



SCALE = 1 : 500

SCALE = 1 : 500

## RAINWATER HARVESTING REQUIREMENTS:

1. CONSIDERING THE ROOF CATCHMENT AREA, LOCATION OF PROPERTY, INTENDED USE OF RAINWATER AND GARDEN SIDE WE RECOMMEND PROVIDING A RAINWATER TANK FOR USE AS PER BASIX REQUIREMENTS, HCCRENS WATER SMART PRACTICE NOTE (N.4) AND THE NSW HEALTH REQUIREMENTS FOR NOT DRINKING USE ONLY AS FOLLOWS:
  - a) TO WATER GARDEN AREAS b) BASIX REQUIREMENTS.
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](http://www.sydneywater.com.au) OR FROM LOCAL COUNCIL GUIDELINES.
5. PROVIDE A DUAL SUPPLY SYSTEM AND BACKFLOW PREVENTION SYSTEM IN ACCORDANCE WITH  
"BASIX-DESIGN GUIDE FOR SINGLE DWELLINGS" BY NSW DEPARTMENT OF INFRASTRUCTURE, PLANNING AND NATURAL RESOURCES AND AS3500.1.
6. IF NOT SPECIFIED ON PLANS, THE FIRST FLUSH SYSTEM IS TO HAVE A MINIMUM SIZE OF 20L PER 100M<sup>2</sup> 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. THIS SHOULD CATER FOR THE FIRST 1mm OF RAINFALL.
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-CAST/AGG. 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. RAINWATER TANK TO BE WATER PROOFED IN ACCORDANCE WITH HB 230-200B
12. BUILDER OR 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 230-200B. IF IN DOUBT CONTACT ENGINEER.
13. NOISE EMISSIONS FROM ANY PUMPS DO NOT EXCEED 5db(A) ABOVE AMBIENT BACKGROUND NOISE LEVEL MEASURED AT THE ALLOTMENT BOUNDARY.

SURVEY NOTES:

1. SILT FENCE AND ASSOCIATED WORKS INCLUDING INTERCEPTOR DRAIN IS TO BE INSTALLED BEFORE THE COMMENCEMENT OF ANY EXCAVATION.
2. GEOTECHNICAL ENGINEER IS TO PROVIDE SITE STABILITY REQUIREMENTS. CUTS ARE TO BE EXECUTED TO THE REQUIRED LEVEL USING CONVENTIONAL EXCAVATION MACHINERY. AS A GUIDE, INITIALLY THE DEPTH OF FILL/CLAY IS TO BE ESTABLISHED TO ENSURE NEIGHBOURING PROPERTIES ARE NOT ADVERSELY AFFECTED. EARTH BATTERS TO BE A MAXIMUM SLOPE OF 1.0m VERT. TO 1.7m HORIZ. (AS PER GEOTECHNICAL REPORT). ANY BATTERS GREATER THAN 1.0m VERT. TO 1.7m HORIZ. ARE TO BE ADEQUATELY SHORED IN ACCORDANCE WITH GEOTECHNICAL ENGINEERS DETAILS AND INSTRUCTIONS.
3. ANY PERMANENT RETAINING STRUCTURE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEER'S DETAILS AND INSTRUCTIONS.
4. ALL EXISTING RETAINING STRUCTURES ARE TO BE COMPLETED WITH MINIMUM DELAY FOLLOWING EXCAVATION.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSPECTED AND MAINTAINED DAILY BY SITE MANAGER.
6. CONTRACTOR TO MINIMISE DISTURBED AREAS.
7. ALL STOCKPILES TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS.
8. DRAINAGE IS TO BE CONNECTED TO STORMWATER SYSTEM AS SOON AS POSSIBLE.
9. ROADS AND FOOTPATH TO BE SWEEP DAILY.
10. CONSTRUCTION VEHICLES ARE TO LEAVE AND ENTER THE SITE OVER AN ALL WEATHER SURFACE CONSISTING OF COURSE CRUSHED STONE OR BLUE METAL CONSTRUCTED WITHIN THE FRONT SETBACK AREA OPPOSITE THE EXISTING FOOTPATH CROSSING UNLESS NOTED OTHERWISE.
11. EXCAVATION MACHINERY ARE TO BE UNLOADED AND LOADED UPON THIS ALL WEATHER SURFACE. CONCRETE PUMPS AND TRUCKS WILL ALSO UTILISE THE ALL WEATHER SURFACE FOR THEIR OPERATIONS.
12. MATERIALS WILL BE UNLOADED UPON THE ALL WEATHER SURFACE WITHIN THE FRONT SETBACK AREA BY MEANS OF CRANES MOUNTED ON THE BACK OF DELIVERY TRUCKS OR UNLOADED BY HAND. A MOBILE CRANE MAY BE REQUIRED DURING THE CONSTRUCTION PROCESS.
13. SOME STOCKPILING OF TOPSOIL REMOVED FROM THE BUILDING AREA MAY BE STORED ON THE SITE DURING THE CONSTRUCTION WITHIN THE PROPERTY IN AN AREA ENCLOSED WITHIN THE SEDIMENT CONTROL FENCING.
14. ALL EXCAVATED & CONSTRUCTION MATERIALS, SHED, SKIP BINS, TEMPORARY WATER CLOSETS, SPOIL AND EQUIPMENT, ETC SHALL BE KEPT WITHIN THE PROPERTY. NO VEHICLES OR MACHINERY ARE KEPT WITHIN THE PROPERTY. NO VEHICLES OR MACHINES SHALL STAND ON COUNCIL FOOTPATHS FOR LARGE LENGTHS OF TIME.
15. ALL RUBBISH & RECYCLABLE MATERIAL SHALL BE STOCKPILED IN WASTE BINS IN THE AREA NOMINATED ON THE SITE PLAN WITHIN THE SITE BOUNDARY. PUBLIC PROPERTY SHALL BE KEPT FREE OF RUBBISH AND RECYCLABLES AT ALL TIMES ANY WASTE MATERIALS SHALL BE REGULARLY COLLECTED FROM THE SITE AND DISPOSED OF IN AN APPROPRIATE FASHION.
16. ANY BUILDING OR DEMOLITION WORKS INVOLVING ASBESTOS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT STANDARDS.
17. VEHICLES LEAVING THE SITE WILL DO SO VIA THE ALL WEATHER BALLAST DRIVEWAY MADE OF COURSE AGGREGATE OR SIMILAR LOCATED WITHIN THE FRONT SETBACK AREA OF THE DEVELOPMENT. ANY DIRT OR MATERIAL DEPOSITED ON THE ROAD RESERVE OR ROADWAY IS TO BE PROMPTLY CLEANED.
18. ANY EXCAVATED AREA REQUIRING SUPPORT WILL BE UNDERTAKEN BY THE OWNER USING STRUCTURALLY APPROVED RETAINING STRUCTURES.
19. ADEQUATE SAFETY SIGNAGE MUST BE ERECTED IN A PROMINENT POSITION ON THE WORK SITE, WARNING OF UNAUTHORISED ENTRY TO WORK SITE AND INTENDING DANGERS.
20. SAFETY FENCES SHALL BE PROVIDED AROUND ALL BOUNDARIES UNLESS A CONTINUOUS STRUCTURALLY ADEQUATE FENCE PRESENTLY EXISTS. THE FENCING SHALL BE ADEQUATE TO RESTRICT PUBLIC ACCESS TO THE SITE WHEN BUILDING WORK IS NOT IN PROGRESS OR THE SITE IS OCCUPIED.
21. NOISE LEVELS SHALL NOT EXCEED COUNCIL REGULATION LEVELS. BUILDING AND DEMOLITION WORKS SHALL ONLY BE CARRIED OUT BETWEEN HOURS AND DAYS SPECIFIED BY COUNCIL.
22. GEOTEXTILE BARRIERS SHALL BE PLACED ON THE INSIDE OF THE SITE FENCING PRIOR TO SITE PREPARATION TO PREVENT SEDIMENT WASHING FROM CLEARED AND DISTURBED AREAS OF THE SITE INTO THE STORMWATER SYSTEM. DURING CONSTRUCTION, UNLESS OTHERWISE NOTED, UNCONTAMINATED RUNOFF FROM CLEARED OR DISTURBED AREAS ARE TO BE DIRECTED TO A TEMPORARY SILT ARRESTOR PIT THAT SHALL BE PROVIDED WITHIN THE SITE AT THE STREET BOUNDARY PROCESSING SITE STORMWATER BEFORE IT IS DISCHARGED TO THE STREET DRAINAGE SYSTEM OR WATERCOURSE.
23. ALL TOP SOIL STRIPPED & STOCKPILED ONSITE IS TO BE PLACED IN NOMINATED AREAS ON PLAN OR TO COUNCIL REQUIREMENTS. ALL DISTURBED AREAS ARE TO BE STABILISED UPON THE COMPLETION OF BUILDING WORKS.
24. ALL SEDIMENT CONTROL STRUCTURES ARE TO BE CONTINUALLY MAINTAINED DURING CONSTRUCTION AND INSPECTED FOR STRUCTURAL DAMAGE AFTER EACH RAINFALL EVENT, WITH EXCESS SEDIMENT BEING REMOVED TO THE TOPSOIL STOCKPILE.
25. WHERE THERE IS THE POTENTIAL OF SITE EROSION TO PRODUCE EXCESSIVE SEDIMENT RUNOFF, SUITABLE GEOTEXTILE BARRIERS SHALL BE PLACED TO ALLEVIATE THE RISK ACCORDINGLY. BARE SURFACES SHALL BE KEPT MOIST TO REDUCE DUST LEVELS. GEOTEXTILE FABRIC LOCATED ON THE INSIDE OF FENCES SHALL ALSO BE UTILISED FOR DUST CONTROL WHERE NECESSARY.

