

Camellia Materials Recycling Facility Water Management Plan

Stage 1A Works Temporary Water Management Plan

17006-R02 Revision 3.2

Date: 19 December 2019



Table of Contents

1	INTRODUCTION	3
1.1	CONTEXT	3
1.2	BACKGROUND	3
1.3	CONSTRUCTION PHASING.....	3
1.4	SCOPE OF THIS TWMP	3
2	PURPOSE AND OBJECTIVES	4
2.1	PURPOSE.....	4
2.2	OBJECTIVE	4
2.3	TARGETS	4
3	ENVIRONMENTAL REQUIREMENTS.....	4
3.1	RELEVANT LEGISLATION AND GUIDELINES	4
3.1.1	<i>Legislation</i>	4
3.1.2	<i>Guidelines</i>	4
3.2	CONDITIONS OF APPROVAL – SOIL AND WATER.....	5
4	WMP CONSULTATION.....	5
5	SITE DESCRIPTION	6
5.1	GENERAL.....	6
5.2	SITE DEMOLITION.....	7
5.3	DECOMMISSIONED STORMWATER SYSTEM	7
5.4	STORMWATER OUTLET WORKS	7
5.5	STAGE 1.....	7
5.5.1	<i>Preload Phase 1A and 1B</i>	7
5.5.2	<i>Preload Phase 1C and 1D</i>	7
6	STAGE 1 WATER MANAGEMENT	8
6.1	DRAWINGS.....	8
6.2	WATER MANAGEMENT	8
6.3	SEDIMENT AND EROSION CONTROL.....	8
7	COMPLIANCE.....	9
7.1	MONITORING AND RECORDS	9
7.2	TRAINING.....	9
7.3	WEATHER MONITORING	9
8	REVIEW AND IMPROVEMENT.....	10
8.1	CONTINUOUS IMPROVEMENT	10
8.2	WMP UPDATE AND AMENDMENT.....	10
9	REFERENCES	11

List of Figures

Figure 1.1	Development Phasing.....	3
Figure 5.1	Site Location	6

Appendix

Appendix A – Drawings

1 Introduction

This Temporary Water Management Plan (TWMP) dated 19 December 2019 version 3.2 replaces the previous Temporary Water Management Plan dated 14 October 2019 version 3.1 This TWMP is applicable to the Stage 1A activities described below.

1.1 Context

This TWMP forms part of the *Camellia Material Recycling Facility (MRF) Construction Environmental Management Plan (CEMP)* (Veolia, 2019). The WMP has been prepared to meet the requirements of the *Development Consent Environmental Performance Conditions* items B6, B7 and B9 for 37 Grand Avenue, Camellia (Lot 1 DP 539890) Application No. SSD 4964. It is noted the Site is subject to a Remediation Action Plan, which is currently being implemented at the site.

1.2 Background

The Camellia Materials Recycling Facility (MRF) will ultimately comprise a large warehouse building and office block with floor constructed on engineered fill. The warehouse building will have a building floor level of greater than RL 4.13mAHD which is 0.5m higher than the 100 year ARI flood level of 3.63mAHD.

1.3 Construction phasing

Construction of the MRF will be carried out in two stages.

The Stage 1A works will involve:

- preparing and levelling the site to the required site levels;
- sealing of the site at the required site levels, to stabilise the existing preload, which was placed during stage 1; and
- installing stormwater system infrastructure which has been designed to satisfy Consent Condition B6 and will be carried out in accordance with Consent Condition B7 of SSD 4964 to assist in managing surface waters to drain freely to Parramatta River

Stormwater works to be undertaken within the riparian zone have been approved by Parramatta City Council (PCC) under the PCC Development Consent (DA/54/2013) and have been addressed in the Contractor's Vegetation Soil and Erosion Plan for Riparian Works.

Stage 1 will be maintained until Stage 2 MRF construction works are carried out.

A summary of the site staging is presented in Figure 1.1.

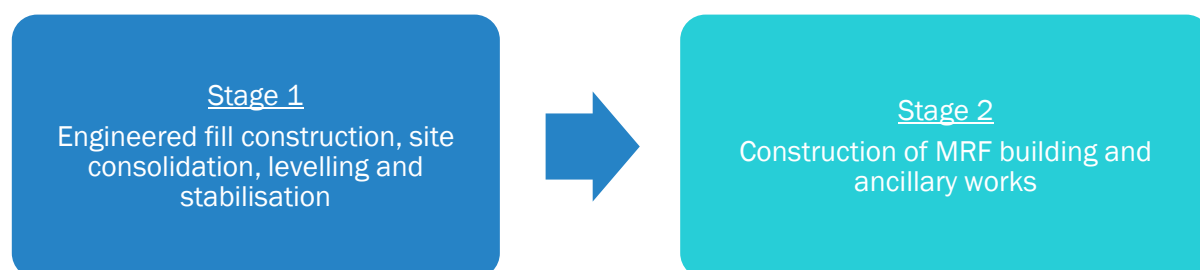


Figure 1.1 Development Phasing

1.4 Scope of this TWMP

This scope of this TWMP is for the proposed Stage 1A works.

This WMP will be updated prior to carrying out any future stages/phases.

2 Purpose and Objectives

2.1 Purpose

The purpose of this TWMP is to describe how Veolia proposes to manage and protect soil and manage stormwater during Stage 1A works.

2.2 Objective

The key objective of the TWMP is to implement water management and erosion and sediment controls to minimise the impacts on water quality downstream of the development within the scope permitted by the development consent.

To achieve this, Veolia will undertake the following:

- ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this WMP;
- ensure appropriate measures are implemented to address the relevant environmental performance criteria specified in the Development Consent (Section 3.2); and
- ensure reasonable and feasible controls (Section 6) and procedures (Section 7) are implemented during site activities to avoid or minimise potential erosion and sedimentation.

2.3 Targets

The following targets have been established for the management of water during Stage 1A works of the Camellia MRF:

- ensure full compliance with the relevant legislative requirements and Conditions of Consent;
- meet water quality discharge parameters for all planned discharges; and
- ensure training on soil and water management is provided to all relevant personnel through site inductions.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

Legislation relevant to soil and water management includes:

- Protection of the Environment Operations Act 1997 (POEO Act);
- Water Management Act 2000 (WM Act);
- Fisheries Management Act 1994 (FM Act); and
- Water Act 1912 (Water Act).

Relevant provisions of the above legislation that relate to the Camellia MRF are explained in Section 3.3 of the EIS (CH2M, 2013).

3.1.2 Guidelines

Guidelines, specifications and policy documents relevant to this WMP include:

- Managing Urban Stormwater, Soils and Construction “Blue Book” (Landcom, 2004);
- NSW Government Department of Primary Industries, Office of Water, Guidelines for Controlled Activities; and
- Department of Environment and Conservation, Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales (DEC, 2004a).

3.2 Conditions of Approval – Soil and Water

The Planning Assessment Commission has granted development consent for the construction and operation of a materials recycling facility at 37 Grand Avenue, Camellia (Lot 1 DP 539890). Schedule 2 Part B lists the Conditions of Consent and environmental performance measures to be implemented as part of the development.

Conditions B6, B7 and B9 are considered as part of the TWMP. Consistent with the CEMP Condition B8 is not triggered as the site is under construction (not operation).

The full set of conditions that relate to Conditions on Soil and Water are considered in the CEMP.

Water Management Plan

- B6. Prior to the commencement of construction of the Development, the Applicant shall prepare a Water Management Plan to the satisfaction of the Secretary. The plan must:
- a. be prepared by a suitably qualified and experienced person(s) in consultation with Council;
 - b. include the details of:
 - i. the Water Management System (see Condition B8);
 - ii. erosion and sediment control measures (see Condition B9); and
 - iii. bunding (see Condition B11)
- B7. The Applicant shall carry out the Development in accordance with the Water Management Plan approved by the Secretary (as revised and approved by the Secretary from time to time), unless otherwise agreed by the Secretary.

Erosion and sediment control

- B9. The Applicant shall implement erosion and sediment control measures on-site in accordance with *Managing Urban Stormwater: Soils and Construction Vol 1*. (Landcom, 2004).

4 WMP consultation

Condition B6 requires a WMP be submitted to City of Parramatta Council (Council) for consultation.

Consultation with Council, approvals from the Department of Planning, Infrastructure and Environment (DPIE) and relevant notifications associated with Stage 1A construction are described below.

- Version 0 of the TWMP (WMP) for Phase 1A and 1B was submitted to Council in December 2016 for information and comment.
- 20 December 2016 – No comments that relate temporary water management had been received from Council.
- 20 December 2016 – Version 1 of the TWMP was released. Council was provided with a copy of this document.

- 2 May 2017 – Veolia received comments from Council on the TWMP version 1 in a letter with the subject “Not for Council approval”. A copy of these comments was forwarded to DPIE for information.
- 25 May 2017 – Veolia received a letter from the DPIE accepting the staging of construction activities and staged submission of the WMP, CEMP and Flood Emergency Response Management Plan (FERMP).
- 27 May 2019 – Completion of consultation process which concluded with acceptance by Parramatta City Council of proposed site stormwater design.

Prior to construction of any future stages/phases of works, the WMP be updated in accordance with the requirements of SSD 4964.

5 Site Description

5.1 General

The Site is located on the Camellia Peninsula as shown in Figure 5.1. The Site is bounded by Parramatta River (waterfront land) to the north, a vacant empty lot with a sealed pavement to the east, Grand Avenue to the south, and two existing industrial facilities to the west.



Figure 5.1 Site Location

The Site covers an area of approximately 20,230 square metres (m²) and is approximately 85 metres (m) wide (east-west) and 238m long (north-south).

The Site is located on land within the 1% AEP. The 1% AEP flood level in Parramatta River is RL +3.63m AHD. Localised flooding may also occur due to heavy wet weather events.

Flooding affects the Site in two ways:

1. Fluvial flooding – flooding from Parramatta River (rising river waters) during very rare and extreme flooding events greater than the 1%AEP; and
2. Pluvial flooding (overland flow) – flooding from rainfall during frequent flooding events >1 EY within the local catchment (to the south-west) on the Camellia peninsula that is conveyed as overland flow along Grand Avenue.

5.2 Site demolition

The Site was demolished with all previous buildings and above-ground structures removed except for the three tanks in the south-eastern corner of the property adjacent to Grand Avenue.

5.3 Decommissioned stormwater system

Prior to Stage 1 preloading, the existing stormwater management system was decommissioned and sealed to prevent the ingress of CrVI contaminated groundwater into the existing stormwater system. Decommissioning involved:

- injection of a hydrophobic foam filler to seal against contaminated groundwater water ingress into:
 - existing stormwater pipes connecting into existing stormwater pits. Pipes were filled up to 10m from the relevant pit.
 - existing stormwater pits. Each pit was filled to 300mm below the pit lid and the remainder of the pits were filled with mass concrete.
- six cut-off trenches that intercepted the contaminated groundwater flow along existing stormwater pipe trenches. Each cut-off trench was filled with a xypex admixture to make the concrete used in the cut-off trench water tight.

The outlet to the existing Pit 1 was plugged with concrete, so that the pit could only operate as a sump. Gravity drainage via Pit 1 is not possible as the existing stormwater system was decommissioned prior to placement of preload at the Site.

Note: Refer to previous versions of the TWMP for details regarding the location of Pit 1.

5.4 Stormwater outlet works

The previous section of existing pipe between Pit P1 (approximately located at the fence line close to Parramatta River) and the outlet to Parramatta River has been removed and replaced with a new section of pipe to prevent infiltration of contaminated groundwater into the new drainage system.

Note: Refer to previous versions of the TWMP for details regarding the location of Pit P1.

5.5 Stage 1

5.5.1 Preload Phase 1A and 1B

The existing sealed pavement areas and concrete building pads formed the base for preload construction. This is referred to as the natural surface level NSL.

Phase 1A and 1B involved placement of fill across the site.

5.5.2 Preload Phase 1C and 1D

Phase 1C involved stripping preload material from Areas B and C to and moving preload material to Area A, further consolidating soils during Phase 1D.

6 Stage 1A Water Management

6.1 Drawings

All drawings that relate to temporary water management for the Stage 1A works are included in Appendix A. Drawings include:

- RAP10 Drawing List & General Notes
- RAP20 Erosion and Sediment Control Plan
- RAP25 Erosion and Sediment Control DetailsRAP30
- RAP30 Bulk Earthworks Plan
- RAP31 Bulk Earthworks Shading Plan
- RAP35 Bulk Earthworks Sections – Sheet 1
- RAP36 Bulk Earthworks Sections – Sheet 2
- RAP40 Stormwater Drainage Plan
- RAP45 Stormwater Drainage Details – Sheet 1
- RAP46 Stormwater Drainage Details – Sheet 2
- RAP48 Stormwater Long sections
- RAP50 RAP Capping Plan & Details

The above drawings should be used as a guide when implementing the water management and sediment and erosion control measures at the Site.

6.2 Water management

Site levelling

During site levelling and the installation of the stormwater system, existing water management measures would be maintained.

Temporary dewatering may be required if perched groundwater or the water table are intersected during installation of the stormwater system to maintain dry conditions in the excavation. The small amounts of extracted water would be stored at the site in tanks, tested and disposed at a licensed facility as required.

Water management features to support ongoing water management

Veolia will implement the following water management features for the Stage 1A.

- Surface flow under gravity for the entire site.
- A bio-retention rain garden along the northern boundary.
- A new pit (Pit A1) connected to Pit A2 which outlets stormwater directly to Parramatta River.
- Two new pits along the located along the southern boundary that collect runoff from the front of the site and pipe this into the existing Grand Avenue drainage system.

Existing water management measures associated with previous phases will be decommissioned.

6.3 Sediment and erosion control

Veolia will implement the following sediment & erosion control features whilst the site is undergoing levelling:

- Silt fences around the boundary of the Site, pit filters and a truck tyre shaker, if required to avoid the tracking of soil, dirt and other materials onto public roads.

Once the site is sealed, erosion control will no longer be necessary, however if deemed appropriate by Veolia, the silt fence may remain. Sediment control will be assisted by bio-retention rain garden.

7 Compliance

7.1 Monitoring and records

The following monitoring and record keeping will be undertaken.

- During the Stage, all inspections of water management systems (including sediment and erosion controls shall be documented.
- Any non-conformances and incidents that relate to the water management system (including system failures) will be immediately reported to the contractor and Veolia and immediately rectified.
- The Site must be inspected and all sediment and erosion controls returned to good working order following (as applicable):
 - rainfall of greater than 29.5mm over a five-day period¹, when the site is being levelled; or
 - rainfall events of equal to or greater than the 20% Annual Exceedance Probability event, once the site is sealed.

7.2 Training

All relevant employees and contractors working on site will undergo site induction training, which will cover issues relating to soil and water management including:

- the existence and requirements of this plan;
- relevant legislation;
- water quality management and protection measures; and
- procedures to be implemented in the event of an unexpected discovery of contaminated land.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with key roles in soil and water management onsite. Examples of training topics include:

- soil and water management control installation methodology;
- dewatering;
- working near or in drainage lines and creeks;
- emergency response measures in high rainfall events;
- preparedness for high rainfall events;
- lessons learnt from incidents and other events;
- spill response; and
- Identification of potentially contaminated material.

7.3 Weather monitoring

Rainfall will be measured and recorded in millimetres per 24-hour from 9am each day either using an On-Site gauge (once installed) or using latest weather observation data from the

¹ 5 day 80th percentile rainfall event.

Australian Government Bureau of Meteorology Gauge 066124 Parramatta North (Masons Drive)² or another suitable nearby gauge. Results will be included as part of monitoring and records.

8 Review and improvement

8.1 Continuous improvement

Continuous improvement of this WMP will be undertaken through the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process is designed to:

- identify areas of opportunity for improvement of environmental management and performance;
- determine the cause or causes of non-conformances and deficiencies;
- develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- verify the effectiveness of the corrective and preventative actions;
- document any changes in procedures resulting from process improvement; and
- make comparisons with objectives and targets.

8.2 WMP update and amendment

The processes described in Section 7 and 8 of this WMP and in the CEMP may result in the need to update or revise this WMP.

The approval of updates or revisions to the WMP will need to be considered in accordance with the *Stage 1 Preloading CEMP* (Veolia, 2016). Updates will be reviewed by the Veolia Environment Manager and Site Project Manager.

² <http://www.bom.gov.au/products/IDN60801/IDN60801.94764.shtml>

9 References

CH2M (2013), *Camellia Recycling Centre Environmental Impact Statement*, 22 February 2013.

Douglas Partners (2014), *Report on Geotechnical Assessment, Proposed Warehouse Building 37 Grand Ave Camellia*, Project 73879.00, June 2014.

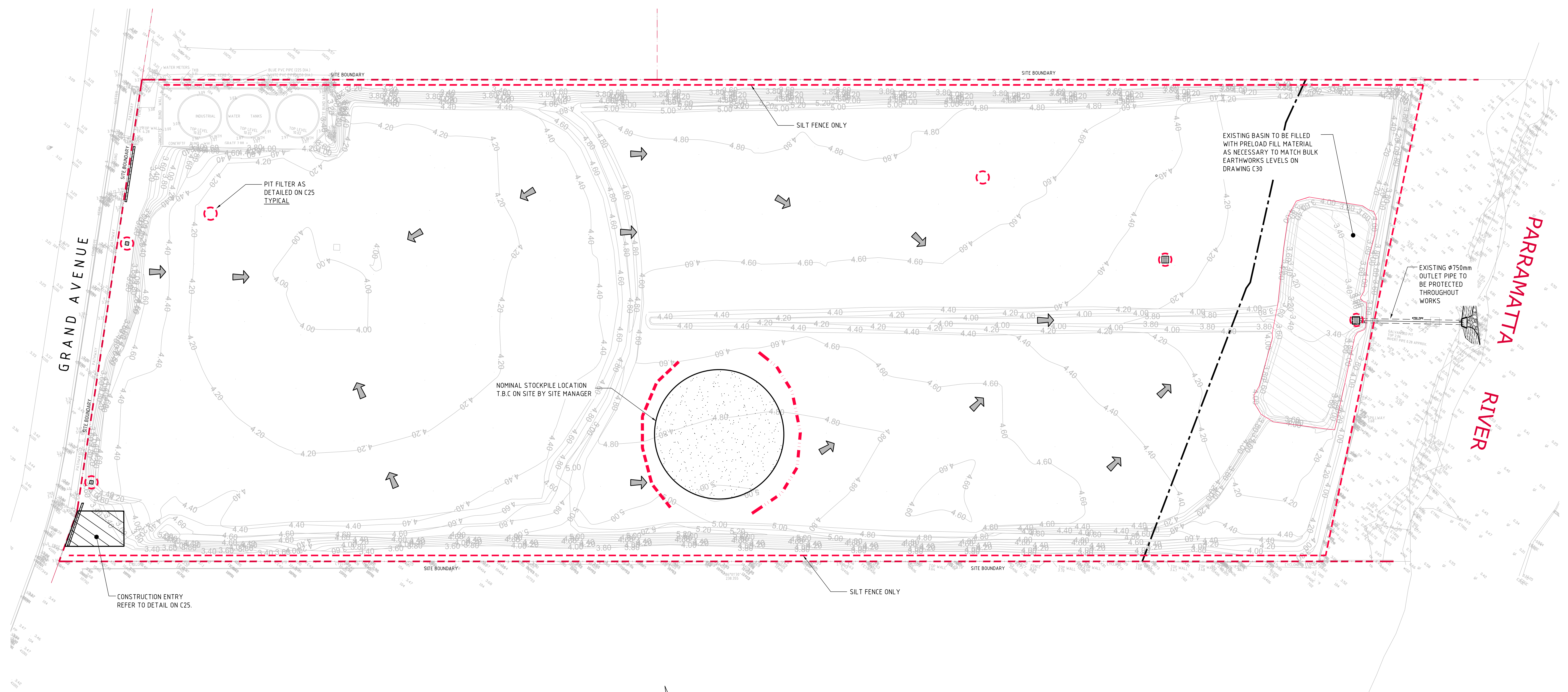
Landcom (2004), *Managing Urban Stormwater, Soils and Construction “Blue Book”*, 4th Edition, March 2004.

