



**NOTES**

NAME	LATITUDE	LONGITUDE	ELEVATION
WWTW	29°43'21.54"S	25°56'6.62"E	1355
OXIDATION PONDS	29°43'11.24"S	25°56'4.18"E	1353
SEWER PUMP STATION	29°43'41.67"S	5°57'3.58"E	1372

**REVISIONS**

NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : DS MOHOLO      DESIGNED : HJ DE WET  
 DATE : 22-04-2024      SCALE : 1:10

22-04-2024  
 CONSULTING ENGINEER      DATE  
 HJ DE WET  
 Pr. Tech Eng : 2018300016

CLIENT



CONTRACT ENGINEER



PROJECT

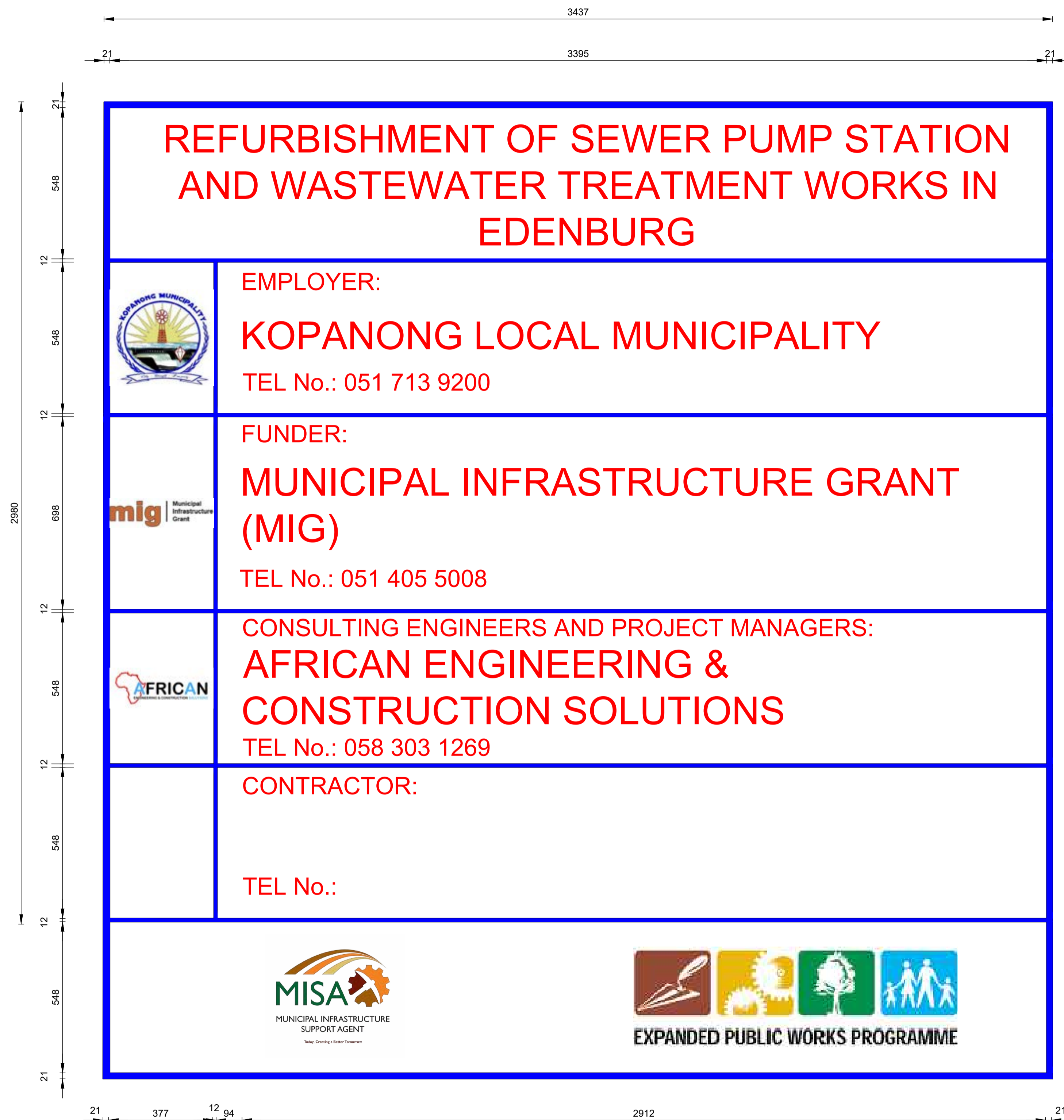
REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG

TITLE

LOCALITY PLAN

PLAN NO. 172/100

REVISION T



**REFURBISHMENT OF SEWER PUMP STATION  
AND WASTEWATER TREATMENT WORKS IN  
EDENBURG**



**EMPLOYER:**  
**KOPANONG LOCAL MUNICIPALITY**  
TEL No.: 051 713 9200



**FUNDER:**  
**MUNICIPAL INFRASTRUCTURE GRANT  
(MIG)**  
TEL No.: 051 405 5008



**CONSULTING ENGINEERS AND PROJECT MANAGERS:**  
**AFRICAN ENGINEERING &  
CONSTRUCTION SOLUTIONS**  
TEL No.: 058 303 1269

**CONTRACTOR:**  
  
TEL No.:



CONTRACT BOARD  
DETAIL  
SCALE 1:10

**NOTES**

- 1.) LETTER TYPE : HELVETICA MEDIUM.
- 2.) COLOUR OF LETTERS : RED
- 3.) LOGO POSITIONS AS SHOWN ON BOARD.
- 4.) BACKGROUND TO BE WHITE.
- 5.) ALL FRAMES AND LINES TO BE MID BLUE.
- 6.) ALL PAINT TO BE ACCORDING TO REF. 290 ACRYLIC ROAD SIGN PAINT.

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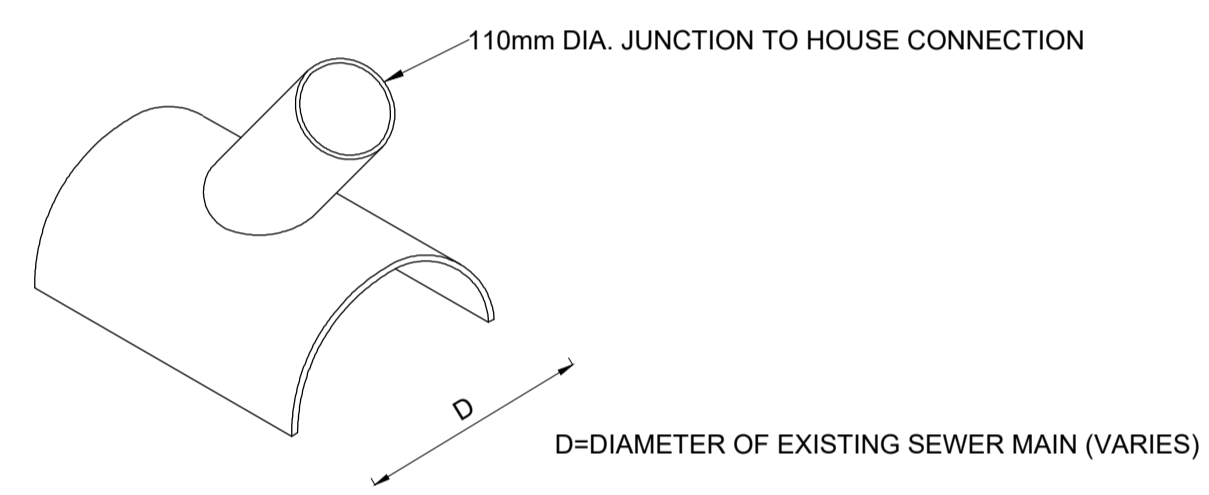
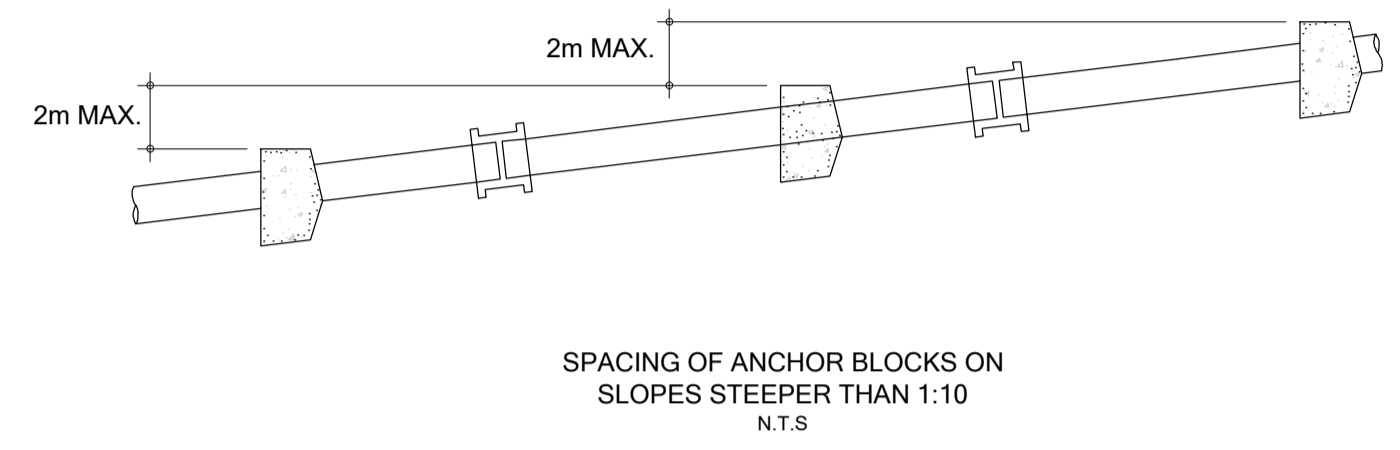
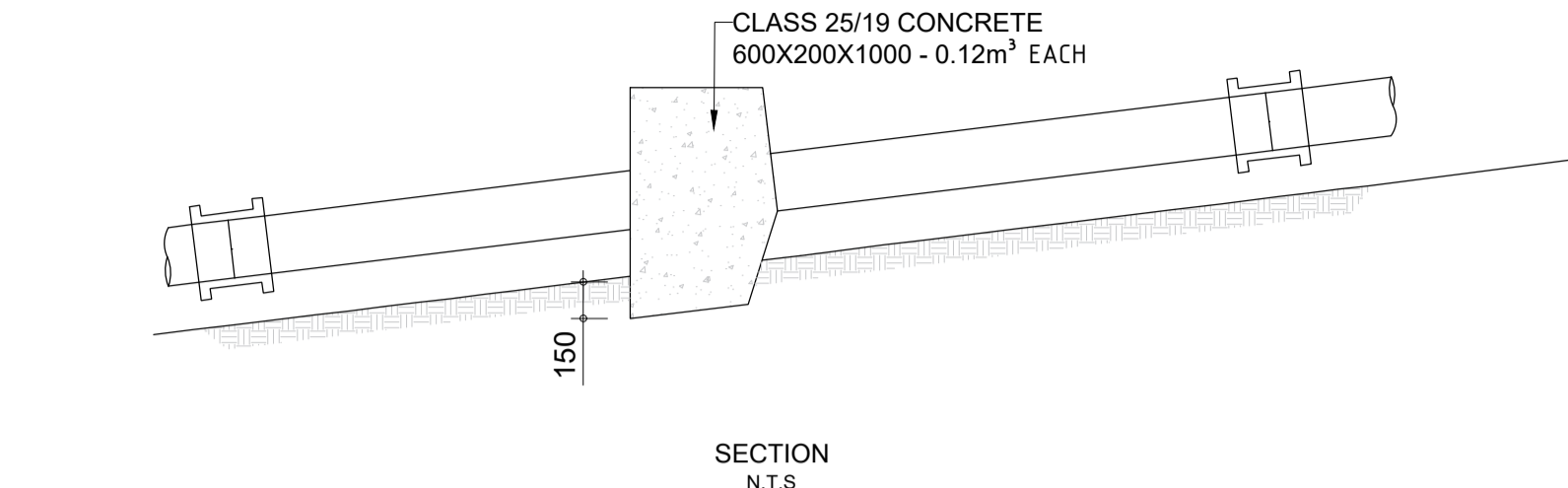
PROJECT  
REFURBISHMENT OF SEWER PUMP  
STATION AND WASTEWATER  
TREATMENT WORKS IN EDENBURG

TITLE  
CONTRACT BOARD  
DETAIL

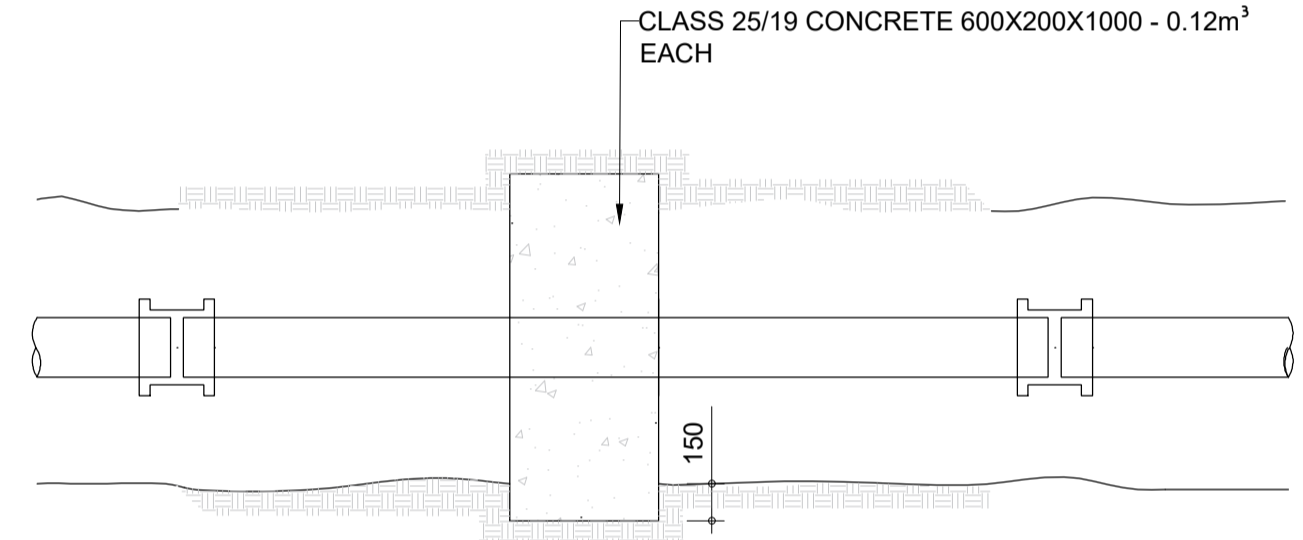
PLAN NO. 172/101      REVISION T

**NOTES**

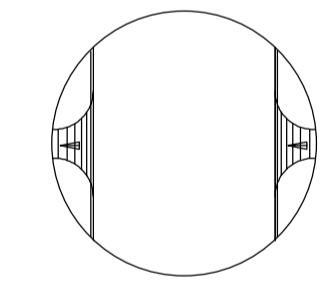
- 1.) FLEXIBLE uPVC PIPES TO SANS 1601:2017  
PIPES TO BE CLASS 40, HEAVY DUTY STRUCTURED WALL IN LENGTHS OF 6m MAX. AND EACH PIPE FITTED WITH INTEGRAL CUFF JOINTS. GUFF JOINTS TO USE A RUBBER COMPRESSION SEAL IN THE 2nd TROUGH FROM THE SPIGOT END.
- 2.) FLEXIBLE JOINTS TO SANS 1601:2017 AMENDED:  
ALL NON STANDARD PIPE SECTIONS TO BE JOINED WITH DOUBLE & KIMBERLEY/ REPAIR COUPLINGS.
- 3.) FIELD TESTS:
  - a.) AIR TESTS ACCORDING TO CLAUSE 7.2 OF SABS 1200 LD MUST BE CARRIED OUT BETWEEN MANHOLES DURING THE FOLLOWING PHASES OF CONSTRUCTION:
    - i.) AFTER THE PIPES HAVE BEEN LAID.
    - ii.) AFTER THE INITIAL BACKFILLING HAS BEEN COMPLETED.
  - b.) 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.
- 4.) TRENCHES:
  - a.) EXCAVATION AND BACKFILLING OF TRENCHES TO COMPLY WITH SABS 1200 DB.
  - b.) BEDDING OF PIPES TO COMPLY WITH SABS 1200 LB FOR FLEXIBLE PIPES.
  - c.) 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 INSITU MATERIAL.
  - d.) SEWERS TO BE PROTECTED AT ROAD CROSSINGS AS SHOWN ON THE TYPICAL PLAN FOR PIPE BEDDINGS.
  - e.) TRENCHES TO BE PROTECTED FROM STORMWATER INFLOW.
- 5.) MANHOLES AND FITTINGS:
  - a.) ALL CONCRETE, BENCHING AND SEALERS SHALL COMPLY WITH SABS 1200 GA OR SABS 1200 LD AS APPLICABLE.
  - b.) PRECAST CONCRETE SECTIONS TO COMPLY WITH SABS 1294.
  - c.) CLASSES OF CONCRETE:
    - i.) PRECAST CONCRETE SECTIONS - 30/19.
    - ii.) BEDDING CRADDLER - 15/19.
    - iii.) ALL OTHER CONCRETE - 25/19.
  - d.) CHANNELS IN THE MANHOLES TO BE LAID IN THE WET CONCRETE  
FLOOR AND THE FIRST OR STARTER PRECAST SECTION OF 250mm BE PLACED AND THE BENCHING COMPLETED WITHIN 24 HOURS AFTER CASTING THE CONCRETE FLOOR NO DRIERS WILL BE PERMITTED.
  - e.) STEP IRONS SHALL NOT BE INSTALLED IN MANHOLES.
- 6.) CLEANING:  
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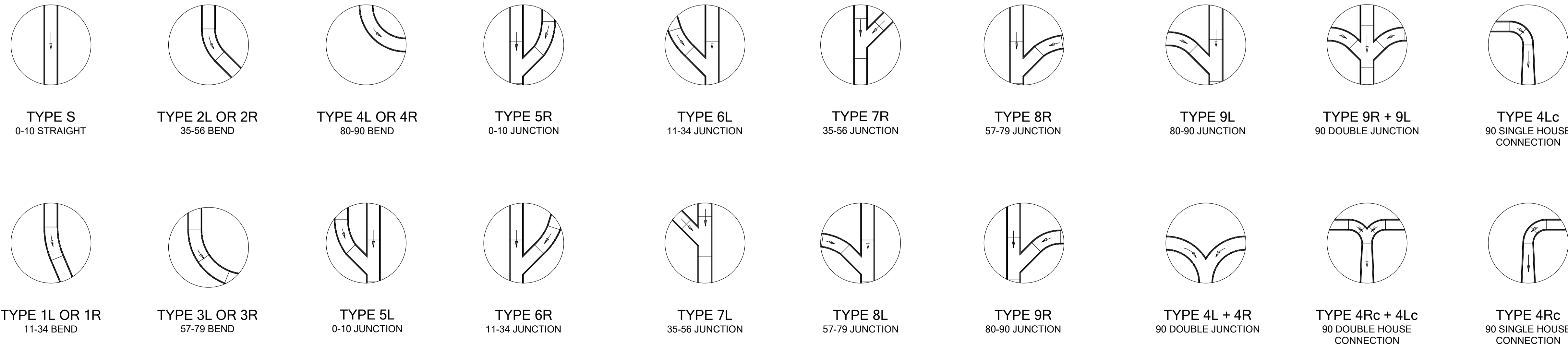
FIXING DETAILS OF SADDLE ON EXISTING MAIN SEWER  
N.T.S



PLAN SCALE 1:50



TYPE MH (gt)  
GRID TRAP



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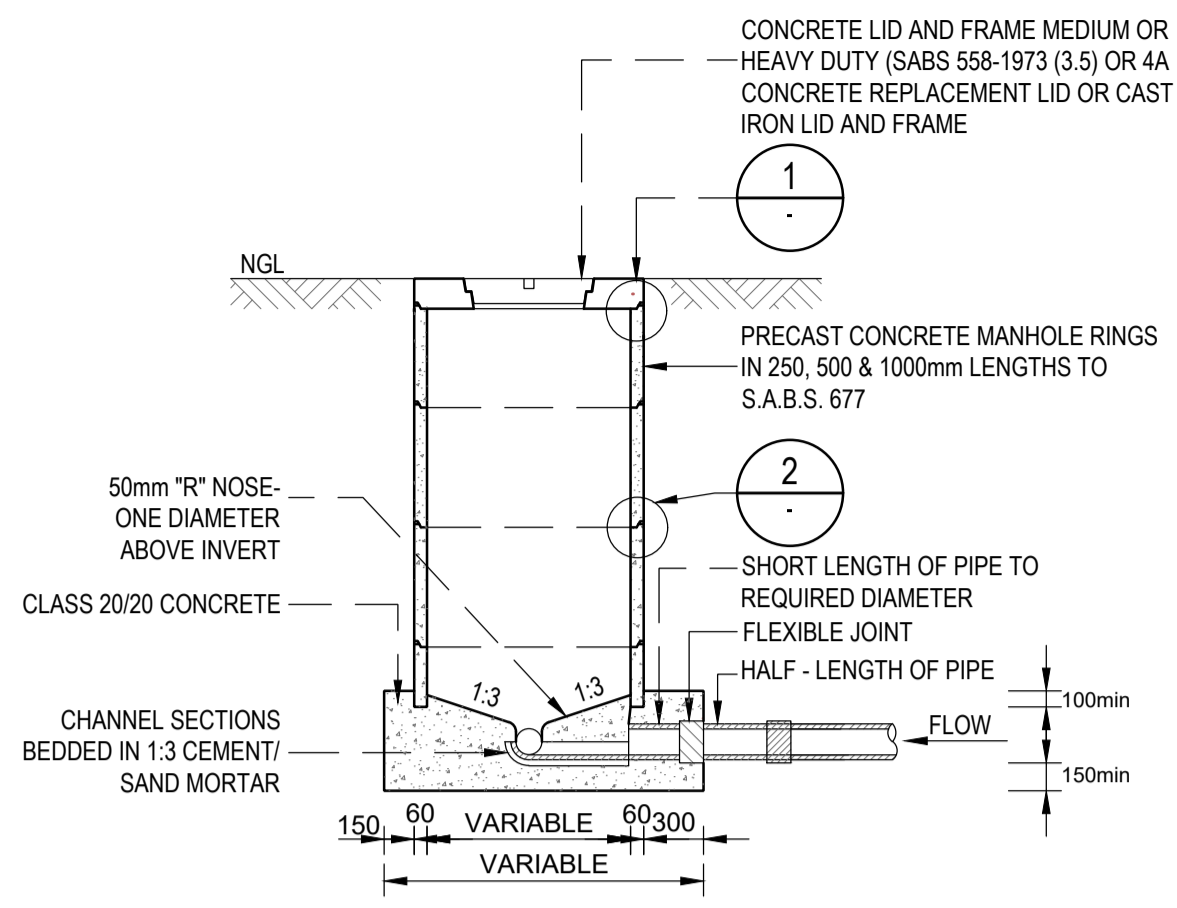
22-04-2024  
CONSULTING ENGINEER      DATE  
HJ DE WET  
Pr. Tech Eng : 2018300016



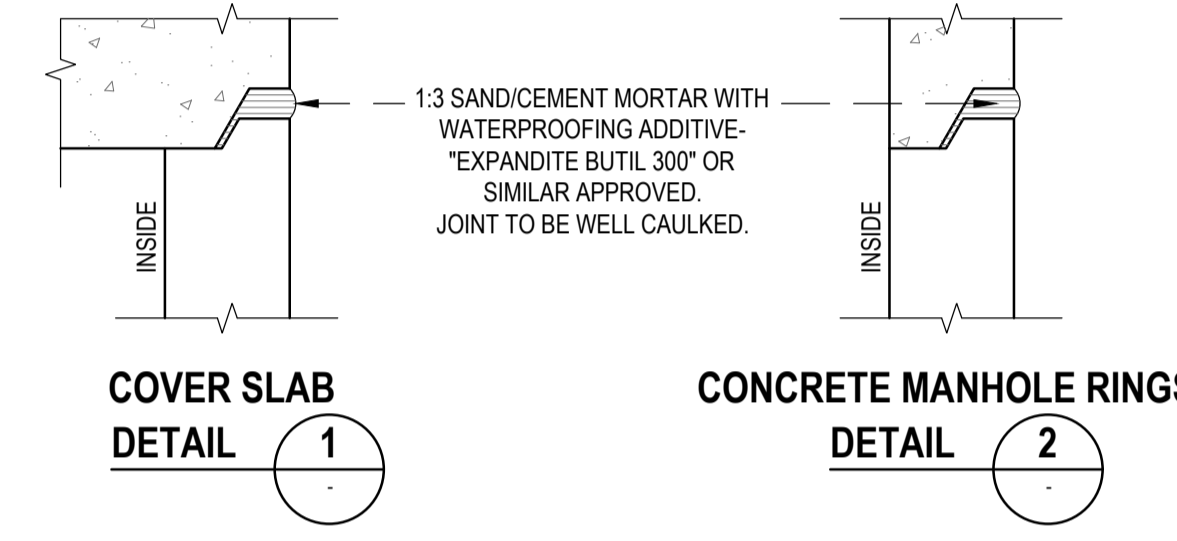
PROJECT  
**REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG**

