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STORMWATER REPORT

DANEBANK ANGLICAN SCHOOL,
SCIENCE LAB
83-85 THE AVENUE, HURSTVILLE,
NSW, 2220

Prepared By:
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1. DOCUMENT VERIFICATION

Project Title	Stormwater Management Report
Document Title	Stormwater Engineering Report
Project No.	9179
Description	Stormwater Report for proposed development application

	Name	Signature
Prepared by	Grishmi Khanal	

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3. INTRODUCTION

Birzulis Associates Pty Ltd has been engaged by EPM Projects on behalf of the Danebank Anglican School for Girls to prepare this Stormwater Plan of Management in support of a proposed development located at 83-85 The Avenue, Hurstville, NSW, 2220.

This report provides a summary of the stormwater management design principles and planning objectives for the management of stormwater quality and quantity.

The objective of stormwater management is to provide an appropriate and economical system which incorporates best practice in Water Sensitive Urban Design consistent with the requirements of Georges River's water quality and quantity design guidelines.

A set of drawings has been prepared to show that stormwater system for the proposed development has been designed to meet the water quality and quantity requirements.

These drawings cover stormwater management elements including surface levels and drainage layouts. The consent authority is Georges River Council. The latest revision of the drawings shall be read in conjunction with this report. Georges River Council's engineering policy have also been considered in the design.

4. SITE CHARACTERISTICS

Site Description

The proposed development is bounded by Park Road to the South-West, The Avenue to the North-East and other residential developments on the North and South.

The site consists of several buildings and walkways linking those buildings. Refer to the locality plan in **Figure 4.1** below.



Figure 4.1 Site Locality Plan

Proposed Development

The proposed Science Lab building development at Danebank: An Anglican School for Girls comprises the removal of eight (8) existing modular classrooms and demolition of a small storeroom at the rear of “Allerton”, and construction of a new two (2) storey Science Lab Building containing six (6) specialist learning areas (SLAs) for science, support rooms and amenities at 83 and 85 The Avenue. The works also include new hard and soft landscaping.

The Overall concept plan for civil/stormwater can be seen in **Figure 4.2**.

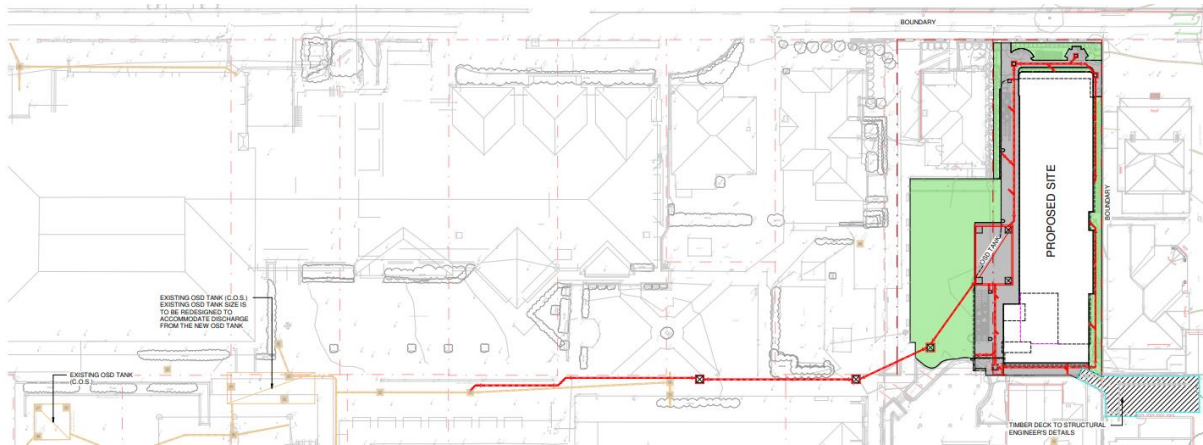


Figure 4.2: Civil/Stormwater Overall Concept Plan.

5. STORMWATER DRAINAGE

5.1 Existing Site Drainage

The existing property is currently developed as an educational site with an established stormwater system with several On-Site Detention (OSD) tanks. Stormwater runoff from the site gets collected in the pits at multiple spots. These pits are connected to pipes which forms a network discharging to the nearest OSD tanks. These OSD tanks finally discharges towards the streets, either connecting to the council's trunk system or discharging to the gutter.

5.2 Proposed Site Drainage

The proposed stormwater system has new pits and pipes proposed to suit new buildings layout and collect stormwater from the development. Pipe run locations to pass through lots 83,85,87,89 and 97. Downpipes from the new roof are connected to the nearest pits. Stormwater pits are proposed at various locations which ultimately discharges to the proposed On-Site Detention (OSD) tank through the pipe network.

OSD tank is designed as per George River Council's Stormwater Management Policy.

Proposed stormwater concept drawing set has been attached in this report to demonstrate the proposed system in more detail (Refer to appendix A).

6. WSUD (Water Sensitive Urban Design) Strategy

6.1 Water Quality

6.1.1 Council's Requirement

As per council's Stormwater Management Policy, Section 7.2, for development sites less than 2000 m^2 . A silt arrestor pit is required to be installed downstream of all collection points within the sites' drainage system prior to discharge of the stormwater from the site. Silt arresting measures are to be designed for all pits within the site that collect ground surface water.

6.1.2 Proposed Water Treatment System

The proposed development occupies total area of 1341 m^2 . As mentioned in the above paragraph, since the development is less than 2000 m^2 , silt arrestor pits are required to satisfy the water quality requirement.

Proposed strategies to achieve water quality requirements includes the following:

Pit Filter Baskets: Proposed grated inlet stormwater pits are designed to be fitted with pit inserts to intercept Gross Pollutants and some total suspended solids. The picture of pit filter basket is shown below in **Figure 6.1.2.1**.

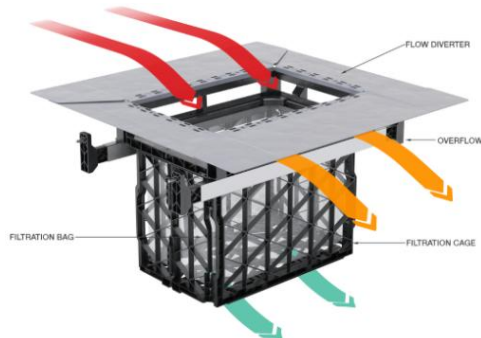


Figure 6.1.2.1: Ocean Guard pit Insert.

Trash Screen: Grated inlet pits is designed with removable Lysaght Galvanised Maxi mesh RH3030 screen fitted before the outlet pipe. These screens prevent clogging of the pipe by filtering gross pollutants before water enters the downstream pipe network. Pit with a trash screen is shown below in **Figure 6.1.2.2**.

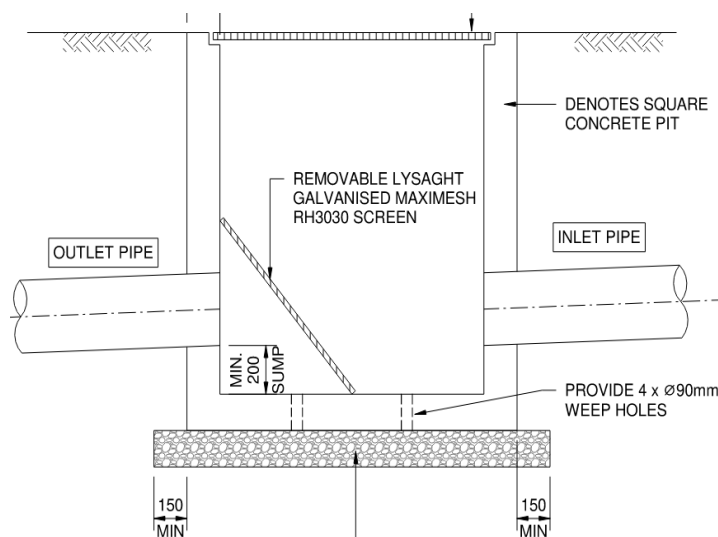


Figure 6.1.2.2: Trash screen.

6.2 Water Quantity

6.2.1 Council's Requirements

On-Site Detention (OSD) tank has to be designed per the Council's Stormwater Management Policy Section 4.

Calculation of the percentage Impervious area of the site to determine the OSD storage requirement has been done as per Appendix 7 of this policy.

Total Site Storage Requirement (SSR) and the Permissible Site Discharge (PSD) for the proposed OSD tank has to be calculated in accordance with Section 4.6, Table no. 3 of the Stormwater Management Policy.

6.2.2 Proposed Water Conservation System

The proposed OSD tank has been designed a per the council's design guidelines as mentioned above. The calculations for the proposed design are shown below.

Table 6.2.1.1: Total Percentage of Impervious Area Calculated as per Council's impermeable factors.

Surface type	Area (m2)	Impermeable factor	Impermeable area (m2)
Roof	711	1	711
Ground Surfaces (Paved Area)	216.5	1	216.5
Area 1.5 meters clearance between building outer wall and adjacent boundary	61	0.5	30.5
Total Impermeable Area			958

Total site area =	1341	m^2
Percentage of total Impervious area=	71.4	%
Say =	75	%

On- Site Detention (OSD) tank is sized up to store discharge from the proposed development.

Total Site Area = $1341 m^2$

PSD/Q (L/S/Ha)= 152

SSR (m^3 /Ha)= 270

PSD for Additional Developed Area (L/s)= $152 \times 0.1341 = 20.38$

SSD for Additional Developed Area (m^3)= $270 \times 0.1341 = 36.21 m^3$.

Proposed OSD Volume = $37 m^3 > \text{Required Storage Volume} = 36.21 m^3$

Orifice Area (m^2) = $Q / C(2gh)^{1/2}$
= 0.007544

Orifice Diameter (mm)= 98.00

6 Conclusion

The proposed stormwater system has been designed considering both the aspects of WSUD (Water Quality and Water Quantity). Stormwater system has been designed to satisfy the requirements as per the Georges River Council's guidelines. Best management practices have been applied to the development to ensure that stormwater runoff is not detrimental to the receiving environment.

7 Appendix A – DA drawings

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ABBREVIATIONS

DA ISSUE
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P3	FOR DA ISSUE		02.12.24
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P1	65% DA		20.08.24
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PROJECT
DANEBANK ANGLICAN SCHOOL FOR GIRLS
- THE SCIENCE LABS BUILDING
83 THE AVENUE, HURSTVILLE, NSW 2220

TITLE	
COVER SHEET	

SCALES	N/A @ A1	DATE	AUG' 2024
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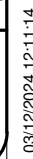
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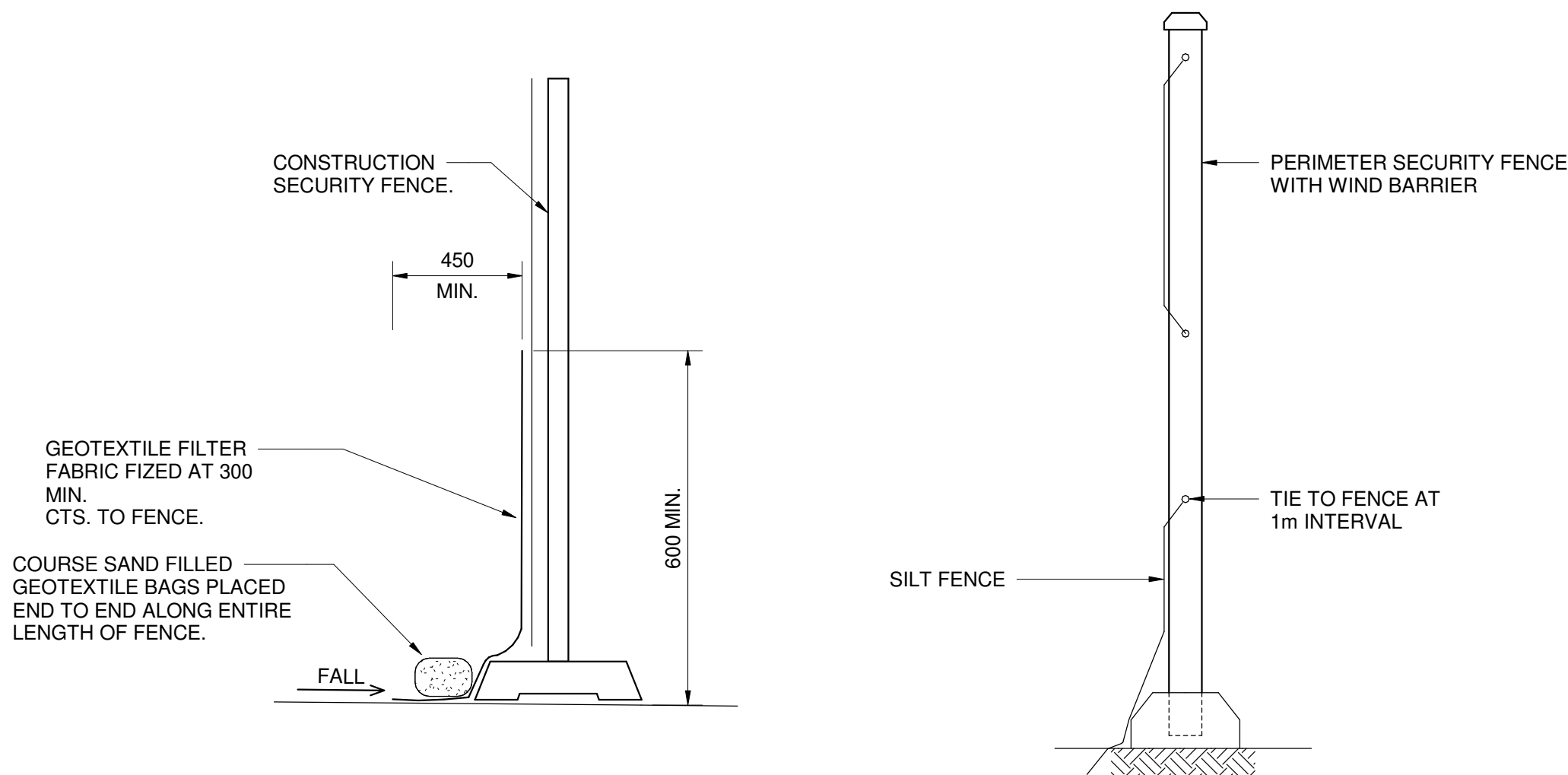
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1

