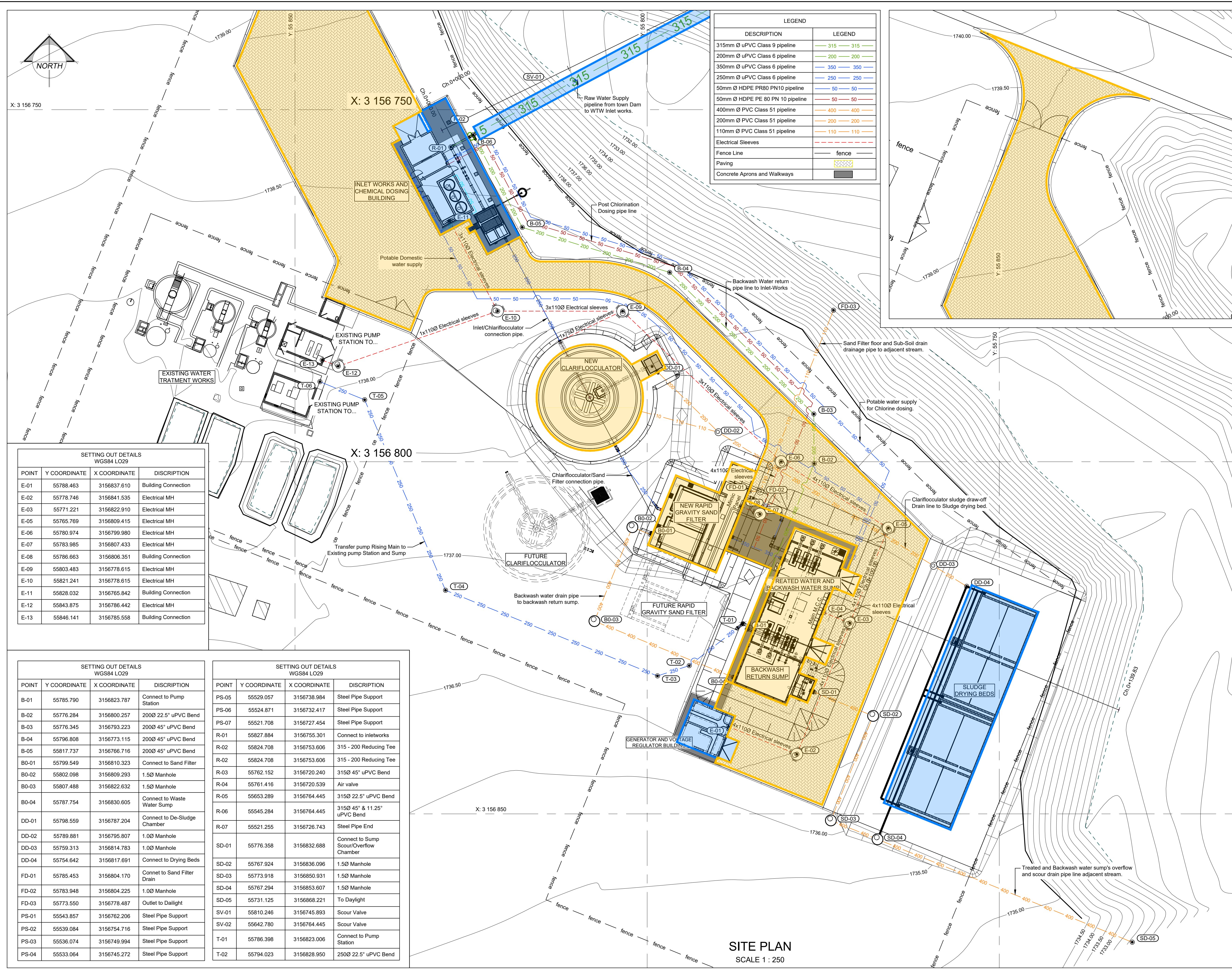




Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
Any discrepancies between any drawings must be clarified before work is continued on site.

SCOPE - PART A
CONTRACT

SCOPE - PART B
CONTRACT

FOR TENDER
PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description

AMENDMENTS

Rev.	Date	Description

ECA CONSULTING MBOMBELA OFFICE:
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www.ecacconsult.co.za
Civil and Structural Engineers
Company Reg.: 2004/019299/07
ISO Registered 9001:2015

OTHER OFFICES:
VRYHEID | GAUTENG | PIETERMARITZBURG | LADYSMITH

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

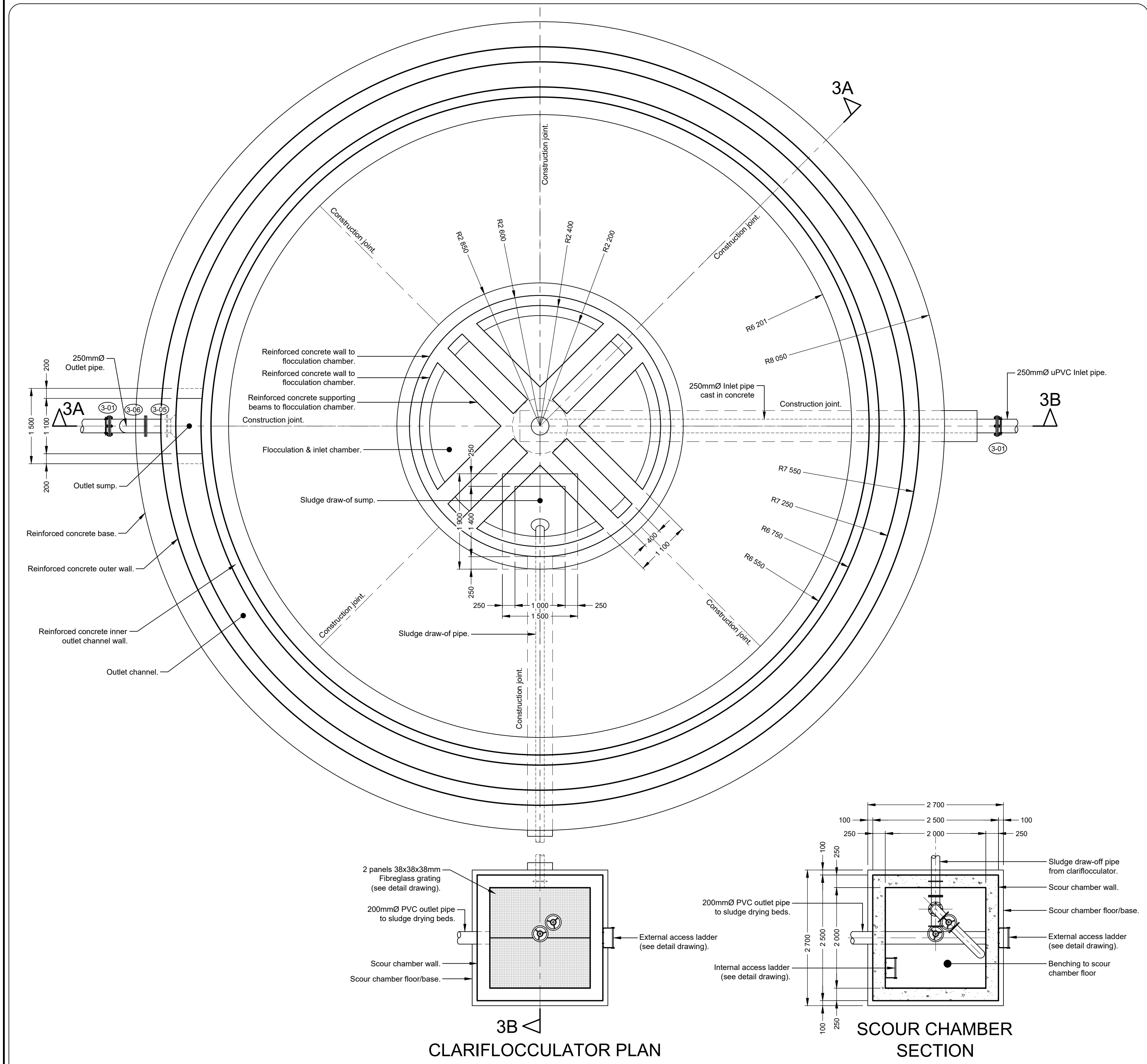
Client: **DIHLABENG LOCAL MUNICIPALITY**

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

Project: **CLARENS WATER TREATMENT WORKS**

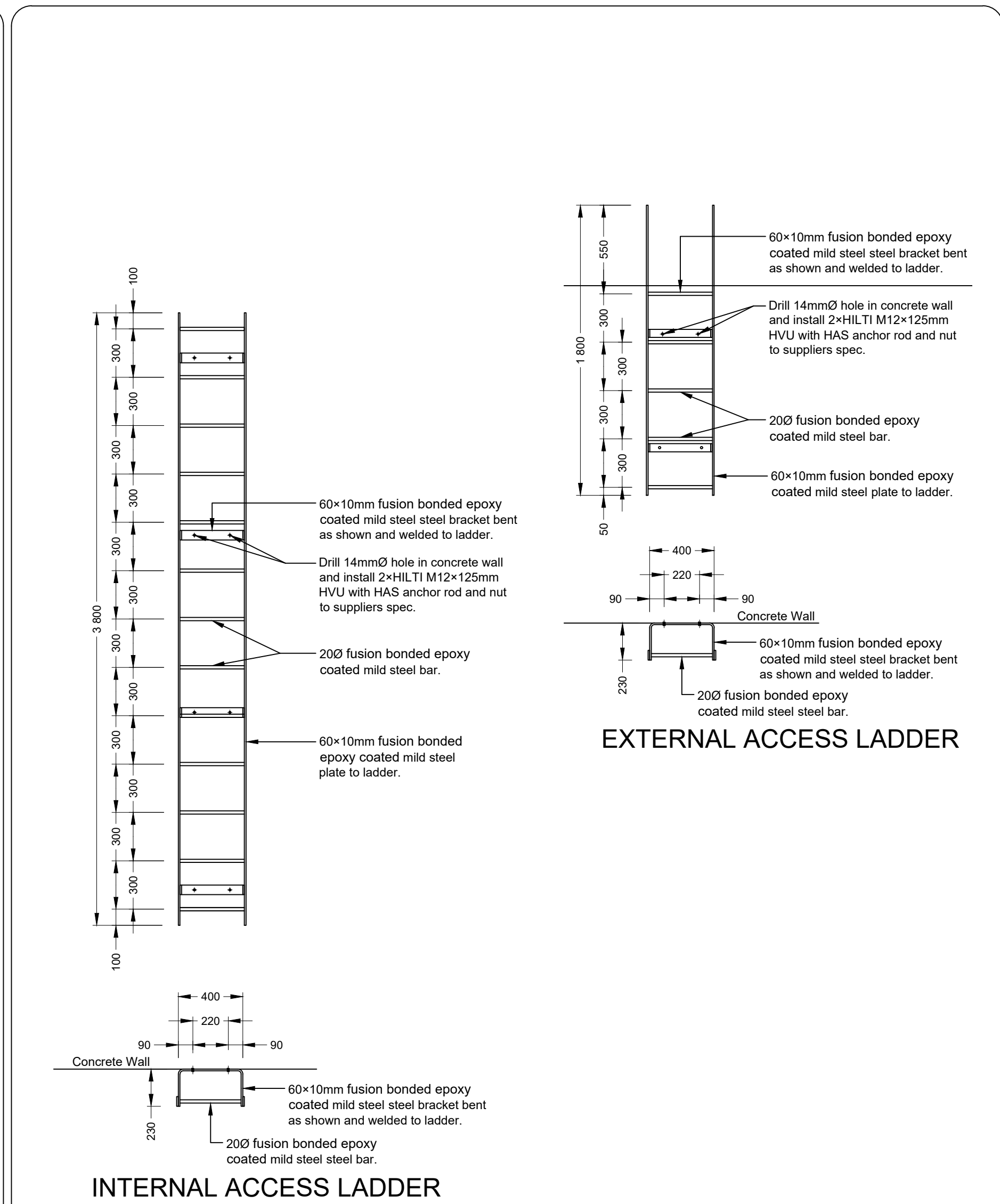
Drawing description: **WATER TREATMENT WORKS SITE PLAN**

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

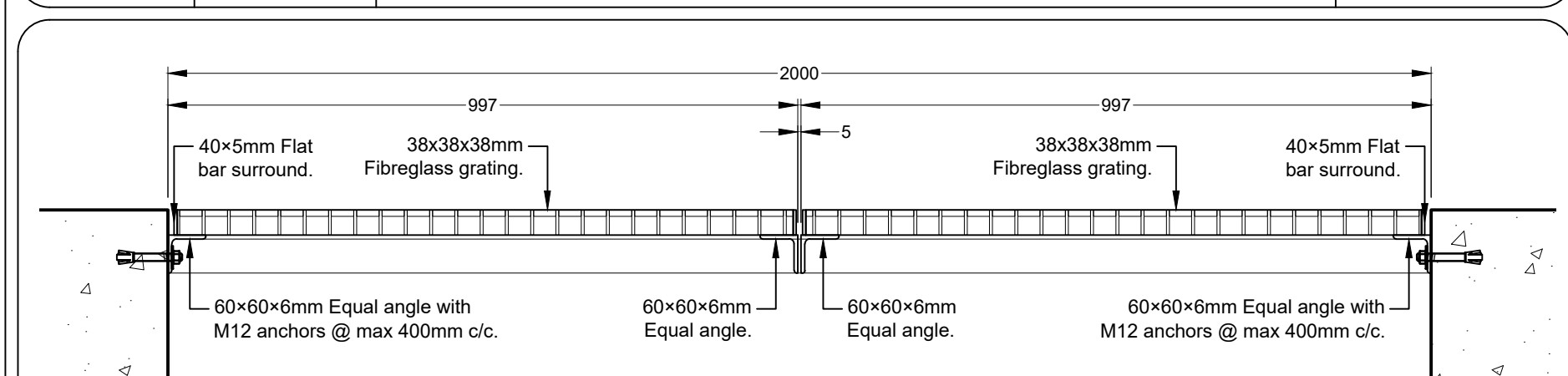


DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/50	CLARIFLOCCULATOR & SCOUR CHAMBER PLAN	-

NOTES: Do not scale off the drawing. If not sure -ask! CONCRETE GRADE: Concrete 28 day compressive strength to be as per list below. <table><tr><td>• Blinding</td><td>15MPa / 13mm</td></tr></table> Valve chamber <table><tr><td>• Base</td><td>35MPa / 19mm</td></tr><tr><td>• Wall</td><td>35MPa / 19mm</td></tr></table> Main Structure <table><tr><td>• Base</td><td>35MPa / 19mm</td></tr><tr><td>• Wall</td><td>35MPa / 19mm</td></tr><tr><td>• Floor slab</td><td>35MPa / 19mm</td></tr></table> General <table><tr><td>• Thrust blocks</td><td>15MPa / 19mm</td></tr><tr><td>• Pipe incased</td><td>35MPa / 19mm</td></tr><tr><td>• Mass concrete</td><td>15MPa / 19mm</td></tr></table>	• Blinding	15MPa / 13mm	• Base	35MPa / 19mm	• Wall	35MPa / 19mm	• Base	35MPa / 19mm	• Wall	35MPa / 19mm	• Floor slab	35MPa / 19mm	• Thrust blocks	15MPa / 19mm	• Pipe incased	35MPa / 19mm	• Mass concrete	15MPa / 19mm	CONCRETE FINISHES: Valve chamber <table><tr><td>• Base top</td><td>U3</td></tr><tr><td>• Base sides</td><td>F2</td></tr><tr><td>• Wall both sides</td><td>F2</td></tr><tr><td>• Wall top</td><td>U3</td></tr><tr><td>• Roof slab soffit</td><td>F2</td></tr><tr><td>• Roof slab top</td><td>U2</td></tr></table> Main Structure <table><tr><td>• Base top</td><td>U3</td></tr><tr><td>• Base sides</td><td>F2</td></tr><tr><td>• Wall both sides</td><td>F2</td></tr><tr><td>(Only Steel f/work)</td><td></td></tr><tr><td>• Wall top</td><td>U3</td></tr><tr><td>• Floor slab top</td><td>U4</td></tr></table> General <table><tr><td>• Thrust blocks sides</td><td>Insitu</td></tr><tr><td>• Thrust blocks top</td><td>U1</td></tr><tr><td>• Incased pipe sides</td><td>Insitu</td></tr><tr><td>• Incased pipe top</td><td>U1</td></tr></table>	• Base top	U3	• Base sides	F2	• Wall both sides	F2	• Wall top	U3	• Roof slab soffit	F2	• Roof slab top	U2	• Base top	U3	• Base sides	F2	• Wall both sides	F2	(Only Steel f/work)		• Wall top	U3	• Floor slab top	U4	• Thrust blocks sides	Insitu	• Thrust blocks top	U1	• Incased pipe sides	Insitu	• Incased pipe top	U1	CONCRETE COVER • Bases / Found cast insitu: 50mm • Bases against formwork: 40mm • Walls (Water Ret. Struct): 40mm • Roof Slabs (All Struct): 30mm • Building - Ring Beams: 30mm • Max. deviation : (+/-) 5mm • Cover blocks must be made equal to the specific structural element, which must be properly compacted and cured.	GENERAL NOTES • Provide synthetic fibres to all concrete for water retaining structures and as specified in the Bill of Quantities. • Concrete to water retaining structures must have a cement / water ratio greater or equal to 2.0. • Concrete must be cured for a min. period of 7 days. • All concrete must be properly vibrated during placing. • <u>All inspections to be done, and written approval granted by Engineer or his representative before concrete may be cast.</u> • All exposed concrete edges to be chamfered 20mm x 20mm. Except if specified differently. • PVC Water stops etc. to be maintained in position during each cast by means of galvanised wires etc. • Wall consecutive lifts: Remove all loose concrete with electric breaker to expose solid concrete & clean before next lift is cast. • Imported fill below main structure to be min. Grade G5/G6 or approved by engineer. • All pipes and steelwork shall be fusion bonded epoxy coated to DFT 300 micron thick unless indicated otherwise or stainless steel items . • Supply and apply " Chryso Dem 10" or similar approved vegetable-based, biodegradable and non toxic release agent at rate of 30m² / liter as thinly as possible and as near as possible to time of concreting. Preferably sprayed onto steel shutters. • Supply and spray "MasterKure 181" or similar approved non-degrading, liquid based on Pliolite Resin curing compound suitable for spray application to freshly poured concrete at and application rate of 6m² / liter as soon as the shutters have been stripped or as soon as floating has been finished on floor surfaces. • Supply and apply "Master Protect 480" or similar approved non-toxic solvent free high build, protective epoxy resin coating applied to prepared concrete surface in two separate coats at an application rate of 5m² / liter per coat.
• Blinding	15MPa / 13mm																																																				
• Base	35MPa / 19mm																																																				
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• Incased pipe sides	Insitu																																																				
• Incased pipe top	U1																																																				



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/25	SCOUR CHAMBER LADDER DETAILS	-



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/25	SCOUR CHAMBER ACCESS COVER LID	-

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

READ THIS DRAWING IN CONJUNCTION WITH	
Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-03-02	Section And Details
13-019-V-01-03-03	Pipe Schedule

AMENDMENTS		
Rev.	Date	Description

ECA CONSULTING
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Civil and Structural Engineers

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

OTHER OFFICES:
MBOMBELA | GAUTENG |
PIETERMARITZBURG |
LADYSMITH

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

Client:

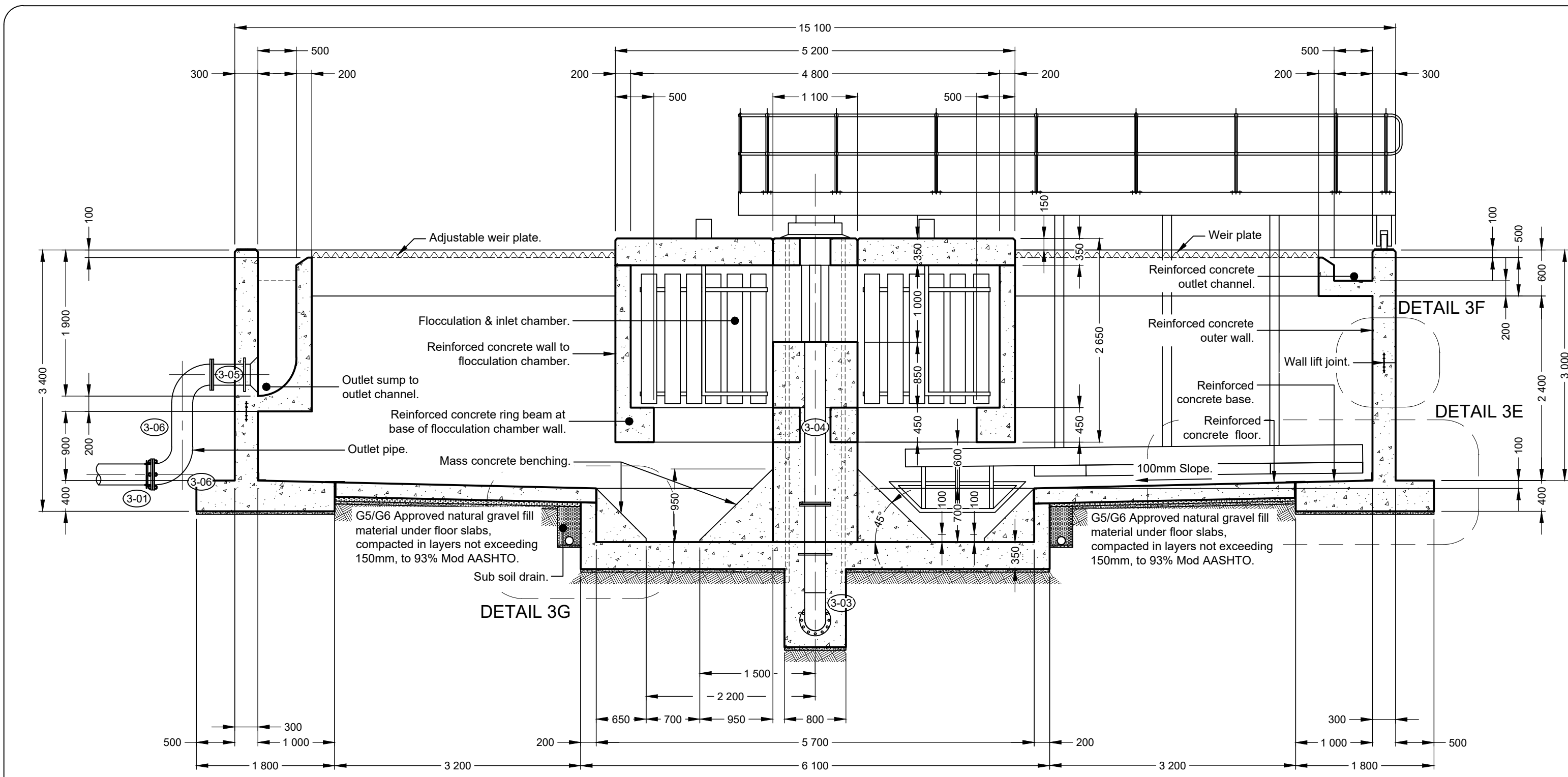
DIHLABENG LOCAL MUNICIPALITY

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

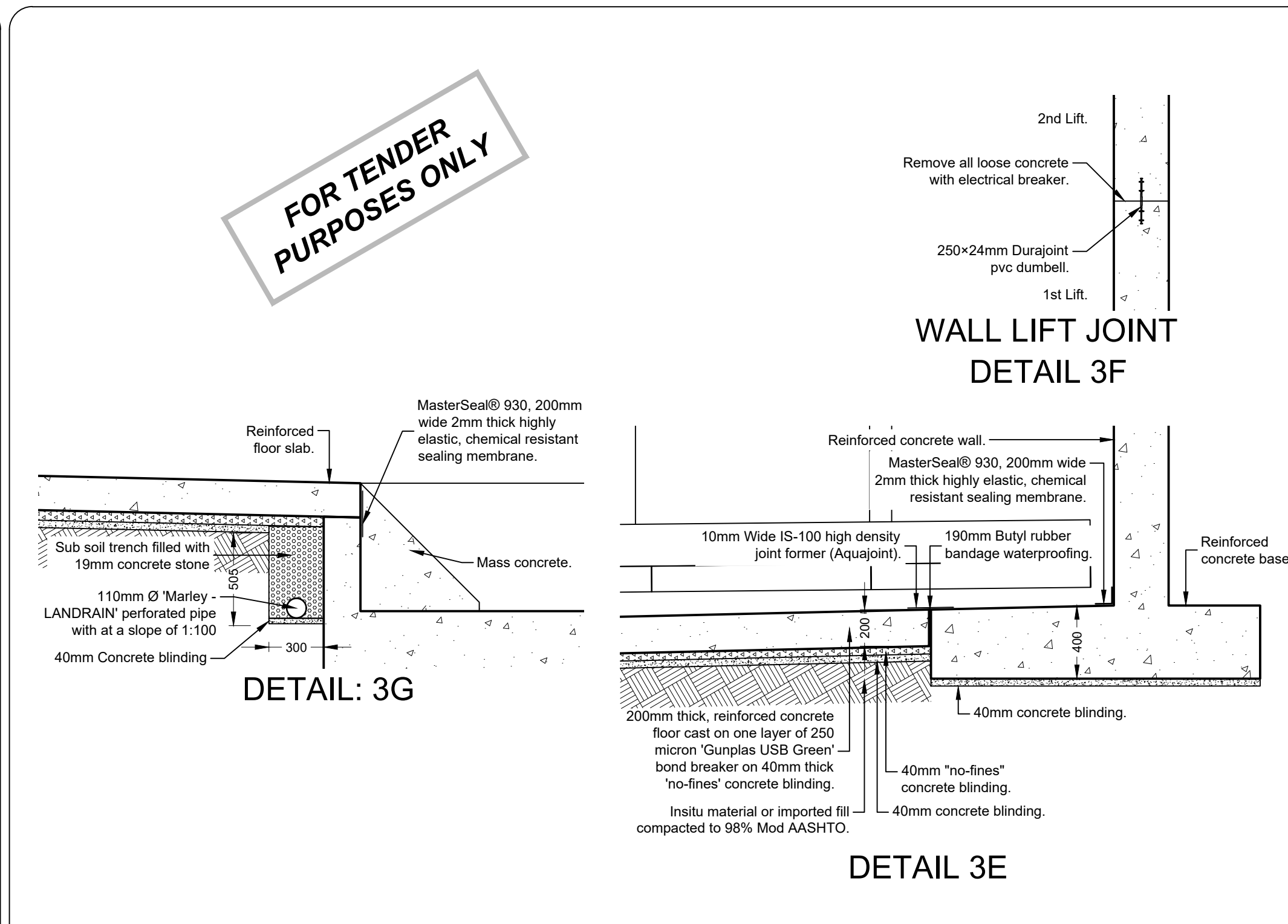
Project:

CLARENS WTW

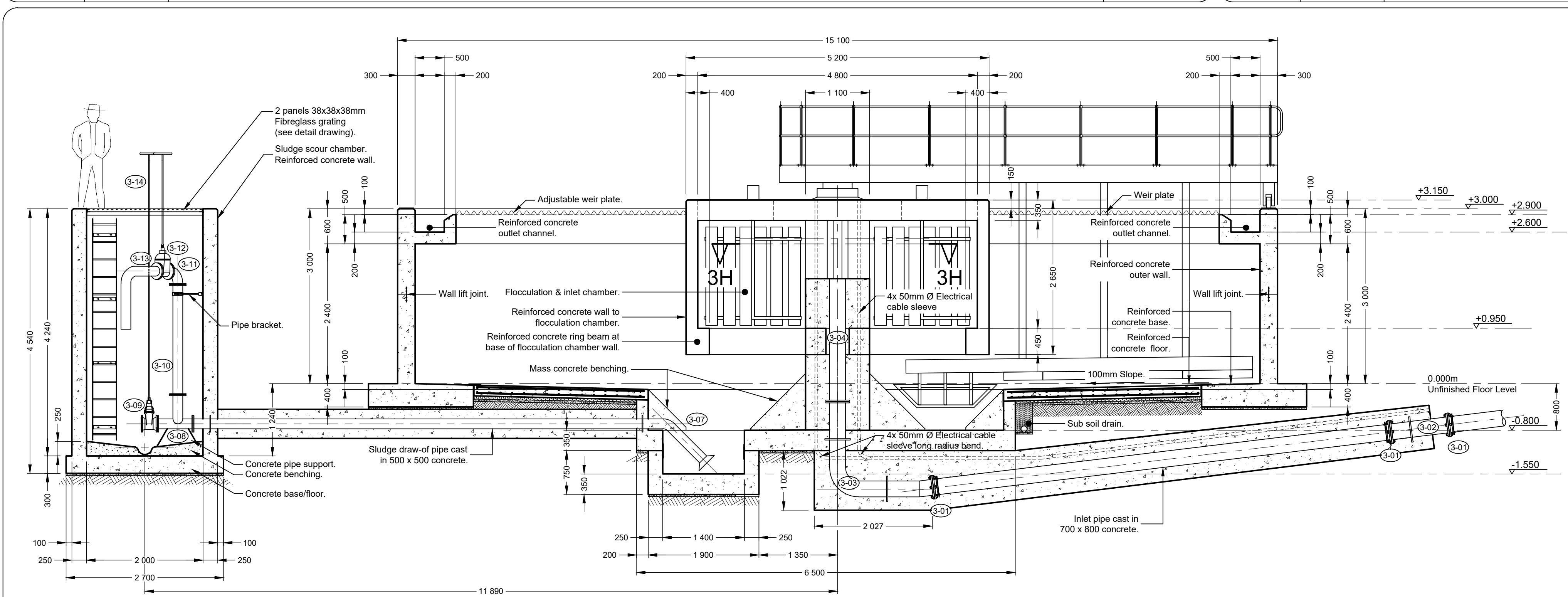
Drawing description:	
CLARIFLOCCULATOR: PLAN & SCOUR CHAMBER DETAILS	
Drawn: R. Joubert	Date: Jan 2021
Scale/s: As Shown	
Drawing number:	Rev.:
13-019-V-01-03-01	00



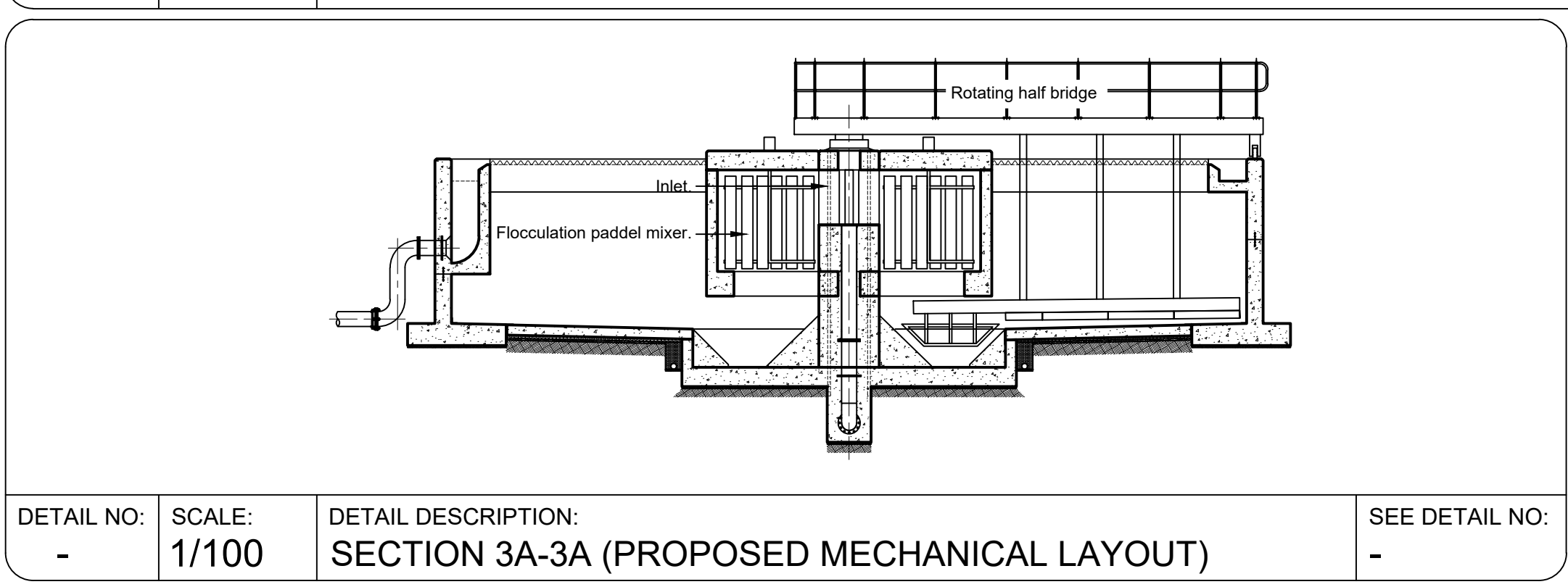
DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/50	SECTION 3A-3A	-



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/25	DETAILS	-

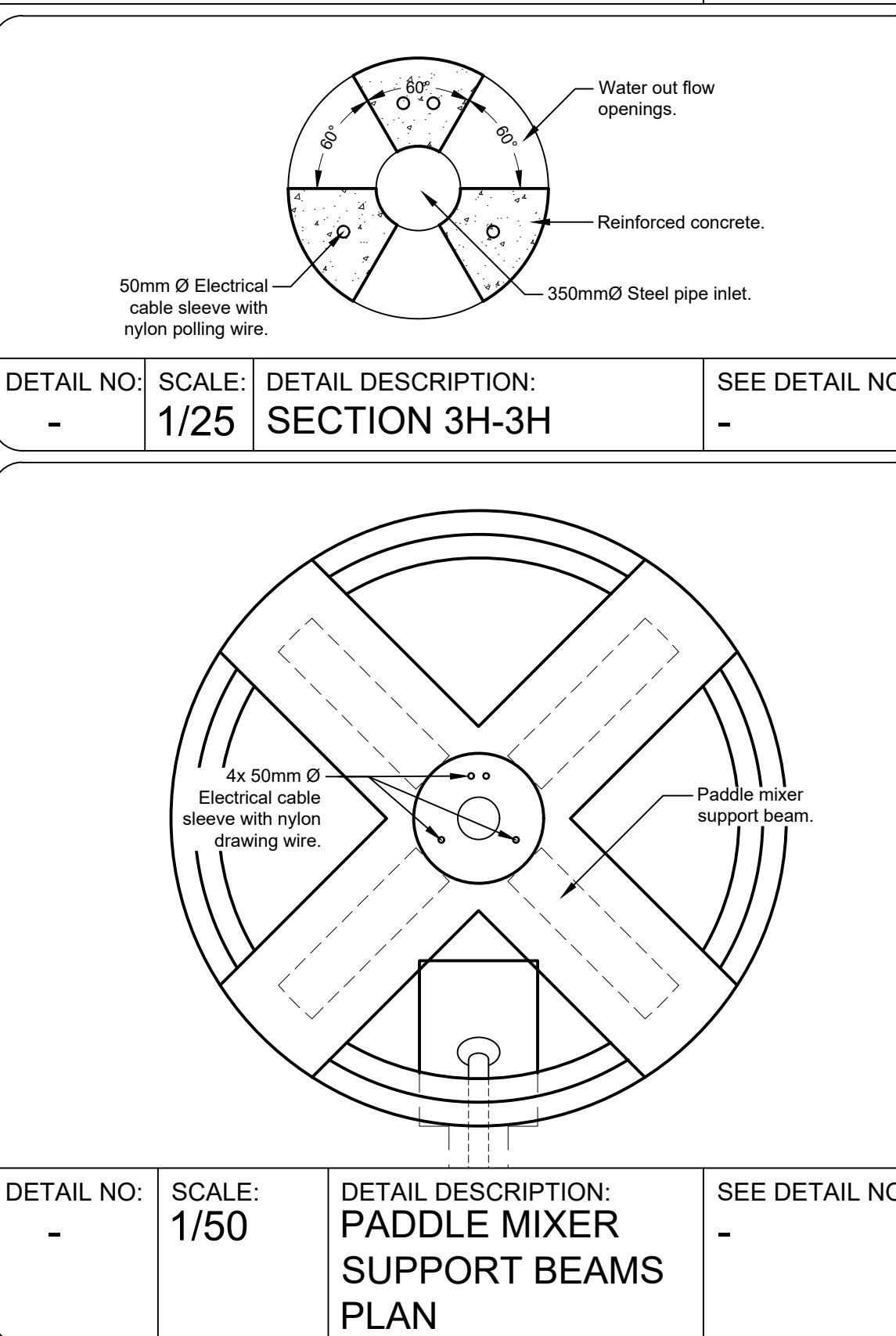


DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/50	SECTION 3B-3B	-



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/100	SECTION 3A-3A (PROPOSED MECHANICAL LAYOUT)	-

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



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/50	PADDLE MIXER SUPPORT BEAMS PLAN	-

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
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READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-03-01	Plan & Scour Chamber Details
13-019-V-01-03-03	Pipe Schedule

AMENDMENTS

Rev.	Date	Description

ECA CONSULTING

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PIETERMARITZBURG |
LADYSMITH

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

DIHLABENG
LOCAL
MUNICIPALITY

CLARENS WTW

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

Project: _____

Drawing description: _____

Drawn: R. Joubert Date: Jan 2021

Scale/s: As Shown

Drawing number: 13-019-V-01-03-02

Rev.: 00

CLARIFLOCCULATOR: SECTIONS & DETAILS

Item No.	No Off.	Dia(mm) ND	Description	Drawing
3-01	04	250Ø	250mmØ Cast iron flange adaptor for uPVC, T16 flanged.	
3-02	01	250Ø	250mmØ Straight, T16 flanged with puddle flange.	
3-03	01	250Ø	250mmØ Straight, with 90° long radius bend, T16 flanged, 2x puddle flanges & 7° bend	
3-04	01	250Ø	250mmØ Straight, with 1xT16 flange.	
3-05	01	250Ø	250mmØ Straight, 1xT10 flange, puddle flange & 480mmØ Bell mouth	
3-06	01	250Ø	250mmØ Straight, with 2x 90° long radius bend, T16 flanged.	
3-07	01	150Ø	150Ø Straight, with 45° long radius bend, 1 x T10 flange, 2 x puddle flanges & 300 mm Ø Bell mouth	
3-08	01	150Ø	150mm Ø Equal tee with 3 x T10 flanges	
3-09	01	150Ø	150mm Ø Wedge gate valve to SANS 664, T10 flanged.	
3-10	01	150Ø	150mm Ø Straight, T10 flanged.	
3-11	01	150Ø	150mm Ø, 90° long radius bend, T10 flanged.	
3-12	01	150Ø	150mm Ø Wedge gate valve, with extended spindle, 900mm high stand and hand wheel.	
3-13	01	150Ø	150mm Ø Straight, with 1 x T10 flange.	
3-14	01	-Ø	Extended spindle and hand wheel 150mm Ø Wedge gate valve refer to item number 3-09.	
3-15	01	150Ø	150mmØ Pipe bracket.	

