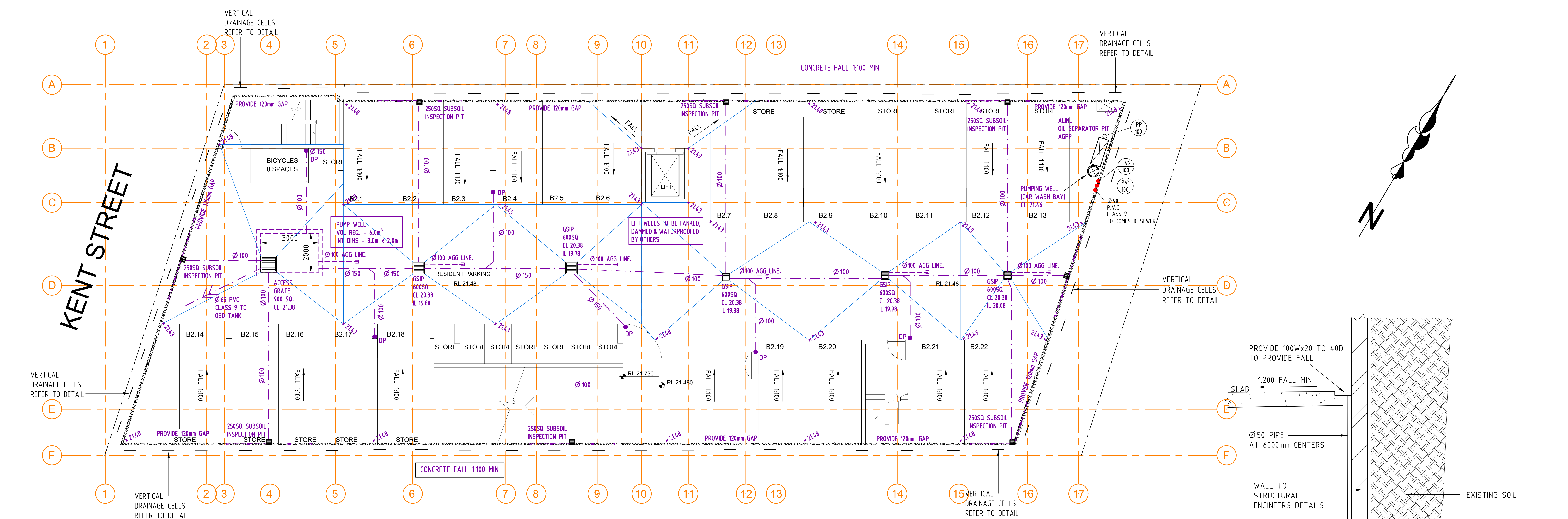
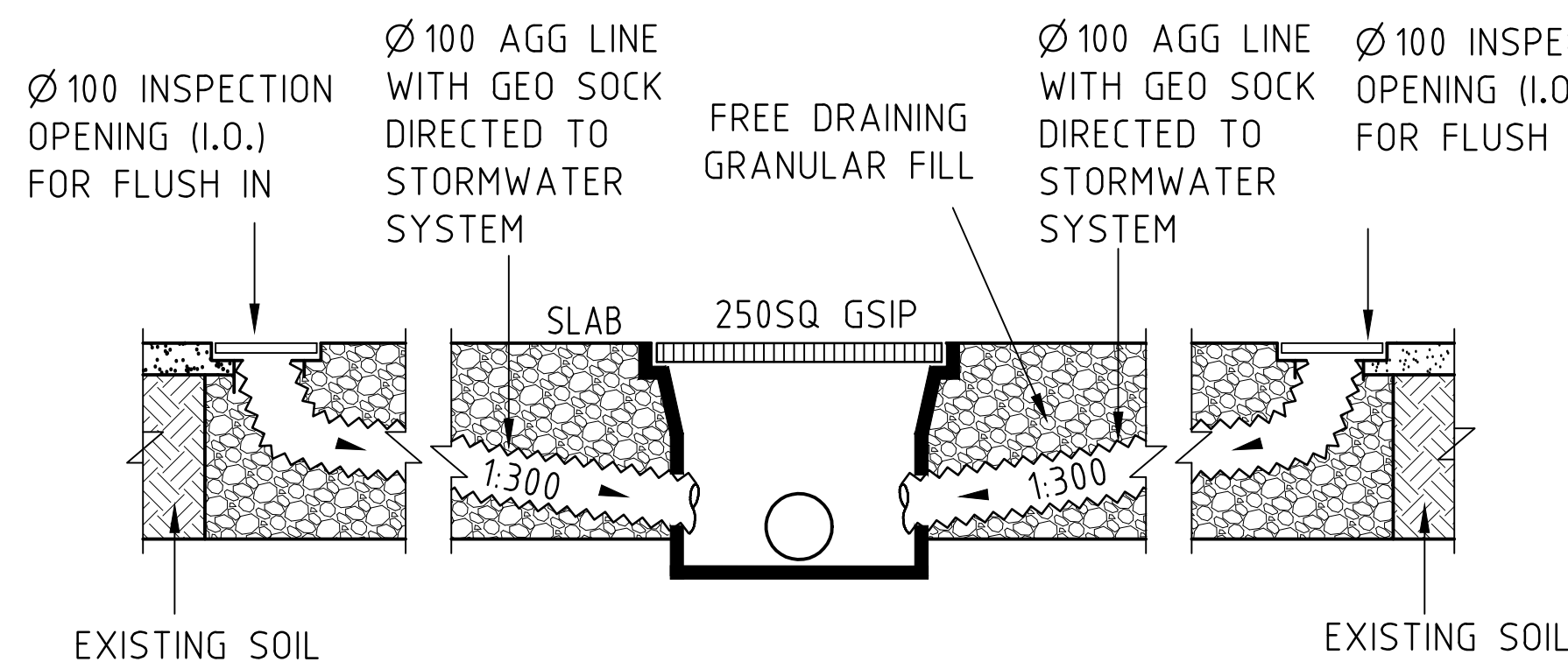