Pells Sullivan Meynink (2016a), David Piccolo to Danny Barac. November 28, 2016 In *Camellia Commercial and Industrial Materials Recycling Facility, 37 Grand Avenue Camellia, Interim Geotechnical Design Advice*, PSM3141-007L, 28 November 2016.

Pells Sullivan Meynink (2016b), *37 Grand Avenue Camellia – Bulk Earthwork Specification Filling, Cutting and Testing (With Preload Fill)*, PSM3141-008S Rev 0, 25 November 2016.

Veolia (2016), *Construction Environmental Management Plan (CEMP) Stage 1 Preloading*.

Appendix A – Drawings



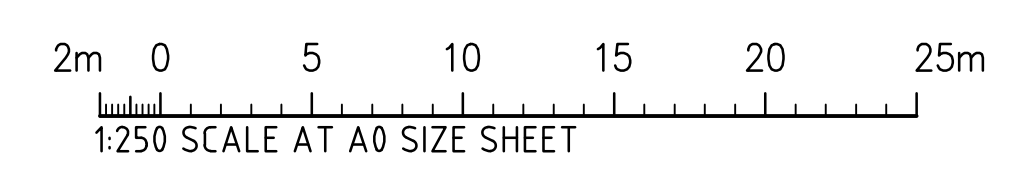
EROSION & SEDIMENT CONTROL PLAN
1:250 SCALE

LEGEND:
 PROVIDE 1m RETURNS TO SILT FENCE AT 30m MAX. INTERVALS. TYPICAL (IN S.O.P.)

- DENOTES DIRECTION OF OVERLAND FLOW
- DENOTES SILT FENCE ONLY
- DENOTES GRATED INLET PIT FILTER

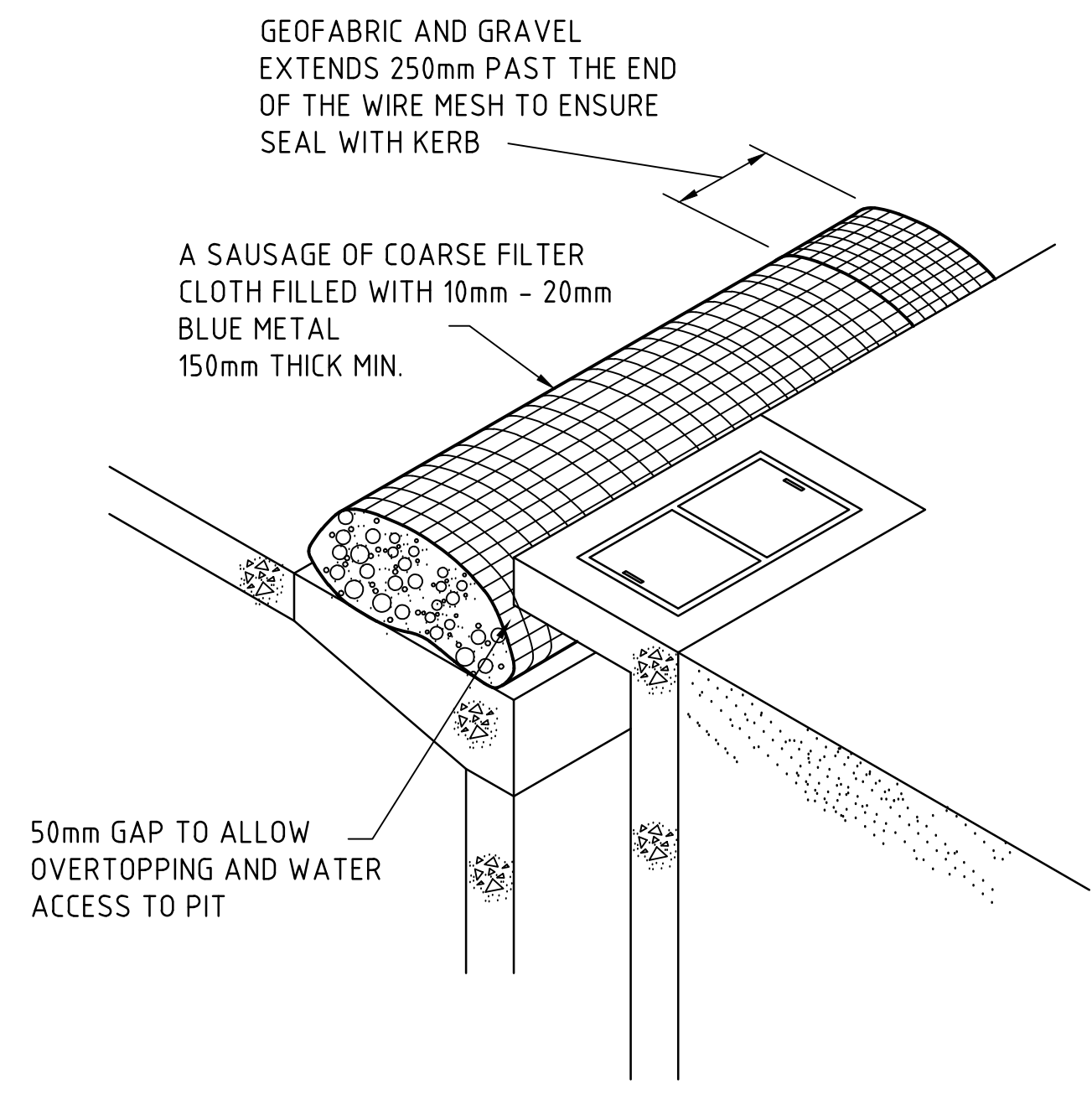
NOTE:
 REFER TO DRAWING C013189.03-RAP10 FOR EROSION CONTROL NOTES.

EROSION & SEDIMENT DEVICES NOTE:
 ALL EROSION & SEDIMENT CONTROL DEVICES AS DETAILED ON REMEDIAL WORKS DRAWINGS & CURRENTLY INSTALLED ARE TO BE KEPT IN PLACE AND MAINTAINED AS PART OF THE PROPOSED DEVELOPMENT WORKS.

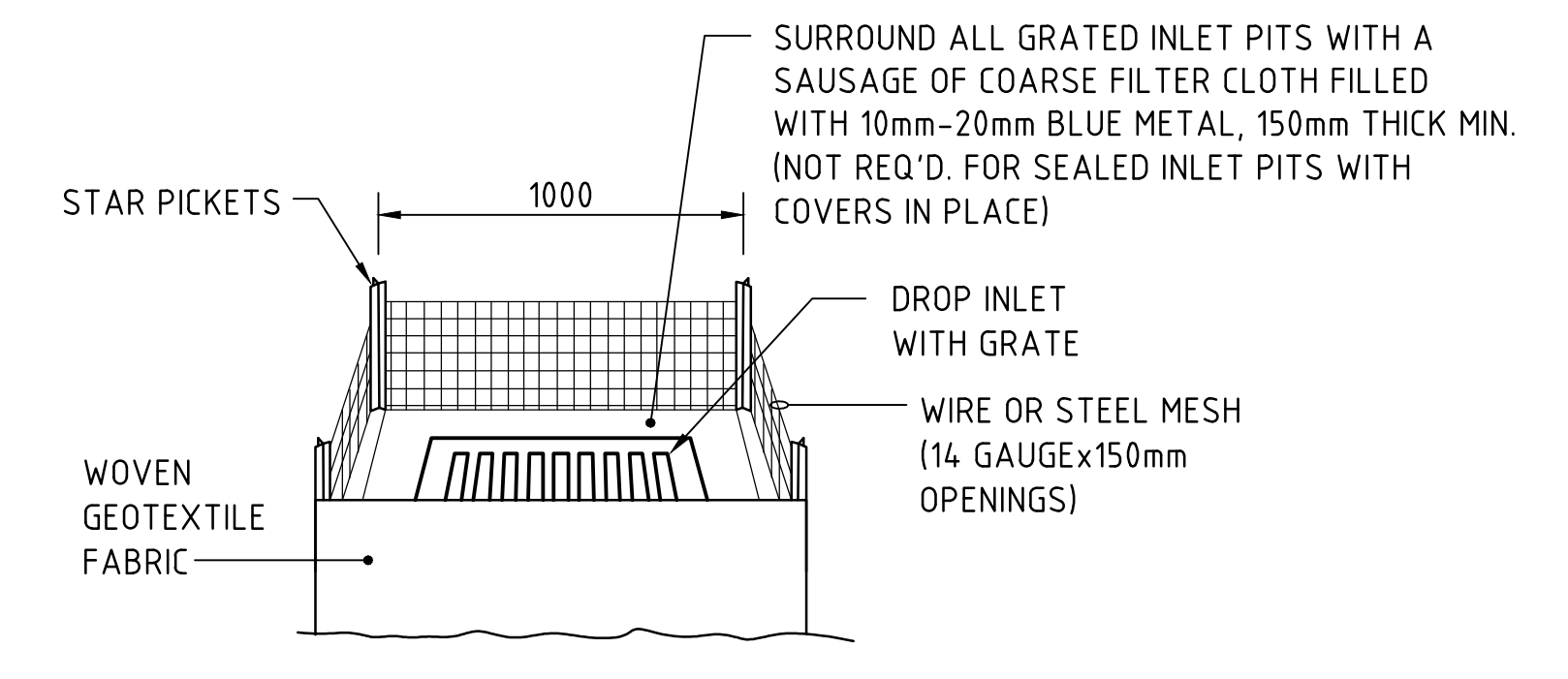


FOR CONSTRUCTION

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AMENDMENTS DATE ISSUE AMENDMENTS DATE ISSUE			CLIENT			PROJECT			CONSULT AUSTRALIA			DRAWING No C013189.03-RAP20		
									PRECISION COMMUNICATION ACCOUNTABILITY			ISSUE 0		

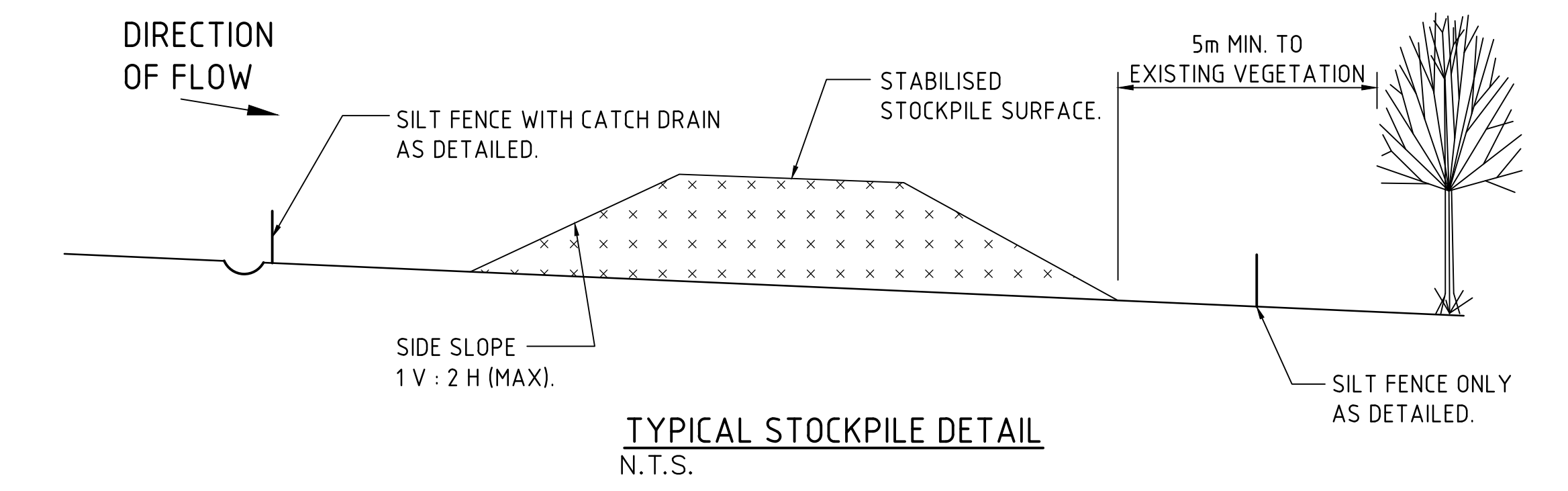


KERB INLET CONTROL
N.T.S.



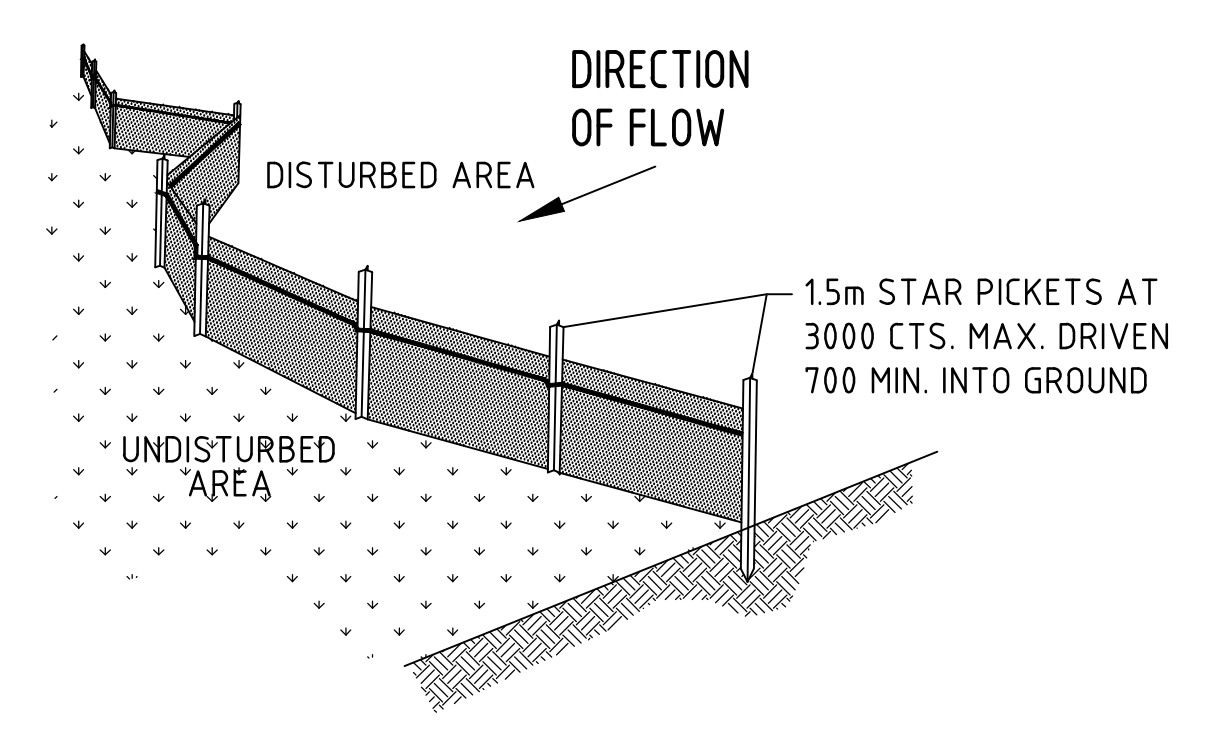
GRADED INLET PIT FILTER DETAIL
N.T.S.

NOTE: ADOPT ABOVE DETAILS AROUND ALL PITS WITHIN AREA ENCOMPASSED BY SILT FENCE & TO PITS ON THE ROAD ADJACENT TO SITE BOUNDARY.

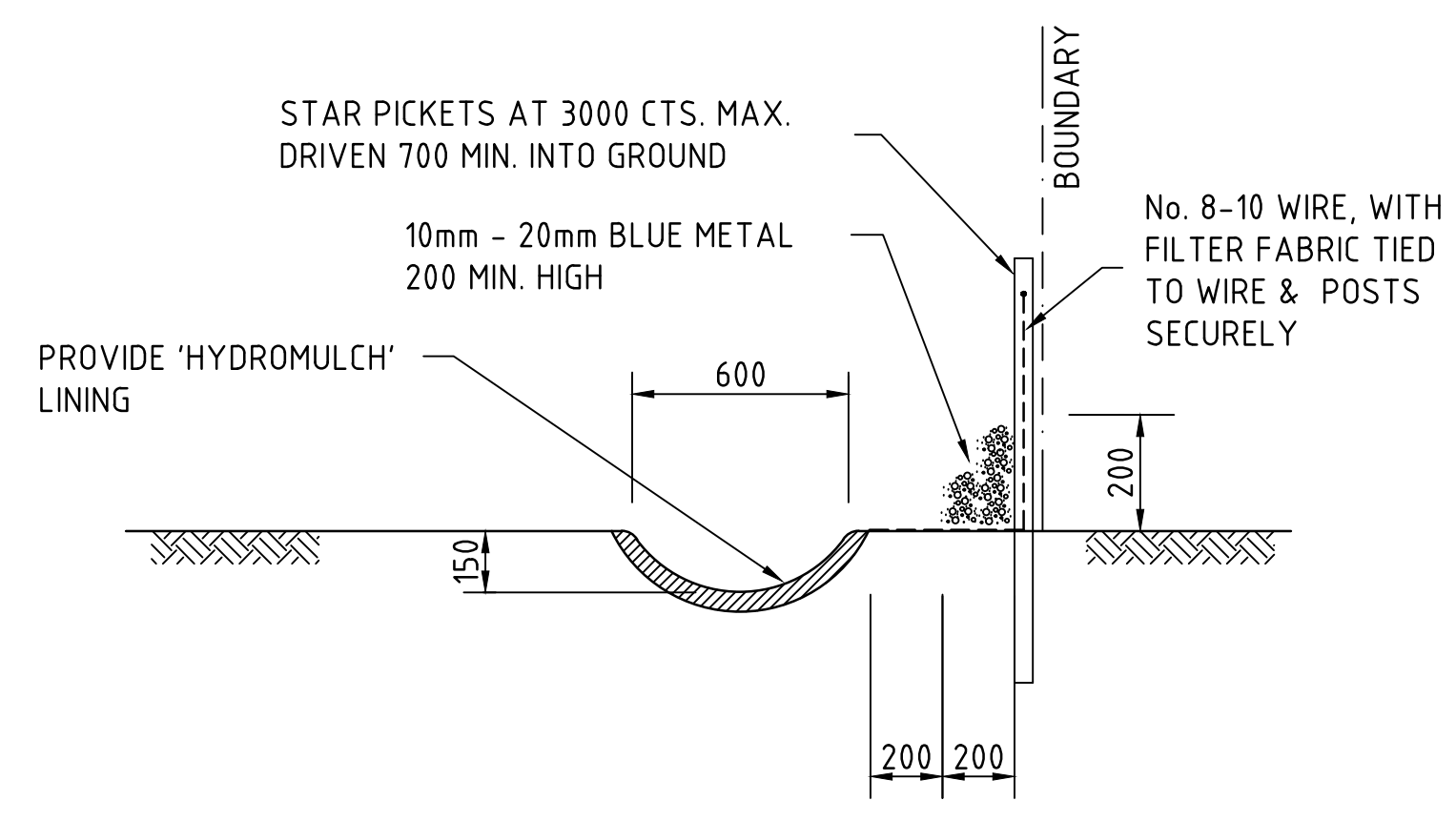


TYPICAL STOCKPILE DETAIL
N.T.S.

