

- GENERAL NOTES:
1. ALL CO-ORDINATES, DIMENSIONS AND LEVELS MUST BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE ANY WORK COMMENCES. DISCREPANCIES MUST BE DISCUSSED WITH THE ENGINEER.
 2. CONCRETE STRENGTHS:
STRIP FOUNDATIONS - 20/19
PUMP PLINTHS - 30/19
ROOF SLAB - 25/19
INTERNAL FLOOR SLAB - 25/19
 3. ALL EXPOSED EDGES TO BE CHAMFERED 25x25.
 4. ALL EXCAVATION MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
 5. ALL REINFORCEMENT MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
 6. LAP LENGTH: 50 x DIAMETER OF THE SMALLER BAR
 7. ALL WORKMANSHIP AND MATERIALS MUST COMPLY WITH THE LATEST RELEVANT SABS CODES.

- BUILDING NOTES
1. FOUNDATIONS
FOUNDATION TRENCHES SHALL BE EXCAVATED TRUE TO THE DETAILS SHOWN ON THE DRAWINGS AND PERPENDICULAR TO EACH OTHER. THE FOOTINGS SHALL BE CAST FROM 20/19 CONCRETE, A MINIMUM OF 300mm DEEP AND SHALL BE APPROVED BY THE ENGINEER ON SITE PRIOR TO ANY BRICKWORK BEING PLACED.
 2. BRICKWORK
FIRST 3 COURSES BELOW GROUND LEVEL TO BE FACE BRICKWORK AND THE REMAINING COURSES ON EXTERNAL FACE TO FOUNDATION MAY BE CONSTRUCTED FROM APPROVED CLAY STOCK BRICKS.
BRICKFORCE SHALL BE LAID IN THE HORIZONTAL BED-JOINTS EVERY TWO COURSES.
AN APPROVED DAMP-PROOF COURSE (DPC) SHALL BE LAID INTO THE BRICKWORK, AT THE LEVEL OF THE FINISHED FLOOR SLAB.
ALL BRICKWORK ABOVE GROUND LEVEL AND ENTIRE INTERNAL FACE SHALL BE CONSTRUCTED FROM APPROVED FACED CLAY BRICKS WITH SQUARE RECESSED JOINTS AND PERPENDS.
ALL EXTERNAL JOINTING SHALL BE POINTED BY RECESSING THE MORTAR A MINIMUM OF 5mm.
ALL BRICKWORK SHALL BE CLEANED OF ANY EXCESS MORTAR DAILY BY WHAT EVER MEANS REQUIRED.
OUTER FACE OF INTERNAL SKIN BRICKWORK WALLS TO BE BAGGED WITH 1:3 CEMENT SAND SLURRY MIX AND APPLY 2 COATS "BRIKEAL" FROM "ABE CONSTRUCTION CHEMICALS" OR SIMILAR APPROVED
 3. FLOOR SLAB
THE INTERNAL FLOOR SLAB SHALL BE CAST OF 25/19 CONCRETE TO FALLS INDICATED AND A MINIMUM DEPTH OF 150mm ON EXCAVATED EARTH.
MESH REF. 395 TO BE PLACED 50mm FROM THE SURFACE OF THE FLOOR SLAB.
FLOOR FINISHED WITH A GRANO SCREED LAID TO FALLS USING A STEEL TROWEL OR SIMILAR APPROVED METHOD. MINIMUM THICKNESS 20mm.
 5. STRUCTURAL STEELWORK
ALL STRUCTURAL STEEL WORK TO BE HOT DIPPED GALVANISED AFTER FABRICATION

- ADDITIONAL NOTES:
1. CUT BANKS TO BE 1:1.5 UNLESS OTHERWISE SPECIFIED BY ENGINEER ON SITE.
 2. CUT BANKS STEEPER THAN 1:1.5 TO BE RETAINED BY A DRY STACKED RETAINING WALL, SPECIFIED BY AN ENGINEER ON SITE.

eTHEKWINI WATER SERVICES

WATER DESIGN BRANCH

REDUCED PLAN USE SCALE BELOW

CONSULTANT:

NAIDU CONSULTING

1st Floor
No. 5, The Boulevard
West Way Office Park
Wentville, Durban
Tel: +27 (0) 31 265 6007
Fax: +27 (0) 31 265 6011
Email: info@naiducosulting.com

Drawing No.: D859-52-5200 REV 0

FOR TENDER ONLY

REFERENCE DRAWINGS

DWG No. TITLE/DESCRIPTION

STANDARD DRAWINGS

0	01/09/2025	ISSUED FOR TENDER ONLY
B	01/08/2025	ISSUED FOR INFORMATION
A	01/02/2025	ISSUED FOR INFORMATION
Revision	Date	Description

Contract No. 32269-5W

Project No. D859

Planning Unit WATER AND SANITATION

Ward No. 59

Project Title
TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE RESERVOIR,
400KL ELEVATED STEEL TANK AND
ANCILLARY WORKS

Drawing Title
PUMP STATION PLAN
AND SECTIONS

Scales: As Shown

Paper Size: A0

Designed: D. Ramghulam Date: 01-09-2025

Checked: A. Goorun Drawn: D. Ramghulam

Bulk Operations

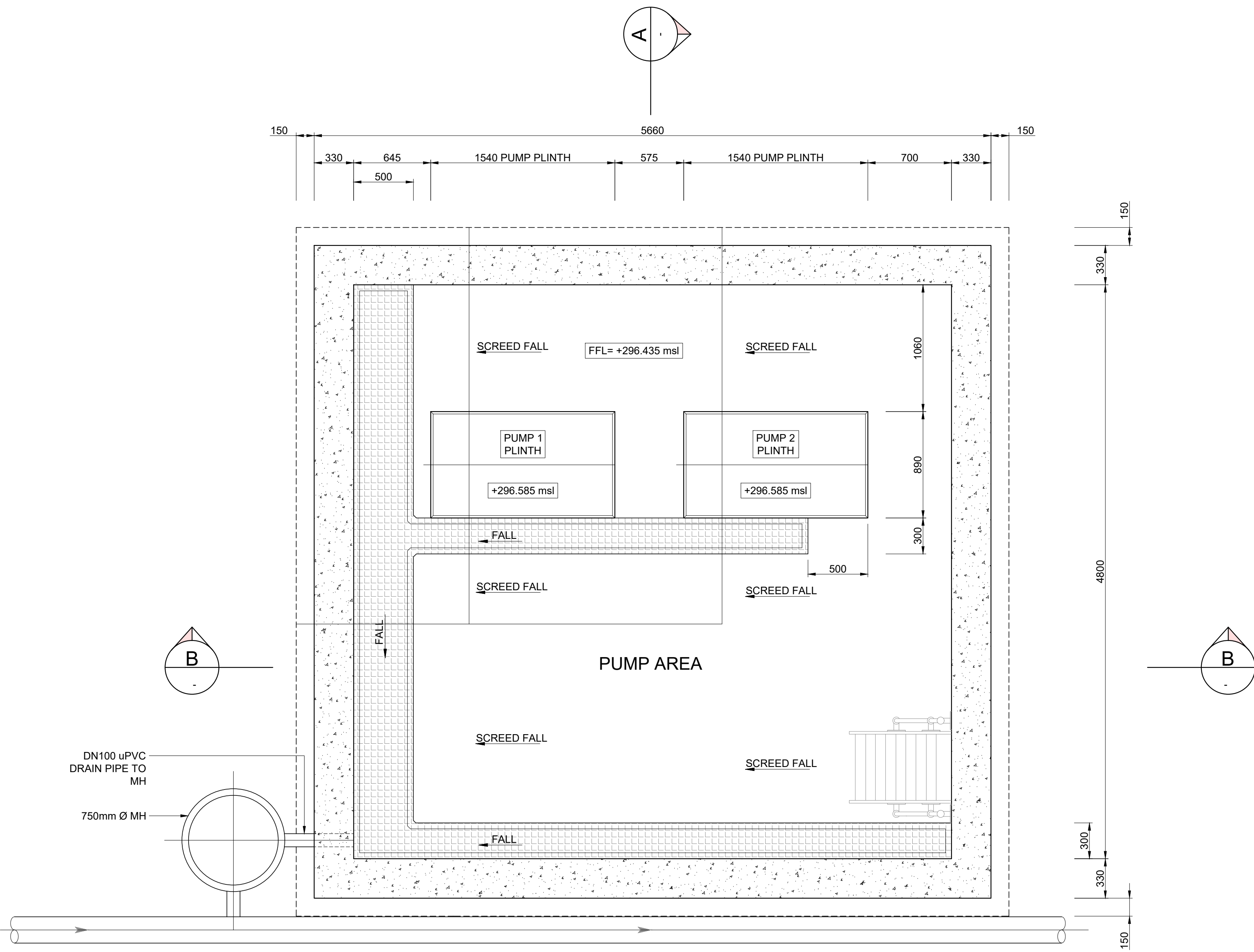
Area Engineer (W.O.)

Manager (W.D.)

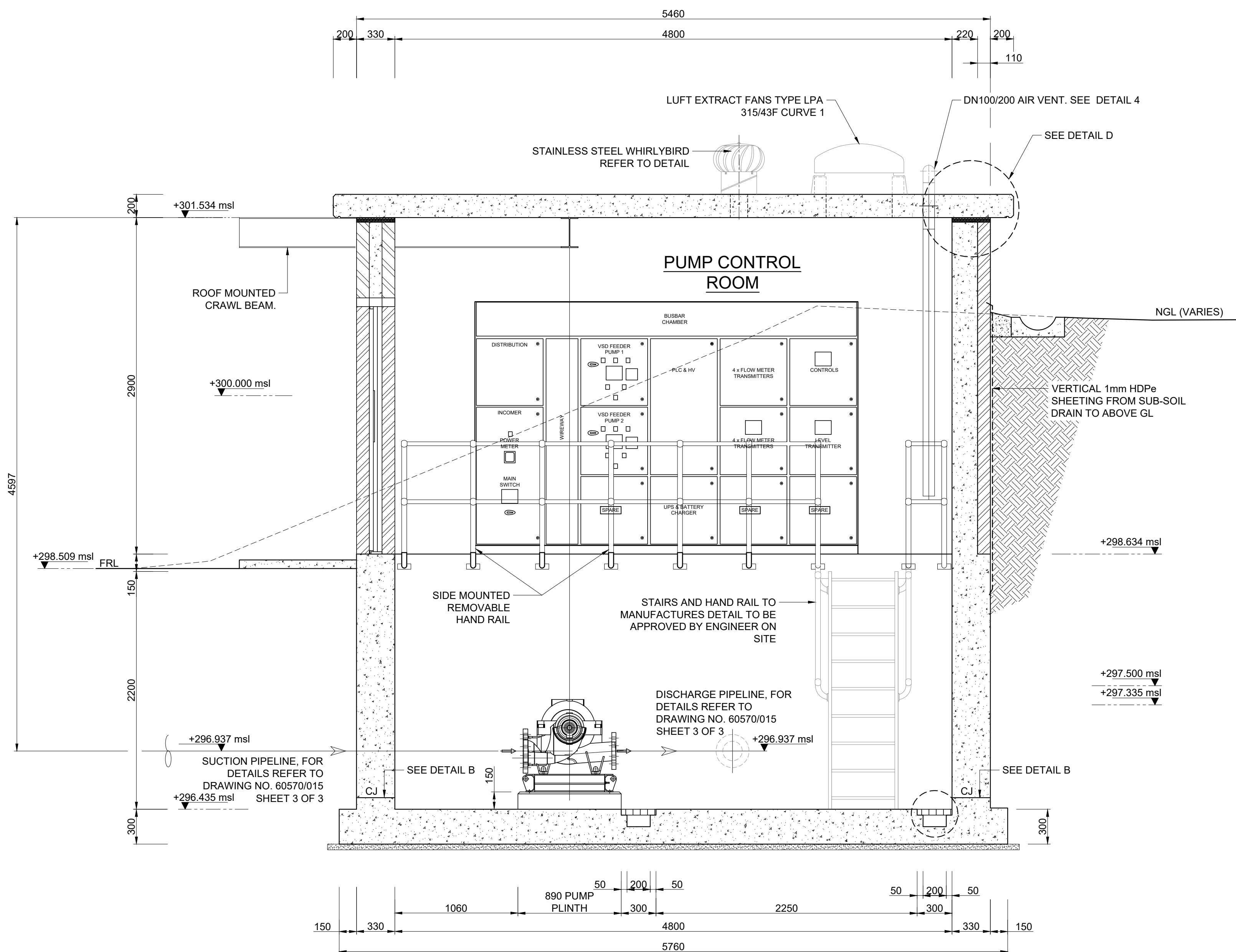
Director (Water)

E.Msweli - Head Water & Sanitation Unit

Drawing No. 60570/015 Sheet 1 of 3 Rev. 0



FOUNDATION LAYOUT
PLAN AT +297.335 m.s.l.
SCALE 1:25



SECTION A
SCALE 1:25

DOOR/WINDOW SCHEDULE :

DOOR/WINDOW TYPE :

GENERAL NOTES:

- ALL OPENINGS TO BE MEASURED ON SITE PRIOR TO MANUFACTURE OF UNITS.
- ALL WINDOW FRAMES TO BE MANUFACTURED IN ACCORDANCE TO WALL THICKNESS ON SITE.
- ALL QUANTITIES TO BE CHECKED BY A CONTRACTOR PRIOR TO ORDERING/MANUFACTURING

NO. & TOTAL :

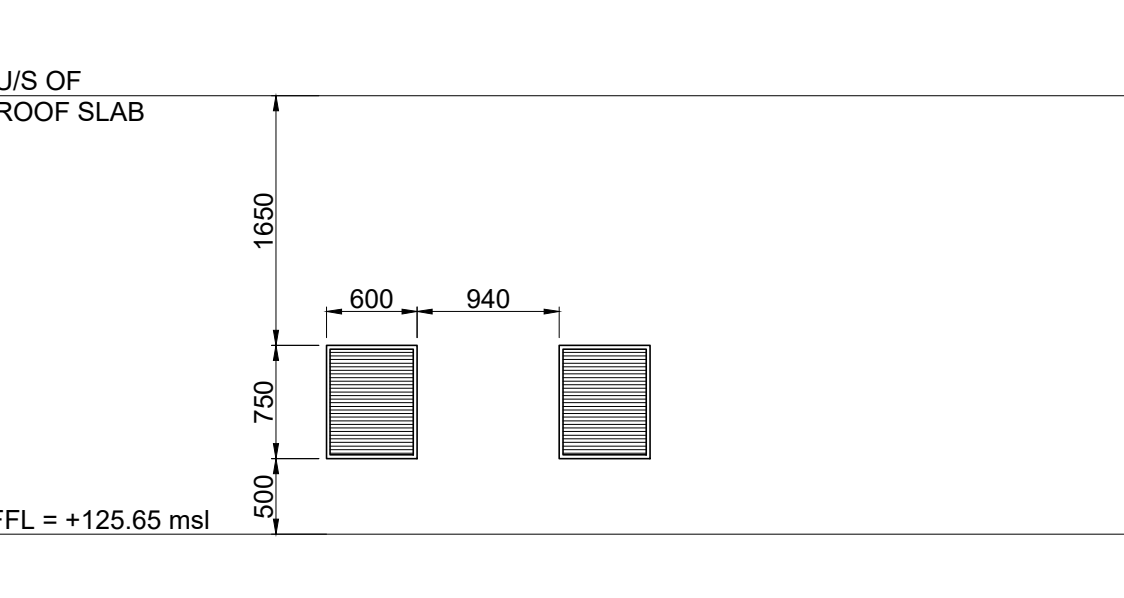
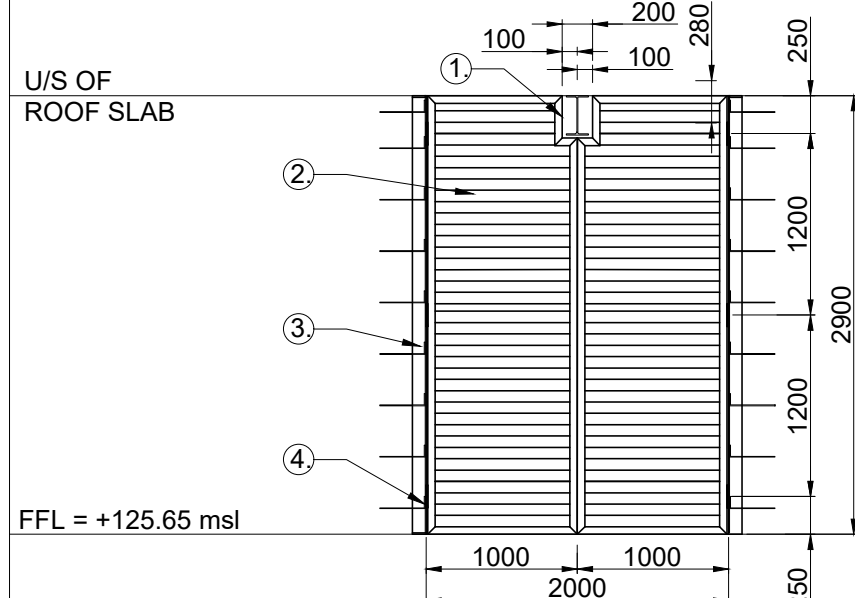
LOCATION :

DOOR/WINDOW DESCRIPTION :

- DOOR MODIFIED TO ACCOMMODATE CRAWL BEAM. FINAL CUT OUT DIMENSION TO BE DETERMINED BY CONTRACTOR DURING DESIGN OF CRAWL BEAM
- GALVANISED PRESSED MILD STEEL DOOR.
- GALVANISED 260x90 CHANNEL WITH 10mm ENDPLATES AND 2 no. M12 HLT HSL-3 HEAVY DUTY ANCHORS PER CONNECTION. GALVANISED 1.6mm HOOP IRON STRAPS WELDED AT 300mm c/c TO BACK OF CHANNEL WEB AND CAST INTO CONCRETE COLUMNS.
- 3 no. HEAVY DUTY BULLET HINGES AT 1250mm c/c TO SUIT PER DOOR.

FRAME FINISH :

AS SUPPLIED BY MANUFACTURER



NO. & TOTAL :

LOCATION :

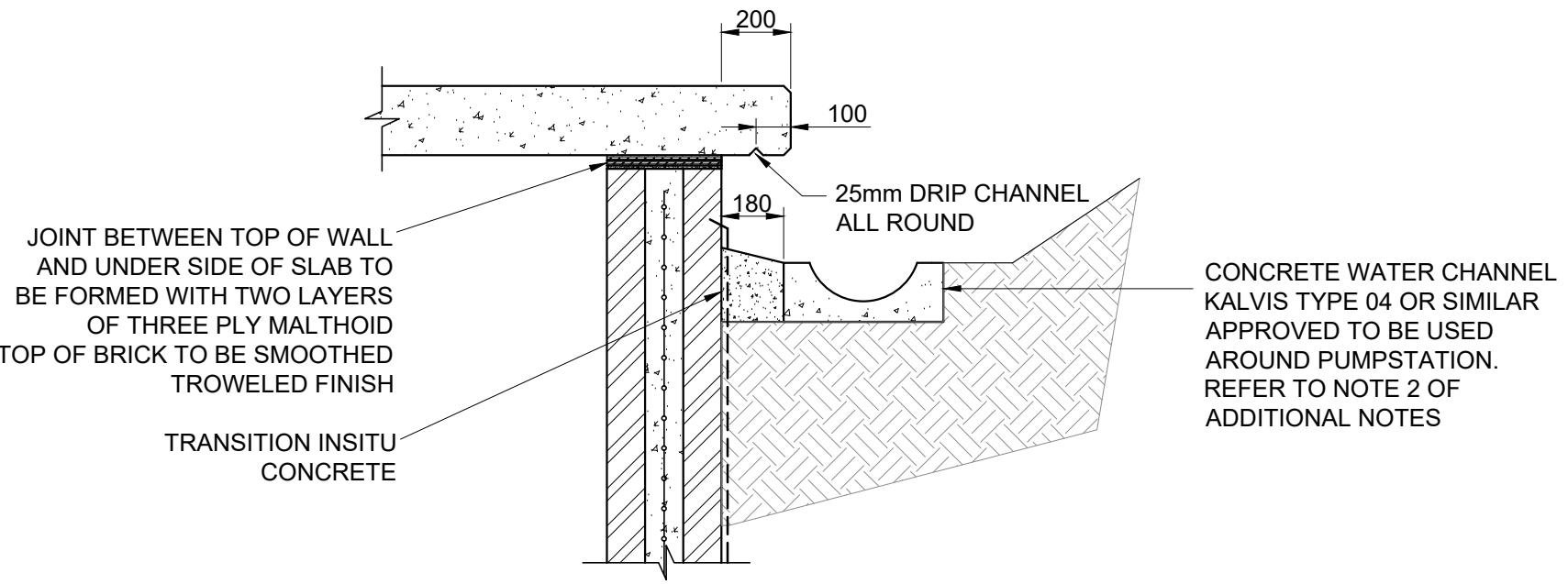
DOOR/WINDOW DESCRIPTION :

- 600 x 750 TYPE NLD - TROX LOUVRES OR SIMILAR APPROVED
- 600 x 750 TYPE NLD - TROX LOUVRES OR SIMILAR APPROVED
- ACOUSTIC LOUVRES TYPE NLD WITH AERODYNAMIC SECTION ACOUSTICALLY ABSORPTIVE BLADES ON A 150mm PITCH.
- CASING SIDES ARE PRE-SLOTTED FOR FIXING INTO A BUILDER'S OPENING. ABSORPTIVE MATERIAL FACED WITH GLASS CLOTH AND PERFORATED SHEET METAL. REAR SIDE WITH BIRD SCREEN USING 12 X 12 X1mm GALVANISED WIRE MESH.
- CONSTRUCTION IN SINGLE SECTION. MATERIAL - GALVANISED SHEET STEEL

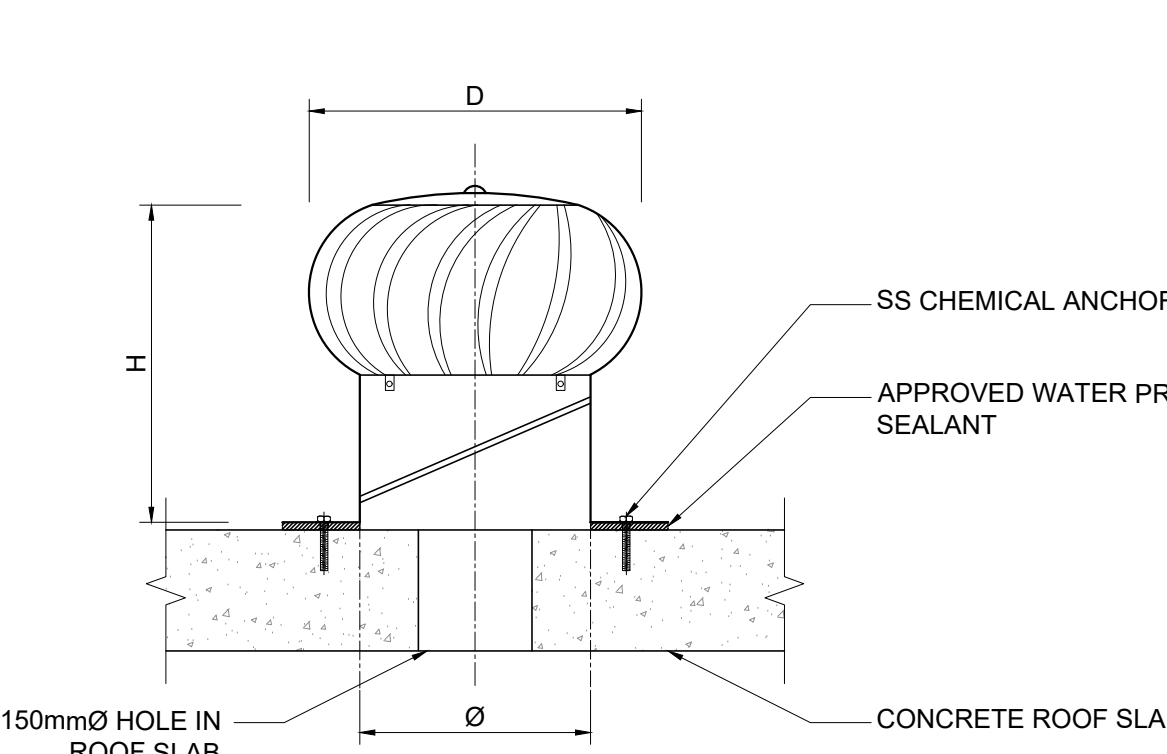
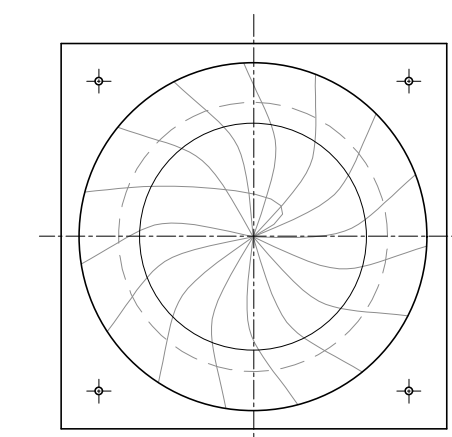
FRAME FINISH :

FULLY GALVANISED

AS SUPPLIED BY MANUFACTURER



DETAIL D
SCALE 1:20



TYPICAL SECTION
WHIRLYBIRD DETAIL
SCALE 1:10

GENERAL NOTES:

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- CONCRETE STRENGTHS:
STRIP FOUNDATIONS - 20/19
PUMP PLINTHS - 30/19
ROOF SLAB - 25/19
INTERNAL FLOOR SLAB - 25/19
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- ALL REINFORCEMENT MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.
- LAP LENGTH: 50 x DIAMETER OF THE SMALLER BAR
- ALL WORKMANSHIP AND MATERIALS MUST COMPLY WITH THE LATEST RELEVANT SABS CODES.

BUILDING NOTES

- FOUNDATIONS
FOUNDATION TRENCHES SHALL BE EXCAVATED TRUE TO THE DETAILS SHOWN ON THE DRAWINGS AND PERPENDICULAR TO EACH OTHER. THE FOOTINGS SHALL BE CAST FROM 20/19 CONCRETE. A MINIMUM OF 300mm DEEP AND SHALL BE APPROVED BY THE ENGINEER ON SITE PRIOR TO ANY BRICKWORK BEING PLACED.
- BRICKWORK
FIRST 3 COURSES BELOW GROUND LEVEL TO BE FACE BRICKWORK AND THE REMAINING COURSES ON EXTERNAL FACE TO FOUNDATION MAY BE CONSTRUCTED FROM APPROVED CLAY STOCK BRICKS.

BRICKFORCE SHALL BE LAID IN THE HORIZONTAL BED-JOINTS EVERY TWO COURSES.

AN APPROVED DAMP-PROOF COURSE (DPC) SHALL BE LAID INTO THE BRICKWORK, AT THE LEVEL OF THE FINISHED FLOOR SLAB.

ALL BRICKWORK ABOVE GROUND LEVEL AND ENTIRE INTERNAL FACE SHALL BE CONSTRUCTED FROM APPROVED FACED CLAY BRICKS WITH SQUARE RECESSED JOINTS AND PERPENDS.

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OUTER FACE OF INTERNAL SKIN BRICKWORK WALLS TO BE BAGGED WITH 1:3 CEMENT SAND SLURRY MIX AND APPLY 2 COATS "BRIXEAL" FROM "ABE CONSTRUCTION CHEMICALS" OR SIMILAR APPROVED

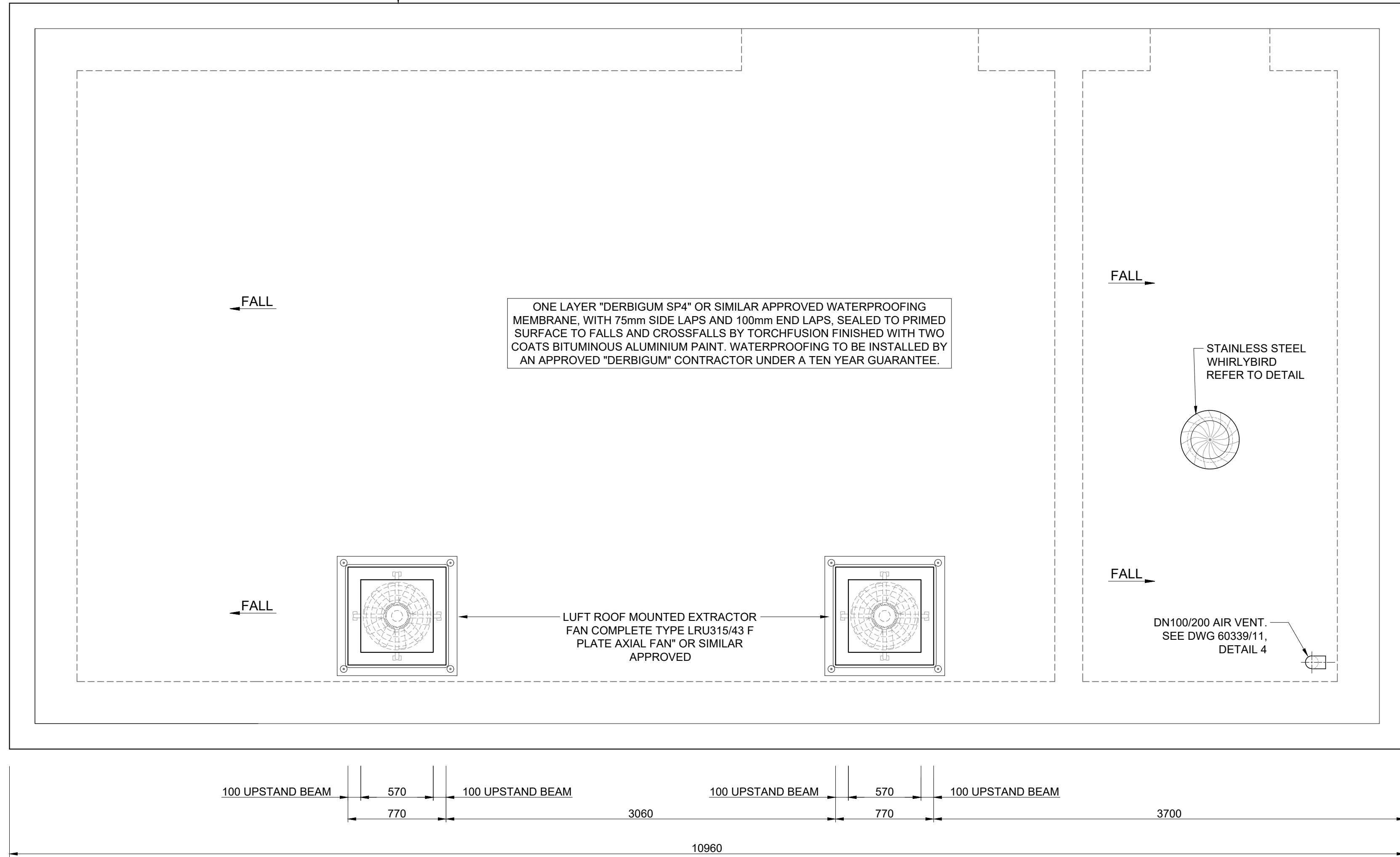
3. FLOOR SLAB
THE INTERNAL FLOOR SLAB SHALL BE CAST OF 25/19 CONCRETE TO FALLS INDICATED AND A MINIMUM DEPTH OF 150mm ON EXCAVATED EARTH.

FLOOR FINISHED WITH A GRANO SCREED LAID TO FALLS USING A STEEL TROWEL OR SIMILAR APPROVED METHOD. MINIMUM THICKNESS 20mm.

5. STRUCTURAL STEELWORK
ALL STRUCTURAL STEEL WORK TO BE HOT DIPPED GALVANISED AFTER FABRICATION

ADDITIONAL NOTES:

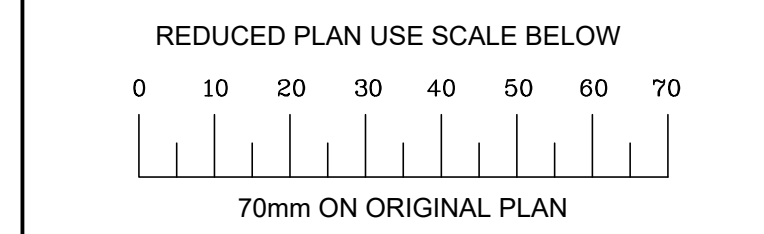
- CUT BANKS TO BE 1:1.5 UNLESS OTHERWISE SPECIFIED BY ENGINEER ON SITE.
- CUT BANKS STEEPER THAN 1:1.5 TO BE RETAINED BY A DRY STACKED RETAINING WALL, SPECIFIED BY AN ENGINEER ON SITE.



eTHEKWINI WATER SERVICES



WATER DESIGN BRANCH



CONSULTANT:



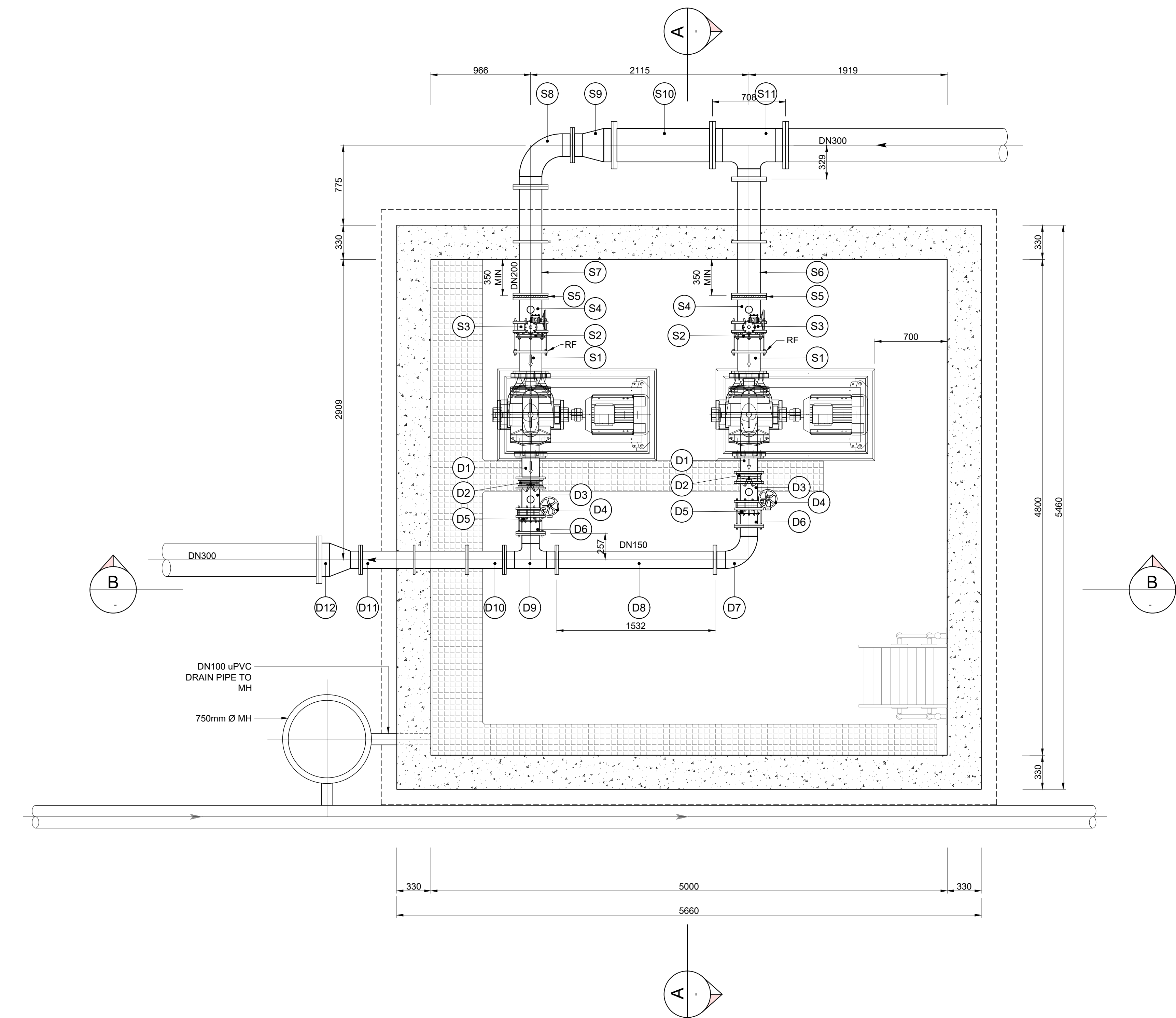
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FOR TENDER ONLY

