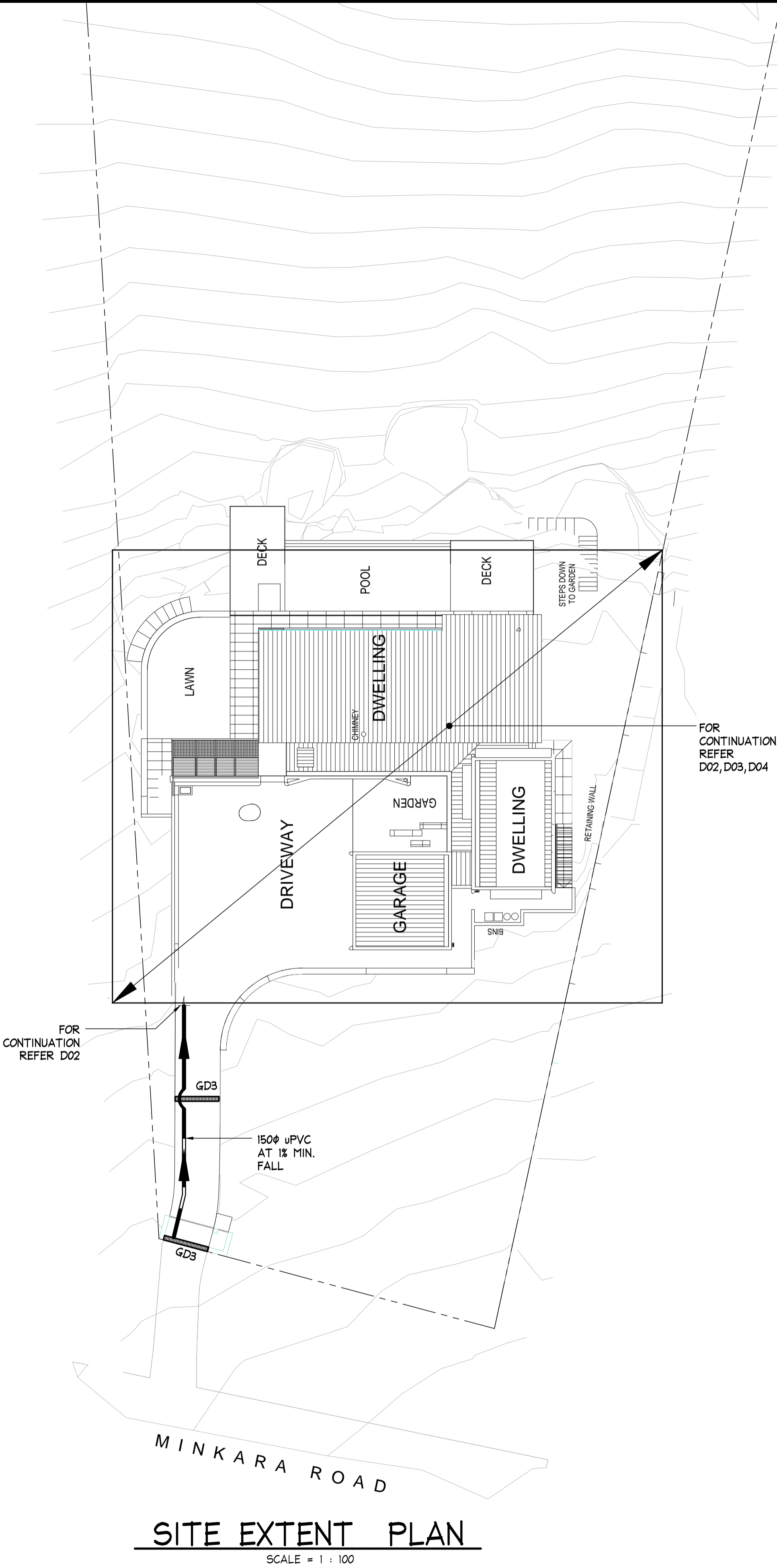


STORMWATER NOTES:

- 1 - ALL PIPES TO BE 100mm Ø UNLESS NOTED OTHERWISE.
- 2 - ALL PIPES TO BE uPVC TO AS 1254-2002 UNLESS NOTED OTHERWISE.
- 3 - ALL PIPES TO BE LAYED AT 1 % MINIMUM GRADE UNLESS NOTED OTHERWISE.
- 4 - ALL PIPES SHALL BE LAID ON A 75mm SAND BED, COMPACTED TO 100% S.M.D.D. BELOW PAVEMENTS.
(NO COMPACTION REQUIRED BELOW LANDSCAPING)
COVER TO SURFACE FROM TOP OF PIPE TO BE 300mm MINIMUM.
BACKFILL TO BE ADEQUATELY CONSOLIDATED AROUND PIPES BY METHOD OF RAMMING AND WATERING IN. TRENCHES TO BE FILLED WITH GRANULAR MATERIAL AS SPECIFIED.
- 5 - ALL DOWN PIPES TO BE 100mm Ø UNLESS NOTED OTHERWISE.
- 6 - DOWN PIPE LOCATIONS ARE INDICATIVE ONLY. LOCATIONS TO BE CONFIRMED WITH ARCHITECT PRIOR TO COMMENCEMENT OF WORK.
- 7 - PROVIDE CLEANING EYES AT ALL DOWNPIPES.
- 8 - ALL PITS TO BE CAST INSITU OR, IF PRECAST, APPROVED BY ENGINEER.
CAST INSITU PITS TO HAVE 150mm THICK CONCRETE WALLS AND BASE.
WALLS TO BE REINFORCED WITH 1 N12 TOP TIE UNLESS NOTED OTHERWISE.
CAST INSITU PITS GREATER THAN 1000 DEEP TO BE MINIMUM 900x600 AND TO HAVE 150mm THICK CONCRETE WALLS AND BASE. WALLS TO BE REINFORCED WITH N12 AT 300 EACH WAY UNLESS NOTED OTHERWISE.
- 9 - ALL PITS GREATER THAN 1000mm DEEP SHALL HAVE STEP IRONS AS PER COUNCIL STANDARDS.
- 10 - THE BOUNDARY OR SILT ARRESTOR PIT SHOULD ALWAYS INCORPORATE A SUMP AND MAXI-MESH SCREEN AS PER LOCAL COUNCIL REQUIREMENTS. HOWEVER, UNLESS SPECIFICALLY REQUIRED BY COUNCILS POLICY OR IF THE SITE CONSISTS OF A CLAY OR ROCK SUBGRADE, ALL OTHER DRAINAGE PITS WILL NOT REQUIRE A SUMP.
- 11 - ALL WORK TO BE IN ACCORDANCE WITH LOCAL COUNCIL STANDARDS AND SPECIFICATIONS.
- 12 - PRIOR TO COMMENCING ANY SITE WORKS THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES TO APPROVED SEDIMENT AND EROSION CONTROL PLAN, EPA GUIDELINES AND COUNCIL SPECIFICATIONS. ALL MEASURES TO REMAIN IN PLACE UNTIL COMPLETION AND STABILIZATION OF THE SITE TO COUNCIL SATISFACTION.
- 13 - ALL LEVELS SHOWN ARE TO AHD
- 14 - ENSURE THAT ALL PITS AND STORMWATER PIPES ARE LOCATED CLEAR FROM TREE ROOT SYSTEMS.
- 15 - ALL EXISTING EARTHENWARE PIPES TO BE UPGRADED TO uPVC.
- 16 - ALL WORKS TO BE IN ACCORDANCE WITH AS 3500-2003 NATIONAL PLUMBING DRAINAGE CODE PART 3 - STORMWATER DRAINAGE.
17. - IF NOT INDICATED ON PLANS, PROVIDE LEAF CATCHERS TO ALL DOWNPIPES.
18. - ORIFICE PLATE MUST BE INSTALLED PRIOR TO INSTALLATION OF THE ROOF DRAINAGE SYSTEM AND CONNECTION OF THE SITE STORMWATER SYSTEM TO THE ONSITE DETENTION TANK.

RAINWATER RE-USE TANKS:

1. CONSIDERING THE ROOF CATCHMENT AREA, LOCATION OF PROPERTY, INTENDED USE OF RAINWATER AND GARDEN SIZE WE RECOMMEND PROVIDING A RAINWATER TANK FOR USE AS PER BASIX REQUIREMENTS, SYDNEY WATER AND NSW HEALTH REQUIRMENTS FOR NON DRINKING USE ONLY
2. THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
3. REFERENCES:
COOMBS P.J. & KUCZERA G. (2001), "RAINWATER TANK DESIGN FOR WATER SUPPLY & STORMWATER MANAGEMENT." STORMWATER INDUSTRY ASSOCIATION REGIONAL CONFERENCE.
PATRICK DUPONT & STEVE SHACKEL, "RAINWATER" AUSTRALIAN GOVERNMENT (2004), "GUIDANCE ON USE OF RAINWATER TANKS"
4. ALL CONNECTIONS TO PLUMBING AND RAINWATER TANKS TO BE IN ACCORDANCE WITH SYDNEY WATERS' GUIDE "INSTALLING A RAINWATER TANK" AVAILABLE AT www.sydneywater.com.au
5. PROVIDE A DUAL SUPPLY SYSTEM AND BACKFLOW PREVENTION SYSTEM IN ACCORDANCE WITH 'BASIX-DESIGN GUIDE FOR SINGLE DWELLINGS' BY NSW DEPARTMENT OF INFRASTRUCTURE, PLANING AND NATURAL RESOURCES.
6. IF NOT SPECIFIED ON PLANS, THE FIRST FLUSH SYSTEM IS TO HAVE A MINIMUM SIZE OF 20L PER 100m2 OF ROOF CATCHMENT AREA PRIOR TO ENTERING THE RAINWATER TANK. INDIVIDUAL SITE ANALYSIS IS REQUIRED IN HEAVILY POLLUTED AREAS TO DETERMINE IF LARGER VOLUMES OF FIRST FLUSH RAINWATER ARE TO BE DIVERTED. IF IN DOUBT, CHECK WITH LOCAL HEALTH AUTHORITIES.
7. SCREENED DOWNPIPE RAINWATER HEAD OR OTHER SUITABLE LEAF AND DEBRIS DEVICE TO BE INSTALLED ON EACH DOWNPIPE. SCREEN MESH TO BE 4-6mm AND DESIGNED TO BE SELF-CLEANING.
8. FIRST FLUSH DEVICES, OR APPROVED ALTERNATIVE, TO BE INSTALLED WITH AN AUTOMATED DIVERSION AND DRAINAGE SYSTEM, THAT IS, NO MANUAL DIVERSION AND DRAINAGE VALVES. REFER TYPICAL FLUSH OUT PIT FOR DETAILS.
9. BEFORE PURCHASING MATERIALS OR PAINT TO BE USED ON ROOF CATCHMENT AREAS, THE MANUFACTURER'S RECOMMENDATIONS ON LABELS AND BROCHURES FOR RAINWATER TANK SUITABILITY TO BE READ AND ADHERED TO.
10. PRE-STORAGE PITS FOR UNDERGROUND RAINWATER STORAGE TANKS AND FLUSH OUT PITS MAY ASSIST IN LIMITING SILT, AND PREVENT VERMIN, INSECTS (INCLUDING MOSQUITOES) AND DEBRIS FROM ENTERING THE RAINWATER STORAGE AREA.
11. BUILDER/PLUMBER TO ENSURE THE INSTALLATION OF THE RAINWATER TANK SYSTEM IS IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND THE RAINWATER TANK DESIGN AND INSTALLATION HANDBOOK - HB 230-2008. IF IN DOUBT CONTACT ENGINEER.
12. RAINWATER TANK TO BE WATER PROOFED IN ACCORDANCE WITH HB 230-200B



