

LENDLEASE

East West Connector Road Stages 1 & 2 and Dunheved Link Road Stages 2 & 3 Road Safety Audit - Concept Design

MARCH 2018

PUBLIC





East West Connector Road Stages 1 & 2 and Dunheved Link Road Stages 2 & 3

Road Safety Audit - Concept Design

LENDLEASE

PUBLIC
PROJECT NO 2197037A
DATE: MARCH 2018

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REV	DATE	DETAILS
	07/02/2018	Draft
A	23/02/2018	Revised Draft to included revised drawing set and Dunheved Link Road Stage 3
B	06/03/2018	Final

	NAME	DATE	SIGNATURE
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Reviewed by:	R Miller	06/03/2018	<i>R. Miller</i>
Approved by:	R Miller	06/03/2018	<i>R. Miller</i>

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Appendix A Supplied Audit documents

1 SUMMARY

Audited Project:	East West Connector Road Stages 1 and 2 and Dunheved Link Road Stages 2 and 3 - Concept Design Road Safety Audit
Audited for:	Lendlease
Address:	Level 2, 88 Phillip Street Parramatta NSW 2150
Telephone:	02 9392 4588
Project Manager:	Sean Porter Development Manager, NSW/ACT Communities Sean.porter@lendlease.com
Auditors:	Ryan Miller (Level 3), Brigette Humphrey-Robinson (Level 2), Qian Liu
Audit Type:	Concept Design
Commencement Meeting:	29 January 2018
Audit Date:	1 st set of drawings - 29 January to 2 February 2018 2 nd set of drawings - 21 February to 23 February 2018
Completion Meeting:	TBA
Previous Audit:	No

This Road Safety Audit has been commissioned by Lend Lease and assessed the road design of East West Connector Road Stages 1 and 2, and Dunheved Link Road Stages 2 and 3.

The audit identified three high risk, two medium risk and one low risk safety issues related to the road design. The auditors also identified nine note only items.

2 INTRODUCTION

2.1 Audit scope

The purpose of this concept design audit is to identify potential road safety issues for road users based upon the road design associated with the development of East West Connector Road Stages 1 and 2 and Dunheved Link Road Stages 2 and 3. The road design drawings have been prepared by Cardno for Lendlease.

2.2 Proposed concept design

Jordan Springs East is located within the Penrith City Council Local Government Area (LGA) and forms part of the St Marys development site. It is bounded by existing residential development in the suburbs of Werrington County and Werrington Downs to the south, land zoned for Regional Open Space to the east and land zoned for Regional Park to the north and west. There is also an area zoned for Drainage that adjoins the northern boundary of the precinct.

Jordan Springs East covers an area of approximately 133.1 hectares and is envisaged to accommodate approximately 1,400 dwellings across a total of 1,238 lots to accommodate a population of between 3,900 and 4,300. It is also envisaged to accommodate approximately 760 jobs in light industrial and light manufacturing sectors.

The delivery of the Jordan Springs East masterplan is staged. Under the Precinct Plan amendment (2016) currently under consideration by Council the total yield from Jordan Springs East will be 1,436 residential dwellings with approximately 38 hectares of employment land use.

As part of the development, East West Connector Road Stage 1 and Stage 2 are proposed, presumably to provide east-west access from the existing Ropes Crossing precinct to the future Jordan Springs East development and the north-south Dunheved Link Road Stage 2 and Stage 3.

The East West Connector Road Stage 1 and Stage 2 and Dunheved Link Road Stage 2 and Stage 3 works are presented in Figures 2.1, 2.2 and 2.3.

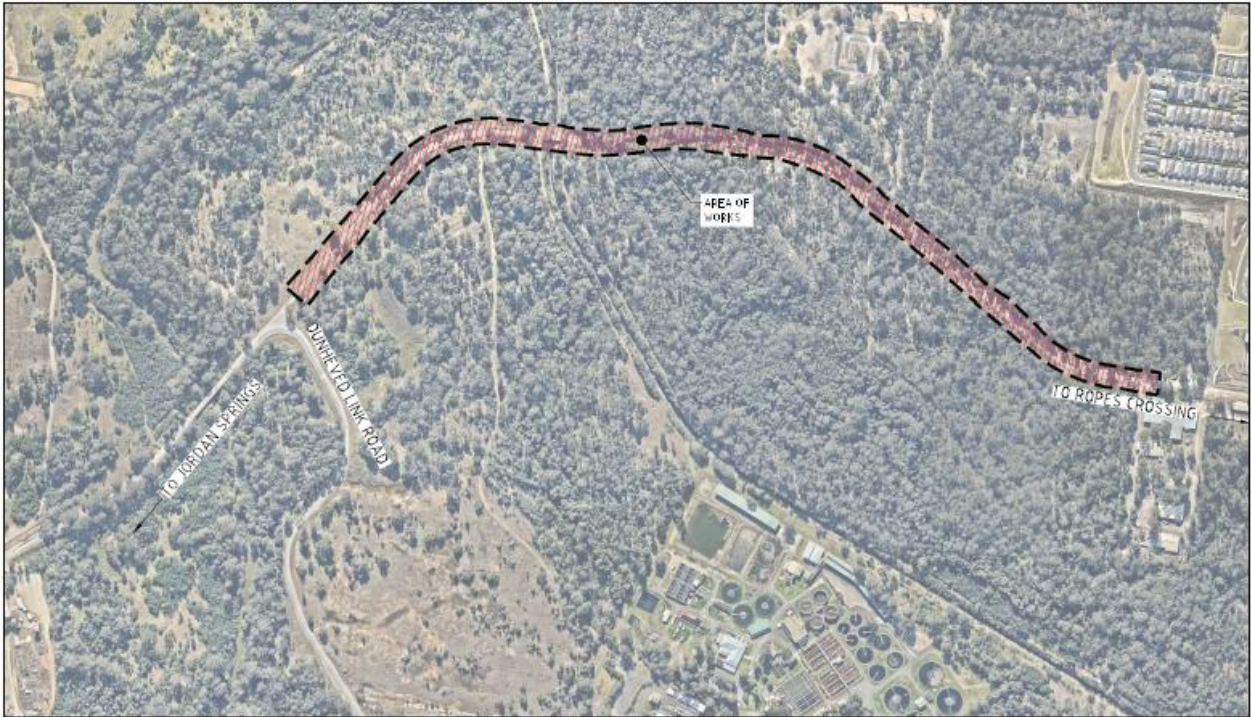


Figure 2.1 Audit location - East West Connector Road Stage 1

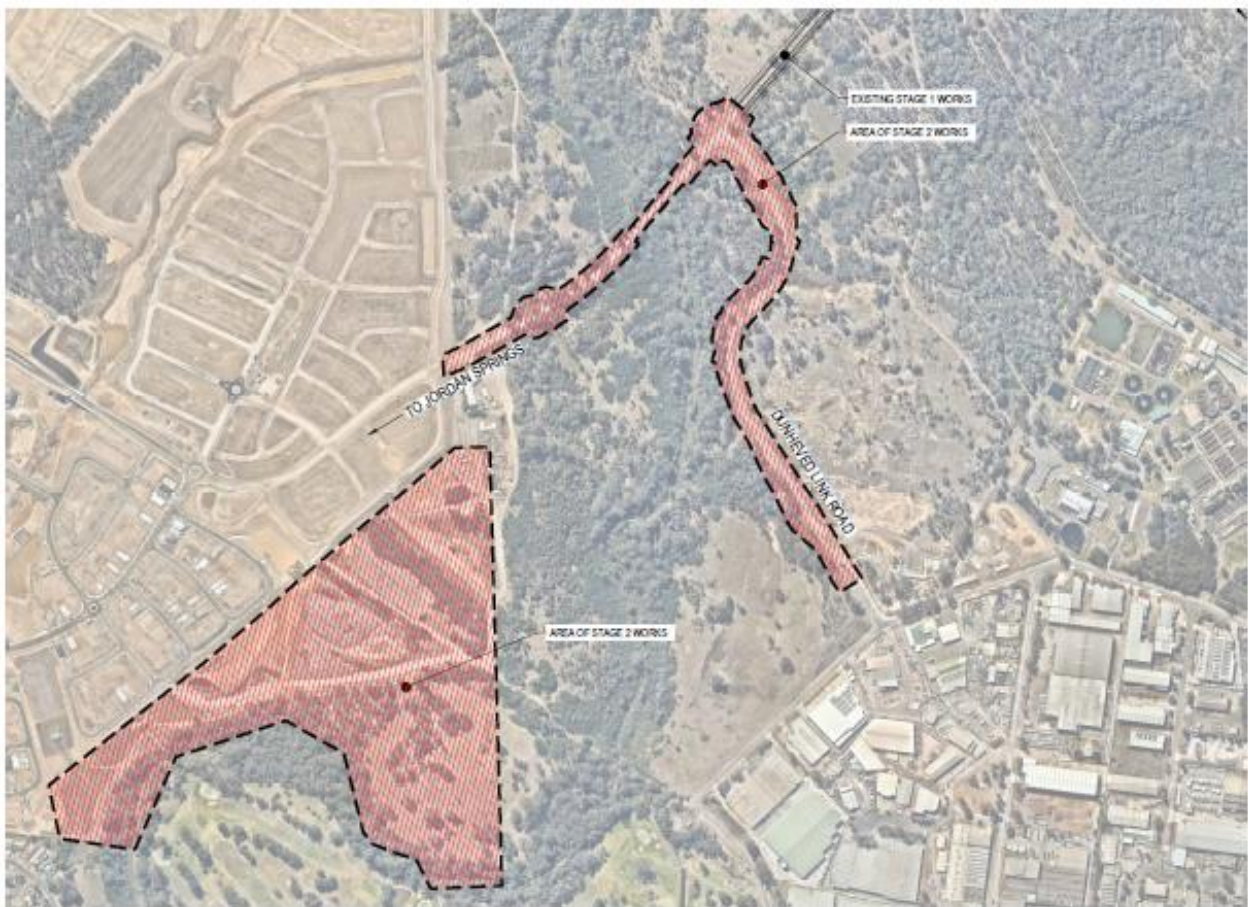


Figure 2.2 Audit location - East West Connector Road and Dunheved Link Road Stage 2



Figure 2.3 Audit location -Dunheved Link Road Stage 3

2.3 Audited documentation

The following documents were provided to the audit team:

Table 2.1 Schedule of Supplied Documents

Drawing number/Report name	Revision	Description
East West Connector Road Stage 1 - Civil Works Development Application		
CV-CARDNO-EWC1-1001	1 & 2 - 19/01/2018	Cover Sheet and Drawing Schedule
CV-CARDNO-EWC1-1011	1 & 2 - 19/01/2018	General Notes and Legends
CV-CARDNO-EWC1-1031	1 & 2 - 19/01/2018	General Arrangement Plan
CV-CARDNO-EWC1-1041	1 & 2 - 19/01/2018	Development Application Staging Plan and Road Hierarchy Plan
CV-CARDNO-EWC1-1051	1 & 2 - 19/01/2018	Existing Services and Survey Plan Sheet 1
CV-CARDNO-EWC1-1052	1 & 2 - 19/01/2018	Existing Services and Survey Plan Sheet 2
CV-CARDNO-EWC1-1101	1 & 2 - 19/01/2018	Erosion and Sedimentation Control Plan Sheet 1
CV-CARDNO-EWC1-1102	1 & 2 - 19/01/2018	Erosion and Sedimentation Control Plan Sheet 2

Drawing number/Report name	Revision	Description
CV-CARDNO-EWC1-1103	1 & 2 - 19/01/2018	Erosion and Sedimentation Control Plan Sheet 3
CV-CARDNO-EWC1-1104	1 & 2 - 19/01/2018	Erosion and Sedimentation Control Plan Sheet 4
CV-CARDNO-EWC1-1105	1 & 2 - 19/01/2018	Erosion and Sedimentation Control Plan Sheet 5
CV-CARDNO-EWC1-1131	1 & 2 - 19/01/2018	Erosion and Sedimentation Control Details
CV-CARDNO-EWC1-1141	1 - 19/01/2018	Cut/Fill Plan Sheet 1
CV-CARDNO-EWC1-1142	1 - 19/01/2018	Cut/Fill Plan Sheet 2
CV-CARDNO-EWC1-1151	1 - 19/01/2018	Tree Removal Plan Sheet 1
CV-CARDNO-EWC1-1152	1 - 19/01/2018	Tree Removal Plan Sheet 2
CV-CARDNO-EWC1-1251	1 & 2 - 19/01/2018	Typical Road Cross Sections
CV-CARDNO-EWC1-1301	1 & 2 - 19/01/2018	Roads and Stormwater Plan Sheet 1
CV-CARDNO-EWC1-1302	1 & 2 - 19/01/2018	Roads and Stormwater Plan Sheet 2
CV-CARDNO-EWC1-1303	1 & 2 - 19/01/2018	Roads and Stormwater Plan Sheet 3
CV-CARDNO-EWC1-1304	1 & 2 - 19/01/2018	Roads and Stormwater Plan Sheet 4
CV-CARDNO-EWC1-1305	1 & 2 - 19/01/2018	Roads and Stormwater Plan Sheet 5
CV-CARDNO-EWC1-1351	1 & 2 - 19/01/2018	Road Longitudinal Sections Sheet 1
CV-CARDNO-EWC1-1352	1 & 2 - 19/01/2018	Road Longitudinal Sections Sheet 2
CV-CARDNO-EWC1-1353	1 & 2 - 19/01/2018	Road Longitudinal Sections Sheet 3
CV-CARDNO-EWC1-1701	1 & 2 - 19/01/2018	Pavement, Signage and Linemarking Plan Sheet 1
CV-CARDNO-EWC1-1702	1 & 2 - 19/01/2018	Pavement, Signage and Linemarking Plan Sheet 2
CV-CARDNO-EWC1-1703	1 & 2 - 19/01/2018	Pavement, Signage and Linemarking Plan Sheet 3
CV-CARDNO-EWC1-1704	1 & 2 - 19/01/2018	Pavement, Signage and Linemarking Plan Sheet 4

Drawing number/Report name	Revision	Description
CV-CARDNO-EWC1-1705	1 & 2 - 19/01/2018	Pavement, Signage and Linemarking Plan Sheet 5
CV-CARDNO-EWC1-1851	2 - 19/01/2018	Typical Retaining Wall Details Sheet 1
CV-CARDNO-EWC1-1852	2 - 19/01/2018	Typical Retaining Wall Details Sheet 2
CV-CARDNO-EWC1-2201	1 & 2 - 19/01/2018	Stormwater Drainage Details Sheet 1
CV-CARDNO-EWC1-2202	1 & 2 - 19/01/2018	Stormwater Drainage Details Sheet 2
CV-CARDNO-EWC1-2301	1 & 2 - 19/01/2018	Internal Stormwater Catchment Plan Sheet 1
CV-CARDNO-EWC1-2302	1 & 2 - 19/01/2018	Internal Stormwater Catchment Plan Sheet 2
CV-CARDNO-EWC1-2351	1 & 2 - 19/01/2018	External Stormwater Catchment Plan
East West Connector Road Stage 2 - Civil Works and Regional Open Space Bulk Earthworks Development Application		
CV-CARDNO-EWC2-1001	1 & 2 - 19/01/2018	Cover Sheet and Drawing Schedule
CV-CARDNO-EWC2-1011	1 & 2 - 19/01/2018	General Notes and Legends
CV-CARDNO-EWC2-1021	1 & 2 - 19/01/2018	General Arrangement Plan
CV-CARDNO-EWC2-1031	1 & 2 - 19/01/2018	Development Application Staging Plan and Road Hierarchy Plan
CV-CARDNO-EWC2-1041	1 & 2 - 19/01/2018	Civil Works - Existing Services and Survey Plan Sheet 01
CV-CARDNO-EWC2-1042	1 & 2 - 19/01/2018	Civil Works - Existing Services and Survey Plan Sheet 02
CV-CARDNO-EWC2-1051	1 & 2 - 19/01/2018	Regional Open Space - Existing Services and Survey Plan Sheet 01
CV-CARDNO-EWC2-1052	1 & 2 - 19/01/2018	Regional Open Space - Existing Services and Survey Plan Sheet 02
CV-CARDNO-EWC2-1101	1 & 2 - 19/01/2018	Civil Works - Erosion and Sedimentation Control Plan
CV-CARDNO-EWC2-1102	1 & 2 - 19/01/2018	Civil Works - Erosion and Sedimentation Control Plan
CV-CARDNO-EWC2-1111	1 & 2 - 19/01/2018	Regional Open Space - Erosion and Sedimentation Control Plan Sheet 01

Drawing number/Report name	Revision	Description
CV-CARDNO-EWC2-1112	1 - 19/01/2018	Regional Open Space - Erosion and Sedimentation Control Plan Sheet 02
CV-CARDNO-EWC2-1131	1 & 2 - 19/01/2018	Erosion and Sedimentation Control Details
CV-CARDNO-EWC2-1141	1 - 19/01/2018	Cut/Fill Plan Sheet 1
CV-CARDNO-EWC2-1142	1 - 19/01/2018	Cut/Fill Plan Sheet 2
CV-CARDNO-EWC2-1151	1 - 19/01/2018	Regional Open Space - Cut/Fill Plan
CV-CARDNO-EWC2-1161	1 - 19/01/2018	Civil Works - Tree Removal Plan Sheet 01
CV-CARDNO-EWC2-1142	1 - 19/01/2018	Civil Works - Tree Removal Plan Sheet 02
CV-CARDNO-EWC2-1142	1 - 19/01/2018	Regional Open Space - Tree Removal Plan
CV-CARDNO-EWC2-1251	1 & 2 - 19/01/2018	Typical Road Cross Sections
CV-CARDNO-EWC2-1301	1 & 2 - 19/01/2018	Civil Works - Roads and Stormwater Plan Sheet 01
CV-CARDNO-EWC2-1302	1 & 2 - 19/01/2018	Civil Works - Roads and Stormwater Plan Sheet 02
CV-CARDNO-EWC2-1303	1 & 2 - 19/01/2018	Civil Works - Roads and Stormwater Plan Sheet 03
CV-CARDNO-EWC2-1304	1 & 2 - 19/01/2018	Civil Works - Roads and Stormwater Plan Sheet 04
CV-CARDNO-EWC2-1305	1 & 2 - 19/01/2018	Civil Works - Roads and Stormwater Plan Sheet 05
CV-CARDNO-EWC2-1311	1 & 2 - 19/01/2018	Regional Open Space - Bulk Earthworks Plan Sheet 01
CV-CARDNO-EWC2-1312	1 & 2 - 19/01/2018	Regional Open Space - Bulk Earthworks Plan Sheet 02
CV-CARDNO-EWC2-1313	1 - 19/01/2018	Regional Open Space - Bulk Earthworks Plan Sheet 03
CV-CARDNO-EWC2-1314	1 - 19/01/2018	Regional Open Space - Bulk Earthworks Plan Sheet 04
CV-CARDNO-EWC2-1315	1 - 19/01/2018	Regional Open Space - Bulk Earthworks Plan Sheet 05
CV-CARDNO-EWC2-1351	1 & 2 - 19/01/2018	Civil Works - Road Longitudinal Sections Sheet 01
CV-CARDNO-EWC2-1352	1 & 2 - 19/01/2018	Civil Works - Road Longitudinal Sections Sheet 02
CV-CARDNO-EWC2-1601	1 & 2 - 19/01/2018	Road Typical Details

Drawing number/Report name	Revision	Description
CV-CARDNO-EWC2-1701	1 & 2 - 19/01/2018	Civil Works - Pavement, Signage and Linemarking Plan Sheet 01
CV-CARDNO-EWC2-1702	1 & 2 - 19/01/2018	Civil Works - Pavement, Signage and Linemarking Plan Sheet 02
CV-CARDNO-EWC2-1703	1 & 2 - 19/01/2018	Civil Works - Pavement, Signage and Linemarking Plan Sheet 03
CV-CARDNO-EWC2-1704	1 & 2 - 19/01/2018	Civil Works - Pavement, Signage and Linemarking Plan Sheet 04
CV-CARDNO-EWC2-1705	1 & 2 - 19/01/2018	Civil Works - Pavement, Signage and Linemarking Plan Sheet 05
CV-CARDNO-EWC2-2201	1 & 2 - 19/01/2018	Stormwater Drainage Details Sheet 01
CV-CARDNO-EWC2-2202	1 & 2 - 19/01/2018	Stormwater Drainage Details Sheet 02
CV-CARDNO-EWC2-2301	1 & 2 - 19/01/2018	Internal Stormwater Catchment Plan Sheet 01
CV-CARDNO-EWC2-2302	1 - 19/01/2018	Internal Stormwater Catchment Plan Sheet 02
CV-CARDNO-EWC2-2351	1 & 2 - 19/01/2018	External Stormwater Catchment Plan
East West Connector Road Stage 3 - Civil Works Development Application		
CV-CARDNO-EWC3-1001	1 -02/02/2018	Cover Sheet and Drawing Schedule
CV-CARDNO-EWC3-1011	1 -02/02/2018	General Notes and Legends
CV-CARDNO-EWC3-1041	1 -02/02/2018	Development Application Staging Plan and Road Hierarchy Plan
CV-CARDNO-EWC3-1051	1 -02/02/2018	Existing Services and Survey Plan
CV-CARDNO-EWC3-1101	1 -02/02/2018	Civil Works - Erosion and Sedimentation Control Plan
CV-CARDNO-EWC3-1131	1 -02/02/2018	Erosion and Sedimentation Control Details
CV-CARDNO-EWC3-1141	1 -02/02/2018	Cut/Fill Plan
CV-CARDNO-EWC3-1151	1 -02/02/2018	Tree Removal Plan
CV-CARDNO-EWC3-1251	1 -02/02/2018	Typical Road Cross Sections and Details
CV-CARDNO-EWC3-1301	1 -02/02/2018	Roads and Stormwater Plan
CV-CARDNO-EWC3-1351	1 -02/02/2018	Road Longitudinal Sections

Drawing number/Report name	Revision	Description
CV-CARDNO-EWC3-1601	1 -02/02/2018	Siteworks Details
CV-CARDNO-EWC3-1701	1 -02/02/2018	Pavement, Signage and Linemarking Plan
CV-CARDNO-EWC3-2201	1 -02/02/2018	Stormwater Drainage Details Sheet 01
CV-CARDNO-EWC3-2202	1 -02/02/2018	Stormwater Drainage Details Sheet 02
CV-CARDNO-EWC3-2301	1 -02/02/2018	Internal Stormwater Catchment Plan
CV-CARDNO-EWC3-2351	1 -02/02/2018	External Stormwater Catchment Plan

The design drawings attached in Appendix A. It should be noted that the proposed Stage 2 works as shown on plans CV-CARDNO-EWC2-1311 to 1315 Rev 1 are only indicative. Audits have not been carried out due to insufficient information.

2.4 Procedures and reference material

The procedures used are those described in the Austroads *Guide to Road Safety: Part 6 Road Safety Audit* (Third Edition, 2009).

Other specific documents and manuals referred to during the course of this audit were:

- Roads and Traffic Authority 1988, *Road Design Guide*
- Austroads 2009, *Guides to Road Design*
- Austroads 2009, *Guides to Road Traffic Management*
- Austroads 2009, *Guide to Road Safety Part 6: Road Safety Audits*
- Roads and Traffic Authority 2005, *NSW Bicycle Guidelines*
- Penrith City Council, *Design Guidelines for Engineering Works for Subdivisions and Developments*, November 2013
- Penrith City Council, *Engineering Construction Specification for Civil Works*, June 2016.

2.5 Audit team

The audit team comprised the following members:

- Ryan Miller, Level 3 lead road safety auditor
- Brigette Humphrey-Robinson, Level 2 road safety auditor
- Qian Liu, Trainee road safety auditor.

2.6 Responding to the audit

An audit provides an opportunity for an independent team to highlight potential road safety problems and have them formally considered by the Project Manager in conjunction with all other project considerations. The responsibility of responding to the findings of a road safety audit rests with the Designer and/or the Project Manager, not with the Auditor(s). The Designer and/or Project Manager is under no obligation to accept the audit findings. It is also noted that it is not the role of the Auditor(s) to agree to, or approve the Project Manager's responses to the audit.

3 ROAD SAFETY AUDIT PROGRAM

3.1 Commencement meeting

A commencement meeting was held on Monday 29 January 2018. Ryan Miller led the meeting outlining the audit scope and providing a project background.

3.2 Site inspection

The audit team did not conduct a site visit as a part of the audit. The site is currently inaccessible for a site visit to be undertaken.

3.3 Completion meeting

A completion meeting would be held as advised by the client.

4 ROAD SAFETY AUDIT FINDINGS

4.1 The risk assessment system

Each hazard has been recorded and assessed in accordance with the Austroads *Guide to Road Safety: Part 6 Road Safety Audit* (Third Edition, 2009). The guide recommends a risk matrix be used to determine the level of risk associated with each hazard. This risk matrix is described below.

4.1.1 Estimated crash frequency

The probable frequency of an incident occurring as a direct result of the hazard was determined using the criteria displayed in Table 4.1.

Table 4.1 Crash frequency

Frequency	Description
Frequent	Once or more per week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five or ten years
Improbable	Less often than once every ten years

Source: Austroads 2009, *Guide to Road Safety Part 6: Road Safety Audit*

4.1.2 Estimated crash severity

The likely severity of the incident which occurred as a direct result of hazard was determined using the criteria in Table 4.2.

Table 4.2 Crash severity

Severity	Description	Examples
Catastrophic	Likely multiple deaths	High-speed, multi-vehicle crash on a freeway. Car runs into crowded bus stop. Bus and petrol tanker collide. Collapse of a bridge or tunnel.
Serious	Likely death or serious injury	High or medium-speed vehicle/vehicle collision. High or medium-speed collision with a fixed roadside object. Pedestrian or cyclist struck by a car.
Minor	Likely minor injury	Some low-speed vehicle collisions. Cyclist falls from bicycle at low speed. Left-turn rear-end crash in a slip lane.
Limited	Likely trivial injury or property damage only	Some low-speed vehicle collisions. Pedestrian walks into object (no head injury). Car reverses into post.

Source: Austroads 2009, *Guide to Road Safety Part 6: Road Safety Audit*

4.1.3 Deemed level of risk

The risk matrix in Table 4.3 was used to assess the level of risk for each hazard. The risk matrix uses the Frequency and Severity determined above to determine the likely level of risk for each hazard.

Table 4.3 Level of risk

	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	Low
Limited	High	Medium	Low	Low

Source: Austroads 2009, *Guide to Road Safety Part 6: Road Safety Audit*

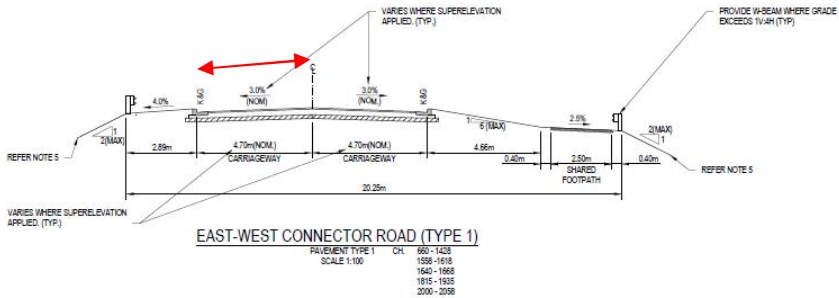
4.2 Road Safety Audit findings

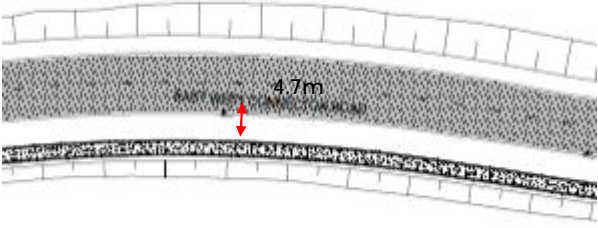
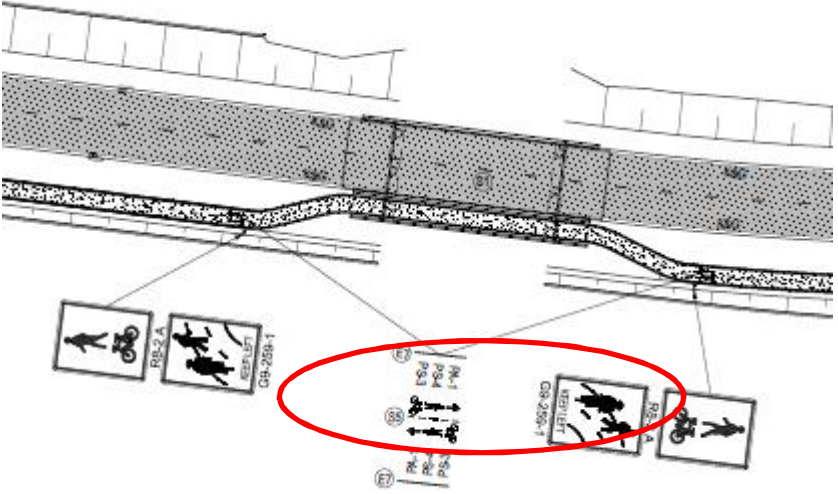
The audit findings are documented in Table 4.4 which provides:

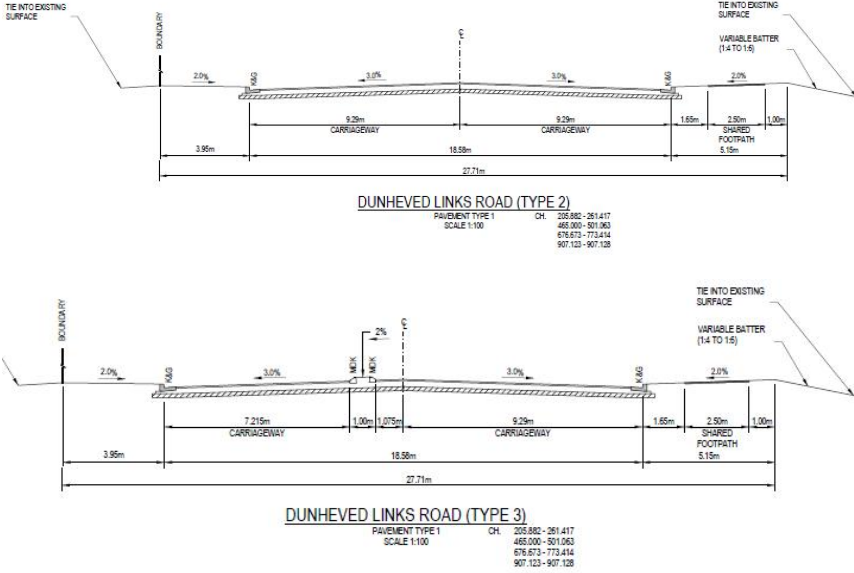
- Specific details of each of the audit findings identified during the audit
- A risk level rating for each of the audit findings.

In accordance with Austroads preferred practice this road safety audit does not include recommended actions.


Table 4.4 Road Safety Audit findings

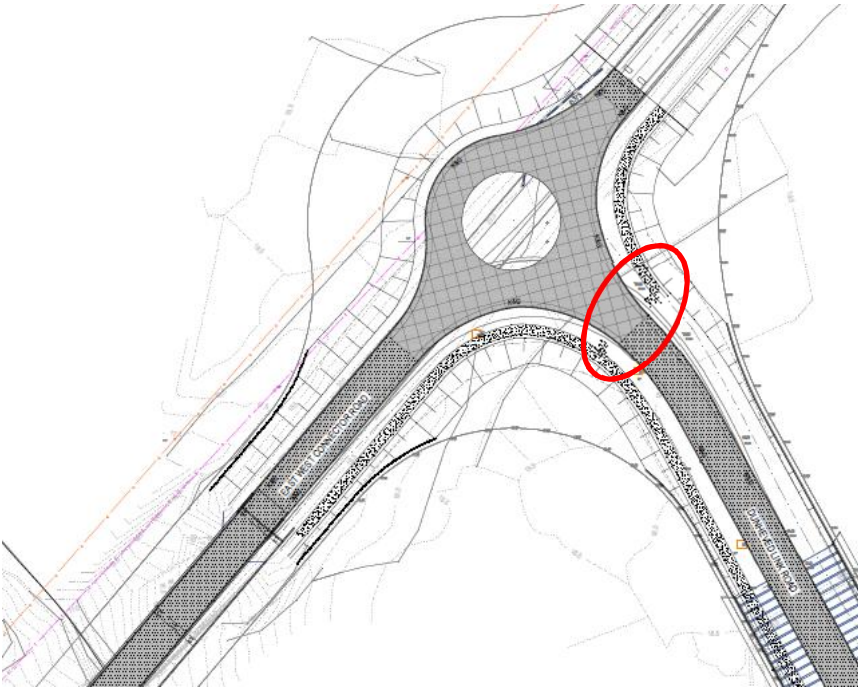

No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
East West Connector Road Stage 1				
1	<p>CV-CARDNO-EWC1-1251 Rev 1, CV-CARDNO-EWC1-1701 to 1705 Rev 1</p> <p>Road alignment and cross section</p>  <p style="text-align: center;">EAST-WEST CONNECTOR ROAD (TYPE 1)</p> <p style="text-align: center;">PAVEMENT TYPE 1 CHL 660 - 1423 1550 - 1616 1640 - 1668 1815 - 1935 2000 - 2058</p>	<p>The plans indicate that East West Connector Road Stage 1 proposes a traffic lane width of 4.7 m. The use of wide lanes may introduce possibility of two cars travelling side-by-side within the lane. This could create potential vehicle to vehicle side-swipe issues, lane encroachment, head-on collisions with the opposing traffic lanes.</p> <p>Wide traffic lanes also encourage speeding.</p>	<p>High (Occasional/Serious)</p>	<p>The road cross section has been dictated by planning documents dictating road widths. Lane markings are proposed to delineate the travel lane. Consideration to additional preventative measures will form part of the CC.</p>

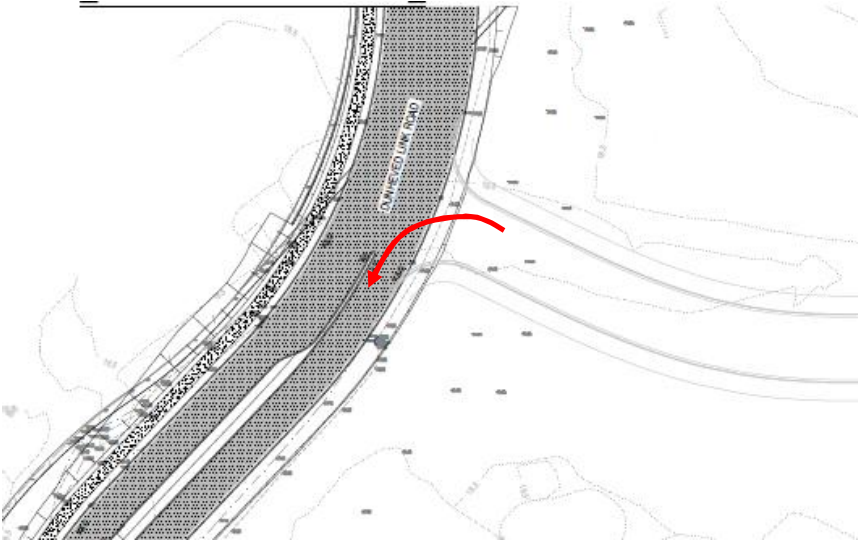
No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
				
2	<p>CV-CARDNO-EWC1-1251 Rev 1, CV-CARDNO-EWC1-1702 Rev 1</p> <p>Safety barriers</p> 	<p>It is unclear if any barrier is proposed along the shared path at the crossing bridge. Given the horizontal alignment changes, without physical protection, there is increased risk of pedestrians and cyclists losing control and falling off from the shared path, potentially in the water or onto the adjacent traffic lane.</p>	<p>High (Occasional/Serious)</p>	<p>Guard rail will be provided on either side of the bridge, to be documented as part of CC.</p>

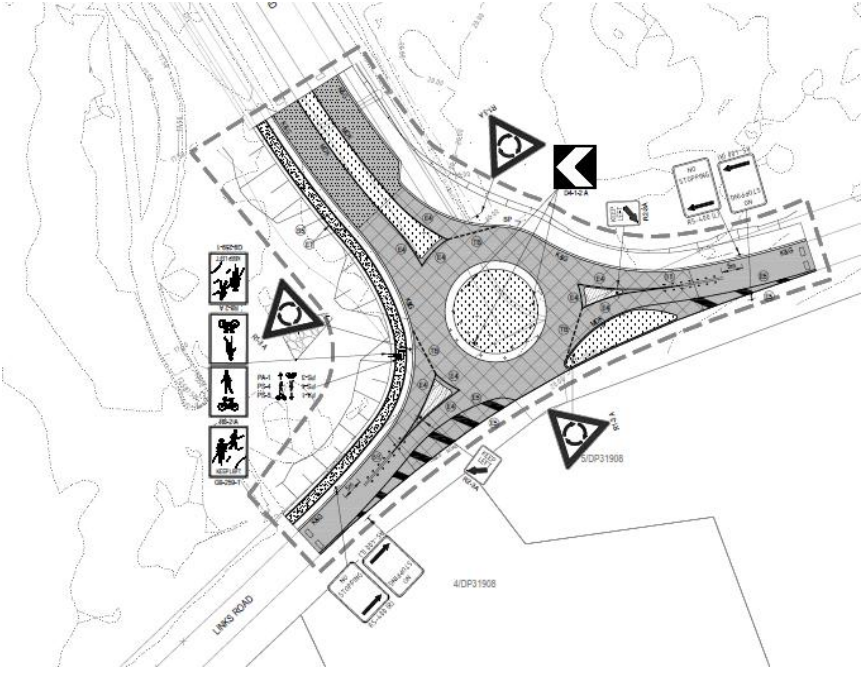
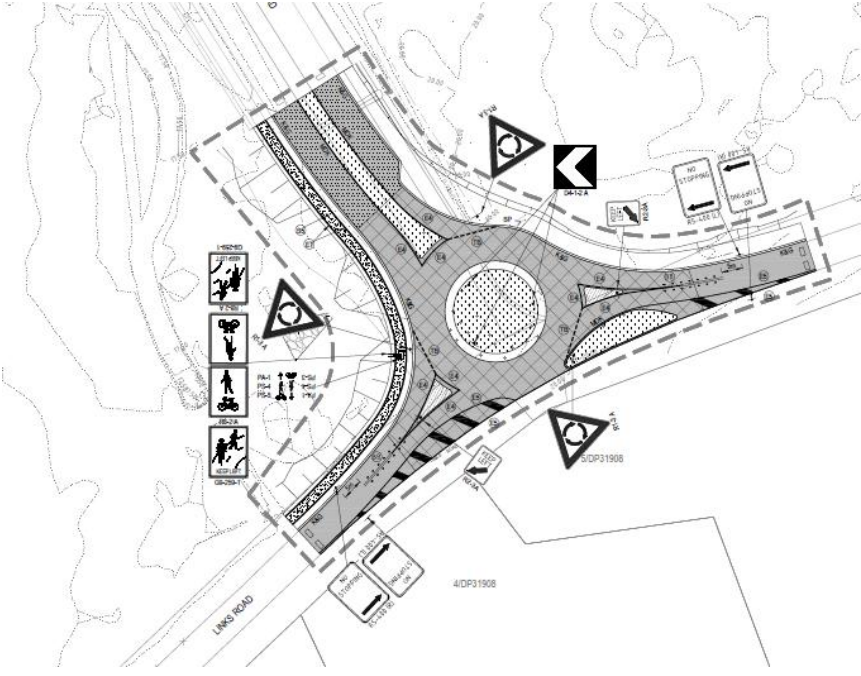
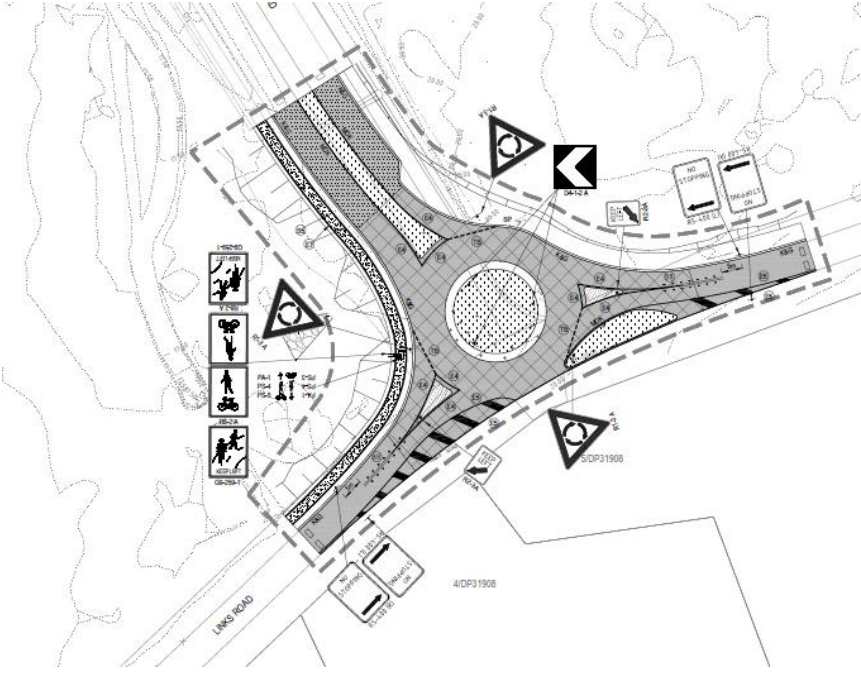
No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
East West Connector Road and Dunheved Link Road Stage 2				
1	CV-CARDNO-EWC2-1251 Rev 1 CV-CARDNO-EWC2-1703 to 1705 Rev 1 Road alignment and cross section Delineation 	<p>The carriageway width of Dunheved Links Road for each direction ranges from 7.215 m to 9.29 m. Longitudinal lane line marking and right turn lane arrow marking are not indicated on the plan. It is unclear if the road follows a two-lane two-way configuration. Wide lanes may introduce possibility of two cars travelling side-by-side. No delineation to regulate traffic could create vehicle side-swipe issues.</p>	<p>Medium (Occasional/Minor)</p>	<p>The design of the Dunheved link road has been based on the previously approved design plans. Lane marking is proposed to delineate the travel section, consideration will be given to additional preventative measure to mitigate the likelihood of vehicles travelling side by side.</p>

No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
	<p>DUNHEVED LINKS ROAD (TYPE 5) PAVEMENT TYPE 1 SCALE 1:100 CH. 205.882 - 261.417 465.000 - 501.063 676.673 - 773.414 907.123 - 907.128</p>			

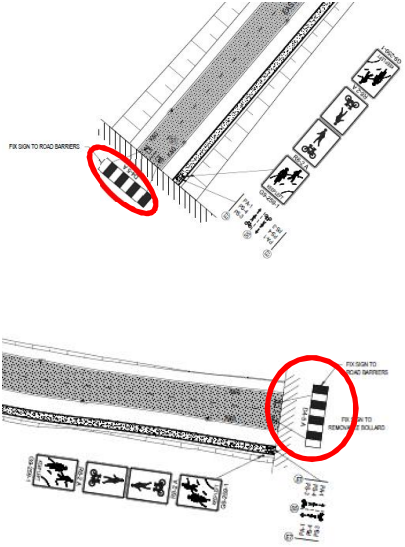
No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/ Severity)	Designer response
				

No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
2	CV-CARDNO-EWC2-1701 Rev 1 	<p>The shared path terminates at the southeast corner of the roundabout. Pedestrians and cyclists who continue heading south along Dunheved Links Road are required to use the western side shared path. A crossing facility has not been proposed to provide safe access for pedestrians and cyclists. This could increase the risk of collisions involving pedestrians and cyclists with vehicles.</p>	<p>High (Occasional/Serious)</p>	<p>A median conforming to Austroads requirements is documented in revision 2 of the drawings, which provides safe access</p> 

No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
3	CV-CARDNO-EWC2-1703 Rev 1 Intersections 	Swept path for the largest vehicle turning left at this driveway access intersection has not been provided. The manoeuvrability of large vehicles making the left turn onto Dunheved Links Road appears to be restricted. The intersection layout could lead to vehicles mounting and tracking over the median with the potential for side-swipe collisions with opposing right turning vehicles.	Medium (Occasional/Minor)	This intersection has been previously assessed under a separate approval. To remove ambiguity the road alignment has been removed from the set.
Dunheved Link Road Stage 3				
1		It is unclear if all existing driveways along Links Road where the proposed roundabout is positioned have been considered in the design.	NOTE ONLY	

No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
2	CV-CARDNO-EWC3-1701 Rev 2 	The driveway access connecting with the roundabout does not appear to have any yield line, signage or centre line. Vehicles utilising the driveway may not be aware of two-way driveway access, vehicle hold position and general guidance signage for roundabout.	Low (Improbable/Minor)	Appropriate signage will be documented as part of the CC in consultation with the user of the facility.
3		It is unclear whether the layout of the roundabout and the intersection accommodates B-double vehicle movements. No swept paths provided.	NOTE ONLY	B double movements have been accommodated where required. Refer drawing 3001 for details.
4		There is no signage to indicate where the shared path starts or ends on Links Road. It is unclear whether this shared path will continue or become a footpath on Links Road and whether it remains on the same side of the road.	NOTE ONLY	Signage to be added to indicate end of shared path.
General Comments for Note Only				
1	Clear zone requirement	The design or posted speed are unknown. There is insufficient information to undertake audit of clear zone distance requirements as per Austroads Guidelines.	NOTE ONLY	Speed limit included on all signage and link marking plans. Clear zone assessment has been carried out.

