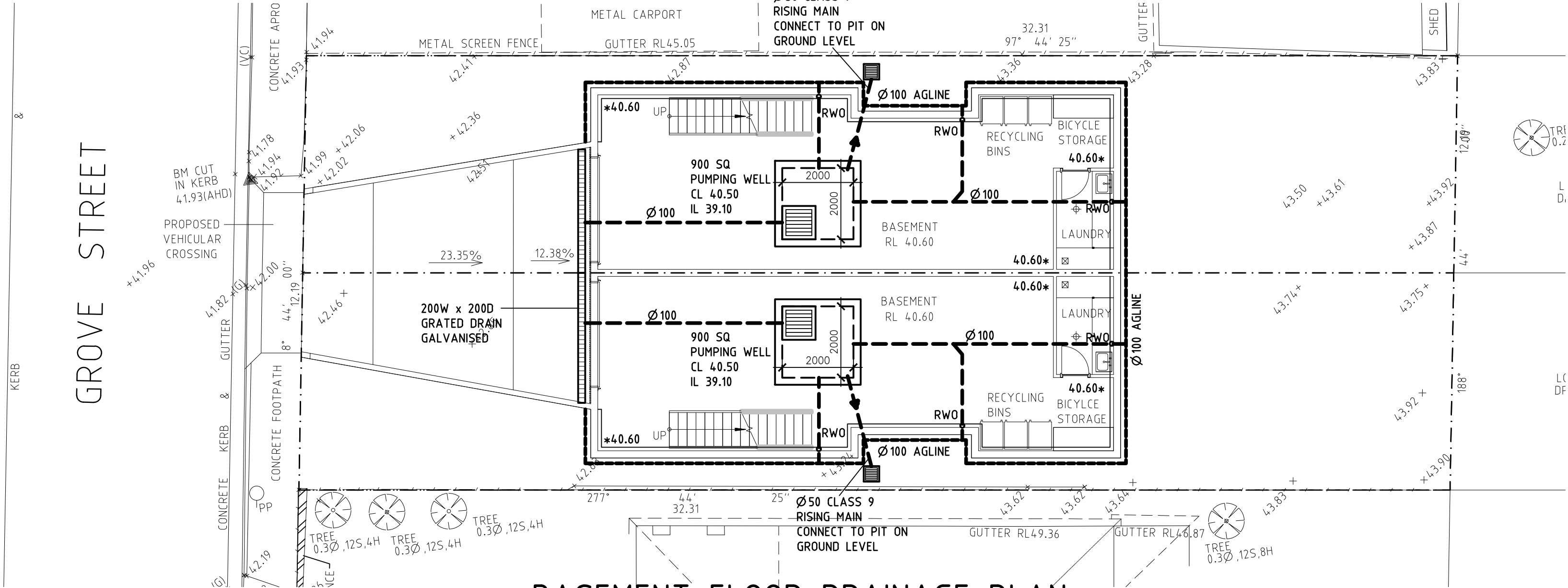




BASEMENT FLOOR DRAINAGE PLAN

SCALE 1: 200 (A3)
SCALE 1: 100 (A1)

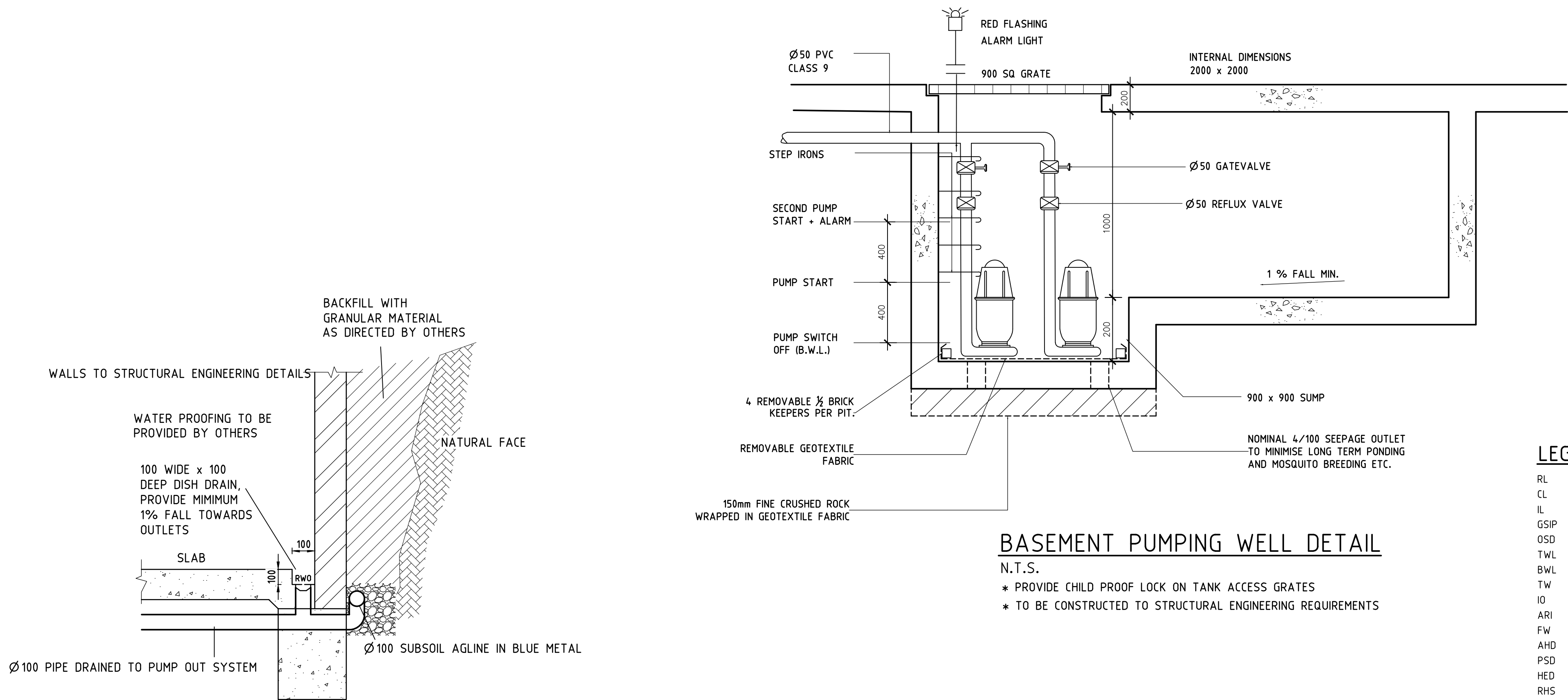
ALL PIPES ARE REQUIRED TO HAVE MINIMUM 1% LONGITUDINAL FALL

BUILDER IS TO CHECK CONDITIONS ON SITE AND TO PROVIDE SUB SOIL DRAINAGE AS REQUIRED

PROVIDE J TYPE CHILD PROOF LOCKS ON PUMPOUT GRATE

CROSSOVER & ALIGNMENT LEVELS TO COUNCIL REQUIREMENTS

ALL STORE ROOMS MUST BE WATERPROOFED BY OTHERS TO BE COMPLETELY DRY AREAS



TYPICAL BASEMENT WALL DRAINAGE DETAIL

BASEMENT PUMPING WELL (STORMWATER RUNOFF)

PROVIDE TWO CENTRIFUGAL DRAINAGE SUMP PUMPS (CLASS 1 ZONE 2 CERTIFIED PUMPS FOR HAZARDOUS AREAS IS REQUIRED) WITH SINGLE PHASE ELECTRIC MOTOR CAPABLE OF DISCHARGING (3.00L/s) EACH AGAINST A TOTAL HEAD OF (6.0m) WITH 10 STARTS PER HOUR MAXIMUM. 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 GARAGE PUMPING WELL IS THE DRIVEWAY (30m2) USE 30m2 MIN STORAGE MUST BE PROVIDED FOR AT LEAST 2hrs. THE 1% AEP, 2hr. STORM RUNOFF IS :

$$Q = F \times C \times I \times A$$
$$= 1/3600 \times 1 \times 60 \times 30$$
$$= 0.5 \text{ L/s}$$

Volume accumulated:

$$V = (0.5 \text{ L/s} \times 2 \text{ hrs} \times 3600 \text{ s}) / 1000$$
$$= 3.6 \text{ m}^3$$

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 stand by 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.

$$Q = F \times C \times I \times A$$
$$= 1/3600 \times 1 \times 205 \times 30$$
$$= 1.70 \text{ L/s SAY } 3.00 \text{ L/s}$$

A CONTROL VOLUME IS REQUIRED TO PREVENT THE PUMP FROM STARTING TOO OFTEN (<10/hr.)