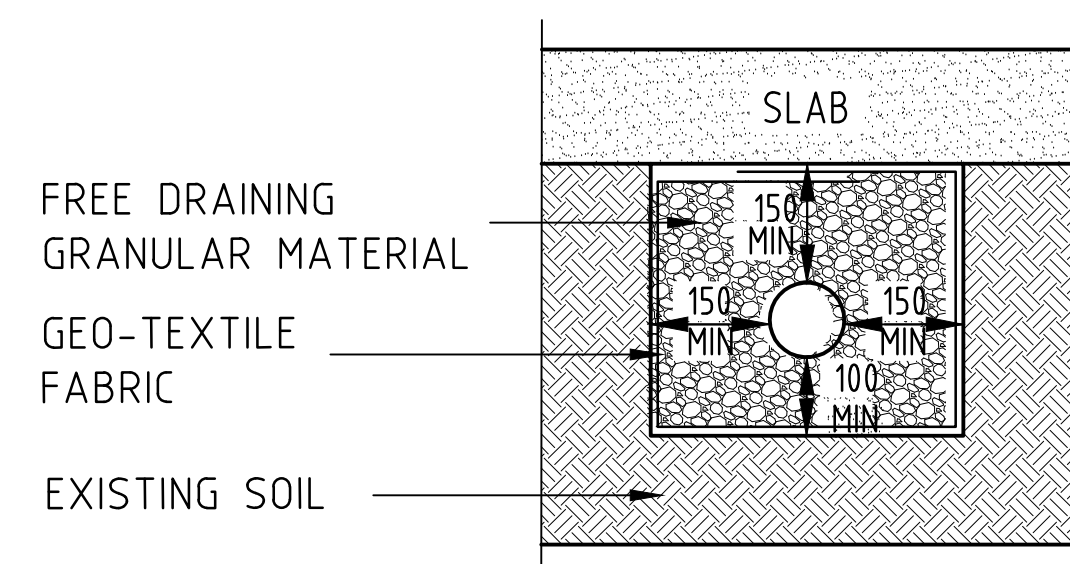


BASEMENT 2 STORMWATER DRAINAGE/HYDRAULIC SERVICES PLAN SCALE - 1:100

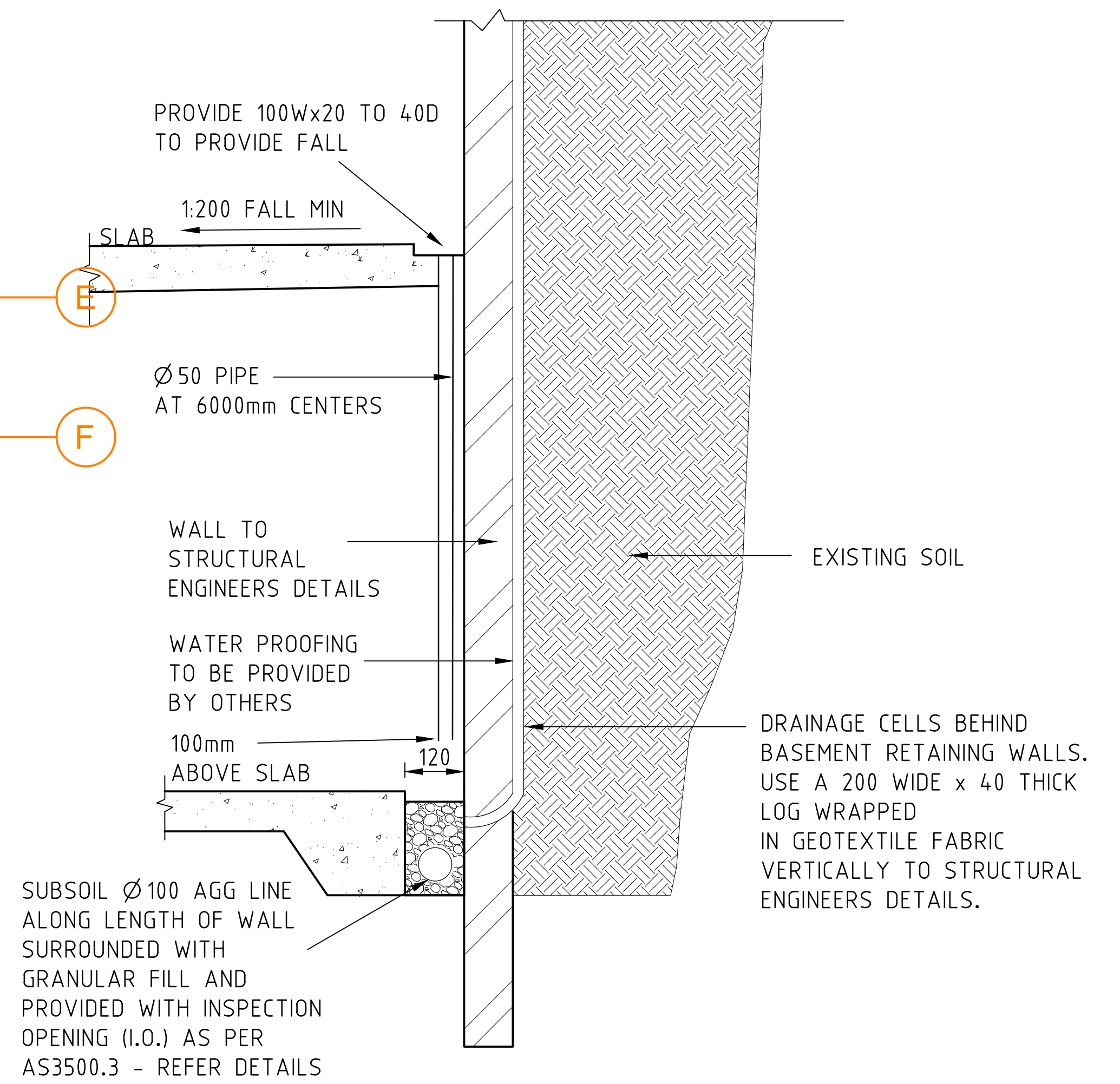
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- ALL DOWNPIPES TO BE 100mm DIAMETER OR 100 x 75mm MIN. TO ARCHITECTURAL SPECIFICATIONS OR AS NOTED ON PLAN.
- PROVIDE AG. LINES BEHIND ALL RETAINING WALLS AND SUBSOIL DRAINAGE AS PER STRUCTURAL ENGINEERING DETAILS. ALL LINES TO DRAIN TO PITS.
- * DENOTES PROPOSED LEVEL
x DENOTES EXISTING LEVEL
• DENOTES DOWNPIPE
- PROPOSED RAINWATER PIPE
- - - PROPOSED STORMWATER PIPE



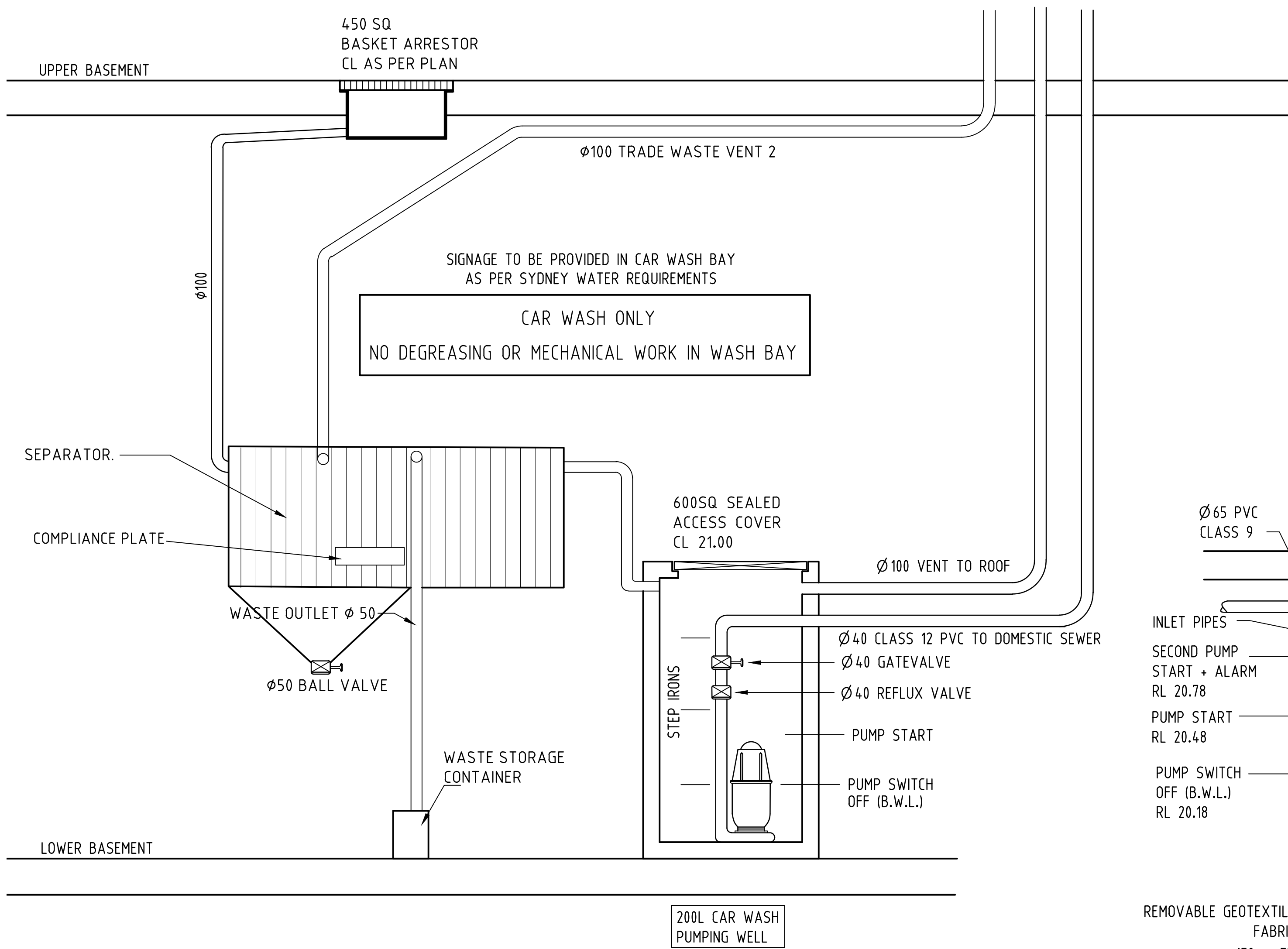
INSPECTION OUTLET DRAIN DETAIL N.T.S.



STORMWATER TRENCH DETAILS N.T.S.