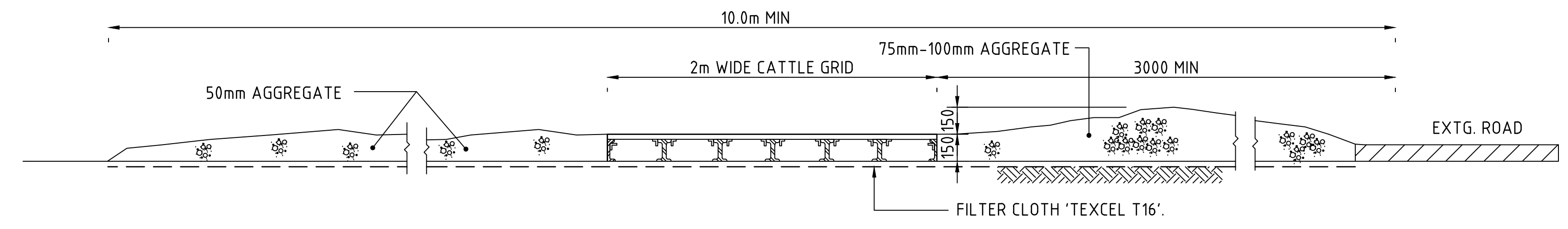
- STOCKPILE NOTES**
1. PLACE ALL STOCKPILES IN LOCATIONS MORE THAN 5m FROM EXISTING VEGETATION, ROADS & HAZARD AREAS.
 2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT ELONGATED MOUNDS. SIDE SLOPE TO BE 1 V: 2 H MAX.
 3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
 4. WHERE STOCKPILES ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE USING WOOD CHIP MULCH - 16 TONNE/Ha.
 5. CONSTRUCT SILT FENCE WITH CATCH DRAIN ON UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES & SILT FENCE ONLY 1 TO 2m DOWNSLOPE AS SHOWN.



TYPICAL SILT FENCE DETAIL
N.T.S.
PROVIDE 1m RETURNS AT 30m INTERVALS.
TYPICAL

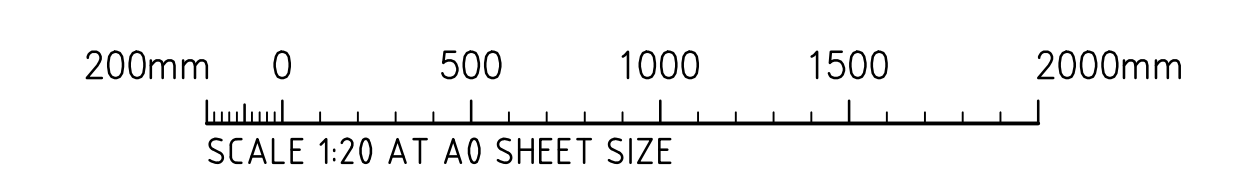


TYPICAL OPEN DRAIN & SILT FENCE
SCALE 1:20



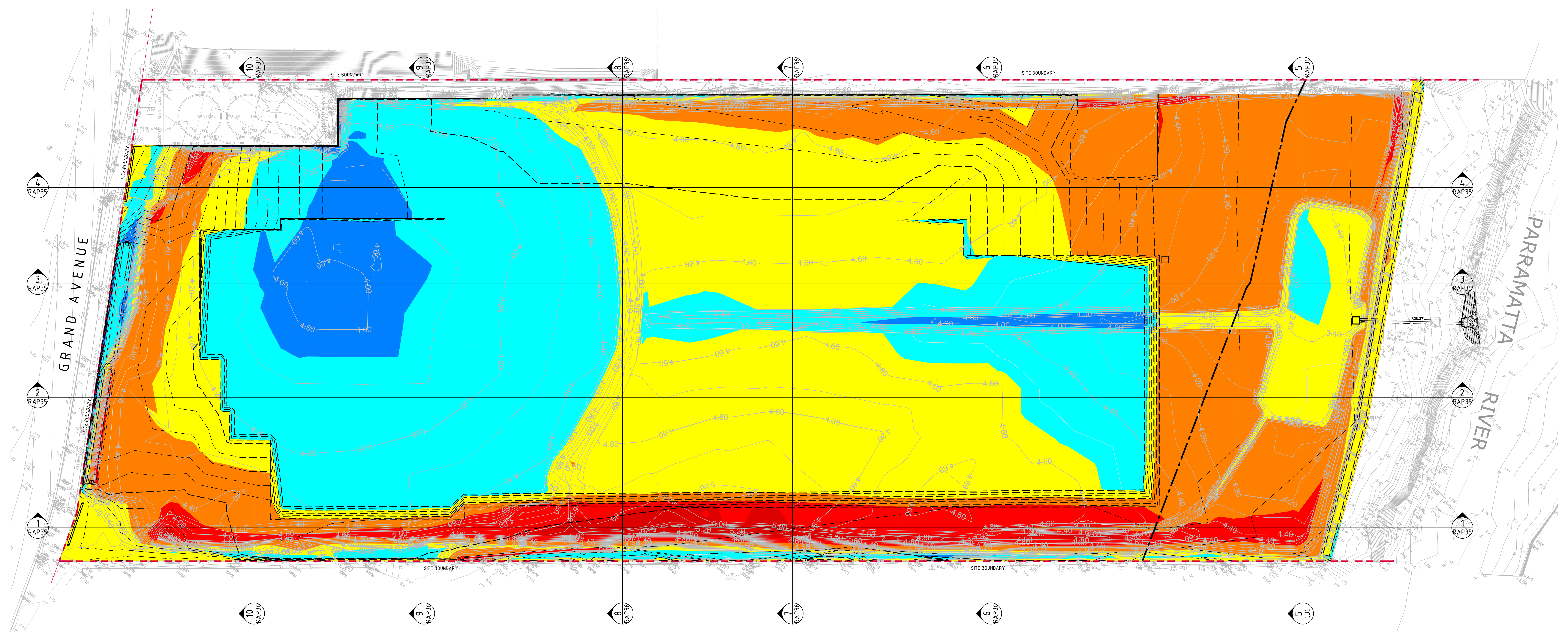
SECTION 1:20 (1/20): STABILISED CONSTRUCTION ENTRANCE 'TRUCK SHAKER'

- NOTES:**
- ALL EROSION & SEDIMENT CONTROL MEASURES TO BE INSPECTED & MAINTAINED DAILY BY SITE MANAGER.
 - MINIMISE DISTURBED AREAS.
 - ROADS & FOOTPATHS TO BE SWEEPED DAILY.
 - 1.2m TURF TO BE PLACED BEHIND KERBS.
 - DUST MINIMISATION CONTROL BY WATERING TO BE IMPLEMENTED BY SITE MANAGER AS REQUIRED OR AS DIRECTED BY THE EPA.



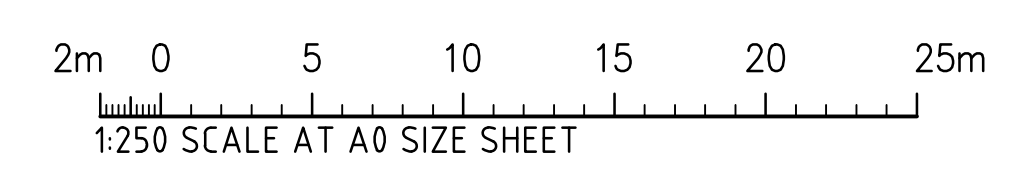
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ISSUED FOR PRICING		26/06/19	B	VEOLIA		CAMELLIA MATERIALS RECYCLING FACILITY REMEDIATION ACTION PLAN WORKS		37 GRAND AVENUE, CAMELLIA, NSW, 2142		CONSULTING ENGINEERS Level 1, 8 Windmill Street Walsh Bay, Sydney NSW 2000 Tel: (02) 9251-7899 Fax: (02) 9241-3721 email: mail@costinroe.com.au ©		
ISSUED FOR PRICING		07/12/18	A	PRECISION COMMUNICATION ACCOUNTABILITY		DESIGNED: XC		DRAWN: SM		DATE: DEC 18		
AMENDMENTS		DATE	ISSUE	AMENDMENTS		DATE		ISSUE				



DEPTH RANGE				
No.	FROM DEPTH	TO DEPTH	COLOUR	DEPTH RANGE VOLUME
1	-2.000	-1.500	Red	27m ³
2	-1.500	-1.000	Orange	313m ³
3	-1.000	-0.500	Yellow	1706m ³
4	-0.500	0.000	Light Yellow	4420m ³
5	0.000	0.500	Cyan	1820m ³
6	0.500	1.000	Blue	66m ³
7	1.000	1.500	Dark Blue	2m ³


BULK EARTHWORKS SHADING PLAN
 1:250 SCALE



FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION	01/11/19	0
ISSUED FOR PRICING	26/06/19	B
ISSUED FOR CONSULTATION	07/12/18	A
AMENDMENTS	DATE	ISSUE

AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE

ARCHITECT

CLIENT

VEOLIA

PROJECT
CAMELLIA MATERIALS RECYCLING FACILITY
 REMEDIATION ACTION PLAN WORKS
 37 GRAND AVENUE, CAMELLIA, NSW, 2142

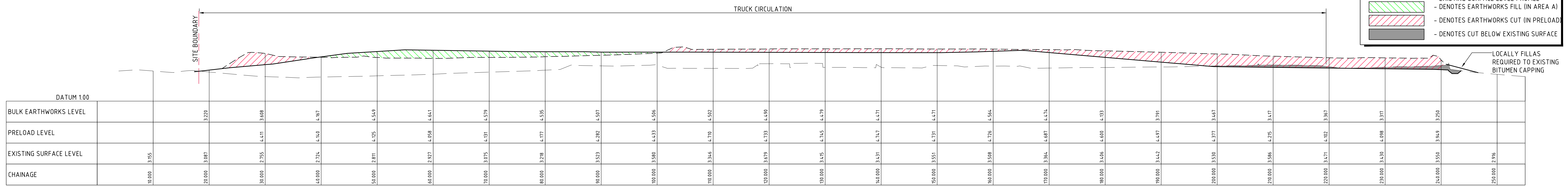
CONSULT AUSTRALIA
 Costin Roe Consulting Pty Ltd.
 Consulting Engineers
 Level 1, 9 Windmill Street
 Walsh Bay, Sydney NSW 2000
 Tel: (02) 9251-7899 Fax: (02) 9241-3721
 email: mail@costinroe.com.au

Costin Roe Consulting
 PRECISION | COMMUNICATION | ACCOUNTABILITY

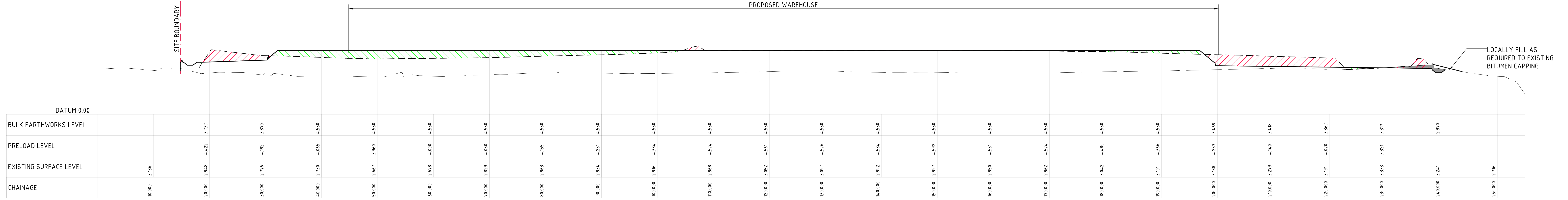
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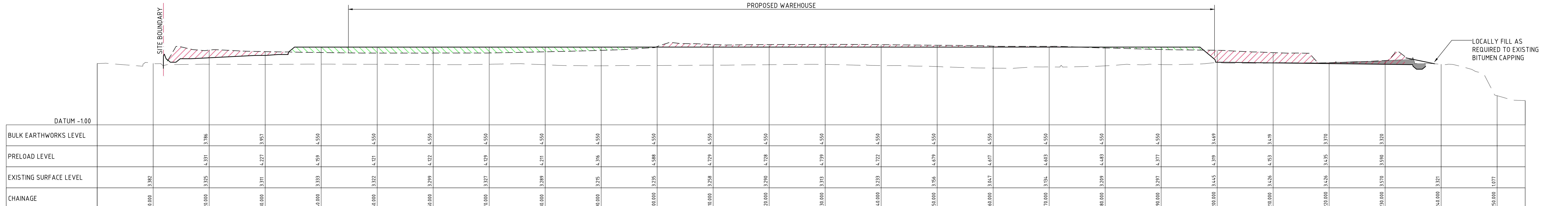
- BULK EARTHWORKS LEVEL PROFILE
- PROPOSED PRELOAD LEVEL PROFILE
- EXISTING SURFACE LEVEL PROFILE
- DENOTES EARTHWORKS FILL (IN AREA A)
- DENOTES EARTHWORKS CUT (IN PRELOAD)
- DENOTES CUT BELOW EXISTING SURFACE



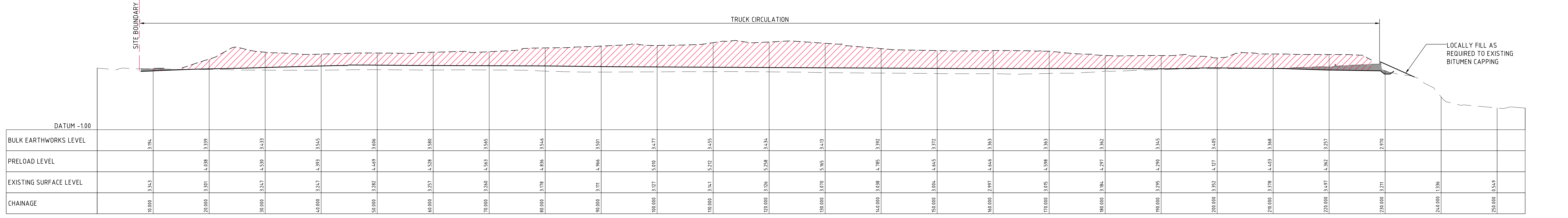
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 VERTICAL SCALE 1:100



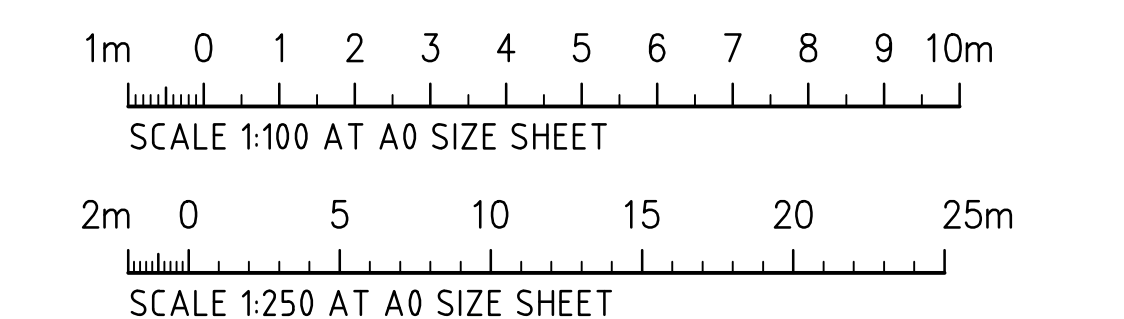
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 HORIZONTAL SCALE 1:250
 VERTICAL SCALE 1:100



SECTION 2
 HORIZONTAL SCALE 1:250
 VERTICAL SCALE 1:100



SECTION 1
 HORIZONTAL SCALE 1:250
 VERTICAL SCALE 1:100

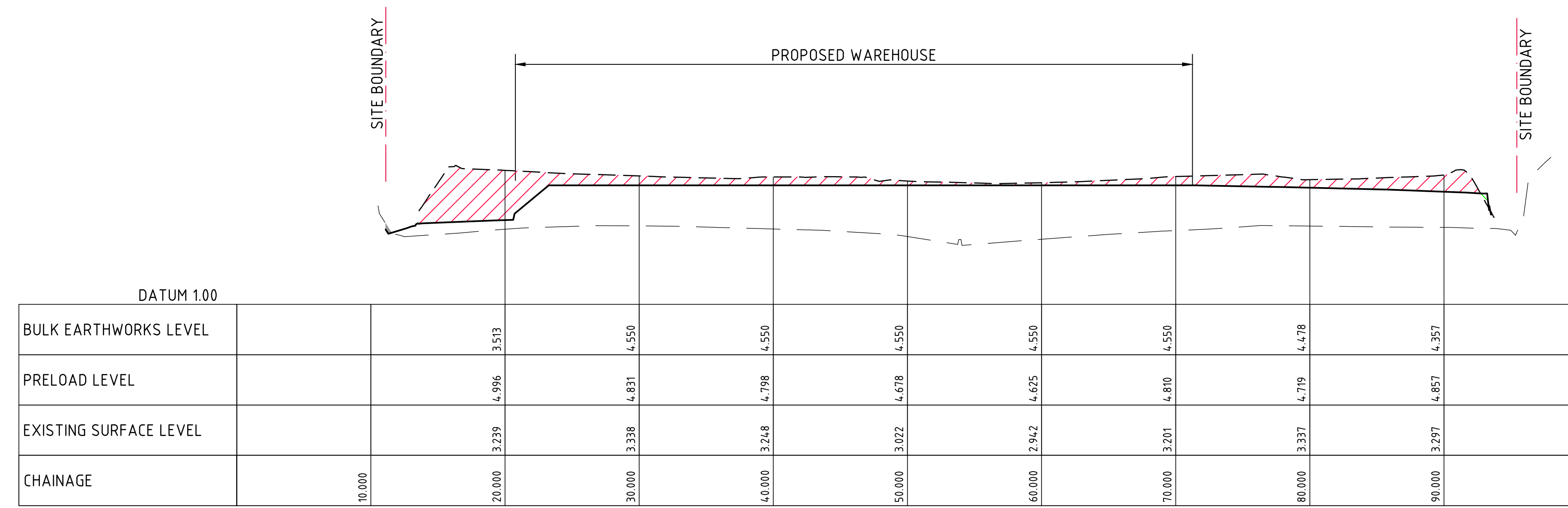


FOR CONSTRUCTION

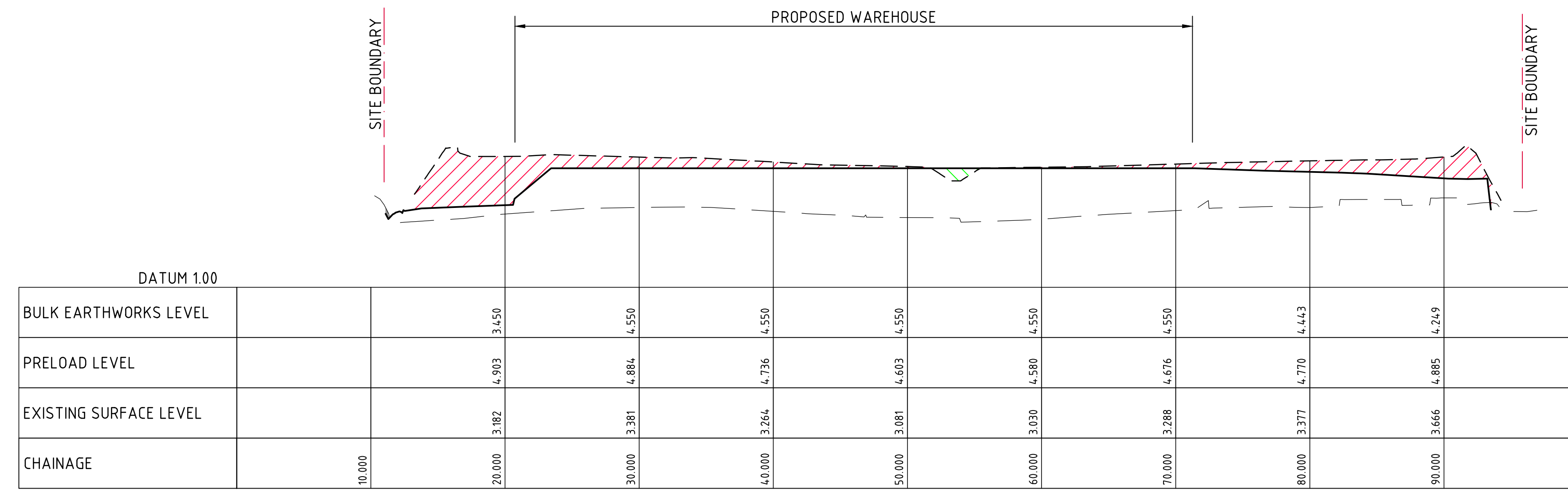
PROJECT CAMELLIA MATERIALS RECYCLING FACILITY REMEDIATION ACTION PLAN WORKS 37 GRAND AVENUE, CAMELLIA, NSW, 2142	CLIENT 	ARCHITECT Costin Roe Consulting Pty Ltd. Consulting Engineers Level 1, 9 Midland Street Walsh Bay, Sydney NSW 2000 Tel: (02) 9251-7899 Fax: (02) 9241-3721 email: mail@costinroe.com.au	DRAWING TITLE BULK EARTHWORKS SECTIONS SHEET 1	DRAWING No C013189.03-RAP35	ISSUE 0
PRECISION COMMUNICATION ACCOUNTABILITY					

LEGEND:
LEVELS DATUM IS AHD.

