



**NASTASI & ASSOCIATES**  
Consulting Civil & Structural Engineers

4<sup>th</sup> April, 2019

Job No. 16928

G.J. Gardner Homes Sydney North  
Unit 2  
28-30 Orchard Road  
**BROOKVALE NSW 2100**

**Attention:** Steve Condliffe

**Re: 26 Parr Road, North Curl Curl**

This is to confirm that Nastasi & Associates undertook Hydraulic/Storm water design for the abovementioned property.

We hereby certify that the following design (Job No; 16928 – Issue A - S1 to S5 – Dated 28<sup>th</sup> March, 2019) has been undertaken in accordance with Council Development Control Plan requirements for Storm water.

All work is to be carried out in accordance with AS 3500 Plumbing and Drainage Code.

Should you have any further queries please do not hesitate in contacting the undersigned.

**SIGNED**

**SAM NASTASI – B.E M.I.E AUST CpEng Nper-3**  
**Accredited Certifier (Structural & Civil) No BPB0289**

PROPOSED DEVELOPMENT  
26 PARR AVENUE, NORTH CURL CURL  
STORMWATER MANAGEMENT PLANS

GENERAL NOTES:

1. THESE PLANS SHALL BE READ IN CONJUNCTION WITH OTHER RELEVANT CONSULTANTS'S PLANS, SPECIFICATIONS, CONDITIONS OF DEVELOPMENT CONEST AND CONSTRUCTION CERTIFICATE REQUIREMENTS. WHERE DISCREPANCIES ARE FOUND NASTASI & ASSOCIATES MUST BE CONTACTED IMMEDIATELY FOR VERIFICATION.
2. WHERE THESE PLANS ARE NOTED FOR DEVELOPMENT APPLICATION PURPOSES ONLY, THEY SHALL NOT BE USED FOR OBTAINING A CONSTRUCTION CERTIFICATE NOR USED FOR CONSTRUCTION PURPOSES.
3. SUBSOIL DRAINAGE SHALL BE DESIGNED AND DETAILED BY THE STRUCTURAL ENGINEER. SUBSOIL DRAINAGE SHALL NOT BE CONNECTED INTO THE STORMWATER SYSTEM IDENTIFIED ON THESE PLAN UNLESS APPROVED BY NASTASI & ASSOCIATES ENGINEERS.

STORMWATER CONSTRUCTION NOTES:

1. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500 (CURRENT EDITION) AND THE REQUIREMENTS OF THE LOCAL COUNCIL'S POLICIES AND CODES
2. THE MINIMUM SIZE OF THE STORMWATER DRAINS SHALL NOT BE LESS THAN DN 90 FOR CLASS 1 BUILDINGS AND DN100 FOR OTHER CLASSES OF BUILDING OR AS REQUIRED BY REGULATORY AUTHORITY
3. THE MINIMUM GRADIENT OF STORMWATER DRAINS SHALL BE 1%, UNLESS NOTED OTHERWISE
4. COUNCIL'S TREE PRESERVATION ORDER IS TO BE STRICTLY ADHERED TO. NO TREES SHALL BE REMOVED UNTIL PERMIT IS OBTAINED
5. PUBLIC UTILITY SERVICES ARE TO BE ADJUSTED AS NECESSARY AT THE CLIENT'S EXPENSE
6. ALL PITS TO BE BENCHED AND STREAMLINED. PROVIDE STEP IRONS FOR ALL PITS OVER 1.2m DEEP
7. MAKE SMOOTH JUNCTION WITH ALL EXISTING WORK
8. VEHICULAR ACCESS AND ALL SERVICES TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION
9. SERVICES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND FIELD INVESTIGATIONS AND ARE NOT GUARANTEED COMPLETE NOR CORRECT. IT IS THE CLIENT & CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL PRIOR TO CONSTRUCTION
10. ANY VARIATION TO THE WORKS AS SHOWN ON THE APPROVED DRAWINGS ARE TO BE CONFIRMED BY NASTASI & ASSOCIATES PRIOR TO THEIR COMMENCEMENT

RAINWATER RE-USE NOTES:

1. RAINWATER SUPPLY PLUMBING TO BE CONNECTED TO OUTLETS WHERE REQUIRED BY BASIX CERTIFICATE (BY OTHERS)
2. TOWN WATER CONNECTION TO RAINWATER TANK TO THE SATISFACTION OF THE REGULATORY AUTHORITY. THIS WAY REQUIRE PROVISION OF:  
2.1 PERMANENT AIR GAP  
2.2 BACKFLOW PREVENTION DEVICE
3. NO DIRECT CONNECTION BETWEEN TOWN WATER SUPPLY AND THE RAINWATER SUPPLY
4. AN APPROVED STOP VALVE AND/OR PRESSURE LIMITING VALVE AT THE RAINWATER TANK
5. PROVIDE AT LEAST ONE EXTERNAL HOSE COCK ON THE TOWN WATER SUPPLY FOR FIRE FIGHTING
6. PROVIDE APPROPRIATE FLOAT VALVES AND/OR SOLENOID VALVES TO CONTROL TOWN WATER SUPPLY INLET TO TANK IN ORDER TO ACHIEVE THE TOP-UP INDICATED ON THE TYPICAL DETAIL
7. ALL PLUMBING WORKS ARE TO BE CARRIED OUT BY LICENSED PLUMBERS IN ACCORDANCE WITH AS/NZS3500.1 NATIONAL PLUMBING AND DRAINAGE CODE
8. PRESSURE PUMP ELECTRICAL CONNECTION TO BE CARRIED OUT BY A LICENSED ELECTRICIAN
9. ONLY ROOF RUN-OFF IS TO BE DIRECTED TO THE RAINWATER TANK. SURFACE WATER INLETS ARE NOT BE CONNECTED
10. PIPE MATERIALS FOR RAINWATER SUPPLY PLUMBING ARE TO BE APPROVED MATERIALS TO AS/NZE3500 PART 1 SECTION 2 AND TO BE CLEARLY AND PERMANENTLY IDENTIFIED AS 'RAINWATER'. THIS MAY BE ACHIEVED FOR BELOW GROUND PIPES USING IDENTIFICATION TAPE (MADE IN ACCORDANCE WITH AS2648) OR FOR ABOVE GROUND PIPES BY USING ADHESIVE PIPE MARKERS (MAKE IN ACCORDANCE WITH AS1945)
11. EVERY RAINWATER SUPPLY OUTLET POINT AND THE RAINWATER TANK ARE TO BE LABELED 'RAINWATER' ON A METALLIC SIGN IN ACCORDANCE WITH AS193619
12. ALL INLETS AND OUTLETS TO THE RAINWATER TANK ARE TO HAVE SUITABLE MEASURES PROVIDED TO PREVENT MOSQUITO AND VERMIN ENTRY.