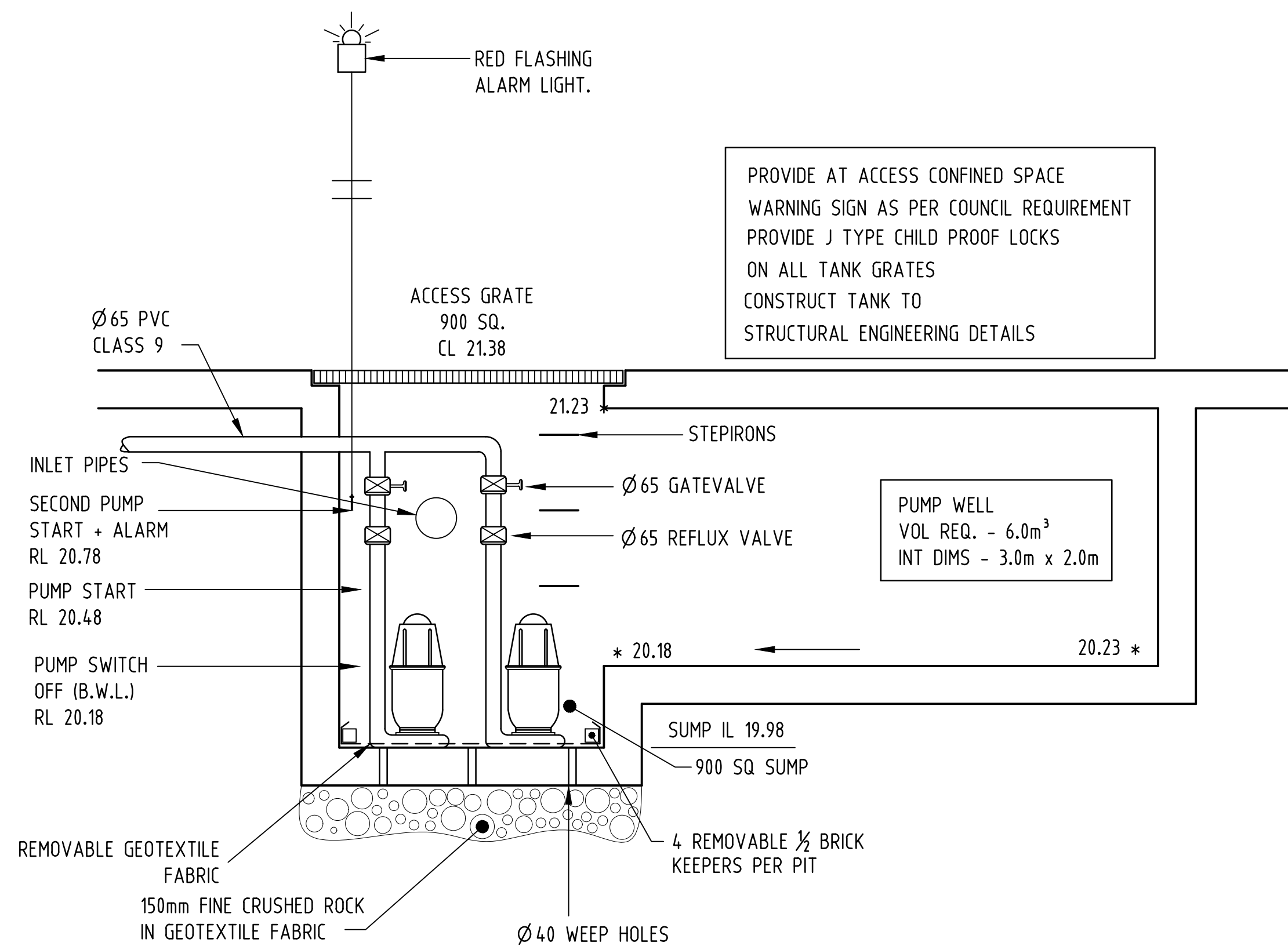


RETAINING WALL DRAINING DETAIL N.T.S.



- NOTES
- 1 - Approval to be sought from Local Authority.
- 2 - A Trade Waste Permit must be obtained from Local Authority.
- 3 - Local Authority Trade Waste inspector is to inspect the work on completion.

CAR WASH BAY OIL WATER SEPERATOR N.T.S.



BASEMENT PUMPING SYSTEM N.T.S.

BASEMENT PUMPING WELL CALCULATIONS

Provide two centrifugal drainage SUMP pumps with single phase electric motor capable of discharging 2.8L/s each against a total head of (5.5m) with 10 starts per hour maximum.

Class 1 Zone 2 certified pumps for hazardous areas is required

Switching shall provide for alternative operation of the pumps, high level switch ON/OFF, 2nd pump, and a red light alarm placed prominently in the basement area activated by high level switch ON.

Garage Holding Tank

Area draining to the garage pumping well is the driveway to the basement (50m²)

Storage must be provided for a blackout of at least 2hrs, the 100yrs ARI 2hr storm runoff is:

$Q = F \times C \times I \times A$

$= 1/3600 \times 1 \times 60 \times 50$

$= 0.83 \text{ L/s}$

Volume accumulated:

$V = (0.83 \text{ L/s} \times 2 \text{ hrs} \times 3600 \text{ s})/1000$

$= 6.00 \text{ m}^3$

Let the maximum discharge be for the 10 min 100yrs ARI storm. In the event of a stronger storm such as a 5min 100yrs ARI, The standby pump will operate with the duty pump to discharge the extra runoff. In case of a break down, storage is provided in the basement for the excess runoff.

$Q = F \times C \times I \times A$

$= 1/3600 \times 1 \times 207 \times 50$

$= 2.8 \text{ L/s}$

A Control volume is required to prevent the pump from starting too often (< 10/hr)

$CV = 900 \times Qp/n$

$= 900 \times 2.8 / (10 \times 1000)$

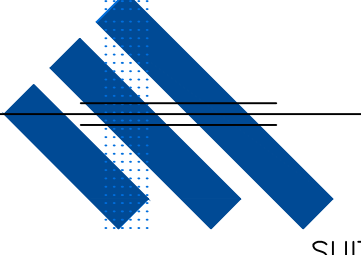
$= 0.25 \text{ m}^3$

Garage Pumping Duty Calculation (Q = 2.8 L/s)

ITEM	HEAD
Static Adjustment	7.5m
65mm Pump Fittings EL 25m (1.2m/100)	0.3m
65mm PVC Class 9 EL 30m (1.2m/100)	0.4m
Sundries (about 10%)	0.5m
Total	9.0m

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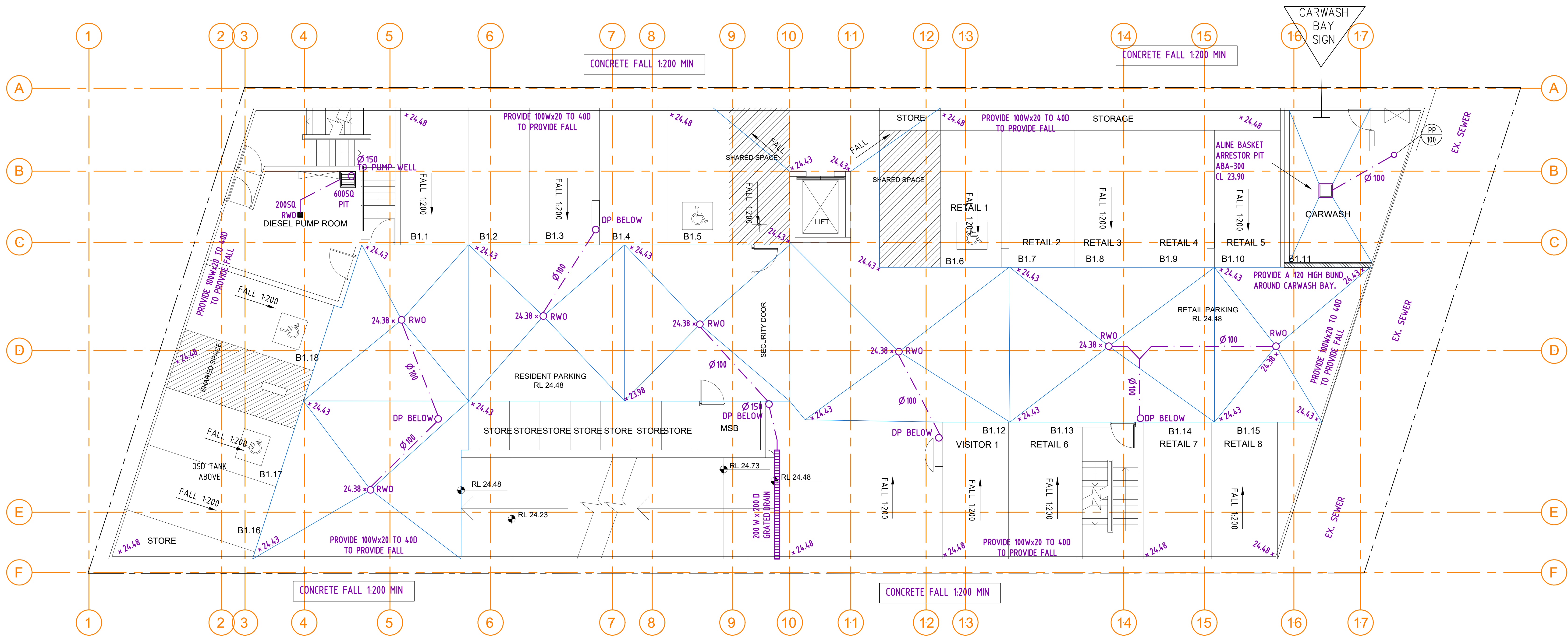


