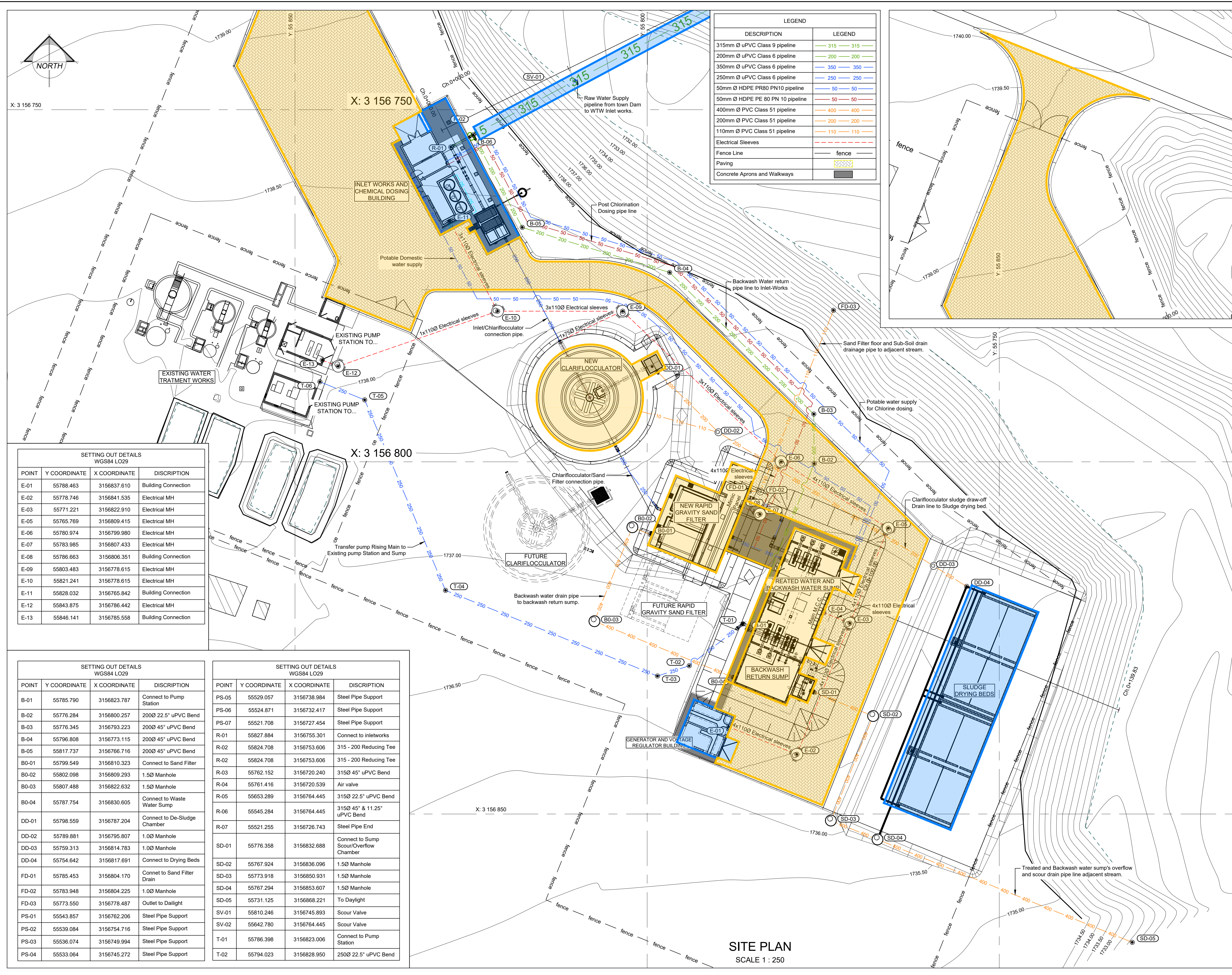




Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
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SCOPE - PART A
CONTRACT

SCOPE - PART B
CONTRACT

FOR TENDER
PURPOSES ONLY

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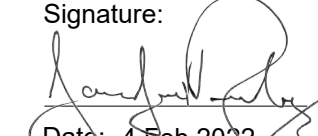
Drawing Number	Drawing Description

AMENDMENTS

Rev.	Date	Description

ECA CONSULTING MBOMBELA OFFICE:
29 Marloth Street | Mbombela | Mpumalanga | RSA
mbombela@ecaconsult.co.za
Tel: +27 (0)13 182 2387
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Civil and Structural Engineers
Company Reg.: 2004/019299/07
ISO Registered 9001:2015

OTHER OFFICES:
VRYHEID | GAUTENG | PIETERMARITZBURG | LADYSMITH

Approved by Engineer: Name: I.J. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 200870069
Signature: 
Date: 4 Feb 2022

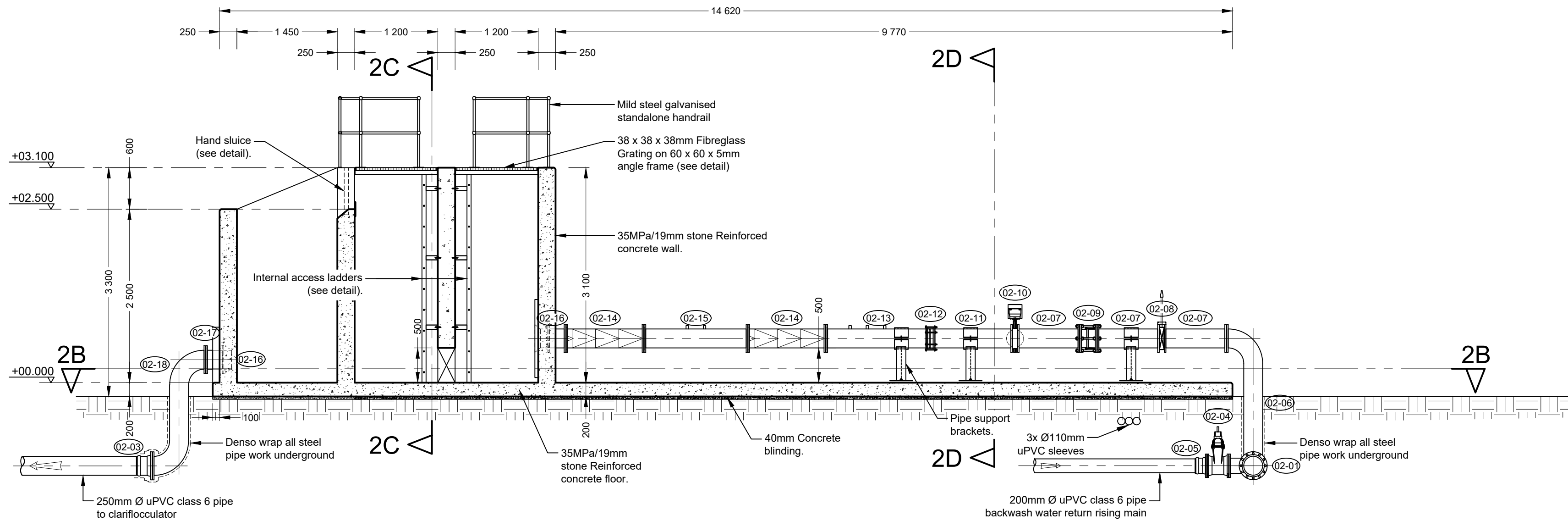
Client: **DIHLABENG LOCAL MUNICIPALITY**

Approved by Client: Name: _____
Signature: _____ Date: _____

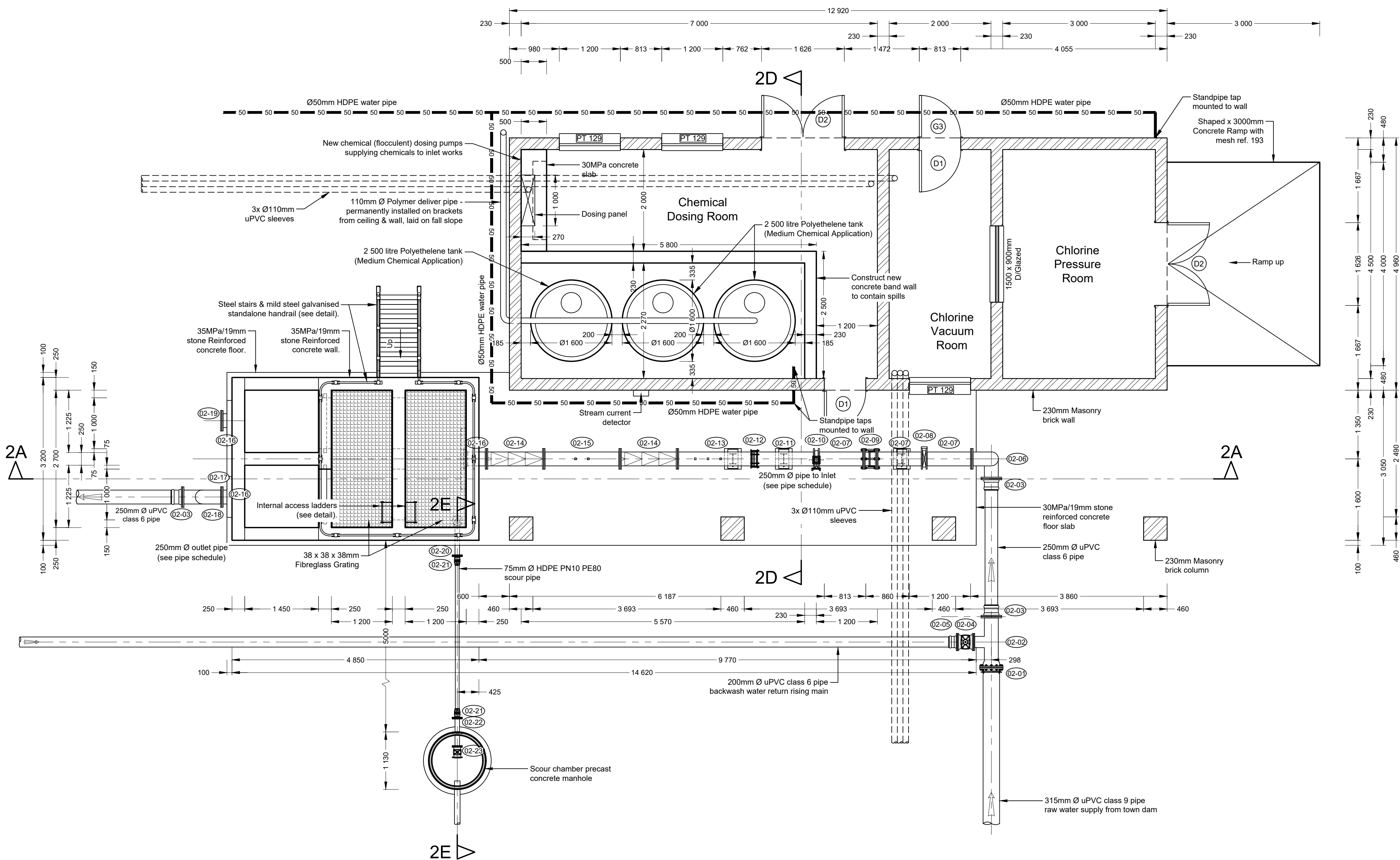
Project: **CLARENS WATER TREATMENT WORKS**

Drawing description: **WATER TREATMENT WORKS SITE PLAN**

Drawn: R Blignaut Date: Jan 2021
Scale/s: 1:250
Drawing number: 13-019-V-01-01-01 Rev.: 00



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/50	SECTION 2A - 2A	-



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/50	PLAN VIEW	-

NOTES:

CONCRETE GRADE:

- Blinding 15MPa / 13mm
- Main Structure
- Base 35MPa / 19mm
- Wall 35MPa / 19mm
- Floor slab 35MPa / 19mm
- Suspended slab 35MPa / 19mm
- Beams 35MPa / 19mm
- Columns 35MPa / 19mm
- General
- Thrust blocks 15MPa / 19mm
- Incased pipes 35MPa / 19mm
- Mass concrete 15MPa / 19mm

CONCRETE FINISHES:

- Main Structure
- Base top U3
- Base sides F2
- Wall both sides F2
- Wall top U3
- Floor slab top U4
- Suspended slab soffit F2
- Suspended slab top U3
- Beam sides F2
- Beam soffit F2
- Beam top U3
- Column sides F2
- General
- Thrust blocks sides Insitu
- Thrust blocks top U1
- Incased pipe sides Insitu
- Incased pipe top U1

GENERAL NOTES:

- All exposed concrete edges to be chamfered 20mm x 20mm. Except if specified differently.
- Imported fill below main structure to be at least Grade G5 or equivalent.
- Supply and apply "Chryso Dem 10" or similar approved vegetable-based, biodegradable and non toxic release agent at rate of 30m² / liter as thinly as possible and as near as possible to time of concreting. Preferably sprayed onto steel shutters.
- Supply and spray "MasterKure 181" or similar approved non-degrading, liquid based on Piloite Resin curing compound suitable for spray application to freshly poured concrete at and application rate of 6m² / liter as soon as the shutters have been stripped or as soon as floating has been finished on floor surfaces.
- Supply and apply "Master Protect 480" or similar approved non-toxic solvent free high build, protective epoxy resin coating applied to prepared concrete surface in two separate coats at an application rate of 5m² / liter per coat.

STEEL AND PIPE NOTES:

- All pipes and steelwork shall be fusion bonded epoxy coated to DFT 300 micron thick unless indicated otherwise or stainless steel items

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
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FOR TENDER PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-02-02	Sections & Details
13-019-V-01-02-03	Elevations
13-019-V-01-02-04	Foundation, Roof & Electrical Plans
13-019-V-01-02-05	Pipe Schedule & Details

AMENDMENTS

Rev.	Date	Description

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Company Reg.: 2004/019299/07
ISO Registered 9001:2015

Approved by Engineer: Name: J.W. Janse v Rensburg Designation: PrTechEng ECSA Reg.: 201070143
Signature: Date: 4 Feb 2022

Client: **DIHLABENG LOCAL MUNICIPALITY**

Approved by Client: Name: Signature: Date:

Project: **CLARENS WTW**

Drawing description: **INLET, DOSING CHAMBER AND BUILDING: SECTIONS**

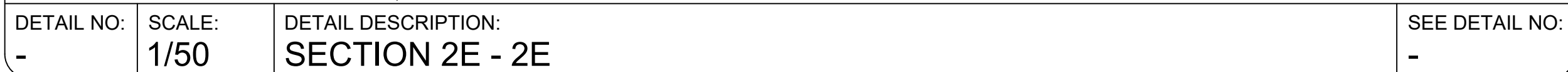
Drawn: M BOTHA Date: Jan 2021
Scale/s: AS SHOWN
Drawing number: 13-019-V-01-02-01 Rev.: 00

STEEL AND PIPE NOTES

- All pipes and steelwork shall be fusion bonded epoxy coated to DFT 300 micron thick unless indicated otherwise or stainless steel items



**FOR TENDER
PURPOSES ONLY**



Approved by Engineer: Signature: 
Name: J.W. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 201070143 Date: 4 Feb 2022


**DIHLABENG
LOCAL
MUNICIPALITY**

Project:

Drawing description:

Drawing number:	Rev.:
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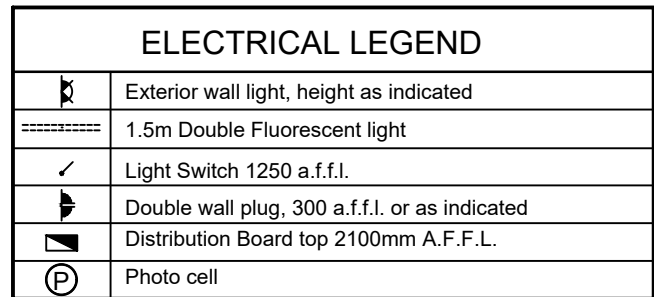
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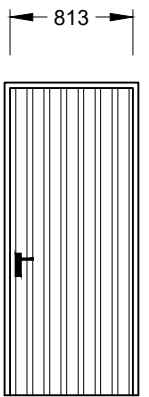
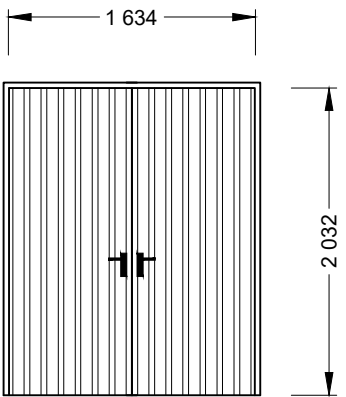
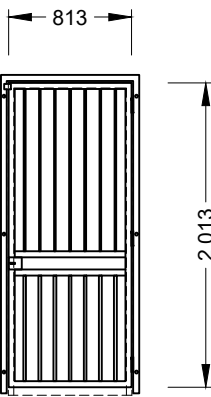
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13-019-V-01-02-03	00

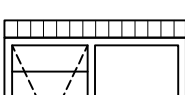
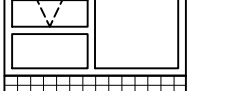
SEE DETAIL NO:
-



DETAIL NO: -	SCALE: 1/100	DETAIL DESCRIPTION: ELECTRICAL PLAN	SEE DETAIL NO: -
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	D1	D2	G3
Door leaf.	Meranti BB® Square Jointed 813 x 2032 x 40mm Constructed from kiln dried (kd) hardwood frame with double top and bottom rails, hinge blocks and lock blocks on both sides. Hardwood tongue and groove square jointed boarding glued to frame on both sides with weather and boil proof adhesive. Supplied raw fine sanded. Finished with three coats "RYSTIX" EXTERIOR ARMADEK, or similar approved solvent sealer. Lightly sand after each coat.	DOUBLE DOOR - Meranti BB® Square Jointed with 20 x 20mm internal rebate. 1632 x 2032 x 40mm Constructed from kiln dried (kd) hardwood frame with double top and bottom rails, hinge blocks and lock blocks on both sides. Hardwood tongue and groove square jointed boarding glued to frame on both sides with weather and boil proof adhesive. Supplied raw fine sanded. Finished with three coats "RYSTIX" EXTERIOR ARMADEK, or similar approved solvent sealer. Lightly sand after each coat.	Gate consisting of 40x40x3mm square tubing, with R12 and R18 bars @ 100mm c/c bars.
Frame:	Std. Hot Dipped Galvanised 1.2mm Mild steel frame for 1/2 brick wall with 2 x 100mm butt hinges welded to frame, adjustable striker plate and rubber buffers to lock jamb.	Std. Double door, hot dipped galvanised 1.2mm Mild steel frame for 1/2 brick wall with 2 x 100mm butt hinges welded to frame, adjustable striker plate.	Purpose made 40x40x3mm square tubing frame rawl bolted to wall over brickwork opening. Gate and frame finished with fusion bonded epoxy coated.
Handles:	Union: Radius lever CZ692-24SC to take 2-Lever lockset.	Union: Radius lever CZ692-24SC to take 2-Lever lockset.	R12 Bar formed into handle and welded to frame.
Lockset:	Union: 2-Lever upright lock 2295-78SS.	Union: 2-Lever upright lock 2295-78SS. 2 x Flush bolts to inner door, complete with rebate conversion set.	Upright double throw security mortice deadlock in steel plate housing with extended cover plate.
Hinges:	As supplied with frame.	As supplied with frame.	3 x Bullit hinges welded to gate and frame as shown.
Glazing:	None.	None.	None.
Special notes:	Wall or Floor mounted black rubber door stop.	Wall or Floor mounted black rubber door stop.	Cabin hook to hold gate in open position.

 PT 129	Standard aluminium window frames and opening sections in 'Anolock bronze 543 finish. Supply and fit standard, pre-glazed, aluminium frames to manufacturer's specification. <u>Clear glazing & solid square bar burglar proofing.</u>
 1500 x 900	<u>Purpose made view window:</u> Frame: 90 x 70 Hardwood (Meranti) frame, rebated to take double glazing pane. Plugged to walls and sealed - air tight Glazing: Double glazing, safety glass. Comply with Part N of SABS 0400, fixed and sealed to hardwood frame to be air tight. (No burglar proofing)

DETAIL NO: -	SCALE: 1/50	DETAIL DESCRIPTION: DOOR & WINDOW SCHEDULE	SEE DETAIL NO: -
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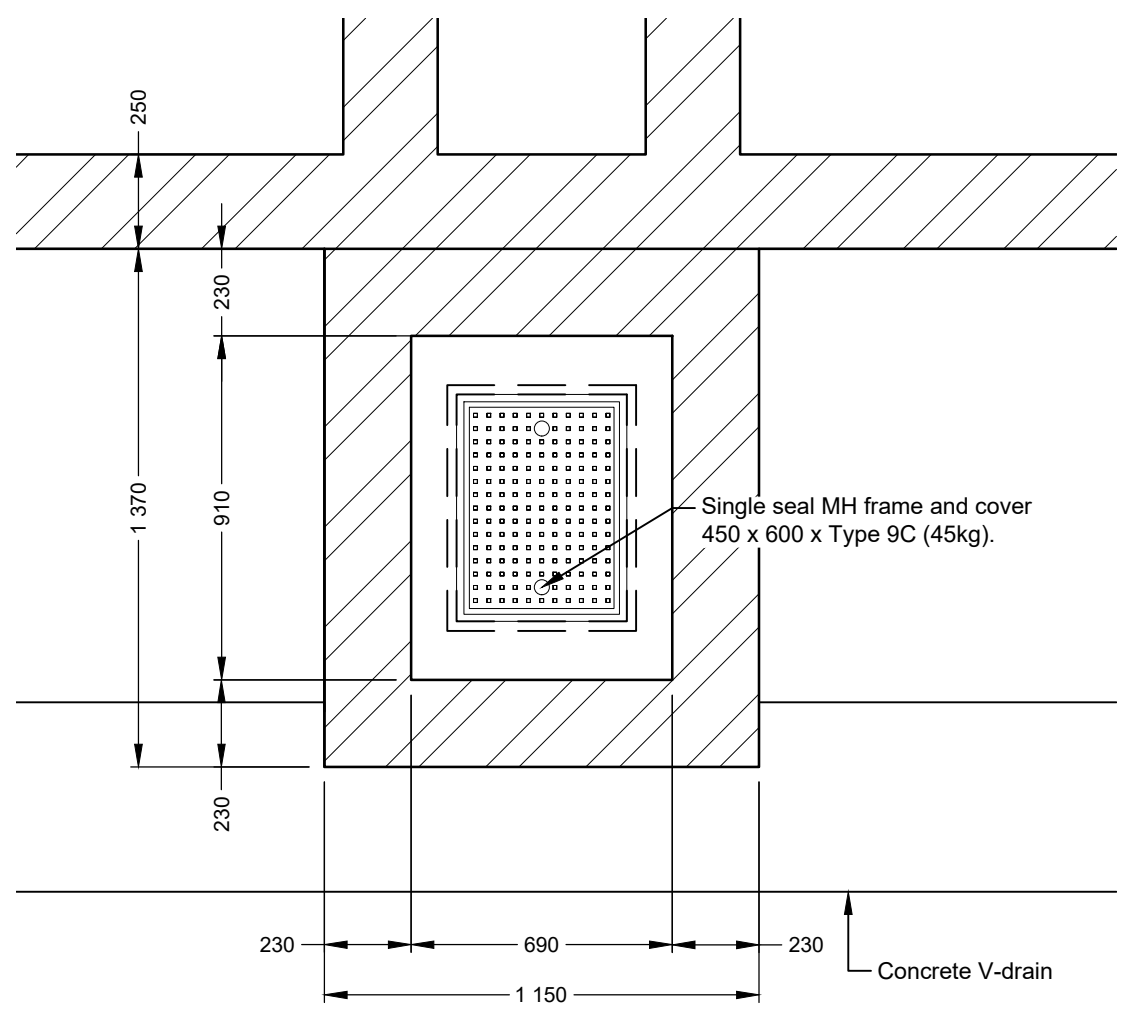
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|--|---|
| <p>TERMITTE POISON: Treat ground under all internal & external walls, concrete beds and slabs in accordance with SABS 1166S. Then apply 50mm river sand over poison.</p> | <p>2. 2x 2 (2400x1140mm) GREEN CHALK BOARD: To comply with CKS-36-1980 or equivalent code of practice, complete with chalk rail as one unit. Strictly according to manufacturers instructions. Bottom of board to be 900mm from finished floor level.</p> |
| <p>2. FLOORS: 100mm Thick, 20MPa concrete surface bed, floated to Class U2 with mesh ref. 245 set 25mm below top on 250microns USB green damp proof membrane on 25mm sand bed on compacted G5 fill. To be poisoned in accordance with SABS 1165 soil poison with with 5 year guarantee.</p> | <p>3. Pinning board as per detail - 2 Coats pva paint finish.</p> |
| <p>3. 100mm, Sloping 20MPa concrete surface bed floated to Class U2 with mesh ref. 245 set 25mm below top on cast on 250 micron USB Green, damp proof membrane - with all side overlaps sealed with approved contact adhesive, on 50mm sand on approved G5 filling to be poisoned as item 1. Concrete to have non-slip U2 finish, wood float.</p> | <p>31. Shelves as per details.</p> |
| <p>4. ±450 x ±450 x 10mm SLIP FREE CERAMIC TILES: As approved on 3:1 tile cement mortar. All joints to be continuous in both directions with total thickness of 6mm min. Tiles laid to manufacturers recommendations and instructions. Tiles to be Group A quality - Sand / Terracotta Colour.</p> | <p>32. Standard 150 X 150 white glazed soap holder.</p> |
| <p>5. 75mm high SKIRTING TILES: Cut from floor tiles, as approved on 3:1 cement mortar. All joints to be laid in same direction as floor tiles. Tiles to be laid to manufacturers recommendations and instructions.</p> | <p>33. As per detail.</p> |
| <p>6. Apply Flowshield 1000 self smoothing epoxy compound to a minimum thickness of 1000 microns in accordance with the manufacturers Flowcrete SA's installation methodology. Colour to be Goosewing Grey Z22 or equal and approved. Concrete floors to be clean, dry, sound and free of laitance with residual moisture content of less than 4%. Applied by Specialist Sub contractor.</p> | <p>34. 0.6mm Thick 450mm girth ridge capping all as described for roof covering. Provide polyethylene filler blocks to ridging.</p> |
| <p>7. 19x76mm MERANTI SKIRTING BOARD: Nailed to wall. All nails to be punched and filled. Finish with 2 coats poly-urethane paint.</p> | <p>35. Kloplok 700/ Kingplod 700/ Saflok700: 0.53mm thick "Chromadek/Gloabcoat" to one side, profiled steel sheeting to steel structure roof & sides: Colour - Dark dolphin.</p> |
| <p>8. UNTINTED GRANOLITHIC: 22mm min. thick floor finish (Screed).</p> | <p>36. Determine the direction of prevailing winds before laying sheets. Sheets must be projected minimum 50mm beyond purlin at eaves. Holes in sheets to be drilled, not punched</p> |
| <p>9. FACE BRICK IN STRETCHER BOND: "Corobrick - Nabrasca Travertine" or similar approved "FBS" quality clay face bricks to SABS 227:2002 with all joints and perpend to be 6mm square deep recessed. WALLS WATERPROOFING: Apply bagwash and bitumen emulsion to external face of of internal brick skin on all external / cavity walls.</p> | <p>37. Prefabricated cleated (Gangnail) roof trusses to engineers approval, tied down to walls with galvanized hoop-iron straps built in. Trusses to be spaced at max 1200mm C/C on 76 x 38mm wall plates. TR1 and TR2 certificates to be provided.</p> |
| <p>10. PLASTER AND PAINT: All walls finished with minimum 15mm plaster and painted with one coat professional plaster primer, and two coats "Plascon - Double Velvet, Colour - VEL 17 Broken White." or other approved interior quality paint.</p> | <p>38. Hurricane clips to be provided and secured to 76 x 50mm SA Pine Purllins purllins and trusses at every intersection.</p> |
| <p>11. WHITE GLAZED TILES: Three rows above unit, with returns where applicable in dove grey gROUT.</p> | <p>39. Barge Boards & Fascias 'Everite Nutlet' fibre-cement: <ul style="list-style-type: none"> • 225 x 10mm thick Fascias. • 200 x 80mm Barge Board. </p> |
| <p>12. MATT WHITE GLAZED TILES (200 x 200): 'Jonson' or similar approved, eight (8) rows tile all round in dove grey gROUT.</p> | <p>40. Approved H-profile barge boards joiners. Provide drill for and fix with hot-dipped galvanized screws and washers. 76 x 50mm trimmer batten to underside of purlin ends for barge board fixing.</p> |
| <p>13. BRICK ON FLUSH WINDOW SILL: all joints to be flush half round jointed joints. Window sills underneath walkway roof to be soldier course.</p> | <p>41. G4/G5 Approved natural gravel fill material under floor slabs, compacted in layers not exceeding 150mm, to 93% Mod. AASHTO.</p> |
| <p>14. Interior 12mm CEMENT PLASTER WINDOW SILLS: finish as for PLASTER & PAINT walls.</p> | <p>42. Face brick-on-edge roller course.</p> |
| <p>15. INSULATION: 'Sisalation FR 500' or similar approved, insulation on top of purllins on 400mm chicken mesh. Care to be taken when installing hurricane clips not to damage insulation.</p> | <p>43. 76mm x 76mm Pine wrot splayed eaves, purllins spiked and stormclipped to rafters.</p> |
| <p>16. 4mm THICK FIBRE-CEMENT SHEET CEILINGS: Secured to 38 x 50mm brandering at maximum 400mm centres, fitted with H-profiled cover strips and 75mm Gypsum ceiling tile. Treat all nails and joints with one primer coat and finish ceiling and conic with one undercoat and two coats acrylic PVA paint.</p> | <p>44. 140 x 140mm Pre cast concrete posts holed for 12mm Ø MS bolts.</p> |
| <p>17. 600x600 CEILING TRAP DOOR: as per roof plan. Finish with 1 universal undercoat and two coats eggshell enamel paint to comply with SABS 630 type 2, or equivalent standard. Colour as for ceiling.</p> | <p>45. 30MPa Concrete ring beam with off-shutter finish and 20mm chamfers to all exposed edges. Rebar to details.</p> |
| <p>18. PLASTER & PAINT: Provide 2 coats acrylic PVA suitable for resisting with a mild detergent and with a mat finish. Apply at 10 m² / liter spread rate. Undercoat: Provide 1 coat alkaline resistant 100% pure acrylic filler coat. Spread rate 6 m² / liter.</p> | <p>46. SINK UNIT: 'Franke Curvline CVN 622' or similar approved insert sink (drop in).</p> |
| <p>19. Class 1, off-shutter concrete. Finishing: One coat bonding liquid, followed by 1 coat 'Plascon' Plastocrete texture paint, applied with a texture roller to manufacturer's specifications.</p> | <p>47. Windows: as scheduled.</p> |
| <p>20. SUSPENDED CEILING: 'Everite' or similar approved ceiling in 'Everite' Pentaltile' boards in 595mm x 1195mm nominal size. Installation complete with T-Grids, wall angles, hold down clips, suspension rods, hooks, plates etc. Installation by specialist / expert.</p> | <p>48. Doors: as scheduled.</p> |
| <p>21. WC - White 'Vaal' Aquasave low level suite (Code 750151) with 90" outlet washdown pan and catching 6 litre SISO cistern complete with heavy duty seat and lid, fittings and flushpipe or similar approved. Cistern connector hose with 232 angle regulating valve.</p> | <p>49. Foundations: 40mm Thick, 15 MPa blinding layer to bottom of trenches, with 30 MPa Concrete strip foundations to detail under all walls with top of foundation to be minimum 400mm below natural ground level. Reinforcing to rebar details.</p> |
| <p>22. WHB - White 'Vaal' Springbok 550 WHB (code 7031) with one top hole fitted to wall with semi concealed brackets (81182O) or similar approved. Basin connector hose with 232 angle regulating valve. Basin waste 1 1/2" Chrome plated basin waste with slotted shank, plug chain & stay (code 301-32) from cobra or similar approved. Basin waste trap: 1 1/2" Chrome plated bottle trap with outlet to 40mm IPVC. (Code 340/40) or similar approved.</p> | <p>50. 125mm Continuously rolled aluminium square guttering. Fixed with aluminium gutter brackets for fascia fixing. 125mm Circular downpipe complete with downpipe connection, offset combination, shoe and downpipe clips for fixing to wall.</p> |
| <p>23. Suitable - metal type (S/steel) toilet roll holder fixed to walls.</p> | <p>51. Worktops to be 32mm thick Laminated Saligna worktops - Refer to detail.</p> |
| <p>24. 600x19mm STAINLESS STEEL CHROMIUM PLATED TOWEL RAIL: complete with chromium plated end brackets plugged and screwed to wall.</p> | <p>52. Horizontal DPC.</p> |
| <p>25. 450x60x6mm "GG" QUALITY POLISHED GLASS MIRROR: Fix to wall position as shown on site with round nose chromium plated mirror screws. Four per mirror. 1 per basin.</p> | <p>53. 50 x 50 x 3mm Galvanised MS angle bracket minimum 500mm long, twice bolted to post and twice bolted to bearer.</p> |
| <p>26. 4.5kg DCP dry powder chemical fire extinguisher with hook made of 120x20x2mm mild steel plate to form hook for extinguisher screwed twice to 520x100x22mm hardwood. Hardwood screwed and plugged with 6 screws and plugs. Positioned as shown on site. Provide 190x100mm ABS plastic symbolic safety signs - type FB2, plugged and screwed to wall at all fire extinguishers.</p> | <p>54. 12mm Ø Stud anchor bolt to concrete post.</p> |
| <p>27. MEDICINE CABINET: Standard white built in type. Complete with mirrors on doors, shelves etc. All as approved. Size 380x610mm.</p> | <p>55. 10mm Ø Steel bolts with washers.</p> |
| <p>28. WALL SAFE: Aprox. size 280 x 310 x 230mm deep, bolted to wall with expansion bolts to inside of safe, with integrated security lock.</p> | <p>56. ±198mm x 46mm Thick laminated SA Pine Beam to veranda roofing secure rafters to bearer with storm clips.</p> |
| | <p>57. Timber finishes: All exposed timber. Pine trusses, purllins, wall plates, etc., treated with 2 coats 'Carbolineum'.</p> |
| | <p>58. 38 x 114mm Bracing.</p> |
| | <p>59. 38 x 76mm Wall plate trimmed to suit beam filling.</p> |
| | <p>60. 50 x 50 x 3mm Hot dipped galvanised mild steel angle with 'fish tail' cast in position to thresholds.</p> |
| | <p>61. 110mm Thick beam filling.</p> |
| | <p>62. Brickwork every two courses in foundations, every course above window head to wall plate level and every third course elsewhere.</p> |
| | <p>63. Walls where indicated on drawings to be taken up to underside of roof sheeting as fire-walls.</p> |
| | <p>64. 80mm Thick, 20 MPa x 1000mm, with mesh ref. 245, wide V-shaped surface channel cast in 2000mm lengths to falls to suit conditions with wood float U2 finish.</p> |
| | <p>65. 80mm Thick x 1000mm wide 20 MPa concrete apron cast in 2000mm lengths to falls to suit conditions to U3 finish.</p> |
| | <p>66. Ramp verandah floor to suit external levels. ie. <u>NO STEPS</u>.</p> |
| | <p>67. Lightning protection: All buildings to be provided with lightning protection in accordance with pages LP/1 to LP/6 inclusive, as the tender document.</p> |
| | <p>68. Expansion joint formed with 10mm thick soft-board full length and height of joint. Provide similar 100mm thick and 100mm wide bitumen impregnated soft-board to exposed edged.</p> |
| | <p>69. Column bases to be 600 deep x 350 x 500mm wide 25MPa concrete to pre-cast column basis.</p> |
| | <p></p> |

