



Material Sciences and Engineering Building, UNSW Director General Requirement's – Civil Engineering

For The University of New South Wales

05 October 2012

111144P-DGR

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1.0 INTRODUCTION

As part of the Materials Science and Engineering Building (MSEB) development, TTW have been engaged by the University of New South Wales (UNSW) to investigate and report on civil engineering aspects of the project.

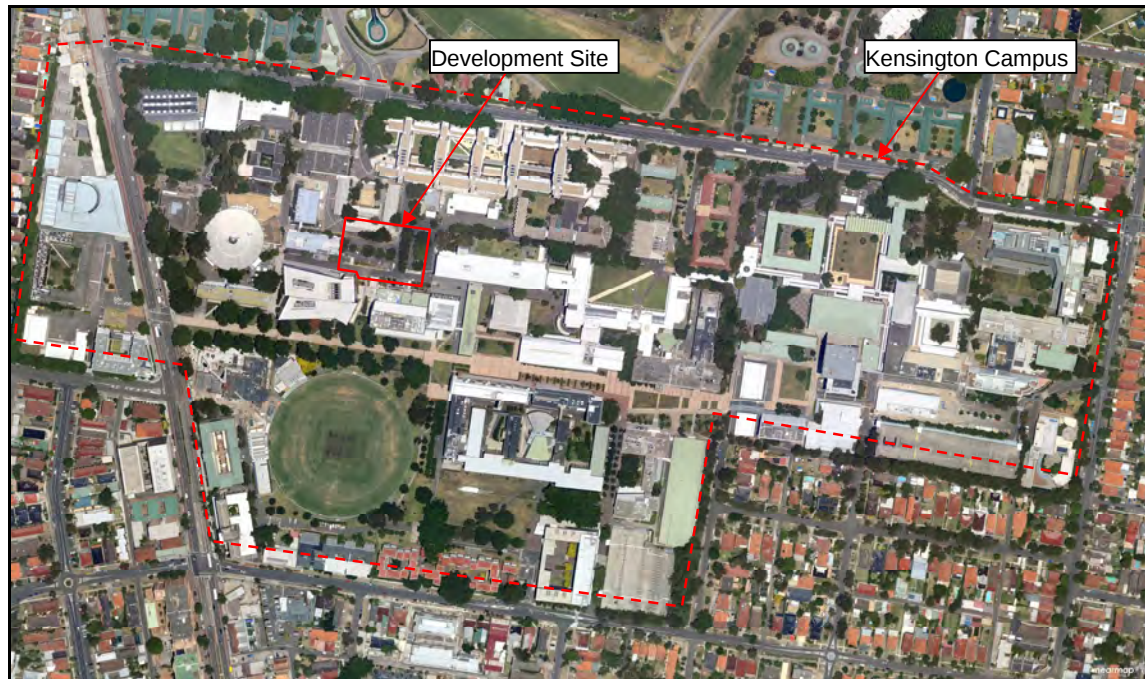
This report relates to the Environmental Impact Statement required for the main building works. It considers the civil engineering issues related to the works and specifically targets the relevant Director General's Requirements (DGR's) – SSD 5373.

2.0 DIRECTOR GENERAL REQUIREMENTS

No	DGR – Civil Related	Civil Comments
10	Sediment, Erosion and Dust controls (Construction and Excavation) Identify measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles. Relevant Policies and Guidelines: - <i>Managing Urban Stormwater – Soils & Construction Volume 1 2004 (Landcom)</i> - <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA)</i>	Details of soil erosion and sedimentation controls are included in Section 6 , and have been prepared in accordance with Randwick Council requirements and Landcom's 2004 publication. The proposed sediment and erosion control plan is provided in Appendix A
11	Utilities In consultation with relevant agencies, the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure shall be addressed.	An overview of the existing site conditions including services is included in Section 4 . Comments will be made by individual consultants for their related services.
14	Drainage Detail drainage associated with the proposal, including stormwater and drainage	A summary of the existing and proposed stormwater for the development is included in Section 7 . Proposed stormwater plans are included in Appendix B
	Plans and Documents ... In addition, the EIS must include the following: - Stormwater Concept Plan...	The stormwater plans are included in Appendix B

3.0 EXISTING SITE

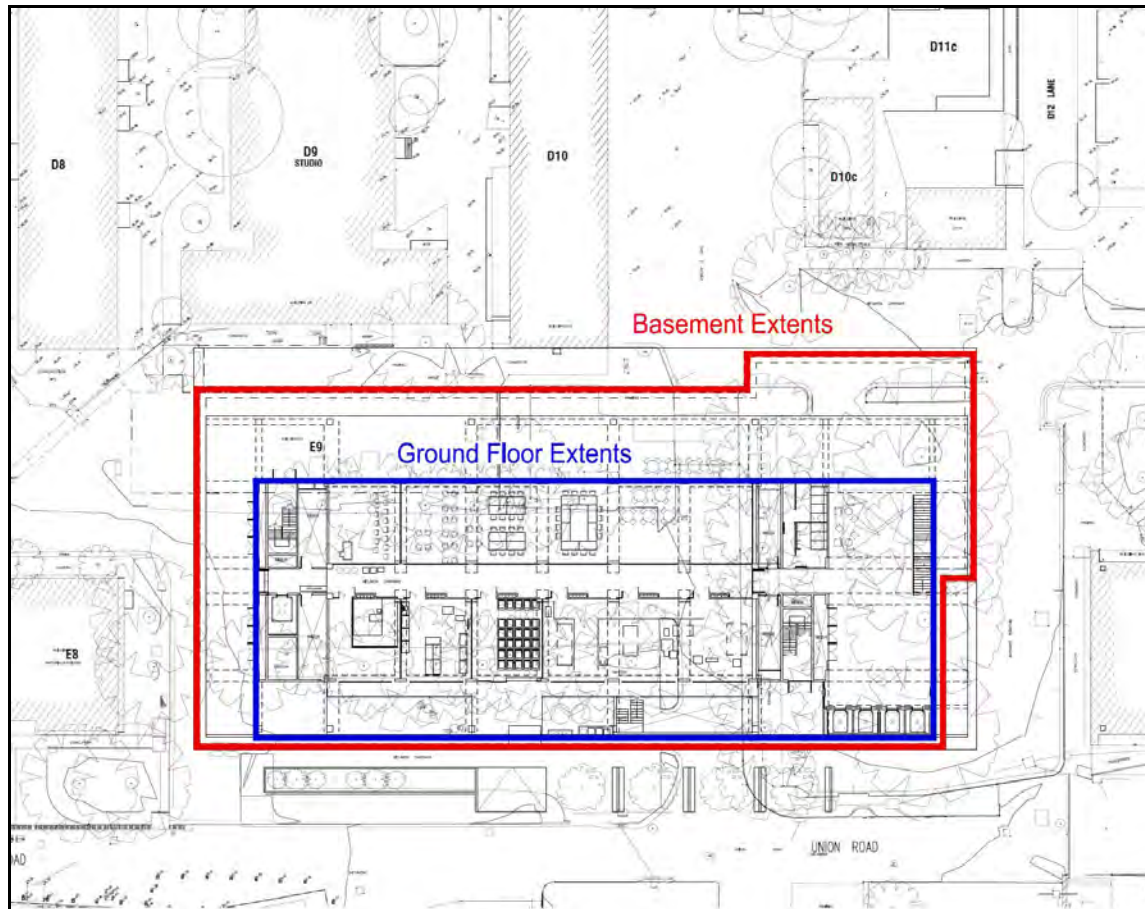
The development site is located on the existing UNSW Kensington Campus, within Randwick Council LGA. The existing site consists of two on-grade car parks primarily used for the existing Materials Science (E8) and Australian School of Business (E12) buildings. The site is surrounded by existing university buildings, pedestrian areas, landscaping, roads and other smaller car parking areas. The existing shared access roads adjacent to the site are Union Road to the south, 3rd Avenue to the north and College Road to the east.



