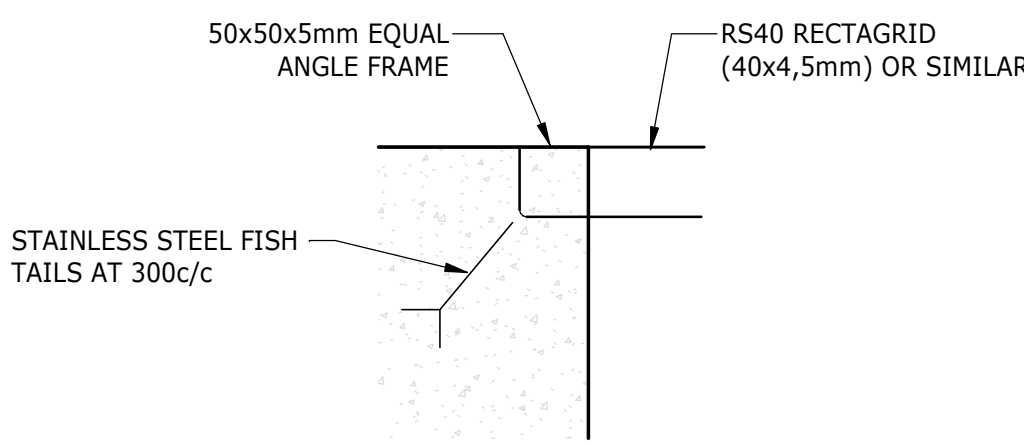
SECTION M - M
1 : 10



DETAIL 3: TYPICAL FIXING DETAIL OF I-SECTION TO ROOF BEAM
1 : 10



SECTION L - L
1 : 10



DETAIL 5
1 : 5

NOTES

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PROJECT PRINCIPAL: _____
(PRINT NAME)
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PROJECT
UMZIMKHULU BULK WATER AUGMENTATION SCHEME : STAGE 2
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BHOBOYI WATER TREATMENT WORKS

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PLANS, SECTIONS AND DETAILS

FACILITY DESCRIPTION
FACILITIES BUILDING

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DRAWN J.H. APPELGRYN	SIGNATURE AND DATE
DRAWING CHECKED S. MUJINGA	SIGNATURE AND DATE
DESIGN CHECKED N. MKANDLA	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. NGOBESSE	SIGNATURE AND DATE

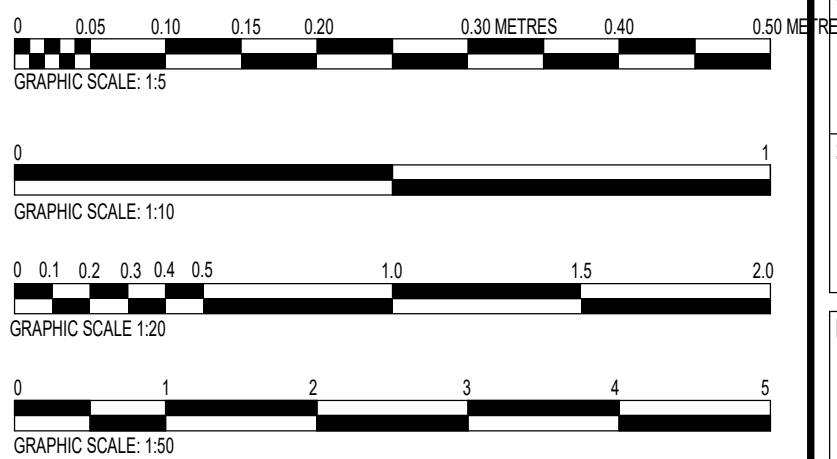
No.	DATE	REVISION DESCRIPTION	CHK	APP
C01	APR 2023	ISSUED FOR TENDER	S.M.	N.M.

PROJECT No. MD5775 CONTRACT No. UGU-07-1631-2023

SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
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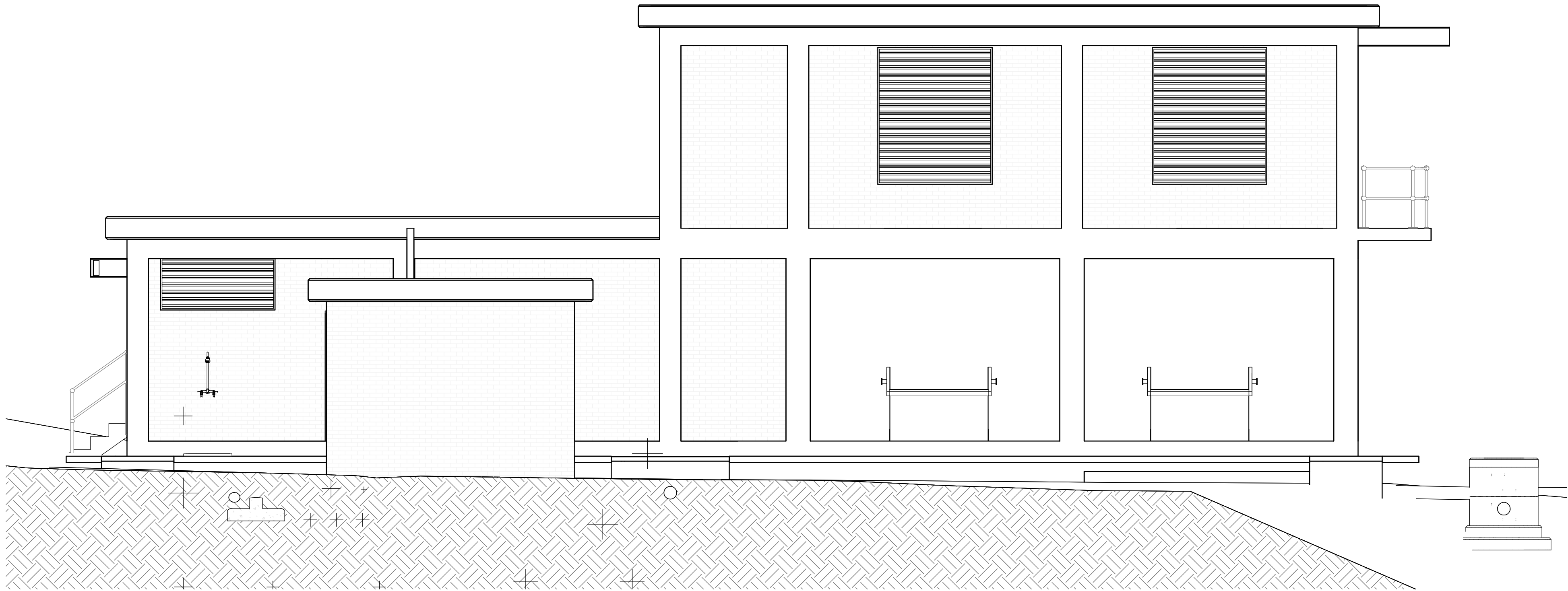
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MD5775-RHD-BR-FB-DR-C-1306	C01

PROJECT No. | ORG. | VIS | LA | TYPE | ROLE | DWG No.

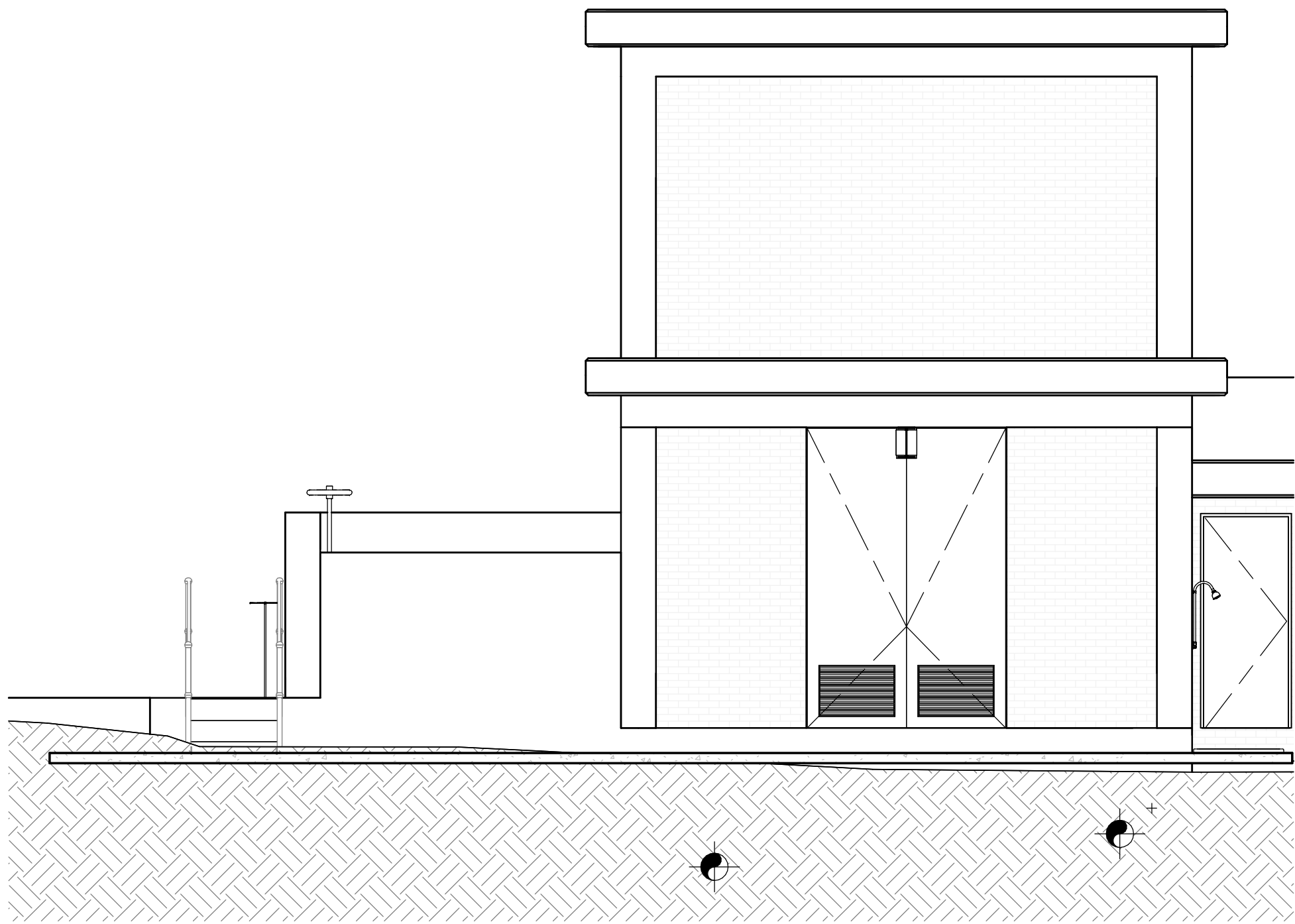




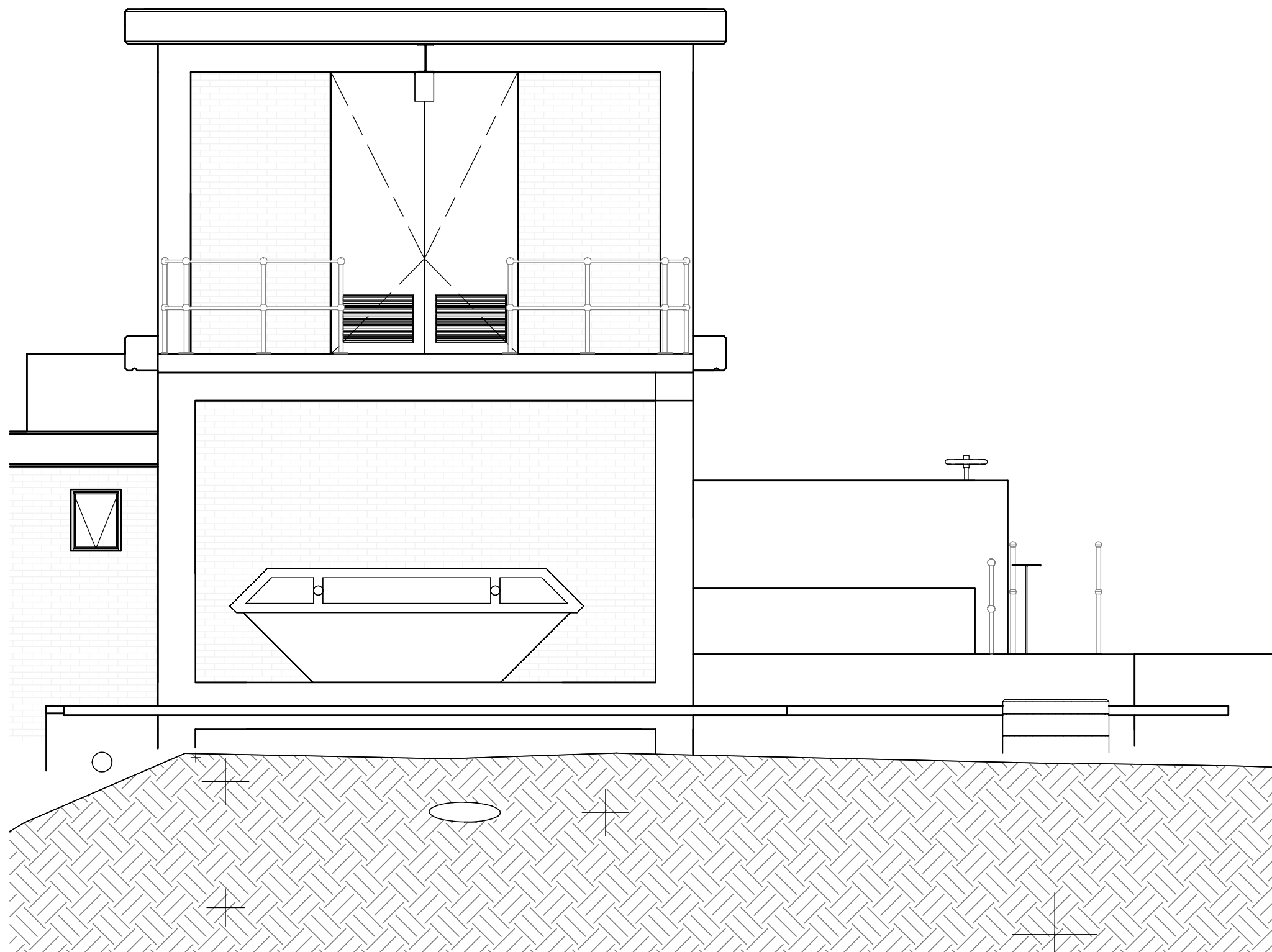
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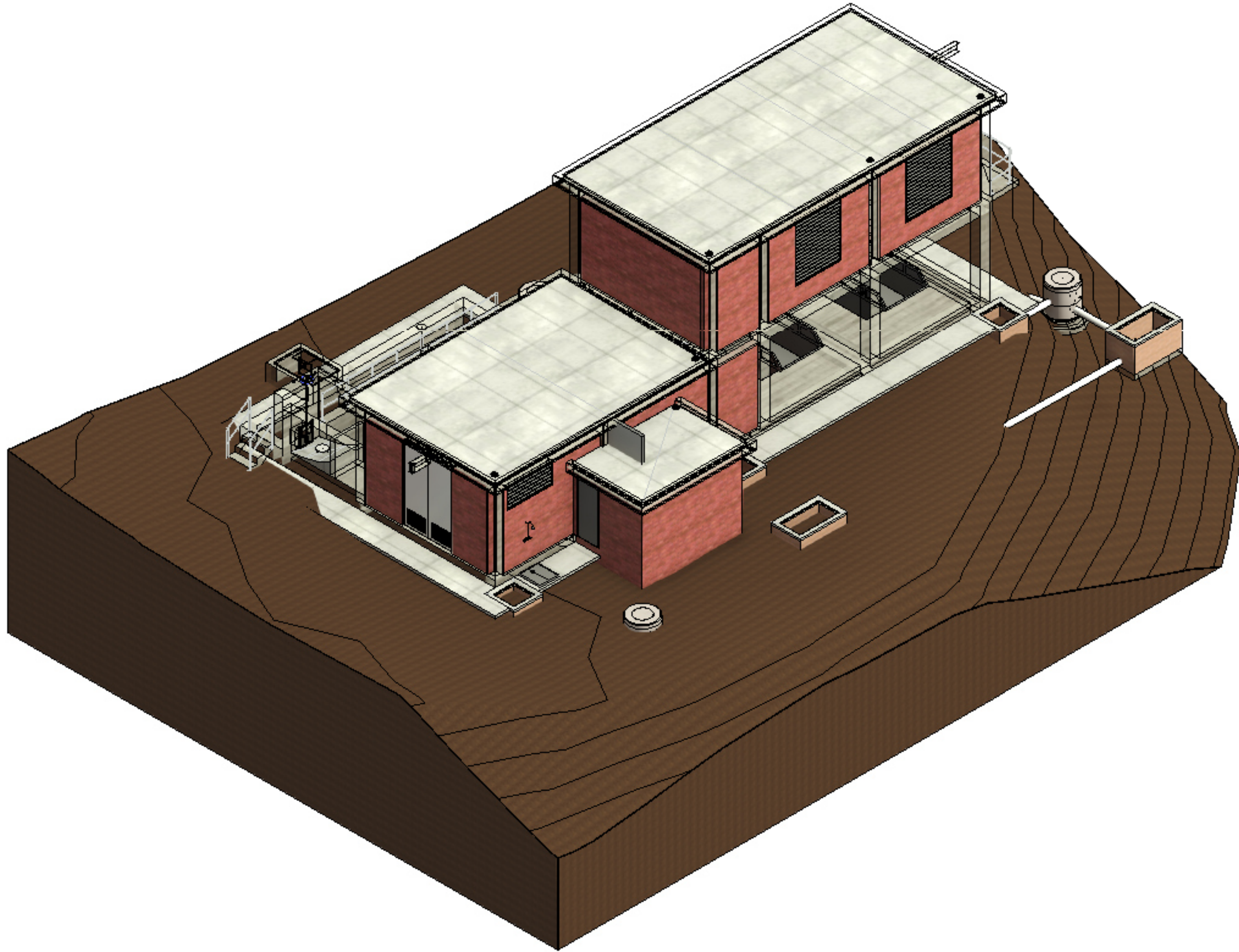
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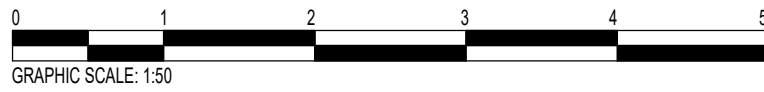
EAST ELEVATION
1 : 50



WEST ELEVATION
1 : 50



3D VIEW



NOTES

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REF. DWG No.	REFERENCE DRAWING DESCRIPTION

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PROJECT PRINCIPAL: _____
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PROJECT PRINCIPAL: _____
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Water Services Provider: _____ Date: _____
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Water Services Authority: _____ Date: _____


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Pietermaritzburg
3201

PROJECT
UMZIMKHULU BULK WATER AUGMENTATION SCHEME : STAGE 2
BACKWASH WATER RECOVERY FACILITY
BHOBOYI WATER TREATMENT WORKS