NOTE: EXCAVATION AROUND TREES

CARE SHOULD BE TAKEN WHEN UNDERTAKING WORKS IN THE VICINITY OF SELECTED TREES NOT TO DISTURB THE TREE ROOT SYSTEM. HAND DIGGING OF TRENCHES ETC MAY BE NECESSARY. REFER ARBORISTS REPORT.

LEGEND

- NEW STORMWATER PIPE
- STORMWATER PIPE FALL DIRECTION IN CHARGED SYSTEMS
- STORMWATER PIPE FLOW DIRECTION
- GD3 - 300 MIN DEPTH x 150 DEEP GRATED DRAIN

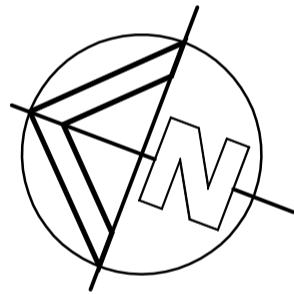
NOTE: ALL DRAINAGE LINES ARE INDICATIVE ONLY.

NOTE:

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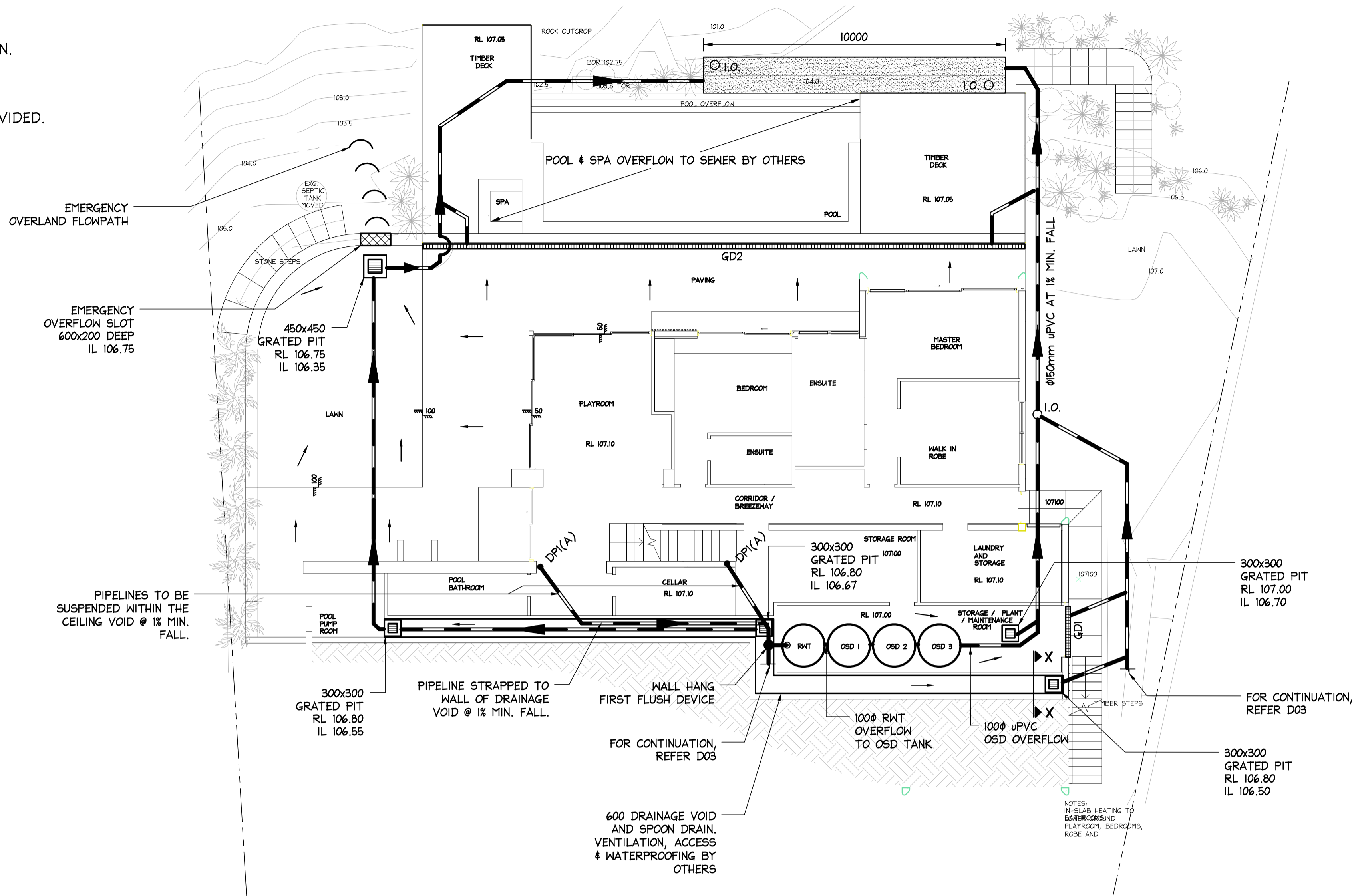
						DOCUMENT CERTIFICATION Date : <i>[Signature]</i> Rick G Wray ... BE(Civil), CPEng, MIEAust., NER., RPEQ. 08293. (Director: NB Consulting Engineers) <small>The copyright of this drawing remains with Northern Beaches Consulting Engineers Pty Ltd. Trading as NB Consulting Engineers</small>	NB Consulting Engineers STRUCTURAL - CIVIL - STORMWATER - REMEDIAL A.C.N. 076 121 616 A.B.N. 24 076 121 616 Sydney: Ph: (02) 9984 7000 Fax: (02) 9984 7444 Suite 207, 30 Fisher Road Dee Why N.S.W. 2099 Gold Coast: Ph: (07) 5631 4744 Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220 E : nb@nbconsulting.com.au W : www.nbconsulting.com.au	Architect: Robert Harrison Architect	Project: ALTERATIONS & ADDITIONS 50 MINKARA ROAD, BAYVIEW	Date: APRIL 2020	Design: KO	Drawn: KO
15.04.2020	A	ISSUE FOR D.A. SUBMISSION ONLY	KO	MW				Client: Miranda Wong	Drawing Title: SITE DRAINAGE PLAN	Job No: 190897	Drawing No: D01	Issue: A
Date:	Issue:	Description:	By:	Review:								

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LOWER GROUND FLOOR DRAINAGE PLAN

SCALE = 1 : 100

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NOTE:
SWIMMING POOL SURCHARGE OVERFLOW TO BE CONNECTED TO SYDNEY WATER SEWER IN ACCORDANCE WITH AS3500.2.2.2003 DETAILS AND CERTIFICATION BY OTHERS.

LEGEND

- 100mm ϕ DOWNPIPE DISCHARGE TO RWT
- NEW STORMWATER PIPE
- STORMWATER PIPE FALL DIRECTION IN CHARGED SYSTEMS
- STORMWATER PIPE FLOW DIRECTION
- GRATED DRAIN
GDI - 150 MIN DEPTH x 150 WIDE GRATED DRAIN
GD2 - STORMTECH 65AG GRATED DRAIN
RECOMMENDED SETDOWN
- 50, 100
- PIT STORMWATER PIT

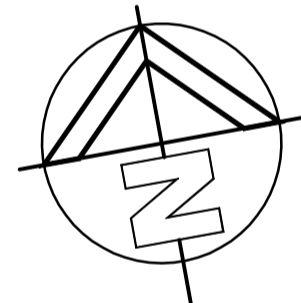
NOTE: ALL DRAINAGE LINES ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.

