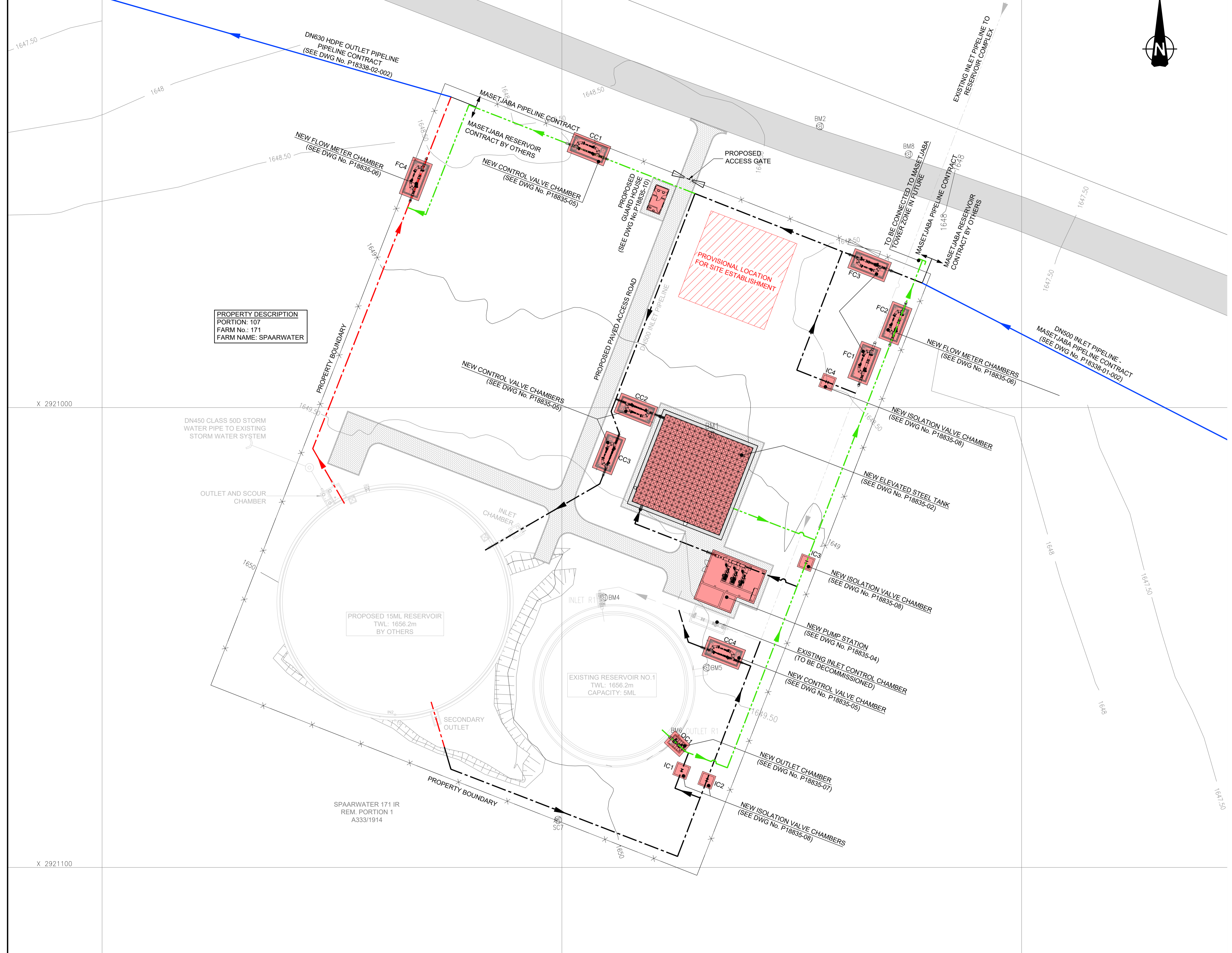


PROPERTY DESCRIPTION  
 PORTION: 107  
 FARM No.: 171  
 FARM NAME: SPAARWATER

| BENCHMARKS CO-ORDINATES - WGS29 |            |               |          |
|---------------------------------|------------|---------------|----------|
| POINT                           | Y          | X             | Z        |
| BM1                             | 60 767.419 | 2 921 005.889 | 1649.146 |
| BM2                             | 60 743.880 | 2 920 938.831 | 1648.327 |
| BM4                             | 60 790.867 | 2 921 041.299 | 1650.732 |
| BM5                             | 60 768.560 | 2 921 056.613 | 1650.302 |
| BM6                             | 60 775.070 | 2 921 071.955 | 1650.277 |
| BM7                             | 60 648.112 | 2 920 973.325 | 1646.642 |
| BM8                             | 60 724.578 | 2 920 944.932 | 1648.146 |
| SC7                             | 60 800.825 | 2 921 089.643 | 1652.390 |

**LEGEND:**

- ALL EXISTING PIPELINE
- PIPELINE BY OTHERS
- NEW INLET PIPELINE
- MASETJABA PIPELINE CONTRACT
- NEW OUTLET PIPELINE
- NEW STRUCTURAL WORK
- NEW PAVING
- BENCH MARKS



**CITY OF EKURHULENI**  
 WATER AND SANITATION DEPARTMENT  
 MR M. SHABANGU  
 HEAD OF DEPARTMENT  
 MR K. CHIHOTA  
 DIVISIONAL HEAD - PROJECTS

| AMENDMENTS |          |          |                        |
|------------|----------|----------|------------------------|
| NR         | DATE     | APPROVED | DESCRIPTION            |
| A          | 23.11.18 | RM       | TENDER DESIGN DRAWINGS |

| WATER AND SANITATION<br>FOR INTERNAL APPROVAL |           |      |  |
|---|-----------|------|--|
| DEPARTMENT:                                   |           |      |  |
| NAME:   | SIGNATURE | DATE |  |
| DEPARTMENT:                                   |           |      |  |
| NAME:   | SIGNATURE | DATE |  |
| DEPARTMENT:                                   |           |      |  |
| NAME:   | SIGNATURE | DATE |  |

**CONSULTANT DETAIL**

TLOU CONSULTING (PTY) LTD  
 P.O. BOX 1309  
 PRETORIA  
 0001  
 TEL: (012) 336-9800  
 FAX: (012) 460-2033  
 EMAIL: ravain@tlouconsult.co.za

I. R. MOODLEY Pr Eng Prof Reg Nr: 20120175  
 HEREBY CERTIFY THAT THE SERVICES WILL BE INSTALLED ACCORDING TO THE DRAWINGS

| DESIGNED  |      |
|-----------|------|
| NAME      | DATE |
| SIGNATURE |      |
| DRAWN     |      |
| NAME      | DATE |
| SIGNATURE |      |
| CHECKED   |      |
| NAME      | DATE |
| SIGNATURE |      |

CONTRACT No. \_\_\_\_\_

PROJECT No. P18335

SCALE 1:200

DATE: NOV 2018

LOCATION OF PROJECT: SOUTH EAST REGION: NIGEL

DESCRIPTION OF PROJECT: MASETJABA TOWER & PUMPSTATION: RESERVOIR COMPLEX

CONSULTANT DRAWING NUMBER: P18335-01-002

DRAWING NUMBER: P18335-01-002

**PROJECT STATUS**

CONCEPT DRAWING  TENDER DRAWING  APPROVED CONSTRUCTION DRAWING  AS BUILT DRAWING

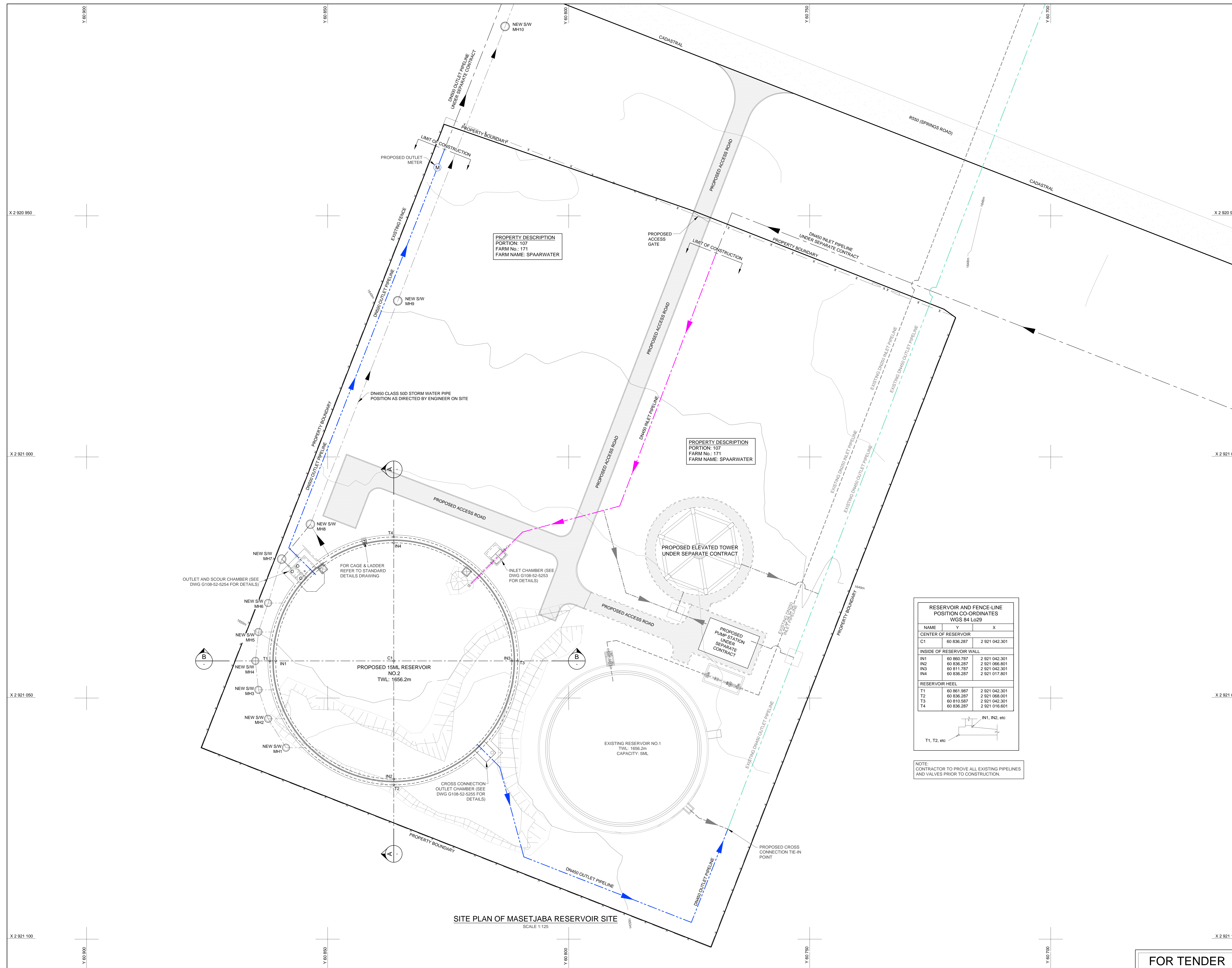
PAPER SIZE A1

OPERATIONS CHIEF ENGINEER - CoE:

NAME: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT MANAGER - CoE:

NAME: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_



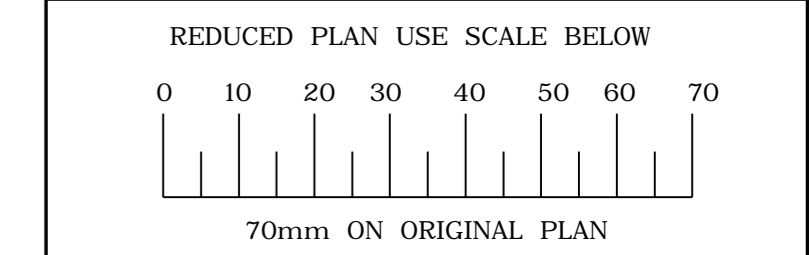
**SITE PLAN OF MASETJABA RESERVOIR SITE**  
SCALE 1:125

**RESERVOIR AND FENCE-LINE POSITION CO-ORDINATES WGS 84 Lo29**

| NAME                            | Y          | X             |
|---------------------------------|------------|---------------|
| <b>CENTER OF RESERVOIR</b>      |            |               |
| C1                              | 60 836.287 | 2 921 042.301 |
| <b>INSIDE OF RESERVOIR WALL</b> |            |               |
| IN1                             | 60 860.787 | 2 921 042.301 |
| IN2                             | 60 836.287 | 2 921 066.001 |
| IN3                             | 60 811.787 | 2 921 042.301 |
| IN4                             | 60 836.287 | 2 921 017.801 |
| <b>RESERVOIR HEEL</b>           |            |               |
| T1                              | 60 861.987 | 2 921 042.301 |
| T2                              | 60 836.287 | 2 921 068.001 |
| T3                              | 60 810.587 | 2 921 042.301 |
| T4                              | 60 836.287 | 2 921 016.601 |

T1, T2, etc

NOTE: CONTRACTOR TO PROVE ALL EXISTING PIPELINES AND VALVES PRIOR TO CONSTRUCTION.



**LEGEND**

EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.

|                              |       |
|------------------------------|-------|
| SEWERS AND M.H.S             | —■—   |
| STORM WATER DRAINS AND M.H.S | —●—   |
| WATER MAINS AND VALVES       | —○—   |
| ELECTRICITY CABLES           | —+—+— |
| G.P.O TELEPHONE CABLES       | —x—x— |
| OIL PIPELINES                | —x—x— |

**CONSULTANT:**

**NAIDU CONSULTING**

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

DRAWING No.: G108-52-5000 REV. 0

**FOR TENDER**

| Ref Drg. | Description |
|----------|-------------|
|          |             |
|          |             |
|          |             |

| Revision | Date    | Description       |
|----------|---------|-------------------|
| 0        | 01-2019 | ISSUED FOR TENDER |

NOTE: No construction work to commence until final and servicable requisitions have been completed.

Acquisitions completed:

| Date | Engineer | NORTH POINT |
|------|----------|-------------|
|      |          |             |
|      |          |             |
|      |          |             |
|      |          |             |
|      |          |             |
|      |          |             |
|      |          |             |
|      |          |             |
|      |          |             |
|      |          |             |

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, watermain and connections. Wherever possible these must be located before work begins.

Contract No. \_\_\_\_\_

Project Title

**MASETJABA RESERVOIR**  
CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS

Section \_\_\_\_\_

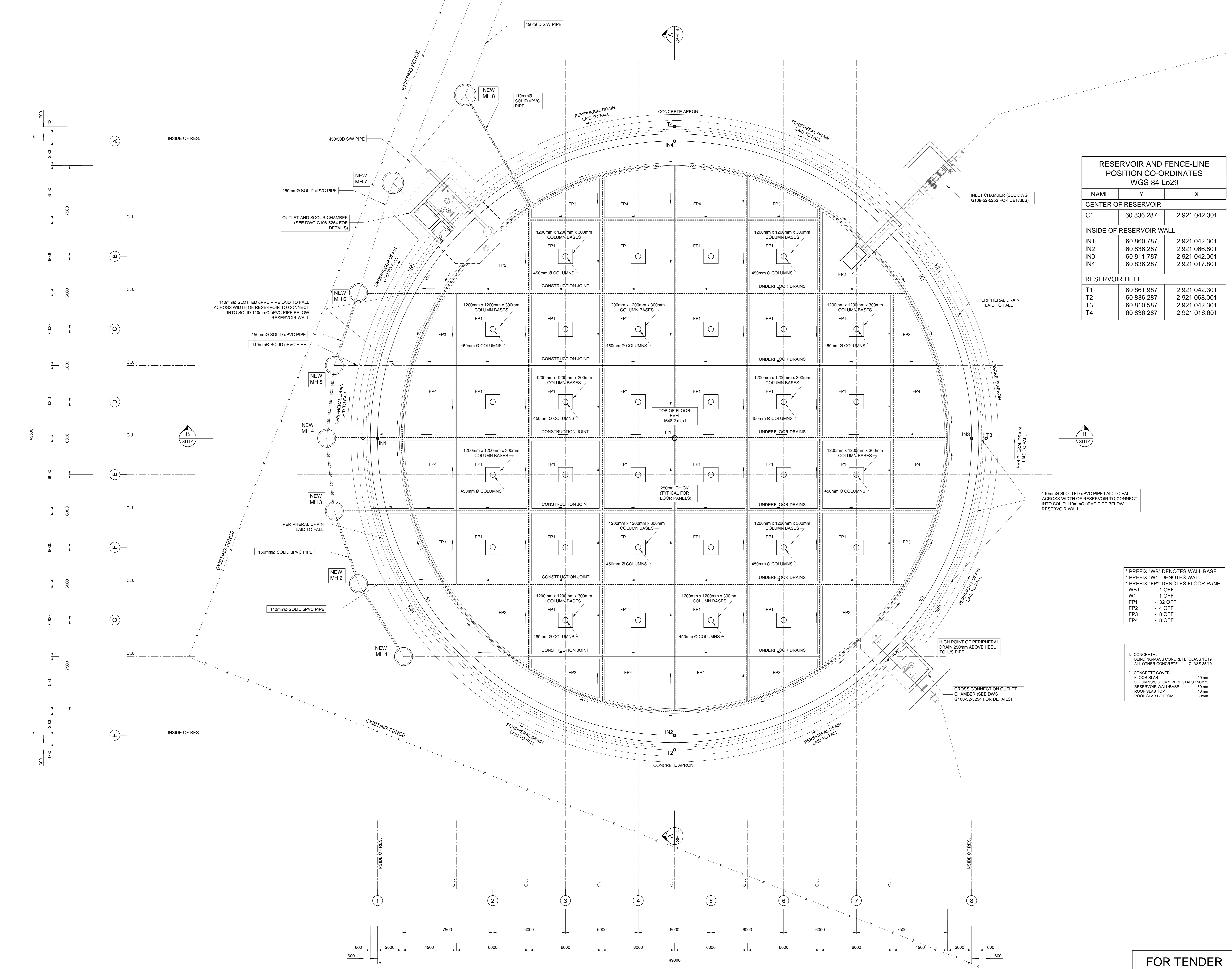
Drawing Title

**SITE PLAN**

Scales : AS SHOWN  
 Designed : D.Ramghulam Date : June 2018  
 Checked : A.Goorun Drawn : N.Adams

|                    |   |
|--------------------|---|
| Area Engineer      |   |
| Manager            |   |
| Director (Water)   |   |
| Executive Director |   |
| Drawing No.        |   |
| Sheet              | 1 |
| Rev.               | 0 |

**FOR TENDER**



**RESERVOIR AND FENCE-LINE POSITION CO-ORDINATES WGS 84 Lo29**

| NAME                            | Y          | X             |
|---------------------------------|------------|---------------|
| <b>CENTER OF RESERVOIR</b>      |            |               |
| C1                              | 60 836.287 | 2 921 042.301 |
| <b>INSIDE OF RESERVOIR WALL</b> |            |               |
| IN1                             | 60 860.787 | 2 921 042.301 |
| IN2                             | 60 836.287 | 2 921 066.801 |
| IN3                             | 60 811.787 | 2 921 042.301 |
| IN4                             | 60 836.287 | 2 921 017.801 |
| <b>RESERVOIR HEEL</b>           |            |               |
| T1                              | 60 861.987 | 2 921 042.301 |
| T2                              | 60 836.287 | 2 921 068.001 |
| T3                              | 60 810.587 | 2 921 042.301 |
| T4                              | 60 836.287 | 2 921 016.601 |

CLIENT:

REDUCED PLAN USE SCALE BELOW

LEGEND

EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW

SEWERS AND M.H'S

STORM WATER DRAINS AND M.H'S

WATER MAINS AND VALVES

ELECTRICITY CABLES

G.P.O TELEPHONE CABLES

OIL PIPELINES

CONSULTANT:

1st Floor Tel: +27 (0) 31 265 6007  
 No.5 The Boulevard Fax: +27 (0) 31 265 6911  
 West Way Office Park E-mail: info@naiduconsulting.com  
 Westville, Durban

DRAWING No.: G108-52-5250 REV. 0

**FOR TENDER**

| Ref           | Drg.        | Description       |
|---------------|-------------|-------------------|
| 0             | 01-2019     | ISSUED FOR TENDER |
| Revision Date | Description |                   |
|               |             |                   |

NOTE: No construction work to commence until final and complete acquisitions have been completed.

Acquisitions completed:

| Date | Engineer | NORTH POINT |
|------|----------|-------------|
|      |          |             |

DATE SIGNATURE

UNDERGROUND SERVICES CHECKED

S.W DRAINS

SEWERS

WATERMANS

G.P.O CABLES

ELECTRIC CABLES

S.A.R CABLES

E.S.C CABLES

OIL PIPE LINE

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavation for road foundations/trenches etc to avoid damage to underground services such as sewer/drain/cables, watermain and connections wherever possible these must be located before work begins.

- \* PREFIX "WB" DENOTES WALL BASE
- \* PREFIX "W" DENOTES WALL
- \* PREFIX "FP" DENOTES FLOOR PANEL
- WB1 - 1 OFF
- W1 - 1 OFF
- FP1 - 32 OFF
- FP2 - 4 OFF
- FP3 - 8 OFF
- FP4 - 8 OFF

- CONCRETE:
  - BLINDING/MASS CONCRETE: CLASS 15/19
  - ALL OTHER CONCRETE: CLASS 30/19
- CONCRETE COVER:
  - FLOOR SLAB: 50mm
  - COLUMNS/COLUMN PEDESTALS: 50mm
  - RESERVOIR WALL/BASE: 50mm
  - ROOF SLAB TOP: 40mm
  - ROOF SLAB BOTTOM: 50mm

Contract No.

Project Title

**MASETJABA RESERVOIR**  
 CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS

Section

Drawing Title

**FLOOR PLAN**

Scales: AS SHOWN

Designed: D.Ramghulam Date: June 2018

Checked: A.Goorun Drawn: N. Adams

Area Engineer

Manager

Director (Water)

Executive Director

Drawing No. 2 Rev. 0

**FOR TENDER**

| Revision | Date    | ISSUED FOR TENDER |
|----------|---------|-------------------|
| 0        | 01-2019 | ISSUED FOR TENDER |

| Revision | Date | Description |
|----------|------|-------------|
|          |      |             |

| Date | Engineer | NORTH | POINT |
|------|----------|-------|-------|
|      |          |       |       |

| Service              | Checked | Signature |
|----------------------|---------|-----------|
| UNDERGROUND SERVICES |         |           |
| S.W DRAINS           |         |           |
| SEWERS               |         |           |
| WATERMAINS           |         |           |
| G.P.O CABLES         |         |           |
| ELECTRIC CABLES      |         |           |
| S.A.R CABLES         |         |           |
| E.S.C CABLES         |         |           |
| OIL PIPE LINE        |         |           |

Contract No. \_\_\_\_\_  
Project Title

**MASETJABA RESERVOIR**  
CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS

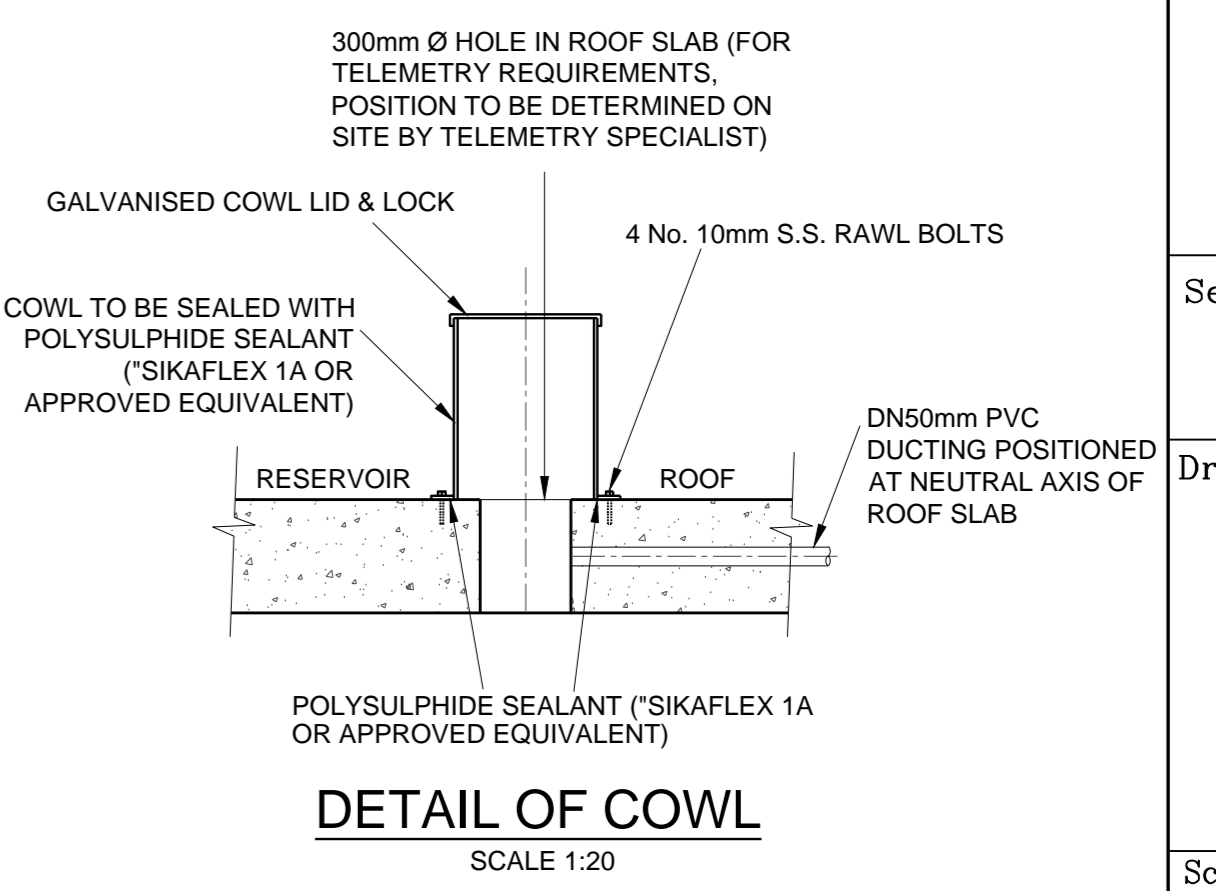
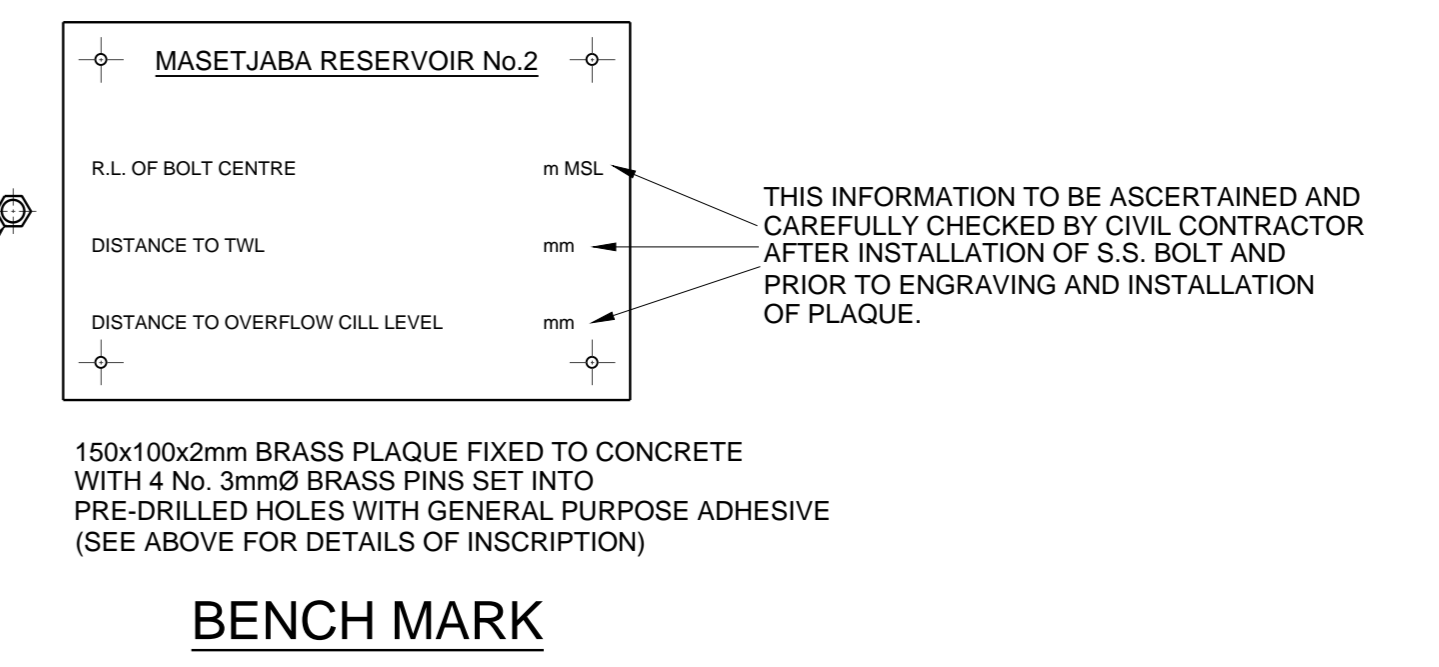
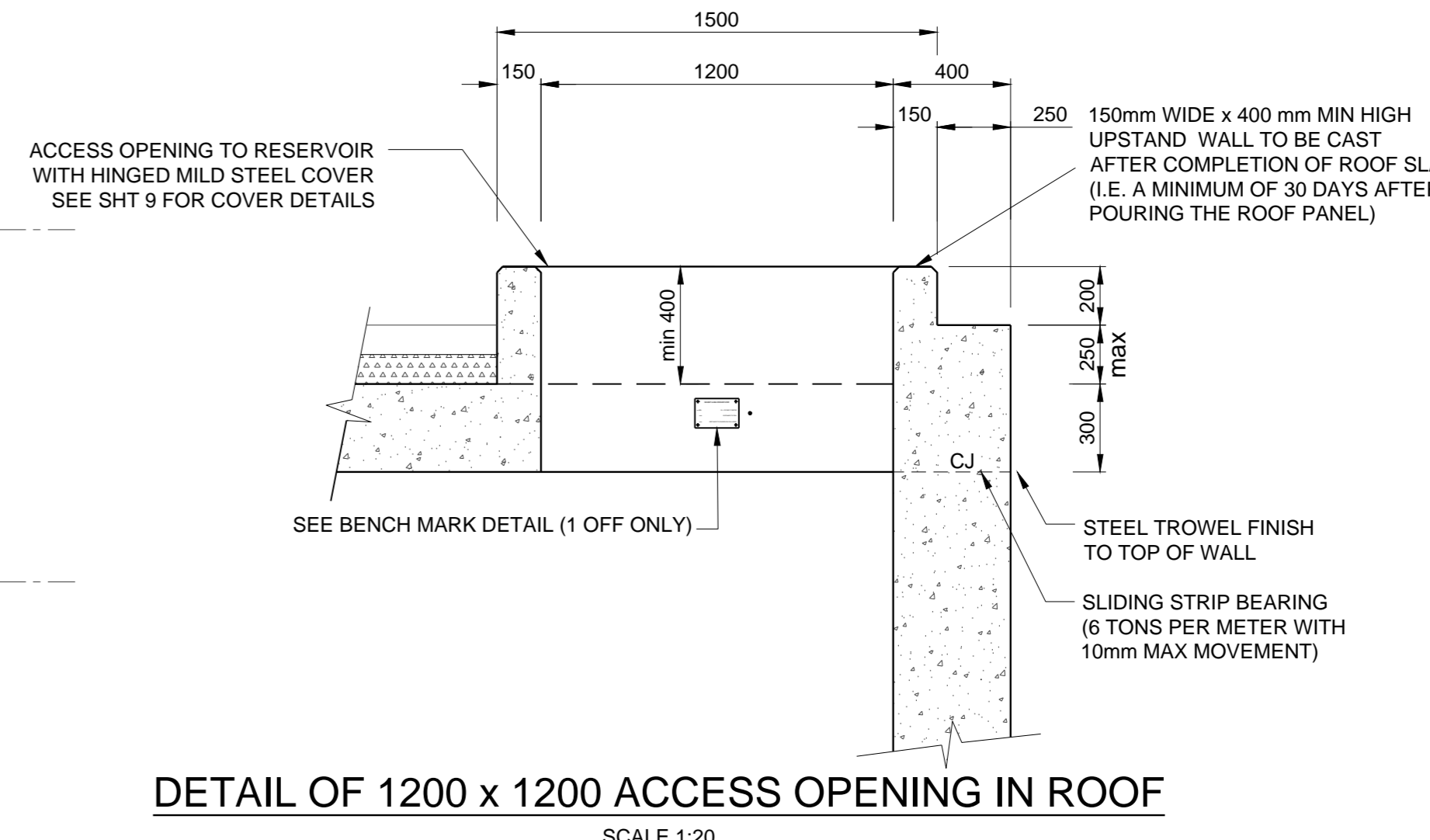
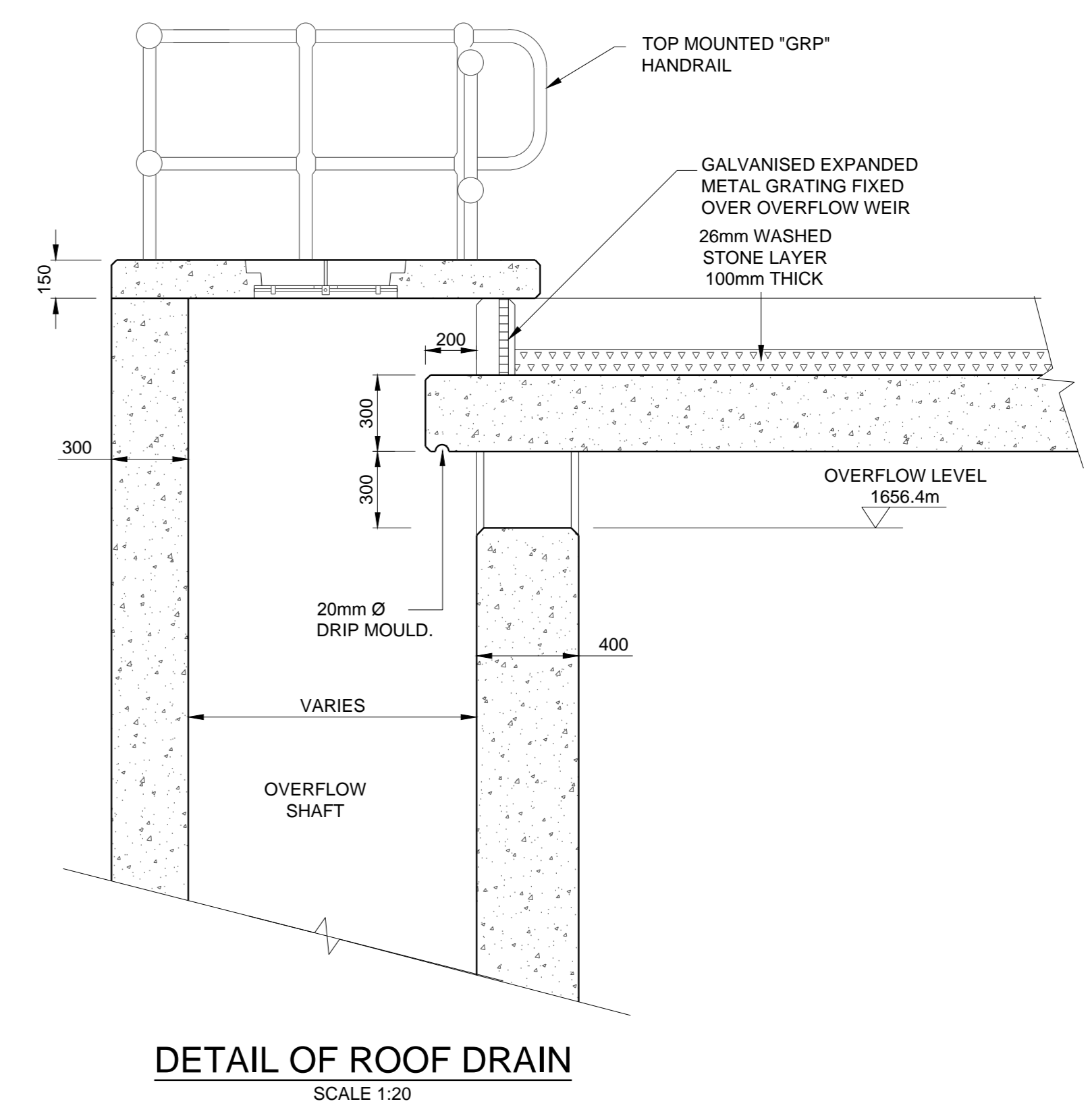
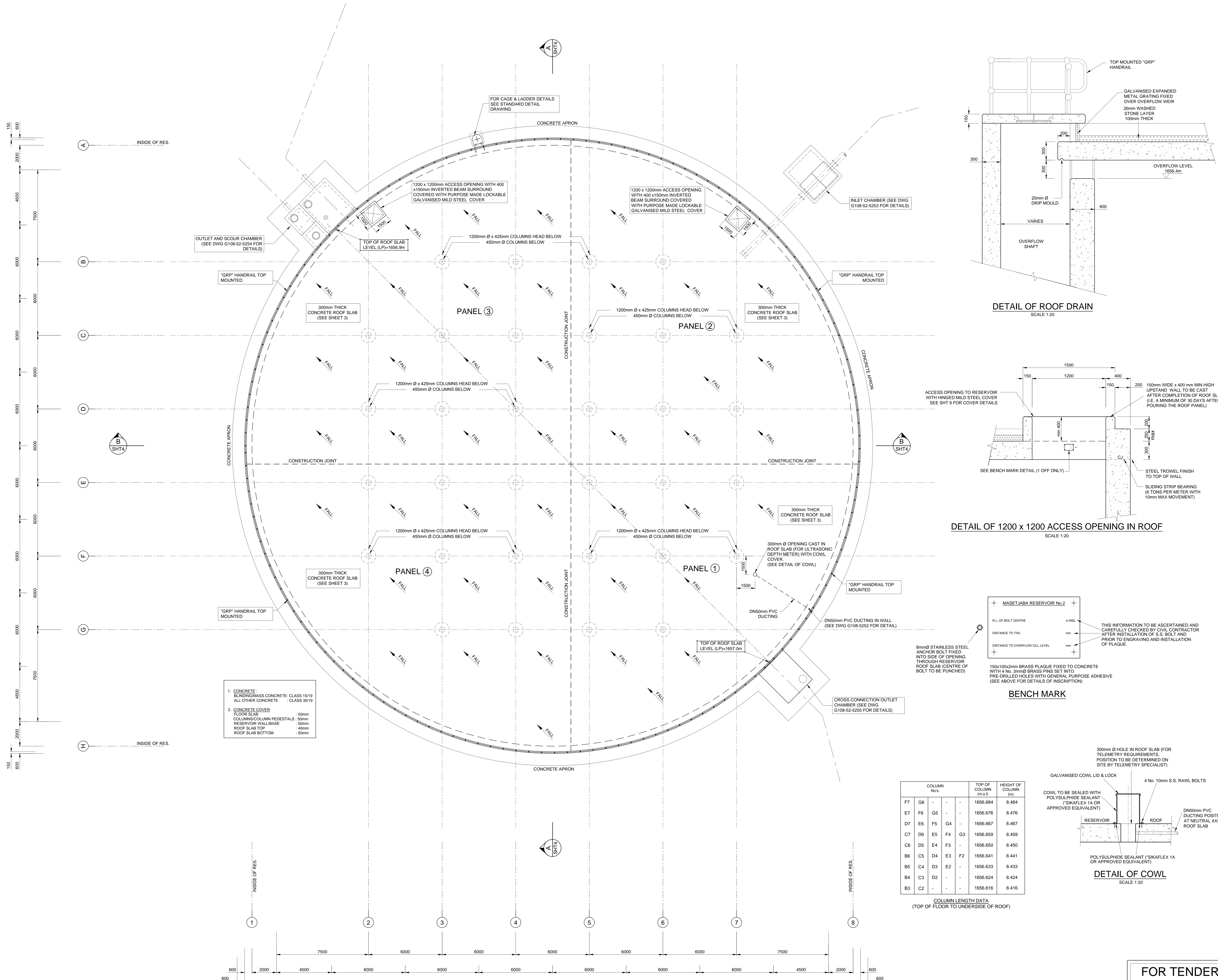
Section \_\_\_\_\_  
Drawing Title

