

NALA LOCAL MUNICIPALITY

CONTRACT No. NLM/TS/004/2025-26

THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF
250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON

TENDER DRAWINGS



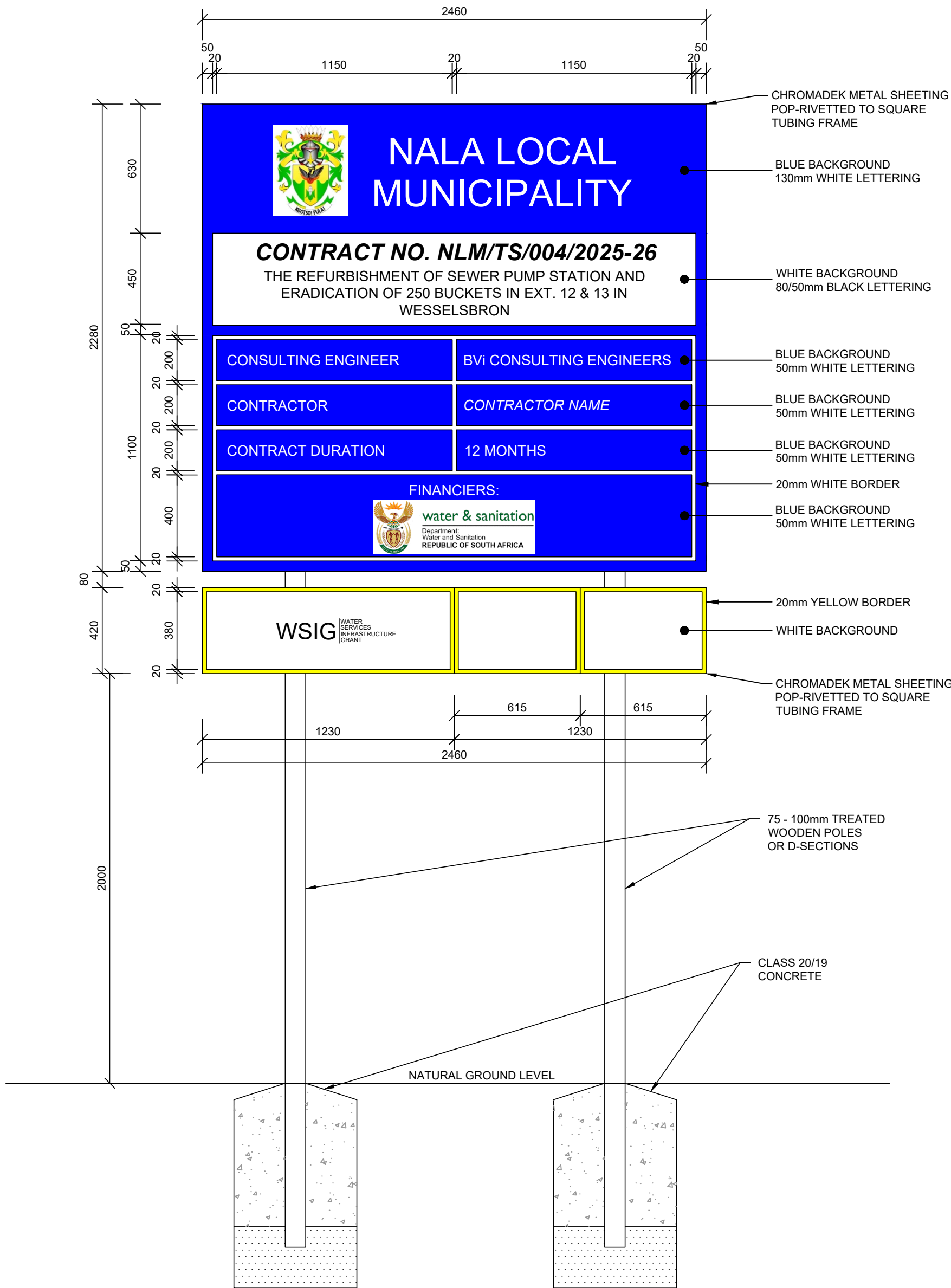
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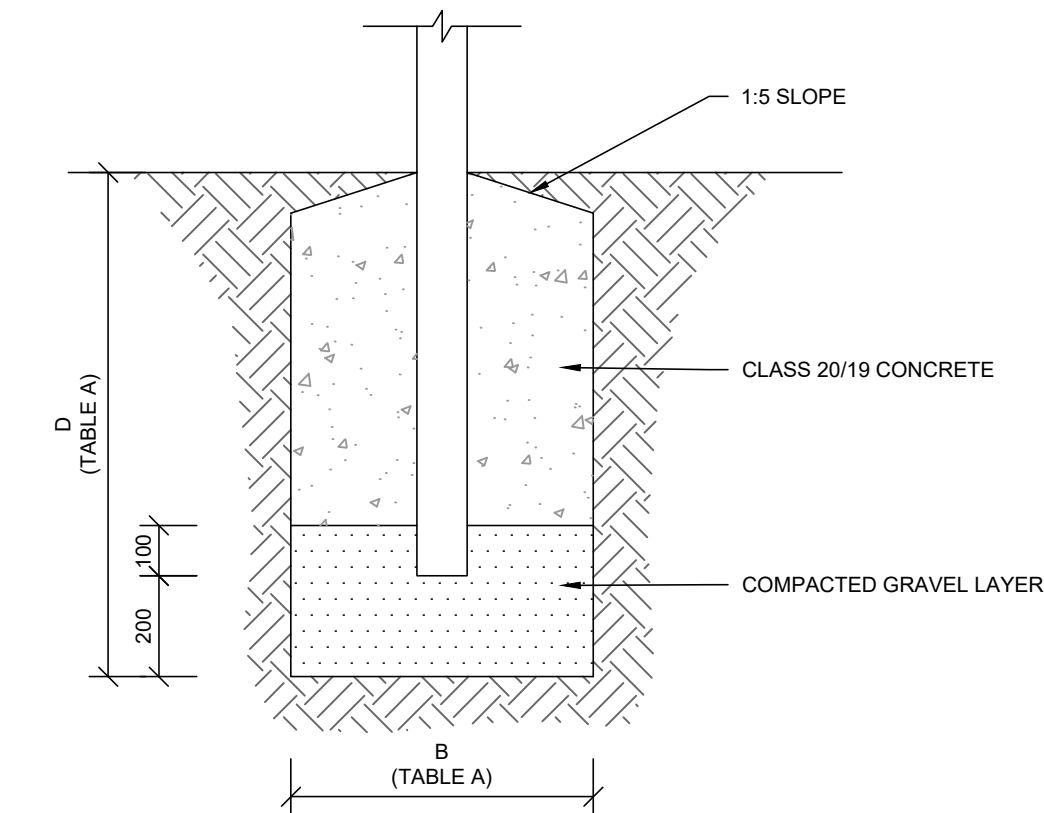
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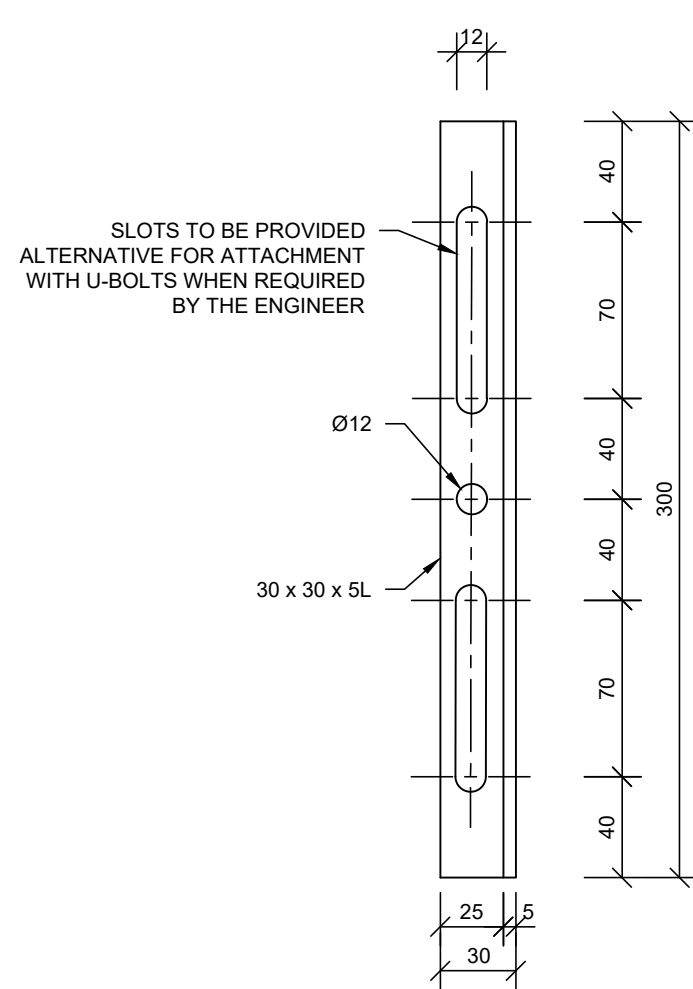


CONTRACT BOARD DETAIL
SCALE 1:20

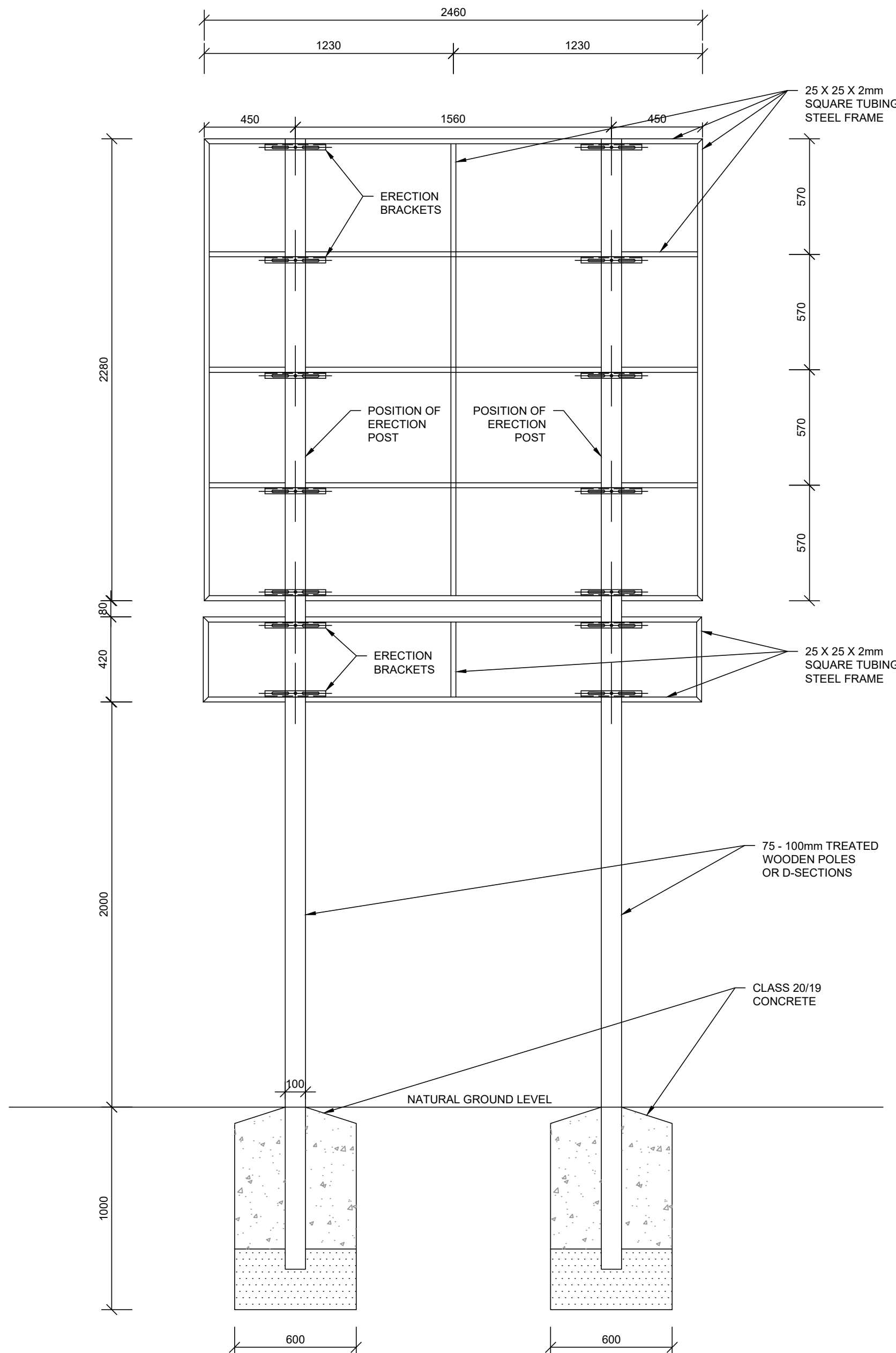
TABLE A				
ERECTION DETAILS				
POST TYPE	UPRIGHT	STAY	D	B
TIMBER POST AND STAY	100mm	80mm	1000mm	800mm
TIMBER POST	180mm	-	1000mm	600mm
D SECTION STEEL POST	100mm x 4mm	-	1000mm	600mm



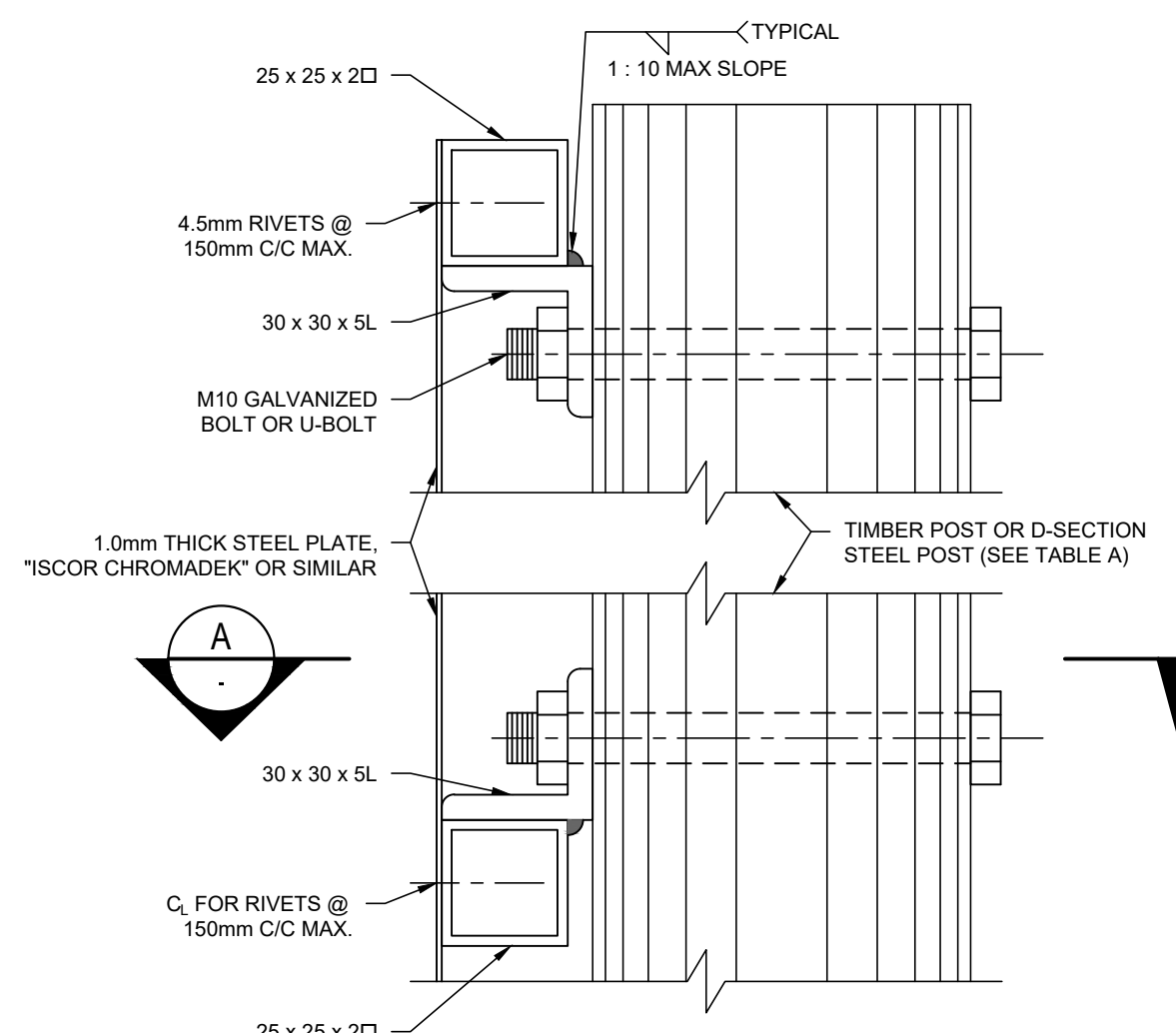
TYPICAL POST FOOTING DETAIL
SCALE N.T.S.



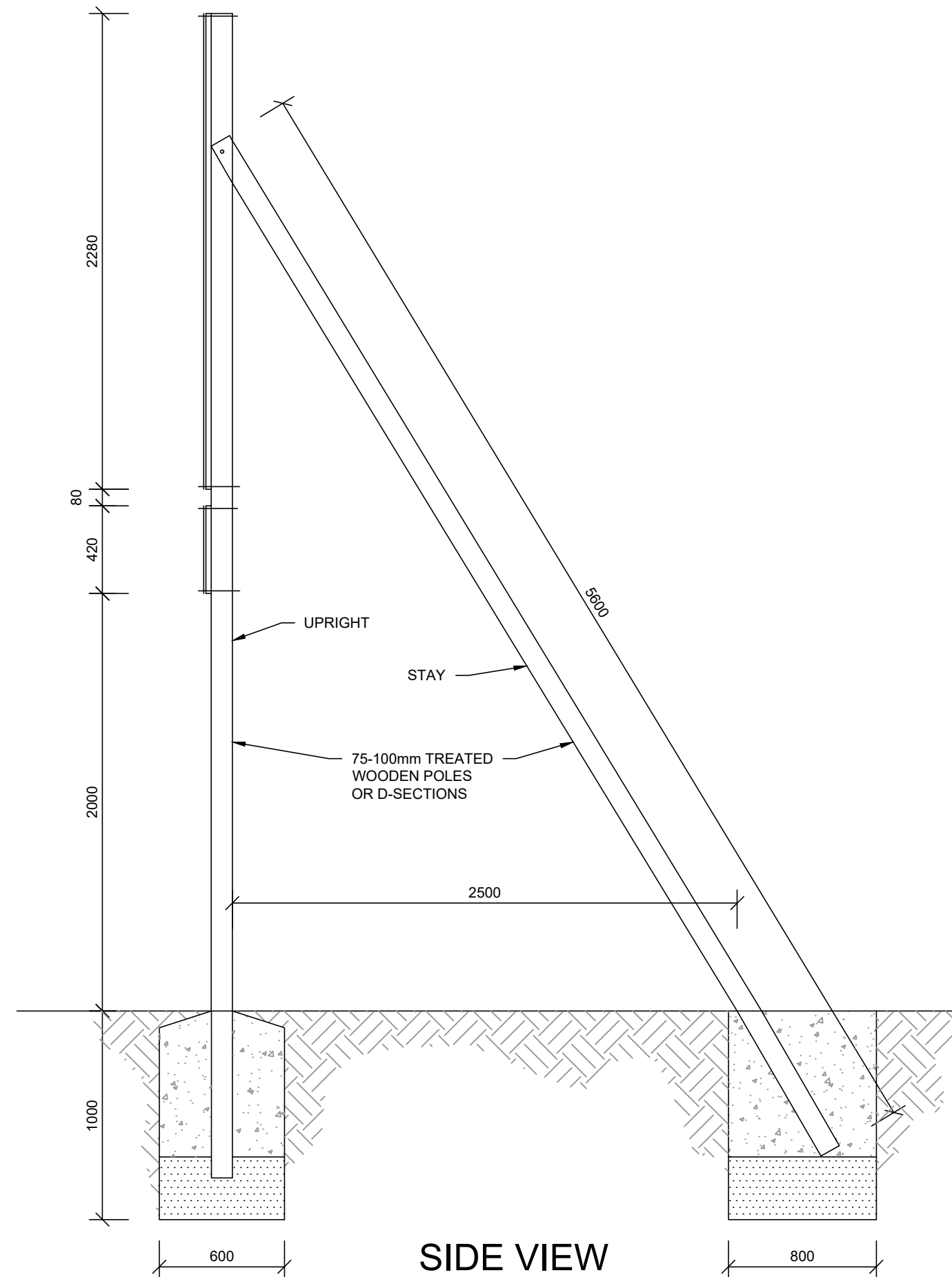
ELEVATION OF
ERECTION BRACKET
SCALE N.T.S.



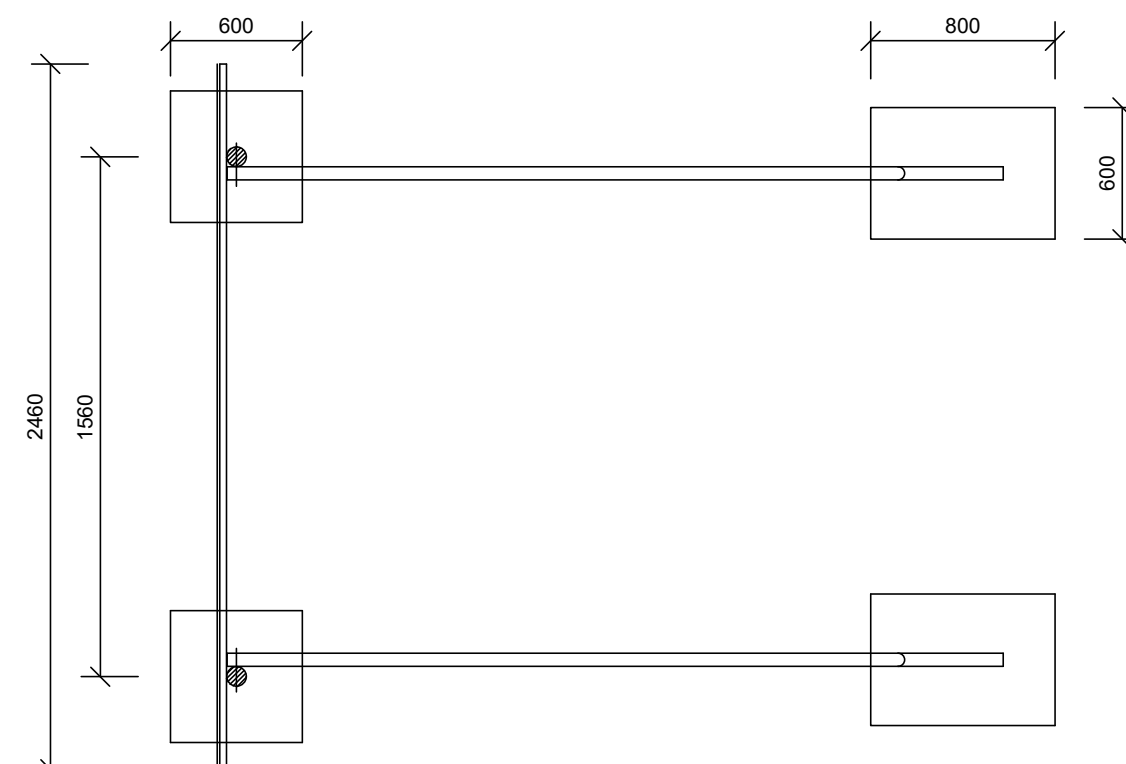
BACK VIEW
SCALE 1:20



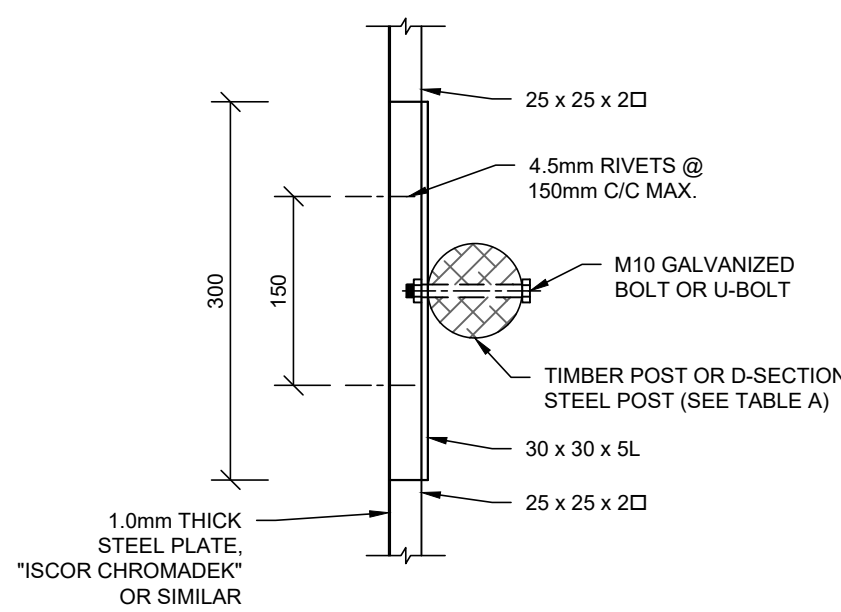
SIDE ELEVATION OF
ERECTION BRACKET
SCALE N.T.S.



SIDE VIEW
SCALE : N.T.S



PLAN VIEW
SCALE : N.T.S



SECTION A
N.T.S.

NOTES / LEGEND

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CITY ENGINEER / CLIENT REG. NO. DATE

REVISION CODES	SUITABILITY CODES
A,B,C...	BEFORE TENDER
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Z	AS-BUILT

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CLIENT

PROJECT NAME

NALA LOCAL MUNICIPALITY:
THE REFURBISHMENT OF SEWER
PUMP STATION AND ERADICATION
OF 250 BUCKETS IN EXT. 12 & 13 IN
WESSELSBRON

DRAWING TITLE

TYPICAL PROJECT
NAMEBOARD DETAILS

APPROVED BY BVI

JL REYNERS 2020300701 2010/2025
ENGINEER/TECHNOLOGIST REG. NO. DATE

SCALE	AS SHOWN @ A1	DRAWN	DJ COETZEE
DESIGNED	DJ COETZEE	CHECKED	JL REYNERS

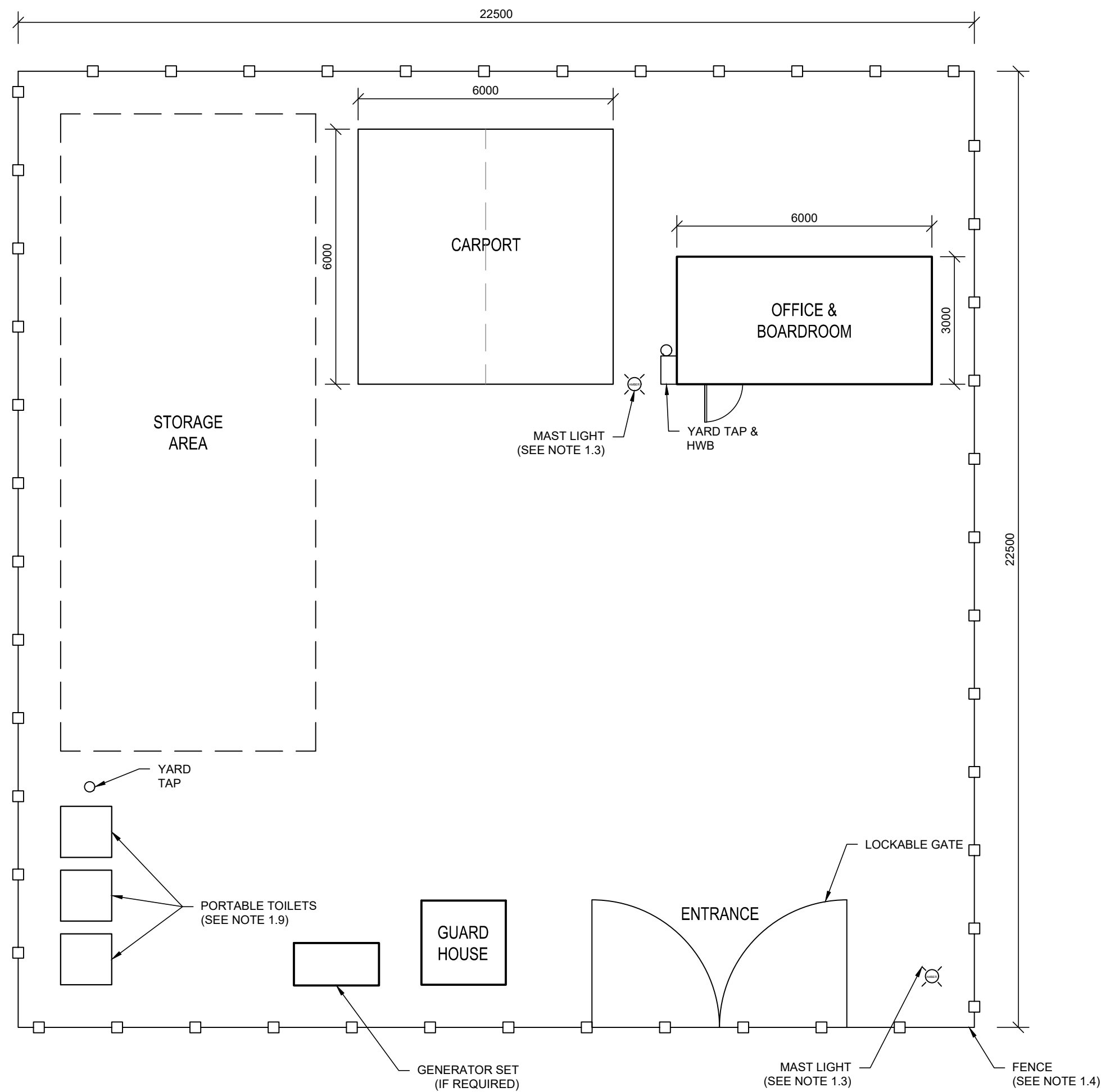
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ISSUED FOR TENDER T0

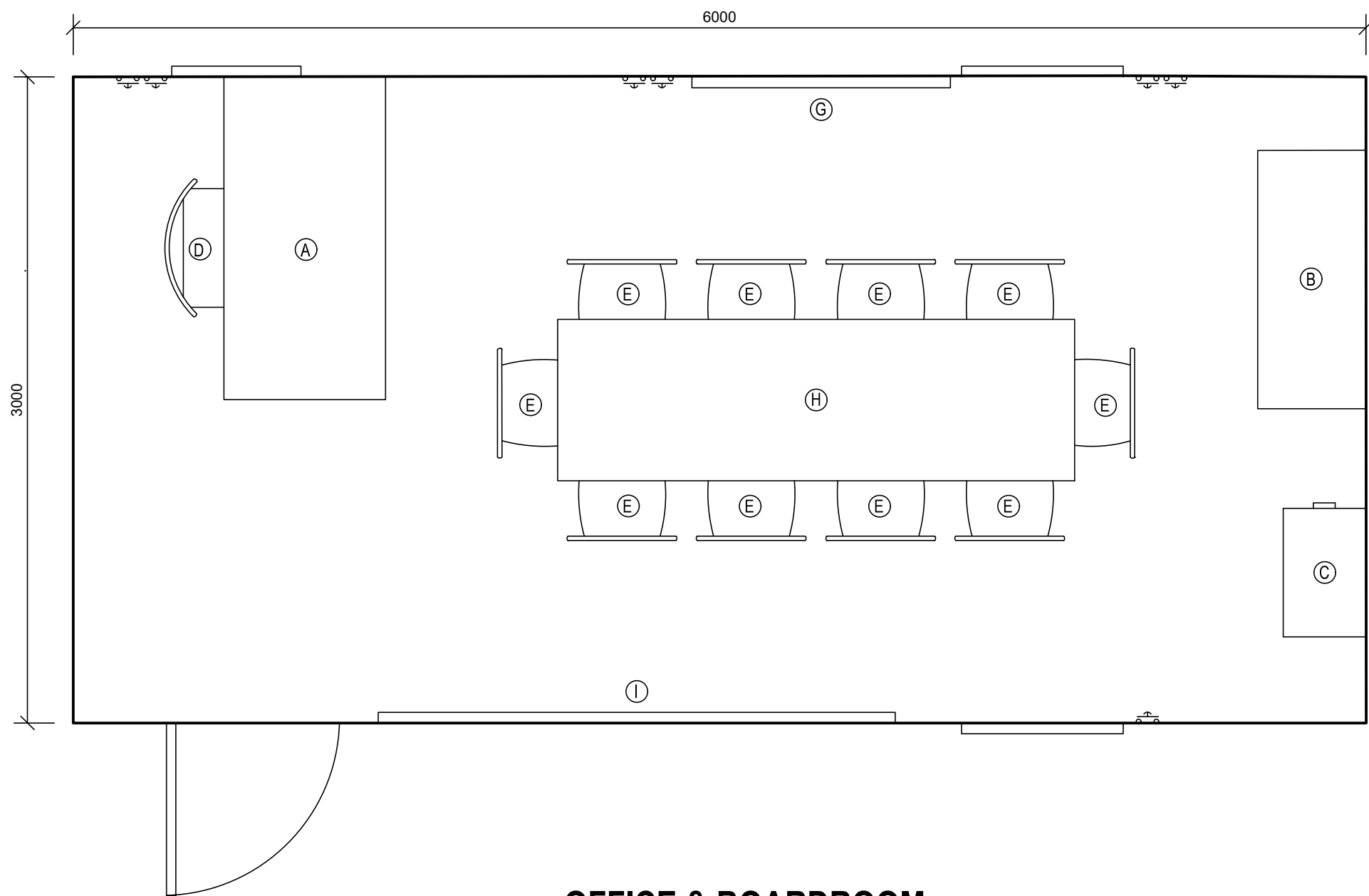
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PROJECT NO. - ORIGIN - SYSTEM - LOCATION - TYPE - ROLE - DR. CODE - PHASE - SEQ. NO.

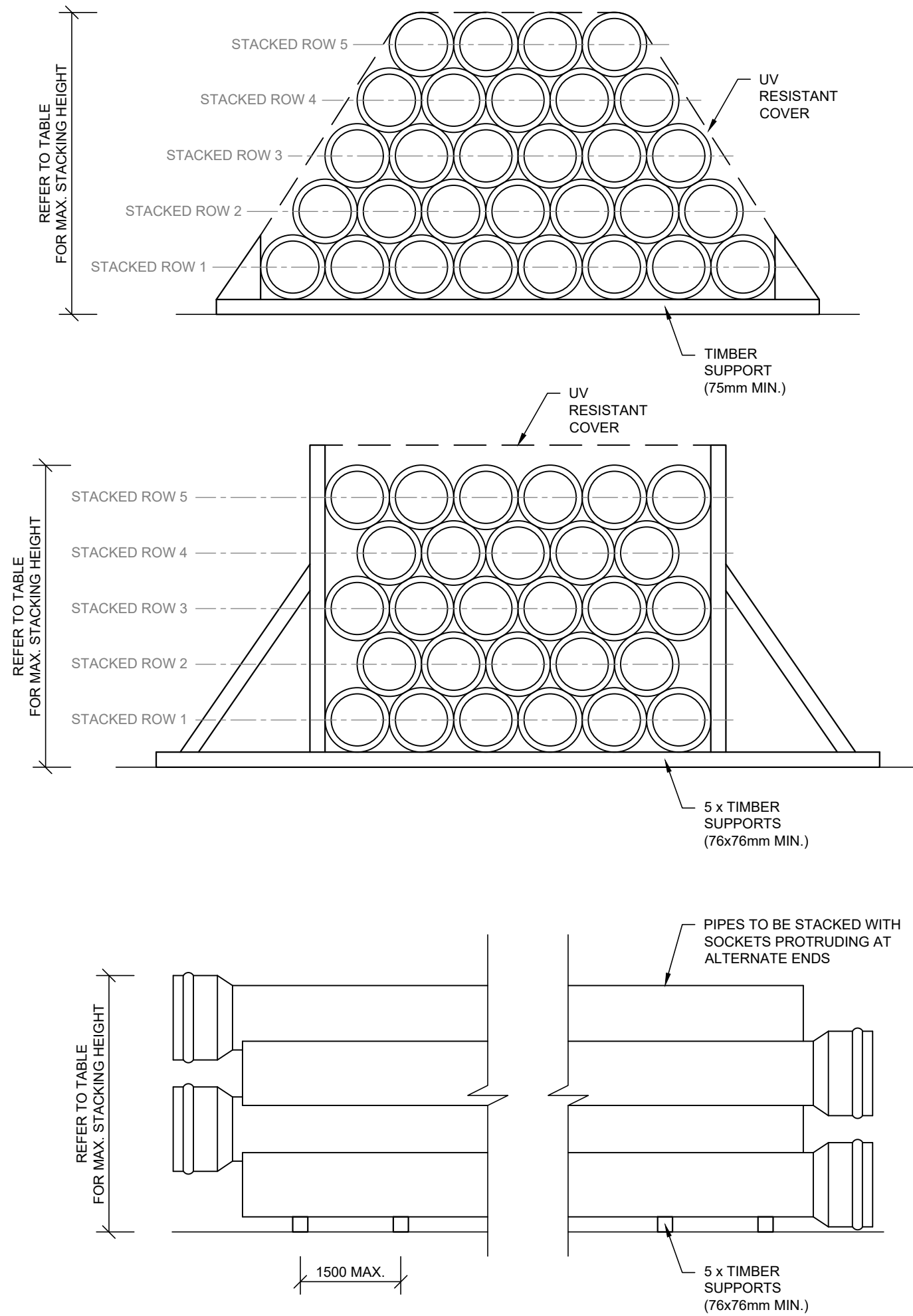
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TYPICAL SITE CAMP LAYOUT
SCALE 1:100



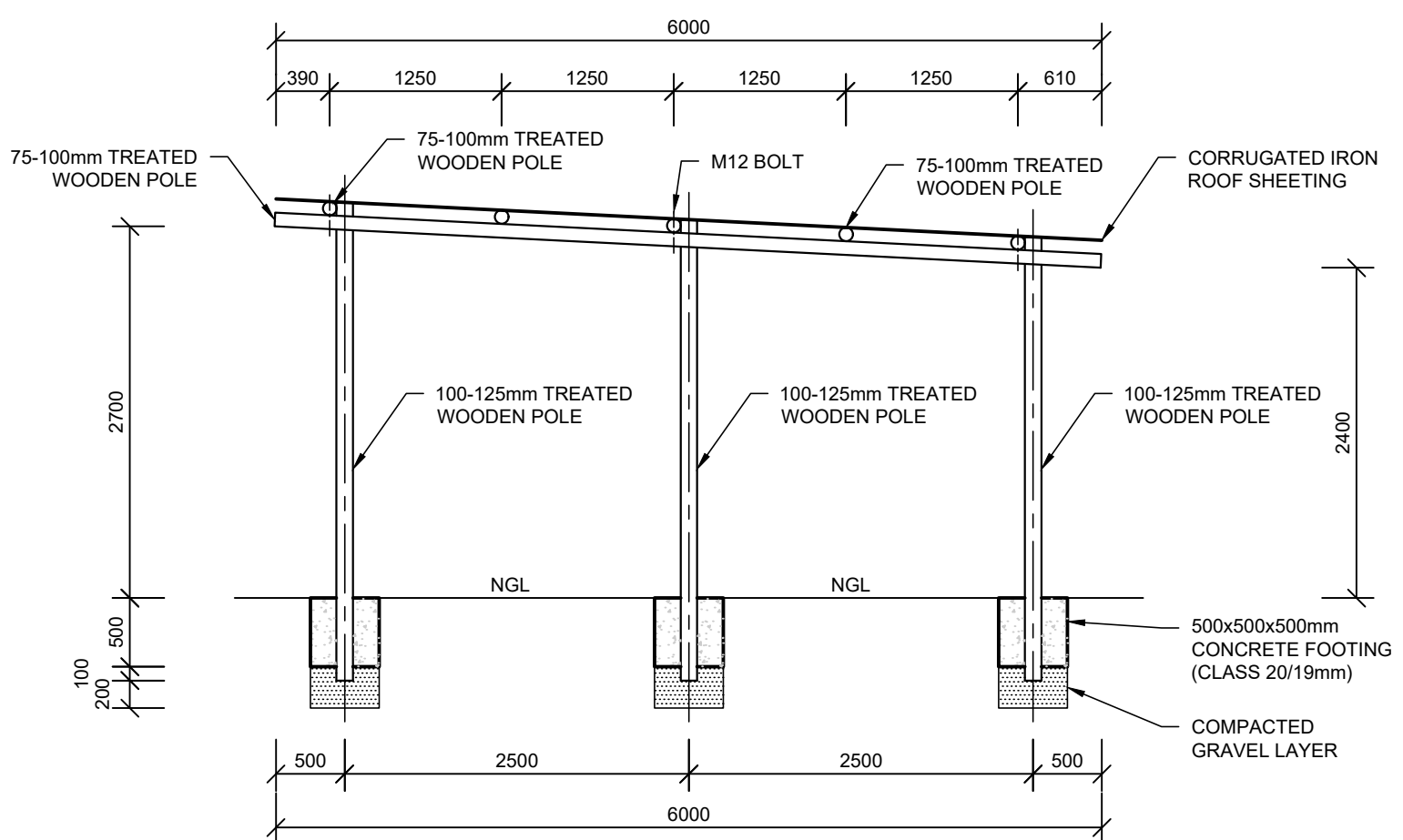
OFFICE & BOARDROOM
(SEE NOTES FOR FURNITURE)
SCALE 1:25



PIPE STORAGE GUIDELINES
N.T.S.

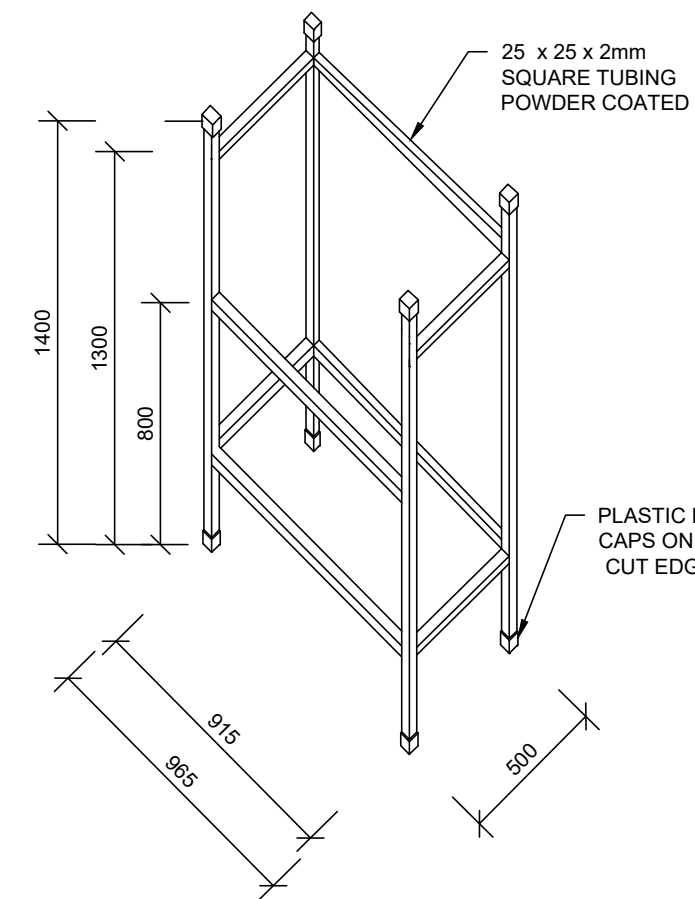
PIPE STORAGE	
• PIPES SHOULD BE STORED ON LEVEL, FLAT GROUND, FREE OF STONES OR SHARP PROTRUSIONS.	
• ALTERNATIVELY, PIPES MAY BE STORED ON TIMBER SUPPORTS OF AT LEAST 76x76mm WIDTH, PLACED MAX. 1.5m APART, WITH SIDE SUPPORTS (45 SUPPORTS PER 6.0m LENGTH).	
• ALL PIPE STACKS AND STORED FITTINGS SHOULD BE COVERED TO AVOID PROLONGED EXPOSURE TO DIRECT SUNLIGHT.	
• WHERE THE PIPES ARE FITTED WITH AN INTEGRAL SOCKET, THEY SHOULD BE STACKED WITH SOCKETS PROTRUDING AT ALTERNATE ENDS.	
• ALL PLASTIC PIPES MUST BE COVERED WITH UV-RESISTANT SHADE CLOTH OR TARPS DURING STORAGE TO PREVENT SUN EXPOSURE AND HEAT DISTORTION. ENSURE THAT COVERS ALLOW FOR ADEQUATE VENTILATION TO AVOID MOISTURE BUILDUP. PIPES SHOULD BE SECURELY STORED ON RACKS OR SIMILAR STRUCTURES TO MAINTAIN STABILITY.	