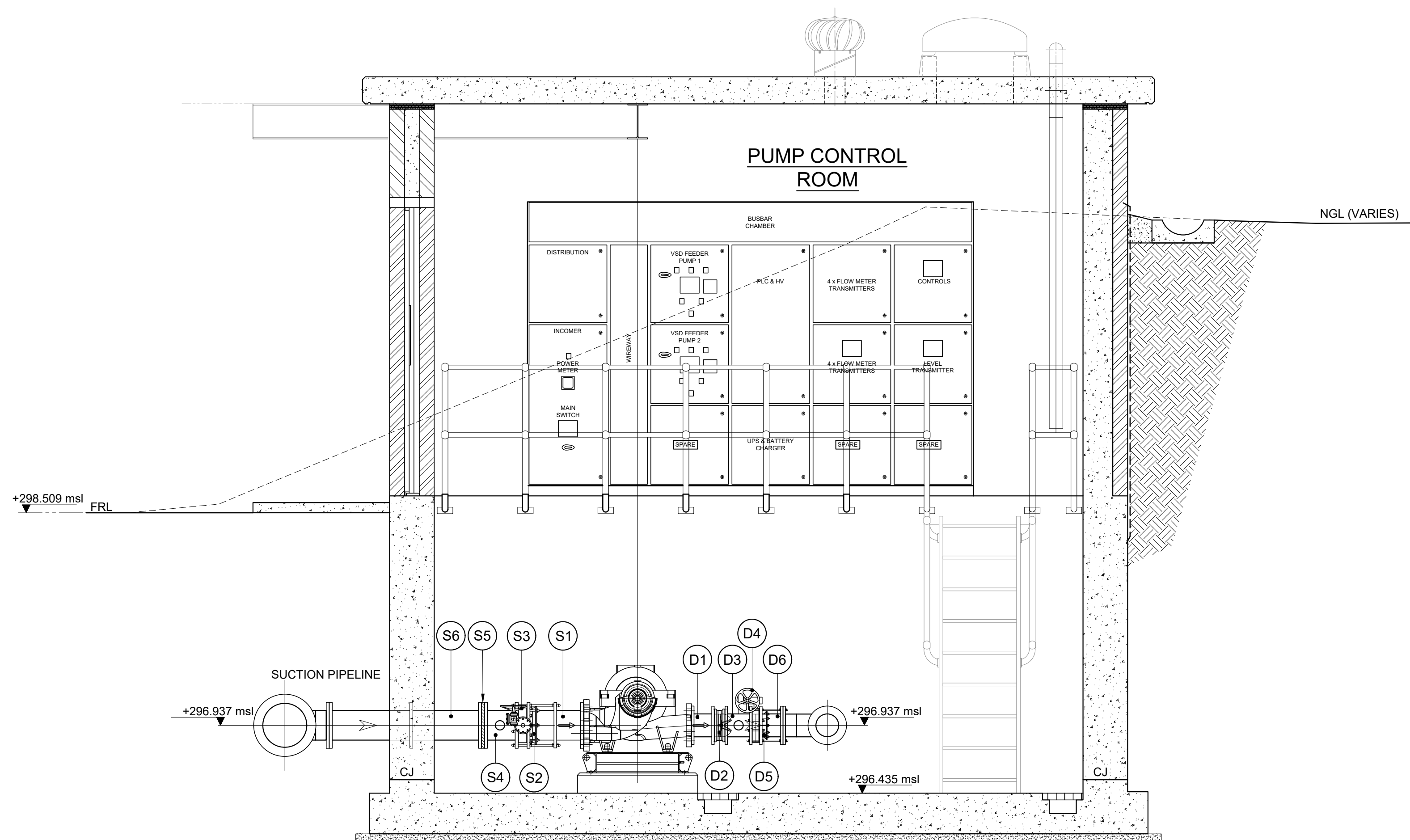
REFERENCE DRAWINGS

DWG No. TITLE/DESCRIPTION

STANDARD DRAWINGS



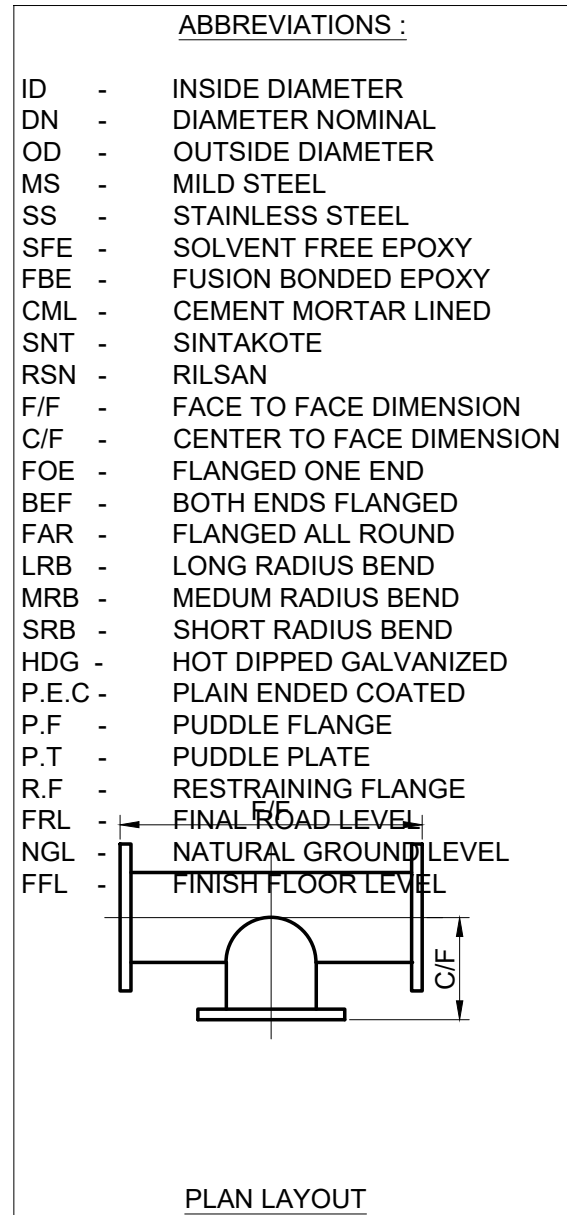
PIPEWORK DETAIL
PLAN AT +297.500 m.s.l.
SCALE 1:25



SECTION A
SCALE 1:25

SCHEDULE 2 - SUCTION PIPEWORK AND FITTINGS SCHEDULE						
ALL FITTINGS TO PN16, FLANGES TO SANS 1123 2500/3 & PIPEWORK TO X42/ SANS 719 Grade C						
ITEM NO	NOM DIA	DESCRIPTION	WALL THK (mm)	LINING	COATING	No. OF
S1	DN200	SPOOL PIECE, F.O.E. OTHER END PLAIN ENDED (PE) COMPLETE WITH RESTRAINING FLANGE (R.F.) TO SANS 1123 1600/3, (R.F. PLACEMENT & FINAL LENGTH OF PIPE TO BE DETERMINED ON SITE PRIOR TO FABRICATING).	6.0	SFE	SFE	400 2
NOTE RF: ANCHORING OR RESTRAINING FLANGE TO BE WELDED APPROXIMATELY 300mm FROM PLAIN END OF ITEM S1. RESTRAINING FLANGE ADAPTOR MINIMUM OF 4 NUMBER GRADE 4.8 RESTRAINING BOLTS TO BE USED, EQUALLY SPACED AROUND CIRCUMFERENCE OF FLANGES.						
S2	DN200	RESTRAINING FLANGE ADAPTOR (KAMFLEX, VIKING JOHNSON) TO SUIT STEEL SPOOL PIPE. FLANGE TO MATCH ITEM S3.		FBE	FBE	<160 2
S3	DN200	PN16 WAFER BUTTERFLY VALVE TYPE 2 SEMI LUGGED PN16 TYPE ISORIA/ BY AMRI OR SIMILAR APPROVED, COMPLETE WITH HANDWHEEL, GEARBOX, NUTS, BOLTS, WASHERS AND GASKETS. VALVE TO BE INSTALLED THAT DISC IS HORIZONTAL TO FLOW.		E.P.D.M. TO EN1092-1	FBE	2
S4	DN200	SPOOL PIECE, FLANGED BOTH ENDS AND FITTED WITH C/W 25mm GAS SOCKET	6.0	SFE	SFE	250 2
S5	DN200	INSULATING FLANGE (INCLUSIVE OF ALL SLEEVES AND BOLTS)				2
S6	DN200	SPOOL PIECE WITH SANS 1123 1600/3 THRUST PUDDLE FLANGE (P.F.) PLACED 520mm FROM DOWNSTREAM END OF PIPE, B.E.F. (FINAL LENGTH TO BE DETERMINED ON SITE PRIOR TO FABRICATING). ITEM TO BE CAST INTO CONCRETE WALL.	6.0	SFE	SFE	1200 1
S7		SPOOL PIECE WITH SANS 1123 1600/3 THRUST PUDDLE FLANGE (P.F.) PLACED 520mm FROM DOWNSTREAM END OF PIPE, B.E.F. (FINAL LENGTH TO BE DETERMINED ON SITE PRIOR TO FABRICATING). ITEM TO BE CAST INTO CONCRETE WALL.	6.0	SFE	SFE	1050 1
S8	DN200	90° (ANSI) B16.9 LONG RADIUS BEND WITH 100mm SPOOL PIECES WELDED TO BOTH ENDS, B.E.F.	6.0	SFE	SFE	1
S9	DN200 x DN300	(ANSI) B16.9 CONCENTRIC REDUCER WITH 100mm LONG SPOOL PIECE WELDED ON BOTH ENDS, B.E.F.	6.0	SFE	SFE	403 1
S10	DN300	SPOOL PIPE, B.E.F. (LENGTH TO BE VERIFIED ON SITE).	6.0	SFE	SFE	950 1
S11	DN300 x DN200	(ANSI) B16.9 REDUCING TEE, WITH 100mm LONG SPOOL PIECE WELDED ON ALL ENDS, FF 708mm & CF 329mm (LENGTHS TO BE VERIFIED ON SITE).	6.0	SFE	SFE	1700 1

SCHEDULE 2 - DISCHARGE PIPEWORK AND FITTINGS SCHEDULE						
ALL FITTINGS TO PN16, FLANGES TO SANS 1123 2500/3 & PIPEWORK TO X42/ SANS 719 Grade C						
ITEM NO	NOM DIA	DESCRIPTION	WALL THK (mm)	LINING	COATING	FACE TO FACE
D1	DN150	SPOOL PIPE FF 1000mm, B.E.F. ONE FLANGE TO MATCH ITEM D2. (LENGTH TO BE VERIFIED ON SITE).	6.0	SFE	SFE	220 2
D2	DN150	EPOXY COATED AND LINED DUCTILE IRON WAFER NON RETURN VALVE, 'AMRI SERIE 200' OR SIMILAR APPROVED DOUBLE DISK SPRING SWING CHECK VALVE		FBE	FBE	76 2
D3	DN150	SPOOL PIECE, FITTED WITH C/W 25mm SOCKET FOR FLOW SWITCH, B.E.F. ONE FLANGE TO MATCH ITEM D2 AND THE OTHER FLANGE TO MATCH ITEM D4 (FINAL LENGTH TO BE DETERMINED ON SITE)	6.0	SFE	SFE	220 2
D4	DN150	PN16 WAFER BUTTERFLY VALVE TYPE 2 SEMI LUGGED PN16 TYPE ISORIA/ BY AMRI OR SIMILAR APPROVED, COMPLETE WITH HANDWHEEL, GEARBOX, NUTS, BOLTS, WASHERS AND GASKETS. VALVE TO BE INSTALLED THAT DISC IS HORIZONTAL TO FLOW.		E.P.D.M. TO EN1092-1	FBE	2
D5	DN150	RESTRAINING FLANGE ADAPTOR (KAMFLEX, VIKING JOHNSON) TO SUIT STEEL SPOOL PIPE. FLANGE TO MATCH ITEM D4.		FBE	FBE	<160 2
D6	DN150	SPOOL PIECE, F.O.E. OTHER END PLAIN ENDED (PE). FINAL LENGTH OF PIPE TO BE DETERMINED ON SITE PRIOR TO FABRICATING).	6.0	SFE	SFE	150 2
D7	DN150	90° (ANSI) B16.9 LONG RADIUS BEND WITH 100mm SPOOL PIECES WELDED TO BOTH ENDS, B.E.F.	6.0	SFE	SFE	1
D8	DN150	SPOOL PIPE, B.E.F. (LENGTH TO BE VERIFIED ON SITE).	6.0	SFE	SFE	1600 1
D9	DN150	(ANSI) B16.9 EQUAL TEE, WITH 100mm LONG SPOOL PIECE WELDED ON ALL ENDS, FF 508mm & CF 257mm (LENGTHS TO BE VERIFIED ON SITE).	6.0	SFE	SFE	508 1
D10	DN150	SPOOL PIPE, B.E.F. (LENGTH TO BE VERIFIED ON SITE).	6.0	SFE	SFE	350 1
D11	DN150	SPOOL PIECE WITH SANS 1123 1600/3 THRUST PUDDLE FLANGE (P.F.) PLACED 520mm FROM DOWNSTREAM END OF PIPE, B.E.F. (FINAL LENGTH TO BE DETERMINED ON SITE PRIOR TO FABRICATING). ITEM TO BE CAST INTO CONCRETE WALL.	6.0	SFE	SFE	1050 1
D12	DN300 x DN150	(ANSI) B16.9 CONCENTRIC REDUCER WITH 100mm LONG SPOOL PIECE WELDED ON BOTH ENDS, B.E.F.	6.0	SFE	SFE	403 1



GENERAL NOTES:

1. ALL CO-ORDINATES, DIMENSIONS AND LEVELS MUST BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE ANY WORK COMMENCES. DISCREPANCIES MUST BE DISCUSSED WITH THE ENGINEER.

2. CONCRETE STRENGTHS:

STRIP FOUNDATIONS - 20/19
PUMP PLINTHS - 30/19
ROOF SLAB - 25/19
INTERNAL FLOOR SLAB - 25/19

3. ALL EXPOSED EDGES TO BE CHAMFERED 15x25.

4. ALL EXCAVATION MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.

5. ALL REINFORCEMENT MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS CAST.

6. LAP LENGTH: 50 x DIAMETER OF THE SMALLER BAR

7. ALL WORKMANSHIP AND MATERIALS MUST COMPLY WITH THE LATEST RELEVANT SABS CODES.

BUILDING NOTES

1. FOUNDATIONS
FOUNDATION TRENCHES SHALL BE EXCAVATED TRUE TO THE DETAILS SHOWN ON THE DRAWINGS AND PERPENDICULAR TO EACH OTHER. THE FOOTINGS SHALL BE CAST FROM 20/19 CONCRETE, A MINIMUM OF 300mm DEEP AND SHALL BE APPROVED BY THE ENGINEER ON SITE PRIOR TO ANY BRICKWORK BEING PLACED.

2. BRICKWORK
FIRST 3 COURSES BELOW GROUND LEVEL TO BE FACE BRICKWORK AND THE REMAINING COURSES ON EXTERNAL FACE TO FOUNDATION MAY BE CONSTRUCTED FROM APPROVED CLAY STOCK BRICKS.

BRICKFORCE SHALL BE LAID IN THE HORIZONTAL BED-JOINTS EVERY TWO COURSES.

AN APPROVED DAMP-PROOF COURSE (DPC) SHALL BE LAID INTO THE BRICKWORK, AT THE LEVEL OF THE FINISHED FLOOR SLAB.

ALL BRICKWORK ABOVE GROUND LEVEL AND ENTIRE INTERNAL FACE SHALL BE CONSTRUCTED FROM APPROVED FACED CLAY BRICKS WITH SQUARE RECESSED JOINTS AND PERPENDS.

ALL EXTERNAL JOINTING SHALL BE POINTED BY RECESSING THE MORTAR A MINIMUM OF 5mm.

ALL BRICKWORK SHALL BE CLEANED OF ANY EXCESS MORTAR DAILY BY WHAT EVER MEANS REQUIRED.

OUTER FACE OF INTERNAL SKIN BRICKWORK WALLS TO BE BAGGED WITH 1:3 CEMENT SAND SLURRY MIX AND APPLY 2 COATS "BRIKAL" FROM "XBE CONSTRUCTION CHEMICALS" OR SIMILAR APPROVED

3. FLOOR SLAB
THE INTERNAL FLOOR SLAB SHALL BE CAST OF 25/19 CONCRETE TO FALLS INDICATED AND A MINIMUM DEPTH OF 150mm ON EXCAVATED EARTH

MESH REF. 395 TO BE PLACED 50mm FROM THE SURFACE OF THE FLOOR SLAB.

FLOOR FINISHED WITH A GRANO SCREED LAID TO FALLS USING A STEEL TROWEL OR SIMILAR APPROVED METHOD. MINIMUM THICKNESS 20mm.

5. STRUCTURAL STEELWORK
ALL STRUCTURAL STEEL WORK TO BE HOT DIPPED GALVANISED AFTER FABRICATION

ADDITIONAL NOTES:

- CUT BANKS TO BE 1:1.5 UNLESS OTHERWISE SPECIFIED BY ENGINEER ON SITE.
- CUT BANKS STEEPER THAN 1:1.5 TO BE RETAINED BY A DRY STACKED RETAINING WALL, SPECIFIED BY AN ENGINEER ON SITE

PIPEWORK NOTES

- ALL STEEL PIPES & FITTINGS 150 NB AND SMALLER TO BE MEDIUM DUTY TO SABS G2 UNLESS OTHERWISE SPECIFIED.
- ALL STEEL PIPES & FITTINGS LARGER THAN 150 NB TO BE min 4.5mm WALL THICKNESS X42 GRADE STEEL
- ALL SPECIALS TO ANSI B16.9 STANDARD SCHEDULE AND DIMENSIONS.
- ALL FLANGES & STEEL PIPEWORK TO SANS 1123 TABLE 1600 (UNLESS OTHERWISE SPECIFIED)
- CONTRACTOR TO CHECK AND CONFIRM DIMENSIONS OF PIPEWORK AND FLANGE DRILLING OF EXISTING PIPE WORK BEFORE THE FABRICATION OF PIPEWORK PRIOR TO PIPE FABRICATION/ INSTALLATION.
- IF FACE TO FACE OF FITTINGS SHOWN DIFFERS TO ACTUAL, THE CONTRACTOR MUST INFORM ENGINEER PRIOR TO PIPE FABRICATION/ INSTALLATION.
- ALL STEEL AND SPECIALS TO BE FACTORY COATED AND LINED WITH COPON HYCOTE 162 OR SIMILAR APPROVED TO A TOTAL MINIMUM DRY FILM THICKNESS OF 300 MICRONS.
- WHERE FABRICATION AND OR CUTTING ON SITE IS NECESSARY, THE COATING SHALL BE MADE GOOD WITH COPON HYCOTE 162 OR SIMILAR APPROVED EPOXY COATING.
- ALL THREADS TO BE BRITISH STANDARD PIPE (BSP) THREADS. THREADS TO BE PROTECTED WITH STAG.
- ALL STEEL COMPONENTS, BOLTS, NUTS & WASHERS TO BE HOT DIP GALVANISED TO ISO 1461 : 2009
- ALL PIPEWORK PASSING THROUGH BRICKWORK/ MORTAR TO BE WRAPPED IN "DENSO" ULTRAFLEX 1250 WHERE IN CONTACT WITH BRICKWORK/ MORTAR.
- ALL BURIED FITTINGS AND PIPES TO BE PROTECTED BY "DENSO" IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
- ALL STAINLESS STEEL SHALL BE STAINLESS STEEL GRADE 316
- ALL STAINLESS STEEL BENDS, REDUCERS, ETC SHALL BE ANSI B16.9 FITTINGS

FOR GENERAL NOTES SEE DWG No. 60339/100

eTHEKWINI WATER
SERVICES



WATER DESIGN BRANCH

REDUCED PLAN USE SCALE BELOW



70mm ON ORIGINAL PLAN

CONSULTANT:



1st Floor
No. 5, The Boulevard
West Way Office Park
Wentworth, Durban
Tel: +27 (0) 31 265 6007
Fax: +27 (0) 31 265 6011
Email: info@naiducosulting.com

Drawing No.: D859-52-5201 REV 0

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Revision Date Description

32269-5W

Contract No.

D859

Project No.

Planning Unit

WATER AND SANITATION

Ward No.

59

Project Title

TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE RESERVOIR,
400KL ELEVATED STEEL TANK AND
ANCILLARY WORKS

Drawing Title

PUMP STATION SUCTION
AND DISCHARGE
PIPELINES DETAILS

Scales: As Shown

Paper Size: A0

Designed: D. Ramghulam Date: 01-09-2025

Checked: A. Goorun Drawn: D. Ramghulam

Bulk Operations

Area Engineer (W.O)

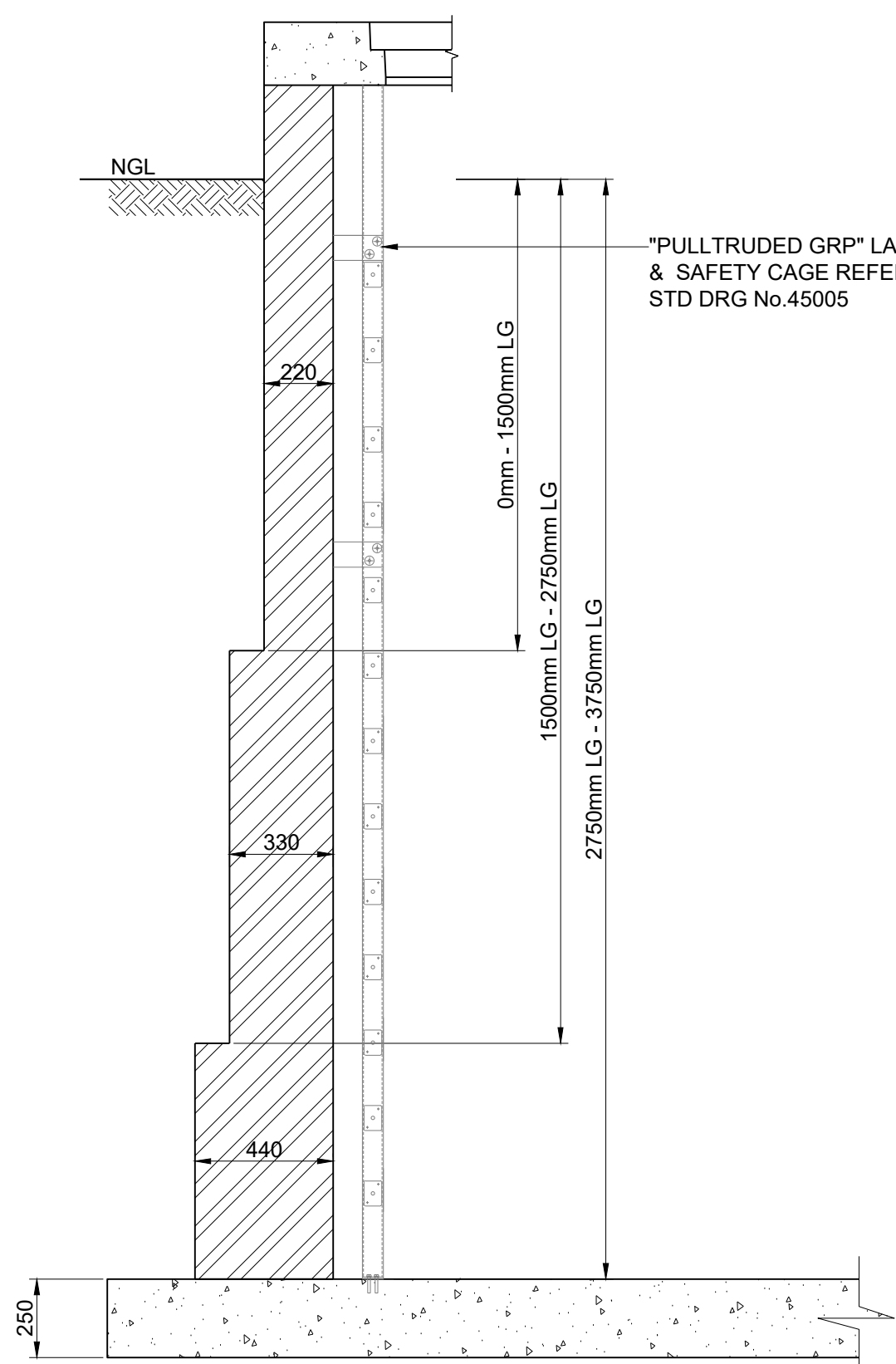
Manager (W.D.)

Director (Water)

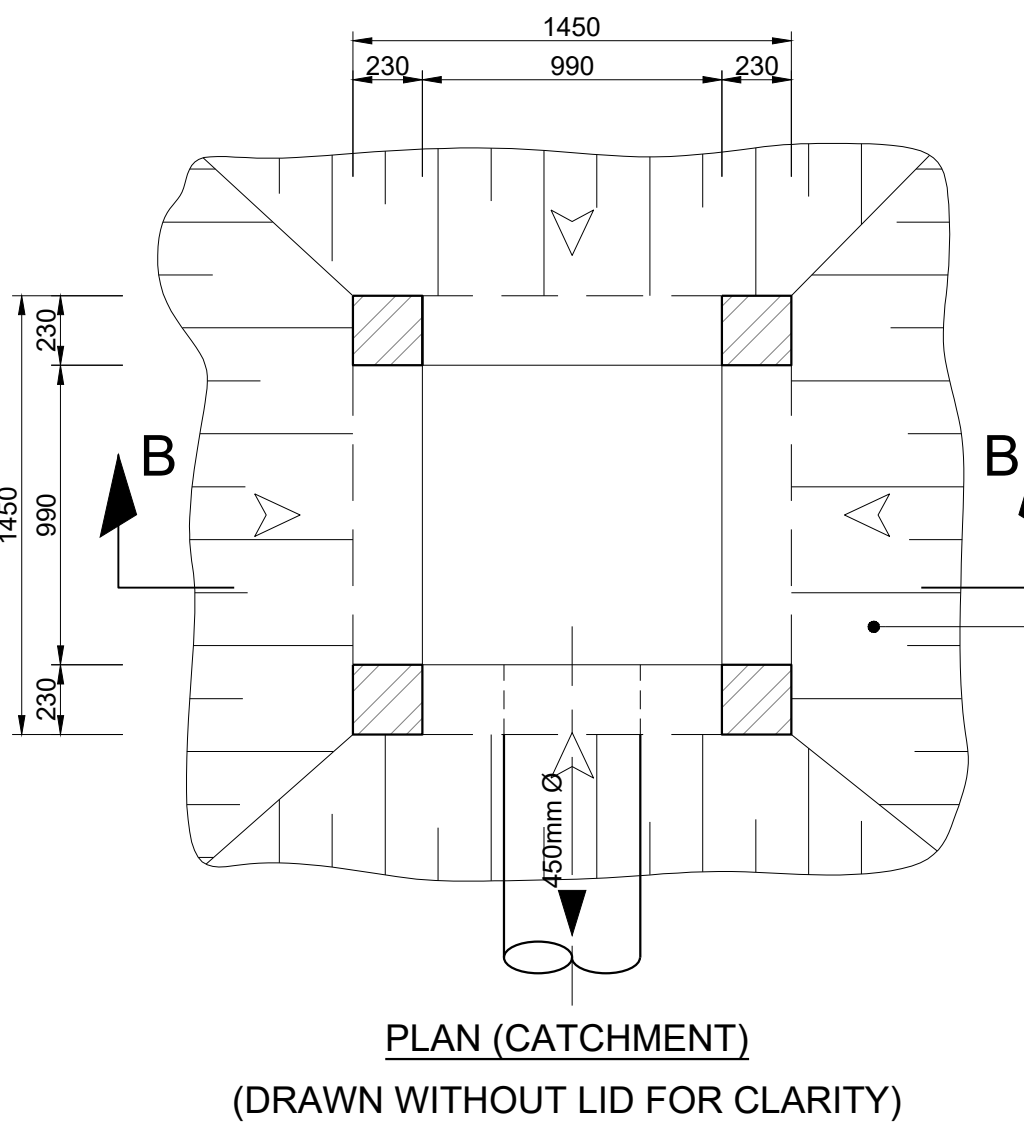
E.Msweli - Head Water & Sanitation Unit

60570/015 3 of 3

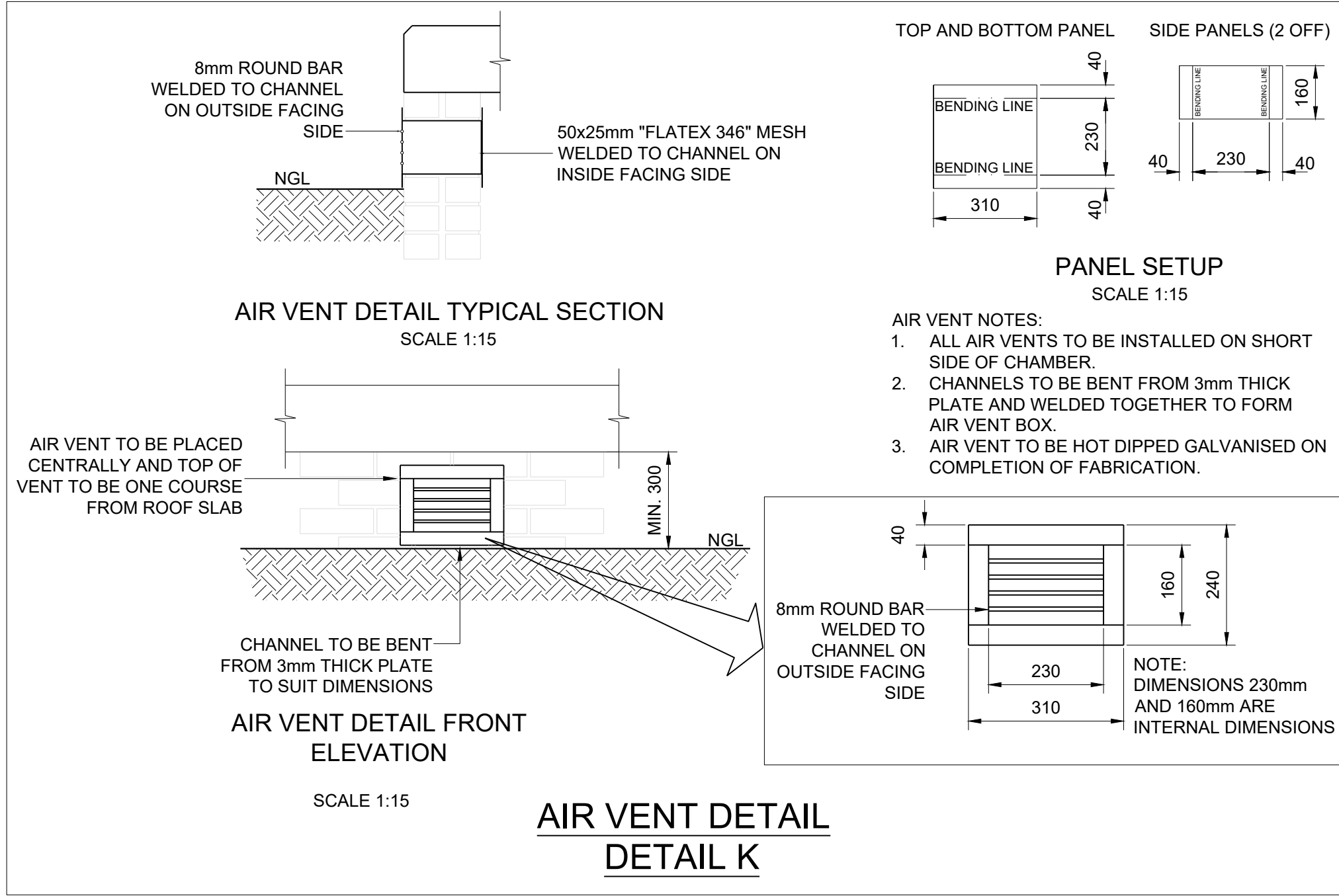
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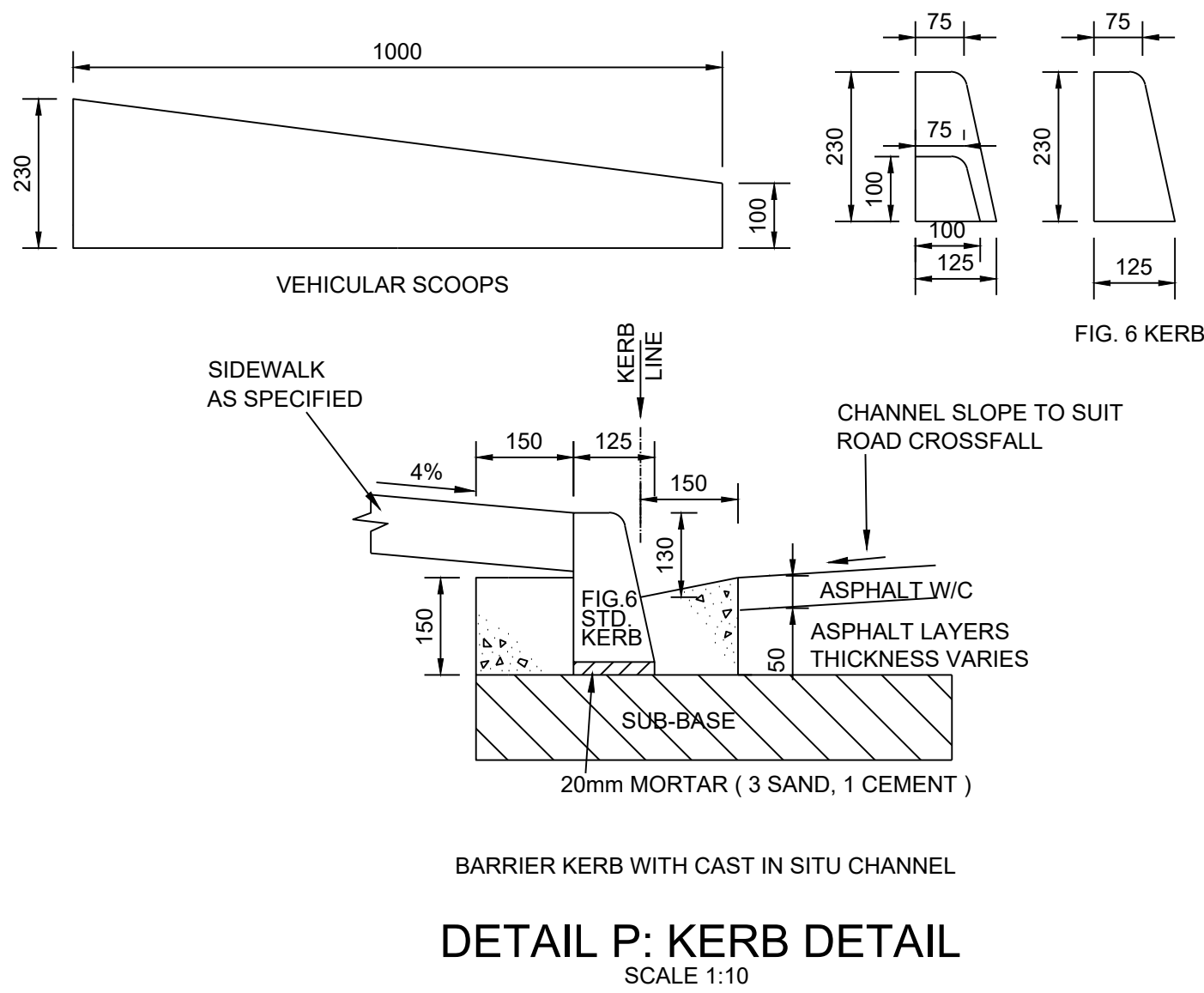
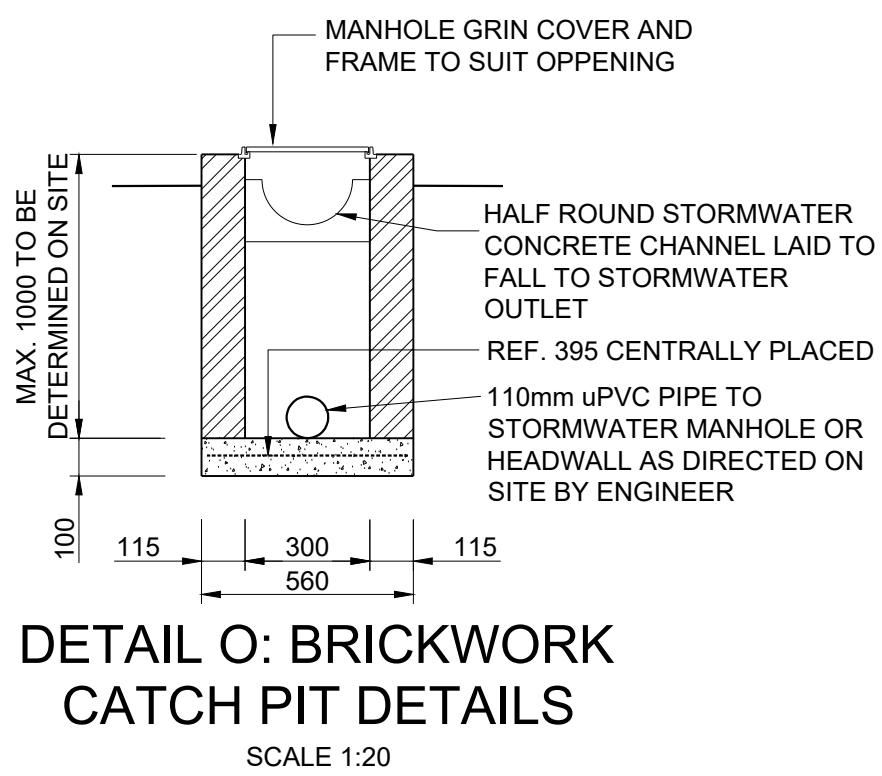
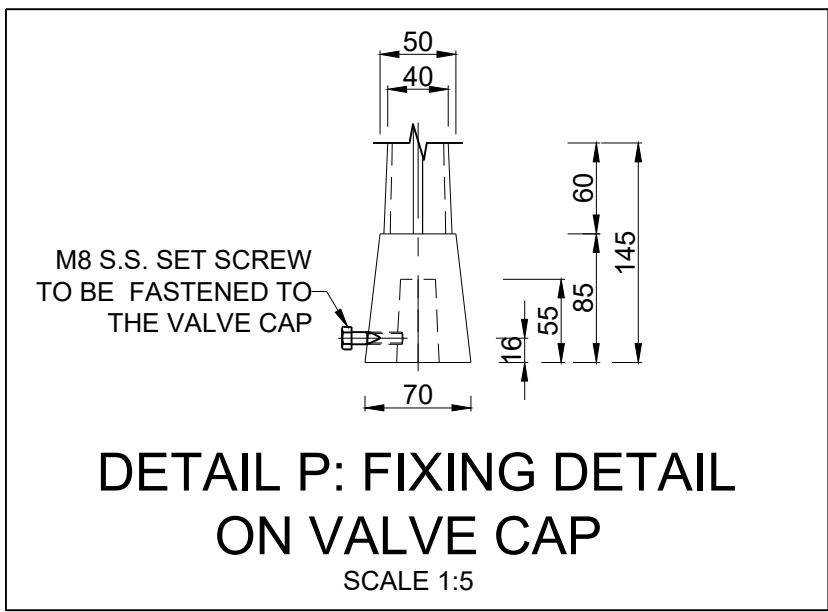
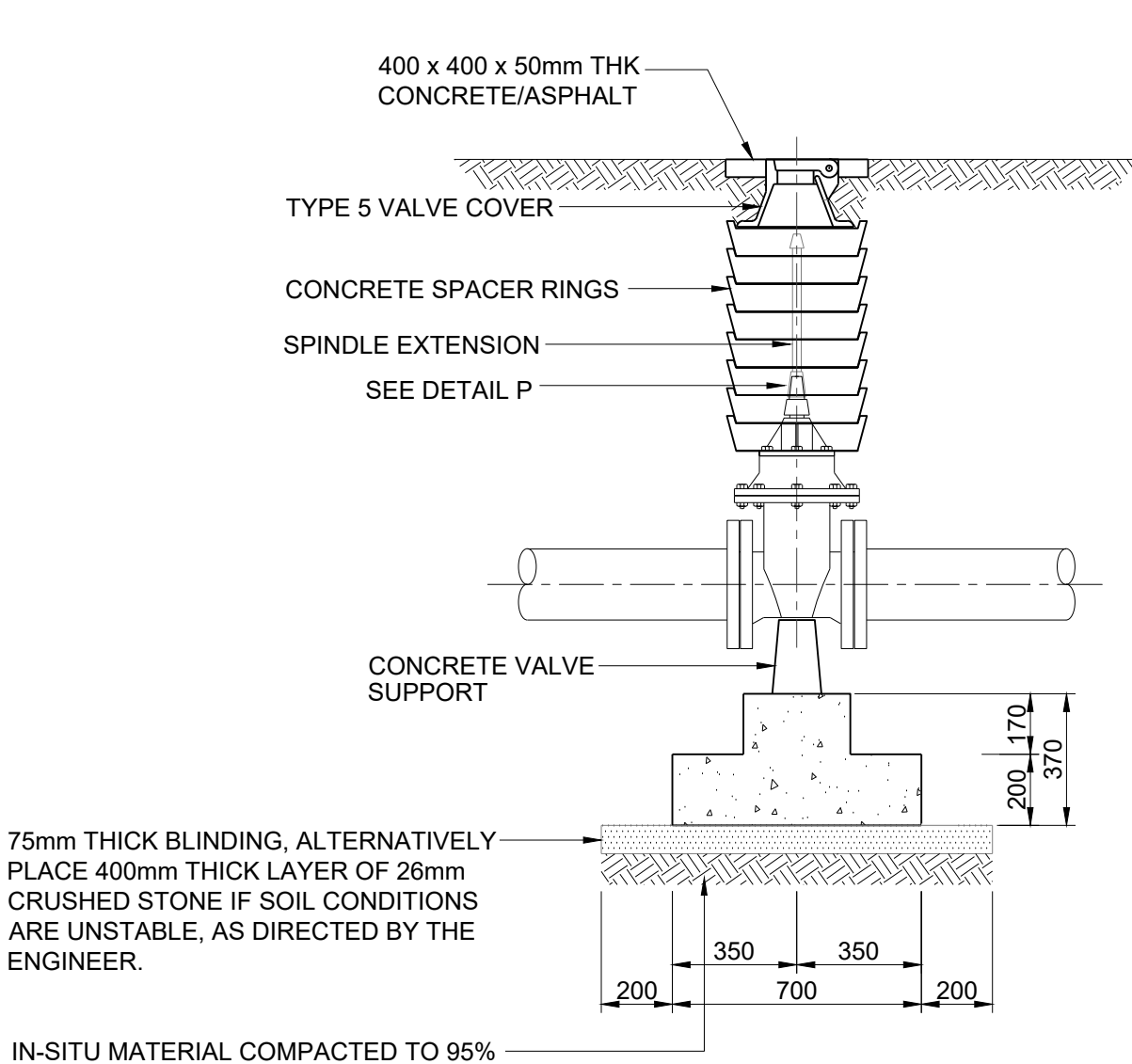
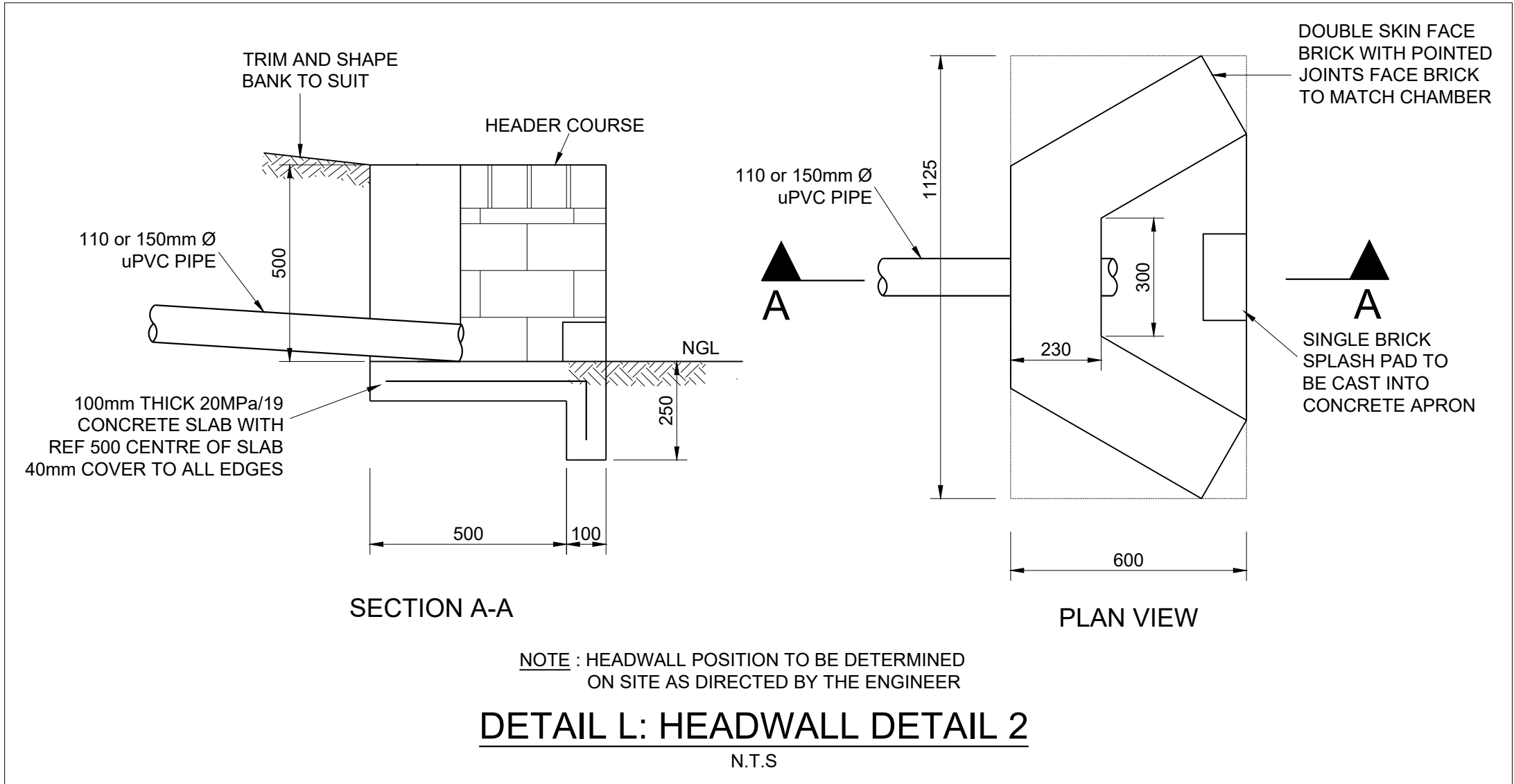
DETAIL J
STANDARD DETAIL ON VARYING BRICK
THICKNESS FOR DIFFERENT DEPTHS
SCALE 1 : 20