DRAWING DESCRIPTION
BHOBOYI WATER TREATMENT WORKS
ELEVATIONS

FACILITY DESCRIPTION
FACILITIES BUILDING

TENDER DRAWINGS

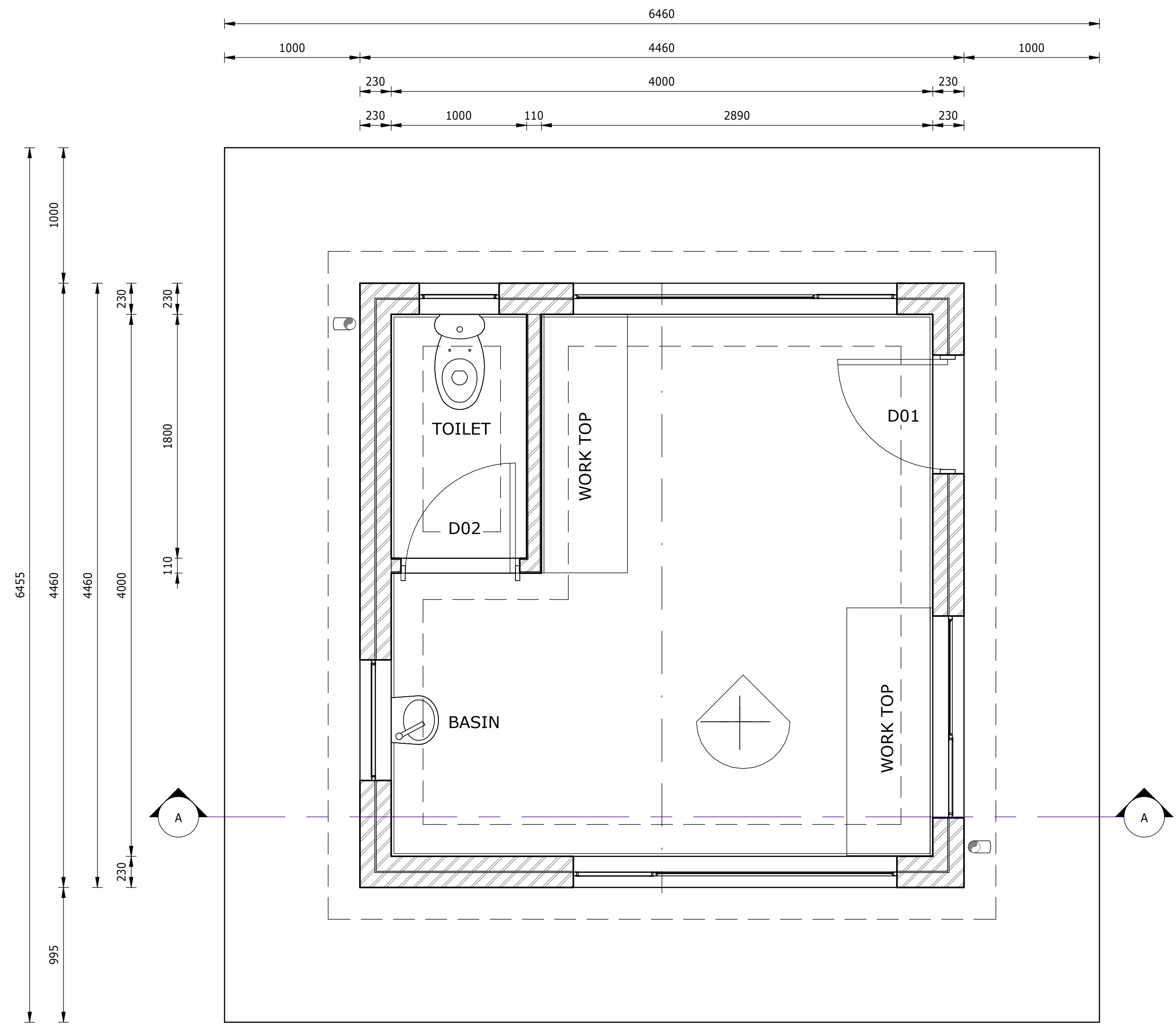
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DRAWN J.H.APPELGRYN	SIGNATURE AND DATE
DRAWING CHECKED S. MUJINGA	SIGNATURE AND DATE
DESIGN CHECKED N. MKANDLA	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. NGOBESSE	SIGNATURE AND DATE

No.	DATE	REVISION DESCRIPTION	CHK	APP
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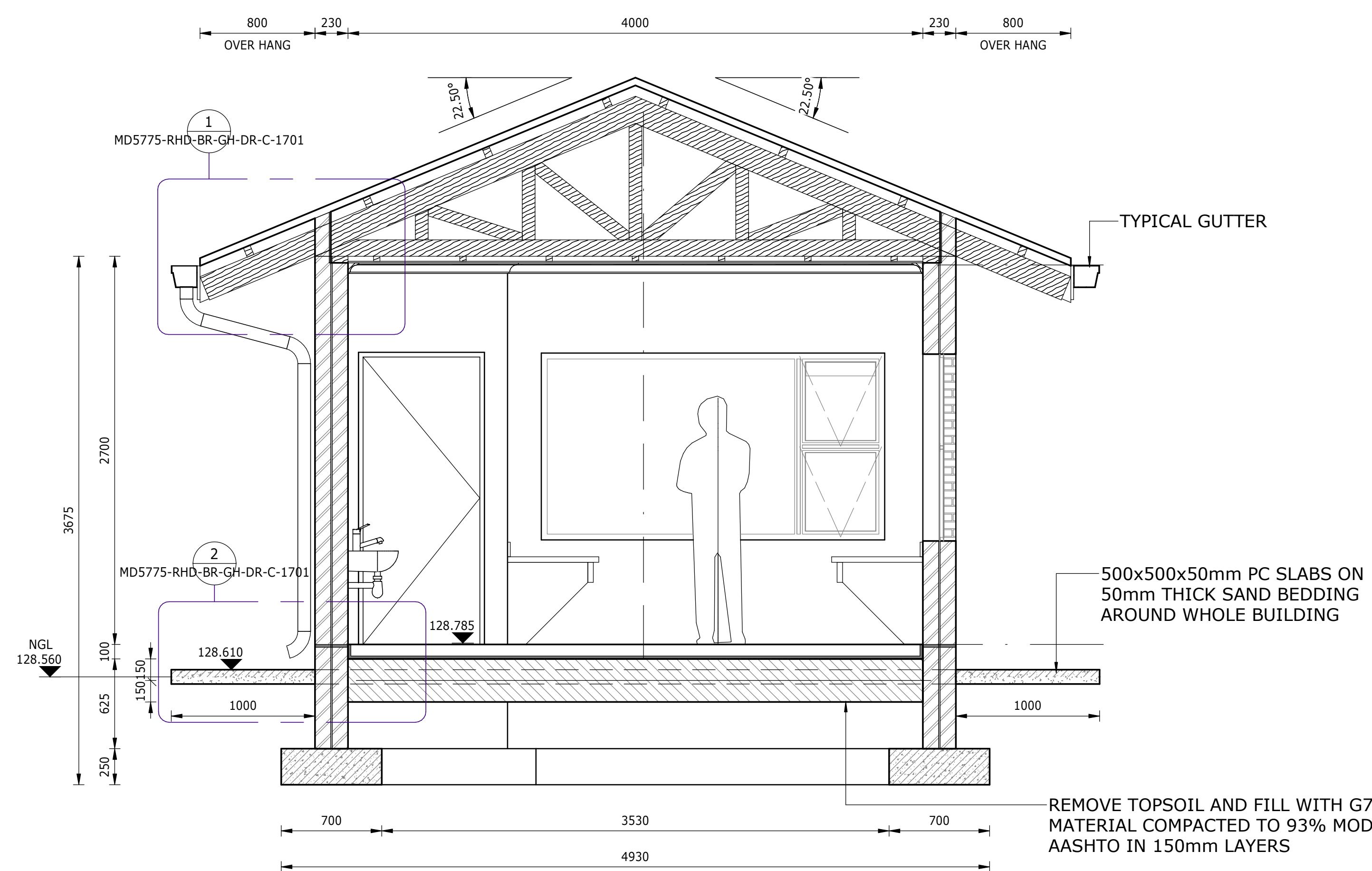
PROJECT No. **MD5775** CONTRACT No. **UGU-07-1631-2023**

SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
SHEET 6 OF 6	CIVIL	A0	1 : 50

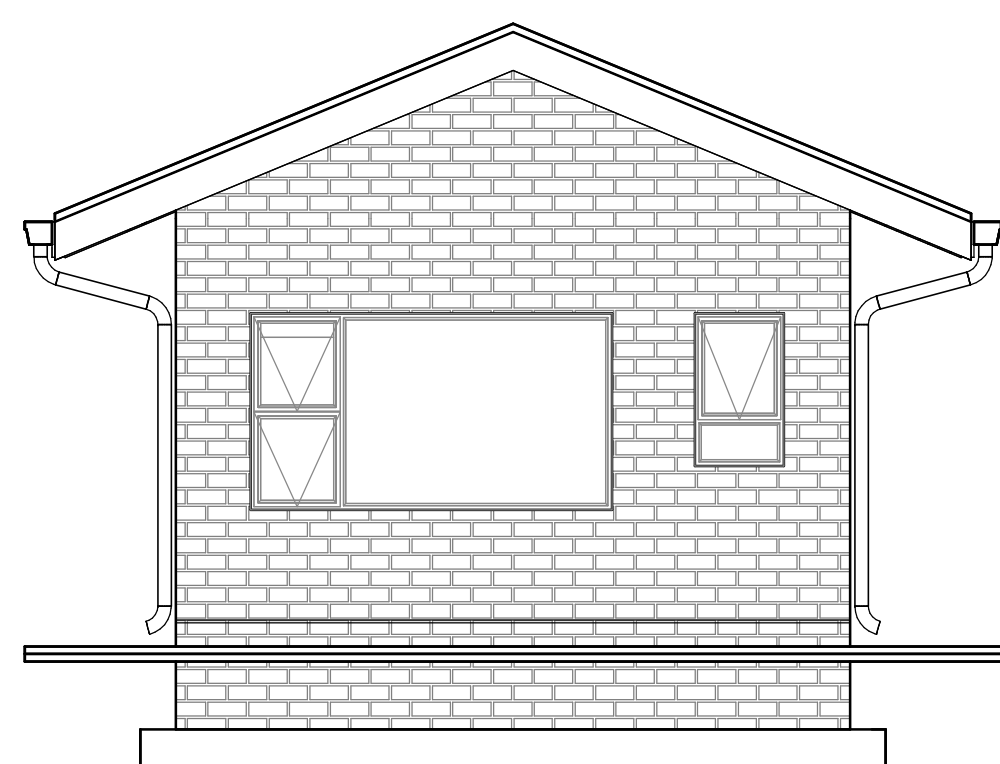
DRAWING No. **MD5775-RHD-BR-FB-DR-C-1307** REV. **C01**
PROJECT No. | ORIG. | VIS | LVL | TYPE | ROLE | DWG No.



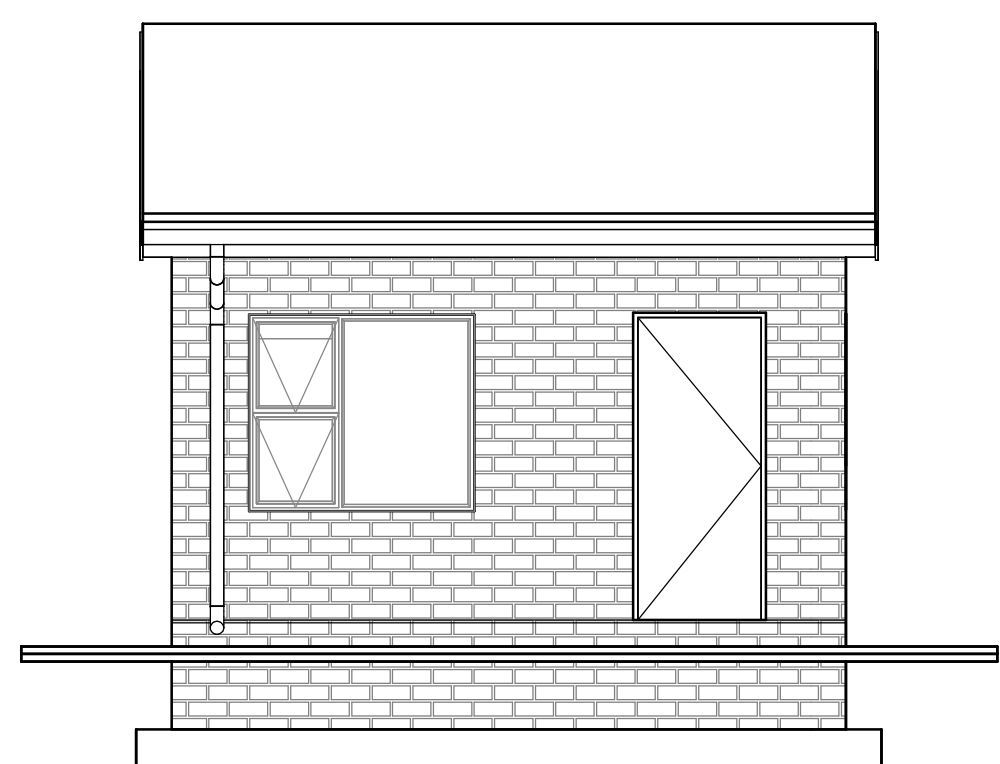
PLAN VIEW
1 : 25



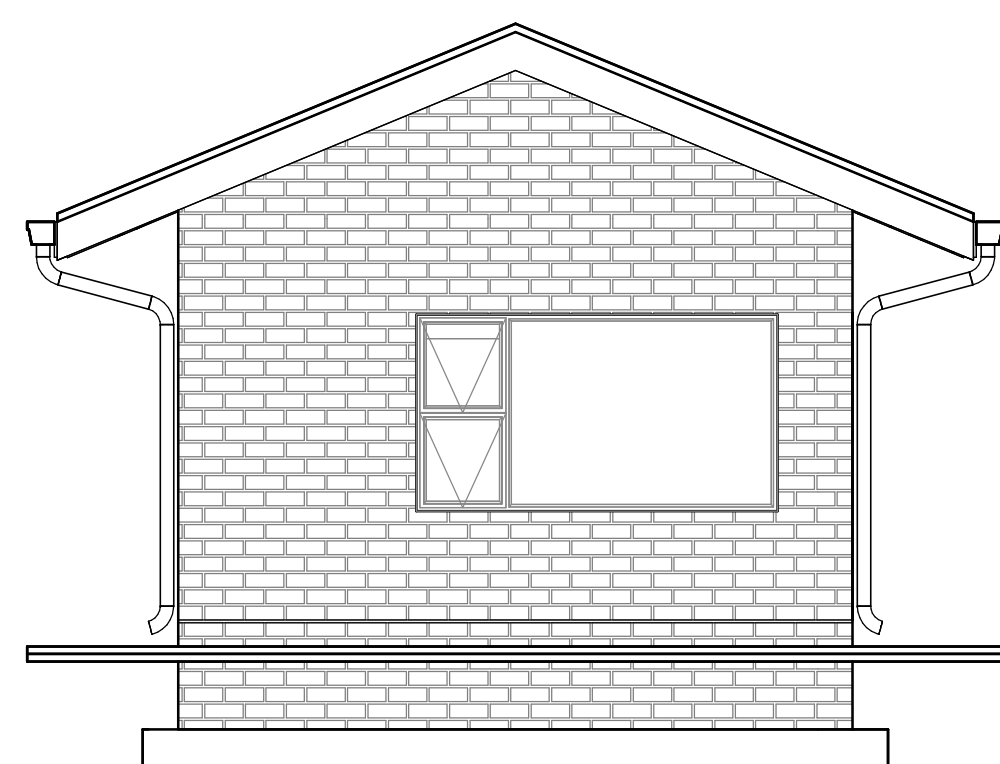
SECTION A-A
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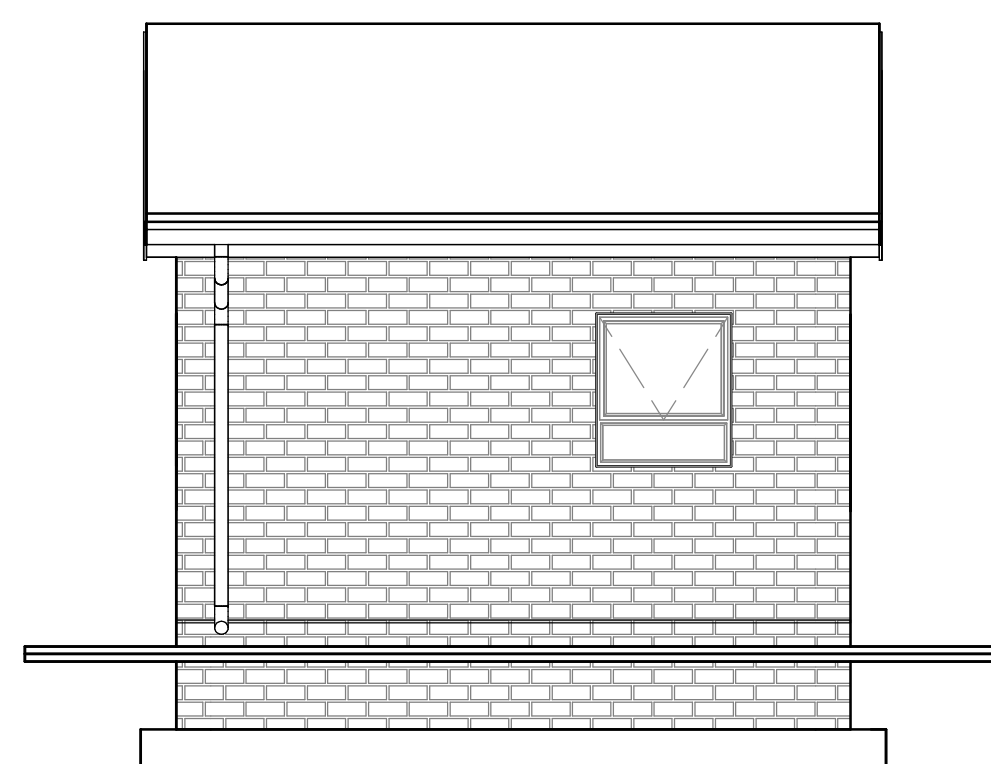
NORTH ELEVATION
1 : 50