BASEMENT PUMPING DUTY CALCULATION. (Q = 2.0L/s.)

ITEM	HEAD
STATIC ADJUSTMENT	3.0m
50mm PUMP FITTINGS EL 20m (5.0m/100)	1.0m
50mm PVC CLASS 9 EL 20m (5.0m/100)	1.0m
SUNDRIES (ABOUT 10%)	1.0m
TOTAL	6.0m

THE PRESSURE DROP IN PIPES AND FITTINGS WAS CALCULATED USING THE HAZEN WILLIAMS EQUATION.

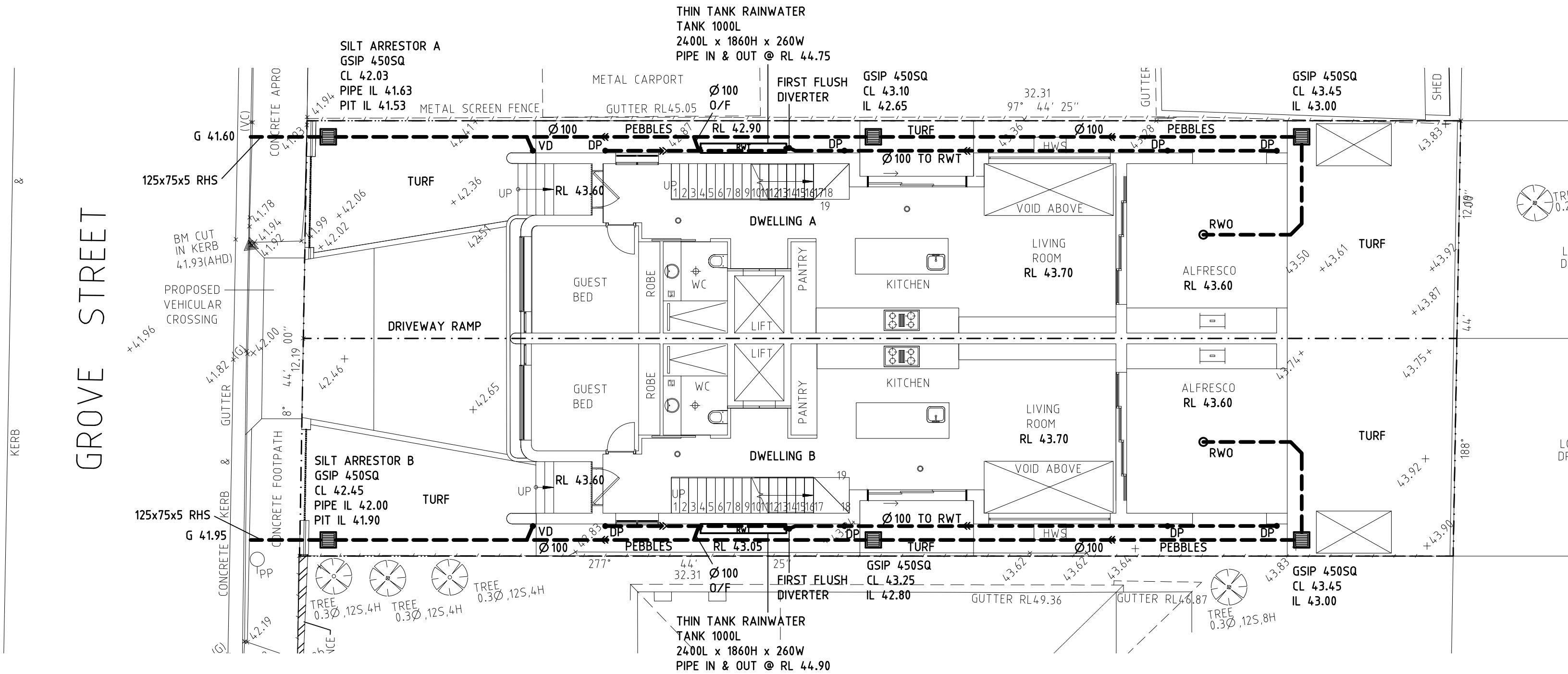
$$P = (6.05 \times Q^{1.85} \times 10^7) / (C^{1.85} \times d^{4.87})$$
 C Roughness Coefficient = 150

WHERE A IS THE CATCHMENT AREA (m²)
CV IS THE CONTROL VOLUME (m³)
Q_p IS THE MAXIMUM PUMPING DISCHARGE (L/s.)
n IS THE HEAD ON THE DISCHARGE PIPE IN THE CONTROL PIPE (m)
d IS THE DIAMETER OF THE CONTROL PIPE (mm)
EL IS THE EQUIVALENT LENGTH OF PIPE.

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	FIBRE REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RRJ	RUBBER RING JOINT
U/S	UNDERSIDE OF SLAB
O/F	OVERFLOW
RWO	RAIN WATER OUTLET
SGL	SOLID GOTHIC LID
•	DROPPER
DP	DOWNPIPE
VD	VERTICAL DROP

A	25.06.2025	FOR DA APPROVAL	TA
REV.	DATE	AMENDMENT DESCRIPTION	DRAWN
TAA CONSULTING GROUP Tony Ahal Registered Engineer Design Practitioner. 201/25 FALCON STREET CROWS NEST NSW 2065 Ph: 0411778799 Email: engineers@taaconultinggroup.com			
PROPOSED RESIDENTIAL DEVELOPMENT 12 GROVE STREET, EARLWOOD			
STORMWATER DRAINAGE & SEDIMENT CONTROL DETAILS			
DRAWN	CHECKED	SCALE	DATUM
TA	TONY AHAL - Civil & Structural Engineer B.E., M.Built.Surv., (NSW)11060225	A5 SHOWN	N/A
DRAWING No.		REV.	
H012G - S1 /3		A	



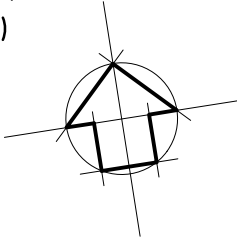
GROUND FLOOR & SITE PLAN

SCALE 1: 200 (A3)
SCALE 1: 100 (A1)

- ALL GUTTERS TO BE QUAD MINIMUM SIZE TO ARCHITECTURAL SPECIFICATIONS.
- ALL PLANTING AREAS ARE TO HAVE SUB-SOIL DRAINAGE AG. LINES WRAPPED WITH GEOTEXTILE FABRIC AND SURROUNDED WITH BLUE METAL OR ATLANTIS SUB-SOIL DRAINAGE CELLS. FALL PLANTER BASES TO OUTLETS.
- ALL BALCONIES ARE TO HAVE A Ø65mm OVERFLOW PIPE OR AN 80mm SQUARE OPENING ACTING AS AN OVERFLOW.
- ALL DOWNPIPES TO BE 90mm DIAMETER PVC OR EQUIVALENT. TO ARCHITECTURAL SPECIFICATIONS.
- PROVIDE AG.LINES BEHIND ALL RETAINING WALLS AND SUBSOIL DRAINAGE AS PER STRUCTURAL ENGINEERING DETAILS.ALL LINES TO DRAIN TO PITS.
- SEWER SURCHARGE GULLY MUST BE LOCATED OUTSIDE THE OSD AREA OR ABOVE TWL.
- MULCH AND FLOATABLE LANDSCAPING MATERIALS SHALL NOT BE USED IN THE ABOVE GROUND OSD AREA OR OVERLAND FLOW AREAS.

