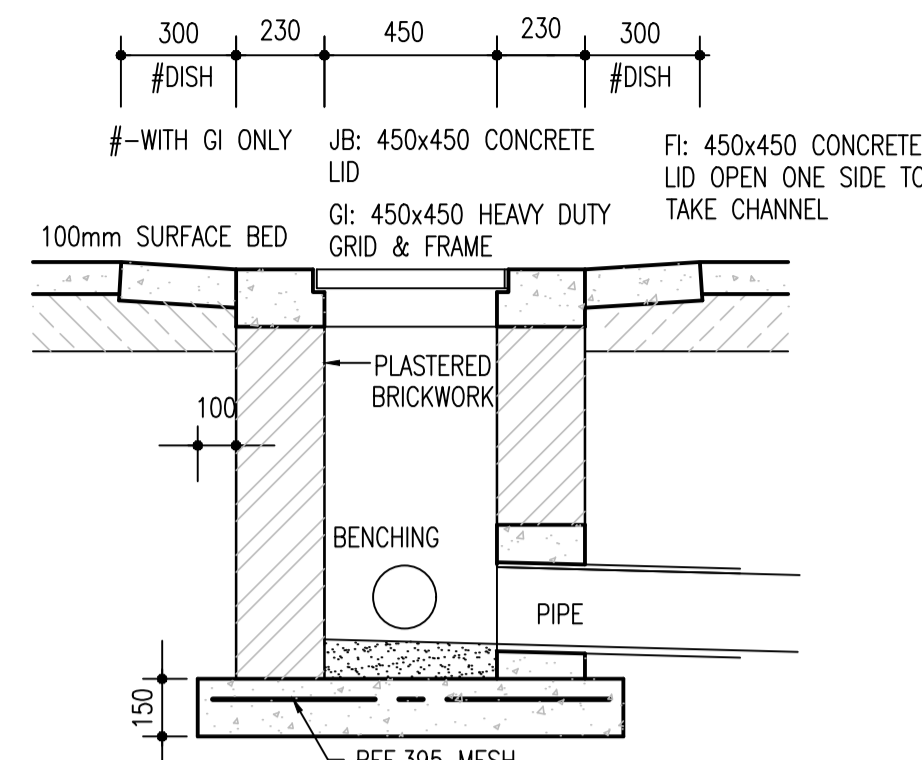
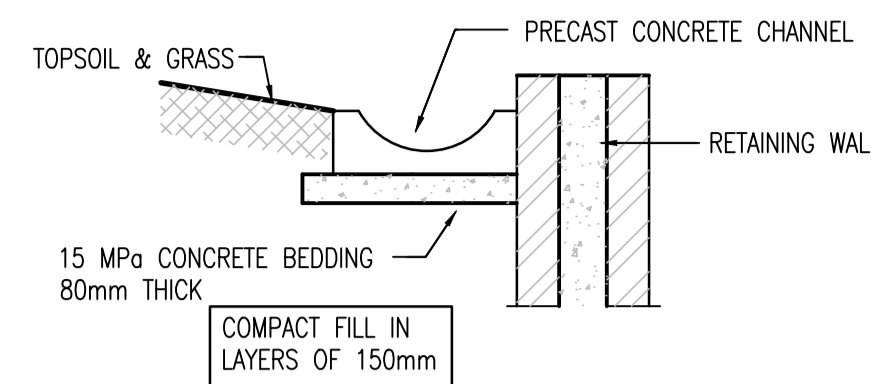


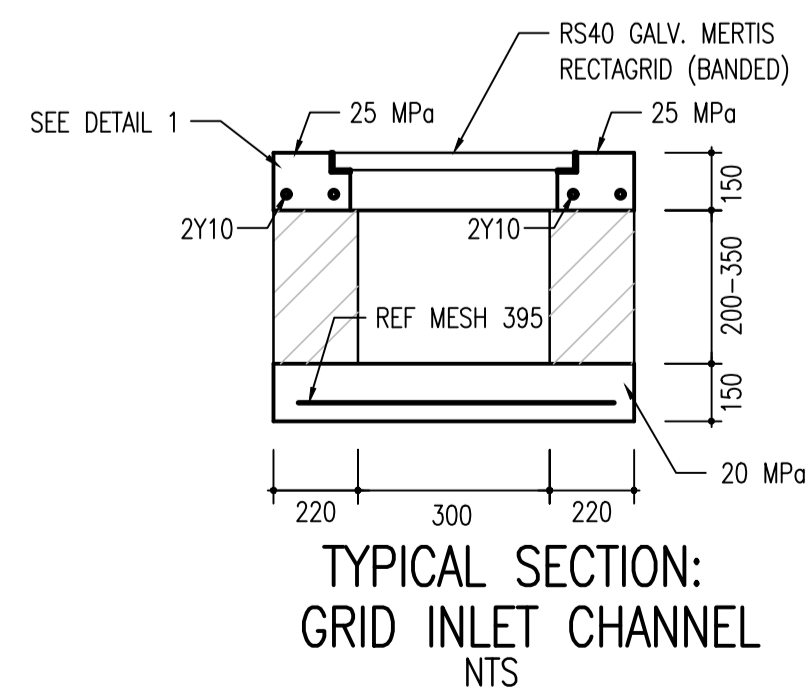
PLAN: GRID INLET (GI)  
JUNCTION BOX (JB)  
FIELD INLET (FI)  
450 x 450 SUMP  
1:20



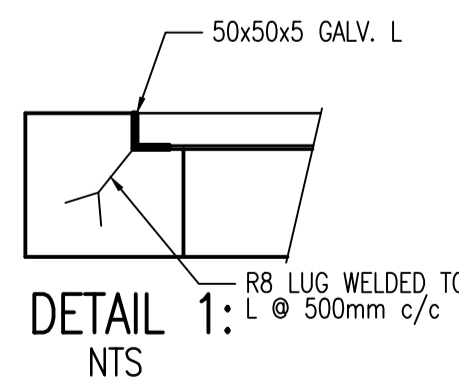
SECTION B-B  
1:20



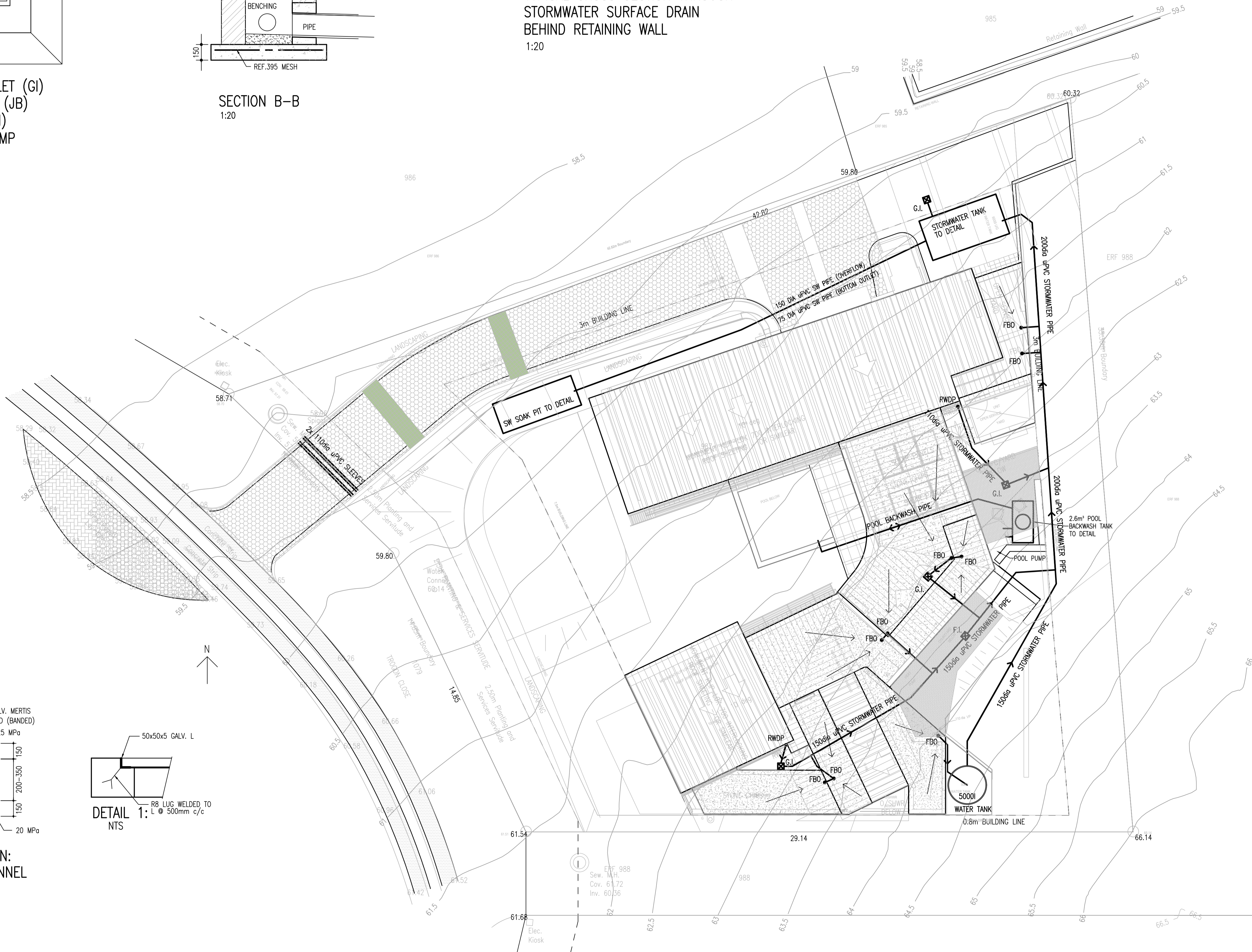
TYPICAL CROSS SECTION THROUGH  
STORMWATER SURFACE DRAIN  
BEHIND RETAINING WALL  
1:20



TYPICAL SECTION:  
GRID INLET CHANNEL  
NTS



DETAIL 1:  
NTS



**NOTES**

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- 3) ALL WORK TO BE IN TERMS OF THE LATEST APPLICABLE SANS 082, 0400, 1200 & 0164 SPECIFICATIONS & LOCAL BY-LAWS.
- 4) DO NOT SCALE OFF THIS DRAWING.
- 5) COVER TO REINFORCEMENT: 40mm
- 6) CONCRETE STRENGTH: 20MPa.
- 7) THE ONUS IS ON THE CONTRACTOR TO INFORM THE ENGINEER TO INSPECT THE WORKS BEFORE ANY CONCRETE IS CAST. COMPLETION CERTIFICATE WILL NOT BE ISSUED IF THE ABOVE IS NOT ADHERED TO.
- 8) ALL EXPOSED CONCRETE EDGES TO HAVE A 25mm CHAMFER.
- 9) REMOVAL OF PROPS TANK ROOF SLAB: 21 DAYS
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- 12) CUT- & FILL BANKS MUST BE PROTECTED AGAINST EROSION BY COVERING WITH HESSIAN SHEETS, USE OF SACK GABIONS OR PLANTING OF VEGETATION.
- 13) 3 ROWSILLATION FENCE TO BE INSTALLED ALONG BOUNDARY AS SHOWN.


NO.	REVISION	APP.	DATE



**J. A. NEL & Associates**  
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PO BOX 1408, BALLITO, 4420  
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DRAWN:	M. STEENKAMP - 079 886 7957	DATE:	2021/02/17
APPROVED:		DATE:	

CLIENT  
**HOUSE SMITH**

PROJECT  
**PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH**

TITLE  
**FINAL STORMWATER LAYOUT**

SCALE: AS SHOWN

DRAWING No: **B21014/40/02**



**SITE DATA**

Client:	HOUSE SMITH
Site Address:	ERF 987, ELALENI ESTATE
Site Coordinates:	29°28'40.4"S 31°15'03.3"E
Site Area:	1011 m <sup>2</sup>

**RAINFALL CALCULATION**

Catchment Area (A):	348 m <sup>2</sup>
Longest Watercourse (L):	35 m
Average Slope Pre-Dev (S.pre):	0.16 9.1°
Average Slope Post-Dev (S.pst):	0.01 0.6°
Overland Surface Factor (r):	0.02
Total Runoff Coefficient Pre-Dev (C.pre):	0.65
Total Runoff Coefficient Post-Dev (C.pst):	0.95
Time of Concentration - Overland (Tc):	2 min.
Time of Concentration - Defined (Tc):	2 min.
Time of Concentration - Used (Tc):	15 min. (Tc = 15 min. minimum)
Storm Duration (Td):	15 min.
Storage Time (Tx):	0:36 hh:mm
Thunder Days (R):	60 d/y
2-Year return period rainfall (M):	70 mm (from DRE.SA software or TR102)

Return Period (T):	10	50	year
Point Rainfall (Pt):	44	69	mm
Rainfall Intensity (I):	178	275	mm/hour
Runoff Calculation Pre-Dev (Q.pre):	0.011	0.017 m <sup>3</sup> /s	(target outflow)
Runoff Calculation Post-Dev (Q.pst):	0.016	0.025 m <sup>3</sup> /s	(tank inflow)