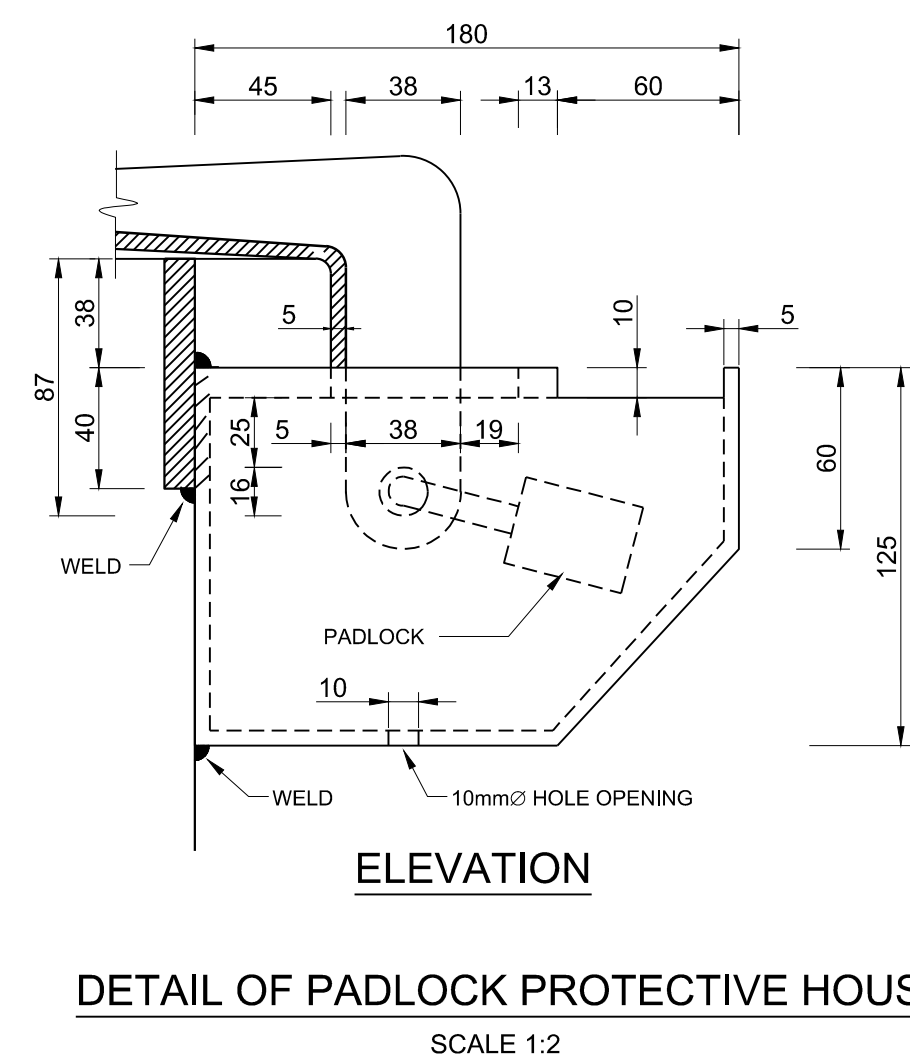
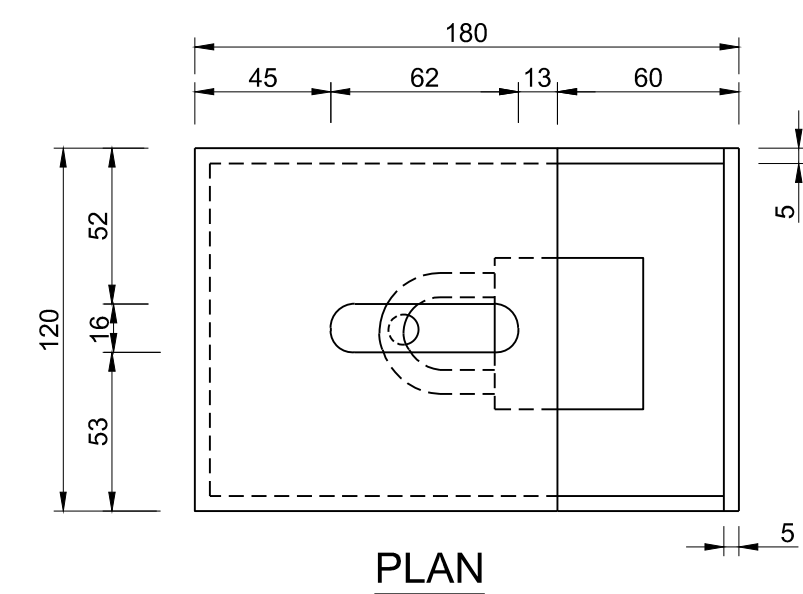
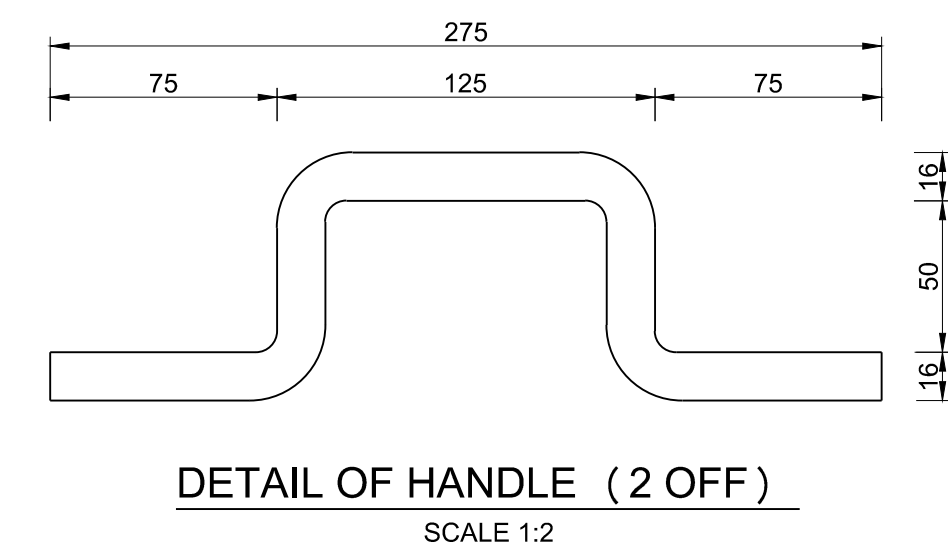
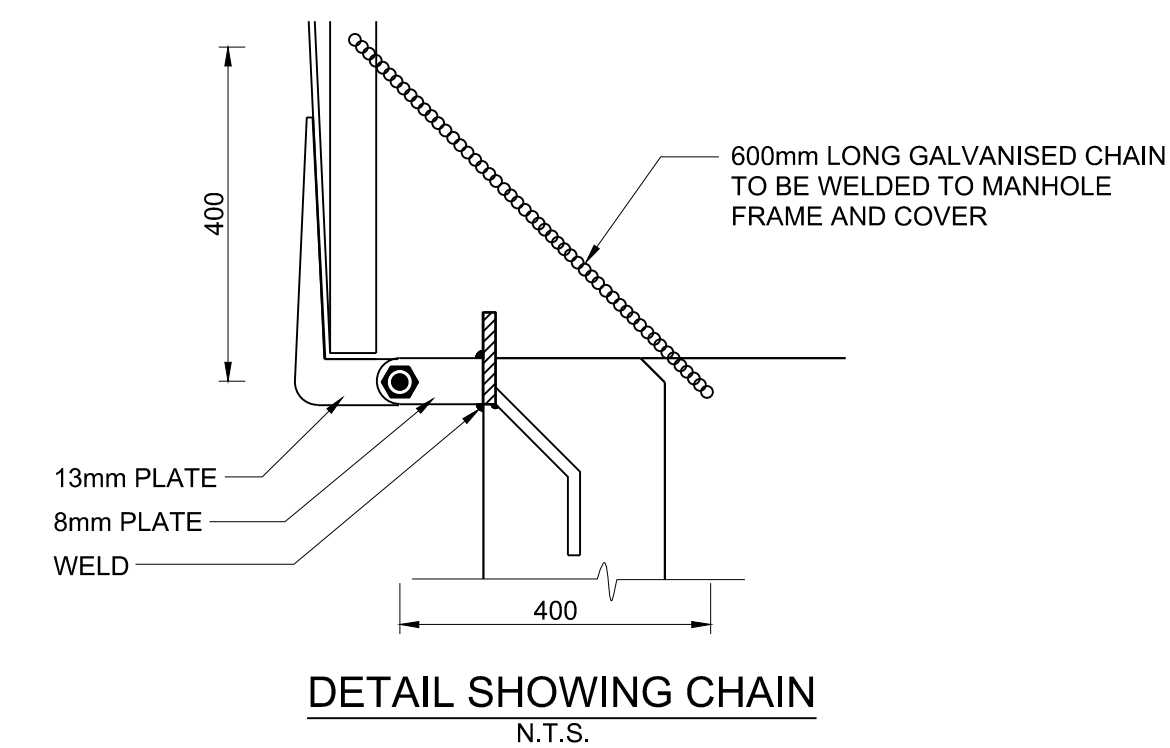


DETAIL N
DEPRESSED INLET DETAIL
SCALE 1 : 25



AIR VENT DETAIL
DETAIL K





REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

NAIDU
CONSULTING

1st Floor
No.5, The Boulevard
West Way Office Park
Westville, Durban
Tel : +27 (0) 31 265 6007
Fax : +27 (0) 31 265 6011
Email: info@naiduconsulting.com

Drawing No.: D859-52-5401- REV0

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REFERENCE DRAWINGS

DWG No.	TITLE/DESCRIPTION	SOURCE

STANDARD DRAWINGS

0	09 / 2025	ISSUED FOR TENDER ONLY
0	02 / 2025	ISSUED FOR INFORMATION
Revision	Date	Description

Contract No. 32269-5W

Project No.	D859
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Planning Unit

WATER AND SANITATION

Ward No.	59
----------	----

Project Title

TRENANCE 3 RESERVOIR CONSTRUCTION OF A 6.0ML REINFORCED CONCRETE RESERVOIR, 400KL ELEVATED STEEL TANK AND ANCILLARY WORKS

Drawing Title

HINGED MILD STEEL
COVER AND FRAME FOR
1200 x 1200mm OPENING

Scales : As Shown

Paper Size :	A1
--------------	----

Designed : Z. Bhengu

Designed : Z. Bhengda	Date : 01-09-2023
Checked : A. Goorun	Drawn : N. Adams

Employee's Name	Employee's ID

Area Engineer (W.O)

Manager (W.D.)

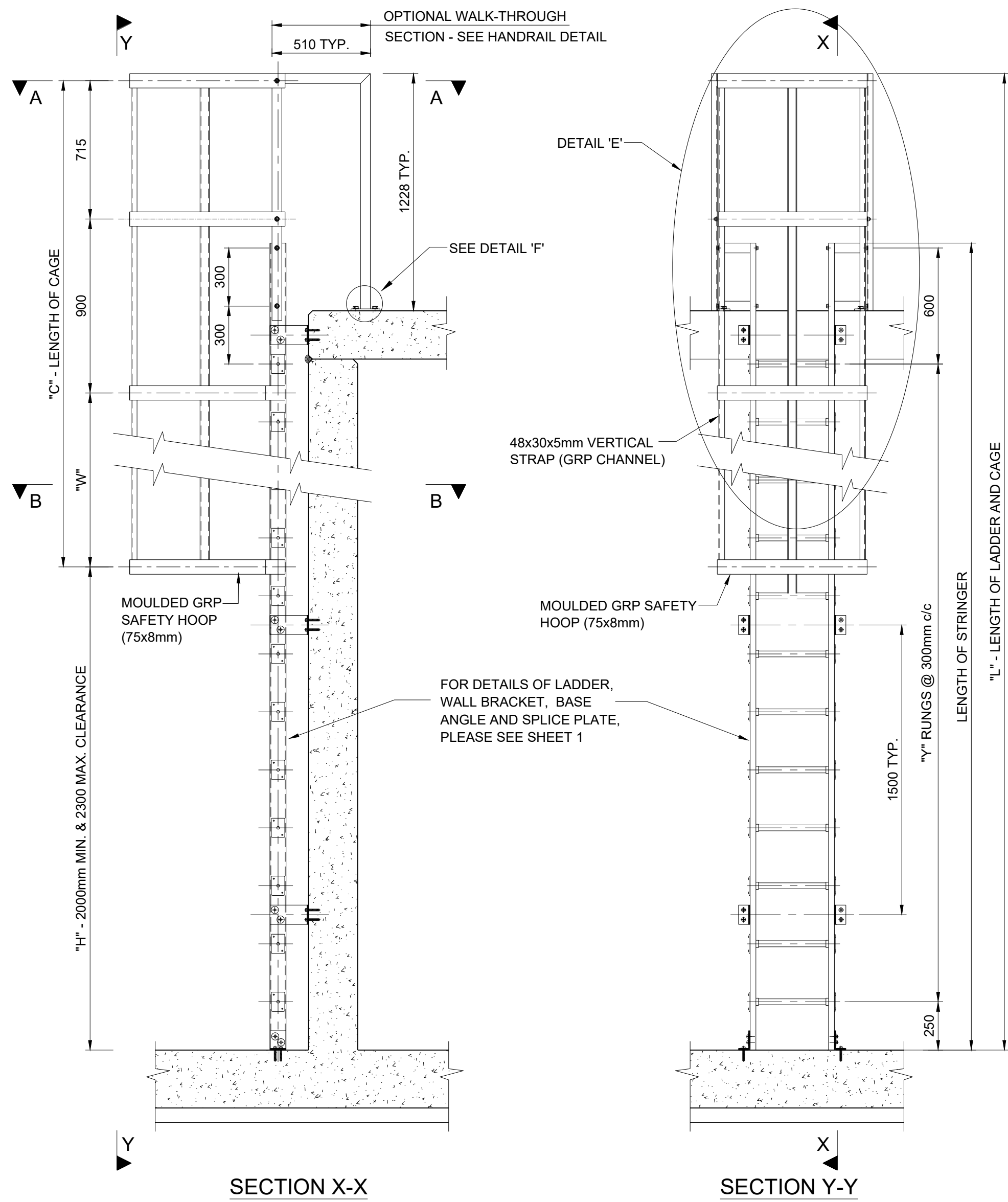
Director (Water)

E.Msweli - Head:Water & Sanitation Unit

60570/021

1 of 1

C

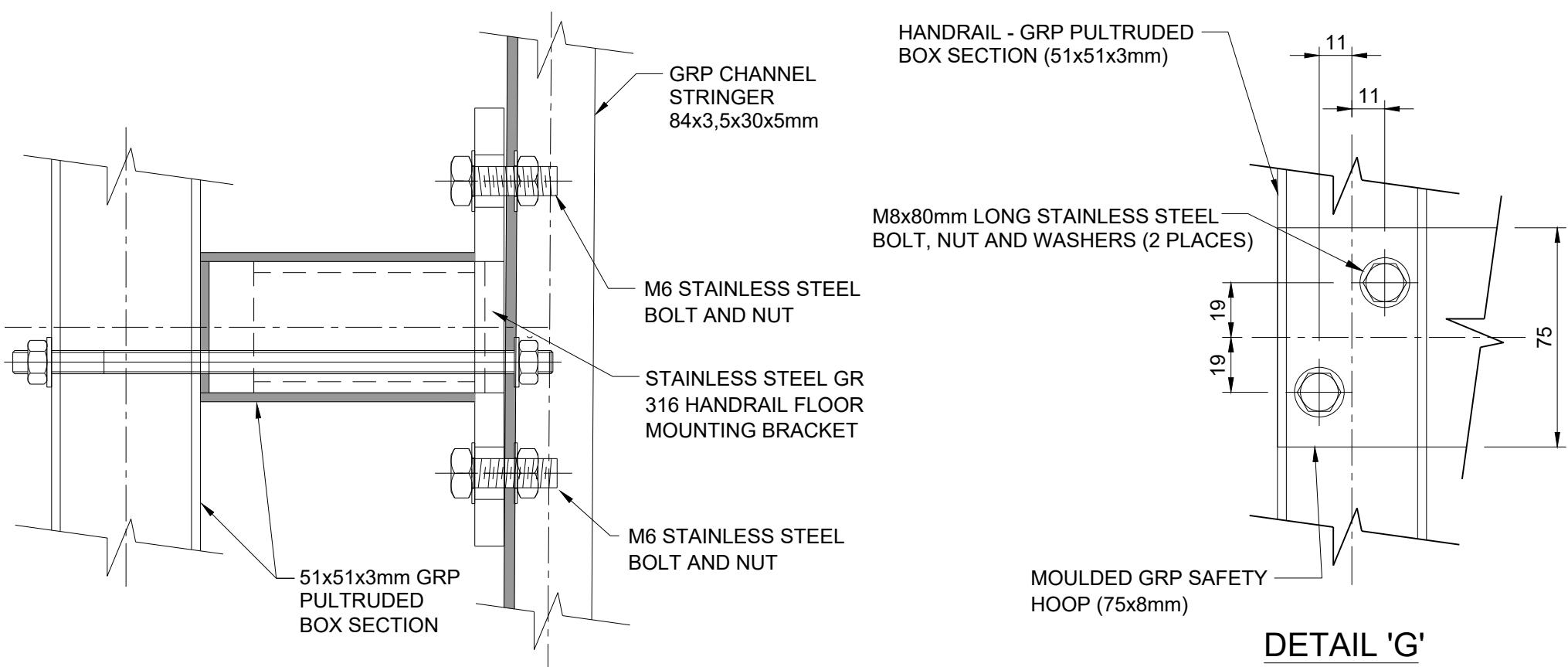


SECTION X-X

SECTION Y-Y

SECTIONAL VIEWS ON ACCESS LADDER

Scale 1:20

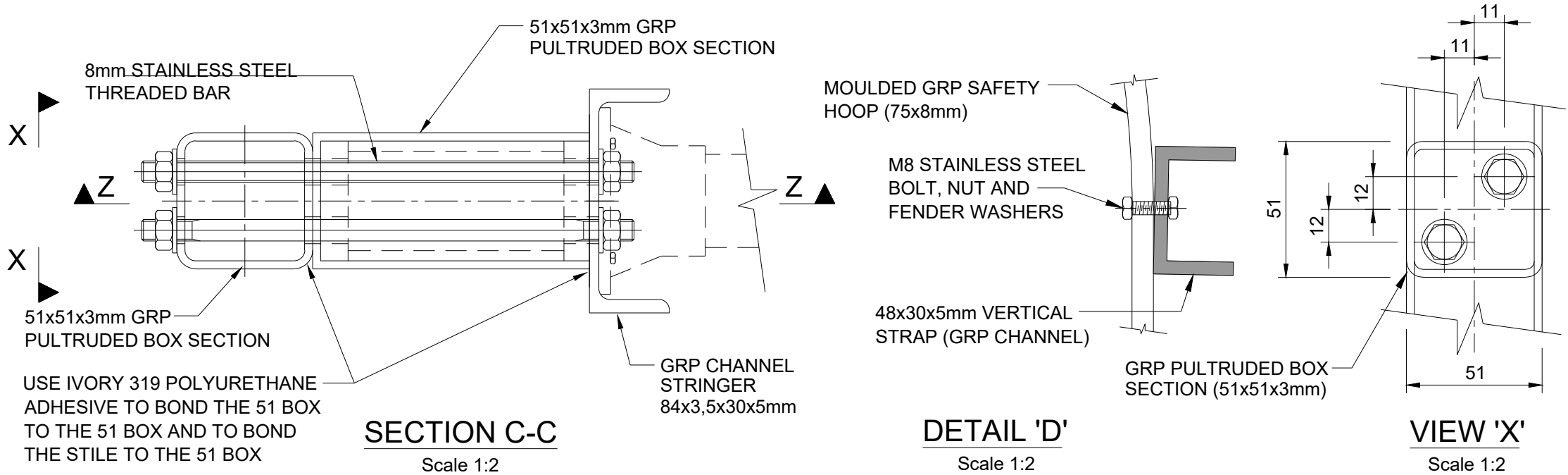


SECTION Z-Z

Scale 1:2

DETAIL 'G'

Scale 1:2



SECTION C-C

Scale 1:2

DETAIL 'D'

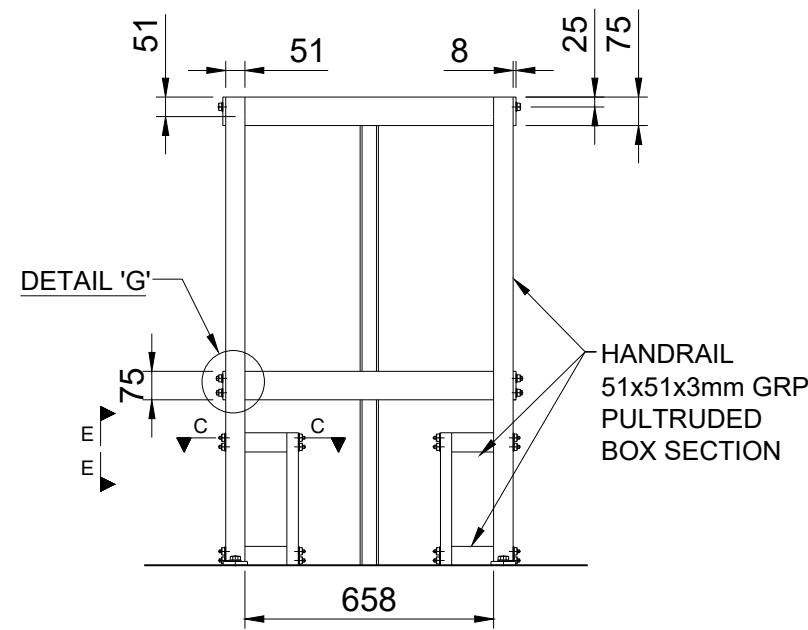
Scale 1:2

VIEW 'X'

Scale 1:2

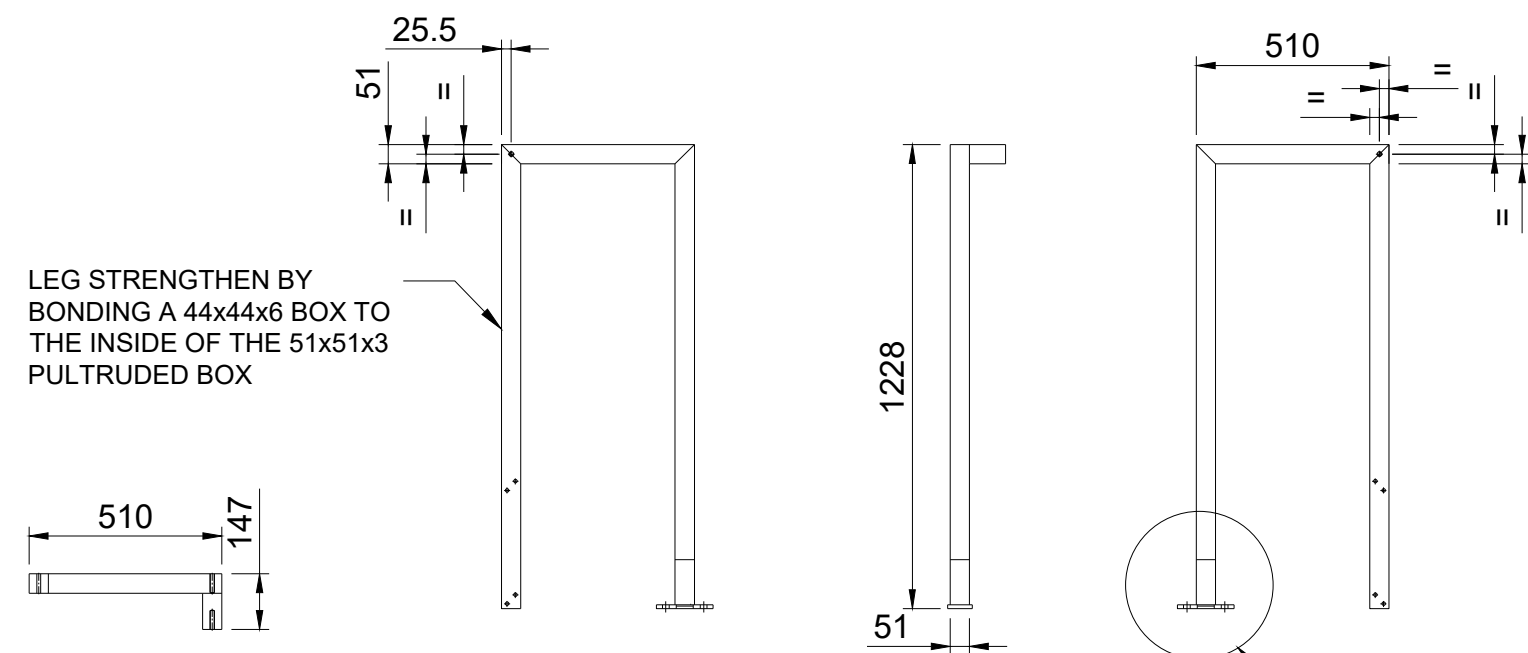
HANDRAIL NOTES :

1. CORNERS JOINED BY INTERNAL INSERTS AND AN EPOXY ADHESIVE.
2. COLOUR OF HANDRAIL: YELLOW
3. STAINLESS STEEL GRADE 316 BOLTS, NUTS AND WASHERS USED TO FIX THE HANDRAIL TO THE CAGE, STRINGER AND STAINLESS STEEL FOOT PIECE.
4. NOTE THAT THE OTHER HANDRAIL IS A MIRROR COPY OF THIS HANDRAIL.
5. FIXING DETAILS DETERMINED BY SUPPLIER.



DETAIL 'E'

Scale 1:20



PLAN VIEW

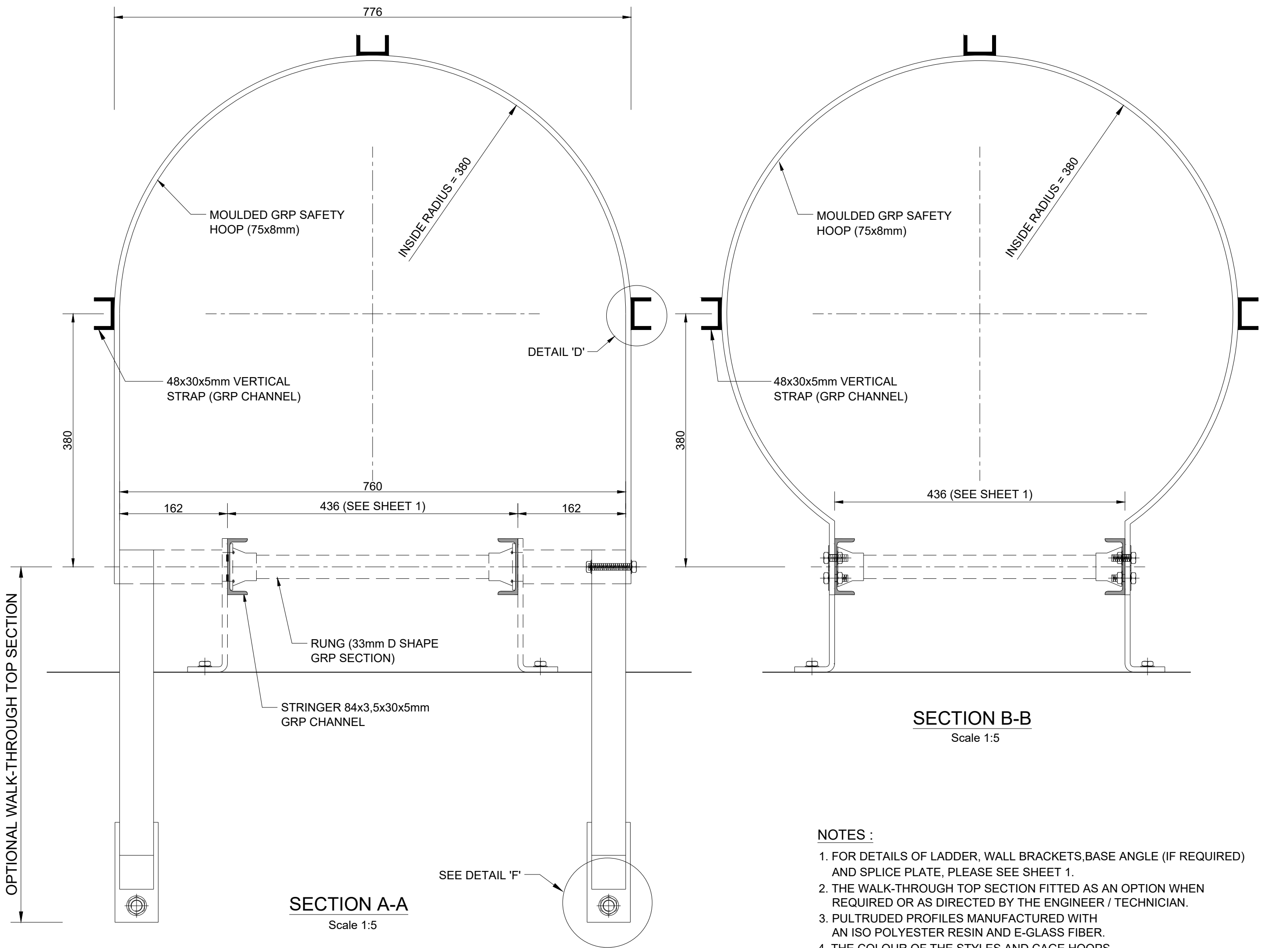
SIDE VIEW

FRONT VIEW

SIDE VIEW

SAFETY CAGE HANDRAIL DETAIL

Scale 1:20



SECTION A-A

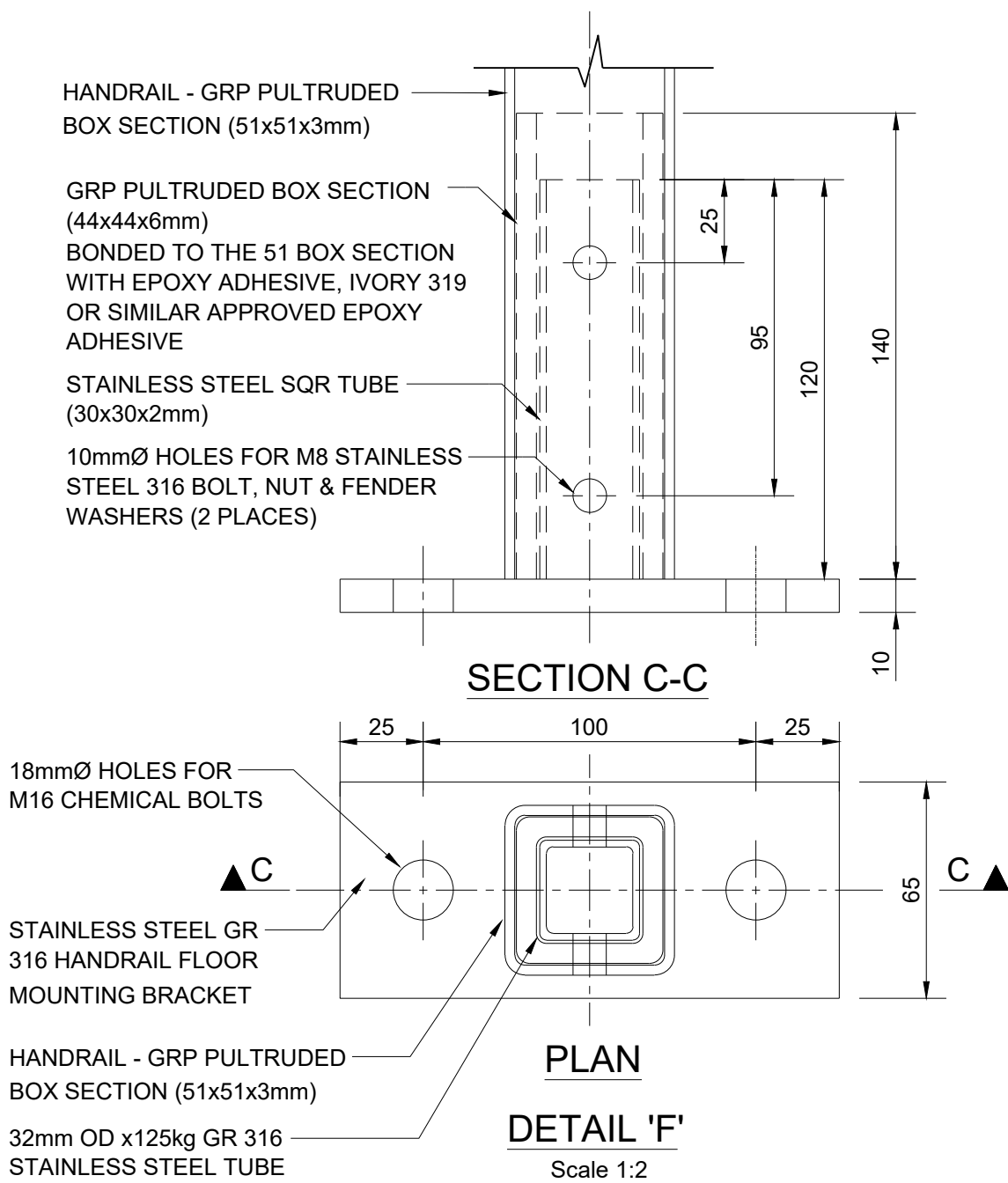
Scale 1:5

SECTION B-B

Scale 1:5

NOTES :

1. FOR DETAILS OF LADDER, WALL BRACKETS, BASE ANGLE (IF REQUIRED) AND SPLICE PLATE, PLEASE SEE SHEET 1.
2. THE WALK-THROUGH TOP SECTION FITTED AS AN OPTION WHEN REQUIRED OR AS DIRECTED BY THE ENGINEER / TECHNICIAN.
3. PULTRUDED PROFILES MANUFACTURED WITH AN ISO POLYESTER RESIN AND E-GLASS FIBER.
4. THE COLOUR OF THE STYLES AND CAGE HOOPS ARE GOLDEN YELLOW.
5. THE COLOUR OF THE RUNGS AND THE CAGE STRAPS ARE CLOUD GREY.
6. ALL BOLTS, NUTS AND FENDER WASHERS USED TO MANUFACTURE THE PRODUCT MUST BE STAINLESS STEEL GRADE 316.
7. LEGEND "L" = HEIGHT TO TOP OF FLOOR PLUS 1228mm.
"C" = ("L" - "H") WHERE "H" = 2000mm MIN. AND 2300mm MAX.
"W" = 900mm OR 600mm (WHERE 900mm IS TYPICAL HEIGHT AND 600mm IS USED IN ORDER TO AVOID COINCIDENCE BETWEEN SAFETY HOOPS AND WALL BRACKETS.) EXCEPT FOR THE TWO TOPMOST SPACES (715mm & 900mm) WHICH HAVE FIXED HEIGHTS.
8. THE TOTAL NUMBER OF SPACES ("W") BETWEEN SAFETY HOOPS ARE DEPENDENT ON THE LENGTH OF "C".