STORAGE STACKS	
PIPE DIAMETER	MAX. NO. OF ROWS STACKED
200mm OR LESS	5
300 TO 530mm	4
600 TO 760mm	3
840 TO 1220mm	2

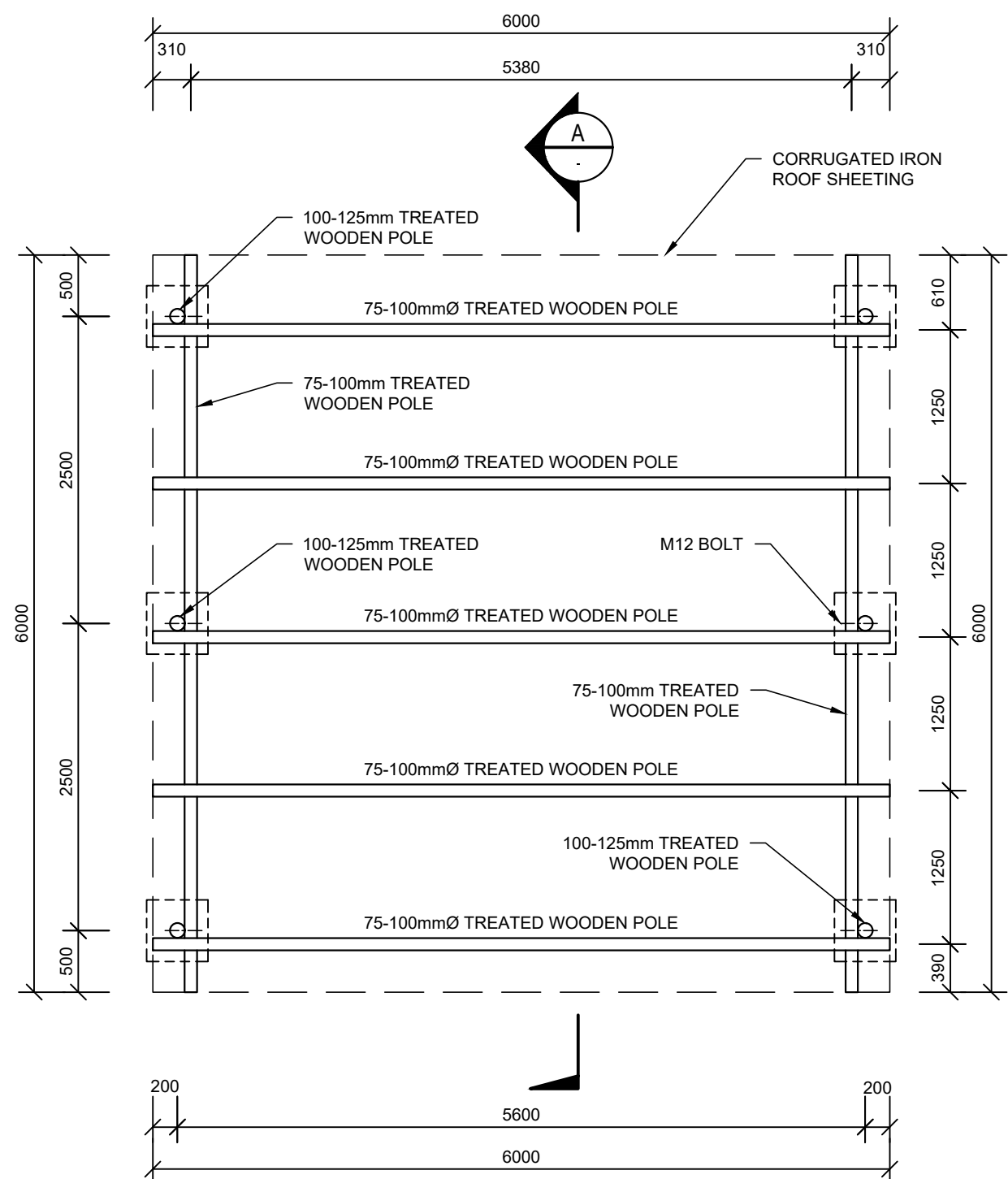


SECTION A
1:50

- NOTES:**
- CAMP**
 - 1.1 CLEAR, GRUB AND GRADE THE SITE TO BE SELF DRAINING.
 - 1.2 SITE TO BE COVERED WITH 75mm THICK 19mm CRUSHED STONE THROUGHOUT TO ALLEVIATE DUST AND MUDDY CONDITIONS.
 - 1.3 MAST LIGHTS TO BE PROVIDED WITH 5m HIGH WOODEN MAST, 500 WATT GLOBE & DAYNIGHT SWITCH.
 - 1.4 FENCING MUST BE 2.1m HIGH RAZOR WIRE MESH, INCL. RAZOR FLAT WRAP ON TOP.
 - 1.5 A FULL TIME GATE GUARD MUST BE PROVIDED WITH A GUARD HOUSE.
 - 1.6 THE GUARD HOUSE MUST BE A 2.1m x 2.1m MODEL FROM RENT A SHED (WWW.RENTASHED.CO.ZA) OR SIMILAR APPROVED, INCL. A CHAIR.
 - 1.7 STEPS MUST BE PROVIDED AT ALL OFFICE ENTRIES.
 - 1.8 1 x PART TIME CAMP ASSISTANT SHOULD BE PROVIDED FOR CLEANING.
 - 1.9 3 x CHEMICAL TOILETS MUST BE PROVIDED (FLUSHABLE).
 - 1.10 80% SHADE CLOTH TO BE FIXED ON THE INSIDE OF FENCING (IF SPECIFIED).
 - 1.11 THE GALVANISED ROOF SHEETING (0.6mm THICK) CARPORT SHOULD DRAIN TOWARDS THE BACK OF THE STRUCTURE (OPPOSITE THE ACCESS POINT). THE SIDES AND BACK OF CARPORT MUST BE CLOSED WITH SHADE NETTING. THE STRUCTURE OF THE CARPORT MUST BE APPROVED BY A REGISTERED STRUCTURAL ENGINEER.
 - 1.12 A 20m GARDEN HOSE MUST BE PROVIDED.
 - 1.13 THE CLO AND/OR LDO OFFICES NEED TO BE LOCATED OUTSIDE OF THE ENGINEER'S CAMP.
 - OFFICE & BOARDROOM**
 - 2.1 OFFICE & BOARDROOM MUST BE A KWIKSPACE MODULAR BUILDINGS LTD
 - 2.2 A 12000 BTU SPLIT AIRCONDITIONING UNIT (LG) MUST BE PROVIDED.
 - 2.3 KWIKSPACE BLINDS AND BURGLAR PROOFING MUST BE INSTALLED IN ALL OFFICES.
 - 2.4 OFFICES SHOULD BE CLEANED ON A DAILY BASIS.
- OFFICE FURNITURE (ALL FURNITURE TO BE NEW)**
- A. 1500 x 750mm OAK MELAMINE DESK INCLUDING DRAWERS
 - B. DRAWING RACK - SEE DETAIL 1
 - C. HALF FILING CABINET
 - D. 1 x ROTATING HIGH BACK CHAIR
 - E. 10 x RICKSTACKER CHAIRS
 - F. PLASTIC ROUND WASTE BIN
 - G. 1.5m x 1.2m MAGNETIC WHITE BOARD
 - H. 2400 x 900mm BOARDROOM TABLE
 - I. 2.4m x 1.2m SOFT PIN BOARD
- 3. CONTRACTS MANAGER COMMUNICATION PACKAGE(S)**
- A. LAPTOP
 - B. DATA (MONTHLY)
 - C. PRINTER, SCANNER, COPIER
 - D. 2 x 3m EXTENSION CORDS
 - E. CELLPHONE

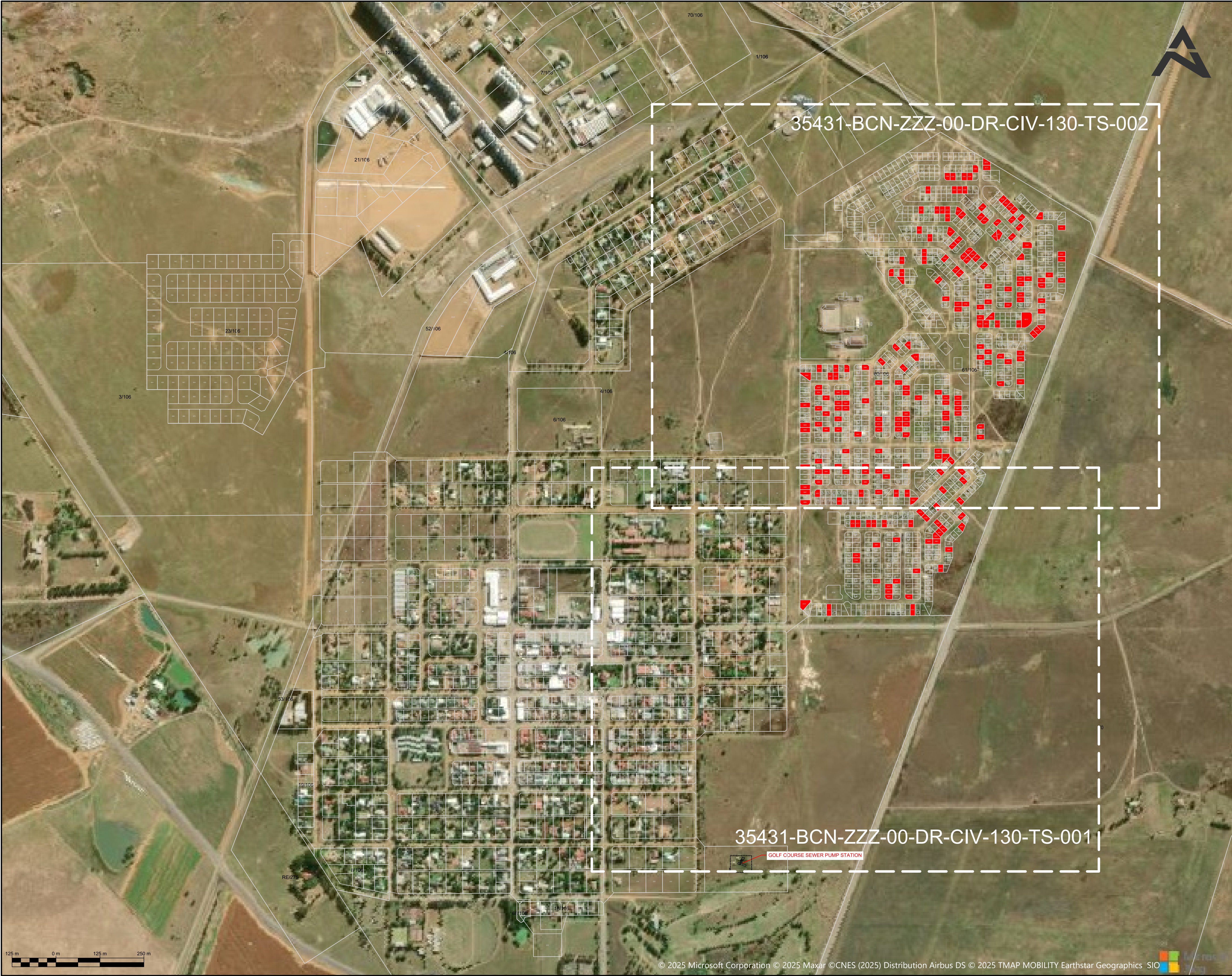


DETAIL 1 DRAWING RACK
SCALE 1:25



TYPICAL CARPORT PLAN VIEW
SCALE 1:50

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NALA LOCAL MUNICIPALITY: THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON		
DRAWING TITLE		
TYPICAL SITE CAMP LAYOUT		
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JL REYNDERS	2020300701	2010/2025
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NOTES / LEGEND

LEGEND

ERF IDENTIFIED TO RECEIVE A TOP STRUCTURE

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KEY PLAN

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20/10/2025

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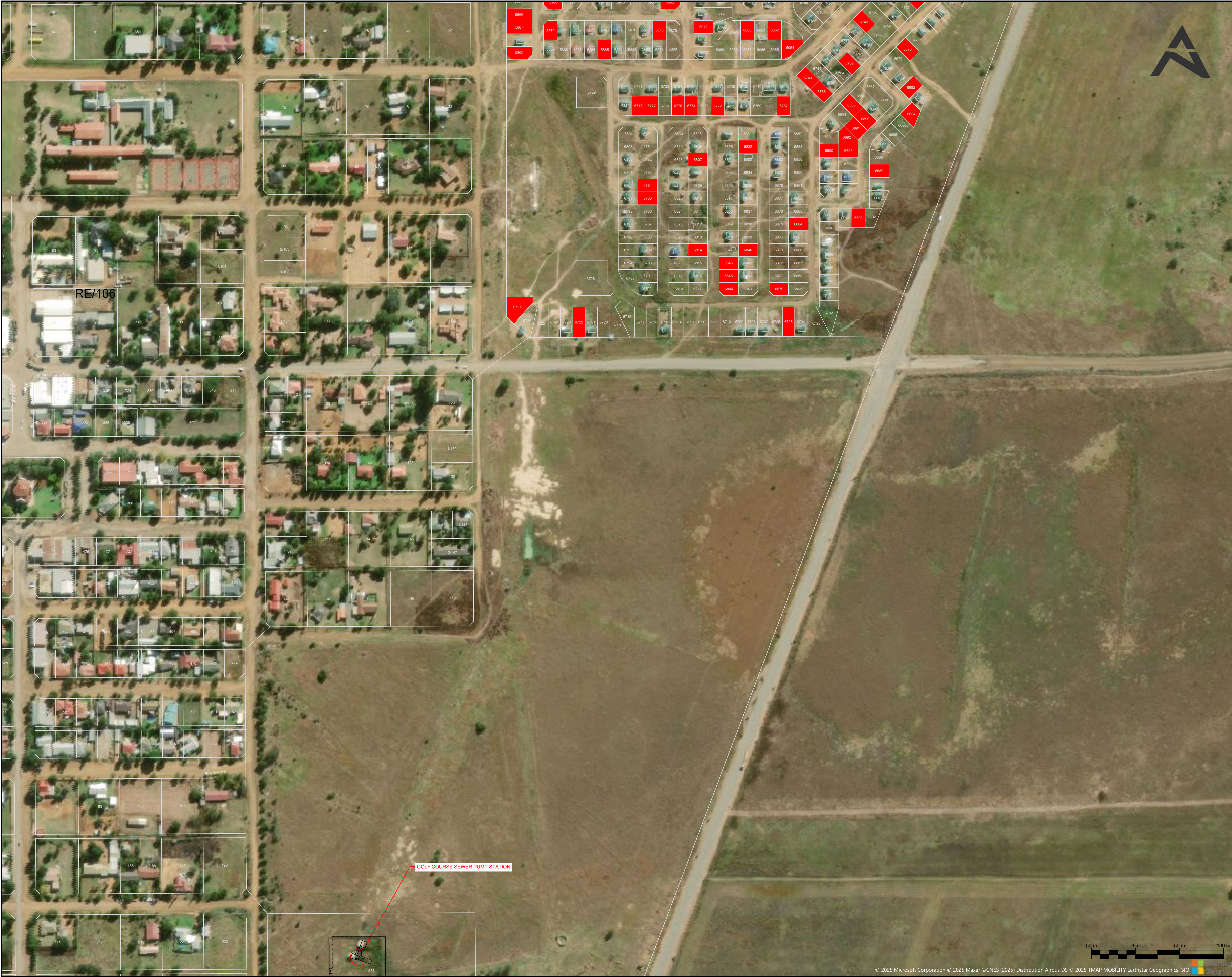
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Z	:	AS-BUILT		IFC	:	ISSUED FOR CONSTRUCTION	
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WESSELSBRON

DRAWING TITLE

LAYOUT
SHEET 1

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50 m

0 m

50 m

100 m



NOTES / LEGEND

LEGEND

 EXISTING SEWER MANHOLE

 EXISTING SEWER PIPE

 BLOCKED SEWER MANHOLE

 NEW SEWER MANHOLE

 NEW SEWER PIPE

 NEW TOP STRUCTURE

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OF 250 BUCKETS IN EXT. 12 & 13 IN
WESSELSBRON

DRAWING TITLE

SEWER TOP STRUCTURE AND
ERF CONNECTION LAYOUT
SHEET 2

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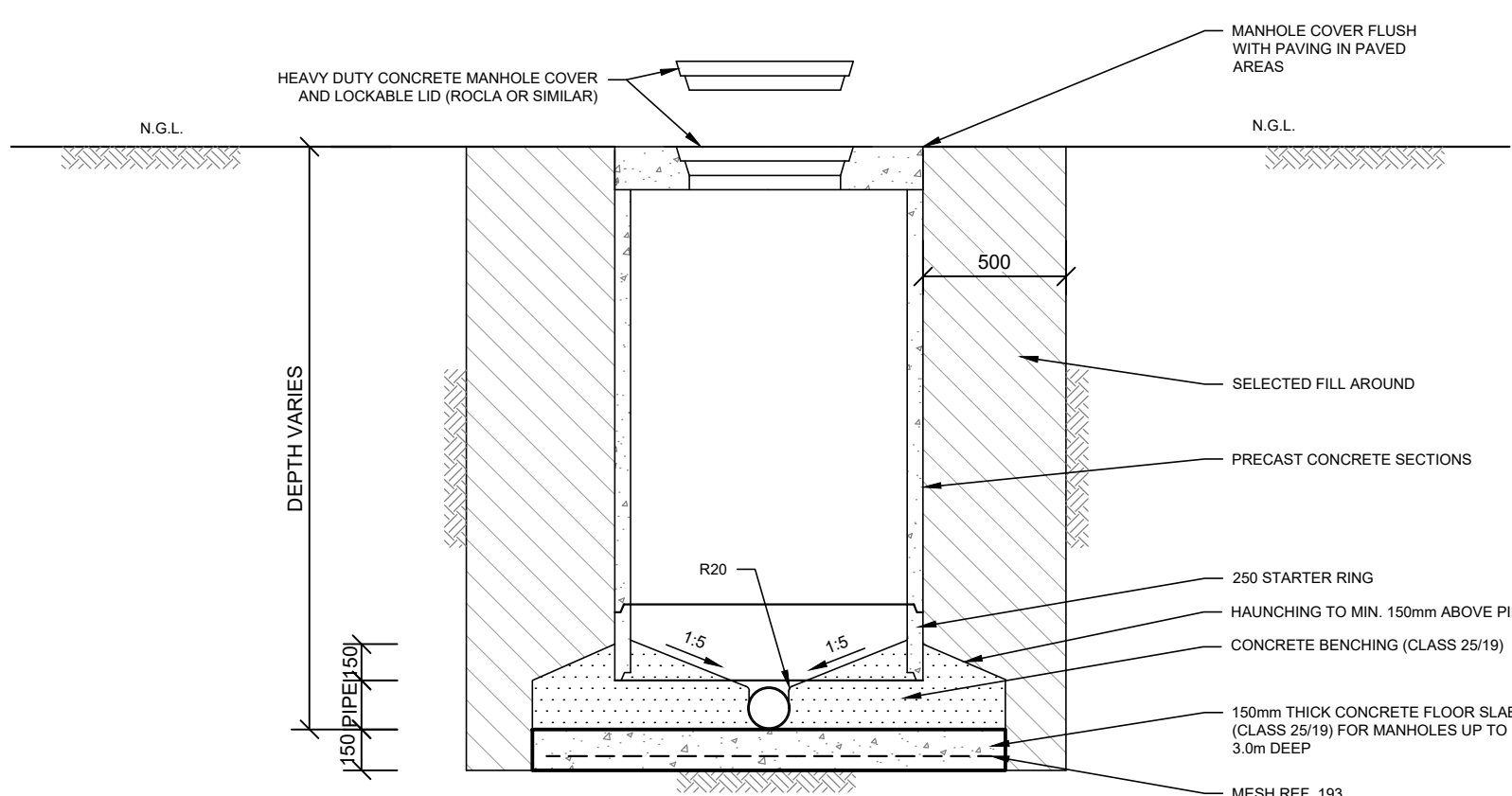
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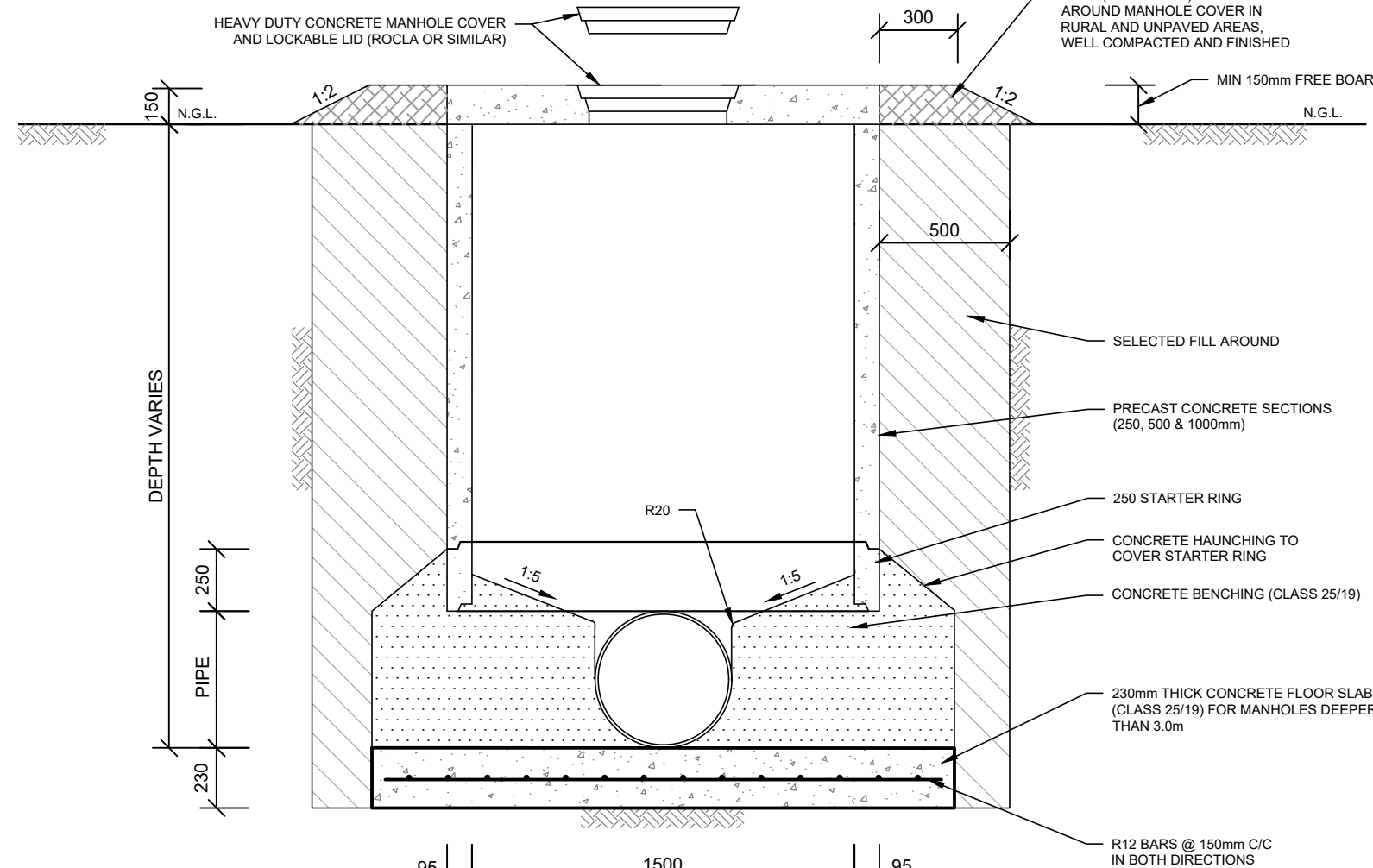


NOTES / LEGEND			
LEGEND			
	EXISTING SEWER MANHOLE		
	EXISTING SEWER PIPE		
	BLOCKED SEWER MANHOLE		
	NEW SEWER MANHOLE		
	NEW SEWER PIPE		
	NEW TOP STRUCTURE		
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SEWER TOP STRUCTURE AND ERF CONNECTION LAYOUT SHEET 3			
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SCALE	1:1000 @ A1	DRAWN	DJ COETZEE
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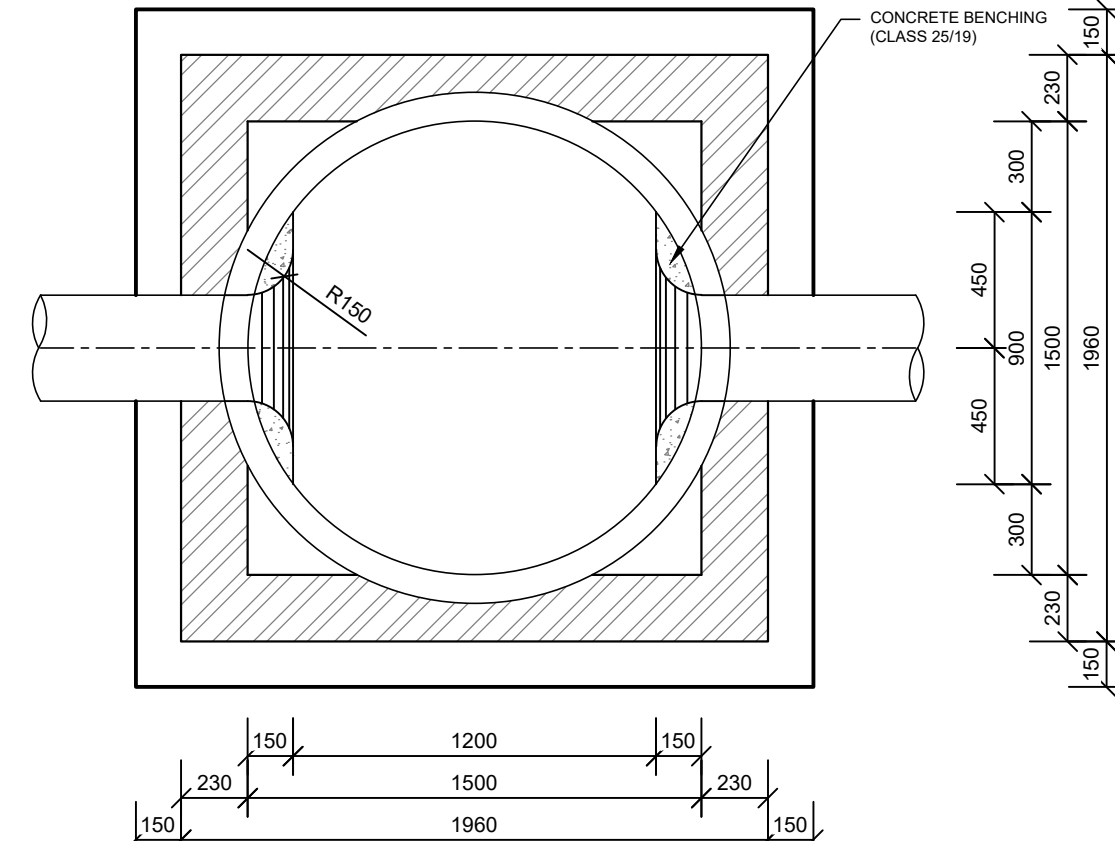
SECTION ELEVATION AT RIGHT ANGLES TO INTERNAL SEWER

SCALE 1:25



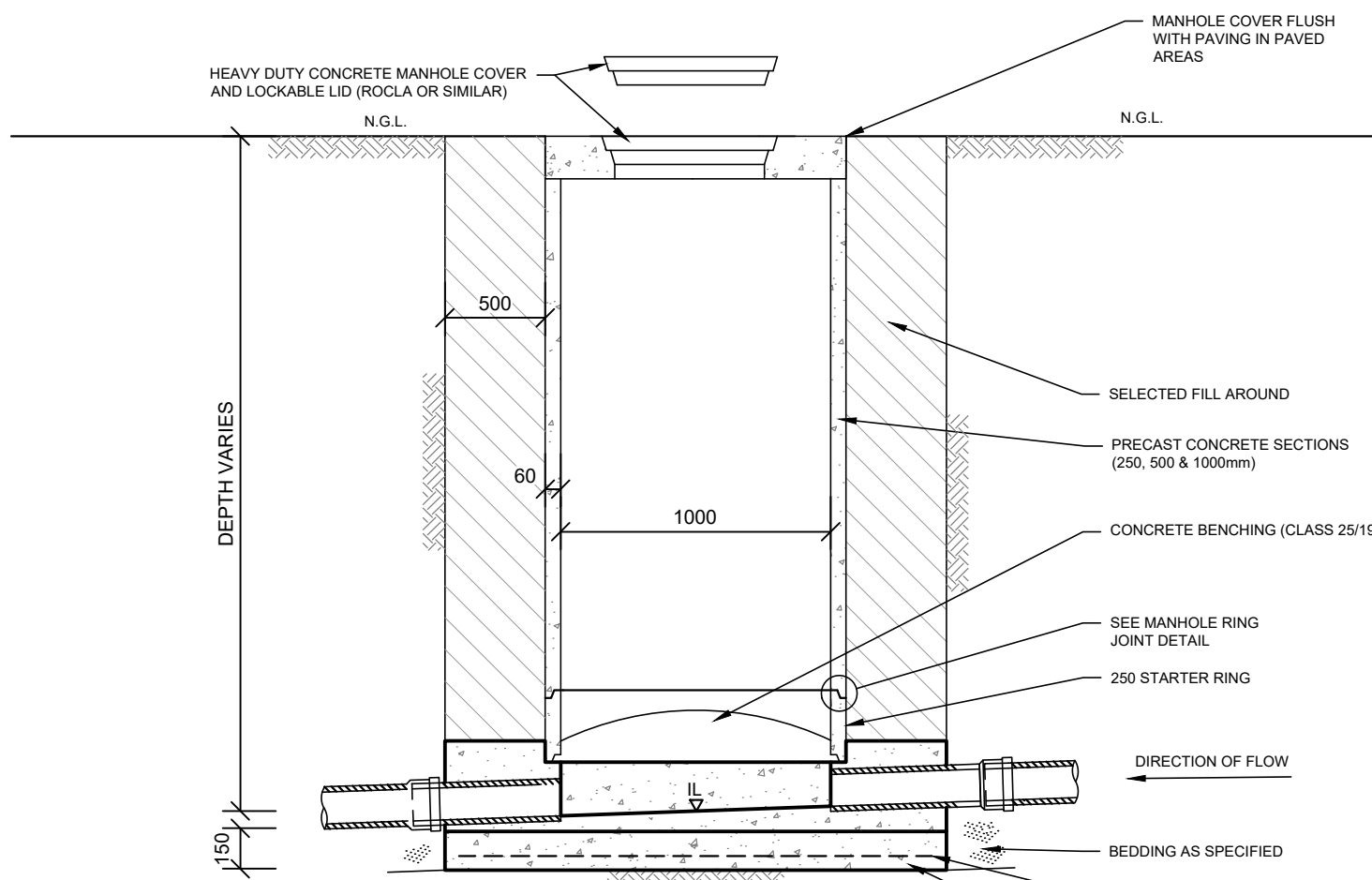
SECTION ELEVATION AT RIGHT ANGLES TO OUTFALL SEWER

SCALE 1:25



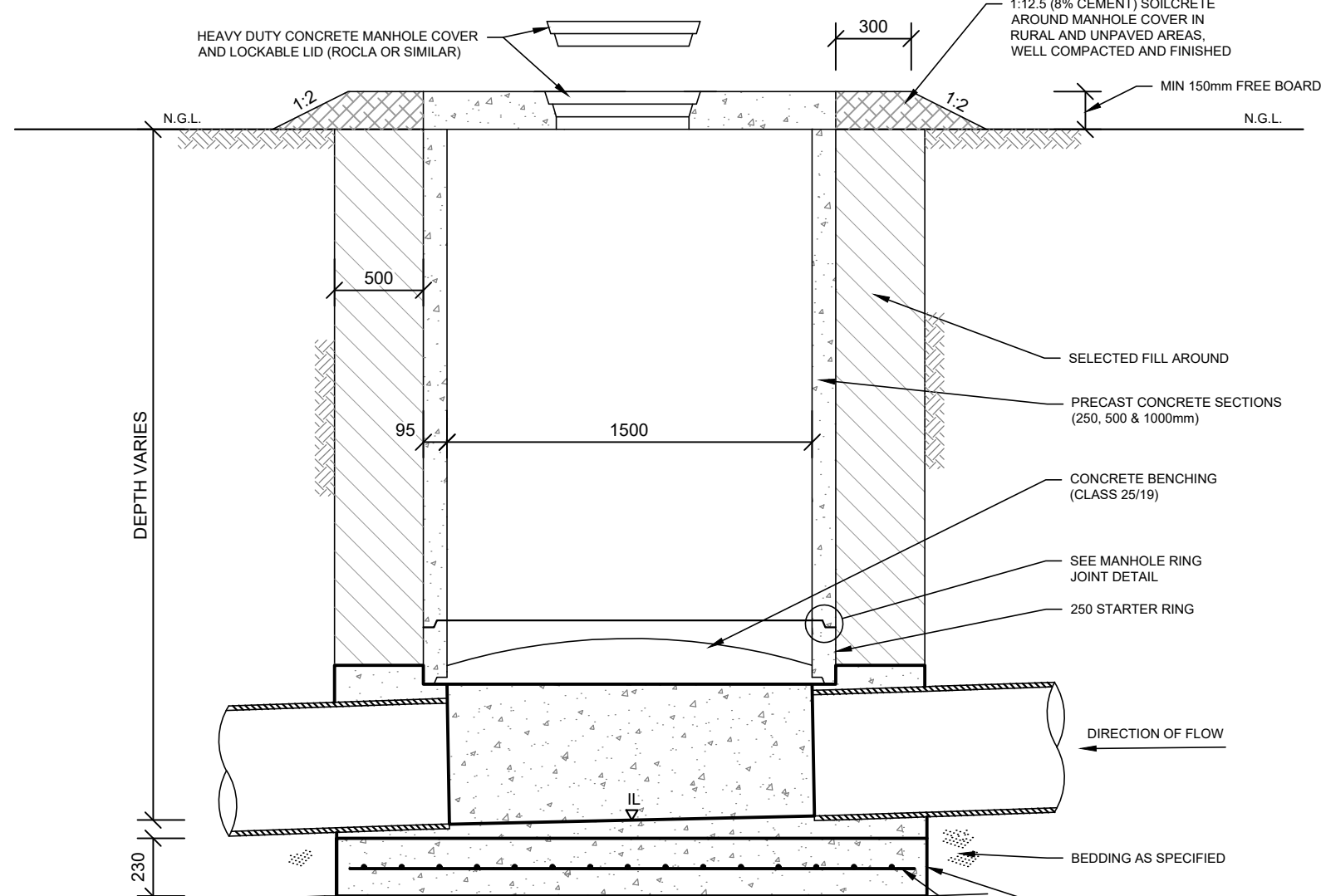
DETAIL M3:
TYPICAL PLAN VIEW OF A GRIT-TRAP MANHOLE

SCALE 1:25



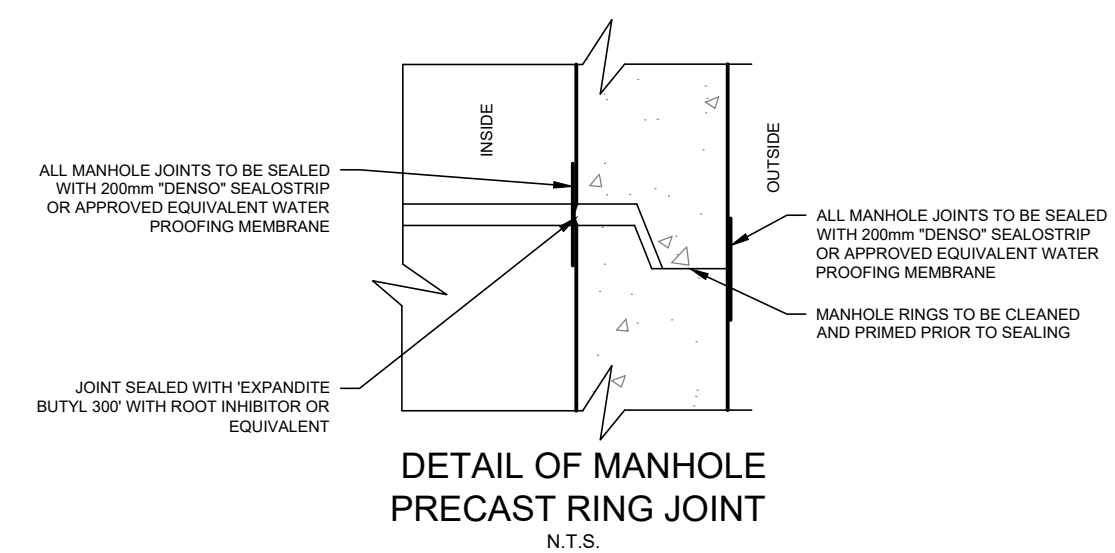
SECTION ELEVATION ALONG CENTER OF INTERNAL SEWER

SCALE 1:25



SECTION ELEVATION ALONG CENTER OF OUTFALL SEWER

SCALE 1:25



DETAIL OF MANHOLE PRECAST RING JOINT
N.T.S.

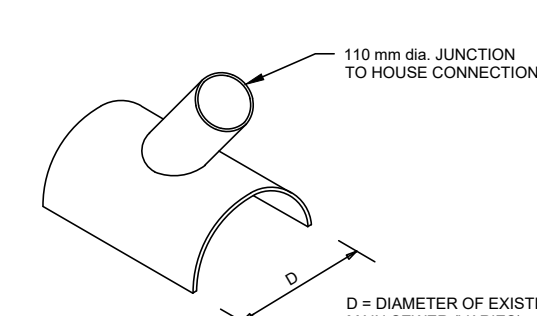
MANHOLE SIZE	RECOMMENDED PIPE SIZE RANGE	RECOMMENDED MANHOLE DEPTH RANGE
1000mm Ø	100 - 350mm	UP TO 2.0m
1200mm Ø	350 - 500mm	2.1 - 3.0m
1500mm Ø	500 - 800mm	3.1 - 4.0m
1800mm Ø	>800mm	>4.0m

NOTES:

- CONCRETE FOR MANHOLES MUST BE OF DOLOMITIC ORIGIN.
- FLEXIBLE uPVC PIPES TO SANS 1601 1994: PIPES TO BE CLASS 400, HEAVY DUTY STRUCTURED WALL IN LENGTHS OF 6m MAX. AND EACH PIPE FITTED WITH INTEGRAL CUFF JOINTS. CUFF JOINTS TO USE A RUBBER COMPRESSION SEAL IN THE 2nd TROUGH FROM THE SPIGOT END.
- FLEXIBLE JOINTS TO SANS 1601: 1994 AMENDED: ALL NON STANDARD PIPE SECTIONS TO BE JOINED WITH DOUBLE & KIMBERLEY/REPAIR COUPLINGS
- FIELD TESTS:
 - AIR TESTS ACCORDING TO CLAUSE 7.2 OF SANS 1200 LD MUST BE CARRIED OUT BETWEEN MANHOLES DURING THE FOLLOWING PHASES OF CONSTRUCTION:
 - AFTER THE PIPES HAVE BEEN LAID.
 - AFTER THE INITIAL BACKFILLING HAS BEEN COMPLETED.
 - THE AIR TEST IS ONLY AN INDICATION OF ACCEPTANCE OF A COMPLETED PORTION OF THE LINE AND IN ANY DISPUTE ARISING THE OUTCOME OF A WATER TEST WILL BE BINDING.
- TRENCHES:
 - EXCAVATION AND BACKFILLING OF TRENCHES TO COMPLY WITH SANS 1200 DB.
 - BEDDING OF PIPES TO COMPLY WITH SANS 1200 LB FOR FLEXIBLE PIPES.
 - TRENCHES DEEPER THAN 2.0m TO BE EXCAVATED IN V-SHAPE FOR TOP 1.5m AS SAFETY PRECAUTION. ONLY ON INSTRUCTION OF THE ENGINEER AS DETERMINED ON SITE AND BY THE IN-SITU MATERIAL.
 - SEWERS TO BE PROTECTED AT ROAD CROSSINGS AS SHOWN ON THE TYPICAL PLAN FOR PIPE BEDDING.
 - TRENCHES TO BE PROTECTED FROM STORMWATER INFLOW.
 - OVER EXCAVATION MAY ONLY BE FILLED AFTER APPROVAL BY THE ENGINEER WITH GRADE 20/19 CONCRETE OR SUITABLE MATERIAL AS DIRECTED BY THE ENGINEER.
- MANHOLES AND FITTINGS:
 - ALL CONCRETE, BENCHING AND SEALERS SHALL COMPLY WITH SANS 1200 GA OR SANS 1200 LD AS APPLICABLE.
 - PRECAST CONCRETE SECTIONS TO COMPLY WITH SANS 1294.
 - CONCRETE MANHOLE SECTIONS MUST BE FIXED WITH AN EPOXY SEALER SUCH AS EPIDERMIX 344 OR PRO-STRUCT 687 OR SIMILAR APPROVED.
 - CLASSES OF CONCRETE:
 - PRECAST CONCRETE SECTIONS - 30/19.
 - BEDDING CRADLE - 15/19.
 - ALL OTHER CONCRETE - 25/19.
 - CHANNELING:
 - Ø ≤ 300mm: CLAY / DOLOMITIC CONCRETE / NUTEC CEMENT
 - Ø > 300mm: IN-SITU CAST DOLOMITIC CONCRETE
 - STEP IRONS SHALL NOT BE INSTALLED IN MANHOLES.
 - FREEBOARD: MIN. 150mm FOR OUTFALL SEWERS OR IN RURAL AREAS.
 - BENCHING: BENCHING TO BE SEALED WITH A 20mm CHEMICAL RESISTANT MORTAR SUCH AS FONDU CEMENT OR SIMILAR APPROVED.
 - CLEANING: THE MANHOLE IN TOTAL, BUT THE CHANNELS IN PARTICULAR, MUST BE RUBBED AND CLEANED OUT PROPERLY TO A SMOOTH FINISH BEFORE THE MANHOLE WILL BE INSPECTED FOR APPROVAL.

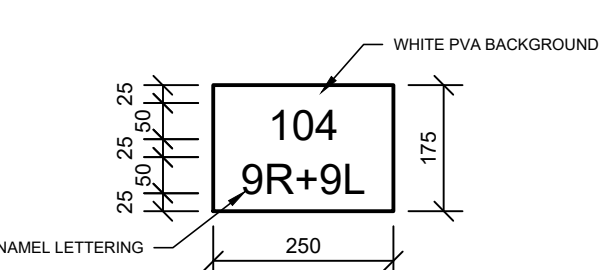
FIXING DETAILS FOR SADDLES

- CUT 100mm dia. HOLE THROUGH EXISTING PIPE. SPECIAL CARE MUST BE TAKEN TO PREVENT DEBRIS FROM FALLING INTO THE EXISTING PIPE.
- FIX SADDLE TO EXISTING PIPE WITH PROSTRUCT 617 EPOXY, OR OTHER SIMILAR APPROVED + STRAPPING



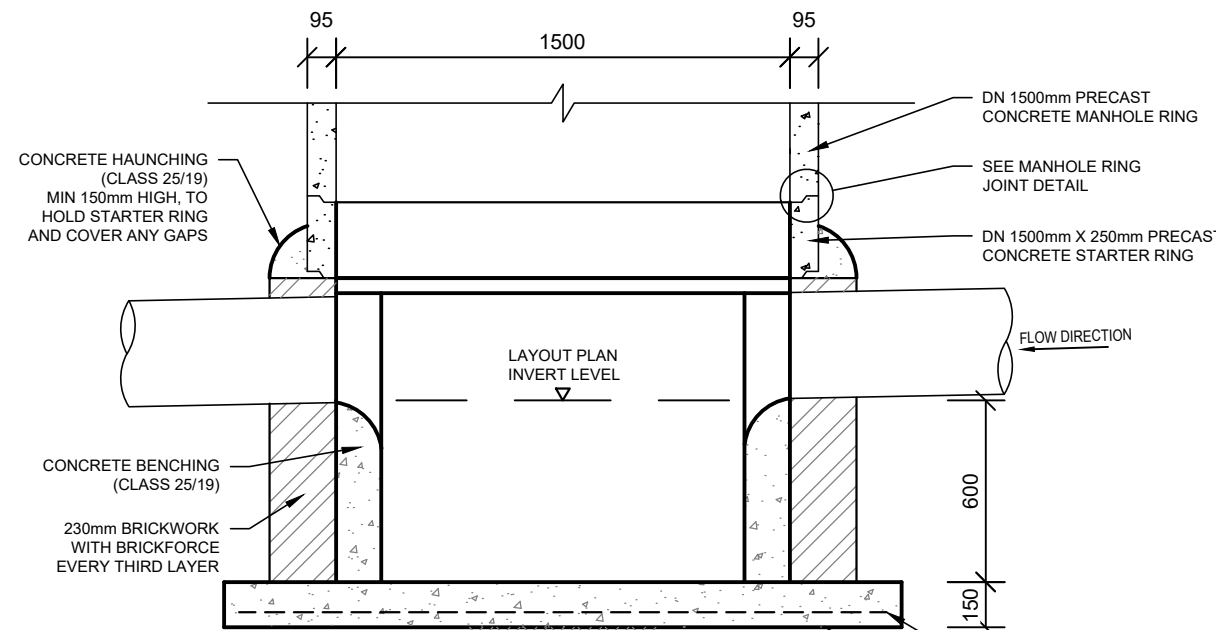
FIXING DETAILS OF SADDLE ON EXISTING MAIN SEWER

N.T.S.