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CONSULTING CIVIL & STRUCTURAL ENGINEERS ACN 054 595 005
SUITE 2D / 322 KINGSGROVE RD. KINGSGROVE NSW 2208 PH (02) 83 87 68 26

PROPOSED DEVELOPMENT AT:
6-8 KENT ST, BELMORE

STORMWATER DRAINAGE/HYDRAULIC SERVICES PLAN				
DRAWN	CHECKED	SCALE	DATUM	DRAWING No.
JDR	D.M.ROMANOUS (B.E., M.Eng.AUST.	AS SHOWN @A1	A.H.D	2110 - S2/8

REV. P



LEGEND

- RL REDUCED LEVEL
- CL COVER LEVEL
- IL INVERT LEVEL
- GSIP GRATED SURFACE INLET PIT
- OSD ON-SITE DETENTION
- TWL TOP WATER LEVEL
- BWL BOTTOM WATER LEVEL
- TW TOP OF WALL
- IO INSPECTION OPENING
- ARI AVERAGE RECURRENCE INTERVAL
- FW FLOOR WASTE
- AHD AUSTRALIAN HEIGHT DATUM
- PSD PERMISSIBLE SITE DISCHARGE
- HED HIGH EARLY DISCHARGE
- RHS RECTANGULAR HOLLOW SECTION
- SS STAINLESS STEEL
- FRC FIBER REINFORCED CONCRETE
- RCP REINFORCED CONCRETE PIPE
- RJ RUBBER RING JOINT
- U/S UNDERSIDE OF SLAB
- O/S OVER THE SLAB
- O/F OVERFLOW
- DP DOWN PIPE
- DR DROPPER
- RWO RAIN WATER OUTLET
- RWH RAIN WATER HEAD
- FFL FINISHED FLOOR LEVEL

GENERAL NOTES:

- ALL SERVICES ARE TO BE LOCATED IN THE FIELD IN CONJUNCTION WITH A RESPONSIBLE OFFICER OF EACH RELEVANT AUTHORITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- DRAINAGE PITS ARE TO BE A 450mm SQUARE OR LARGER AS SHOWN, AND FITTED WITH A GALVANIZED GRATE.
- ALL PITS ARE TO HAVE A GALVANISED GRATE AND FRAME. FRAME TO BE CAST INTEGRALLY WITH THE PIT.
- ALL PITS ARE TO BE BENCH TO HALF PIPE LEVEL.
- PROVIDE STEP IRONS WHERE PIT IS DEEPER THAN 1m. AT 450mm CENTERS.
- DRAINAGE PIPES SHALL BE SEWER GRADE UPVC UNLESS OTHERWISE NOTED.
- DRAINAGE PIPE SIZES ARE 100mm DIAMETER UNLESS OTHERWISE NOTED.
- ALL BARE SOIL AREAS ARE TO BE PROTECTED FROM EROSION BY TEMPORARY MEASURES AND REVEGETATED AT THE CESSATION OF CONSTRUCTION.
- THE DOWNHILL BOUNDARY OF THE SITE IS TO BE PROTECTED BY HAY BALES OR A FILTER FABRIC FENCE DURING CONSTRUCTION AS SHOWN IN THE ATTACHED DETAILS.
- THE STREET DRAINAGE PIT LOCATED DOWNHILL OF THE SITE SHALL BE PROTECTED FROM SEDIMENT WITH SEDIMENT BARRIER.
- A SINGLE CONSTRUCTION ENTRANCE SHALL BE ESTABLISHED IN THE MANNER SHOWN IN THE ATTACHED DETAILS.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL AND STRUCTURAL ENGINEERING DOCUMENTS. ANY DISCREPANCIES SHALL BE REPORTED BY THE BUILDER TO THE ARCHITECT PRIOR TO COMMENCEMENT OF THE ITEM.
- THESE PLANS ARE DIAGRAMMATIC AND SHOW THE GENERAL LOCATION OF STRUCTURES AND PIPES. WORK SHALL BE SET OUT ON SITE BY THE SITE FOREMAN & MAY VARY FROM THE PLANS TO THE EXTENT REQUIRED. TO ENSURE COMPATIBLE CONSTRUCTION OF OTHER SERVICES AND STRUCTURAL REQUIREMENTS. VARIATION IN LOCATION OF MORE THAN 10M & ANY CHANGES IN SIZE OF ANY COMPONENT NOMINATED HEREON SHALL BE REFERRED TO THE DESIGNER FOR COMMENT.
- IF IN DOUBT, ASK THE SUPERINTENDENT WHO SHALL CONSULT THE DESIGNER.

BASEMENT 1 STORMWATER DRAINAGE/HYDRAULIC SERVICES PLAN SCALE - 1:100

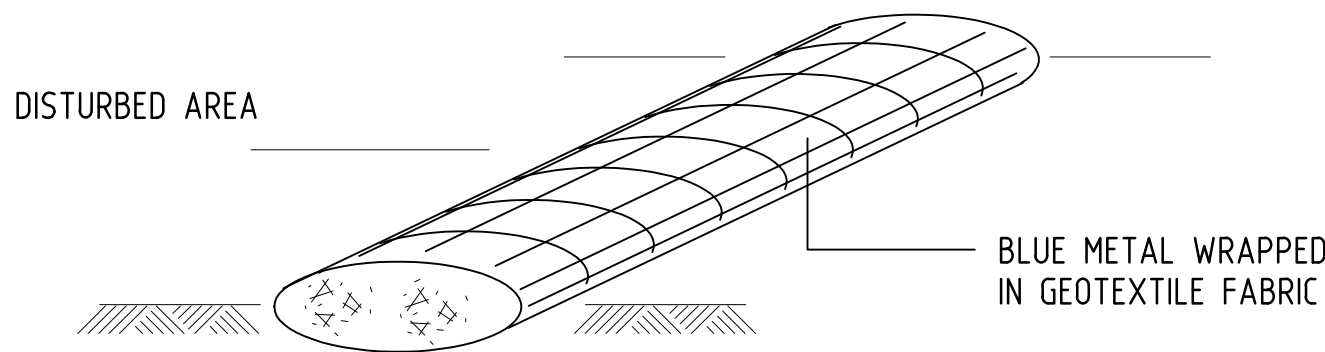
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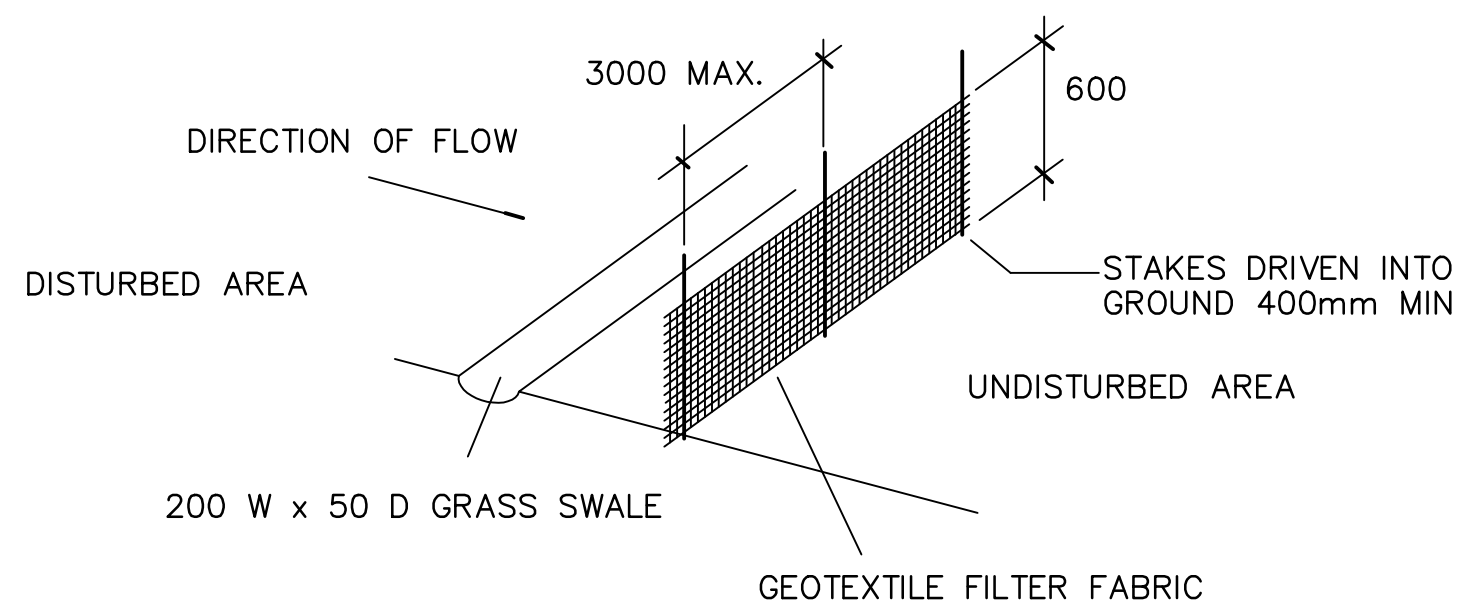
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- DENOTES DOWNPIPE