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-02-01	Sections
13-019-V-01-02-02	Sections & Details
13-019-V-01-02-03	Elevations
13-019-V-01-02-05	Pipe Schedule & Details

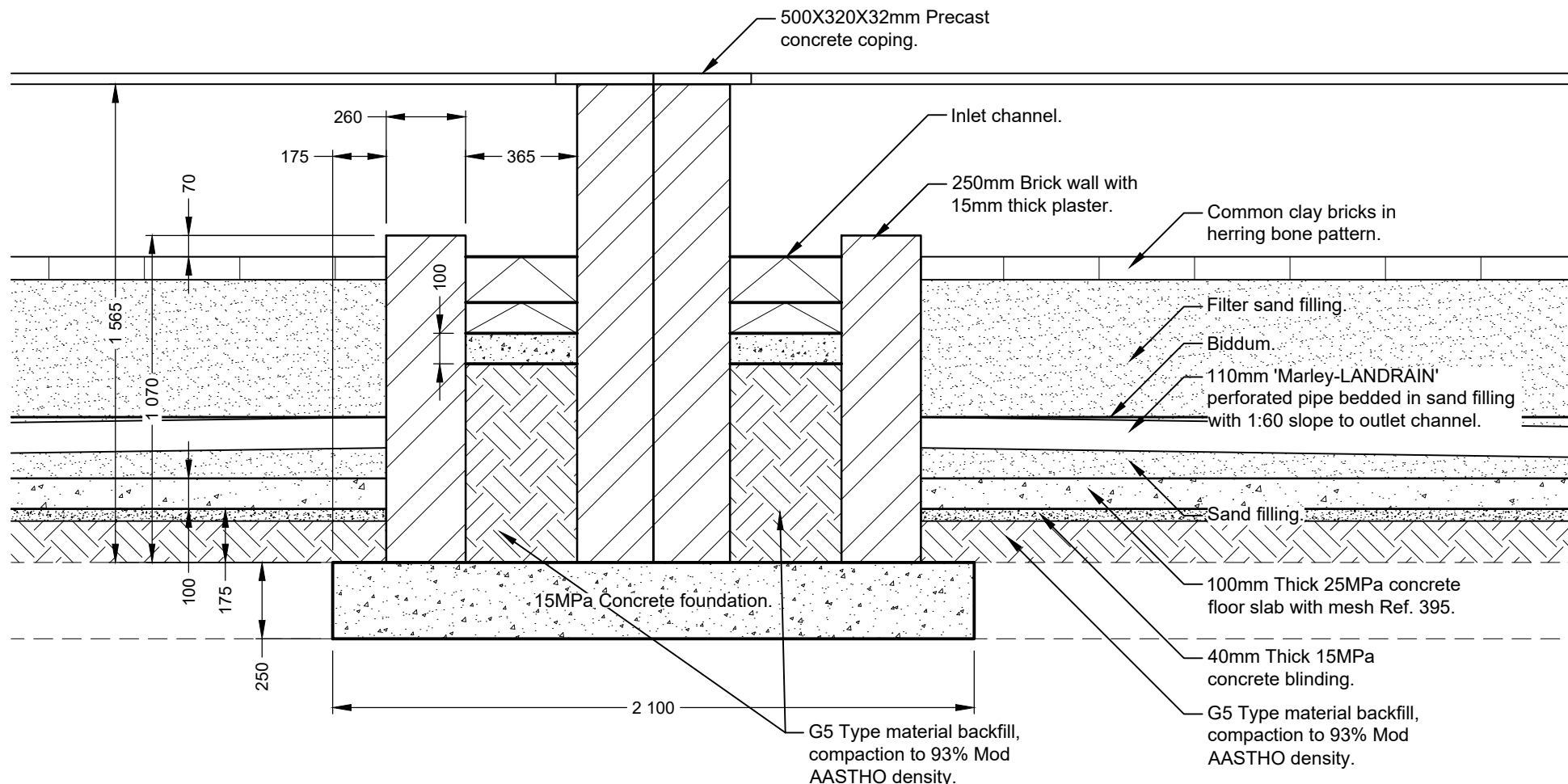
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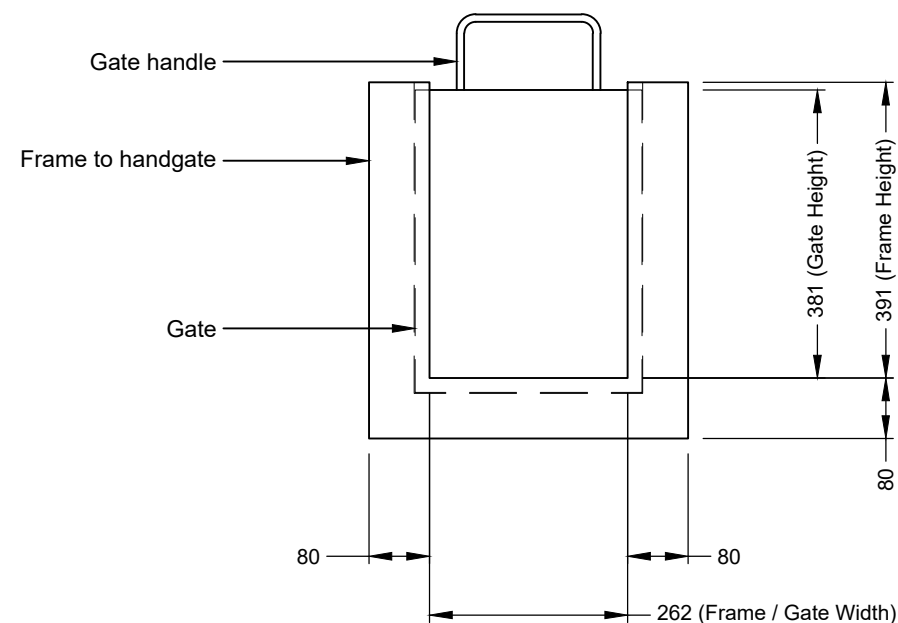
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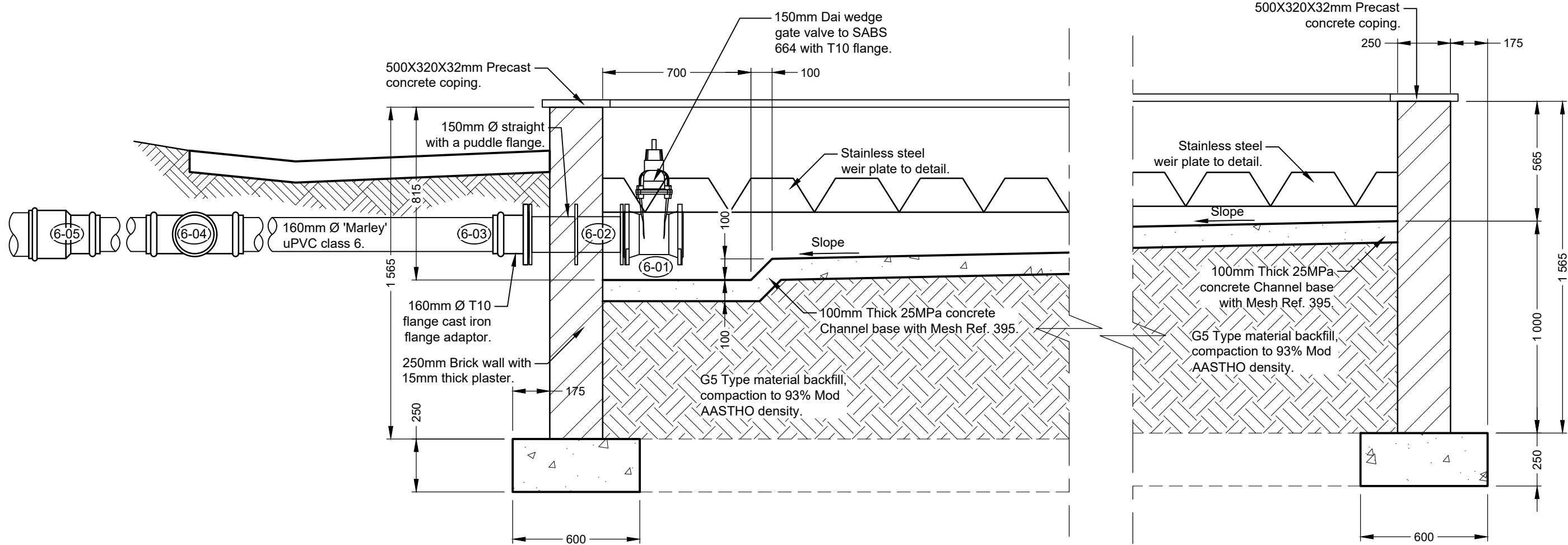
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SEE DETAIL NO: -



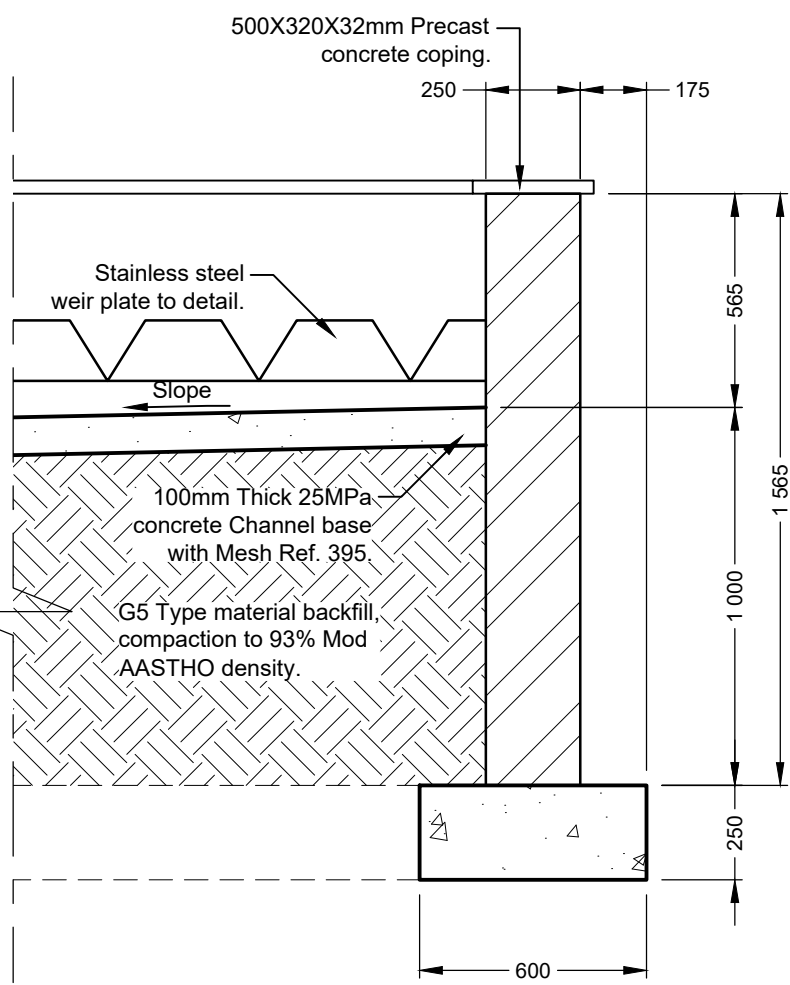
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SEE DETAIL NO: -



DETAIL NO: -
SCALE: 1/10
DETAIL DESCRIPTION: TYPICAL REMOVABLE HAND SLUICE DETAIL
SEE DETAIL NO: -

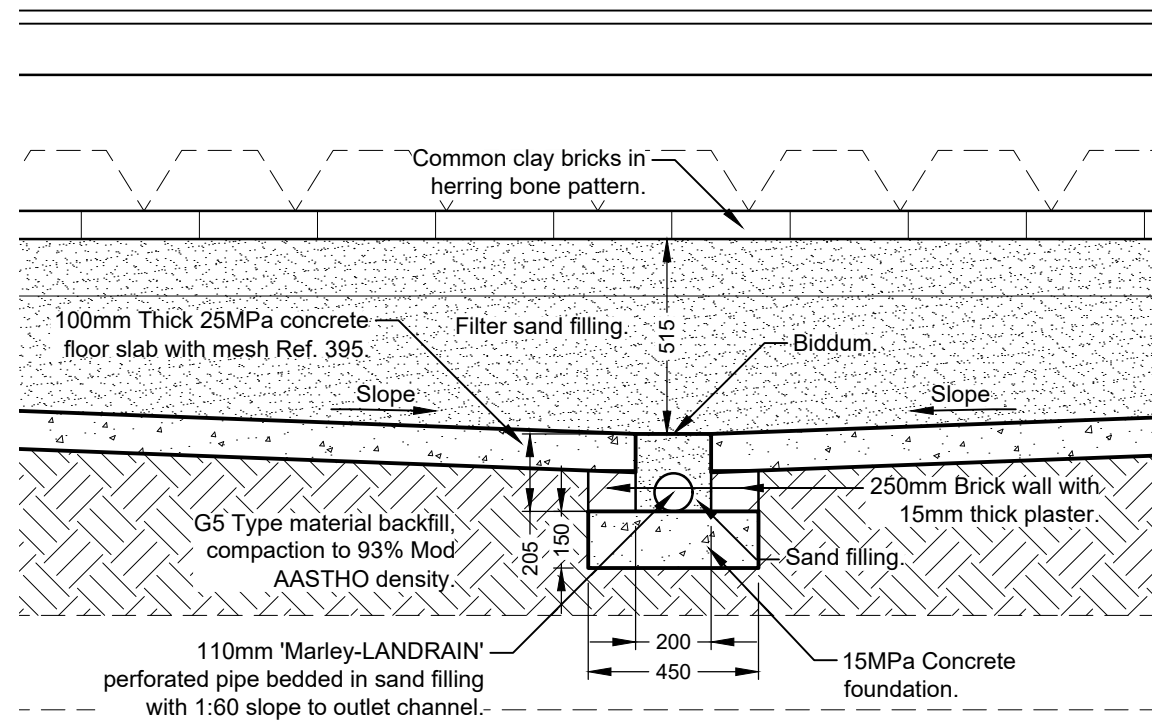


DETAIL 6G



DETAIL 6H

DETAIL NO: -
SCALE: 1/20
DETAIL DESCRIPTION: DETAIL 6G & 6H
SEE DETAIL NO: -



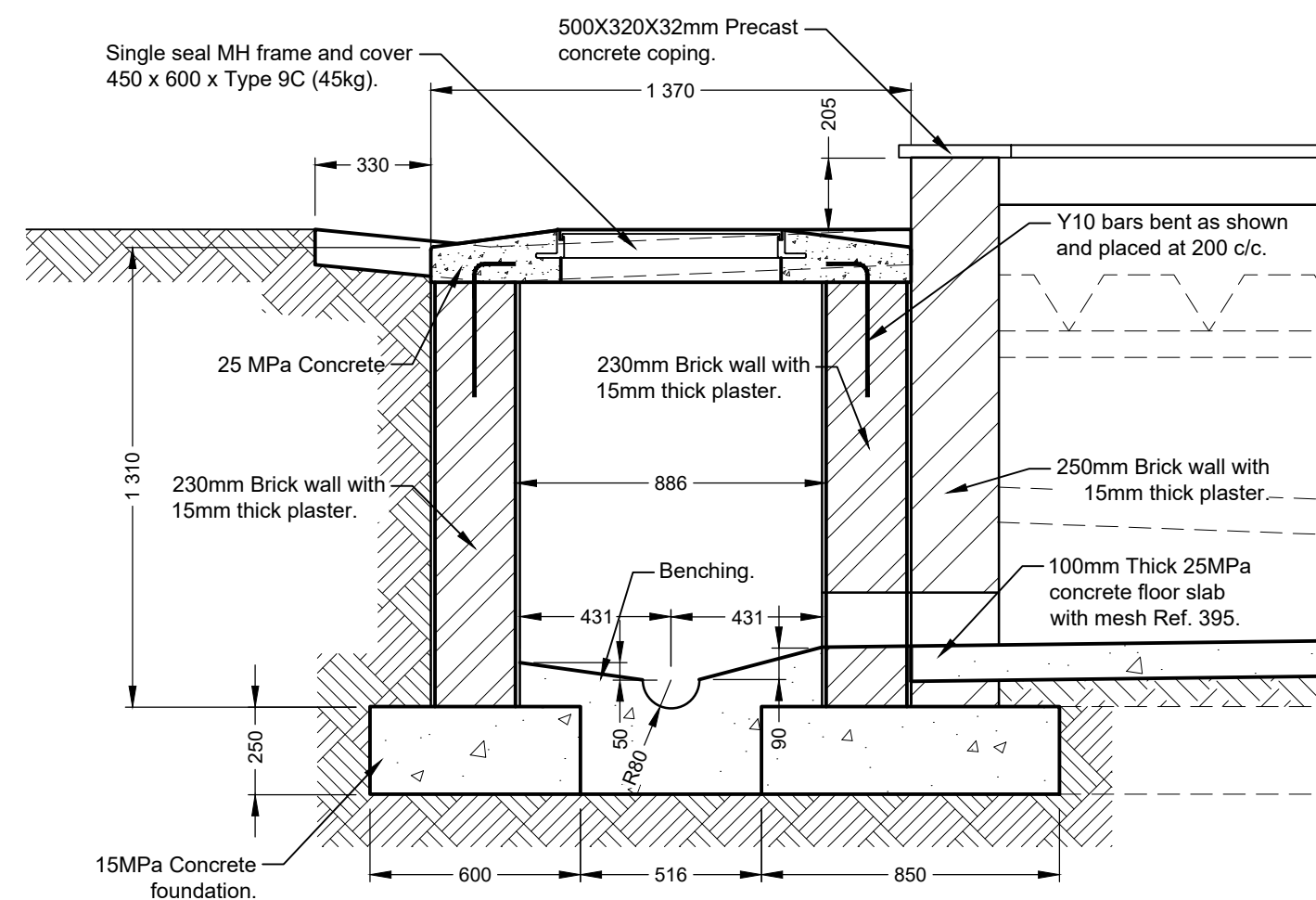
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SCALE: 1/20
DETAIL DESCRIPTION: DETAIL 6J
SEE DETAIL NO: -

Item No.	No Off.	Dia(mm) ND	Description	Drawing
6-01	04	150Ø	150mm Ø Wedge gate valve to SANS 664, T10 flanged.	
6-02	04	150Ø	150mmØ Straight, T10 flanged with 1x puddle flange.	
06-03	04	160Ø	160mmØ Cast Iron Flange Adaptor for uPVC.	
06-04	03	160Ø	160mmØ Cast Iron Equal tee.	
06-05	01	200Ø - 160Ø	200 - 160mmØ Cast Iron Female reducer.	

STEEL AND PIPE NOTES

- All pipes and steelwork shall be fusion bonded epoxy coated to DFT 300 micron thick unless indicated otherwise or stainless steel items

DETAIL NO: -
SCALE: 1/50
DETAIL DESCRIPTION: PIPE SCHEDULE
SEE DETAIL NO: -



DETAIL NO: -
SCALE: 1/20
DETAIL DESCRIPTION: DETAIL 6K
SEE DETAIL NO: -

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
Any discrepancies between any drawings must be clarified before work is continued on site.

FOR TENDER PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-06-01	Plan, Foundation Plan & Sections

AMENDMENTS

Rev.	Date	Description

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ISO Registered 9001:2015

Approved by Engineer: Name: J.W. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 201070143

Signature:
Date: 4 Feb 2022

DIHLABENG LOCAL MUNICIPALITY

Approved by Client: Name: _____
Signature: _____ Date: _____

Project: CLARENS WTW

Drawing description: SLUDGE DRYING BEDS: DETAILS

Drawn: R. Joubert Date: Jan 2021
Scale/s: AS SHOWN
Drawing number: 13-019-V-01-06-02 Rev.: 00

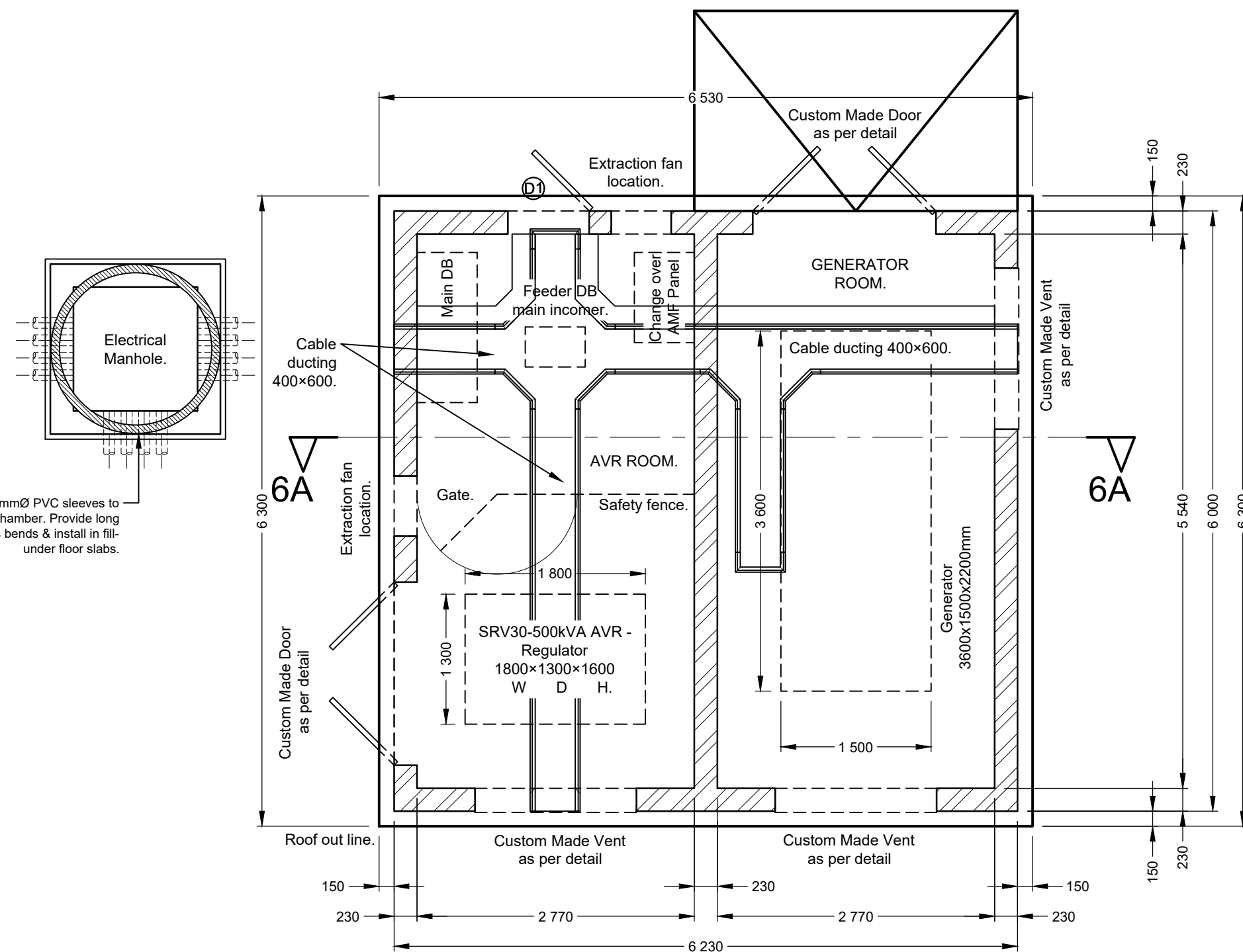
- All excavations to be min. 1000mm deep, confirm with Eng. on site.
- Provide steps in foundation as per details and rebar schedule.
- Eng. to inspect an approve excavated foundations before blinding may be cast.
- Provide 15MPa, 40mm thick concrete blinding to all foundation trenches to specified invert levels, to take rebar and spacer-blocks.
- Blinding to be cast to + or - 10mm accuracy.
- All rebar to be inspected and approved by Eng before concrete may be cast.
- Provide class 30MPa / 19mm stone concrete with 75-85mm slump, to all foundations.



FOUNDATION PLAN
SCALE 1/100

Diagram showing the ceiling plan for the AVR ROOM and ALTERNATOR ROOM. A diagonal line indicates a run of 12.6m from the floor to the R/C ceiling.		
DETAIL NO: -	SCALE: 1/100	DETAIL DESCRIPTION: CEILING PLAN
		SEE DETAIL NO: -

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DETAIL NO: -	SCALE: 1/100	DETAIL DESCRIPTION: ROOF PLAN
		SEE DETAIL NO: -

TERMITES POISON: Treat ground around all internal & external walls, concrete beds and slabs in accordance with SABS 1165. Then apply 50mm river sand over poison.

2. FLOORS: 100mm thick, 20MPa concrete surface bed, floated to Class U2 with mesh ref. 245 set 25mm below top on 250microns USB green damp proof membrane on 25mm sand bed on compacted G5 fill. To be poisoned in accordance with SABS 1165 soil poison with with 5 year guarantee.

3. 100mm, Sloping 20MPa concrete surface bed floated to Class U2 with mesh ref. 245 set 25mm below top on cast on 250 micron USB Green, damp proof membrane , with all side overlaps sealed with approved contact adhesive, on 50mm sand on approved G5 filling to be poisoned as Item 1.

4. 450x40 x 450 x 10mm SLIP FREE CERAMIC TILES: As approved on 3:1 tile cement mortar. All joints to be continuous in both directions with total thickness of 6mm min. Tiles laid to manufacturers recommendations and instructions. Tiles to be Group A quality - Sand / Terracotta Colour.

5. 75mm high SKIRTING TILES: Cut from floor tiles, as approved on 3:1 cement mortar. All joints to be laid in same direction as floor tiles. Tiles to be laid to manufacturers recommendations and instructions.

6. Apply Flowshield 1000 self smoothing epoxy compound to a minimum thickness of 1000 microns in accordance with the manufacturers Flowcrete SA's installation methodology. Colour to be: Gossweeing Grey 222 and equal and approved. Concrete floors to be clean, dry, sound and free of laitance with residual moisture content of less than 4%. Applied by Specialist SB contractor.

7. 19x76mm MERANTI SKIRTING BOARD: Nailed to wall. All nails to be punched and filled. Finish with 2 coats poly-urethane paint.

8. UNTINTED GRANOLITHIC: 22mm min. thick floor finish (Screed).

9. FACE BRICK IN STRETCHER BOND: 'Corobrick - Nabrasca Travertine' or similar approved 'FBS' quality clay face bricks to SABS 227:2002 with all joints and perpends to be 6mm square deep recessed. WALLS WATERPROOFING: Apply bagwash and bitumen emulsion to external face of internal brick skin on all external / cavity walls.

10. PLASTER AND PAINT: All walls finished with minimum 15mm plaster and painted with one coat professional plaster primer, and two coats "Plascon - Double Velvet, Colour - VEL 17 Broken White" or other approved interior quality paint.

11. WHITE GLAZED TILES: Three rows above unit, with returns where applicable in dove grey grot.

12. MATT WHITE GLAZED TILES (200 x 200): 'Jonson' or similar approved, eight (8) rows tile all round in dove grey grot.

13. BRICK ON EDGE WINDOW SILL: all joints to be flush half round pointed joints. Window sills underneath walkway roof to be soldier course.

14. Interior 12mm CEMENT PLASTER WINDOW SILLS: finish as for PLASTER & PAINT walls.

15. INSULATION: 'Sisalation FR 500' or similar approved, insulation on top of purfins on 40mm chicken mesh. Care to be taken when installing hurricane clips not to damage insulation.

16. 4mm THICK FIBRE-CEMENT SHEET CEILINGS: Secured to 38 x 50mm brading at maximum 400mm centres, fitted with H-profiled cover strips and 75mm Gypsum covered concie. Treat all nails and joints with one primer coat and finish ceiling and concie with one undercoat and two coats acrylic PVA paint.

17. 600x600 CEILING TRAP DOOR: as per roof plan. Finish with 1 universal undercoat and two coats eggshell enamel paint to comply with SABS 630 type 2, or equivalent standard. Colour as for ceiling.

18. PLASTER & PAINT: Provide 2 coats acrylic PVA suitable for washing with a mild detergent and with a mat finish. Apply for 10 m² / liter spread rate. Undercoat: Provide 1 coat alkaline resistant 100% pure acrylic filler coat. Spread rate 6 m² / liter.

19. Class 1, off-shutter concrete. Finishing: One coat bonding liquid, followed by 1 coat 'Plascon' Plascotex texture paint, applied with a texture roller to manufacturer's specifications.

20. SUSPENDED CEILING: 'Everite' or similar approved ceiling in 'Everite' Pentatle' boards in 5mm nominal size. Installation complete with T-Grids, wall angles, hold down clips, suspension rods, hooks, plates etc. Installation by specialist / expert.

21. WC - White 'Vaal' Aquevasse low level suite (Code 750151) with 90' outlet washdown pan and catching 6 litre SISO cistern complete with heavy duty seat and lid, fittings and flushpipe or similar approved. Cistern connector hose with 232 angle regulating valve.

22. WHB - White 'Vaal' Springbok 505 WHB (code 7031) with one tap hole fitted to wall with semi concealed brackets (811820) or similar approved. Basin connector hose with 232 angle regulating valve. Basin waste: 1 1/2" Chrome plated basin waste water slotted shank, plug chain & stay (code 301-32) from cobra or similar approved. Basin waste trap: 1 1/2" Chrome plated bottle trap with outlet to 40mm uPVC. (Code 340/40) or similar approved.

23. Suitable - metal type (S/Steel) toilet roll holder fixed to walls.

24. 600x19mm STAINLESS STEEL CHROMIUM PLATED TOWEL RAIL: complete with chromium plated end brackets plugged and screwed to wall.

25. 450x600x6mm "GG" QUALITY POLISHED GLASS MIRROR: Fix to wall position as shown on plan with round nose chromium plated mirror screws. Four per mirror, 1 per basin.

26. 4.5kg DOP: dry powder chemical fire extinguisher with hook made of 120x20x2mm mild steel strip bent to form hook for extinguisher screwed twice to 520x100x22mm hardwood. Hardwood screwed and plugged with 6 screws and plugs. Positioned as shown on spec. Provide 190x190mm ABS plastic symbolic safety signs - type FB2, plugged and screwed to wall at all fire extinguishers.

27. MEDICINE CABINET: Standard white built in unit. Complete with mirrors on doors, shelves etc. As approved. Size 380x610mm.

28. WALL SAFE: Approx. size 280 x 310 x 230mm deep, bolted to wall with expansion bolts to inside of safe, with integrated security lock.

2 x (2400x1140mm) GREEN CHALK BOARD: To comply with CKS-36-1980 or equivalent code of practice, complete with chalk rail as one unit. Strictly according to manufacturers instructions. Bottom of board to be 900mm from finished floor level.

30. Pinning board as per detail - 2 Coats pva paint finish.

31. Shelves as per details.

32. Standard 150 X 150 white glazed soap holder.

33. As per detail.

34. 0.6mm Thick 450mm girth ridge capping all as described for roof covering. Provided polyethylene filler blocks to ridging.

35. Kiplip 700 Kingip 700 Salfok 700f. 0.53mm thick 'Chromadek/Globalcoat' to one side, profiled steel sheeting to steel structure roof & sides: Colour - Dark dolphin.

36. Determine the direction of prevailing winds before laying sheets. Sheets must be projected minimum 50mm beyond purlins at eaves. Holes in sheets to be drilled, not punched.

37. Prefabricated cleated (Gangnail) roof trusses to engineers approval, tied down to walls with galvanized hoop-iron straps built in. Trusses to be spaced at max 1200mm C/C to be 76 x 38mm wall plates. TR1 and TR2 certificates to be provided.

38. Hurricane clips to be provided and secured to 76 x 50mm SA Pine Purlins purlins and trusses at every intersection.

39. Barge Boards & Fascias 'Everite Nutec' fibre-cement:

- 225 x 10mm Thick Fascias.
- 200 x 80mm Barge Board.

40. Approved H-profile barge boards joiners. Provide drill for and fix with hot-dipped galvanized screws and washers. 76 x 50mm trimmer buttend to underside of purlin ends for barge board fixing.

41. G4/G5 Approved natural gravel fill material under floor slabs, compacted in layers not exceeding 150mm, to 93% Mod. AASHTO.

42. Face brick-on-edge roller course.

43. 76mm x 76mm Pine wrought splayed eaves, purlins spiked and stormclipped to rafters.

44. 140 x 140mm Pre cast concrete posts holed for 12mm Ø MS bolts.

45. 30MPa Concrete ring beam with off-shutter finish and 20mm chamfers to all exposed edges. Rebar to details.