SECTION C-C

PLAN

DETAIL 'F'

Scale 1:2

eTHEKWINI WATER SERVICES



WATER DESIGN BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

CONSULTANT:

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Drawing No.: D859-52-5402- REV 0

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REFERENCE DRAWINGS

DWG No.	TITLE/DESCRIPTION	SOURCE

STANDARD DRAWINGS

0	09 / 2025	ISSUED FOR TENDER ONLY
0	02 / 2025	ISSUED FOR INFORMATION
Revision	Date	Description

Contract No. 32269-5W

Project No. D859

Planning Unit
WATER AND SANITATION

Ward No. 59

Project Title
**TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE
RESERVOIR, 400KL ELEVATED
STEEL TANK AND ANCILLARY
WORKS**

Drawing Title
**STANDARD DRAWING GRP
ACCESS LADDER SAFETY CAGE
PLAN, SECTION AND DETAILS**

Scales : As Shown

Paper Size : A1

Designed : Z. Bhengu Date : 01-09-2025

Checked : A. Goorun Drawn : N. Adams

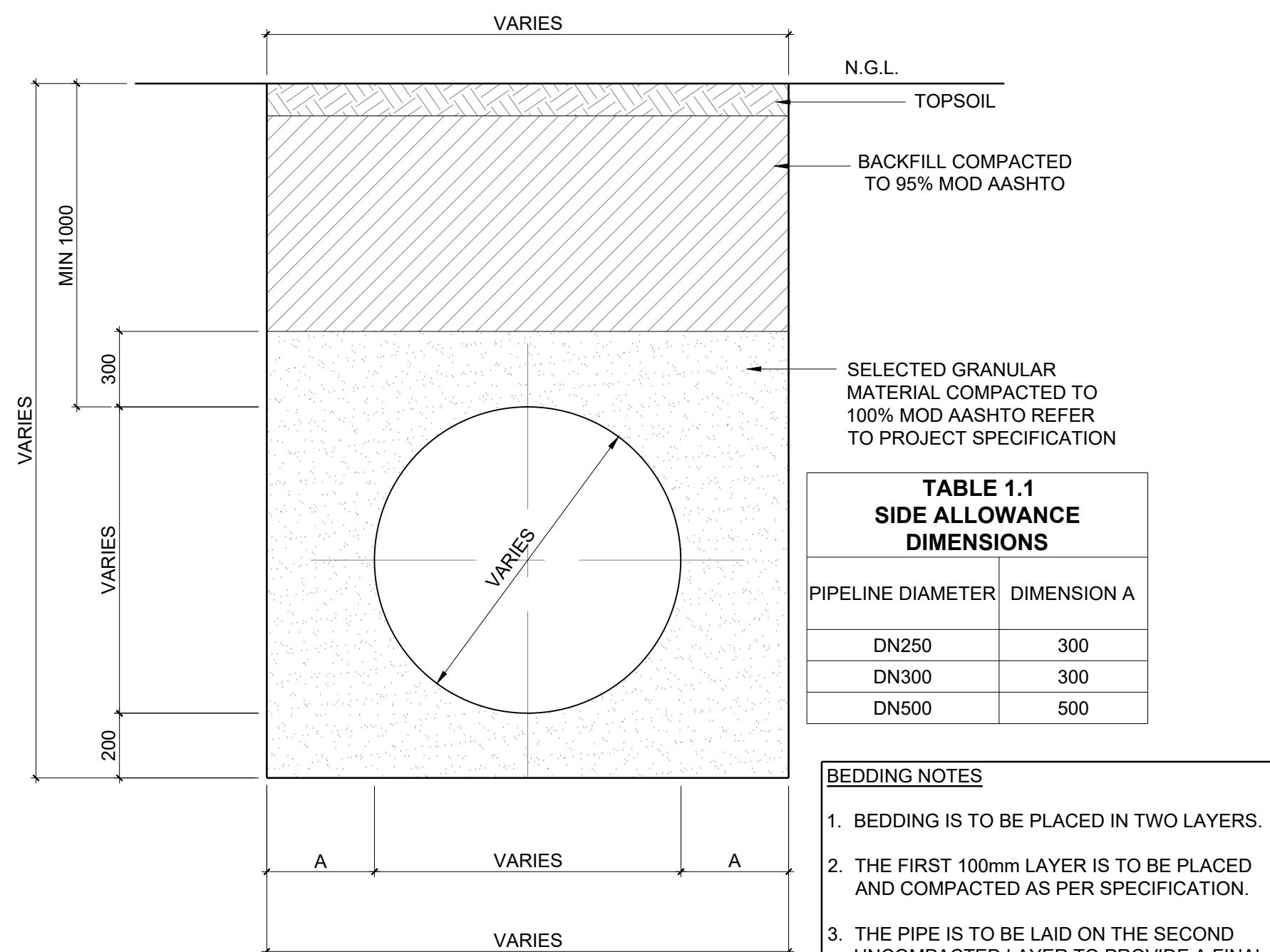
Area Engineer (W.O.)

Manager (W.D.)

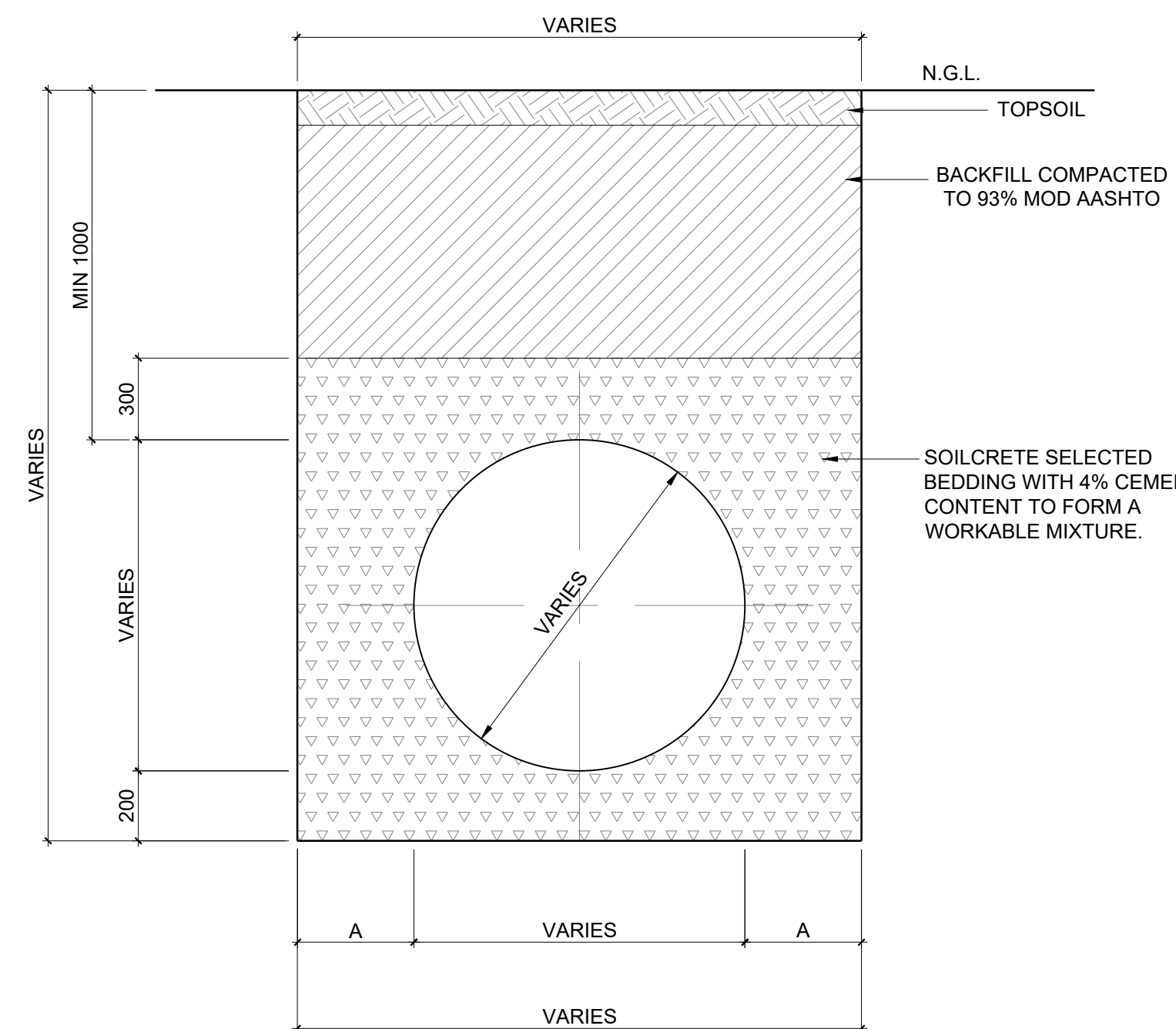
Director (Water)

E.Msweli - Head:Water & Sanitation Unit

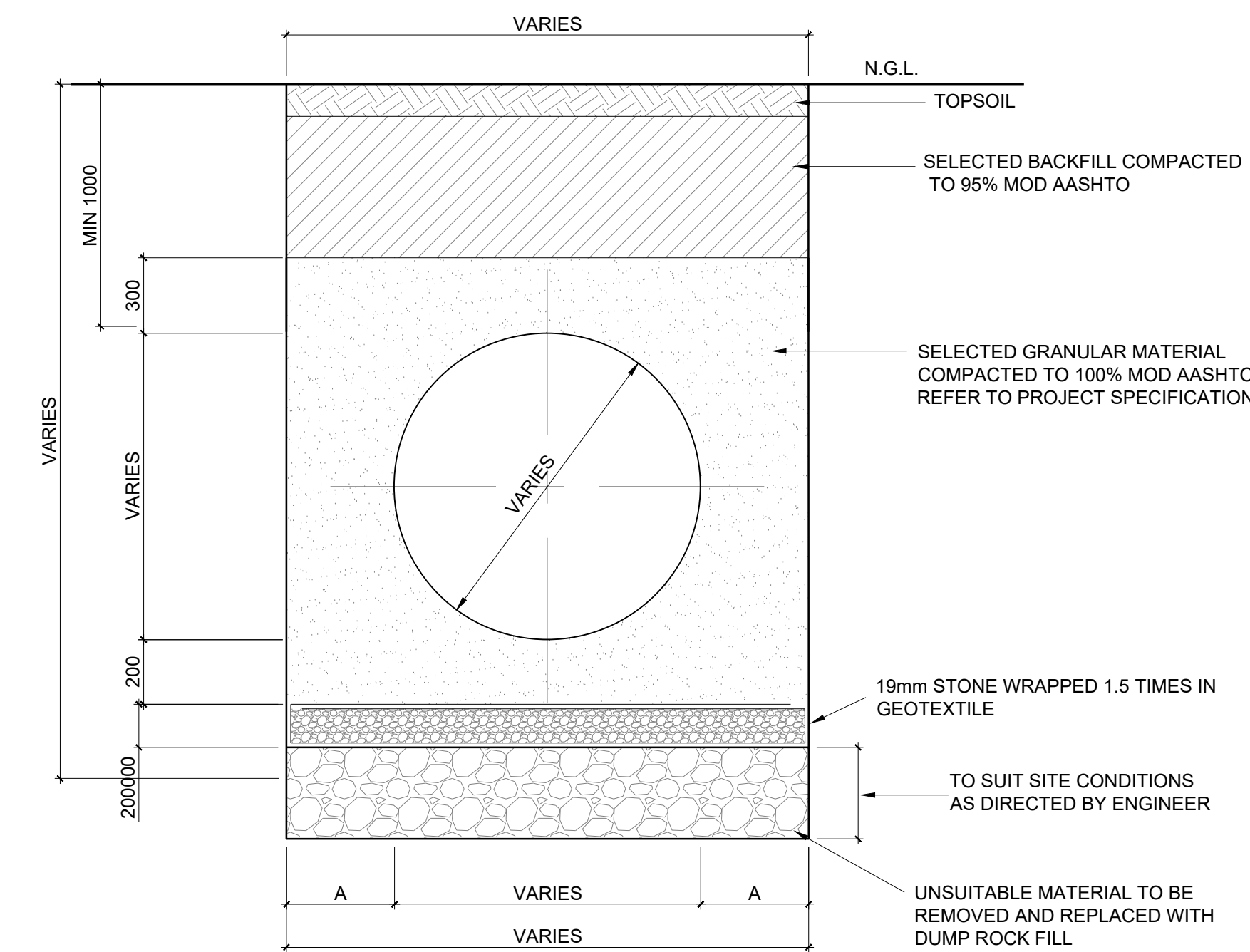
Drawing No. 60570/022 2 of 2 0
Sheet Rev.



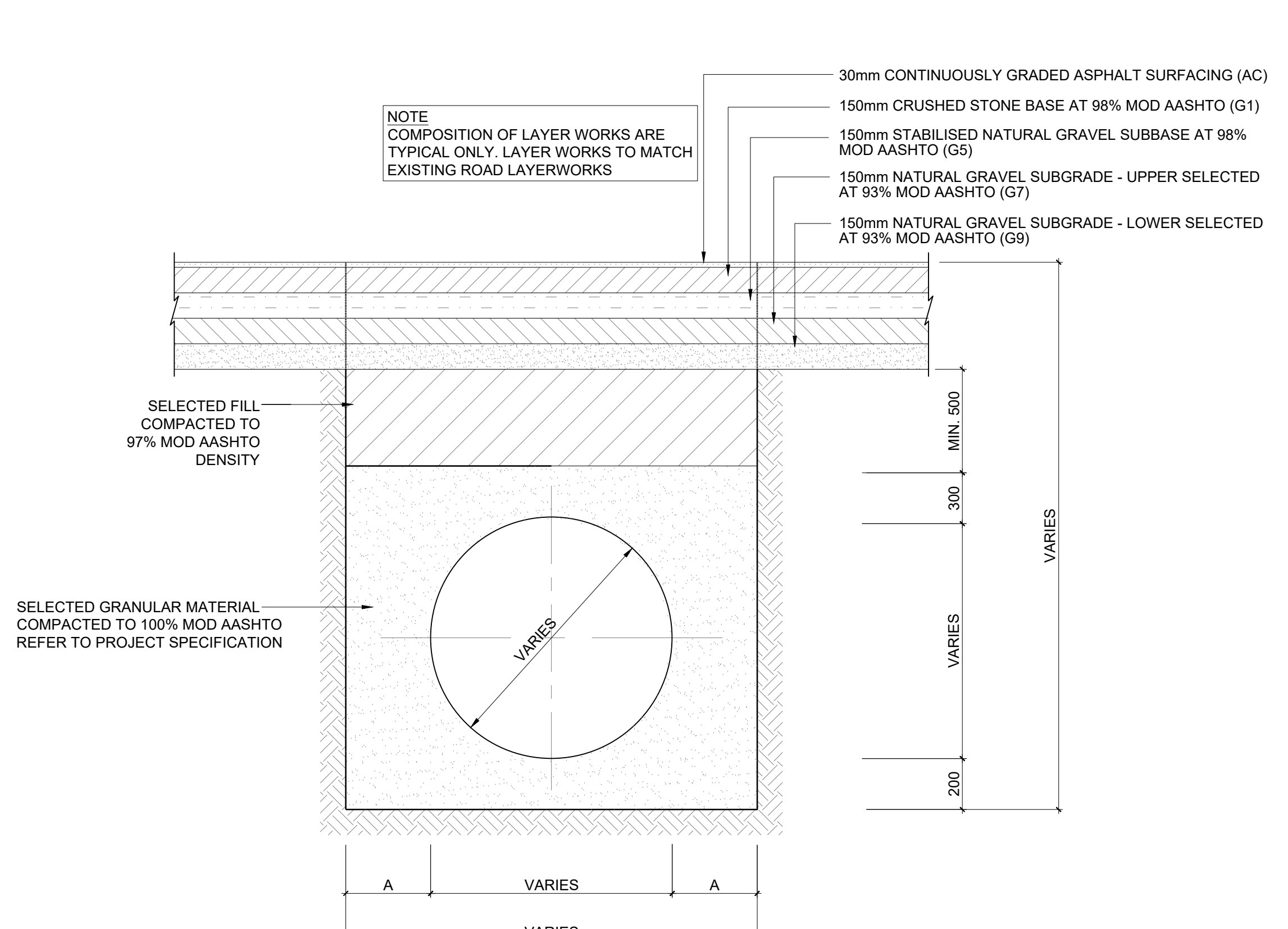
DETAIL 1
TYPICAL PIPE TRENCH
SCALE 1:25



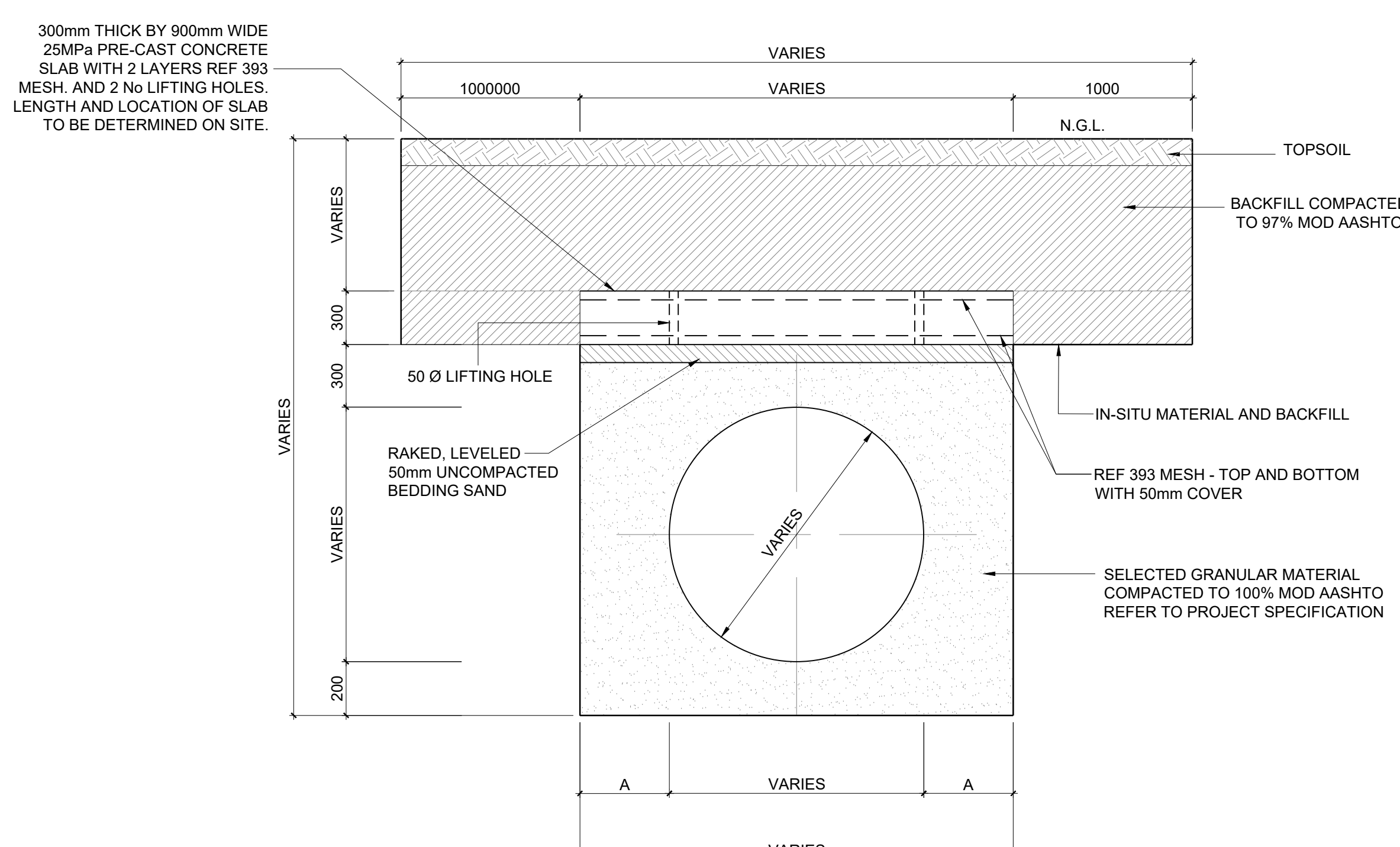
DETAIL 2
TYPICAL PIPE TRENCH WITH SOILCRETE BEDDING
SCALE 1:25



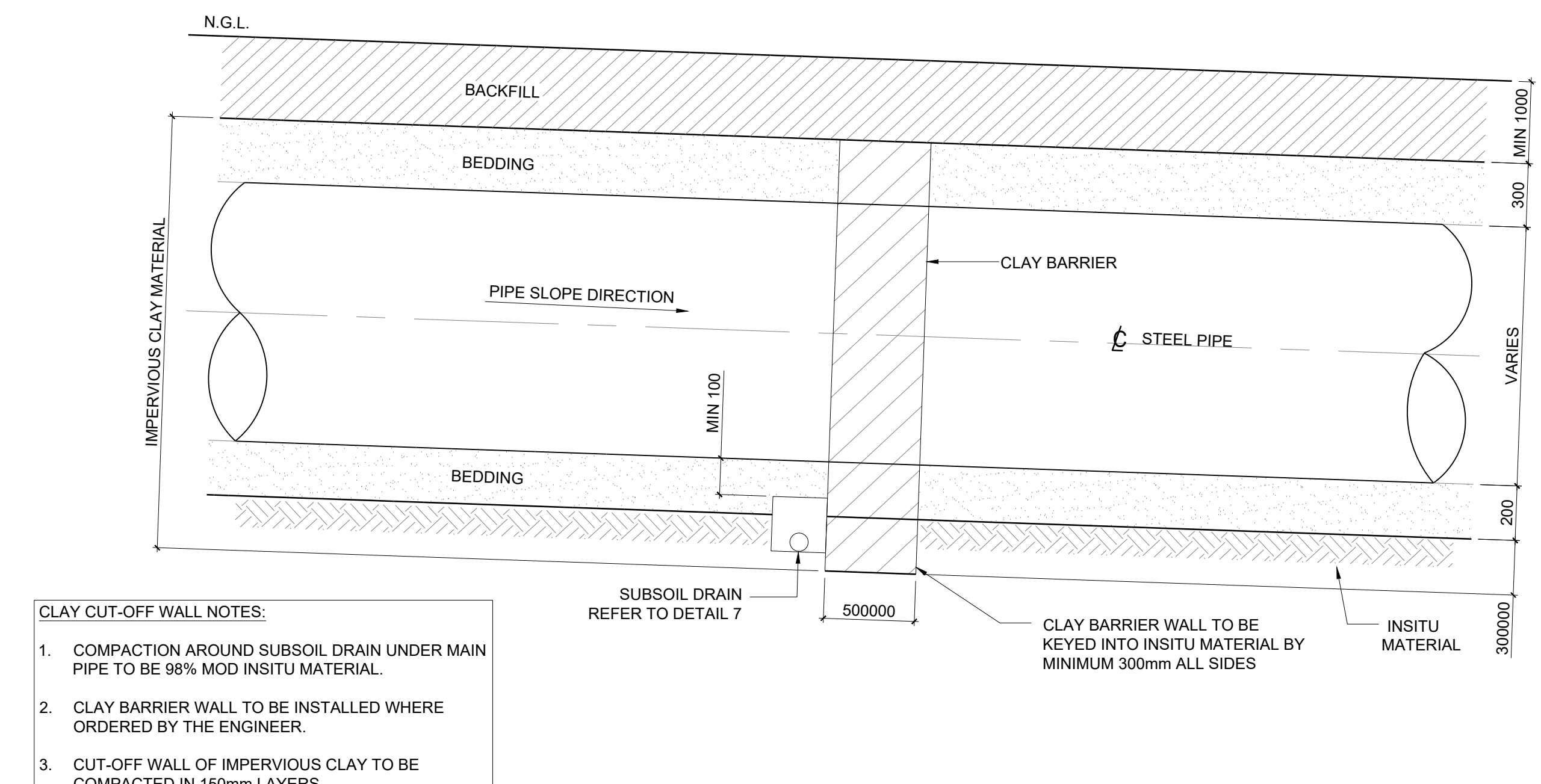
DETAIL 3
TYPICAL STONE BEDDING DETAIL
SCALE 1:25



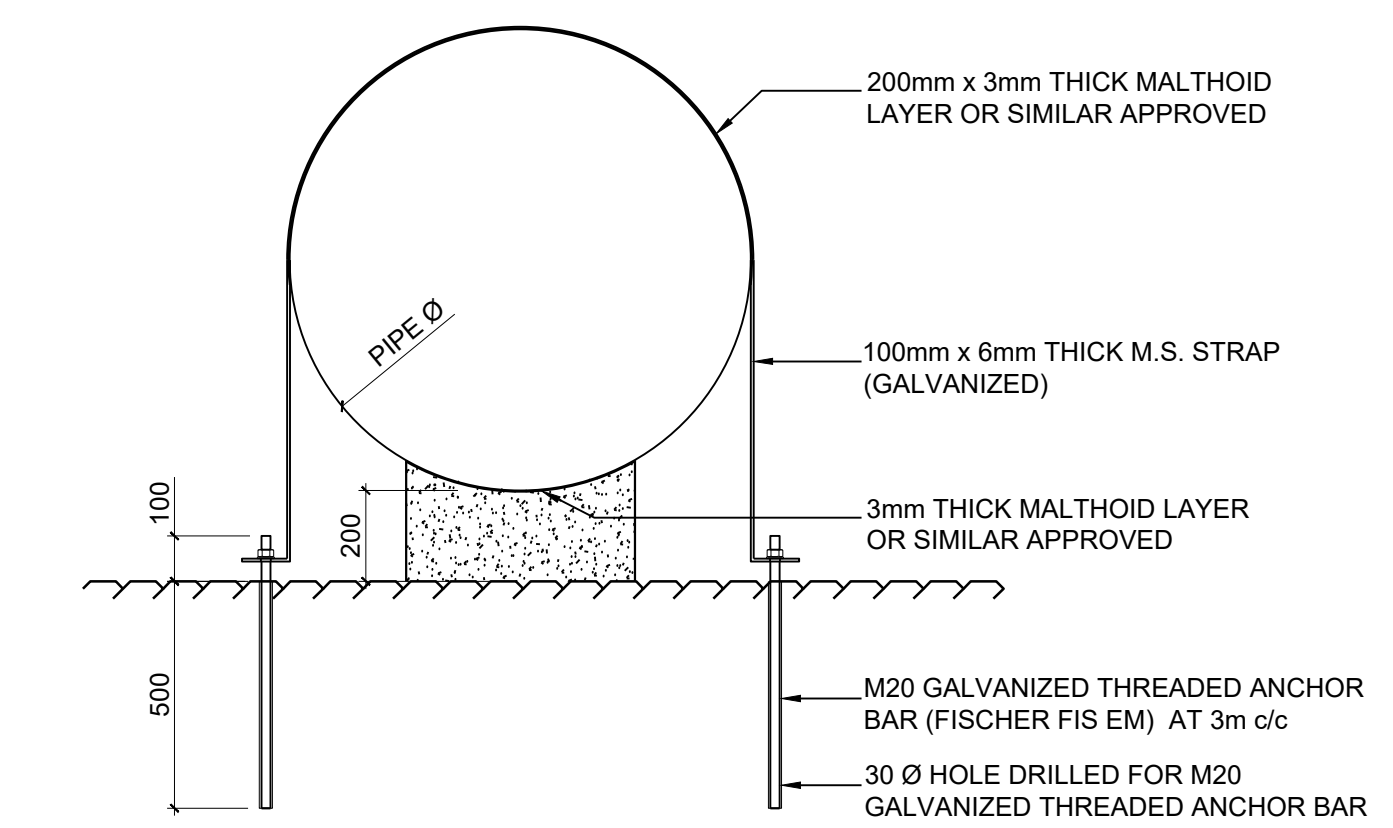
DETAIL 4
TYPICAL ROAD CROSSING TRENCH DETAIL
SCALE 1:25



DETAIL 5
TYPICAL PIPE PROTECTION
(OCCURRENCES OF BELOW MINIMUM COVER)
SCALE 1:25



DETAIL 6
TYPICAL PIPE CLAY CUT-OFF WALL AND SUB SOL DRAIN DETAIL
SCALE 1:25



DETAIL 9
PIPE ANCHORAGE DETAIL
SCALE 1:10

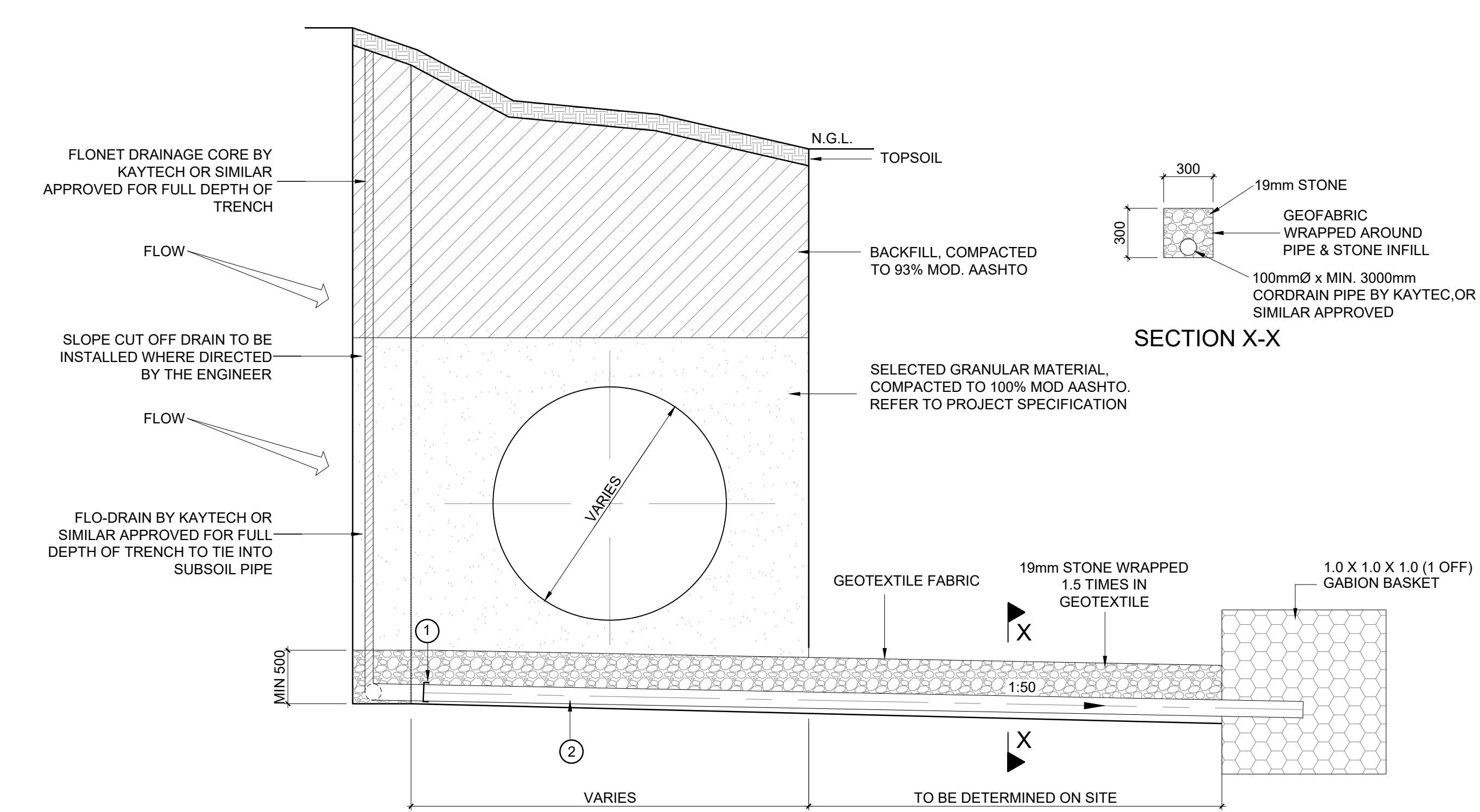
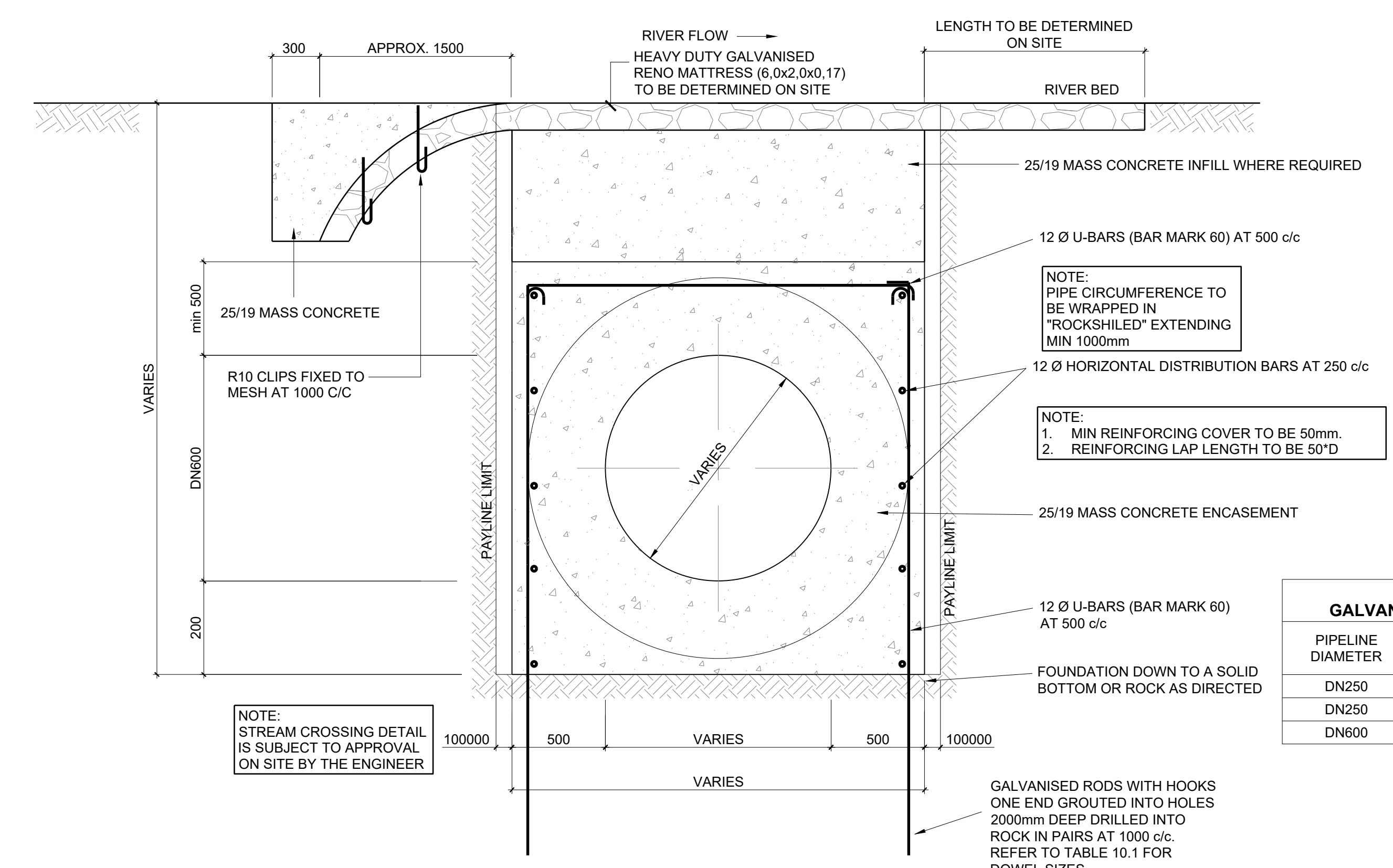