ONSITE DETENTION CALCULATIONS ACCORDING TO NORTHERN BEACHES COUNCIL - PITWATER 21

TOTAL SITE AREA	=	4423 m ²
PRE DEVELOPED IMPERVIOUS AREA	=	559 m ² (13 %)
PROPOSED IMPERVIOUS AREA	=	671 m ² (15 %)
INCREASE	=	112 m ²

OSD REQUIREMENTS

TYPE OF CONTROL	ABOVE GROUND POLY TANKS
REQUIRED OSD TANK	= 9000 L
OSD TANK PROVIDED	= 9000 L (3x3000 L)
PSD	= 4 l/s
ORIFICE	= 37 mm
REQUIRED RAINWATER TANK (BASIX)	= 3000 L
RAINWATER TANK PROVIDED	= 3000 L



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DOCUMENT CERTIFICATION				Architect:		Project:		Date:	Design:	Drawn:
Date : 15.04.2020				Robert Harrison Architect		ALTERATIONS & ADDITIONS 50 MINKARA ROAD, BAYVIEW		APRIL 2020	KO	KO
Issue: A				Miranda Wong		Drawing Title: LOWER GROUND FLOOR DRAINAGE PLAN		Job No: 190897	Drawing No: D02	Issue: A
Description: ISSUE FOR D.A. SUBMISSION ONLY										
By: Review:										

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SCALE = 1 : 100


 100mm ϕ DOWNPIPE DISCHARGE TO RWT

 NEW STORMWATER PIPE

 STORMWATER PIPE FALL DIRECTION
 IN CHARGED SYSTEMS

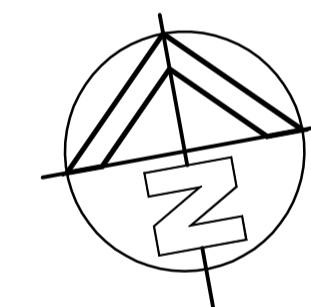
 STORMWATER PIPE FLOW DIRECTION

 GRATED DRAIN
 GD1 - 150 MIN DEPTH x 150 WIDE GRATED DRAIN
 GD2 - STORMTECH 65AG GRATED DRAIN
 GD3 - 300 MIN DEPTH x 150 WIDE GRATED DRAIN

 BUILDUP TO PROVIDE A MINIMUM 100mm W x 30mm
 OR 50mm DIA OVERFLOW FOR EVERY 6m² OF EXISTING
 TERRACE AREA. THE FULL OVERFLOW DEPTH MUST
 BE LOCATED BELOW THE ADJACENT INTERNAL FLOOR
 TO PROTECT AGAINST INCIDENTAL FLOODING DUE TO
 BLOCKED FLOOR OUTLET.

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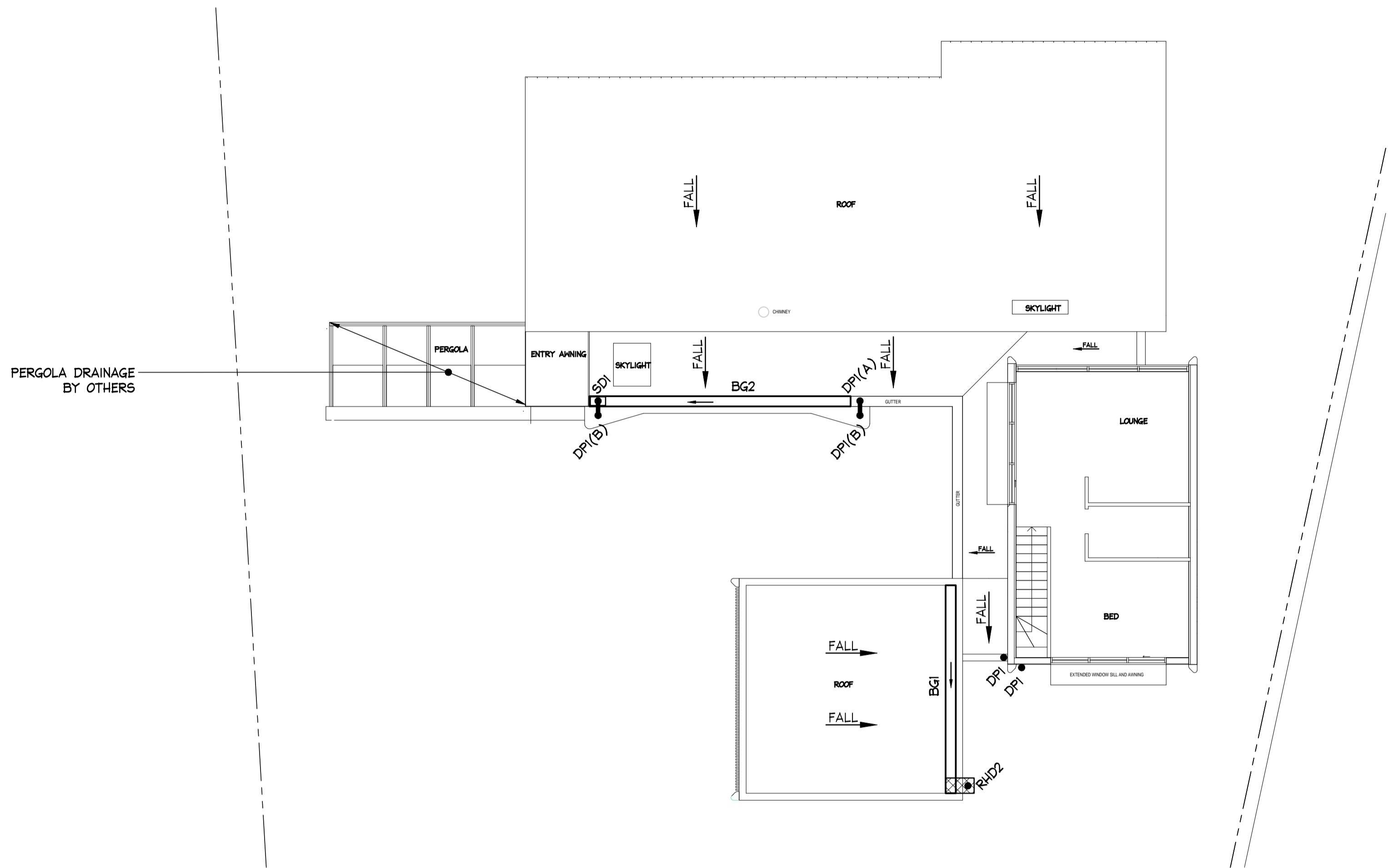
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NOTE:
PROVIDE WATERPROFFING AND FLASHING ALL AROUND SKYLIGHTS

NOTE: BOX GUTTERS
ALL BOX GUTTER SYSTEMS SHOWN ON THESE PLANS ARE TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE ASSOCIATED DETAILS. IF ANY CHANGE TO THE BOX GUTTER CONFIGURATION IS PROPOSED, NOTIFY THE ENGINEER FOR RE-DESIGN. IF THE INSTALLED BOX GUTTER DOES NOT STRICTLY COMPLY WITH OUR DESIGN, CERTIFICATION OF THE HYDRAULIC SYSTEM MAY BE REFUSED.

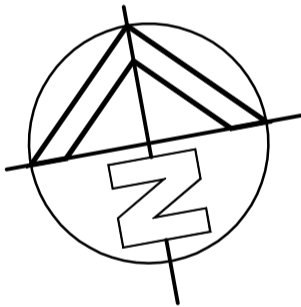
LOWER ROOF DRAINAGE PLAN

SCALE = 1 : 100

LEGEND

- DP(A) DOWN PIPE ABOVE ONLY
DP(B) DOWN PIPE BELOW ONLY
DP 100mm ϕ DOWNPIPE DISCHARGE TO RWT
Bg1 BOX GUTTER, REFER TO DETAIL
RH1 RAINHEAD WITH 100mm ϕ DOWNPIPE DISCHARGE TO RWT
RH2 RAINHEAD WITH 100mm ϕ DOWNPIPE DISCHARGE TO RWT
SD1 SUMP WITH 100mm ϕ DOWNPIPE DISCHARGE TO RWT

NOTE: ALL DRAINAGE LINES ARE INDICATIVE ONLY.
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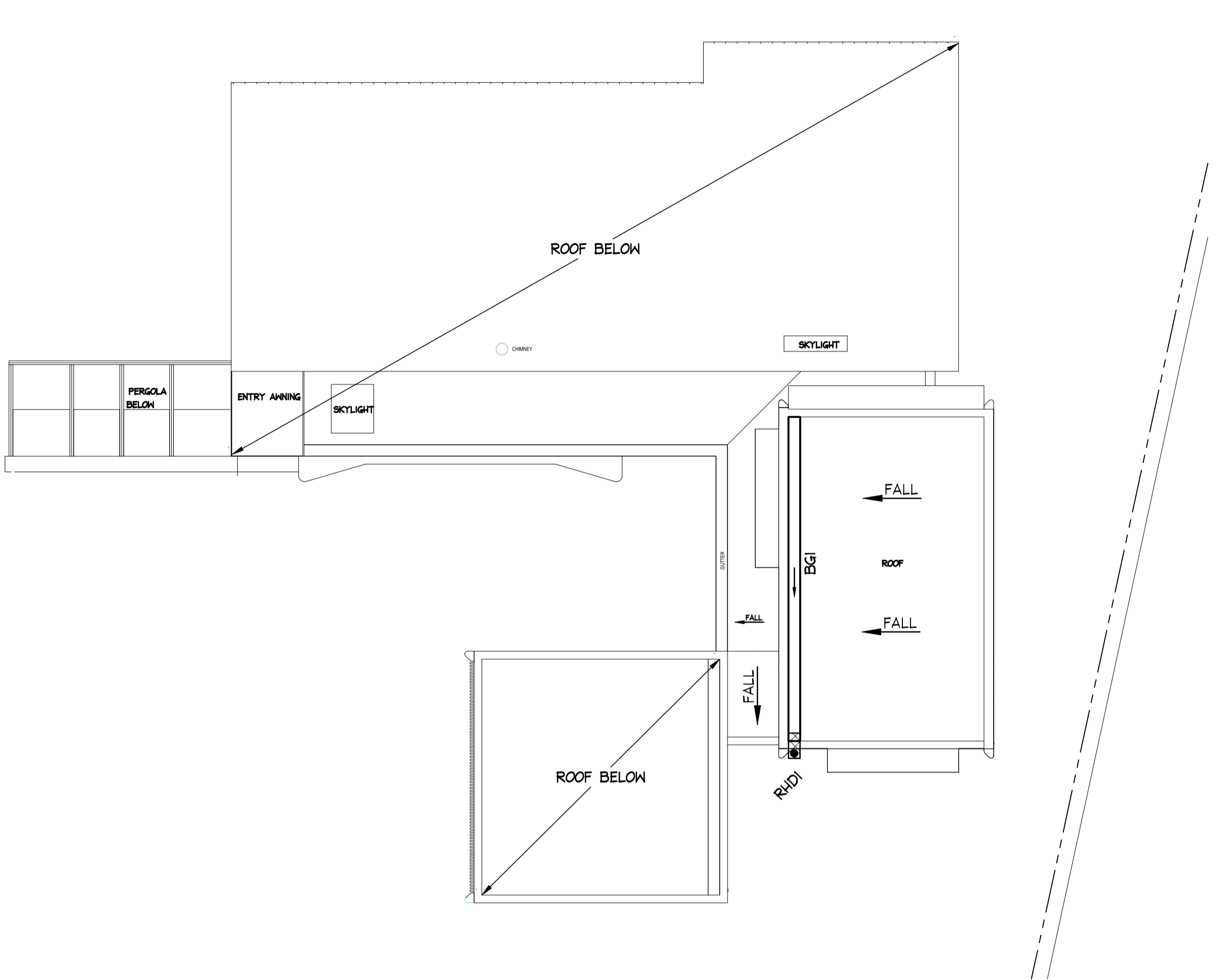
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ROOF DRAINAGE PLAN
SCALE = 1 : 100

- LEGEND**
- BGI BOX GUTTER, REFER TO DETAIL
 - R/DI RAINHEAD WITH 100mm Ø DOWNPIPE DISCHARGE TO RWT

NOTE: ALL DRAINAGE LINES ARE INDICATIVE ONLY. LOCATION MAY VARY DUE TO CONSTRAINTS.



