



PHOKWANE LOCAL MUNICIPALITY

HARTSWATER BULK WATER SUPPLY UPGRADE

TENDER DRAWINGS

VOLUME 3

CONTRACT NUMBER: PLM/TUPG01/1611 - 2025

NOVEMBER 2025



DRAWING REGISTER: HARTSWATER BULK WATER SUPPLY UPGRADE		
VERSION	DRAWING NUMBER	DRAWING DESCRIPTION
CIVIL DRAWING		
GENERAL		
1.0	2024-06-G/A/001	DRAWING REGISTER
1.0	2024-06-G/D/001	CONTRACT NAME BOARD
1.0	2024-06-G/E/001	ENGINEERS CAMP
1.0	2024-06-G/P/001	LOCALITY MAP
SITE LAYOUTS		
1.0	2024-06-A/P/001	REFURBISHMENT AND DECOMMISSIONING OF EXISTING INFRASTRUCTURE SITE LAYOUT
1.0	2024-06-A/P/002	EXISTING, REFURBISHED AND NEW INFRASTRUCTURE SITE LAYOUT
1.0	2024-06-A/P/003	PROPOSED FINAL INFRASTRUCTURE SITE LAYOUT
STRUCTURE LAYOUTS		
1.0	2024-06-B/P/001	SLUDGE POND, CCC, TWT, BRT AND MACHINE ROOM LAYOUT
1.0	2024-06-B/P/002	SLUDGE POND LAYOUT & DETAILS
1.0	2024-06-B/P/003	CHLORINE CONTACT CHANNEL, TREATED WATER TANK AND BACKWASH RECOVERY TANK LAYOUT & DETAILS
1.0	2024-06-B/P/004	MACHINE ROOM LAYOUT & DETAILS
1.0	2024-06-B/P/005	TRANSFORMER AND GENERATOR BUILDING LAYOUT & DETAILS
1.0	2024-06-B/P/006	SLUDGE DRYING BEDS LAYOUT & DETAILS
1.0	2024-06-B/P/007	FLASH MIXER CHAMBER
1.0	2024-06-B/P/008	SUPERNATANT PUMP STATION AND PIPE WORK CHAMBER
1.0	2024-06-B/P/009	CHLORINATION BUILDING
1.0	2024-06-B/P/010	ADMIN BUILDING
1.0	2024-06-B/P/011	GUARD HOUSE
PUMP MAINS		
1.0	2024-06-W/P/001	NEW PUMP MAIN LAYOUTS TO RESERVOIR
DETAILS		
1.0	2024-06-B/A/001	DOOR AND WINDOW SCHEDULE
1.0	2024-06-B/D/001	TYPICAL STRUCTURE DETAILS
1.0	2024-06-R/D/001	TYPICAL ROAD AND PAVING DETAILS
1.0	2024-06-F/D/001	STEEL MESH PANEL FENCE DETAILS
1.0	2024-06-F/D/002	STEEL MESH PANEL SLIDING GATE DETAILS
1.0	2024-06-F/D/003	SECURITY FENCING (WELDED RAZOR MESH, DIAMOND MESH AND FLAT WRAP)
1.0	2024-06-W/A/001	TYPICAL CHAMBER DETAILS
1.0	2024-06-W/D/001	TYPICAL AIR VALVE INSTALLATION DETAILS
1.0	2024-06-W/D/002	WATER METER INSTALLATION LAYOUT & DETAILS FOR 200ND & 250ND WATER METER INSTALLATION ON 250mmØ TO 350mmØ WATER MAIN
1.0	2024-06-W/D/003	TYPE 1 & TYPE 2 SCOUR VALVE INSTALLATION LAYOUT AND DETAILS
1.0	2024-06-W/D/004	TYPE 3 & TYPE 4 SCOUR VALVE INSTALLATION LAYOUT AND DETAILS
1.0	2024-06-W/D/005	TYPICAL GATE VALVE INSTALLATION IN PRECAST MANHOLE
1.0	2024-06-W/D/006	TYPICAL SLEEVE PIPE DETAILS AND CONCRETE ENCASEMENT FOR WATER PIPELINES
1.0	2024-06-W/D/007	TYPICAL WATER MAIN INSTALLATION DETAILS
1.0	2024-06-W/D/008	TYPICAL END-STRUCTURE, GARDEN TAP AND STOP COCK DETAILS
1.0	2024-06-S/D/001	TYPICAL SEWER MANHOLE, RODDING EYE AND MARKER DETAILS
MECHANICAL DRAWING		
GENERAL ARRANGEMENT		
0.5	DYN-075-006-001	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT RAW WATER PUMP SET LAYOUT SHEET 1 OF 2
0.5	DYN-075-006-002	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT RAW WATER PUMP SET LAYOUT SHEET 2 OF 2
0.5	DYN-075-006-003	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT HIGH LIFT PUMP SET NO 1 LAYOUT SHEET 1 OF 2
0.5	DYN-075-006-004	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT HIGH LIFT PUMP SET NO 1 LAYOUT SHEET 2 OF 2
0.5	DYN-075-006-005	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT HIGH LIFT PUMP SET NO 2 LAYOUT SHEET 1 OF 3
0.5	DYN-075-006-006	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT HIGH LIFT PUMP SET NO 2 LAYOUT SHEET 2 OF 3
0.5	DYN-075-006-007	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT HIGH LIFT PUMP SET NO 2 LAYOUT SHEET 3 OF 3
0.5	DYN-075-006-008	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT SERVICE WATER PUMP SET LAYOUT SHEET 1 OF 3
0.5	DYN-075-006-009	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT SERVICE WATER PUMP SET LAYOUT SHEET 2 OF 3
0.5	DYN-075-006-010	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT SERVICE WATER PUMP SET LAYOUT SHEET 3 OF 3
0.5	DYN-075-006-011	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT RECOVERY WATER PUMP SET LAYOUT SHEET 1 OF 4
0.5	DYN-075-006-012	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT RECOVERY WATER PUMP SET LAYOUT SHEET 2 OF 4
0.5	DYN-075-006-013	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT RECOVERY WATER PUMP SET LAYOUT SHEET 3 OF 4
0.5	DYN-075-006-014	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT RECOVERY WATER PUMP SET LAYOUT SHEET 4 OF 4
0.5	DYN-075-006-015	EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT BACKWASH WATER BLOWER SET LAYOUT SHEET 1 OF 1
0.1	WCE-2025-06-001	GENERAL ARRANGEMENT: SUPERNATANT PUMP STATION BUILDING SHEET 1 OF 2
0.1	WCE-2025-06-001a	GENERAL ARRANGEMENT: SUPERNATANT PUMP STATION BUILDING SHEET 2 OF 2
0.1	WCE-2025-06-002	GENERAL ARRANGEMENT: TYPICAL DRAINAGE PUMP STATION
ELECTRICAL DRAWING		
0.1	WCE-2025-06-003	SITE PLAN EXTERNAL AREA LIGHTENING

REVISIONS			
No.	DATE	BY	DESCRIPTION

[illegible]

APPROVED: _____
ENGINEER: _____ DATE: _____

APPROVED: _____
CLIENT: _____ DATE: _____

PRINT ISSUED ON _____

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CLIENT

**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:

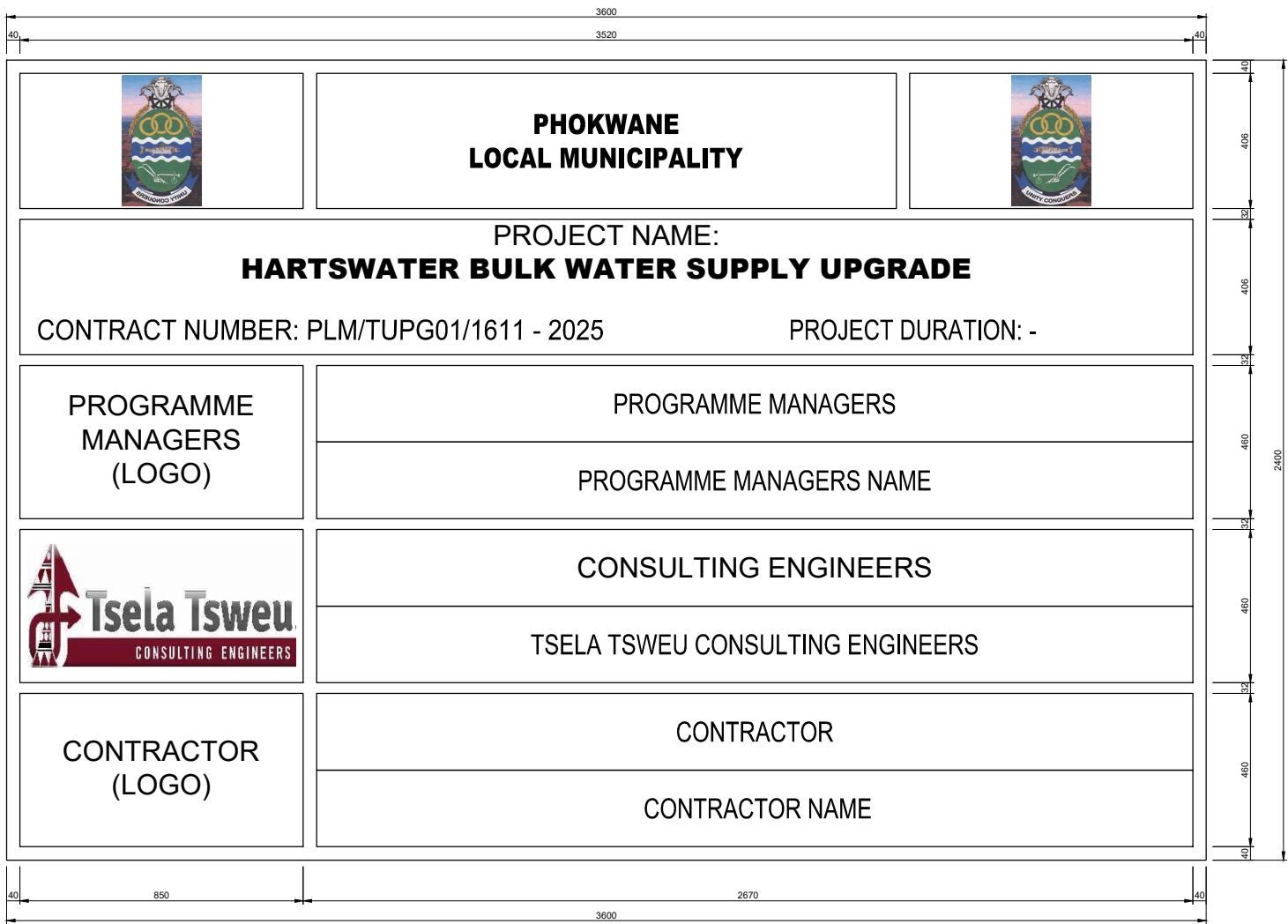
PHOKWANE LM

DRAWING REGISTER

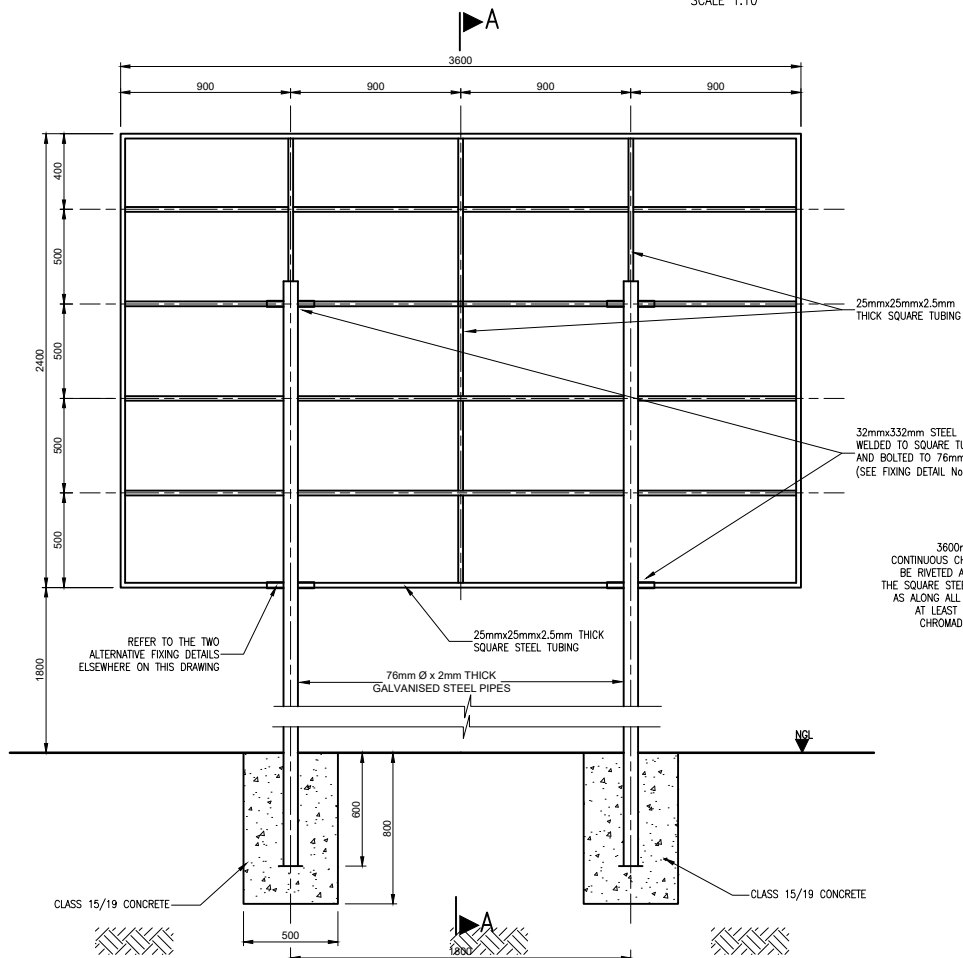
DESIGN -	DATE JUN 2025	DRAWN -	DATE JUN 2025
SURVEYED -	DATE -	CHECKED J.BATEMAN	DATE JUN 2025

SCALE	NTS
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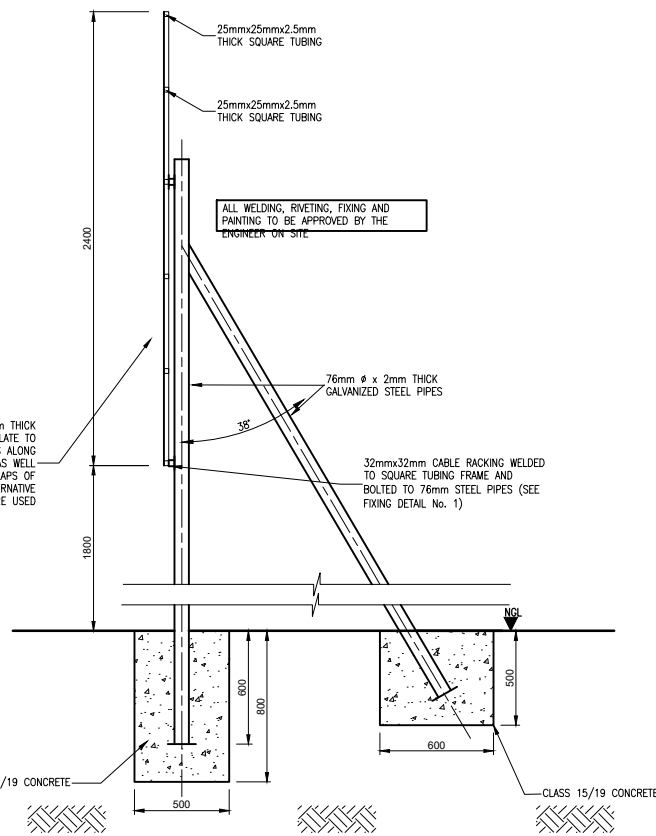
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2024-06-G/A/001	
REVISION No.	
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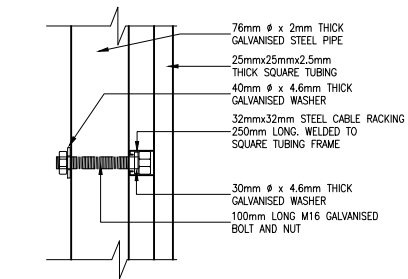
FRONT ELEVATION
SCALE 1:10



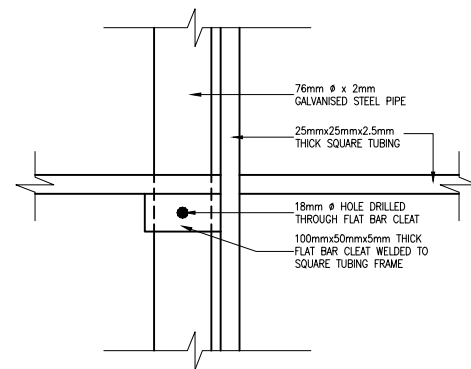
BACK ELEVATION
SCALE 1:20



SECTION A-A
SCALE 1:20



FIXING DETAIL No. 1
SCALE 1:5



FIXING DETAIL No. 2
SCALE 1:5
ALTERNATIVE FIXING DETAILS

REVISIONS			
No.	DATE	BY	DESCRIPTION

- NOTES**
- Description in Italics must be adjusted to suit project details.
 - Type face to be used shall be Helvetica Medium Colour of lettering AS INDICATED.
 - LETTERS TO BE CAPITALISED.
 - Background of board to be WHITE. ALL borders & lines to be MIDDLE BLUE. Colour for logos to be AS PER RESPECTIVE.
 - All paint used should match Ref. 290 Acrylic Road Sign Paint.
 - All lettering to be painted on. Stick-on labels will NOT be permitted.

REFERENCE DRAWINGS	
PLAN No.	DESCRIPTION

APPROVED:	
ENGINEER:	DATE:
APPROVED:	
CLIENT:	DATE:

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PHOKWANE
LOCAL MUNICIPALITY

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE

PROJECT NAME BOARD

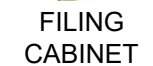
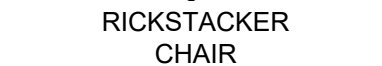
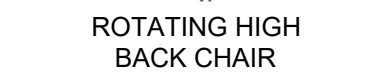
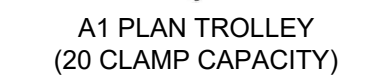
DESIGN	DATE	DRAWN	DATE
	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		J.BATEMAN	JUN 2025

SCALE AS SHOWN

DRAWING No.

2024-06-G/D/001

REVISION No.			
1.0			



CAMP

- CLEAR, GRUB AND GRADE SITE TO BE SELF DRAINING
- 75mm THICK 19mm STONE GRAVELING THROUGHOUT
- SITE LIGHTING AS PER CONTRACTORS DESIGN.
- FENCING TO BE 2.1m HIGH RAZOR MESH WIRE INCL. RAZOR FLAT WRAP ON TOP.
- STEPS TO BE PROVIDED AT ALL OFFICE ENTRIES.
- 1x FULL TIME CAMP ASSISTANT TO BE PROVIDED FOR CLEANING AND CAR WASH
- 3 x CHEMICAL TOILETS TO BE PROVIDED (FLUSHABLE) (T)
- 80% SHADE CLOTH TO BE FIXED ON INSIDE OF FENCING IF SPECIFIED
- GARDEN ROOF SHEETING (0.6mm THICK) CARPORT TO DRAIN TOWARDS THE BACK OF THE STRUCTURE (OPPOSITE ADDRESS). 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

- MODULAR BUILDING TO SUIT SIZE AS SPECIFIED ON DETAIL LAYOUT
- 12000 BTU SPLIT AIRCON UNIT (LG) TO BE PROVIDED IN OFFICE.
- 24000 BTU SPLIT AIRCON UNIT (LG) TO BE PROVIDED IN BOARDROOM
- OFFICES TO BE CLEANED ON A DAILY BASIS

1. 1 x OFFICE DESK INCLUDING DRAWERS AND SHELVES
2. 1 x A1 PLAN TROLLEY (20 CLAMP CAPACITY)
3. 1 x 4 DRAWER FILING CABINET.
4. 1 x ROTATING HIGH BACK CHAIR.
5. 15 x RICKSTACKER CHAIRS.
6. 2 x PLASTIC ROUND WASTE BINS.
7. 4 x 2m x1.2m MAGNETIC WHITE BOARDS.
8. 3 x FULL STATIONERY CUPBOARDS.
9. 2 x 2500x900mm BOARDROOM TABLES.

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

- LAPTOP
- DATACARD
- PRINTER, FAX, COPIER
- 2 x 3m EXTENSION CORDS
- CAMERA
- TELEPHONE

- 1 x 220T FREEZER REFRIGERATOR COMBO
- 1 x 20l MANUAL MICROWAVE OVEN (800W)
- 1 x 1.7L KETTLE
- 1 x DOUBLE HOT PLATE (SOLID PLATE)
- 6 x 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)

NOTES

REFERENCE DRAWINGS

APPROVED: _____ENGINEER: _____ DATE: _____APPROVED: _____

DATE: _____

IDENT: _____ DATE: _____

PRINT ISSUED ONPROJECT

IMPLEMENTING AGENT:

DRAWING TITLE

SCALE AS SHOWN

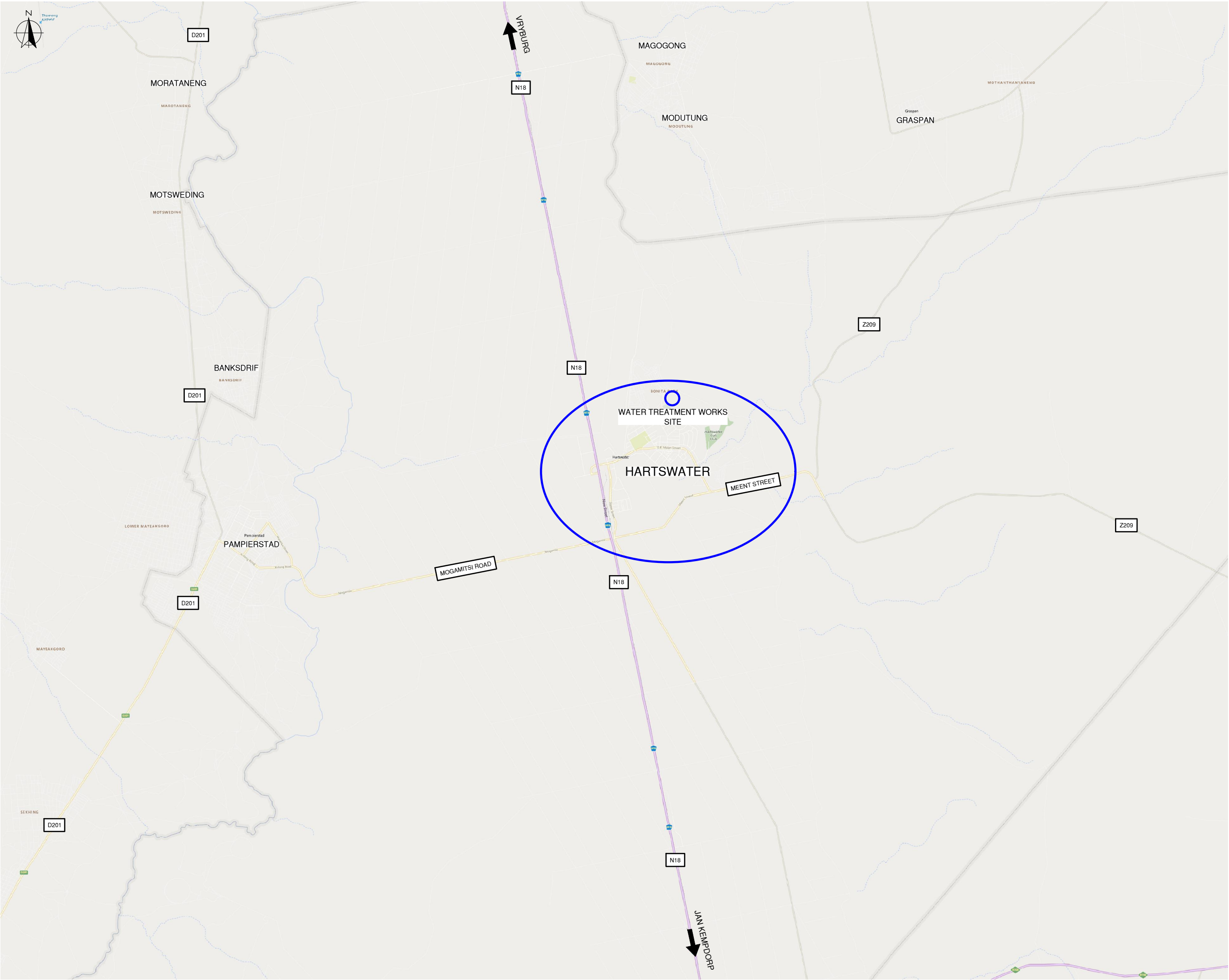
3672 J. Neurosci., September 24, 2008 • 28(39):3666–3674

DRAWING No.2024.06.06/5/2021

2024-06-G/E/001

REVISION No. _____

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REVISIONS			
No.	DATE	BY	DESCRIPTION

NOTES

REFERENCE DRAWINGS	
PLAN Nr.	DESCRIPTION

APPROVED:

ENGINEER: _____ DATE: _____

APPROVED:

CLIENT: _____ DATE: _____

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CLIENT
**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

LOCALITY MAP

DESIGN	DATE	DRAWN	DATE
-	JUN 2025	-	JUN 2025
SURVEYED	DATE	CHECKED	DATE
-	-	J.BATEMAN	JUN 2025

SCALE 1:50 000

DRAWING No.

2024-06-G/P/001

REVISION No.							
1.0							



REVISIONS				
No.	DATE	BY	DESCRIPTION	

NOTES	
	EXISTING STRUCTURE
	EXISTING STRUCTURE TO BE DECOMMISSIONED
	EXISTING STRUCTURE TO BE REFURBISHED
	EXISTING PIPE
	EXISTING PIPE TO BE DECOMMISSIONED
	EXISTING FENCE LINE

REFERENCE DRAWINGS	
PLAN No.	DESCRIPTION

APPROVED:	
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CLIENT:	
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	CLIENT PHOKWANE LOCAL MUNICIPALITY
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PROJECT UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT: PHOKWANE LM

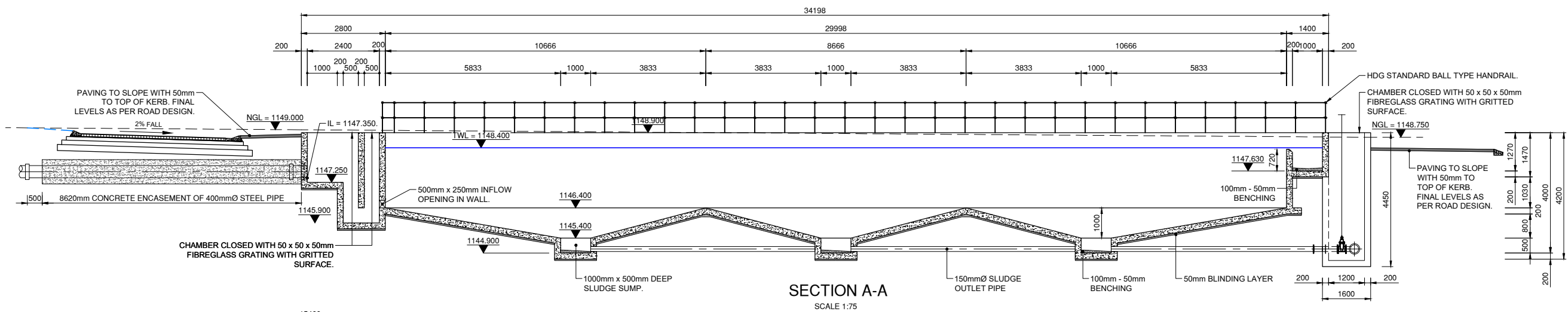
DRAWING TITLE REFURBISHMENT AND DECOMMISSIONING OF EXISTING INFRASTRUCTURE SITE LAYOUT
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DESIGN	DATE JUN 2025	DRAWN	DATE JUN 2025
SURVEYED	DATE	CHECKED J.BATEMAN	DATE JUN 2025

SCALE	1:500
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DRAWING No. 2024-06-A/P/001

REVISION No.	1.0								
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NOTE: ALL REINFORCED CONCRETE WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATION. SAVE AS MAY BE AMENDED OR ADDED TO HEREAFTER.

1. **FOUNDATIONS:**

1.1 THE WALL FOUNDATION SHALL BE CAST ON A BLINDING OF 50mm MINIMUM THICKNESS

1.2 MINIMUM SAFE BEARING PRESSURE REQUIRED = 150KPa

2. **CONCRETE:**

2.1 CONCRETE DESIGN HAS BEEN BASED ON A MAXIMUM CRACK WIDTH OF 0.1mm IN ACCORDANCE WITH BS 8007: 1987

2.2 CONCRETE CLASSES

ALL STRUCTURAL CONCRETE: 35MPa/19mm.

BLINDING: 15MPa/19mm.

2.3 CONCRETE COVER TO REINFORCEMENT INCLUDING LINKS SHALL BE 50mm

3. **REINFORCEMENT:**

3.1 ALL REINFORCING STEEL SHALL BE WIRE-BRUSHED AND KEPT CLEAN AND FREE OF ANY MILL-SCALE, RUST, OIL OR ANY OTHER DELETERIOUS COMPOUNDS.

3.2 WELDING ON REINFORCING STEEL WILL NOT BE PERMITTED.

3.3 ALL REINFORCING STEEL FIXED IN POSITION ON SITE SHALL BE CHECKED BY THE ENGINEER PRIOR TO CONCRETING.

- | REVISIONS | | | |
|---|--|----------------------|------------------|
| No. | DATE | BY | DESCRIPTION |
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| NOTES | | | |
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| REFERENCE DRAWINGS | | | |
| PLAN No. | DESCRIPTION | | |
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| APPROVED: | | | |
| ENGINEER: | | DATE: | |
| APPROVED: | | | |
| CLIENT: | | DATE: | |
| PRINT ISSUED ON | | | |
| <div><p>Mobile: + 27 (0)82 265 1524
329 Stateway Chambers, Stateway, Welkom,
PO Box 2600, Welkom, 9460, South Africa</p></div> | | | |
|  | CLIENT

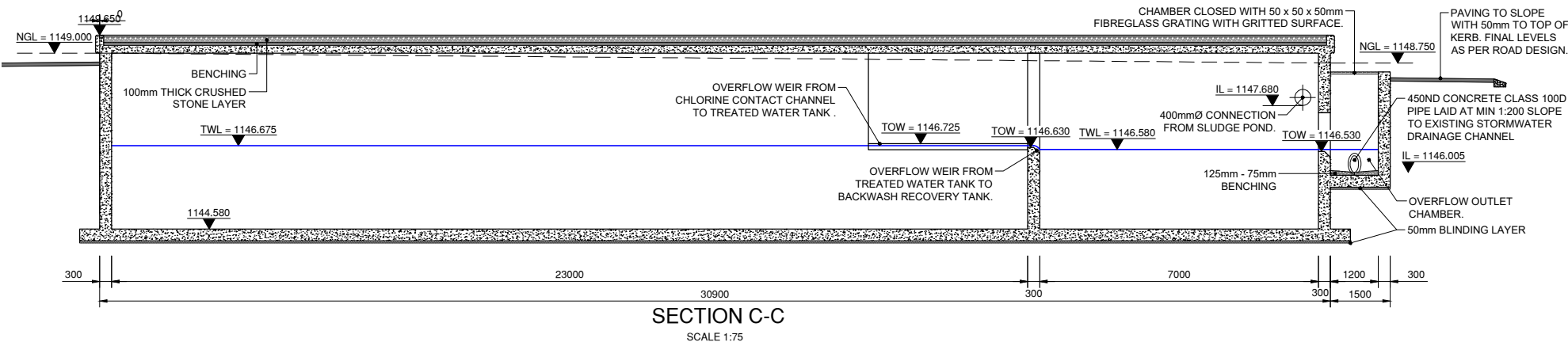
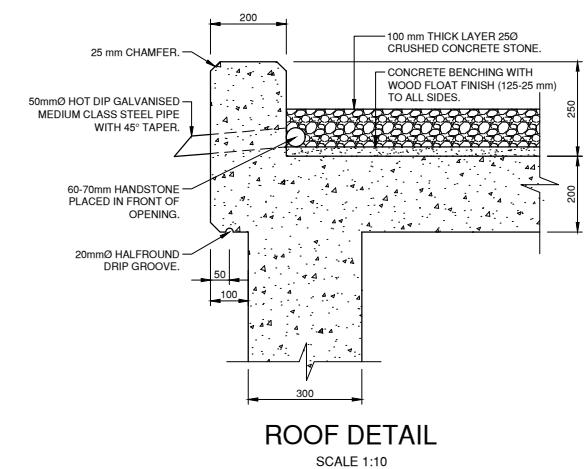
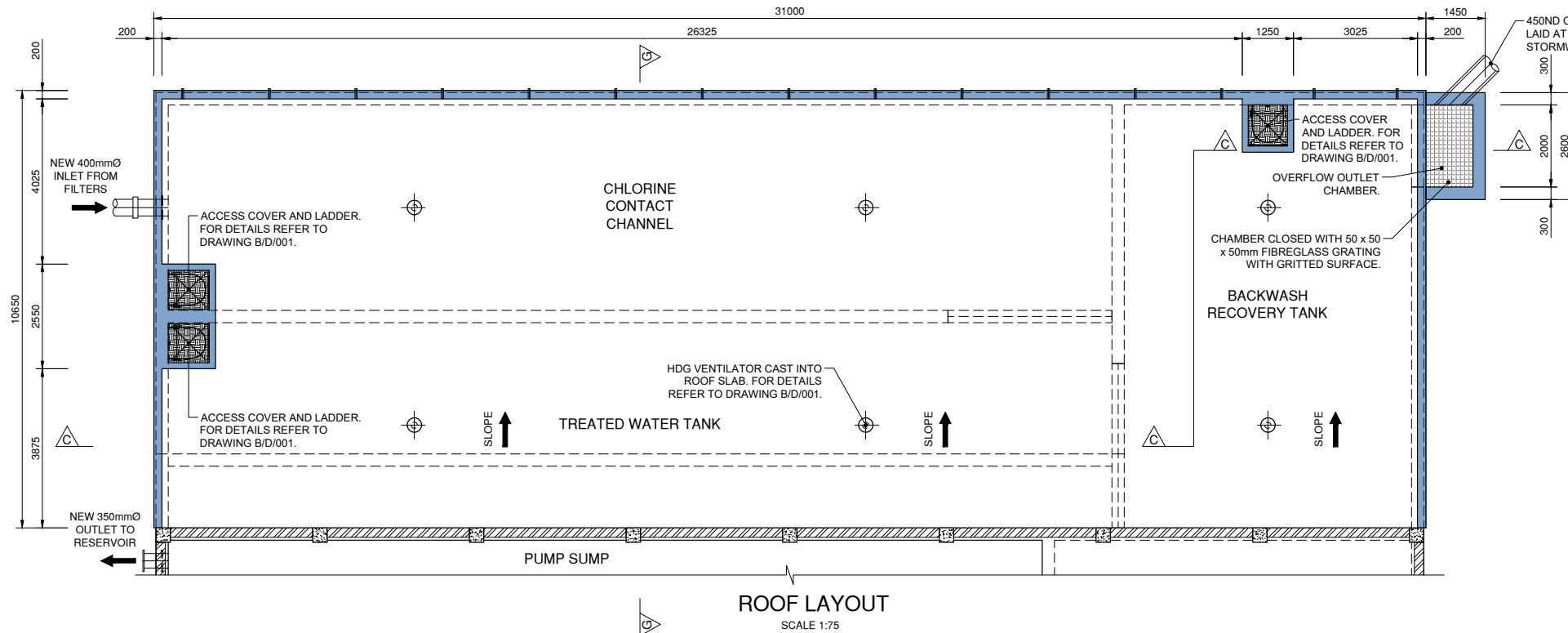
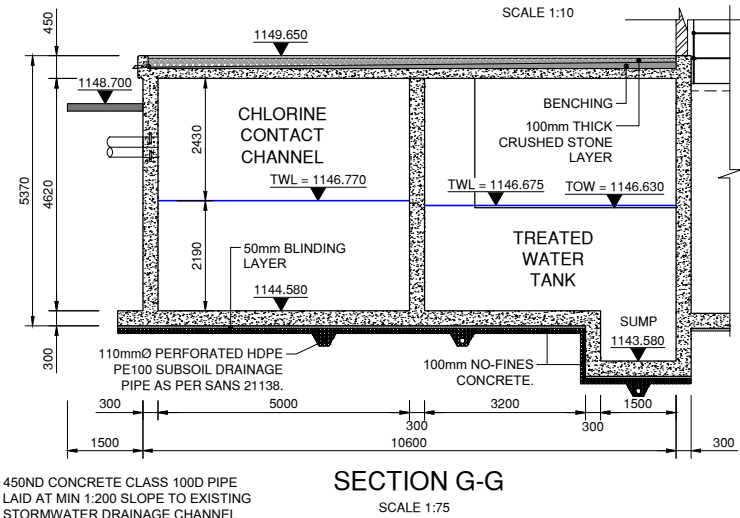
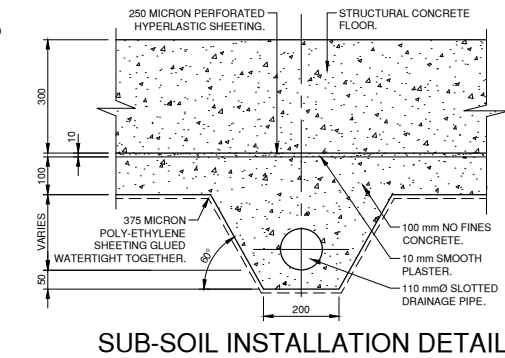
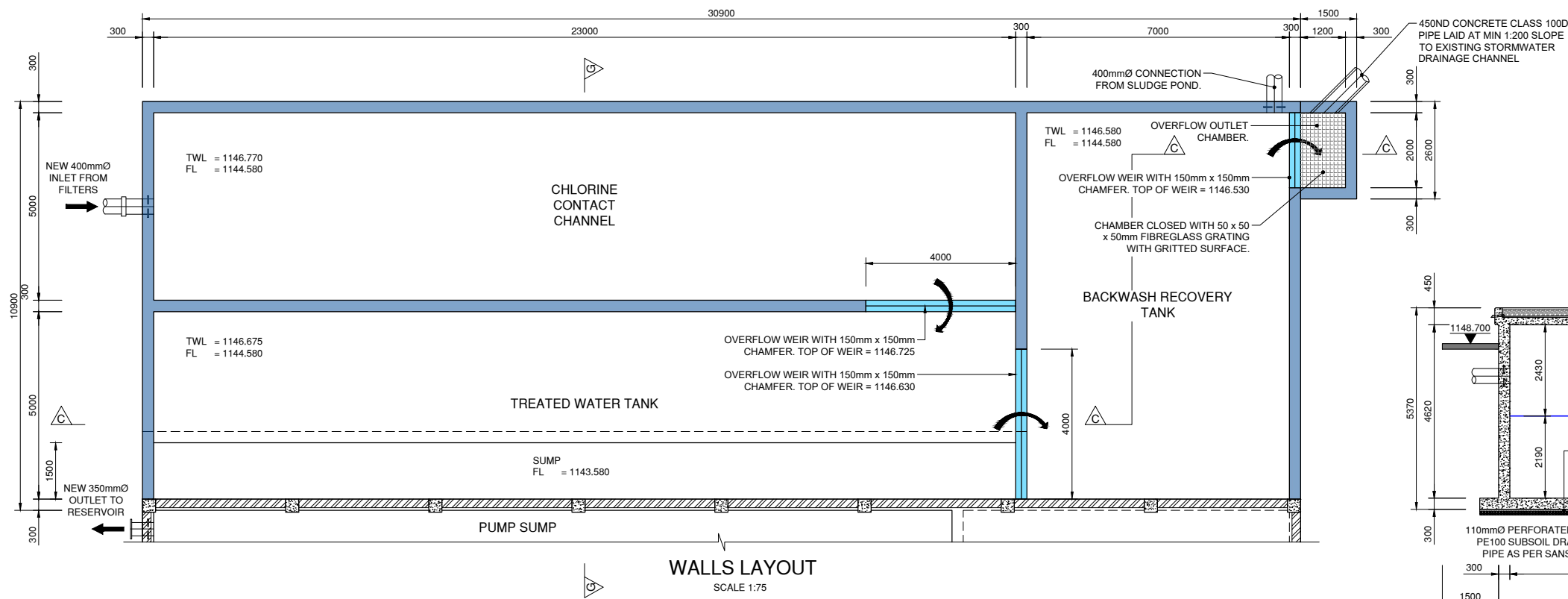
PHOKWANE
LOCAL MUNICIPALITY | | |
| PROJECT

UPGRADING OF HARTSWATER
WATER TREATMENT PLANT | | | |
| IMPLEMENTING AGENT:

PHOKWANE LM | | | |
| DRAWING TITLE

SLUDGE POND
LAYOUT & DETAILS | | | |
| DESIGN
- | DATE
JUN 2025 | DRAWN
- | DATE
JUN 2025 |
| SURVEYED
- | DATE
- | CHECKED
J.BATEMAN | DATE
JUN 2025 |
| SCALE AS SHOWN | | | |
| DRAWING No.

2024-06-B/P/002 | | | |
| REVISION No. | | | |
| 1.0 | | | |



- ## GENERAL DESCRIPTIONS: CONCRETE WORK:
-
- NOTE:** ALL REINFORCED CONCRETE WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATION, SAME AS MAY BE AMENDED OR ADDED TO HEREAFTER.
1. **FOUNDATIONS:**
 - 1.1 THE WALL FOUNDATION SHALL BE CAST ON A BLINDING OF 50mm MINIMUM THICKNESS.
 - 1.2 MINIMUM SAFE BEARING PRESSURE REQUIRED = 150kPa
 2. **CONCRETE:**
 - 2.1 CONCRETE DESIGN HAS BEEN BASED ON A MAXIMUM CRACK WIDTH OF 0.1mm IN ACCORDANCE WITH BS 8007 : 1987
 - 2.2 CONCRETE CLASSES:
ALL STRUCTURAL CONCRETE: 35MPa/19mm.
BLINDING: 15MPa/19mm.
 - 2.3 CONCRETE COVER TO REINFORCEMENT INCLUDING LINKS SHALL BE 50mm
 3. **REINFORCEMENT:**
 - 3.1 ALL REINFORCING STEEL SHALL BE WIRE-BRUSHED AND KEPT CLEAN AND FREE OF ANY MILL-SCALE, RUST, OIL OR ANY OTHER DELETERIOUS COMPOUNDS.
 - 3.2 WELDING ON REINFORCING STEEL WILL NOT BE PERMITTED.
 - 3.3 ALL REINFORCING STEEL, FIXED IN POSITION ON SITE SHALL BE CHECKED BY THE ENGINEER PRIOR TO CONCRETING.
 4. **FORM WORK:**
 - 4.1 FORM WORK SHALL BE ERECTED AND FIXED IN AN APPROVED MANNER AND SHALL BE INSPECTED BY THE ENGINEER PRIOR TO CONCRETING.
 - 4.2 STRIPPING TIMES OF THE FORM WORK SHALL BE AS SPECIFIED IN THE SPECIFICATION OR AS PER THE ENGINEERS SITE INSTRUCTIONS.
 5. **SURFACE FINISH:**

5.1 TOP WALLS	: STEEL FLOAT
5.2 TOP OF ROOF	: STEEL FLOAT
5.3 TOP OF FLOORS (SCREED OR BENCHING FINISH)	: WOOD FLOAT
5.4 TOP OF FLOORS (NO TOPPING)	: STEEL FLOAT
5.5 ACCESS RAMP	: STEEL FLOAT
 6. **DESIGN STRENGTH:**
 - 6.1 REINFORCING: HIGH YIELD
 $f_y = 450 \text{ MPa}$ MILD STEEL
 $f_y = 250 \text{ MPa}$

REVISIONS			
No.	DATE	BY	DESCRIPTION

NOTES

[illegible]

APPROVED: _____
ENGINEER: _____ DATE: _____
APPROVED: _____
CLIENT: _____ DATE: _____
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Mobile: + 27 (0)83 265 1524
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PO Box 2600, Welkom, 9460, South Africa



PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

CHLORINE CONTACT CHANNEL, TREATED WATER TANK AND BACKWASH RECOVERY TANK LAYOUT & DETAILS

DESIGN -	DATE JUN 2025	DRAWN -	DATE JUN 2025
SURVEYED -	DATE -	CHECKED J.BATEMAN	DATE JUN 2025

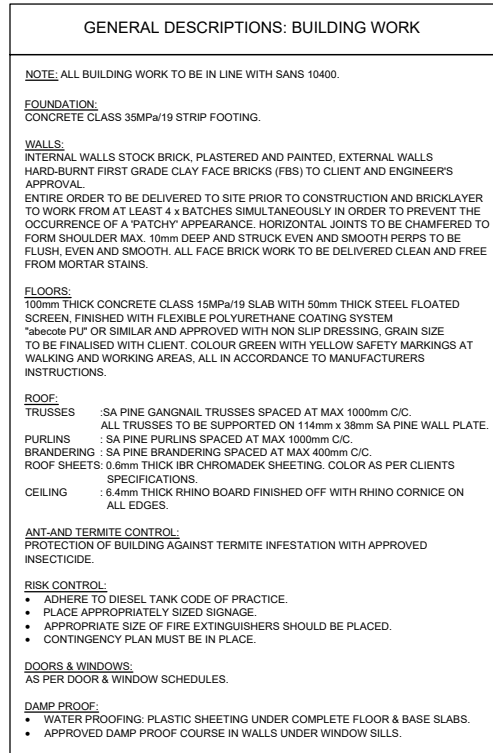
SCALE AS SHOWN

DRAWING No.

2024-06-B/P/003

REVISION No.

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SCALE 1:50

BUILDING LAYOUT

REFER TO NOTES FOR DESCRIPTION OF ROOF CONSTRUCTION.

300mm WIDE NUTEC FACIA BOARD.

4 x 100mmØ GUTTER DOWN PIPES.

ROOF RIDGE PLATE.

WIRE TIES BUILT 4 BRICK LAYERS DEEP INTO WALL TO TIE DOWN TRUSSES. POSITIONS TO ALIGN WITH ROOF TRUSSES.

300mm WIDE NUTEC FACIA BOARD.

4 x 100mmØ GUTTER DOWN PIPES.

2 x 110mm LINTELS OVER DOOR AND LOUVERS.

1000mm WIDE x 800mm HIGH FIXED LOUVRE. MOUNTED IN METAL FRAME INTO WALL, WITH FIXED BURGLAR BARS ON OUTSIDE AND INSECT GAUZE BACKING ON INSIDE.

2400mm HIGH x 1500mm WIDE TRANSFORMER ROOM DOOR. VENTS TO BE FITTED WITH INSECT PROOF GAUZE.

NOTE: FINAL PLACEMENT OF ELECTRICAL EQUIPMENT AS PER ELECTRICAL ENGINEERS DESIGN

50 x 50 x 50mm FIBREGLASS GRATING WITH SMOOTH SURFACE.

100mm THICK FLOOR SLAB, TOPPED WITH 50mm THICK STEEL FLOATED SCREED.

1148.900

250 MICRON DPC.

800mm WIDE x 800mm DEEP CABLE TRENCH.

1780mm WIDE x 250mm THICK CONCRETE STRIP FOOTING.

CONCRETE ACCESS RAMP.

TOP OF ACCESS ROAD.

ACCESS RAMP 200mm WIDE CONCRETE SIDE WALL.

750mm WIDE x 250mm THICK CONCRETE STRIP FOOTING.

110mmØ HDPE SLEEVE PIPES FOR ELECTRICAL. QUANTITY AND POSITION AS PER ELECTRICAL ENGINEERS SPECIFICATIONS.

230

800

1030

230

5000

5460

1800

2000

800

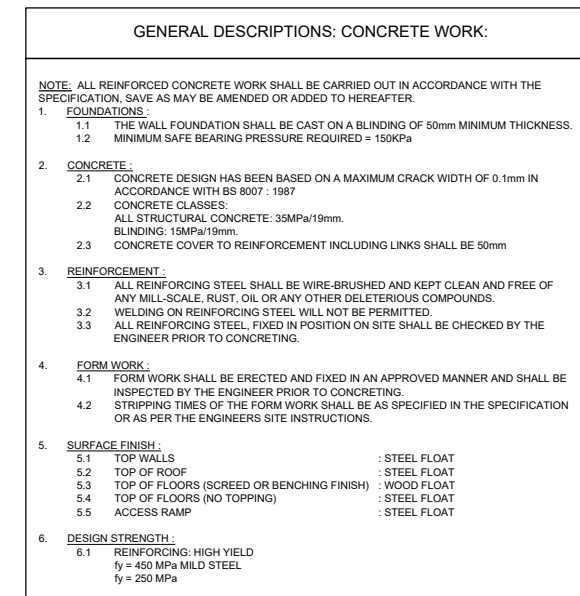
230

1100mm x 1000mm TRENCH.