QUALIFIED STORMWATER DESIGN ENGINEER: Michael Grogan
NER NUMBER: 2125368

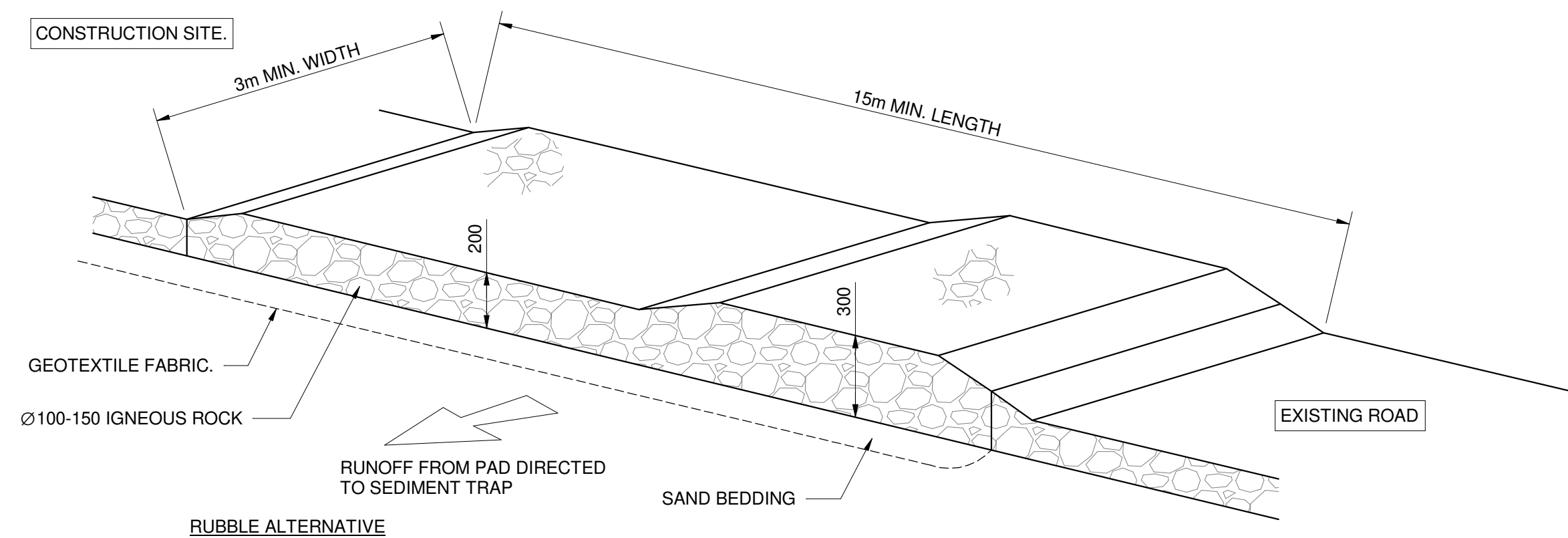
SIGNATURE: Michael Grogan



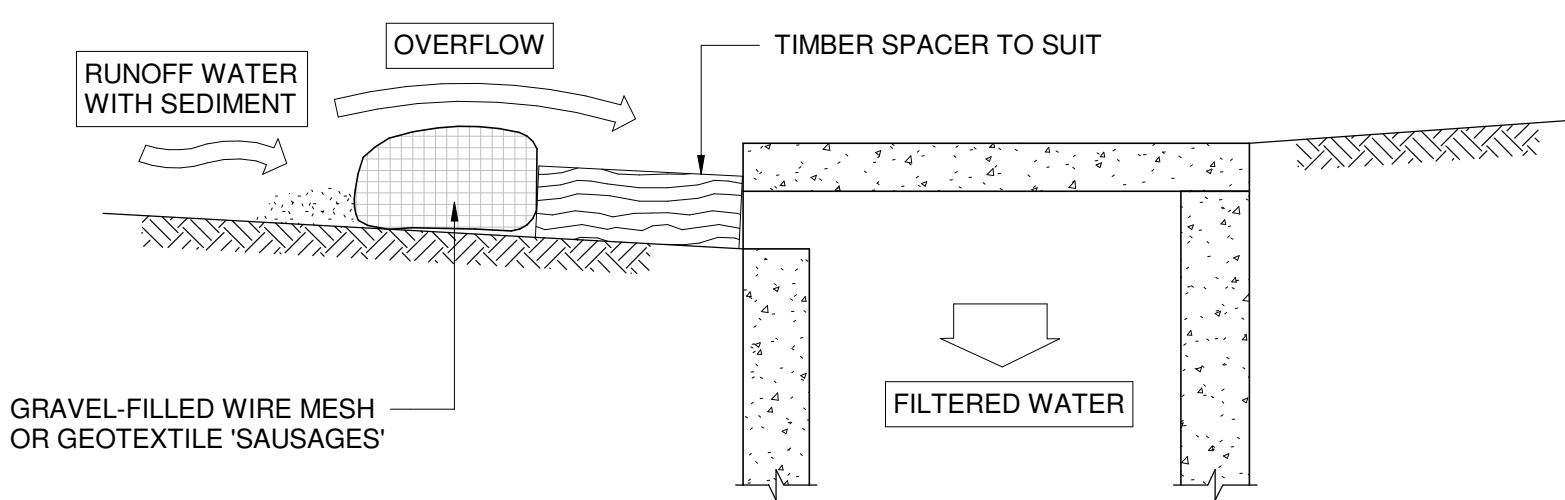
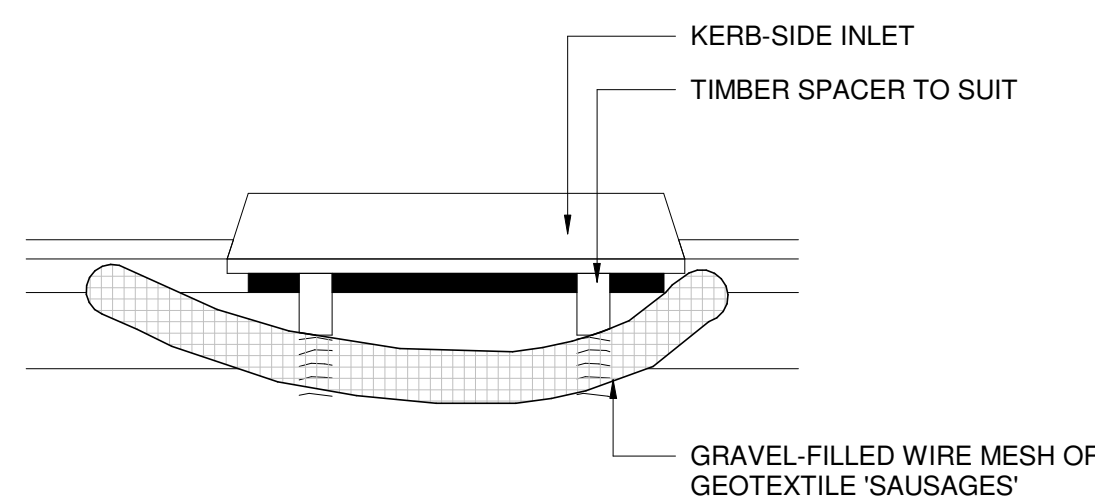


SEDIMENT FENCE ON PAVED SURFACE
(NOT TO SCALE)

PERIMETER SECURITY FENCE WITH WIND BARRIER & SILT FENCE DETAIL
(NOT TO SCALE)



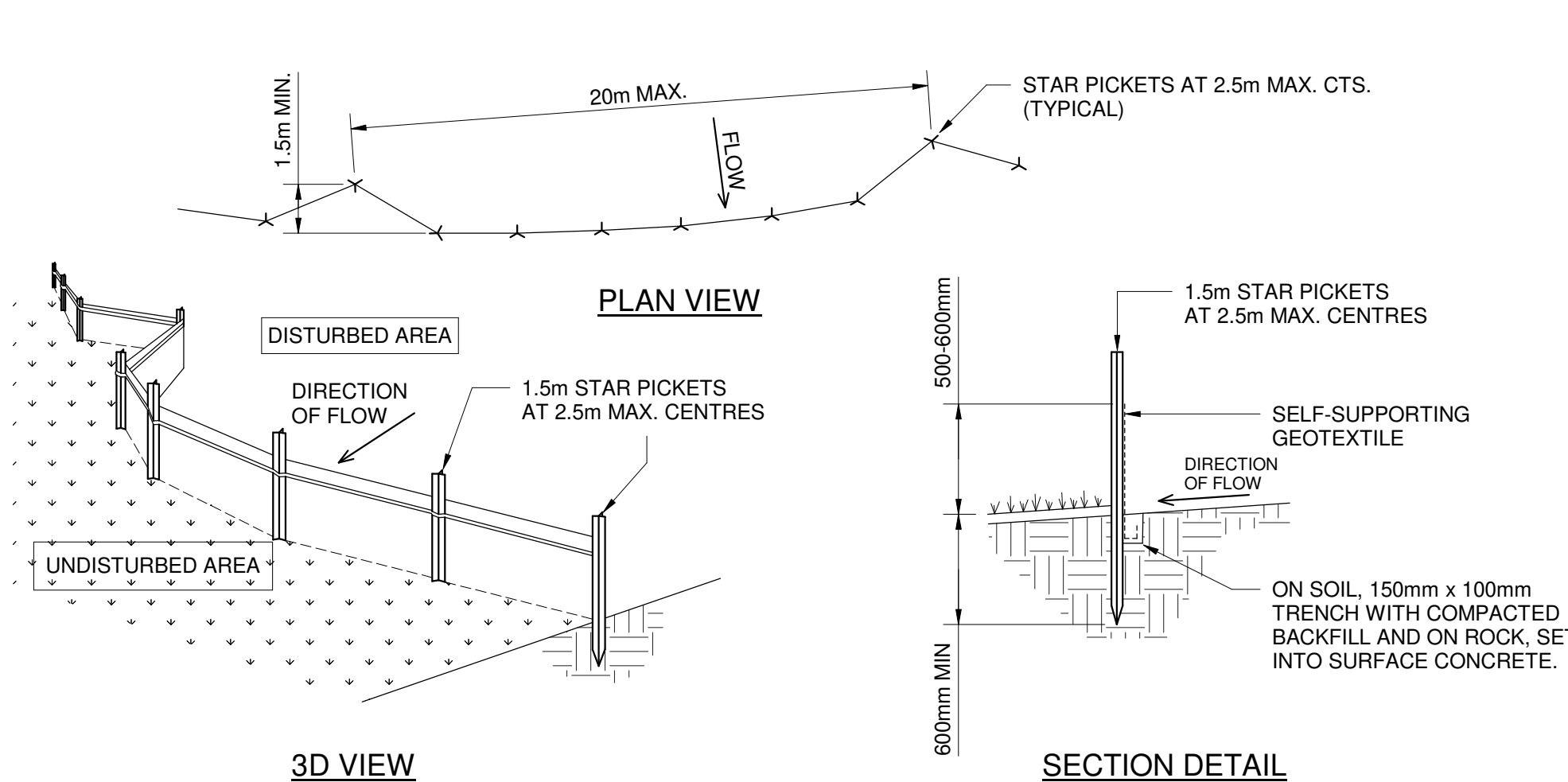
TEMPORARY CONSTRUCTION EXIT
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MESH & GRAVEL INLET FILTER DETAILS.
(NOT TO SCALE)

MESH & GRAVEL INLET FILTER CONSTRUCTION NOTES:

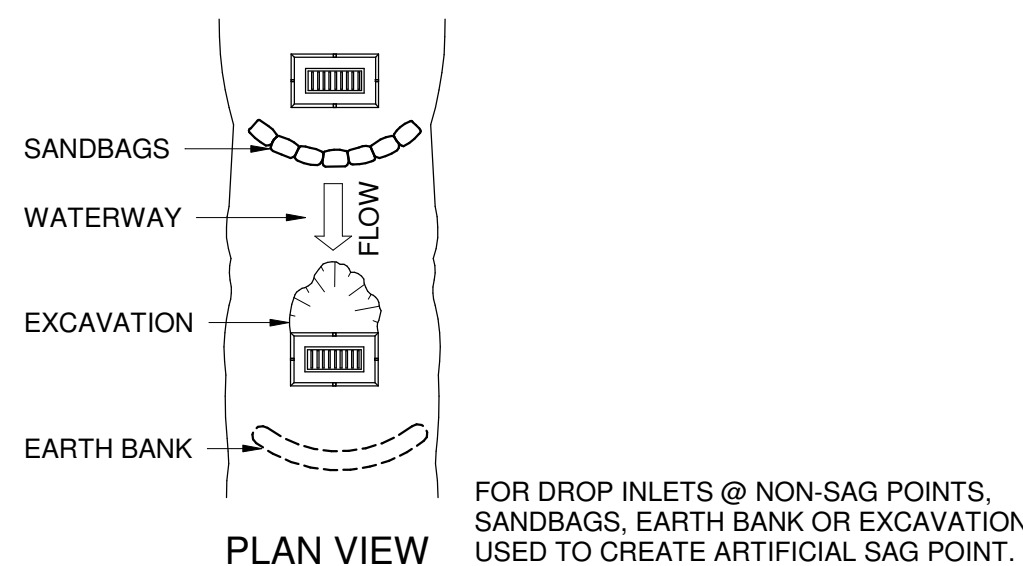
1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25-50mm GRAVEL.
2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
3. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH TIMBER SPACER BLOCKS.
4. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
5. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE. PROVIDING THEY ARE PLACED SO THAT THEY CAN FIRMLY ABUT EACH OTHER AND SEDIMENT LADEN WATERS CANNOT PASS BETWEEN.



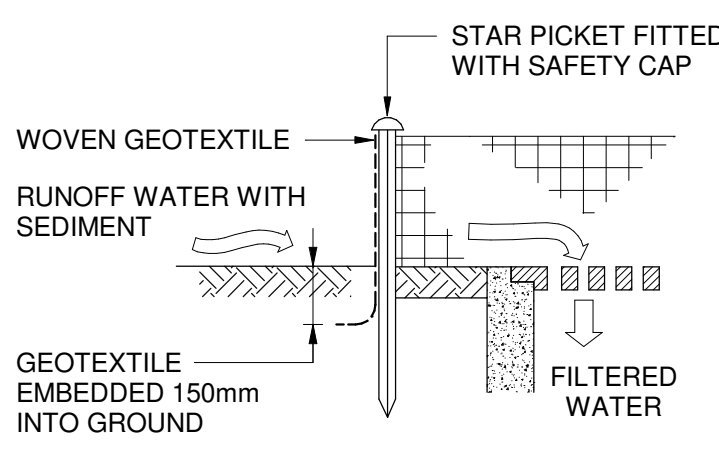
SEDIMENT FENCE DETAILS
(NOT TO SCALE)

SEDIMENT FENCE CONSTRUCTION NOTES:

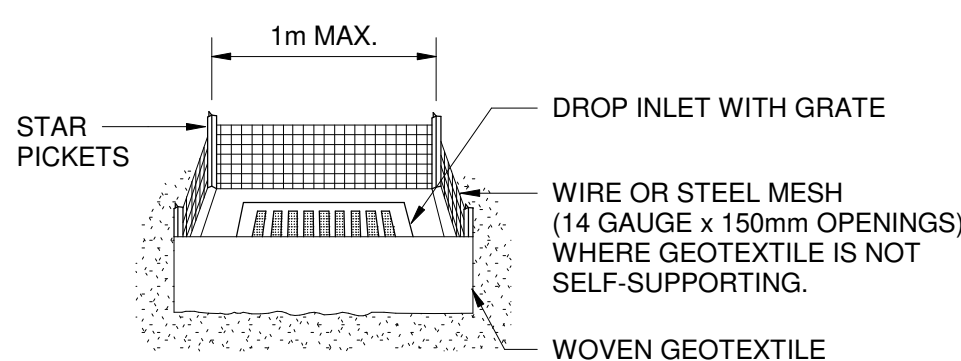
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND AT 2.5m INTERVALS (MAX.) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



PLAN VIEW



SECTION DETAIL



3D VIEW

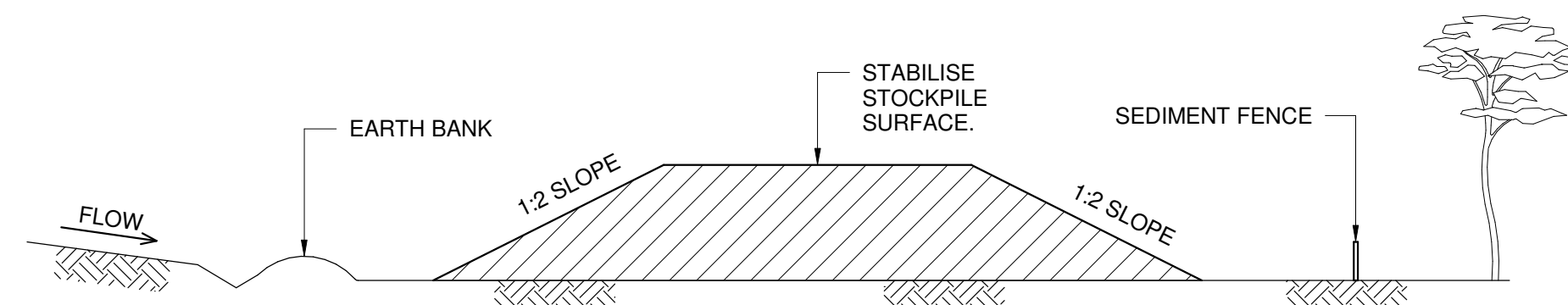
GEOTEXTILE INLET FILTER DETAILS
(NOT TO SCALE)

GEOTEXTILE INLET FILTER CONSTRUCTION NOTES:

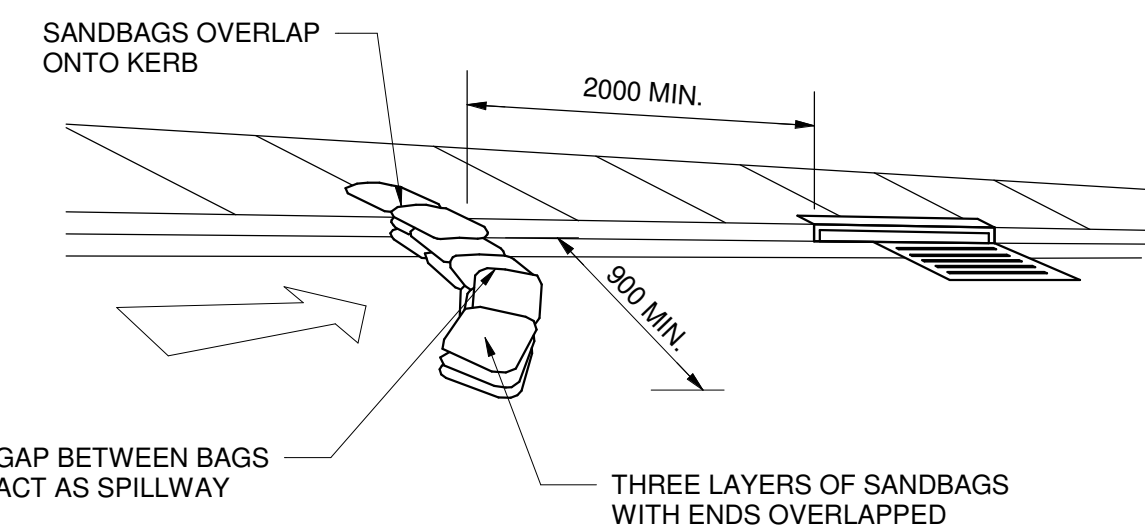
1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE.
2. PICKET SPACING TO BE MAXIMUM 1m.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILES UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

STOCKPILE CONSTRUCTION NOTES:

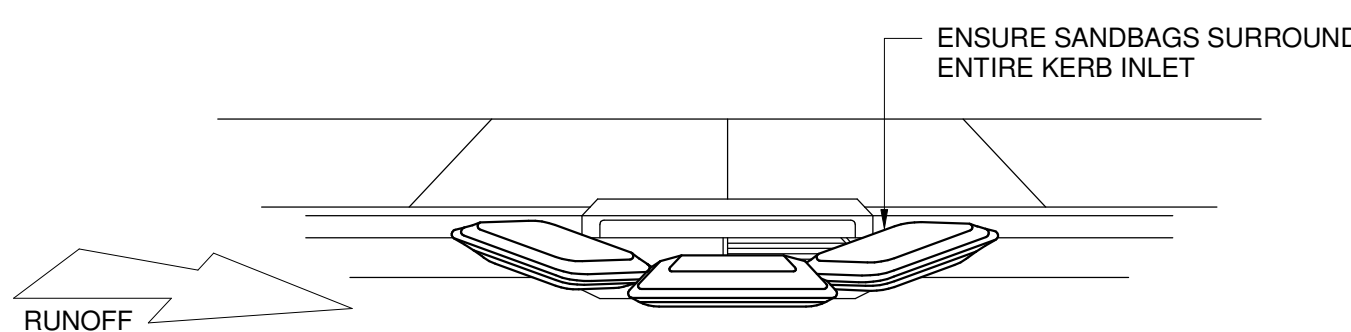
1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.G.P. OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 - 2 METRES DOWNSLOPE.



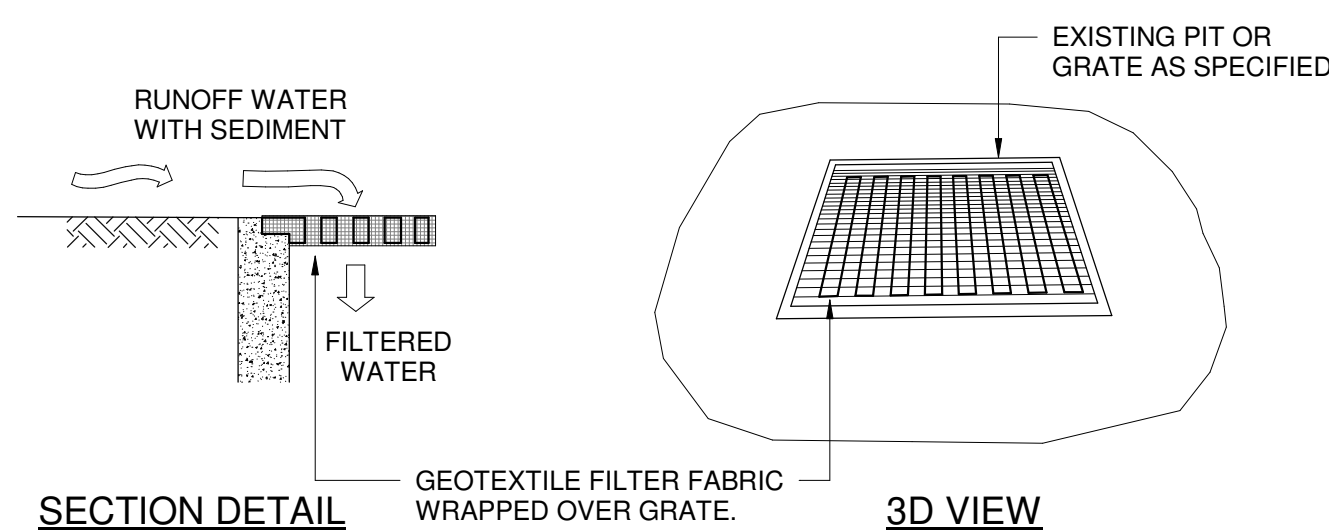
STOCKPILE DETAILS
(NOT TO SCALE)



SANDBAG SEDIMENT TRAP FOR KERB INLET ON GRADE
(NOT TO SCALE)



SANDBAG KERB INLET SEDIMENT TRAP DETAIL
(NOT TO SCALE)



GEOTEXTILE PIT FILTER DETAILS
(NOT TO SCALE)

QUALIFIED STORMWATER DESIGN ENGINEER: Michael Grogan
NER NUMBER: 2125368

SIGNATURE: *Michael Grogan*

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PROJECT
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TITLE
SOIL EROSION & SEDIMENT CONTROL DETAILS