TABLE 7.1 PIPEWORK SCHEDULE	
ITEM	DESCRIPTION
1	110mmØ END CAP
2	100mmØ x MIN. 3000mm CORDRAIN PIPE BY KAYTECH OR SIMILAR APPROVED WITH 19mm STONE WRAPPED 1.5 TIMES IN GEOTEXTILE

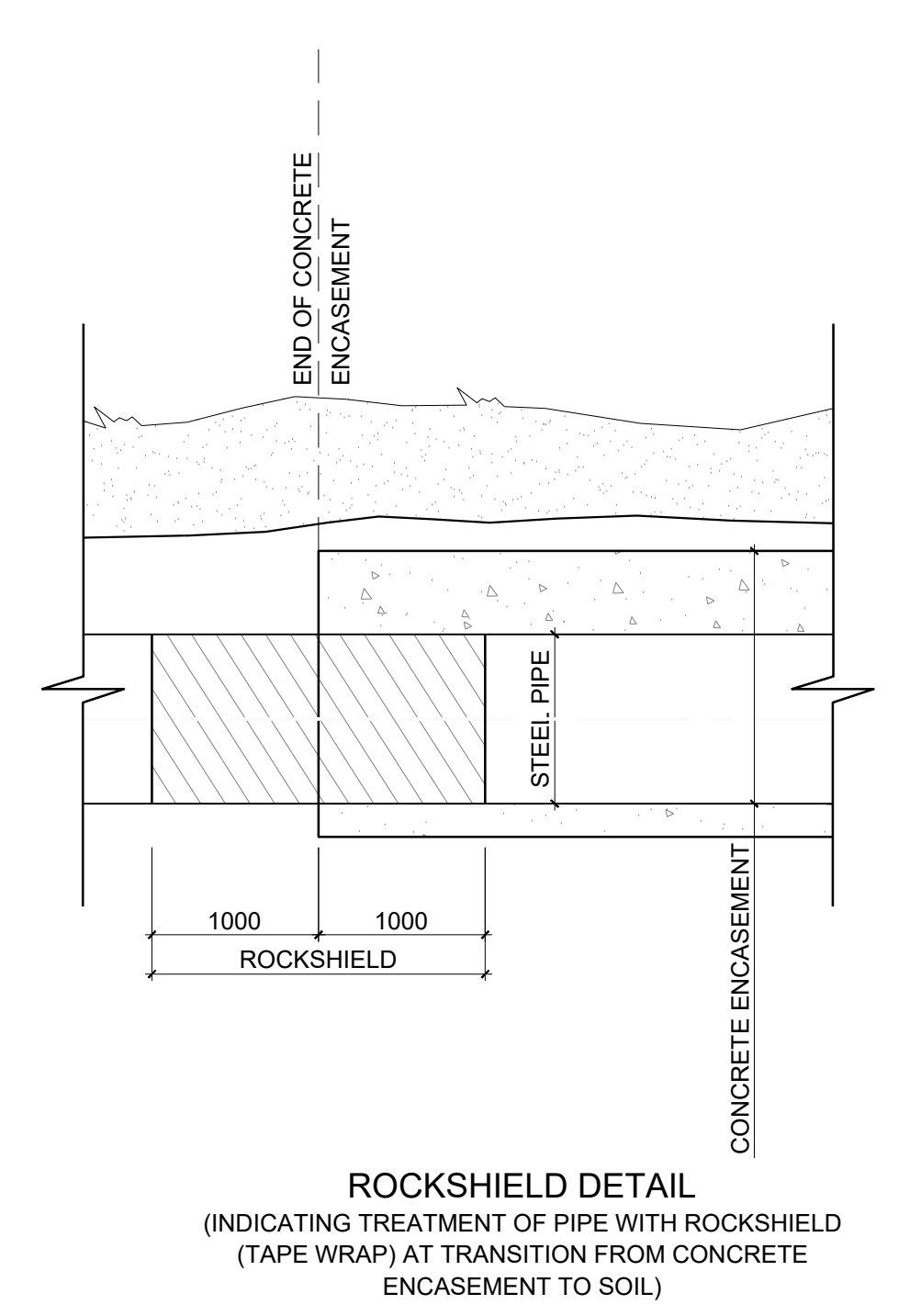
- DRAINAGE NOTES:**
- SUBSOIL DRAINAGE PIPE TO BE INSTALLED AT LOW POINTS AND WHERE INSTRUCTED BY THE ENGINEER.
 - GABION BASKET TO BE POSITIONED AT DAYLIGHT POSITION & WRAPPED IN A4 GEOTEXTILE.
 - 100mmØ HDPE TO BE LAID WITH 1 : 50 CONSTANT FALL INTO GABION BASKET.
 - MAX TRENCH WIDTH FOR 100mmØ PIPE TO BE DETERMINED ON SITE BY THE ENGINEER.
 - SUBSOIL PIPE TRENCH TO BE BACKFILLED WITH SELECTED BACKFILL AND COMPACTED TO 90% MOD AASHTO DENSITY.
 - DRAINAGE DETAIL IS SUBJECT TO APPROVAL ON SITE BY THE ENGINEER.

DETAIL 7
TYPICAL PIPE SUBSOIL AND SLOPE CUT OFF DRAIN DETAIL
SCALE 1:25



DETAIL 8
TYPICAL STREAM CROSSING SECTIONAL DETAIL
SCALE 1:25

TABLE 8.1 GALVANISED DOWEL SIZES		
PIPELINE DIAMETER	DOWEL DIAMETER	DRILLED HOLE DIAMETER
DN250	16 Ø	25 Ø
DN250	16 Ø	25 Ø
DN600	32 Ø	40 Ø



eTHEKWINI WATER SERVICES

WATER DESIGN BRANCH
REDUCED PLAN USE SCALE BELOW
0 10 20 30 40 50 60 70
70mm ON ORIGINAL PLAN

CONSULTANT:
NAIDU CONSULTING
1st Floor
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West Way Office Park
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Fax: +27 (0) 31 265 6011
Email: info@naiduconsulting.com

Drawing No.: D859-52-5403 REV 0

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REFERENCE DRAWINGS
DWG No. TITLE/DESCRIPTION

STANDARD DRAWINGS

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Revision	Date	Description

32269-5W

Contract No.

Project No. D859

Planning Unit
WATER AND SANITATION

Ward No. 59

Project Title
TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML REINFORCED CONCRETE RESERVOIR, 400KL ELEVATED STEEL TANK AND ANCILLARY WORKS

Drawing Title
STANDARD DETAILS
TYPICAL TRENCH DETAILS

Scales: As Shown

Paper Size: A0

Designed: Z. Bhengu Date: 01-09-2025

Checked: A. Goorun Drawn: N. Adams

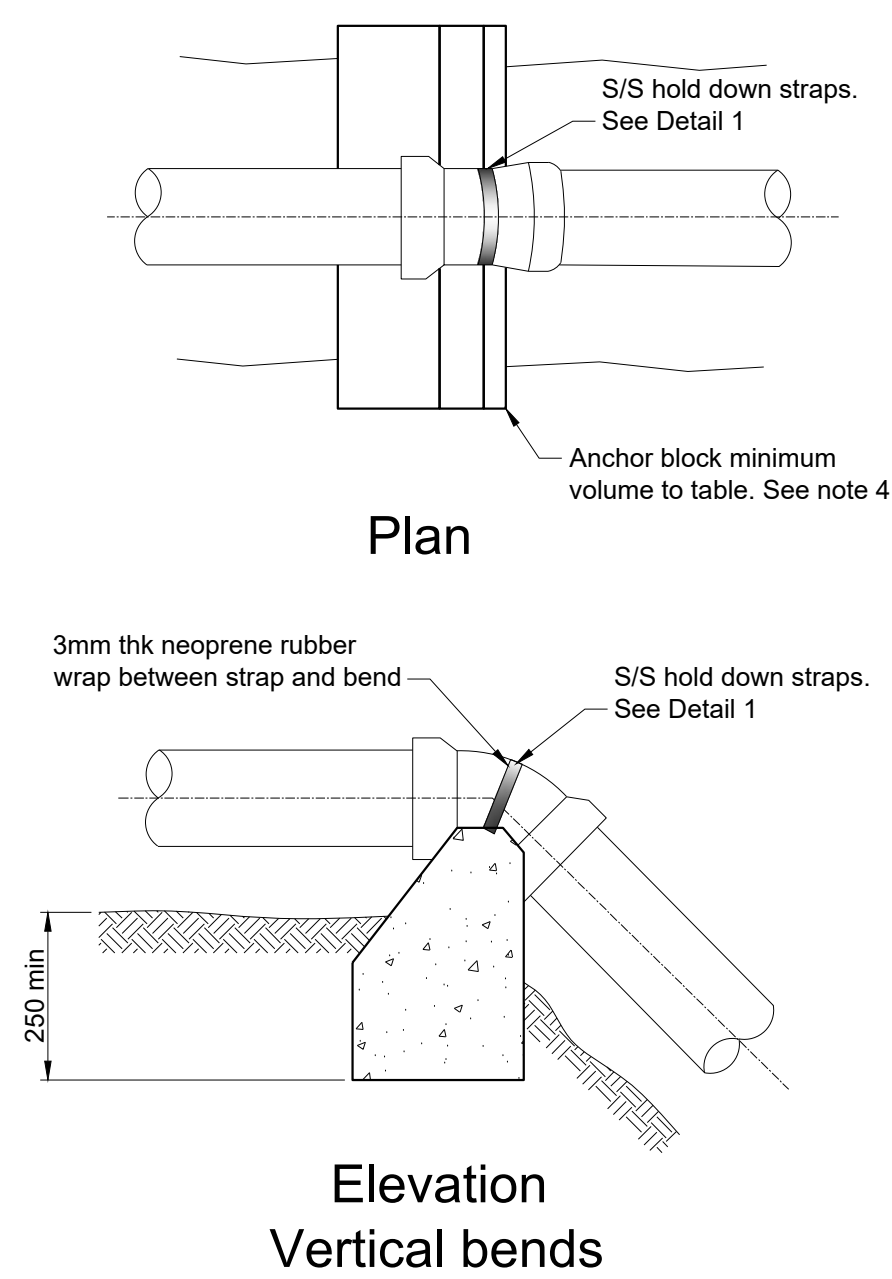
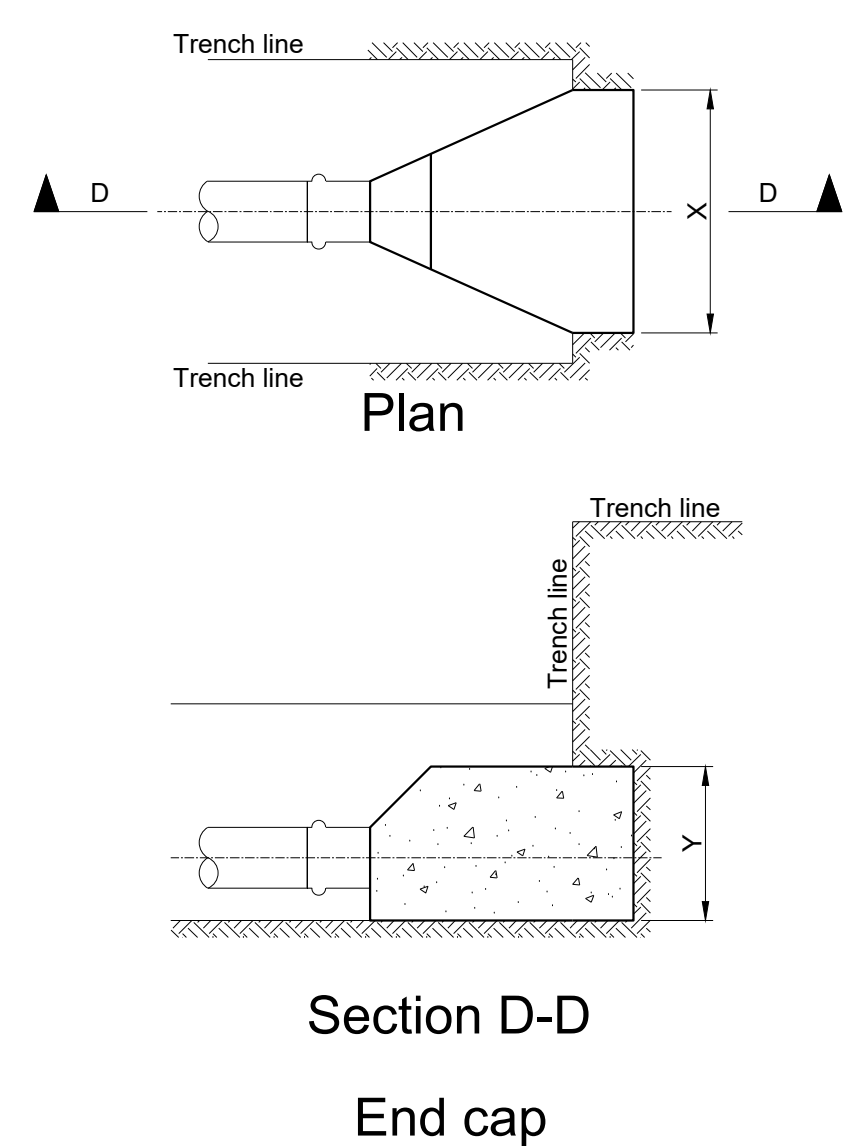
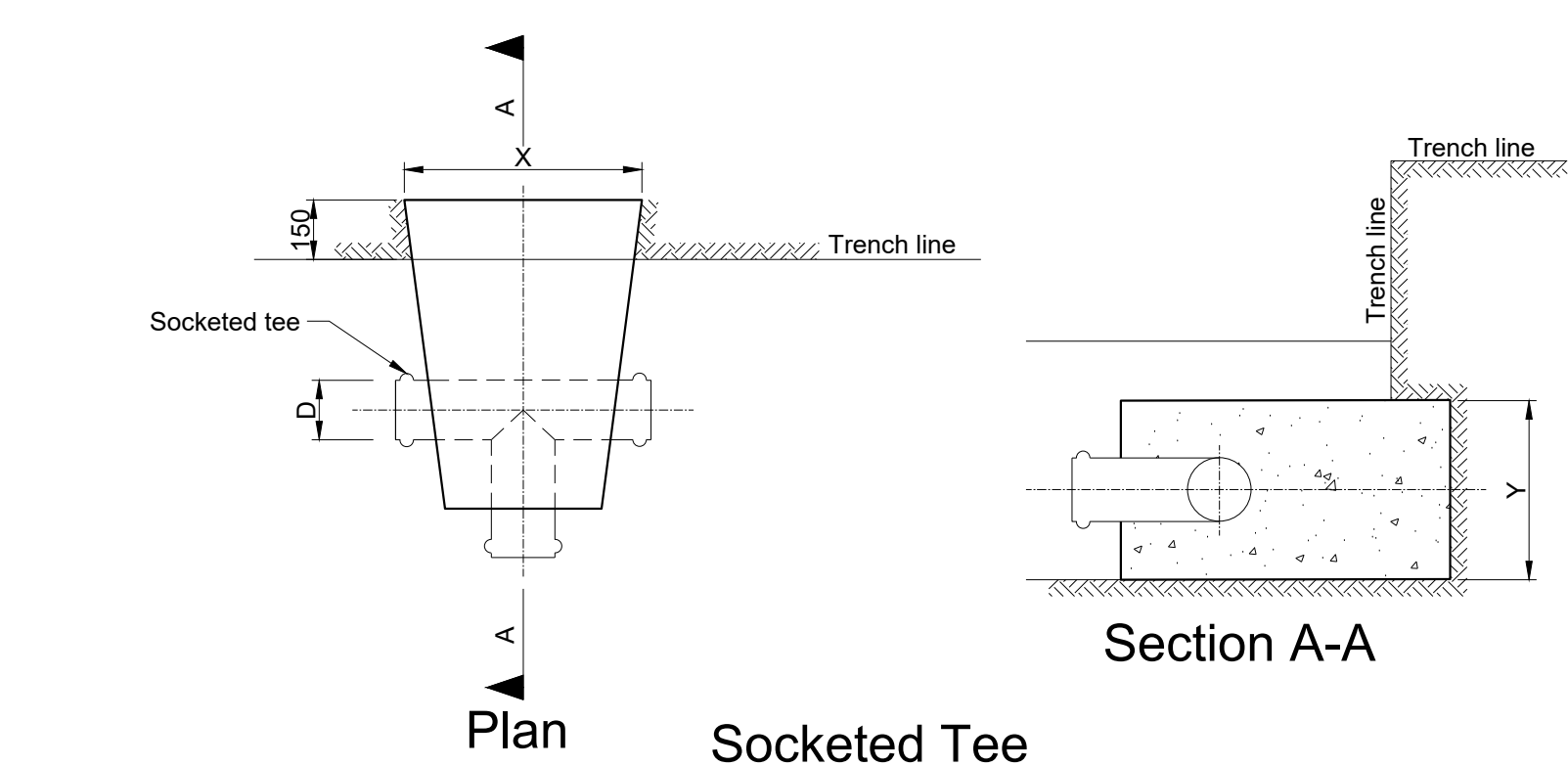
Area Engineer (W.O.)

Manager (W.D.)

Director (Water)

E.Msweli - Head Water & Sanitation Unit

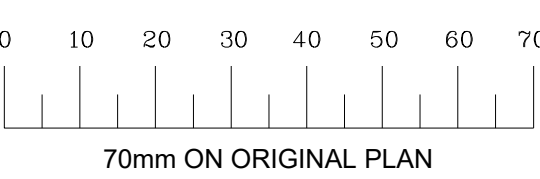
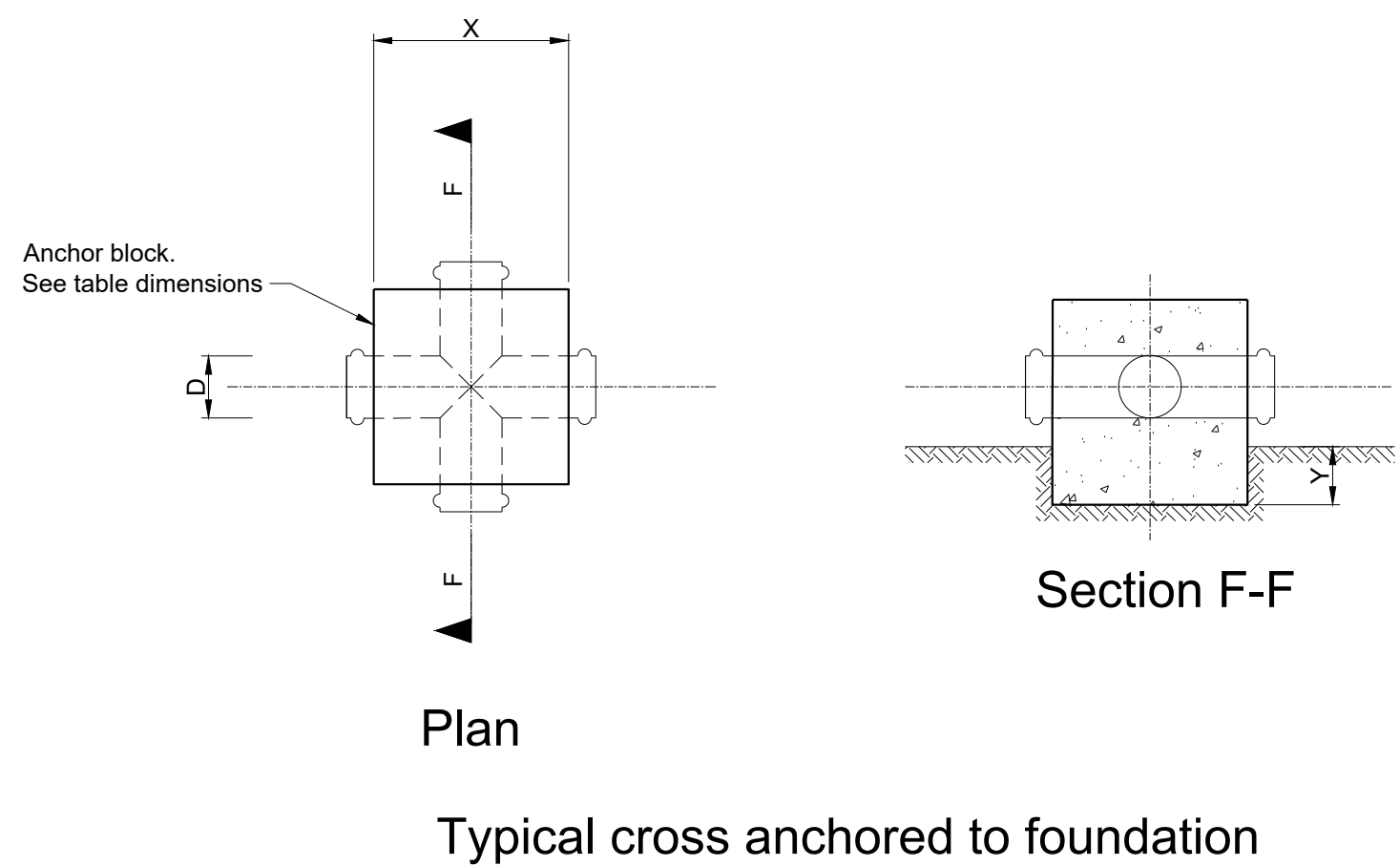
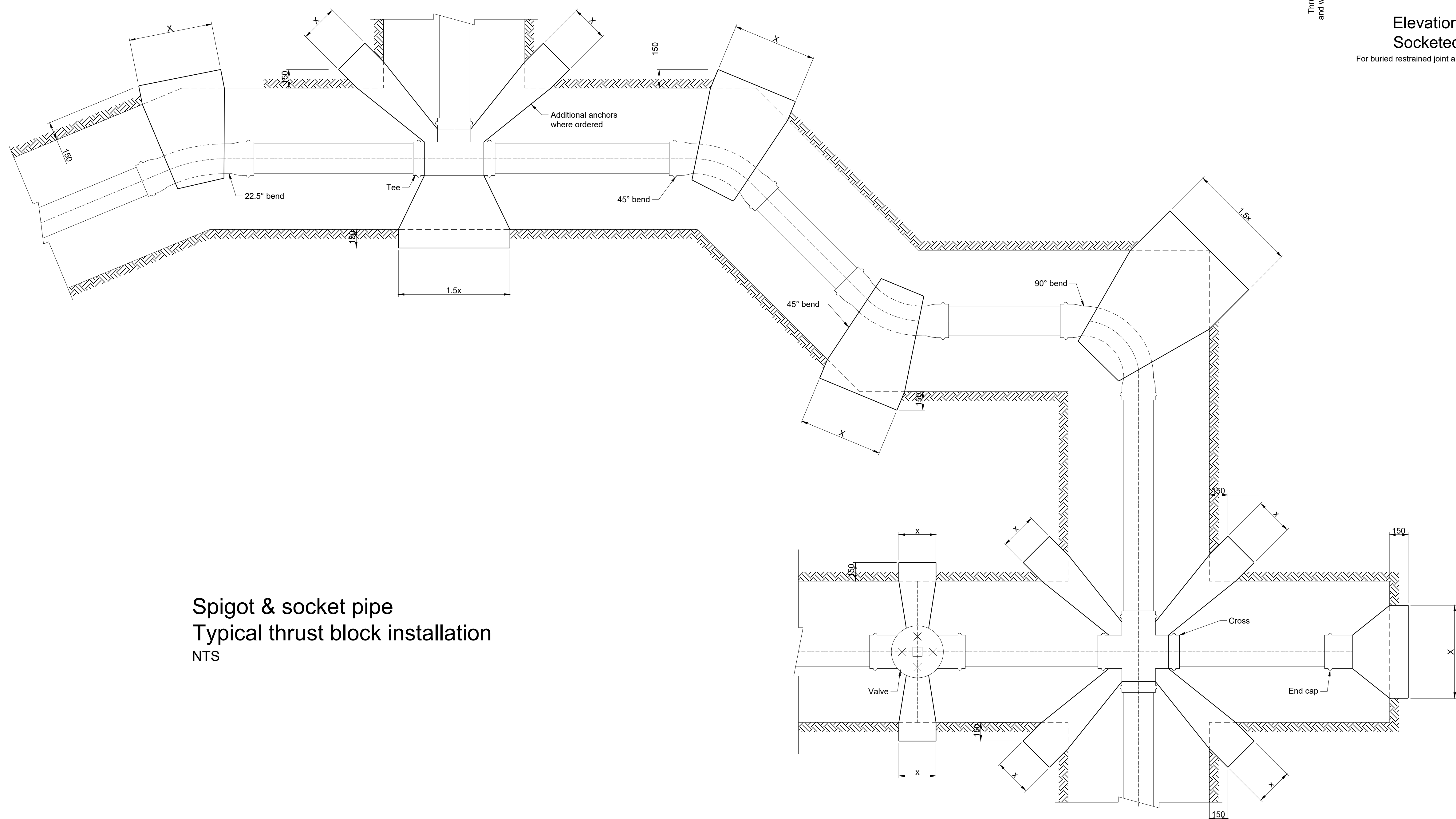
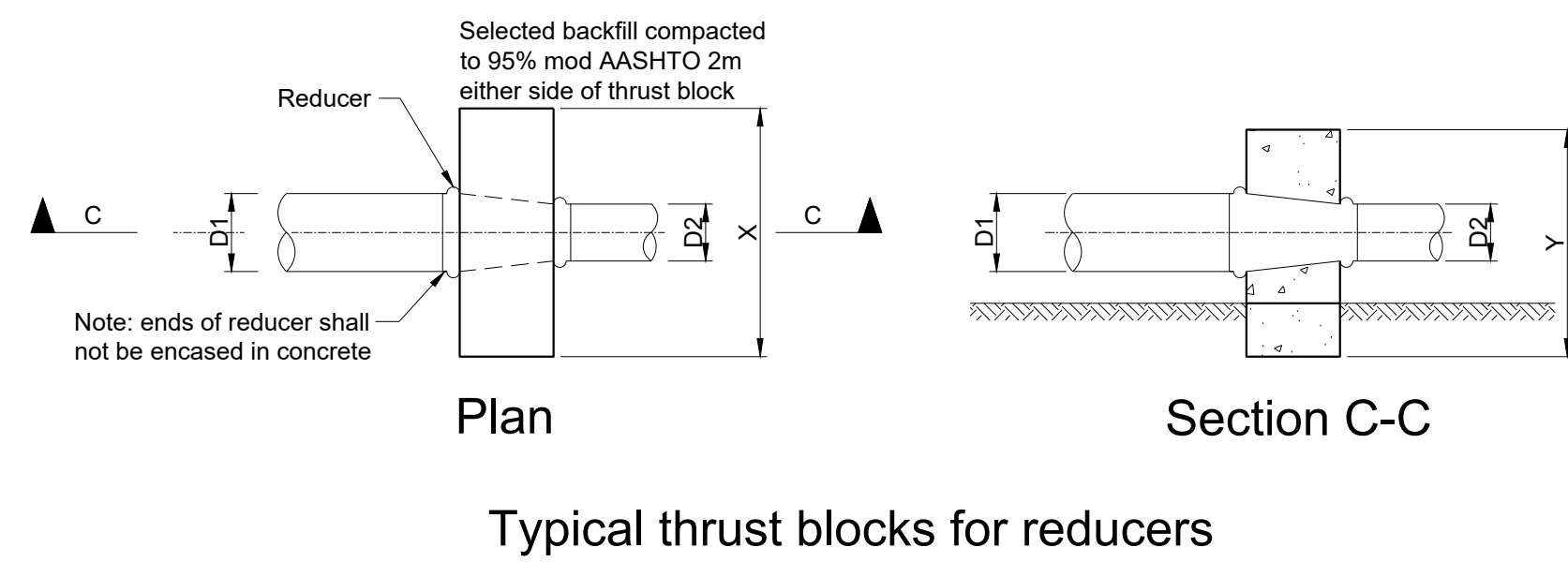
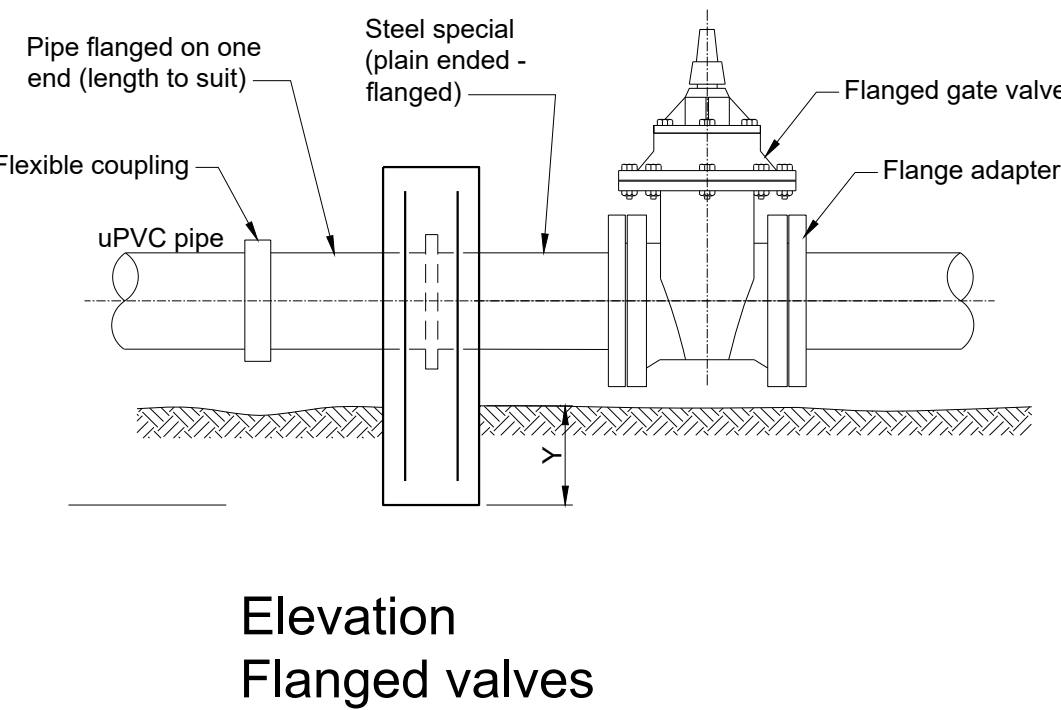
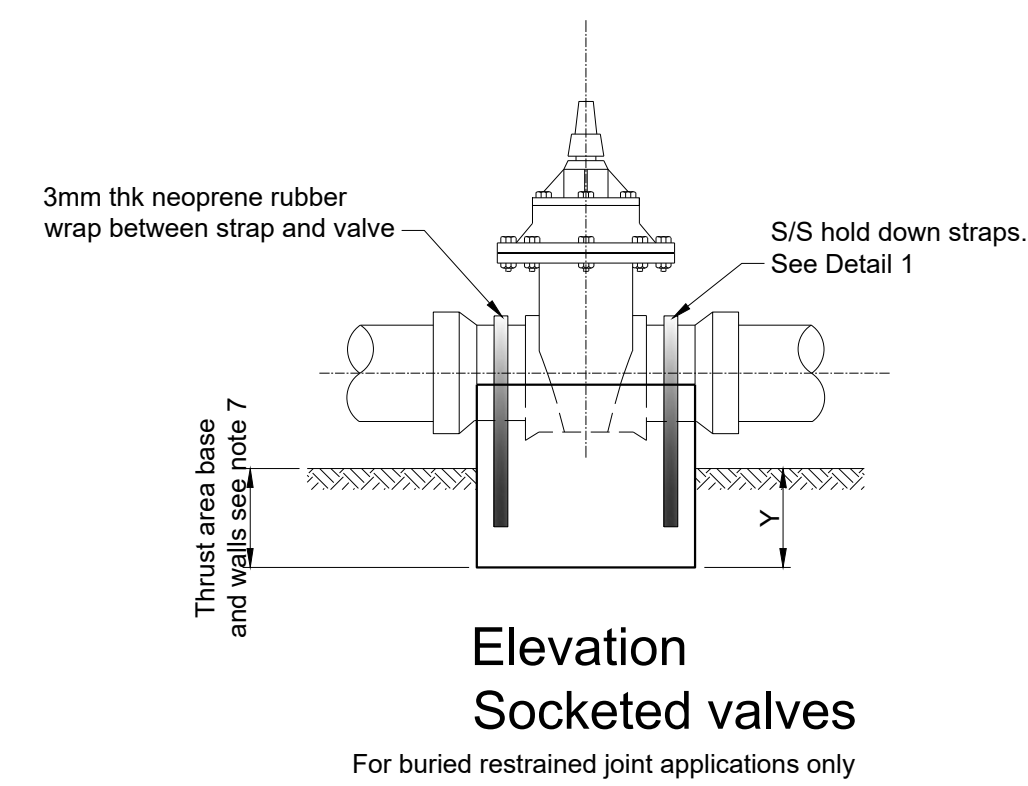
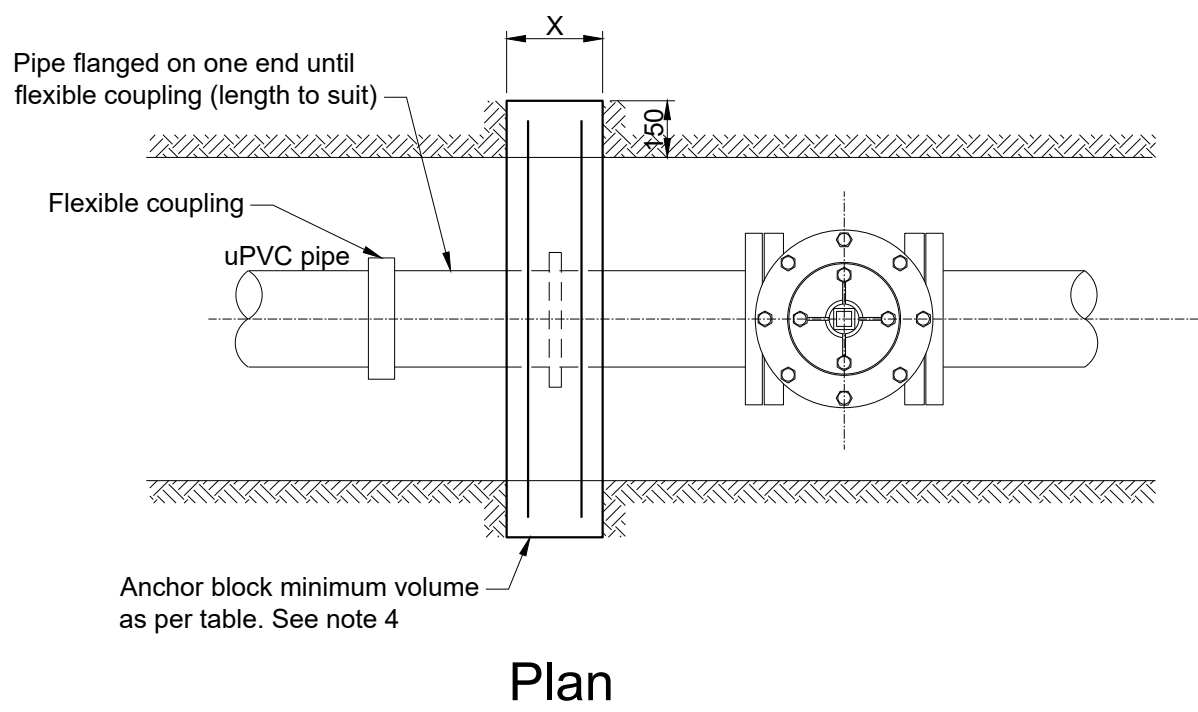
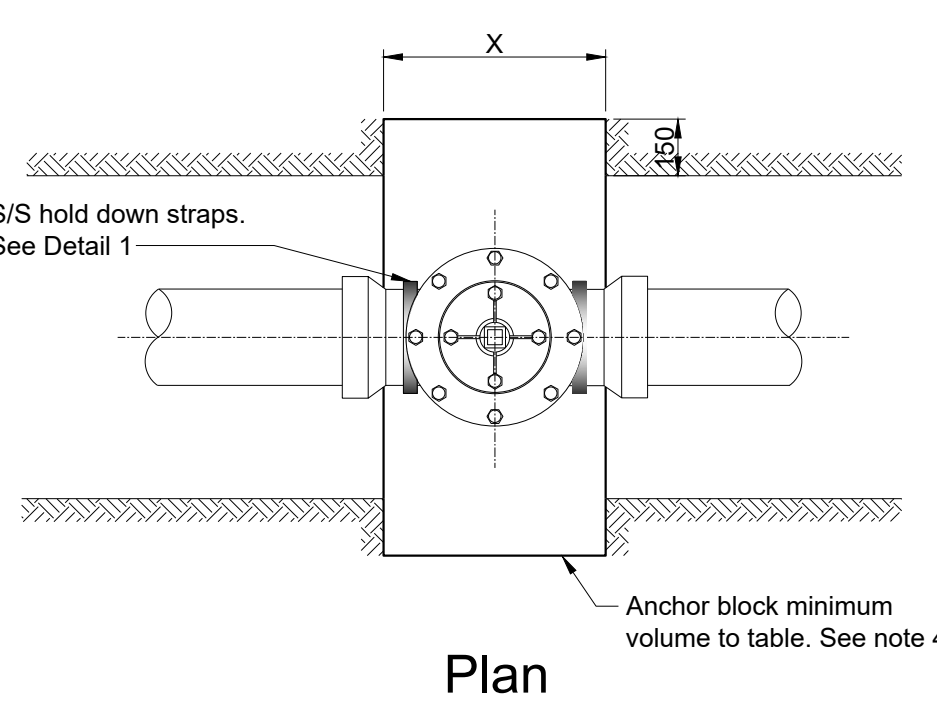
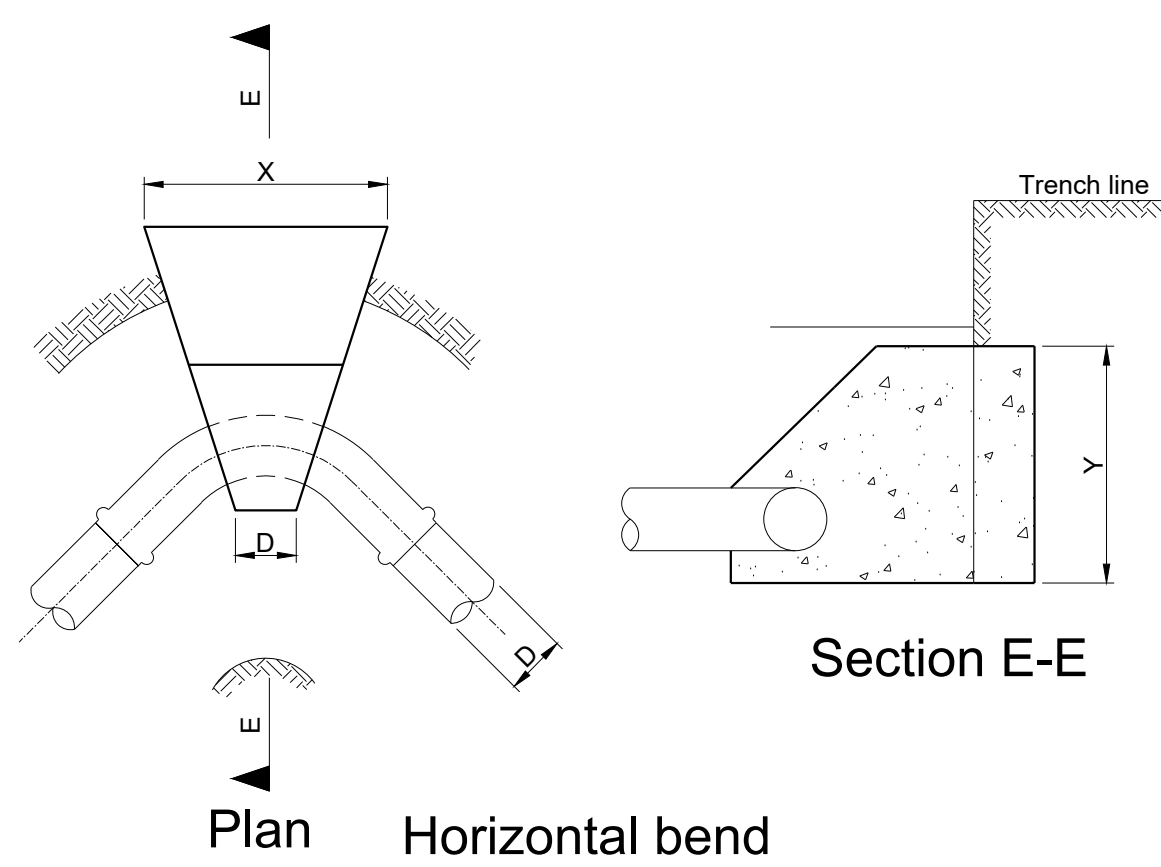
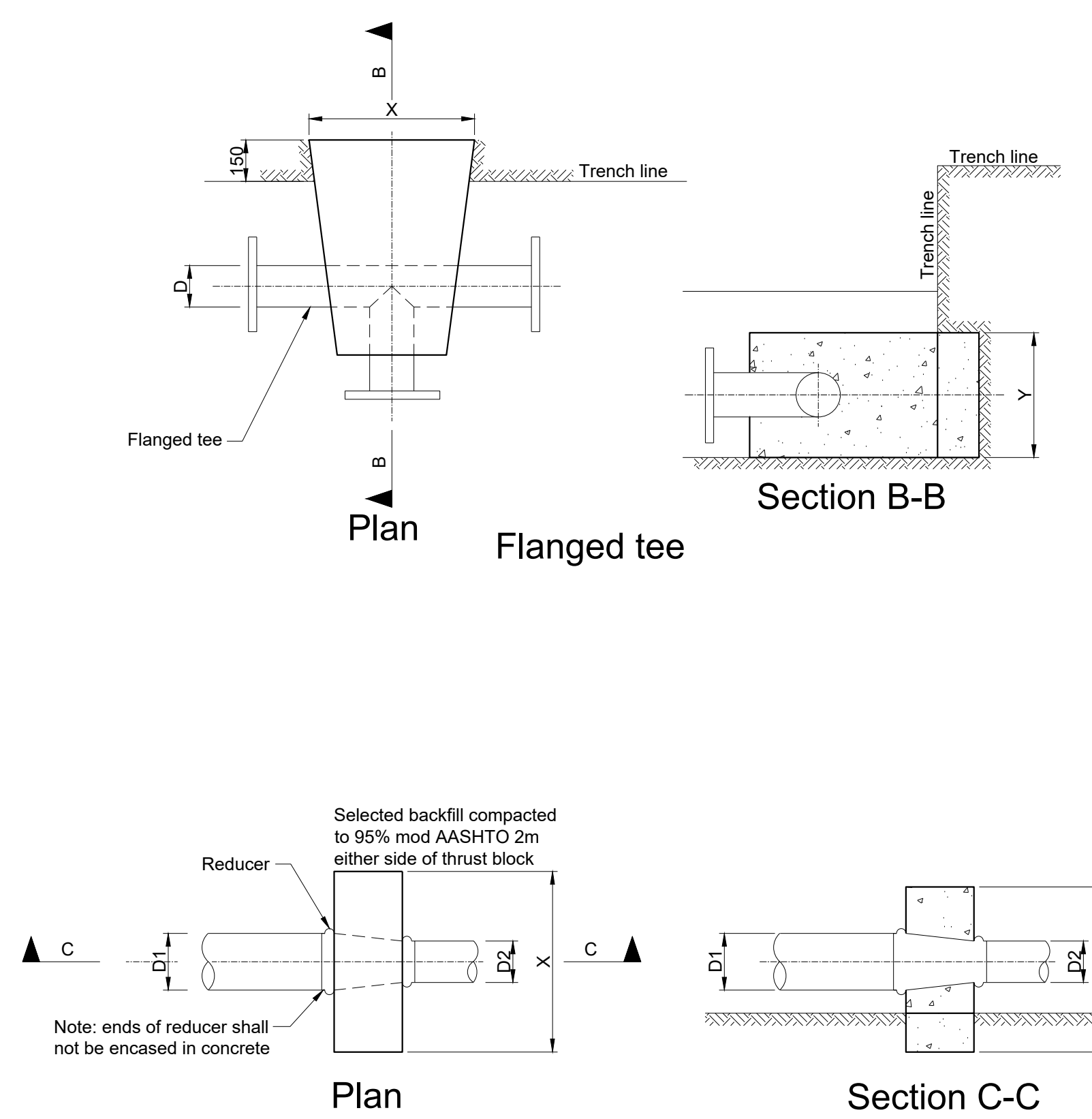
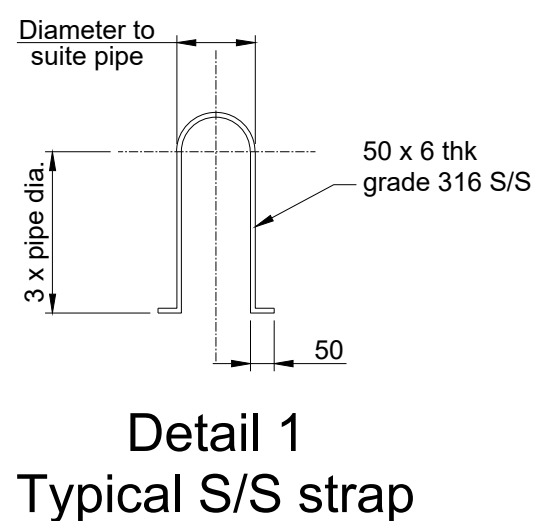
Drawing No. 60570/023 1 of 1 Sheet Rev. 0