46. SINK UNIT: 'Frankie Curvine CVN 622' or similar approved insert sink (drop in).

47. Windows: as scheduled.

48. Doors: as scheduled.

49. Foundations: 40mm Thick, 15 MPa blinding layer to bottom of trenches with 30 MPa Concrete strip foundations to detail under all walls with top of foundation to be minimum 400mm below natural ground level. Reinforcing to rebar details.

50. 125mm Continuously rolled aluminium square guttering. Fixed with aluminium gutter brackets for fascia fixing. 125mm Circular downpipe complete with downpipe connection, offset combination, shoe and downpipe clips for fixing to wall.

51. Worktops to be 32mm thick Laminated Saligna worktops - Refer to detail.

52. Horizontal DPC.

53. 50 x 50 x 3mm Galvanised MS angle bracket minimum 500mm long, twice bolted to post and twice bolted to bearer.

54. 12mm Ø Stud anchor bolt to concrete post.

55. 10mm Ø Steel bolts with washers.

56. ±198mm x 46mm Thick laminated SA Pine Beam to veranda roofing secure rafters to bearer with storm clips.

57. Timber finishes: All exposed timber: Pine trusses, purlins, wall plates, etc., treated with 2 coats 'Carbolineum'.

58. 38 x 114mm Bracing.

59. 38 x 76mm Wall plate trimmed to suit beam filling.

60. 50 x 50 x 3mm Hot dipped galvanised mild steel angle with 'fish tail' cast in position to thresholds.

61. 110mm Thick beam filling.

62. Brickwork every two courses in foundations, every course above window head to wall plate level and every third course elsewhere indicated.

63. Walls where indicated on drawings to be taken up to underside of roof sheeting as fire-walls.

64. 80mm Thick, 20 MPa x 1000mm, with mesh ref. 245, wide V-shaped service channel cast in 2000mm lengths to falls to suit conditions with wood float U2 finish.

65. 80mm Thick x 1000mm wide 20 MPa concrete apron cast in 2000mm lengths to falls to suit conditions to U3 finish.

66. Ramp verandah floor to suit external levels. ie. NO STEPS.

67. Lighting protection: All buildings to be provided with lightning protection in accordance with pages LP/1 to LP/6 inclusive, as the tender document.

68. Expansion joint formed with 10mm thick soft-board full length and height of joint. Provide similar 100mm thick and 100mm wide bitumen impregnated soft-board to exposed edged.

69. Column bases to be 600 deep x 350 x 500mm wide 25MPa concrete to pre-cast column basis.

70. External plumbing: Use is to be made of Sewer piping and fittings under the 'Marley' - Soil and Vent & Underground Drain piping and fitting systems.

71. 1000mm High Balustrade to detail.

**FOR TENDER
PURPOSES ONLY**

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-07-02	Section, Elevations & Details
13-019-V-01-07-03	Door & Louvre Details

Rev.	Date	Description

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Company Reg.: 2004/019299/07
 ISO Registered 9001:2015

Approved by Engineer: Signature: 

Name: J.W. Janse v Rensburg

Designation: PrTechEng

ECSA Reg.: 201070143 Date: 4 Feb 2022

Client:



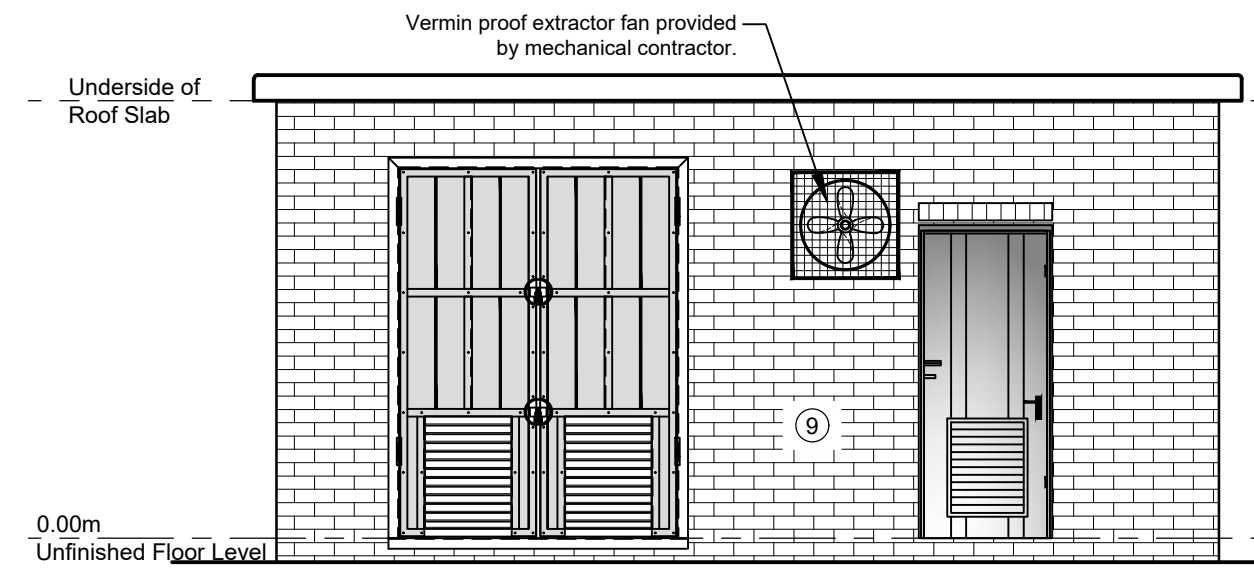
DIHLABENG
LOCAL
MUNICIPALITY

Project: _____

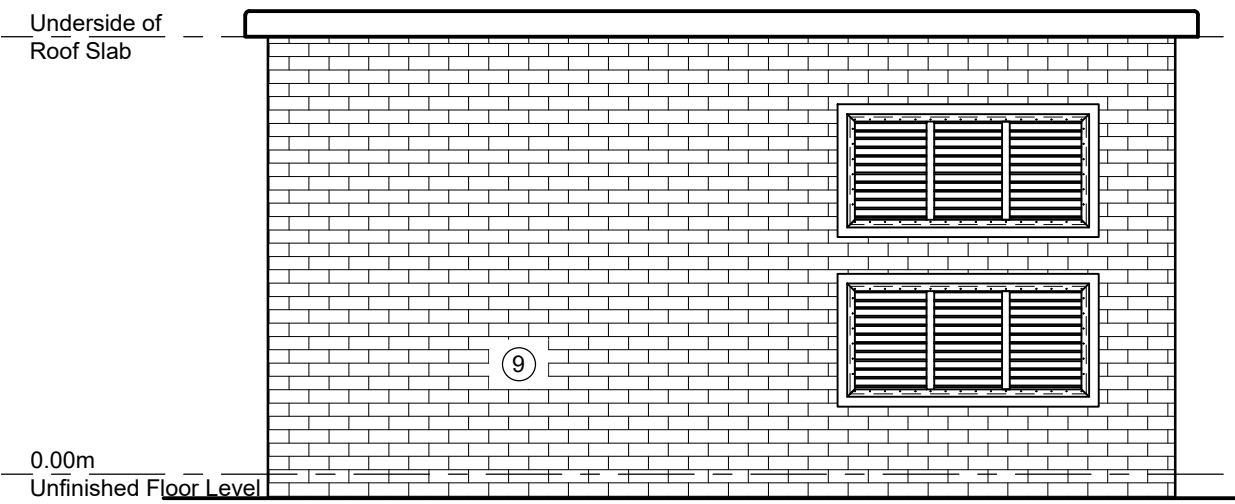
CLARENS WTW

GENERATOR & A.V.R.
ROOM BUILDING:
BUILDING WORK & PLANS

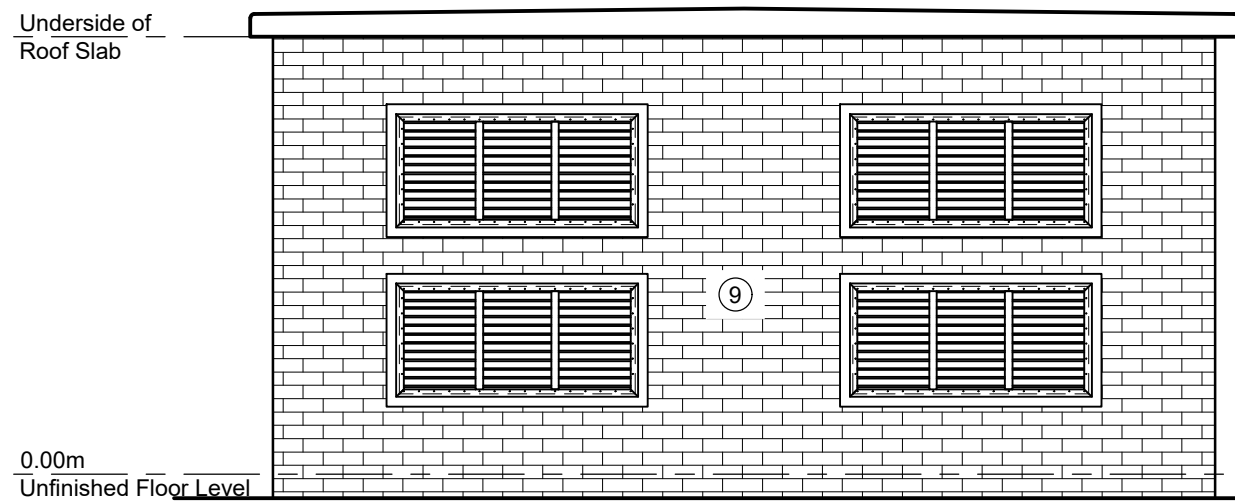
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13-019-V-01-07-01	00



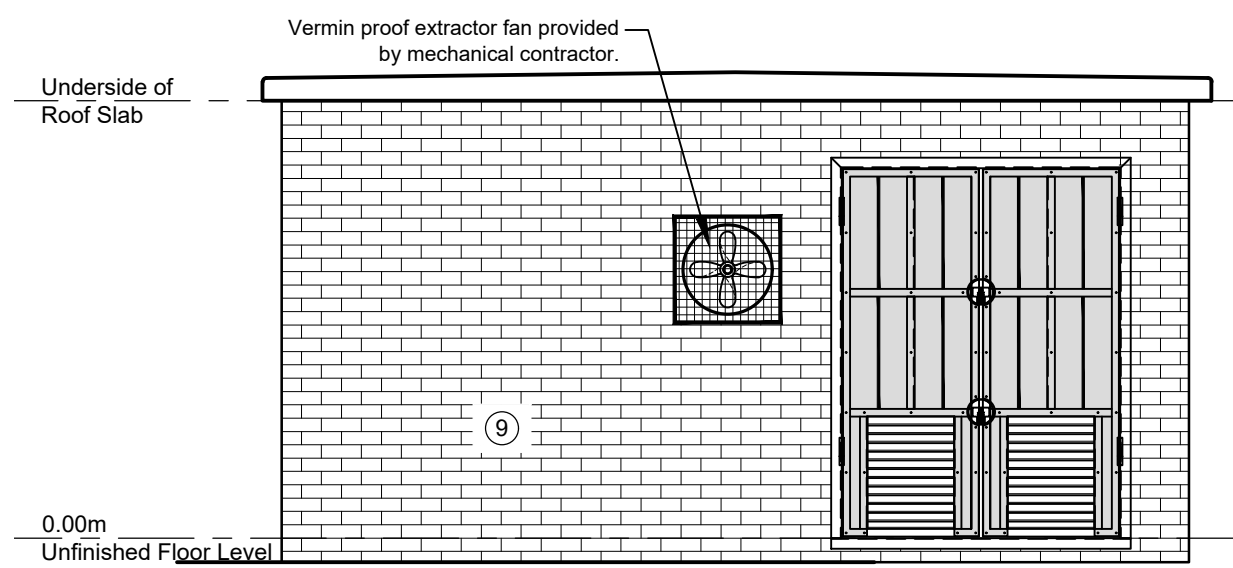
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EAST ELEVATION

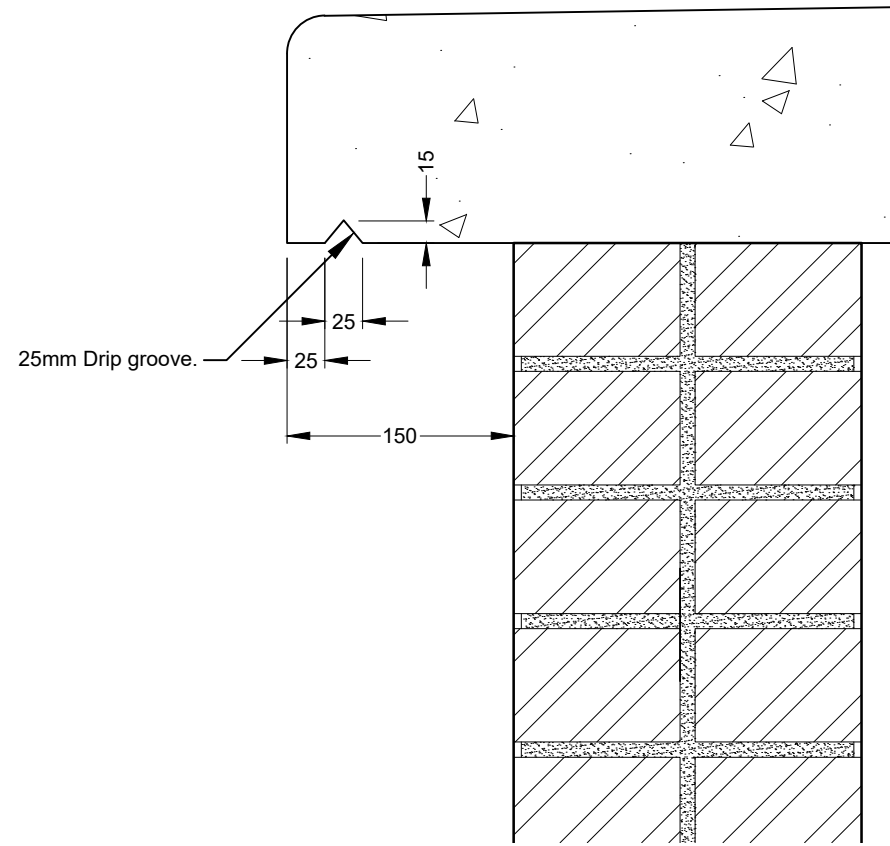


SOUTH ELEVATION

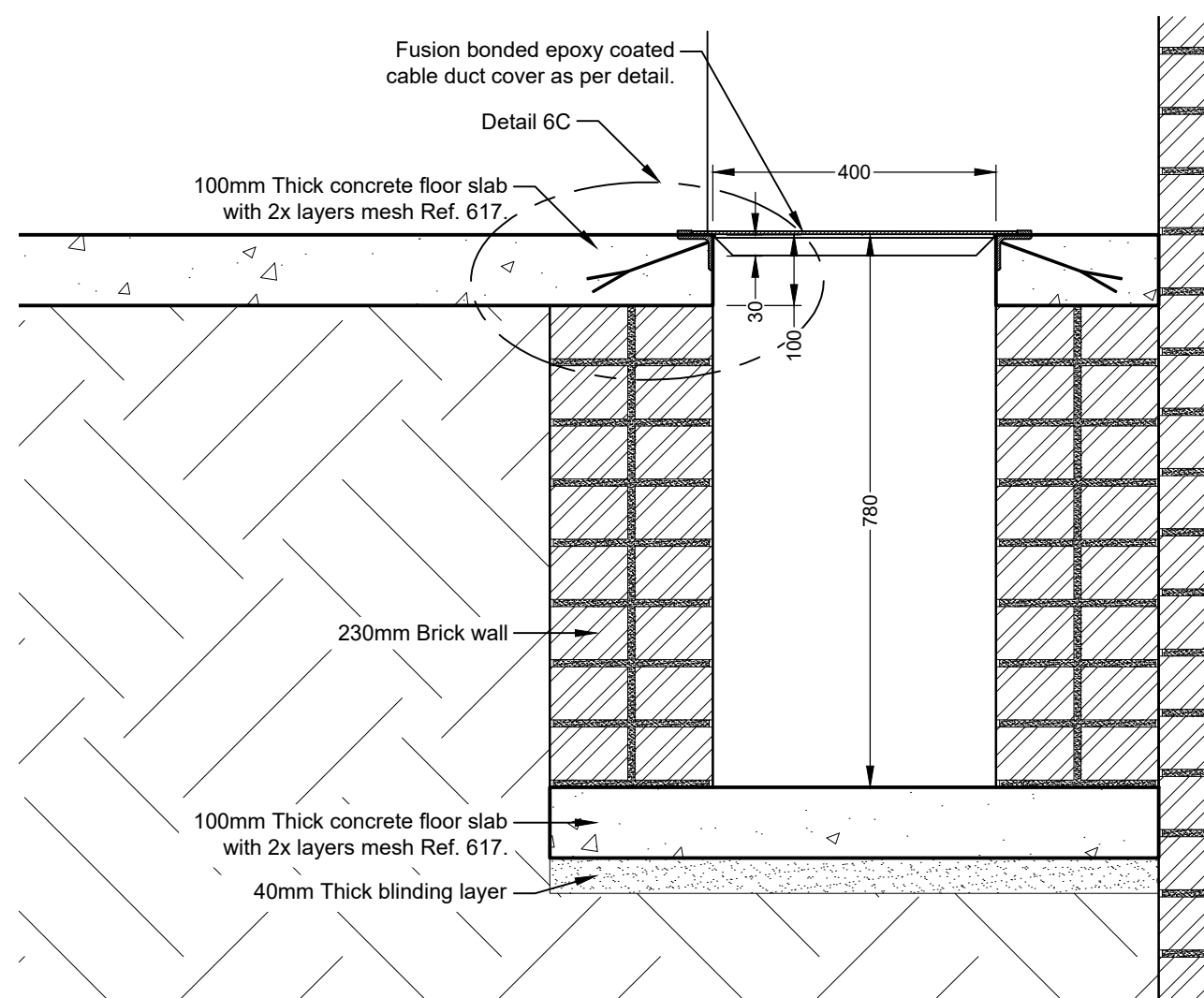


WEST ELEVATION

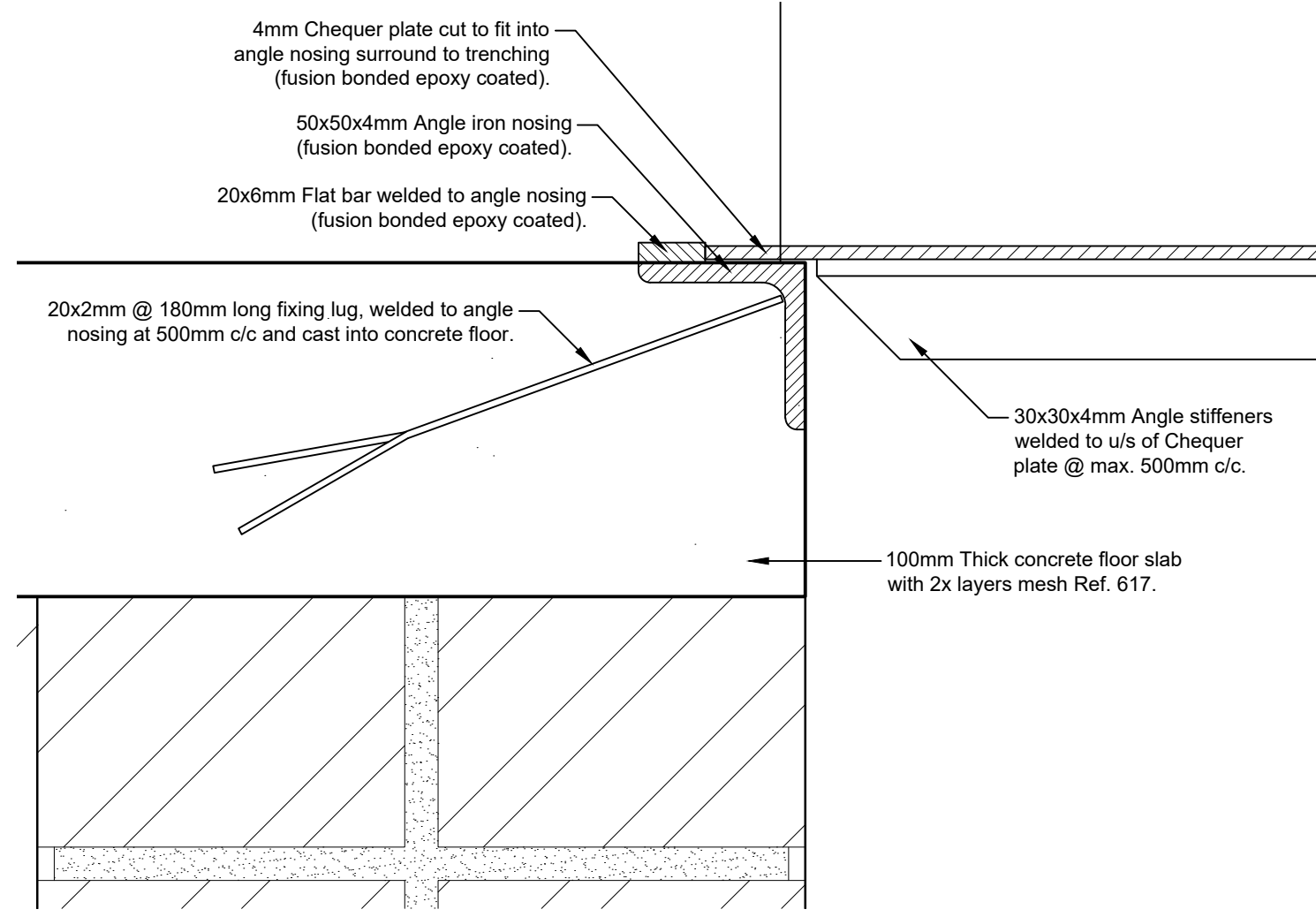
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-	1/50	ELEVATIONS	-



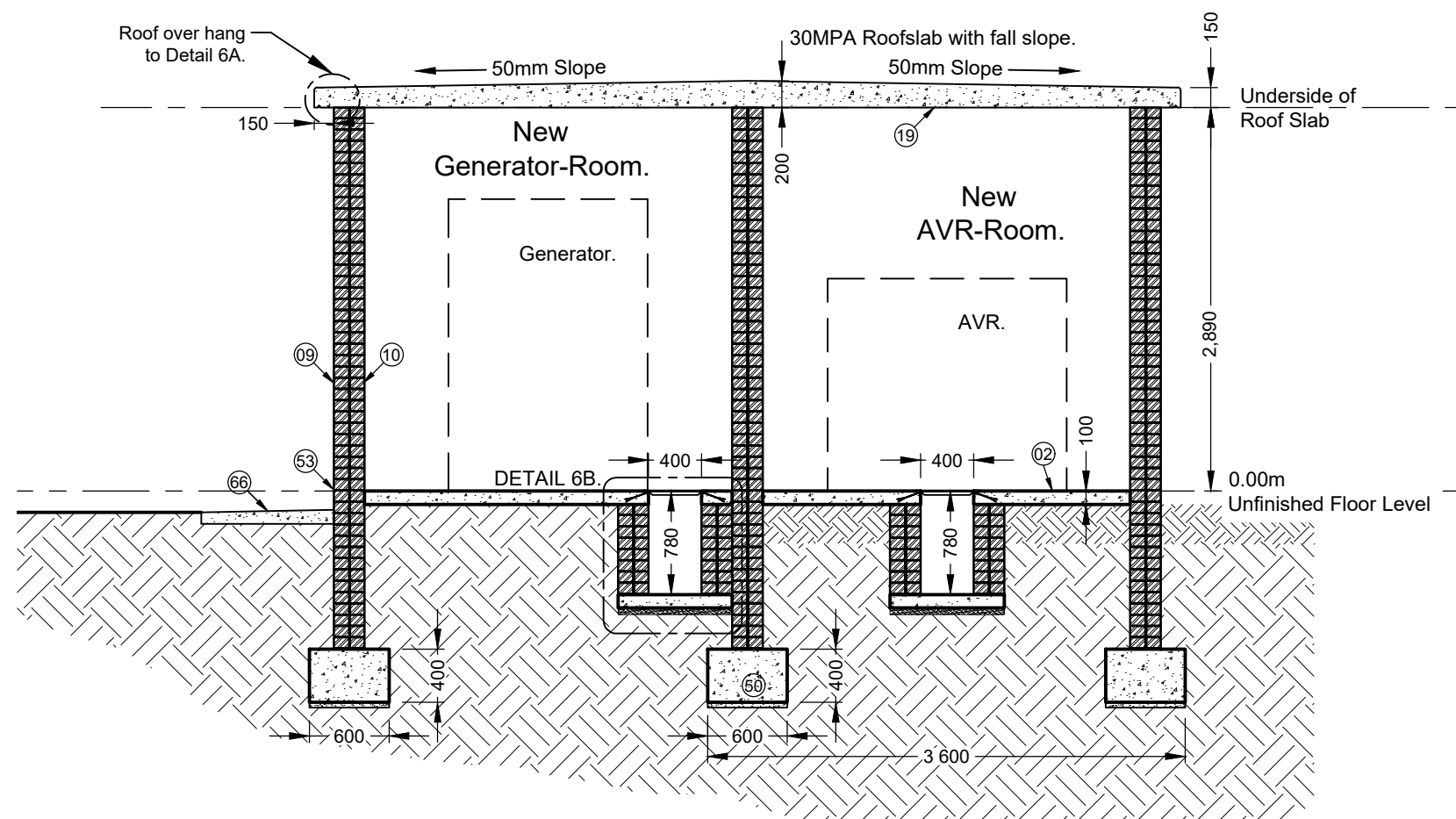
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-	1/5	DETAIL 6A	-



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/10	DETAIL 6B	-



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/2	DETAIL 6C	-



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/50	SECTION 6A - 6A	-

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FOR TENDER
PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-07-01	Building Work & Plans
13-019-V-01-07-03	Door & Louvre Details

AMENDMENTS

Rev.	Date	Description

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Name: J.W. Janse v Rensburg	
Designation: PrTechEng	Date: 4 Feb 2022
ECSA Reg.: 201070143	

Client:

DIHLABENG LOCAL MUNICIPALITY

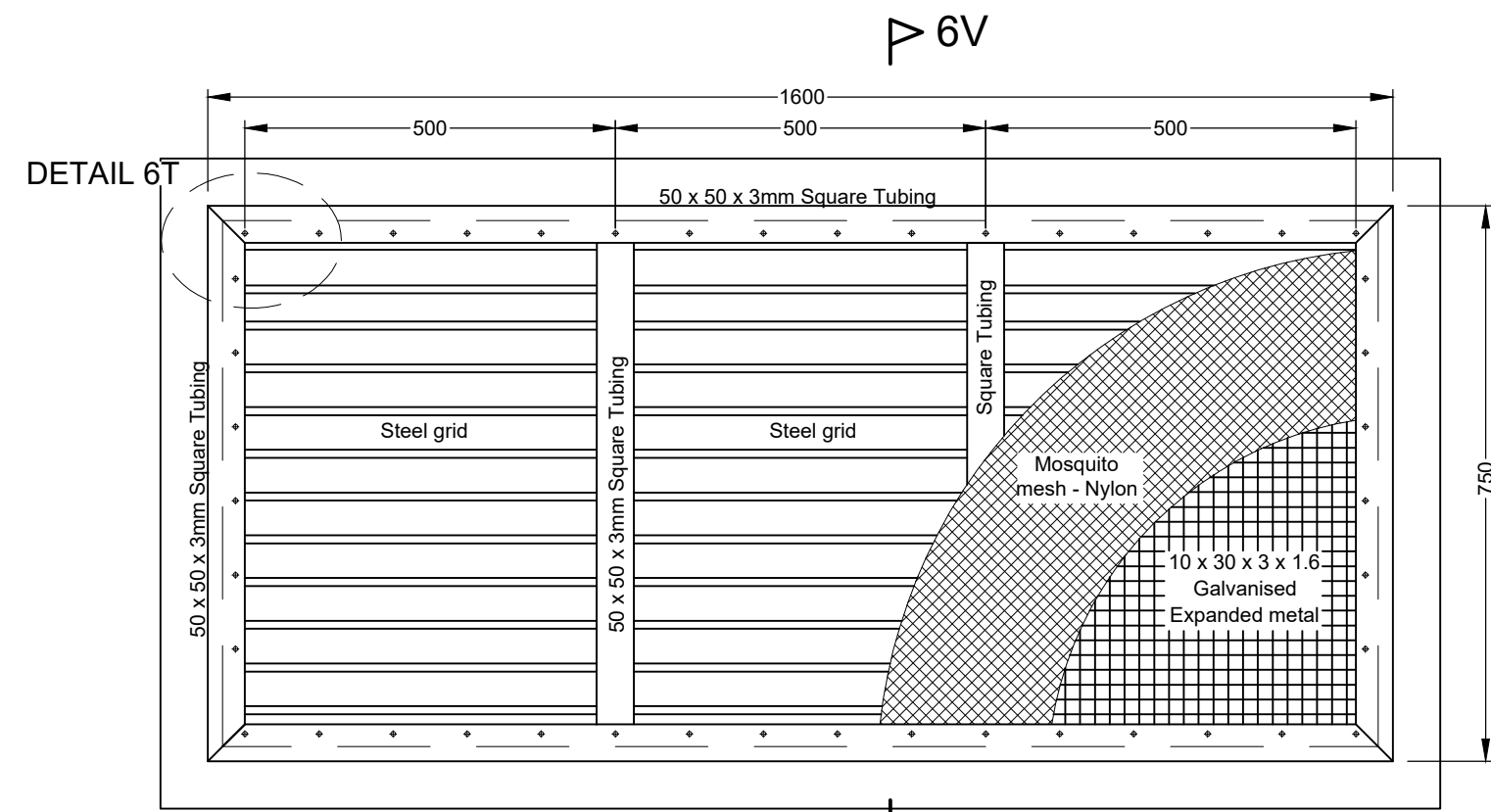
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Name:	
Signature:	Date:

Project:

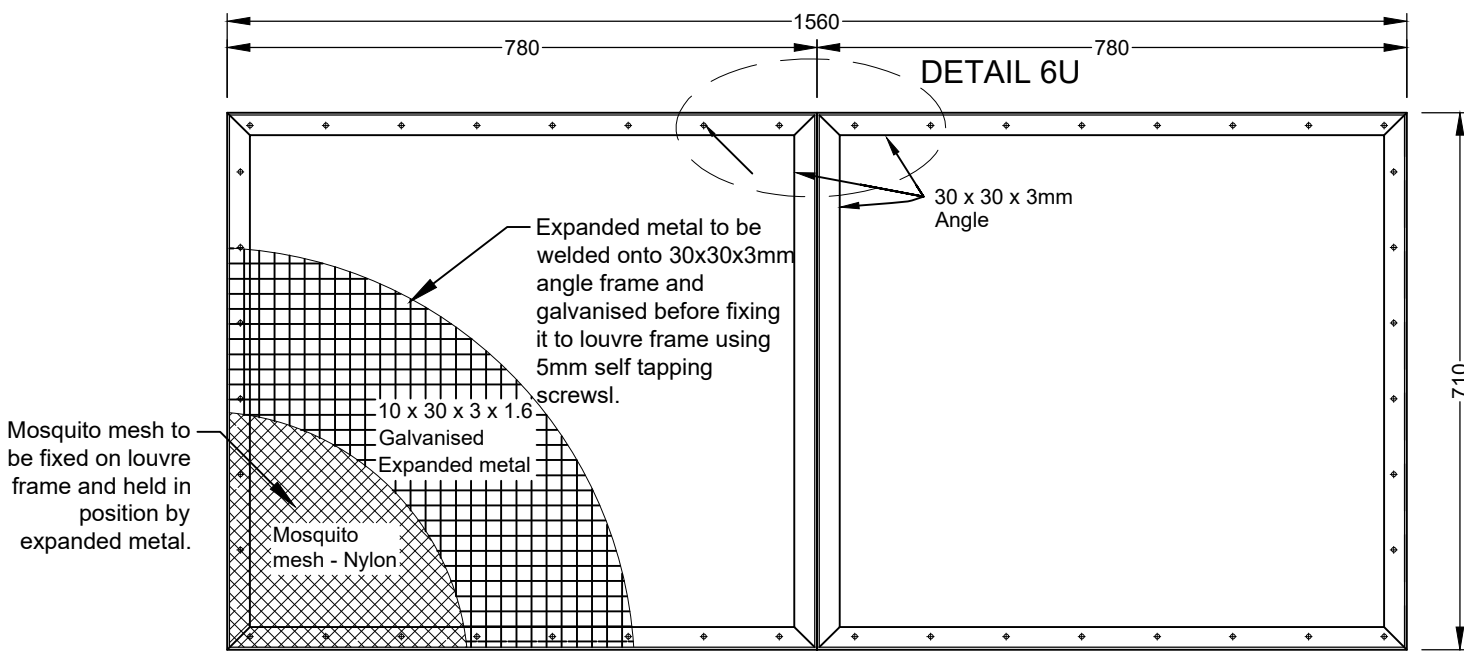
CLARENS WTW

Drawing description:
**GENERATOR & A.V.R.
ROOM BUILDING:
SECTION, ELEVATIONS &
DETAILS**

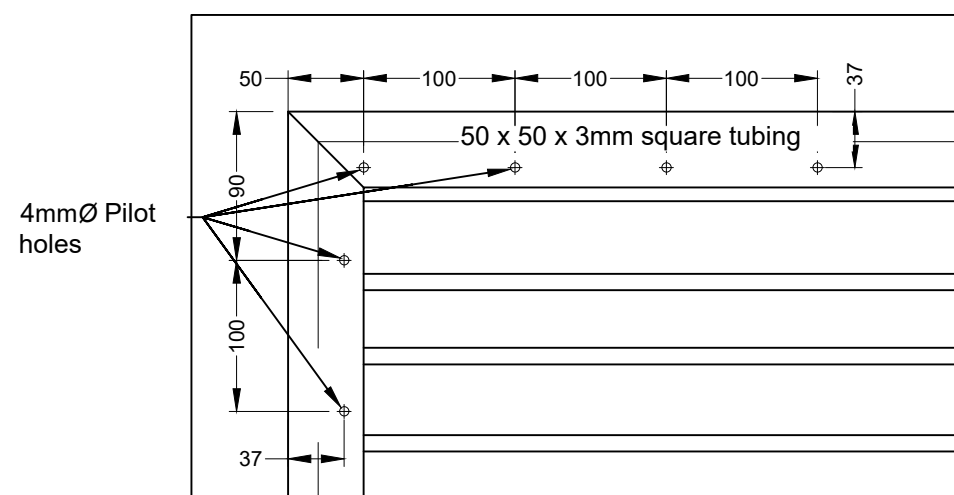
Drawn: M BOTHA	Date: Jan 2021
Scale/s: AS SHOWN	
Drawing number: 13-019-V-01-07-02	Rev.: 00