**ATTENUATION TANK INLET PIPE**

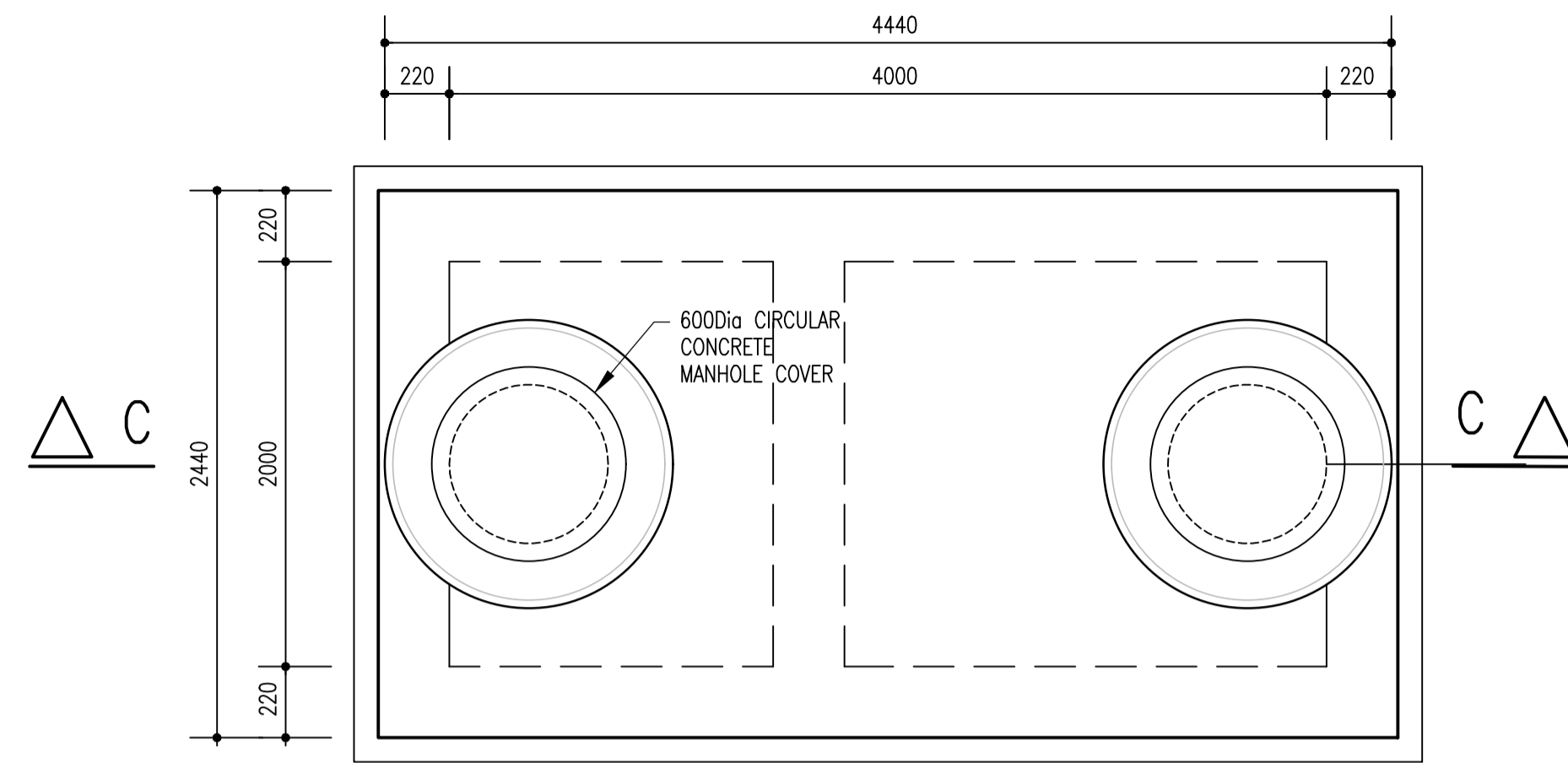
Peak Flow Req. (QP):	0.025 m <sup>3</sup> /s (1:50 year Post-Dev)
Pipe Diameter (D):	200 mm
Manning (n):	0.010
Full Area (A):	0.031 m <sup>2</sup>
Partial Full (%):	60%
Depth of Flow (d):	120 mm
Angle of Flow (θ):	3.544
Area of Flow (a):	0.020 m <sup>2</sup>
Wetted Perimeter (P):	0.354 m
Hydraulic Radius (R):	0.056 m
Flow Velocity (V):	1.456 m/s
Flow Rate (Q):	0.029 m <sup>3</sup> /s <b>OK</b>

**ATTENUATION TANK SIZE**

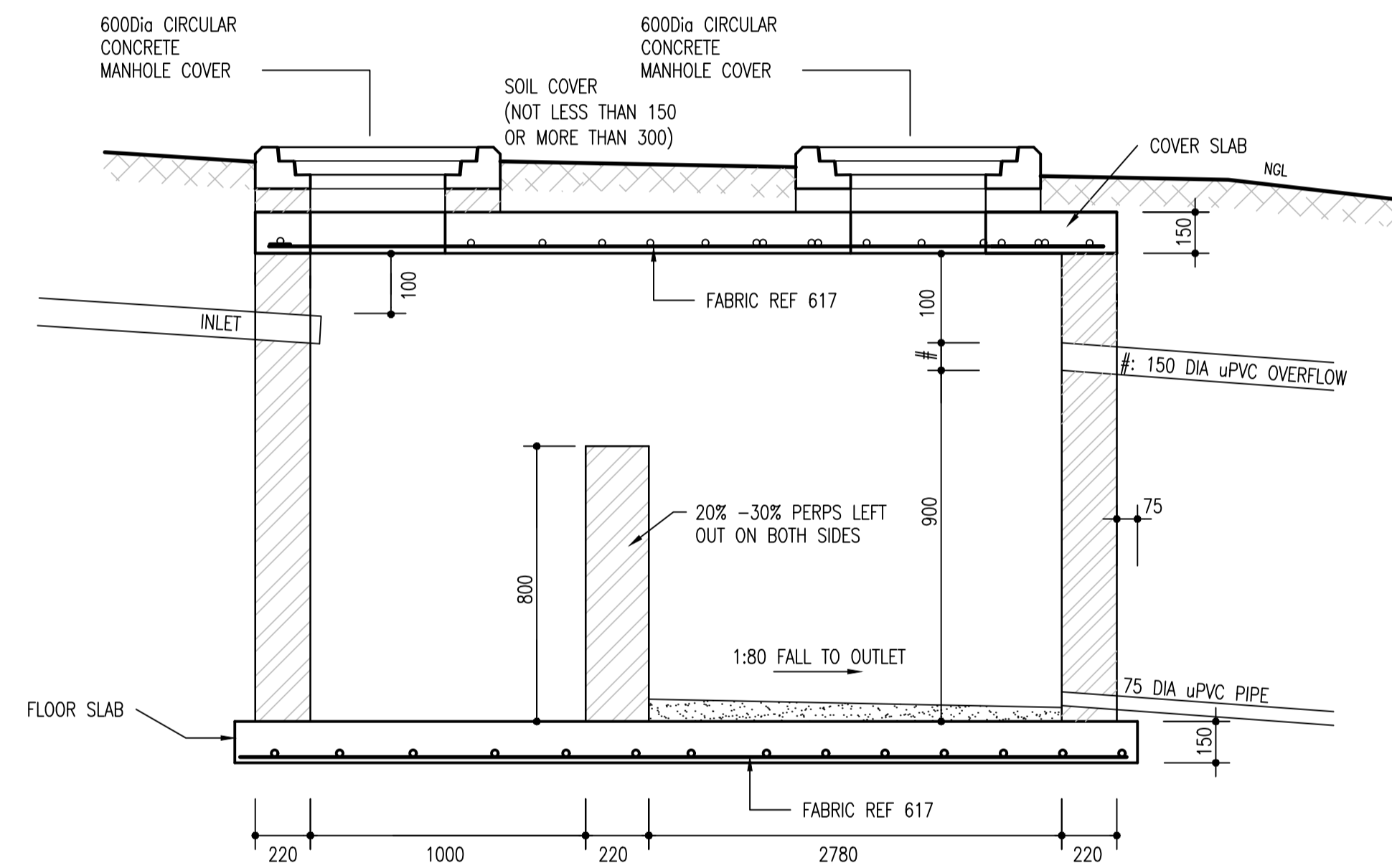
Catchment Area (A):	0.0348 ha
K1:	49
K2:	17
K3:	51
T.max:	22 min.
T.limit:	24 min.
T.critical:	22 min.
Required Attenuation Volume (Vt):	7.762 m <sup>3</sup>
Attenuation Tank Depth:	1.000 m
Attenuation Tank Width:	2.000 m
Attenuation Tank Length:	4.000 m
Attenuation Tank Volume:	8.000 m <sup>3</sup> <b>3.882 OK</b>

**ATTENUATION TANK OUTLET**

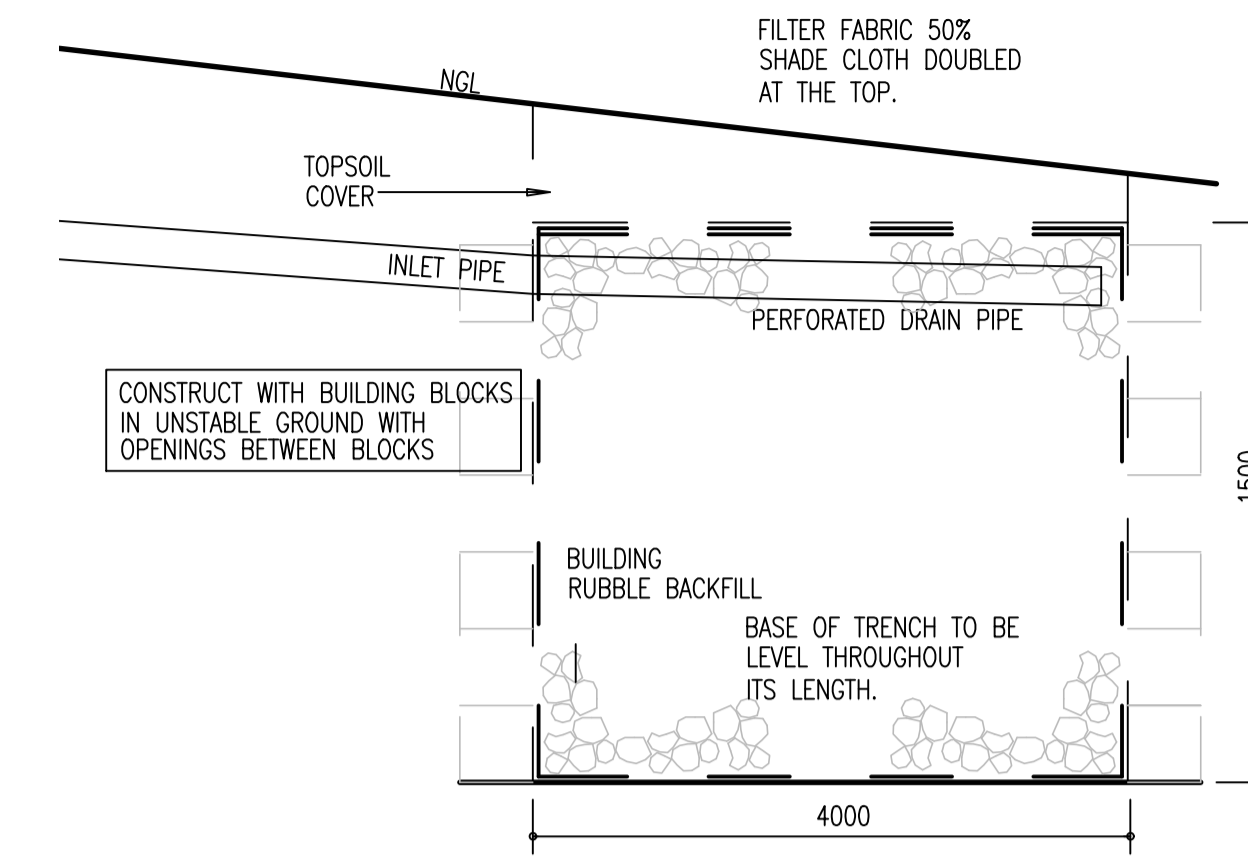
Bottom Outlet Pipe Diameter:	75 mm
Bottom Outlet Area:	0.004 m <sup>2</sup>
Outlet Coefficient:	0.60
Blockage Factor:	1.00
Depth of Bot. Outlet:	0.900 m
Bottom Outflow (QBOT):	0.011 m <sup>3</sup> /s < 1:10 pre: 0.011
Overflow Outlet Diameter:	150 mm
Overflow Outlet Area:	0.018 m <sup>2</sup>
Outlet Coefficient:	0.60
Blockage Factor:	1.00
Depth of Overflow Outlet:	0.100 m
OVERFLOW OUTFLOW (QTOP):	0.015 m <sup>3</sup> /s < 1:50 pre: 0.017
TOTAL OUTFLOW (QOUT):	0.026 m <sup>3</sup> /s > 0.017 m <sup>3</sup> /s <b>OK</b>



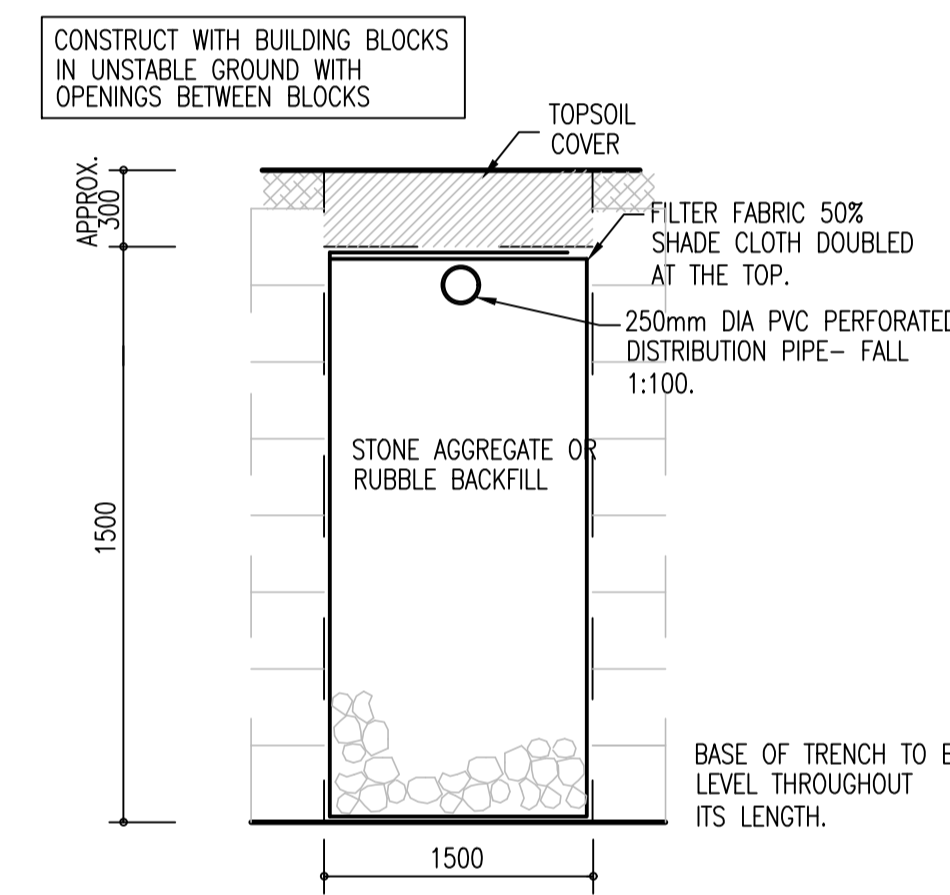
PLAN: 9.2m<sup>3</sup> STORMWATER ATTENUATION TANK  
NTS