TITLE  
**SEWER MANHOLE BENCHING LAYOUTS AND ANCHOR BLOCKS**

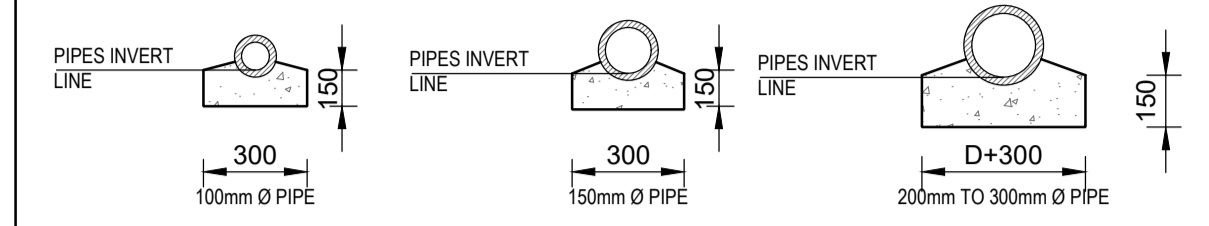
PLAN NO. 172/300      REVISION T



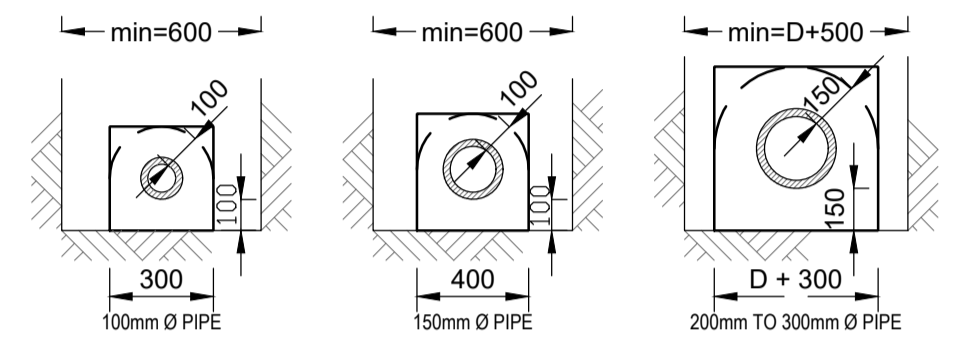
TYPICAL SECTION : MANHOLE CHAMBER



DETAIL R1: TYPICAL SECTIONS THROUGH MANHOLE

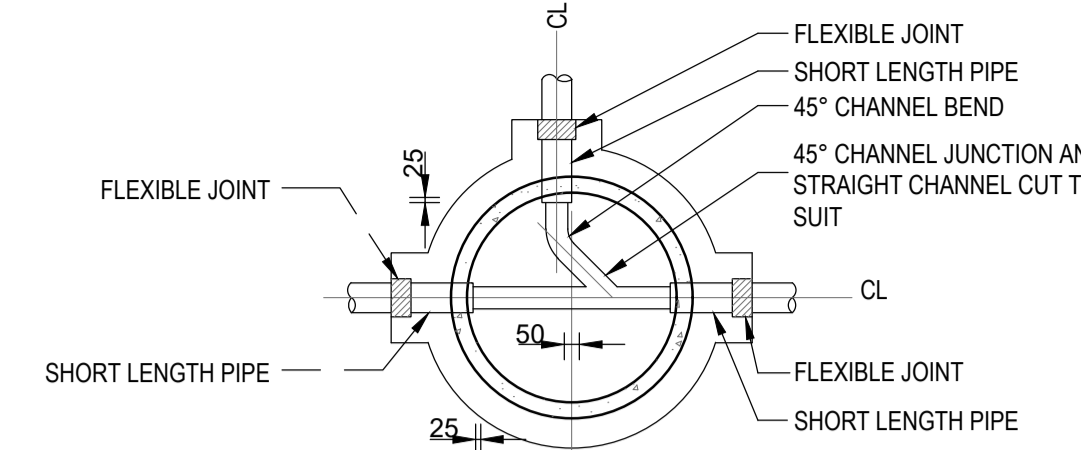


SECTION OF SEWER PIPES ON CONCRETE BEDDING (ONLY WHERE SPECIFIED) CLASS 20MPa/20 CONCRETE

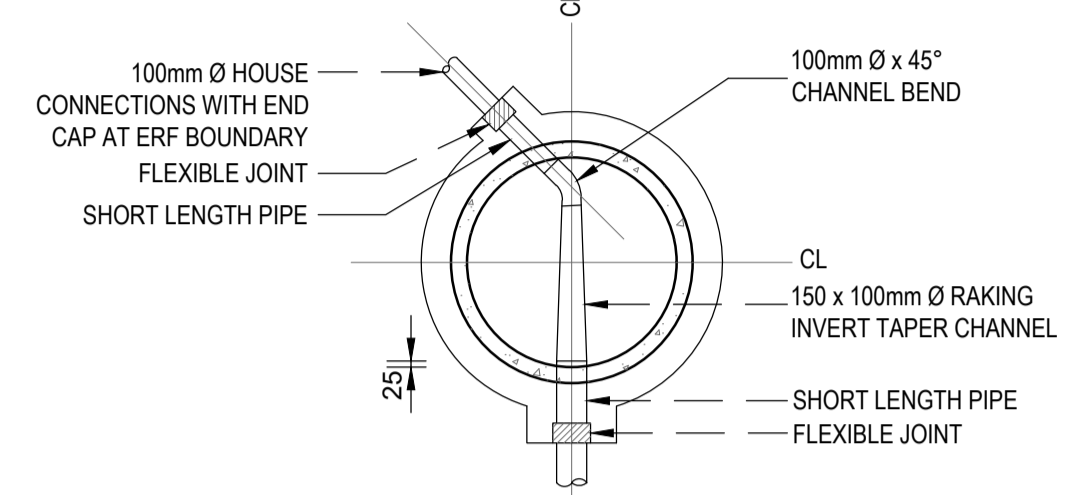


SECTION OF SEWER PIPES ON CONCRETE ENCASING (ONLY WHERE SPECIFIED) CLASS 20/20 CONCRETE

DETAIL R2: MANHOLE DETAIL - CONCRETE BEDDING AND ENCASING

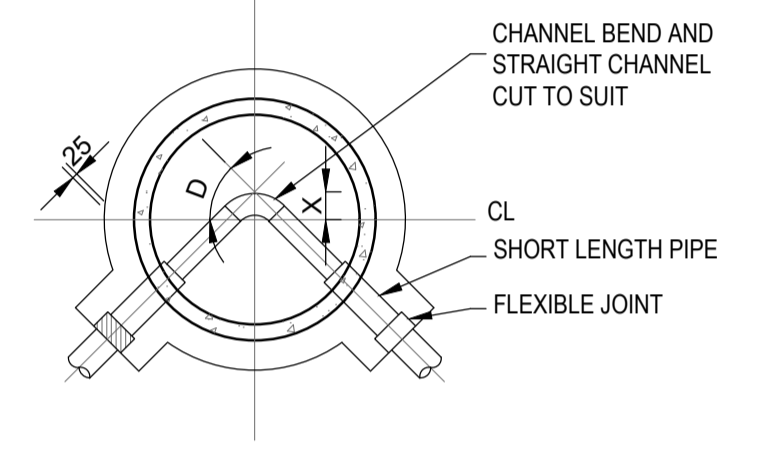


PLAN OF 90° BRANCH AND CONNECTION



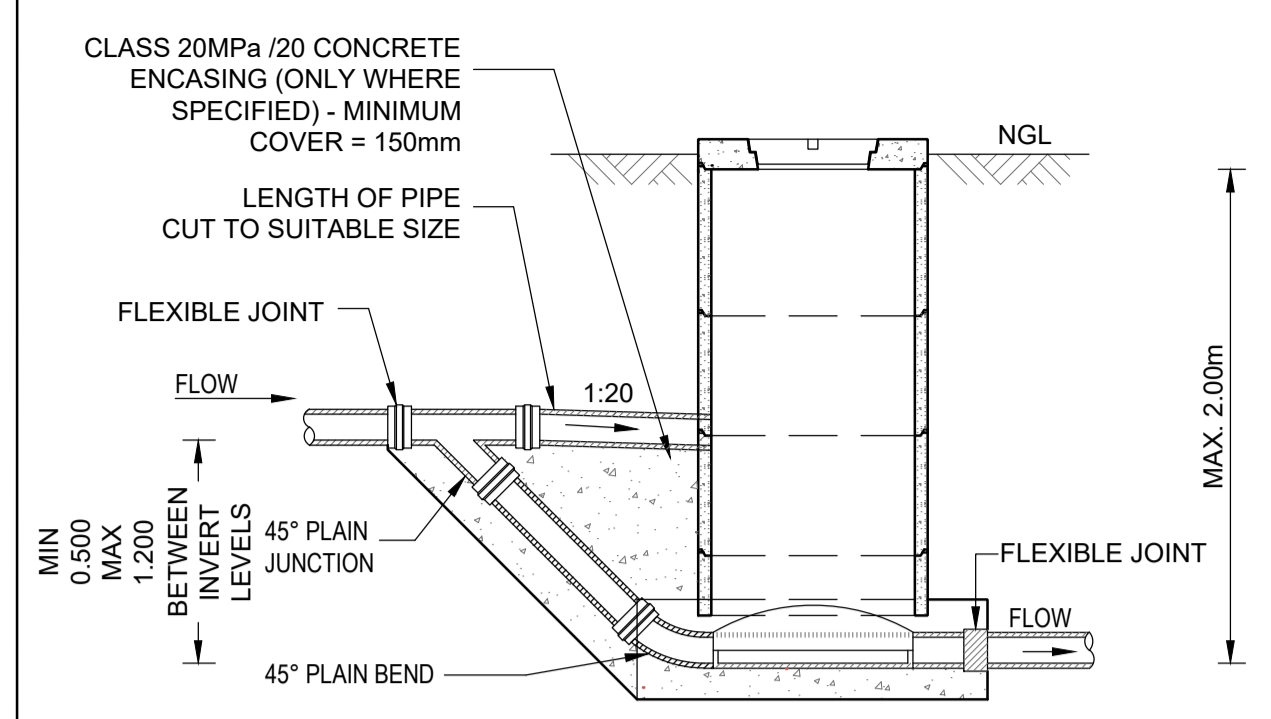
PLAN OF TERMINAL MANHOLES

DEF. ANGLE D	DISTANCE X
11,25°	50
22,5°	100
45°	140
67,5°	190
90°	230

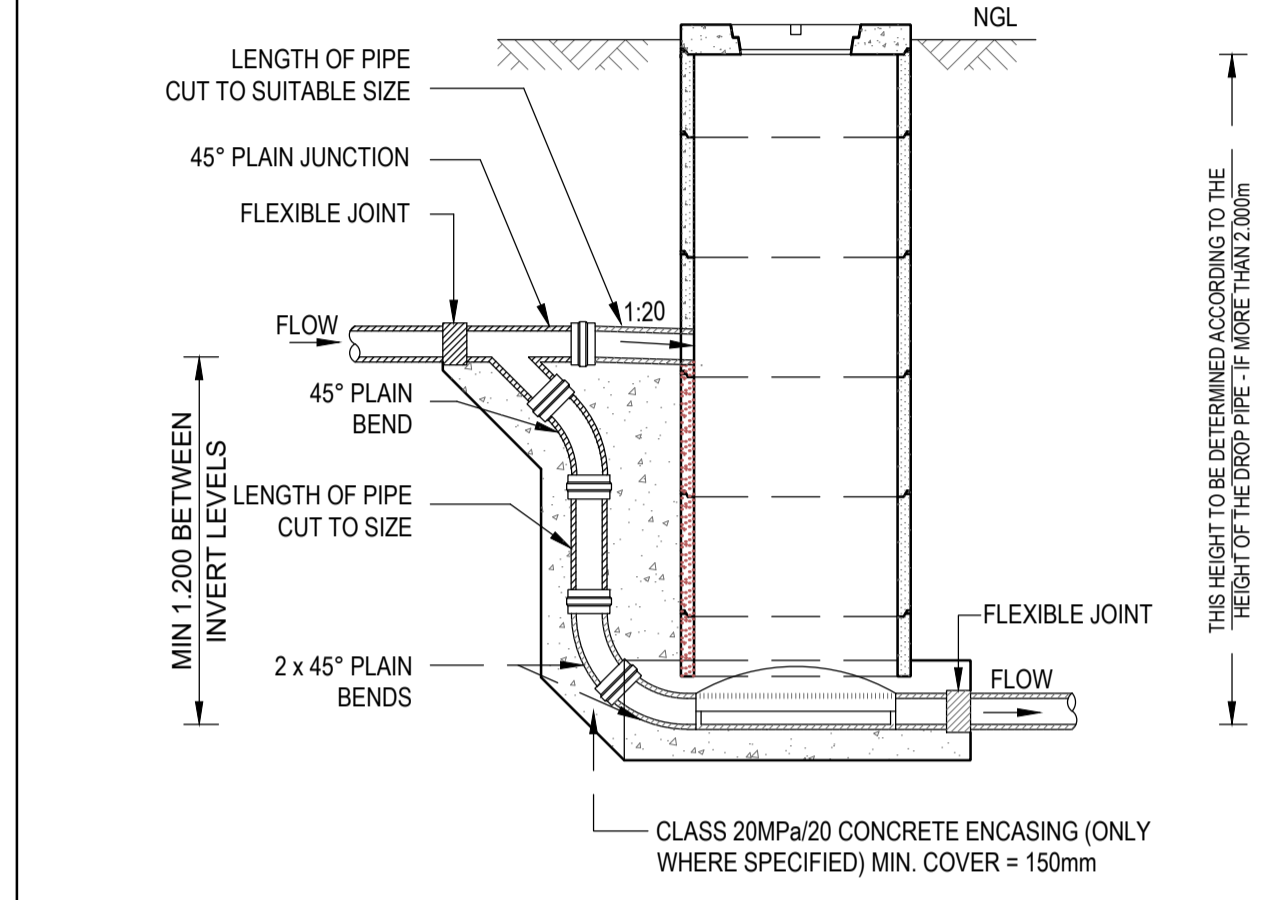


PLAN OF MANHOLE AT BENDS

DETAIL R3: TYPICAL CHANNEL LAYOUTS



DETAIL OF RAMP AT MANHOLE



DETAIL OF DROP PIPE AT MANHOLE

DETAIL R4: DETAILS OF RAMP AND BACKDROPS

- NOTES**
- FLEXIBLE uPVC PIPES TO SANS 1601:2017 PIPES TO BE CLASS 40, HEAVY DUTY STRUCTURED WALL IN LENGTHS OF 6m MAX. AND EACH PIPE FITTED WITH INTEGRAL CUFF JOINTS. GUFF JOINTS TO USE A RUBBER COMPRESSION SEAL IN THE 2nd TROUGH FROM THE SPIGOT END.
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 Pr. Tech Eng : 2018300016



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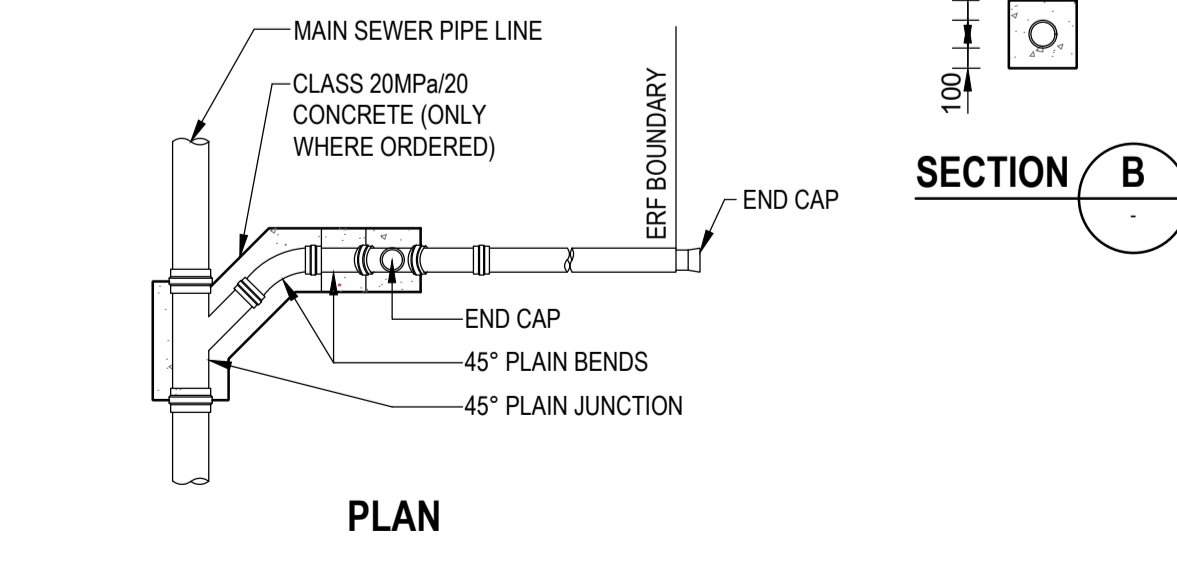
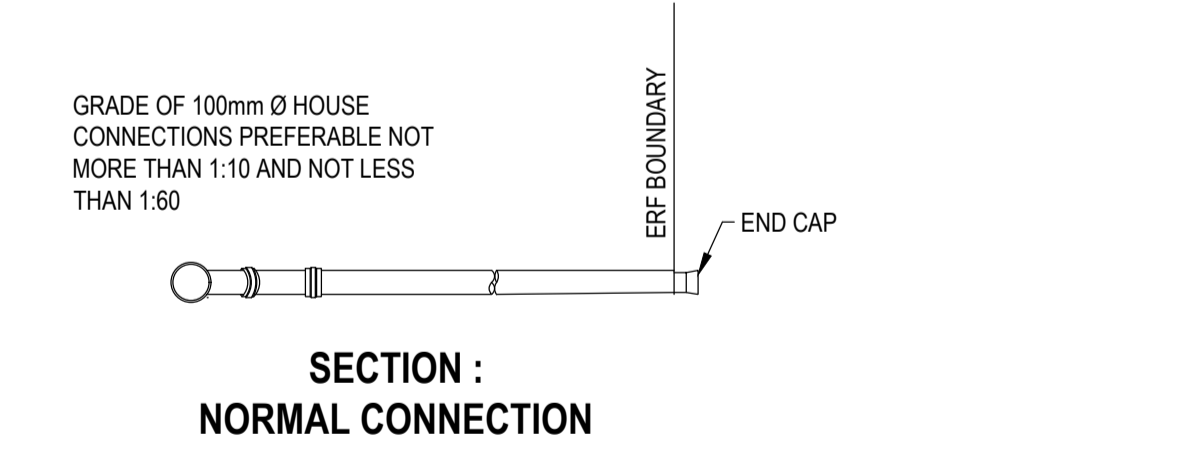
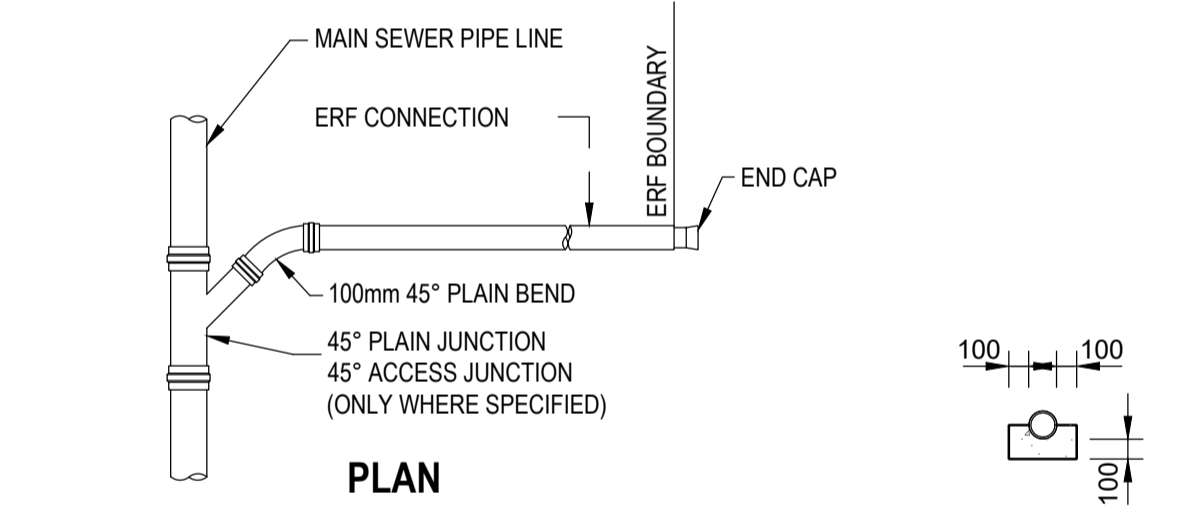