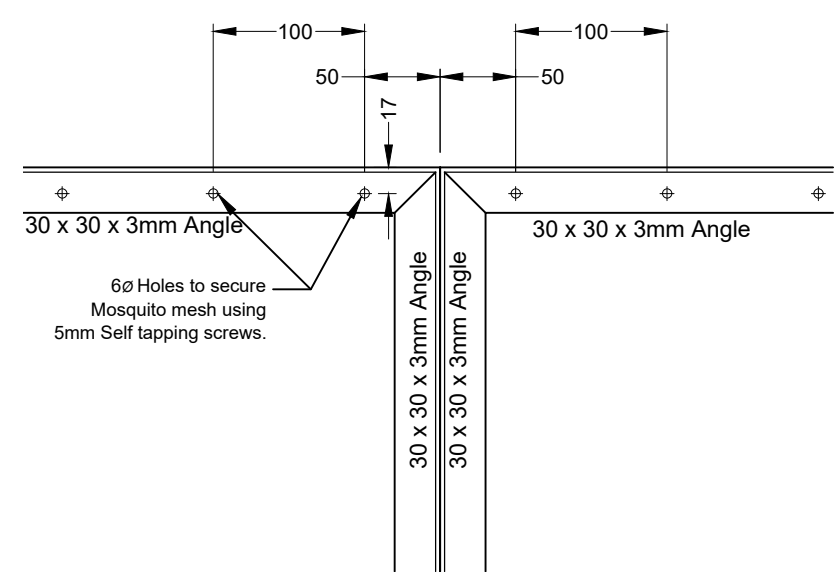
LOUVRE ELEVATION
SCALE 1/10



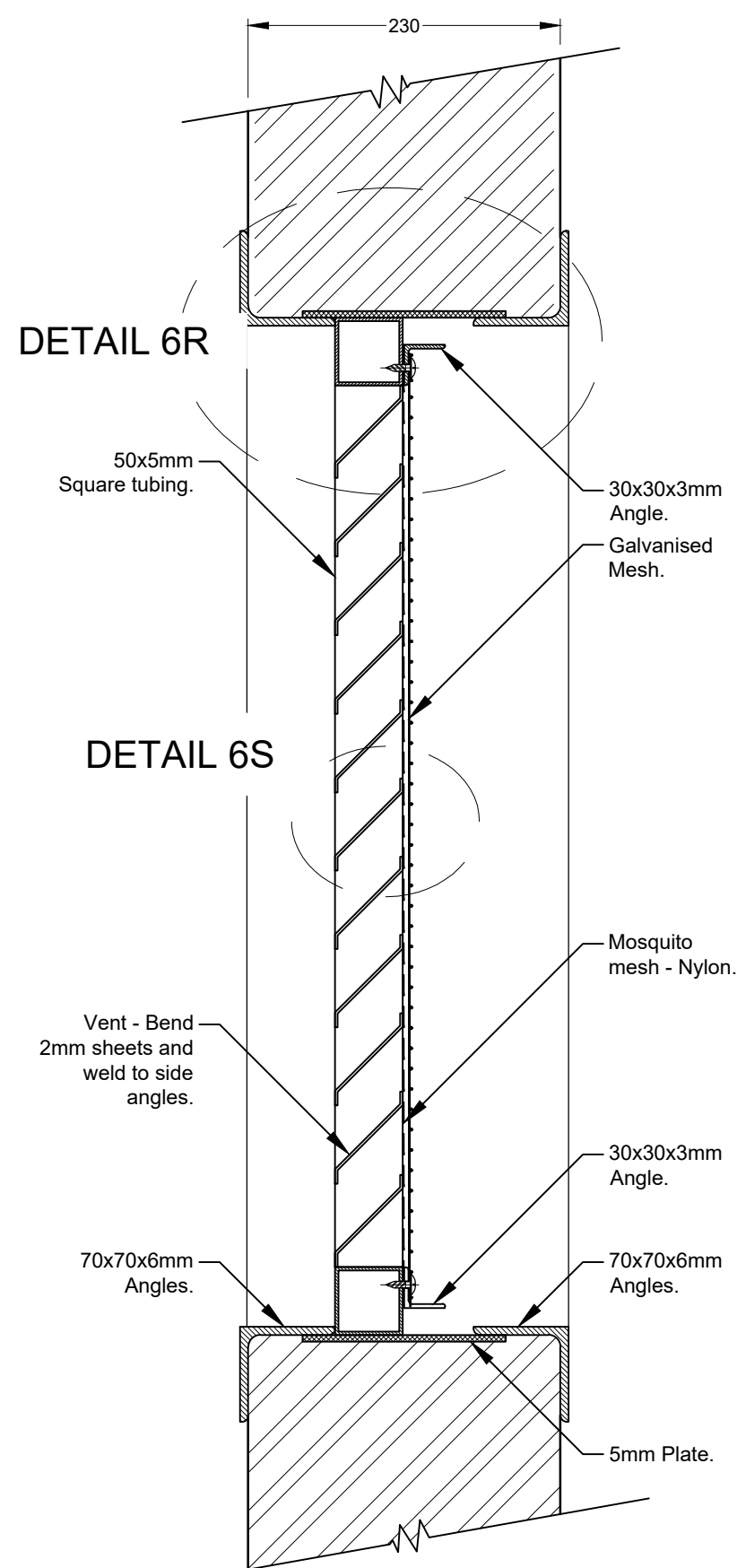
LOUVRE MESH SECURING FRAME
SCALE 1/10



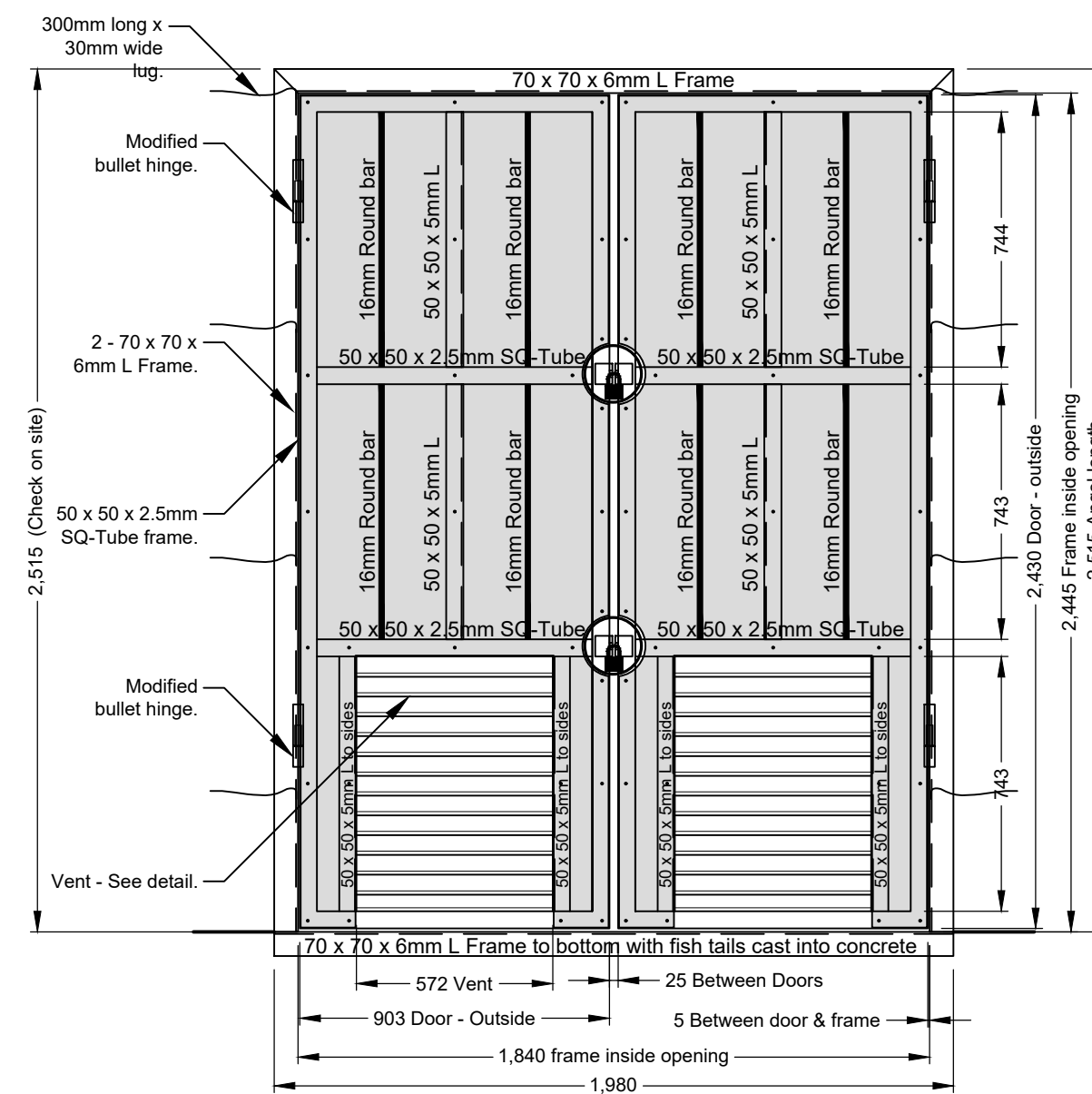
DETAIL 6T
SCALE 1/5



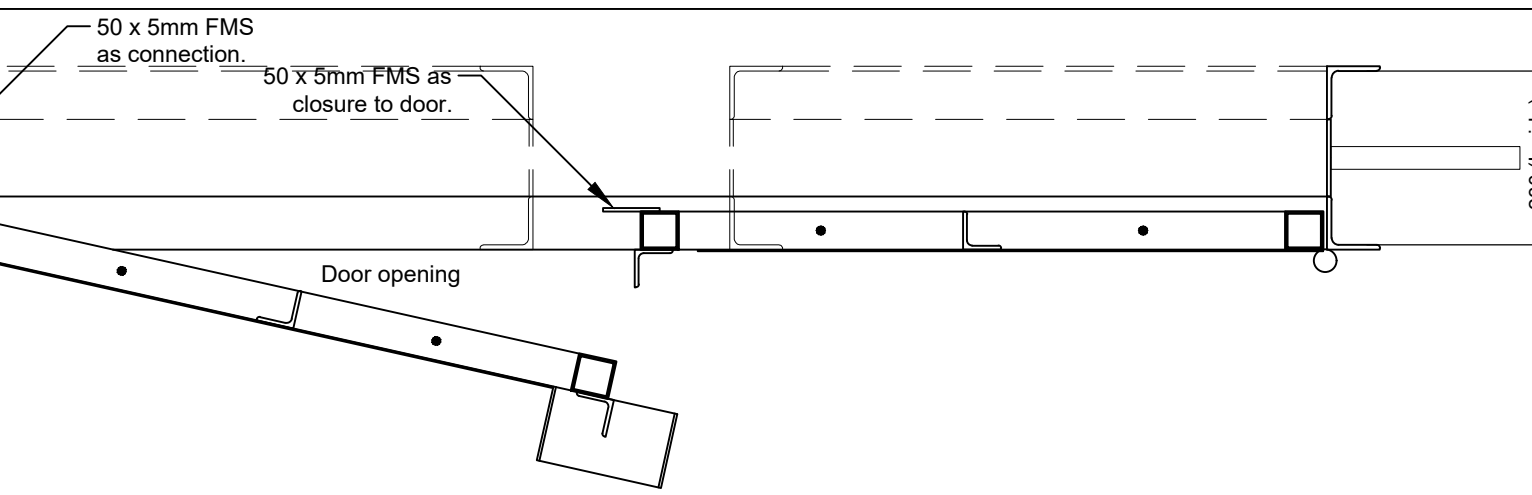
DETAIL 6U
SCALE 1/5



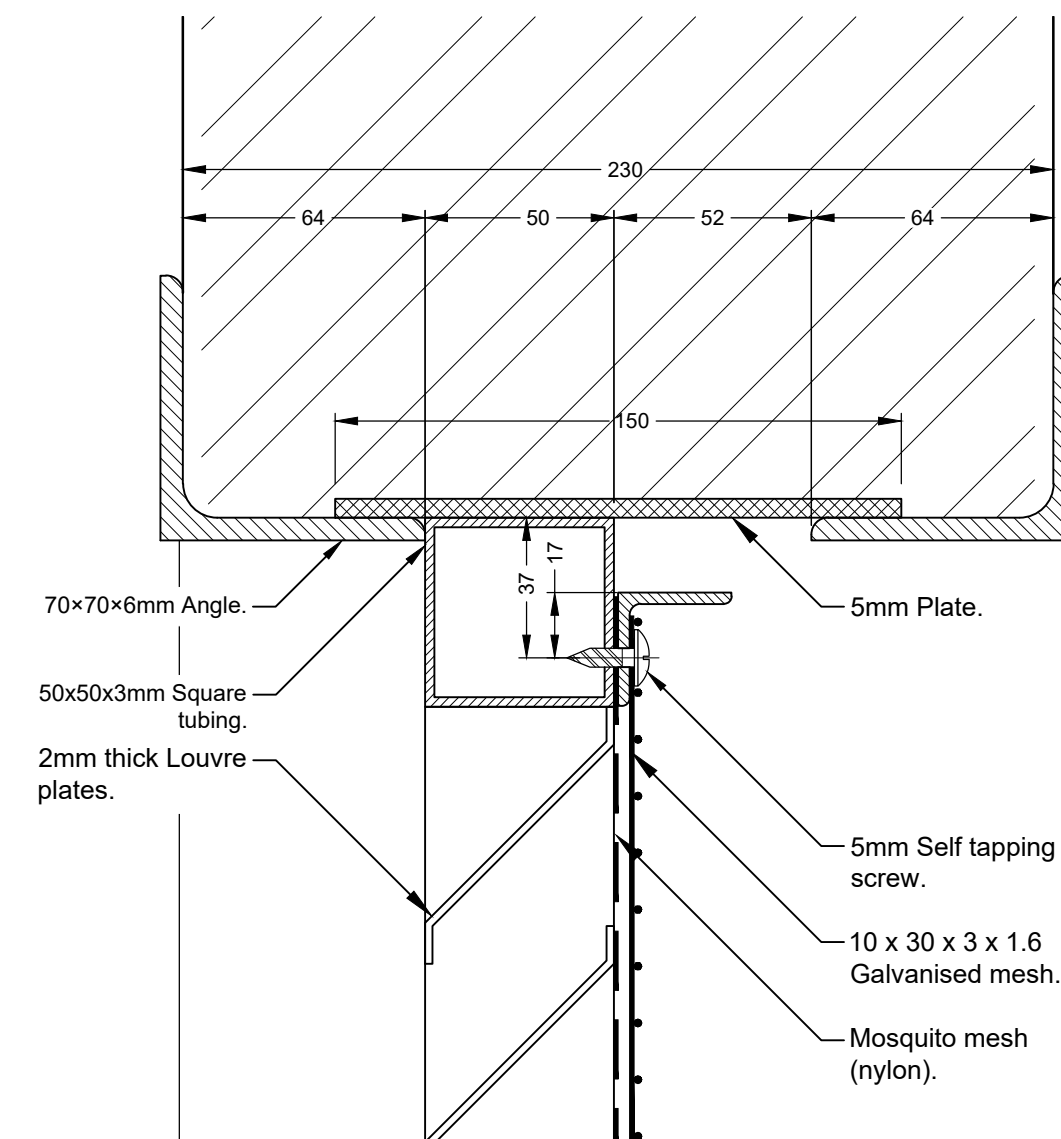
SECTION 6V - 6V
SCALE 1/5



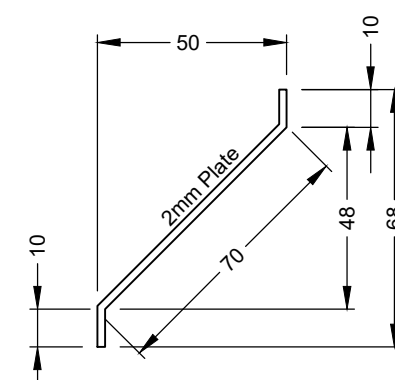
DOOR FRONT ELEVATION
SCALE 1/20



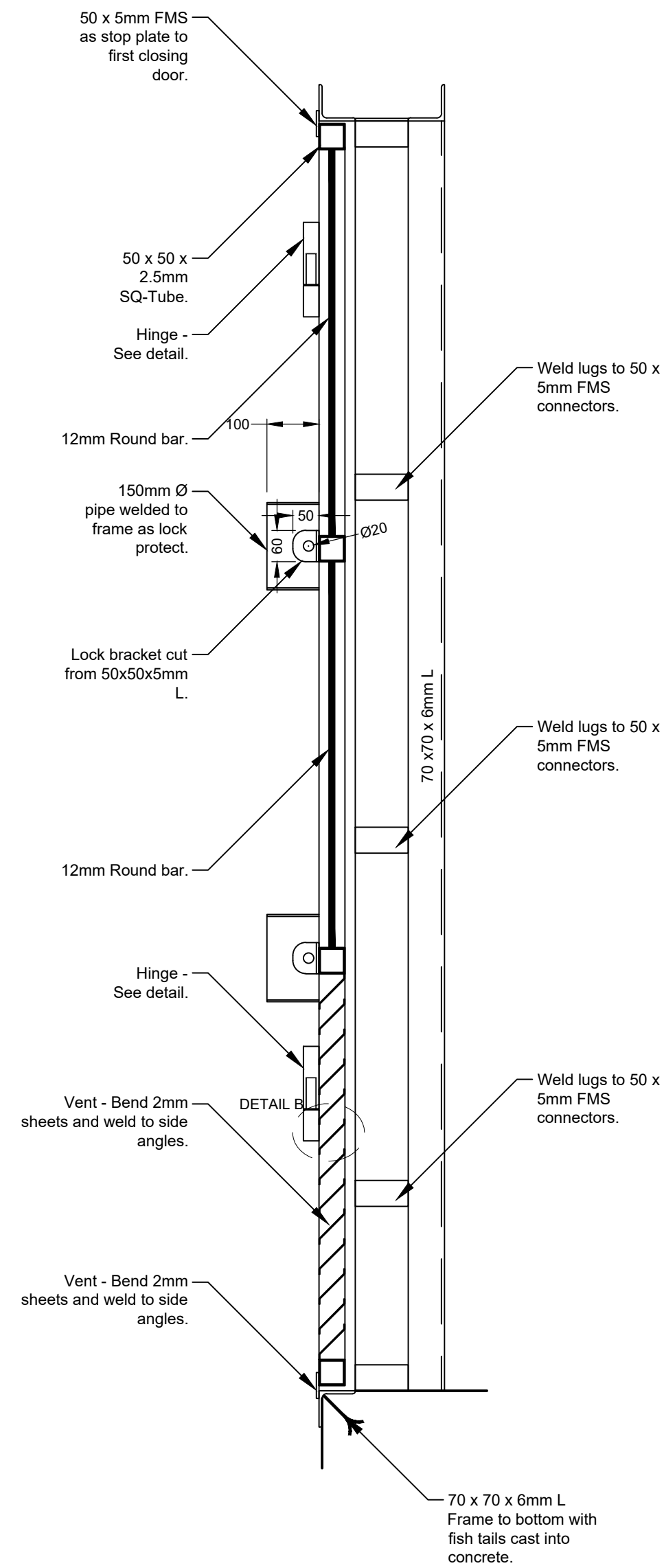
DOOR PLAN
SCALE 1/10



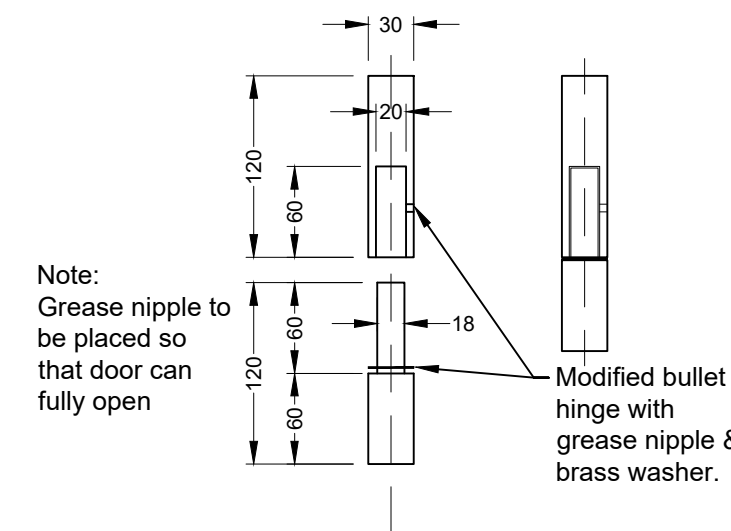
DETAIL 6R
SCALE 1/2



DETAIL 6S
SCALE 1/2



TYPICAL DOOR SECTION
SCALE 1/20



DOOR BULLET HINGE DETAIL
SCALE 1/5

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
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Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-07-01	Building Work & Plans
13-019-V-01-07-02	Section, Elevations & Details

AMENDMENTS

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Project:
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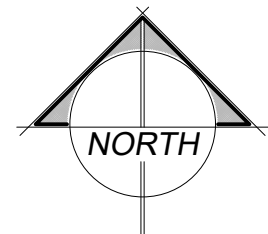
Drawing description:
**GENERATOR & A.V.R.
ROOM BUILDING:
DOOR & LOUVRE DETAILS**

Drawn: M BOTHA Date: Jan 2021

Scale/s: AS SHOWN

Drawing number: 13-019-V-01-07-03 Rev.: 00

DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:	DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	AS SHOWN	LOUVRE DETAILS	-	-	AS SHOWN	DOOR DETAILS	-



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Y: 55 750

Y: 55 700

Y: 55 650

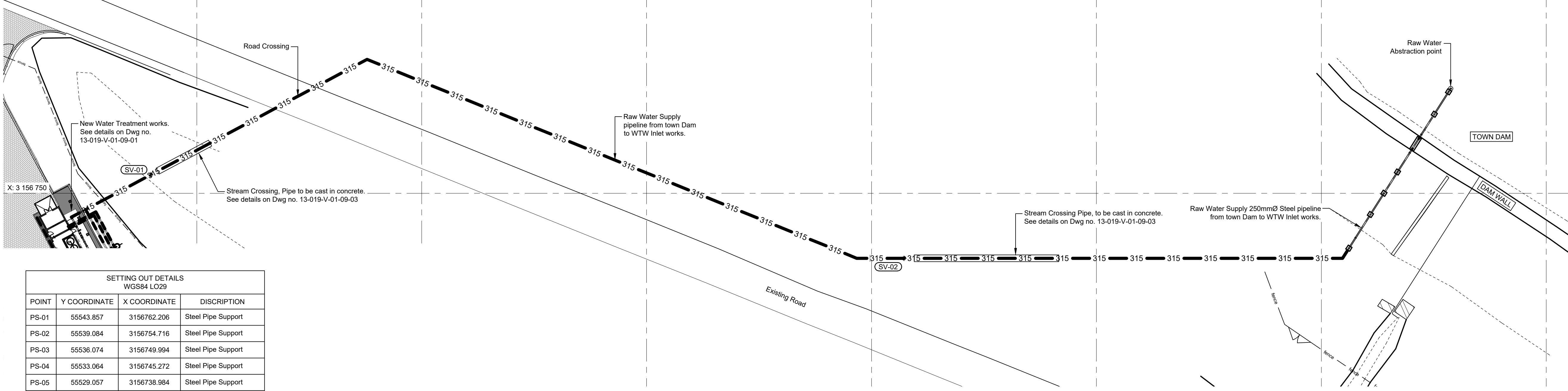
Y: 55 600

Y: 55 550

LEGEND	
DESCRIPTION	LEGEND
315mm Ø uPVC Class 9 pipeline	315
Scour Valve	
Air valve	
Existing Buildings	

X: 3 156 700

X: 3 156 750



SITE PLAN
SCALE 1 : 250

SETTING OUT DETAILS WGS84 LO29			
POINT	Y COORDINATE	X COORDINATE	DISCRIPTION
PS-01	55543.857	3156762.206	Steel Pipe Support
PS-02	55539.084	3156754.716	Steel Pipe Support
PS-03	55536.074	3156749.994	Steel Pipe Support
PS-04	55533.064	3156745.272	Steel Pipe Support
PS-05	55529.057	3156738.984	Steel Pipe Support
PS-06	55524.871	3156732.417	Steel Pipe Support
PS-07	55521.708	3156727.454	Steel Pipe Support
R-01	55827.884	3156755.301	Connect to inletworks
R-02	55824.708	3156753.606	315 - 200 Reducing Tee
R-03	55762.152	3156720.240	315Ø 45° uPVC Bend
R-04	55761.416	3156720.539	Air valve
R-05	55653.289	3156764.445	315Ø 22.5° uPVC Bend
R-06	55545.284	3156764.445	315Ø 45° & 11.25° uPVC Bend
R-07	55521.255	3156726.743	Steel Pipe End
SV-01	55810.246	3156745.893	Scour Valve
SV-02	55642.780	3156764.445	Scour Valve

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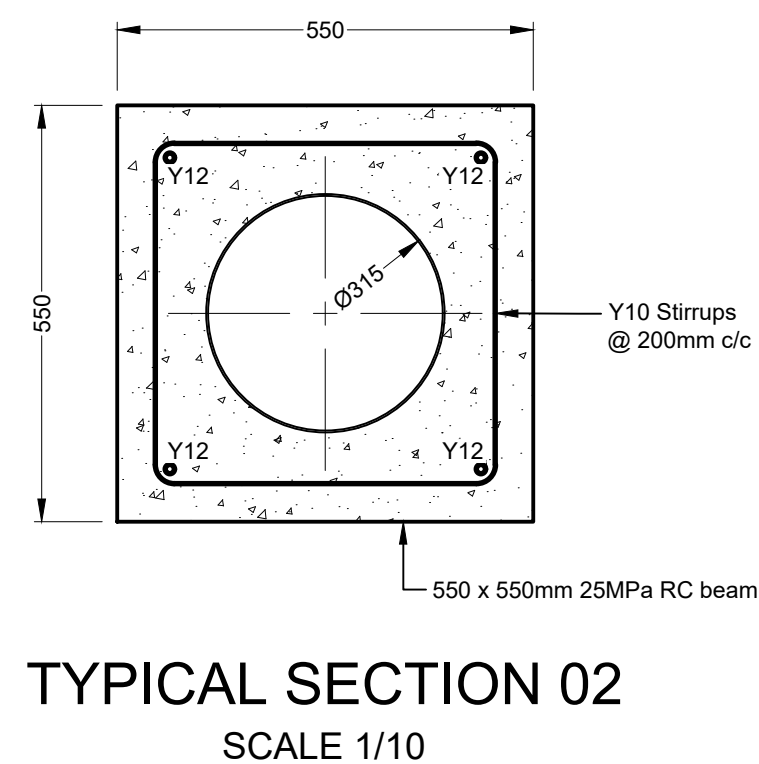
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CLARENS WTW

Drawing description:

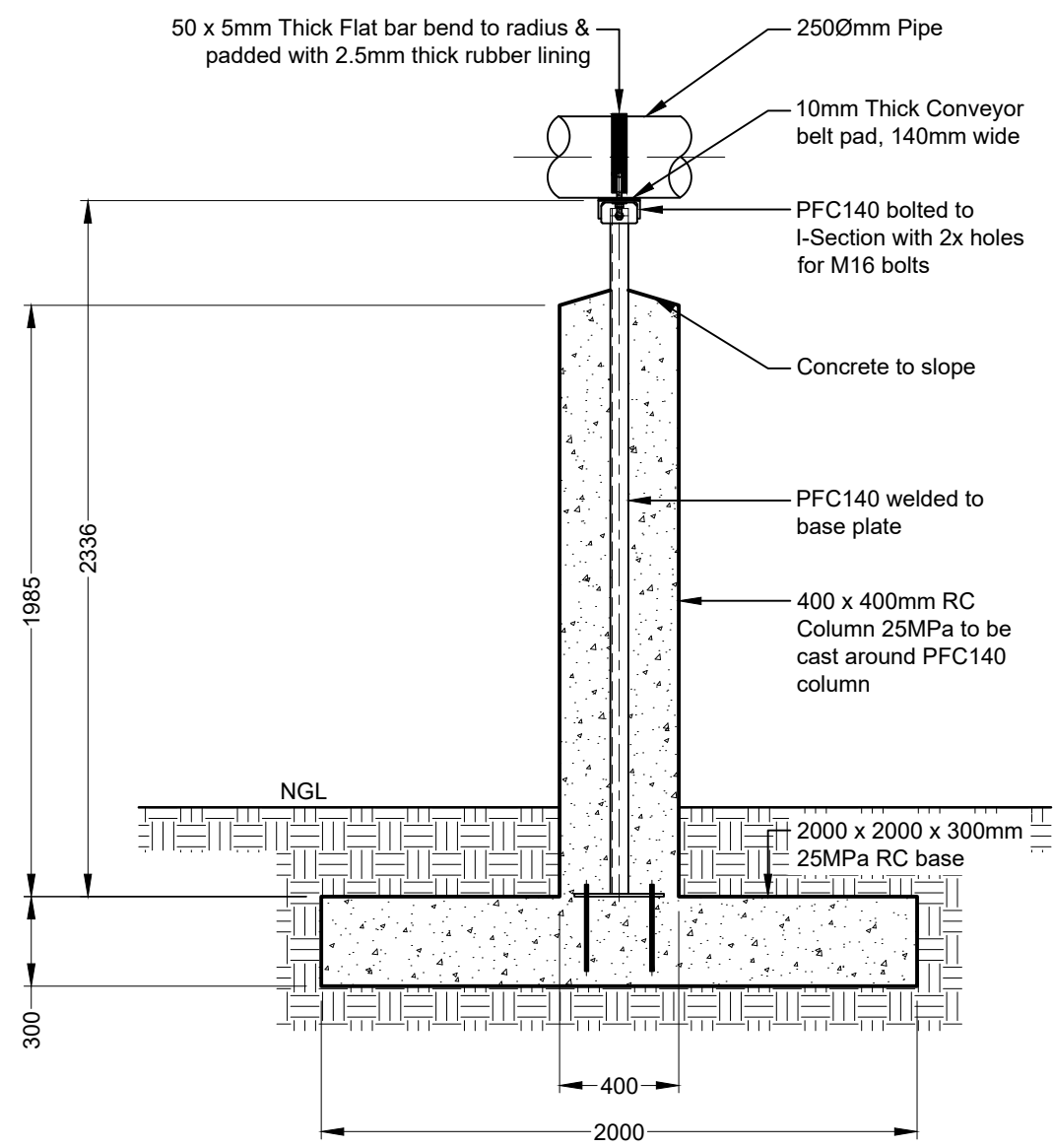
**RAW WATER SUPPLY LINE
SITE PLAN**

Drawn: R BLIGNAUT	Date: OCT 2020
Scale/s: AS SHOWN	
Drawing number: 13-019-V-01-08-01	Rev.: 00