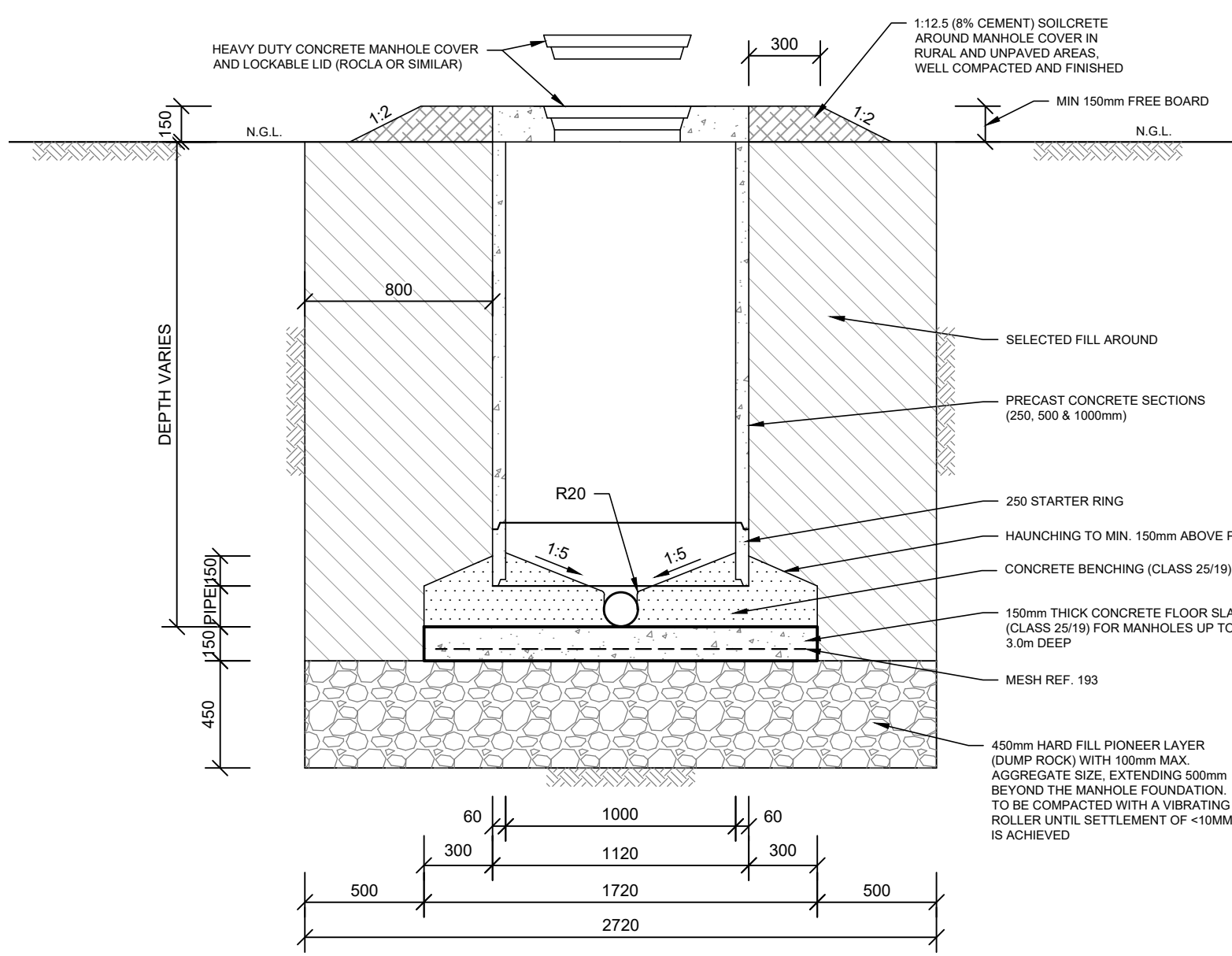
PAINT MARKER ON COVER SLAB OF MAIN SEWER

SCALE 1:10



SECTION ELEVATION ALONG CENTER OF A GRIT-TRAP MANHOLE

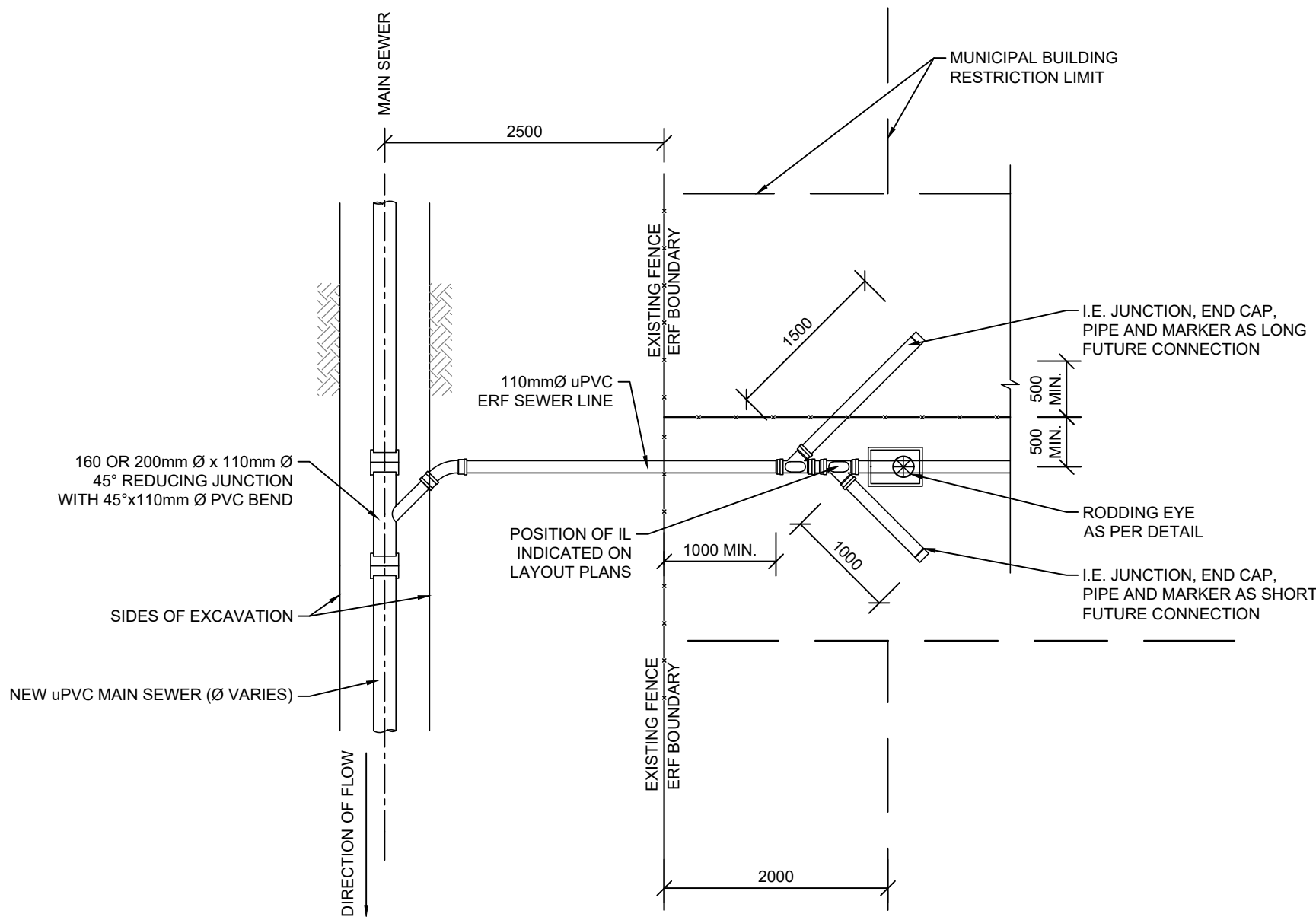
SCALE 1:25



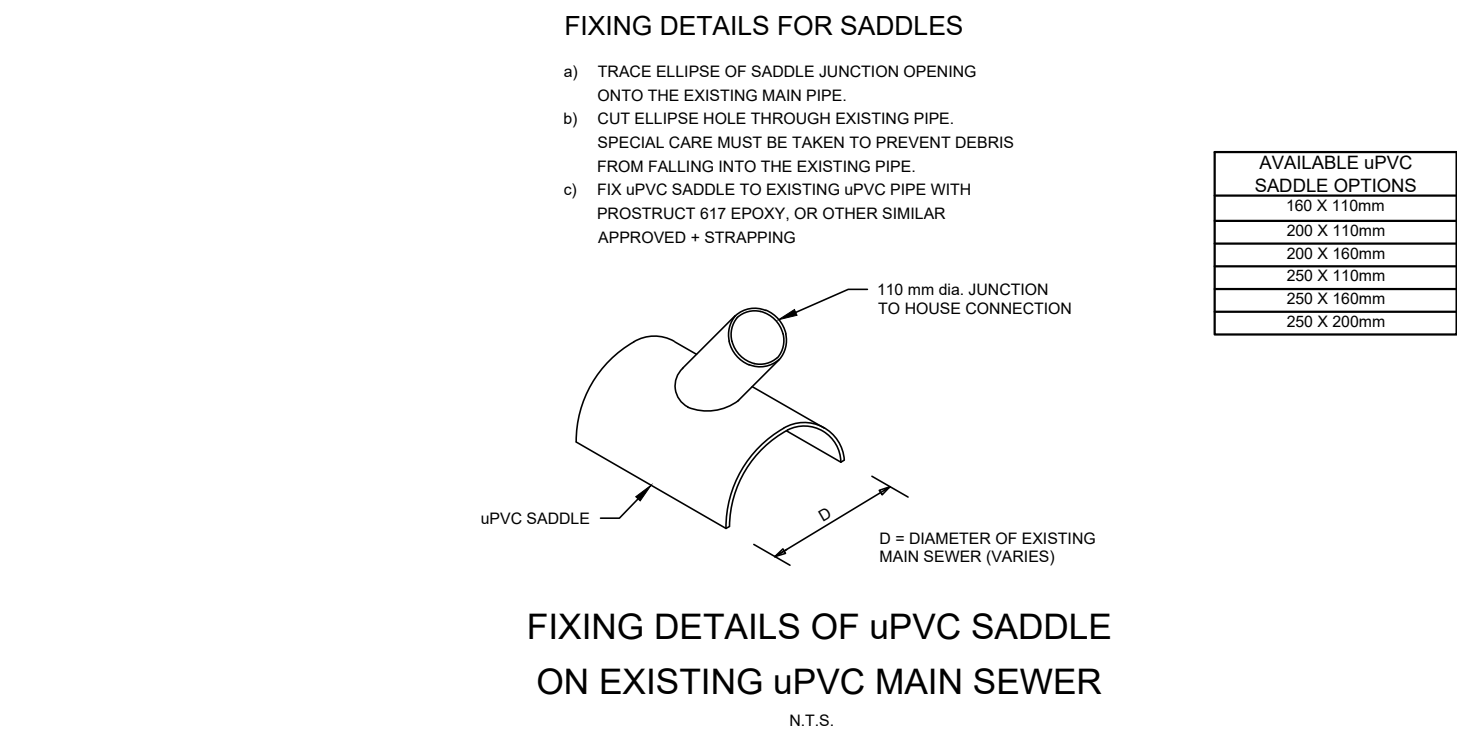
DETAIL M2:
TYPICAL DETAIL OF HARD FILL (DUMP ROCK) PIONEER LAYER UNDER MANHOLE FOUNDATION

SCALE 1:25

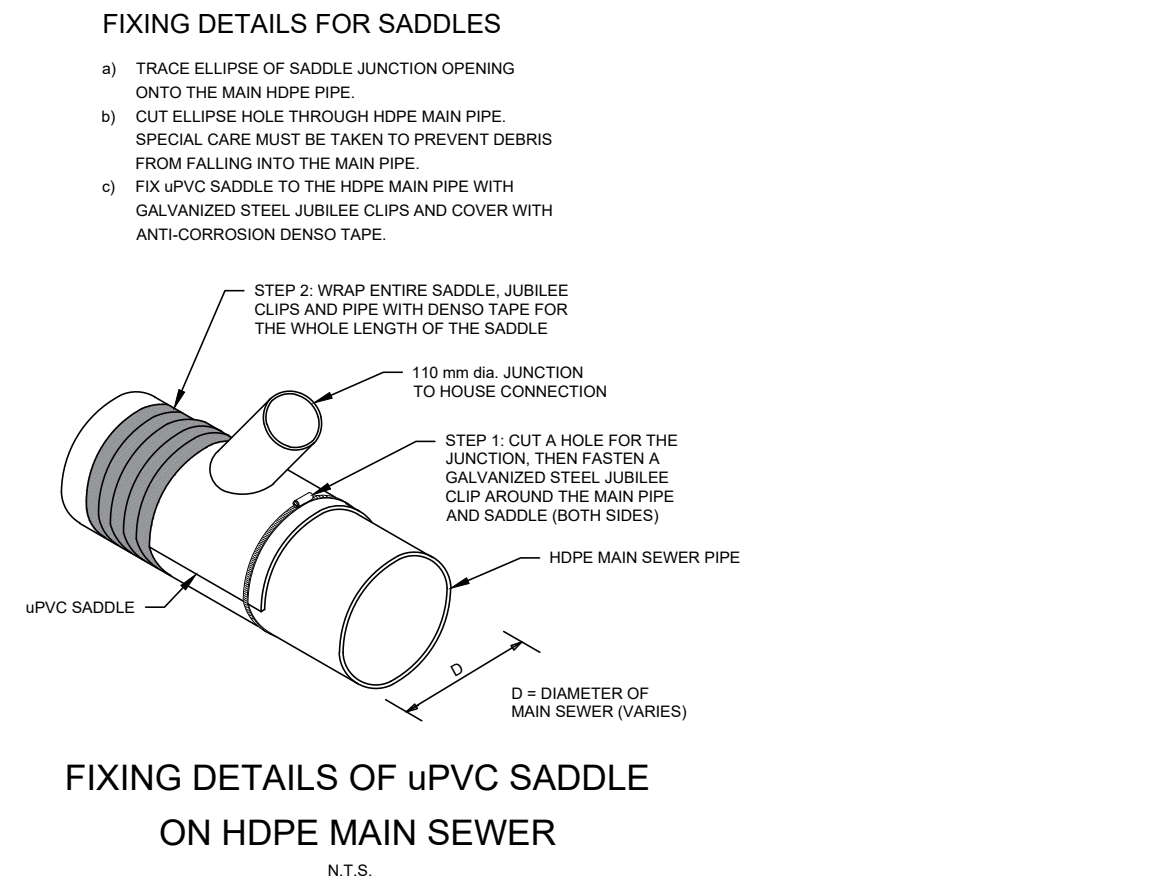
NOTES / LEGEND			
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CITY ENGINEER / CLIENT	REG. NO.	DATE	
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PROJECT NAME			
NALA LOCAL MUNICIPALITY: THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON			
DRAWING TITLE			
TYPICAL SEWER MANHOLE DETAILS			
APPROVED BY BVI			
JL REYNERS	2020300701	2010/2025	
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SCALE	AS SHOWN @ A1	DRAWN	DJ COETZEE
DESIGNED	DJ COETZEE	CHECKED	JL REYNERS
SUITABILITY STATUS			REV. NO.
ISSUED FOR TENDER			T0
PLAN NUMBER			
PROJECT NO. - ORIGIN - SYSTEM - LOCATION - TYPE - ROLE - DR - CODE - PHASE - SEQ. NO.			
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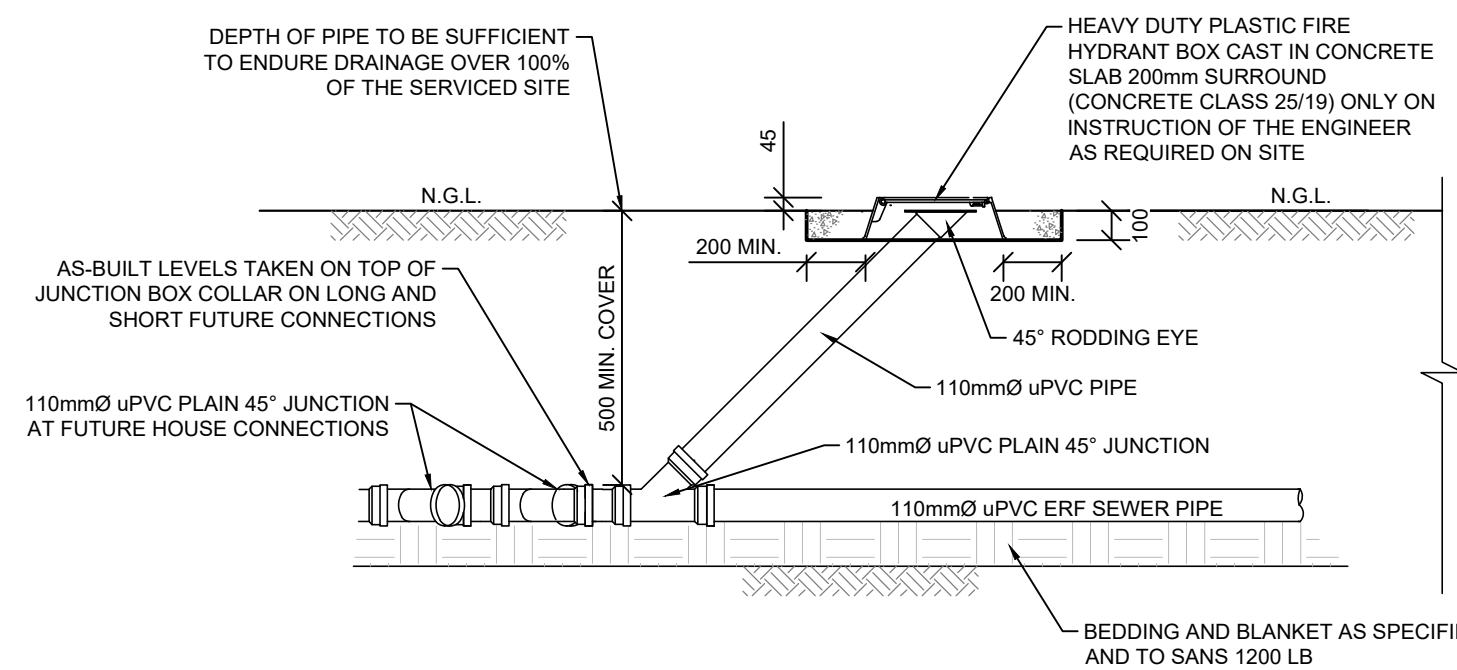
TYPICAL LAYOUT OF ERF SEWER COLLECTOR
WITH FUTURE CONNECTIONS
N.T.S.



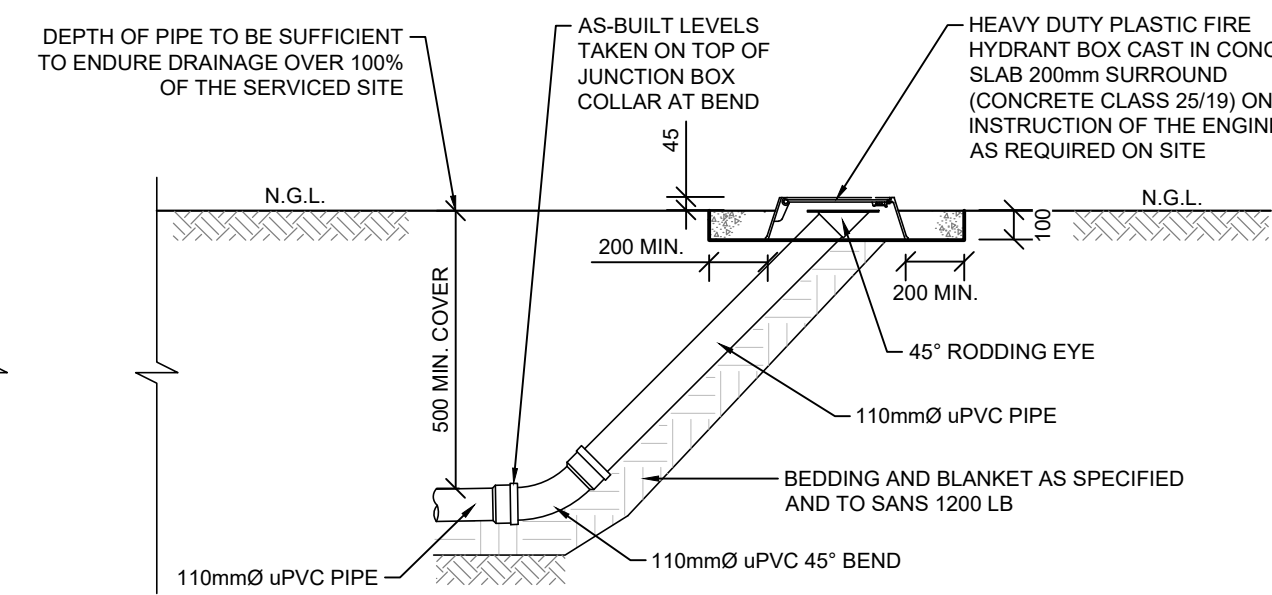
FIXING DETAILS OF uPVC SADDLE
ON EXISTING uPVC MAIN SEWER
N.T.S.



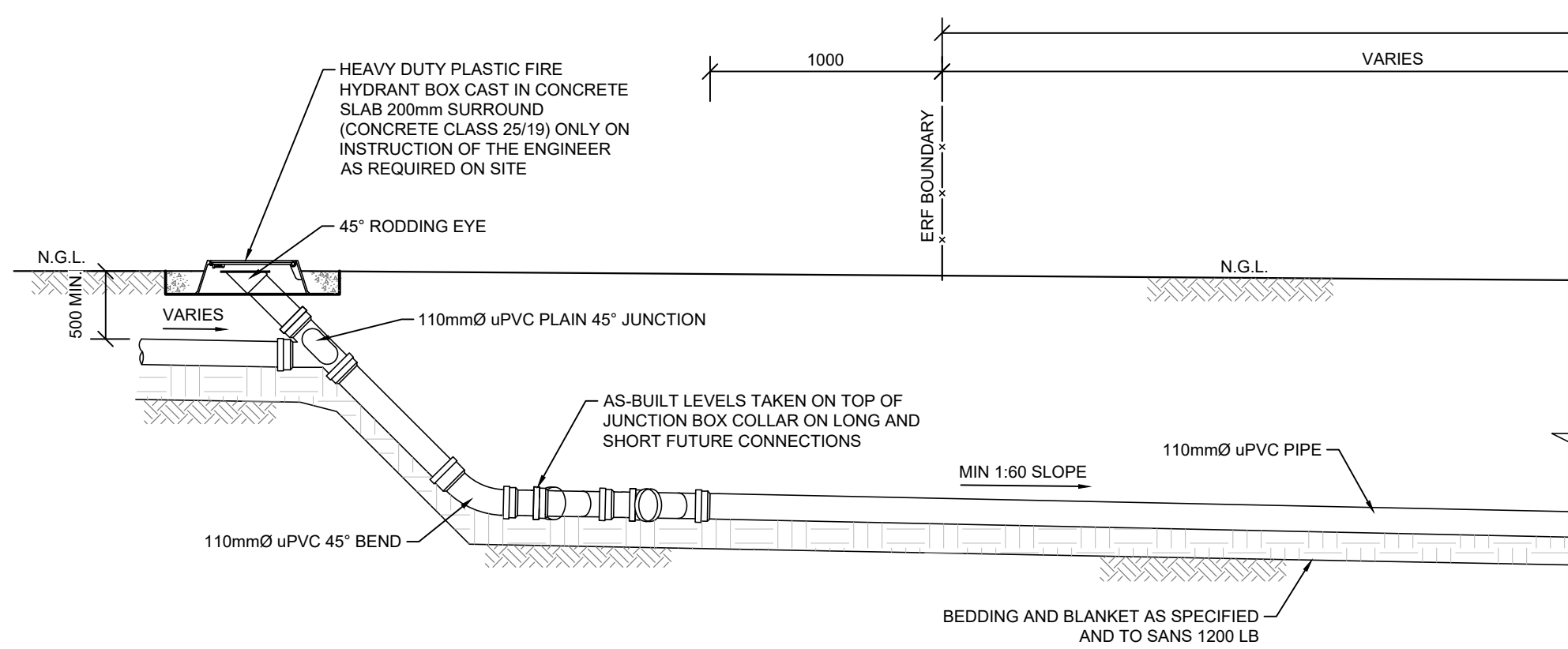
FIXING DETAILS OF uPVC SADDLE
ON HDPE MAIN SEWER
N.T.S.



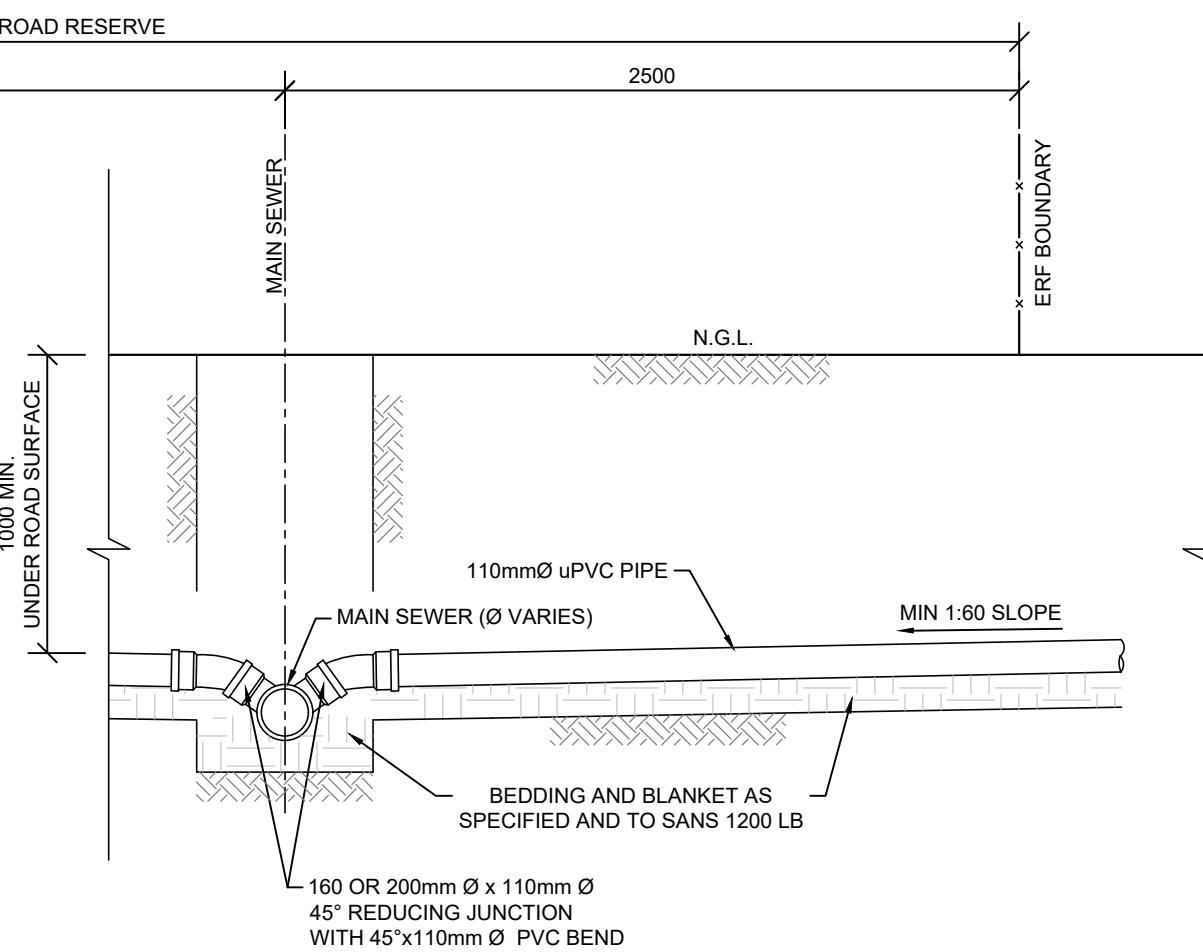
TYPICAL DETAIL OF RODDING EYE
AT FUTURE HOUSE CONNECTIONS ON THE ERF SEWER LINE
N.T.S.



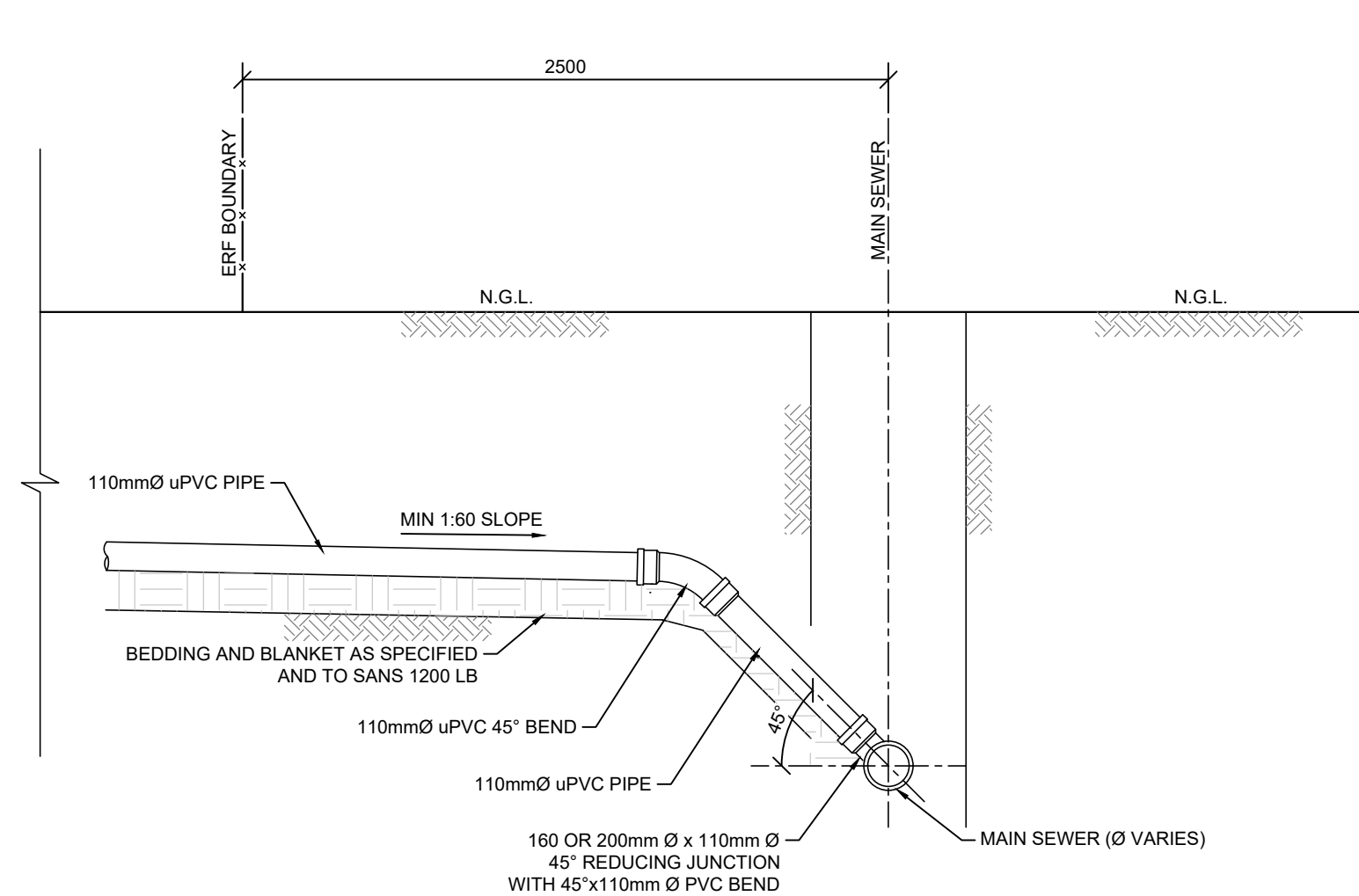
TYPICAL DETAIL OF RODDING EYE
AT THE HEAD OF THE ERF SEWER LINE
N.T.S.



STREET CROSSING



CONNECTION OF ERF SEWER COLLECTOR
TO MAIN SEWER
N.T.S.



D > 1200

NOTES / LEGEND	
1.	SHORT FUTURE CONNECTIONS: 1.0m PIPE + 1 x JUNCTION + 1 x END CAP + 1 x MARKER
2.	LONG FUTURE CONNECTION: 1.5m PIPE + 1 x JUNCTION + 1 x END CAP + 1 x MARKER
3.	SHORT CONNECTION: 1.25m PIPE + 1 x JUNCTION
4.	LONG CONNECTION: 1.8m PIPE + 1 x JUNCTION
5.	SHORT SHORT FUTURE CONNECTION: 0.5m PIPE + 1 x JUNCTION + 1 x END CAP + 1 x MARKER
6.	ALL PIPEWORK BEDDING AND BLANKET TO COMPLY WITH SANS 1200 LB

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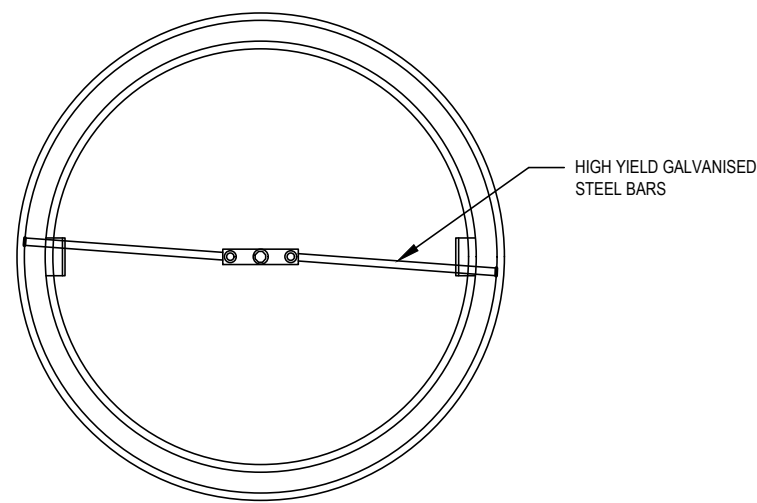
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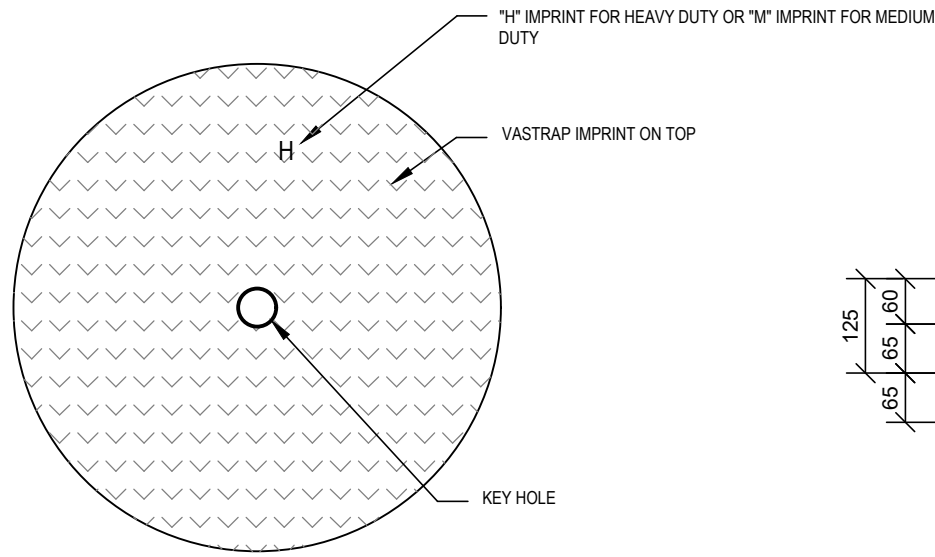

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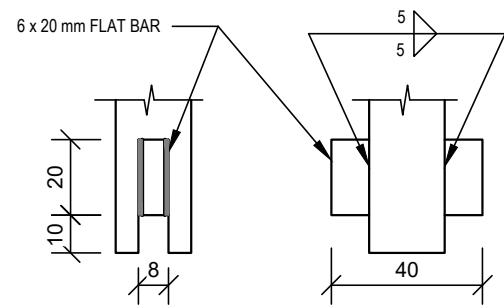
CLIENT		
		
PROJECT NAME		
NALA LOCAL MUNICIPALITY: THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON		
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TYPICAL SEWER ERF CONNECTION DETAILS		
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35431-BCN-ZZZ-00-DR-CIV-133-TS-003		



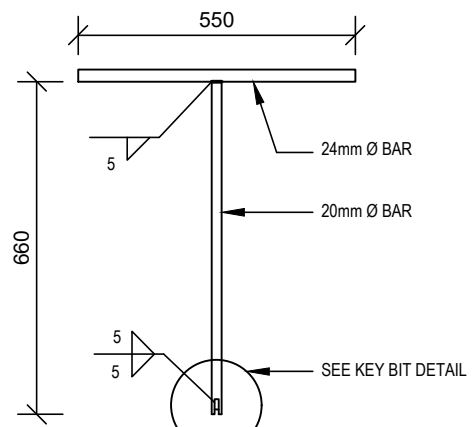
BOTTOM VIEW OF MANHOLE LID WITH LOCKING DEVICE
SCALE 1:10



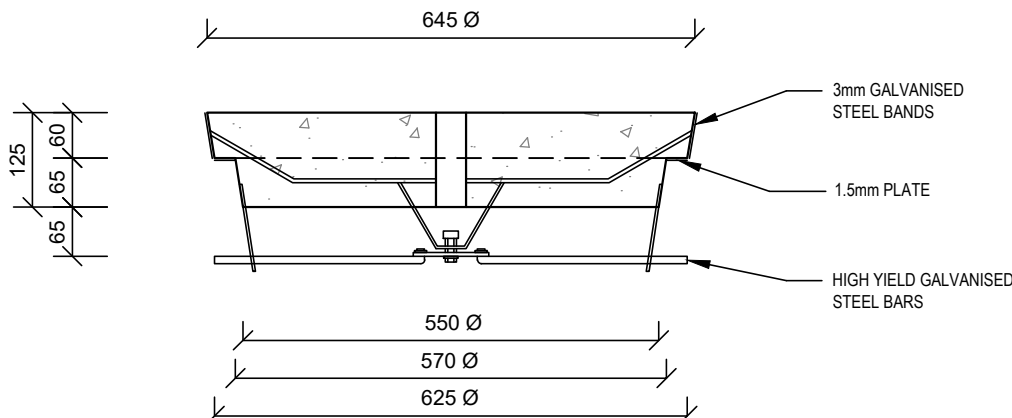
TOP VIEW OF MANHOLE LID
SCALE 1:10



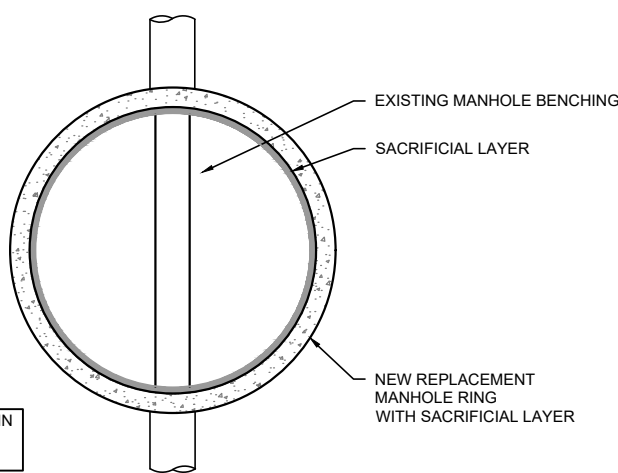
KEY BIT DETAIL
SCALE 1:2



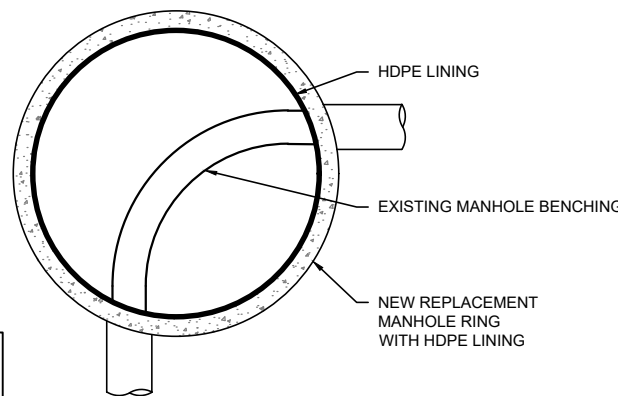
LOCKING AND LIFTING KEY DETAIL
SCALE 1:15



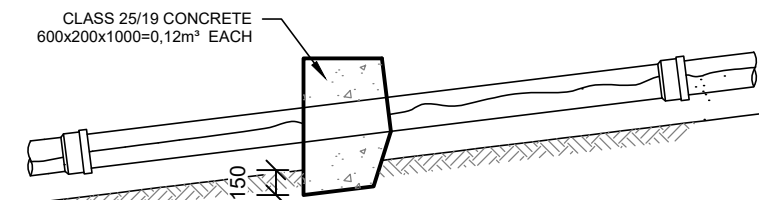
SECTION THROUGH MANHOLE LID
SCALE 1:10



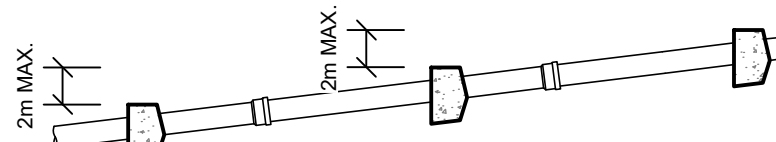
DETAIL R3
TYPICAL DETAIL OF MANHOLE REPLACEMENT USING COMPONENTS WITH A SACRIFICIAL LAYER
SCALE 1:25



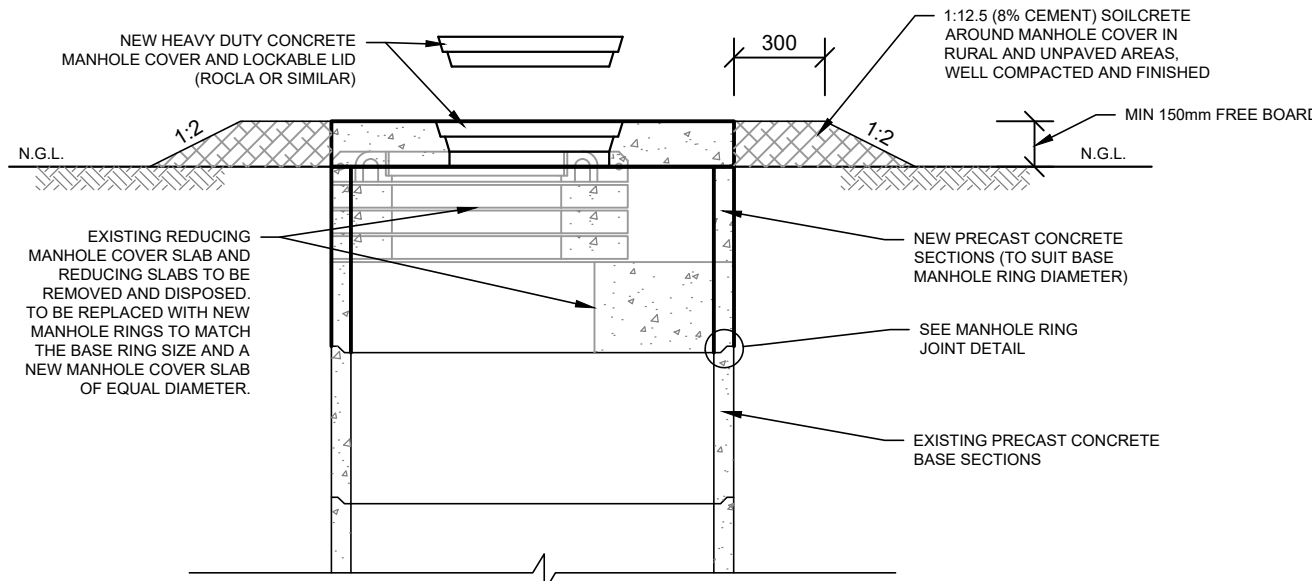
DETAIL R4:
TYPICAL DETAIL OF MANHOLE REPLACEMENT USING HDPE LINED MANHOLE COMPONENTS
SCALE 1:25



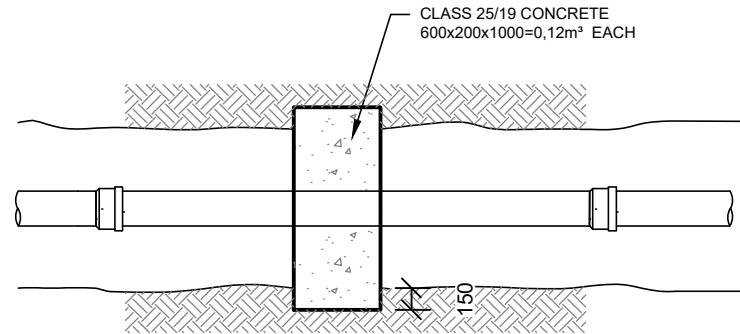
SECTION
N.T.S.