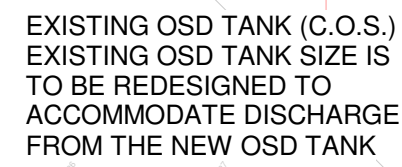
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WATER LINE	— W — W — W — W —
NBN LINE	— NBN — NBN — NBN — NBN —
OPTUS LINE	— OP — OP — OP — OP —
TPG LINE	— TPG — TPG — TPG — TPG —
TELECOMMUNICATION LINE	— T — T — T — T —
OVERFLOW PIPE	— OFP — OFP — OFP — OFP —
SEWER LINE	— S — S — S — S —
SEWER LINE - EXISTING	— EX.S — EX.S — EX.S — EX.S —
SUBSOIL DRAINAGE LINE	— SSD — SSD — SSD — SSD —
RAINWATER LINE	— RW — RW — RW — RW —
SITE BOUNDARY	- - - - -
DEMOLISHED	- - - - -
STORMWATER LINE	— EX.SW — EX.SW — EX.SW — EX.SW —
STORMWATER LINE - EXISTING	— EX.SW — EX.SW — EX.SW — EX.SW —
PROPOSED CONTOUR	— — — — —



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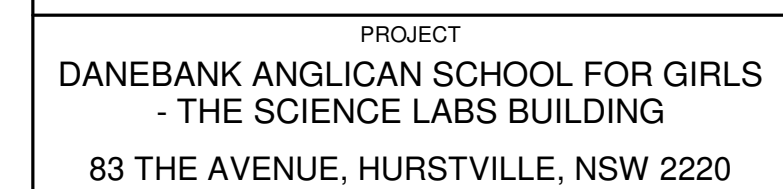
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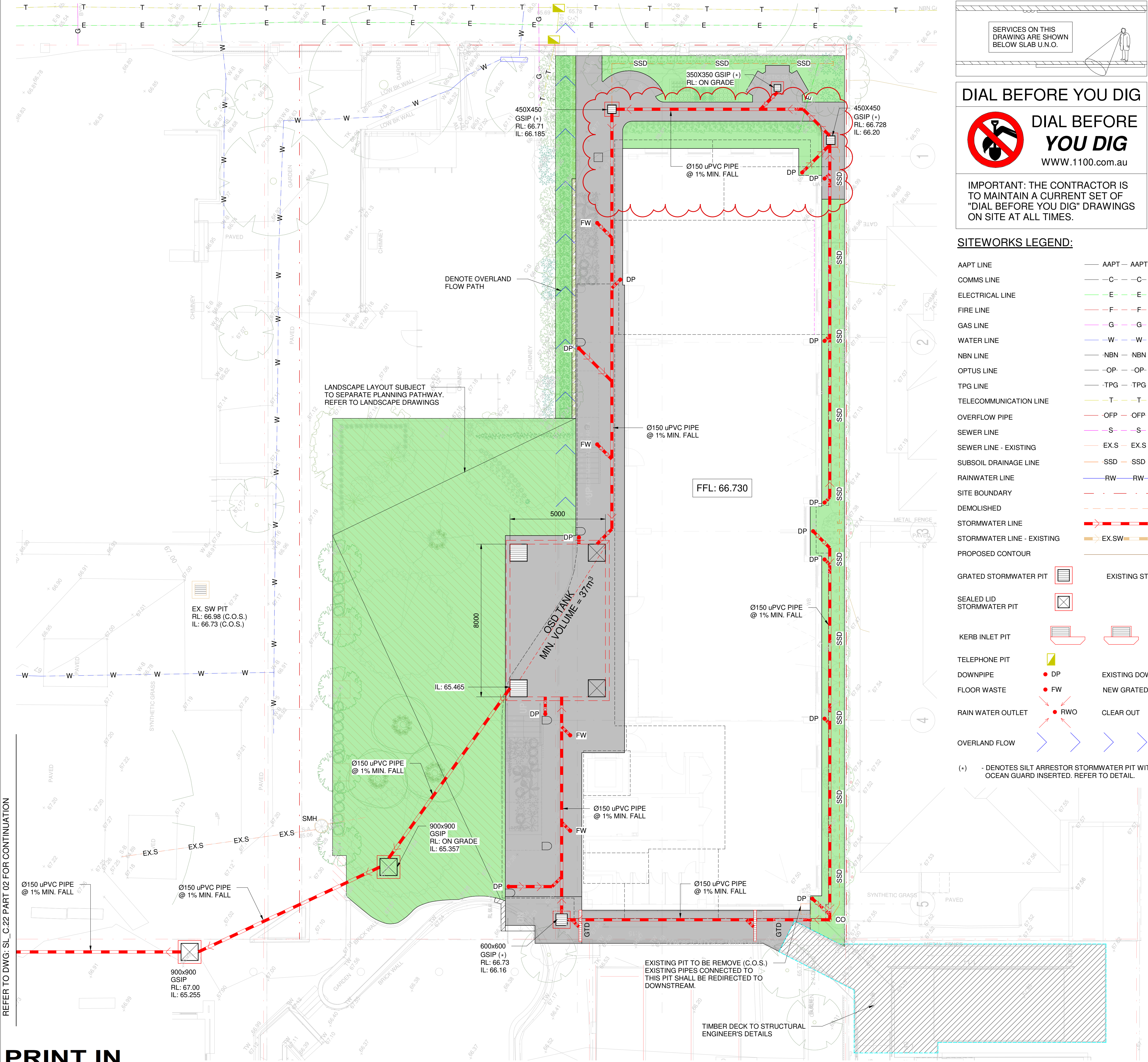
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GAS LINE	— G — G — G — G —
WATER LINE	— W — W — W — W —
NBN LINE	— NBN — NBN — NBN — NBN —
OPTUS LINE	— OP — OP — OP — OP —
TPG LINE	— TPG — TPG — TPG — TPG —
TELECOMMUNICATION LINE	— T — T — T — T —
OVERFLOW PIPE	— OFP — OFP — OFP — OFP —
SEWER LINE	— S — S — S — S —
SEWER LINE - EXISTING	— EX.S — EX.S — EX.S — EX.S —
SUBSOIL DRAINAGE LINE	— SSD — SSD — SSD — SSD —
RAINWATER LINE	— RW — RW — RW — RW —
SITE BOUNDARY	— — — — —
DEMOLISHED	— — — — —
STORMWATER LINE	— — — — —
STORMWATER LINE - EXISTING	— EX.SW — EX.SW —
PROPOSED CONTOUR	— — — — —
GRATED STORMWATER PIT	EXISTING STORMWATER PIT
SEALED LID STORMWATER PIT	
KERB INLET PIT	
TELEPHONE PIT	
DOWNPIPE	EXISTING DOWNPIPE
FLOOR WASTE	NEW GRATED DRAIN
RAIN WATER OUTLET	CLEAR OUT
OVERLAND FLOW	
(*) - DENOTES SILT ARRESTOR STORMWATER PIT WITH OCEAN GUARD INSERTED. REFER TO DETAIL.	

CIVIL DRAWING NOTES:

- SERVICES SHOWN ON PLAN ARE INDICATIVE. EXACT DEPTH AND LOCATION TO BE CONFIRMED ONSITE. CONTRACTOR TO CARRY OUT DIAL BEFORE YOU DIG APPLICATION AND ENGAGE A REGISTERED SURVEYOR TO PEG OUT ALL EXISTING SERVICES PRIOR TO ANY WORK COMMENCING ONSITE.
- ROOF DRAINAGE BY OTHERS.
- ALL uPVC STORMWATER DRAINAGE LINES SHALL BE 'CLASS SH' SEWER GRADE UNLESS NOTED OTHERWISE.
- UNLESS NOTED OTHERWISE DOWNPIPES SHALL CONNECT TO THE MAIN STORMWATER LINE DOWNSTREAM USING 150mm DIAMETER uPVC LINES WITH MINIMUM 1% FALL.
- UNLESS NOTED OTHERWISE GRATED DRAINS SHALL BE 150x150 AND CONNECTED TO THE DOWNSTREAM (NON-CHARGED) STORMWATER SYSTEM.
- ALL SUBSOIL DRAINAGE NOT SHOWN ON THE PLAN IS TO BE PROVIDED AND CONNECTED TO THE STORMWATER DRAINAGE SYSTEM.
- THE CONTRACTOR MUST VERIFY THE EXACT LOCATION AND EXTENT OF ALL SERVICES PRIOR TO CONSTRUCTION AND NOTIFY IMMEDIATELY OF ANY CONFLICTS WITH THE DRAWINGS TO THE ENGINEER/SUPERINTENDENT.

DESIGN NOTES:

THE PROPOSED DEVELOPMENT SITE IS GOVERNED BY GEORGES RIVER COUNCIL. STORMWATER DESIGN FOR THE PROPOSED DEVELOPMENT HAS BEEN DONE IN ACCORDANCE WITH THE COUNCIL'S STORMWATER MANAGEMENT POLICY. PROPOSED ON-SITE DETENTION (OSD) TANK HAS BEEN SIZED UP TO STORE DISCHARGE FROM THE PROPOSED DEVELOPMENT.

REFER TO DRAWING C.70 FOR CATCHMENT ANALYSIS PLAN

TOTAL SITE AREA = 1341 m²
TOTAL IMPERVIOUS AREA (%) = 75%
PSD/Q (L/S/ha) = 152
SSR (m³/ha) = 270
PSD FOR ADDITIONAL DEVELOPED AREA (L/s) = 152 x 0.1341 = 20.38 L/s
SSR FOR ADDITIONAL DEVELOPED AREA (m³) = 270 x 0.1341 = 36.21 m³

PROPOSED OSD VOLUME = 37 m³ > REQUIRED STORAGE VOLUME = 36.21 m³
ORIFICE AREA (A) = Q/C (2gh)^{1/2} (1/2)
ORIFICE DIAMETER (mm) = 98.03

NOTES:

SILT ARRESTOR PITS WITH ATLAN STORMSACKS HAS BEEN PROPOSED TO MEET THE WATER QUALITY REQUIREMENT OF THE PROPOSED DEVELOPMENT.

PAVEMENT LEGEND:

DENOTES CONCRETE FOOTPATH PAVEMENT

DENOTES LANDSCAPING

QUALIFIED STORMWATER DESIGN ENGINEER: Michael Grogan
NER NUMBER: 2125368

SIGNATURE: *Michael Grogan*

DA ISSUE
NOT FOR CONSTRUCTION

P4	DRAWING REVISED	24.09.25
P3	FOR DA ISSUE	02.12.24
P2	80% DA	08.10.24
P1	80% DA	20.08.24
ISSUE	DESCRIPTION	APPROVED DATE

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www.birzulisassociates.com

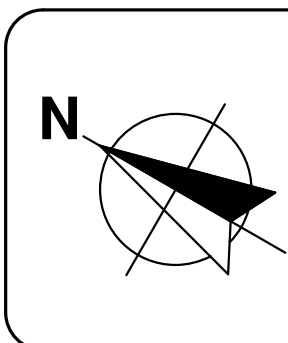
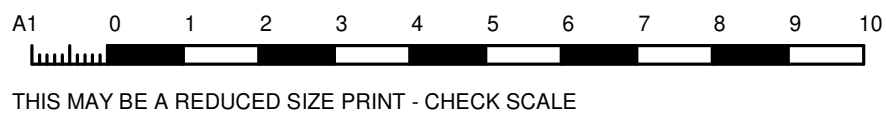
PROJECT
DANEBANK ANGLICAN SCHOOL FOR GIRLS
- THE SCIENCE LABS BUILDING
83 THE AVENUE, HURSTVILLE, NSW 2220

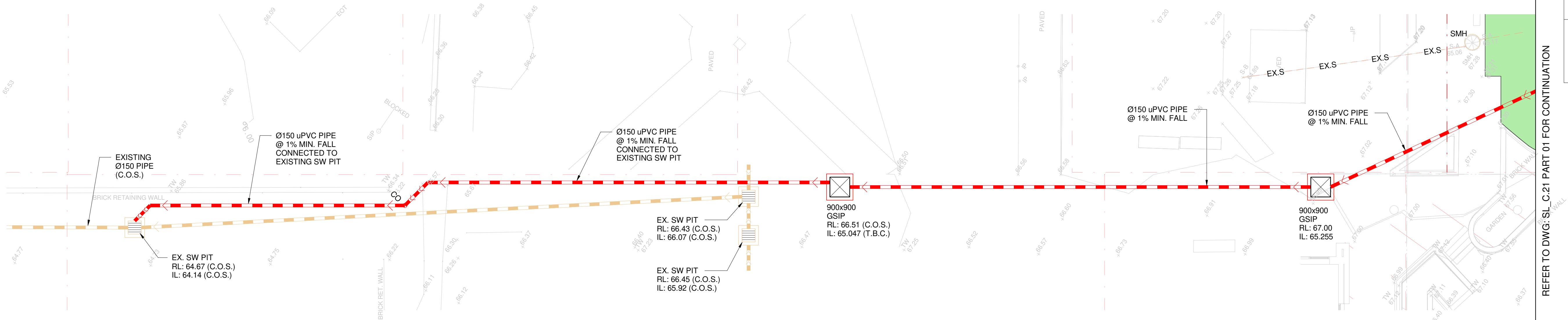
TITLE
CIVIL WORKS DRAINAGE PLAN - SHEET 1