ALL PIPES ARE REQUIRED TO HAVE MINIMUM 1% LONGITUDINAL FALL

*62.45 DENOTES PROPOSED LEVEL
62.33 DENOTES EXISTING LEVEL



DESIGN SUMMARY - DWA & DWB

TOTAL SITE AREA = 394m2
PRE DEV. IMP. AREA = 246m2 (62.4%)
POST DEV. IMP. AREA = 258m2 (65.4%)

NO OSD REQUIRED FOR DUAL OCCUPANCY WITH AN IMPERVIOUS AREA LESS THAN 66% OF THE TOTAL SITE AREA.

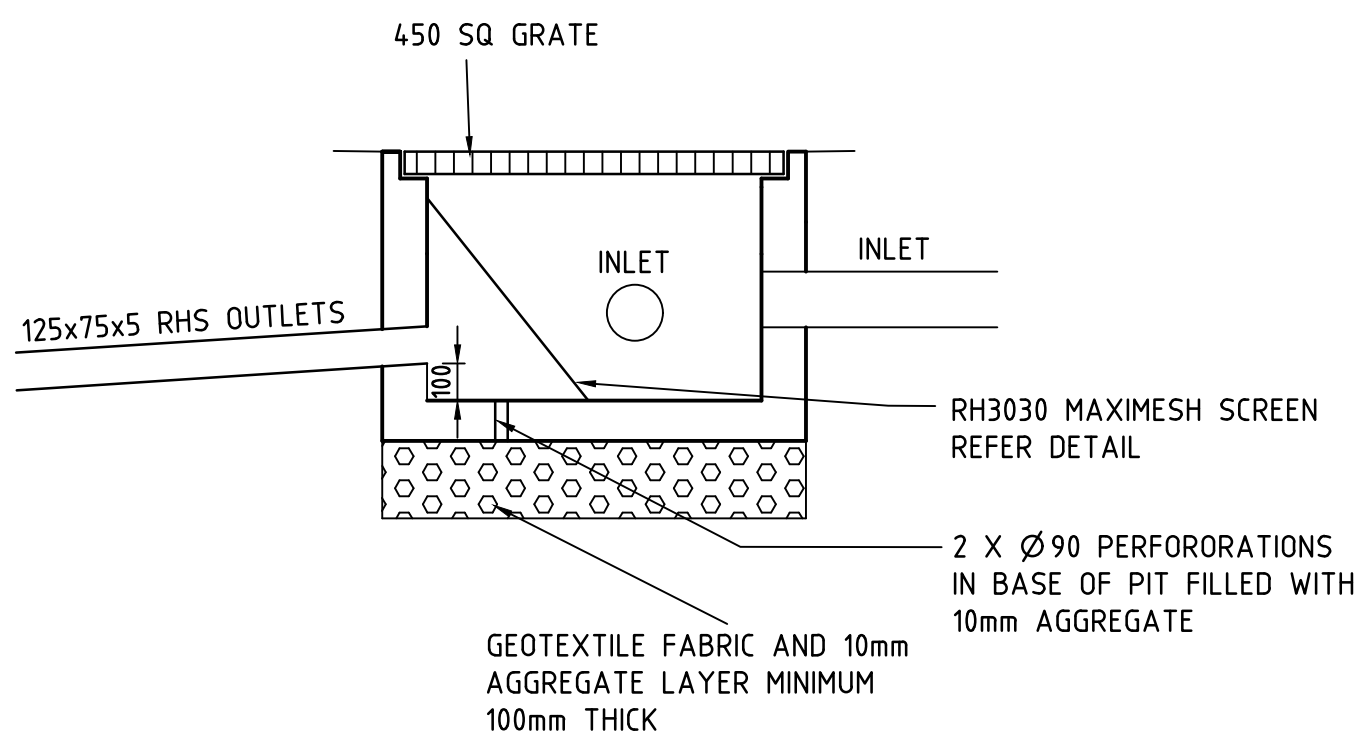
RAINWATER TANK TO COMPLY WITH BASIX COMMITMENTS AND COUNCIL'S POLICY

INSTALL A RAINWATER TANK PER DWELLING
MINIMUM 750L BASIX REQUIREMENT
THIN TANK 1000L
2400L x 1860H x 260W
EACH TANK IS TO COLLECT A MINIMUM OF 80m2 OF ROOF AREA
RECYCLED WATER CONNECTIONS AS PER BASIX AND COUNCIL REQUIREMENTS

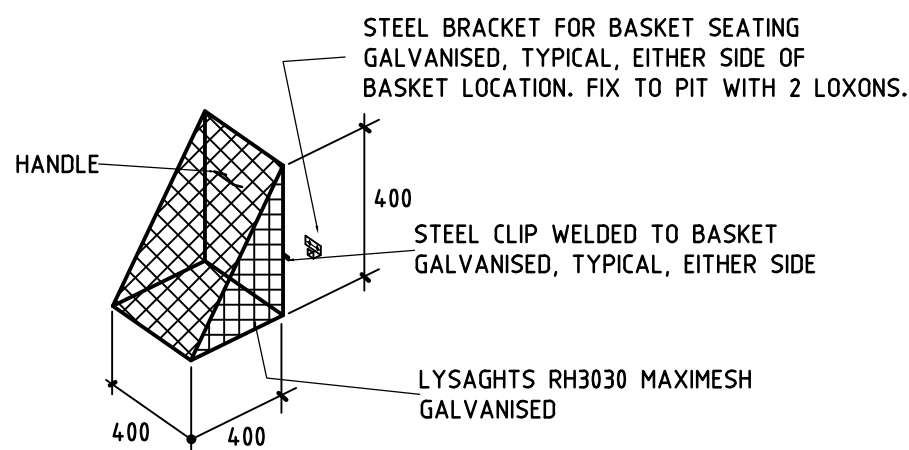
PROVIDE A MAINS BYPASS IN THE EVENT OF LOWER WATER LEVELS IN THE TANKS OR POVER FAILURE.

PROVIDE WARNING LABEL AS PER SYDNEY WATER REQUIREMENT INDICATING THAT THE WATER IS RAINWATER AND NOT TO BE CONSUMED

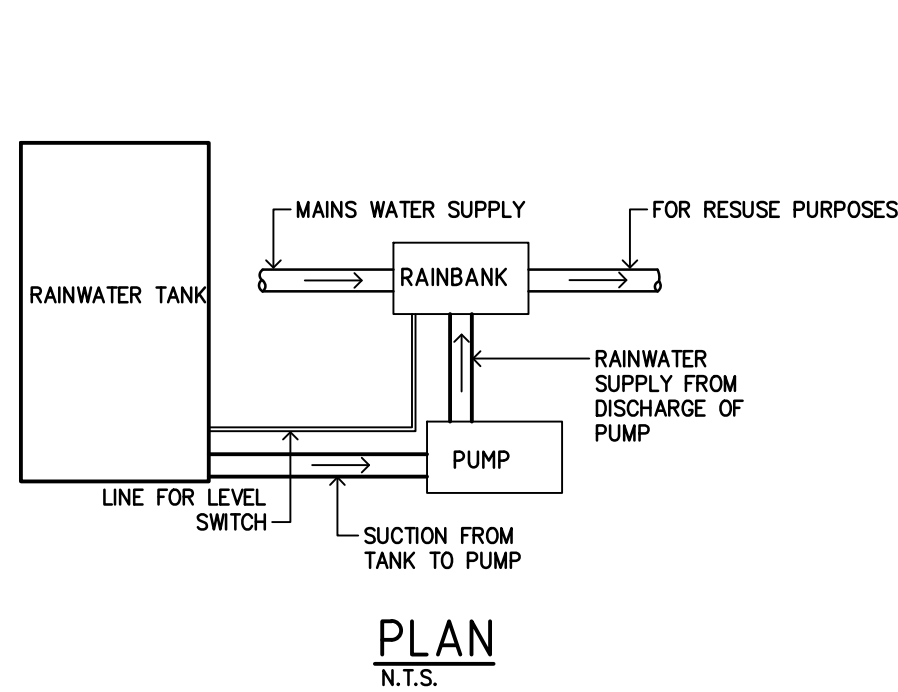
PROVIDE A FIRST FLUSH DIVERSION DEVICE AND SCREENING PRIOR TO WATER REACHING RAINWATER TANK.