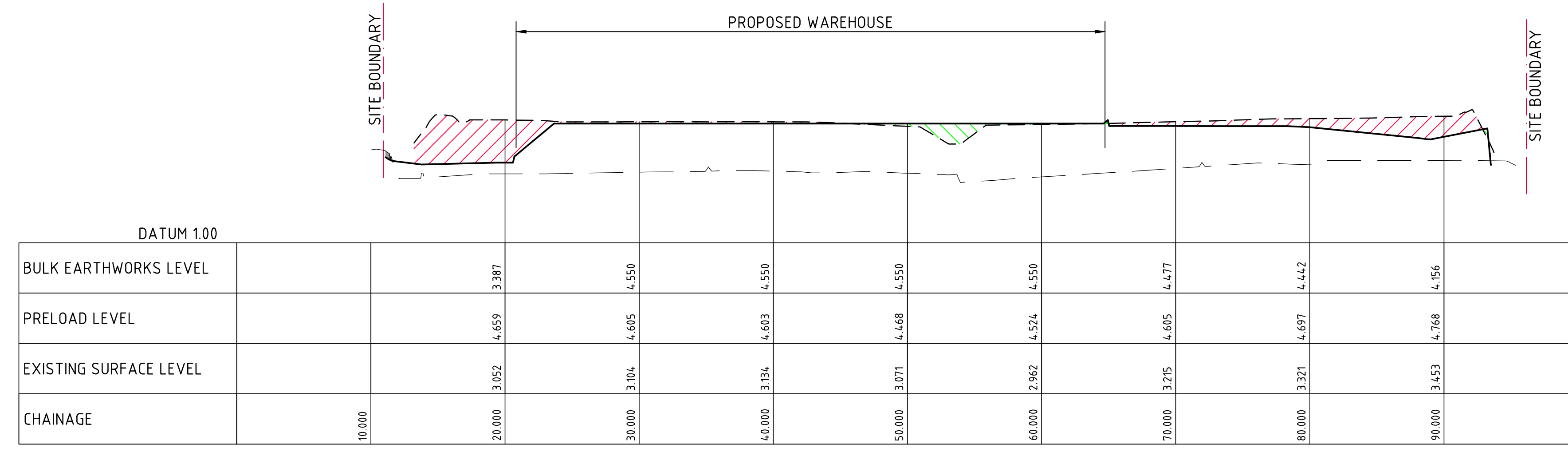
- BULK EARTHWORKS LEVEL PROFILE
- PROPOSED PRELOAD LEVEL PROFILE
- EXISTING SURFACE LEVEL PROFILE
- DENOTES EARTHWORKS FILL (IN AREA A)
- DENOTES EARTHWORKS CUT (IN PRELOAD)
- DENOTES CUT BELOW EXISTING SURFACE



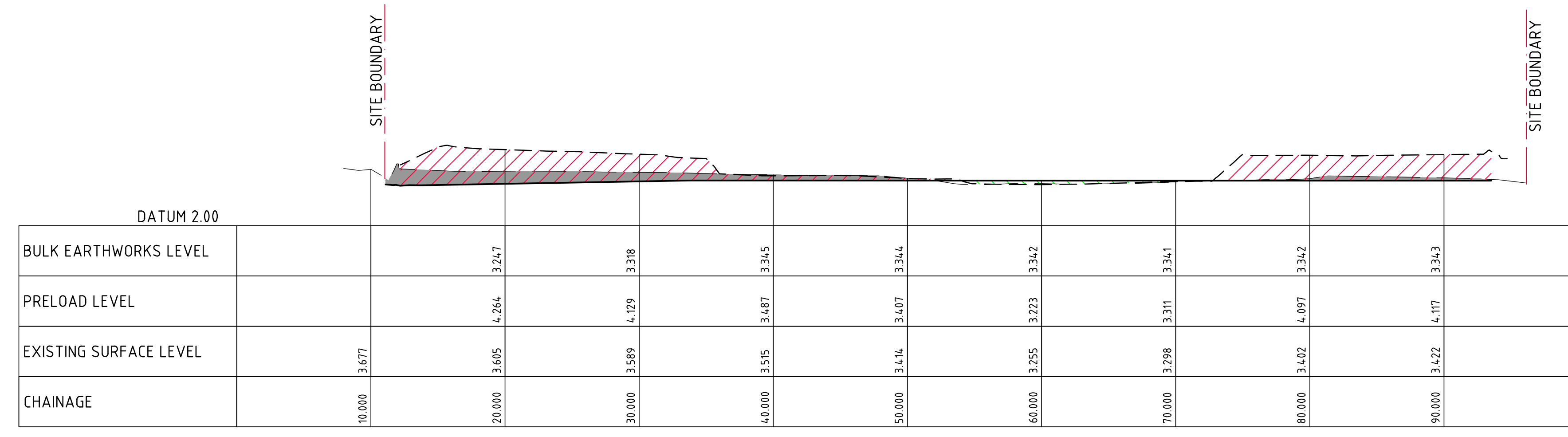
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HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:100



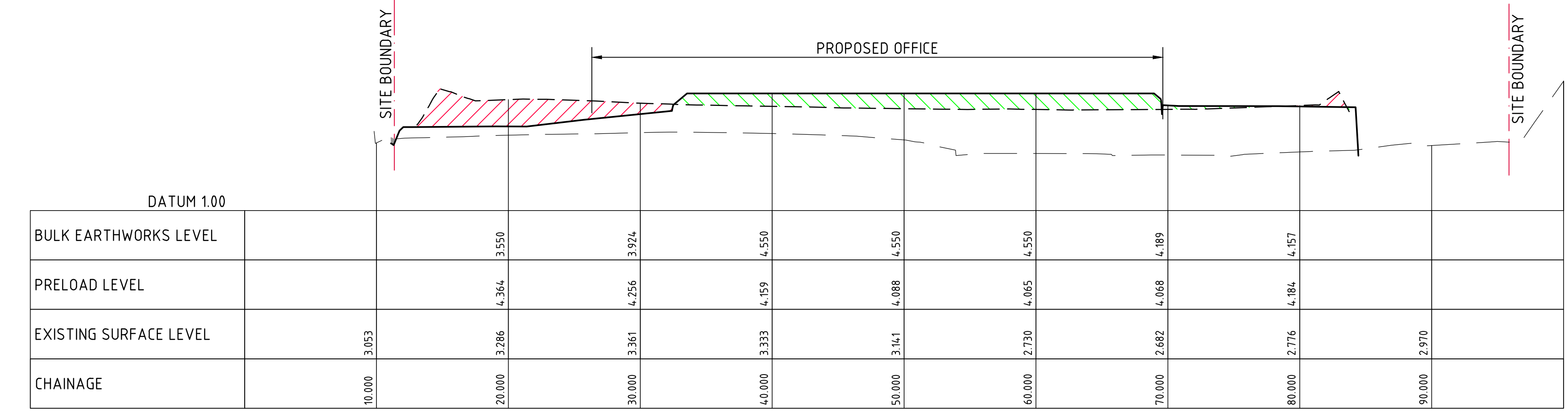
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VERTICAL SCALE 1:100



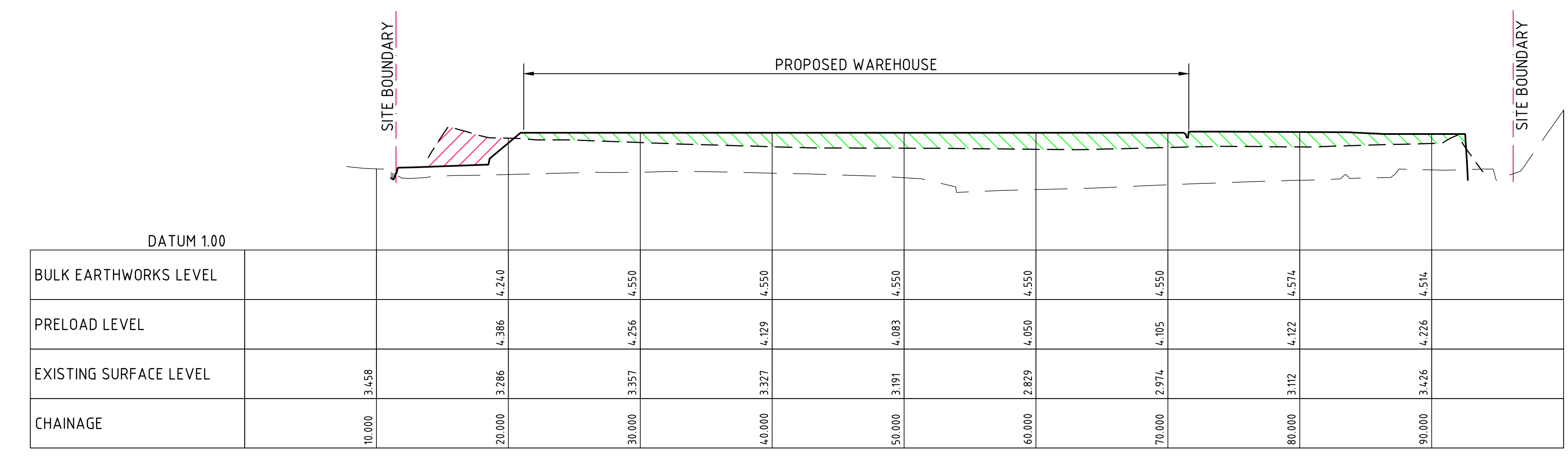
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VERTICAL SCALE 1:100



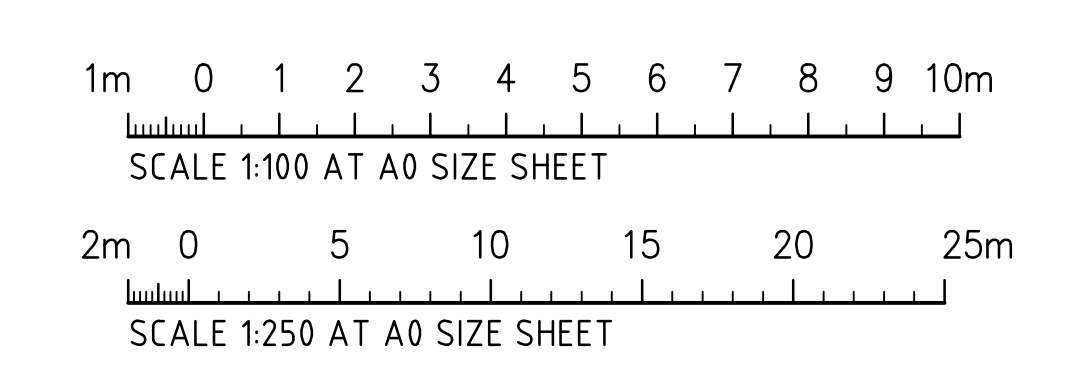
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VERTICAL SCALE 1:100



SECTION 10
HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:100

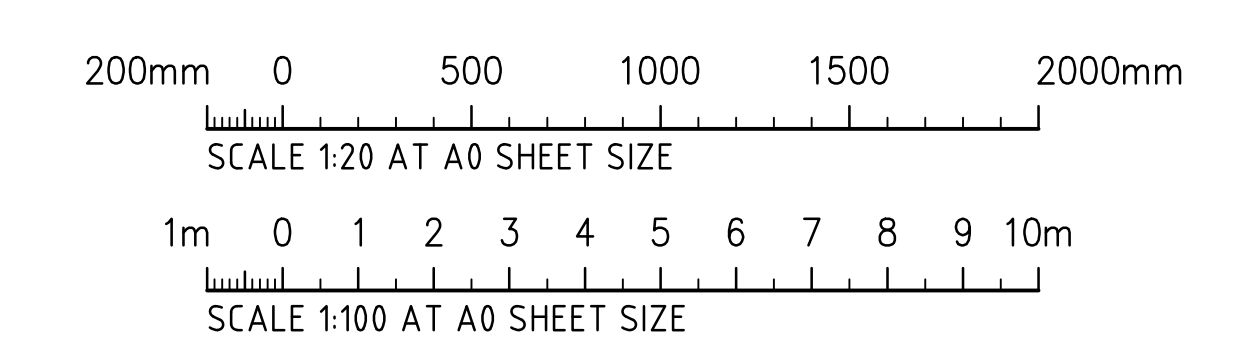
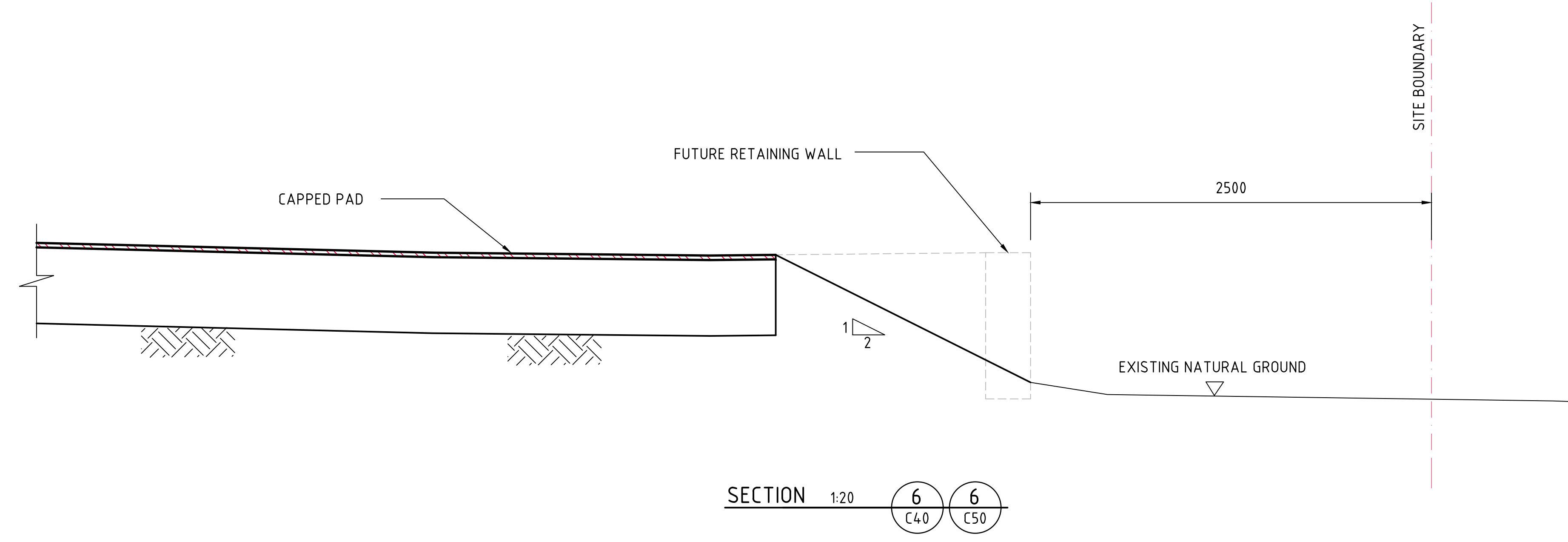
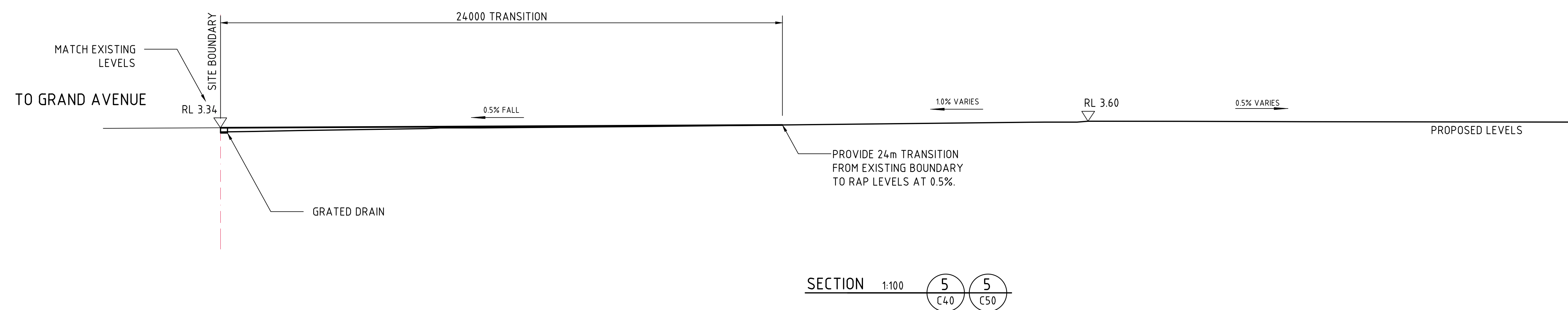
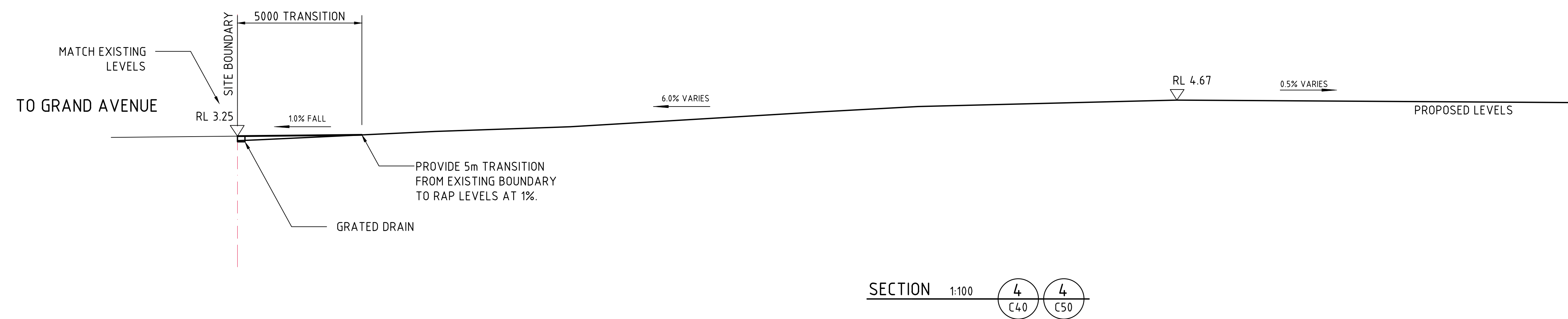
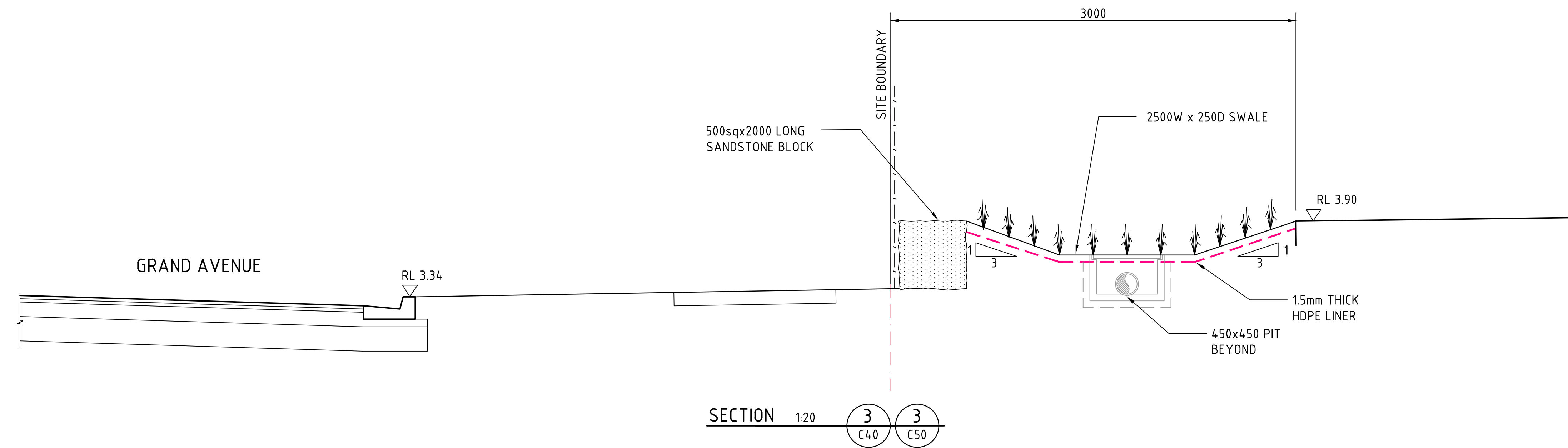


