VAAL CENTRAL WATER

BRANDKOP DAM JOINT SEALING IN THE CRR AND BY-PASS PIPELINE

CONTRACT NUMBER:

CONSTRUCTION OF A STEEL BY-PASS PIPELINE AND BREAK PRESSURE TANK AT BRANDKOP RESERVOIR INCLUDING RESERVOIR JOINT SEALING AND CONCRETE REPAIRS

VOLUME 3 : BOOK OF DRAWINGS

JUNE 2026



Prepared for :
Vaal Central Water

Supply Chain Management

Mr L Sethathi

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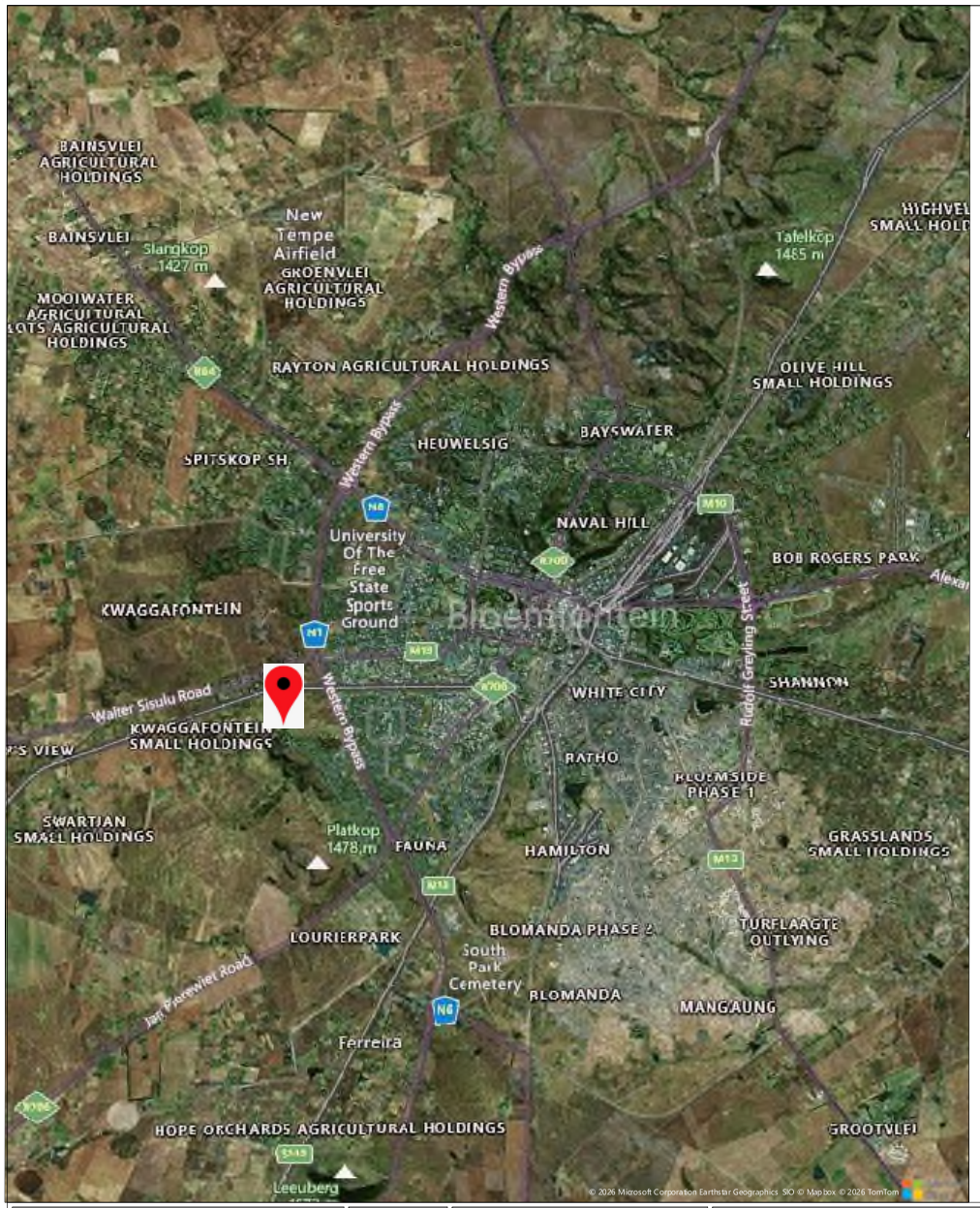
Email:lerekos@vcwater.co.za

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DRAWING LIST

3890.00.00.AAA.01.A011	PROJECT NAME BOARD
3890.00.00.GZA.01.A002	ENGINEERS SITE OFFICE TYPE A
3890.00.00.GZA.01.A004	SITE OFFICE FURNITURE
3890.00.00.GZA.01.A005	LOCALITY MAP
3890.00.00.GZA.05.U002	SITE LAYOUT
3890.00.00.GZA.05.U004	BRANDKOP PROPOSAL 711DIA BYPASS
3890.00.00.GZA.05.L003	BRANDKOP PROPOSAL LONGITUDINAL SECTION BYPASS ISOLATION
3890.00.00.GZA.05.L004	BRANDKOP PROPOSAL LONGITUDINAL SECTION 711DIA CROSS CONNECTION
3890.00.00.GZA.05.F001	RUSTFONTEIN - WELBEDACHT CROSS CONNECTION ITEM LIST 711 DIA PIPE
3890.00.00.GZA.05.F002	BY-PASS PIPELINE ISOLATION AND CONNECTION ITEM LIST - MAIN ISOLATION
3890.00.00.GZA.05.D004	RUSTFONTEIN - WELBEDACHT CROSS CONNECTION DETAILS AND SECTION 711 DIA CROSS CONNETION PIPE
3890.00.00.GZA.05.D005	BY-PASS PIPELINE ISOLATION AND CONNECTION DETAILS AND SECTION OF MAIN ISOLATION CHAMBER
3890.00.00.GZA.05.D006	BY-PASS PIPELINE ISOLATION AND CONNECTION DETAILS AND SECTION OF FLOW METER CHAMBER
3890.00.00.SQA.14.A001	BY-PASS AND BREAK PRESSURE TANK 3D VIEWS
3890.00.00.SQA.14.D001	BY-PASS AND BREAK PRESSURE TANK LAYOUT AND SECTIONS
3890.00.00.SQA.14.D002	BY-PASS AND BREAK PRESSURE TANK CAT LADDER DETAILS

VERSION

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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
LOCALITY MAP

vaal central water naturally

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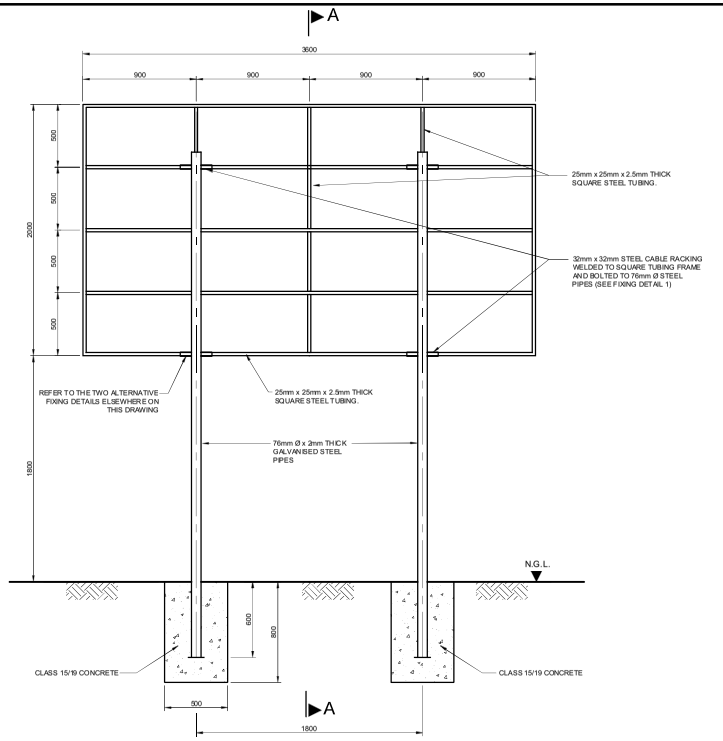
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NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN:
Llewellyn Biggs

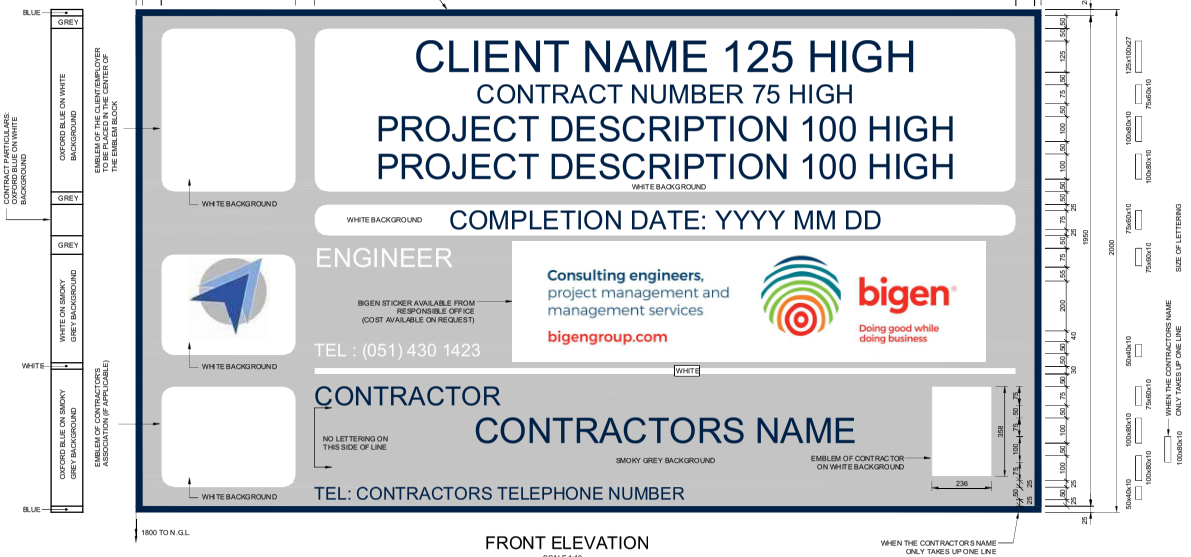
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3890.00.00.GZA.01.A005



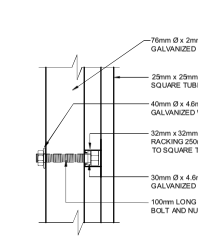
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SCALE 1:20



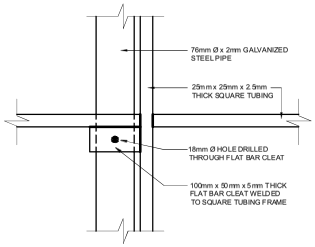
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SCALE 1:10



FIXING DETAIL 1

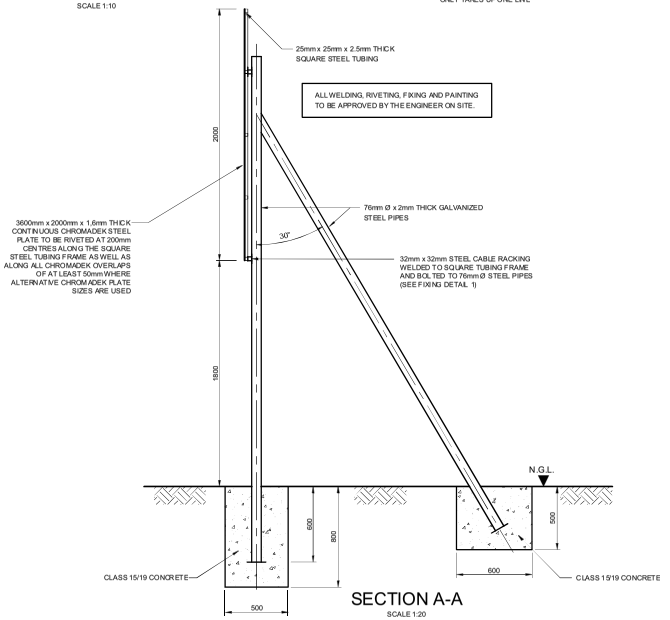
SCALE 1:5



FIXING DETAIL 2

SCALE 1:5

ALTERNATIVE FIXING DETAILS



SECTION A-A

SCALE 1:20

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PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:

PROJECT NAME BOARD

vaal central water naturally

0 50 100

100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:

ORIGINAL DRAWING SHEET SIZE: A1

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NAME:

DATE:

CLIENT DRAWING No.:

CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

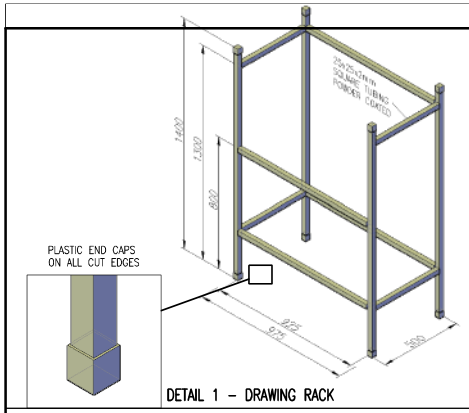
APPROVED ON BEHALF OF BIGEN:

Llewellyn Biggs

DRAWING No.: 3890.00.00.AAA.01.A011

VERSION: A

3890.00.00.AAA.01.A011



DETAIL 1 – DRAWING RACK

NOTES:

(FOR PHOTOS REFER TO DRAWING NO 01D025–1)

CAMP

- CLEAR, GRUB AND GRADE SITE TO BE SELF DRAINING
- 75mm THICK 19mm STONE GRAVELING THROUGHOUT
- MAST LIGHT TO BE PROVIDED 5m HIGH WOODEN MAST, 500 WATT GLOBE & DAY/NIGHT SWITCH
- FENCING TO BE 2.1m HIGH RAZOR MESH WIRE INCL. RAZOR FLAT WRAP ON TOP (SEE PHOTO 1).
- FULL TIME GATE GUARD TO BE PROVIDED WITH GUARD HOUSE (GH). GUARD HOUSE TO BE A 2.1m x 2.1m MODEL FROM RENT A SHED (WWW.RENTASHED.CO.ZA) OR SIMILAR APPROVED INCL CHAIR
- STEPS TO BE PROVIDED AT ALL OFFICE ENTRIES
- 1x FULL TIME CAMP ASSISTANT TO BE PROVIDED FOR CLEANING AND CAR WASH
- 3x CHEMICAL TOILETS TO BE PROVIDED (FLUSHABLE) (T)
- 80% SHADE CLOTH TO BE FIXED ON INSIDE OF FENCING IF SPECIFIED
- GALVANISED ROOF SHEETING (0.6mm THICK) CARPORT TO DRAIN TOWARDS THE BACK OF THE STRUCTURE (OPPOSITE ACCESS POINT). SIDES AND BACK OF CARPORT TO BE CLOSED WITH SHADE NETTING. THE STRUCTURE OF THE CARPORT STRUCTURE TO BE APPROVED BY A REGISTERED STRUCTURAL ENGINEER.
- 20m GARDEN HOSE TO BE PROVIDED
- CLO AND/OR LDO OFFICES NEED TO BE LOCATED OUTSIDE OF THE ENGINEER'S CAMP

OFFICE (SEE PHOTO 8)

- OFFICE A1 TO BE KWIKSPACE MODULAR BUILDINGS LTD (WWW.KWIKSPACE.CO.ZA) SINGLE WIDE 3m x 3m OFFICE OR SIMILAR APPROVED
- 12000 BTU SPLIT AIRCON UNIT (LG) TO BE PROVIDED IN OFFICE A1.
- KWIKSPACE BLINDS AND BURGLAR PROOFING TO BE INSTALLED
- OFFICE TO BE CLEANED ON A DAILY BASIS

OFFICE FURNITURE (ALL FURNITURE TO BE NEW)

1. 1500x750mm MELAMINE DESK (SEE PHOTO 2) INCLUDING DRAWERS
2. DRAWING RACK – SEE DETAIL 1
3. HALF FILING CABINET (SEE PHOTO 3)
4. ROTATING HIGH BACK CHAIR (SEE PHOTO 4)
5. 4x RICKSTACKER CHAIRS (SEE PHOTO 5)
6. PLASTIC ROUND WASTE BIN
7. 2mx1.2m MAGNETIC WHITE BOARD
8. FULL STATIONERY CUPBOARD (SEE PHOTO 6)
9. DRAWING REFERENCE TABLE

STATIONERY PACKAGE (TOTAL # OF SETS SPECIFIED IN TENDER DOCUMENT)

- 5x PENS (2x BLACK, 1x RED)
- 1x PENCIL & LEAD
- 1x ERASER
- 1x CORRECTION FLUID
- 1x PRESTIK
- 1x PRITT
- 1x SCISSOR
- 4x MAGNETS
- 1x STAPLER & BOX OF STAPLES
- 1x PUNCH
- 1x BOX RUBBER BANDS
- 1x BOX A4 PAPER

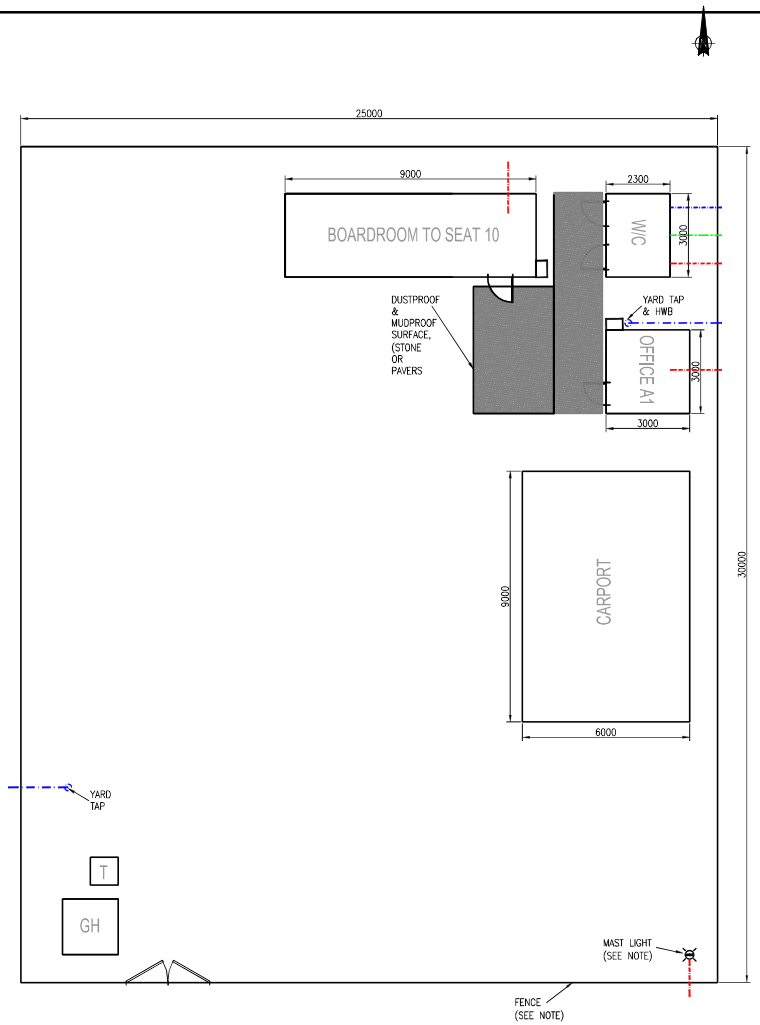
RESIDENT ENGINEER COMMUNICATION PACKAGE(S) (TOTAL NO. SETS SPECIFIED IN TENDER DOCUMENT)

- LAPTOP
- DATACARD
- PRINTER, FAX, COPIER
- 2x3m EXTENSION CORDS } SPECIFICATION ATTACHED TO THIS DRAWING
- CAMERA
- TELEPHONE

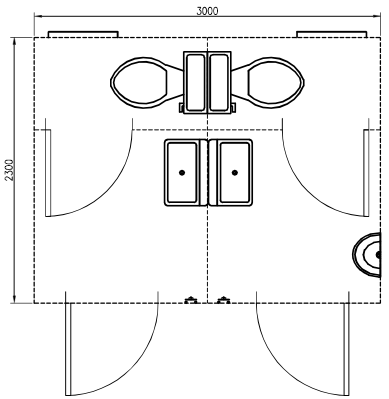
KITCHEN (NEW)

- 1x 220l FREEZER REFRIGERATOR COMBO
- 1x 20l MANUAL MICROWAVE OVEN (800W)
- 1x 1.7L KETTLE
- 1x DOUBLE HOT PLATE (SOLID PLATE)
- 6x MUGS, PLATES, UTENSILS (KNIVES, FORKS, TEASPOONS)
- DISPOSABLE CUPS, KNIVES, FORKS, TEASPOONS (PROVIDED AND MAINTAINED ON A MONTHLY BASIS)
- COFFEE, TEA BOTTLED WATER & MILK (PROVIDED AND MAINTAINED ON A MONTHLY BASIS)
- PAPER TOWEL, CLEANING MATERIALS (DISHWASHING LIQUID, HANDY ANDY, FURNITURE POLISH, CLOTHS, SPONGES), HAND SOAP AND TOILET PAPER (PROVIDED AND MAINTAINED ON A MONTHLY BASIS)

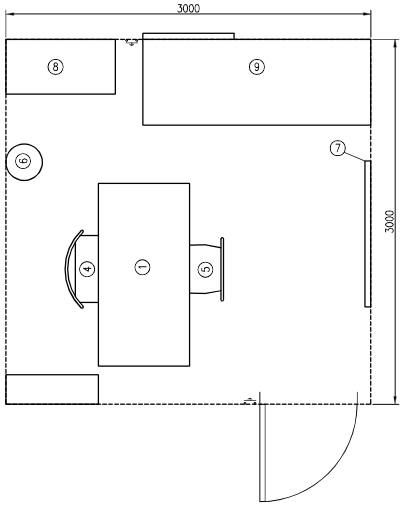
LEGEND
WATER
SEWER
ELECTRICAL



ENGINEER'S CAMP
SITE LAYOUT–TYPE A
SCALE 1:1000



W/C
SCALE 1:25



OFFICE B2
(SEE NOTES FOR FURNITURE)
SCALE 1:25

VERSION			
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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
ENGINEER'S SITE OFFICE TYPE A

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:	ORIGINAL DRAWING SHEET SIZE: A1

APPROVED ON BEHALF OF CLIENT:
NAME:
DATE:

CLIENT DRAWING No.:	CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH	CHECKED	L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN:
PROJECT MANAGER: Llewellyn Biggs
ENGINEER:

DRAWING No.: 3890.00.00.GZA.01.A002
VERSION: A

3890.00.00.GZA.01.A002



PHOTO 1 FENCING



PHOTO 2 DESK



PHOTO 3 FILING CABINET



PHOTO 4 ROTATING HIGH BACK CHAIR



PHOTO 8 C1 PARK HOME



PHOTO 7 BOARDROOM TABLE



PHOTO 6 STATIONARY CUPBOARD



PHOTO 5 RICKSTACKER CHAIR

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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
SITE OFFICE FURNITURE

vaal central water.naturally

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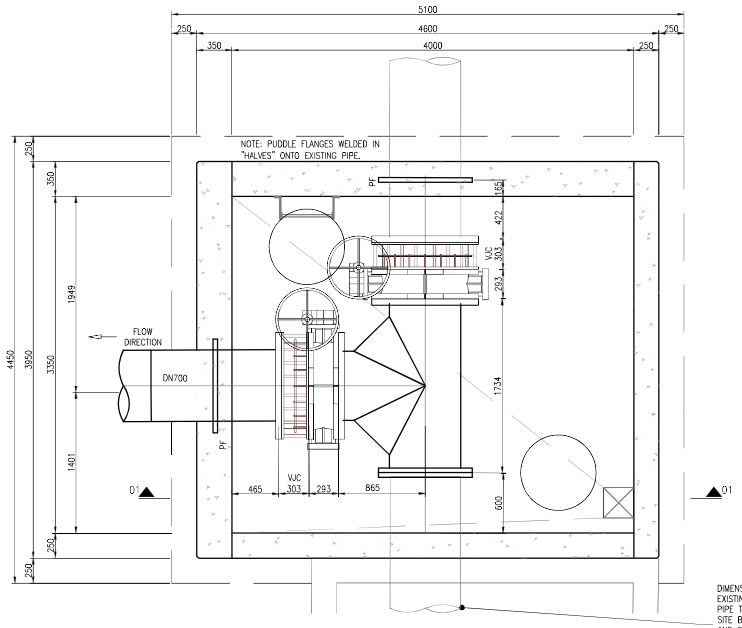
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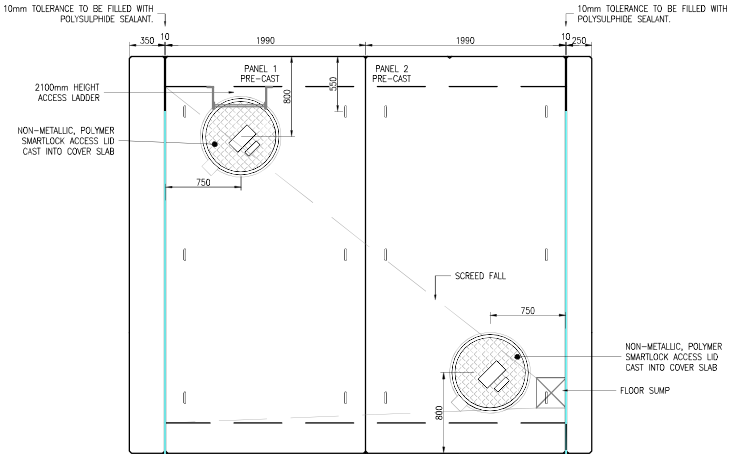
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PRACTITIONER
REVIEWER
Llewellyn Biggs