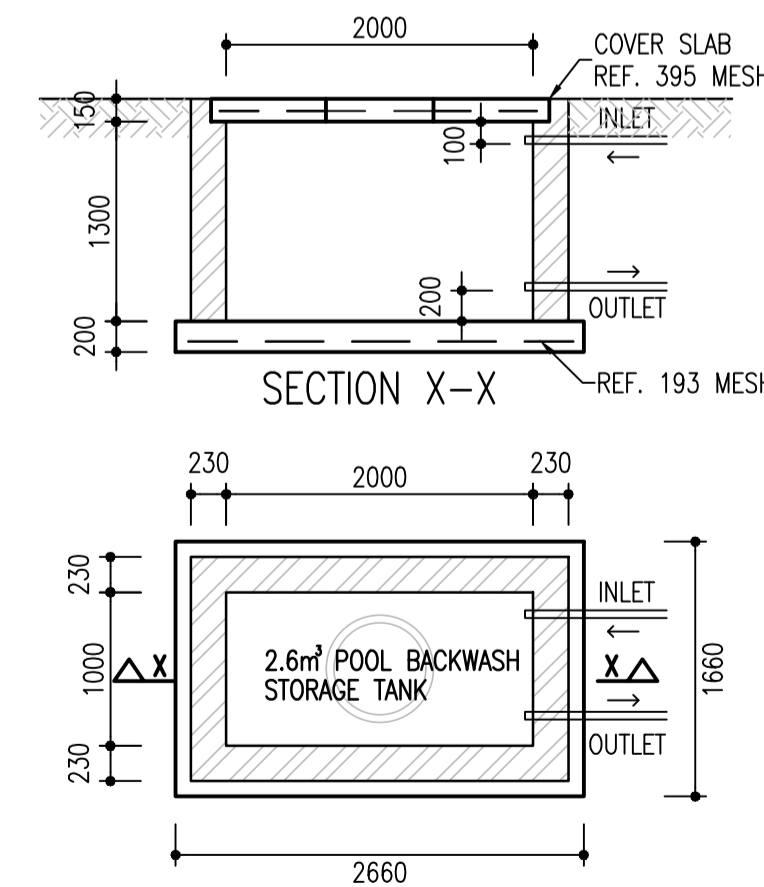
SECTION C-C  
NTS



SECTION: 9m<sup>3</sup> STORMWATER SOAK PIT  
NTS



TYPICAL SECTION: SOAK PIT  
NTS



2.6m<sup>3</sup> POOL BACKWASH TANK  
1:50

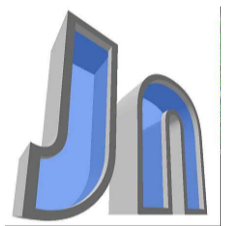
**Elaleni Recycling of Swimming Pool Backwash.**

- Pool backwash water shall be discharged into backwash storage tank on site and is not permitted to be discharged into the estates sewer/stormwater systems.
- When the pool is backwashed the water from the backwash will be collected in the tank. The backwash tank will require an outlet that is set 200mm above the bottom of the tank.
- Once the backwash water has been collected approximately 100 milliliters of a flocculent agent, such as Alum powder, is to be placed in the backwash tank.
- After 24 hours, when all sediment within the tank will have settled in the bottom of the tank, the water within the tank can be fed back into the swimming pool. The amount of flocculent required will be pool dependent and will initially need to be monitored and adjusted for each pool by a pool specialist.
- The backwash tank needs to be cleaned every six months.

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DRAWN: M. STEENKAMP - 079 886 7957 DATE: 2021/02/17

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CLIENT  
**HOUSE SMITH**

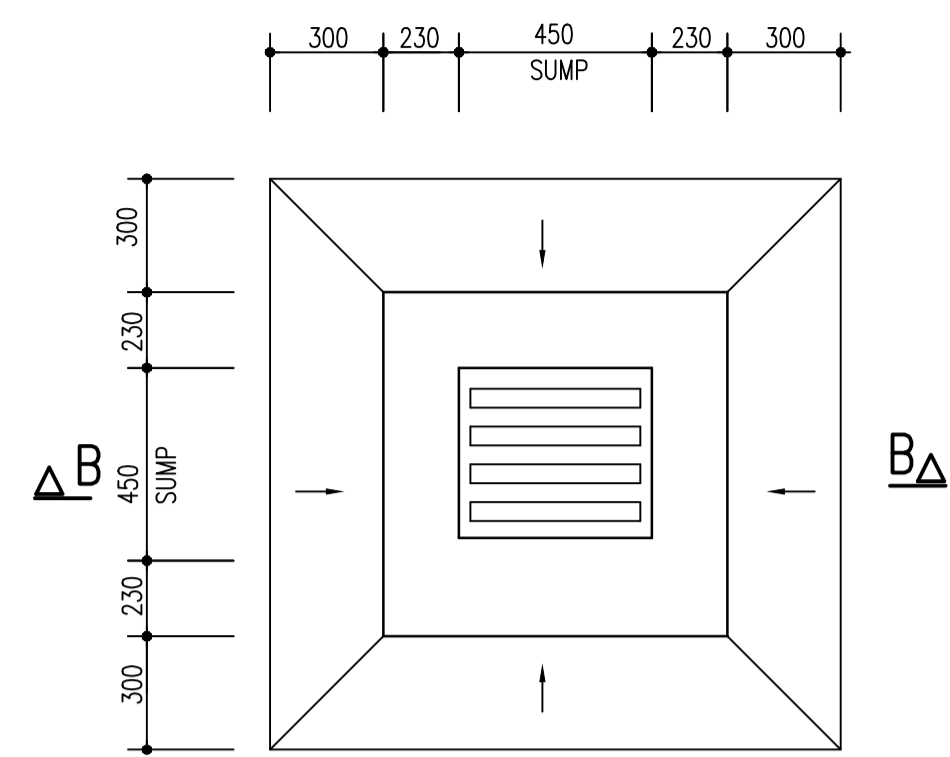
PROJECT  
**PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH**

TITLE  
**FINAL STORMWATER DETAILS**

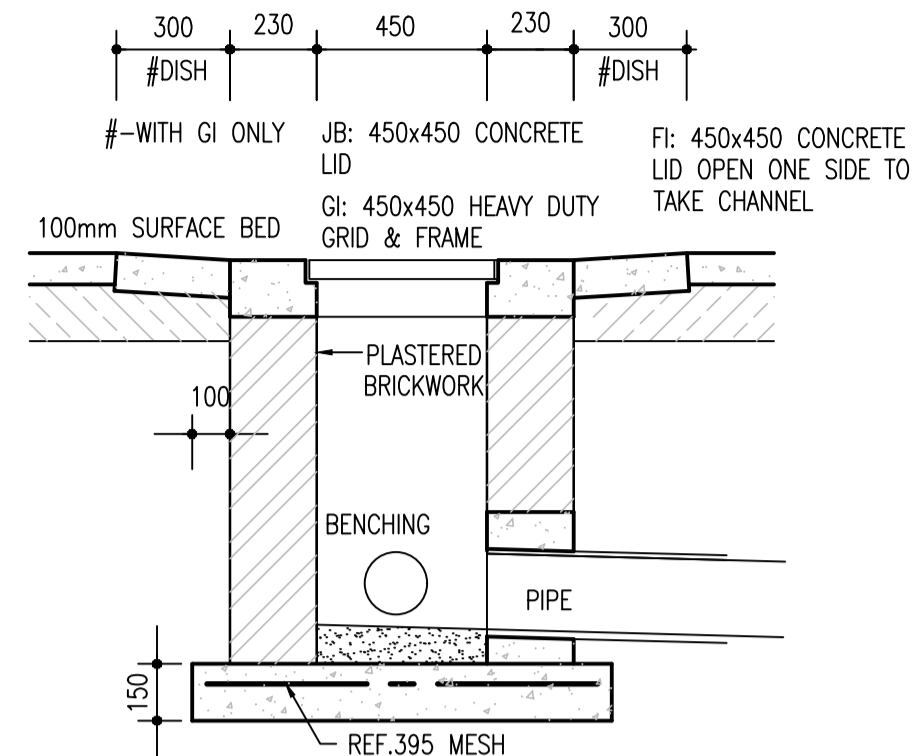
SCALE: AS SHOWN

DRAWING No: B21014/40/03

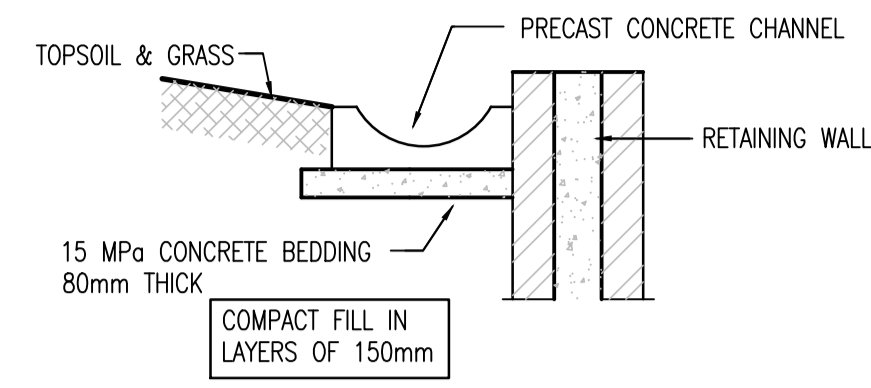




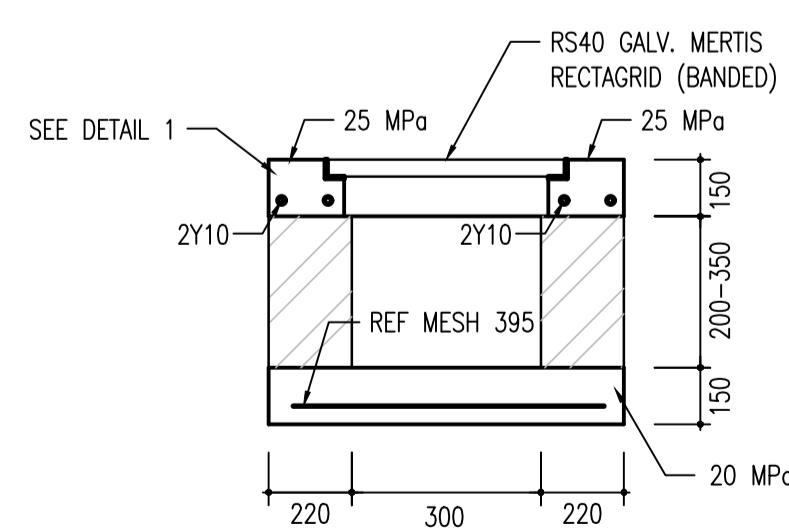
PLAN: GRID INLET (GI)  
JUNCTION BOX (JB)  
FIELD INLET (FI)  
450 x 450 SUMP  
1:20



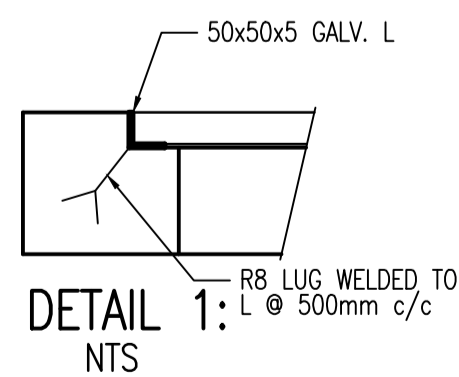
SECTION B-B  
1:20



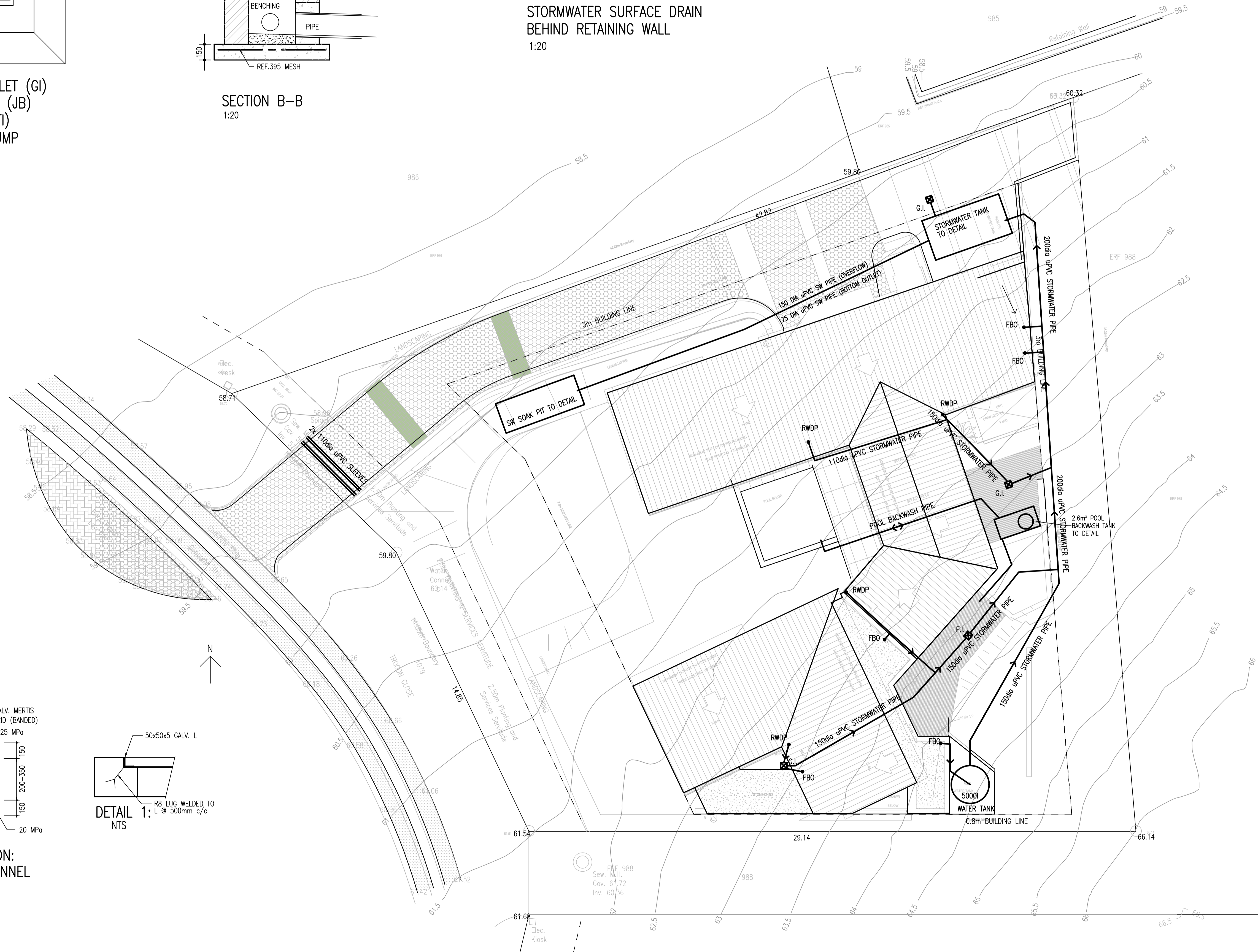
TYPICAL CROSS SECTION THROUGH  
STORMWATER SURFACE DRAIN  
BEHIND RETAINING WALL  
1:20