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

STEEL AND PIPE NOTES

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

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

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-03-01	Plan & Scour Chamber Details
13-019-V-01-03-02	Sections & Details

AMENDMENTS

Rev.	Date	Description

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OTHER OFFICES:
MBOMBELA | GAUTENG |
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LADYSMITH

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

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

**DIHLABENG
LOCAL
MUNICIPALITY**

Approved by Client: _____

Name: _____

Signature: _____ Date: _____

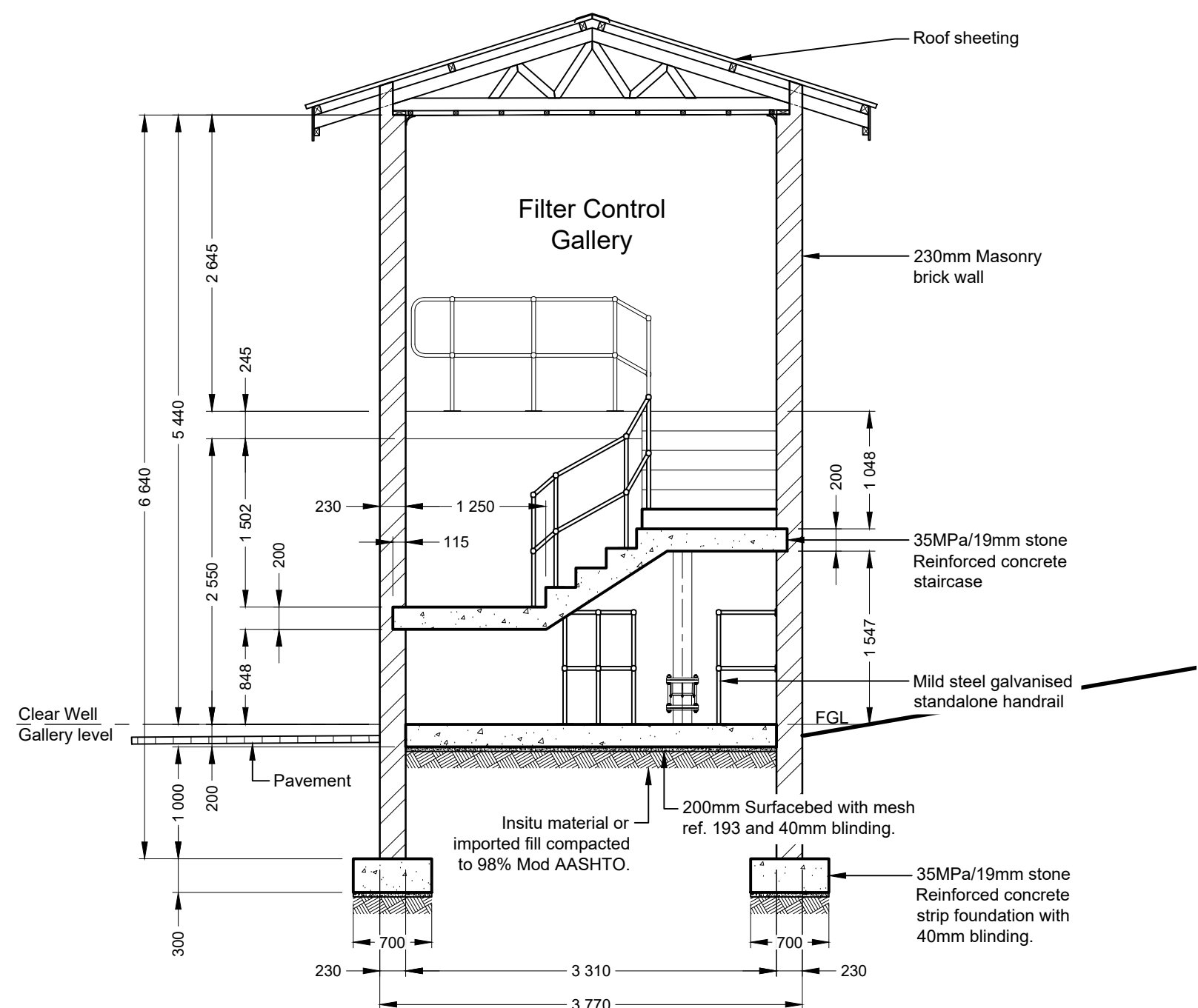
Project:

CLARENS WTW

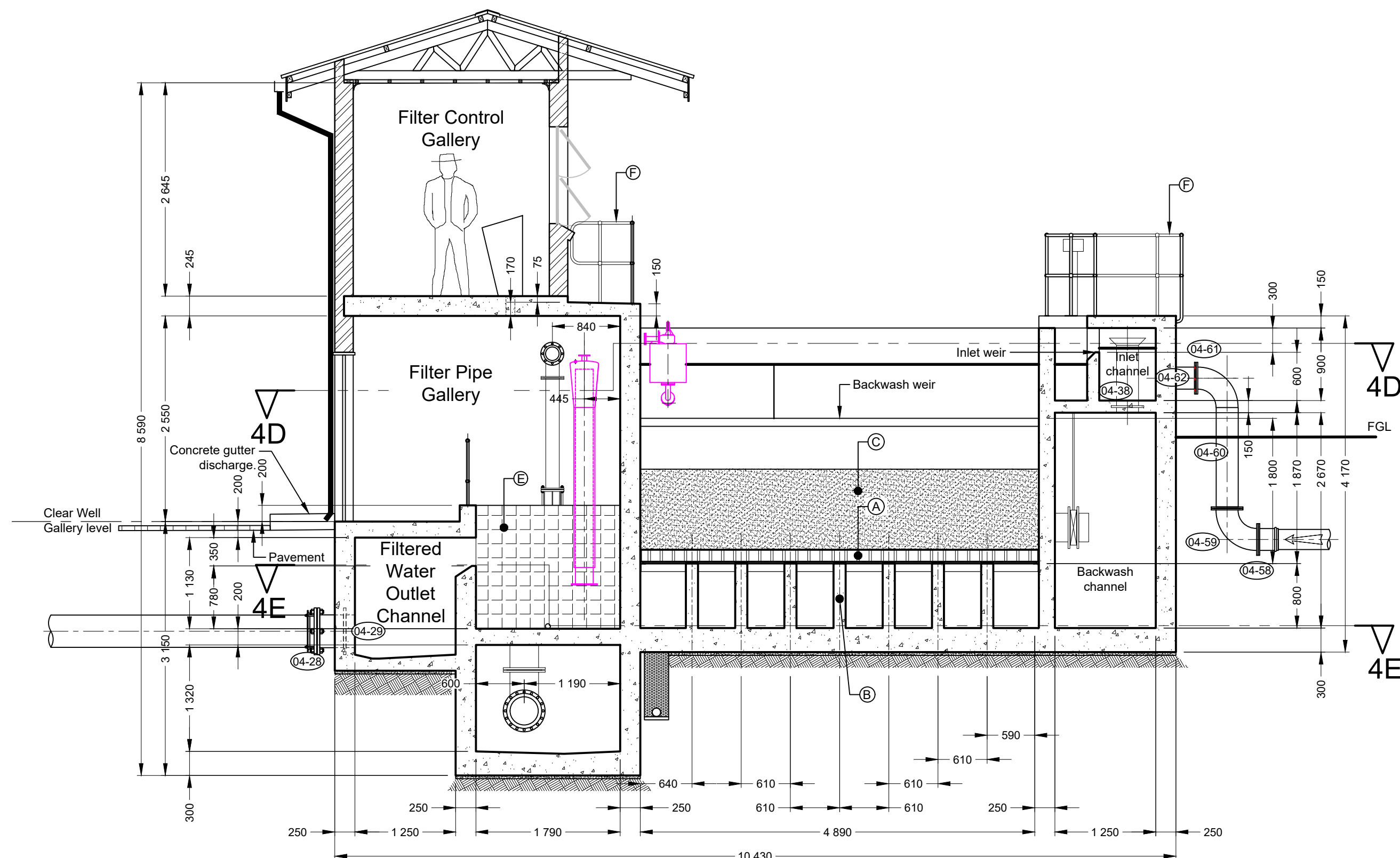
Drawing description:

**CLARIFLOCCULATOR:
PIPE SCHEDULE**

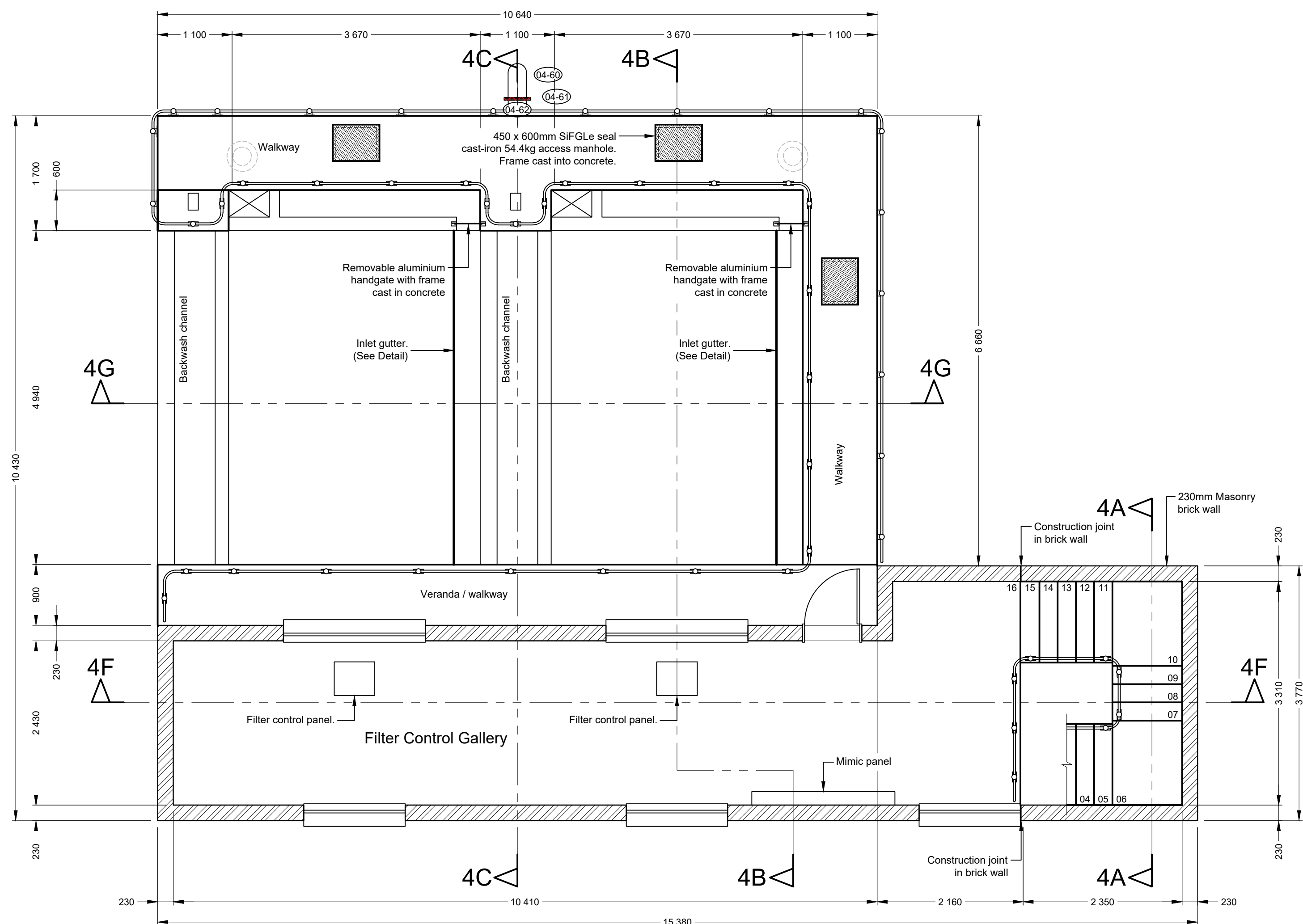
Drawn: R. Joubert	Date: Jan 2021
Scale/s: As Shown	
Drawing number: 13-019-V-01-03-03	Rev.: 00



DETAIL NO: - SCALE: 1/50 DETAIL DESCRIPTION: SECTION 4A - 4A SEE DETAIL NO: -



DETAIL NO: - SCALE: 1/50 DETAIL DESCRIPTION: SECTION 4B - 4B SEE DETAIL NO: -



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

DRAWING NOTES:

- A CADAR GRC Monolithic flat panel filter floor & filter nozzles installed to 2mm accuracy as per manufacture specifications. If an alternative filter floor or nozzle design is proposed, it must not change or compromise the current design and layout.
- B 1600 UPVC PN16 sleeve filled with concrete supporting filter floor.
- C 1.0m Layer high quality silica sand with a nominal size and a uniformity coefficient as per specialist's recommendation.
- D Stainless steel inlet gutter.
- E White ceramic glazed tiles 150mm x 150mm installed to clear well using white waterproof tile grout.
- F Galvanize Ball-type knee and handrail, top or side mounted. Handrail to be 1m above final floor level. Stanchion diameter at least 42mm and Handrail diameter at least 34mm.

NOTES:

CONCRETE GRADE:

- Blinding 15MPa / 13mm
- Main Structure
- Base 35MPa / 19mm
- Wall 35MPa / 19mm
- Floor slab 35MPa / 19mm
- Suspended slab 35MPa / 19mm
- Beams 35MPa / 19mm
- Columns 35MPa / 19mm

General

- Thrust blocks 15MPa / 19mm
- Incased pipes 35MPa / 19mm
- Mass concrete 15MPa / 19mm

CONCRETE FINISHES:

Main Structure

- Base top U3
- Base sides F2
- Wall both sides F2
- Wall top U3
- Floor slab top U4
- Suspended slab soffit F2
- Suspended slab top U3
- Beam sides F2
- Beam soffit F2
- Beam top U3
- Column sides F2

General

- Thrust blocks sides Insito
- Thrust blocks top U1
- Incased pipe sides Insito
- Incased pipe top U1

GENERAL NOTES:

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

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!

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FOR TENDER PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-04-02	Section And Details: 1
13-019-V-01-04-03	Section And Details: 2
13-019-V-01-04-04	Building Work Plan, Sections & Elevations
13-019-V-01-04-05	Pipe Schedule

AMENDMENTS

Rev.	Date	Description

ECA CONSULTING VRYHEID
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 ISO Registered 9001:2015

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OTHER OFFICES:
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 PIETERMARITZBURG |
 LADYSMITH

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

Client: **DIHLABENG LOCAL MUNICIPALITY**

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

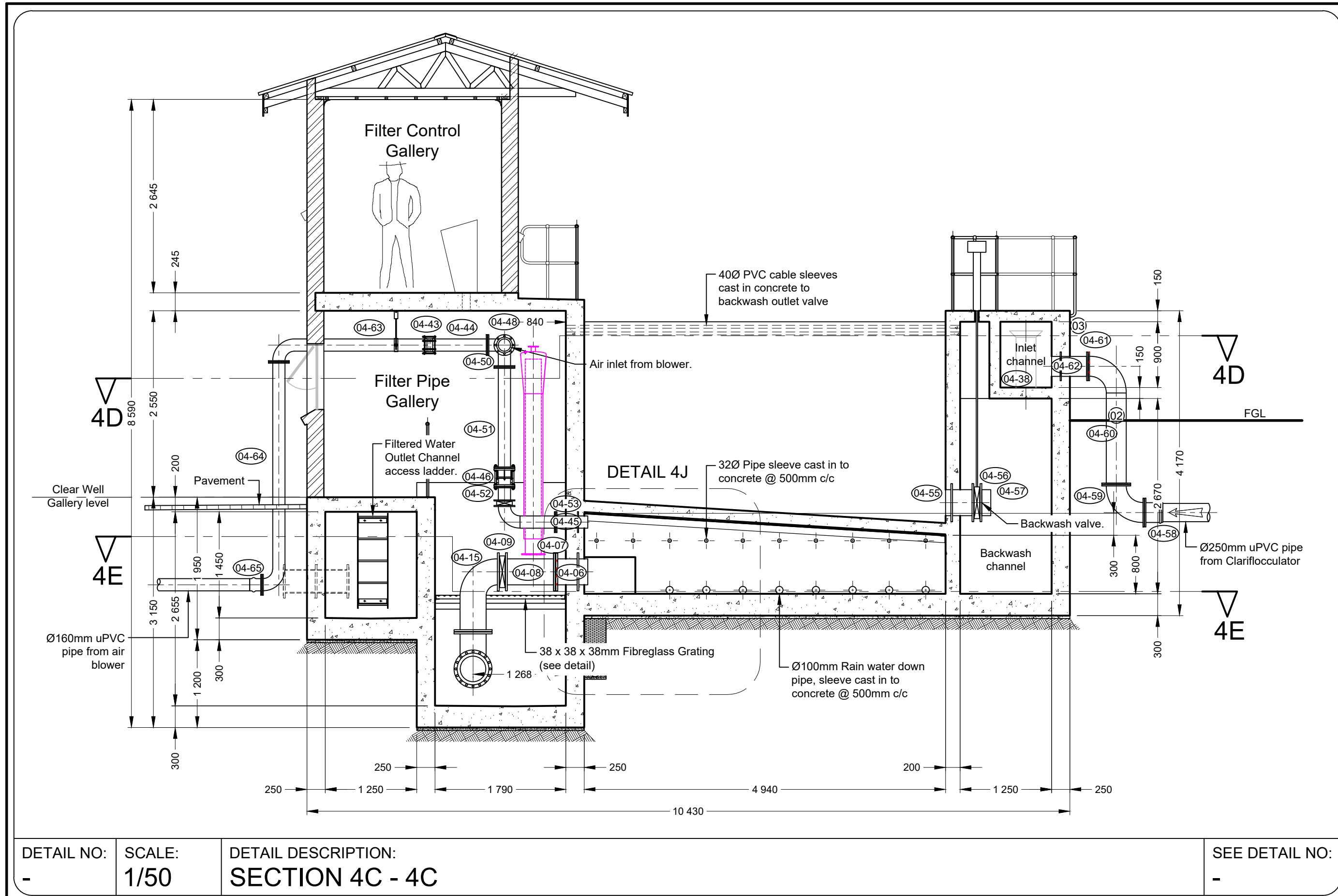
Project: **CLARENS WTW**

Drawing description: **RAPID GRAVITY SAND FILTER: PLAN AND SECTIONS**

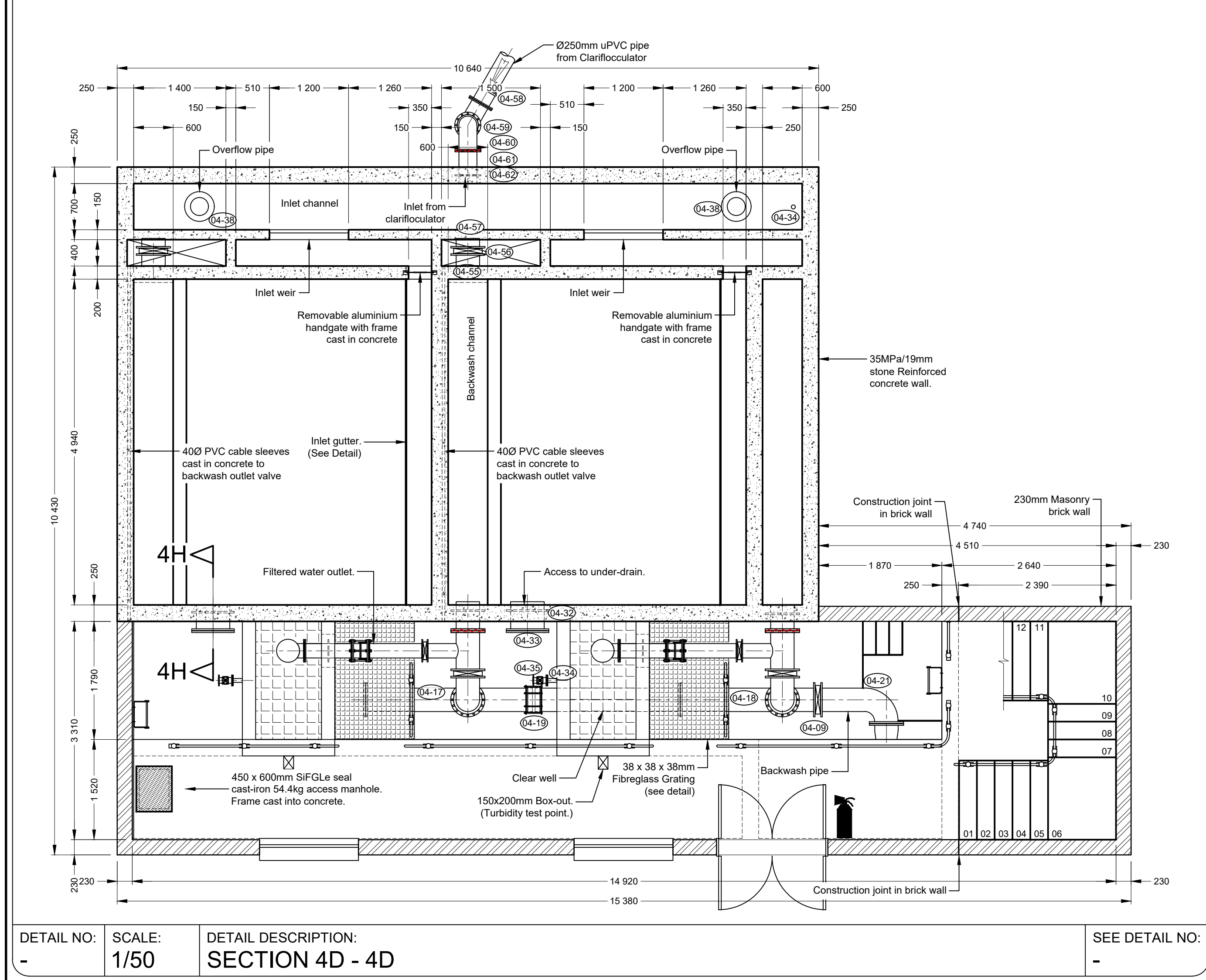
Drawn: M BOTHA Date: Jan 2021

Scale/s: AS SHOWN

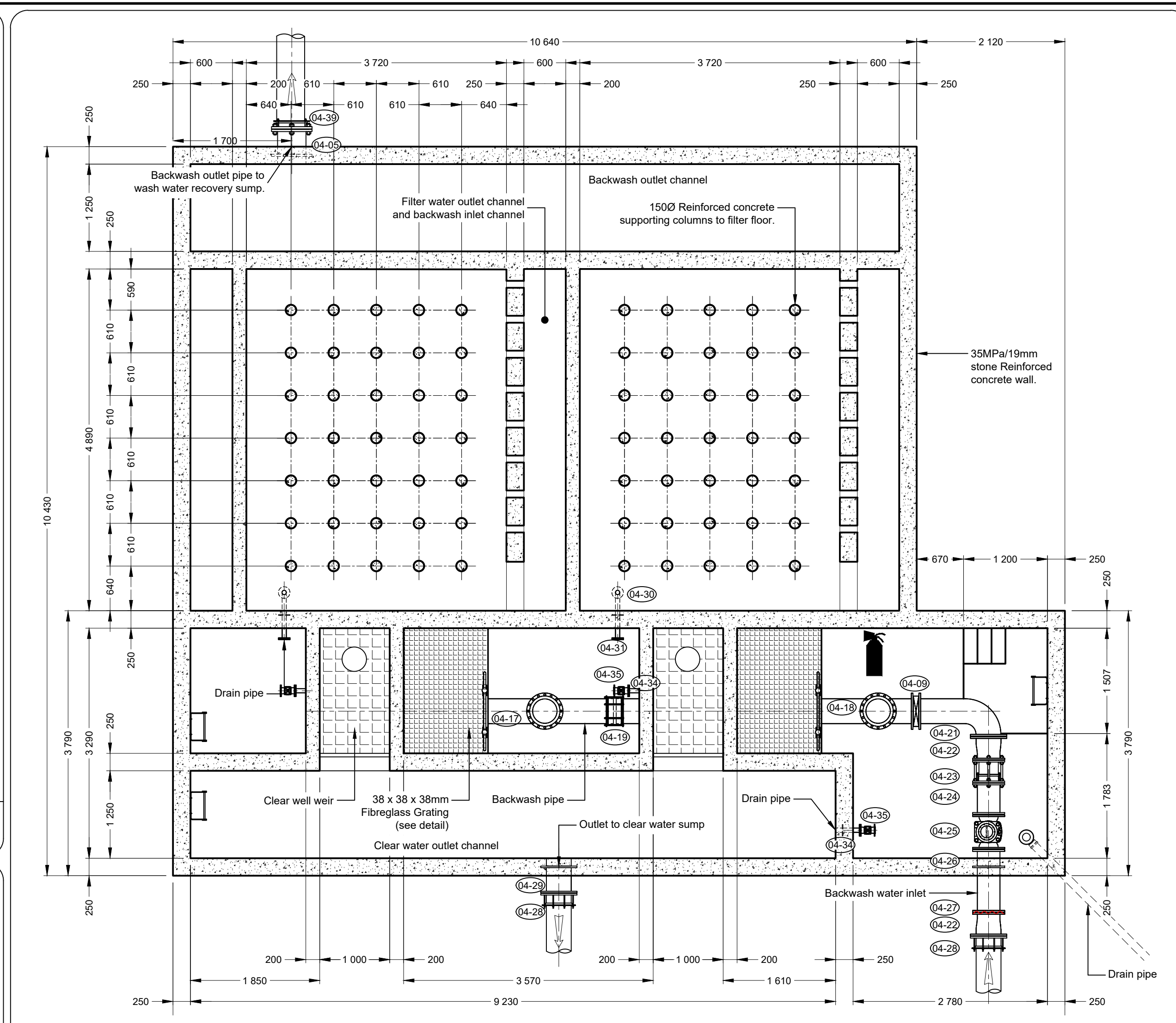
Drawing number: 13-019-V-01-04-01 Rev.: 00