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VERSION: A

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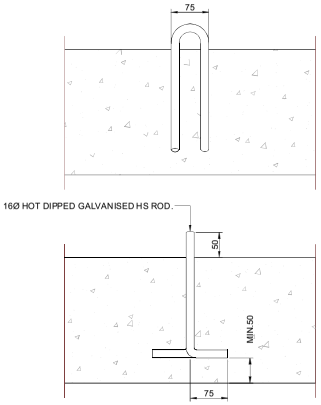
PLAN SECTION ON 700ND VALVE CHAMBER
SCALE 1:25



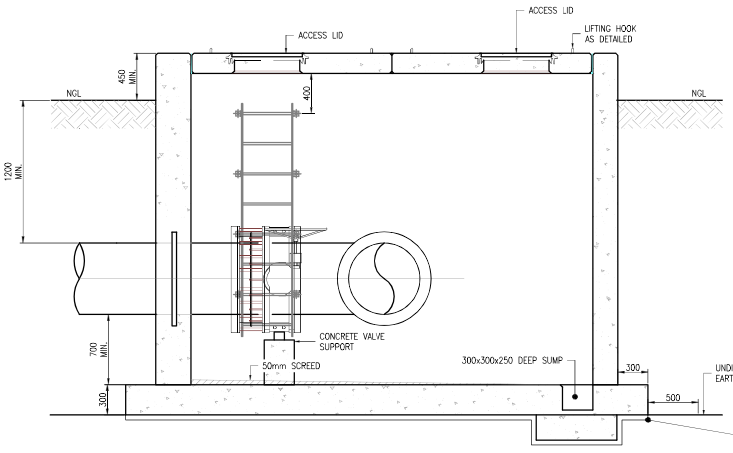
ROOF PLAN ON 700ND CHAMBER
SCALE 1:25

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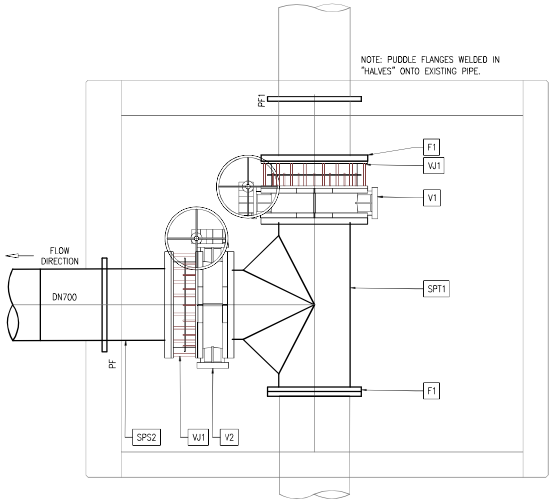
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2. FINAL POSITION OF CHAMBERS TO BE CONFIRMED BY ENGINEER ON SITE.
3. FINAL LEVEL OF EXISTING PIPES TO BE CONFIRMED BY CONTRACTOR ON SITE FOR ENGINEERS APPROVAL.
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7. PIPE SUPPORTS TO BE PROVIDED UNDERNEATH ALL VALVES AS INSTRUCTED BY THE ENGINEER ON SITE.



DETAIL OF LIFTING HOOK
SCALE 1:5



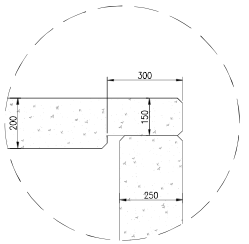
SECTION (01-01)
SCALE 1:25



REFER FITTING SCHEDULE FOR COMPONENT DETAIL

NB NOTE: ALL FILLED WELDS ON EXISTING PIPE TO BE REPAIRED BEFORE NEW PIPE PIECES ARE INSTALLED.

PLAN ON MS-900 CHAMBER FITTINGS
SCALE 1:25



DETAIL A - "ANTI-SLIDE" COVER SLAB DEATIL
SCALE 1:10

Llewellyn Biggs

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DRAWING TITLE:
RUSTFONTEIN - WELBEDACHT CROSS CONNECTION DETAILS AND SECTION 711Ø CROSS-CONNECTION PIPE

vaal central water naturally

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100mm ON ORIGINAL DRAWING

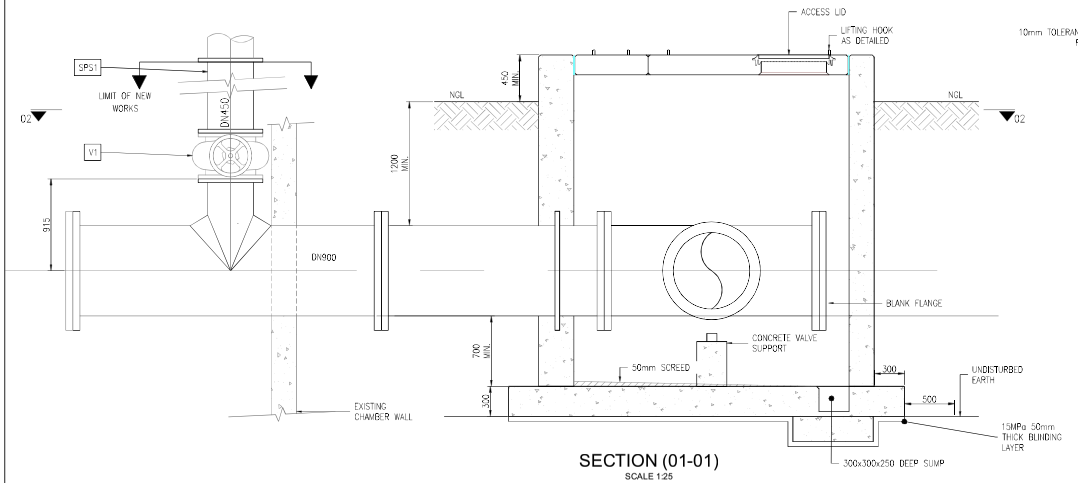
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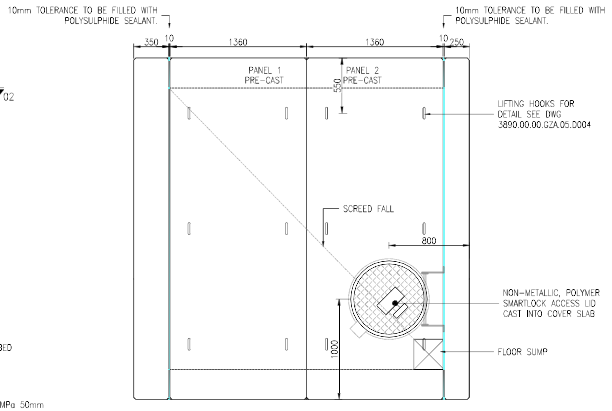
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DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

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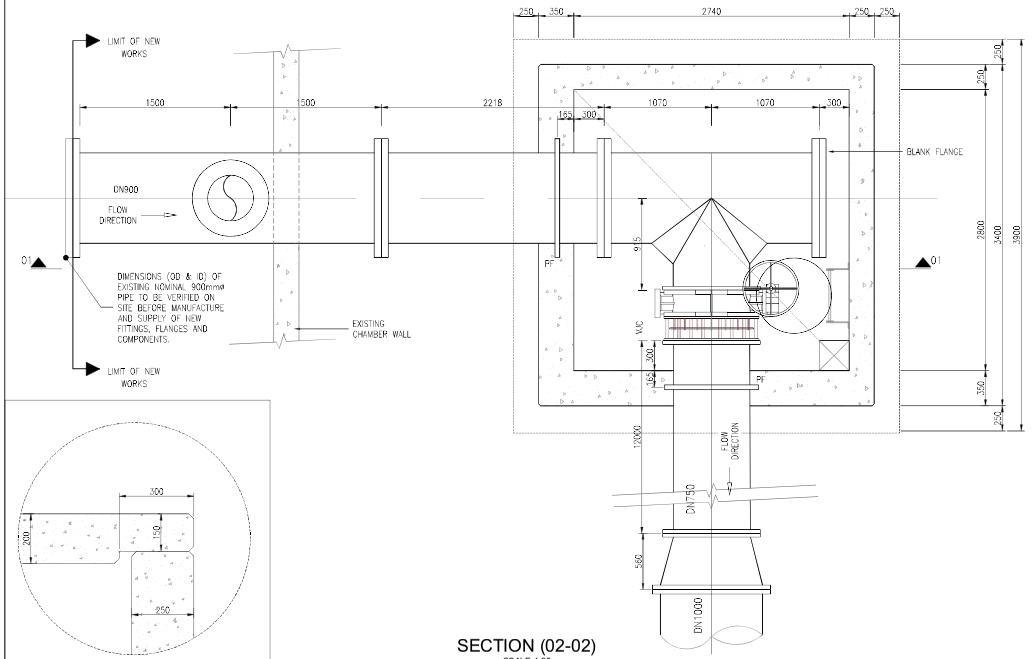
SECTION (01-01)
SCALE 1:25



ROOF PLAN TURBO CHAMBER
SCALE 1:25

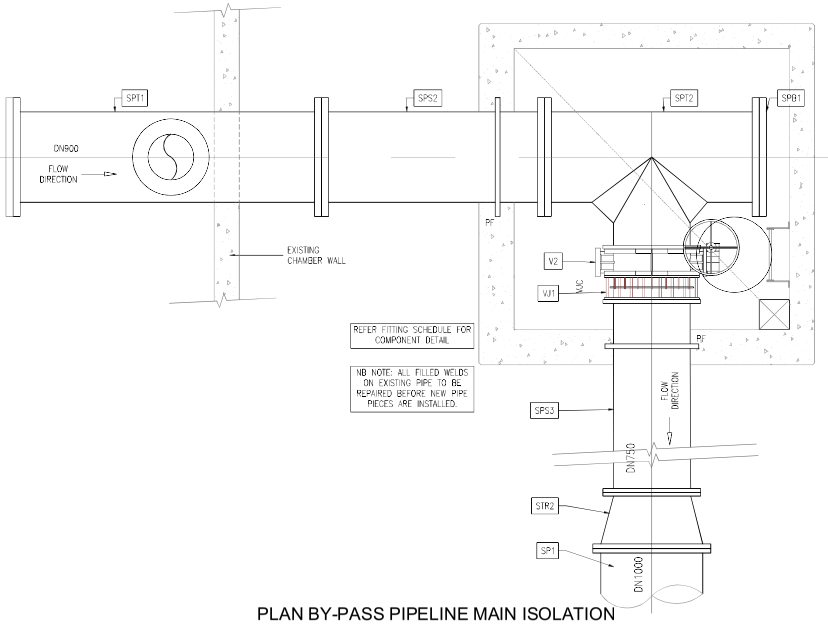
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SECTION (02-02)
SCALE 1:25

DETAIL A - "ANTI-SLIDE" COVER SLAB DEATIL
SCALE 1:10



PLAN BY-PASS PIPELINE MAIN ISOLATION VALVE CHAMBER FITTINGS
SCALE 1:25

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DRAWING TITLE:
BY-PASS PIPELINE ISOLATION AND CONNECTION DETAILS AND SECTION OF MAIN ISOLATION CHAMBER

vaal central water naturally

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE	ORIGINAL DRAWING SHEET SIZE: A1