Thrust block sizes (mm)									
In normal earth for heads of 120m									
Pipe Size (D)	Cap X Y	Tee (branch) X Y	90° bend X Y	45° bend X Y	1/8 bend X Y	1/16 bend X Y	1/32 bend X Y	11/25° Bend X Y	Valve X Y
50	200 x 100	200 x 100	300 x 100	200 x 100	200 x 100	100 x 100	100 x 100	200 x 100	200 x 100
75	200 x 200	200 x 200	300 x 250	250 x 200	200 x 200	200 x 200	200 x 200	200 x 200	200 x 200
110	400 x 200	400 x 200	500 x 300	300 x 250	300 x 250	200 x 200	400 x 200	400 x 200	400 x 200
160	600 x 300	600 x 300	600 x 600	500 x 300	300 x 300	250 x 200	600 x 300	600 x 300	600 x 300
200	800 x 400	800 x 400	900 x 600	800 x 400	500 x 300	300 x 250	800 x 400	800 x 400	800 x 400
250	800 x 600	800 x 600	900 x 900	800 x 600	600 x 400	300 x 300	800 x 600	800 x 600	800 x 600
315	1000 x 700	1000 x 700	1300 x 1000	1000 x 700	600 x 600	500 x 300	1000 x 700	1000 x 700	1000 x 700
355	1200 x 800	1200 x 800	1700 x 800	900 x 800	800 x 500	800 x 300	1200 x 800	1200 x 800	1200 x 800

Note: for thrust block sizes for reducers refer to note 12.

Minimum block volume for anchorage			
Vertical bends for test pressure of 1200 kPa (see note 4)			
Pipe DN	11/25° Bend	22/5° Bend	45° Bend
100	N	N	0.3
150	N	0.3	0.6
200	0.2	0.5	1.1
225	0.3	0.6	1.4
250	0.3	0.7	2.5
300	0.4	1.1	3.8
375	0.7	1.8	5.8



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A	01/02/2025	ISSUED FOR INFORMATION
Revision	Date	Description

Contract No. 32269-5W

Project No. D859

Planning Unit
WATER AND SANITATION

Ward No. 59

Project Title
TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE RESERVOIR,
400KL ELEVATED STEEL TANK AND
ANCILLARY WORKS

Drawing Title
STANDARD DRAWING
THRUST BLOCK DETAILS

Scales: As Shown		
Paper Size: A0		
Designed: Z. Bhengu	Date: 01-09-2025	
Checked: A. Goorun	Drawn: N. Adams	

Bulk Operations

Area Engineer (W.O)

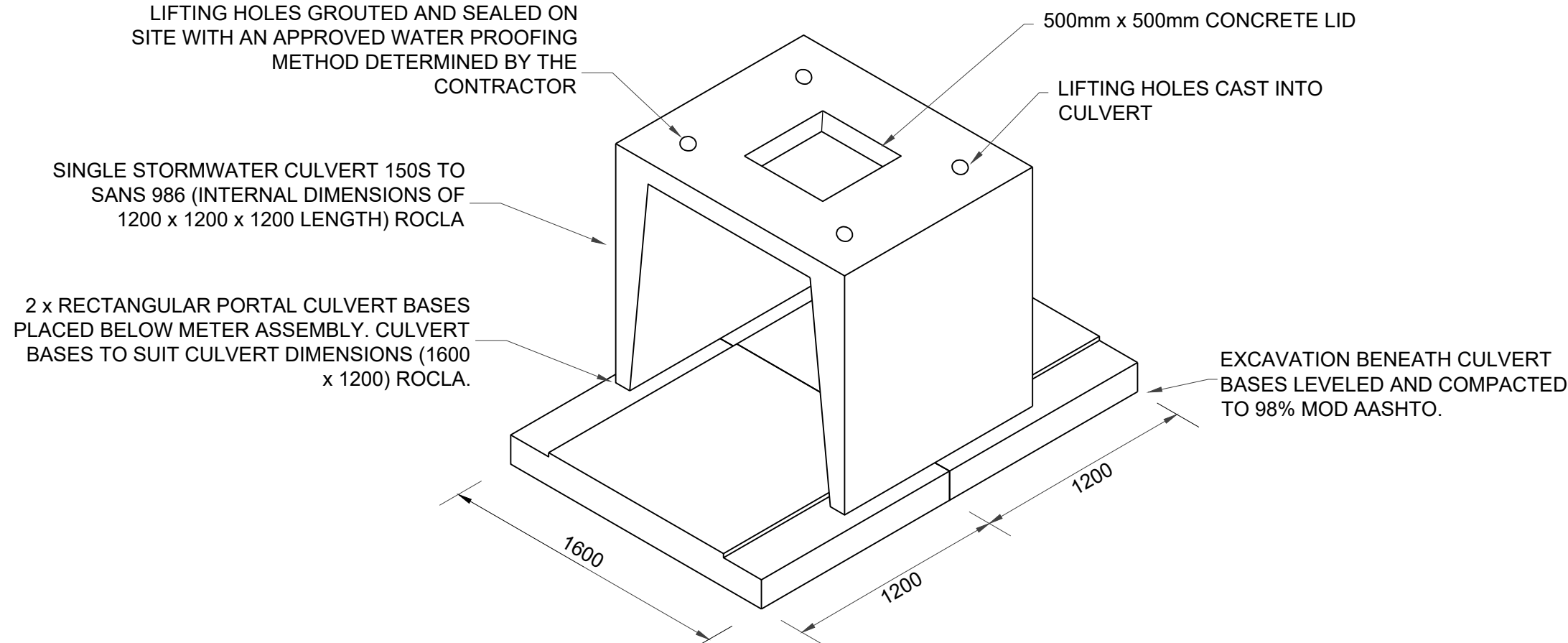
Manager (W.D.)

Director (Water)

E.Mawell - Head:Water & Sanitation Unit

Drawing No. 60570/024	Sheet 1	Rev. 0
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CONTRACTOR TO PROVIDE FINAL FABRICATION DETAILS AND SHOP DRAWINGS FOR APPROVAL BY THE ENGINEER PRIOR TO FABRICATION

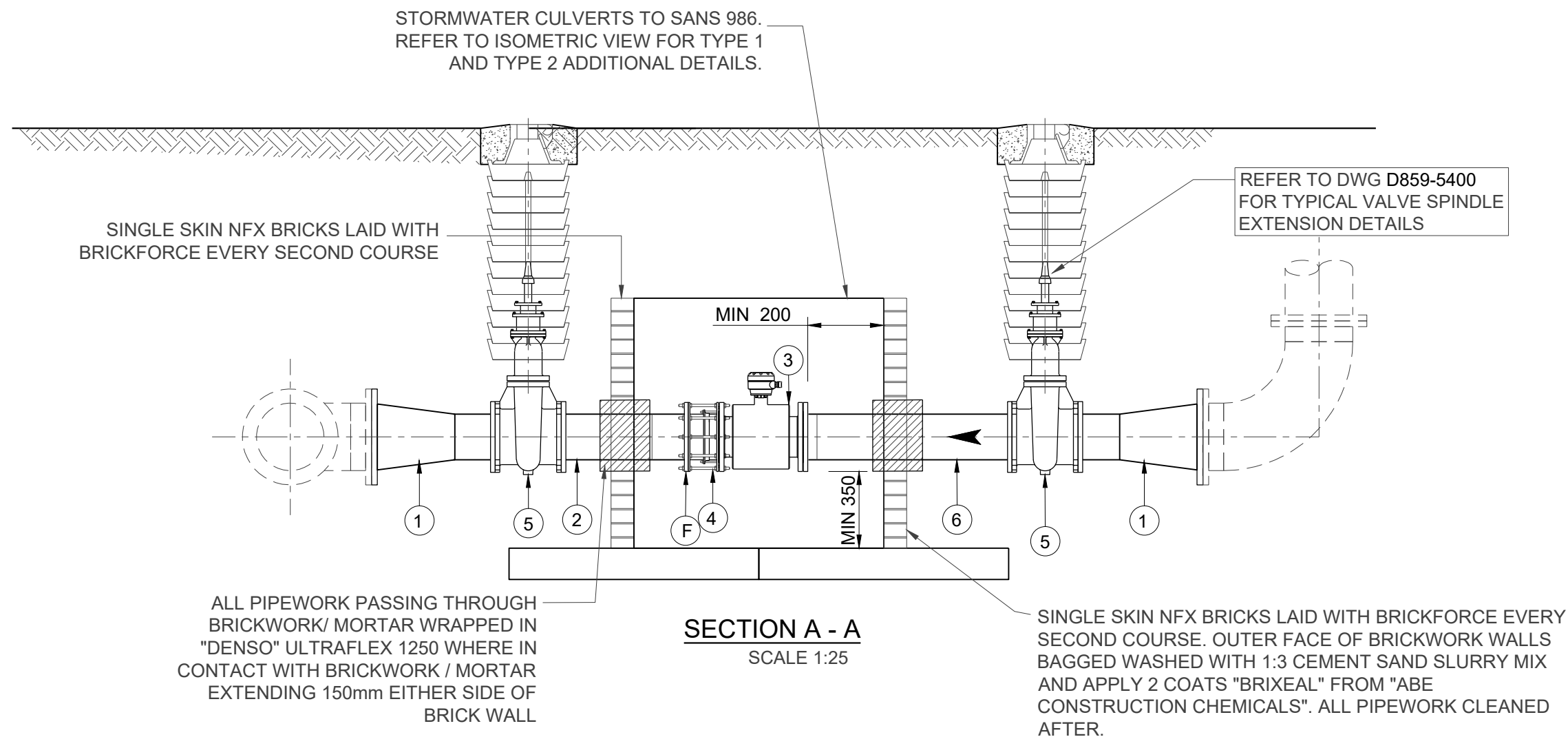
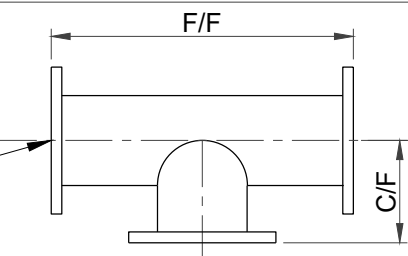


ISOMETRIC VIEW OF TYPE 1 CULVERT AND CULVERT BASE
ARRANGEMENT
N.T.S

ABBREVIATIONS :

DN - DIAMETER NOMINAL
OD - OUTSIDE DIAMETER
ID - INSIDE DIAMETER
M.S - MILD STEEL
S.S - STAINLESS STEEL
H.D.G.M.S - HOT DIPPED GALVANISED MILD STEEL
G.M.S - GALVANISED MILD STEEL
C.I - CAST IRON
F.R.L. - FINAL ROAD LEVEL

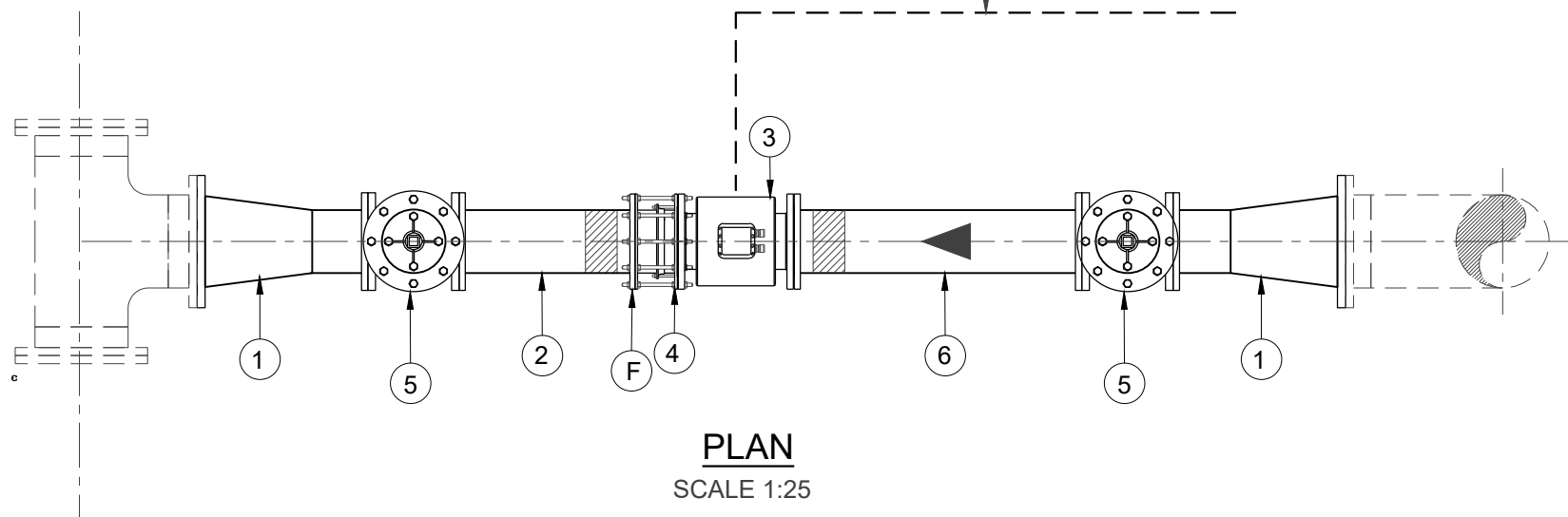
F.O.E - FLANGED ONE END
F.B.E - FLANGED BOTH ENDS
F.A.R - FLANGED ALL ROUND
F/F - FACE TO FACE DIMENSION
C/F - CENTRE TO FACE DIMENSION
L.R.B - LONG RADIUS BEND
S.R.B - SHORT RADIUS BEND
P.C. - PLAIN END COATED
P.E. - PLAIN END (FOR WELDING)



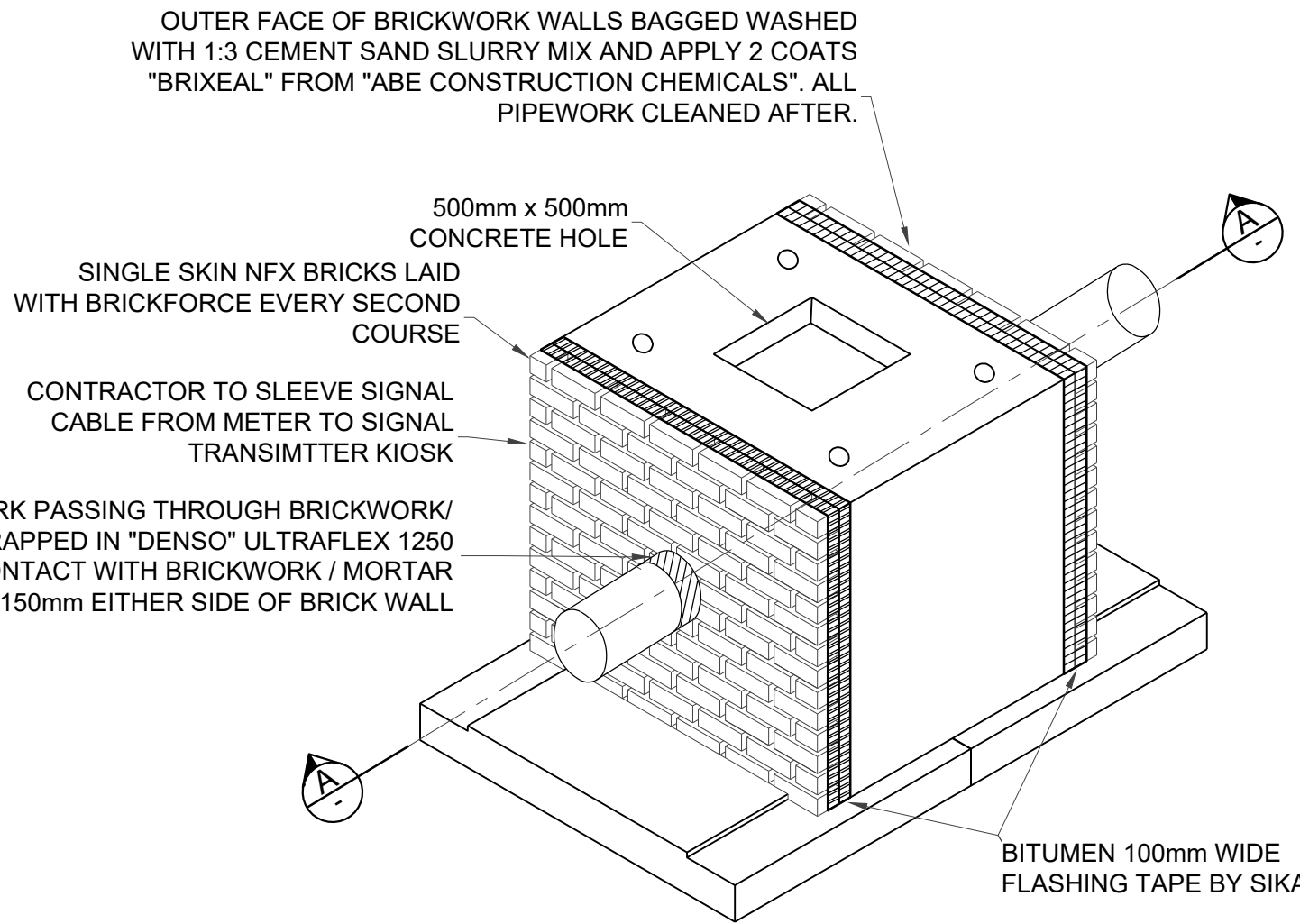
ALL PIPEWORK PASSING THROUGH BRICKWORK/ MORTAR WRAPPED IN "DENSO" ULTRAFLEX 1250 WHERE IN CONTACT WITH BRICKWORK / MORTAR EXTENDING 150mm EITHER SIDE OF BRICK WALL

SECTION A - A
SCALE 1:25

75mm Ø PVC DUCT FOR HYDRAULIC LINES (CL 6) LAID AS PER ENGINEERS INSTRUCTIONS



PLAN
SCALE 1:25



NFX BRICK WALL END CLOSING DETAIL FOR TYPE 1 AND TYPE 2 METER
PROTECTION CULVERT
N.T.S

GENERAL NOTES

PIPEWORK

- ALL PIPEWORK MILD STEEL UNLESS OTHERWISE STATED.
- THE CONTRACTOR SHALL VERIFY THE DIMENSIONS OF ALL PIPEWORK AND ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO FABRICATION.
- ALL PIPES GREATER THAN AND INCLUDING DN100, FITTED TO EQUIPMENT OR FITTINGS, OR WHERE SPECIFICALLY INDICATED SHALL BE FLANGED TO SANS 1123:2007 (TABLE 3) OR BS EN 1092 : 1-2007 WHERE SANS 1123:2007 (TABLE 3) DOES NOT APPLY OR AS SPECIFIED ON THE DRAWINGS. SHOULD THE RESPECTIVE FLANGE DRILLING NOT BE COVERED IN THE ABOVE SPECIFICATIONS THE RESIDENT ENGINEER SHALL BE CONSULTED FOR THE APPROPRIATE SPECIFICATION, BEFORE PROCURING ANY VALVES OR FLANGES.
- SURFACE PREPARATION FOR APPLICATION OF CORROSION PROTECTION MATERIALS SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- DAMAGED COATINGS AND LININGS SHALL BE REPAIRED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- ALL PIPEWORK AND SPECIALS COATED AND LINED AS PER THE PROJECT SPECIFICATIONS.
- ALL JOINTS SHALL BE COATED, PROTECTED AND WRAPPED AS PER THE PROJECT SPECIFICATIONS.
- THE PRESSURE RATINGS OF ALL PIPEWORK, FLANGES AND VALVES, SHALL BE AS INDICATED IN THE SCHEDULES OF FITTINGS.
- ALL MILD STEEL PIPEWORK, COLLARS, WRAPPERS AND CROTCH PLATES MANUFACTURED FROM MINIMUM GRADE X42 STEEL AND WELDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. WHERE THE GRADE OF STEEL FOR THE MAIN PIPE IS X52 OR X65, COLLARS AND WRAPPERS SHALL BE FABRICATED FROM STEEL PIPE OF THE SAME GRADE AS THE MAIN PIPE AS SUPPLIED FREE-ISSUE BY THE EMPLOYER, UNLESS OTHERWISE STATED ON THE DRAWINGS.
- ALL BENDS FABRICATED AND DIMENSIONED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

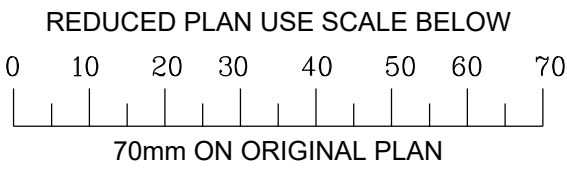
PIPEWORK AND FITTINGS SCHEDULE (PN16)				
ITEM No.	NOM DIA	DESCRIPTION	F/F	No. OF
1	DN300 x DN200	CONCENTRIC REDUCER TO ANSI B16.9, FBE WITH 100MM LONG SPOOL PIECE ON EACH END. DN500 FLANGE WELDED TO DN300 INLET/OUTLET PIPELINE.	400	2
2	DN200	SPOOL PIECE, FBE, FLANGE TO MATCH ITEM 3 OR ITEM 5	750	1
3	DN200	INLINE FLANGED ELECTROMAGNETIC METER COMPLETE WITH SIGNAL TRANSMITTER, CONVERTER AND TRANSMITTER CABLE. PN10		1
4	DN200	RESTRAINED FLANGE ADAPTOR (KAMFLEX, VIKING JOHNSON) TO SUIT STEEL SPOOL PIPE. FLANGE TO MATCH ITEM 3. NOTE F: ANCHORING OR RESTRAINING FLANGE TO BE WELDED APPROXIMATELY 300mm FROM PLAIN END OF ITEM 6. RESTRAINING FLANGE ADAPTOR TO USE MINIMUM OF 4 NUMBER GRADE 4.8 RESTRAINING BOLTS, EQUALLY SPACED AROUND CIRCUMFERENCE OF FLANGES. RESTRAINING FLANGE TO MANUFACTURERS SPECIFICATION AND APPROVED BY THE EMPLOYER'S REPRESENTATIVE.		1
5	DN200	PN10 WEDGE GATE VALVE	317	2
6	DN200	SPOOL PIPE, F.O.E, OTHER END P.C. AND FITTED WITH A RESTRAINING FLANGE TO SUIT ADAPTER (ITEM 4). (SEE ITEM 4 FOR DETAILS)	1000	1

NOTES:
ALL SPECIALS EPOXY COATED (S.F.E) TO PROJECT SPECIFICATIONS UNLESS OTHERWISE STATED. ALL PIPE TO SANS 719, GRADE X42, 4.5mm THICK.
ALL FLANGES TO TABLE 1600/3 (SANS 1123 - 2011).
IF FACE TO FACE DIMENSION OF FITTINGS DIFFER TO ACTUAL THE CONTRACTOR MUST INFORM THE ENGINEER PRIOR TO PIPE FABRICATION.

eTHEKWINI WATER
SERVICES



WATER DESIGN BRANCH



CONSULTANT:

NAIDU CONSULTING
1st Floor
No.5, The Boulevard
West Way Office Park
Westville, Durban
Tel : +27 (0) 31 265 6007
Fax : +27 (0) 31 265 6011
Email: info@naiduconsulting.com

Drawing No.: **D859-52-5405- REV 0**

FOR TENDER ONLY

REFERENCE DRAWINGS (xxx/...)

DWG No.	TITLE/DESCRIPTION	SOURCE

STANDARD DRAWINGS

0	09 / 2025	ISSUED FOR TENDER ONLY
Revision	Date	Description

Contract No. **32269-5W**

Project No. **D859**

Planning Unit
WATER AND SANITATION

Ward No. **59**

**TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE
RESERVOIR, 400KL ELEVATED
STEEL TANK AND ANCILLARY
WORKS**

**TYPICAL DN200 INLINE
METER ASSEMBLY**

As Shown

A1

Designed : Z. Bhengu Date : 30-01-2025
Checked : A. Goorun Drawn : N. Adams

Area Engineer (W.O)

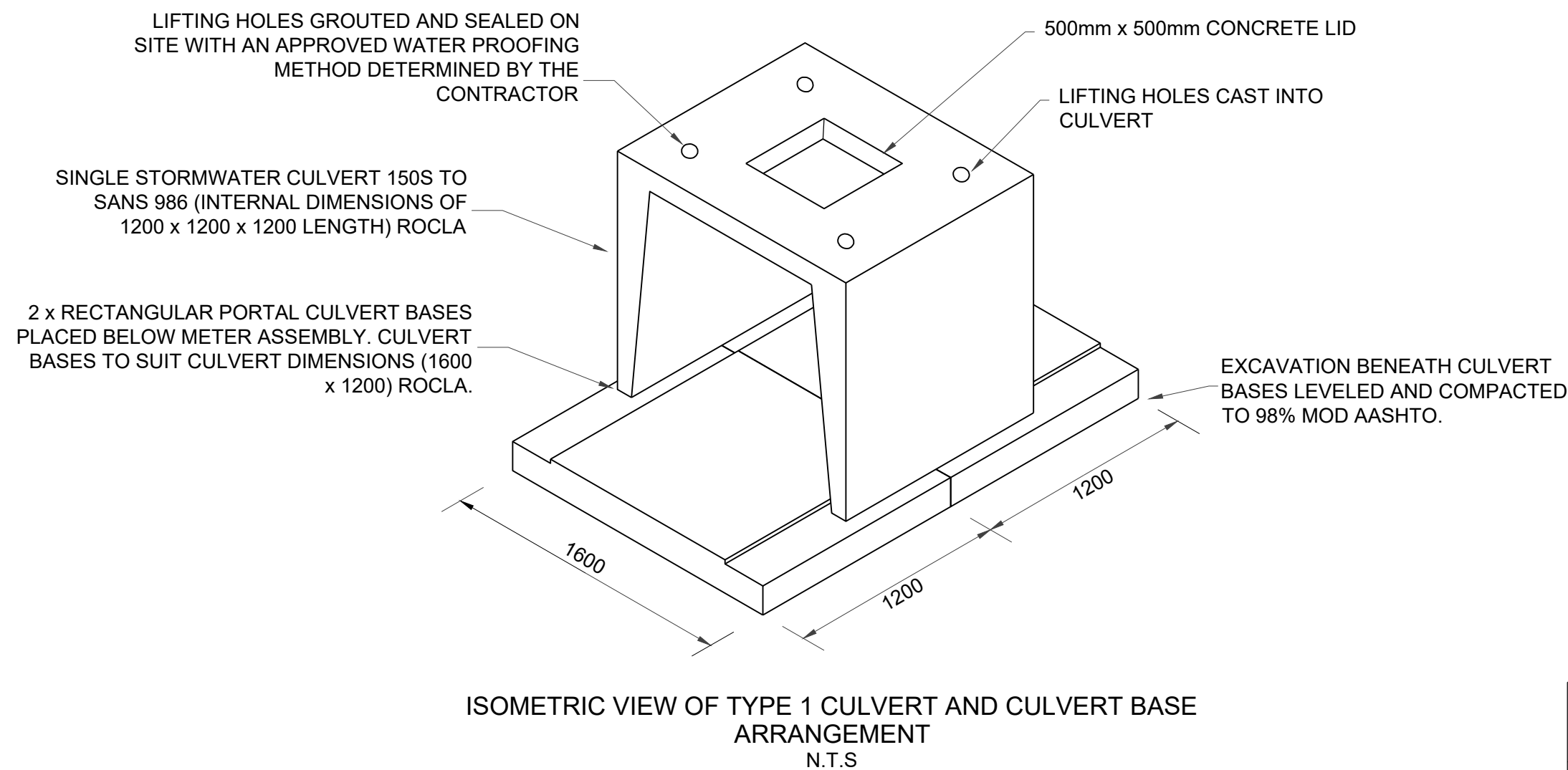
Manager (W.D.)

Director (Water)

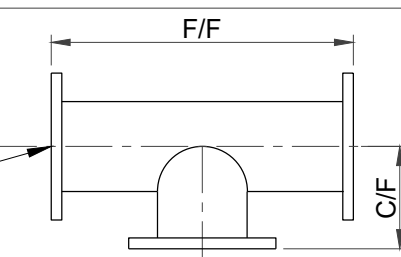
E.Msweli - Head:Water & Sanitation Unit

Drawing No. **60570/025** 1 of 1 0
Sheet Rev.