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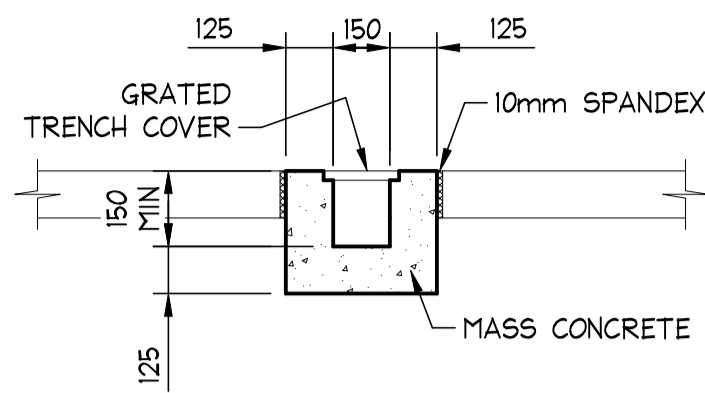
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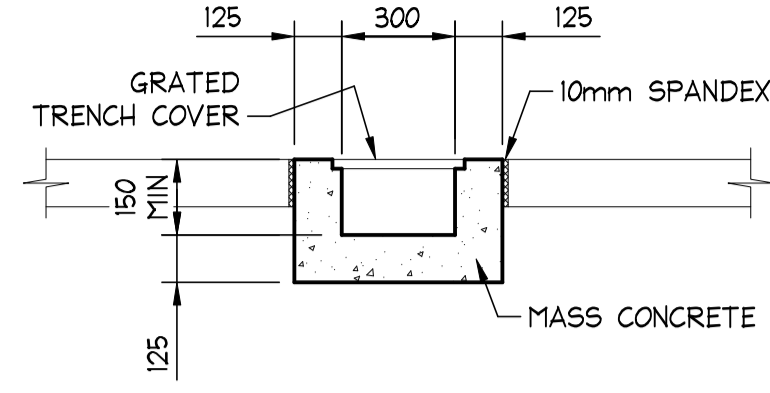
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16.04.2020	B	REVISED	KO	-									
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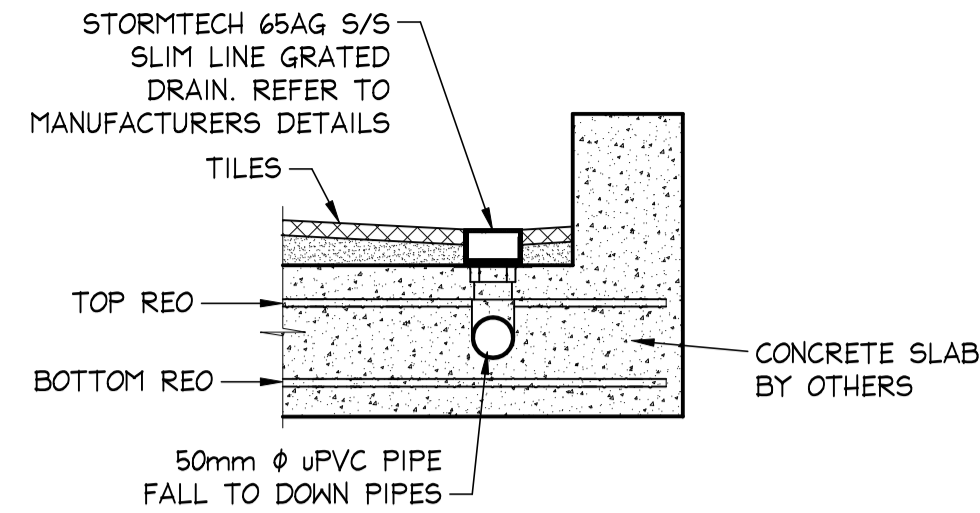
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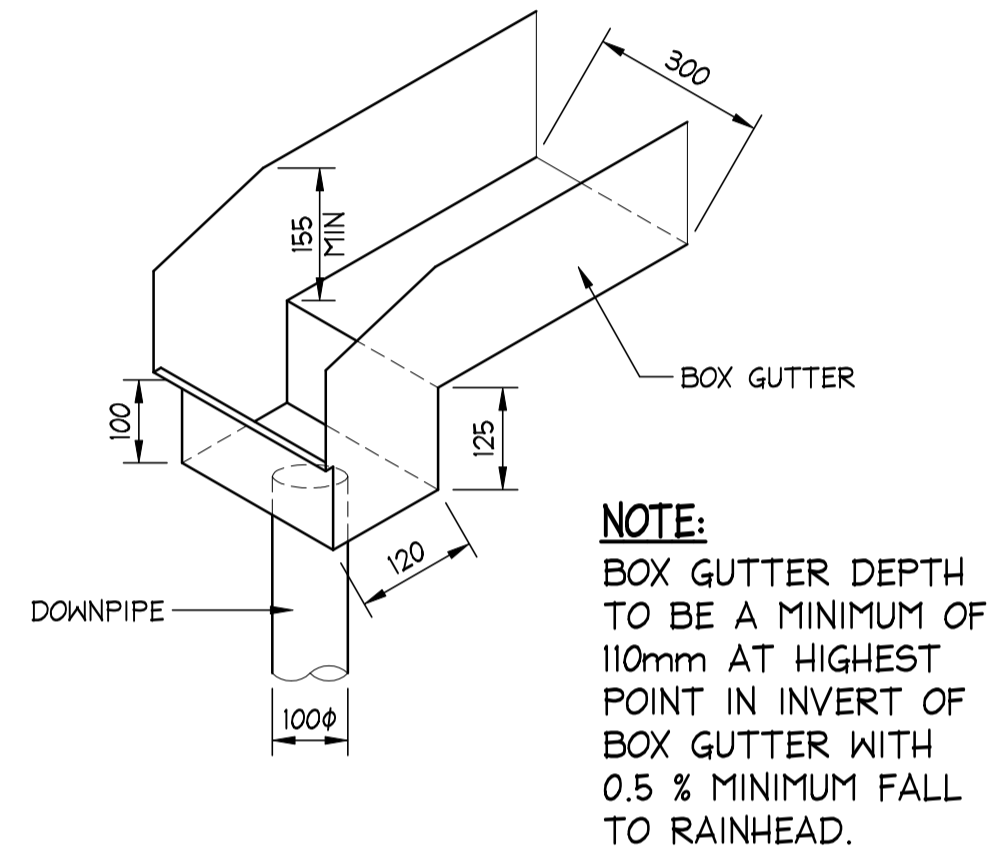
OR PRECAST GRATED DRAIN
ALTERNATE POLYPROPYLENE DRAIN BY MANUFACTURER
TYPICAL GRATED DRAIN - GDI
SCALE = 1 : 20



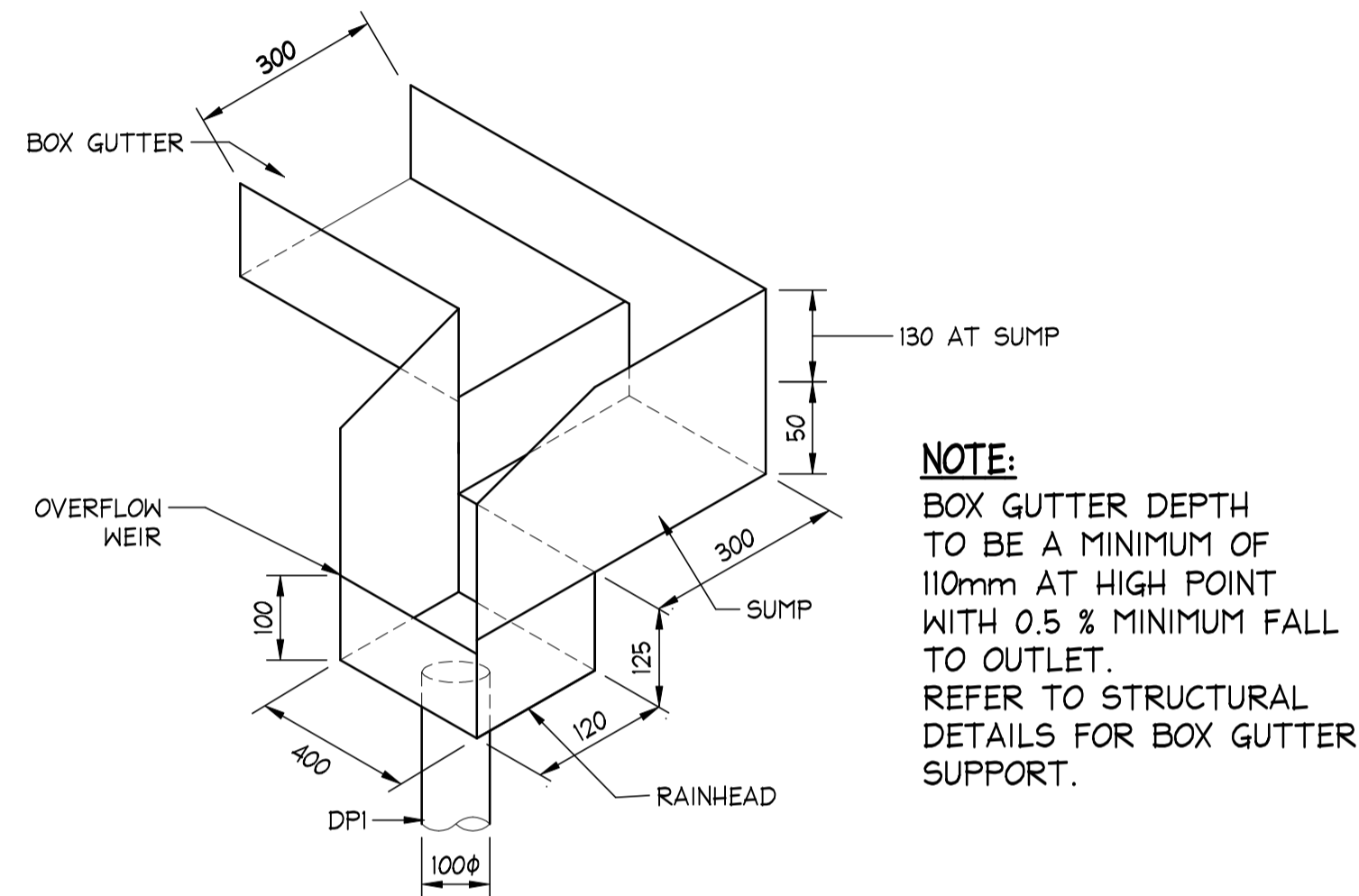
OR PRECAST GRATED DRAIN
ALTERNATE POLYPROPYLENE DRAIN BY MANUFACTURER
TYPE GD3 GRATED DRAIN
SCALE = 1 : 20



