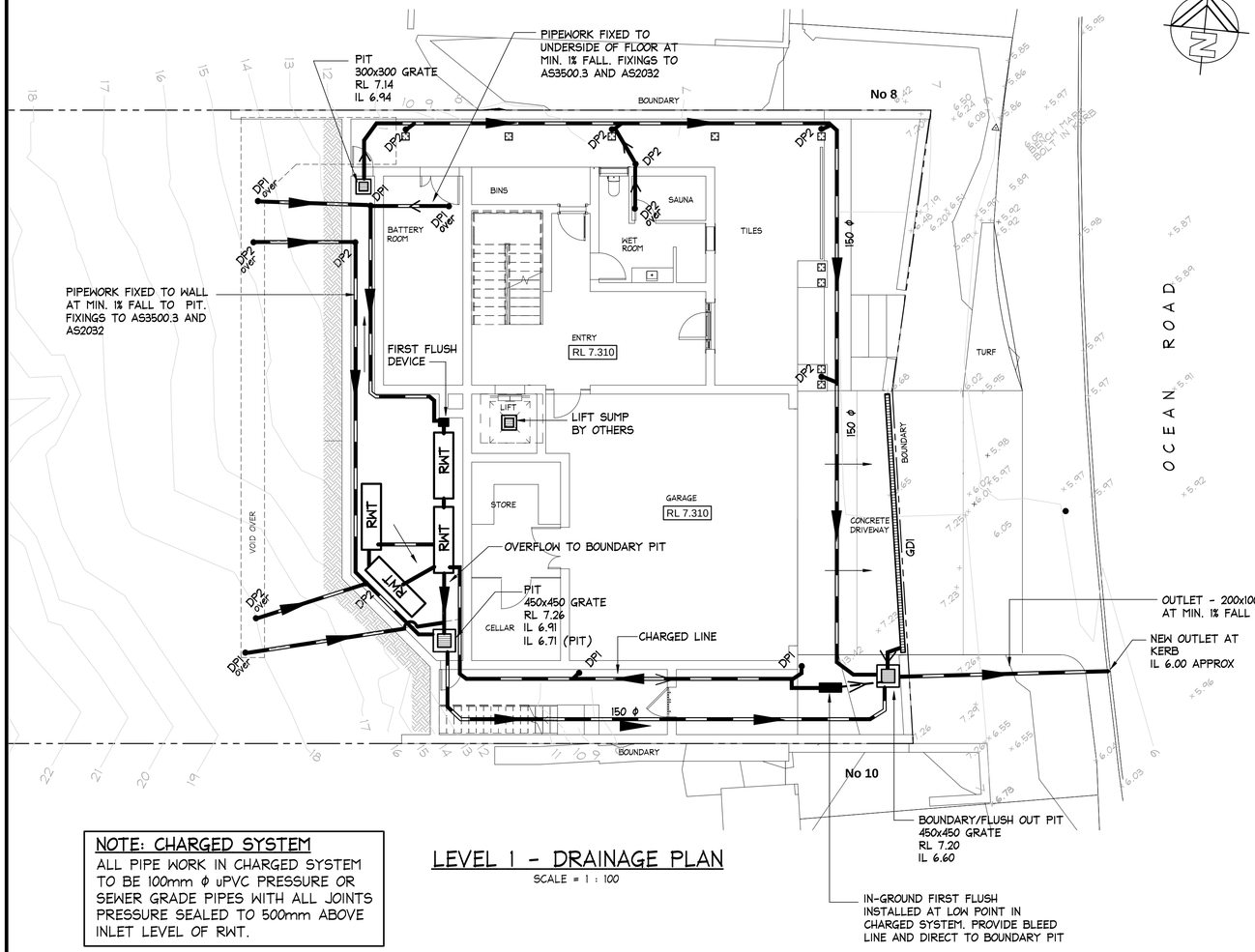

LEVEL 1 - DRAINAGE PLAN

SCALE = 1 : 100

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 AND TO BASIX REQUIREMENTS.
2. THE TANKS PROVIDED WILL REDUCE PRESSURE ON COUNCIL'S STORMWATER INFRASTRUCTURE.
3. REFERENCES:
   COOMBES 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 ALTERATIVE, 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

STORMWATER NOTES:

1. ALL PIPES TO BE 100mm ϕ 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 ϕ 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 900 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. UNLESS NOTED OTHERWISE, SUB-SOIL DRAINS ARE TO BE INSTALLED IN ACCORDANCE WITH AS3500.3 ALONGSIDE WALLS THAT IMPEDE THE NATURAL FLOW OF GROUNDWATER. THIS MAY ALSO INVOLVE TRENCHING INTO THE CLAY OR ROCK SUBGRADE TO DIRECT GROUNDWATER AWAY FROM STRUCTURES.
18. IF NOT INDICATED ON PLANS, PROVIDE LEAF CATCHERS TO ALL DOWNPIPES OR GUTTER GUARD TO ALL EAVES GUTTERS.