MACHINE ROOM

SECTION H-H
SCALE 1:25

[illegible]



REVISIONS			
No.	DATE	BY	DESCRIPTION

NOTES

REFERENCE DRAWINGS	
PLAN N ^o .	DESCRIPTION

APPROVED: _____	
ENGINEER: _____	DATE: _____
APPROVED: _____	
CLIENT: _____	DATE: _____

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CLIENT

**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

SLUDGE DRYING BEDS LAYOUT & DETAILS

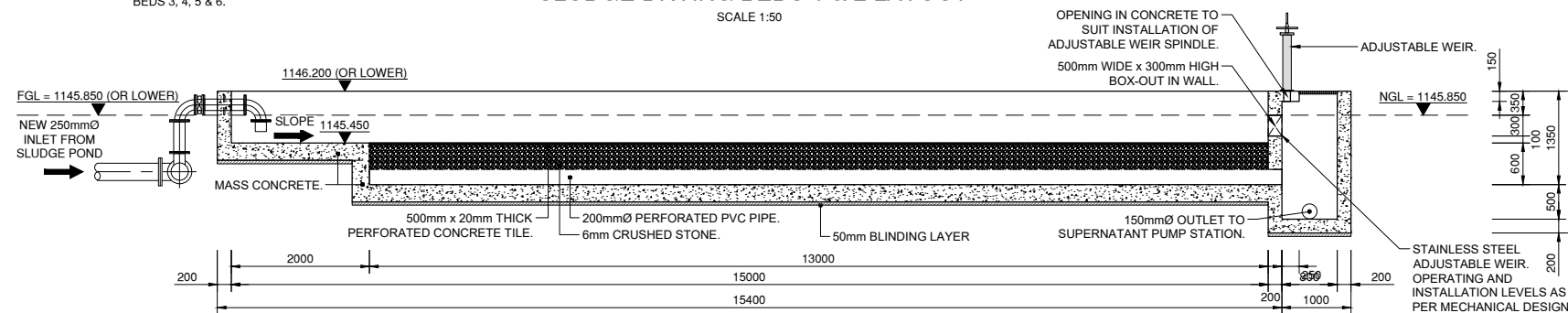
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SURVEYED -	DATE -	CHECKED J.BATEMAN	DATE JUN 2025

SCALE AS SHOWN

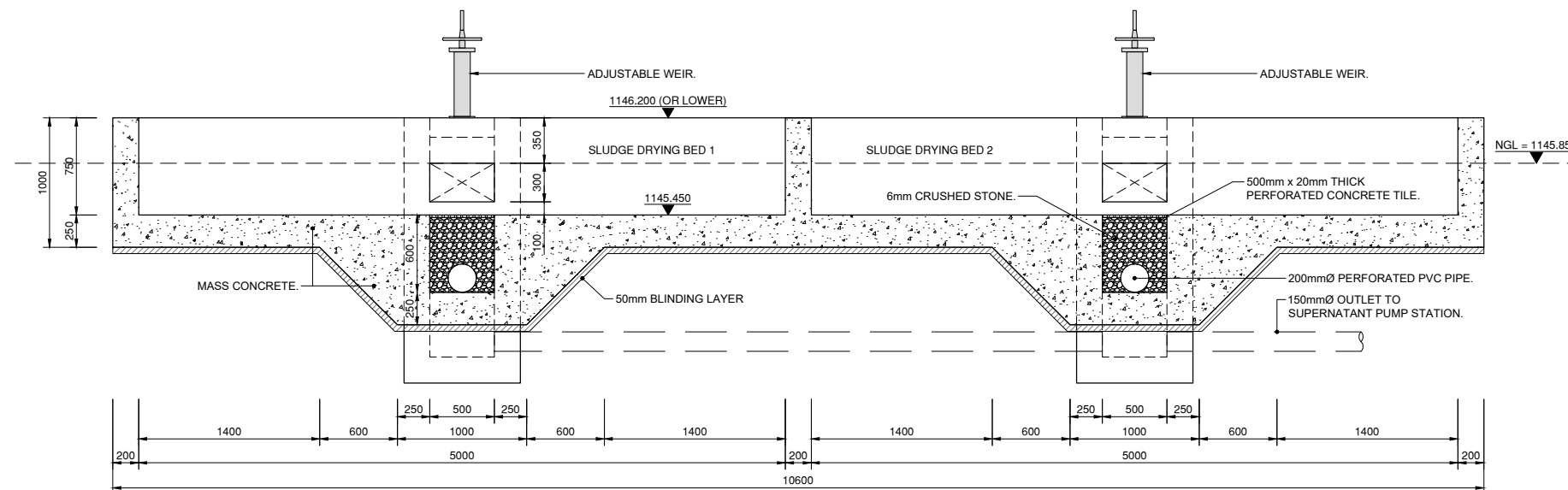
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2024-06-B/P/006

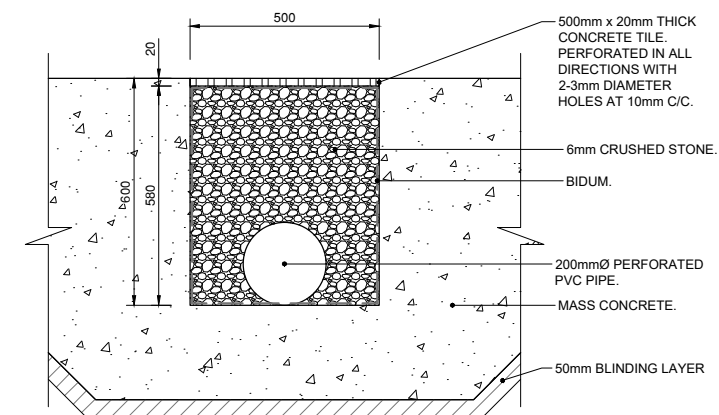
REVISION No.									
	1.0								



SECTION J-J
SCALE 1:50

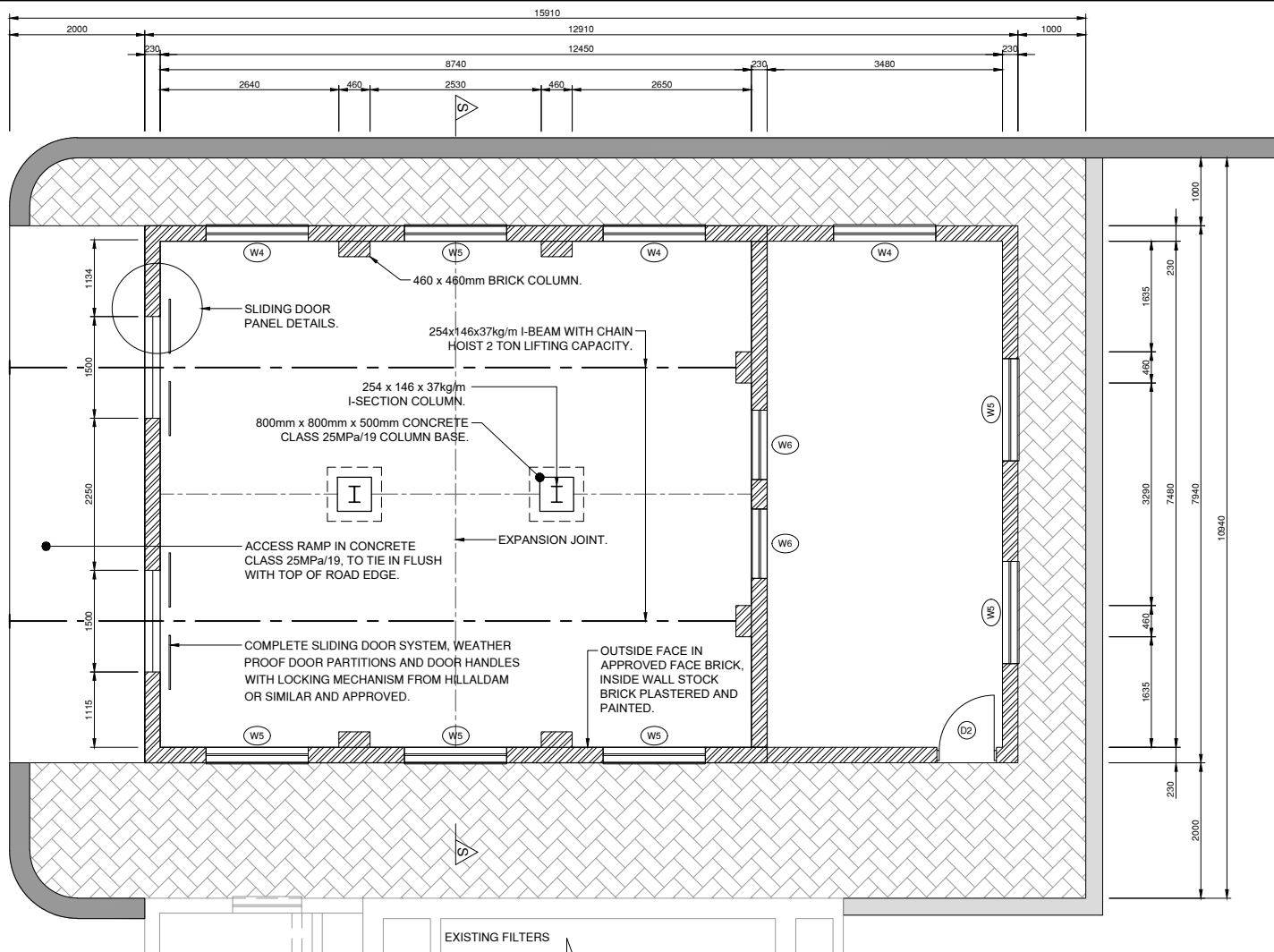


SECTION K-K
SCALE 1:25

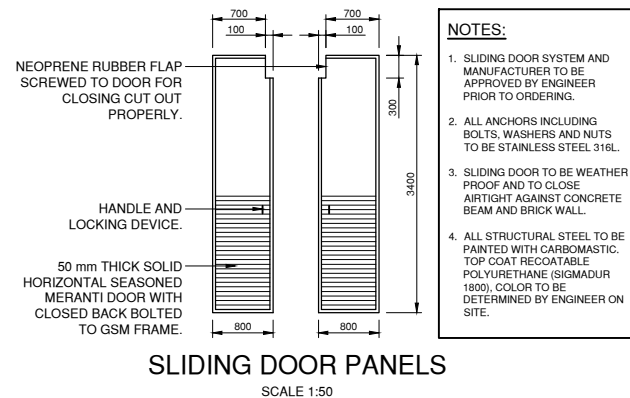


TRENCH MEDIA DETAIL

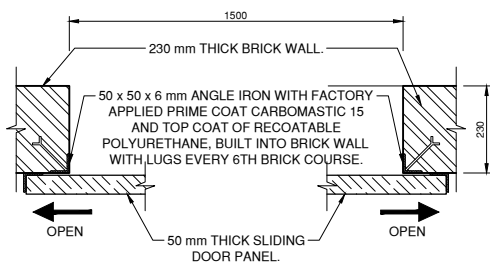
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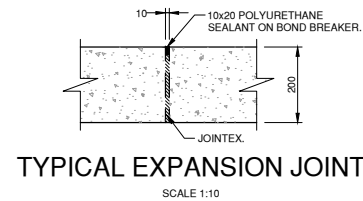
PLAN VIEW
SCALE 1:50



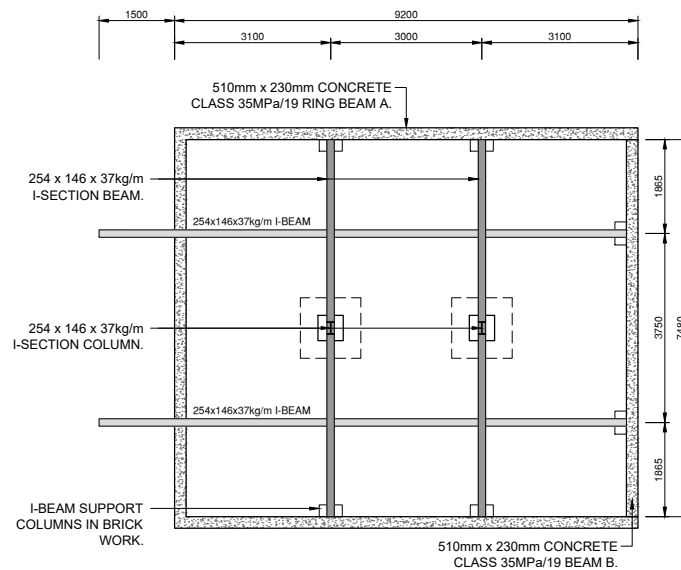
SLIDING DOOR PANELS
SCALE 1:50



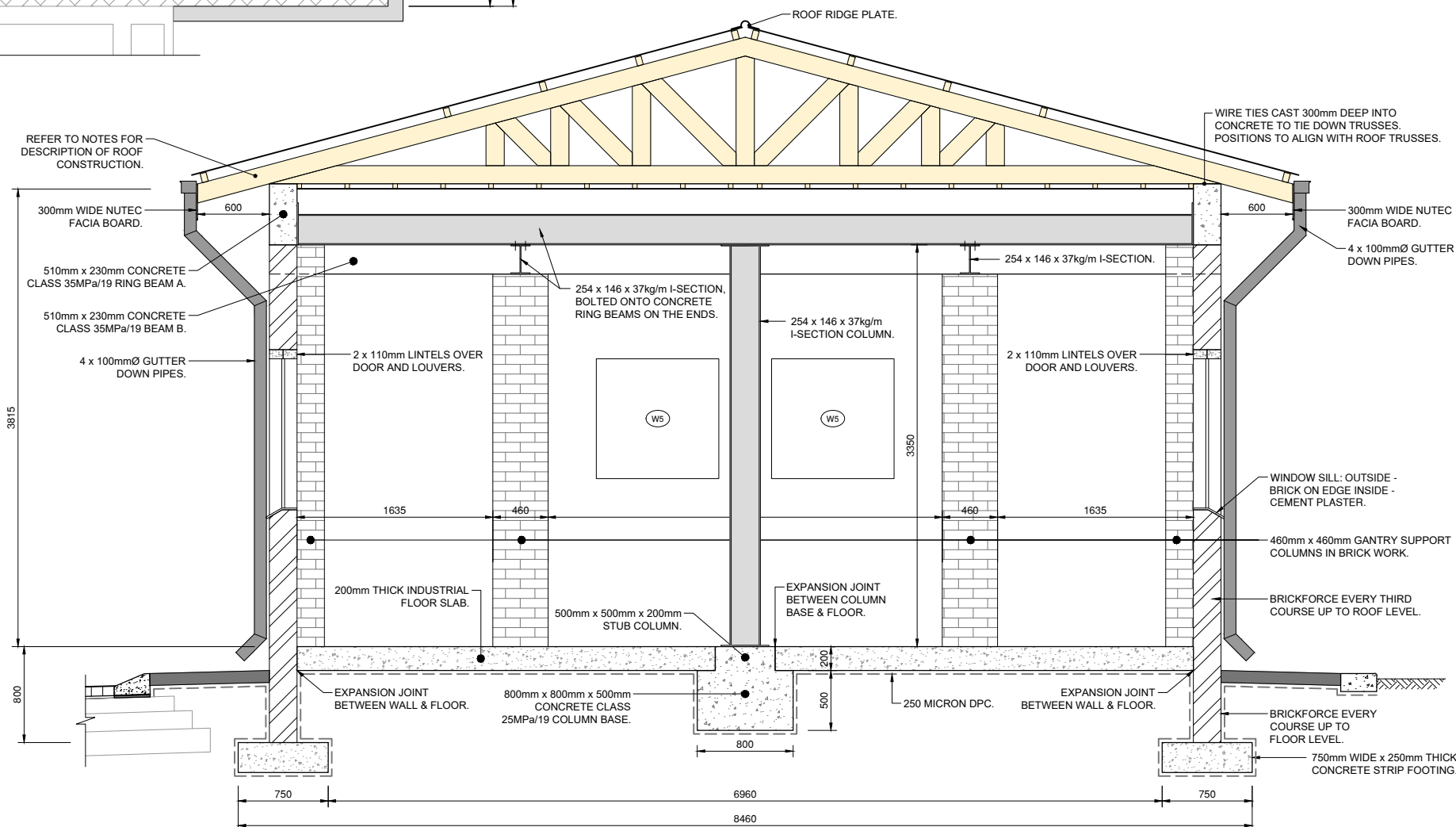
SLIDING DOOR PANEL DETAILS
SCALE 1:10



TYPICAL EXPANSION JOINT
SCALE 1:10



CONCRETE BEAMS AND STRUCTURAL STEEL
LAYOUT
SCALE 1:75



SECTION S-S
SCALE 1:25

GENERAL DESCRIPTIONS: BUILDING WORK

NOTE: ALL BUILDING WORK TO BE IN LINE WITH SANS 10400.

FOUNDATION:
CONCRETE CLASS 35MPa/19 STRIP FOOTING.

WALLS:
INTERNAL WALLS STOCK BRICK, PLASTERED AND PAINTED.
EXTERNAL WALLS HARD-BURN'T FIRST GRADE CLAY FACE BRICKS (FBS) TO CLIENT AND ENGINEER'S APPROVAL.
ENTIRE ORDER TO BE DELIVERED TO SITE PRIOR TO CONSTRUCTION AND BRICKLAYER TO WORK FROM AT LEAST 4 x BATCHES SIMULTANEOUSLY IN ORDER TO PREVENT THE OCCURRENCE OF A 'PATCHY' APPEARANCE. HORIZONTAL JOINTS TO BE CHAMFERED TO FORM SHOULDER MAX. 10mm DEEP AND STRUCK EVEN AND SMOOTH PERPS TO BE FLUSH, EVEN AND SMOOTH. ALL FACE BRICK WORK TO BE DELIVERED CLEAN AND FREE FROM MORTAR STAINS.

FLOORS:
100mm THICK CONCRETE CLASS 15MPa/19 SLAB WITH 50mm THICK STEEL FLOATED SCREEN, FINISHED WITH FLEXIBLE POLYURETHANE COATING SYSTEM.
"abecote PU" OR SIMILAR AND APPROVED WITH NON SLIP DRESSING.
GRAIN SIZE TO BE FINALISED WITH CLIENT. COLOUR GREEN WITH YELLOW SAFETY MARKINGS AT WALKING AND WORKING AREAS, ALL IN ACCORDANCE TO MANUFACTURERS INSTRUCTIONS.

ROOF:
TRUSSES : SA PINE GANGNAIL TRUSSES SPACED AT MAX 1000mm C/C. ALL TRUSSES TO BE SUPPORTED ON 114mm x 38mm SA PINE WALL PLATE.
PURLINS : SA PINE PURLINS SPACED AT MAX 1000mm C/C.
BRANDERING : SA PINE BRANDERING SPACED AT MAX 400mm C/C.
ROOF SHEETS : 0.6mm THICK IBR CHROMADEK SHEETING. COLOR AS PER CLIENTS SPECIFICATIONS.
CEILING : 6.4mm THICK RHINO BOARD FINISHED OFF WITH RHINO CORNICE ON ALL EDGES.

ANT-AND TERMITE CONTROL:
PROTECTION OF BUILDING AGAINST TERMITE INFESTATION WITH APPROVED INSECTICIDE.

RISK CONTROL:
• ADHERE TO DIESEL TANK CODE OF PRACTICE.
• PLACE APPROPRIATELY SIZED SIGNAGE.
• APPROPRIATE SIZE OF FIRE EXTINGUISHERS SHOULD BE PLACED.
• CONTINGENCY PLAN MUST BE IN PLACE.

DOORS & WINDOWS:
AS PER DOOR & WINDOW SCHEDULES.

DAMP PROOF:
• WATER PROOFING: PLASTIC SHEETING UNDER COMPLETE FLOOR & BASE SLABS.
• APPROVED DAMP PROOF COURSE IN WALLS UNDER WINDOW SILLS.

REVISIONS

No.	DATE	BY	DESCRIPTION

NOTES

REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

APPROVED:
ENGINEER: _____ DATE: _____

APPROVED:
CLIENT: _____ DATE: _____

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PO Box 2600, Welkom, 9460, South Africa



CLIENT
**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

CHLORINATION BUILDING

DESIGN	DATE	DRAWN	DATE
	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		J.BATEMAN	JUN 2025

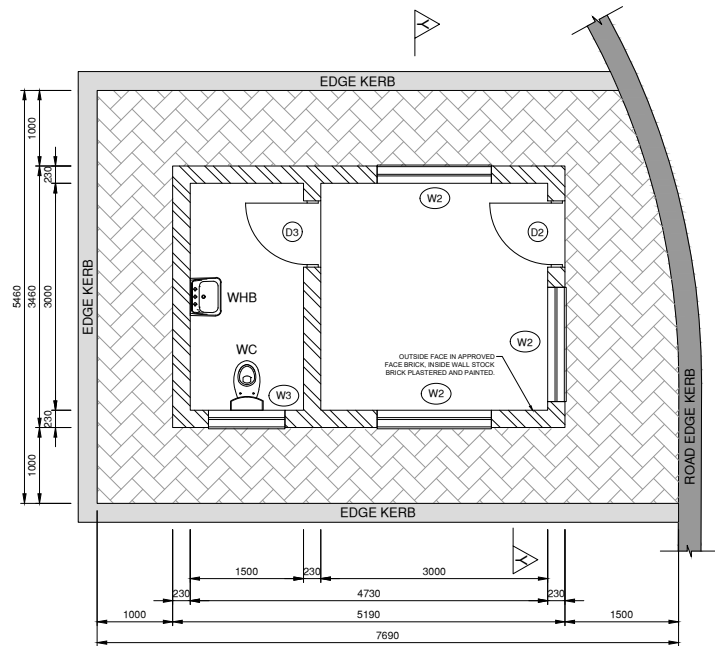
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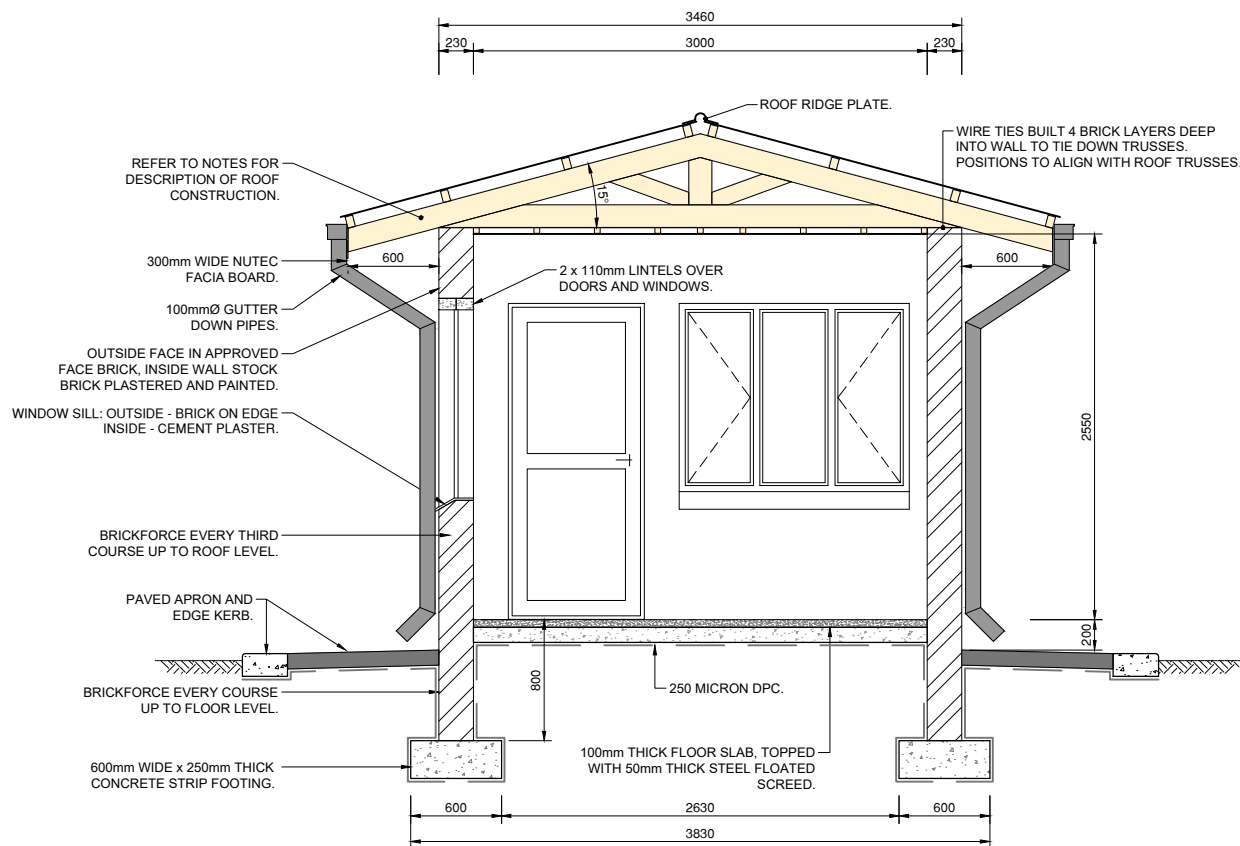
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REVISION No.

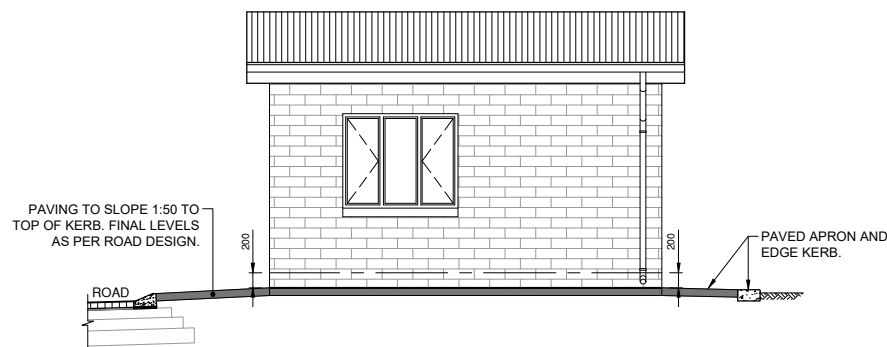
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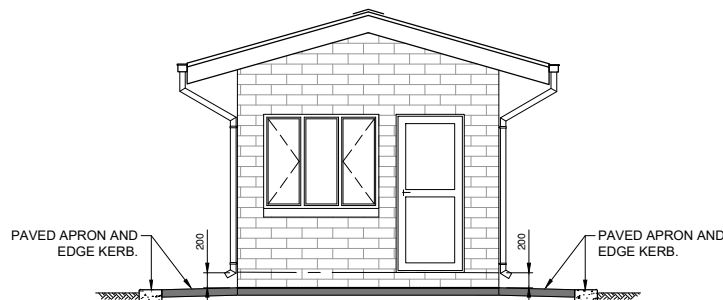
PLAN VIEW
SCALE 1:50



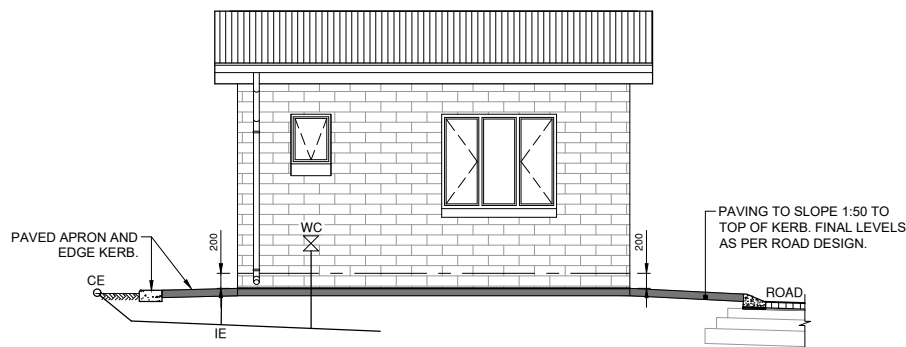
SECTION Y-Y
SCALE 1:25



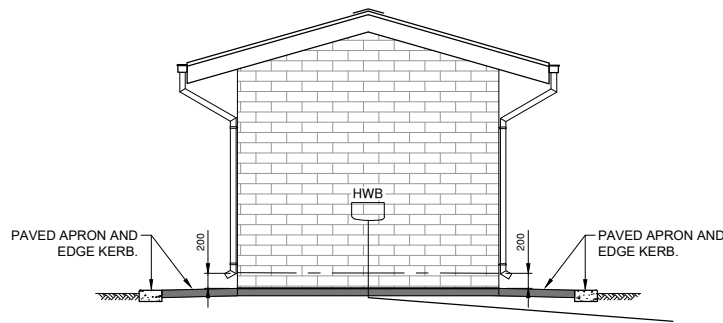
NORTH ELEVATION
SCALE 1:50



EAST ELEVATION
SCALE 1:50



SOUTH ELEVATION
SCALE 1:50



WEST ELEVATION
SCALE 1:50

GENERAL DESCRIPTIONS: BUILDING WORK

NOTE: ALL BUILDING WORK TO BE IN LINE WITH SANS 10400.

FOUNDATION:
CONCRETE CLASS 35MPa/19 STRIP FOOTING.

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• APPROVED DAMP PROOF COURSE IN WALLS UNDER WINDOW SILLS.

REVISIONS

No.	DATE	BY	DESCRIPTION

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REFERENCE DRAWINGS

PLAN Nr.	DESCRIPTION

APPROVED: _____ DATE: _____
ENGINEER: _____

APPROVED: _____ DATE: _____
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CLIENT
**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

GUARD HOUSE

DESIGN	DATE	DRAWN	DATE
	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		J.BATEMAN	JUN 2025

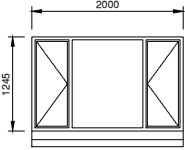
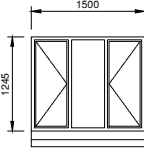
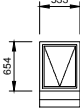
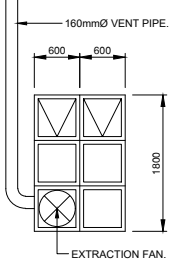
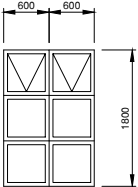
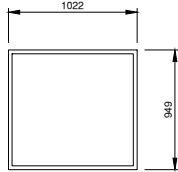
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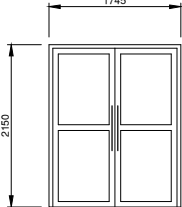
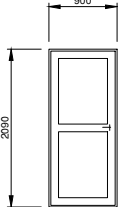
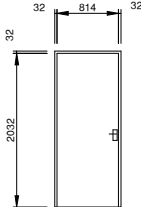
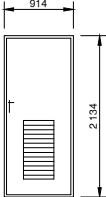
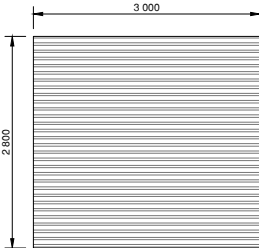
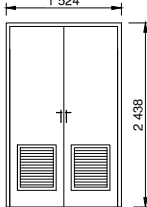
DRAWING No.

2024-06-B/P/011

REVISION No.

1.0

ADD FOR DINING REST AND ABLUTION						
WINDOW SCHEDULE						
	W1 (3 OFF)	W2 (4 OFF)	W3 (X OFF)	W4 (3 OFF)	W5 (6 OFF)	W6 (2 OFF)
	STANDARD RESIDENTIAL STEEL PROFILE	STANDARD RESIDENTIAL STEEL PROFILE	STANDARD RESIDENTIAL STEEL PROFILE	WINBLOCK WB 66 260(590x590)	WINBLOCK WB 66 260(590x590)	STANDARD RESIDENTIAL STEEL PROFILE NC8 WITHOUT CENTER MULLION
	STANDARD CHROMIUM PLATED	STANDARD CHROMIUM PLATED	STANDARD CHROMIUM PLATED	TWO WINVENTS (TOP HUNG) TYPE WVS 66T THREE WITH TINTED FIXED GLAZING DIRECTLY INTO WINBLOCK ONE LEFT OPEN FOR EXTRACTION FAN	TWO WINVENTS (TOP HUNG) TYPE WVS 66T FOUR WITH TINTED FIXED GLAZING DIRECTLY INTO WINBLOCK	NOT APPLICABLE
	4mm CLEAR DRAWN GLASS AS PER NBR	4mm CLEAR DRAWN GLASS AS PER NBR	4mm OBSCURED GLASS AS PER NBR	FACTORY GLAZED (515x515), TINTED	FACTORY GLAZED (515x515), TINTED	IN ACCORDANCE TO SANS 0400:1990, PART N, TABLE 1 (4mm THICK)
	FACTORY APPLIED PRIME COAT, ONE UNDERCOAT AND TWO COATS ENAMEL	FACTORY APPLIED PRIME COAT, ONE UNDERCOAT AND TWO COATS ENAMEL	FACTORY APPLIED PRIME COAT, ONE UNDERCOAT AND TWO COATS ENAMEL	POWDER COATED	POWDER COATED	PRIME COAT, ONE UNDERCOAT TWO COATS POLYURETHANE ENAMEL

DOOR SCHEDULE						
	D1 (1 OFF)	D2 (3 OFF)	D3 (5 OFF)	D4 (1 OFF)	D5 (1 OFF)	D6 (3 OFF)
	ALUMINIUM FRAME WITH HINGES FIXED TO 230mm WALL	ALUMINIUM FRAME WITH HINGES FIXED TO 230mm WALL	1,6mm PRESSED METAL FRAME FOR 115mm WALL, ALL FRAMES TO BE DOUBLE REBATE TYPE.	STD MS TRANSFORMER ROOM FRAME FOR 230 mm WALL	SUPPORT BRACKETS AND GUIDES FIXED TO IPE SUPPORT & FRAME	STD MS TRANSFORMER ROOM FRAME FOR 230 mm WALL
	ALUMINIUM DOUBLE DOORS WITH 6mm SAFETY GLASS AND WEATHER BAR	ALUMINIUM SINGLE DOOR WITH 6mm SAFETY GLASS AND WEATHER BAR	STANDARD SEMI-SOLID DOOR IN SAPELE WITH TWO CONCEALED EDGES.	STD MS TRANSFORMER ROOM DOOR WITH LOUVERS OVER 1/3 OF LENGTH OF DOOR	CHAIN OPERATED ROLLER SHUTTER DOOR WITH SLATS AND HOOD	2438 x 1524mm STANDARD TRANSFORMER STEEL DOOR WITH A LOUVRE INSERT AT LOWER HALF OF THE DOOR PANELS.
	UNION L2244E EUROPROFILE DEADLOCK UNION PH03 DOOR HANDLES UNION N8825 DOOR CLOSER	UNION L2244E EUROPROFILE DEADLOCK UNION PH03 DOOR HANDLE UNION N8825 DOOR CLOSER	UNION C2 662-24-9756 C2 LEVER LOCKSET, OR SIMILAR AND APPROVED. HINGES AS SUPPLIED WITH FRAME.	HEAVY DUTY	STANDARD	HEAVY DUTY
	FRAME AND DOOR: EPOXY POWDER COAT ROYAL BLUE	FRAME AND DOOR: EPOXY POWDER COAT ROYAL BLUE	FRAME: PRIME COAT, ONE UNDERCOAT AND TWO COATS ENAMEL. DOOR: PREPARE AND STOP, APPLY THREE COATS WOOD SUEDE OR SIMILAR APPROVED.	FRAME AND DOOR: PRIME COAT, ONE UNDERCOAT AND TWO COATS POLYURETHANE ENAMEL. COLOUR DECIDED BY ENGINEER ON SITE	HOT DIP GALVANISED	ONE UNDER COAT AND TWO COATS POLYURETHANE ENAMEL

REVISIONS

No.	DATE	BY	DESCRIPTION

NOTES

REFERENCE DRAWINGS

PLAN Nr.	DESCRIPTION

APPROVED: _____
ENGINEER: _____ DATE: _____
APPROVED: _____
CLIENT: _____ DATE: _____

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Tsela Tsweu
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CLIENT
PHOKWANE
LOCAL MUNICIPALITY

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

DOOR & WINDOW SCHEDULE

DESIGN	DATE	DRAWN	DATE
-	JUN 2025	-	JUN 2025
SURVEYED	DATE	CHECKED	DATE
-	-	J.BATEMAN	JUN 2025

SCALE

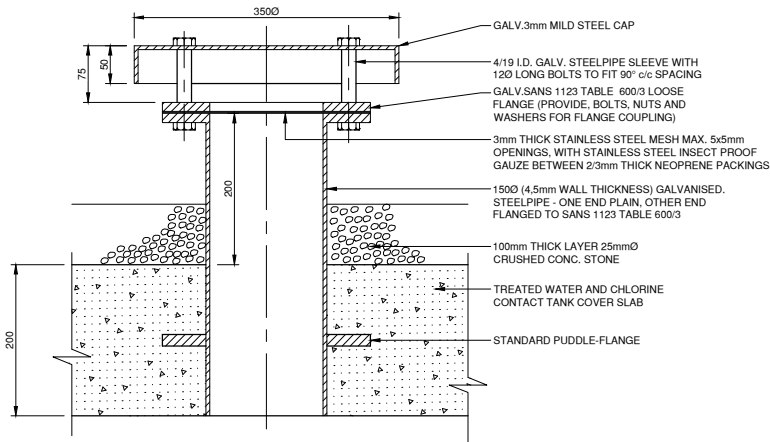
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2024-06-B/A/001

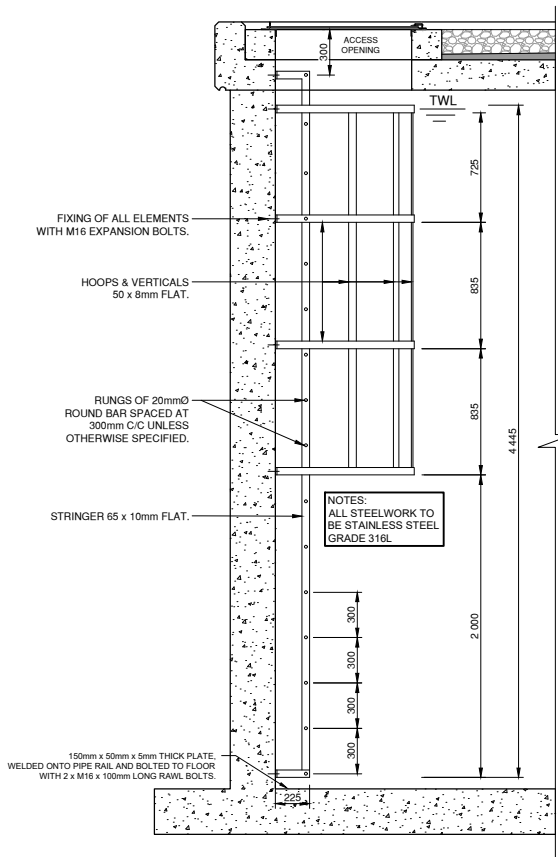
REVISION No.

1.0							
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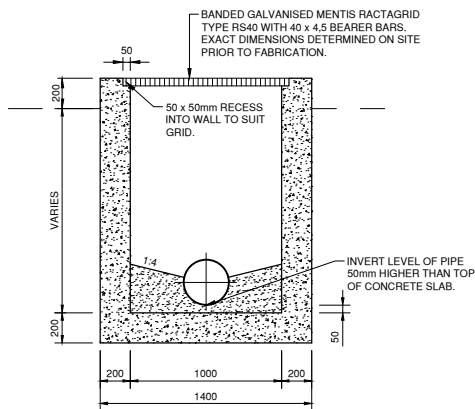
VENTILATOR

SCALE 1:5



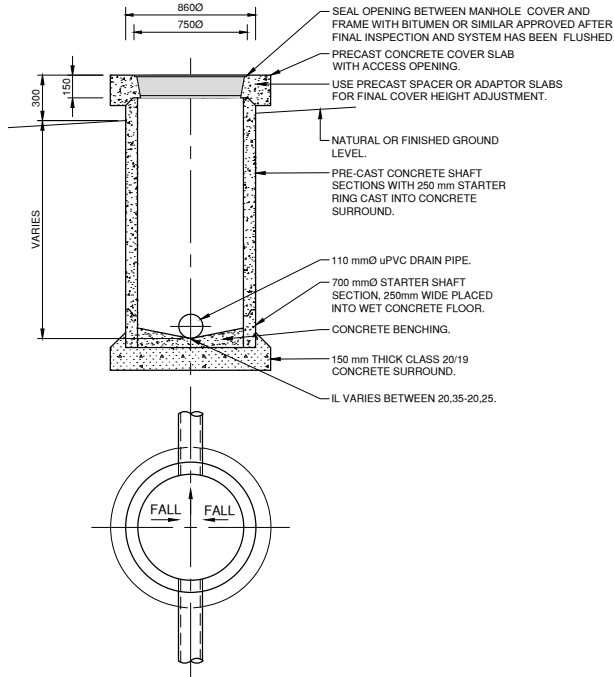
TYPICAL ACCESS LADDER FOR WATER RETAINING STRUCTURES

SCALE 1:25



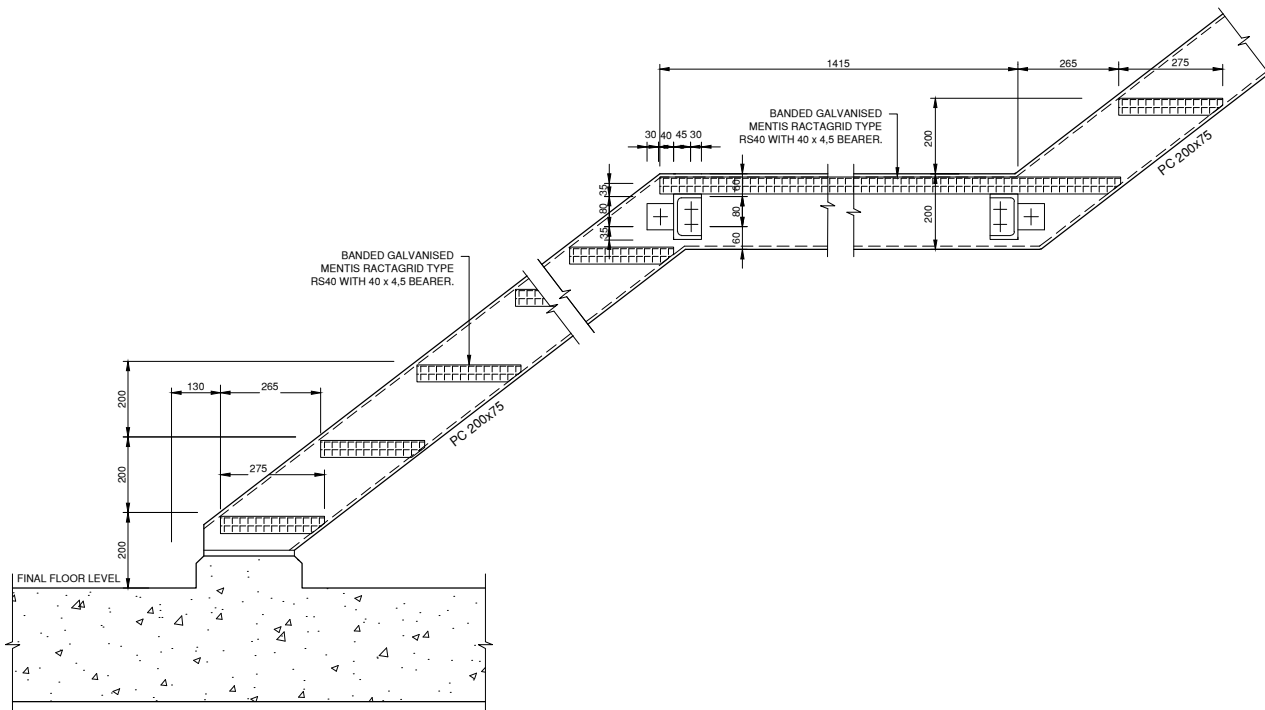
DRAINAGE CHAMBER

SCALE 1:25



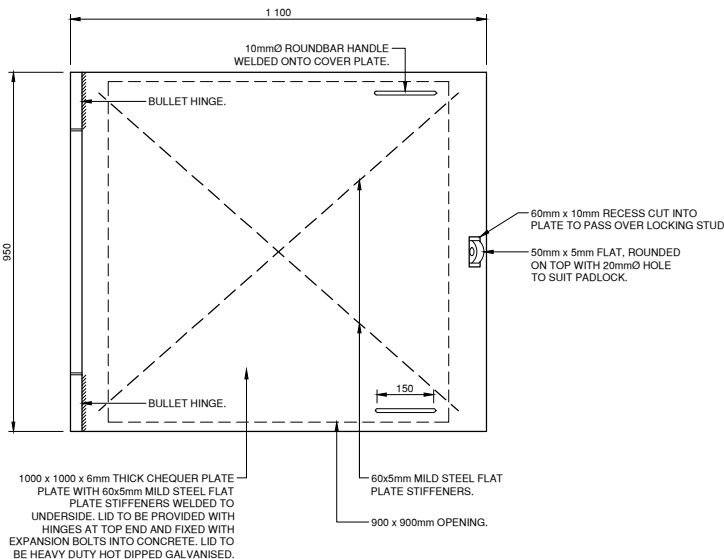
SUB-SOIL DRAINAGE INSPECTION CHAMBER

SCALE 1:25



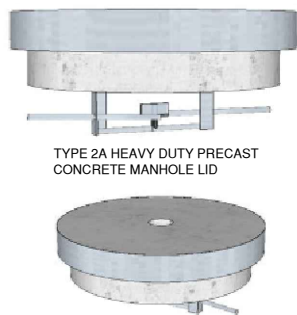
TYPICAL STAIR DETAIL

SCALE 1:10



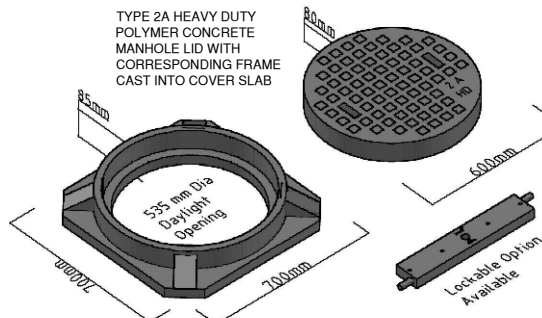
TYPICAL ACCESS COVER

SCALE 1:10



TYPICAL LOCKABLE MANHOLE COVER LID

NTS



ALTERNATIVE LOCKABLE MANHOLE COVER LID

NTS

STRUCTURAL STEEL NOTES

DESIGN:

- MEMBERS ARE DESIGNED TO THE REQUIREMENTS OF SANS 10400 (LATEST EDITION), AND ALL REFERENCED DESIGN CODES.
- HOT ROLLED STEELWORK TO BE IN ACCORDANCE WITH EN 10025-2 S355JR. MILL TEST CERTIFICATES TO BE PROVIDED.
- COLD FORMED STEELWORK TO HAVE MINIMUM YIELD STRESS OF 250MPa.
- BOLTS, NUTS & WASHERS TO BE CLASS 4.6 U.O.S.
- WELDS TO BE CONTINUOUS FILLET WELDS (U.O.S.) WITH A THROAT THICKNESS NOT EXCEEDING 0.7 TIMES THE THINNER MATERIAL THICKNESS WELDED TO.

FABRICATION & ERECTION:

- STEEL FABRICATION AND ERECTION TO COMPLY WITH SANS 1200H AND MAY NOT COMMENCE BEFORE SHOP DRAWINGS AND AN ERECTION METHOD STATEMENT HAVE BEEN APPROVED BY THE ENGINEER.
- CONNECTION DETAILS TO BE APPROVED BY ENGINEER BEFORE THE SHOP DRAWINGS ARE SUBMITTED FOR APPROVAL.
- MINIMUM EDGE DISTANCE TO BOLTS TO BE 1.75 TIMES THE BOLT DIAMETER U.O.S.
 - MINIMUM BOLT SPACING TO BE 2.5 TIMES THE BOLT DIAMETER U.O.S.
- ALL BOLT HOLES TO BE DRILLED, NOT PUNCHED.
- CONTRACTOR TO ENSURE THE STABILITY AND SAFE ERECTION OF THE STRUCTURE, AND TO PROVIDE ALL NECESSARY BRACING TO ENABLE HIM TO DO SO, SUCH BRACING TO BE INDICATED ON THE ERECTION GENERAL ARRANGEMENT DRAWINGS.
- NO SITE CUTTING OR WELDING WILL BE ALLOWED UNLESS PRIOR ARRANGEMENT WITH THE ENGINEER.
- ALL STEELWORK DELIVERED TO THE SITE SHALL BE STACKED ON TIMBER SUPPORTS AT LEAST 300mm FROM GROUND LEVEL.

GENERAL:

- THESE DRAWINGS TO BE READ IN CONJUNCTION WITH THE GENERAL LAYOUT DRAWINGS AND ANY DISCREPANCIES TO BE RESOLVED BEFORE CONSTRUCTION COMMENCES.
- SHOP DRAWINGS AND AN ERECTION METHOD STATEMENT TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION OF ANY STEELWORK.
- THE ENGINEER WILL NOT BE HELD RESPONSIBLE FOR ANY WORK THAT DEVIATES FROM THE ENGINEERS' OR APPROVED SHOP DRAWINGS.
- BEFORE ANY STRUCTURAL STEELWORK IS MANUFACTURED, ALL INTERFACING CONCRETE WORK IS TO BE SURVEYED TO CONFIRM DIMENSIONS, LEVELS, BOLT POSITIONS ETC. RECTIFICATION OF ANY 'LACK OF FIT' DUE TO NON-COMPLIANCE WITH THE ABOVE, WILL BE AT THE COST OF THE CONTRACTOR.
- WHERE ANY MEMBER SIZES OR DETAILS ON THE WORKSHOP DRAWINGS DEVIATE SUBSTANTIALLY FROM THE DESIGN DRAWINGS, THE CONTRACTOR SHALL INFORM THE ENGINEER EXPLICITLY IN WRITING IN ORDER TO OBTAIN APPROVAL FOR SUCH DEVIATIONS. FAILING TO DO SO WILL RESULT IN NON-PAYMENT OF ANY EXTRA'S.
- THE DESIGN DRAWINGS DO NOT NORMALLY SHOW CONNECTION DETAILS. ALL CONNECTIONS ARE TO BE FULLY DETAILED ON THE WORKSHOP DRAWINGS AND SUFFICIENT TIME SHOULD BE ALLOWED FOR THE ENGINEER TO APPROVE SUCH CONNECTION DETAILS.
- ON RECEIVING THE DESIGN DRAWINGS, THE CONTRACTOR MUST ARRANGE A MEETING/WORKSHOP WITH THE ENGINEER TO DISCUSS THE DESIGN, ERECTION METHOD AND CONNECTION DETAILS, AS WELL AS A QUALITY CONTROL METHOD.

FINISHES TO STEELWORK:

- SURFACE PREPARATION:
 - EXPOSED STEELWORK: BLAST CLEAN STEELWORK TO Sa 2.5 OR SIS 05-59-00 OR ALTERNATIVE TO BE APPROVED BY ENGINEER.
 - NON EXPOSED STEELWORK: WIRE BRUSHING AS PER SANS 1200
- PRIMER: APPLY ONE COAT (30 MICRON) ZINC CROMATE PRIMER IN ACCORDANCE WITH SANS 681.
- INTERMEDIATE COAT: APPLY BY BRUSH OR ROLLER ONE COAT (30 MICRON) MULTI-PURPOSE UNDERCOAT IN ACCORDANCE WITH SANS 681. USE TYPE II IF PAINT IS APPLIED WITHIN 16 HOURS OF APPLICATION OR ZINC PHOSPHATE PRIMER, OTHERWISE USE TYPE I COLOUR TO DIFFER FROM COLOUR OF FINAL COAT.
- TOP COATS: (ONLY FOR EXPOSED STEELWORK) AS SPECIFIED BY ARCHITECT.
- ALLOW 24 HOURS BETWEEN COATS FOR DRYING.
- DAMAGES TO COATINGS DURING TRANSIT, SITE WELDING AND/OR ERECTION MUST BE WIRE BRUSHED TO BARE METAL AND FOLLOWED BY THE APPLICABLE SPECIFICATION.
- APPROVED ALTERNATIVE PRODUCTS MAY BE USED.

STEEL GRADES:

- ACCESS LADDER INSIDE RESERVOIR TO BE STAINLESS STEEL GRADE 316L.
- ALL OTHER STEELWORK TO BE HOT DIPPED GALVANISED MILD STEEL TO SANS 0121.