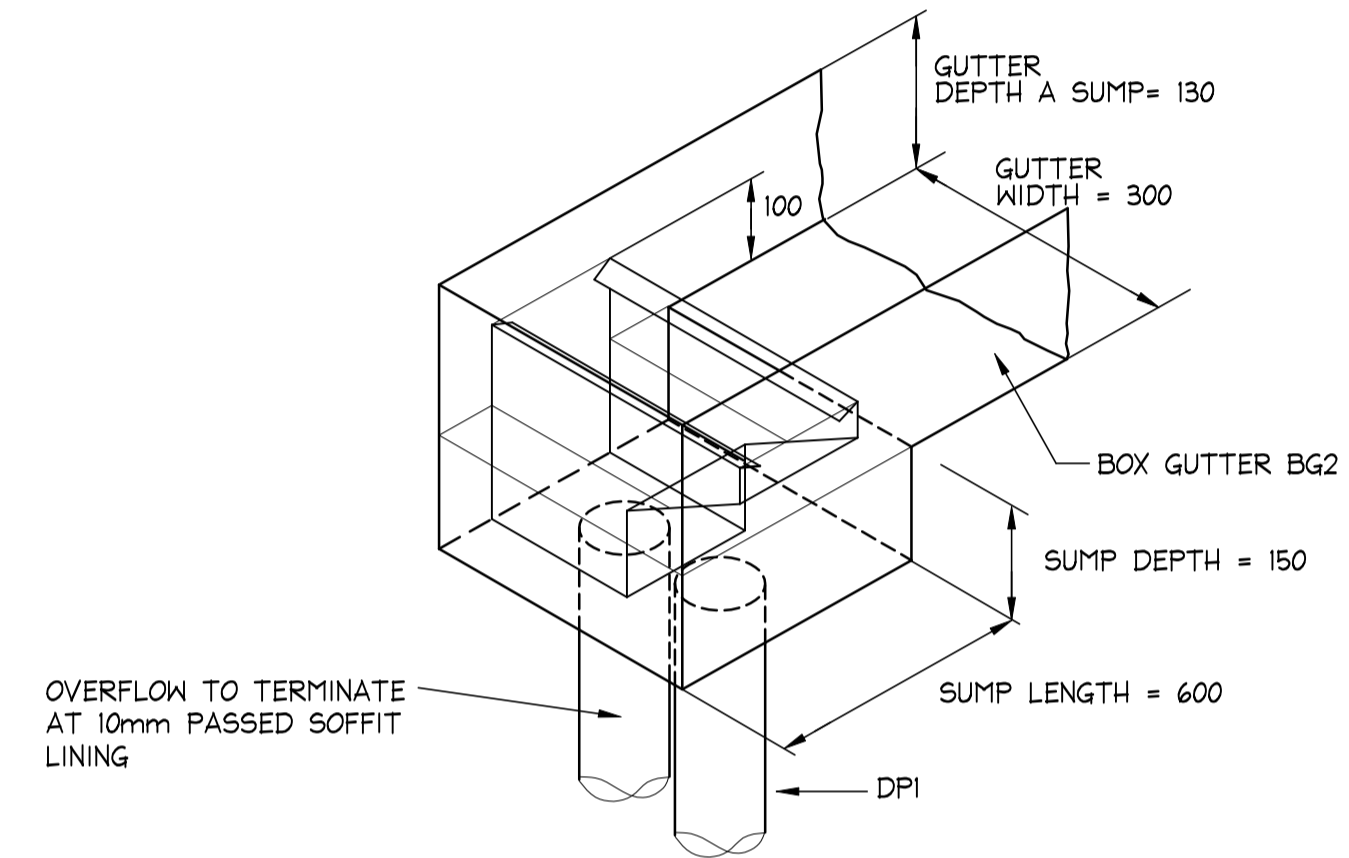
STORMTECH 65AG GRATED DRAIN DETAIL - GD2
SCALE = 1 : 10



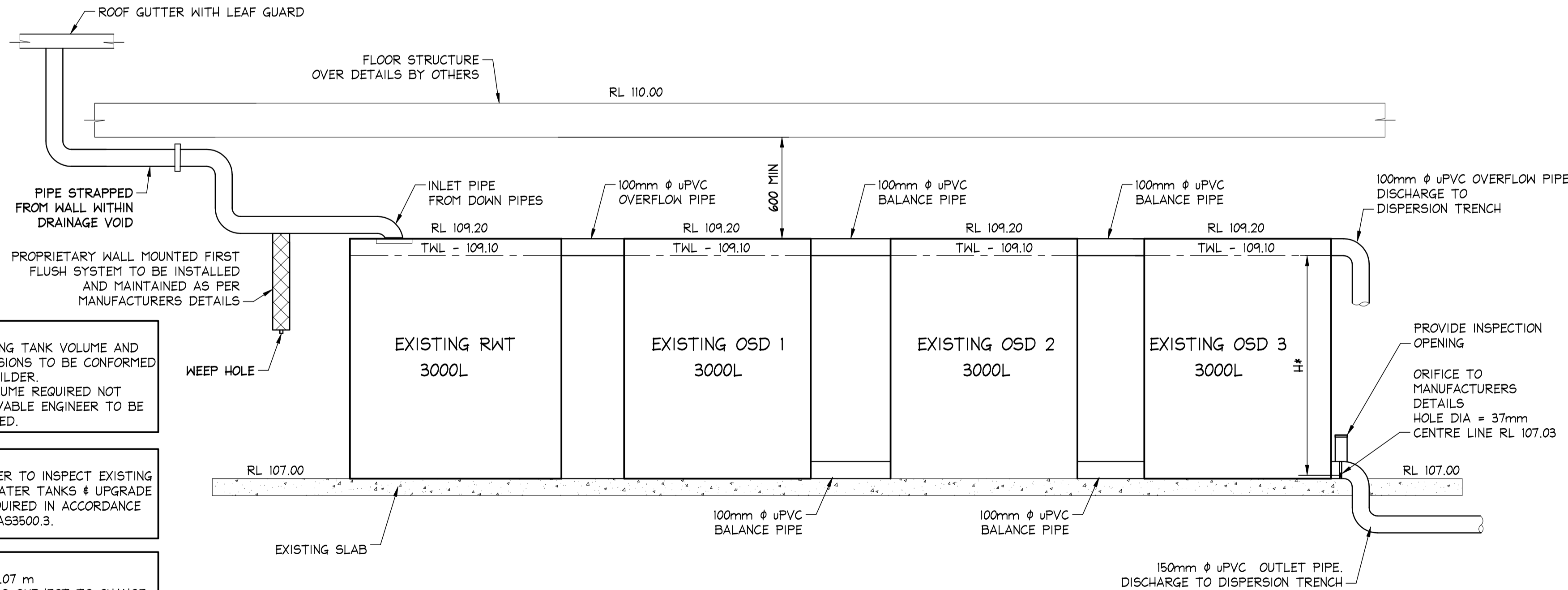
BOX GUTTER BGI AND RAINHEAD RHD1 DETAIL
SCALE = NTS