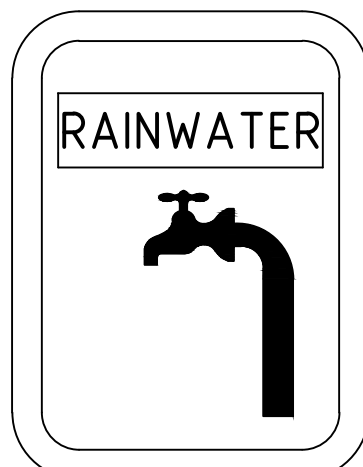
SILT ARRESTOR PIT DETAIL



SCREEN DETAIL TYPICAL



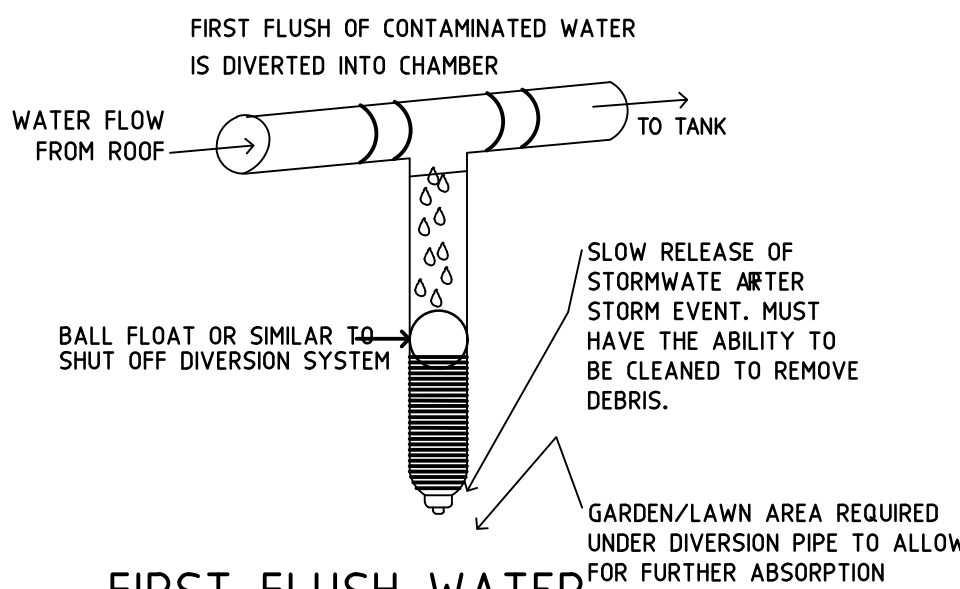
PLAN
N.T.S.