REVISIONS

No.	DATE	BY	DESCRIPTION

NOTES

REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

APPROVED:	DATE:
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CLIENT
PHOKWANE
LOCAL MUNICIPALITY

PROJECT
UPGRADING OF HARTSWATER
WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

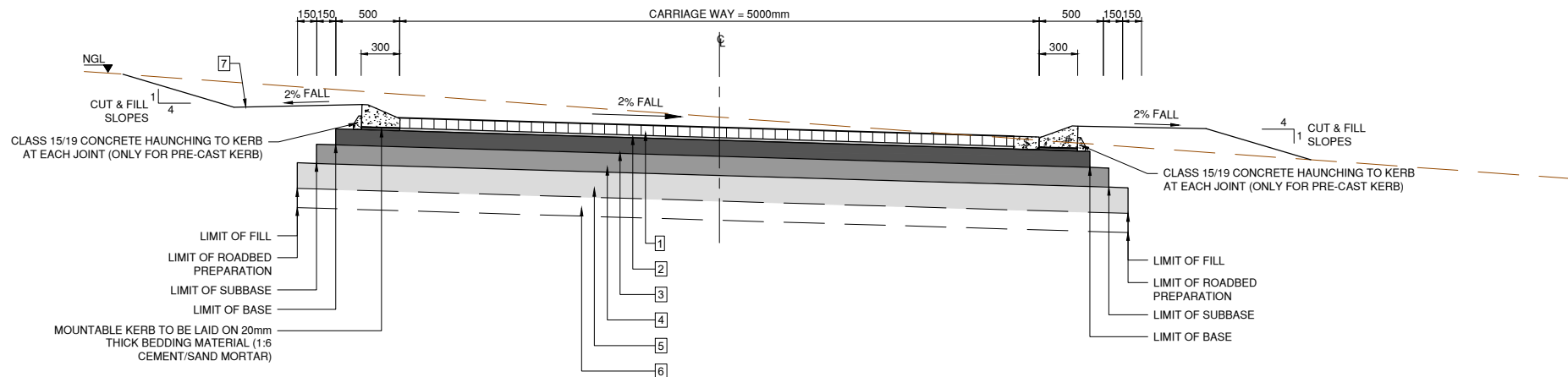
DRAWING TITLE
TYPICAL STRUCTURE DETAILS

DESIGN	DATE	DRAWN	DATE
-	JUN 2025	-	JUN 2025
SURVEYED	DATE	CHECKED	DATE
-	-	J.BATEMAN	JUN 2025

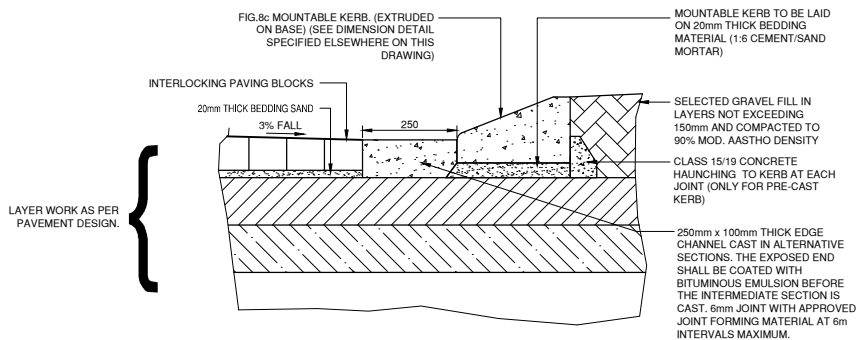
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DRAWING No.	2024-06-B/D/001
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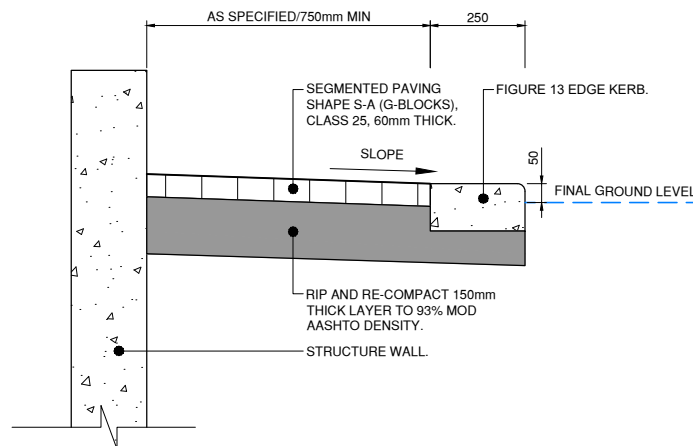
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TYPICAL PAVEMENT DESIGN DETAIL FOR
5.0m SURFACED ACCESS STREETS
(PAVING BLOCK FINISH)
SCALE 1:25



TYPICAL SECTION THROUGH FIG.8b MOUNTABLE KERB
SCALE 1:10



TYPICAL PAVING DETAIL
SCALE 1:10

NOTE:

1. PRIOR TO THE UNDERTAKING OF ANY VIBRATORY OR PAD FOOT ROLLING WITHIN THE ROAD FOUNDATION, AN ON SITE TRIAL SECTION SHALL BE PREPARED AND CONDUCTED IN ORDER TO ASCERTAIN THE AVERAGE NUMBER OF m^2 PASSES REQUIRED IN ORDER TO OBTAIN THE SPECIFIED COMPACTION EFFORT FOR THE ROADBED PREPARATION.
2. THE ENGINEER SHALL THEN INSTRUCT THE CONTRACTOR TO REMOVE AND SPOIL THE TOPSOIL AND HILLWASH OVERBURN TO WEARING COURSE DEPTH OR FERRICRETE LEVEL, WHERE REQUIRED WHICHEVER IS THE SHALLOWEST.
3. ALL FERRICRETE MATERIAL SHALL BE CUT TO TEMPORARY STOCKPILE AS DETERMINED BY THE ENGINEER FOR LATER USE IN THE PAVEMENT STRUCTURE AND WEARING COURSE LAYER WORKS.
4. THE CONTRACTOR SHALL THEN APPLY THE NUMBER OF m^2 PASSES ORDERED BY THE ENGINEER, PERIODICALLY WATERING AND BLADING THE ROADBED FOUNDATION AREA TO ENSURE MAXIMUM WORKABILITY AND COMPACTION EFFICIENCY.
5. AFTER APPLYING THE VIBRATORY OR PAD FOOT ROLLING, CUT TO FILL OR BLADE TO WINDROW THE FERRICRETE PINNACLES, RIP, SCARIFY AND RECOMPACT ROADBED TO ABOVE SPECIFICATION WHERE REQUIRED.

LEGEND:

- a) REQUIREMENTS ARE GIVEN IN THE FOLLOWING ORDER:
LAYER THICKNESS/MATERIAL/CBR AND
MIN COMPACTION/MIN. GM/MAX. PI
- b) MIN. UNCONFINED COMPRESSIVE STRENGTH (UCS) IS SHOWN IN MPa.
- c) MIN. DENSITY IS GIVEN AS % OF MAX MODIFIED AASHTO DENSITY.
- d) SG = STABILIZED GRAVEL
NG = NATURAL GRAVEL
IS = IN SITU SOIL
PI = PLASTICITY INDEX
GM = GRADING MODULES
SBP = SHOULDER BREAK POINT
- e) # FIGURE 8c MOUNTABLE CONCRETE KERB (CLASS 25/13) EXTRUDED ON BASE
\$ 250mm WIDE x 100mm THICK EDGE CHANNEL CAST IN ALTERNATIVE SECTIONS. THE EXPOSED END SHALL BE COATED WITH BITUMINOUS EMULSION BEFORE THE INTERMEDIATE SECTION IS CAST. 6mm JOINT WITH APPROVED JOINT FORMING MATERIAL AT 6m INTERVALS MAXIMUM.

1	SEGMENTED PAVING SHAPE S-A (G-BLOCKS), CLASS 25, 80mm THICK
2	RIVER SAND 20 / RIVER SAND IMPORTED FROM COMMERCIAL SOURCE
3	BASE 125mm C4 MATERIAL COMPACTED TO 98% MOD AASHTO DENSITY.
4	SUBBASE 150mm G6 MATERIAL COMPACTED TO 95% MOD AASHTO DENSITY
5	ROADBED PREPARATION (REFER TO NOTES) VIBRATORY OR PAD FOOT ROLLING (NUMBER OF PASSES TO BE DETERMINED BY ENGINEER ON SITE) OR RIP SCARIFY AND RE-COMPACT 150/IS@90%
6	FILL - ONLY WHERE REQUIRED FILL TO BE A MINIMUM OF G9 MATERIAL TO BE COMPACTED IN LAYERS NOT EXCEEDING 150mm THICKNESS TO 90% MOD AASHTO DENSITY.
7	1000mm WIDE SHOULDER WEARING COURSE CUT TO FILL FROM ROAD FOR ACCOMMODATION OF TRAFFIC WHERE REQUIRED

REVISIONS

No.	DATE	BY	DESCRIPTION

NOTES

REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

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CLIENT

PHOKWANE
LOCAL MUNICIPALITY

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

**TYPICAL ROAD AND PAVING
DETAILS**

DESIGN	DATE	DRAWN	DATE
	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		J.BATEMAN	JUN 2025

SCALE

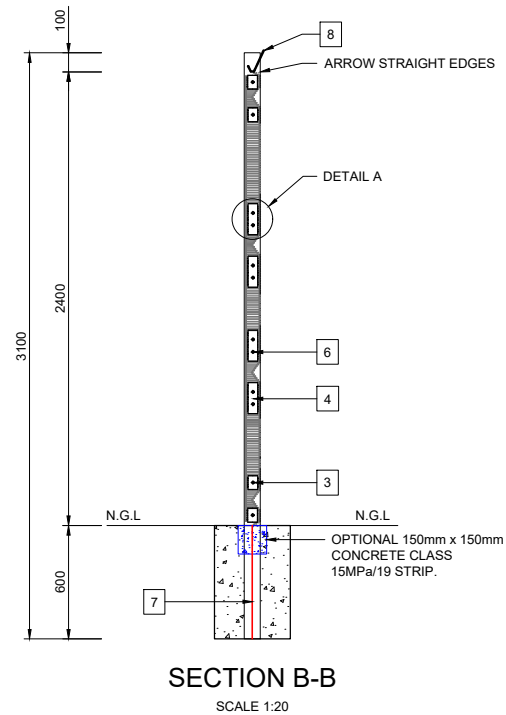
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DRAWING No.

2024-06-R/D/001

REVISION No.

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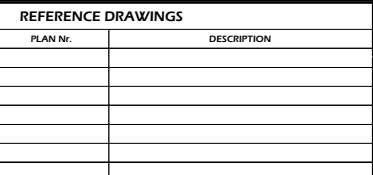
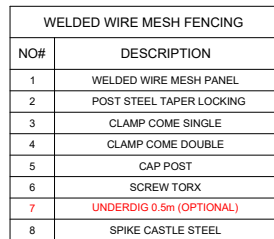


- NOTES**

 - OPTIONAL CONCRETE STRIP BELOW FENCE PANELS.
 - OPTIONAL MESH PANEL BELOW FENCE PANELS.

NOTE:

OPTIONAL ITEMS TO BE INSTALLED ONLY ON INSTRUCTION FROM THE CLIENT.



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PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE

**STEEL MESH PANEL FENCE
DETAILS**

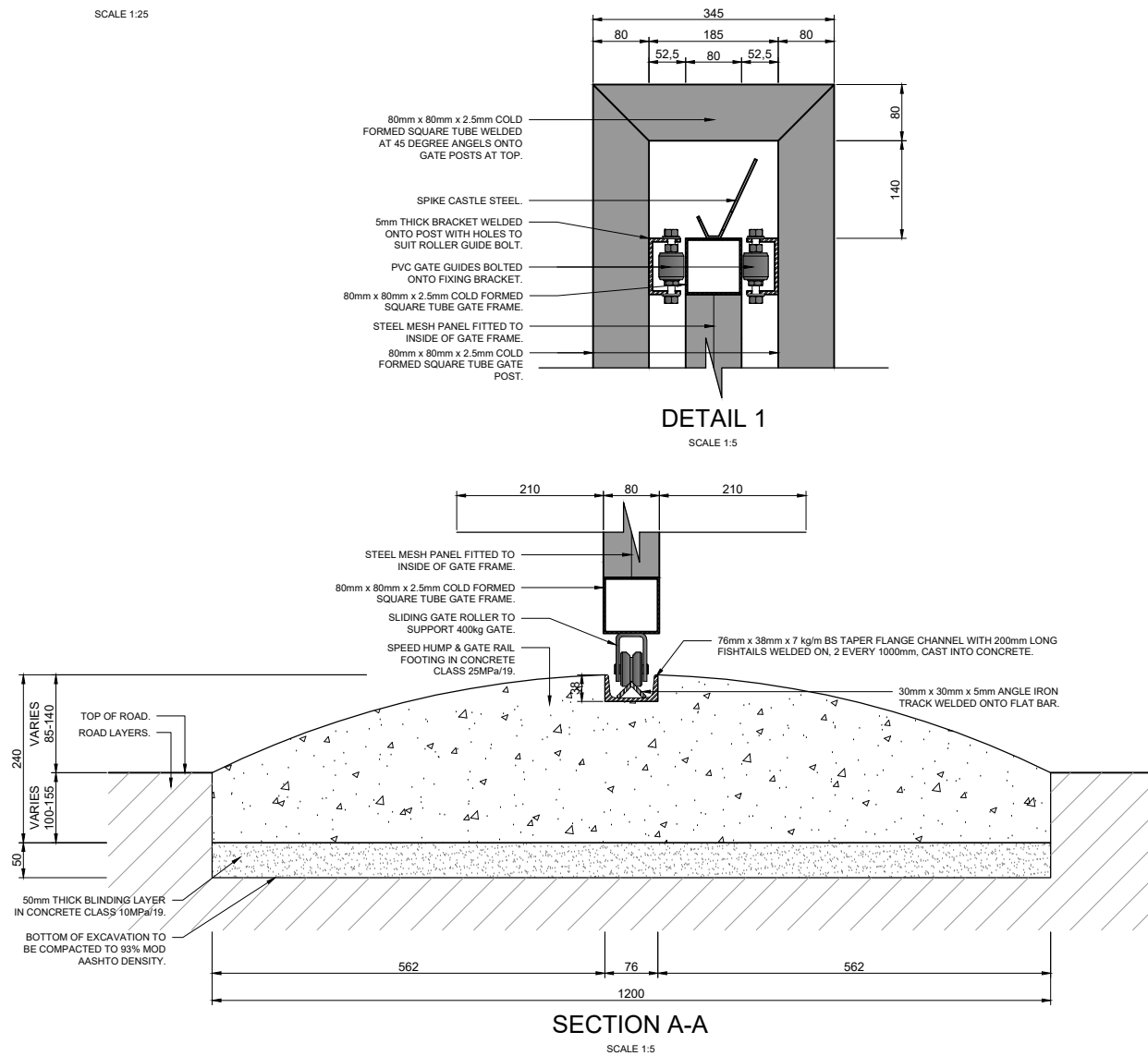
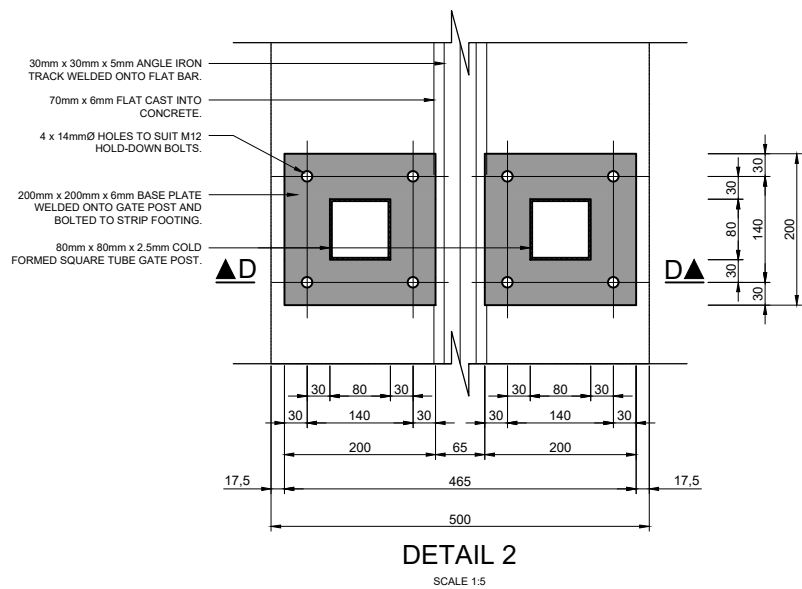
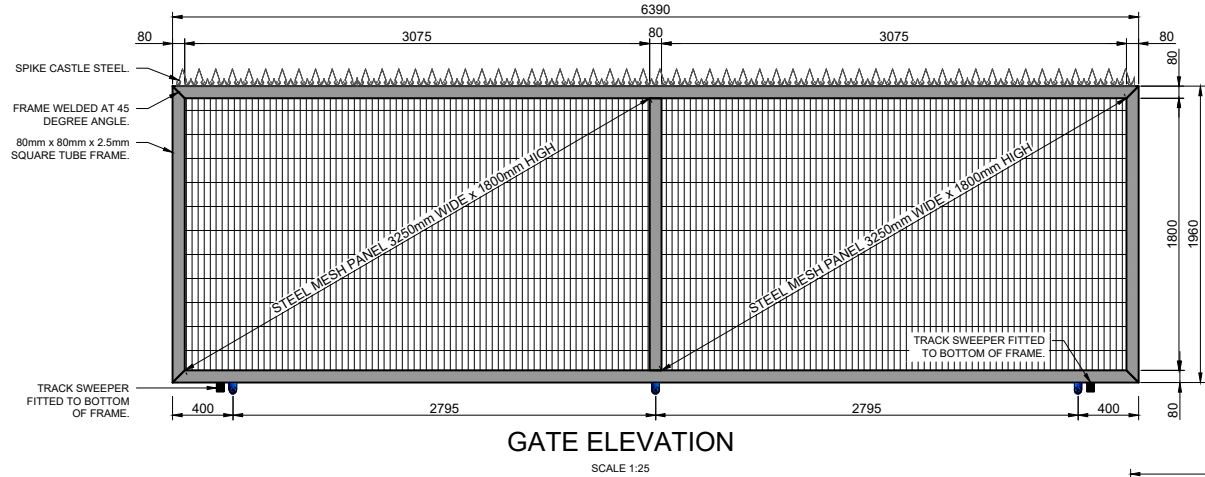
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SURVEYED -	DATE -	CHECKED J.BATEMAN	DATE JUN 2025

SCALE as shown

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2024-06-F/D/001

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NOTES

GENERAL:

- GATE TO BE OPERATED MANUALLY.
- GATE MUST BE FITTED WITH AN APPROVED LOCKING MECHANISM.

STEEL MESH PANELS:

- PANEL SIZES AS SHOWN.
- GATE PANELS TO MATCH FENCE PANELS.
- FIXING OF PANELS TO GATE FRAME TO BE ON THE INSIDE AND AS PER MANUFACTURERS SPECIFICATIONS.
- PANELS AND FIXTURES SHALL BE HOT DIP GALVANIZED WITH UV RESISTANT POLYESTER POWDER COATING ON EXTERIOR.

GATE POSTS AND FRAME:

- GATE POSTS TO BE 80mm x 80mm x 2.5mm COLD FORMED SQUARE TUBE, INCLUDING 6mm THICK BASE PLATE WELDED ONTO BOTTOM.
- OPEN POSTS SHALL BE SEALED WITH A UV STABILIZED POLYMER CAP.
- GATE POSTS TO BE 80mm X 80mm X 2.5mm COLD FORMED SQUARE TUBE.
- ALL POSTS AND GATE FRAME TO BE HOT DIP GALVANIZED WITH UV RESISTANT POLYESTER POWDER COATING ON EXTERIOR.

[illegible]

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LOCAL MUNICIPALITY

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE

**STEEL MESH PANEL SLIDING
GATE DETAILS**

DESIGN	DATE JUN 2025	DRAWN	DATE JUN 2025
SURVEYED	DATE	CHECKED J.BATEMAN	DATE JUN 2025

SCALE as shown

DRAWING No.

2024-06-F/D/002

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No.	DATE	BY	DESCRIPTION

 NEW 355mmØ PUMP MAIN (750m LONG)
 NEW 315mmØ PUMP MAIN (1450m LONG)
 AIR VALVE
 SCOUR VALVE

PLAN Nr.	DESCRIPTION

APPROVED: _____
CLIENT: _____ DATE: _____



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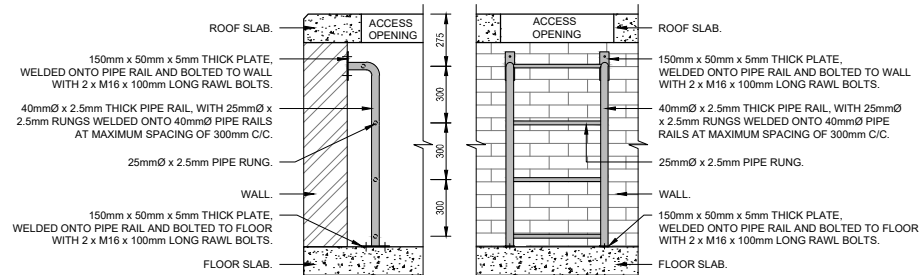


UPGRADING OF HARTSWATER WATER TREATMENT PLANT

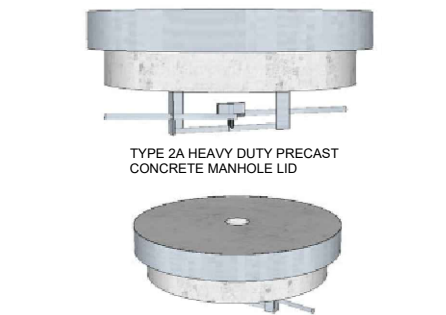
NEW PUMP MAIN LAYOUTS TO RESERVOIRS

2024-06-W/P/001

REVISION No.							
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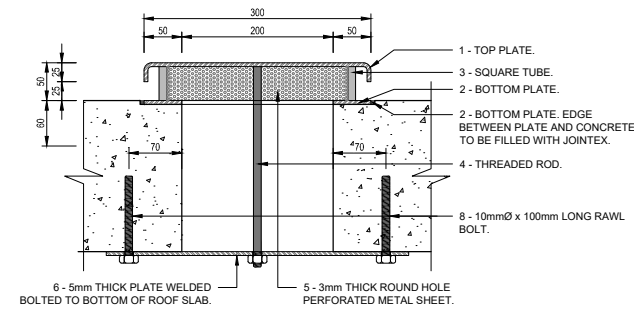


SECTION ELEVATION
TYPICAL ACCESS LADDER DETAIL
SCALE 1:20

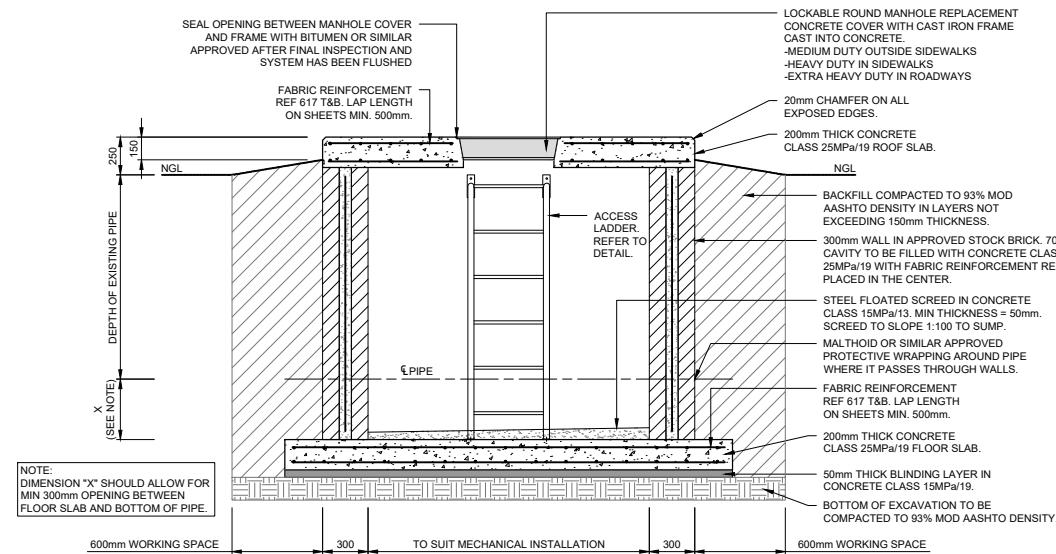


TYPICAL LOCKABLE MANHOLE COVER LID
NTS

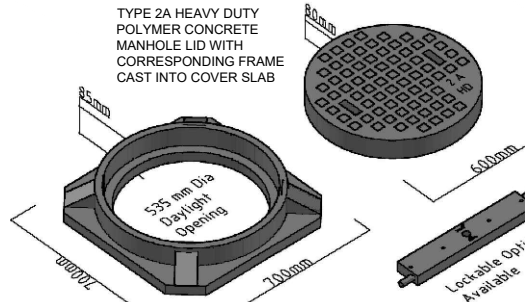
- TOP UNIT COMPONENTS:
1. TOP PLATE - 300mm x 300mm x 5mm THICK WITH EDGES BENT 90° DOWNWARD FOR 25mm.
 2. BOTTOM PLATE - 300mm x 300mm x 5mm THICK WITH 200mm x 200mm OPENING CUT OUT IN THE MIDDLE.
 3. SQUARE TUBING - 8 x 20mm x 20mm x 3mm x 45mm LONG. SQUARE TUBES PLACED 25mm FROM ONE ON EACH CORNER AND ONE IN THE CENTER OF EACH EDGE OF TOP AND BOTTOM PLATES. WELDED ONTO TOP PLATE AND BOTTOM PLATE.
 4. THREADED ROD - 1 x 300mm LONG x 10mmØ. WELDED AT THE CENTER ONTO BOTTOM OF TOP PLATE.
 5. 3mm THICK ROUND HOLE PERFORATED METAL SHEET, FIXED TO INSIDE OF SQUARE TUBES.
- FIXING BRACKET COMPONENTS:
6. 30mm WIDE x 5 mm THICK x 400 mm LONG PLATE, BOLTED TO BOTTOM OF ROOF SLAB WITH 10mmØ x 100mm LONG RAWL BOLTS. ONE EACH SIDE. PLATE TO HAVE 12mmØ HOLE IN THE CENTER TO ACCOMMODATE FIXING OF TOP UNIT WITH 10mmØ THREADED ROD.
- GENERAL:
- A. ALL STEELWORK TO BE HOT DIP GALVANIZED.
- B. PERFORATED PLATE TO BE ALUMINUM.



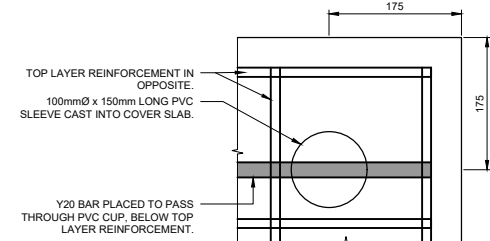
AIR BREATHER DETAIL - SECTION
SCALE 1:5



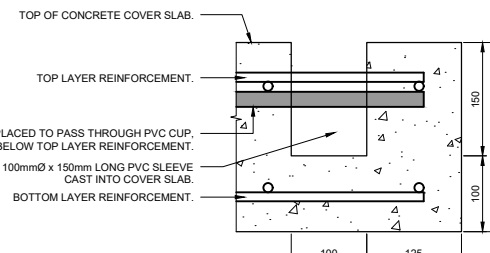
TYPICAL SECTION
SCALE 1:25



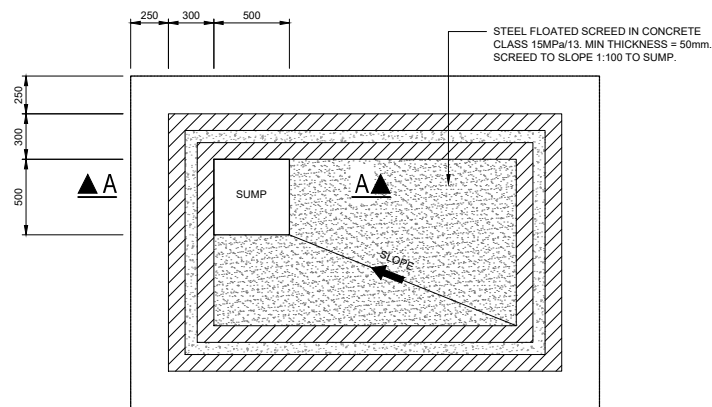
ALTERNATIVE LOCKABLE MANHOLE COVER LID
NTS



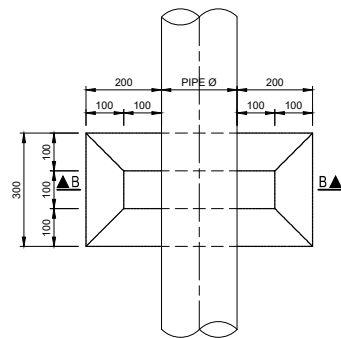
CONCRETE COVER SLAB LIFTING HOOK
PLAN VIEW
SCALE 1:5



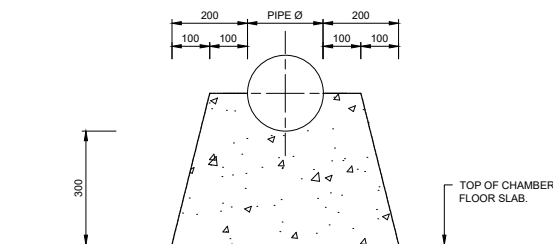
SECTION
SCALE 1:5



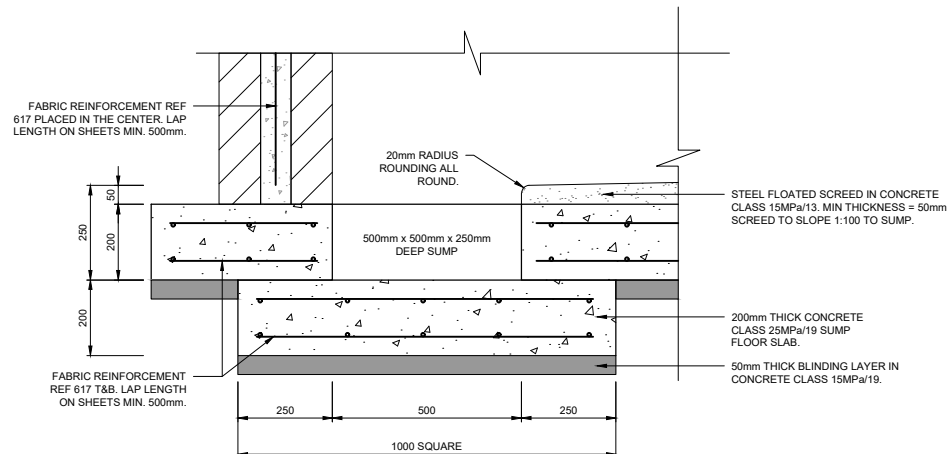
TYPICAL FLOOR PLAN
SCALE 1:25



PIPE PEDESTAL PLAN
SCALE 1:10



SECTION B-B
PIPE PEDESTAL
SCALE 1:10



SECTION A-A
SUMP DETAIL
SCALE 1:10

REVISIONS				
No.	DATE	BY	DESCRIPTION	

NOTES				

REFERENCE DRAWINGS	
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CLIENT
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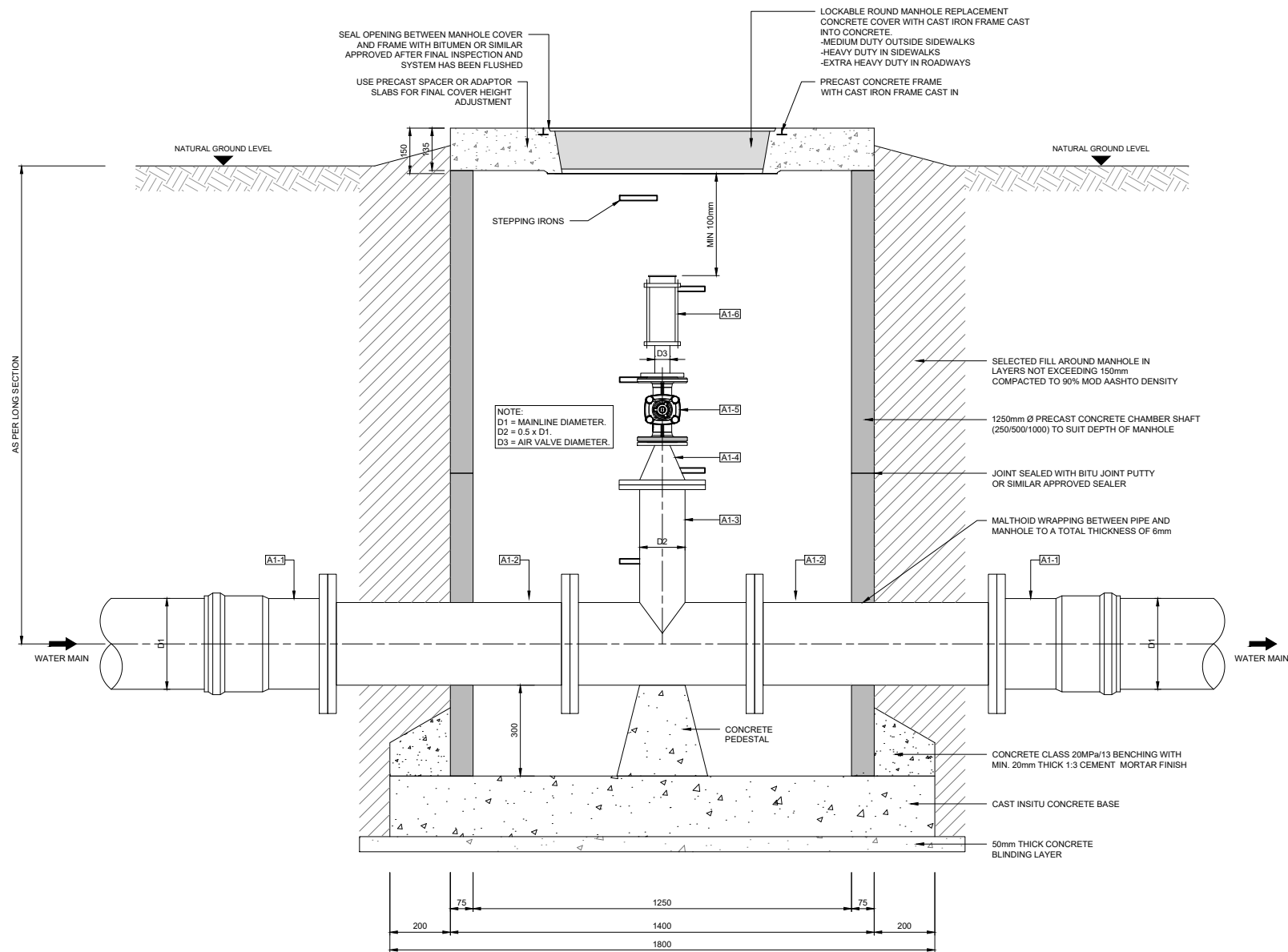
PROJECT
UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE
TYPICAL CHAMBER DETAILS

DESIGN	DATE	DRAWN	DATE
	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		J.BATEMAN	JUN 2025

SCALE AS SHOWN			
DRAWING No.			
2024-06-W/A/001			
REVISION No.			
1.0			



TYPICAL AIR VALVE INSTALLATION DETAIL
SCALE 1:10

BULK PIPELINES			
50ND, 80ND & 100ND AIR VALVE CHAMBER PIPE ITEM LIST			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
A1-1	D1 uPVC - STEEL FLANGE ADAPTOR.	STANDARD	2
A1-2	D1 x 800mm LONG FLANGED STRAIGHT PIPE WITH PUDDLE FLANGE.	SANS 719/SANS 62	2
A1-3	D1 x D2 TEE PIECE.	SANS 719/SCHEDULE 40	1
A1-4	D2 x D3 REDUCER (ONLY IF REQUIRED)	SCHEDULE 40	1
A1-5	D2 PN16 RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	1
A1-6	D2 VENT-O-MAT 100 RBX 1601, OR SIMILAR APPROVED AIR VALVE.	DUCTILE IRON - EPOXY PAINTED	1
NOTES			
D1	MAINLINE DIAMETER		
D2	0.5 x D1 (HALF OF THE MAINLINE DIAMETER)		
D3	AIR VALVE DIAMETER AS SPECIFIED ON LONGSECTION (50ND, 80ND & 100ND)		

REVISIONS			
No.	DATE	BY	DESCRIPTION

NOTES			

REFERENCE DRAWINGS	
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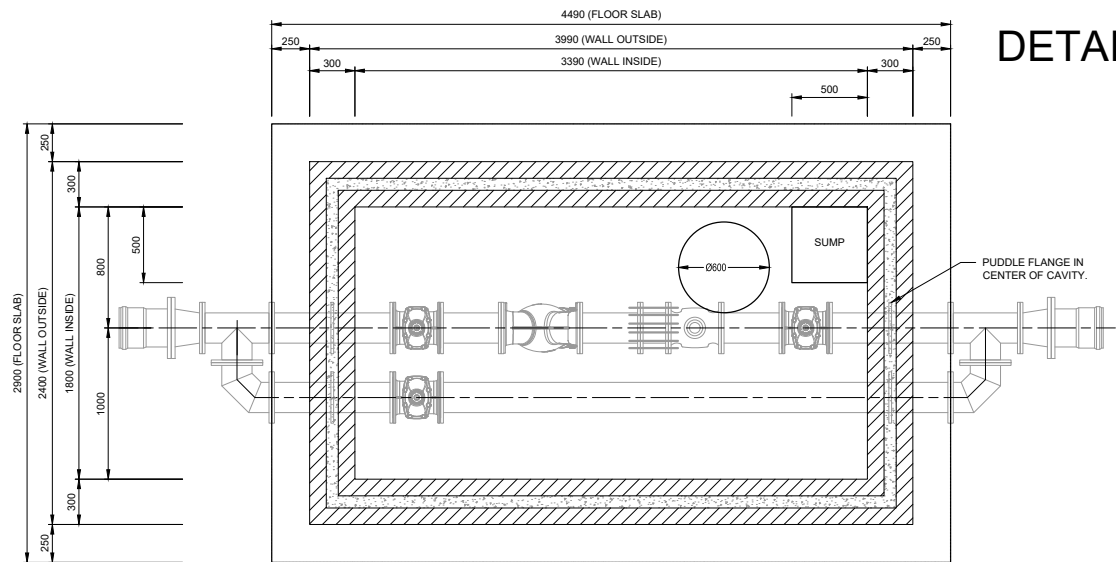
PROJECT UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT: PHOKWANE LM

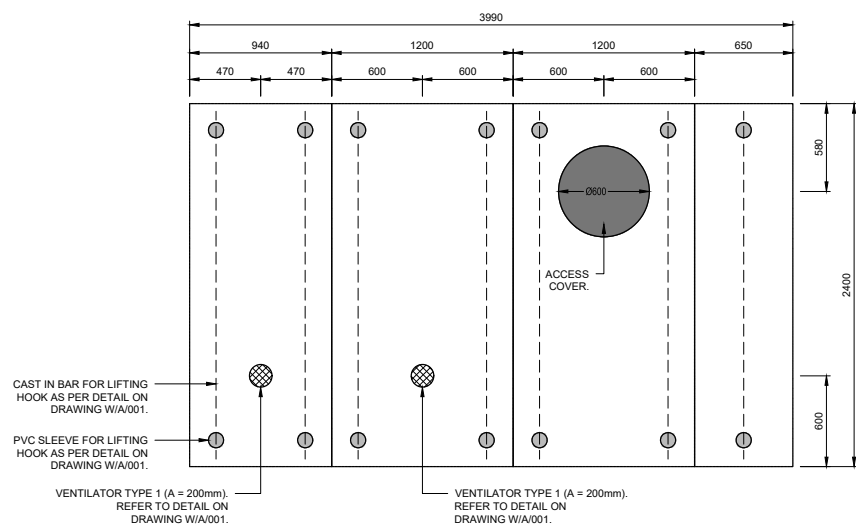
DRAWING TITLE TYPICAL AIR VALVE INSTALLATION DETAILS
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DESIGN	DATE JUN 2025	DRAWN	DATE JUN 2025
SURVEYED	DATE	CHECKED J.BATEMAN	DATE JUN 2025

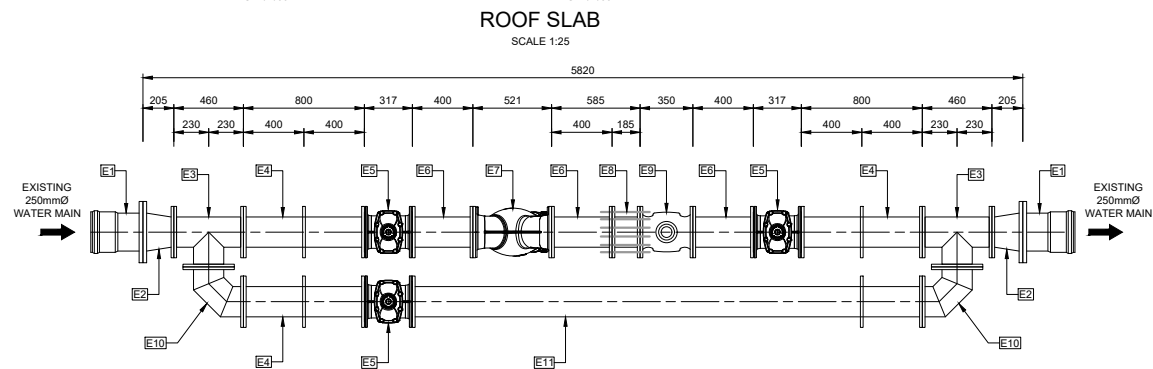
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DRAWING No.	2024-06-W/D/001
REVISION No.	1.0



200ND WATER METER INSTALLATION LAYOUT
SCALE 1:25

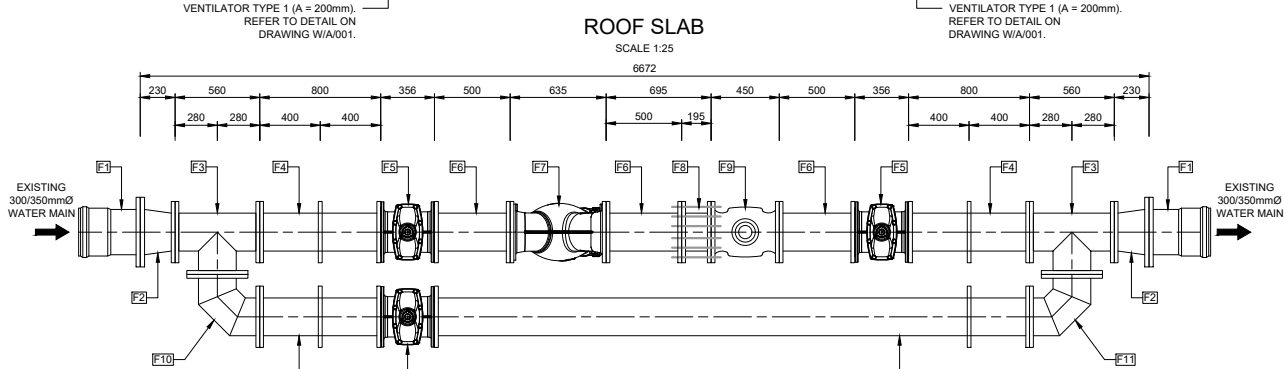


250ND WATER METER INSTALLATION LAYOUT
SCALE 1:25



200ND WATER METER INSTALLATION
PIPES & FITTINGS LAYOUT
SCALE 1:25

200ND BULK WATER METER INSTALLATION			
PIPE FITTING LIST			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
E1	COUPLING TO SUIT CONNECTION ONTO EXISTING 250mm DIAMETER WATER MAIN AND 250mm DIAMETER STEEL PIPE.	STANDARD	2
E2	250mm - 200mm FLANGED ECCENTRIC REDUCER.	SANS 719	2
E3	200mm DIAMETER TEE PIECE.	SANS 719	2
E4	200mm DIAMETER FLANGED STRAIGHT PIPE WITH PUDDLE FLANGE.	SANS 719	3
E5	200ND PN16 RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	3
E6	200mm DIAMETER FLANGED STRAIGHT PIPE.	SANS 719	3
E7	200ND PN16 Y-PATTERN STRAINER.	DUCTILE IRON - EPOXY PAINTED	1
E8	200ND PN16 DISMANTLING JOINT.	STANDARD	1
E9	200ND PN16 WATER METER.	CAST IRON - EPOXY PAINTED	1
E10	200mm DIAMETER FLANGED 90 DEGREE ELBOW.	SANS 719	2
E11	200mm DIAMETER FLANGED STRAIGHT PIPE WITH PUDDLE FLANGE.	SANS 719	1



250ND WATER METER INSTALLATION
PIPES & FITTINGS LAYOUT
SCALE 1:25

250ND BULK WATER METER INSTALLATION ON 300mm DIAMETER WATER MAIN			
PIPE FITTING LIST			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
F1	COUPLING TO SUIT CONNECTION ONTO EXISTING 300mm DIAMETER WATER MAIN AND 300mm DIAMETER STEEL PIPE.	STANDARD	2
F1	COUPLING TO SUIT CONNECTION ONTO EXISTING 350mm DIAMETER WATER MAIN AND 350mm DIAMETER STEEL PIPE.	STANDARD	2
F2	300mm - 250mm FLANGED ECCENTRIC REDUCER.	SANS 719	2
F2	350mm - 250mm FLANGED ECCENTRIC REDUCER.	SANS 719	2
F3	250mm DIAMETER TEE PIECE.	SANS 719	2
F4	250mm DIAMETER FLANGED STRAIGHT PIPE WITH PUDDLE FLANGE.	SANS 719	3
F5	250ND PN16 RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	3
F6	250mm DIAMETER FLANGED STRAIGHT PIPE.	SANS 719	3
F7	250ND PN16 Y-PATTERN STRAINER.	DUCTILE IRON - EPOXY PAINTED	1
F8	250ND PN16 DISMANTLING JOINT.	STANDARD	1
F9	250ND PN16 WATER METER.	CAST IRON - EPOXY PAINTED	1
F10	250mm DIAMETER FLANGED 90 DEGREE ELBOW.	SANS 719	2
F11	250mm DIAMETER FLANGED STRAIGHT PIPE WITH PUDDLE FLANGE.	SANS 719	1

ALTERNATIVE FITTING F1 FOR CONNECTION ONTO EXISTING 350mmØ WATER MAIN.

ALTERNATIVE FITTING F2 FOR CONNECTION ONTO EXISTING 350mmØ WATER MAIN.

NOTE:
1. FOR TYPICAL CHAMBER DETAILS REFER TO DRAWING 2024-06/W/A/001.

REVISIONS

No.	DATE	BY	DESCRIPTION

MECHANICAL NOTES:

- ALL FLANGES TO BE DRILLED SABS 1123-1977 (1600/3)
- ALL VALVES, STRAINERS AND WATER METERS TO BE APPROVED BY ENGINEER IN WRITING.
- THE LENGTH OF PIPES AND FITTINGS ARE APPROXIMATE ONLY - ACTUAL LENGTH TO BE DETERMINED BY CONTRACTOR ONLY AFTER APPROVAL OF VALVES BY ENGINEER.
- NO ALLOWANCE HAS BEEN MADE IN PIPE AND FITTING DIMENSIONS FOR PACKINGS, GASKETS AND GAPS BETWEEN PIPEWORK - PROVISION FOR THESE TO BE MADE BY SUPPLIERS.
- FLANGE HOLES TO BE DRILLED TO ALLOW EXACT ALIGNMENT HORIZONTALLY AND VERTICALLY, AS DETAILED ON THE DRAWINGS, OF ALL PIPEWORK AND EQUIPMENT.
- ALL WELDING TO BE FULL STRENGTH, FULL PENETRATION.
- ALL PIPES, ELBOWS, TEE PIECES AND REDUCERS TO BE HOT-DIPPED GALVANISED.
- ALL PIPEWORK PASSING THROUGH BRICKWORK TO BE MALTHOID WRAPPED (4 LAYERS MIN.) AND SEALED AROUND PIPE WITH POLYSULPHIDE SEALANT ON BOTH FACES OF BRICKWORK.
- ALL BOLTS, NUTS AND GASKETS NECESSARY FOR THE PROPER INSTALLATION OF THE EQUIPMENT, TO BE SUPPLIED AS PART OF THE MECHANICAL EQUIPMENT.
- A PEDESTAL IN CONCRETE CLASS 25MPa/19 TO BE CAST EITHER SIDE OF THE WATER METER. REFER TO PEDESTAL DETAIL ON DRAWING W/A/001.

REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

APPROVED:
ENGINEER: _____ DATE: _____
APPROVED:
CLIENT: _____ DATE: _____
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Tsela Tsweu
CONSULTING ENGINEERS

Mobile: + 27 (0)83 265 1524
329 Stately Chambers, Stateway, Welkom,
PO Box 2600, Welkom, 9460, South Africa

CLIENT
PHOKWANE LOCAL MUNICIPALITY

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE

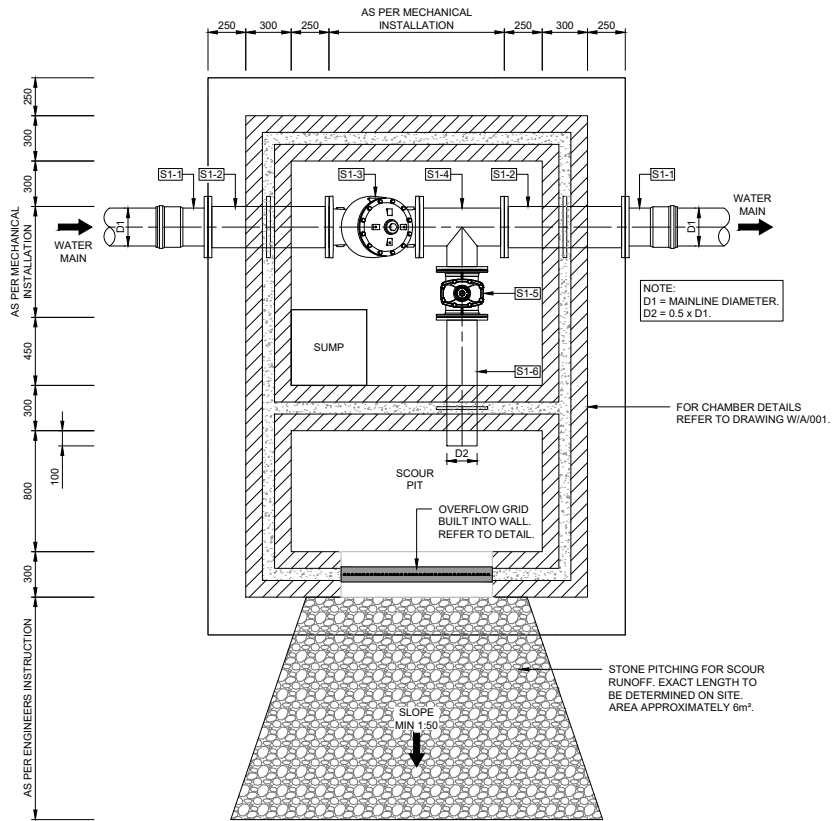
WATER METER INSTALLATION LAYOUT & DETAILS FOR 200ND & 250ND WATER METER INSTALLATION ON 250mmØ TO 350mmØ WATER MAIN

DESIGN	DATE	DRAWN	DATE
	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		J.BATEMAN	JUN 2025

SCALE 1:25

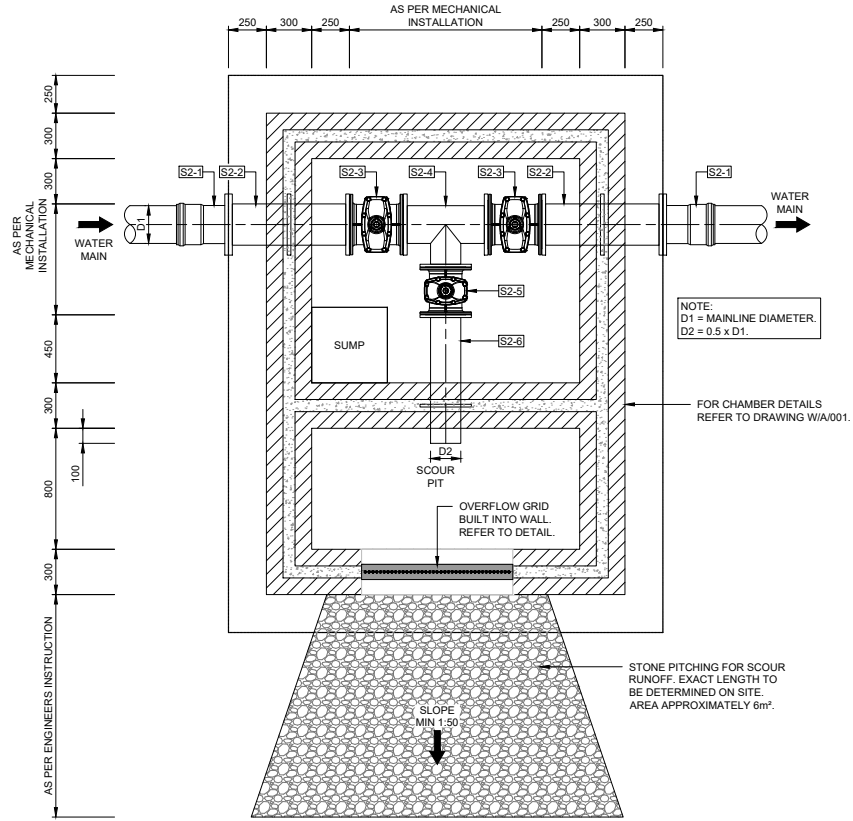
DRAWING No.
2024-06-W/D/002

REVISION No.						
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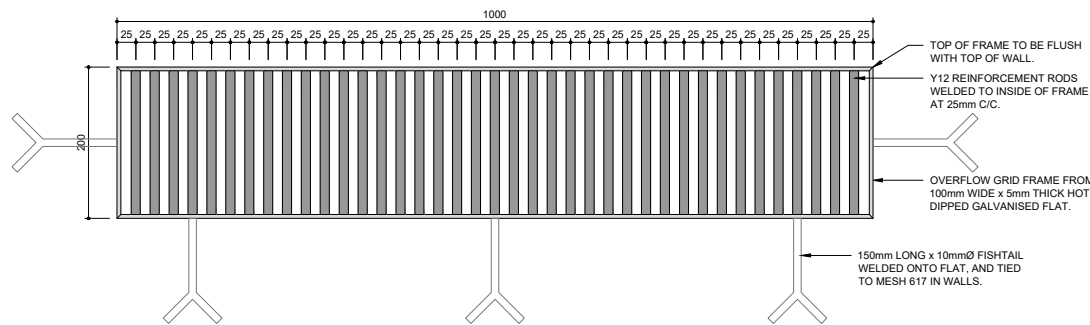
TYPE 1 SCOUR VALVE CHAMBER
TYPICAL ONE WAY SCOUR VALVE CHAMBER LAYOUT
SCALE 1:25

BULK PIPELINES			
TYPE 1 SCOUR VALVE CHAMBER PIPE ITEM LIST			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
S1-1	D1 uPVC - STEEL FLANGE ADAPTOR.	STANDARD	2
S1-2	D1 x 800mm LONG FLANGED STRAIGHT PIPE WITH PUDDLE FLANGE.	SANS 719/SANS 62	2
S1-3	D1 PN16 NON-RETURN VALVE.	DUCTILE IRON - EPOXY PAINTED	1
S1-4	D1 x D2 UNEQUAL TEE PIECE.	SANS 719/SCHEDULE 40	1
S1-5	D2 PN16 RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	1
S1-6	D2 x 850mm LONG STRAIGHT PIPE, WITH PUDDLE FLANGE. ONE END FLANGED, OTHER END PLAIN ENDED.	SANS 719/SANS 62	1
NOTES			
D1	MAINLINE DIAMETER		
D2	0.5 x D1 (HALF OF THE MAINLINE DIAMETER)		



TYPE 2 SCOUR VALVE INSTALLATION
TYPICAL TWO WAY SCOUR VALVE CHAMBER LAYOUT
SCALE 1:25

BULK PIPELINES			
TYPE 2 SCOUR VALVE CHAMBER PIPE ITEM LIST			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
S2-1	D1 uPVC - STEEL FLANGE ADAPTOR.	STANDARD	2
S2-2	D1 x 800mm LONG FLANGED STRAIGHT PIPE WITH PUDDLE FLANGE.	SANS 719/SANS 62	2
S2-3	D1 PN16 RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	2
S2-4	D1 x D2 UNEQUAL TEE PIECE.	SANS 719/SCHEDULE 40	1
S2-5	D2 PN16 RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	1
S2-6	D2 x 1100mm LONG STRAIGHT PIPE, WITH PUDDLE FLANGE. ONE END FLANGED, OTHER END PLAIN ENDED.	SANS 719/SANS 62	1
NOTES			
D1	MAINLINE DIAMETER		
D2	0.5 x D1 (HALF OF THE MAINLINE DIAMETER)		



SCOUR OVERFLOW GRID DETAIL
SCALE 1:5

NOTE:
1. FOR TYPICAL CHAMBER DETAILS REFER TO DRAWING 2024-06/W/A/001.

REVISIONS

No.	DATE	BY	DESCRIPTION

MECHANICAL NOTES:

- ALL FLANGES TO BE DRILLED SABS 1123-1977 (1600/3)
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- ALL WELDING TO BE FULL STRENGTH, FULL PENETRATION.
- ALL PIPES, ELBOWS, TEE PIECES AND REDUCERS TO BE HOT-DIPPED GALVANISED.
- ALL PIPEWORK PASSING THROUGH BRICKWORK TO BE MALTHOID WRAPPED (4 LAYERS MIN.) AND SEALED AROUND PIPE WITH POLYSULPHIDE SEALANT ON BOTH FACES OF BRICKWORK.
- ALL BOLTS, NUTS AND GASKETS NECESSARY FOR THE PROPER INSTALLATION OF THE EQUIPMENT, TO BE SUPPLIED AS PART OF THE MECHANICAL EQUIPMENT.
- ALL VALVES TO HAVE A PEDESTAL IN CONCRETE CLASS 25MPa/19.

REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

APPROVED:
ENGINEER: _____ DATE: _____
APPROVED:
CLIENT: _____ DATE: _____

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329 Stateway Chambers, Stateway, Welkom,
PO Box 2600, Welkom, 9460, South Africa



CLIENT
**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

TYPE 1 & TYPE 2 SCOUR VALVE INSTALLATION LAYOUT AND DETAILS

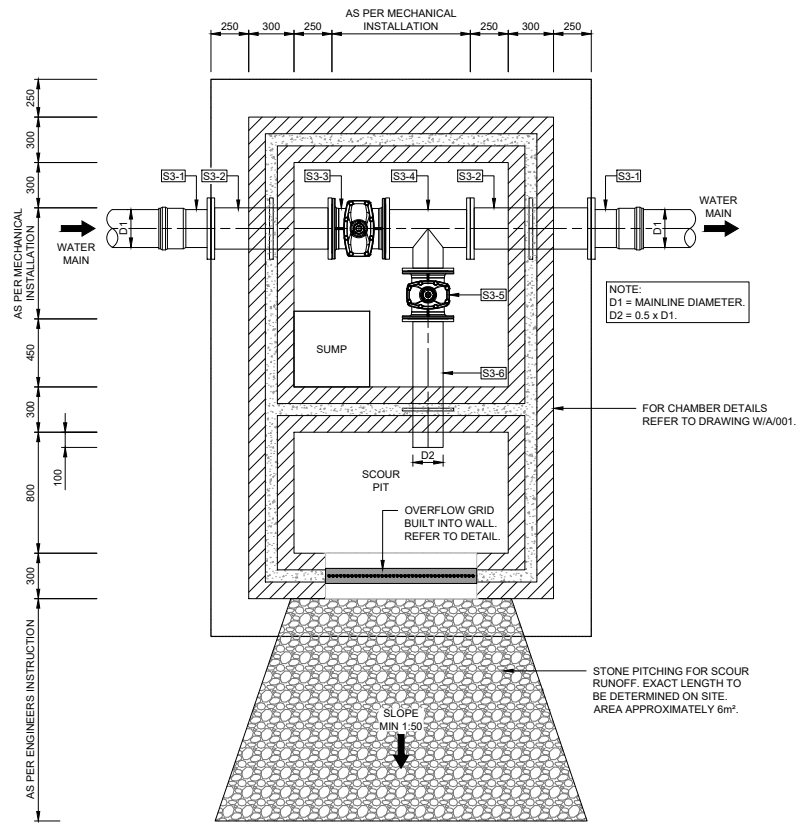
DESIGN	DATE JUN 2025	DRAWN	DATE JUN 2025
SURVEYED	DATE	CHECKED J.BATEMAN	DATE JUN 2025

SCALE 1:25

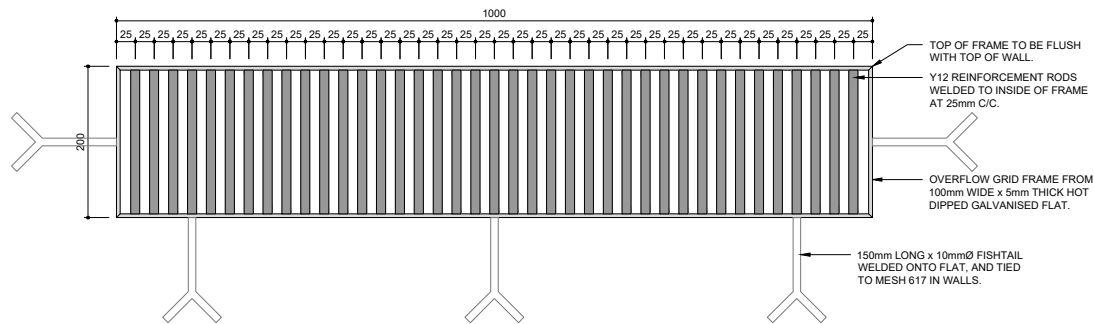
DRAWING No.

2024-06-W/D/003

REVISION No.							
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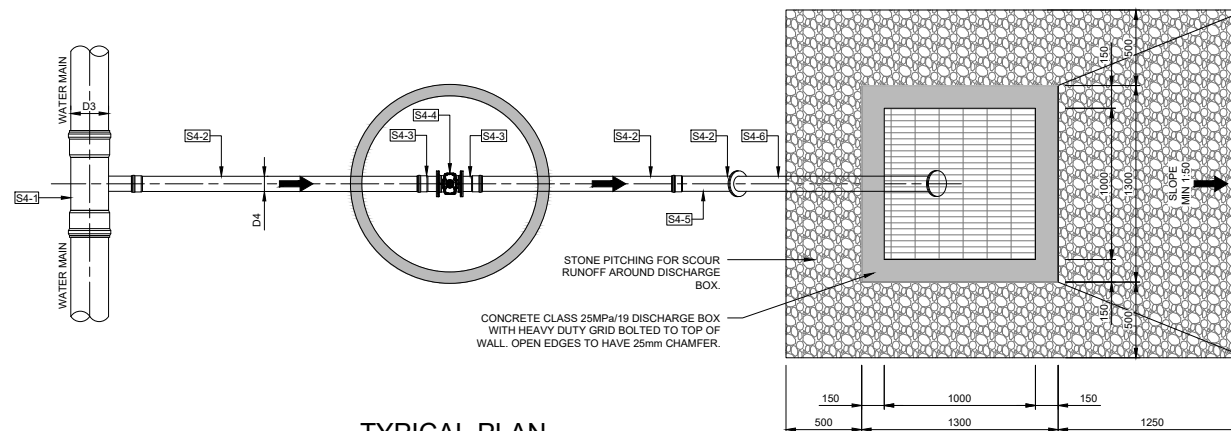
TYPE 3 SCOUR VALVE CHAMBER
TYPICAL ONE WAY SCOUR VALVE CHAMBER LAYOUT
SCALE 1:25



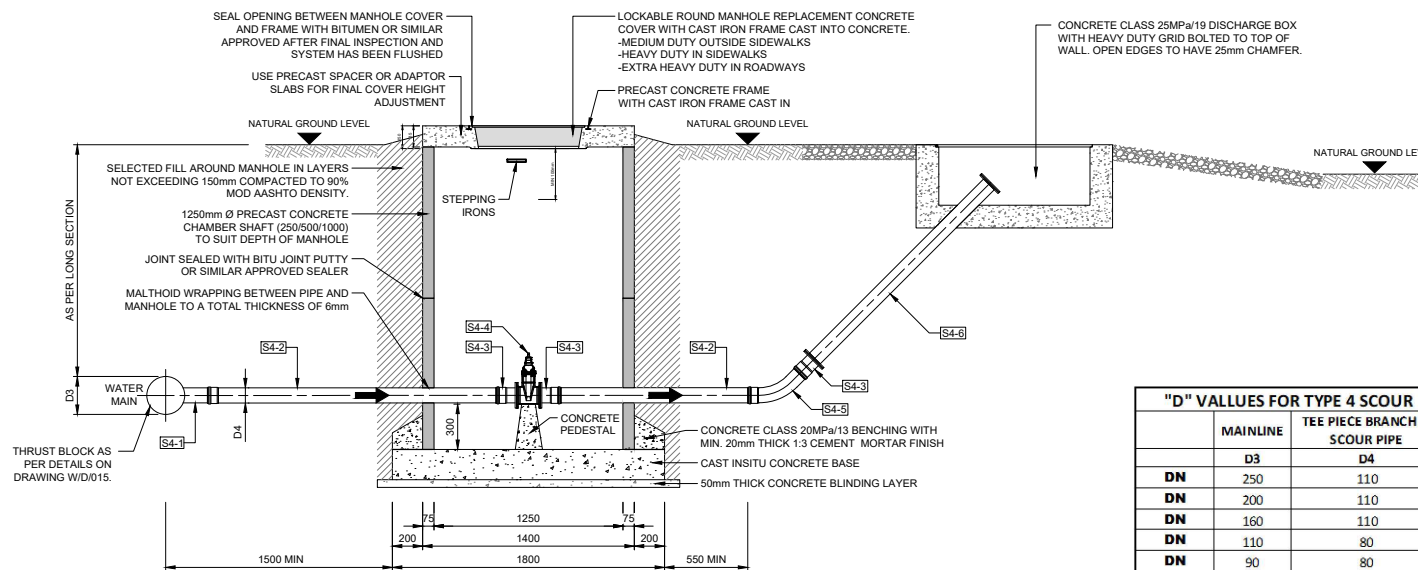
SCOUR OVERFLOW GRID DETAIL
SCALE 1:5

BULK PIPELINES			
TYPE 3 SCOUR VALVE CHAMBER PIPE ITEM LIST			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
S3-1	D1 uPVC - STEEL FLANGE ADAPTOR.	STANDARD	2
S3-2	D1 x 800mm LONG FLANGED STRAIGHT PIPE WITH PUDDLE FLANGE.	SANS 719/SANS 62	2
S3-3	D1 PN16 NON-RETURN VALVE.	DUCTILE IRON - EPOXY PAINTED	1
S3-4	D1 x D2 UNEQUAL TEE PIECE.	SANS 719/SCHEDULE 40	1
S3-5	D2 PN16 RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	1
S3-6	D2 x 850mm LONG STRAIGHT PIPE, WITH PUDDLE FLANGE. ONE END FLANGED, OTHER END PLAIN ENDED.	SANS 719/SANS 62	1
NOTES			
D1	MAINLINE DIAMETER		
D2	0.5 x D1 (HALF OF THE MAINLINE DIAMETER)		

BULK PIPELINES			
TYPE 4 SCOUR VALVE CHAMBER PIPE ITEM LIST			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
S4-1	D3 x D4 SG IRON REDUCING TEE PIECE.	CAST IRON	1
S4-2	D4 uPVC CLASS 09 PIPE. EXACT LENGTH TO BE DETERMINED ON SITE.	uPVC	2
S4-3	D4 uPVC - STEEL FLANGE ADAPTOR.	STANDARD	3
S4-4	D4 PN16 CAP TOP OPERATED RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	1
S4-5	D4 uPVC CLASS 09 45 DEGREE BEND.	uPVC	1
S4-6	D4 FLANGED STRAIGHT PIPE, WITH BLANK FALNGE ON OPEN END. EXACT LENGTH TO SUIT MANHOLE DEPTH.	SANS 719	1



TYPICAL PLAN
SCALE 1:25



TYPICAL SECTION
SCALE 1:25

TYPE 4 SCOUR VALVE CHAMBER

"D" VALUES FOR TYPE 4 SCOUR		
	MAINLINE	TEE PIECE BRANCH & SCOUR PIPE
D3		D4
DN	250	110
DN	200	110
DN	160	110
DN	110	80
DN	90	80
DN	75	80

NOTE:
1. FOR TYPICAL CHAMBER DETAILS REFER TO DRAWING 2024-06/W/A/001.

REVISIONS				
No.	DATE	BY	DESCRIPTION	

- MECHANICAL NOTES:
- ALL FLANGES TO BE DRILLED SABS 1123-1977 (1600/3)
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 - ALL VALVES TO HAVE A PEDESTAL IN CONCRETE CLASS 25MPa/19.

REFERENCE DRAWINGS	
PLAN Nr.	DESCRIPTION

APPROVED: ENGINEER: _____ DATE: _____
APPROVED: CLIENT: _____ DATE: _____
PRINT ISSUED ON



CLIENT
PHOKWANE LOCAL MUNICIPALITY

PROJECT
UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

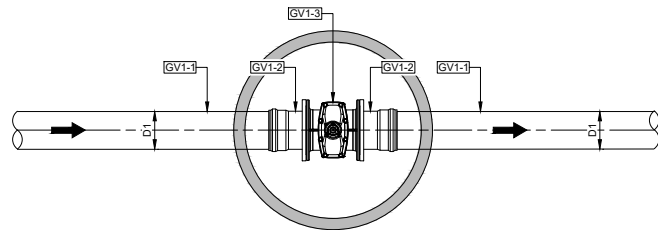
DRAWING TITLE
TYPE 3 & TYPE 4 SCOUR VALVE INSTALLATION LAYOUT AND DETAILS

DESIGN	DATE	DRAWN	DATE
	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		J.BATEMAN	JUN 2025

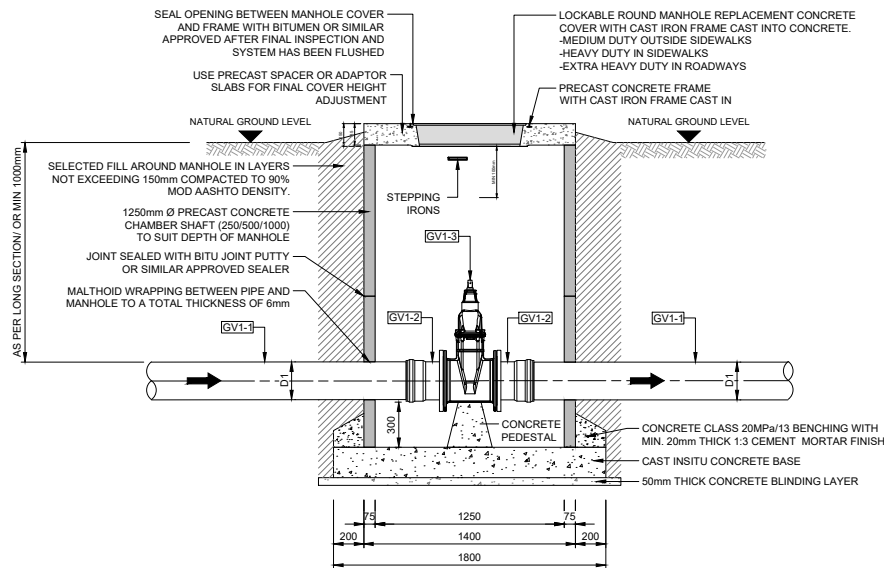
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DRAWING No.
2024-06-W/D/004

REVISION No.					
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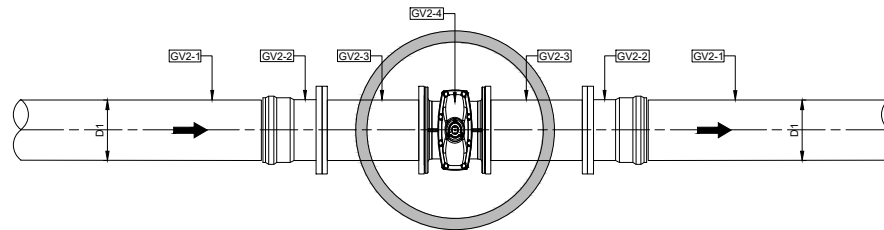


TYPICAL PLAN
100ND - 250ND GATE VALVE INSTALLATION
SCALE 1:25

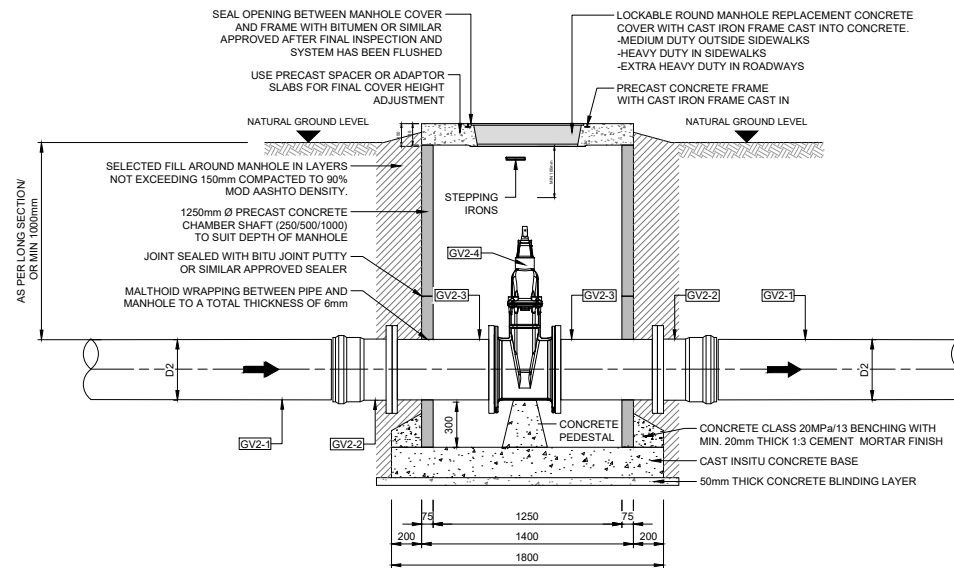


TYPICAL SECTION
100ND - 250ND GATE VALVE INSTALLATION
SCALE 1:25

GATE VALVE INSTALLATION IN PRECAST MANHOLE			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
GV1-1	D1 uPVC MAINLINE	STANDARD	
GV1-2	D1 DIAMETER uPVC - STEEL FLANGE ADAPTOR.	STANDARD	2
GV1-3	D1 DIAMETER PN16 CAP TOP OPERATED RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	1
D1 = 75mm DIAMETER UP TO AND INCLUDING 250mm DIAMETER PIPELINES			



TYPICAL PLAN
300ND - 600ND GATE VALVE INSTALLATION
SCALE 1:25



TYPICAL SECTION
300ND - 600ND GATE VALVE INSTALLATION
SCALE 1:25

GATE VALVE INSTALLATION IN PRECAST MANHOLE			
PIPE NUMBER	DESCRIPTION	MATERIAL	QUANTITY
GV2-1	D2 uPVC MAINLINE	STANDARD	
GV2-2	D2 DIAMETER uPVC - STEEL FLANGE ADAPTOR.	STANDARD	2
GV2-3	D2 DIAMETER x 700mm LONG FLANGED STRAIGHT PIPE.	SANS 719	2
GV2-4	D2 DIAMETER PN16 CAP TOP OPERATED RESILIENT SEATED GATE VALVE TO SANS 664.	DUCTILE IRON - EPOXY PAINTED	1
D2 = 300mm DIAMETER UP TO AND INCLUDING 600mm DIAMETER PIPELINES			

NOTE:
1. FOR TYPICAL CHAMBER DETAILS REFER TO DRAWING 2024-06/W/A/001.

REVISIONS

No.	DATE	BY	DESCRIPTION

MECHANICAL NOTES:

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- ALL BOLTS, NUTS AND GASKETS NECESSARY FOR THE PROPER INSTALLATION OF THE EQUIPMENT, TO BE SUPPLIED AS PART OF THE MECHANICAL EQUIPMENT.
- ALL VALVES TO HAVE A PEDESTAL IN CONCRETE CLASS 25MPa/19.

REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

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329 Stateway Chambers, Stateway, Welkom,
PO Box 2600, Welkom, 9460, South Africa



PROJECT
UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

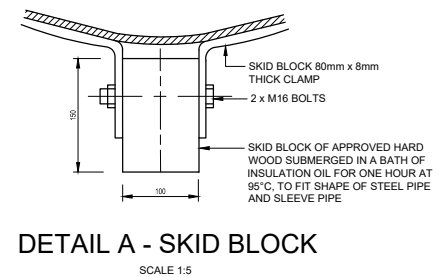
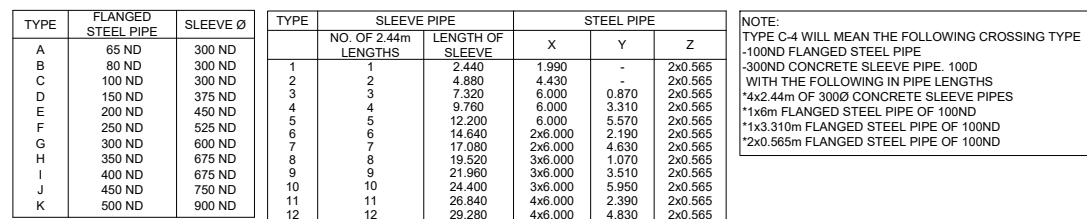
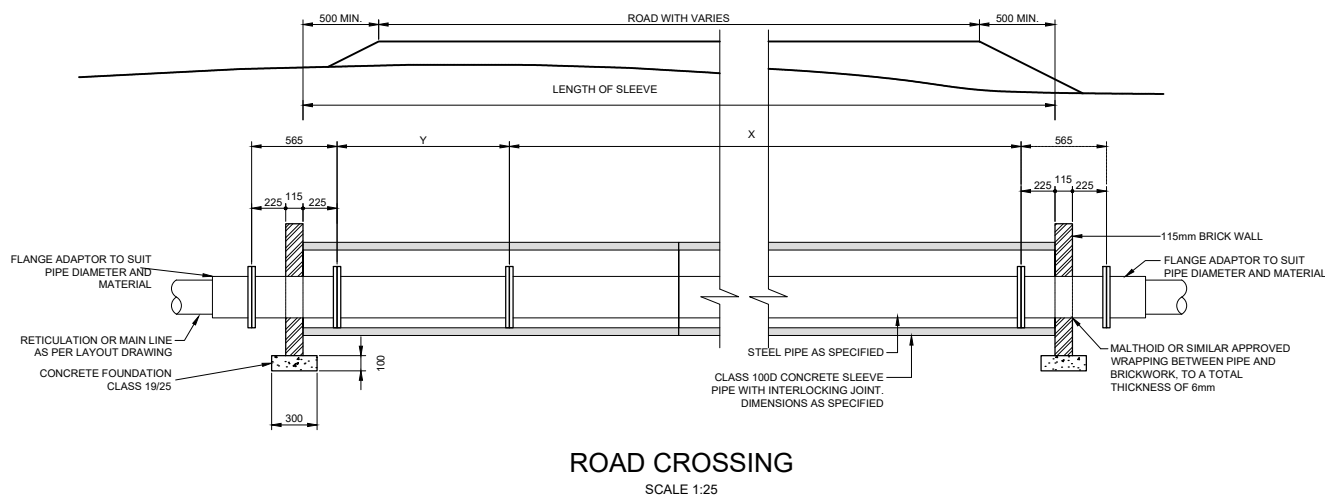
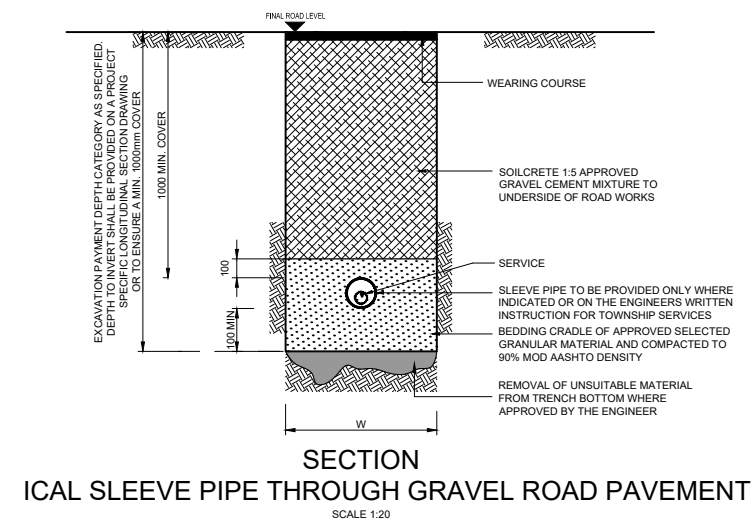
DRAWING TITLE
TYPICAL GATE VALVE INSTALLATION IN PRECAST MANHOLE

DESIGN	DATE	DRAWN	DATE
	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		J.BATEMAN	JUN 2025

SCALE **AS SHOWN**

DRAWING No.
2024-06-W/D/005

REVISION No.							
1.0							



REVISIONS			
No.	DATE	BY	DESCRIPTION

NOTES

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APPROVED:	
ENGINEER: _____ DATE: _____	
APPROVED:	
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PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

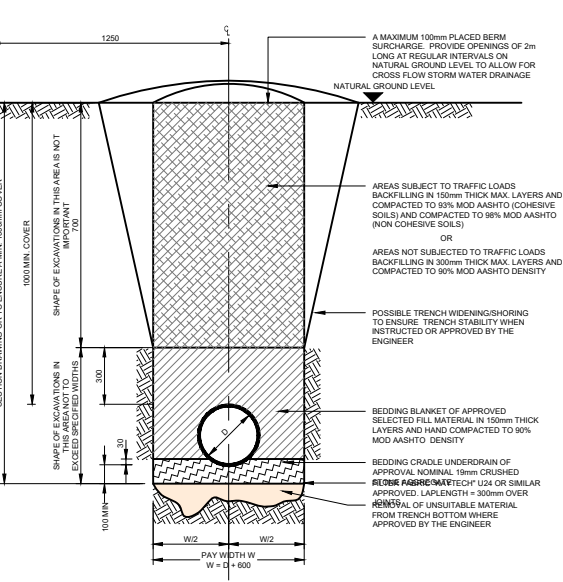
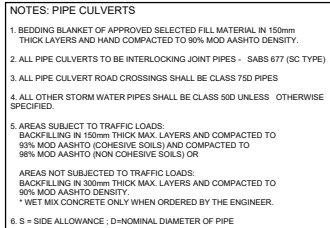
IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE

**TYPICAL SLEEVE PIPE
DETAILS AND CONCRETE
ENCASEMENT FOR WATER
PIPELINES**

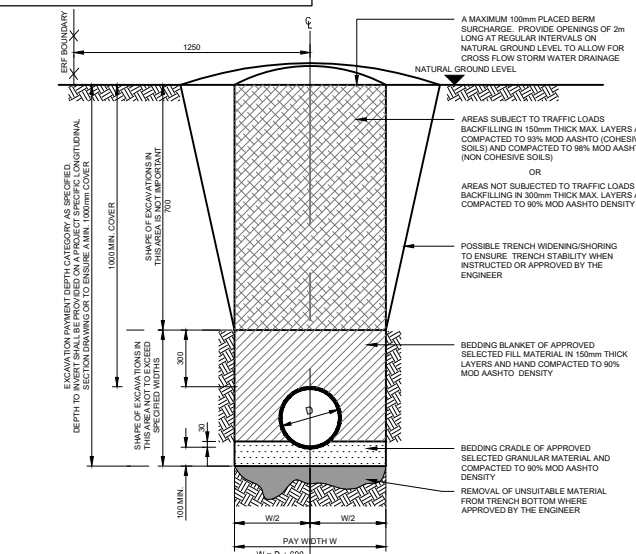
DESIGN	DATE JUN 2025	DRAWN	DATE JUN 2025
SURVEYED	DATE	CHECKED J.BATEMAN	DATE JUN 2025

SCALE		AS SHOWN	
DRAWING No.			
2024-06-W/D/006			
REVISION No.			
1.0			

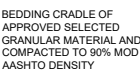


SCALE 1:20

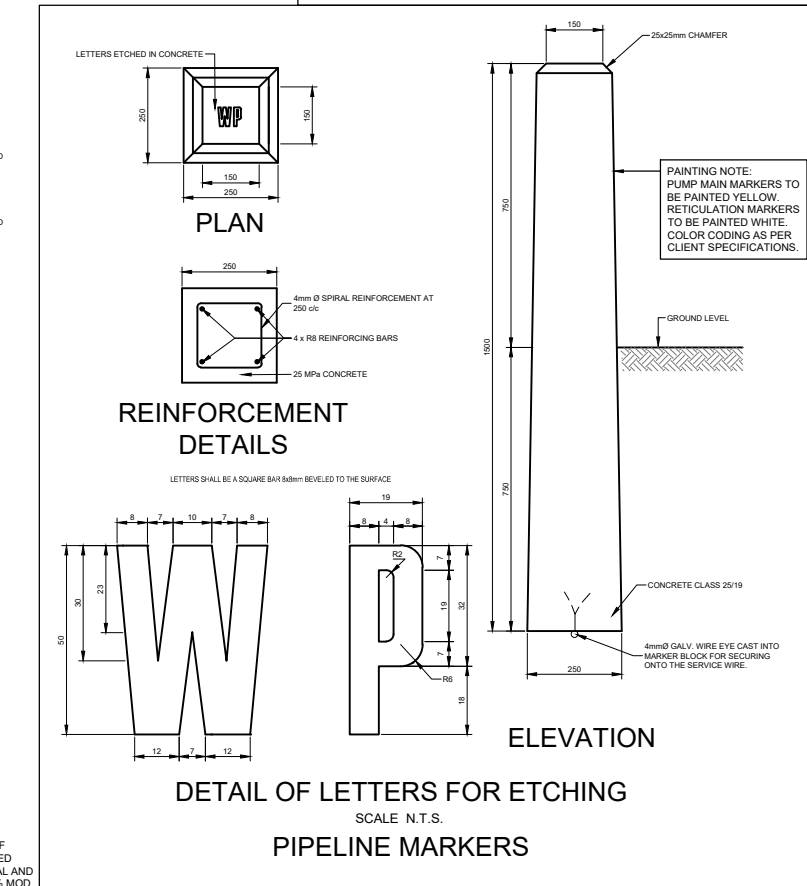
- a) The Contractor shall not commence backfilling of pipe trenches until the pipework has been inspected, tested as specified and approved by the Engineer. Any trenches filled in without this approval shall be removed and the Contractor shall be responsible for the cost of rectification and retesting. Backfilling shall be undertaken immediately after each section of pipelaying is approved.
- b) Backfilling shall not be commenced less than seven days after placing of concrete packing or concrete encasement.
- c) Backfilling shall be carried out by hand tampered, mechanical or pneumatic tamplers or other means approved by the Engineer. Road compaction equipment shall not be used within 300mm of the top of the pipe. The fill under the haunches of the pipe shall be thoroughly compacted and the soil immediately above the pipe shall be compacted. All compaction and packing operations shall be carried out in such a manner that the pipework is not disturbed or damaged.
- d) The balance of the trench (from 300mm above the top of the pipe) shall be filled with the material specified in the contract with the maximum density at the maximum compaction. All loose materials and voids shall not contain stones or clay lumps exceeding 150mm. Lumpy material shall be broken down before placing. Filling shall be done in 150mm layers unless otherwise specified. Fill shall be compacted to 90% of the maximum density at MOD AASHTO.
- e) In no case shall fill be placed in water.



SCALE 1:20



SCALE 1:5



SCALE 1:10

1.2							
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FOR INFORMATION

REVISIONS

No.	DATE	BY	DESCRIPTION
0.5	04/11/25	CS	DRAWING REVISED AS PER COMMENTS - ISSUED FOR INFORMATION

GENERAL NOTES

- 1) ALL BENDS TO ANSI B16.9
- 2) ALL PIPING TO ASTM A106 GRADE "B"
- 3) ALL PIPING TO BE PAINTED IN ACCORDANCE WITH CLIENT SPECIFICATION
- ALL CLOSURE PIECES ARE TO BE SUPPLIED WITH ONE LOOSE FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR DELIVERY.
- 4) BOLTS, NUTS AND WASHERS TO BE BAGGED AND TAGGED FOR DELIVERY WITH RELEVANT LINE IDENTIFICATION NUMBER. (ADDITIONAL 5% TO BE SUPPLIED).
- PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT
- 5) DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE.
- 6) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWST110.
- 7) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 313

CONSULTING COMPANY

DYNATECH CONSULTING

CELL: 082 3710 308
MAIL: braam@dynatech1.co.za
CELL: 079 4052 924
MAIL: corne@dynatech1.co.za



REFERENCE DRAWINGS

PLAN Nr.	DESCRIPTION

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329 Stately Chambers, Statelyway, Welkom,
PO Box 2600, Welkom, 9460, South Africa



CLIENT

**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:

PHOKWANE LM**DRAWING TITLE
EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT****RAW WATER PUMP SET
LAYOUT SHEET 1 OF 2**

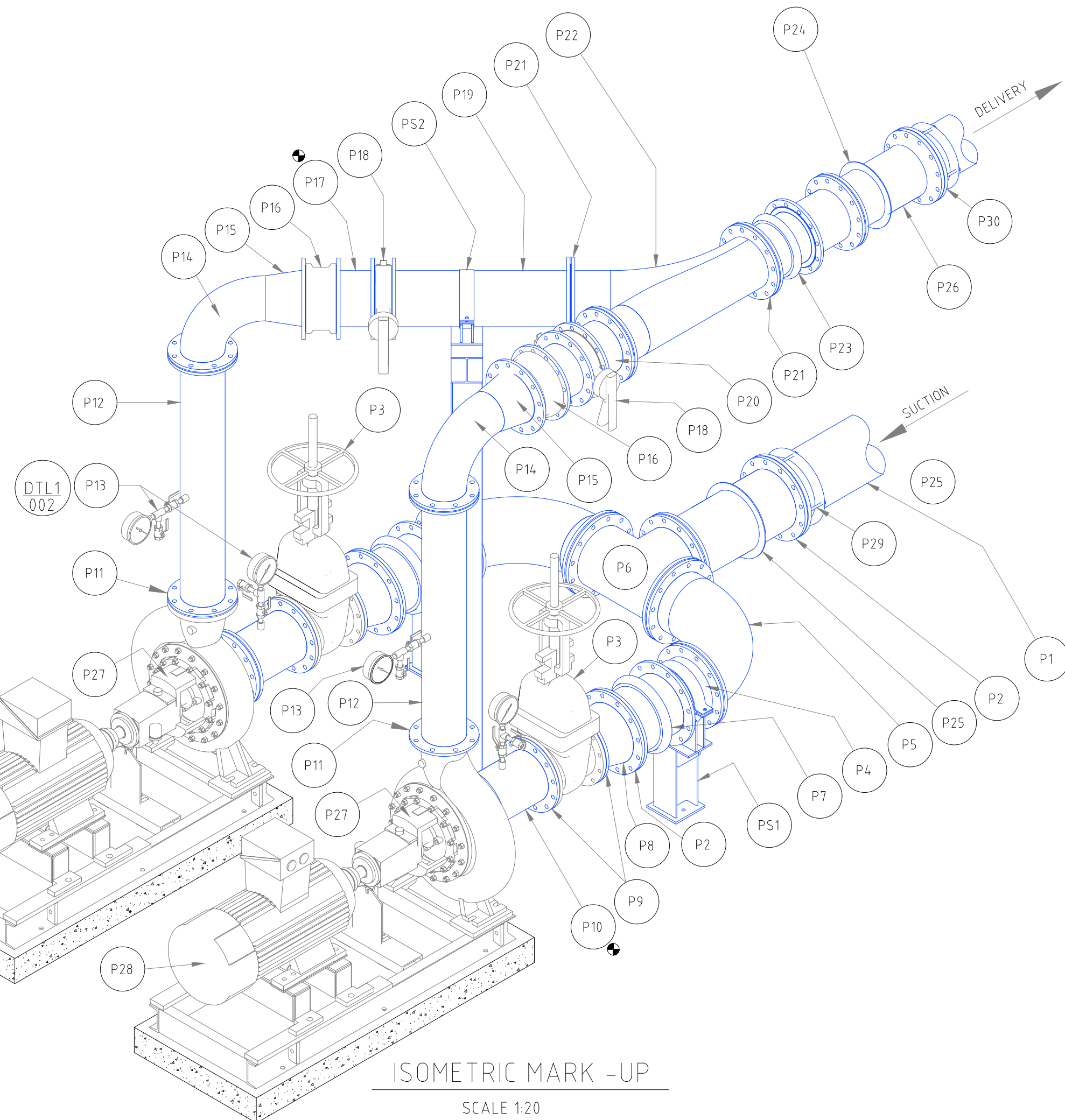
DESIGN	DATE	DRAWN C.SWART - DYNATECH	DATE NOV 2025
SURVEYED	DATE	CHECKED A.D.E WET	DATE NOV 2025

SCALE **AS SHOWN**

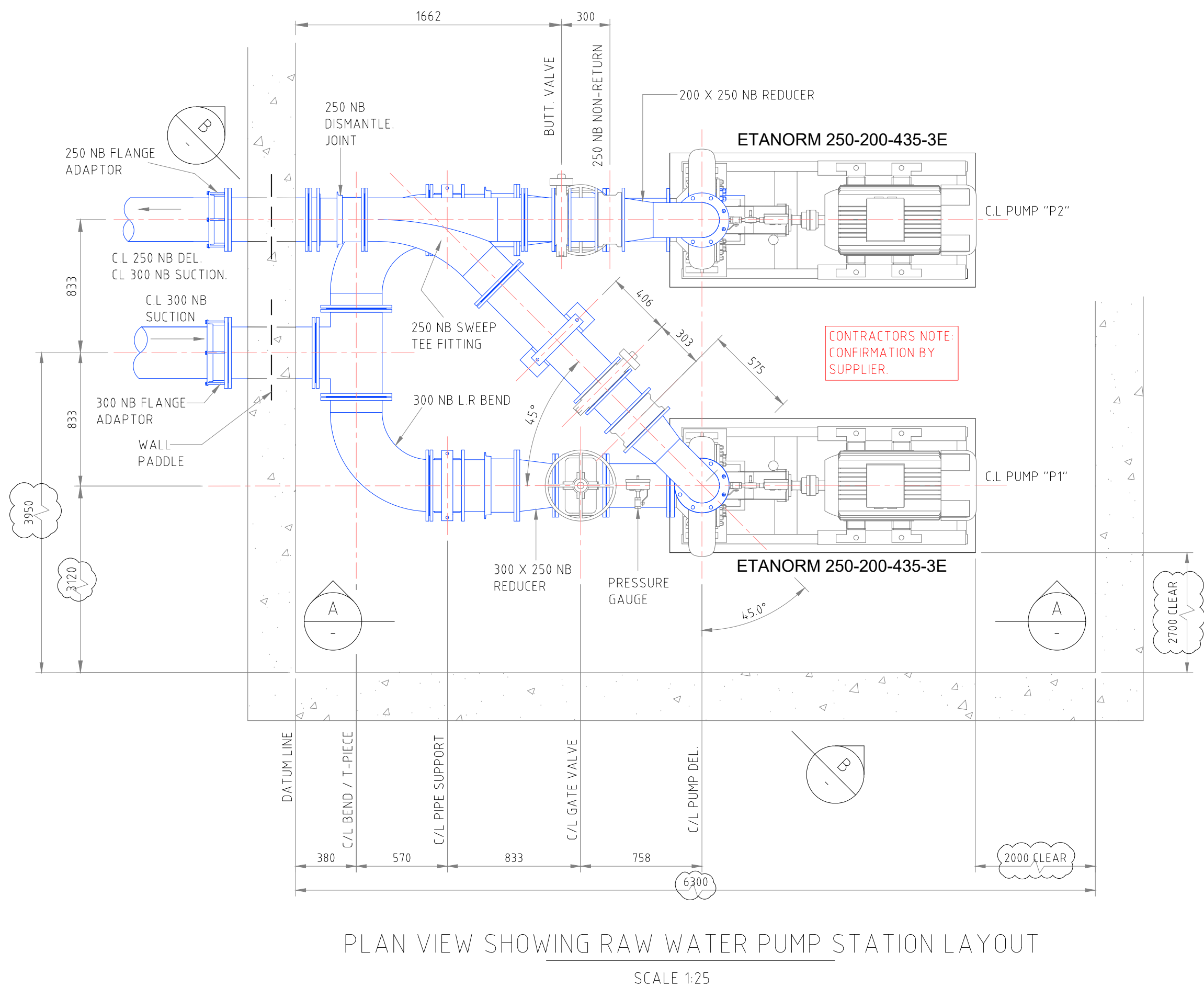
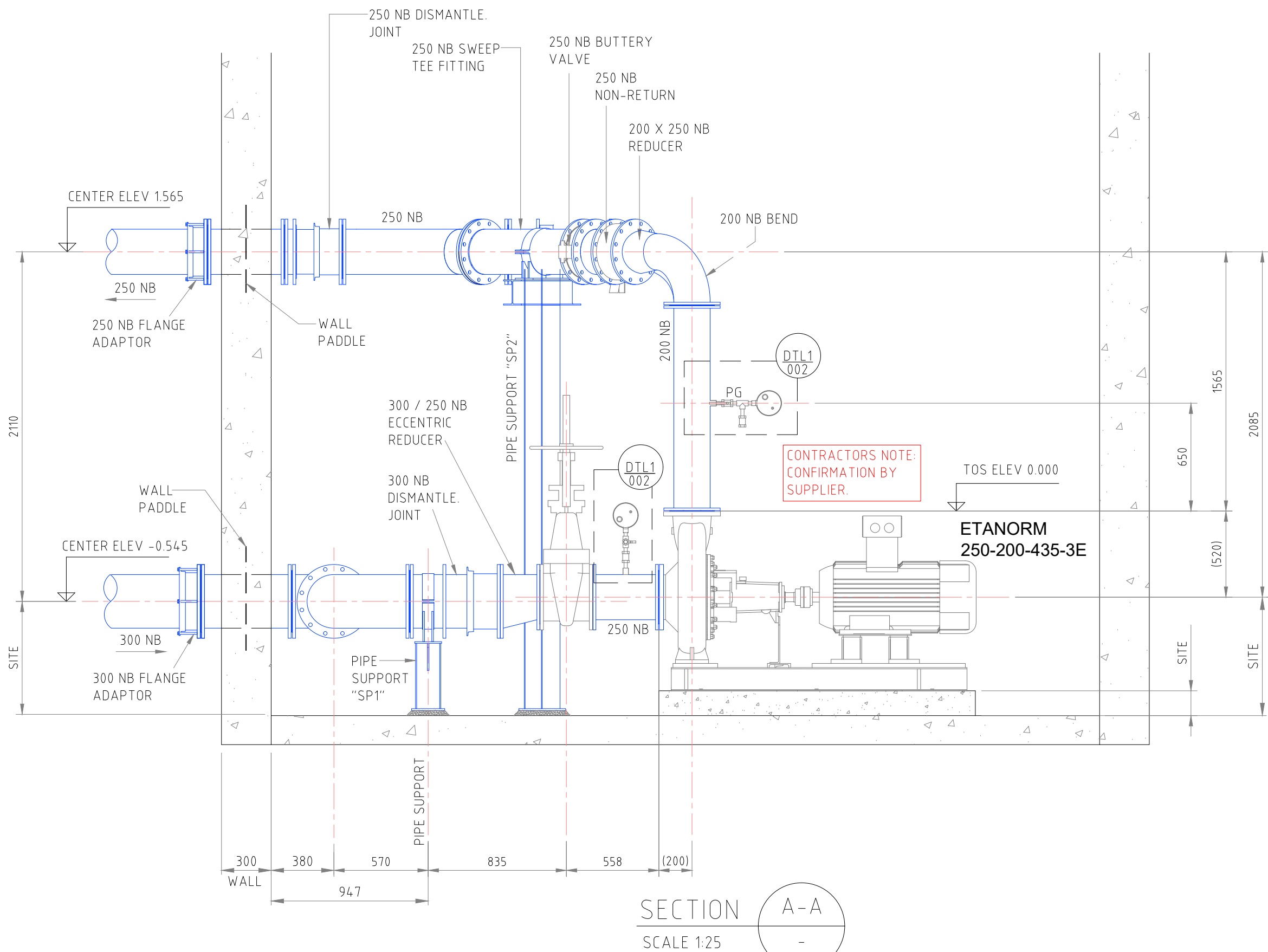
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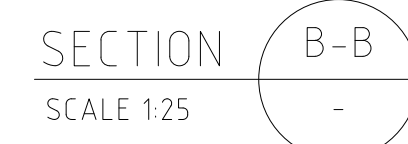
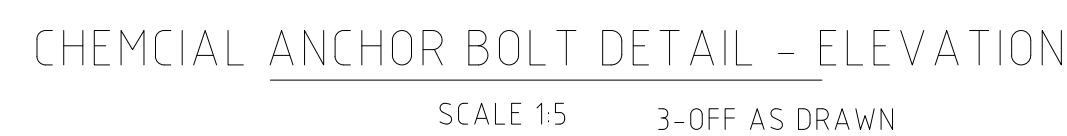
DYN-075-006-001

REVISION No.