NOTE: CHARGED SYSTEM

ALL PIPE WORK IN CHARGED SYSTEM TO BE 100mm ϕ uPVC PRESSURE OR SEWER GRADE PIPES WITH ALL JOINTS PRESSURE SEALED TO 500mm ABOVE INLET LEVEL OF RWT.

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.

NORTHERN BEACHES COUNCIL (PITTWATER AREA) ON SITE DETENTION SYSTEM CALCULATION SHEET

ADDRESS: 9 OCEAN ROAD, PALM BEACH
DEVELOPMENT TYPE: NEW DWELLING

SITE DETAILS

TOTAL SITE AREA	1189 m^2	
PRE DEVELOPMENT IMPERVIOUS AREA	239 m^2	(20% IMPERVIOUS)
POST DEVELOPMENT IMPERVIOUS AREA	589 m^2	(50% IMPERVIOUS)
INCREASE	350 m^2	

OSD REQUIREMENT

THE SUBJECT SITE IS LOCATED AT THE BOTTOM OF THE SUB-CATCHMENT (FRONTING TO PALM BEACH) THEREFORE, OSD IS NOT RECOMMENDED FOR THIS DEVELOPMENT

SITE STORAGE REQUIREMENT

RAINWATER 'BASIX' REQUIRED 2.25 m^3 (8.92 m^3 PROVIDED)

PERMITTED SITE DISCHARGE

PSD 30 l/s

OUTLET CONTROL

METHOD OF DISCHARGE KERB & GUTTER

NOTE:

ALL DP1 DOWN PIPES TO DISCHARGE INTO RAINWATER RE-USE TANK IN ACCORDANCE WITH AS 3500.3

NOTE:

STORMWATER DRAWINGS DO NOT INCLUDE SUBSOIL AGRICULTURAL DRAINAGE DETAILS FOR D.A. SUBMISSION. NORTHERN BEACHES CONSULTING ENGINEERS PTY LTD MUST BE COMMISSIONED TO INCLUDE THESE DETAILS ONLY WHEN CONSTRUCTION CERTIFICATE AND/OR CONSTRUCTION DOCUMENTATION IS COMPLETE AND PROVIDED.

LEGEND

DP1 ●	100mm ϕ DOWNPIPE TO DISCHARGE TO RWT'S
DP2 ●	100mm ϕ DOWNPIPE TO DISCHARGE TO BOUNDARY PIT
====<====	65mm ϕ uPVC STORMWATER PIPE CAST INTO SLAB
———	NEW STORMWATER PIPE
———►	STORMWATER PIPE FLOW DIRECTION
———<	STORMWATER PIPE FALL DIRECTION IN CHARGED SYSTEMS
PIT	STORMWATER PIT
SP	SPREADER PIPE
FD	200x200 FLOOR DRAIN
GDI	GRATED DRAIN GDI - 150 MIN DEPTH x 150 WIDE GRATED DRAIN
RWT	RAINWATER TANKS TO COLLECT ALL DP1 DOWNPIPES. TO BE RE-USED AS PER BASIX REQUIREMENTS LOCAL COUNCIL & SYDNEY WATER REQUIREMENTS
DIMENSIONS =	2230L x 650W x 2070 H
VOLUME =	2.3 m3

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

www.1100.com.au
DIAL 1100 BEFORE YOU DIG

NOTE:

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

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A1

Date:	Issue:	Description:	By:	Review:
23-09-2019	A	ISSUE FOR DA SUBMISSION	MC	SMABB