**ROOF PLAN**

Scales : AS SHOWN  
Designed : D.Ramghulam Date : June 2018  
Checked : A.Goorun Drawn : N.Adams

Area Engineer \_\_\_\_\_  
Manager \_\_\_\_\_  
Director (Water) \_\_\_\_\_

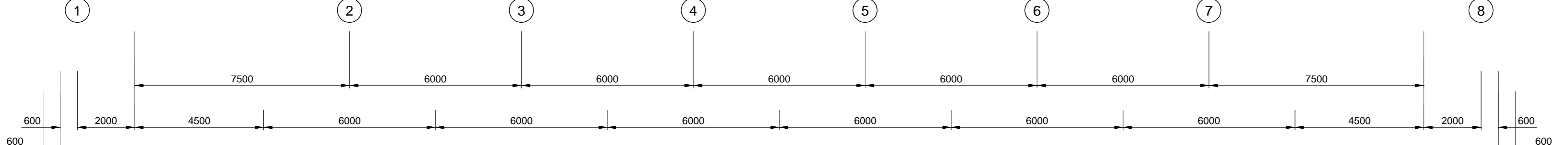
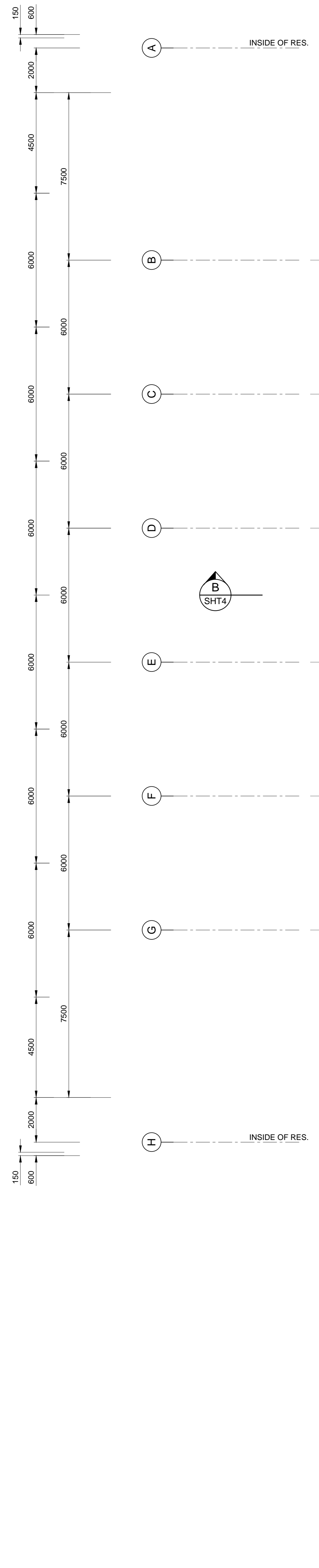
Executive Director \_\_\_\_\_  
Drawing No. \_\_\_\_\_ Sheet 3 Rev. 0



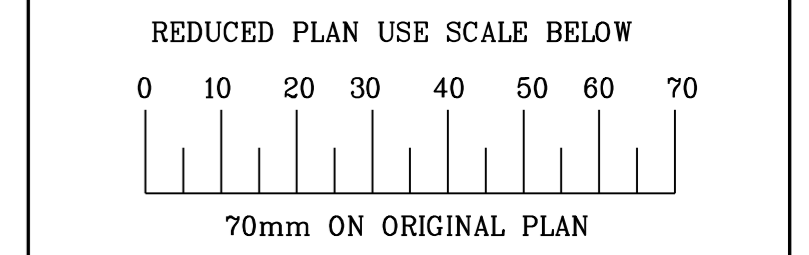
**COLUMN LENGTH DATA**  
(TOP OF FLOOR TO UNDERSIDE OF ROOF)

| COLUMN No.s     | TOP OF COLUMN (m.a.s.l) | HEIGHT OF COLUMN (m) |
|-----------------|-------------------------|----------------------|
| F7 G6 - - -     | 1656.684                | 8.484                |
| E7 F6 G5 - -    | 1656.676                | 8.476                |
| D7 E6 F5 G4 -   | 1656.667                | 8.467                |
| C7 D6 E5 F4 G3  | 1656.659                | 8.459                |
| B6 C5 D4 E3 F2  | 1656.650                | 8.450                |
| A5 B4 C3 D2 - - | 1656.641                | 8.441                |
|                 | 1656.633                | 8.433                |
|                 | 1656.624                | 8.424                |
| B3 C2 - - -     | 1656.616                | 8.416                |

- CONCRETE :  
BLINDING/MASS CONCRETE : CLASS 15/19  
ALL OTHER CONCRETE : CLASS 35/19
- CONCRETE COVER:  
FLOOR SLAB : 50mm  
COLUMNS/COLUMN PEDESTALS : 50mm  
RESERVOIR WALL/BASE : 50mm  
ROOF SLAB TOP : 40mm  
ROOF SLAB BOTTOM : 50mm



- CONCRETE NOTES**
- CONCRETE  
BLINDING/MASS CONCRETE: CLASS 15/19  
ALL OTHER CONCRETE : CLASS 30/19
  - CONCRETE COVER:  
FLOOR SLAB : 50mm  
COLUMNS/COLUMN PEDESTALS : 50mm  
RESERVOIR WALL/BASE : 50mm  
ROOF SLAB TOP : 40mm  
ROOF SLAB BOTTOM : 50mm



- LEGEND**
- EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.
- SEWERS AND M.H.F'S  
STORM WATER DRAINS AND M.H.F'S  
WATER MAINS AND VALVES  
ELECTRICITY CABLES  
G.P.O TELEPHONE CABLES  
OIL PIPELINES

CONSULTANT:

**NAIDU CONSULTING**

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

DRAWING No.: G108-52-5252 REV. 0

**FOR TENDER**

| Ref. Drg. | Description |
|-----------|-------------|
|           |             |

| Revision | Date    | ISSUED FOR TENDER | Description |
|----------|---------|-------------------|-------------|
| 0        | 01-2019 | ISSUED FOR TENDER |             |

NOTE: No construction work to commence until final and complete acquisition has been completed.

Acquisitions completed:

| Date | Engineer | NORTH | POINT |
|------|----------|-------|-------|
|      |          |       |       |

| UNDERGROUND SERVICES | CHECKED |
|----------------------|---------|
| S.W DRAINS           |         |
| SEWERS               |         |
| WATERMANS            |         |
| G.P.O CABLES         |         |
| ELECTRIC CABLES      |         |
| S.A.R CABLES         |         |
| E.S.C CABLES         |         |
| OIL PIPE LINE        |         |

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations/trenches etc to avoid damage to underground services such as sewer drains/cables, watermains and pipelines wherever possible these must be located before work begins.

Contract No. \_\_\_\_\_  
Project Title  
**MASETJABA RESERVOIR CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS**

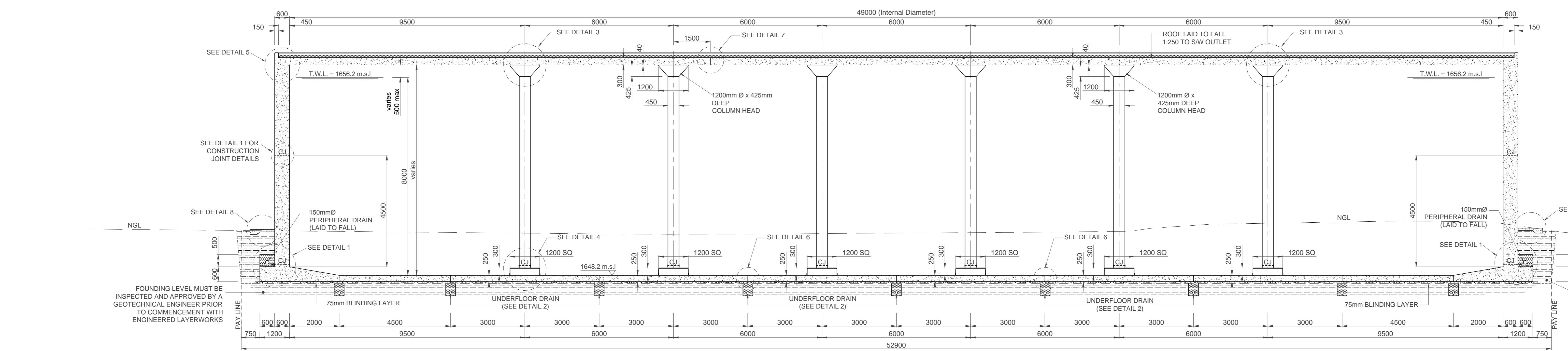
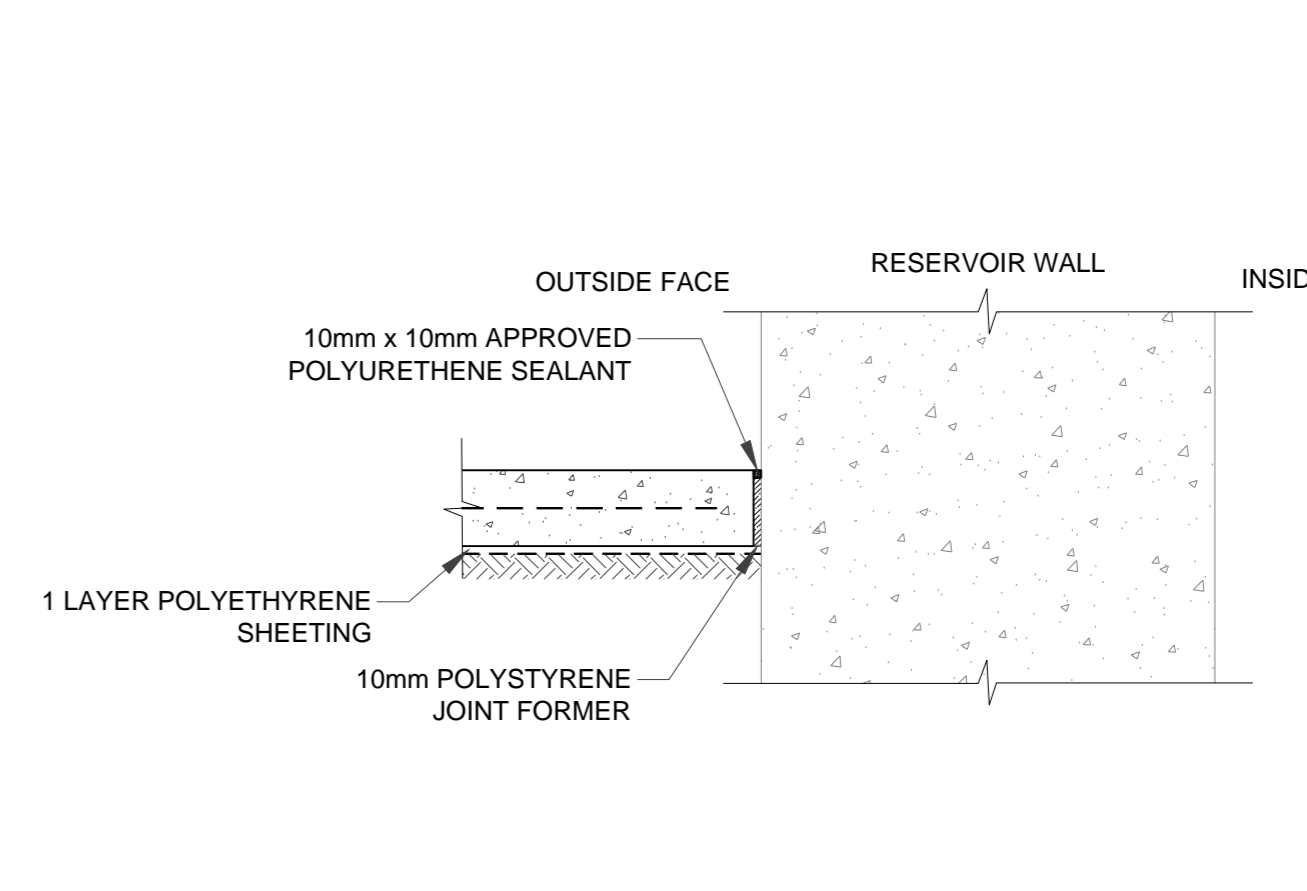
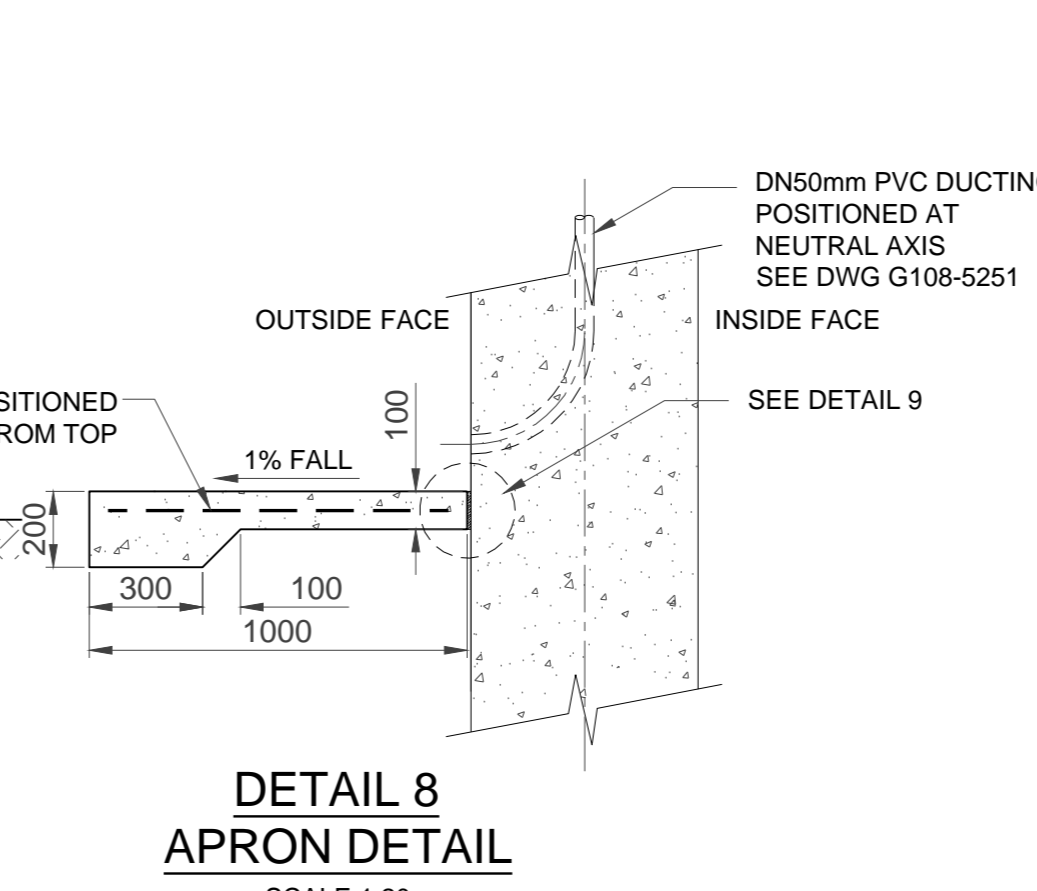
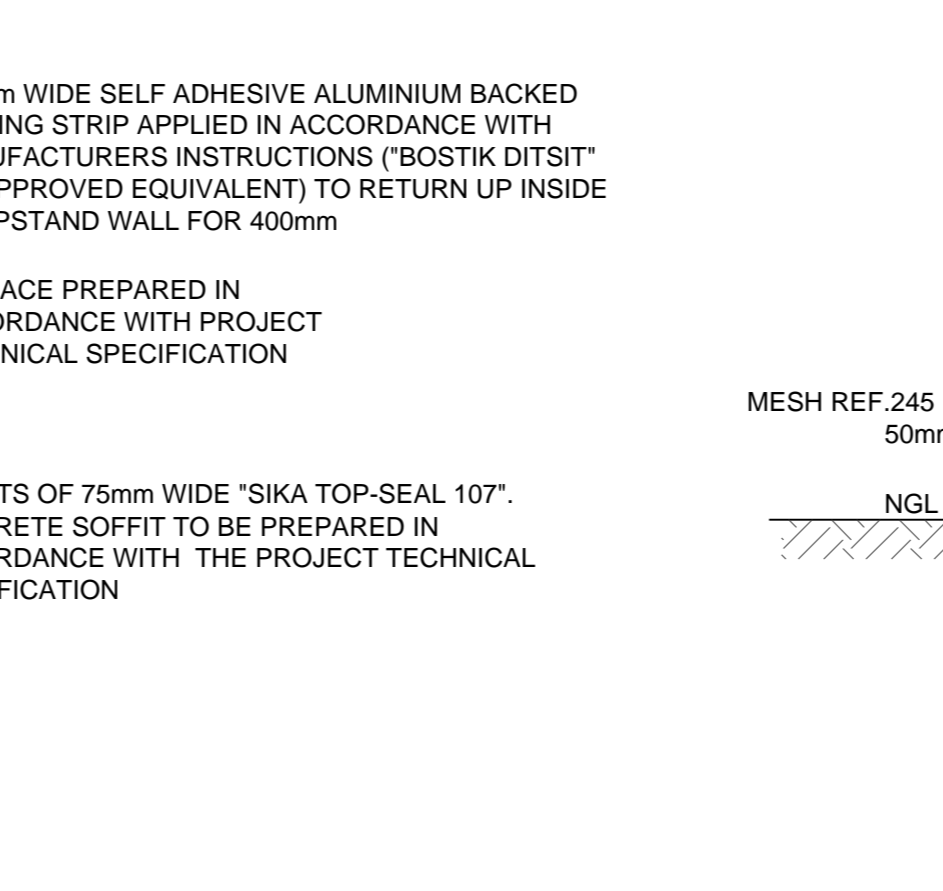
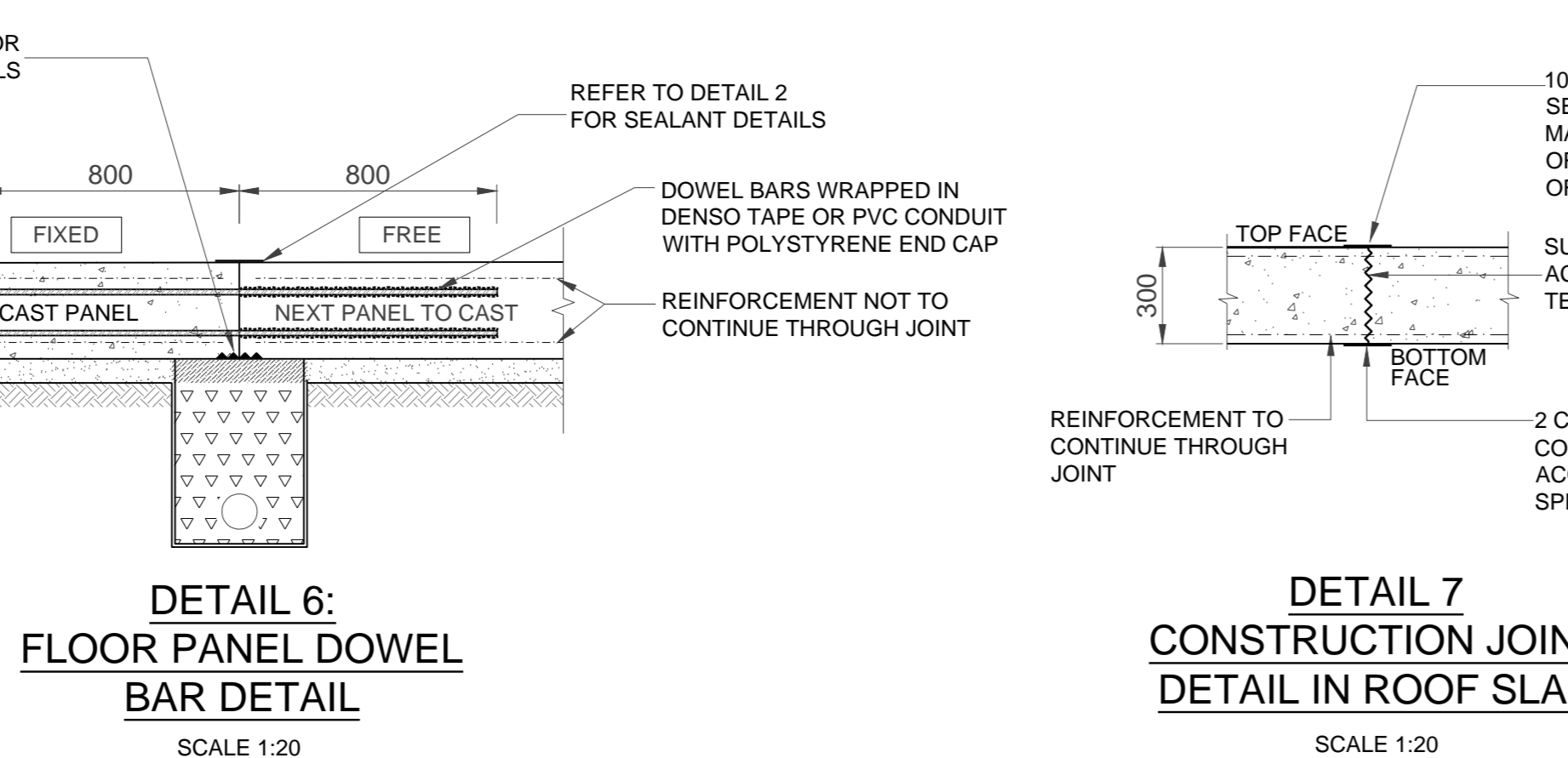
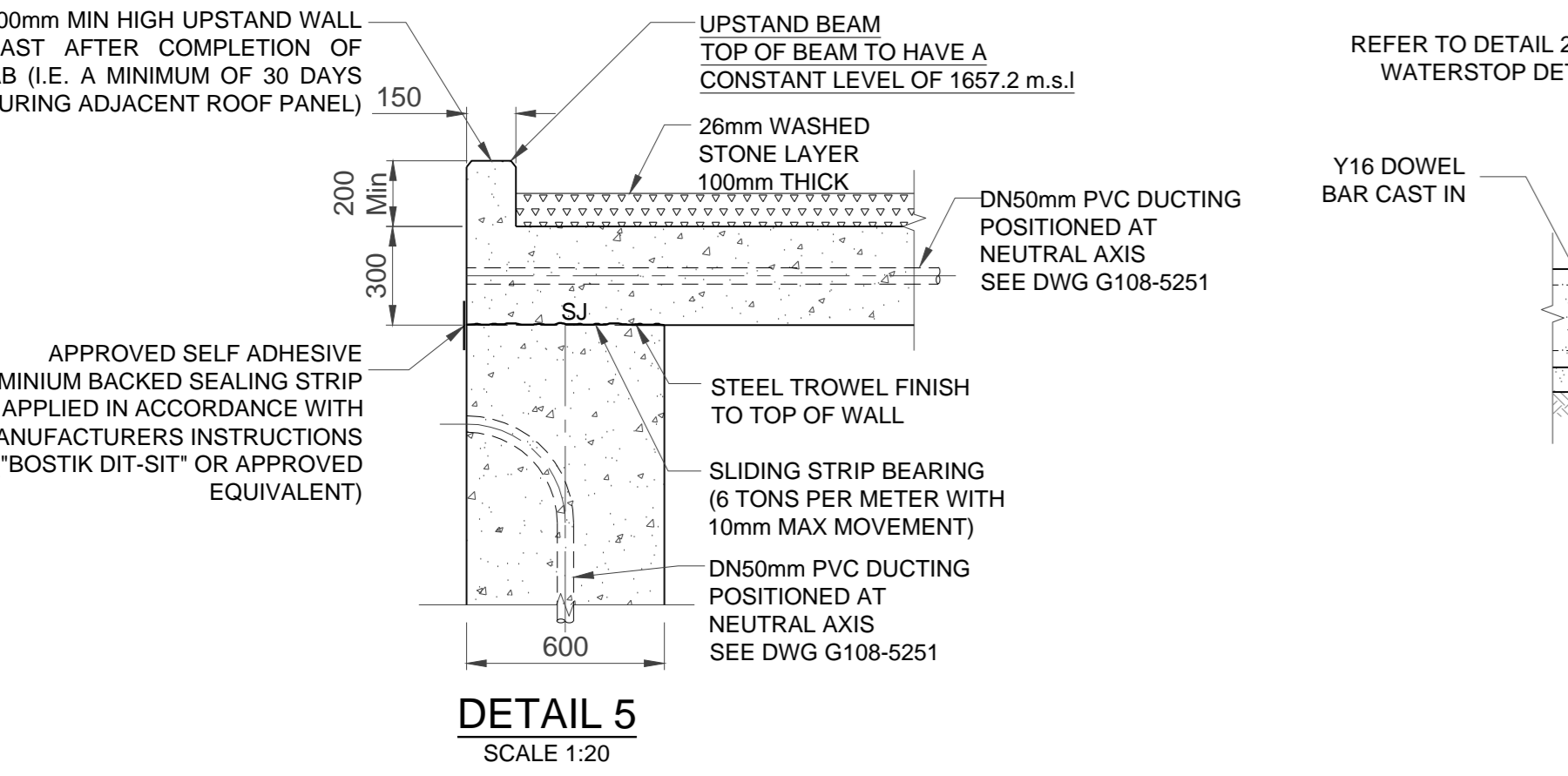
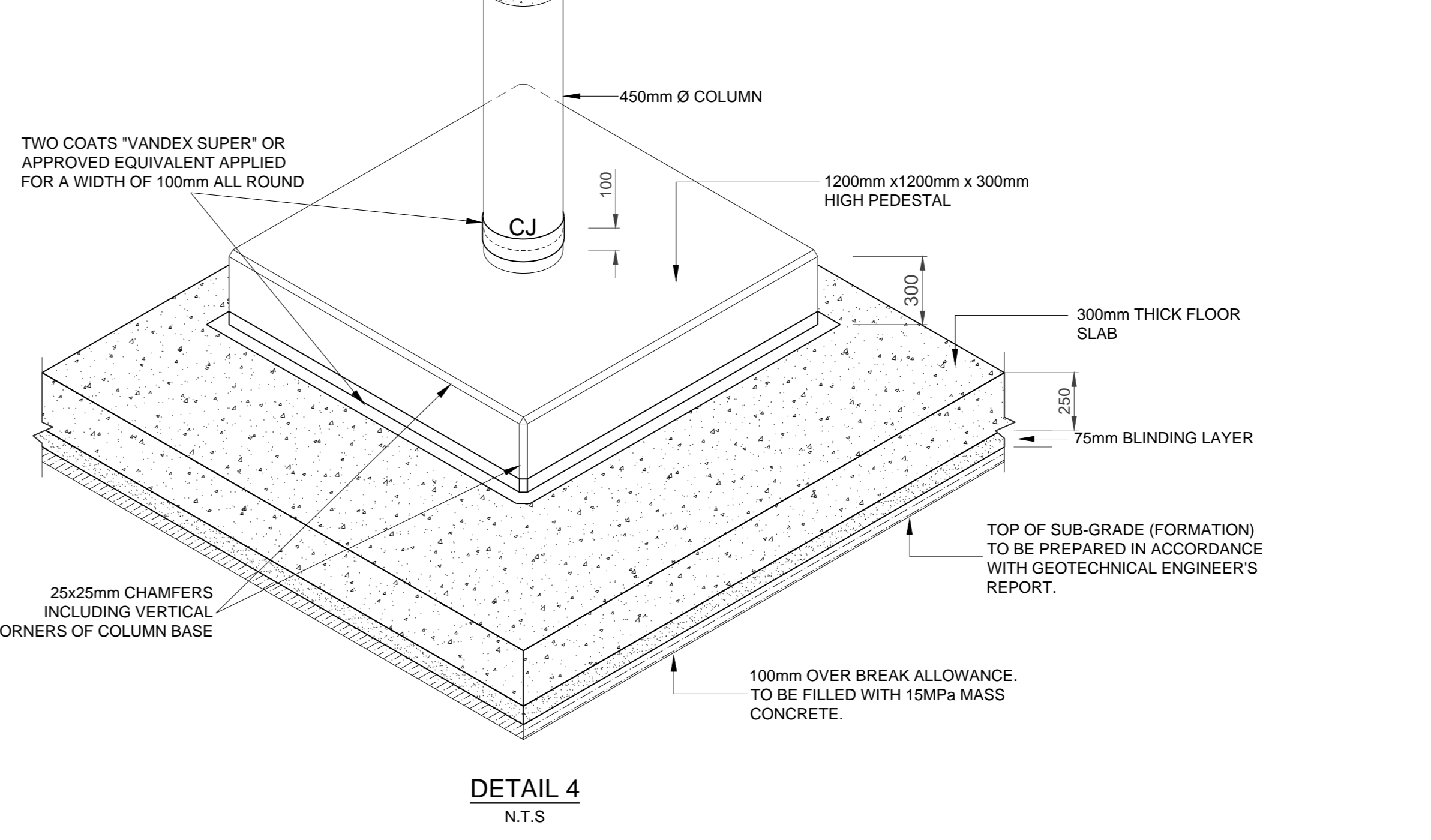
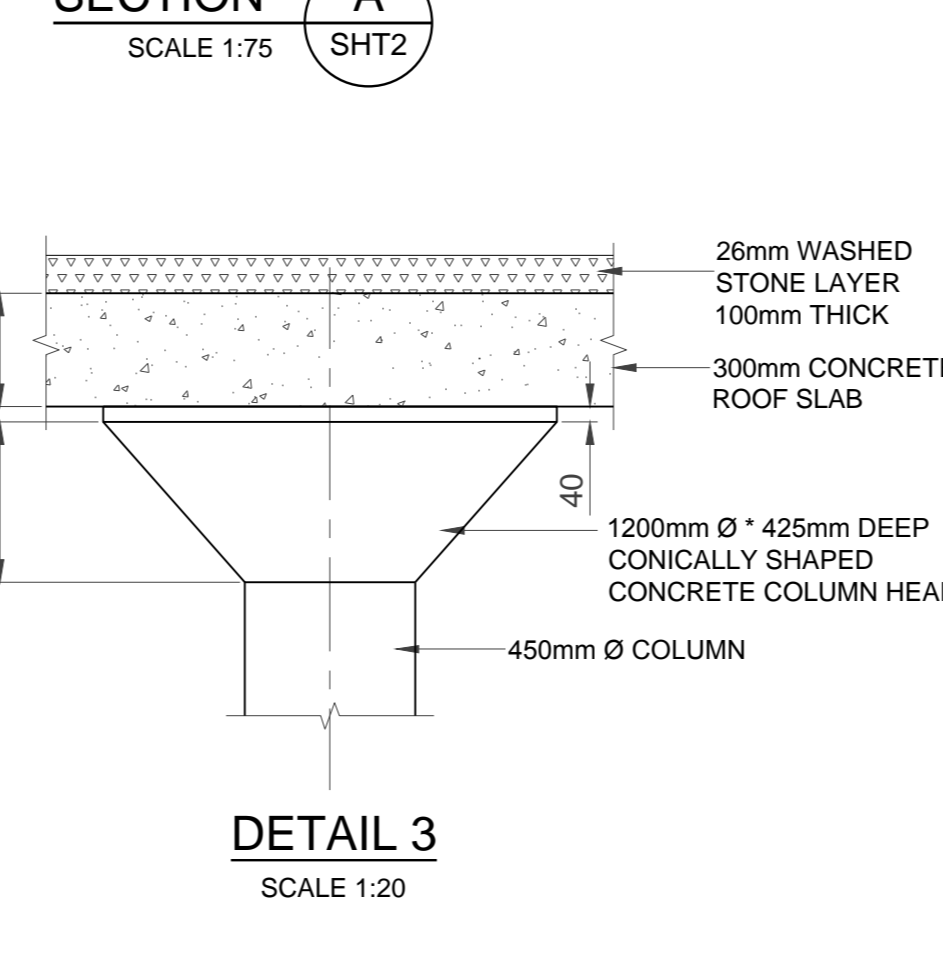
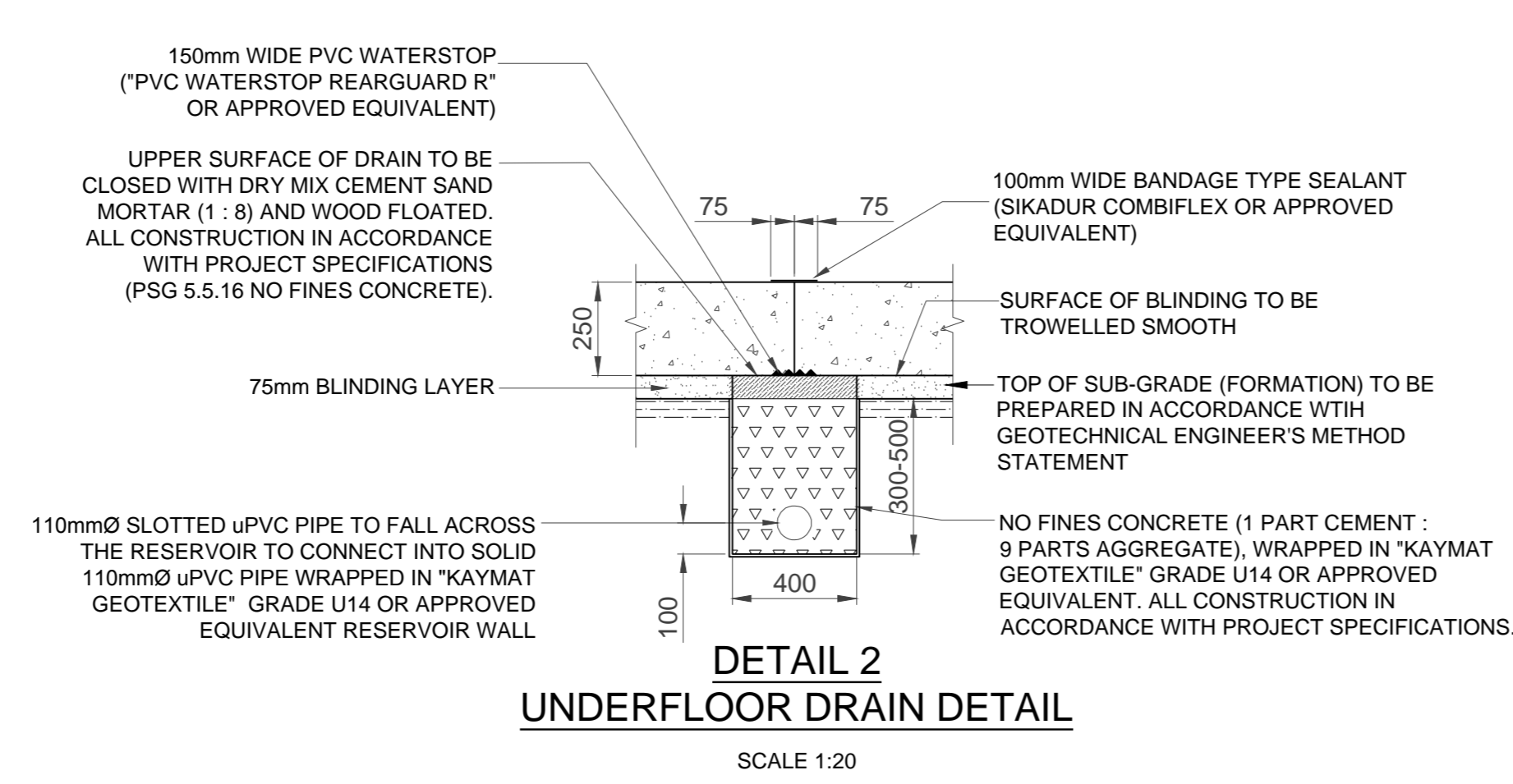
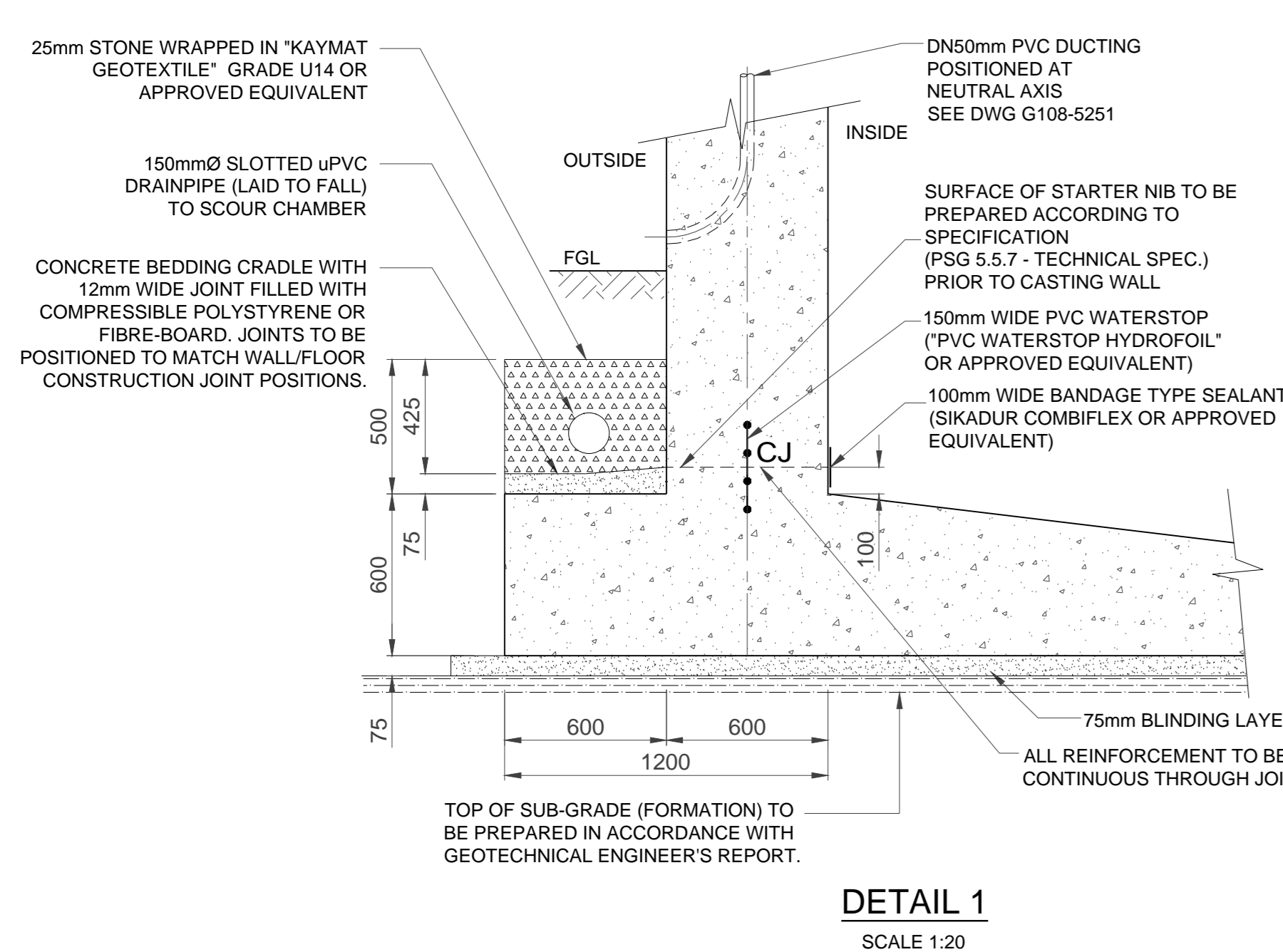
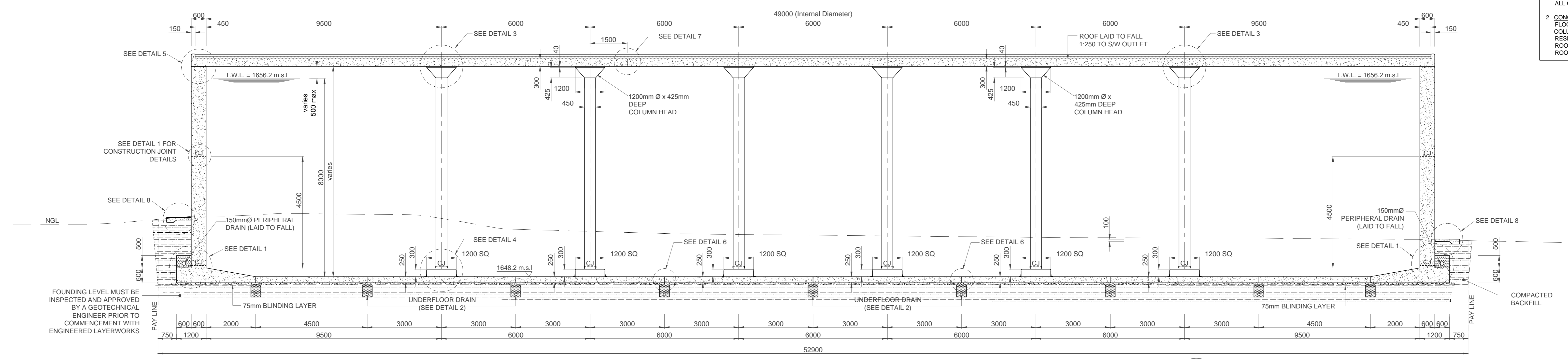
Section \_\_\_\_\_  
Drawing Title