Scales		DATE	
1:100 @ A1		AUG 2024	
DRAWN	DESIGN	VERIFIED	APPROVED
C.KE	G.K		
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ISSUE	PROJECT No.	DRAWING No.	
P4	9179	SL_C.21	

PRINT IN
COLOUR

CIVIL STORMWATER DRAINAGE PLAN - PART 01
SCALE 1 : 100





CIVIL STORMWATER DRAINAGE PLAN - PART 02

SCALE 1 : 100

SITeworks LEGEND:

AAPT LINE	— AAPT — AAPT — AAPT — AAPT —
COMMS LINE	— C — C — C — C —
ELECTRICAL LINE	— E — E — E — E —
FIRE LINE	— F — F — F — F —
GAS LINE	— G — G — G — G —
WATER LINE	— W — W — W — W —
NBN LINE	— NBN — NBN — NBN — NBN —
OPTUS LINE	— OP — OP — OP — OP —
TPG LINE	— TPG — TPG — TPG — TPG —
TELECOMMUNICATION LINE	— T — T — T — T —
OVERFLOW PIPE	— OFP — OFP — OFP — OFP —
SEWER LINE	— S — S — S — S —
SEWER LINE - EXISTING	— EX.S — EX.S — EX.S — EX.S —
SUBSOIL DRAINAGE LINE	— SSD — SSD — SSD — SSD —
RAINWATER LINE	— RW — RW — RW — RW —
SITE BOUNDARY	— . — . — . — . —
DEMOLISHED	— . — . — . — . —
STORMWATER LINE	— S — S — S — S —
STORMWATER LINE - EXISTING	— EX.SW — EX.SW — EX.SW — EX.SW —
PROPOSED CONTOUR	— . — . — . — . —
GRATED STORMWATER PIT	— S — S — S — S —
EXISTING STORMWATER PIT	— S — S — S — S —
SEALED LID STORMWATER PIT	— S — S — S — S —
KERB INLET PIT	— S — S — S — S —
TELEPHONE PIT	— S — S — S — S —
DOWNPIPE	— S — S — S — S —
FLOOR WASTE	— S — S — S — S —
RAIN WATER OUTLET	— S — S — S — S —
OVERLAND FLOW	— S — S — S — S —
(+) - DENOTES SILT ARRESTOR STORMWATER PIT WITH OCEAN GUARD INSERTED. REFER TO DETAIL.	

CIVIL DRAWING NOTES:

- SERVICES SHOWN ON PLAN ARE INDICATIVE. EXACT DEPTH AND LOCATION TO BE CONFIRMED ONSITE. CONTRACTOR TO CARRY OUT DIAL BEFORE YOU DIG APPLICATION AND ENGAGE A REGISTERED SURVEYOR TO PEG OUT ALL EXISTING SERVICES PRIOR TO ANY WORK COMMENCING ONSITE.
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- ALL uPVC STORMWATER DRAINAGE LINES SHALL BE 'CLASS SH' SEWER GRADE UNLESS NOTED OTHERWISE.
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DESIGN NOTES:

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REFER TO DRAWING C.70 FOR CATCHMENT ANALYSIS PLAN

TOTAL SITE AREA = 1341 m²
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PROPOSED OSD VOLUME = 37 m³ > REQUIRED STORAGE VOLUME = 36.21 m³
ORIFICE AREA (A) = Q/C (2gh)^{1/2}
ORIFICE DIAMETER (mm) = 98.03

NOTES:

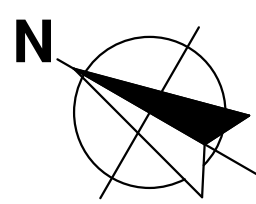
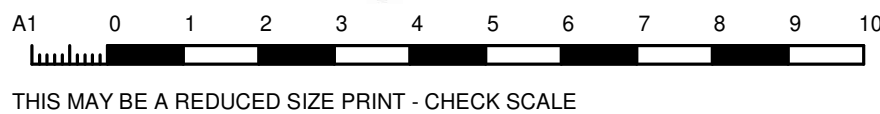
SILT ARRESTOR PITS WITH ATLAN STORMSACKS HAS BEEN PROPOSED TO MEET THE WATER QUALITY REQUIREMENT OF THE PROPOSED DEVELOPMENT.

PAVEMENT LEGEND:

—	DENOTES CONCRETE FOOTPATH PAVEMENT
—	DENOTES LANDSCAPING

QUALIFIED STORMWATER DESIGN ENGINEER: Michael Grogan
NER NUMBER: 2125368

SIGNATURE: *Michael Grogan*



SERVICES ON THIS
DRAWING ARE SHOWN
BELOW SLAB U.N.O.

DIAL BEFORE YOU DIG
WWW.1100.COM.AU

IMPORTANT: THE CONTRACTOR IS
TO MAINTAIN A CURRENT SET OF
"DIAL BEFORE YOU DIG" DRAWINGS
ON SITE AT ALL TIMES.

DA ISSUE
NOT FOR CONSTRUCTION

P1	FOR DA ISSUE			02.12.24
ISSUE	DESCRIPTION	APPROVED	DATE	

ARCHITECT

22/02/2024 11:12:10 - 10/02/2024 11:12:10
PROJECT: 11/02/2024 11:12:10
PHONE: 02 9555 7230
EMAIL: info@birzulisassociates.com
WEB: www.birzulisassociates.com

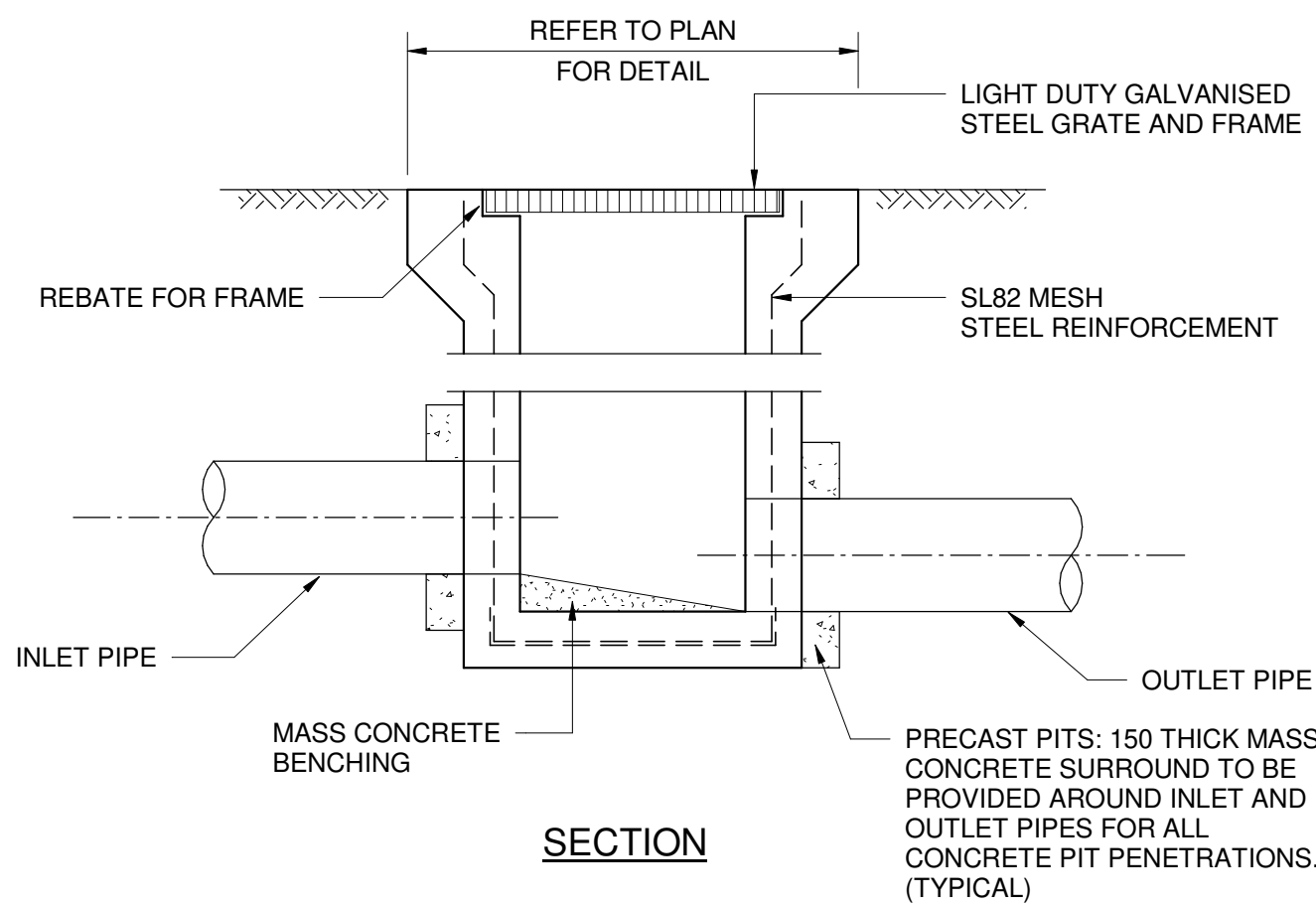
BIRZULIS ASSOCIATES
CONSULTING STRUCTURAL & CIVIL ENGINEERS
583 DARLING STREET, ROZELLE NSW 2039
tel: (02) 9555 7230 email: office@birzulisassociates.com
www.birzulisassociates.com

PROJECT
DANEBANK ANGLICAN SCHOOL FOR GIRLS
- THE SCIENCE LABS BUILDING
83 THE AVENUE, HURSTVILLE, NSW 2220

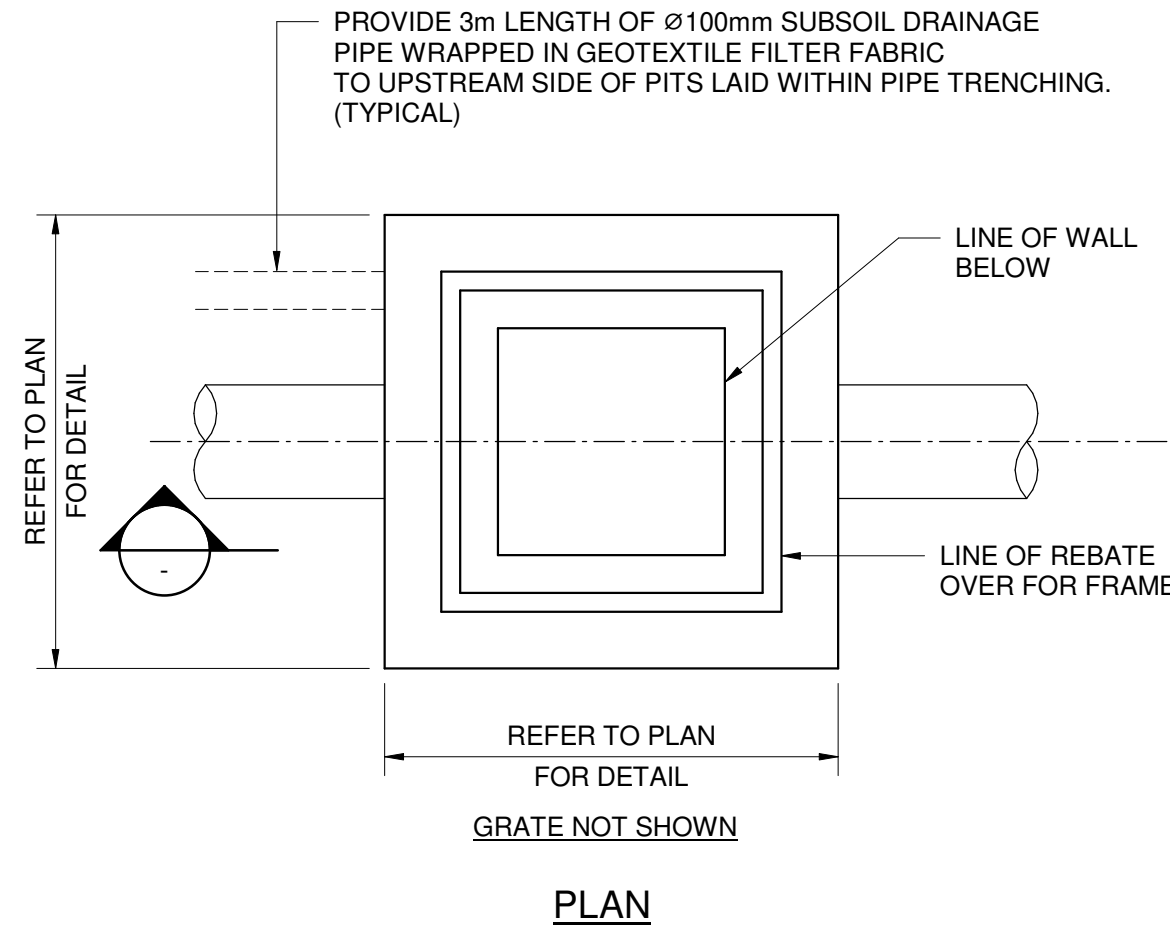
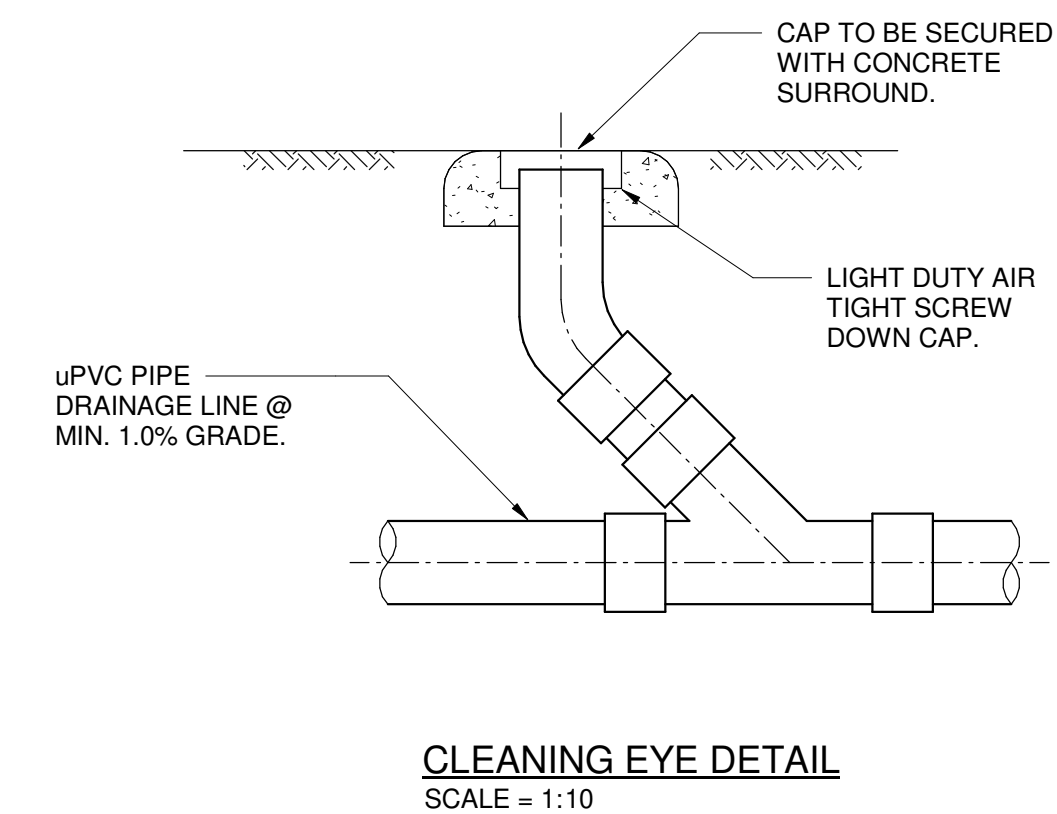
TITLE
CIVIL WORKS DRAINAGE PLAN - SHEET 2