TYPICAL SECTION:  
GRID INLET CHANNEL  
NTS



DETAIL 1:  
NTS



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DRAWN:	M. STEENKAMP - 079 886 7957	DATE:	2021/05/18
APPROVED:	_____	DATE:	_____

CLIENT  
HOUSE SMITH

PROJECT  
PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH

TITLE  
FINAL STORMWATER LAYOUT

SCALE: AS SHOWN  
DRAWING No: B21014/40/02 - REV.1

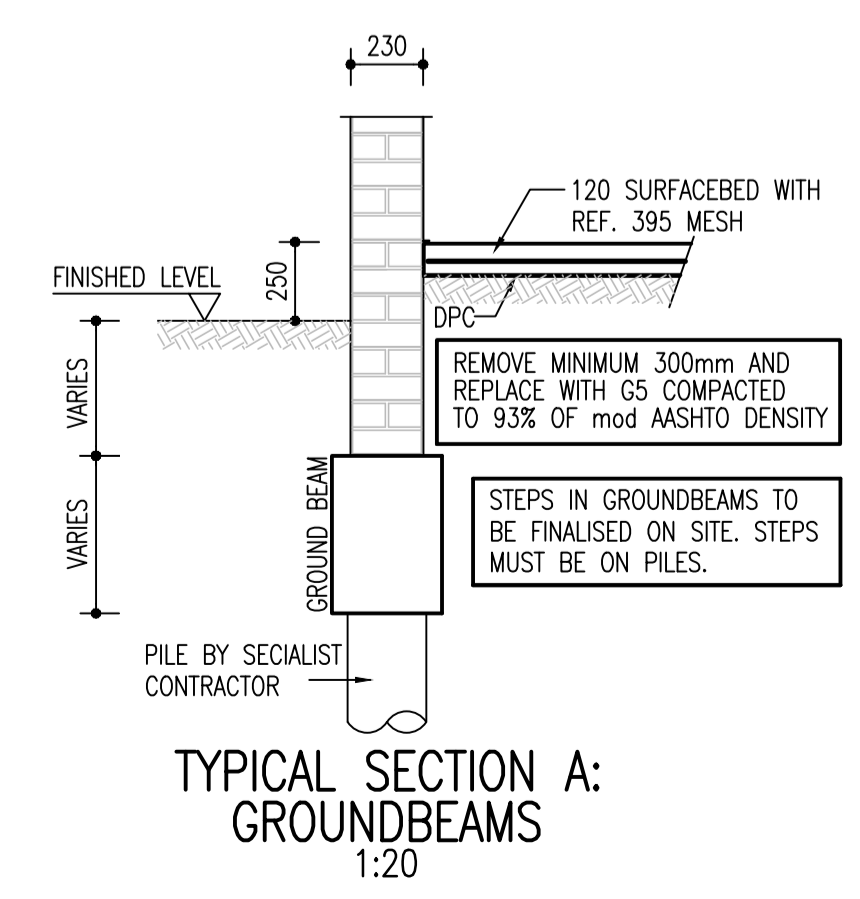




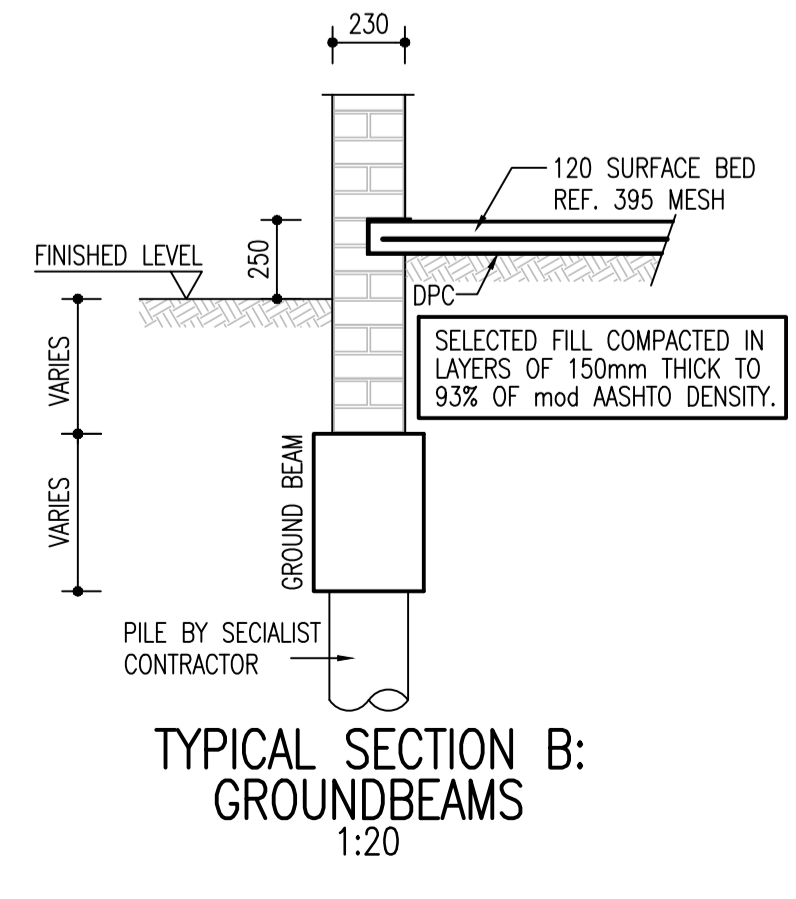
LOWER PILING LAYOUT  
1:50



CONCRETE DETAILS:  
LOWER GROUND BEAMS  
1:50



TYPICAL SECTION A:  
GROUND BEAMS  
1:20

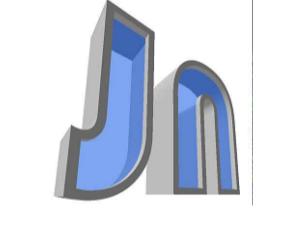


TYPICAL SECTION B:  
GROUND BEAMS  
1:20

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EXTERIOR:  
COLUMNS, BEAMS & SLABS: 40mm  
INTERIOR:  
COLUMNS, BEAMS & SLABS: 30mm
- 6) CONCRETE STRENGTH: BASES, BEAMS & SLABS: 25MPa.  
STRIP FOOTINGS: 20MPa  
COLUMNS: 30MPa
- 7) SUSPENDED SLABS ARE DESIGNED FOR A MAXIMUM UNIFORMLY DISTRIBUTED IMPOSED LOAD OF 1.5kN/sq.m.
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APPROVED: \_\_\_\_\_      DATE: \_\_\_\_\_

CLIENT  
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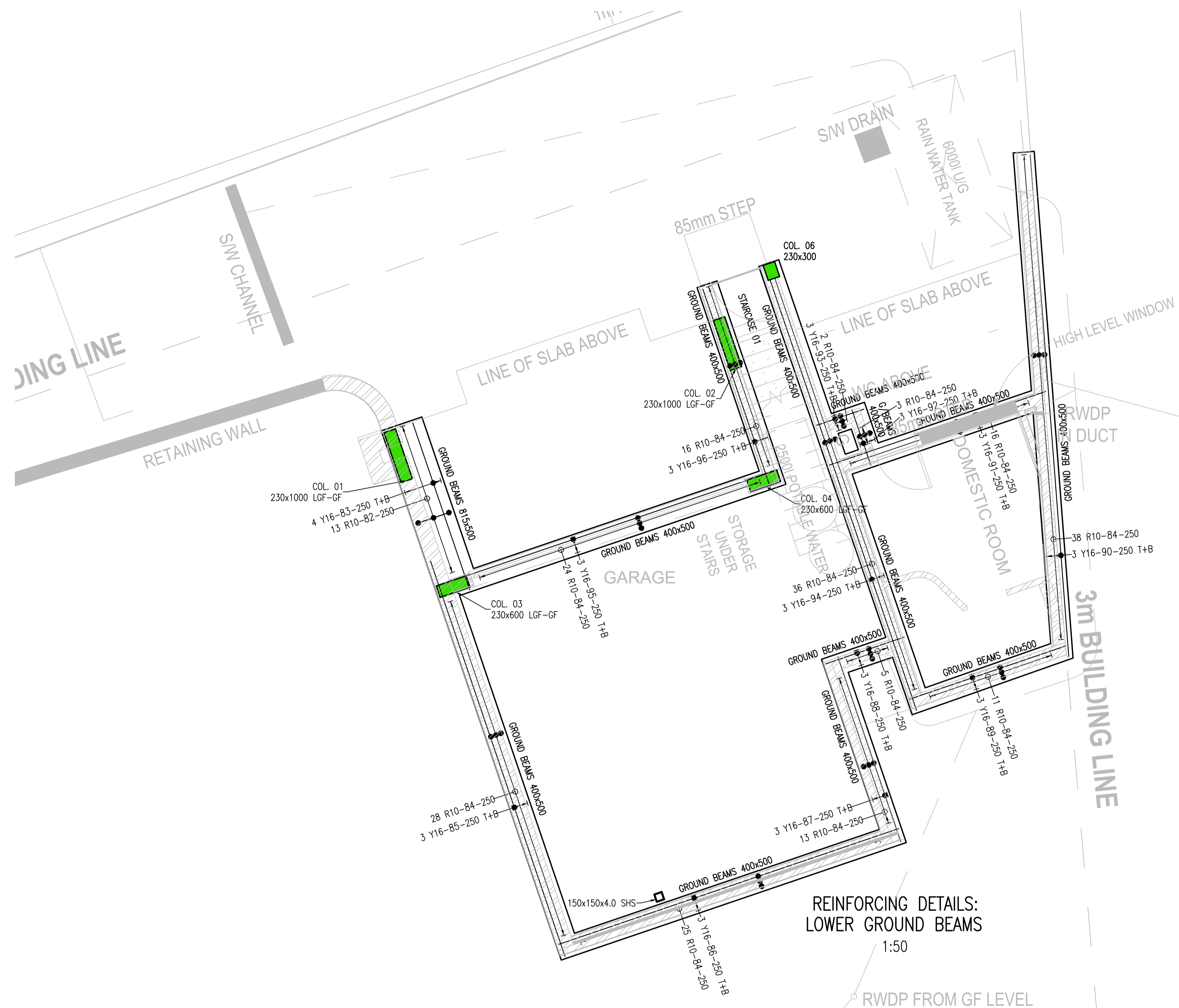
PROJECT  
**PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH**