**RESERVOIR SECTIONS**

Scales : AS SHOWN  
Designed : D.Ramghulam Date : June 2018  
Checked : A.Goorun Drawn : N. Adams

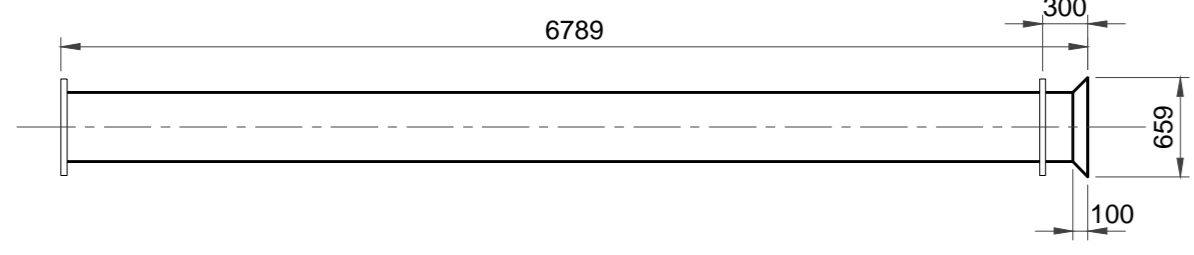
Area Engineer \_\_\_\_\_  
Manager \_\_\_\_\_  
Director (Water) \_\_\_\_\_

Executive Director \_\_\_\_\_  
Drawing No. \_\_\_\_\_ Sheet 4 Rev. 0

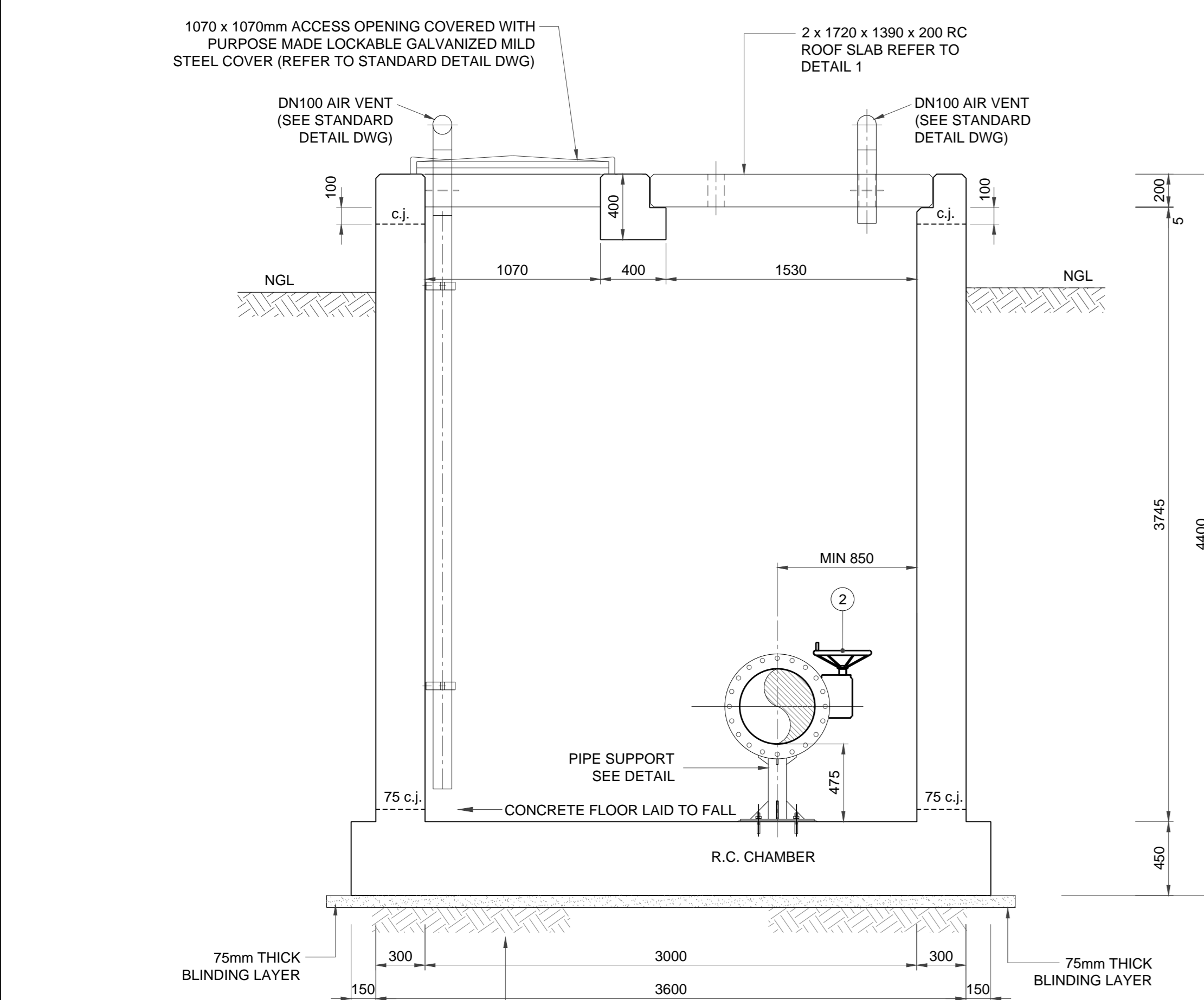
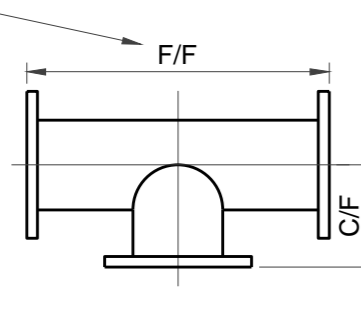


**FOR TENDER**

| PIPEWORK AND FITTINGS SCHEDULE (PN10) |   |                |         |        |         |                |
|---------------------------------------|---|----------------|---------|--------|---------|----------------|
| ITEM NO.                              | DESCRIPTION   | WALL THICKNESS | NO. OFF | LINING | COATING | GRADE OF STEEL |
| 1                                     | DN450 X 1000mm LONG SPOOL PIECE WITH PUDDLE FLANGE CENTRALLY PLACED, F.B.E. ONE FLANGE TO MATCH ITEM 2 (FINAL LENGTH TO BE DETERMINED ON SITE PRIOR TO FABRICATING)                                     | 4.5mm          | 1       | S.F.E  | S.F.E   | X42            |
| 2                                     | WAFER BUTTERFLY VALVE AND GEARBOX, PN10, HAND WHEEL - OPERATED, COMPLETE WITH NUTS, BOLTS, GASKETS, WASHERS & MATCHING FLANGES  | 4.5mm          | 1       | S.F.E  | S.F.E   | X42            |
| 3                                     | DN450 DISMANTLING JOINT   |                | 1       |        |         |                |
| 4                                     | DN450 X 680mm MIN LONG SPOOL PIECE WITH FLANGE PLACED 300mm FROM UPSTREAM END, F.O.E., OTHER END PLAIN ENDED, P.C., FLANGE TO MATCH ITEM 5 (FINAL LENGTH TO BE DETERMINED ON SITE PRIOR TO FABRICATING) | 4.5mm          | 1       | S.F.E  | S.F.E   | X42            |
| 5                                     | DOUBLE DOOR WAFER CHECK VALVE, COMPLETE WITH MATCHING FLANGES, NUTS, BOLTS, WASHERS & GASKETS, OR SIMILAR APPROVED.   |                | 1       |        |         |                |
| 6                                     | DN450 X 550mm LONG SPOOL PIECE, FLANGED BOTH END, ONE FLANGE TO MATCH ITEM 2 & THE OTHER FLANGE TO MATCH ITEM 5   | 4.5mm          | 1       | S.F.E  | S.F.E   | X42            |
| 7                                     | SPECIAL: DN450 X 6789mm STRAIGHT PIECE, F.O.E. WITH BELL MOUTH AND PUDDLE FLANGE AS DETAILED BELOW (CUT TO SUIT)  | 6.0mm          | 1       | S.F.E  | S.F.E   | X42            |

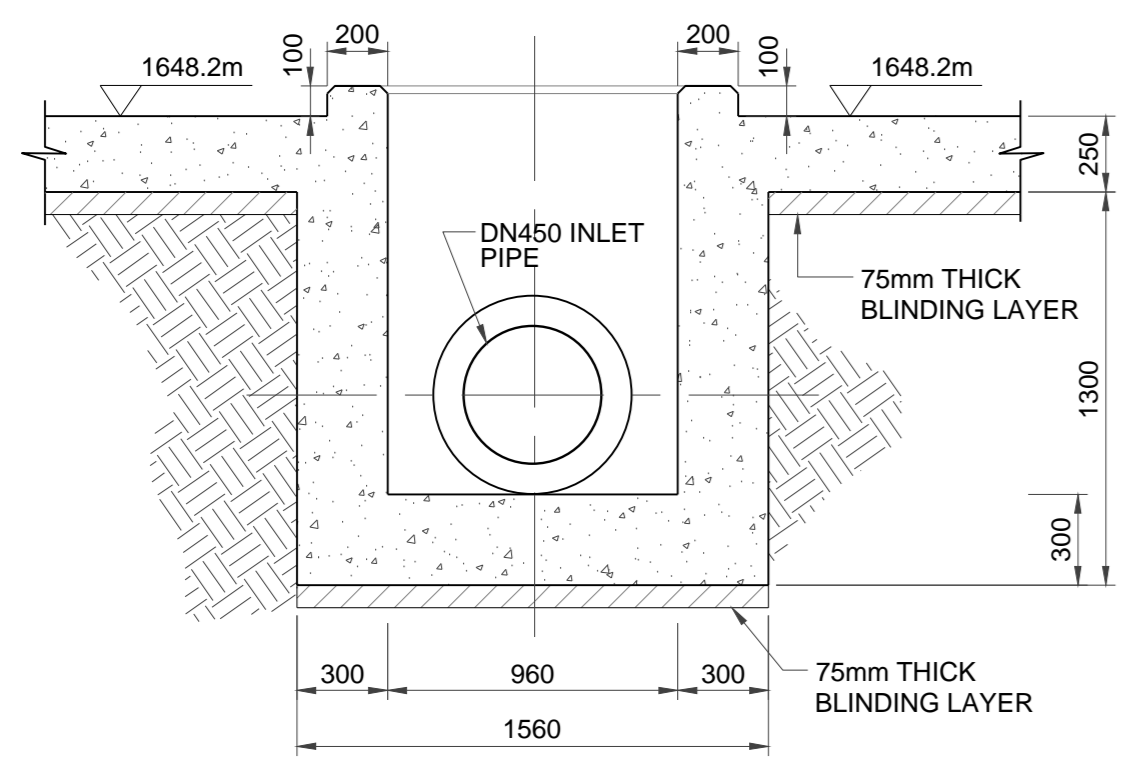


| ABBREVIATIONS:             |                               |
|----------------------------|-------------------------------|
| ID - INSIDE DIAMETER       | DI - DUCTILE IRON             |
| CI - CAST IRON             | F/F - FACE TO FACE DIMENSION  |
| DN - DIAMETER NOMINAL      | CF - CENTER TO FACE DIMENSION |
| OD - OUTSIDE DIAMETER      | FOE - FLANGED ONE END         |
| MS - MILD STEEL            | BEF - BOTH ENDS FLANGED       |
| SS - STAINLESS STEEL       | FAR - FLANGED ALL ROUND       |
| FRL - FINAL ROAD LEVEL     | LRB - LONG RADIUS BEND        |
| SFE - SOLVENT FREE EPOXY   | SRB - SHORT RADIUS BEND       |
| CMIL - CEMENT MORTAR LINED | NGL - NATURAL GROUND LEVEL    |
| SNT - SINKAKOTE            | HDGMS - HOT DIPPED GALVANIZED |
| RSN - RILSAN               | MILD STEEL                    |
|                            | P.C. - PLAIN ENDED COATED     |

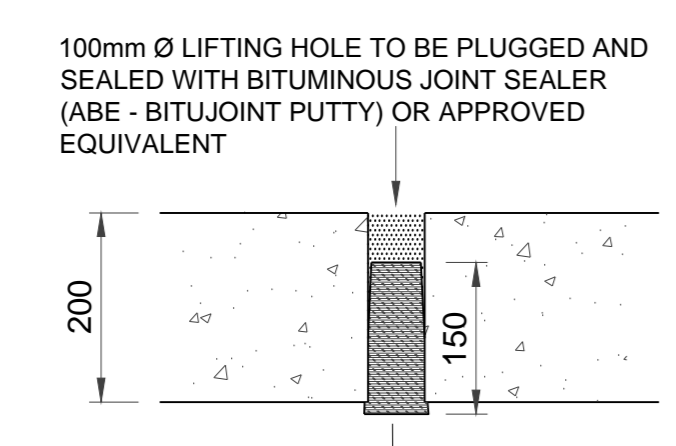


SECTION B  
SCALE 1:25

FOUNDATION CONDITIONS ARE TO BE ASSESSED BY THE ENGINEER PRIOR TO CASTING OF THE BLINDING LAYER.

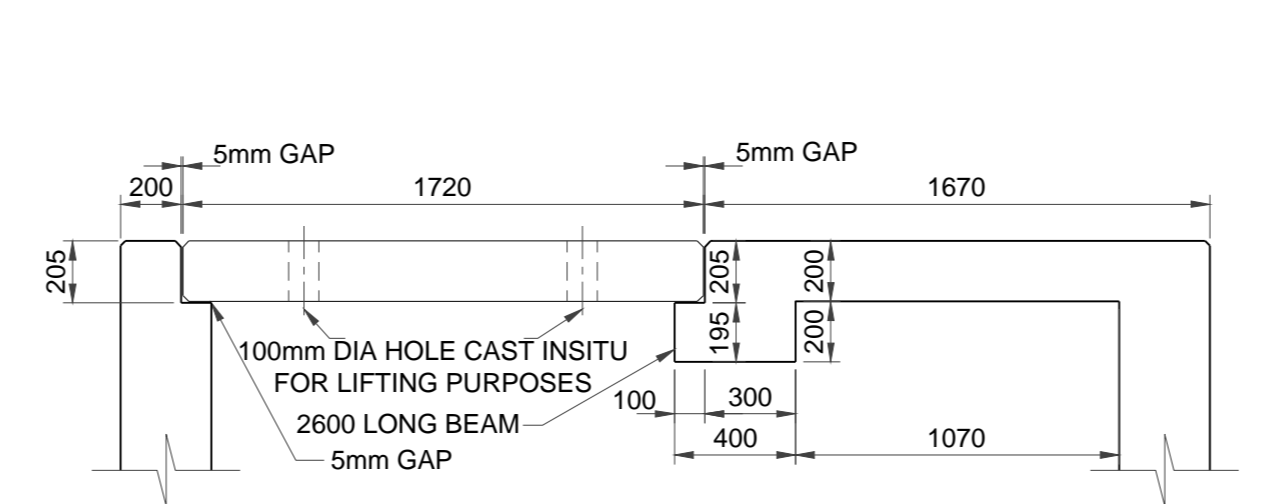


SECTION C  
SCALE 1:25

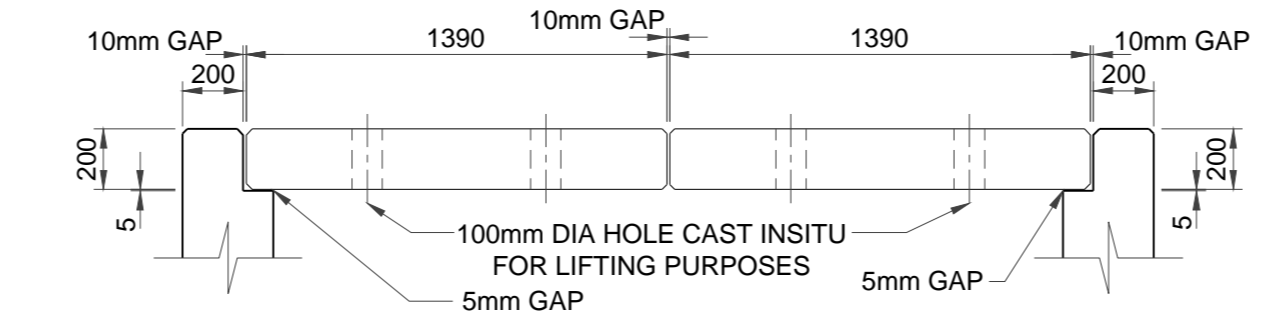


DETAIL A  
N.T.S.

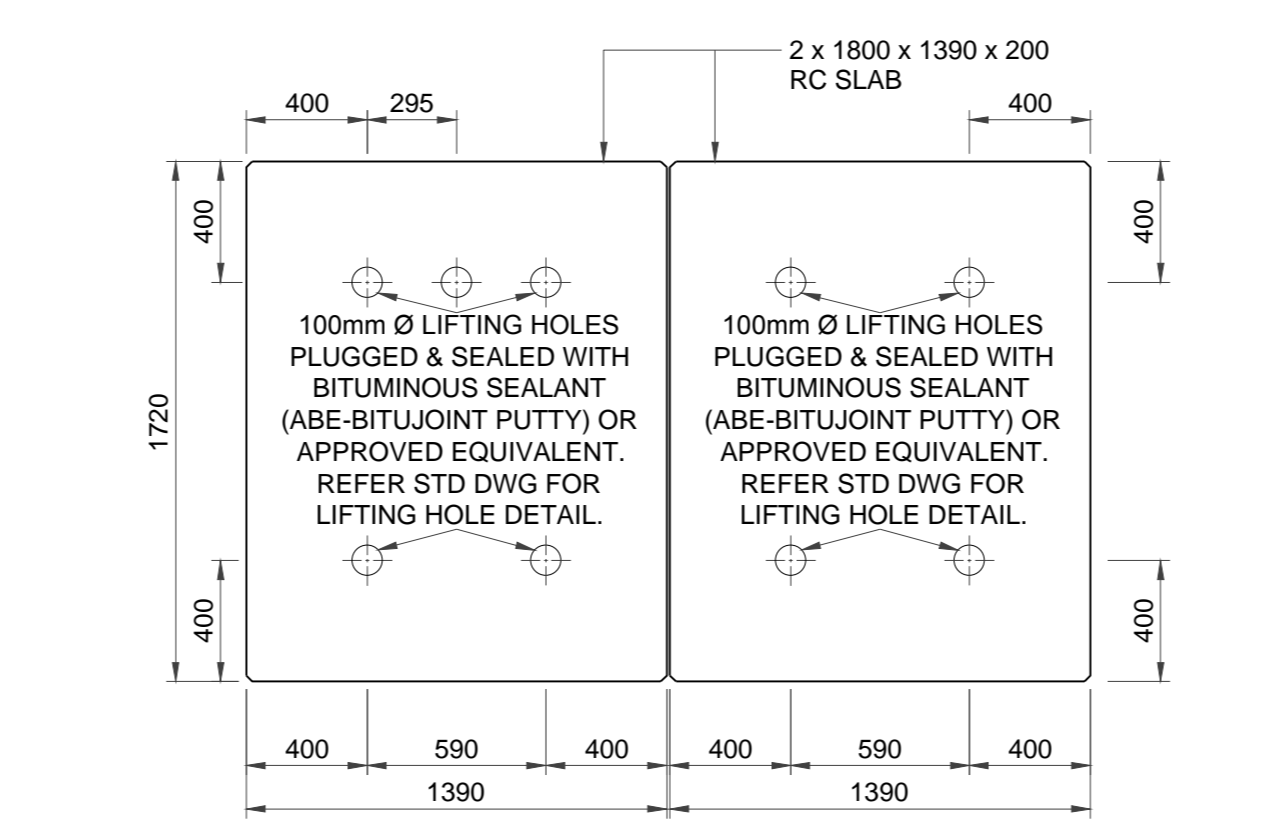
- GENERAL NOTES**
- PIPEWORK**
- ALL PIPEWORK TO BE MILD STEEL UNLESS OTHERWISE STATED.
  - THE CONTRACTOR SHALL VERIFY THE DIMENSIONS OF ALL PIPEWORK AND ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO FABRICATION.
  - ALL PIPES GREATER THAN AND INCLUDING DN100, FITTED TO EQUIPMENT OR FITTINGS, OR 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 TO BE 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 CROCH PLATES TO BE MANUFACTURED FROM MINIMUM GRADE X42 STEEL AND WELDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
  - ALL BENDS TO BE FABRICATED AND DIMENSIONED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
  - BACKFILL MATERIAL TO BE COMPACTED TO 95% MOD. AASHTO IN MAX. 150mm LAYERS & 97% MOD AASHTO IN 150mm LAYERS WHERE THE PIPE IS LOCATED UNDER A PAVED ROAD SURFACE.
- CONCRETE**
- ALL EXPOSED EDGES TO BE CHAMFERED 25x25.
  - MINIMUM COVER TO ALL REINFORCING SHALL BE 50mm.
  - NO REINFORCEMENT SHALL BE FIXED CLOSER THAN 200mm TO THE STEEL PIPE.
  - CONSTRUCTION JOINTS TO BE WELL CLEANED & SCABBLED TO EXPOSE FRESH AGGREGATE AND THOROUGHLY WETTED BEFORE THE NEXT LIFT IS POURED.
  - FINISHES
    - EXTERNAL WALLS UNEXPOSED : F1 FINISH
    - EXTERNAL WALLS EXPOSED : F2 FINISH
    - INTERNAL WALLS : F2 FINISH
    - FLOOR : U4 FINISH
  - WHERE APPLICABLE, AIR VENTS, LIFTING HOLES, LIFTING HOOKS, STEP IRONS AND DI COVER & FRAME ARE TO BE PRE-INSTALLED AT THE MANUFACTURER PRIOR TO DELIVERY ON SITE.