SCALES	1:100 @ A1	DATE	AUG '2024
DRAWN	DESIGN	VERIFIED	APPROVED
C.KE	G.K		
ISSUE	PROJECT No.	DRAWING No.	
P1	9179	SL_C.22	

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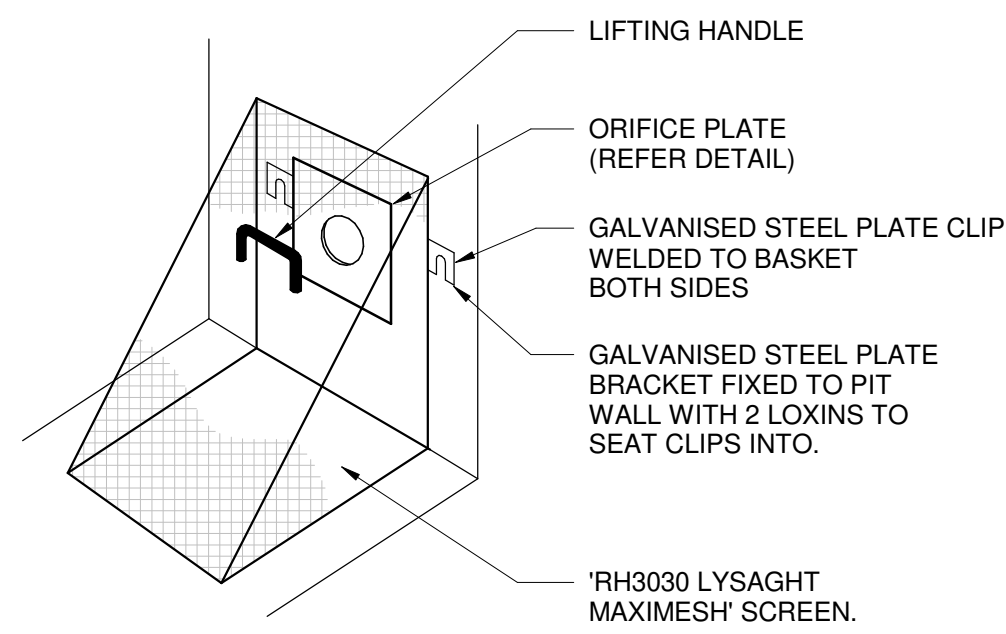
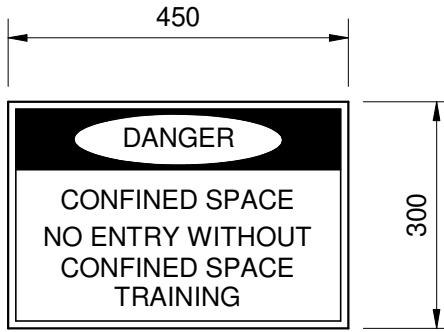
STORMWATER PIT DETAIL
SCALE = 1:10



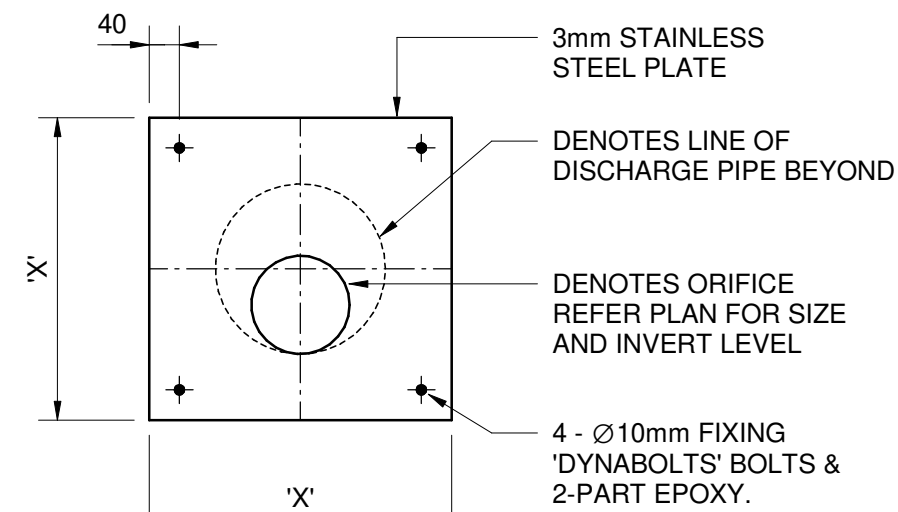
CONFINED SPACE SIGN DETAIL
SCALE = 1:10

THIS IS AN ON-SITE STORMWATER DETENTION SYSTEM REQUIRED BY LOCAL COUNCIL. IT IS AN OFFENCE TO REDUCE THE VOLUME OF THE TANK OR BASKIN UP TO REDUCE WITH ORIFICE PLATE THAT CONTROLS THE OUTFLOW. THE BASE OF THE OUTLET CONTROL PIT AND THE DEBRIS SCREEN MUST BE CLEARED OF DEBRIS AND SECURED ON A REGULAR BASIS BY THE OWNER. THIS PLATE MUST NOT BE REMOVED.

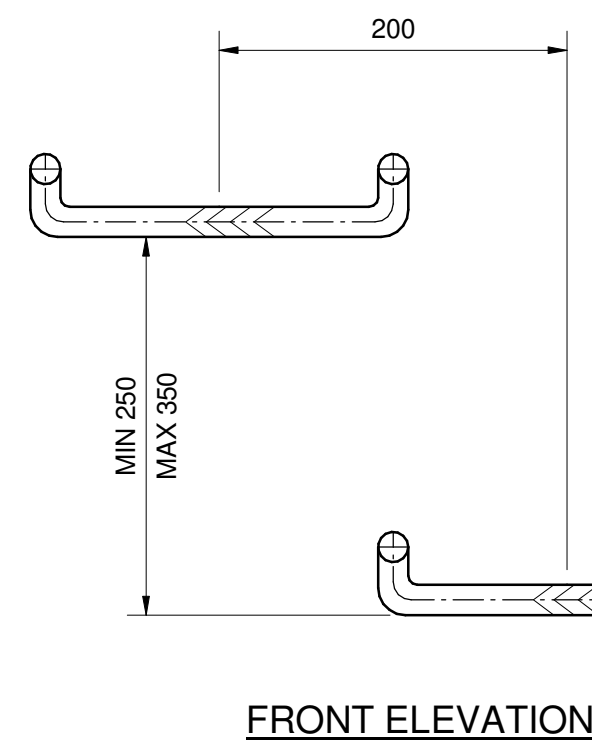
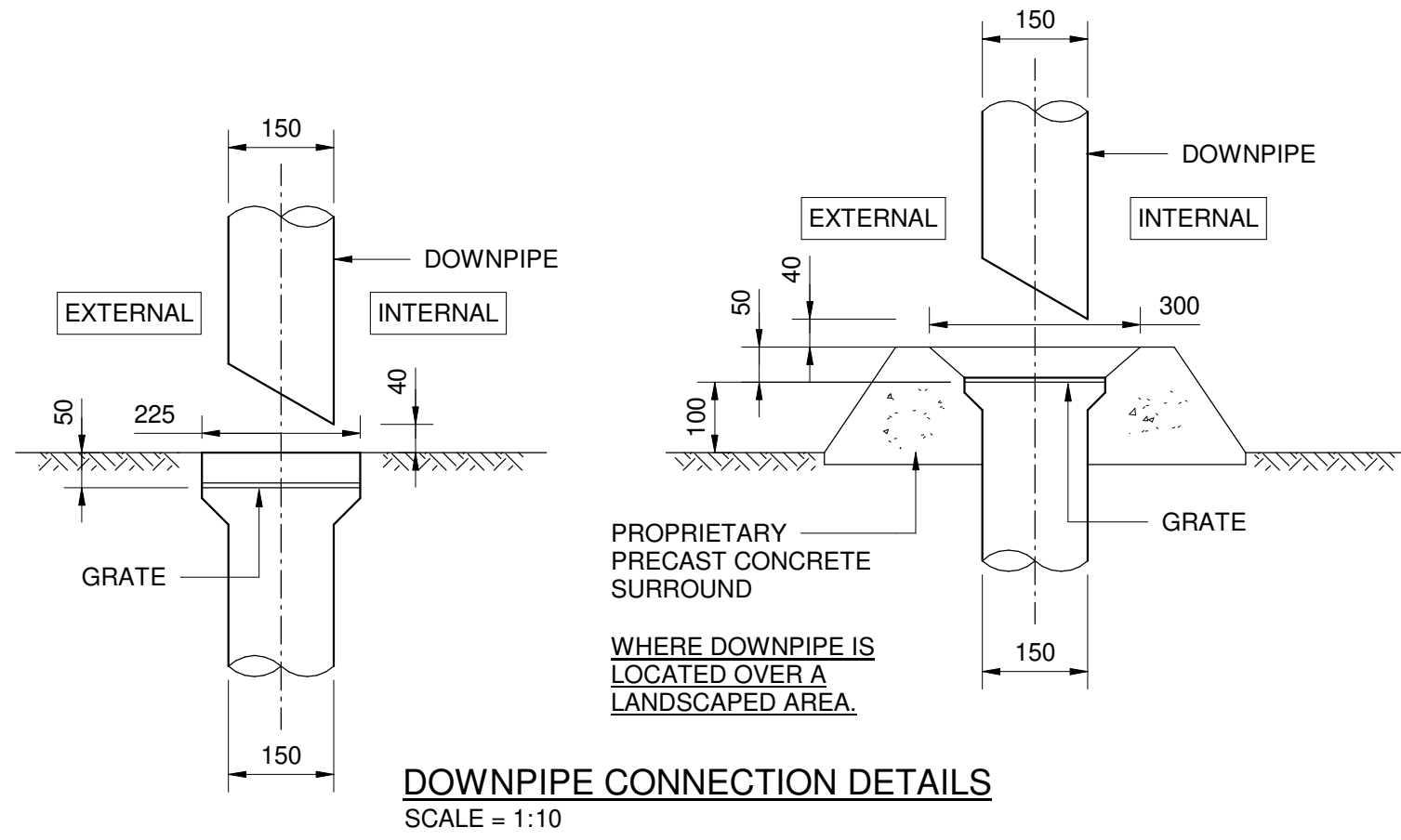
OSD SIGN DETAIL
(NOT TO SCALE)