TITLE  
**CONCRETE DETAILS:  
LOWER PILE AND  
GROUND BEAM LAYOUT**

SCALE: AS SHOWN

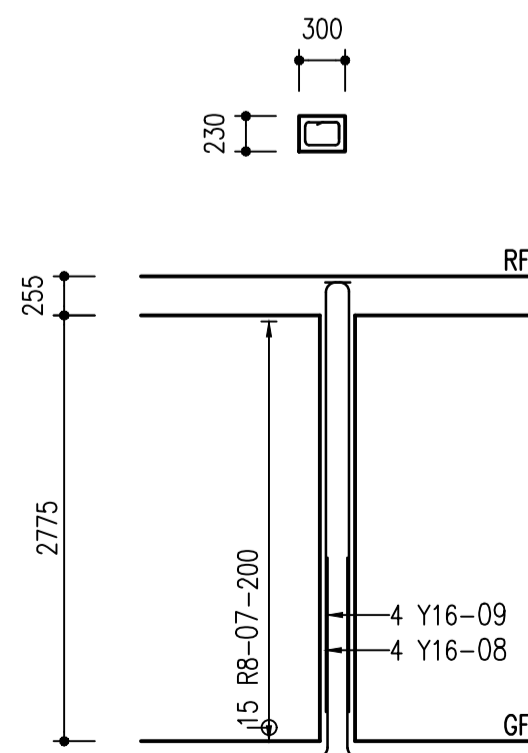
DRAWING No: **B21014/90/01 REV 1**



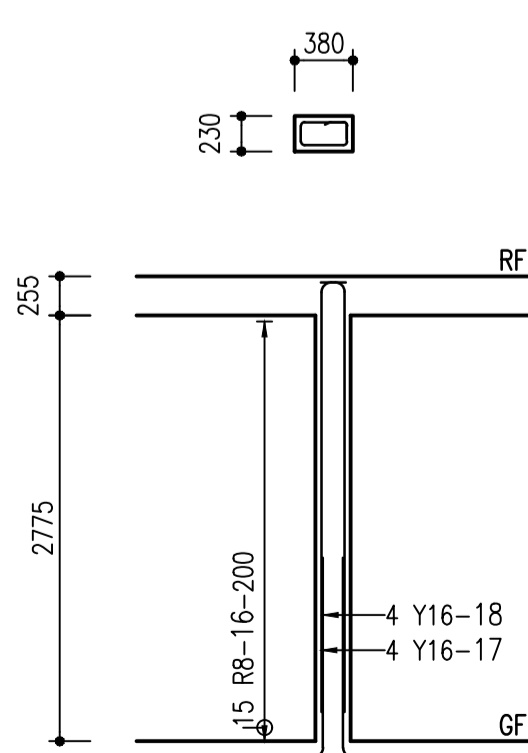


REINFORCING DETAILS:  
LOWER GROUND BEAMS  
1:50

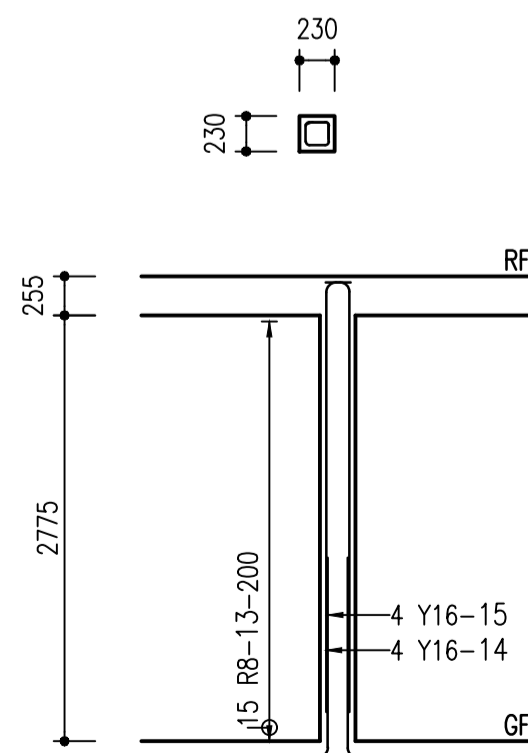
RWDP FROM GF LEVEL



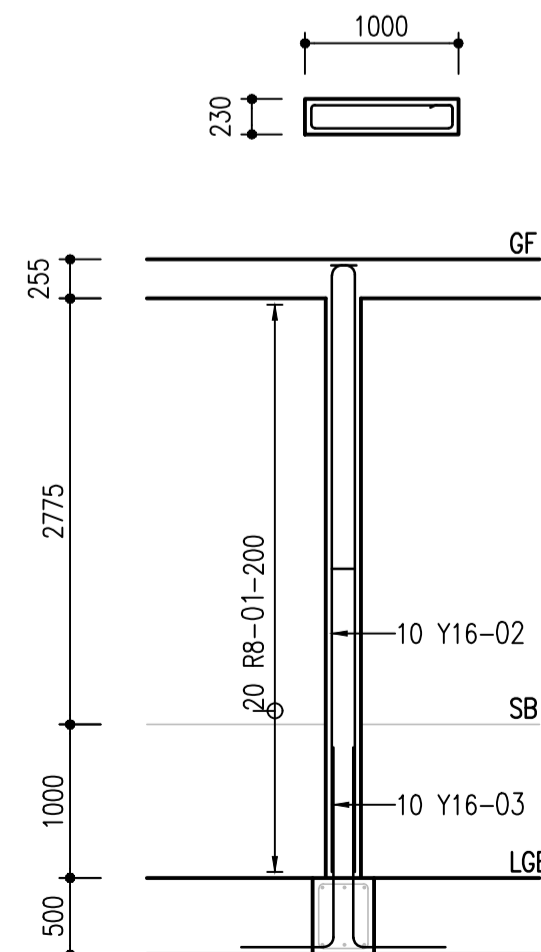
COLUMN 05:  
230x300  
1:50



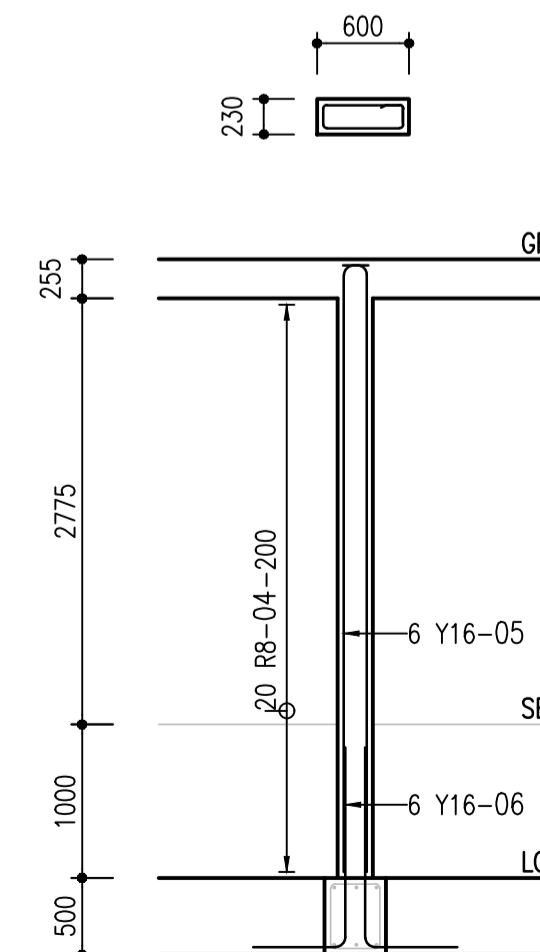
COLUMN 08:  
230x380  
1:50



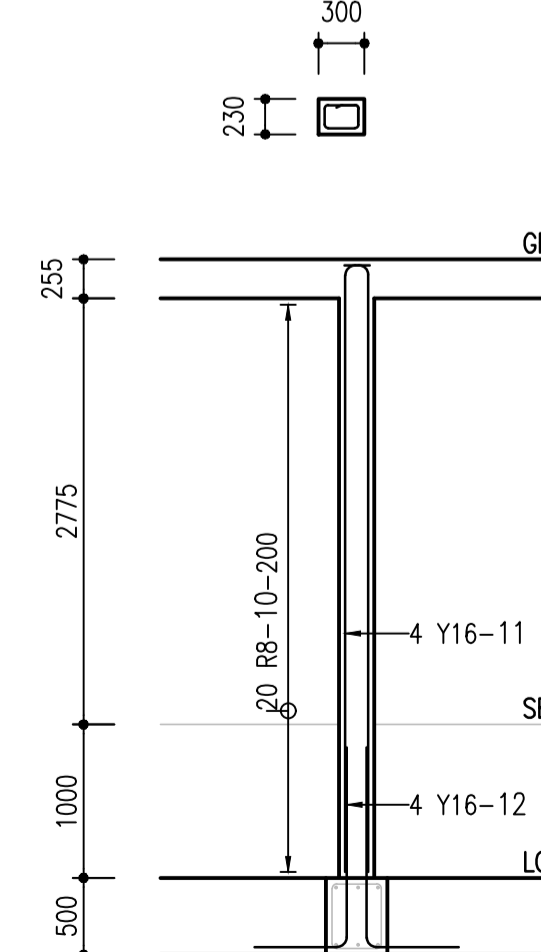
COLUMN 07,09,10:  
230x230  
1:50



COLUMN 01, 02:  
230x1000  
1:50



COLUMN 03, 04:  
230x600  
1:50



COLUMN 06:  
230x300  
1:50

NOTES

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NO.	REVISION	APP.	DATE



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DRAWN: M. STEENKAMP - 079 886 7957 DATE: 2021/05/18

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CLIENT  
HOUSE SMITH

PROJECT  
PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH

TITLE  
REINFORCING DETAILS:  
LOWER GROUND BEAM LAYOUT

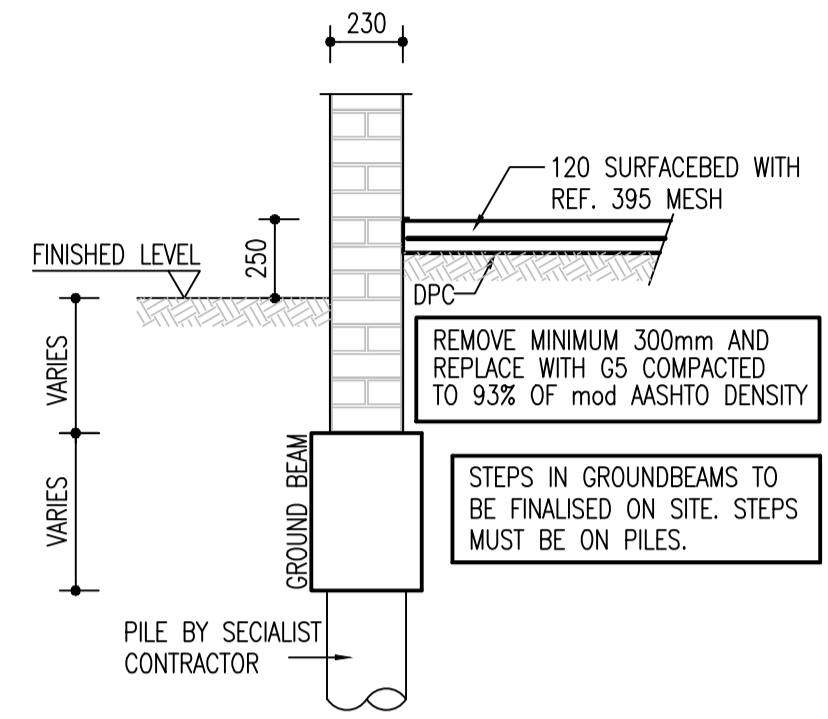
SCALE: AS SHOWN

DRAWING No: B21014/90/01R REV 1

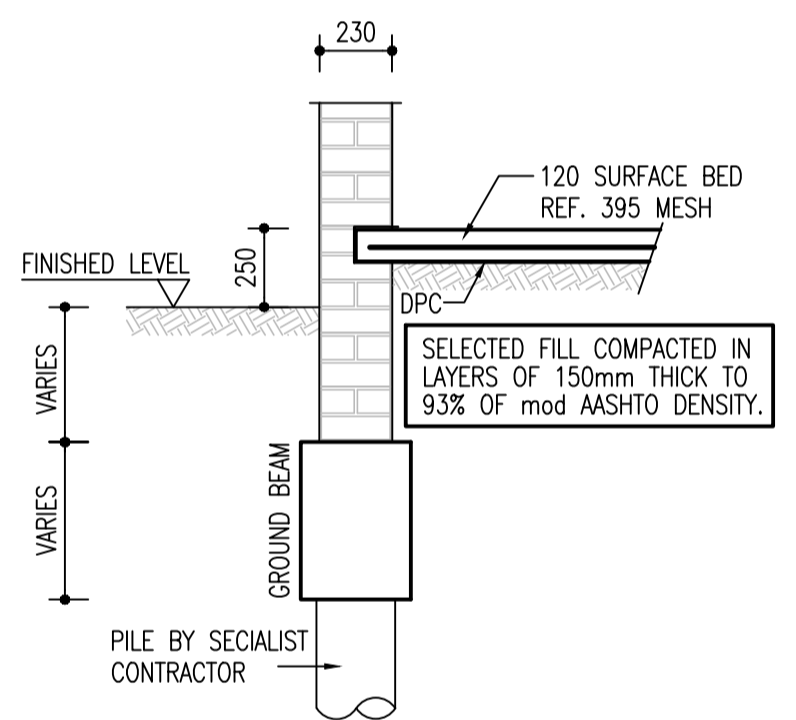




UPPER PILING LAYOUT  
1:50



TYPICAL SECTION A:  
GROUND BEAMS  
1:20



TYPICAL SECTION B:  
GROUND BEAMS  
1:20

- NOTES**
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  - 3) ALL WORK TO BE IN TERMS OF THE LATEST APPLICABLE SANS 082, 0400, 1200 & 0164 SPECIFICATIONS & LOCAL BY-LAWS.
  - 4) DO NOT SCALE OFF THIS DRAWING.
  - 5) COVER TO REINFORCEMENT: BASES: 50mm  
EXTERIOR:  
COLUMNS, BEAMS & SLABS: 40mm  
INTERIOR:  
COLUMNS, BEAMS & SLABS: 30mm
  - 6) CONCRETE STRENGTH: BASES, BEAMS & SLABS: 25MPa.  
STRIP FOOTINGS: 20MPa  
COLUMNS: 30MPa
  - 7) SUSPENDED SLABS ARE DESIGNED FOR A MAXIMUM UNIFORMLY DISTRIBUTED IMPOSED LOAD OF 1.5KN/sq.m.
  - 8) LOAD BEARING BRICKWORK TO HAVE A MINIMUM CHARACTERISTIC CRUSHING STRENGTH OF 14MPa.
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  - 11) REMOVAL OF PROPS:  
BEAMS & SLABS: 21 DAYS
  - 12) ALL LOAD BEARING WALLS TO BE STRUCK OFF LEVEL WITH A MORTAR BED AND TWO LAYERS OF 3-PLY MALTHOID APPLIED AS A BOND BREAKER.
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NO.	REVISION	APP.	DATE
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**J. A. NEL & Associates**  
CONSULTING CIVIL & STRUCTURAL ENGINEERS

PO BOX 1408, BALLITO, 4420  
TEL: 032 815 2786  
www.janel.co.za

DRAWN:	M. STEENKAMP - 079 886 7957	DATE:	2021/05/18
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APPROVED:		DATE:	
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CLIENT  
**HOUSE SMITH**

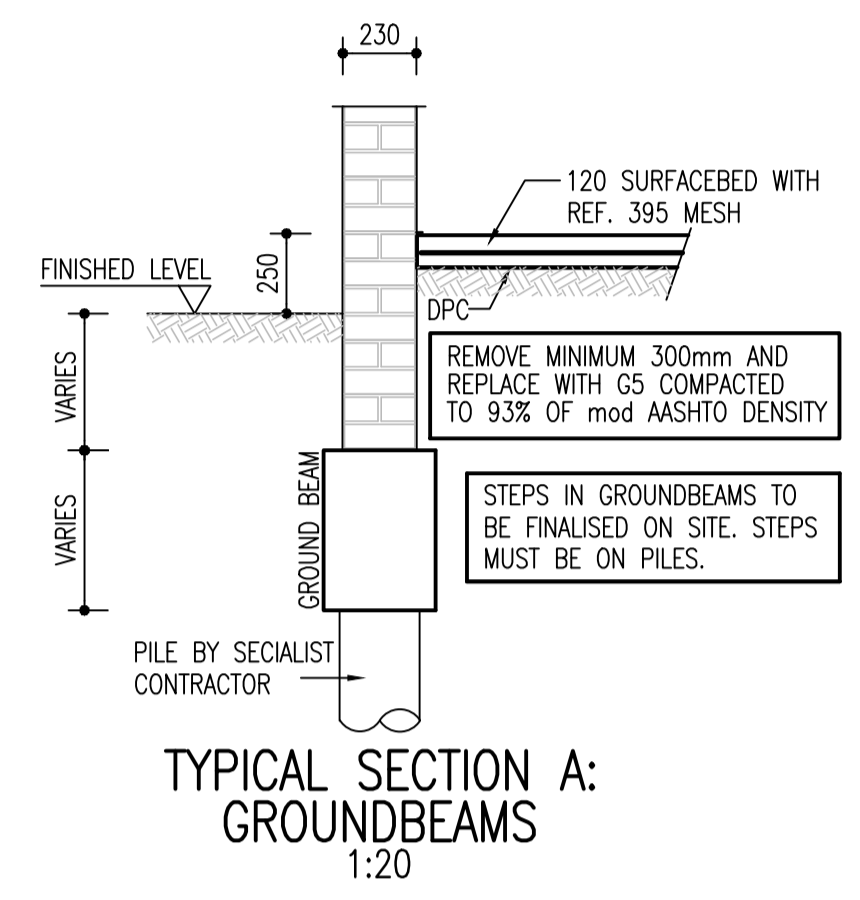
PROJECT  
**PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH**