EXISTING UNDERGROUND SERVICES NOTES:

1. THE LOCATIONS OF UNDERGROUND SERVICES SHOWN IN THIS SET OF DRAWINGS HAVE BEEN PLOTTED FROM SURVEY INFORMATION AND SERVICE AUTHORITY INFORMATION. THE SERVICE INFORMATION HAS BEEN PREPARED ONLY TO SHOW THE APPROXIMATE POSITIONS OF ANY KNOWN SERVICES AND MAY NOT BE AS CONSTRUCTED OR ACCURATE.
2. RTS CIVIL CONSULTING ENGINEERS PTY LTD CANNOT GUARANTEE THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS AS SUFFICIENTLY INDICATES THE PRESENCE OR ABSENCE OF SERVICES OR THEIR LOCATION AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.
3. CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY.
4. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS.
5. CONTRACTORS ARE TO UNDERTAKE A SERVICES SEARCH, PRIOR TO COMMENCEMENT OF WORKS ON SITE. SEARCH RESULTS ARE TO BE KEPT ON SITE AT ALL TIMES.
6. CONTRACTORS ARE TO CONFIRM DURING THE LOCAL COUNCIL OR SYDNEY WATER IN RELATION TO THE SEWER OR WATER MAINS LOCATED. CONFIRMATION OF MAINS IS REQUIRED PRIOR TO CONSTRUCTION. POSSIBLE CONFLICT OF SERVICES ARE TO BE REPORTED TO THE SUPERINTENDENT OR ENGINEER FOR FURTHER DIRECTIONS.

EXTERNAL NOTES:

1. ALL ACTIVITIES AND WORKS EXTERNAL TO THE SITE, OR THAT AFFECT PUBLIC ROADS, ARE TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL'S CODES AND STANDARDS.
2. PUBLIC FOOTPATHS SHALL BE RECONSTRUCTED TO THE SATISFACTION OF COUNCIL'S DIRECTOR OF ENGINEERING SERVICES. A ROAD OPENING PERMIT SHALL BE OBTAINED FOR ALL WORKS CARRIED OUT IN A PUBLIC OR COUNCIL CONTROLLED LAND.
3. RESTORATION OF LANDSCAPING, ROADS AND OTHERS SHALL BE TO COUNCIL'S REQUIREMENTS. ALL ACTIVITIES SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE AFFECTED PARTIES.
4. WHERE WORKS ARE UNDERTAKEN ON PUBLIC ROADS, ADEQUATE TRAFFIC CONTROL AND DIRECTIONS TO MOTORISTS SHALL BE PROVIDED BY OTHERS.

DRAWING SCHEDULE:

CP100 - COVER PAGE, NOTES & CALCULATIONS  
SW100 - STORMWATER MANAGEMENT PLAN 1 OF 2  
SW101 - STORMWATER MANAGEMENT PLAN 2 OF 2  
SW200 - STORMWATER DRAINAGE DETAILS

STORMWATER CALCULATIONS ACCORDING TO NORTHERN BEACHES COUNCIL (PITWATER DCP21)	
TOTAL SITE AREA	664 m <sup>2</sup>
TOTAL SITE IMPERVIOUS AREA (EXISTING)	345 m <sup>2</sup> ( 52% IMPERVIOUS )
TOTAL SITE IMPERVIOUS AREA (PROPOSED)	394 m <sup>2</sup> ( 59% IMPERVIOUS )
TOTAL INCREASE IN IMPERVIOUS AREA	49 m <sup>2</sup> < 50 m <sup>2</sup>
REQUIRED OSD VOLUME IN ACCORDANCE DCP21	0 m <sup>3</sup>
REQUIRED RAINWATER VOLUME IN ACCORDANCE DCP21	0 m <sup>3</sup>
RAINWATER VOLUME (BASIX) REQUIRED	2.0 m <sup>3</sup>

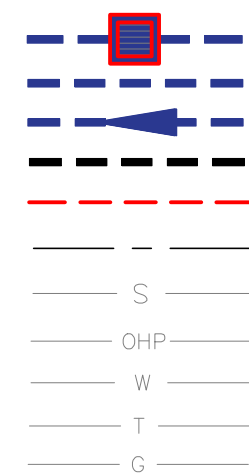
THE BUILDER/CONTRACTOR SHALL LOCATE ALL EXISTING PUBLIC UTILITY SERVICES WITHIN THE SITE, FOOTPATH AREA AND ROAD RESERVE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ALL LOCATIONS AND LEVELS OF SERVICES SHALL BE REPORTED TO THE STORMWATER ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS TO ENSURE THAT THERE ARE NO OBSTRUCTIONS IN THE LINE OF THE DRAINAGE DISCHARGE PIPES.

A1 ORIGINAL				BY BUILDER BEFORE COMMENCING WITH WORK.																	
				Issued for: DEVELOPMENT APPLICATION	Title:	Initial:	Date:	<div><div>RTS</div><div>CIVIL CONSULTING ENGINEERS</div><div>STORMWATER • CIVIL • FLOOD MITIGATION</div><div>ABN: 81 615 065 588 Phone: 0490 507 300 Email: admin@rtscivil.com.au Web: rtscivil.com.au</div></div>	Architect:	Project and Drawing Title:			Local Council:								
				Approved by:	DESIGN	R.M	06.05.2021		BENNETT MURADA ARCHITECTS							27 GRENFELL AVENUE, NORTH NARRABEEN			NORTHERN BEACHES COUNCIL		
				Date : 02.06.21 Rhys Mikhail Director BE (Civil) Hons MIEAust CPEng NER RPEQ (RTS Civil Consulting Engineers Pty Ltd)	DRAWN	S.M	06.05.2021		Client:	COVERPAGE, NOTES & CALCULATIONS			Project Number: 210501								
A	02.06.21	STORMWATER MANAGEMENT PLAN FOR DA SUBMISSION	R.M		CHECKED	R.M	31.05.2021									JO-ANNE BENNETT					
Rev:	Date:	Description:	Reviewed:	APPROVED	R.M	31.05.2021	The document is produced by RTS Civil Consulting Engineers Pty Ltd (RTS) solely for the benefit of and use by the client. In accordance with the terms and conditions of RTS, RTS does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.														



## NOTES

## IF



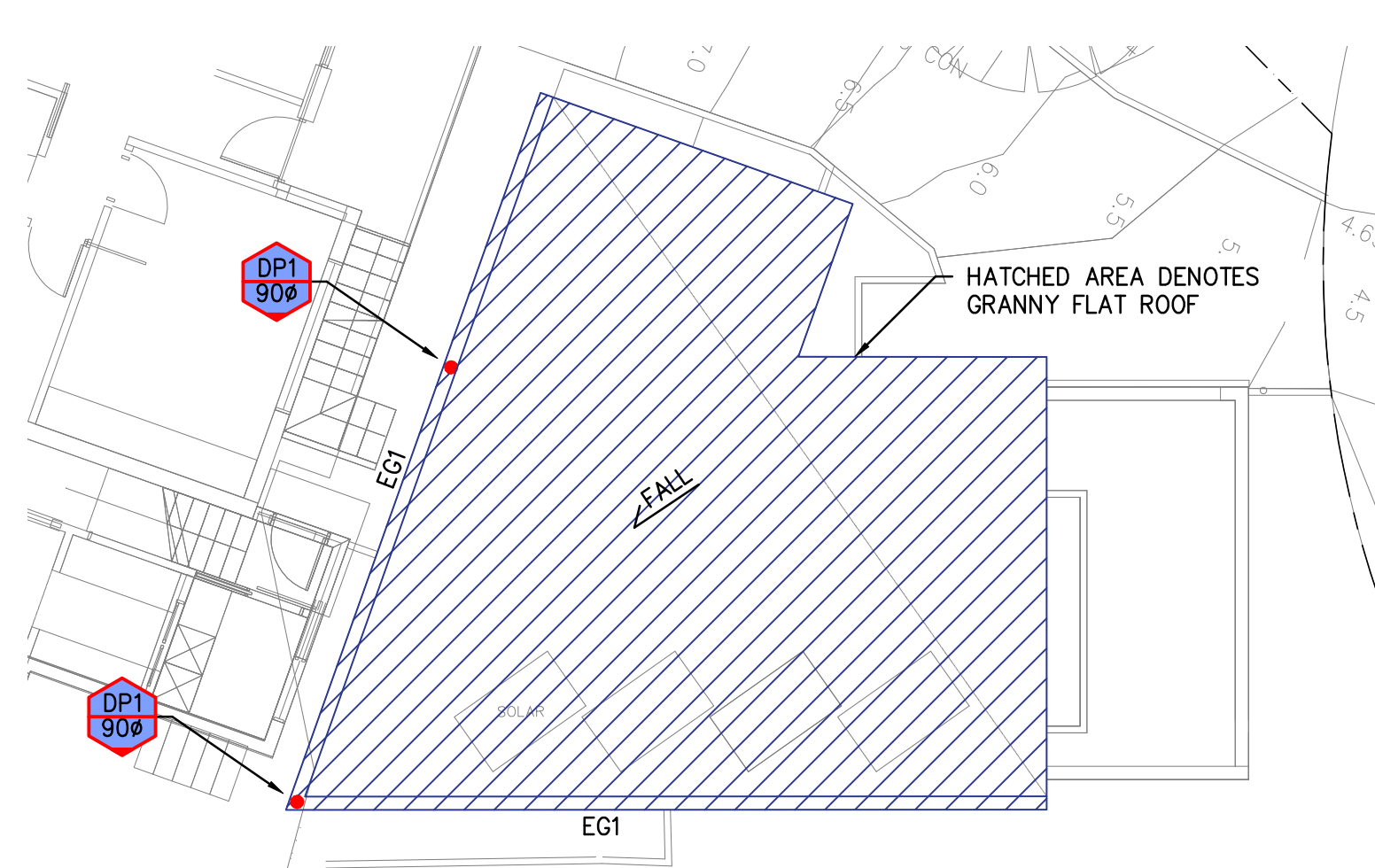
DP1  
DP2  
DP3  
FD1  
GD1  
GD2  
RWT  
EG1