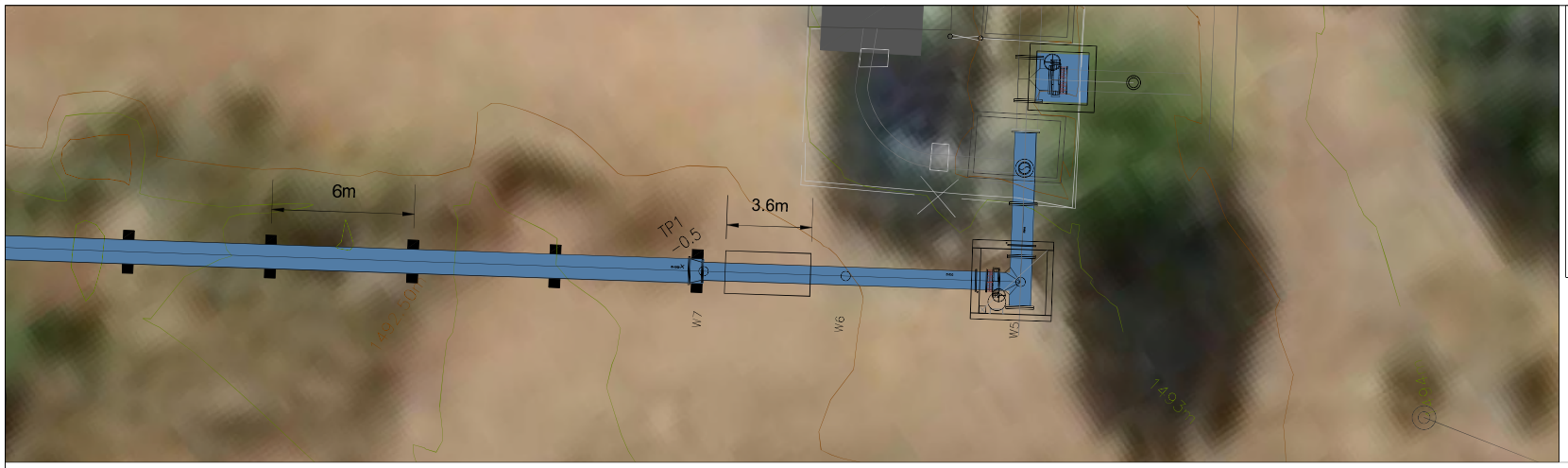
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APPROVED ON BEHALF OF BIGEN:
Llewellyn Biggs

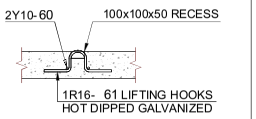
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3890.00.00.GZA.05.D005	A

3890.00.00.GZA.05.D005

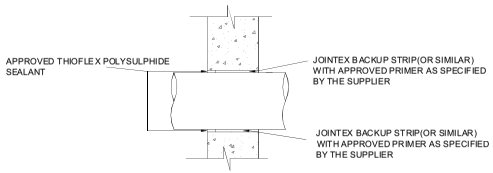


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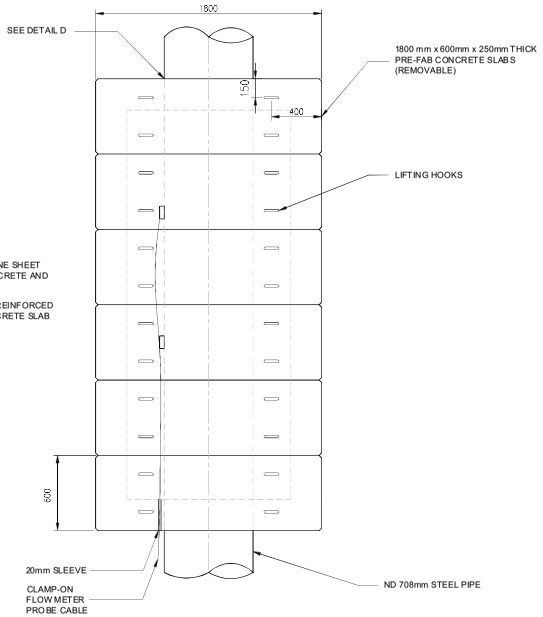
1. ALL EXISTING DETAIL AND DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURE AND SUPPLY.
2. FINAL POSITION OF CHAMBERS TO BE CONFIRMED BY ENGINEER ON SITE.
3. FINAL LEVEL OF EXISTING PIPES TO BE CONFIRMED BY CONTRACTOR ON SITE FOR ENGINEERS APPROVAL.
4. CONCRETE FINISHES SHALL BE AS FOLLOWS, EXCEPT WHERE OTHERWISE SPECIFIED: SMOOTH SPECIALLY FOR SURFACES EXPOSED TO VIEW. ROUGH TO SURFACES AGAINST WHICH BACKFILL OR FURTHER CONCRETE WILL BE PLACED. FLOOR FINISHES INSIDE CHAMBERS TO BE WOOD FLOATED.
5. ALL EXPOSED EDGES TO HAVE 20x20 CHAMFERS.
6. ALL JOINTS AT ROOF PANELS TO BE SEALED WITH POLYURETHANE SEALANT.
7. PIPE SUPPORTS TO BE PROVIDED UNDERNEATH ALL VALVES AS INSTRUCTED BY THE ENGINEER ON SITE.

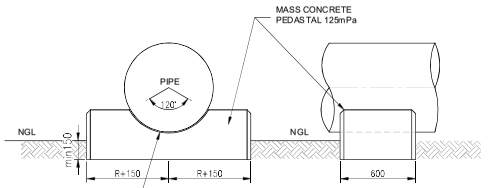


LIFTING HOOK DETAIL
SCALE 1:25

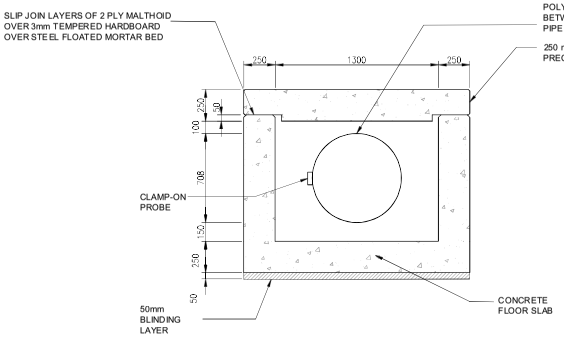


DETAIL D
N.T.S.

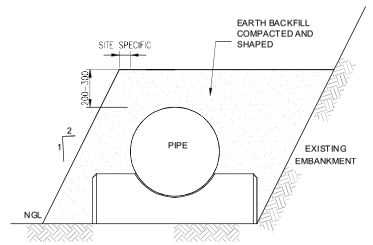




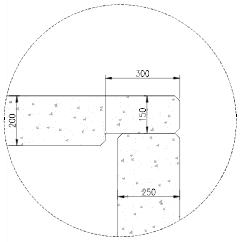
DETAIL B
CONCRETE PEDESTALS
SCALE :1:25



PIPE CROSSING AND FLOW METER CHAMBER
SCALE 1 :20



DETAIL C
EARTH FILL AROUND PIPE
SCALE :1:25



DETAIL A - "ANTI-SLIDE" COVER SLAB DEATIL
SCALE 1:10

VERSION			
No.	DATE	DESCRIPTION	AUTH. BY

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Doing good while doing business

PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
BY-PASS PIPELINE ISOLATION AND CONNECTION DETAILS AND SECTION OF FLOW METER CHAMBER

vaal central water naturally

0 50 100
100mm ON ORIGINAL DRAWING

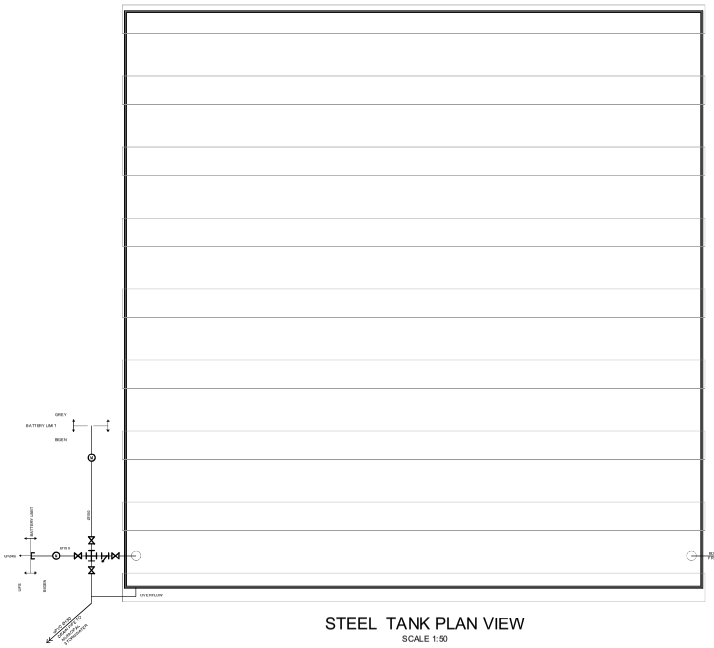
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NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

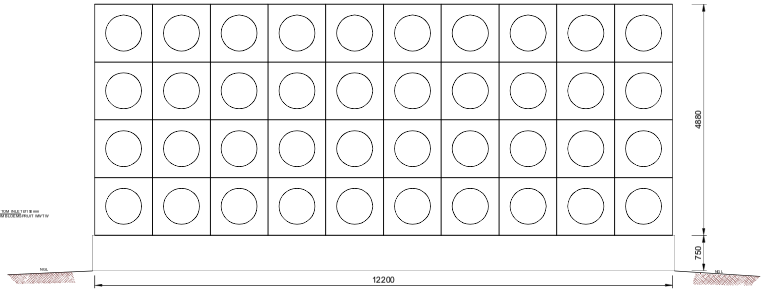
SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN:
Liewellyn Biggs
DRAWING No.: 3890.00.00.GZA.05.D006
VERSION: A

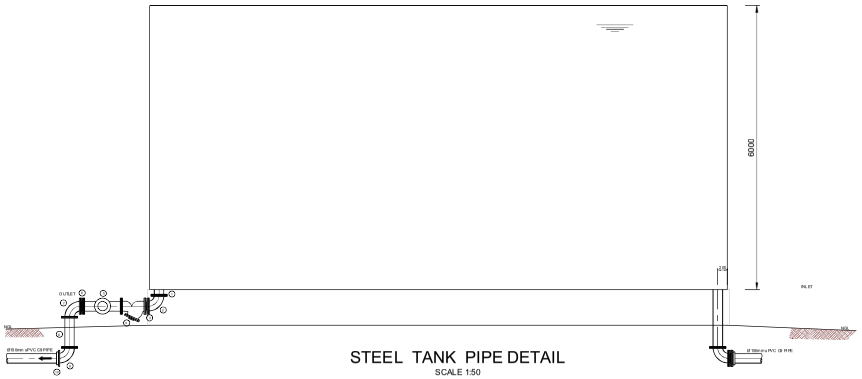
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STEEL TANK PLAN VIEW
SCALE 1:50



TYPICAL SIDE VIEW STEEL TANK
SCALE 1:50



STEEL TANK PIPE DETAIL
SCALE 1:50

PIPE NOTES:

1. Ø150mm FLANGED OUTLET
2. Ø150mm SHORT RADIUS FLANGED BEND
3. Ø150mm WAVER TYPE BUTTERFLY VALVE
4. Ø150mm STRAINER
5. Ø150mm - 150mm FOURWAY FLANGED CROSS
6. Ø150mm WAVER TYPE BUTTERFLY VALVE
7. Ø150mm SHORT RADIUS FLANGED BEND
8. Ø150mm FLANGED PIPE SECTION (F/F 640mm)
9. Ø150mm SHORT RADIUS FLANGED BEND
10. Ø150mm FLANGED ADAPTOR (STEEL TO PVC)
11. Ø150mm WAVER TYPE BUTTERFLY VALVE
12. Ø150mm-200mm EQUAL FLANGED TEE
13. Ø150mm SHORT RADIUS FLANGED BEND
14. Ø150mm FLANGED PIPE SECTION (F/F 640mm)
15. Ø150mm SHORT RADIUS FLANGED BEND WITH FLANGED ADAPTOR (STEEL TO PVC)
16. Ø150mm WAVER TYPE BUTTERFLY VALVE
17. Ø150mm FLANGED PIPE SECTION (F/F 1500mm)
18. Ø150 MECHANICAL FLOW METER
19. Ø150 FLANGED PIPE SECTION INCLUDING BLANK FLANGE (F/F 750mm)