EROSION AND SEDIMENT NOTES:

1. THESE PLANS SHALL BE READ IN CONJUNCTION WITH EROSION AND SEDIMENT CONTROL DETAILS AS ATTACHED
2. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURE AS NECESSARY AND TO THE SATISFACTION OF THE RELEVANT LOCAL AUTHORITY PRIOR TO THE COMMENCEMENT ANY DURING CONSTRUCTION. NO DISTURBANCE TO THE SITE SHALL BE PERMITTED OTHER THAN IN THE IMMEDIATE AREA OF THE WORKS AND NO MATERIAL SHALL BE REMOVED FROM THE SITE WITHOUT THE RELEVANT LOCAL AUTHORITY APPROVAL. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH STANDARDS OUTLINED IN NSW DEPARTMENT OF HOUSING'S "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTIONS"
3. TOPSOIL SHALL BE STRIPPED AND STOCKPILED OUTSIDE HAZARD AREA SUCH AS DRAINAGE LINES. THIS TOPSOIL SHALL BE RESPREAD LATER ON AREAS TO BE REVEGETATED AND STABILIZED ONLY. TOPSOIL SHALL NOT BE RESPREAD ON ANY OTHER AREA UNLESS SPECIFICALLY INSTRUCTED BY THE SUPERINTENDENT. IF THEY ARE TO REMAIN LONGER THAN ONE MONTH STOCK PILES SHALL BE PROTECTED FROM EROSION BY COVERING THEM WITH A MULCH AND HYDROSEEDING AND, IF NECESSARY, BY LOCATING BANKS OR DRAINS DOWNSTREAM OF A STOCKPILE TO RETARD SILT LADEN RUNOFF
4. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL EROSION AND SEDIMENT CONTROL DEVICES AND REMOVE ACCUMULATED SILT FROM SUCH DEVICES SUCH THAT MORE THAN 60% OF THEIR CAPACITY IS LOST. ALL THE SILT IS TO BE PLACED OUTSIDE THE LIMIT OF WORKS. THE PERIOD FOR MAINTAINING THESE DEVICES SHALL BE AT LEAST UNTIL ALL DISTURBED AREAS ARE REVEGETATED AND FURTHER AS MAY BE DIRECTED BY SUPERINTENDENT OR COUNCIL
5. VEHICULAR TRAFFIC SHALL BE CONTROLLED DURING CONSTRUCTION CONFINING ACCESS WHERE POSSIBLE TO NOMINATED STABILISED ACCESS POINTS
6. THE CONTRACTOR SHALL IMPLEMENT DUST CONTROL BY REGULAR WETTING DOWN DISTURBED AREA
7. ALL DRAINAGE PIPE INLETS TO BE CAPPED UNTIL.  
- DOWNPIPES CONNECTED  
- PITS CONSTRUCTED AND PROTECTED WITH SILT BARRIER

MINIMUM PIPE COVER NOTES:

LOCATION	MINIMUM COVER
NO SUBJECT TO VEHICLE LOADING	100mm SINGLE RESIDENTIAL
SUBJECT TO VEHICLE LOADING	450mm WHERE NOT IN A ROAD
UNDER A SEALED ROAD	600mm
UNSEALED ROAD	750mm
PAVED DRIVEWAY	100mm PLUS DEPTH OF CONCRETE

SEE AS2032 INSTALLATION OF UPVC PIPES FOR FURTHER INFORMATION.

CONCRETE PIPE COVER SHALL BE IN ACCORDANCE WITH AS3725-1989 LOADS ON BURIED CONCRETE PIPES, HOWEVER A MINIMUM COVER OF 450mm WILL APPLY.

WHERE INSUFFICIENT COVER IS PROVIDED, THE PIPE SHALL BE COVERED AT LEAST 50mm THICK OVERLAY AND SHALL BE PAVED WITH AT LEAST:  
- 150 mm REINFORCED CONCRETE WHERE SUBJECT TO HEAVY VEHICLE TRAFFIC  
- 75mm THICKNESS OF BRICK OR 100mm OF CONCRETE PAVING WHERE SUBJECT TO LIGHT VEHICLE TRAFFIC, OR  
- 50mm THICK BRICK OR CONCRETE PAVING WHERE NOT SUBJECT TO VEHICLE TRAFFIC

SURFACE STORMWATER PIT NOTES:

PIT DEPTH (mm)	MINIMUM PIT SIZE (mm)
UP TO 600 mm	450 x 450
FROM 600mm TO LESS THAN 900mm	600 x 600
FROM 900mm	900 x 900