NOT FOR CONSTRUCTION



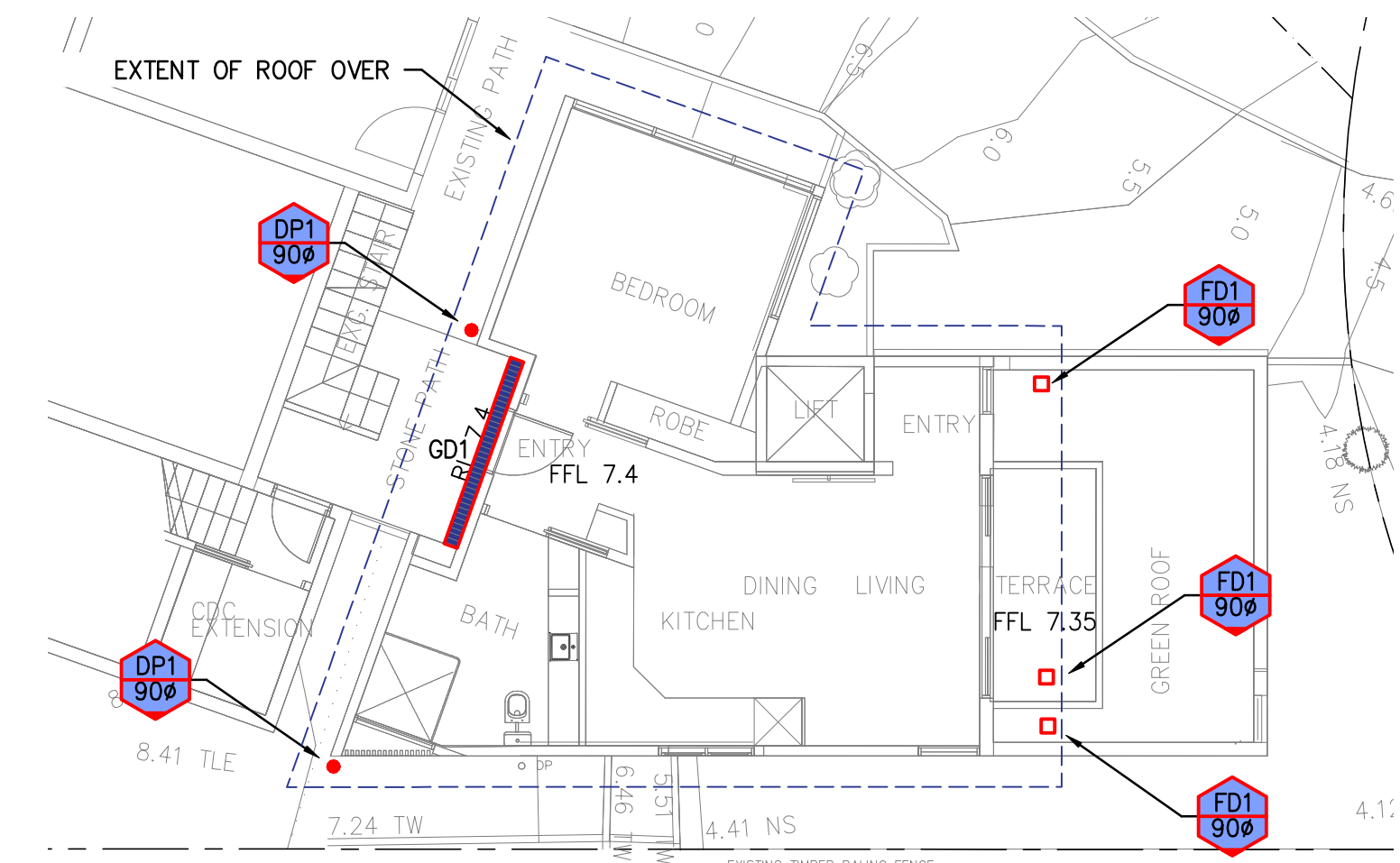
## NEW PIPE CONNECTION TO EXISTING KERB AND GUTTER

SCALE 1: 20



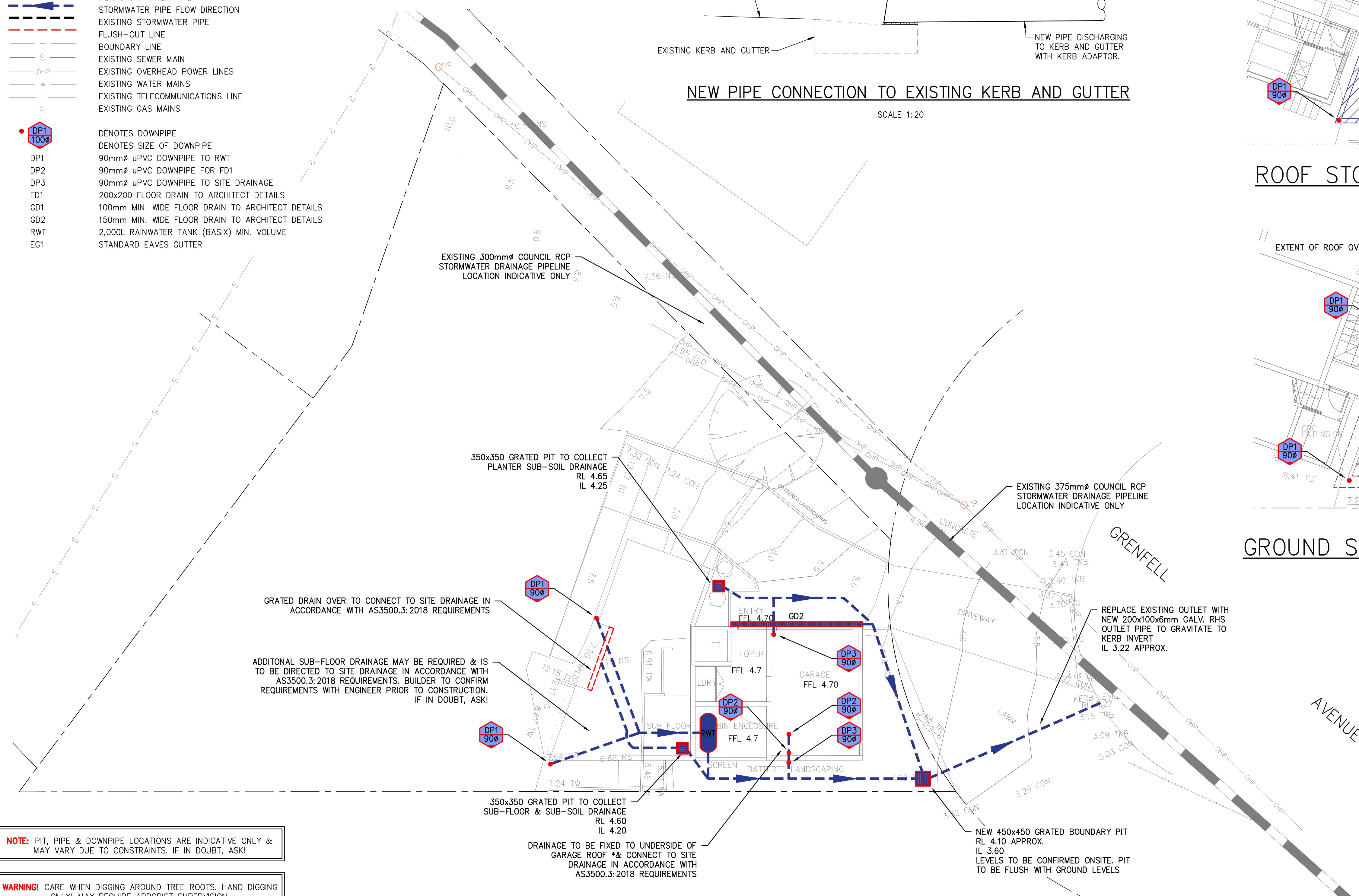
# ROOF STORMWATER MANAGEMENT PLAN

SCALE = 1 : 100



# GROUND STORMWATER MANAGEMENT PLAN

SCALE = 1 : 10




**NOTE:** PIT, PIPE & DOWNPIPE LOCATIONS ARE INDICATIVE ONLY & MAY VARY DUE TO CONSTRAINTS. IF IN DOUBT, ASK!

**WARNING!** CARE WHEN DIGGING AROUND TREE ROOTS. HAND DIGGING ONLY! MAY REQUIRE ARBORIST SUPERVISION.

**NOTE:**  
THE BUILDER/CONTRACTOR SHALL LOCATE ALL EXISTING PUBLIC UTILITY SERVICES WITHIN THE SITE, FOOTPATH AREA AND ROAD RESERVE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ALL LOCATIONS AND LEVELS OF SERVICES SHALL BE REPORTED TO THE STORMWATER ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS TO ENSURE THAT THERE ARE NO OBSTRUCTIONS IN THE LINE OF THE DRAINAGE DISCHARGE PIPES.