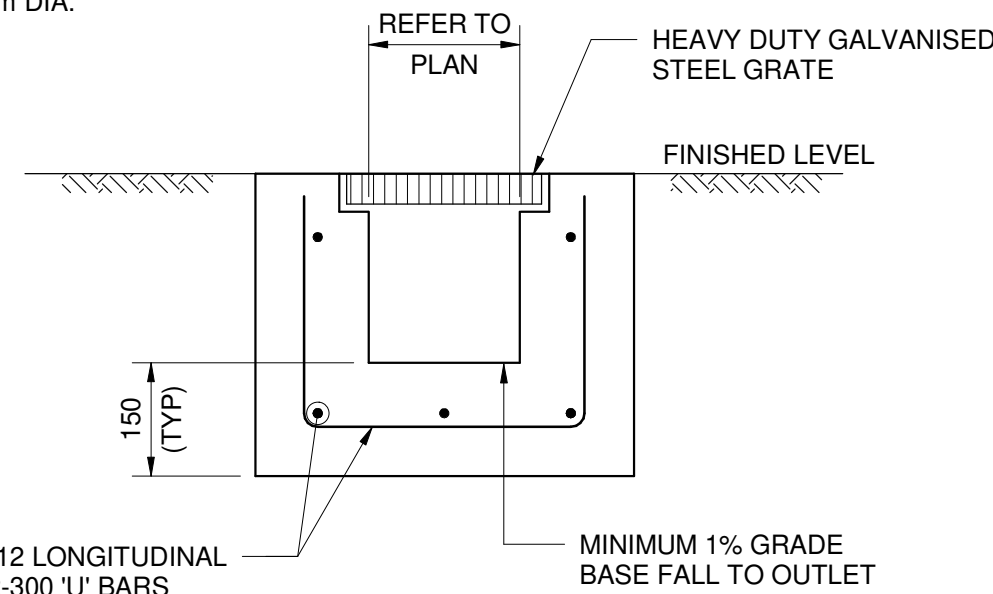
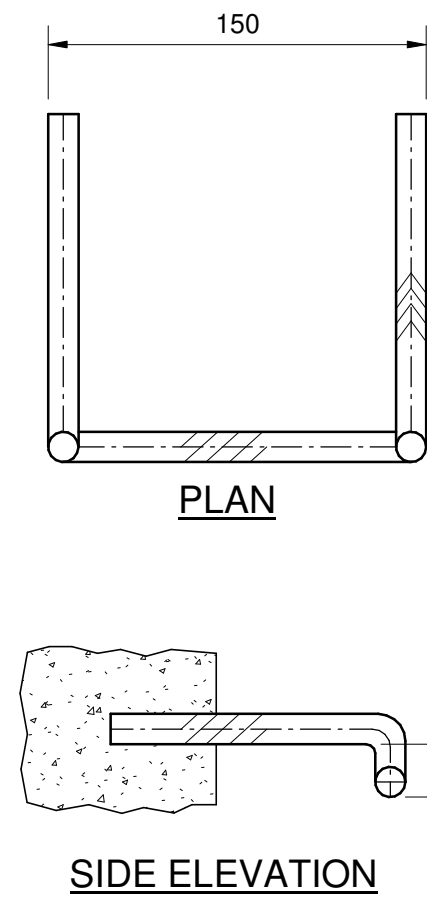
DEBRIS SCREEN DETAIL
(NOT TO SCALE)



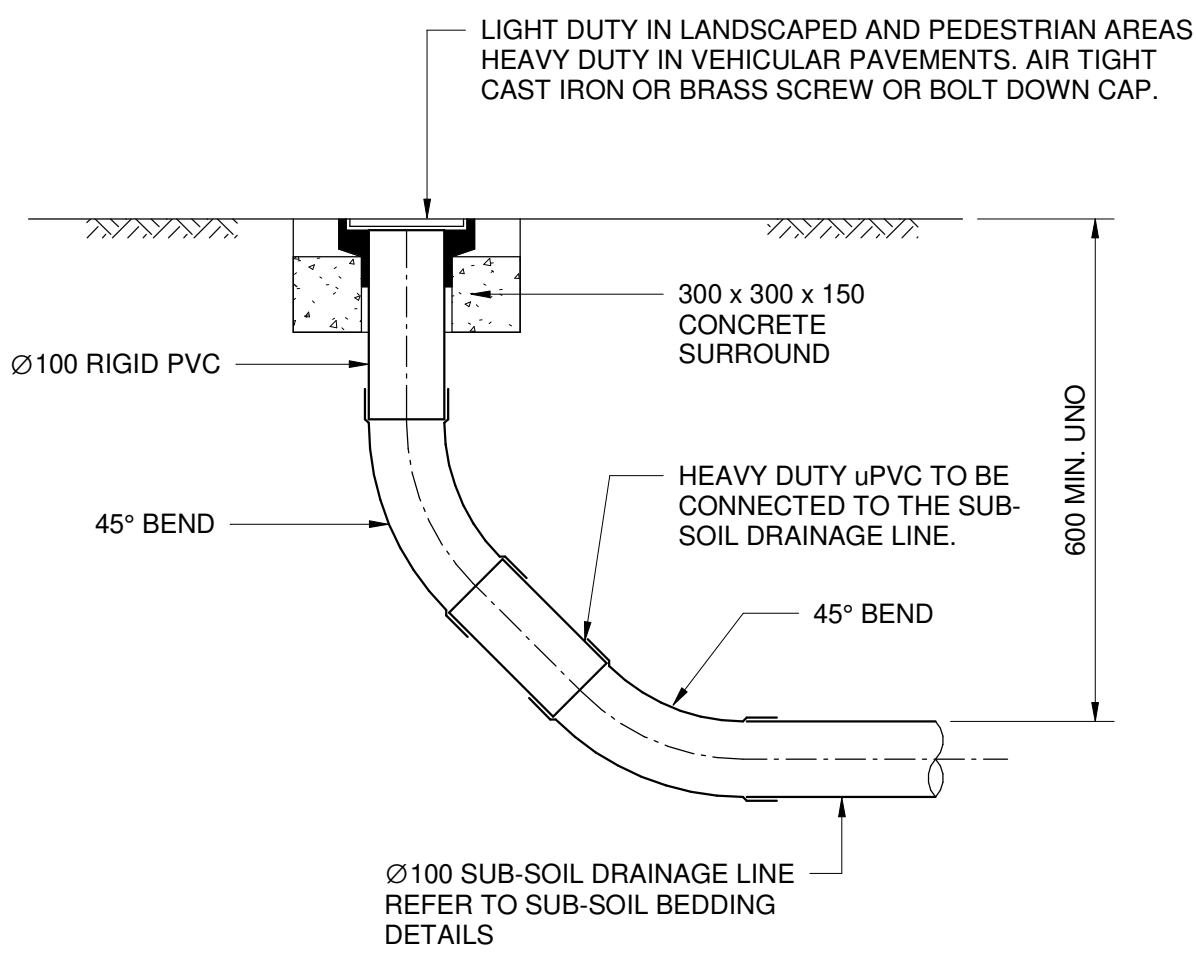
ORIFICE PLATE DETAIL
SCALE = 1:10



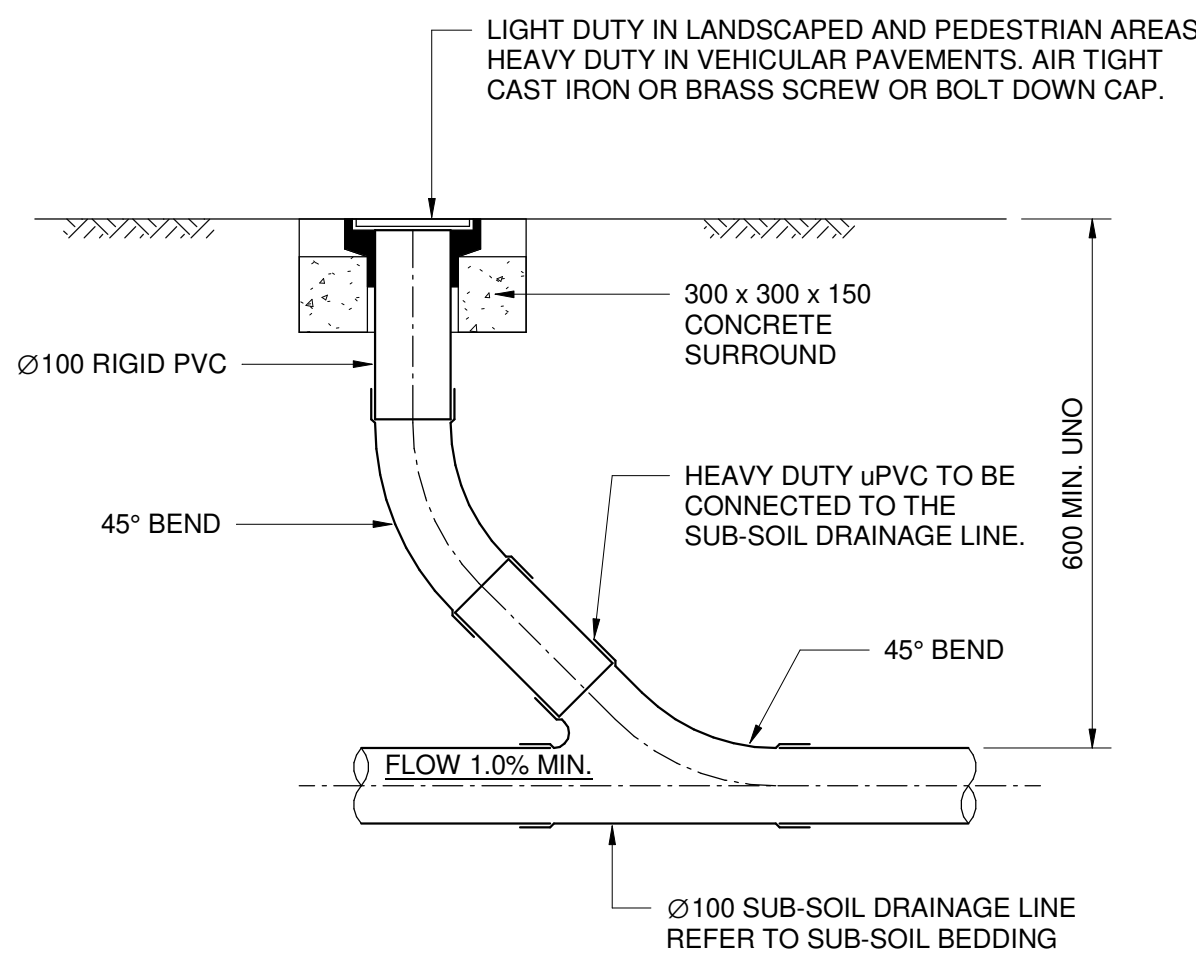
STEP IRON DETAILS
(NOT TO SCALE)
PROVIDE FOR PITS/TANKS GREATER THAN 900mm DEEP



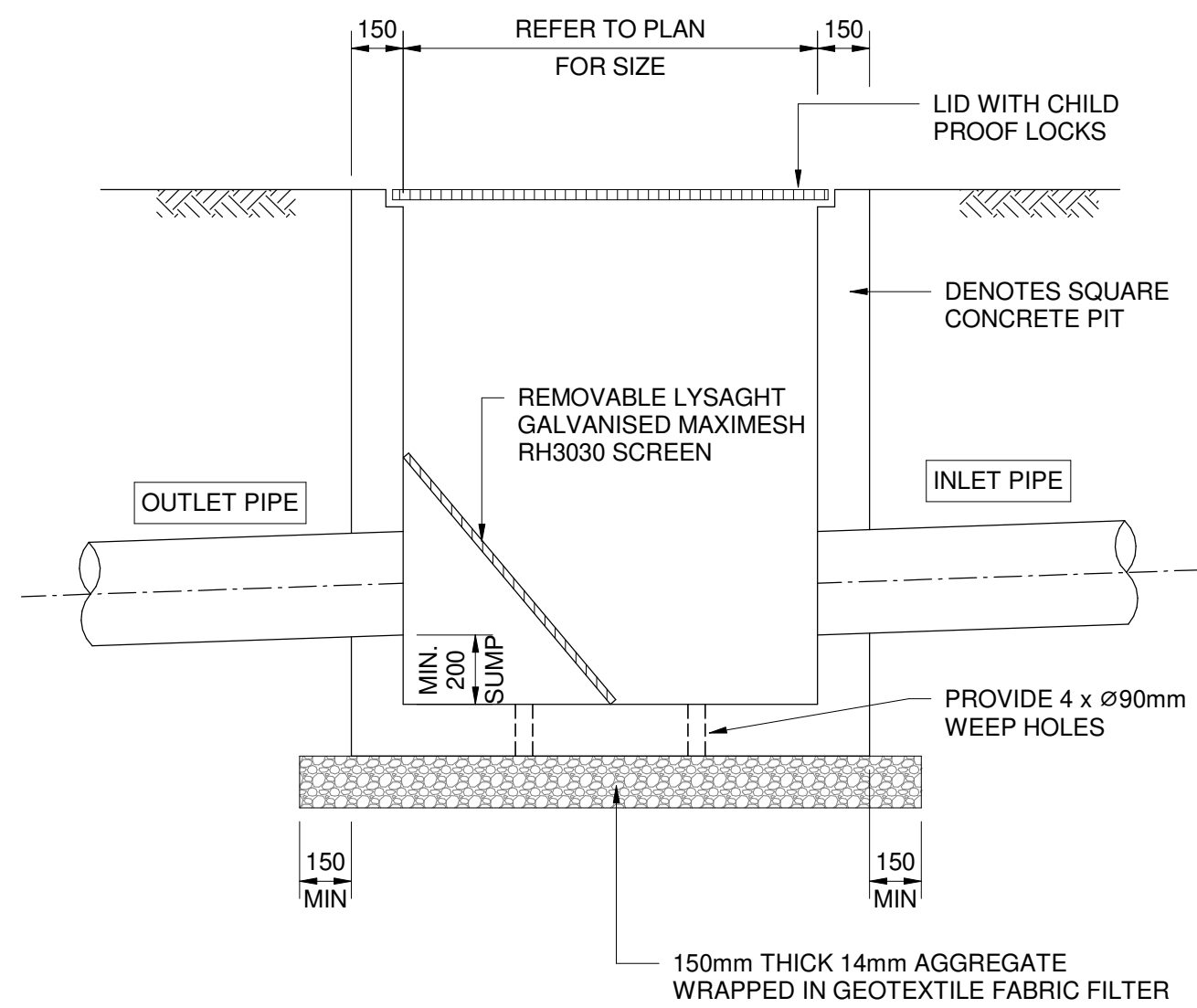
TYPICAL GRATED DRAIN DETAIL
(NOT TO SCALE)