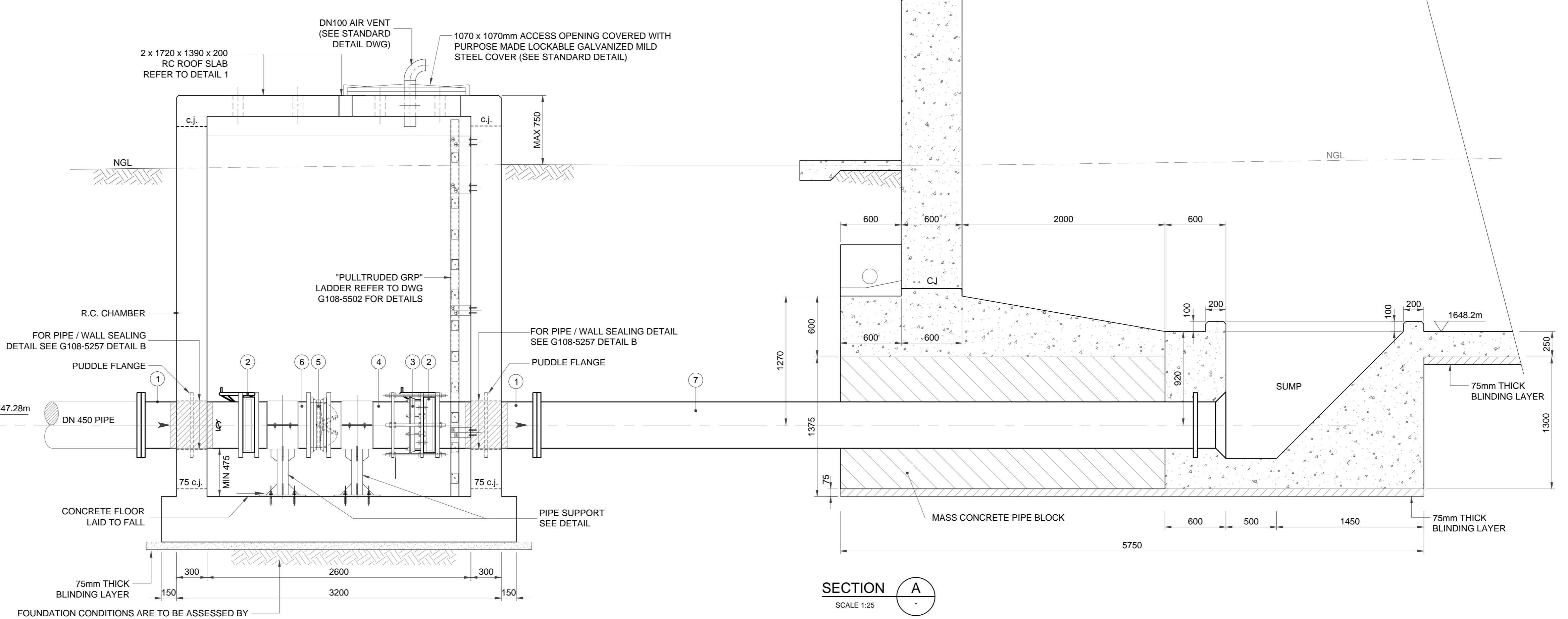
PART SECTION C-C  
THROUGH ROOF SLAB



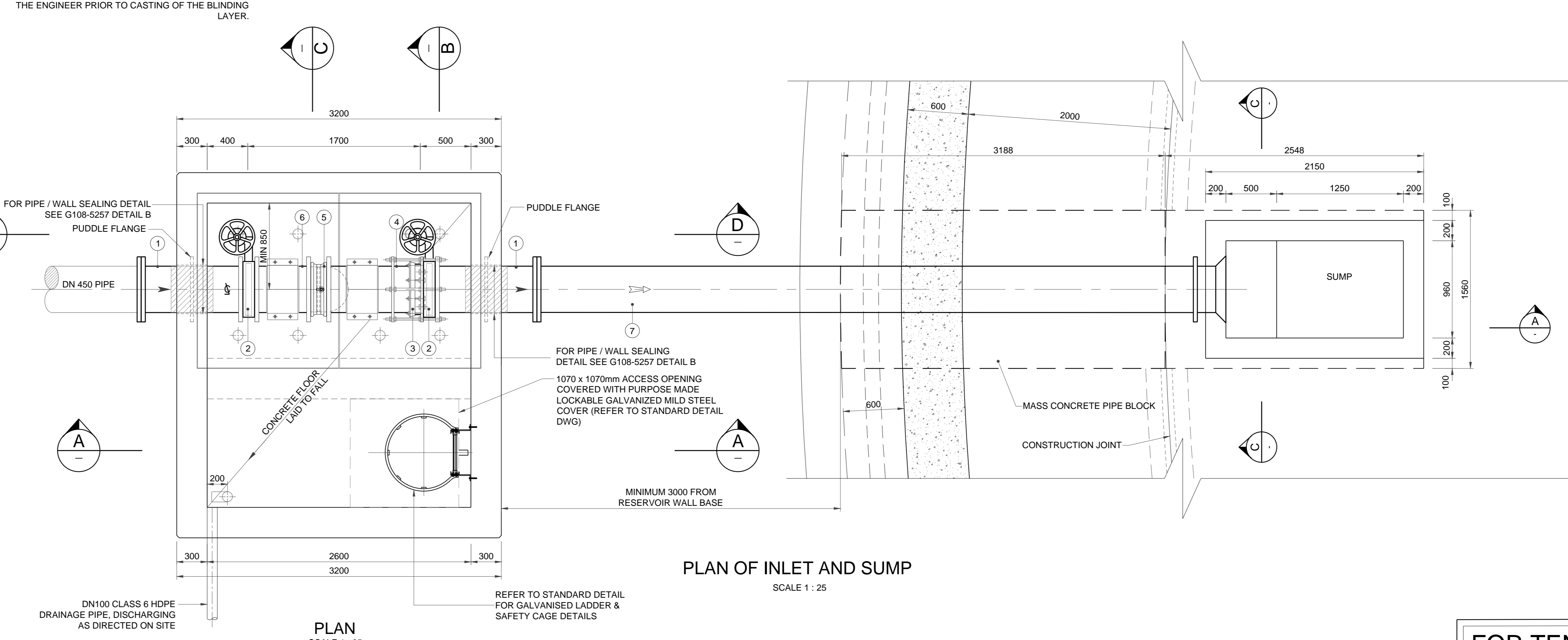
PART SECTION D-D  
THROUGH ROOF SLAB



PLAN  
DETAIL 1  
ROOF SLAB DETAIL  
(ISOLATING VALVE CHAMBER)  
SCALE 1:25



SECTION A  
SCALE 1:25



PLAN OF INLET AND SUMP  
SCALE 1:25

CLIENT:

REDUCED PLAN USE SCALE BELOW

LEGEND

EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.

SEWERS AND M.H'S

STORM WATER DRAINS AND M.H'S

WATER MAINS AND VALVES

ELECTRICITY CABLES

G.P.O TELEPHONE CABLES

OIL PIPELINES

CONSULTANT:

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West Way Office Park E-mail: info@naiduconsulting.com  
Westville, Durban

DRAWING No.: G108-52-5253 REV. 0

**FOR TENDER**

| Ref Drg. | Description |
|----------|-------------|
|          |             |

| Revision | Date    | Description       |
|----------|---------|-------------------|
| 0        | 01-2019 | ISSUED FOR TENDER |

NOTE: No construction work to commence until land and services acquisitions have been completed.

Acquisitions completed:

| Date | Engineer | NORTH | POINT |
|------|----------|-------|-------|
|      |          |       |       |

UNDERGROUND SERVICES CHECKED

| SERVICE         | DATE | SIGNATURE |
|-----------------|------|-----------|
| S.W DRAINS      |      |           |
| SEWERS          |      |           |
| WATERMANS       |      |           |
| C.P.O CABLES    |      |           |
| ELECTRIC CABLES |      |           |
| S.A.R CABLES    |      |           |
| E.S.C CABLES    |      |           |
| OIL PIPE LINE   |      |           |

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, watermains and construction services. Wherever possible these must be located before work begins.

Contract No. \_\_\_\_\_

Project Title

**MASETJABA RESERVOIR**  
CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS

Section

Drawing Title

**DN450 INLET CHAMBER AND SUMP**

Scales : AS SHOWN  
Designed : D.Ramghulam Date : June 2018  
Checked : A.Goorun Drawn : N. Adams

Area Engineer \_\_\_\_\_

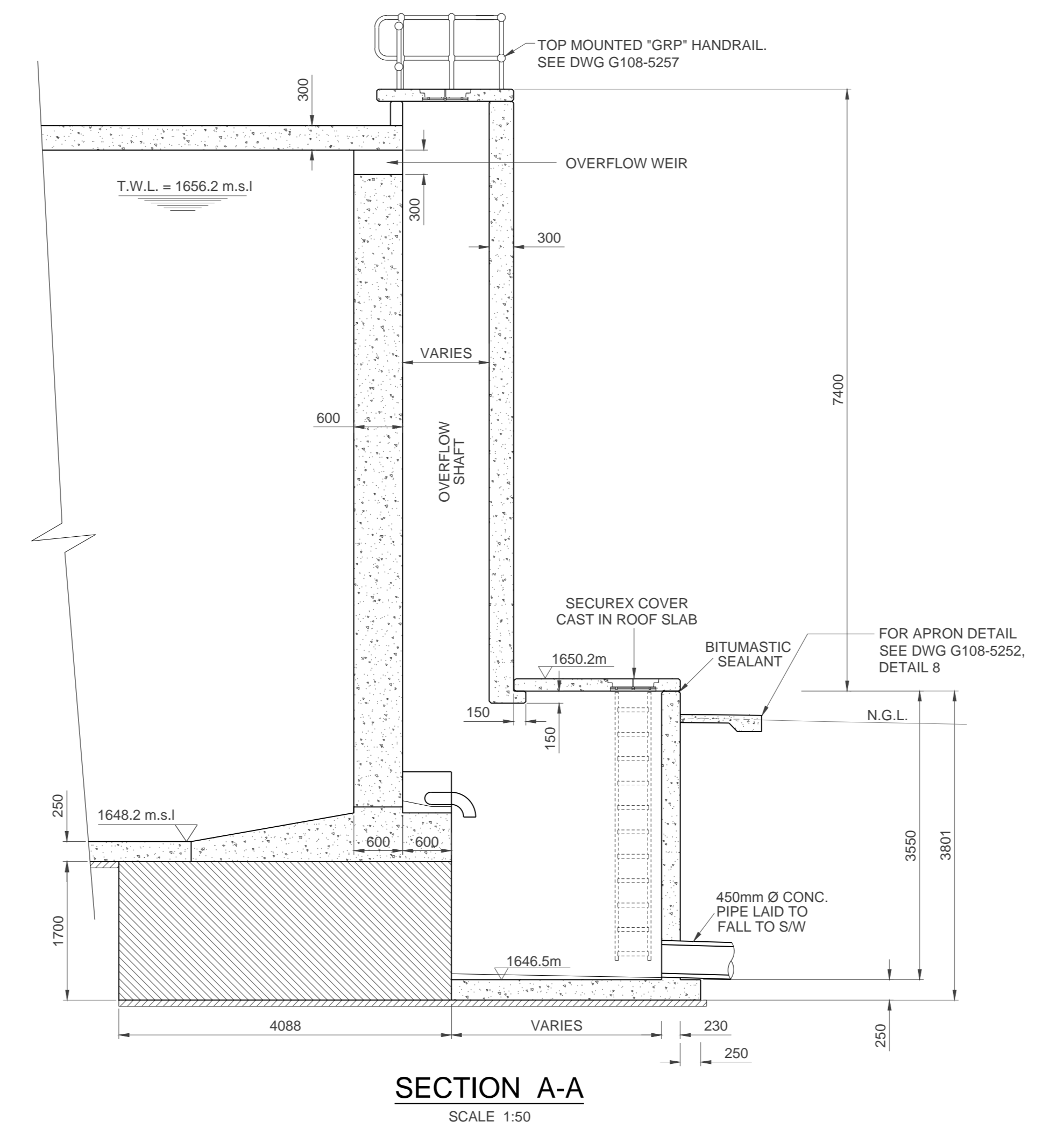
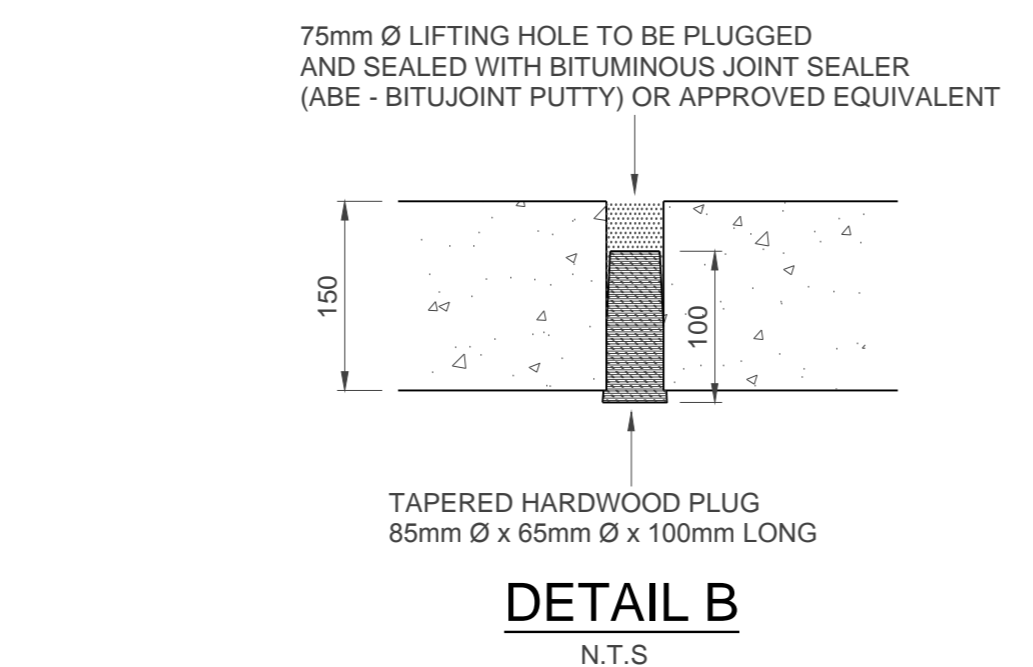
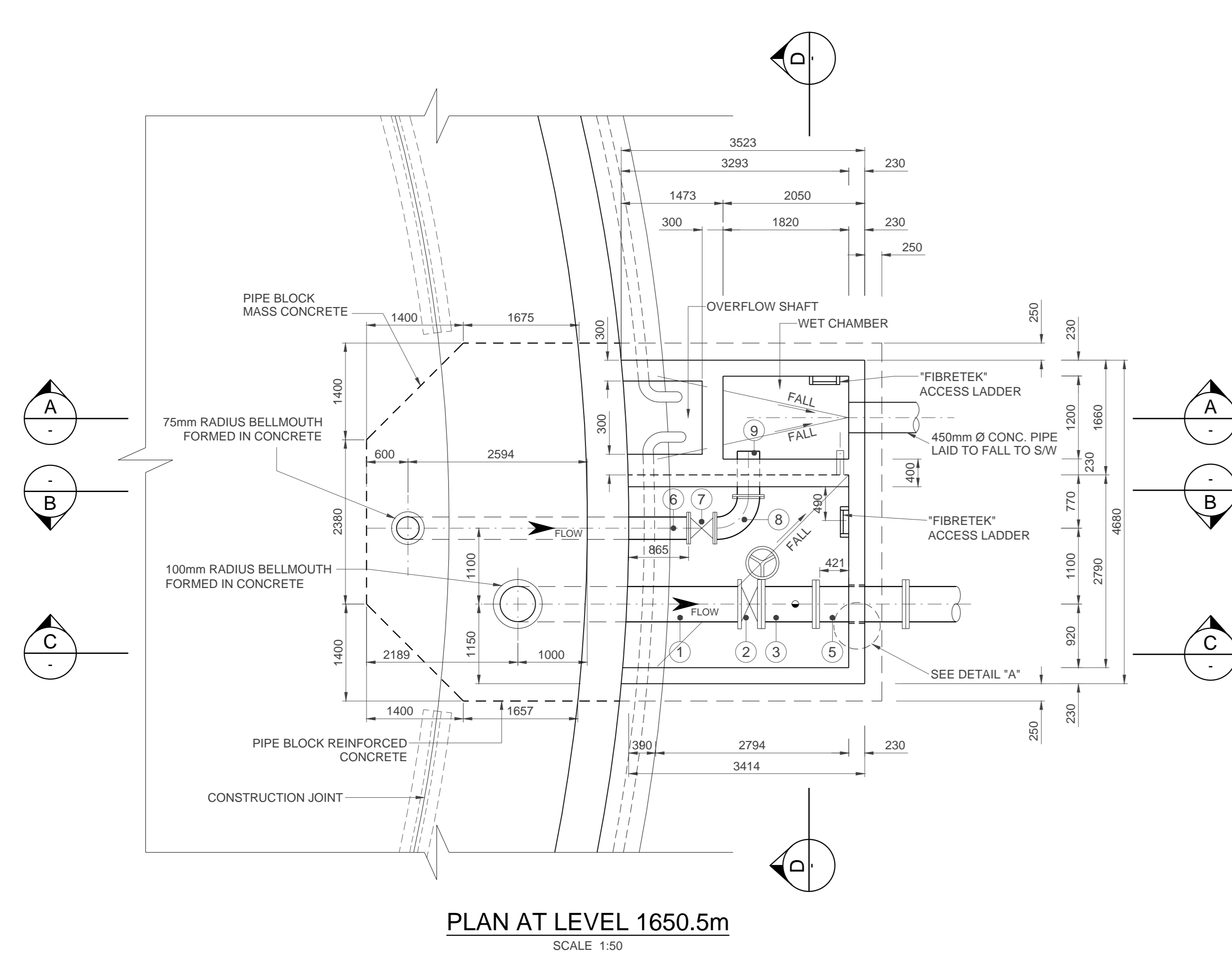
Manager \_\_\_\_\_

Director (Water) \_\_\_\_\_

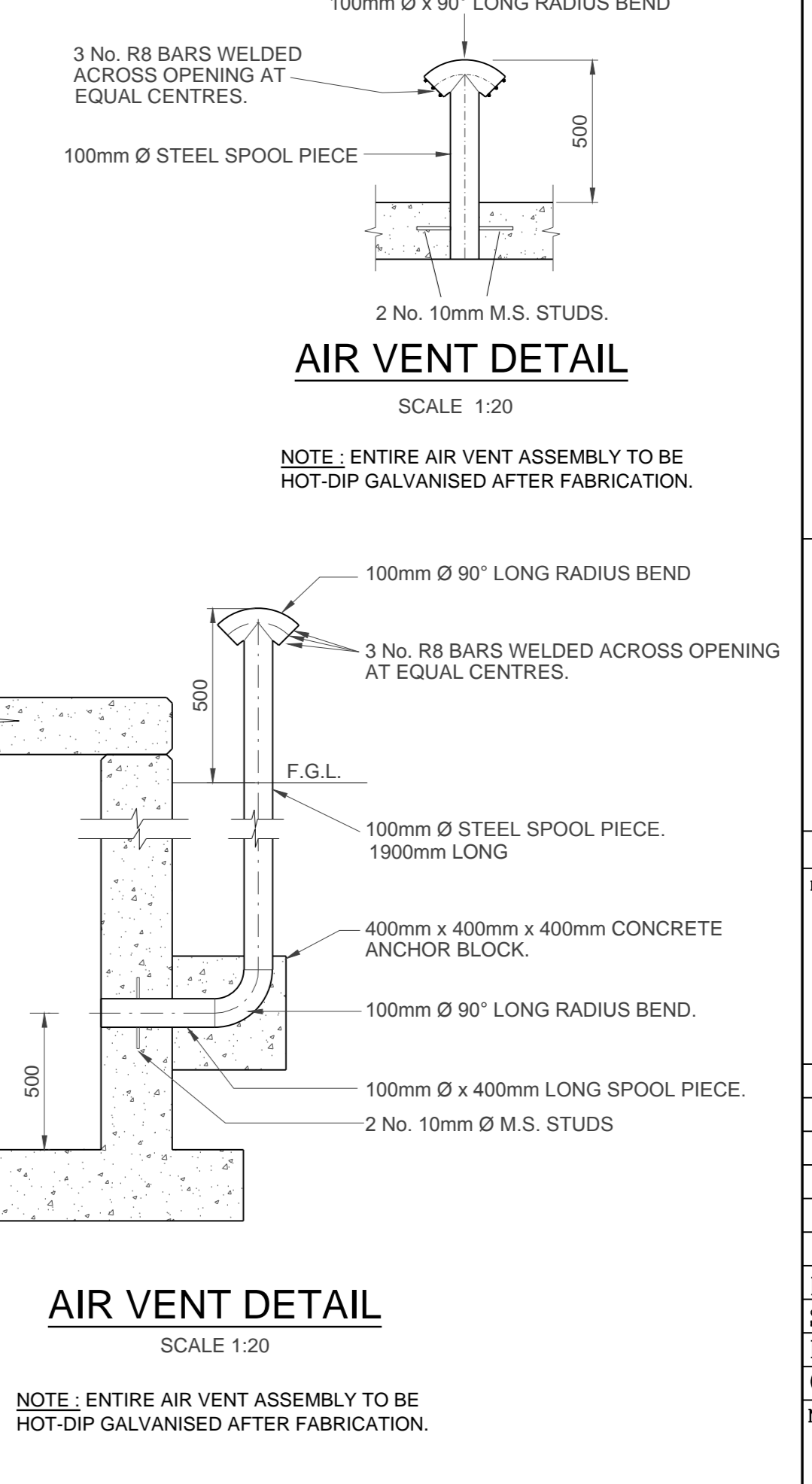
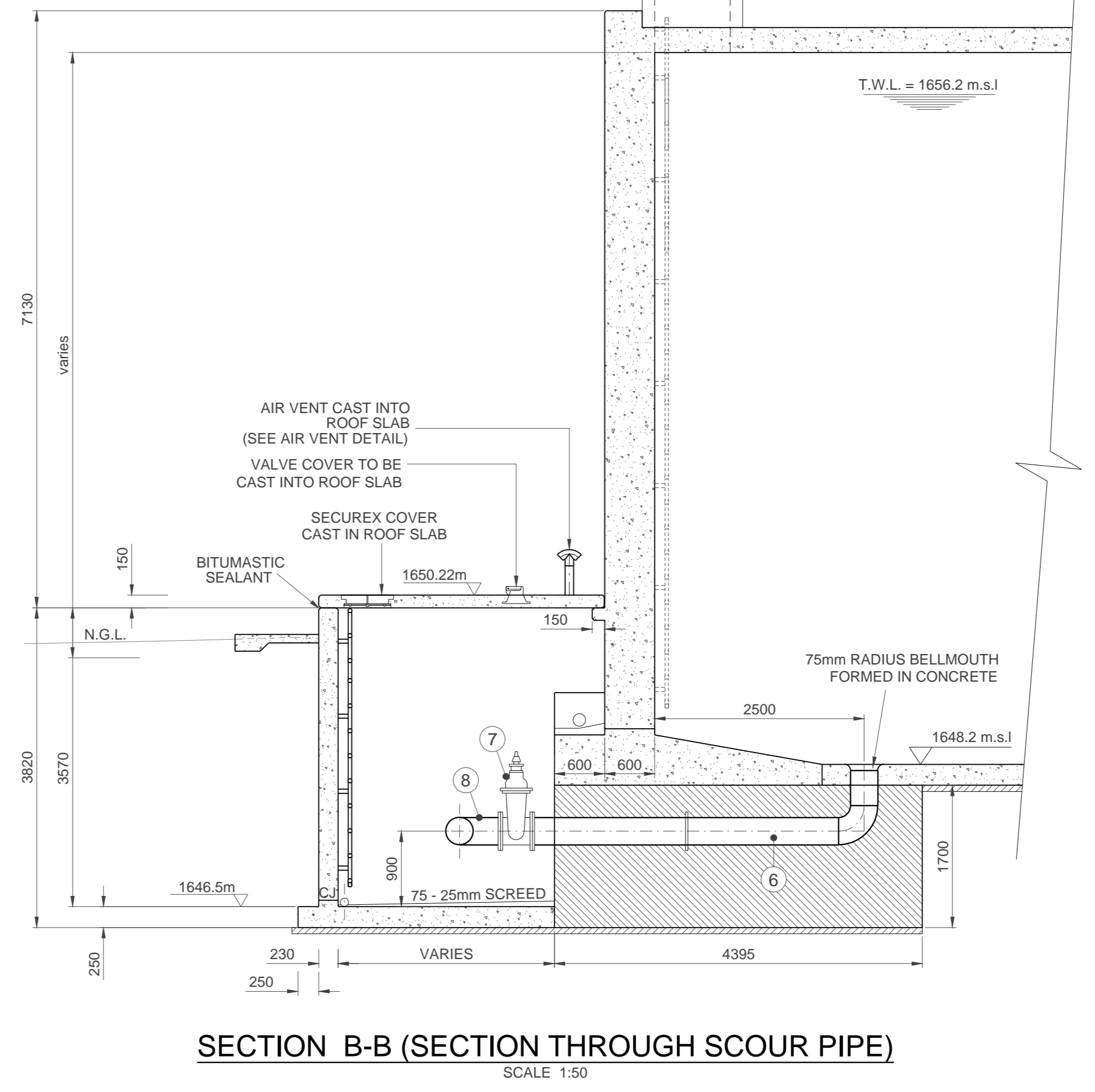
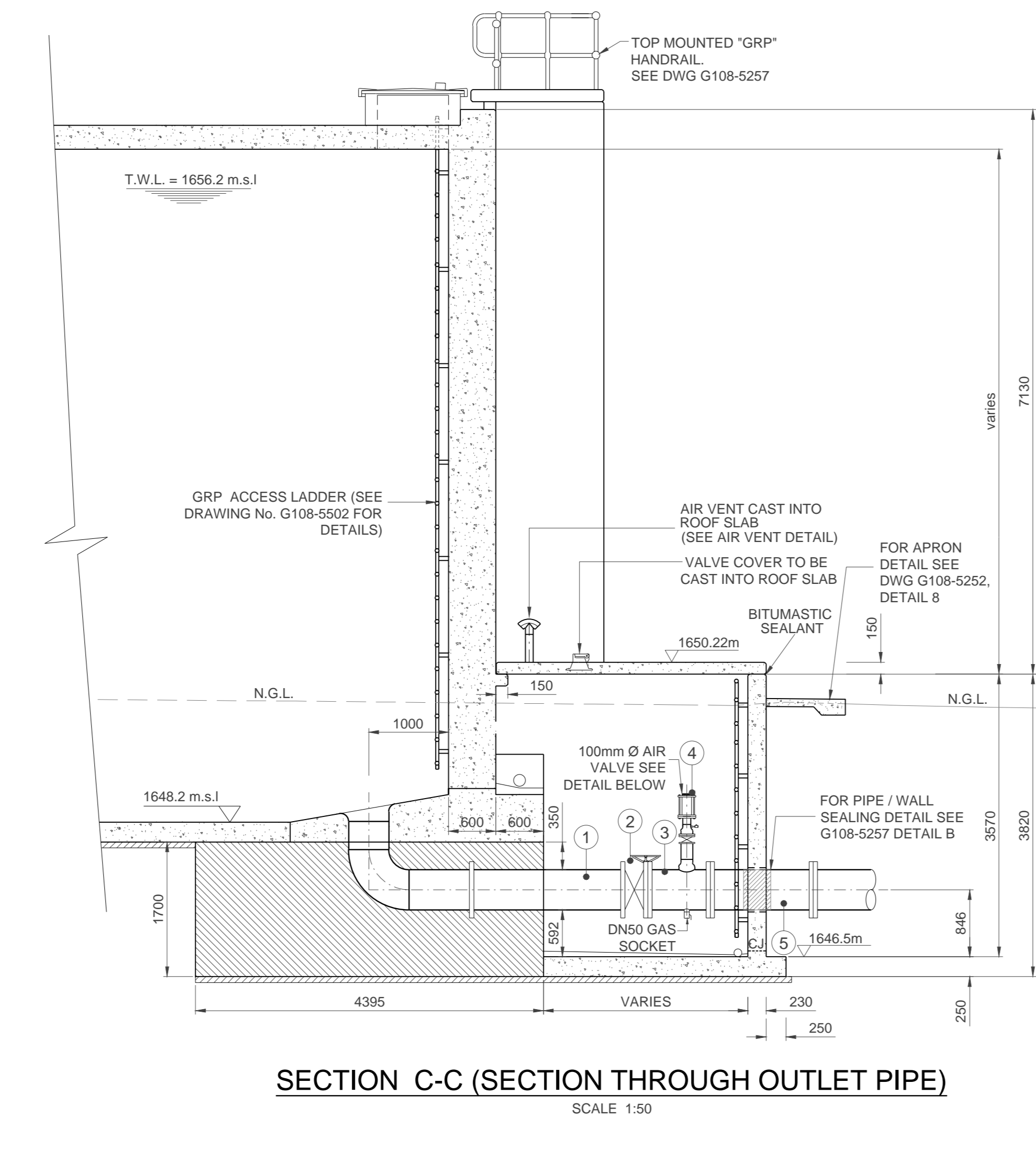
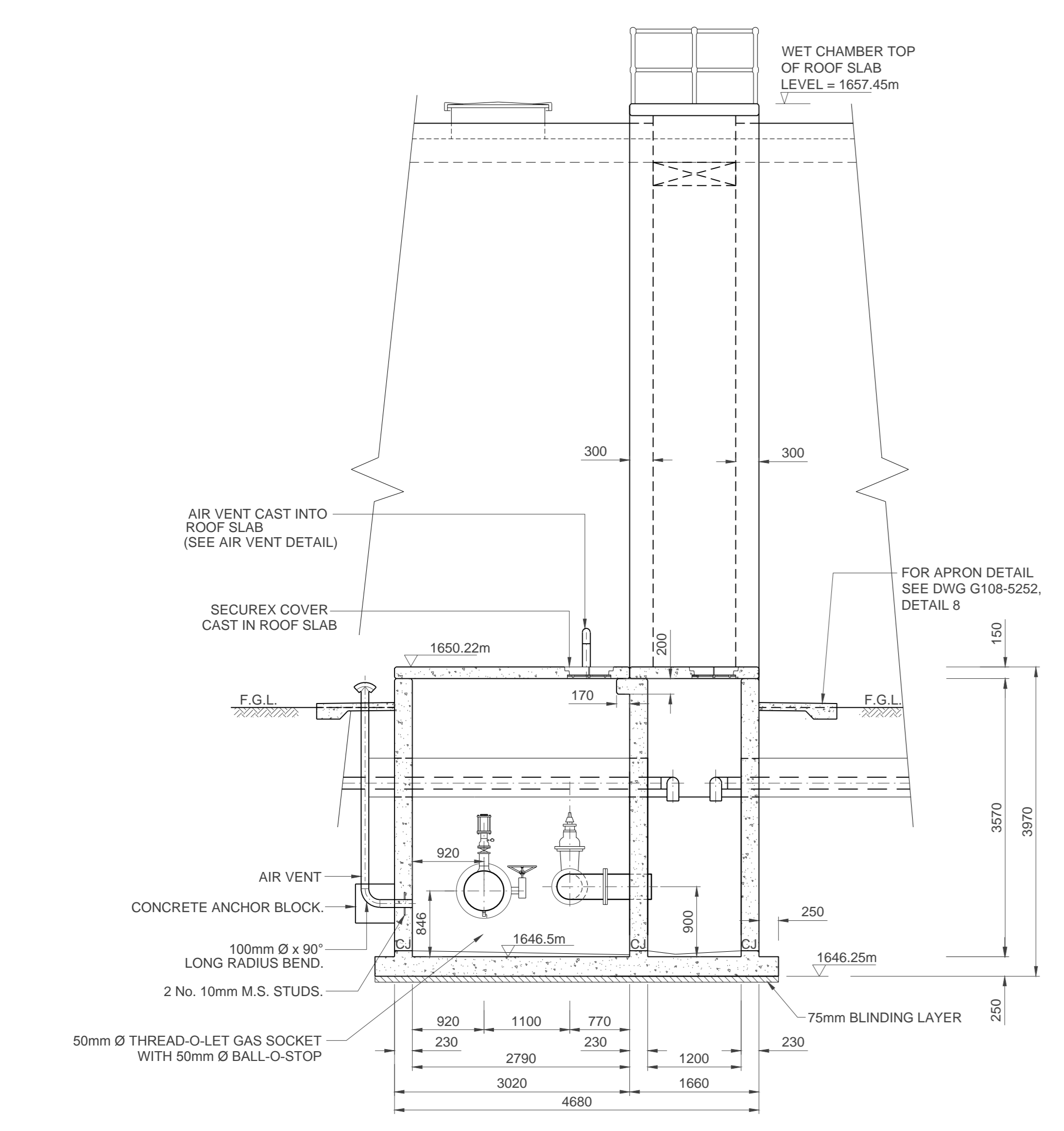
Executive Director \_\_\_\_\_

Drawing No. \_\_\_\_\_ Sheet 5 Rev. 0

**FOR TENDER**



- GENERAL NOTES**
- PIPEWORK**
- ALL PIPEWORK TO BE 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 TO BE 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 CROUCH PLATES TO BE 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 TO BE FABRICATED AND DIMENSIONED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
  - FOR ALL COLLAR PLATES, PRE-DRILL 2 x 5mm Ø HOLE. UPON COMPLETION OF FILLET WELDING, WELD HOLES CLOSED.
- CONCRETE**
- ALL EXPOSED EDGES TO BE CHAMFERED 50x50.
  - MINIMUM COVER TO ALL REINFORCING SHALL BE 50mm.
  - NO REINFORCEMENT SHALL BE FIXED CLOSER THAN 200mm TO THE STEEL PIPE.
  - CONSTRUCTION JOINTS TO BE WELL CLEANED & SCABBLED TO EXPOSE FRESH AGGREGATE AND THOROUGHLY WETTED BEFORE THE NEXT LIFT IS POURED.
- CONCRETE GRADE**
- BLINDING : 15/19
  - CONCRETE : 35/19 UNLESS OTHERWISE STATED (CHAMBERS ONLY)
  - SCREED : 1:3 (CEMENT/SAND)
- WHERE APPLICABLE, AIR VENTS, LIFTING HOLES, LIFTING HOOKS, STEP IRONS AND DI COVER & FRAME ARE TO BE PRE-INSTALLED AT THE MANUFACTURER PRIOR TO DELIVERY ON SITE.