ALL BASEMENT PIT TO BE FITTED WITH HEAVY DUTY CLASS C GRATE & FRAME

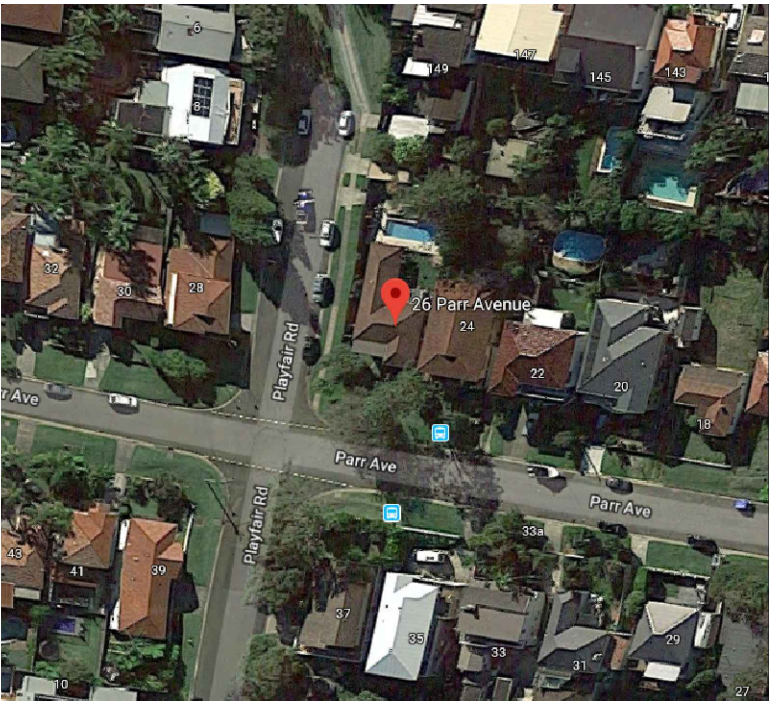
LEGEND

	DENOTES BELOW GROUND ON-SITE DETENTION TANK
	DENOTES ON-SITE DETENTION BASIN
	DENOTES Ø150 DOWNPIPE (U.N.O)
	DENOTES INSPECTION OPENING WITH SCREW DOWN LID AT FINISHED SURFACE LEVEL
	DENOTED PLANTER BOX DRAINS
	DENOTED FLOOR DRAINS
	DENOTED CLEANING EYE
	STORMWATER PIT - SOLID COVER
	STORMWATER PIT - GRATED INLET
	DENOTES GRATED DRAIN
	DENOTES ABSORPTION TRENCH
	DENOTES NON RETURN VALVE
	DENOTES OVERLAND FLOW PATH
	INVERT LEVEL
	TOP OF KERB
	REDUCED LEVEL/SURFACE LEVEL
	PROPOSED FINISH SURFACE LEVEL
	DENOTED Ø100mm PVC (SEWER GRADE) @1% MIN. FALL U.N.O
	DENOTED Ø150mm PVC (SEWER GRADE) @1% MIN. FALL U.N.O
	DENOTED Ø100mm PVC (SEWER GRADE) @0.5% MIN. FALL U.N.O
	DENOTE AGG PIPE
	DENOTE RAINWATER TANK

SCHEDULE OF DRAWING

DESCRIPTION	SHEET NUMBER
COVER SHEET & NOTES	C1
GROUND FLOOR DRAINAGE PLAN	C2
FIRST FLOOR DRAINAGE PLAN	C2
OSD PLAN & DETAILS	C3
STORMWATER DETAILS	C4