EXISTING SITE

4.0 PROPOSED DEVELOPMENT

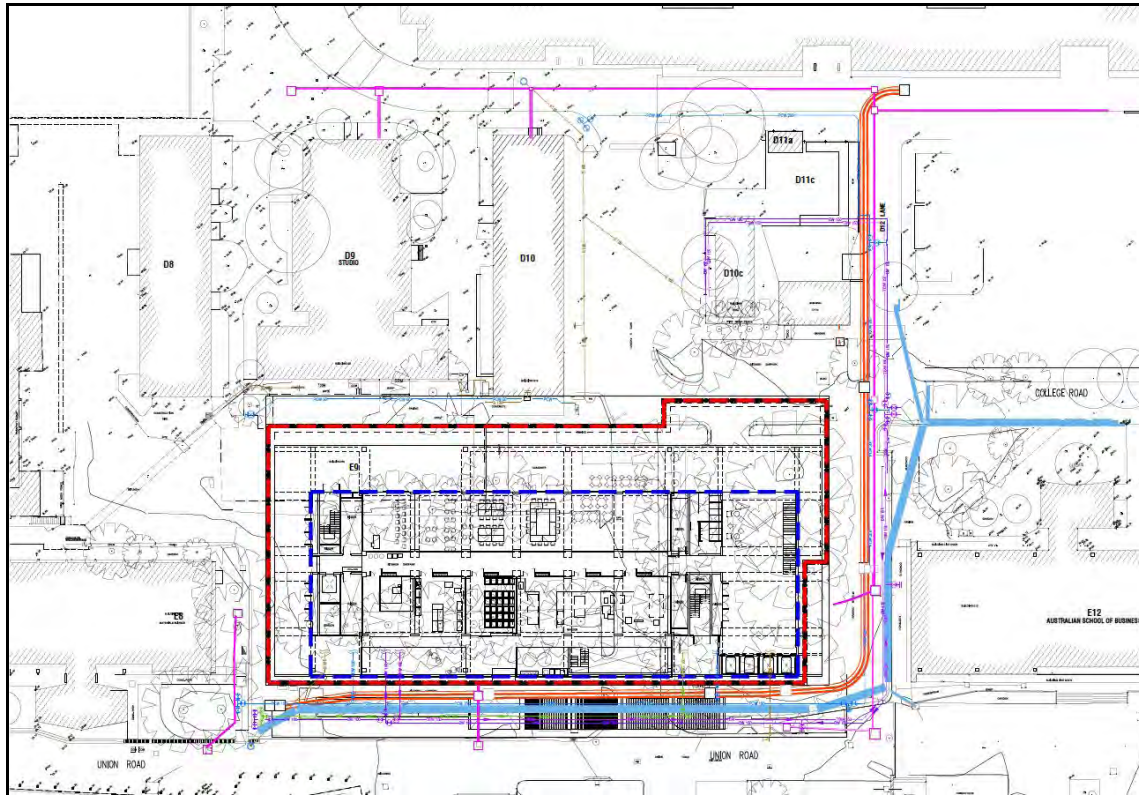
The proposed development consists of a single building which will be located across the two existing car parks. The building will have eight levels above ground and one basement level below ground. The extents of the basement level extend beyond the above ground structure with the proposed building layout shown below.



PROPOSED BUILDING LOCATION

5.0 UTILITIES

The construction of the new building will not impact on site services as connection and diversion works will have already been made prior to development commencing. Further details regarding the individual services will be made by the relevant consulting engineers. This report considers the stormwater only and is detailed in section 3.



EXISTING SERVICE DIVERSIONS MADE PRIOR TO DEVELOPMENT

6.0 SOIL EROSION AND SEDIMENT CONTROL

A preliminary soil erosion and sediment control plan has been prepared in accordance with;

- Randwick Council – Soil and water management guidelines.
- Environment Protection Agency – Pollution control manual for urban stormwater.
- LANDCOM NSW Managing Urban Stormwater: Soils and Construction (Blue Book).

This plan is included in Appendix A.

Prior to construction, and particularly the excavation of the basement, erosion and sediment control measures will need to be in place to ensure that stormwater runoff from the site is clean before discharging offsite.

It is required that dust suppression, construction vehicle inspection and cleaning systems are in place throughout the duration of the construction. The erosion and control measures will need to be inspected and maintained regularly and following storm events.

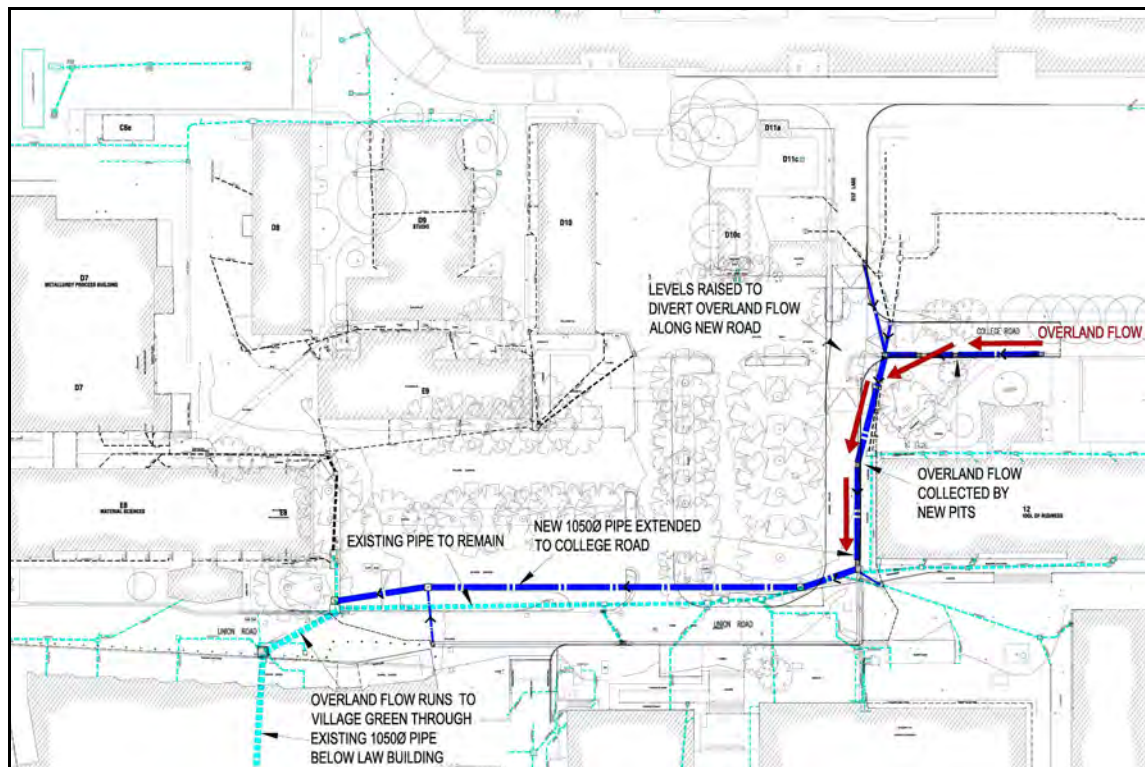
These controls will minimise and manage the generation and off-site transmission of sediment, dust and fine particles during the construction period.

7.0 STORMWATER

The stormwater for the main building works is limited to roof runoff from the new building and surface runoff from small areas of external landscaping immediately adjacent to the new building. Roof runoff will connect directly to a 1050mm pipe that runs parallel to the south face of the building. External areas will drain away from the building towards pits located in the surrounding roads and hard landscaped areas. Stormwater plans are included in Appendix B

NSW and Randwick Council have adopted a campus wide strategy entitled 'UNSW Kensington Campus, Campus 2020 Master Plan, Stormwater Strategy (November 2005)'. In accordance with this strategy no detention is required for this building as stormwater runoff up to the 100yr ARI drains to the Village Green Detention Basin. This basin recharges the Botany Sands Aquifer, which in turn is used as a source for bore water supply across the campus.