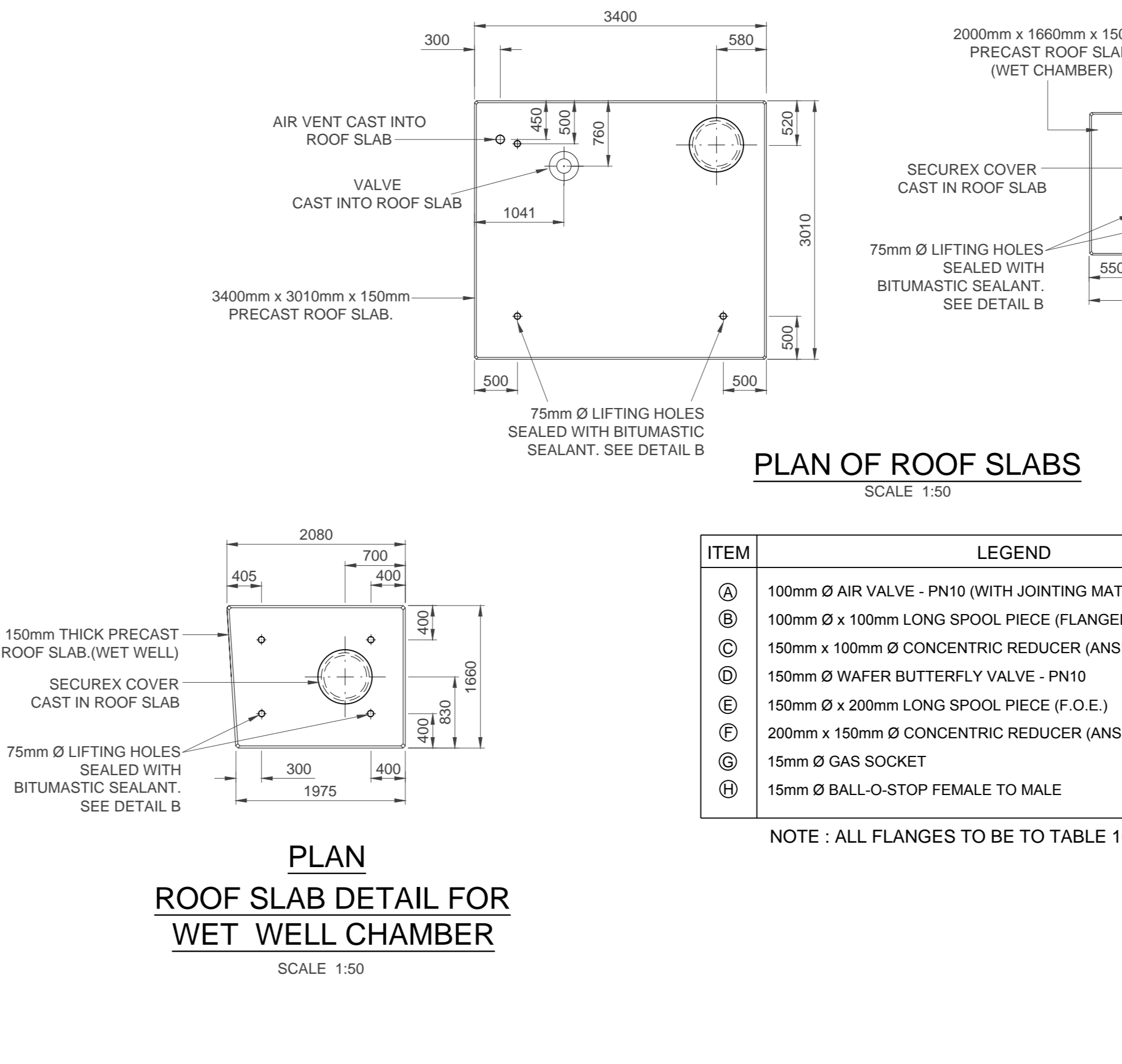
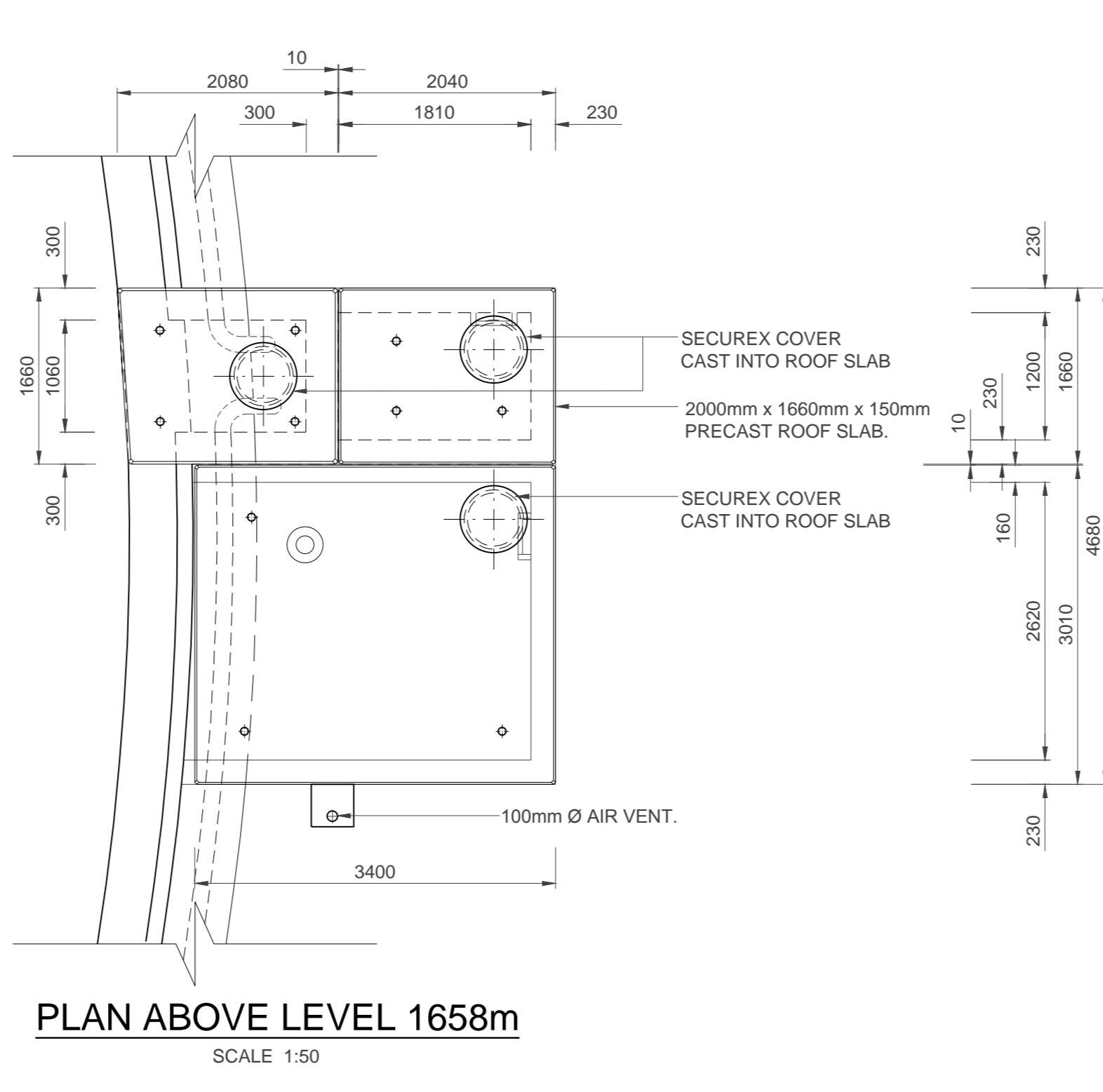
**PIPEWORK SCHEDULE - PN10**

| No. | DESCRIPTION   | WALL THICKNESS | NO. OFF | LINING | COATING | GRADE OF STEEL |
|-----|---|----------------|---------|--------|---------|----------------|
| 1   | SPECIAL DN500 x 90° LONG RADIUS BEND WITH DN500 x 2730mm LONG SPOOL PIECE WITH PUDDLE FLANGE AS SHOWN, WELDED TO ONE END AND A DN500 x 260mm LONG SPOOL PIECE WELDED TO OTHER END, F.O.E. FLANGE TO MATCH ITEM 2, OTHER END PLAIN END COATED. | 6.0            | 1       | S.F.E. | S.F.E.  | X42            |
| 2   | DN500 WAFER BUTTERFLY VALVE, (E.P.D.M. LINED) TYPE ISORIA BY AMRI OR SIMILAR APPROVED, COMPLETE WITH HAND WHEEL, NUTS, BOLTS, WASHERS AND GASKETS.  |                | 1       |        |         |                |
| 3   | SPECIAL DN500 x 789mm LONG F/F STRAIGHT PIECE, F.B.E. ONE FLANGE TO MATCH ITEM 2, PLACE 50mm Ø THREAD-O-LET GAS SOCKET WITH 50mm Ø BALL-O-STOP  | 4.5            | 1       | S.F.E. | S.F.E.  | X42            |
| 4   | DN100 AIR VALVE (REFER TO AIR VALVE DETAIL)   |                | 1       |        |         |                |
| 5   | DN500 x 1300mm LONG F/F STRAIGHT PIECE, F.B.E.  | 4.5            | 1       | S.F.E. | S.F.E.  | X42            |
| 6   | SPECIAL DN300 x 90° LONG RADIUS BEND WITH DN300 x 3660mm LONG SPOOL PIECE WITH PUDDLE FLANGE AS SHOWN, WELDED TO ONE END AND A DN300 x 420mm LONG SPOOL PIECE WELDED TO OTHER END, F.O.E. FLANGE TO MATCH ITEM 7, OTHER END PLAIN END COATED. | 4.5            | 1       | S.F.E. | S.F.E.  | X42            |
| 7   | DN 300mm FLANGED WEDGE GATE VALVE   |                | 1       |        |         |                |
| 8   | DN300 x 90° LONG RADIUS BEND F.B.E. ONE TO MATCH ITEM.  | 4.5            | 1       | S.F.E. | S.F.E.  | X42            |
| 9   | DN300 x 600mm LONG F/F STRAIGHT PIECE, F.O.E.   | 4.5            | 1       | S.F.E. | S.F.E.  | X42            |

NOTE: ALL FLANGES TO BE TO TABLE 1600/3 (SABS 1123 - 2011)

**ABBREVIATIONS:**

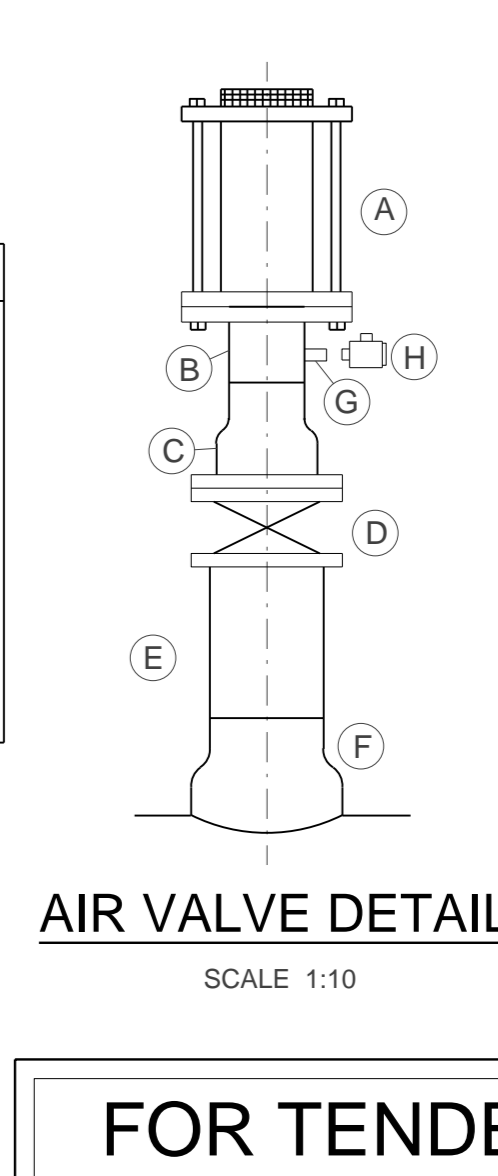
- DN - DIAMETER NOMINAL
- OD - OUTSIDE DIAMETER
- ID - INSIDE DIAMETER
- M.S. - MILD STEEL
- S.S. - STAINLESS STEEL
- H.D.G.M.S. - HOT DIPPED GALVANIZED MILD STEEL
- G.M.S. - GALVANIZED MILD STEEL
- C.I. - CAST IRON
- F.R.L. - FINAL ROAD LEVEL
- F.O.E. - FLANGED ONE END
- F.B.E. - FLANGED BOTH ENDS
- F.A.R. - FLANGED ALL ROUND
- L.R.B. - LONG RADIUS BEND
- S.R.B. - SHORT RADIUS BEND
- FFF - FACE TO FACE DIMENSION
- C/F - CENTRE TO FACE DIMENSION
- P.C. - PLAIN END COATED
- P.E. - PLAIN END (FOR WELDING)
- S.F.E. - SOLVENT FREE EPOXY



**LEGEND**

| ITEM | DESCRIPTION  |
|------|--|
| (A)  | 100mm Ø AIR VALVE - PN10 (WITH JOINTING MATERIALS)                   |
| (B)  | 100mm Ø x 100mm LONG SPOOL PIECE (FLANGED ONE END TO SUIT AIR VALVE) |
| (C)  | 150mm Ø x 100mm Ø CONCENTRIC REDUCER (ANSI B16.9) F.O.E.             |
| (D)  | 150mm Ø WAFER BUTTERFLY VALVE - PN10                                 |
| (E)  | 150mm Ø x 200mm LONG SPOOL PIECE (F.O.E.)                            |
| (F)  | 200mm x 150mm Ø CONCENTRIC REDUCER (ANSI B16.9)                      |
| (G)  | 15mm Ø GAS SOCKET  |
| (H)  | 15mm Ø BALL-O-STOP FEMALE TO MALE                                    |

NOTE: ALL FLANGES TO BE TO TABLE 1600/3 (SABS 1123 - 1977)



**FOR TENDER**

**CLIENT:**

**REDUCED PLAN USE SCALE BELOW**

**LEGEND**

**EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.**

- SEWERS AND M.I.F'S
- STORM WATER DRAINS AND M.I.F'S
- WATER MAINS AND VALVES
- ELECTRICITY CABLES
- G.P.O TELEPHONE CABLES
- OIL PIPELINES

**CONSULTANT:**

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West Way Office Park E-mail: info@naiducosulting.com  
Westville, Durban

**DRAWING No. : G108-52-5254 REV. 0**

**FOR TENDER**

| Ref | Drg.    | Description       |
|-----|---------|-------------------|
| 0   | 01-2019 | ISSUED FOR TENDER |

NOTE: No construction work to commence until final and certified quotations have been completed.

Acquisitions completed:

Date: \_\_\_\_\_ Engineer: \_\_\_\_\_ NORTH POINT

**UNDERGROUND SERVICES CHECKED**

| S.W DRAINS | DATE | SIGNATURE |
|------------|------|-----------|
|            |      |           |

**SEWERS**

**WATERMANS**

**C.P.O CABLES**

**ELECTRIC CABLES**

**S.A.R CABLES**

**E.S.C CABLES**

**OIL PIPE LINE**

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations/trenches etc to avoid damage to underground services such as sewer/drain/cables/watermain and connections wherever possible these must be located before work begins.

**Contract No.**

**Project Title**

**MASETJABA RESERVOIR**

**CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS**

**Section**

**Drawing Title**

**DN500 OUTLET AND SCOUR CHAMBER**

**Scales:** AS SHOWN

**Designed:** D.Ramghulam **Date:** June 2018

**Checked:** A.Goorun **Drawn:** N.Adams

**Chief Area Engineer**

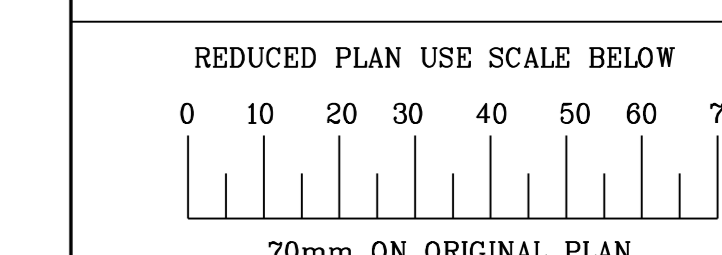
**Manager**

**Director (Water)**

**Executive Director**

| Drawing No. | Sheet | Rev. |
|-------------|-------|------|
|             | 6     | 0    |

CLIENT:



**LEGEND**

EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.

|                               |   |
|-------------------------------|---|
| SEWERS AND M.H.'S             | — |
| STORM WATER DRAINS AND M.H.'S | — |
| WATER MAINS AND VALVES        | — |
| ELECTRICITY CABLES            | — |
| G.P.O TELEPHONE CABLES        | — |
| OIL PIPELINES                 | — |



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DRAWING No.: G108-52-5255 REV. 0

**FOR TENDER**

| Ref | Drg     | Description       |
|-----|---------|-------------------|
| 0   | 01-2019 | ISSUED FOR TENDER |

| Revision | Date    | Description       |
|----------|---------|-------------------|
| 0        | 01-2019 | ISSUED FOR TENDER |

| Date | Engineer | NORTH | POINT |
|------|----------|-------|-------|
|      |          |       |       |

| UNDERGROUND SERVICES | SERVICES | CHECKED   |
|----------------------|----------|-----------|
| S.W DRAINS           | DATE     | SIGNATURE |
| SEWERS               |          |           |
| WATERMAINS           |          |           |
| G.P.O CABLES         |          |           |
| ELECTRIC CABLES      |          |           |
| S.A.R CABLES         |          |           |
| E.S.C CABLES         |          |           |
| OIL PIPE LINE        |          |           |

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and communications. Wherever possible these must be located before work begins.

Contract No. \_\_\_\_\_

Project Title  
**MASETJABA RESERVOIR**  
 CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS

Section \_\_\_\_\_

Drawing Title  
**DN500 CROSS CONNECTION OUTLET**

Scales: AS SHOWN  
 Designed: D.Ramghulam Date: June 2018  
 Checked: A.Goorun Drawn: N. Adams

Chief Area Engineer \_\_\_\_\_

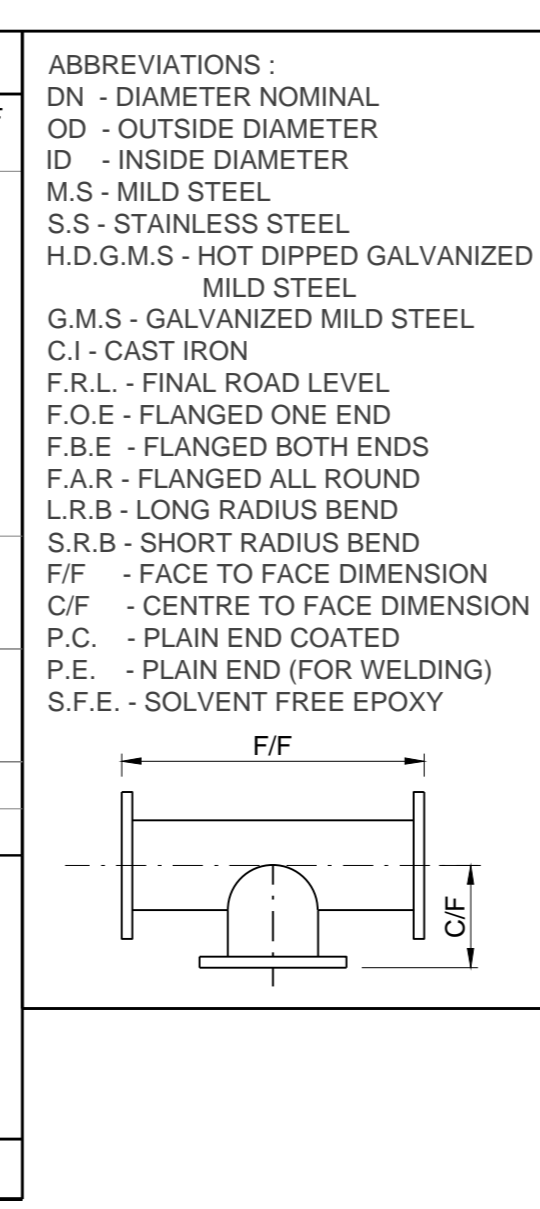
Manager \_\_\_\_\_

Director (Water) \_\_\_\_\_

Executive Director \_\_\_\_\_

Drawing No. \_\_\_\_\_ Sheet 7 Rev 0

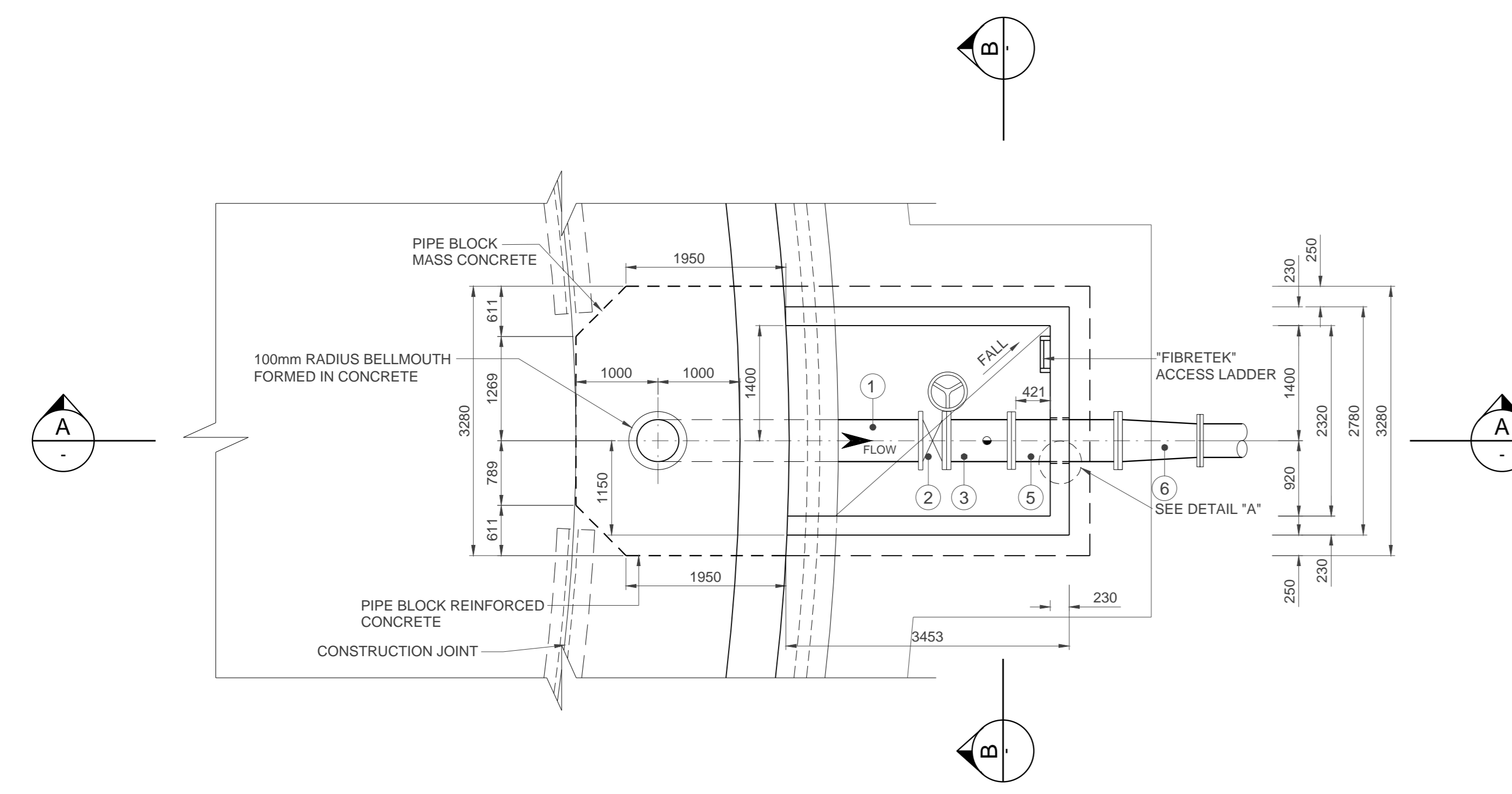
| No. | DESCRIPTION   | WALL THICKNESS | NO. OFF | LINING | COATING | GRADE OF STEEL |
|-----|---|----------------|---------|--------|---------|----------------|
| 1   | SPECIAL DN500 x 90° LONG RADIUS BEND WITH DN500 x 2680mm LONG SPOOL PIECE WITH PUDDLE FLANGE AS SHOWN, WELDED TO ONE END AND A DN500 x 260mm LONG SPOOL WELDED TO OTHER END, F.O.E. FLANGE TO MATCH ITEM 2, OTHER END FLAIN END COATED. | 6.0            | 1       | S.F.E. | S.F.E.  | X42            |
| 2   | DN500 WAFER BUTTERFLY VALVE, (E.P.D.M. LINED) TYPE ISORIA BY AMRI OR SIMILAR APPROVED, COMPLETE WITH HAND WHEEL, NUTS, BOLTS, WASHERS AND GASKETS.  |                | 1       |        |         |                |
| 3   | SPECIAL DN500 x 780mm LONG F/F STRAIGHT PIECE, F.B.E. ONE FLANGE TO MATCH ITEM 2, PLACE 50mm Ø THREAD-O-LET GAS SOCKET WITH 50mm Ø BALL-O-STOP  | 4.5            | 1       | S.F.E. | S.F.E.  | X42            |
| 4   | DN100 AIR VALVE (REFER TO AIR VALVE DETAIL)   |                | 1       |        |         |                |
| 5   | DN500 x 1300mm LONG F/F STRAIGHT PIECE, F.B.E.  | 4.5            | 1       | S.F.E. | S.F.E.  | X42            |
| 6   | SPECIAL DN500 X DN450 REDUCER, 1000mm LONG F/F, F.B.E.  | 4.5            | 1       | S.F.E. | S.F.E.  | X42            |



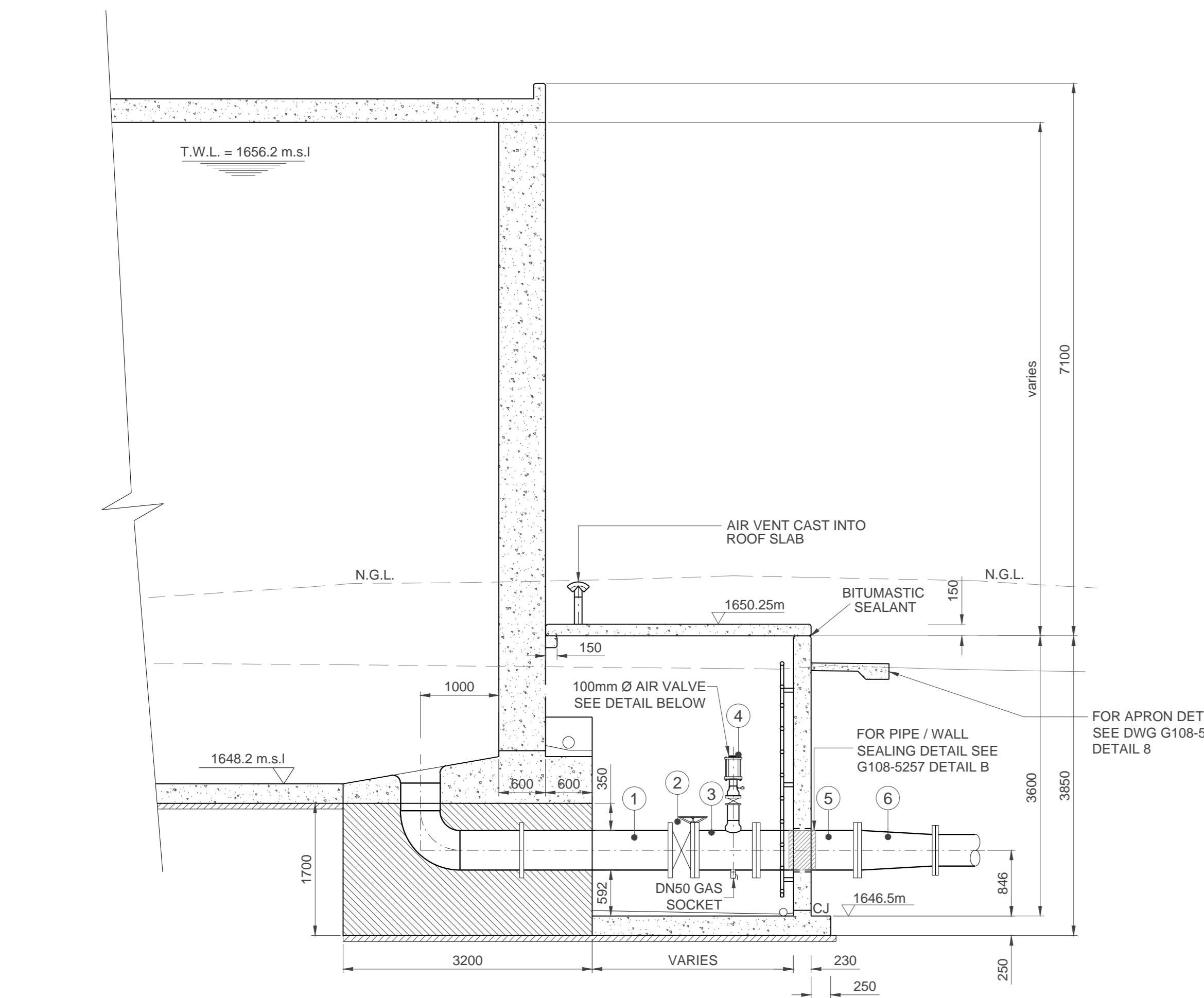
NOTE: ALL FLANGES TO BE TO TABLE 1600/3 (SABS 1123 - 2011)

**GENERAL NOTES**

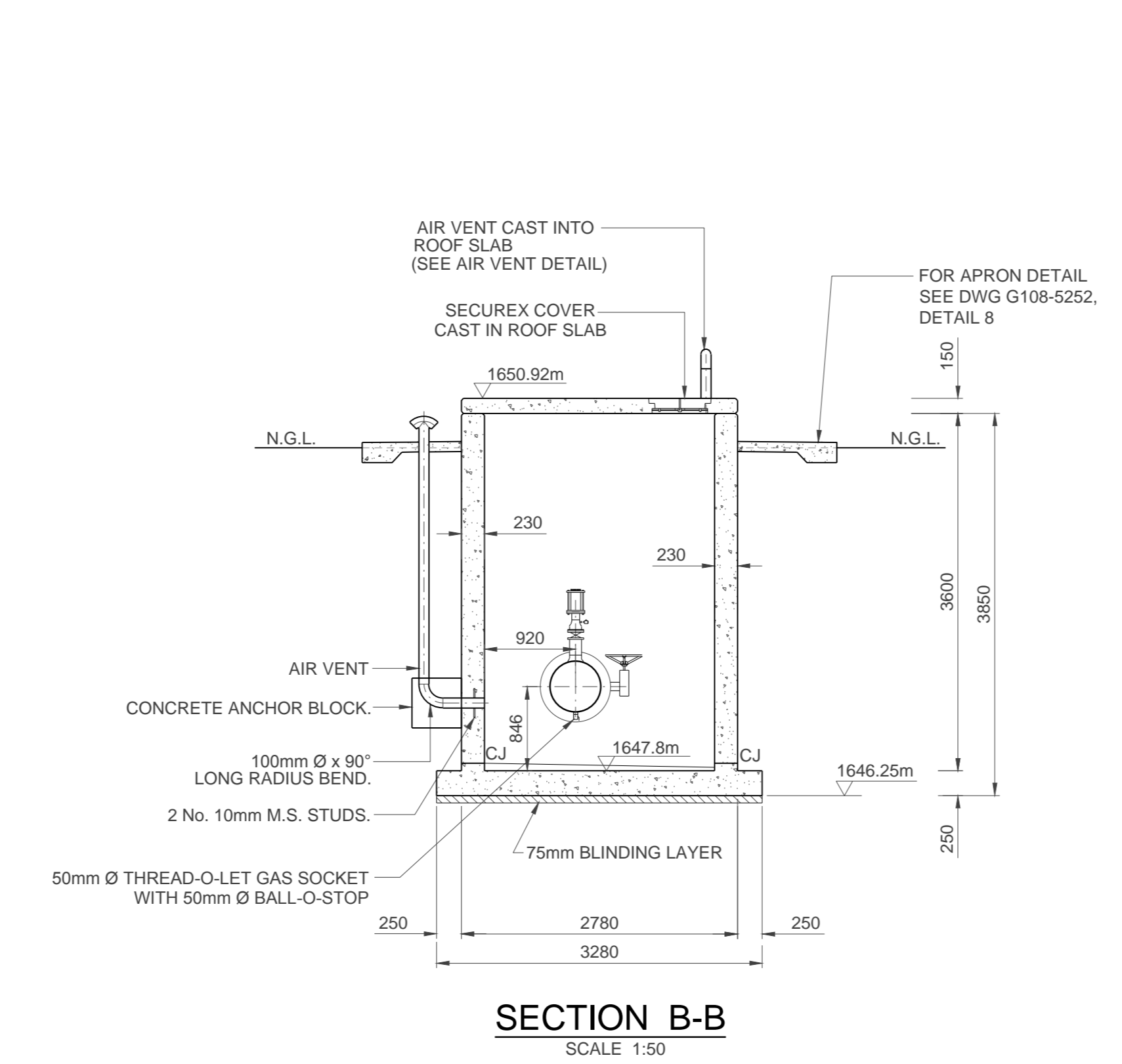
- PIPEWORK**
- ALL PIPEWORK TO BE MILD STEEL UNLESS OTHERWISE STATED.
  - THE CONTRACTOR SHALL VERIFY THE DIMENSIONS OF ALL PIPEWORK AND ADVISE THE ENGINEER OF ANY DISCREPANCIES PRIOR TO FABRICATION.
  - ALL PIPES GREATER THAN AND INCLUDING DN100, FITTED TO EQUIPMENT OR FITTINGS, OR WHERE SPECIFICALLY 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 TO BE 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 TO BE MANUFACTURED FROM MINIMUM GRADE X42 STEEL AND WELDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. WHERE THE GRADE OF STEEL FOR THE MAIN PIPE IS X62 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 TO BE FABRICATED AND DIMENSIONED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
  - FOR ALL COLLAR PLATES, PRE-DRILL 2 x 5mm Ø HOLE. UPON COMPLETION OF FILLET WELDING, WELD HOLES CLOSED.
- CONCRETE**
- ALL EXPOSED EDGES TO BE CHAMFERED 50x50.
  - MINIMUM COVER TO ALL REINFORCING SHALL BE 50mm.
  - NO REINFORCEMENT SHALL BE FIXED CLOSER THAN 200mm TO THE STEEL PIPE. CONSTRUCTION JOINTS TO BE WELL CLEANED & SCABBLED TO EXPOSE FRESH AGGREGATE AND THOROUGHLY WETTED BEFORE THE NEXT LIFT IS POURED.
  - CONCRETE GRADE
    - BLINDING : 15/19
    - CONCRETE : 35/19 UNLESS OTHERWISE STATED (CHAMBERS ONLY)
    - SCREED : 1:3 (CEMENT:SAND)
  - WHERE APPLICABLE, AIR VENTS, LIFTING HOLES, LIFTING HOOKS, STEP IRONS AND DI COVER & FRAME ARE TO BE PRE-INSTALLED AT THE MANUFACTURER PRIOR TO DELIVERY ON SITE.