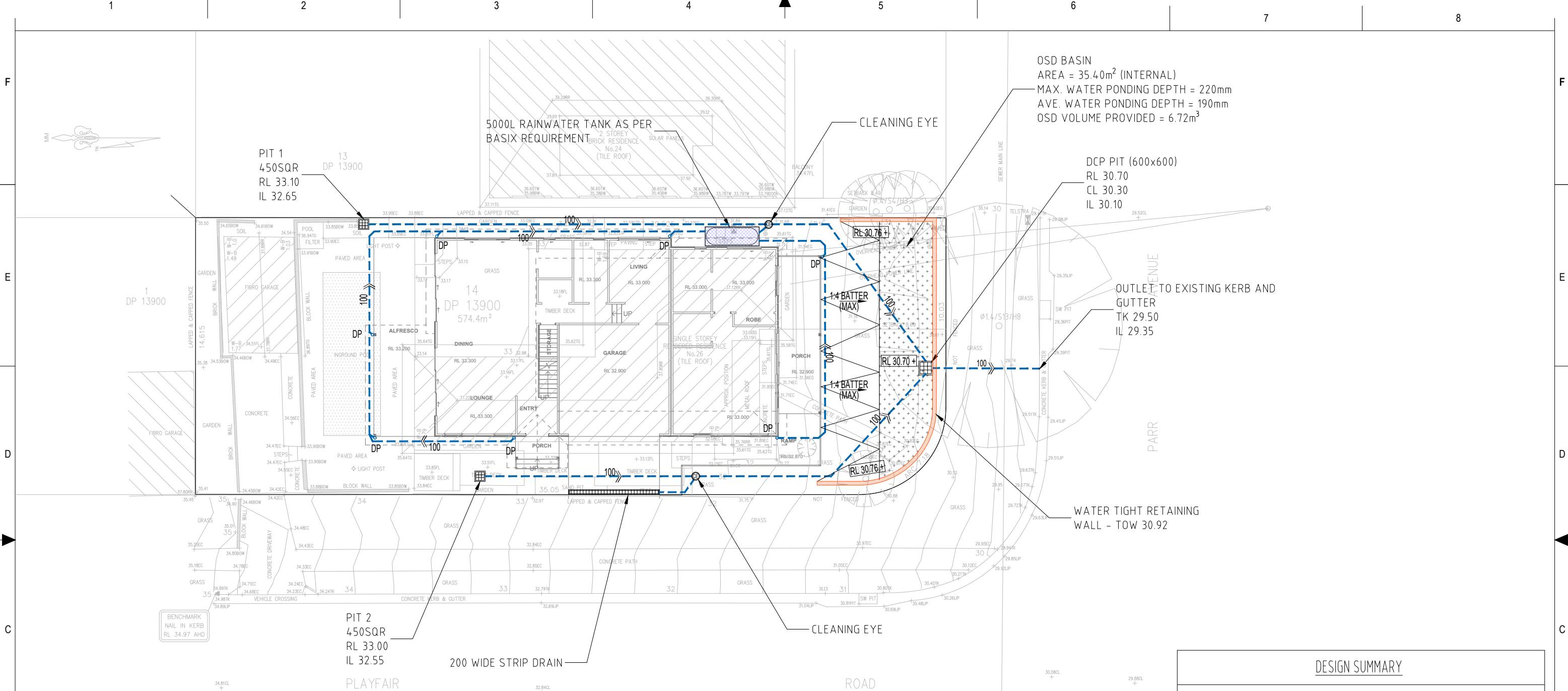
LOCATION MAP



ISSUE FOR APPROVAL



		REFERENCE COORDINATION DRAWING								<div>GENERAL NOTES :</div> <div>* THIS DRAWING IS THE COPYRIGHT OF NASTASI &amp; ASSOCIATES CONSULTING CIVIL &amp; STRUCTURAL ENGINEERS, Unit 5,1-3 Whiyalla Place,Prestons, 2170, PO Box 6048, Hornsbyshale, NSW, 2170.</div> <div>* IT IS NOT ALLOWED TO COPY OR REPRODUCE ITS CONTENTS IN ANY FORM EXCEPT FOR THE PURPOSE, WHICH IT IS INTENDED WITHOUT THE ABOVE CONSULTANT'S AUTHORITY.</div> <div>* DO NOT SCALE THIS DRAWING, ONLY STATED DIMENSIONS ARE TO BE CONSIDERED.</div> <div>* CONTRACTOR TO VERIFY THE DETAIL / INFORMATION GIVEN IN THIS DRAWING, ANY DISCREPANCIES SHALL BE BROUGHT TO ENGINEERS ATTENTION PRIOR TO COMMENCEMENT OF WORK, FAILURE TO COMPLY WITH THE ABOVE WILL BE CONTRACTORS LIABILITY.</div> <div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div> 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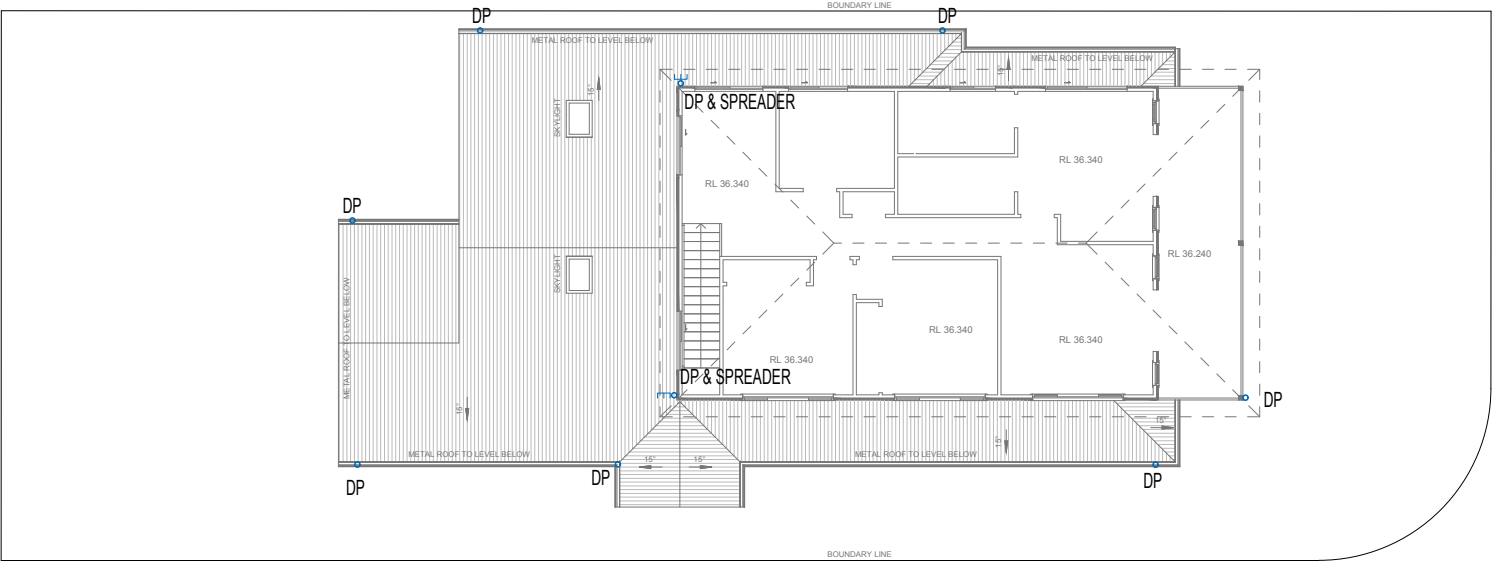
GROUND FLOOR DRAINAGE PLAN  
SCALE 1:200

DESIGN SUMMARY
NORTHERN BEACH COUNCIL WARRINGAH ON-SITE STORMWATER DETENTION TECHNICAL SPECIFICATION
SITE AREA = 574.40 m <sup>2</sup> PROPOSED IMPERVIOUS AREA = 272m <sup>2</sup> (47.35%)
THE PROPOSED DEVELOPMENT IS SINGLE RESIDENTIAL DWELLING ONLY. FROM SECTION 4.2.1 - STREAMLINED METHOD:
SSR = 200 x 0.05744 = 11.49 m <sup>3</sup> PSD = 400 x 0.05744 = 22.97 l/s (LIMITED TO 20l/s FOR KERB & GUTTER CONNECTION)
RAINWATER TANK OFFSET = 5000L (FROM BASIX CERTIFICATE) OSD VOLUME PROVIDED = 11.200m <sup>3</sup> TOTAL VOLUME PROVIDED = 5.0 + 6.72 = 11.72 m <sup>3</sup> > 11.49 m <sup>3</sup> ORIFICE DIAMETER = 109mm (USE 100mm OUTLET PIPE AS ORIFICE)