No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
2	Speed limit	The plans have not indicated any speed limit signposting or pavement markings.	NOTE ONLY	Speed limit included on all signage and link marking plans.
3	Signposting and linemarkings	Signposting and linemarkings are not fully detailed on the drawings.	NOTE ONLY	Signage and line marking updated in revision 2 of the design.
4	Swept paths	No swept paths analyses provided for this audit.	NOTE ONLY	Swept paths undertaken as part of DA design.

No.	Drawings/Location/Road safety category	Description of findings	Risk rating (Frequency/Severity)	Designer response
6	<p>CV-CARDNO-EWC1-1701 Rev 1</p> 	<p>It is unclear whether the sections of road audited are trafficable. Barrier signs may not provide adequate advanced warning to drivers on where the road terminates should the road open to traffic. There is also inadequate turnaround area for vehicles at these locations.</p>	NOTE ONLY	<p>It is proposed that the road would only be open once continuity exists between stages. A 12 metre wide carriageway should provide adequate facility for turning around the typical service vehicles that will be using the road.</p>

5 FORMAL STATEMENT

The findings and opinions in the report are based on the examination of the design drawings as well as the specific road and environs, and might not address all concerns existing at the time of the audit. The Auditors have endeavoured to identify features of the design and/or the road that could be modified or removed to improve safety. It should be noted that although every effort has been made to identify potential safety hazards, no guarantee can be made that every deficiency has been identified. It must also be recognised that safety cannot be guaranteed since no road can be regarded as safe. While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to the Auditors.

Ryan Miller

Level 3 Lead Road Safety Auditor
Identification number: RSA-02-0223



Signature date: 06/03/2018

Brigette Humphrey-Robinson

Level 2 Road Safety Auditor
Identification number: RSA-02-0835



Signature date: 06/03/2018

Qian Liu

Trainee Road Safety Auditor

Signature date: 06/03/2018

APPENDIX A

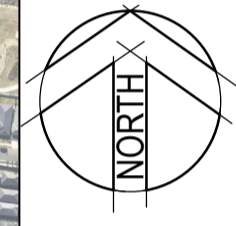
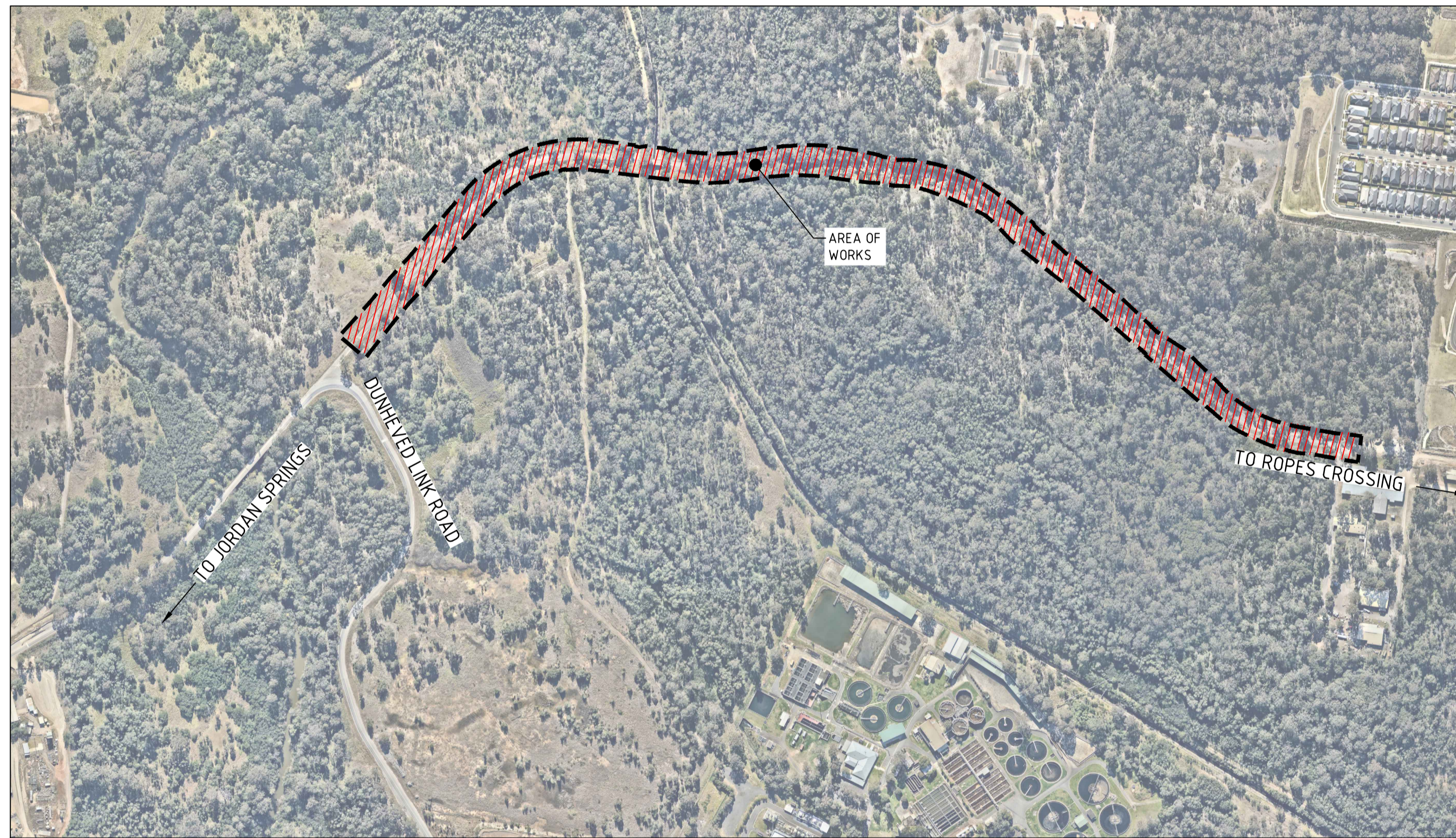
SUPPLIED AUDIT DOCUMENTS



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LENDLEASE

EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION



SCHEDULE OF DRAWINGS

DRAWING No.	DESCRIPTION
CV-CARDNO-EWC1-1001	COVER SHEET & DRAWING SCHEDULE
CV-CARDNO-EWC1-1011	GENERAL NOTES AND LEGENDS
CV-CARDNO-EWC1-1031	GENERAL ARRANGEMENT PLAN
CV-CARDNO-EWC1-1041	DEVELOPMENT APPLICATION STAGING PLAN & ROAD HIERARCHY PLAN
CV-CARDNO-EWC1-1051	EXISTING SERVICES & SURVEY PLAN SHEET 1
CV-CARDNO-EWC1-1052	EXISTING SERVICES & SURVEY PLAN SHEET 2
CV-CARDNO-EWC1-1101	EROSION & SEDIMENT CONTROL PLAN SHEET 1
CV-CARDNO-EWC1-1102	EROSION & SEDIMENT CONTROL PLAN SHEET 2
CV-CARDNO-EWC1-1103	EROSION & SEDIMENT CONTROL PLAN SHEET 3
CV-CARDNO-EWC1-1104	EROSION & SEDIMENT CONTROL PLAN SHEET 4
CV-CARDNO-EWC1-1105	EROSION & SEDIMENT CONTROL PLAN SHEET 5
CV-CARDNO-EWC1-1131	EROSION & SEDIMENT CONTROL DETAILS
CV-CARDNO-EWC1-1251	TYPICAL ROAD CROSS SECTIONS
CV-CARDNO-EWC1-1301	ROADS & STORMWATER PLAN SHEET 1
CV-CARDNO-EWC1-1302	ROADS & STORMWATER PLAN SHEET 2
CV-CARDNO-EWC1-1303	ROADS & STORMWATER PLAN SHEET 3
CV-CARDNO-EWC1-1304	ROADS & STORMWATER PLAN SHEET 4
CV-CARDNO-EWC1-1305	ROADS & STORMWATER PLAN SHEET 5
CV-CARDNO-EWC1-1351	ROAD LONGITUDINAL SECTIONS SHEET 1
CV-CARDNO-EWC1-1352	ROAD LONGITUDINAL SECTIONS SHEET 2
CV-CARDNO-EWC1-1353	ROAD LONGITUDINAL SECTIONS SHEET 3
CV-CARDNO-EWC1-1701	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 1
CV-CARDNO-EWC1-1702	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 2
CV-CARDNO-EWC1-1703	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 3
CV-CARDNO-EWC1-1704	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 4
CV-CARDNO-EWC1-1705	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 5
CV-CARDNO-EWC1-2201	STORMWATER DRAINAGE DETAILS SHEET 1
CV-CARDNO-EWC1-2202	STORMWATER DRAINAGE DETAILS SHEET 2
CV-CARDNO-EWC1-2301	INTERNAL STORMWATER CATCHMENT PLAN SHEET 1
CV-CARDNO-EWC1-2302	INTERNAL STORMWATER CATCHMENT PLAN SHEET 2
CV-CARDNO-EWC1-2351	EXTERNAL STORMWATER CATCHMENT PLAN

DATE PLOTTED: 19 January 2018 12:19 PM BY: BRENDAN LARKIN
 XREFS: XR-89914020-2301-C4-HO-BOUNDARIES
 CAD File: N:\Parametric\Projects\89914020_CENTRAL_PRECINCT_ADI_ST MARYS\Drawings\23_East West Collector Road DAV01 Stage 1\Drawings\CV-CARDNO-EWC1-1001-DWG(1).dwg

Rev.	Date	Description	Des.	Verif.	Appd.
1	19/01/2018	DRAFT - ISSUED FOR RSA		MS	

Drawn BML 19/01/2018		Date	19/01/2018	Status	
Checked MS 19/01/2018		Date	19/01/2018	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES	
Designed MS 19/01/2018		Date	19/01/2018		
Verified 19/01/2018		Date	19/01/2018	Datum	AHD
Approved		Date	19/01/2018	Scale	N.T.S.
		Date	19/01/2018	Size	A1
				Drawing Number	CV-CARDNO-EWC1-1001
				Revision	1

GENERAL

- 1. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH PENRITH CITY COUNCIL GUIDELINES.
2. PENRITH CITY COUNCIL STANDARD DETAILS TO BE USED WHERE POSSIBLE.

SITWORKS NOTES

- 1. ORIGIN OF LEVELS:- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO CARDNO.
3. MAKE SMOOTH CONNECTION WITH EXISTING WORKS AND SURFACES.
4. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
5. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
6. PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
7. ASPHALTIC CONCRETE SHALL CONFORM TO R.M.S. SPECIFICATION R116.
8. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m² OF BASECOURSE MATERIAL PLACED.
9. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S. FORM 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF CARDNO AND THE SUPERINTENDENT.
10. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S. FORM 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF CARDNO AND THE SUPERINTENDENT.

BULK EARTHWORKS NOTES

- 1. ORIGIN OF LEVELS: REFER SURVEY NOTES
2. STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND STOCK PILE AS DIRECTED BY SUPERINTENDENT FOR FUTURE REUSE.
3. EXCAVATED MATERIAL TO BE USED AS STRUCTURAL FILL PROVIDED THE PLACEMENT MOISTURE CONTENT OF THE MATERIAL IS +/- 2% OF THE OPTIMUM MOISTURE CONTENT.
4. COMPACT FILL AREAS AND SUBGRADE TO NOT LESS THAN:
LOCATION STANDARD DRY DENSITY (AS 1289 E 5.1.1.)
UNDER BUILDING SLABS ON GROUND 98%
UNDER ROADS AND CARPARKS 100%
LANDSCAPED AREAS UNLESS NOTED OTHERWISE 98%
5. FOR NON COHESIVE MATERIAL, COMPACT TO 75% DENSITY INDEX.
6. BEFORE PLACING FILL, PROOF ROLL EXPOSED SUBGRADE WITH AN 8 TONNE (MIN) DEADWEIGHT SMOOTH DRUM VIBRATORY ROLLER TO DETECT THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 20mm MOVEMENT UNDER ROLLER).
7. FREQUENCY OF COMPACTION TESTING SHALL BE NOT LESS THAN- (A) 1 TEST PER 1,000m² OF FILL PLACED PER LAYER OF FILL. (B) 3 TESTS PER VISIT (C) 1 TEST PER 1000m² OF EXPOSED SUBGRADE "LEVEL 1" TESTING SHALL BE TESTING IN ACCORDANCE WITH AS 3798 (1996).
8. FILLING TO BE PLACED IN MAXIMUM 200mm - LOOSE LAYERS AND COMPACTED AS SPECIFIED
9. NO FILLING SHALL TAKE PLACE TO EXPOSED SUBGRADE UNTIL THE AREA HAS BEEN PROOF ROLLED IN THE PRESENCE OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER AND APPROVAL GIVEN IN WRITING THAT FILLING CAN PROCEED.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

- 1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, NSW OFFICE OF WATER, SYDNEY WATER, THE OFFICE OF ENVIRONMENT AND HERITAGE, AND LENDLEASE'S REPRESENTATIVE. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED OR AS OTHERWISE DIRECTED BY THE SUPERINTENDENT. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH a. LOCAL AUTHORITY REQUIREMENTS b. EPA REQUIREMENTS c. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

- 6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE: a. INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL. b. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL. c. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN (D) INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN. d. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

- 7. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
8. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS IS PRACTICABLE AFTER THE COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

- 9. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
10. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
11. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
12. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY: a. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE b. ENSURING THAT NOTHING IS MAILED TO THEM c. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS. (I) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER (II) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH (III) CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

NOISE

EPA AND COUNCIL REQUIREMENTS MUST BE ADHERED TO REGARDING LEVEL OF NOISE AND WORKING HOURS TO ENSURE THAT RESIDENTS AND OTHER APPLICABLE NEIGHBORS TO THE SITE ARE NOT DISTURBED UNREASONABLY. THE GENERATION OF NOISE MUST BE MINIMISED.

DUST

DUST MUST BE MINIMISED TO ENSURE THERE IS NO HEALTH RISK OR LOSS OF AMENITY.

STAGING OF WORKS

STRIPPING WORKS ARE TO BE STAGED TO MINIMISE EXTENT OF EXPOSED AREA. WEATHER CONDITIONS TO BE ASSESSED PRIOR TO UNDERTAKING STRIPPING.

STOCKPILE PROTECTION

SEDIMENT RETENTION STRUCTURES TO BE PLACED DOWNSLOPE OF ANY STOCKPILES. STOCKPILE IN PLACE > 28 DAYS TO BE TEMPORARILY GRASSED.

VEHICLE AND ROAD MANAGEMENT

SITE ACCESS TO BE RESTRICTED TO ALLOCATED TRUCK ROUTES. EXTERNAL ROADS TO BE SWEEPED REGULARLY FOR DURATION OF WORKS.

EXISTING UNDERGROUND SERVICES NOTES

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. CARDNO CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY 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.

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. 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.

STORMWATER DRAINAGE NOTES

- 1. STORMWATER DESIGN CRITERIA: (A) AVERAGE RECURRENCE INTERVAL: 5 YEAR ARI PIPED DRAINAGE 100 YEAR ARI OVERLAND FLOW (B) RAINFALL INTENSITIES: TIME OF CONCENTRATION: 5 MINUTES 5 YEAR ARI= 126mm/hr 100 YEAR ARI= 219mm/hr
2. PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
3. PIPES 300 DIA AND LESS SHALL BE DWV GRADE (CLASS SN8) uPVC WITH SOLVENT WELDED JOINTS.
4. EQUIVALENT STRENGTH FRC PIPES MAY BE USED.
5. ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
6. PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.
7. PIPES TO BE INSTALLED TO TYPE HS1 SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).
8. REFER TO AS/NZS 3725:2007 TABLE B1 FOR REQUIRED FILL DEPTHS ABOVE PIPE BARREL PRIOR TO USE OF COMPACTION MACHINERY OR TRAVERSING OF PIPES BY GENERAL SITE EQUIPMENT.
9. WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 (2007) TO DETERMINE THE APPROPRIATE PIPE CLASS. PROPOSED PIPE CLASS SHALL BE REVIEWED BY CARDNO PRIOR TO INSTALLATION.
10. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500.3 (2015).
11. THE USE OF PRECAST PITS IS ONLY PERMITTED WITH THE APPROVAL OF PENRITH CITY COUNCIL'S ENGINEER.
12. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
13. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC DWV SEWER GRADE PIPE IS TO BE USED.
14. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
15. GRATES AND COVERS SHALL CONFORM TO AS 3996. MINIMUM CLASS C.
16. ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.
17. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.

STORMWATER DRAINAGE NOTES CONTINUED

- 18. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

TELSTRA - DUTY OF CARE NOTE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY ITS LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO ITS PROPERTY AND LOSSES CAUSED TO TELSTRA AND ITS CUSTOMERS.

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY WHELANS INSITES, BEING REGISTERED SURVEYORS. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. CARDNO DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT CARDNO THE FOLLOWING NOTES HAVE BEEN TAKEN DIRECTLY FROM THE ORIGINAL SURVEY DOCUMENTS.

STREET FURNITURE

- 1. ALL LIGHT POLES, STREET NAMES AND BUS SHELTERS IN THIS SUBDIVISION WILL BE BLACK POWDER COATED TO THE SATISFACTION OF PENRITH CITY COUNCIL. FURTHER THAT THESE LIGHT POLES WILL COMPLY WITH COUNCIL'S SPECIFICATIONS.
2. ALL LIGHT POLES ARE TO BE TYPE 'MACARTHUR'. REFER ELECTRICAL DESIGN DRAWINGS.

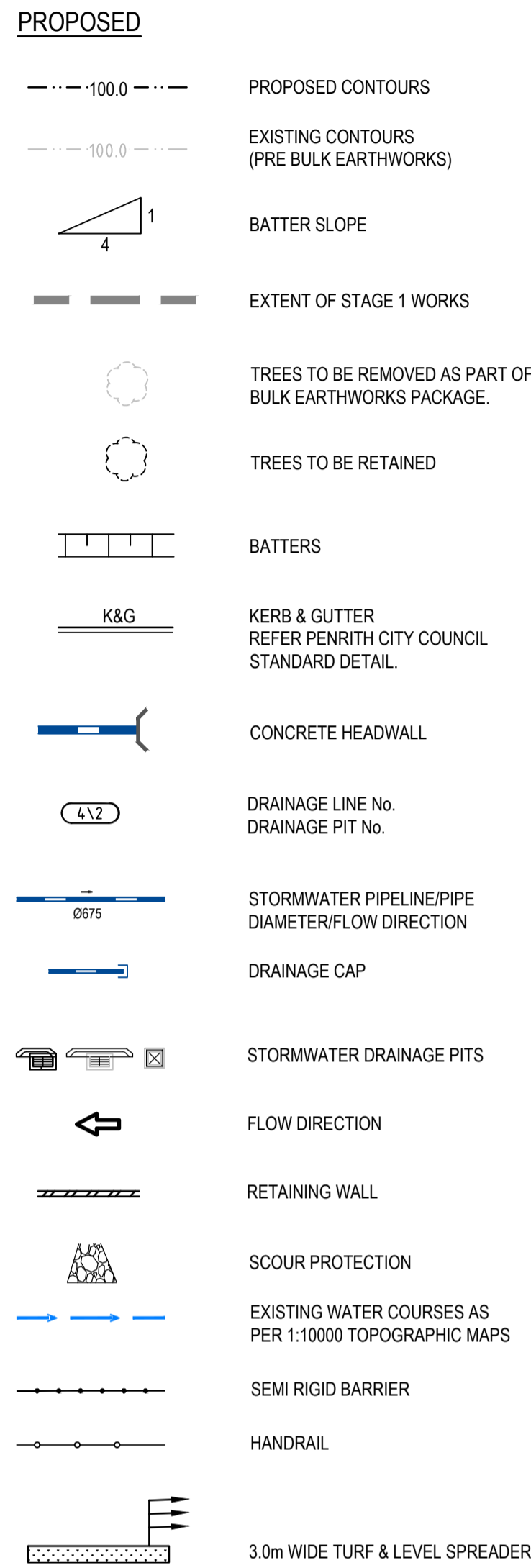
CONCRETE NOTES

- 1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONCRETE QUALITY ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

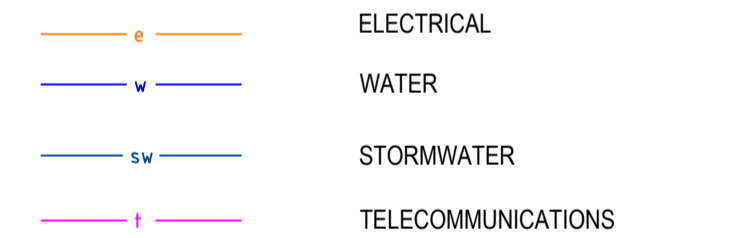
Table with 4 columns: ELEMENT, AS 3600 Fc MPa AT 28 DAYS, SPECIFIED SLUMP, NOMINAL AGG. SIZE. Rows include VEHICULAR BASE, KERBS AND PATHS, PITS, FOUNDATIONS & CULVERT BASE SLABS.

- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379.
3. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY CARDNO.
4. CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm TOP AND 70mm FOR EXTERNAL EDGES UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
6. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED AND CURED IN ACCORDANCE WITH R.T.A. SPECIFICATION R83.

PROPOSED WORKS LEGEND



EXISTING WORKS LEGEND



REINFORCEMENT NOTES

- 1. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION. SPLICES IN THE REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN. THE WRITTEN APPROVAL OF THE ENGINEER SHALL BE OBTAINED FOR ANY OTHER SPLICES. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT.
2. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED IN WRITING BY THE ENGINEER.
3. REINFORCEMENT SYMBOLS - N - DENOTES GRADE 400N TEMPORARE DEFORMED BARS TO AS 1302 R - DENOTES GRADE 250R HOT ROLLED PLAIN BARS TO AS 1302 SL - DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304 W - DENOTES HARD-DRAWN PLAIN WIRE TO AS 1303 REINFORCEMENT COGS AND EXTENSIONS TO BE IN ACCORDANCE WITH AS3600.
4. THE FIGURES FOLLOWING THE FABRICS SYMBOL 'SL' IS THE REFERENCE NUMBER FOR FABRIC TO AS 1304. ALL REINFORCEMENT FABRIC SHALL COMPLY WITH AS1303 AND AS1304 AND SHALL BE SUPPLIED AS FLAT SHEETS.
5. FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF WIRE.
6. PLACE SUFFICIENT BAR CHAIRS UNDER BOTTOM REINFORCING RODS AND TOP CROSSRODS IN SLABS TO ALLOW THEM TO BE SUPPORTED IN THEIR CORRECT POSITIONS DURING CONCRETING (NOT GREATER THAN 900mm CENTRES BOTH WAYS)
7. REINFORCEMENT LAYERS DENOTED THUS UNO - TT - DENOTES TOP BARS LAID LAST IN TOP T - DENOTES TOP BARS LAID FIRST IN TOP B - DENOTES BOTTOM BARS LAID SECOND IN BOTTOM BB - DENOTES BOTTOM BARS LAID FIRST IN BOTTOM WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-300 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 450mm UNLESS NOTED OTHERWISE.
8. MINIMUM LAP LENGTHS UNLESS NOTED OTHERWISE SHALL BE - 500 FOR N12 BARS 600 FOR N16 BARS 900 FOR N20 BARS 1000 FOR N24 BARS 1200 FOR N28 BARS 1500 FOR N32 BARS 1800 FOR N36 BARS



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Table with 2 columns: Action (Drawn, Checked, Designed, Verified, Approved) and Date (19/01/2018).

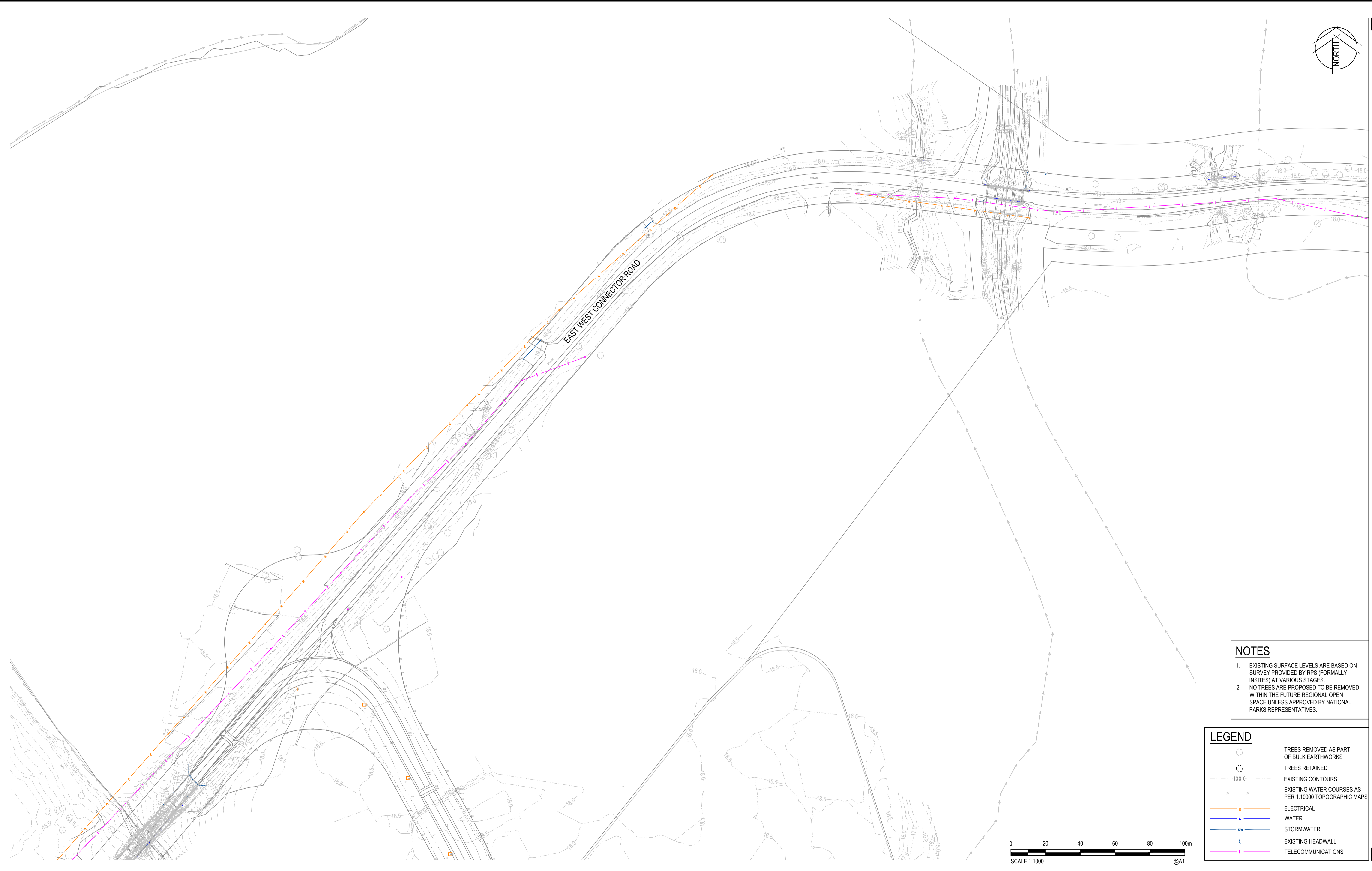
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Table with 2 columns: Status (FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES) and Drawing Number (CV-CARDNO-EWC1-1011). Includes Date (19/01/2018), Scale (N.T.S), Size (A1), and Revision (1).

Table with 4 columns: Rev., Date, Description, Des. Verif. Appd. Row 1: 1, 19/01/2018, DRAFT - ISSUED FOR RSA, MS.

DATE PLOTTED: 19 January 2018 12:22 PM BY: BRENDAN LARKIN

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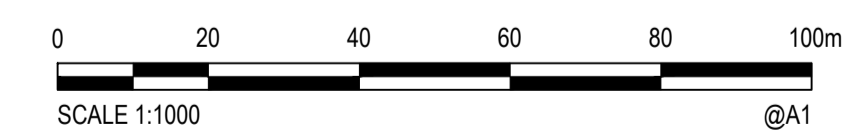


NOTES

- EXISTING SURFACE LEVELS ARE BASED ON SURVEY PROVIDED BY RPS (FORMALLY INSITES) AT VARIOUS STAGES.
- NO TREES ARE PROPOSED TO BE REMOVED WITHIN THE FUTURE REGIONAL OPEN SPACE UNLESS APPROVED BY NATIONAL PARKS REPRESENTATIVES.

LEGEND

	TREES REMOVED AS PART OF BULK EARTHWORKS
	TREES RETAINED
	EXISTING CONTOURS
	EXISTING WATER COURSES AS PER 1:10000 TOPOGRAPHIC MAPS
	ELECTRICAL
	WATER
	STORMWATER
	EXISTING HEADWALL
	TELECOMMUNICATIONS



Rev.	Date	Description	Des.	Verif.	Appd.
1	19/01/2018	DRAFT - ISSUED FOR RSA		MS	



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Drawn	Date
BML	19/01/2018
Checked	Date
MS	19/01/2018
Designed	Date
MS	19/01/2018
Verified	Date
Approved	

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Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EXISTING SERVICES & SURVEY PLAN
	SHEET 1

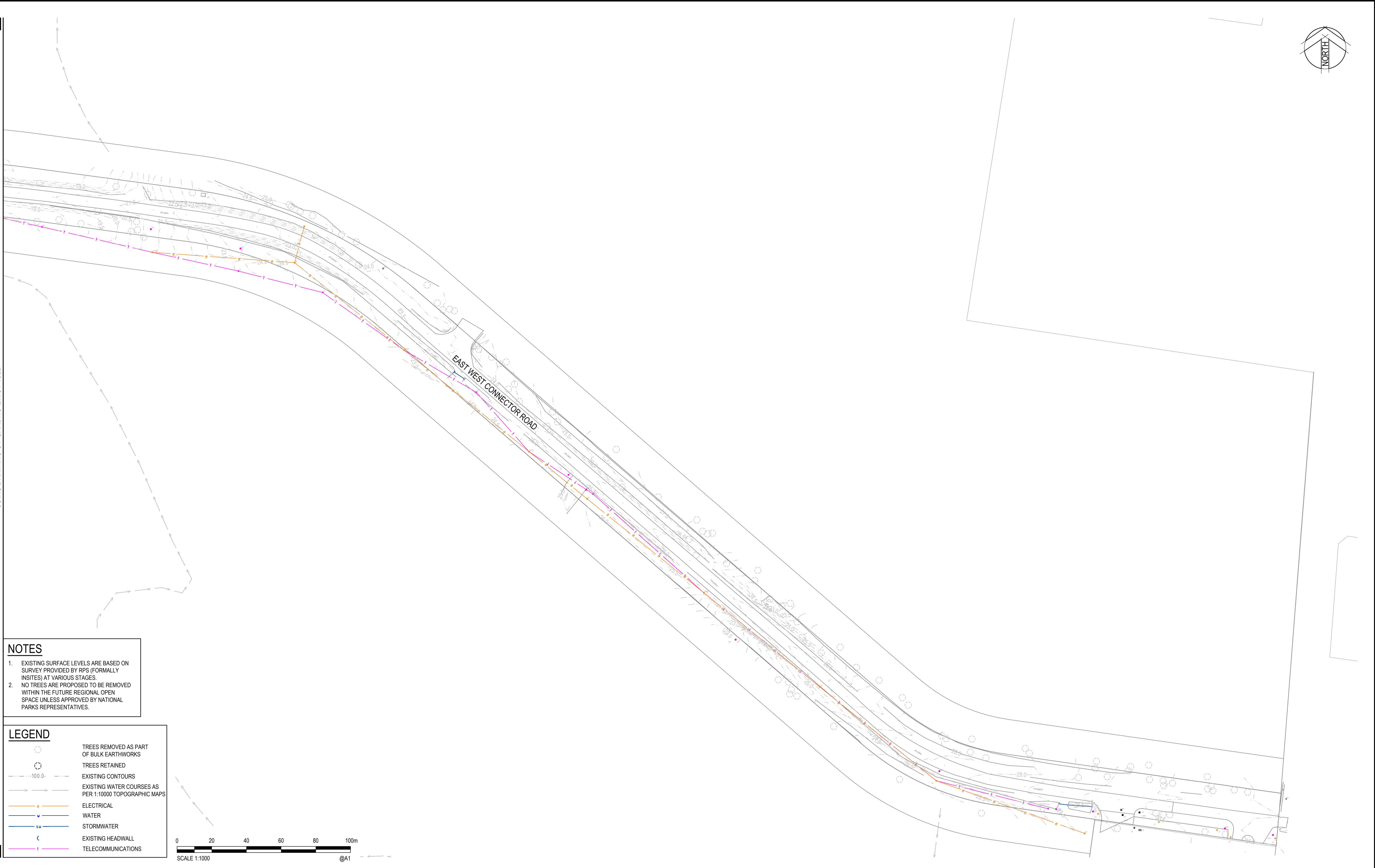
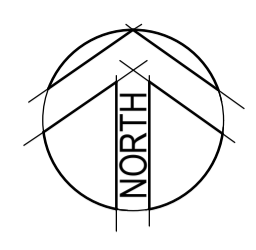
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DATE PLOTTED: 19 January 2018 12:23 PM BY: BRENDAN LARKIN

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JOINS DRAWING CV-CARDNO-EWC1-1052

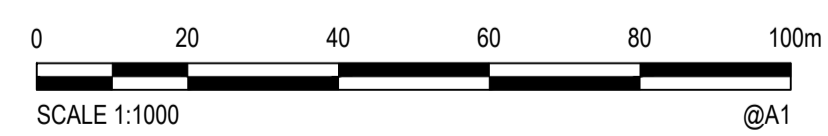


NOTES

- EXISTING SURFACE LEVELS ARE BASED ON SURVEY PROVIDED BY RPS (FORMALLY INSITES) AT VARIOUS STAGES.
- NO TREES ARE PROPOSED TO BE REMOVED WITHIN THE FUTURE REGIONAL OPEN SPACE UNLESS APPROVED BY NATIONAL PARKS REPRESENTATIVES.

LEGEND

	TREES REMOVED AS PART OF BULK EARTHWORKS
	TREES RETAINED
	EXISTING CONTOURS
	EXISTING WATER COURSES AS PER 1:10000 TOPOGRAPHIC MAPS
	ELECTRICAL
	WATER
	STORMWATER
	EXISTING HEADWALL
	TELECOMMUNICATIONS



Rev.	Date	Description	Des.	Verif.	Appd.
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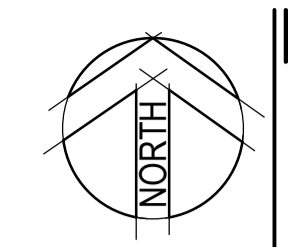
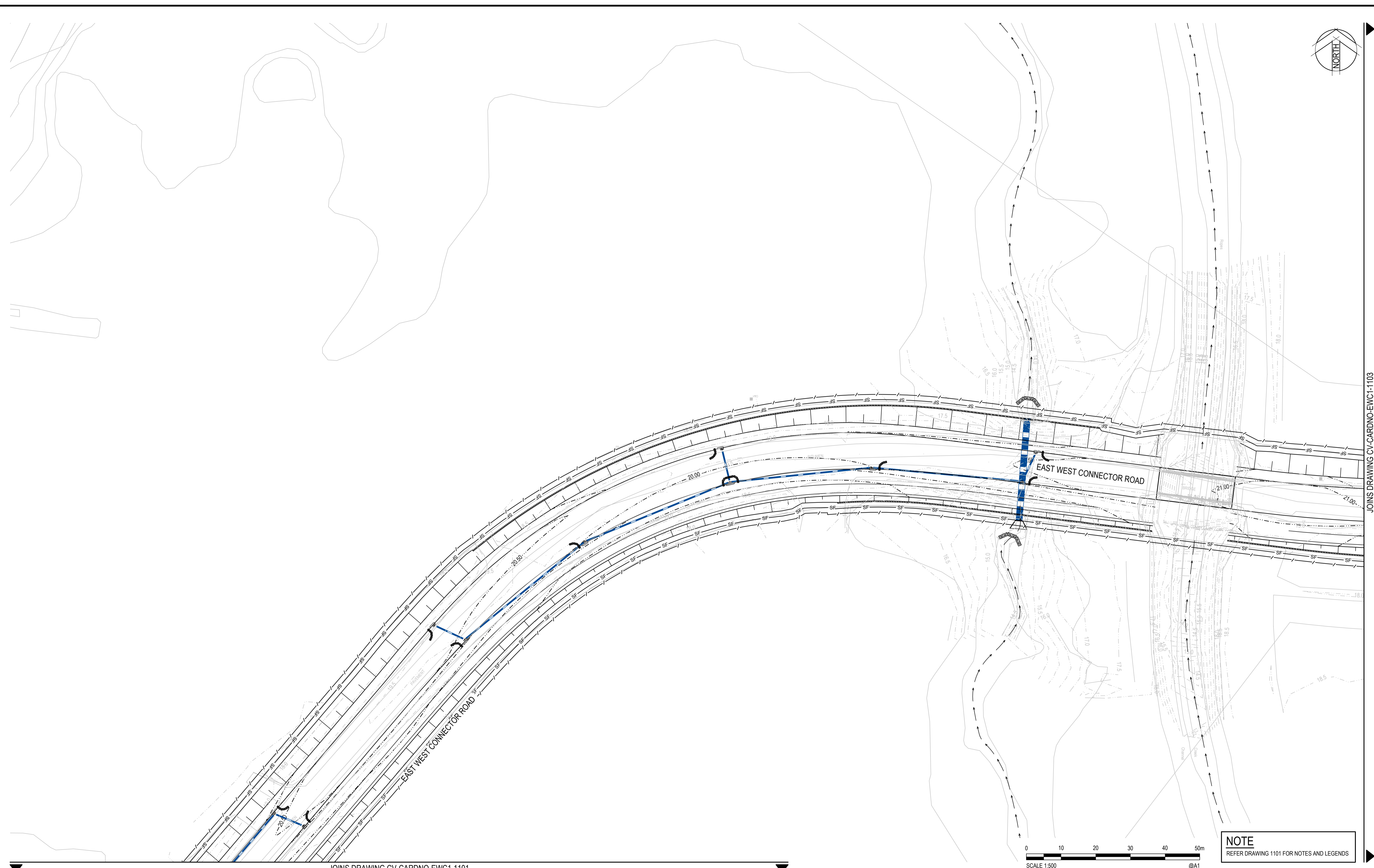
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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EXISTING SERVICES & SURVEY PLAN
	SHEET 2

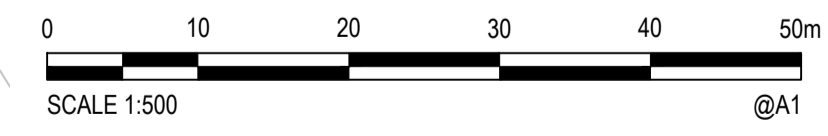
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JOINS DRAWING CV-CARDNO-EWC1-1103

JOINS DRAWING CV-CARDNO-EWC1-1101



NOTE
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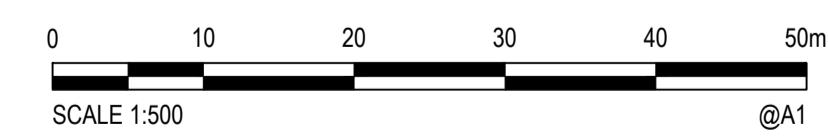
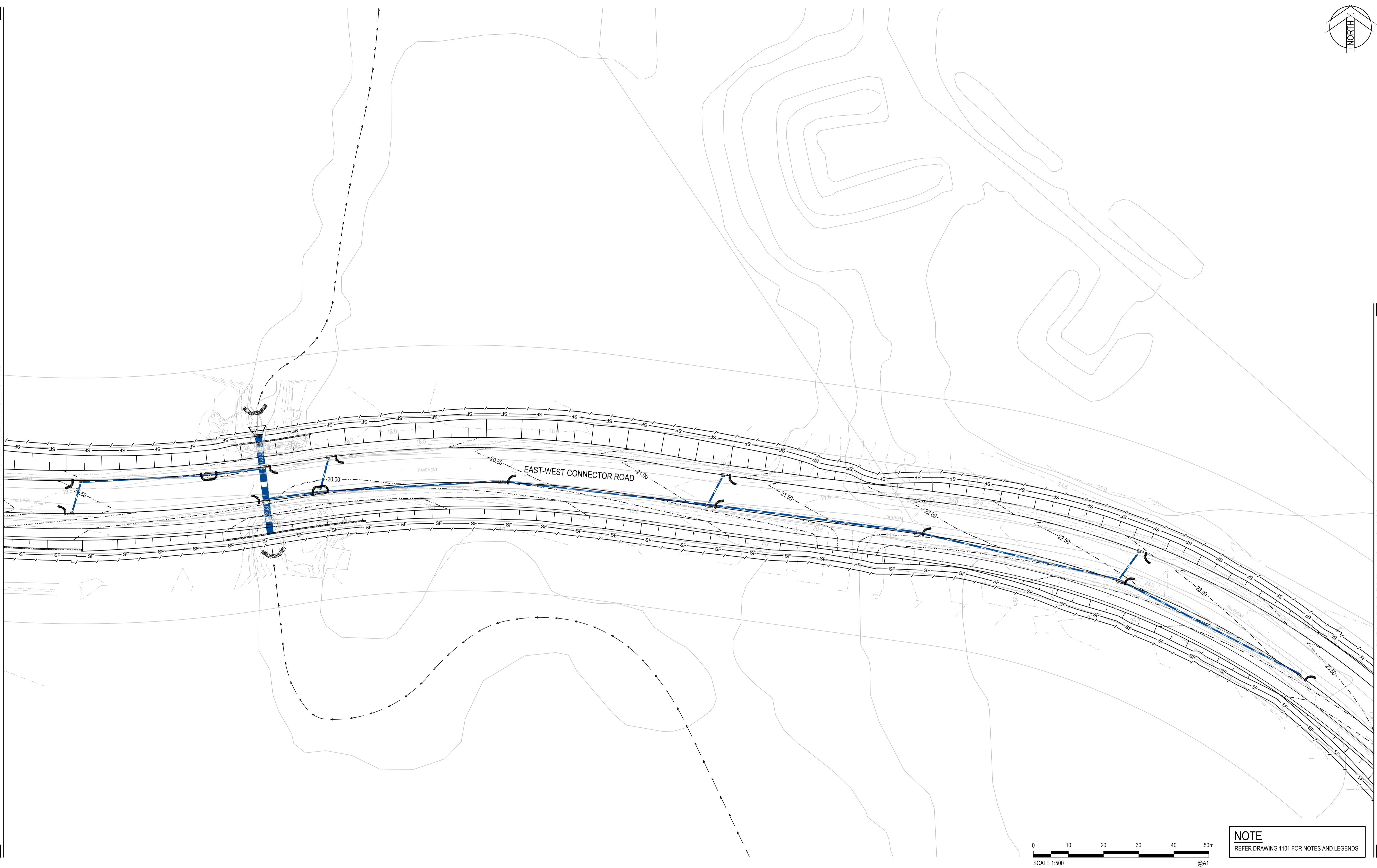
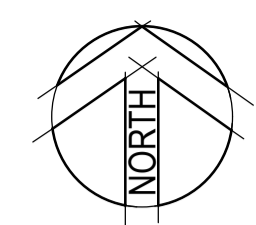
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Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EROSION & SEDIMENT CONTROL PLAN
SHEET	2