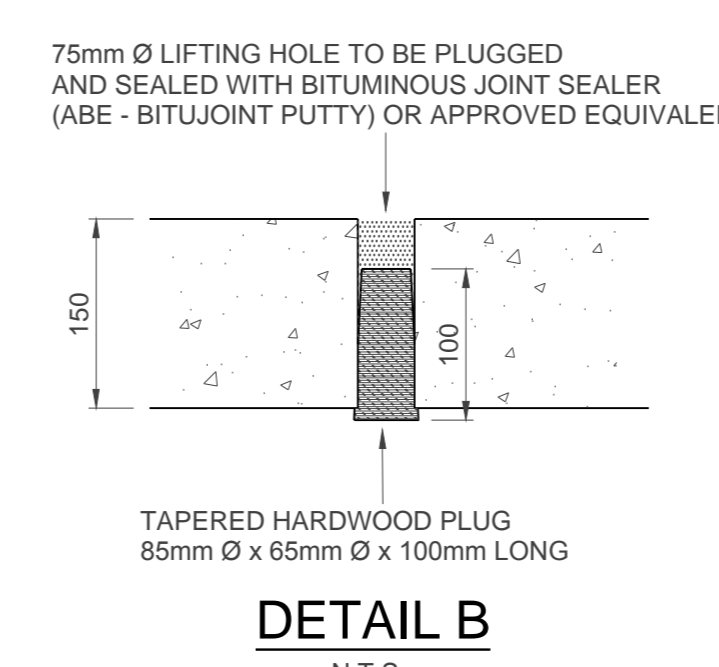
PLAN AT LEVEL 1650.5m  
SCALE 1:50



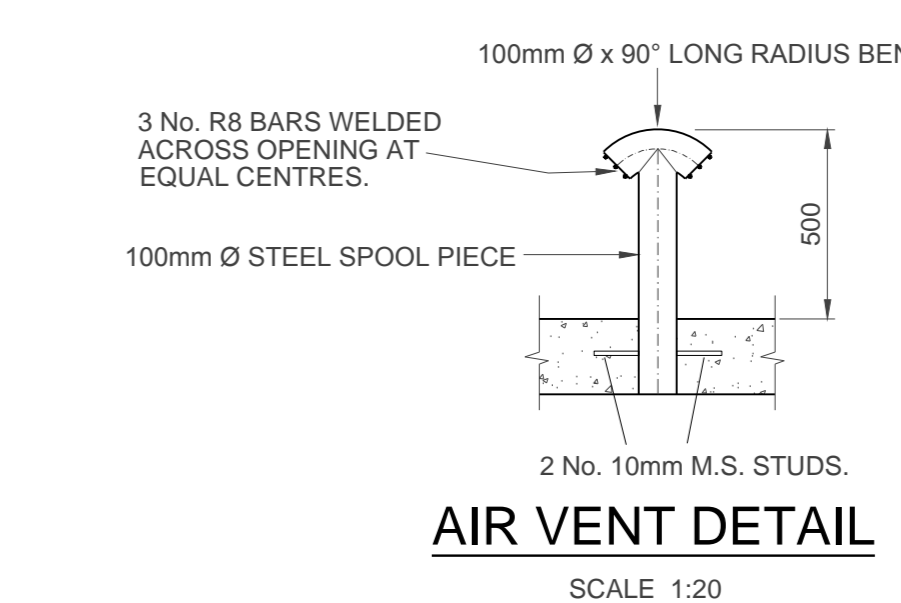
SECTION A-A (SECTION THROUGH CROSS CONNECTION OUTLET PIPE)  
SCALE 1:50



SECTION B-B  
SCALE 1:50



DETAIL B  
N.T.S.

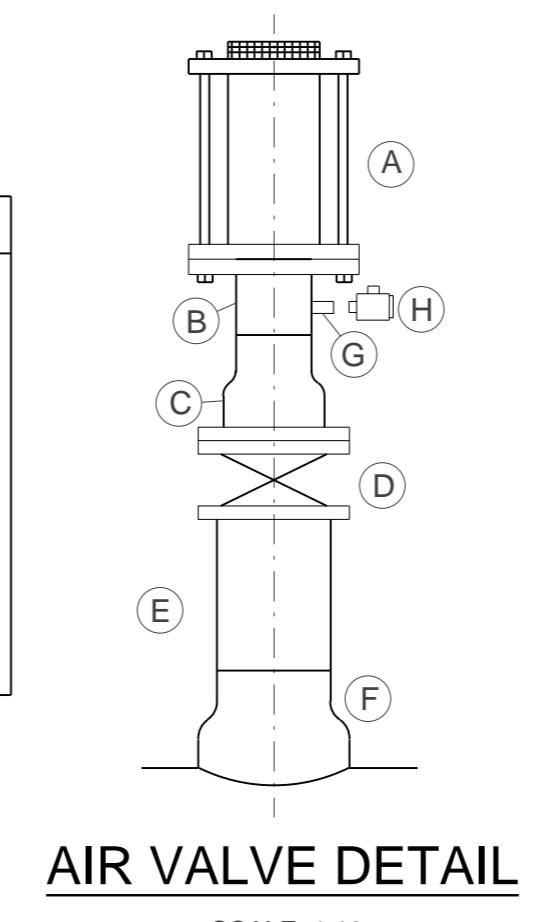


AIR VENT DETAIL  
SCALE 1:20

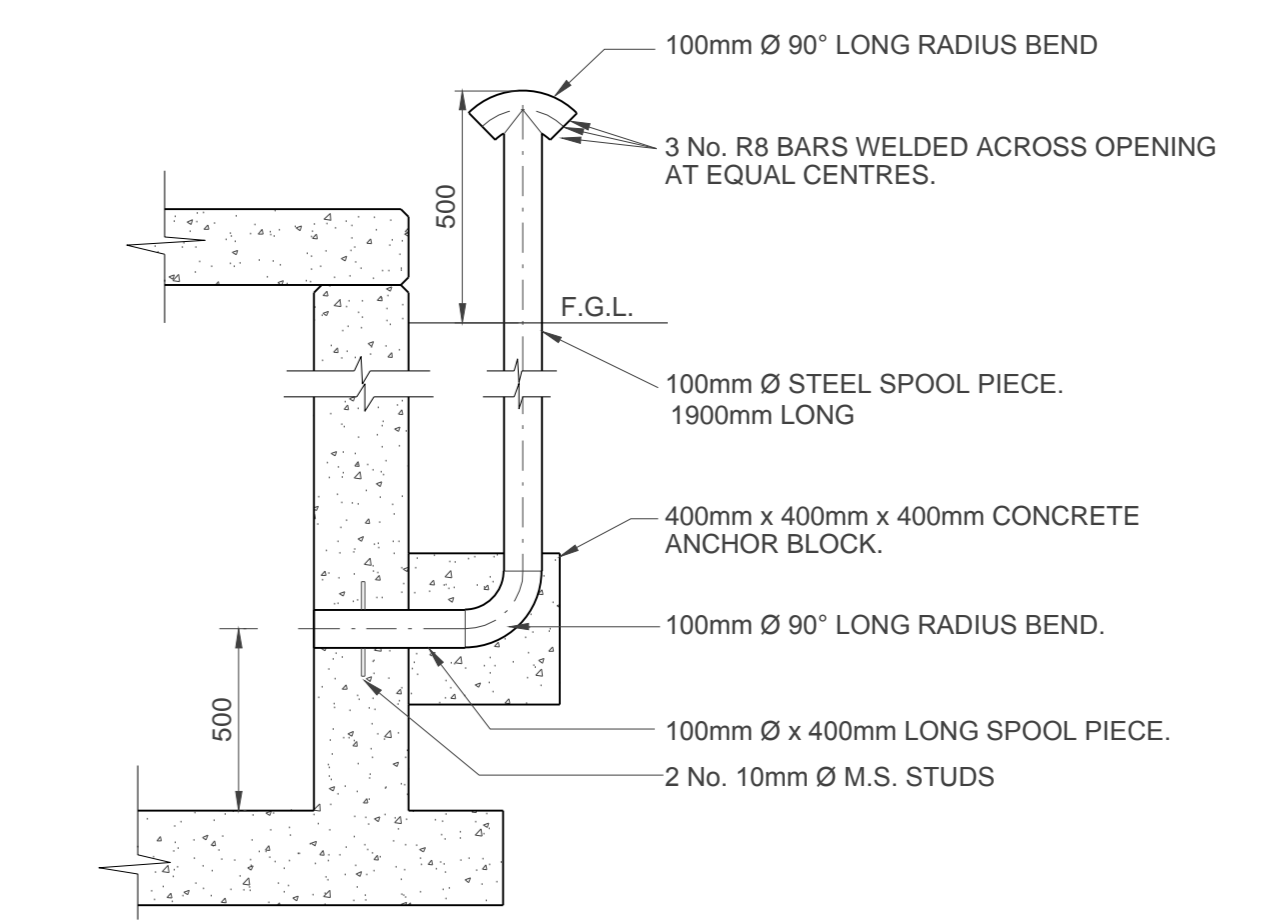
NOTE: ENTIRE AIR VENT ASSEMBLY TO BE HOT-DIP GALVANISED AFTER FABRICATION.

| ITEM | LEGEND   |
|------|--|
| (A)  | 100mm Ø AIR VALVE - PN10 (WITH JOINTING MATERIALS)                   |
| (B)  | 100mm Ø x 100mm LONG SPOOL PIECE (FLANGED ONE END TO SUIT AIR VALVE) |
| (C)  | 150mm x 100mm Ø CONCENTRIC REDUCER (ANSI: B16.9) F.O.E.              |
| (D)  | 150mm Ø WAFER BUTTERFLY VALVE - PN10                                 |
| (E)  | 150mm Ø x 200mm LONG SPOOL PIECE (F.O.E.)                            |
| (F)  | 200mm x 150mm Ø CONCENTRIC REDUCER (ANSI: B16.9)                     |
| (G)  | 15mm Ø GAS SOCKET  |
| (H)  | 15mm Ø BALL-O-STOP FEMALE TO MALE                                    |

NOTE: ALL FLANGES TO BE TO TABLE 1600/3 (SABS 1123 - 1977)

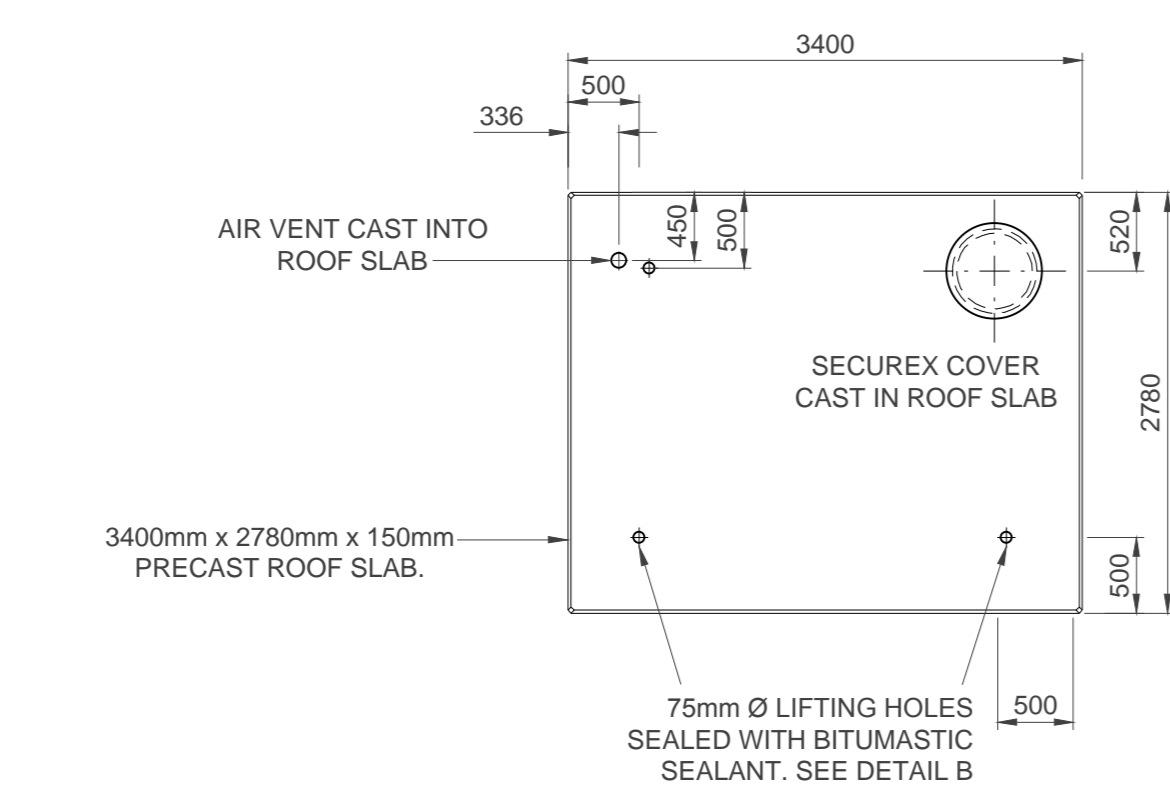


AIR VALVE DETAIL  
SCALE 1:10



AIR VENT DETAIL  
SCALE 1:20

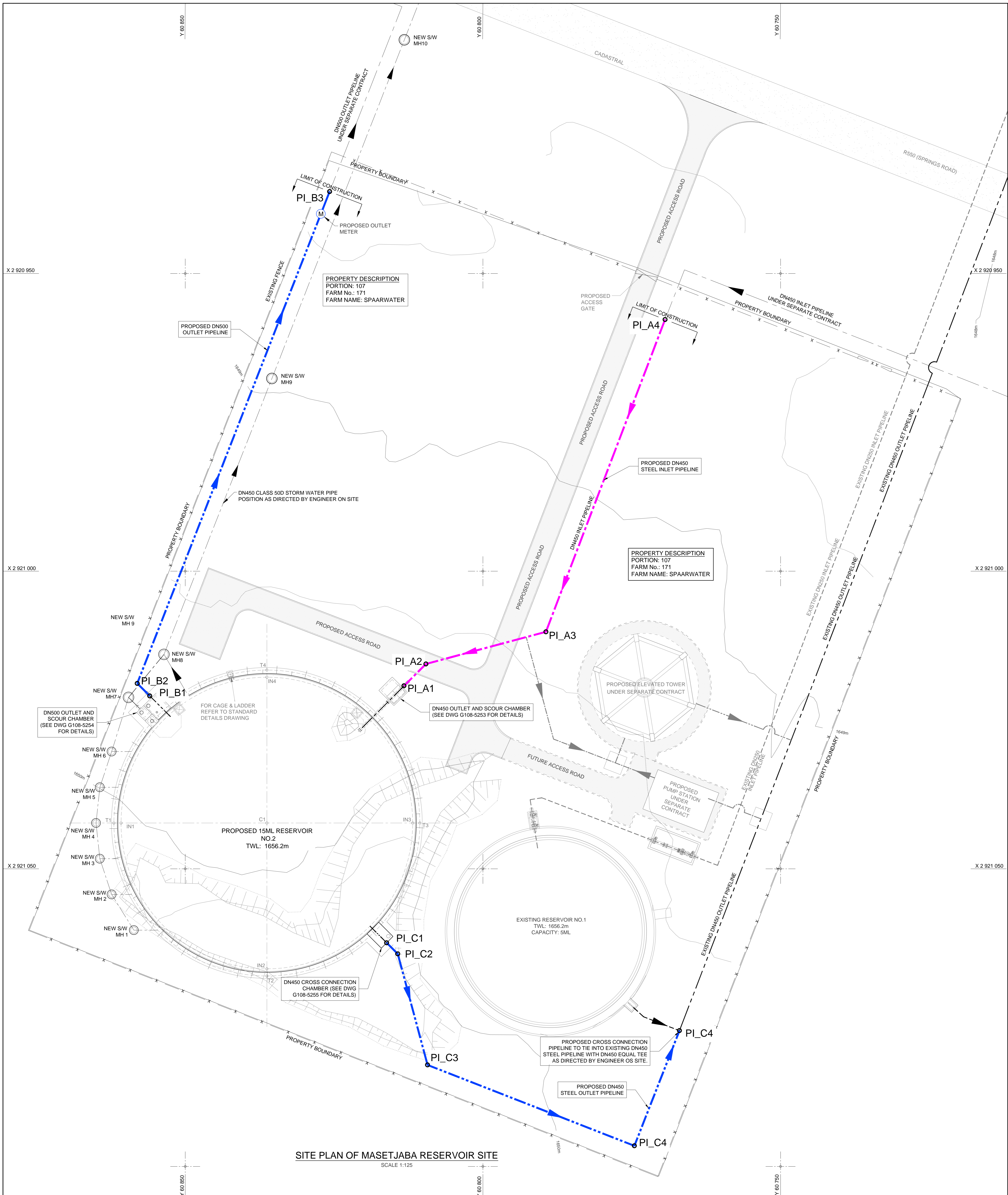
NOTE: ENTIRE AIR VENT ASSEMBLY TO BE HOT-DIP GALVANISED AFTER FABRICATION.



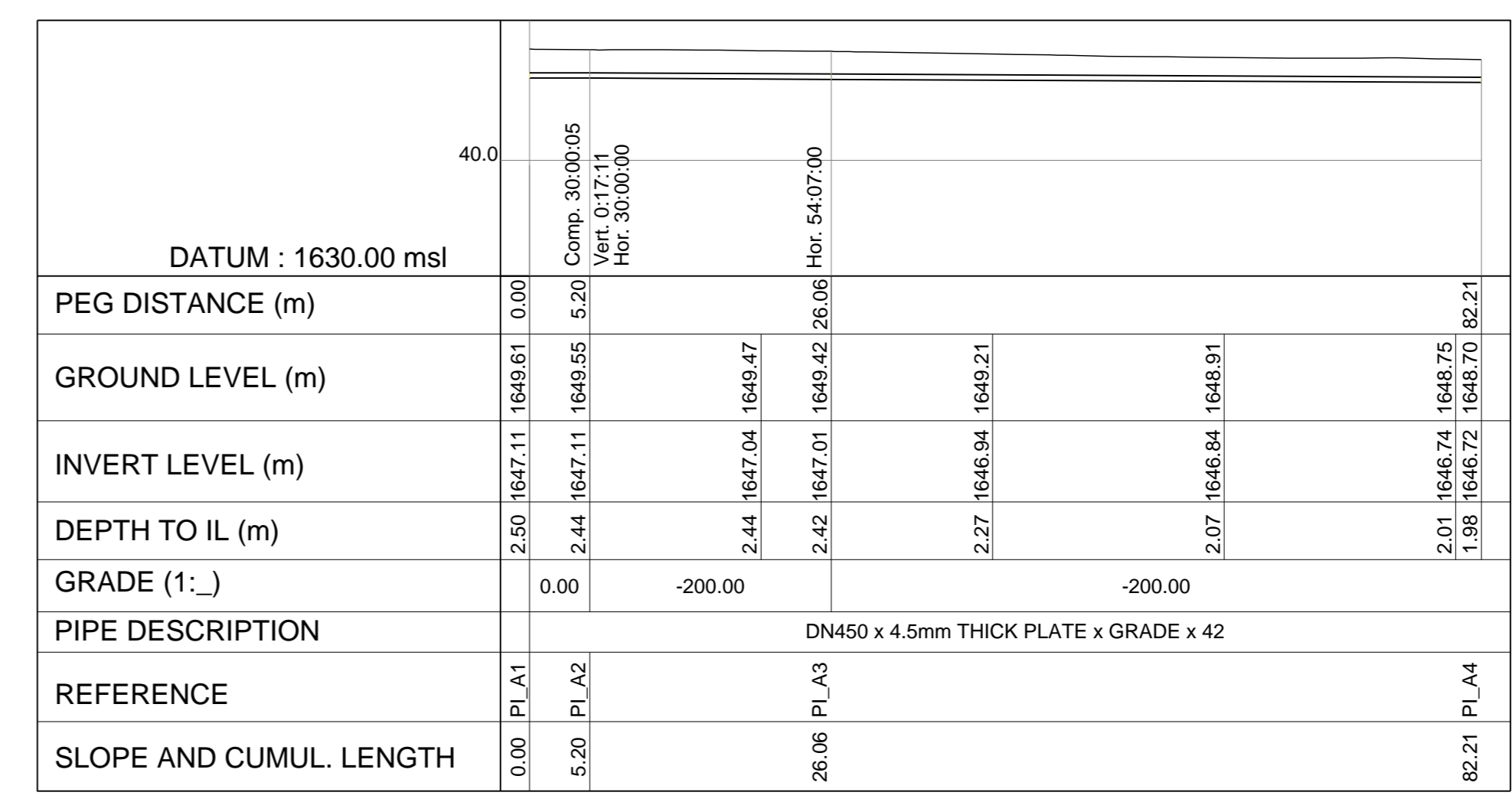
PLAN OF ROOF SLAB  
SCALE 1:50

FOR TENDER





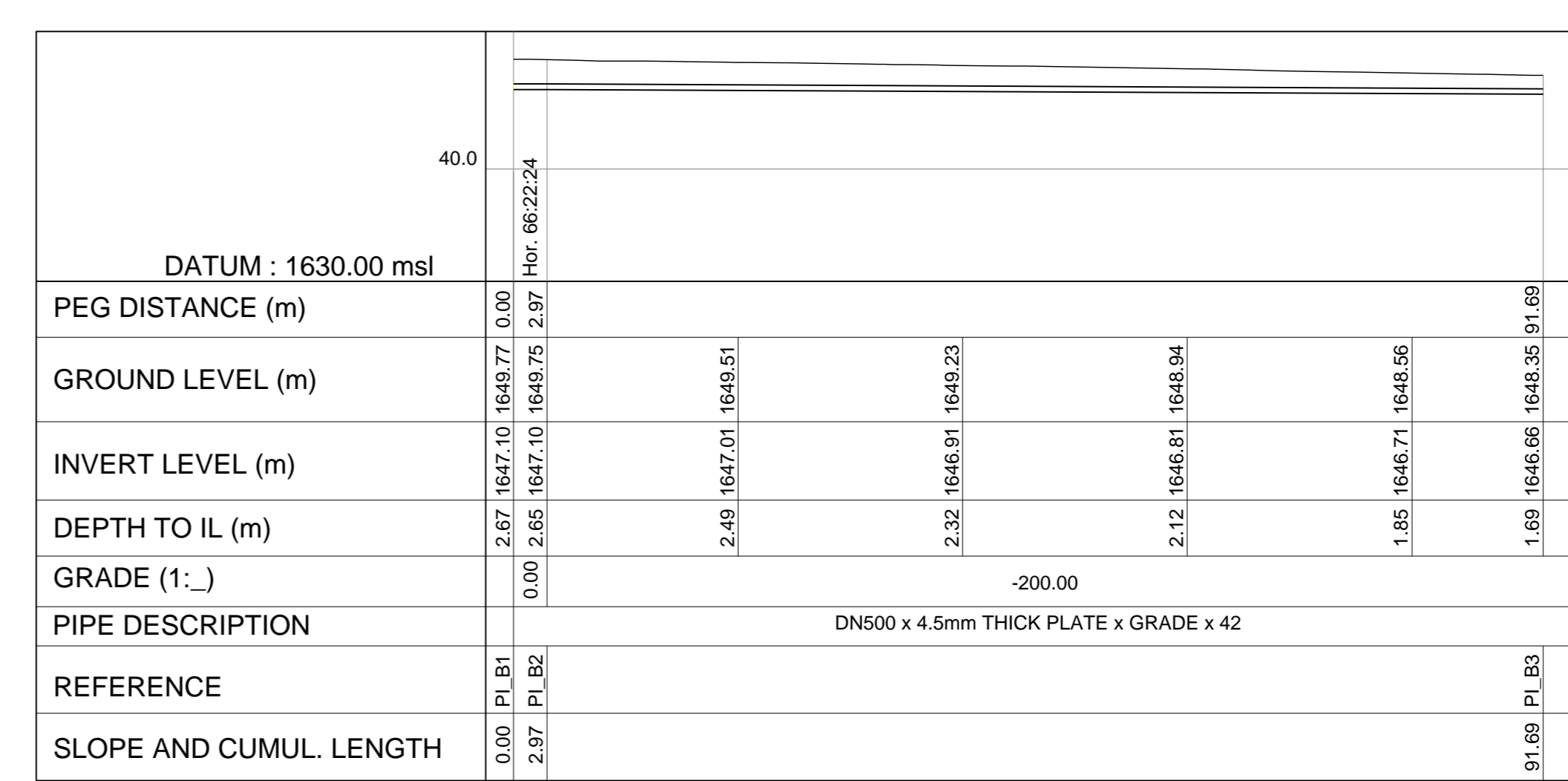
SITE PLAN OF MASETJABA RESERVOIR SITE  
SCALE 1:125



LONGITUDINAL SECTION: DN450 INLET PIPELINE

SCALE: HOR 1:250  
VER 1:250

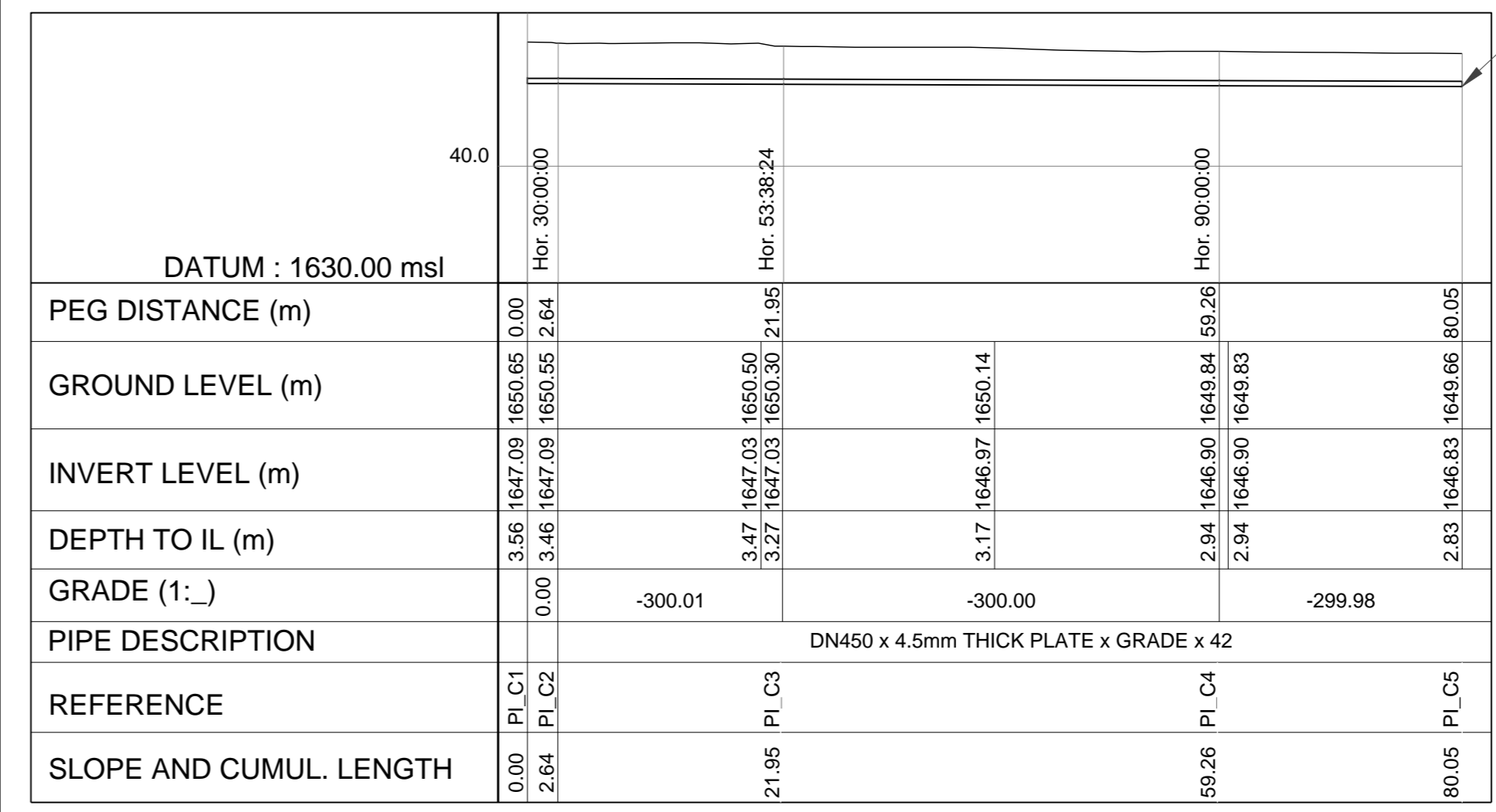
| REF   | Y          | X             | Z (IL)    |
|-------|------------|---------------|-----------|
| PI_A1 | 60 813.243 | 2 921 019.257 | 1 647.110 |
| PI_A2 | 60 808.570 | 2 921 015.883 | 1 647.110 |
| PI_A3 | 60 789.412 | 2 921 010.182 | 1 647.006 |
| PI_A4 | 60 769.397 | 2 920 957.722 | 1 646.725 |



LONGITUDINAL SECTION: DN500 OUTLET PIPELINE

SCALE: HOR 1:250  
VER 1:250

| REF   | Y          | X             | Z (IL)    |
|-------|------------|---------------|-----------|
| PI_B1 | 60 855.950 | 2 921 020.946 | 1 647.100 |
| PI_B2 | 60 858.063 | 2 921 018.844 | 1 647.100 |
| PI_B3 | 60 825.750 | 2 920 936.222 | 1 646.656 |



LONGITUDINAL SECTION: DN450 CROSS CONNECTION OUTLET PIPELINE

SCALE: HOR 1:250  
VER 1:250

| REF   | Y          | X             | Z (IL)    |
|-------|------------|---------------|-----------|
| PI_C1 | 60 815.164 | 2 921 062.424 | 1 647.090 |
| PI_C2 | 60 814.296 | 2 921 064.292 | 1 647.090 |
| PI_C3 | 60 809.299 | 2 921 062.942 | 1 647.026 |
| PI_C4 | 60 774.549 | 2 921 096.533 | 1 646.901 |
| PI_C5 | 60 766.979 | 2 921 077.177 | 1 646.832 |

FOR TENDER

CLIENT: **Ekurhuleni METROPOLITAN MUNICIPALITY**

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

LEGEND  
EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.

SEWERS AND M.H.S.  
STORM WATER DRAINS AND M.H.S.  
WATER MAINS AND VALVES  
ELECTRICITY CABLES  
G.P.O TELEPHONE CABLES  
OIL PIPELINES

CONSULTANT: **NAIDU CONSULTING**

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Westville, Durban

DRAWING No.: G108-52-5256 REV. 0

FOR TENDER

| Ref Drg. | Description               |
|----------|---------------------------|
| 0        | 01-2019 ISSUED FOR TENDER |

| Revision | Date | Description |
|----------|------|-------------|
|          |      |             |

NOTE: No construction work is to commence until final and complete site acquisition has been completed.

Acquisitions completed:

Date: \_\_\_\_\_ Engineer: \_\_\_\_\_ NORTH POINT

| UNDERGROUND SERVICES | CHECKED |
|----------------------|---------|
| S.W DRAINS           |         |
| SEWERS               |         |
| WATERMANS            |         |
| G.P.O CABLES         |         |
| ELECTRIC CABLES      |         |
| S.A.R CABLES         |         |
| E.S.C CABLES         |         |
| OIL PIPE LINE        |         |

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations, trenches, etc. to avoid damage to underground services. Work on sewer drains, cables, water mains and stormwater drains wherever possible should be located before work begins.