## LOWER GROUND FLOOR STORMWATER MANAGEMENT PLAN

SCALE = 1 : 100

Issued for: DEVELOPMENT APPLICATION	Title:	Initial:	Date:
Approved by:  Date: 02.06.21 Rhys Mikhail ..... Director BE (Civil) Hons MIEAust CPEng NER RPEQ (RTS Civil Consulting Engineers Pty Ltd)	DESIGN	R.M	06.05.2021
	DRAWN	S.M	06.05.2021
	CHECKED	R.M	31.05.2021
	APPROVED	R.M	31.05.2021



**CIVIL CONSULTING  
ENGINEERS**

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Architect:  
BENNETT MURADA ARCHITECTS

Client: JO-ANNE BENNETT

Project and Drawing Title:	27 GRENFELL AVENUE, NORTH NARRABEEN STORMWATER MANAGEMENT PLAN 2 OF 2
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Local Council:

NORTHERN BEACHES COUNCIL

Project Number:	Drawing ID:	Issue:
210501	SW101	A

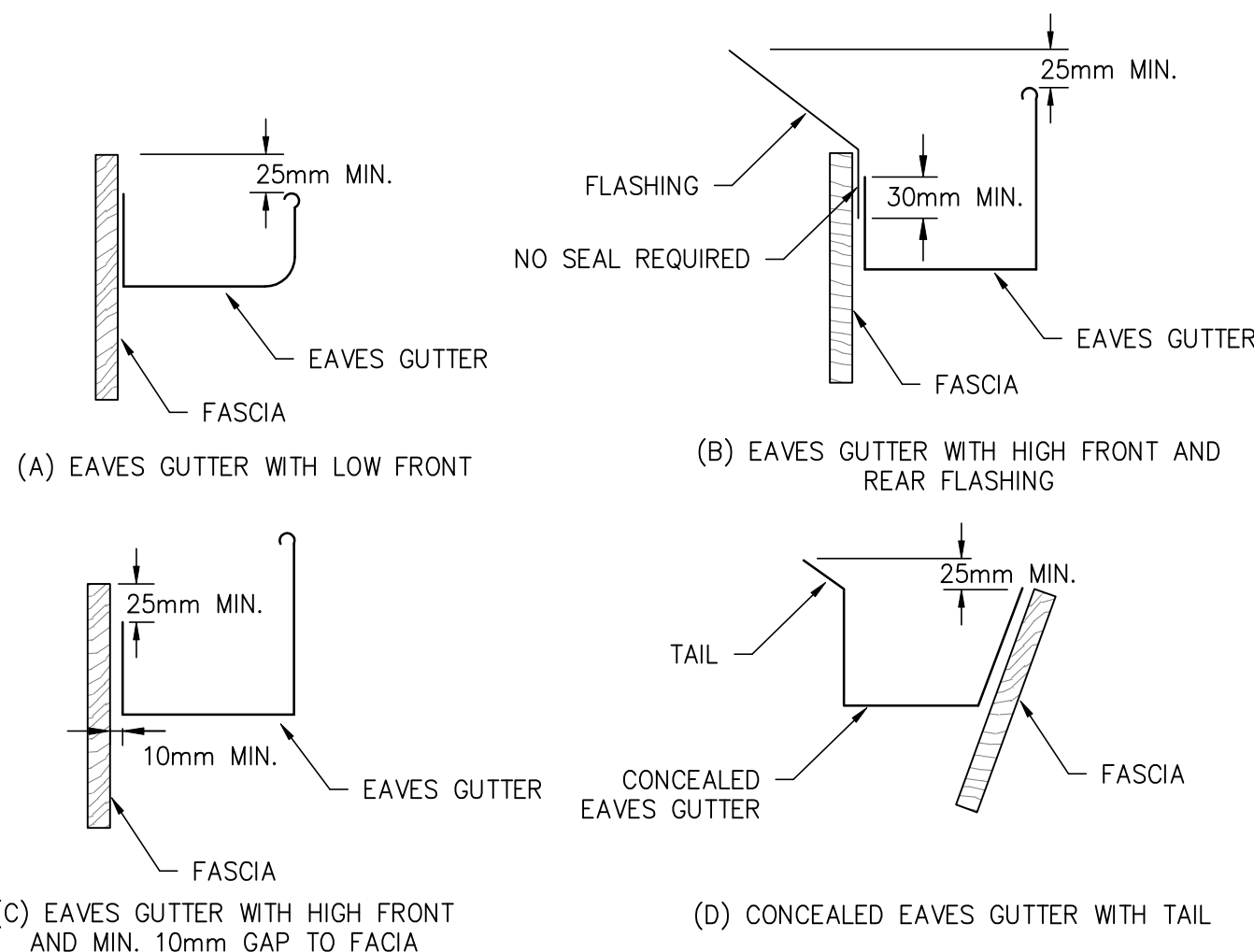




NOTES:  
1. U.N.O REFER TO THE COVERPAGE CP100 SERIES FOR DETAILED NOTES AND CALCULATIONS.  
2. ALL DIMENSIONS SHALL BE VERIFIED ONSITE BY BUILDER BEFORE COMMENCING WITH WORK.

### LEGEND

- STORMWATER PIT  
NEW STORMWATER PIPE  
STORMWATER PIPE FLOW DIRECTION  
EXISTING STORMWATER PIPE  
FLUSH-OUT LINE  
BOUNDARY LINE  
EXISTING SEWER MAIN  
OHP  
EXISTING OVERHEAD POWER LINES  
EXISTING WATER MAINS  
T  
EXISTING TELECOMMUNICATIONS LINE  
G  
EXISTING GAS MAINS
- DP1  
DP2  
DP3  
FD1  
GD1  
GD2  
RWT  
EG1
- DENOTES DOWNPIPE  
DENOTES SIZE OF DOWNPIPE  
90mmØ uPVC DOWNPIPE TO RWT  
90mmØ uPVC DOWNPIPE FOR FD1  
90mmØ uPVC DOWNPIPE TO SITE DRAINAGE  
200x200 FLOOR DRAIN TO ARCHITECT DETAILS  
100mm MIN. WIDE FLOOR DRAIN TO ARCHITECT DETAILS  
150mm MIN. WIDE FLOOR DRAIN TO ARCHITECT DETAILS  
2,000L RAINWATER TANK (BASIX) MIN. VOLUME  
STANDARD EAVES GUTTER



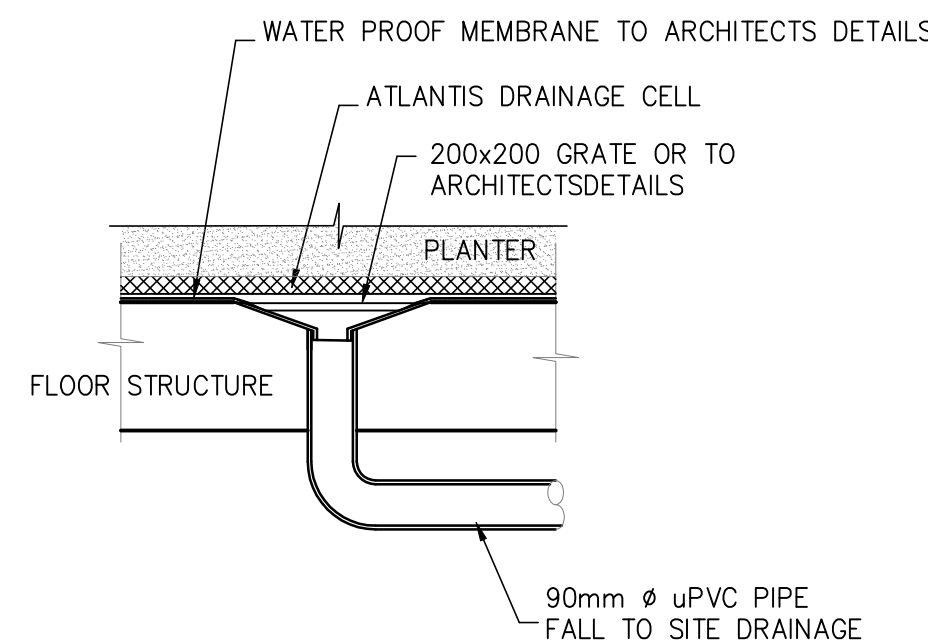
### EAVES GUTTER OVERFLOW METHODS

SCALE: 1:20

**NOTE:** PIT, PIPE & DOWNPIPE LOCATIONS ARE INDICATIVE ONLY & MAY VARY DUE TO CONSTRAINTS. IF IN DOUBT, ASK!

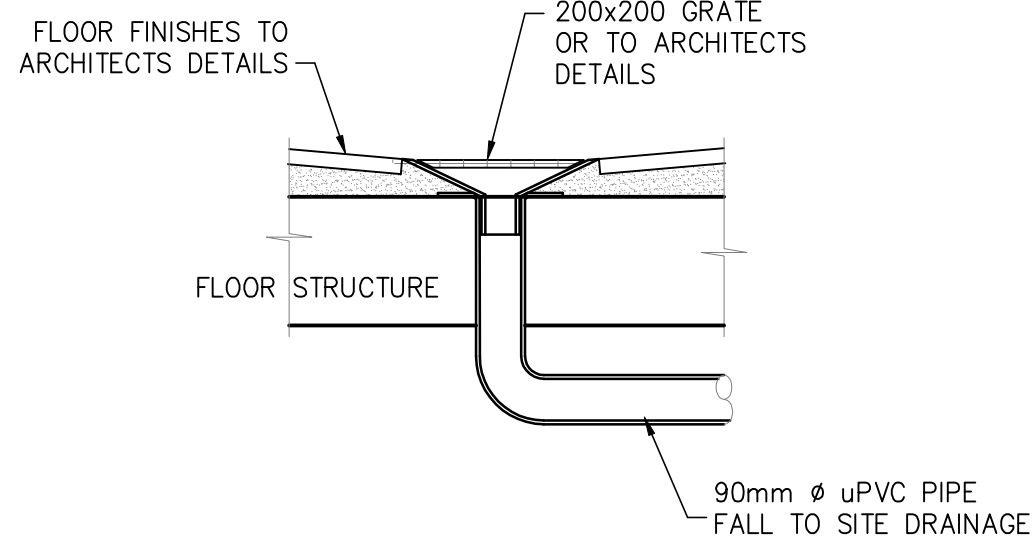
**WARNING!** CARE WHEN DIGGING AROUND TREE ROOTS. HAND DIGGING ONLY! MAY REQUIRE ARBORIST SUPERVISION.