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JOINS DRAWING CV-CARDNO-EWC1-1104



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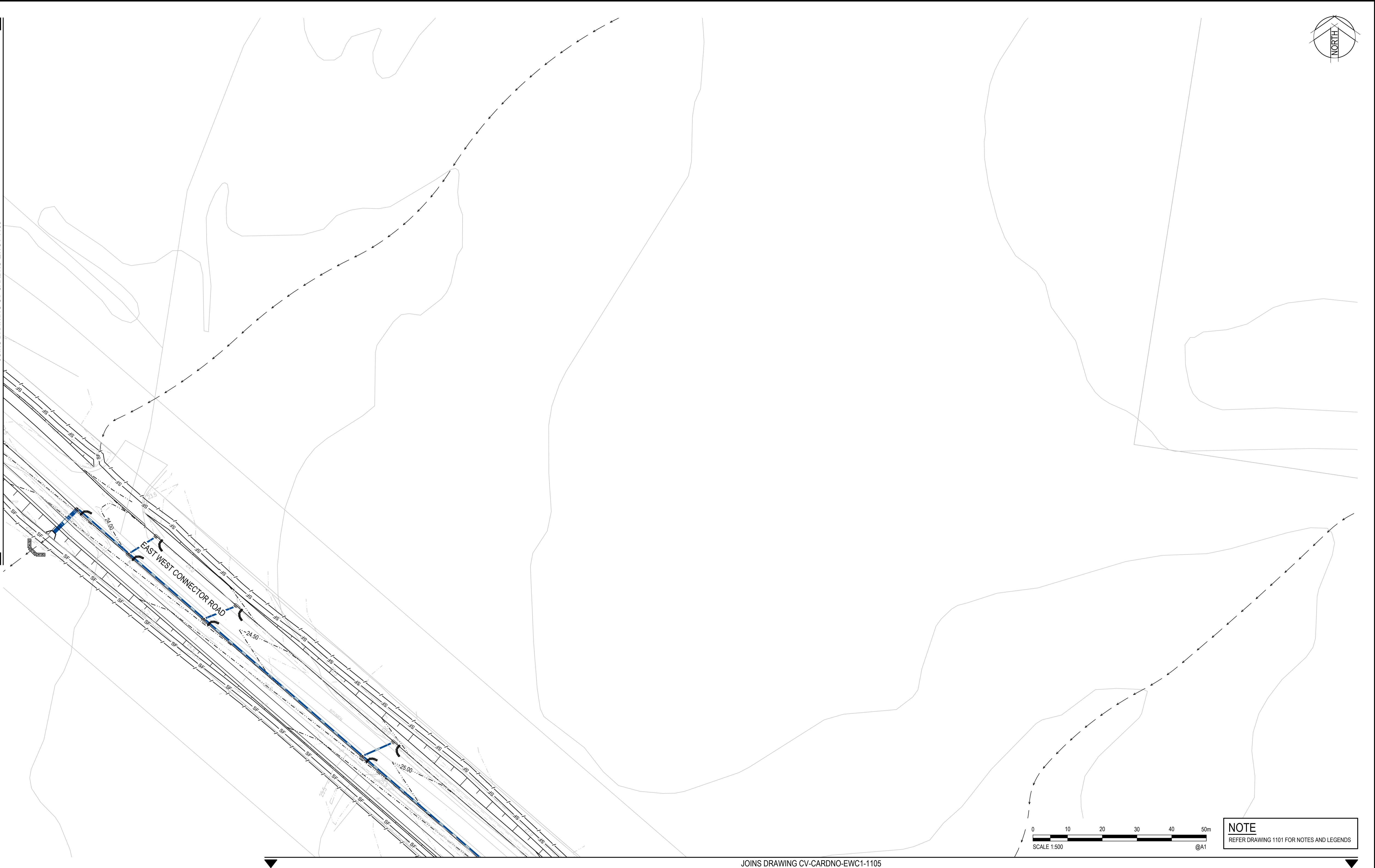
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EROSION & SEDIMENT CONTROL PLAN
SHEET	3

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
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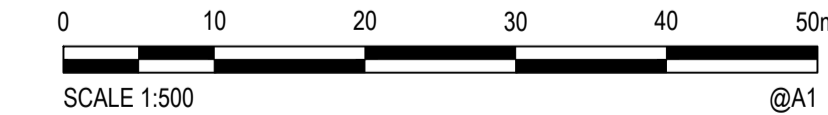
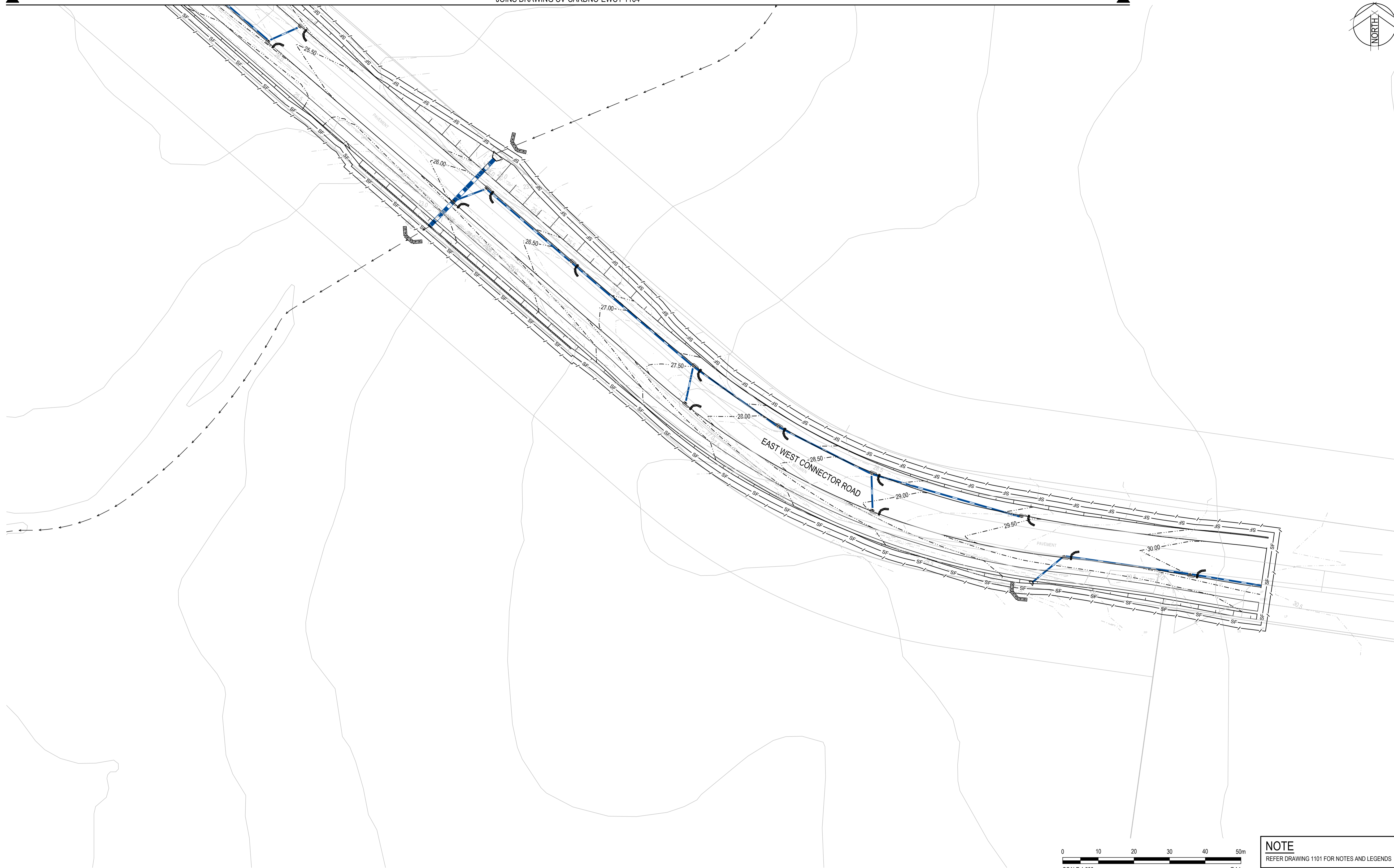
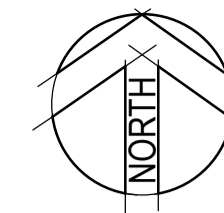
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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EROSION & SEDIMENT CONTROL PLAN
	SHEET 4

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
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Scale	1:500	Size	A1
Drawing Number	CV-CARDNO-EWC1-1104	Revision	1



NOTE
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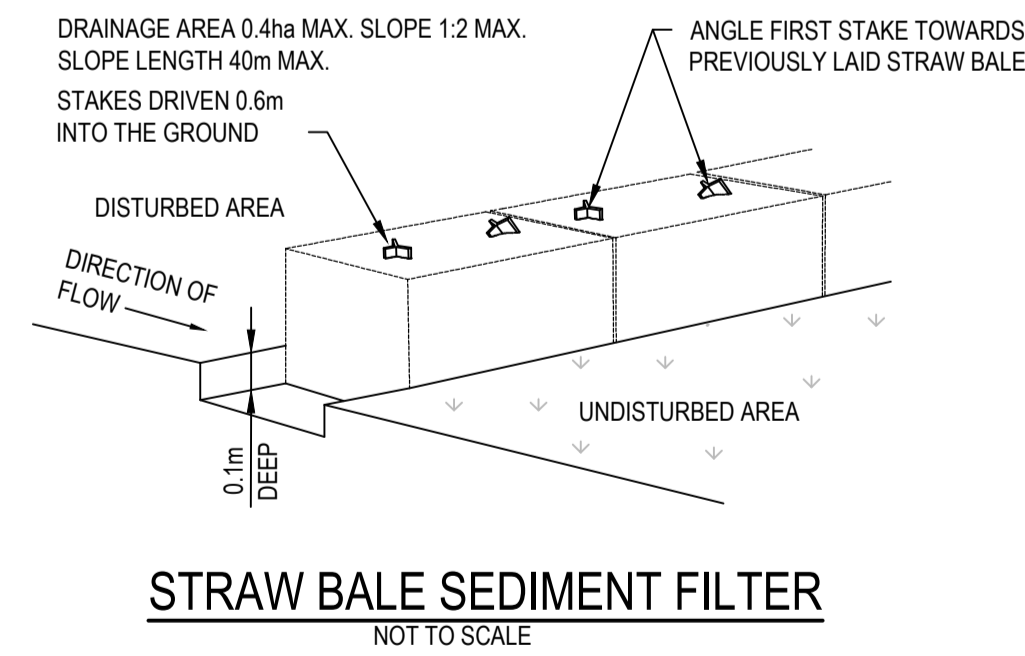
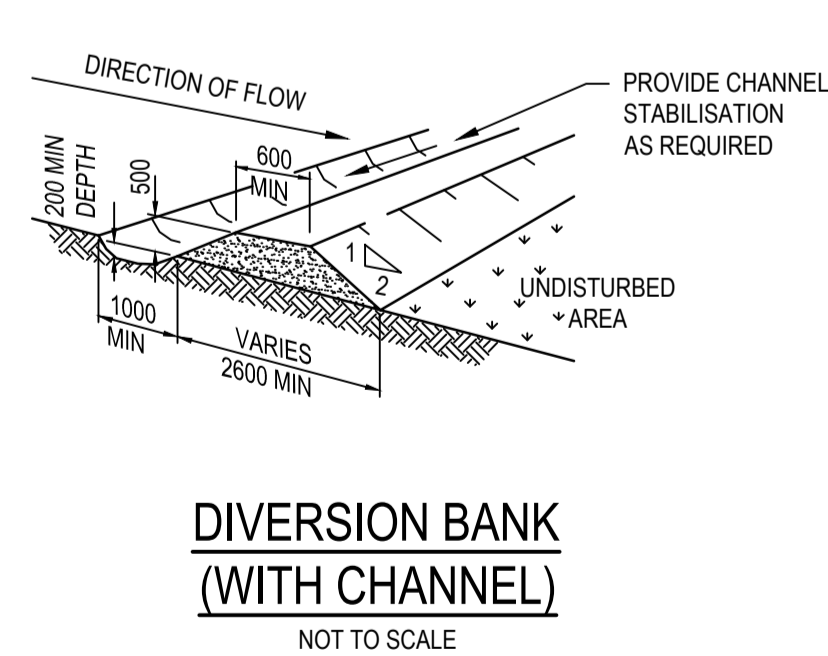
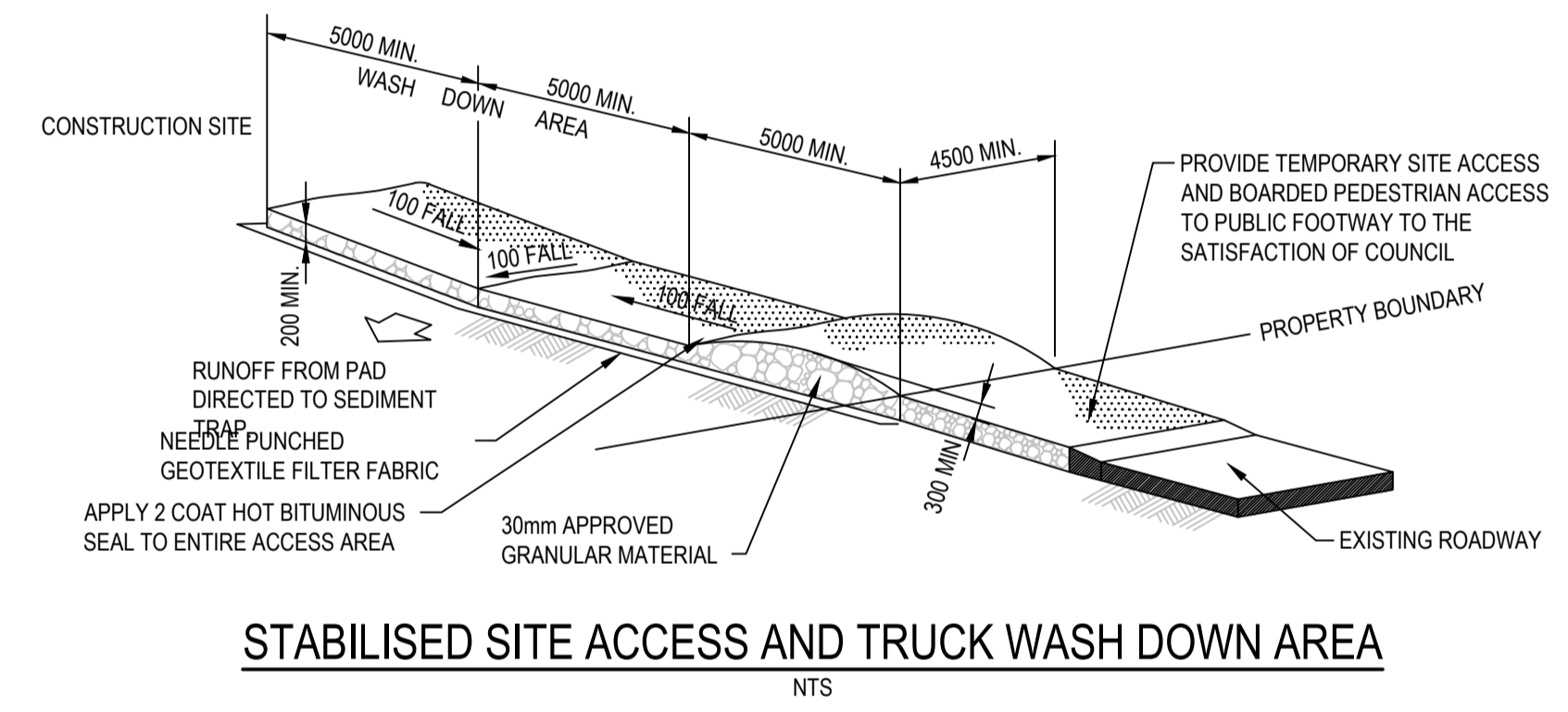
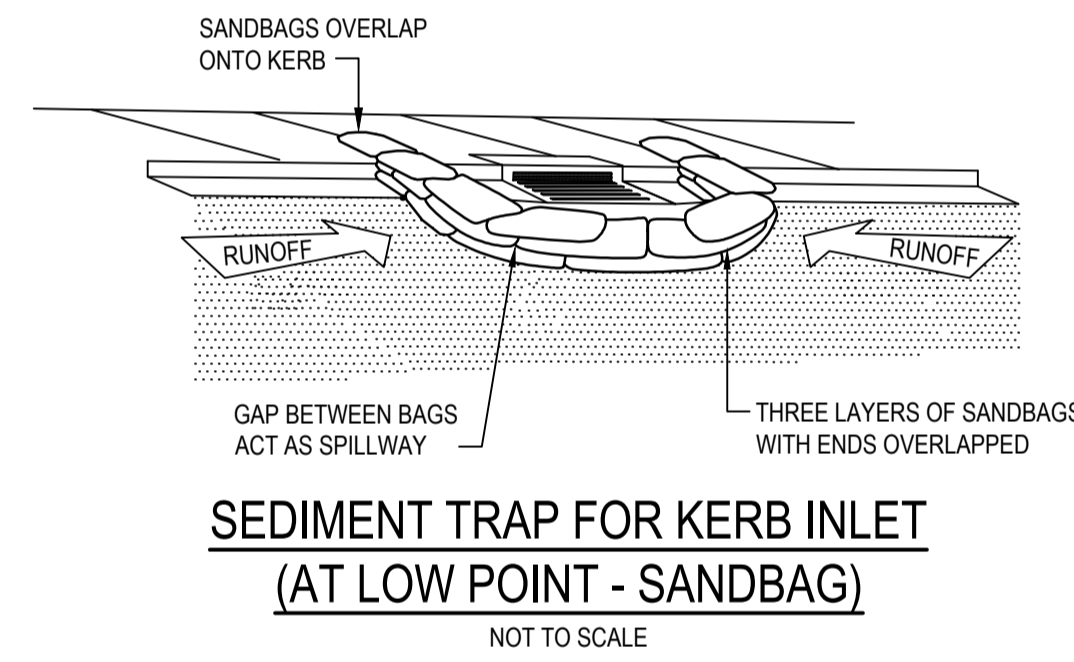
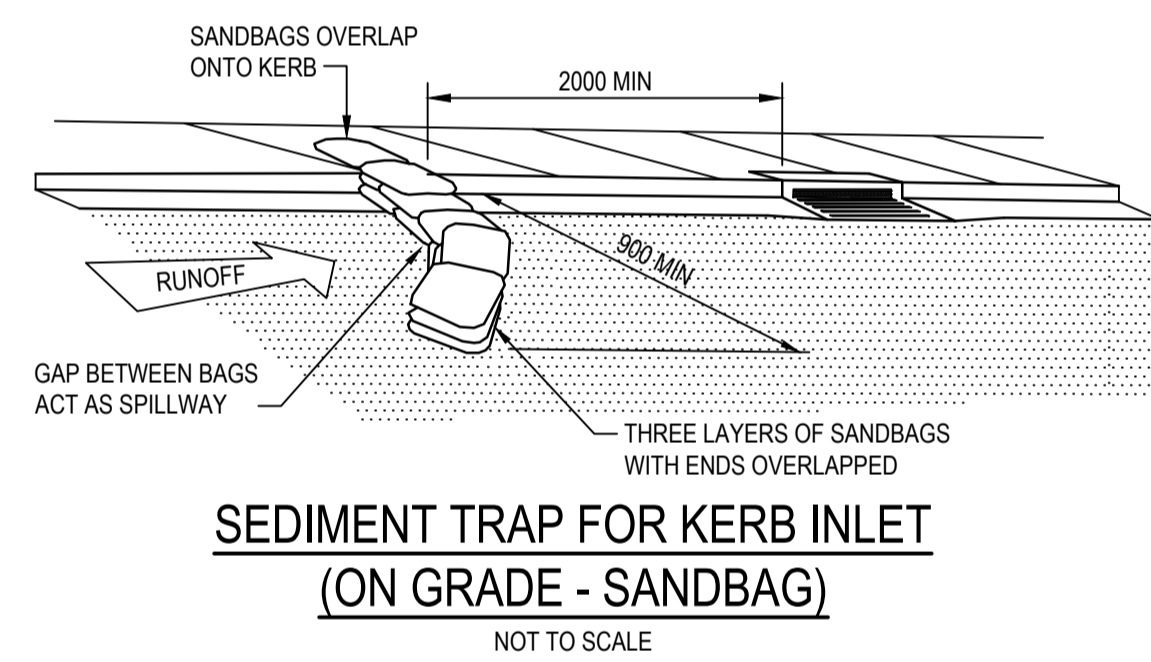
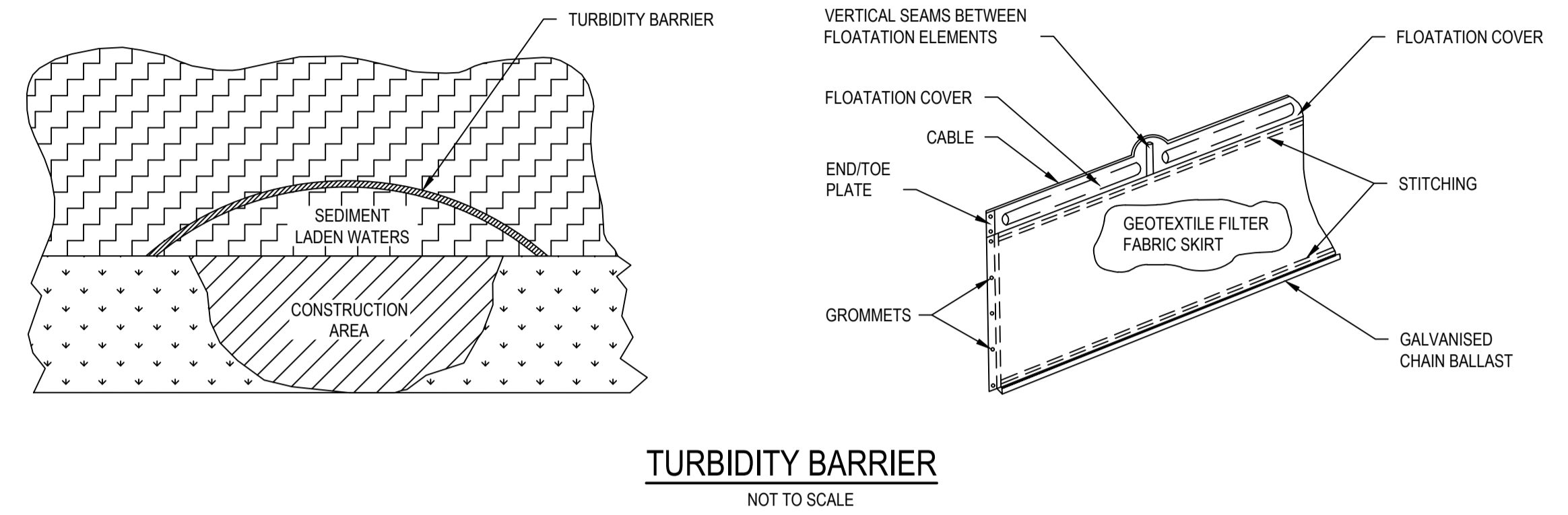
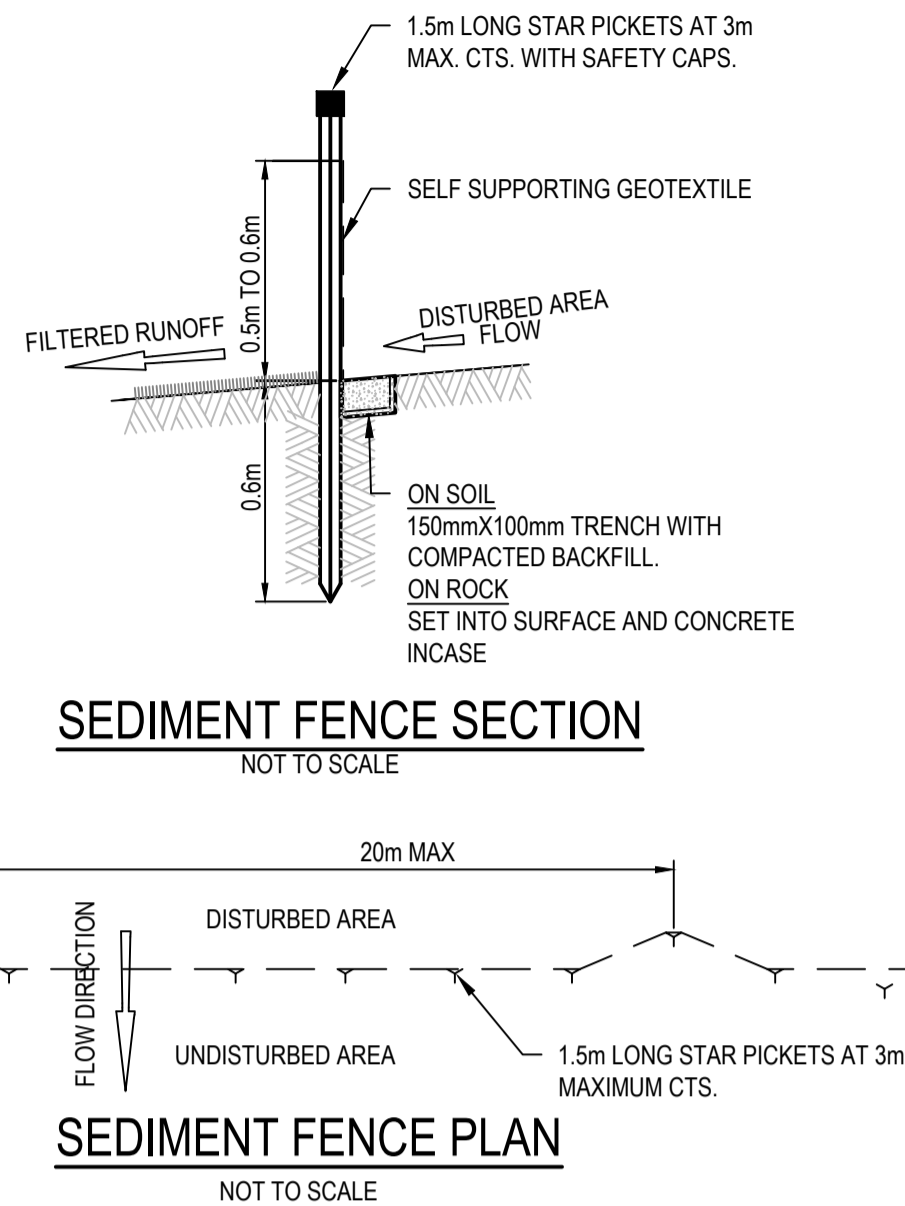
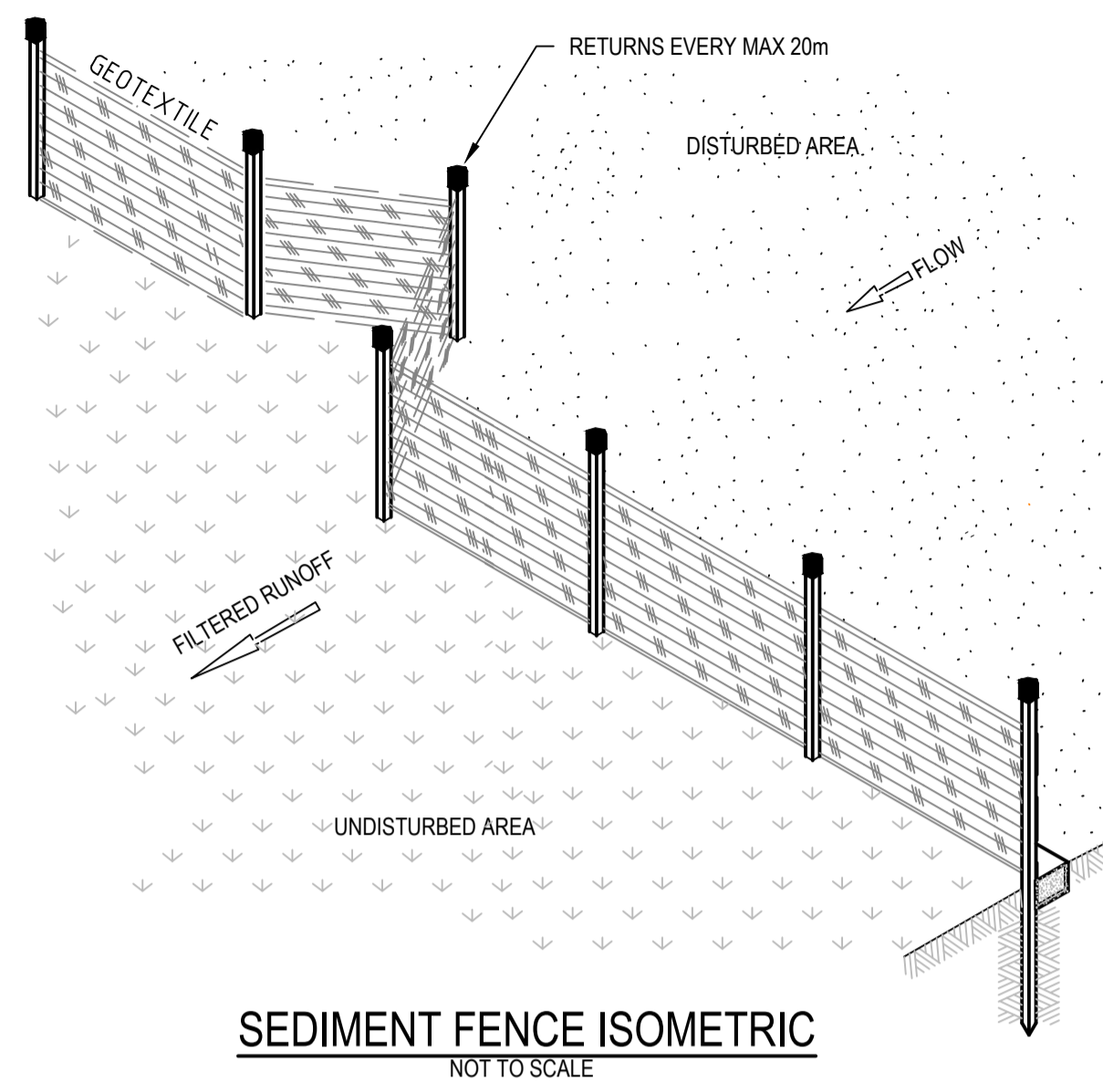
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Checked	MS	Date	19/01/2018
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EROSION & SEDIMENT CONTROL PLAN
	SHEET 5

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
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Scale	1:500	Size	A1
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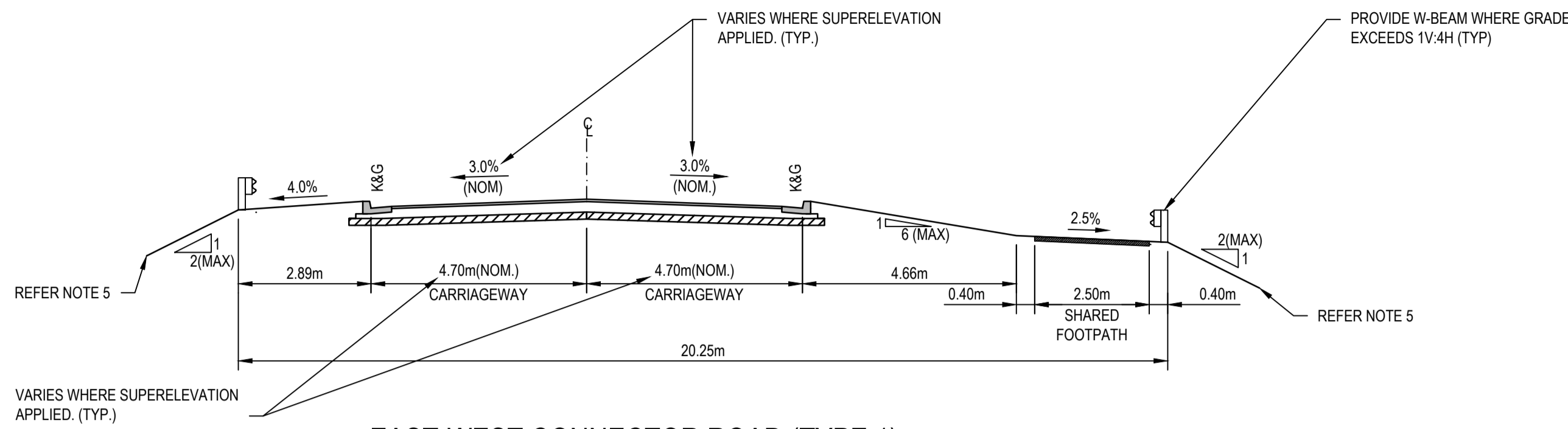
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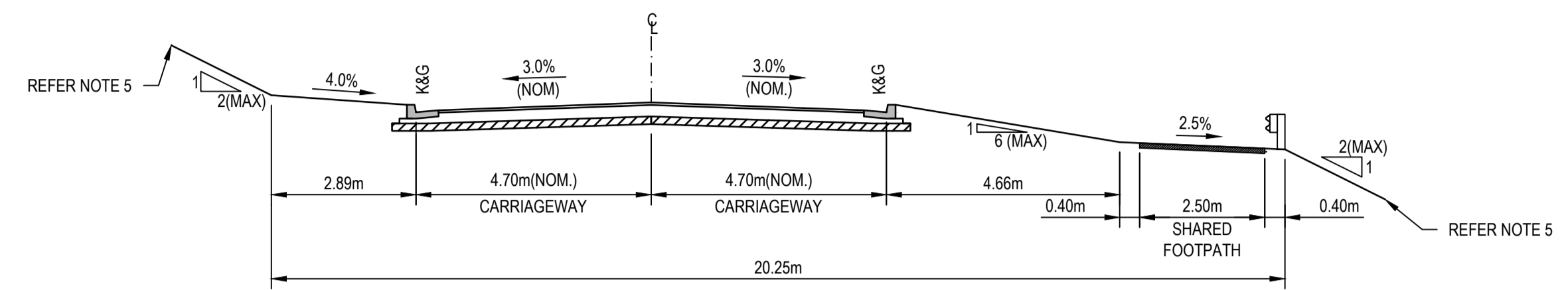
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Title	EROSION & SEDIMENT CONTROL DETAILS

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES				
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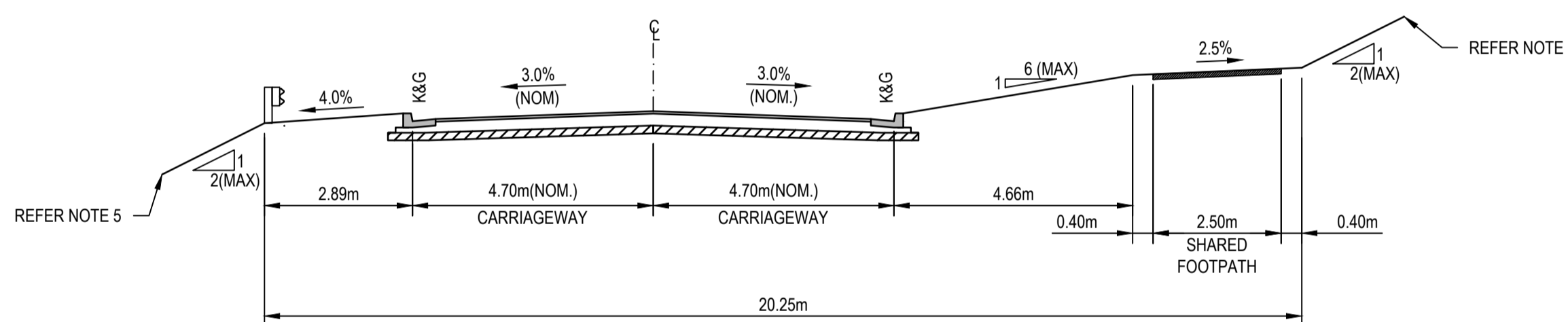
EAST-WEST CONNECTOR ROAD (TYPE 1)

PAVEMENT TYPE 1 CH. 660 - 1428
 1558 - 1618
 1640 - 1668
 1815 - 1935
 2000 - 2058
 SCALE 1:100



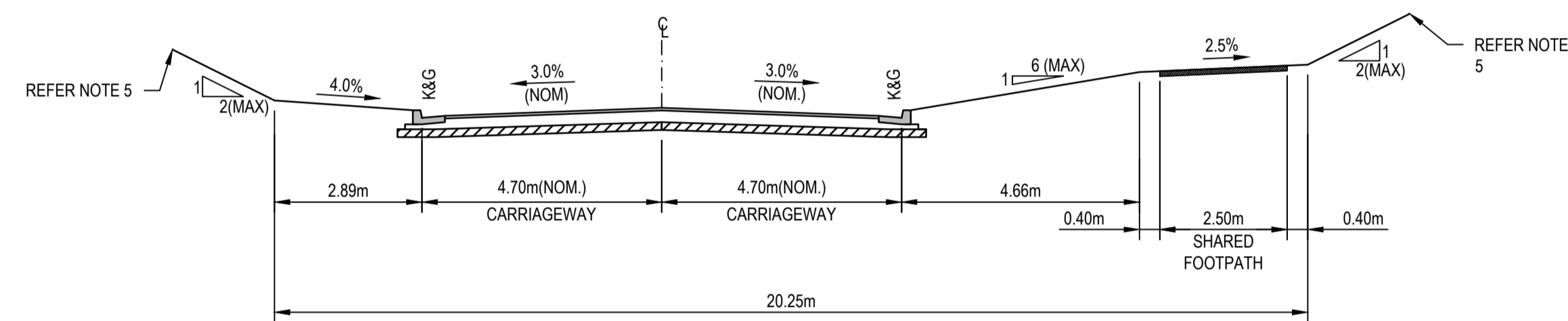
EAST-WEST CONNECTOR ROAD (TYPE 2)

PAVEMENT TYPE 1 CH. 1428 - 1458
 1618 - 1640
 1668 - 1810
 SCALE 1:100



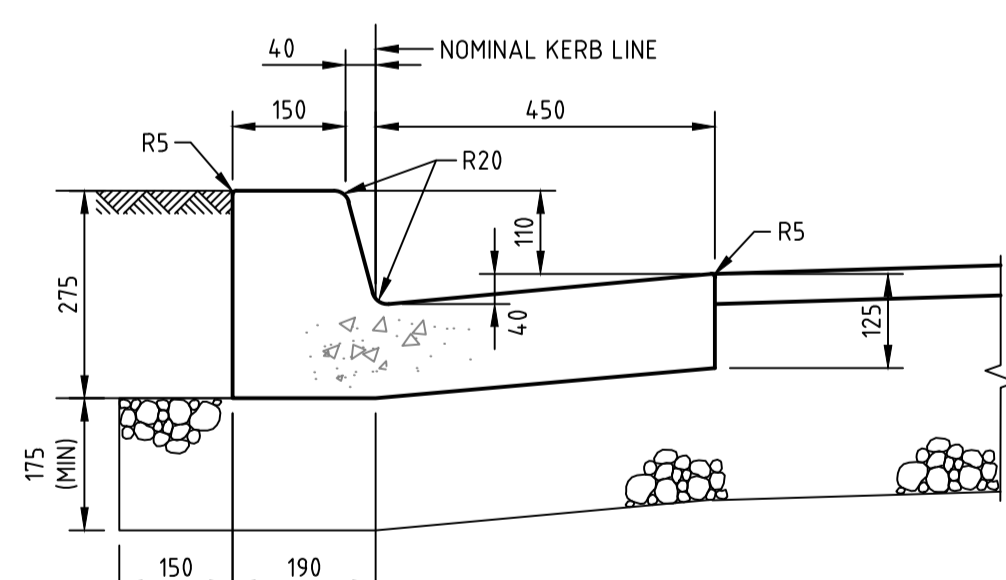
EAST-WEST CONNECTOR ROAD (TYPE 3)

PAVEMENT TYPE 1 CH. 1935 - 1946
 1973 - 2000
 2058 - 2089
 SCALE 1:100

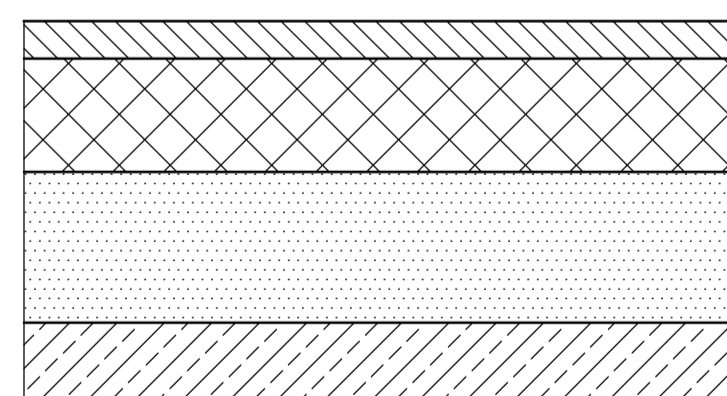


EAST-WEST CONNECTOR ROAD (TYPE 4)

PAVEMENT TYPE 1 CH. 1458 - 1558
 1810 - 1815
 1946 - 1973
 2089 - 2109
 SCALE 1:100



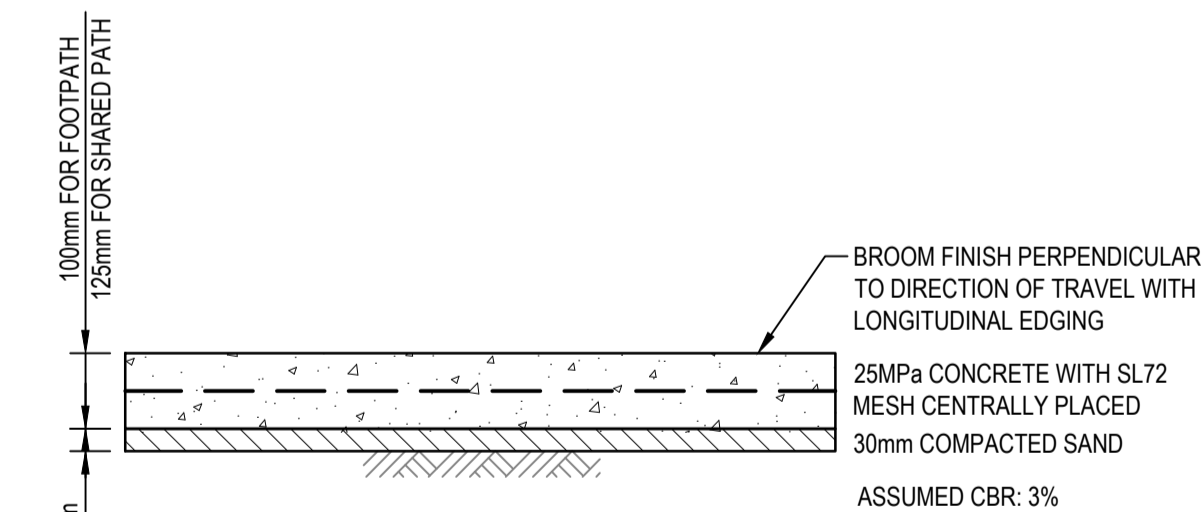
KERB AND GUTTER (K&G)
 SCALE 1:10



PAVEMENT TYPE 1
 SCALE 1:10

AC14 WEARING COURSE
 10mm PRIMER SEAL
 BASE COURSE DGB20 COMPACTED TO MINIMUM MODIFIED DENSITY RATIO OF 98%
 SUB BASE DGS40 COMPACTED TO MINIMUM MODIFIED DENSITY RATIO OF 95%
 COMPACTED SUBGRADE TO MINIMUM DENSITY RATIO OF 100%
 ASSUMED CBR: REFER BELOW TABLE
 ASSUMED ESA: 2x10⁵

PAVEMENT 1 DESIGN				
DESIGN SUBGRADE	CBR 3%	CBR 5%	CBR 7%	CBR 9%
WEARING SURFACE	50mm AC14	50mm AC14	50mm AC14	50mm AC14
BASE COURSE	150mm	150mm	150mm	150mm
SUBBASE	410mm	290mm	210mm	175mm
TOTAL THICKNESS	610mm	490mm	410mm	375mm



SHARED PATH/FOOTPATH
 SCALE 1:10

NOTES
 1. SAWCUT PATH OR TROWELLED DUMMY JOINT AT 2m SPACING
 2. EVERY THIRD JOINT TO BE FULL DEPTH DOWELLED EXPANSION JOINT.