FLUSHING POINT (FP)
SCALE = 1:10
• NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED
• U.N.O. INSTALL AT UPSTREAM POINTS ALONG SUBSOIL DRAINAGE LINES



INTERMEDIATE RISER (IR)
SCALE = 1:10
• NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED.
• U.N.O. INSTALL AT UPSTREAM POINTS ALONG SUBSOIL DRAINAGE LINES.
• U.N.O. INSTALL AT MAXIMUM 30m CENTRES ALONG SUBSOIL LINES AND PRIOR TO DISCHARGING TO DRAINAGE STRUCTURES.



SILT ARRESTOR PIT DETAIL
(NOT TO SCALE)

QUALIFIED STORMWATER DESIGN ENGINEER: Michael Grogan
NER NUMBER: 2125368

SIGNATURE: *Michael Grogan*

DA ISSUE
NOT FOR CONSTRUCTION

ISSUE	DESCRIPTION	APPROVED	DATE
P3	FOR DA ISSUE		02.12.24
P2	80% DA		08.10.24
P1	80% DA		20.08.24

ARCHITECT
22/02/2024 11:12:11 10/08/2024 11:12:11 10/08/2024 11:12:11 POSTAL: PO Box 206, Newbury NSW 2160 PHONE: 02 9555 7230 EMAIL: info@birzulisassociates.com WEB: www.birzulisassociates.com

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PROJECT
DANEBANK ANGLICAN SCHOOL FOR GIRLS
- THE SCIENCE LABS BUILDING
83 THE AVENUE, HURSTVILLE, NSW 2220

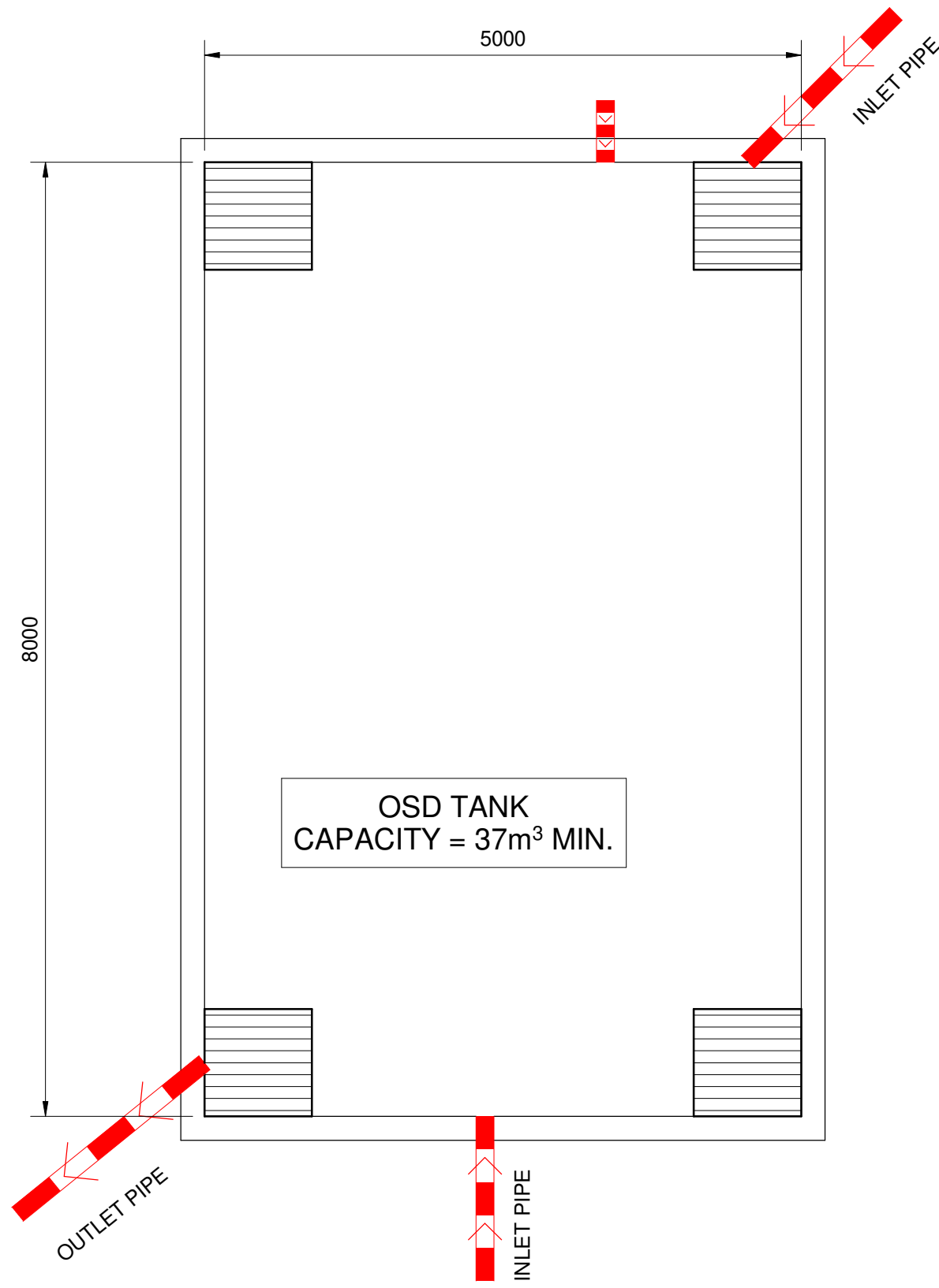
TITLE
STORMWATER DETAILS 01

SCALES	AS NOTED @ A1	DATE	AUG' 2024
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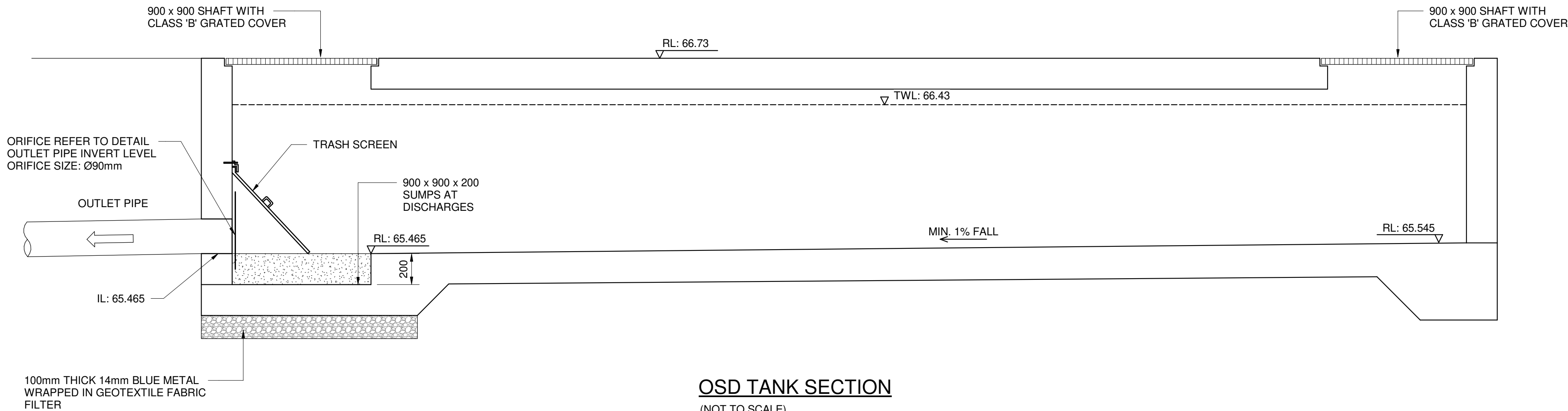
DRAWN	DESIGN	VERIFIED	APPROVED
C.KE	G.K		

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ISSUE	PROJECT No.	DRAWING No.
P3	9179	SL_C.30



OSD TANK PLAN
(NOT TO SCALE)



OSD TANK SECTION
(NOT TO SCALE)

QUALIFIED STORMWATER DESIGN ENGINEER: Michael Grogan
NER NUMBER: 2125368
SIGNATURE: *Michael Grogan*

DA ISSUE
NOT FOR CONSTRUCTION

P3	FOR DA ISSUE		02.12.24
P2	80% DA		08.10.24
P1	60% DA		20.08.24
ISSUE	DESCRIPTION	APPROVED	DATE

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LEAP
ARCHITECTURE

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WEB: www.leaparchitecture.com.au

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ASSOCIATES

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PROJECT
DANEBANK ANGLICAN SCHOOL FOR GIRLS
- THE SCIENCE LABS BUILDING
83 THE AVENUE, HURSTVILLE, NSW 2220

TITLE
OSD TANK DETAILS

SCALES	N/A @ A1	DATE	AUG 2024
DRAWN	DESIGN	VERIFIED	APPROVED
C.KE	G.K		

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ISSUE	PROJECT No.	DRAWING No.
P3	9179	SL_C.35



QUALIFIED STORMWATER DESIGN ENGINEER: Michael Grogan
 NER NUMBER: 2125368

SIGNATURE: Michael Grogan

BULK EARTHWORKS NOTES:

1. BULK EARTHWORKS LEVELS ARE BASE ON THE FOLLOWING PAVEMENT THICKNESS AND ALLOWANCES:
 - 200mm BUILDING PLATFORM
 - 130mm CONCRETE FOOTPATH
 - 100mm OTHER AREAS
2. THE EXISTING GROUND SURFACE IS NOT LOWERED TO ACCOUNT FOR ANY TOPSOIL/VEGETATION OR EXISTING PAVEMENTS. STRIPPING VOLUME ASSESSMENT TO BE MADE BY CONTRACTOR.
3. BULKING FACTOR OF 1.0 WAS USED FOR BOTH CUT & FILL.
4. NO ALLOWANCE HAS BEEN MADE FOR DETAILED WORKS SUCH AS FOOTINGS, SET DOWN, LIFT PITS, SERVICE TRENCHES & STORMWATER/SUBSOIL TRENCHES, TEMP CONSTRUCTION PLATFORMS, STABILISATION, TEMP BATTERS, BENCHING, RETAINING WALL BACKFILL, REMOVAL OF HAZARDOUS MATERIAL OR TEMPORARY SEDIMENT BASINS, OR SOFT EXISTING UNSUITABLE MATERIAL, UPPER CARPARK OSD, PIPE AND PIT OSDs AND THE LOWER CARPARK PAVEMENT FOR ABOVE GROUND LEVELS TO BE ACHIEVED. DETAILED SUBGRADE EXCAVATION IS REQUIRED IN VICINITY OF OSD 2.
5. THIS PLAN IS PREPARED FOR INFORMATION PURPOSES ONLY AND IS INDICATIVE ONLY. EARTH WORKS CONTRACTOR IS TO VERIFY ALL LEVELS AND QUANTITIES AND PERFORM THEIR OWN BULK EARTHWORK ASSESSMENT. SOME FILL AND CUT HAS BEEN SHOWN BASED ON ASSUMED LANDSCAPE PROFILING AND IS THE RESPONSIBILITY OF OTHERS

DA ISSUE
NOT FOR CONSTRUCTION

ARCHITECT

LEAF
ARCHITECTURE



BULK EXCAVATION AND CUT & FILL PLAN

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