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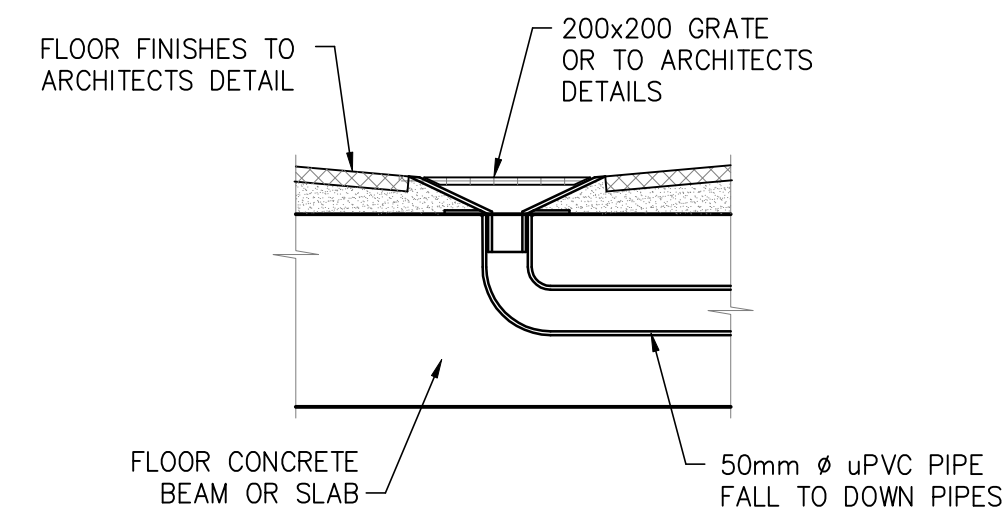
### STANDARD FLOOR DRAIN

SCALE = 1 : 20



### STANDARD FLOOR PATIO DRAIN

SCALE = 1 : 20



### STANDARD FLOOR DRAIN (OPTION FOR BALCONIES ONLY)

SCALE = 1 : 20

**NOTE:**  
FLOOR DRAINS TO BE INSTALLED WITHIN ALL PLANTERS AND PATIOS TO ARCHITECTS DETAILS AND AS3500.3 REQUIREMENTS. FLOOR DRAINS ARE TO DRAIN BY GRAVITY TO THE NEAREST DRAINAGE STRUCTURE AND MUST BE LOCATED AT LEAST 500mm ABOVE CONNECTION POINT. IF IN DOUBT, CONTACT THE ENGINEER.

NOT FOR CONSTRUCTION

EXISTING BRICK PAVED AREA IS LOCATED ON SAND & HAS BEEN CONSIDERED AS 50% PERIOUS IN RELATION TO IMPERVIOUS AREA CALCULATIONS

BUILDER TO INSPECT EXISTING SITE DRAINAGE PRIOR TO CONSTRUCTION & NOTIFY ENGINEER OF FINDINGS. BUILDER TO INVESTIGATE IF UPHILL RUNOFF ENTERS THE PROPERTY & IF SO IS TO NOTIFY ENGINEER OF FINDINGS AS ADDITIONAL DRAINAGE MAY BE REQUIRED.

EXISTING BRICK PAVED AREA IS LOCATED ON SAND & HAS BEEN CONSIDERED AS 50% PERIOUS IN RELATION TO IMPERVIOUS AREA CALCULATIONS

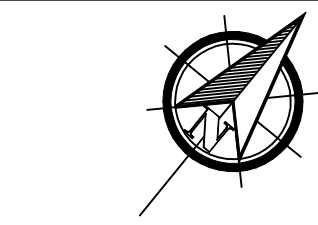
ADDITIONAL SURFACE DRAINAGE OR DISH DRAIN IS STRONGLY RECOMMENDED TO BE PROVIDED ALONG THE HIGH SIDE OF ANY LANDSCAPING OR RETAINING STRUCTURES LOCATED ADJACENT TO THE DWELLING TO DIRECT UPSTREAM SURFACE RUNOFF AROUND THE PROPOSED DEVELOPMENT. DETAILS TO BE IN ACCORDANCE WITH AS3500.3:2018 REQUIREMENTS.

ADDITIONAL SURFACE & SUBSURFACE DRAINAGE MAY BE REQUIRED TO DIRECT UPSTREAM RUNOFF AROUND DWELLING. BUILDER TO NOTIFY ENGINEER DURING CONSTRUCTION. IF IN DOUBT, ASK!

## SITE STORMWATER MANAGEMENT PLAN

SCALE = 1 : 100

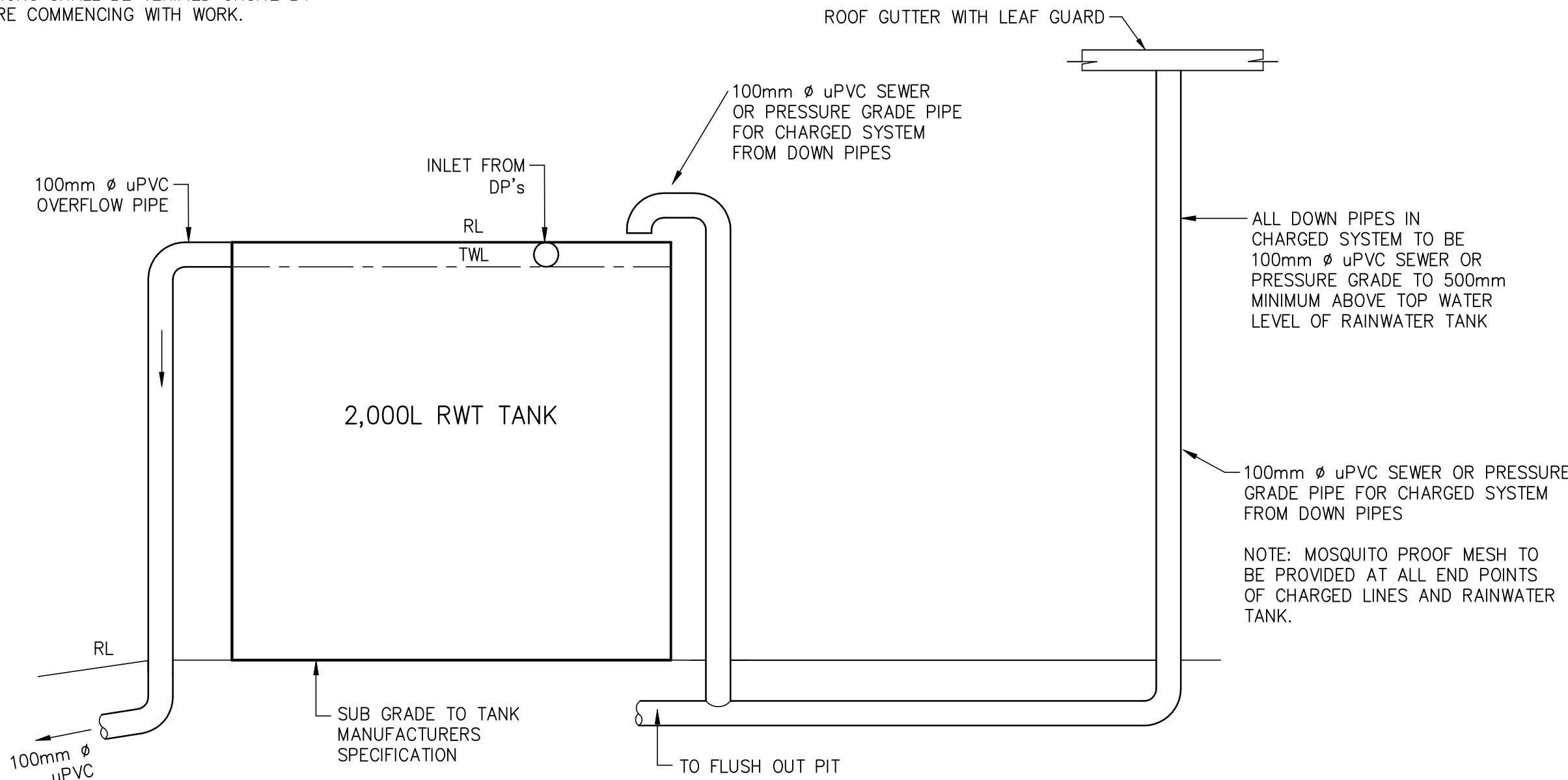
DEPTH TO INVERT OF OUTLET	MINIMUM INTERNAL DIMENSIONS (mm)		
	RECTANGULAR		CIRCULAR
	Width	Length	Diameter Ø
≤ 450	350	350	—
≤ 600	450	450	600
> 600 ≤ 900	600	600	900
> 900 ≤ 1200	600	900	1000
> 1200	900	900	1000