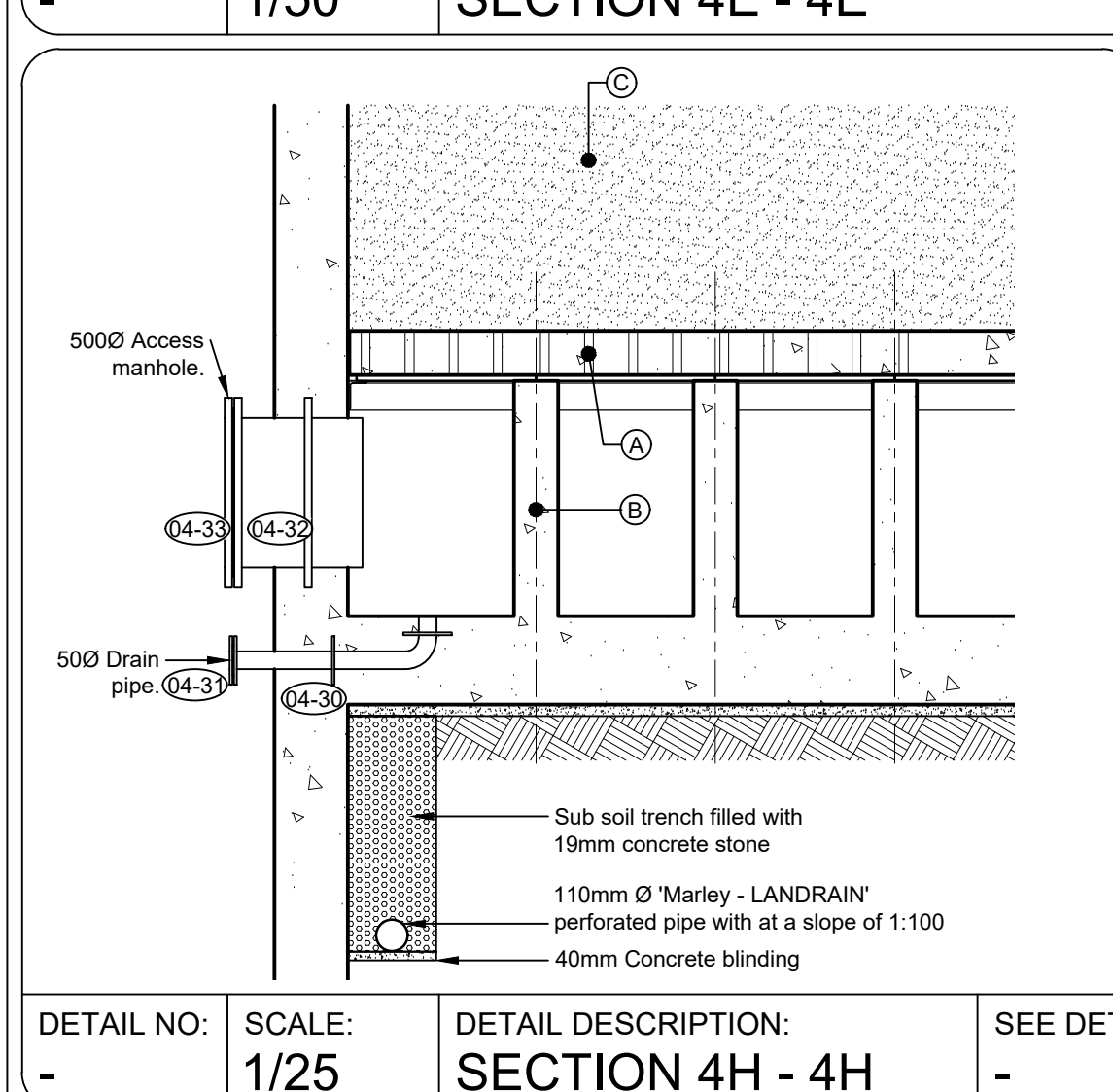
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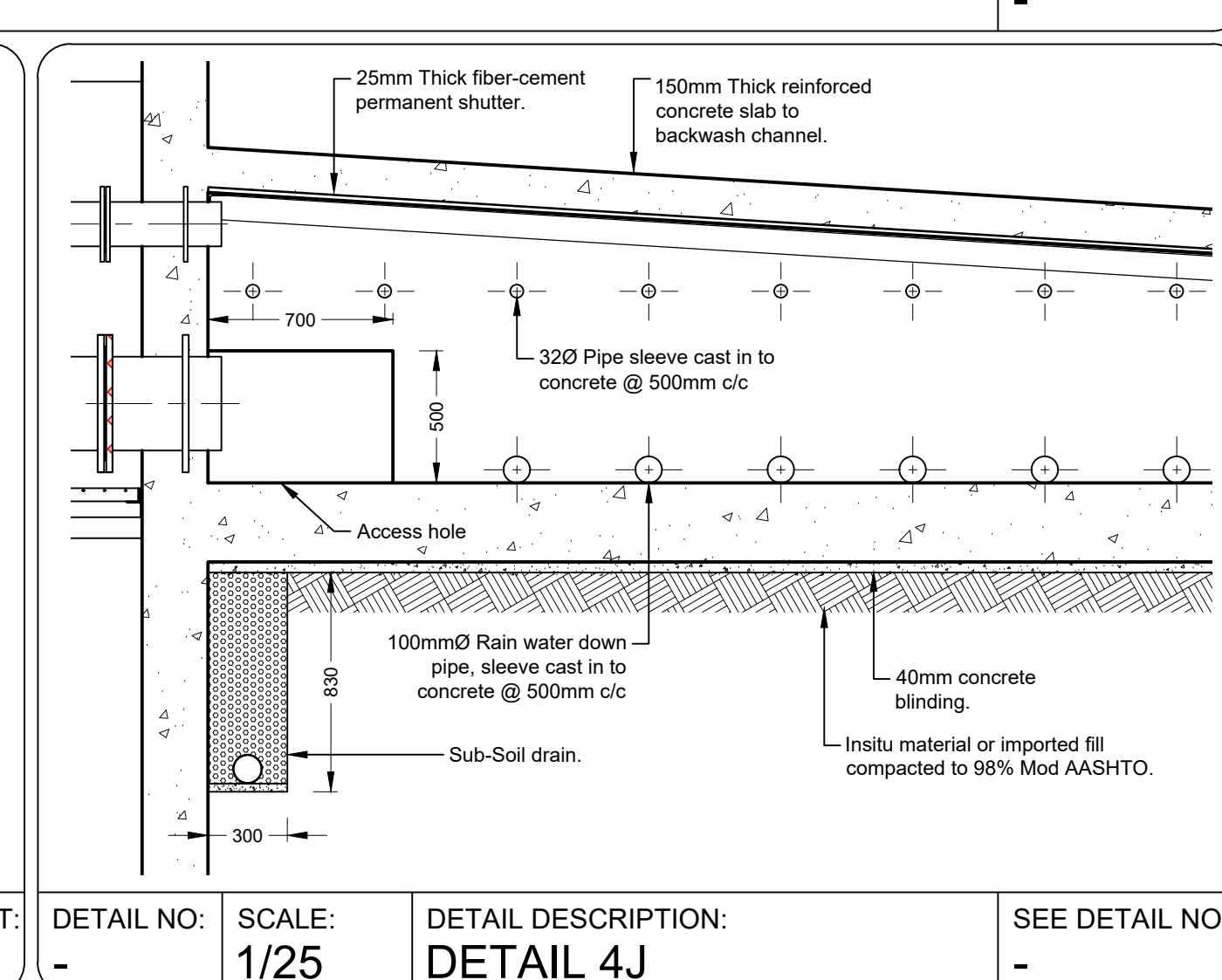
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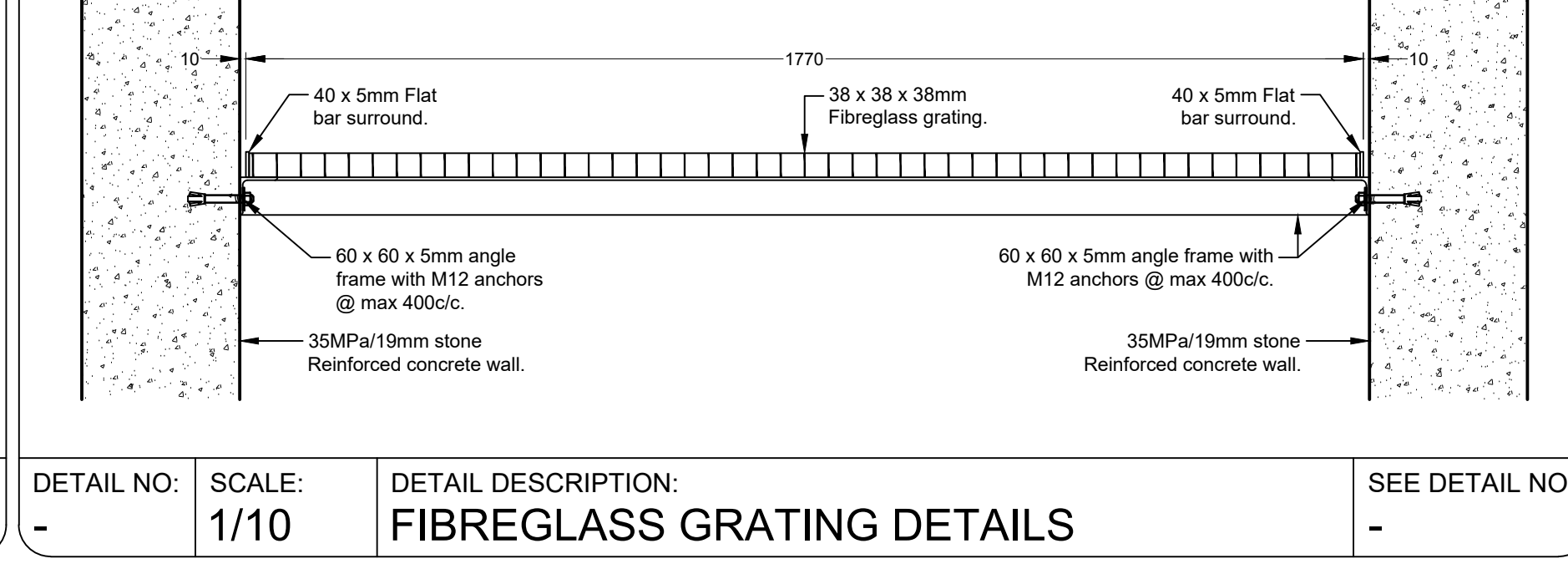
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DETAIL NO: - SCALE: 1/25 DETAIL DESCRIPTION: SECTION 4H - 4H SEE DET: -



DETAIL NO: - SCALE: 1/25 DETAIL DESCRIPTION: DETAIL 4J SEE DETAIL NO: -



DETAIL NO: - SCALE: 1/10 DETAIL DESCRIPTION: FIBREGLASS GRATING DETAILS SEE DETAIL NO: -

- DRAWING NOTES:
- A CADAR GRC Monolithic flat panel filter floor & filter nozzles installed to 2mm accuracy as per manufacture specifications. If an alternative filter floor or nozzle design is proposed, it must not change or compromise the current design and layout.
 - B 1600 uPVC PN16 sleeve filled with concrete supporting filter floor.
 - C 1.0m Layer high quality silica sand with a nominal size and a uniformity coefficient as per specialist's recommendation.
 - D Stainless steel inlet gutter.
 - E White ceramic glazed tiles 150mm x 150mm installed to clear well using white waterproof tile grout.
 - F Galvanize Ball-type knee and handrail, top or side mounted. Handrail to be 1m above final floor level. Stanchion diameter at least 42mm and Handrail diameter at least 34mm.

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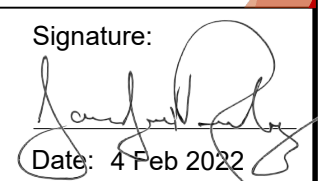
Drawing Number	Drawing Description
13-019-V-01-04-01	Plan And Sections
13-019-V-01-04-03	Section And Details: 2
13-019-V-01-04-04	Building Work Plan, Sections & Elevations
13-019-V-01-04-05	Pipe Schedule

AMENDMENTS

Rev.	Date	Description

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

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

Signature: 
Date: 4 Feb 2022

Client: **DIHLABENG LOCAL MUNICIPALITY**

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

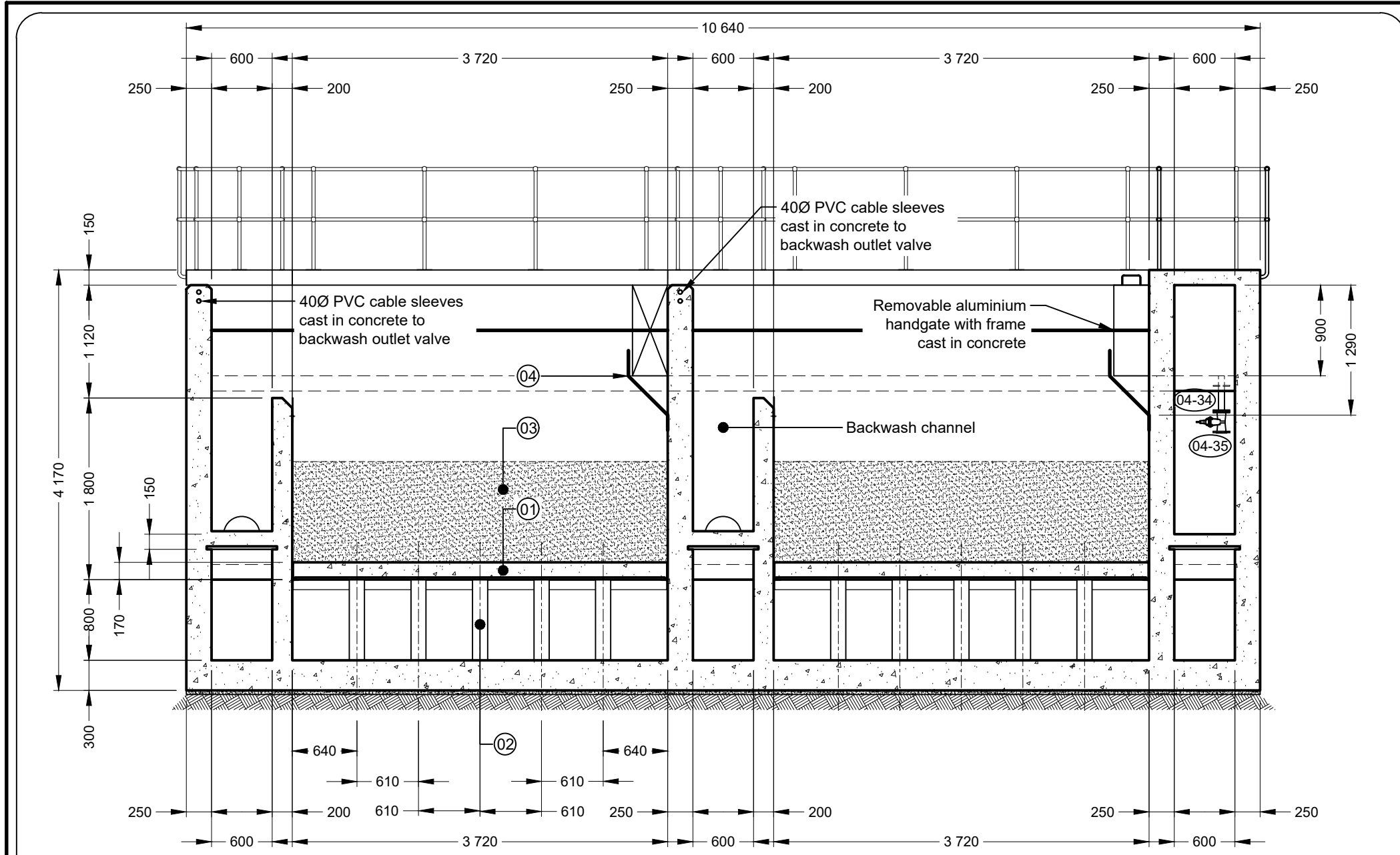
Project: **CLARENS WTW**

Drawing description: **RAPID GRAVITY SAND FILTER: SECTIONS AND DETAILS: 1**

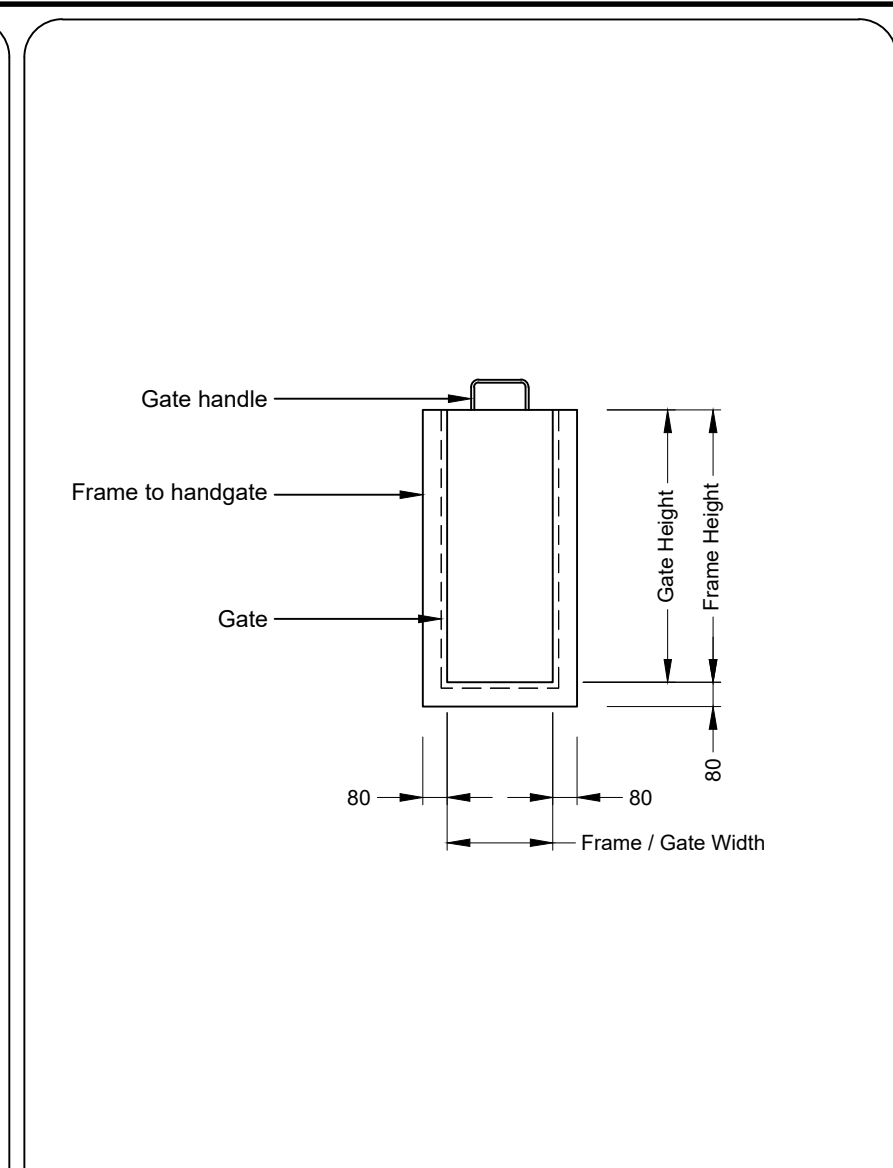
Drawn: M BOTHA Date: Jan 2021

Scale/s: AS SHOWN

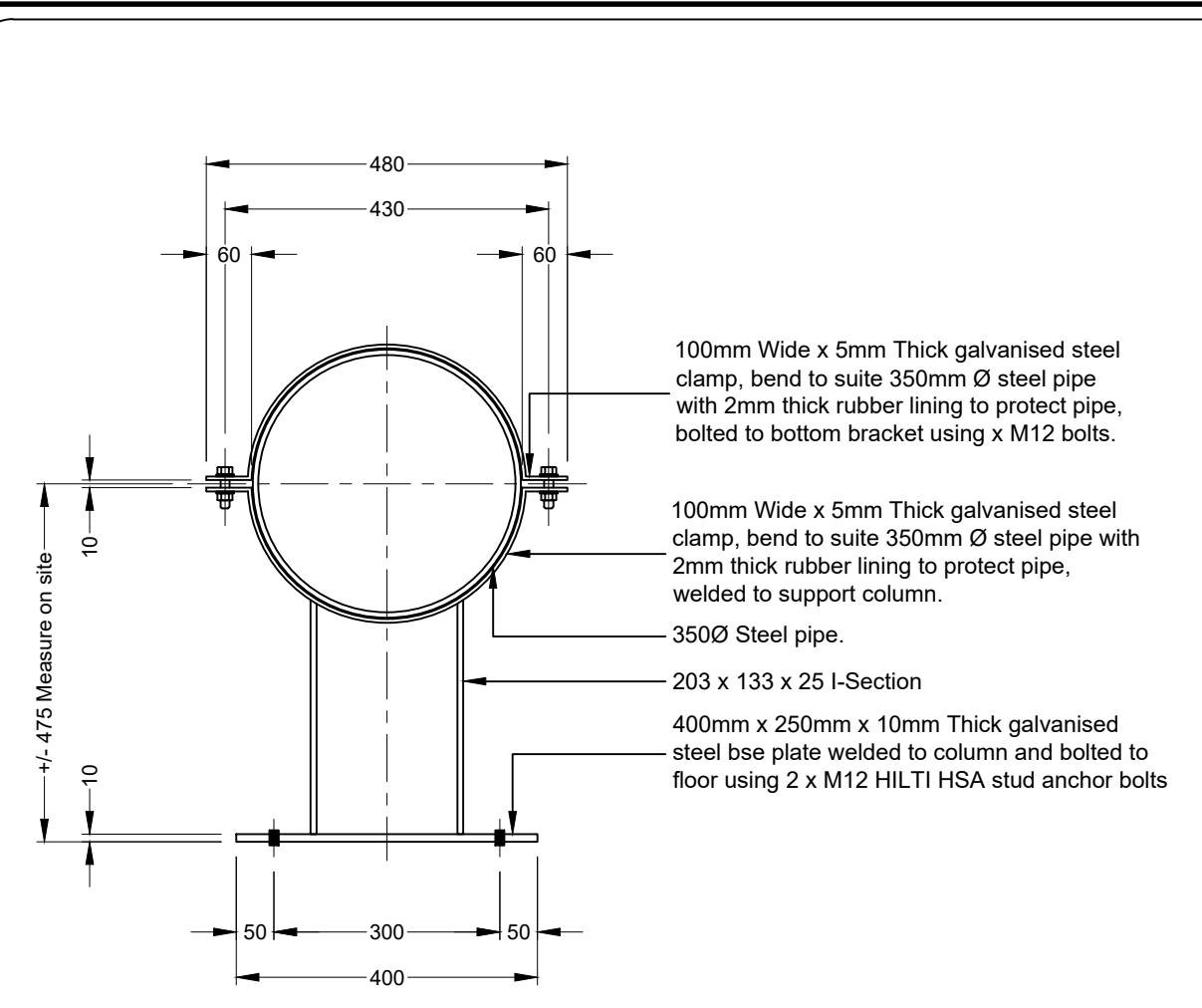
Drawing number: 13-019-V-01-04-02 Rev.: 00



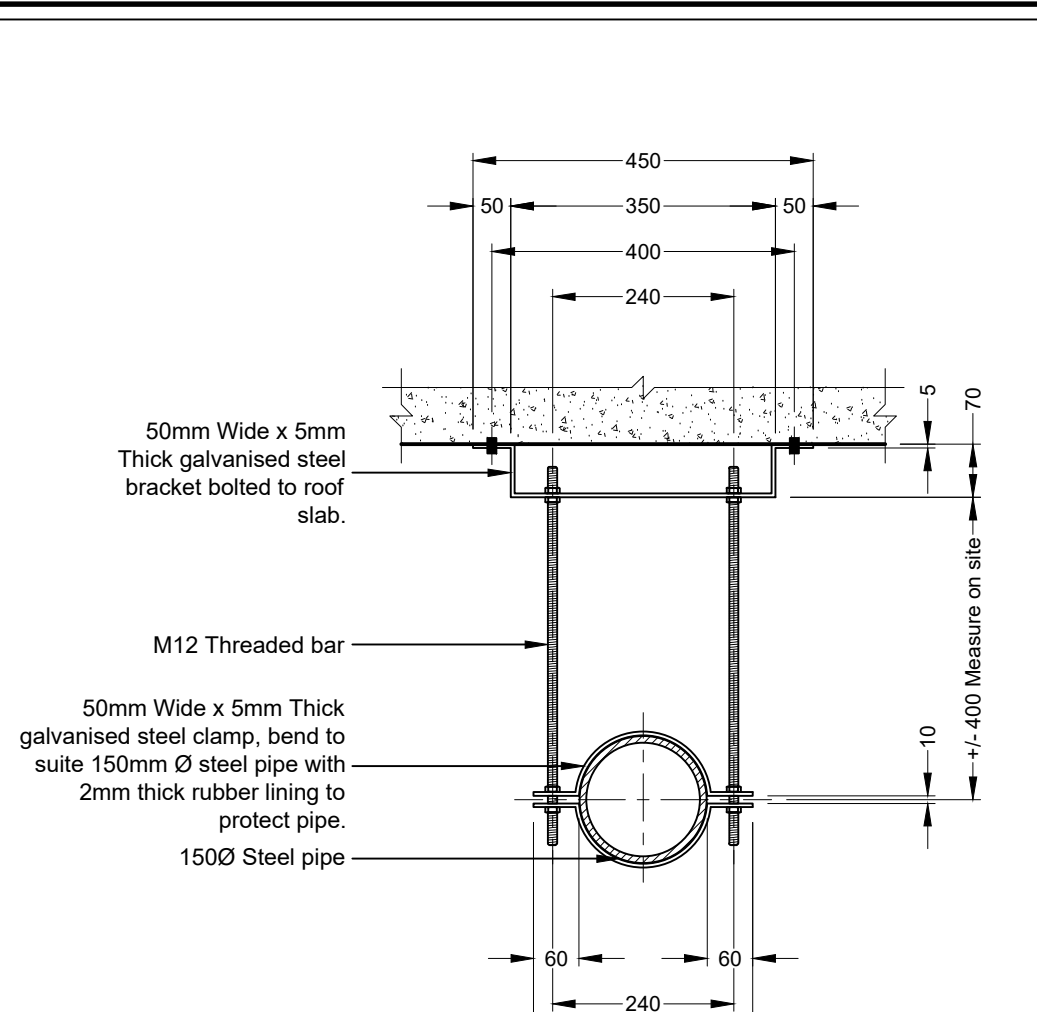
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-	1/50	SECTION 4G - 4G	-



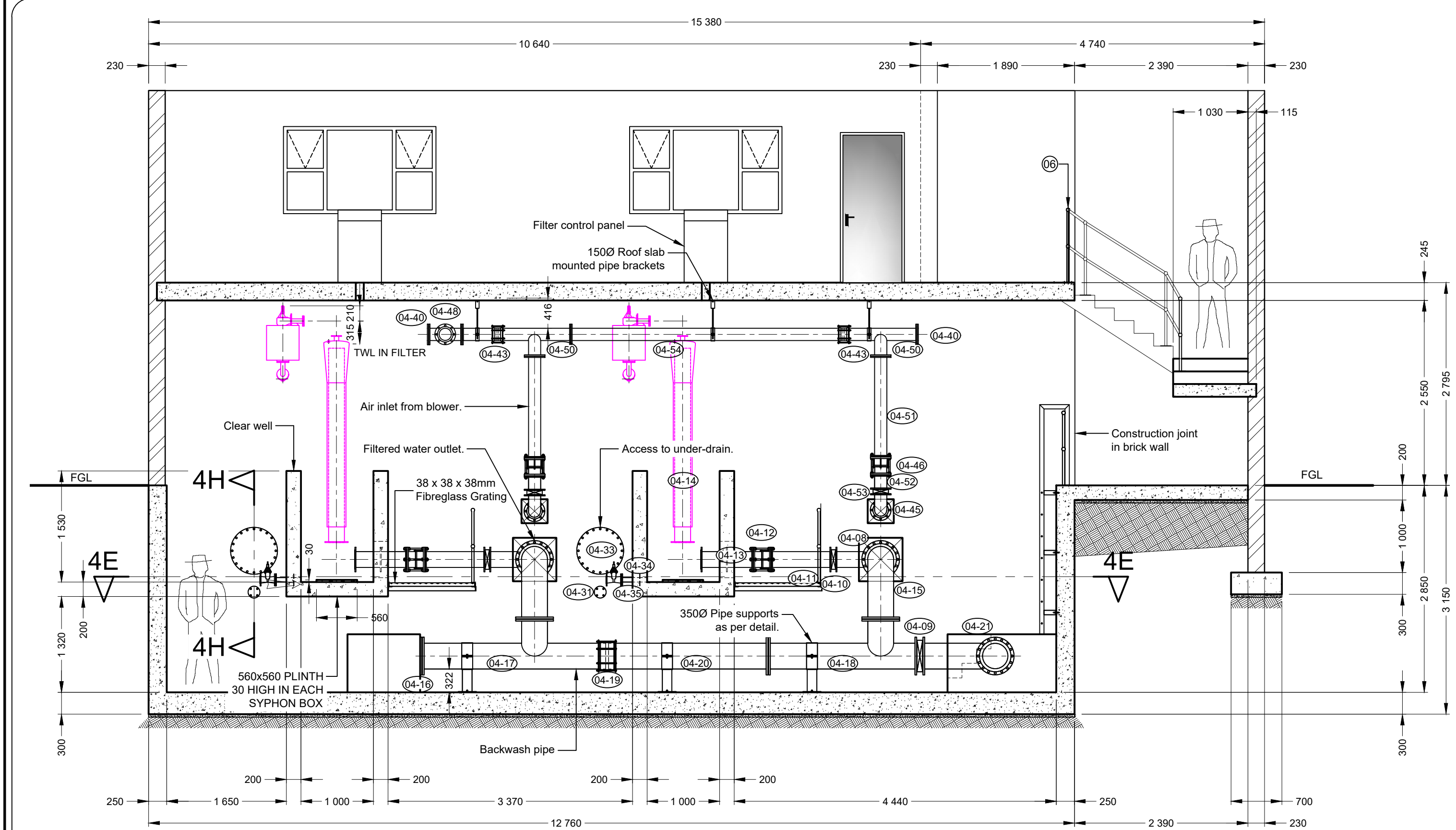
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-	1/25	TYPICAL REMOVABLE HAND SLUICE DETAIL



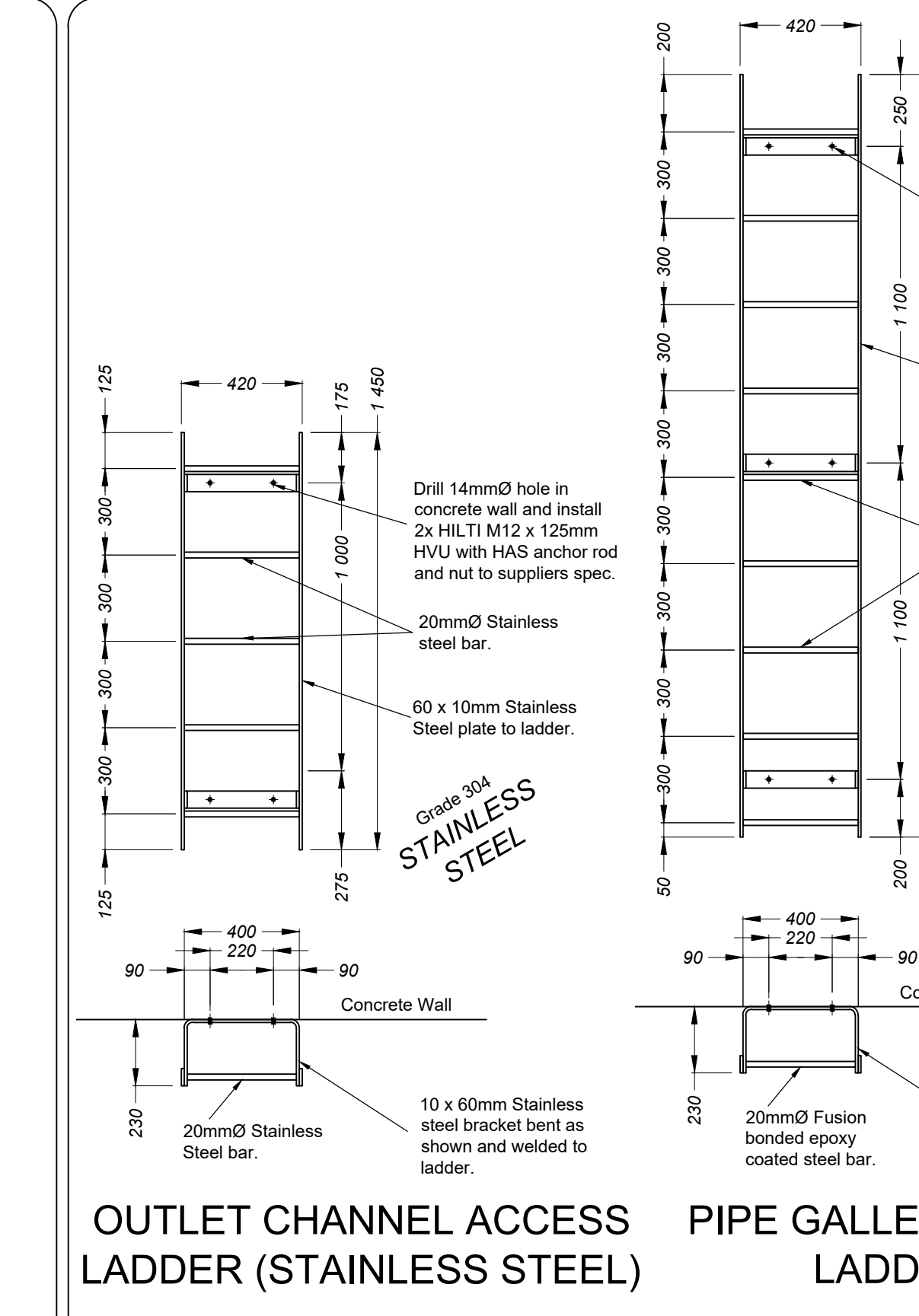
DETAIL NO:	SCALE:	DETAIL DESCRIPTION:
-	1/10	PIPE BRACKET DETAILS



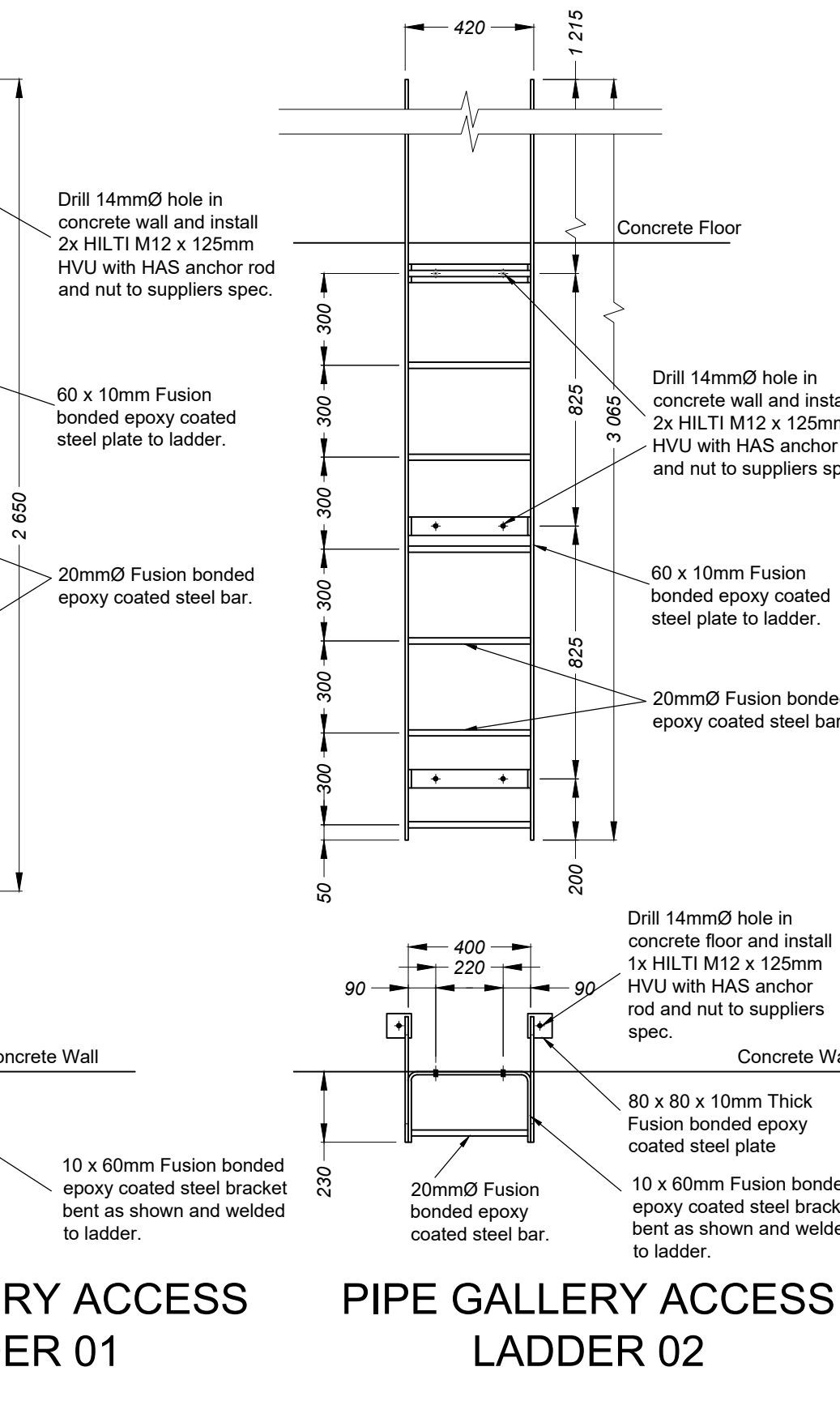
DETAIL NO:	SCALE:	DETAIL DESCRIPTION:
-	1/10	PIPE BRACKET DETAILS



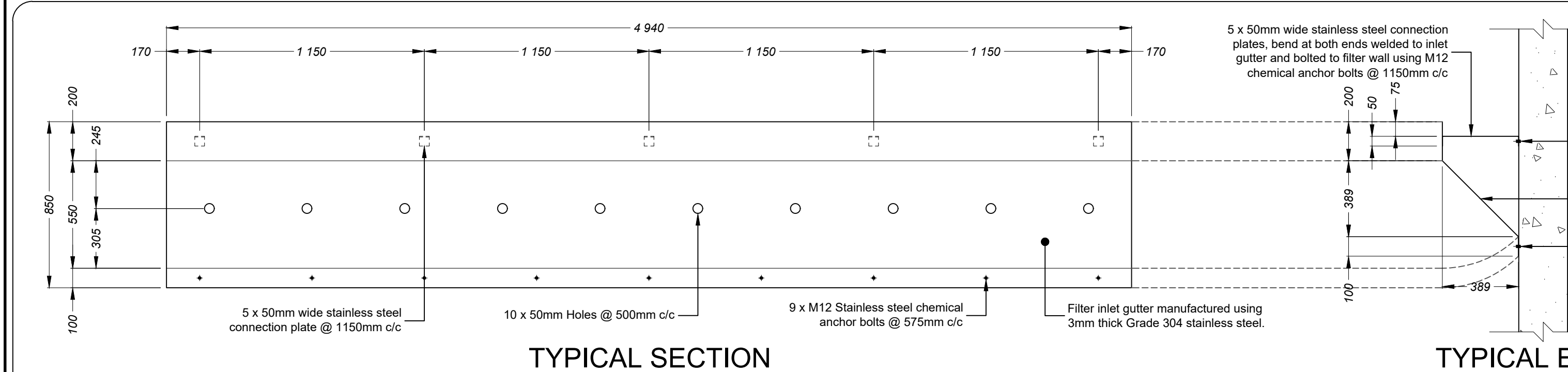
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-	1/50	SECTION 4F - 4F	-