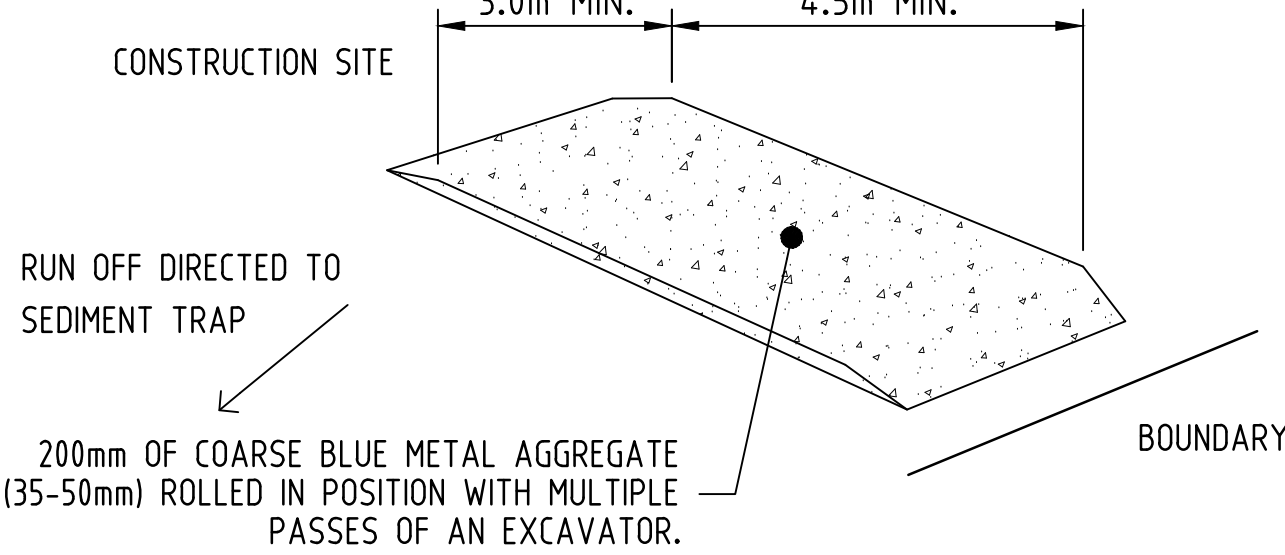
- PROPOSED RAINWATER PIPE
- PROPOSED STORMWATER PIPE



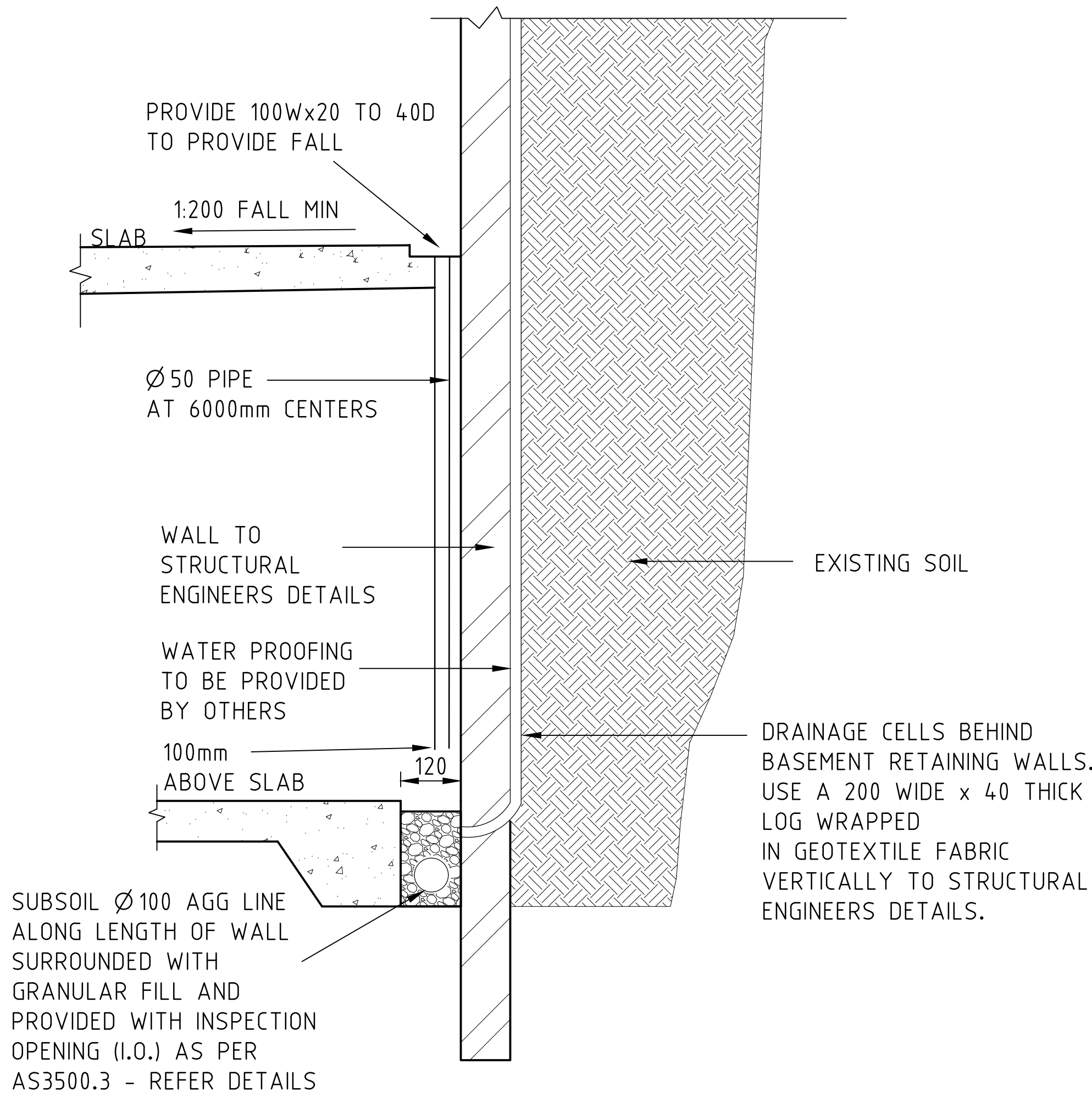
SEDIMENT BARRIER N.T.S.



SEDIMENT FENCE DETAIL N.T.S.