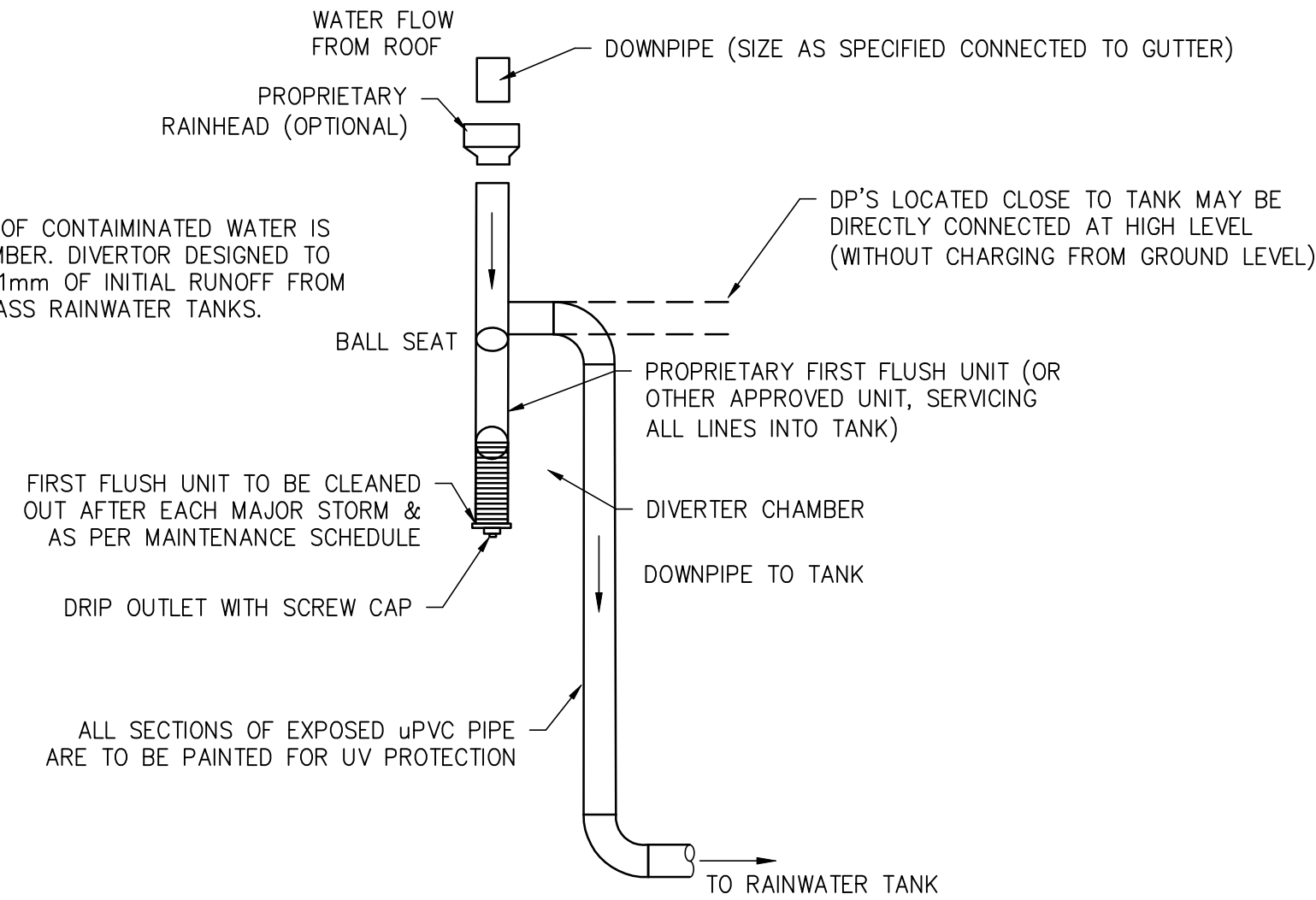
NOTES:  
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NOT FOR CONSTRUCTION



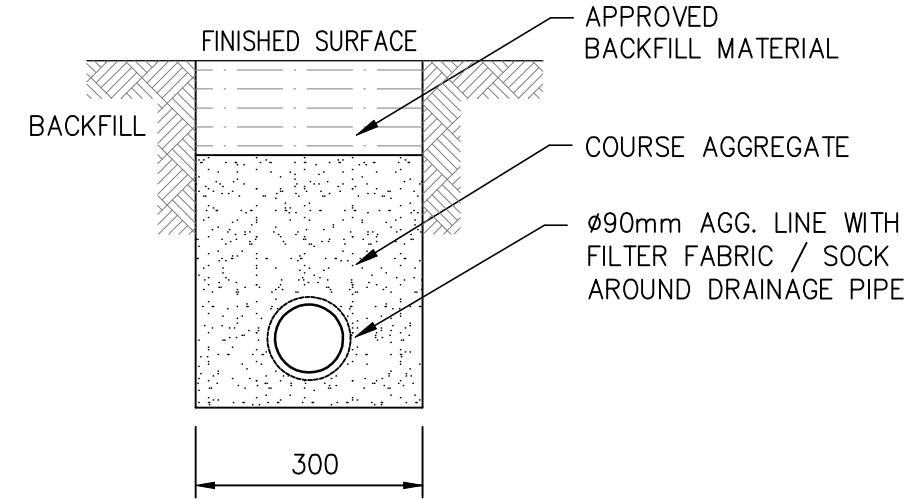
TYPICAL SECTION RAINWATER TANK

NOT TO SCALE



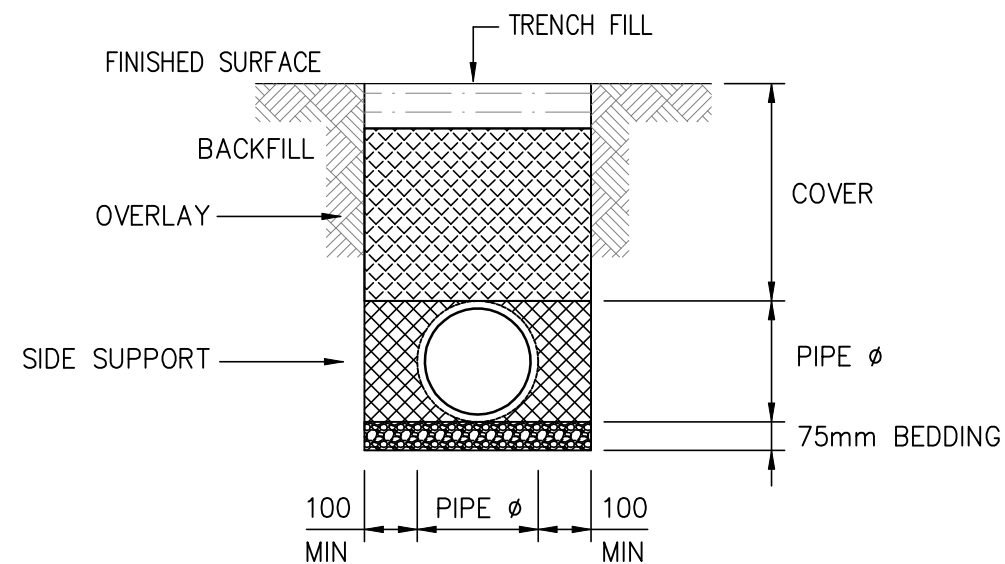
TYPICAL WALL MOUNTED FIRST FLUSH DETAIL

NOT TO SCALE



TYPICAL SUB-SOIL TRENCH DETAIL

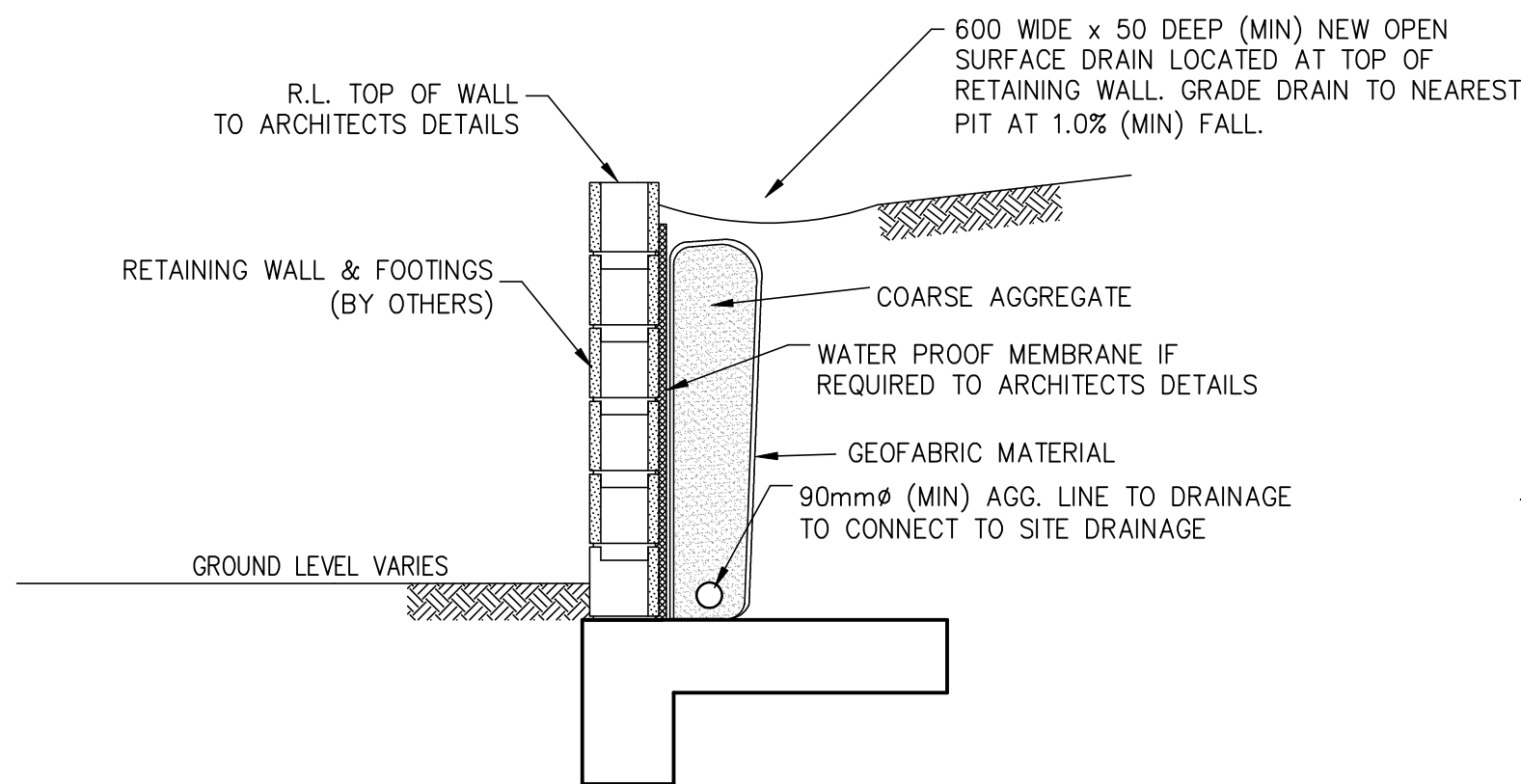
SCALE = N.T.S.