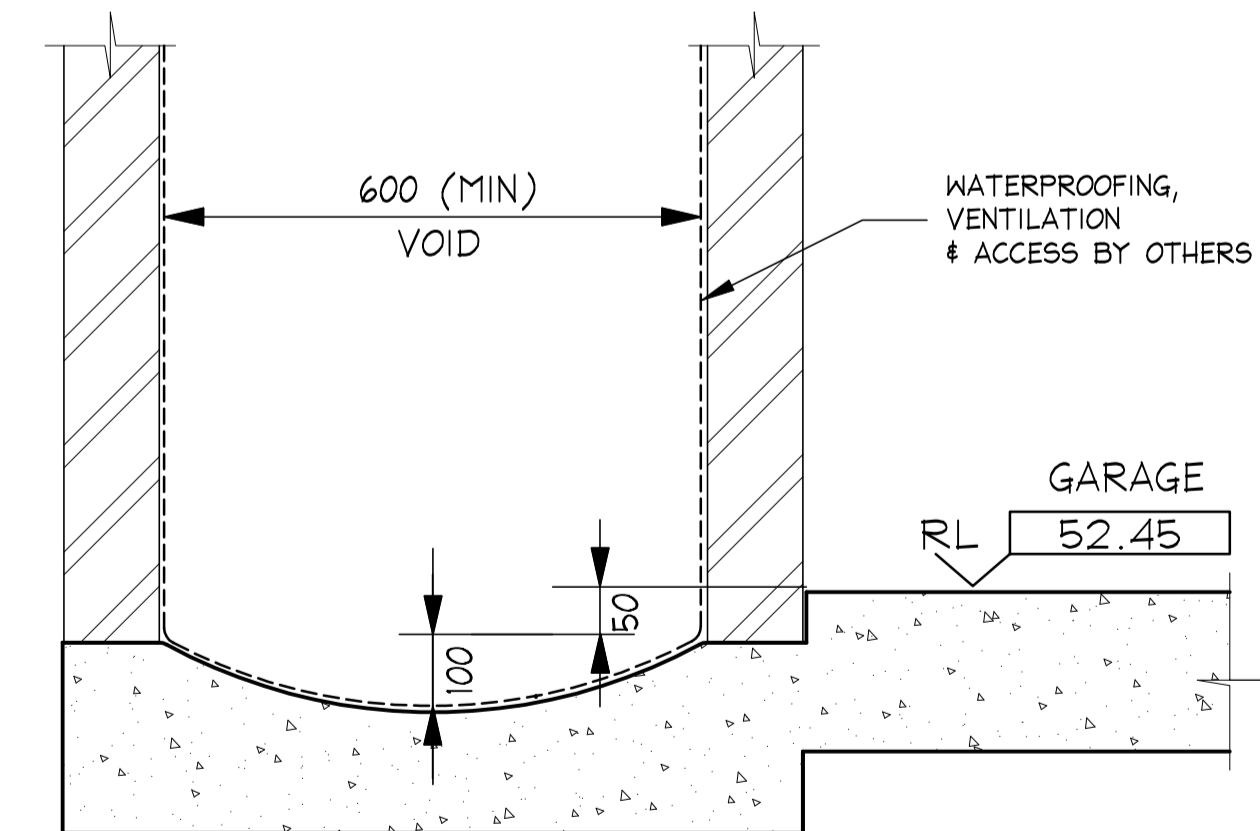
BOX GUTTER BGI AND RAINHEAD RHD2 DETAIL
SCALE = NTS



BOX GUTTER BG2 AND SUMP SDI DETAIL
SCALE = NTS



TYPICAL SECTION OSD AND RAINWATER RE-USE TANKS
NOT TO SCALE



DRAINAGE VOID & SPOON DRAIN
SECTION X - X
NOT TO SCALE

- NOTES:**
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BY BUILDER BEFORE COMMENCING WITH WORK.
 2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: D01.

NOTE:
EXISTING TANK VOLUME AND DIMENSIONS TO BE CONFORMED BY BUILDER.
IF VOLUME REQUIRED NOT ACHIEVABLE ENGINEER TO BE NOTIFIED.

NOTE:
BUILDER TO INSPECT EXISTING RAINWATER TANKS & UPGRADE IF REQUIRED IN ACCORDANCE WITH AS3500.3.

NOTE:
H* : 2.07 m
IF H* IS SUBJECT TO CHANGE, NOTIFY ENGINEER FOR ORIFICE PLATE ADJUSTMENT.



NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE.

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:

- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG. - TEL. 1100

ISSUED FOR D.A. SUBMISSION ONLY NOT FOR CONSTRUCTION

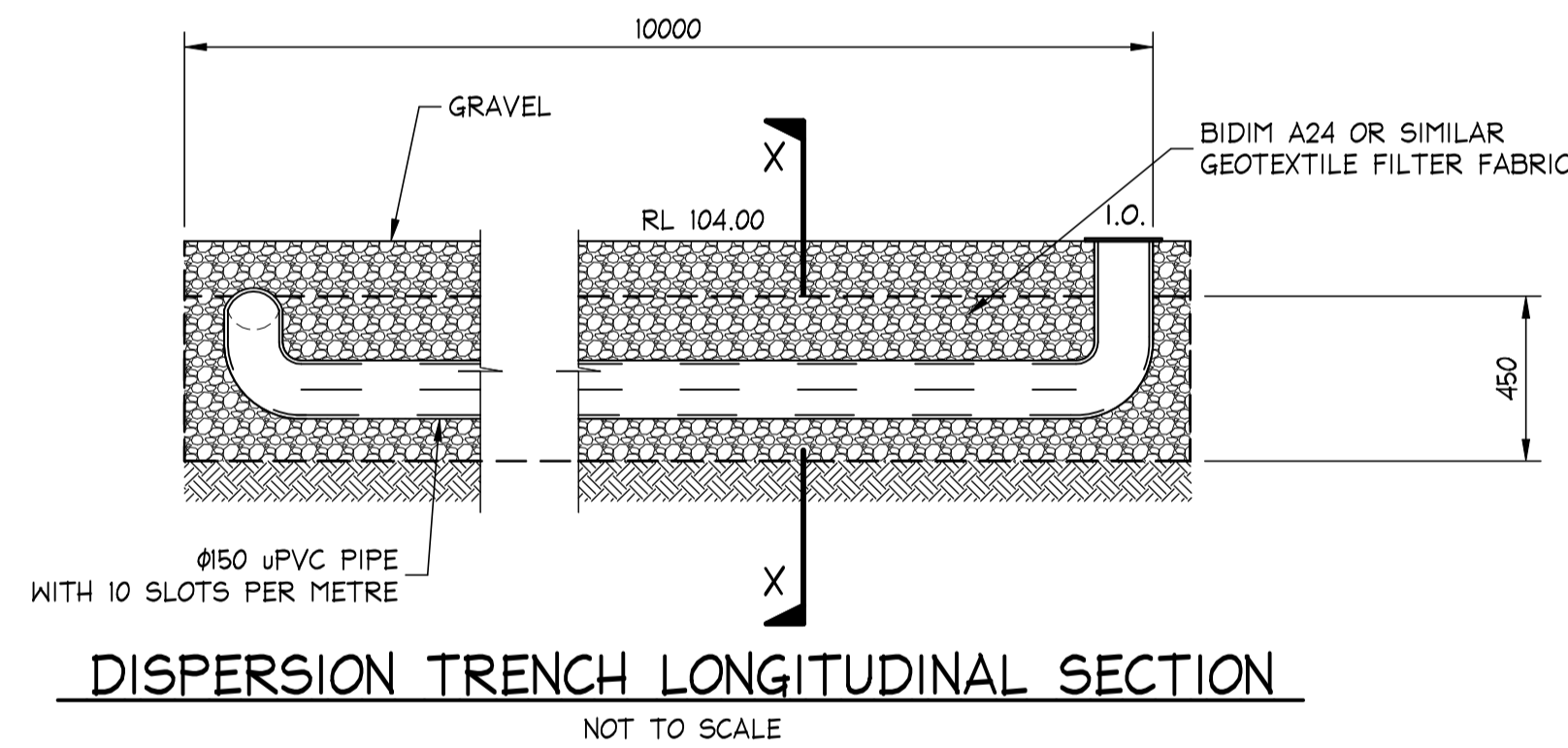
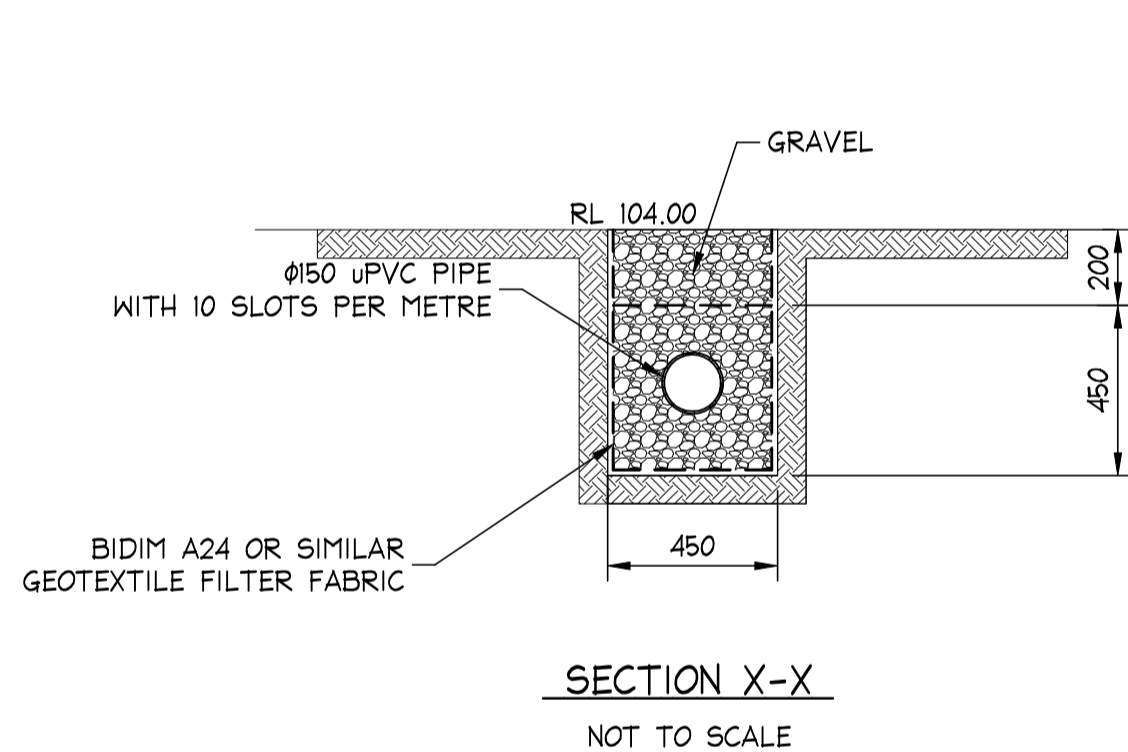
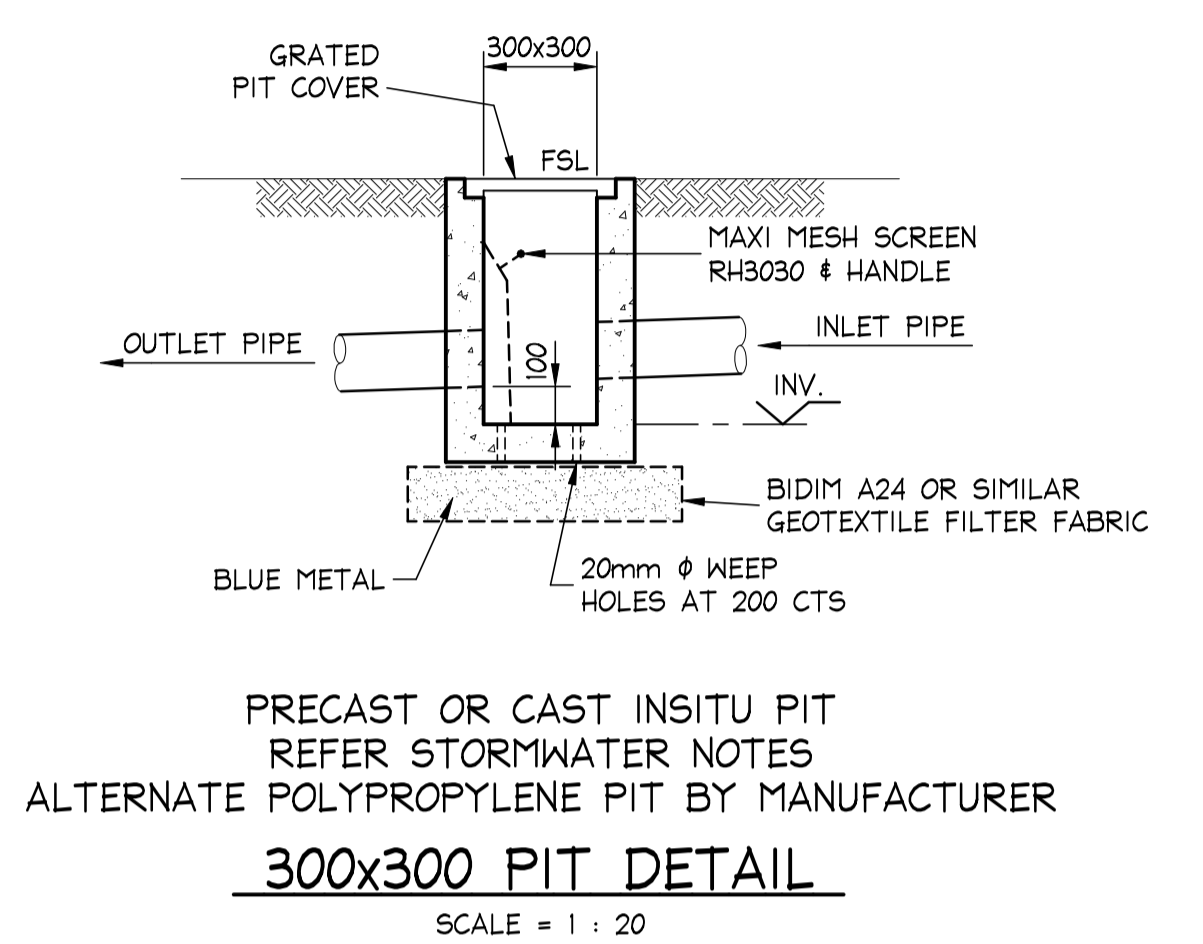
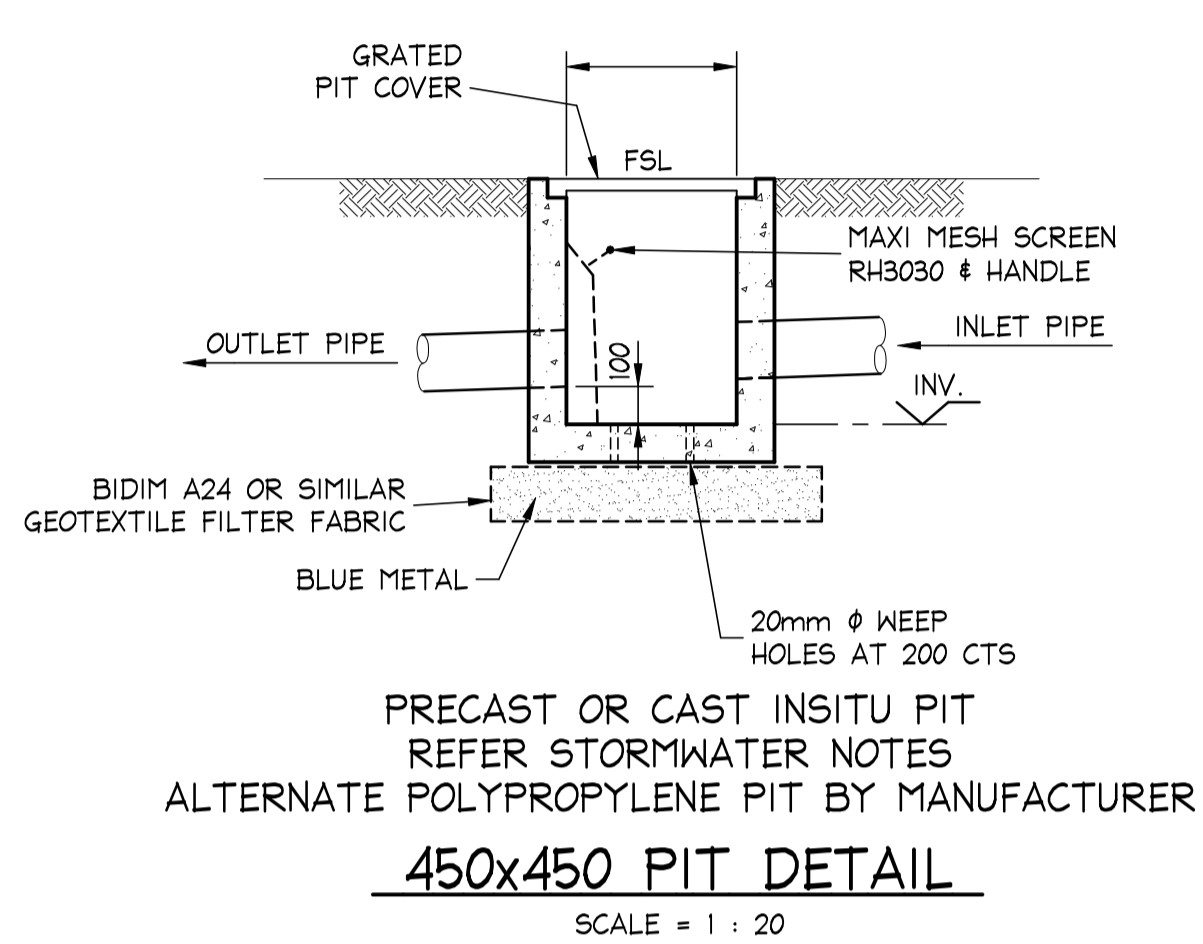
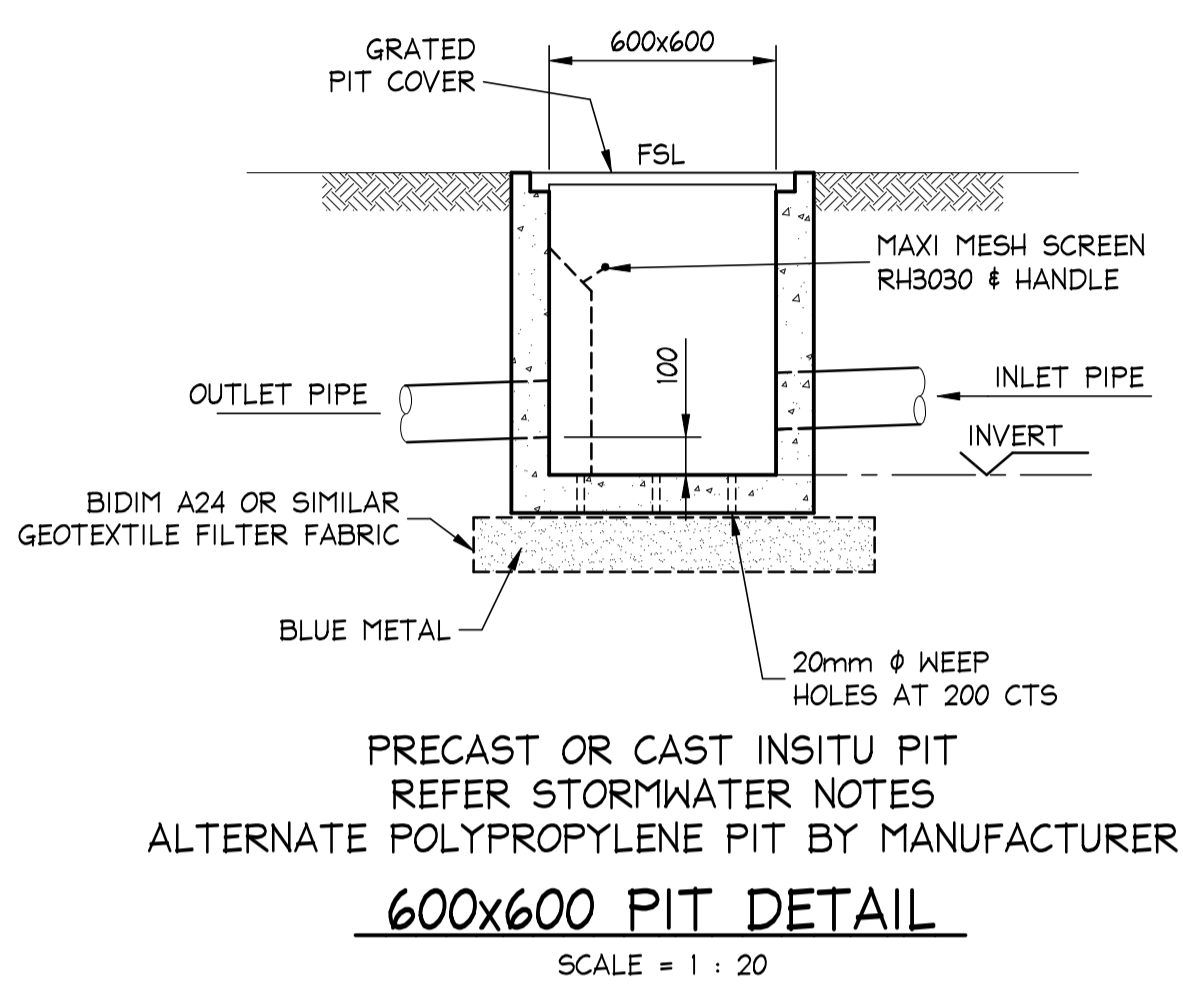
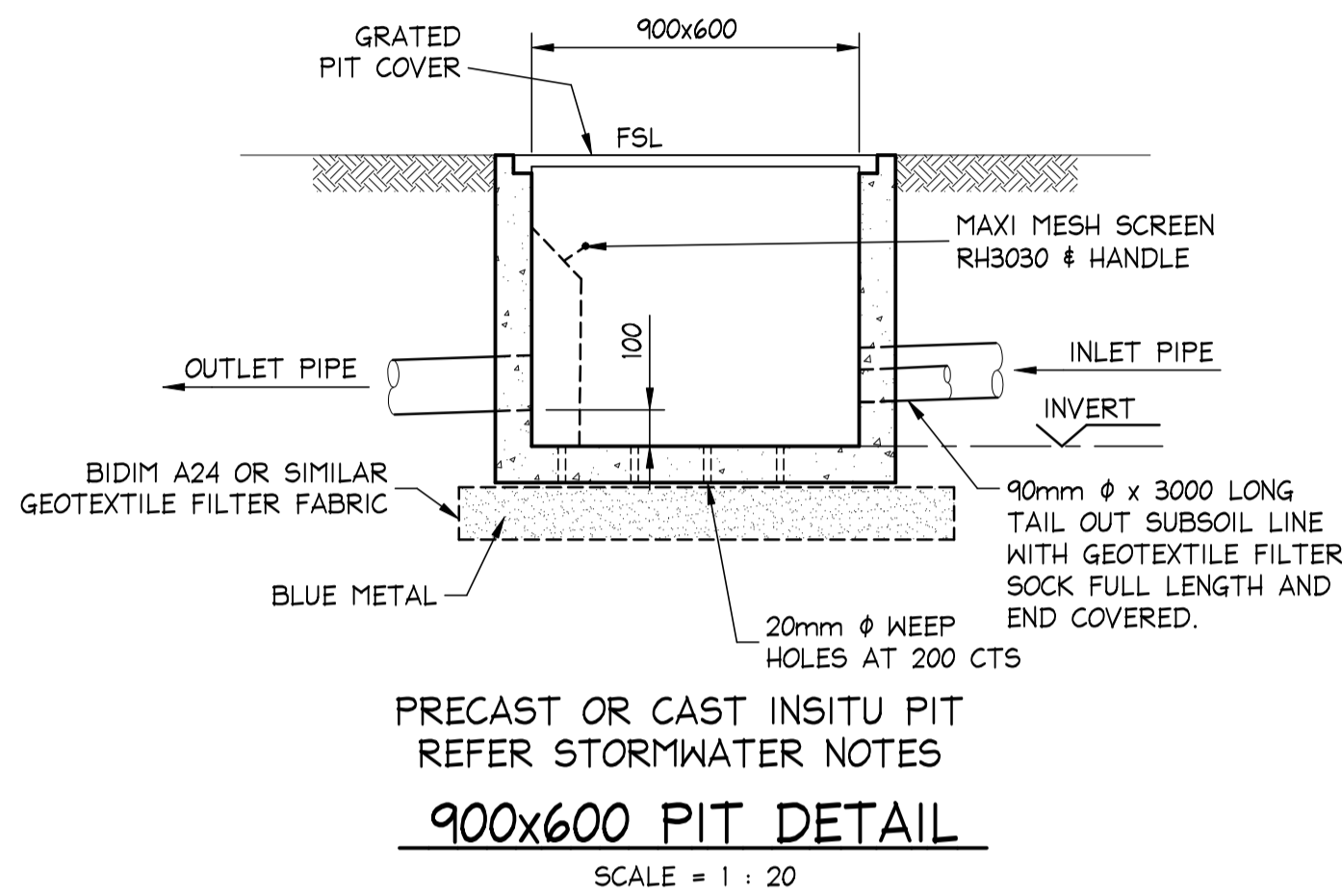
IF IN DOUBT ASK