PROJECT

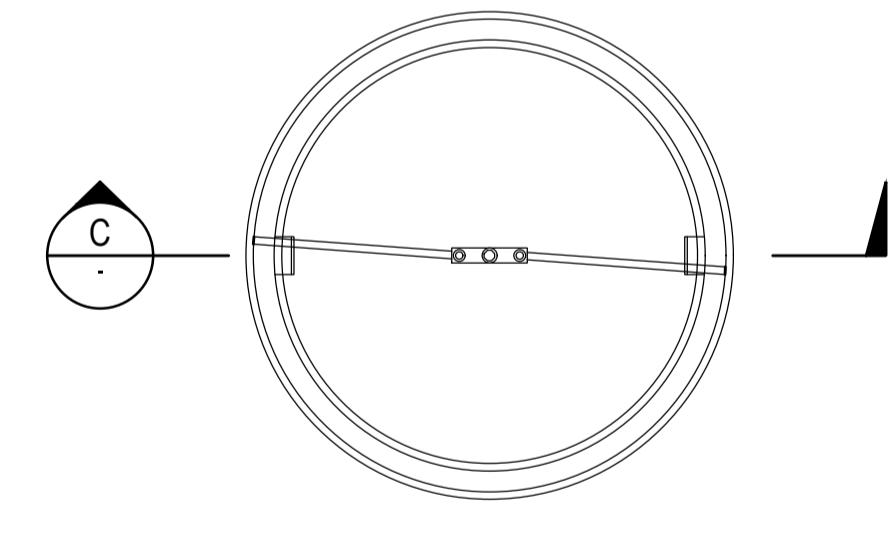
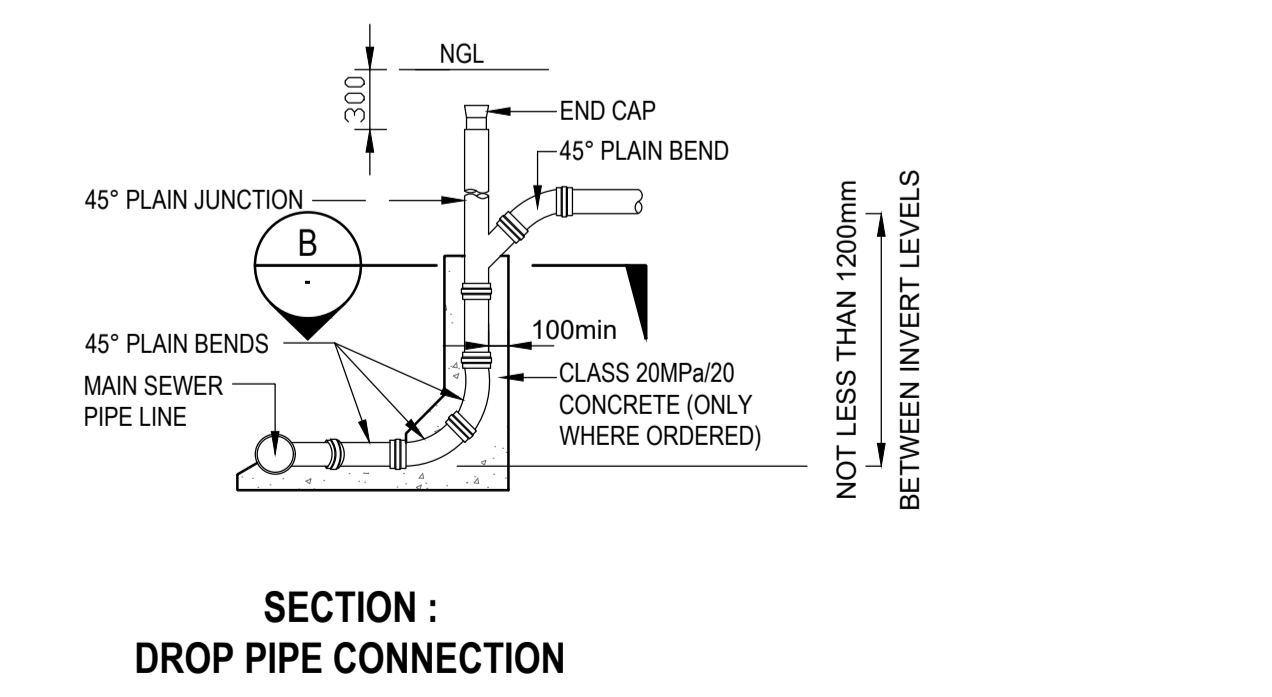
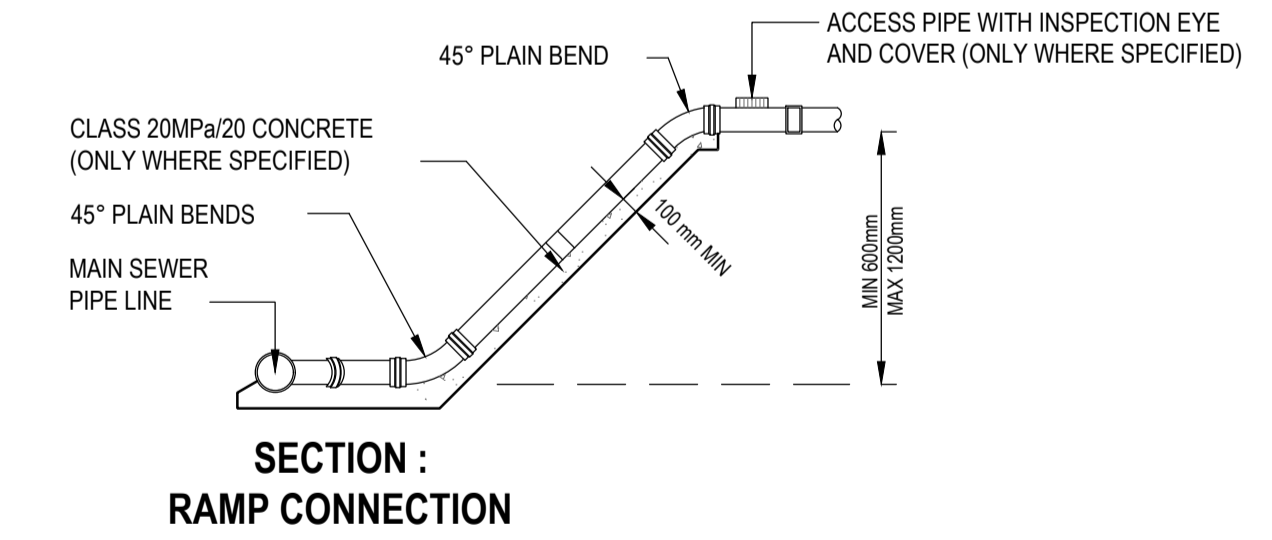
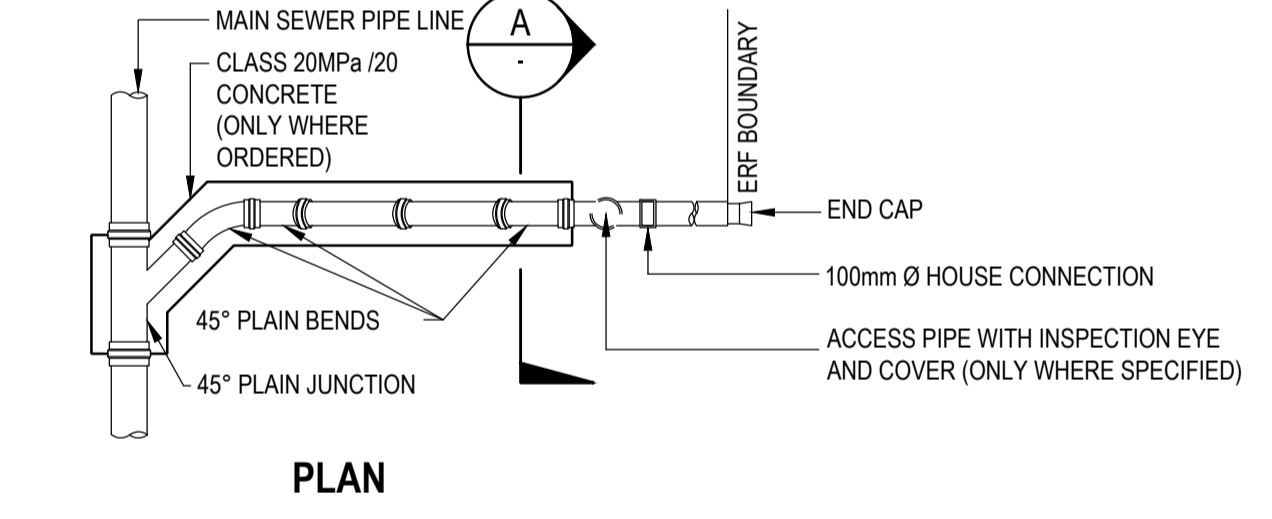
REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG

TITLE  
 SEWER MANHOLE AND BENCHING TYPICAL DETAIL

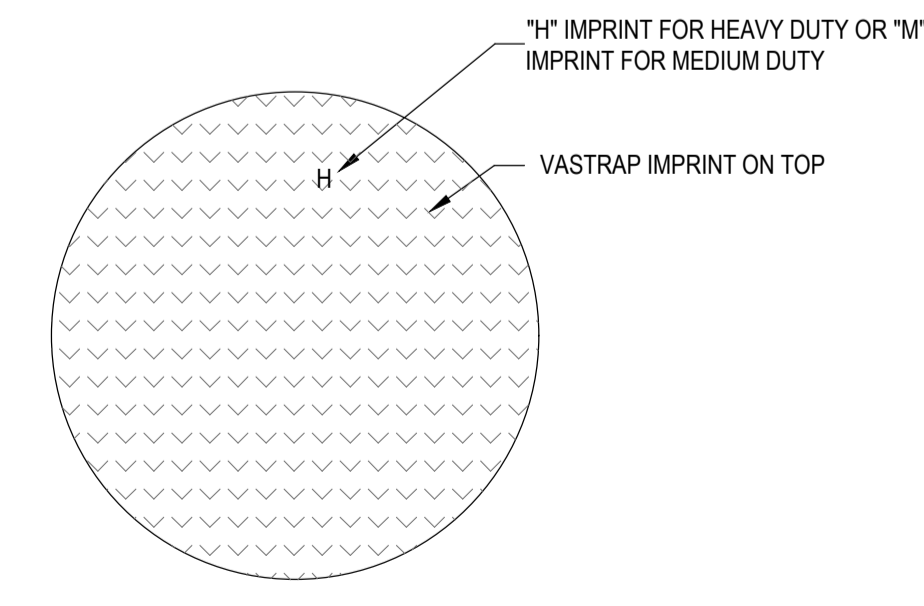
PLAN NO. 172/301      REVISION T



DETAIL R5: DETAILS OF ERF CONNECTIONS

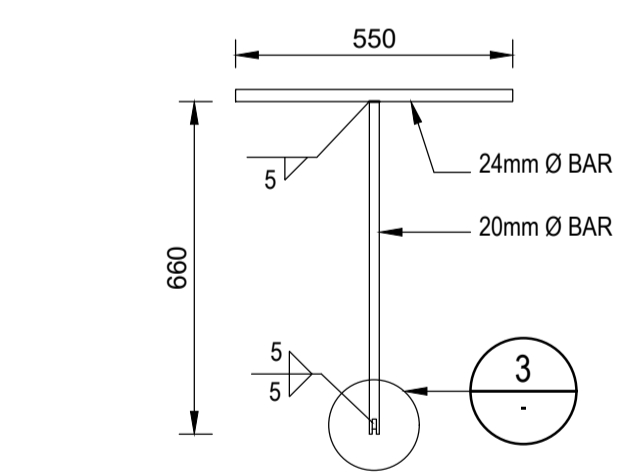
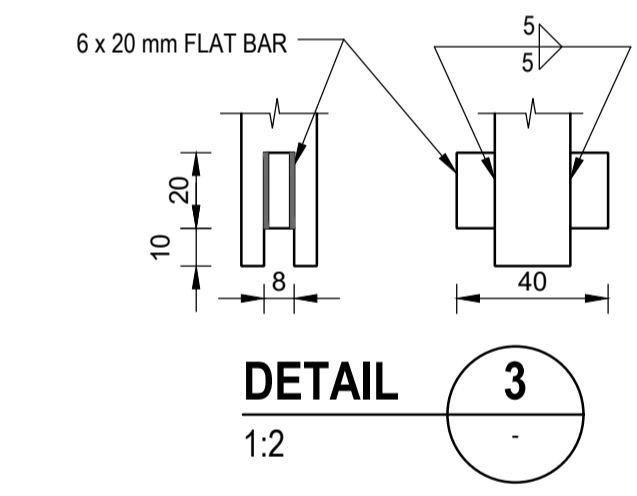


BOTTOM VIEW SCALE 1:10

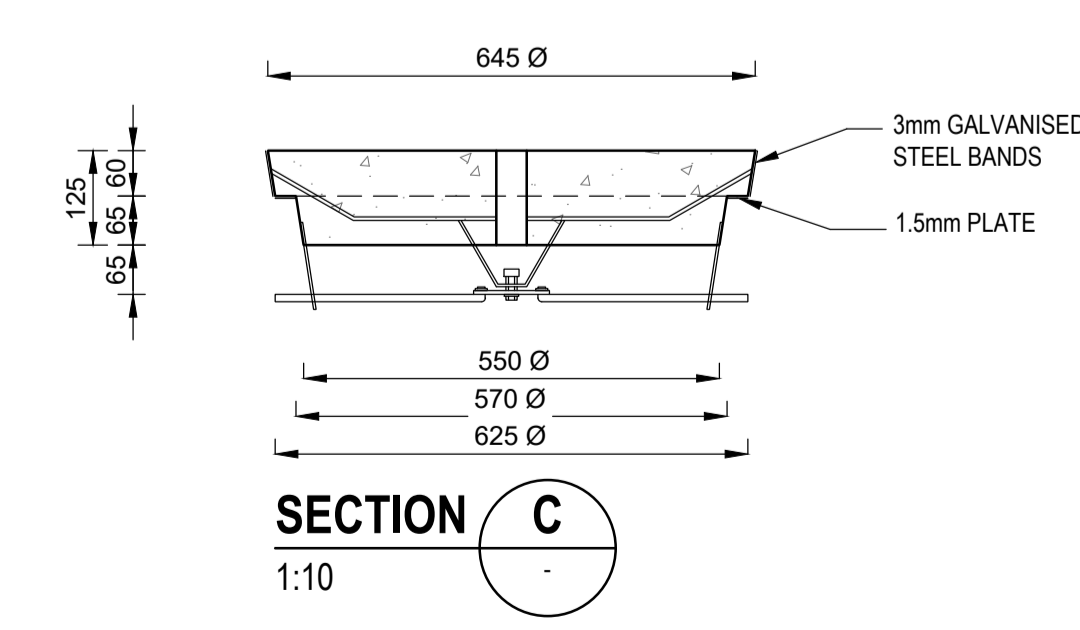


TOP VIEW SCALE 1:10

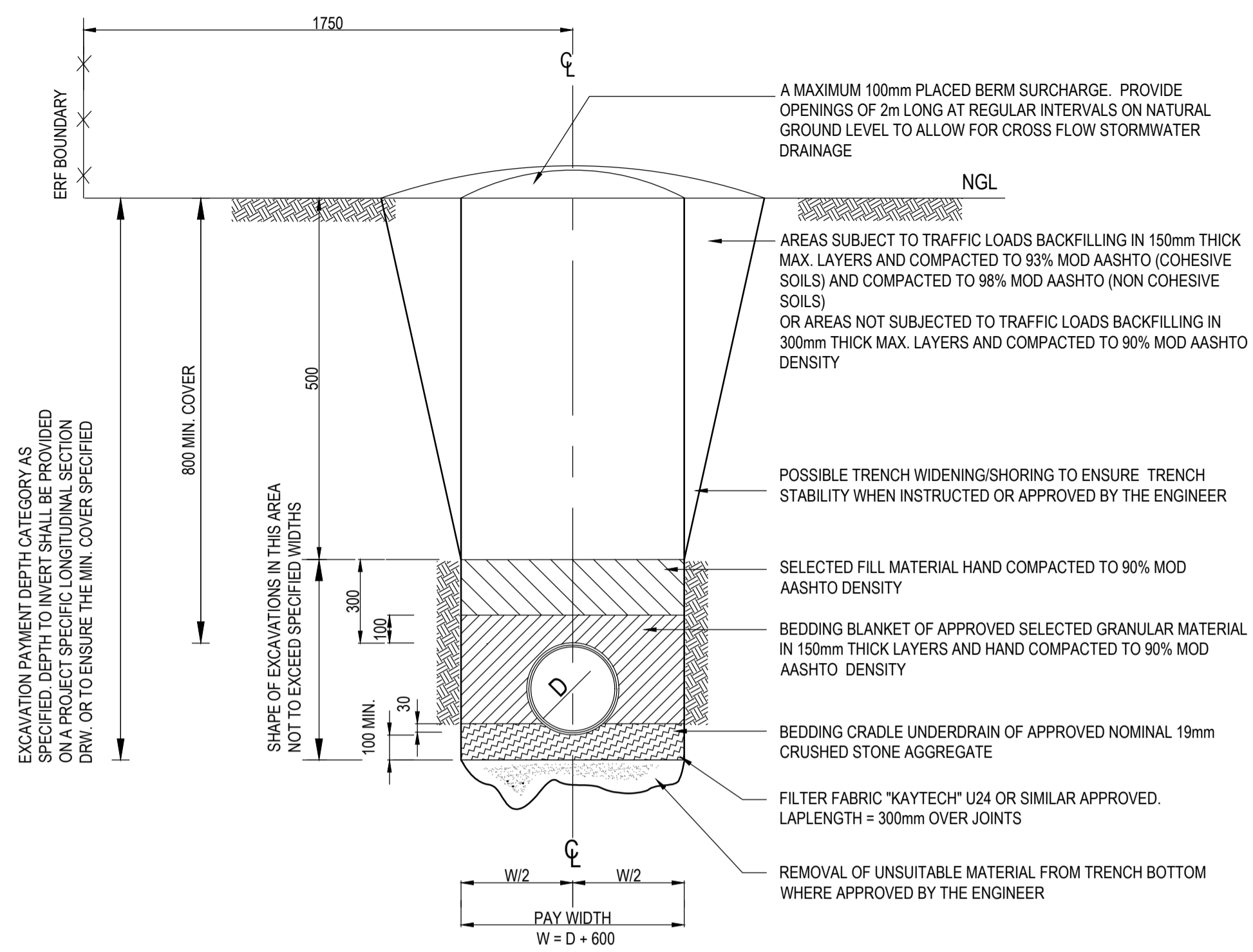
DETAIL R6: DETAIL OF MANHOLE LID WITH LOCKING DEVICE



LOCKING AND LIFTING KEY SCALE 1:15

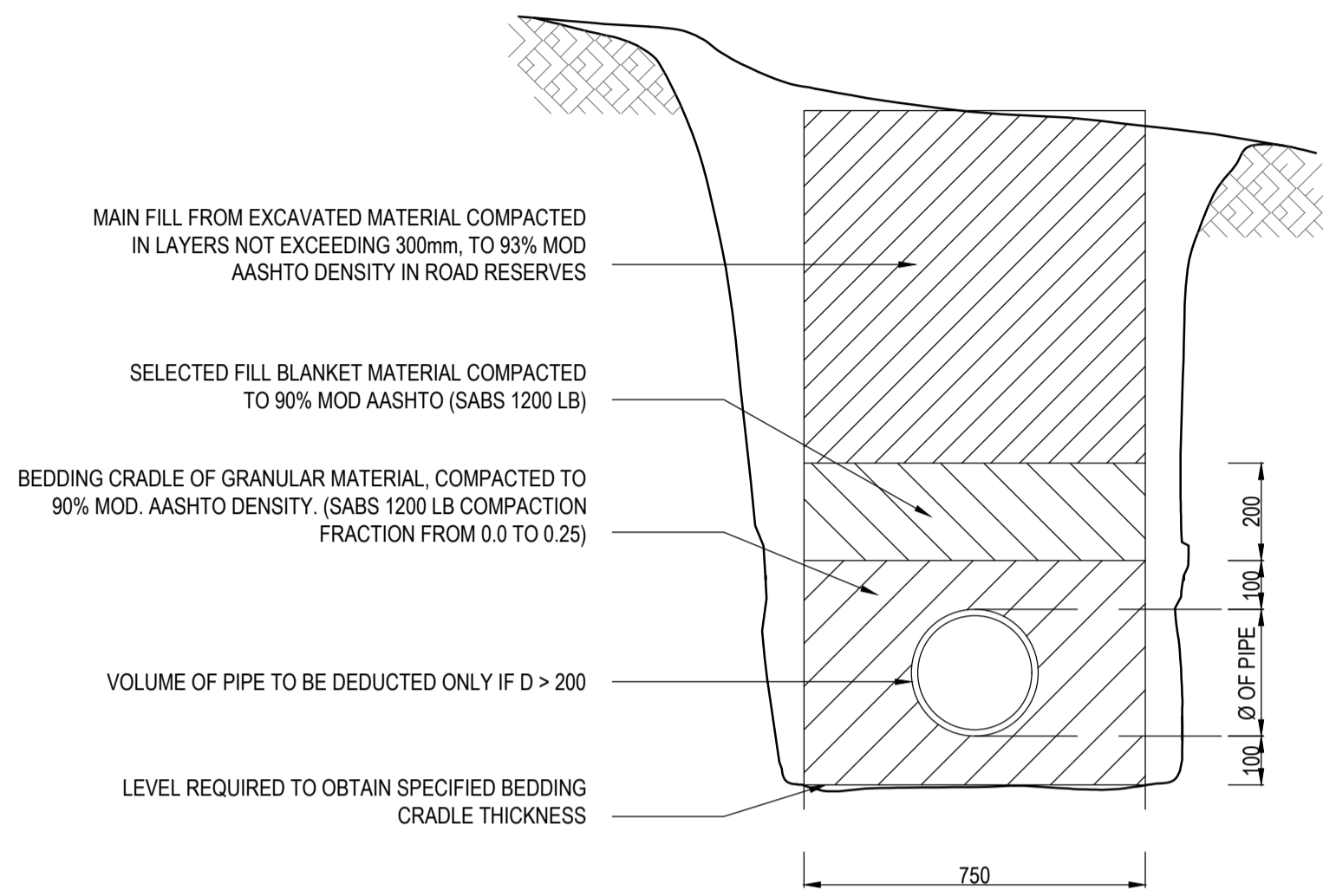


SECTION C 1:10

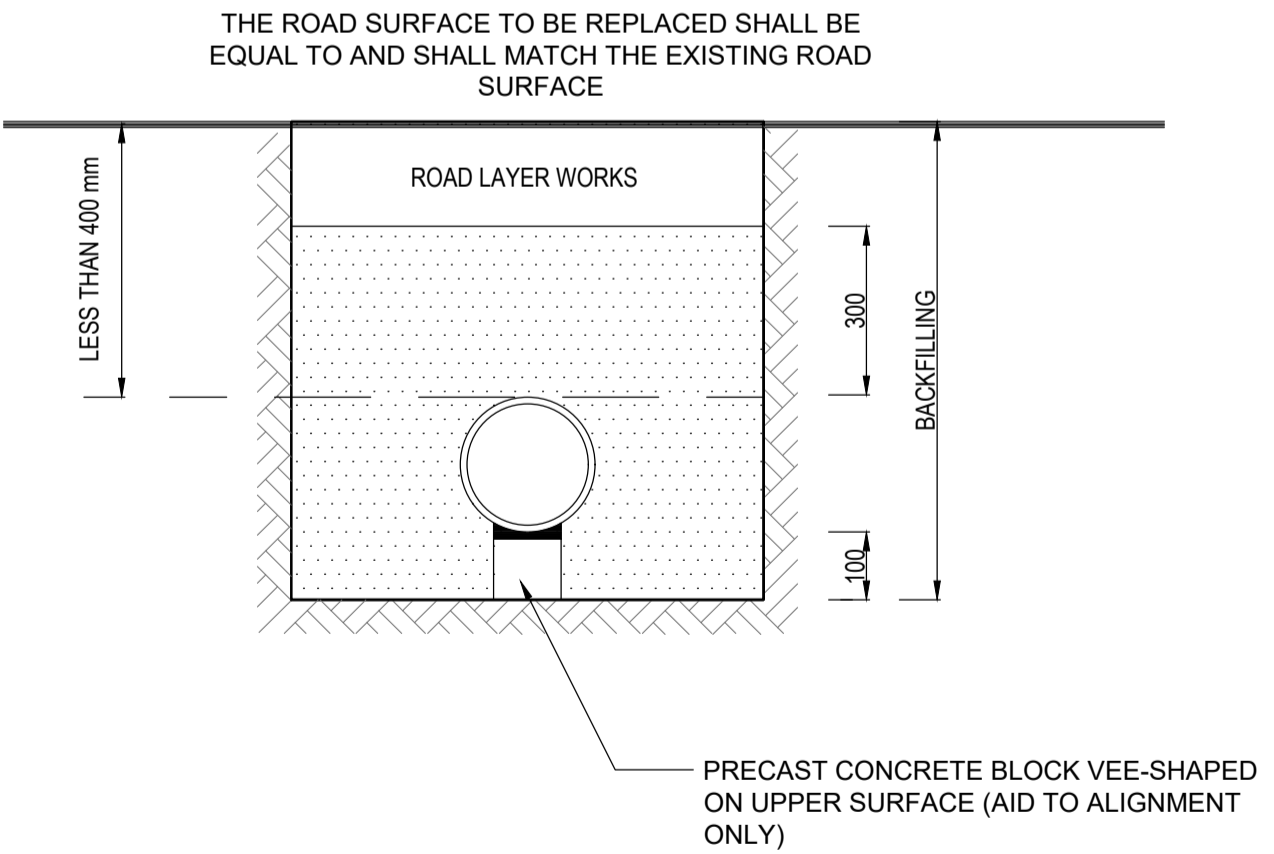


**TYPICAL UNDERDRAIN DETAILS FOR SEWER PIPE TRENCHES**  
N.T.S

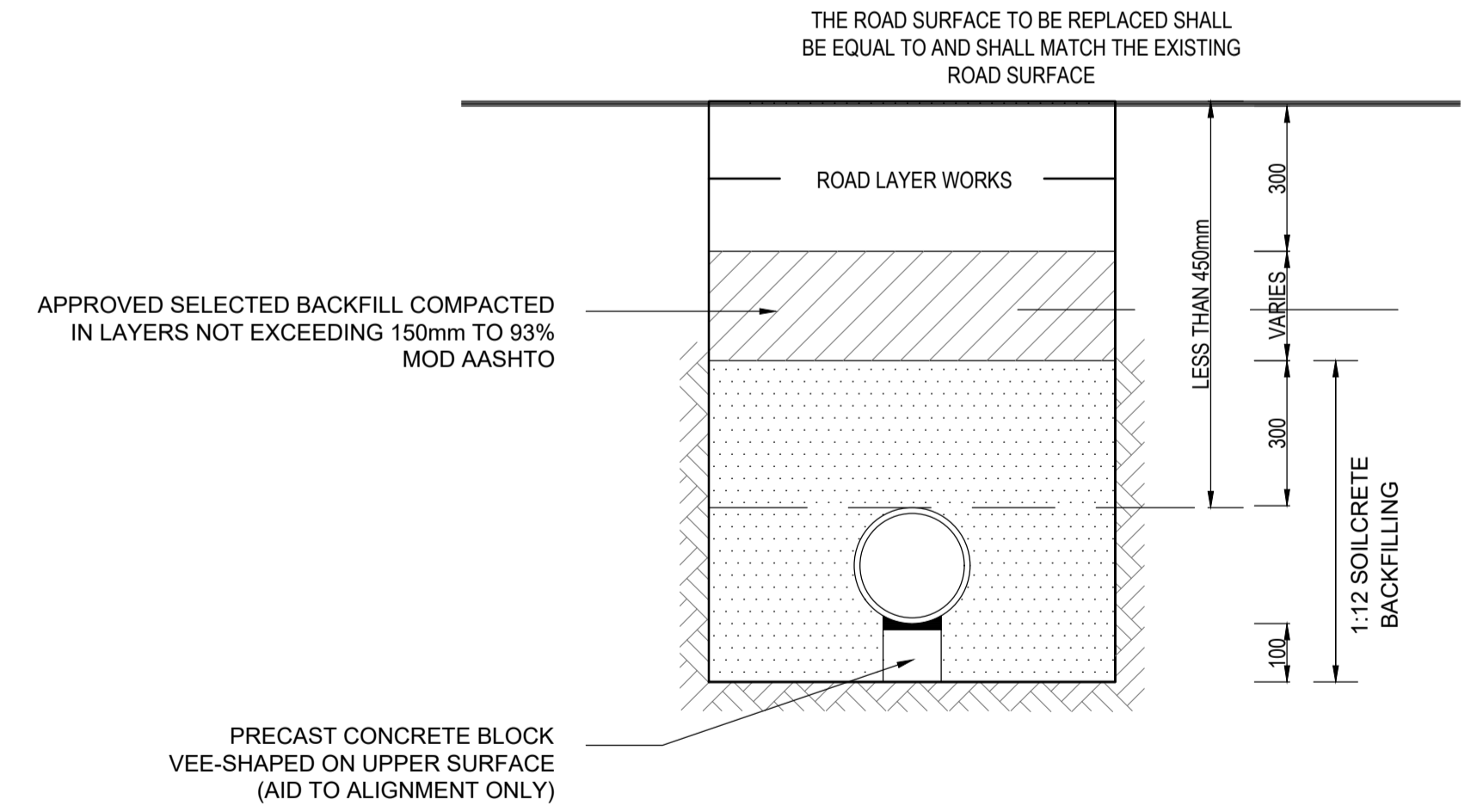
NOTES:  
COVER ON HDPE WATER PIPES SHALL BE 500 mm. PIPE BEDDING AND BLANKET MATERIAL SHALL CONFORM TO:  
1) MAXIMUM P.F. 6  
2) MAXIMUM SIZE: BEDDING 6 mm BLANKET 19 mm