VERSION

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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
STEEL TANK DETAILS

vaal central water.naturally

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:	ORIGINAL DRAWING SHEET SIZE: A1

APPROVED ON BEHALF OF CLIENT:
NAME:
DATE:

CLIENT DRAWING No.:	CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH	CHECKED	L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN:
Llewellyn Biggs

DRAWING No.: **3890.00.00.GZA.05.D007**
VERSION: **A**

3890.00.00.GZA.05.D007

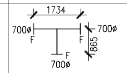
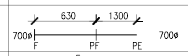
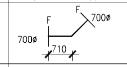
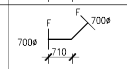
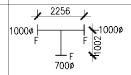
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4. DRILLING OF EXISTING FLANGES MUST BE VERIFIED BY CONTRACTOR ON SITE BEFORE ORDERING.
5. ABBREVIATIONS

CORROSION PROTECTION

CML	CEMENT MORTAR
DP	DENSO PETROLATUM TAPE (ONLY UNDERGROUND SECTIONS)
DT	DENSOTHERM HD SYSTEM (ONLY UNDERGROUND SECTIONS)
DU	DENSO ULTRAFLEX 1250/300 (ONLY UNDERGROUND SECTIONS)
EP	EPOXY PAINT
FBE	FUSION BONDED EPOXY
FMDPE	FUSION BONDED MEDIUM DENSITY POLYETHYLENE (SINTAKOTE)
FRB	FIBRE REINFORCED BITUMEN
G	HOT–DIP GALVANISING
IZS	INORGANIC ZINC SILICATE
MPEP	MULTI–PURPOSE EPOXY PAINT – UV–RESISTANT
PUA	POLYURETHANE ACRYLIC (SILVER)
RPU	RE–COATABLE POLYURETHANE TO CLIENT'S COLOUR CODING SPECIFICATION

CL	CLASS
CP	CROTCH PLATE
CTO	CAP TOP – OPERATED
CTS	PIPE LENGTH CUT TO SUIT ON SITE
DWG	DRAWING
EA	ELECTRIC ACTUATOR
F	FLANGED
F/F	FACE TO FACE DIMENSION
FA	FLANGE ADAPTOR
FDT	FLANGE DRILLING TABLE
GE	GROOVED END
GR	GRADE OF STEEL
GS	GALVANISED STEEL
HD	HEAVY DUTY – GALVANISED STEEL PIPEWORK
HPWB	HANDWHEEL PEDESTAL ON WALL SUPPORT BRACKET
HW	HANDWHEEL
HWO	HANDWHEEL–OPERATED
IF	INSULATED FLANGE
LF	LOOSE FLANGE – WELDED ONTO PIPE END AFTER CUTTING PIPE LENGTH TO SUIT ON SITE – NB: INSTALLATION POSITION AS INDICATED ON LAYOUT DRAWING TO REMAIN UNCHANGED
LH	LEFT HAND SIDE
LR	LONG RADIUS
MD	MEDIUM DUTY – GALVANISED STEEL PIPEWORK
MR	MEDIUM RADIUS
MWP	MAXIMUM WORKING PRESSURE
OD	OUTSIDE DIAMETER
PCD	PITCH CIRCLE DIAMETER FOR FLANGES
PE	PLAIN PIPE END
PF	PUDDLE FLANGE
PMP	PLATFORM–MOUNTED HANDWHEEL PEDESTAL
R	RADIUS
RB	RESTRAINING BOLT
RF	RESTRAINING FLANGE
RH	RIGHT HAND SIDE
RSV	RESILIENT SEAL GATE VALVE
SB	SOLID BODY
SCREW	SCREW THREAD
SE	SPINDLE EXTENSION
SH	STUB HANDWHEEL PEDESTAL ON WALL SUPPORT BRACKET
SP	STRAIGHT PIPE
SR–C	STRAIGHT COUPLING
SS/3,4	STAINLESS STEEL ITEM TO SPECIFICATION WITH 3,4mm WALL THICKNESS
ST/4,5	STEEL ITEM TO SPECIFICATION WITH 4,5 mm WALL THICKNESS
ST–C	STEPPED COUPLING
SW	CERTAIN ITEMS WELDED TOGETHER ON SITE (SITE WELDING). PREPARATION OF ENDS FOR WELDING HAVE TO COMPLY WITH THE SPECIFICATION – NB – CORROSION PROTECTION TO BE REPAIRED TO ENGINEER'S APPROVAL
t	PLATE THICKNESS
WT	PIPE WALL THICKNESS
SO	20mm DIA STAINLESS STEEL SOCKET WELDED ON PIPE ITEM, WITH STAINLESS STEEL NIPPLE AND 20mm DIA 25 BAR FEMALE SCREWED FULL BORE CHROME PLATED BRASS BALL VALVE GATE VALVE, WELDED ON TOP OF PIPE IN A POSITION WHERE IT CANNOT OBSTRUCT INSTALLATION AND REMOVAL OF BOLTS, ALL ITEMS TO BE SUITABLE FOR 2500 kpa WORKING PRESSURE

ITEM NO		TOTAL	REFER DWG	DIA LEFT	DIA RIGHT	DIA BRANCH 1	DIA BRANCH 2	END LEFT	END RIGHT	END BRANCH 1	END BRANCH 2	BEND ANGLE (DEGREE)	BEND RADIUS	MATERIAL/ CLASS	FLANGE SPEC/DRILLING SABS 1123 (1977)	CORROSION PROTECTION: FACTORY INTERNAL LINING	CORROSION PROTECTION: FACTORY COATING	CORROSION PROTECTION: SITE APPLICATION	DESCRIPTION
CROSS CONNECTION (PIPE DIAMETER 700mm)																			
F1		1	3890.00.00.GZA.05.D004	700				F	F						2500/3	EP	EP		ND700 LOOSE PN25 FLANGE WELDED ONTO EXITING ND711 MS PIPE
SPT1		1	3890.00.00.GZA.05.D004	700	700	700		F	F	F				ST/8	2500/3	EP	EP		EQUAL GUSSETED FLANGED TEE PN25 ND700mm
V1		1	3890.00.00.GZA.05.D004	700				F	F						2500/3	FBE	FBE		EXISTING ND 700 BUTTERFLY VALVE PN25 TO BE REPURPOSED
VJ1		2	3890.00.00.GZA.05.D004	700	700			F	F						2500/3	FBE	FBE		ND 700 PN 25 VIKING JOHNSON DISMANTLING JOINT
PF1		1	3890.00.00.GZA.05.D004	700				F							2500/3	EP	EP		PUDDLE FLANGE PN25. PUDDLE FLANGES WELDED IN "HALVES" ONTO EXISTING PIPE
V2		2	3890.00.00.GZA.05.D004	700				F	F						2500/3	FBE	FBE		ND700 PN 25 DOUBLE ECCENTRIC BUTTERFLY VALVE WITH HANDWHEEL
SPS2		1	3890.00.00.GZA.05.D004	700	700			F	PE					ST/8	2500/3	EP	EP+DP		MS PIPE SPECIAL ONE END FLANGED OTHER END PLAIN WELDED ONTO PIPE WITH PUDDLE FLANGE PN25
W2		1	3890.00.00.GZA.05.D004	700	700			F	F					ST/8	2500/3	EP	EP		15° BEND
W3		1	3890.00.00.GZA.05.D004	700	700			F	F					ST/8	2500/3	EP	EP		13° BEND
W4		1	3890.00.00.GZA.05.D004	1000	1000	700		F	F	F				ST/8	2500/3	EP	EP		UNEQUAL GUSSETED FLANGED TEE PN25

VERSION

No.	DATE	DESCRIPTION	AUTH. BY

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Doing good while doing business

PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
RUSTFONTEIN - WELBEDACHT CROSS CONNECTION ITEM LIST 711Ø CROSS-CONNECTION PIPE

vaal central water.naturally

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:
ORIGINAL DRAWING SHEET SIZE: A1

APPROVED ON BEHALF OF CLIENT:
NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN
PRACTITIONER:
REVIEWER: Llewellyn Biggs

DRAWING No.: 3890.00.00.GZA.05.F001
VERSION: A

3890.00.00.GZA.05.F001

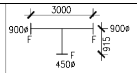
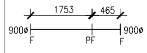
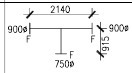
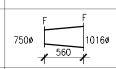
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WT	PIPE WALL THICKNESS
SO	20mm DIA STAINLESS STEEL SOCKET WELDED ON PIPE ITEM, WITH STAINLESS STEEL NIPPLE AND 20mm DIA 25 BAR FEMALE SCREWED FULL BORE CHROME PLATED BRASS BALL VALVE GATE VALVE, WELDED ON TOP OF PIPE IN A POSITION WHERE IT CANNOT OBSTRUCT INSTALLATION AND REMOVAL OF BOLTS, ALL ITEMS TO BE SUITABLE FOR 2500 kpa WORKING PRESSURE

ITEM NO		TOTAL	REFER DWG	DIA LEFT	DIA RIGHT	DIA BRANCH 1	DIA BRANCH 2	END LEFT	END RIGHT	END BRANCH 1	END BRANCH 2	BEND ANGLE (DEGREE)	BEND RADIUS	MATERIAL/ CLASS	FLANGE SPEC/DRILLING SABS 1123 (1977)	CORROSION PROTECTION: FACTORY INTERNAL LINING	CORROSION PROTECTION: FACTORY COATING	CORROSION PROTECTION: SITE APPLICATION	DESCRIPTION
BY–PASS PIPELINE ISOLATION																			
SPT1		1	3890.00.00.GZA.05.D004	900	900	450		F	F	F				ST/8	2500/3 1600/3	EP	EP		UNEQUAL GUSSETED FLANGED TEE PN25 ND900mm MAIN ND450 BRANCH = LENGTH CUSTOM
V1		1	3890.00.00.GZA.05.D005	450				F	F						1600/3	FBE	FBE		EXISTING ND 450 RSV VALVE PN16 TO BE REPURPOSED
SPS1		1	3890.00.00.GZA.05.D005	450				F	F						1600/3	EP	EP		FLANGED STEEL PIPE SPECIAL EXISTING TO BE REPURPOSED AND SHORTERED ON SITE
SPS2		1	3890.00.00.GZA.05.D005	900				F	F						2500/3	EP	EP		FLANGED PIPE SPECIAL WITH RESTRAINER FLANGE LENGTH 2218mm
SPT2		1	3890.00.00.GZA.05.D004	900	900	750		F	F	F				ST/8	2500/3	EP	EP		UNEQUAL GUSSETED FLANGED TEE PN25 ND900mm MAIN ND750 BRANCH
V2		1	3890.00.00.GZA.05.D005	750				F	F						2500/3	FBE	FBE		ND750 PN 25 DOUBLE ECCENTRIC BUTTERFLY VALVE WITH HANDWHEEL
VJ1		1	3890.00.00.GZA.05.D005	750	750			F	F						2500/3	FBE	FBE		ND 750 PN 25 VIKING JOHNSON DISMANTLING JOINT
SPS3		1	3890.00.00.GZA.05.D005	750				F	F						2500/3	EP	EP		FLANGED PIPE SPECIAL WITH RESTRAINER FLANGE LENGTH 12m
STR2		1	3890.00.00.GZA.05.D005	750	1016			F	F						2500/3	EP	EP		FLANGED STEEL PIPE REDUCER ND750 – ND 1016
SPB1		1	3890.00.00.GZA.05.D005	900				F	F						2500/3	EP	EP		BLANK FLANGE – ND 900

VERSION			
No.	DATE	DESCRIPTION	AUTH. BY
SURVEY DATUM:			

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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
BY-PASS PIPELINE ISOLATION AND CONNECTION ITEM LIST - MAIN ISOLATION

vaal central water. naturally

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:
ORIGINAL DRAWING SHEET SIZE: A1