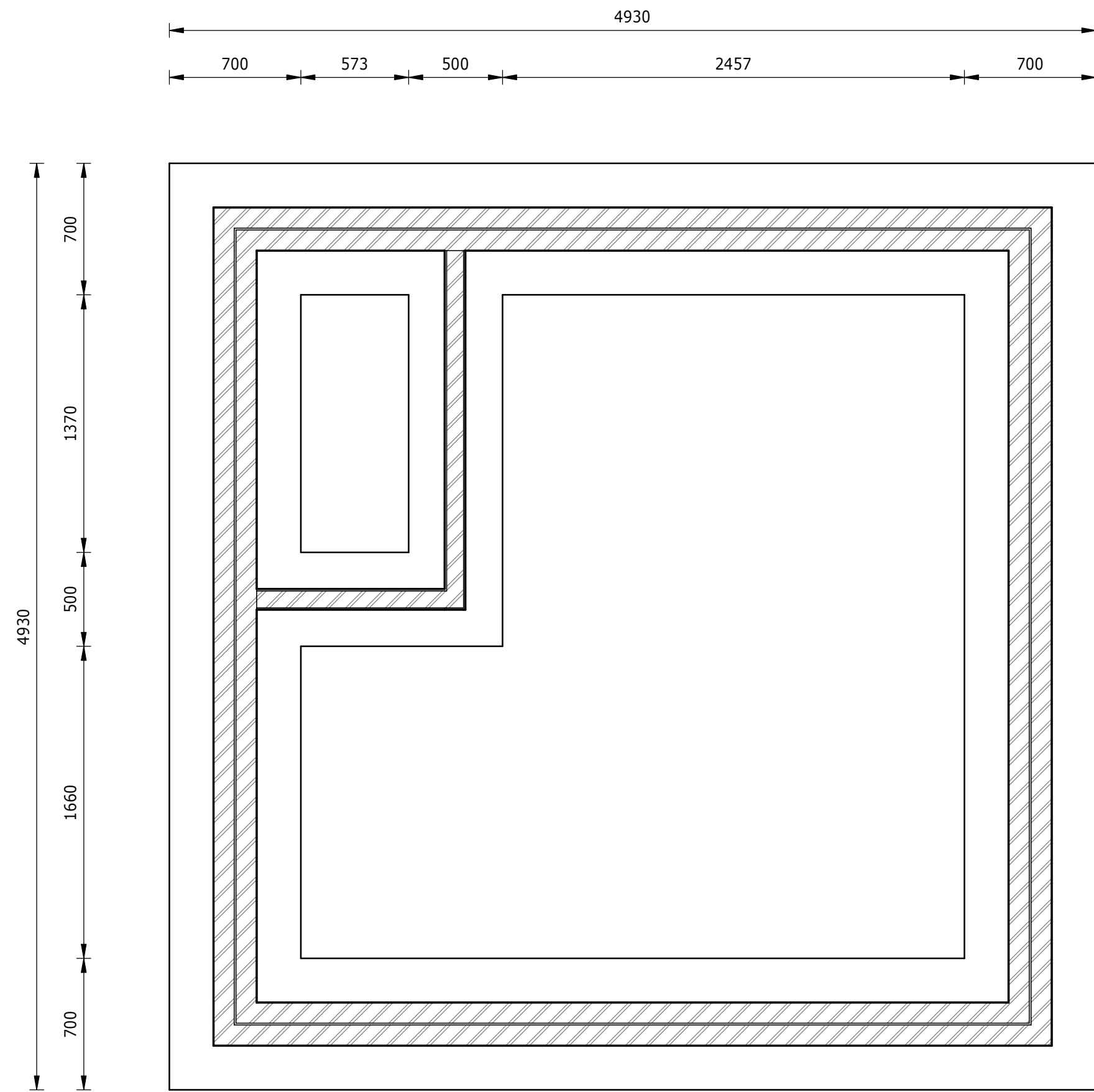
EAST ELEVATION
1 : 50



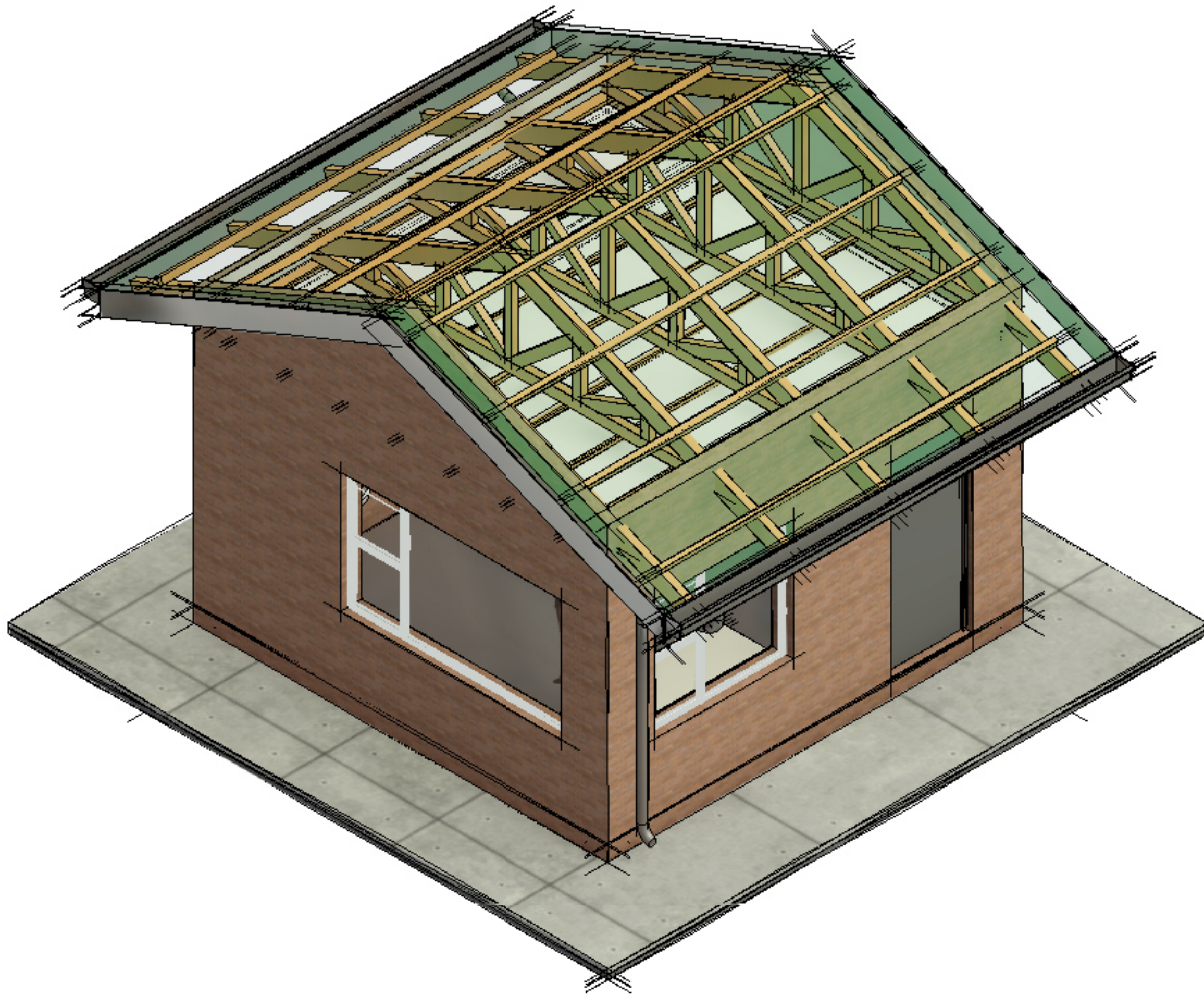
SOUTH ELEVATION
1 : 50



WEST ELEVATION
1 : 50



FOUNDATION PLAN
1 : 25



TYPICAL ISOMETRIC VIEW

SPECIFICATIONS:

GENERAL NOTES:

1. ALL WORK AND MATERIALS TO COMPLY WITH NATIONAL BUILDING REGULATIONS, SANS 1200, 0164, 82, 1083, AND 1090.
2. DIMENSIONS ARE NOT TO BE SCALED OFF THE DRAWINGS. ALL DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER TIMEOUSLY.
3. ALL REINFORCING STEEL SHALL BE INSPECTED BY THE ENGINEER AND WRITTEN APPROVAL GIVEN PRIOR TO CASTING OF CONCRETE.
4. CURING OF CONCRETE TO THE SATISFACTION OF THE ENGINEER TO BE MAINTAINED FOR A MINIMUM OF 7 DAYS.
5. ALL SHARP EXPOSED CONCRETE EDGES TO BE CHAMFERED 20 x 20mm.
6. PRECAST CONCRETE LINTOLS TO BE PLACED ACROSS ALL OPENINGS.
7. GROUND WATER CONTROL AND FALLS OF STORMWATER DRAINAGE TO BE AGREED WITH ENGINEER ON SITE.
8. ALL BULK EXCAVATIONS, PLATFORMS, SOIL IMPROVEMENTS, FOUNDATIONS AND CONSTRUCTION JOINTS TO BE APPROVED BY THE ENGINEER.

FOUNDATIONS:

1. ALL FOUNDATION EXCAVATIONS TO BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO ANY CONCRETE BEING CAST. FOUNDATION LEVEL TO BE ON ROCK.
2. FOUNDATIONS TO BE STRIP FOOTINGS USING 25/19MPa/mm CONCRETE.

DOORS:

1. INTERNAL DOORS (D1) TO BE MEDIUM DUTY VENEERED DOORS SIZE 2032 x 762 x 44mm REBATED. HARD WOOD DOOR FRAME 114mm x 44mm ORDINARY ARKS ROUNDED. DOORS AND FRAMES TO BE PAINTED WITH PRIMER AND 2 No. COATS WHITE GLOSS ENAMEL PAINT.
2. EXTERNAL DOORS (D2) TO BE HARDWOOD DOOR SIZE 2032 x 832 x 40mm. WITH PRESSED METAL DOOR FRAME. DOORS TO BE PAINTED WITH THREE COATS OF NOVA 15 OR SIMILAR APPROVED. ALL DOORS TO RECEIVE THEIR FIRST COAT OF NOVA 15 PRIOR TO BEING INSTALLED.
3. ALL EXTERNAL DOORS TO BE PROVIDED WITH HEAVY DUTY SECURITY GATE, HEAVY DUTY HOT DIPPED GALVANIZED WITH SUITABLE LOCKING MECHANISM.

LOCKS TO DOORS:

1. 3 LEVER MORTICE LOCK TO EXTERNAL DOORS.
2. 3 LEVER MORTICE TO INTERNAL DOORS.
3. APPROVED SLOTTED LOCK TO ALL TOILETS AND SHOWERS WITH "ENGAGED" OR RED EXTERNAL LOCK SIGN.

FLOOR:

1. 100mm THICK 25 MPa CONCRETE SURFACE BED (REINFORCED WITH 1 LAYER WELD MESH REF. 395) ON 250 MICRON PVC DAMP PROOF MEMBRANE ON WELL COMPACTED HARDCORE TREATED WITH POISON FOR TERMITES.

FLOOR FINISHES:

1. SCREED PLUS INSIMBI (RATED 7) FLOOR TILES OR SIMILAR APPROVED TO ALL ROOMS.
2. ALL SKIRTINGS FROM FLOORTILES 75mm HIGH.

WINDOWS:

1. ALL WINDOWS TO BE ALUMINIUM TO SABS.
2. TOILET WINDOWS TO BE GLAZED WITH OPAQUE GLASS.

WALL AND CEILING FINISHES:

1. ALL EXTERNAL WALLS TO BE FIRESIDE TRAVERTINE FBA FACE BRICK OR SIMILAR APPROVED WITH RULED JOINTS.
2. CEILING TO BE PAINTED WITH ONE COAT PRIMER PLUS TWO COATS WHITE PLASCON VELVEGO POLYURETHANE VELVET NON-D RIP ENAMEL OR SIMILAR APPROVED.
3. ALL INTERNAL WALLS TO BE 10mm PLASTER AND ONE COAT PRIMER PLUS TWO COATS WHITE PLASCON VELVEGO POLYURETHANE VELVET NON-D RIP ENAMEL OR SIMILAR APPROVED.
4. SINK AREA TO BE TILED.

BRICKWORK:

1. 7MPa SANS COMPLIANT BRICK TO BE USED WITH CLASS II MORTAR, 7 MPa LABORATORY STRENGTH, 5MPa WORK TESTS- APPROXIMATE MIX PROPORTION OF 1 PART CEMENT TO 6 PARTS BUILDING SAND.
2. NHBC APPROVED BRICKFORCE EVERY FIFTH COURSE.
3. 375 MICRON DPC UNDER WALLS AT FLOOR OR SLAB LEVEL.
4. ALL EXTERNAL WALLS TO BE FACE BRICK, FIRESIDE TRAVERTINE FBA AS SUPPLIED BY COROBRICK.
5. ALL INTERNAL WALLS TO HAVE COMMONS, 10mm THICK PLASTER.
6. INTERNAL BRICK WORK TO TOILET AND SHOWERS TO BE 2100mm HIGH.
7. ALL OPENINGS, DOORS AND WINDOWS, TO HAVE ONE HEADER COURSE OVER WITH NHBC APPROVED BRICKFORCE EVERY COURSE FOR FIVE COURSES ABOVE EXTENDING A MINIMUM OF 1000mm ON EACH SIDE OF THE OPENING. FRAMES TO BE PROPE FOR A MINIMUM OF SEVEN DAYS AFTER COMPLETION OF THE BRICK WORK TO WALL PLATE LEVEL.

ROOF:

1. ROOF COVERING TO BE HULAMIN ALUMINIUM SHEET, 1BR A7 PROFILE 0,80mm (COLOUR KINGFISHER BLUE).
2. TIMBER TRUSSES AT MAXIMUM 1000mm CENTRES.
3. ROOF TRUSSES TO BE DESIGNED BY MANUFACTURER'S Pr. ENG.
4. ROOF PITCH = 22.5°
5. SISALATION 420 KSA UNDERLAY TO BE PROVIDED OVER FULL ROOF AREA.

CEILING:

1. 6mm RHINO BOARD ON 38 x 38 TIMBER BATTENS AT 400 CENTRES EACH WAY. CORNICE AND COVER STRIPS TO BE PROVIDED.

WATER SUPPLY:

1. THE CONTRACTOR SHALL WORK OUT THE NEAREST AND SHORTEST ROUTE USING THE LEAST NUMBER OF BENDS AND FITTINGS. THE INSTALLATION SHALL BE PROPERLY CO-ORDINATED WITH ALL OTHER SERVICES AND CROSSOVERS SHALL BE AVOIDED WHERE POSSIBLE.
2. UNLESS OTHERWISE SPECIFIED TO THE CONTRARY ON THE DRAWINGS THE FOLLOWING TYPES OF PIPES SHALL BE USED:
 - 2.1 PIPEWORK ABOVE GROUND AND BURIED PIPEWORK SHALL BE POLYCOP COPICAL CAPILLARY FITTINGS SECURELY FIXED TO WALLS WITH BRASS HOLDER BATS. PIPEWORK MUST BE NEATLY SET OUT AND MUST BE FIXED, PLUMB AND LEVEL.
 - 2.2 ALL INTERNAL PIPEWORK SHALL BE CHASED INTO WALLS. THE CONTRACTOR IS RECOMMENDED TO CHALK THE POSITIONS OF ALL PIPE RUNS FOR APPROVAL BY THE ENGINEER BEFORE PROCEEDING WITH THE INSTALLATION. INTERNAL PIPEWORK SHALL BE GRADE 2 COPPER TUBING WITH COPICAL CAPILLARY FITTINGS, MALLEABLE COPPER PIPING MAY BE USED TO CONNECT FITTINGS PIPE SIZES AT INDIVIDUAL UNITS.
3. INCOMING FEED 20mm FEEDS TO BATH AND SHOWER BRANCHES TO WC/BASINS/SINKS/SHOWERS 15mm.
4. PIPE DIAMETERS MAY NOT BE VARIED. POLYCOP MAY BE USED FOR UNDERGROUND BUT NOT FOR HOT WATER INSTALLATIONS.
5. BURIED PIPES SHOULD BE LOCATED IN AREAS WHERE THEY CAN BE REACHED FOR MAINTENANCE WITH LITTLE DISRUPTION AND EXPENSE. COVER SHALL BE MINIMUM 450mm EXCEPT UNDER HEAVY DUTY AREAS WHERE THE COVER SHALL BE 700mm, WHERE FEASIBLE THE PIPE SHALL BE LAID IN THE SAME TRENCH AS OTHER SERVICES.

CHASES IN WALL:

1. CHASES SHALL BE MACHINE CUT WITH SUFFICIENT DEPTH SO AS NOT TO AFFECT THE THICKNESS OF THE PLASTER COAT. HORIZONTAL CHASES EXCEEDING 1 METER IN LENGTH AND LOCATED IN BRICK SHALL NOT BE PERMITTED WITHOUT THE ENGINEERS APPROVAL.
2. HOLES THROUGH WALLS SHALL BE DRILLED AND PLUNCHED.

SANITARY AND FITTINGS:

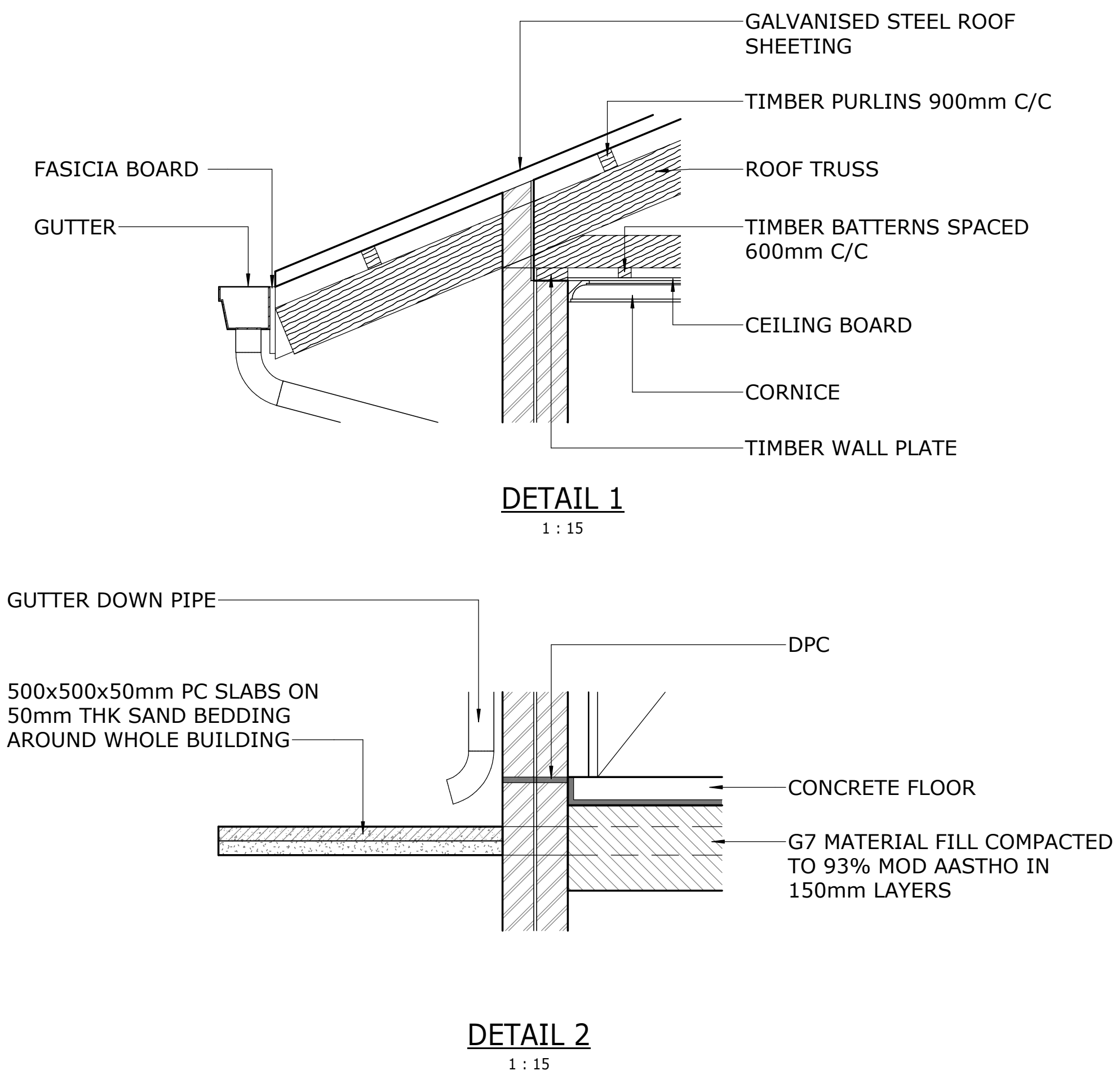
1. WC - CONSUL CLOSE-COUPLED TOILET SUITE AS SUPPLIED BY CERAMIC TILE MARKET OR SIMILAR APPROVED. TOILET BRUSH AND HOLDER IS TO BE PROVIDED TO THE APPROVAL OF THE ENGINEER.
2. WHB - CONSUL WASH HAND BASIN AND UNIVERSAL FULL PEDESTAL AS SUPPLIED BY CERAMIC TILE MARKET OR SIMILAR APPROVED.
3. TRH - SPINDLE TOILET ROLL HOLDER (CODE TVCH6225) AS SUPPLIED BY CERAMIC TILE MARKET OR SIMILAR APPROVED TO EACH TOILET.
4. 1 No. 500 x 600mm FRAMED MIRRORS TO BE FIXED TO THE WALL.

ISOLATING VALVES:

1. GATE VALVES TO SUIT THE RELEVANT PIPE DIAMETER SHALL BE INSTALLED TO TOILET, GEYSER AND WATER SUPPLY TO EACH ROOM.

SEWER:

1. ALL SEWER PIPES TO BE CLASS 34 uPVC.
2. SEWER PIPES ARE TO BE LAID WITH A MINIMUM FALL OF 1:90.
3. ALL RODDING EYES TO BE CAST IRON.



NOTES

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REF. DWG No.	REFERENCE DRAWING DESCRIPTION
08-SL-DR-C-0001	SITE LAYOUT

APPROVED:

PROJECT PRINCIPAL:
(PRINT NAME) _____

PROJECT PRINCIPAL:
(SIGNATURE) _____

DATE: (DD/MM/YYYY) _____

CLIENT



Approved: _____ Date: _____

Implementing Agent: _____ Date: _____

Water Services Authority: _____ Date: _____



P.O. Box 1966
Pietermaritzburg
3200

Block C, 3rd Floor
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Pietermaritzburg
3201

PROJECT

UMZIMKHULU BULK WATER AUGMENTATION SCHEME : STAGE 2

BACKWASH WATER RECOVERY FACILITY
BHOBOYI WATER TREATMENT WORKS

DRAWING DESCRIPTION

PLAN, SECTIONS AND DETAILS

FACILITY DESCRIPTION

GUARD HOUSE

TENDER DRAWINGS

DESIGNED	SIGNATURE AND DATE
S. MUJINGA	
DRAWN	SIGNATURE AND DATE
J.H. APPELGRYN	
DRAWING CHECKED	SIGNATURE AND DATE
S. MUJINGA	
DESIGN CHECKED	SIGNATURE AND DATE
N. MKANDLA	
PROJ. MANAGER / APPROVED	SIGNATURE AND DATE
S. NGOBESSE	

No.	DATE	REVISION DESCRIPTION	CHK	APP
C01	APR 2023	ISSUED FOR TENDER	N.M.	S.M.