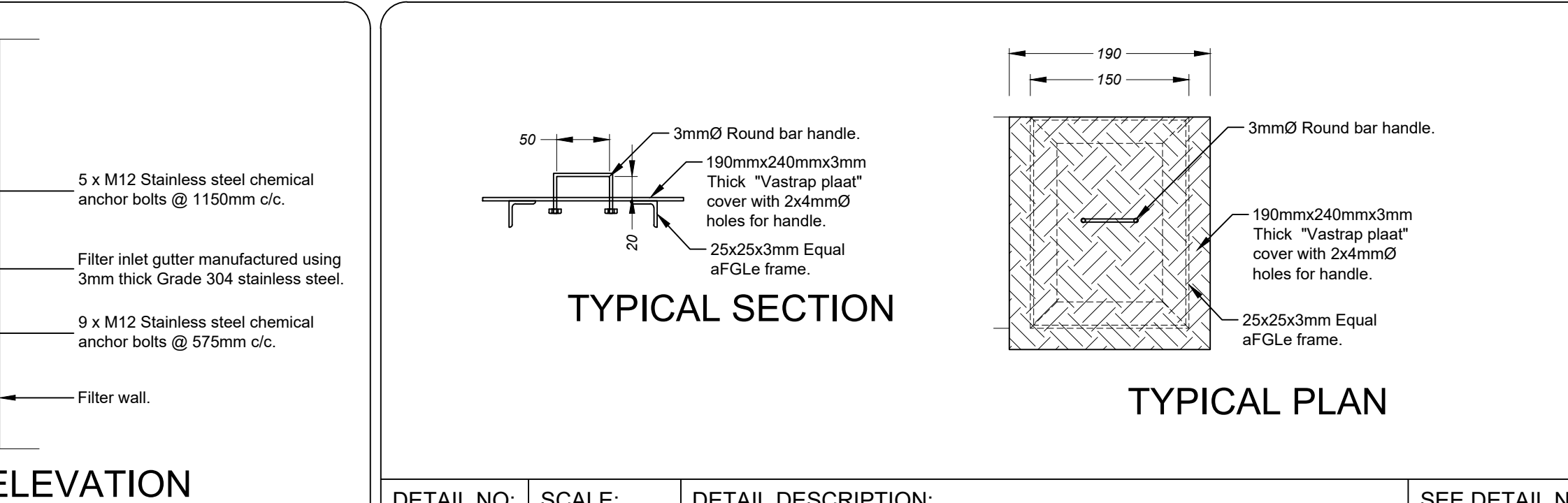
DETAIL NO:	SCALE:	DETAIL DESCRIPTION:
-	1/20	ACCESS LADDER DETAILS



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:
-	1/20	ACCESS LADDER DETAILS



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/20	TYPICAL FILTER INLET GUTTER DETAIL	-



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/5	TURBIDITY TEST POINT COVER DETAILS	-

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

FOR TENDER PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH	
Drawing Number	Drawing Description
13-019-V-01-04-01	Plan And Sections
13-019-V-01-04-02	Section And Details: 1
13-019-V-01-04-04	Building Work Plan, Sections & Elevations
13-019-V-01-04-05	Pipe Schedule

AMENDMENTS	
Rev.	Date

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

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

Client:
DIHLABENG LOCAL MUNICIPALITY

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

Project:
CLARENS WTW

Drawing description:
**RAPID GRAVITY SAND FILTER:
SECTIONS AND DETAILS: 2**

Drawn: M BOTHA Date: Jan 2021
Scale/s: AS SHOWN
Drawing number: 13-019-V-01-04-03 Rev.: 00

Item No.	No Off.	Dia(mm) ND	Description	Drawing
4-38	2	250Ø	250mm Ø Straight, with puddle flange and 1 x 450mm Ø belmouth.	
4-58	1	250Ø	250mmØ Flange adaptor for uPVC, T10 flanged.	
4-59	1	250Ø	250mmØ long radius bend, T10 flanged.	
4-60	1	250Ø	250mmØ Straight, with 90° long radius bends, T10 flanged.	
04-61	01	250Ø	250mmØ Insulating Gasket.	
4-62	1	250Ø	250mmØ Straight, 1x T10 flange with puddle flange.	
4-63	1	150Ø	150mmØ Straight, with 1x 90° long radius bend and 1x T10 flange.	
4-64	1	150Ø	150mmØ Straight, with 1x 90° long radius bend, T10 flanged.	
4-65	2	150Ø	150mmØ Flange adaptor for uPVC, T10 flanged.	

STEEL AND PIPE NOTES:

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

BUILDING WORK NOTES:

- TERMITE POISON: Treat ground under all internal & external walls, concrete beds and slabs in accordance with SABS 1165. Then apply 50mm river sand over poison.
- FLOORS: 100mm Thick, 20MPa concrete surface bed, floated to Class U2 with mesh ref. 245 set 25mm below top on 250microns USB green damp proof membrane on 25mm sand bed on compacted G5 fill. To be poisoned in accordance with SABS 1165 soil poison with with 5 year guarantee.
- 100mm, Sloping 20MPa concrete surface bed floated to Class U2 with mesh ref. 245 set 25mm below top on cast on 250 micron USB Green, damp proof membrane, with all side overlaps sealed with approved contact adhesive, on 50mm sand on approved G5 filling to be poisoned as Item 1. Concrete to have non-slip U2 finish, wood float.
- ±450 x ±450 x 10mm SLIP FREE CERAMIC TILES: As approved on 3:1 tile cement mortar. All joints to be continuous in both directions with total thickness of 6mm min. Tiles laid to manufacturers recommendations and instructions. Tiles to be Group A quality - Sand / Terracotta Colour.
- 75mm high SKIRTING TILES: Cut from floor tiles, as approved on 3:1 cement mortar. All joints to be laid in same direction as floor tiles. Tiles to be laid to manufacturers recommendations and instructions.
- Apply Flowshield 1000 self smoothing epoxy compound to a minimum thickness of 1000 microns in accordance with the manufacturers Flowcrete SA's installation methodology. Colour to be Goosewing Grey 222 or equal and approved. Concrete floors to be clean, dry, sound and free of laitance with residual moisture content of less than 4%. Applied by Specialist Sub contractor.
- 19x76mm MERANTI SKIRTING BOARD: Nailed to wall. All nails to be punched and filled. Finish with 2 coats poly-urethane paint.
- UNTINTED GRANOLITHIC: 22mm min. thick floor finish (Screed).
- FACE BRICK IN STRETCHER BOND: 'Corobrick - 'Nabraska Travertine' or similar approved 'FBS' quality clay face bricks to SABS 227:2002 with all joints and perpend to be 6mm square deep recessed. WALLS WATERPROOFING: Apply bagwash and bitumen emulsion to external face of internal brick skin on all external / cavity walls.
- PLASTER AND PAINT: All walls finished with minimum 15mm plaster and painted with one coat professional plaster primer, and two coats 'Plascon - Double Velvet, Colour - VEL 17 Broken White.' or other approved interior quality paint.
- WHITE GLAZED TILES: Three rows above unit, with returns where applicable in dove grey grout.
- MATT WHITE GLAZED TILES (200 x 200): 'Jonson' or similar approved, eight (8) rows tile all round in dove grey grout.
- BRICK ON EDGE WINDOW SILL: all joints to be flush half round pointed joints. Window sills underneath walkway roof to be soldier course.
- Interior 12mm CEMENT PLASTER WINDOW SILLS: finish as for PLASTER & PAINT walls.
- INSULATION: 'Sisalation FR 500' or similar approved, insulation on top of purlins on 40mm chicken mesh. Care to be taken when installing hurricane clips not to damage sisalation.
- 4mm THICK FIBRE-CEMENT SHEET CEILINGS: Secured to 38 x 50mm bracing at maximum 400mm centres, fitted with H-profiled cover strips and 75mm Gypsum coved cornice. Treat all nails and joints with one primer coat and finish ceiling and conic with one undercoat and two coats acrylic PVA paint.
- 600x600 CEILING TRAP DOOR: as per roof plan. Finish with 1 universal undercoat and two coats eggshell enamel paint to comply with SABS 630 type 2, or equivalent standard. Colour as for ceiling.
- PLASTER & PAINT: Provide 2 coats acrylic PVA suitable for washing with a mild detergent and with a mat finish. Apply at 10 m² / liter spread rate. Undercoat: Provide 1 coat alkaline resistant 100% pure acrylic filler coat. Spread rate 6 m² / liter.
- Class 1, off-shutter concrete. Finishing: One coat bonding liquid, followed by 1 coat 'Plascon' Plasctexture paint, applied with a texture roller to manufacturer's specifications.
- SUSPENDED CEILING: 'Everite' or similar approved ceiling in 'Everite' 'Pentaltie' boards in 595mm x 1195mm nominal size. Installation complete with T-Grids, wall aFGLes, hold down clips, suspension rods, hooks, plates etc. Installation by specialist / expert.
- WC - White 'Vaal' Aquasave low level suite (Code 750151) with 90° outlet washdown pan and catching 6 litre SISO cistern complete with heavy duty seat and lid, filaments and flushpipe or similar approved. Cistern connector hose with 232 aFGLe regulating valve.
- WHB - White 'Vaal' Springbok 550 WHB (code 7031) with one tap hole fitted to wall with semi consesled brackets (8116ZO) or similar approved. Basin connector hose with 232 aFGLe regulating valve. Basin waste: 1½" Chrome plated basin waste with slotted shank, plug chain & stay (code 301-32) from cobra or similar approved. Basin waste trap: 1½" Chrome plated bottle trap with outlet to 40mm uPVC. (Code 340/40) or similar approved.
- Suitable - metal type (S/steel) toilet roll holder fixed to walls.
- 600x19mm STAINLESS STEEL CHROMIUM PLATED TOWEL RAIL: complete with chromium plated end brackets plugged and screwed to wall.
- 450x600x6mm "GG" QUALITY POLISHED GLASS MIRROR: Fix to wall position as shown on site with round nose chromium plated mirror screws. Four per mirror. 1 per basin.
- 4.5kg DCP: dry powder chemical fire extinguisher with hook made of 120x20x2mm mild steel strip bent to form hook for extinguisher screwed twice to 520x100x22mm hardwood. Hardwood screwed and plugged with 6 screws and plugs. Positioned as shown on site. Provide 190x190mm ABS plastic symbolic safety signs - type FB2, plugged and screwed to wall at all fire extinguishers.
- MEDICINE CABINET: Standard white built in type. Complete with mirrors on doors, shelves etc.. All as approved. Size 380x610mm.
- WALL SAFE: Aprox. size 280 x 310 x 230mm deep, bolted to wall with expansion bolts to inside of safe, with integrated security lock.
- 2 x (2400x1140mm) GREEN CHALK BOARD: To comply with OKS-36-1980 or equivalent code of practice, complete with chalk rail as one unit. Strictly according to manufacturers instructions. Bottom of board to be 900mm from finished floor level.
- Pinning board as per detail - 2 Coats pva paint finish.
- Shelves as per details.
- Standard 150 X 150 white glazed soap holder.
- As per detail.
- 0.6mm Thick 450mm girth ridge capping all as described for roof covering. Provided polyethylene filler blocks to ridging.
- Kliplok 700/ Kingclip 700/ Saffok700: 0.53mm thick 'Chromadek/Globalcoat' to one side, profiled steel sheeting to steel structure roof & sides: Colour - Dark dolphin.
- Determine the direction of prevailing winds before laying sheets. Sheets must be projected minimum 50mm beyond purlins at eaves. Holes in sheets to be drilled, not punched.
- Prefabricated cleated (Gangnail) roof trusses to engineers approval, tied down to walls with galvanized hoop-iron straps built in. Trusses to be spaced at max 1200mm C/C on 76 x 38mm wall plates. TR1 and TR2 certificates to be provided.
- Hurricane clips to be provided and secured to 76 x 50mm SA Pine Purlins purlins and trusses at every intersection.
- Barge Boards & Fascias 'Everite Nutec' fibre-cement:
 - 225 x 10m thick Fascias.
 - 200 x 80mm Barge Board.
- Approved H-profile barge boards joiners. Provide drill for and fix with hot-dipped galvanized screws and washers. 76 x 50mm trimmer batten to underside of purlin ends for barge board fixing.
- G4/G5 Approved natural gravel fill material under floor slabs, compacted in layers not exceeding 150mm, to 93% Mod. AASHTO.
- Face brick-on-edge roller course.
- 76mm x 76mm Pine wrot splayed eaves, purlins spiked and stormclipped to rafters.
- 140 x 140mm Pre cast concrete posts holed for 12mm Ø MS bolts.
- 30MPa Concrete ring beam with off-shutter finish and 20mm chamfers to all exposed edges. Rebar to details.
- SINK UNIT: 'Franke Curvline CVN 622' or similar approved insert sink (drop in).
- Windows: as scheduled.
- Doors: as scheduled.
- Foundations: 40mm Thick, 15 MPa blinding layer to bottom of trenches with 30 MPa Concrete strip foundations to detail under all walls with top of foundation to be minimum 400mm below natural ground level. Reinforcing to rebar details.
- 125mm Continuously rolled aluminium square guttering. Fixed with aluminium gutter brackets for fascia fixing. 125mm Circular downpipe complete with downpipe connection, offset combination, shoe and downpipe clips for fixing to wall.
- Worktops to be 32mm thick Laminated Saligna worktops - Refer to detail.
- Horizontal DPC.
- 50 x 50 x 3mm Galvanised MS aFGLe bracket minimum 500mm long, twice bolted to post and twice bolted to bearer.
- 12mm Ø Stud anchor bolt to concrete post.
- 10mm Ø Steel bolts with washers.
- ±198mm x 46mm Thick laminated SA Pine Beam to veranda roofing secure rafters to bearer with storm clips.
- Timber finishes: All exposed timber: Pine trusses, purlins, wall plates, etc., treated with 2 coats 'Carbolineum'.
- 38 x 114mm Bracing.
- 38 x 76mm Wall plate trimmed to suit beam filling.
- 50 x 50 x 3mm Hot dipped galvanised mild steel aFGLe with 'fish tail' cast in position to thresholds.
- 110mm Thick beam filling.
- Brickforce every two courses in foundations, every course above window head to wall plate level and every third course elsewhere.
- Walls where indicated on drawings to be taken up to underside of roof sheeting as fire-walls.
- 80mm Thick, 20 MPa x 1000mm, with mesh ref. 245, wide V-shaped surface channel cast in 2000mm lengths to falls to suit conditions with wood float U2 finish.
- 80mm Thick x 1000mm wide 20 MPa concrete apron cast in 2000mm lengths to falls to suit conditions to U3 finish.
- Ramp verandah floor to suit external levels. ie. NO STEPS.
- Lightning protection: All buildings to be provided with lightning protection in accordance with pages LP/1 to LP/6 inclusive, as the tender document.
- Expansion joint formed with 10mm thick soft-board full length and height of joint. Provide similar 100mm thick and 100mm wide bitumen impregnated soft-board to exposed edged.
- Column bases to be 600 deep x 350 x 500mm wide 25MPa concrete to pre-cast column basis.
- External plumbing: Use is to be made of Sewer piping and fittings under the 'Marley' - Soil and Vent & Underground Drain piping and fitting systems.
- 1000mm High Balustrade to detail.

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

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-04-01	Plan And Sections
13-019-V-01-04-02	Section And Details: 1
13-019-V-01-04-03	Section And Details: 2
13-019-V-01-04-04	Building Work Plan, Sections & Elevations
13-019-V-01-05-01	Clear Water & Backwash Sump: Plan & Section
13-019-V-01-05-04	Clear Water & Backwash Sump: Sections & Electrical Plan

AMENDMENTS

Rev.	Date	Description

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PIETERMARITZBURG |
LADYSMITH

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

**DIHLABENG
LOCAL
MUNICIPALITY**

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

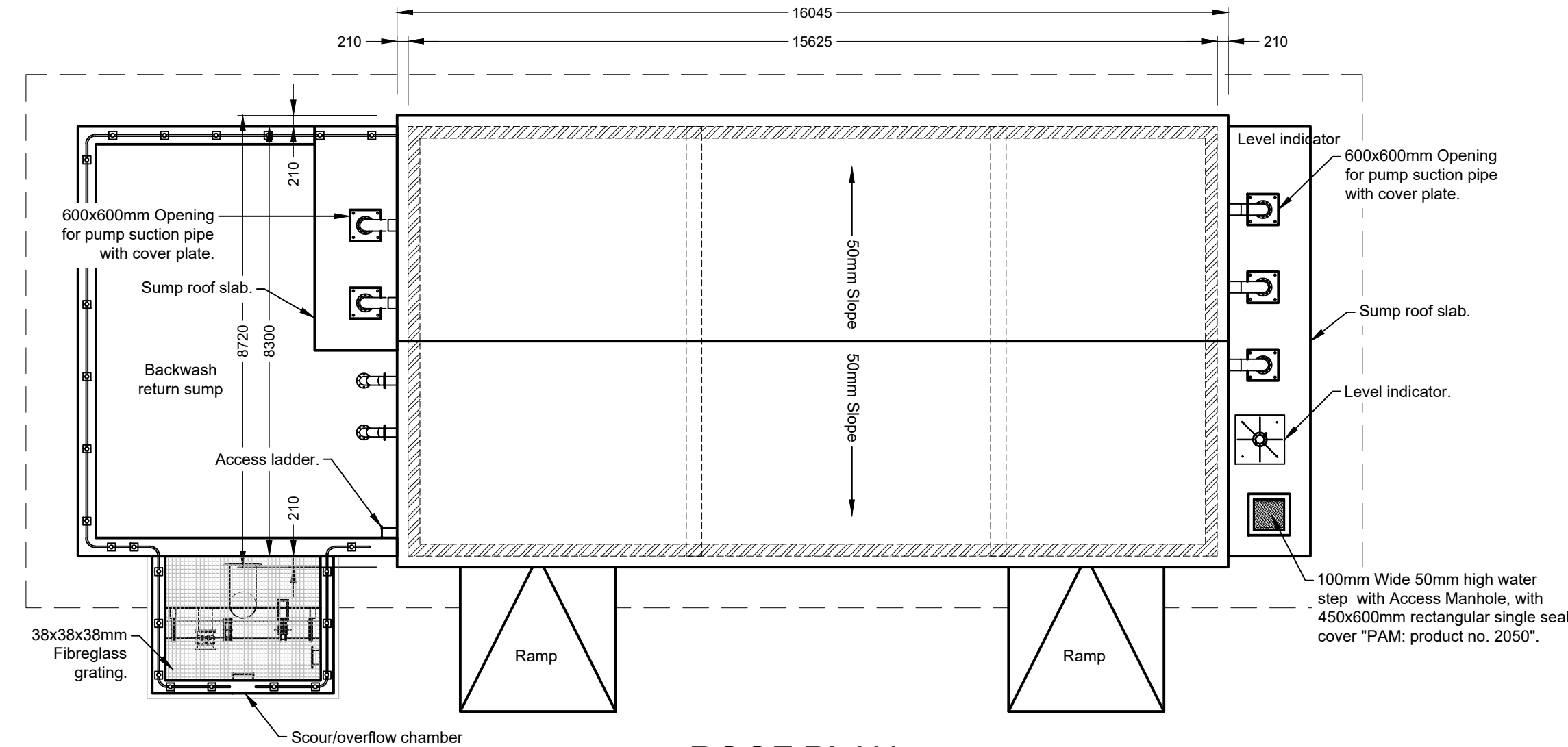
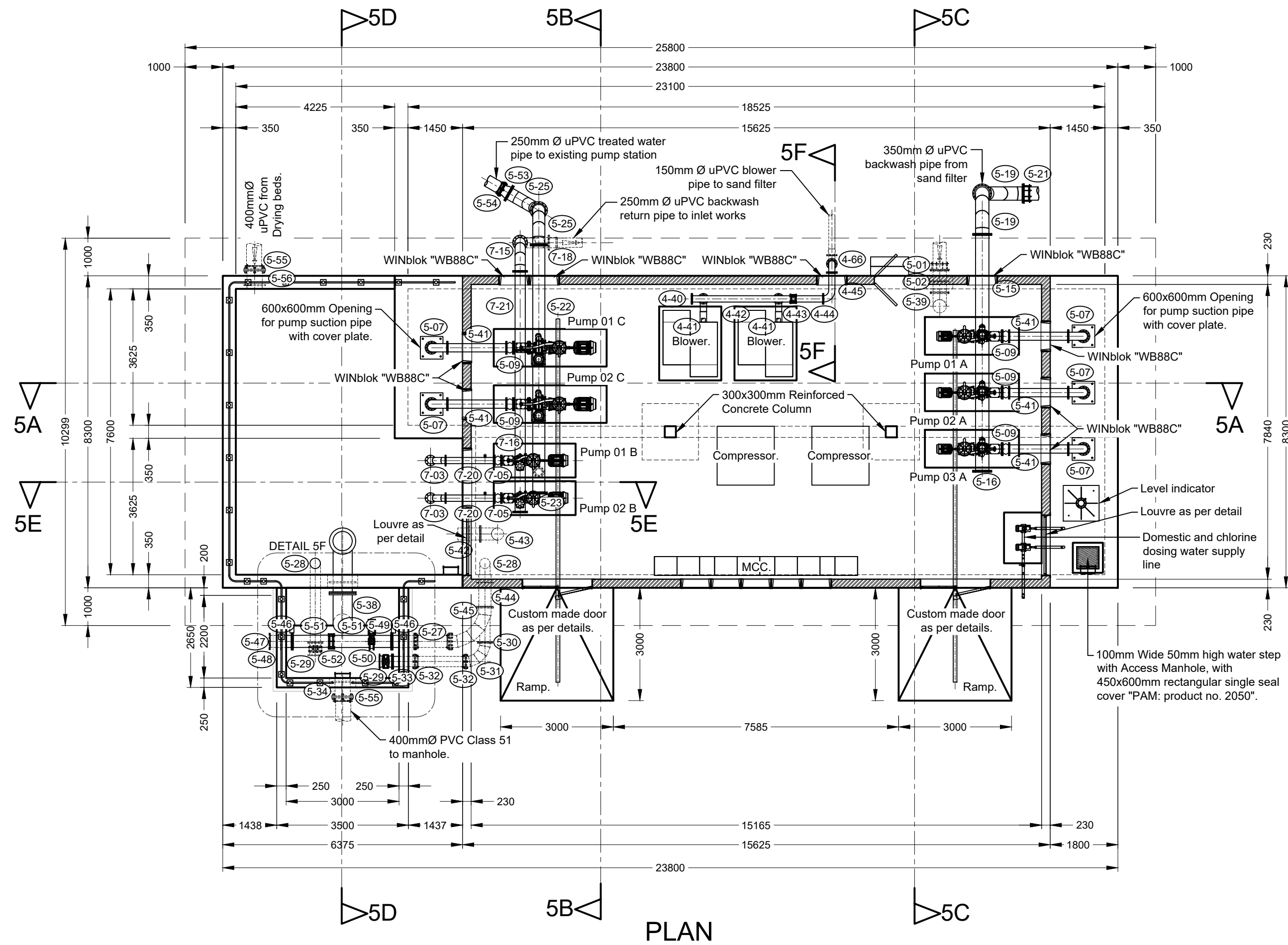
Project: _____

CLARENS WTW

Drawing description:

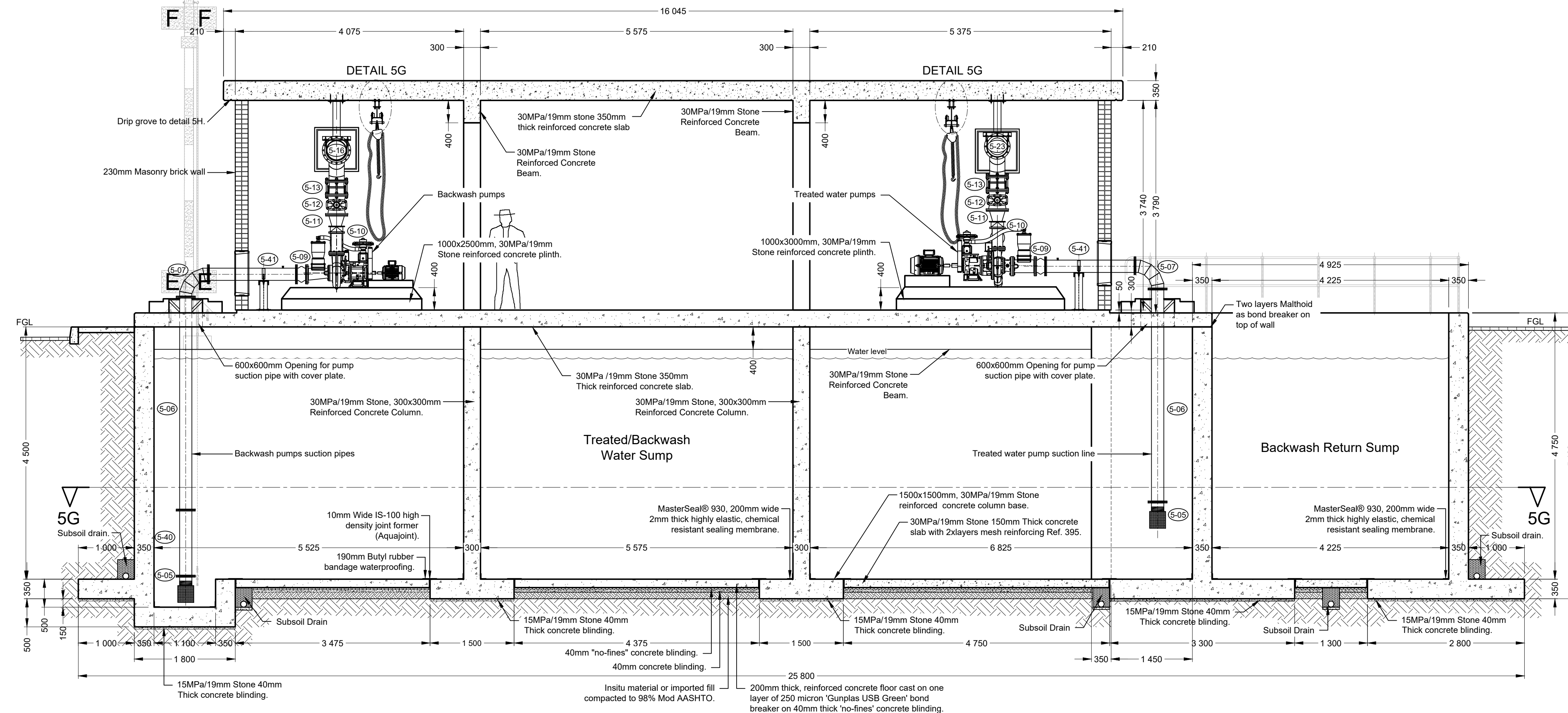
**RAPID GRAVITY SAND
FILTER:
PIPE SCHEDULE**

Drawn: M BOTHA	Date: Jan 2021
Scale/s: AS SHOWN	
Drawing number: 13-019-V-01-04-05	Rev.: 00



ROOF PLAN

DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/100	CLEARWATER & BACKWASH SUMP PLAN & ROOF PLAN	-



STEEL AND PIPEWORKS NOTES

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

DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/50	SECTION 5A-5A	-

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FOR TENDER PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-05-02	Section & Elevations
13-019-V-01-05-03	Scour Details
13-019-V-01-05-04	Sections & Electrical Plan
13-019-V-01-05-05	Hoist Beam & Various Details
13-019-V-01-05-06	Louvre & Door Details
13-019-V-01-05-07	Pipe Bracket Details
13-019-V-01-05-08	Pipe Schedule (1)
13-019-V-01-05-09	Pipe Schedule (2)
13-019-V-01-04-05	Rapid Gravity Sand Filter: Pipe Schedule

AMENDMENTS

Rev.	Date	Description

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

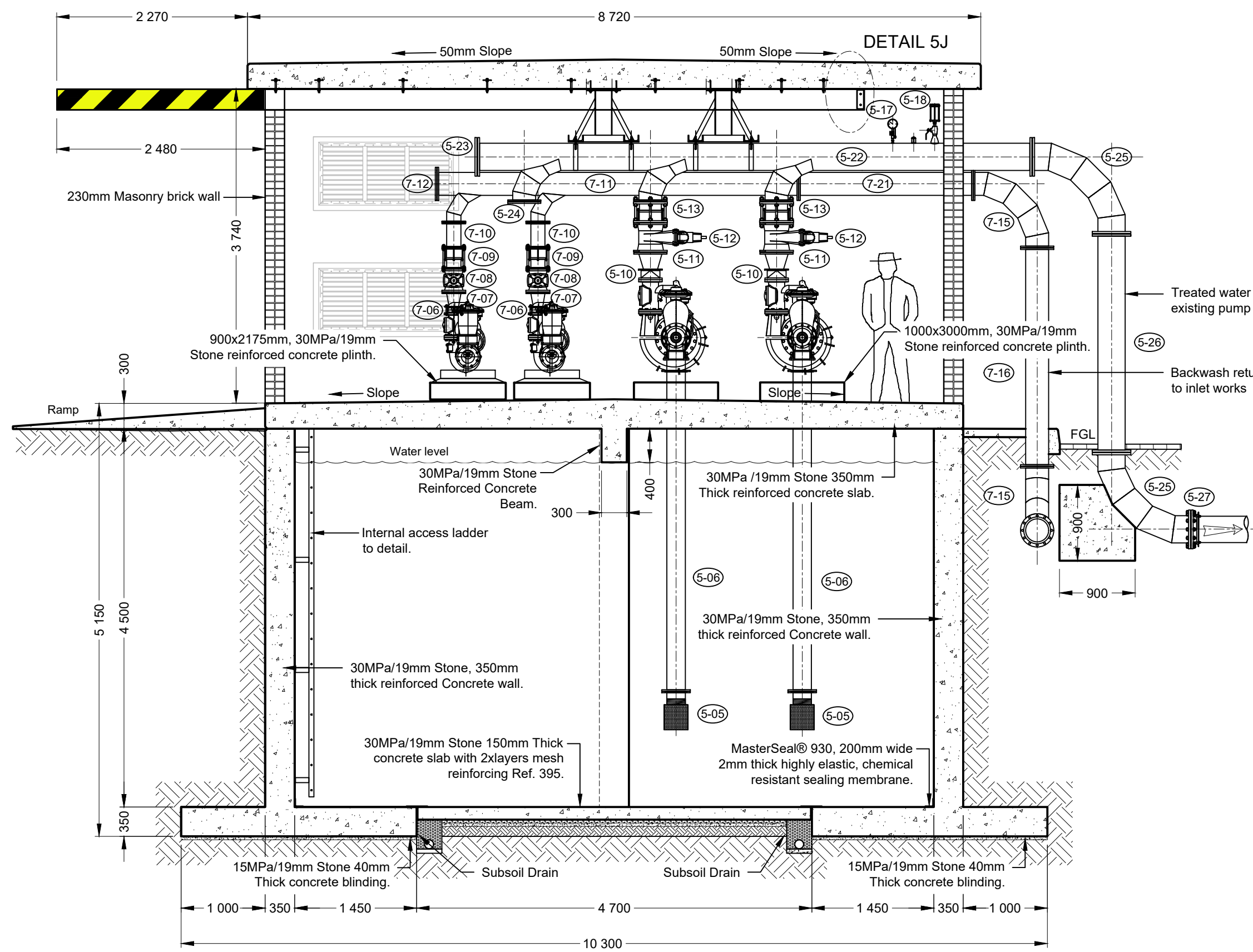
Client: **DIHLABENG LOCAL MUNICIPALITY**