The proposed building will not impact on overland flow. Works will be undertaken prior to the development to ensure that overland flow is directed away from the building and the existing loading dock to the Applied Sciences building. The overland flow will be collected by a 1050mm pipe that runs beneath the Law building and discharges to the Village Green Detention Basin. These works will have been approved by UNSW Facilities Management and completed by the time this development commences.



OVERLAND FLOW PRIOR TO DEVELOPMENT

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**Eirian Crabbe
Senior Civil Engineer**

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**Stephen Brain
Civil Technical Director**

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APPENDIX A:
EROSION AND SEDIMENT CONTROL PLAN

EROSION AND SEDIMENT CONTROL NOTES

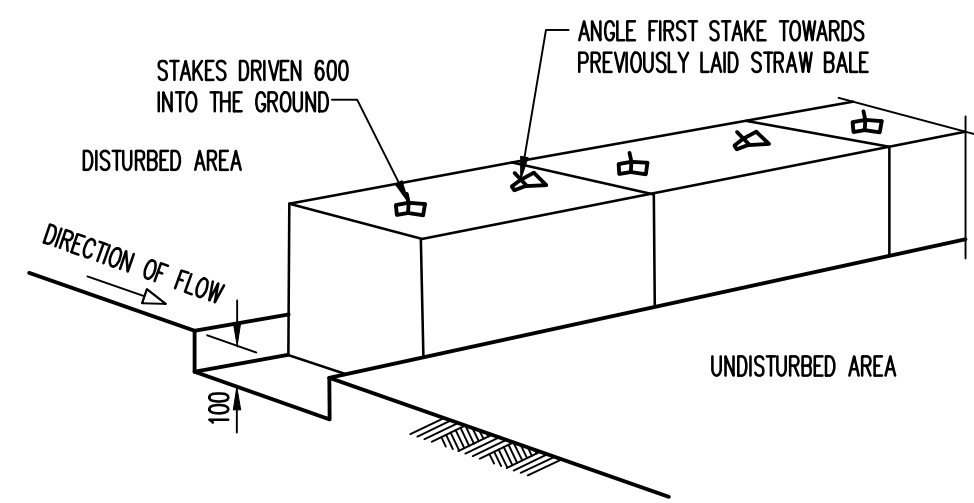
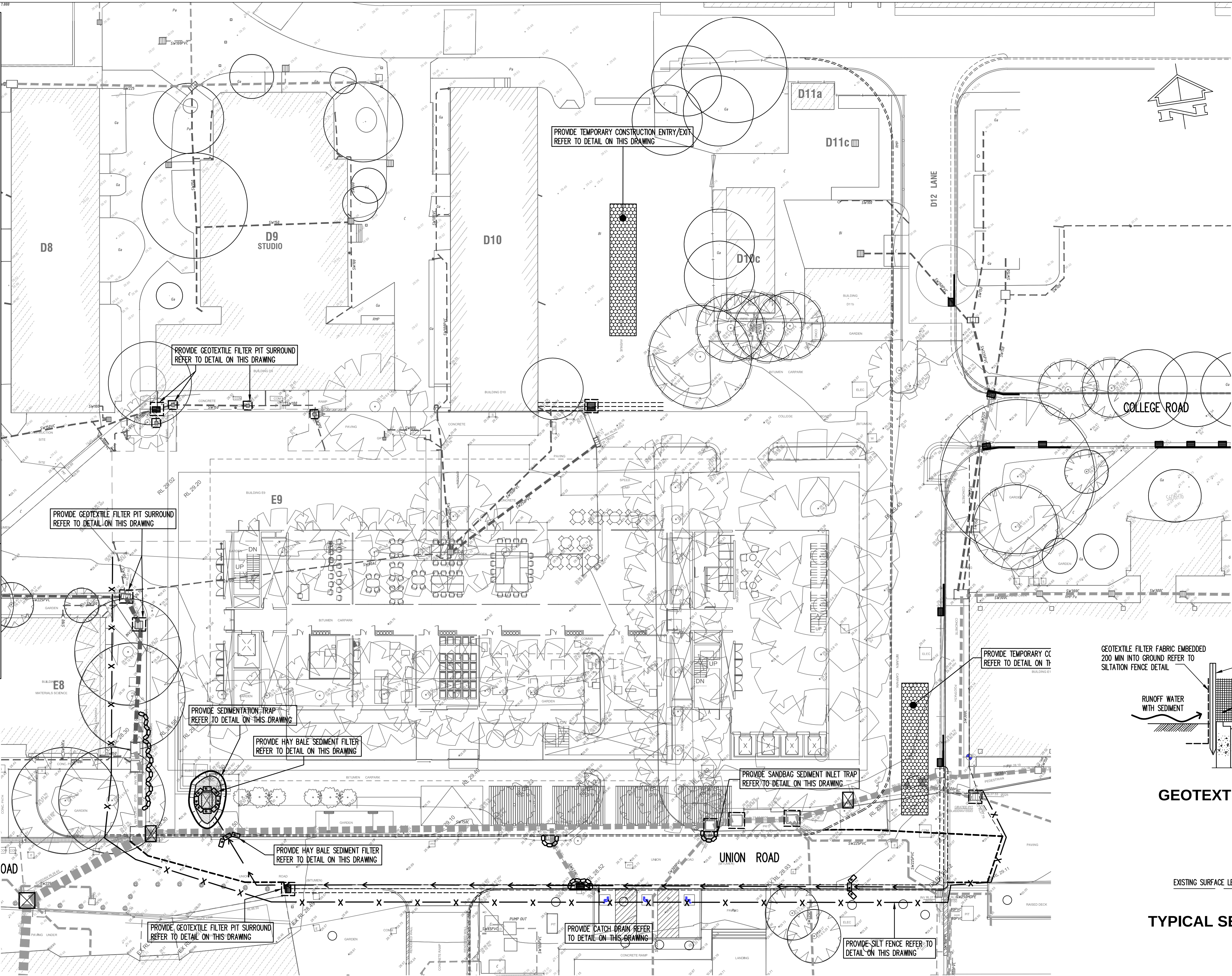
- All work shall be generally carried out in accordance with
 - Local authority requirements,
 - EPA – Pollution control manual for urban stormwater,
 - LANDCOM NSW – Managing Urban Stormwater: Soils and Construction ("Blue Book").
- Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities. The erosion and sediment control plan shall be implemented and adopted to meet the varying situations as work on site progresses.
- Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
- When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
- Minimise the area of site being disturbed at any one time.
- Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
- All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
- Control water from upstream of the site such that it does not enter the disturbed site.
- All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
- All vehicles leaving the site shall be cleaned and inspected before leaving.
- Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
- Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

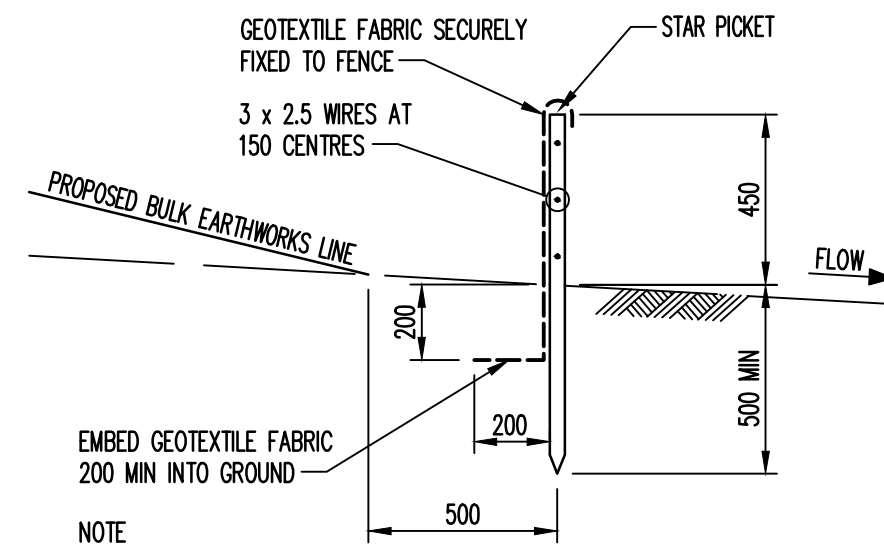
- Prior to commencement of excavation the following soil management devices must be installed.
 - Construct silt fences below the site and across all potential runoff sites.
 - Construct temporary construction entry/exit and divert runoff to suitable control systems.
 - Construct measures to divert upstream flows into existing stormwater system.
 - Construct sedimentation traps/basin including outlet control and overflow.
 - Construct turf lined swales.
 - Provide sandbag sediment traps upstream of existing pits.
 - Construct geotextile filter pit surround around all proposed pits as they are constructed.
- On completion of pavement provide sand bag kerb inlet sediment traps around pits.
- Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