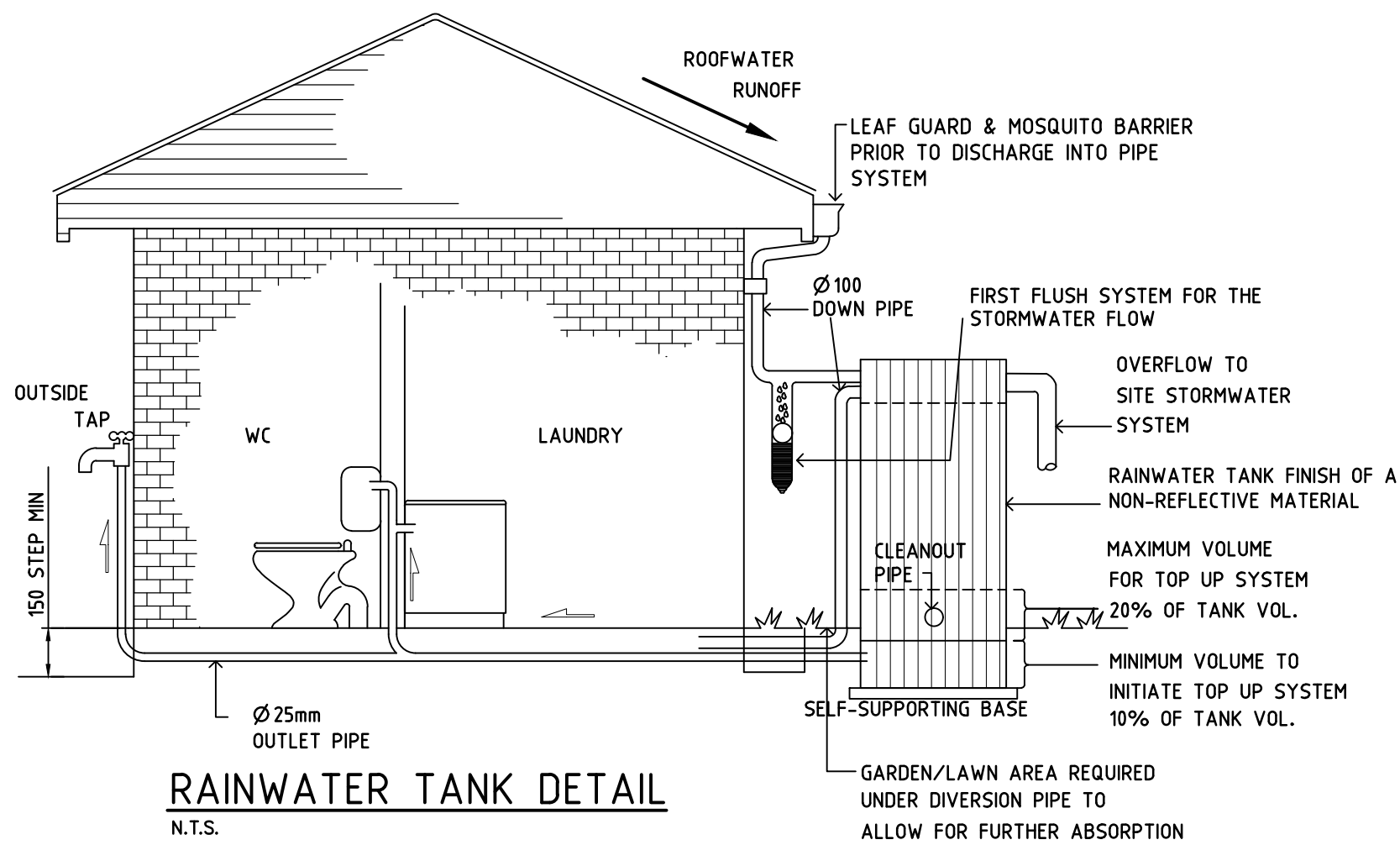
RAINWATER TANK

SIGNAGE

DIMENSIONS: 120MM X 150MM
BACKGROUND COLOUR IS YELLOW
TEXT IS WHITE ON BLACK BACKGROUND
TAP SYMBOL IS BLACK



FIRST FLUSH WATER
DIVERTER DETAIL
NTS



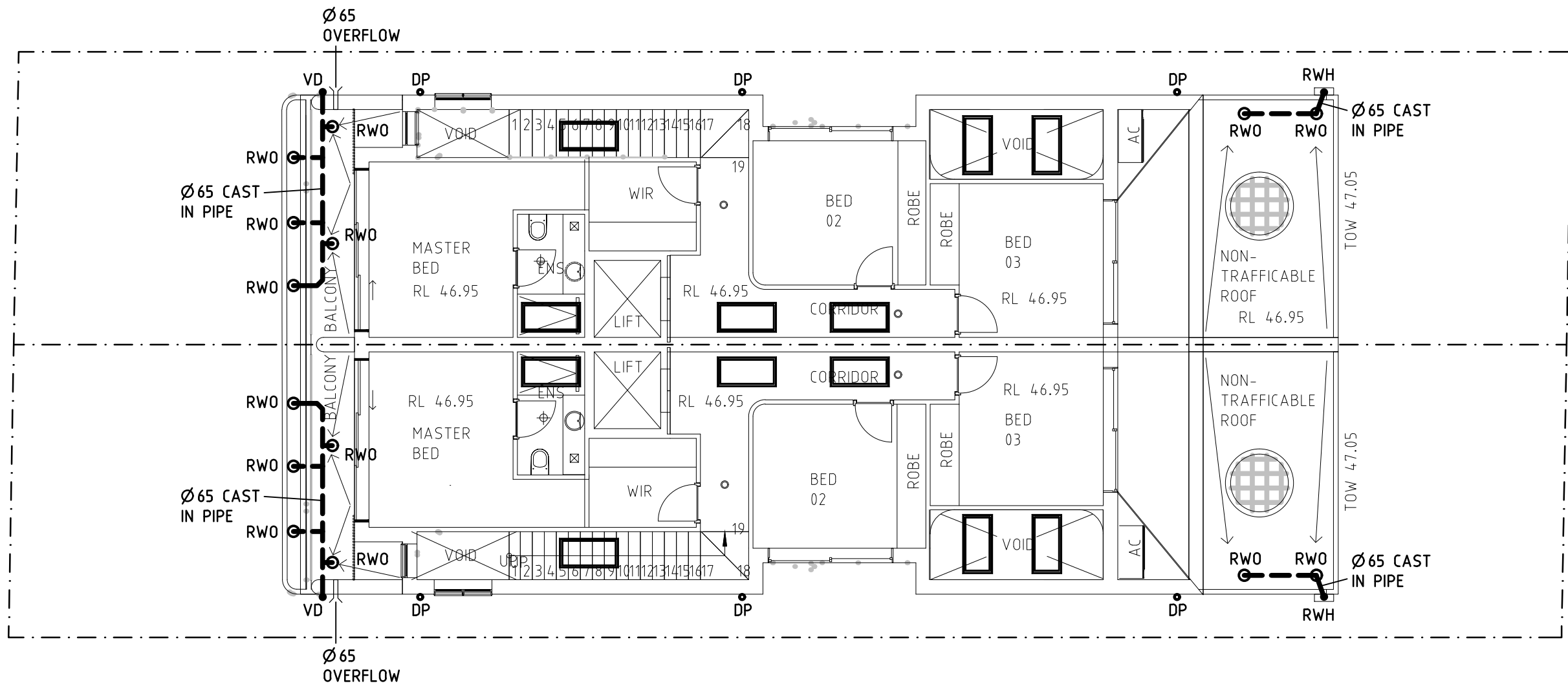
RAINWATER TANK DETAIL

N.T.S.
INSTALLATION OF TANKS TO BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATION.

LEGEND

RL	REDUCED LEVEL
CL	COVER LEVEL
IL	INVERT LEVEL
GSP	GRADED 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	FIBRE REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RRJ	RUBBER RING JOINT
U/S	UNDERSIDE OF SLAB
O/F	OVERFLOW
RWO	RAIN WATER OUTLET
SGL	SOLID GOTIC LID
DP	DROPPER
VD	VERTICAL DROP

A	25.06.2025	FOR DA APPROVAL	TA
REV.	DATE	AMENDMENT DESCRIPTION	DRAWN
TAA CONSULTING GROUP Tony Ahal Registered Engineer Design Practitioner. 201/25 FALCON STREET CROWS NEST NSW 2065 Ph: 0411778799 Email: engineers@taaconsultinggroup.com			
PROPOSED RESIDENTIAL DEVELOPMENT 12 GROVE STREET, EARLWOOD			
STORMWATER DRAINAGE & SEDIMENT CONTROL DETAILS			
DRAWN	CHECKED	SCALE	DATUM
TA	TONY AHAL - Civil & Structural Engineer B.E., M.Built.Surv., (NillAus)11060225	A5 SHOWN	N/A
DRAWING No.		REV.	
H012G - S2 /3		A	

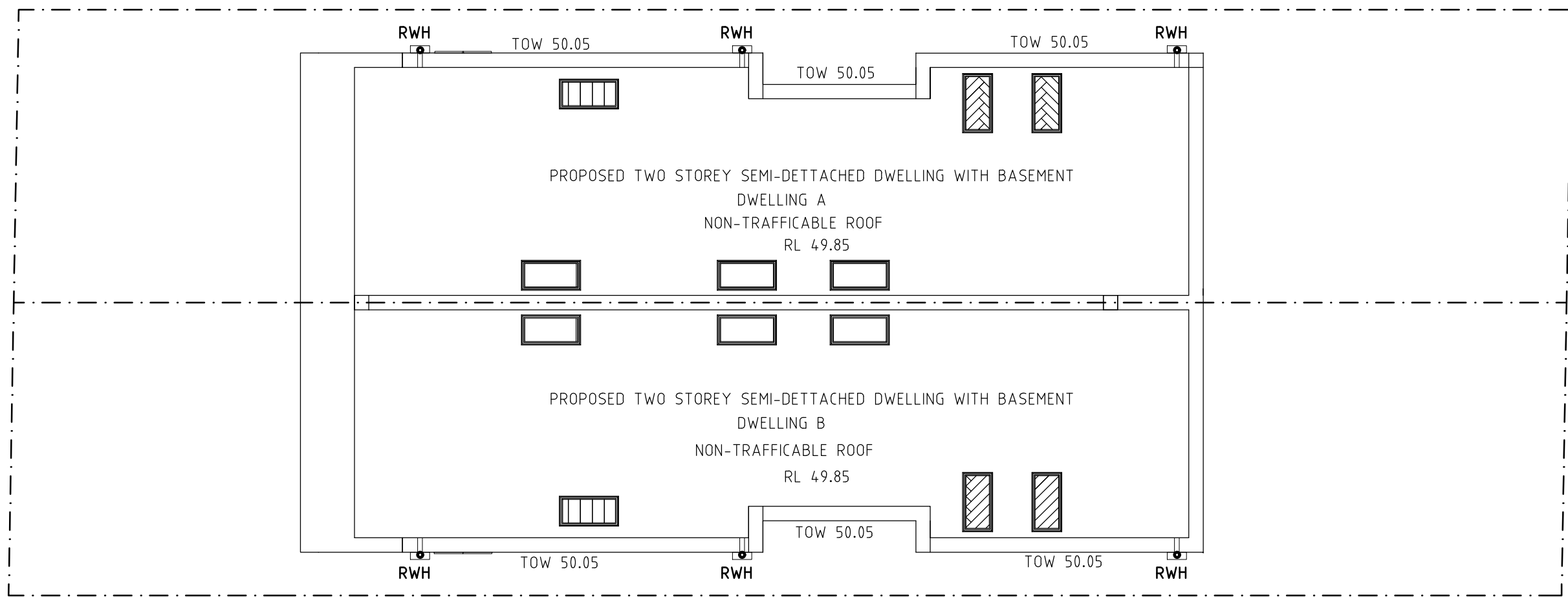
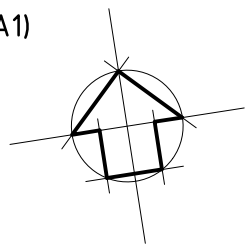