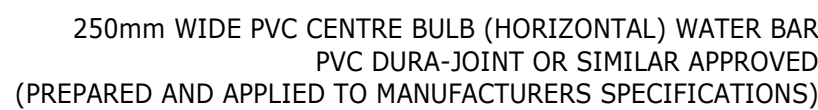
PROJECT No.
MD5775

CONTRACT No.
UGU-07-1631-2023

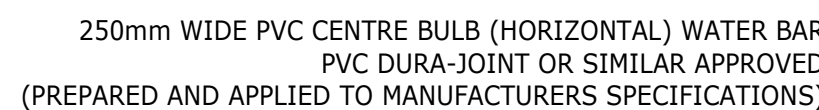
SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
SHEET 1 OF 1	CIVIL	A0	As indicated

DRAWING No.	REV.
MD5775-RHD-BR-GH-DR-C-1701	C01

PROJECT No. | ORG. | VIS. | L.A. | TYPE | ROLE | DWG No.



TYPICAL WALL KICKER JOINT



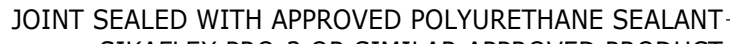
TYPICAL WALL KICKER JOINT



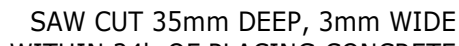
FLOOR PANELS CONTRACTION JOINT



DETAIL D



WALL CONTRACTION JOINT



TYPICAL SAW CUT JOINT DETAIL



DETAIL 1

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(PRINT NAME)

PROJECT PRINCIPAL
(SIGNATURE)

DATE:
(DD/MM/YYYY)

CLIENT



Approved:

Water Services Provider: _____ Date: _____

Implementing Agent: _____ Date: _____

Water Services Authority: _____ Date: _____



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PROJECT

uMZIMKHULU BULK WATER AUGMENTATION SCHEME : STAGE 2

BACKWASH WATER RECOVERY FACILITY
BHOBOYI WATER TREATMENT WORKS

DRAWING DESCRIPTION

JOINT DETAILS

FACILITY DESCRIPTION

STRUCTURAL JOINTS

TENDER DRAWINGS

DESIGNED S. Mujina	SIGNATURE AND DATE
DRAWN L. Muller	SIGNATURE AND DATE
DRAWING CHECKED S. Mujina	SIGNATURE AND DATE
DESIGN CHECKED N. Mkandla	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. Ngobese	SIGNATURE AND DATE

No.	DATE	REVISION DESCRIPTION	CHK	APP
C01	APR 2023	ISSUED FOR TENDER	N.M.	S.M.

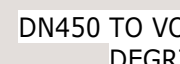
PROJECT No.	CONTRACT No.
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MD5775

UGU-07-1631-202

SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
SHEET 01 OF 01	CIVIL	A0	As indicated

DRAWING No.	REV.
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PROJECT No. ORIG. V/S L/L TYPE ROLE DWG No.	



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(PRINT NAME)

PROJECT PRINCIPAL: _____
(SIGNATURE)

DATE: _____
(DD/MM/YYYY)

Approved: _____

Water Services Provider: _____ Date: _____

Implementing Agent: _____ Date: _____

Water Services Authority: _____ Date: _____



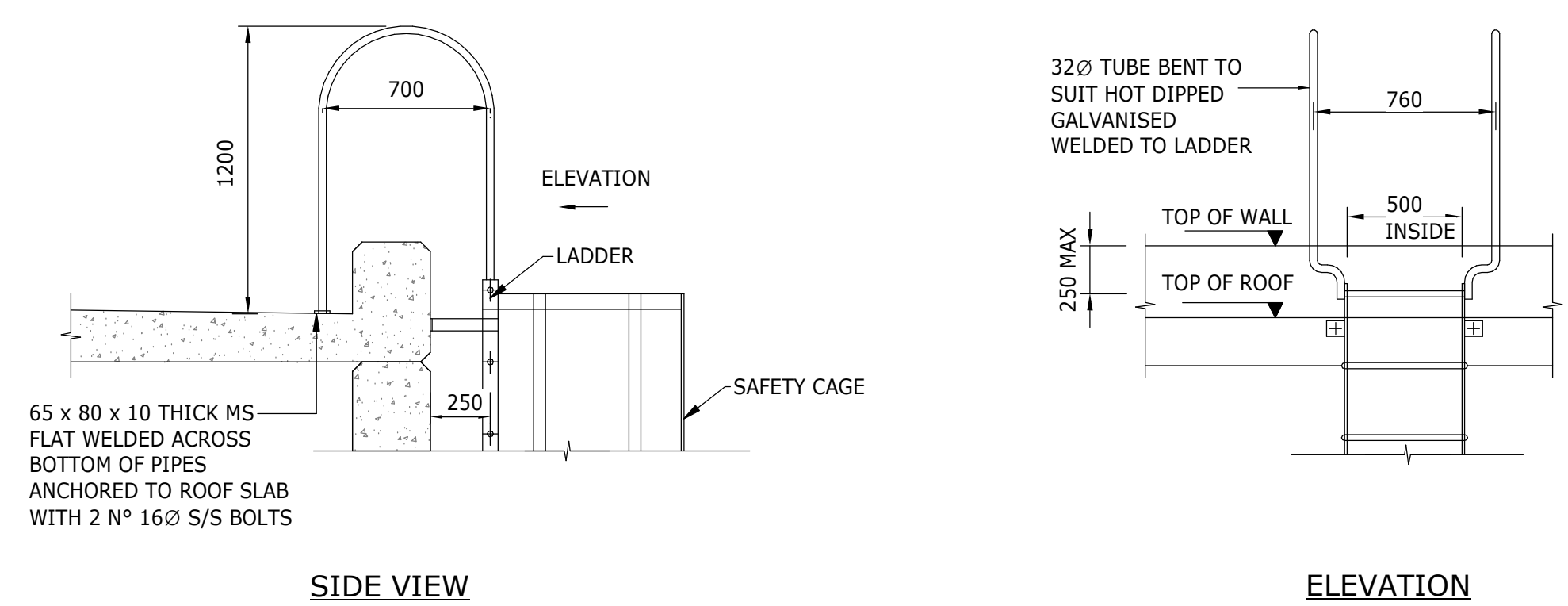
DRAWING DESCRIPTION	PLANS, SECTIONS AND DETAILS
FACILITY DESCRIPTION	VORTEX DEGRITTER

DESIGNED S. Mujinga	SIGNATURE AND DATE
DRAWN J.H. Appelgryn	SIGNATURE AND DATE
DRAWING CHECKED S. Mujinga	SIGNATURE AND DATE
DESIGN CHECKED N. MKANDLA	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. NGOBESE	SIGNATURE AND DATE

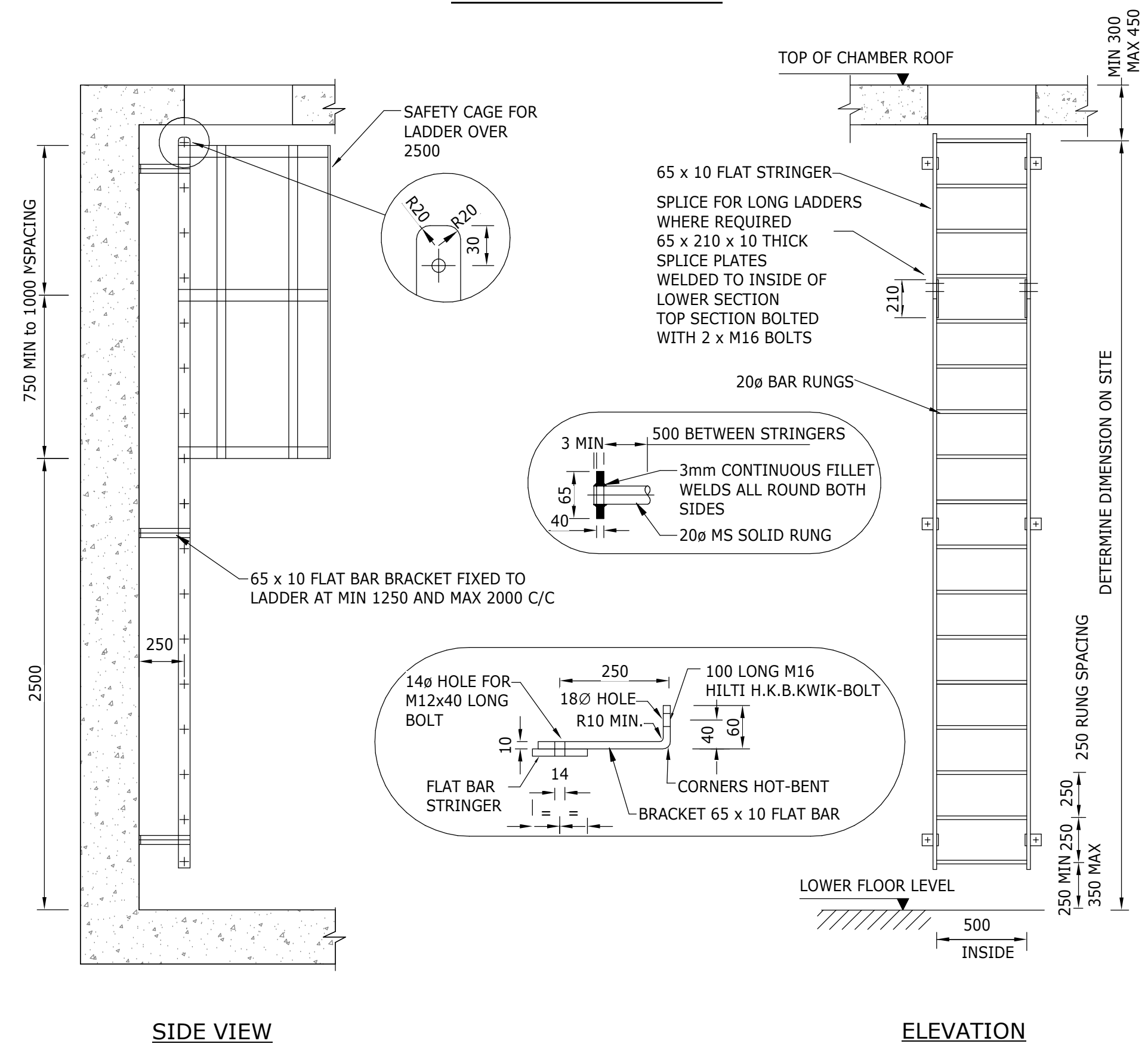
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C01	APR 2023	ISSUED FOR TENDER	S.M.	N.M

MD5775 UGU-07-1631-2023

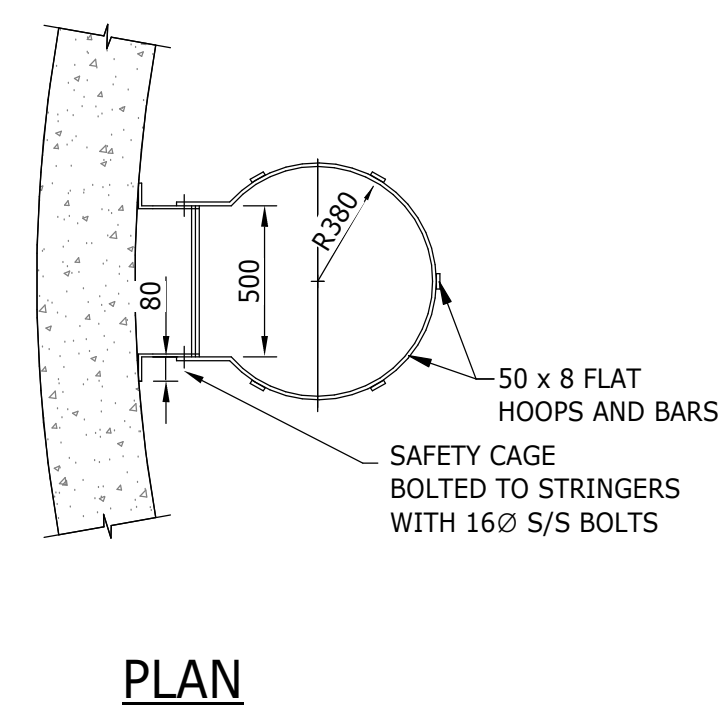
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MD5775-RHD-BR-VD-DR-C-1101	C01
PROJECT No. ORIG. V/S L/L TYPE ROLE DWG No.	



EXTERNAL LADDER



INTERNAL LADDER



LADDER DETAILS

1 : 25

MATERIALS/FINISH:

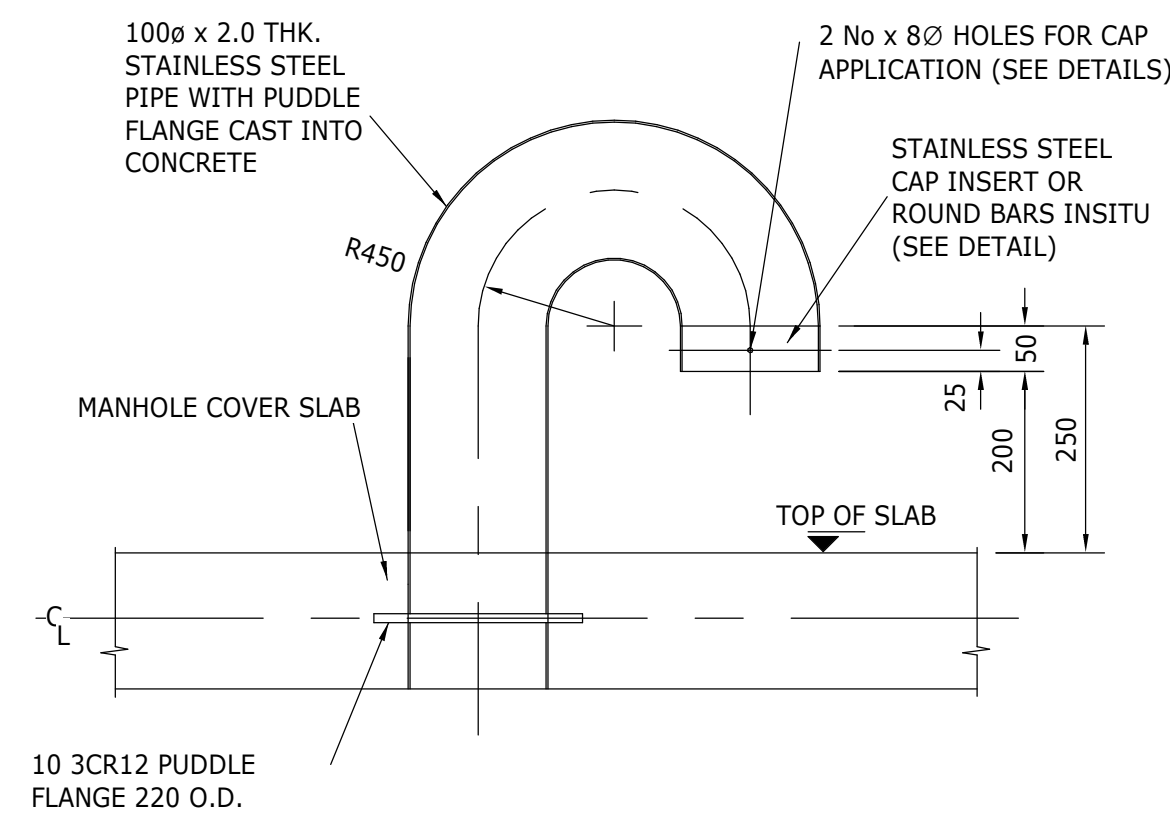
ALL BURRS, WELD-FLASH & SHARP EDGES TO BE REMOVED & MADE SMOOTH.
LADDERS AND FIXINGS INSIDE RESERVOIR TANKS OR IMMersed IN WATER TO BE 316
STAINLESS STEEL. EXTERNAL LADDERS AND FIXINGS TO BE MILD STEEL HOT-DIPPED GALVANISED
TO SABS 1463 AFTER FABRICATION.

STRINGERS:
STRINGERS TO BE FABRICATED FROM 65 x 10 THICK FLAT BAR IN CONTINUOUS LENGTHS. IF JOINED, FISH PLATES ARE TO BE USED ON INSIDE OF STRINGERS. JOINTS TO BE BOLTED WITH 2 x M12 ON EACH SIDE OF JOINT.

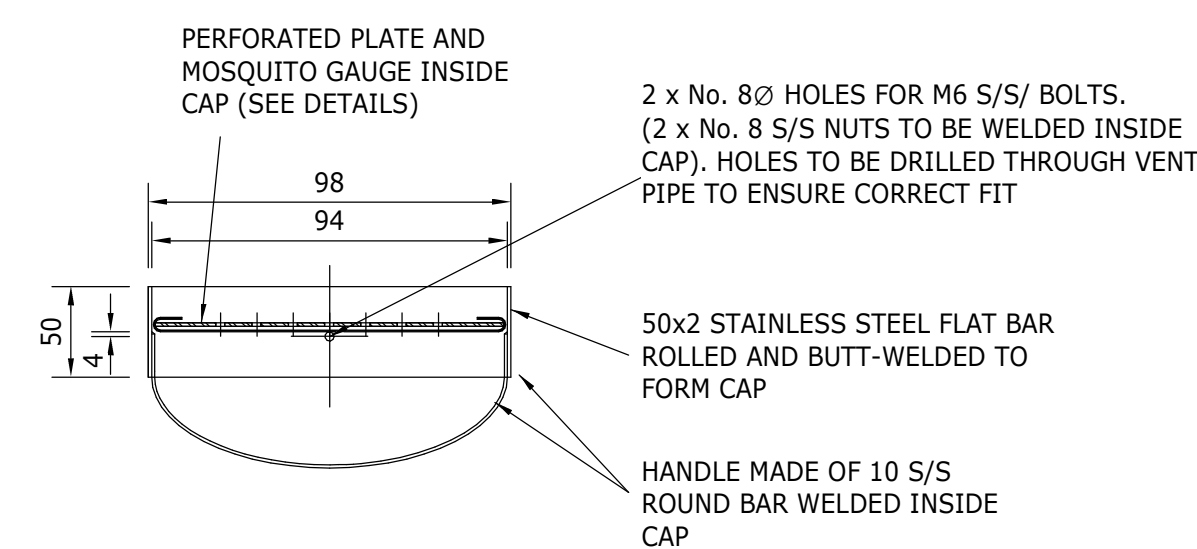
RUNGS:
RUNGS TO BE FABRICATED FROM 20# mm SOLID ROUND BARS. RUNGS TO BE FITTED INTO HOLES DRILLED IN STRINGERS & WELDED BOTH SIDES. HOLES DRILLED TO ALLOW 0.8mm CLEARANCE.

BOLTS:
ALL BOLT HOLES TO BE DRILLED. ALL BOLTS TO BE STAINLESS STEEL OR HOT-DIPPED GALVANISED TO MATCH LADDER.

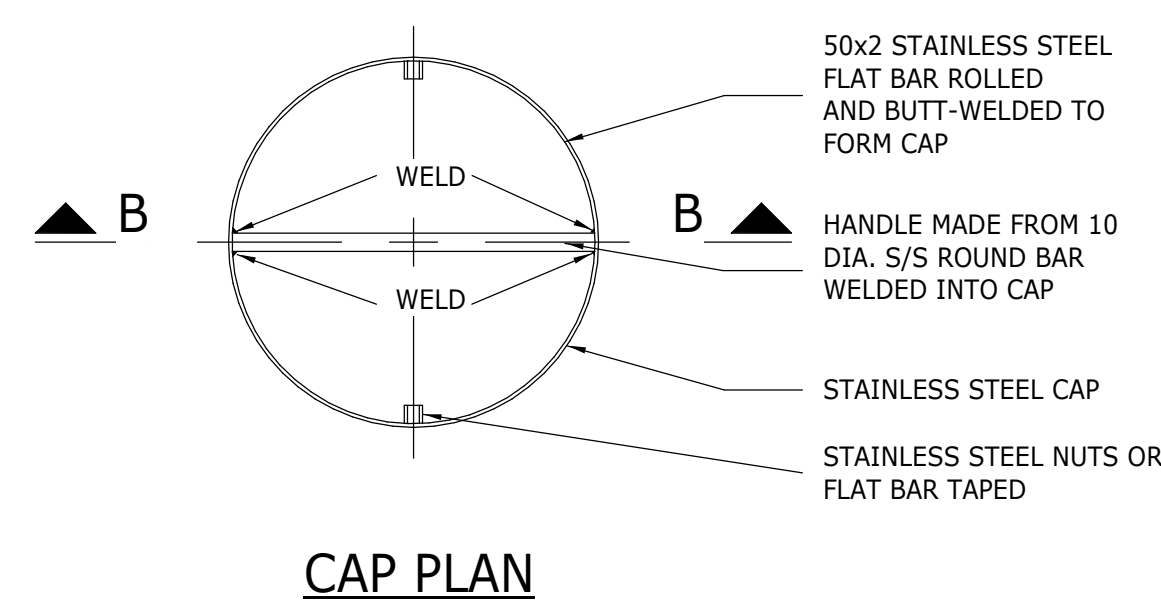
CAGES:
ALL LADDERS OF OVERALL HEIGHT IN EXCESS OF 2500mm TO BE PROVIDED WITH STANDARD SAFETY CAGE (HOOPS AND STRAPS FROM 50mm x 8mm FLAT) FOR THAT HEIGHT WHICH IS IN EXCESS OF 2500mm ABOVE LOWER FLOOR LEVEL. HOOPS AND STRAPS MUST BE BOLT ASSEMBLED MIG.