EROSION AND SEDIMENT CONTROL LEGEND

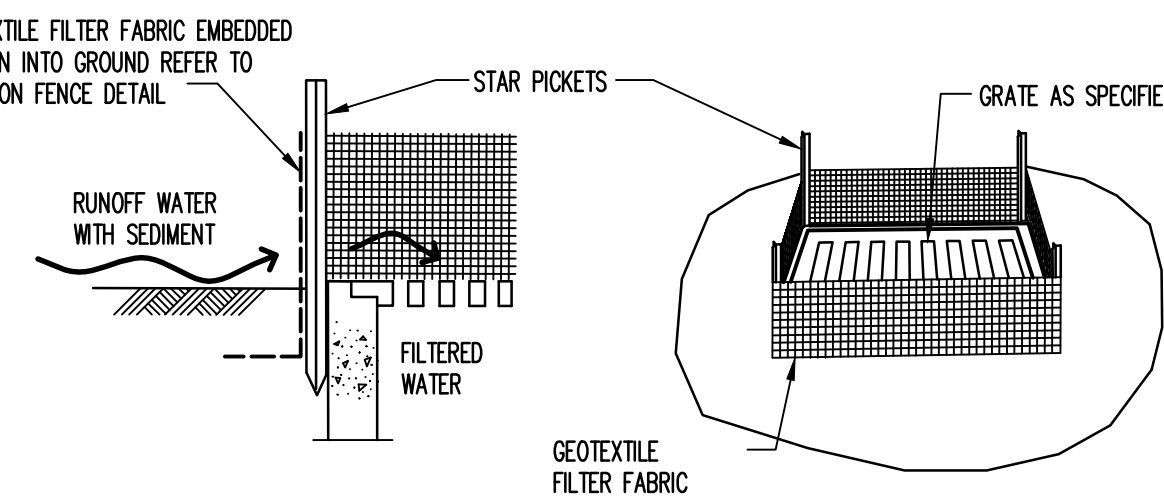
- Siltation fence
- Stormwater pit with Geotextile filter surround
- Hay bale barriers
- Sandbag sediment trap
- Catch drain



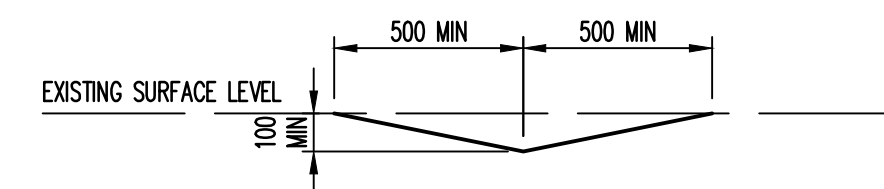
STRAW BALE SEDIMENT FILTER
NTS
NOTE: STAKE TO BE EITHER TAR COATED
STAKE OR 50 x 50 HARDWOOD