NOTES
 1. TYPICAL ROAD CROSS SECTIONS ARE BASED UPON INFORMATION PROVIDED BY LENDLEASE. STREET SCAPES ARE INDICATIVE ONLY & SUBJECT TO DETAILED DESIGN BY LANDSCAPE ARCHITECT.
 2. SERVICE ALLOCATIONS ARE INDICATIVE ONLY. REFER TO SEPARATE SERVICE DRAWING PACKAGES FOR ALIGNMENT & DETAILS.
 3. CONSTRUCTION OF FOOTPATH TO BE DEFERRED UNTIL DIRECTED BY THE SITE SUPERINTENDENT.
 4. PAVEMENT DEPTH BASED ON "PENRITH CITY COUNCIL DESIGN GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISIONS AND DEVELOPMENTS (NOV 2013)". PAVEMENT DEPTH IS PRELIMINARY ONLY & SUBJECT TO FUTURE DETAILED DESIGN.
 5. TIE INTO EXISTING SURFACE OR PROVIDE RETAINING WALL STRUCTURE IF BATTER EXTENDS BEYOND EXISTING ROAD CORRIDOR. REFER DRAWING 1301-1305 FOR RETAINING WALL LOCATIONS. BATTER SURFACE TO BE STABILIZED.



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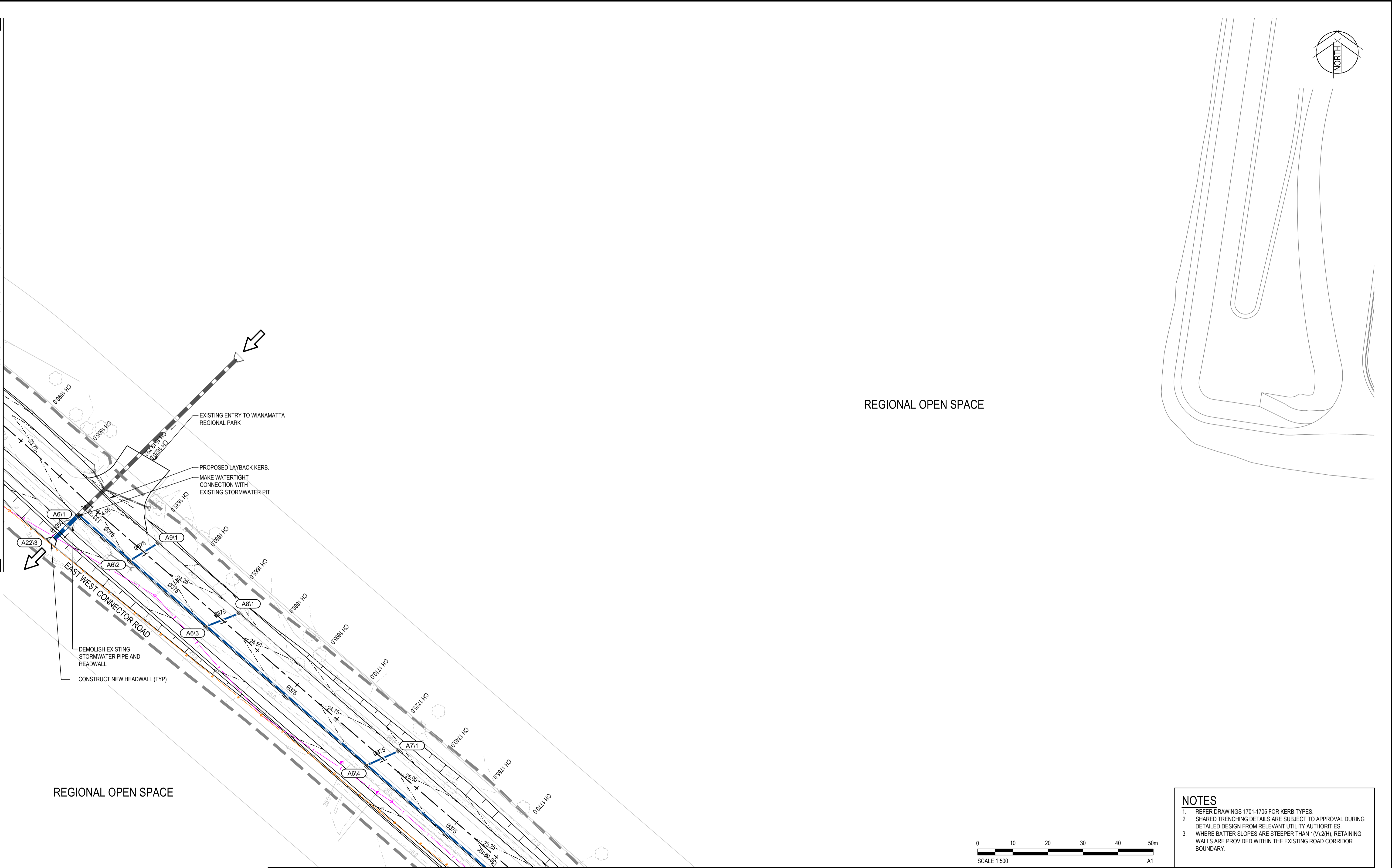
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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client **LENDLEASE**
 Project **EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION**
 Title **TYPICAL ROAD CROSS SECTIONS AND DETAILS**

Status	FOR INFORMATION ONLY		
NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	AHD	DATE	19/01/2018
Scale	AS SHOWN	Size	A1
Drawing Number	CV-CARDNO-EWC1-1251		Revision
			1

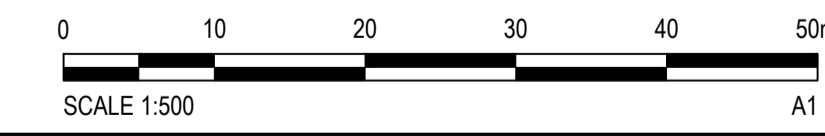
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 DATE PLOTTED: 19 January 2018 12:30 PM BY: BRENDAN LARKIN

JOINS DRAWING CV-CARDNO-EWC1-1303



REGIONAL OPEN SPACE

REGIONAL OPEN SPACE



NOTES

- REFER DRAWINGS 1701-1705 FOR KERB TYPES
- SHARED TRENCHING DETAILS ARE SUBJECT TO APPROVAL DURING DETAILED DESIGN FROM RELEVANT UTILITY AUTHORITIES
- WHERE BATTER SLOPES ARE STEEPER THAN 1(V):2(H), RETAINING WALLS ARE PROVIDED WITHIN THE EXISTING ROAD CORRIDOR BOUNDARY.

JOINS DRAWING CV-CARDNO-EWC1-1305

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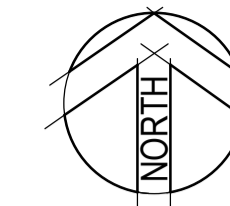
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROADS & STORMWATER PLAN
SHEET 4	

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	DATE	19/01/2018
Scale	1:500	Size	A1
Drawing Number	CV-CARDNO-EWC1-1304	Revision	1



REGIONAL OPEN SPACE

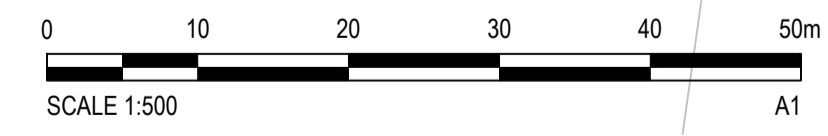
REGIONAL OPEN SPACE

EAST WEST CONNECTOR ROAD

PROPOSED RETAINING WALL (RW13)

CONSTRUCT NEW HEADWALL (TYP)
REPLACE EXISTING CULVERT

MAKE SMOOTH TRANSITION TO EXISTING WORKS
PROVIDE REMOVABLE ROAD BARRIERS AS SHOWN
MAKE WATERTIGHT CONNECTION WITH EXISTING STORMWATER PIT
LIMIT OF WORKS



- NOTES**
- REFER DRAWINGS 1701-1705 FOR KERB TYPES
 - SHARED TRENCHING DETAILS ARE SUBJECT TO APPROVAL DURING DETAILED DESIGN FROM RELEVANT UTILITY AUTHORITIES
 - WHERE BATTER SLOPES ARE STEEPER THAN 1(V):2(H), RETAINING WALLS ARE PROVIDED WITHIN THE EXISTING ROAD CORRIDOR BOUNDARY.

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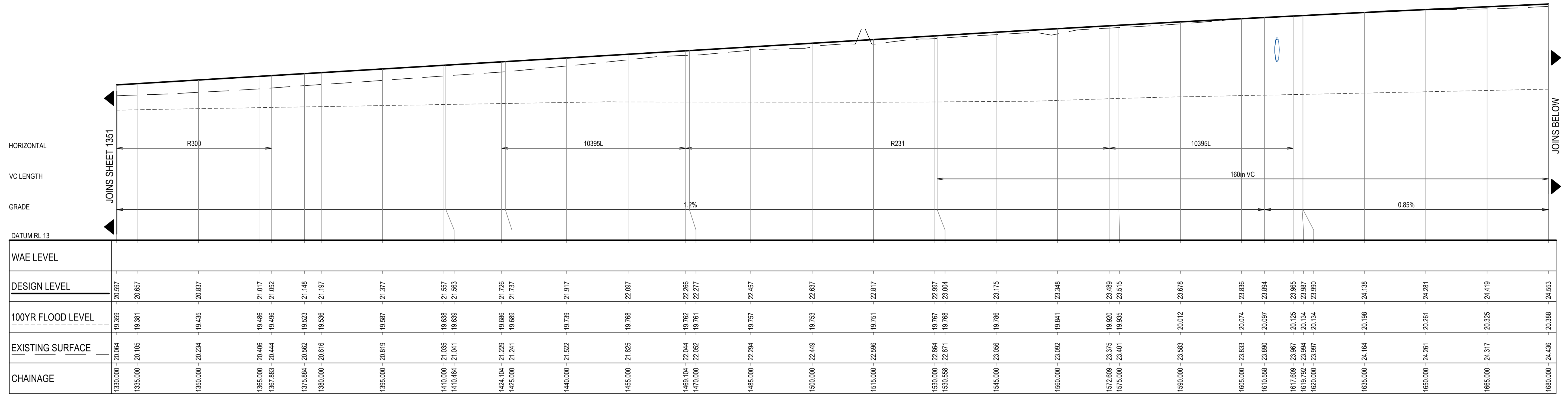
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROADS & STORMWATER PLAN
SHEET	5

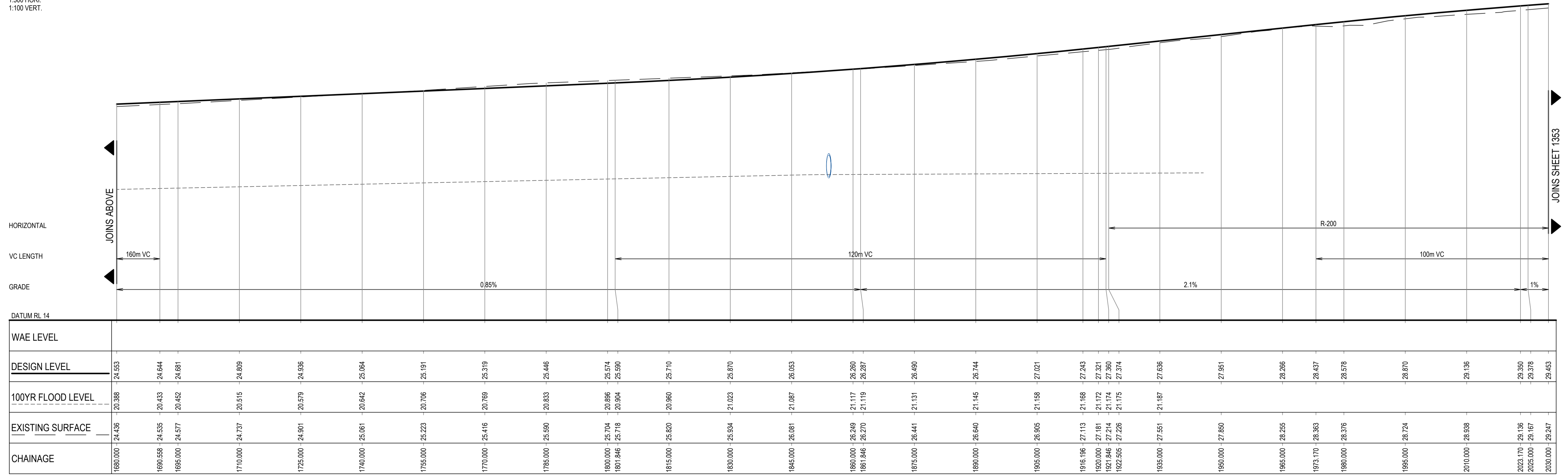
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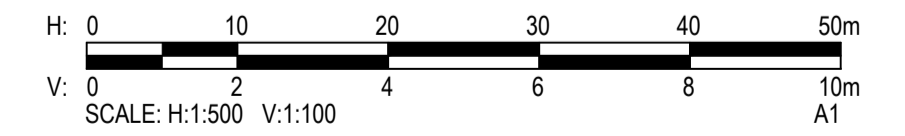
EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION

1:500 HORI.
1:100 VERT.



EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION

1:500 HORI.
1:100 VERT.



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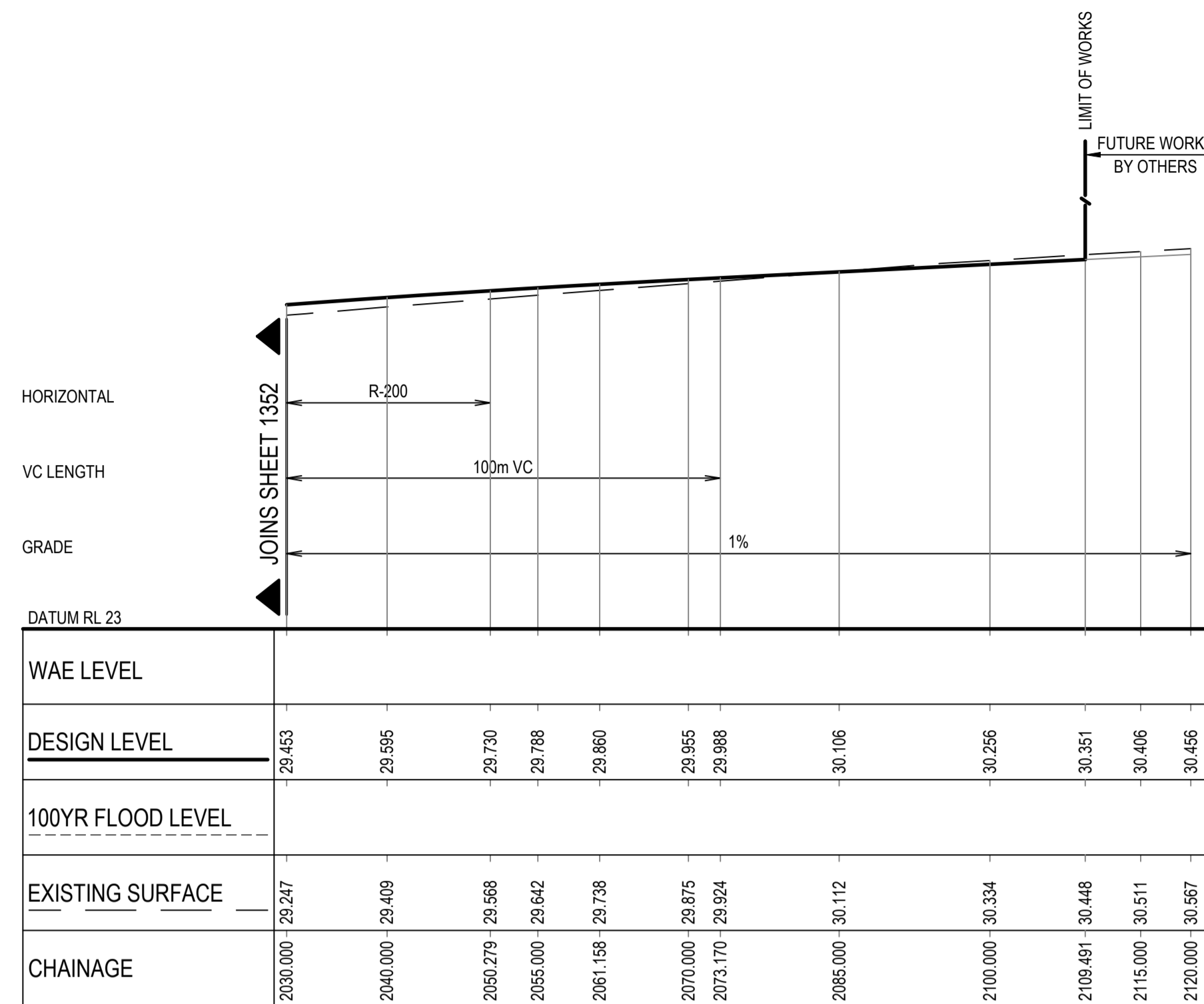
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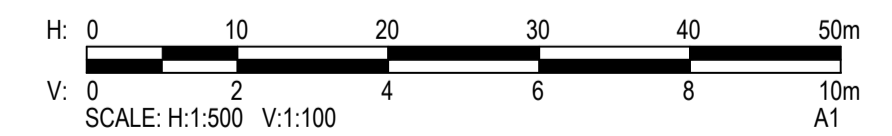
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Checked	MS	Date	19/01/2018
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROAD LONGITUDINAL SECTIONS
SHEET	2

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES						
Datum	AHD	DATE	19/01/2018	Scale	AS SHOWN	Size	A1
Drawing Number	CV-CARDNO-EWC1-1352			Revision	1		



EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION
 1:500 HORI.
 1:100 VERT.



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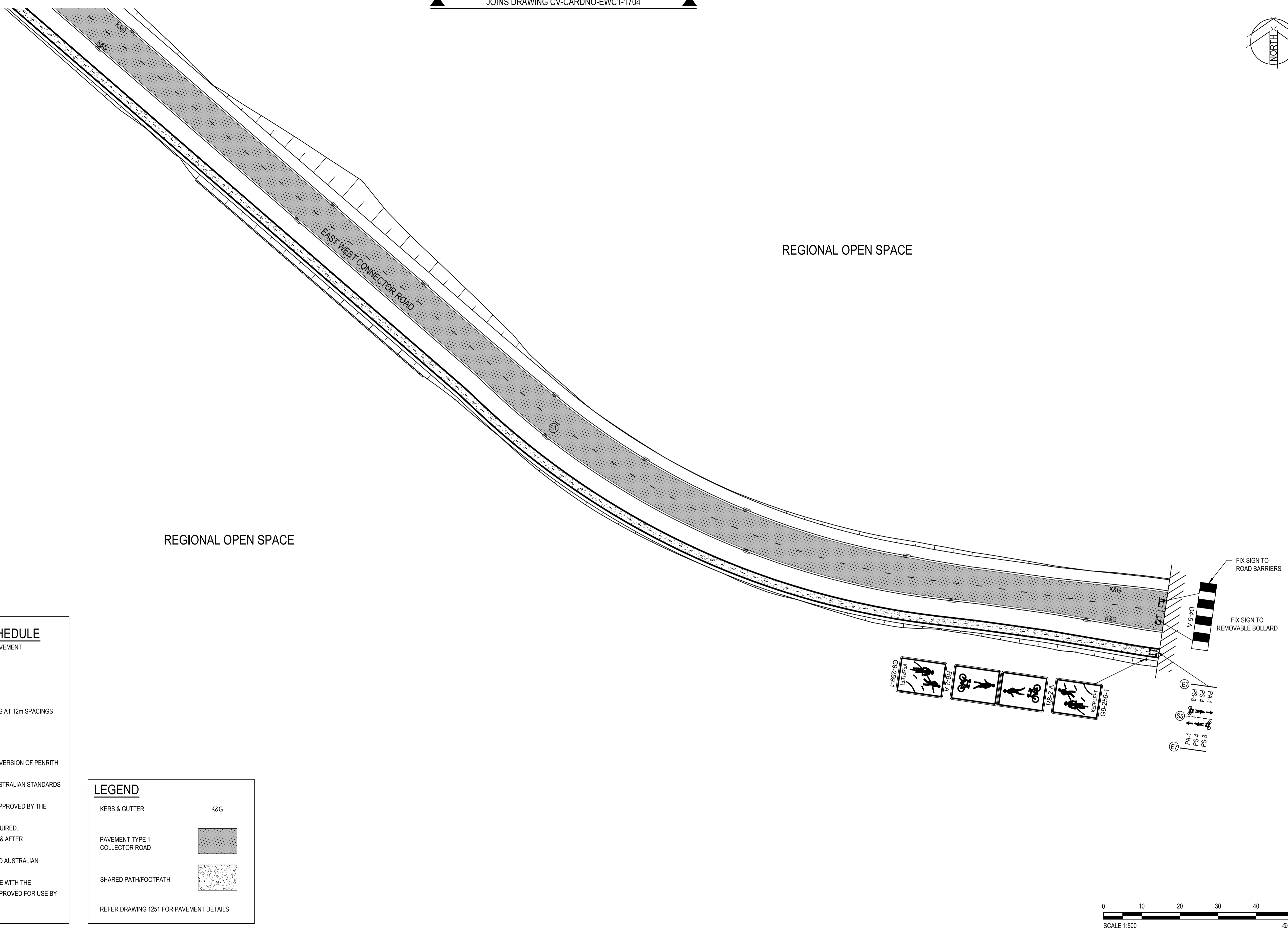
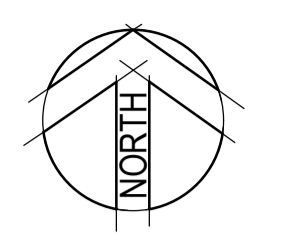
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Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROAD LONGITUDINAL SECTIONS
	SHEET 3

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES			
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PAVEMENT MARKING SCHEDULE

BB LINE WITH BIDIRECTIONAL RETROREFLECTIVE RAISED PAVEMENT MARKERS TO AUSTRALIAN STANDARDS 1742.

BB(26m TOTAL LENGTH, ARC RAD. 9m) - AS EXAMPLE

E7	BICYCLE EDGE LINE
S1	SEPARATION LINE WITH RAISED PAVEMENT MARKERS AT 12m SPACINGS
S5	BICYCLE SEPARATION LINE
TB	HOLDING LINE
TB1	HOLDING LINE

NOTES:

1. ALL SIGNAGE TO BE IN ACCORDANCE WITH THE CURRENT VERSION OF PENRITH CITY COUNCIL AND AUSTRALIAN STANDARDS 1742.
2. ALL PAVEMENT MARKING TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARDS 1742.
3. ALL PAVEMENT MARKINGS SHALL BE SPOTTED OUT AND APPROVED BY THE SUPERINTENDENT PRIOR TO APPLICATION.
4. TRANSITION LINE MARKING TO SUIT EXISTING WHERE REQUIRED.
5. PROVIDE ADEQUATE APPROACH WARNING SIGNS DURING & AFTER CONSTRUCTION.
6. PROVIDE RETRO-REFLECTORISED PAVEMENT MARKERS TO AUSTRALIAN STANDARDS 1742.
7. THERMO PLASTICS MUST BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND BE ONLY THOSE APPROVED FOR USE BY THE RMS.
8. ALL LINEMARKING TO BE WHITE IN COLOUR. U.N.O.

LEGEND

KERB & GUTTER	K&G
PAVEMENT TYPE 1 COLLECTOR ROAD	
SHARED PATH/FOOTPATH	

REFER DRAWING 1251 FOR PAVEMENT DETAILS

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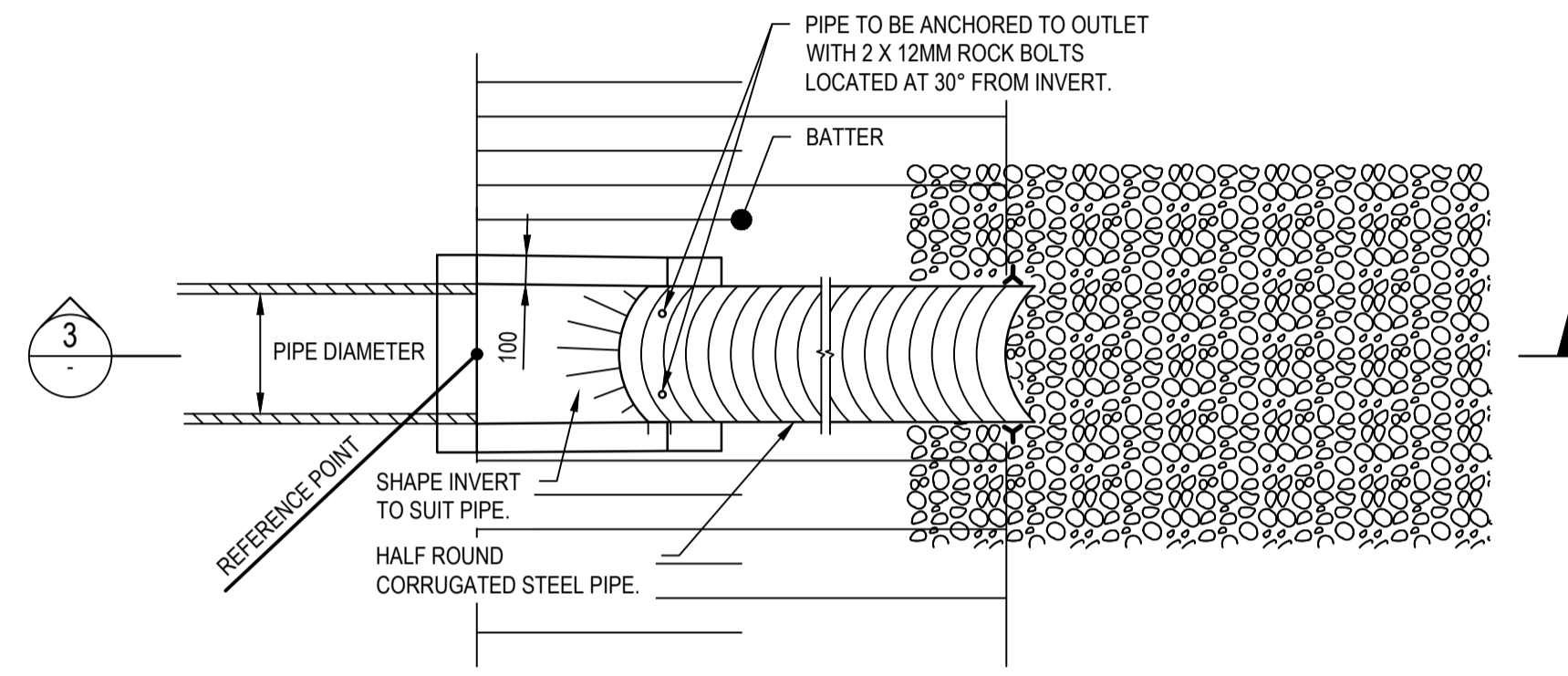
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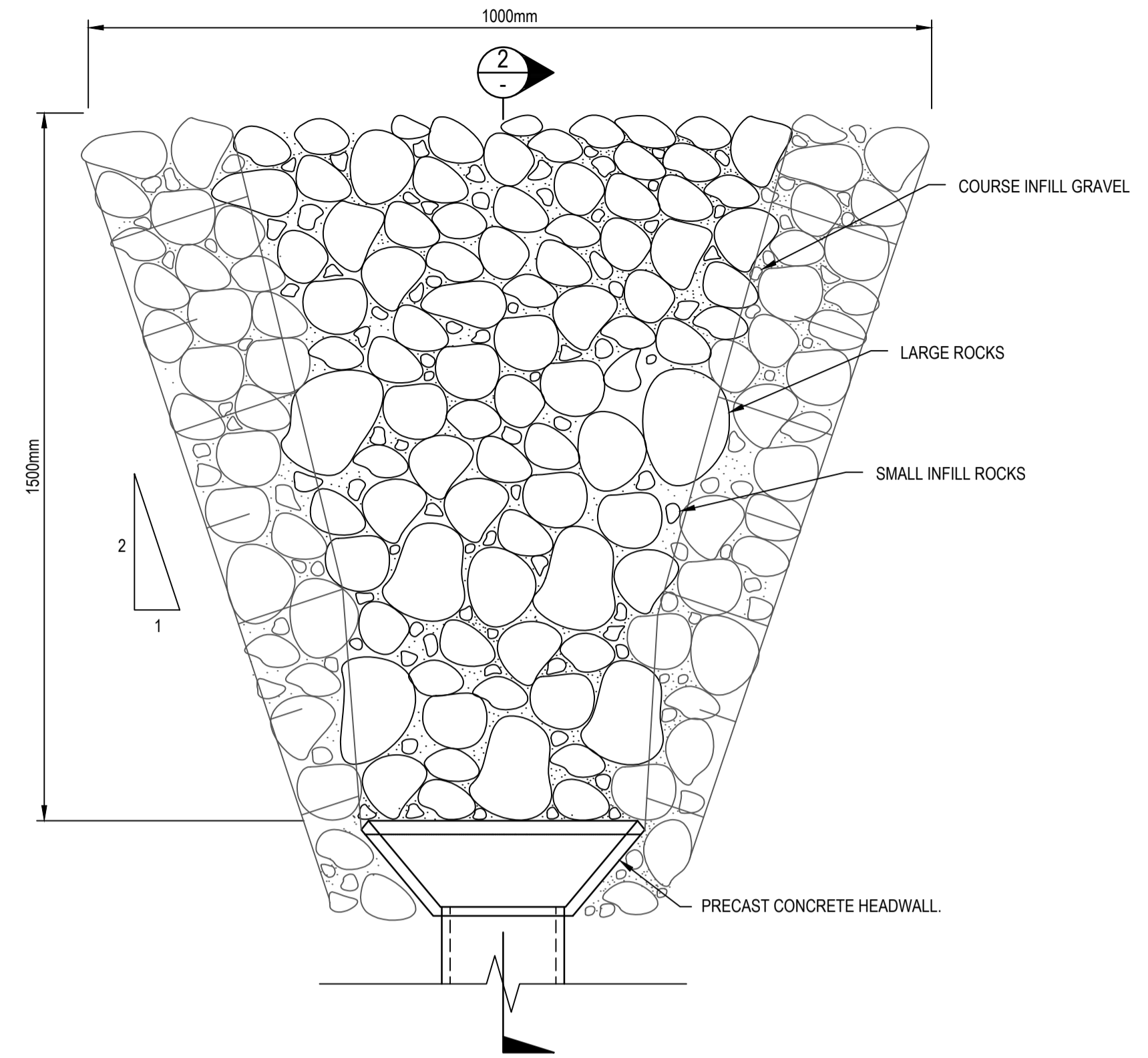
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Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	PAVEMENT, SIGNAGE AND LINEMARKING PLAN
SHEET	5

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	DATE	19/01/2018
Scale	1:500	Size	A1
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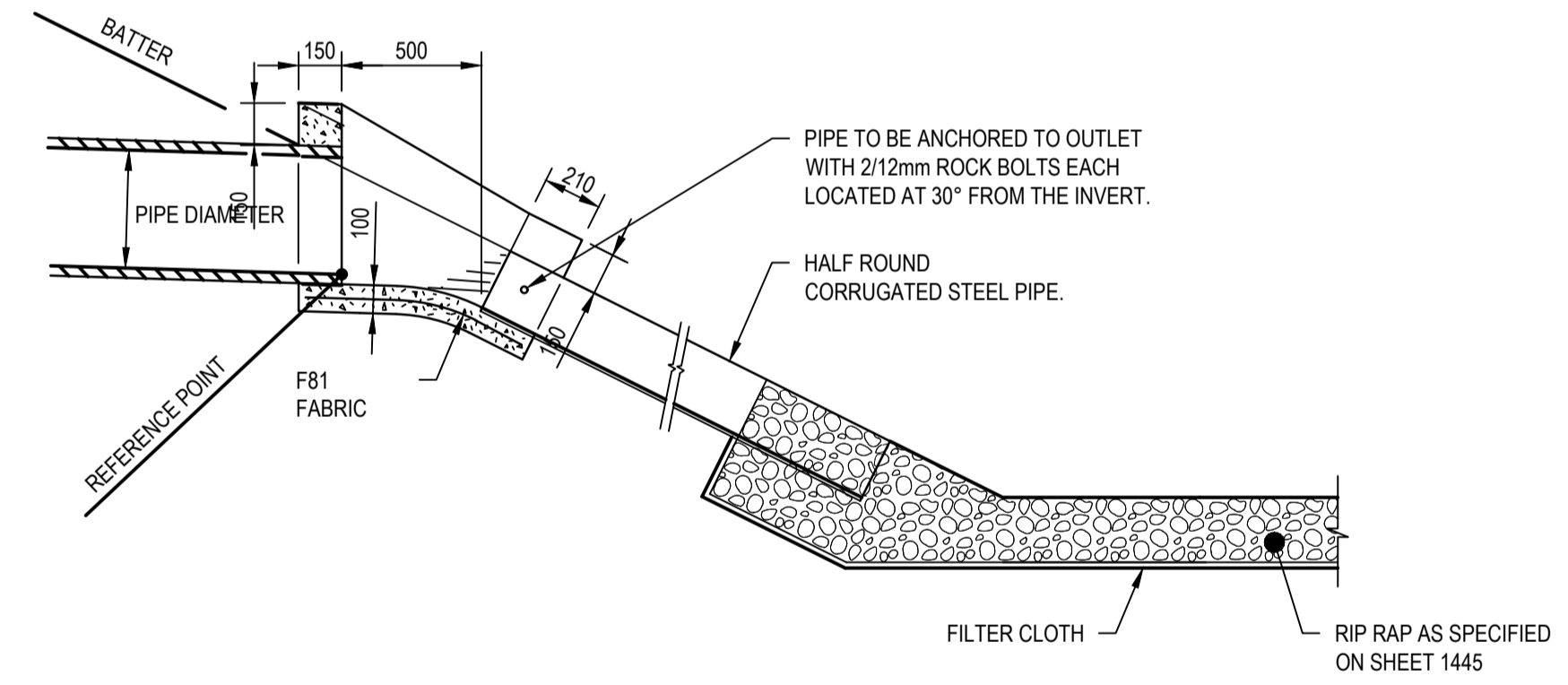
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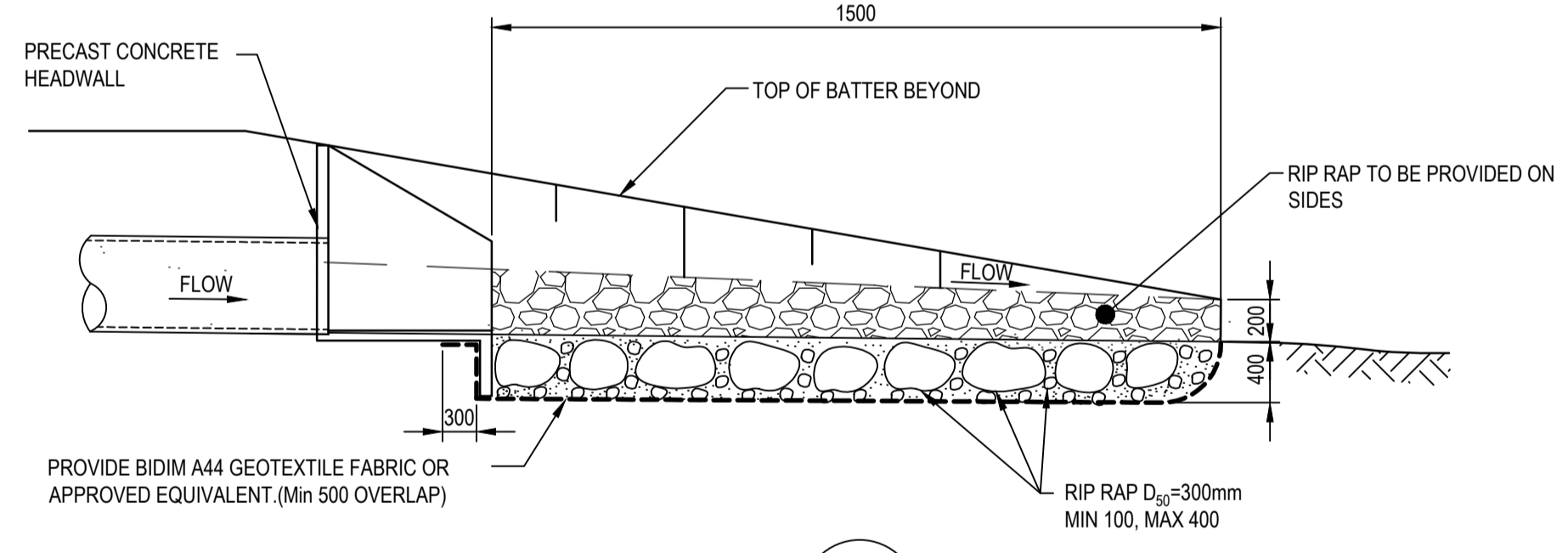
BATTER DRAIN DETAIL
NOT TO SCALE



TYPICAL HEADWALL SCOUR PROTECTION PLAN
NOT TO SCALE



SECTION 3
NOT TO SCALE



SECTION 2
NOT TO SCALE

- NOTES**
1. TOP LIP OF HALF ROUND CORRUGATED STEEL PIPE TO BE INSTALLED FLUSH WITH THE COMPACTED BATTER SURFACE.
 2. HALF ROUND CORRUGATED STEEL PIPE TO BE FASTENED WITH 4mm WIRE TO TWO 1350mm STAR PICKETS AT LOWER END OF CSP PIPE.
 3. 1350mm STAR PICKETS TO BE PROVIDED AT POINTS MARKED **A** (FOR FASTENING PURPOSES).
 4. CONCRETE TO BE N25.
 5. ADAPTED FROM RMS DRAWING MD.R11.C06.A.1

XREFS: Xref:89814020-Client:Loops
CAD File: N:\Paramat\Projects\89814020-CENTRAL_PRCIN\CT_ADI_ST MARYS\Drawings\23_East West Connector Road DAI01_Stage 1\Drawings\CV-CARDNO-EWC1-2201-2202-DWG(1).dwg