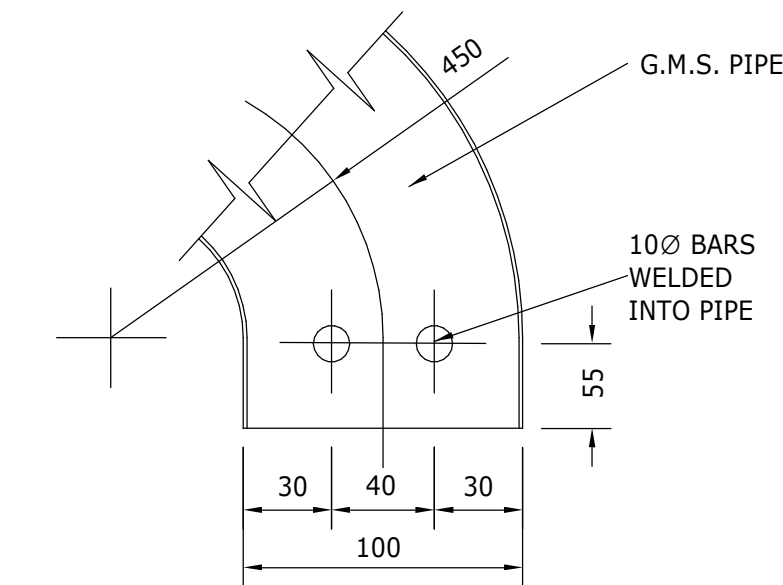
VENTILATOR TYPICAL SECTION



DETAILS OF CAP

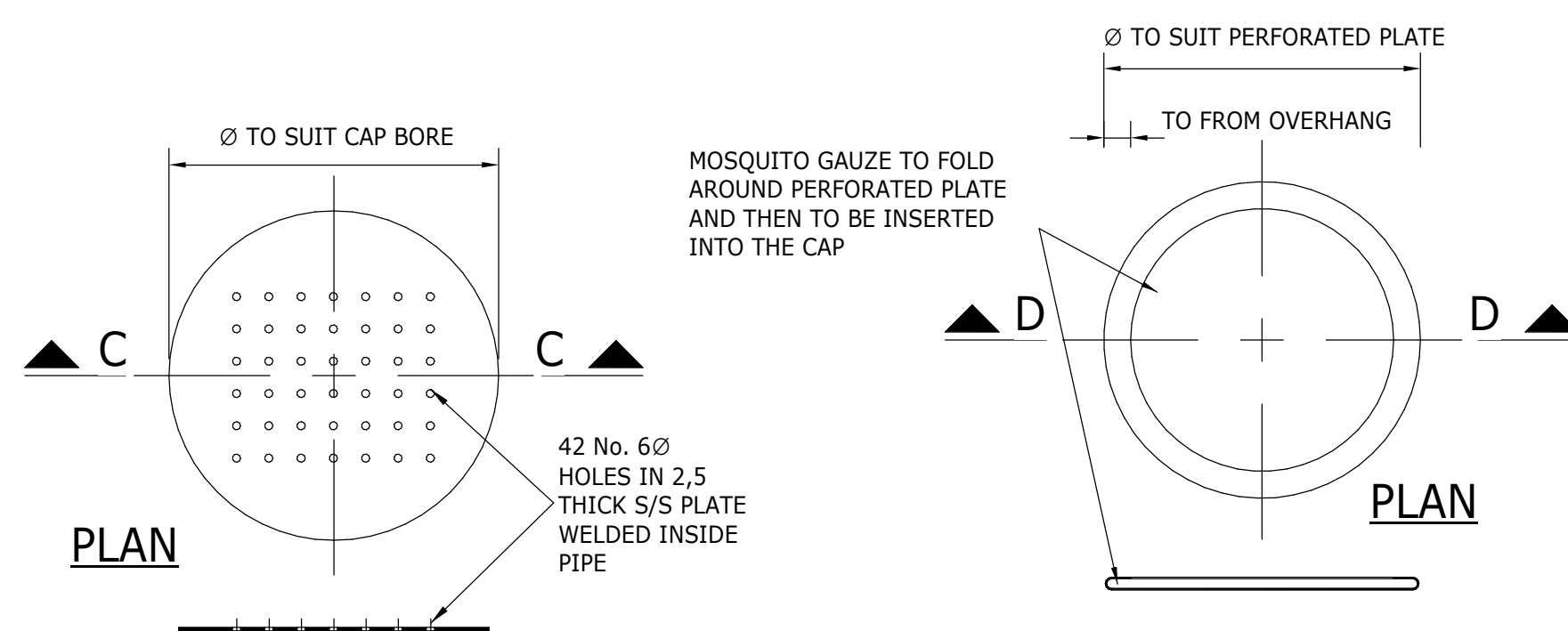


ROUND BAR
INSIDE
PIPE (NO CAP)



NOTES:

1. ALL DIMENSIONS IN MILLIMETERS.
2. VENTILATORS TO BE FABRICATED FROM STAINLESS STEEL TYPE 304 UNLESS ELSEWHERE STIPULATED TO BE GALVANIZED MILD STEEL.
3. ALL FLANGES TO BE DRILLED TO SABS 1123.
4. THE STAINLESS STEEL IS TO BE WELDED IN ACCORDANCE WITH THE DESIGN GUIDELINES FOR THE SELECTION AND USE OF STAINLESS STEEL ISSUED BY
5. VENTILATORS TO BE FABRICATED BY WELTEYA (PTY) LTD OR SIMILAR APPROVED.
6. VENTILATORS TO BE CAST IN CONCRETE.
7. DRILL 66 HOLES IN TOP RING FOR VENTILATION AT NORMAL SITUATIONS FOR PIPE INSTALLATIONS UP TO 600 UNLESS ELSEWHERE STIPULATED MOSQUITO TRAPS TO BE USED.

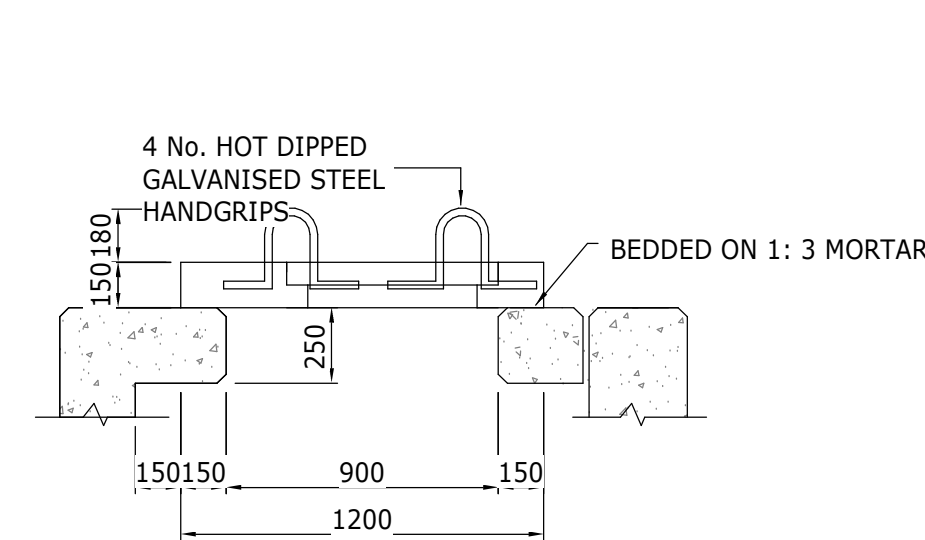


SECTION C - C

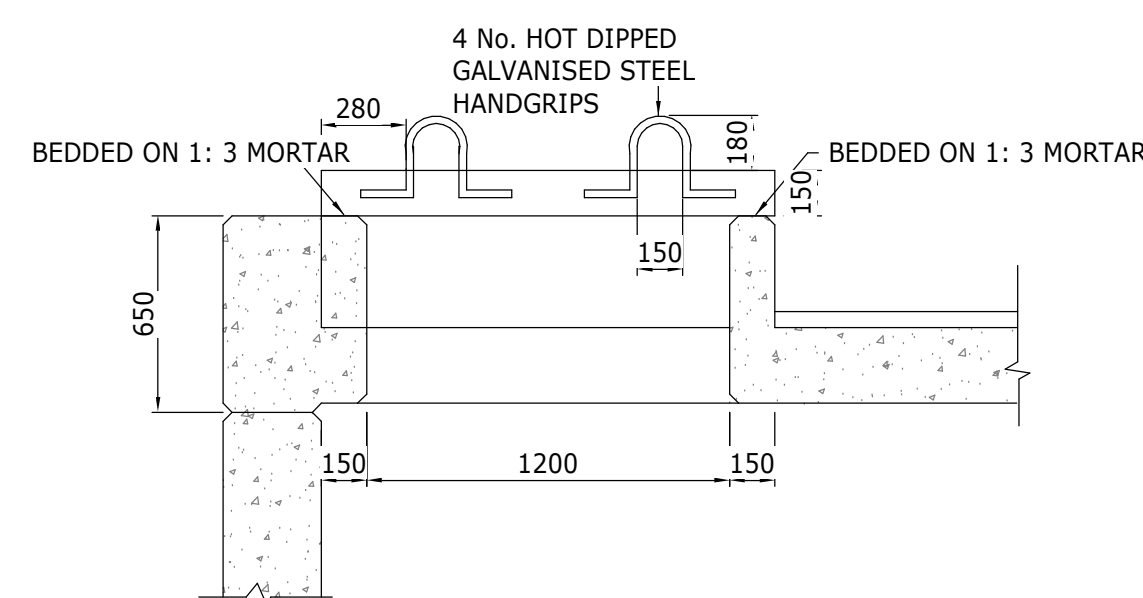
DETAILS OF PERFORATED PLATE & MOSQUITO GAUZE INSIDE CAP

AIR VENT DETAILS

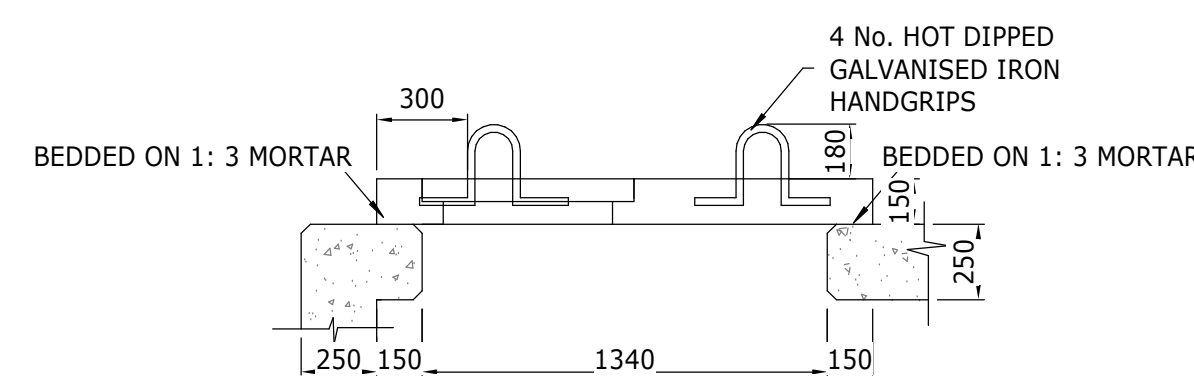
NTS



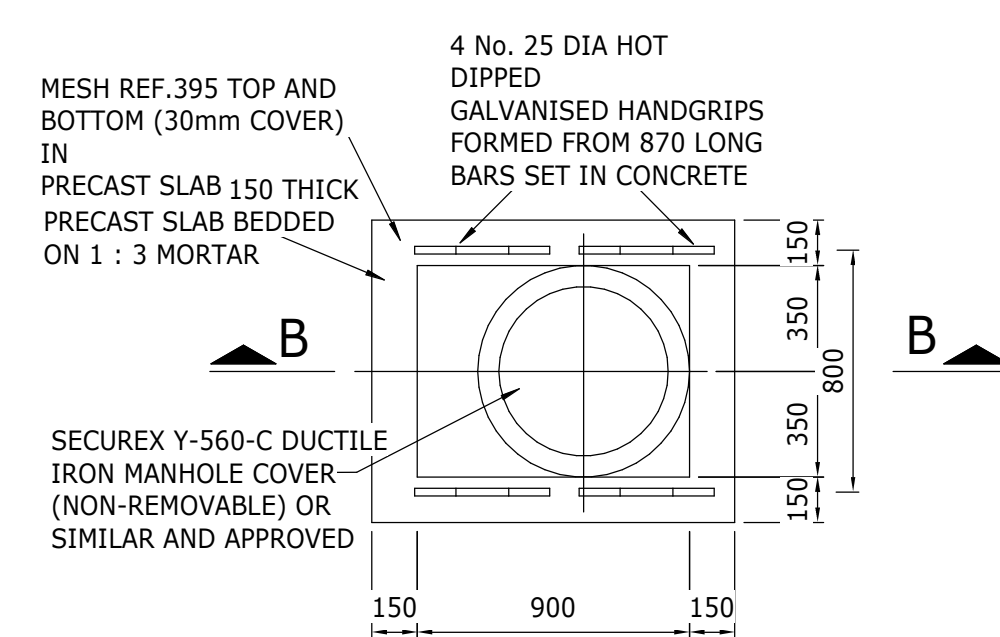
SECTION B - B



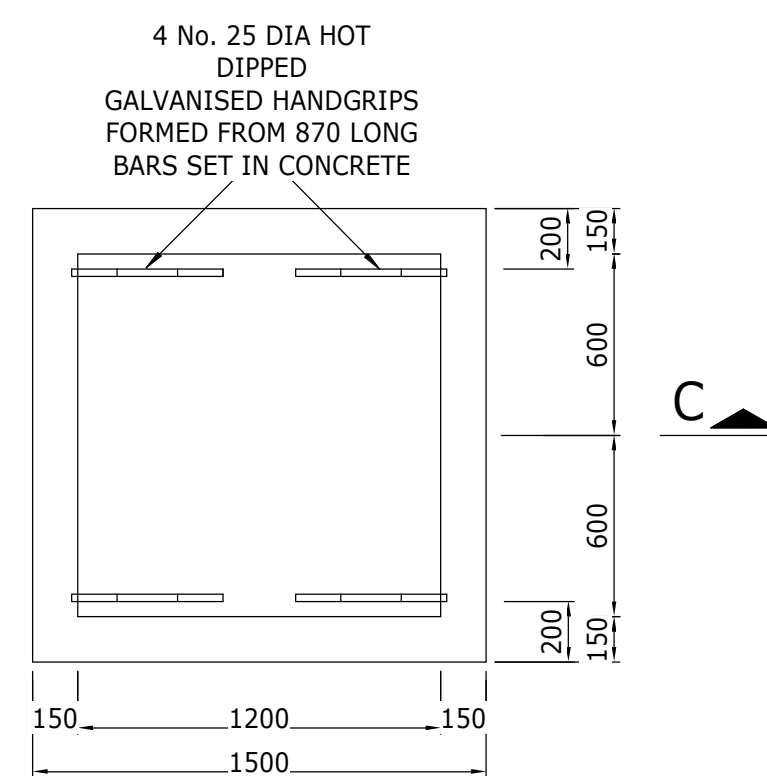
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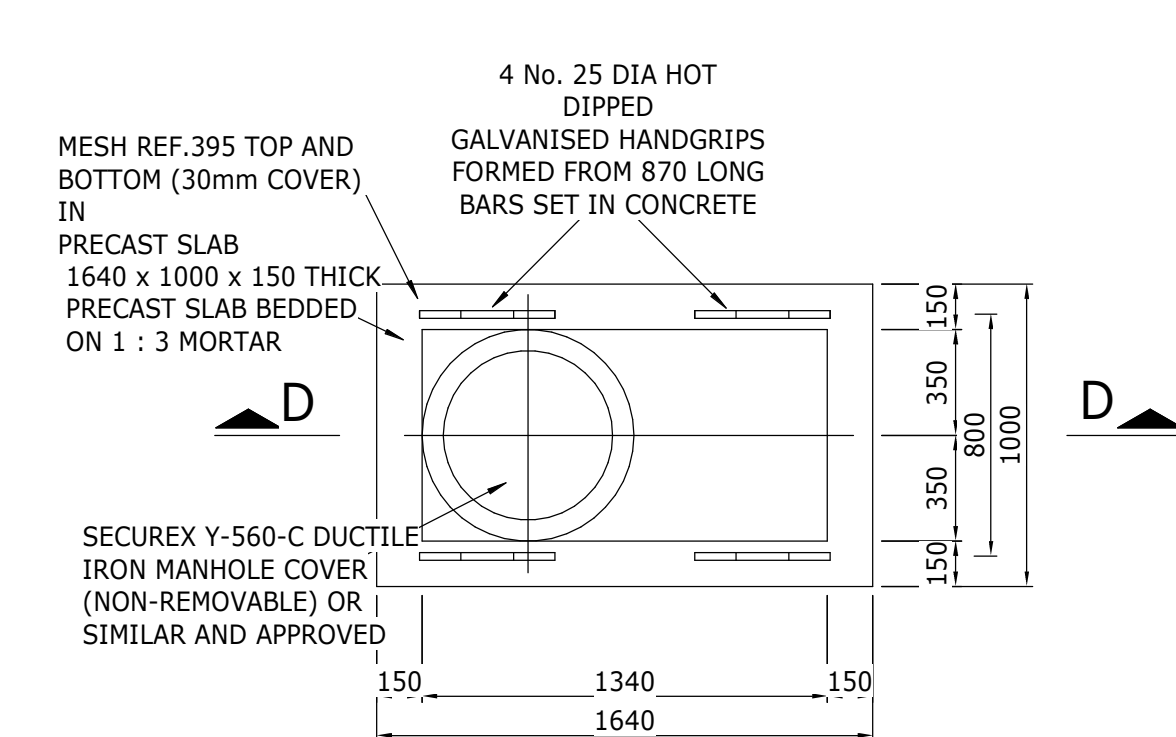
SECTION D - D