A1

DOCUMENT CERTIFICATION				NB Consulting Engineers				Architect:				Project:				Date:				Design:				Drawn:			
Date : 15.04.2020				Rick G Wray				Robert Harrison Architect				ALTERATIONS & ADDITIONS 50 MINKARA ROAD, BAYVIEW				APRIL 2020				KO				KO			
Issue: 15.04.2020				A				Miranda Wong				Drawing Title:				190897				D06				A			
Description: ISSUE FOR D.A. SUBMISSION ONLY				By: KO				Review: MW				Job No:				190897				Drawing No:				D06			
Date: 15.04.2020				Issue: A				Description: ISSUE FOR D.A. SUBMISSION ONLY				Job No: 190897				Drawing No: D06				Issue: A							

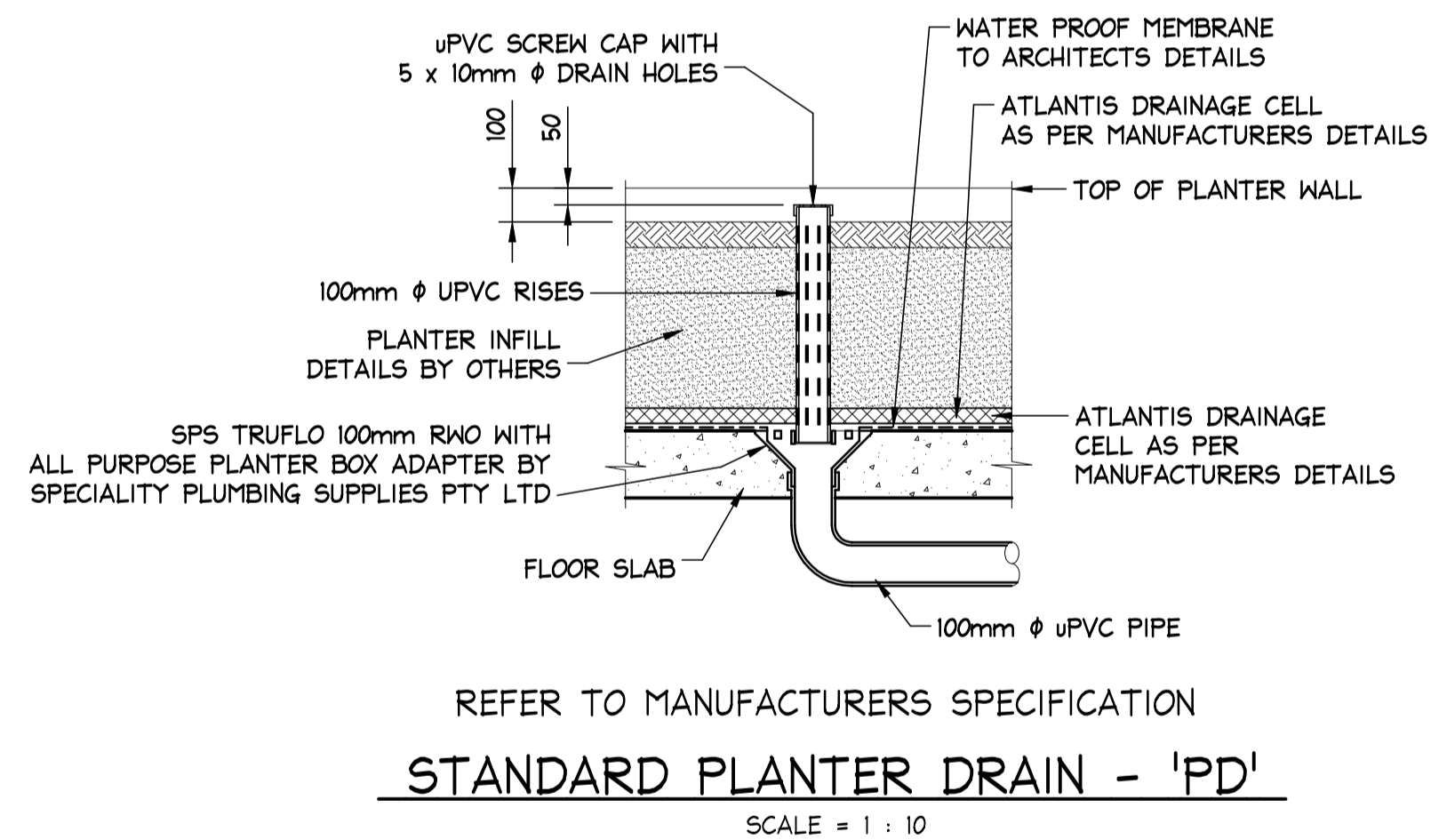
NB Consulting Engineers

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NOTE: DISPERSION TRENCH

1. DISPERSION TRENCH TO BE LAID ON A LEVEL CONTOUR.
2. GROUND LEVEL ABOVE TRENCH MUST BE LEVEL SO AS TO EVENLY DISPERSE WATER DOWN HILL OF THE TRENCH
3. IF ROCK IS ENCOUNTERED DURING EXCAVATION FOR DISPERSION TRENCH NOTIFY ENGINEER FOR ALTERNATE DETAIL.



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A1

DOCUMENT CERTIFICATION				NB Consulting Engineers				Architect:		Project:		Date:	Design:	Drawn:
Date : Rick G Wray				STRUCTURAL - CIVIL - STORMWATER - REMEDIAL A.C.N. 076 121 616 A.B.N. 24 076 121 616 Sydney: Ph: (02) 9984 7000 Fax: (02) 9984 7444 Suite 207, 30 Fisher Road Dee Why N.S.W. 2099 Gold Coast: Ph: (07) 5631 4744 Unit 8, 1726 Gold Coast Highway Burleigh Heads QLD 4220 E : nb@nbconsulting.com.au W : www.nbconsulting.com.au				Robert Harrison Architect		ALTERATIONS & ADDITIONS 50 MINKARA ROAD, BAYVIEW		APRIL 2020	KO	KO
By: Review:				Client:				Miranda Wong		Drawing Title:		Job No:	Drawing No:	Issue:
15.04.2020 A ISSUE FOR D.A. SUBMISSION ONLY				DRAINAGE DETAILS SHEET 2				190897		D07		A		