FIRST FLOOR DRAINAGE PLAN

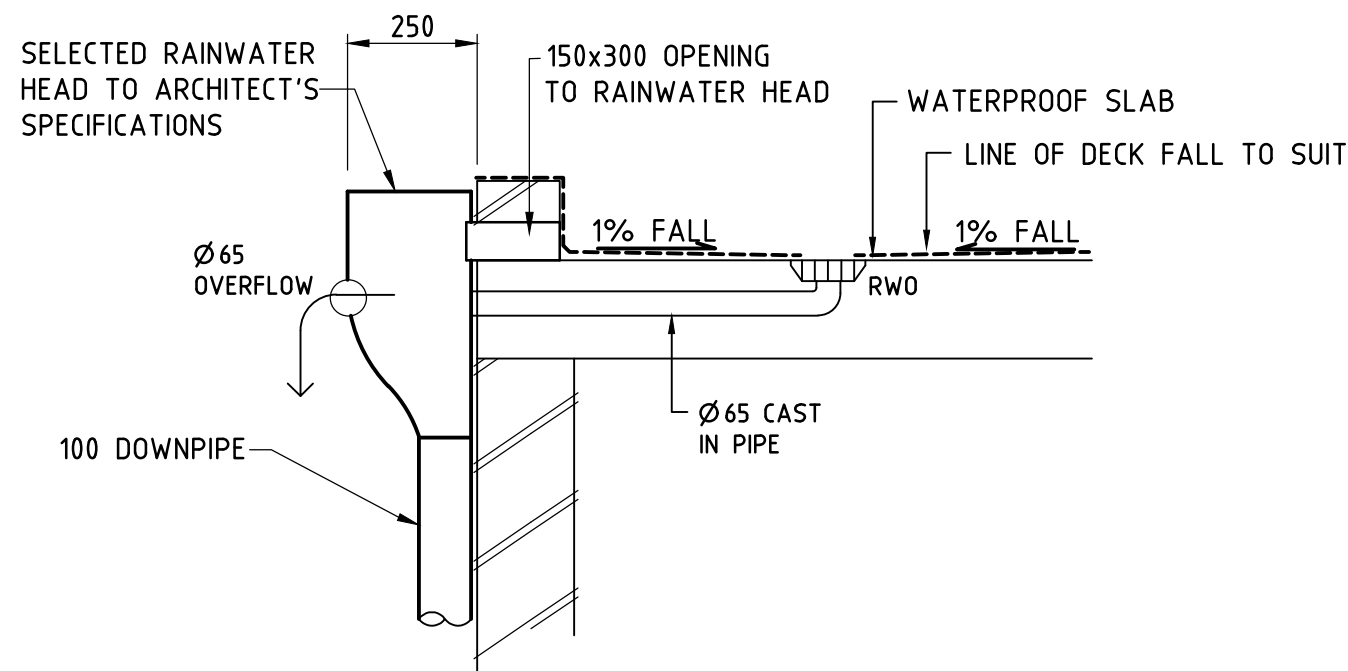
1. ALL GUTTERS TO BE MINILINE MINIMUM SIZE TO ARCHITECTURAL SPECIFICATIONS.
2. ALL DOWNPIPES TO BE MINIMUM 90mm DIAMETER.
3. ALL BALCONIES ARE TO HAVE A Ø65mm OVERFLOW PIPE OR AN 80mm SQUARE OPENING ACTING AS AN OVERFLOW.

ALL PIPES ARE REQUIRED TO HAVE MINIMUM 1% LONGITUDINAL FALL

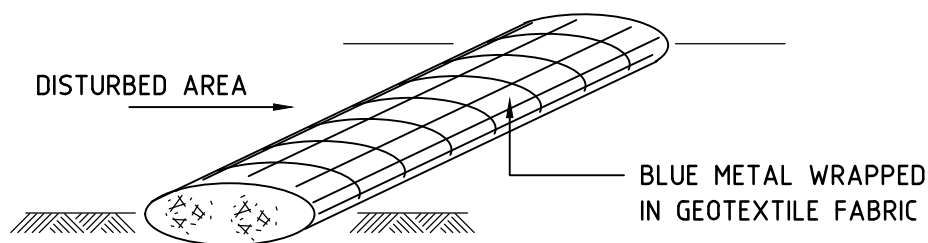
SCALE 1: 200 (A3)
SCALE 1: 100 (A1)