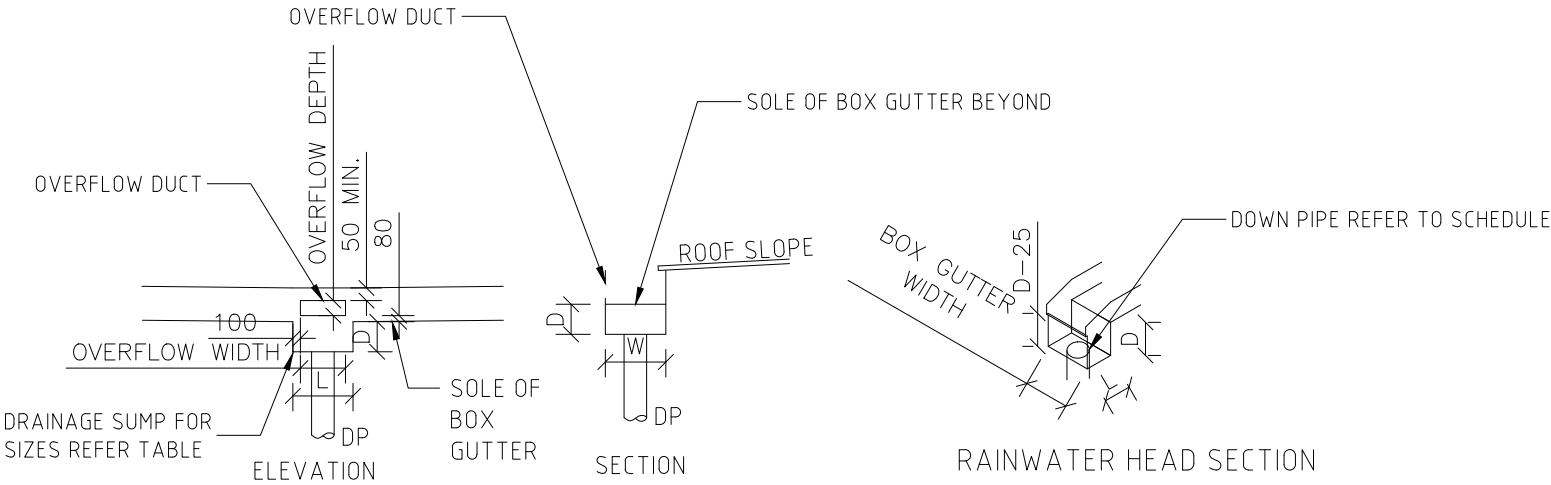
ISSUE FOR APPROVAL



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UNIT 5, 1-3 WHYALLA PLACE, PRESTONS NSW 2170 PH: (02) 9607 2884 OR (02) 8798 5617 FAX: (02) 9731 2081 MOB: 0419 041 401										DESIGNED      DATE																				ARCHITECT:										TITLE:										SCALE ( AT ORIGINAL SIZE)										AS 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FIRST FLOOR DRAINAGE PLAN  
SCALE 1:200



BOX GUTTER, RAINWATER HEAD & SUMP SIZING SCHEDULE					
NODE	BOX GUTTER SIZE	RAINWATER HEAD SIZE	SUMP SIZE	OVERFLOW TO SUMP	DOWNPIPE Ø mm
BG1	300 W x 150 D	250 D x 150 W	400 L x 130 D	N/A	100