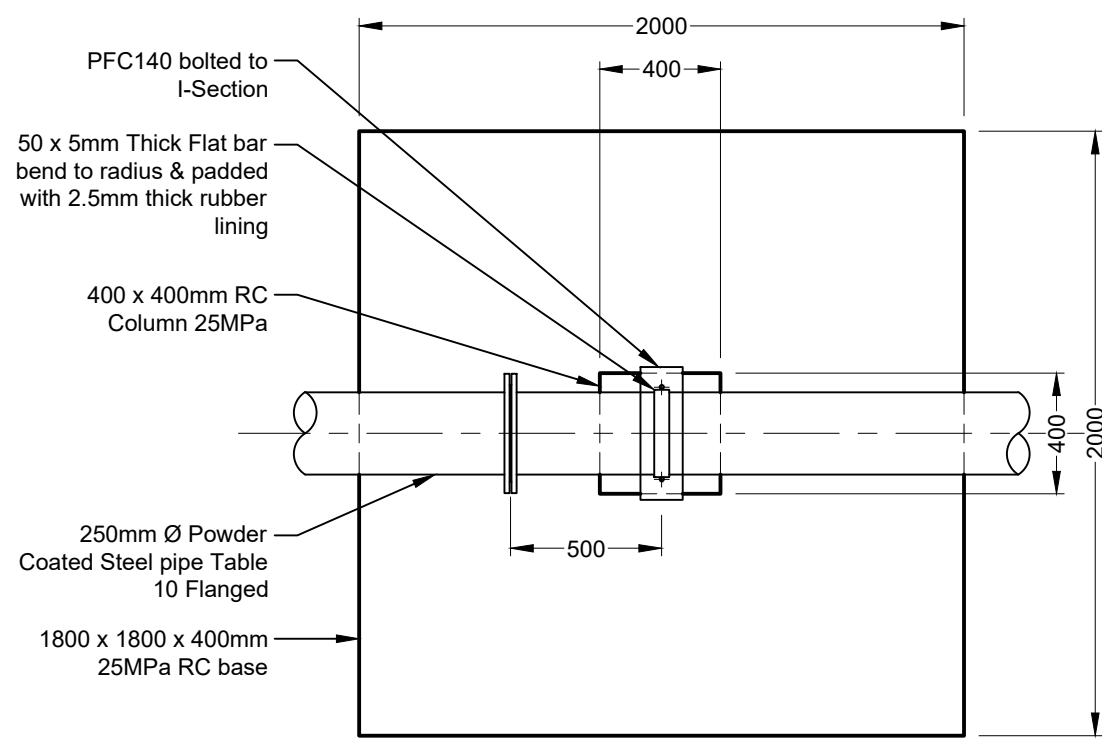


**FOR TENDER
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13-019-V-01-09-01	00

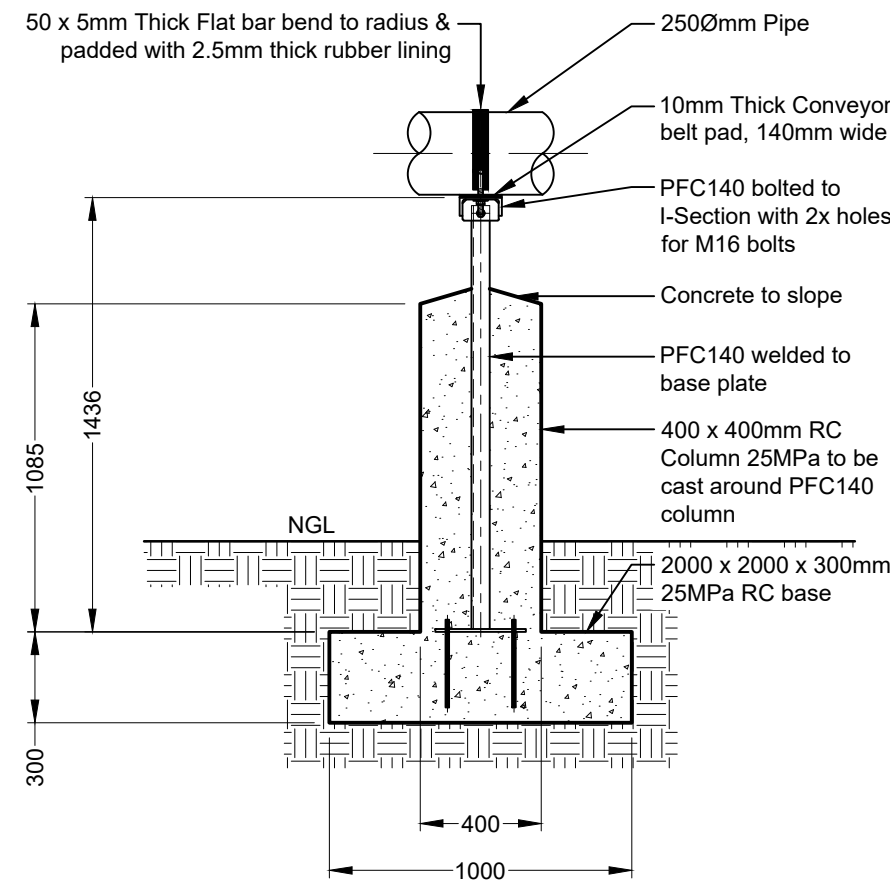


PIPE SUPPORT BRACKET TYPE A
TYPICAL SECTION

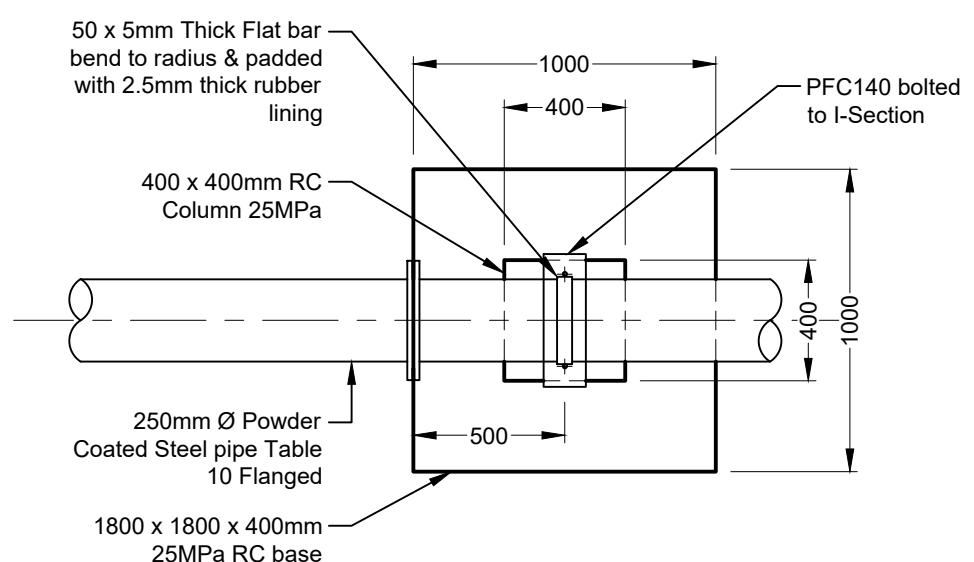


PIPE SUPPORT BRACKET TYPE A
TYPICAL PLAN VIEW

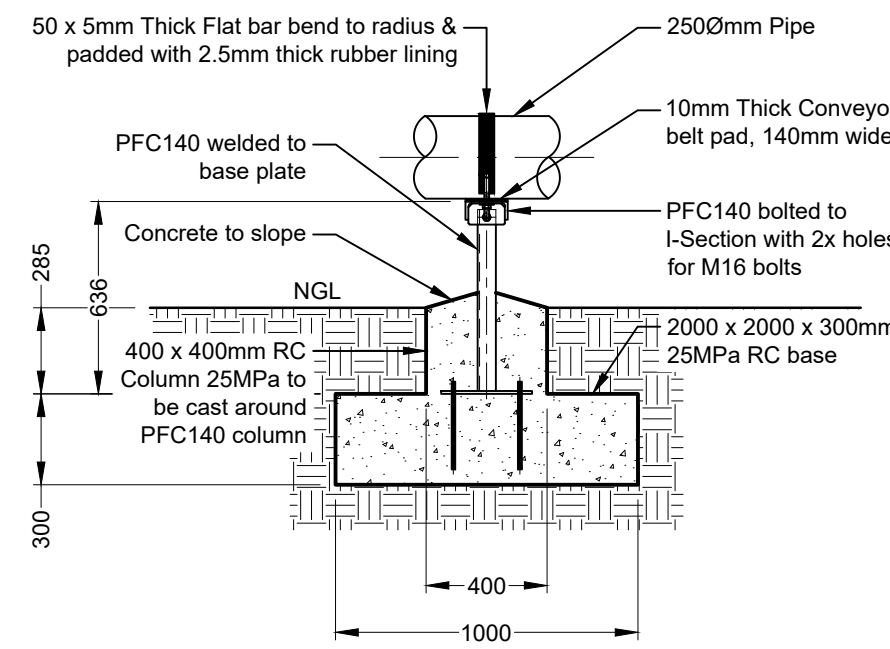
Note:
Base Level Varies to achieve
final pipe level and slope



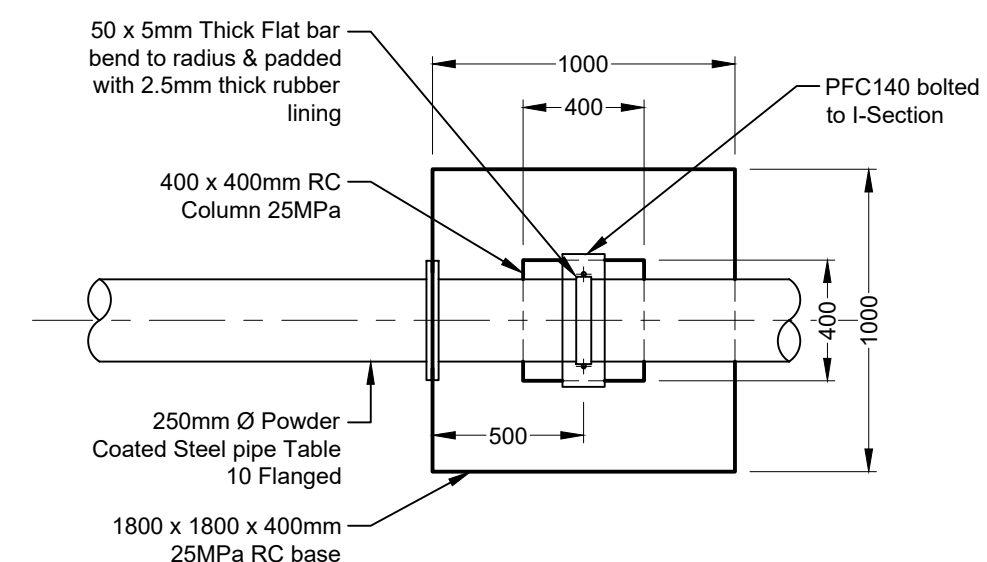
PIPE SUPPORT BRACKET TYPE B
TYPICAL SECTION



PIPE SUPPORT BRACKET TYPE B
TYPICAL PLAN VIEW



PIPE SUPPORT BRACKET TYPE C
TYPICAL SECTION



PIPE SUPPORT BRACKET TYPE C
TYPICAL PLAN VIEW

STEEL AND PIPE NOTES

- All pipes and steelwork shall be fusion bonded epoxy coated to DFT 300 micron thick unless indicated otherwise or stainless steel items

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
Any discrepancies between any drawings must be clarified before work is continued on site.

FOR TENDER
PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description

AMENDMENTS

Rev.	Date	Description

ECA CONSULTING
Civil and Structural Engineers
161 High Street | Vryheid | Kwa Zulu Natal | RSA
vryheid@ecaconsult.co.za
Tel: +27 (0)34 983 3225
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Company Reg.: 2004/019299/07
ISO Registered 9001:2015

OTHER OFFICES:
MBOMBELA | GAUTENG | PIETERMARITZBURG | LADYSMITH

Approved by Engineer:
Name: J.W. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 201070143

Signature:
Date: 4 Feb 2022

Client:
DIHLABENG LOCAL MUNICIPALITY

Approved by Client:
Name: _____
Signature: _____ Date: _____

Project:
CLARENS WTW

Drawing description:
**RAW WATER SUPPLY LINE:
PIPE SUPPORT DETAILS**

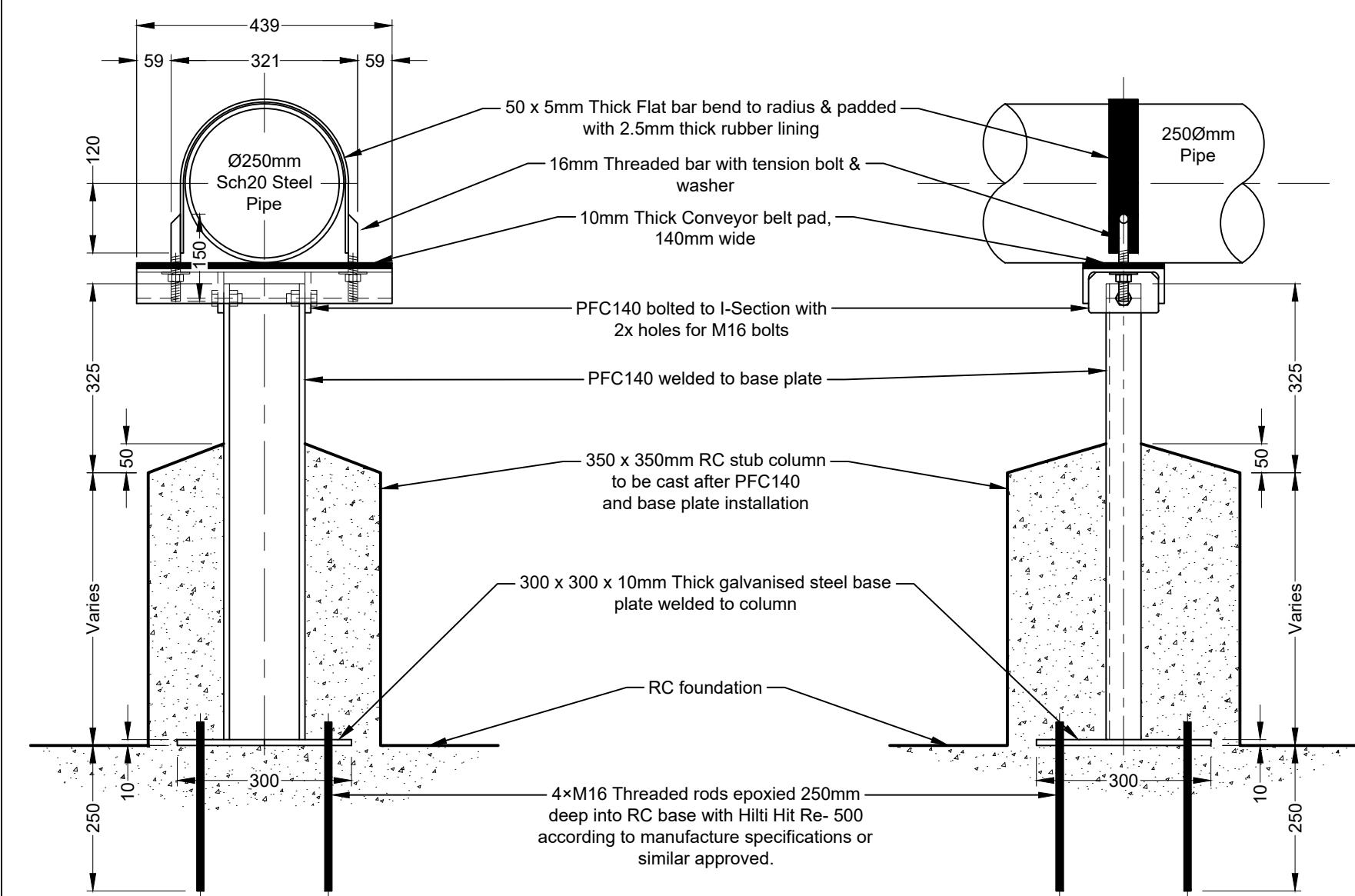
Drawn: M BOTHA Date: Jan 2021

Scale/s: AS SHOWN

Drawing number: 13-019-V-01-09-02 Rev.: 00

DETAIL NO: - SCALE: 1/25 DETAIL DESCRIPTION: 250mm Ø STEEL PIPE ABOVE GROUND SUPPORT DETAIL

SEE DETAIL NO: -

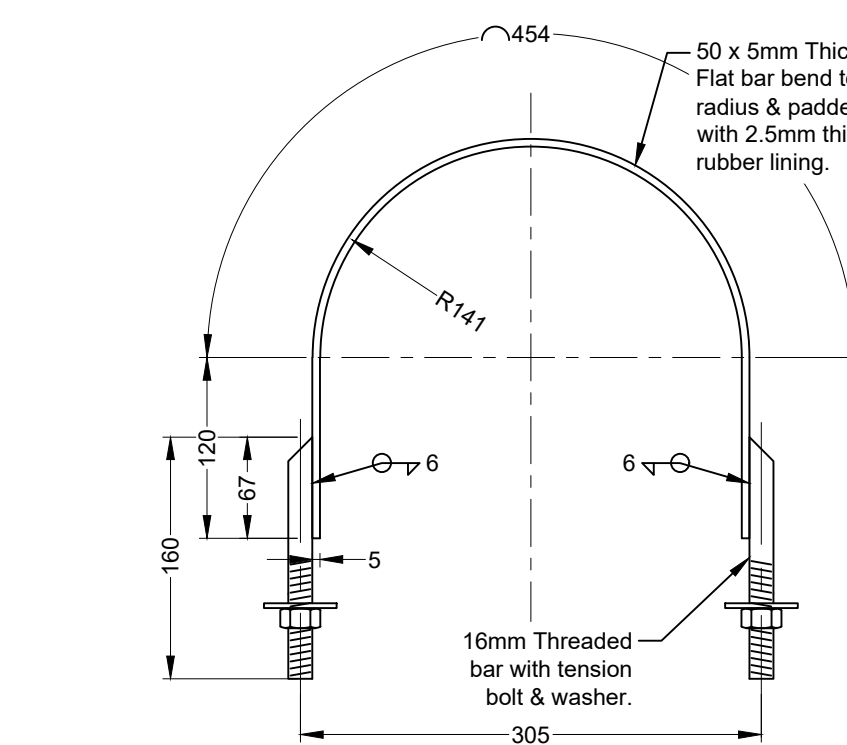


PIPE BRACKET & BASE PLATE
TYPICAL SECTION

SCALE 1/10

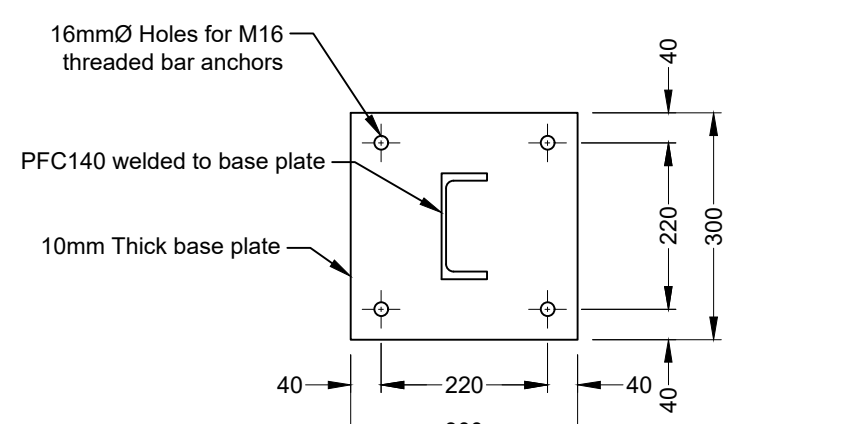
PIPE BRACKET & BASE PLATE
TYPICAL ELEVATION

SCALE 1/10



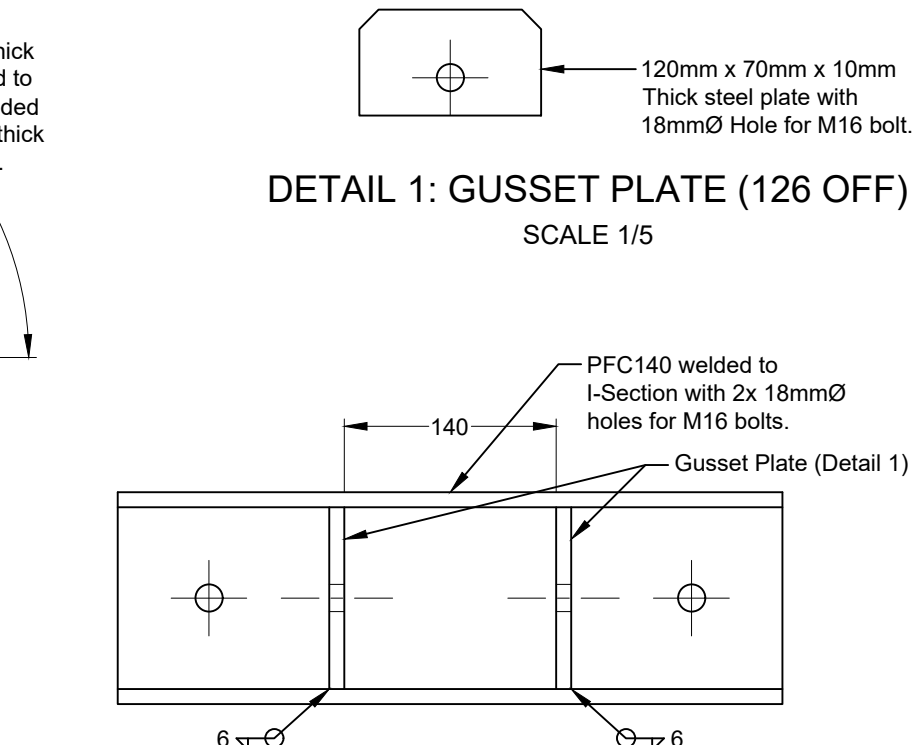
DETAIL 3: FLAT BAR AND
TENSION BOLT (63 OFF)

SCALE 1/5

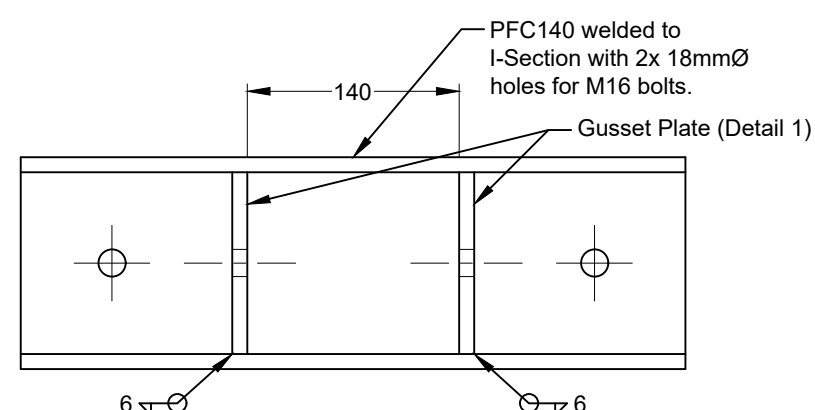


BASE PLATE
TYPICAL PLAN VIEW

SCALE 1/10

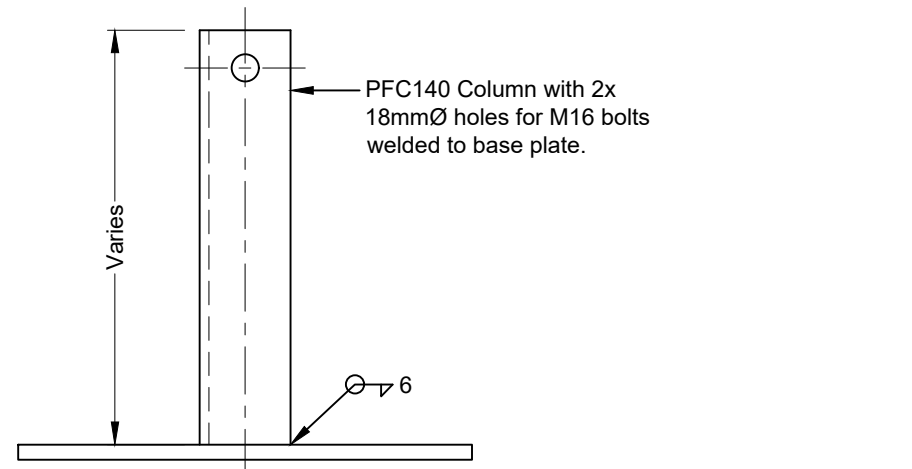


DETAIL 1: GUSSET PLATE (126 OFF)
SCALE 1/5



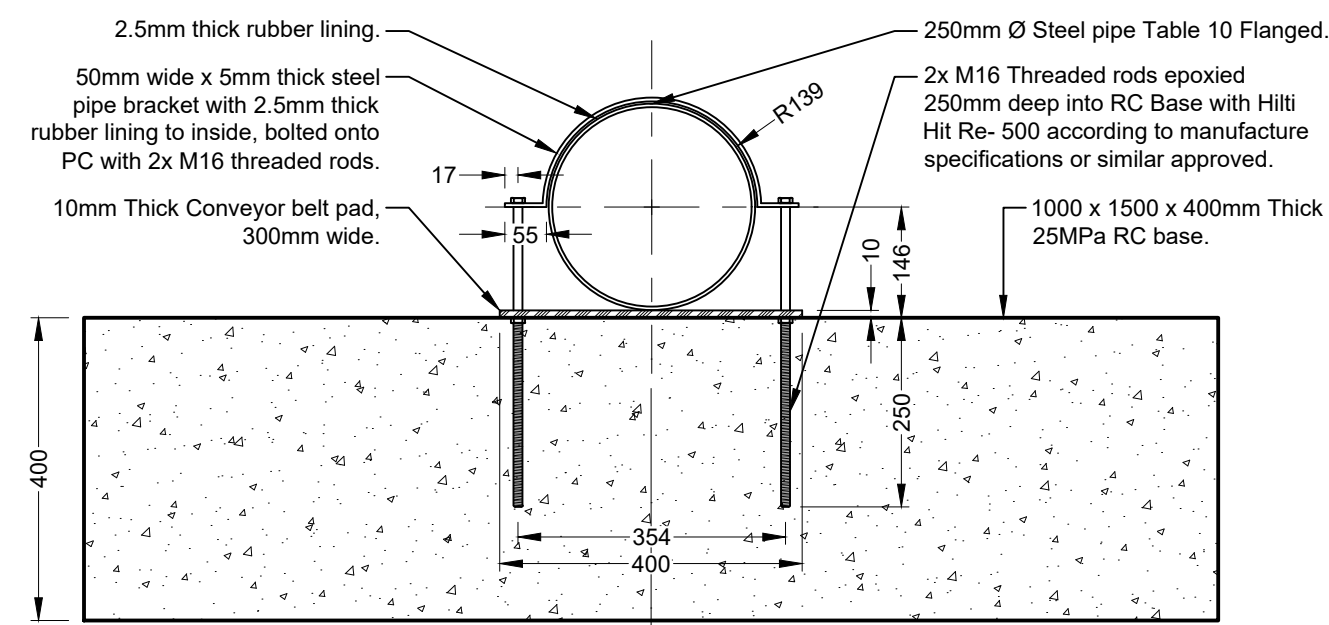
PC140 BOTTOM VIEW
DETAIL (63 OFF)

SCALE 1/5

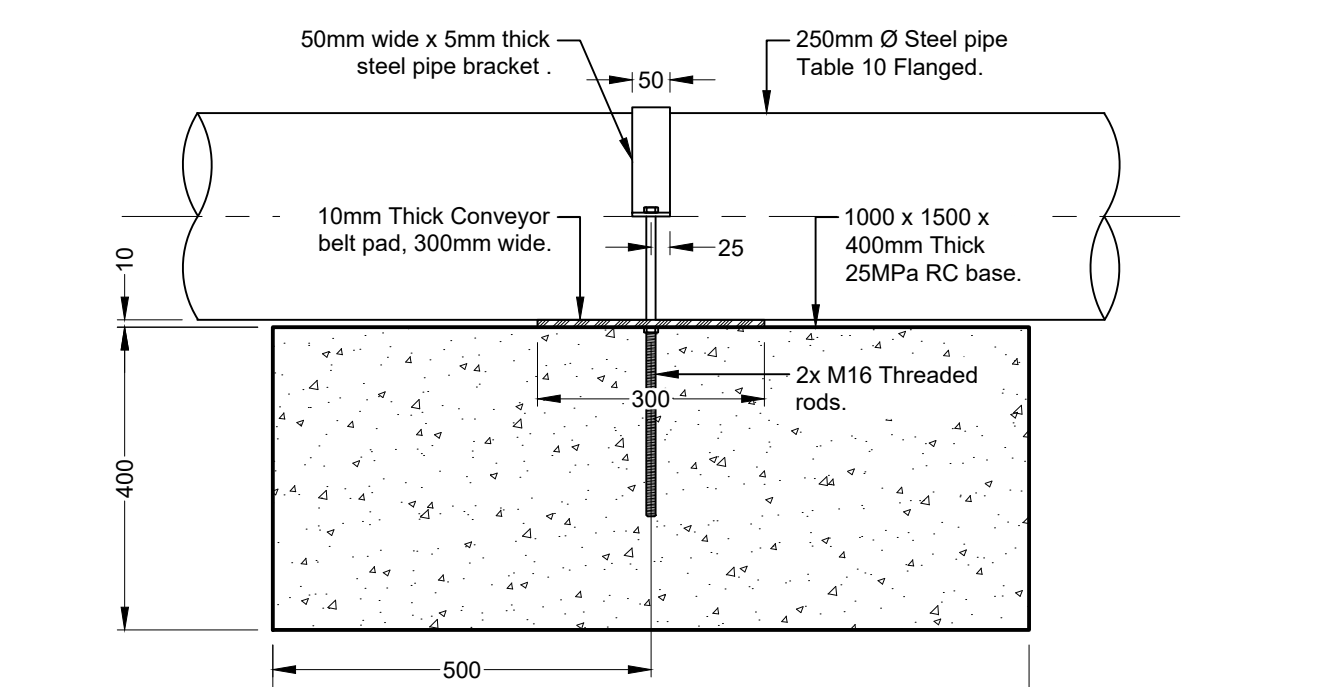


DETAIL 2: COLUMN (63 OFF)

SCALE 1/5



TYPICAL SECTION



TYPICAL ELEVATION

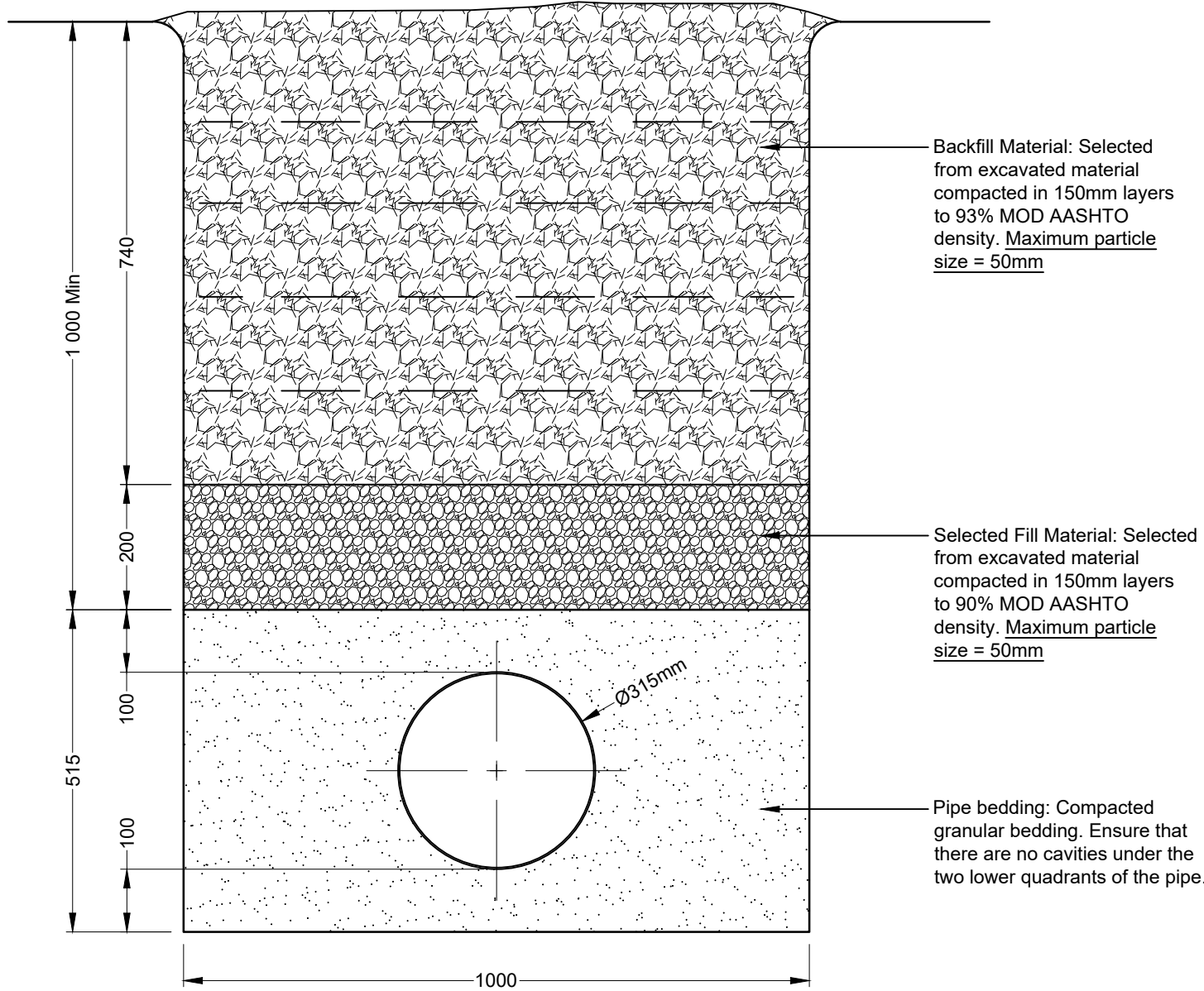
DETAIL NO: - SCALE: 1/10 DETAIL DESCRIPTION: TYPICAL ANCHOR BLOCK PIPE SUPPORT DETAIL

SEE DETAIL NO: -

Item No.	No Off.	Dia(mm) ND	Description	Drawing
09-01	01	250Ø	250mm Ø Suction strainer, T10 flanged.	
09-02	01	250Ø - 700Ø	250 - 700mm Ø x 5mm thick collar. Holes to be drilled to 250mmØ T10 flange.	
09-03	01	250Ø	250mmØ Straight, with 79° long radius bend, T10 flanged.	
09-04	06	250Ø	250mmØ Straight, T10 flanged.	
09-05	01	250Ø	250mmØ Straight with 1x 21° bend, 1x 11° bend and 2x 150mmØ branches complete with 2x 150 to 50mmØ reducers, all T10 flanges.	
09-06	02	50Ø	50mm Ø RSV Gate Valve to SANS 664, T10 flanged.	
09-07	01	50Ø	50mm Ø D-040-C x 2" cast iron body ARI air release valve. (valve should only release air from system and prevent air from entering	
09-08	01	80Ø	80mm Ø T10 Blanked flange with 1" female threaded steam socket	
09-09	01	250Ø - 300Ø	250mmØ Straight with 250 to 300mmØ reducer, T10 flanged.	
09-10	09	300Ø	300mm Ø VJ Flange adaptor for uPVC, T10 flanged.	
09-11	04	300Ø	300mmØ Straight with puddle flange, T10 flanged.	