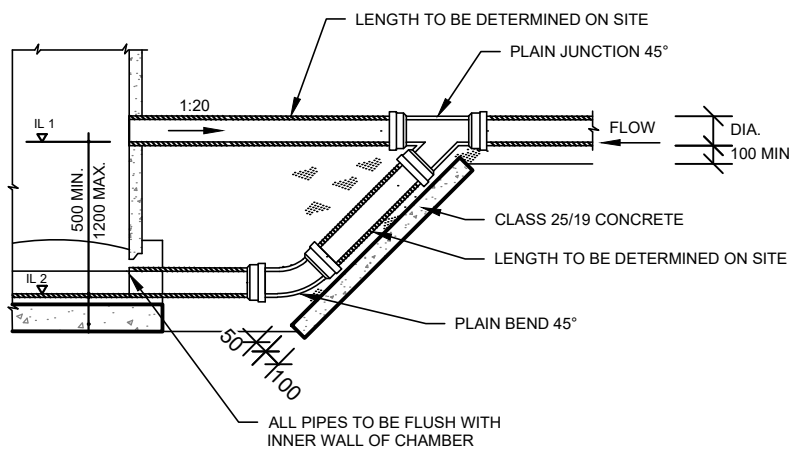
SPACING OF ANCHOR BLOCKS ON SLOPES STEEPER THAN 1:10
N.T.S.



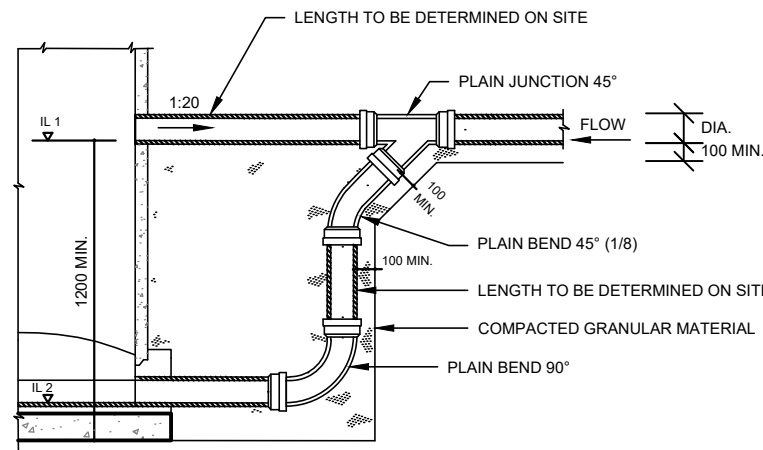
DETAIL R7:
TYPICAL DETAIL FOR REPLACEMENT OF REDUCING MANHOLES
SCALE 1:25



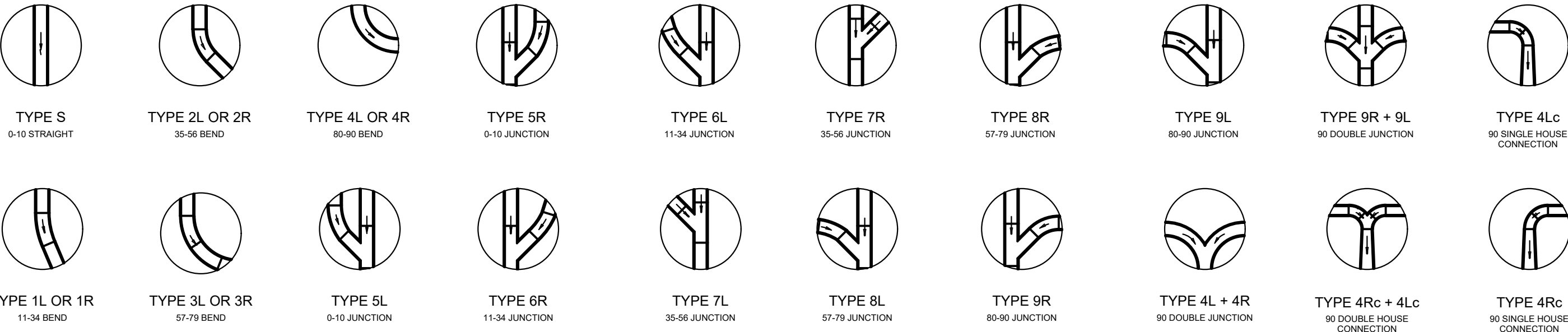
PLAN
SCALE 1:50



MANHOLE WITH HIGH INLET RAMP TYPE
N.T.S.



MANHOLE WITH HIGH INLET VERTICAL DROP TYPE
N.T.S.



TYPICAL MANHOLE CHANNEL DETAILS

NOTES:
1. DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 35431-BCN-ZZZ-00-DR-CIV-133-TS-002

NOTES / LEGEND

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PROJECT NAME

NALA LOCAL MUNICIPALITY:
THE REFURBISHMENT OF SEWER
PUMP STATION AND ERADICATION
OF 250 BUCKETS IN EXT. 12 & 13 IN
WESSELSBRON

DRAWING TITLE

ADDITIONAL SEWER
MANHOLE DETAILS

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ENGINEER/TECHNOLOGIST REG. NO. DATE

SCALE AS SHOWN @ A1 DRAWN DJ COETZEE

DESIGNED DJ COETZEE CHECKED JL REYNERS

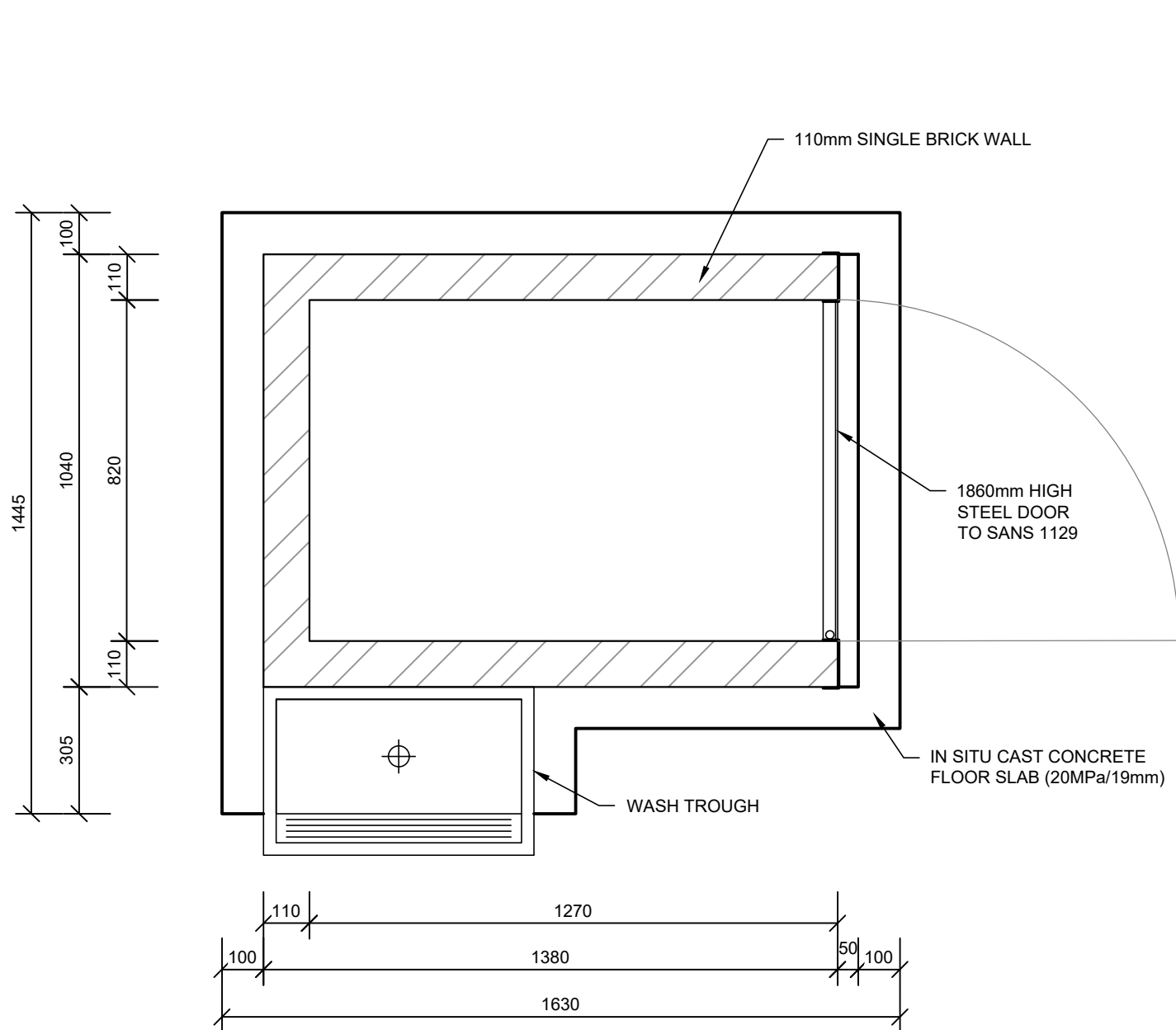
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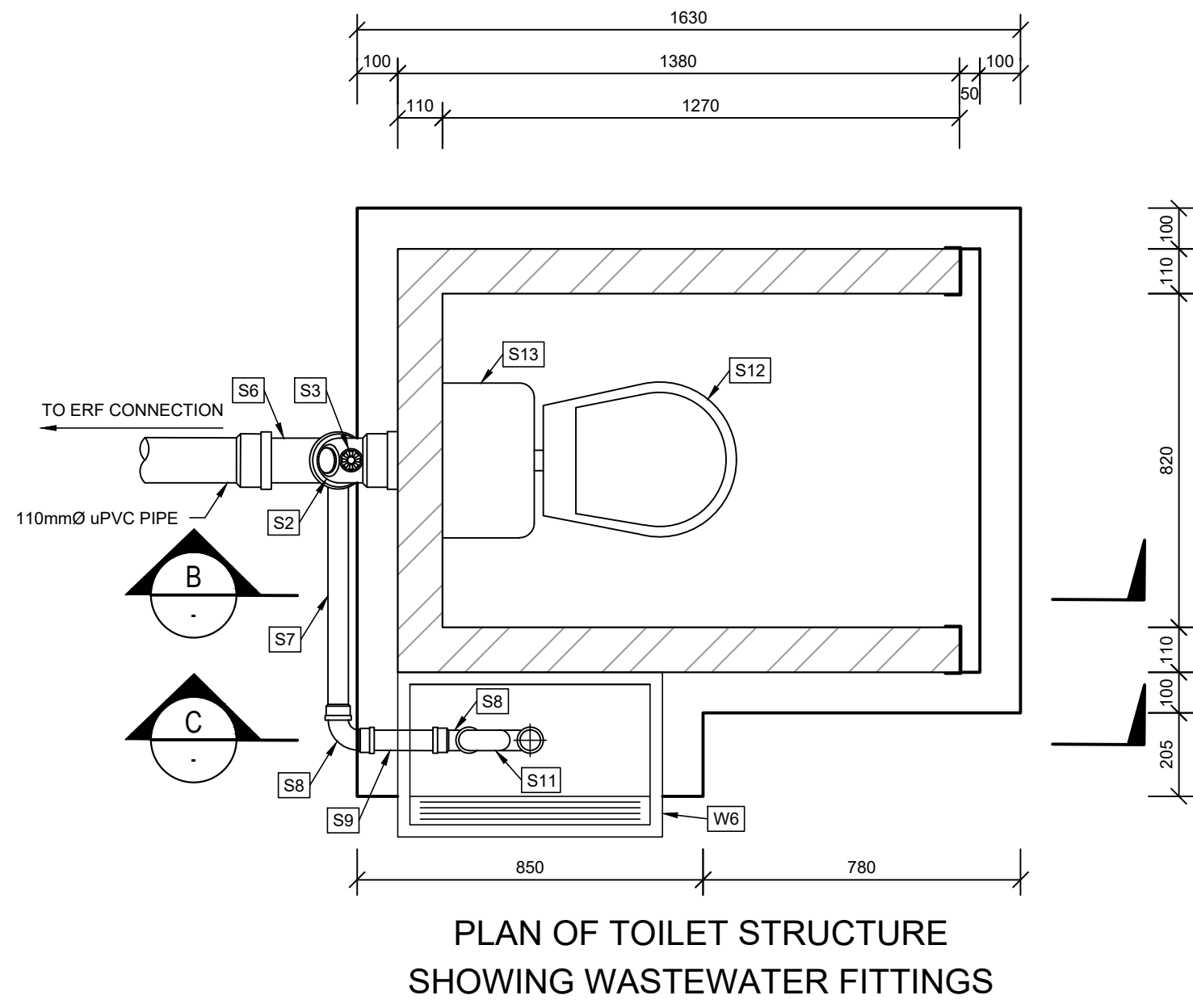
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PROJECT NO. - ORIGIN - SYSTEM - LOCATION - TYPE - ROLE - DR. CODE - PHASE - SEQ. NO.

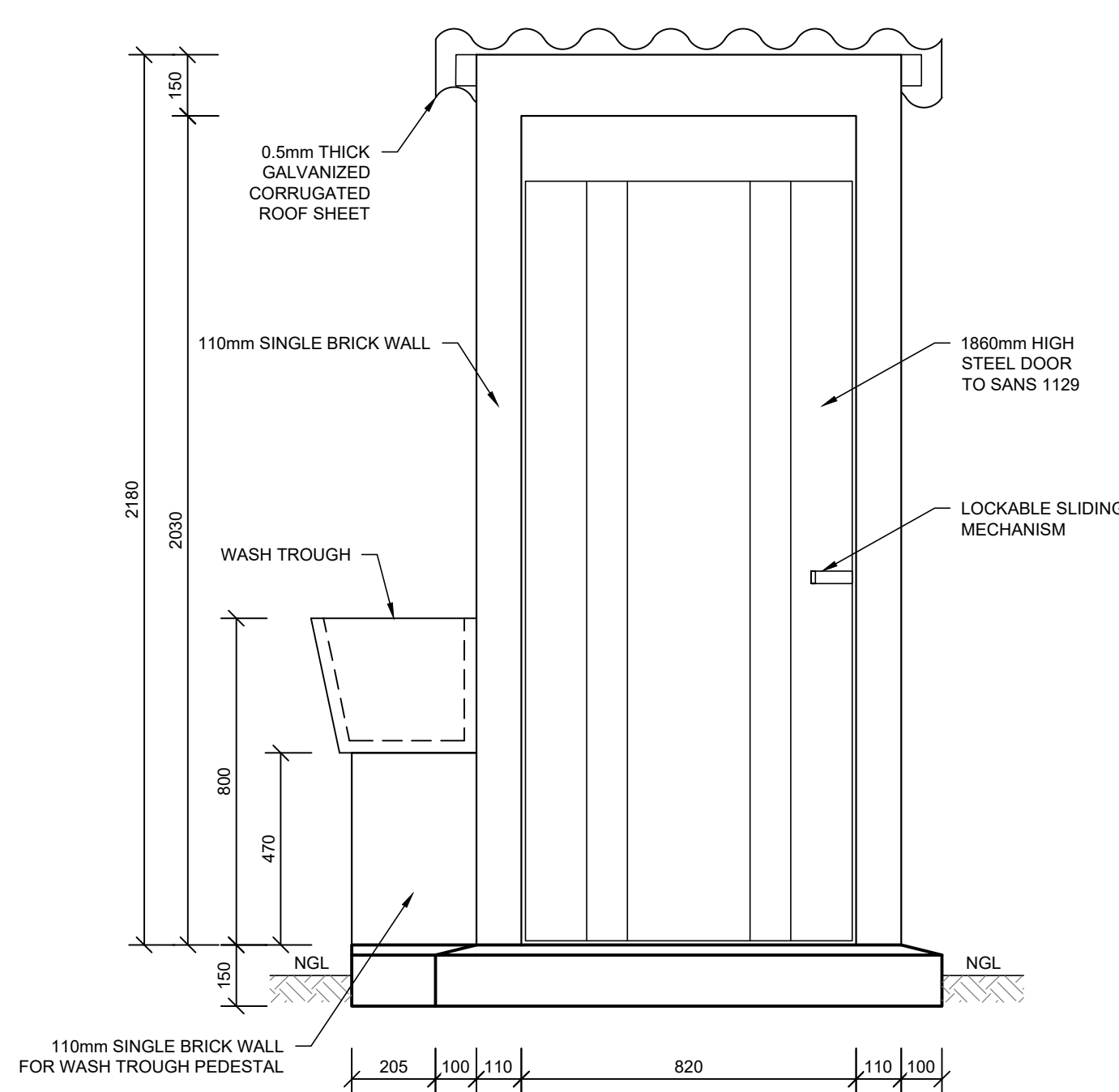
35431-BCN-ZZZ-00-DR-CIV-133-TS-004



EXTERNAL TOILET
PLAN VIEW
SCALE 1:15



PLAN OF TOILET STRUCTURE
SHOWING WASTEWATER FITTINGS
SCALE 1:15

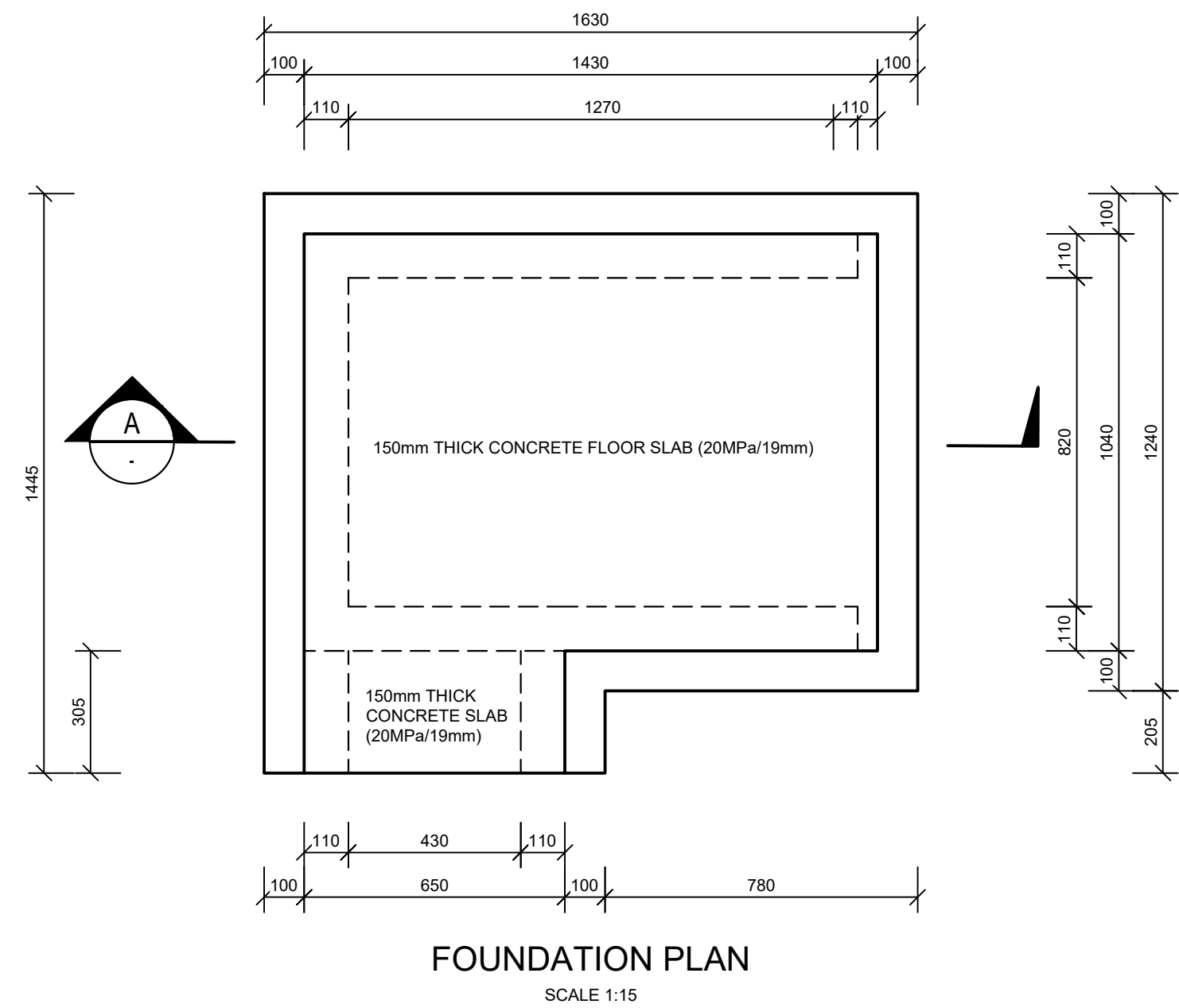


EXTERNAL TOILET
FRONT ELEVATION
SCALE 1:15

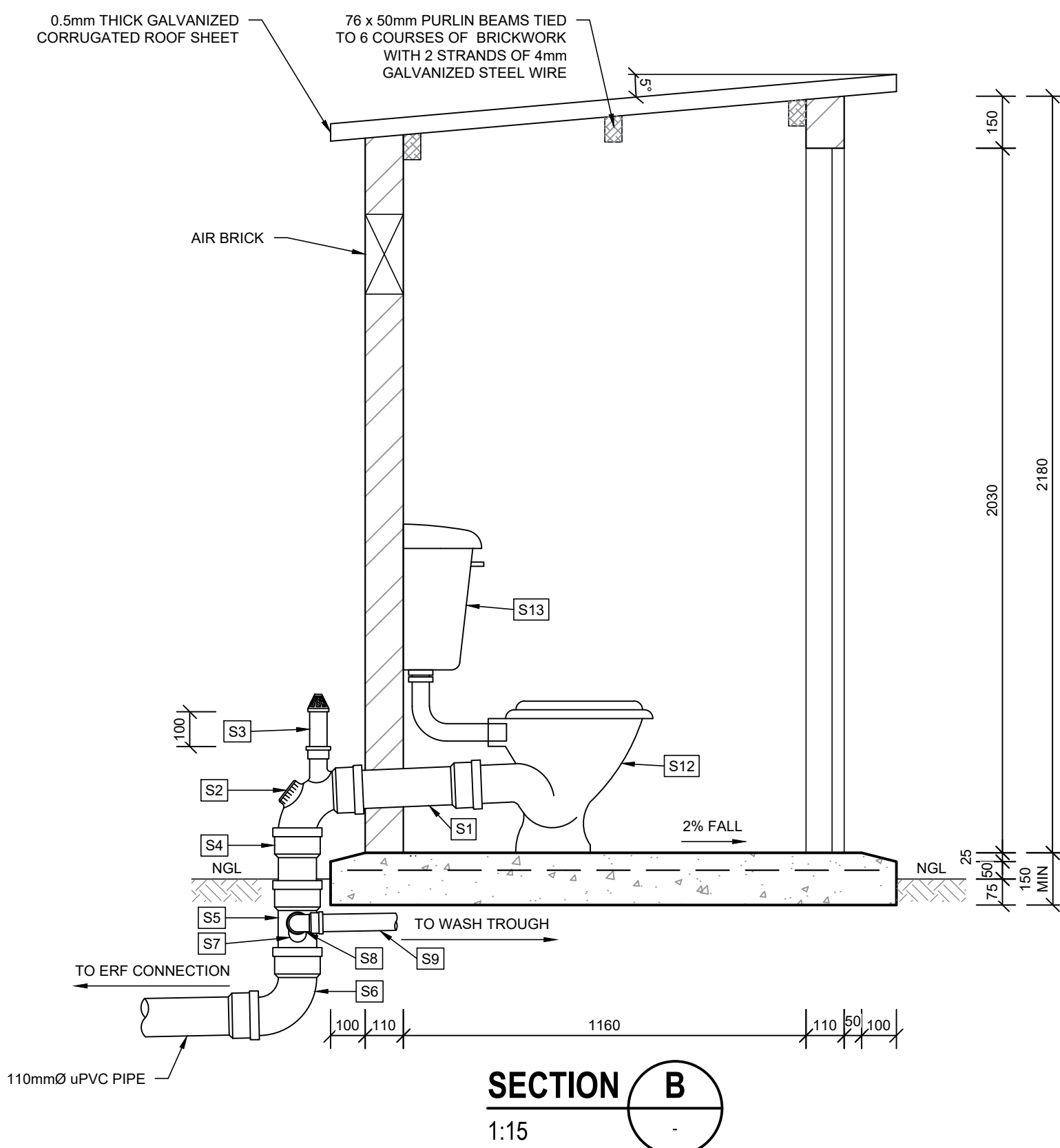
SANITARY FITTING SCHEDULE		
ITEM NO.	DESCRIPTION	NO. OF
S1	110mmØ PAN CONNECTOR	1
S2	110mmØ uPVC VENT HORN BEND WITH INSPECTION EYE AND 50mmØ VENT ON HEEL	1
S3	50mmØ uPVC VENTILATION PIPE WITH ONE-WAY VENTILATION VALVE, FIXED WITH APPROVED GLUE (100mm MAX. LENGTH)	1
S4	110mmØ uPVC DISTANCE PIECE (LENGTH TO SUIT)	1
S5	110x50mmØ uPVC JUNCTION	1
S6	110mmØ uPVC 90° BEND	1
S7	50mmØ uPVC DISTANCE PIECE (LENGTH TO SUIT)	1
S8	50mmØ uPVC 90° BEND	2
S9	50mmØ uPVC DISTANCE PIECE (LENGTH TO SUIT)	1
S10	50mmØ uPVC DOWNPIPE (LENGTH TO SUIT)	1
S11	50mmØ P-TRAP	1
S12	VAAL SANITARYWARE 4.5-LITRE PORCELAIN PAN WITH SEAT AND COVER	1
S13	6-LITRE SISO POLYPROPYLENE TOP-FLUSH CISTERN WITH LID	1

WATER SUPPLY FITTING SCHEDULE		
ITEM NO.	DESCRIPTION	NO. OF
W1	1/2"Ø TO 20mmØ PLASSON MALE ADAPTOR	1
W2	1/2"Ø BALL VALVE WITH HANDLE TO SANS 226, CLASS 2	1
W3	1/2"Ø GALVANIZED STEEL DISTANCE PIECE TO SANS 62 (LENGTH TO SUIT)	1
W4	1/2"Ø GALVANIZED STEEL T-PIECE TO SANS 62	1
W5	1/2"Ø GALVANIZED STEEL DISTANCE PIECE TO SANS 62 (LENGTH TO SUIT)	1
W6	CONCRETE WASH TROUGH (ROCLA OR SIMILAR APPROVED)	1
W7	15mm PLASTIC TAP	1

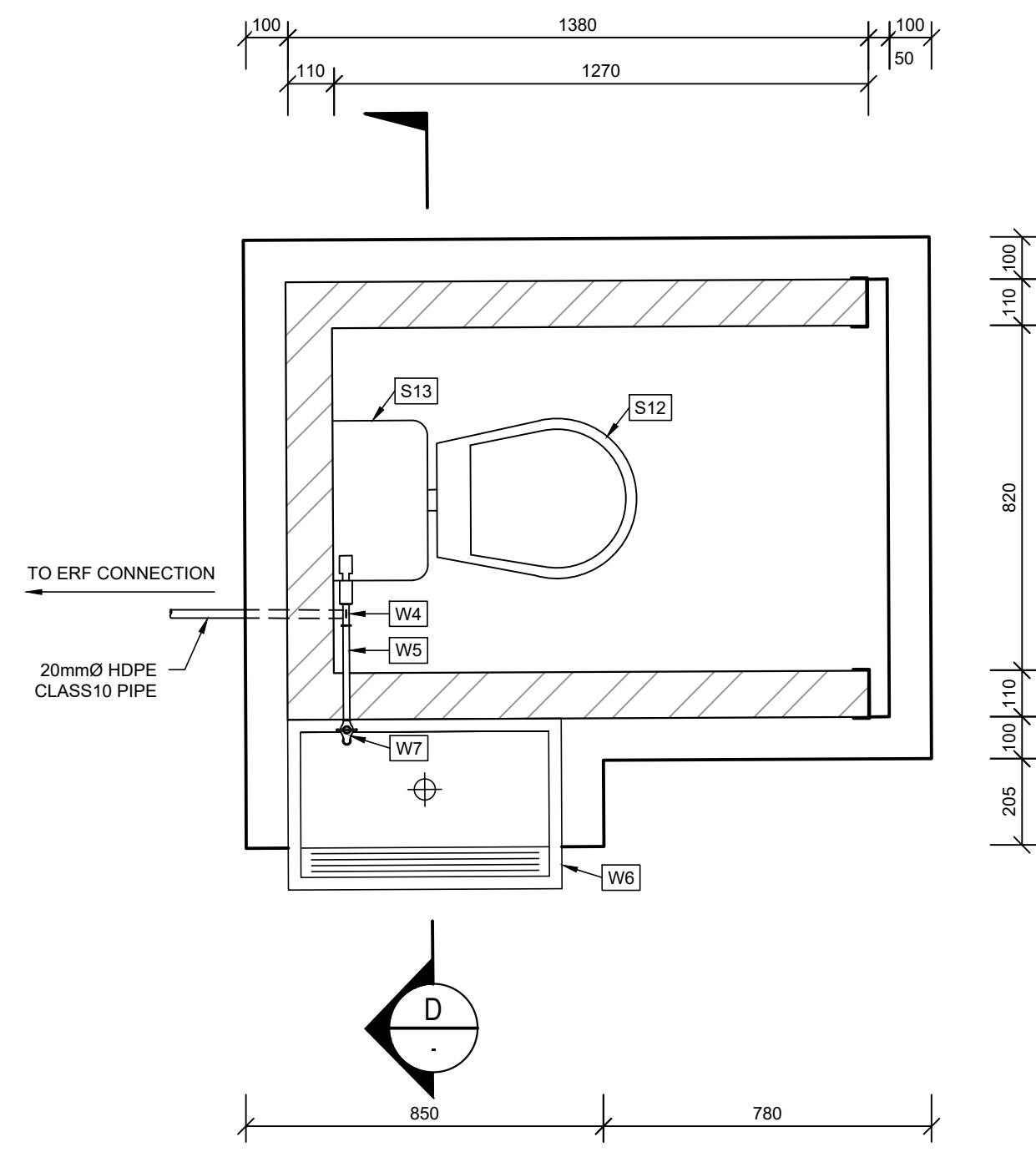
- NOTES:**
- FLOOR:** THE FLOOR MUST BE A 150mm THICK CONCRETE RAFT FOUNDATION (20MPa/19mm). THE TOP OF SLAB MUST BE 75mm ABOVE THE NGL AT THE HIGHEST POINT.
 - WALLS:** A 250µ DAMP PROOF COURSE MUST BE PROVIDED UNDER ALL EXTERNAL WALLS.
 - DOORS:** THE DOOR AND DOOR FRAME MUST BE PAINTED WITH 1 COAT OF UNDERCOAT AND 1 COAT OF ENAMEL PAINT IN ADDITION TO THE FACTORY PAINTED RED-OXIDE.
 - ROOF:** THE MINIMUM ROOF SLOPE IS 5.0°. PURLIN BEAMS MUST BE POSITIONED AS SHOWN IN SECTION-B. PURLINS MUST BE S.A.P. GRADE V5 PURLIN BEAMS. GALVANIZED STEEL WIRE MUST BE TAKEN UP ON EITHER SIDE OF THE PURLIN BEAM AND TWISTED TOGETHER, SO AS NOT TO HAVE ANY SLACK, AND MUST BE FIXED WITH A 75mm ROOF SCREW, COMPLETE WITH A BONDED WASHER.
 - ALL BOLTS, NUTS, BRACKETS, ETC. MUST BE CORROSION PROTECTED TO THE SATISFACTION OF THE ENGINEER.
 - MINIMUM COVER TO MESH REINFORCEMENT IS 50mm.



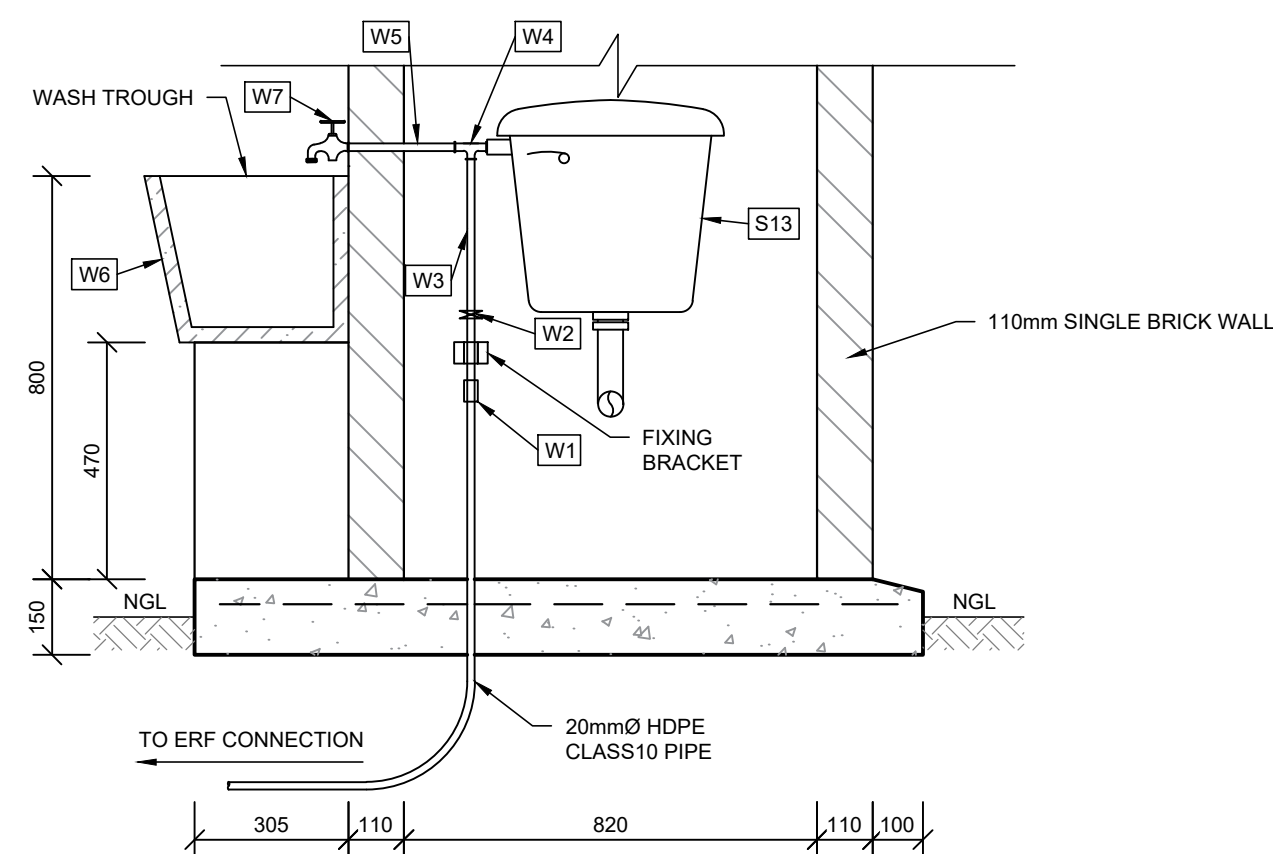
FOUNDATION PLAN
SCALE 1:15



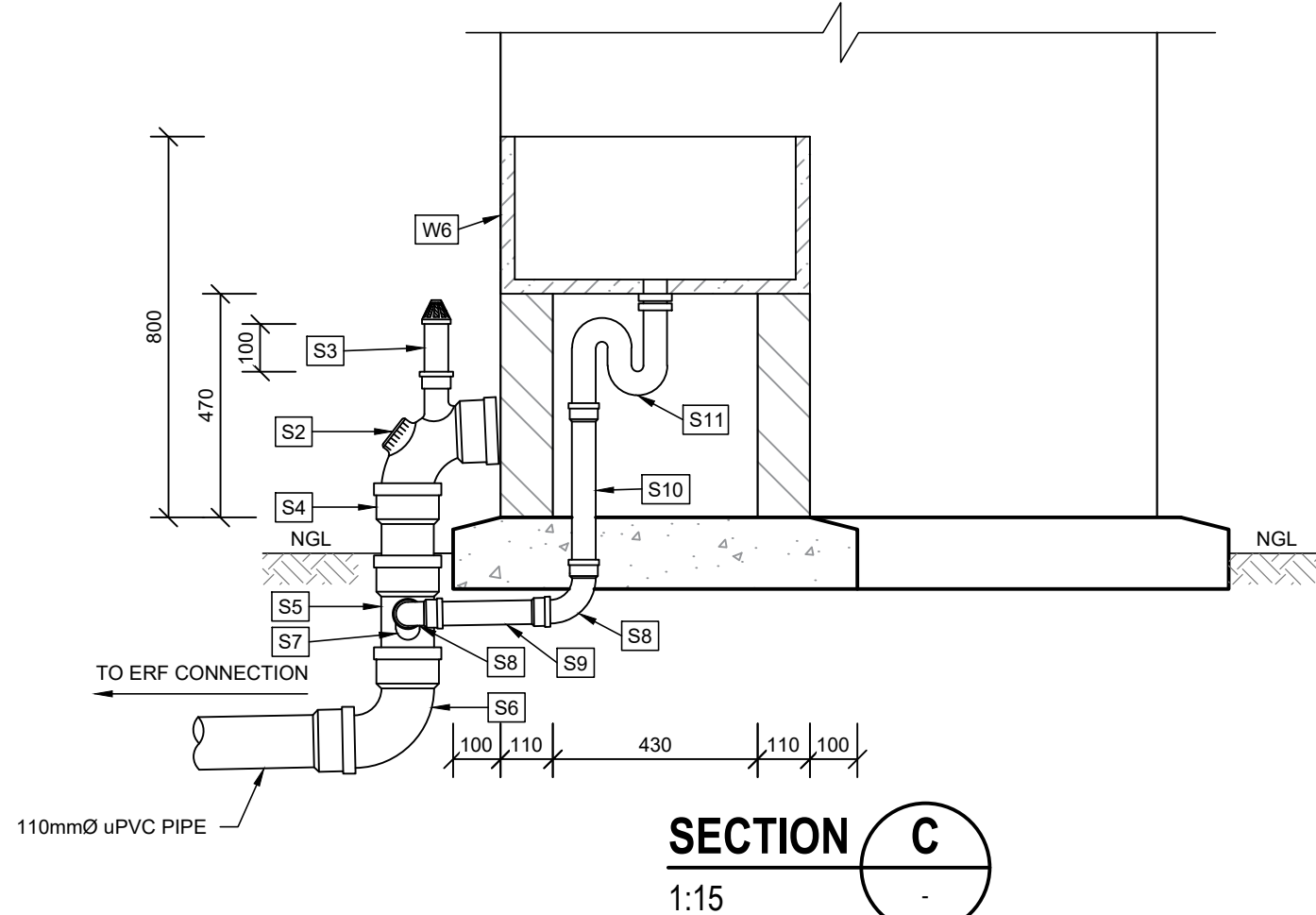
SECTION B
1:15



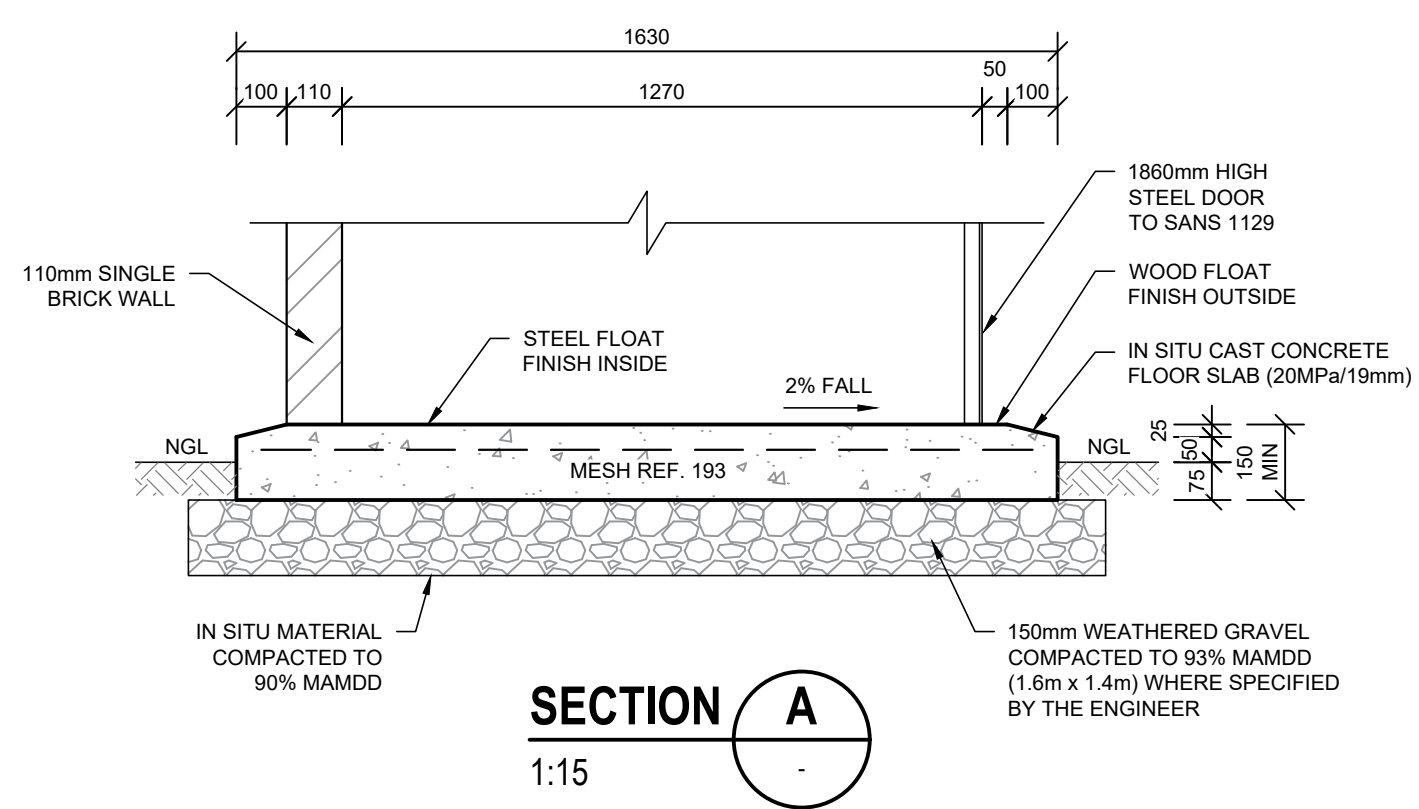
PLAN OF TOILET STRUCTURE
SHOWING WATER SUPPLY FITTINGS
SCALE 1:15



SECTION D
1:15



SECTION C
1:15



SECTION A
1:15

NOTES / LEGEND

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WESSELSBRON

DRAWING TITLE

TYPICAL TOILET
TOP STRUCTURE DETAILS

APPROVED BY BVI

JL REYNDERS

2020300701

2010/2025

ENGINEER/TECHNOLOGIST

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DESIGNED	DJ COETZEE	CHECKED	JL REYNDERS

SUITABILITY STATUS

REV. NO.