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

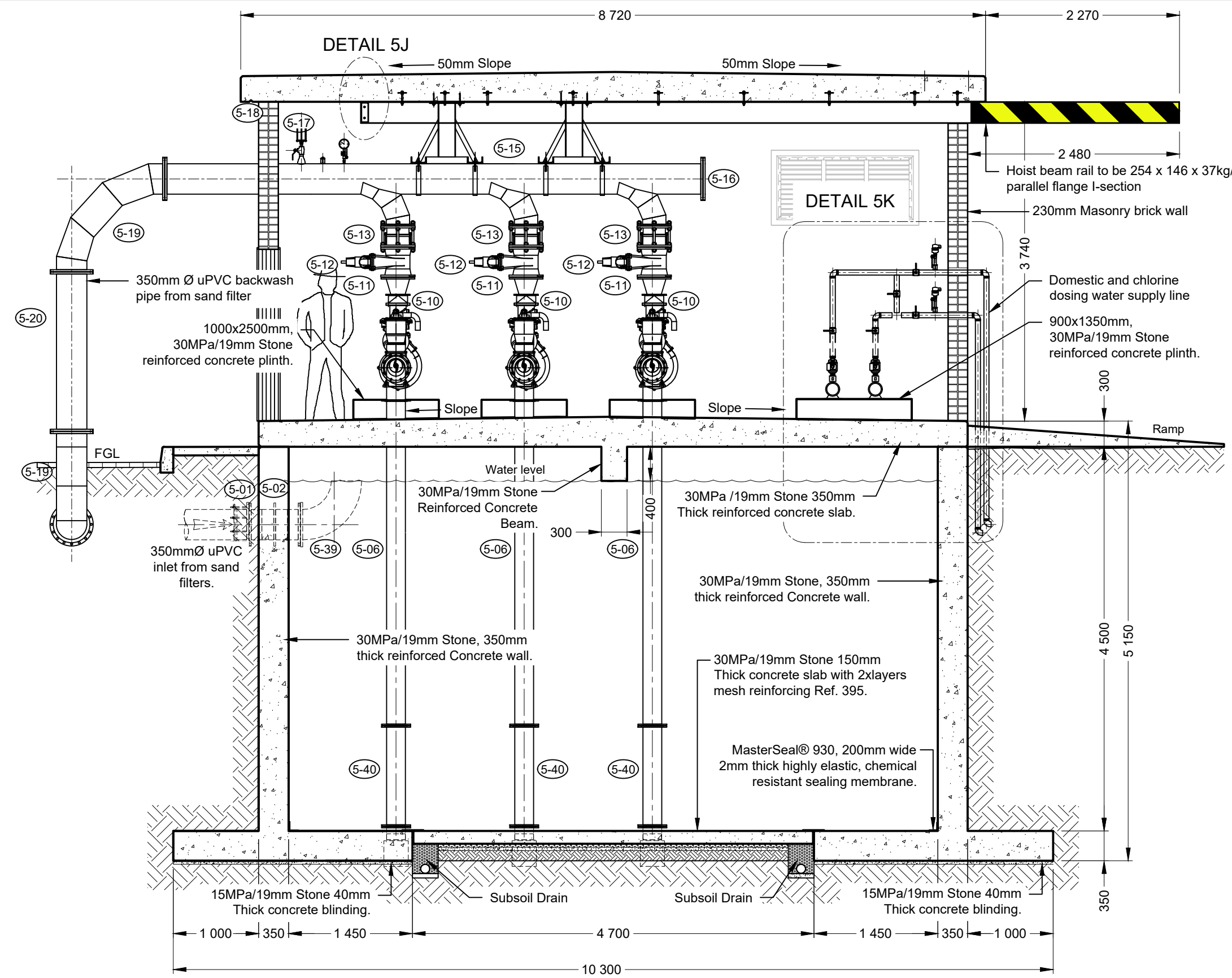
Project: **CLARENS WTW**

Drawing description: **CLEAR WATER & BACKWASH SUMP: PLAN & SECTION**

Drawn: R. Joubert	Date: Jan 2021
Scale/s: AS SHOWN	
Drawing number: 13-019-V-01-05-01	Rev.: 00



DETAIL NO: - SCALE: 1/50 DETAIL DESCRIPTION: SECTION 5B-5B SEE DETAIL NO: -



DETAIL NO: - SCALE: 1/50 DETAIL DESCRIPTION: SECTION 5C-5C SEE DETAIL NO: -

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FOR TENDER PURPOSES ONLY

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-05-01	Plan & Section
13-019-V-01-05-03	Scour Details
13-019-V-01-05-04	Sections & Electrical Plan
13-019-V-01-05-05	Hoist Beam & Various Details
13-019-V-01-05-06	Louvre & Door Details
13-019-V-01-05-07	Pipe Bracket Details
13-019-V-01-05-08	Pipe Schedule (1)
13-019-V-01-05-09	Pipe Schedule (2)

AMENDMENTS

Rev.	Date	Description

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

Client:

DIHLABENG LOCAL MUNICIPALITY

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Name: _____
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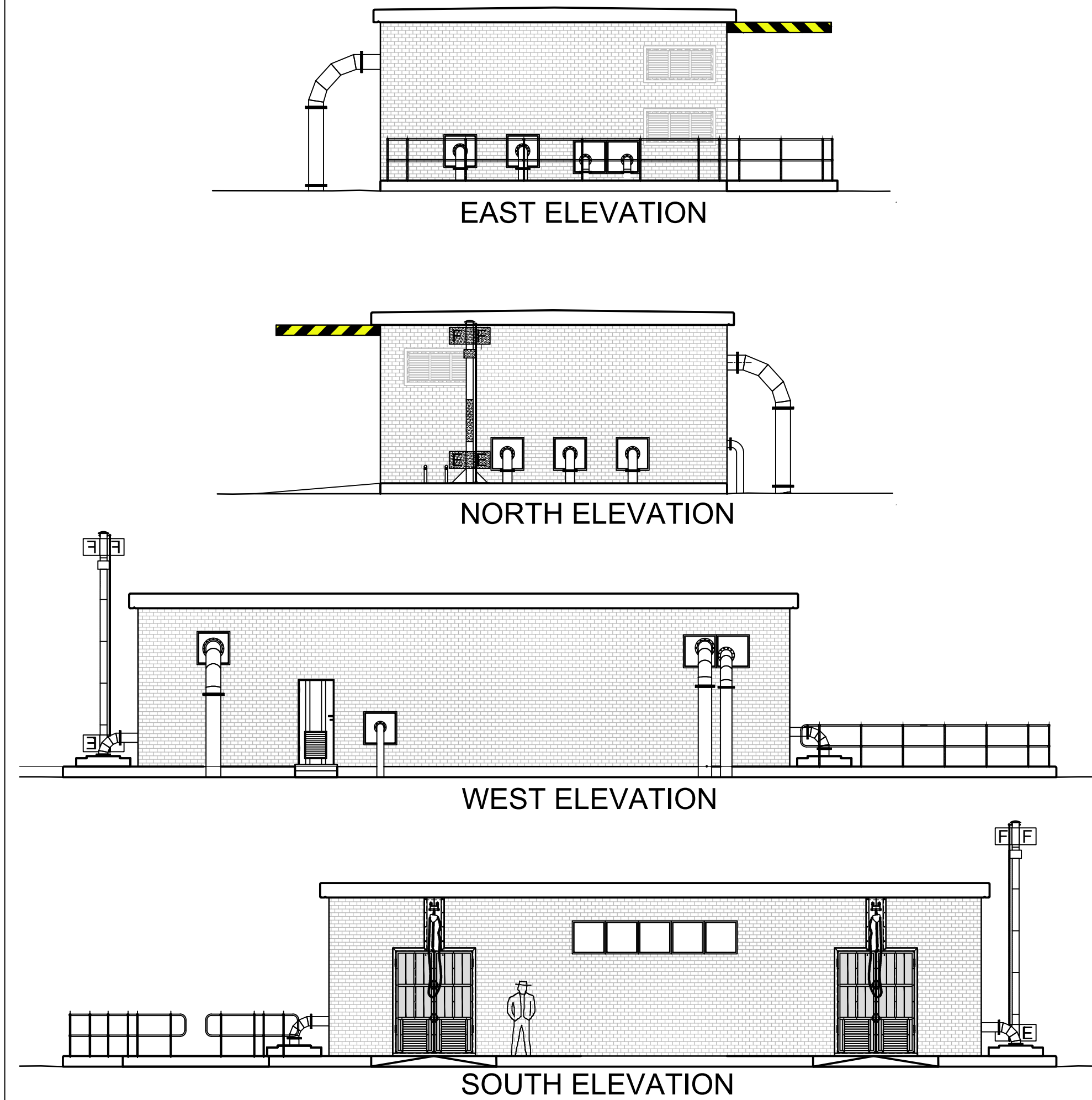
Project:
CLARENS WTW

Drawing description:
CLEAR WATER & BACKWASH SUMP: SECTION & ELEVATIONS

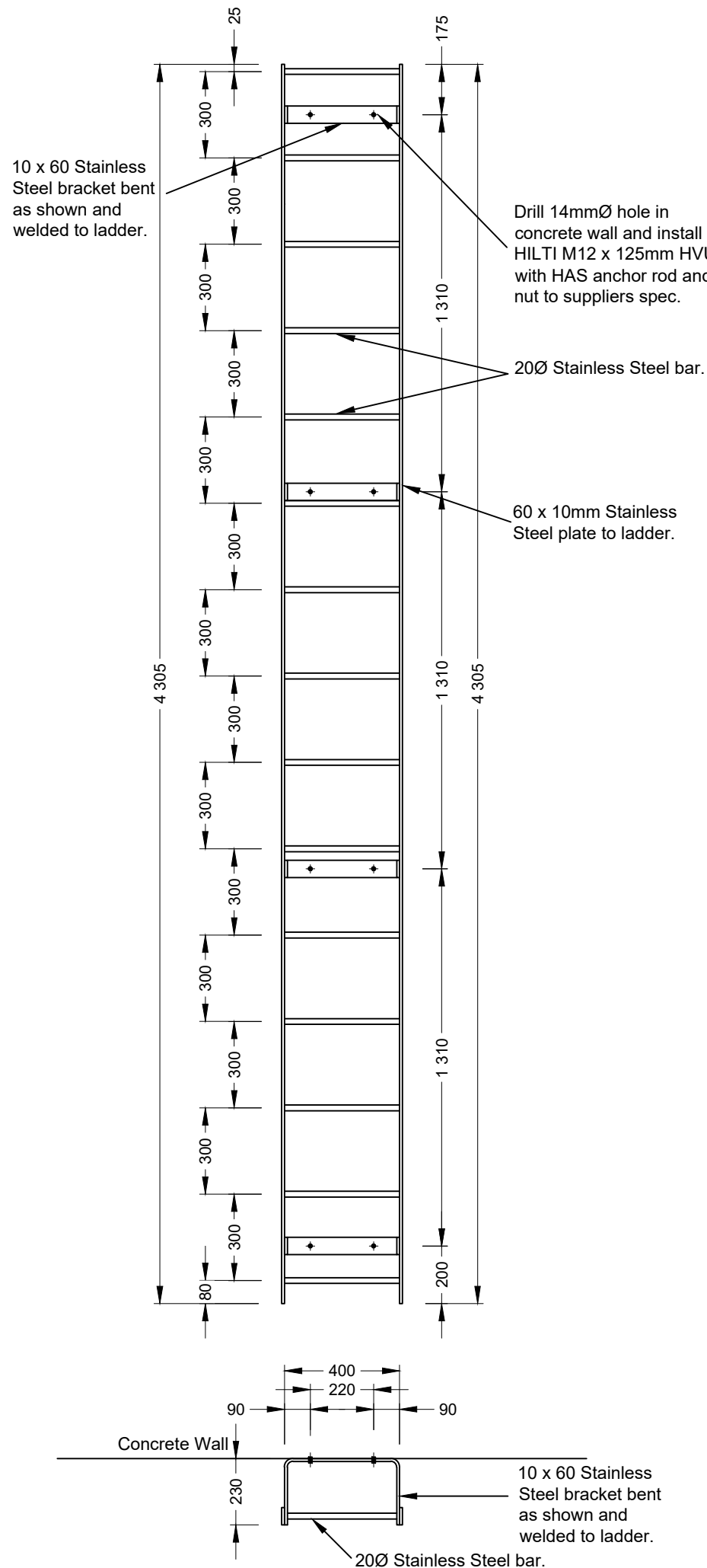
Drawn: R. Joubert Date: Jan 2021

Scale/s: As Shown

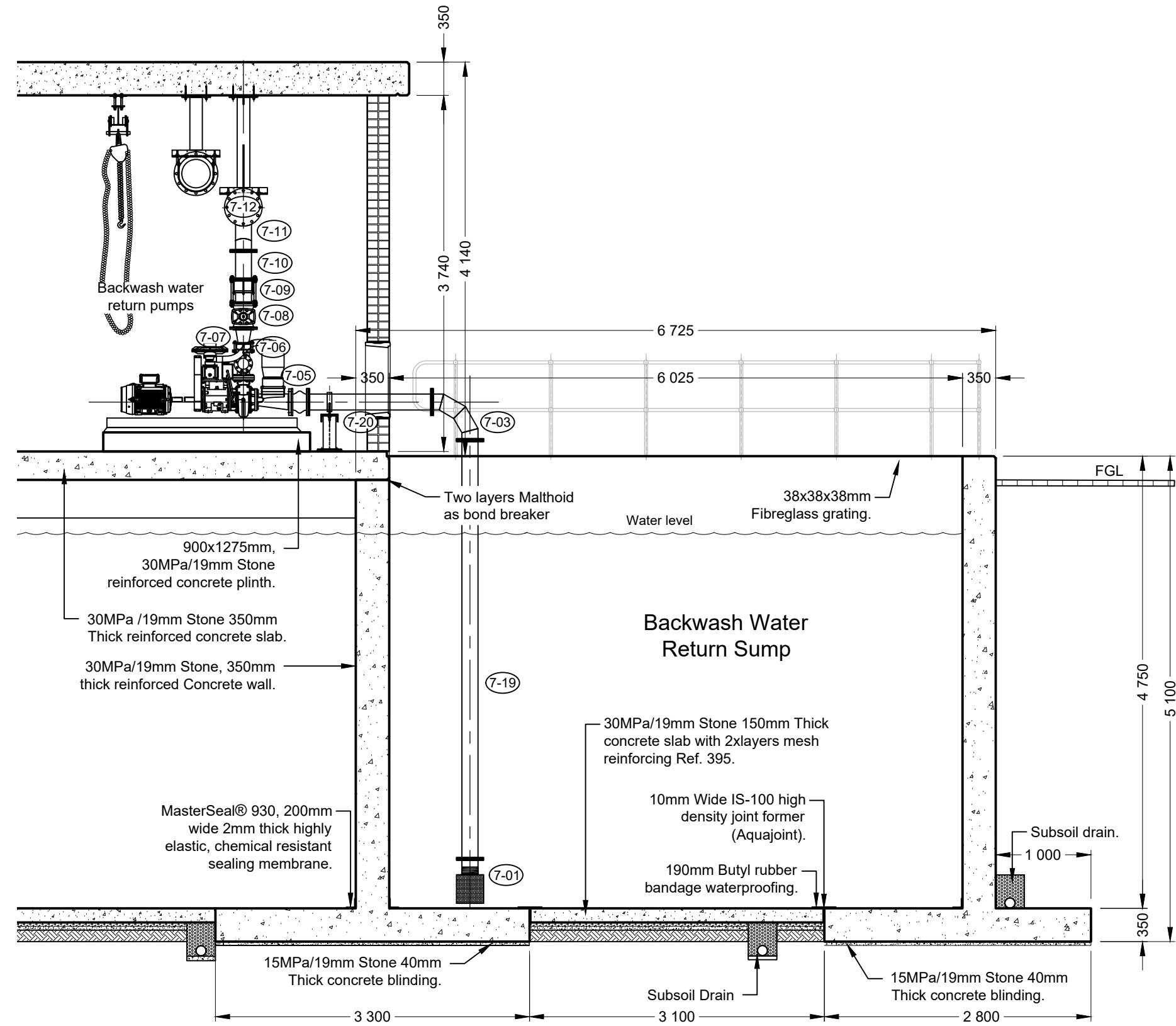
Drawing number: 13-019-V-01-05-02 Rev.: 00



DETAIL NO: - SCALE: 1/100 DETAIL DESCRIPTION: ELEVATIONS SEE DETAIL NO: -

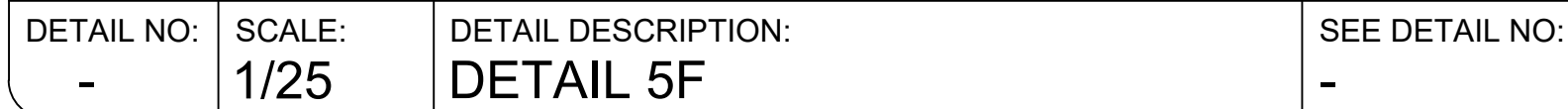
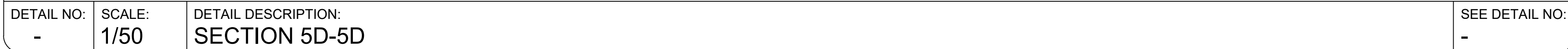


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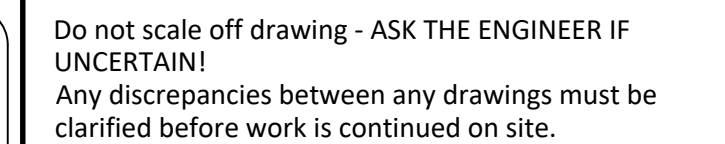


DETAIL NO: - SCALE: 1/50 DETAIL DESCRIPTION: SECTION 5E-5E SEE DETAIL NO: -

STEEL AND PIPEWORKS NOTES
• All pipes and steelwork shall be fusion bonded epoxy coated to DFT 300 micron thick unless indicated otherwise or stainless steel items.



Drawing number:	Rev.:
13-019-V-01-05-03	00

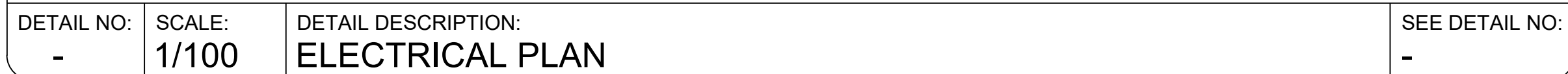
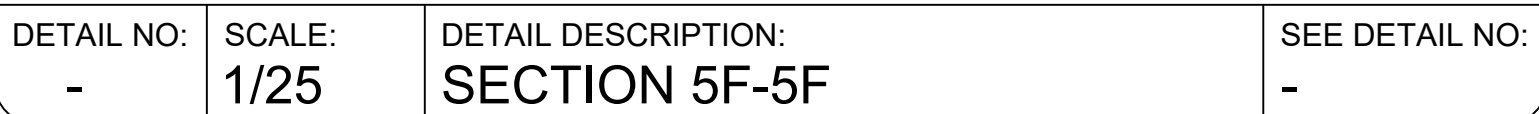


**FOR TENDER
PURPOSES ONLY**

Drawing Number	Drawing Description
13-019-V-01-01	Site Plan
13-019-V-01-05-01	Plan & Section
13-019-V-01-05-02	Section & Elevations
13-019-V-01-05-03	Sloor Details
13-019-V-01-05-05	Hoist Beam & Various Details
13-019-V-01-05-06	Louvre & Door Details
13-019-V-01-05-07	Pipe Bracket Details
13-019-V-01-05-08	Pipe Schedule (1)
13-019-V-01-05-09	Pipe Schedule (2)
13-019-V-01-04-05	Rapid Gravity Sand Filter: Pipe Schedule

[illegible]

SEE DETAIL NO:



ELECTRICAL LEGEND	
	Exterior wall light, height as indicated
	1.5m Double Fluorescent light
	Light Switch 1250 a.f.f.l.
	Double wall plug, 300 a.f.f.l. or as indicated
	Distribution Board top 2100mm A.F.F.L.
	Photo cell

NOTES:
Do not scale off the drawing.
If not sure -ask!

CONCRETE GRADE:
Concrete 28 day compressive strength to be as per
list below.

• Blinding	15MPa / 13mm
• Valve chamber	
• Base	30MPa / 19mm
• Wall	30MPa / 19mm
• Suspended slab	30MPa / 19mm
Main Structure	
• Base	30MPa / 19mm
• Wall	30MPa / 19mm
• Floor slab	30MPa / 19mm
General	
• Thrust blocks	15MPa / 19mm
• Scour pipe incased	30MPa / 19mm
• Mass concrete	15MPa / 19mm

CONCRETE FINISHES:

- Valve chamber
 - Base top U3
 - Base sides F2
 - Wall both sides F2
 - Wall top U3
 - Roof slab soffit F2
 - Roof slab top U2
- Main Structure
 - Base top U3
 - Base sides F2
 - Wall both sides F2 (Only Steel f/work)
 - Wall top U3
 - Floor slab top U4
- General
 - Thrust blocks sides Insitu
 - Thrust blocks top U1
 - Increased pipe sides Insitu
 - Increased pipe top U1

CONCRETE COVER

- Bases / Found cast insitu: 50mm
- Bases against formwork: 40mm
- Walls (Water Ret. Struct): 40mm
- Roof Slabs (All Struct): 30mm
- Building - Ring Beams: 30mm
- Max. deviation : (+ / -) 5mm
- Cover blocks of 60 x 60mm must be made equal to the specific structural element, which must be properly compacted and cured.

GENERAL NOTES

- Provide synthetic fibres to all concrete for water retaining structures and as specified in the Bill of Quantities.
- Concrete to water retaining structures must have a cement / water ratio greater or equal to 2.0.
- Concrete must be cured for a min. period of 7 days.
- All concrete must be properly vibrated during placing.
- All inspections to be completed and written approval granted by Engineer or his representative before concrete may be cast.
- All closed concrete surfaces to be chamfered 20mm x 20mm. Except if specified differently.
- PVC Water stops etc. to be maintained in position during each cast by means of galvanised wires etc.
- Wall consecutive lifts: Remove all loose concrete with electric breaker to expose solid concrete & clean before next lift is cast.
- Imported fill below main structure to be min. Grade G5/G6 or as approved by engineer.
- All pipes and steelwork shall be fusion bonded epoxy coated to DFT 300 micron thick unless indicated otherwise or stainless steel items.

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

Client:

 **DIHLABENG
LOCAL
MUNICIPALITY**

Approved by Client:

Name: _____

Signature: _____ Date: _____

Project:

CLARENS WTW

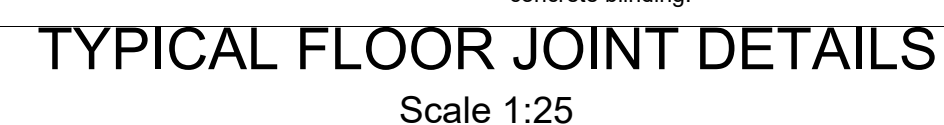
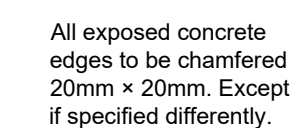
Drawing description:

**CLEAR WATER &
BACKWASH SUMP:
SECTIONS &
ELECTRICAL PLAN**

Drawn: R. Joubert Date: Jan 2021

Scale/s: As Shown

Drawing number:	Rev.:
13-019-V-01-05-04	00



DETAIL NO:	SCALE: AS SHOWN	DETAIL DESCRIPTION: DETAILS	SEE DETAIL NO: -
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STEEL AND PIPEWORKS NOTES

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

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description
13-019-V-01-01-01	Site Plan
13-019-V-01-05-01	Plan & Section
13-019-V-01-05-02	Section & Elevations
13-019-V-01-05-03	Scour Details
13-019-V-01-05-04	Sections & Electrical Plan
13-019-V-01-05-06	Louvre & Door Details
13-019-V-01-05-07	Pipe Bracket Details
13-019-V-01-05-08	Pipe Schedule (1)
13-019-V-01-05-09	Pipe Schedule (2)

AMENDMENTS

[illegible]

ECA CONSULTING



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ISO Registered 9001:2015

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PIETERMARITZBURG |
JAYUSMIR

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

Signature: 
Date: 4 Feb 2022

Client: _____

 **DIHLABENG
LOCAL
MUNICIPALITY**

Approved by Client: _____

Name: _____

Signature: _____ Date: _____

Project: _____

CLARENS WTW

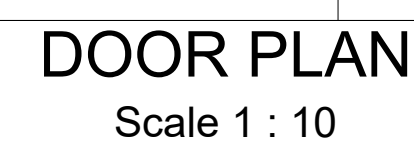
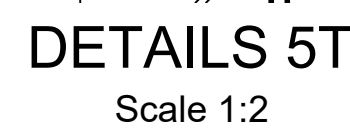
Drawing description:

CLEAR WATER &
BACKWASH SUMP:
HOIST BEAM &
VARIOUS DETAILS

Drawn: R. Joubert Date: Jan 2021

Scale/s: As Shown

Drawing number:	Rev.:
13-019-V-01-05-05	00



STEEL AND PIPEWORKS NOTES

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13-019-V-01-05-05	Hoist Beam & Various Details
13-019-V-01-05-07	Pipe Bracket Details
13-019-V-01-05-08	Pipe Schedule (1)
13-019-V-01-05-09	Pipe Schedule (2)

[illegible]

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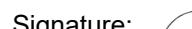
Civil and Structural Engineers

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

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PRETORIA
JANSBURG |
JANSMIDR

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

Signature: 
Date: 4 Feb 2022

Client:	 DIHLABENG LOCAL MUNICIPALITY
---------	---

Approved by Client:	
---------------------	--

Name: _____

Signature: _____ Date: _____

Project:	
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CLARENS WTW

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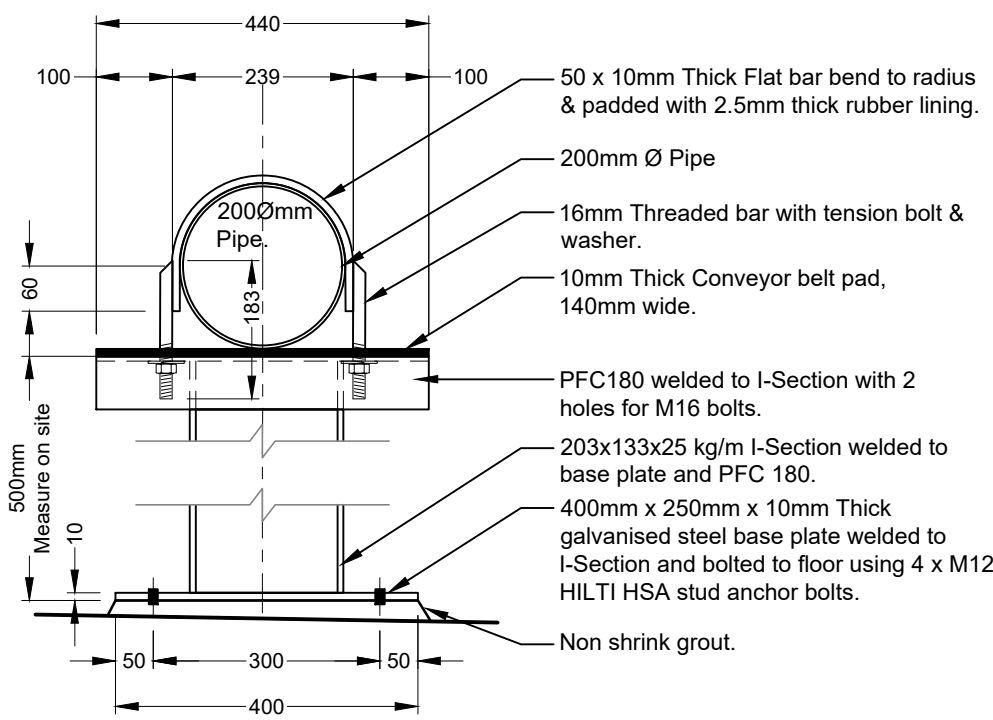
CLEAR WATER &
BACKWASH SUMP:
LOUVRE & DOOR
DETAILS

Drawn: R. Joubert Date: Jan 2021

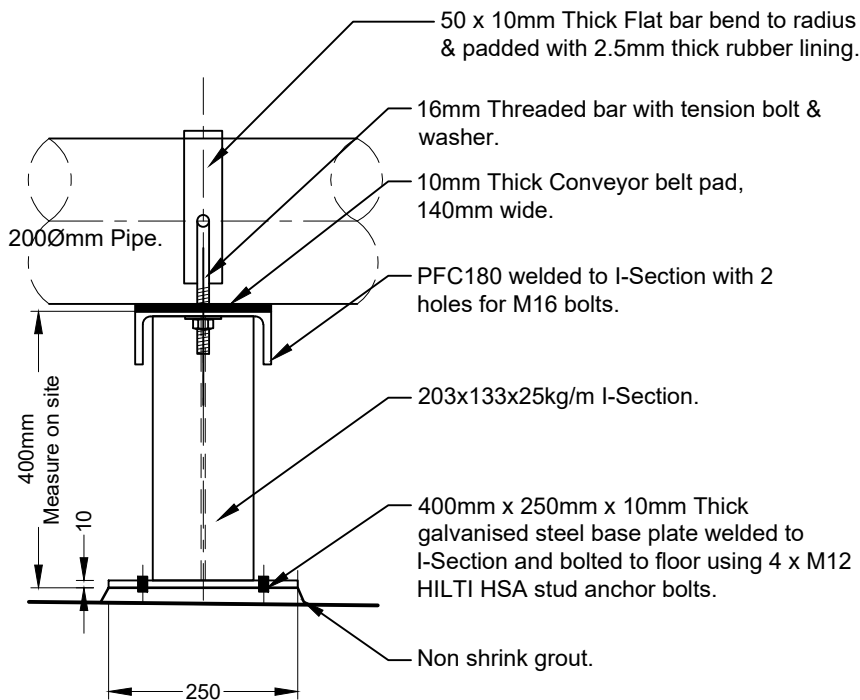
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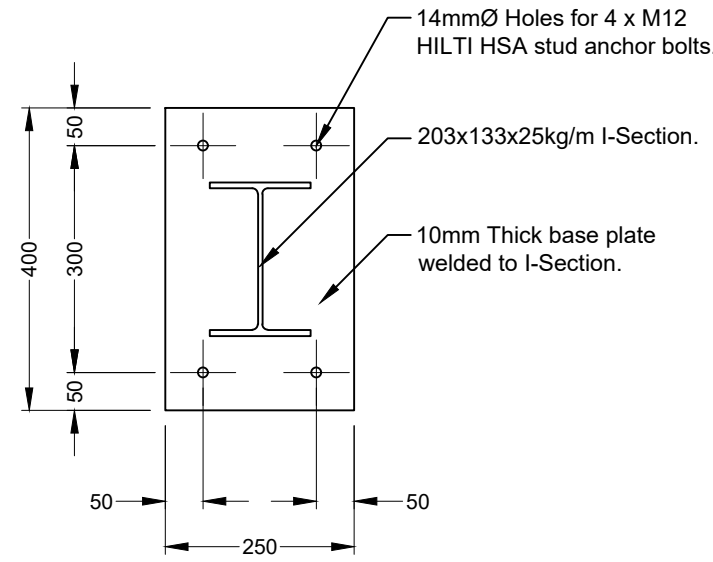
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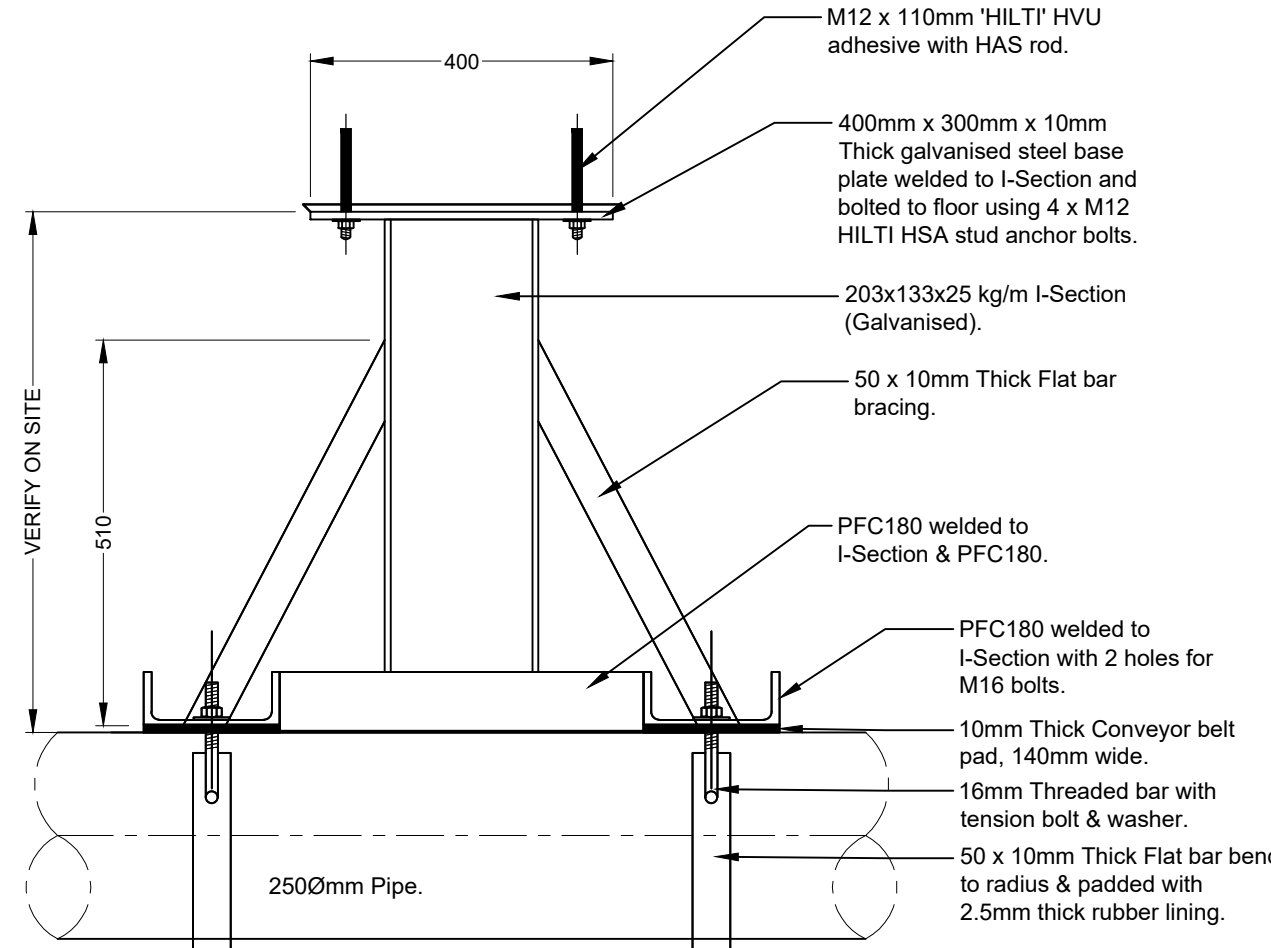
200Ø PIPE SUPPORT
BRACKET FRONT ELEVATION
Scale 1:10