TYPICAL uPVC PIPE TRENCH DETAIL

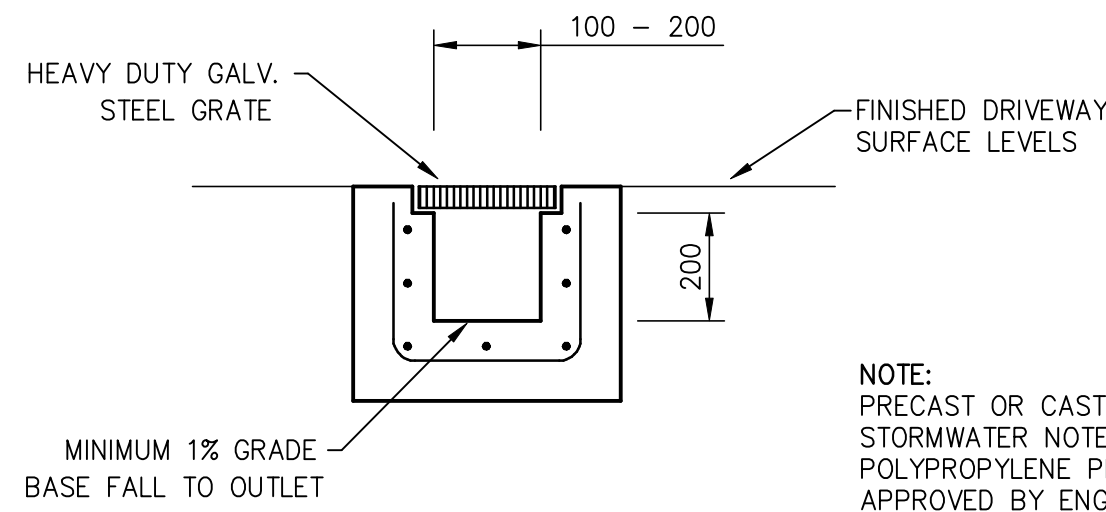
SCALE = N.T.S.

NOTE - STANDARD uPVC PIPE TRENCH:  
SUITABLE BEDDING TO AS2032:  
1. SAND FREE FROM ROCK OR OTHER HARD AND SHARP OBJECTS THAT WOULD BE RETAINED ON 13.2 SIEVE.  
2. CRUSHED ROCK OR GRAVEL OF APPROVED GRADING UP TO MAXIMUM SIZE OF 14mm.  
3. THE EXCAVATED MATERIAL MAY BE USED IF IT IS FREE FROM ROCK OR HARD MATTER AND BROKEN UP SO THAT IT CONTAINS NO SOIL LUMPS HAVING ANY DIMENSIONS GREATER THAN 75mm WHICH WOULD PREVENT ADEQUATE COMPACTION OF THE BEDDING.  
SIDE SUPPORT: MATERIAL FOR PIPE SUPPORT SHOULD BE ADEQUATELY TAMPED IN LAYERS OF NOT MORE THAN 150mm.  
OVERLAY: PIPE OVERLAY MATERIAL SHOULD BE LEVELED AND TAMPED IN LAYERS TO A MINIMUM HEIGHT OF 150mm ABOVE THE CROWN OF PIPE.  
COVER: FOR MIN COVER REFER TO AS3500.3:2018.



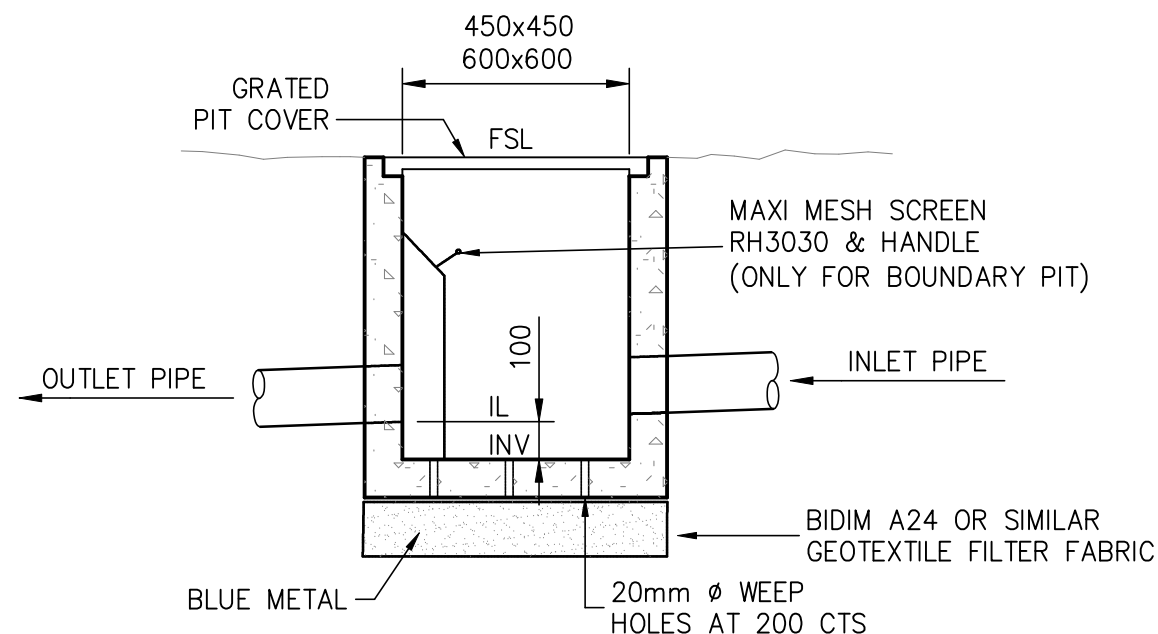
OPEN DRAIN RETAINING WALL (TYP.)

SCALE = 1 : 20



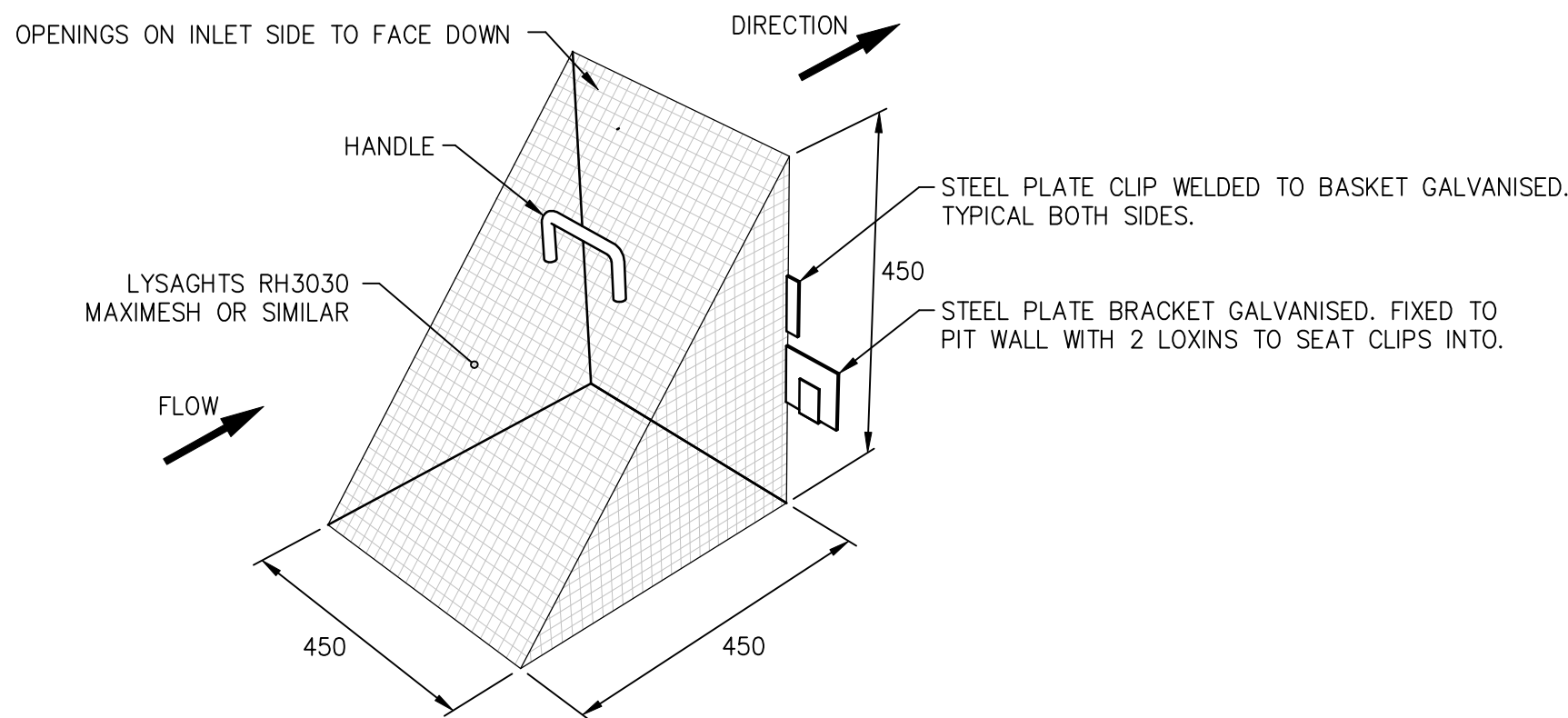
TYPICAL DRIVEWAY GRATED DRAIN (GD)