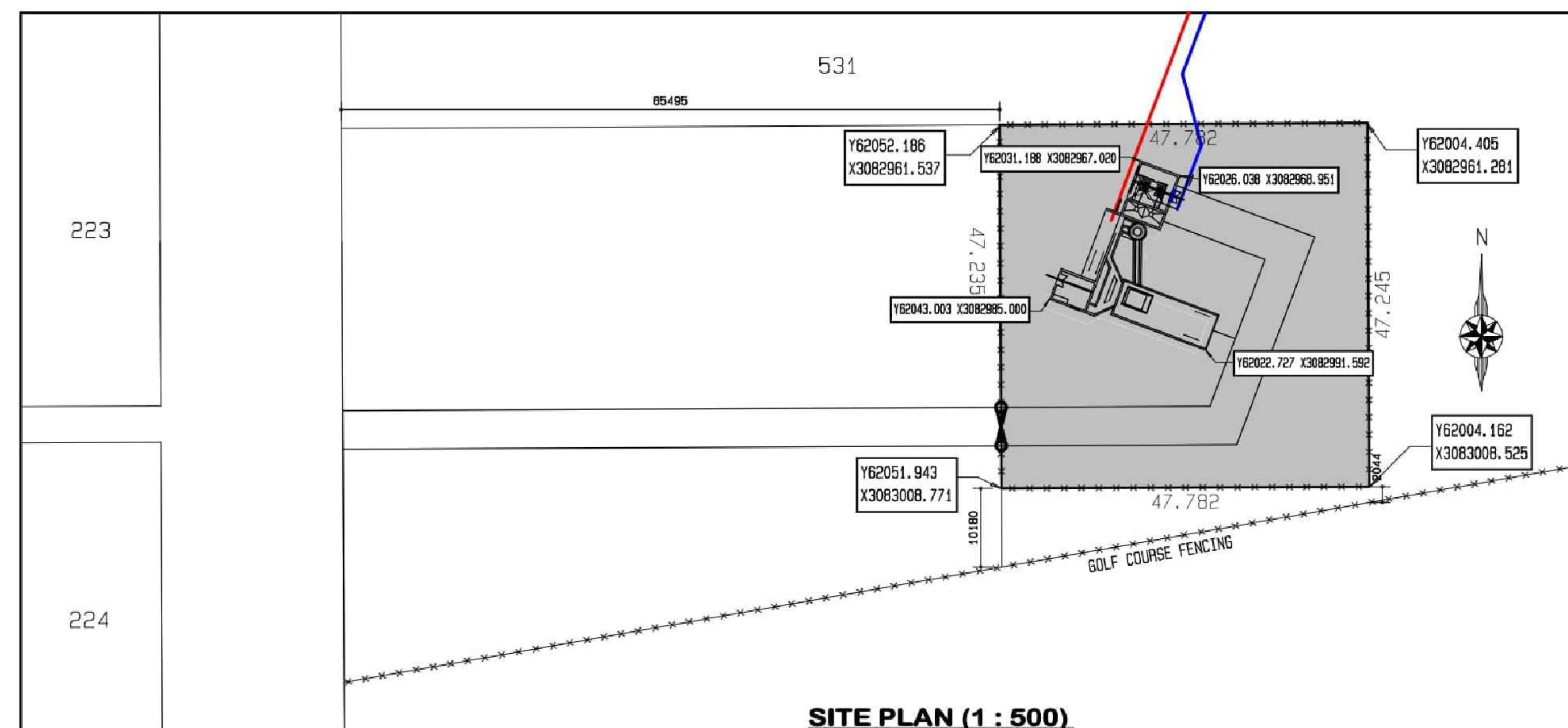
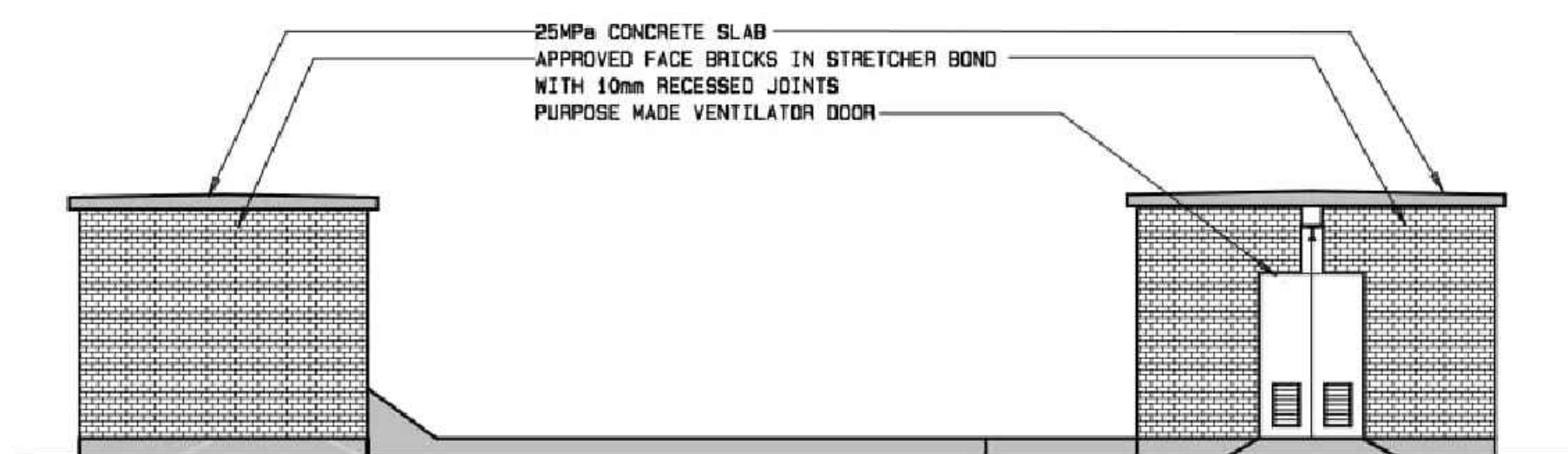
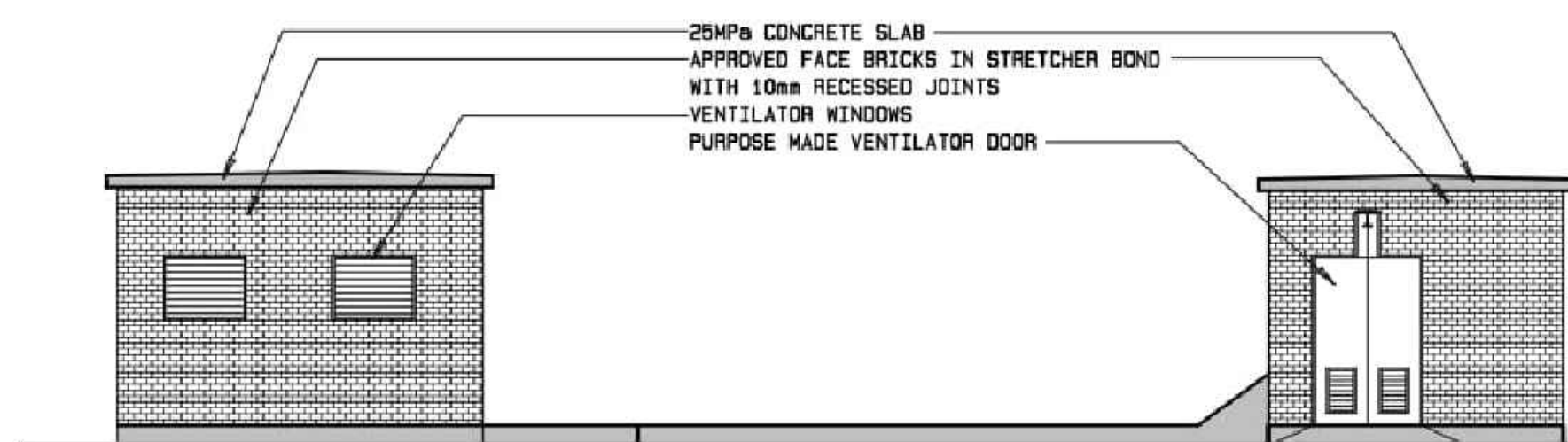
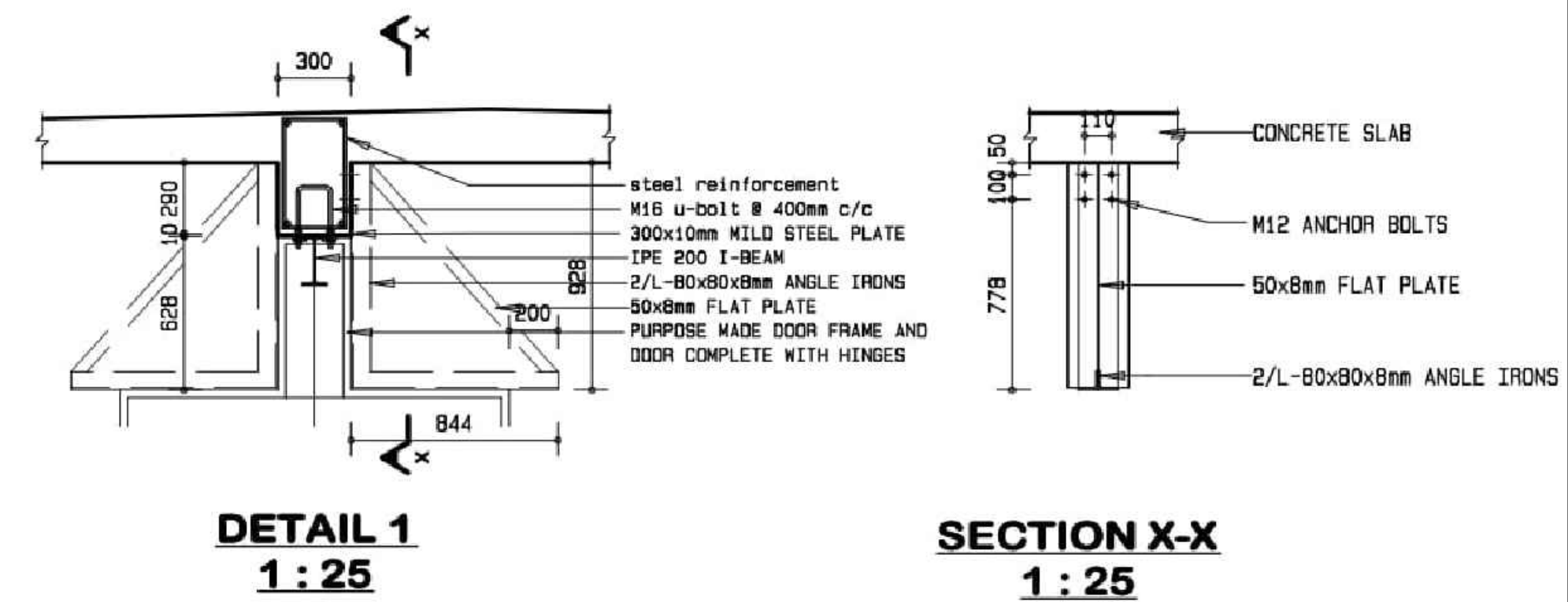
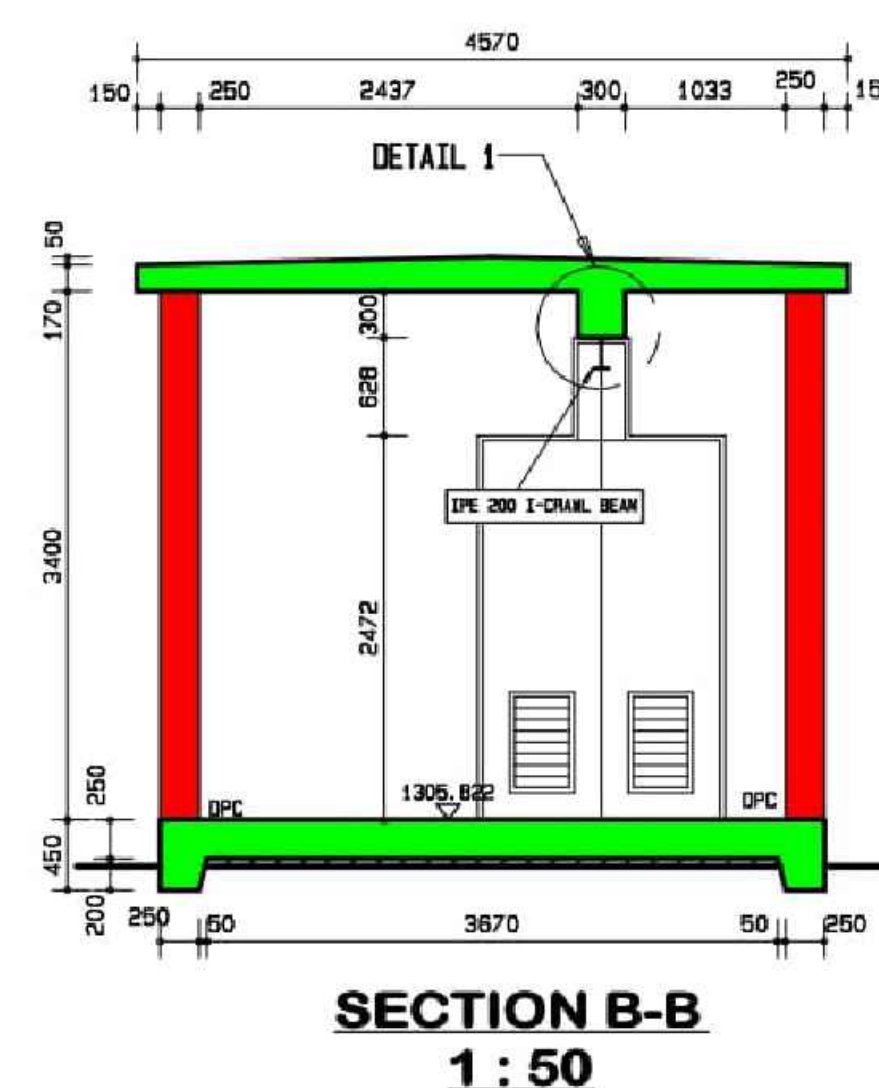
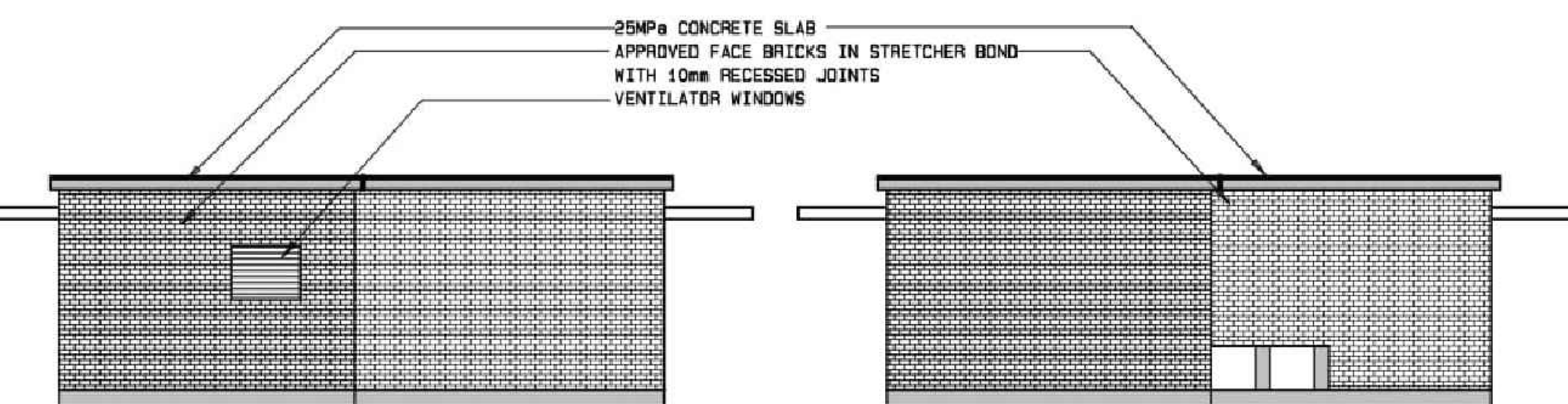
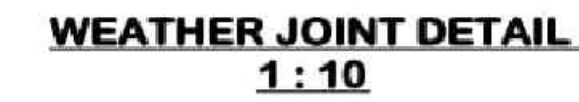
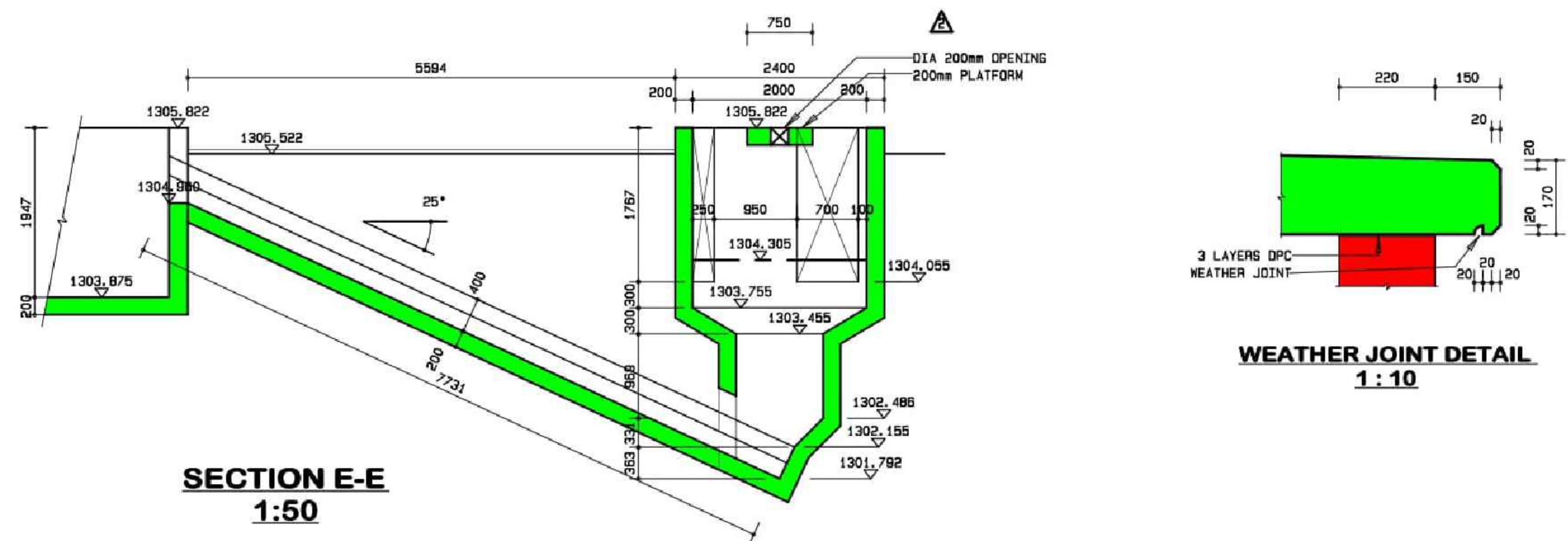
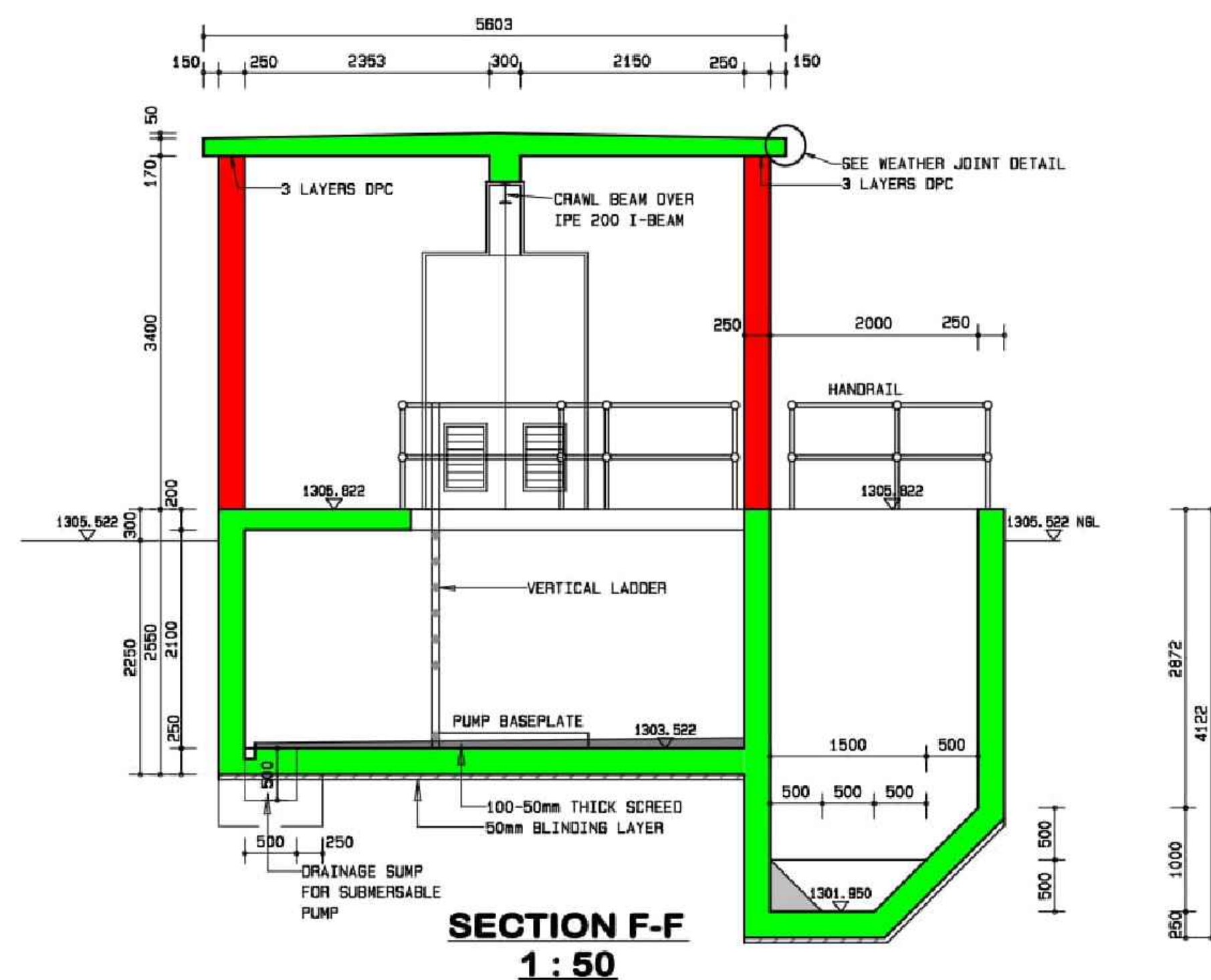
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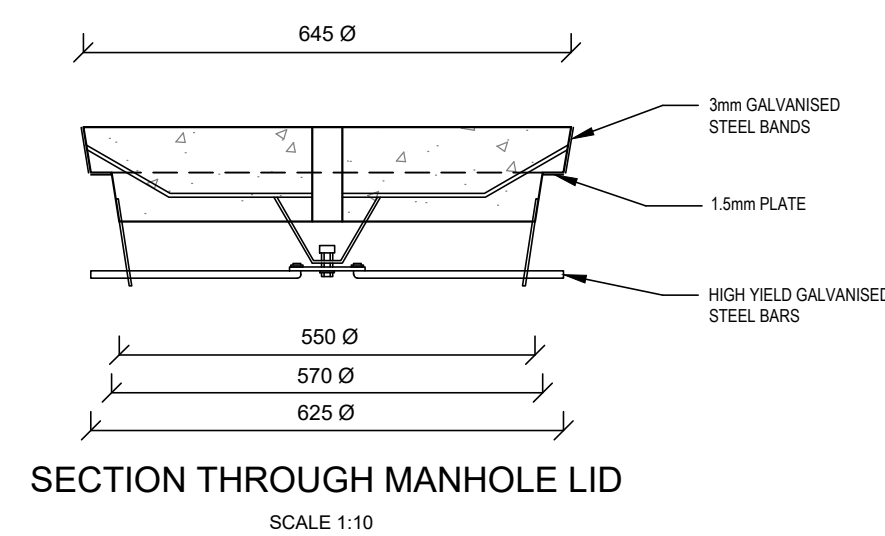
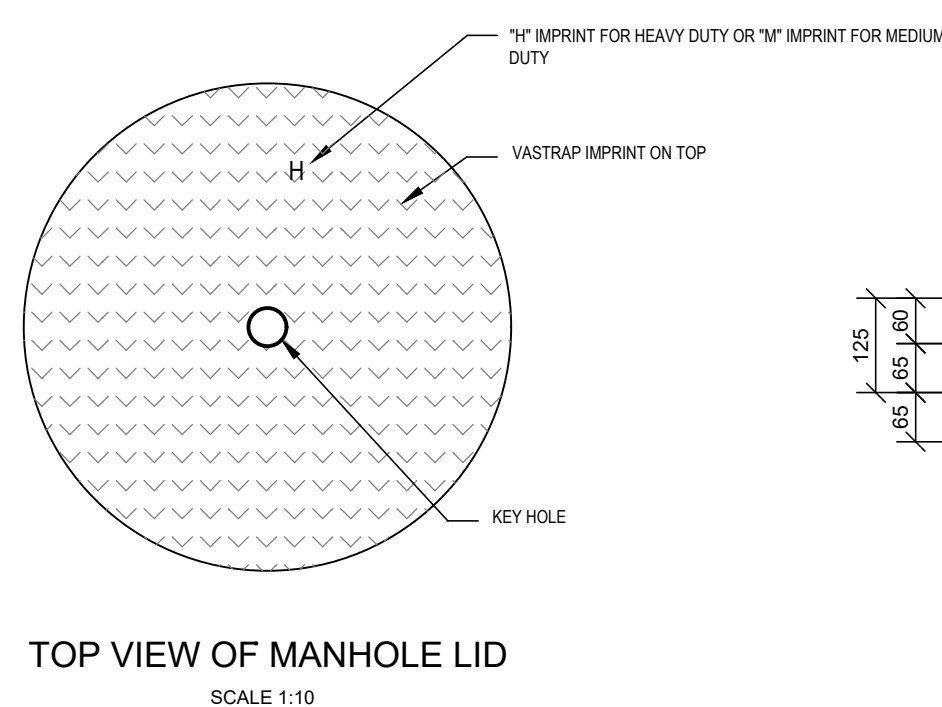
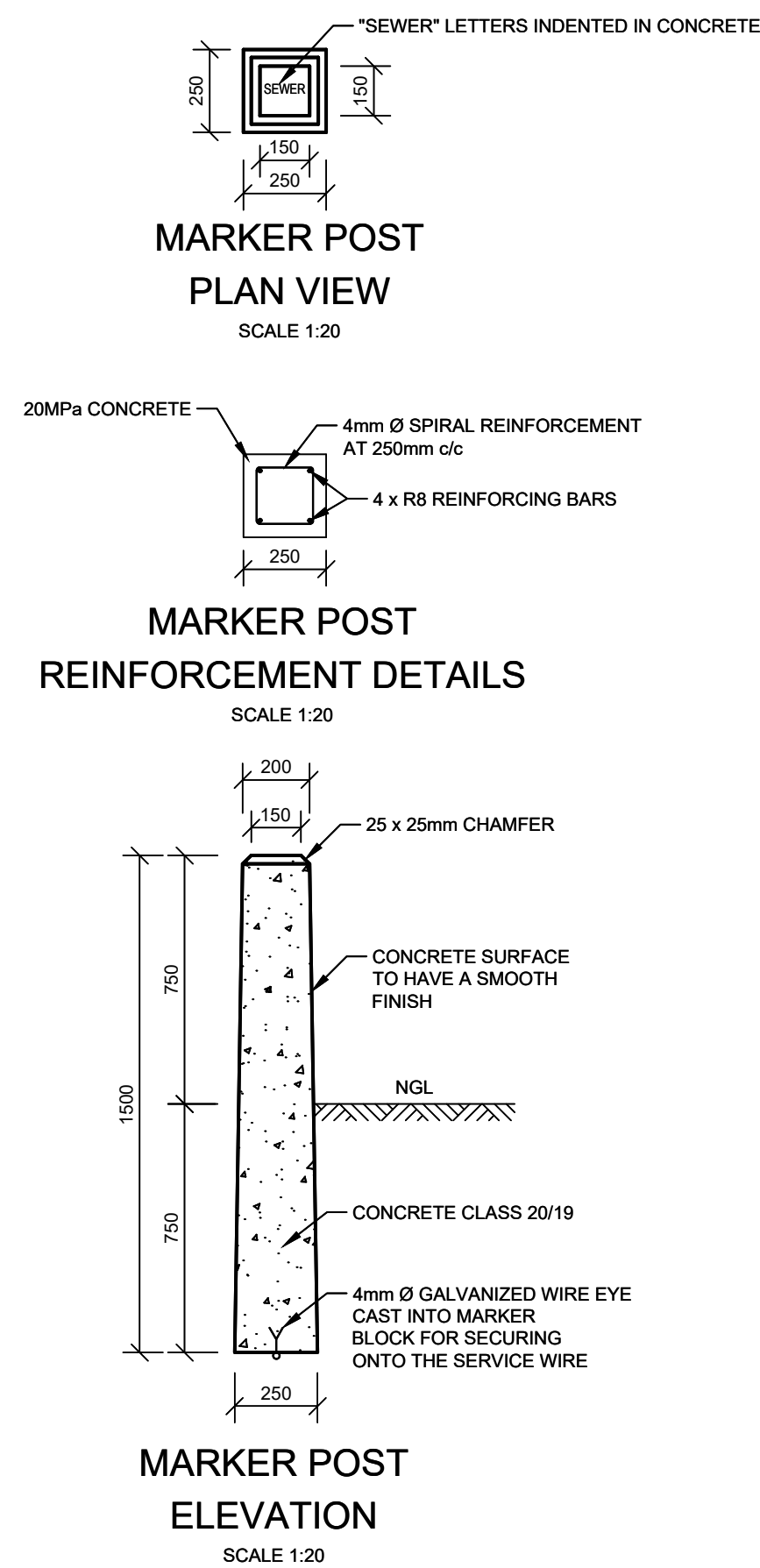
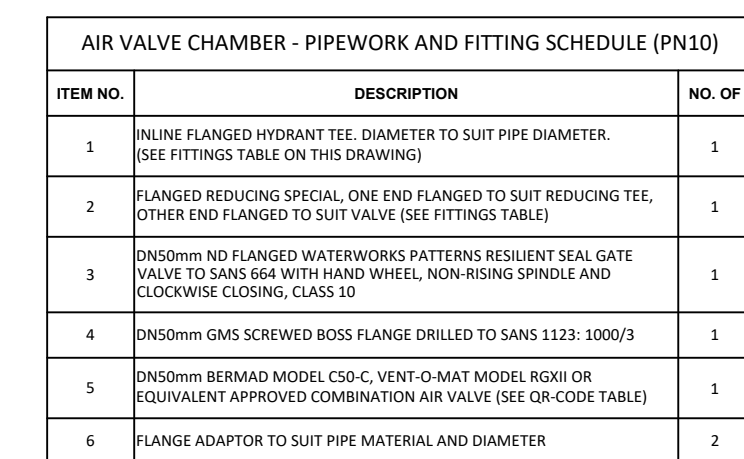
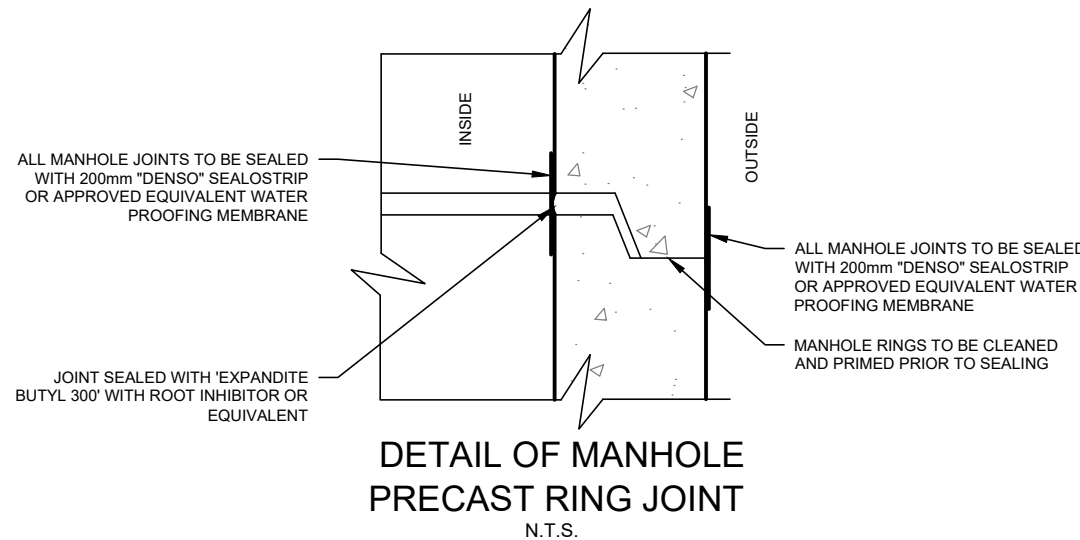
PLAN NUMBER

PROJECT NO. - ORIGIN - SYSTEM - LOCATION - TYPE - ROLE - DR. CODE - PHASE - SEQ. NO.

35431-BCN-ZZZ-00-DR-CIV-133-TS-005

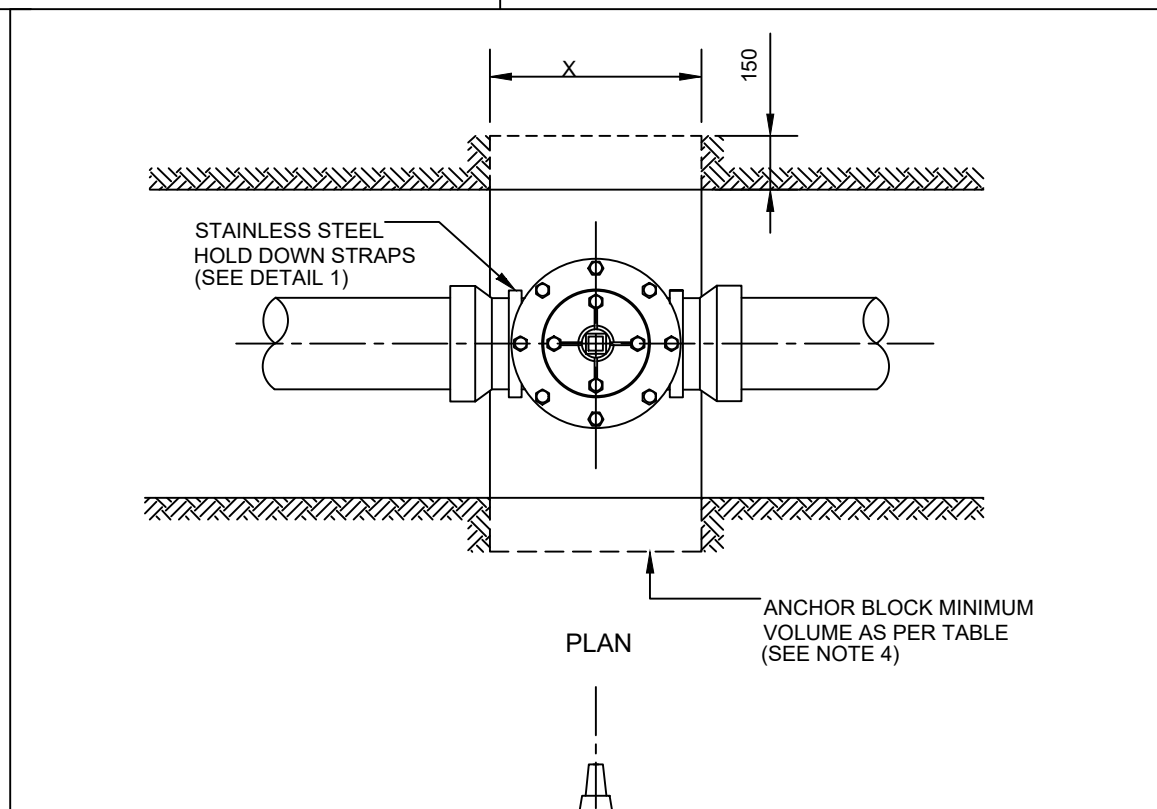
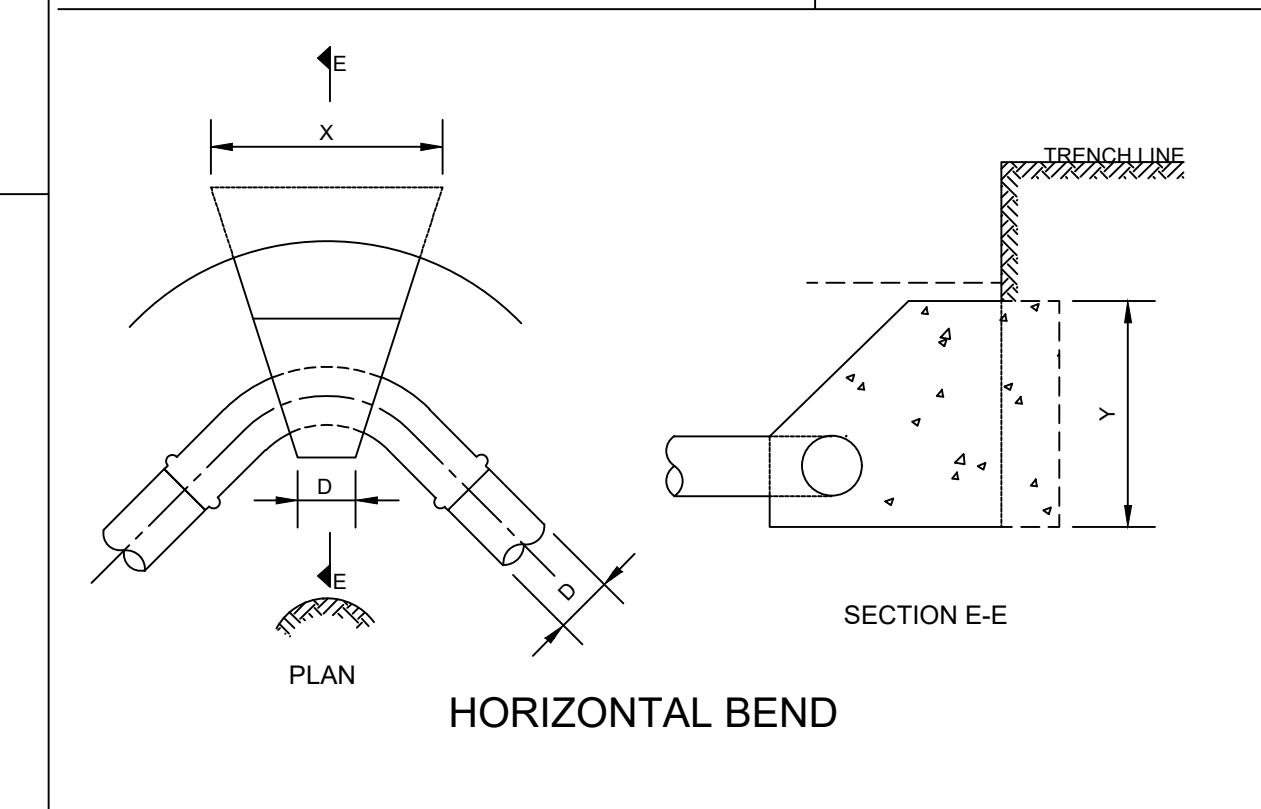
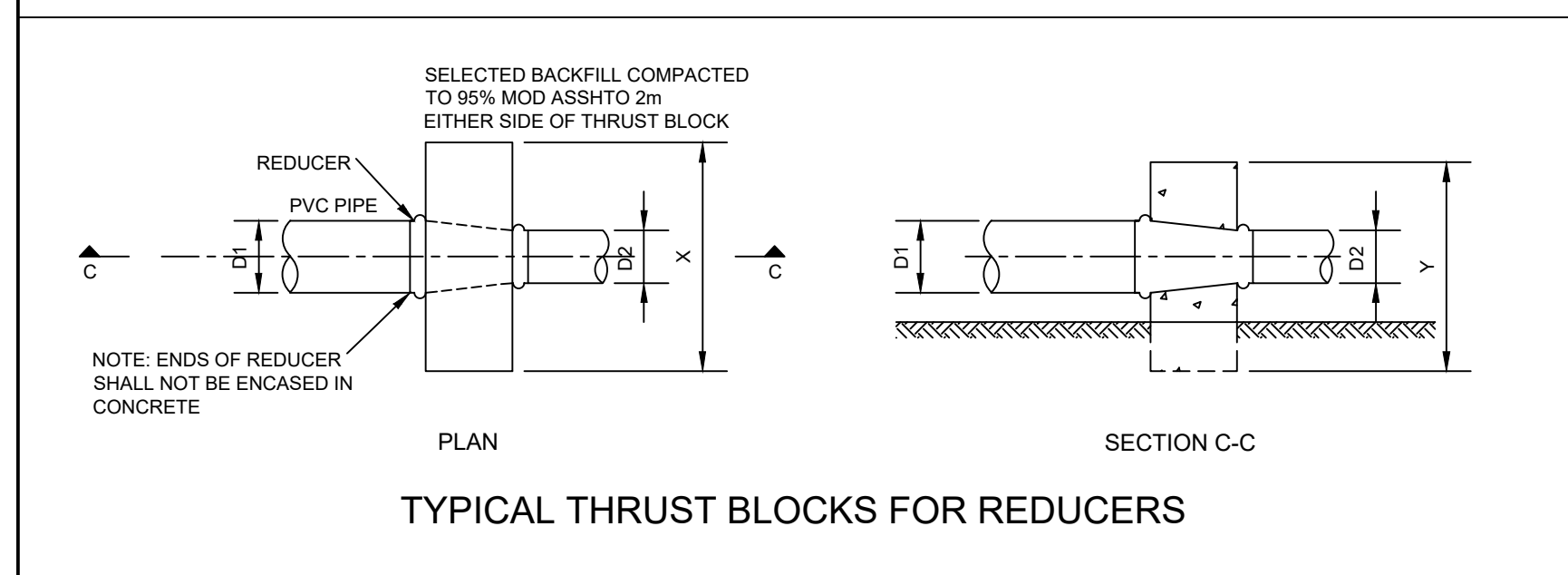
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- NOTES:**
1. CONCRETE FOR MANHOLES MUST BE OF OLIGOMERIC ORIGIN.
 2. FLEXIBLE JOINTS TO SANS 1001/1504 PIPES TO BE CLASS 400, HEAVY DUTY STRUCTURAL STEEL JOINTS OF 60 MM AND 300 MM PIPES TO BE FITTED WITH INTEGRAL JOINTS. JOINT CUFFS TO USE A RUBBER GASKET WITH 100% BUTYL RUBBER LINED JOINTS TO BE 100% FIBRE REINFORCED.
 3. FLEXIBLE JOINTS TO SANS 1001/1504 MANHOLES: ALL STANDARD PIPE JOINTS TO BE JOINTED WITH GASKETS & KIMBLEWRENCH COUPLINGS.
 4. JOINTS TO BE 100% BUTYL RUBBER LINED.
 5. AIR TEST ACCORDING TO CLAUSE 7.2 OF SANS 1020 LD MUST BE CARRIED OUT BETWEEN MANHOLES DURING THE FOLLOWING CONSTRUCTION:
 - i) AFTER THE PIPES HAVE BEEN Laid.
 - ii) AFTER THE INITIAL BACKFILLING HAS BEEN COMPLETED.
 6. THE AIR TEST BACKFILLING HAS BEEN COMPLETED OF A COMPLETE PORTION OF THE LINE AND IN ANY CASE/SAFE ARISING THE OUTCOME OF A WATER TEST WILL BE ENDING.
- TRENCHES**
- a) EXCAVATION AND BACKFILLING OF TRENCHES TO COMPLY WITH SANS 1020 LB.
 - b) REINFORCE PIPES TO COMPLY WITH SANS 1020 LB FOR FLEXIBLE PIPES.
 - c) TRENCHES DEEPER THAN 1.5m TO BE EXCAVATED IN V-SHAPED FOR TOP 1.5m AS SAFETY PRECAUTION, ONLY ON INSTRUCTION OF THE ENGINEER AS DETERMINED BY SITE AND BY THE IN-SITU MATERIAL.
 - d) TRENCHES TO BE PROTECTED BY SHIELDING CROSSINGS AS SHOWN ON THE TYPICAL PLAN PIPE BEDDING.
 - e) TRENCHES TO BE PROTECTED FROM STORMWATER INFLOW.
 - f) THE JOINT CUFFING MAY ONLY BE FILLED AFTER APPROVAL BY THE ENGINEER WITH GRADE 25/30 CONCRETE OR SUBSTANTIAL MATERIAL AS DIRECTED BY THE ENGINEER.
- MANHOLES**
- a) ALL CONCRETE, BRICKWORK AND REINFORCING SHALL COMPLY WITH SANS 1020 GA OR SANS 1020 GA AS APPLICABLE.
 - b) CONCRETE REINFORCING SHALL COMPLY WITH SANS 1024.
 - c) CONCRETE MANHOLE SECTIONS MUST BE FIXED WITH AN EPOXY RESIN TO COMPLY WITH EPIDURON 344 OR PROSTRUCT 687 OR SIMILAR APPROVED.
- CLASSES OF CONCRETE:**
- i) DESIGN CLASS: CONCRETE SECTIONS: 30/19
 - ii) DESIGN CLASS: 15/19
 - iii) ALL OTHER CONCRETE - 25/19
- CHAMBERS**
- Ø 300mm: 40% OLIGOMERIC CONCRETE / NUTEC CEMENT
 - Ø 300mm: 30% OLIGOMERIC CONCRETE / NUTEC CEMENT
 - Ø 300mm: 15% OLIGOMERIC CONCRETE / NUTEC CEMENT
 - Ø 300mm: 15% OLIGOMERIC CONCRETE / NUTEC CEMENT
- REINFORCING:**
- Ø 300mm: 30% OLIGOMERIC CONCRETE / NUTEC CEMENT
 - Ø 300mm: 15% OLIGOMERIC CONCRETE / NUTEC CEMENT
 - Ø 300mm: 15% OLIGOMERIC CONCRETE / NUTEC CEMENT
 - Ø 300mm: 15% OLIGOMERIC CONCRETE / NUTEC CEMENT
- FREEDOM: MIN. 100mm FOR OUTLET SEWERS OR IN RURAL AREAS.**
- REINFORCING:** REINFORCING TO BE SEALED WITH A 20mm CHAMBER REPEATED MORTAR SUCH AS FONDUCI CEMENT OR SIMILAR APPROVED.
- CLEANING:** MANHOLE IN TOTAL BUT THE CHAMBERS IN PARTICULAR MUST BE RUBBED AND CLEANED OUT PROPERLY TO A SMOOTH FINISH BEFORE THE MANHOLE WILL BE INSPECTED FOR QUALITY.