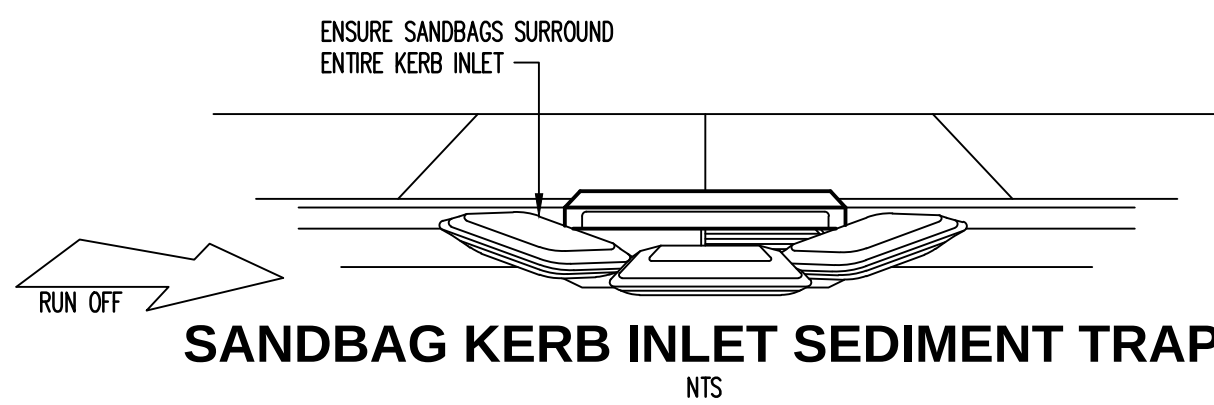
SILTATION FENCE DETAIL
SCALE 1: 20



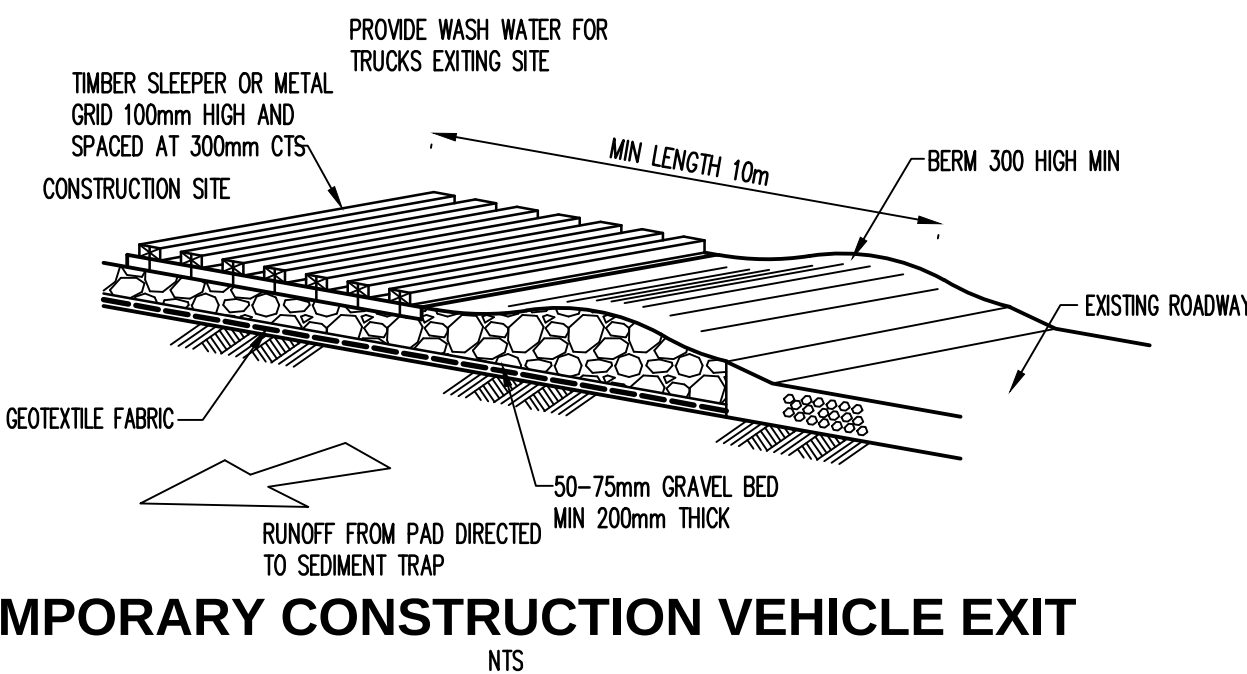
GEOTEXTILE FILTER PIT SURROUND
NTS



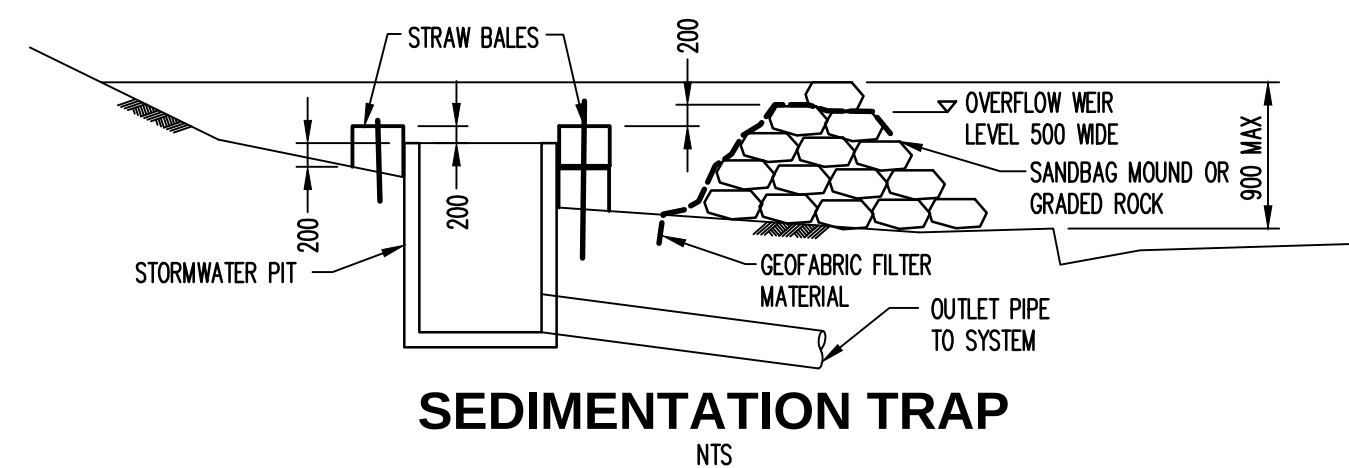
TYPICAL SECTION THROUGH CATCH DRAIN
SCALE 1: 20



SANDBAG KERB INLET SEDIMENT TRAP
NTS



TEMPORARY CONSTRUCTION VEHICLE EXIT
NTS



SEDIMENTATION TRAP
NTS

SCHEMATIC DESIGN

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1	SCHEMATIC DESIGN	EC	WW	???							
Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date		

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Project

UNIVERSITY OF NEW SOUTH WALES - MATERIALS SCIENCE BUILDING

Sheet Subject

EROSION AND SEDIMENT CONTROL PLAN

Scale: A1

1:250

Drawn

WW

Authorised

John

Job No

111144

Drawing No

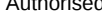
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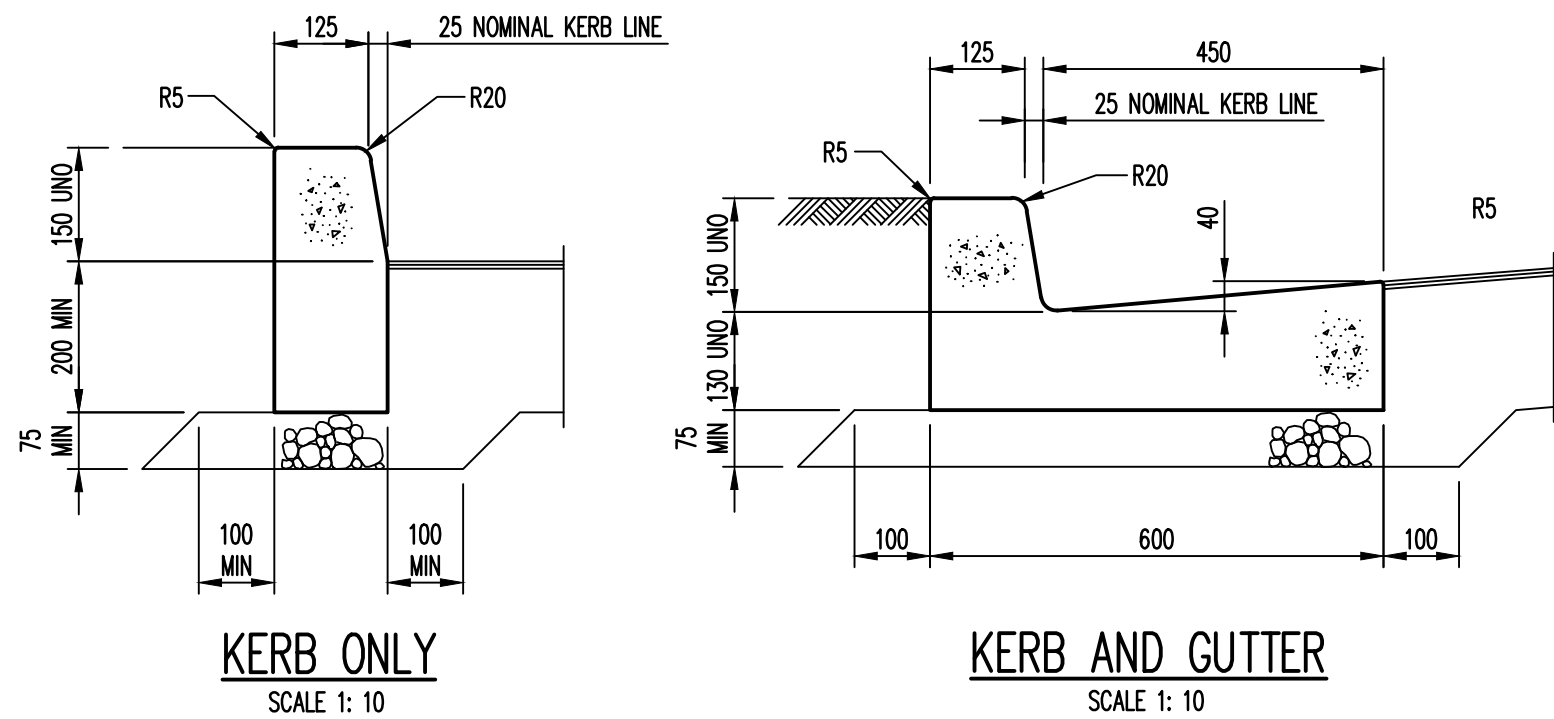
Revision