SCALE = 1 : 20



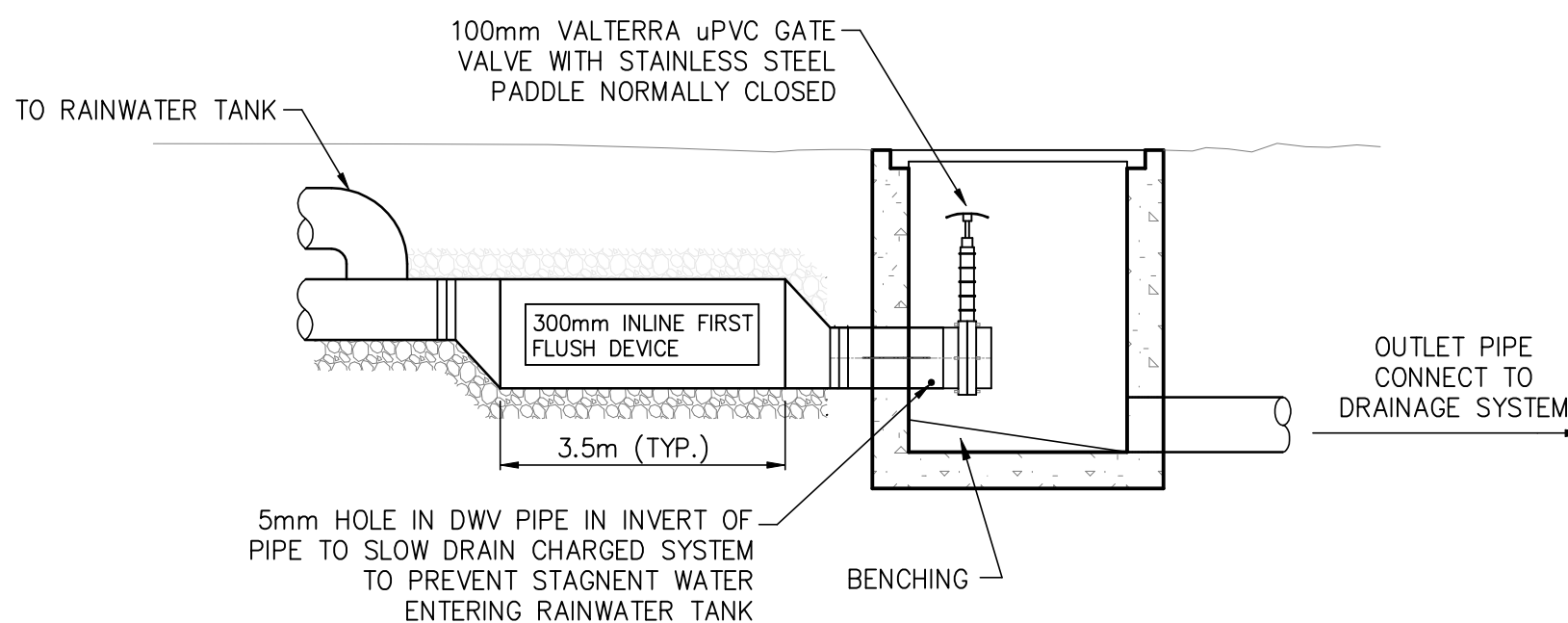
TYPICAL PIT DETAIL

SCALE = 1 : 20



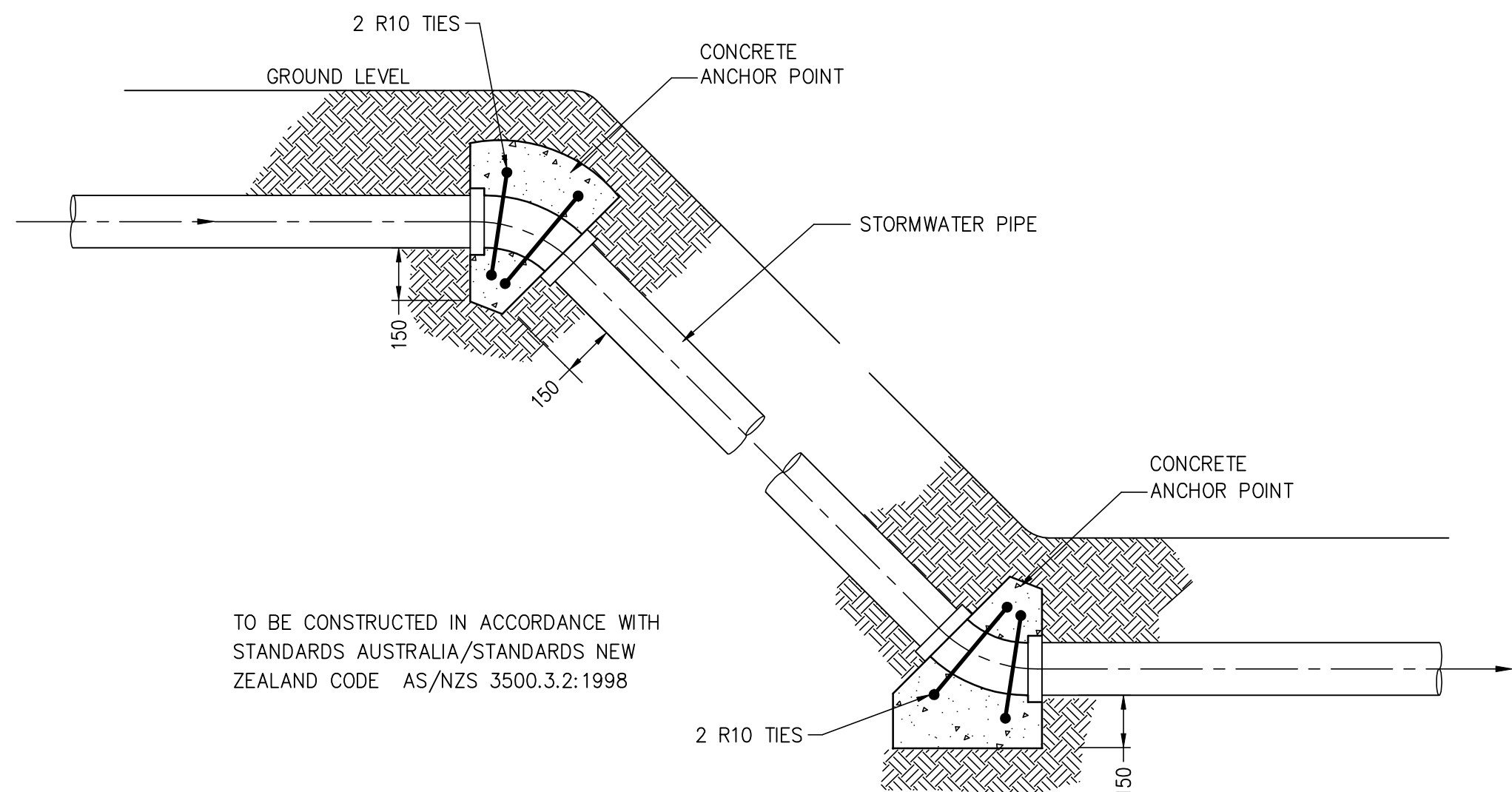
MAXI MESH SCREEN DETAIL

SCALE = N.T.S.



FIRST FLUSH DETAIL - INGROUND

SCALE = 1 : 20



CONCRETE ANCHOR POINT DETAIL  
FOR EARTH SLOPE GREATER THAN 1 V. TO 3 H.

SCALE = 1 : 20

ANCHOR BLOCKS TO BE LOCATED AT THE BEND OR JUNCTION AT THE TOP AND BOTTOM OF THE INCLINED SITE STORMWATER DRAIN AND AT INTERVALS NOT EXCEEDING 3.0m



NOTE:  
THE BUILDER/CONTRACTOR SHALL LOCATE ALL EXISTING PUBLIC UTILITY SERVICES WITHIN THE SITE, FOOTPATH AREA AND ROAD RESERVE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ALL LOCATIONS AND LEVELS OF SERVICES SHALL BE REPORTED TO THE STORMWATER ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS TO ENSURE THAT THERE ARE NO OBSTRUCTIONS IN THE LINE OF THE DRAINAGE DISCHARGE PIPES.

A1 ORIGINAL				Issued for: DEVELOPMENT APPLICATION			Title:			Initial:			Date:			Architect:			Project and Drawing Title:			Local Council:		
				Approved by:			DESIGN			R.M.			06.05.2021			BENNETT MURADA ARCHITECTS			27 GRENFELL AVENUE, NORTH NARRABEEN			NORTHERN BEACHES COUNCIL		
				Date : 02.06.21			DRAWN			S.M.			06.05.2021											
A				02.06.21			CHECKED			R.M.			31.05.2021						STORMWATER DRAINAGE DETAILS			Project Number:		
Rev:				Date:			APPROVED			R.M.			31.05.2021			JO-ANNE BENNETT						Drawing ID:		
				Description:																		Issue:		
				Reviewed:																		210501		
																						SW200		
																						A		