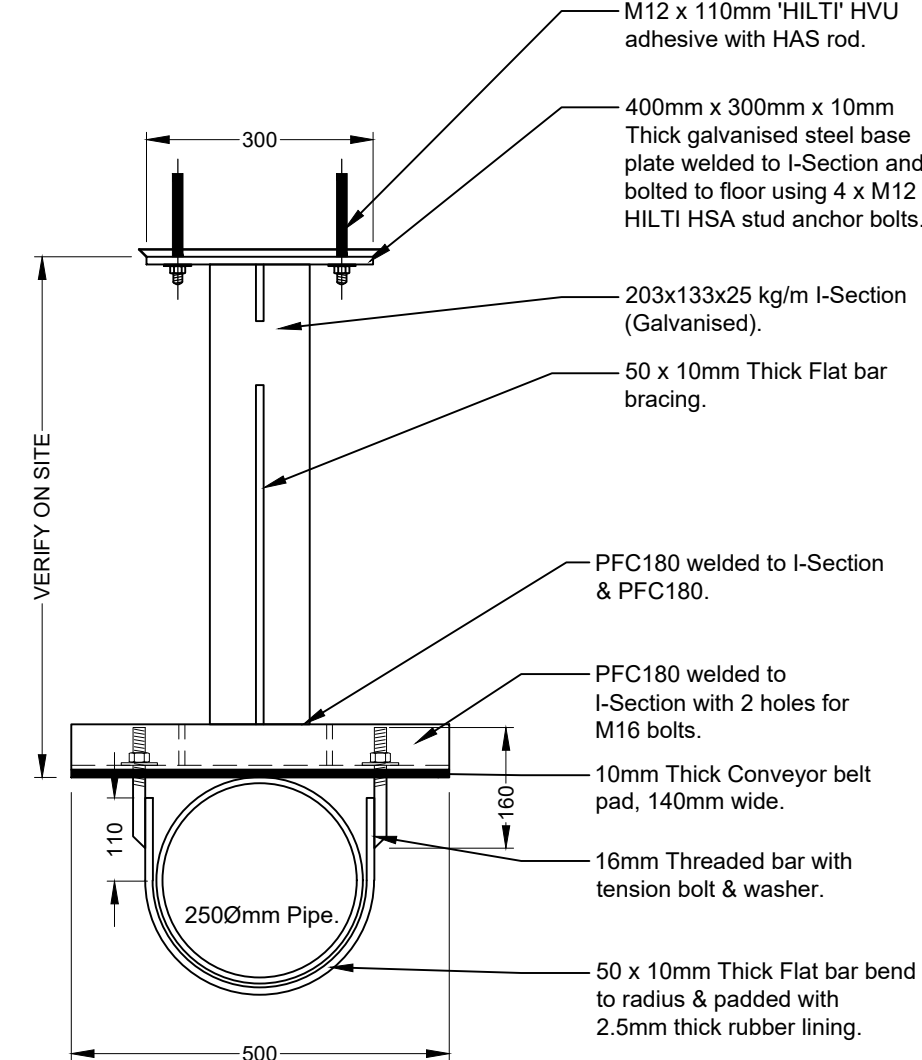
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BRACKET SIDE ELEVATION
Scale 1:10



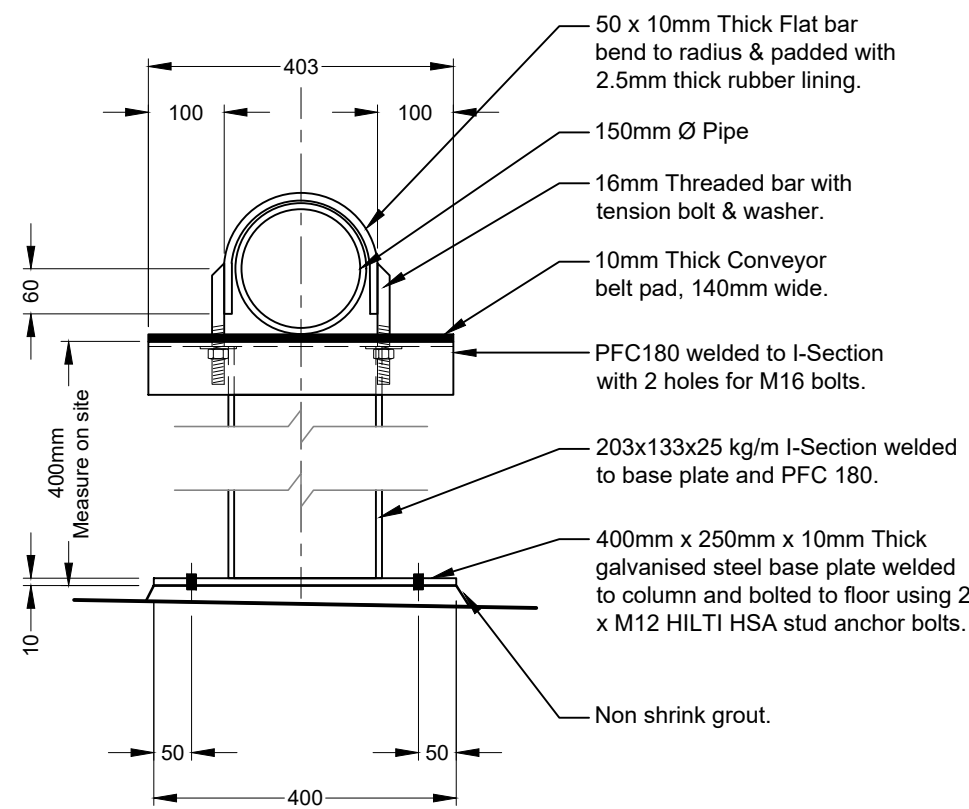
200Ø PIPE SUPPORT
BRACKET BASE PLATE
Scale 1:10



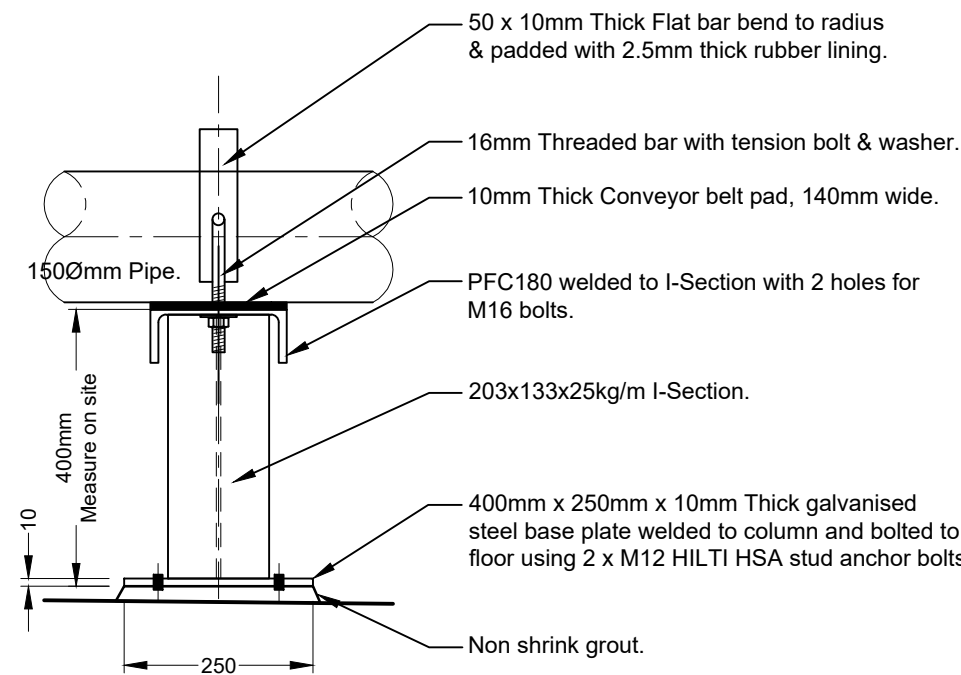
250Ø PIPE SUPPORT
BRACKET SIDE ELEVATION
Scale 1:10



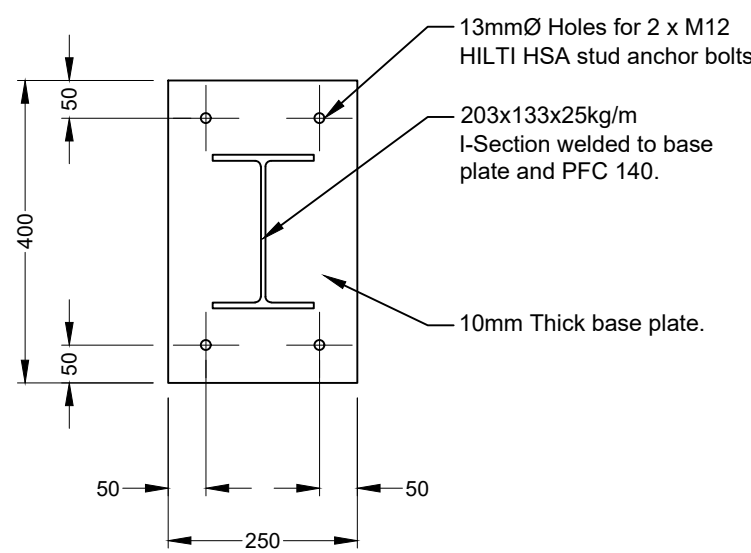
250Ø PIPE SUPPORT
BRACKET FRONT ELEVATION
Scale 1:10



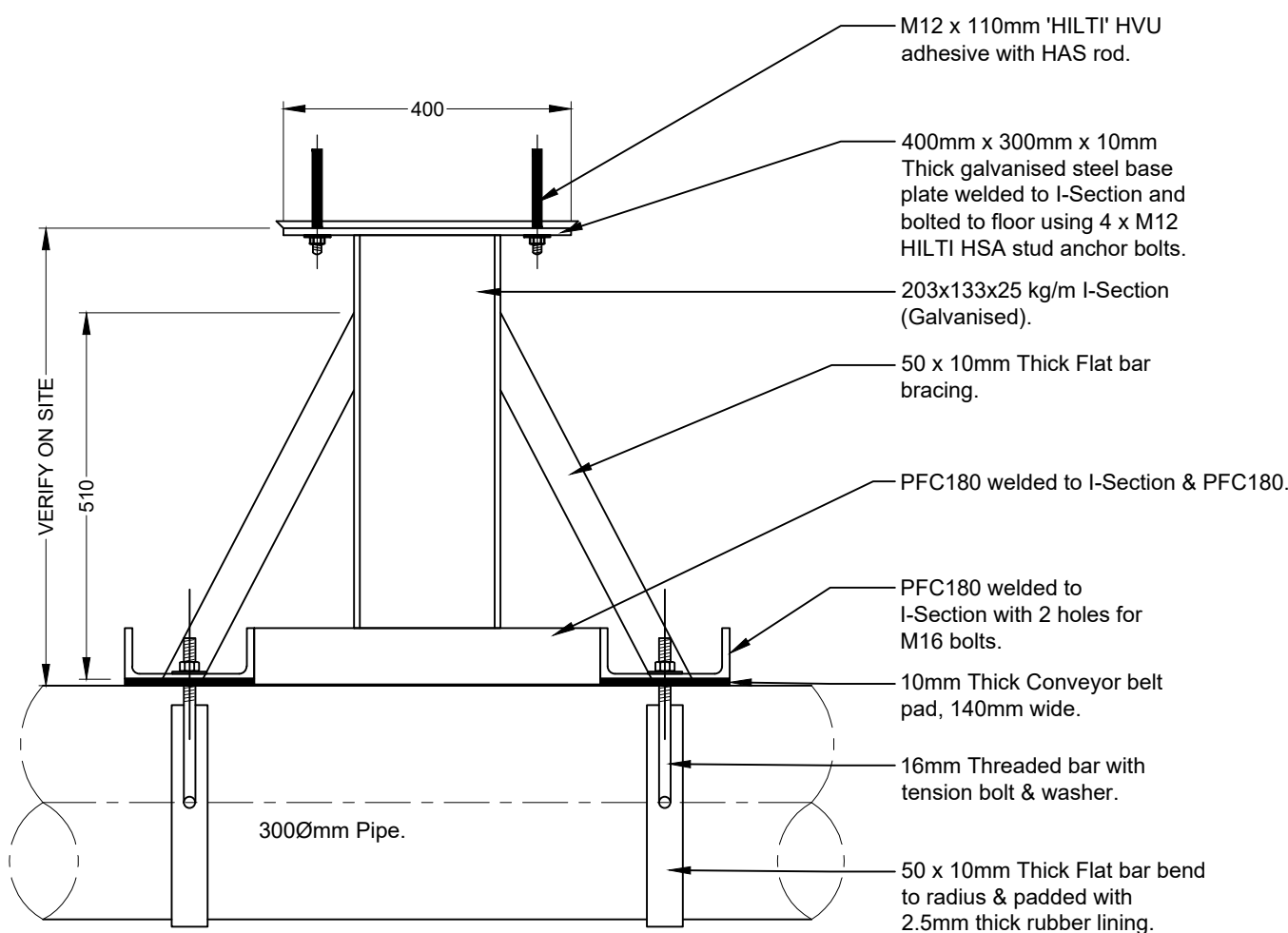
150Ø PIPE SUPPORT
BRACKET FRONT ELEVATION
Scale 1:10



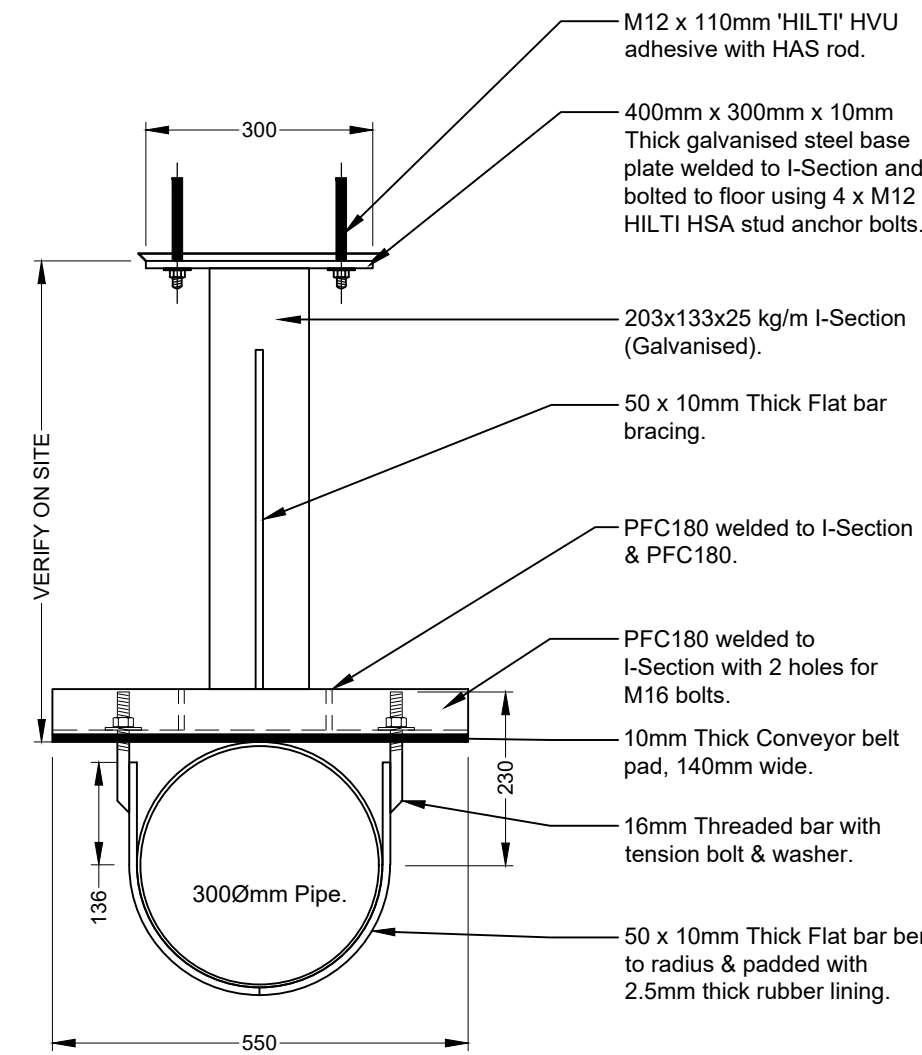
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BRACKET SIDE ELEVATION
Scale 1:10



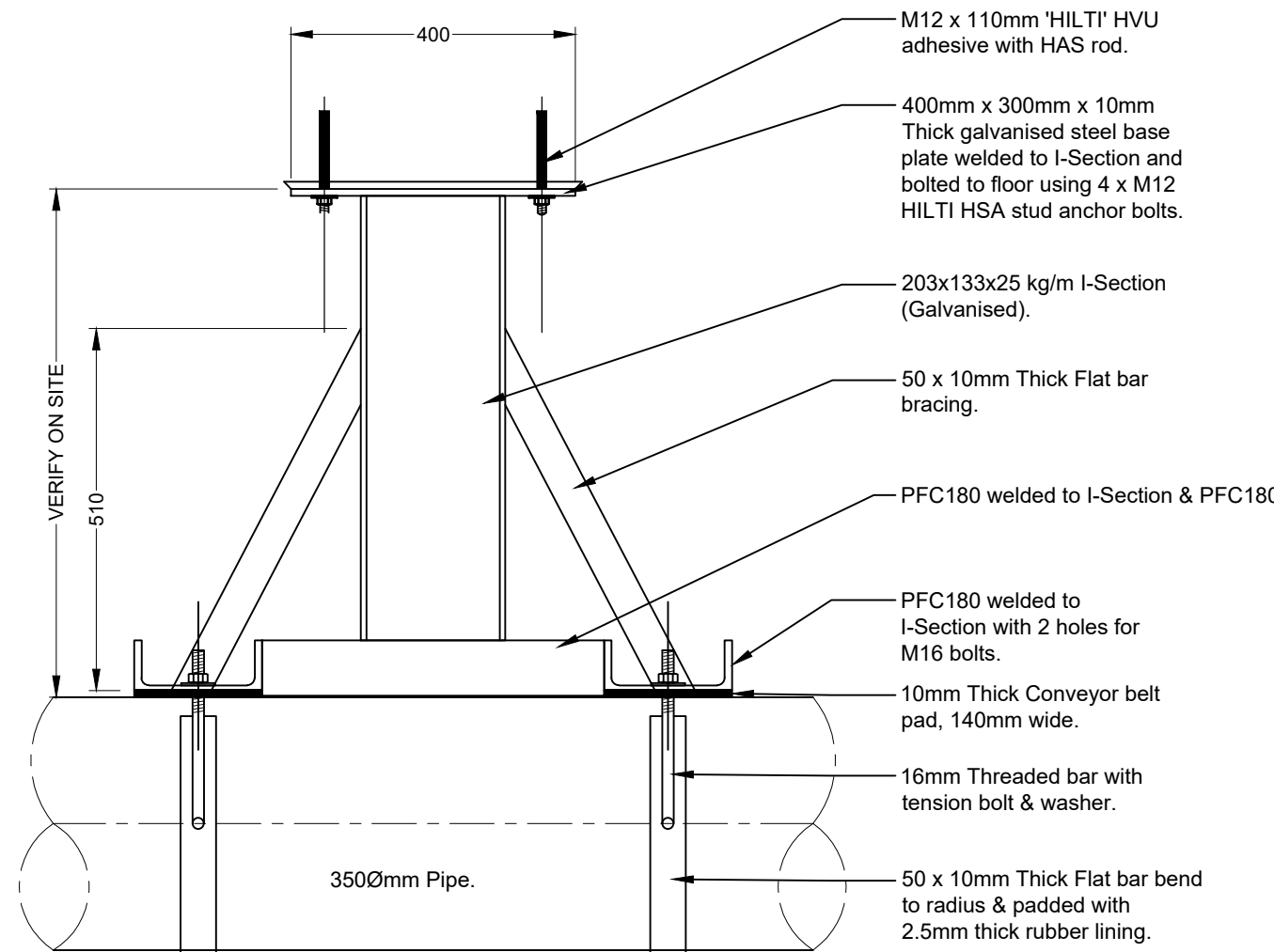
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BRACKET BASE PLATE
Scale 1:10



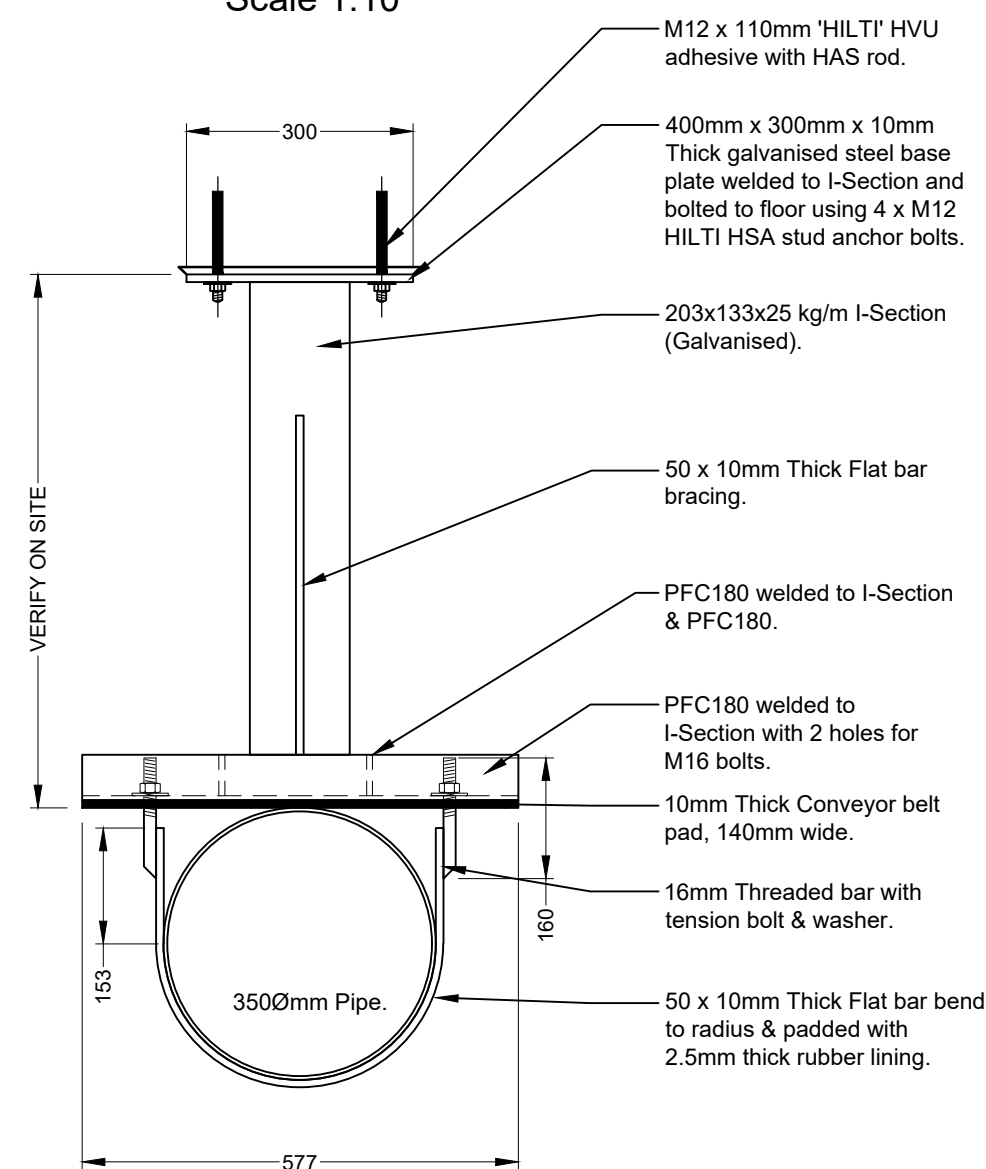
300Ø PIPE SUPPORT
BRACKET SIDE ELEVATION
Scale 1:10



300Ø PIPE SUPPORT
BRACKET FRONT ELEVATION
Scale 1:10



350Ø PIPE SUPPORT
BRACKET SIDE ELEVATION
Scale 1:10



350Ø PIPE SUPPORT
BRACKET FRONT ELEVATION
Scale 1:10

STEEL AND PIPEWORKS NOTES

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

DETAIL NO: - SCALE: AS SHOWN DETAIL DESCRIPTION: PIPE BRACKET DETAILS

SEE DETAIL NO: -

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13-019-V-01-05-05	Hoist Beam & Various Details
13-019-V-01-05-06	Louvre & Door Details
13-019-V-01-05-08	Pipe Schedule (1)
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AMENDMENTS

Rev.	Date	Description

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LADYSMITH

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

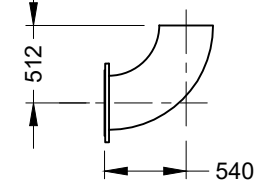
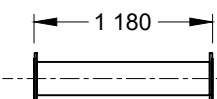
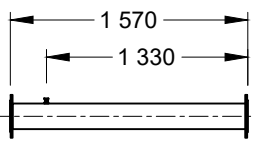
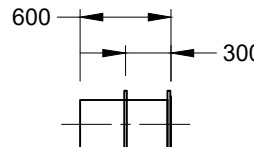
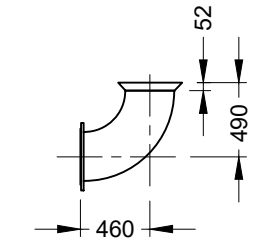
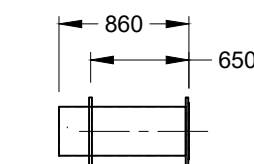
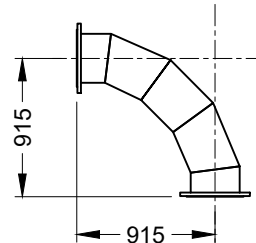
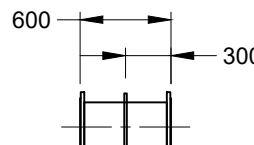
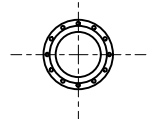
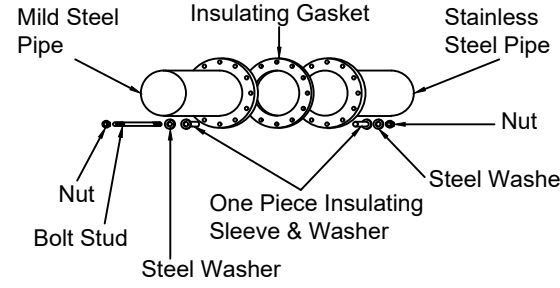
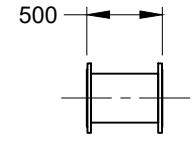
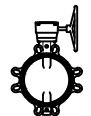
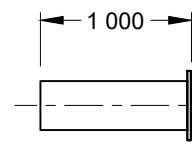
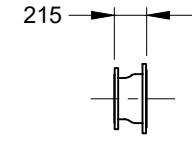
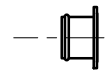
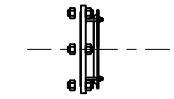
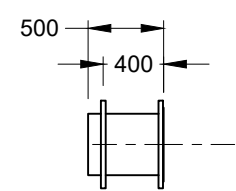
**DIHLABENG
LOCAL
MUNICIPALITY**

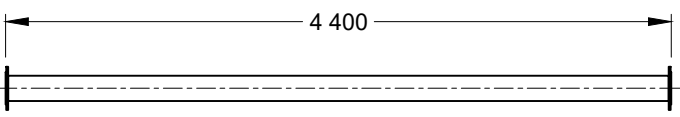
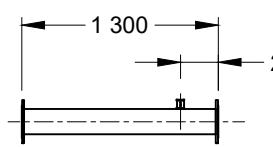
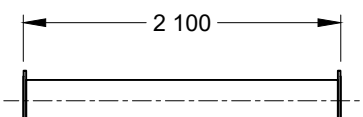
Approved by Client: Name: Signature: Date:

Project: CLARENS WTW

Drawing description:
**CLEAR WATER &
BACKWASH SUMP:
PIPE BRACKET
DETAILS**

Drawn: R. Joubert Date: Jan 2021
Scale/s: As Shown
Drawing number: 13-019-V-01-05-07 Rev.: 00

Item No.	No Off.	Dia(mm) ND	Description	Drawing
05-39	01	350Ø	350mm Ø, 90° bend with 1x T10 flange.	
05-40	03	200Ø	200mm Ø Straight, T10 flanged.	
05-41	05	200Ø	200mm Ø Straight with 1x1" steam socket, T10 flanged.	
05-42	01	300Ø	300mm Ø Straight with 1x T10 flange and puddle flange.	
05-43	01	300Ø	300mm Ø, 90° bend with bell mouth, 1 x T10 flange	
05-44	01	300Ø	300mm Ø Straight with 1x T10 flange and puddle flange.	
05-45	01	300Ø	300mm Ø 90° Gusset Long radius bend, T10 Flanged.	
05-46	02	300Ø	300mm Ø Straight, T10 flanged with puddle flange.	
05-47	01	300Ø	1x300mm Ø Blank flange T10.	
05-48	01	300Ø	300mmØ Insulating Gasket.	
05-49	01	300Ø	300mm Ø Straight, T10 flanged.	
05-50	01	300Ø	300mm Ø Butterfly isolating valve, gear operated.	
05-51	02	300Ø	300mm Ø Straight, 1x T10 flanged.	
05-52	01	300Ø	300mm Ø VJ coupling for steel pipe.	
05-53	01	300Ø - 250Ø	300mm Ø - 250mm Ø reducer, T10 flanged.	
05-54	01	250Ø	250mm Ø Cast iron uPVC flanged adaptor.	
05-55	02	400Ø	400mm Ø uPVC VJ Flange adaptor.	
05-56	01	400Ø	400mm Ø Straight with 1x T10 flange and puddle flange.	

Item No.	No Off.	Dia(mm) ND	Description	Drawing
07-19	02	150Ø	150mm Ø Straight, T10 flanged.	
07-20	02	150Ø	150mm Ø Straight with 1x1" steam socket, T10 flanged.	
07-21	01	250Ø	250mm Ø Straight, T10 flanged.	

- STEEL AND PIPEWORKS NOTES
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13-019-V-01-05-06	Louvre & Door Details
13-019-V-01-05-07	Pipe Bracket Details
13-019-V-01-05-08	Pipe Schedule (1)

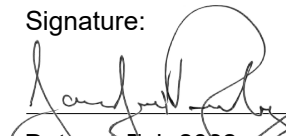
AMENDMENTS

Rev.	Date	Description

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LADYSMITH

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



**DIHLABENG
LOCAL
MUNICIPALITY**

Approved by Client:

Name: _____

Signature: _____ Date: _____

Project:

CLARENS WTW

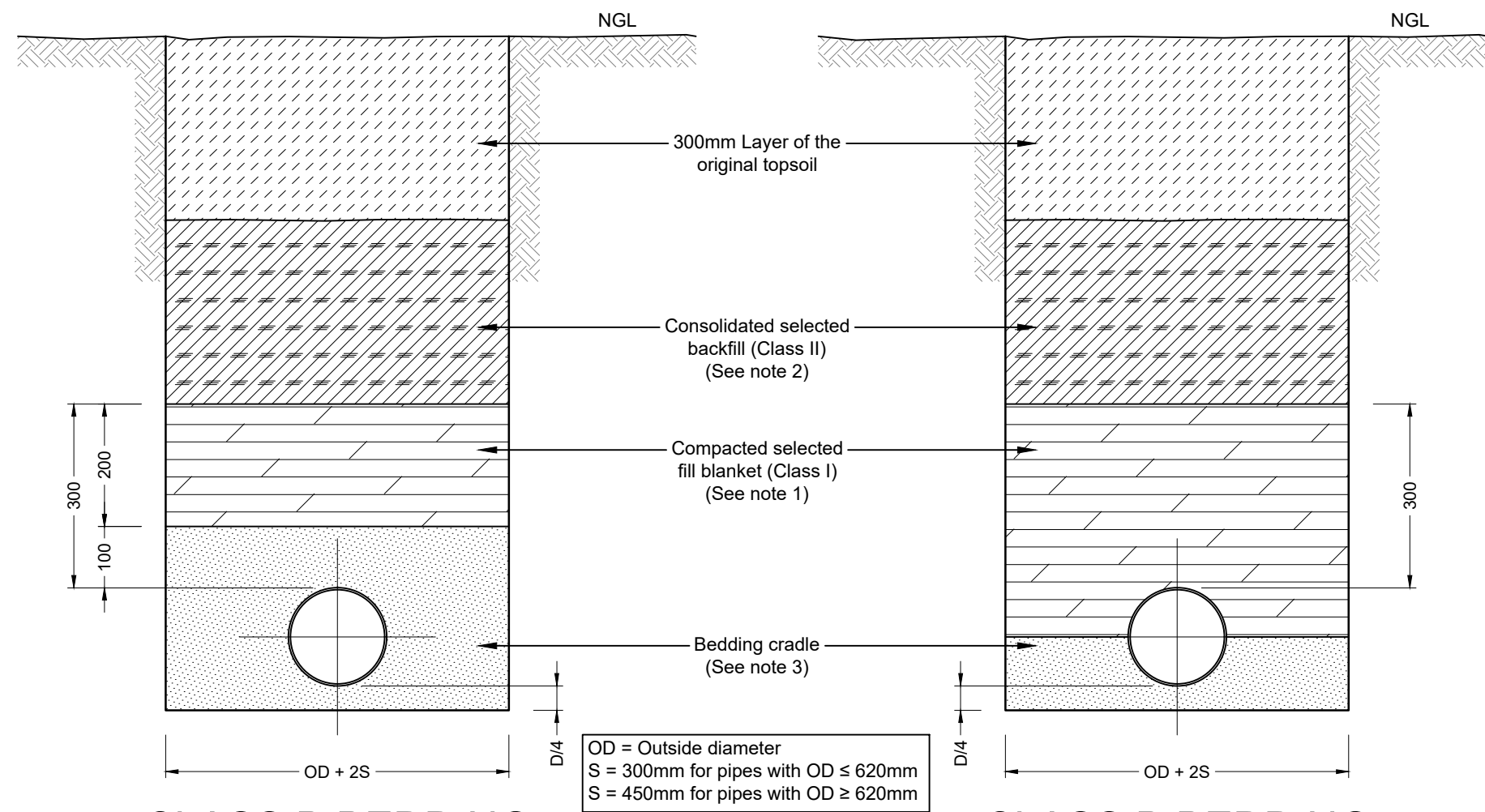
Drawing description:

CLEAR WATER &
BACKWASH SUMP:
PIPE SCHEDULE

Drawn: R. Joubert Date: Jan 2021

Scale/s: As Shown

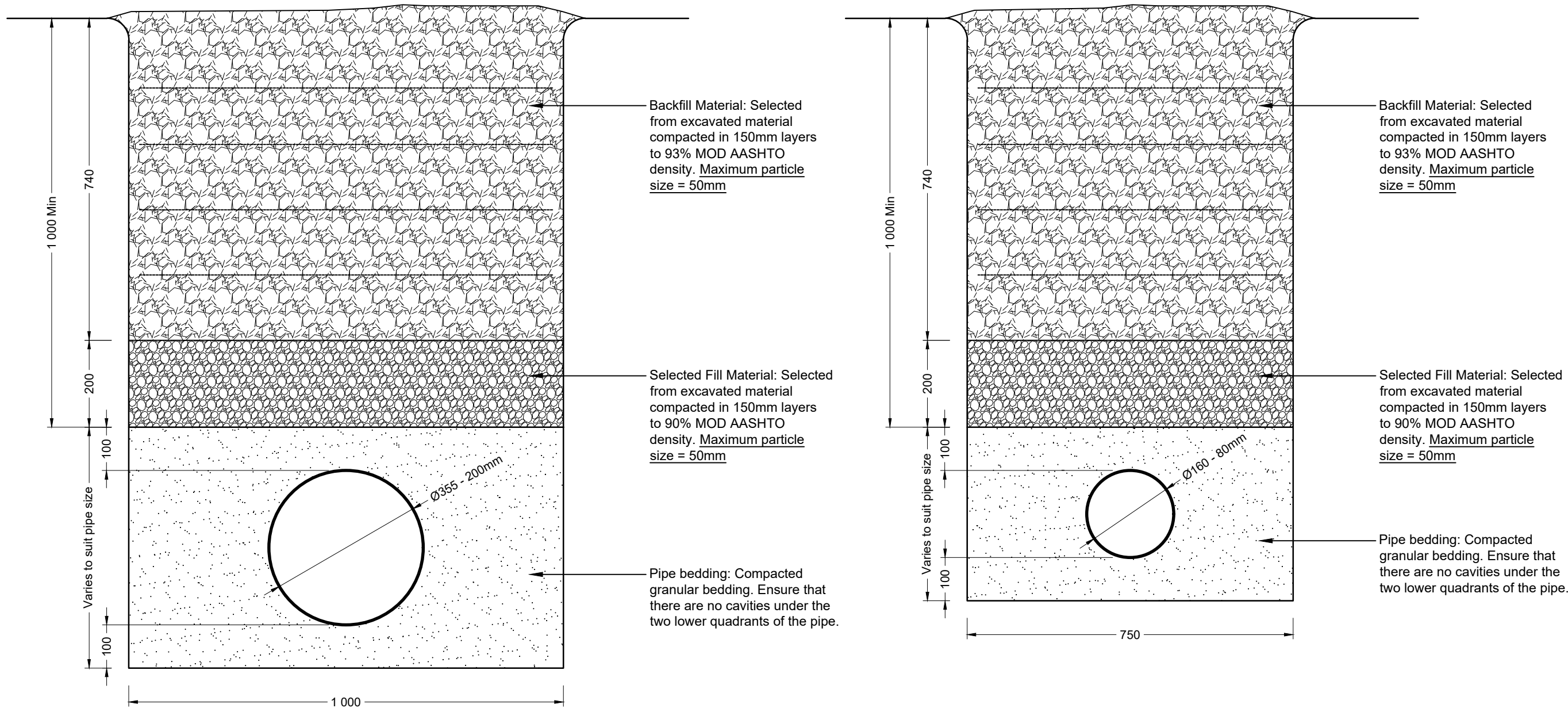
Drawing number:	Rev.:
13-019-V-01-05-08	00



CLASS B BEDDING
FOR FLEXIBLE PIPELINE

CLASS B BEDDING
FOR RIGID PIPELINE

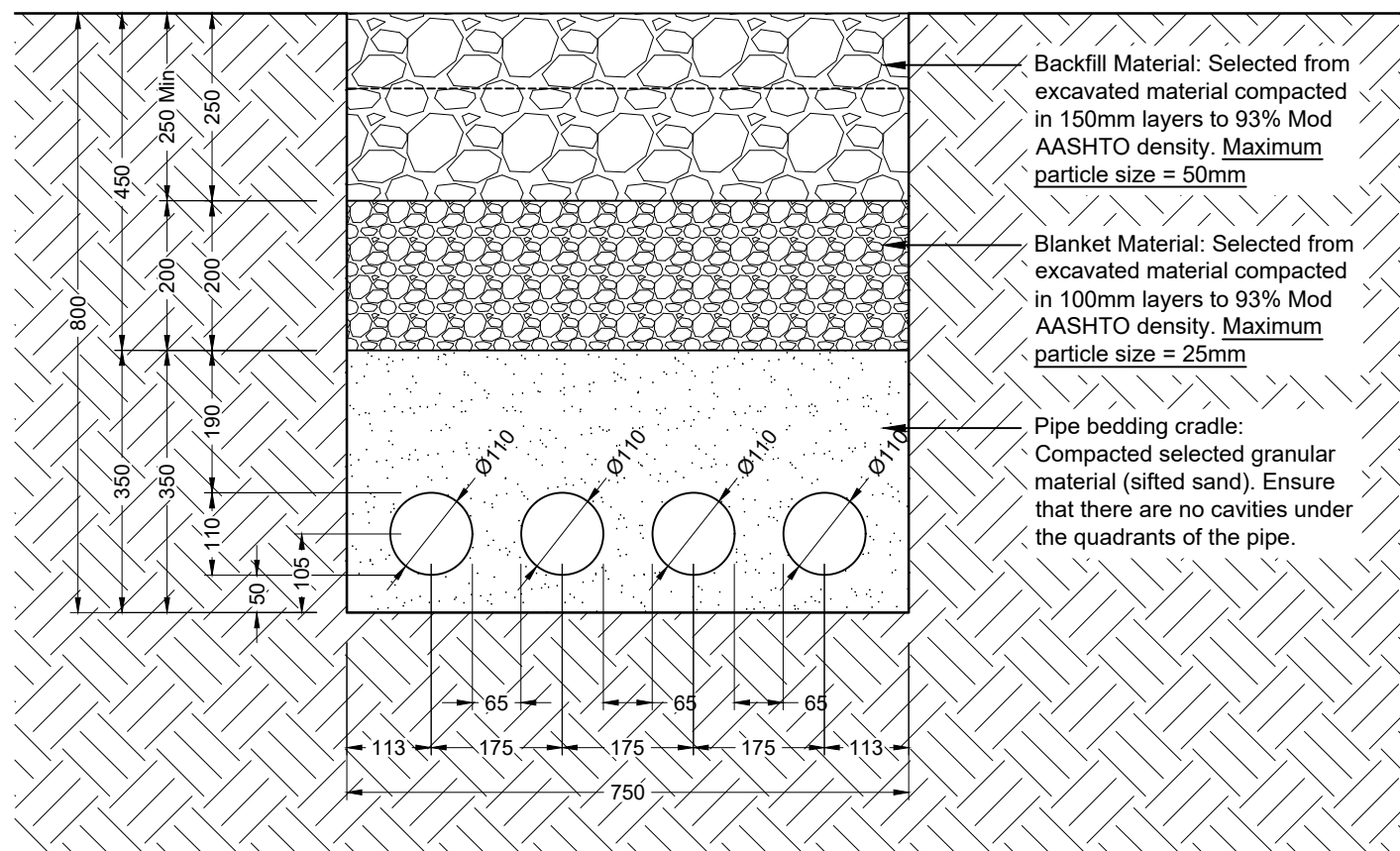
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-	1/10	DRAINAGE PIPE TRENCH DETAIL	-



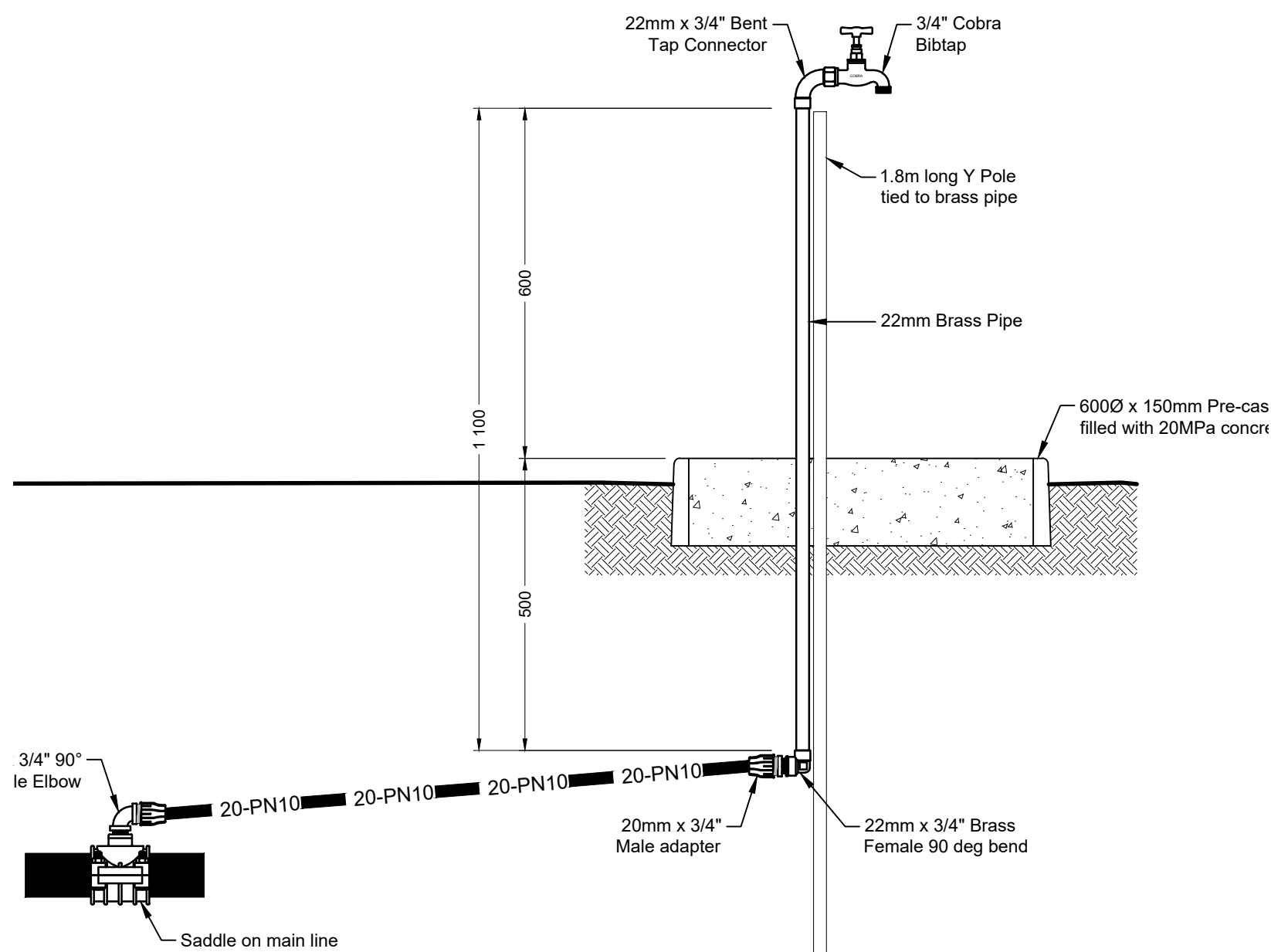
200 - 355mm Ø uPVC PIPE
TRENCH DETAIL

80 - 160mm Ø uPVC PIPE
TRENCH DETAIL

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

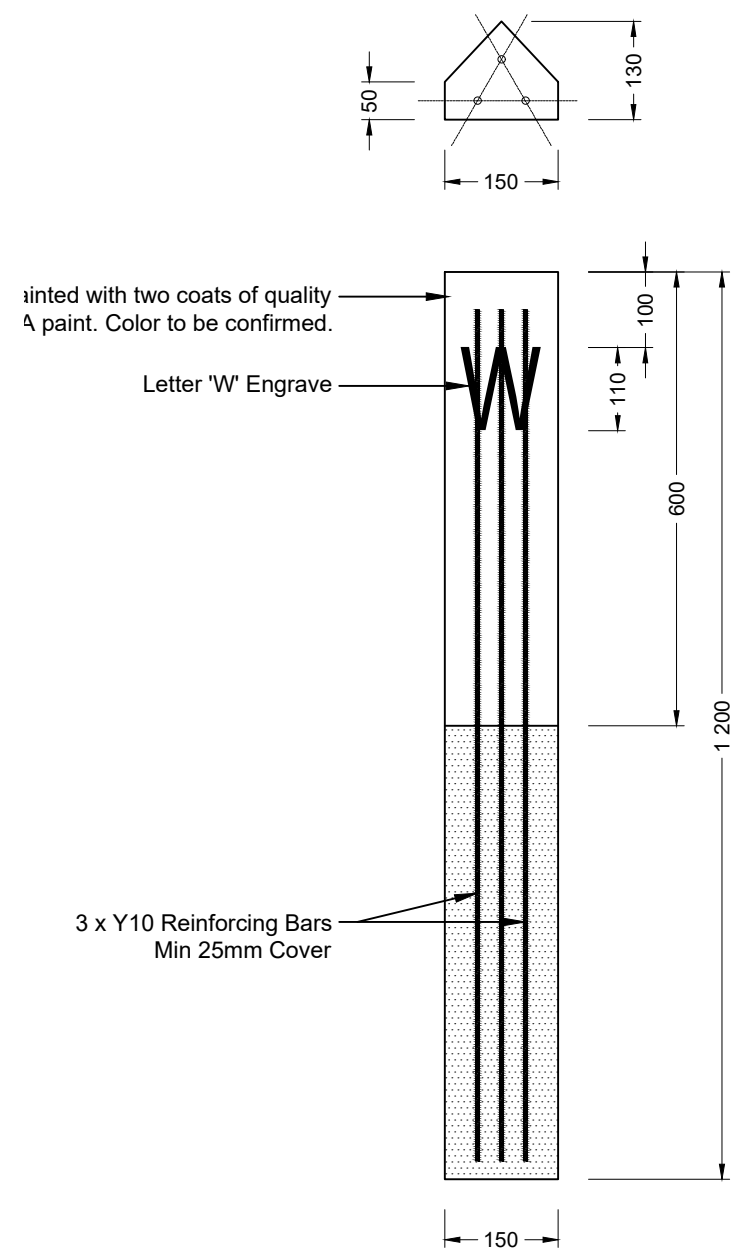


DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	1/10	ELECTRICAL SLEEVE TRENCH DETAIL	-



STAND PIPE DETAIL
Scale 1:10

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



WATER MARKER DETAIL
Scale 1:10

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

NOTES:

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

READ THIS DRAWING IN CONJUNCTION WITH

Drawing Number	Drawing Description

AMENDMENTS

Rev.	Date	Description

ECA CONSULTING MBOMBELA OFFICE:
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LADYSMITH

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

DIHLABENG
LOCAL MUNICIPALITY

Approved by Client:

Name: _____

Signature: _____ Date: _____

Project:

CLARENS WATER
TREATMENT WORKS

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

Drawn: R Blignaut Date: 12-10-2020

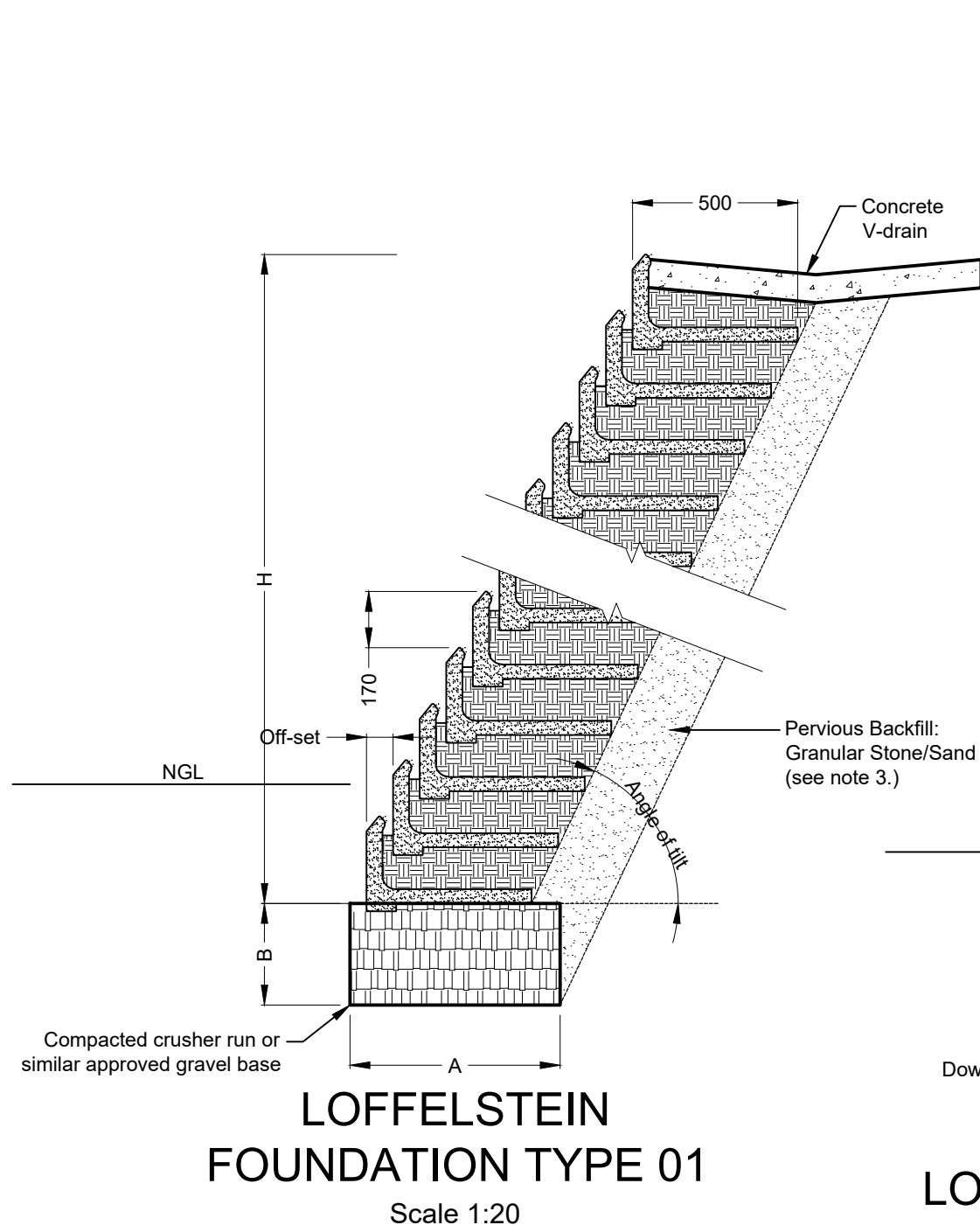
Scale/s: AS SHOWN

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

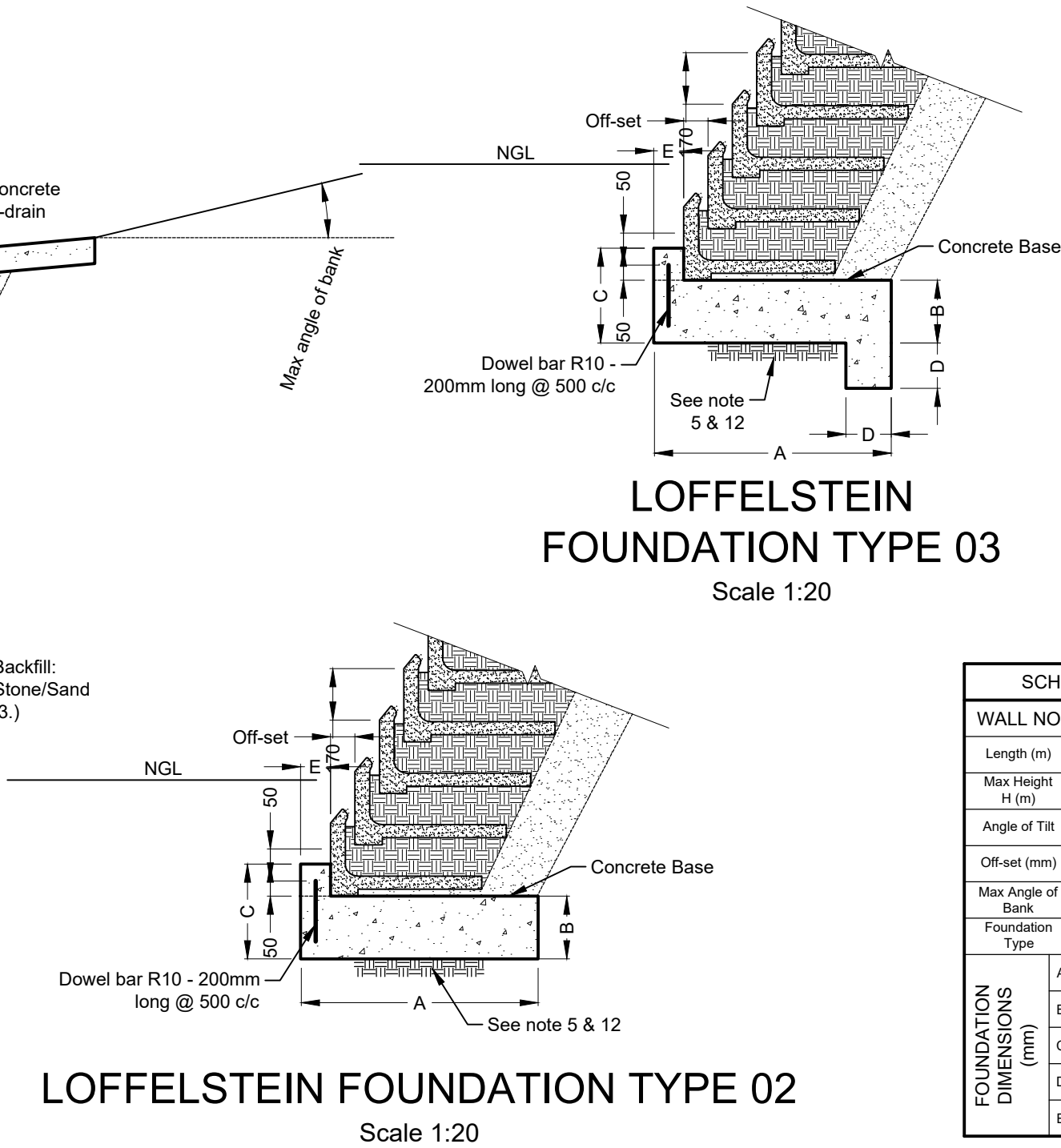
FOR TENDER
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NOTES:

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

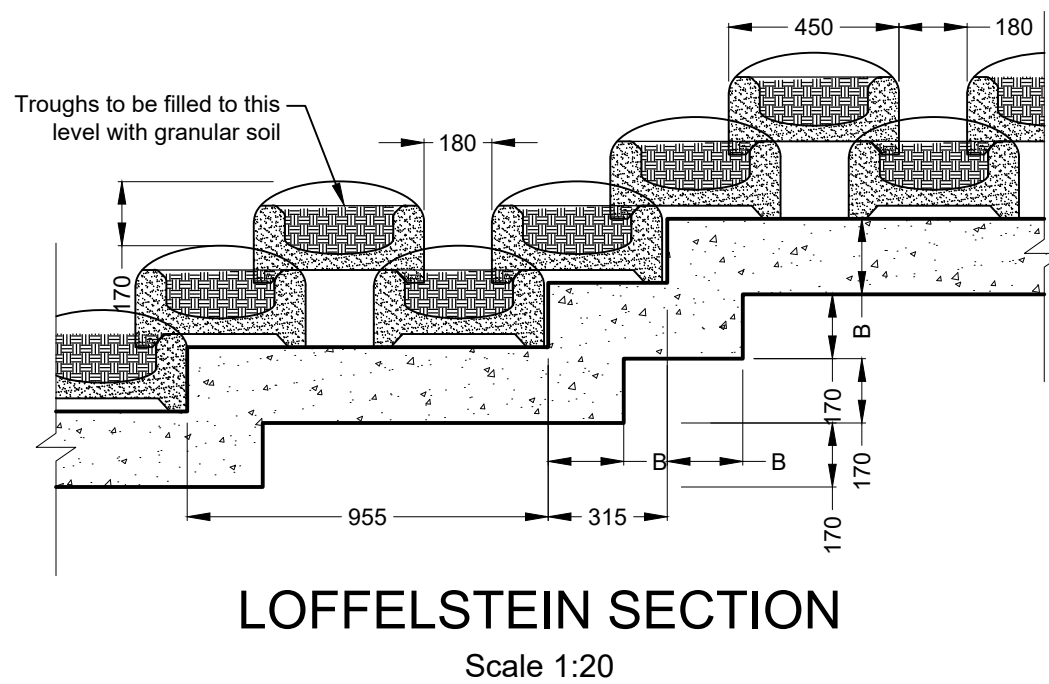


**LOFFELSTEIN
FOUNDATION TYPE 01**
Scale 1:20



LOFFELSTEIN FOUNDATION TYPE 02
Scale 1:20

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

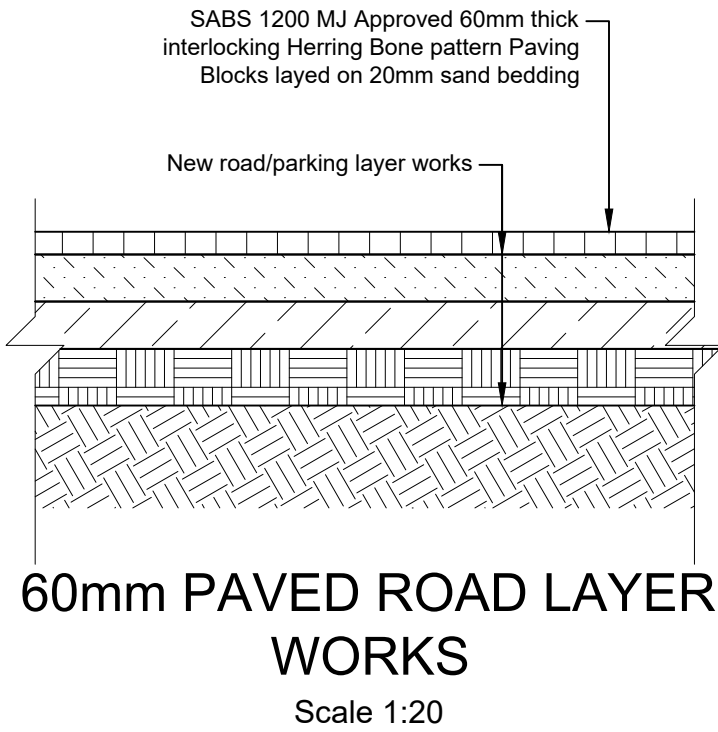


LOFFELSTEIN SECTION
Scale 1:20

DETAIL NO: -
SCALE: 1/20
DETAIL DESCRIPTION: TYPICAL LOFFELSTEIN DETAILS

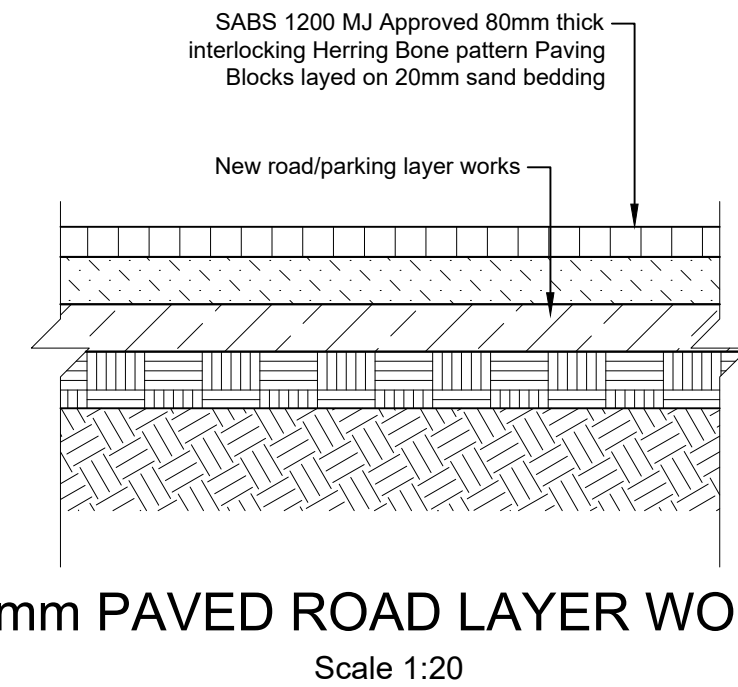
SEE DETAIL NO: -

PAVEMENT DESIGN CRITERIA FOR 80mm PAVING				
Layer No.	Thickness	Material Description	Material Spec. (TRH)	Layer Compaction
01	60	60mm paving on 20mm sand	-	-
02	150	Base	C4	97%
03	150	Sub-base	G7	95%
04	150	Road bed preparation	Insitu	90%



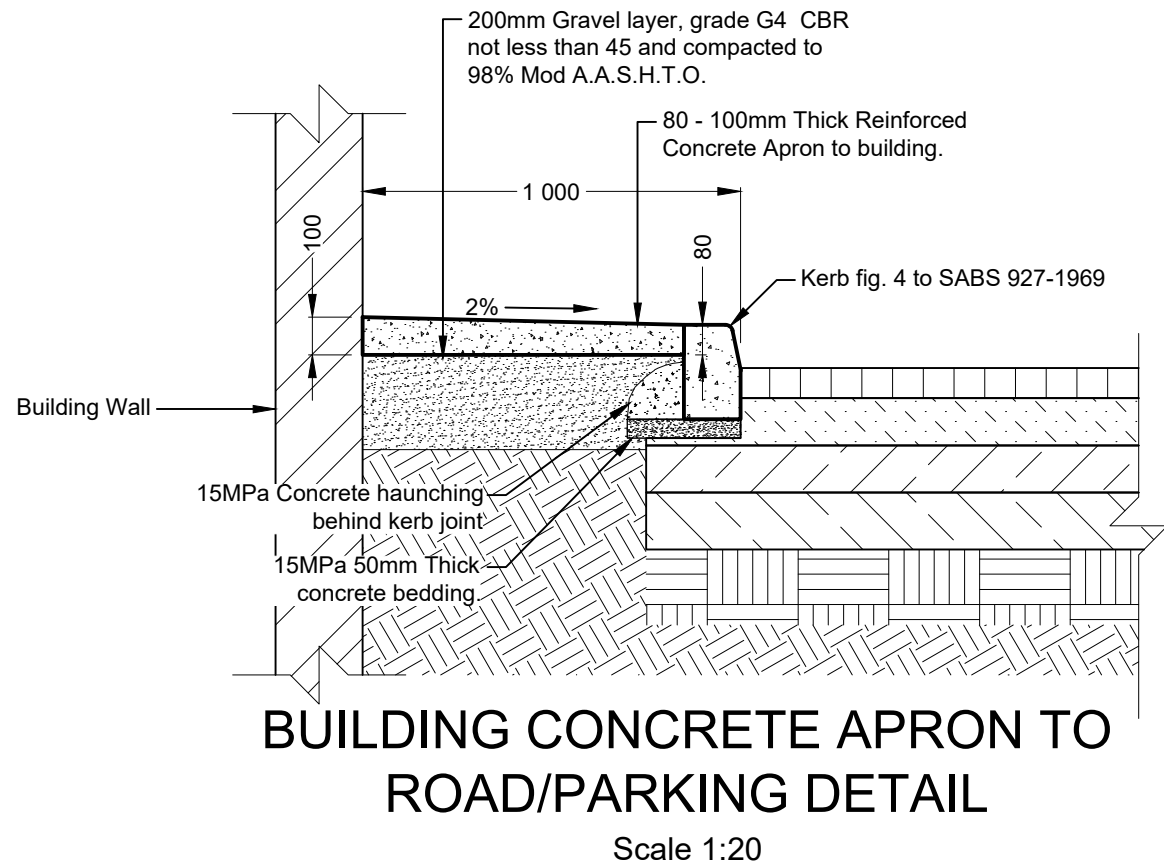
60mm PAVED ROAD LAYER WORKS
Scale 1:20

PAVEMENT DESIGN CRITERIA FOR 80mm PAVING				
Layer No.	Thickness	Material Description	Material Spec. (TRH)	Layer Compaction
01	60	80mm paving on 20mm sand	-	-
02	150	Base	C4	97%
03	150	Sub-base	G7	95%
04	150	Road bed preparation	Insitu	90%

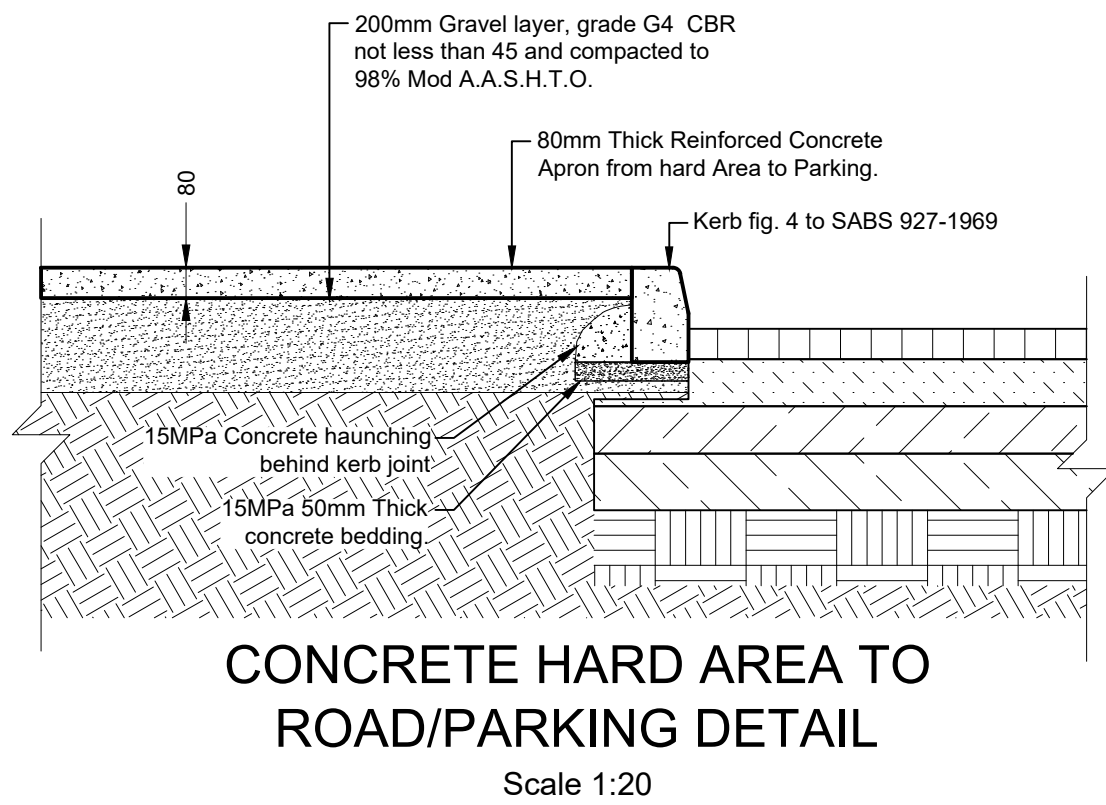


80mm PAVED ROAD LAYER WORKS
Scale 1:20

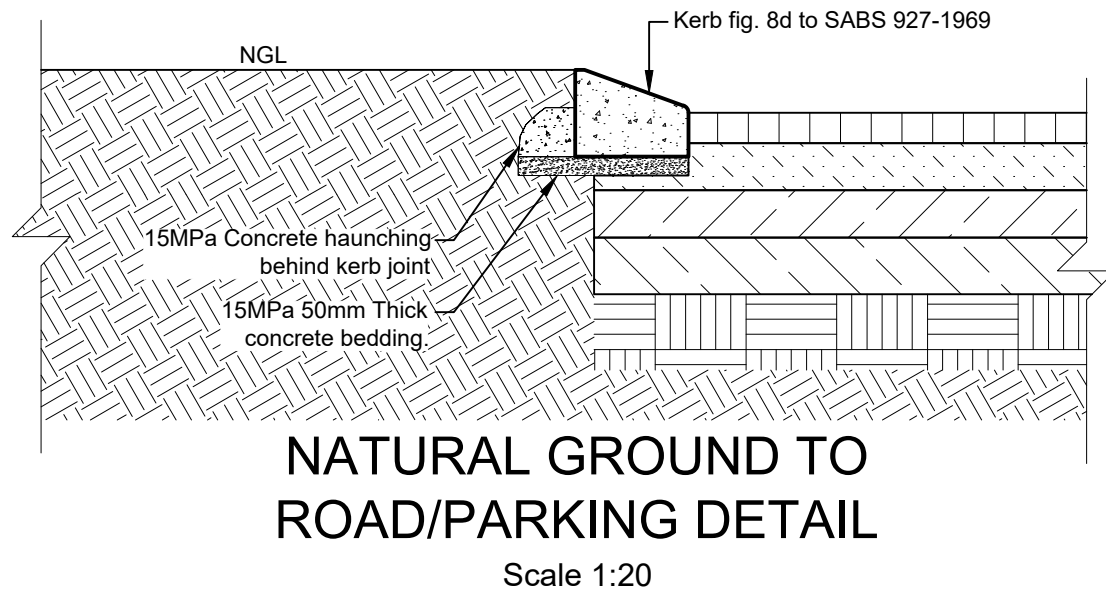
DETAIL NO: -
SCALE: 1/20
DETAIL DESCRIPTION: PAVING LAYER WORKS
SEE DETAIL NO: -



BUILDING CONCRETE APRON TO ROAD/PARKING DETAIL
Scale 1:20



CONCRETE HARD AREA TO ROAD/PARKING DETAIL
Scale 1:20



NATURAL GROUND TO ROAD/PARKING DETAIL
Scale 1:20

DETAIL NO: -
SCALE: 1/20
DETAIL DESCRIPTION: CONCRETE APRON DETAILS
SEE DETAIL NO: -

Do not scale off drawing - ASK THE ENGINEER IF UNCERTAIN!
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Signature: _____
Date: 4 Feb 2022

DIHLABENG LOCAL MUNICIPALITY
Client: _____

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

Project:
CLARENS WATER TREATMENT WORKS

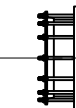
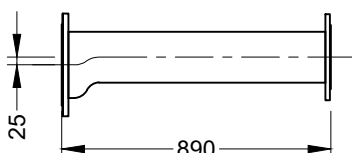
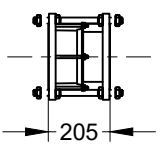
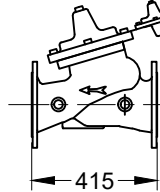
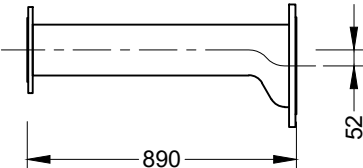
Drawing description:
WATER TREATMENT WORKS:LOFFELSTEIN AND LAYER WORKS DETAIL DRAWING

Drawn: R Blignaut Date: 12-10-2020
Scale/s: AS SHOWN
Drawing number: 13-019-V-01-13-04 Rev.: 00

CHAMBER PLAN

Scale 1:20

CHAMBER SECTION
Scale 1:20

Item No.	No Off.	Dia(mm) ND	Description	Drawing
D1	01	200Ø	200Ø "VJ" Flange adaptor to suit AC or uPVC pipe, T16 flanged.	
D2	01	200Ø - 150	150mm Straight pipe with 200mm Eccentric Reducer T16 flanged.	
D3	01	150	150mm Dismantling joint T16 flanged.	
D4	01	150	150Ø BERMAD Pressure Sustaining Valve complete with Solenoid Control, T16 Flanged	
D5	01	150 - 250	150mm Straight pipe with 250mm Eccentric Reducer T16 flanged.	