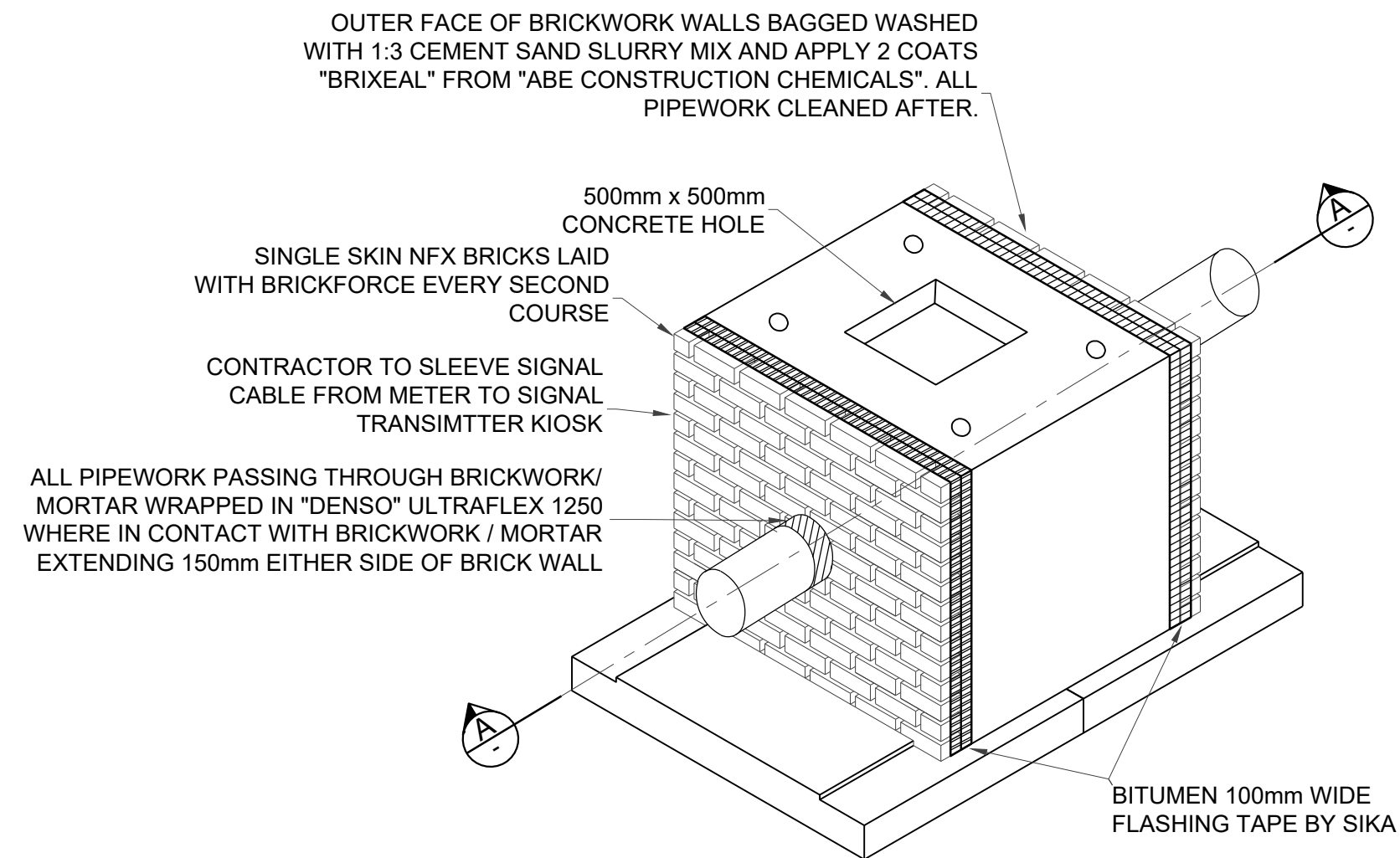
CONTRACTOR TO PROVIDE FINAL FABRICATION DETAILS AND SHOP
DRAWINGS FOR APPROVAL BY THE ENGINEER PRIOR TO FABRICATION



F.O.E - FLANGED ONE END
F.B.E - FLANGED BOTH ENDS
F.A.R - FLANGED ALL ROUND
F/F - FACE TO FACE DIMENSION
C/F - CENTRE TO FACE DIMENSION
L.R.B - LONG RADIUS BEND
S.R.B - SHORT RADIUS BEND
P.C - PLAIN END COATED
P.E - PLAIN END (FOR WELD)

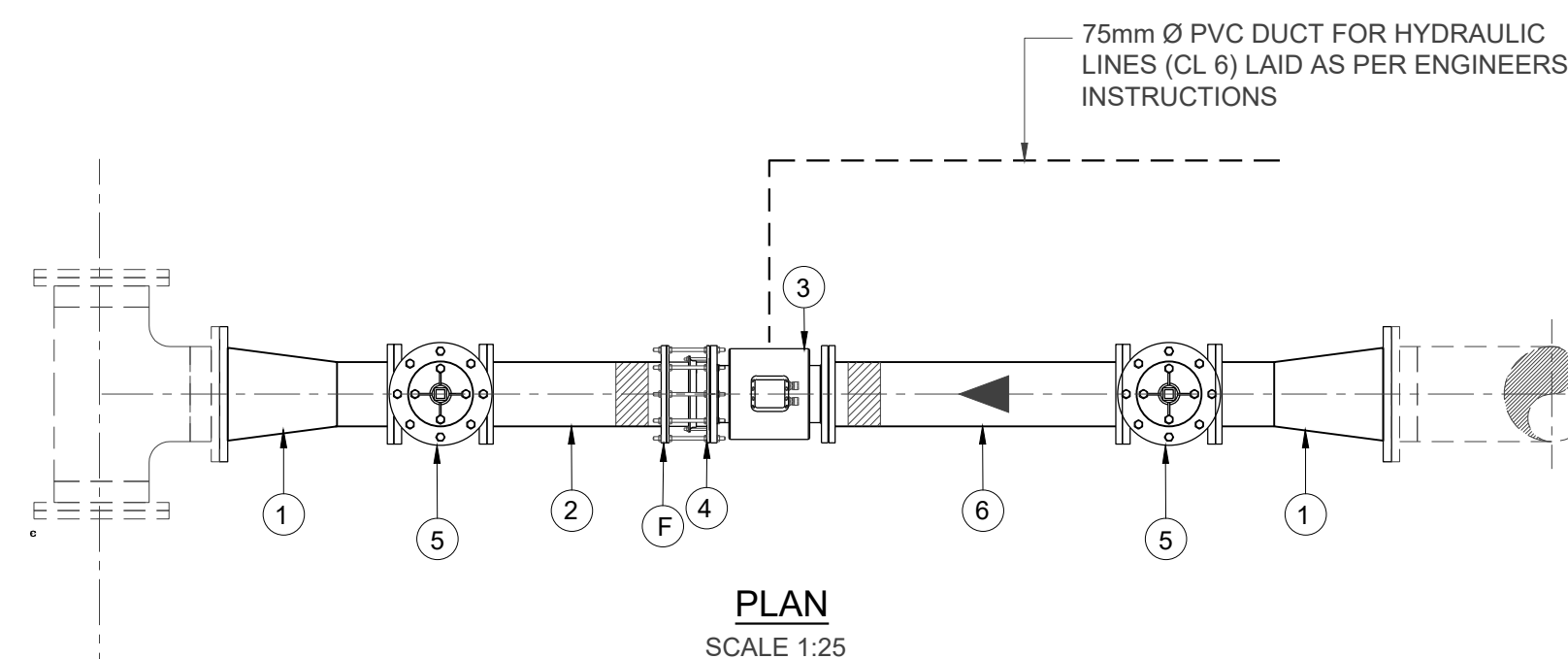
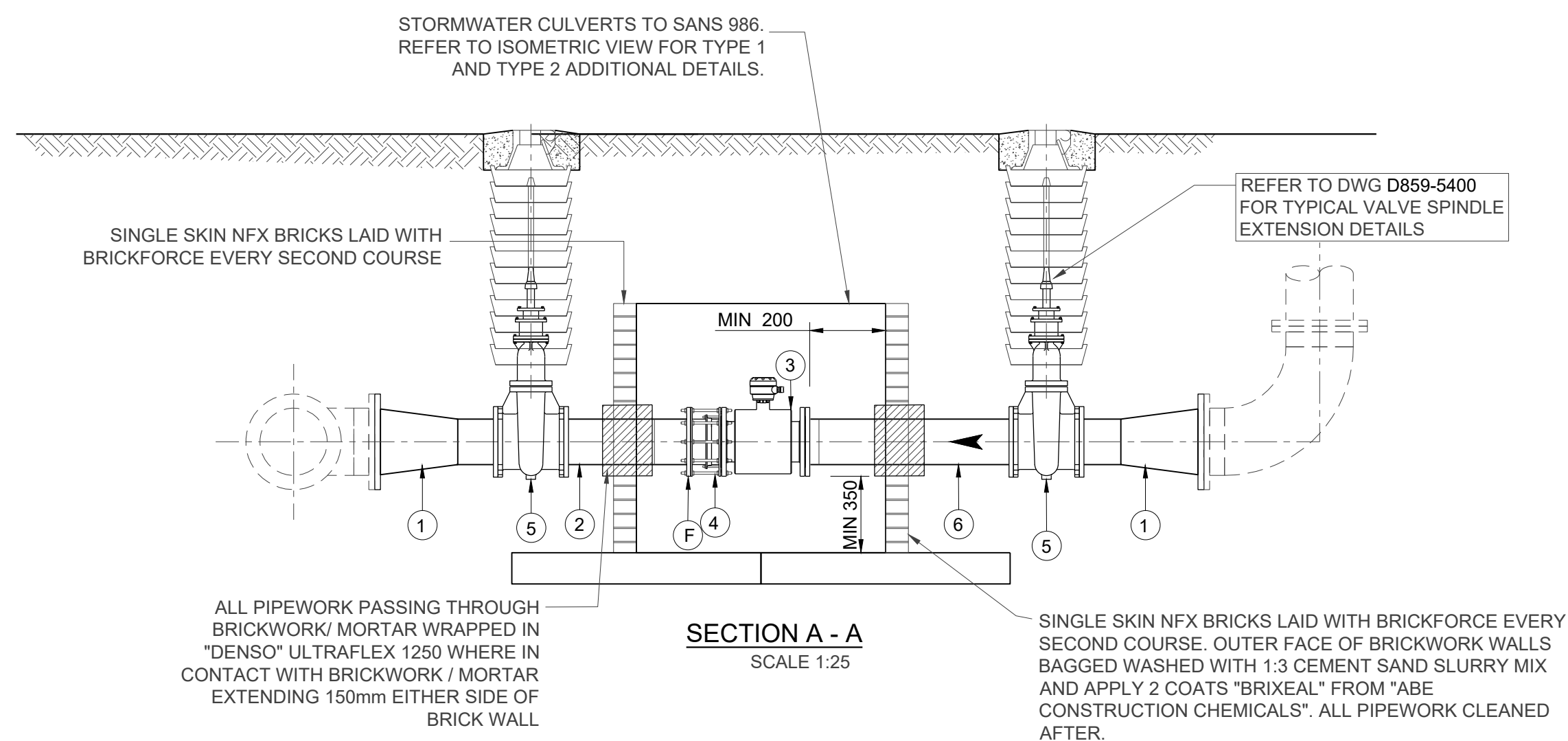


CULVERT TYPE	METER SIZE RANGE	WHERE TO USE
TYPE 1	DN150 - DN300	UNDER ROADS OR PAVED AREAS SUBJECT TO TRAFFIC LOADING
TYPE 1	DN350 - DN400	ALL METER INSTALLATIONS
TYPE 2	DN450 - DN600	ALL METER INSTALLATIONS



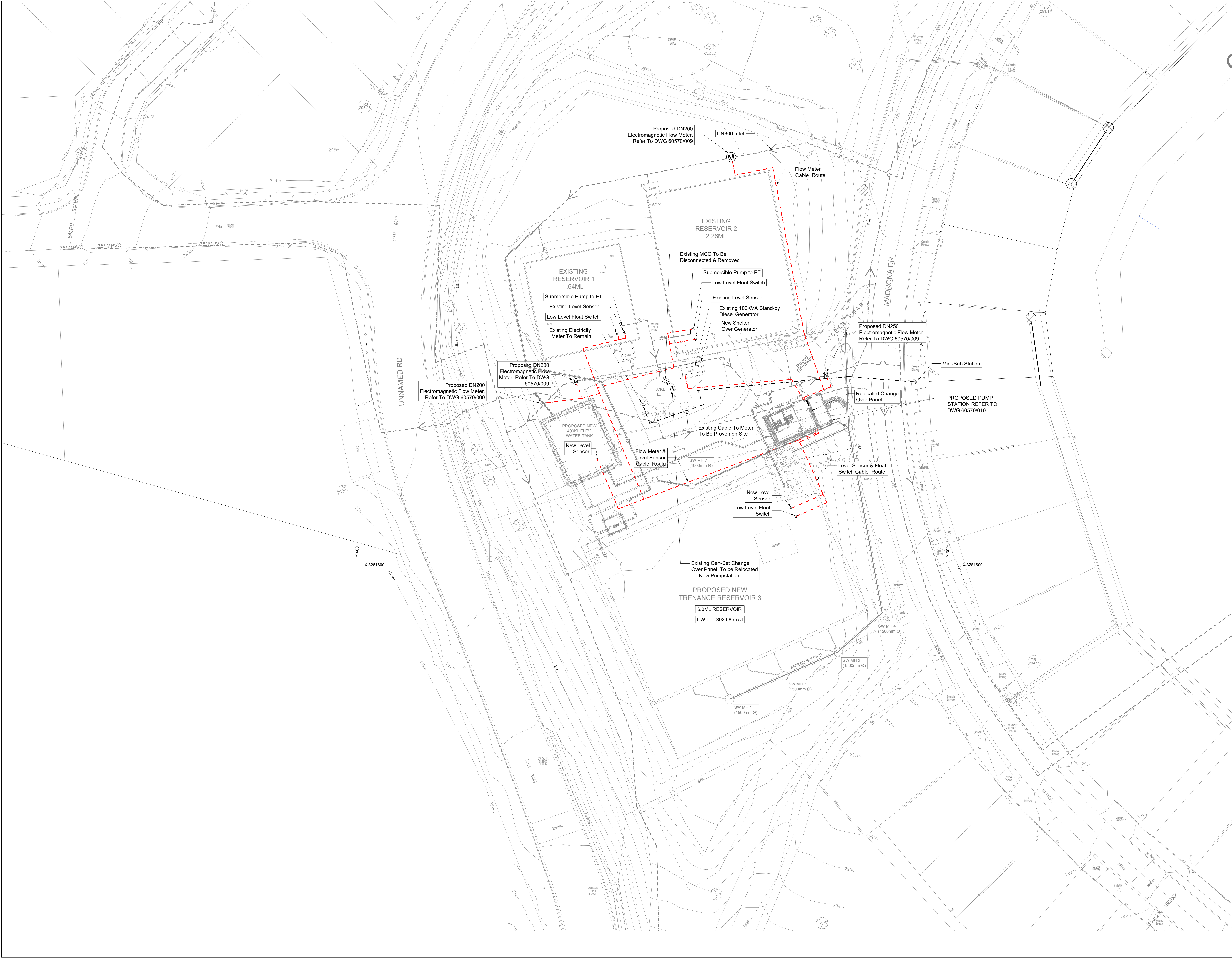
NFX BRICK WALL END CLOSING DETAIL FOR TYPE 1 AND TYPE 2 METER
PROTECTION CULVERT
N.T.S

1. ALL PIPEWORK MILD STEEL UNLESS OTHERWISE STATED.
2. THE CONTRACTOR SHALL VERIFY THE DIMENSIONS OF ALL PIPEWORK AND ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO FABRICATION.
3. ALL PIPES GREATER THAN AND INCLUDING DN100, FITTED TO EQUIPMENT OR FITTINGS, OR WHERE SPECIFICALLY INDICATED SHALL BE FLANGED TO SANS 1123:2007 (TABLE 3) OR BS EN 1092 : 1-2007 WHERE SANS 1123:2007 (TABLE 3) DOES NOT APPLY OR AS SPECIFIED ON THE DRAWINGS. SHOULD THE RESPECTIVE FLANGE DRILLING NOT BE COVERED IN THE ABOVE SPECIFICATIONS THE RESIDENT ENGINEER SHALL BE CONSULTED FOR THE APPROPRIATE SPECIFICATION, BEFORE PROCURING ANY VALVES OR FLANGES.
4. SURFACE PREPARATION FOR APPLICATION OF CORROSION PROTECTION MATERIALS SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
5. DAMAGED COATINGS AND LININGS SHALL BE REPAIRED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
6. ALL PIPEWORK AND SPECIALS COATED AND LINED AS PER THE PROJECT SPECIFICATIONS.
7. ALL JOINTS SHALL BE COATED, PROTECTED AND WRAPPED AS PER THE PROJECT SPECIFICATIONS.
8. THE PRESSURE RATINGS OF ALL PIPEWORK, FLANGES AND VALVES, SHALL BE AS INDICATED IN THE SCHEDULES OF FITTINGS.
9. ALL MILD STEEL PIPEWORK, COLLARS, WRAPPERS AND CROTCH PLATES MANUFACTURED FROM MINIMUM GRADE X42 STEEL AND WELDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
WHERE THE GRADE OF STEEL FOR THE MAIN PIPE IS X52 OR X65, COLLARS AND WRAPPERS SHALL BE FABRICATED FROM STEEL PIPE OF THE SAME GRADE AS THE MAIN PIPE AS SUPPLIED FREE-ISSUE BY THE EMPLOYER, UNLESS OTHERWISE STATED ON THE DRAWINGS.
10. ALL BENDS FABRICATED AND DIMENSIONED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.



PIPEWORK AND FITTINGS SCHEDULE (PN16)				
ITEM No.	NOM DIA	DESCRIPTION	F/F	No. OF
1	DN400 x DN250	CONCENTRIC REDUCER TO ANSI B16.9, FBE WITH 100MM LONG SPOOL PIECE ON EACH END. DN500 FLANGE WELDED TO DN300 INLET/OUTLET PIPELINE.	400	2
2	DN250	SPOOL PIECE, FBE. FLANGE TO MATCH ITEM 3 OR ITEM 5	750	1
3	DN250	INLINE FLANGED ELECTROMAGNETIC METER COMPLETE WITH SIGNAL TRANSMITTER, CONVERTER AND TRANSMITTER CABLE. PN10		1
4	DN250	RESTRAINED FLANGE ADAPTOR (KAMFLEX, VIKING JOHNSON) TO SUIT STEEL SPOOL PIPE. FLANGE TO MATCH ITEM 3. NOTE F: ANCHORING OR RESTRAINING FLANGE TO BE WELDED APPROXIMATELY 300mm FROM PLAIN END OF ITEM 6. RESTRAINING FLANGE ADAPTOR TO USE MINIMUM OF 4 NUMBER GRADE 4.8 RESTRAINING BOLTS, EQUALLY SPACED AROUND CIRCUMFERENCE OF FLANGES. RESTRAINING FLANGE TO MANUFACTURERS SPECIFICATION AND APPROVED BY THE EMPLOYER'S REPRESENTATIVE.		1
5	DN250	PN10 WEDGE GATE VALVE	317	2
	DN250	SPOOL PIPE, F.O.E. OTHER END P.C. AND FITTED WITH A RESTRAINING FLANGE TO SUIT ADAPTER (ITEM 4). (SEE ITEM 4 FOR DETAILS)	1000	1

NOTES:
ALL SPECIALS EPOXY COATED (S.F.E) TO PROJECT SPECIFICATIONS UNLESS OTHERWISE STATED. ALL
PIPE TO SANS 719, GRADE X42, 4.5mm THICK.
ALL FLANGES TO TABLE 1600/3 (SANS 1123 - 2011).
IF FACE TO FACE DIMENSION OF FITTINGS DIFFER TO ACTUAL THE CONTRACTOR MUST INFORM THE
ENGINEER PRIOR TO PIPE FABRICATION.



eTHEKWINI WATER SERVICES

WATER DESIGN BRANCH

REDUCED PLAN USE SCALE BELOW

010203040506070

70mm ON ORIGINAL PLAN

CONSULTANT:

NAIDU CONSULTING

1st Floor
No. 5, The Boulevard
West Way Office Park
Westville, Durban
Tel: +27 (0) 31 265 6007
Fax: +27 (0) 31 265 6011
Email: info@naiduc consulting.com

Drawing No.: D859-52-5500 REV 0

FOR TENDER ONLY

REFERENCE DRAWINGS (60570/...)

DWG No.

TITLE/DESCRIPTION

001

Site Plan

002

Concrete Floor Layout and Details

003

Reservoir Sections Concrete Outline and Details

004

Concrete Roof Layout and Details

005

Outlet Structure and Scour Chamber Layout and Details

006

Inlet Chamber and Associated Pipework

007

Elevated Tank & Details

008

DN 300 Inlet Plan & Long Section (Elevated Tower)

009

DN 200 Meter Chamber off DN 300 (Elevated Tower Outlet Pipe)

010

Stormwater Plan & Long Section

015

Pumpstation Associated details Sht 1

015

Pumpstation Associated details Sht 2

015

Pumpstation Associated details Sht 3

029

Electrical & Instrumentation Layout

030

P & ID Diagram

031

Lightning Protection & Earthing Layout

032

Pump Station Electrical, Fire & Intruder Alarm Layout

033

Typical G.A & Line Diagram of Motor Control Panel

0

05/09/2025

ISSUED FOR TENDER ONLY

B

06/08/2025

ISSUED FOR INFORMATION

A

01/02/2025

ISSUED FOR INFORMATION

Revision

Date

Description

32269-5W

Contract No.

D859

Project No.

WATER AND SANITATION

Planning Unit

59

Ward No.

TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE RESERVOIR,
400KL ELEVATED STEEL TANK AND
ANCILLARY WORKS

Project Title

ELECTRICAL &
INSTRUMENTATION LAYOUT

Drawing Title

As Shown

Scales :

A0

Paper Size :

D. GOVENDER

30-01-2025

Date :

D. GOVENDER

Z. BHENGU

Drawn :

Bulk Operations

Area Engineer (W.O.)

Manager (W.D.)

Director (Water)

E.Msweli - Head Water & Sanitation Unit

60570/029


1


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
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Sheet


Rev.


 FILTER

 PRESSURE REGULATOR


 ORIFICE PLATE

 RELIEF VALVE


 PRESSURE GAUGE

 AIR DIFFUSER


PANEL MOUNTED

 05-001


FIELD MOUNTED


 05-001


DISCREET INSTRUMENTS


 05-001


PLC FUNCTION


 HARD WIRE INTERLOCK


 AIR VALVE


 GATE VALVE


 CONTROL VALVE


 ACTUATED VALVE


 SAFETY VALVE


 FLOAT VALVE


 BUTTERFLY VALVE


 BALL VALVE


 NON-RETURN VALVE


 SCREW DOWN NON-RETURN VALVE


 DIAPHRAGM VALVE


 3-WAY VALVE


 NEEDLE VALVE


 SOLENOID VALVE


 TELESCOPIC VALVE


 PLUG VALVE


 SAMPLE VALVE


 KNIFE GATE VALVE


 SLUICE WITH HAND & GEARBOX


 AIR BLOWER


 SUBMERSIBLE PUMP


 AIR COMPRESSOR


 CENTRIFUGAL PUMP


 P-XXX


 PROGRESSIVE CAVITY PUMP


 P-XXX


 POSITIVE DISPLACEMENT PUMP


 P-XXX


 STATIC MIXER


 MIXER


 ELECTRIC MOTOR


 FAN


 EARTH


 GEARBOX


 MECHANICAL SCREEN


 HAND RAKED SCREEN


 FILTER


 PRESSURE REGULATOR


 ORIFICE PLATE


 CROSSING LINES NOT CONNECTED


 INSTRUMENT ELECTRICAL LEAD


 PIPE LINE (Minor)


 FLOW DIRECTION ARROW


 INSTRUMENT AIR LINES


 SOFTWARE LINK


 RUBBER JOINT


 REDUCER


 SIGHT GLASS


 SPRAY


 DRAIN


 DAMPER


 ROTAMETER


 TERMINAL POINT


 STREAM No.


 VENT TO ATMOSPHERE


 HYDRO SEAL


 STRAINER


 SURFACE AERATOR


 VACUUM INJECTOR


 MAG FLOW METER


 VENTURI FLUME


 WEIR


 ADJUSTABLE WEIR


 GAS FLARE


 VACUUM REGULATOR

 FLAME ARRESTOR


 DOUBLE PIPE HEAT EXCHANGER

 WATER TYPE PRESSURE RELIEF VALVE

 PRESSURE GAUGE

 AIR DIFFUSER

eTHEKWINI WATER SERVICES



WATER DESIGN BRANCH

REDUCED PLAN USE SCALE BELOW

010203040506070

70mm ON ORIGINAL PLAN

CONSULTANT:

NAIDU CONSULTING

1st Floor
No.5, The Boulevard
West Way Office Park
Westville, Durban
Tel : +27 (0) 31 265 6007
Fax : +27 (0) 31 265 6011
Email: info@naiduconsulting.com

DGI Consulting

Consulting Engineers & Project Managers
Electrical & Mechanical Engineering
54 Crescent Place, Verulam, 4339
Phone: 032 - 533 0675
Fax: 086 552 3759 Cell : 082 496 6383
Email: dgovendor@dgiconsulting.co.za

Drawing No.: D859-52-5501- REV 0

FOR TENDER ONLY

REFERENCE DRAWINGS

DWG No.	TITLE/DESCRIPTION	SOURCE

STANDARD DRAWINGS

0	09 / 2025	ISSUED FOR TENDER ONLY
1	07 / 2025	ISSUED FOR INFORMATION
Revision	Date	Description

Contract No. 32269-5W

Project No. D859

Planning Unit WATER AND SANITATION

Ward No. 59

Project Title
TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE
RESERVOIR, 400KL ELEVATED
STEEL TANK AND ANCILLARY
WORKS

Drawing Title
P&ID DIAGRAM

Scales : As Shown

Paper Size : A1

Designed : D. Govender Date : 01-09-2025

Checked : D. Govender Drawn : Z. Bhengu

Bulk Operations

Area Engineer (W.O.)

Manager (W.D.)

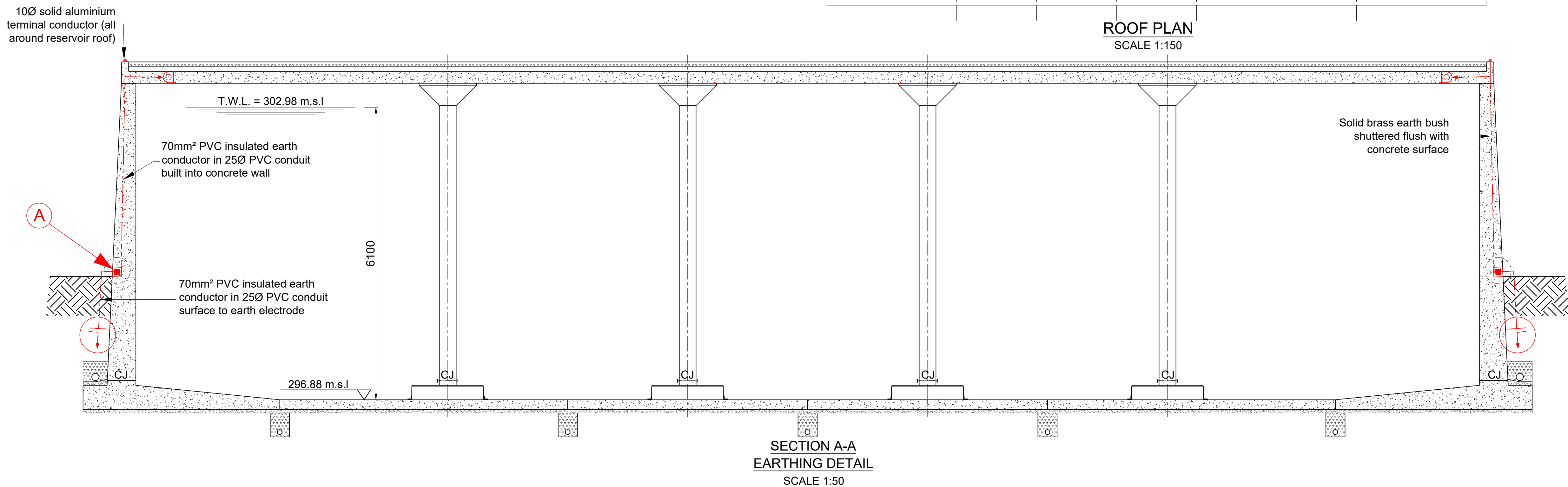
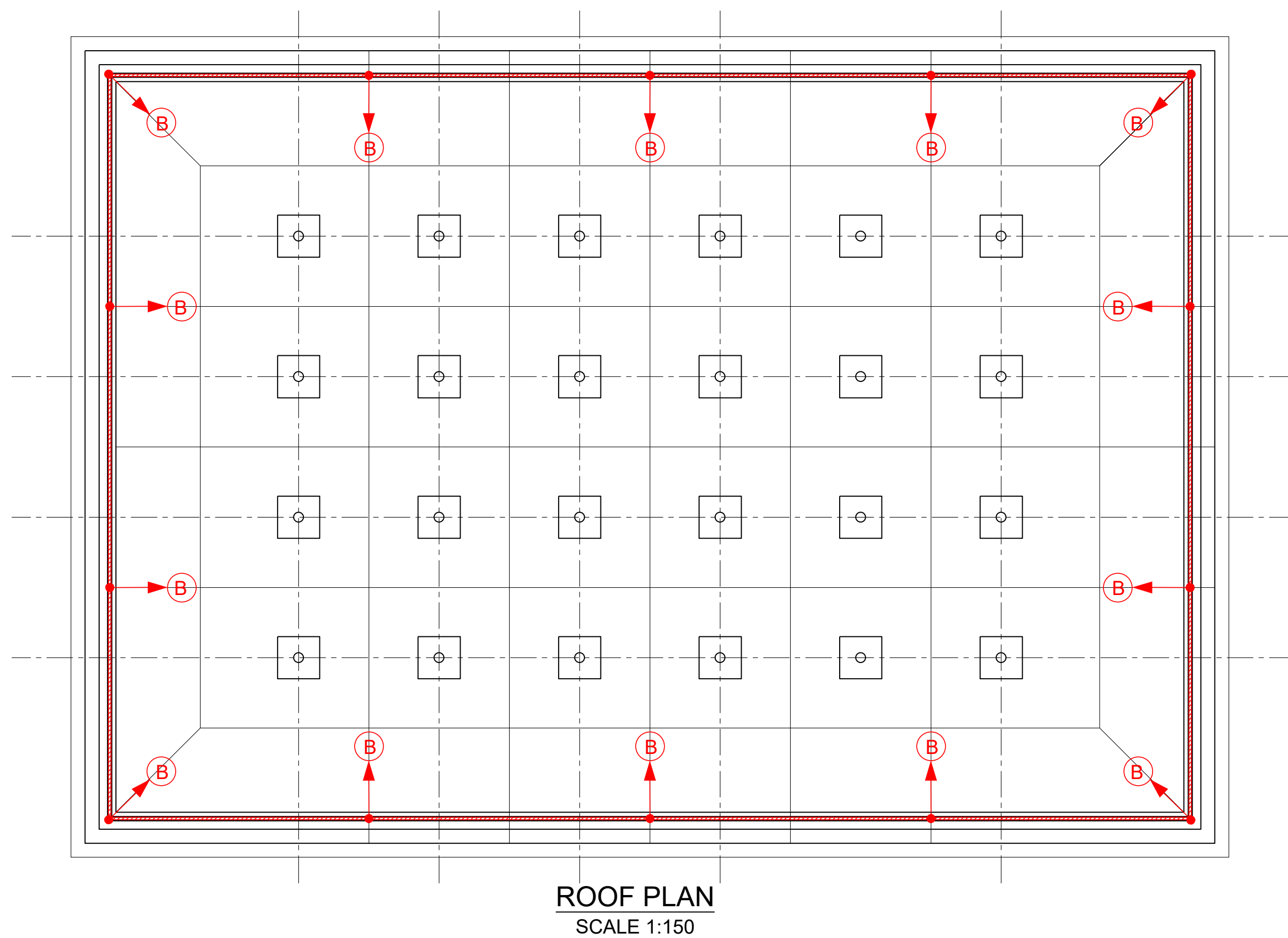
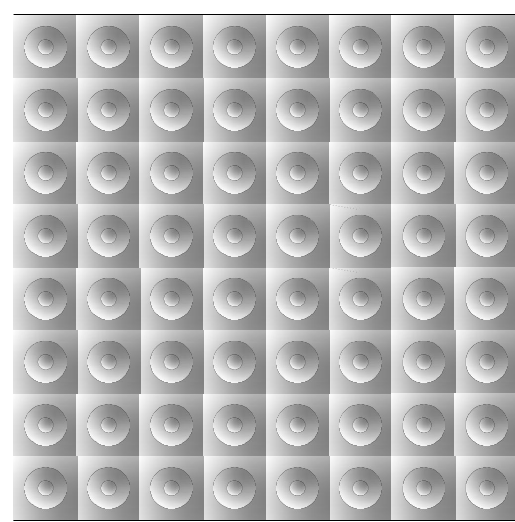
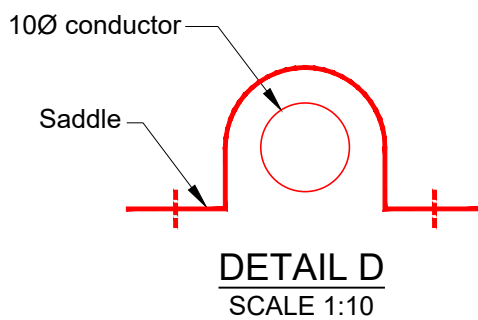
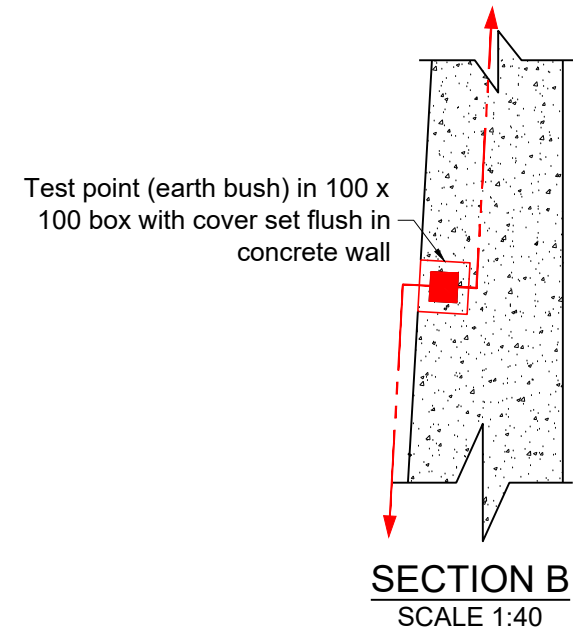
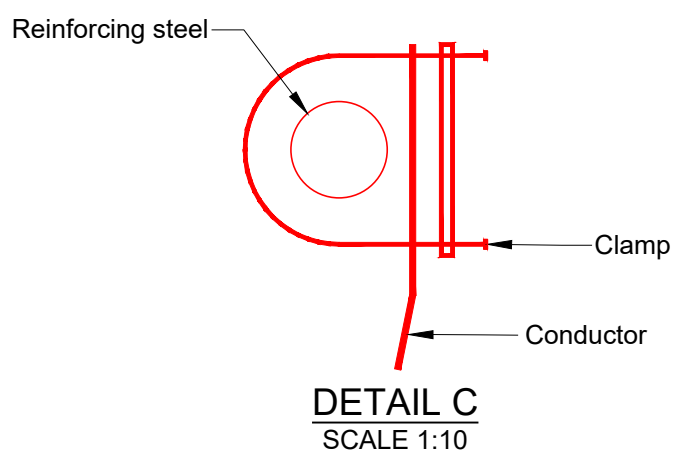
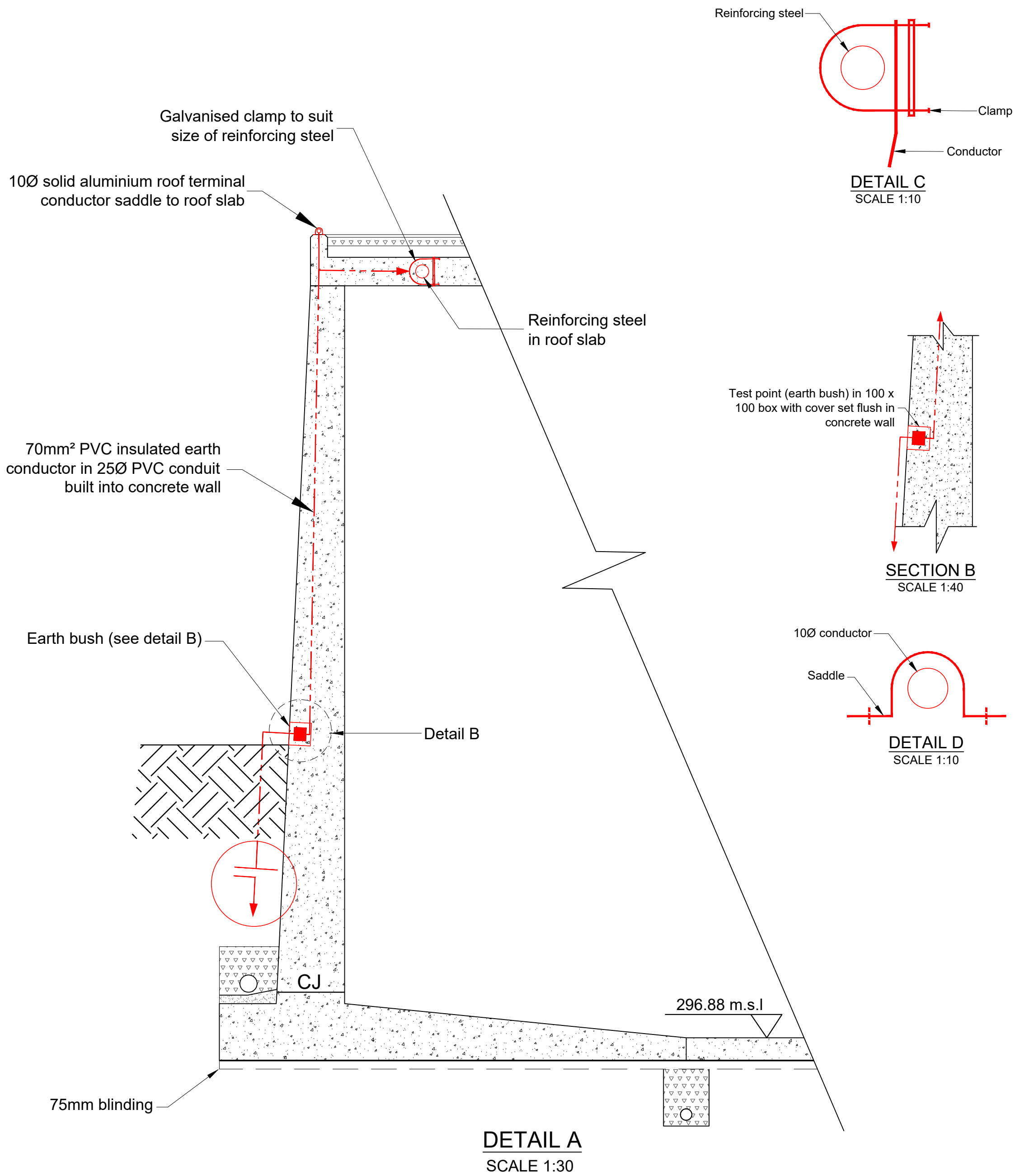
Director (Water)