TYPICAL BOX GUTTER DETAILS WITH SUMP OVERFLOW  
SCALE 1:20

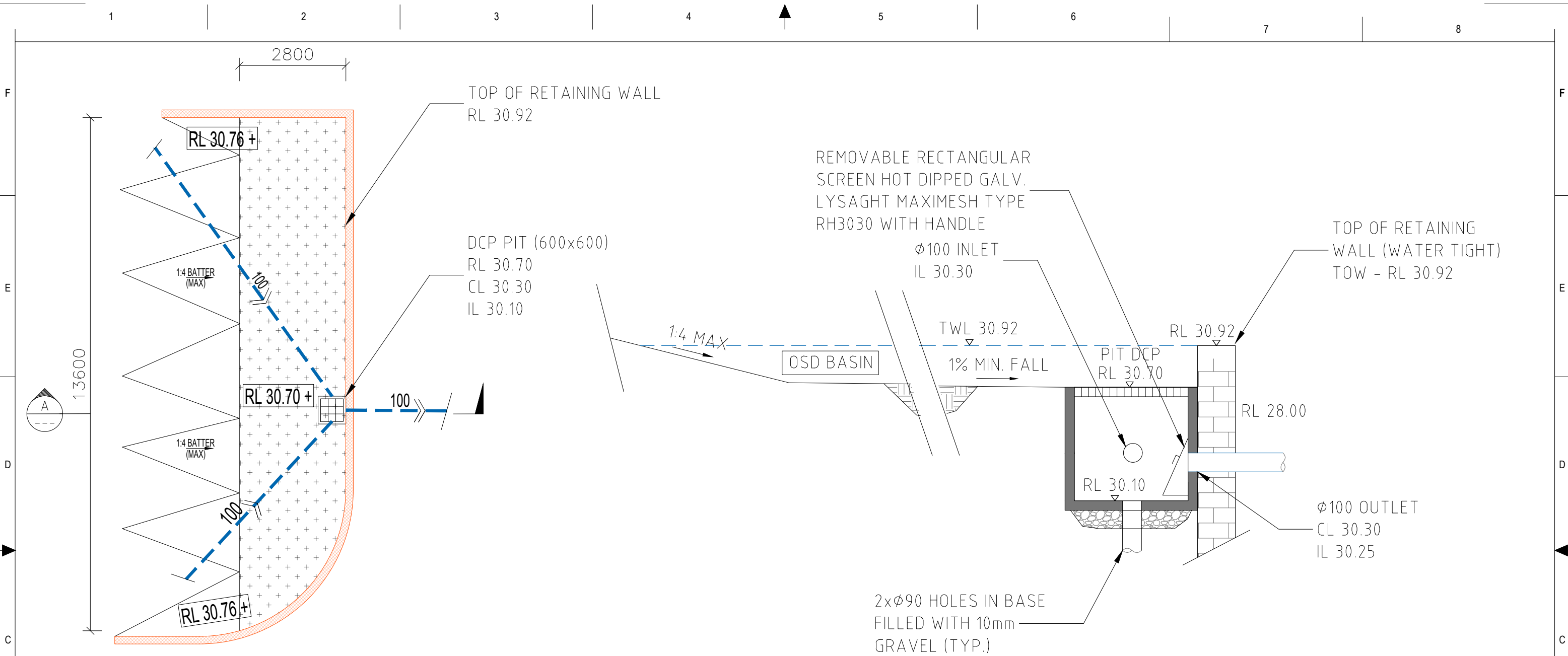
ISSUE FOR APPROVAL



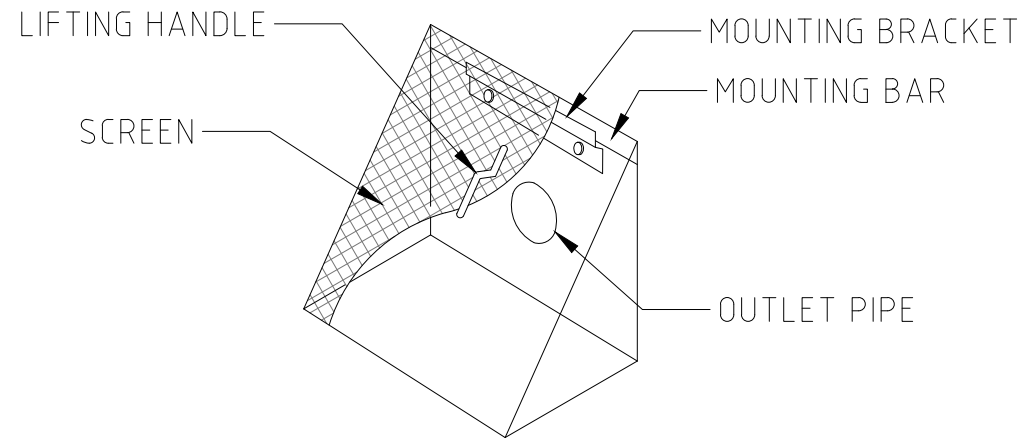
		REFERENCE COORDINATION DRAWING						GENERAL NOTES :		QUALITY CONTROL		APPROVED:	CLIENT: IAN HAINE & NARELLE MOSS	PROJECT: 26 PARR AVENUE, NORTH CURL CURL	DRAWING STATUS CONCEPT PLAN FOR APPROVAL	
		DISCIPLINE		DRAWING TITLE AND NUMBER		DATE	REV.		DRAWING TITLE AND NUMBER		DATE	REV.				
		ARCH.		230240 – GJG079					FIRE							
		STRUCT.							LANDS							
		MECH.							CIVIL							
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A	ISSUED FOR REVIEW					28.03.2019										
ISSUE	REVISION					DATE										
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**NASTASI & ASSOCIATES**  
CONSULTING CIVIL & STRUCTURAL ENGINEERS  
B.E., M.I.E. AUST. CPENG NPER-3  
ABN 45 533 226 008  
UNIT 5, 1-3 WHYALLA PLACE, PRESTONS NSW 2170  
PH: (02) 9607 2864 OR (02) 8798 5517 FAX: (02) 9731 2081  
MOB: 0419 041 401





OSD BASIN PLAN  
SCALE 1:100



DEBRIS SCREEN DETAILS  
SCALE 1:20

OSD BASIN SECTION A  
SCALE 1:20

ISSUE FOR APPROVAL



REFERENCE COORDINATION DRAWING		GENERAL NOTES :		QUALITY CONTROL		APPROVED:		CLIENT:		PROJECT:		DRAWING STATUS	
DISCIPLINE		DRAWING TITLE AND NUMBER		DATE		DATE		IAN HAINE & NARELLE MOSS		26 PARR AVENUE, NORTH CURL CURL		CONCEPT PLAN FOR APPROVAL	
ARCH.		230240 - GJG079											
STRUCT.													
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A		ISSUED FOR REVIEW		28.03.2019									
ISSUE		REVISION		DATE									

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DESIGNED		DATE		MD		28.03.2019									
CHECKED		DATE													

ARCHITECT:		G.J. GARDNER HOMES		TITLE:		OSD BASIN PLAN & DETAILS		SCALE ( AT ORIGINAL SIZE)		AS NOTED	
PROJECT NO.		DRAWING NO.		REVISION NO.		16928		C4		A	