TITLE  
**UPPER PILE LAYOUT**

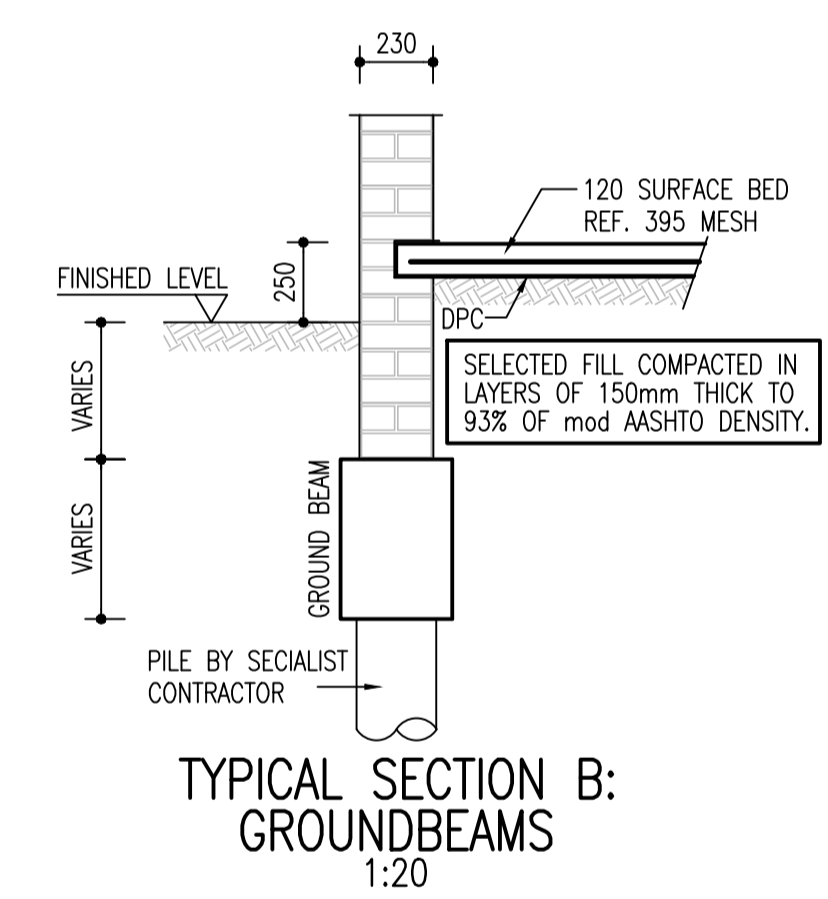
SCALE: AS SHOWN

DRAWING No: **B21014/90/02 REV.1**





TYPICAL SECTION A:  
GROUND BEAMS  
1:20



TYPICAL SECTION B:  
GROUND BEAMS  
1:20

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NO.	REVISION	APP.	DATE

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DRAWN:	M. STEENKAMP - 079 886 7957	DATE:	2021/05/18
APPROVED:	_____	DATE:	_____

CLIENT  
**HOUSE SMITH**

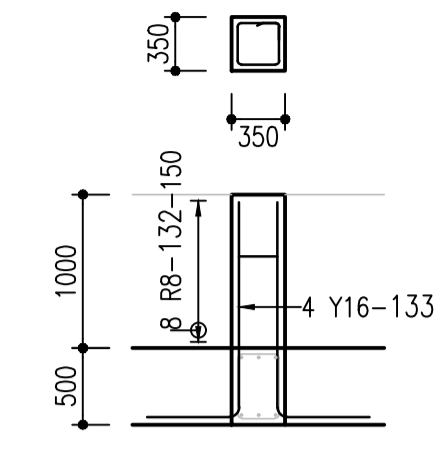
PROJECT  
**PROPOSED NEW DWELLING ON ERF 987, ELALENI ESTATE SHEFFIELD BEACH**

TITLE  
**CONCRETE DETAILS:  
UPPER GROUND BEAM LAYOUT**

SCALE: AS SHOWN  
DRAWING No: **B21014/90/03 REV.1**

CONCRETE DETAILS:  
UPPER GROUND BEAMS  
1:50





STUB COLUMN 01-07:  
350x350  
1:50

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NO.	REVISION	APP.	DATE

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www.jonel.co.za

DRAWN: M. STEENKAMP - 079 886 7957 DATE: 2021/05/18

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

CLIENT  
**HOUSE SMITH**

PROJECT  
**PROPOSED NEW DWELLING ON ERF 987, ELALENI ESTATE SHEFFIELD BEACH**

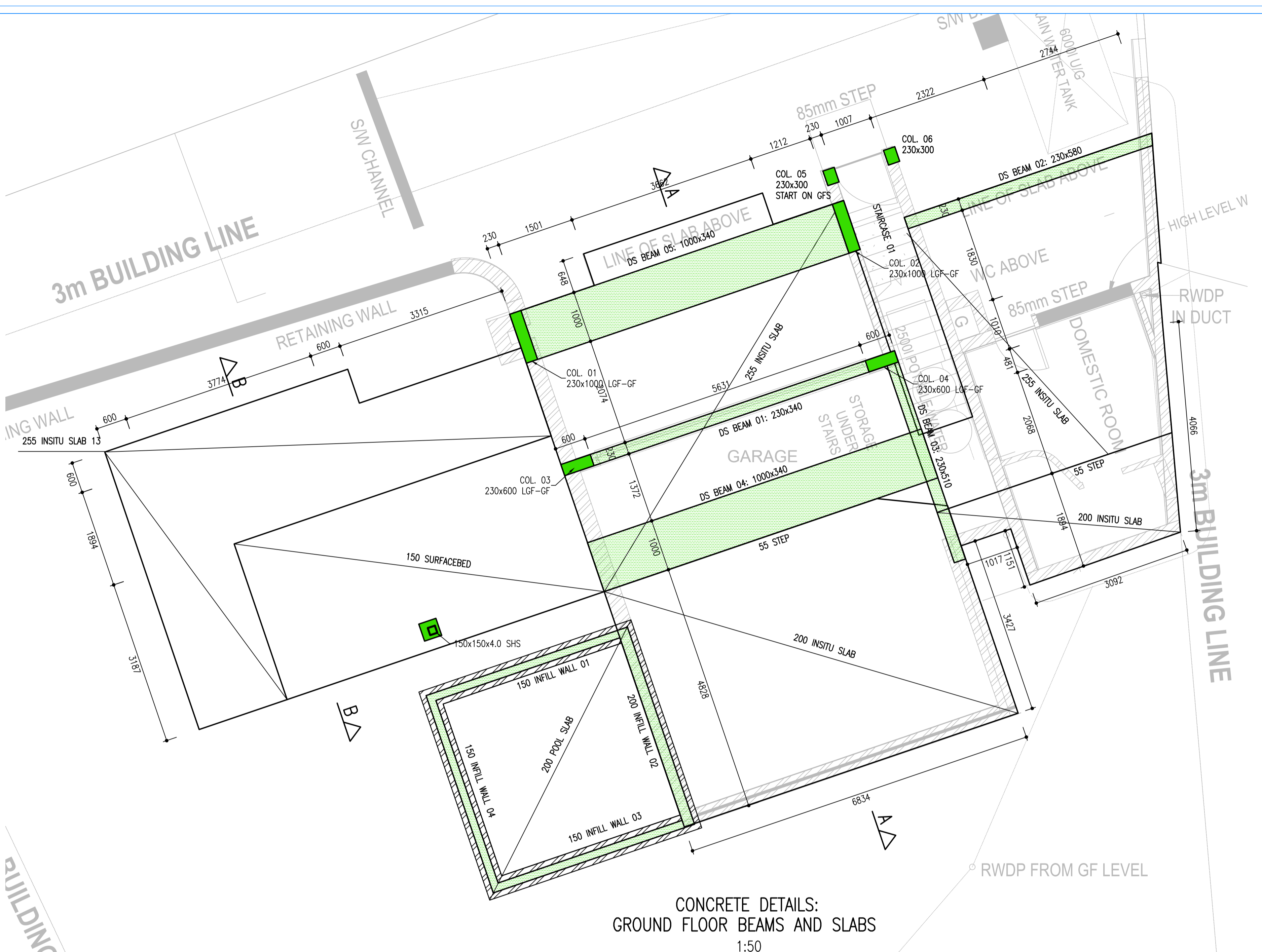
TITLE  
**REINFORCING DETAILS:  
UPPER GROUND BEAM LAYOUT**

SCALE: AS SHOWN

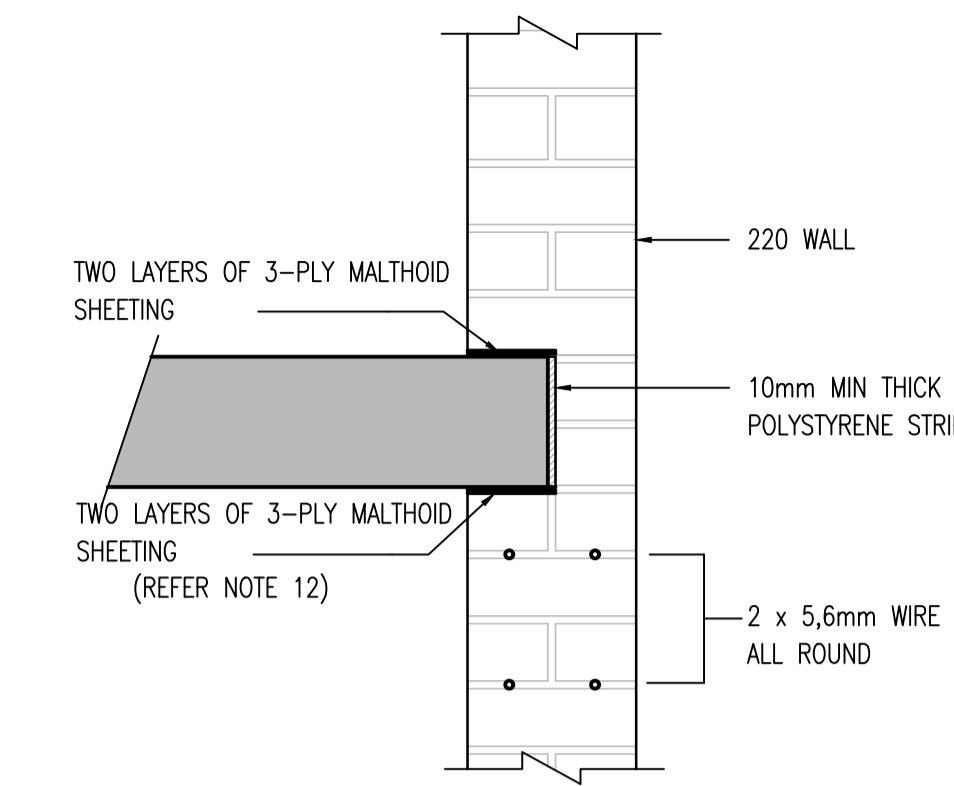
DRAWING No: B21014/90/03R REV.1

29.14m Boundary line  
110 DIA UPVC SEWER PIPE @ MAX FALL 1:3  
TO BE ENCASED IN CONCRETE UNDER DRIVEWAY  
**REINFORCING DETAILS:  
UPPER GROUND BEAMS**  
1:50

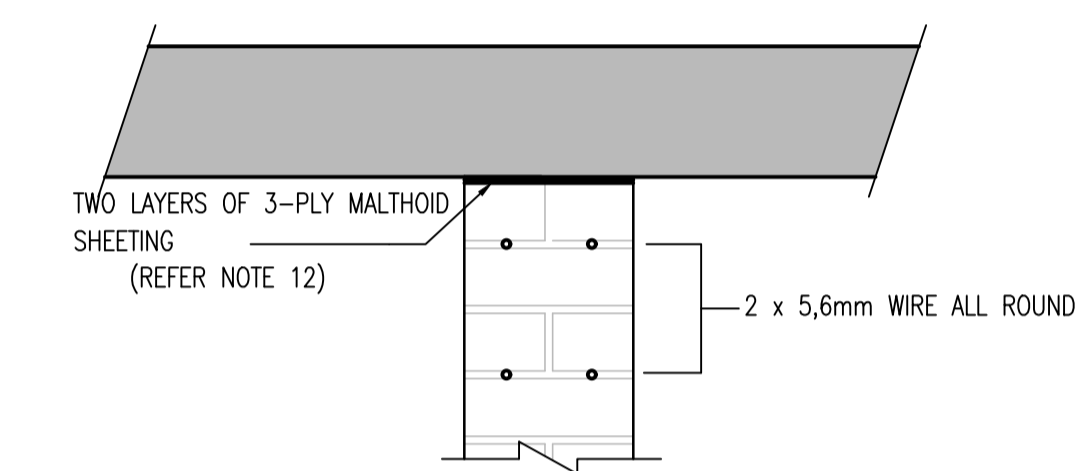




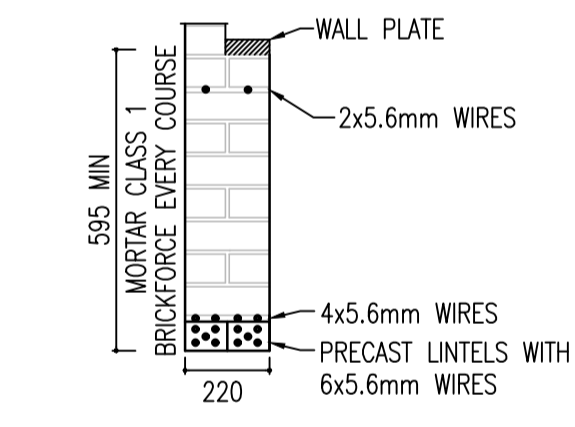
CONCRETE DETAILS:  
GROUND FLOOR BEAMS AND SLABS  
1:50