DOCUMENT CERTIFICATION
Date : 23-09-2019
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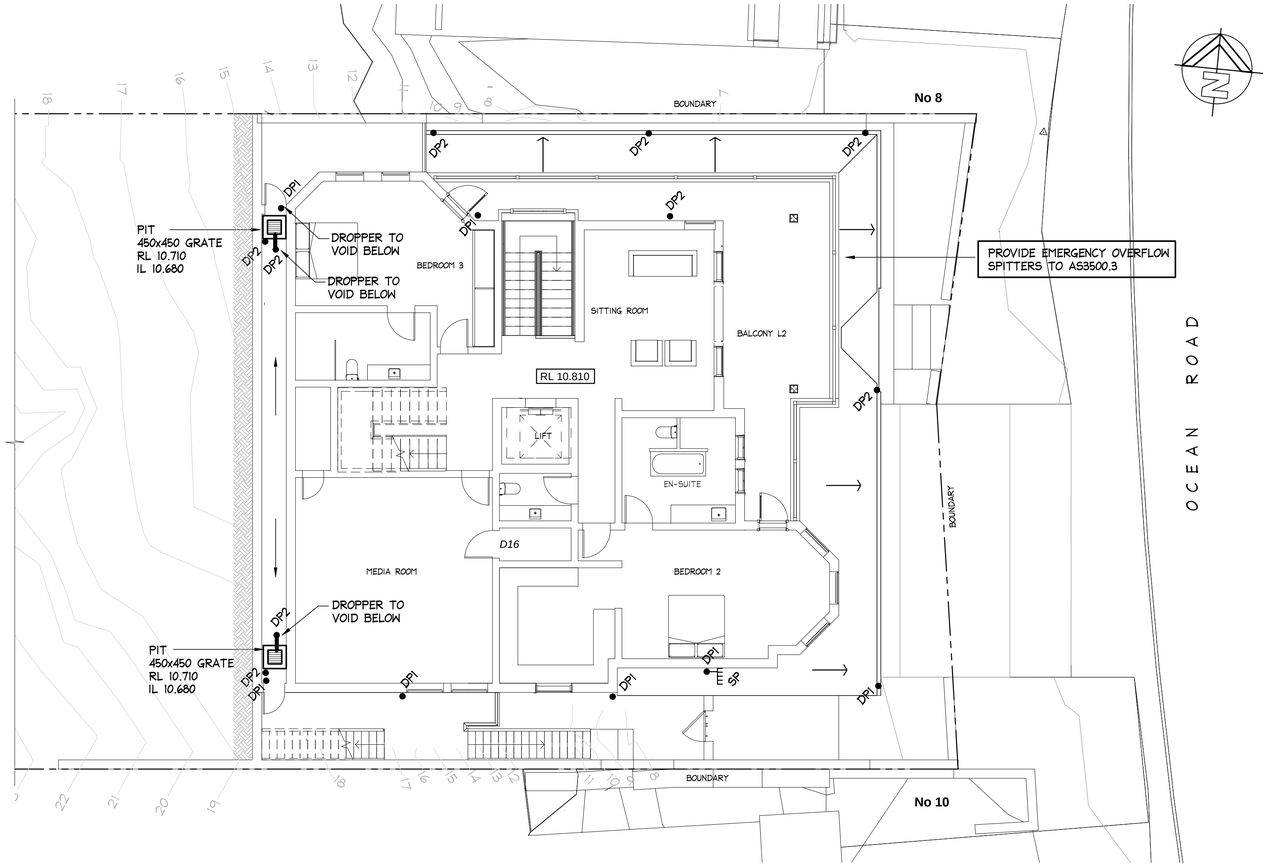
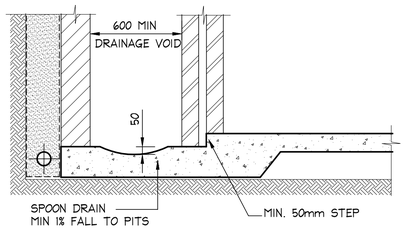
Architect: MAP ARCHITECTURE AND INTERIORS	Project: ALTERATIONS AND ADDITIONS 9 OCEAN ROAD, PALM BEACH	Date: SEPT. 2019	Design: CF / Drawn: MC
Client: JOHN BUBB AND CHRISTINA NEUMANN-BUBB	Drawing Title: STORMWATER MANAGEMENT DRAINAGE PLANS	Job No: 190875	Drawing No: D01 / Issue: A