**MEASUREMENT OF BEDDING FOR FLEXIBLE SEWER PIPES**  
N.T.S



**ROAD CROSSING : COVER < 450 mm**  
N.T.S



**ROAD CROSSING : COVER > 450 mm**  
N.T.S

**NOTES**

- COVER ON SEWER PIPES SHALL BE:
- UNDER WALKWAYS = 800mm
  - UNDER PERMANENT SURFACE ROADWAYS = 1000mm
  - UNDER GRAVEL SURFACED ROADWAYS = 1500mm
- PIPE BEDDING AND BLANKET MATERIAL SHALL CONFORM TO SANS 1200LB.
- 3.1 SELECTED GRANULAR MATERIAL FOR BEDDING CRADLE:
- GRADING 0.6 - 19mm
  - NON CORROSIVE, FREE DRAINING
  - COMPATIBILITY FACTOR MAX 0.4
  - PI MAX = 6
- 3.2 SELECTED FILL MATERIAL FOR SELECTED FILL BLANKET
- MAXIMUM PARTICLE SIZE 30mm
  - PI MAX = 6

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HJ DE WET  
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**REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG**

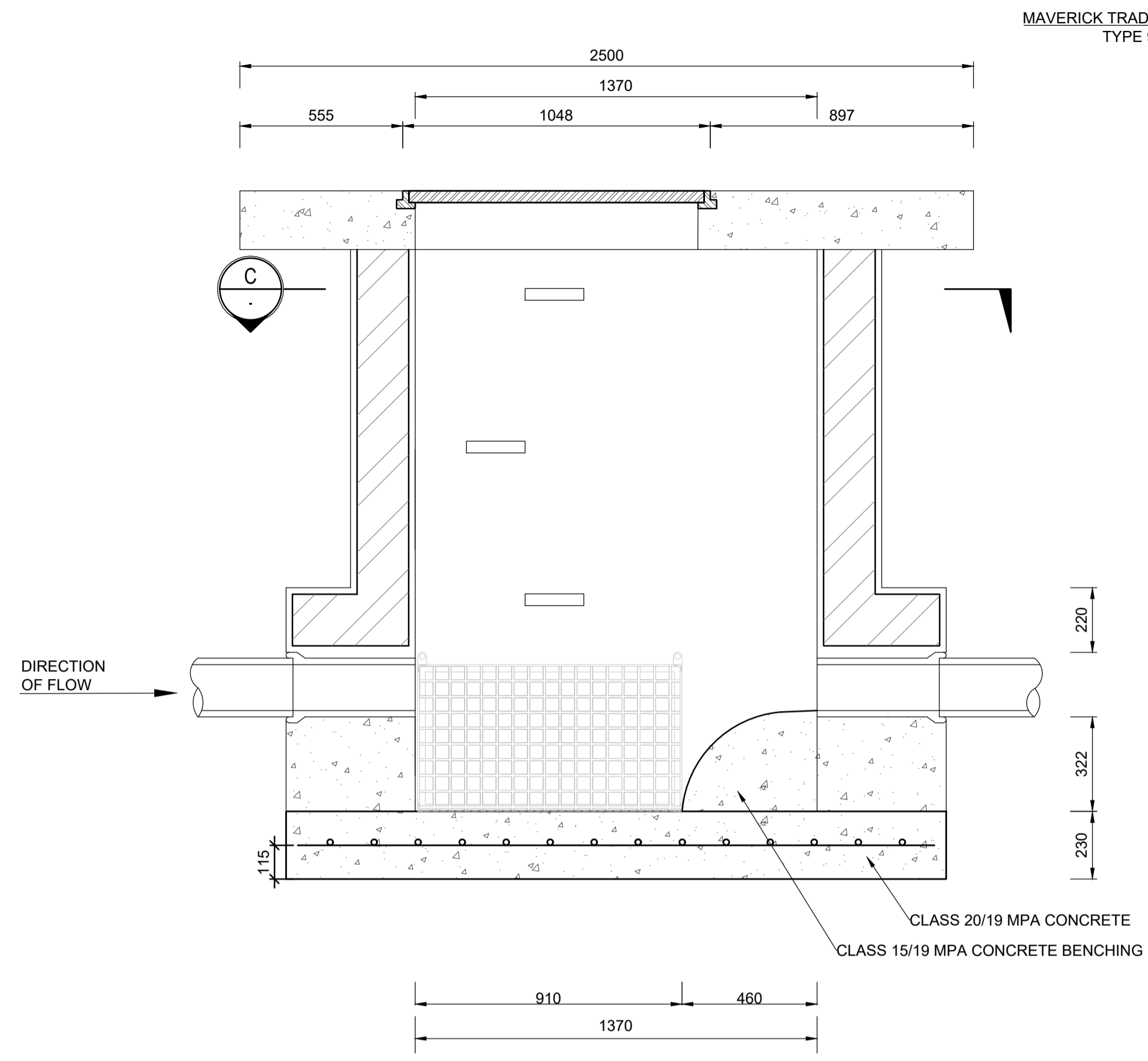
TITLE  
**SEWER PIPE, TRENCHES AS BEDDING**

PLAN NO. 172/302      REVISION T

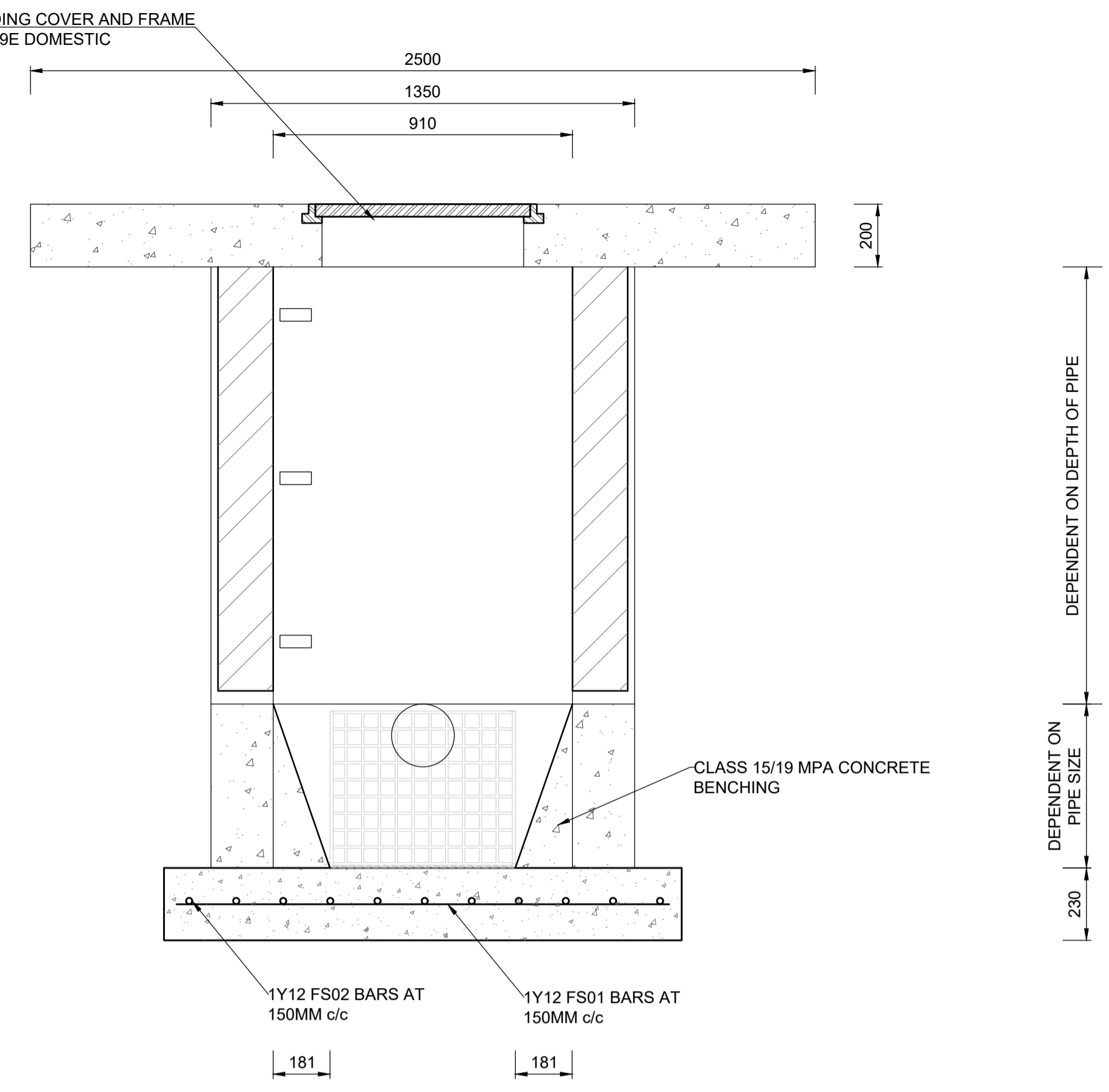
**NOTES**

- 1.) FLEXIBLE uPVC PIPES TO SANS 1601:2017 PIPES TO BE CLASS 40, HEAVY DUTY STRUCTURED WALL IN LENGTHS OF 6m MAX. AND EACH PIPE FITTED WITH INTEGRAL CUFF JOINTS. GUFF JOINTS TO USE A RUBBER COMPRESSION SEAL IN THE 2nd TROUGH FROM THE SPIGOT END.
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  - e.) STEP IRONS SHALL NOT BE INSTALLED IN MANHOLES 300mm C/C.
- 6.) 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.

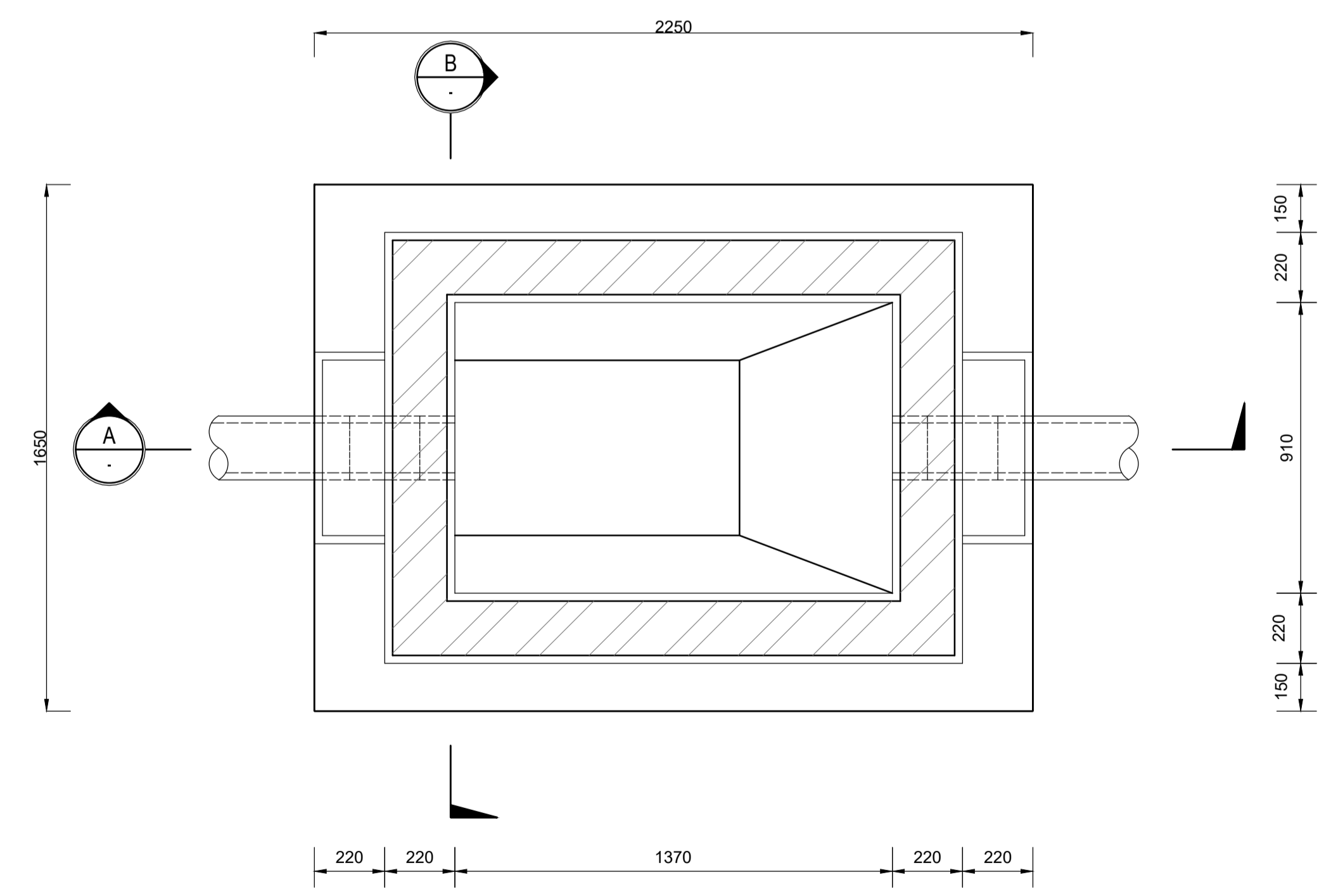
NOTE:  
 1. ALL PIPE CONNECTIONS TO MANHOLES TO HAVE FLEXIBLE JOINTS.  
 2. BRICKWORK TO BE 220mm.  
 3. ALL BRICKWORK TO BE PLASTERED INTERNALLY AND EXTERNALLY WITH 13mm 1:3 CEMENT MORTAR.  
 4. BENCHING TO BE RENDERED IN 20mm 1:3 CEMENT MORTAR.  
 5. STEP IRONS, IF REQUIRED BY PROJECT SPECIFICATION, TO BE PLACED AT 300mm CENTRES AND STAGGERED LEFT AND RIGHT.



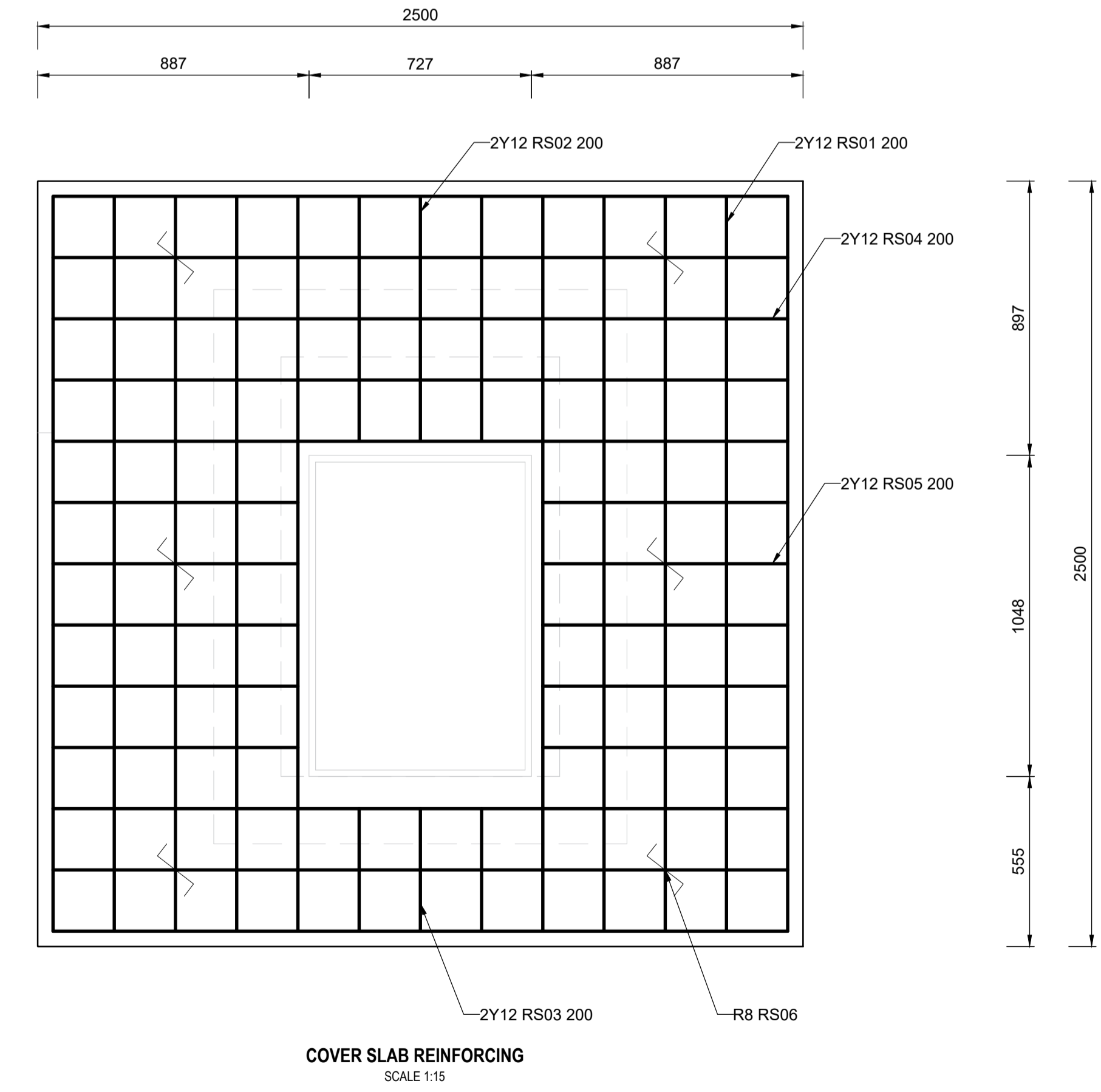
**SECTION A**  
1:15



**SECTION B**  
1:15



**SECTION C**  
1:15



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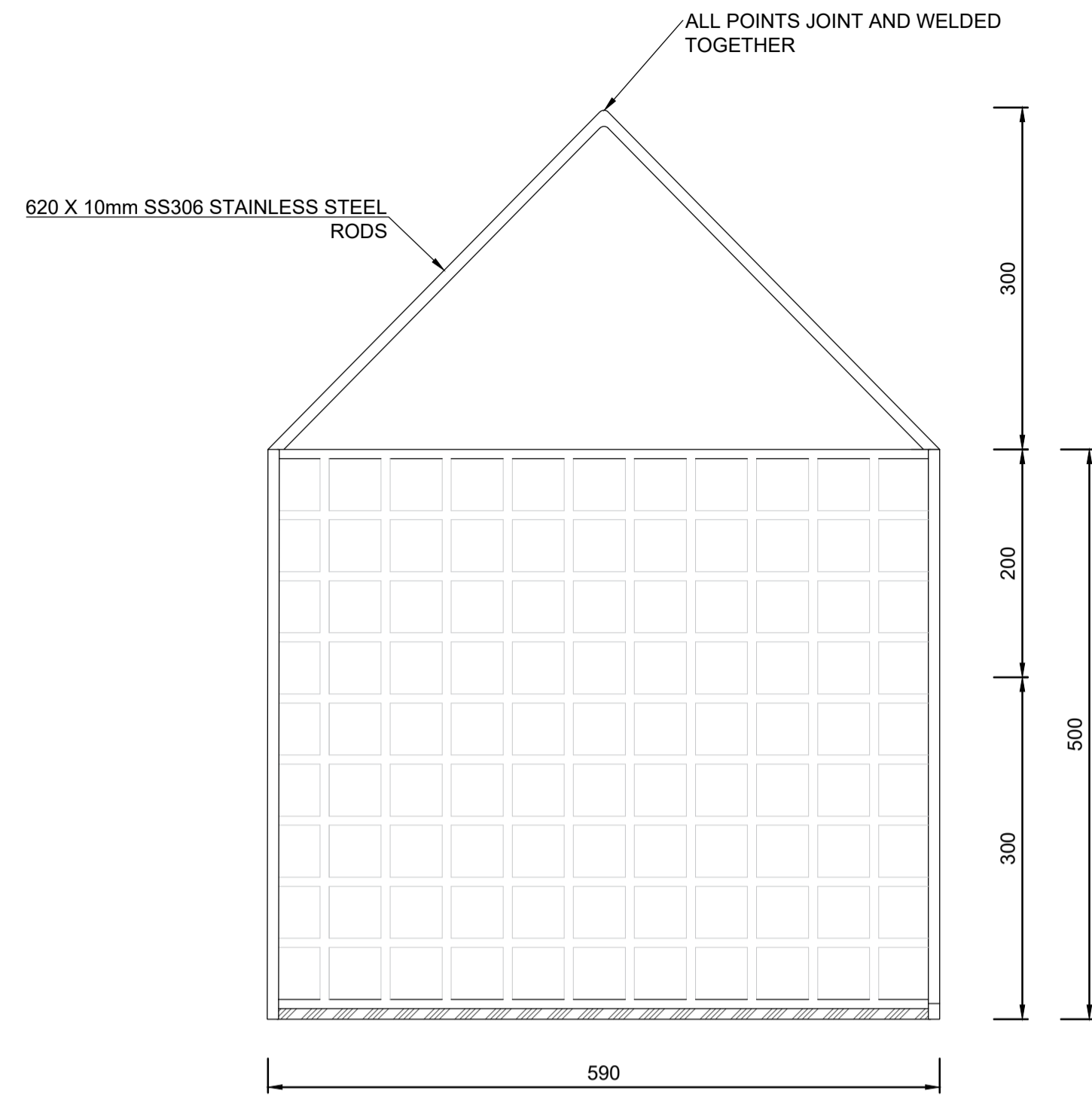