0.5**LEGEND
HDG - HOT DIP GALVANIZED**

SP2	PIPE SUPPORT	SEE DRAWING No : DYN-075-006-002		
SP1	PIPE SUPPORT	SEE DRAWING No : DYN-075-006-002		
P30	FLANGE ADAPTOR	250 NB FLANGE ADAPTOR TO SANS 1123 TABLE 1000/3	1	Carbon Steel To JIS G3452
P29	FLANGE ADAPTOR	300 NB FLANGE ADAPTOR TO SANS 1123 TABLE 1000/3	1	Carbon Steel To JIS G3452
P28	MOTOR	KW XXX RPM XXX	2	
P27	PUMP ASSEMBLY	ETANORM 250-200-435-3E	2	
P26	DELIVERY PIPE	250 NB SCH 40	6 m	ASTM A106 Grade B Carbon Steel Seamless HDG
P25	PADDLE FLANGE	300 NB TO ASME 16.5 (OD 405 X 326 ID X 5 THK)	1	Mild steel HDG
P24	PADDLE FLANGE	250 NB TO ASME 16.5 (OD 355 X 258 ID X 5 THK)	1	Mild steel HDG
P23	DISMANTLING JOINT	250 NB FLANGE DRILLING TO PN10	1	SANS 1431 GR 350 WA
P22	SWEEP TEE FITTING	250 NB BUTT WELD TO ANSI B19.6	1	Carbon Steel To JIS G3452
P21	FLANGE	250 NB SANS 1123 TABLE 1000/3 TYPE NP/8	14	Carbon Steel A106
P20	SPOOL PIECE	250 NB SCH 40	1	ASTM A106 Grade B Carbon Steel Seamless HDG
P19	SPOOL PIECE	250 NB SCH 40	1	ASTM A106 Grade B Carbon Steel Seamless HDG
P18	VALVE	250 NB BUTTERFLY WAFER TYPE BOLTED IN BETWEEN FLANGES	2	Cast iron to SANS 1024 GR 250
P17	SPOOL PIECE	250 NB SCH 40	0.3 m	ASTM A106 Grade B Carbon Steel Seamless HDG
P16	NON RETURN VALVE	250 NB C.W WAFER DUEL PLATE (BOLTED BETWEEN FLANGES)	2	Cast steel
P15	REDUCER	200 X 250 NB BUTT WELD CONCENTRIC	2	Carbon Steel To JIS G3452 HDG
P14	BEND	200 NB STD LONG RADIUS BUTT WELD	2	Carbon Steel To JIS G3452 HDG
P13	PRESSURE GAUGE	ASSEMBLY - SEE DRAWING NUMBER: DYN 075-006-002	4	
P12	DELIVERY PIPE	200 NB SCH 40	3 m	ASTM A106 Grade B Carbon Steel Seamless HDG
P11	FLANGE	200 NB SANS 1123 TABLE 1000/3 TYPE NP/8	2	Carbon Steel A106
P10	SPOOL PIECE	250 NB SCH 40	2	ASTM A106 Grade B Carbon Steel Seamless HDG
P9	FLANGE	250 NB SANS 1123 TABLE 1000/3 TYPE NP/8	6	Carbon Steel A106 HDG
P8	REDUCER	300 X 250 NB ECCENTRIC	2	Carbon Steel To JIS G3452 HDG
P7	DISMANTLING JOINT	300 NB FLANGE DRILLING TO PN10	2	SANS 1431 GR 350 WA
P6	STRAIGHT TEE	300 NB WELD TO ANSI B 16.9	1	Carbon Steel To JIS G3452 HDG
P5	BEND	300 NB STD LONG RADIUS BUTT WELD	2	Carbon Steel To JIS G3452 HDG
P4	SPOOL PIECE	300 NB NB SCH 40	2	ASTM A106 Grade B Carbon Steel Seamless HDG
P3	VALVE	250 NB GATE HAND OPP. FLANGE DRILLING TO SANS 1123 TABLE 1000/3	2	Cast iron to SANS 1024 GR 250
P2	FLANGE	300 NB SANS 1123 TABLE 1000/3 TYPE NP/8	16	Carbon Steel A106 HDG
P1	SUCTION PIPE	300 NB NB SCH 40	6 m	ASTM A106 Grade B Carbon Steel Seamless HDG
MARK	ITEM	DESCRIPTION	QTY	MATERIAL





FOR INFORMATION

No.	DATE	BY	DESCRIPTION
0.5	04/11/25	C.S	DRAWING REVISED AS PER COMMENTS ISSUED FOR INFORMATION

- 1 ALL BENDS TO ANSI B16.9
- 2 ALL PIPING TO ASTM A106 GRADE "B"
- 3 ALL PIPING TO BE PAINTED IN ACCORDANCE WITH CLIENT SPECIFICATION
- 4 ALL CLOSURE PIECES ARE TO BE SUPPLIED WITH ONE LOOSE FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR DELIVERY
- 5 BOLT/TIGHTENERS AND WASHERS TO BE BAGGED AND TAGGED FOR DELIVERY WITH RELEVANT LINE IDENTIFICATION NUMBER. (ADDITIONAL 5% TO BE SUPPLIED)
- 6 PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT.
- 7 MEASURED & CLOSURE PIECE, PIPE LENGTH TO BE SITE NEGOTIATED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE
- 8 ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWS11
- 9 PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 31.3

Dynatech
Solutions
CADD
Computer Aided Drafting
and Design

PLAN Nr.	DESCRIPTION

APPROVED: _____
ENGINEER: _____ DATE: _____

APPROVED: _____
CLIENT: _____ DATE: _____

Mobile: + 27 (0)83 265 1524
329 Stateway Chambers, Stateway, Welkom,
PO Box 2600, Welkom, 9460, South Africa



UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE

EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT

RAW WATER PUMP SET
LAYOUT SHEET 1 OF 2

SCALE AS SHOWN

DRAWING No.

DYN-075-006-002

REVISION No.							
0.5							

FOR INFORMATION

REVISIONS

No.	DATE	BY	DESCRIPTION
0.5	04/11/25	C.S	DRAWING REVISED AS PER COMMENTS - ISSUED FOR INFORMATION

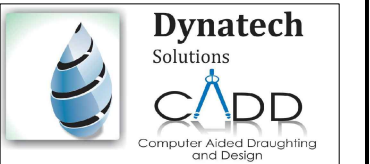
GENERAL NOTES

- 1) ALL BENDS TO ANSI B16.9
- 2) ALL PIPING TO ASTM A106 GRADE "B"
- 3) ALL PIPING TO BE PAINTED IN ACCORDANCE WITH CLIENT SPECIFICATION
- ALL CLOSURE PIECES ARE TO BE SUPPLIED WITH ONE LOOSE FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR DELIVERY.
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- PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT
- 5)  DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE
- 6) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWG110
- 7) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 313

CONSULTING COMPANY

DYNATECH CONSULTING

CELL: 082 3710 308
MAIL: braam@dynatech1.co.za
CELL: 079 4052 924
MAIL: corne@dynatech1.co.za



REFERENCE DRAWINGS

PLAN Nr.	DESCRIPTION

APPROVED:	
ENGINEER:	DATE:
APPROVED:	
CLIENT:	DATE:
PRINT ISSUED ON	



Mobile: + 27 (0)83 265 1524
329 Statelyway Chambers, Statelyway, Welkom,
PO Box 2600, Welkom, 9460, South Africa

	CLIENT PHOKWANE LOCAL MUNICIPALITY
---	--

PROJECT
**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE
**EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT**

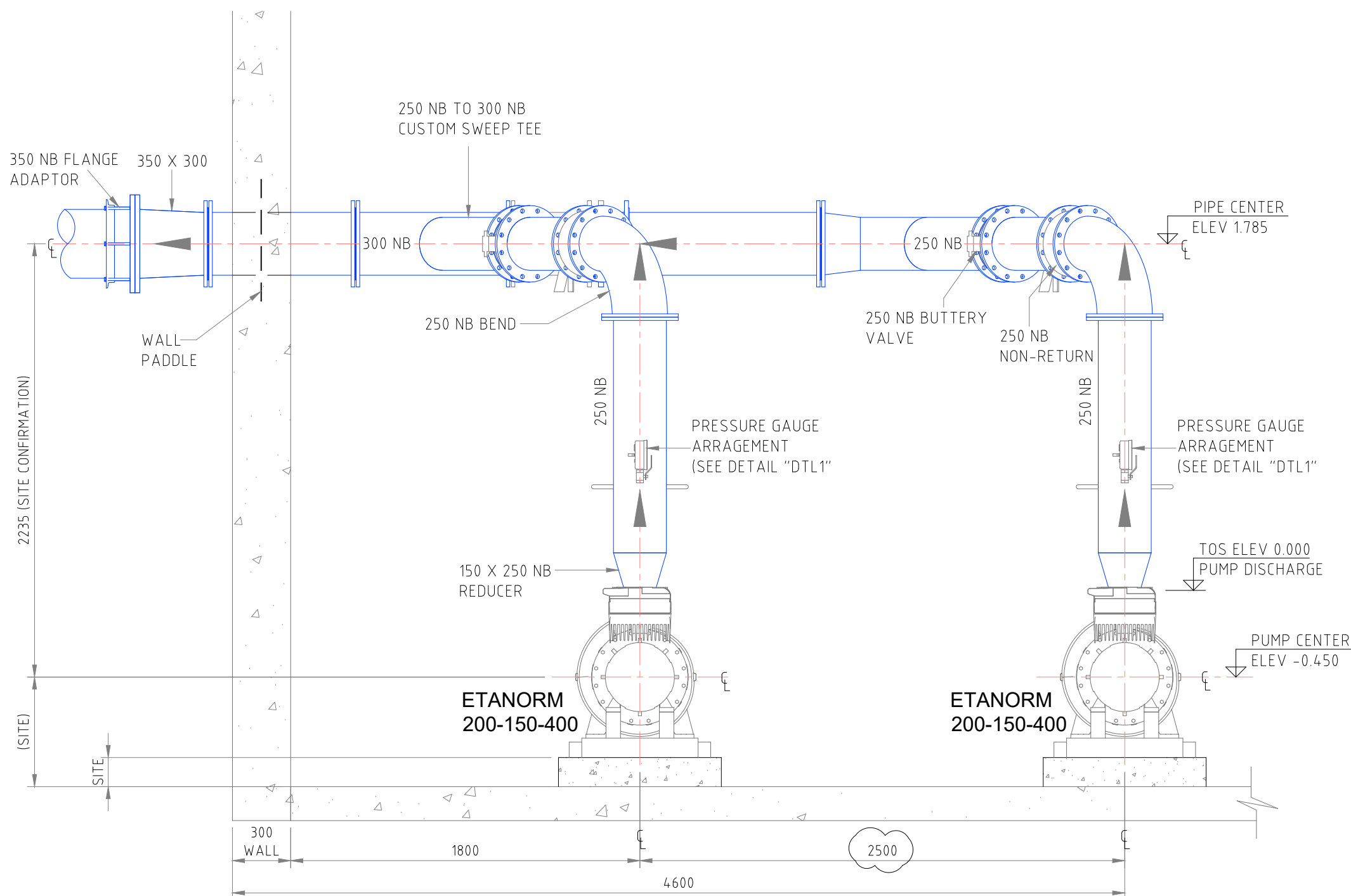
**HIGH LIFT PUMP SET NO 1
LAYOUT SHEET 1 OF 2**

DESIGN	DATE	DRAWN C.SWART - DYNATECH	DATE NOV 2025
SURVEYED	DATE	CHECKED A.DE WET	DATE NOV 2025

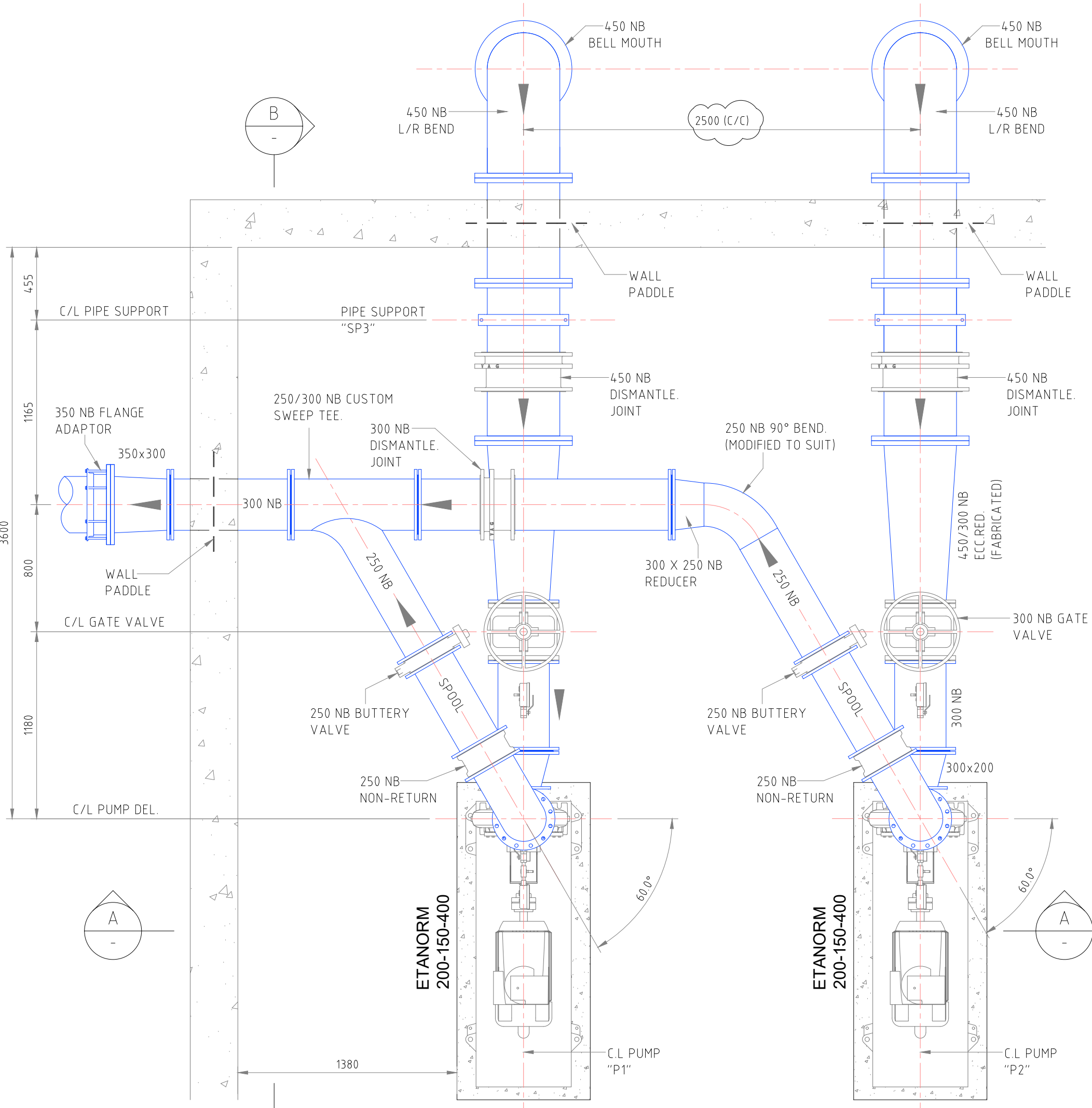
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DRAWING No.
DYN-075-006-003

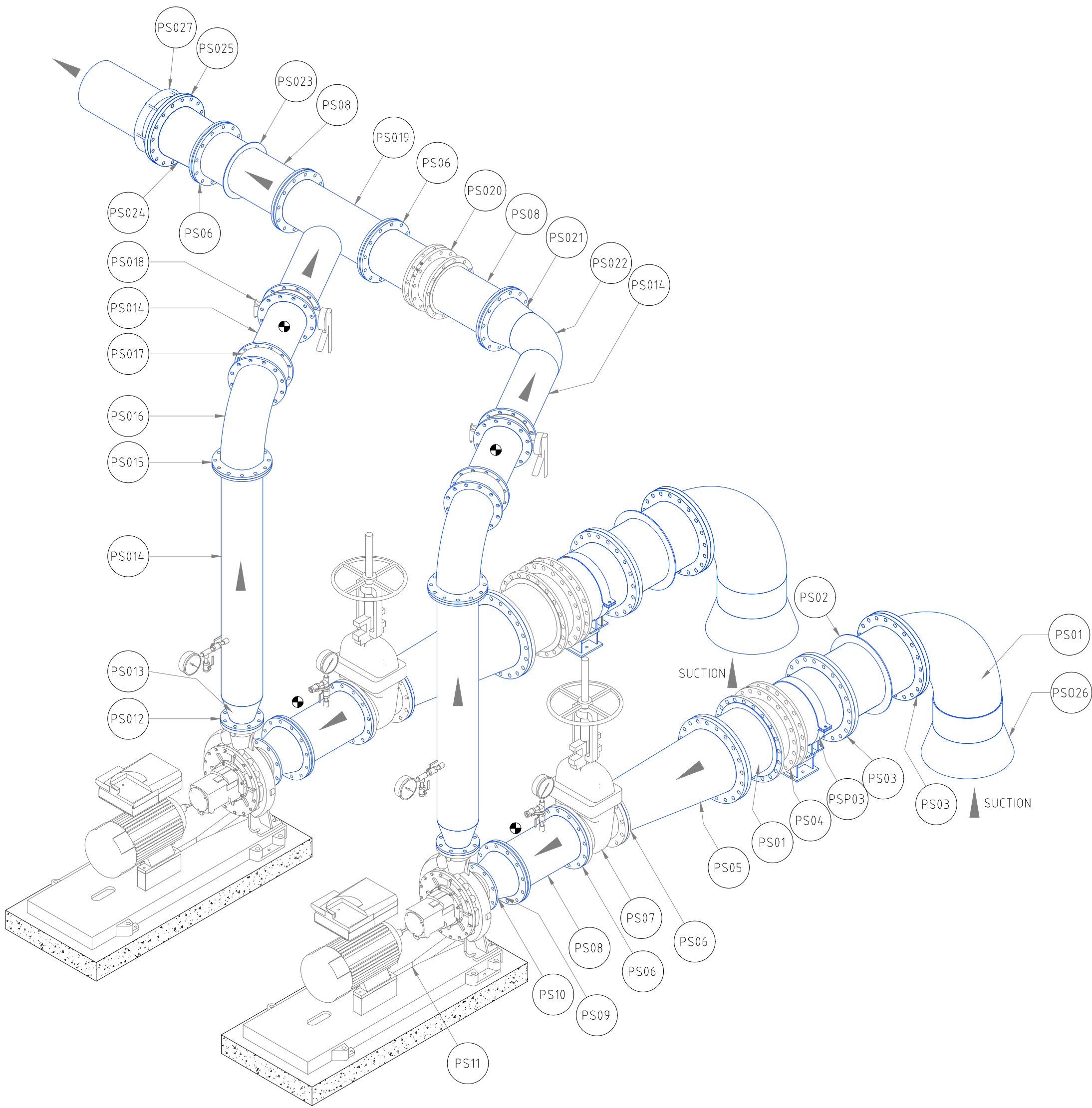
REVISION No.					
0.5					



SECTION A-A
SCALE 1:25



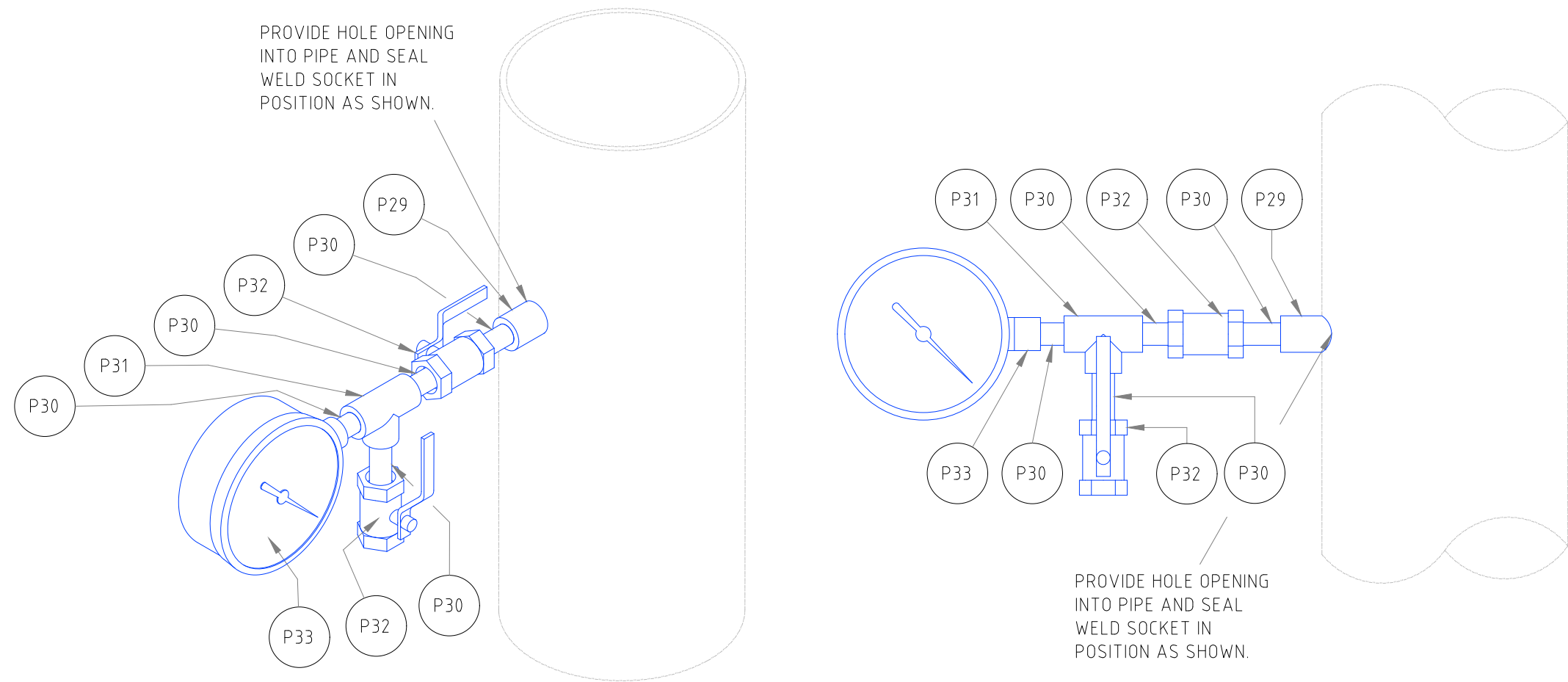
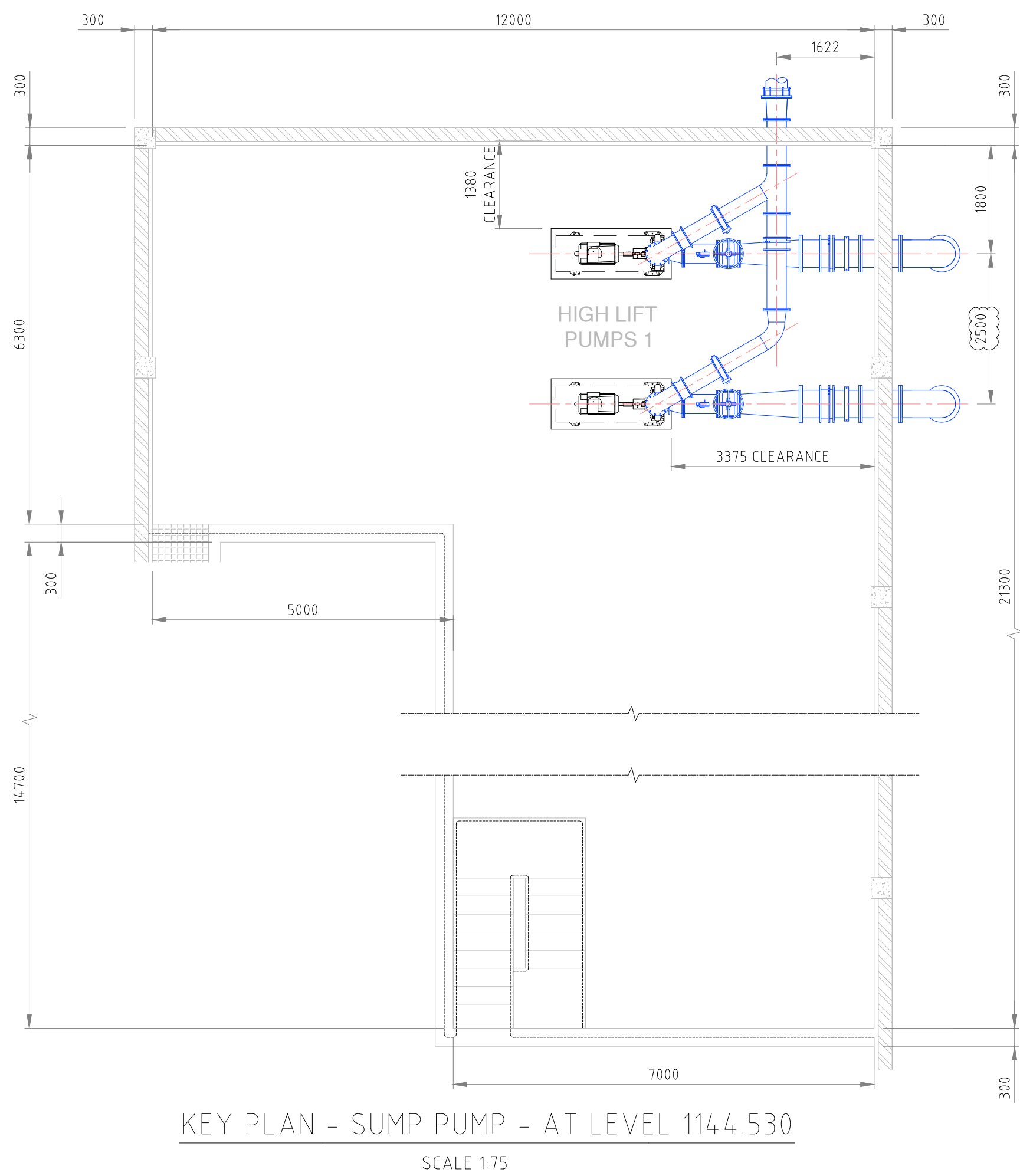
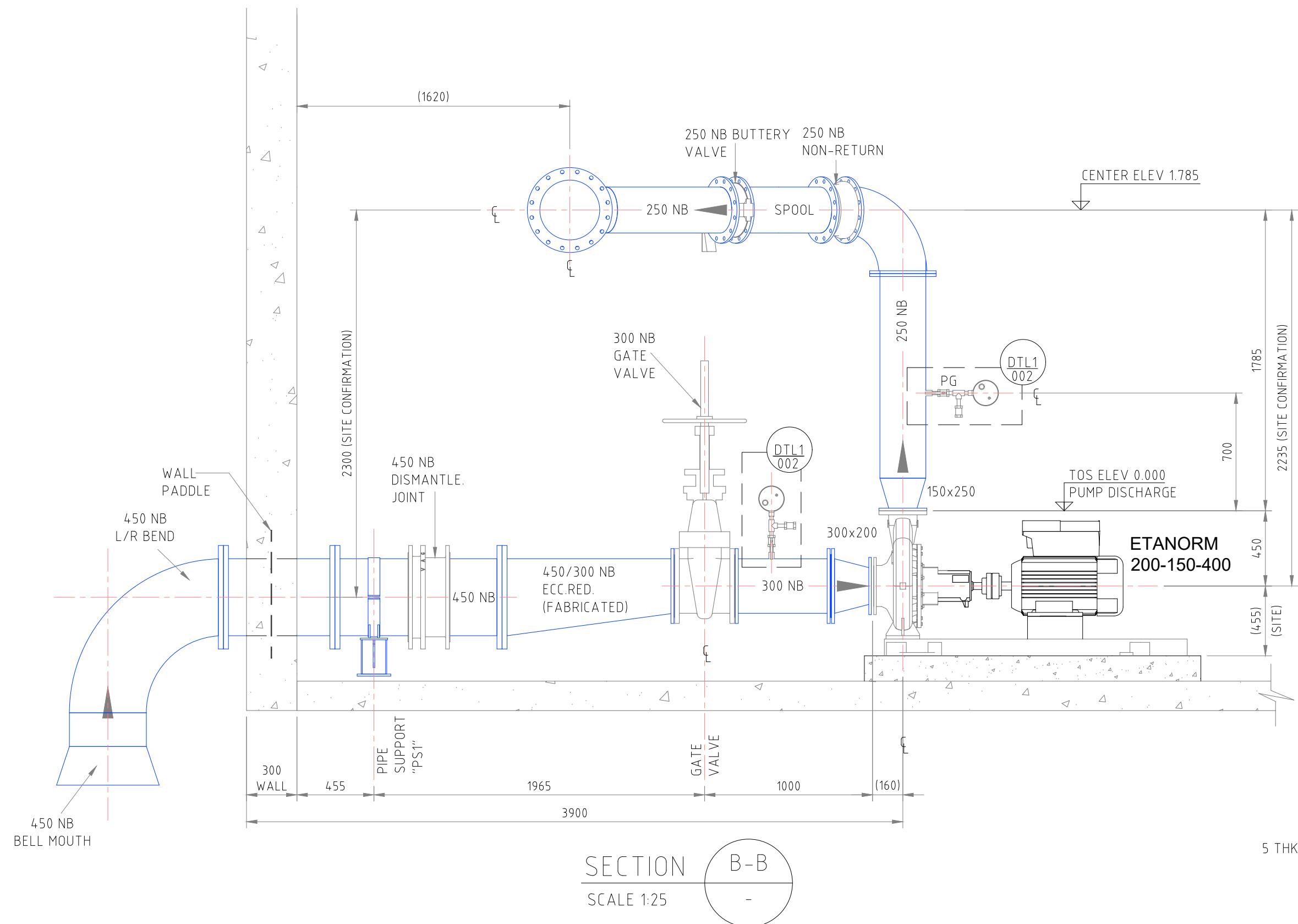
PLAN VIEW SHOWING HIGH LIFT WATER PUMP "1" STATION LAYOUT
SCALE 1:25



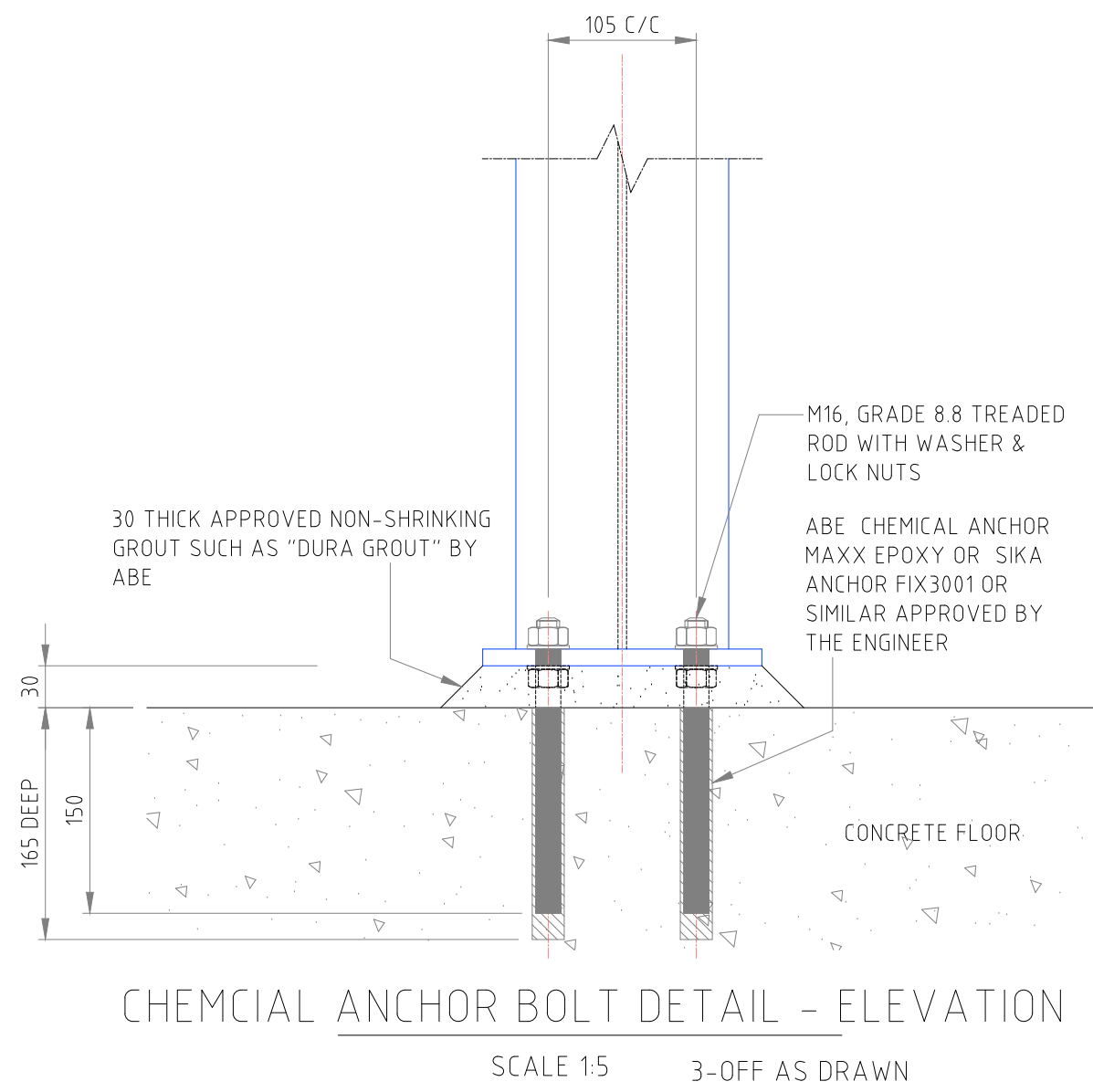
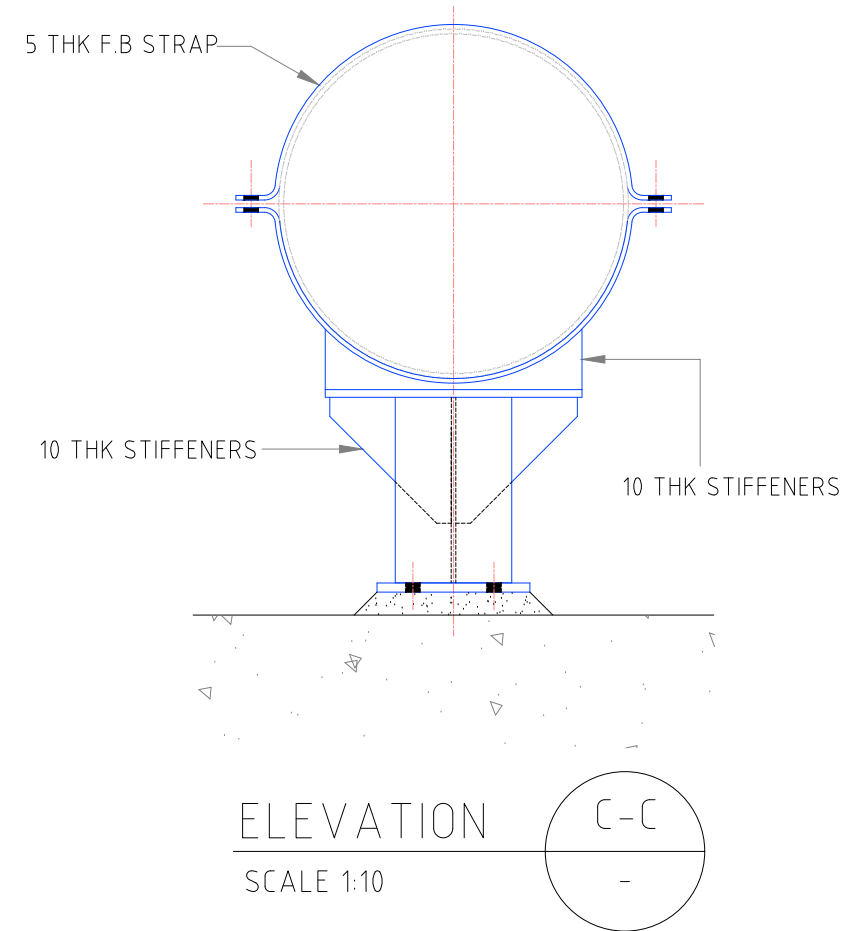
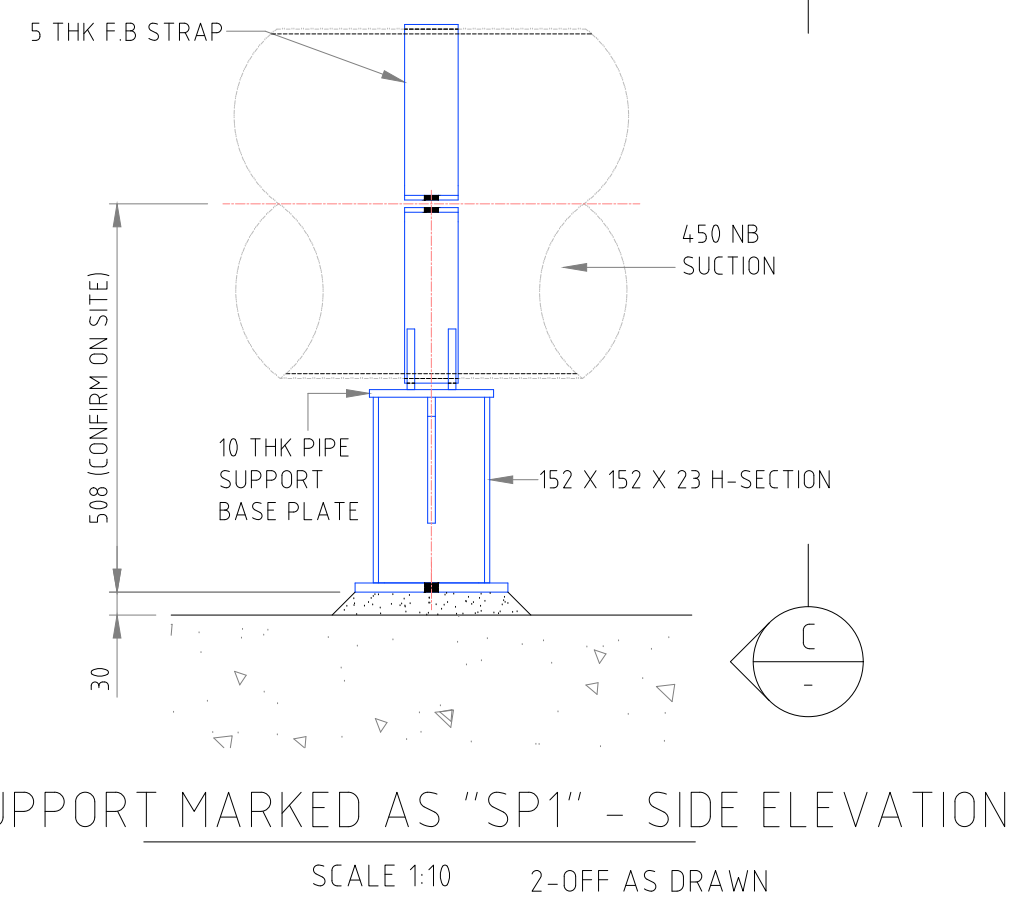
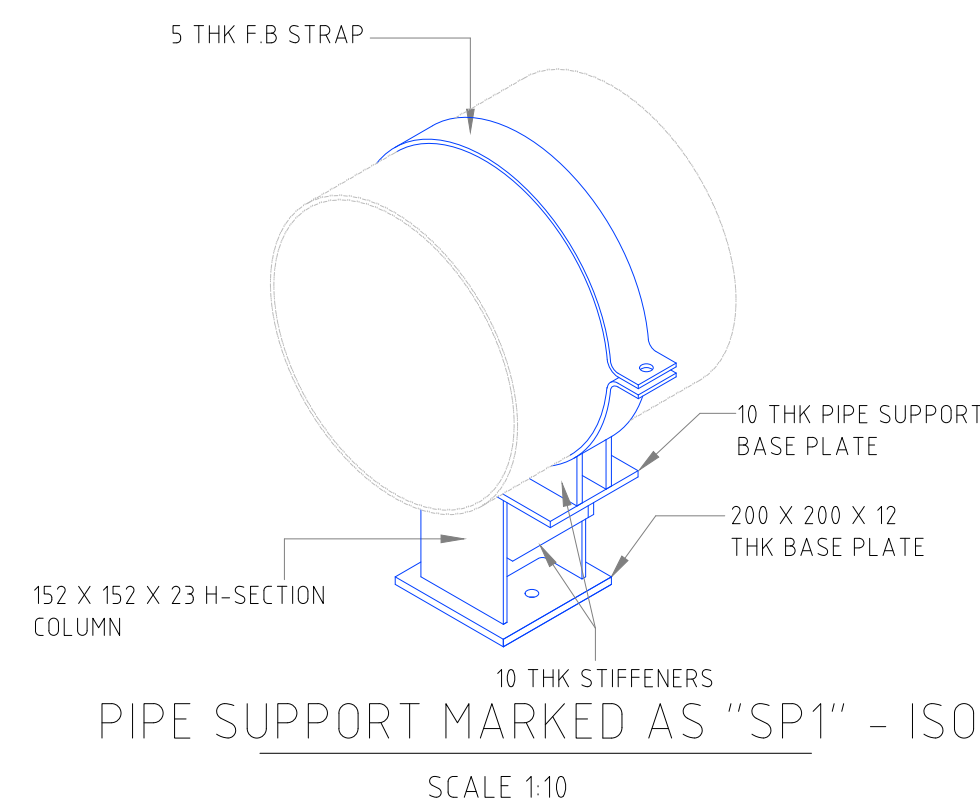
ISOMETRIC MARK -UP
SCALE 1:25

LEGEND
HDG - HOT DIP GALVANIZED

PS027	FLANGE ADAPTOR	350 NB FLANGE ADAPTOR TO SANS 1123 TABLE 1000/3	1	Carbon Steel To JIS G3452 HDG
PS026	BELL MOUTH	450 NB BELL MOUTH TO SANS 719	2	Carbon Steel To JIS G3452 HDG
PS025	FLANGE	350 NB SANS 1123 TABLE 1000/3 TYPE NP/8	1	Carbon Steel A106 HDG
PS024	REDUCER	350 X 300 NB STD CONCENTRIC (BUTT WELD)	2	Carbon Steel To JIS G3452 HDG
PS023	PADDLE FLANGE	300 NB TO ASME 16.5 (OD 405 X 326 ID X 5 THK)	1	Mild steel HDG
PS022	BEND (MODIFIED)	300 NB STD 90° LONG RADIUS (CUT TO SUIT 60°) BUTT WELD	1	Carbon Steel To JIS G3452 HDG
PS021	REDUCER	300 X 250 NB STD CONCENTRIC (BUTT WELD)	2	Carbon Steel To JIS G3452 HDG
PS020	DISMANTLING JOINT	300 NB FLANGE DRILLING TO PN10	1	
PS019	SWEEP TEE	250 X 300 NB FABRICATED TO ANSI B19.6	1	ASTM A106 Grade B Carbon Steel Seamless HDG
PS018	VALVE	250 NB BUTTERFLY WAFER TYPE BOLTED IN BETWEEN FLANGES	2	Cast iron to SANS 1024 GR 250
PS017	NON RETURN VALVE	250 NB C.W WAFER DUEL PLATE (BOLTED BETWEEN FLANGES)	2	Cast steel
PS016	BEND	250 NB STD 90° LONG RADIUS BUTT WELD	2	Carbon Steel To JIS G3452 HDG
PS015	FLANGE	250 NB SANS 1123 TABLE 1000/3 TYPE NP/8	12	Carbon Steel A106 HDG
PS014	DELIVERY PIPE	250 NB NB SCH 40	12 m	ASTM A106 Grade B Carbon Steel Seamless HDG
PS013	REDUCER	150 X 250 NB STD CONCENTRIC (BUTT WELD)	2	Carbon Steel To JIS G3452 HDG
PS012	FLANGE	150 NB EN1092-2 TO SUIT ETANORM 200-150-400 PUMP DISCHARGE	2	Carbon Steel To JIS G3452 HDG
PS011	PUMP ARRANGEMENT	ETANORM 200-150-400 PUMP C.W WEG W20 55 kW MOTOR	2	
PS010	FLANGE	200 NB EN1092-2 TO SUIT ETANORM 200-150-400 PUMP SUCTION	2	Carbon Steel A106 HDG
PS09	REDUCER	350 X 200 NB ECCENTRIC	2	Carbon Steel To JIS G3452 HDG
PS08	SUCTION PIPE	300 NB NB SCH 40	2	ASTM A106 Grade B Carbon Steel Seamless HDG
PS07	VALVE	300 NB GATE HAND OPP. FLANGE DRILLING TO SANS 1123 TABLE 1000/3	2	Cast iron to SANS 1024 GR 250
PS06	FLANGE	300 NB SANS 1123 TABLE 1000/3 TYPE NP/8	14	Carbon Steel A106 HDG
PS05	REDUCER	450 X 300 NB ECCENTRIC (FABRICATED 1000 LG)	2	ASTM A106 Grade B Carbon Steel Seamless HDG
PS04	DISMANTLING JOINT	450 NB FLANGE DRILLING TO PN10	2	SANS 1431 GR 350 WA
PS03	FLANGE	450 NB SANS 1123 TABLE 1000/3 TYPE NP/8	12	Carbon Steel A106 HDG
PS02	PADDLE FLANGE	450 NB TO ASME 16.5 (OD 550 X 460 ID X 5 THK)	1	Mild steel HDG
PS01	BEND	450 NB STD 90° LONG RADIUS BUTT WELD	2	Carbon Steel To JIS G3452 HDG
MARK	ITEM	DESCRIPTION	QTY	MATERIAL



DETAIL "DTL1" PRESSURE GAUGE ASSEMBLY FOR SUCTION & DELIVERY LINE (SEE DWG NO DYN-075-006-003)
SCALE 1:5



P33	PRESSURE GAUGE	20 NB BSP THREAD	4	HGD - HOT DIP GALVANIZED
P32	HAND OPP BALL VALVE	20 NB BSP THREAD	8	
P31	EQUIL-T	20 NB BSP THREAD TO BS 1740	4	
P30	RUNNING NIPPLE	20 NB BSP THREAD TO BS 1740	16	
P29	SOCKET	20 NB BSP THREAD SOCKET TO BS 1740	4	
MARK	ITEM	DESCRIPTION	QTY	MATERIAL

FOR INFORMATION

REVISIONS			
No.	DATE	BY	DESCRIPTION
0.5	04/11/25	CS	DRAWING REVISED AS PER COMMENTS - ISSUED FOR INFORMATION

GENERAL NOTES

- 1) ALL BENDS TO ANSI B16.9
- 2) ALL PIPING TO ASTM A106 GRADE "B"
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- 4) ALL CLOSURE PIECES ARE TO BE SUPPLIED WITH ONE LOOSE FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR DELIVERY.
- 5) BOLTS, NUTS AND WASHERS TO BE BAGGED AND TAGGED FOR DELIVERY WITH RELEVANT LINE IDENTIFICATION NUMBER. (ADDITIONAL 5% TO BE SUPPLIED).
- 6) PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT
- 7) DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE.
- 8) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWST110.
- 9) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 313

CONSULTING COMPANY

DYNATECH CONSULTING

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CELL: 079 4052 924
MAIL: corne@dynatech1.co.za

Dynatech Solutions
Computer Aided Drafting and Design

REFERENCE DRAWINGS	
PLAN Nr.	DESCRIPTION

APPROVED:	
ENGINEER:	DATE:
APPROVED:	
CLIENT:	DATE:

PRINT ISSUED ON

Tsela Tsweu
CONSULTING ENGINEERS

Mobile: + 27 (0)83 265 1524
329 Stateway Chambers, Stateway, Welkom,
PO Box 2600, Welkom, 9460, South Africa

CLIENT

PHOKWANE LOCAL MUNICIPALITY

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT

HIGH LIFT PUMP SET NO 1 LAYOUT SHEET 2 OF 2

DESIGN	DATE	DRAWN	DATE
		C.SWART - DYNATECH	NOV 2025
SURVEYED	DATE	CHECKED	DATE
		A.D.E.WET	NOV 2025

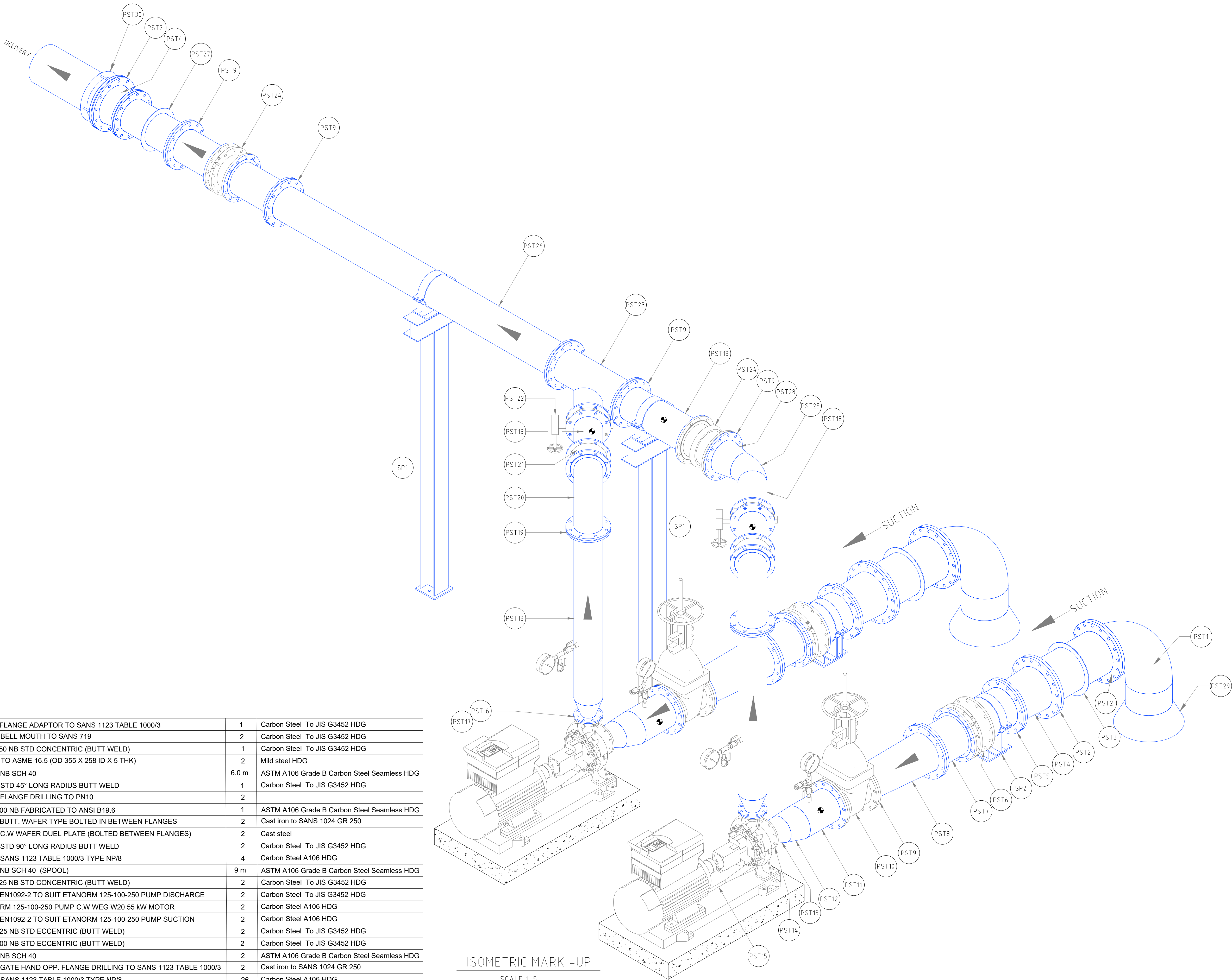
SCALE

AS SHOWN

DRAWING No.