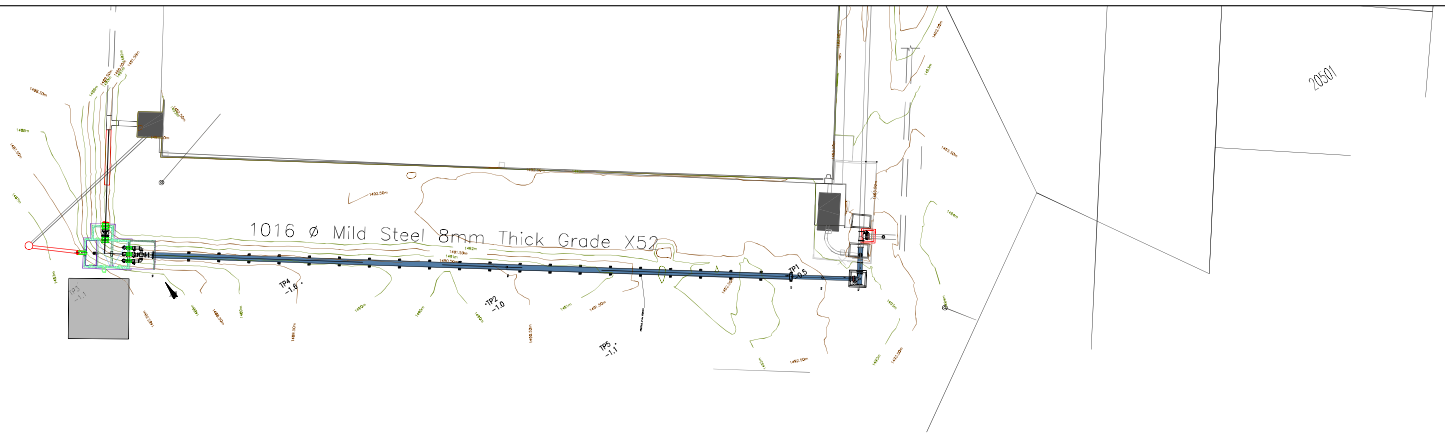
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NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN
PRACTITIONER: Signed by: Mornay Pienaar
RECOMMENDED: Signed by: Llewellyn Biggs

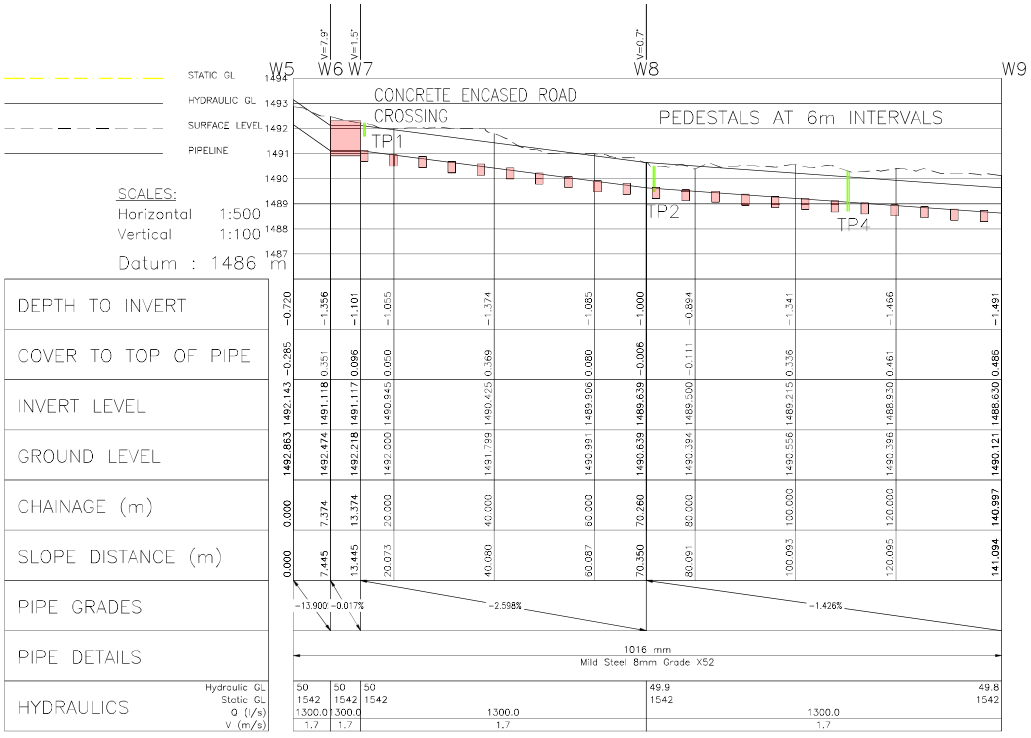
DRAWING No.: 3890.00.00.GZA.05.F002
VERSION: A

3890.00.00.GZA.05.F002



NOTES:
1. ALL EXISTING DETAIL AND DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURE AND SUPPLY.
2. FINAL POSITION OF CHAMBERS TO BE CONFIRMED BY ENGINEER ON SITE.
3. FINAL LEVEL OF EXISTING PIPES TO BE CONFIRMED BY CONTRACTOR ON SITE FOR ENGINEERS APPROVAL.
4. CONCRETE FINISHES SHALL BE AS FOLLOWS, EXCEPT WHERE OTHERWISE SPECIFIED: SMOOTH SPECIALLY FOR SURFACES EXPOSED TO VIEW; ROUGH TO SURFACES AGAINST WHICH BACKFILL OR FURTHER CONCRETE WILL BE PLACED. FLOOR FINISHES INSIDE CHAMBERS TO BE WOOD FLOATED.
5. ALL EXPOSED EDGES TO HAVE 20x20 CHAMFERS.
6. ALL JOINTS AT ROOF PANELS TO BE SEALED WITH POLYURETHANE SEALANT.
7. PIPE SUPPORTS TO BE PROVIDED UNDERNEATH ALL VALVES AS INSTRUCTED BY THE ENGINEER ON SITE.

LEGEND:
- CADASTER
- EXISTING INFASTUCTURE
- NEW BYPASS 700ND PROPOSAL



Coordinate List
Lo 27

Node	YLo	XLo
hydro		
Const:		
W5	82 221.545	3 225 633.533
W6	82 227.511	3 225 629.199
W7	82 232.366	3 225 625.673
W8	82 278.392	3 225 592.243
W9	82 335.615	3 225 550.659

Pipe Data List

Node	–	Node	Length (m)	Dia. (mm)	MATERIAL	GRADE
hydro						
W5	–	W6	7.37	1016	Mild Steel	25
W6	–	W7	6.00	1016	Mild Steel	25
W7	–	W8	56.89	1016	Mild Steel	25
W8	–	W9	70.74	1016	Mild Steel	25

PIPE MATERIAL LIST

Diameter (mm)	Grade	Length (m)
Mild Steel 1016	25	141.00
Total length :		141.00

Pipe Bends Schedule (>3.0 Deg)

CH	Diameter1 (mm)	Diameter2 (mm)	Angle (Deg)
7.374	1011	1011	7.9

VERSION

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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
BRANDKOP PROPOSAL LONGITUDINAL SECTION BYPASS ISOLATION

vaal central water naturally

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100mm ON ORIGINAL DRAWING
ORIGINAL DRAWING SCALE:
ORIGINAL DRAWING SHEET SIZE: A1

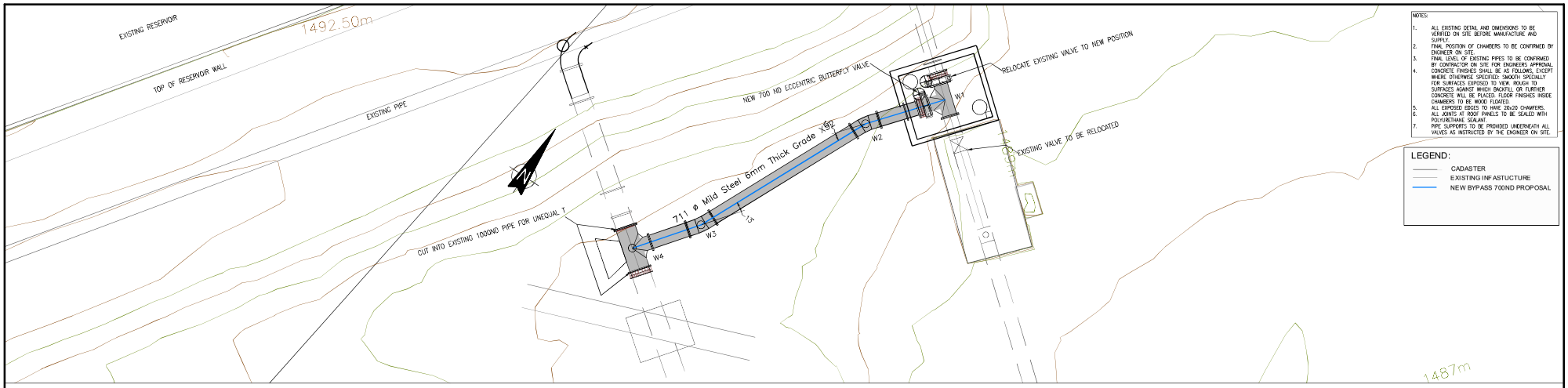
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NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

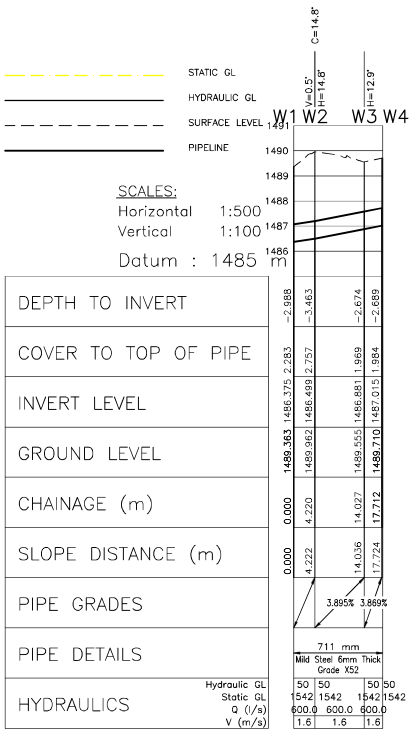
SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN:
PRACTITIONER
SIGNATURE
Llewellyn Biggs

DRAWING No.: 3890.00.00.GZA.05.L003
VERSION: A

3890.00.00.GZA.05.L003





Coordinate List		
Lo 27		
GRP		
Node	YLo	XLo
Const:		
W1	82 154.793	3 225 557.585
W2	82 157.488	3 225 560.833
W3	82 161.612	3 225 569.730
W4	82 163.870	3 225 572.642

Pipe Data List						
Node	–	Node	Length (m)	Dia. (mm)	MATERIAL	GRADE
GRP						
W1	–	W2	4.22	711	Mild Steel	X52
W2	–	W3	9.81	711	Mild Steel	X52
W3	–	W4	3.68	711	Mild Steel	X52

PIPE MATERIAL LIST		
Diameter (mm)	Grade	Length (m)
Mild Steel 711	X52	17.71
Total length :		17.71

Pipe Bends Schedule (>3.0 Deg)			
CH	Diameter1 (mm)	Diameter2 (mm)	Angle (Deg)
5.220	711	711	14.8

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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
BRANDKOP PROPOSAL LONGITUDINAL SECTION 711Ø CROSS CONNECTION

vaal central water naturally

0 50 100
100mm ON ORIGINAL DRAWING
ORIGINAL DRAWING SCALE:
ORIGINAL DRAWING SHEET SIZE: A1

APPROVED ON BEHALF OF CLIENT:
NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN:
PRACTITIONER: Marinel Pienaar
REVIEWER: Llewellyn Biggs

DRAWING No.: 3890.00.00.GZA.05.L004
VERSION: A

3890.00.00.GZA.05.L004



LEGEND:

- EXISTING ABOVE-GROUND PIPELINES
- EXISTING BELOW-GROUND PIPELINES
- PROPOSED NEW ABOVE-GROUND PIPELINES
- PROPOSED NEW BELOW-GROUND PIPELINES
- EXISTING CHAMBERS
- PROPOSED NEW BREAK PRESSURE TANK

NOTES:

PROPOSED BYPASS PIPELINE:
THE PROPOSED BYPASS PIPELINE COMPRISES A DN 1100 ABOVE-GROUND STEEL PIPELINE, SUPPORTED ON PEDESTALS. CONNECTIONS TO THE EXISTING INFRASTRUCTURE WILL BE BELOW GROUND.

BREAK PRESSURE TANK:
REFER TO THE SEPARATE BREAK PRESSURE TANK (BPT) DRAWINGS FOR BPT CONFIGURATION AND LAYOUT.

THE FINAL BPT LOCATION AND DIMENSIONS ARE SUBJECT TO THE OUTCOMES OF THE GEOTECHNICAL INVESTIGATION.