PROJECT  
**REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG**

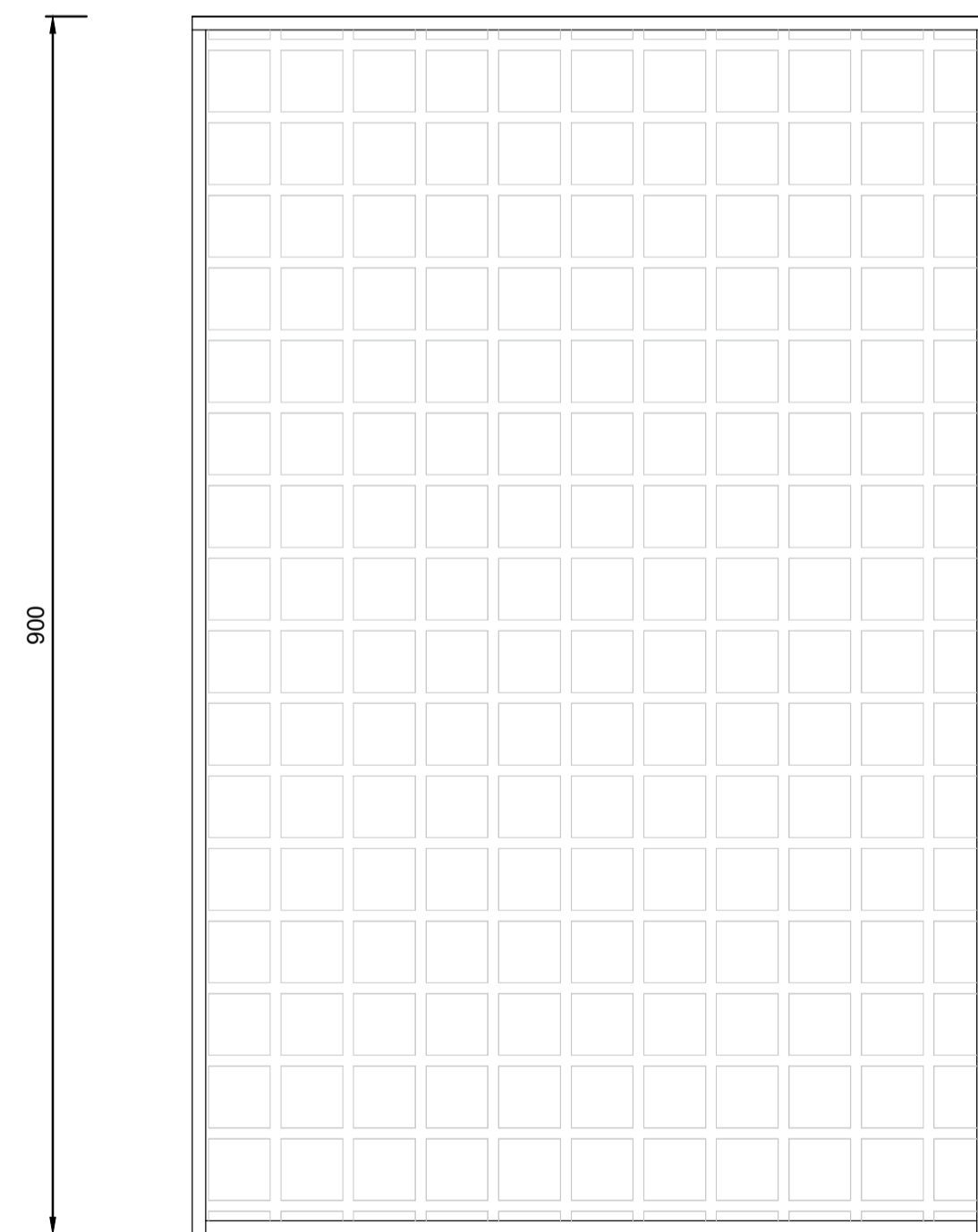
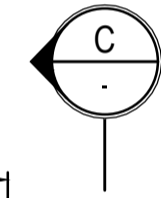
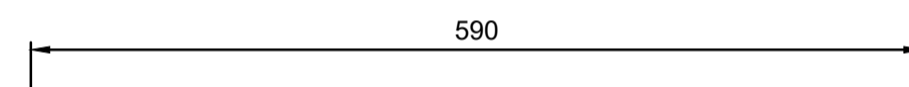
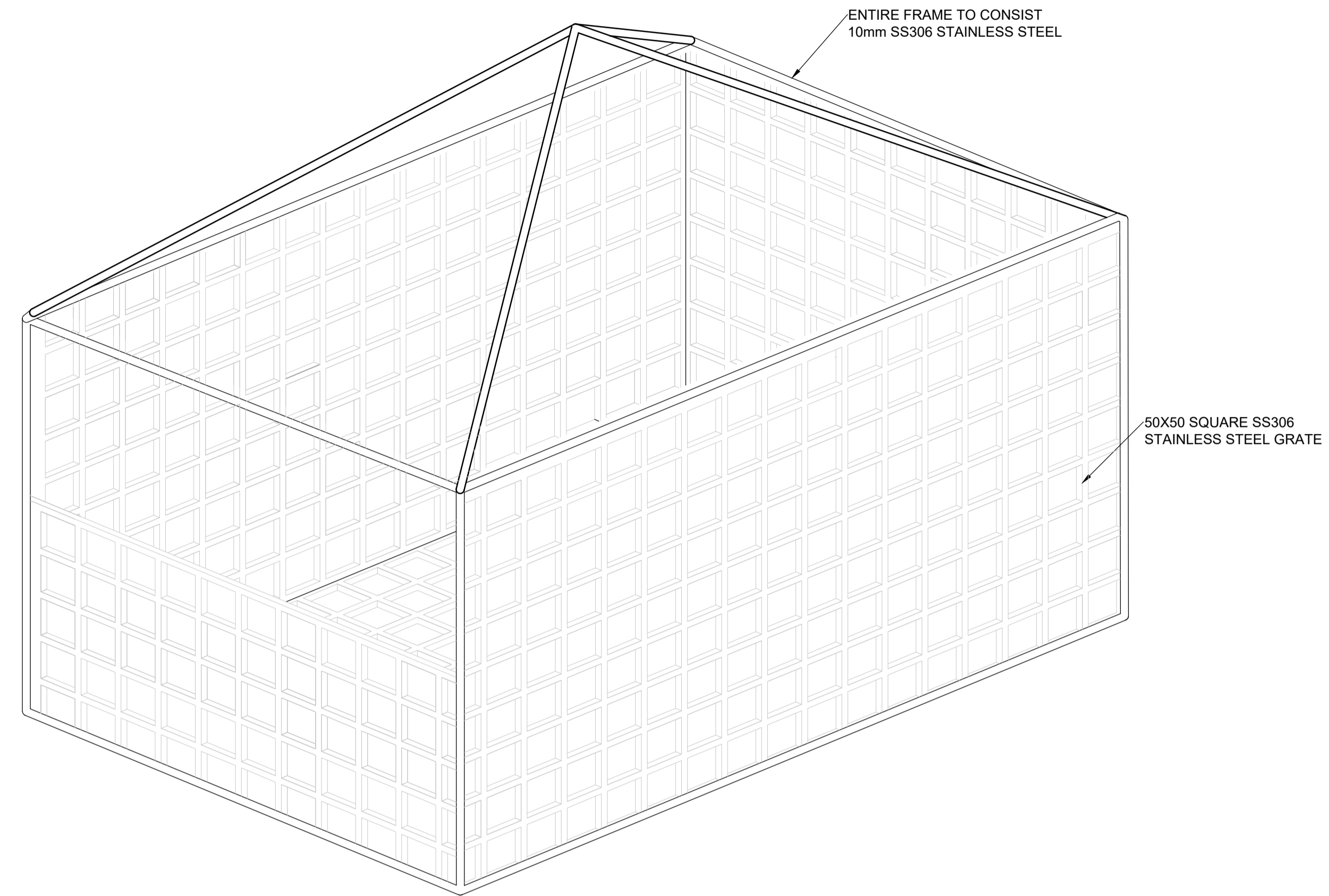
TITLE  
**SEWER GRIT COLLECTING MANHOLE DETAIL**

PLAN NO. 172/303      REVISION T

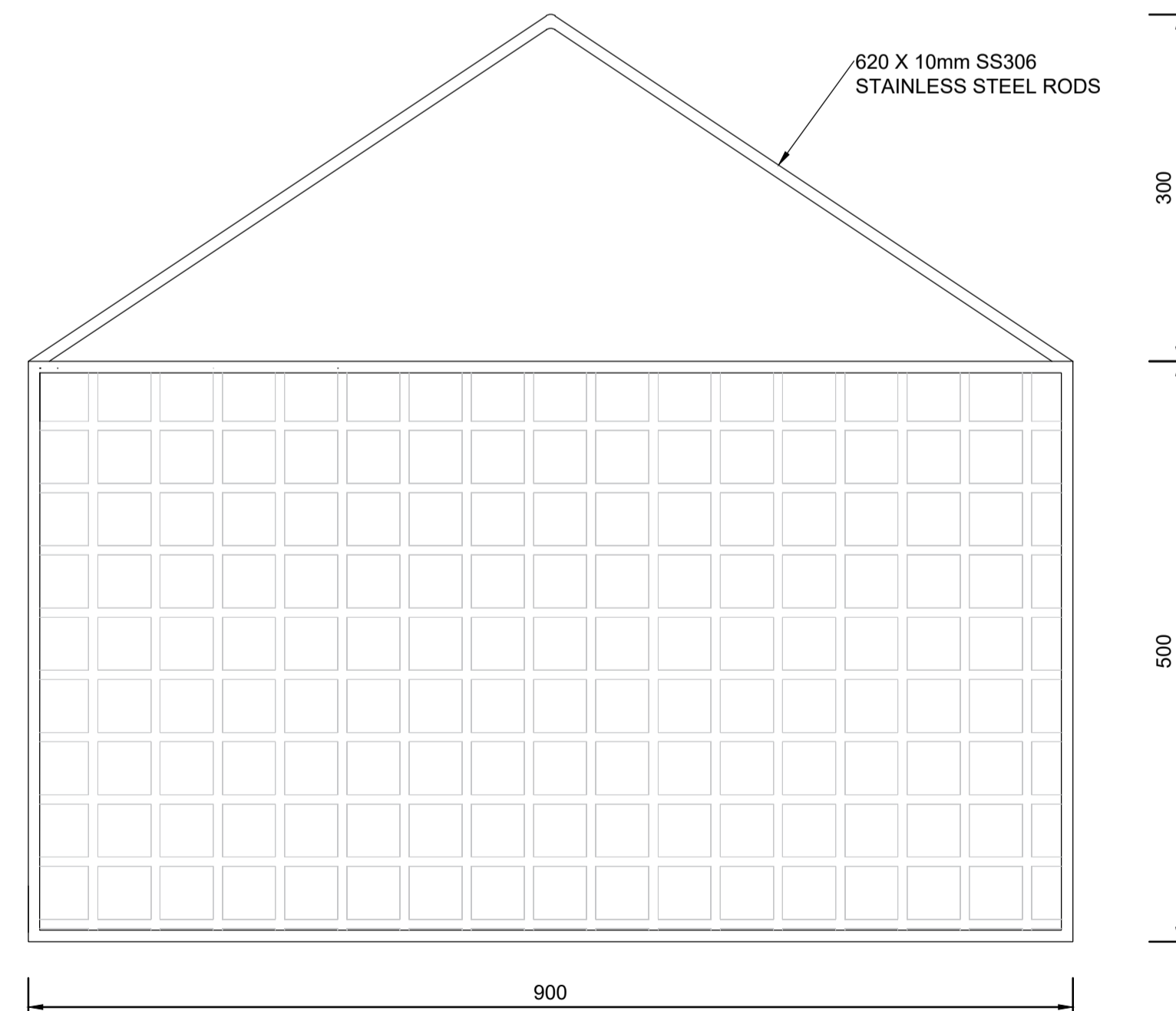
**NOTES**



**SECTION A**  
1:5



PLAN VIEW  
SCALE 1:5



**SECTION C**  
1:5

**REVISIONS**

NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : J GLINISTER      DESIGNED : HJ DE WET  
DATE : 22-04-2024      SCALE : AS SHOWN

22-04-2024  
DATE  
CONSULTING ENGINEER  
HJ DE WET  
Pr. Tech Eng : 2018300016

CLIENT



CONTRACT ENGINEER



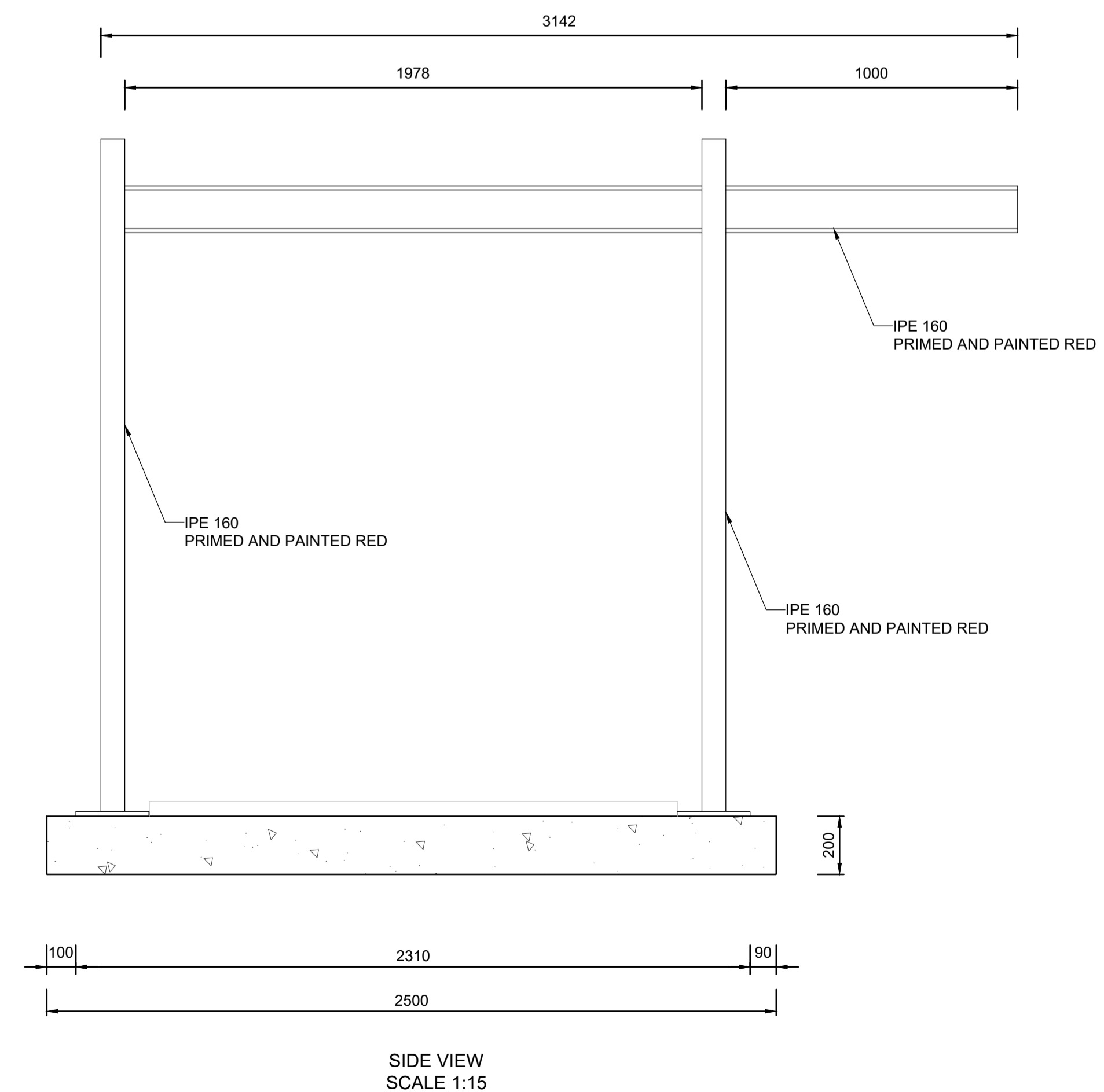
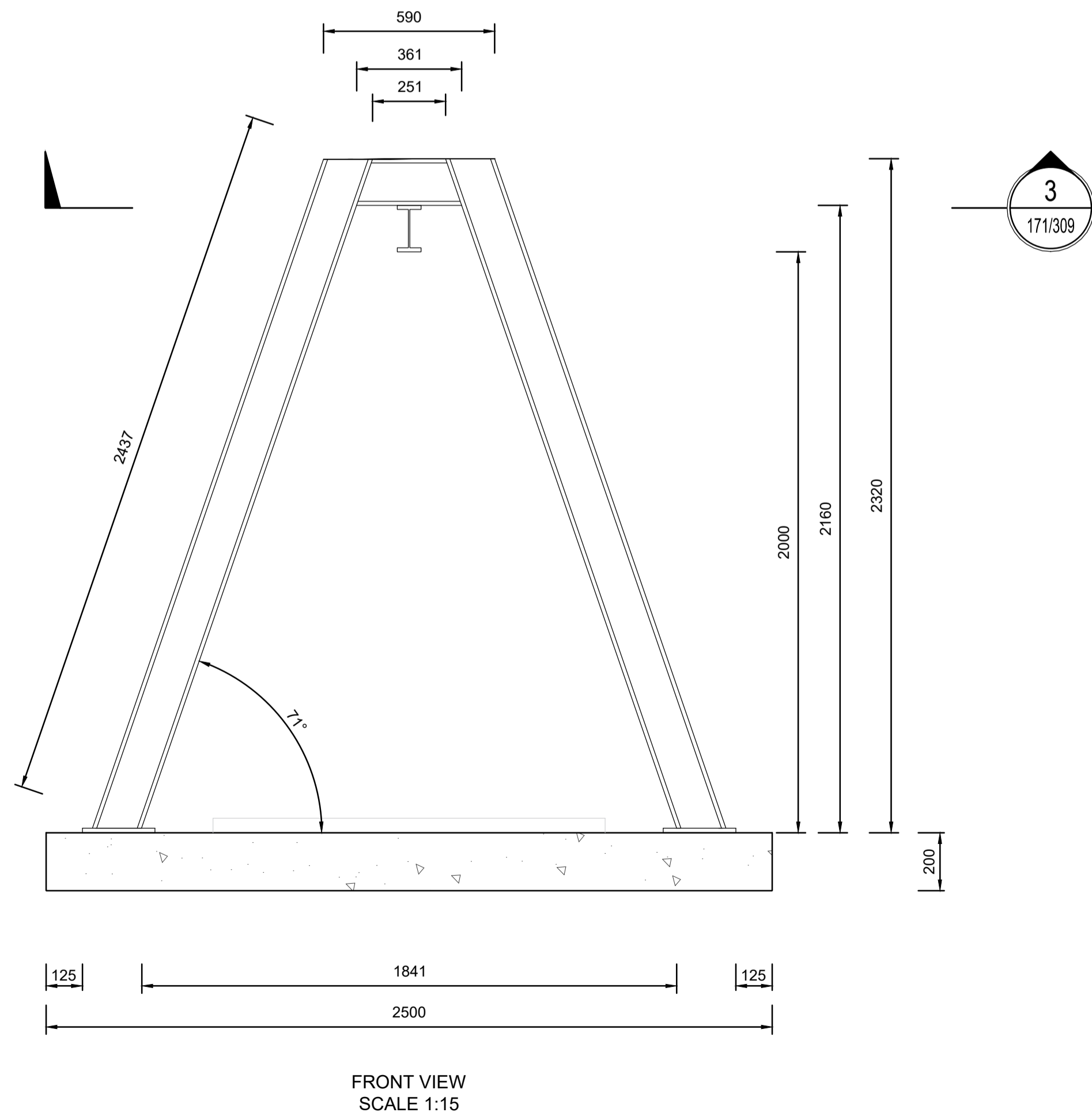
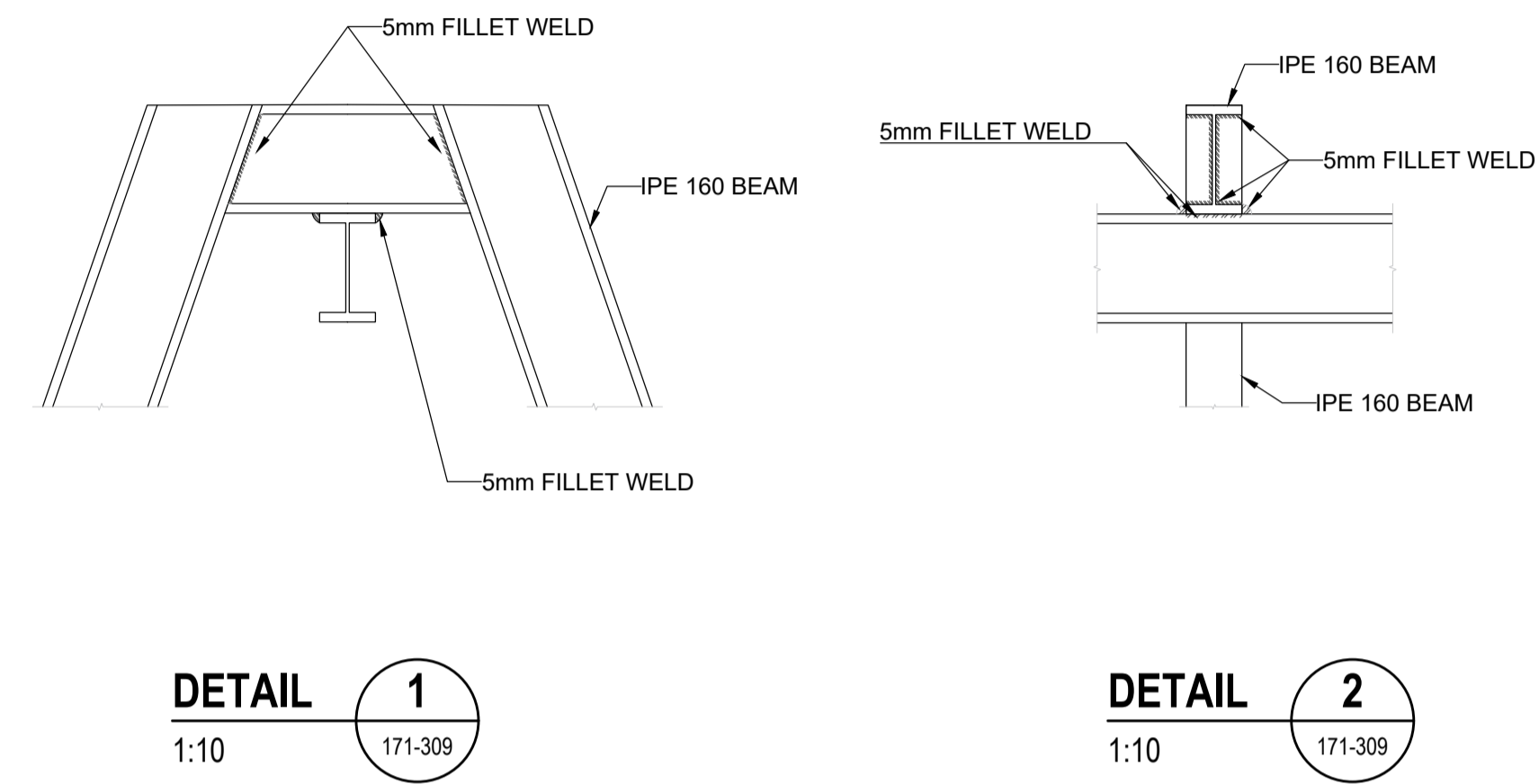
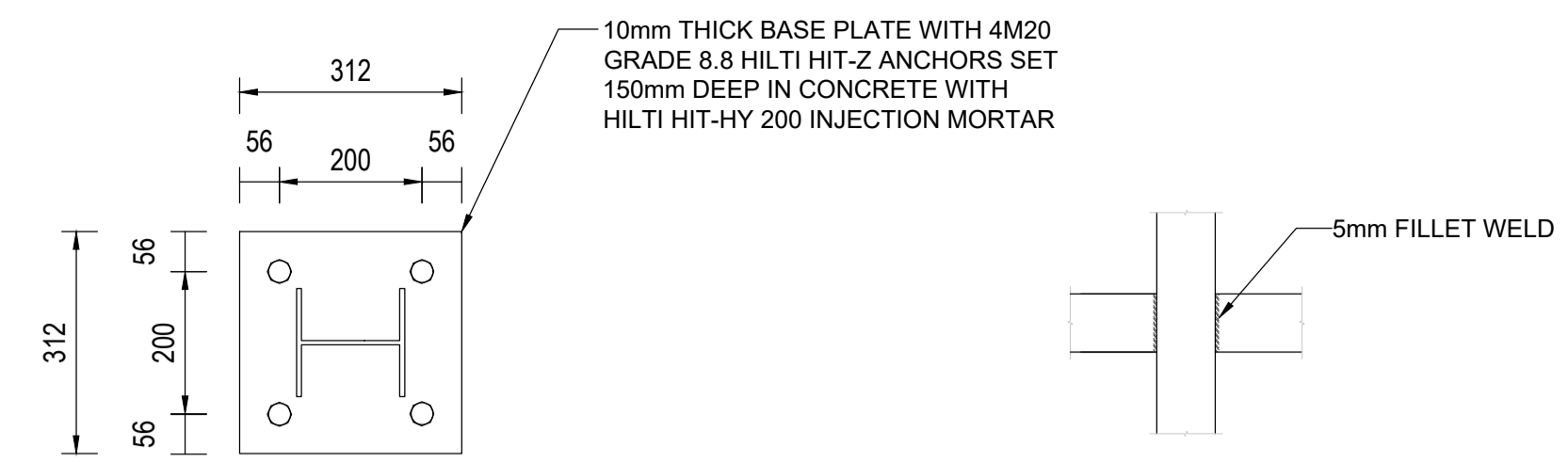
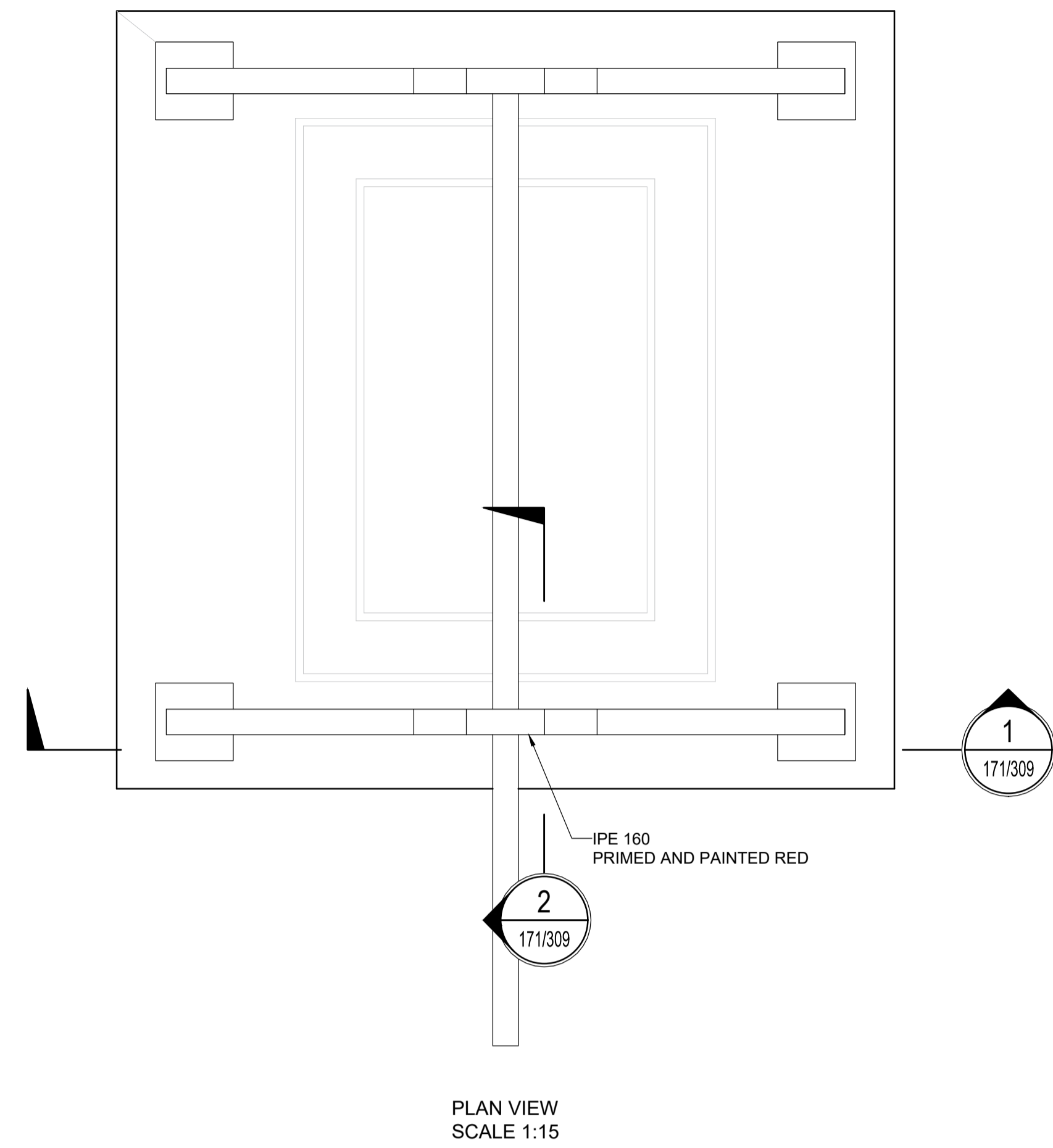
PROJECT