DYN-075-006-004

REVISION No.							
0.5							



LEGEND
HDG - HOT DIP GALVANIZED

PST30	FLANGE ADAPTOR	300 NB FLANGE ADAPTOR TO SANS 1123 TABLE 1000/3	1	Carbon Steel To JIS G3452 HDG
PST29	BELL MOUTH	350 NB BELL MOUTH TO SANS 719	2	Carbon Steel To JIS G3452 HDG
PST28	REDUCER	200 X 250 NB STD CONCENTRIC (BUTT WELD)	1	Carbon Steel To JIS G3452 HDG
PST27	PADDLE FLANGE	250 NB TO ASME 16.5 (OD 355 X 258 ID X 5 THK)	2	Mild steel HDG
PST26	DELIVERY PIPE	250 NB NB SCH 40	6.0 m	ASTM A106 Grade B Carbon Steel Seamless HDG
PST25	BEND	200 NB STD 45° LONG RADIUS BUTT WELD	1	Carbon Steel To JIS G3452 HDG
PST24	DISMANTLING JOINT	250 NB FLANGE DRILLING TO PN10	2	
PST23	SWEEP TEE	250 X 200 NB FABRICATED TO ANSI B19.6	1	ASTM A106 Grade B Carbon Steel Seamless HDG
PST22	VALVE	200 NB BUTT. WAFER TYPE BOLTED IN BETWEEN FLANGES	2	Cast iron to SANS 1024 GR 250
PST21	NON RETURN VALVE	200 NB C.W WAFER DUEL PLATE (BOLTED BETWEEN FLANGES)	2	Cast steel
PST20	BEND	200 NB STD 90° LONG RADIUS BUTT WELD	2	Carbon Steel To JIS G3452 HDG
PST19	FLANGE	250 NB SANS 1123 TABLE 1000/3 TYPE NP/8	4	Carbon Steel A106 HDG
PST18	DELIVERY PIPE	200 NB NB SCH 40 (SPOOL)	9 m	ASTM A106 Grade B Carbon Steel Seamless HDG
PST17	REDUCER	200 X 125 NB STD CONCENTRIC (BUTT WELD)	2	Carbon Steel To JIS G3452 HDG
PST16	FLANGE	100 NB EN1092-2 TO SUIT ETANORM 125-100-250 PUMP DISCHARGE	2	Carbon Steel To JIS G3452 HDG
PST15	PUMP ARRANGEMENT	ETANORM 125-100-250 PUMP C.W WEG W20 55 kW MOTOR	2	Carbon Steel A106 HDG
PST14	FLANGE	125 NB EN1092-2 TO SUIT ETANORM 125-100-250 PUMP SUCTION	2	Carbon Steel A106 HDG
PST13	REDUCER	200 X 125 NB STD ECCENTRIC (BUTT WELD)	2	Carbon Steel To JIS G3452 HDG
PST12	REDUCER	250 X 200 NB STD ECCENTRIC (BUTT WELD)	2	Carbon Steel To JIS G3452 HDG
PST11	SUCTION PIPE	250 NB NB SCH 40	2	ASTM A106 Grade B Carbon Steel Seamless HDG
PST10	VALVE	250 NB GATE HAND OPP. FLANGE DRILLING TO SANS 1123 TABLE 1000/3	2	Cast iron to SANS 1024 GR 250
PST9	FLANGE	250 NB SANS 1123 TABLE 1000/3 TYPE NP/8	26	Carbon Steel A106 HDG
PST8	REDUCER	300 X 250 NB ECCENTRIC (FABRICATED 700 LG)	2	ASTM A106 Grade B Carbon Steel Seamless HDG
PST7	SUCTION PIPE	300 NB NB SCH 40	3 m	ASTM A106 Grade B Carbon Steel Seamless HDG
PST6	DISMANTLING JOINT	300 NB FLANGE DRILLING TO PN10	2	
PST5	FLANGE	300 NB SANS 1123 TABLE 1000/3 TYPE NP/8	8	Carbon Steel A106 HDG
PST4	REDUCER	350 X 300 NB CONCENTRIC	3	Carbon Steel To JIS G3452 HDG
PST3	PADDLE FLANGE	350 NB TO ASME 16.5 (OD 460 X 360 ID X 5 THK)	2	Mild steel HDG
PST2	FLANGE	350 NB SANS 1123 TABLE 1000/3 TYPE NP/8	6	Carbon Steel A106 HDG
PST1	BEND	350 NB STD 90° LONG RADIUS BUTT WELD	2	Carbon Steel To JIS G3452 HDG
MARK	ITEM	DESCRIPTION	QTY	MATERIAL

FOR INFORMATION

REVISIONS

No.	DATE	BY	DESCRIPTION
0.5	04/11/25	C.S	DRAWING REVISED AS PER COMMENTS - ISSUED FOR INFORMATION

GENERAL NOTES

- 1) ALL BENDS TO ANSI B16.9
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- ALL CLOSURE PIECES ARE TO BE SUPPLIED WITH ONE LOOSE FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR DELIVERY.
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- PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT
- 5) ⚙️ DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE.
- 6) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWST110
- 7) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 313

CONSULTING COMPANY

DYNATECH CONSULTING

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CELL: 079 4052 924
MAIL: corne@dynatech1.co.za



REFERENCE DRAWINGS

PLAN Nr.	DESCRIPTION

APPROVED:

ENGINEER: _____ DATE: _____

APPROVED:

CLIENT: _____ DATE: _____

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Mobile: + 27 (0)83 265 1524
329 Sateway Chambers, Sateway, Welkom,
PO Box 2660, Welkom, 9460, South Africa



CLIENT

**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

**EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT**

HIGH LIFT PUMP SET NO 2 LAYOUT SHEET 1 OF 3

DESIGN	DATE	DRAWN C.SWART - DYNATECH	DATE NOV 2025
SURVEYED	DATE	CHECKED A.D.E WET	DATE NOV 2025

SCALE

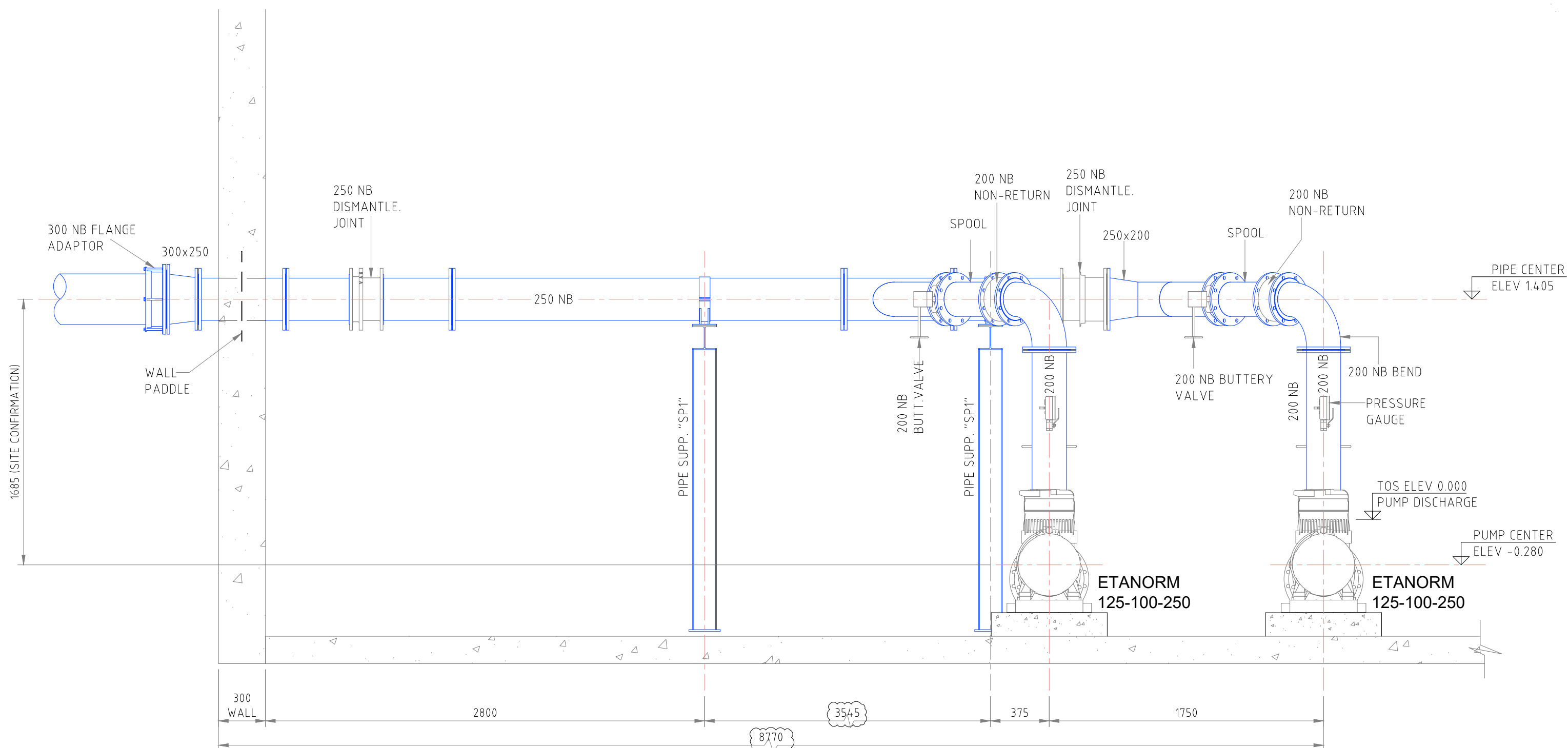
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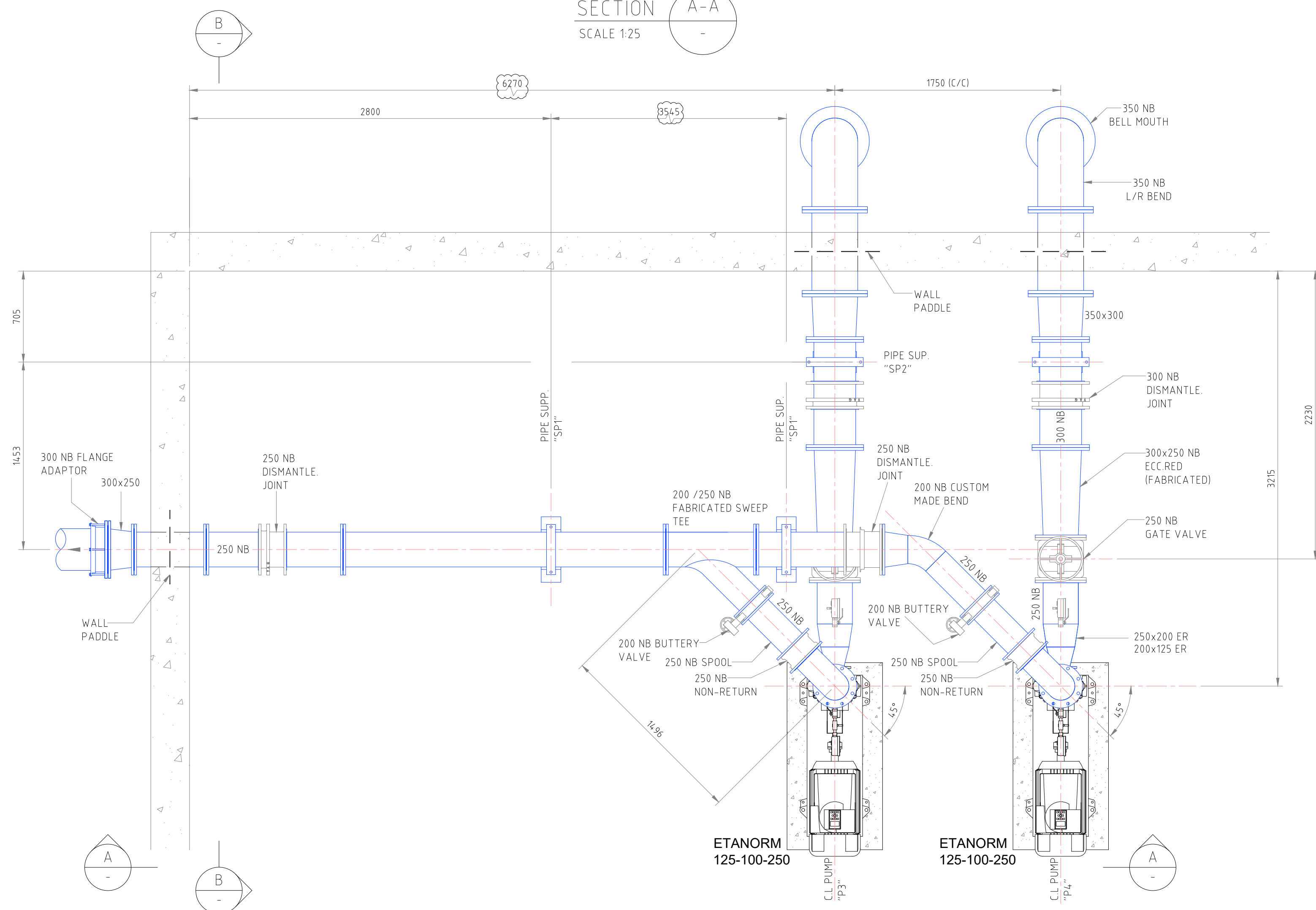
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REVISION No.

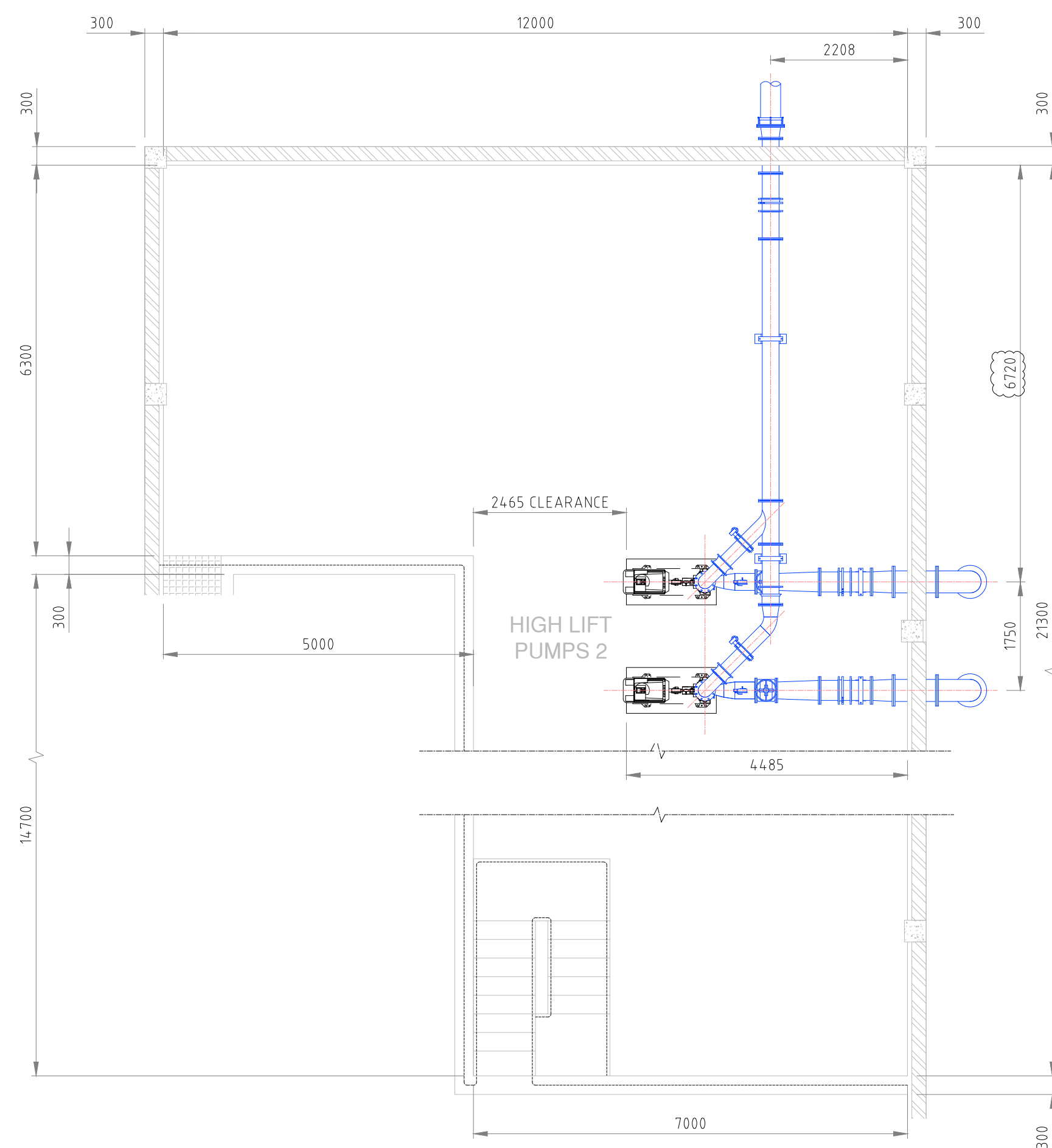
0.5



SECTION A-A
SCALE 1:25



PLAN VIEW SHOWING HIGH LIFT WATER PUMP "2" STATION LAYOUT
SCALE 1:25



KEY PLAN - SUMP PUMP - AT LEVEL 1144.530
SCALE 1:75

FOR INFORMATION

REVISIONS

No.	DATE	BY	DESCRIPTION
0.5	04/11/25	C.S.	DRAWING REVISED AS PER COMMENTS - ISSUED FOR INFORMATION

GENERAL NOTES

- 1) ALL BENDS TO ANSI B16.9
- 2) ALL PIPING TO ASTM A106 GRADE "B"
- 3) ALL PIPING TO BE PAINTED IN ACCORDANCE WITH CLIENT SPECIFICATION
- 4) ALL CLOSURE PIECES ARE TO BE SUPPLIED WITH ONE LOOSE FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR DELIVERY.
- 5) BOLTS, NUTS AND WASHERS TO BE BAGGED AND TAGGED FOR DELIVERY WITH RELEVANT LINE IDENTIFICATION NUMBER. (ADDITIONAL 5% TO BE SUPPLIED).
- 6) PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT
- 7) DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE.
- 8) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWST110.
- 9) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 31.3

CONSULTING COMPANY

DYNATECH CONSULTING

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CELL: 079 4052 924
MAIL: corne@dynatech1.co.za



REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

APPROVED:	
ENGINEER:	DATE:
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CLIENT:	DATE:

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Mobile: +27 (0)83 265 1524
329 Stately Chambers, Statelyway, Welkom,
PO Box 2600, Welkom, 9460, South Africa

CLIENT	PHOKWANE LOCAL MUNICIPALITY
--------	-----------------------------

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE
EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT

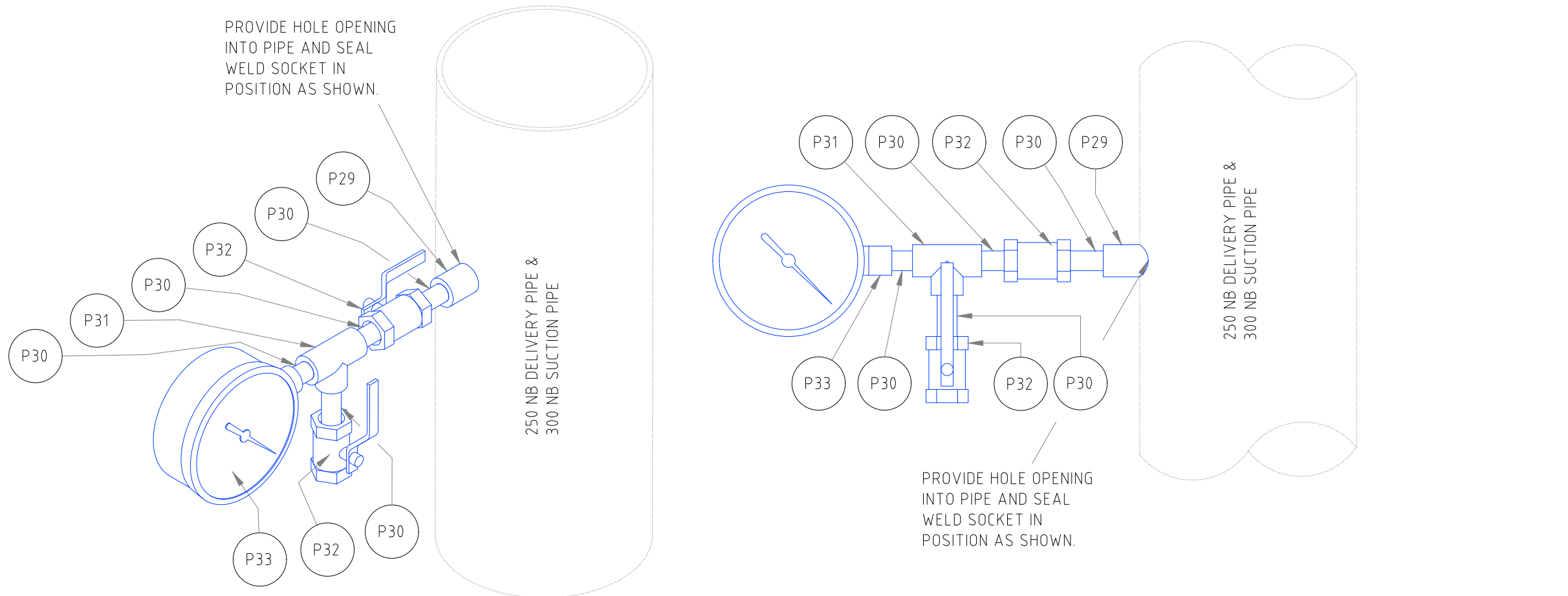
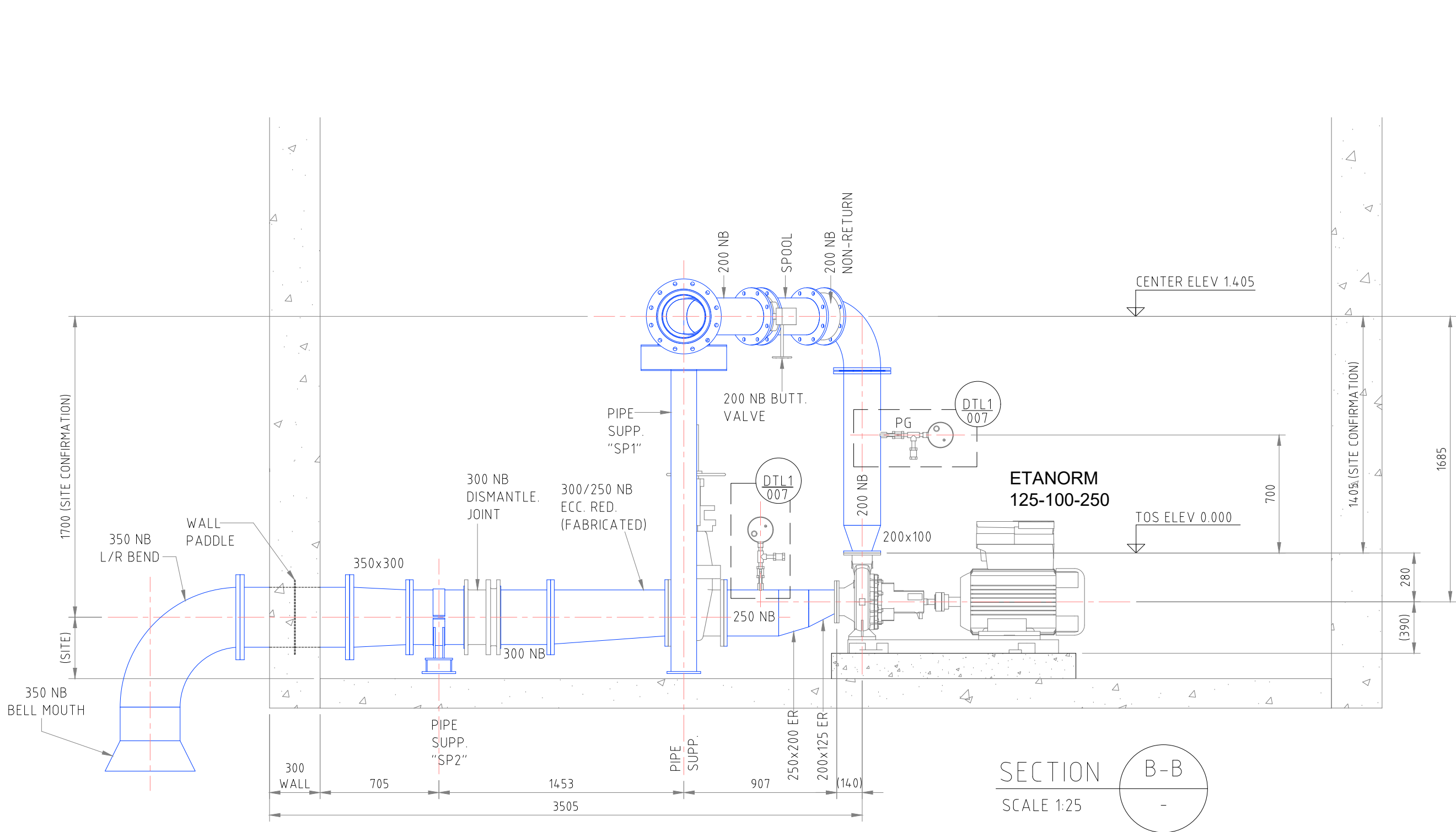
HIGH LIFT PUMP SET NO 2
LAYOUT SHEET 2 OF 3

DESIGN	DATE	DRAWN C.SWART - DYNATECH	DATE NOV 2025
SURVEYED	DATE	CHECKED A.D.E. WET	DATE NOV 2025

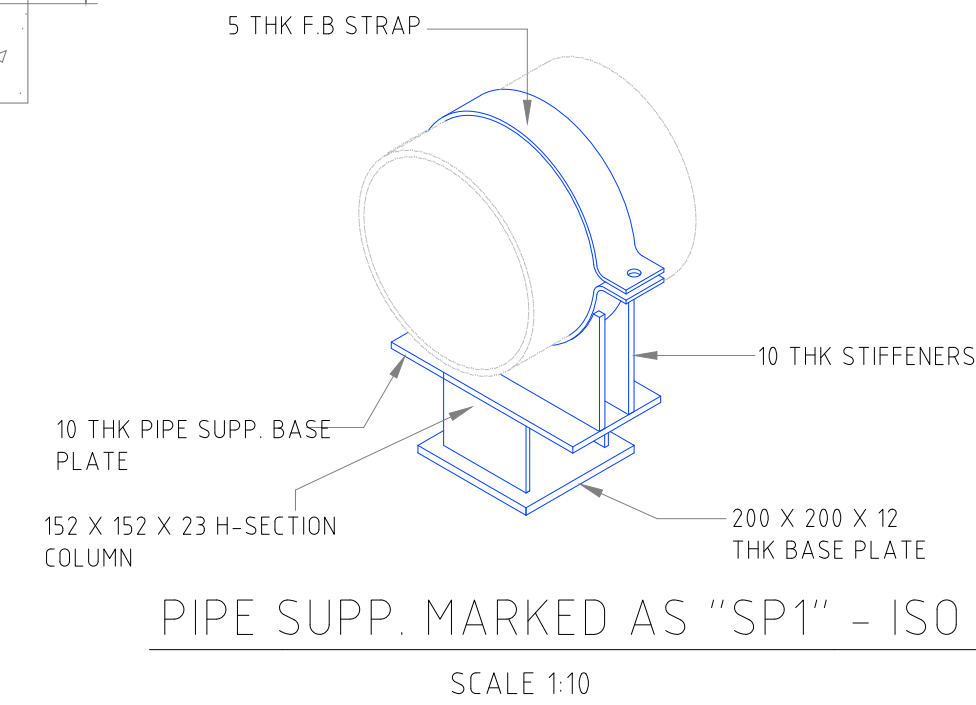
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DRAWING No.
DYN-075-006-006

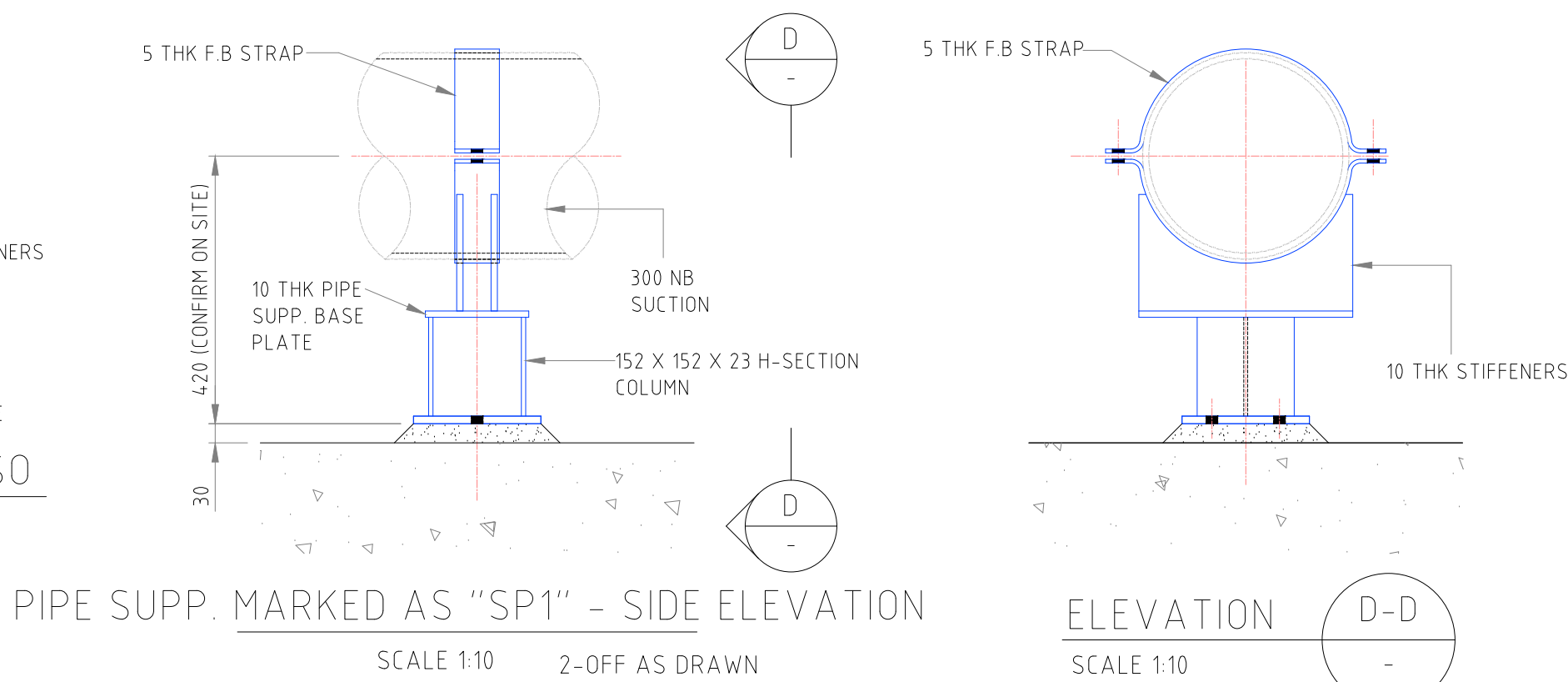
REVISION No.	0.5						
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DETAIL "DTL1" PRESSURE GAUGE ASSEMBLY (SEE DWG NO DYN-075-006-006)

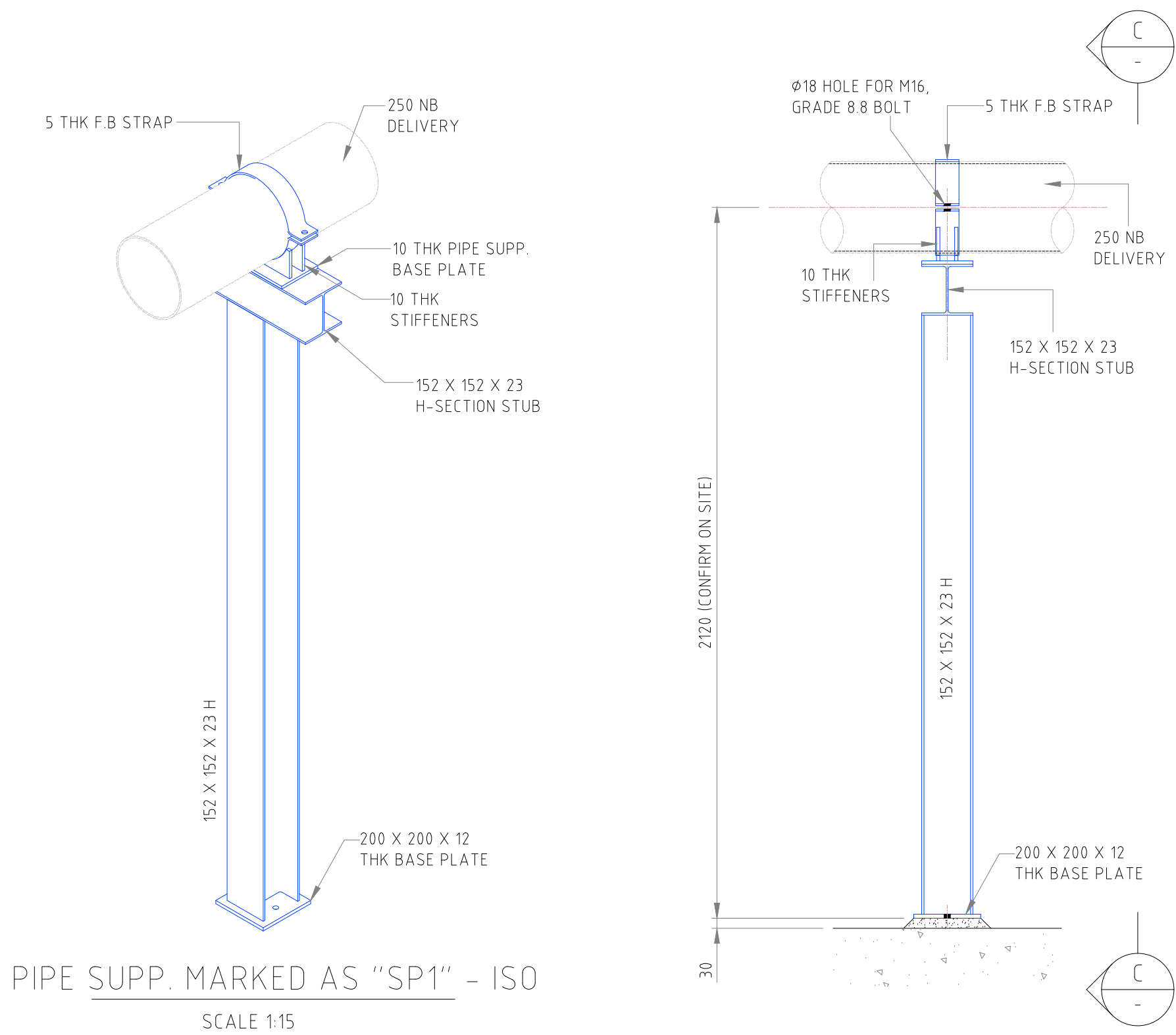


PIPE SUPP. MARKED AS "SP1" - ISO



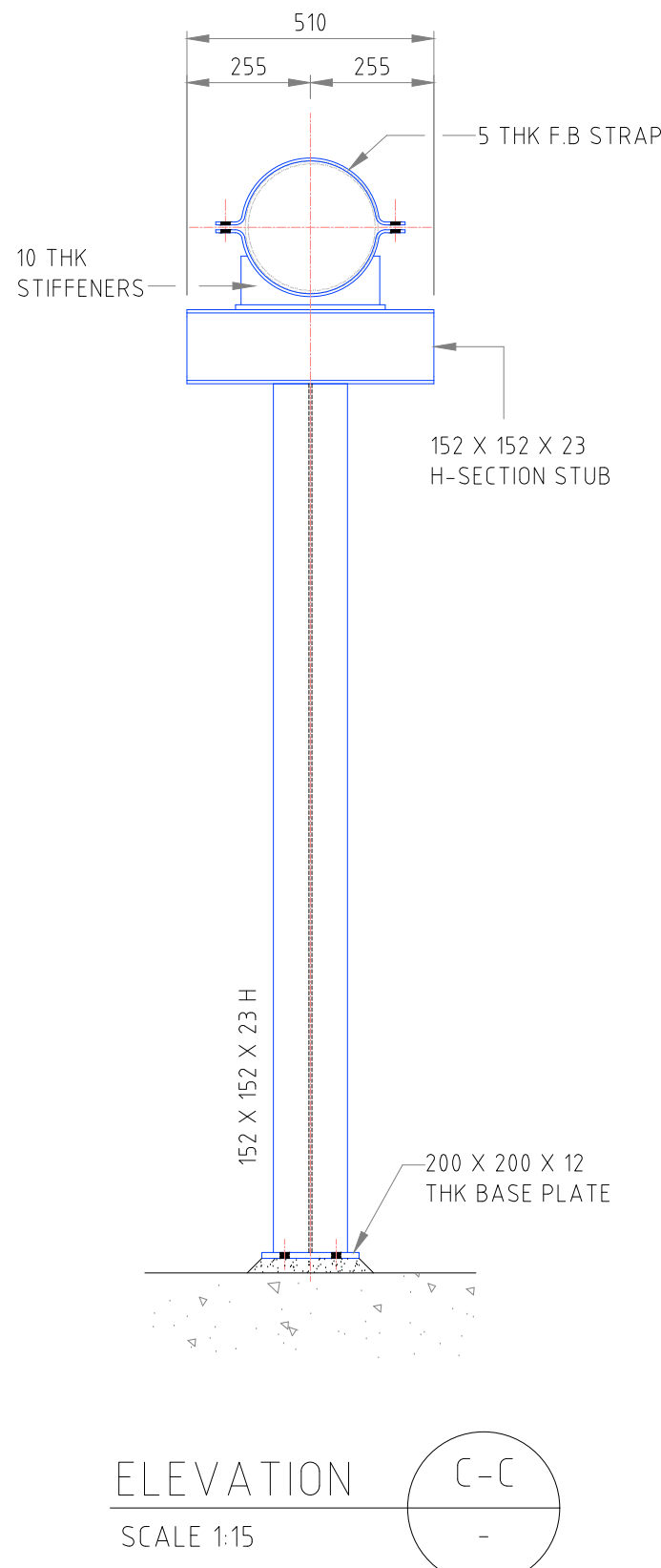
PIPE SUPP. MARKED AS "SP1" - SIDE ELEVATION

ELEVATION D-D

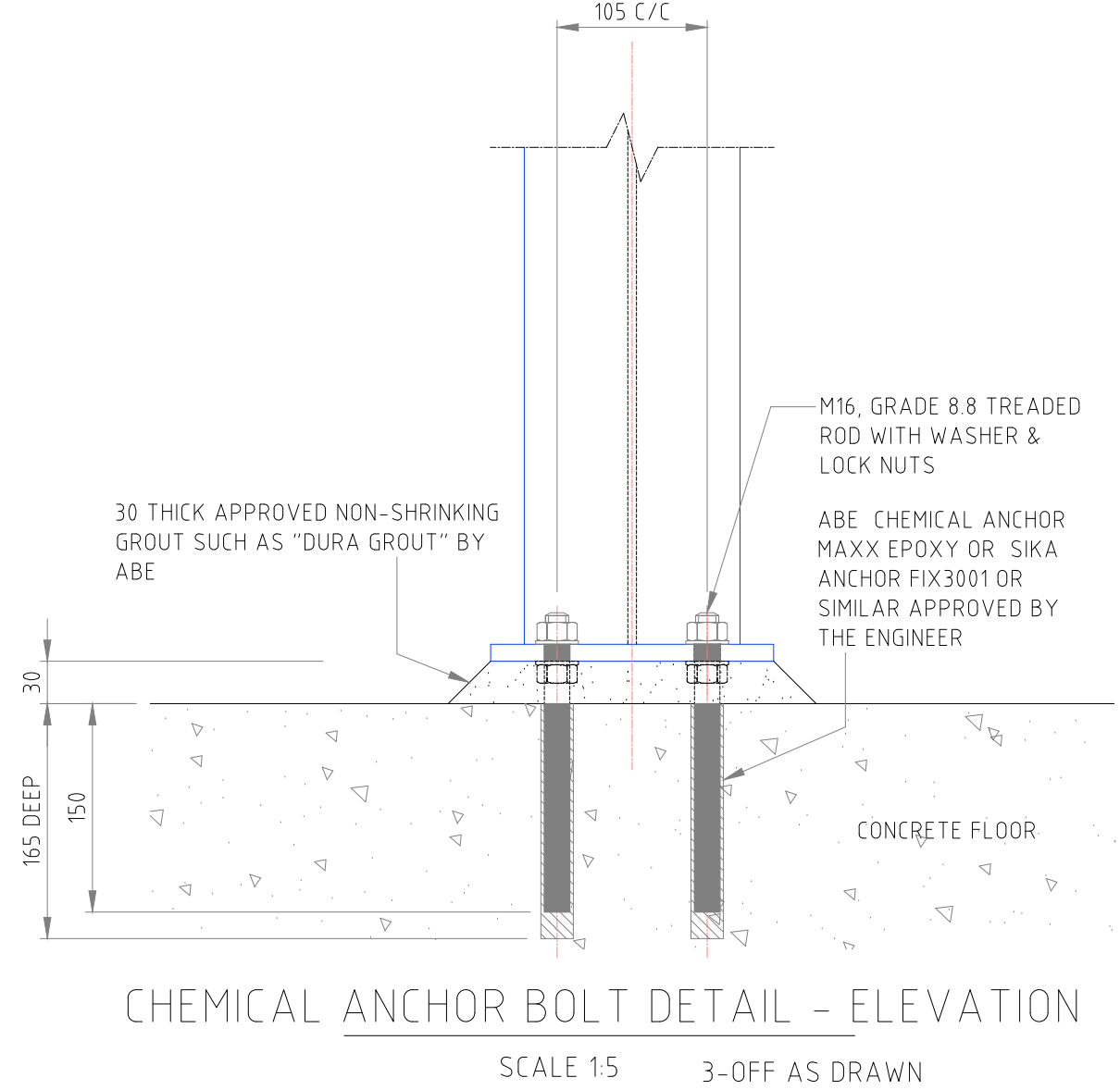


PIPE SUPP. MARKED AS "SP1" - ISO

PIPE SUPP. MARKED AS "SP1" - SIDE ELEVATION



ELEVATION C-C



CHEMICAL ANCHOR BOLT DETAIL - ELEVATION

P33	PRESSURE GAUGE	20 NB BSP THREAD	4	
P32	HAND OPP BALL VALVE	20 NB BSP THREAD	8	WROUGHT STEEL
P31	EQUIL-T	20 NB BSP THREAD TO BS 1740	4	WROUGHT STEEL
P30	RUNNING NIPPLE	20 NB BSP THREAD TO BS 1740	16	WROUGHT STEEL
P29	SOCKET	20 NB BSP THREAD SOCKET TO BS 1740	4	WROUGHT STEEL
MARK	ITEM	DESCRIPTION	QTY	MATERIAL

FOR INFORMATION

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- GENERAL NOTES
- 1) ALL BENDS TO ANSI B16.9
 - 2) ALL PIPING TO ASTM A106 GRADE "B"
 - 3) ALL PIPING TO BE PAINTED IN ACCORDANCE WITH CLIENT SPECIFICATION
 - ALL CLOSURE PIECES ARE TO BE SUPPLIED WITH ONE LOOSE FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR DELIVERY.
 - 4) BOLTS, NUTS AND WASHERS TO BE BAGGED AND TAGGED FOR DELIVERY WITH RELEVANT LINE IDENTIFICATION NUMBER. (ADDITIONAL 5% TO BE SUPPLIED).
 - PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT
 - 5) DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE.
 - 6) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWS110.
 - 7) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 313

CONSULTING COMPANY

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CONSULTING ENGINEERS

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PO Box 2600, Welkom, 9460, South Africa

CLIENT

PHOKWANE LOCAL MUNICIPALITY

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

EQUIPMENT ROOM - LOW LIFT PUMPS PHASE 1 PUMP ARRANGEMENT

HIGH LIFT PUMP SET NO 2 LAYOUT SHEET 3 OF 3

DESIGN	DATE	DRAWN	DATE
		C.SWART - DYNATECH	NOV 2025
SURVEYED	DATE	CHECKED	DATE
		A.DE WET	NOV 2025

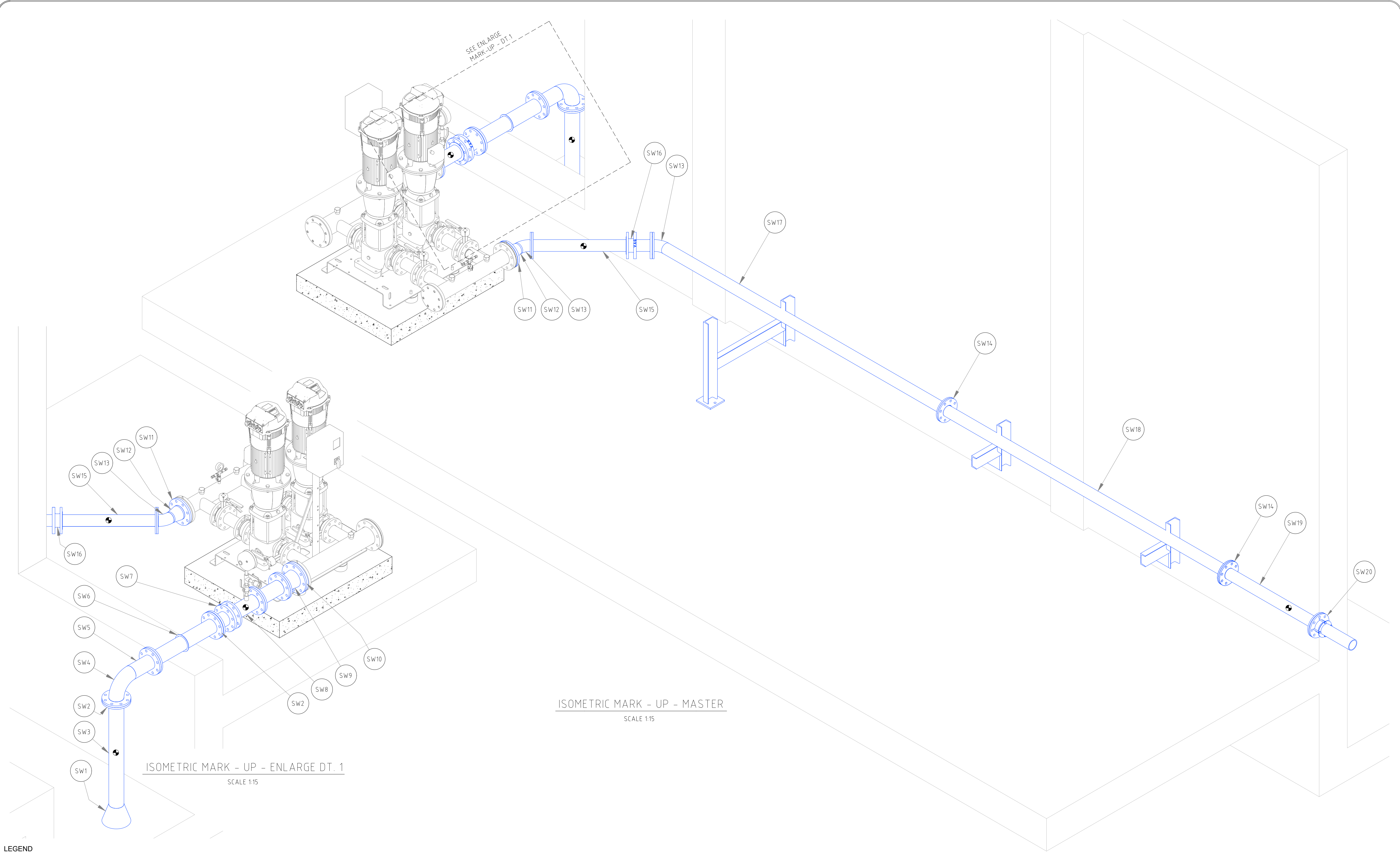
SCALE

AS SHOWN

DRAWING No.