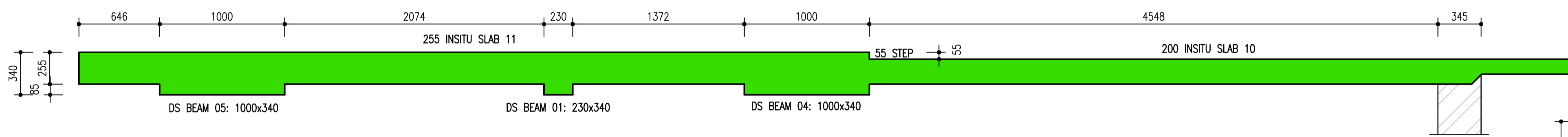
TYPICAL EDGE DETAIL  
1:10



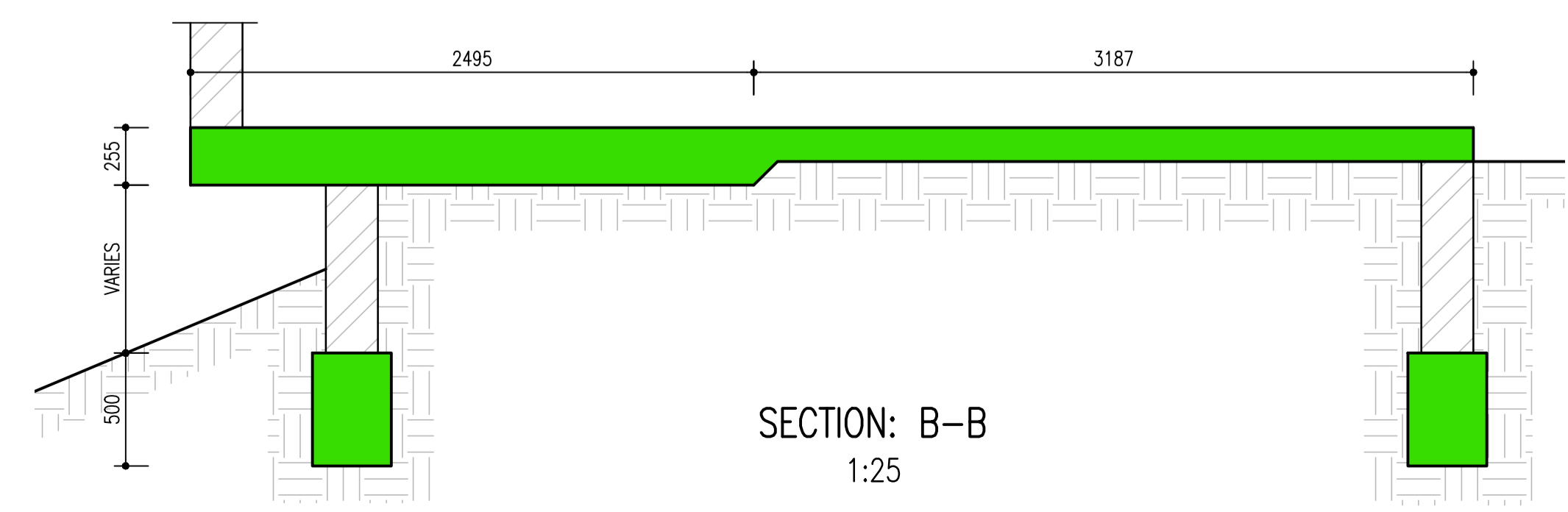
TYPICAL SLIP JOINT  
1:10



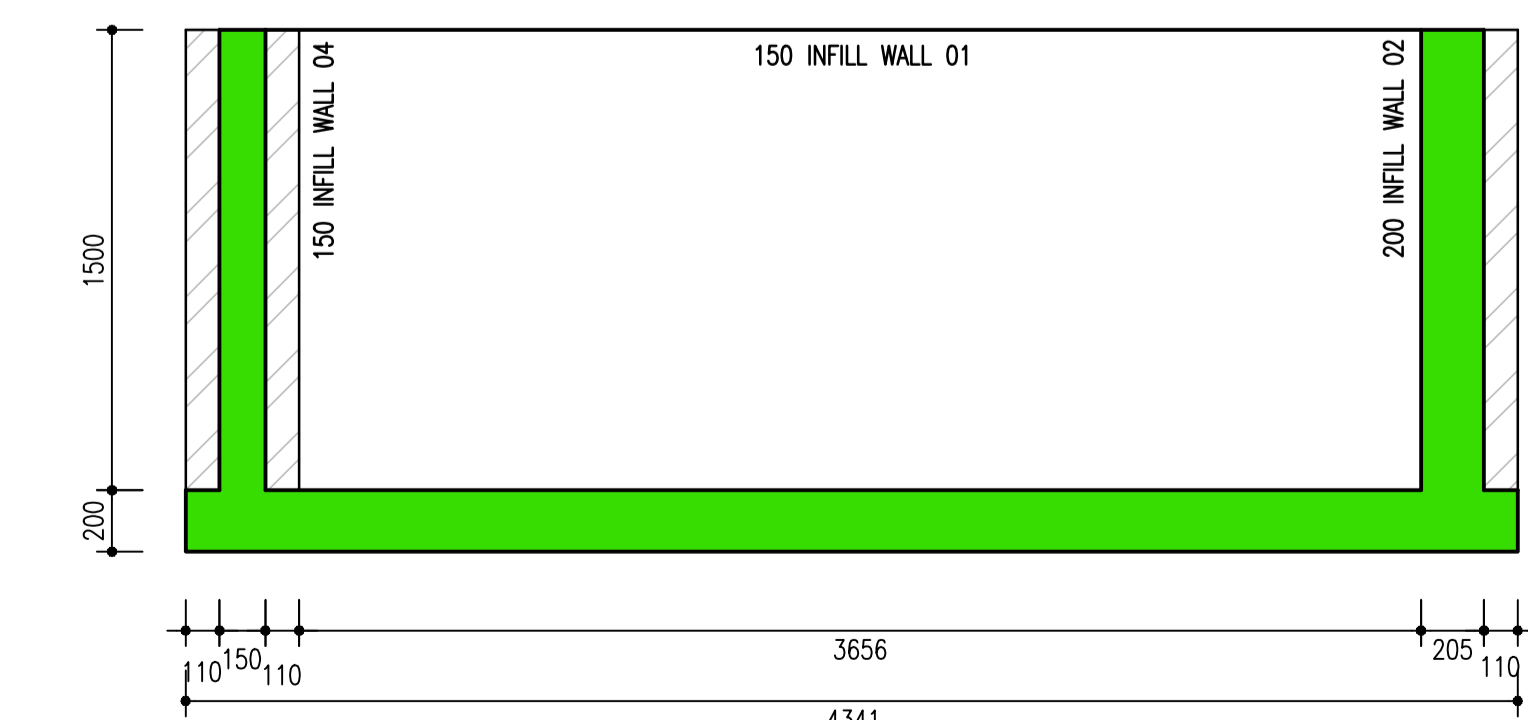
TYPICAL LINTEL DETAIL  
OPENINGS 2.5m TO 3.5m  
1:20



SECTION: A-A  
1:25



SECTION: B-B  
1:25



POOL SECTION  
1:25

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NO.	REVISION	APP.	DATE

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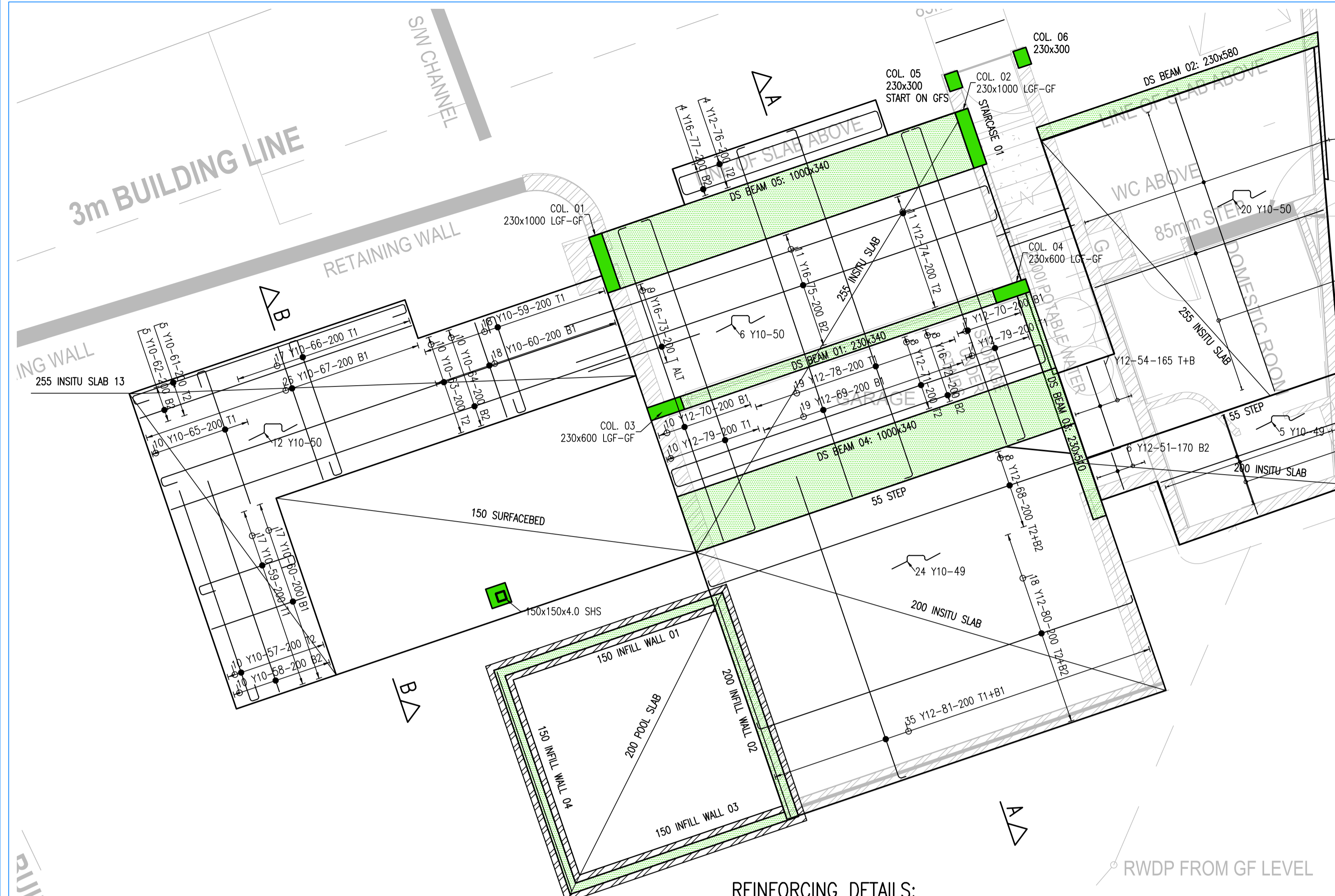
CLIENT  
**HOUSE SMITH**