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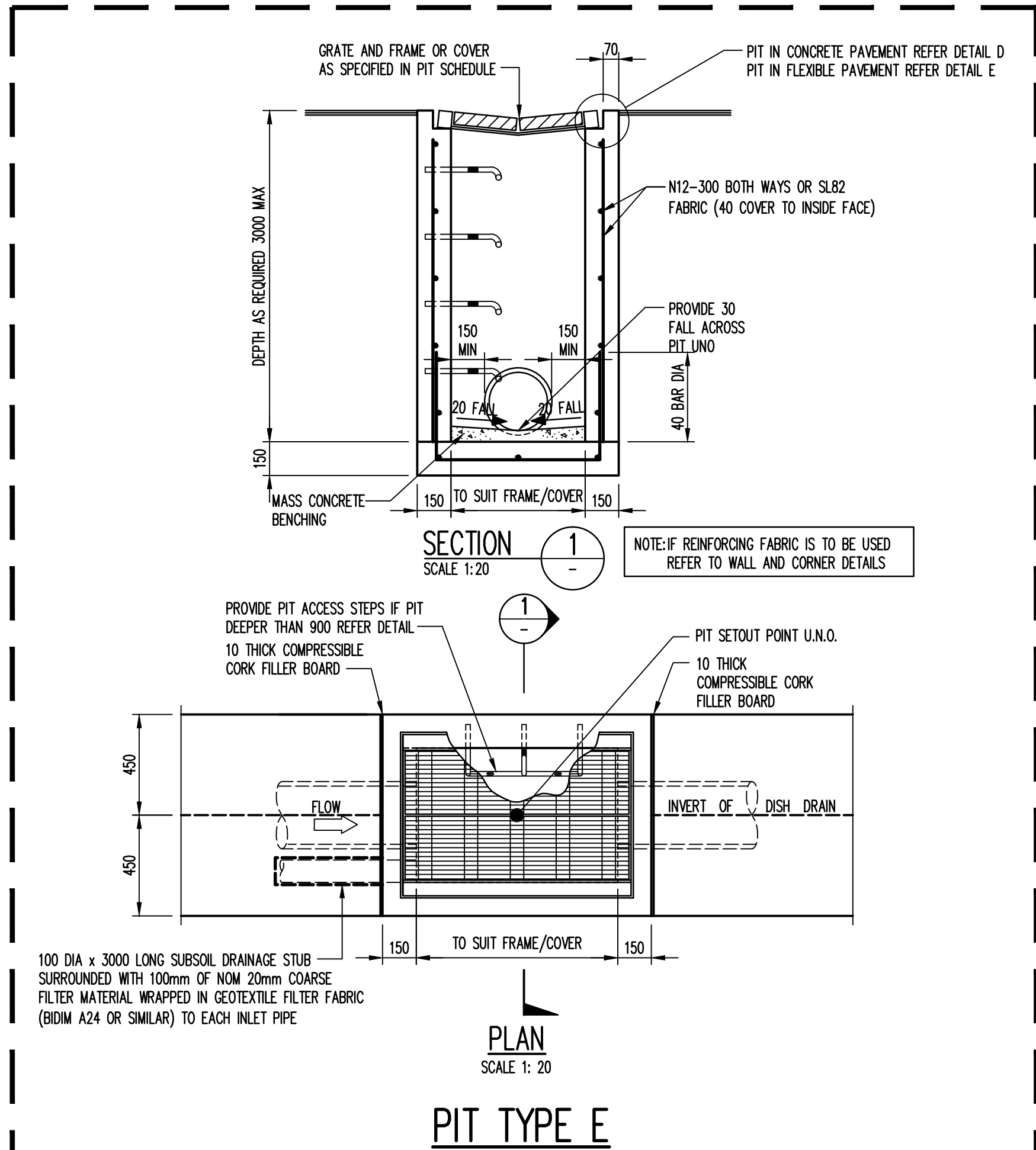
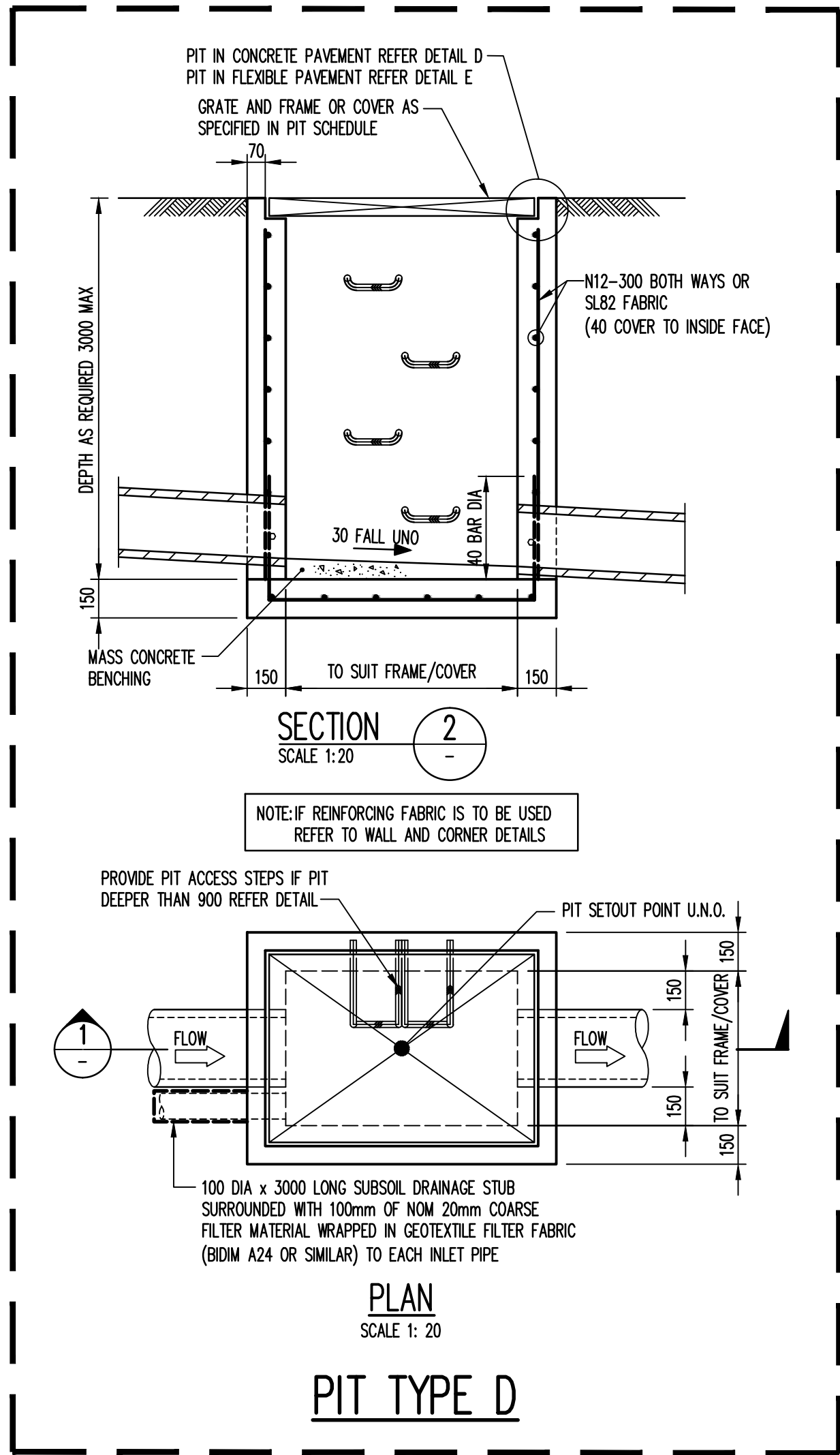
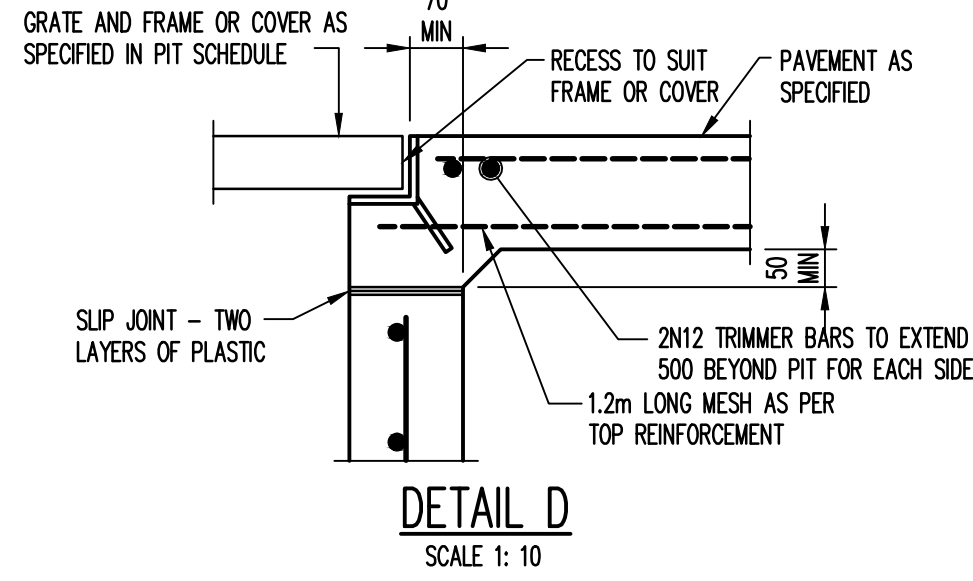
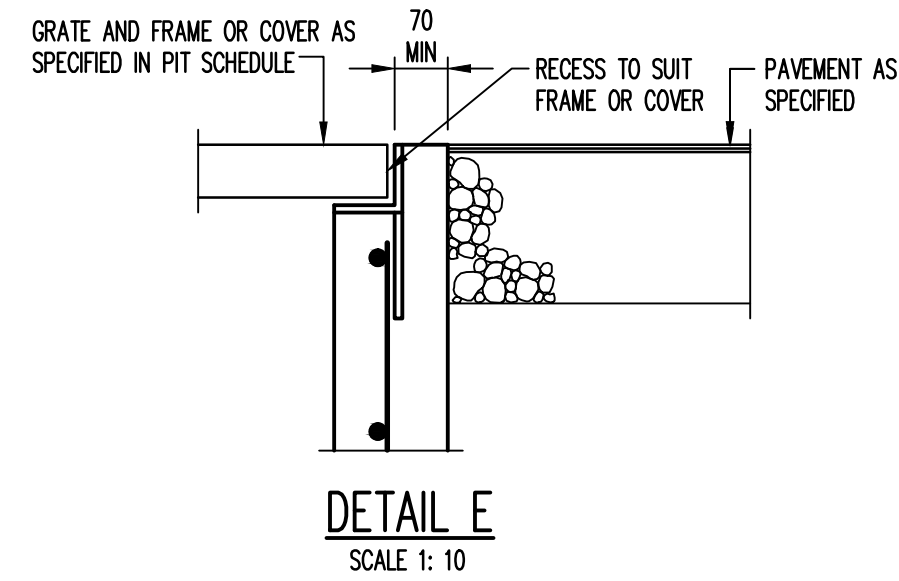
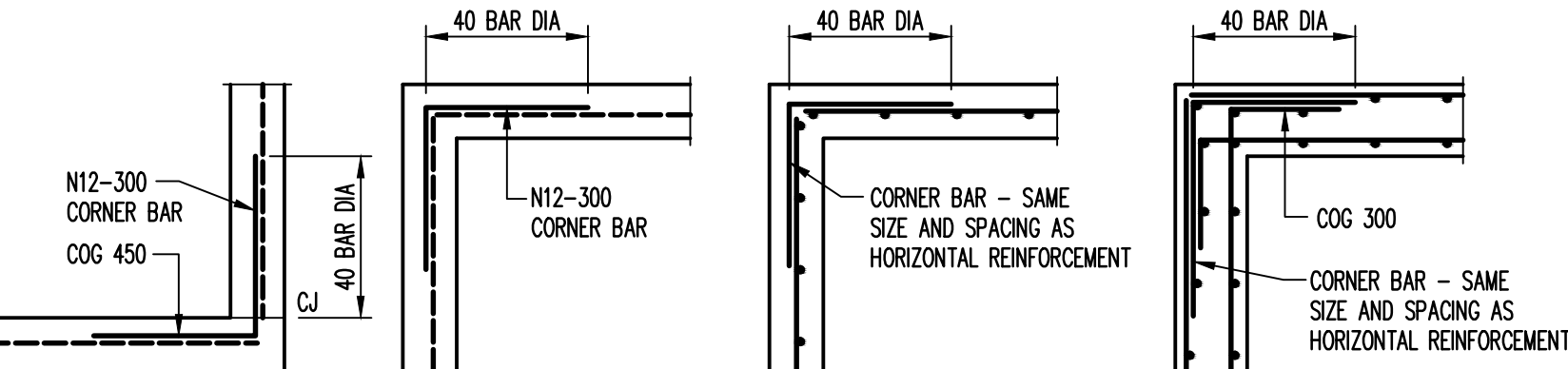
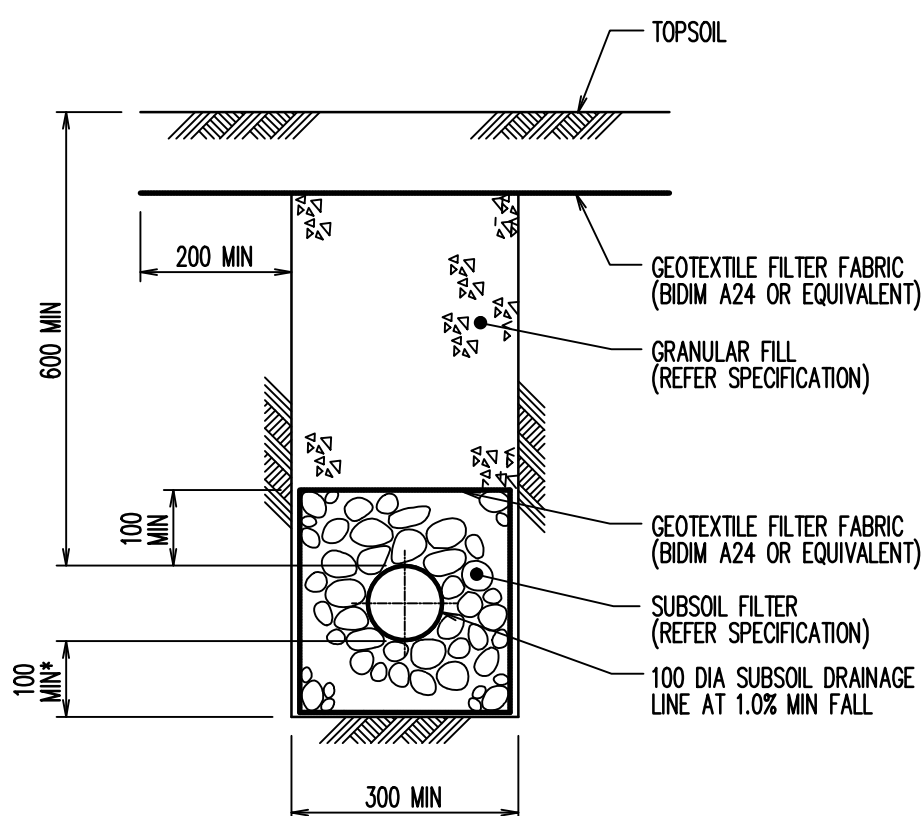
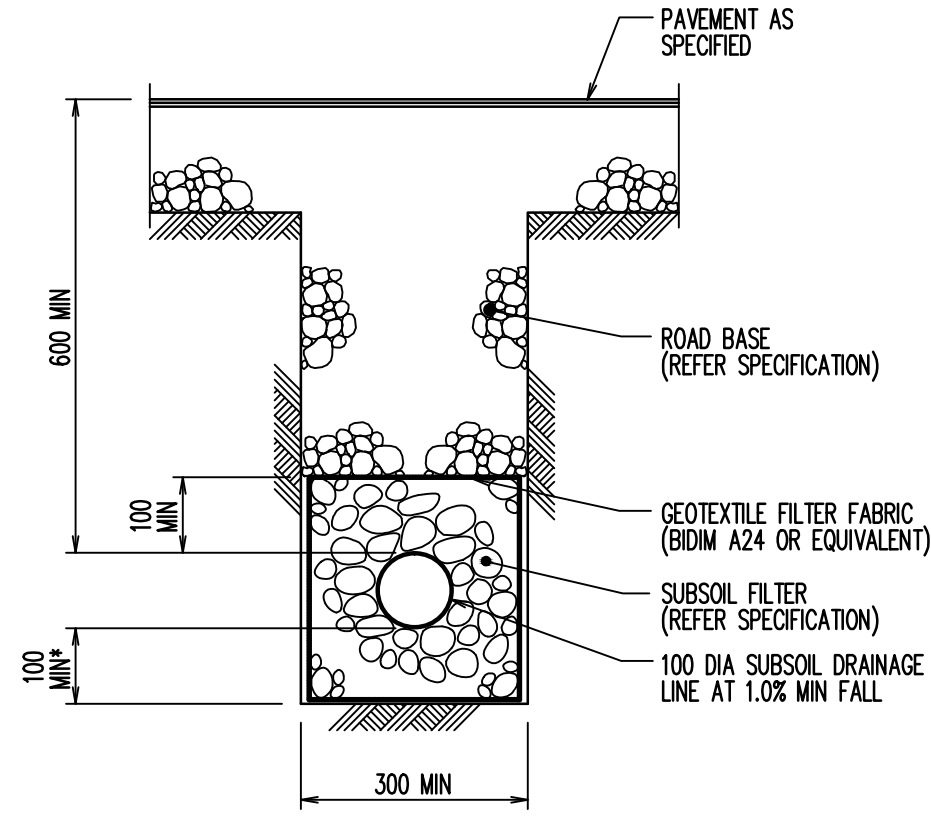
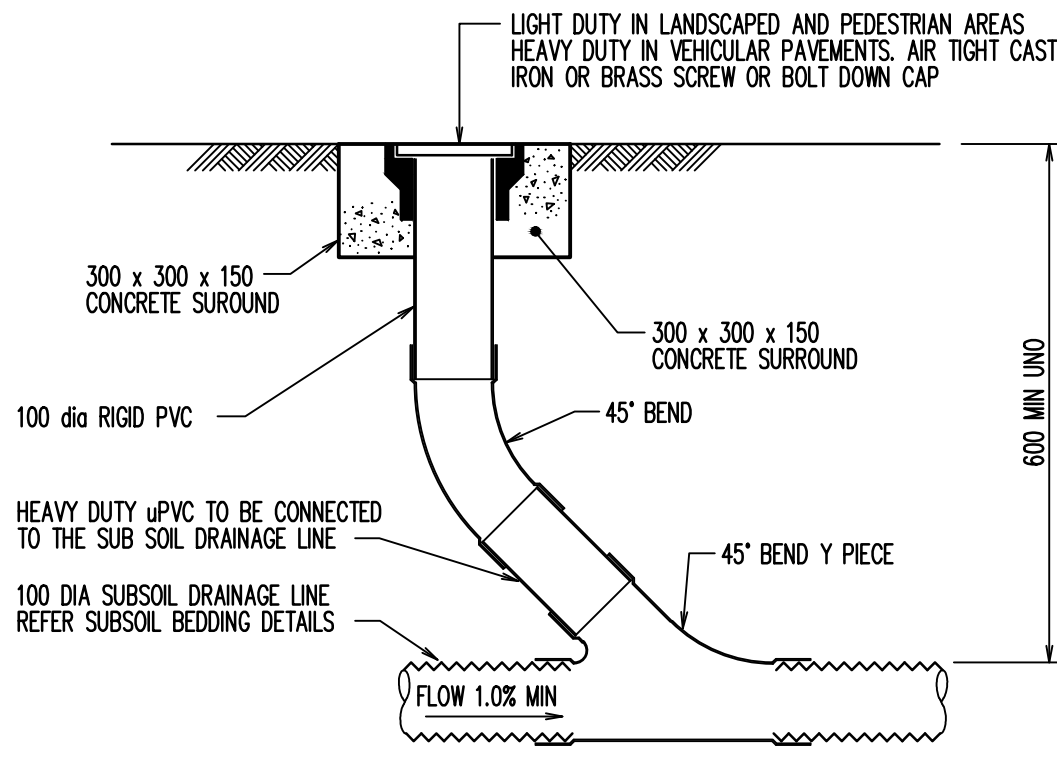