DETAIL OF OVERFLOW CHAMBER MAINTENANCE MANHOLE



DETAIL OF RESERVOIR MAINTENANCE MANHOLE

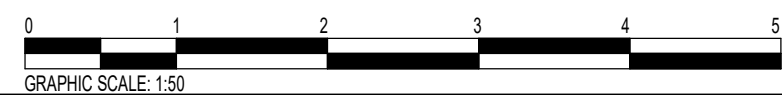


DETAIL OF OUTLET CHAMBER MAINTENANCE

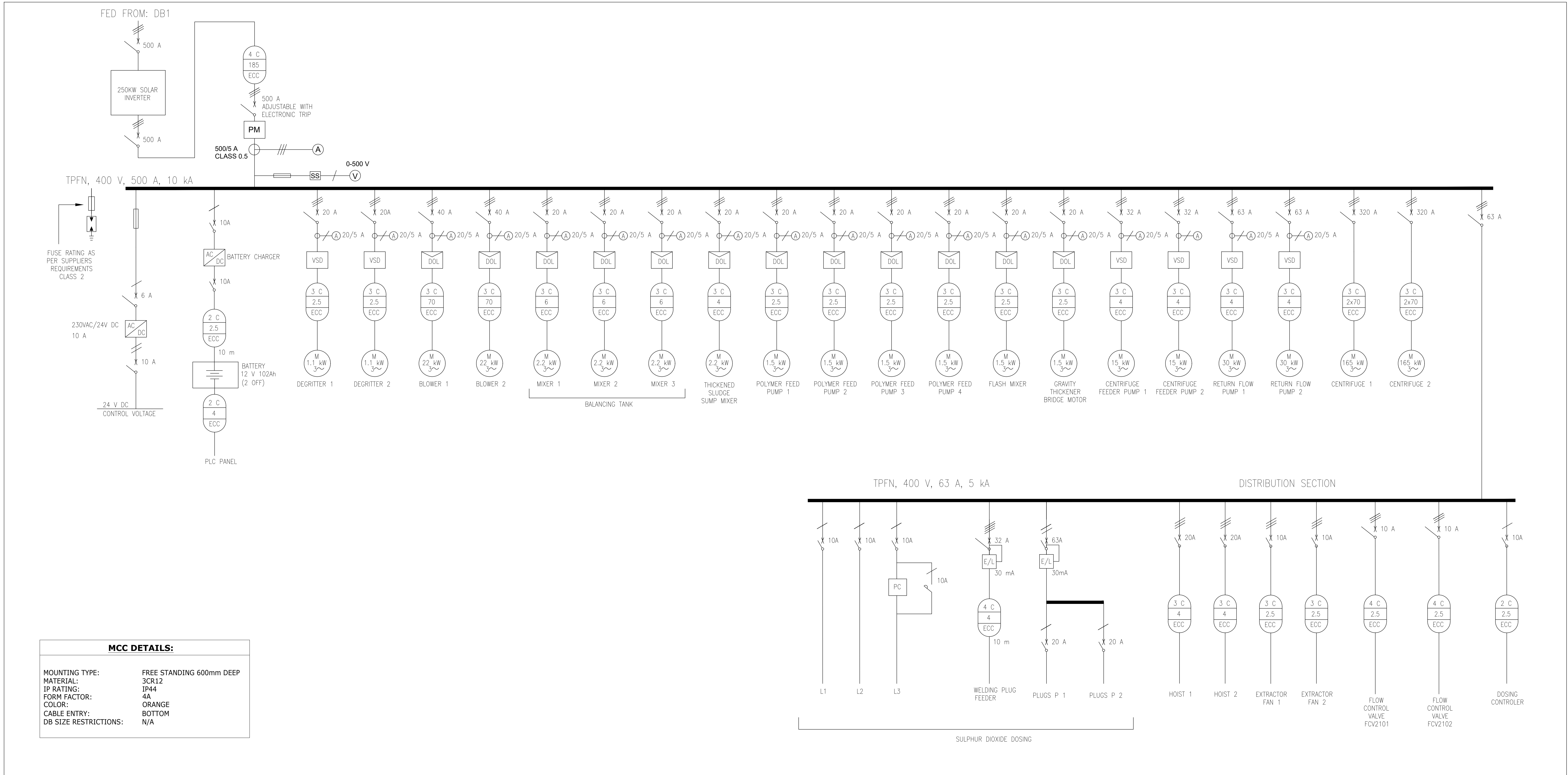
MANHOLE

MANHOLE ACCESS AND COVER DETAILS

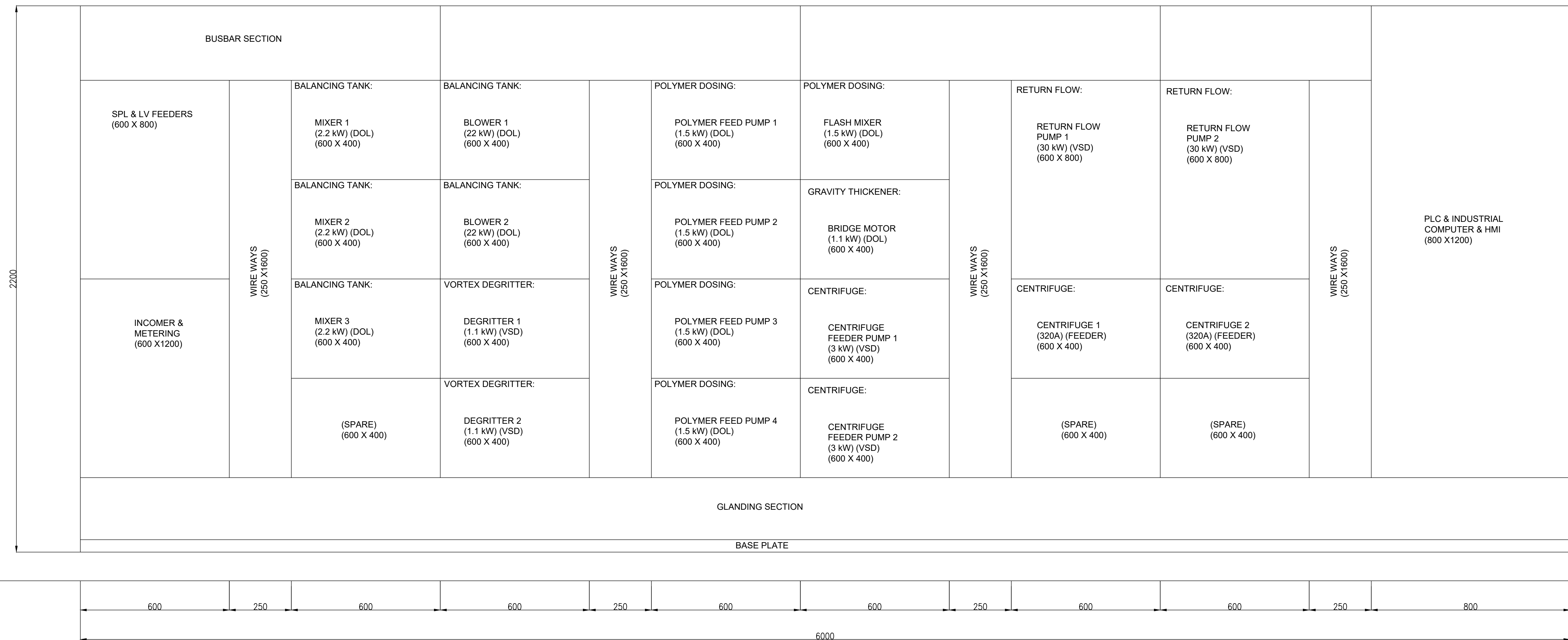
1 : 25



MCC3: BACKWASH RECOVERY FACILITY



NOTE: THE FINAL MCC GENERAL ARRANGEMENT SIZING TO BE CONFIRMED DURING THE CONTRACTOR'S DETAIL DESIGN AND TO ENSURE ALL EQUIPMENT SUPPLIER VENTILATION AND SPACING REQUIREMENTS ARE MET



LEGEND:

- | | |
|--|---|
| | CONDUIT SIZE
LIVE AND NEUTRAL WIRE SIZE
EARTH WIRE SIZE |
| | NUMBER OF CORES
SIZE
EARTH CONDUCTOR |
| | CURRENT TRANSFORMER |
| | FUSE |
| | AMMETER |
| | VOLTMETER |
| | EARTH |
| | CIRCUIT BREAKER |
| | INTEGRAL EARTH |
| | SURGE PROTECTION DEVICE |
| | SOFT STARTER |
| | DIRECT ON LINE |
| | SELECTOR SWITCH |
| | VARIABLE SPEED DRIVE |
| | UNINTERRUPTIBLE POWER SUPPLY |
| | ELECTRONIC POWER METER |
| | 4 POLE EARTH LEAKAGE DEVICE
WITH OVERLOAD PROTECTION |
| | 2 POLE EARTH LEAKAGE DEVICE
WITH OVERLOAD PROTECTION |
| | BY PASS CONTACTOR |
| | SWITCH DISCONNECTOR |

NOTES

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APPROVED:

PROJECT PRINCIPAL:
(PRINT NAME)

PROJECT PRINCIPAL:
(SIGNATURE)

ATF.

LIENT



Approved: **Ugu District Municipality**

Water Services Provider:

Implementing Agent:

Supplementing Agents:



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PROJECT

**UMZIMKHULU BULK WATER
AUGMENTATION SCHEME :
STAGE 2**

DRAWING DESCRIPTION

**SINGLE LINE DIAGRAM &
GENERAL ARRANGEMENT DRAWING**

FACILITIES BUILDING

TENDER DRAWINGS

DESIGNED	SIGNATURE AND DATE
D. SCHEEPERS	
DRAWN	SIGNATURE AND DATE
D. SCHEEPERS	
DRAWING CHECKED	SIGNATURE AND DATE
G. MUJINGA	
DESIGN CHECKED	SIGNATURE AND DATE
M. KAMDLA	
PROJ. MANAGER / APPROVED	SIGNATURE AND DATE
G. NGOBESE	

No.	DATE	REVISION DESCRIPTION	CHK	APP
01	2022/11/___	ISSUED FOR TENDER	D.S.	N.M.

PROJECT No. _____

MD5775

CONTRACT No.

IGU-02-XXX-2015

SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
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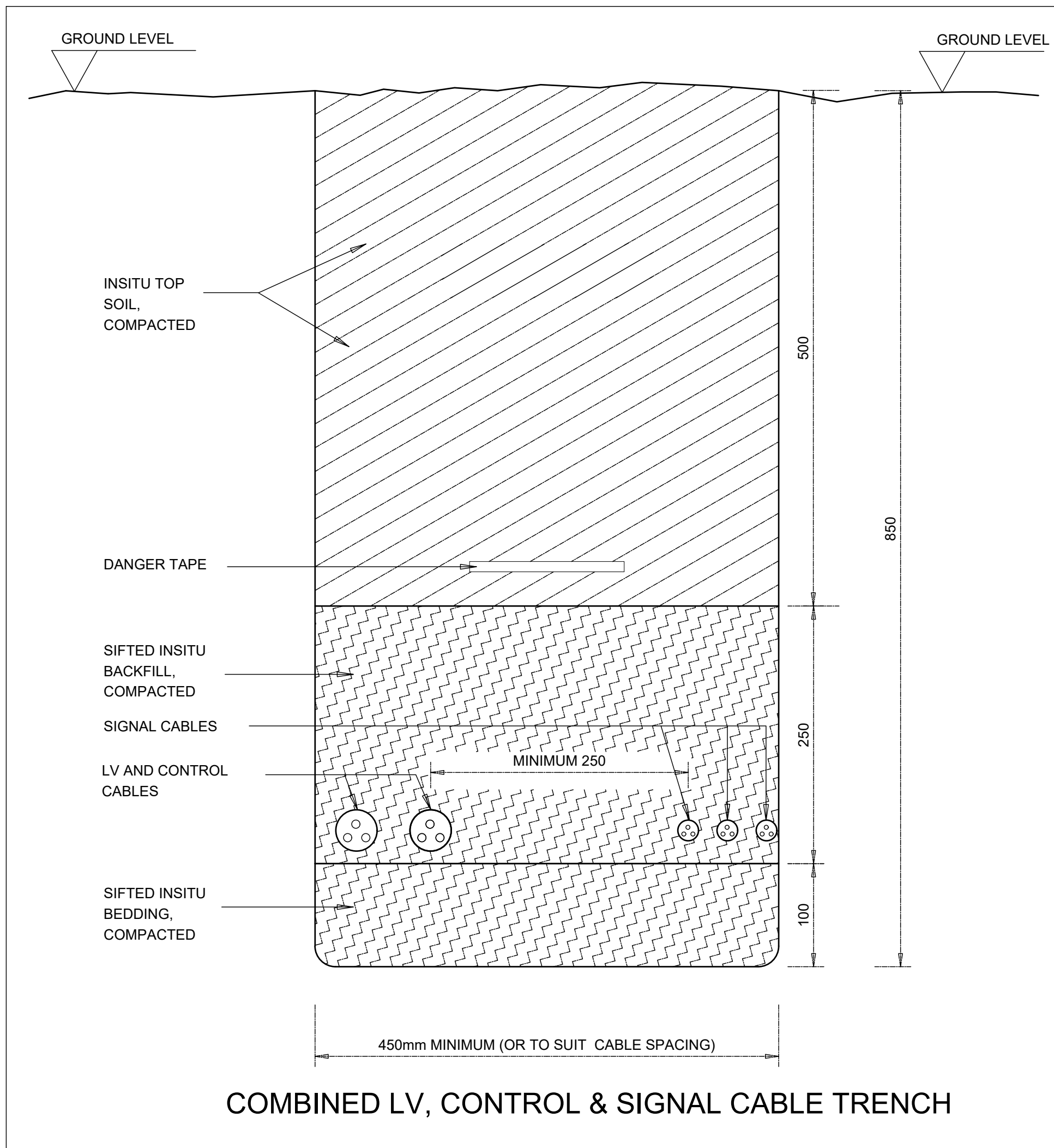
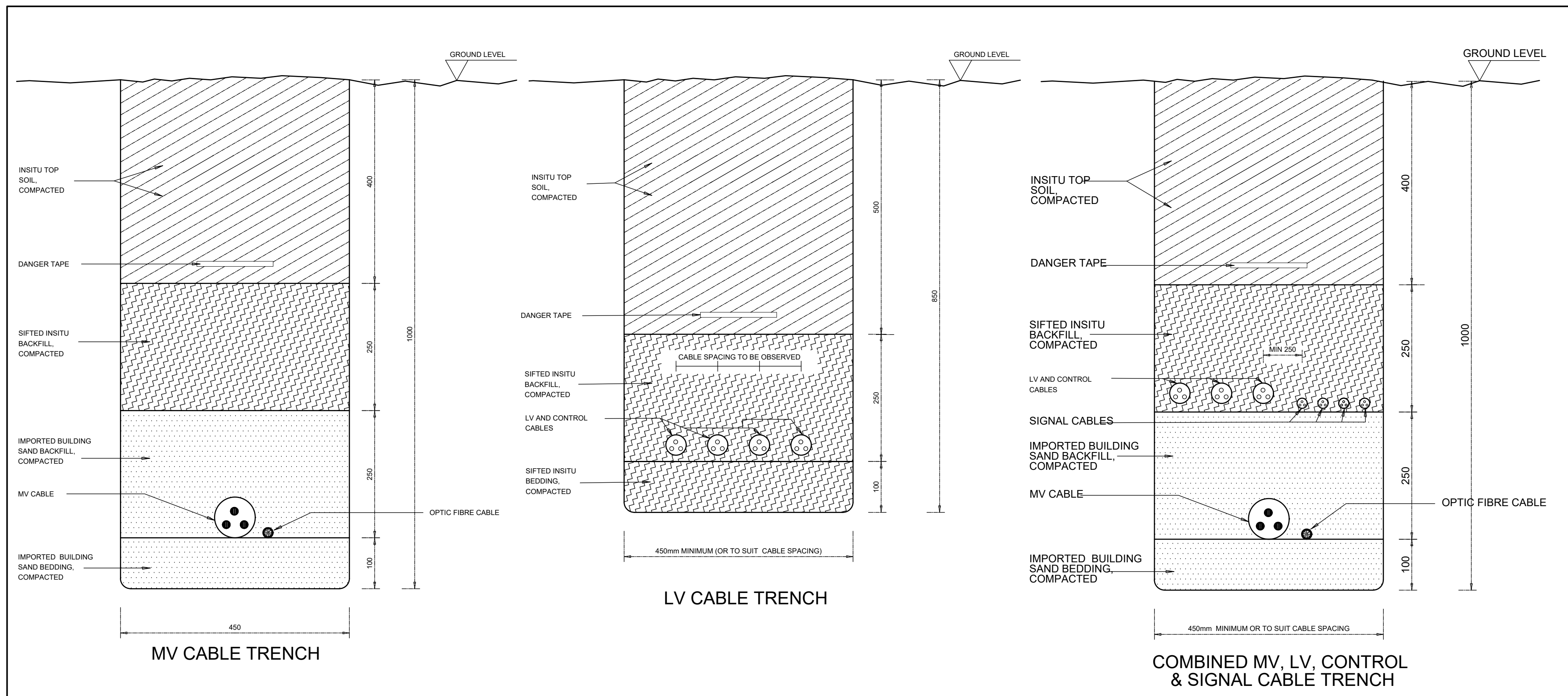
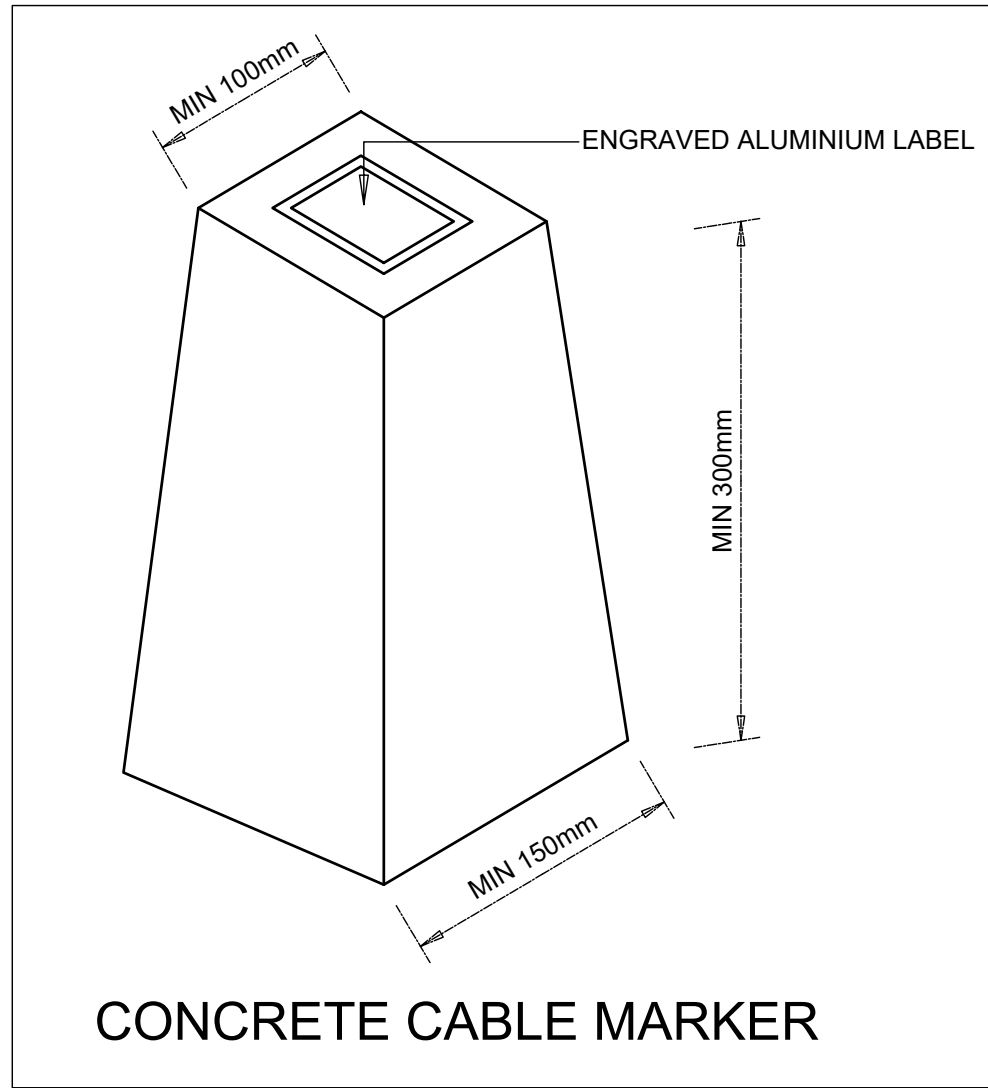
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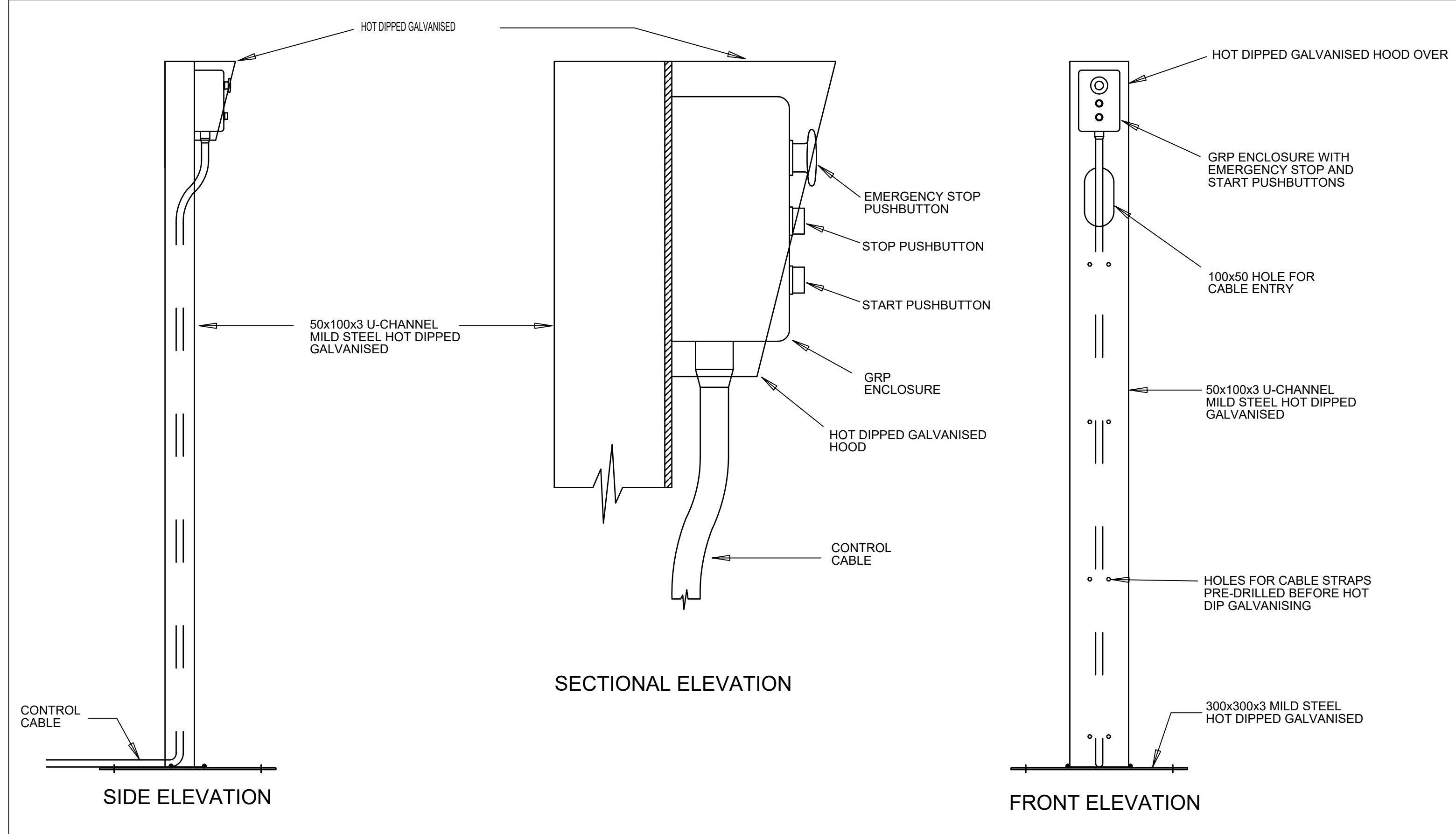
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01