STEEL AND PIPE NOTES

- All pipes and steelwork shall be fusion bonded epoxy coated to DFT 300 micron thick unless indicated otherwise



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/10	PIPE TRENCH DETAIL	-

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
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FOR TENDER
PURPOSES ONLY

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AMENDMENTS

Rev.	Date	Description

ECA CONSULTING

Civil and Structural Engineers

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OTHER OFFICES:
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PIETERMARITZBURG |
LADYSMITH

Approved by Engineer:	Signature:
Name: J.W. Janse v Rensburg	
Designation: PrTechEng	Date: 4 Feb 2022
ECSA Reg.: 201070143	

**DIHLABENG
LOCAL
MUNICIPALITY**

Approved by Client:
Name: _____
Signature: _____ Date: _____

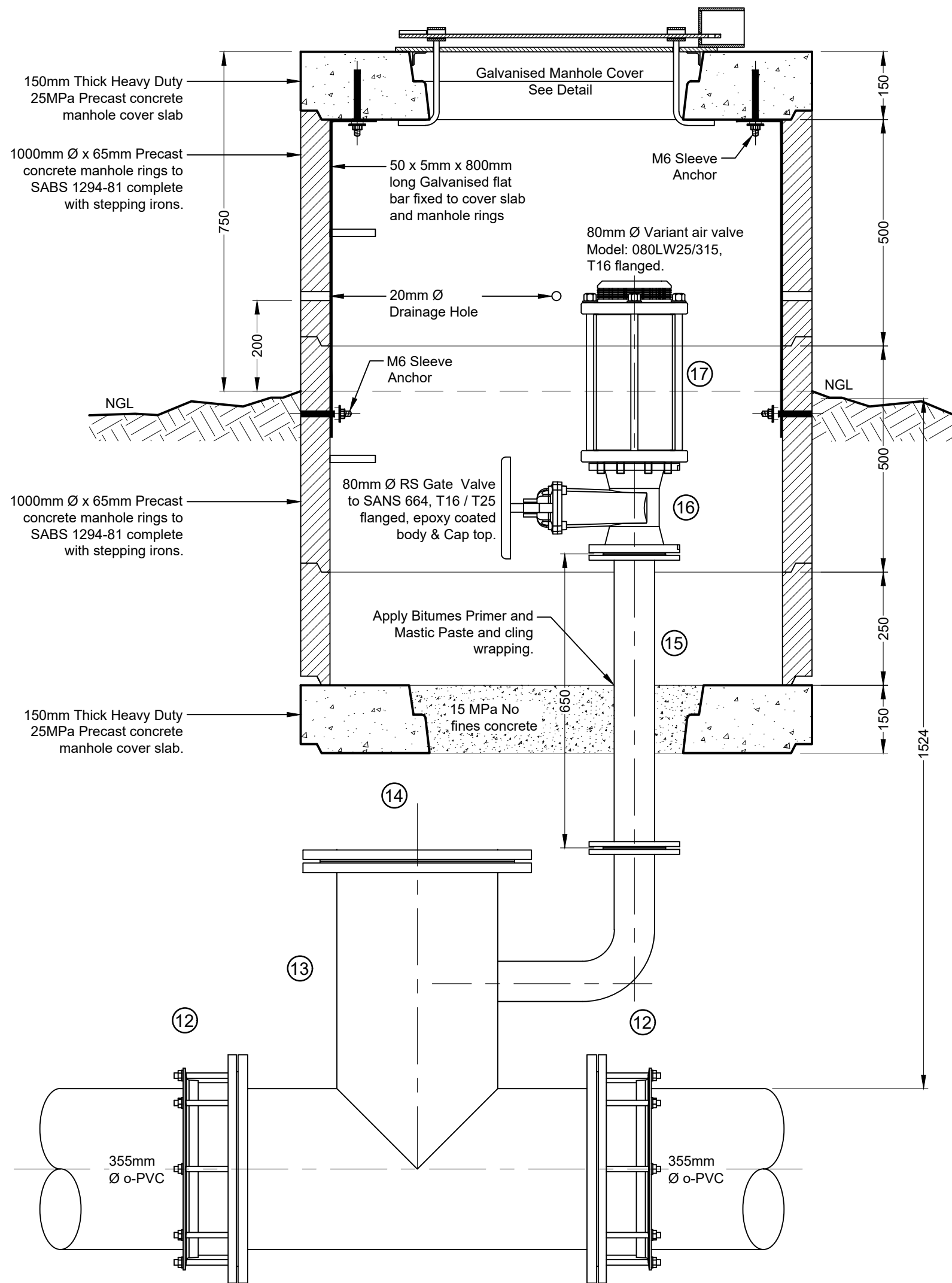
Project:

CLARENS WTW

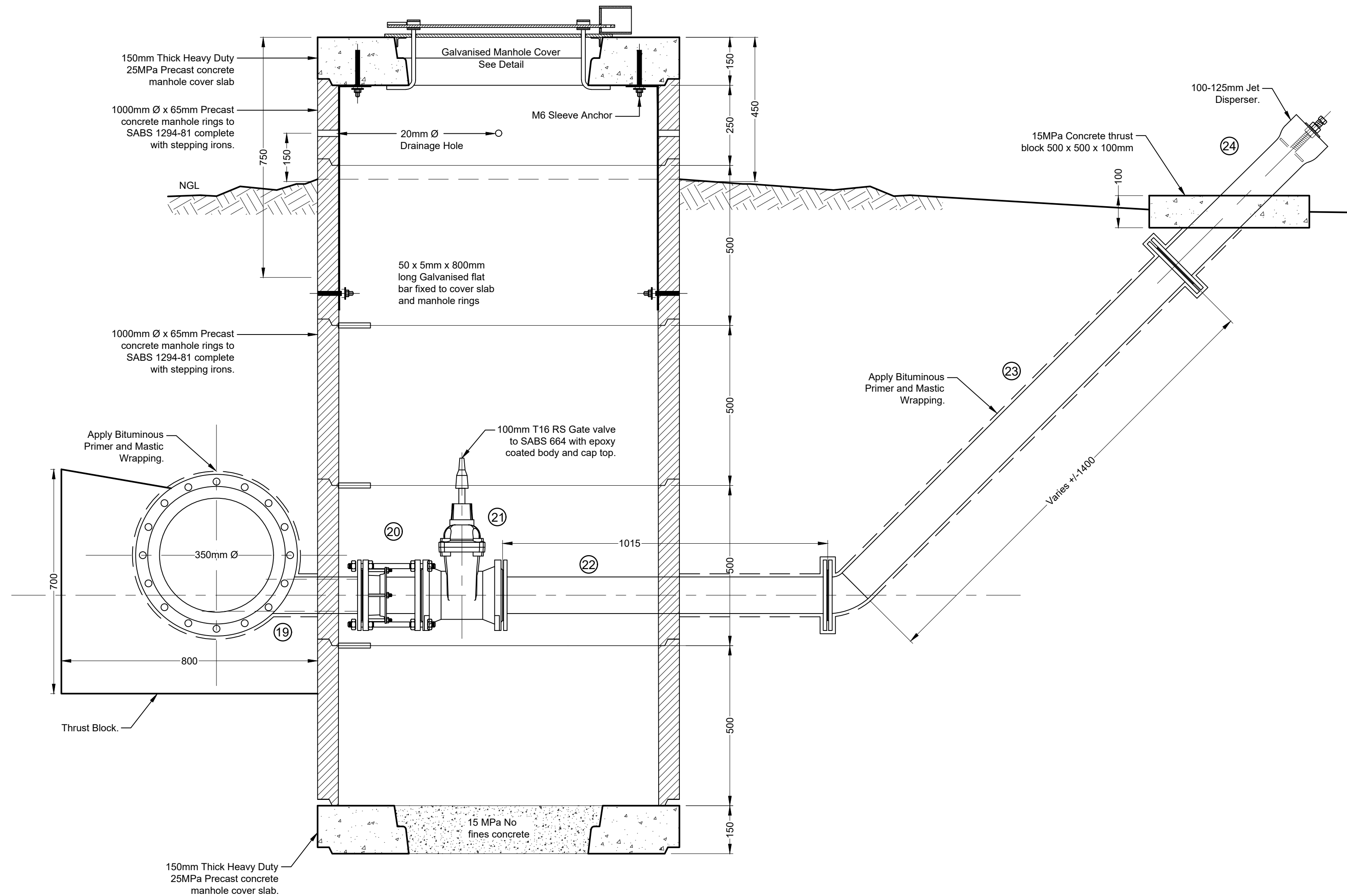
Drawing description:

**RAW WATER SUPPLY LINE:
PIPE SCHEDULE**

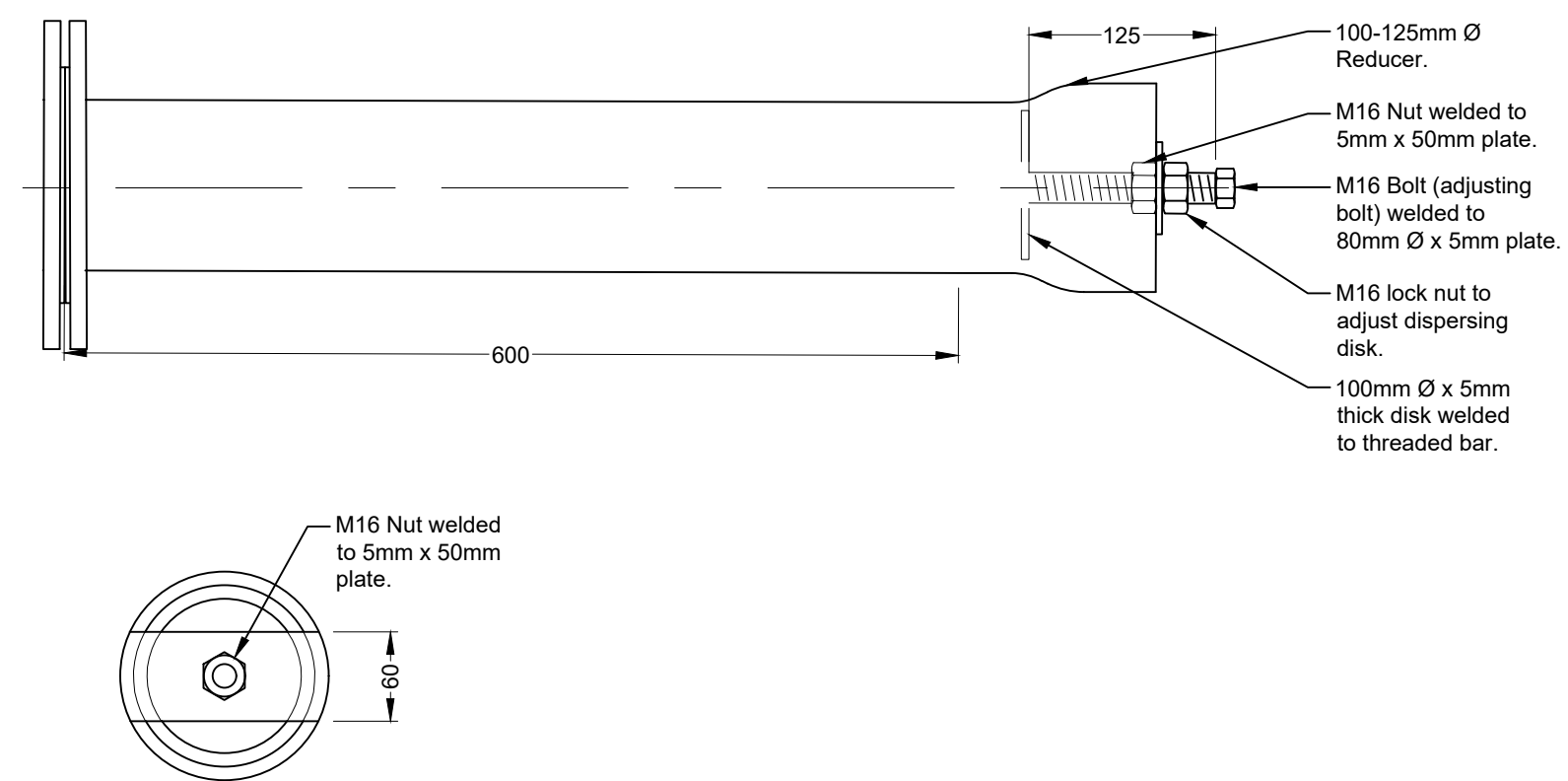
Drawn: M BOTHA	Date: Jan 2021
Scale/s: AS SHOWN	
Drawing number: 13-019-V-01-09-03	Rev.: 00



DETAIL NO: - SCALE: 1/10 DETAIL DESCRIPTION: AIR VALVE CHAMBER DETAILS SEE DETAIL NO: -



DETAIL NO: - SCALE: 1/10 DETAIL DESCRIPTION: SCOUR VALVE CHAMBER DETAILS SEE DETAIL NO: -



DETAIL NO: - SCALE: 1/5 DETAIL DESCRIPTION: DISPENSER DETAILS SEE DETAIL NO: -

Item No.	No Off.	Dia(mm) ND	Description	Drawing
09-12	02	350Ø	350mm Ø 'VJ' Flange Adaptor with epoxy power coated body & T10 flange or similar approved.	
09-13	01	350Ø	350mm Ø Tee with 80mm Air valve connection Tee, T10 flanged.	
09-14	01	350Ø	350mm Ø T10 Blanked flange.	
09-15	01	80Ø	80mm Ø Straight pipe, T16 flanged.	
09-16	01	80Ø	80mm Ø Wedge gate valve T16 flanged.	
09-17	01	80Ø	80mm Ø Air Valve - Type 'Variant' model '080LW16/315' flanged Anti Shock air valve or similar approved.	

DETAIL NO: - SCALE: 1/25 DETAIL DESCRIPTION: PIPE SCHEDULES SEE DETAIL NO: -

Item No.	No Off.	Dia(mm) ND	Description	Drawing
09-18	02	350Ø	350mm Ø 'VJ' Flange Adaptor with epoxy power coated body & T10 flanges or similar approved.	
09-19	01	450Ø	450mm Ø Straight T16 flanged with puddle flanges and 100mm Ø Tee, T16 flanged.	
09-20	01	100Ø	100mm Ø, dismantling joint, T16 flanged.	
09-21	01	100Ø	100mm T16 RS Gate valve to SABS 664 with epoxy coated body and cap top, T16 flanged.	
09-22	01	100Ø	100mm Ø Straight, T16 flanged.	
09-23	01	100Ø	100mm Ø Straight with 45° Bend, T16 flanged.	
09-24	01	100Ø	100-125mm Ø Jet Disperser, T16 flanged.	

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
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FOR TENDER PURPOSES ONLY

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Drawing Number	Drawing Description

AMENDMENTS

Rev.	Date	Description

ECA CONSULTING
Civil and Structural Engineers
Company Reg.: 2004/019299/07
ISO Registered 9001:2015

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OTHER OFFICES:
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PIETERMARITZBURG |
LADYSMITH

Approved by Engineer:
Name: J.W. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 201070143

Signature:
Date: 4 Feb 2022

DIHLABENG LOCAL MUNICIPALITY

Approved by Client:
Name: _____
Signature: _____ Date: _____

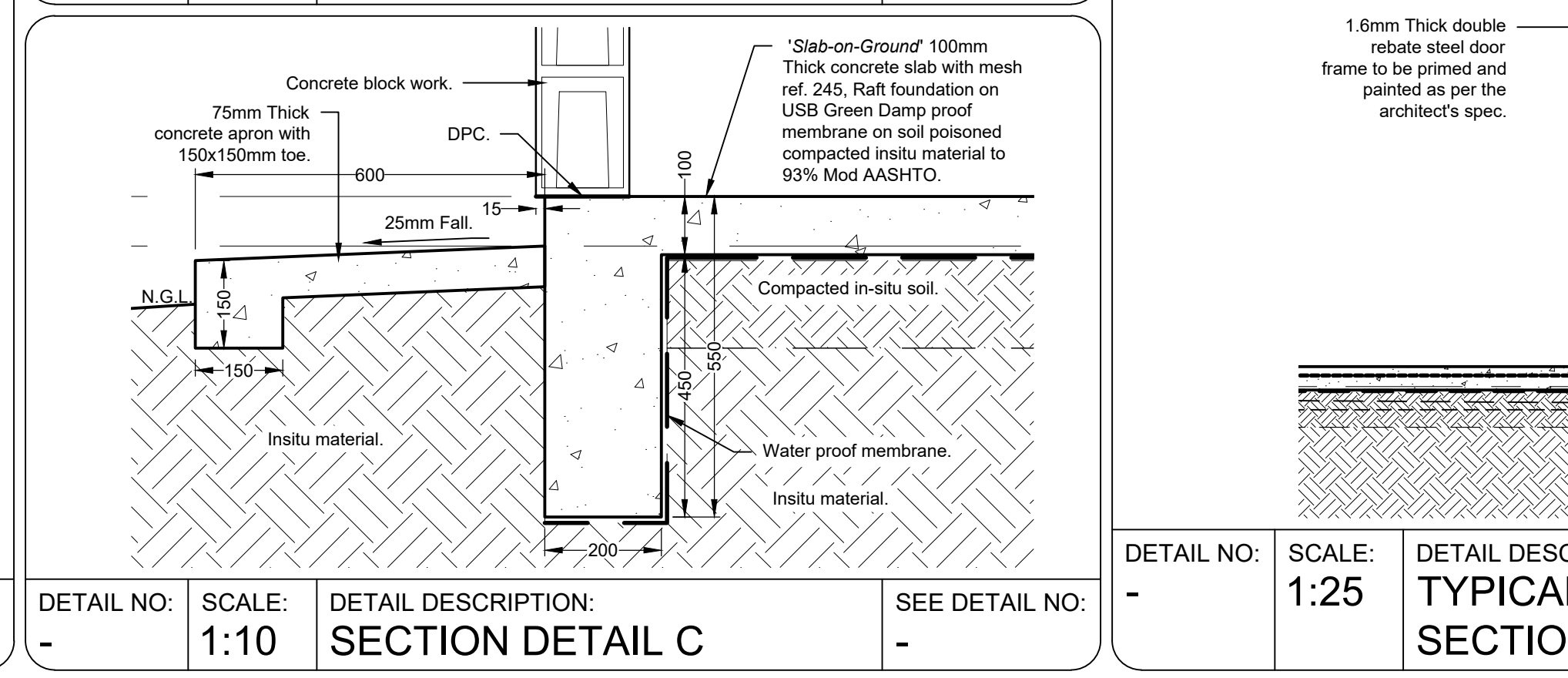
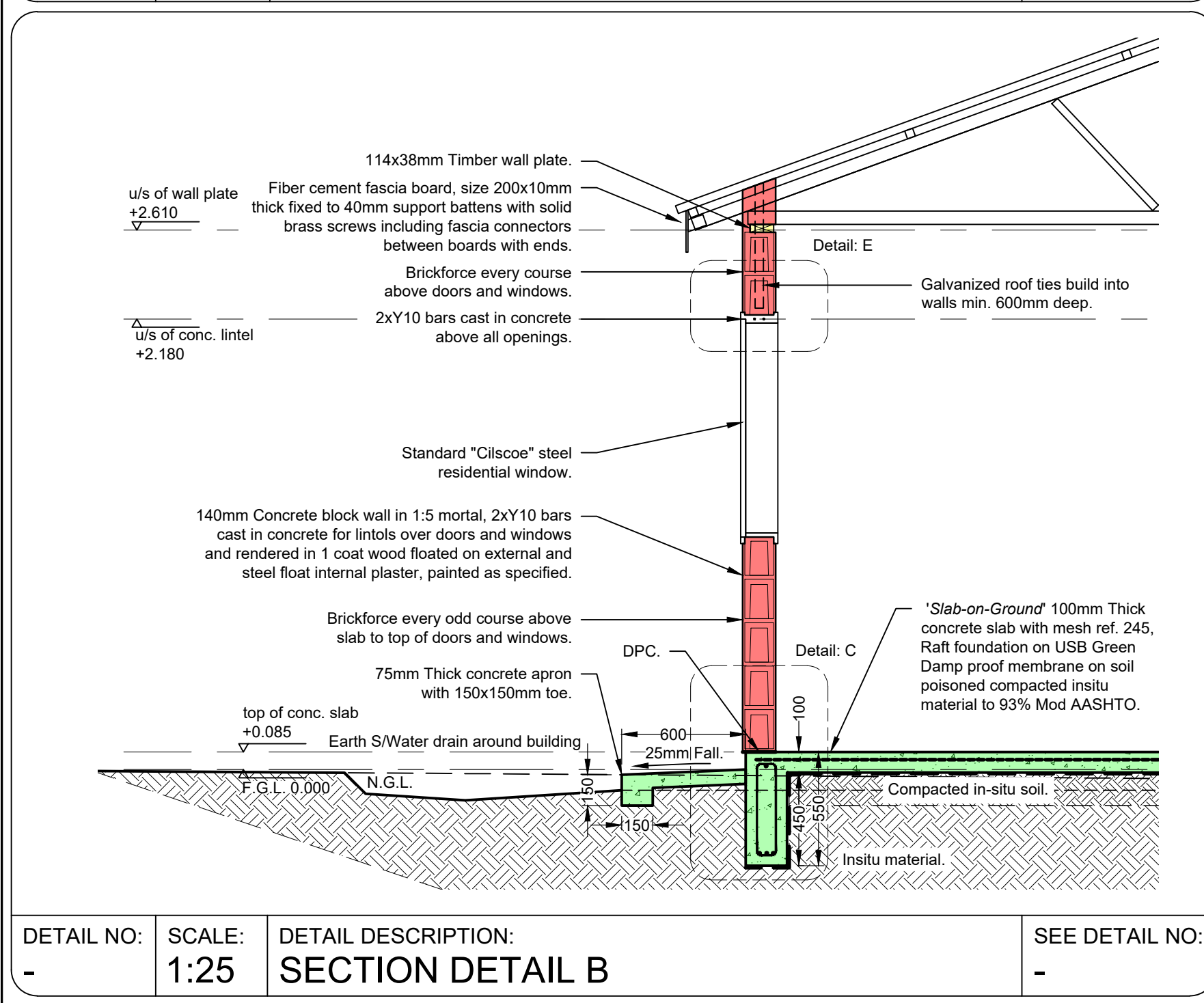
Project:
CLARENS WTW

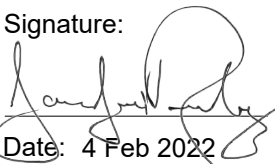
Drawing description:
**RAW WATER SUPPLY LINE:
AIR & SCOUR VALVE
CHAMBER DETAILS**

Drawn: L. Nel Date: Sep 2021

Scale/s: AS SHOWN

Drawing number: 13-019-V-01-09-04 Rev.: 00

[illegible]

Approved by Engineer: Name: J.W. Janse v Rensburg Designation: PrTechEng ECSA Reg.: 201070143		Signature:  Date: 4 Feb 2022	
Client:  DIHLABENG LOCAL MUNICIPALITY			
Approved by Client: _____ Name: _____ Signature: _____ Date: _____			
Project: CLARENS WTW			
Drawing description: ADMIN & LABORATORIUM OFFICE BUILDING PLANS, SECTIONS & DETAILS			
Drawn: G.D Bezuidenhout		Date: Apr 2021	
Scale/s: As Shown			
Drawing number: 13-019-V-01-10-01			Rev.: 00

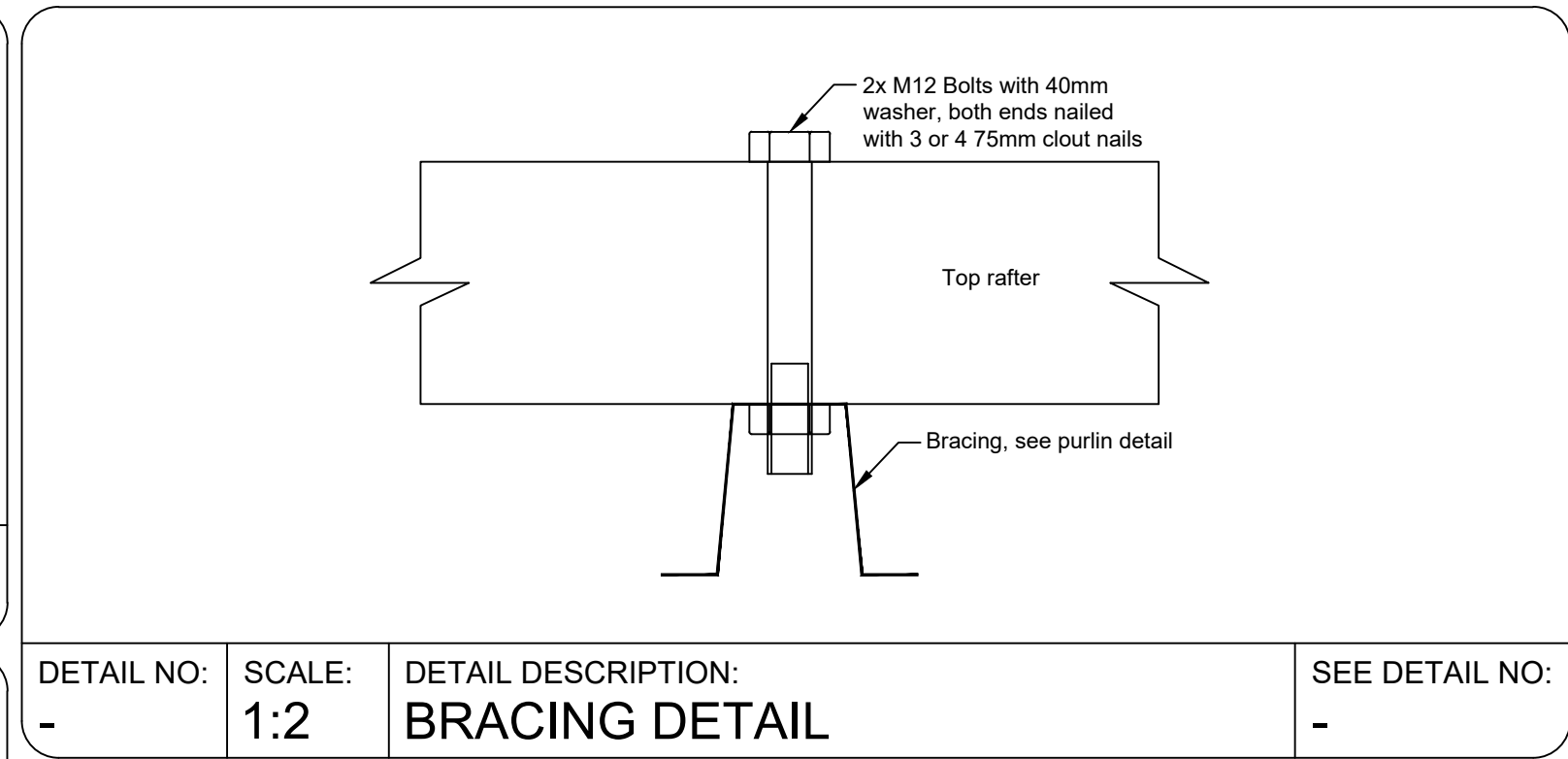
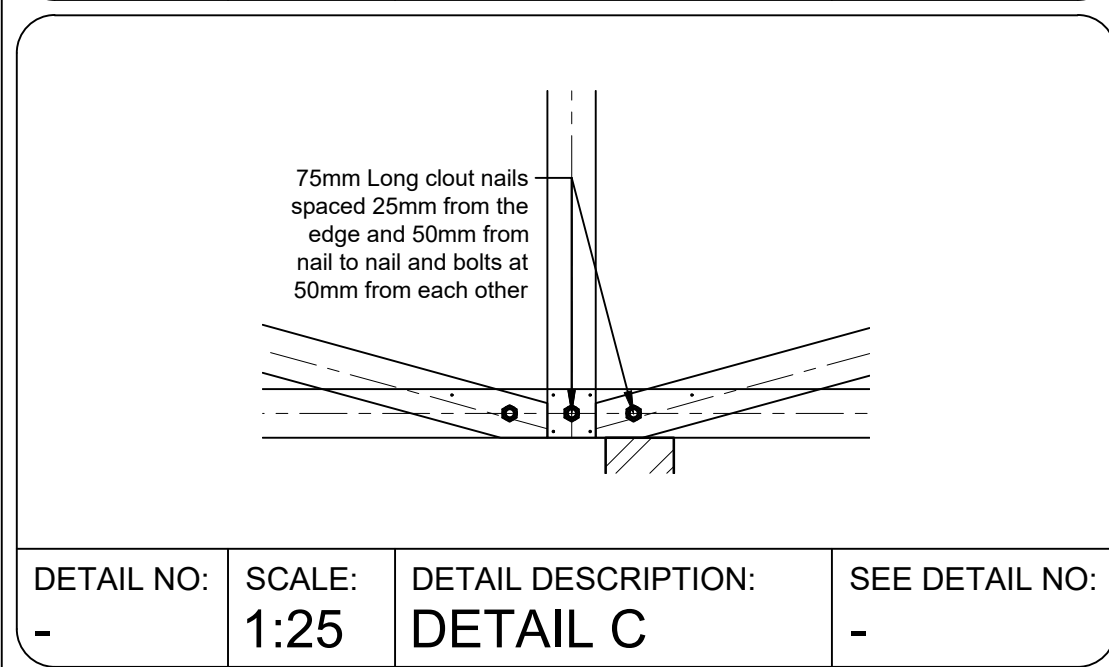
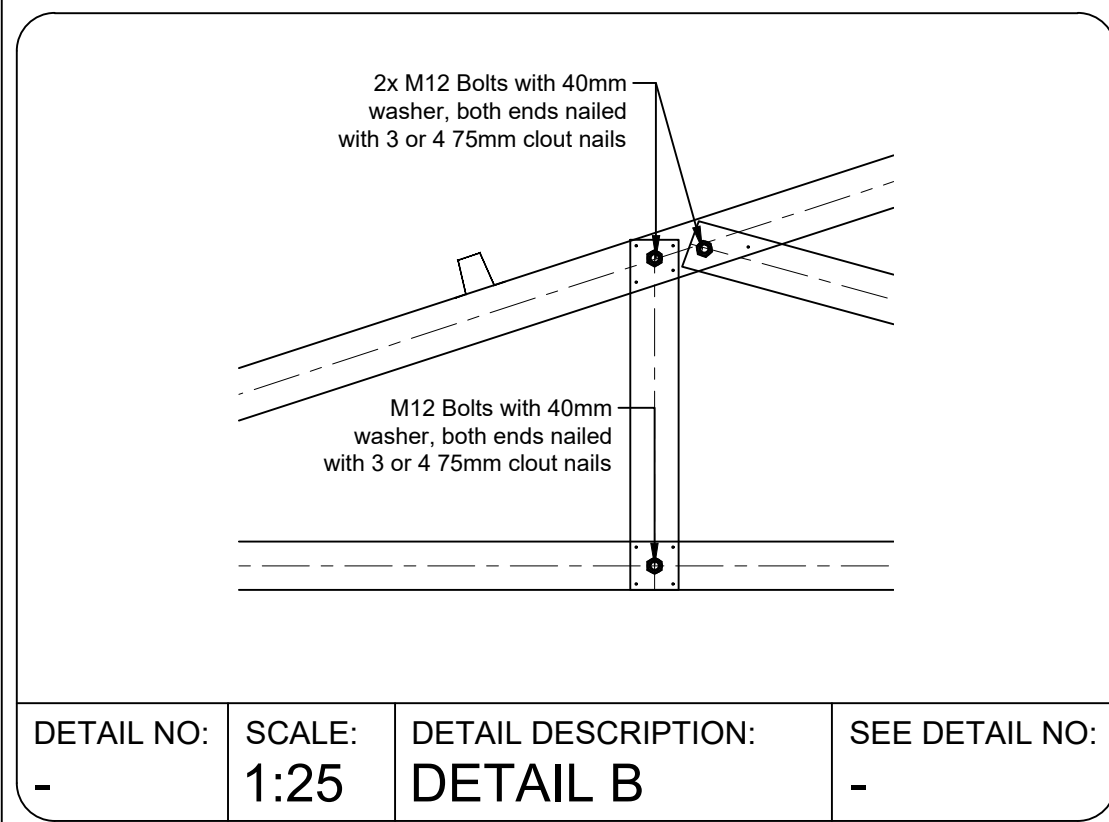
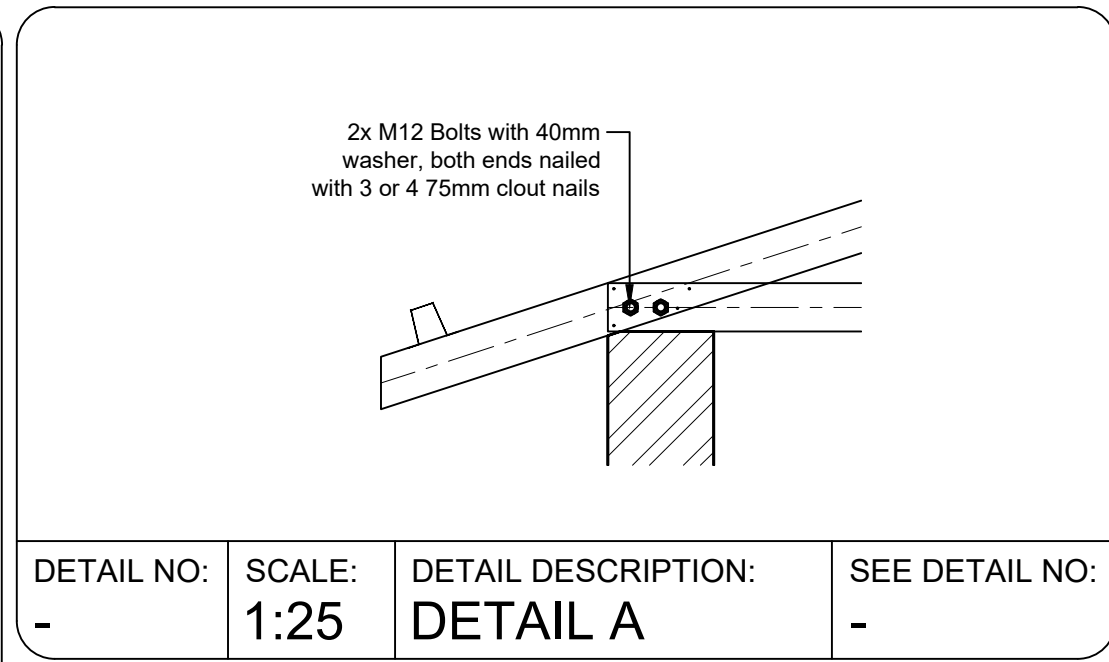
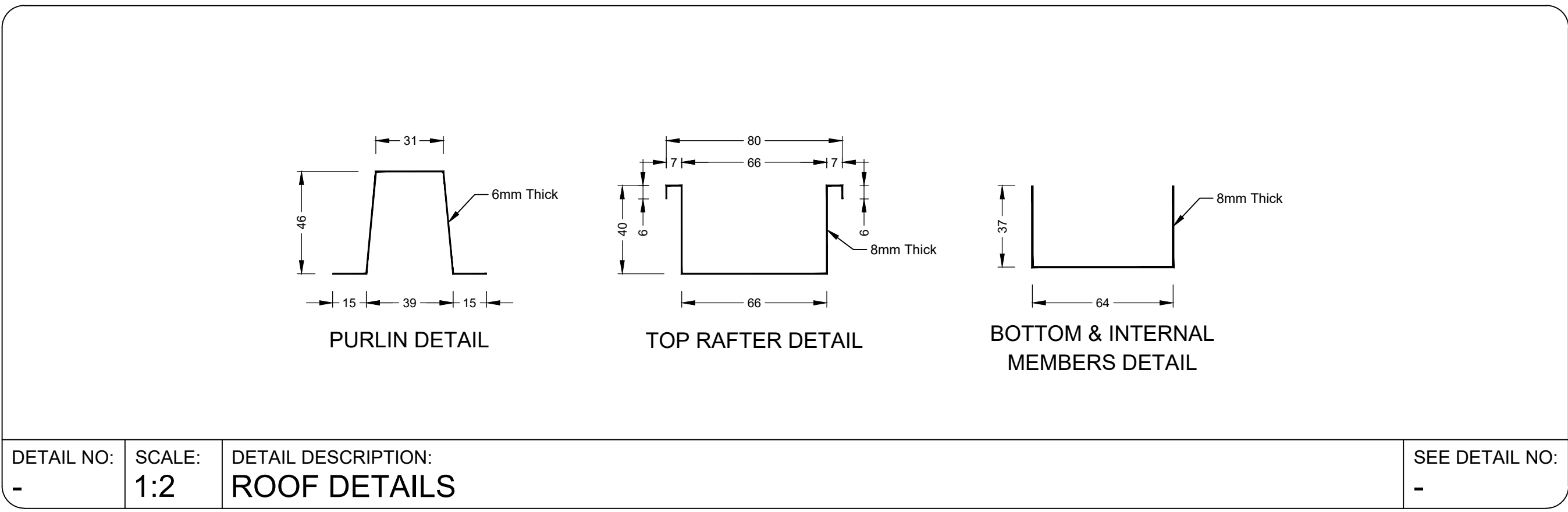
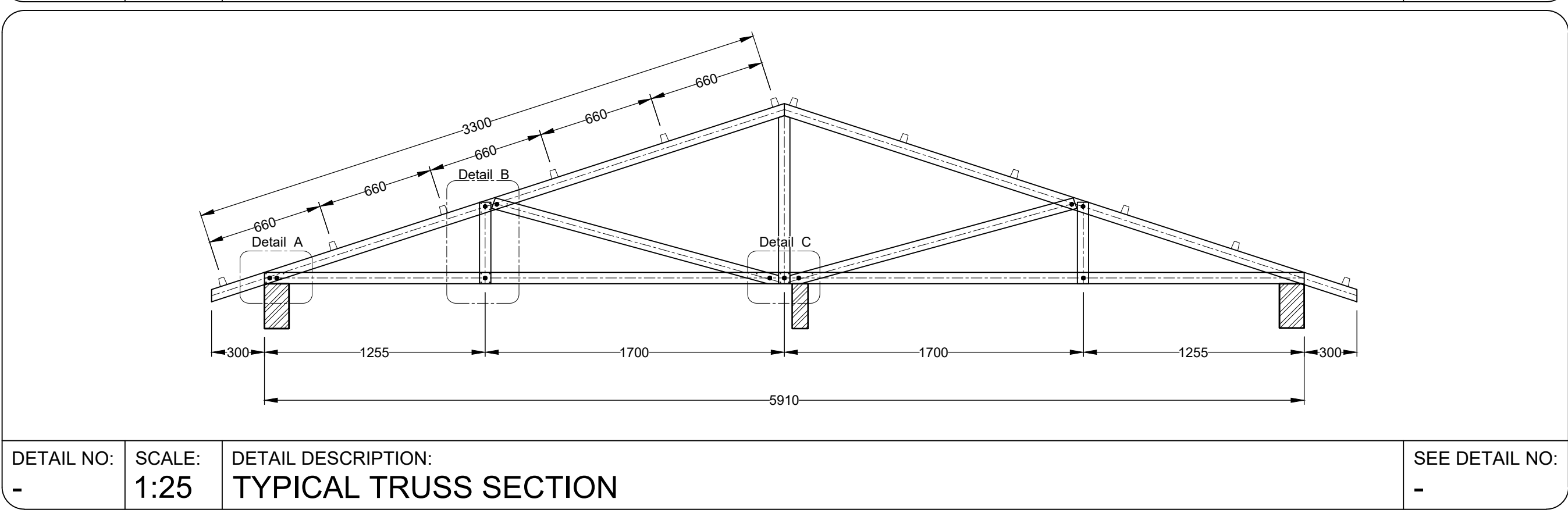
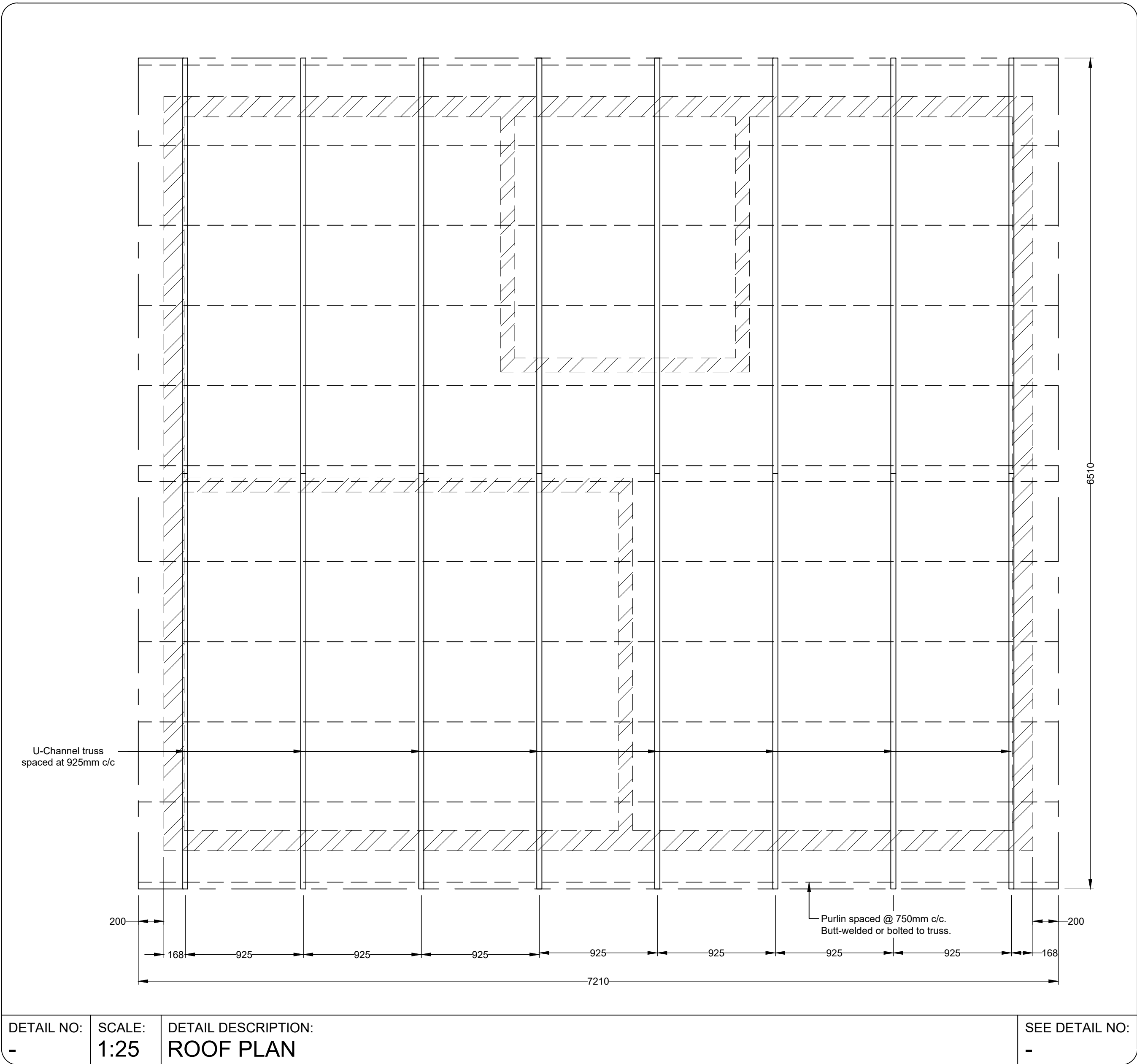