DYN-075-006-007

REVISION No.					
0.5					



LEGEND				
HDG - HOT DIP GALVANIZED				
SW20	FLANGE ADAPTOR	80 NB FLANGE ADAPTOR TO SANS 1123 TABLE 1000/3	1	Carbon Steel To JIS G3452 HDG
SW19	SPOOL PIECE	80 NB SCH40	1.5 m	ASTM A106 Grade B Carbon Steel Seamless HDG
SW18	PIECE	80 NB SCH40	3.0 m	ASTM A106 Grade B Carbon Steel Seamless HDG
SW17	PIECE	80 NB SCH40	3.0 m	ASTM A106 Grade B Carbon Steel Seamless HDG
SW16	DISMANTLING JOINT	80 NB FLANGE DRILLING TO PN10 SANS 1123 TABLE 1000/3	2	SANS 1431 GR 350 WA
SW15	SPOOL PIECE	80 NB SCH40	0.8 m	ASTM A106 Grade B Carbon Steel Seamless HDG
SW14	FLANGE	80 NB SANS 1123 TABLE 1000/3	8	Carbon Steel A106 HDG
SW13	BEND	80 NB STD 45° LONG RADIUS BUTT WELD	2	Carbon Steel To JIS G3452 HDG
SW12	REDUCER	100 X 80 NB STD CONCENTRIC (BUTT WELD)	1	Carbon Steel To JIS G3452 HDG
SW11	FLANGE (DELIVERY)	DN 100 FLANGE TO PUMP SET XYLEM LEWARA GHV20/46SV3	1	Carbon Steel A106 HDG
SW10	FLANGE (SUCTION)	DN 125 FLANGE TO PUMP SET XYLEM LEWARA GHV20/46SV3	1	Carbon Steel A106 HDG
SW9	REDUCER	100 X 125 NB STD CONCENTRIC (BUTT WELD)	1	Carbon Steel To JIS G3452 HDG
SW8	SPOOL PIECE	100 NB SCH40	0.3 m	ASTM A106 Grade B Carbon Steel Seamless HDG
SW7	DISMANTLING JOINT	100 NB FLANGE DRILLING TO PN10 SANS 1123 /3	1	SANS 1431 GR 350 WA
SW6	PADDLE FLANGE	100 NB TO ASME 16.5 (OD 175 X 117 ID X 5 THK)	1	Mild steel HDG
SW5	PIPE	100 NB SCH40	0.9 m	ASTM A106 Grade B Carbon Steel Seamless HDG
SW4	BEND	100 NB STD 90° LONG RADIUS BUTT WELD	1	Carbon Steel To JIS G3452 HDG
SW3	SPOOL PIECE	100 NB SCH40	1 m	ASTM A106 Grade B Carbon Steel Seamless HDG
SW2	FLANGE	100 NB SANS 1123 TABLE 1000/3	10	Carbon Steel A106 HDG
SW1	BELL MOUTH	100 NB BELL MOUTH TO SANS 719	1	Carbon Steel To JIS G3452 HDG
MARK	ITEM	DESCRIPTION	QTY	MATERIAL

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- 5)  DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE.
- 6) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DW5110.
- 7) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 31.3

CONSULTING COMPANY

DYNATECH CONSULTING

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PO Box 2600, Welkom, 9460, South Africa



CLIENT
**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE
**EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT**

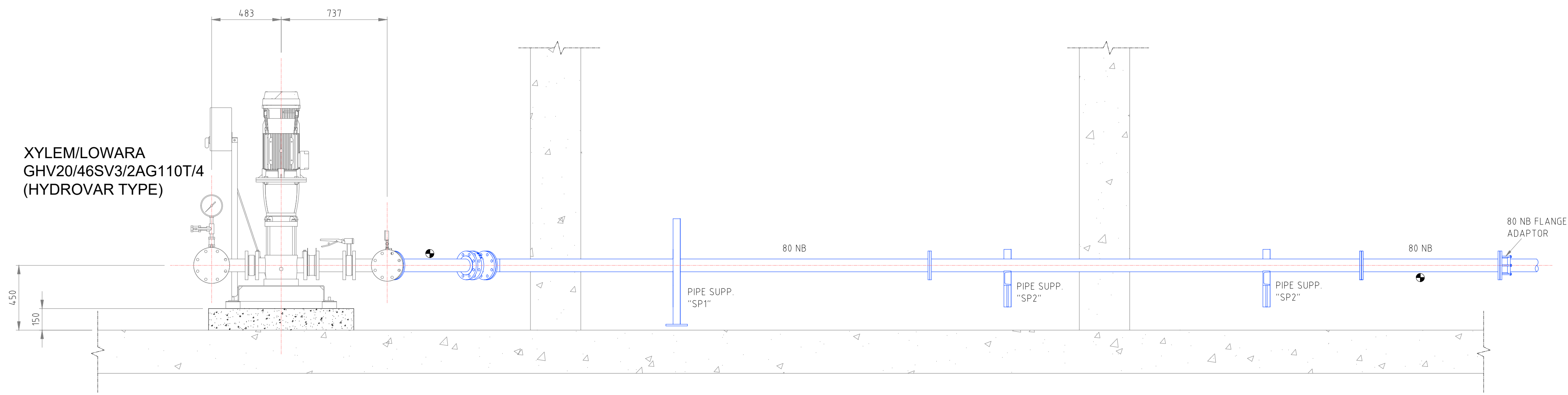
**SERVICE WATER PUMP SET
LAYOUT SHEET 1 OF 3**

DESIGN	DATE	DRAWN C.SWART - DYNATECH	DATE NOV 2025
SURVEYED	DATE	CHECKED A.D.E. WET	DATE NOV 2025

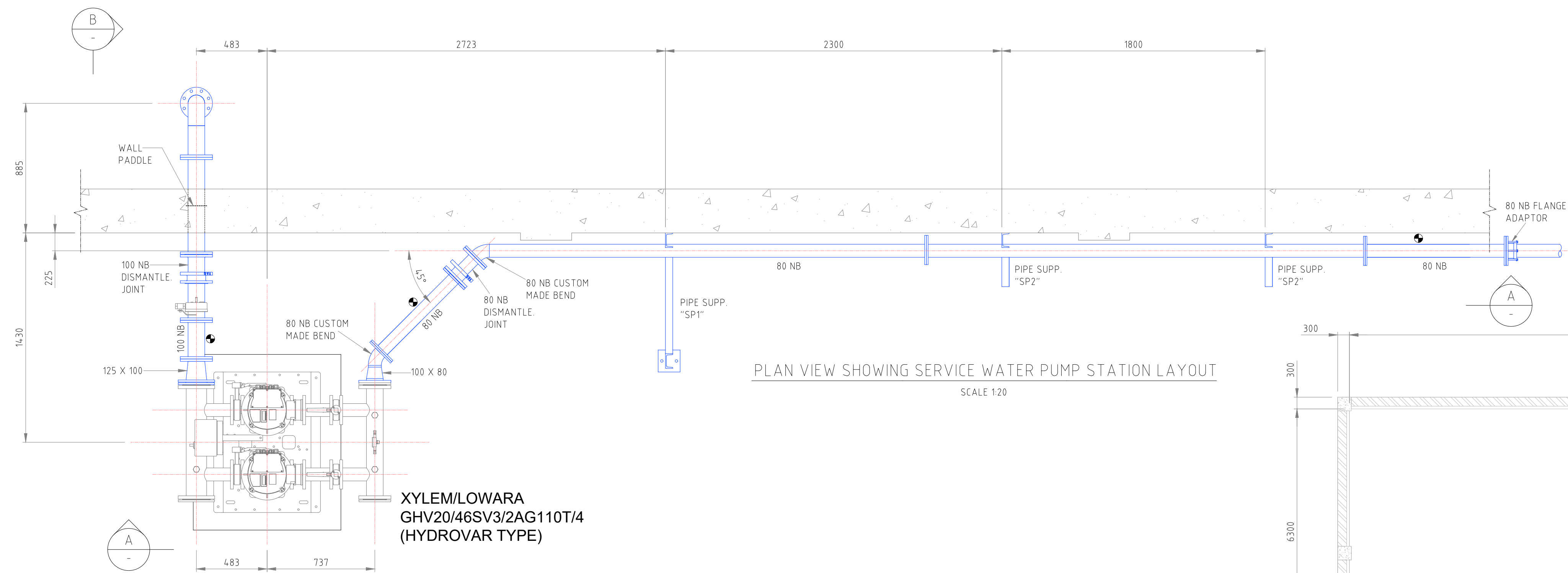
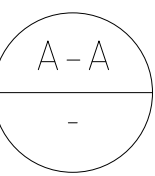
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DRAWING No.
DYN-075-006-008

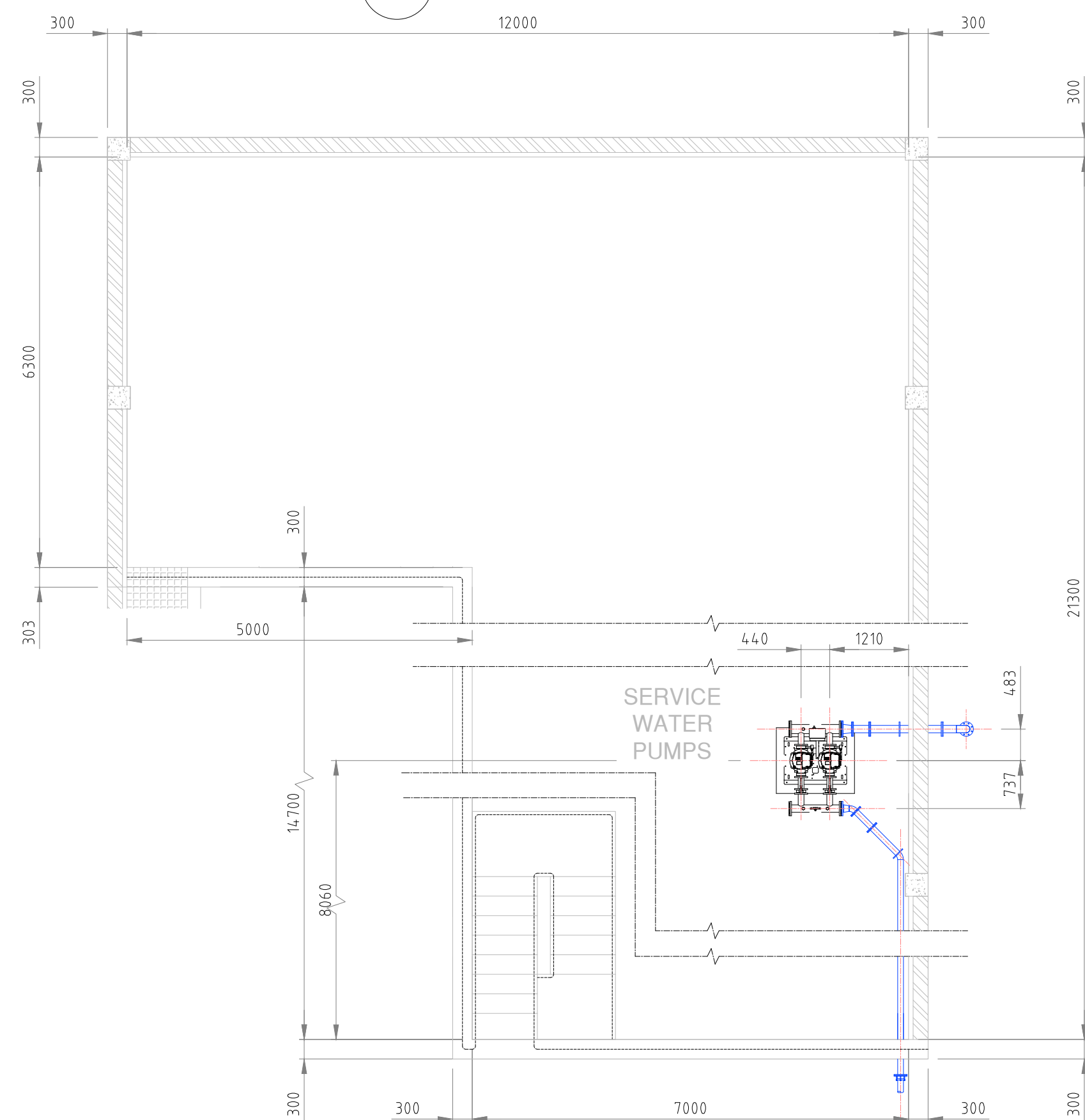
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ELEVATION
SCALE 1:20



PLAN VIEW SHOWING SERVICE WATER PUMP STATION LAYOUT
SCALE 1:20



KEY PLAN - SUMP PUMP - AT LEVEL 114.530
SCALE 1:75

FOR INFORMATION

REVISIONS

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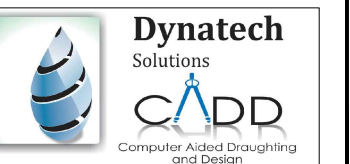
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- 5) 1/2" DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE.
- 6) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWG110.
- 7) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 313

CONSULTING COMPANY

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CLIENT
**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:
PHOKWANE LM

DRAWING TITLE
**EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT**

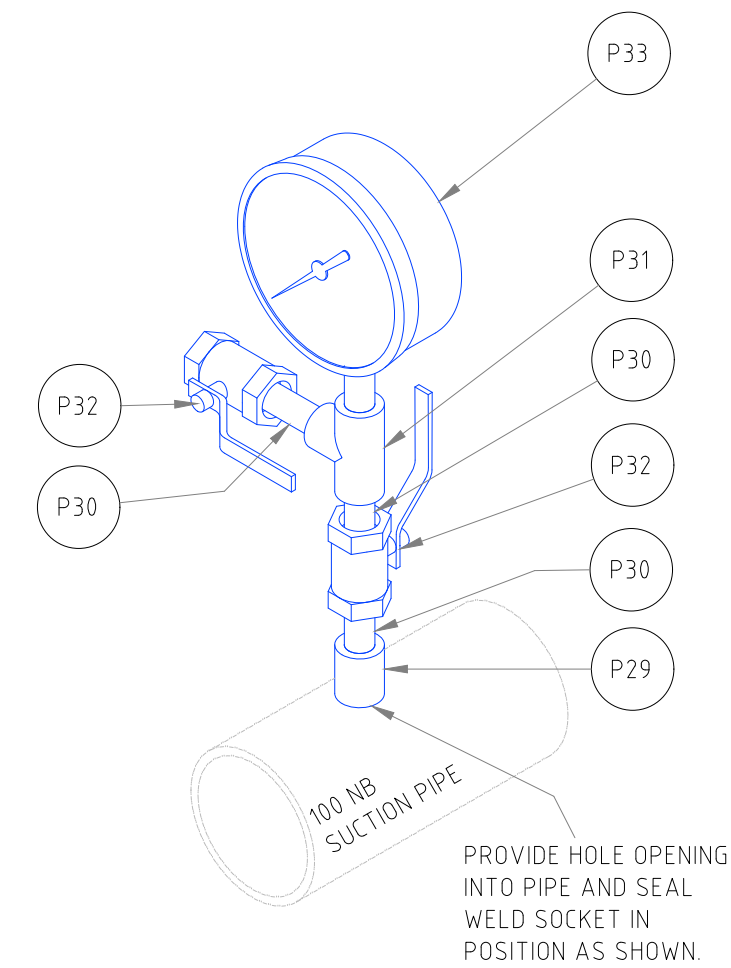
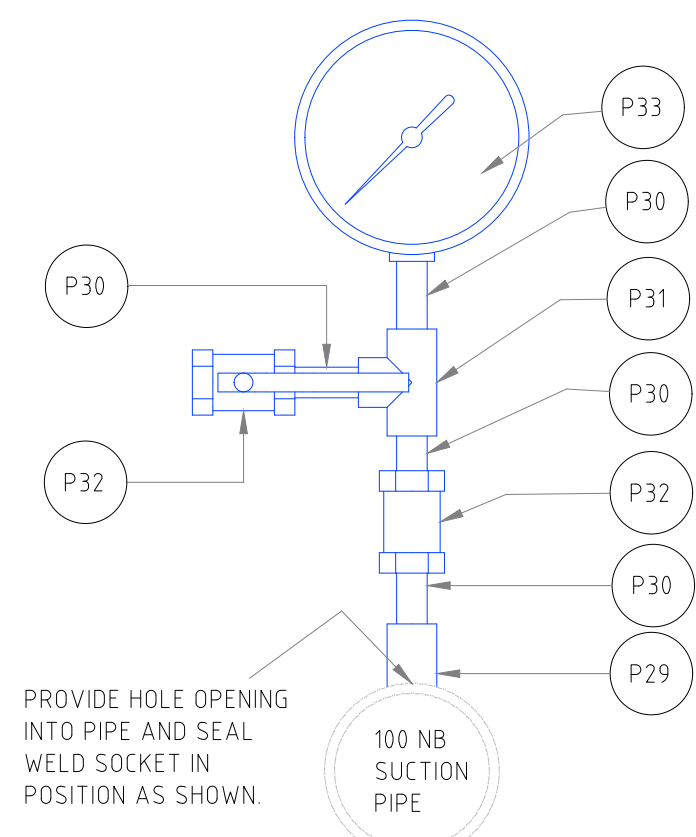
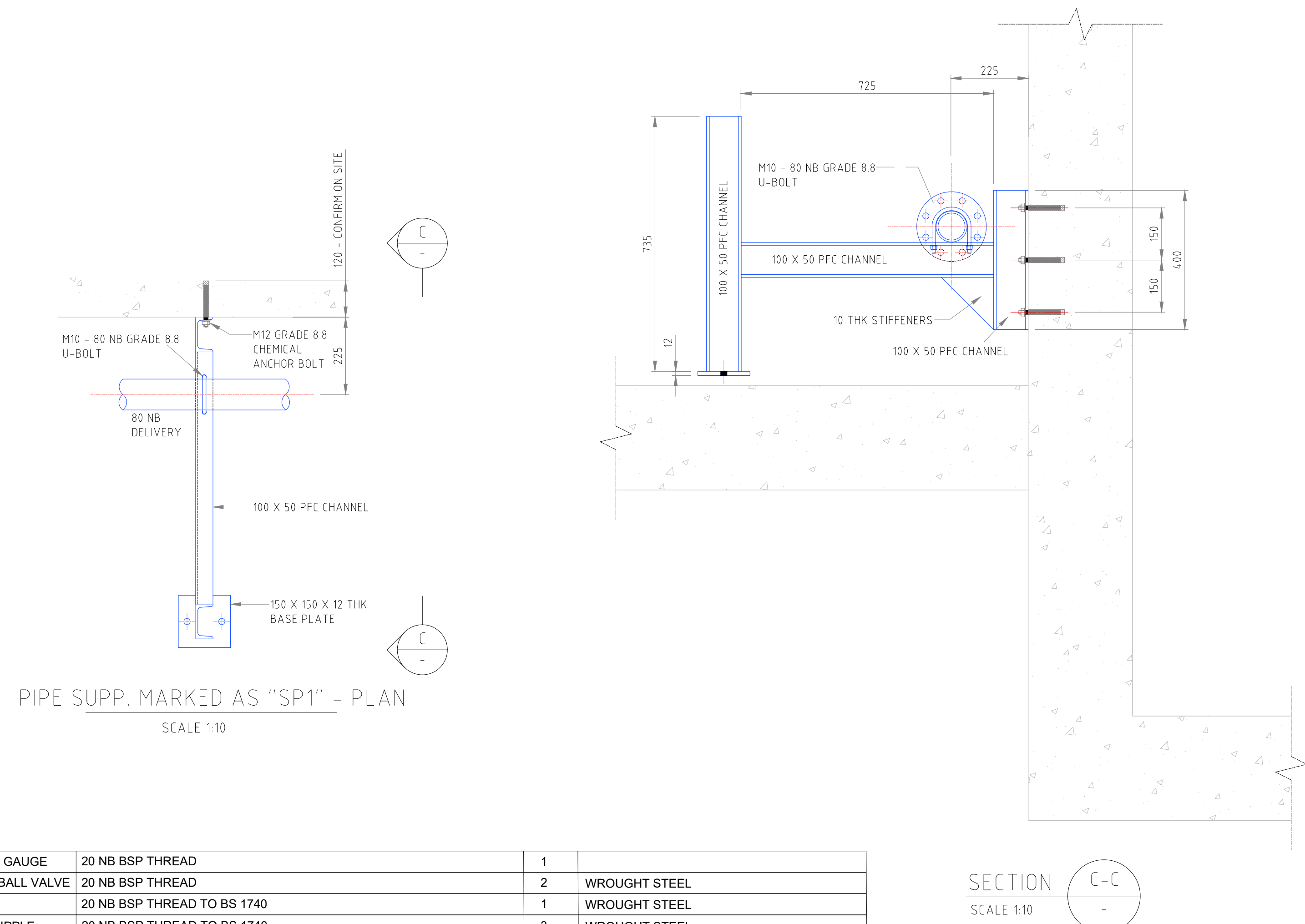
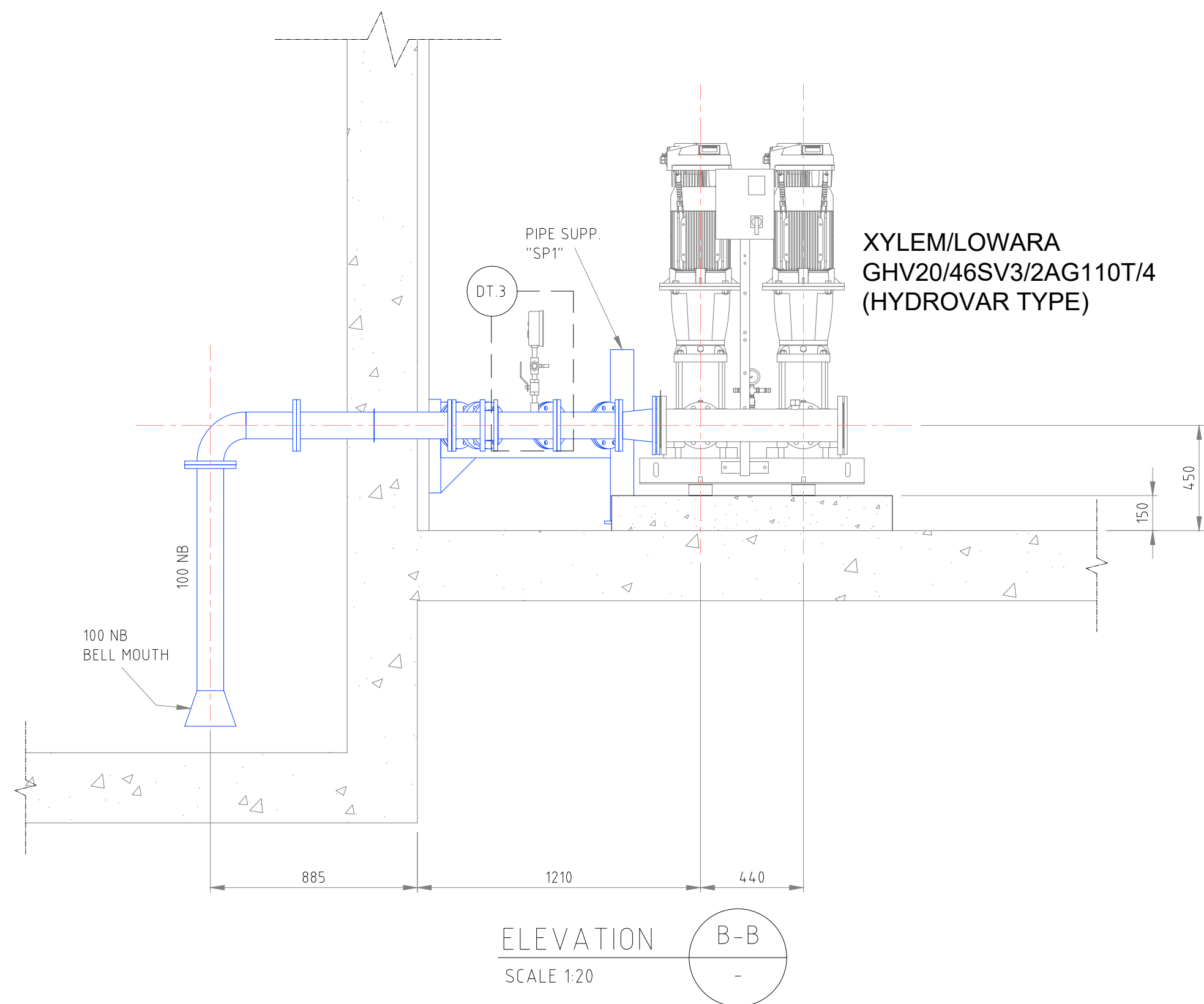
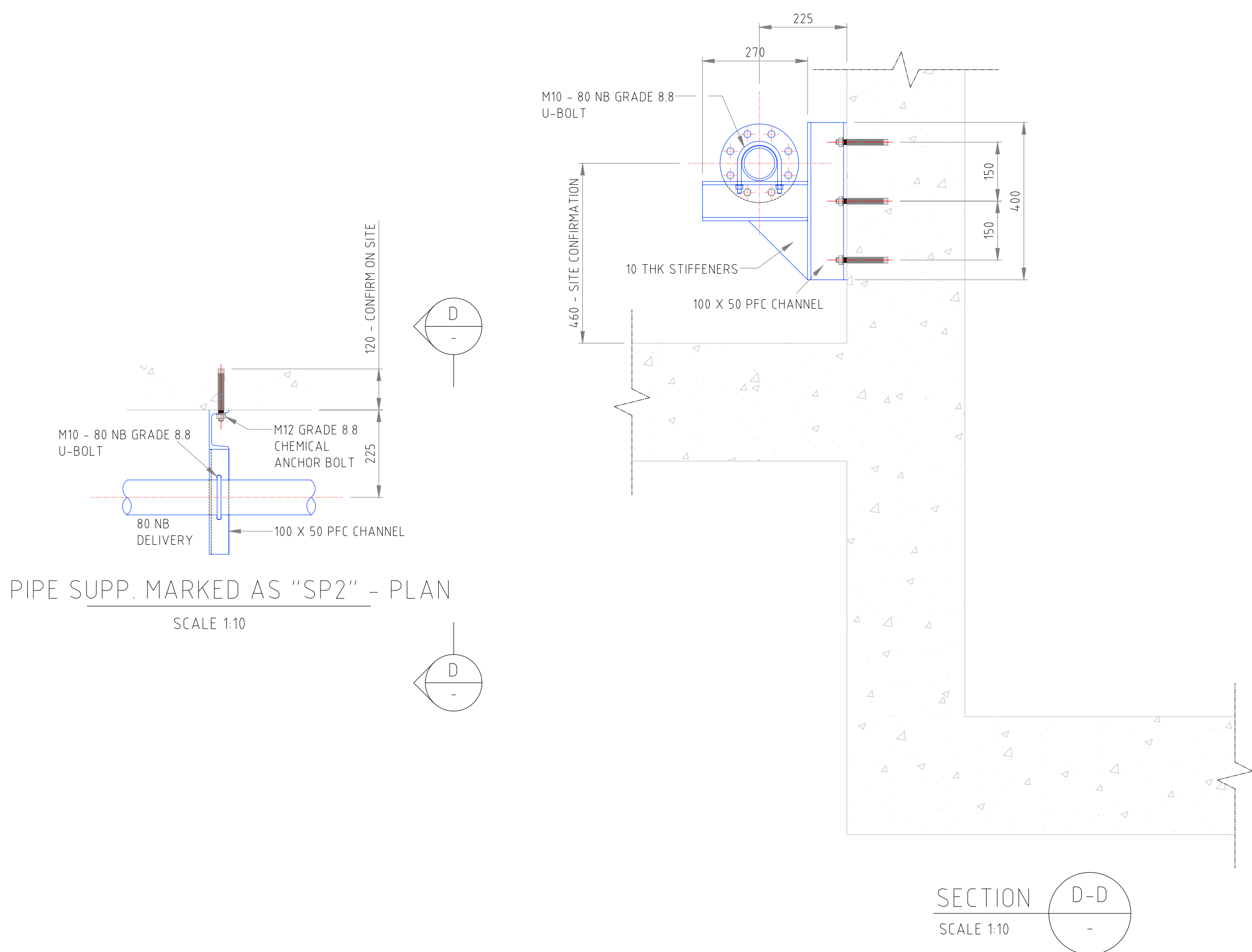
**SERVICE WATER PUMP SET
LAYOUT SHEET 2 OF 3**

DESIGN	DATE	DRAWN	DATE
		C.SWART - DYNATECH	NOV 2025
SURVEYED	DATE	CHECKED	DATE
		A.D.E. WET	NOV 2025

SCALE
AS SHOWN

DRAWING No.
DYN-075-006-009

REVISION No.							
0.5							



DETAIL "DT.3" PRESSURE GAUGE ASSEMBLY
SCALE 1:5

P33	PRESSURE GAUGE	20 NB BSP THREAD	1	
P32	HAND OPP BALL VALVE	20 NB BSP THREAD	2	WROUGHT STEEL
P31	EQUIL-T	20 NB BSP THREAD TO BS 1740	1	WROUGHT STEEL
P30	RUNNING NIPPLE	20 NB BSP THREAD TO BS 1740	3	WROUGHT STEEL
P29	SOCKET	20 NB BSP THREAD SOCKET TO BS 1740	1	WROUGHT STEEL
MARK	ITEM	DESCRIPTION	QTY	MATERIAL

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CONSULTING COMPANY

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CLIENT	PHOKWANE LOCAL MUNICIPALITY
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PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE
EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT

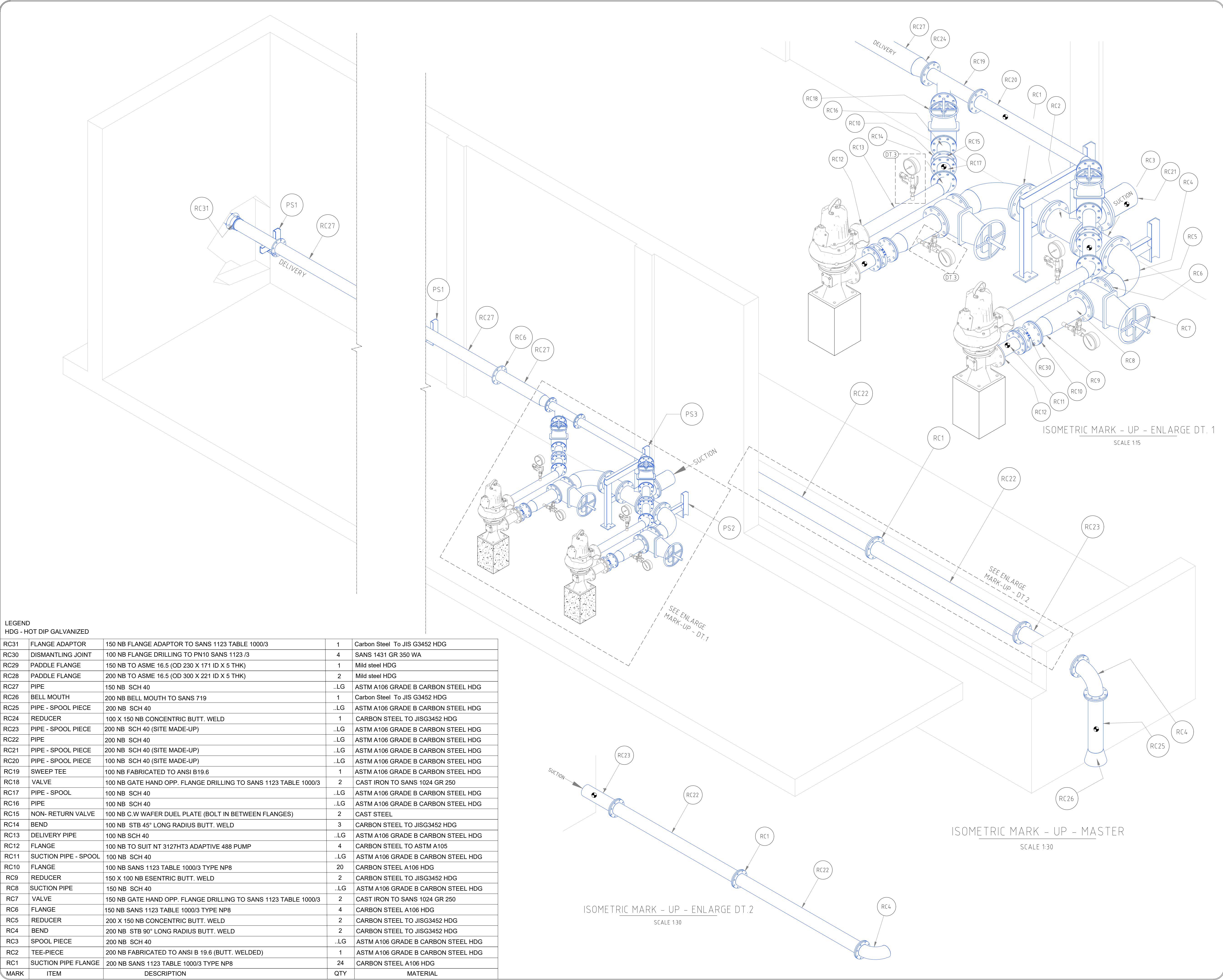
SERVICE WATER PUMP SET
LAYOUT SHEET 3 OF 3

DESIGN	DATE	DRAWN C.SWART - DYNATECH	DATE NOV 2025
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SCALE AS SHOWN

DRAWING No.
DYN-075-006-010

REVISION No.	0.5								
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LEGEND				
HDG - HOT DIP GALVANIZED				
RC31	FLANGE ADAPTOR	150 NB FLANGE ADAPTOR TO SANS 1123 TABLE 1000/3	1	Carbon Steel To JIS G3452 HDG
RC30	DISMANTLING JOINT	100 NB FLANGE DRILLING TO PN10 SANS 1123 /3	4	SANS 1431 GR 350 WA
RC29	PADDLE FLANGE	150 NB TO ASME 16.5 (OD 230 X 171 ID X 5 THK)	1	Mild steel HDG
RC28	PADDLE FLANGE	200 NB TO ASME 16.5 (OD 300 X 221 ID X 5 THK)	2	Mild steel HDG
RC27	PIPE	150 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC26	BELL MOUTH	200 NB BELL MOUTH TO SANS 719	1	Carbon Steel To JIS G3452 HDG
RC25	PIPE - SPOOL PIECE	200 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC24	REDUCER	100 X 150 NB CONCENTRIC BUTT. WELD	1	CARBON STEEL TO JISG3452 HDG
RC23	PIPE - SPOOL PIECE	200 NB SCH 40 (SITE MADE-UP)	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC22	PIPE	200 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC21	PIPE - SPOOL PIECE	200 NB SCH 40 (SITE MADE-UP)	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC20	PIPE - SPOOL PIECE	100 NB SCH 40 (SITE MADE-UP)	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC19	SWEEP TEE	100 NB FABRICATED TO ANSI B19.6	1	ASTM A106 GRADE B CARBON STEEL HDG
RC18	VALVE	100 NB GATE HAND OPP. FLANGE DRILLING TO SANS 1123 TABLE 1000/3	2	CAST IRON TO SANS 1024 GR 250
RC17	PIPE - SPOOL	100 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC16	PIPE	100 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC15	NON- RETURN VALVE	100 NB C.W WAFER DUEL PLATE (BOLT IN BETWEEN FLANGES)	2	CAST STEEL
RC14	BEND	100 NB STB 45° LONG RADIUS BUTT. WELD	3	CARBON STEEL TO JISG3452 HDG
RC13	DELIVERY PIPE	100 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC12	FLANGE	100 NB TO SUIT NT 3127HT3 ADAPTIVE 488 PUMP	4	CARBON STEEL TO ASTM A105
RC11	SUCTION PIPE - SPOOL	100 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC10	FLANGE	100 NB SANS 1123 TABLE 1000/3 TYPE NP8	20	CARBON STEEL A106 HDG
RC9	REDUCER	150 X 100 NB ESENTRIC BUTT. WELD	2	CARBON STEEL TO JISG3452 HDG
RC8	SUCTION PIPE	150 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC7	VALVE	150 NB GATE HAND OPP. FLANGE DRILLING TO SANS 1123 TABLE 1000/3	2	CAST IRON TO SANS 1024 GR 250
RC6	FLANGE	150 NB SANS 1123 TABLE 1000/3 TYPE NP8	4	CARBON STEEL A106 HDG
RC5	REDUCER	200 X 150 NB CONCENTRIC BUTT. WELD	2	CARBON STEEL TO JISG3452 HDG
RC4	BEND	200 NB STB 90° LONG RADIUS BUTT. WELD	2	CARBON STEEL TO JISG3452 HDG
RC3	SPOOL PIECE	200 NB SCH 40	..LG	ASTM A106 GRADE B CARBON STEEL HDG
RC2	TEE-PIECE	200 NB FABRICATED TO ANSI B 19.6 (BUTT. WELDED)	1	ASTM A106 GRADE B CARBON STEEL HDG
RC1	SUCTION PIPE FLANGE	200 NB SANS 1123 TABLE 1000/3 TYPE NP8	24	CARBON STEEL A106 HDG
MARK	ITEM	DESCRIPTION	QTY	MATERIAL

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CONSULTING COMPANY

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Dynatech Solutions

CADD

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PLAN Nr.	DESCRIPTION

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ENGINEER: _____ DATE: _____

APPROVED: _____

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Mobile: + 27 (0)83 265 1524
329 Stateway Chambers, Stateway, Welkom,
PO Box 2600, Welkom, 9460, South Africa

CLIENT

PHOKWANE
LOCAL MUNICIPALITY

PROJECT

UPGRADING OF HARTSWATER
WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE

EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT

RECOVERY WATER PUMP SET
LAYOUT SHEET 1 OF 4

DESIGN	DATE	DRAWN C.SWART - DYNATECH	DATE NOV 2025
SURVEYED	DATE	CHECKED A.D.E WET	DATE NOV 2025

SCALE

AS SHOWN

DRAWING No.

DYN-075-006-011

REVISION No.	0.5								
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FOR INFORMATION

REVISIONS

No.	DATE	BY	DESCRIPTION
0.5	04/11/25	C.S	DRAWING REVISED AS PER COMMENTS - ISSUED FOR INFORMATION

GENERAL NOTES

- 1) ALL BENDS TO ANSI B16.9
- 2) ALL PIPING TO ASTM A106 GRADE "B"
- 3) ALL PIPING TO BE PAINTED IN ACCORDANCE WITH CLIENT SPECIFICATION
- ALL CLOSURE PIECES ARE TO BE SUPPLIED WITH ONE LOOSE FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR DELIVERY.
- 4) BOLTS, NUTS AND WASHERS TO BE BAGGED AND TAGGED FOR DELIVERY WITH RELEVANT LINE IDENTIFICATION NUMBER. (ADDITIONAL 5% TO BE SUPPLIED)
- PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT
- 5)  DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE
- 6) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWG110
- 7) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 313

CONSULTING COMPANY

DYNATECH CONSULTING

CELL: 082 3710 308
MAIL: braam@dynatech1.co.za
CELL: 079 4052 924
MAIL: corne@dynatech1.co.za



REFERENCE DRAWINGS

PLAN Nr.	DESCRIPTION

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APPROVED: CLIENT: DATE:

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CLIENT

PHOKWANE
LOCAL MUNICIPALITY

PROJECT

UPGRADING OF HARTSWATER
WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE
EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT

RECOVERY WATER PUMP SET
LAYOUT SHEET 2 OF 4

DESIGN	DATE	DRAWN C.SWART - DYNATECH	DATE NOV 2025
SURVEYED	DATE	CHECKED A.DE WET	DATE NOV 2025

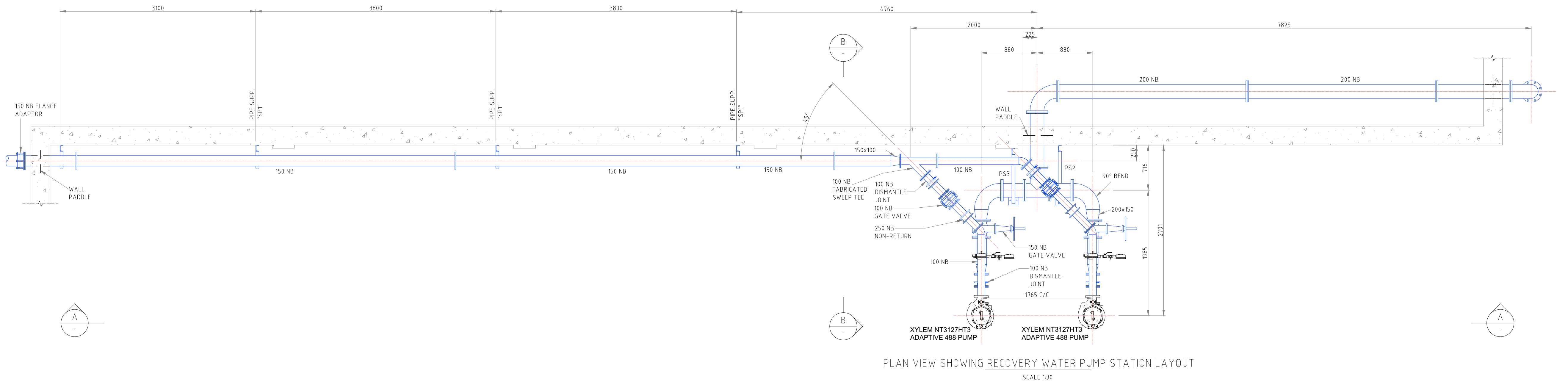
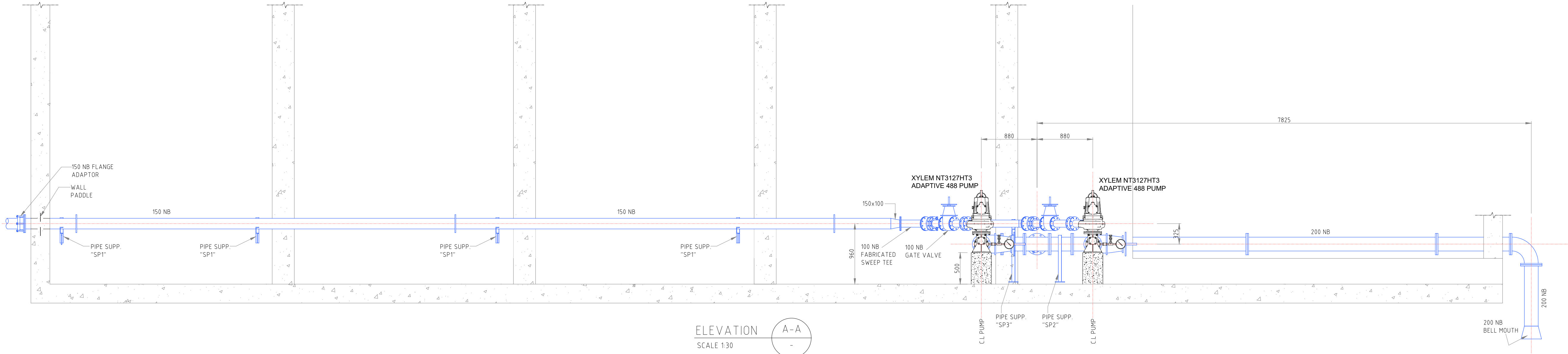
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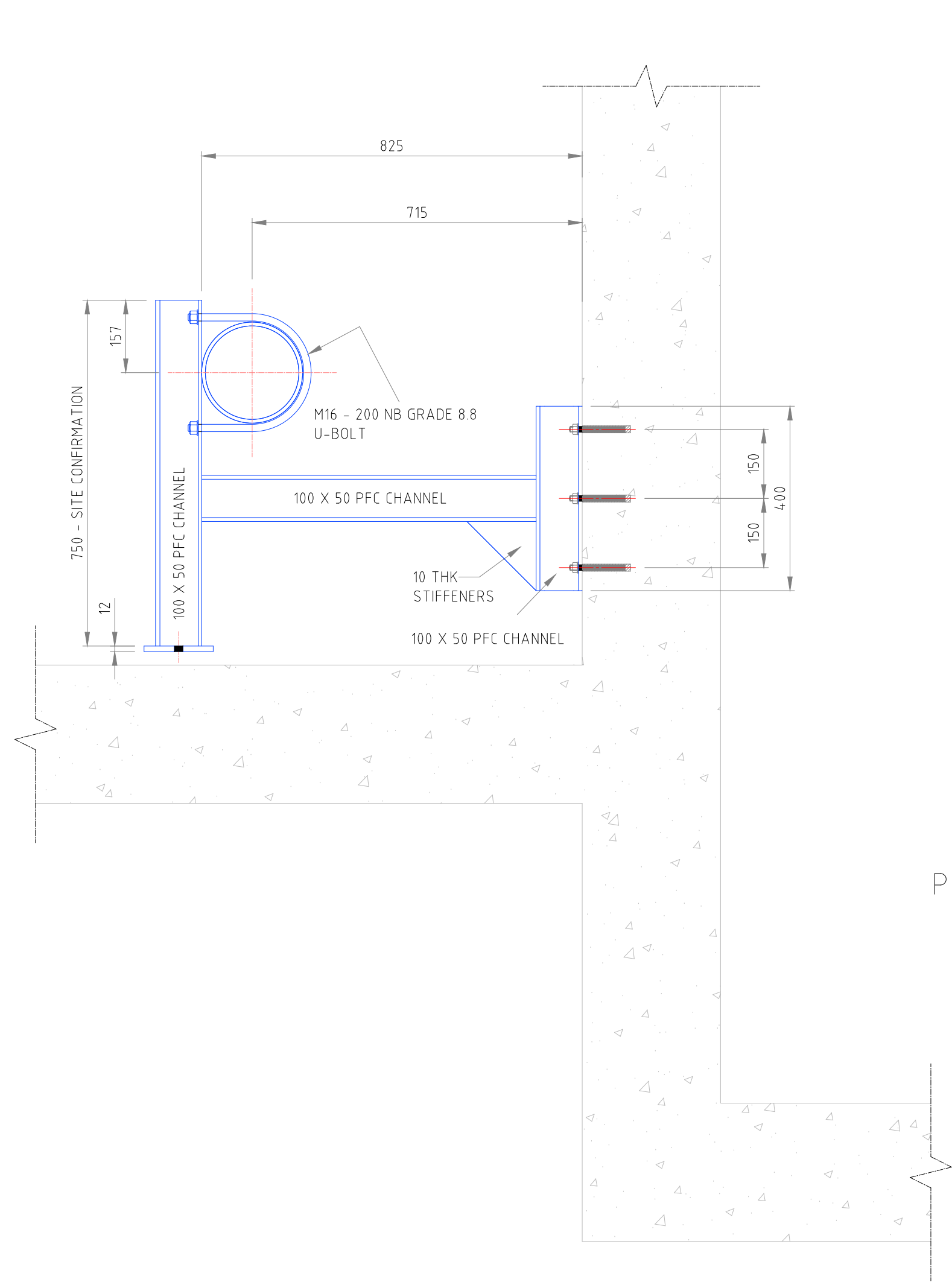
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DYN-075-006-012

REVISION No.