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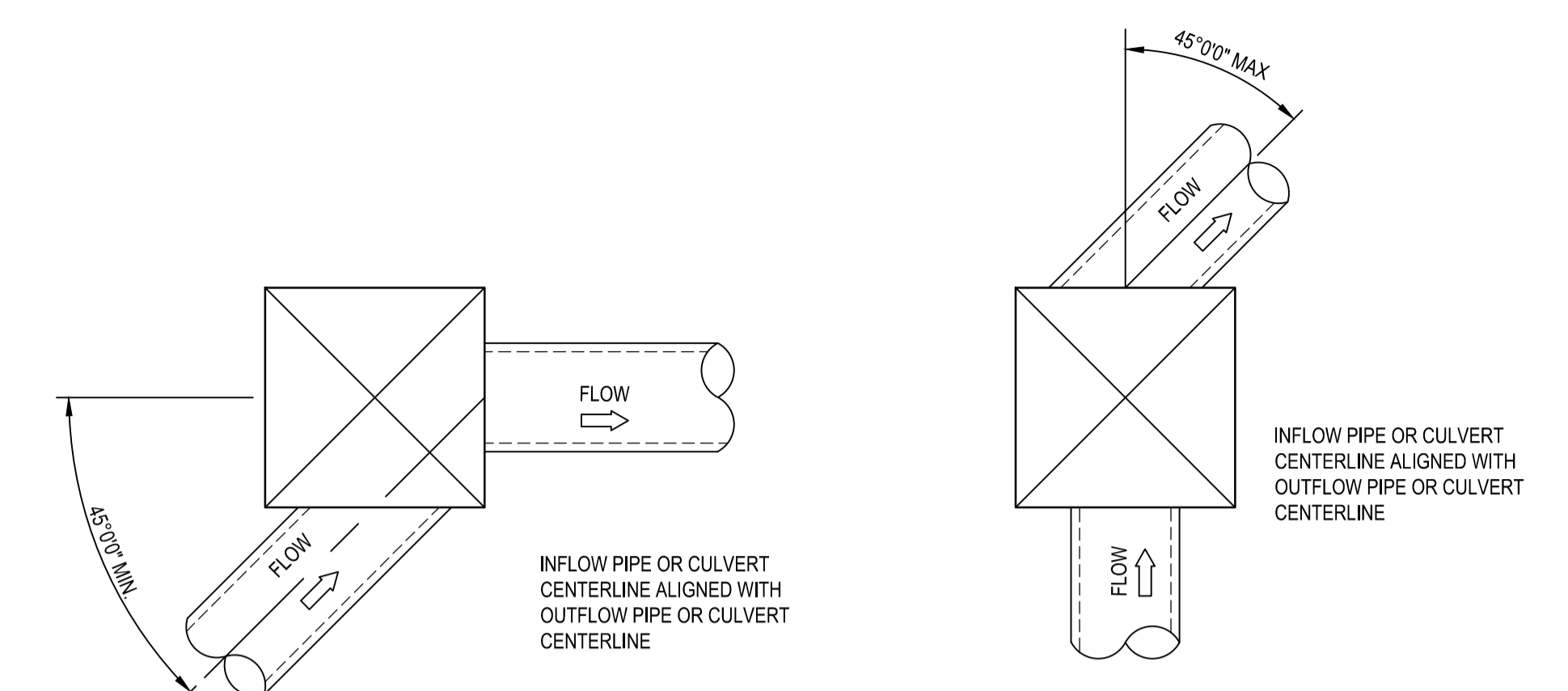
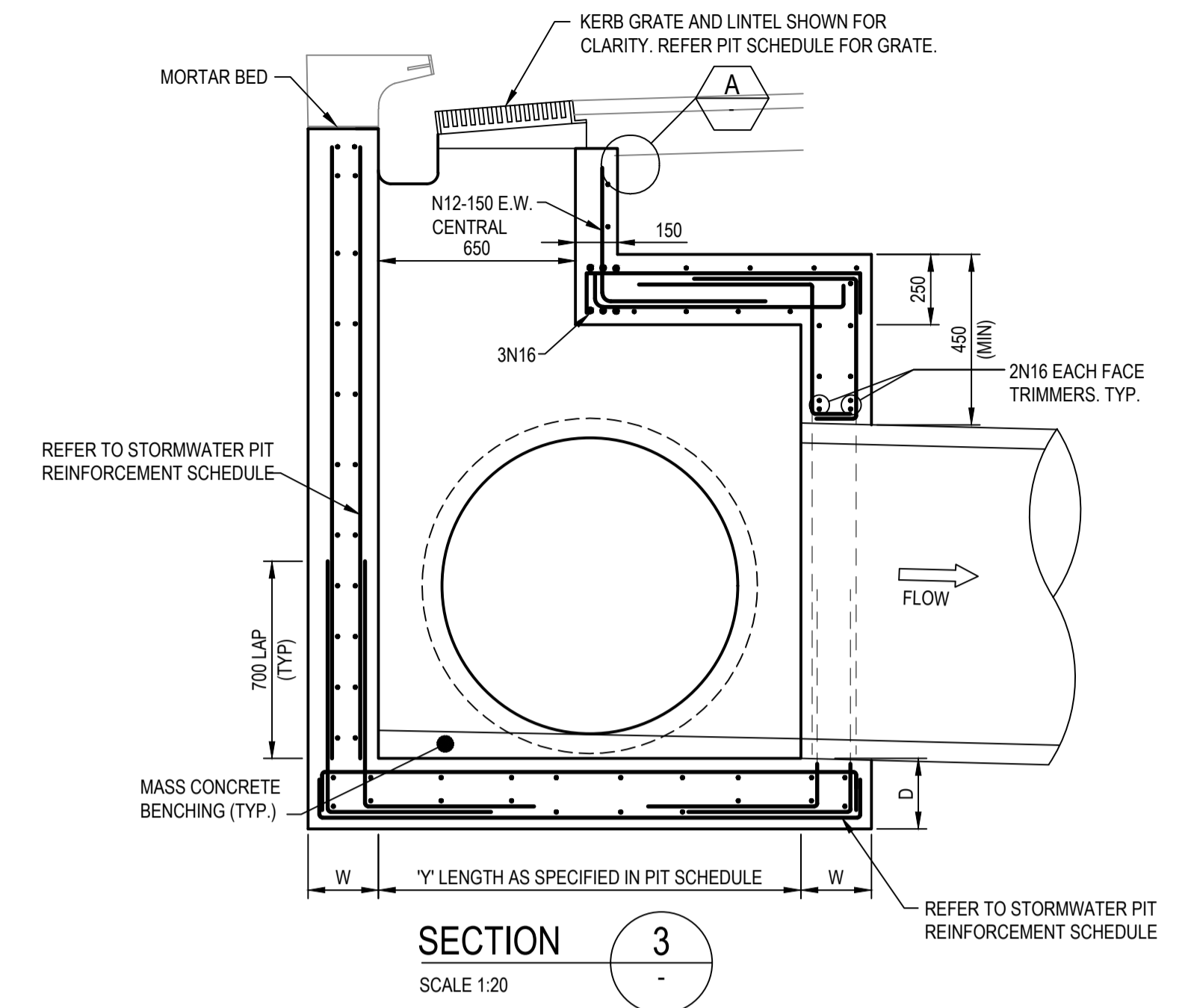
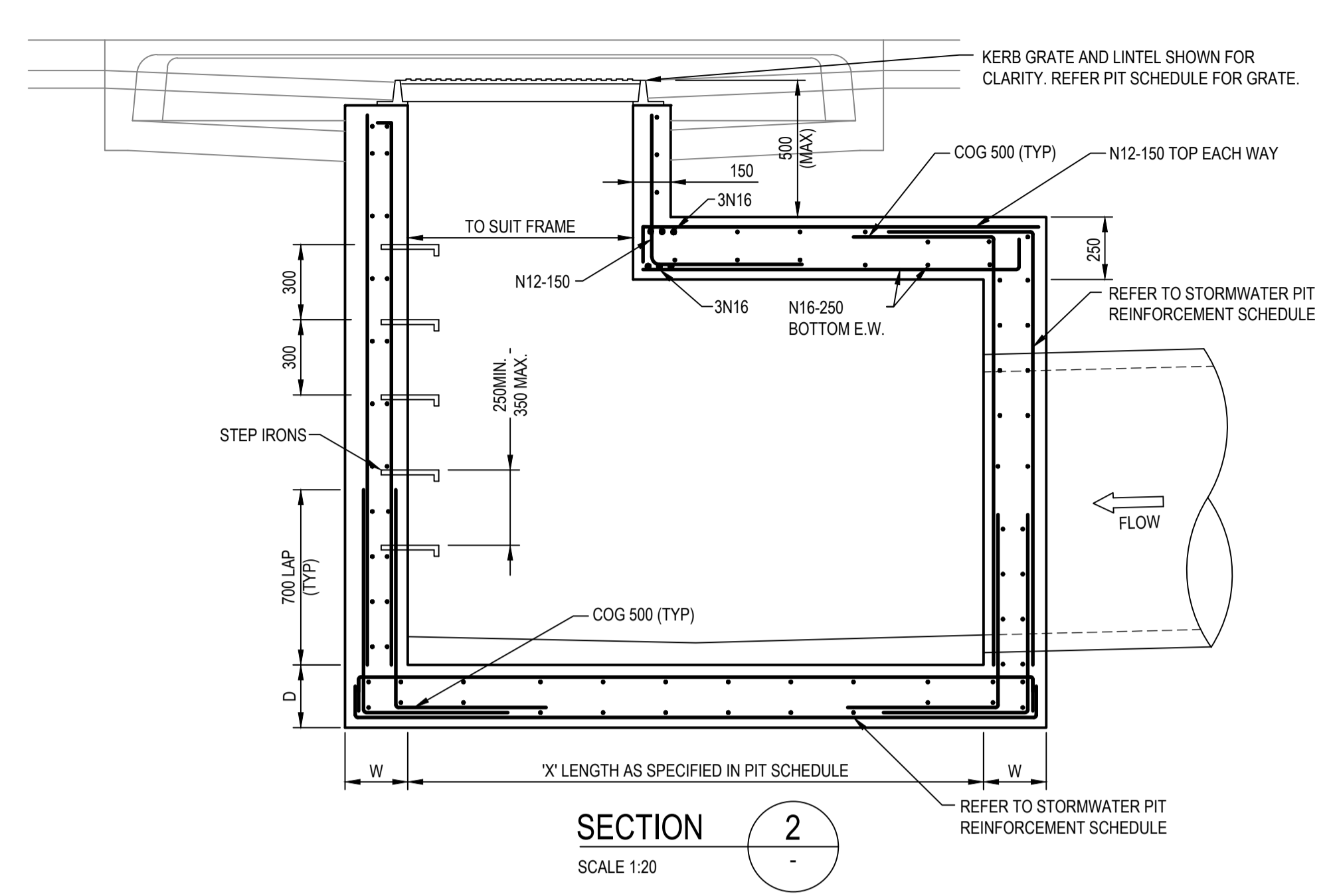
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	STORMWATER DRAINAGE DETAILS
SHEET	1

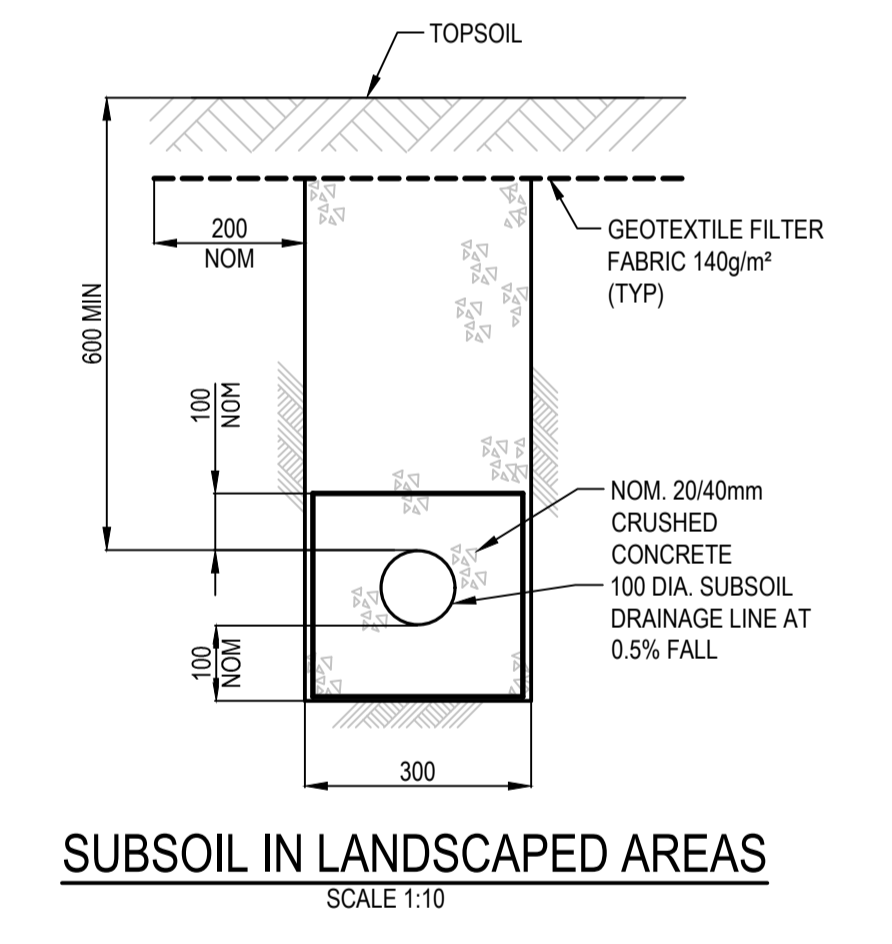
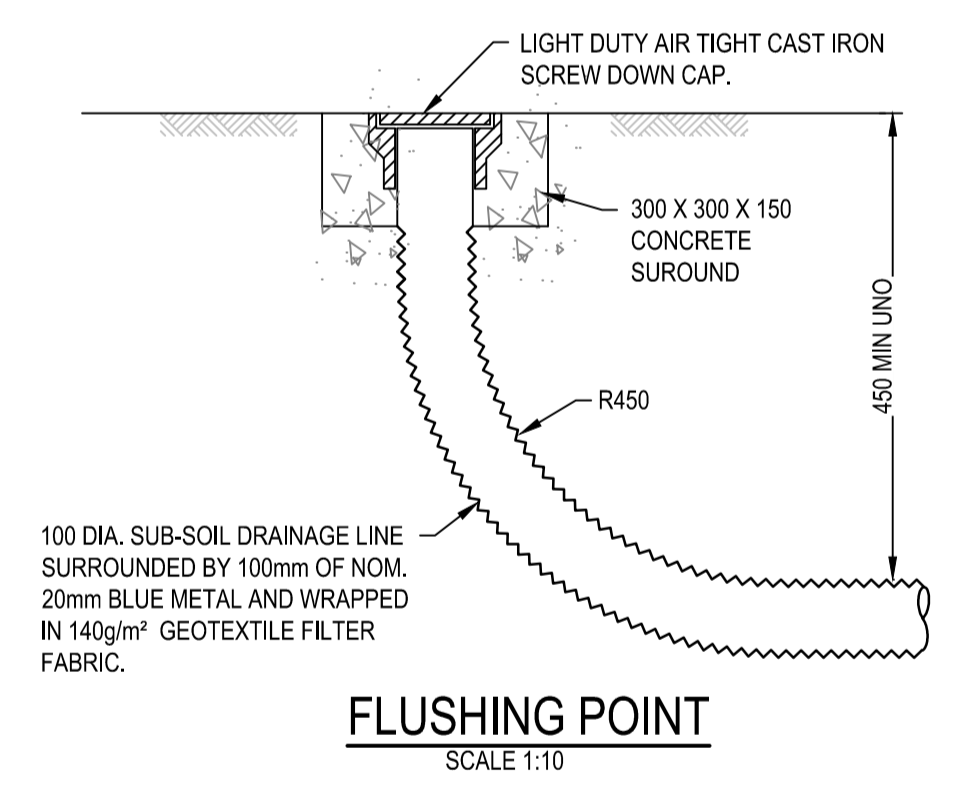
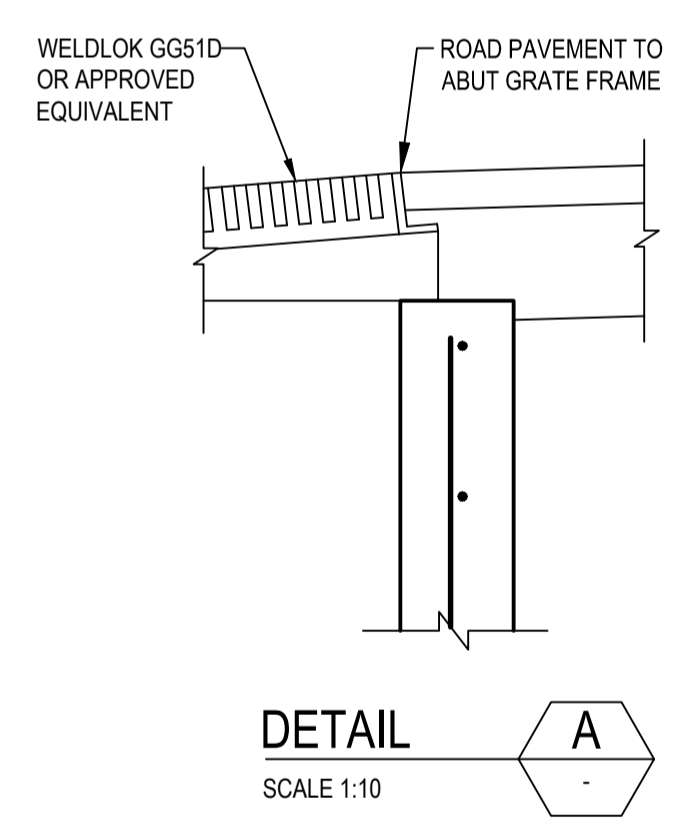
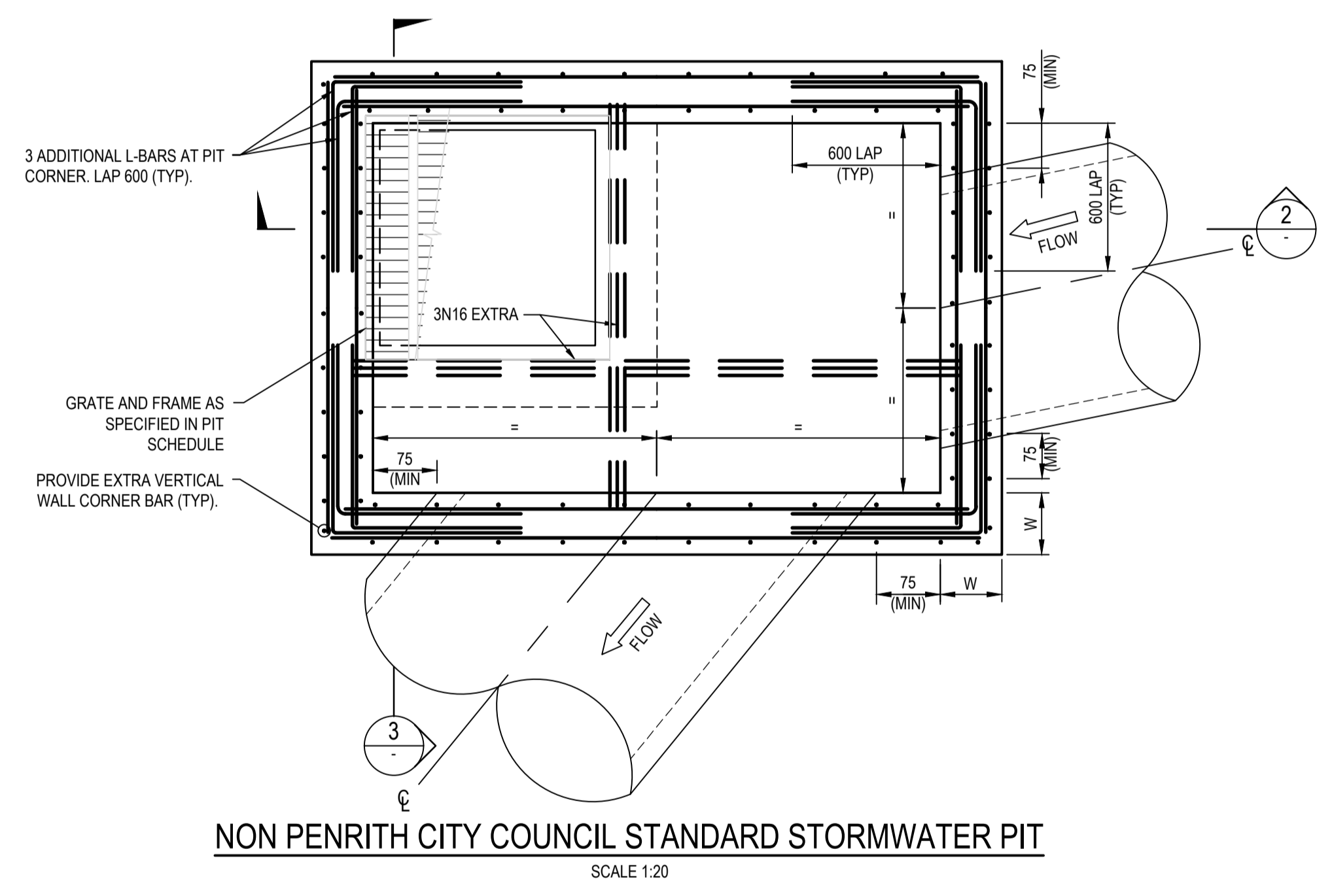
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DEFLECTION ANGLE GREATER THAN 45° (SIDE OF PIT)

TYPICAL DETAILS OF STORMWATER PIPE OR CULVERT ALIGNMENTS THROUGH STORMWATER PITS. STORMWATER PIPE OR CULVERT ALIGNMENTS NOT SHOWN SHOULD BE CONSTRUCTED SIMILARLY IN ORDER TO STREAMLINE FLOWS FROM UPSTREAM TO DOWNSTREAM AND MINIMISE HEADLOSS.



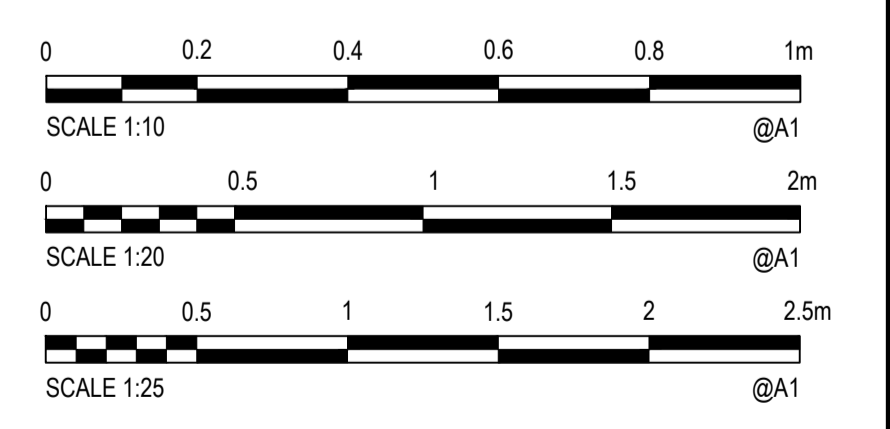
IMPORTANT NOTE: PIT STANDARD DETAILS

PENRITH COUNCIL STANDARD GRATED GULLY PITS DETAIL, SD2001 TO BE USED FOR PIT DETAILS WHERE:
 A. PIT INTERNAL WIDTH IN ANY DIRECTION IS LESS THAN OR EQUAL TO 1200mm, AND
 B. PIT DEPTH FROM SETOUT POINT TO INVERT IS LESS THAN OR EQUAL TO 2000mm.

FOR PITS WIDER THAN 1200mm AND/OR DEEPER THAN 2000mm REFER TO THE BELOW TABLE AND DETAILS.

NON PCC STORMWATER PIT REINFORCEMENT SCHEDULE						
PIT DIMENSIONS(mm)		WALL DIMENSIONS(mm)		VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	BASE REINFORCEMENT
LENGTH 'X', 'Y'	DEPTH 'H'	BASE THICKNESS 'D'	WALL THICKNESS 'W'			
1200<X,Y<3300	2000<H<3900	230	230	N12-200 E.F.	N12-200 E.F.	N12-200 E.F.
X,Y<1200	H<6000	230	230	N16-250 E.F.	N16-250 E.F.	N16-250 E.F.

NOTE: PIT REINFORCEMENT TO BE SELECTED USING MAXIMUM PIT DIMENSION



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1	19/01/2018	DRAFT - ISSUED FOR RSA		MS	



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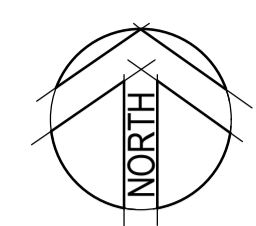
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Designed	MS	Date	19/01/2018
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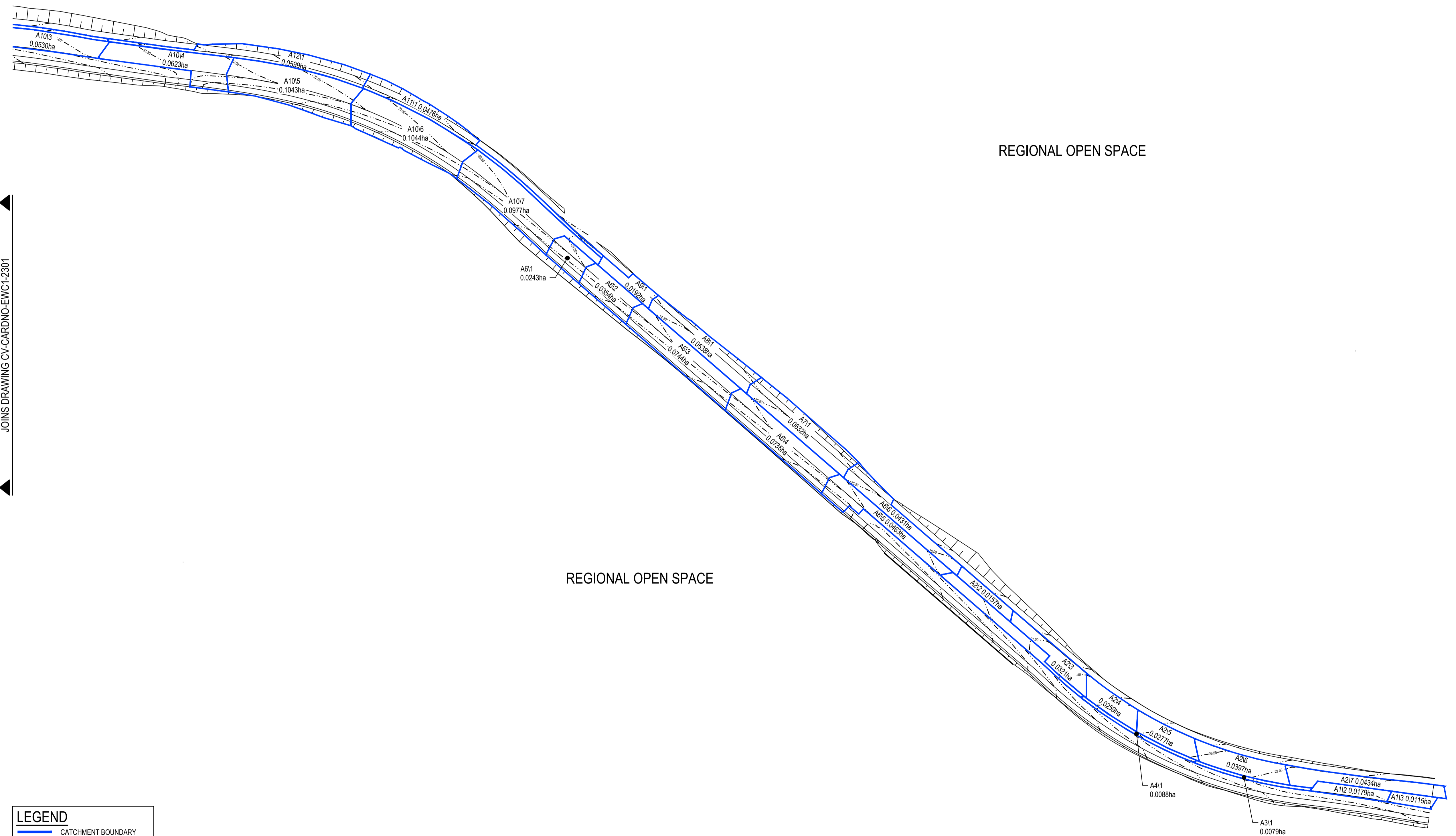
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Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	STORMWATER DRAINAGE DETAILS
SHEET	2

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES						
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Drawing Number	CV-CARDNO-EWC1-2202			Revision	1		

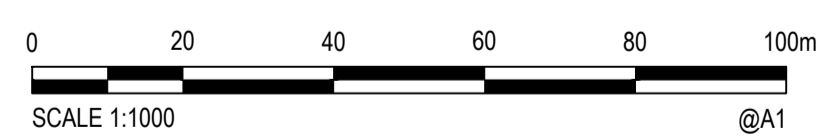
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 DATE PLOTTED: 19 January 2018 12:35 PM BY: BRENDAN LARKIN



JOINS DRAWING CV-CARDNO-EWC1-2301



LEGEND	
	CATCHMENT BOUNDARY
	CATCHMENT LABEL/AREA



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Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	INTERNAL STORMWATER CATCHMENT PLAN
	SHEET 2

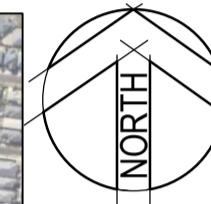
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LENDLEASE

EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION



SCHEDULE OF DRAWINGS

DRAWING No.	DESCRIPTION
CV-CARDNO-EWC1-1001	COVER SHEET & DRAWING SCHEDULE
CV-CARDNO-EWC1-1011	GENERAL NOTES AND LEGENDS
CV-CARDNO-EWC1-1031	GENERAL ARRANGEMENT PLAN
CV-CARDNO-EWC1-1041	DEVELOPMENT APPLICATION STAGING PLAN & ROAD HIERARCHY PLAN
CV-CARDNO-EWC1-1051	EXISTING SERVICES & SURVEY PLAN SHEET 1
CV-CARDNO-EWC1-1052	EXISTING SERVICES & SURVEY PLAN SHEET 2
CV-CARDNO-EWC1-1101	EROSION & SEDIMENT CONTROL PLAN SHEET 1
CV-CARDNO-EWC1-1102	EROSION & SEDIMENT CONTROL PLAN SHEET 2
CV-CARDNO-EWC1-1103	EROSION & SEDIMENT CONTROL PLAN SHEET 3
CV-CARDNO-EWC1-1104	EROSION & SEDIMENT CONTROL PLAN SHEET 4
CV-CARDNO-EWC1-1105	EROSION & SEDIMENT CONTROL PLAN SHEET 5
CV-CARDNO-EWC1-1131	EROSION & SEDIMENT CONTROL DETAILS
CV-CARDNO-EWC1-1141	CUT/FILL PLAN SHEET 1
CV-CARDNO-EWC1-1142	CUT/FILL PLAN SHEET 2
CV-CARDNO-EWC1-1151	TREE REMOVAL PLAN SHEET 1
CV-CARDNO-EWC1-1152	TREE REMOVAL PLAN SHEET 2
CV-CARDNO-EWC1-1251	TYPICAL ROAD CROSS SECTIONS AND DETAILS
CV-CARDNO-EWC1-1301	ROADS & STORMWATER PLAN SHEET 1
CV-CARDNO-EWC1-1302	ROADS & STORMWATER PLAN SHEET 2
CV-CARDNO-EWC1-1303	ROADS & STORMWATER PLAN SHEET 3
CV-CARDNO-EWC1-1304	ROADS & STORMWATER PLAN SHEET 4
CV-CARDNO-EWC1-1305	ROADS & STORMWATER PLAN SHEET 5
CV-CARDNO-EWC1-1351	ROAD LONGITUDINAL SECTIONS SHEET 1
CV-CARDNO-EWC1-1352	ROAD LONGITUDINAL SECTIONS SHEET 2
CV-CARDNO-EWC1-1353	ROAD LONGITUDINAL SECTIONS SHEET 3
CV-CARDNO-EWC1-1701	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 1
CV-CARDNO-EWC1-1702	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 2
CV-CARDNO-EWC1-1703	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 3
CV-CARDNO-EWC1-1704	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 4
CV-CARDNO-EWC1-1705	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 5
CV-CARDNO-EWC1-1851	TYPICAL RETAINING WALL DETAILS SHEET 1
CV-CARDNO-EWC1-1852	TYPICAL RETAINING WALL DETAILS SHEET 2
CV-CARDNO-EWC1-2201	STORMWATER DRAINAGE DETAILS SHEET 1
CV-CARDNO-EWC1-2202	STORMWATER DRAINAGE DETAILS SHEET 2
CV-CARDNO-EWC1-2301	INTERNAL STORMWATER CATCHMENT PLAN SHEET 1
CV-CARDNO-EWC1-2302	INTERNAL STORMWATER CATCHMENT PLAN SHEET 2
CV-CARDNO-EWC1-2351	EXTERNAL STORMWATER CATCHMENT PLAN

DATE PLOTTED: 25 January 2018 4:00 PM BY: MARY DOZA
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Rev.	Date	Description	Des.	Verif.	Appd.
2	25/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		

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Designed MS	Date 19/01/2018		
Verified	Date		
Approved	Date		
Datum AHD		Scale N.T.S	Size A1
Drawing Number CV-CARDNO-EWC1-1001		Revision 2	

GENERAL

- 1. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH BLACKTOWN CITY COUNCIL ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS.
2. BLACKTOWN CITY COUNCIL STANDARD DETAILS TO BE USED AT ALL TIMES.

SITEWORKS NOTES

- 1. ORIGIN OF LEVELS:- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO CARDNO.
3. MAKE SMOOTH CONNECTION WITH EXISTING WORKS AND SURFACES.
4. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
5. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
6. PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
7. ASPHALTIC CONCRETE SHALL CONFORM TO R.M.S. SPECIFICATION R116.
8. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, AND COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m² OF BASECOURSE MATERIAL PLACED.
9. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 100m² OF SUB-BASE COURSE MATERIAL PLACED.
10. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S. FORM 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF BLACKTOWN CITY COUNCIL AND THE SUPERINTENDENT.
11. A HANDRAIL OR SAFETY BARRIER IS TO BE PROVIDED AT THE TOP OF ALL HEADWALLS AND RETAINING WALLS GREATER THAN 1m HIGH IN ACCORDANCE WITH THE LENDLEASE GMR'S.

BULK EARTHWORKS NOTES

- 1. ORIGIN OF LEVELS: REFER SURVEY NOTES
2. STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND STOCK PILE AS DIRECTED BY SUPERINTENDENT FOR FUTURE REUSE.
3. EXCAVATED MATERIAL TO BE USED AS STRUCTURAL FILL PROVIDED THE PLACEMENT MOISTURE CONTENT OF THE MATERIAL IS +/- 2% OF THE OPTIMUM MOISTURE CONTENT.
4. COMPACT FILL AREAS AND SUBGRADE TO NOT LESS THAN:
LOCATION STANDARD DRY DENSITY (AS 1289 E 5.1.1)
UNDER BUILDING SLABS ON GROUND 98%
UNDER ROADS AND CARPARKS 100%
LANDSCAPED AREAS UNLESS NOTED OTHERWISE 98%
5. FOR NON COHESIVE MATERIAL, COMPACT TO 75% DENSITY INDEX.
6. BEFORE PLACING FILL, PROOF ROLL EXPOSED SUBGRADE WITH AN 8 TONNE (MIN) DEADWEIGHT SMOOTH DRUM VIBRATORY ROLLER TO DETECT THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 2mm MOVEMENT UNDER ROLLER).
7. FREQUENCY OF COMPACTION TESTING SHALL BE NOT LESS THAN- (A) 1 TEST PER 1,000m² OF FILL PLACED PER LAYER OF FILL. (B) 3 TESTS PER VISIT (C) 1 TEST PER 1000m² OF EXPOSED SUBGRADE "LEVEL 1" TESTING SHALL BE TESTING IN ACCORDANCE WITH AS 3798 (1996).
8. FILLING TO BE PLACED IN MAXIMUM 300mm - LOOSE LAYERS AND COMPACTED AS SPECIFIED
9. NO FILLING SHALL TAKE PLACE TO EXPOSED SUBGRADE UNTIL THE AREA HAS BEEN PROOF ROLLED IN THE PRESENCE OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER AND APPROVAL GIVEN IN WRITING THAT FILLING CAN PROCEED.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

- 1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, NSW OFFICE OF WATER, SYDNEY WATER, THE OFFICE OF ENVIRONMENT AND HERITAGE, AND LENDLEASE'S REPRESENTATIVE. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED OR AS OTHERWISE DIRECTED BY THE SUPERINTENDENT. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH a. LOCAL AUTHORITY REQUIREMENTS b. EPA REQUIREMENTS c. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

- 6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE: a. INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL. b. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL. c. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN (D). INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN. d. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

- 7. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
8. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS IS PRACTICABLE AFTER THE COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

- 9. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
10. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
11. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
12. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY: a. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE b. ENSURING THAT NOTHING IS NAILED TO THEM c. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS. (I) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER (II) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH (III) CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

NOISE

EPA AND COUNCIL REQUIREMENTS MUST BE ADHERED TO REGARDING LEVEL OF NOISE AND WORKING HOURS TO ENSURE THAT RESIDENTS AND OTHER APPLICABLE NEIGHBORS TO THE SITE ARE NOT DISTURBED UNREASONABLY. THE GENERATION OF NOISE MUST BE MINIMISED.

DUST

DUST MUST BE MINIMISED TO ENSURE THERE IS NO HEALTH RISK OR LOSS OF AMENITY.

STAGING OF WORKS

STRIPPING WORKS ARE TO BE STAGED TO MINIMISE EXTENT OF EXPOSED AREA. WEATHER CONDITIONS TO BE ASSESSED PRIOR TO UNDERTAKING STRIPPING.

STOCKPILE PROTECTION

SEDIMENT RETENTION STRUCTURES TO BE PLACED DOWNSLOPE OF ANY STOCKPILES. STOCKPILE IN PLACE > 28 DAYS TO BE TEMPORARILY GRASSED.

VEHICLE AND ROAD MANAGEMENT

SITE ACCESS TO BE RESTRICTED TO ALLOCATED TRUCK ROUTES. EXTERNAL ROADS TO BE SWEEP REGULARLY FOR DURATION OF WORKS.

EXISTING UNDERGROUND SERVICES NOTES

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. CARDNO CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY 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.

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. 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.

STORMWATER DRAINAGE NOTES

- 1. STORMWATER DESIGN CRITERIA: (A) AVERAGE RECURRENCE INTERVAL: 5 YEAR ARI PIPED DRAINAGE 100 YEAR ARI OVERLAND FLOW (B) RAINFALL INTENSITIES: TIME OF CONCENTRATION: 5 MINUTES 5 YEAR ARI= 126mm/hr 100 YEAR ARI= 219mm/hr
2. PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
3. PIPES 300 DIA AND LESS SHALL BE DWV GRADE (CLASS SN8) uPVC WITH SOLVENT WELDED JOINTS.
4. EQUIVALENT STRENGTH FRC PIPES MIN CLASS 3 MAY BE USED SUBJECT TO PRIOR APPROVAL BY BLACKTOWN CITY COUNCIL.
5. ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
6. PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.
7. PIPES TO BE INSTALLED TO TYPE H51 SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).
8. REFER TO AS/NZS 3725:2007 TABLE B1 FOR REQUIRED FILL DEPTHS ABOVE PIPE BARREL PRIOR TO USE OF COMPACTION MACHINERY OR TRAVERSING OF PIPES BY GENERAL SITE EQUIPMENT.
9. WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 (2007) TO DETERMINE THE APPROPRIATE PIPE CLASS. PROPOSED PIPE CLASS SHALL BE REVIEWED BY CARDNO PRIOR TO INSTALLATION.
10. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500.3 (2015).
11. THE USE OF PRECAST PITS IS ONLY PERMITTED WITH THE PRIOR APPROVAL OF BLACKTOWN CITY COUNCIL.
12. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
13. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC DWV SEWER GRADE PIPE IS TO BE USED.
14. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
15. GRATES AND COVERS SHALL CONFORM TO AS 3996. MINIMUM CLASS C. UNLESS NOTED OTHERWISE.
16. ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.
17. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.

STORMWATER DRAINAGE NOTES CONTINUED

- 18. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

TELSTRA - DUTY OF CARE NOTE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY ITS LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY RPS GROUP P/L (FORMERLY WHELANS INSTIES), BEING REGISTERED SURVEYORS. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. CARDNO DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT CARDNO.

ROOF WATER KERB OUTLETS

- 1. KERB OUTLETS TO BE PROVIDED IN ACCORDANCE WITH BLACKTOWN CITY COUNCILS CIVIL WORKS SPECIFICATION AT EACH LOT WHERE INTERALLOTMENT DRAINAGE IS NOT PROVIDED
2. KERB OUTLETS ARE TO BE CONSTRUCTED AT THE SAME TIME KERBS ARE POURED.

STREET FURNITURE

- 1. ALL LIGHT POLES, STREET NAMES AND BUS SHELTERS IN THIS SUBDIVISION WILL BE GALVANISED BLACK POWDER COATED TO THE SATISFACTION OF BLACKTOWN CITY COUNCIL. FURTHER THAT THESE LIGHT POLES WILL COMPLY WITH COUNCIL'S SPECIFICATIONS.
2. ALL LIGHT POLES ARE TO BE TYPE 'MACARTHUR'. REFER ELECTRICAL DESIGN DRAWINGS.

CONCRETE NOTES

- 1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONCRETE QUALITY ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

Table with 4 columns: ELEMENT, AS 3600 Fc MPa AT 28 DAYS, SPECIFIED SLUMP, NOMINAL AGG. SIZE. Rows include VEHICULAR BASE, KERBS AND PATHS, PITS, FOUNDATIONS & CULVERT BASE SLABS, HEADWALL.

- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379.
3. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY CARDNO.
4. CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm TOP AND 70mm FOR EXTERNAL EDGES UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
6. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED AND CURED IN ACCORDANCE WITH R.T.A. SPECIFICATION R83.

PROPOSED WORKS LEGEND

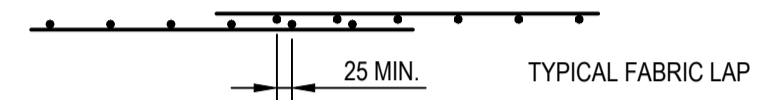
- PROPOSED
- - - - -100.0 - - - - - PROPOSED CONTOURS
- - - - - 100.0 - - - - - EXISTING CONTOURS (PRE BULK EARTHWORKS)
BATTER SLOPE
EXTENT OF STAGE 1 WORKS
TREES TO BE REMOVED AS PART OF BULK EARTHWORKS PACKAGE.
TREES TO BE RETAINED
BATTERS
KERB & GUTTER REFER BLACKTOWN CITY COUNCIL STANDARD DETAIL.
CONCRETE HEADWALL
DRAINAGE LINE No. DRAINAGE PIT No.
STORMWATER PIPELINE/PIPE DIAMETER/FLOW DIRECTION
DRAINAGE CAP
STORMWATER DRAINAGE PITS
FLOW DIRECTION
RETAINING WALL
SCOUR PROTECTION
EXISTING WATER COURSES AS PER 1:10000 TOPOGRAPHIC MAPS
SEMI RIGID BARRIER
HANDRAIL
3.0m WIDE TURF & LEVEL SPREADER

EXISTING WORKS LEGEND

- ELECTRICAL
WATER
STORMWATER
TELECOMMUNICATIONS

REINFORCEMENT NOTES

- 1. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
2. SPLICES IN THE REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN. THE WRITTEN APPROVAL OF THE ENGINEER SHALL BE OBTAINED FOR ANY OTHER SPLICES. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT.
3. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED IN WRITING BY THE ENGINEER.
4. REINFORCEMENT SYMBOLS - N - DENOTES GRADE 400N TEMPCORE DEFORMED BARS TO AS 1302 R - DENOTES GRADE 250R HOT ROLLED PLAIN BARS TO AS 1302 SL - DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304 W - DENOTES HARD-DRAWN PLAIN WIRE TO AS 1303
5. REINFORCEMENT COGS AND EXTENSIONS TO BE IN ACCORDANCE WITH AS3600.
NUMBER OF BARS IN GROUP BAR GRADE AND TYPE
NOMINAL BAR SIZE IN mm SPACING IN mm
6. THE FIGURES FOLLOWING THE FABRICS SYMBOL 'SL' IS THE REFERENCE NUMBER FOR FABRIC TO AS 1304. ALL REINFORCEMENT FABRIC SHALL COMPLY WITH AS1303 AND AS1304 AND SHALL BE SUPPLIED AS FLAT SHEETS.



- FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF WIRE.
7. PLACE SUFFICIENT BAR CHAIRS UNDER BOTTOM REINFORCING RODS AND TOP CROSSRODS IN SLABS TO ALLOW THEM TO BE SUPPORTED IN THEIR CORRECT POSITIONS DURING CONCRETING (NOT GREATER THAN 900mm CENTRES BOTH WAYS)
8. REINFORCEMENT LAYERS DENOTED THUS UNO - TT - DENOTES TOP BARS LAID LAST IN TOP T - DENOTES TOP BARS LAID FIRST IN TOP B - DENOTES BOTTOM BARS LAID SECOND IN BOTTOM BB - DENOTES BOTTOM BARS LAID FIRST IN BOTTOM
9. WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-300 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 450mm UNLESS NOTED OTHERWISE.
10. MINIMUM LAP LENGTHS UNLESS NOTED OTHERWISE SHALL BE - 500 FOR N12 BARS 600 FOR N16 BARS 900 FOR N20 BARS 1000 FOR N24 BARS 1200 FOR N28 BARS 1500 FOR N32 BARS 1800 FOR N36 BARS



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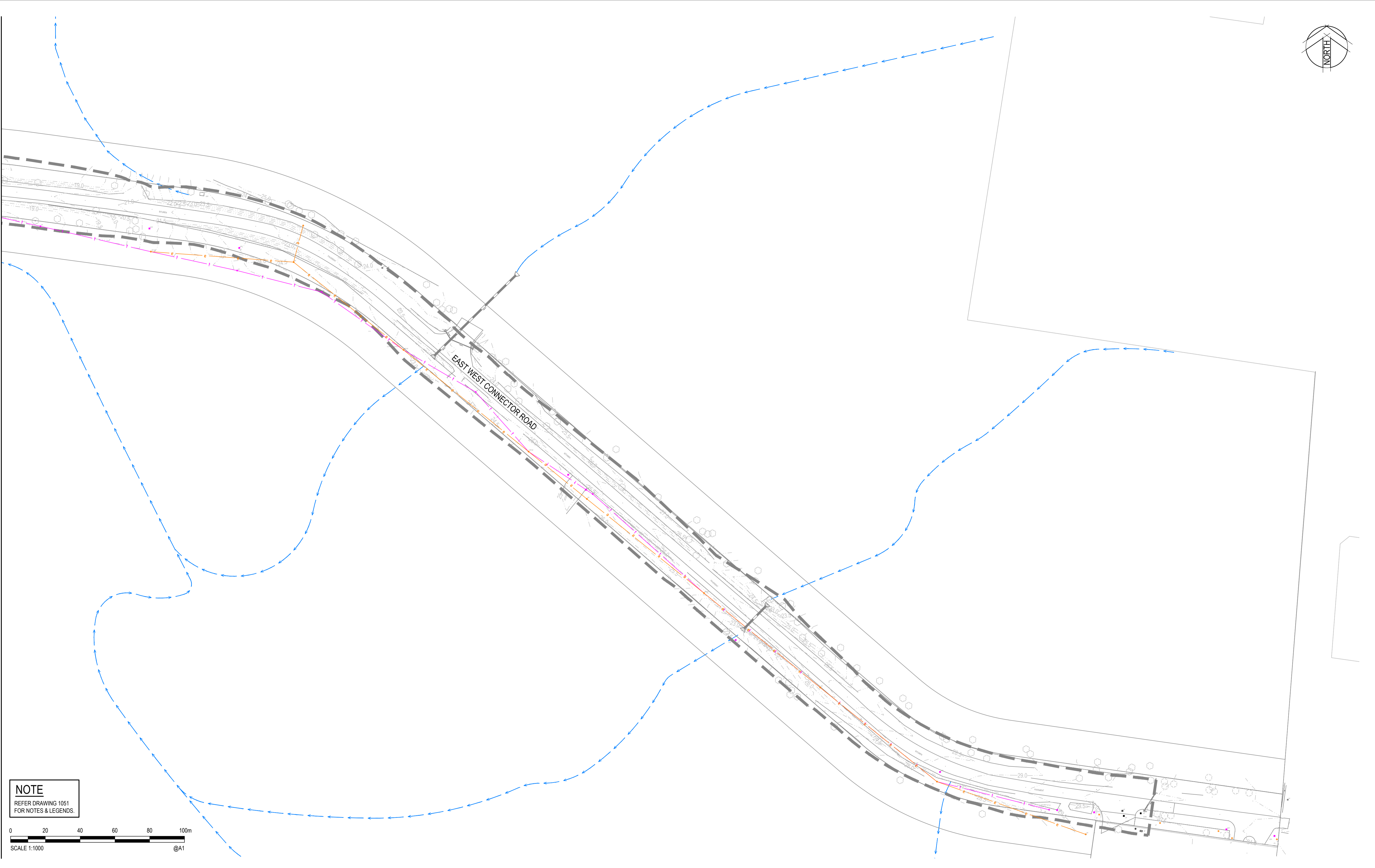
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Table with 2 columns: Client, Project. Client: LENDLEASE. Project: EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION

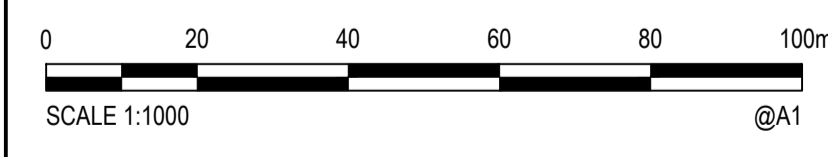
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 DATE PLOTTED: 25 January 2018 4:00 PM BY: MARY DOZA

JOINS DRAWING CV-CARDNO-EWC1-1051



NOTE
REFER DRAWING 1051
FOR NOTES & LEGENDS.