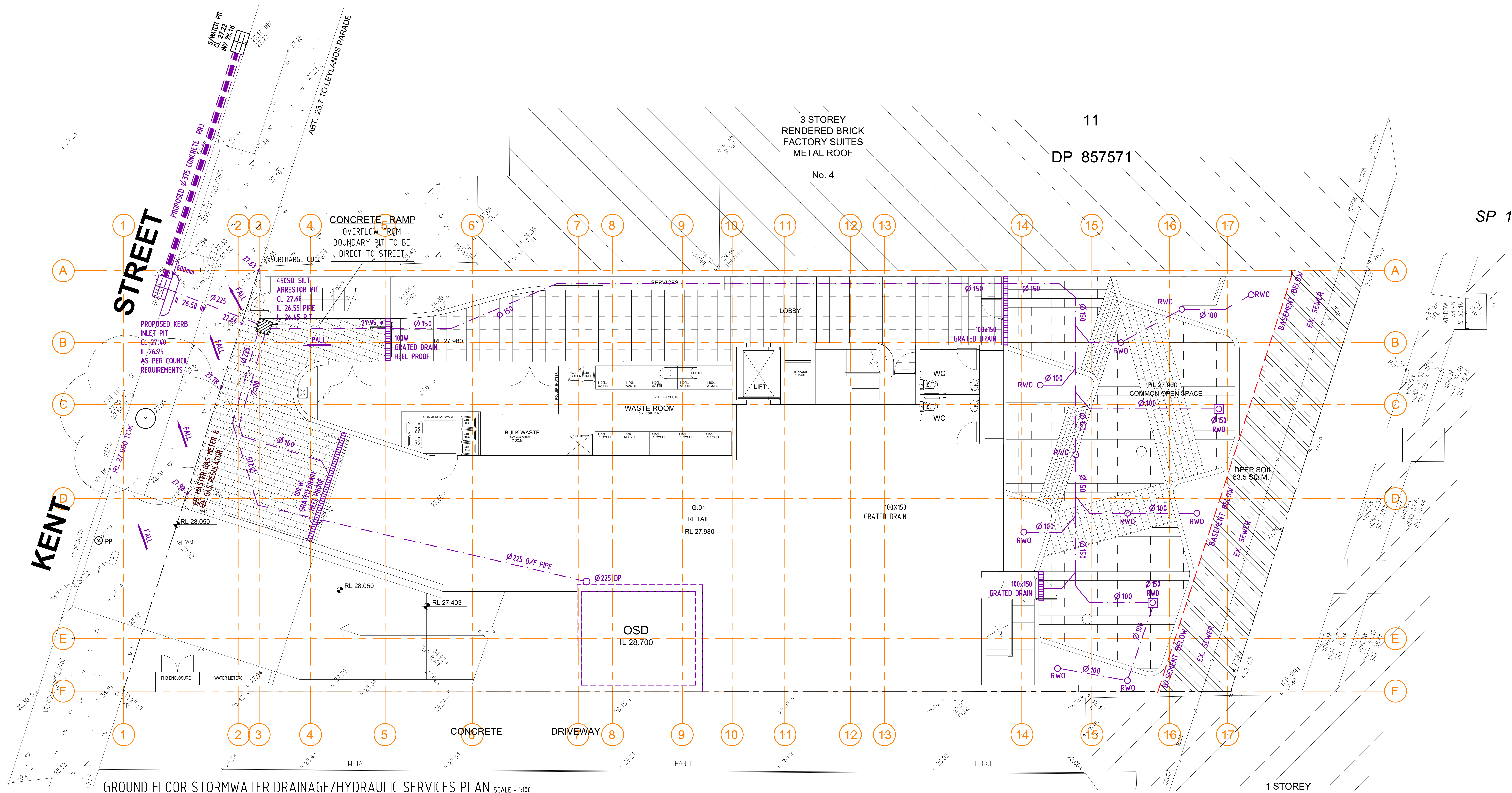
CONSTRUCTION ENTRY/EXIT DETAIL N.T.S.



RETAINING WALL DRAINING DETAIL N.T.S.

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JOHN ROMANOUS & ASSOCIATES PTY. LTD. CONSULTING CIVIL & STRUCTURAL ENGINEERS ACN 054 595 005 SUITE 2D / 322 KINGSGROVE RD, KINGSGROVE NSW 2208 PH (02) 83 87 68 26			
PROPOSED DEVELOPMENT AT: 6-8 KENT ST, BELMORE			
STORMWATER DRAINAGE/HYDRAULIC SERVICES PLAN			
DRAWN	CHECKED	SCALE	DATUM
JDR	D.M.ROMANOUS (B.E., M.I.E.AUST.)	AS SHOWN @A1	A.H.D.
DRAWING No.		REV.	
2110 - S3/8		P	



GROUND FLOOR STORMWATER DRAINAGE/HYDRAULIC SERVICES PLAN SCALE - 1:100

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* DENOTES PROPOSED LEVEL

x DENOTES EXISTING LEVEL

• DENOTES DOWNPIPE

--- PROPOSED RAINWATER PIPE

--- PROPOSED STORMWATER PIPE

DESIGN SUMMARY

QUANTITY	VALUE
SITE AREA	962.7m ²
IMPERVIOUS POST-DEVELOPMENT	90%
AREA DRAINED TO THE CONTROL PIT (%)	100%
PERMISSIBLE SITE DISCHARGE @ 10yr. ARI.	14.40L/s
REQUIRED STORAGE @ 10yr. ARI.	19.40m ³
STORAGE PROVIDED DESIGN	22.00m ³