35431-BCN-ZZZ-00-DR-CIV-133-TS-009



NOTE: FOR THRUST BLOCK SIZES FOR REDUCERS
REFER TO NOTE 12.



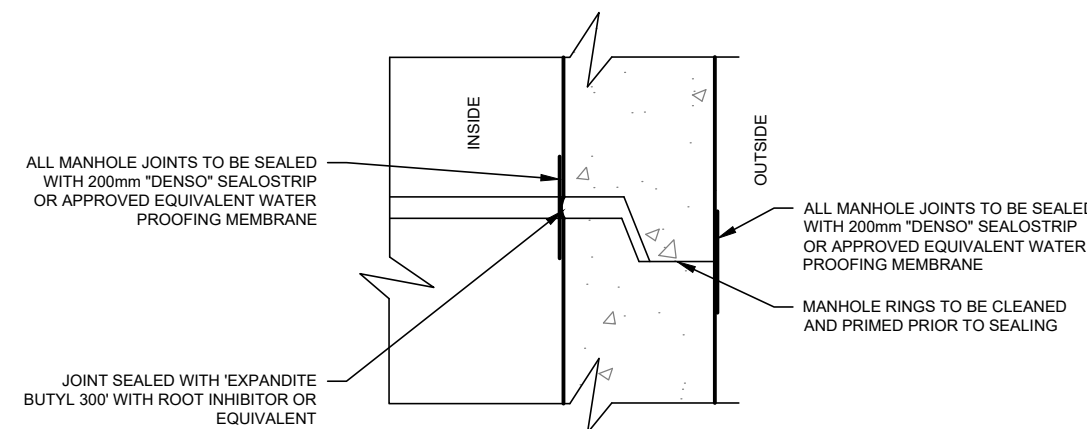
- | RECOMMENDED MANHOLE SIZES | | |
|---------------------------|-----------------------------|---------------------------------|
| MANHOLE SIZE | RECOMMENDED PIPE SIZE RANGE | RECOMMENDED MANHOLE DEPTH RANGE |
| 1000mm Ø | 100 - 350mm | UP TO 2.0m |
| 1200mm Ø | 350 - 500mm | 2.1 - 3.0m |
| 1500mm Ø | 500 - 800mm | 3.1 - 4.0m |
| 1800mm Ø | >800mm | >4.0m |



The diagram illustrates the correct sealing procedure for manhole joints. It shows a cross-section of a manhole structure with an 'INSIDE' face and an 'OUTSIDE' face. The 'INSIDE' face shows a joint where a '200mm "DENSOL" SEAL STRIP' is applied over a 'PROOFING MEMBRANE'. A callout points to the joint, stating: 'ALL MANHOLE JOINTS TO BE SEALED WITH 200mm "DENSOL" SEAL STRIP OR APPROVED EQUIVALENT WATER PROOFING MEMBRANE'. The 'OUTSIDE' face shows the same joint with the seal strip applied to the exterior. A callout points to the rings, stating: 'ALL MANHOLE JOINTS TO BE SEALED WITH 200mm "DENSOL" SEAL STRIP OR APPROVED EQUIVALENT WATER PROOFING MEMBRANE'. Another callout points to the rings, stating: 'MANHOLE RINGS TO BE CLEANED AND PRIMED PRIOR TO SEALING'. A third callout points to the joint, stating: 'JOINT SEALED WITH "EXPANDITE BUTYL 300" WITH ROOT INHIBITOR OR EQUIVALENT'.

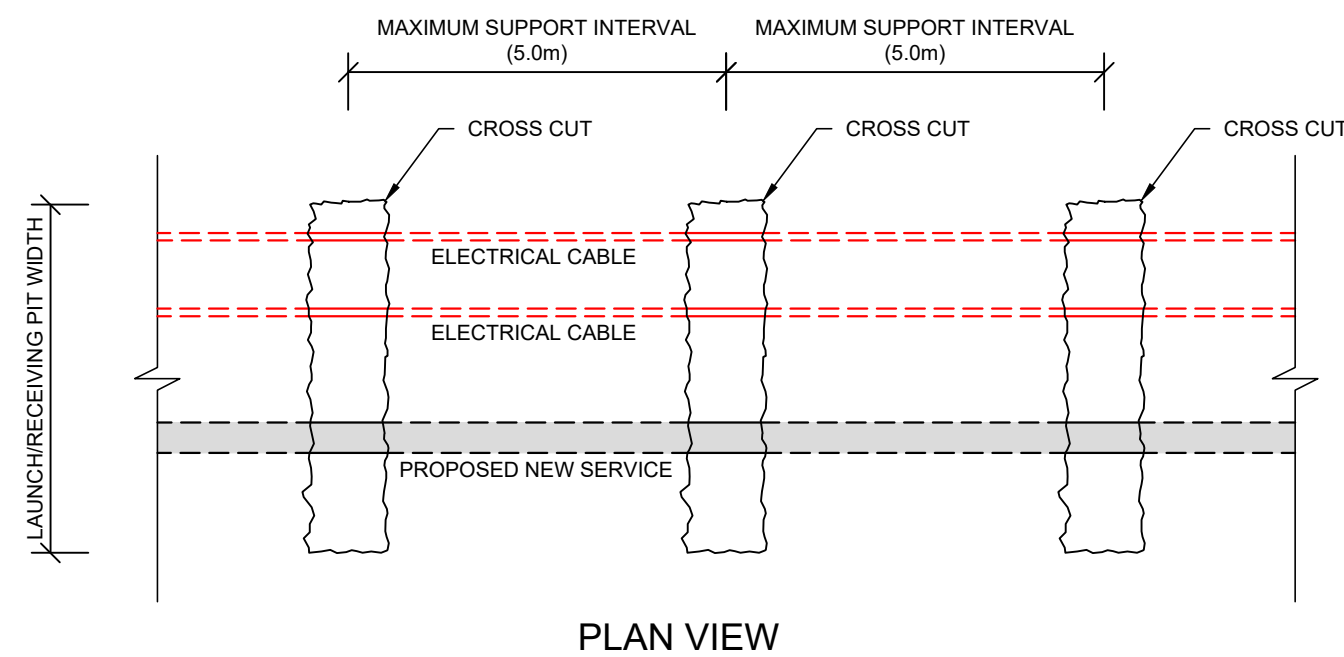


TYPICAL MANHOLE PROTECTION GRID (MPG) SIZES	
NOMINAL MPG SIZE	NO. OF SUPPORTING LEGS
1000mm Ø	4
1250mm Ø	4
1500mm Ø	6
1800mm Ø	6
1950mm Ø	6

[illegible]

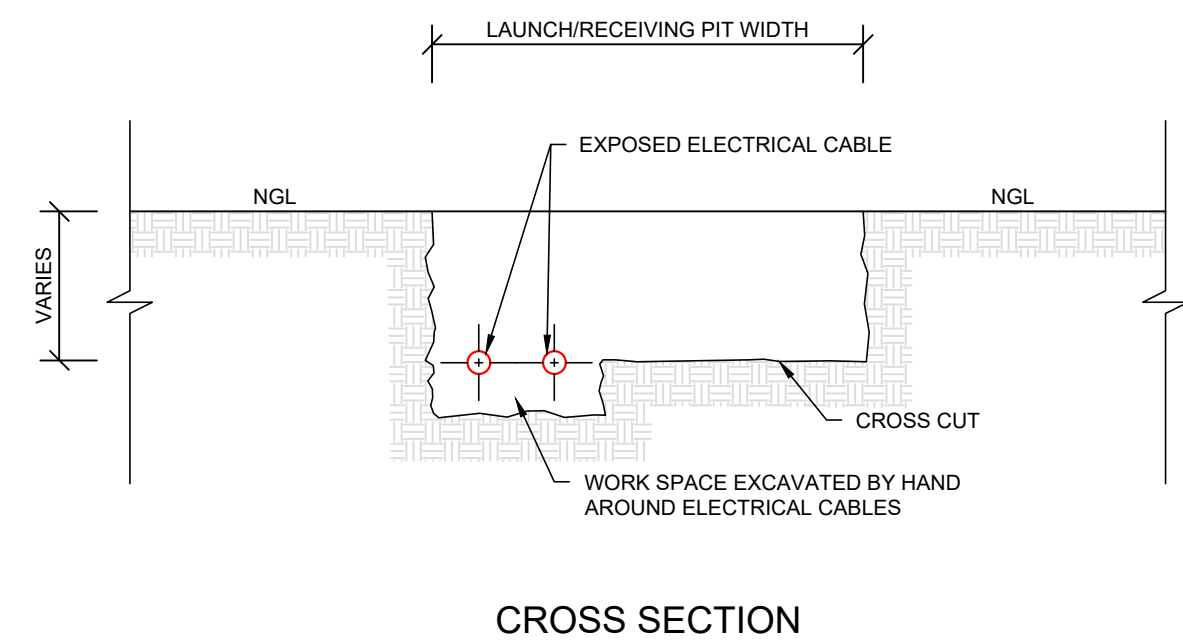
THE ELECTRICAL CABLE EXPOSING AND PROTECTION PROCESS DURING EXCAVATIONS

STEP 1 **EXPPOSE ELECTRICAL CABLES** - After all cables have been detected, identified and marked, and before any trench excavations take place, the contractor must carefully excavate cross-cut trenches by hand at 5.0m intervals perpendicular to the direction of the new services that are being installed, to expose all the electrical cables along the service route. After all cables are exposed, the wayleaves process should be followed, as per the Wayleaves Notes on this drawing.

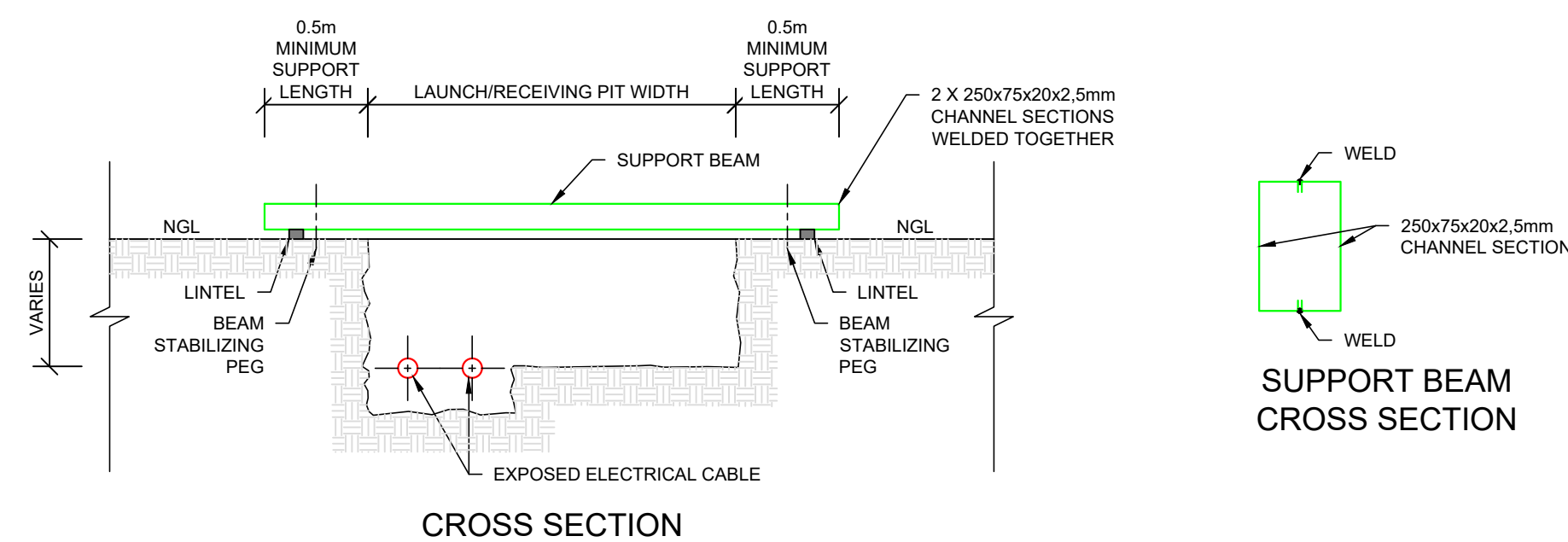


STEP 2 **CREATE WORK SPACE AROUND EXPOSED CABLES** - Once the wayleaves application has been approved, the contractor must excavate around the cables by hand to create work space for the cable supports.

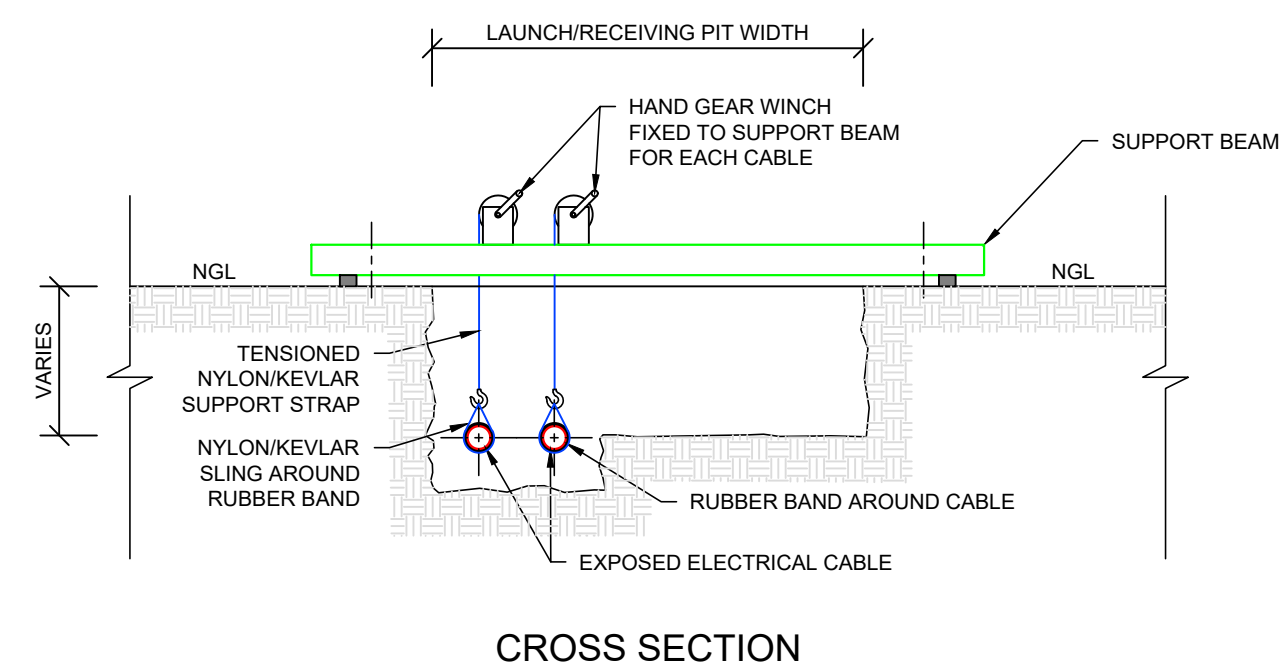
IMPORTANT NOTE: If any cable joints are uncovered, the MLM Electrical Department must be contacted immediately to arrange for a shut-off of the electricity before any further work takes place.



STEP 3 **INSTALL SUPPORT BEAMS** - After the contractor has created work space around the cables, support beams must be installed at 5.0m intervals or as dictated by the site conditions. The beams must have a minimum support length of 0.5m on each side and must be pegged into the ground to stabilize and secure them in place. The beams should be made of 2 X 250x75x20x2,5mm channel sections welded together and should be placed on lintels, as per the sketch below.

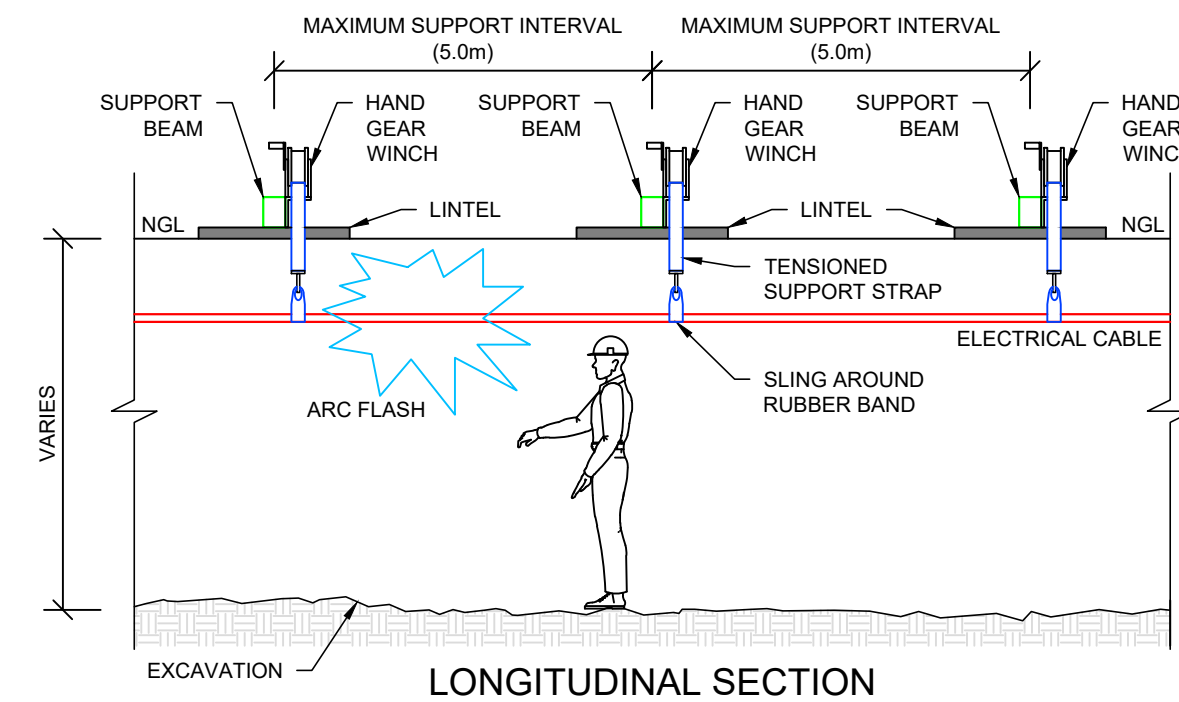


STEP 4	STRAP AND TENSION - After the support beams are secured in place, a hand gear winch with a nylon/kevlar strap should be fixed onto the support beam for each cable that is to be supported. Each winch and strap must be able to handle a minimum of 500kg. Each electrical cable must then be wrapped with a rubber band at every support point to protect the cable. Thereafter, a kevlar/nylon sling must be placed around the rubber band, hooked to the winch strap and tensioned to ensure the cable is fully supported. Alternative methods can also be used to secure the cable in place, but should be submitted to the engineer for review and approval before being used.
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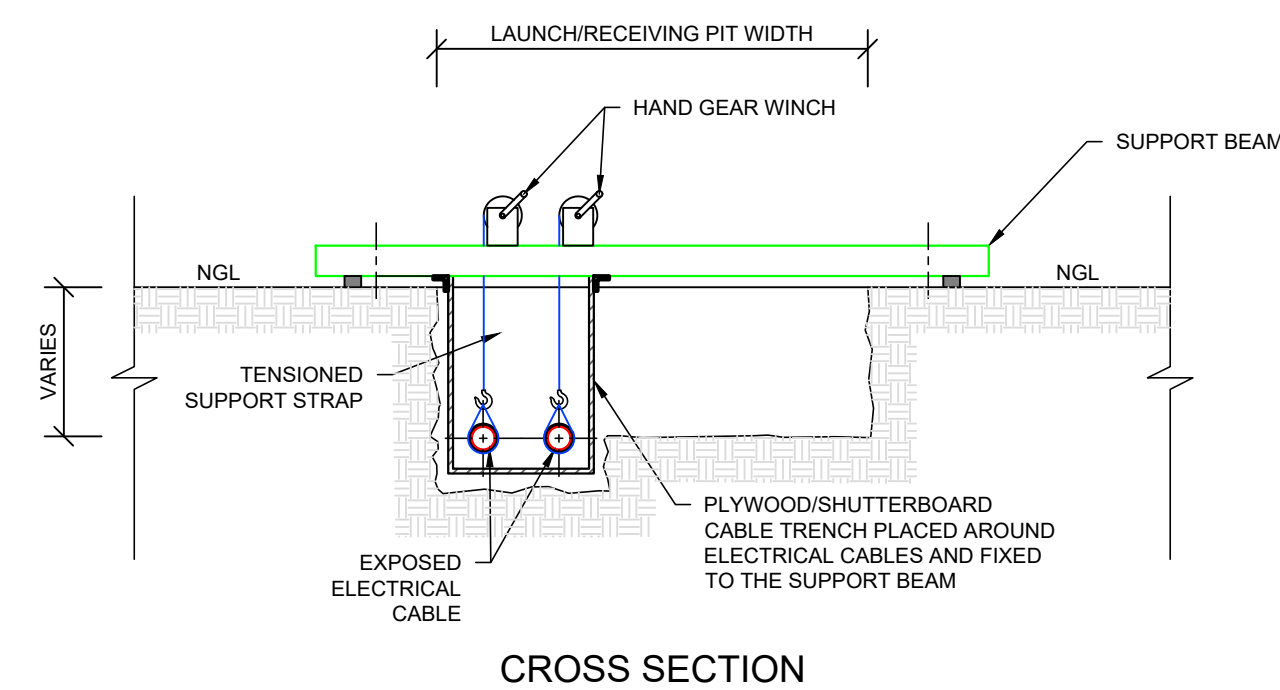


THE ELECTRICAL CABLE EXPOSING AND PROTECTION PROCESS DURING EXCAVATIONS (CONTINUED)

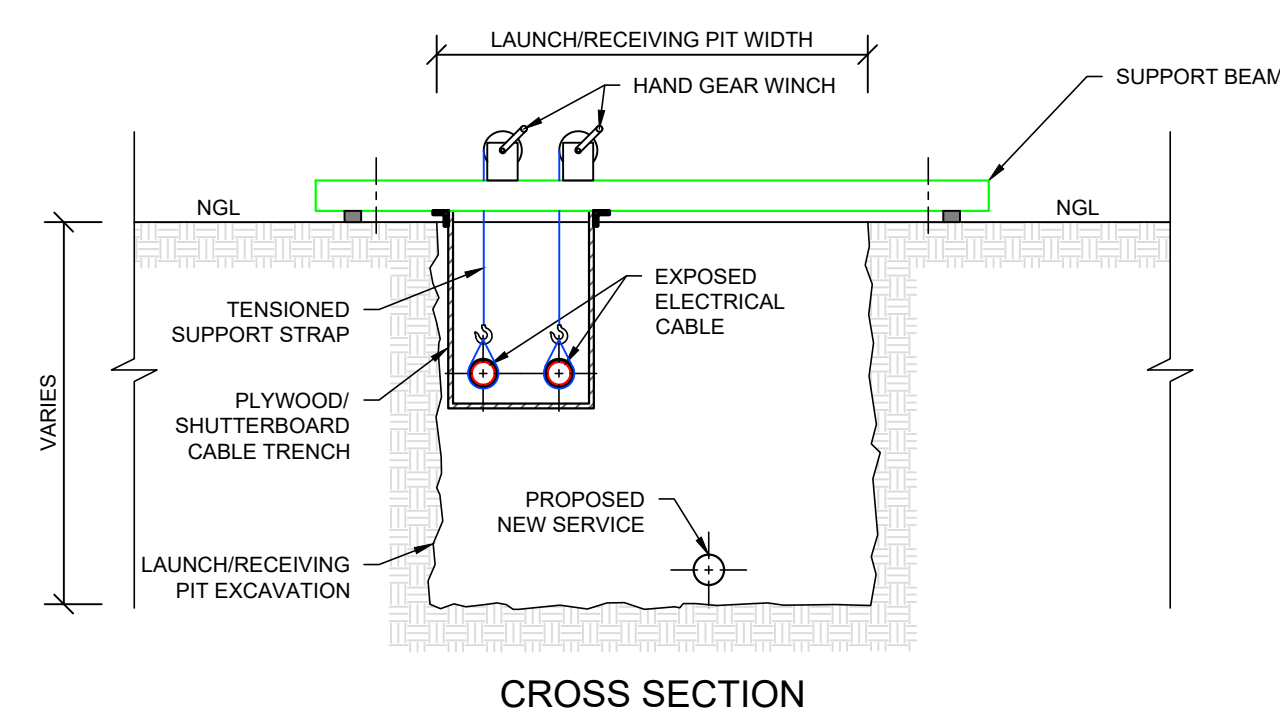
STEP 5a **ARC FLASH PROTECTION** - To protect the contractor from possible hazardous arc flashes, arc flash protection measures must be used to isolate the electrical cables from any persons working in the trenches. The specific arc flash protection measures that are taken can be determined by the contractor, but must be signed off by a professionally registered engineer. Some examples are provided in the steps below as guidance.



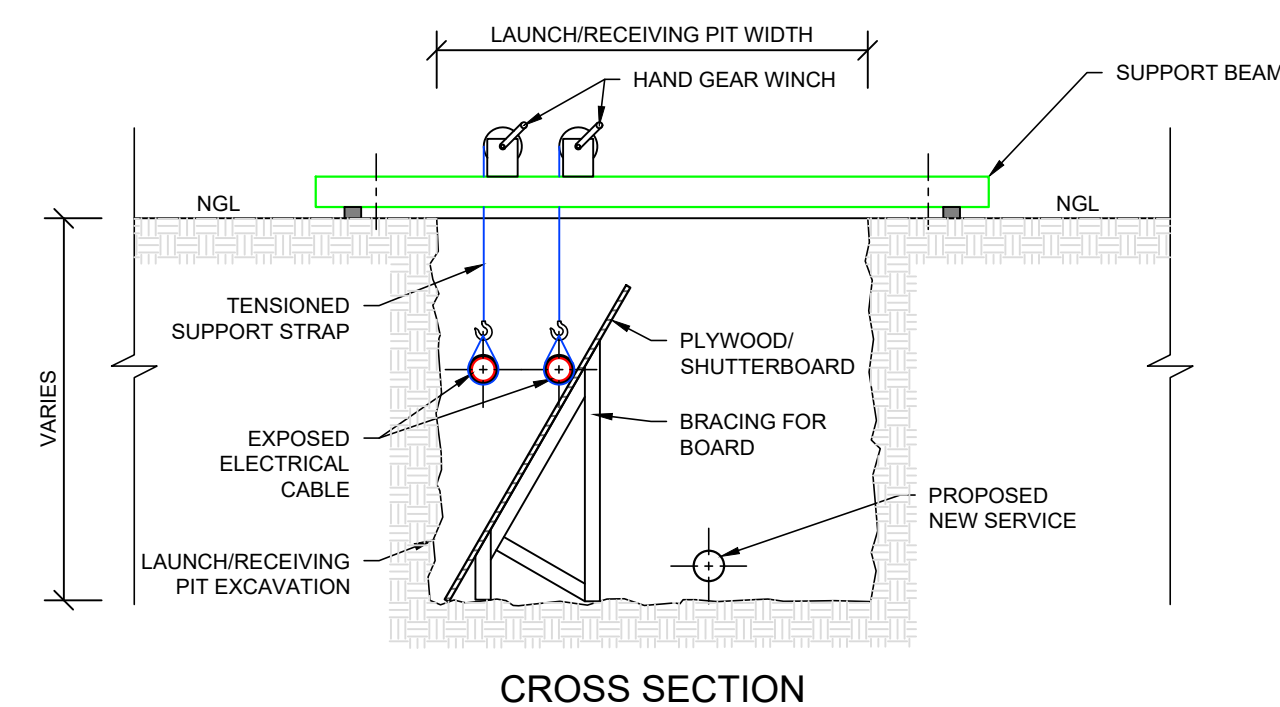
STEP 5b	ARC FLASH PROTECTION BEFORE TRENCH EXCAVATION - Arc flash protection measures can be placed before the main excavations take place. This method is recommended, as it has the added benefit of providing additional protection of the electrical cables during excavation. The proposed method, as per the sketch below, is to create a plywood/ shutterboard channel that is placed around the electrical cables and fixed to the support beams to serve as a temporary cable trench and provide a barrier between the work area and the electrical cables.



STEP 6a **TRENCH EXCAVATION** - After all electrical cables have been securely supported, the contractor can commence with trench excavations up to the levels required for the new services to be installed.



STEP 6b **ARC FLASH PROTECTION AFTER TRENCH EXCAVATION** - Alternatively, the contractor may opt to place arc flash protection after trench excavations have been completed, before workers start working in the trench. The sketch below shows an example using a plywood/shutterboard sheet that is braced and placed to isolate the electrical cables from the work area. The specific arc flash protection measures that are taken can be determined by the contractor, but must be signed off by a professionally registered engineer.

TABLE 1:
SUPPORT INTERVALS

LAUNCH/ RECEIVING PIT WIDTH	MAXIMUM SUPPORT INTERVAL
> 5.0m	5.0m
4.0m - 5.0m	6.0m
3.0m - 4.0m	7.0m
2.0m - 3.0m	8.0m
< 2.0m	10.0m

WAYLEAVES NOTES:

1. Once the contractor has completed the cross-cut excavations and exposed the electrical cables, the contractor should take photos to document all the cables that were encountered.
2. The contractor should then send a request to the MLM surveyor (with 1 week's notice) to record the coordinates and levels of the electrical cables, or the contractor can use their own registered surveyor for this.
3. The contractor should also send the photos and surveyed electrical cables to the engineer.
4. A wayleave application should then be submitted to the MLM Electrical Dept.
5. The cross-cut excavations should then be backfilled to protect the services, until the wayleave application has been approved.

NOTES / LEGEND

APPROVED BY COUNCIL / CLIENT

CITY ENGINEER / CLIENT	REG. NO.	DATE
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REVISION CODES	SUITABILITY CODES
A,B,C... : BEFORE TENDER	IFI : ISSUED FOR INFORMATION
T0, T1, T2... : FOR TENDER	FAC : FOR ACCEPTANCE CONTROL
0, 1, 2... : CONSTRUCTION	IFR : ISSUED FOR REVIEW
Z : AS-BUILT	IFC : ISSUED FOR CONSTRUCTION
	ASB : AS-BUILT

DRAWING REVISION

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BVI CONSULTING ENGINEERS



• ENGINEERING • PROCUREMENT • MANAGEMENT

Registration no. 1998/000185/07

CLIA



PROJECT NAME

NALA LOCAL MUNICIPALITY:
THE REFURBISHMENT OF SEWER
PUMP STATION AND ERADICATION
OF 250 BUCKETS IN EXT. 12 & 13 IN
WESSELSBRON

DRAWING TITLE

TYPICAL ELECTRICAL CABLE EXPOSING AND PROTECTION METHODOLOGY

APPROVED BY BVI

JL REYNDERS 2020300701 20/10/2025

ENGINEER/TECHNOLOGIST REG. NO. DATE

SCALE	AS SHOWN @ A1	DRAWN	DJ COETZEE
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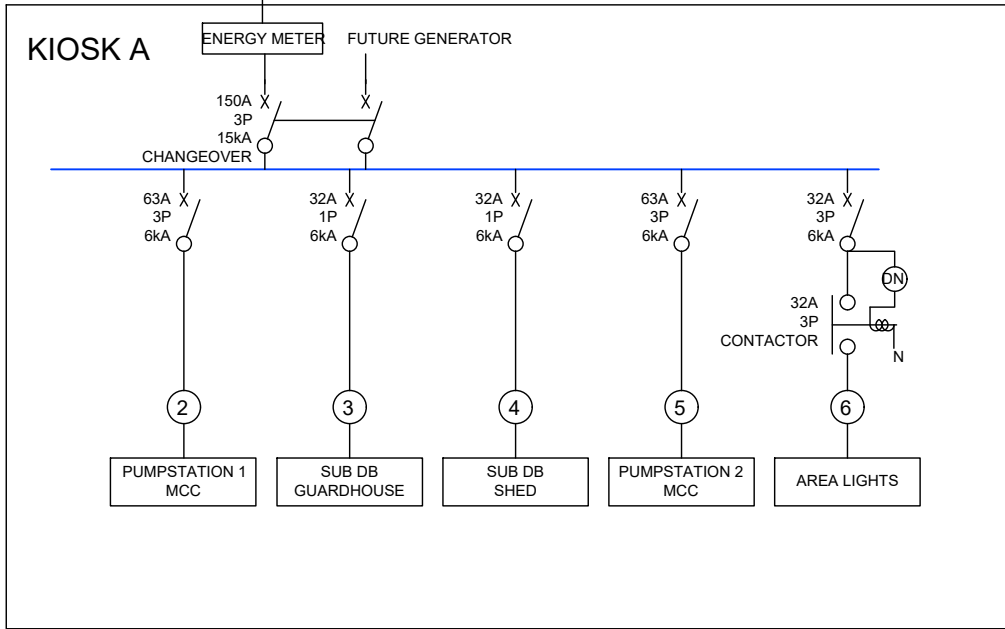
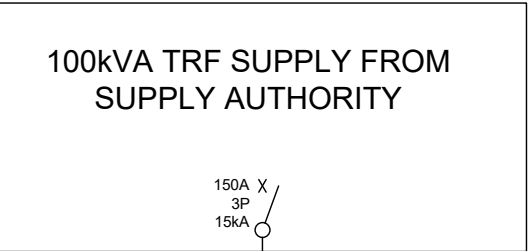
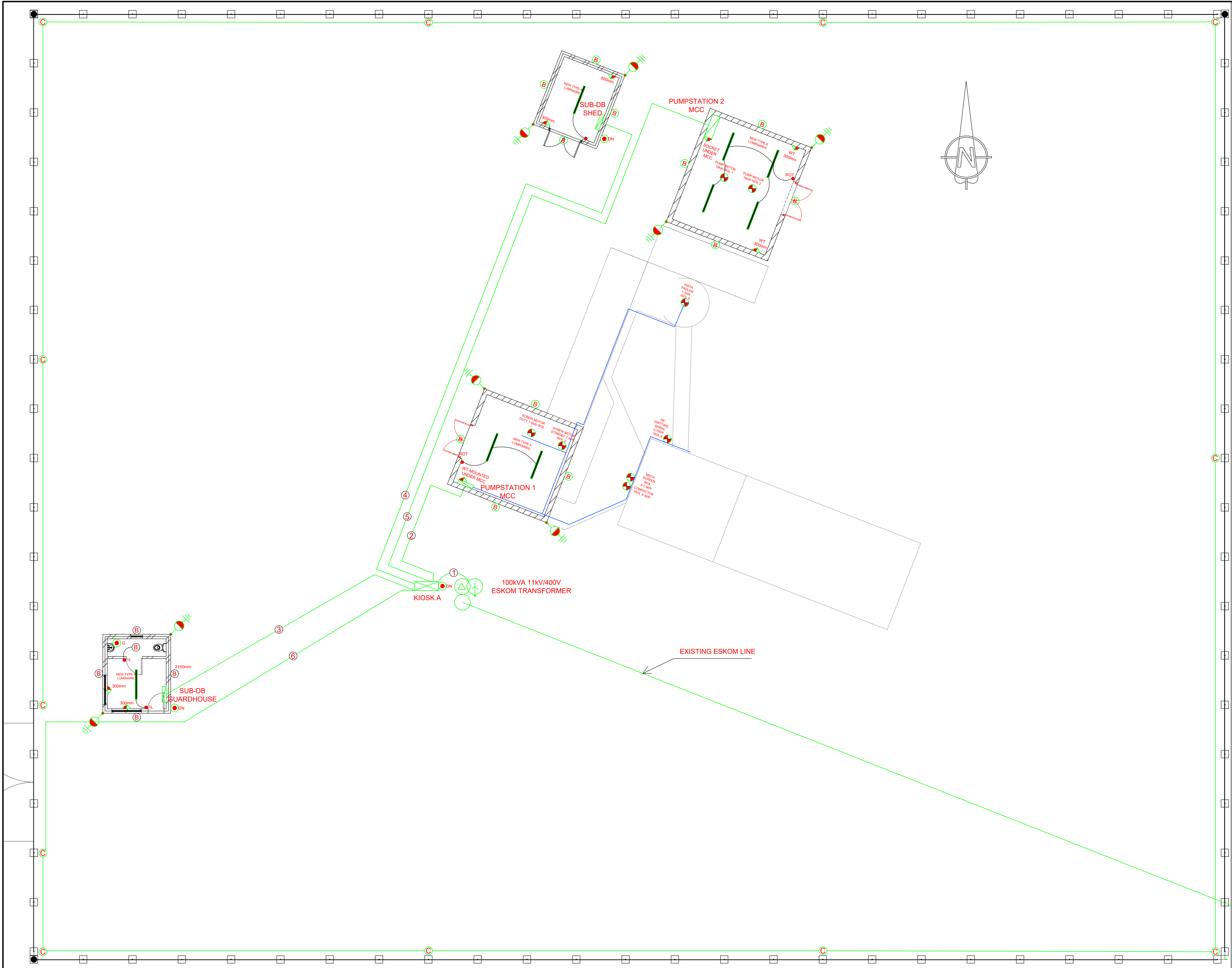
DESIGNED	DJ COETZEE	CHECKED	JL REYNDERS
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SUITABILITY STATUS		REV. N
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ISSUED FOR TENDER	T0
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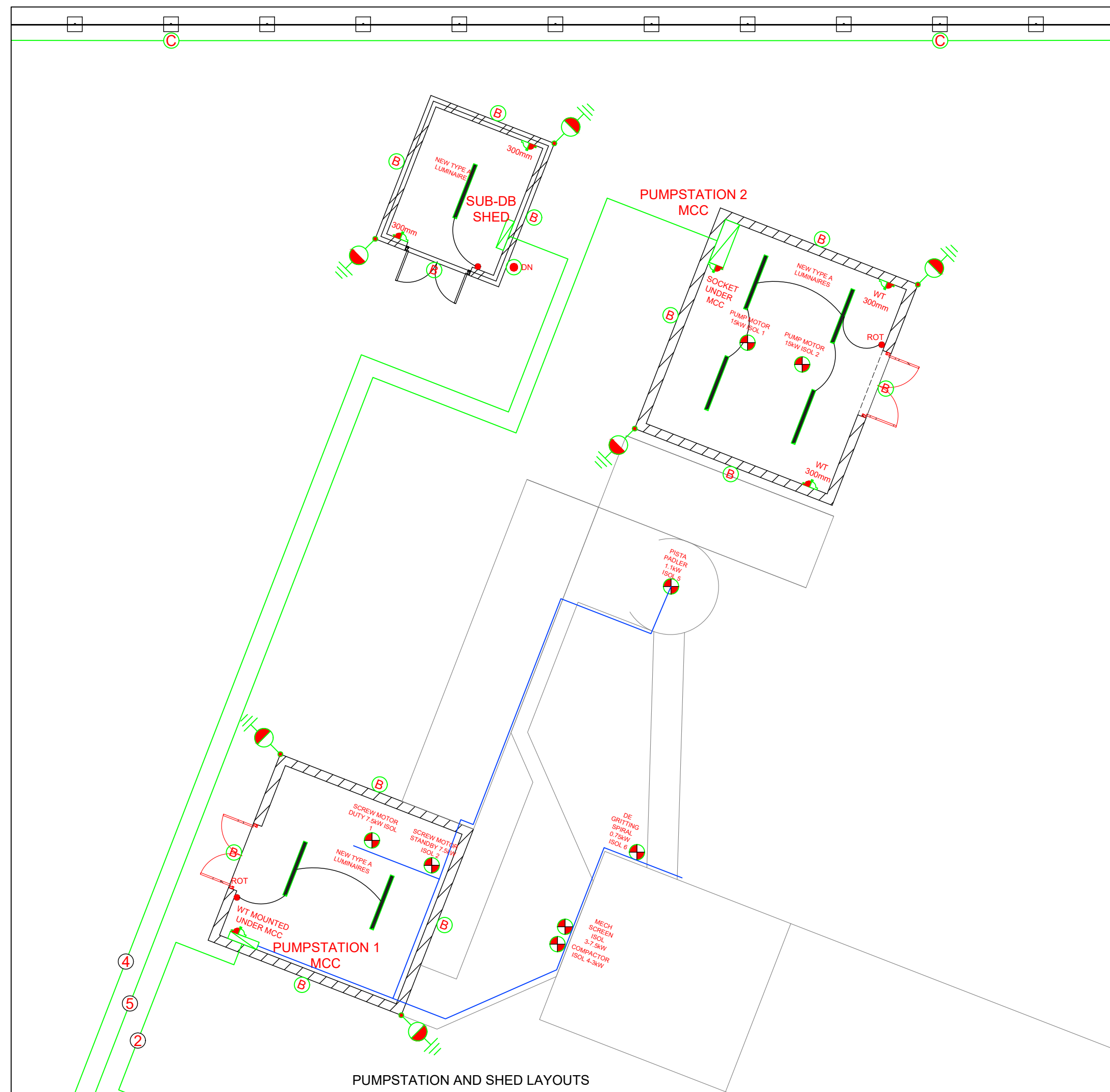
	PLAN NUMBER
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CABLE SCHEDULE						
NO	FED FROM	FEED TO	DESCRIPTION	CORES	EARTH	LENGTH
1	ESKOM	KIOSK A	50mm SQ PVC SWA CU LV	4	50mm SQ BGEW	15M
2	KIOSK A	PUMPSTATION 1 MCC	25mm SQ PVC SWA CU LV	4	25mm SQ BGEW	10M
3	KIOSK A	SUB DB GUARDHOUSE	6mm SQ PVC SWA CU LV	3	NIL	18M
4	KIOSK A	SUB DB SHED	6mm SQ PVC SWA CU LV	3	NIL	40M
5	KIOSK A	PUMPSTATION 2 MCC	25mm SQ PVC SWA CU LV	4	25mm SQ BGEW	40M
6	KIOSK A	AREA LIGHTS	10mm SQ PVC SWA CU LV	4	10mm SQ BGEW	300M

NOTES / LEGEND		APPROVED BY COUNCIL / CLIENT		DATE	INITIAL	NO./CODE	REVISION DESCRIPTION	CLIENT	APPROVED BY BVI		PROJECT NAME		
CITY ENGINEER / CLIENT		REG. NO.		DATE					P HARMSE		NALA LOCAL MUNICIPALITY: THE REFRUBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON		
REVISION CODES		SUITABILITY CODES							ENGINEER/TECHNOLOGIST		DRAWING TITLE		
A,B,C... : BEFORE TENDER		IFI : ISSUED FOR INFORMATION							201570312		SUITABILITY STATUS		
T0, T1, T2... : FOR TENDER		FAC : FOR ACCEPTANCE CONTROL							20/10/2025		ISSUED FOR TENDER		
0, 1, 2... : CONSTRUCTION		IFR : ISSUED FOR REVIEW							REG. NO.		PLAN NUMBER		
Z : AS-BUILT		IFC : ISSUED FOR CONSTRUCTION							DATE		PROJECT NO. - ORIGIN - SYSTEM - LOCATION - TYPE - ROLE - DR CODE - PHASE - SEQ. NO.		
		ASB : AS-BUILT						SCALE		1:100 @ A1	35431-BCN-ZZZ-00-DR-ELC-311-TS-001		
								DESIGNED		P HARMSE			
								CHECKED		P HARMSE			



SYMBOL	DESCRIPTION
	2WAY-LIGHT SWITCH MOUNTED AT 1400mm AFFL UNLESS STATED OTHERWISE.
	1L LIGHT SWITCH MOUNTED AT 1400mm AFFL UNLESS STATED OTHERWISE.
	IP65 ROTARY WEATHERPROOF LIGHT SWITCH MOUNTED AT 1400mm AFFL.
	16A DAY/NIGHT SWITCH MOUNTED INSIDE CLEAR LID BOX
	16A SWITCHED SOCKET OUTLET WITH 1 X SANS 164-1 AND 2 X SANS 164-2 SOCKETS WALL MOUNTED AT HEIGHT INDICATED.
	60A DP STOVE ISOLATOR COMPLETE WITH OUTLET BOX AND CONNECTION AND STOVE COUPLER
	60A DP GEYSER ISOLATOR COMPLETE WITH OUTLET BOX
	LIGHTNING PROTECTION DOWN CONDUCTOR POINT COMPLETE
	WEATHER TIGHT 16A SWITCHED SOCKET OUTLET WITH 1 X SANS 164-1 AND 2 X SANS 164-2 SOCKETS WALL MOUNTED AT HEIGHT INDICATED COMPLETE WITH IP65 OUTLET BOX
	EQUIPMENT MOTOR CONNECTION COMPLETE WITH WEATHERPROOF ISOLATOR BOX 63A 3P ISOLATORS

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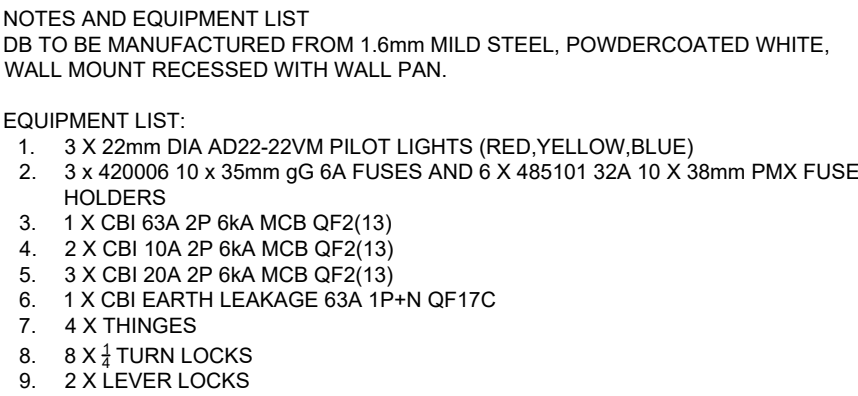
ILLUSTRATION			
			
TYPE	SYMBOL	SPECIFICATION	
A		Type:	24W LED Weatherproof channel
		Dimensions:	1500mm narrow body
		Mounting:	Surface ceiling
		Body Materials:	Injection moulded Polycarbonate
		Lens / diffuser Material	prismatic polycarbonate diff
		Operating temperature:	-25deg C to 45deg C
		Light source	LED T8 glass tube
AREA	Outdoor parking	Wattage	24W
		Lumen	2400Lm
		Colour temp	4000K
		CRI	>80
		Voltage and powerfactor	230+-10% 0.9PF
		Lifetime(hrs)	25 000
		Dimmable / DALI	N/A
		Surge arrester	10kA MOV fitted
		Motion sensor fitted	N/A
		Emergency batt.	N/A
		IP rating	IP 65
		IK rating	IK 05
		Approved supplier	Synerji

ILLUSTRATION			
			
TYPE	SYMBOL	SPECIFICATION	
C		Type:	40W LED Streetlight including 4m MH pole and 5A 1P.mcb
		Dimensions:	615 x 154 x 304mm
		Mounting:	Rear Spigot mounted
		Body Materials:	High pressure die cast AL
		Lens / diffuser Material	4mm clear tempered glass
		Operating temperature:	-30deg C to 45deg C
		Light source	LED
AREA	Outdoor area	Wattage	40W
		Lumen	5840Lm
		Colour temp	4000K
		CRI	>80
		Voltage and powerfactor	230+-10% 0.9PF
		Lifetime(hrs)	100 000
		Dimmable / DALI	N/A
		Surge arrester	10kA MOV fitted
		Motion sensor fitted	N/A
		Emergency batt.	N/A
		IP rating	IP 65
		IK rating	IK 08
		Approved supplier	Genlux

ILLUSTRATION			
			
TYPE	SYMBOL	SPECIFICATION	
B		Type:	15W LED Weatherproof Bulkhead
		Dimensions:	280mm diameter x 104h
		Mounting:	Surface ceiling
		Body Materials:	high pressure die cast AL
		Lens / diffuser Material	High impact acrylic
		Operating temperature:	-25deg C to 45deg C
		Light source	LED
AREA	Outdoor area	Wattage	15W
		Lumen	2250Lm
		Colour temp	4000K
		CRI	>80
		Voltage and powerfactor	230+-10% 0.9PF
		Lifetime(hrs)	50 000
		Dimmable / DALI	N/A
		Surge arrester	10kA MOV fitted
		Motion sensor fitted	N/A
		Emergency batt.	N/A
		IP rating	IP 65
		IK rating	IK 05
		Approved supplier	Beka

NOTES / LEGEND		APPROVED BY COUNCIL / CLIENT		DATE	INITIAL	NO./CODE	REVISION DESCRIPTION		CLIENT		APPROVED BY BVI		PROJECT NAME					
											P HARMSE		201570312	20/10/2025	NALA LOCAL MUNICIPALITY: THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON			
								ENGINEER/TECHNOLOGIST			REG. NO.	DATE	DRAWING TITLE		SUITABILITY STATUS	REV. NO.		
													LUMINAIRE SPECIFICATIONS		ISSUED FOR TENDER	T0		
											P HARMSE		201570312	20/10/2025	NALA LOCAL MUNICIPALITY: THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON			
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								ENGINEER/TECHNOLOGIST			REG. NO.	DATE	DRAWING TITLE		SUITABILITY STATUS	REV. NO.		
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											P HARMSE		201570312	20/10/2025	NALA LOCAL MUNICIPALITY: THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON			
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								ENGINEER/TECHNOLOGIST			REG. NO.	DATE	DRAWING TITLE		SUITABILITY STATUS	REV. NO.		