SECTION 9
HORIZONTAL SCALE 1:250
VERTICAL SCALE 1:100



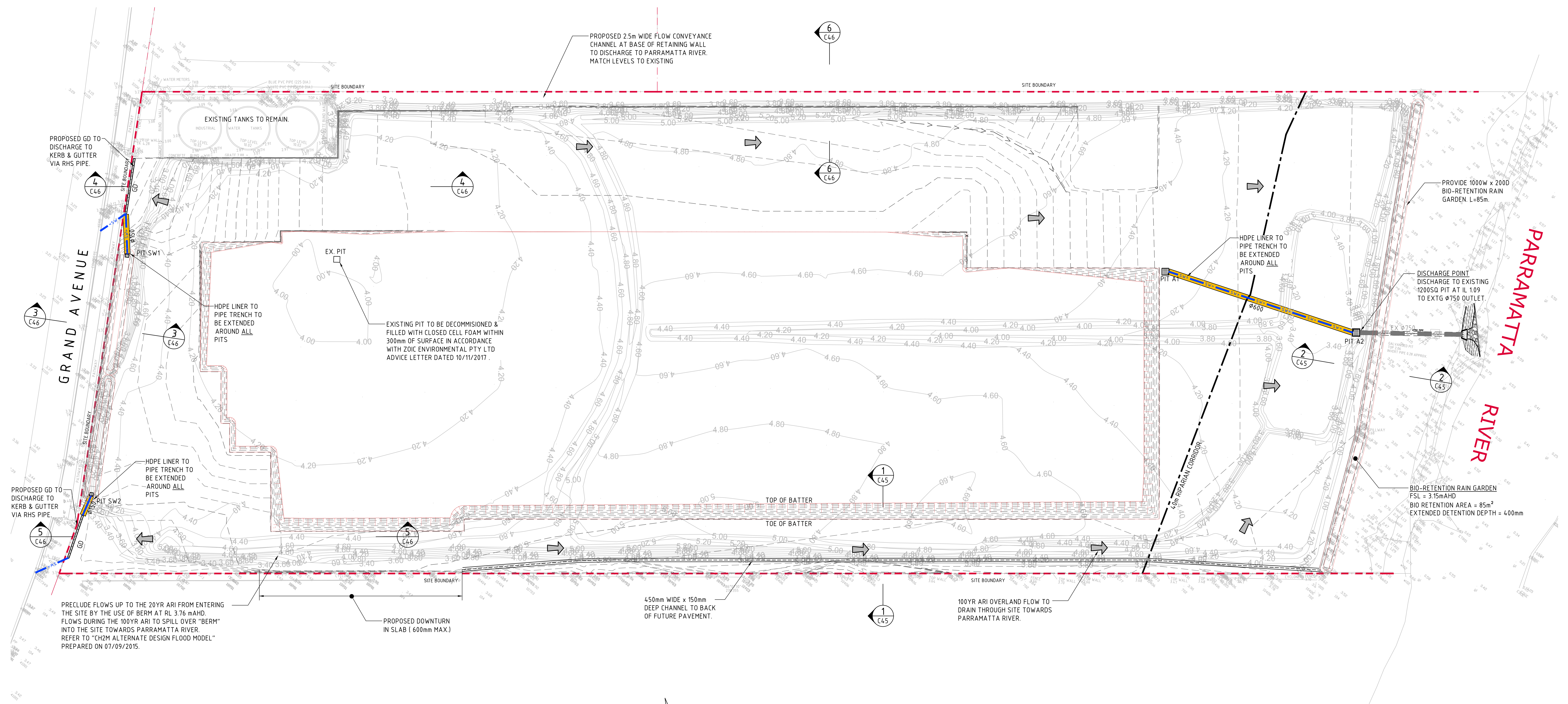
FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION		01.10.19	0	ARCHITECT		CLIENT		PROJECT		COSTIN ROE CONSULTING PTY LTD.		DRAWING TITLE	
ISSUED FOR PRICING		26.06.19	B	VEOLIA		CAMELLIA MATERIALS RECYCLING FACILITY REMEDIATION ACTION PLAN WORKS		37 GRAND AVENUE, CAMELLIA, NSW, 2142		Consulting Engineers		BULK EARTHWORKS SECTIONS SHEET 2	
ISSUED FOR PRICING		07.12.18	A	AMENDMENTS		DATE		ISSUE		PRECISION COMMUNICATION ACCOUNTABILITY		DRAWING No. C013189.03-RAP 36	
AMENDMENTS		DATE	ISSUE	AMENDMENTS		DATE		ISSUE		PRECISION COMMUNICATION ACCOUNTABILITY		ISSUE 0	



FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION		01.10.19	D	ARCHITECT		CLIENT		PROJECT		COSTIN ROE CONSULTING PTY LTD.		DRAWING TITLE STORMWATER DRAINAGE DETAILS SHEET 2
ISSUED FOR PRICING		13.08.19	C	VEOLIA		CAMELLIA MATERIALS RECYCLING FACILITY REMEDIAL ACTION PLAN WORKS 37 GRAND AVENUE, CAMELLIA, NSW, 2142		Level 1, 8 Widdowall Street Wahib Bay, Sydney NSW 2000 Tel: (02) 9251-7899 Fax: (02) 9241-3721 email: mail@costinroe.com.au		PRECISION COMMUNICATION ACCOUNTABILITY		
ISSUED FOR PRICING		13.12.18	B	AMENDMENTS		AMENDMENTS		DESIGNED		DRAWN		DRAWING No C013189.03-RAP46
ISSUED FOR PRICING		07.12.18	A	DATE		ISSUE		CHECKED		SCALE		
AMENDMENTS		DATE	ISSUE	AMENDMENTS		DATE		AS SHOWN		CAD REF: C013189.03-RAP46		ISSUE
												0



STORMWATER DRAINAGE PLAN
1:250 SCALE

LEGEND:
LEVELS DATUM IS AHD.

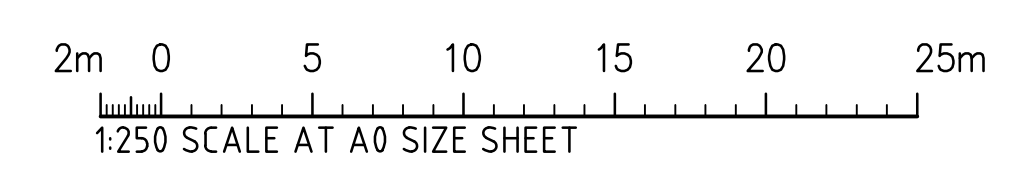
- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- DRAINAGE LINE
- RISING MAIN
- SUBSOIL LINE
- ROOFWATER LINE
- SYPHONIC LINE
- GRATED DRAIN (300W x 250D)
- OVERLAND FLOW DIRECTION
- FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

PIT SCHEDULE

PIT No.	GRATE RL	DEPTH	TYPE	SIZE	COMMENT
PIT SW1	3.65	290	SGGP	450x450	SWALE INLET
PIT SW2	3.55	200	SGGP	450x450	SWALE INLET
PIT A01	3.46	1210	SGGP	1500x1500	SYPHONIC BREAK PIT
PIT A02	3.30	2210	SGGP	1200x1200	EXISTING PIT

NOTE:
D-C CONTRACTOR TO MAKE ALLOWANCE FOR OTHER SERVICES CONNECTION FROM EXISTING NETWORK FOR SEWER / WATER / TELECOM / ETC.

NOTE:
DISTURBANCE TO THE EXISTING (PRIOR TO PRELOAD) SUBSURFACE IS REQUIRED FOR THE INSTALLATION OF STORMWATER PIPES SHOWN ON THIS PLAN. CONTRACTOR TO ALLOW FOR APPROXIMATELY 450mm EXCAVATION INTO EXISTING GROUND FOR THE STORMWATER DRAINAGE. EXCAVATION VOLUME INTO SUBSURFACE TO BE CALCULATED BY D-C CONTRACTOR BASED ON SITE CONDITIONS AND TRENCHING / BENCHING REQUIREMENTS. ALL PROPOSED DRAINAGE LINES TO BE INSTALLED BELOW GROUND LEVEL (PRIOR TO PRELOAD) TO BE WRAPPED IN AN IMPERMEABLE LINER (HDPE) TO THE SATISFACTION OF THE SITE AUDITOR.



FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION	01.10.19	0					
REVISED AS CLOUDED	13.08.19	E					
REVISED AS CLOUDED	28.06.19	D					
ISSUED FOR PRICING	26.06.19	C					
REVISED AS CLOUDED	13.12.18	B					
ISSUED FOR PRICING	07.12.18	A					
AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE

ARCHITECT

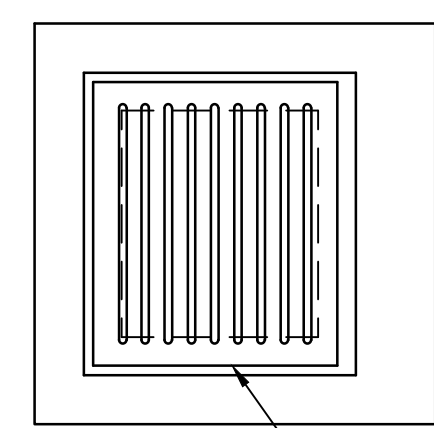
CLIENT
VEOLIA

PROJECT
**CAMELLIA MATERIALS RECYCLING FACILITY
REMEDIAL ACTION PLAN WORKS**
37 GRAND AVENUE, CAMELLIA, NSW, 2142

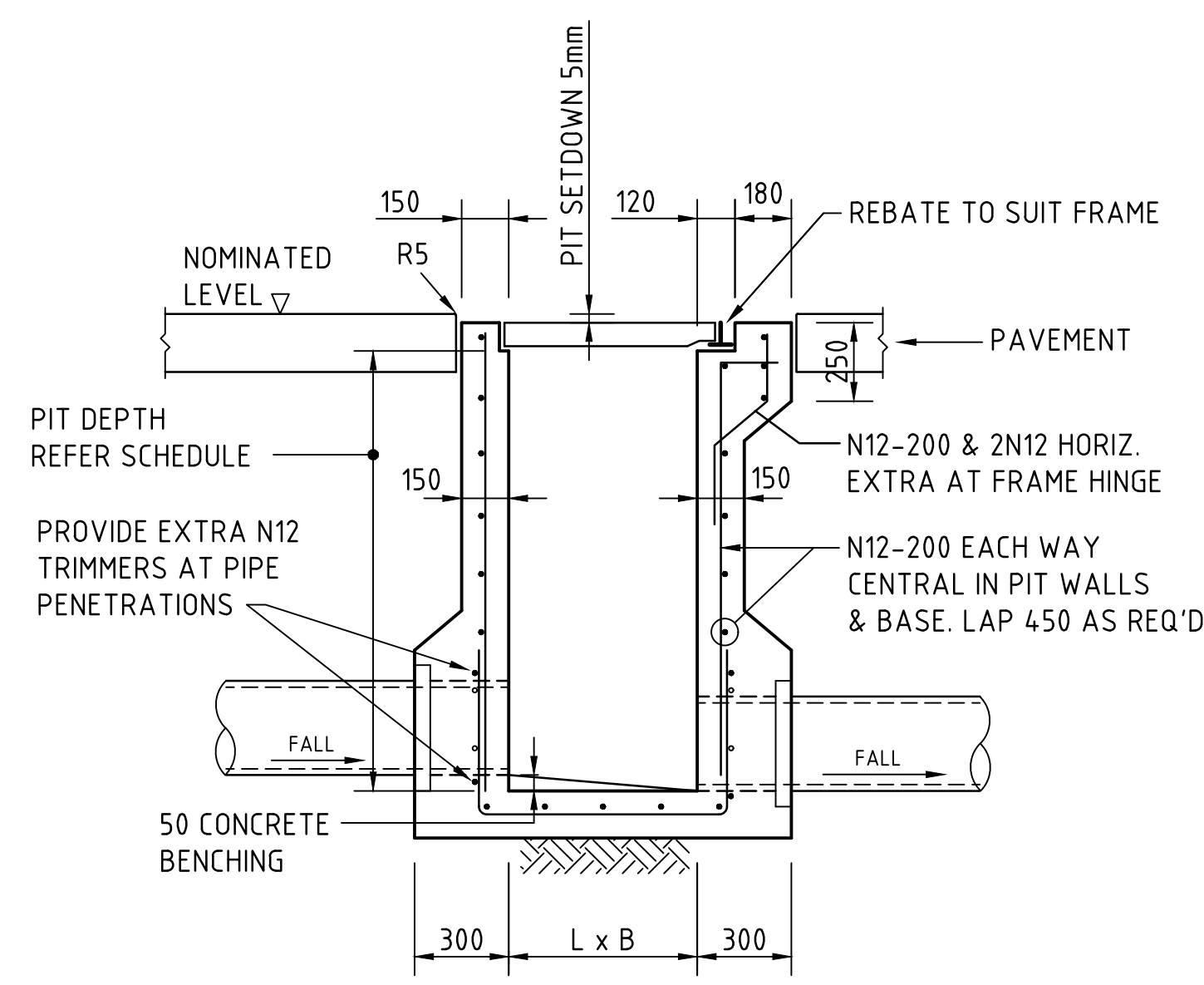
COSTIN ROE CONSULTING AUSTRALIA
Costin Roe Consulting Pty Ltd.
Consulting Engineers
Level 1, 9 Windmill Street
Wahib Bay, Sydney NSW 2000
Tel: (02) 9251-7899 Fax: (02) 9241-3721
email: mail@costinroe.com.au

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DRAWING TITLE
STORMWATER DRAINAGE PLAN
DRAWING No. **C013189.03-RAP40** ISSUE **0**

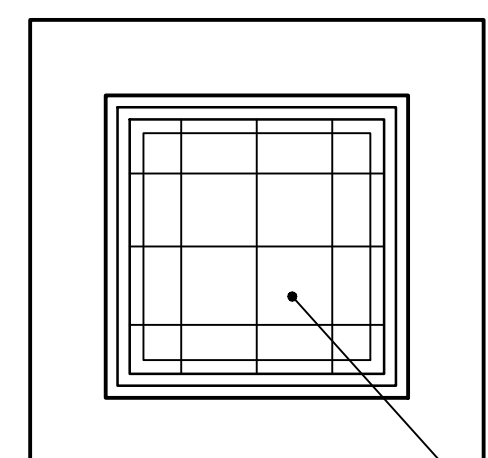


PLAN
SCALE 1:20

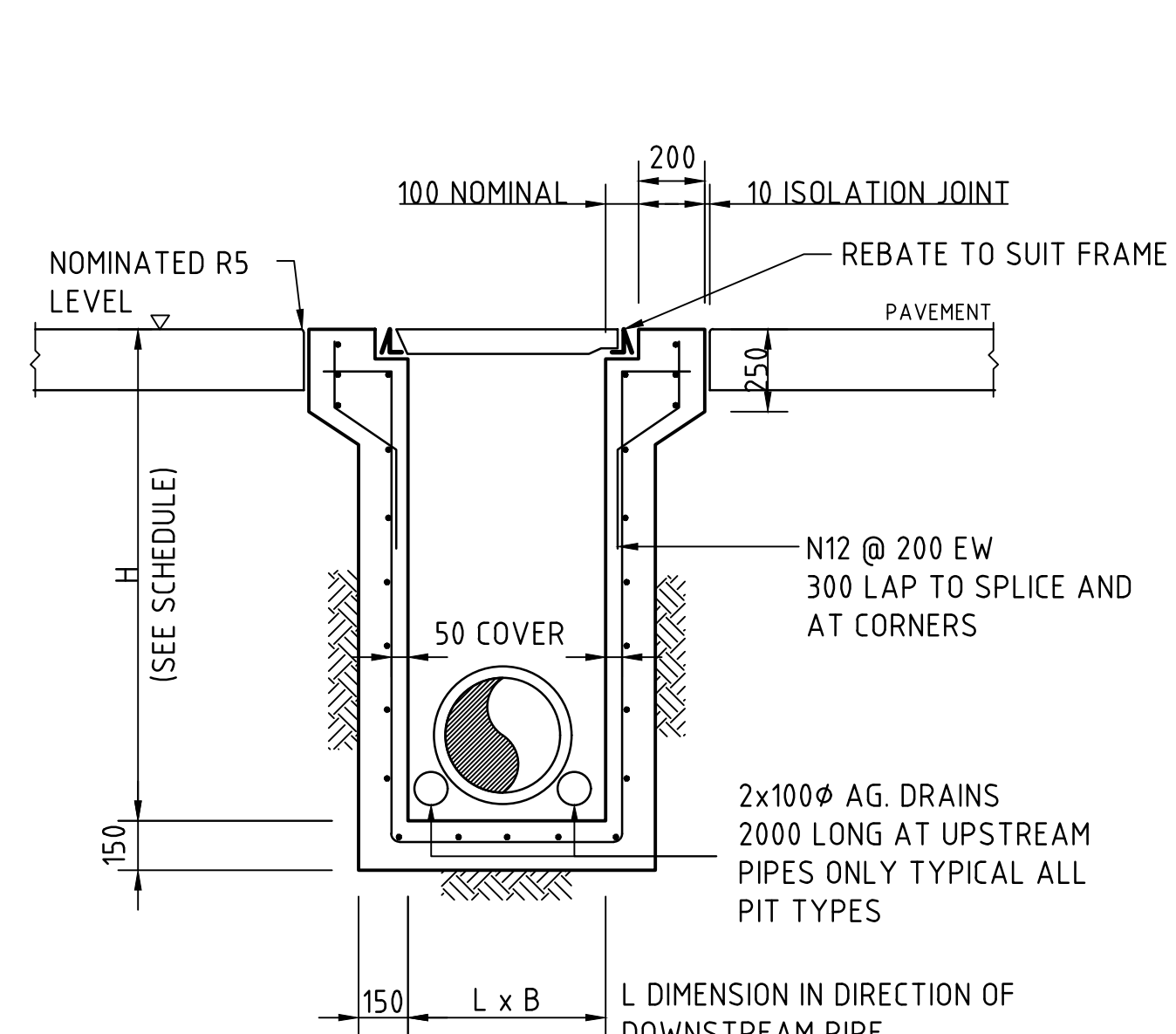


SECTION
SCALE 1:20

SINGLE GRATED GULLY PIT - SGGP



PLAN
1:20



SECTION
SCALE 1:20

SEALED JUNCTION PIT - SJP

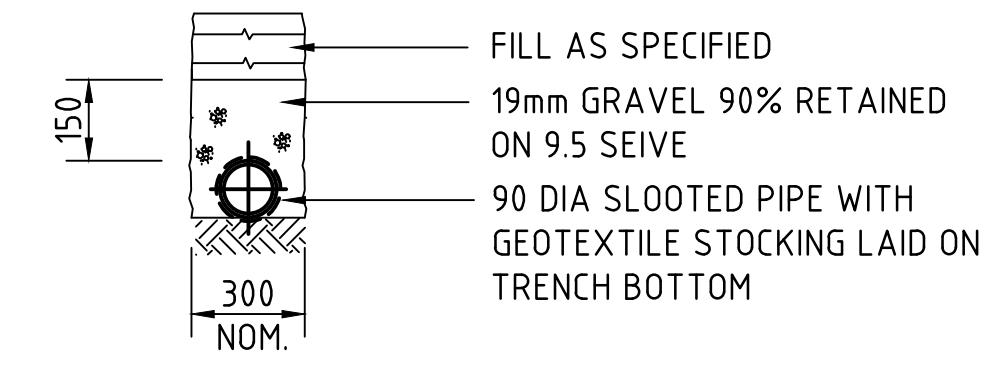
BEDDING & HAUNCH MATERIAL GRADING	
SIEVE SIZE	WEIGHT PASSING(%)
19	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