PROJECT  
**PROPOSED NEW DWELLING ON ERF 987, ELALENI ESTATE SHEFFIELD BEACH**

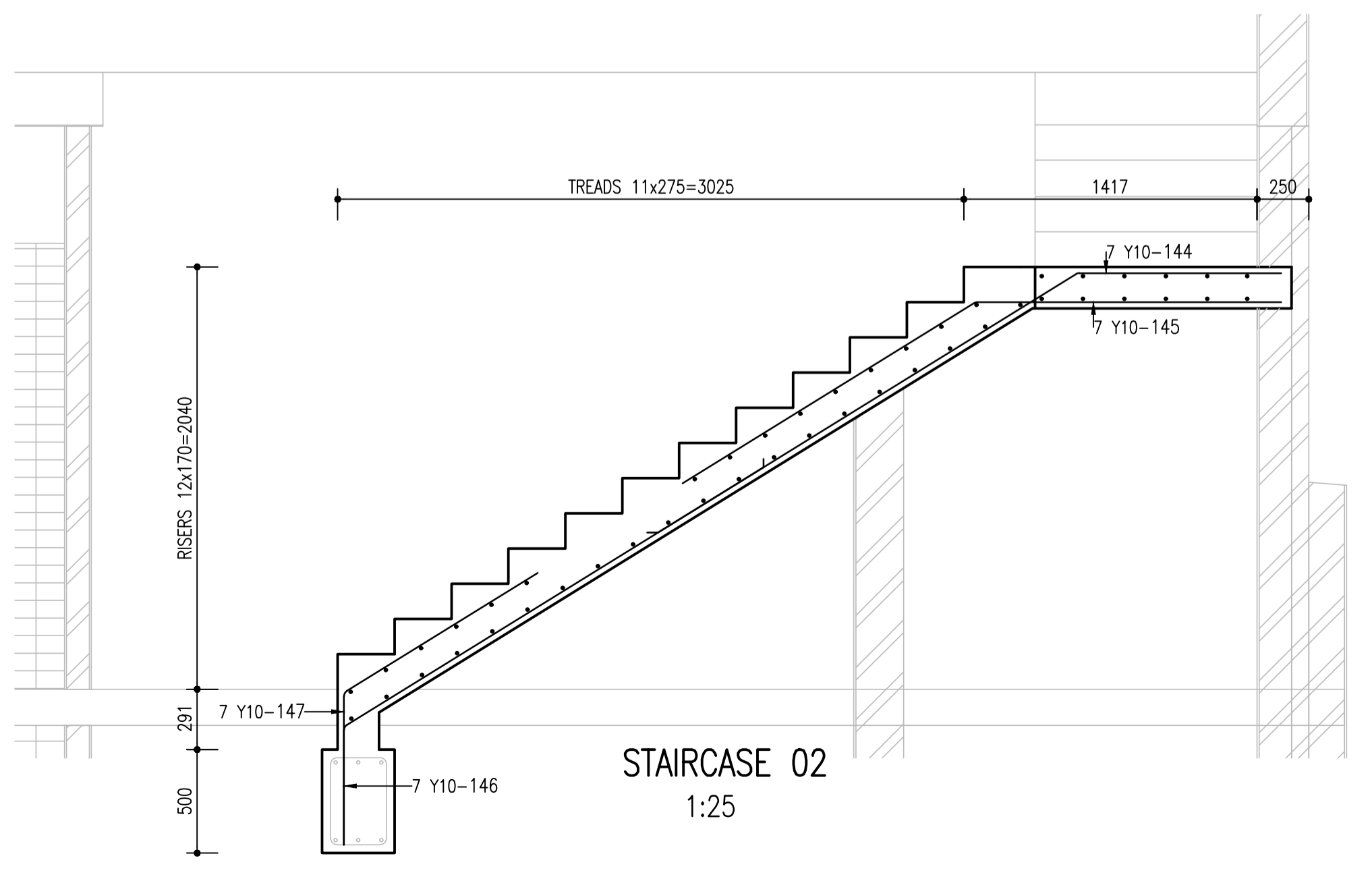
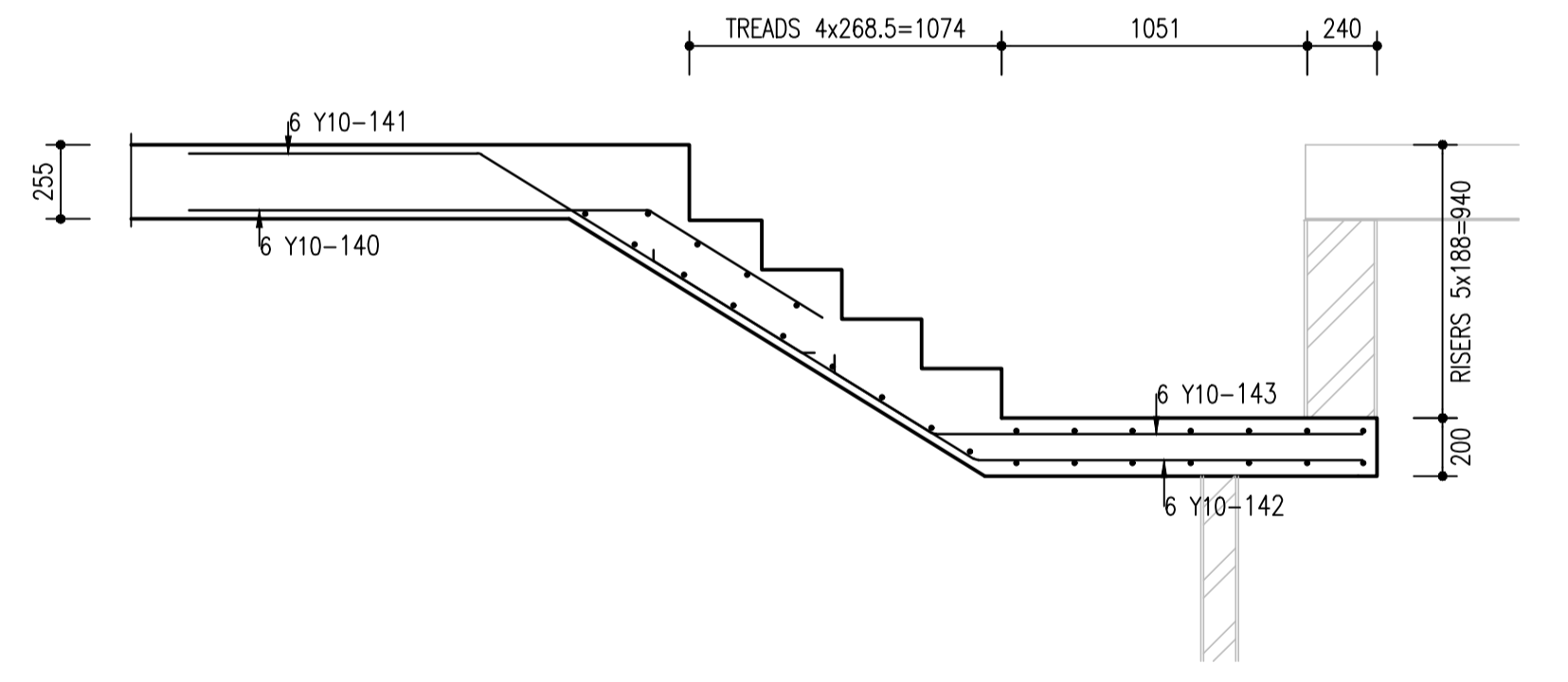
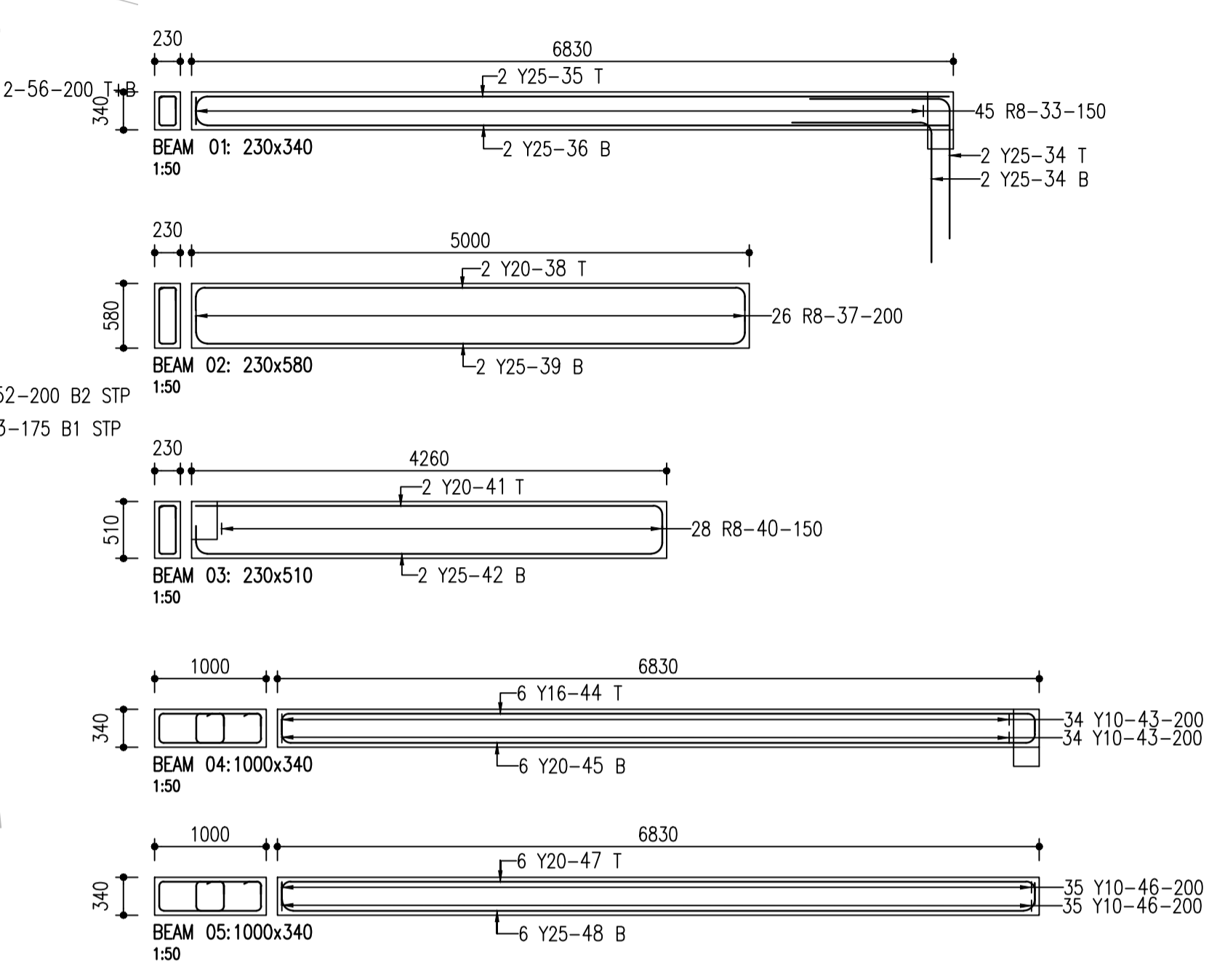
TITLE  
**CONCRETE DETAILS: GROUND FLOOR LAYOUT**

SCALE: AS SHOWN  
DRAWING No: **B21014/90/04 REV.1**

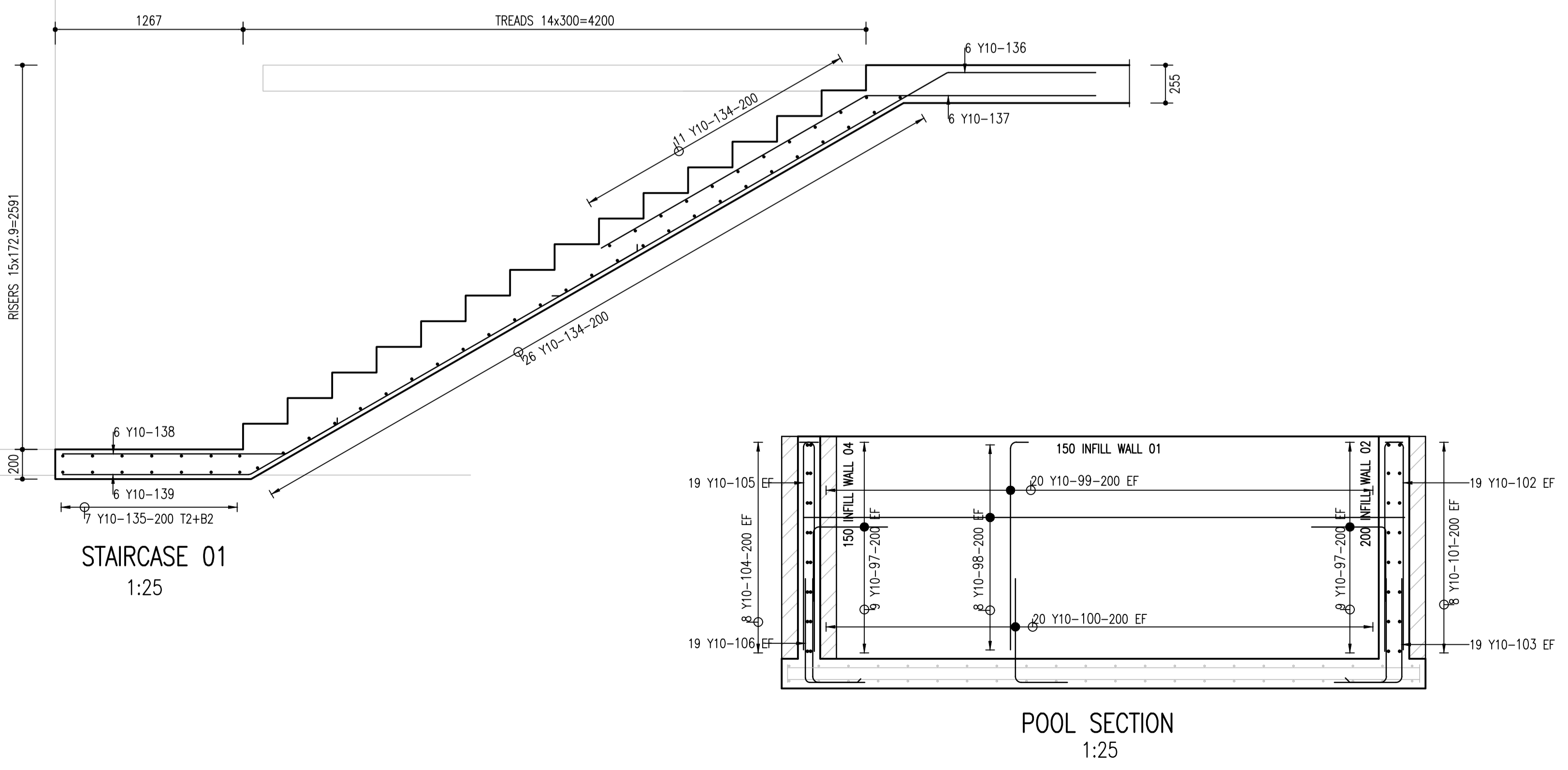




REINFORCING DETAILS:  
GROUND FLOOR BEAMS AND SLABS  
1:50



STAIRCASE 02  
1:25




STAIRCASE 01  
1:25

POOL SECTION  
1:25

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DRAWN: M. STEENKAMP - 079 886 7957      DATE: 2021/05/18

APPROVED: \_\_\_\_\_      DATE: \_\_\_\_\_

CLIENT  
**HOUSE SMITH**

PROJECT  
**PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH**

TITLE  
**REINFORCING DETAILS:  
GROUND FLOOR LAYOUT**

SCALE: AS SHOWN  
DRAWING No: **B21014/90/04R REV.1**



29.14m Boundary line

110 DIA UPVC SEWER PIPE @ MAX FALL 1:3  
TO BE ENCASED IN CONCRETE UNDER DRIVEWAY

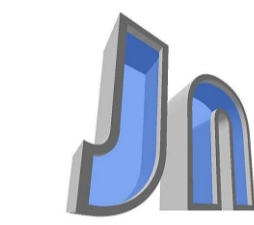
REINFORCING DETAILS:  
ROOF BEAMS AND SLABS  
1:50



**NOTES**

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NO.	REVISION	APP.	DATE



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DRAWN: M. STEENKAMP - 079 886 7957 DATE: 2021/05/18

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CLIENT  
**HOUSE SMITH**

PROJECT  
**PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH**

TITLE  
**REINFORCING DETAILS:  
ROOF SLAB AND BEAM LAYOUT**

SCALE: AS SHOWN

DRAWING No: **B21014/90/05R\_A REV.1**



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CLIENT  
**HOUSE SMITH**

PROJECT  
**PROPOSED NEW DWELLING ON  
ERF 987, ELALENI ESTATE  
SHEFFIELD BEACH**

TITLE  
**REINFORCING DETAILS:  
ROOF SLAB AND BEAM LAYOUT**

SCALE: AS SHOWN

DRAWING No: **B21014/90/05R\_B REV.1**