DETAIL NO: -	SCALE: -	DETAIL DESCRIPTION: CONCRETE RAFT NOTES	SEE DETAIL NO: -
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DETAIL NO: -	SCALE: -	DETAIL DESCRIPTION: BENDING SCHEDULE	SEE DETAIL NO: -
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Drawing number:	Rev.:
13-019-V-01-10-02	00



NOTES

1. This drawing to be read in conjunction with the relevant engineering and architectural drawings.
2. Drawings must be checked for errors, omissions and ambiguities and referred to the engineer for clarification prior to commencement of works.
3. All dimensions are in millimeters.
4. Materials and construction to comply with SANS 10082, SANS 10400 and to other lightweight steel construction.
5. All structural steel to be manufactured in accordance.
6. Purlins, bolted connection plates to be galvanized to SANS 1641:1999
7. All bolted connections to have min 2-M12 grade 5.6 galvanized bolts to SANS 1641:1999.
8. If requested by client all steel to be cleaned by sandblast to 40-70 blasting profile microns and apply a prime coat of zinc phosphate to a min dry film thickness of 45 microns and a finish coat iron oxide by brush of airless spray to 40 microns.
9. Roof anchors shall be anchored in masonry in accordance with figure 34 of SWANS 10400-K.
10. Roof anchor 30mm x 1.6 galvanized steel strap to be embedded in brickwork to a min depth of 600mm or four standard brickwork courses after the window level in accordance to national home builders manual.
11. Purlins on concrete roof tiles should be a min 320c/c spacing unless agreed otherwise by the client or stated on suppliers certificate.
12. Roof tiles to be subjected to a 2h rain-penetration test as described in SANS 542.
13. Wall plates not to be provided for a lightweight steel truss, roof anchors in accordance to figure 34 and 35 of SANS 10400K.
14. TR1 & TR2 Certification to be issued by supplier/manufacture.

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FOR TENDER PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH	
Drawing Number	Drawing Description

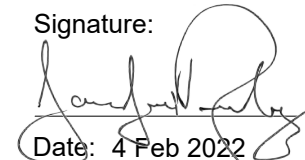
AMENDMENTS		
Rev.	Date	Description

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OTHER OFFICES:
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PIETERMARITZBURG |
LADYSMITH

Company Reg.: 2004/019299/07
ISO Registered 9001:2015

Approved by Engineer:
Name: J.W. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 201070143
Signature: 
Date: 4 Feb 2022



**DIHLABENG
LOCAL
MUNICIPALITY**

Approved by Client:
Name: _____
Signature: _____ Date: _____

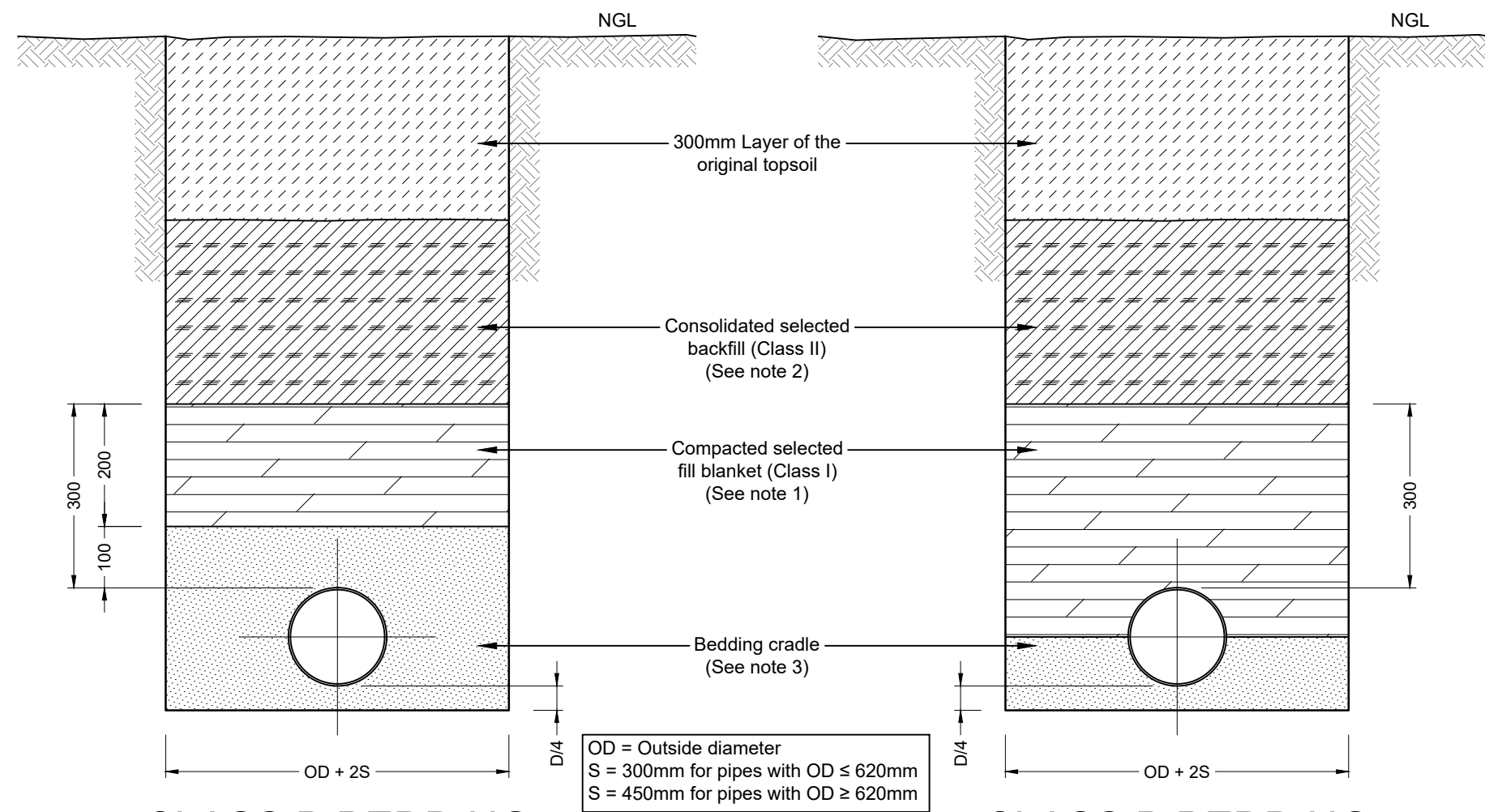
Project:

CLARENS WTW

Drawing description:

**ADMIN & LABORATORIUM
STEEL ROOF PLAN &
DETAILS**

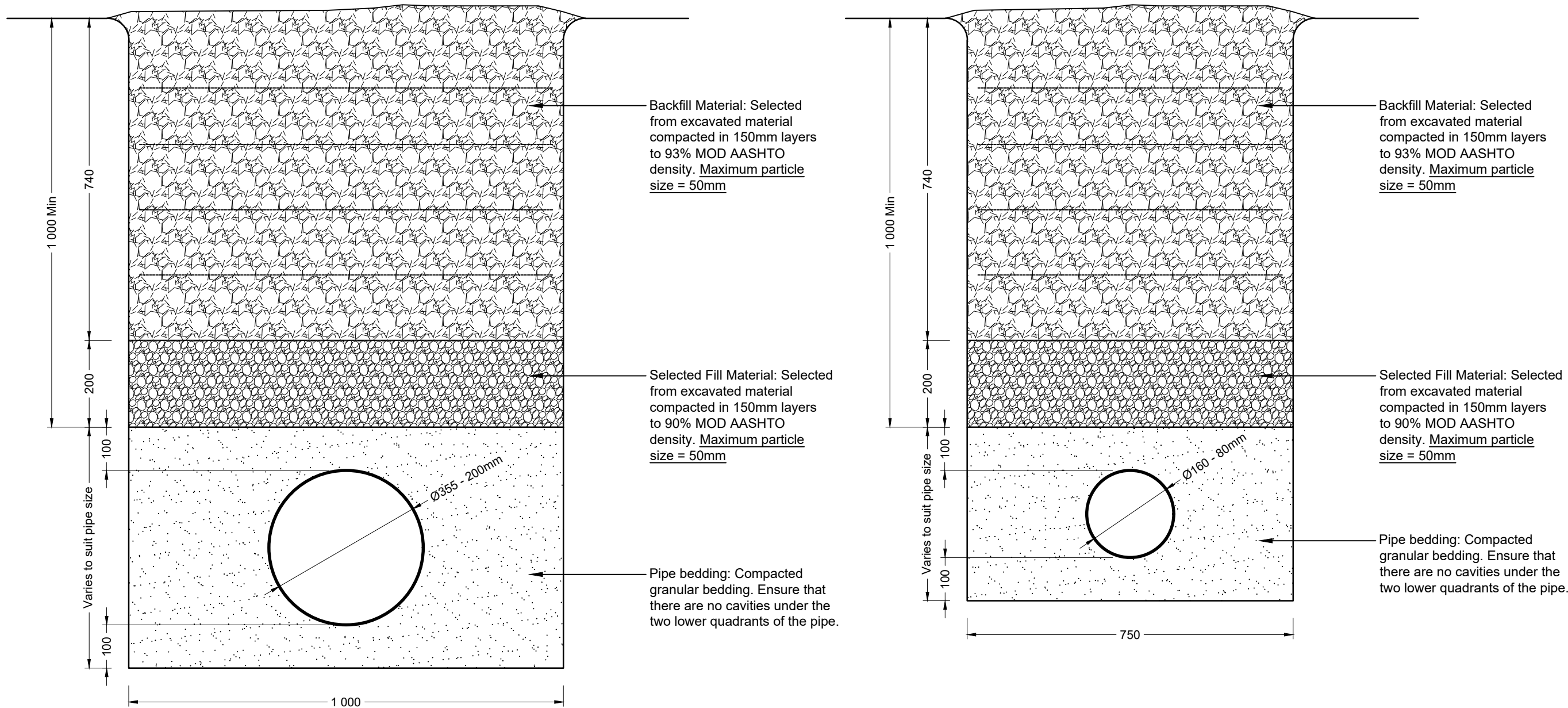
Drawn: G.D Bezuidenhout	Date: Apr 2021
Scale/s: As Shown	
Drawing number: 13-019-V-01-10-03	Rev.: 00



CLASS B BEDDING
FOR FLEXIBLE PIPELINE

CLASS B BEDDING
FOR RIGID PIPELINE

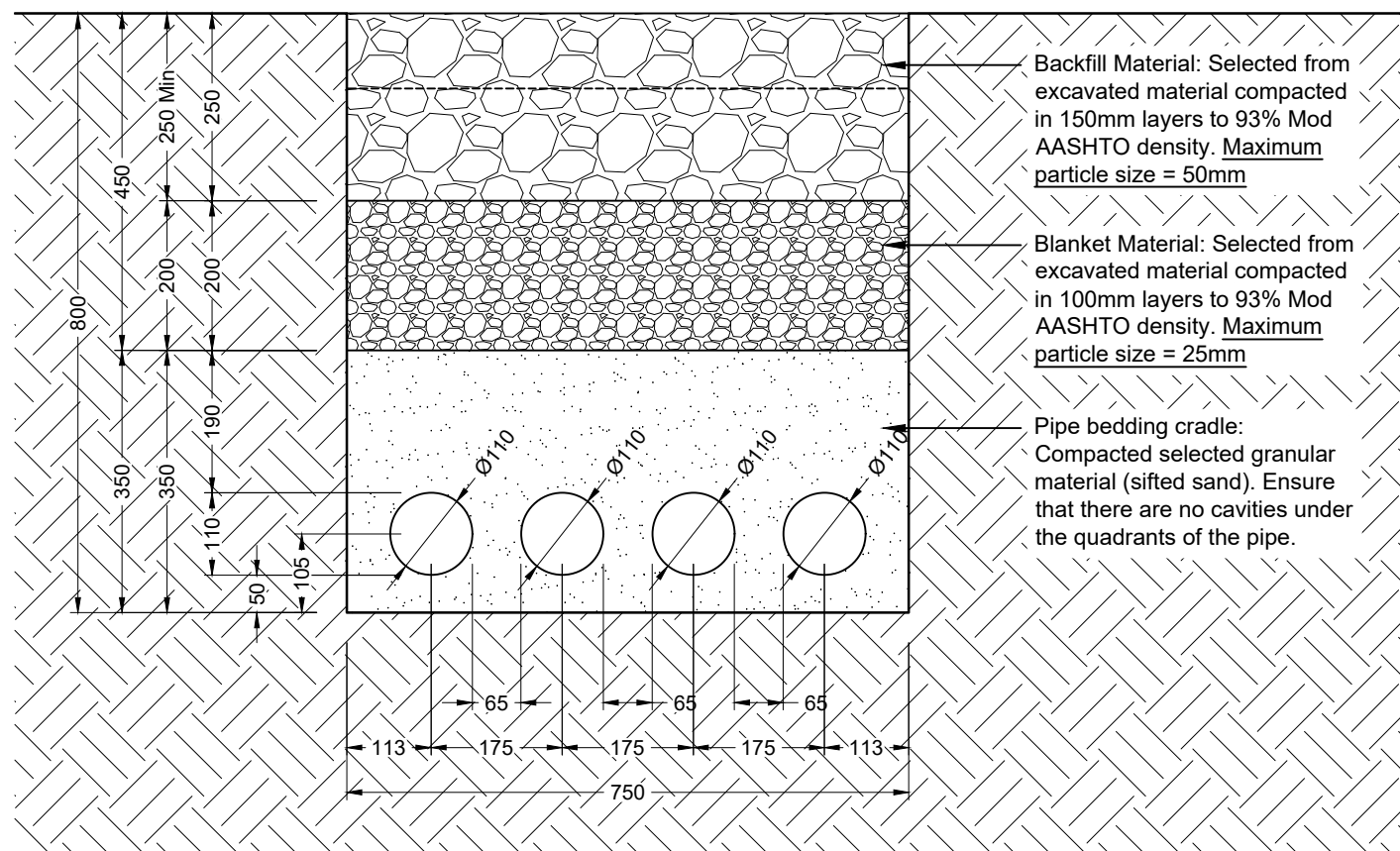
DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/10	DRAINAGE PIPE TRENCH DETAIL	-



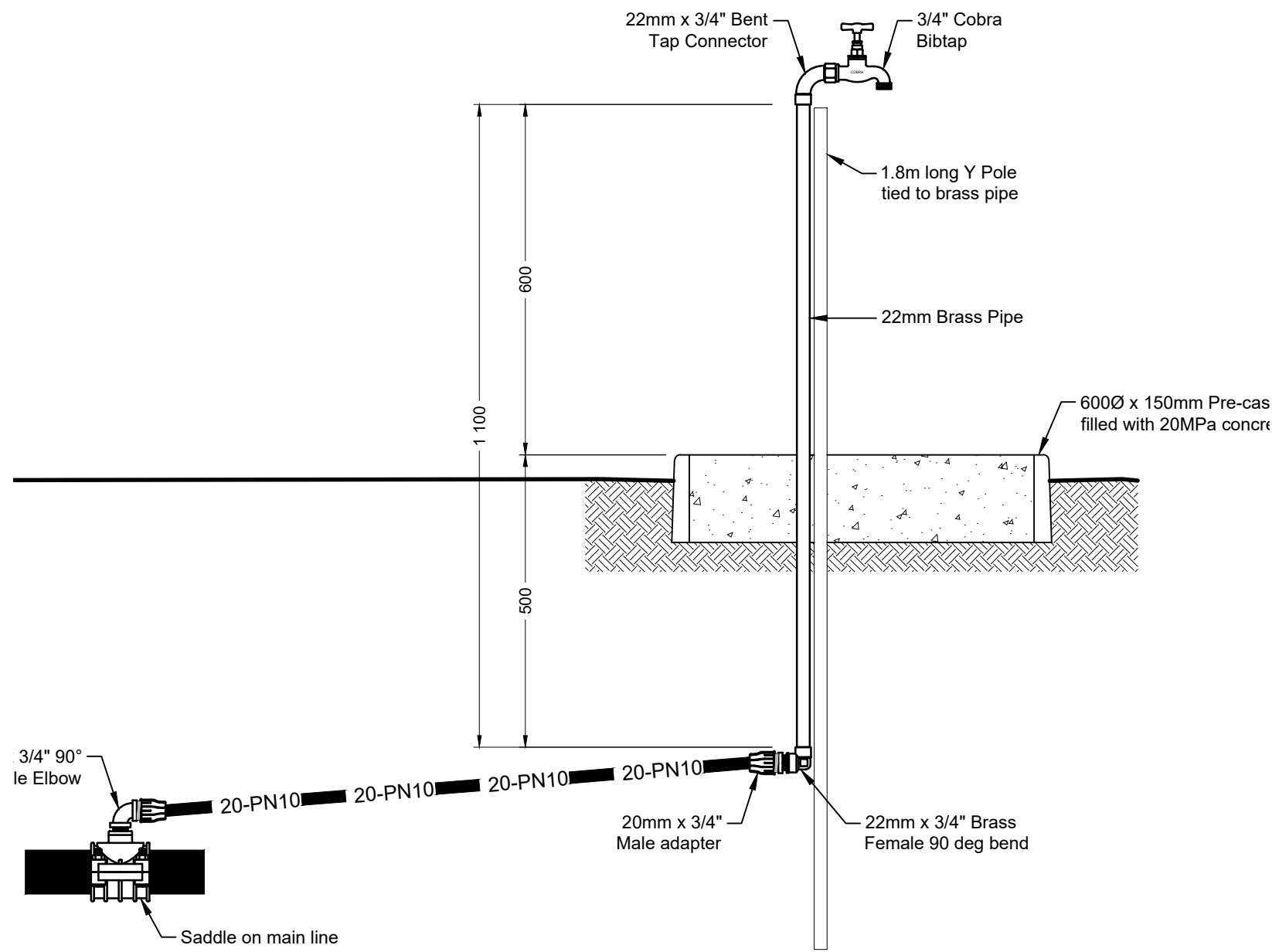
200 - 355mm Ø uPVC PIPE
TRENCH DETAIL

80 - 160mm Ø uPVC PIPE
TRENCH DETAIL

DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/10	WATER PIPE TRENCH DETAIL	-

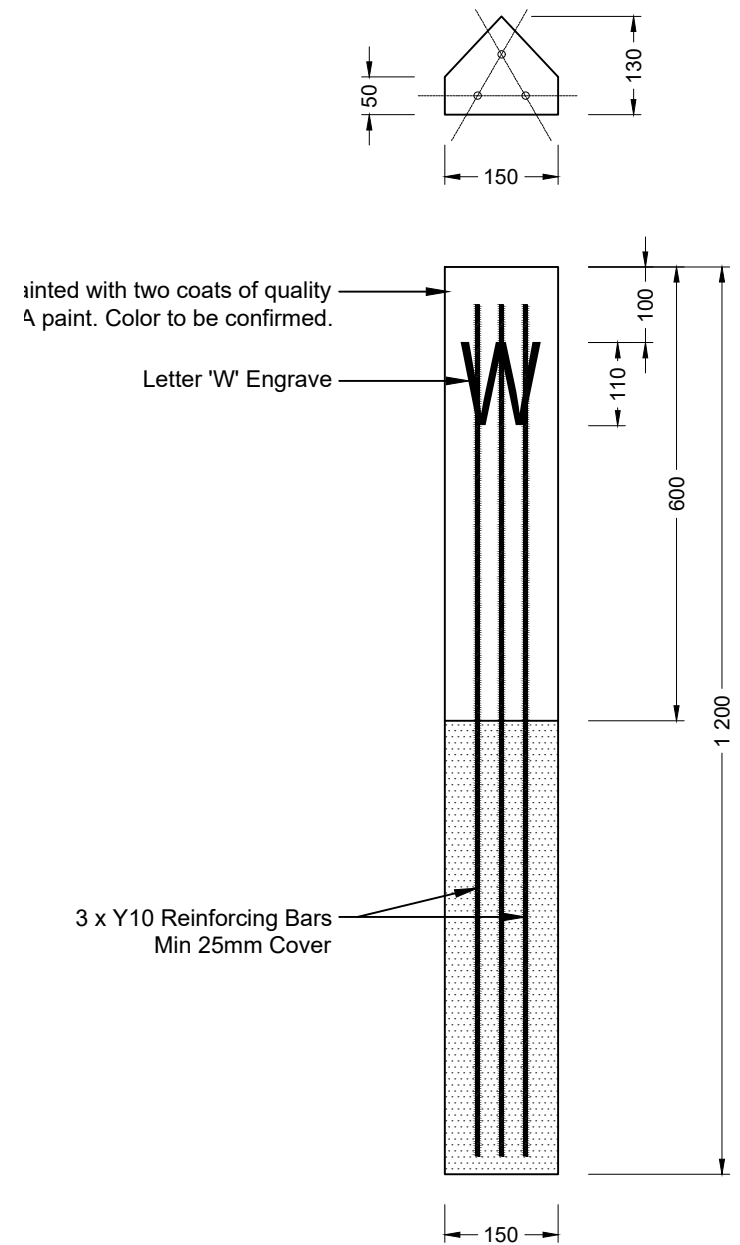


DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/10	ELECTRICAL SLEEVE TRENCH DETAIL	-



STAND PIPE DETAIL
Scale 1:10

DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/10	STAND PIPE DETAIL	-



WATER MARKER DETAIL
Scale 1:10

DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/10	WATER MARKER DETAIL	-

NOTES:

- Selected backfill Class I: implies approved selected material from trench excavation or borrow, free from stones and with an optimum moisture content.
- Selected backfill Class II: implies selected backfill from trench excavation or borrow, which shall not contain any stone larger than 150mm Ø.
- Class B bedding cradle shall consist of an approved selected gravel material with a PI not exceeding 6, free from stones exceeding 20mm, organic matter and lumps of clay.
- Class A bedding / encasing concrete between joints shall be carried out in one continuous operation using class 20/19 concrete.
- Flexible joints must be provided. At each pipe joint in a Class A concrete bedding / encasing, with a 12mm thick softboard place vertically for the entire concrete area. Pipe joint must be sealed with wet clay to prevent slush from penetrating the joint.
- Minimum depth and cover:
in servitude - 600mm
in road reserve - 1.0m
below road carriage - 1.2m
- All material and workmanship must comply with the requirements of the latest relevant SABS requirements.
- All dimensions are in millimeters (unless otherwise specified).
- Do not scale from these drawings.
- All dimensions must be checked and approved on site.