Contract No. \_\_\_\_\_  
Project Title  
**MASETJABA RESERVOIR**  
CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS

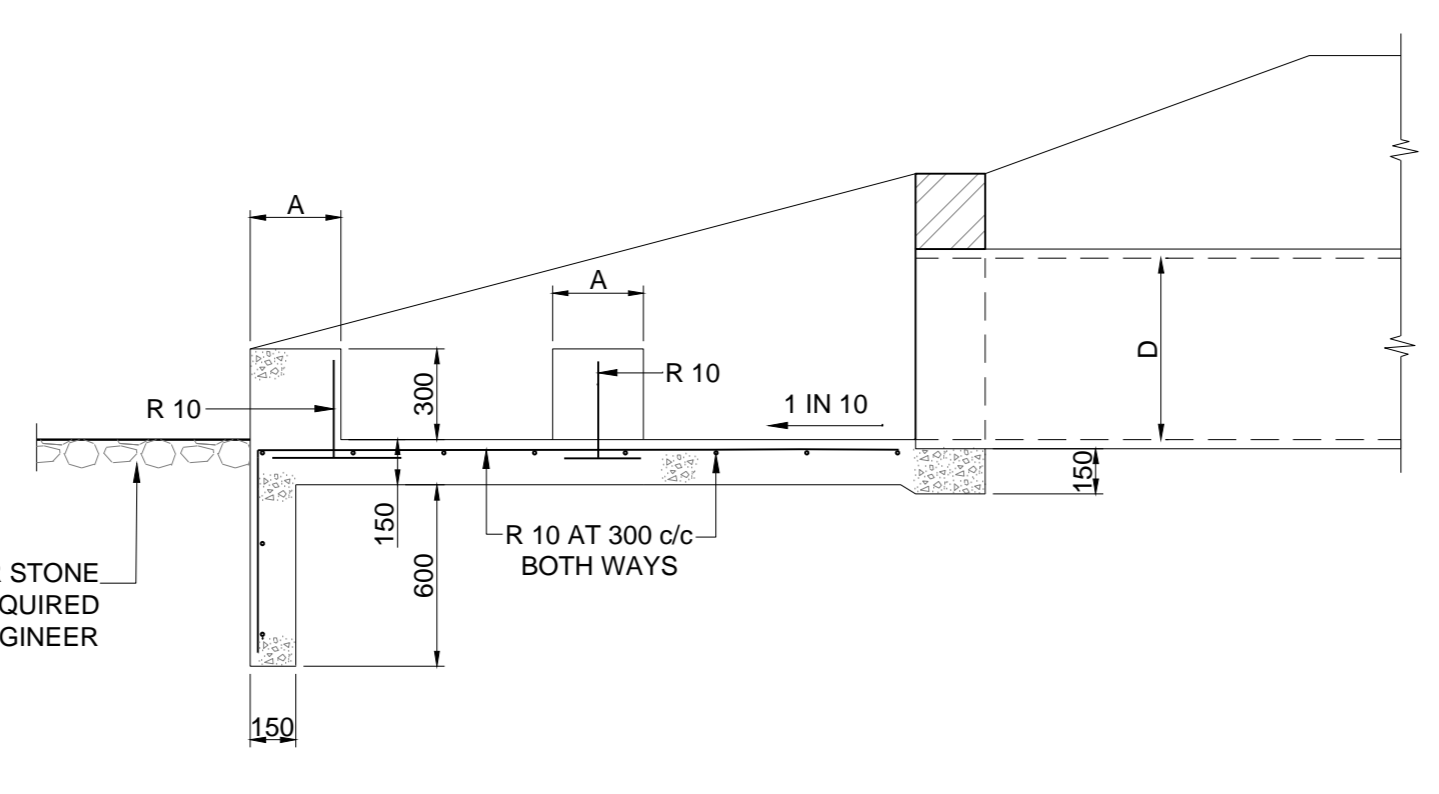
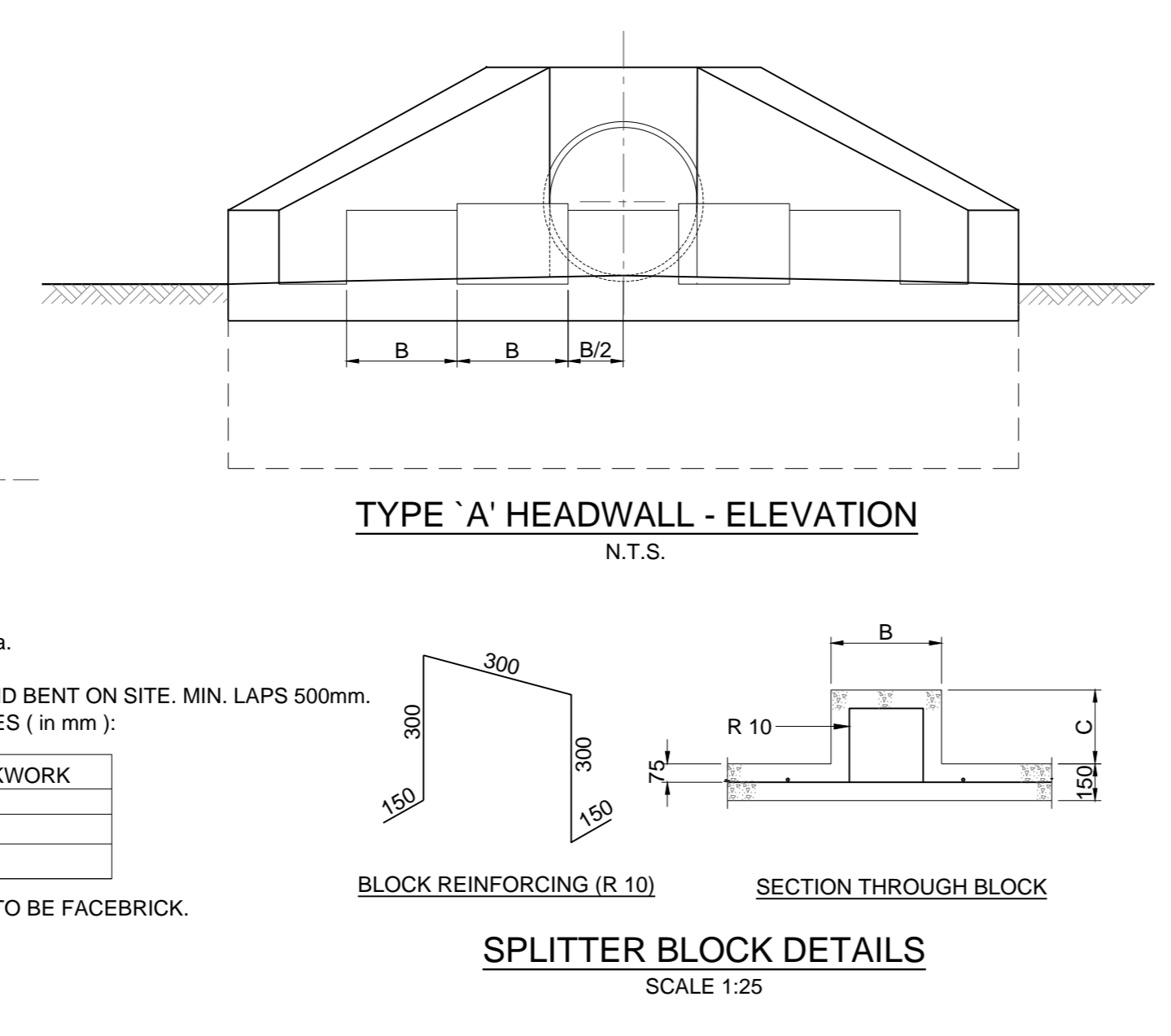
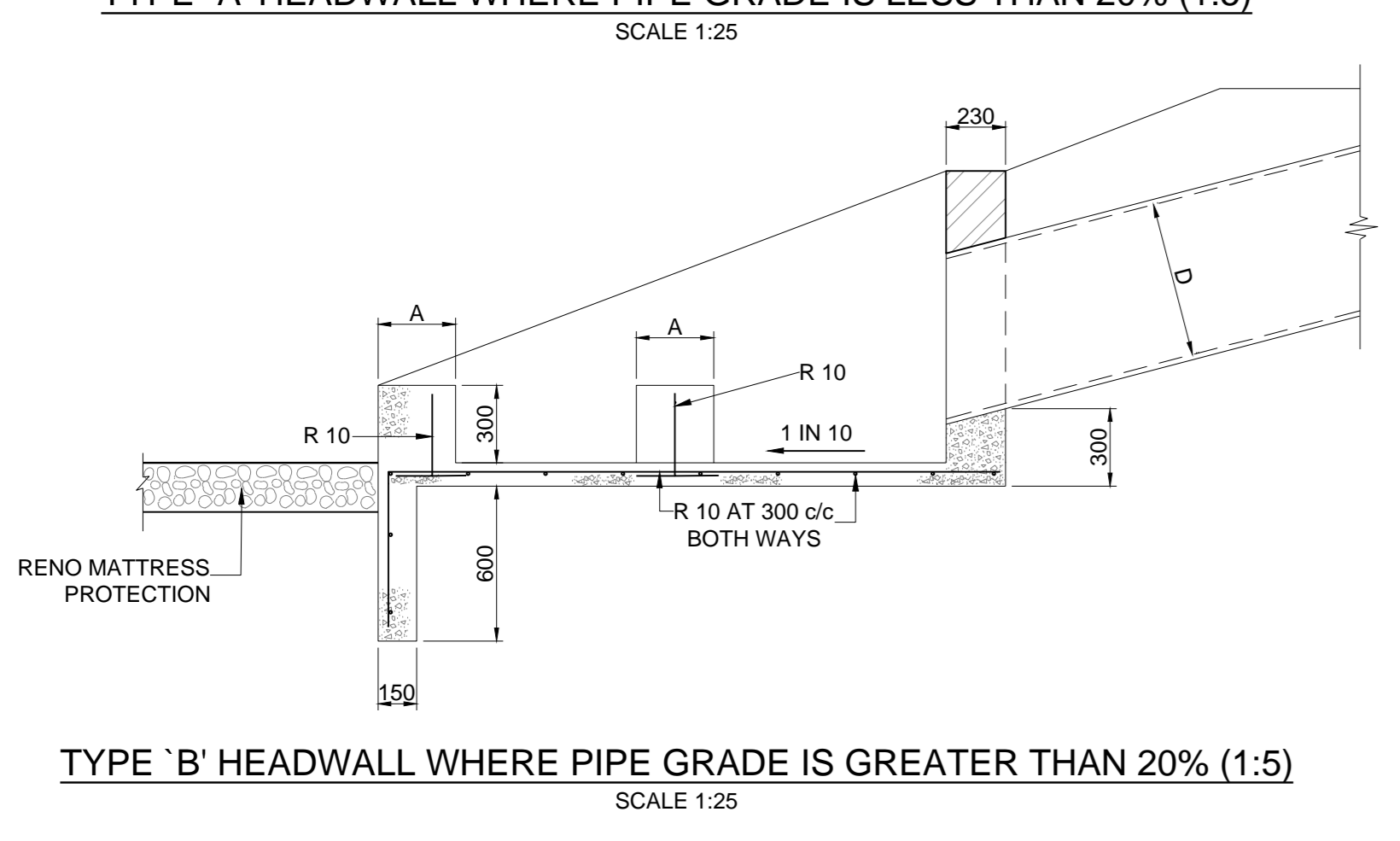
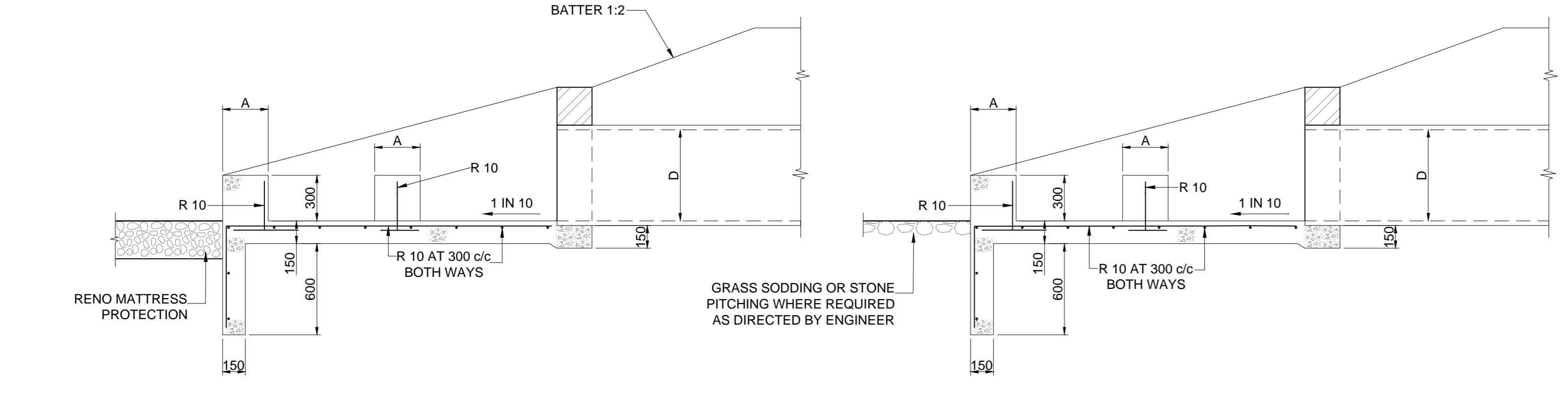
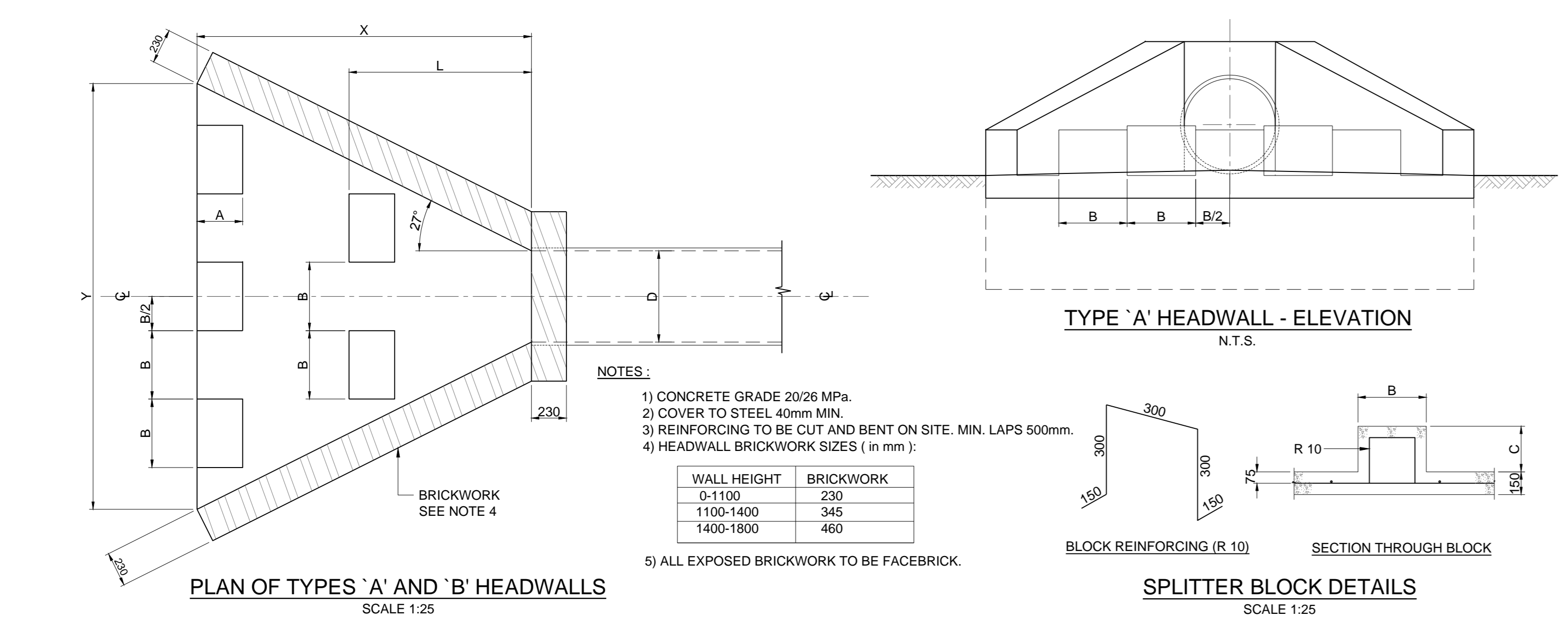
Section

Drawing Title  
**DN450 INLET, DN500 OUTLET AND DN450 CROSS CONNECTION PIPELINE PLAN AND LONG SECTION**

Scales: AS SHOWN  
Designed: D.Ramghulam Date: June 2018  
Checked: A.Goorun Drawn: A. Faro

Area Engineer  
Manager  
Director (Water)  
Executive Director

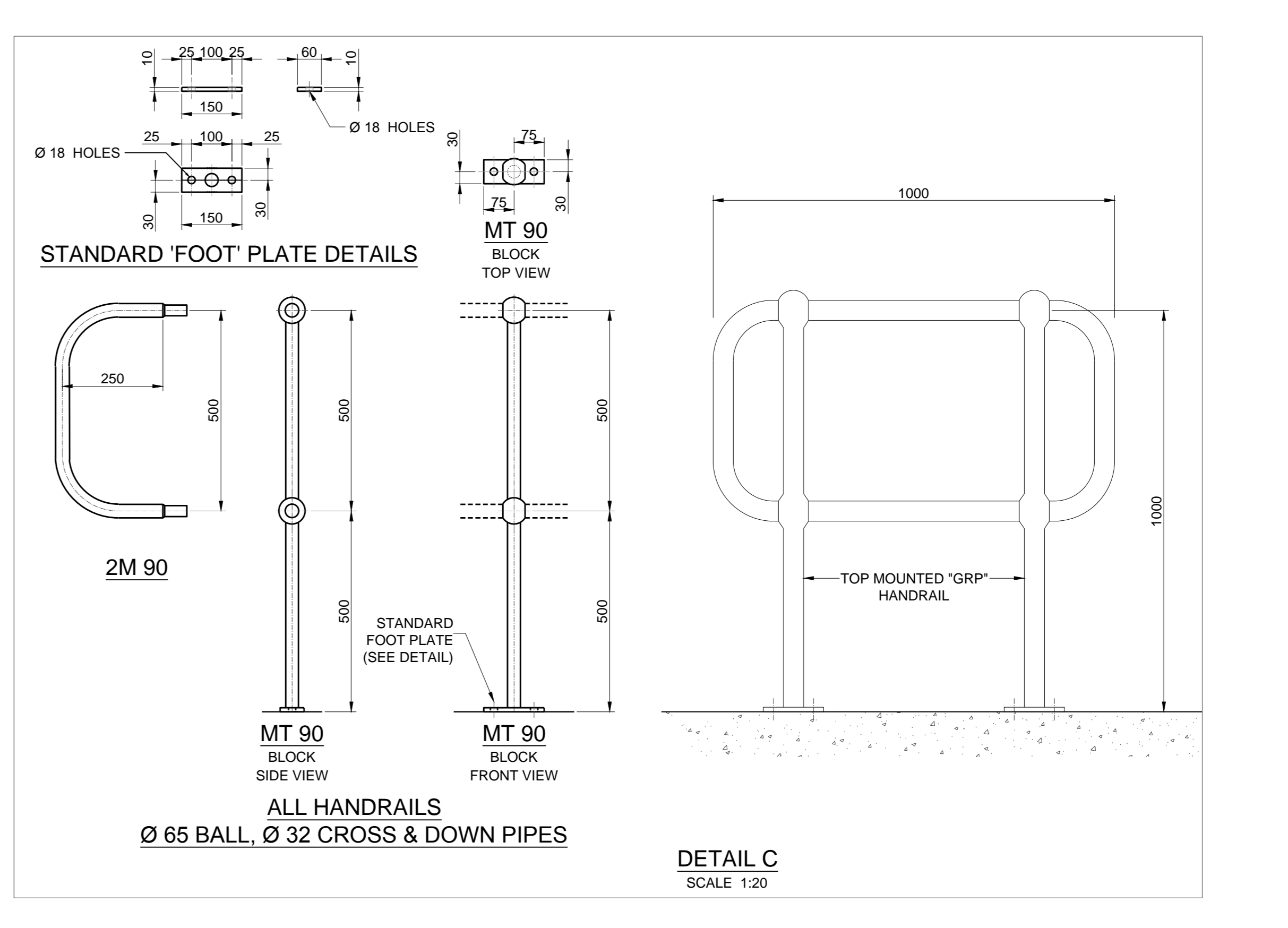
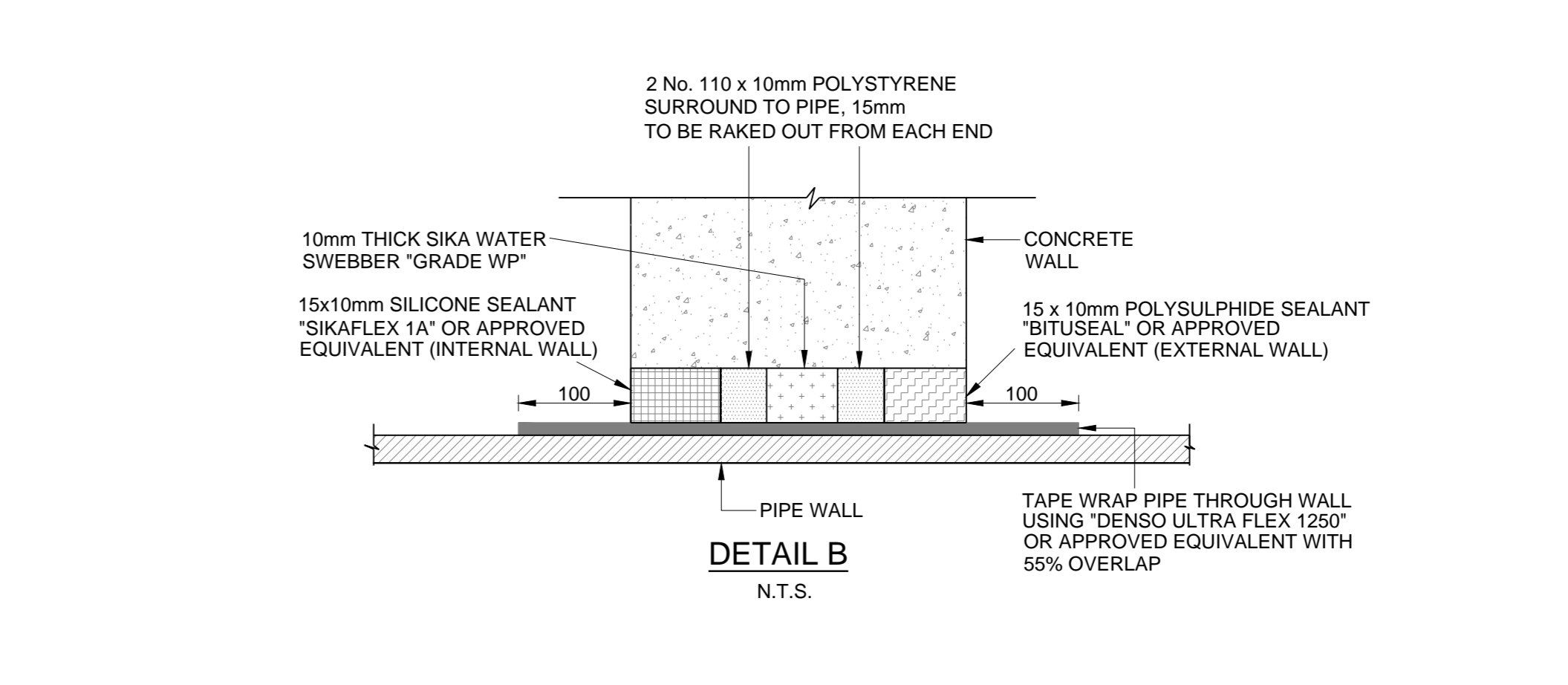
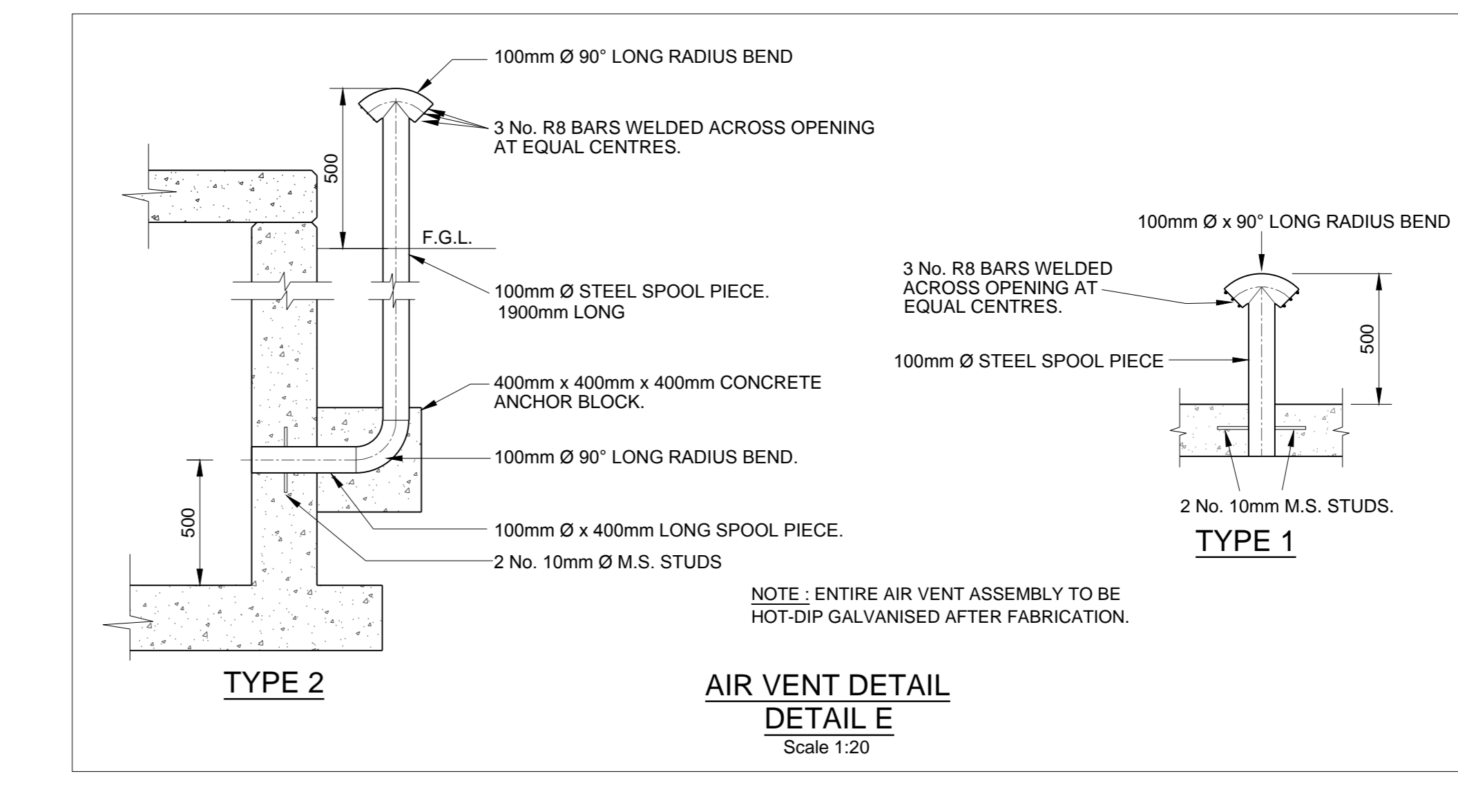
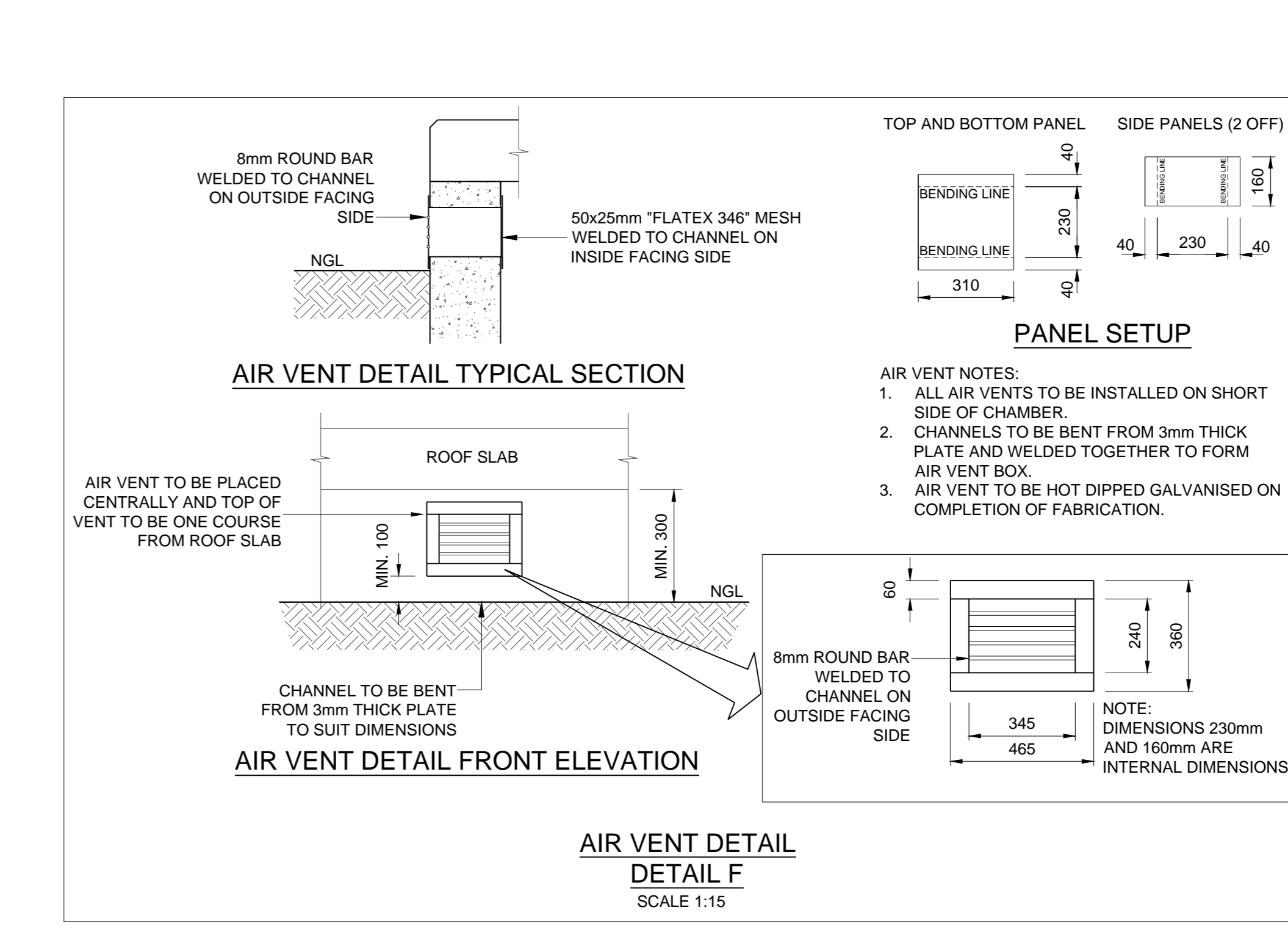
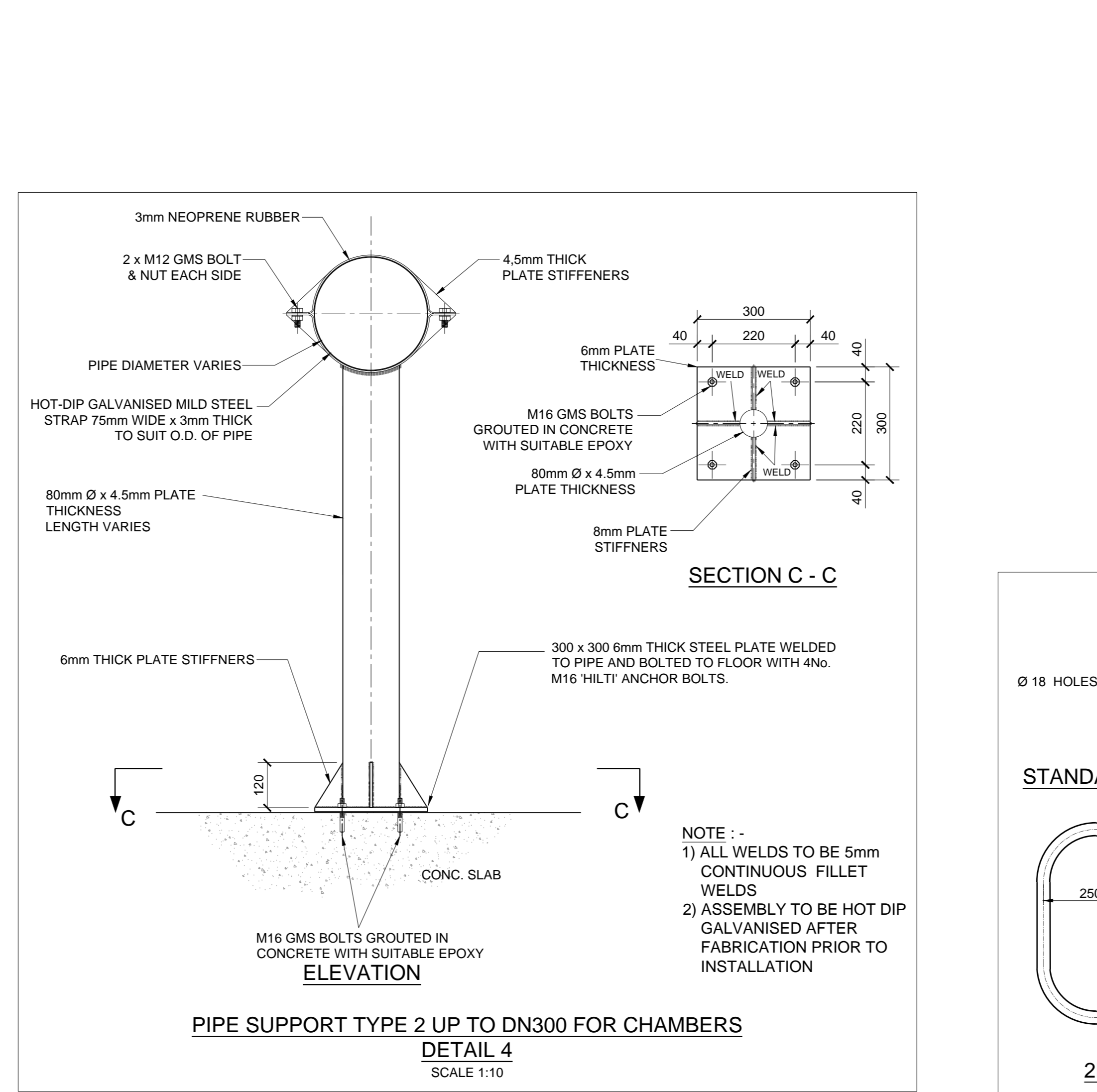
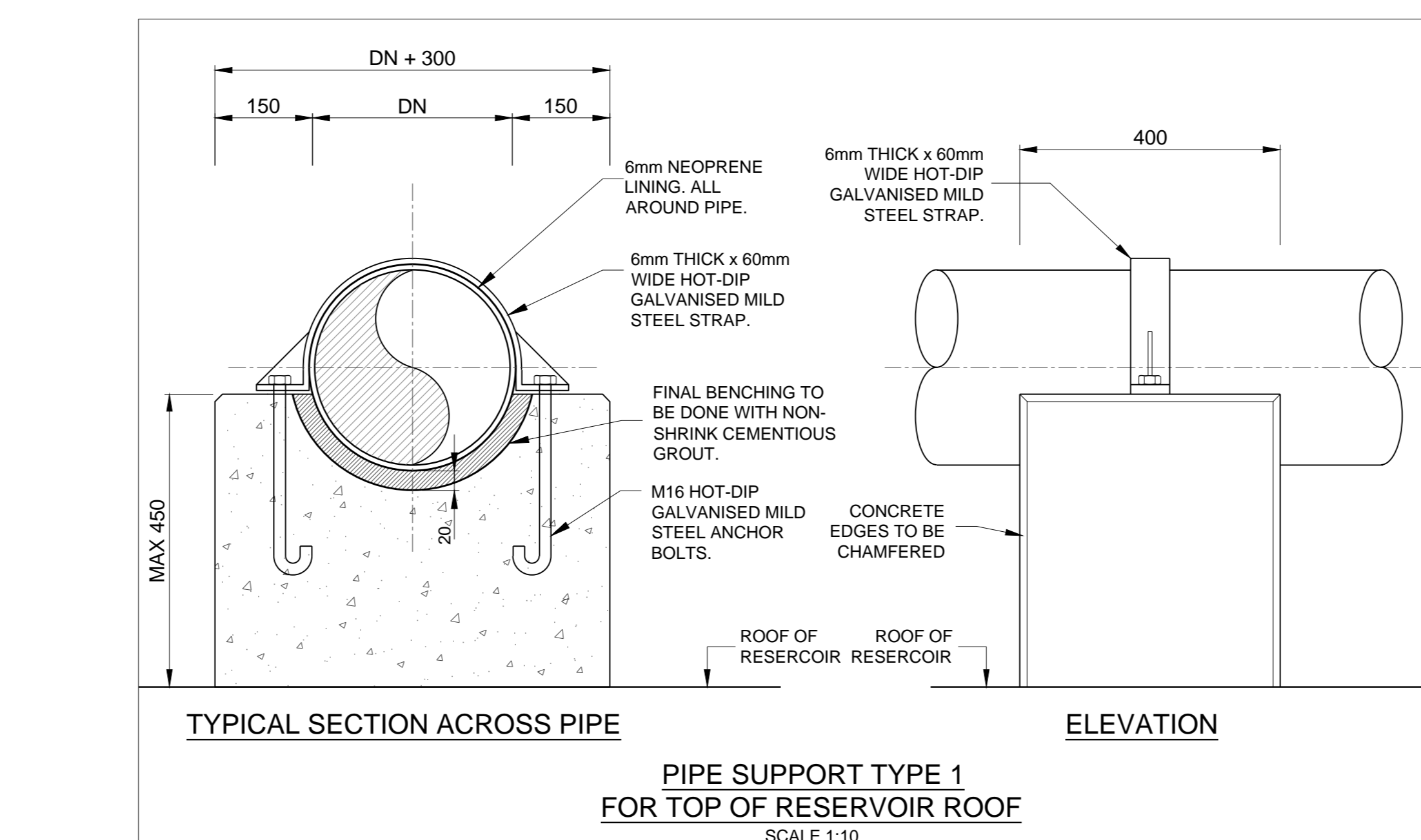
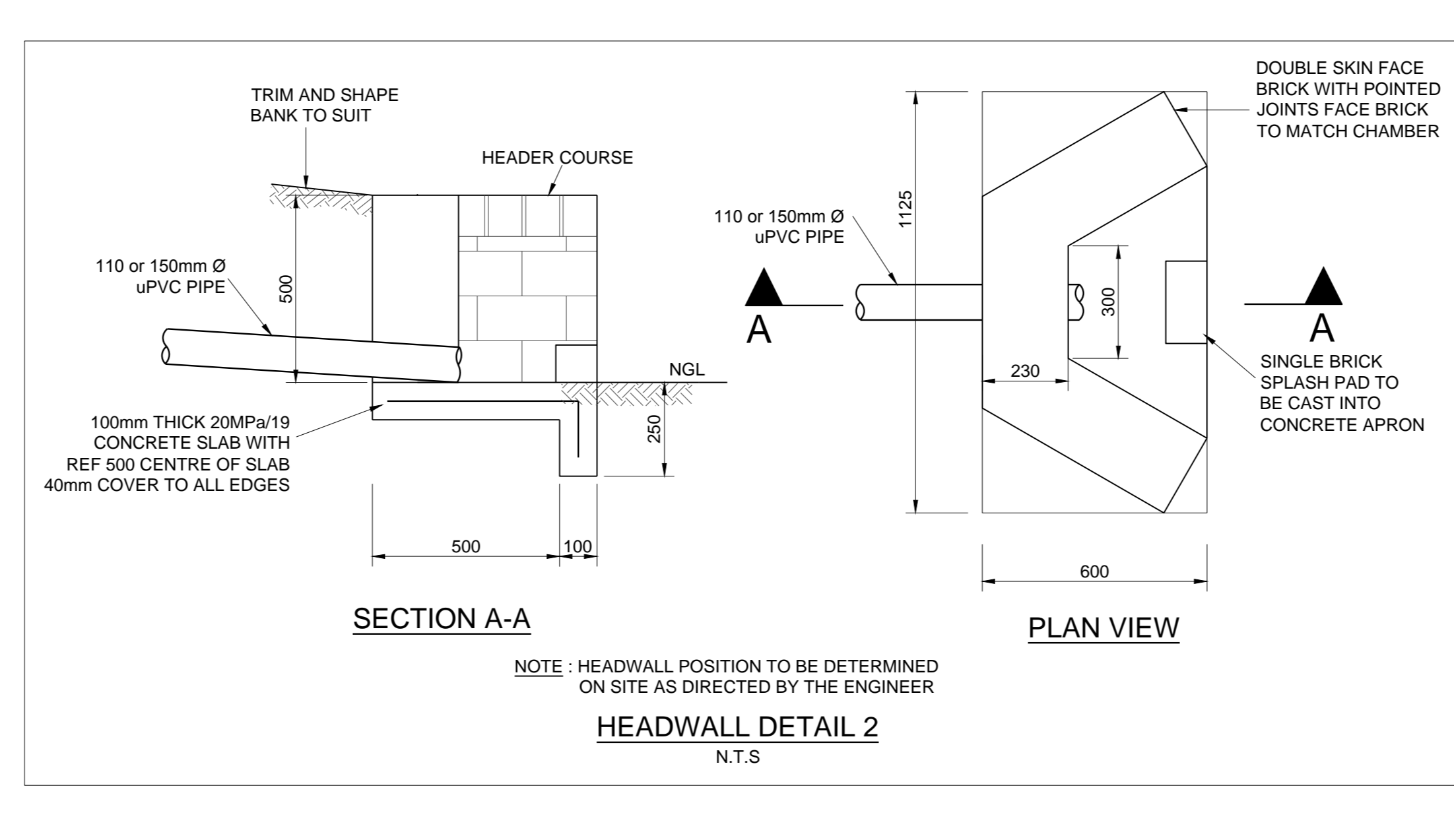
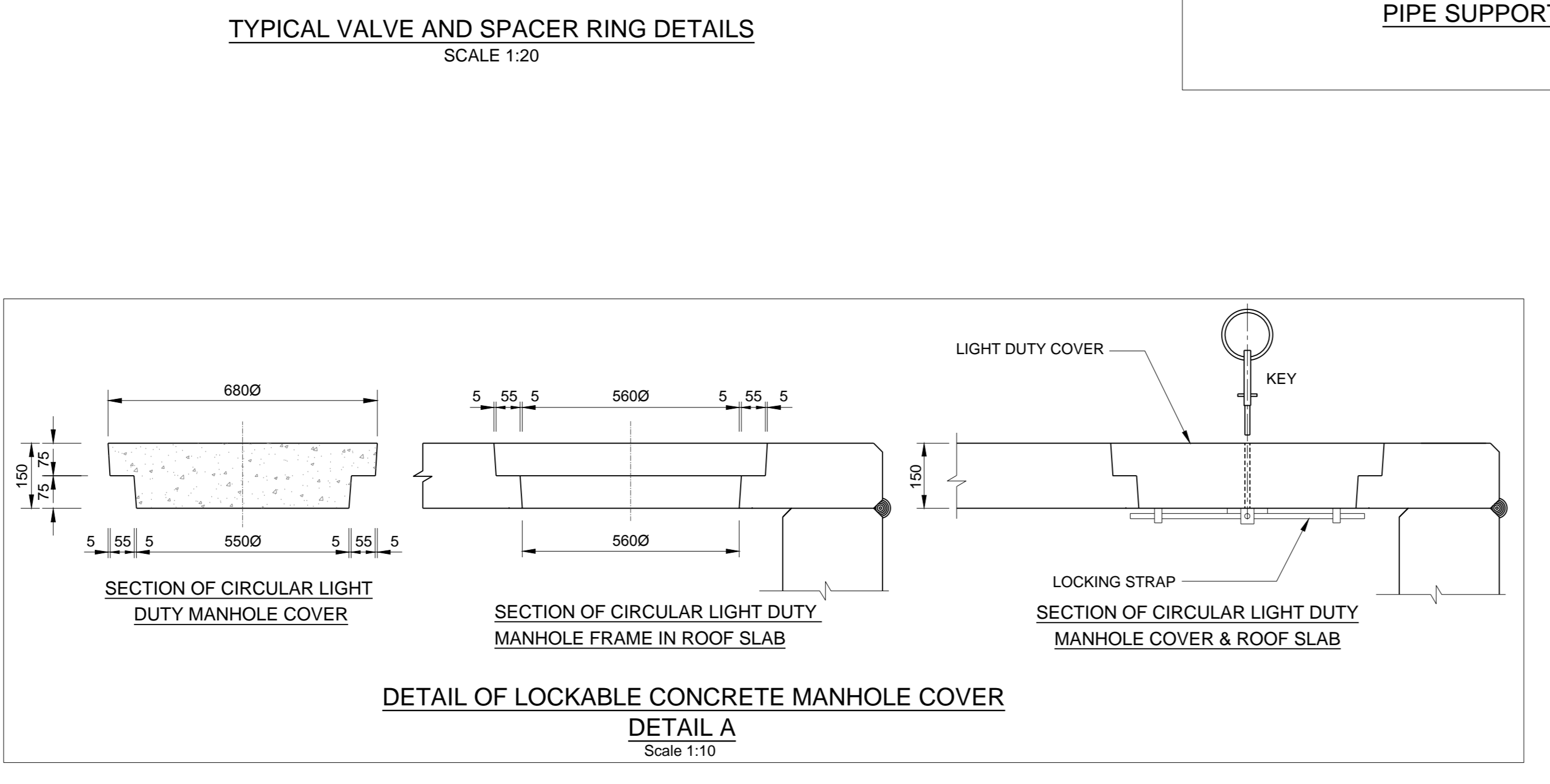
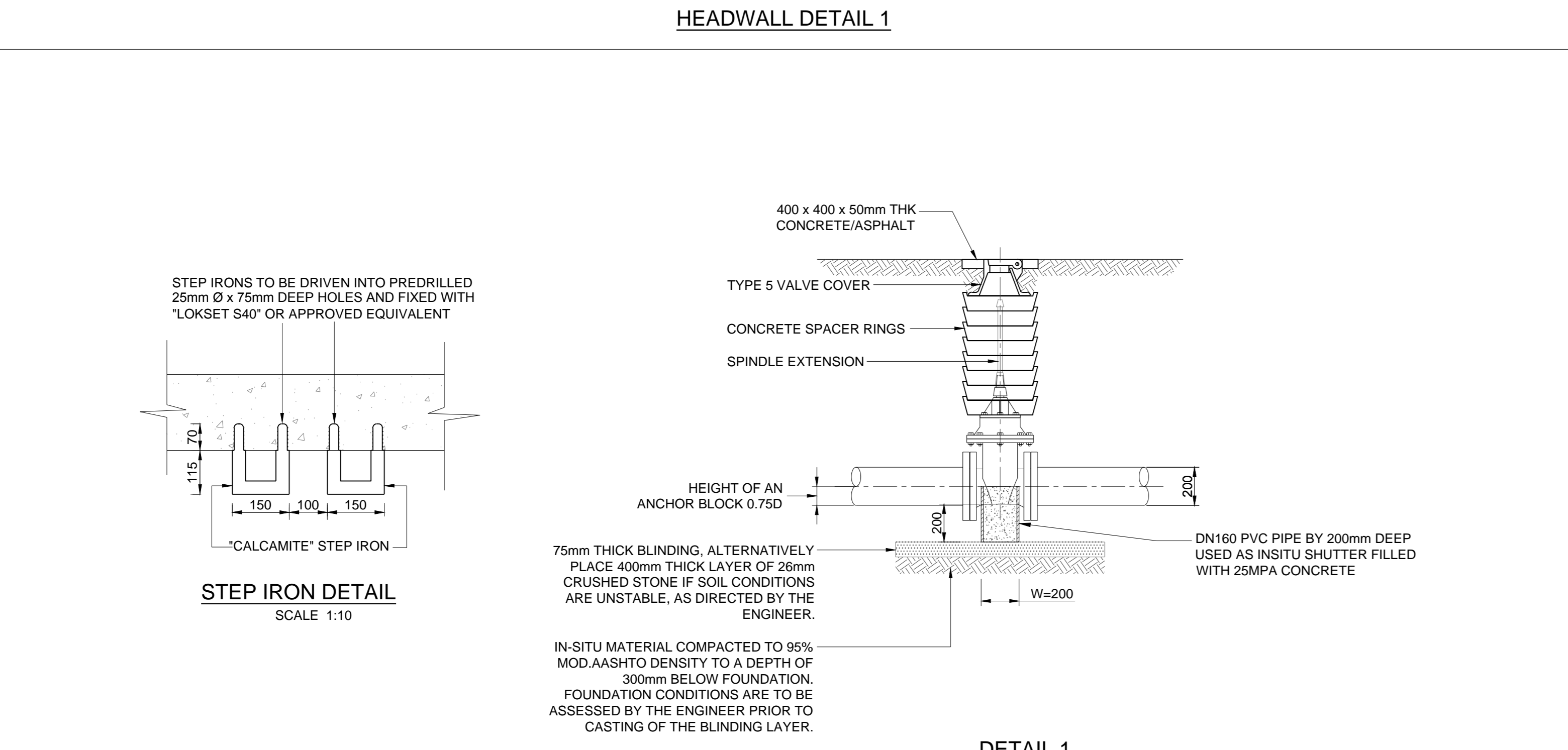
Drawing No. \_\_\_\_\_ Sheet 8 Rev. 0