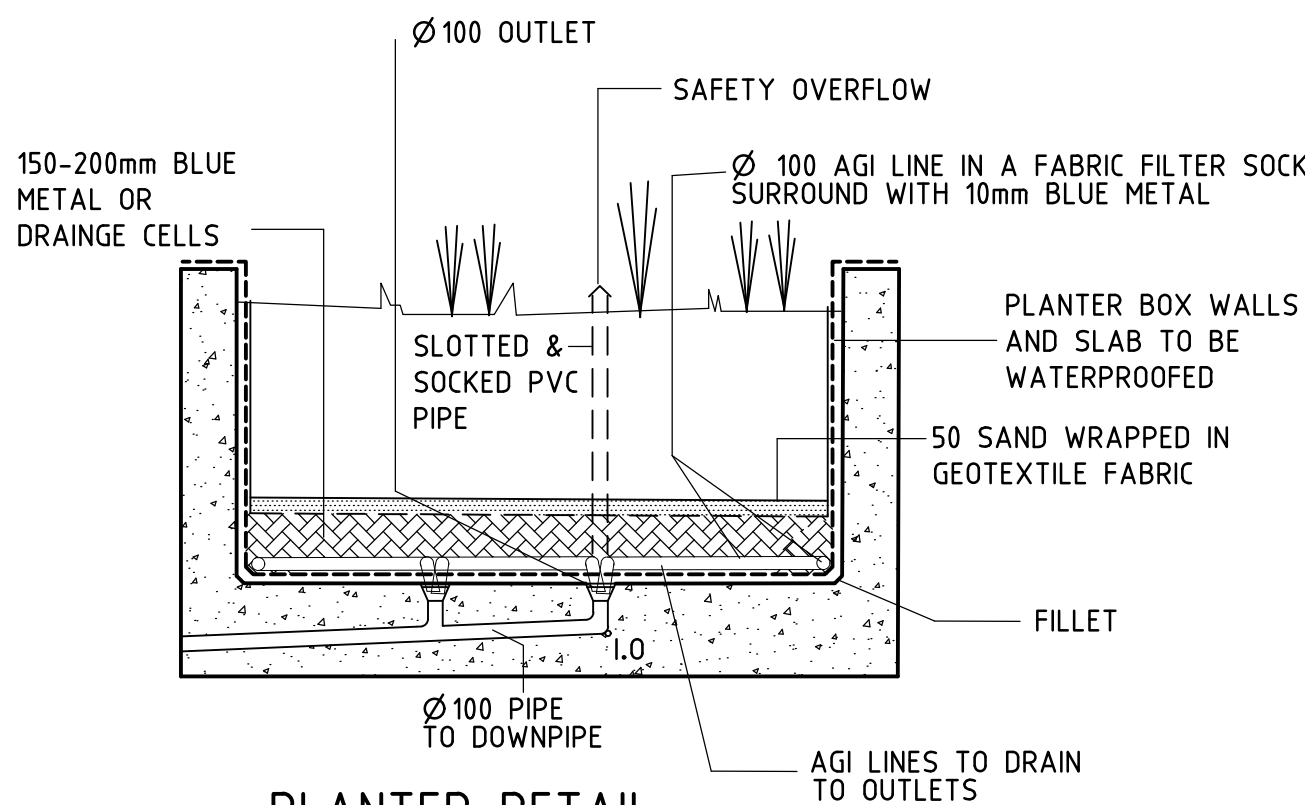
ROOF DRAINAGE PLAN



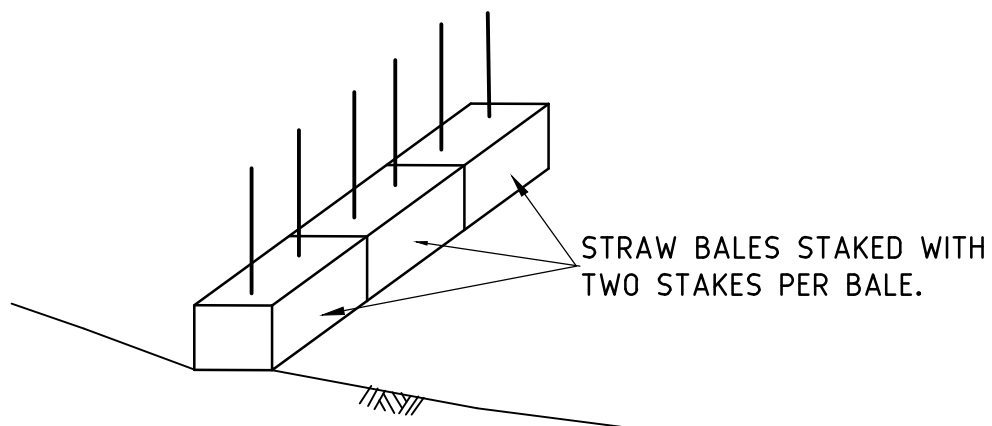
RAIN WATER HEAD DETAIL TYPICAL N.T.S



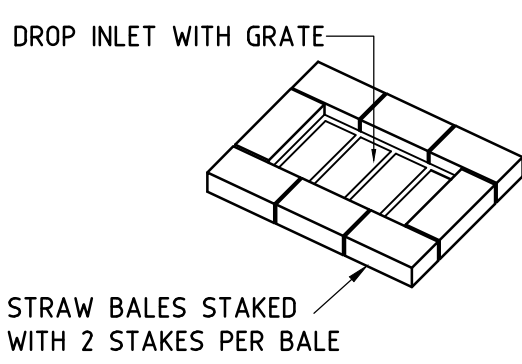
SEDIMENT BARRIER



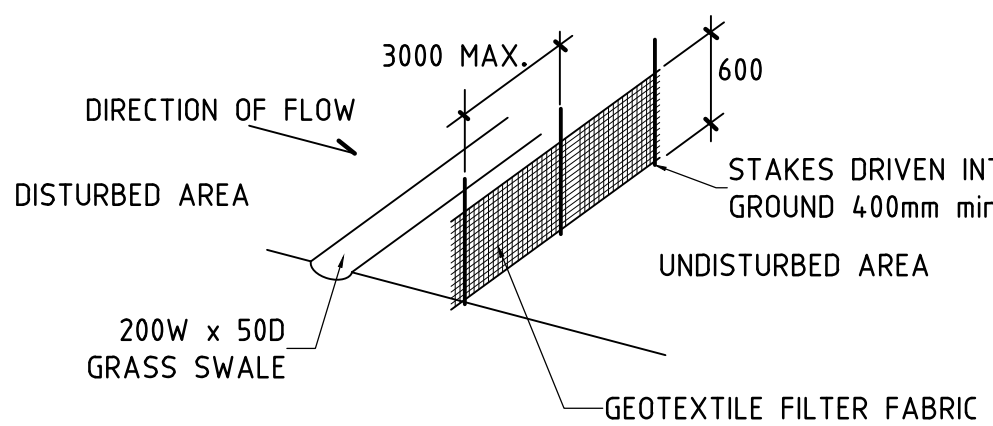
PLANTER DETAIL



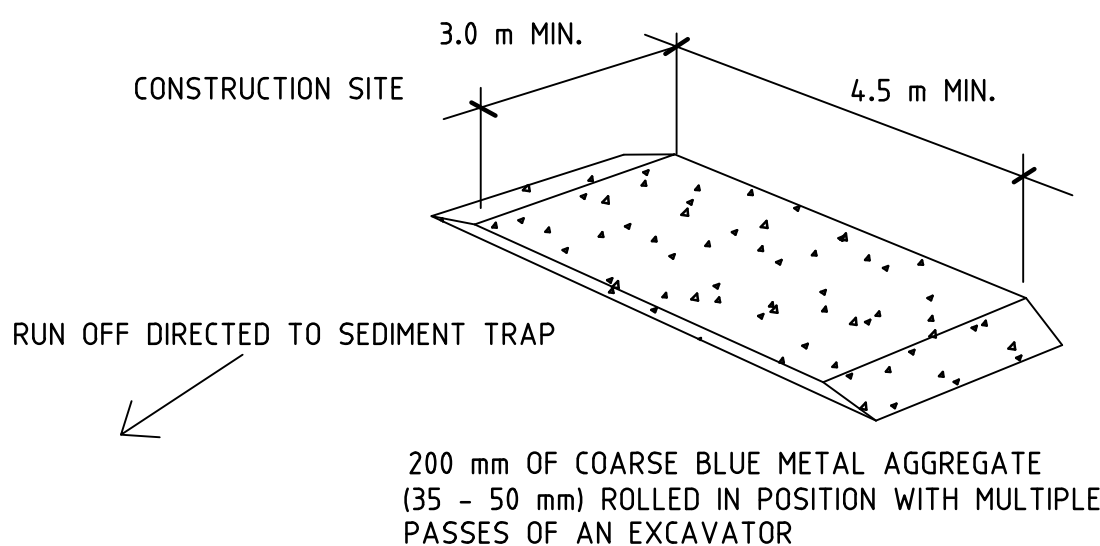
STRAW BALE SEDIMENT TRAP



STRAW BALE DROP INLET



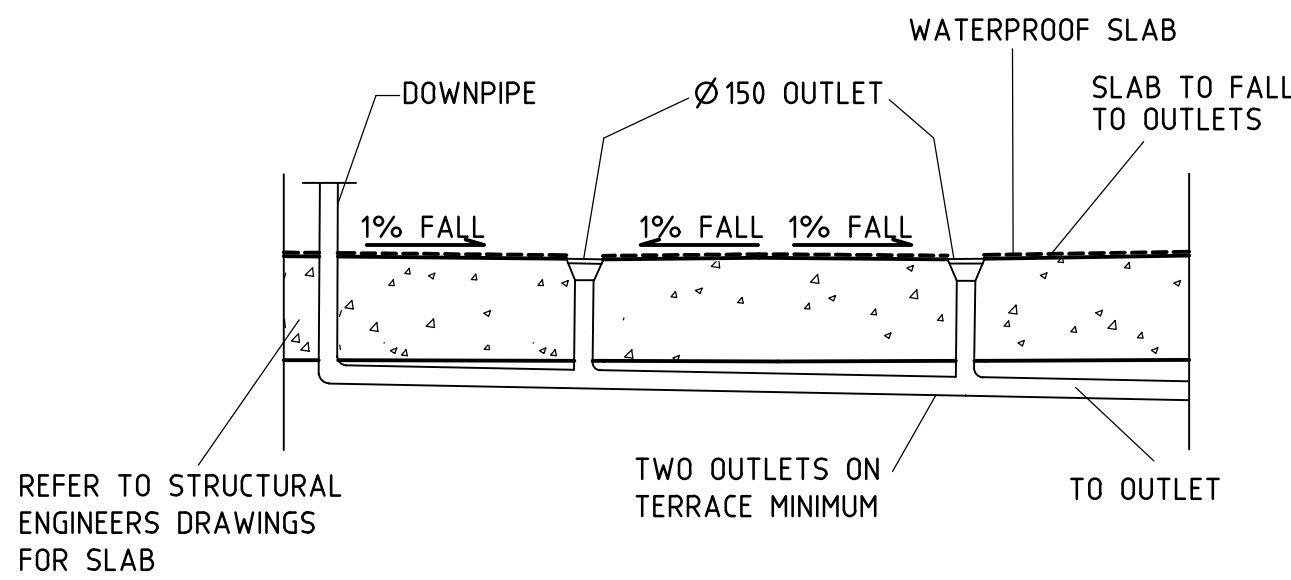
SEDIMENT FENCE DETAIL



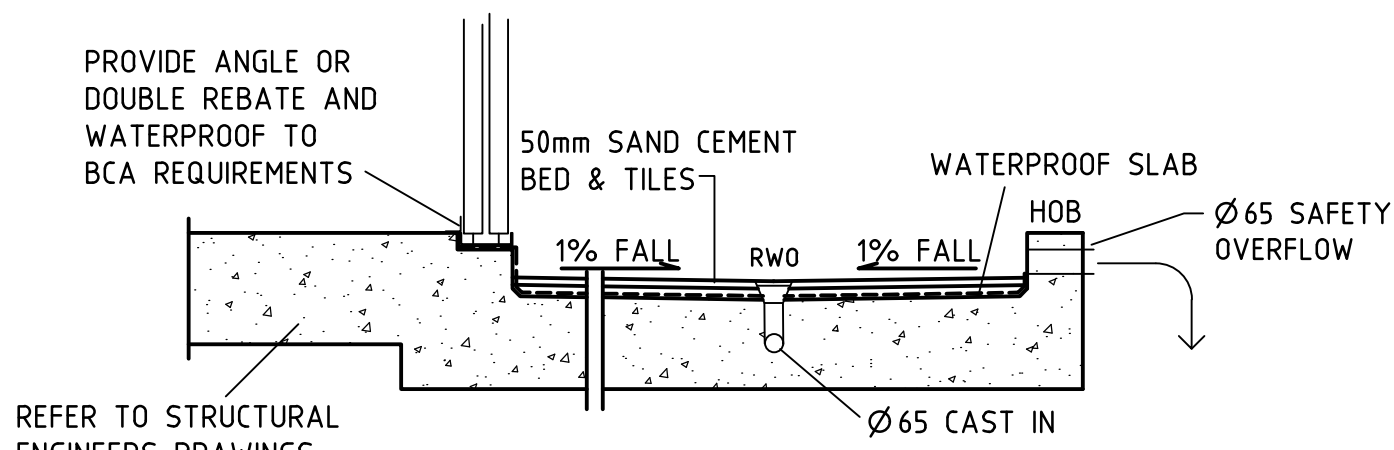
CONSTRUCTION ENTRY/EXIT DETAIL

LEGEND

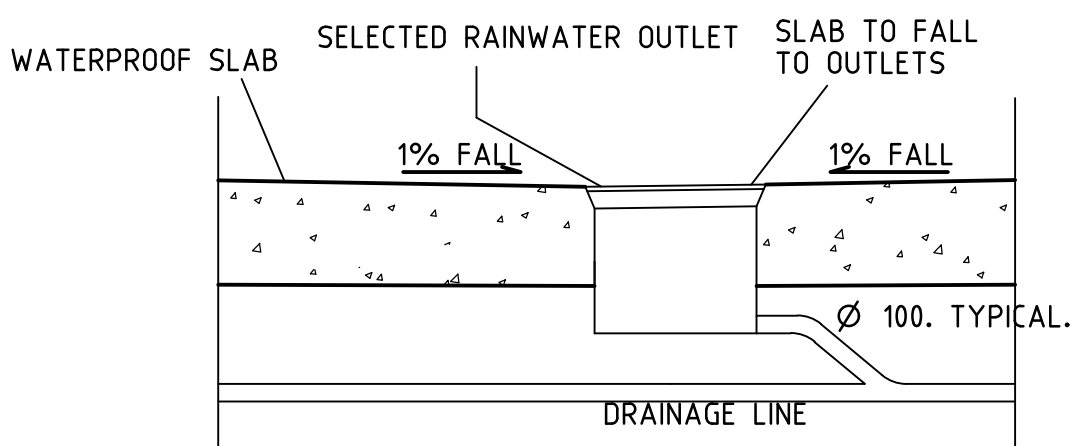
RL	REDUCED LEVEL
CL	COVER LEVEL
IL	INVERT LEVEL
GSIP	GRATED SURFACE INLET PIT
OSD	ON-SITE DETENTION
TWL	TOP WATER LEVEL
BWL	BOTTOM WATER LEVEL
TW	TOP OF WALL
IO	INSPECTION OPENING
ARI	AVERAGE RECURRENCE INTERVAL
FW	FLOOR WASTE
AHD	AUSTRALIAN HEIGHT DATUM
PSD	PERMISSIBLE SITE DISCHARGE
HED	HIGH EARLY DISCHARGE
RHS	RECTANGULAR HOLLOW SECTION
SS	STAINLESS STEEL
FRC	FIBRE REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RRJ	RUBBER RING JOINT
U/S	UNDERSIDE OF SLAB
O/F	OVERFLOW
RWO	RAIN WATER OUTLET
SGL	SOLID GOTIC LID
DP	DROPPER
VD	VERTICAL DROP



TERRACE OUTLET DETAIL (RWO)



BALCONY OUTLET DETAIL (RWO)



TYPICAL RAINWATER OUTLET DETAIL

NOTES:

1. ALL SERVICES ARE TO BE LOCATED IN THE FIELD IN CONJUNCTION WITH A RESPONSIBLE OFFICER OF EACH RELEVANT AUTHORITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. DRAINAGE PITS ARE TO BE SQUARE OR LARGER AS SHOWN, AND FITTED WITH A GALVANISED GRATE OR AS NOTED ON PLAN.
3. ALL PITS ARE TO HAVE A GALVANISED GRATE AND FRAME. FRAME TO BE CAST INTEGRALLY WITH THE PIT.