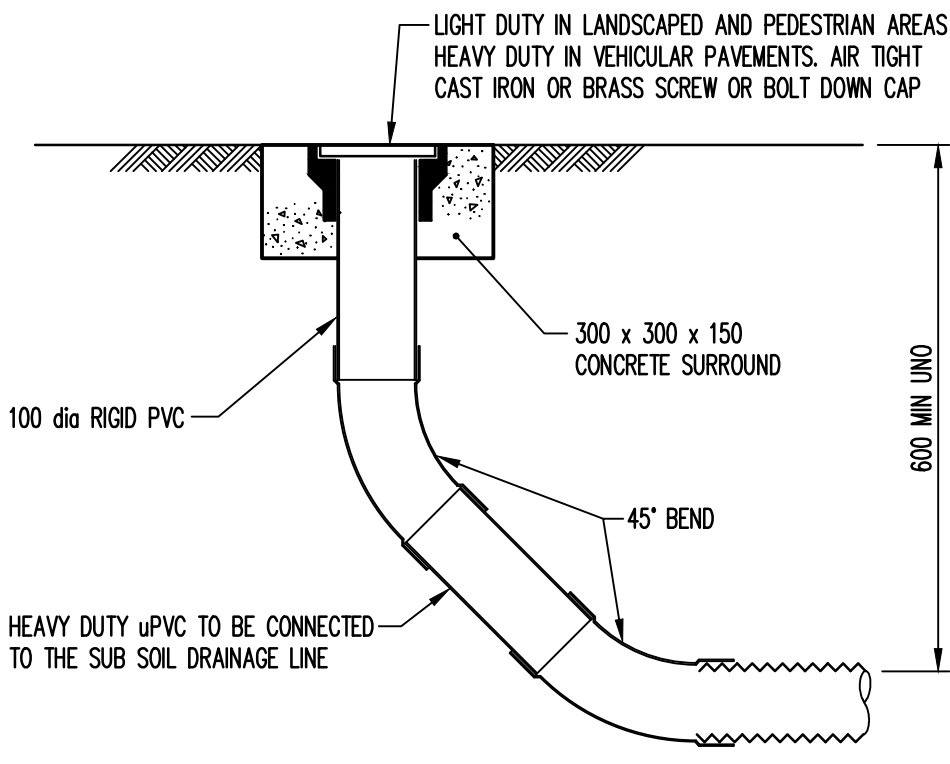
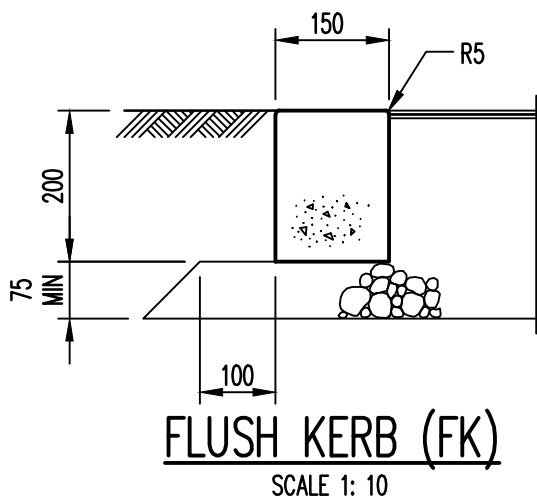
APPENDIX B:
STORMWATER PLANS



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Job No 111144	Drawing No C104	Revision 1
		



DISH DRAIN (DD)
SCALE 1:10



A1 0 1 2 3 4 5 6 7 8 9 10

Project Manager	Architect	Consulting Engineers	Project	Sheet Subject
GRIMSHAW	TaylorThomsonWhitting	UNIVERSITY OF NEW SOUTH WALES - MATERIALS SCIENCE BUILDING	DETAILS SHEET 1	
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1 SCHEMATIC DESIGN	EC WW ???	Job No 111144	Drawing No C105	Revision 1
Rev Description	Eng Draft Date	Rev Description	Eng Draft Date	

SCHEMATIC DESIGN

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Job No
111144

Drawing No
C105

Revision
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