| NOM. PIPE DIA. | DIMENSIONS (mm) |     |     |      |      |      |
|----------------|-----------------|-----|-----|------|------|------|
|                | A               | B   | C   | L    | X    | Y    |
| 375            | 245             | 350 | 250 | 980  | 1800 | 2175 |
| 450            | 245             | 360 | 250 | 980  | 1800 | 2250 |
| 525            | 250             | 375 | 250 | 1050 | 2000 | 2525 |
| 600            | 300             | 450 | 300 | 1200 | 2200 | 2800 |
| 750            | 300             | 450 | 300 | 1500 | 2400 | 3150 |
| 825            | 300             | 450 | 300 | 1650 | 2600 | 3425 |
| 900            | 300             | 450 | 300 | 1800 | 2800 | 3700 |
| 1050           | 300             | 450 | 300 | 2100 | 3000 | 4050 |
| 1200           | 300             | 450 | 300 | 2400 | 3200 | 4400 |

NOTE: INLET HEADWALL DOES NOT HAVE SPLITTER BLOCKS.

HEADWALL DETAIL 1



CLIENT:

Ekurhuleni  
METROPOLITAN MUNICIPALITY

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70  
70mm ON ORIGINAL PLAN

LEGEND

EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.

SEWERS AND M.H.'S

STORM WATER DRAINS AND M.H.'S

WATER MAINS AND VALVES

ELECTRICITY CABLES

G.P.O TELEPHONE CABLES

OIL PIPELINES

CONSULTANT:

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 Westville, Durban

DRAWING No.: G108-52-5257 REV. 0

FOR TENDER

| Ref. Drg. | Description |
|-----------|-------------|
|           |             |

| Revision | Date    | Description       |
|----------|---------|-------------------|
| 0        | 01-2019 | ISSUED FOR TENDER |

NOTE: No construction work to commence until base and services locations have been completed.

Acquisitions completed:

Date: \_\_\_\_\_ Engineer: \_\_\_\_\_ NORTH POINT

| UNDERGROUND SERVICES | CHECKED |           |
|----------------------|---------|-----------|
| SERVICE              | DATE    | SIGNATURE |
| S.W DRAINS           |         |           |
| SEWERS               |         |           |
| WATERMANS            |         |           |
| G.P.O CABLES         |         |           |
| ELECTRIC CABLES      |         |           |
| S.A.R CABLES         |         |           |
| E.S.C CABLES         |         |           |
| OIL PIPE LINE        |         |           |

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewer, drains, cables, water mains and connections. Wherever possible these must be located before work begins.

Contract No. \_\_\_\_\_

Project Title  
**MASETJABA RESERVOIR  
 CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS**

Section \_\_\_\_\_

Drawing Title  
**STANDARD ASSOCIATED DETAILS**

Scales: AS SHOWN  
 Designed: D.Ramghulam Date: June 2018  
 Checked: A.Goonun Drawn: N. Adams

Chief Area Engineer \_\_\_\_\_

Manager \_\_\_\_\_

Director (Water) \_\_\_\_\_

Executive Director \_\_\_\_\_

FOR TENDER

Drawing No. \_\_\_\_\_ Sheet 9 Rev. 0

CLIENT:



LEGEND

- EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.
- SEWERS AND M.H'S
  - STORM WATER DRAINS AND M.H'S
  - WATER MAINS AND VALVES
  - ELECTRICITY CABLES
  - G.P.O TELEPHONE CABLES
  - OIL PIPELINES

CONSULTANT:



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DRAWING No.: G108-52-5259 REV. 0

| Ref Drg. | Description |
|----------|-------------|
|          |             |

| Revision | Date    | Description       |
|----------|---------|-------------------|
| 0        | 01-2019 | ISSUED FOR TENDER |

NOTE: No construction work to commence until land and servitude acquisitions have been completed.

Acquisitions completed:

| Date | Engineer | NORTH | POINT |
|------|----------|-------|-------|
|      |          |       |       |

| UNDERGROUND SERVICES | CHECKED |
|----------------------|---------|
| S.W DRAINS           |         |
| SEWERS               |         |
| WATERMAINS           |         |
| G.P.O CABLES         |         |
| ELECTRIC CABLES      |         |
| S.A.R CABLES         |         |
| E.S.C CABLES         |         |
| OIL PIPE LINE        |         |

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations, trenches etc. to avoid damage to underground services such as sewers, drains, cables, water mains and connections. Wherever possible these must be located before work begins.

Contract No.

Project Title  
**MASETJABA RESERVOIR**  
 CONSTRUCTION OF A 15ML REINFORCED CONCRETE RESERVOIR, PIPELINES AND ASSOCIATED WORKS

Section

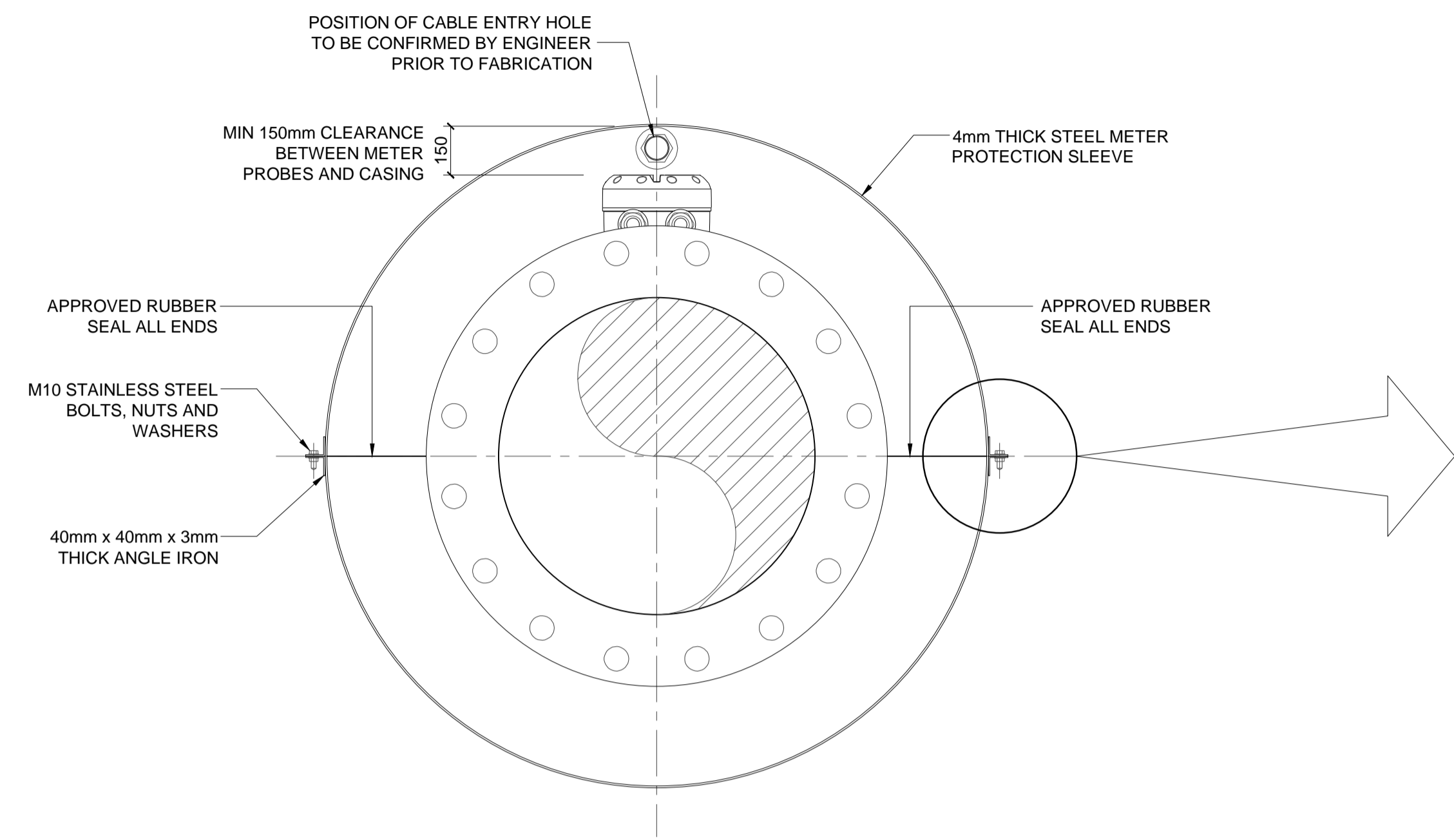
Drawing Title  
**DN300 METER INSTALLATION ON DN500 OUTLET PIPELINE**

Scales : AS SHOWN  
 Designed : D.Ramghulam Date : June 2018  
 Checked : A.Goorun Drawn : A. Faro

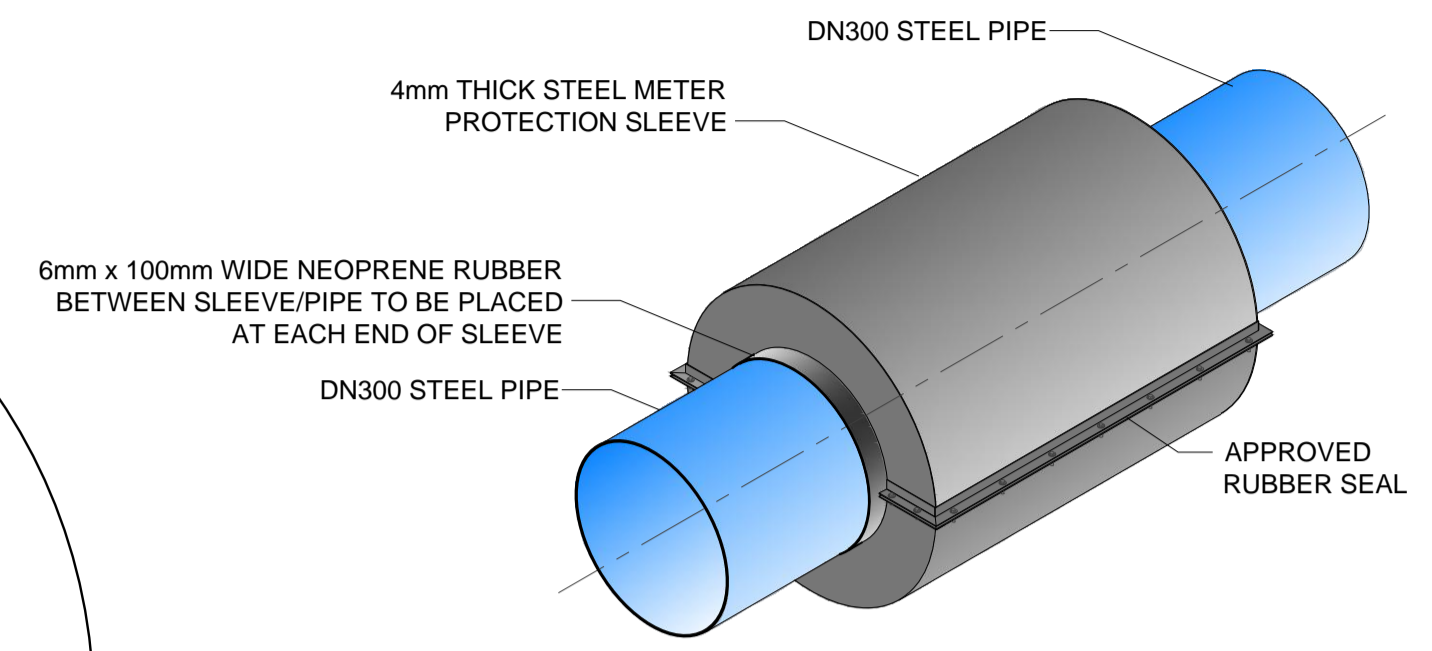
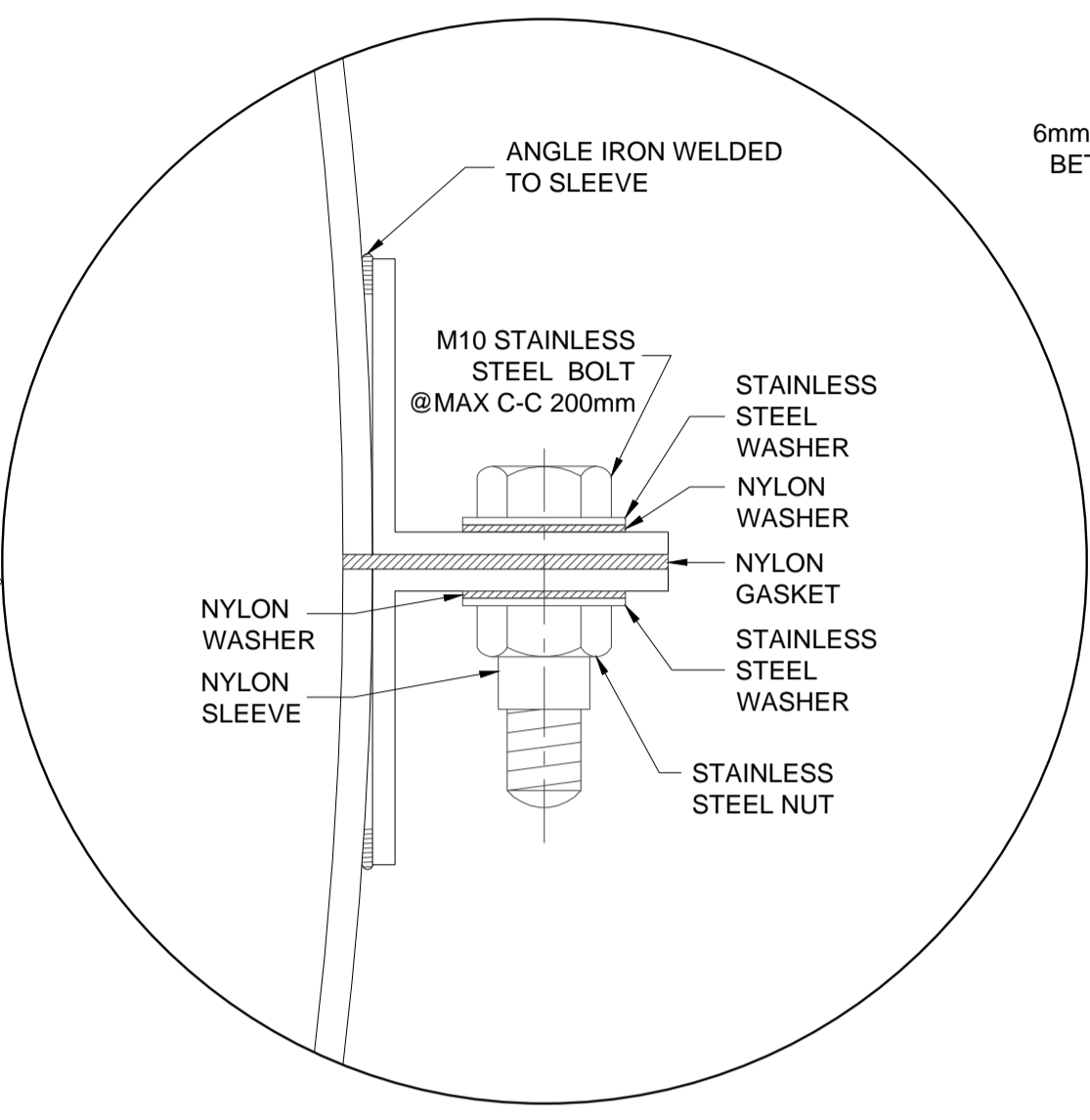
Area Engineer  
 Manager  
 Director (Water)  
 Executive Director

Drawing No. 11 Sheet 0 Rev. 0

**FOR TENDER**



SECTION C  
 SCALE 1:10

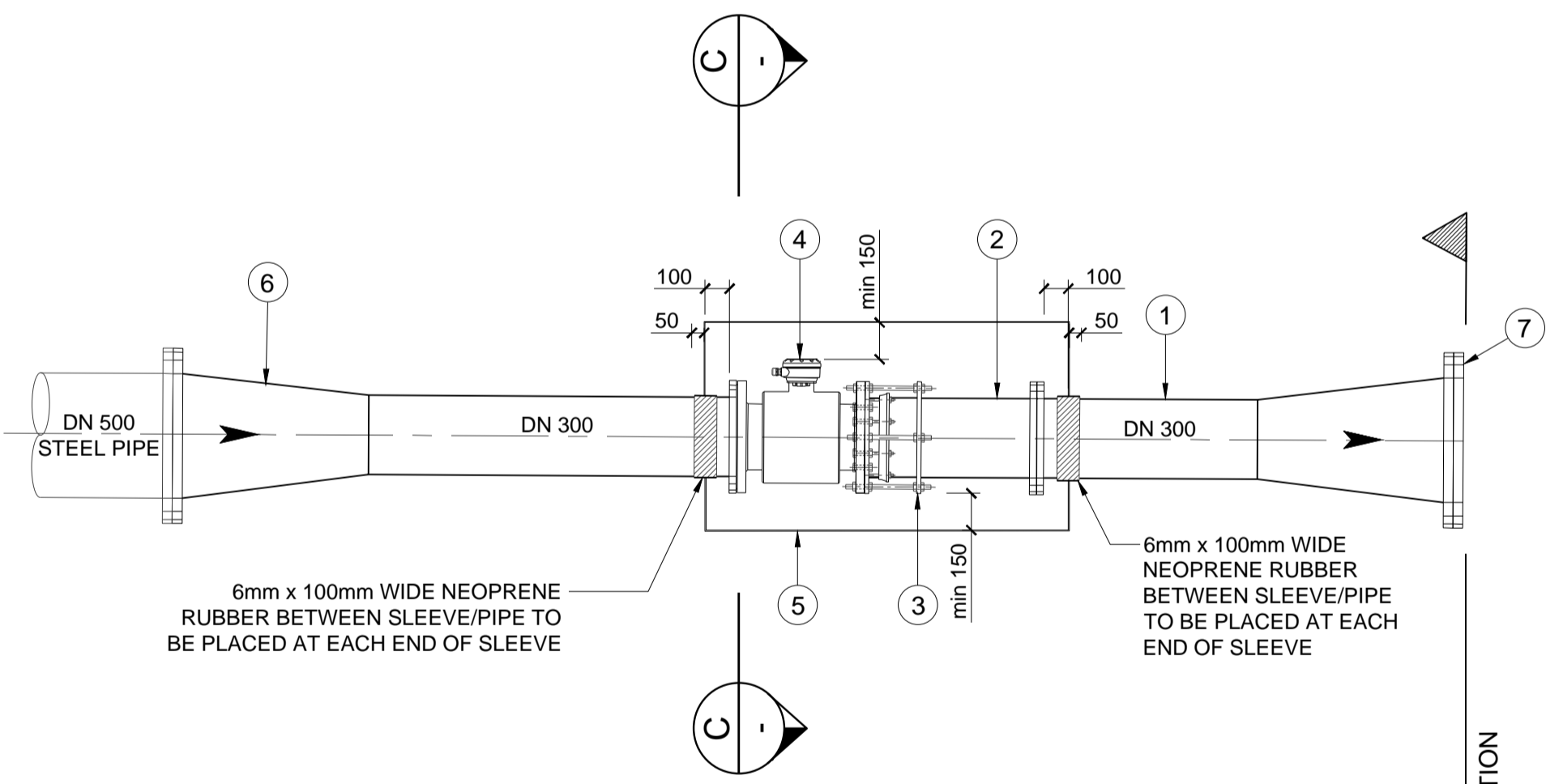


ISOMETRIC VIEW OF METER PROTECTION SLEEVE  
 N.T.S.

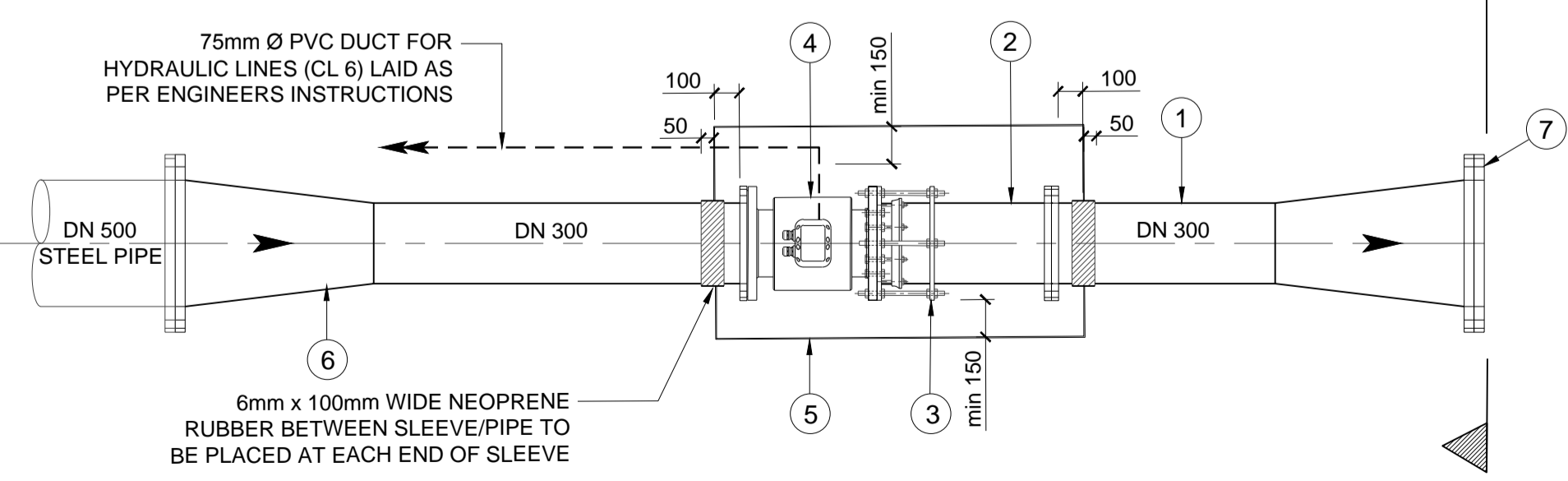
| ITEM NO | NOM DIA       | DESCRIPTION   | DIMENSIONS (mm) |   |   |      | No. OF |
|---------|---------------|---|-----------------|---|---|------|--------|
|         |               |   | A               | B | C | F/F  |        |
| 1       | DN500 x DN300 | SPECIAL: 800mm LONG F/F TAPER WELDED TO DN300 x 900mm LONG STRAIGHT PIPE, F.B.E.  |                 |   |   | 1700 | 1      |
| 2       | DN300         | SPOOL PIECE WITH FLANGE PLACED 250mm FROM UPSTREAM END, F.O.E., OTHER END PLAIN ENDED, P.C., (FINAL LENGTH TO BE DETERMINED ON SITE PRIOR TO FABRICATION) |                 |   |   | 750  | 1      |
| 3       | DN300         | VIKING JOHNSON RESTRAINED FLANGE ADAPTOR OR SIMILAR APPROVED  |                 |   |   |      | 1      |
| 4       | DN300         | METER PN16 (KROHNE OPTISONIC 3400) OR SIMILAR APPROVED.   |                 |   |   | 500  | 1      |
| 5       |               | METER PROTECTION SLEEVE AS PER DETAILS  |                 |   |   |      | 1      |
| 6       | DN500 x DN300 | SPECIAL: 800mm LONG F/F TAPER WELDED TO DN300 x 1500mm LONG STRAIGHT PIPE, F.B.E.   |                 |   |   | 2300 | 1      |
| 7       | DN500         | BLANK FLANGE  |                 |   |   |      | 1      |

NOTES:  
 ALL SPECIALS TO BE EPOXY COATED (S.F.E) TO PROJECT SPECIFICATIONS UNLESS OTHERWISE STATED. ALL PIPE TO BE TO SANS 719, GRADE X42, 8mm THICK.  
 ALL FLANGES TO BE 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.

|   |  |  |
|---|--|--|
| <p>ABBREVIATIONS :</p> <p>DN - DIAMETER NOMINAL<br/>                 OD - OUTSIDE DIAMETER<br/>                 ID - INSIDE DIAMETER<br/>                 M.S - MILD STEEL<br/>                 S.S - STAINLESS STEEL<br/>                 H.D.G.M.S - HOT DIPPED GALVANISED MILD STEEL<br/>                 G.M.S - GALVANISED MILD STEEL<br/>                 C.I - CAST IRON<br/>                 F.R.L - FINAL ROAD LEVEL</p> | <p>F.O.E - FLANGED ONE END<br/>                 F.B.E - FLANGED BOTH ENDS<br/>                 F.A.R - FLANGED ALL ROUND<br/>                 F/F - FACE TO FACE DIMENSION<br/>                 C/F - CENTRE TO FACE DIMENSION<br/>                 L.R.B - LONG RADIUS BEND<br/>                 S.R.B - SHORT RADIUS BEND<br/>                 P.C. - PLAIN END COATED<br/>                 P.E. - PLAIN END (FOR WELDING)</p> |  |
|---|--|--|



ELEVATION  
 SCALE 1:100



PLAN  
 SCALE 1:100

LIMIT OF CONSTRUCTION