PANEL LAYOUT

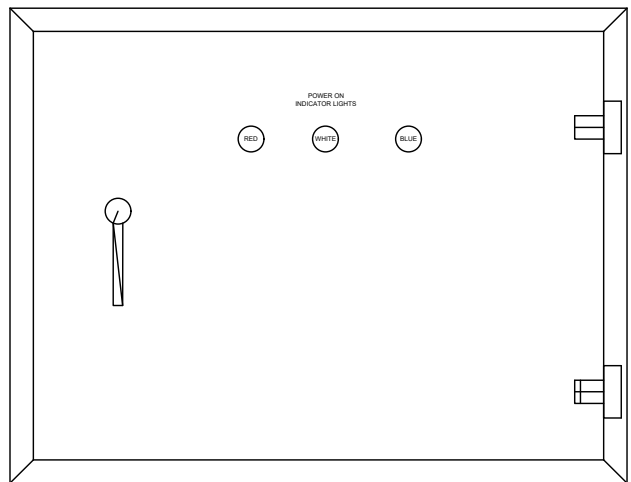
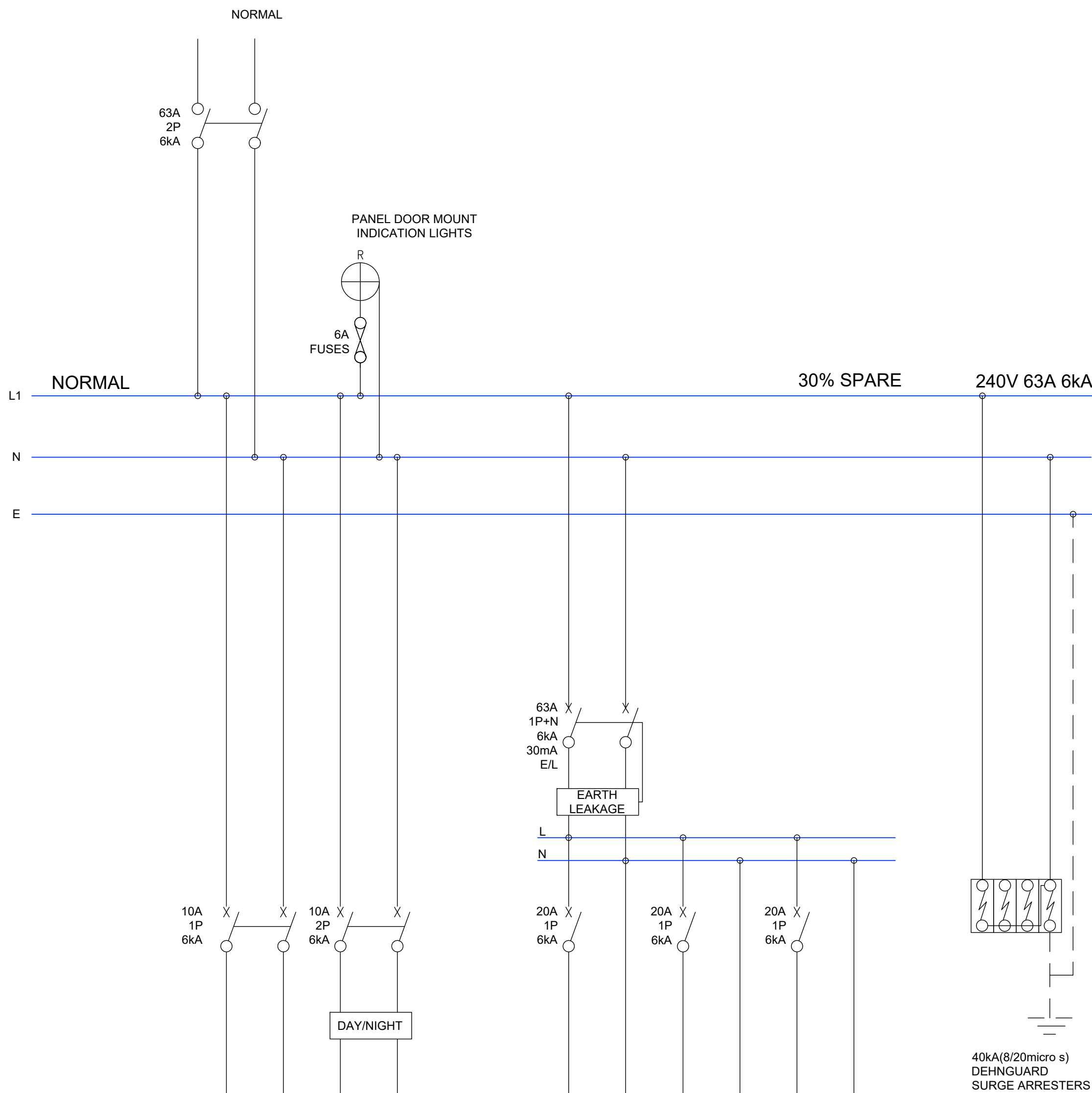
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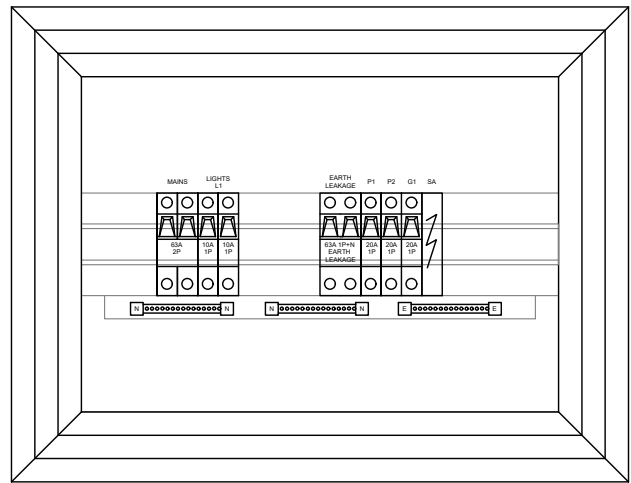
NOTES AND EQUIPMENT LIST
DB TO BE MANUFACTURED FROM 1.6mm MILD STEEL, POWDERCOATED WHITE,
WALL MOUNT RECESSED WITH WALL PAN.

EQUIPMENT LIST:

- 3 X 22mm DIA AD22-22VM PILOT LIGHTS (RED,YELLOW,BLUE)
- 3 X 4200006 10 x 35mm g5 6A FUSES AND 6 X 485101 32A 10 X 38mm PMX FUSE HOLDERS
- 1 X CBI 31A 2P 6KA MCB QF2(13)
- 2 X CBI 10A 2P 6KA MCB QF2(13)
- 3 X CBI 20A 2P 6KA MCB QF2(13)
- 1 X CBI EARTH LEAKAGE 63A 1P+N QF17C
- 4 X THINGS
- 8 X $\frac{1}{4}$ TURN LOCKS
- 2 X LEVER LOCKS



EXTERNAL VIEW



INTERNAL VIEW

NOTES / LEGEND	APPROVED BY COUNCIL / CLIENT		DATE	INITIAL	NO./CODE	REVISION DESCRIPTION
CITY ENGINEER / CLIENT	REG. NO.	DATE				
REVISION CODES		SUITABILITY CODES				
A,B,C... : BEFORE TENDER T0, T1, T2... : FOR TENDER 0, 1, 2... : CONSTRUCTION Z : AS-BUILT	IFI : ISSUED FOR INFORMATION FAC : FOR ACCEPTANCE CONTROL IFR : ISSUED FOR REVIEW IFC : ISSUED FOR CONSTRUCTION ASB : AS-BUILT	COPYRIGHT VESTS IN THIS DOCUMENT AND NO USE OR REPRODUCTION OR DUPLICATION THEREOF MAY OCCUR WITHOUT THE WRITTEN CONSENT OF BVI CONSULTING ENGINEERS				



KROON PULJ



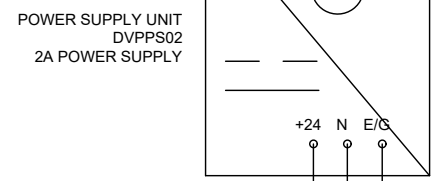
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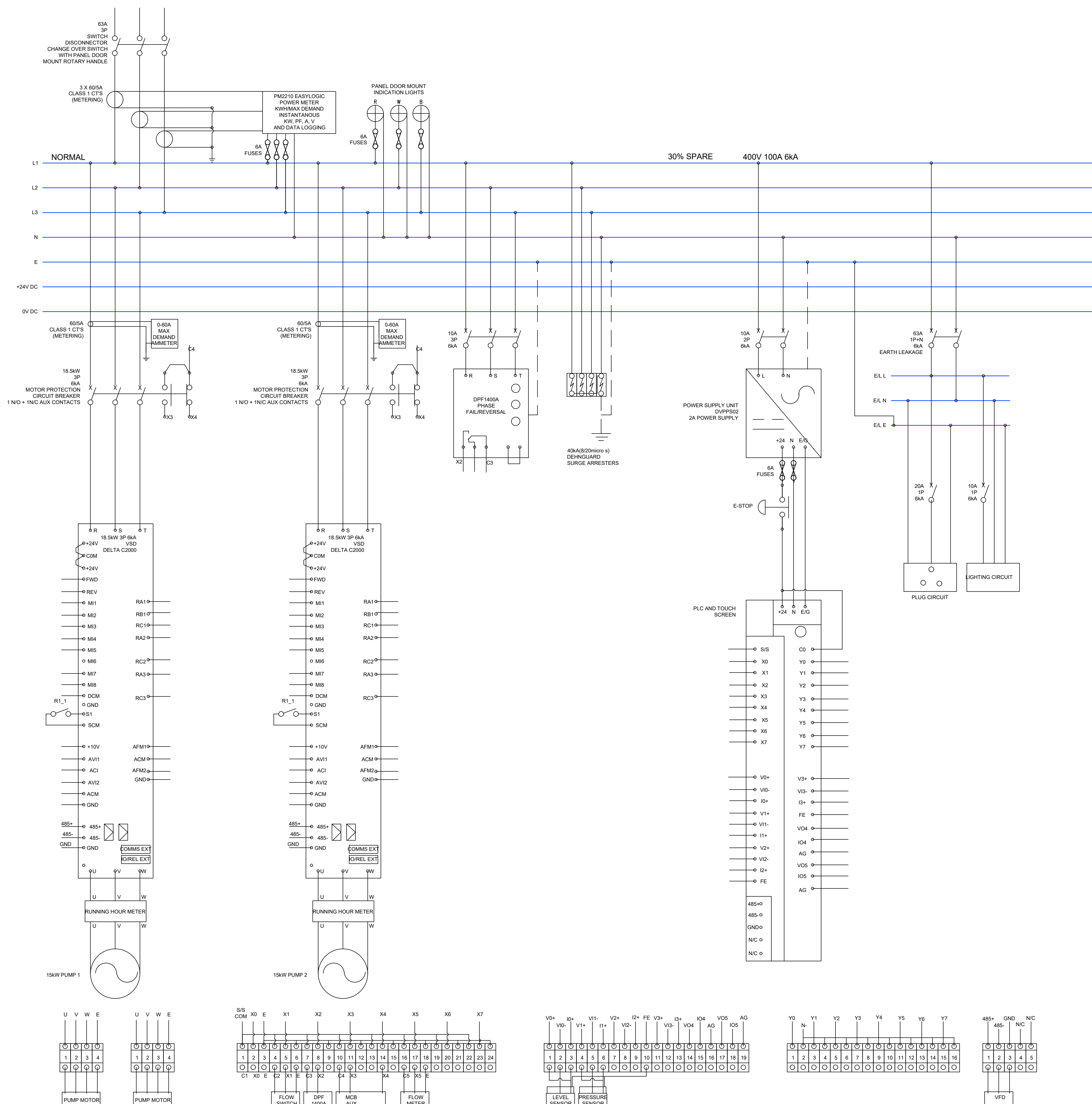
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APPROVED BY BVI				PROJECT NAME		
P HARMSE		201570312	2010/2025	NALA LOCAL MUNICIPALITY: THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON		
ENGINEER/TECHNOLOGIST		REG. NO.	DATE	DRAWING TITLE	SUITABILITY STATUS	REV. NO.
				SCHEMATIC LAYOUTS	ISSUED FOR TENDER	T0
PLAN NUMBER						
PROJECT NO. - ORIGIN - SYSTEM - LOCATION - TYPE - ROLE - DR CODE - PHASE - SEQ. NO.						
35431-BCN-ZZZ-00-DR-ELC-312-TS-002						

SCALE	NOT TO SCALE	DRAWN	D COETZEE
DESIGNED	P HARMSE	CHECKED	P HARMSE

PUMPSTATION 1 MCC

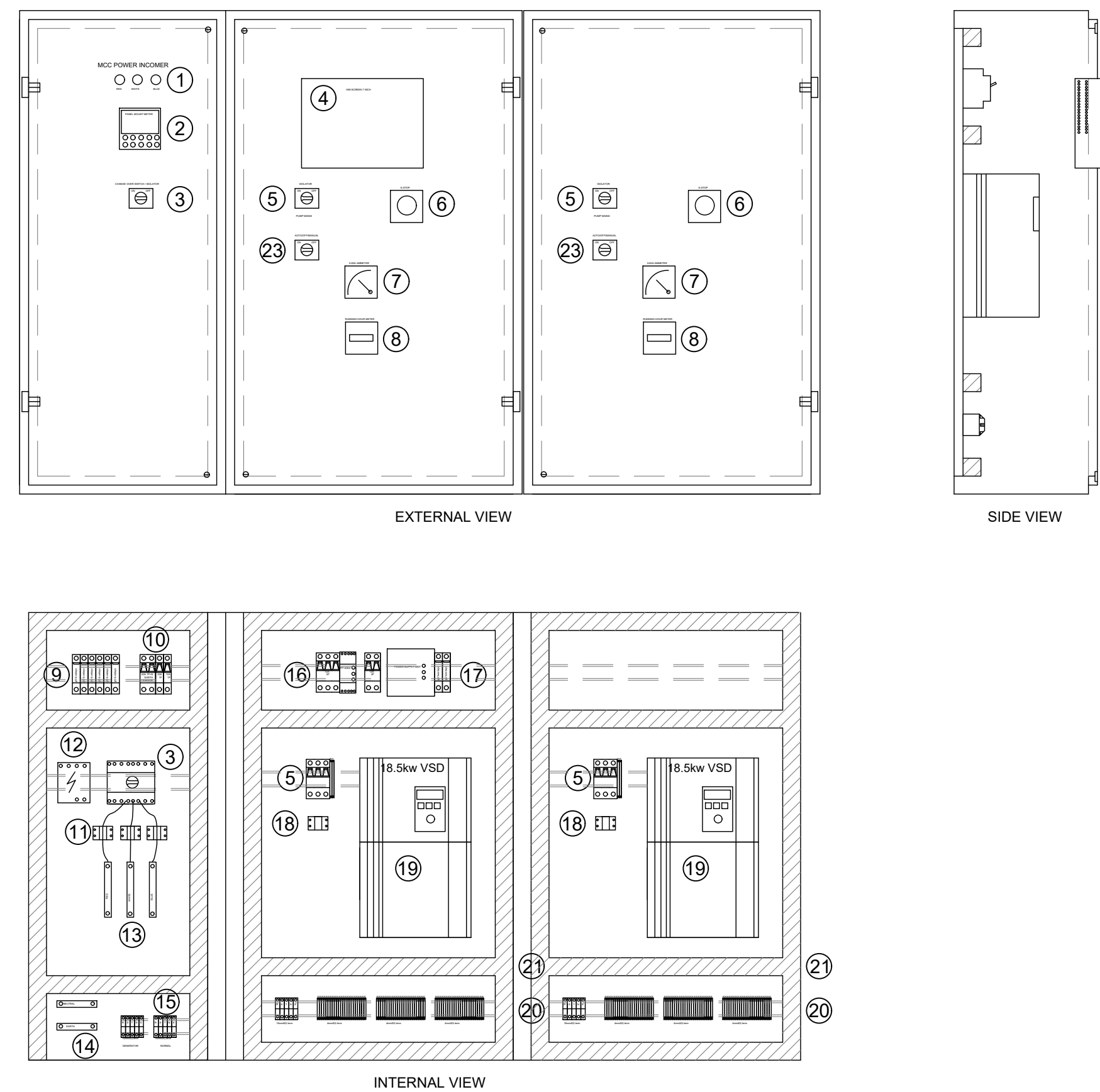
PUMPSTATION 2 MCC			
SUPPLY VOLTAGE	400V +/-10%	SUPPLY VOLTAGE	-
COLOUR	ORANGE	COLOUR	-
		COLOUR	-



PANEL LAYOUT

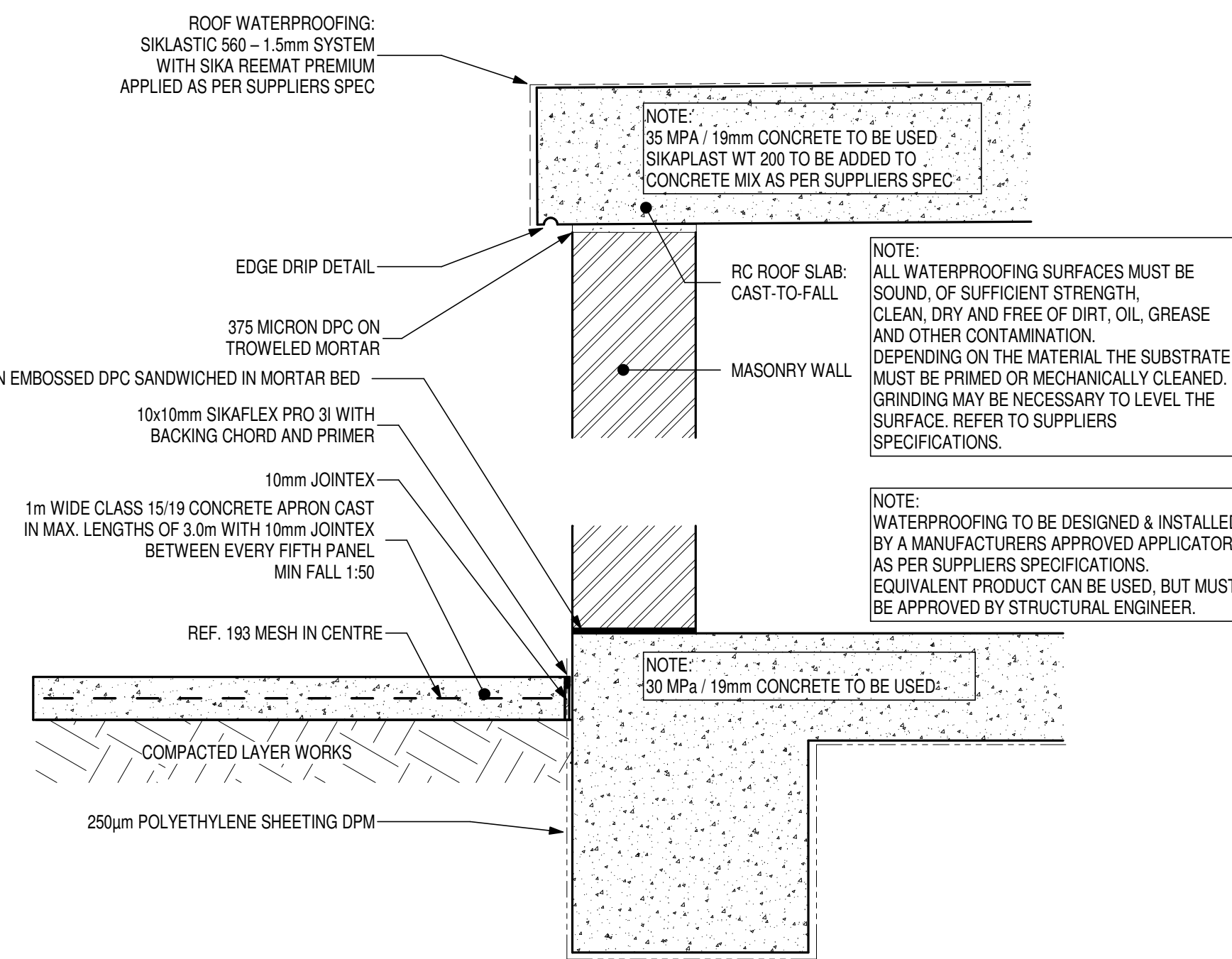
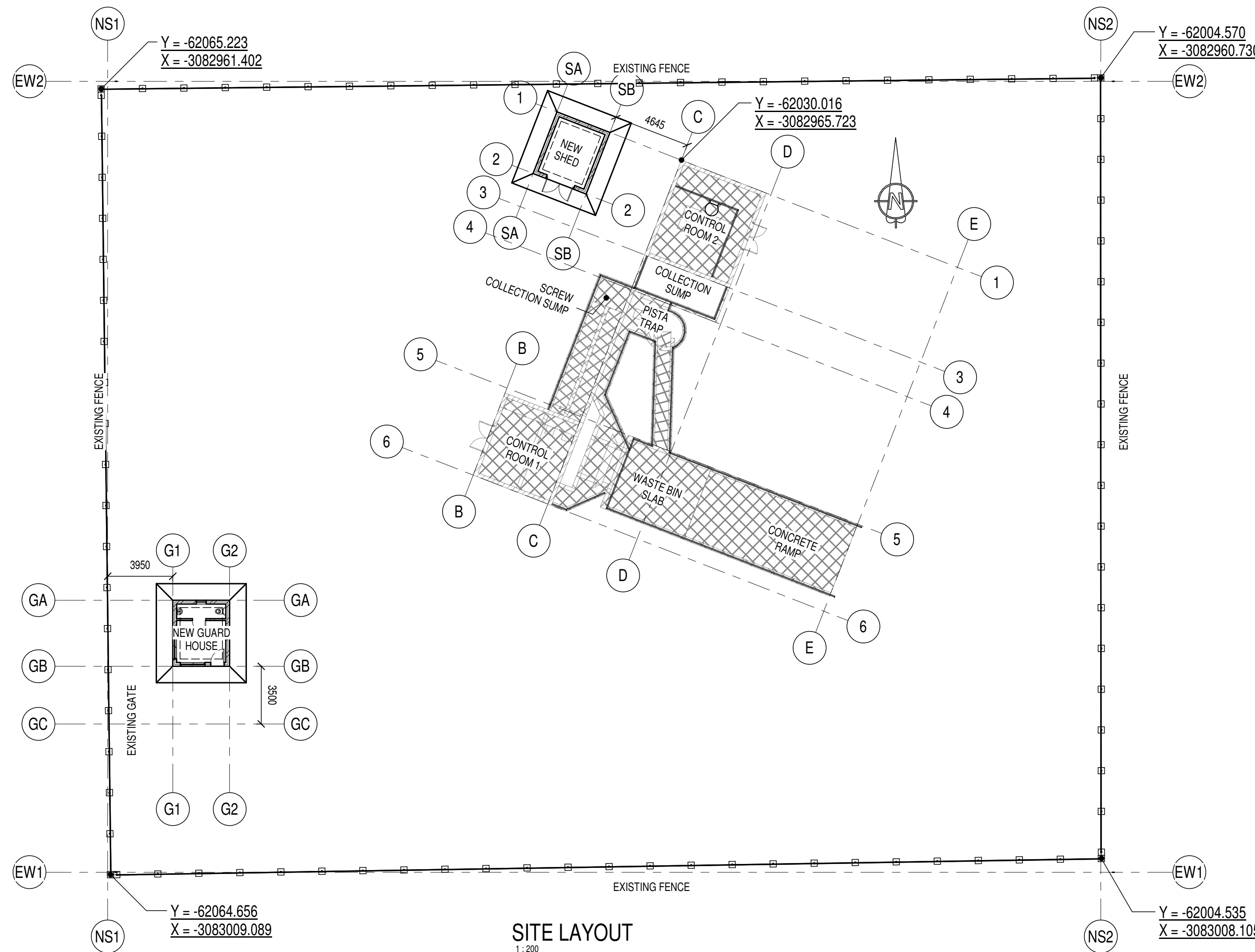
NOTES AND EQUIPMENT LIST
MCC TO BE MANUFACTURED FROM 1.6mm 3CR12 STEEL, BE WEATHERPROOF,
POWDERCOATED ORANGE, WALL MOUNT WITH FIXING TABS.

- EQUIPMENT LIST:
 - 1 x 3 2mm DINI PAD22-22VM POLY LIGHTS (RED YELLOW,BLUE)
 - 1 x SCHNEIDER PD22-22V ENERGY METER
 - 1 x 96S0A6E16 36A CHANGEOVER SWITCH CW GA6X16CB DOOR MOUNT HANDLE AND EXTENSION SHAFT
 - 4 TP70P-21E1X TITRATOR SCREEN PLUG DELTA
 - 88WV MOLT PROTECTION CIRCUIT BREAKER CW SM1Y1211 CLIP ON 1 NO 1 NO 4 NO CONTACT C/W 1 x SM1Y1820R PANEL MOUNT DOOR MOUNT DOOR HANDLE WITH SHAFT
 - 6 ECRH8141 MOTOR COMPLETE WITH LPX A113 LABEL RING
 - 96 X96 BEB05A0935 MAX DEMAND METER
 - 96 X96 BEH6A09 RUNNING HOUR METER
 - 96 X96 10 to 35mm g6 GA FUSES AND 6 X 485101 32A 10 X 38mm PMX FUSE HOLDERS
 - 32 GA138 1P+N PE 6kV EARTH LEAKAGE + CBI 20A 1P 6kV MCB + CBI 10A 1P 6kV A CBI 30A 1P 7089 60A CL1 CURRENT TRANSFORMERS
 - 12 TYPE 2 PROTECT 32A 1P+N PE 6kV 125T 1P 3PH+N 6kV
 - 3 12 x 12 x 4mm X 150mm CU BUSBAR BR1000 CW 6 X 32M5S BUSBAR INSULATOR CW THREADED STUD KITS
 - 2 12 x 12 x 4mm X 150mm CU BUSBAR BR1000 CW 6 X 32M5S BUSBAR INSULATORS + 2 X M36 3mm HEX COUPLING NUTS WITH THREADED STUD KITS
 - 2 12 x 5 X 16mm SQ TERMINATIONS WITH 10 X GR(X)BL(X) (1X)YEL(GRN)
 - 6 CBI 10A 3P 6kV + DPF140A 3PFA FAULT/REVERSAL RELAY 400V 3PH
 - 6 CBI 10A 2P 6kV + DPV502 2A POWER SUPPLY + 2 X 4200m G6 GA FUSES AND PMX FUSE HOLDERS
 - 6 CBI 1A3 1/3 60VA CL1 CURRENT TRANSFORMERS
 - DELTA C2000 18 9KV VFD THREE PHASE VFD110CEA-21N
 - 5 16mm SQ TERMINATIONS WITH 10 X GR(X)BL(X) (1X)YEL(GRN) + 72X 4mm SQ TERMINATIONS W/ NUTS
 - 10 X 40x40m SLOTTED PMV TRUNKING
 - 2 DIN RAIL
 - 2 AUTO/EMANUAL SPRING RETURN SELECTOR SWITCH
- COMPLETE-LPC2533



NOTES / LEGEND	APPROVED BY COUNCIL / CLIENT	DATE	INITIAL	NO./CODE	REVISION DESCRIPTION	CLIENT	APPROVED BY BVI	PROJECT NAME		
							 bvi 50 YEARS EST 1967 • ENGINEERING • PROCUREMENT • MANAGEMENT Registration no. 1998/000185/07 Visit or contact us online at www.bvi-group.co.za Free State - Bloemfontein - (051) 447 2137	NALA LOCAL MUNICIPALITY: THE REFURBISHMENT OF SEWER PUMP STATION AND ERADICATION OF 250 BUCKETS IN EXT. 12 & 13 IN WESSELSBRON		
	CITY ENGINEER / CLIENT	REG. NO.	DATE					DRAWING TITLE	SUITABILITY STATUS	REV. NO.
	REVISION CODES	SUITABILITY CODES						SCHEMATIC LAYOUTS	ISSUED FOR TENDER	T0
A.B.C... : BEFORE TENDER T0, T1, T2... : FOR TENDER 0, 1, 2... : CONSTRUCTION Z : AS-BUILT	IFI : ISSUED FOR INFORMATION FAC : FOR ACCEPTANCE CONTROL IFR : ISSUED FOR REVIEW IFC : ISSUED FOR CONSTRUCTION ASB : AS-BUILT							PLAN NUMBER		
								35431-BCN-ZZZ-00-DR-ELC-312-TS-004		

CODES: DESIGN CODES: SANS 1010-1: The structural use of concrete. SANS 2001: Standardized specification for Civil Engineering Construction SANS 1016: The General procedures and loadings to be adopted in design of buildings SANS 10162: The structural use of steel SANS 10400: The application of National Building Regulations CONSTRUCTION CODES AND NOTES The contractor shall adhere to the following codes during construction as applicable: SANS 2001 construction works: Part CCI: Concrete Works (Structural) Part CCC: Concrete Works (Minor Works) Part CCI: Installation of Glazing in Window And Door Frames Part CMI: Masonry Walling Part CMI: Strip Footings, Pad Footings and Slab-On-The-Ground Foundations for Masonry Walling Part CSI: Structural Steelwork Part CII: Structural Timberwork (Flooring) Part CII: Structural Timberwork (Roofing) Part CMI: Cement Plaster SANS 10155 accuracy in buildings (SANS 2001 CCI Table 11) Grade II permissible deviation / tolerance shall apply U.N.O. One copy of each of these codes shall be kept on-site and shall be made available to the engineer on request. GENERAL SANS 10155 accuracy in buildings (SANS 2001 CCI Table 11) Grade II permissible deviation / tolerance shall apply U.N.O. One copy of each of these codes shall be kept on-site and shall be made available to the engineer on request. All civil works to comply with S.A.N.S. 1200 accuracy level II U.N.O Do not scale any drawings, work to figured dimensions only. These drawings must be read as part of the contract documents and all discrepancies must be discussed with the engineer without delay. Any discrepancies on the drawings are to be brought to the engineers' attention prior to implementation of any work. The engineer should be notified in good time if he is required on site. All setting-out dimensions and levels must be checked by the contractor prior to any work commencing on-site. Only concrete dimensions are shown on these drawings. Refer to the relevant architect's drawings for finishing details and masonry work. The contractor is to maintain a full set of the latest drawings on site. STRUCTURAL CONCRETE (SANS 10100 - 1:2000) CONCRETE SPECIFICATION Only CEM I cement to be used (SANS 50197-1) Maximum extender to be used is 30% for all concrete, except extenders for surface beds must be limited to 20% Only fly ash to be used as an extender. No GGBS allowed. Maximum water content for walls and slabs = 180 l/m³ Aggregate to be 10mm stone U.N.O Only potable water to be used Sand to be well graded, free of clay with a sand equivalent of more than 85% (AASHTO T 176) (SANS 1083) Aggregate to consist of rock types that will produce low shrinkage and are not Alkal Reactive Design mix to be submitted to BVI for approval before the concrete pour. Minimum concrete cubes curing strength after 28 days for (U.N.O.) Retaining walls 30 MPa Structural foundations 25 MPa Structural columns 30 MPa Structural walls 30 MPa Suspended slabs, beams & parapets 30 MPa Non-structural foundations 20 MPa Blinding layers 15 MPa Surface beds (with max. 20% extender) 30 MPa Mass concrete (non-structural fill) 10 MPa Mass concrete (structural fill below floor) 25 MPa Bonded or bonded like slabs 30 MPa Shear walls and lift shafts 35 MPa Subgrade 30 MPa Water retaining concrete (water tank) 35 MPa PLACEMENT AND POURING (SANS 2001 CCI 4.7.9 – 4.7.10) No concrete pouring allowed without obtaining the written consent of the consulting engineer. No concrete must be poured in rainy conditions or after 1600 without approval. Do not pour concrete after a delay of 60 minutes if mixing water has been added. (SANS 2001 CCI 4.7.10.3) Concrete must not be mixed or poured in temperatures under 2 degrees Celsius on a rising thermometer or under 5 degrees Celsius on a falling thermometer. Thereafter concrete must be kept at a minimum of 10 degrees Celsius and a maximum of 26 degrees Celsius for at least 72 hours. (SANS 2001 CCI 4.7.14) When concrete is poured against existing concrete, existing concrete must be wetted and coated with cement paste (SANS 2001 CCI Table 7) Concrete shall not be allowed to fall freely through a height of more than 3 m. (SANS 2001 CCI 4.7.10.8) CURING (SANS 2001 CCI 4.7.13) All green concrete must be effectively covered and watered for a minimum period of 10 days (e.g. Hessian for walls and columns and 25mm sand for floor plus water). The use of a curing compound is also allowed. Curing method of concrete to be agreed with the engineer. PRESTRESSING: The support and laying of prestressed material must be in accordance with the supplier's requirements. FINISHES (SANS 2001 CCI Table 7) Concrete surfaces to be power float finished (U.N.O.) to be confirmed with architects' drawings. All exposed concrete edges to have 25x25mm chamfer (U.N.O.). OFF-SHUTTER (Special off-form): Formwork quality shall be special, smooth and fair in accordance with SANS 2001 CCI Table 1. Designated joints shall be in the position and in the details shown on the working drawings. Should the contractor wish to incorporate further construction joints or amend the position of those shown to suit his own requirements or technique, this may be allowed provided that all design considerations are met, that the prior approval of the engineer is obtained and that any extra costs are borne by the contractor. Special care shall be taken to ensure that forms are clean and free of all pieces of tying wire, nails and other debris at the time of concreting. The standard of finish shall be such that upon removal of the formwork, no further treatment, other than treatment of bolt holes if required, shall be found necessary to provide a straight, smooth and uniform finish of good quality and consistent colour and texture, free of all honeycombing etc. Any defect shall be made good by either removing and replacing the defective concrete or, in certain instances only, by patching. Removal of formwork as per SANS 2001 CCI Table 2 REMEDIALS: No "honey combing" in concrete should be rectified without inspection and consent of the engineer. Do not cover with plaster or other finishes to hide the defect. All Honey Combing must be chipped open for visual inspection by engineer before repair remedial can be provided. Crack repairs to be confirmed by engineer before repairs commence. CONCRETE COVER ON MAIN REINFORCING (U.N.O.) (To be confirmed with Durability class, see SANS 2001 CCI Table 3) Slabs all round 30mm Beams all round 30mm Foundation bottom, no blinding 15mm Foundation sides and top 50mm Columns 30mm Ret. Walls - inside face 30mm Ret. Walls - outside face 40mm RC walls 30mm CONCRETE SLABS In slabs with main reinforcement in two directions, the steel spanning the shorter distance must be laid first (U.N.O.). Reinforcement in top of slabs must be supported by stools at 1m² (minimum). BACKPROPPING When suspended floor slabs are poured in a multi-storey building, the following guidelines apply with regard to the propping of the supporting floor slabs: If slabs are poured less than 10 days apart: Wet concrete and construction joint of the slab to be poured must be supported with 100% propping on at least 3 former floors. If slabs are poured more than 10 days apart: 25% props under the first slab 25% props under the second slab 25% props under the third slab The position of the props on top and bottom of slab must correspond. Notwithstanding the above-mentioned, no shoring may be stripped without the consent of the consulting engineer. Stripping procedures should be agreed with consulting engineer. Props to remain in place for 21 days or as otherwise directed by the engineer. UPWARD CAMBER: Beams and slabs to be poured with an upward camber as follows: Can'tilever beams & can'tilever slabs Span / 150 Other beams & slabs Span / 500 Beam dimensions: Width x depth UP/DOWN STAND. The slab thickness is excluded in the beam depth (U.N.O.), i.e 230x510 DP RC UP-STAND BEAM Width x depth. The slab thickness is included in the beam depth (U.N.O.), i.e 230x510 DP RC BEAM COMPACTION For all material (cut to fill) compacted in layers of 150mm TO 95% MOD. AASHTO (U.N.O.) Final 150mm layers to be compacted to 98% MOD. AASHTO (U.N.O.) If topsoil is compacted sand then top soil to be removed to a depth of 300mm and replaced with an approved material. Soil to be compacted in 150mm LAYERS to a density of 98% MOD. AASHTO (U.N.O.) Refer to drawings to confirm if above is adapted for specific site conditions SURFACE BED All surface beds to be constructed on 250-micron polythene sheeting. Surface beds to be cast in panels not exceeding 10x10m with saw cut and isolation joints as indicated on drawings. A proper construction joint must be formed. Saw cut joints to be cut within 24 hours after pouring of concrete. Alternatively: Surface beds to be cast in a block pattern, of no more than 5x5m. Alternative casting to be approved by the consulting engineer. TYPICAL PANEL CAST SEQUENCE FOUNDATIONS: The final dimension for the foundations are reserved until the excavations are approved. The excavation for foundations must be kept dry and completed where necessary (U.N.O.) All concrete work to be founded on-in-situ soil or fill as specified on the construction drawing. When excavating for drainage pits etc, the contractor must take care that the bottom of such excavation does not undermine adjacent footings. See figure below. REINFORCEMENT All bending dimensions for reinforcement are overall, unless shown otherwise on the schedules. Reinforcing steel to SANS 920-1989 as amended. When pouring concrete, reinforcement to be maintained in position and at specified depth by means of approved spacers to ensure correct concrete cover. Measures should be taken to protect reinforcement from rust. All rust must be removed. Excessively corroded rebar may be rejected by the consulting engineer. All rebar to be clean from shutter oil / rust / dirt or any contaminants. Where main reinforcement in beams is laid in two or more layers (in same direction) spacer bars must be provided at 1000mm centre-to-centre to support the upper layers. The engineer shall be informed 72 hours in advance when an inspection on the reinforcement fixing is required. All reinforcement is to be inspected by the responsible engineer prior to casting of any concrete. Bars to be bundled and tagged with bar no., dir. no. and member no. before delivery to site. SANAS certificate to be provided to confirm reinforcement compliance (SANS 2001 CCI 4.2.5.3) SERVICES No supply or waste pipes may enter the concrete construction without the consent of the consulting engineer. And no rebar may be cut to make space for ducts and cables (services) PERMISSIBLE DEVIATION ACCEPTANCE CRITERIA ON CONCRETE SLABS In general, tolerances for structural elements to comply with SANS 1200G (Concrete Structural) Clause 6 or SANS 2001 CCI Table 11. Floor tolerances to fulfil two criteria, flatness and deviation from a prescribed level. FLATNESS: A) Any deviation from flatness of a plane surface will be measured as the maximum deviation of the surface from any straight line of length 3m joining two points on the surface, determined by means of a straight edge, the ends of which are supported on identical blocks of suitable thickness placed over each of the points. (See sketch 1 and 2). B) Any abrupt change in a continuous surface, including a local depression or peak in a floor or wall and any abrupt change caused by a joint in framework will be measured as specified in (a) above. (see sketch 3). The maximum deviation from flatness as measured in (A) and (B) above shall be 5mm. DEVIATION FROM A PRESCRIBED LEVEL (SEE SKETCH 4): The permissible deviation from a prescribed design level on the upper or lower surface unless otherwise specified is +5 /-15mm PLUS the expected elastic and long-term deflection calculated by the engineer (i.e. SPAN/300 (+25mm at midspan for a 7500mm or SPAN/300 for terminal deflection of cantilevers). Quality assurance investigation shall be carried out after removal of shuttering, but before removal of props. Props to remain in place for 21 days or as otherwise directed by the engineer. There shall be no limitation as to the number of readings. No deviation from the specification shall be accepted i.e. remedial works will be necessary in non-compliant areas STRUCTURAL STEEL The quality of work and materials must comply with SANS 10162 "the structural use of steel", SANS 1200H "standardized specifications for civil engineering construction chapter 4 - structural steelwork" and SANS 2001 CSI. CONSTRUCTION / MANUFACTURING / ERECTION: Steel structures are to be strictly in accordance with SANS 2001 CSI Steel grade S355JR U.N.O. and the mark must be clearly visible The contractor must submit detailed workshop drawings to the engineer for review prior to manufacture Only sizes of structural members, connections and splices will be checked Final dimensions and the correct fitting of members shall remain the responsibility of the contractor. All dimensions are to be confirmed on site prior to manufacturing of elements. The position of holding down bolts is to be verified on-site. All sliding plates must be supplied with graphite grease. Permissible deviations as per SANS 2001 CCI Table 3 FASTENERS: All fasteners to be class 8.8 bolts with class 8 lock nuts (U.N.O.). (SANS 1700-5-1) Only 2mm oversize bolt holes are permitted Minimum bolt size to be M12 (U.N.O.). WELDING: Welding must be of high quality with minimum defects No notches or cracks shall be accepted The full penetration groove welds shall have contoured fillet reinforcing to provide a smooth flow of stresses. All welds to be continuous and not intermittent welds shall be allowed Intersecting welds running in various directions at any point must be prevented by cutting selected plates so as to remain clear of the intersection Welding must comply with SANS 10044. If gusset plates are used, members must be welded around full circumference of contact area. If not specified, welds must be 6mm fillet welds with 4.2mm throat thickness. Welding machines must be of sufficient capacity to ensure full penetration - 150 amps is regarded the minimum. 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NO: 0 DESCRIPTION OF REVISION: ISSUED FOR CONSTRUCTION PROVINCE OFFICE IS E-MAIL Free State Central (051) 447 2137 sl@bvl.co.za Verbal or written at: www.bvl.co.za Central Office REGISTERED ENGINEER ENCOURAGING PROGRESSIVE MANAGEMENT BBBEE Level 1 CESA CLIENT NALA LOCAL MUNICIPALITY PROJECT WESSELSBRON SEWER PUMPSTATION AND 250 BUCKET ERADICATION DRAWING TITLE STANDARD SPECIFICATIONS APPROVED BY BVL JJ HAEFELE 20190844 2025-08-22 ENGINEER/TECHNOLOGIST REG. NO. DATE SCALE: 1 : 1 DRAWN: J.H. DESIGNED: J.H. CHECKED: DP LEUKES PLAN NUMBER 35431-BCN-BLD- 00-233-STR-001-00	REINFORCEMENT All bending dimensions for reinforcement are overall, unless shown otherwise on the schedules. Reinforcing steel to SANS 920-1989 as amended. When pouring concrete, reinforcement to be maintained in position and at specified depth by means of approved spacers to ensure correct concrete cover. Measures should be taken to protect reinforcement from rust. All rust must be removed. Excessively corroded rebar may be rejected by the consulting engineer. All rebar to be clean from shutter oil / rust / dirt or any contaminants. Where main reinforcement in beams is laid in two or more layers (in same direction) spacer bars must be provided at 1000mm centre-to-centre to support the upper layers. The engineer shall be informed 72 hours in advance when an inspection on the reinforcement fixing is required. All reinforcement is to be inspected by the responsible engineer prior to casting of any concrete. Bars to be bundled and tagged with bar no., dir. no. and member no. before delivery to site. SANAS certificate to be provided to confirm reinforcement compliance (SANS 2001 CCI 4.2.5.3) SERVICES No supply or waste pipes may enter the concrete construction without the consent of the consulting engineer. And no rebar may be cut to make space for ducts and cables (services) PERMISSIBLE DEVIATION ACCEPTANCE CRITERIA ON CONCRETE SLABS In general, tolerances for structural elements to comply with SANS 1200G (Concrete Structural) Clause 6 or SANS 2001 CCI Table 11. Floor tolerances to fulfil two criteria, flatness and deviation from a prescribed level. FLATNESS: A) Any deviation from flatness of a plane surface will be measured as the maximum deviation of the surface from any straight line of length 3m joining two points on the surface, determined by means of a straight edge, the ends of which are supported on identical blocks of suitable thickness placed over each of the points. (See sketch 1 and 2). B) Any abrupt change in a continuous surface, including a local depression or peak in a floor or wall and any abrupt change caused by a joint in framework will be measured as specified in (a) above. (see sketch 3). The maximum deviation from flatness as measured in (A) and (B) above shall be 5mm. DEVIATION FROM A PRESCRIBED LEVEL (SEE SKETCH 4): The permissible deviation from a prescribed design level on the upper or lower surface unless otherwise specified is +5 /-15mm PLUS the expected elastic and long-term deflection calculated by the engineer (i.e. SPAN/300 (+25mm at midspan for a 7500mm or SPAN/300 for terminal deflection of cantilevers). Quality assurance investigation shall be carried out after removal of shuttering, but before removal of props. Props to remain in place for 21 days or as otherwise directed by the engineer. There shall be no limitation as to the number of readings. No deviation from the specification shall be accepted i.e. remedial works will be necessary in non-compliant areas STRUCTURAL STEEL The quality of work and materials must comply with SANS 10162 "the structural use of steel", SANS 1200H "standardized specifications for civil engineering construction chapter 4 - structural steelwork" and SANS 2001 CSI. CONSTRUCTION / MANUFACTURING / ERECTION: Steel structures are to be strictly in accordance with SANS 2001 CSI Steel grade S355JR U.N.O. and the mark must be clearly visible The contractor must submit detailed workshop drawings to the engineer for review prior to manufacture Only sizes of structural members, connections and splices will be checked Final dimensions and the correct fitting of members shall remain the responsibility of the contractor. All dimensions are to be confirmed on site prior to manufacturing of elements. The position of holding down bolts is to be verified on-site. 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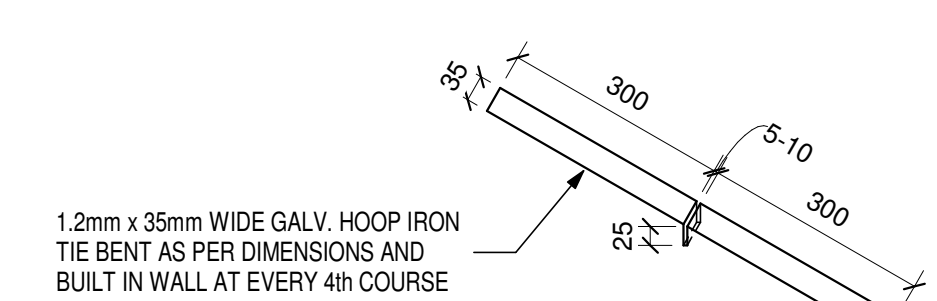
BRICKWORK
OPENINGS IN LOAD-BEARING WALLS TO BE SPANNED BY PRESTRESSED LINTELS SUPPLIED BY
BULLDOG (UN.O). MINIMUM 300mm SUPPORT ON LOAD BEARING WALLS. MAX 2.4m SPAN FOR
PRECAST LINTELS
ALL NON-LOAD-BEARING BRICKWORK TO RECEIVE JOINTEX OR SOFTBOARD BETWEEN SLAB SOFFIT
AND TOP OF WALLS.
PLASTER JOINT BETWEEN SLABS/COLS & BRICKWORK TO BE CUT THROUGH THE PLASTER TO
CREATE A CLEAR MOVEMENT JOINT.
JOINTEX/SOFTBOARD TO BE INSTALLED BETWEEN RC COLUMNS & BRICKWORK
NO BRICKWORK TO CONTINUE OVER STRUCTURAL EXPANSION JOINTS.
ENGINEERS TO BE CONSULTED WITH HEADS TO ADDITIONAL BRICKWORK REQUIREMENTS
SEISMIC REQUIREMENT: ALL BRICKWORK SHALL BE TIED TO CONCRETE WITH GALVANISED HOOP
IRON TIES EVERY 4TH COURSE. ONLY APPLICABLE TO SEISMIC DESIGN AREAS