REFURBISHMENT OF SEWER PUMP  
STATION AND WASTEWATER  
TREATMENT WORKS IN EDENBURG

TITLE

GRIT BASKET DETAIL

**NOTES**



REVISIONS

NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : J GLINISTER      DESIGNED : HJ DE WET  
DATE : 22-04-2024      SCALE : AS SHOWN

CONSULTING ENGINEER  
HJ DE WET  
Pr. Tech Eng : 2018300016

22-04-2024  
DATE



PROJECT

**REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG**

TITLE

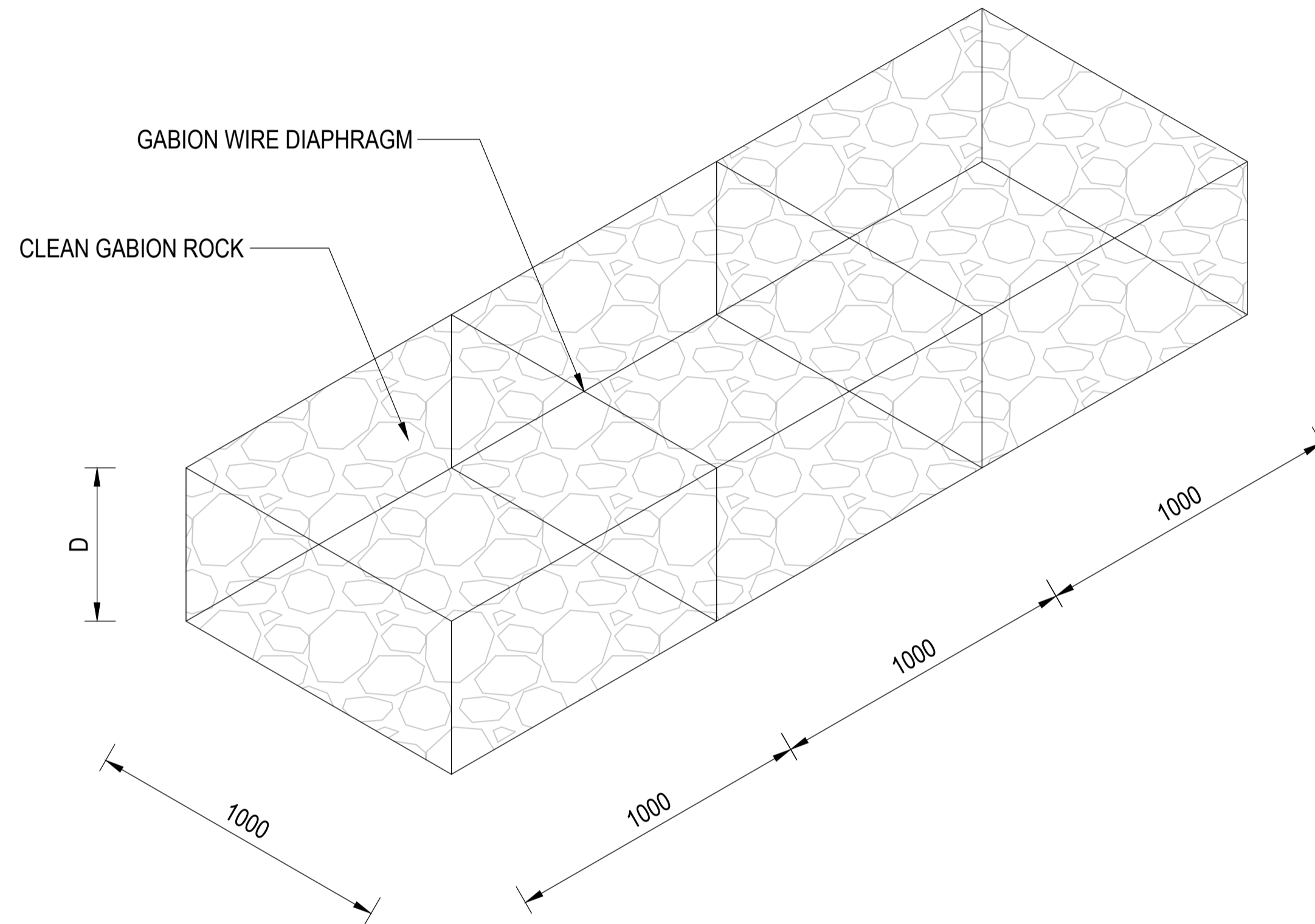
**GRIT MANHOLE GANTRY DETAIL**

PLAN NO. 172/305      REVISION T



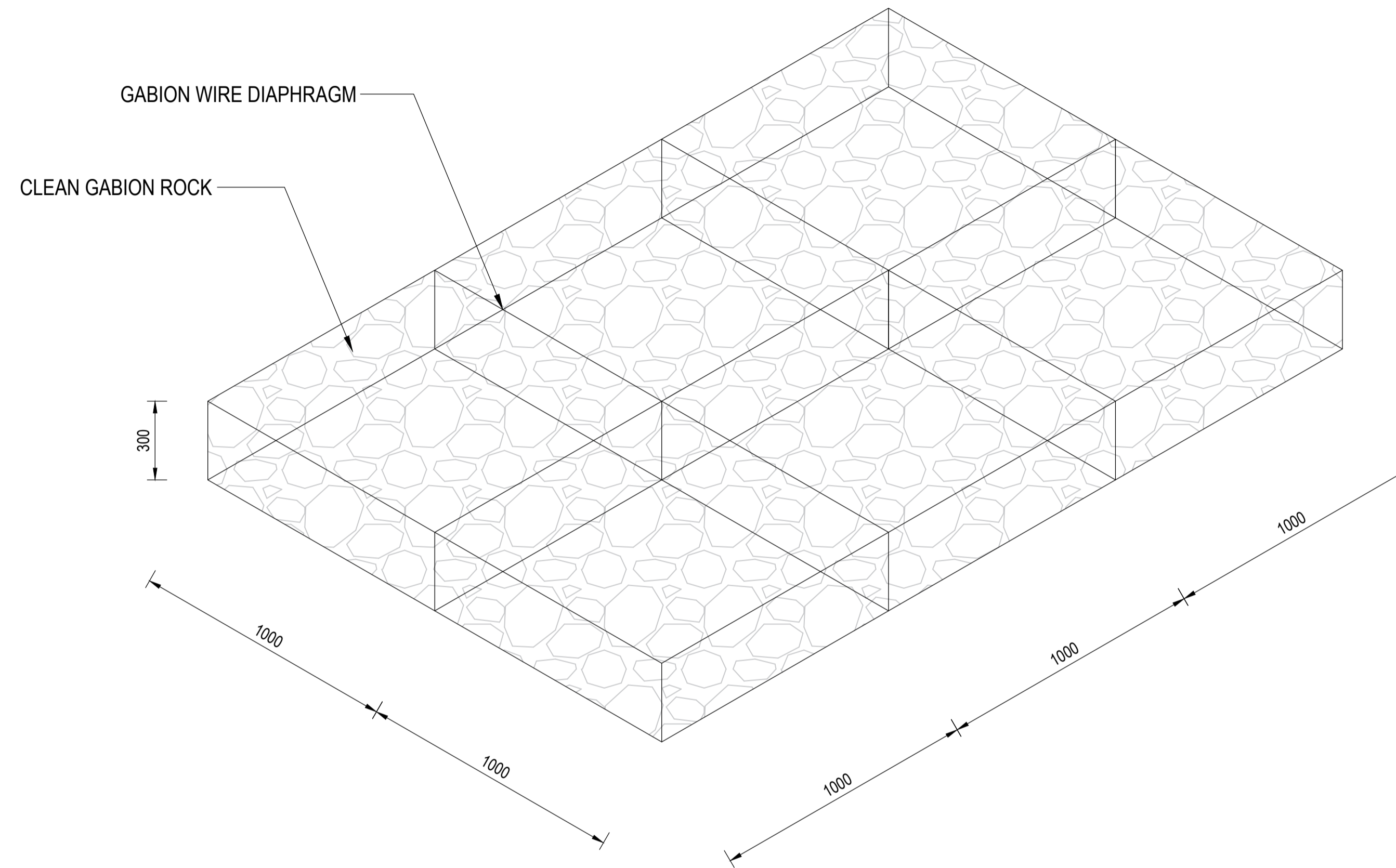
ROCK USED FOR THE FILLING OF CAGES		
DEPTH OF CAGES	ROCK SIZE (DIMENSIONS)	
	MIN. (mm)	MAX. (mm)
300	100	200
500	100	250
1000	100	300

ROCK USED FOR FILLING OF CAGES		
DEPTH OF GABION	MESH SIZE (mm)	WIRE DIAMETER (mm)
200mm TO 300mm	80mm x 100mm	2.5
500mm AND OVER	80mm x 100mm	2.7



**GABION BOXES**  
N.T.S

DESIGN INFORMATION FOR GABIONS	
STANDARD SIZES FOR BOXES (mm)	
LENGTH (L)	1000mm
WIDTH (W)	1000mm
DEPTH (D)	TBD ON SITE
DIAPHRAGM SPACING	1000mm



**GABION MATTRESSES**  
N.T.S

DESIGN INFORMATION FOR GABIONS	
STANDARD SIZES FOR MATTRESS (mm)	
LENGTH (L)	6000mm
WIDTH (W)	2000mm
DEPTH (D)	300mm

**NOTES**

1. GABIONS:
  - 1.1. ALL GABIONS AND GABION MATTRESSES SHALL HAVE BIDEM PLACED ON ALL SIDES WHERE IT IS TO BE COVERED WITH SOIL.
  - 1.2. ALL EXPOSED FACES OF THE GABIONS SHALL BE MADE NEAT WITH EXPOSED FACE STONES AND HAVE A SMOOTH FINISHED SURFACE.

**REVISIONS**

NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : DS MOHOLO      DESIGNED : HJ DE WET  
 DATE : 22-04-2024      SCALE : AS SHOWN

22-04-2024  
 CONSULTING ENGINEER      DATE  
 HJ DE WET  
 Pr. Tech Eng : 2018300016

CLIENT



CONTRACT ENGINEER



PROJECT

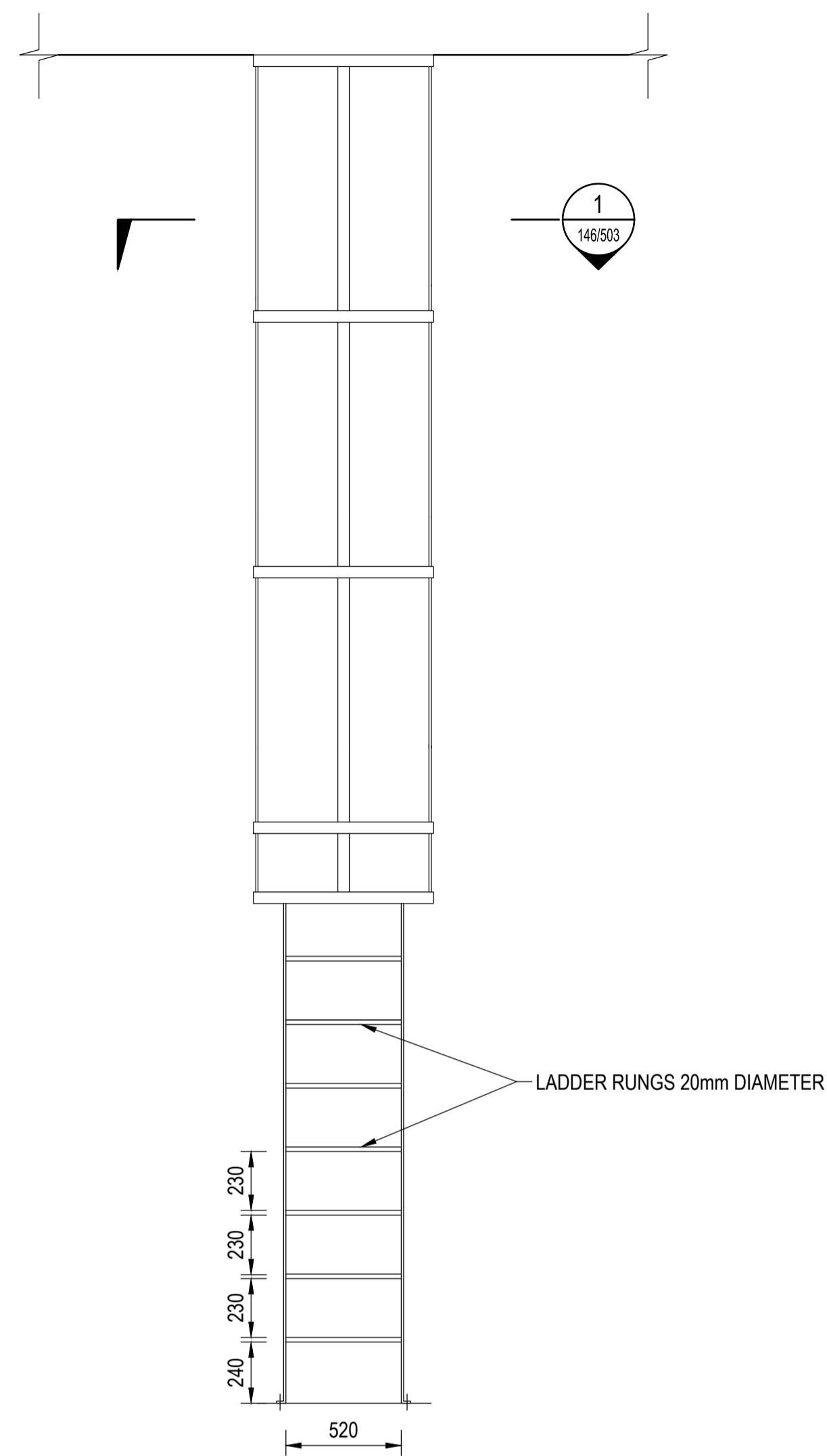
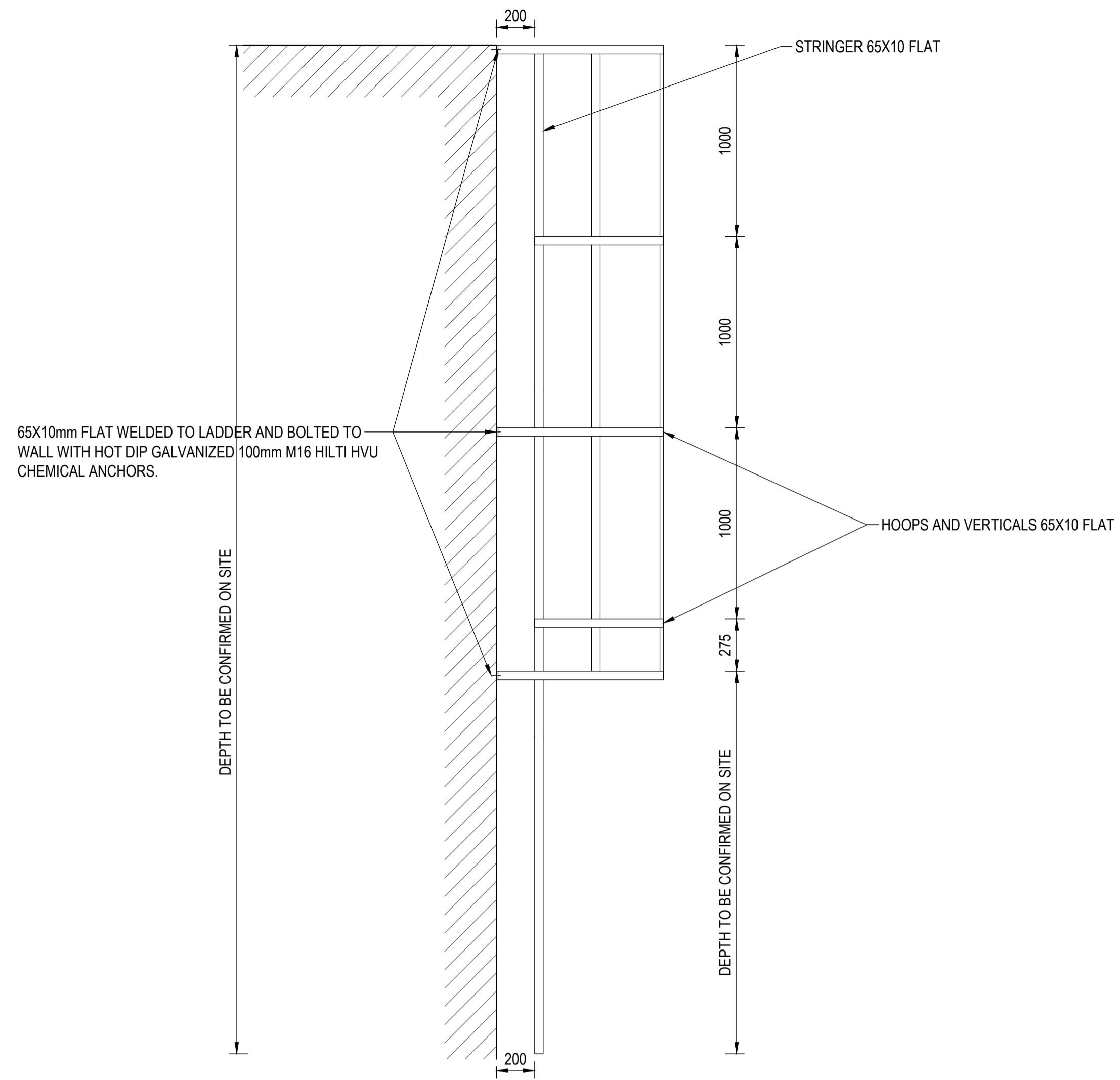
**REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG**

TITLE

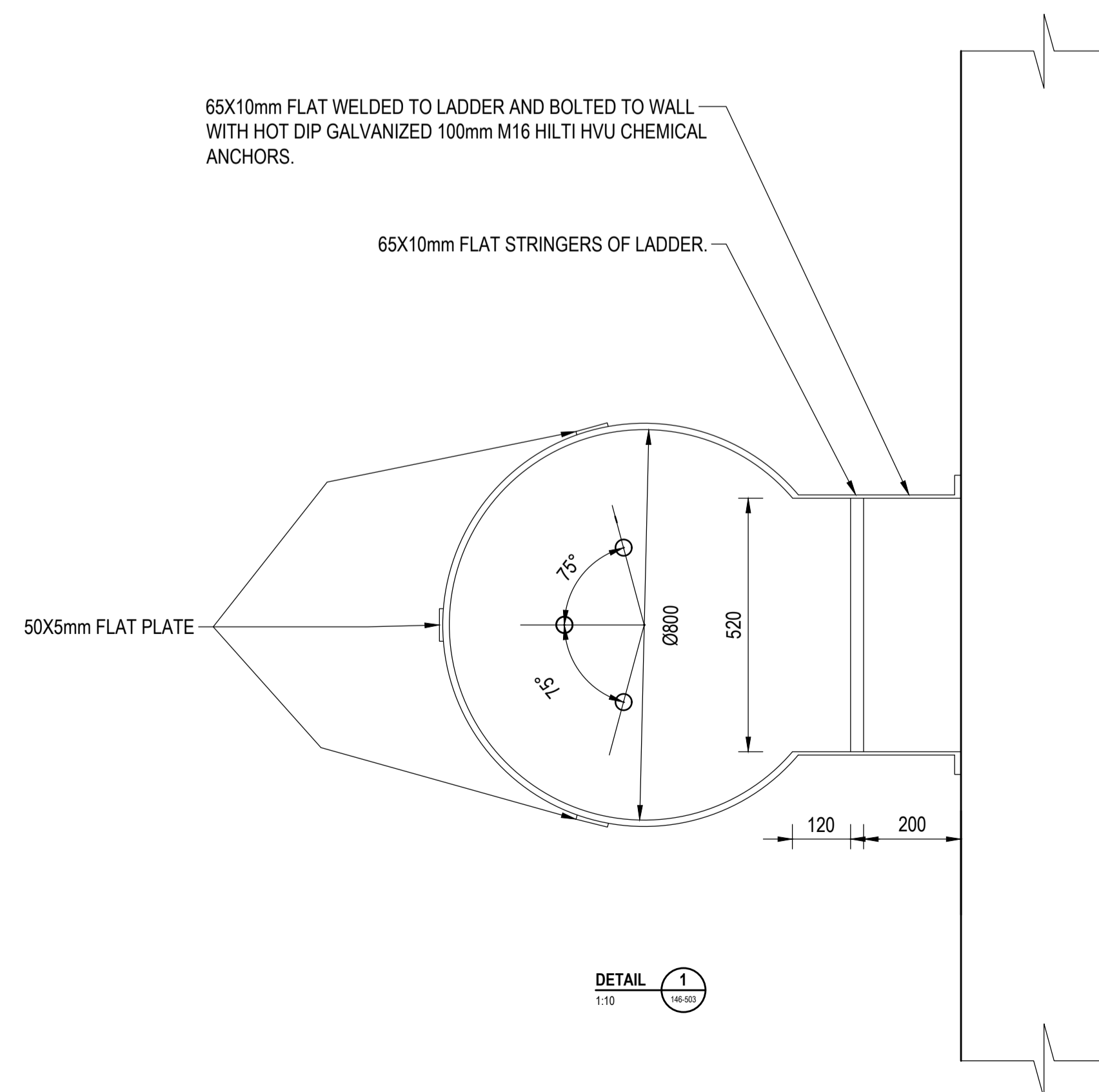
**BASIC GABION LAYOUT**

**NOTES**

1. ALL MATERIAL SHALL BE HOT DIP GALVANISED



VERTICAL LADDER DETAIL  
SCALE 1:20



**REVISIONS**

NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : J GLINISTER      DESIGNED : HJ DE WET  
DATE : 22-04-2024      SCALE : AS SHOWN