LEVEL 2 AND LOWER ROOF - DRAINAGE PLAN

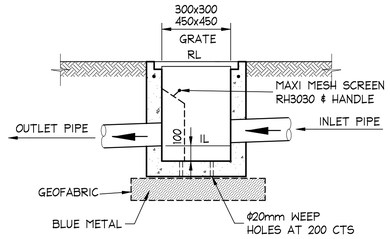
SCALE = 1 : 100



NOTE:
REFER STRUCTURAL ENGINEERS PLANS
FOR STRUCTURAL DETAILS

TYPICAL SPOON DRAIN DETAIL

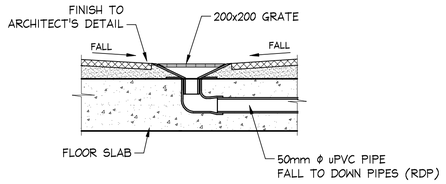
SCALE = 1 : 20



PRECAST OR CAST INSITU PIT
REFER STORMWATER NOTES
ALTERNATIVE POLYPROPYLENE PIT BY MANUFACTURER

TYPICAL PIT DETAIL

SCALE = 1 : 20

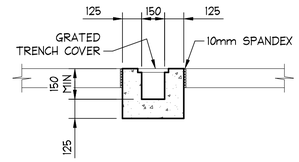


BALCONY/TERRACE

STANDARD FLOOR DRAIN - 'FD'

SCALE = 1 : 10

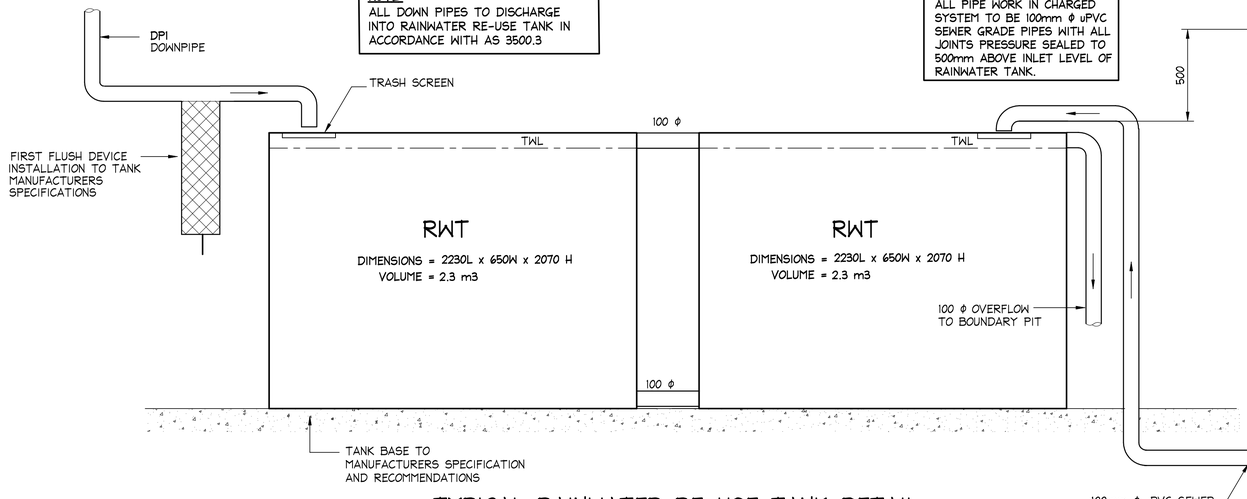
OR TO ARCHITECT'S DETAIL



OR PRECAST GRATED DRAIN
ALTERNATIVE POLYPROPYLENE DRAIN BY MANUFACTURER

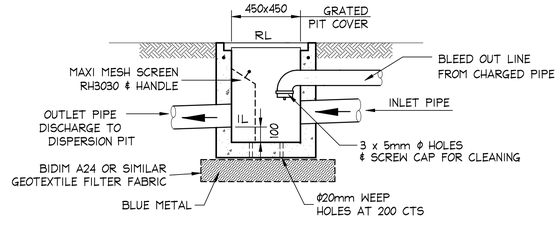
TYPICAL GRATED DRAIN - 'GDI'

SCALE = 1 : 20



TYPICAL RAINWATER RE-USE TANK DETAIL

NOT TO SCALE



PRECAST OR CAST INSITU PIT
REFER STORMWATER NOTES
ALTERNATIVE POLYPROPYLENE PIT BY MANUFACTURER

TYPICAL FLUSH OUT/SURFACE PIT DETAIL

SCALE = 1 : 20

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Architect: MAP ARCHITECTURE AND INTERIORS