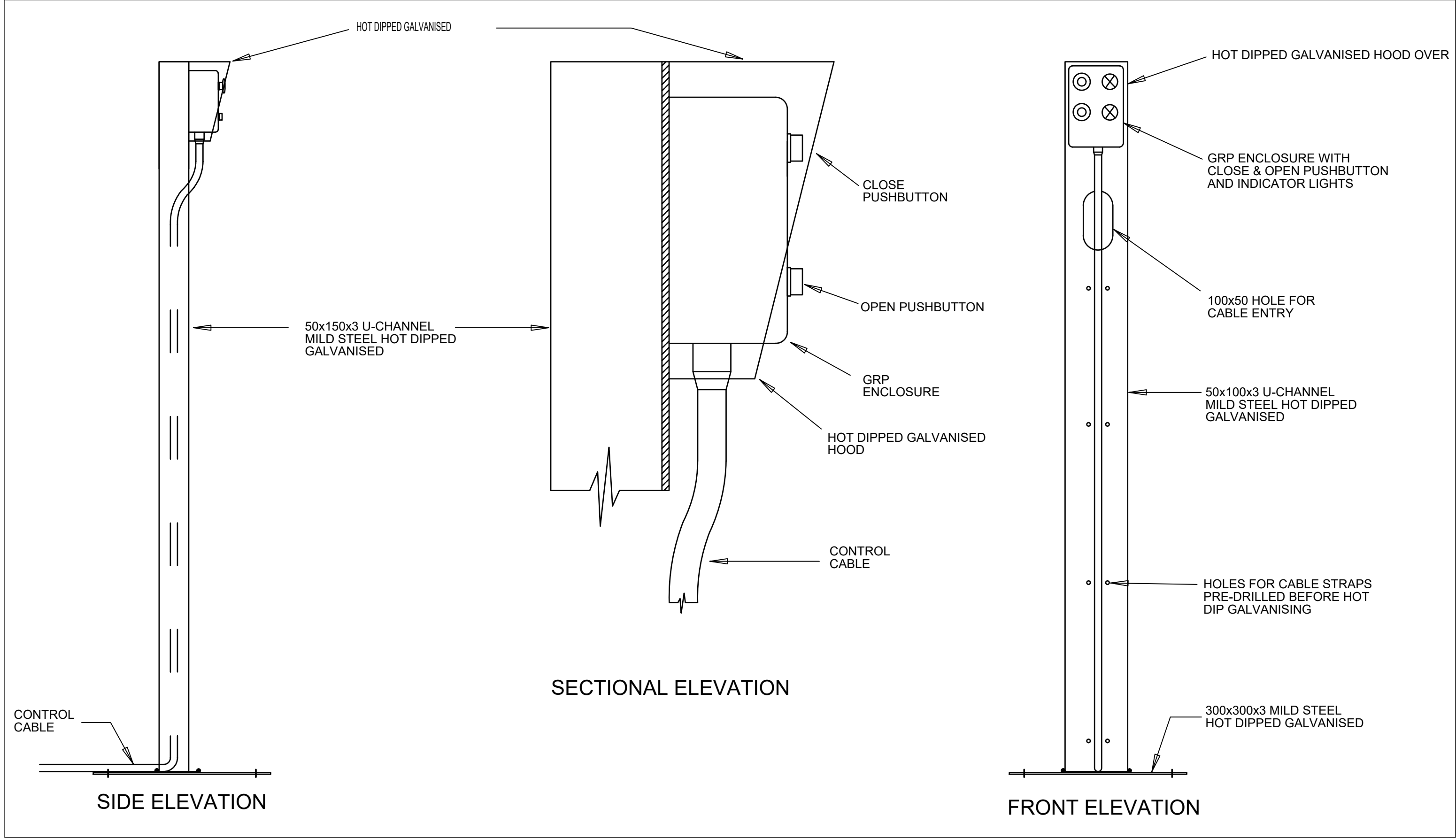
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CONTROL STATION ILLUSTRATION



FIELD AND CONTROL STATION ILLUSTRATION



NOTES

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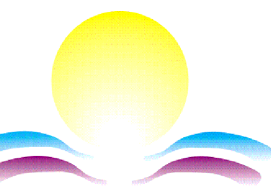
PROVED:

OBJECT PRINCIPAL:
(PRINT NAME)

PROJECT PRINCIPAL:
(SIGNATURE)

TE:
(MM/YY)

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above:

Center Services Provider:

Implementing Agent:
Center Services Authority

ate:

ate:

ate:



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Pietermaritzburg
3201

**UMZIMKHULU BULK WATER
AUGMENTATION SCHEME :
STAGE 2**

DRAWING DESCRIPTION

ELECTRICAL TYPICAL DRAWING

FACILITIES BUILDING

TENDER DRAWINGS

SIGNED SCHEEPERS	SIGNATURE AND DATE
SIGNED BY SCHEEPERS	SIGNATURE AND DATE
CHECKING CHECKED MUIJINGA	SIGNATURE AND DATE
CHECKING CHECKED MKANDLA	SIGNATURE AND DATE
BY, MANAGER / APPROVED NGOBESE	SIGNATURE AND DATE

DATE	REVISION DESCRIPTION	CHK	APP
2022/11/___	ISSUED FOR TENDER	D.S.	N.M.

SUBJECT No.

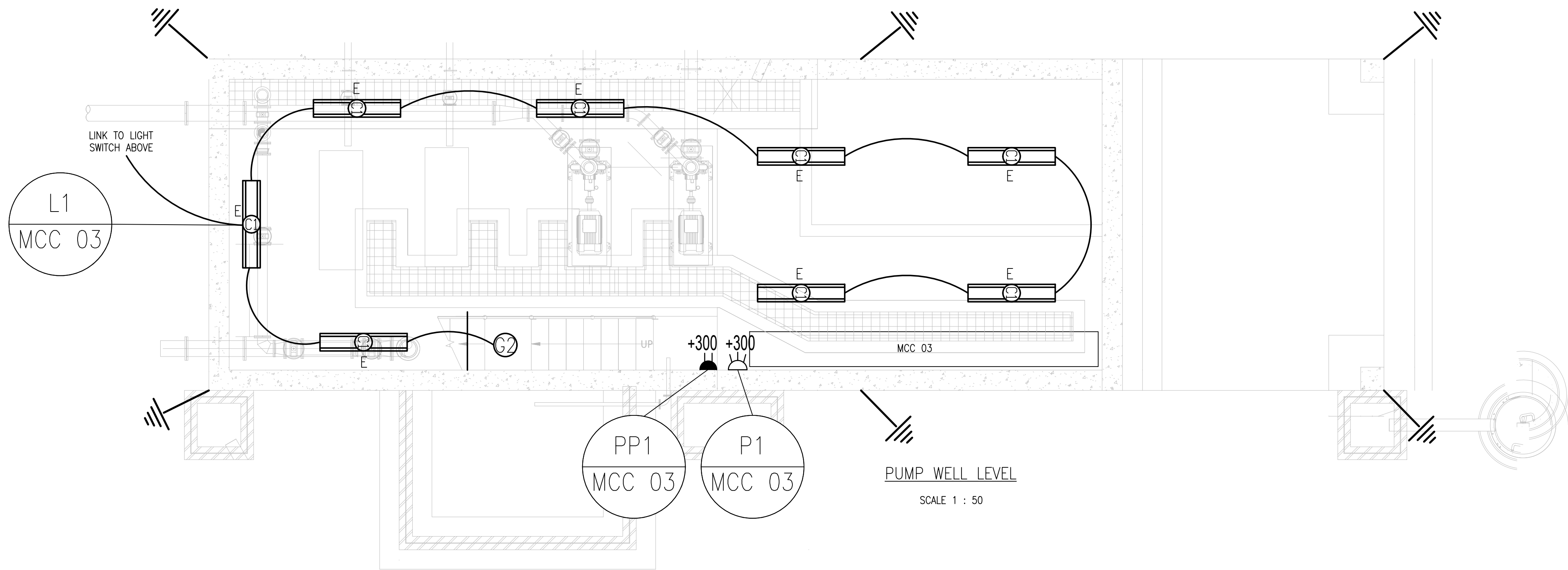
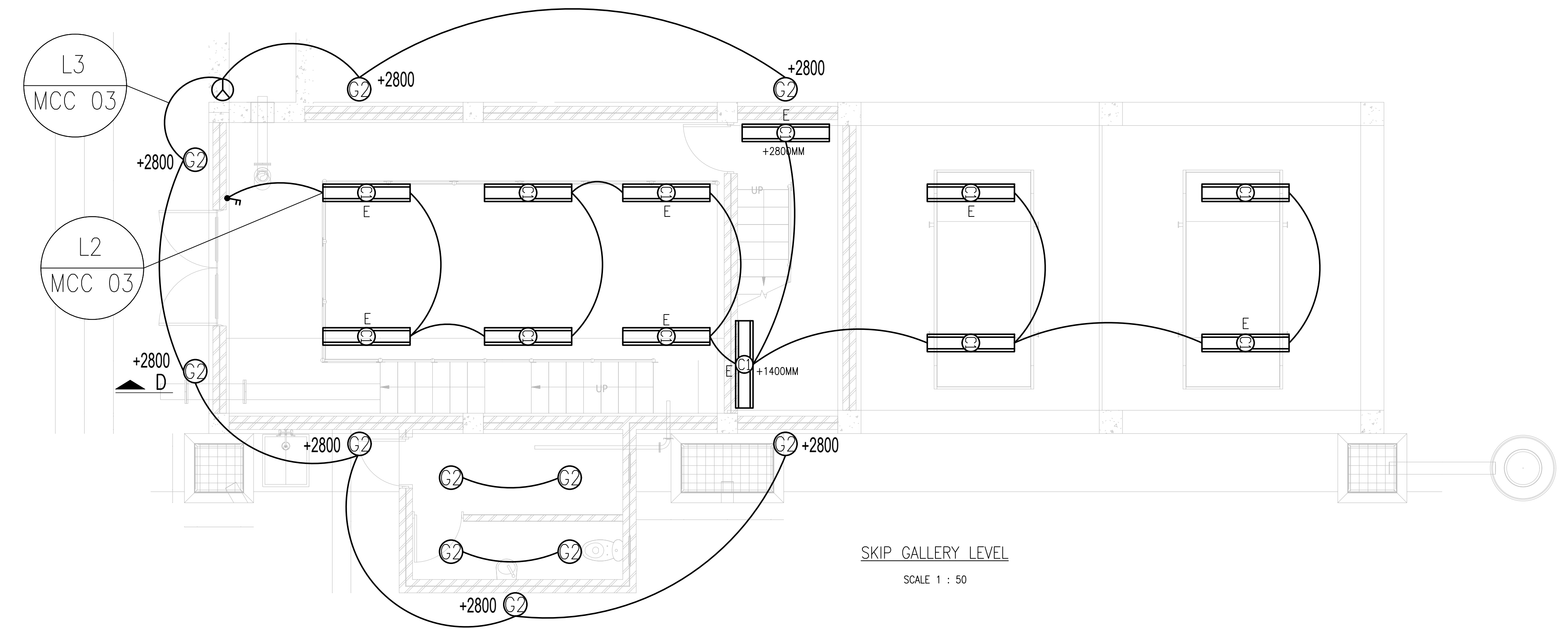
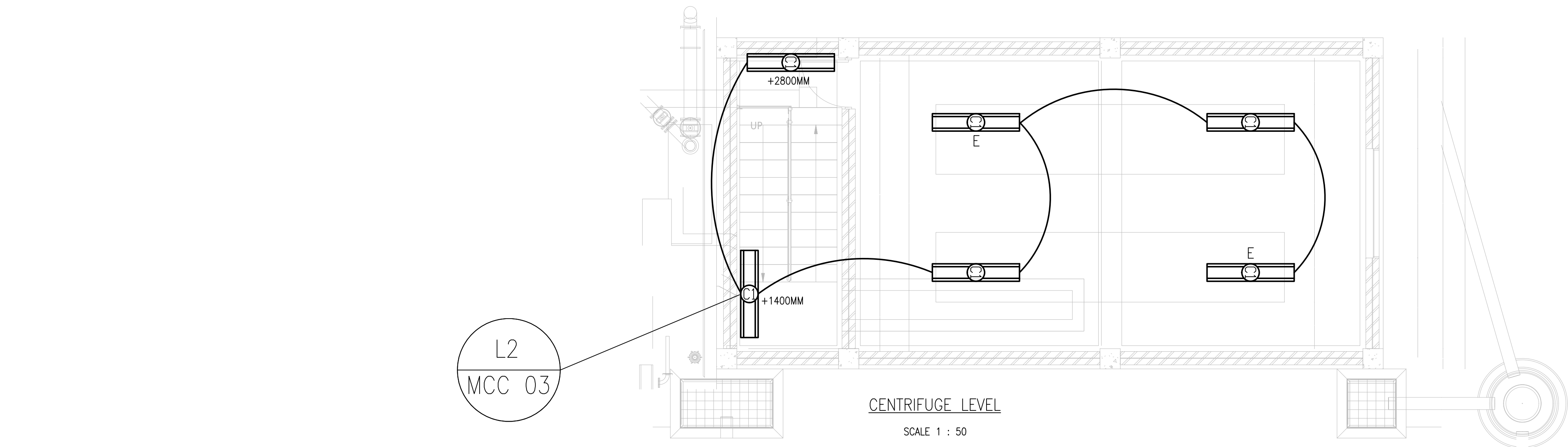
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CONTRACT No.

JGU-02-XXX-2015

SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
SHEET 1 OF 1	ELECTRICAL	A0	1 : 50

DRAWING No. 05775-RHD-BR-FB-DR-E-4200 PROJECT No. ORIG. V/S L/L TYPE ROLE DWG No.	REV. C01
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LIGHTING LEGEND

C1(E)
C1

65W LED VAPOUR PROOF FITTING, WITH ROBUST CORROSION-RESISTANT HOUSING AND DIFFUSER, STAINLESS STEEL LATCHES, HINGED PRISMATIC DIFFUSER FOR EASE OF LAMP REPLACEMENT, IP65 INGRESS PROTECTION, AND COMPLETE WITH MOUNTING KITS AND GLANDS. E - DENOTES 30MIN EMERGENCY BATTERY BACKUP

C1(E)
C1

15W LED BULKHEAD FITTING, THE LUMINAIRE SHALL CONSIST OF A HIGH PRESSURE DIE CAST ALUMINIUM BASE AND TRIM RING CASTING AND A OPAL HIGH IMPACT ACRYLIC SHALLOW DOMED SHAPED DIFFUSER. BASE AND TRIM RING ARE TO BE WHITE EPOXY POWDER COATED. WHEN INSTALLED, THE TRIM RING AND DIFFUSER SHALL COVER THE ENTIRE BASE CASTING.

SINGLE LEVER, 1 WAY LIGHT SWITCH.

DOUBLE LEVER, 2 WAY LIGHT SWITCH.

SINGLE LEVER, 2 WAY LIGHT SWITCH.

PHOTOCELL

POWER LEGEND

ELECTRICAL DISTRIBUTION BOARD

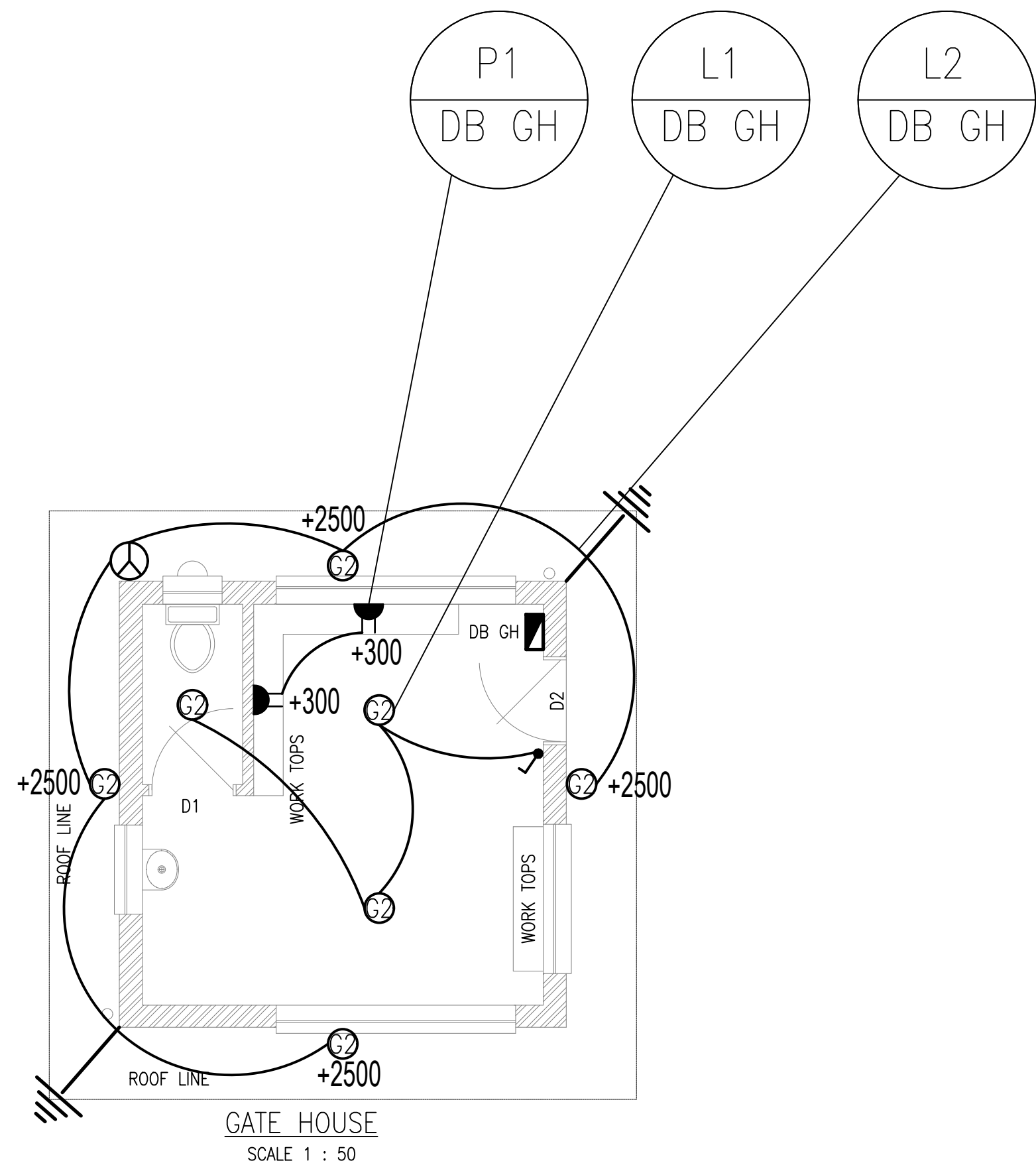
15A 3-PIN DOUBLE SWITCHED SOCKET OUTLET
AT +300mm AFFL