22-04-2024  
CONSULTING ENGINEER      DATE  
HJ DE WET  
Pr. Tech Eng : 2018300016



PROJECT  
**REFURBISHMENT OF SEWER PUMP  
STATION AND WASTEWATER  
TREATMENT WORKS IN EDENBURG**

TITLE  
**SUMP ACCESS LADDER**

PLAN NO. 172/307      REVISION T

**NOTES**

- NEW ELECTRIC FENCE
- NEW DIAMOND MESH FENCE
- - - - - EXISTING STEEL PALLISADE FENCE



REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : W STOFFBERG      DESIGNED : HJ DE WET  
 DATE : 22-04-2024      SCALE : 1:75

CONSULTING ENGINEER  
 HJ DE WET  
 Pr. Tech Eng : 2018300016



PROJECT  
**REFURBISHMENT OF SEWER PUMP  
 STATION AND WASTEWATER  
 TREATMENT WORKS IN EDENBURG**

TITLE **PERIMETER FENCING AT  
 WASTEWATER TREATMENT  
 WORKS**

PLAN NO. 172-400      REVISION 1



**NOTES**

- ——— NEW ELECTRIC FENCE
- ⊠ ——— NEW DIAMOND MESH FENCE
- - - - - EXISTING STEEL PALLISADE FENCE

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : W STOFFBERG      DESIGNED : HJ DE WET  
 DATE : 22-04-2024      SCALE : 1:50

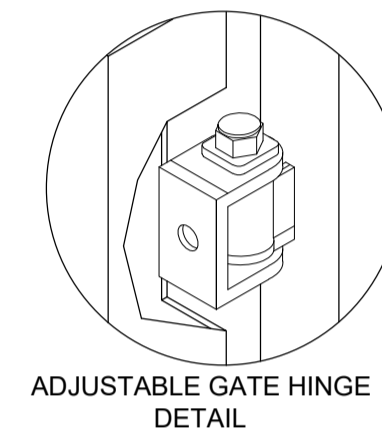
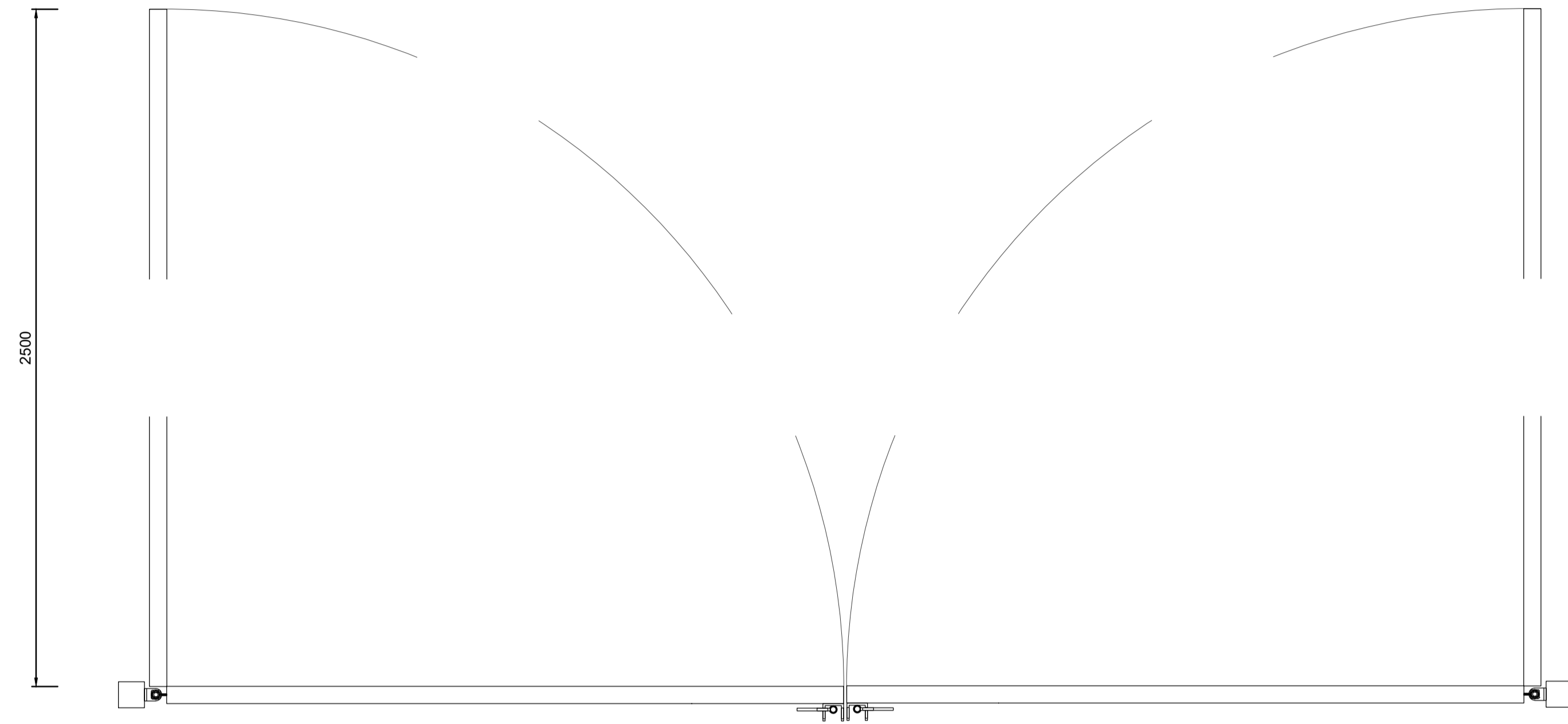
CONSULTING ENGINEER  
 HJ DE WET  
 Pr. Tech Eng : 2018300016



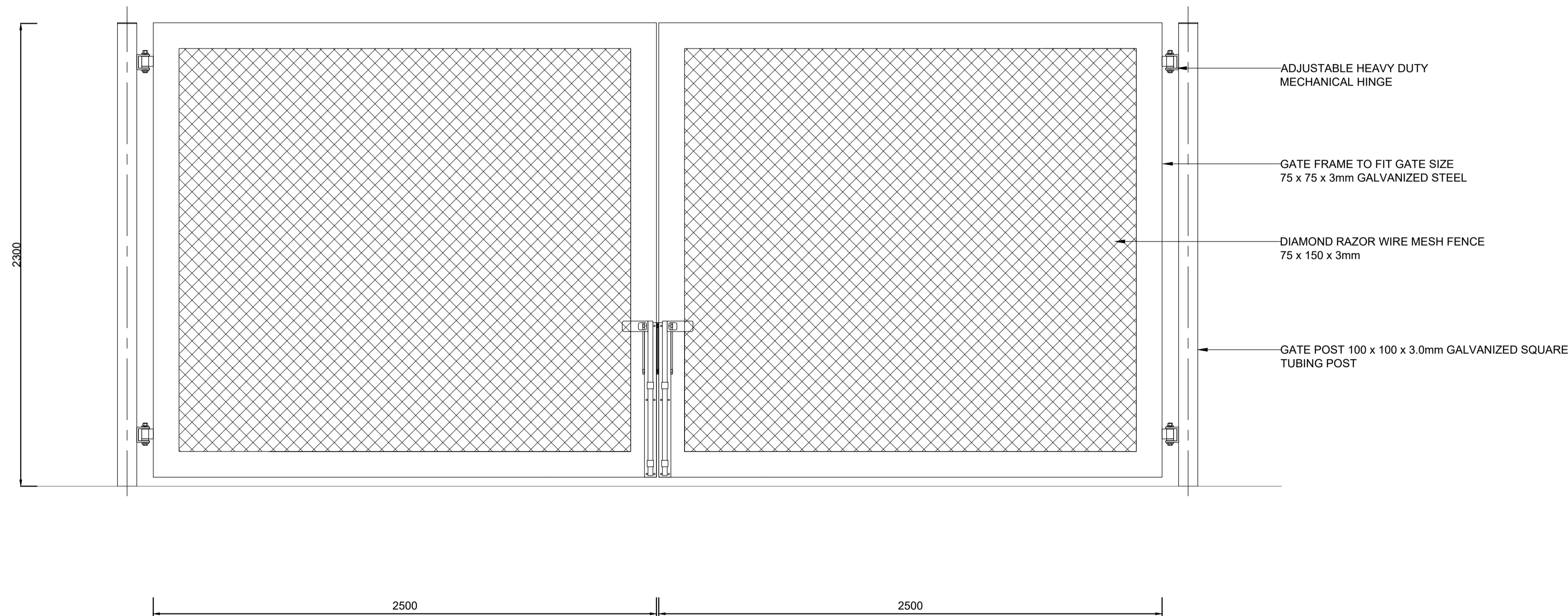
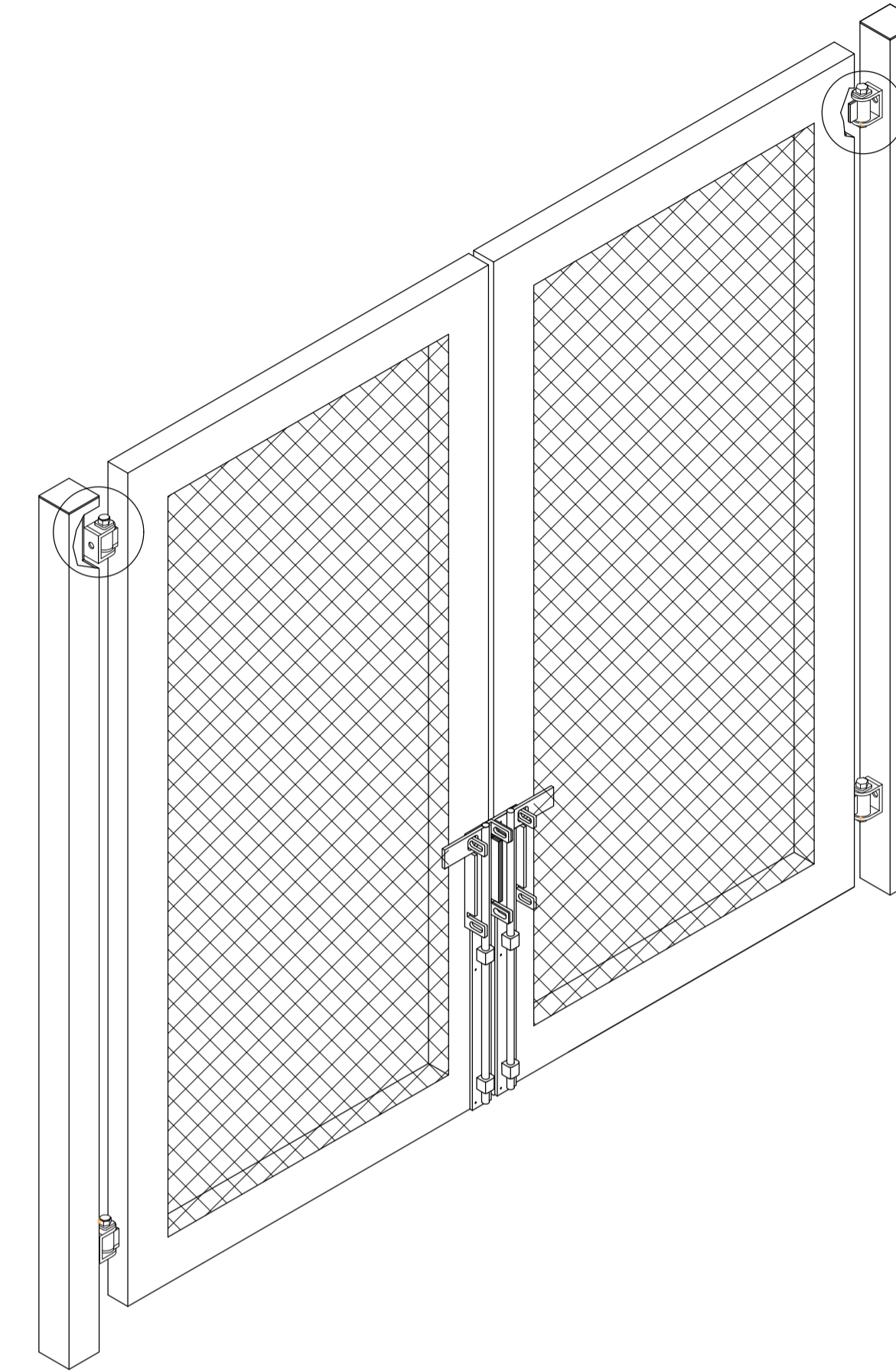
PROJECT  
**REFURBISHMENT OF SEWER PUMP  
 STATION AND WASTEWATER  
 TREATMENT WORKS IN EDENBURG**

TITLE  
**PERIMETER FENCING AT PUMP  
 STATION**

**NOTES**



ADJUSTABLE GATE HINGE  
DETAIL



**REVISIONS**

NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : DS MOHOLO      DESIGNED : HJ DE WET  
 DATE : 22-04-2024      SCALE : NTS

22-04-2024  
 CONSULTING ENGINEER      DATE  
 HJ DE WET  
 Pr. Tech Eng : 2018300016

CLIENT



CONTRACT ENGINEER



PROJECT

REFURBISHMENT OF SEWER PUMP  
 STATION AND WASTEWATER  
 TREATMENT WORKS IN EDENBURG

TITLE

TYPICAL DOUBLE LEAF GATE  
 DETAILS

PLAN NO. 172/402      REVISION T

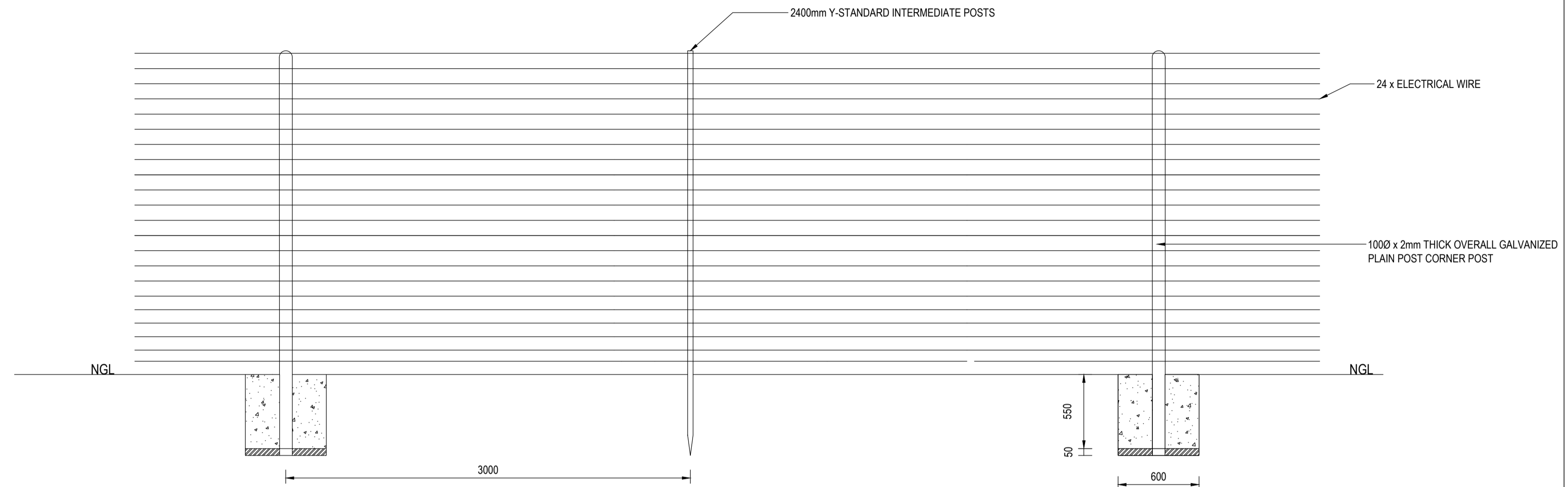
**NOTES**

**LEGEND:**

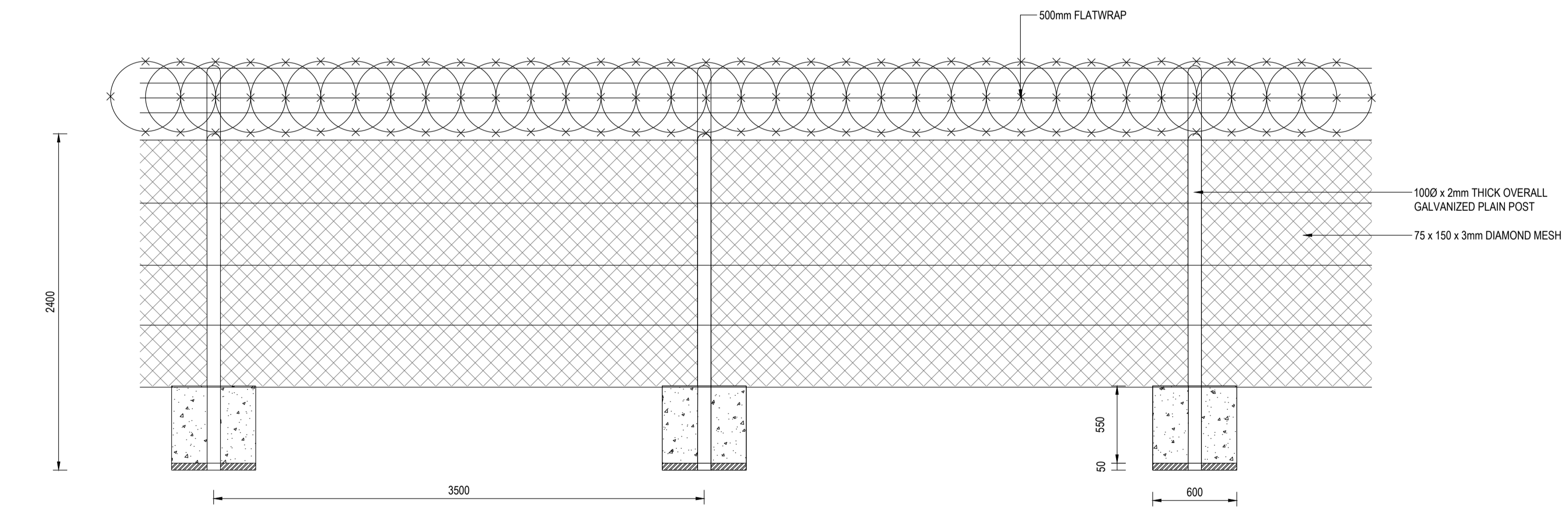
- 1 101.6mm OUTSIDE Ø STEEL PIPE, WALL THICKNESS 2.95mm OR 15 kg/m RAIL.
- 2 60.33mm OUTSIDE Ø STEEL PIPE, WALL THICKNESS 2.95mm.
- 3 6-CHORD STRAINING WIRE.
- 4 SEE NOTE 1.
- 5 12mm Ø STEEL BOLT.
- 6 10mm Ø x 300mm ANCHOR PIN.
- 7 CLASS 1:3.6/38 CONCRETE.
- 8 DIAMOND MESH 2.5mm THICK WITH 64mm x 64mm OPENINGS.
- 9 WHERE REQUIRED BY THE ENGINEER, 150mm OF GRAVEL MUST BE PLACED BELOW THE CONCRETE TO FACILITATE DRAINAGE.
- 10 PLAIN ELECTRIFIED WIRE.

**NOTES:**

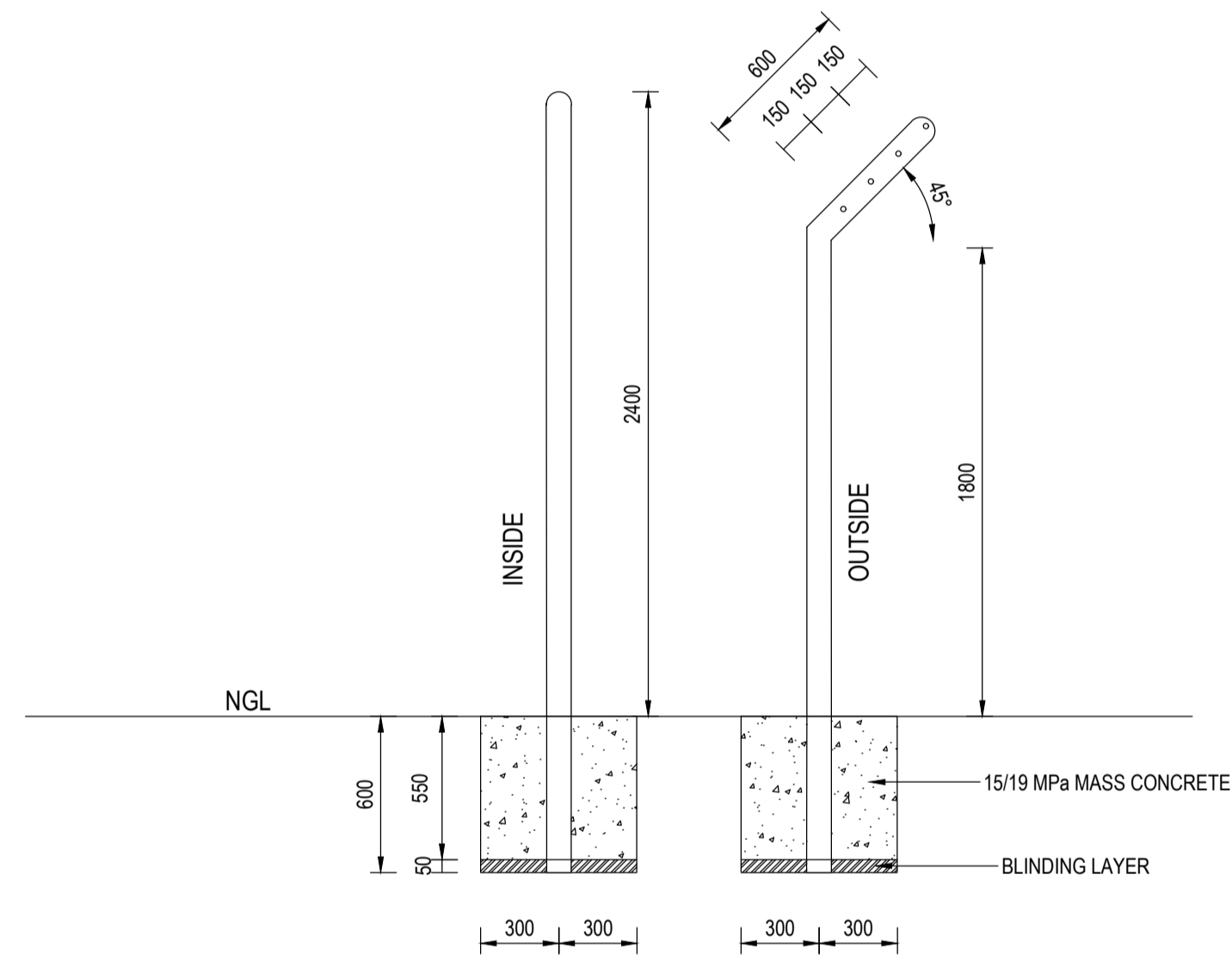
1. ALL POSTS ARE TO BE SEALED BY WELDING A STEEL CAP OVER THE OPENING AT THE TOP.
2. CONCRETE MUST HAVE BEVELLED EDGES.
3. CADASTRAL BEACONS MAY NOT BE TAMPED WITH UNDER NO CIRCUMSTANCES.
5. ALL STEEL MEMBERS TO BE HOT DIPPED GALVANISED WITH A 85 MICRON COATING IN ACCORDANCE WITH S.A.B.S. 263.
5. PAINTING FINISH OF PALISADE MUST MATCH EXISTING.