SIDE ZONE MATERIAL GRADING	
SIEVE SIZE	WEIGHT PASSING(%)
75	100
9.5	100 TO 50
2.36	100 TO 30
0.60	50 TO 15
0.075	25 TO 0

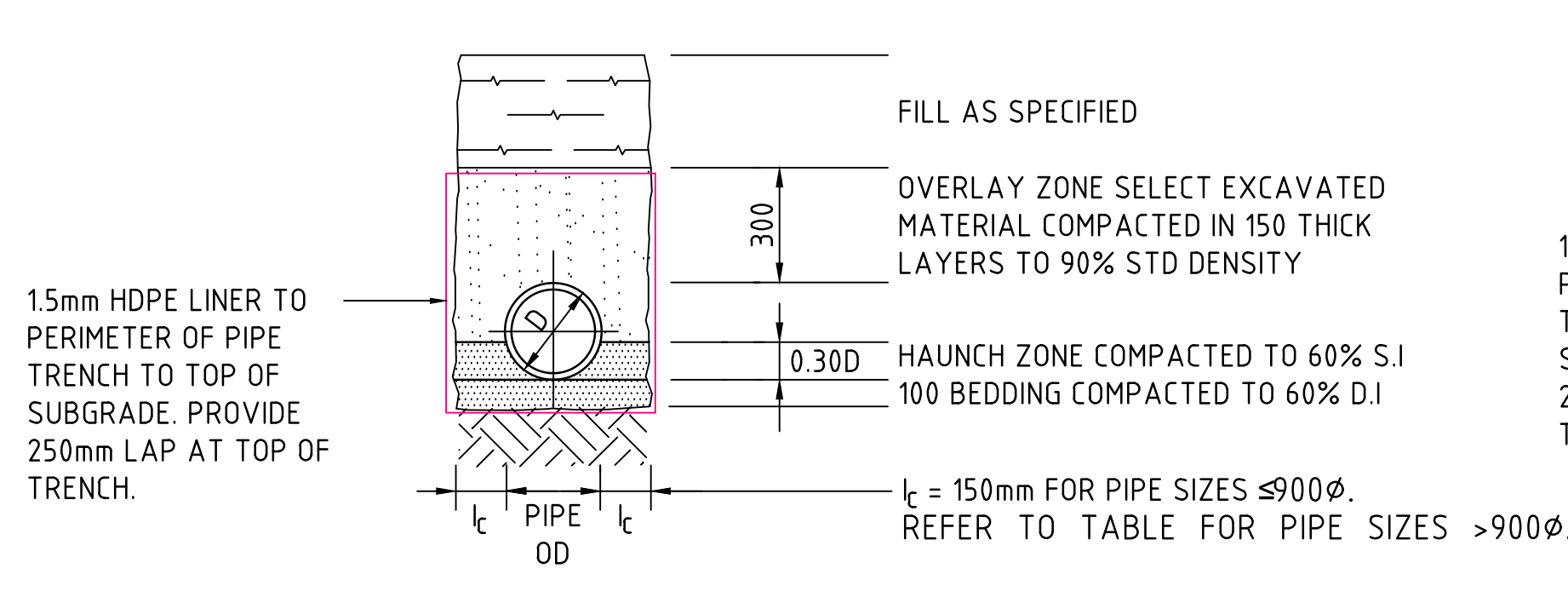
SELECT FILL MATERIAL IN ACCORDANCE WITH TABLE 1 AS 3725

SIDE ZONE WIDTH	
PIPE SIZE	L (mm)
≤900Ø	150
1050Ø	175
1200Ø	200
1350Ø	225
1500Ø	250
1650Ø	275
1800Ø	300

REFER TO ENGINEER FOR TRENCH WIDTHS FOR PIPE SIZES GREATER THAN 1800Ø

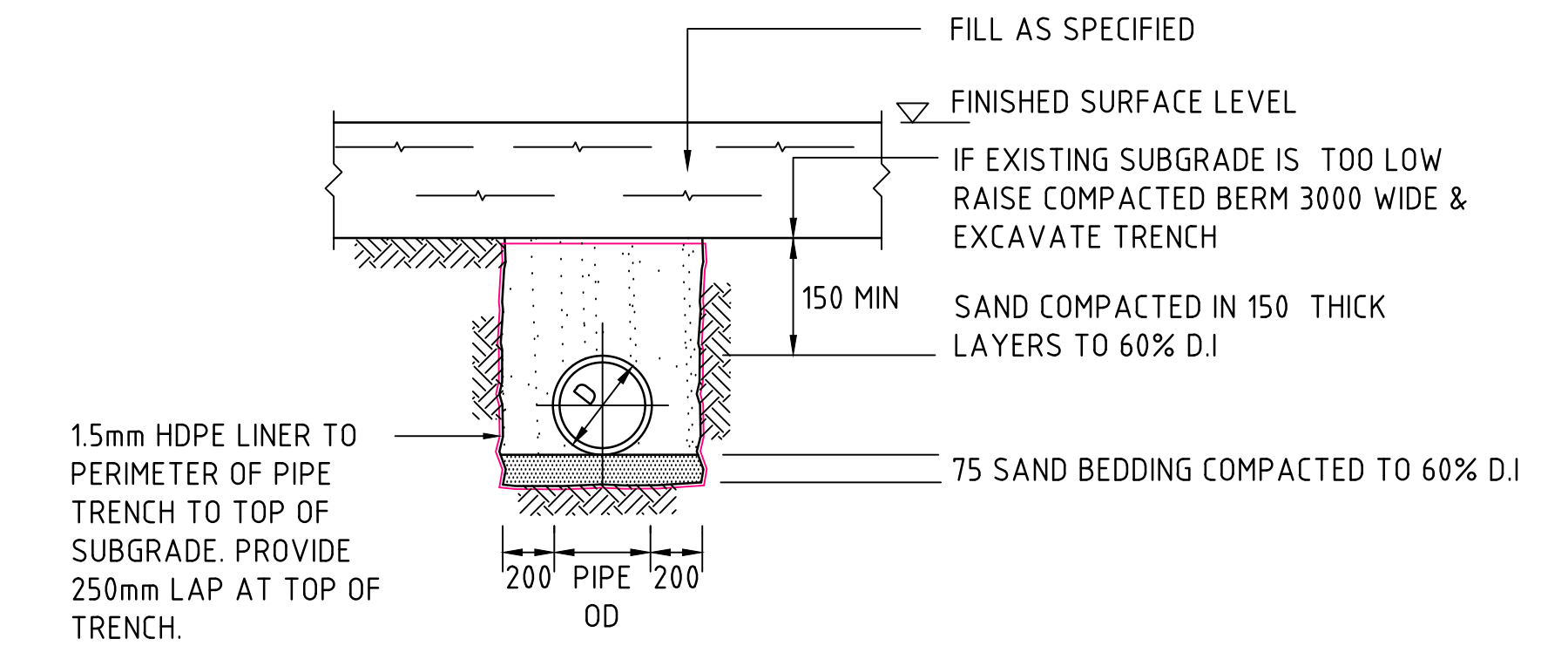


SUPPORT TO AG DRAIN
AG-LINES TO BE KEPT WHOLLY WITHIN THE PIPE TRENCH.

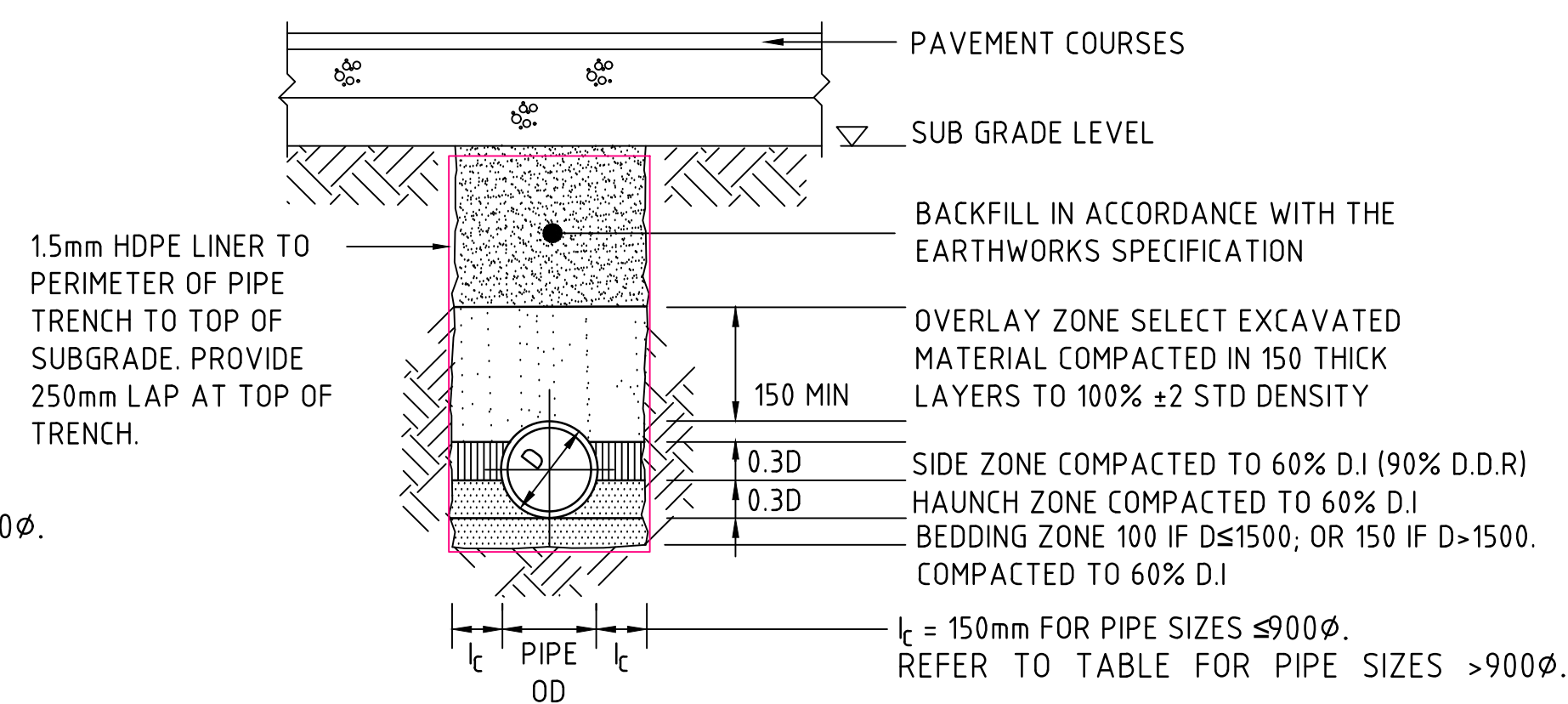


TYPE H1 SUPPORT TO CONCRETE PIPES AT LANDSCAPED AREAS

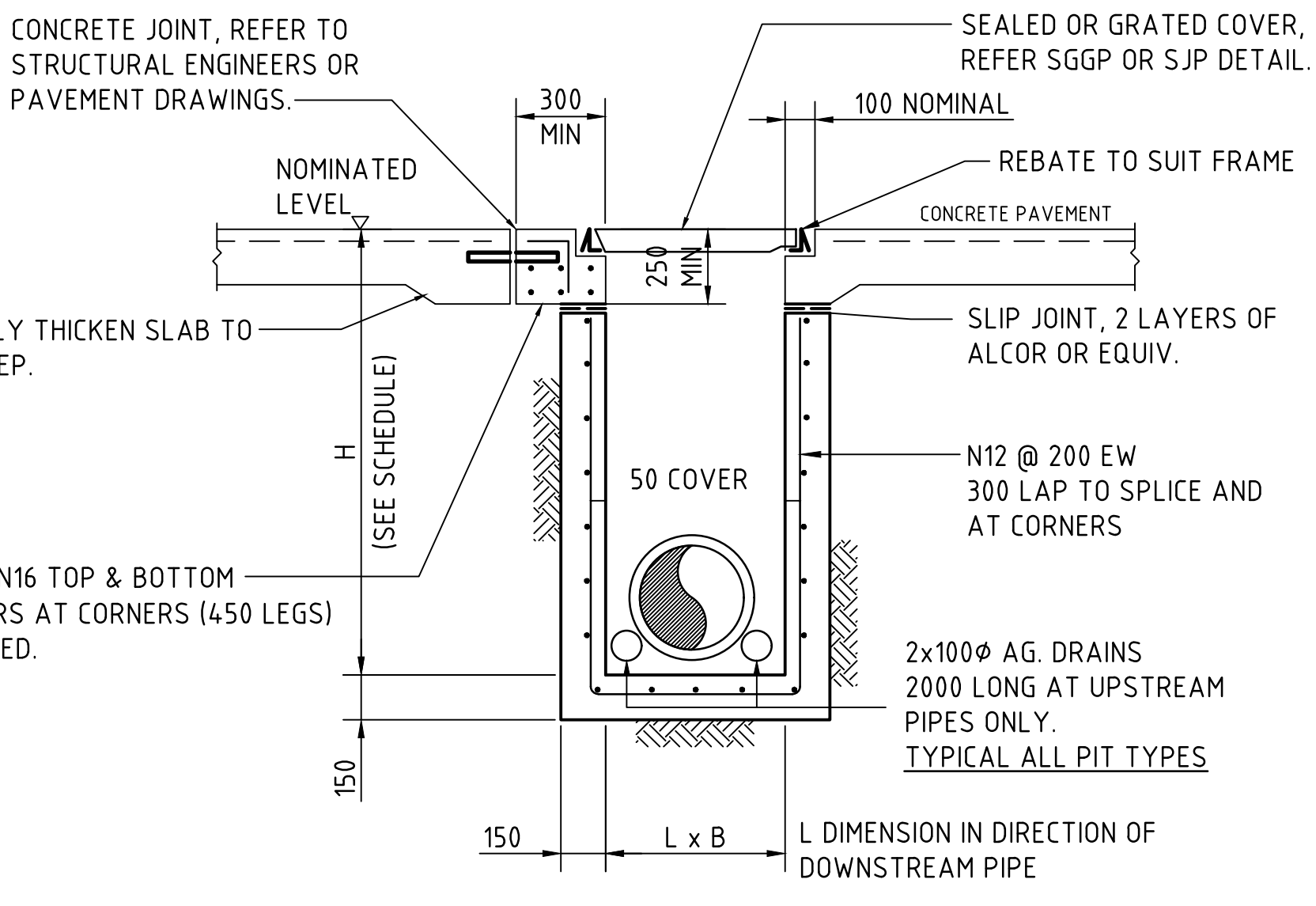
PIPE LAYING DETAILS
SCALE 1:20



SUPPORT TO uPVC PIPES

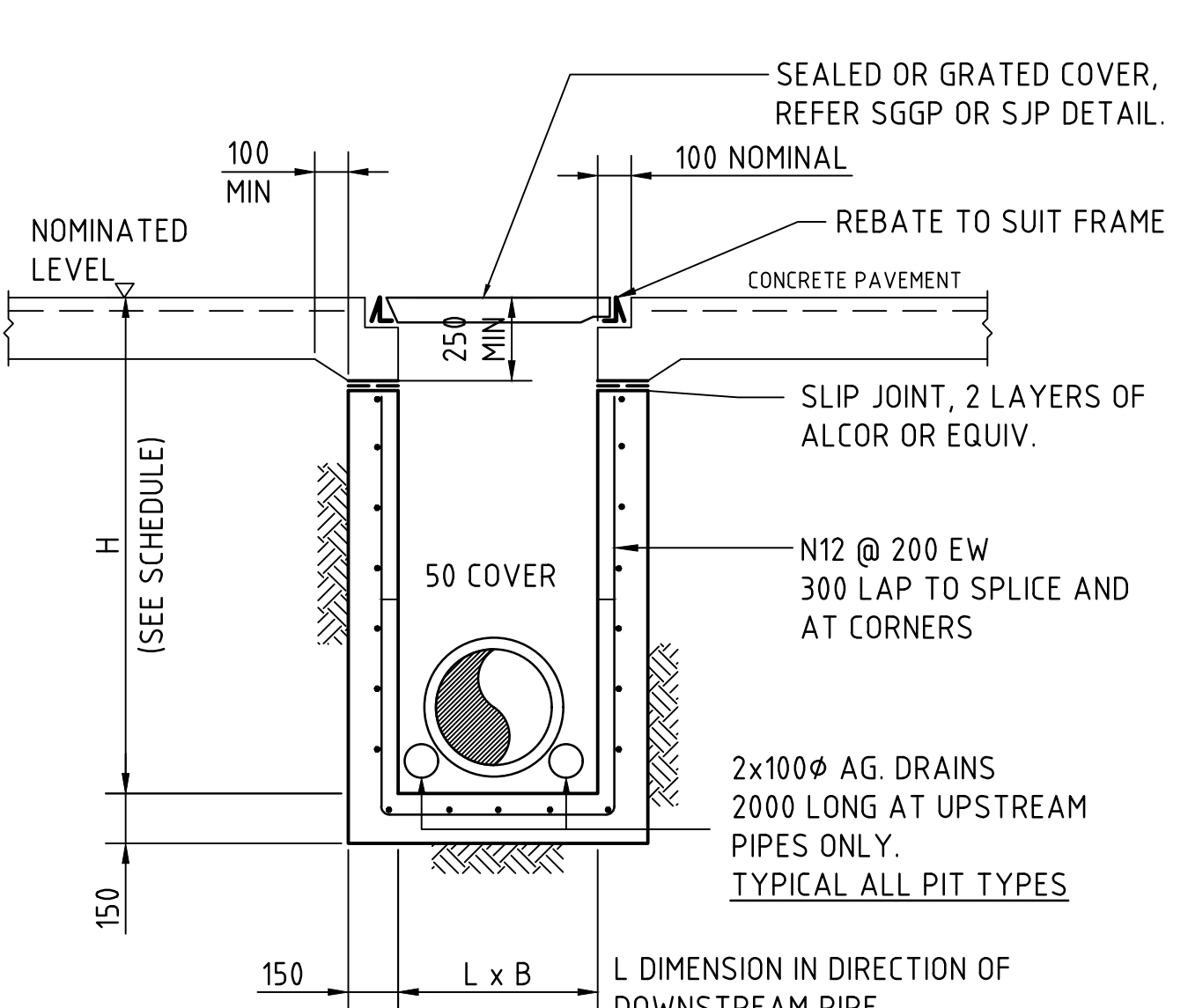


TYPE HS2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT
D ≤ 1350, MAX FILL = 4.0m
D > 1350, MAX FILL = 3.0m