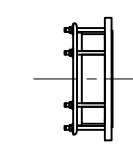
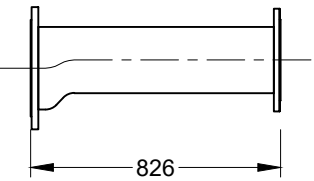
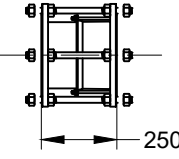
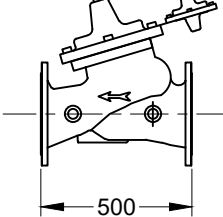
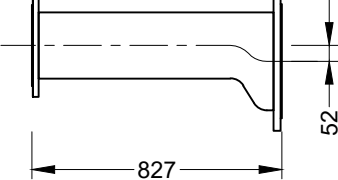
STEEL AND PIPE NOTES:

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

CHAMBER PLAN

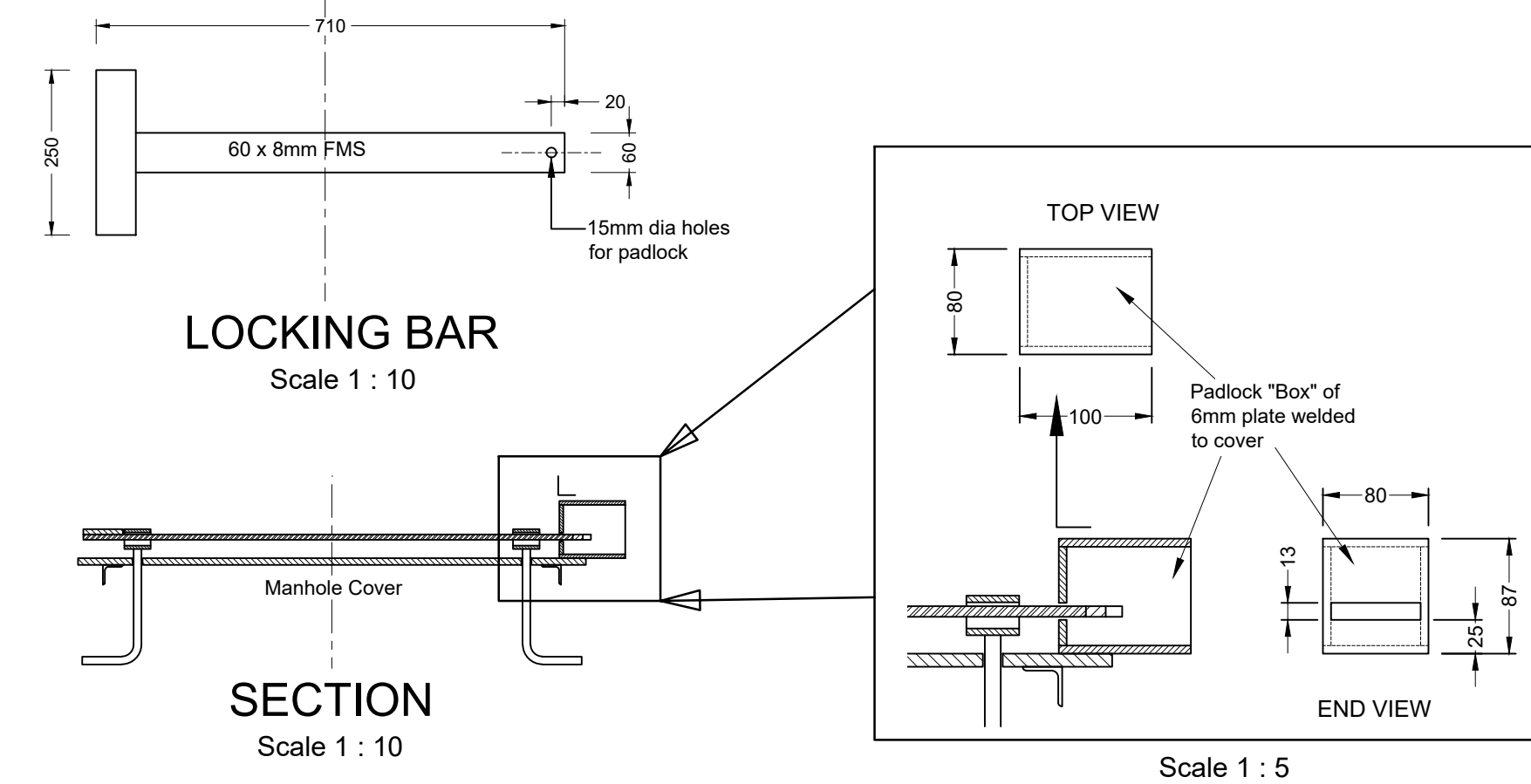
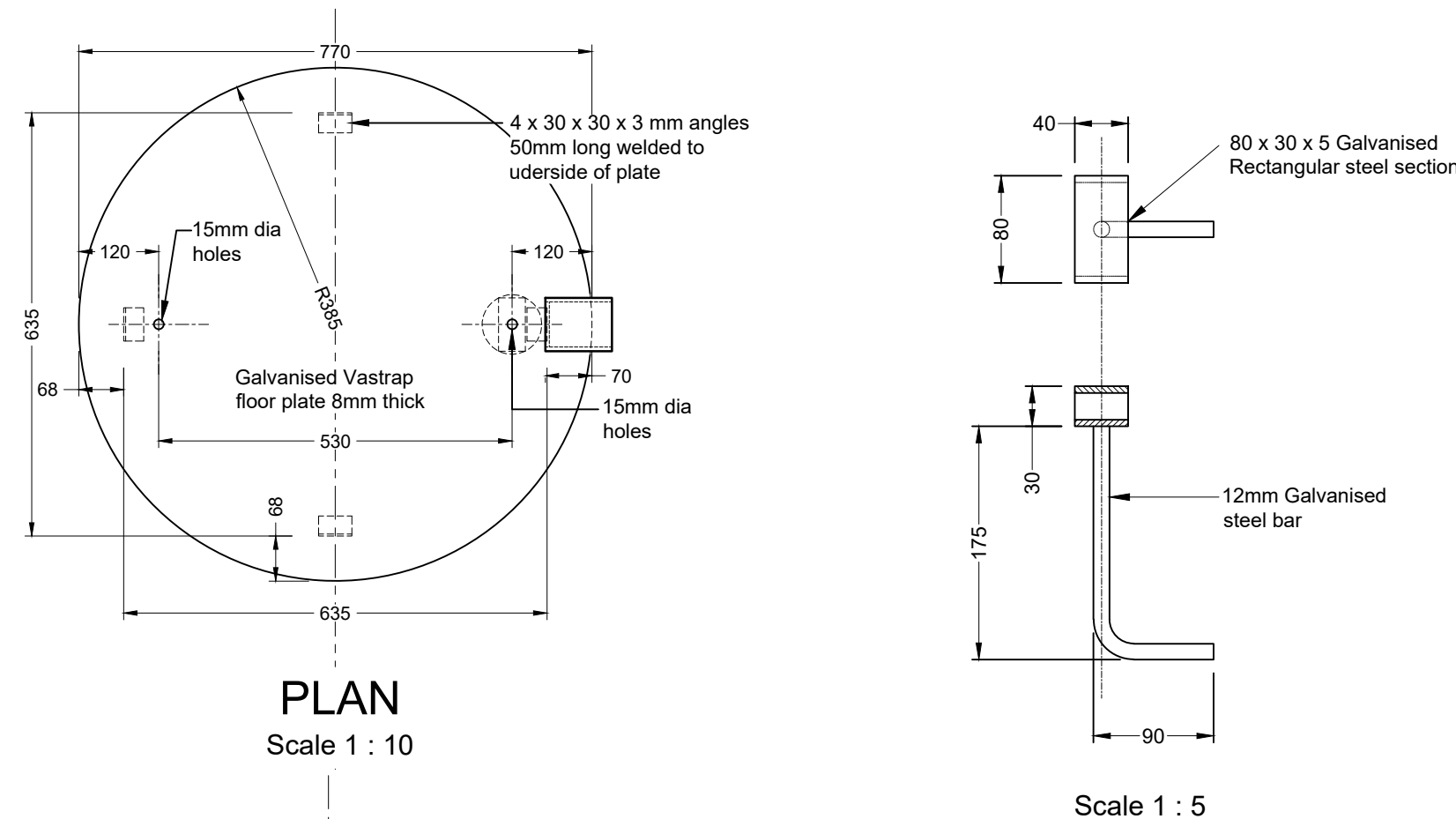
Scale 1:20

CHAMBER SECTION
Scale 1:20

Item No.	No Off.	Dia(mm) ND	Description	Drawing
E1	01	250Ø	250Ø "V.J" Flange adaptor to suit AC or uPVC pipe. T16 flanged.	
E2	01	250Ø 200	200mm Straight pipe with 250mm Eccentric Reducer T16 flanged.	
E3	01	200	200mm Dismantling joint T16 flanged.	
E4	01	200	200Ø BERMAD Pressure Sustaining Valve Model complete with Solenoid Control, T16 Flanged	
E5	01	200 - 300	200mm Straight pipe with 300mm Eccentric Reducer T16 flanged.	

STEEL AND PIPE NOTES:

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



DETAIL NO:	SCALE:	DETAIL DESCRIPTION:	SEE DETAIL NO:
-	-	GALVANISED CHAMBER LID DETAIL	-

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Drawing Number	Drawing Description

AMENDMENTS

[illegible]

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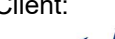
Company Reg.: 2004/019299/07
 ISO Registered 9001:2015

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

Signature:

Date: 4 Feb 2022

Client:



DIHLABENG LOCAL
MUNICIPALITY

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

Project:

CLARENS WATER TREATMENT
WORKS

Drawing description:

**WATER TREATMENT WORKS:
FLOW CONTROL VALVE AND
CHAMBER DETAILS**

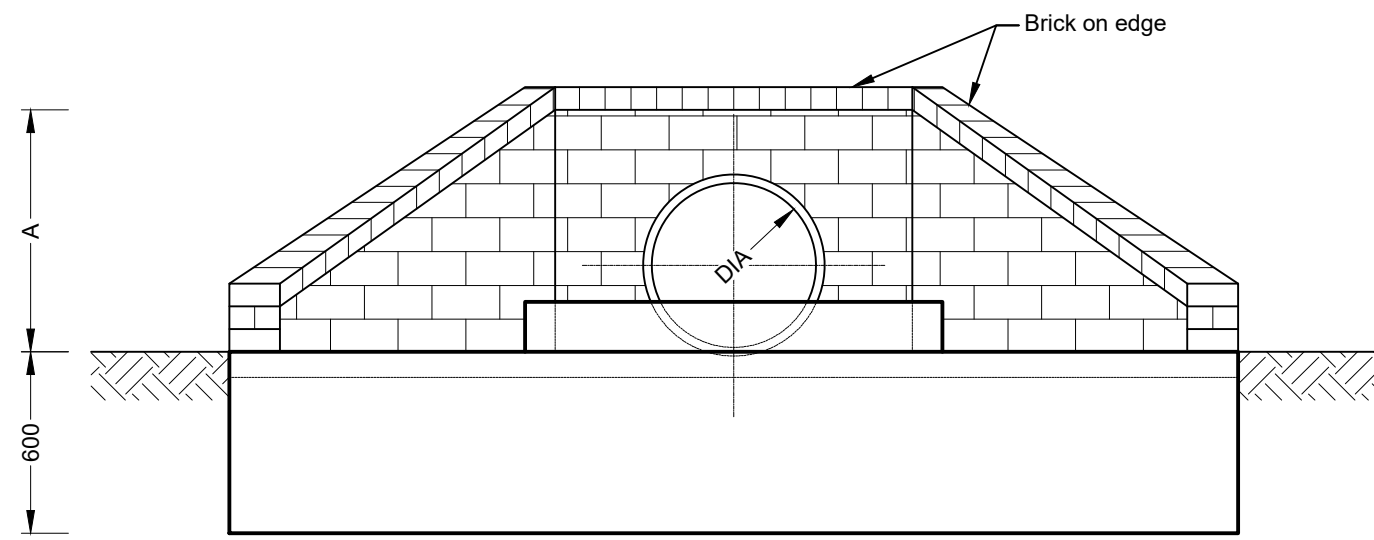
Drawn: R Blignaut	Date: 12-10-2020
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Scale/s: AS SHOWN

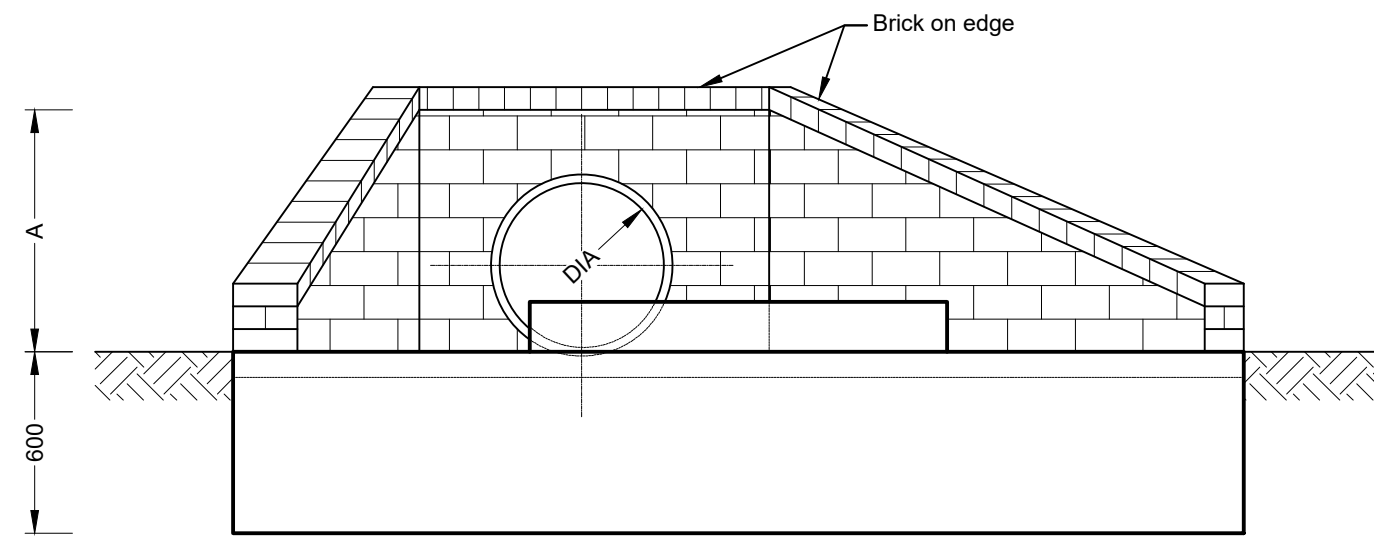
Drawing number:	Rev.:
13-019-V-01-13-05	00

DETAIL NO: -	SCALE: 1 : 20	DETAIL DESCRIPTION: FLOW CONTROL VALVE AND CHAMBER 250mm - 200mmØ	SEE DETAIL NO: -
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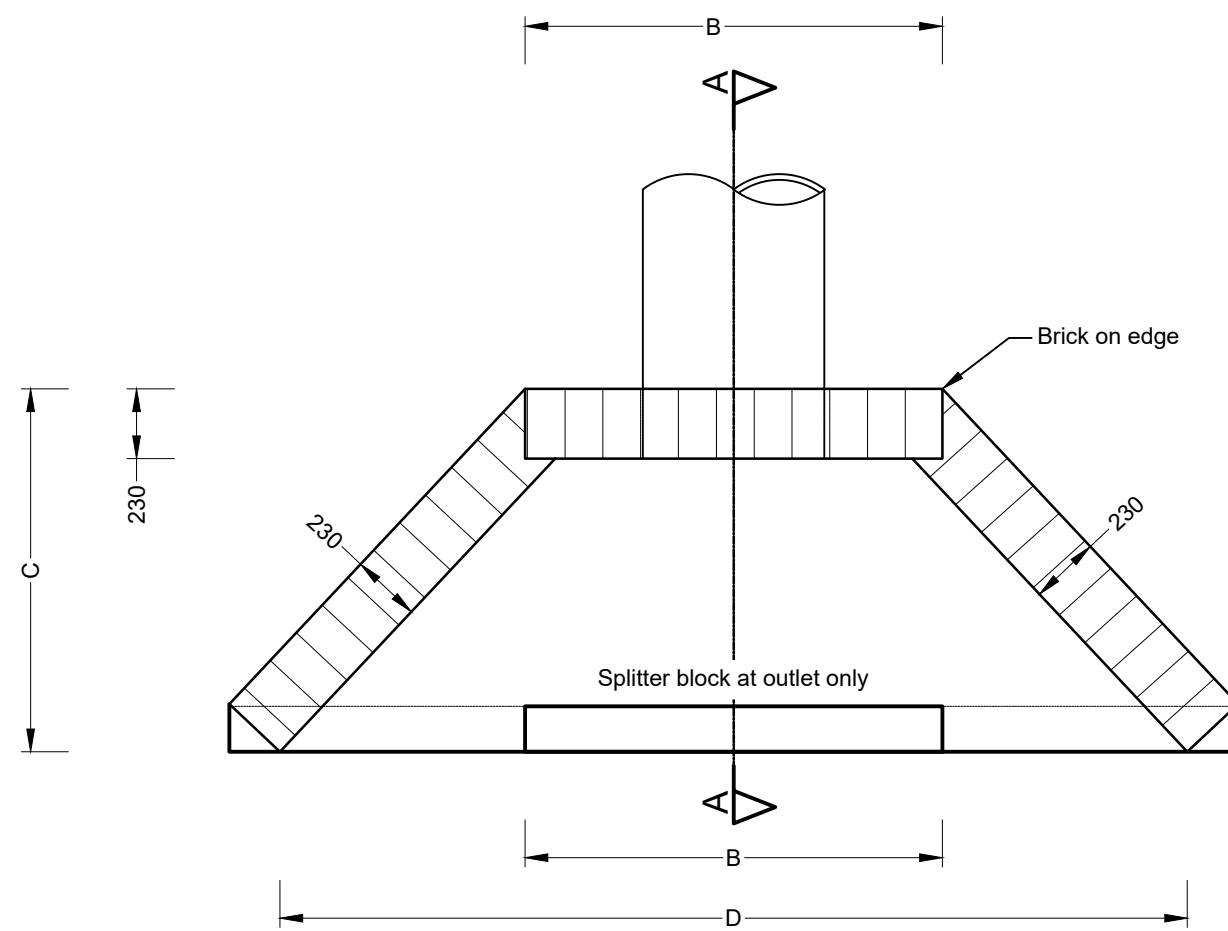
DETAIL NO: -	SCALE: 1 : 20	DETAIL DESCRIPTION: FLOW CONTROL VALVE AND CHAMBER 250mm - 300mmØ	SEE DETAIL NO: -
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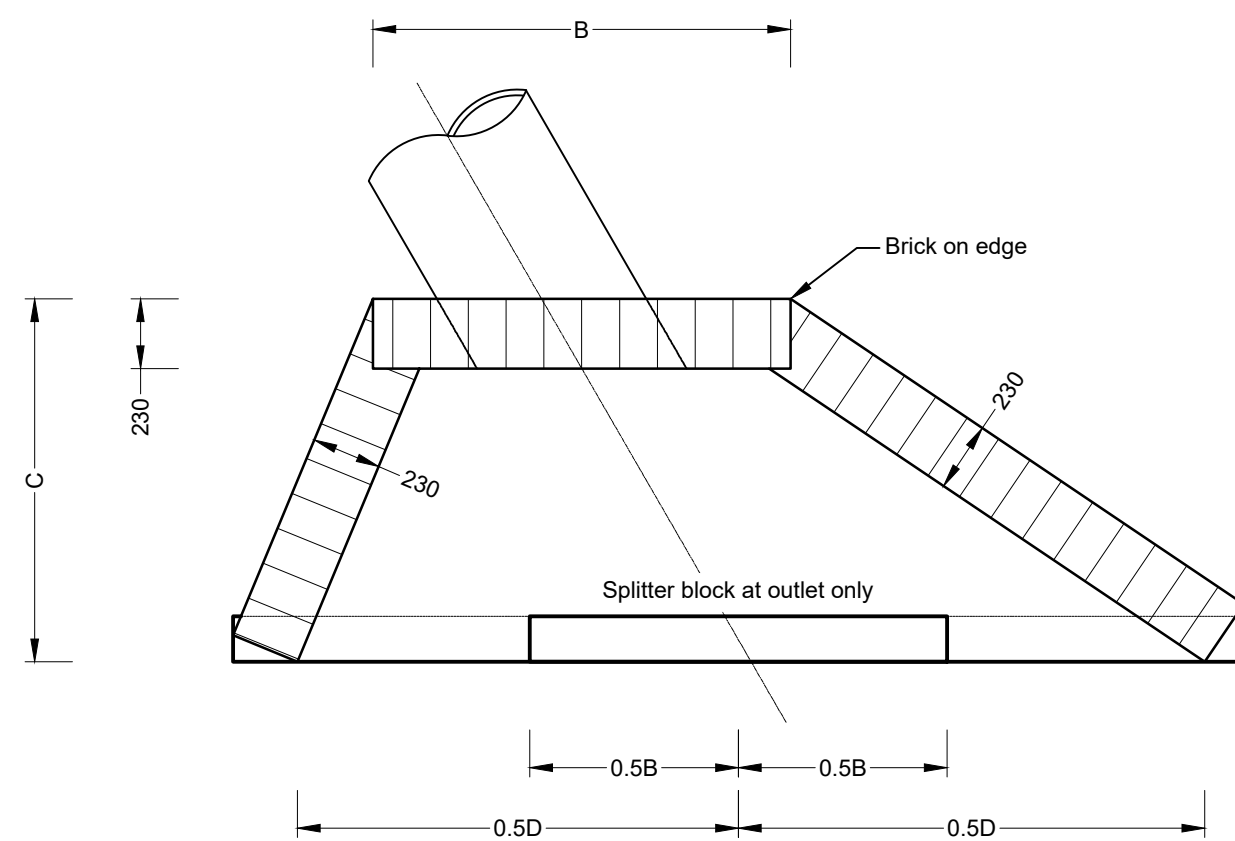
FRONT ELEVATION OF A
SINGLE PIPE OUTLET



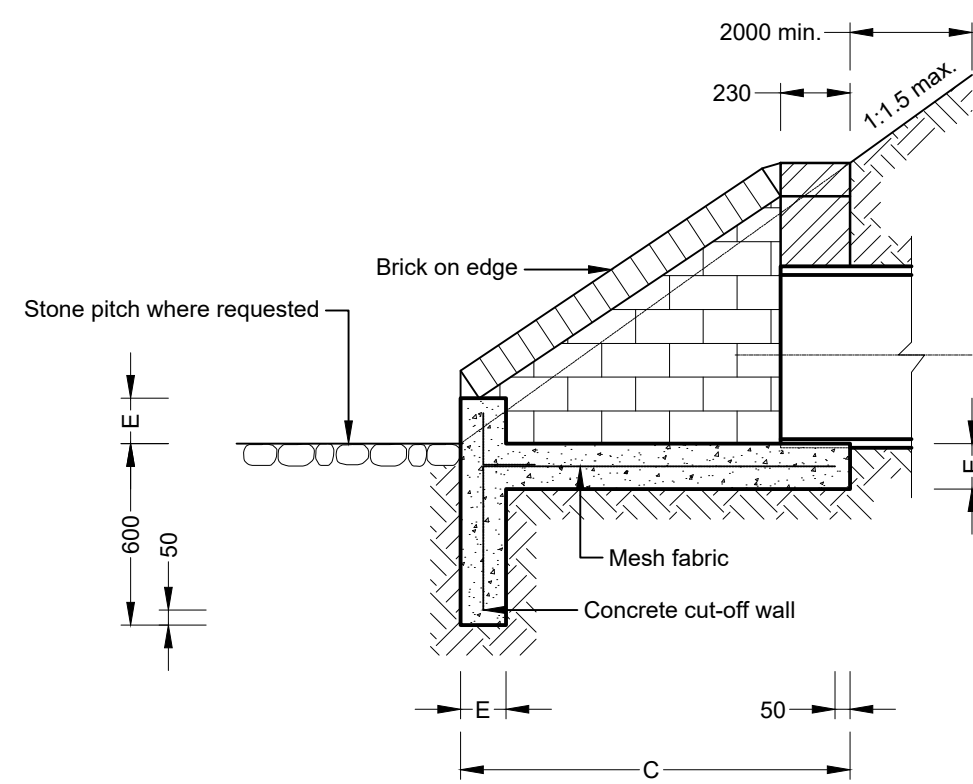
FRONT ELEVATION OF A
SINGLE SKEW PIPE OUTLET



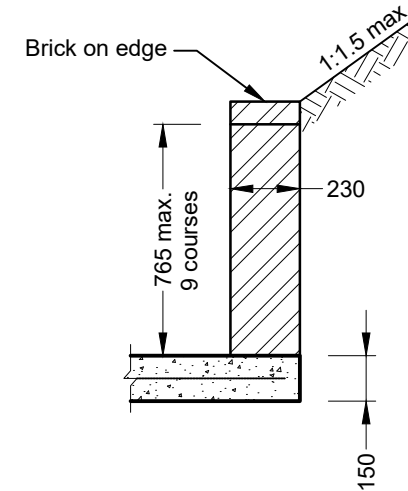
PLAN OF A SINGLE PIPE OUTLET



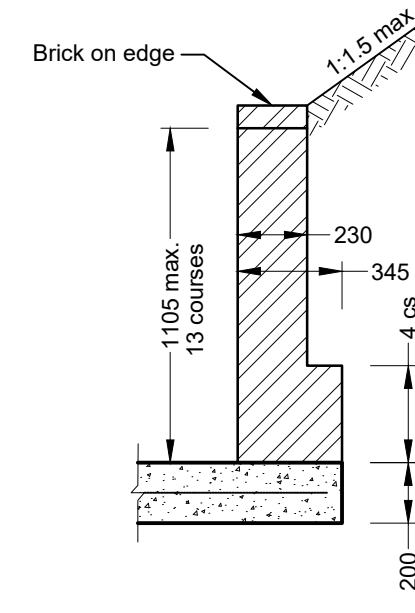
PLAN OF A SINGLE SKEW PIPE OUTLET



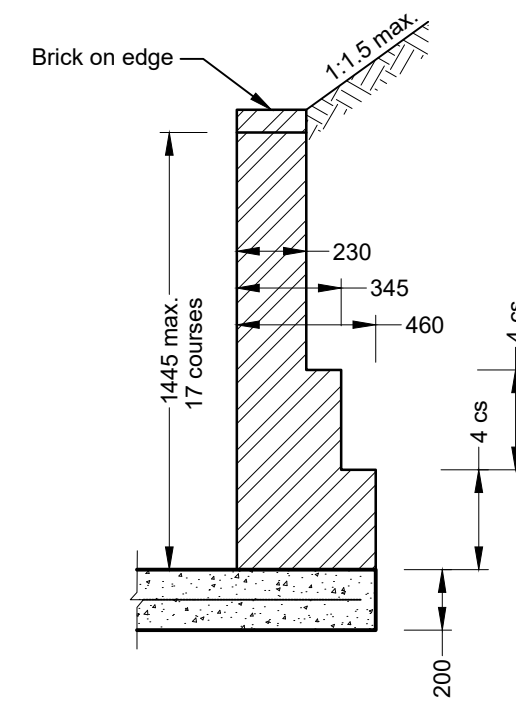
SECTION A - A



230mm HEAD
WALL



345mm HEAD
WALL



460mm HEAD
WALL

Notes:

1. Splitter block and pitching to be provided at all outlets where erosion is likely to occur.
2. Splitter block mat be omitted if discharge velocity is less than 0.9m/s.
3. Cut-off walls may be omitted if structure is founded on rocks.
4. For multiple pipe culverts increase dimensions 'E' and 'F' by $(n-1)(A+460)\text{mm}$: Where n = number of pipes and A = nominal diameter of pipes
5. Pipes to be cut flush with headwall.
6. For skew pipe culverts the headwall shall be parallel to the centre line of the road.
7. If corrugated metal pipes are used 4x 20mm, 150mm long galvanized anchor bolts in the hollows of the corrugation are to be used.
8. All concrete is to be 20MPa.
9. Square mesh fabric (Reference S.M.F. 193) is to be placed 50mm from top in all apron slabs and centrally in cut-off walls.
10. Brickwork is to be of good quality burnt clay common bricks in accordance with SABS 227 specification, or cement bricks in accordance with SABS 987 specification, uniform in size and shaped layed in stretcher bond style with the skins tied together with galvanized crimped wire wall ties.
11. Brickforce is to be placed every 4th course.
12. Jointing on all visible faces to be pointed.
13. No infill shall be larger than a half standard brick size unless 15MPa concrete is used.
14. Cover to all main reinforcing to be at least 50mm and kept in place by means of approved spacers.

Pipe Culvert Headwall Dimensions					
Nominal Dia.	A	B	C	D	E
110	345	690	750	2100	150
300	425	920	900	2400	150
400	595	1040	975	2550	150
450	595	1150	1050	2700	150
600	765	1380	1200	3000	150
750	935	1610	1350	3300	150
900	1105	1840	1500	3600	230
1050	1275	2070	1750	3900	230
1200	1445	2300	1900	4200	230

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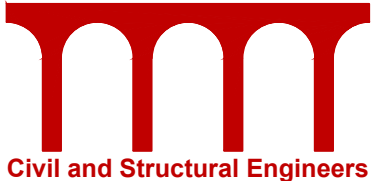
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Project:

**CLARENS WATER
TREATMENT WORKS**

Drawing description:
**WATER TREATMENT
WORKS: PIPE OUTLET
HEADWALL DETAILS
DRAWING**

Drawn: R Blignaut Date: 12-10-2020

Scale/s: AS SHOWN

Drawing number: 13-019-V-01-13-06 Rev.: 00