Rev.	Date	Description	Des.	Verif.	Appd.
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1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



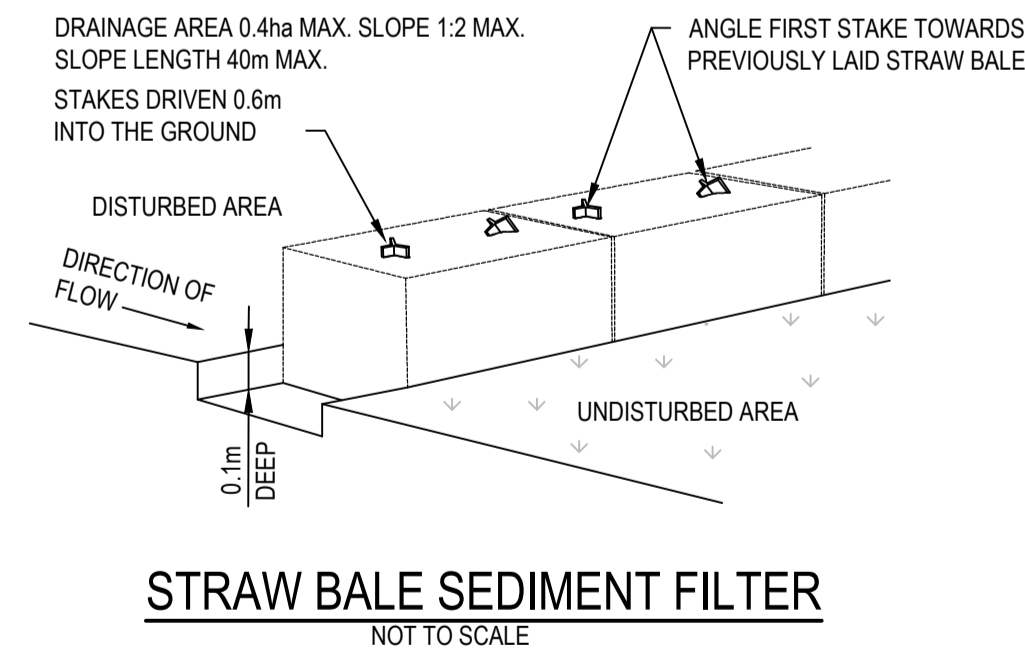
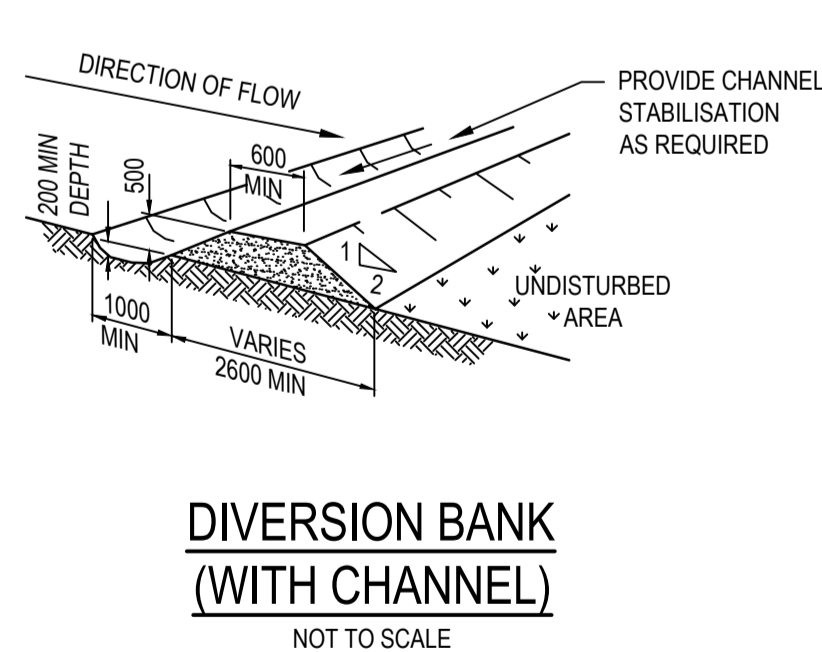
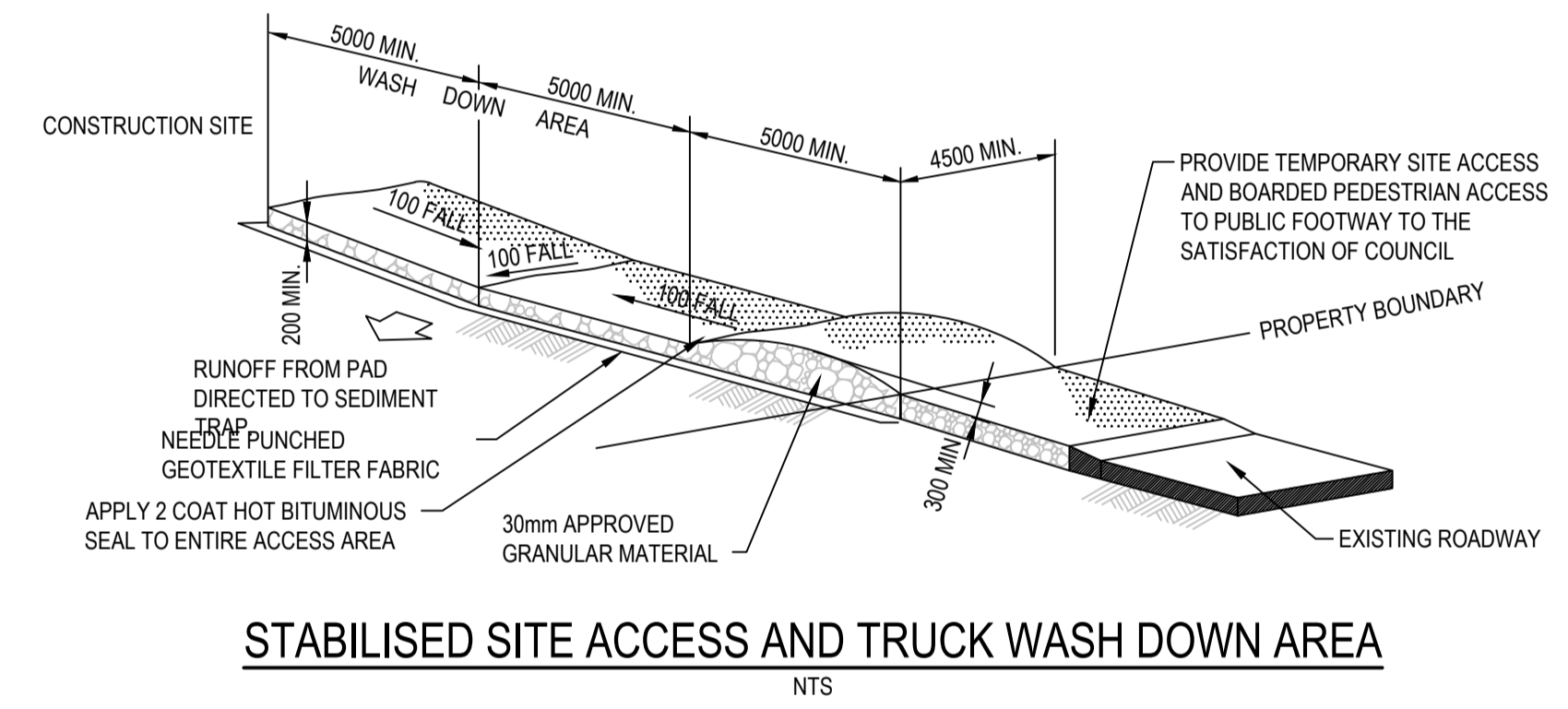
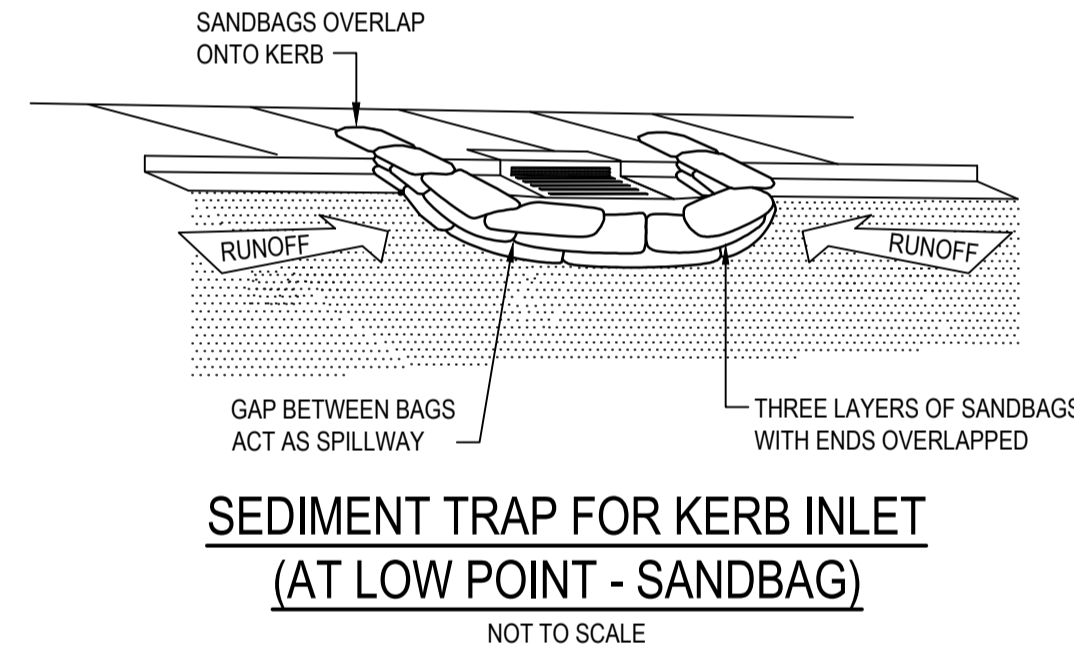
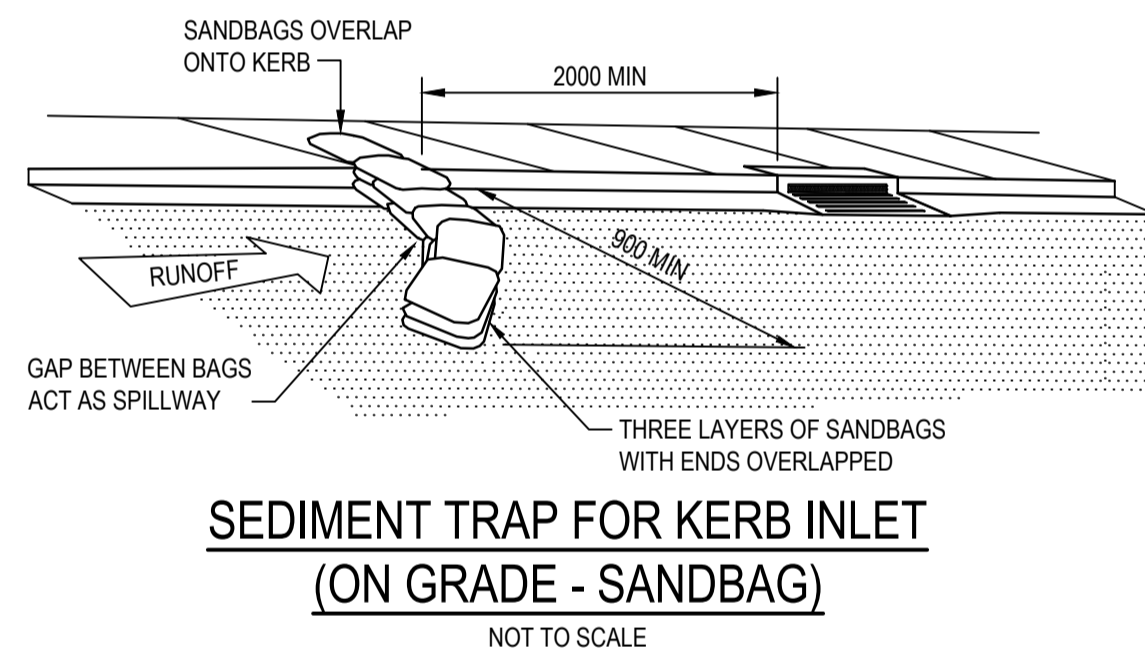
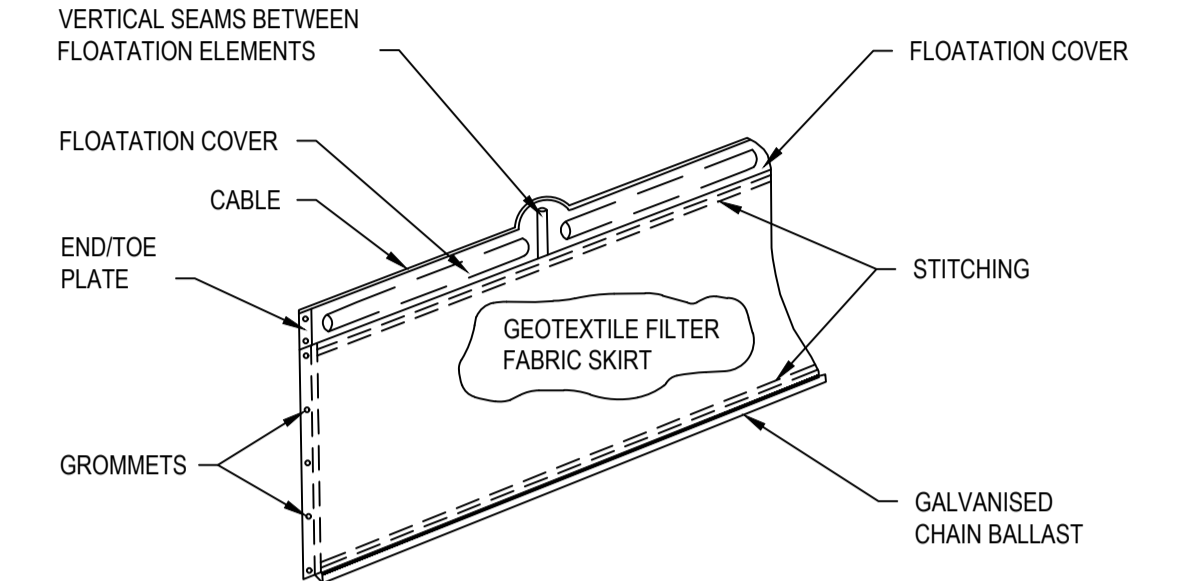
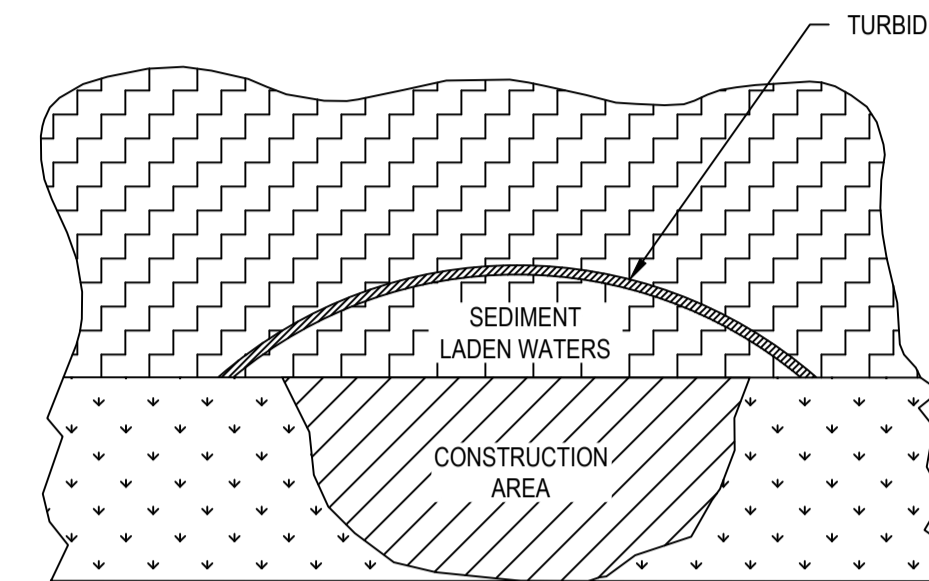
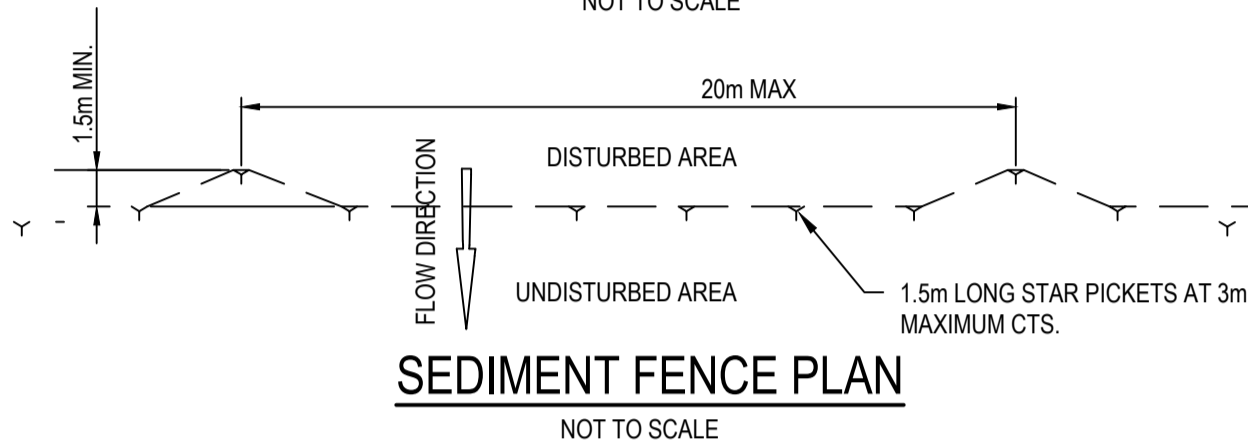
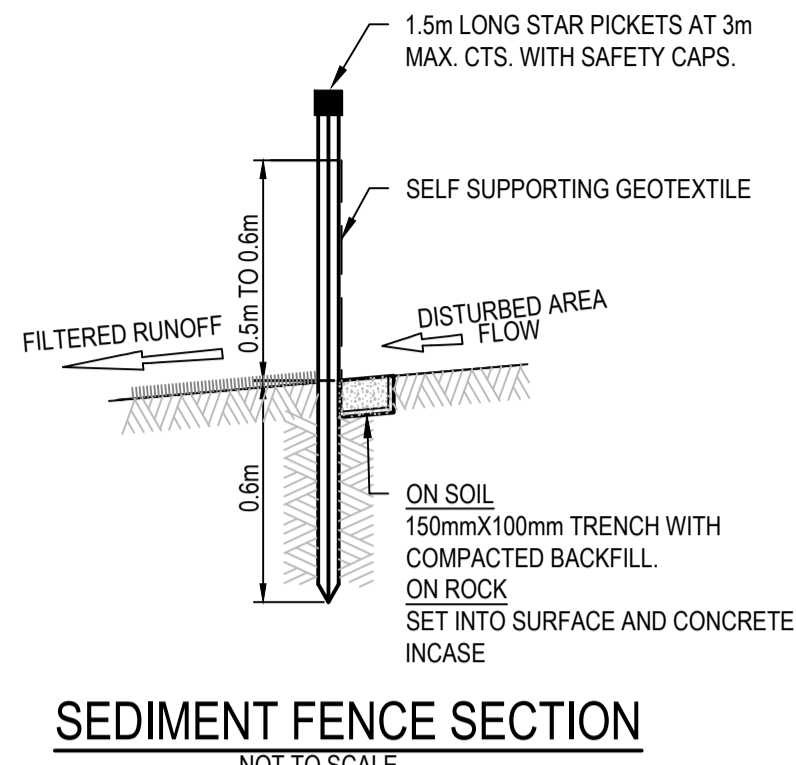
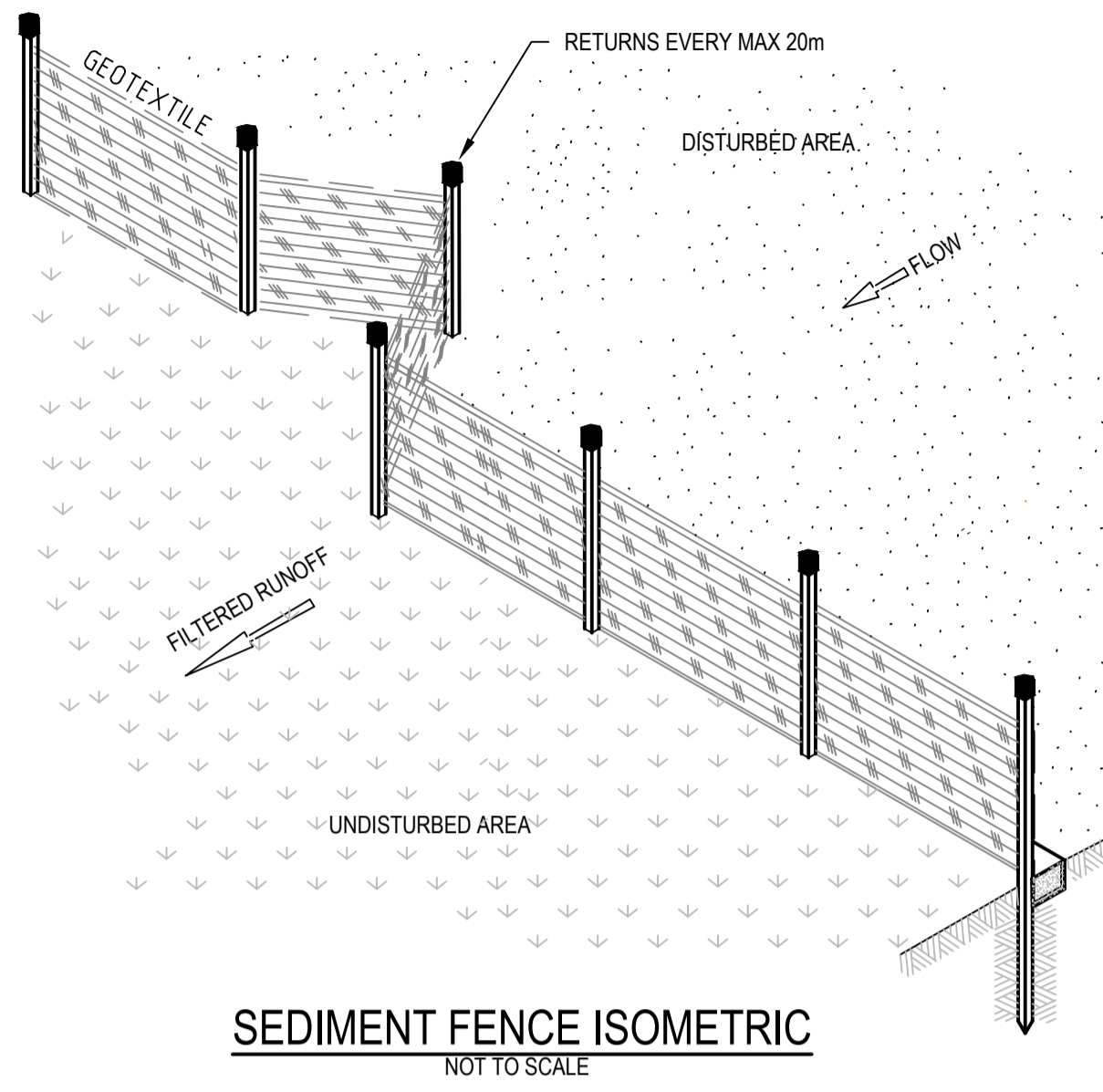
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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EXISTING SERVICES & SURVEY PLAN SHEET 2

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	1:1000
Drawing Number	CV-CARDNO-EWC1-1052	Size	A1
Revision			2



Rev.	Date	Description	Des.	Verif.	Appd.
2	25/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



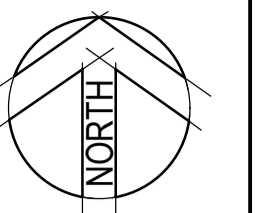
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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

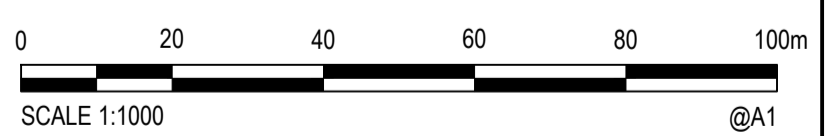
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Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EROSION & SEDIMENT CONTROL DETAILS

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Drawing Number	CV-CARDNO-EWC1-1131	Size	A1
Revision			2



LEGEND

[Dark Red]	CUT GREATER THAN 3m
[Red-Orange]	CUT BETWEEN 2.5m AND 3.0m
[Orange]	CUT BETWEEN 2.0m AND 2.5m
[Light Orange]	CUT BETWEEN 1.5m AND 2.0m
[Yellow-Orange]	CUT BETWEEN 1.0m AND 1.5m
[Yellow]	CUT BETWEEN 0.5m AND 1.0m
[Light Yellow]	CUT LESS THAN 0.5m
[Light Green]	FILL LESS THAN 0.5m
[Green]	FILL BETWEEN 0.5m AND 1.0m
[Light Green]	FILL BETWEEN 1.0m AND 1.5m
[Green]	FILL BETWEEN 1.5m AND 2.0m
[Dark Green]	FILL BETWEEN 2.0m AND 2.5m
[Dark Green]	FILL BETWEEN 2.5m AND 3.0m
[Blue]	FILL GREATER THAN 3.0m



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Verified		Date	
Approved		Date	

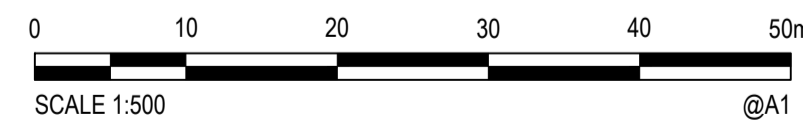
Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	CUT/FILL PLAN SHEET 1

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	1:1000
Size	A1	Revision	1
Drawing Number	CV-CARDNO-EWC1-1141		

Rev.	Date	Description	Des.	Verif.	Appd.
1	25/01/18	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM



NOTE
 REFER DRAWING 1141 FOR
 NOTES AND LEGENDS.



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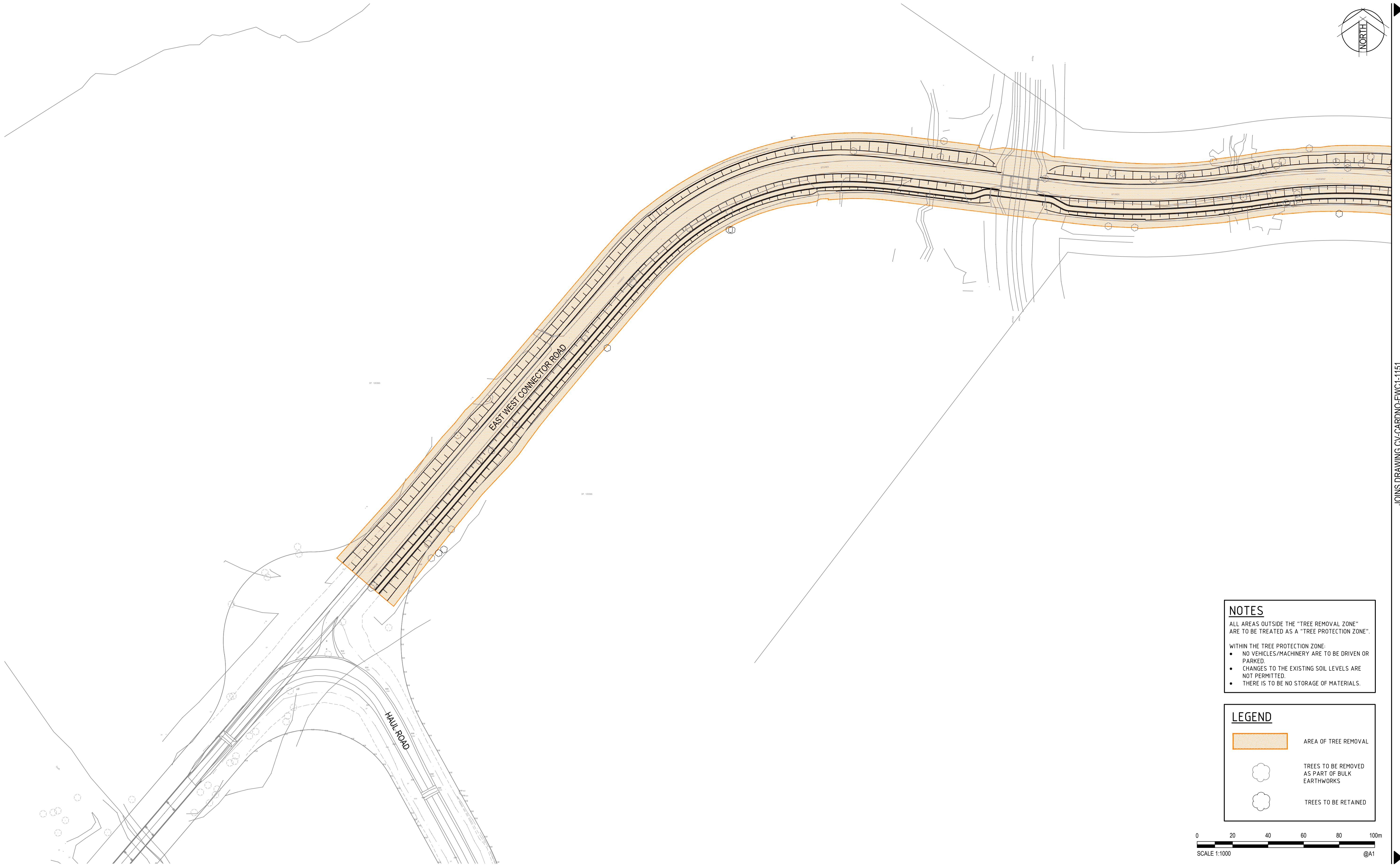
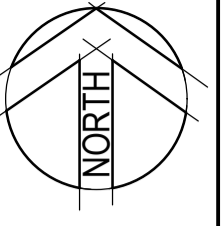


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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	CUT/FILL PLAN SHEET 2

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	1:1000
Size	A1	Revision	1
Drawing Number	CV-CARDNO-EWC1-1142		

Rev.	Date	Description	Des.	Verif.	Appd.
1	25/01/18	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM




NOTES


ALL AREAS OUTSIDE THE "TREE REMOVAL ZONE" ARE TO BE TREATED AS A "TREE PROTECTION ZONE".


WITHIN THE TREE PROTECTION ZONE:

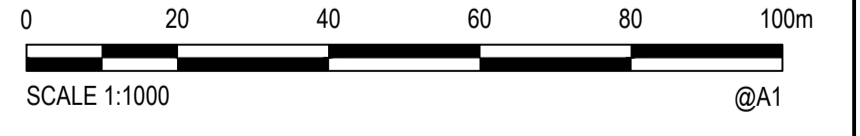
- NO VEHICLES/MACHINERY ARE TO BE DRIVEN OR PARKED.
- CHANGES TO THE EXISTING SOIL LEVELS ARE NOT PERMITTED.
- THERE IS TO BE NO STORAGE OF MATERIALS.

LEGEND

 AREA OF TREE REMOVAL

 TREES TO BE REMOVED AS PART OF BULK EARTHWORKS

 TREES TO BE RETAINED



XREFs: XR-89914020-2301-CI-SHEET DESIGN; XR-89914020-2301-CI-SHEET BREAK; XR-89914020-2301-CI-SURVEY; XR-89914020-2301-CI-EXISTING TREES
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JOINS DRAWING CV-CARDNO-EWC1-1151



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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client **LENLEASE**

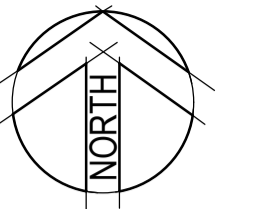
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 STAGE 1 - CIVIL WORKS
 DEVELOPMENT APPLICATION**

Title **TREE REMOVAL PLAN
 SHEET 1**

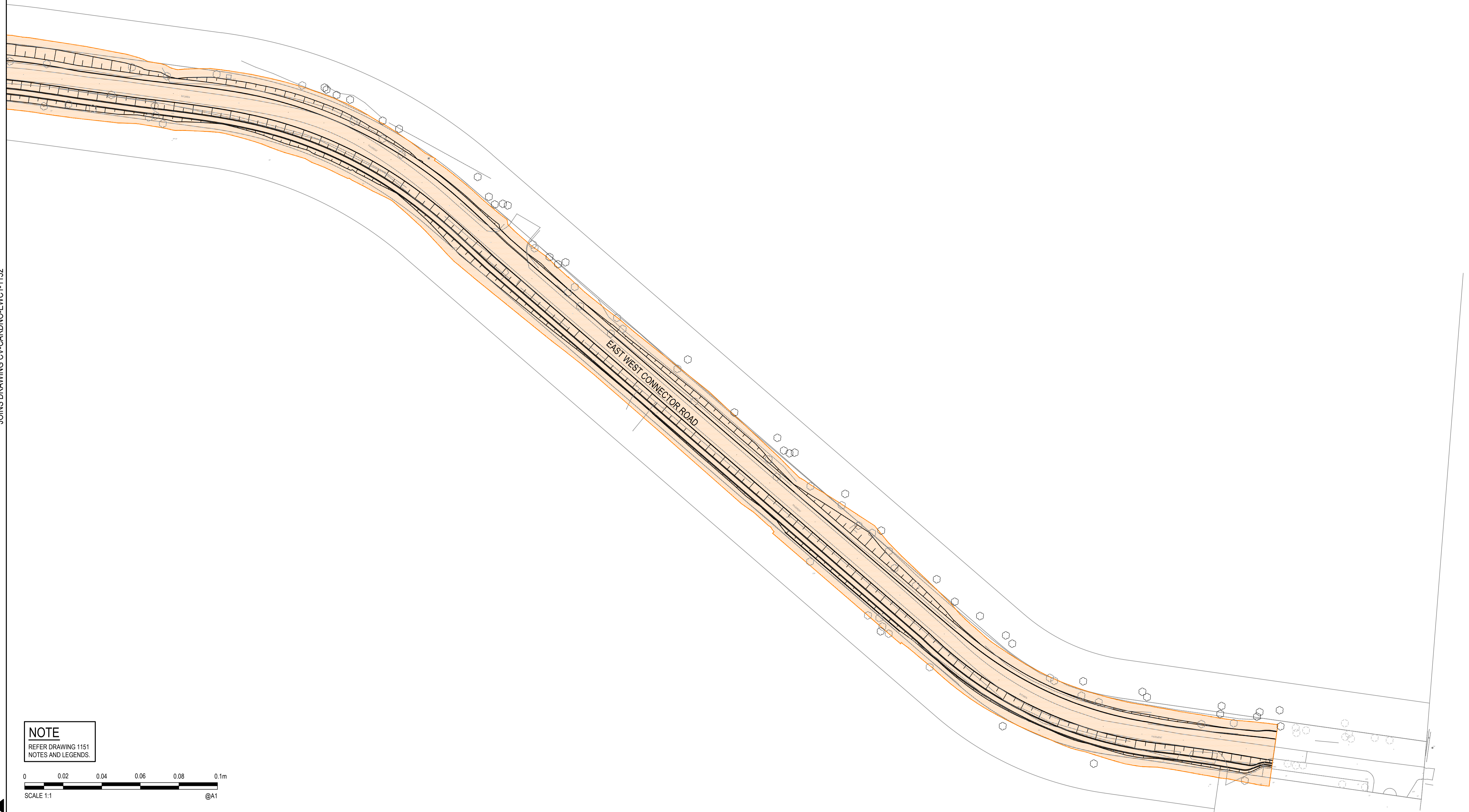
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 NOT TO BE USED FOR CONSTRUCTION PURPOSES

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Drawing Number	CV-CARDNO-EWC1-1151			Revision	1

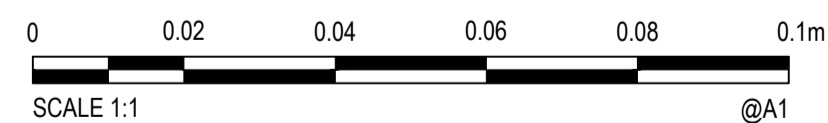
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1	25/01/18	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM



JOINS DRAWING CV-CARDNO-EWC-1-1152



NOTE
REFER DRAWING 1151
NOTES AND LEGENDS.