NOT FOR CONSTRUCTION

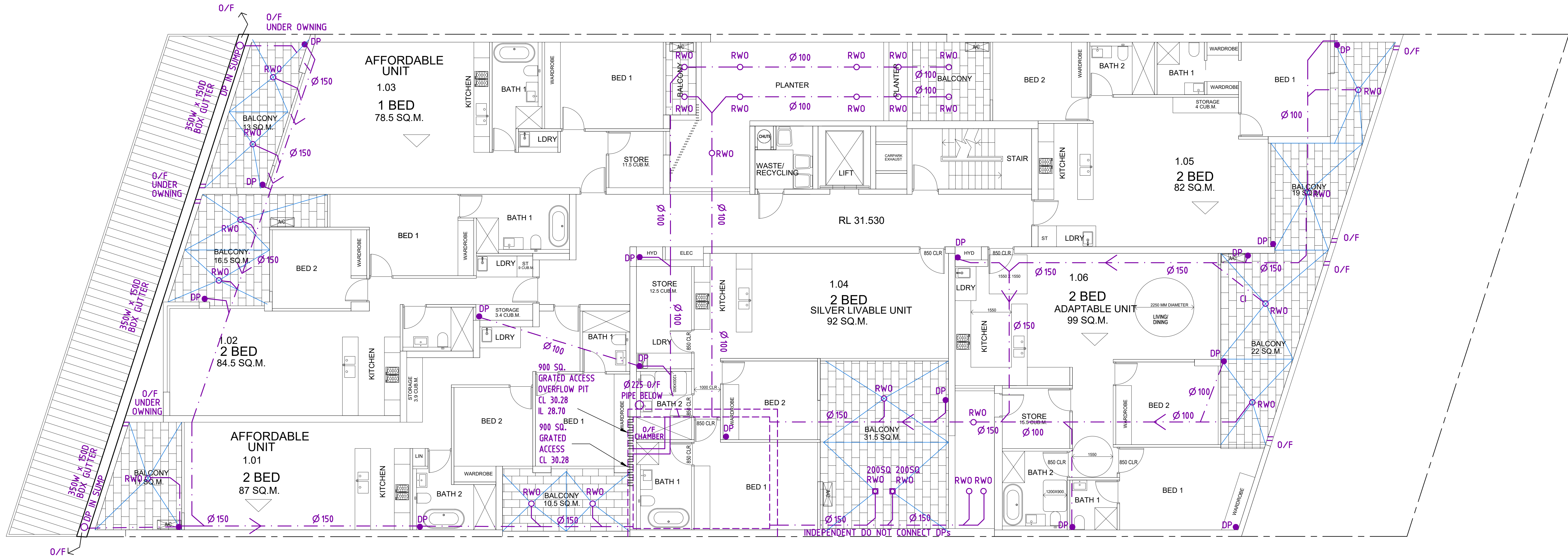
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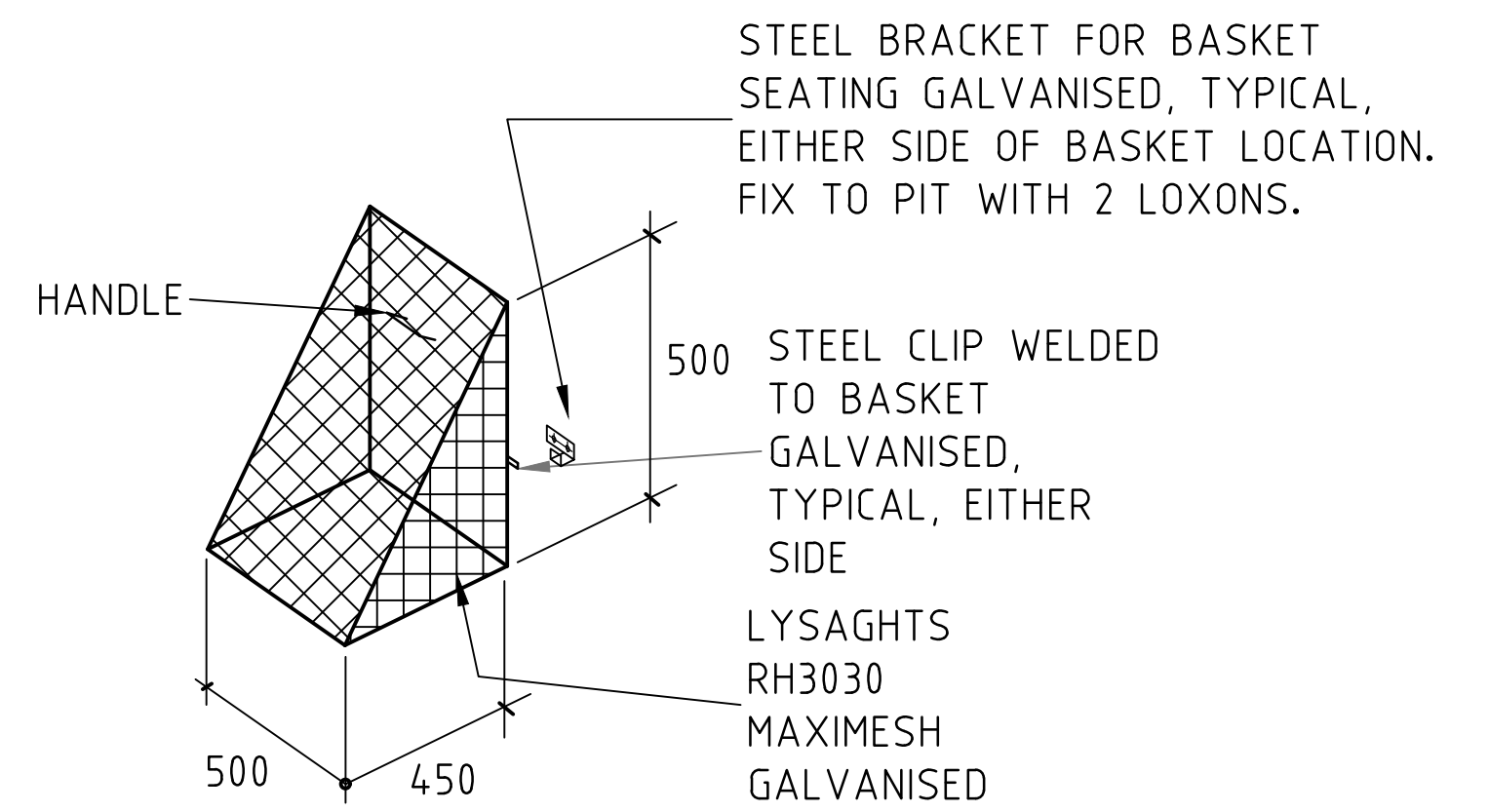
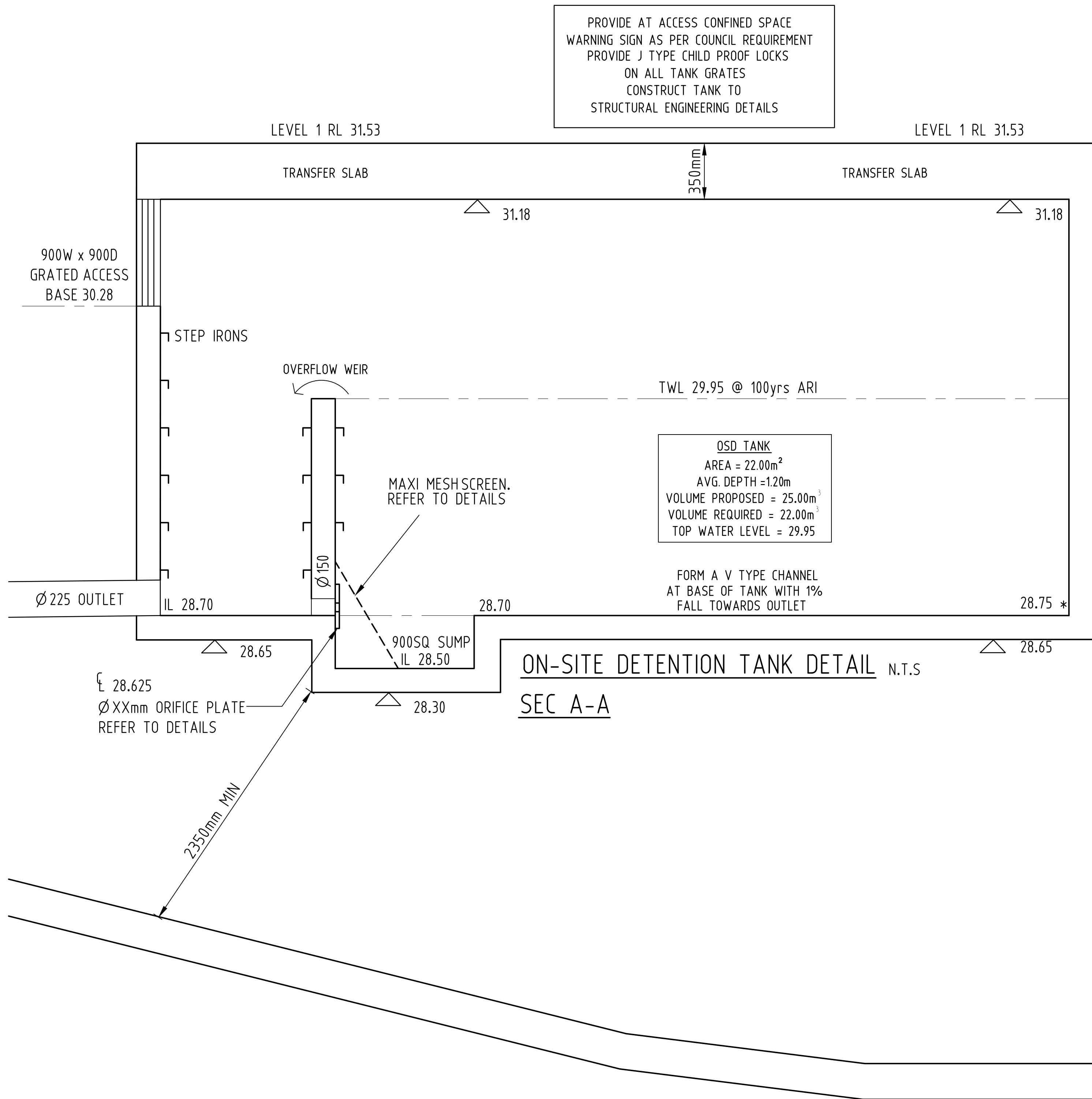
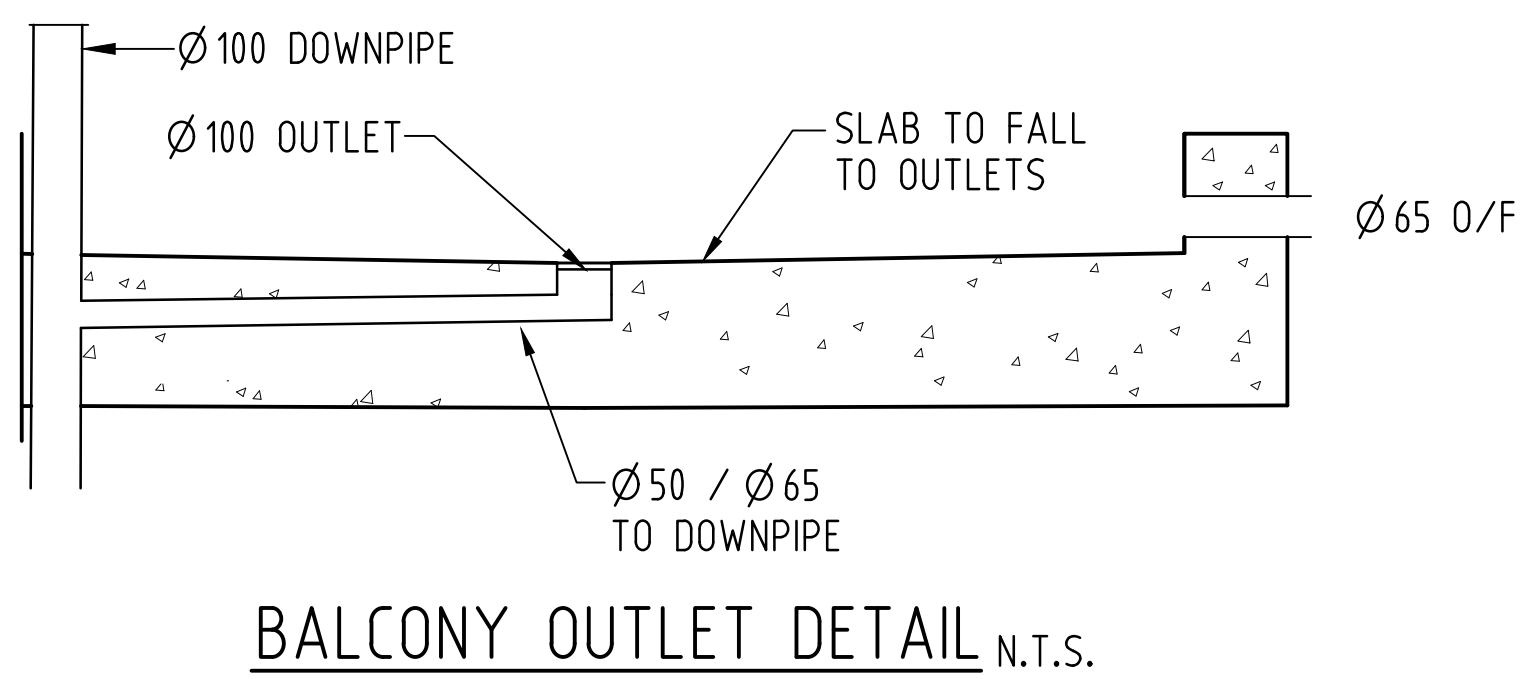
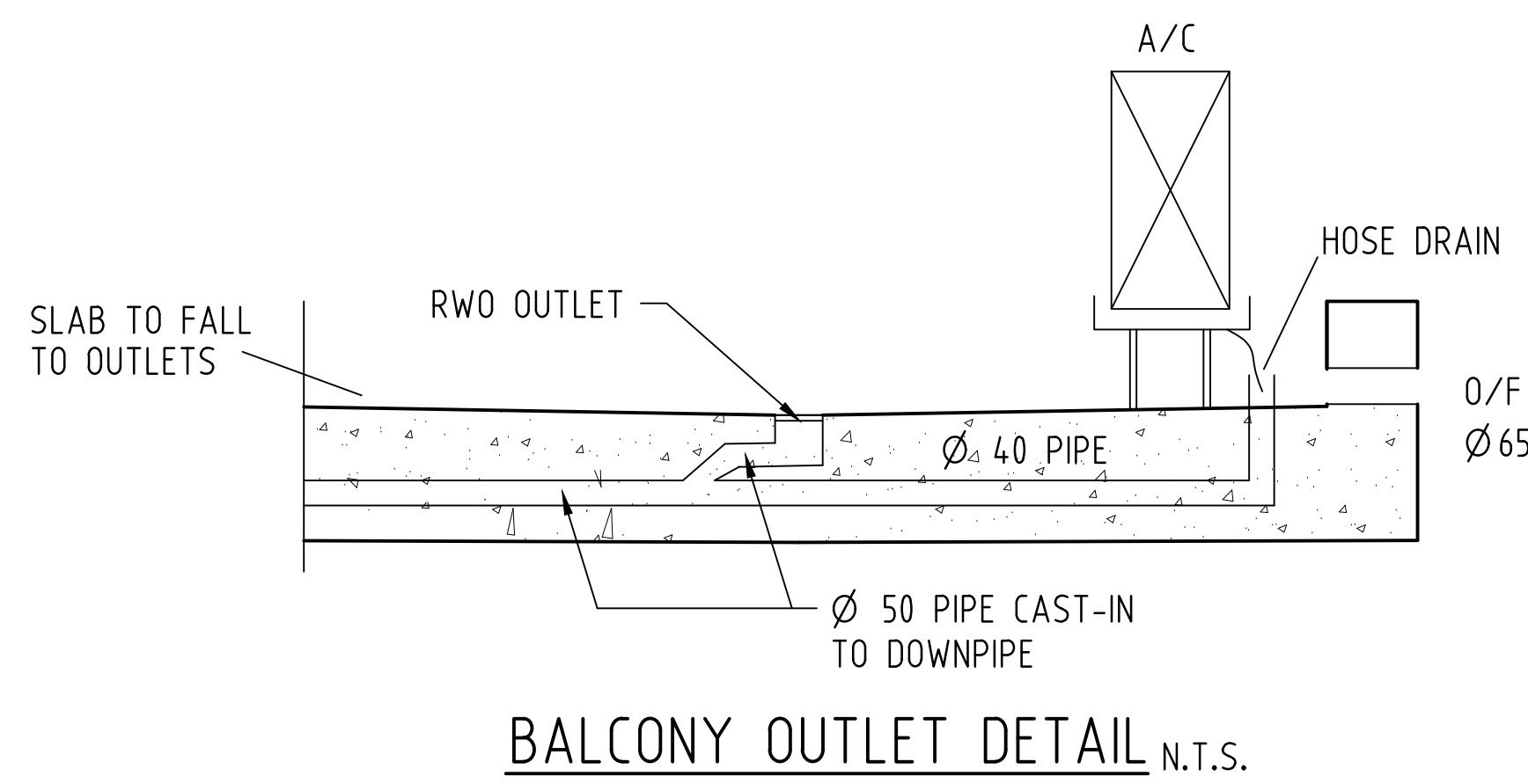
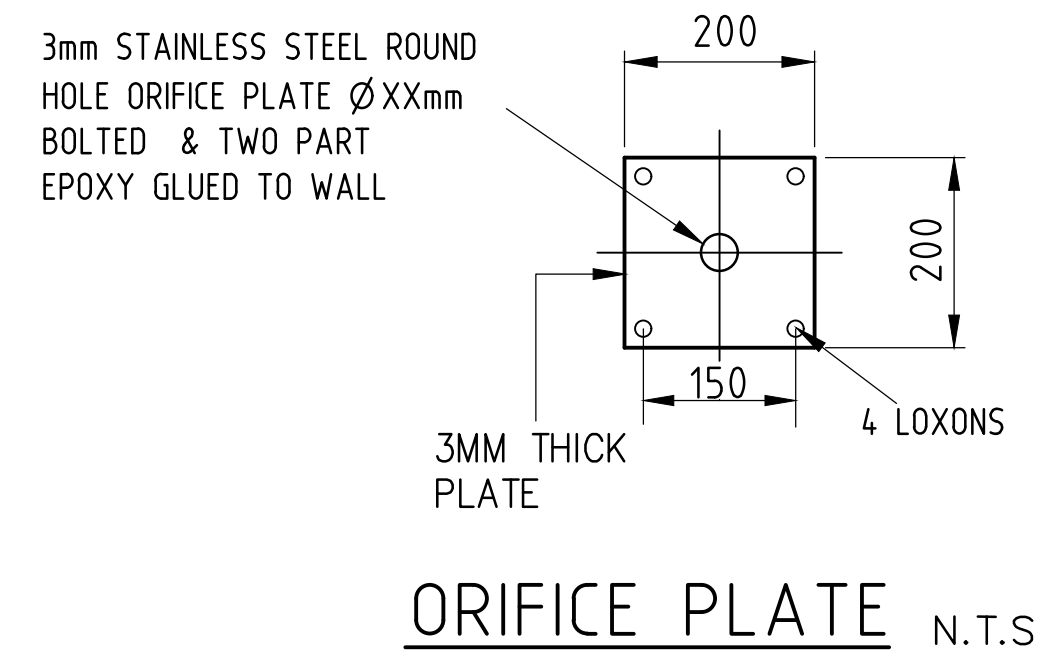
STORMWATER DRAINAGE/HYDRAULIC SERVICES PLAN

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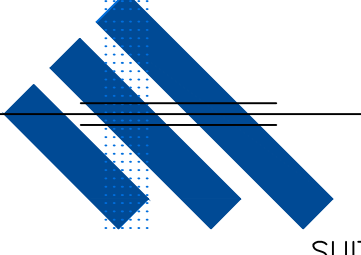


LEVEL 1 STORMWATER DRAINAGE/HYDRAULIC SERVICES PLAN SCALE - 1:100

- * DENOTES PROPOSED LEVEL
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