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description

AMENDMENTS

Rev.	Date	Description

ECA CONSULTING MBOMBELA OFFICE:
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Company Reg.: 2004/019299/07
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PIETERMARITZBURG |
LADYSMITH

Approved by Engineer:
Name: I.J. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 200870069
Signature:
Date: 4 Feb 2022

DIHLABENG
LOCAL MUNICIPALITY

Approved by Client: _____

Name: _____

Signature: _____ Date: _____

Project: _____

CLARENS WATER
TREATMENT WORKS

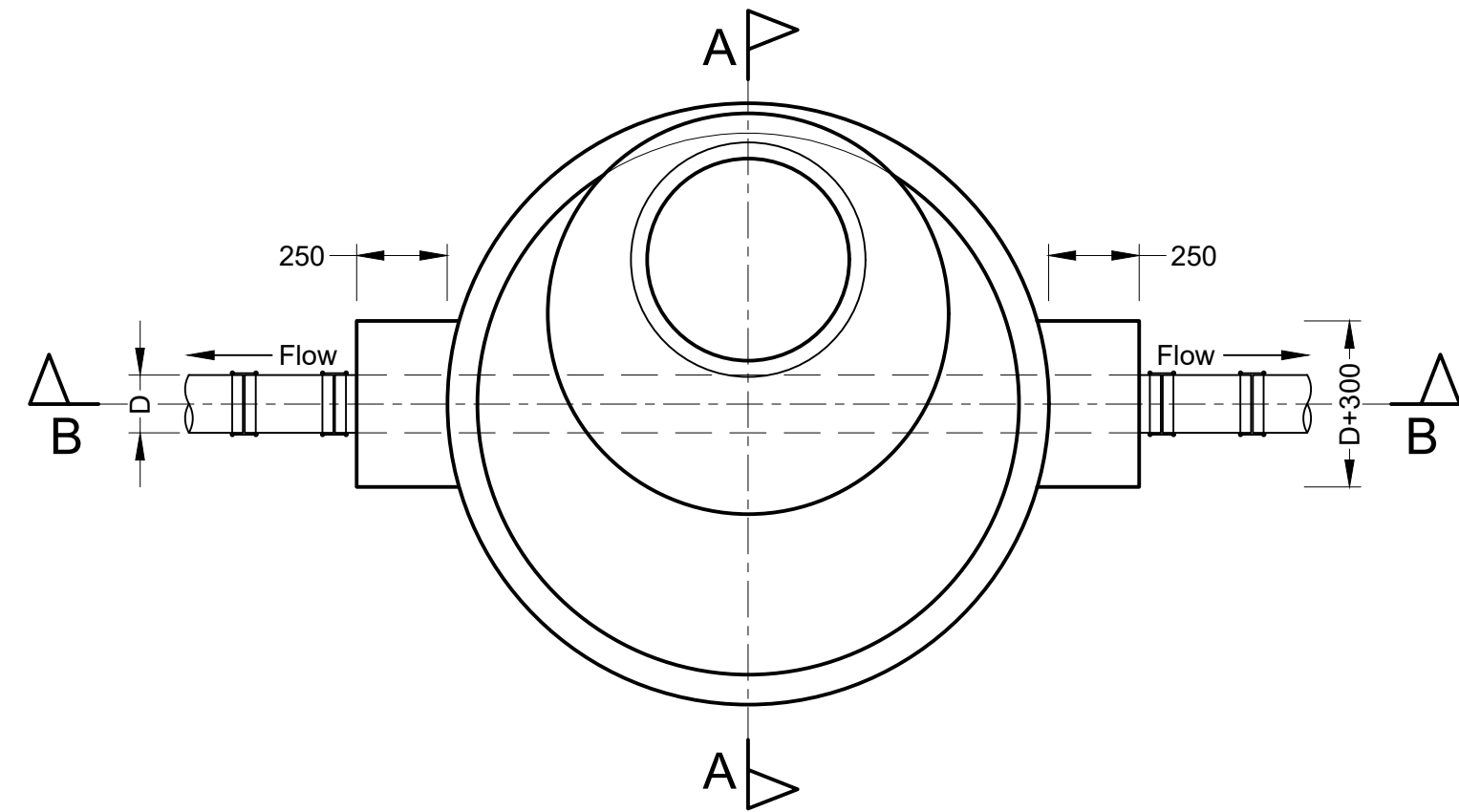
Drawing description:
**WATER TREATMENT
WORKS: PIPE TRENCH,
STAND PIPE AND WATER
MARKER DETAILS**

Drawn: R Blignaut Date: 12-10-2020

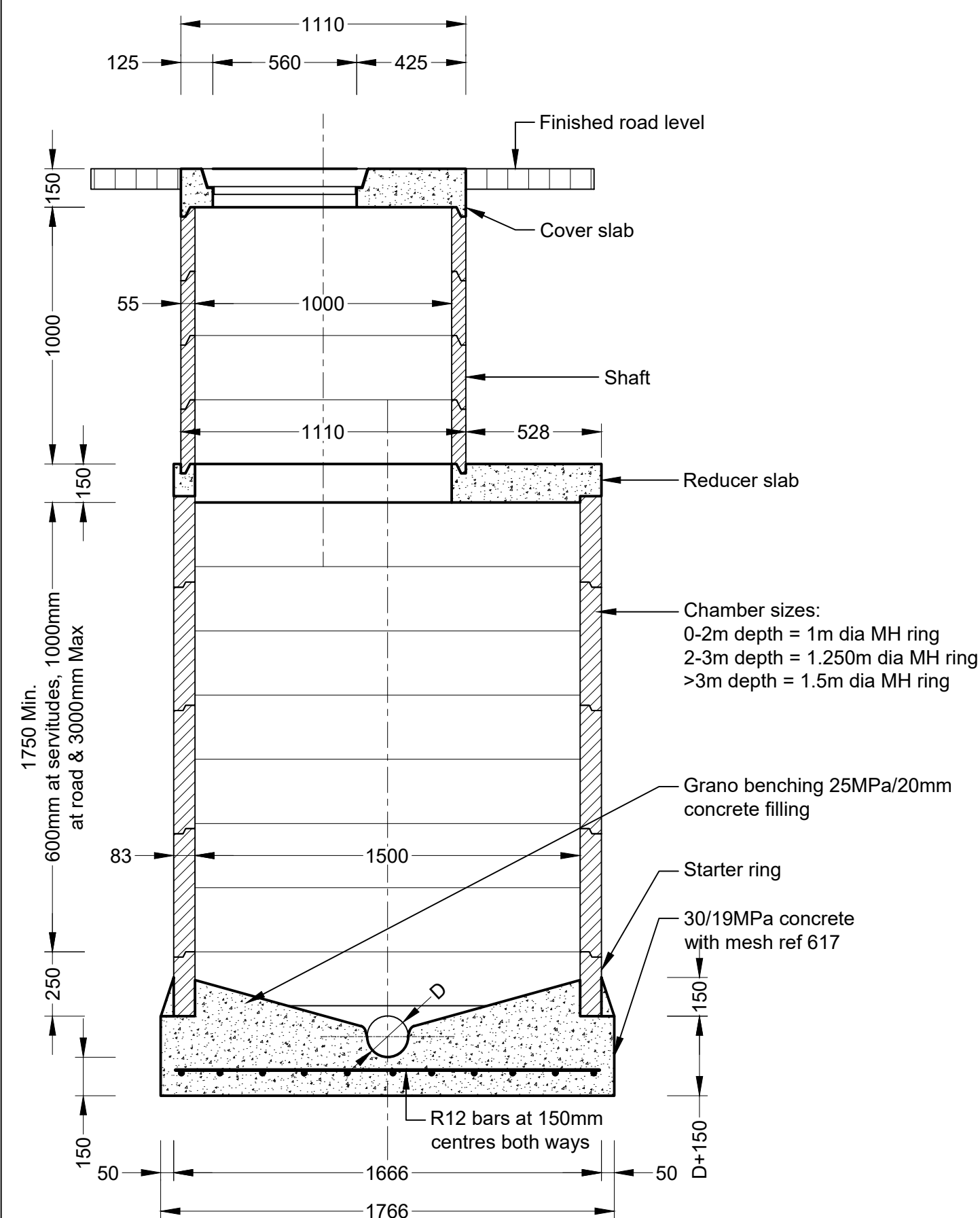
Scale/s: AS SHOWN

Drawing number: 13-019-V-01-13-01 Rev.: 00

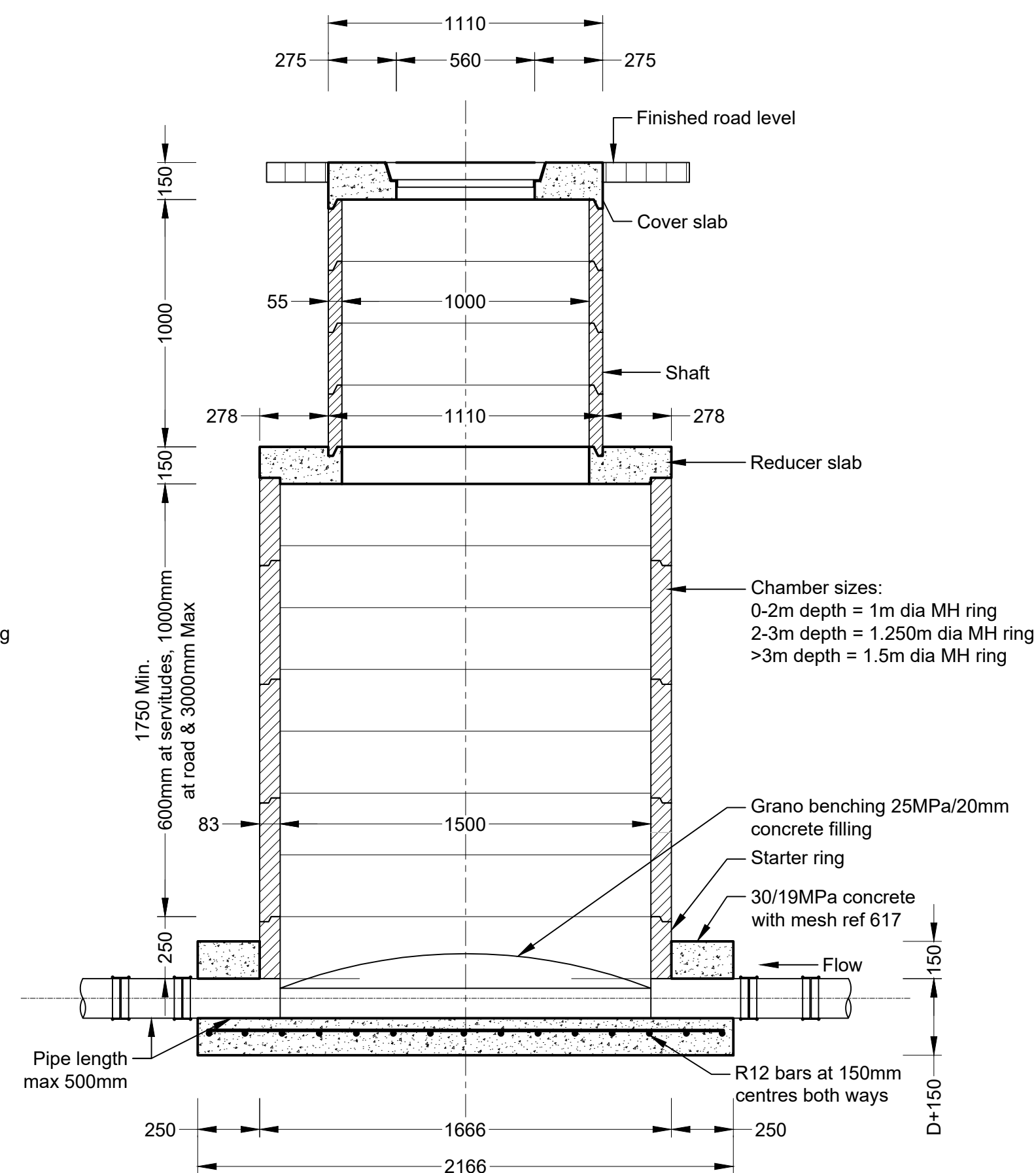
FOR TENDER
PURPOSES ONLY



TYPICAL PLAN OF A PRECAST
CONCRETE MANHOLE WITH A SHAFT



SECTION A - A



SECTION B - B

DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/20	TYPICAL PRECAST CONCRETE MANHOLE WITH A SHAFT DETAILS	-

Do not scale off drawing - ASK THE ENGINEER IF
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Company Reg.: 2004/019299/07
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OTHER OFFICES:
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PIETERMARITZBURG |
LADYSMITH

Approved by Engineer:
Name: I.J. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 200870069
Signature:
Date: 4 Feb 2022

Client:
DIHLABENG
LOCAL MUNICIPALITY

Approved by Client:
Name: _____
Signature: _____ Date: _____

Project:
**CLARENS WATER
TREATMENT WORKS**

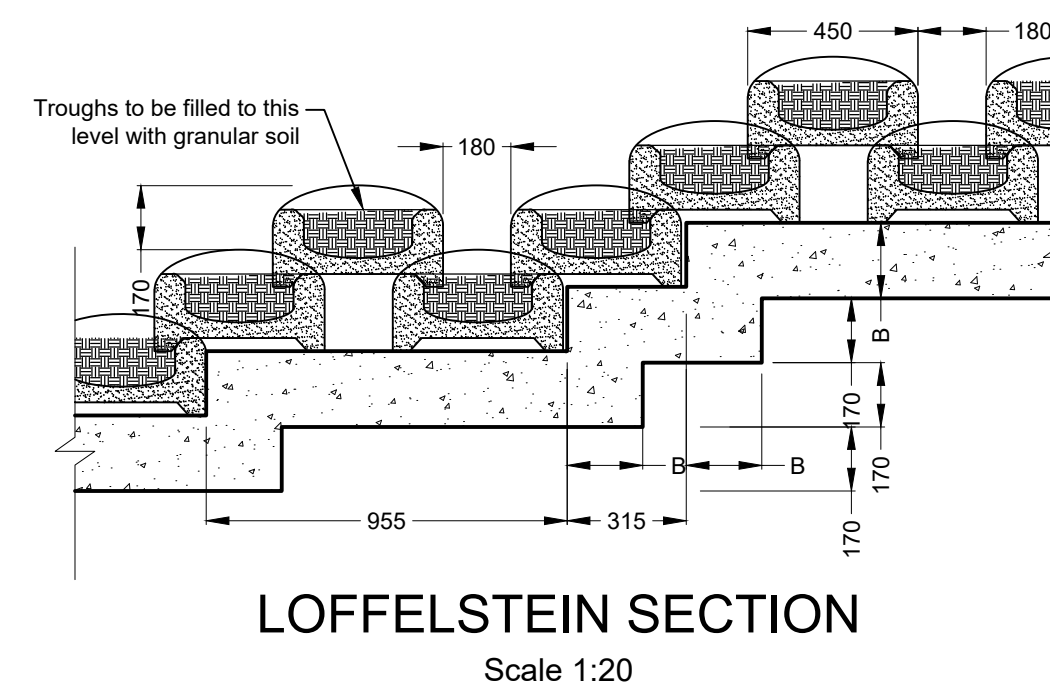
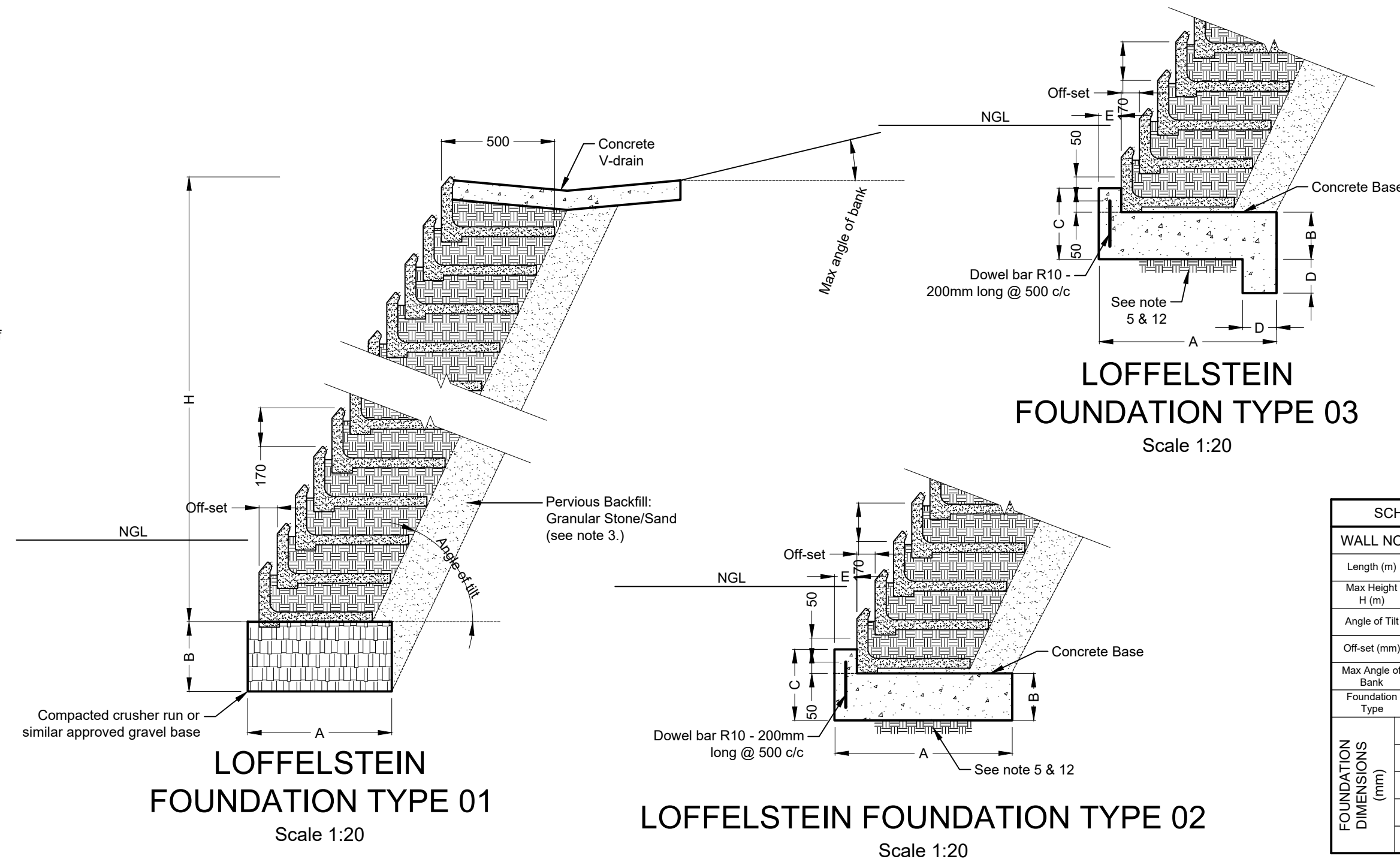
Drawing description:
**WATER TREATMENT
WORKS: TYPICAL
MANHOLE DETAILS
DRAWING 02 OF 02**

Drawn: R Blignaut Date: 12-10-2020

Scale/s: AS SHOWN

Drawing number:
13-019-V-01-13-03
Rev.:
00

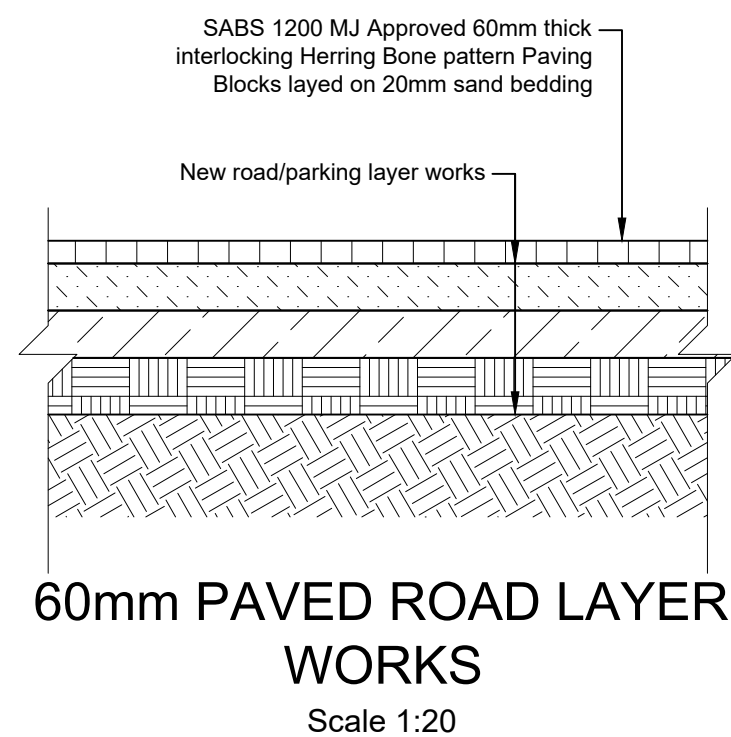
1. Retaining wall to be constructed of Löffelstein precast concrete blocks.
2. Blocks placed as shown and to be filled with well tamped granular soil.
3. For walls retaining clay or shale, provide a 300mm wide pervious soil filling behind wall. Backfill to be compacted in 150mm layers.
4. Where concrete rib is not cast integrally with the base, dowel bars are to be added as shown.
5. Ground under all bases to be well compacted, prior to construction the base.
6. The engineer is to be notified of any variations of levels or dimensions shown.
7. Minimum concrete strength for the concrete foundation to be 20 MPa after 28 days.
8. No walls to encroach over boundary.
9. No services or trenches permitted immediately in front of the retaining wall.
10. Precautions to be taken to prevent collapse of excavated bank. Refer to local authority requirements.
11. No super imposed loading permitted behind the wall, within a distance equal to the wall height, unless stated otherwise.
12. For foundation types 2 & 3 founded in clay/shale, insitu material to be excavated and replaced with approved granular material to a depth of 300mm below the underside of the base.



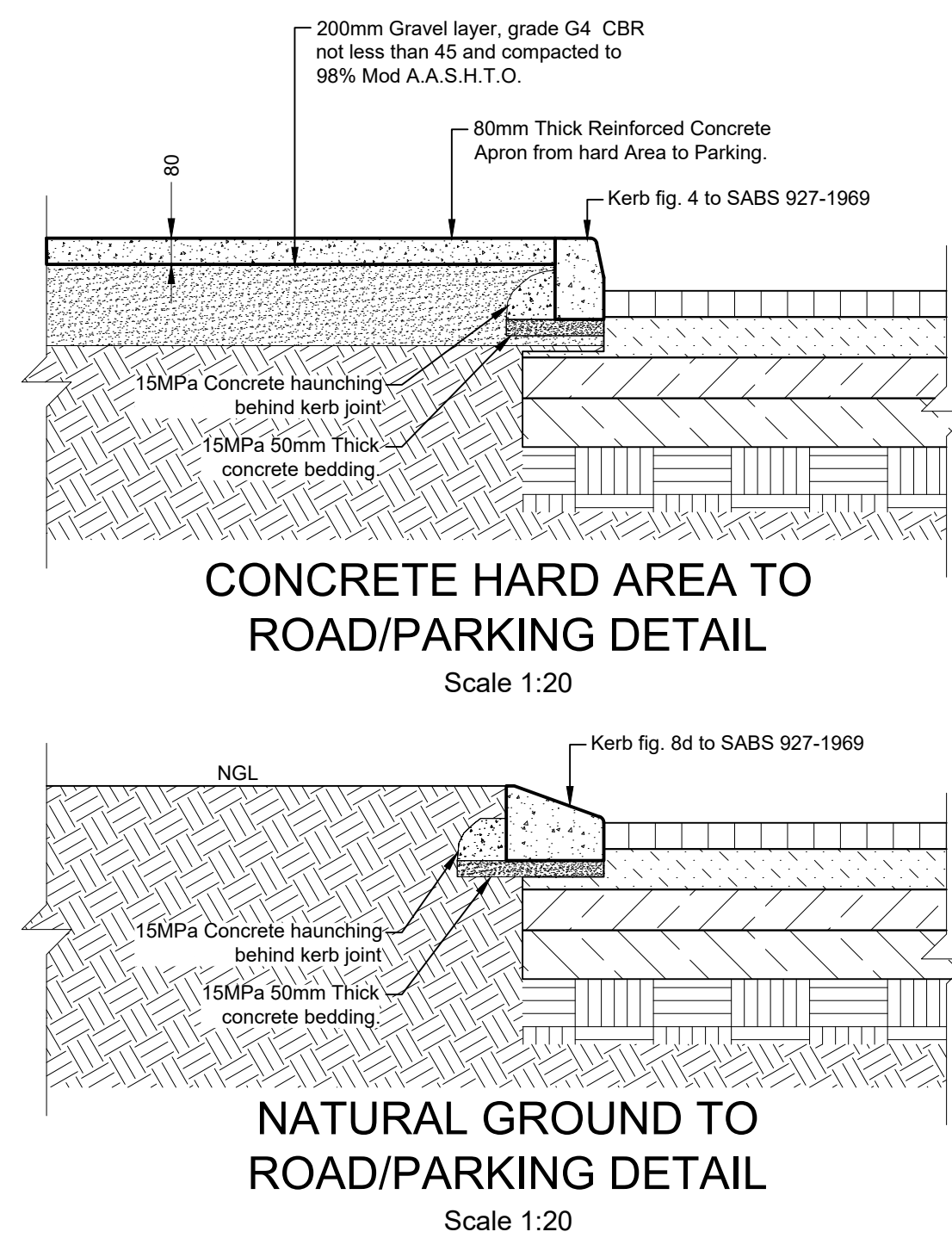
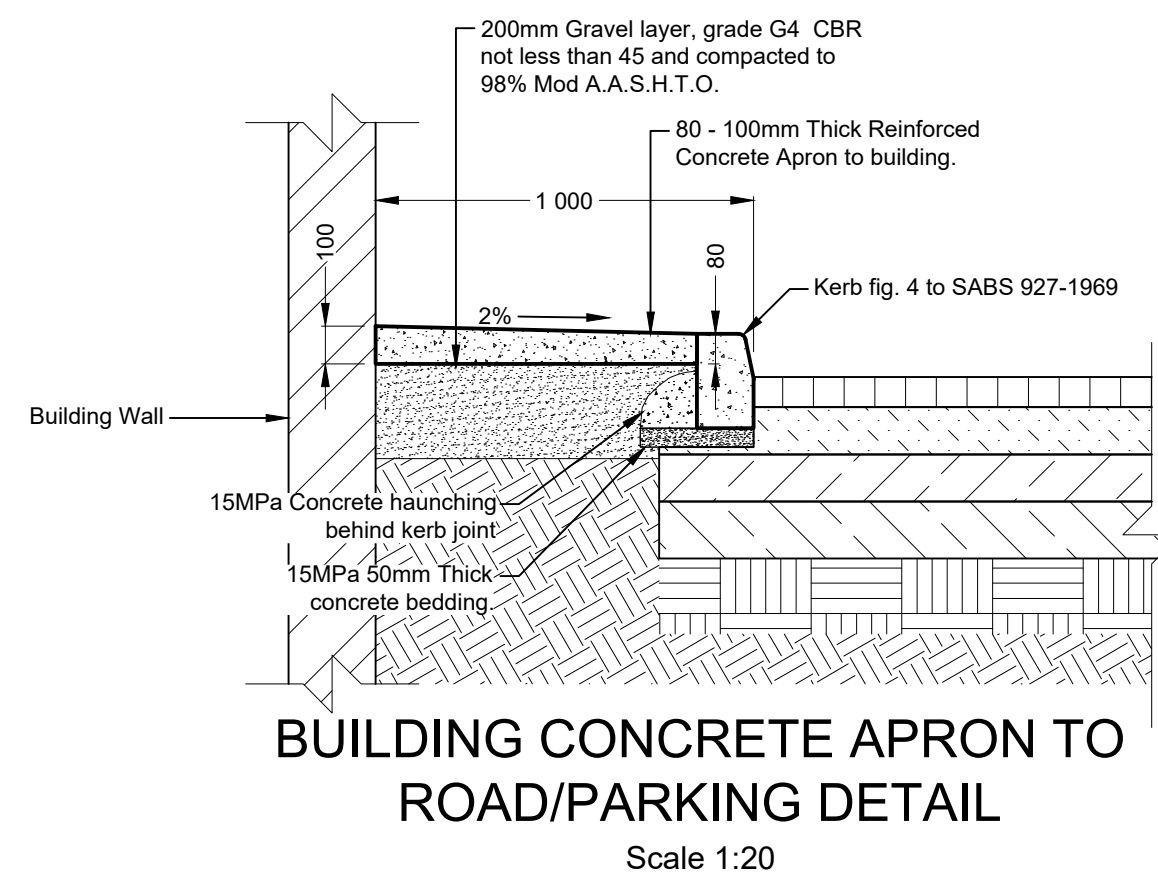
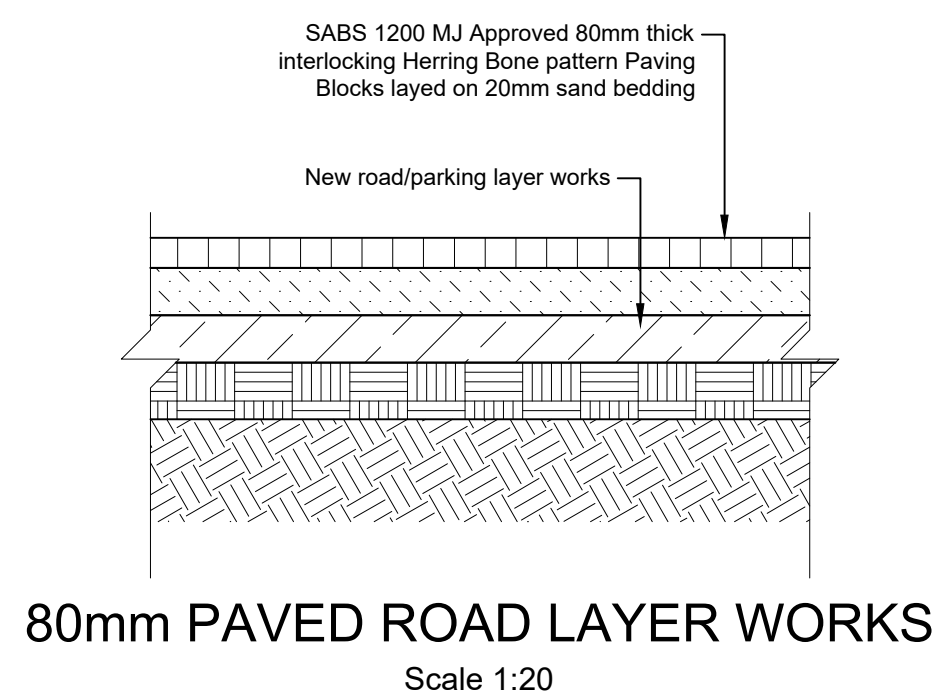
SCHEDULE		
WALL NO	1	
Length (m)	85	
Max Height H (m)	2.2	
Angle of Tilt	60°	
Off-set (mm)	100	
Max Angle of Bank	30°	
Foundation Type	02	
FOUNDATION DIMENSIONS (mm)	A	750
	B	200
	C	320
	D	
	E	

DETAIL NO: -	SCALE: 1/20	DETAIL DESCRIPTION: TYPICAL LOFFELSTEIN DETAILS	SEE DETAIL NO: -
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PAVEMENT DESIGN CRITERIA FOR 80mm PAVING				
Layer No.	Thickness	Material Description	Material Spec. (TRH)	Layer Compaction
01	60	60mm paving on 20mm sand	-	-
02	150	Base	C4	97%
03	150	Sub-base	G7	95%
04	150	Road bed preparation	Insitu	90%



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DETAIL NO: -	SCALE: 1/20	DETAIL DESCRIPTION: PAVING LAYER WORKS	SEE DETAIL NO: -	DETAIL NO: -	SCALE: 1/20	DETAIL DESCRIPTION: CONCRETE APRON DETAILS	SEE DETAIL NO: -
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**FOR TENDER
PURPOSES ONLY**

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description

AMENDMENTS

[illegible]



ECA CONSULTING

Civil and Structural Engineers

Company Reg.: 2004/019299/07
ISO Registered 9001:2015

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LADYSMITH

Approved by Engineer:
Name: I.J. Janse v Rensburg
Designation: PrTechEng
ECSA Reg.: 200870069

Signature: 
Date: 4 Feb 2022

Client: _____


**DIHLABENG
LOCAL
MUNICIPALITY**

Approved by Client:

Name: _____

Signature: _____ Date: _____

Project:

CLARENS WATER TREATMENT WORKS

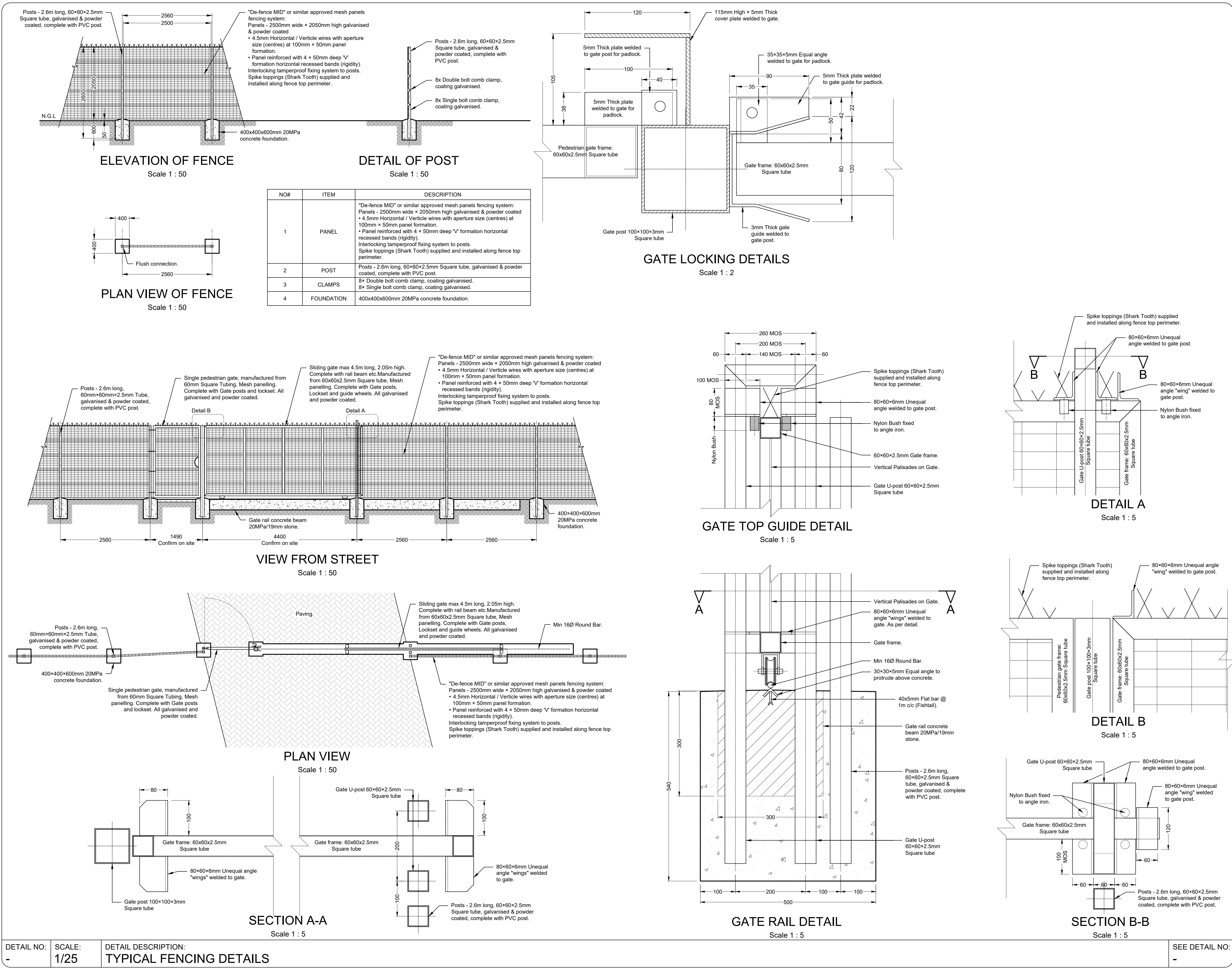
Drawing description:

**WATER TREATMENT
WORKS:LOFFELSTEIN
AND LAYER WORKS
DETAIL DRAWING**

Drawn: R Blignaut Date: 12-10-2020

Scale/s: AS SHOWN

Drawing number:	Rev.:
13-019-V-01-13-04	00



Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
Any discrepancies between any drawings must be clarified before work is continued on site.

FOR TENDER PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description

AMENDMENTS

Rev.	Date	Description

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ECSA Reg.: 200870069

Signature:

Date: 4 Feb 2022

Client:

DIHLABENG LOCAL MUNICIPALITY

Approved by Client:
Name: _____
Signature: _____ Date: _____

Project:
CLARENS WATER TREATMENT WORKS

Drawing description:
WATER TREATMENT WORKS: FENCING DETAILS

Drawn: R Blignaut Date: 12-10-2020

Scale/s: AS SHOWN

Drawing number: 13-019-V-01-13-07

Rev.: 00

DETAIL NO: -

SCALE: 1/25

DETAIL DESCRIPTION: TYPICAL FENCING DETAILS

SEE DETAIL NO: -