Client: JOHN BUBB AND CHRISTINA NEUMANN-BUBB

Project: ALTERATIONS AND ADDITIONS
9 OCEAN ROAD, PALM BEACH

Drawing Title: STORMWATER MANAGEMENT
DRAINAGE PLANS AND DETAILS

Date:	Design:	Drawn:
SEPT. 2019	CF	MC

Job No:	Drawing No:	Issue:
190875	D02	A

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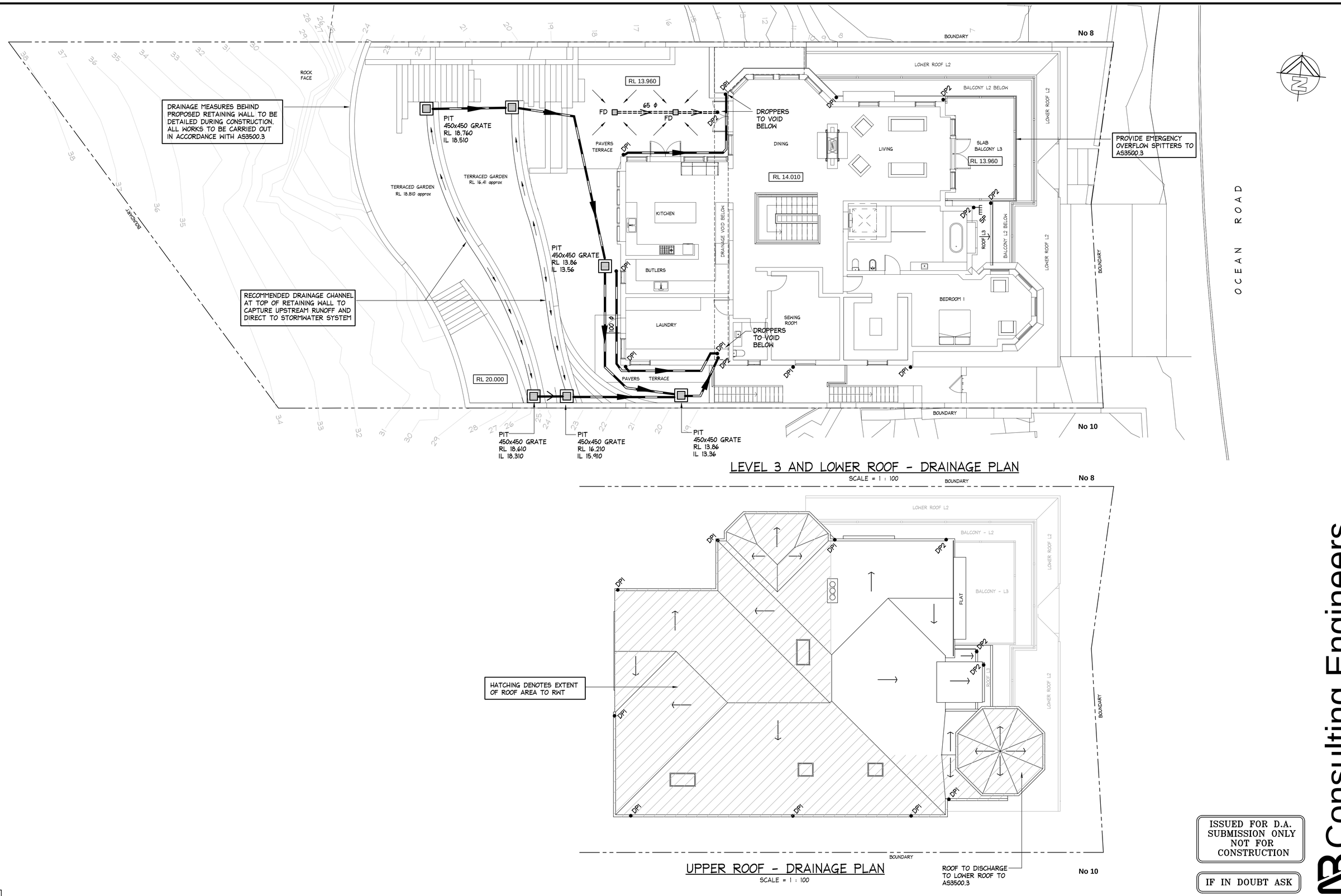

LEVEL 3 AND LOWER ROOF - DRAINAGE PLAN

SCALE = 1 : 100

UPPER ROOF - DRAINAGE PLAN

SCALE = 1 : 100

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Project: ALTERATIONS AND ADDITIONS 9 OCEAN ROAD, PALM BEACH

Drawing Title: STORMWATER MANAGEMENT DRAINAGE PLANS

Date:	Design:	Drawn:
SEPT. 2019	CF	MC

Job No:	Drawing No:	Issue:
190875	D03	A

Consulting Engineers