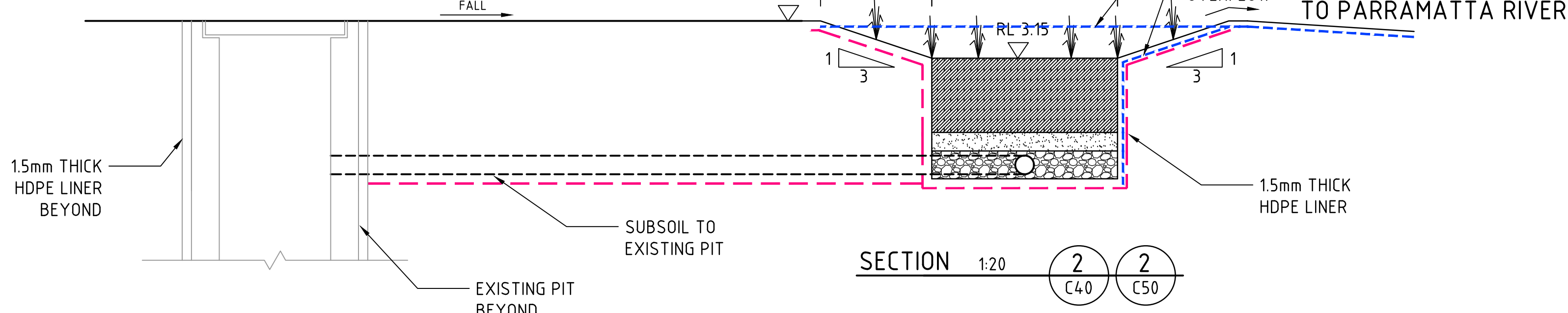
SJP/CIS & SGGP/CIS (CAST IN SLAB) PIT DETAIL GRATE/COVER SUPPORT CAST-INTO PAVEMENT SLAB

(ADOPT IN CONCRETE PAVEMENT FOR SGGP'S & SJP'S, WHERE PITS ARE LOCATED IN THE CORNER OF SLAB PANELS OR ADJACENT TO SLAB PANEL JOINTS)

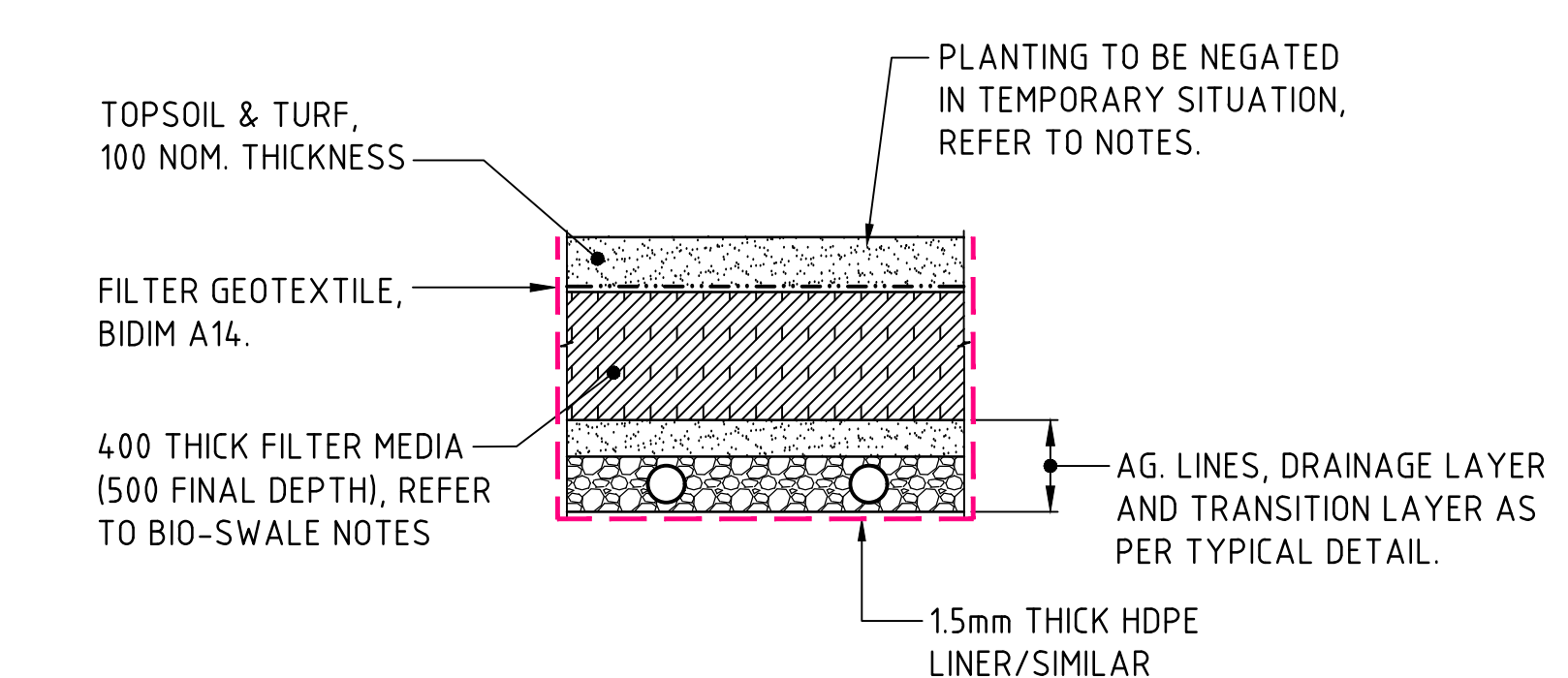
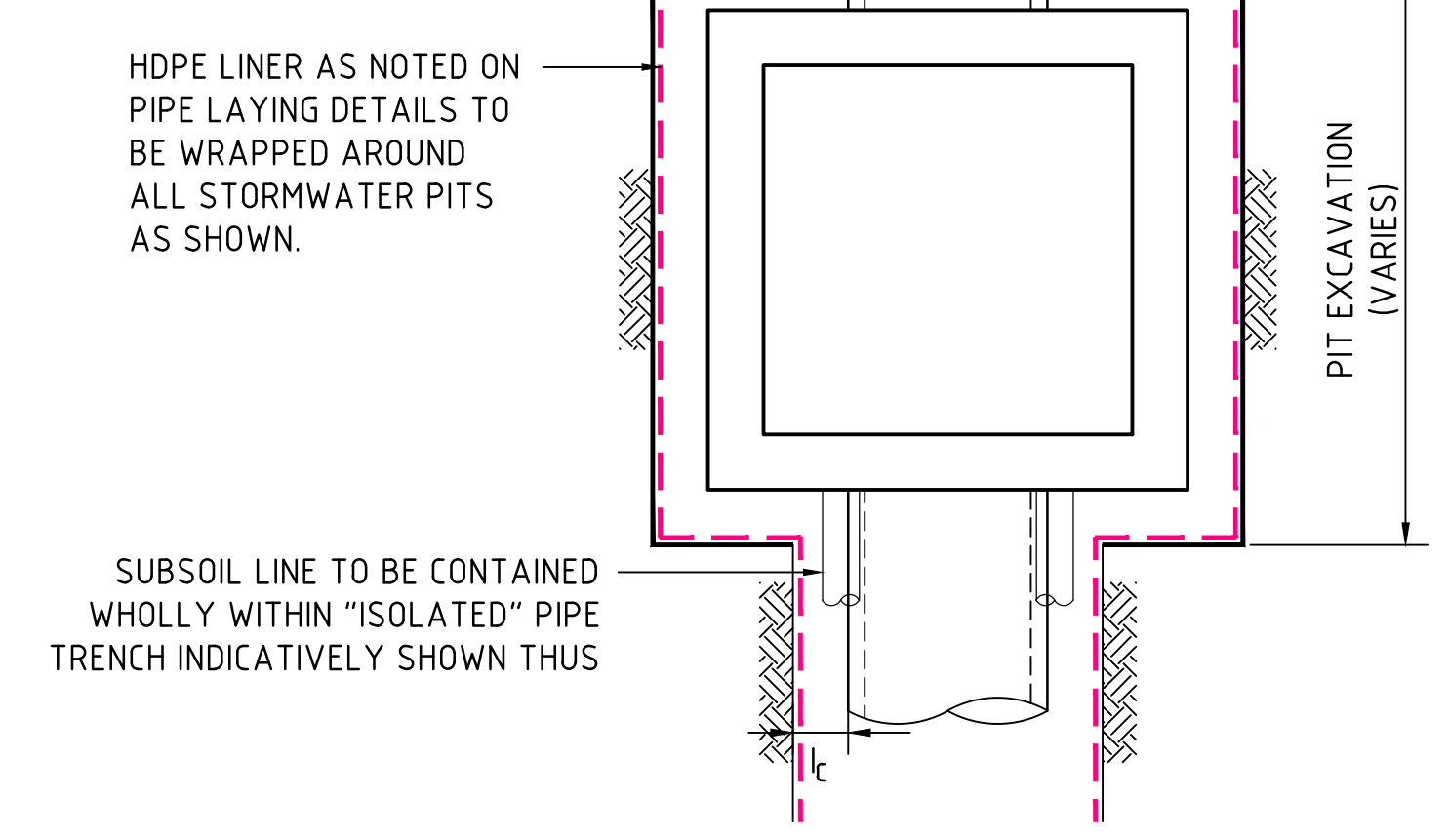


SJP/CIS & SGGP/CIS (CAST IN SLAB) PIT DETAIL GRATE/COVER SUPPORT CAST-INTO PAVEMENT SLAB

(ADOPT IN CONCRETE PAVEMENTS FOR SGGP'S & SJP'S, WHERE JOINTS ARE NOT LOCATED WITHIN PROXIMITY OF THE GRATE)



HDPE LINER - PIPE TO PIT INTERFACE



TEMPORARY BIO-RETENTION PROTECTION DETAIL
SCALE 1:20
TEMPORARY CONSTRUCTION REQUIREMENT DETAIL - REFER TO NOTES FOR IMPLEMENTATION PERIODS.

BIO-RETENTION NOTES :

FILTER MEDIA TO BE LOAMY SAND WITH A PERMEABILITY NOT LESS THAN 200mm/hr. FILTER MEDIA TO BE FREE OF RUBBISH, DELETERIOUS MATERIAL, TOXICANTS, DECLARED PLANTS AND LOCAL WEEDS, AND IS TO NOT BE HYDROPHOBIC.

FILTER MEDIA TO HAVE THE FOLLOWING COMPOSITION RANGE:

CLAY & SILT (<0.05mm)	≤3%
VERY FINE SAND (0.05-0.15mm)	5-30%
FINE SAND (0.15-0.25mm)	10-30%
MEDIUM TO COARSE SAND (0.25-1.00mm)	40-60%
COARSE SAND (1.0-2.0mm)	7-10%
FINE GRAVEL (2.0-3.4mm)	≤3%

FILTER MEDIA THAT DOES NOT MEET THE FOLLOWING CRITERIA SHALL BE REJECTED:

- ORGANIC MATTER CONTENT TO BE IDEALLY WITHIN 1% TO 3% (W/W) AND TO BE NO GREATER THAN 5% (W/W).
- PH TO BE BETWEEN 5.5 AND 7.5
- PHOSPHOROUS CONTENT TO BE NO GREATER THAN 35mg/kg

FILTER MEDIA TO BE ASSESSED BY QUALIFIED HORTICULTURALIST TO ENSURE CAPABILITY OF SUPPORTING PLANT LIFE.

DRAINAGE LAYER TO BE CLEAN GRAVEL 5-7mm.

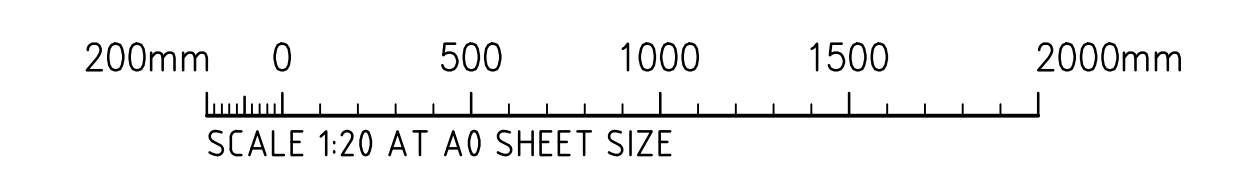
PLANTS TO BE IN ACCORDANCE WITH THE LANDSCAPE ARCHITECT'S REQUIREMENTS, WITH A MINIMUM OF SIX DIFFERENT SPECIES.

PROVIDE 100mm TOPSOIL AND TEMPORARY EROSION PROTECTION (JUTEMASTER OR EQUIV) TO SWALE BATTER SLOPES AND ADJACENT LANDSCAPED AREAS. NOTE THAT NO TOPSOIL IS TO BE PLACED OVER FILTRATION MEDIA. PROVIDE SILT FENCE TO TOP OF BANK UNTIL SUCH TIME AS THIS STABILISING AND VEGETATION HAS BEEN COMPLETED.

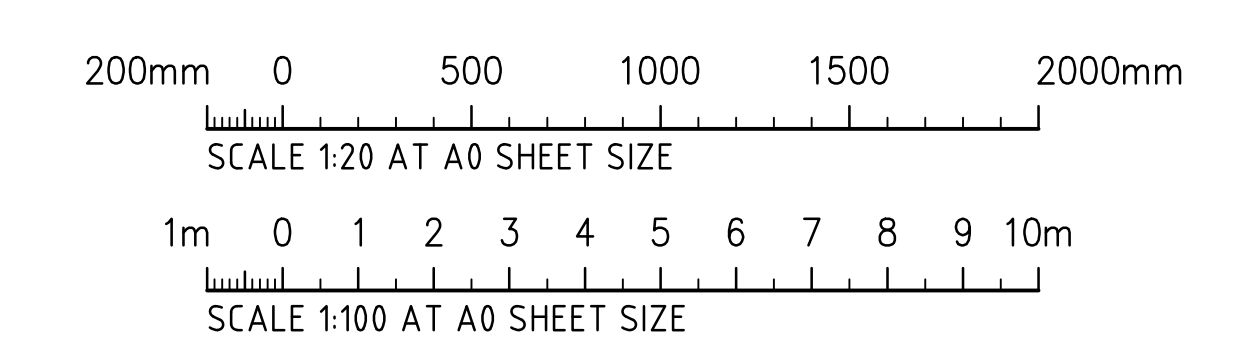
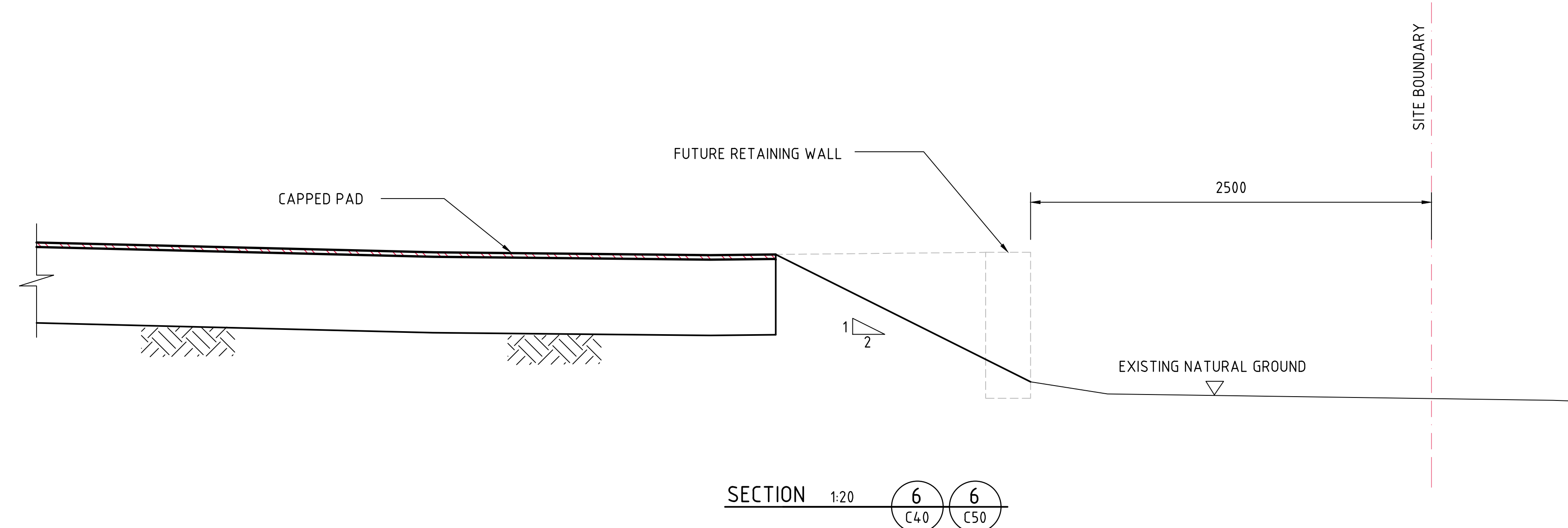
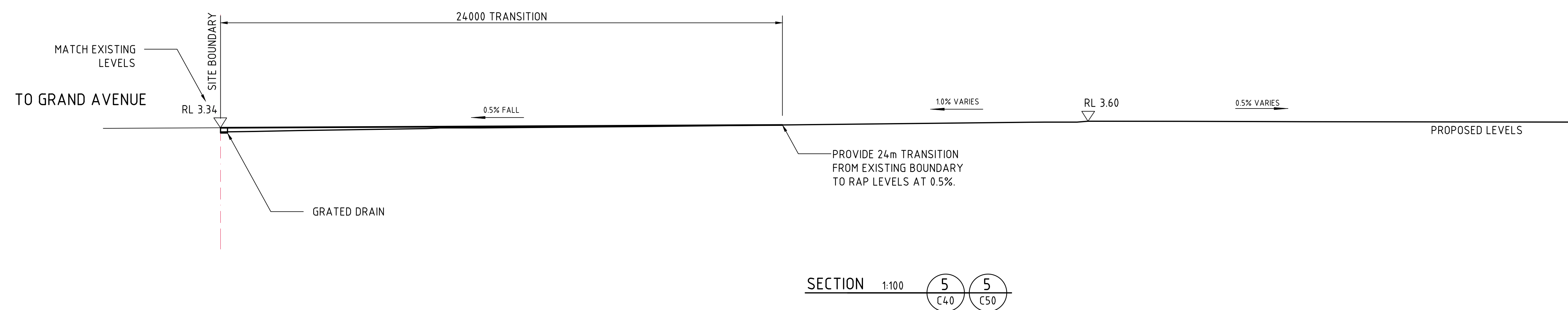
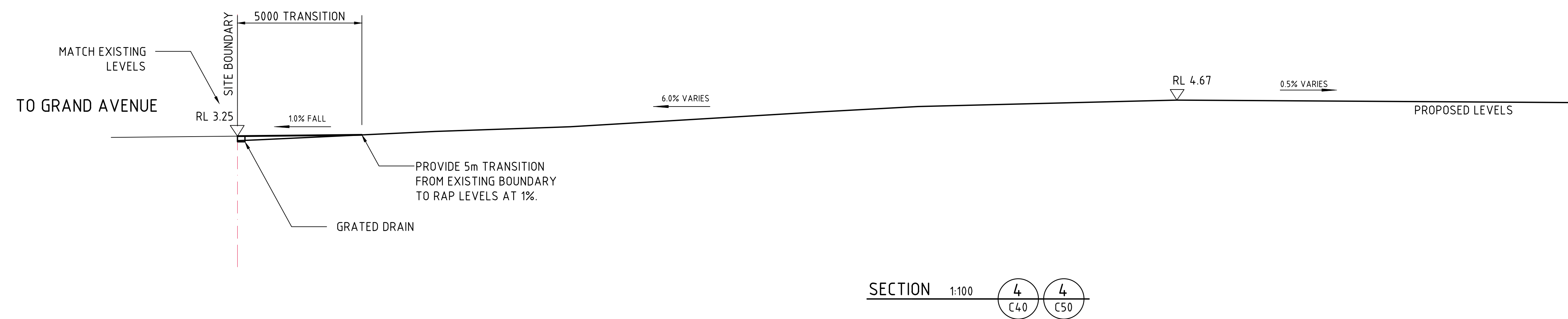
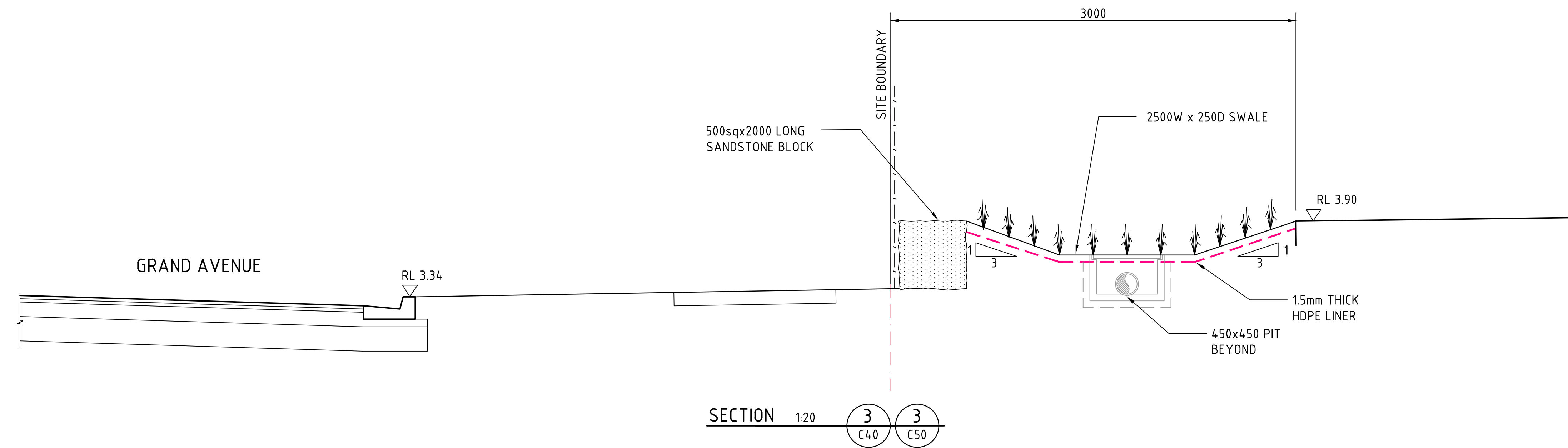
BIO-RETENTION TO BE PARTIALLY INSTALLED, FOLLOWING COMPLETION OF THE ROAD, WITH THE TOP 75-100mm OF FILTER MEDIA REPLACED WITH A FINE TO COARSE SAND UNDERLAIN WITH A GEOTEXTILE LAYER (REFER TO DETAIL). FOLLOWING COMPLETION OF THE UPSTREAM DEVELOPMENT AND SITE STABILISATION, THE SAND IS TO BE REMOVED, REPLACED WITH FILTER MATERIAL AND PLANTED OUT. REFER TO TEMPORARY BIO-BASIN DETAIL.