F

E

D

C

B

A

F

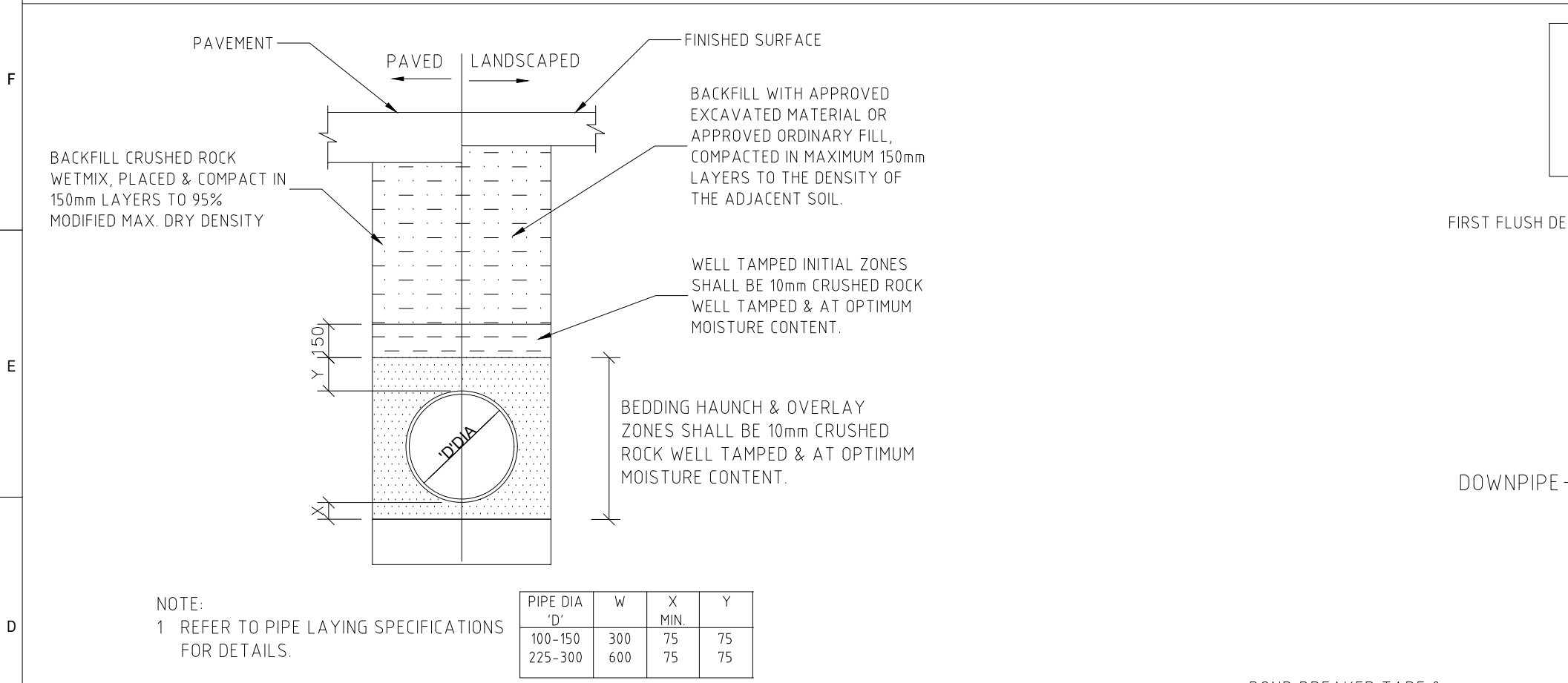
E

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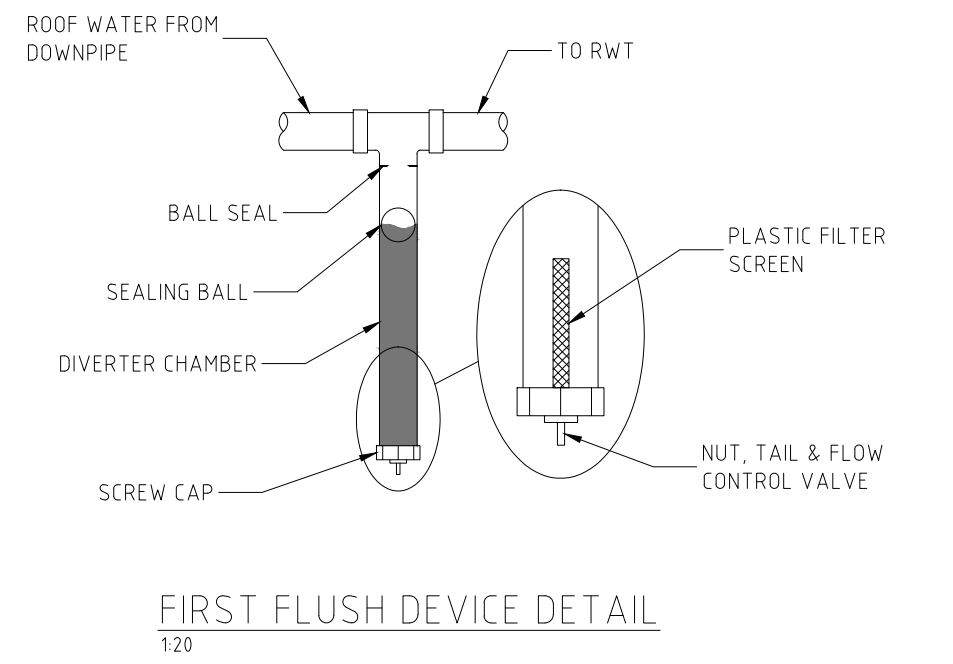
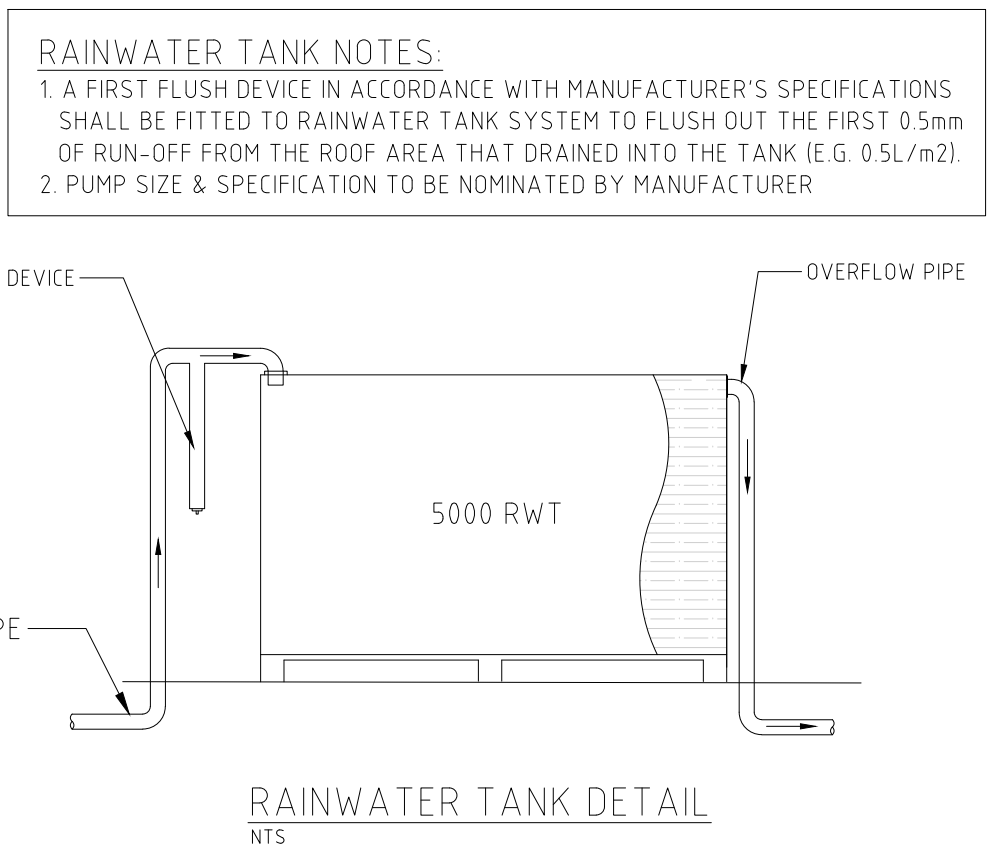
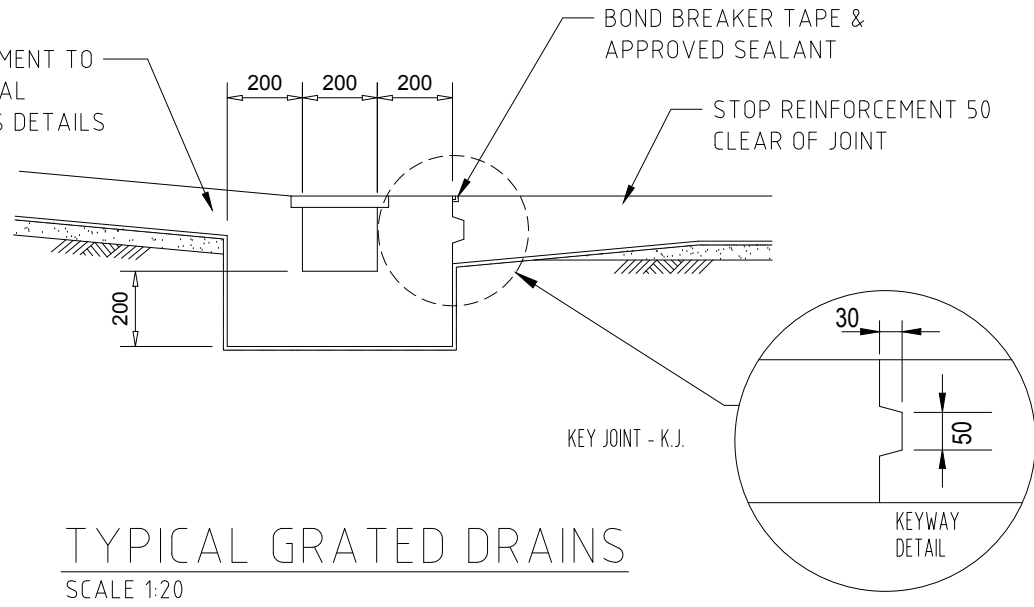
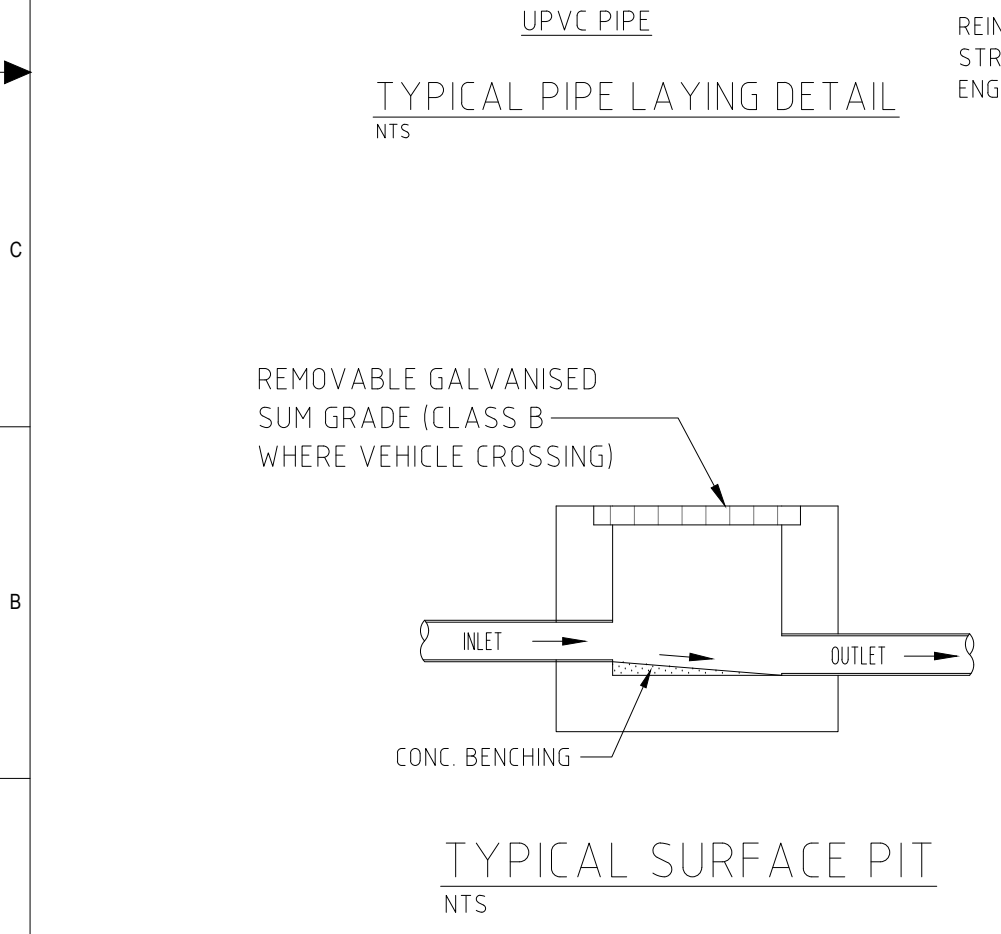
C

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UPVC PIPE  
TYPICAL PIPE LAYING DETAIL  
NTS



a3

REFERENCE COORDINATION DRAWING				GENERAL NOTES :				QUALITY CONTROL				APPROVED:				CLIENT:				PROJECT:				DRAWING STATUS			
DISCIPLINE				DRAWING TITLE AND NUMBER				DRAWN				DATE				IAN HAINE & NARELLE MOSS				26 PARR AVENUE, NORTH CURL CURL				CONCEPT PLAN FOR APPROVAL			
ARCH.				230240 - GJG079				DESIGNED				DATE				ARCHITECT:				TITLE:				SCALE ( AT ORIGINAL SIZE)			
STRUCT.								MD				28.03.2019				G.J. GARDNER HOMES				STORMWATER DETAILS				AS NOTED			
MECH.								CHECKED				DATE												PROJECT NO.			
ELEC.																								DRAWING NO.			
HYD.																								16928			
ISSUE				DATE																				REVISION NO.			
																								C5			
																								A			



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