INFRASTRUCTURE POSITIONING:
THE EXACT POSITIONING OF EXISTING AND PROPOSED INFRASTRUCTURE WILL BE REFINED ONCE THE TOPOGRAPHICAL SURVEY INFORMATION HAS BEEN RECEIVED.

VERSION

No.	DATE	DESCRIPTION	AUTH. BY

SURVEY DATUM:

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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
SITE LAYOUT

vaal central water naturally

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:
ORIGINAL DRAWING SHEET SIZE: A1

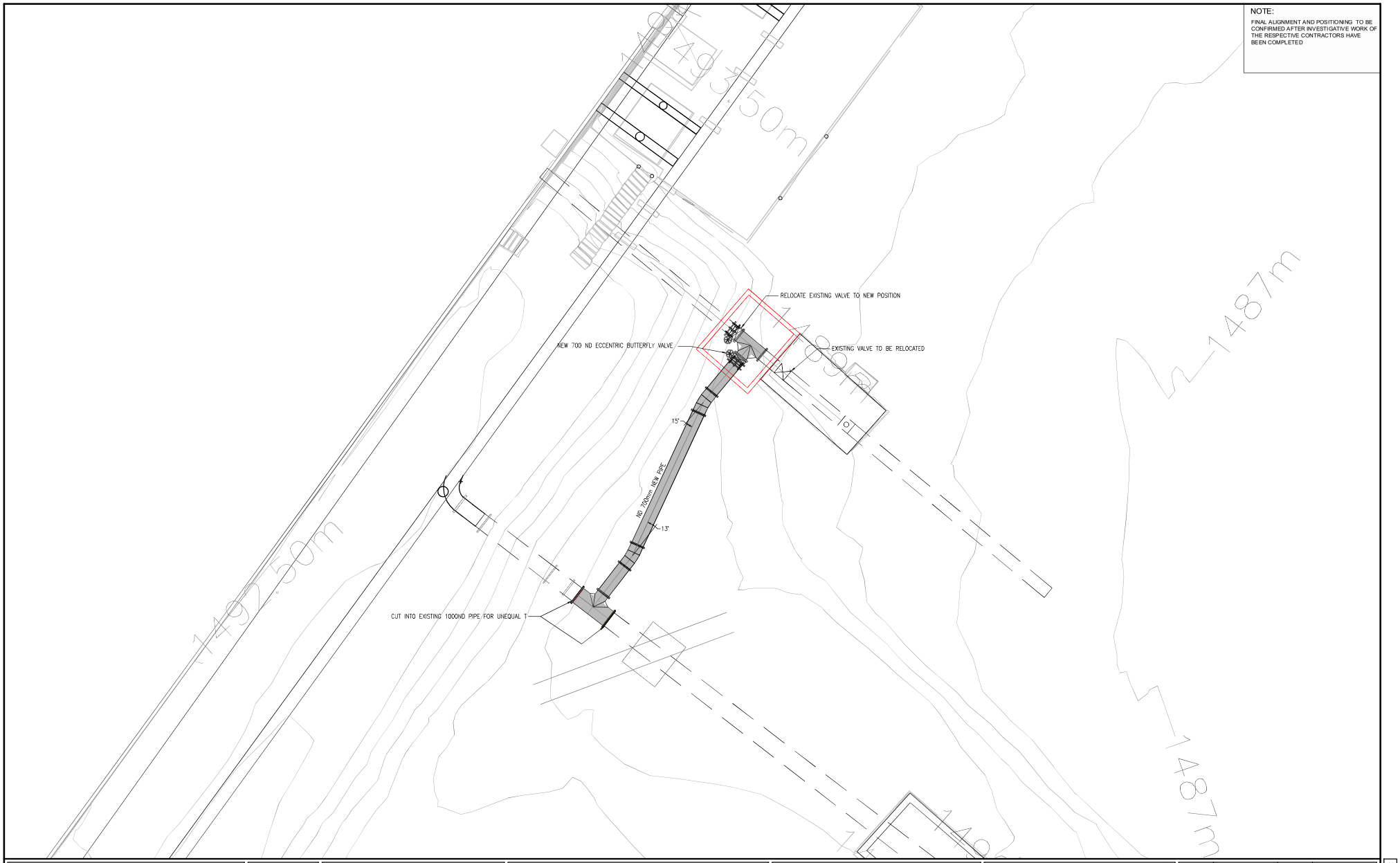
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NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

APPROVED ON BEHALF OF BIGEN:
Project Manager
Signed by: Wessel Kleynhans
Date: 2026.04.15 11:17:52 +02'00'
Reason: I am the author of this document
Location: PRETORIA
Author
Signed by: Llewellyn Biggs
Date: 2026.04.15 11:17:52 +02'00'
Reason: I am the author of this document
Location: PRETORIA

DRAWING No.: **3890.00.00.GZA.05.U002**
VERSION: **A**

3890.00.00.GZA.05.U002



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PROJECT TITLE:
PROPOSED BYPASS PIPELINE AT VAAL CENTRAL WATER BRANDKOP RESERVOIR

DRAWING TITLE:
BRANDKOP PROPOSAL 711Ø BYPASS

vaal central water naturally

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:	ORIGINAL DRAWING SHEET SIZE: A1

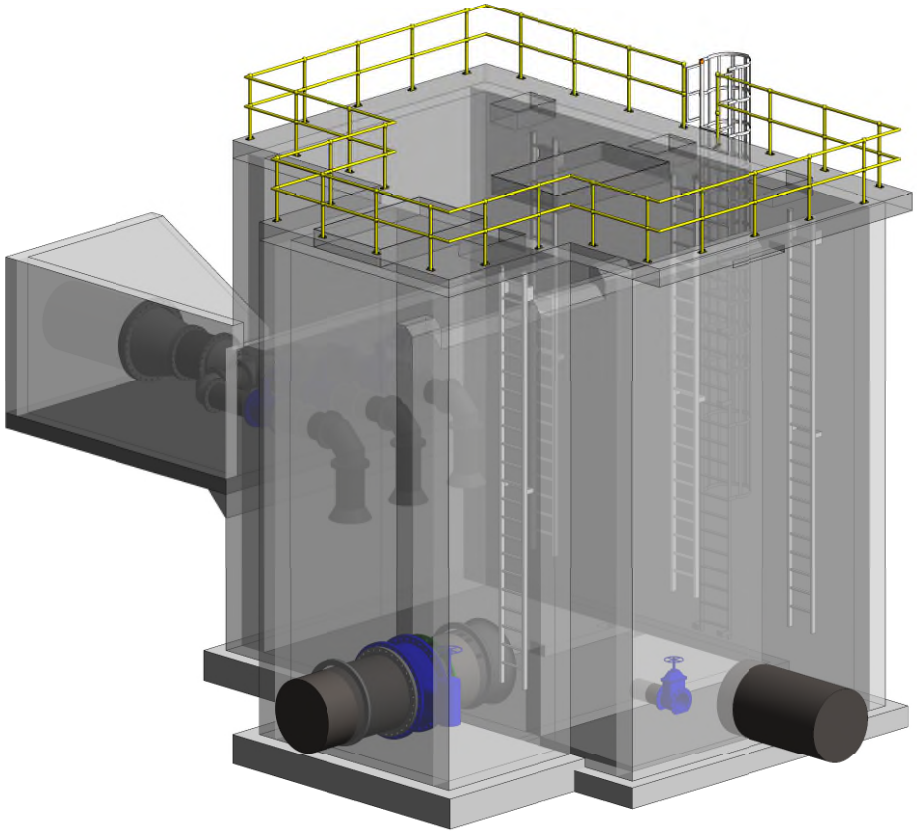
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NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

SURVEYED	-	DESIGNED	M PIENAAR
DRAWN	KL SMITH		L BIGGS
COORD SYSTEM		DATE	APR 2026

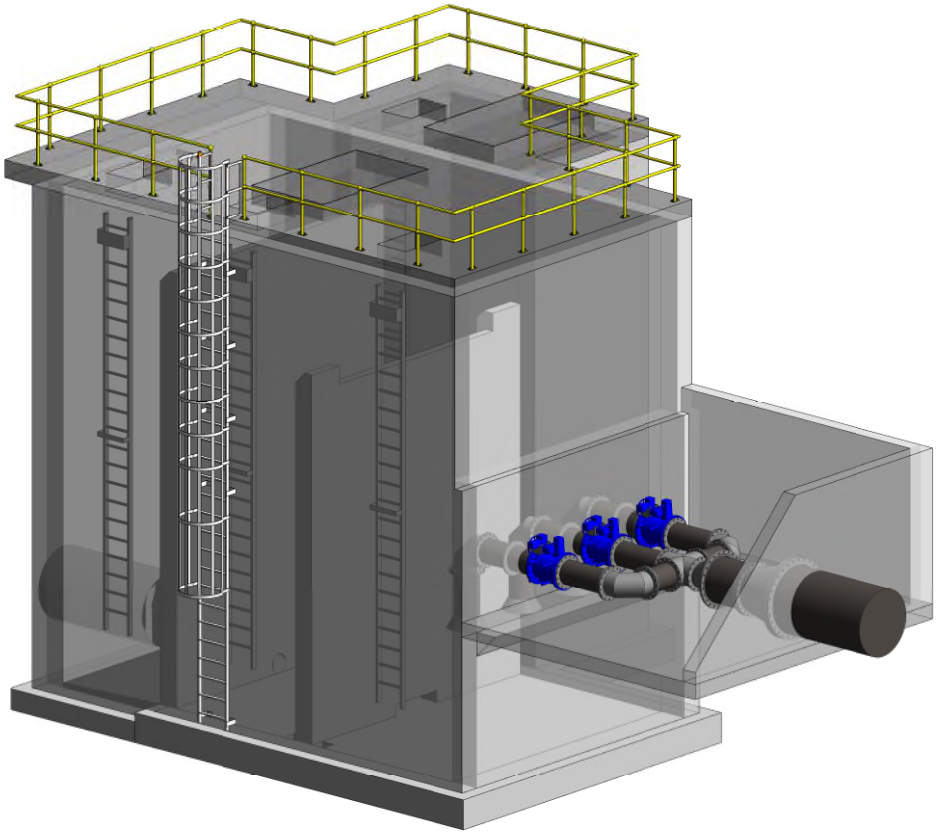
APPROVED ON BEHALF OF BIGEN:
PRACTITIONER
SIGNATURE
Llewellyn Biggs

DRAWING No.: 3890.00.00.GZA.05.U004
VERSION: A

3890.00.00.GZA.05.U004



3D VIEW FROM OUTLET



3D VIEW FROM INLET

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PROJECT TITLE:
BRANDKOP RESERVOIR JOINT SEALING AND REPAIR

DRAWING TITLE:
BYPASS AND BREAK PRESSURE TANK 3D VIEWS

vaal central water
enabling

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:	ORIGINAL DRAWING SHEET SIZE: A1		
SURVEYED		DESIGNED	M PIENAAR
DRAWN	V MABONA	CHECKED	
COORD. SYSTEM:		DATE	APRIL 2026

APPROVED ON BEHALF OF CLIENT:
NAME:
DATE:

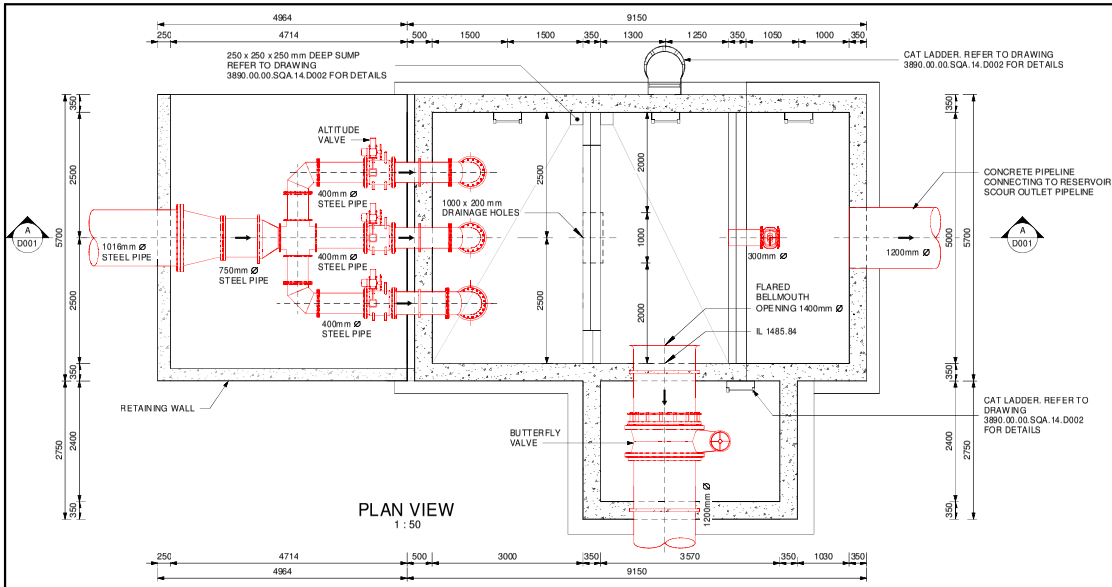
APPROVED ON BEHALF OF BIGEN:
Llewellyn Biggs