4. ALL PITS ARE TO BE BENCHED TO HALF PIPE LEVEL.
5. PROVIDE STEP IRONS WHERE PIT IS DEEPER THAN 1m. AT 450mm CENTRES.
6. DRAINAGE PIPE SIZES ARE 100mm DIAMETER UNLESS OTHERWISE NOTED.
7. DRAINAGE PIPES SHALL BE SEWER GRADE UPVC UNLESS OTHERWISE NOTED.
8. ALL BARE SOIL AREAS ARE TO BE PROTECTED FROM EROSION BY TEMPORARY MEASURES AND REVEGETATED AT THE CESSATION OF CONSTRUCTION.
9. 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.
10. THE STREET DRAINAGE PIT LOCATED DOWNHILL OF THE SITE SHALL BE PROTECTED FROM SEDIMENT WITH HAY BALES.
11. A SINGLE CONSTRUCTION ENTRANCE SHALL BE ESTABLISHED IN THE MANNER SHOWN IN THE ATTACHED DETAILS.
12. 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.
13. THESE PLANS ARE DIAGRAMMATIC AND SHOW THE GENERAL LOCATION OF STRUCTURES AND PIPES. WORK SHALL BE SET OUT ON SITE BY THE SITE FOREMAN AND 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 1.0m AND ANY CHANGES IN SIZE OF ANY COMPONENT NOMINATED HERON SHALL BE REFERRED TO THE DESIGNER FOR COMMENT.
14. IF IN DOUBT, ASK THE SUPERINTENDENT WHO SHALL CONSULT THE DESIGNER.

A	25.06.2025	FOR DA APPROVAL	TA
REV.	DATE	AMENDMENT DESCRIPTION	DRAWN
TAA CONSULTING GROUP Tony Ahal Registered Engineer Design Practitioner. 201/25 FALCON STREET CROWS NEST NSW 2065 Ph: 0411778799 Email: engineers@taaconsultinggroup.com			
PROPOSED RESIDENTIAL DEVELOPMENT 12 GROVE STREET, EARLWOOD			
STORMWATER DRAINAGE & SEDIMENT CONTROL DETAILS			
DRAWN	CHECKED	SCALE	DATUM
TA	TONY AHAL - Civil & Structural Engineer B.E., M.Built.Surv., (NRE)Aust11060225	AS SHOWN	N/A
DRAWING No.		REV.	
H012G - S3/3		A	