PRIOR TO PLANTING, THE TOP 100mm OF THE BIORETENTION FILTER MEDIA IS TO BE AMELIORATED WITH APPROPRIATE ORGANIC MATTER, FERTILISER AND TRACE ELEMENTS TO AID PLANT ESTABLISHMENT AS PER THE TABLE BELOW:

CONSTITUENT	QUANTITY (kg/m2 OF FILTER AREA)
GRANULATED INDUSTRIAL MANURE FINES	50
SUPERPHOSPHATE	3
MAGNESIUM SULPHATE	3
POTASSIUM SULPHATE	3
TRACE ELEMENT MIX	1
FERTILISER NPK (16:6:16)	1
LIME	20

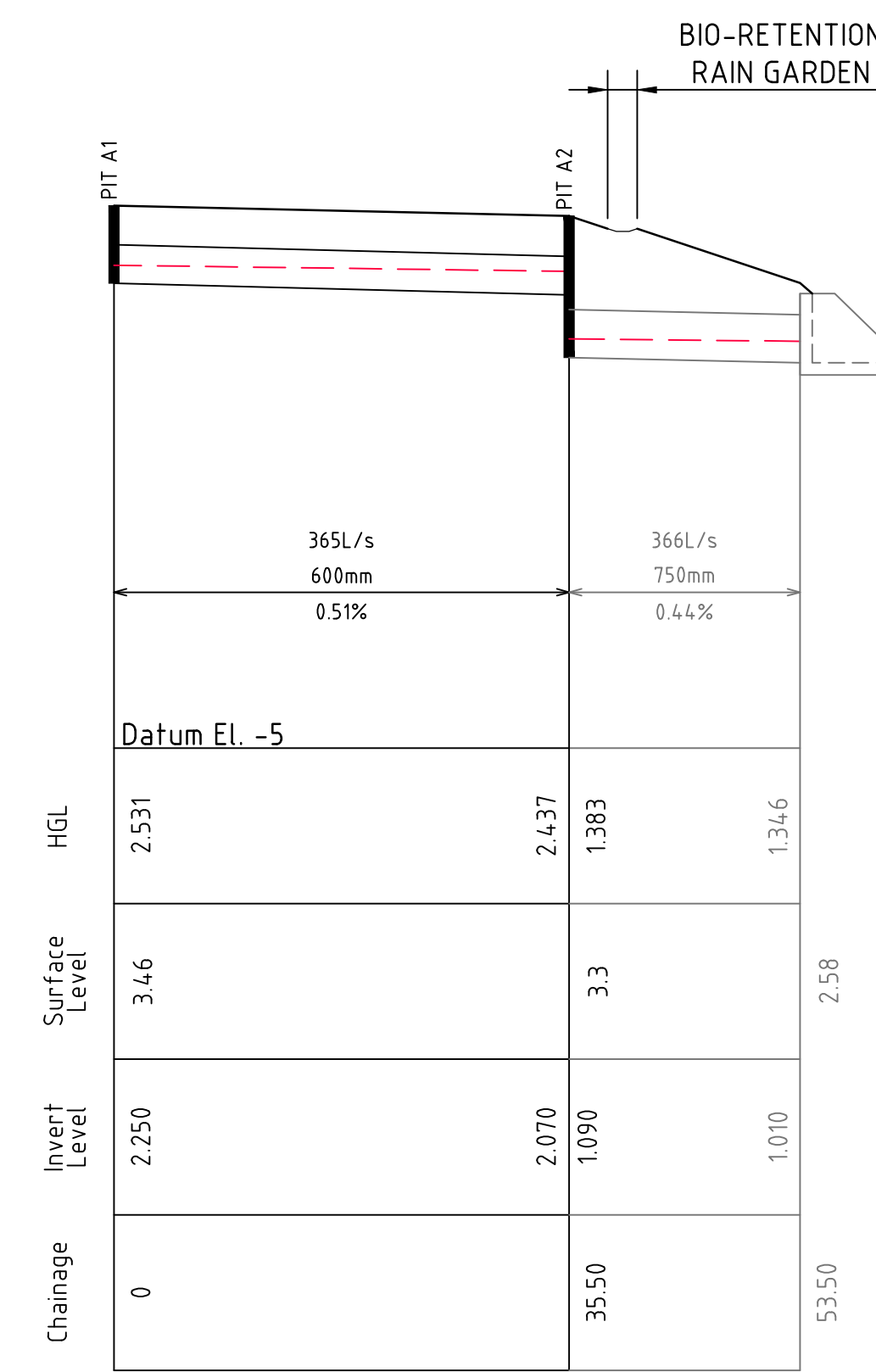


FOR CONSTRUCTION



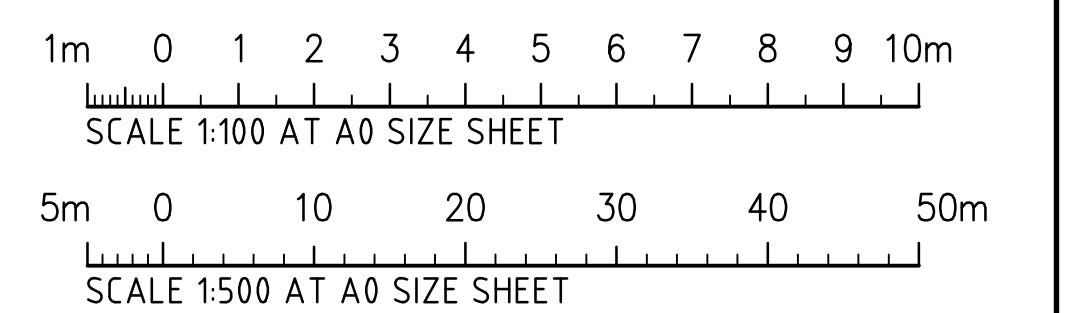
FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION		01.10.19	0	ARCHITECT		CLIENT		PROJECT		COSTIN ROE CONSULTING PTY LTD.		DRAWING TITLE STORMWATER DRAINAGE DETAILS SHEET 2
ISSUED FOR PRICING		13.08.19	C	VEOLIA		CAMELLIA MATERIALS RECYCLING FACILITY REMEDIAL ACTION PLAN WORKS 37 GRAND AVENUE, CAMELLIA, NSW, 2142		Level 1, 8 Widdowall Street Wahib Bay, Sydney NSW 2000 Tel: (02) 9251-7899 Fax: (02) 9241-3721 email: mail@costinroe.com.au		PRECISION COMMUNICATION ACCOUNTABILITY		
ISSUED FOR PRICING		13.12.18	B	AMENDMENTS		AMENDMENTS		DESIGNED		DRAWN		DRAWING No C013189.03-RAP46
ISSUED FOR PRICING		07.12.18	A	DATE		ISSUE		CHECKED		SCALE		
AMENDMENTS		DATE	ISSUE	AMENDMENTS		DATE		AS SHOWN		CAD REF: C013189.03-RAP46		ISSUE 0



LONG SECTION - PIT A1 TO PARRAMATTA RIVER
SCALE 1:500 HORIZONTAL
1:100 VERTICAL

NOTE:
H.G.L & FLOWRATE SHOWN FOR Q20 A RI STORM EVENT



FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION	01.10.19	0
ISSUED FOR PRICING	28.06.19	B
ISSUED FOR PRICING	07.12.18	A
AMENDMENTS	DATE	ISSUE

ARCHITECT	CLIENT



PROJECT
CAMELLIA MATERIALS RECYCLING FACILITY REMEDATION ACTION PLAN WORKS 37 GRAND AVENUE, CAMELLIA, NSW, 2142

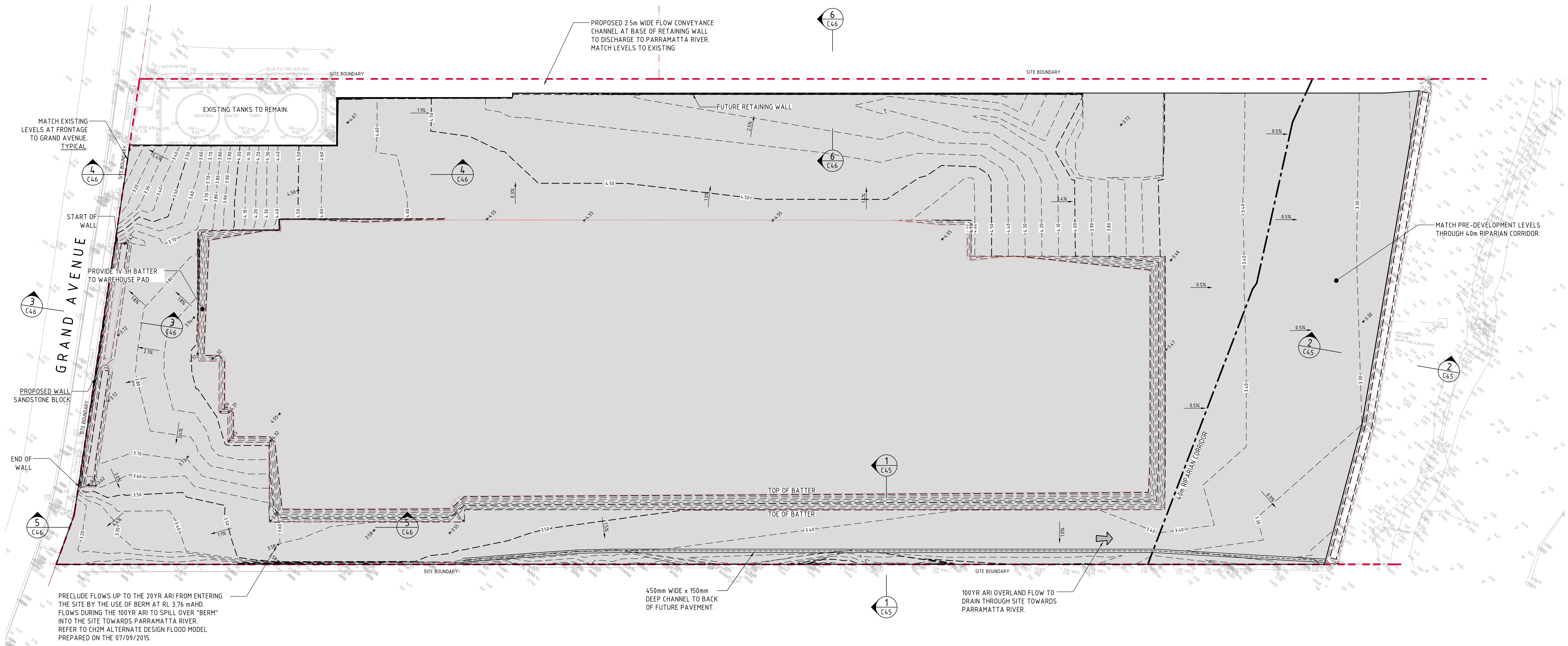


Costin Roe Consulting Pty Ltd.
Consulting Engineers
Level 1, 9 Windmill Street
Wahib Bay, Sydney NSW 2000
Tel: (02) 9251-7899 Fax: (02) 9241-3721
email: mail@costinroe.com.au

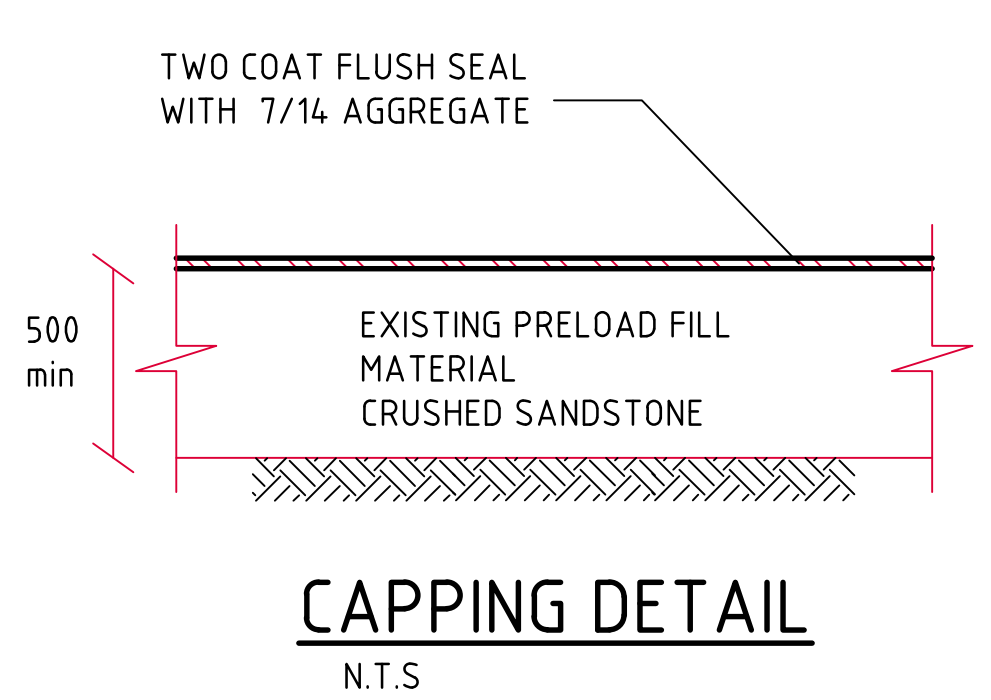
Costin Roe Consulting

PRECISION | COMMUNICATION | ACCOUNTABILITY

DRAWING TITLE	DRAWING No.	ISSUE
STORMWATER DRAINAGE LONGSECTIONS	C013189.03-RAP48	0



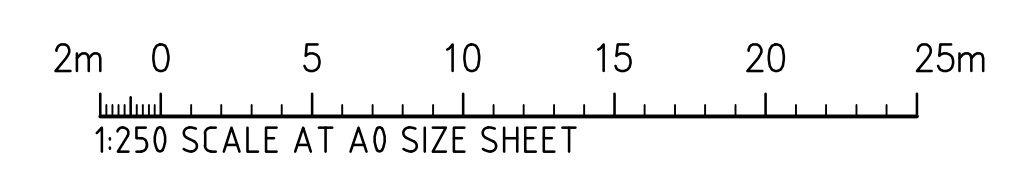
RAP FINISHED LEVELS & DETAILS
1:250 SCALE



LEGEND:
LEVELS DATUM IS AHD.

	- SGGP, SINGLE GRATED GULLY PIT
	- SJP, SEALED JUNCTION PIT
	- EXISTING SPOT HEIGHT
	- PAVEMENT FALL DIRECTION AND GRADE
	- GRATED DRAIN
	- FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
	- FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
	- FINISHED PAVEMENT SPOT HEIGHT

NOTE:
REFER TO DRAWING C013189.03-DA10 FOR FINISHED LEVELS NOTES.



FOR CONSTRUCTION

ISSUED FOR CONSTRUCTION			01.10.19	0	ARCHITECT			CLIENT			PROJECT			Costin Roe Consulting Pty Ltd.		
REVISED AS CLOUDED			13.08.19	C				VEOLIA			CAMELLIA MATERIALS RECYCLING FACILITY REMEDIATION ACTION PLAN WORKS			Consulting Engineers		
ISSUED FOR PRICING			26.06.19	B							37 GRAND AVENUE, CAMELLIA, NSW, 2142			Level 1, 8 Windmill Street, Walsh Bay, Sydney NSW 2000		
ISSUED FOR PRICING			07.12.18	A										Tel: (02) 9251-7899 Fax: (02) 9241-3721 email: mail@costinroe.com.au		
AMENDMENTS			DATE	ISSUE	AMENDMENTS			DATE			ISSUE			PRECISION COMMUNICATION ACCOUNTABILITY		
														DRAWING TITLE: RAP FINISHED LEVELS & DETAILS		
														DRAWING No: C013189.03-RAP50		
														ISSUE: 0		