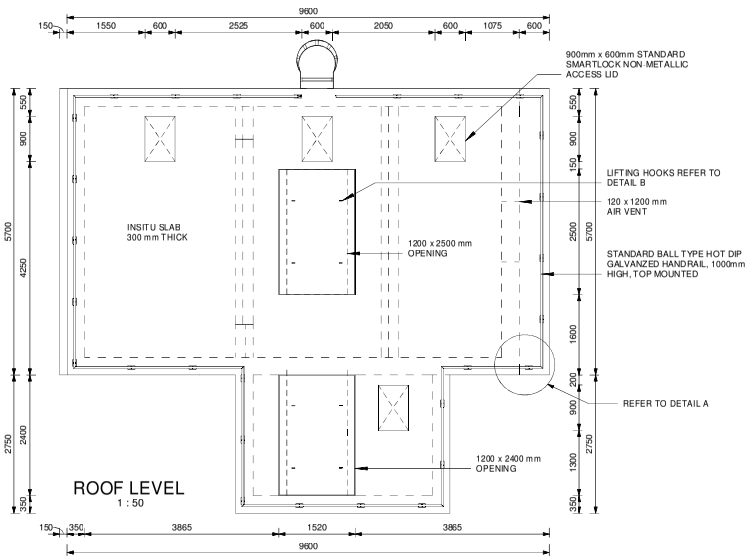
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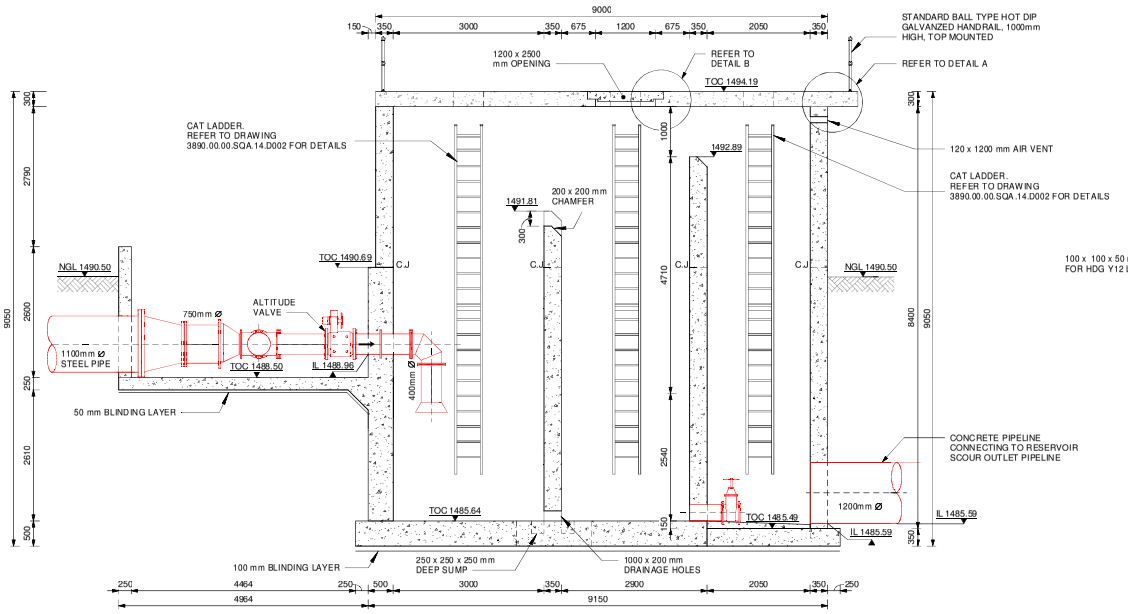
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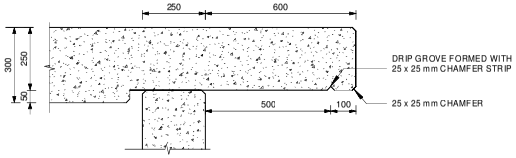
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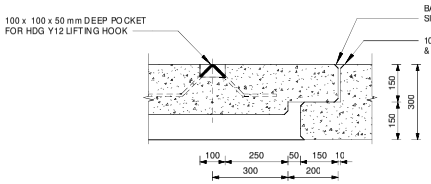
2026/07/20 | 6:12:25











NOTES:

1. ALL PIPEWORK IS INDICATIVE AND SHALL NOT BE MANUFACTURED FROM THIS DRAWING. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE PIPEWORK, VALVES AND SPECIALS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE DESIGN ENGINEER FOR APPROVAL BEFORE MANUFACTURING OR FABRICATION COMMENCES. THE DESIGN MUST BE IN ACCORDANCE WITH THE MECHANICAL SPECIFICATION.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. ALL MATERIAL AND WORKMANSHIP MUST COMPLY THE REQUIREMENTS OF THE LATEST RELEVENT SABS REQUIREMENTS.
4. REFER TO PARTICULAR SPECIFICATION FOR CORROSION PROTECTION. UNLESS OTHERWISE SPECIFIED ALL PIPE SPOOLS WILL BE MILD STEEL PIPES.
5. CONCRETE FINISHES SHALL BE AS FOLLOWS, EXCEPT WHERE OTHERWISE SHOWN:
   a. SMOOTH SPECIALLY FOR SURFACES EXPOSED TO VIEW.
   b. ROUGH TO SURFACES AGAINST WHICH BACKFILL OR FURTHER CONCRETE WILL BE PLACED.
   c. FLOOR FINISHES INSIDE CHAMBERS TO BE WOOD FLOATED.
6. ALL EXPOSED EDGES TO HAVE 20x20 CHAMFERS.
7. ALL JOINTS AT ROOF PANELS TO BE SEALED WITH POLYURETHANE SEALANT.
8. ANY DISCREPANCIES BETWEEN THE DRAWINGS, SPECIFICATIONS AND DATA SHEETS MUST BE REPORTED IMMEDIATELY.

Revision Schedule

No.	DESCRIPTION	DATE	AUTH. BY

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PROJECT TITLE:
BRANDKOP RESERVOIR JOINT SEALING AND REPAIR

DRAWING TITLE:
BYPASS AND BREAK PRESSURE TANK LAYOUT AND SECTION

vaal central water
enabling

SURVEYED		DESIGNED	M PIENAAR
DRAWN	V MABONA	CHECKED	
COORD. SYSTEM		DATE	APRIL 2026

ORIGINAL DRAWING SCALE: As indicated
ORIGINAL DRAWING SHEET SIZE: A1
100mm ON ORIGINAL DRAWING

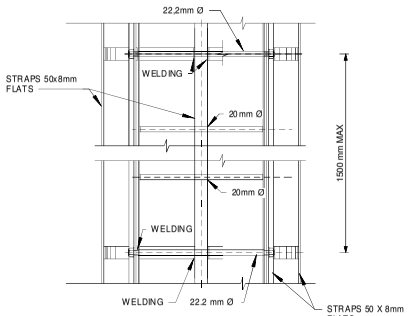
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NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

APPROVED ON BEHALF OF BIGEN.

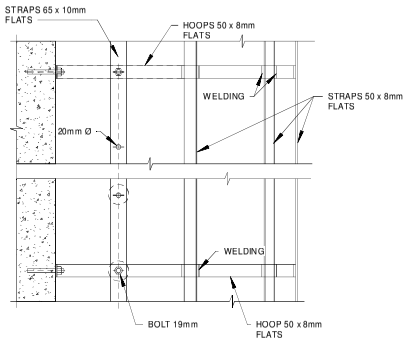
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VERSION: **0**

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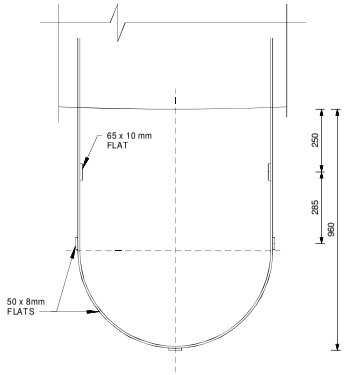
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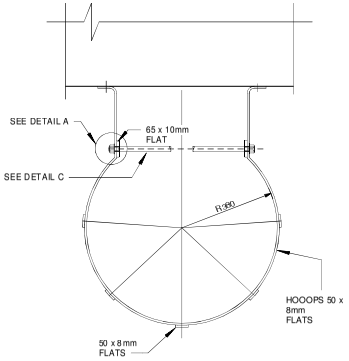
FRONT VIEW
SCALE 1:10



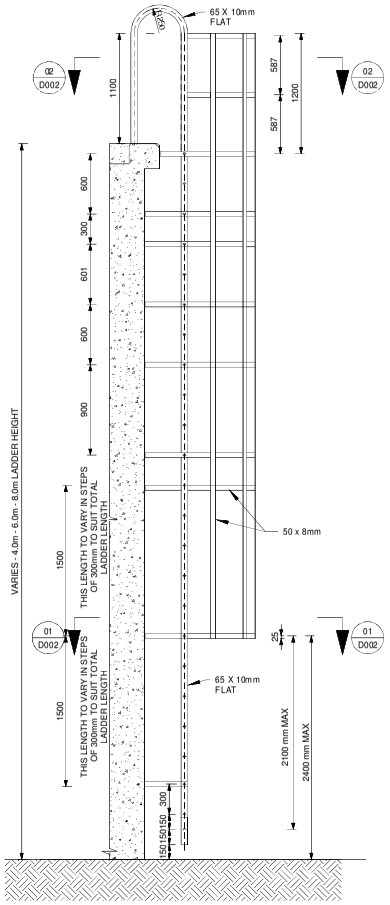
SIDE VIEW
SCALE 1:10



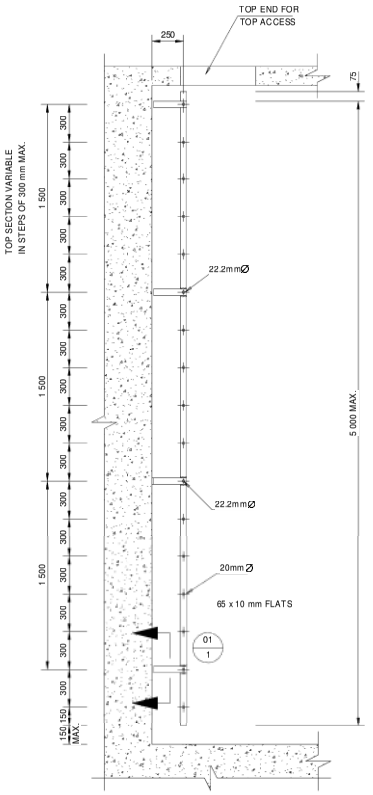
SECTION 02-02
SCALE 1:10



SECTION 01-01
SCALE 1:10



ELEVATION OF CAT LADDER
SCALE 1:25



LADDER WITHOUT SAFETY HOOP
SCALE 1:20

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2026/07/03 16:42:08

Revision Schedule			
No.	DESCRIPTION	DATE	AUTH. BY

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PROJECT TITLE:
BRANDKOP RESERVOIR JOINT SEALING AND REPAIR

DRAWING TITLE:
BYPASS AND BREAK PRESSURE TANK CAT LADDER DETAILS

vaal central water
naturally

0 50 100
100mm ON ORIGINAL DRAWING

ORIGINAL DRAWING SCALE:	As indicated	ORIGINAL DRAWING SHEET SIZE	A1

SURVEYED		DESIGNED	M PIENAAR
DRAWN	V MABONA	CHECKED	
COORD. SYSTEM		DATE	APRIL 2026

APPROVED ON BEHALF OF CLIENT:
NAME:
DATE:
CLIENT DRAWING No.:
CLIENT REF No.:

APPROVED ON BEHALF OF BIGEN:
Llewellyn Biggs

DRAWING No.: 3890.00.00.SQA.14.D002
VERSION: 0

3890.00.00.SQA.14.D002