BRICKWORK
2mm BRICKFORCE TO BE PLACED IN BRICK WALLS EVERY:
BRICK COURSE IN FOUNDATION WALLS
BRICK COURSE IN INTERNAL WALLS FOR THE FIRST 3 BRICK COURSES, THEN EVERY FOURTH
BRICK COURSE
THIRD BRICK COURSE FOR EXTERNAL BRICK COURSES
BRICK COURSE FOR THE LAST 4 BRICK COURSES BELOW ROOF LEVEL
BRICK COURSE FOR 6 COURSES BELOW ALL WINDOWS & 6 COURSES ABOVE ALL WINDOWS &
DOORS - TO EXTEND 80mm ON BOTH SIDES OF OPENINGS

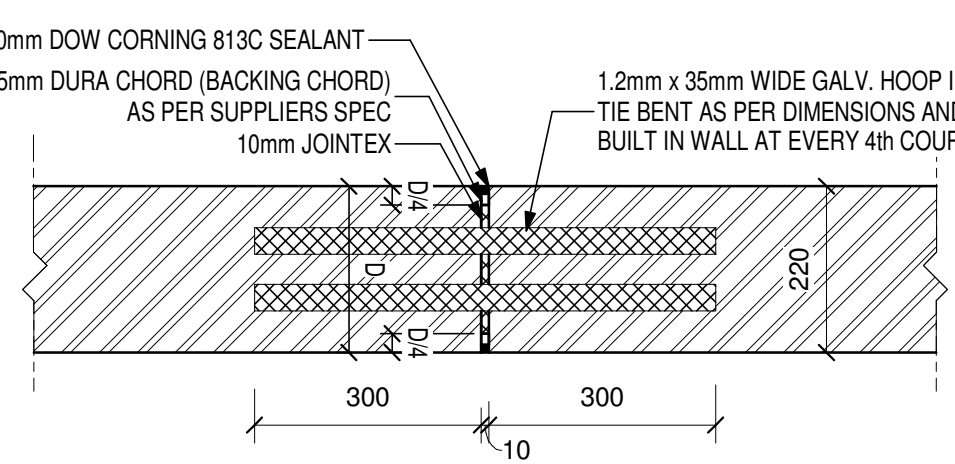
HOOP IRONS
HOOP IRONS TO BE 35mm WIDE x 1.2mm THICK x 350mm LONG (GALVANIZED)
HOOP IRONS TO BE SHOT INTO CONCRETE COLUMNS WITH HULTI ANCHORS (TWO PER HOOP IRON)
HOOP IRONS TO BE TIED TO COLUMNS EVERY THIRD BRICK COURSE FOR EXTERNAL BRICKWORK
HOOP IRONS TO BE TIED TO COLUMNS EVERY FIFTH BRICK COURSE FOR INTERNAL BRICKWORK

BRICK JOINTS
VERTICAL EXPANSION JOINTS TO BE MAXIMUM 7.5m APART OR AS PER SANS 10400 K TABLE 19
HORIZONTAL MOVEMENT JOINT TO BE EVERY FLOOR LEVEL, MAX 3.0m (SEATING ANGLE)

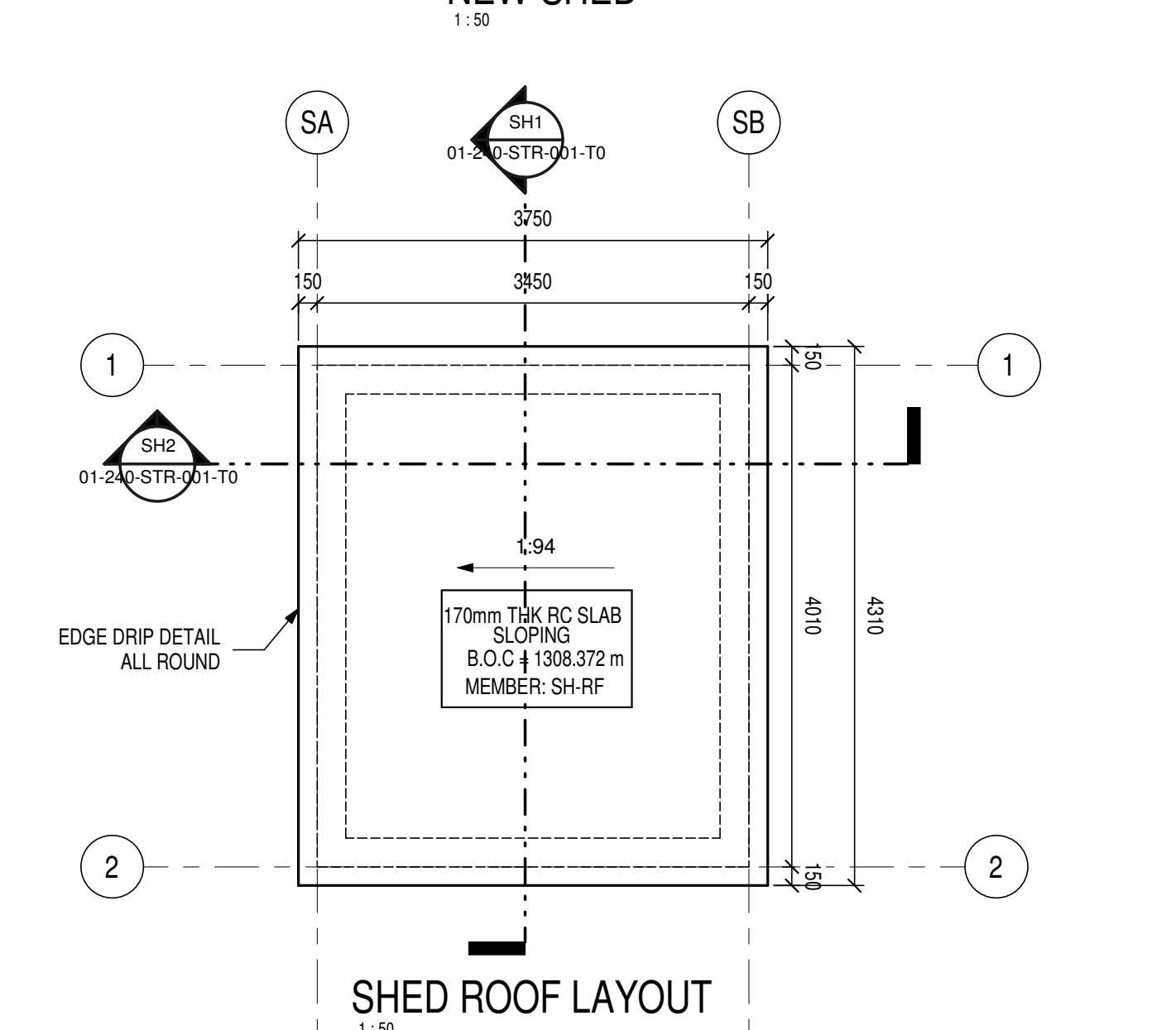
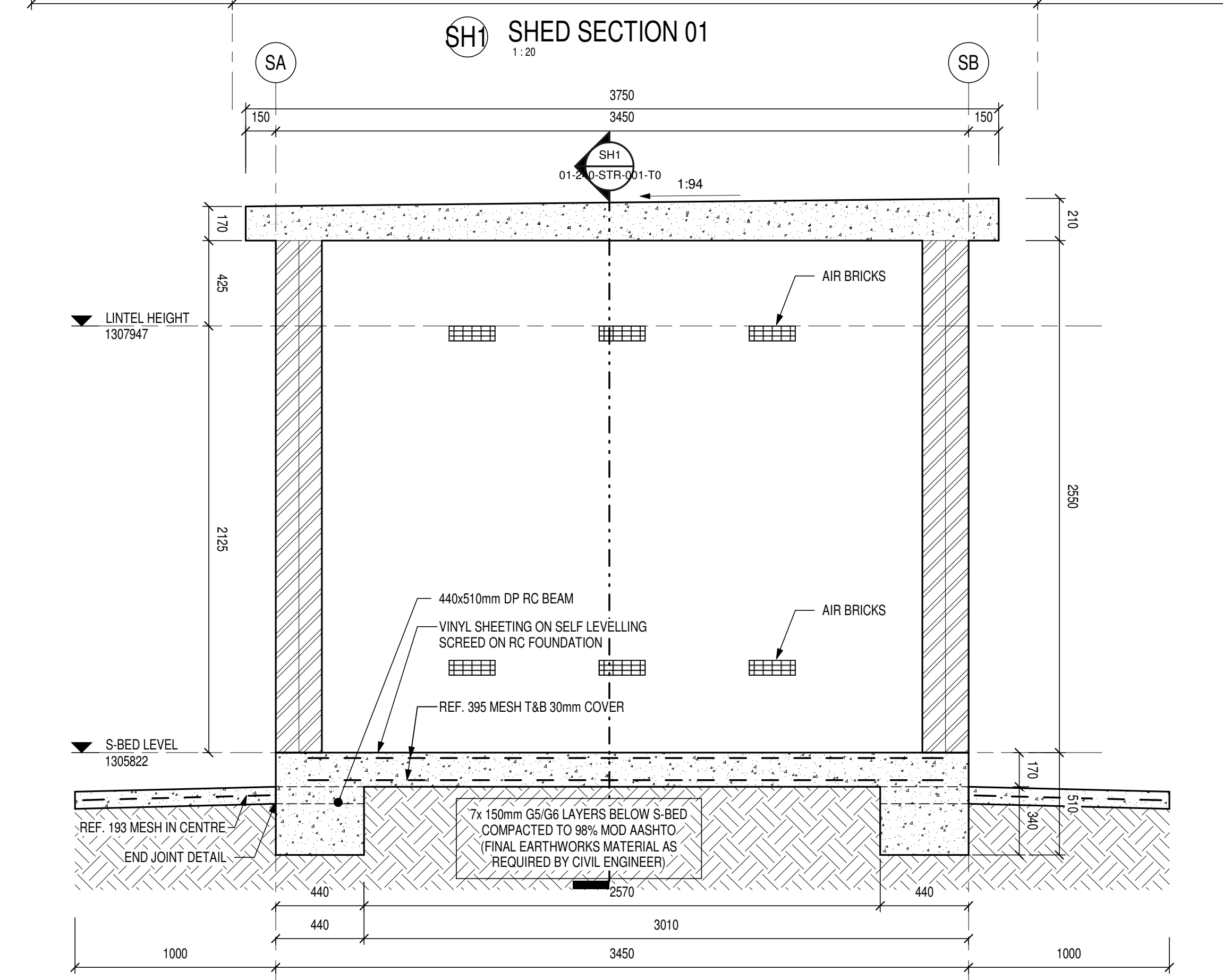
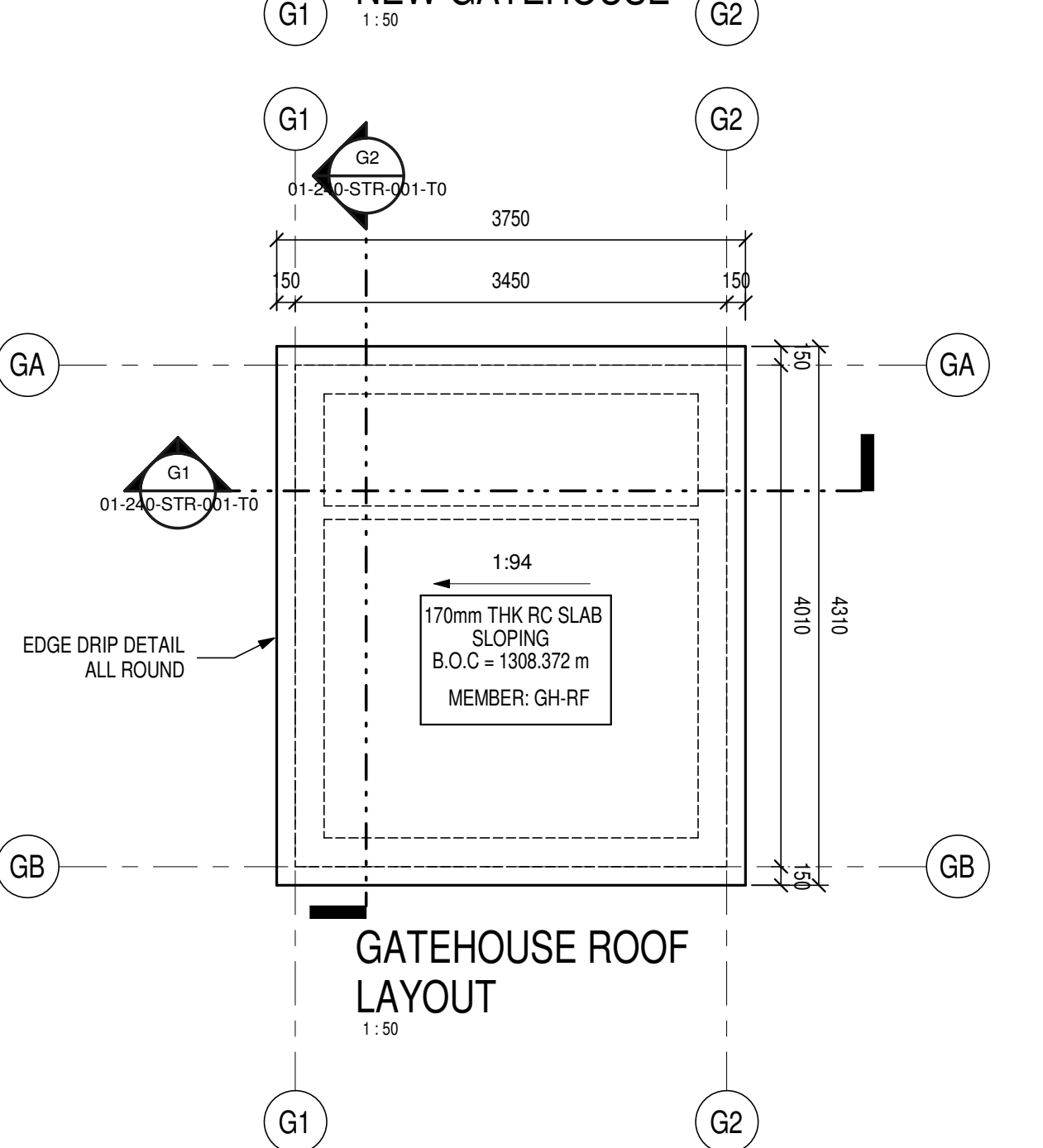
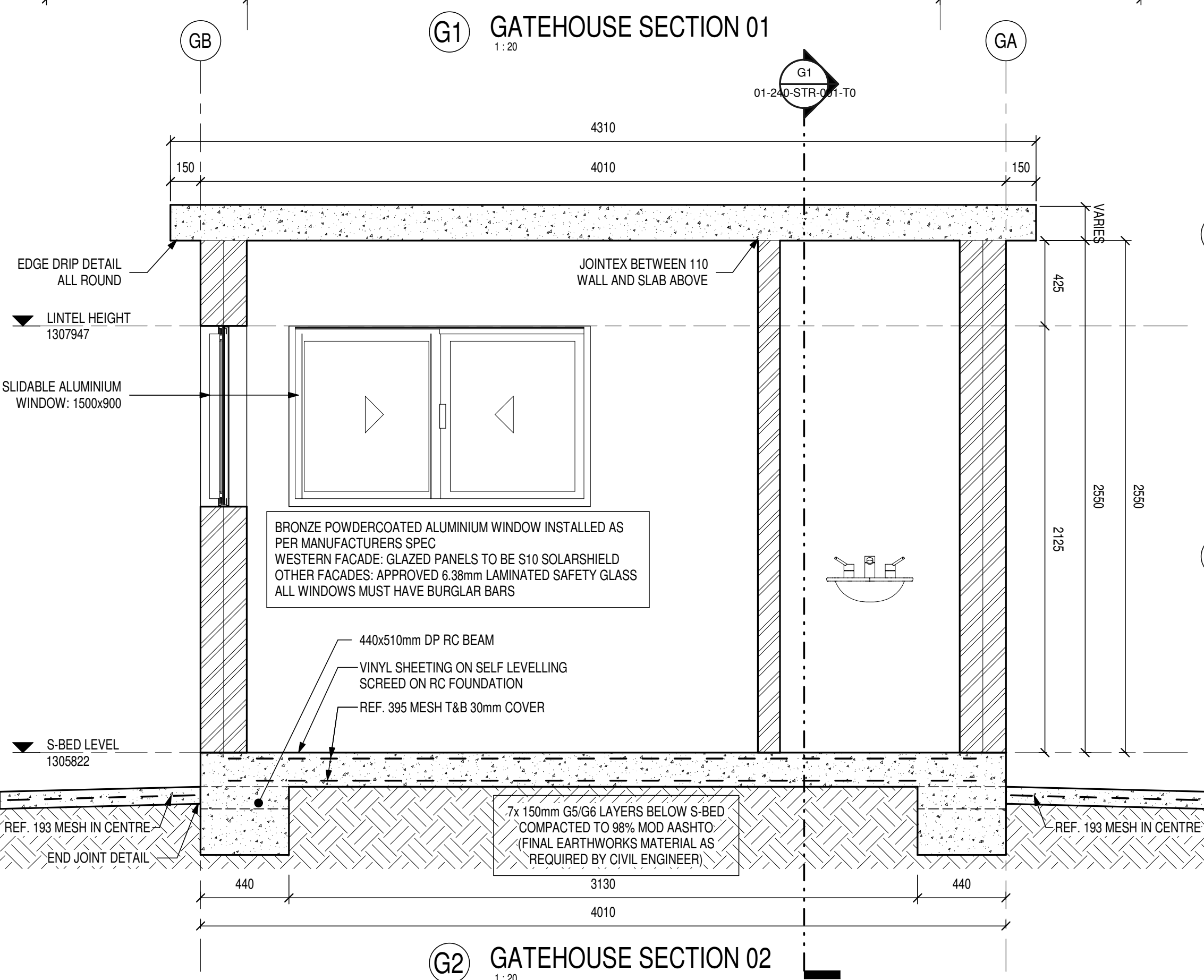
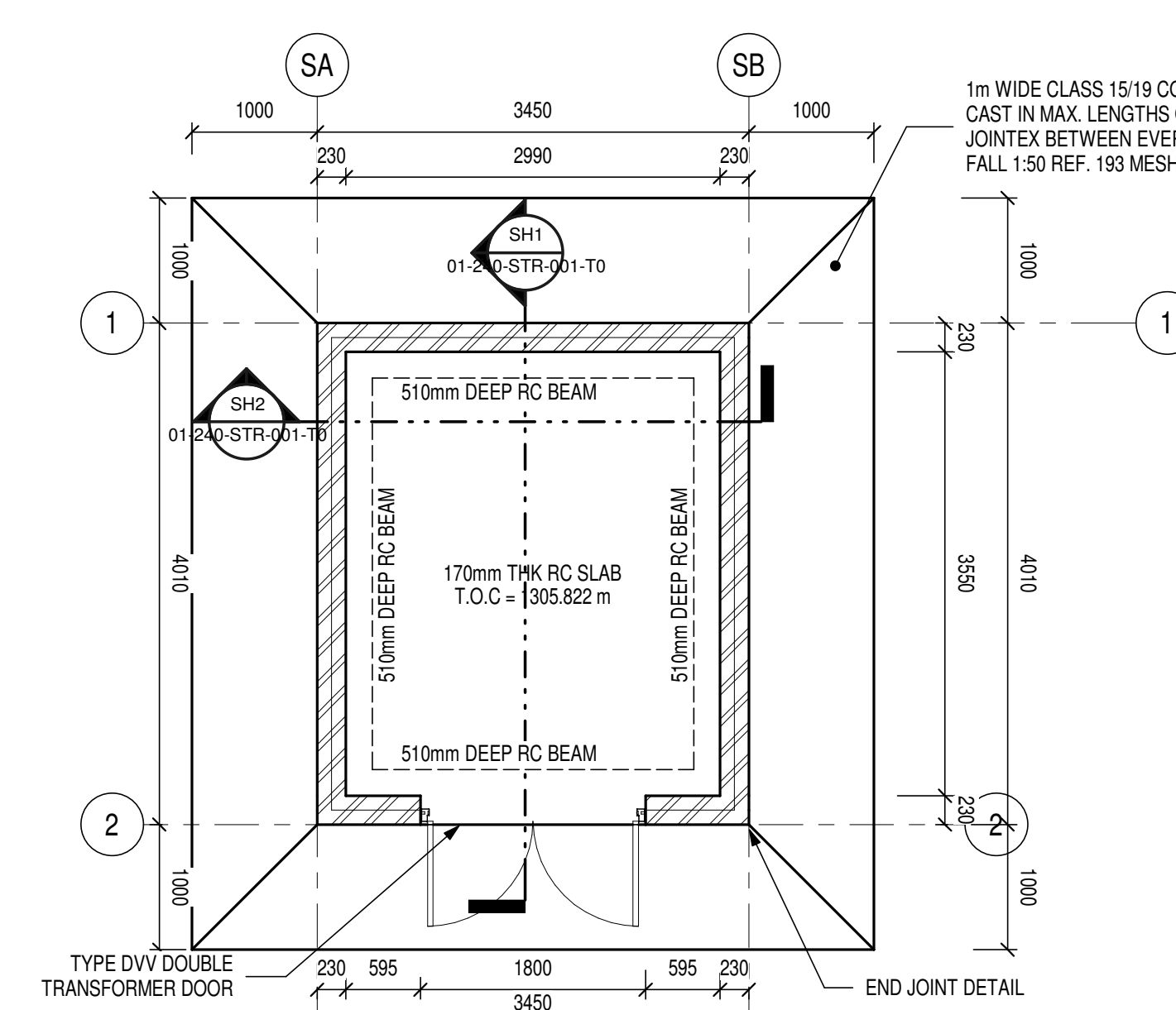
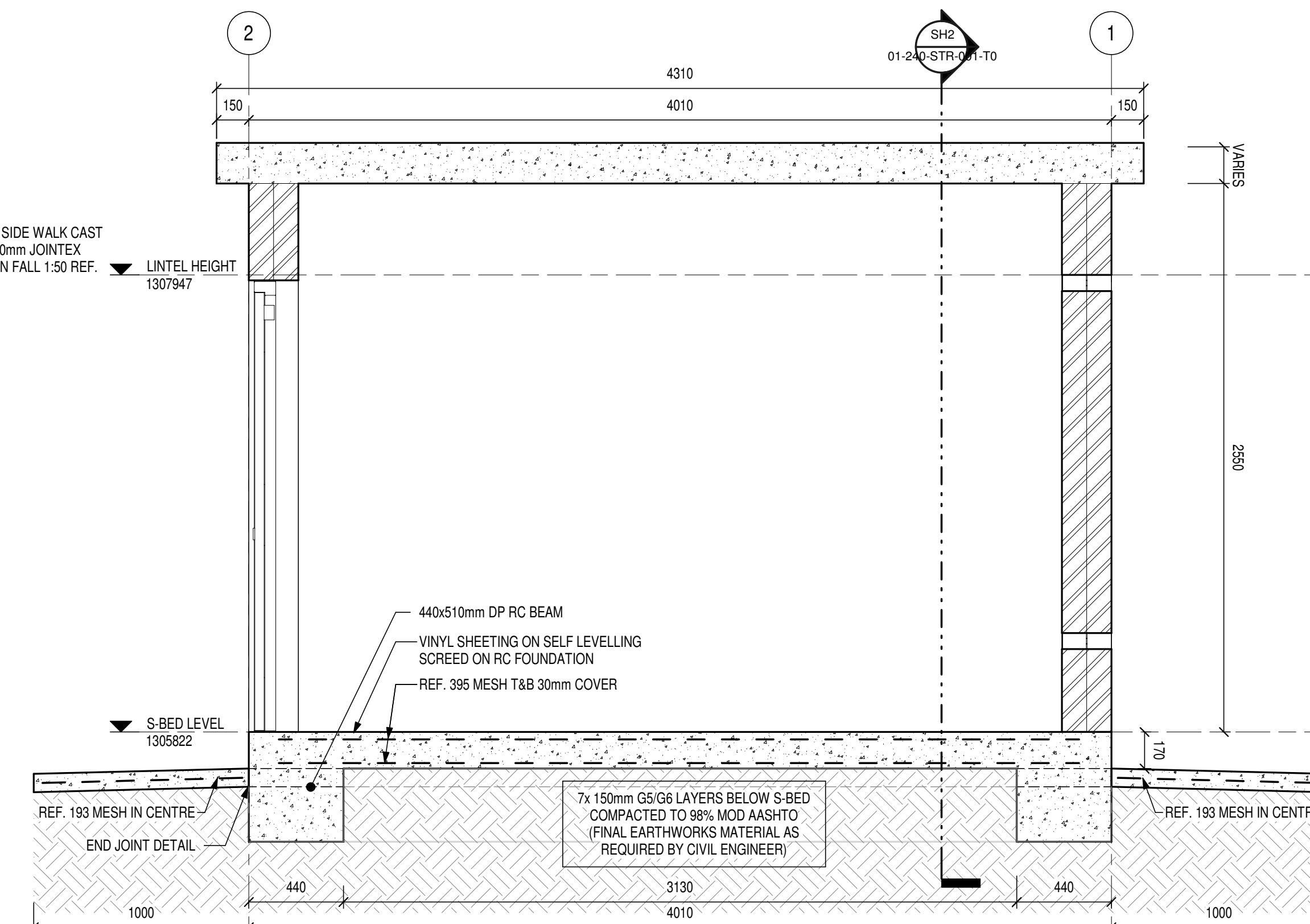
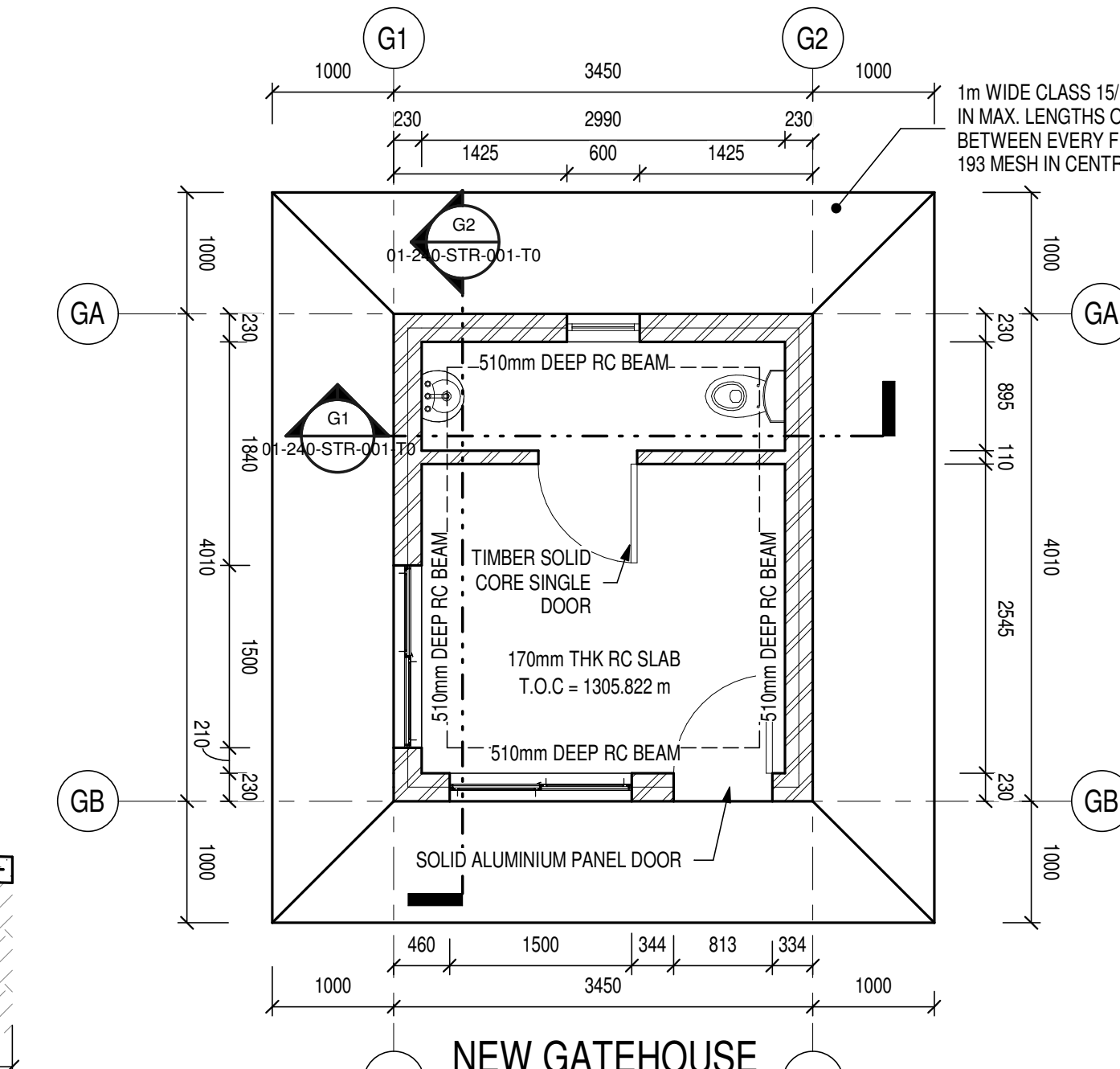
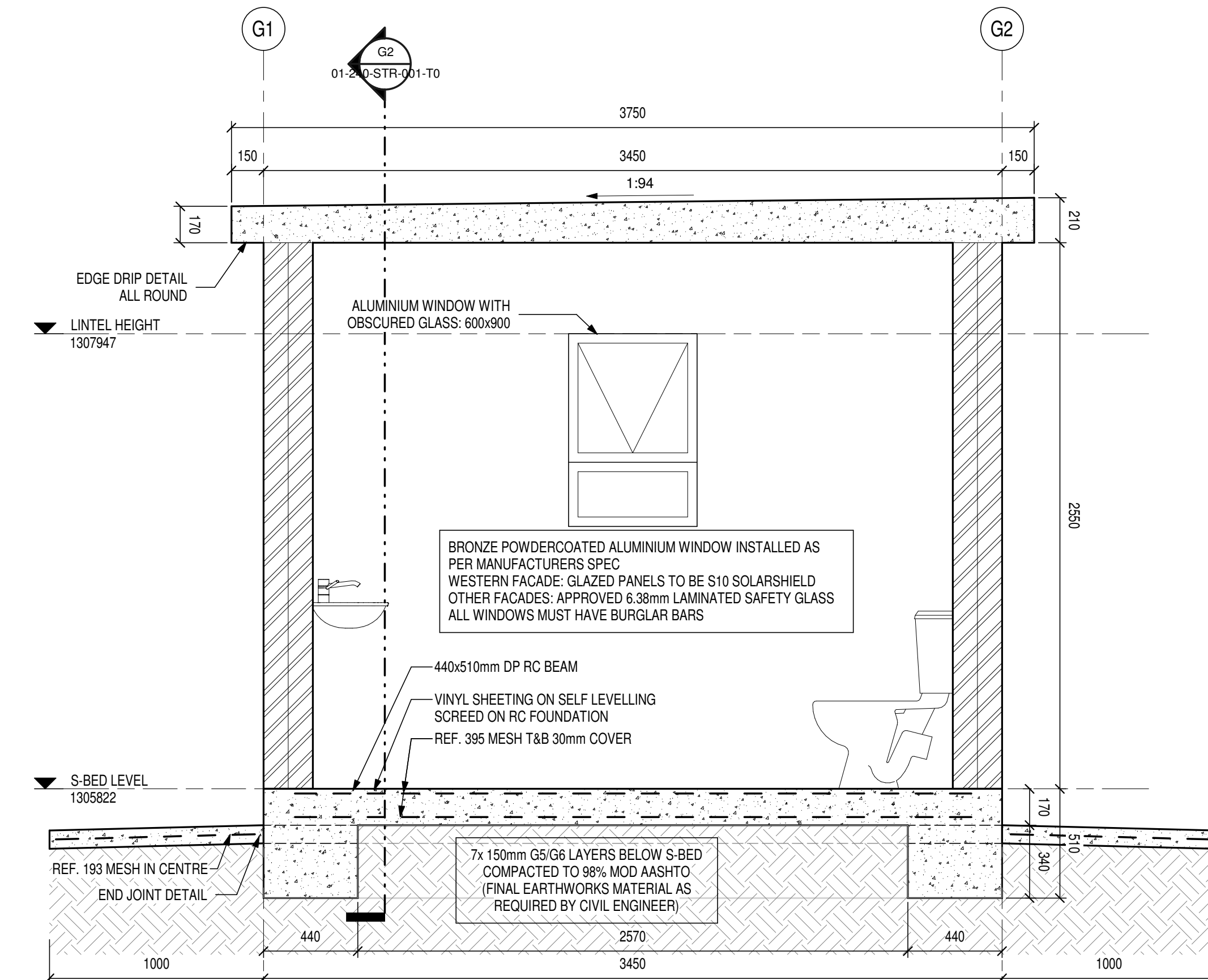
MASONRY WALL NOTES



ISO VIEW OF CONCERTINA TIE TO EXP JOINT



MASONRY WALL EXPANSION JOINT DETAIL



NOTES / LEGEND

GENERAL

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ISSUE DATE	DRAWING SIZE	REVISION
2025-08-22	A0	T0
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FOR CONSTRUCTION		
AS-BUILT		

APPROVED BY COUNCIL / CLIENT

CITY ENGINEER / CLIENT REG. NO. DATE

AMENDMENTS CODE			
A.B.C. /	BEFORE TENDER	A	BY CLIENT
1	BY ARCHITECT	B	BY ARCHITECT
0.1.2. /	AFTER TENDER	C	BY MECHANICAL OR ELECTRICAL
2	BY MECHANICAL OR ELECTRICAL	D	BY MECHANICAL OR ELECTRICAL
3	BY MECHANICAL OR ELECTRICAL	E	BY MECHANICAL OR ELECTRICAL
4	BY MECHANICAL OR ELECTRICAL	F	BY MECHANICAL OR ELECTRICAL
5	BY MECHANICAL OR ELECTRICAL	G	BY MECHANICAL OR ELECTRICAL
6	BY MECHANICAL OR ELECTRICAL	H	BY MECHANICAL OR ELECTRICAL
7	BY MECHANICAL OR ELECTRICAL	I	BY MECHANICAL OR ELECTRICAL
8	BY MECHANICAL OR ELECTRICAL	J	BY MECHANICAL OR ELECTRICAL
9	BY MECHANICAL OR ELECTRICAL	K	BY MECHANICAL OR ELECTRICAL
10	BY MECHANICAL OR ELECTRICAL	L	BY MECHANICAL OR ELECTRICAL
11	BY MECHANICAL OR ELECTRICAL	M	BY MECHANICAL OR ELECTRICAL
12	BY MECHANICAL OR ELECTRICAL	N	BY MECHANICAL OR ELECTRICAL
13	BY MECHANICAL OR ELECTRICAL	O	BY MECHANICAL OR ELECTRICAL
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17	BY MECHANICAL OR ELECTRICAL	S	BY MECHANICAL OR ELECTRICAL
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21	BY MECHANICAL OR ELECTRICAL	W	BY MECHANICAL OR ELECTRICAL
22	BY MECHANICAL OR ELECTRICAL	X	BY MECHANICAL OR ELECTRICAL
23	BY MECHANICAL OR ELECTRICAL	Y	BY MECHANICAL OR ELECTRICAL
24	BY MECHANICAL OR ELECTRICAL	Z	BY MECHANICAL OR ELECTRICAL

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DATE: 2025-08-22 INITIAL: JHJ NO: 01-240-STR-001-10
ISSUED FOR TENDER PURPOSES

DATE	INITIAL	NO	DESCRIPTION OF REVISION
2025-08-22	JHJ	10	ISSUED FOR TENDER PURPOSES

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Visit or contact us online at www.bvlgroup.co.za			



CLIENT

NALA LOCAL MUNICIPALITY

PROJECT

WESSELSBRON SEWER
PUMPSTATION AND 250 BUCKET
ERADICATION

DRAWING TITLE

GOLF COURSE PUMP STATION
GUARDHOUSE AND SHED
LAYOUTS

APPROVED BY BVL

JJ HAEFELE 20190844 2025-08-22

ENGINEER/TECHNOLOGIST REG. NO. DATE

SCALE As indicated DRAWN JHJ

DESIGNED JHJ CHECKED JLR

PLAN NUMBER

DWG. TO BE READ IN CONJUNCTION WITH:
-35431-BCN-BLD-00-233-STR-001-00

35431-BCN-BLD- 01-240-STR-001-T0