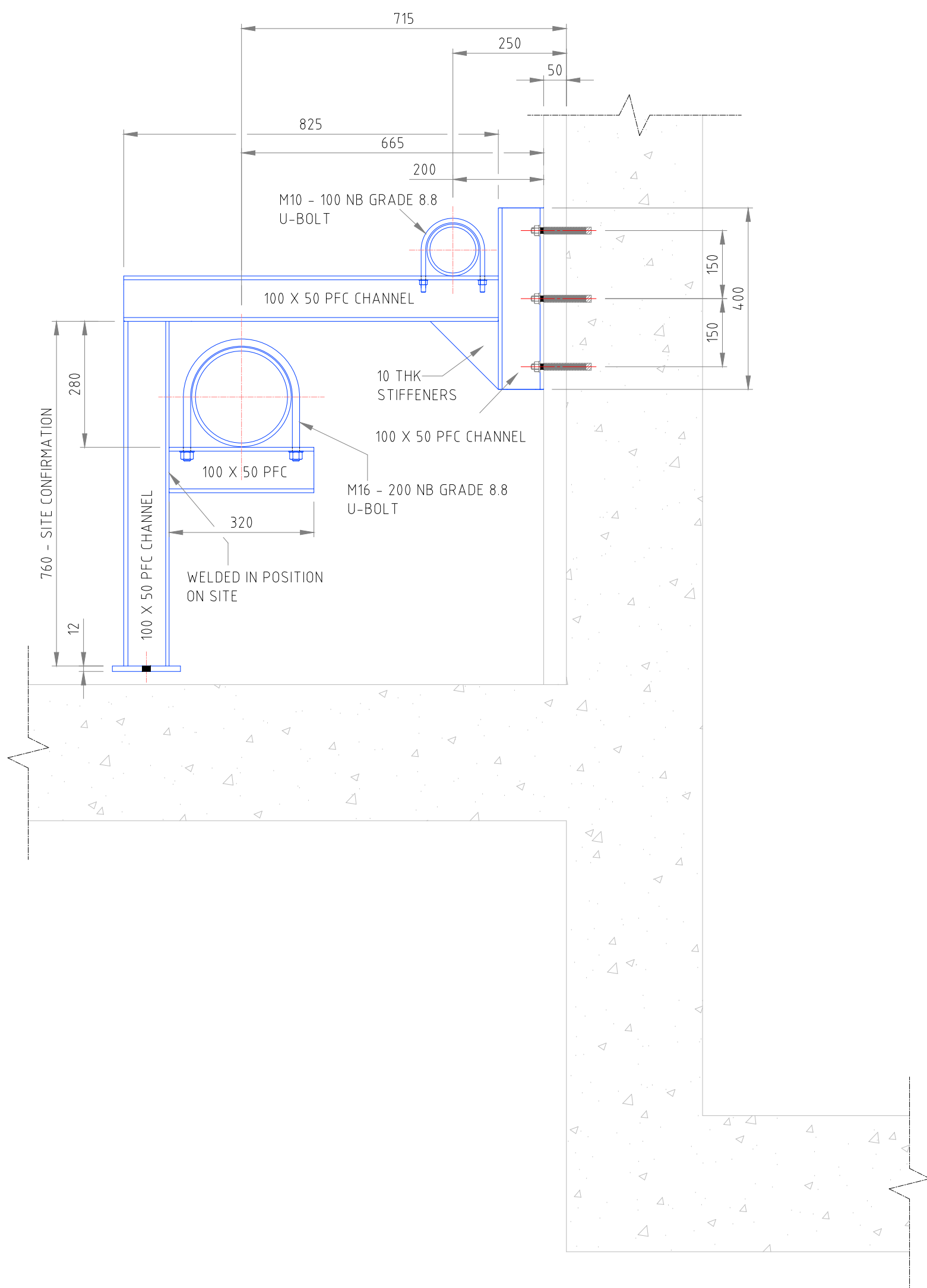
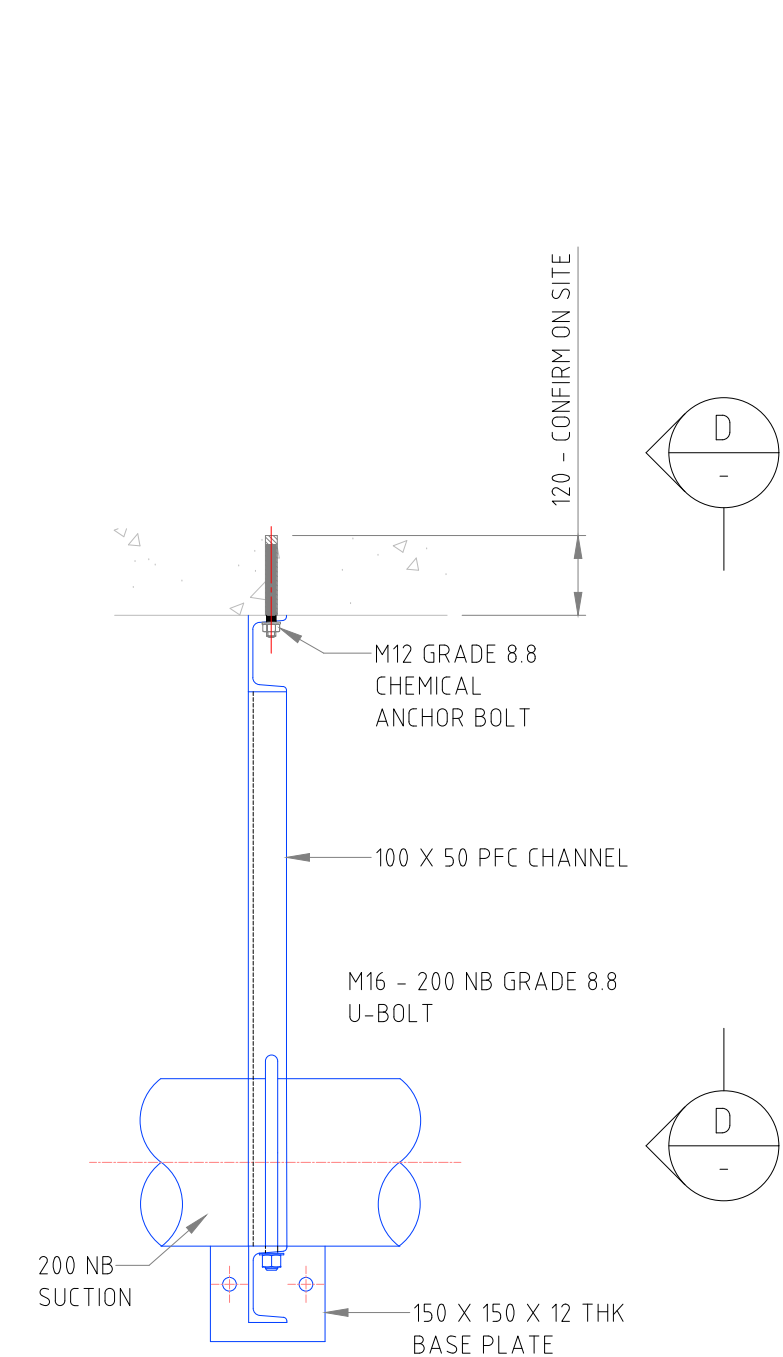
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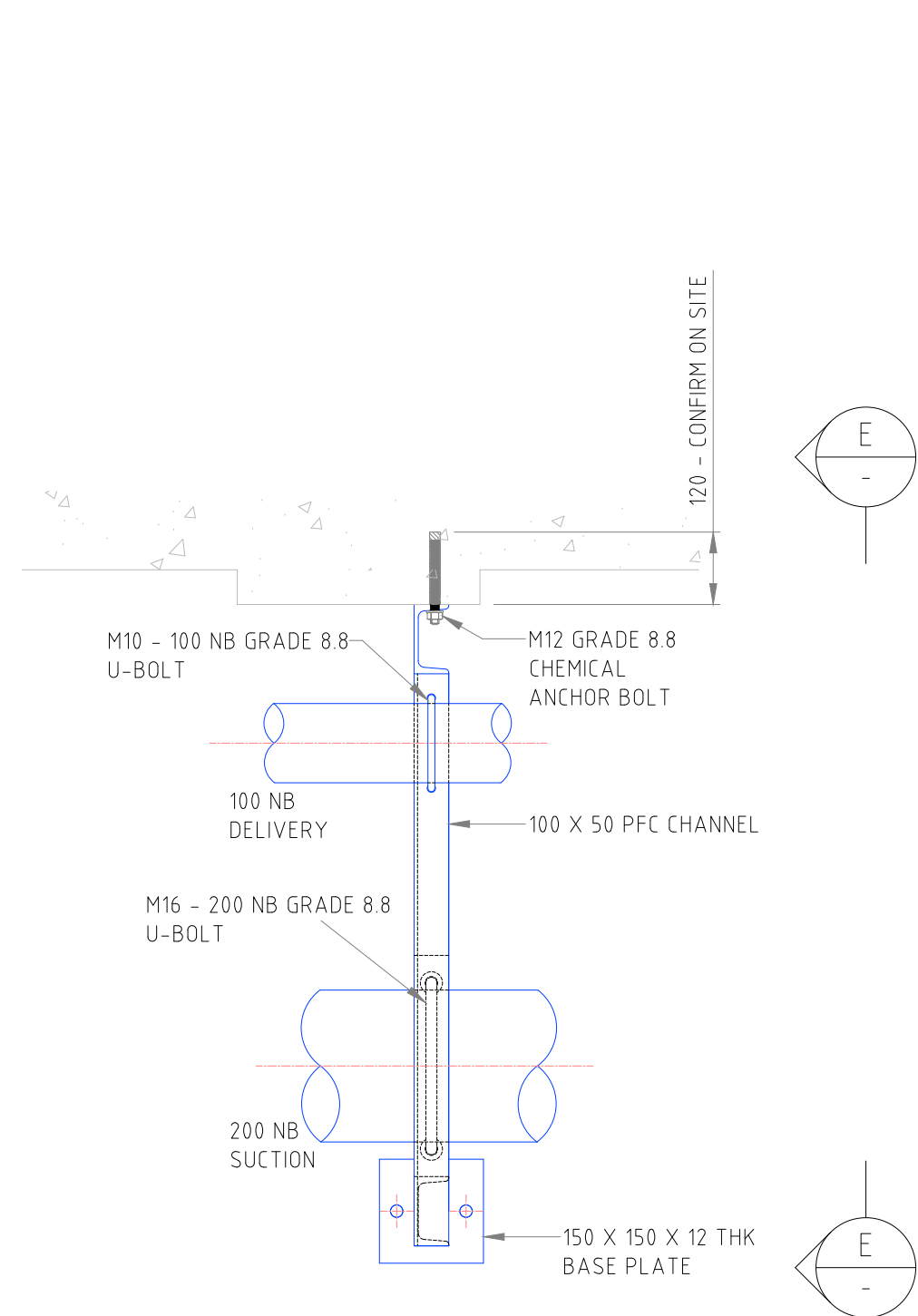


SECTION D-D
SCALE 1:10

PIPE SUPP. MARKED AS "SP2" - PLAN
SCALE 1:10



SECTION E-E
SCALE 1:10



PIPE SUPP. MARKED AS "SP3" - PLAN
SCALE 1:10

FOR INFORMATION

REVISIONS

No.	DATE	BY	DESCRIPTION
0.5	04/11/25	C.S	DRAWING REVISED AS PER COMMENTS - ISSUED FOR INFORMATION

GENERAL NOTES

- 1) ALL BENDS TO ANSI B16.9
- 2) ALL PIPING TO ASTM A106 GRADE "B"
- 3) ALL PIPING TO BE PAINTED IN ACCORDANCE WITH CLIENT SPECIFICATION
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- 6) PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO SUIT
- 7) DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION OF MATING FLANGE
- 8) ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWG110
- 9) PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 313

CONSULTING COMPANY

DYNATECH CONSULTING

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MAIL: braam@dynatech1.co.za
CELL: 079 4052 924
MAIL: corne@dynatech1.co.za



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ENGINEER:	DATE:
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CLIENT

PHOKWANE
LOCAL MUNICIPALITY

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE
EQUIPMENT ROOM - LOW LIFT PUMPS
PHASE 1 PUMP ARRANGEMENT

RECOVERY WATER PUMP SET
LAYOUT SHEET 4 OF 4

DESIGN	DATE	DRAWN	DATE
		C.SWART - DYNATECH	NOV 2025
SURVEYED	DATE	CHECKED	DATE
		A.DE WET	NOV 2025

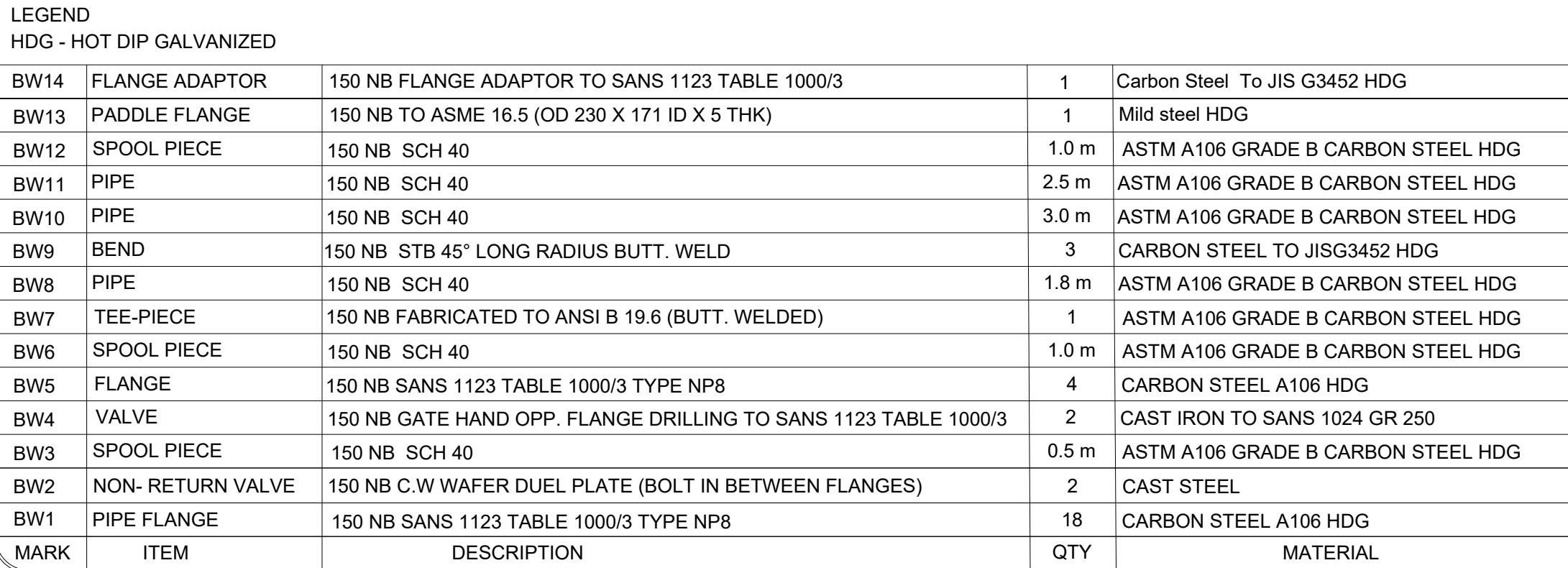
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DRAWING No.

DYN-075-006-014

REVISION No.

0.5



	DATE	BY	DESCRIPTION
5	04/11/25	C.S	DRAWING REVISED AS PER COMMENTS - ISSUED FOR INFORMATION

ALL BENDS TO ANSI B16.9
ALL PIPING TO ASTM A106 GRADE "B"
ALL PIPING TO BE PAINTED IN ACCORDANCE WITH CLIENT SPECIFICATION
ALL CLOSURE PIECE AND FLANGE TO BE SUPPLIED WITH ONE LOOSE
FLANGE SUITABLY BOLTED TO THE FIXED FLANGE FOR
DELIVERY
BOLTS, NUTS AND WASHERS TO BE BAGGED AND TAGGED FOR
DELIVERY WITH RELEVANT LINE IDENTIFICATION NUMBER. (
ADDITIONAL 5% TO BE SUPPLIED)
PIPE SUPPORTS TO BE FABRICATED & POSITIONED ON SITE TO
SUIT
X DENOTES A CLOSURE PIECE, PIPE LENGTH TO BE SITE
MEASURED & LOOSE FLANGE WELDED ON TO SUIT ORIENTATION
OF MATING FLANGE
ALL PIPING TO CONFORM TO THE GENERAL PIPE CONSTRUCTION DWS1110.
PIPE DESIGN, FABRICATION AND INSTALLATION TO ASME 31.3

Dynatech
Solutions

CADD
Computer Aided Drafting
and Design

PLAN Nr.	DESCRIPTION

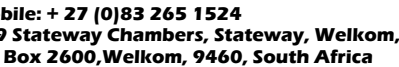
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ENGINEER: _____ DATE: _____

PROVED: _____

AGENT: _____ DATE: _____

PRINT ISSUED ON _____

PRINT ISSUED ON



CLIENT

**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

UPGRADING OF HARTSWATER WATER TREATMENT PLANT

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE
EQUIPMENT ROOM - LOW LIFT PUMP
PHASE 1 PUMP ARRANGEMENT

**BACKWASH WATER BLOWER SET
LAYOUT SHEET 1 OF 1**

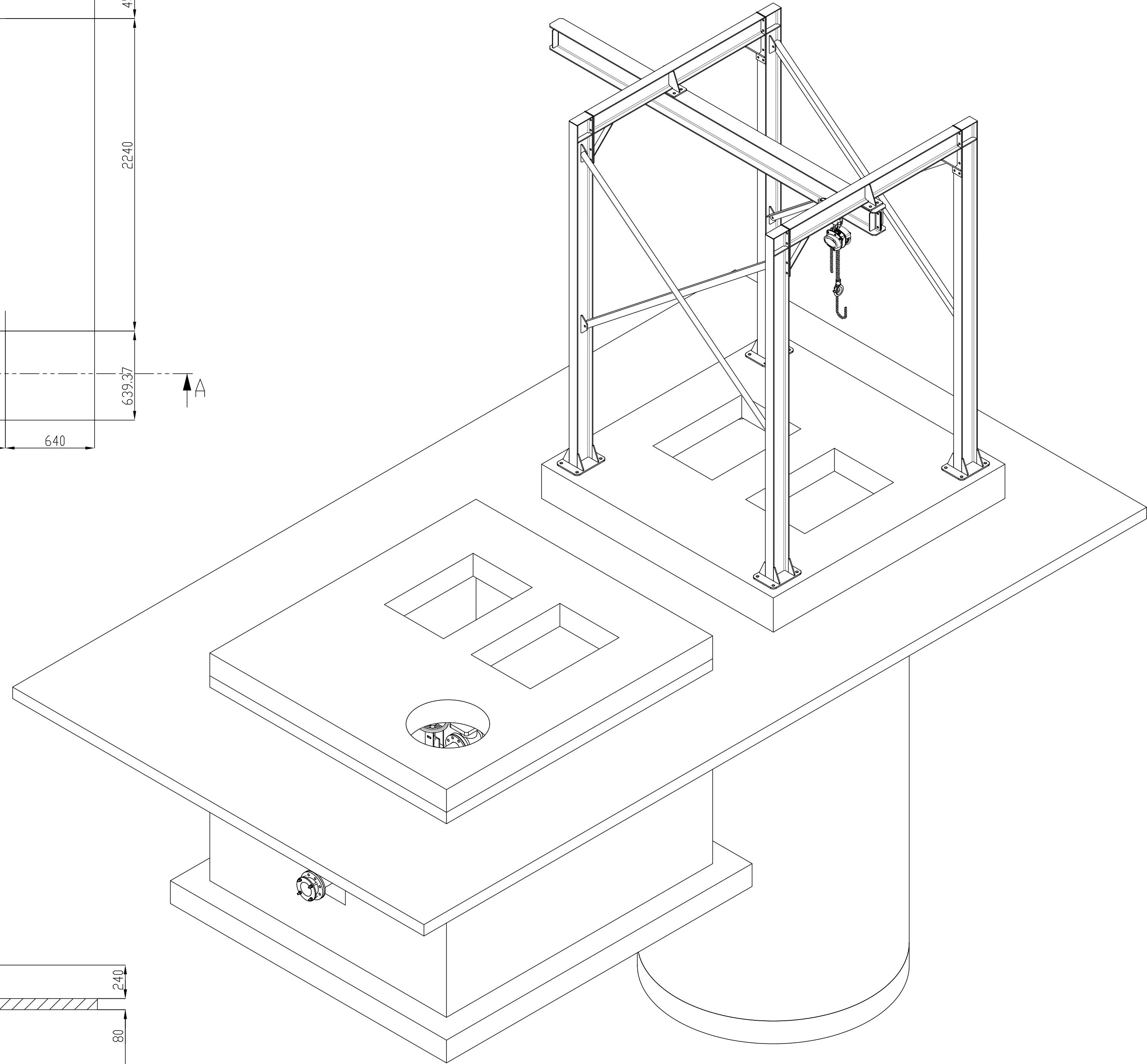
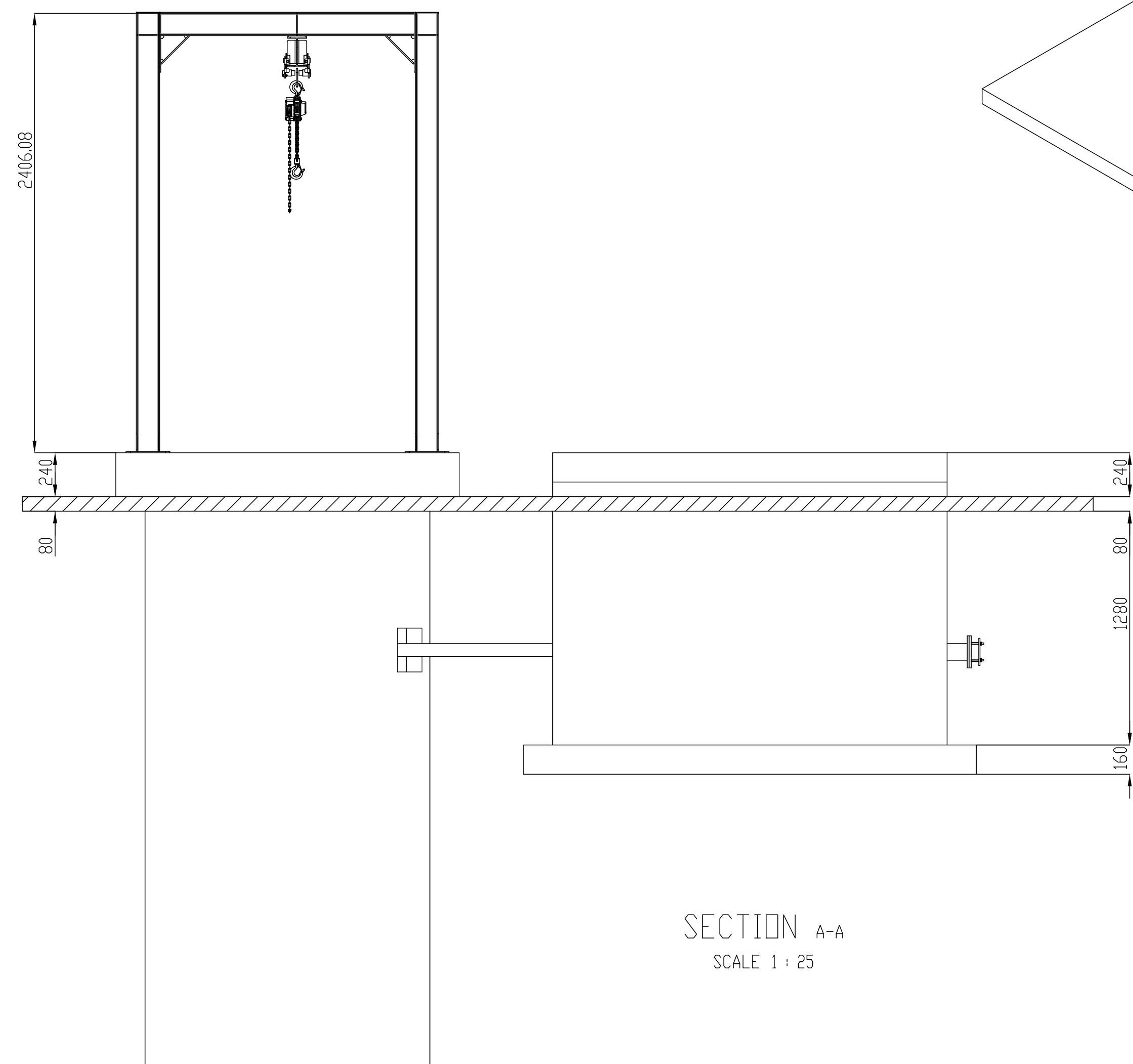
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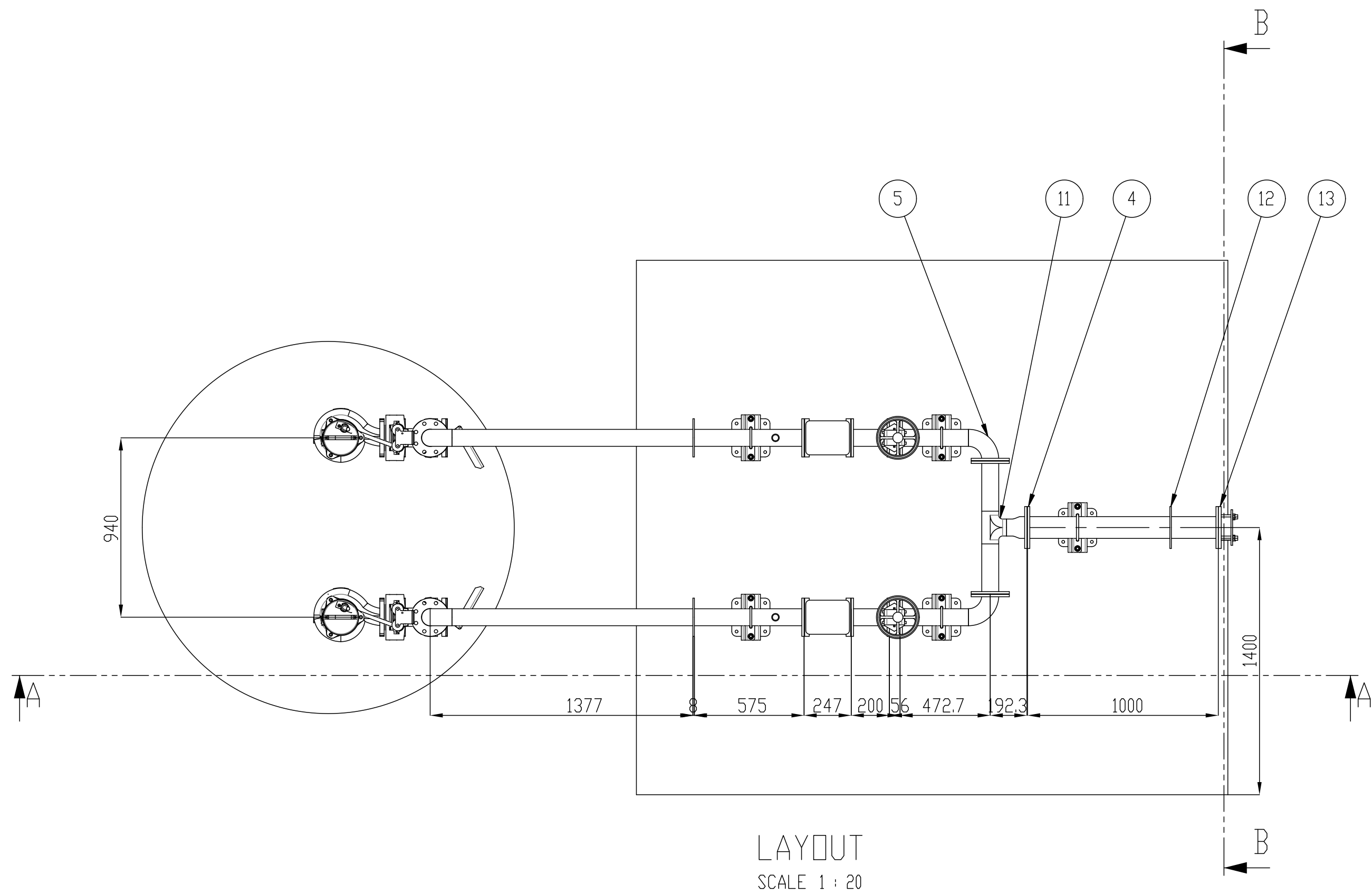
DYN-075-006-015

REVISION No.

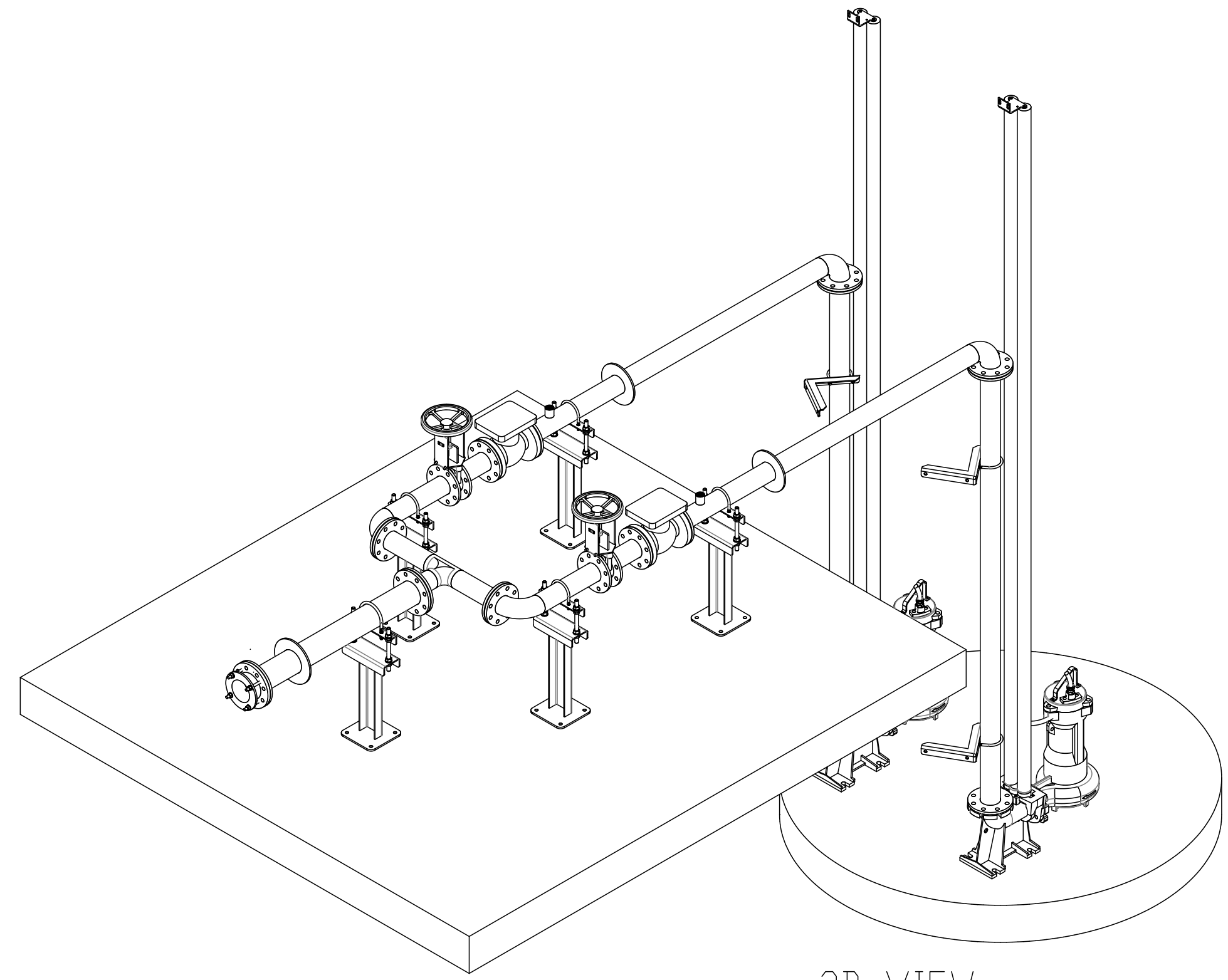
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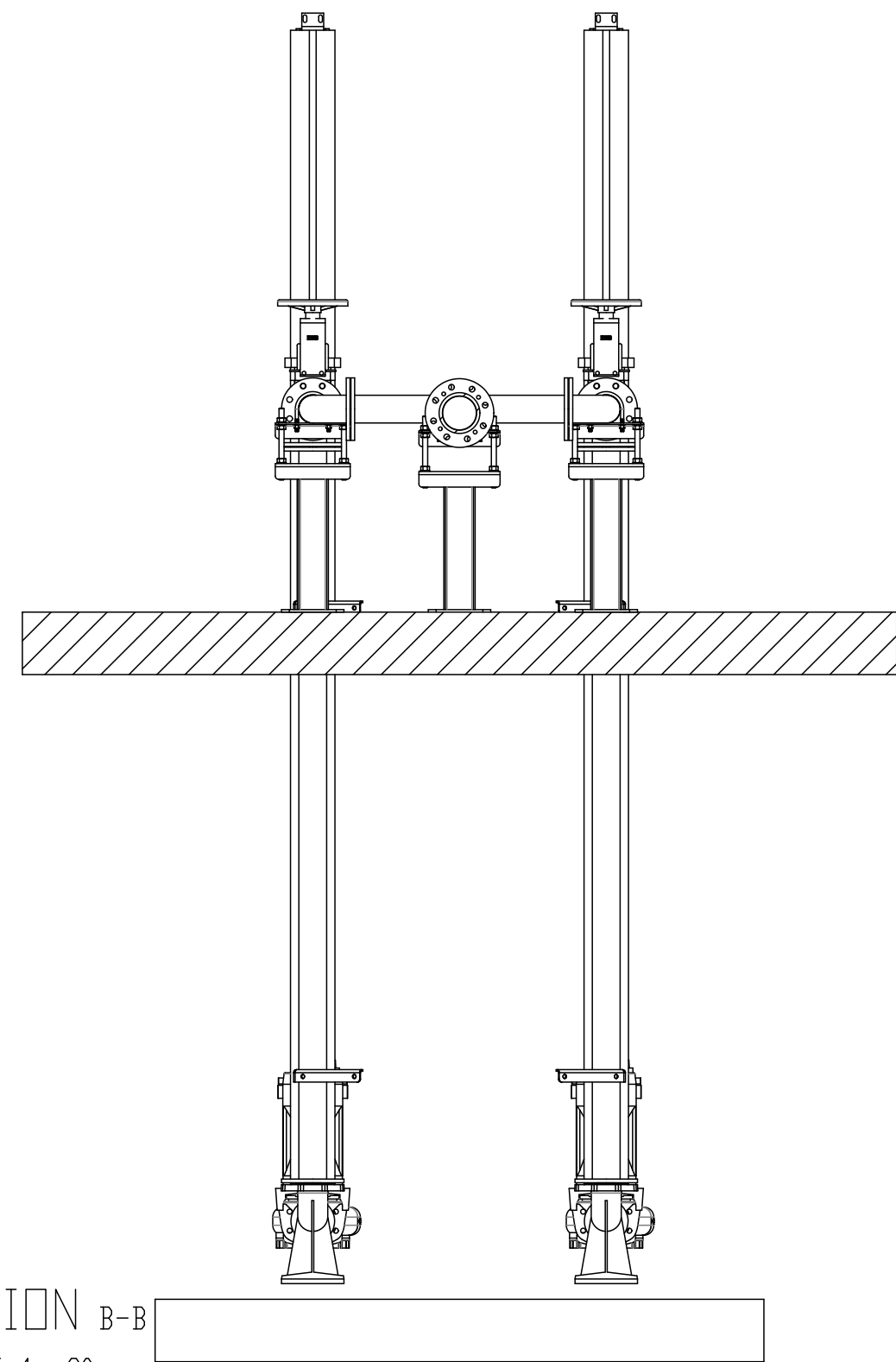
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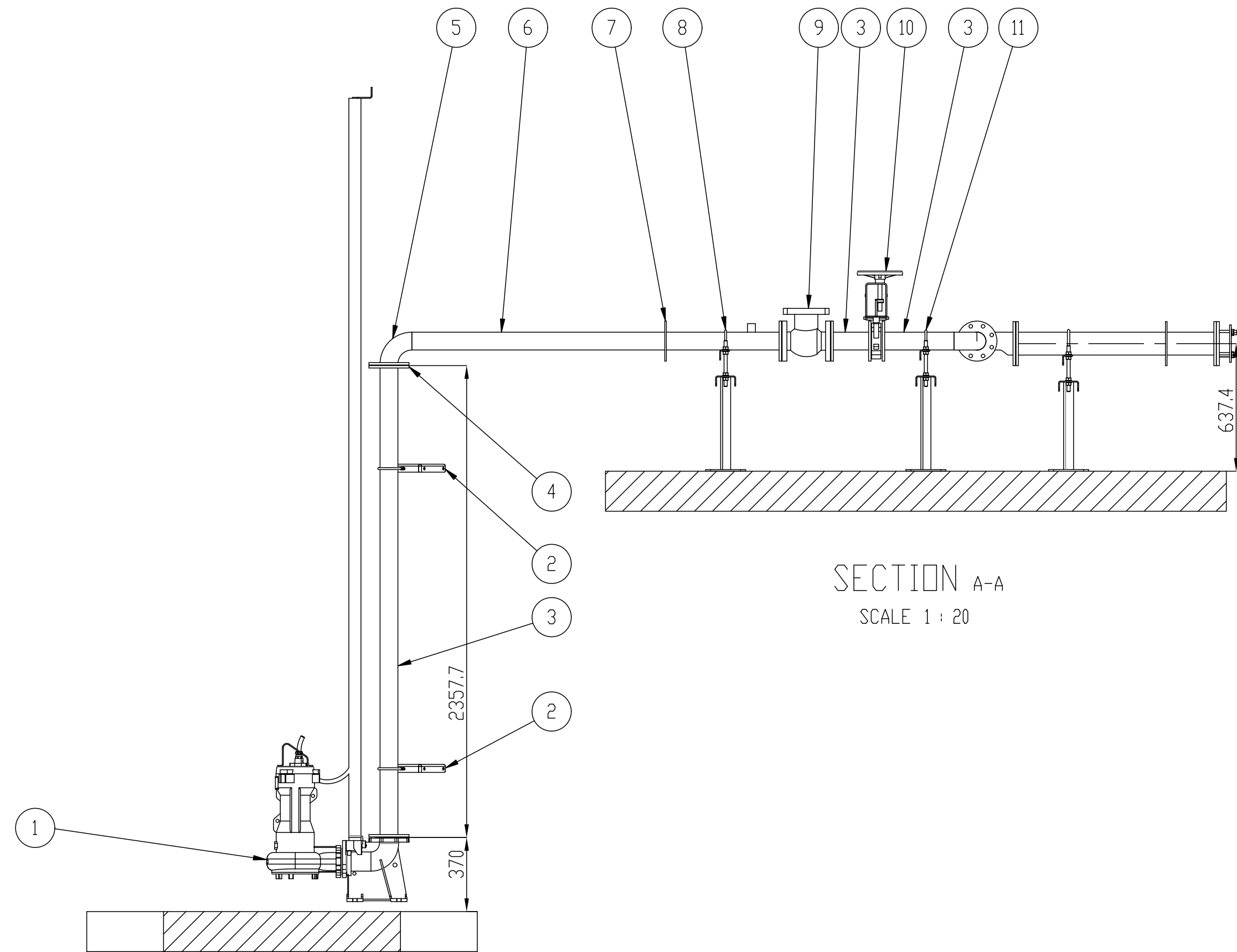
LAYOUT
SCALE 1 : 20



3D VIEW
SCALE 1 : 20



SECTION B-B
SCALE 1 : 20



SECTION A-A
SCALE 1 : 20

13	150NB Flange Adaptor	As per Manufacture	1
12	150NB Puddle pipe	Mild steel HDG	1
11	100NB Special Tee with eccentric reducer	Mild steel HDG	1
10	100NB Knife gate valve	As per Manufacture	2
9	100NB Swing check valve	As per Manufacture	2
8	100NB Pipe supports	Mild steel HDG	5
7	100NB Puddle	Mild steel HDG	3
6	100NB Pipe with socket	Mild steel HDG	2
5	100NB 90° Bend	Mild steel HDG	4
4	100NB Flange T/1000/3	As per Manufacture	18
3	100NB Pipes with different dimensions	Mild steel HDG	7
2	100NB Pipe support	Mild steel HDG	4
1	Xylem NP 3127HT3 Adaptive 489 Submersible pump set	As per Manufacture	2
ITEM	DESCRIPTION	MATERIAL	QTY

REVISIONS

No.	DATE	BY	DESCRIPTION

NOTES

REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

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CLIENT
**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE
**GENERAL ARRANGEMENT:
SUPERNATANT PUMP STATION
BUILDING
SHEET 2 OF 2**

DESIGN	DATE	DRAWN	DATE
A. de Wet	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		Evd Hoff	JUN 2025

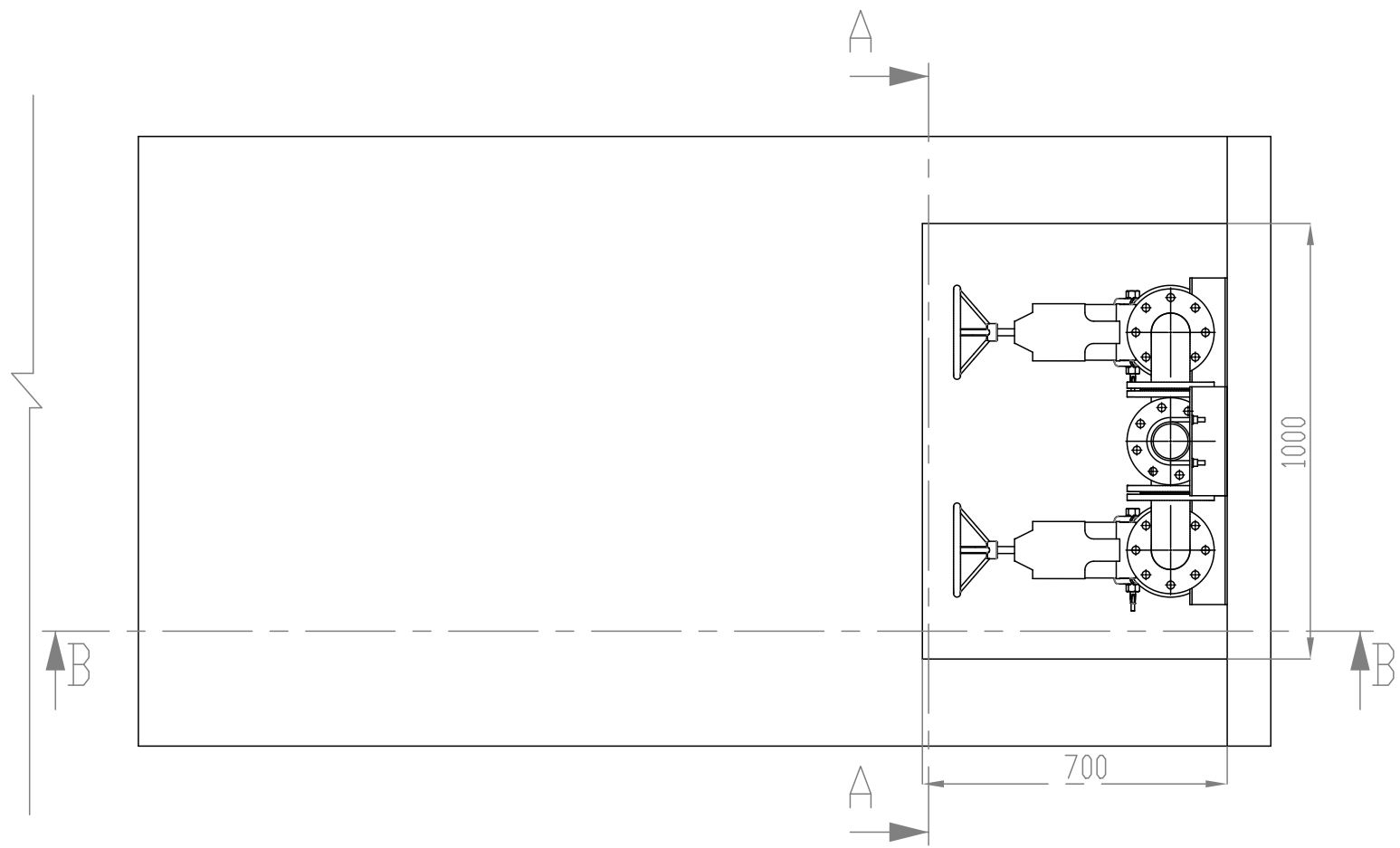
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DRAWING No.

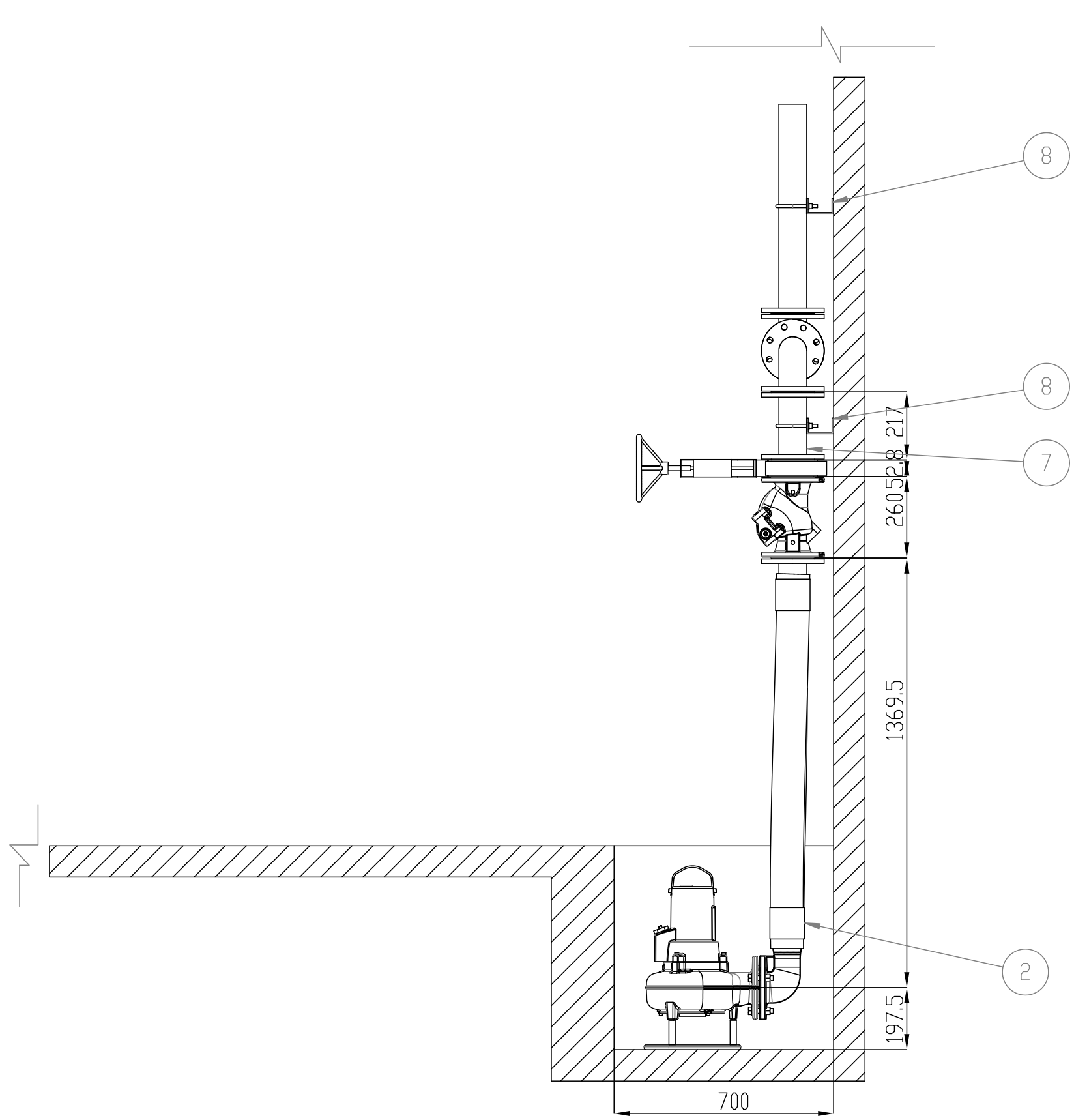
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REVISION No.

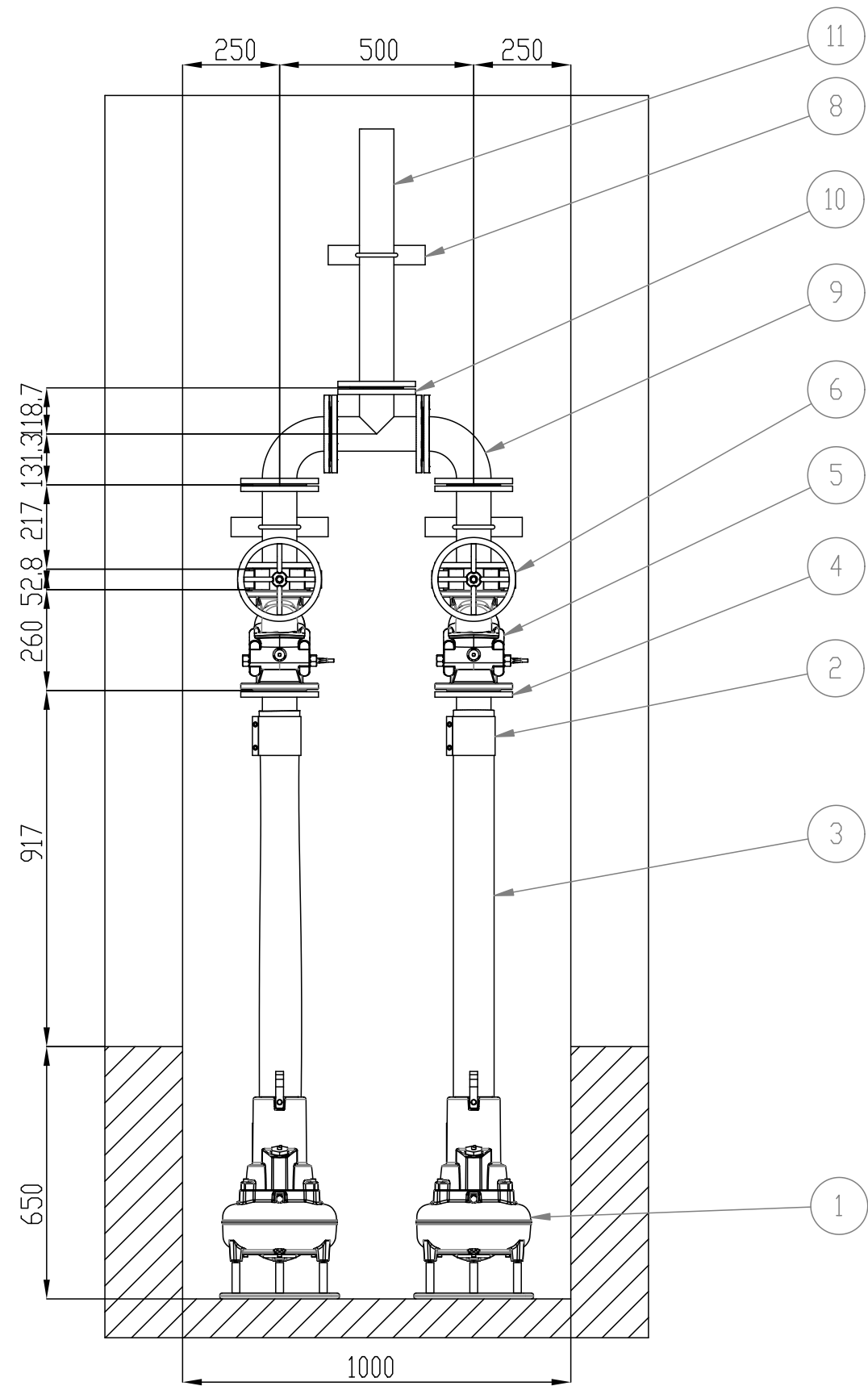
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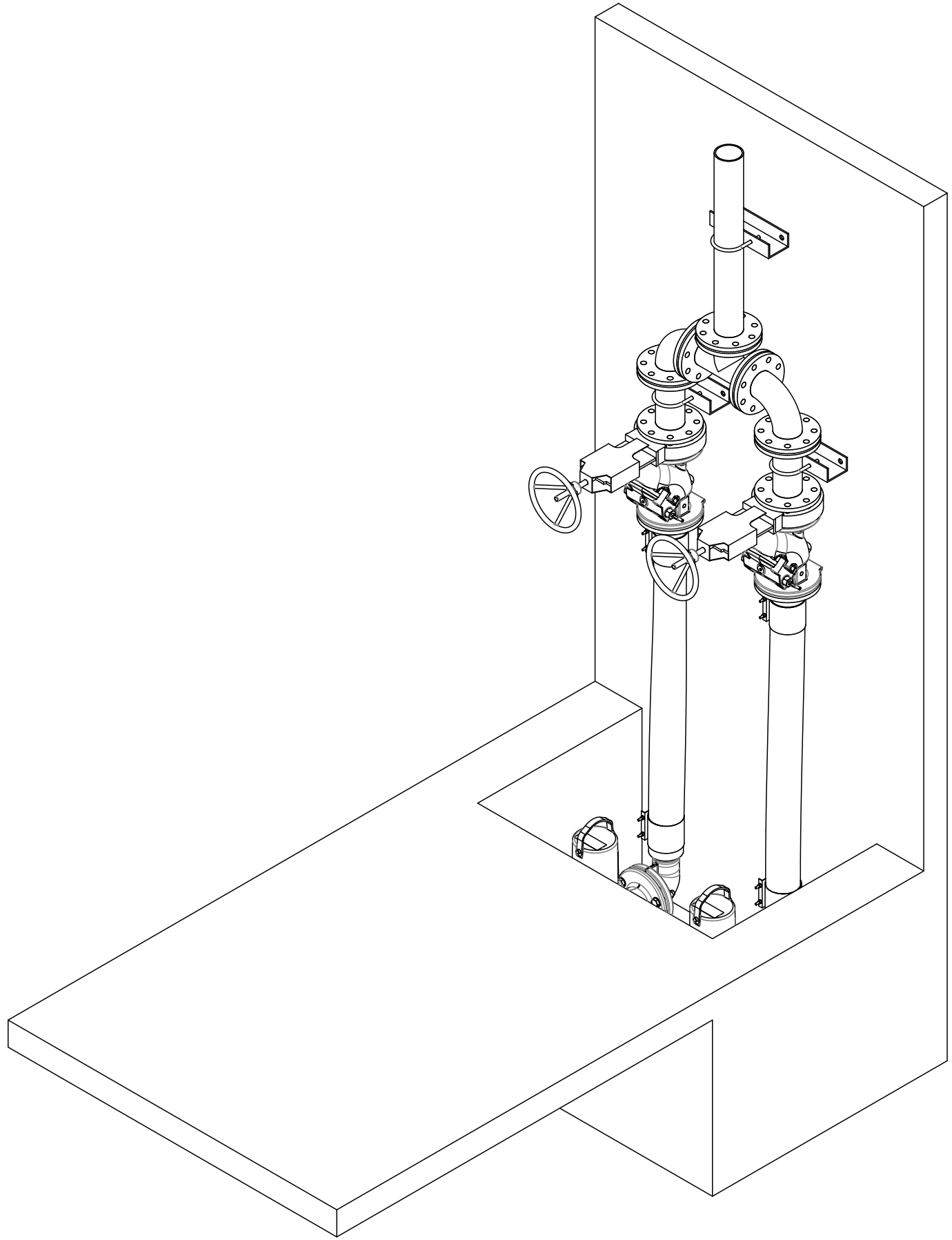
LAYOUT
SCALE 1 : 15



SECTION B-B
SCALE 1 : 15



SECTION A-A
SCALE 1 : 15



ISOMETRIC
SCALE 1 : 15

11	80NB Pipe Flanged (T/1000/3)	Mild steel HDG	1
10	80NB Special T-piece	Mild steel HDG	1
9	80NB 90° Bend Flanged (T/1000/3)	Mild steel HDG	2
8	80NB Pipe support	Mild steel HDG	3
7	80NB Pipe Flanged (T/1000/3)	Mild steel HDG	2
6	80NB Knife gate valve	As per Manufacture	2
5	80NB Swing check valve	As per Manufacture	2
4	80NB Flanged combination nipple standard type (T/1000/3)	As per Manufacture	2
3	80NB High Quality reinforced rubber flexible host	As per Manufacture	2
2	80NB Cascade Clamp	As per Manufacture	2
1	Xylem DP 3069 LT3 412 Pump Set	As per Manufacture	2
ITEM	DESCRIPTION	MATERIAL	QTY

REVISIONS

No.	DATE	BY	DESCRIPTION

NOTES

REFERENCE DRAWINGS

PLAN No.	DESCRIPTION

APPROVED: ENGINEER: DATE:

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CLIENT
**PHOKWANE
LOCAL MUNICIPALITY**

PROJECT

**UPGRADING OF HARTSWATER
WATER TREATMENT PLANT**

IMPLEMENTING AGENT:

PHOKWANE LM

DRAWING TITLE
**GENERAL ARRANGEMENT:
TYPICAL DRAINAGE PUMP
STATION
SHEET 2 OF 2**

DESIGN	DATE	DRAWN	DATE
A. de Wet	JUN 2025		JUN 2025
SURVEYED	DATE	CHECKED	DATE
		E. vd Hoff	JUN 2025

SCALE AS SHOWN

DRAWING No.
WCE-2025-06-002

REVISION No.							