3 PHASE SOCKET OUTLET

20A DP WEATHERPROOF ISOLATOR
ON WALL COMPLETE WITH CONDUIT OUTLET BOX

30A T/P WEATHERPROOF ISOLATOR
ON WALL COMPLETE WITH CONDUIT TO MACHINE CONNECTION

EARHTING & LIGHTNING PROTECTION DOWNCONDUCTOR,
TEST BOX AND EARTH SPIKE



NOTES

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REF. DWG No.	REFERENCE DRAWING DESCRIPTION

APPROVED:
PROJECT PRINCIPAL:
(PRINT NAME)
PROJECT PRINCIPAL:
(SIGNATURE)
DATE:
(DD/MM/YYYY)

CLIENT

Approved:
Water Services Provider:
Implementing Agent:
Water Services Authority:
Date:
Date:
Date:
Date:

Royal HaskoningDHV
Enhancing Society Together

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PROJECT
**UMZIMKHULU BULK WATER
AUGMENTATION SCHEME :
STAGE 2**

DRAWING DESCRIPTION
ELECTRICAL LAYOUT
FACILITY DESCRIPTION
FACILITIES BUILDING

TENDER DRAWINGS

DESIGNED	SIGNATURE AND DATE
D. SCHEEPERS	
DRAWN	SIGNATURE AND DATE
D. SCHEEPERS	
DRAWING CHECKED	SIGNATURE AND DATE
S. MUJINGA	
DESIGN CHECKED	SIGNATURE AND DATE
N. MKANDLA	
PROJ. MANAGER / APPROVED	SIGNATURE AND DATE
S. NGOBESE	

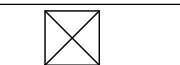
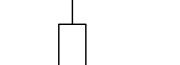
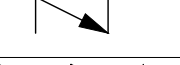
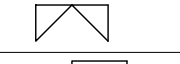
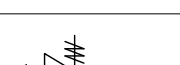
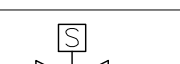
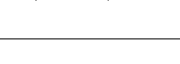
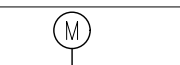
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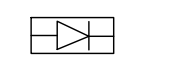
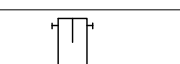
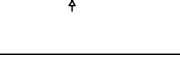
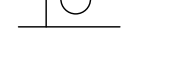
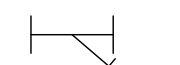
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MD5775

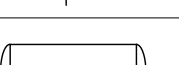
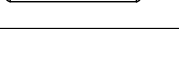
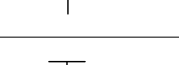
CONTRACT No.
UGU-02-XXX-2015

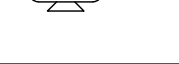
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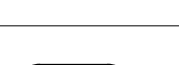
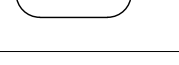
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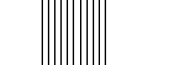
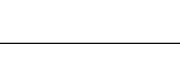
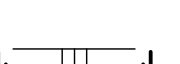
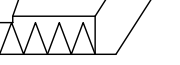
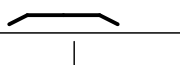
VALVES		
SYMBOL	ABBREVIATION	DESCRIPTION
	PGV	PENSTOCK
	HST	HANDSTOP
	GV	GATE VALVE
	NRV	NON RETURN VALVE
	NRV	DOUBLE NON RETURN VALVE
	BTV	BUTTERFLY VALVE
	BV	BALL VALVE
	DV	DIAPHRAGM VALVE
	FV	FLOAT VALVE
	CV	CONTROL VALVE
	RD	RUPTURE DISK
	PRV	PRESSURE RELIEF VALVE
	ARV	AUTOMATIC AIR RELIEF VALVE
	ARV	AUTOMATIC AIR AND VACUUM RELIEF VALVE
	SOV	SOLENOID VALVE
	KGV	KNIFE GATE VALVE
	TB	TELESCOPIC BELLMOUTH
	APB	ACTUATED PLUG BELLMOUTH

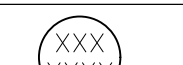
PIPELINE FITTINGS & ACCESSORIES		
SYMBOL	ABBREVIATION	DESCRIPTION
	FA	GAS FLAME ARRESTER
	CT/ST	GAS PIPE CONDENSATE TRAP / SEDIMENT TRAP
	MM	GAS PRESSURE MANOMETER
	STRN	STRAINER
	RTM	ROTAMETER FLOW METER
	TFM	TURBINE FLOW METER
	AF	AIR FILTER
	-	DRAIN
	PG	ANALOGUE PRESSURE GAUGE (INCLUDING ISOLATION VALVE & CHEMICAL SEAL)
	-	QUICK RELEASE COUPLING
	SG	SIGHT GLASS

MOTORS AND ACTUATION		
SYMBOL	ABBREVIATION	DESCRIPTION
	M	ELECTRIC ACTUATOR
	M	ELECTRIC MOTOR
	-	HANDWHEEL WITH RISING SPINDLE
	-	HANDWHEEL WITH NON-RISING SPINDLE

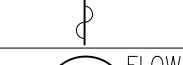
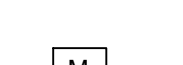
PUMPS, BLOWERS & COMPRESSORS		
SYMBOL	ABBREVIATION	DESCRIPTION
	CP	CENTRIFUGAL PUMP
	PD	SINGLE DIAPHRAGM PUMP
	PC	PROGRESSIVE CAVITY PUMP
	SP	SUBMERSIBLE PUMP
	PP	PERISTALTIC PUMP
	AP	AXIAL FLOW PUMP
	B/C	BLOWER / ROTARY COMPRESSOR

TANK, VESSELS, ETC.		
SYMBOL	ABBREVIATION	DESCRIPTION
	AR	AIR RECEIVER
	HMT	HYDRO-PNEUMATIC MEMBRANE TANK
	TNK	STORAGE TANK
	PG	SILLO
	SKP	SKIP
	MH	MANHOLE

MISCELLANEOUS EQUIPMENT		
SYMBOL	ABBREVIATION	DESCRIPTION
	SCN	MECHANICALLY RAKED BAR SCREEN
	SCN	HAND RAKED BAR SCREEN
	BRG	ROTATING HALF BRIDGE SCRAPER
	BRG	ROTATING PICKET FENCE RAKE WITH SCRAPERS
	SCRFP	SCREENINGS WASHER COMPACTOR
	DEW	DEWATERING SCREW PRESS
	GRIF	CLASSIFIER
	-	VENTURI FLUME
	MIX	PADDLE/AGITATOR/STIRRER
	AER	AERATOR
	-	CRANE
	GBT	GRAVITY BELT THICKENER
	FDR	SCREW FEEDER
	-	DIVERSION CHUTE
	FAN	FAN
	-	WEIR
	UV	ULTRAVIOLET DISINFECTION SYSTEM
	-	BELT CONVEYOR
	HEX	TUBE IN TUBE HEAT EXCHANGER

INSTRUMENTATION (GENERAL)	
SYMBOL	DESCRIPTION
	LOCALLY(FIELD) MOUNTED INSTRUMENT
	GRAPHICS SCREEN DISPLAY LOCALLY (FIELD) MOUNTED
	PLC RECEIVING / TRANSMITTING SIGNALS
	PANEL(REMOTE) MOUNTED INSTRUMENT
	GRAPHICS SCREEN DISPLAY ON MAIN PANEL OR SCREEN

INSTRUMENT IDENTIFICATION (AS PER ISA 5.1)					
SYMBOL	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION				
C			CONTROL		
D		DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)	GLASS VIEWING DEVICE		
G					
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER		SCAN		
K	TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M		MOMENTARY			MIDDLE, INTERMEDIATE
N					
O			ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		PAINT, (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALISE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE				
U	MULTIPURPOSE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X		X-AXIS			
Y	EVENT, STATE OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z-AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

INSTRUMENTATION (SPECIFIC)	
SYMBOL	DESCRIPTION
	LEVEL CONDUCTIVITY PROBE
	FLOAT LEVEL SENSOR
	ULTRASONIC LEVEL INDICATOR TRANSMITTER
	OPEN CHANNEL FLOW METER (THROUGH ULTRASONIC LEVEL SENSOR)
	ELECTROMAGNETIC FLOW METER
	ULTRASONIC FLOW METER
	PRESSURE INDICATOR TRANSMITTER (INCLUDING ISOLATION VALVE & CHEMICAL SEAL)
	DISSOLVED OXYGEN PROBE
	NITRATE PROBE
	SUSPENDED SOLIDS METER

NOTES

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REF. DWG No.	REFERENCE DRAWING DESCRIPTION

APPROVED:
PROJECT PRINCIPAL:
(PRINT NAME)
PROJECT PRINCIPAL:
(SIGNATURE)
DATE:
(DD/MM/YYYY)

CLIENT


Ugu District Municipality
Approved: _____ Date: _____
Water Services Provider: _____ Date: _____
Implementing Agent: _____ Date: _____
Water Services Authority: _____ Date: _____


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PROJECT

UMZIMKHULU BULK WATER AUGMENTATION SCHEME : STAGE 2

DRAWING DESCRIPTION

P&ID LEGEND

FACILITY DESCRIPTION

FACILITIES BUILDING

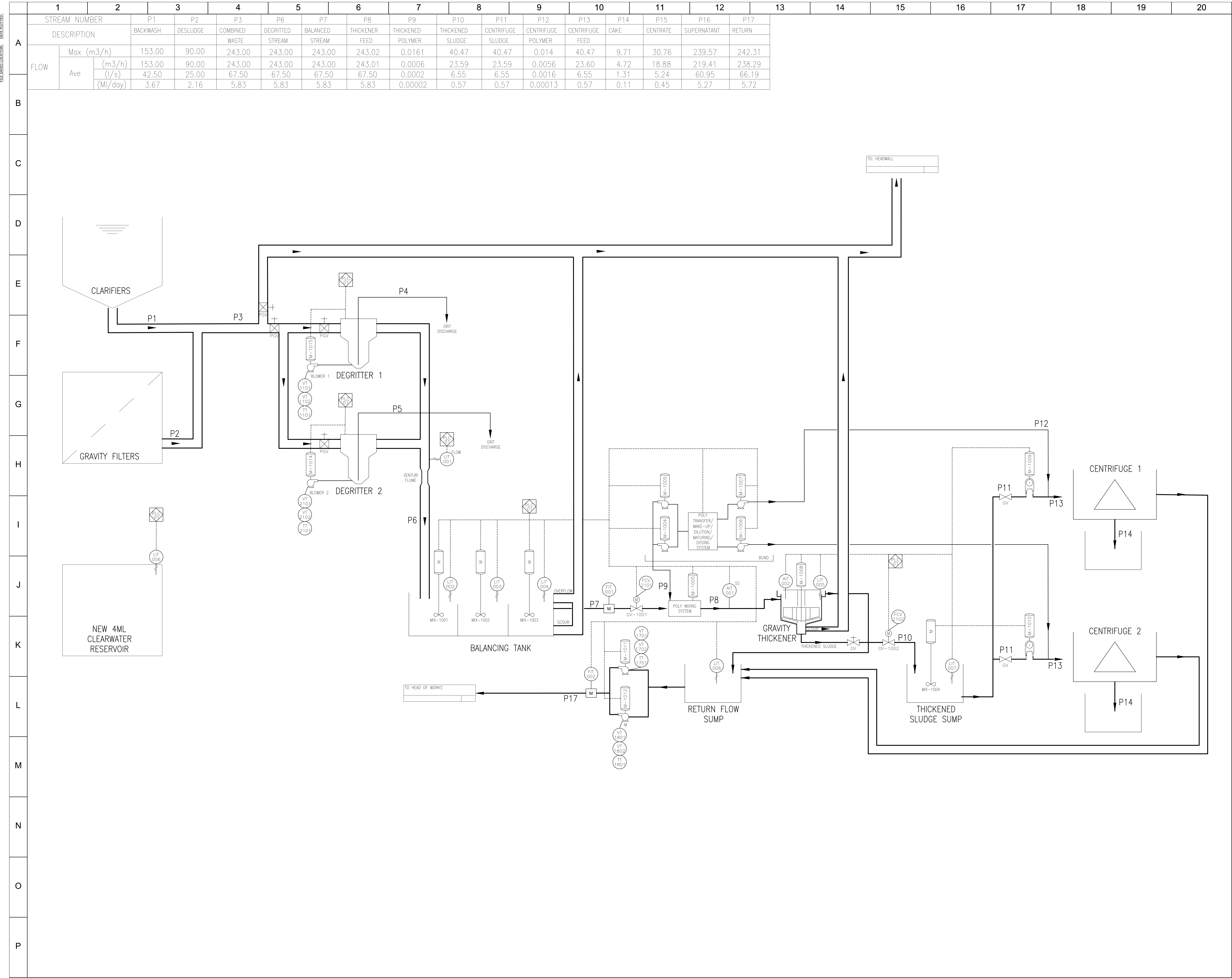
TENDER DRAWINGS

DESIGNED D. SCHEEPERS	SIGNATURE AND DATE
DRAWN D. SCHEEPERS	SIGNATURE AND DATE
DRAWING CHECKED S. MUJINGA	SIGNATURE AND DATE
DESIGN CHECKED N. MKANDLA	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. NGOBESE	SIGNATURE AND DATE

No.	DATE	REVISION DESCRIPTION	CHK	APP
001	2022/11/	ISSUED FOR TENDER		D.S. N.M.

PROJECT No.		CONTRACT No.	
MD5775		UGU-02-XXX-2015	
SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
SHEET 1 OF 1	ELECTRICAL	A0	1 : 50
DRAWING No.			REV.
MD5775-RHD-BR-FB-DR-E-4400			C01
PROJECT No. ORIG. VIS LA TYPE ROLE DWG No.			

FILE NAME: LOCATION DATE: 2022/11/11



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PROJECT PRINCIPAL:
(PRINT NAME)
PROJECT PRINCIPAL:
(SIGNATURE)
DATE:
(DD/MM/YYYY)

CLIENT

Approved:
Water Services Provider:
Implementing Agent:
Water Services Authority:

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Pietermaritzburg
3200
Block C, 3rd Floor
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460 Town Bush Road
Pietermaritzburg
3201
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PROJECT
**UMZIMKHULU BULK WATER
AUGMENTATION SCHEME :
STAGE 2**

DRAWING DESCRIPTION
P&ID DRAWING

FACILITY DESCRIPTION
FACILITIES BUILDING

TENDER DRAWINGS

DESIGNED D. SCHEEPERS	SIGNATURE AND DATE
DRAWN D. SCHEEPERS	SIGNATURE AND DATE
DRAWING CHECKED S. MUJINGA	SIGNATURE AND DATE
DESIGN CHECKED N. MKANDLA	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. NGOBESE	SIGNATURE AND DATE

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PROJECT No.
MD5775

CONTRACT No.
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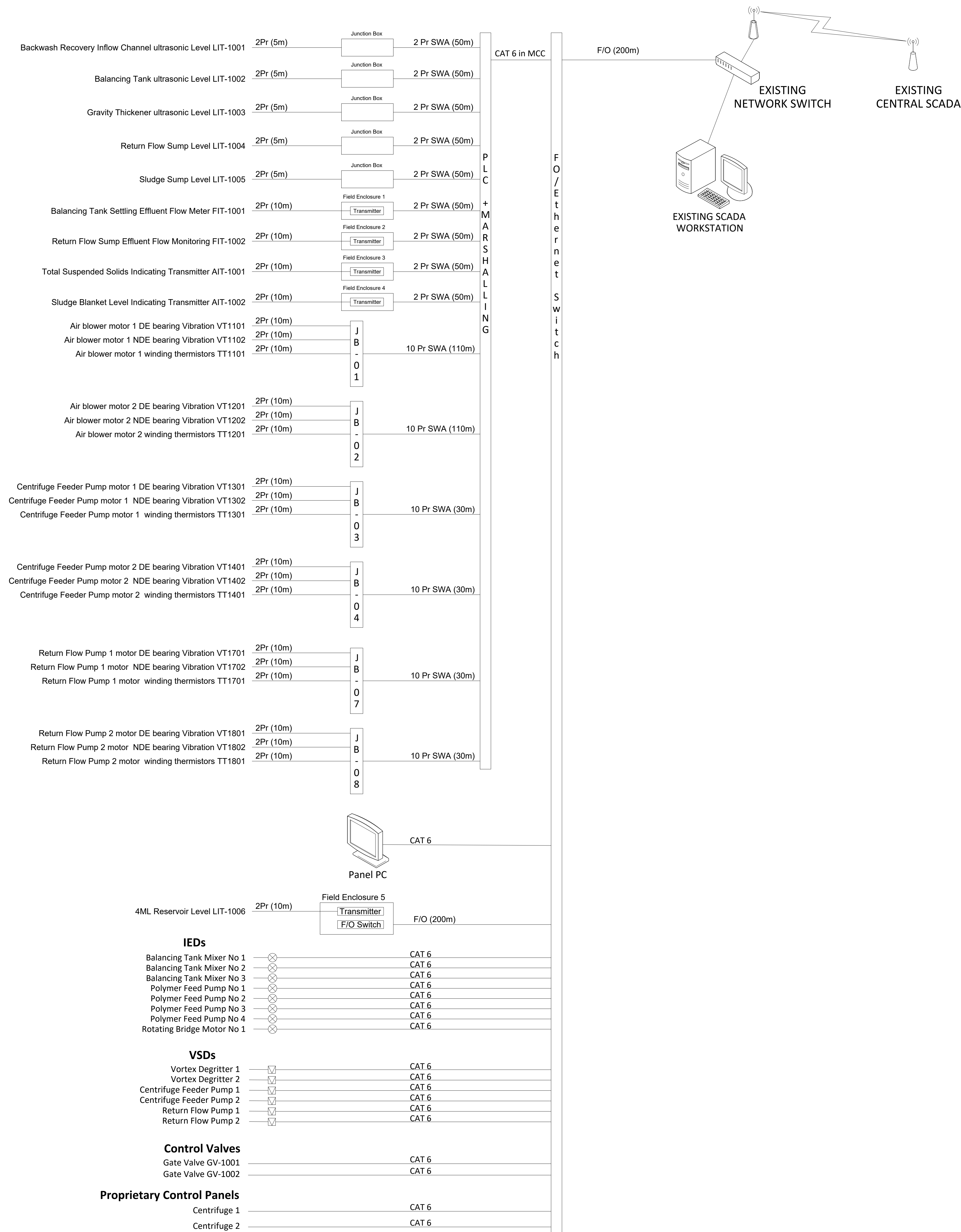
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REV.
C01

PROJECT No. | ORIG. | VIS | LVL | TYPE | ROLE | DWG No.

001 000 0000

BACKWASH RECOVERY FACILITY



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PROJECT PRINCIPAL:
(PRINT NAME)

PROJECT PRINCIPAL:
(SIGNATURE)

DATE:
(DD/MM/YYYY)

CLIENT



Ugu District Municipality

Approved

Water Services Provider

Date:

Implementing Agent:

Date:



P.O. Box 1066
Pietermaritzburg
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Block C, 3rd Floor
Town Bush Office Park
460 Town Bush Road
Pietermaritzburg
320

PROJECT

**UMZIMKHULU BULK WATER
AUGMENTATION SCHEME :
STAGE 2**

DRAWING DESCRIPTION

CONTROL NETWORK DRAWING

FACILITY DESCRIPTION

FACILITIES BUILDING

TENDER DRAWINGS

DESIGNED D. SCHEEPERS	SIGNATURE AND DATE
DRAWN D. SCHEEPERS	SIGNATURE AND DATE
DRAWING CHECKED S. MUJINGA	SIGNATURE AND DATE
DESIGN CHECKED N. MKANDLA	SIGNATURE AND DATE
PROJ. MANAGER / APPROVED S. NGOBESE	SIGNATURE AND DATE

No.	DATE	REVISION DESCRIPTION	CHK	APP
C01	2022/11/___	ISSUED FOR TENDER	D.S.	N.M.

PROJECT No.	CONTRACT No.
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MD5775		UGU-02-XXX-2015	
SHEET NUMBER	DISCIPLINE	PAPER SIZE	SCALE
SHEET 1 OF 1	ELECTRICAL	A0	1 : 50

DRAWING No.	REV.
MD5775-RHD-BR-FB-DR-E-4600	C01
PROJECT No. ORIG. V/S L/L TYPE ROLE DWG No.	