**GENERAL DETAIL FOR ELECTRICAL FENCING**  
(3,0m c/c MAX)



**GENERAL DETAIL FOR DIAMOND MESH FENCING**  
(3,5m c/c MAX)



**INSIDE FENCE (ELECTRICAL FENCE)**  
**OUTSIDE DENCE (PERIMETER FENCE)**

**REVISIONS**

NO.	DATE	DESCRIPTION	APPROVED
T	22-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : W STOFFBERG      DESIGNED : HJ DE WET  
DATE : 22-04-2024      SCALE : 1:50

CONSULTING ENGINEER  
HJ DE WET  
Pr. Tech Eng : 2018300016

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CONTRACT ENGINEER



PROJECT

**REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG**

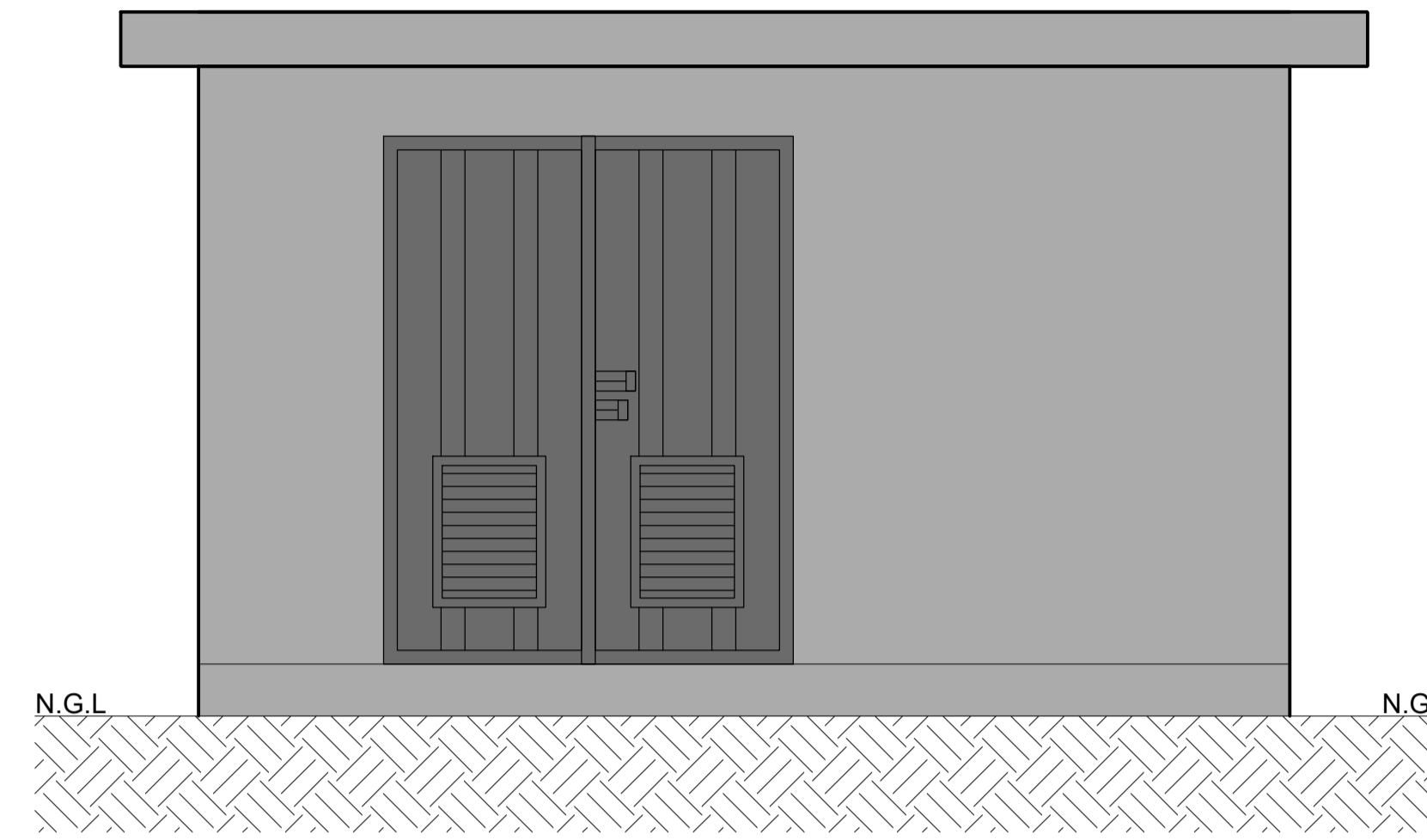
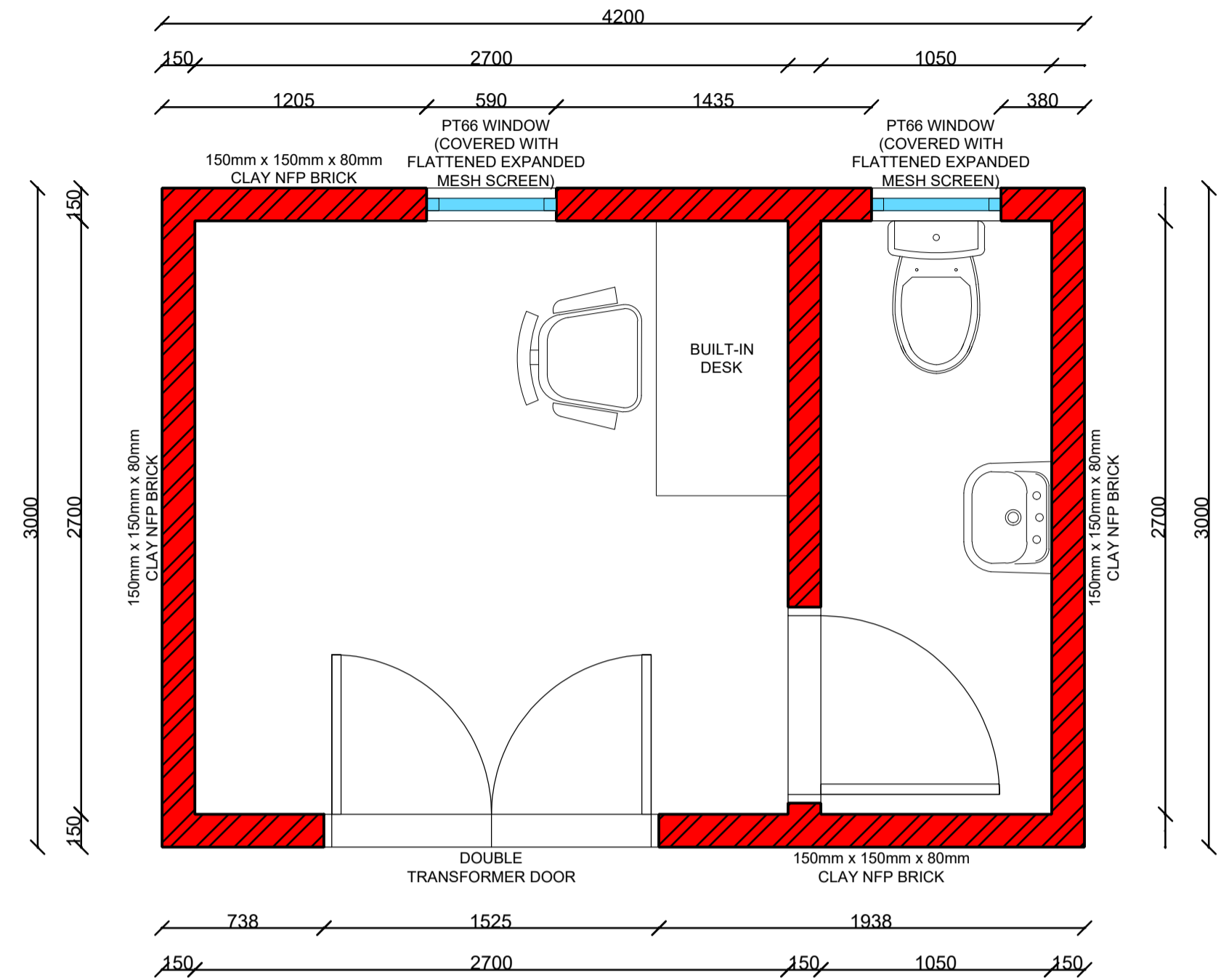
TITLE

**TYPICAL FENCE DETAILS**

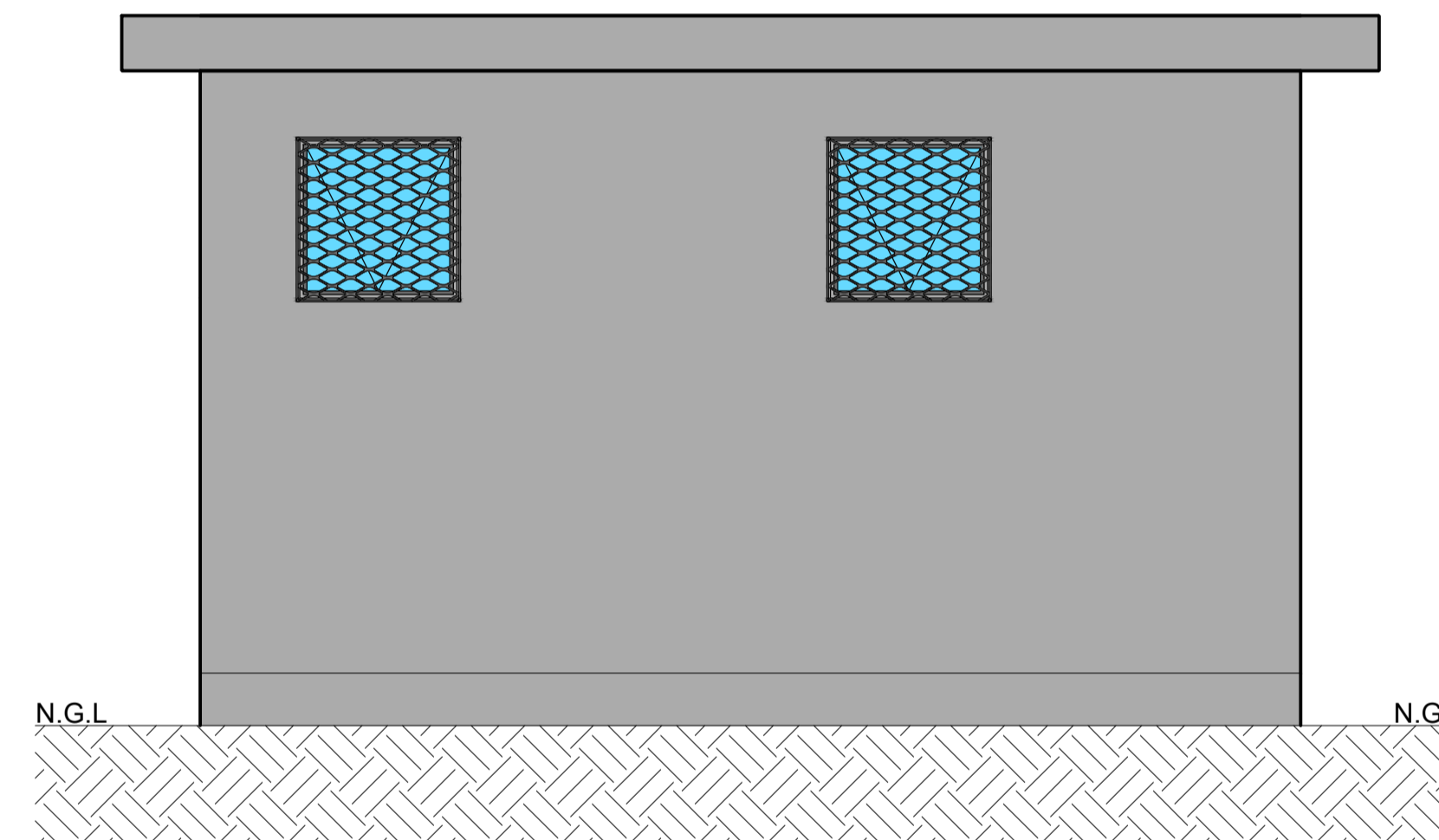
PLAN NO. 172-403

REVISION 1

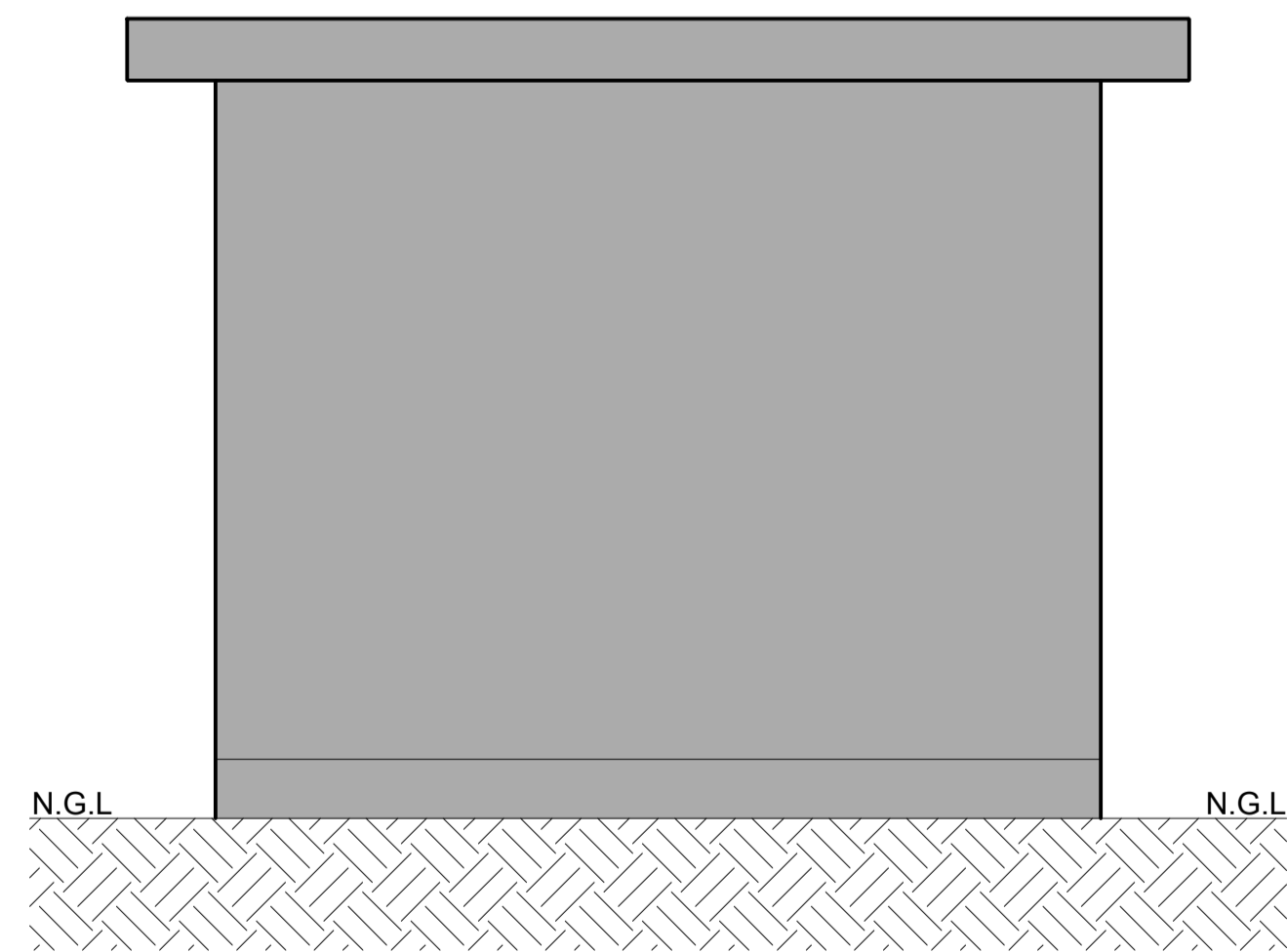
**NOTES**



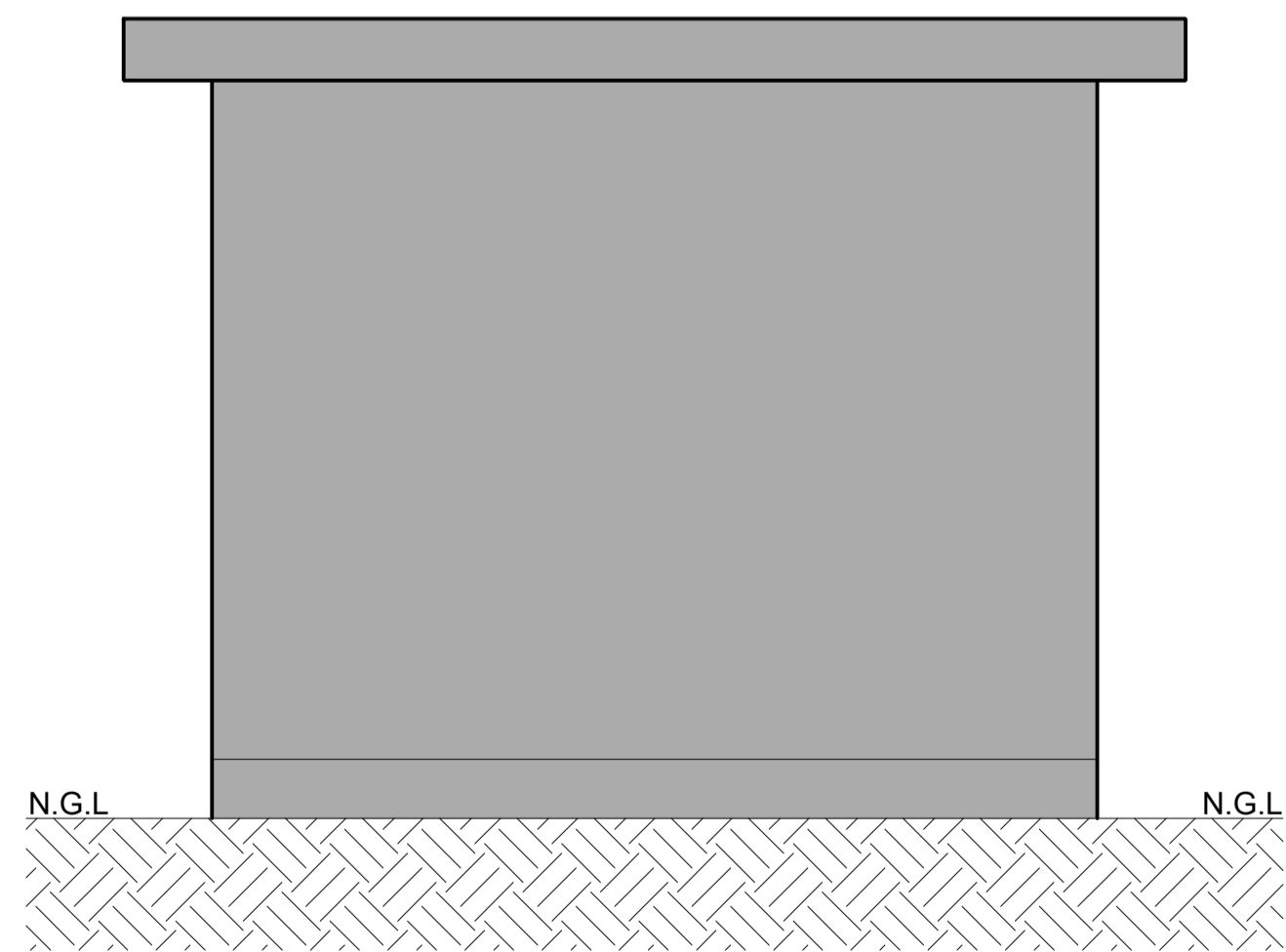
PROPOSED NEW ABLUTION BLOCK NORTH  
ELEVATION  
SCALE 1:25



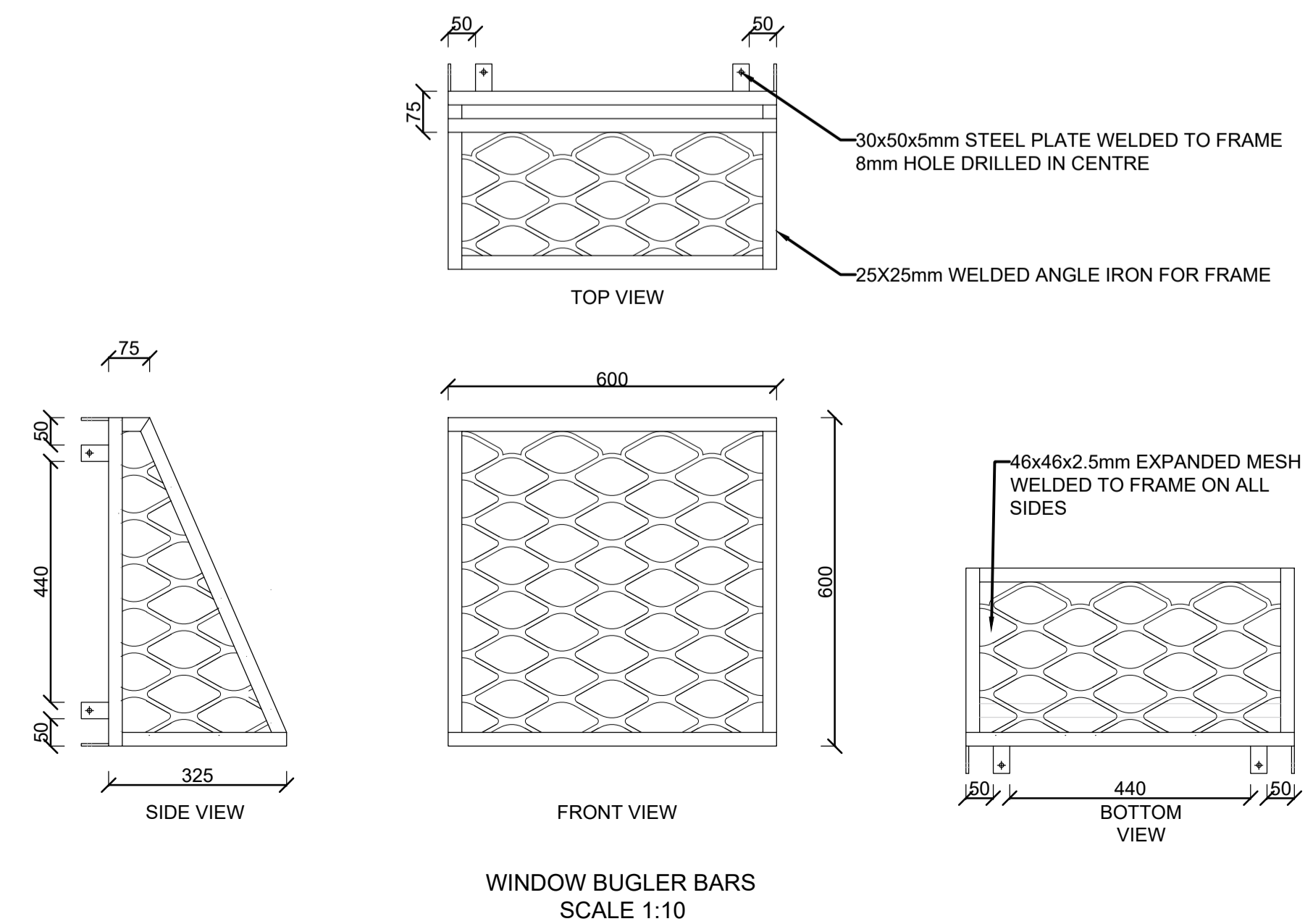
PROPOSED NEW ABLUTION BLOCK SOUTH  
ELEVATION  
SCALE 1:25



PROPOSED NEW ABLUTION BLOCK WEST ELEVATION  
SCALE 1:25



PROPOSED NEW ABLUTION BLOCK EAST ELEVATION  
SCALE 1:25



WINDOW BUGLER BARS  
SCALE 1:10

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED
T	23-04-2024	ISSUED FOR TENDER	HJ DE WET

DRAWN : J GLINISTER      DESIGNED : HJ DE WET  
DATE : 23-04-2024      SCALE : NTS

CONSULTING ENGINEER      DATE: 22-04-2024  
HJ DE WET  
Pr. Eng : 2018300016



PROJECT  
**REFURBISHMENT OF SEWER PUMP STATION AND WASTEWATER TREATMENT WORKS IN EDENBURG**

TITLE  
**ABLUTION FACILITY**

PLAN NO. 172/404      REVISION T