E.Mswell - Head:Water & Sanitation Unit

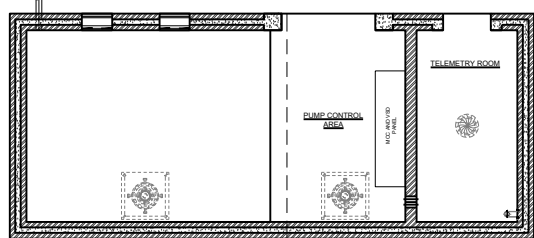
Drawing No. 60570/030

1 of 1

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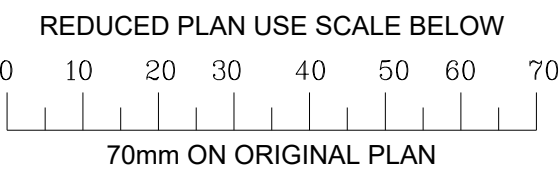
Electrical Schedule / Legend	
Symbol	Description
	100 solid aluminium roof earth terminal conductor around the perimeter of the roof seal. saddle to concrete using plugs & stainless steel screws (not glued) - connect to reinforcing steel in roof slab & to ring main.
	70mm² bare copper ground earth ring main (earth mat)
	70mm² bare copper earth bonding conductor
	Brass earth bush shuttered flush with concrete wall or bases connect to reinforcing steel in wall & connect to earth ring main.
	70mm² bare copper earth conductor bonded from 100 conductor on roof slab to reinforcing steel in slab. Use suitable galvanised clamps to suit size of reinforcing rod.
	70mm² bare copper earthconductor bonded to steel handrailing, catladder or other steel structure.
	70mm² PVC insulated earth conductor for bonding to steel structure or steel columns. Tap and drill steel structure to accept terminations.
	2m long copper clad earth electrode - connect to trench earth ring main using exothermic welds and denso wrapped.



eTHEKWINI WATER SERVICES



WATER DESIGN BRANCH



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Drawing No.: D859-52-5502- REV 0

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DWG No.	TITLE/DESCRIPTION	SOURCE

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Revision	Date	Description

Contract No. 32269-5W

Project No. D859

Planning Unit
WATER AND SANITATION

Ward No. 59

Project Title
**TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE
RESERVOIR, 400KL ELEVATED
STEEL TANK AND ANCILLARY
WORKS**

Drawing Title

**LIGHTNING PROTECTION AND
EARTHING LAYOUT**

Scales : As Shown

Paper Size : A1

Designed : D. Govender Date : 01-09-2025

Checked : D. Govender Drawn : Z. Bhengu

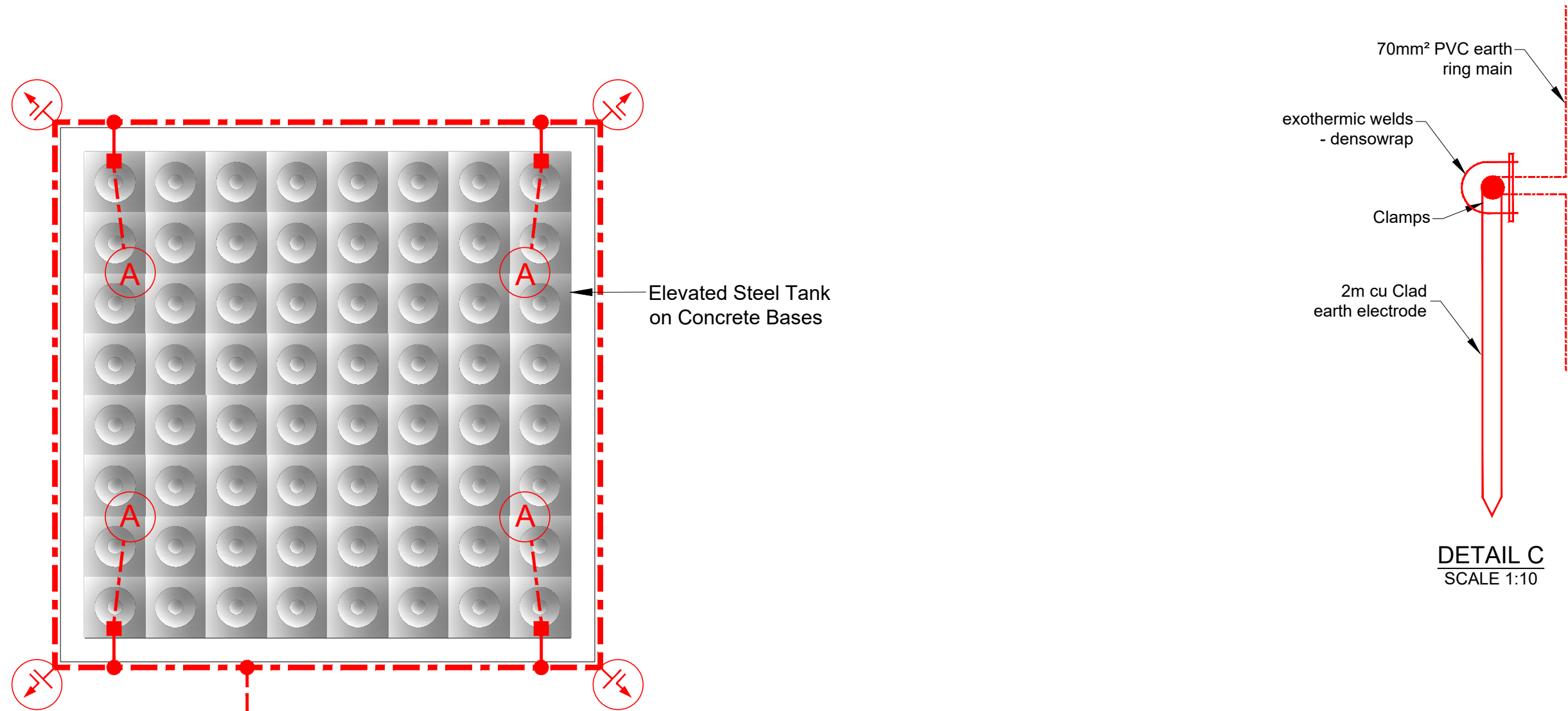
Area Engineer (W.O)

Manager (W.D.)

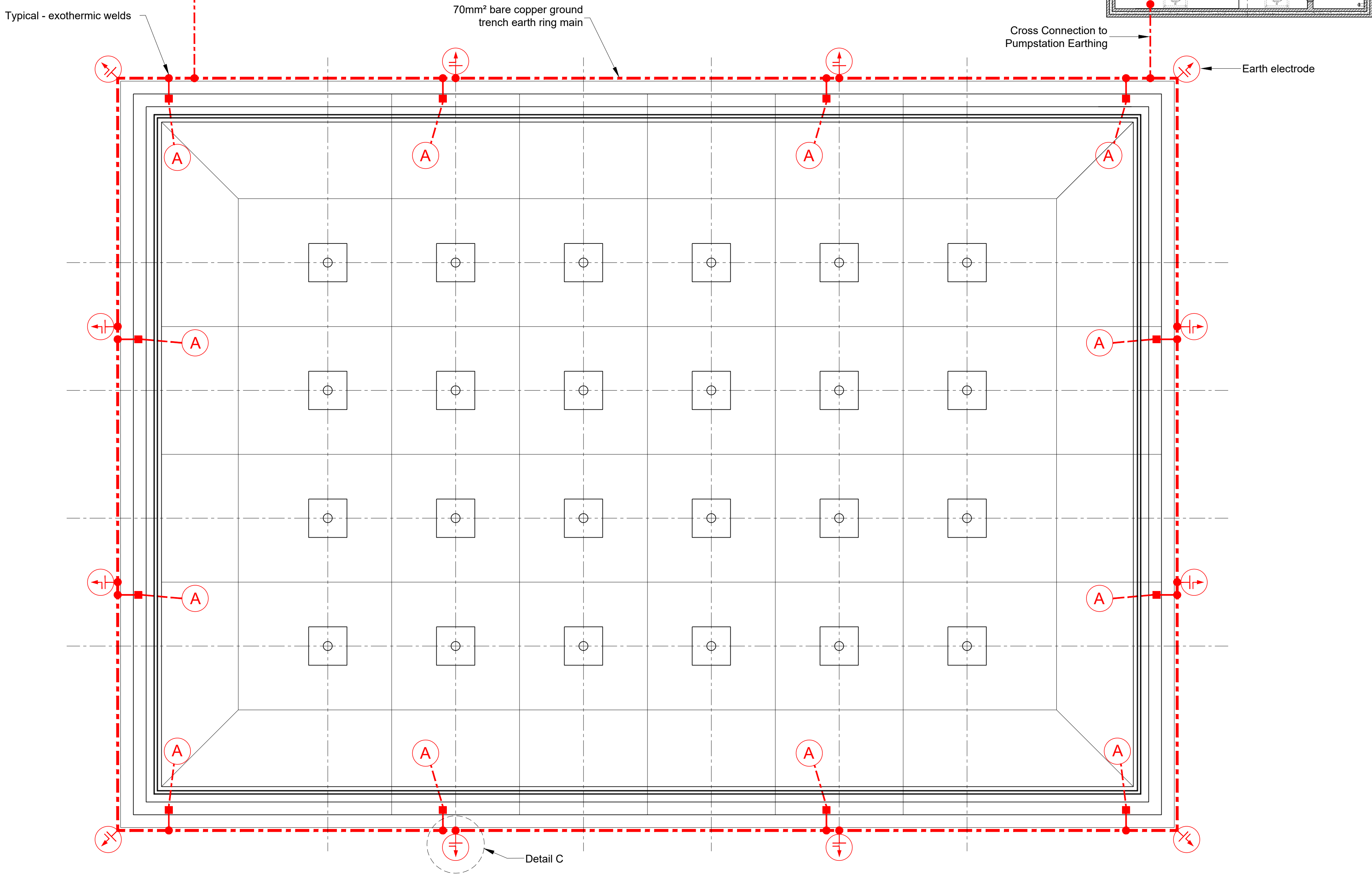
Director (Water)

E.Msweli - Head:Water & Sanitation Unit

Drawing No. 60570/031 1 of 2 0
Sheet Rev.



Electrical Schedule / Legend	
Symbol	Description
	100 solid aluminium roof earth terminal conductor around the perimeter of the roof seal, saddle to concrete using plugs & stainless steel screws (not glued) - connect to reinforcing steel in roof slab & to ring main.
	70mm ² bare copper ground earth ring main (earth mat)
	70mm ² bare copper earth bonding conductor
	Brass earth bush shuttered flush with concrete wall or bases connect to reinforcing steel in wall & connect to earth ring main.
	70mm ² bare copper earth conductor bonded from 100 conductor on roof slab to reinforcing steel in slab. Use suitable galvanised clamps to suit size of reinforcing rod.
	70mm ² bare copper earth conductor bonded to steel handrailing, catladder or other steel structure.
	70mm ² PVC insulated earth conductor for bonding to steel structure or steel columns. Tap and drill steel structure to accept terminations.
	2m long copper clad earth electrode - connect to trench earth ring main using exothermic welds and denso wrapped.



ROOF PLAN
SCALE 1:100

eTHEKWINI WATER SERVICES

WATER DESIGN BRANCH

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

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Contract No. 32269-5W

Project No. D859

Planning Unit
WATER AND SANITATION

Ward No. 59

Project Title
**TRENANCE 3 RESERVOIR
CONSTRUCTION OF A 6.0ML
REINFORCED CONCRETE
RESERVOIR, 400KL ELEVATED
STEEL TANK AND ANCILLARY
WORKS**

Drawing Title
**LIGHTNING PROTECTION AND
EARTHING LAYOUT**

Scales : As Shown	
Paper Size : A1	
Designed : D. Govender	Date : 01-09-2025
Checked : D. Govender	Drawn : Z. Bhengu

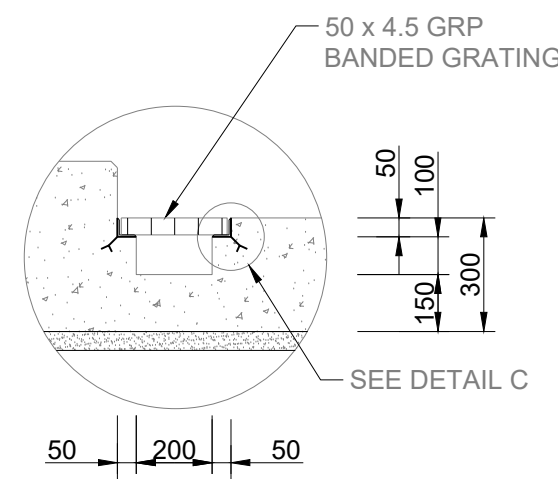
Bulk Operations

Area Engineer (W.O.)

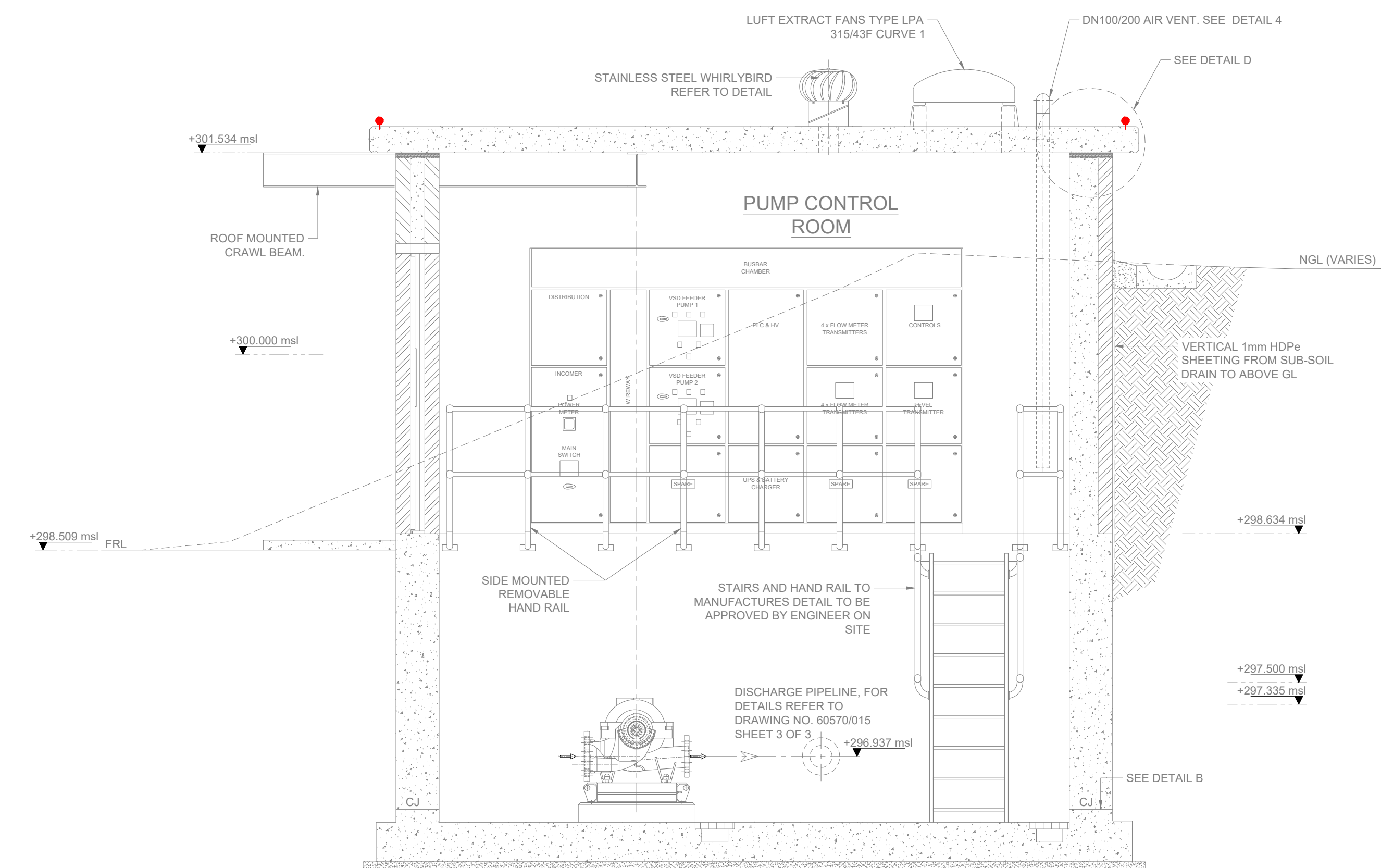
Manager (W.D.)

Director (Water)

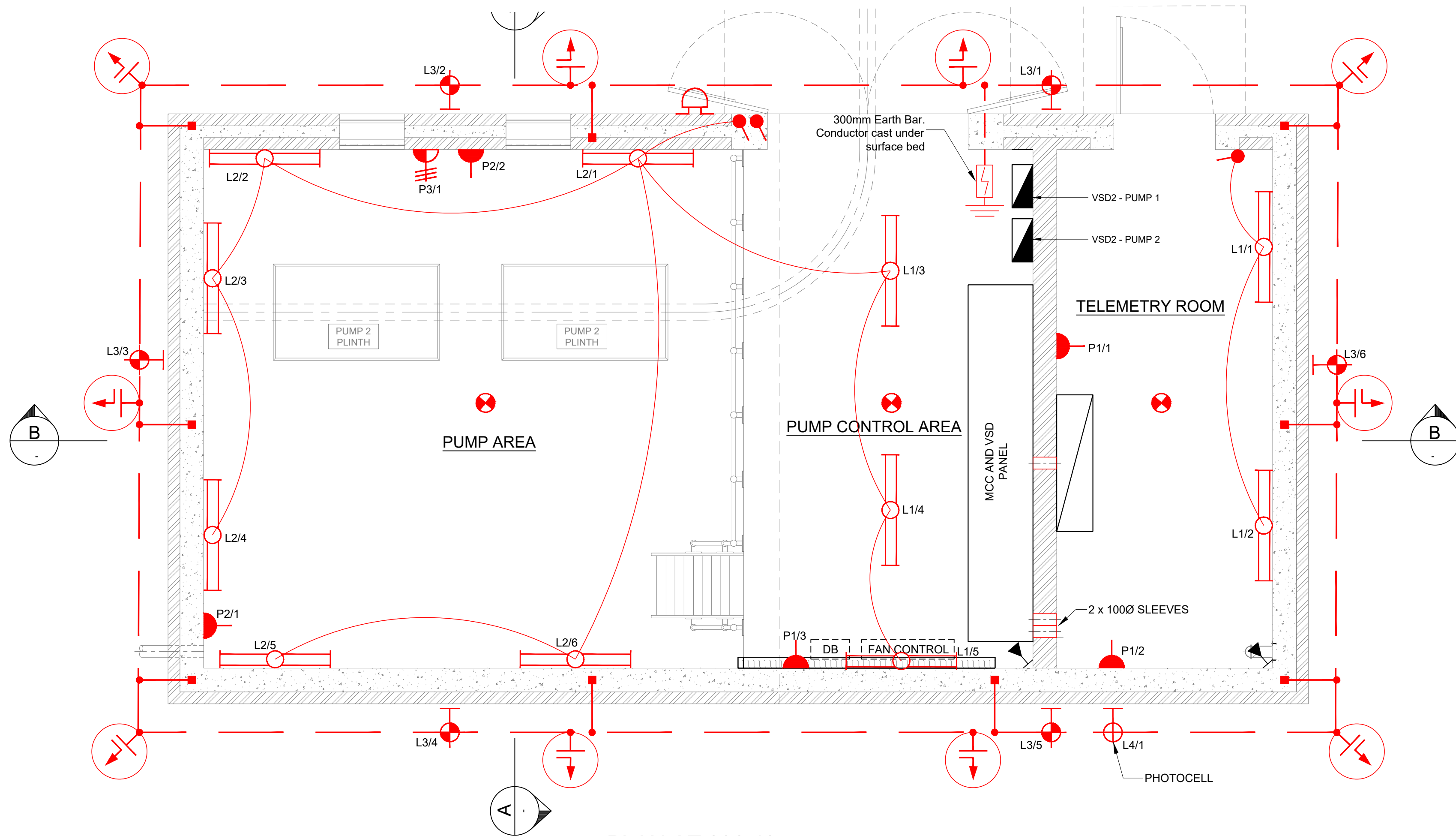
E.Msweli - Head:Water & Sanitation Unit		
Drawing No. 60570/031	2 of 2	0
	Sheet	Rev.



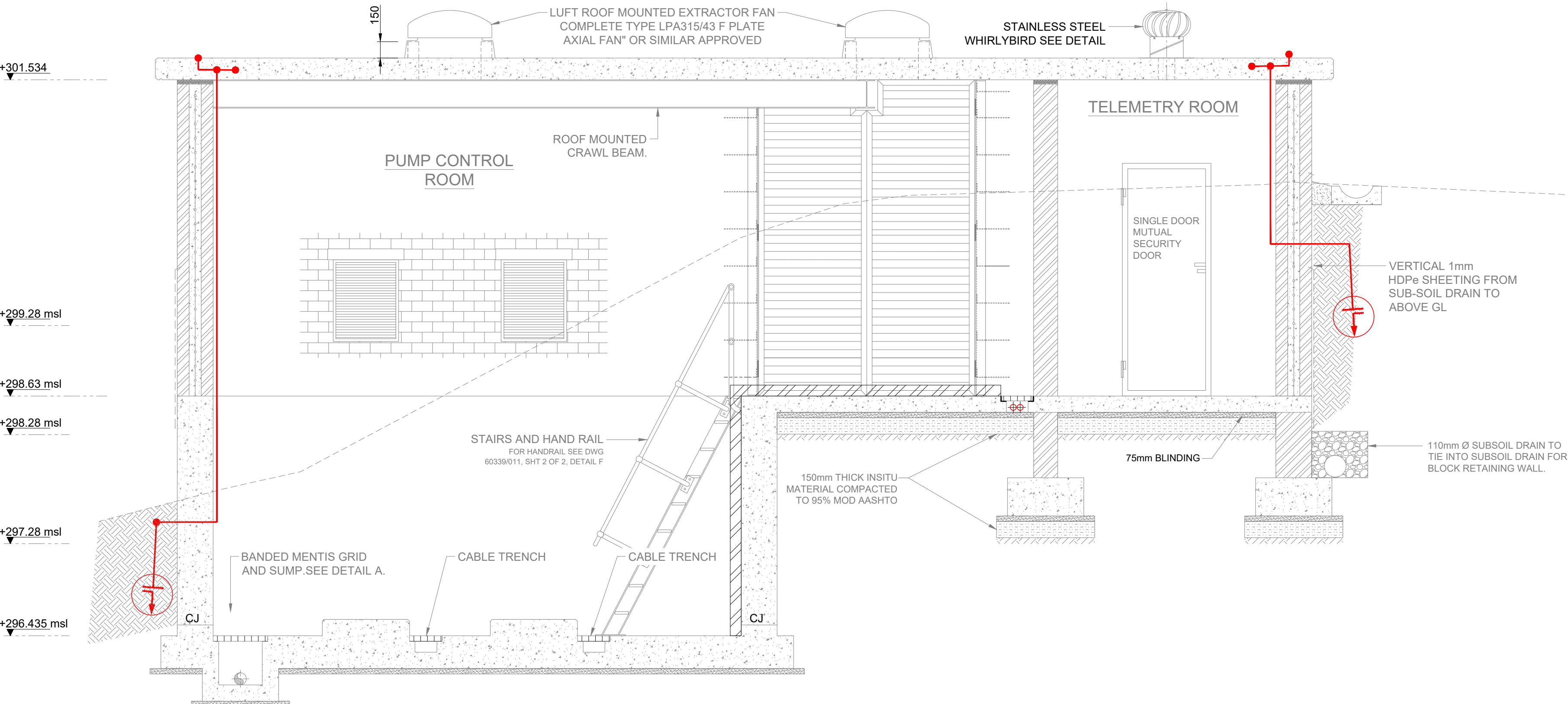
DETAIL A:
CABLE TRENCH
SCALE 1:20



SECTION A
SCALE 1:30



PLAN AT 296.435 m.s.l.
SCALE 1:30

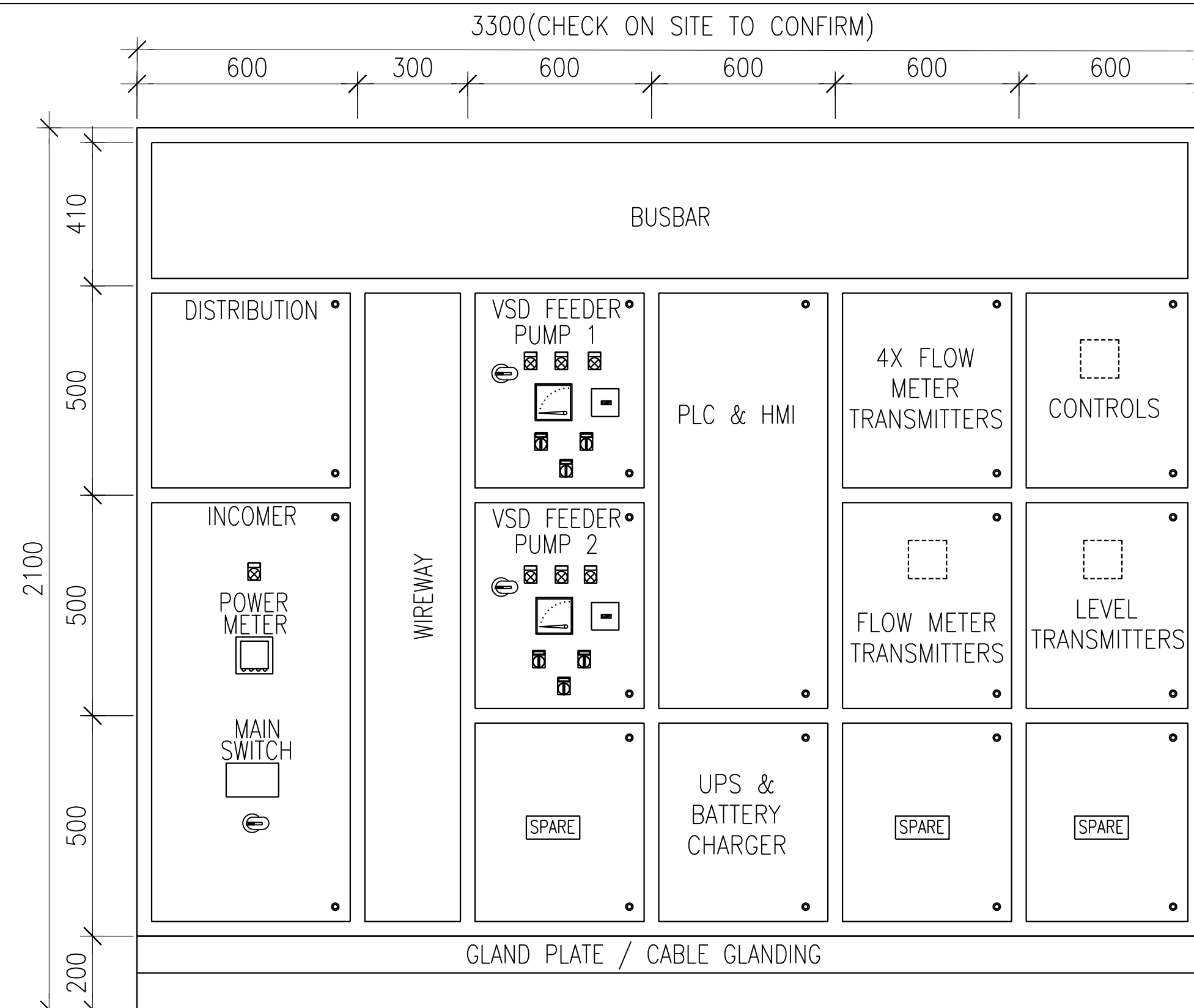


SECTION B
SCALE 1:30

Electrical Schedule / Legend		
Symbol	No. off	Description
		16A Surface Switch Socket Outlet 300 or 1200 AFL
		32A Waco or Similar 5 Pin Welding Socket Outlet 1200 AFL
		Wall light switch as indicated 1400 AFL
		1.5m x 58W double fluorescent light corrosion resistant with polycarbonate diffuser
		1.5m 2 tube CL1 DIV 2 explosion proof fluorescent light surface mounted
		10W LED ceiling downlight recessed in ceiling
		Wall bulkhead light with 10W LED lamp 2500 AFL
		Photocell on roof
		70mm² bare copper ground earth ring main (earth mat)
		70mm² bare copper earth bonding conductor
		2m long copper clad earth electrode - connect to trench earth ring main using exothermic welds and dense wrapped
		300mm x 6mm thick copper earth bar on insulators (connect to ringmain with 70mm² PVC wire)
		100 solid aluminium roof earth terminal conductor around the perimeter of the roof seal - saddle to concrete using plugs & stainless steel screws (not glued) - connect to reinforcing steel in roof slab & to ring main.

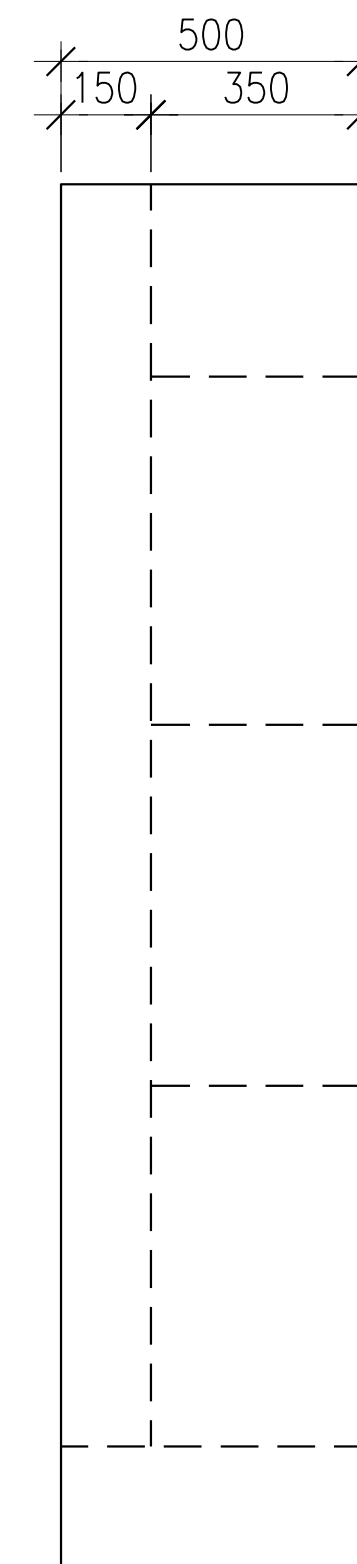
FIRE & ALARM LEGEND		
SYMBOL	No. OFF	DESCRIPTION / CODE
	3	FIRE SMOKE DETECTOR TO EWS SPECIFICATION. WIRE TO PLC IN MCC
	1	FIRE ALARM SIREN WITH FLASHING BEACON LIGHT
	2	INTRUDER MOTION SENSOR TO EWS SPECIFICATION. WIRE TO PLC IN MCC

MCC TYPE :
FLOOR MOUNT
COLOUR-ORANGE EPOXY POWDER COATED
CABLE ENTRY-BOTTOM
ACCESS : FRONT ONLY
REMOVABLE COVERS: SIDES AND BACK
PROTECTION : IP 54
MATERIAL : 3CR12 2mm
FAULT LEVEL : 10KA
DEPTH : 400mm MIN
DESIGN TO: SANS1973-8 ASSEMBLY FORM 4



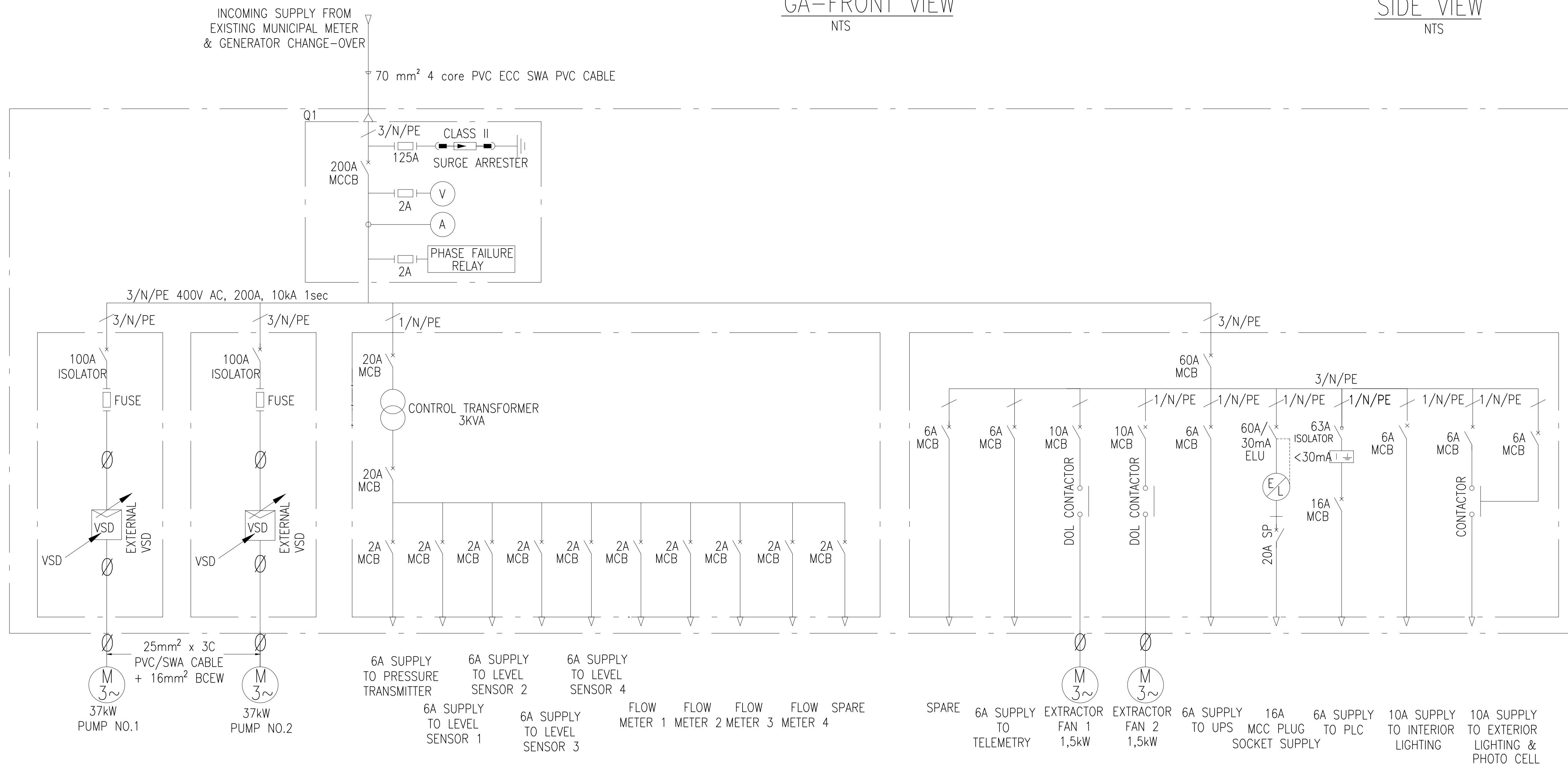
NOTES:

1. REFER TO PROJECT SPECIFICATION FOR DETAILS OF EQUIPMENT ETC.
2. PANEL BUILDER TO DESIGN & PROVIDE WIRING DIAGRAMS ETC. FOR COMMENTS & APPROVAL PRIOR TO MANUFACTURE OF MCC.
3. FINAL MCC & CURBULE SIZES TO BE DETERMINED BY PANEL BUILDER.
4. PROVIDE VENTS TO BATTERY CHARGER AND BATTERY CURBULES.
5. MCC – TYPE 2 CO-ORDINATION
6. VSDs TO BE EXTERNALLY MOUNTED
7. THE FINAL LAYOUTS OF ALL PANELS ND SIZES TO BE DETERMINED DURING DURING DETAILED DESIGN
8. PANEL TO BE INSTALLED ON PEDASTALS 400-500 METER HIGH FOR ERGONOMIC REASONS (DETAILED DURING DETAILED DESIGNS)



SIDE VIEW

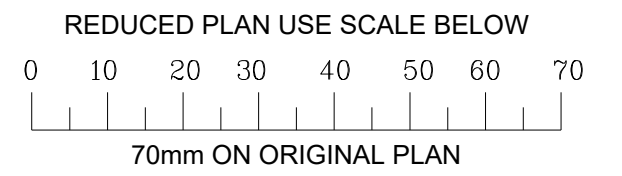
NTS



TYPICAL SCHEMATIC DIAGRAM OF MCC



WATER DESIGN BRANCH



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Revision	Date	Description

Contract No.	32269-5W
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Project No.	D859
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Planning Unit

WATER AND SANITATION

Ward No.	59
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Project Title
<p>TRENANCE 3 RESERVOIR CONSTRUCTION OF A 6.0ML REINFORCED CONCRETE RESERVOIR, 400KL ELEVATED STEEL TANK AND ANCILLARY WORKS</p>

Drawing Title

TYPICAL G.A AND LINE
DIAGRAM OF MOTOR
CONTROL PANEL

Scales : As Shown	
Paper Size : A1	
Designed : D. Govender	Date : 01-09-2025
Checked : D. Govender	Drawn : Z. Bhengu

Bulk Operations

Area Engineer (W.O)

Manager (W.D.)

Director (Water)

E.Msweli - Head:Water & Sanitation Unit

Drawing No.	60570/033	1 of 1	0
		Sheet	Rev.