XREFs: XR-89914020-2301-CI-DESIGN; XR-89914020-2301-CI-SHEET BREAK; XR-89914020-2301-CI-SURVEY; Xref-89914020-Client Logos; XR-89914020-2301-CI-EXISTING TREES
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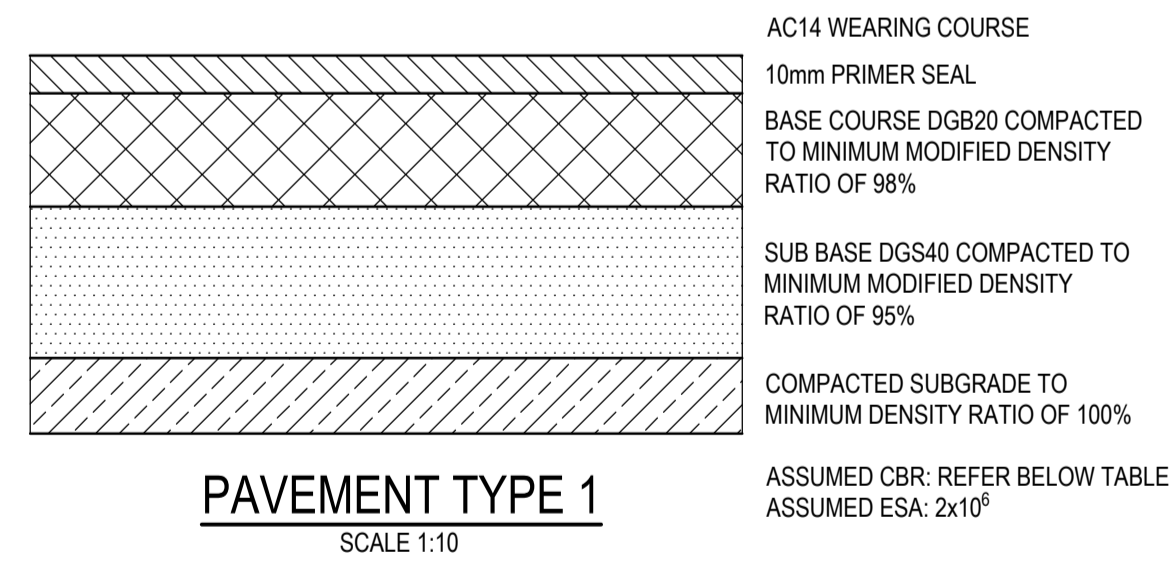
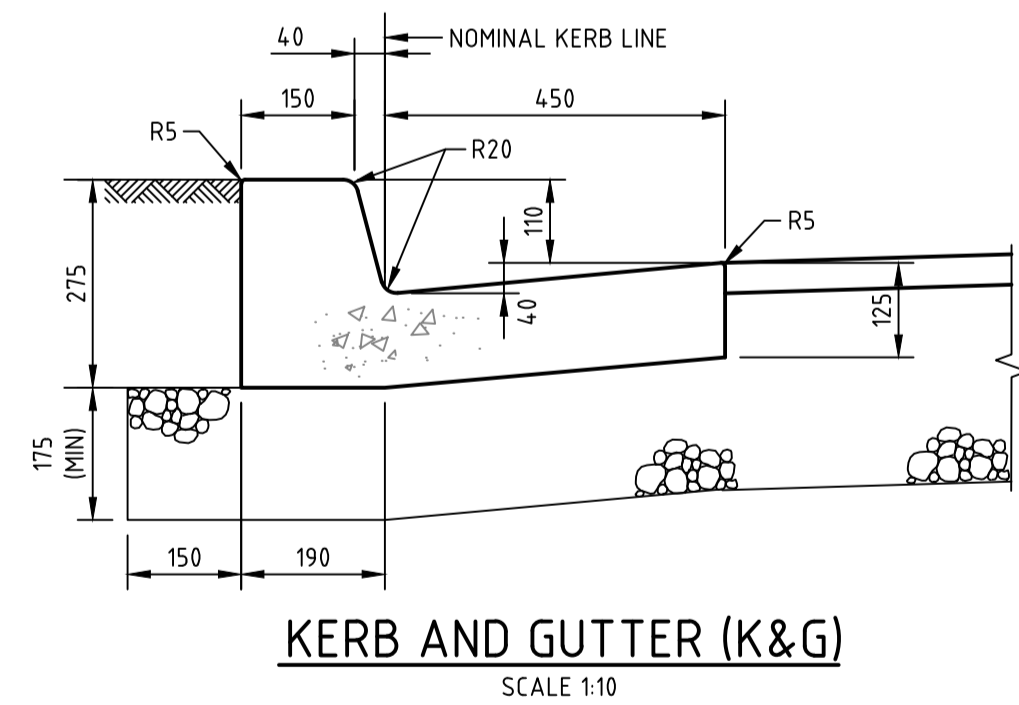
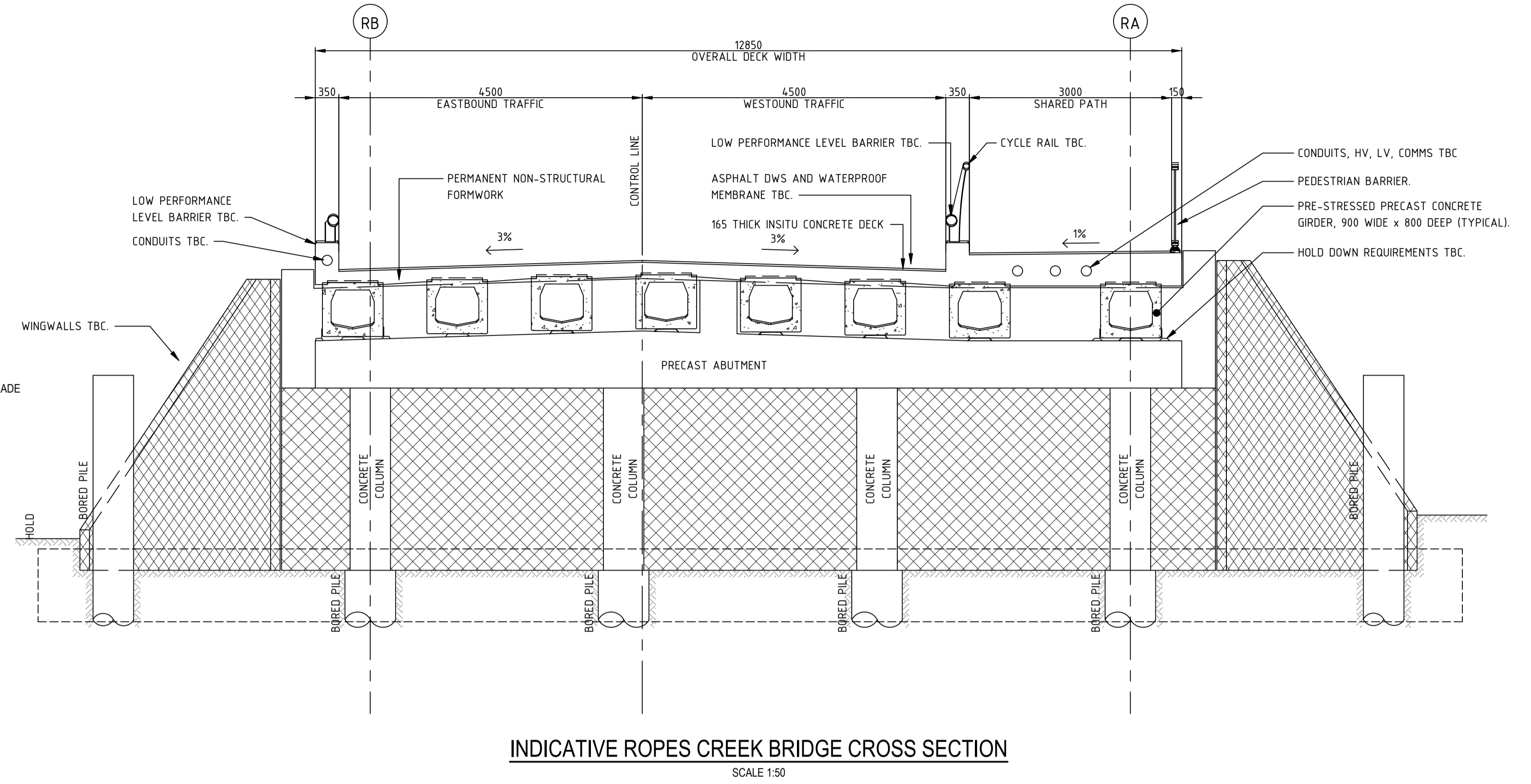
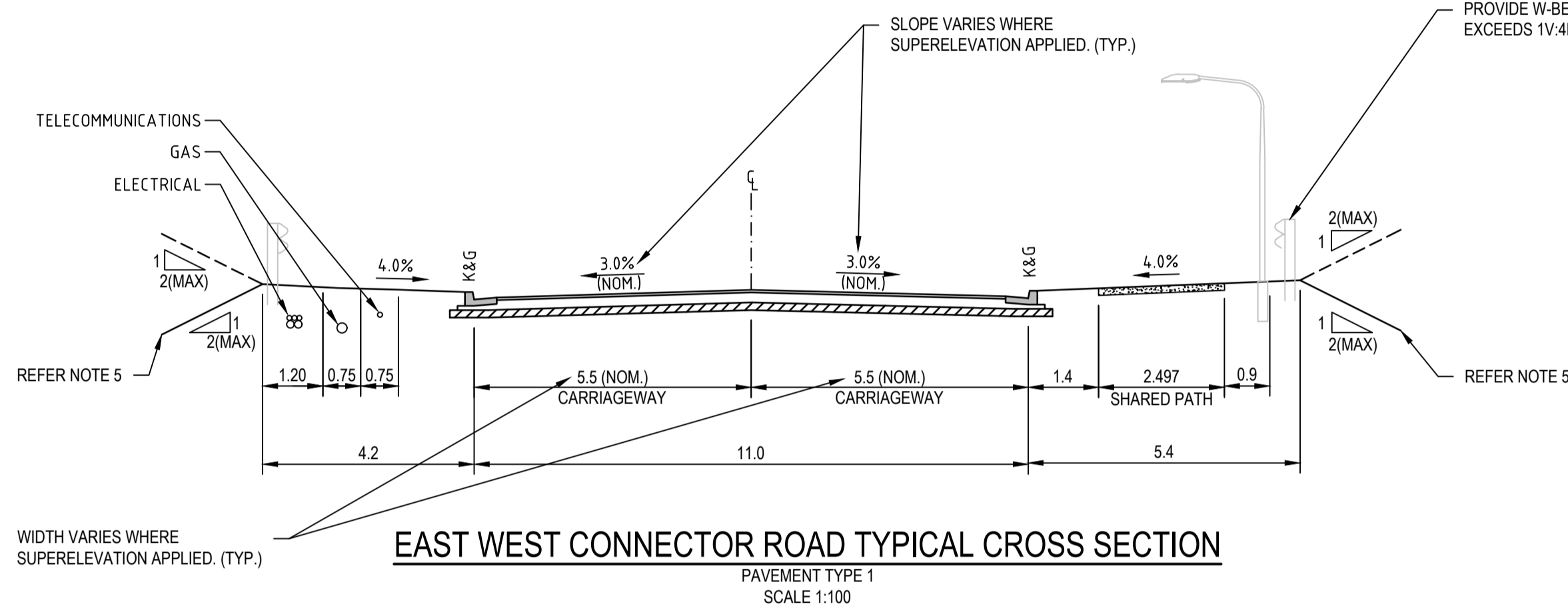
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Verified		Date	
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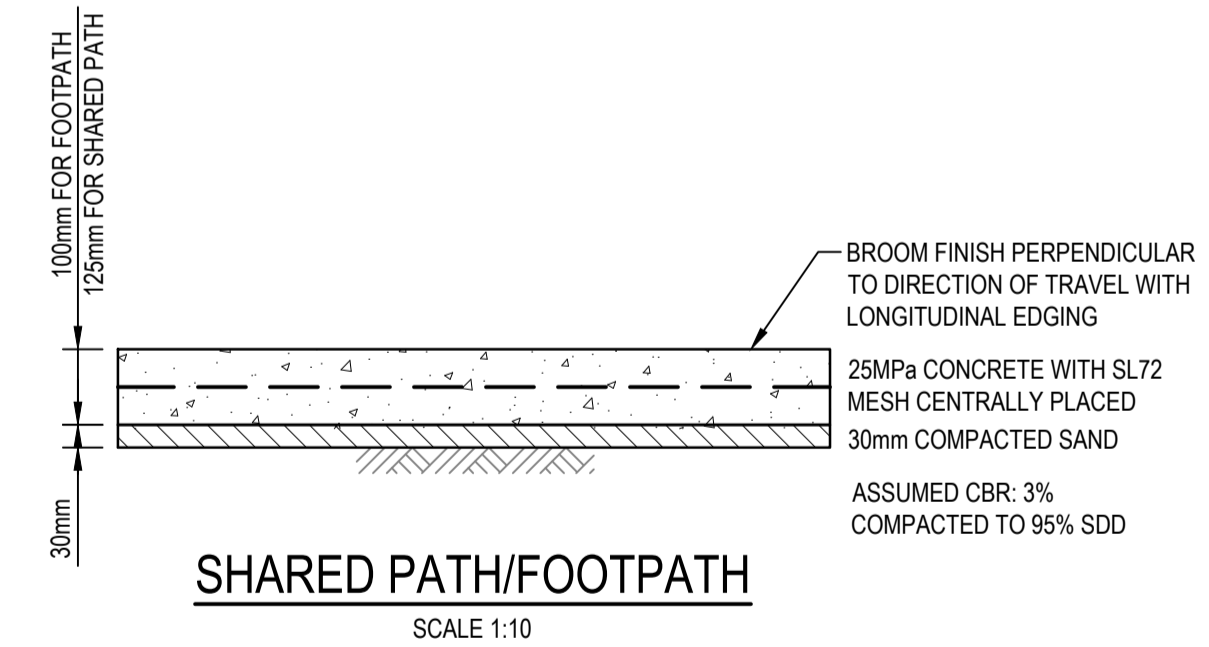
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Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	TREE REMOVAL PLAN SHEET 2

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	1:1000
Size			A1
Drawing Number	CV-CARDNO-EWC-1-1152	Revision	1

Rev.	Date	Description	Des.	Verif.	Appd.
1	25/01/18	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM

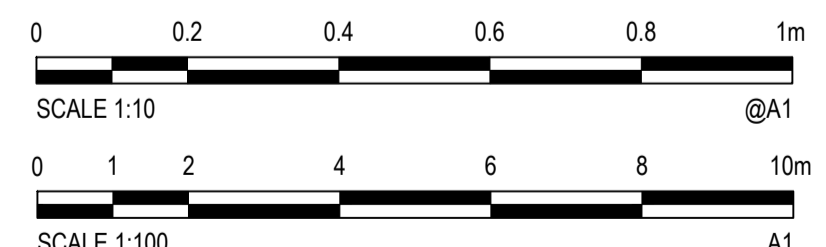


DESIGN SUBGRADE	CBR 3%	CBR 5%	CBR 7%	CBR 9%
WEARING SURFACE	50mm AC14	50mm AC14	50mm AC14	50mm AC14
BASE COURSE	150mm	150mm	150mm	150mm
SUBBASE	410mm	290mm	210mm	175mm
TOTAL THICKNESS	610mm	490mm	410mm	375mm



- NOTES**
- SAWCUT PATH OR TROWELLED DUMMY JOINT AT 2m SPACING.
 - EVERY THIRD JOINT TO BE FULL DEPTH DOWELLED EXPANSION JOINT.

- NOTES**
- TYPICAL ROAD CROSS SECTIONS ARE BASED UPON INFORMATION PROVIDED BY LENDLEASE. STREET SCAPES ARE INDICATIVE ONLY & SUBJECT TO DETAILED DESIGN BY LANDSCAPE ARCHITECT.
 - SERVICE ALLOCATIONS ARE INDICATIVE ONLY. REFER TO SEPARATE SERVICE DRAWING PACKAGES FOR ALIGNMENT & DETAILS.
 - CONSTRUCTION OF FOOTPATH TO BE DEFERRED UNTIL DIRECTED BY THE SITE SUPERINTENDENT.
 - PAVEMENT DEPTH BASED ON "BLACKTOWN CITY COUNCIL DESIGN GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISIONS AND DEVELOPMENTS". PAVEMENT DEPTH IS PRELIMINARY ONLY & SUBJECT TO FUTURE DETAILED DESIGN.
 - TIE INTO EXISTING SURFACE OR PROVIDE RETAINING WALL STRUCTURE IF BATTER EXTENDS BEYOND EXISTING ROAD CORRIDOR. REFER DRAWING 1301-1305 FOR RETAINING WALL LOCATIONS. BATTER SURFACE TO BE STABILIZED.



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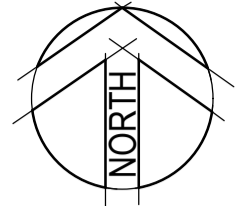
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 Tel: 02 9496 7700 Fax: 02 9439 5170
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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client	LENDLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	TYPICAL ROAD CROSS SECTIONS AND DETAILS

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Size	A1	Revision	2
Drawing Number	CV-CARDNO-EWC1-1251		

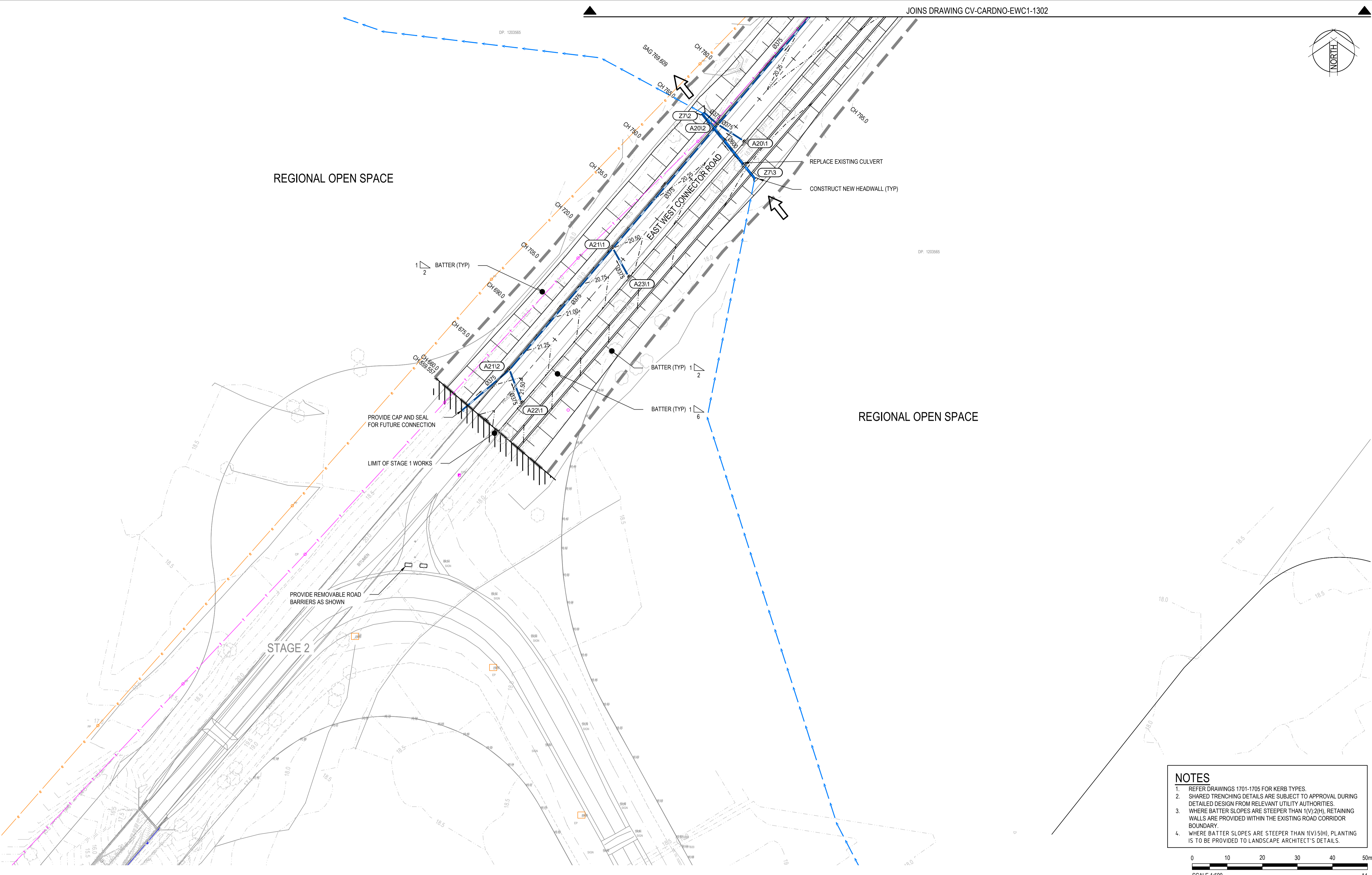
Rev.	Date	Description	Des.	Verif.	Appd.
2	25/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



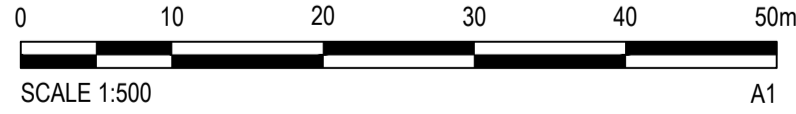
REGIONAL OPEN SPACE

REGIONAL OPEN SPACE

STAGE 2



- NOTES**
- REFER DRAWINGS 1701-1705 FOR KERB TYPES.
 - SHARED TRENCHING DETAILS ARE SUBJECT TO APPROVAL DURING DETAILED DESIGN FROM RELEVANT UTILITY AUTHORITIES.
 - WHERE BATTER SLOPES ARE STEEPER THAN 1(V):2(H), RETAINING WALLS ARE PROVIDED WITHIN THE EXISTING ROAD CORRIDOR BOUNDARY.
 - WHERE BATTER SLOPES ARE STEEPER THAN 1(V):5(H), PLANTING IS TO BE PROVIDED TO LANDSCAPE ARCHITECT'S DETAILS.



Rev.	Date	Description	Des.	Verif.	Appd.
2	25/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



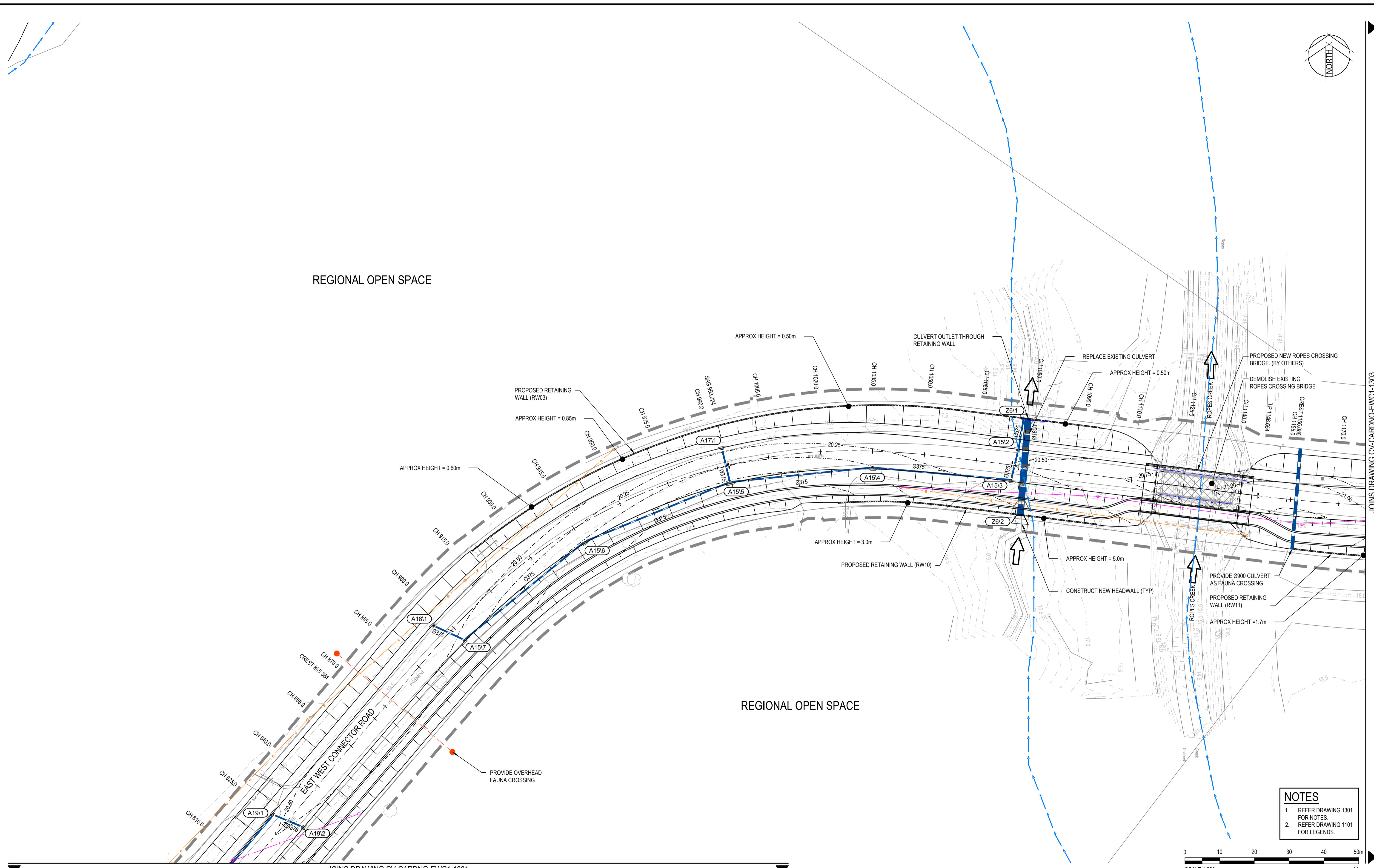
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Drawn	Date	Client
BML	19/01/2018	LENLEASE
Checked	Date	Project
MS	19/01/2018	EAST WEST CONNECTOR ROAD
Designed	Date	Stage
MS	19/01/2018	STAGE 1 - CIVIL WORKS
Verified	Date	Application
		DEVELOPMENT APPLICATION
Approved	Date	Title
		ROADS & STORMWATER PLAN
		SHEET 1

Status	FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES	
Datum	AHD
Scale	1:500
Size	A1
Drawing Number	CV-CARDNO-EWC1-1301
Revision	2

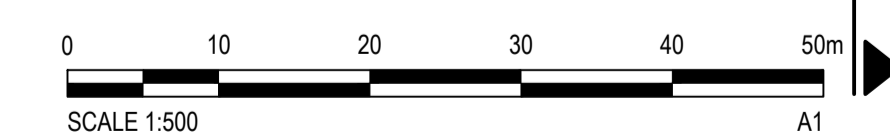
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 DATE PLOTTED: 25 January 2018 4:18 PM BY: MARY DOZA



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REGIONAL OPEN SPACE

- NOTES**
- REFER DRAWING 1301 FOR NOTES.
 - REFER DRAWING 1101 FOR LEGENDS.



JOINS DRAWING CV-CARDNO-EWC1-1301

JOINS DRAWING CV-CARDNO-EWC1-1303

Rev.	Date	Description	Des.	Verif.	Appd.
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1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



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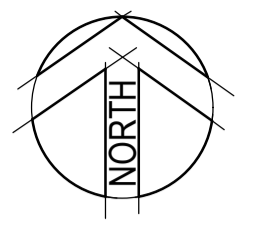
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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROADS & STORMWATER PLAN SHEET 2

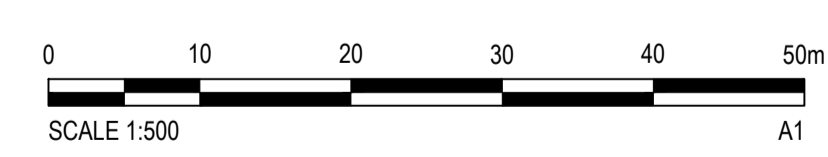
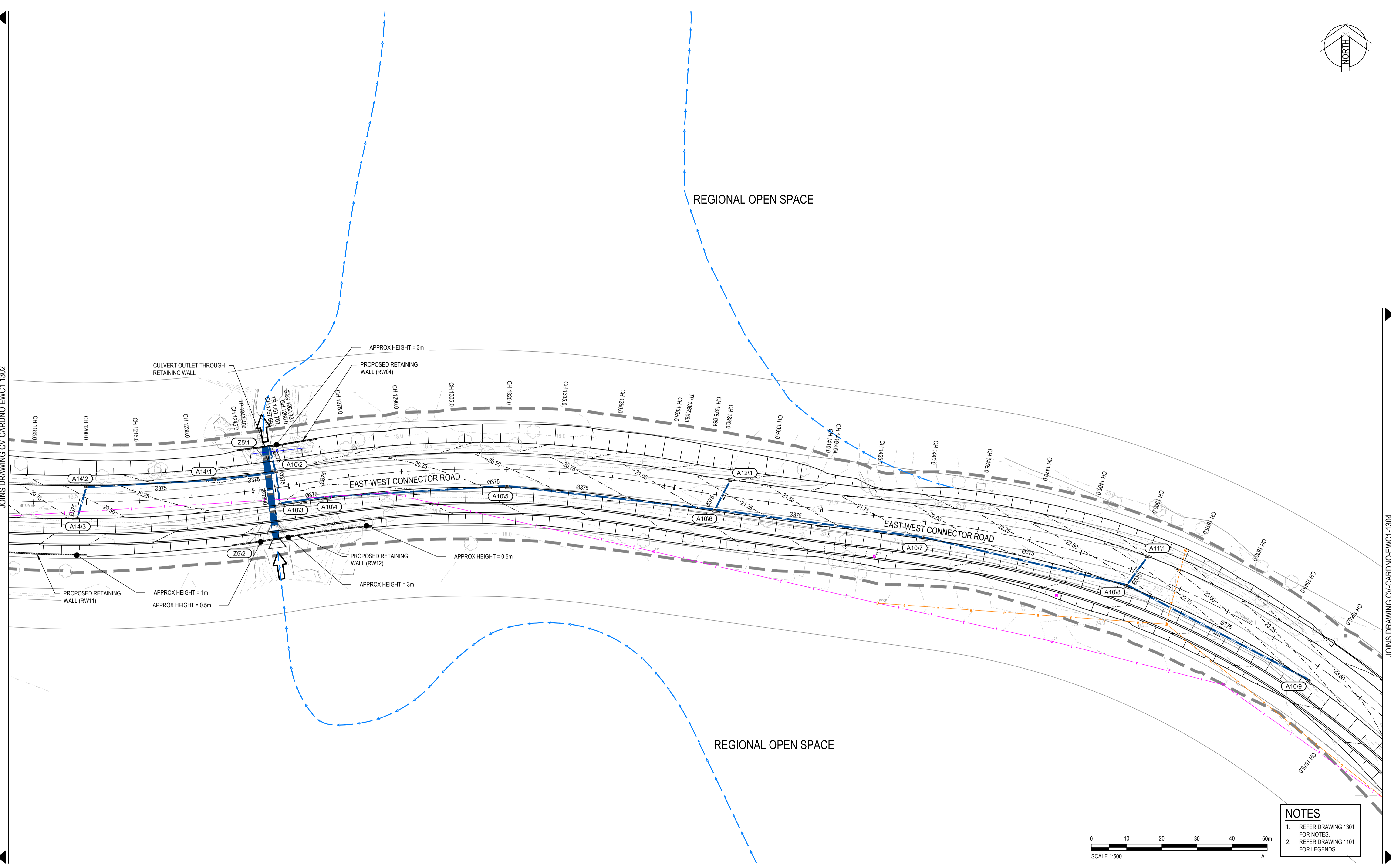
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Revision			2

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 DATE PLOTTED: 25 January 2018 4:18 PM BY: MARY DOZA



JOINS DRAWING CV-CARDNO-EWC1-1302

JOINS DRAWING CV-CARDNO-EWC1-1304



- NOTES**
- REFER DRAWING 1301 FOR NOTES.
 - REFER DRAWING 1101 FOR LEGENDS.

Rev.	Date	Description	Des.	Verif.	Appd.
2	25/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



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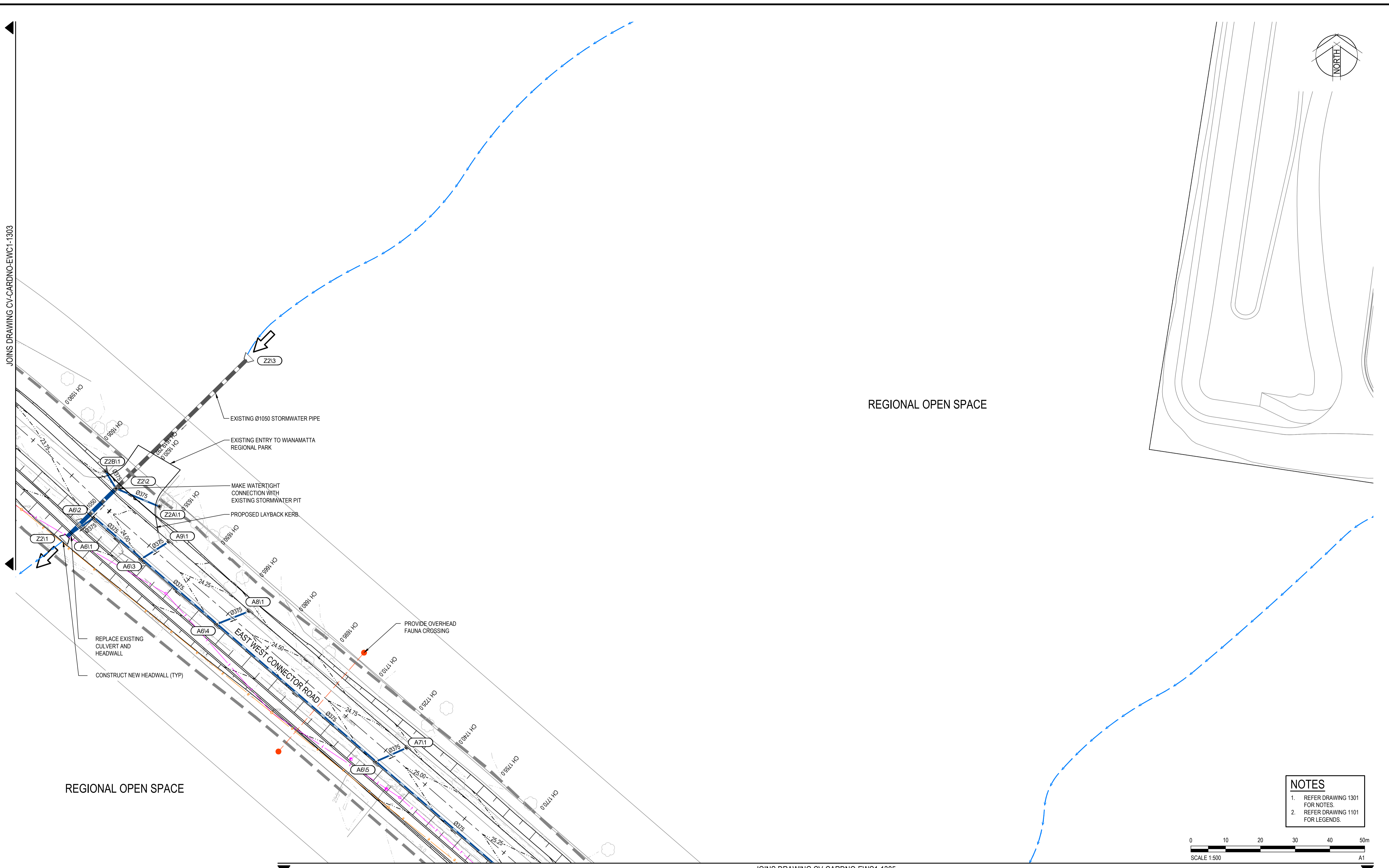
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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROADS & STORMWATER PLAN SHEET 3

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	1:500
Drawing Number	CV-CARDNO-EWC1-1303	Size	A1
Revision			2

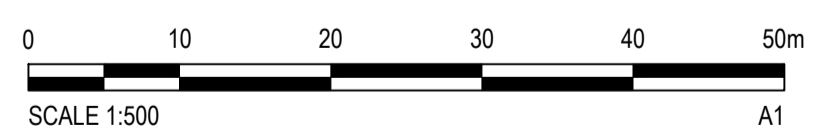
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 DATE PLOTTED: 25 January 2018 4:18 PM BY: MARY DOZA



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REGIONAL OPEN SPACE

- NOTES**
- REFER DRAWING 1301 FOR NOTES.
 - REFER DRAWING 1101 FOR LEGENDS.



JOINS DRAWING CV-CARDNO-EWC1-1305

Rev.	Date	Description	Des.	Verif.	Appd.
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1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



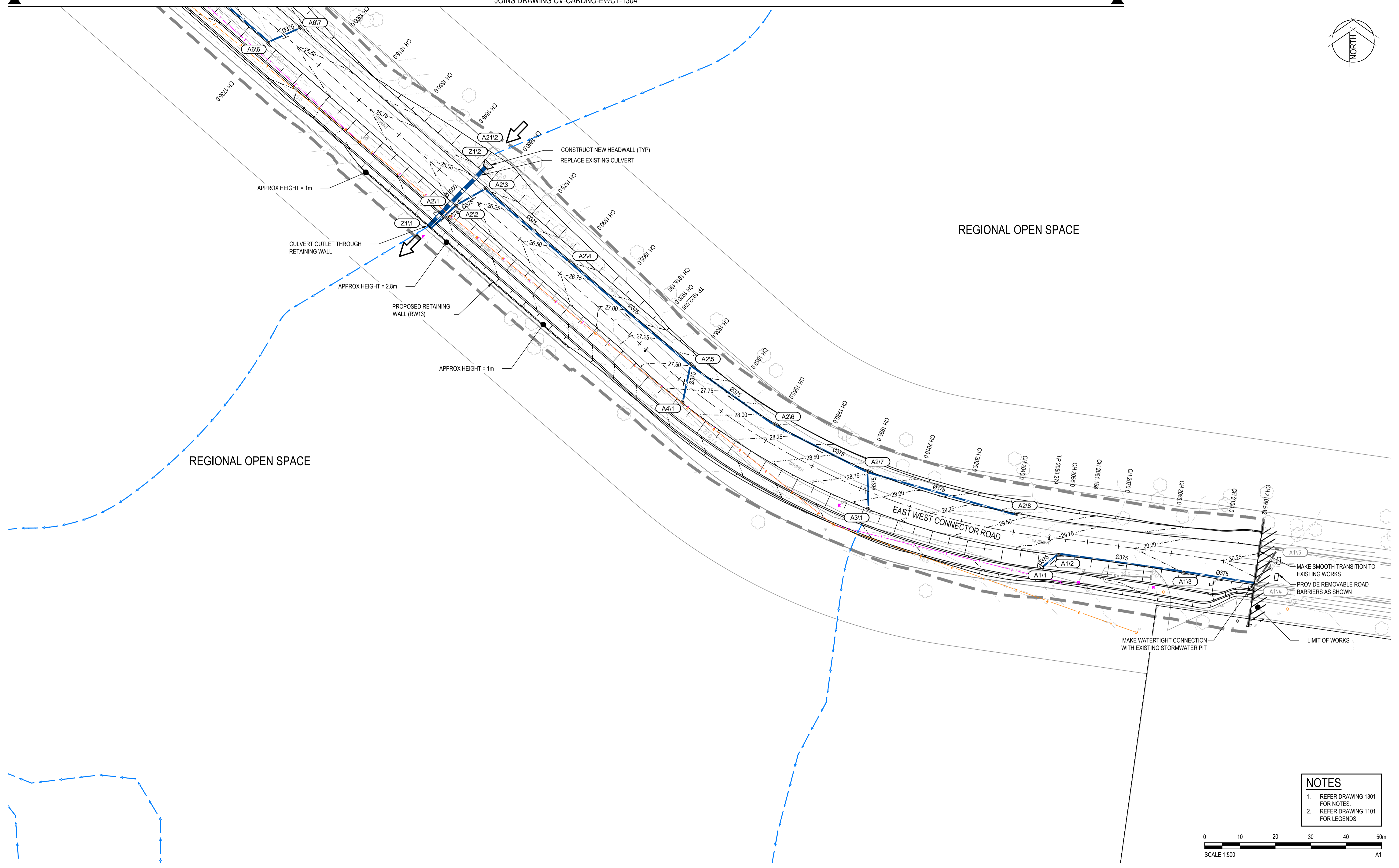
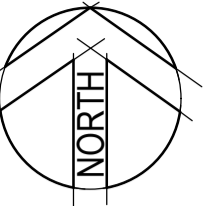
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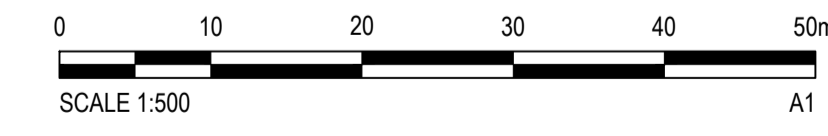
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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROADS & STORMWATER PLAN SHEET 4

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	1:500
Size	A1	Revision	2
Drawing Number	CV-CARDNO-EWC1-1304		



NOTES
 1. REFER DRAWING 1301 FOR NOTES.
 2. REFER DRAWING 1101 FOR LEGENDS.



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 DATE PLOTTED: 25 January 2018 4:18 PM BY: MARY DOZA

Rev.	Date	Description	Des.	Verif.	Appd.
2	25/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



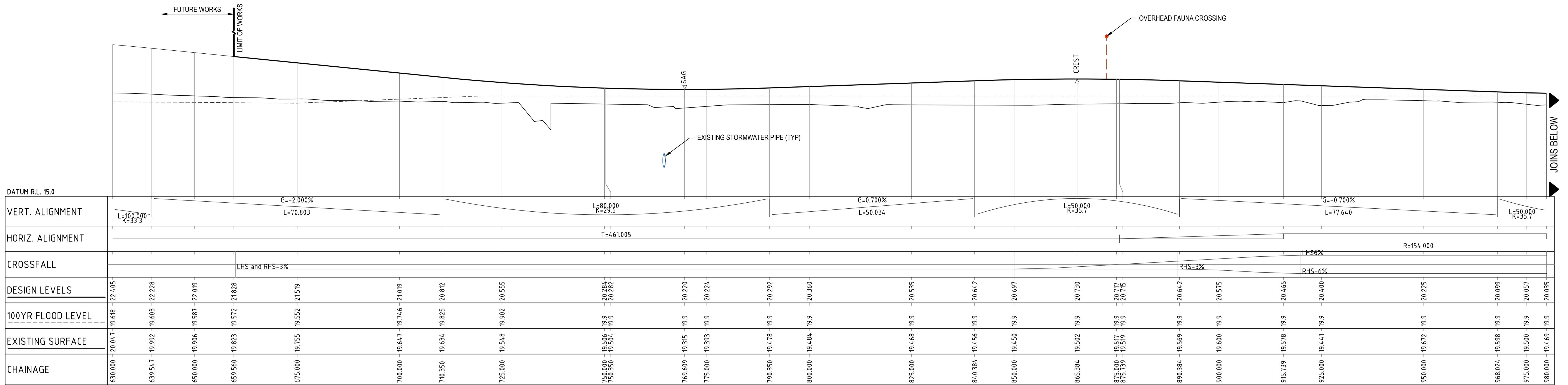
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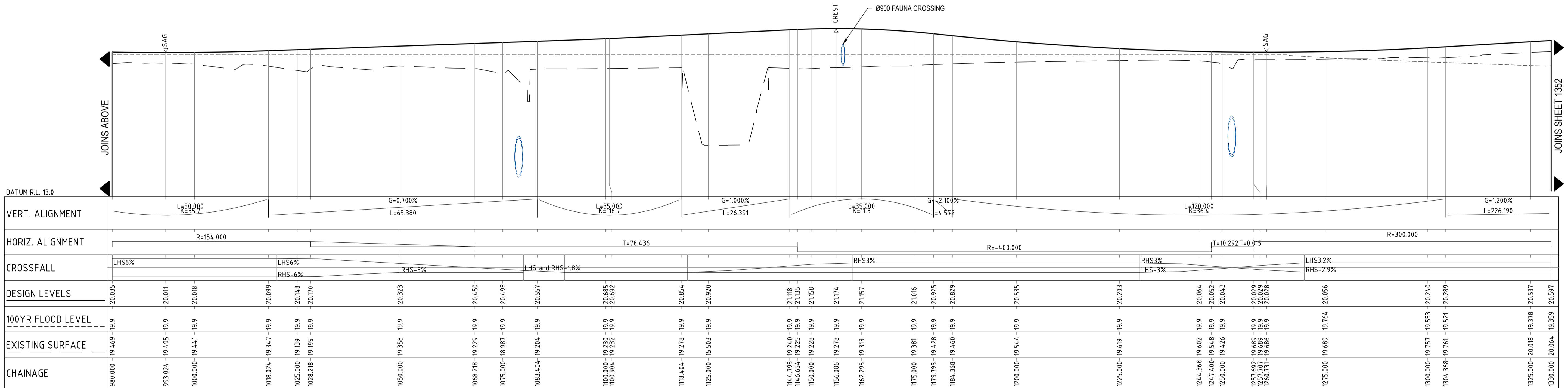
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Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client **LENLEASE**
 Project **EAST WEST CONNECTOR ROAD
 STAGE 1 - CIVIL WORKS
 DEVELOPMENT APPLICATION**
 Title **ROADS & STORMWATER PLAN
 SHEET 5**

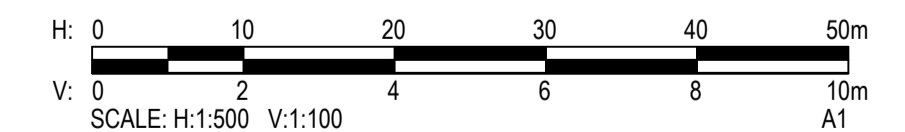
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NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	AHD	Scale	1:500
Size			A1
Drawing Number	CV-CARDNO-EWC1-1305		Revision
			2



EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION
 1:500 HORI.
 1:100 VERT.



EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION
 1:500 HORI.
 1:100 VERT.



XREFs: Xref:89914020-Client-Logos; X-LS-EAST-WEST-ROAD-0011; X-LS-EAST-WEST-ROAD-0012; X-LS-EAST-WEST-ROAD-0013; X-LS-EAST-WEST-ROAD-0014; X-LS-EAST-WEST-ROAD-0015
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Rev.	Date	Description	Des.	Verif.	Appd.
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1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		

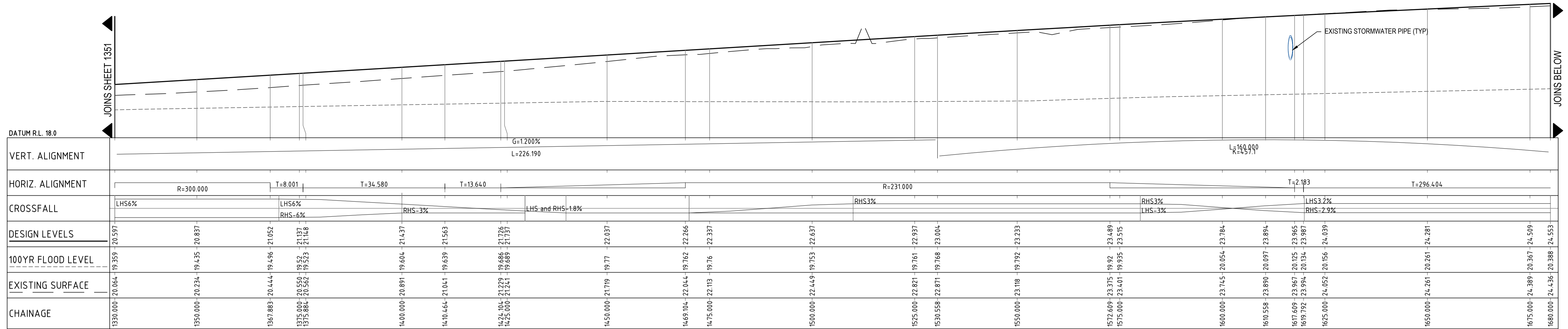


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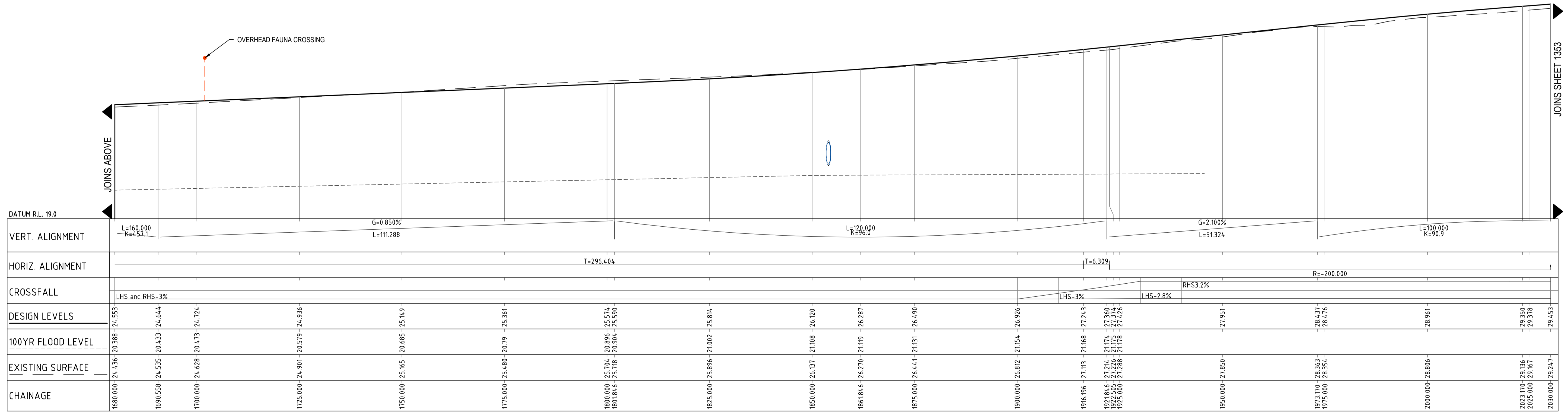
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Drawn	Date	Client
BML	19/01/2018	LENLEASE
Checked	Date	Project
MS	19/01/2018	EAST WEST CONNECTOR ROAD
Designed	Date	STAGE 1 - CIVIL WORKS
MS	19/01/2018	DEVELOPMENT APPLICATION
Verified	Date	Title
		ROAD LONGITUDINAL SECTIONS
Approved		SHEET 1

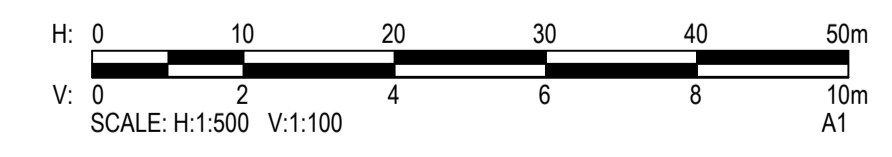
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NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	Scale	Size
AHD	AS SHOWN	A1
Drawing Number	Revision	
CV-CARDNO-EWC1-1351	2	



EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION
 1:500 HORI.
 1:100 VERT.



EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION
 1:500 HORI.
 1:100 VERT.



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Rev.	Date	Description	Des.	Verif.	Appd.
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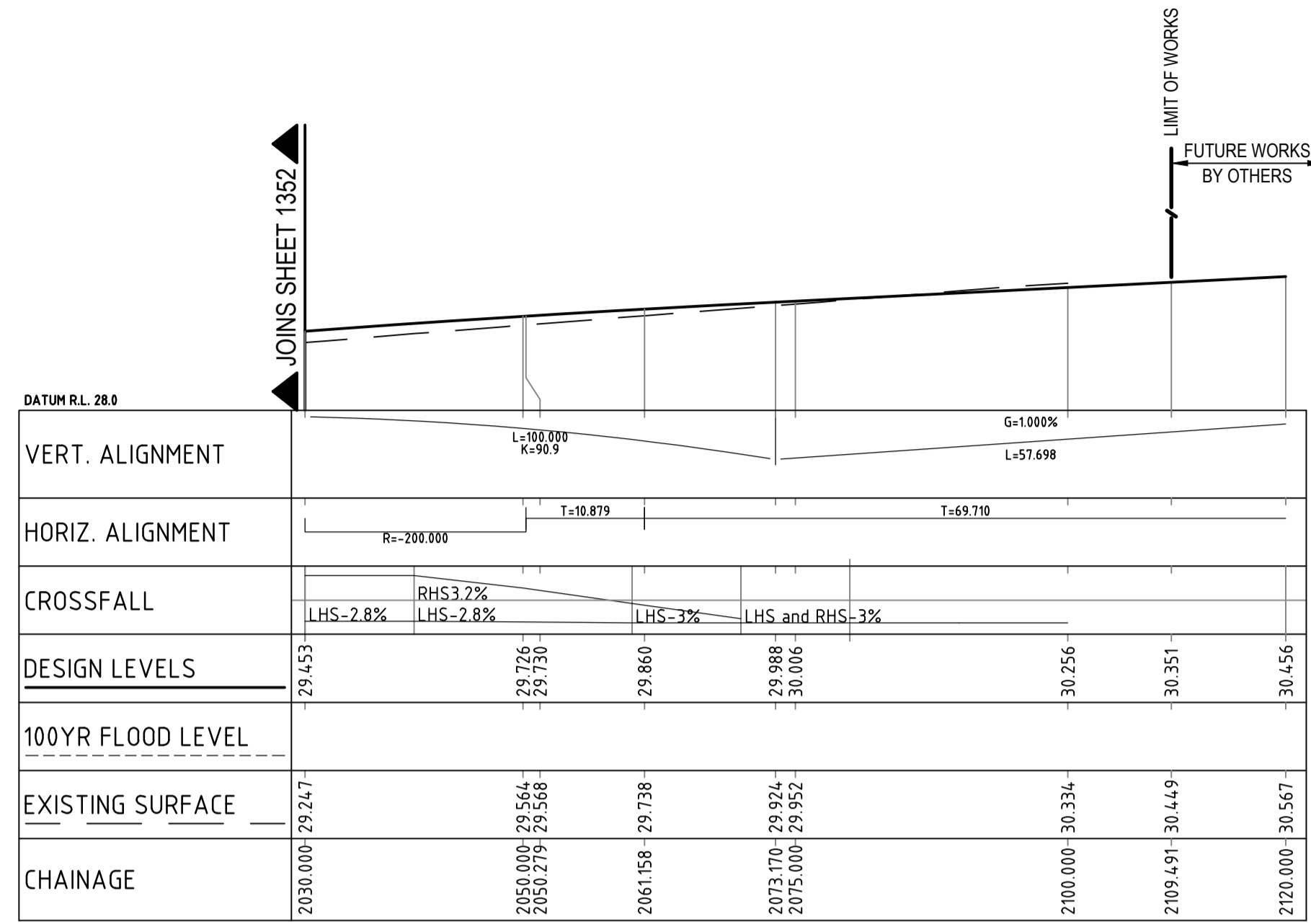
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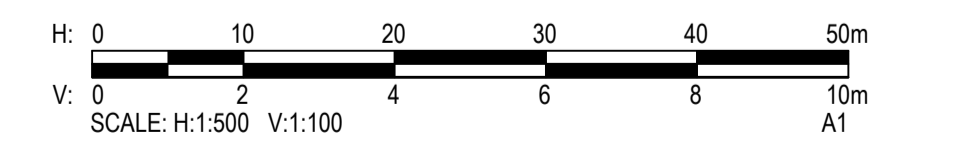
Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROAD LONGITUDINAL SECTIONS SHEET 2

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Drawing Number	CV-CARDNO-EWC1-1352	Size	A1
Revision			2



EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION
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 1:100 VERT.



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Rev.	Date	Description	Des.	Verif.	Appd.
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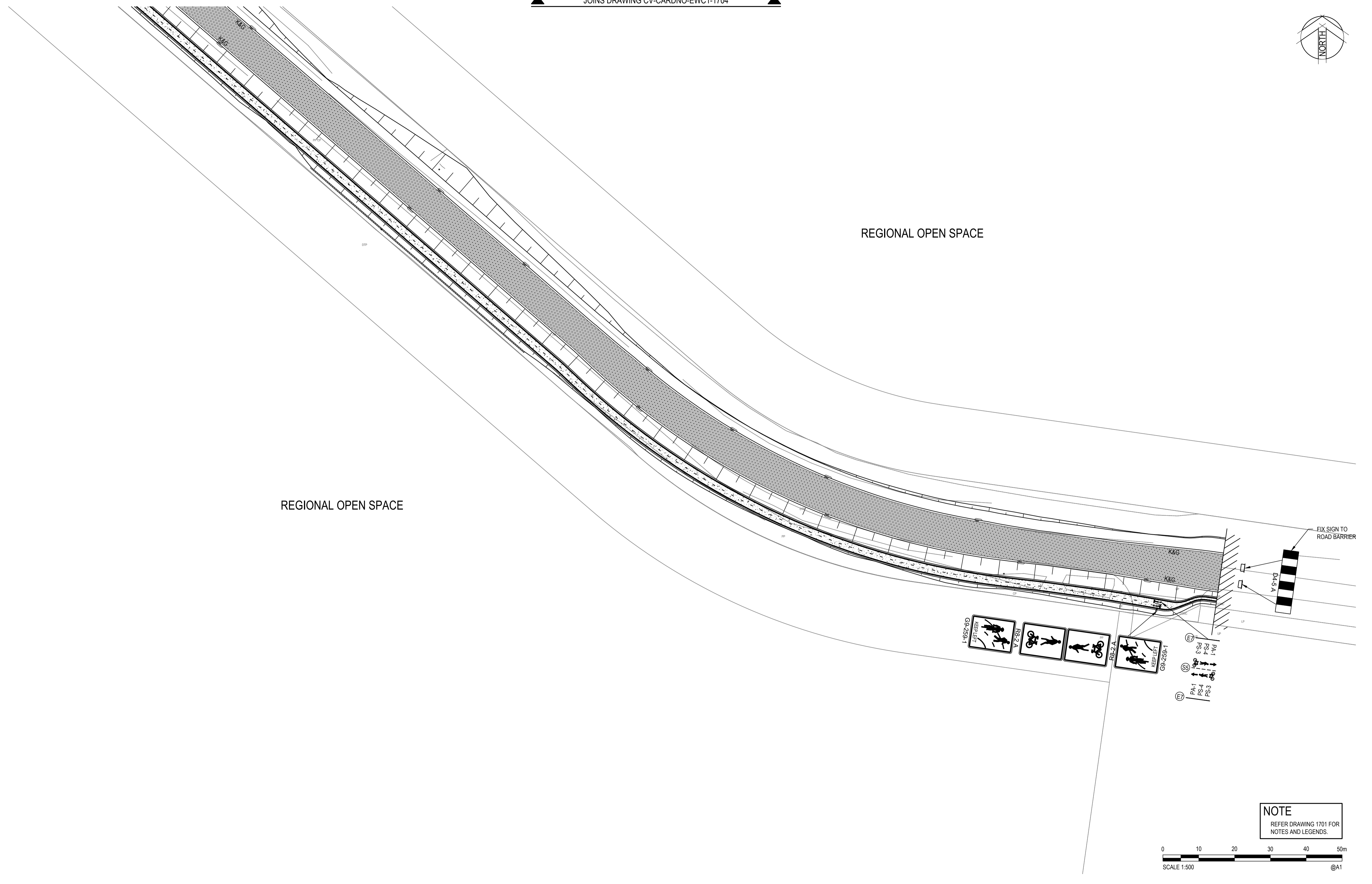
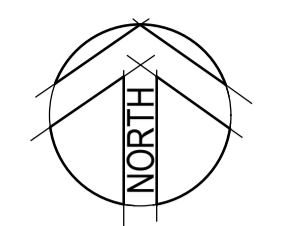
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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

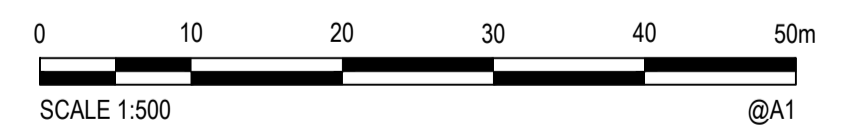
Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROAD LONGITUDINAL SECTIONS SHEET 3

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Size		Revision	A1
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 DATE PLOTTED: 25 January 2018 4:02 PM BY: MARY DOZA



NOTE
REFER DRAWING 1701 FOR NOTES AND LEGENDS.



Rev.	Date	Description	Des.	Verif.	Appd.
2	25/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



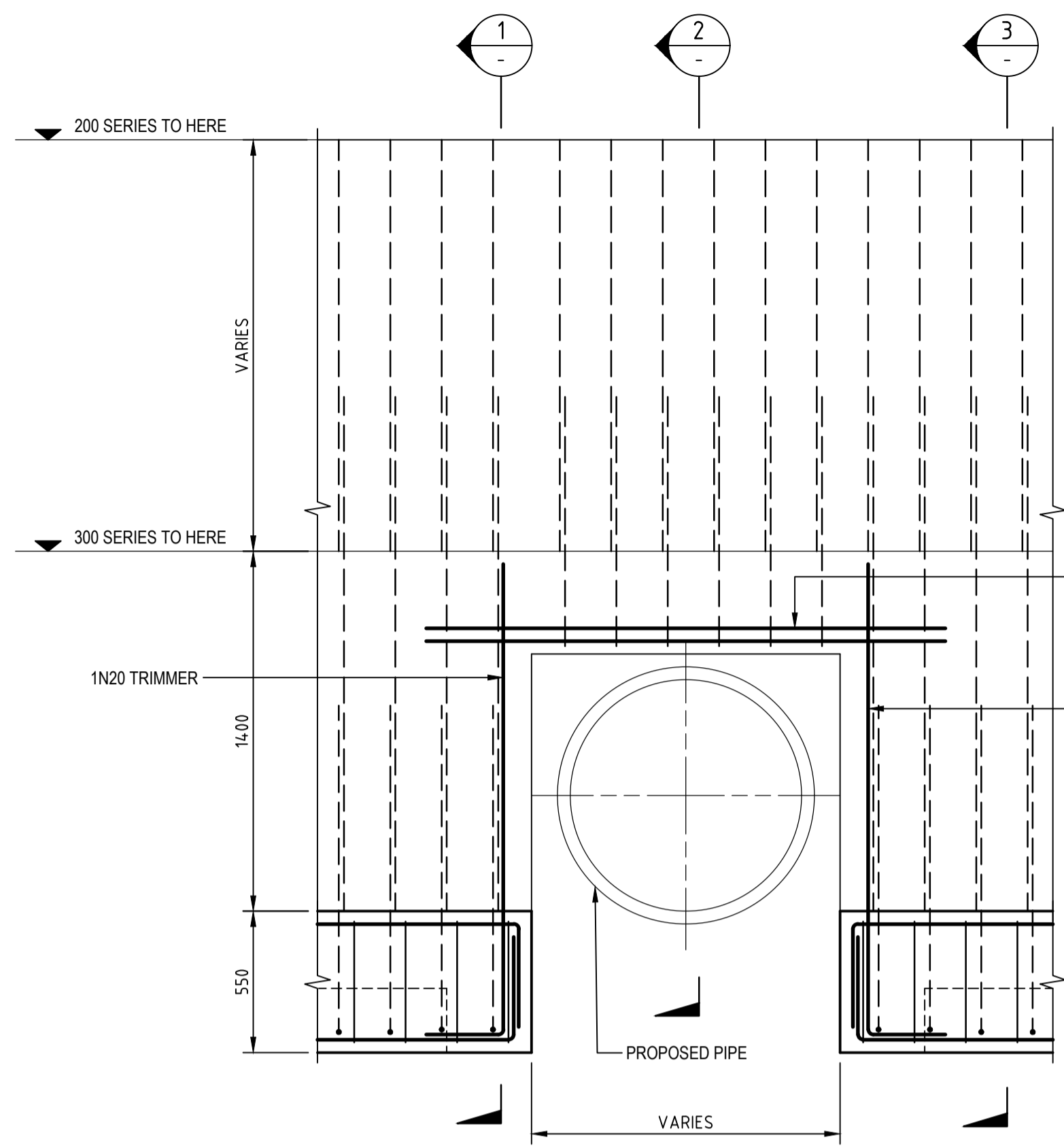
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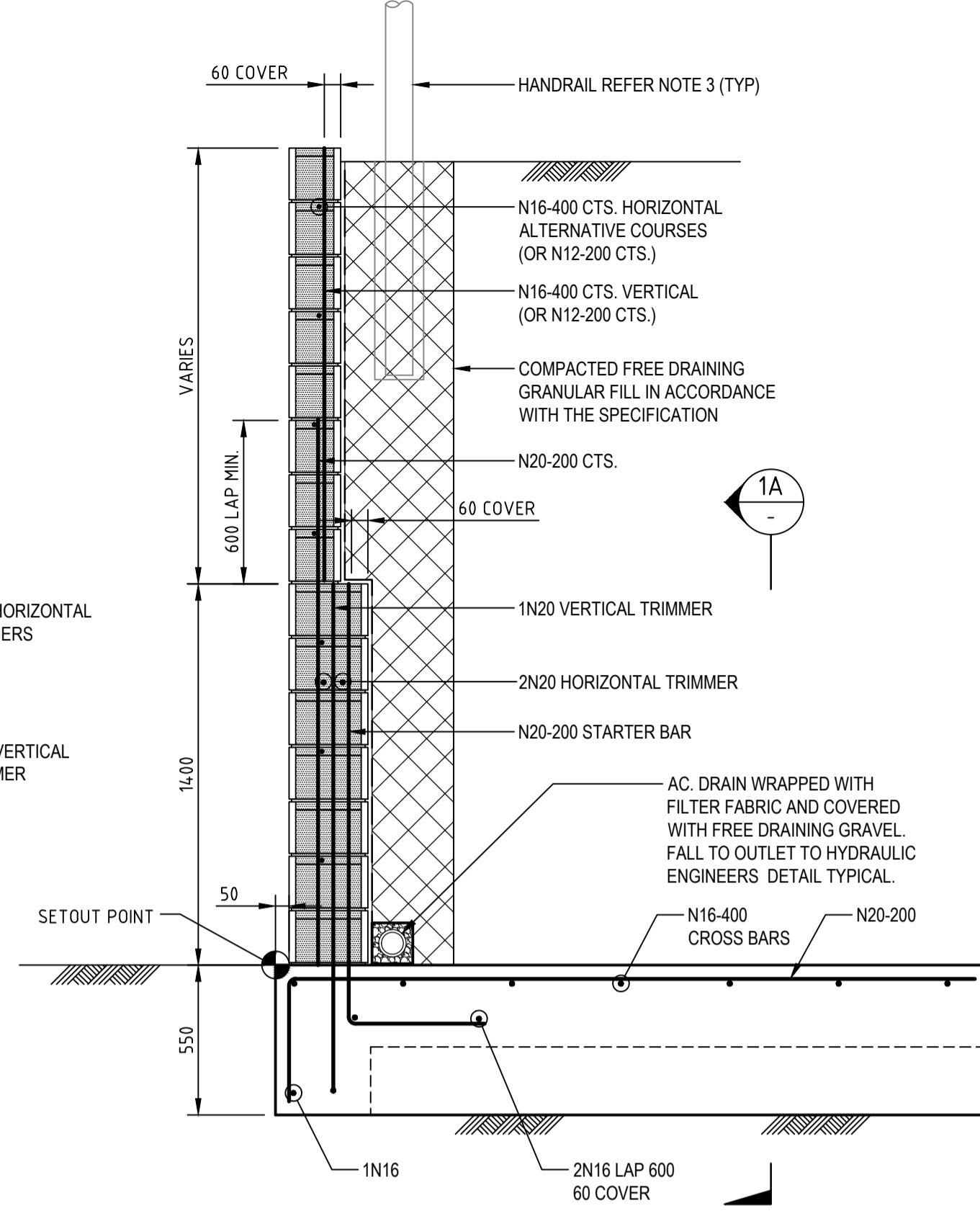
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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 5

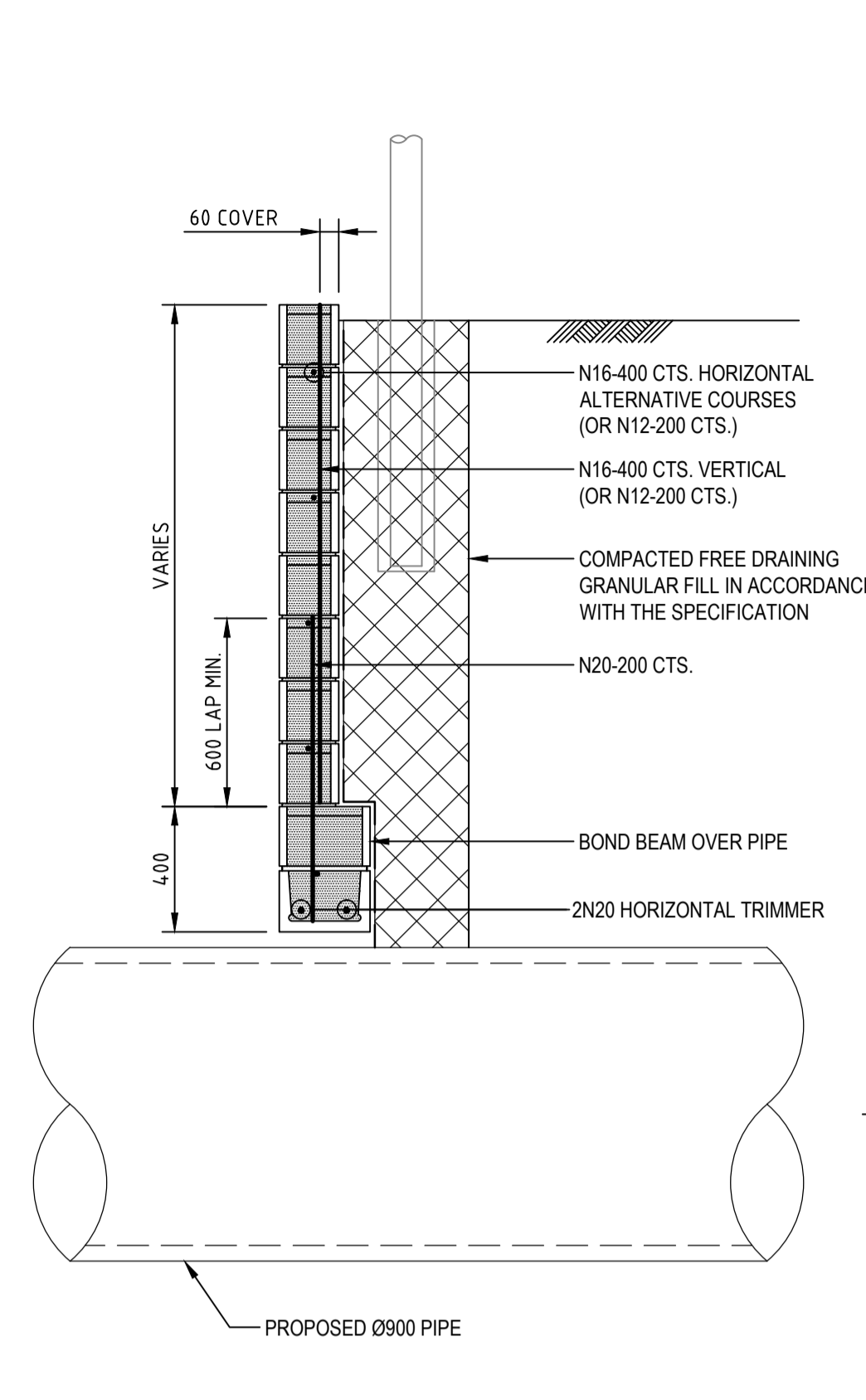
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Size	A1		
Drawing Number	CV-CARDNO-EWC1-1705	Revision	2



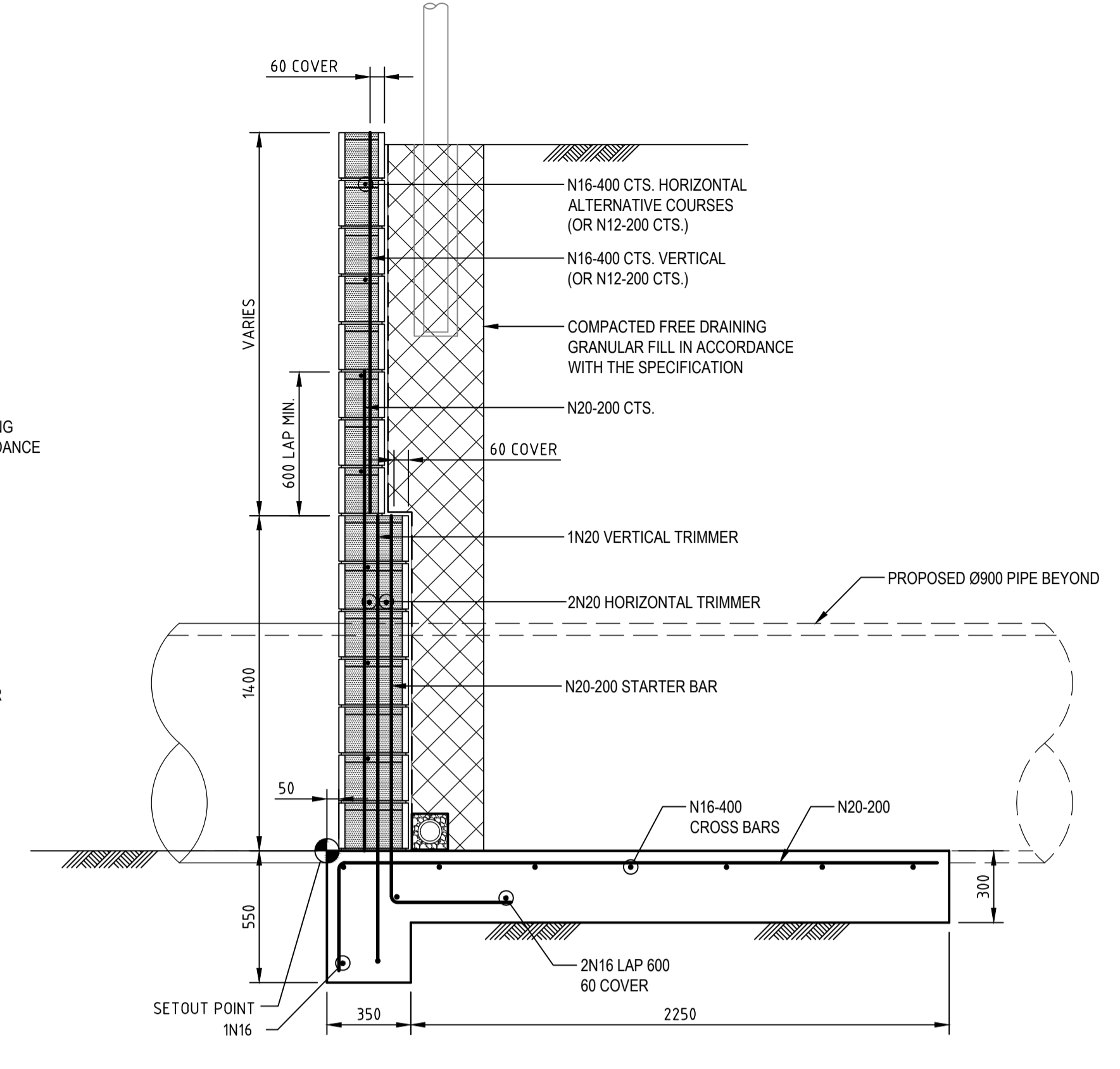
TYPICAL RETAINING WALL FOOTING BRIDGING DETAIL
CULVERT THROUGH RETAINING WALL
SCALE 1:20



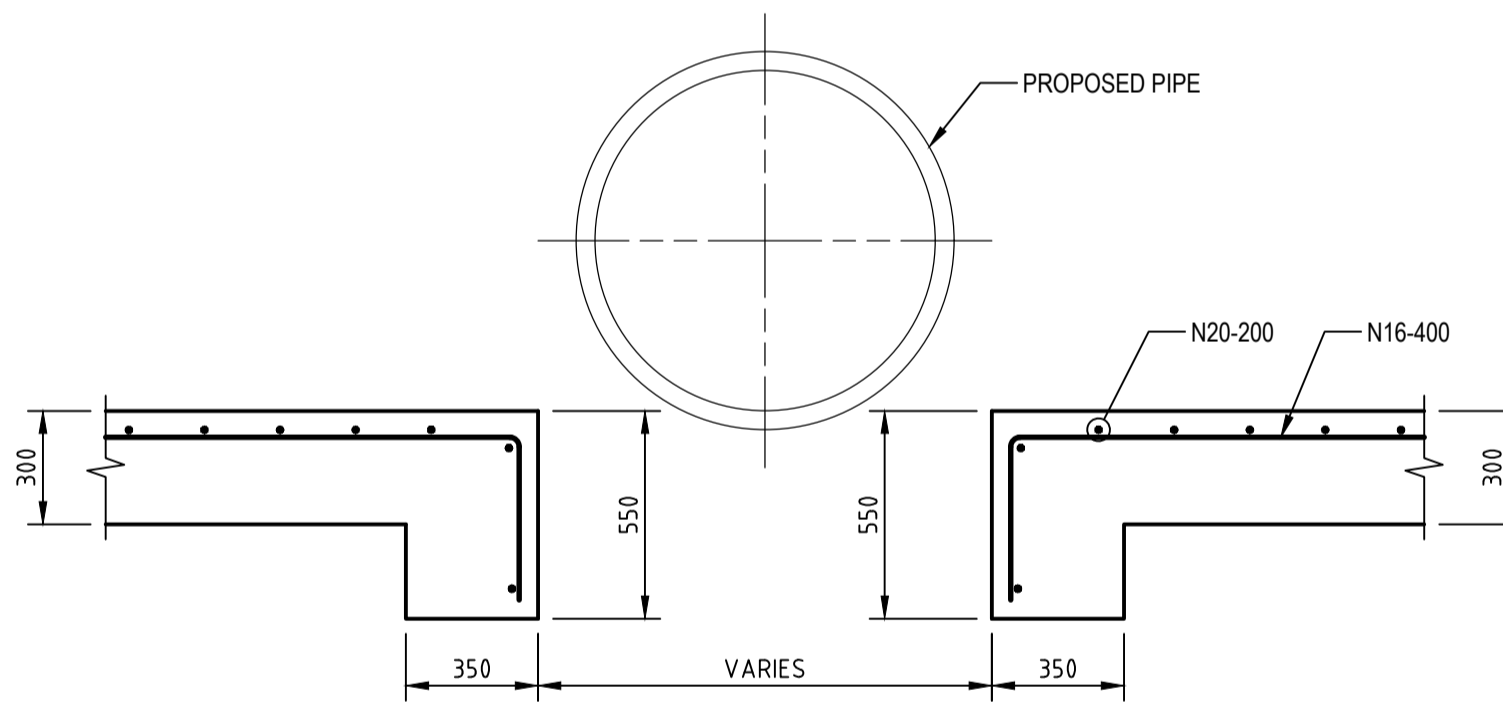
SECTION 1
SCALE 1:20



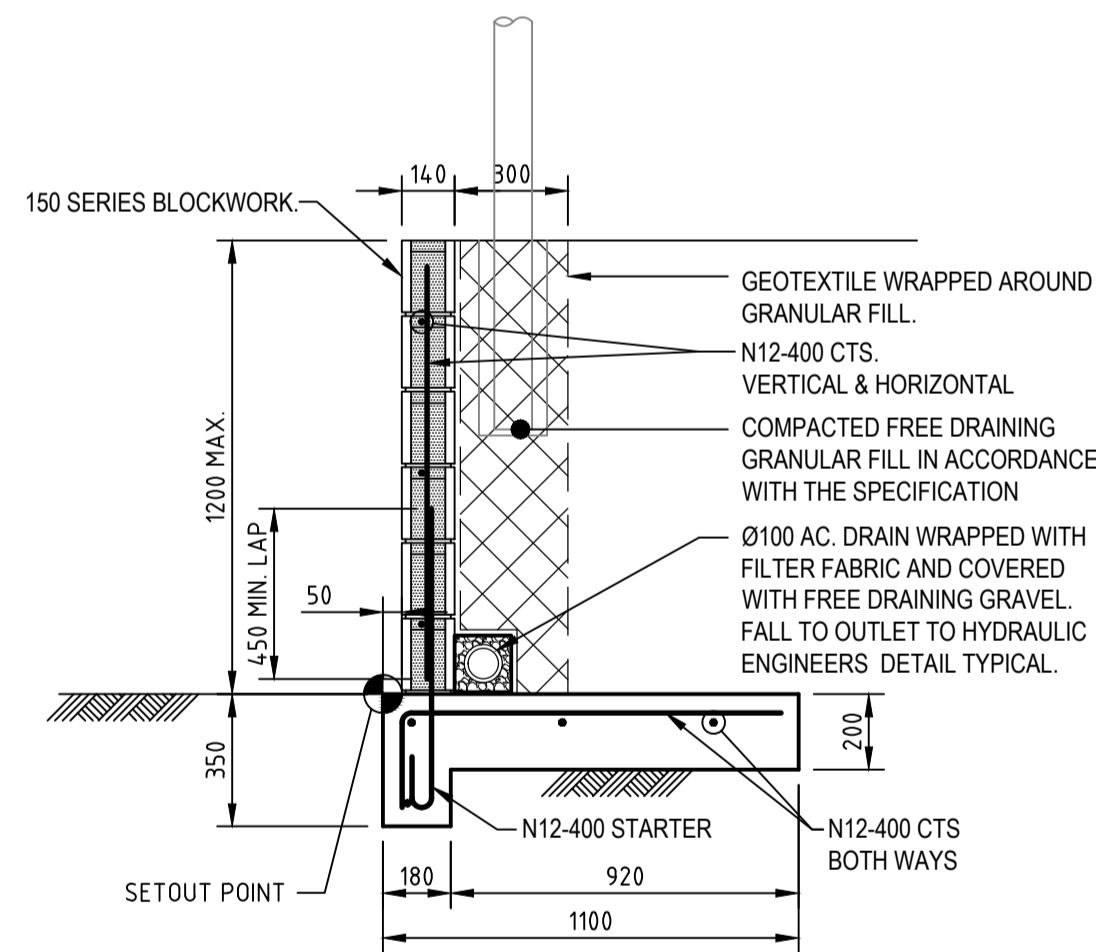
SECTION 2
SCALE 1:20



SECTION 3
SCALE 1:20



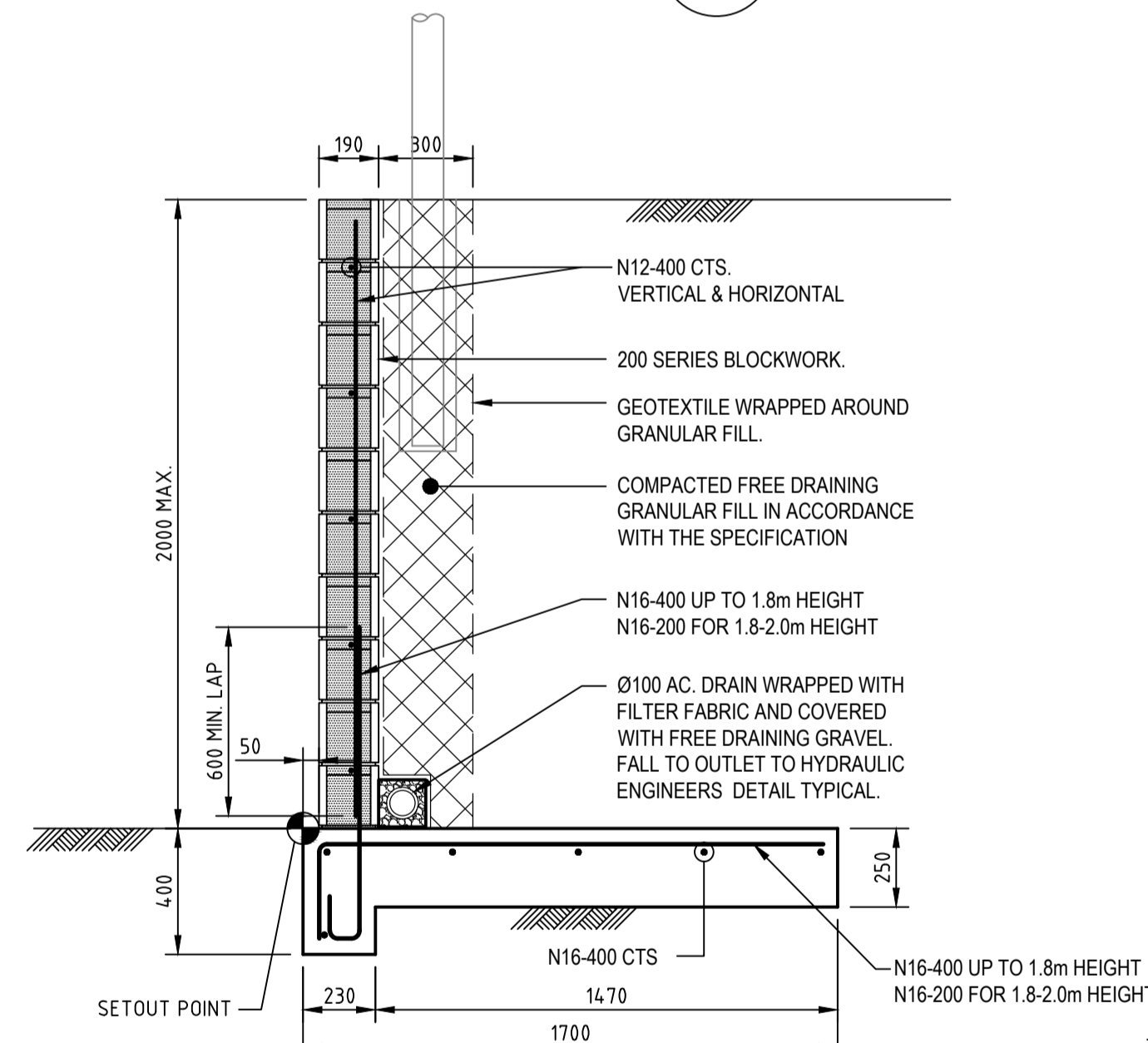
SECTION 1A
SCALE 1:20



REINFORCED BLOCKWORK RETAINING WALL - 0.4m TO 1.2m
(NO FENCE POST)
SCALE 1:20

CONCRETE NOTES

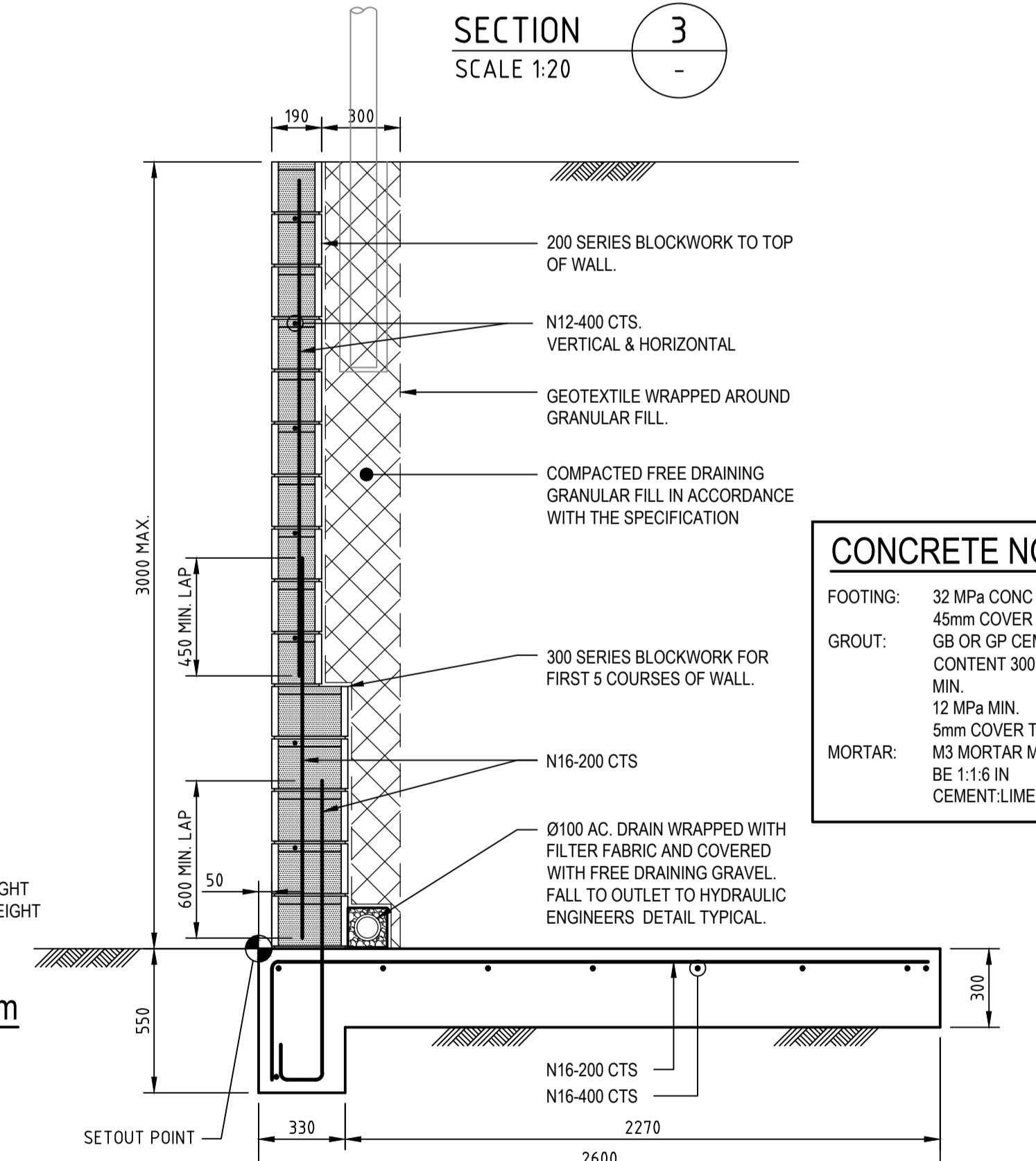
FOOTING: 32 MPa CONC MIN.
45mm COVER MIN.
GROUT: GB OR GP CEMENT CONTENT 300kg/m³ MIN.
12 MPa MIN.
5mm COVER TO REO
MORTAR: M3 MORTAR MIX TO BE 1:1.6 IN CEMENT:LIME:SAND



REINFORCED BLOCKWORK RETAINING WALL - 1.2m TO 2.0m
(NO FENCE POST)
SCALE 1:20

CONCRETE NOTES

FOOTING: 32 MPa CONC MIN.
45mm COVER MIN.
GROUT: GB OR GP CEMENT CONTENT 300kg/m³ MIN.
12 MPa MIN.
5mm COVER TO REO
MORTAR: M3 MORTAR MIX TO BE 1:1.6 IN CEMENT:LIME:SAND



REINFORCED BLOCKWORK RETAINING WALL - 2.0m TO 3.0m
(NO FENCE POST)
SCALE 1:20

CONCRETE NOTES

FOOTING: 32 MPa CONC MIN.
45mm COVER MIN.
GROUT: GB OR GP CEMENT CONTENT 300kg/m³ MIN.
12 MPa MIN.
5mm COVER TO REO
MORTAR: M3 MORTAR MIX TO BE 1:1.6 IN CEMENT:LIME:SAND

- NOTES**
- FOR WALL HEIGHTS GREATER THAN 1.8m, FIRST 5 COURSES OF BLOCKWORK TO BE 230 SERIES BLOCKS. REFER TO DETAIL.
 - PROVIDE ANTI-GRAFFITI COATING TO ALL RETAINING WALLS FACING PUBLIC SPACES
 - PROVIDE HANDRAIL FOR RETAINING WALLS GREATER THAN 1m HIGH. REFER DRAWING 1363 FOR HANDRAIL ELEVATION DETAILS. DESIGN LIVE LOAD 5kPa TO AS4678 TABLE 4.1.
 - MIN BEARING CAPACITY FOR ALL WALL FOOTING 150kPa
 - FOUNDING STRATUM TO COMPRISE STIFF CLAY OR BETTER. WHERE SOFTER MATERIAL IS ENCOUNTERED, THIS SHOULD BE REMOVED AND REPLACED WITH IMPORTED GRANULAR FILL WITH MINIMUM INTERNAL FRICTION ANGLE OF 35° AND MAXIMUM COHESION 3kPa. WHERE STANDING WATER IS ENCOUNTERED, CARDNO TO BE CONSULTED.

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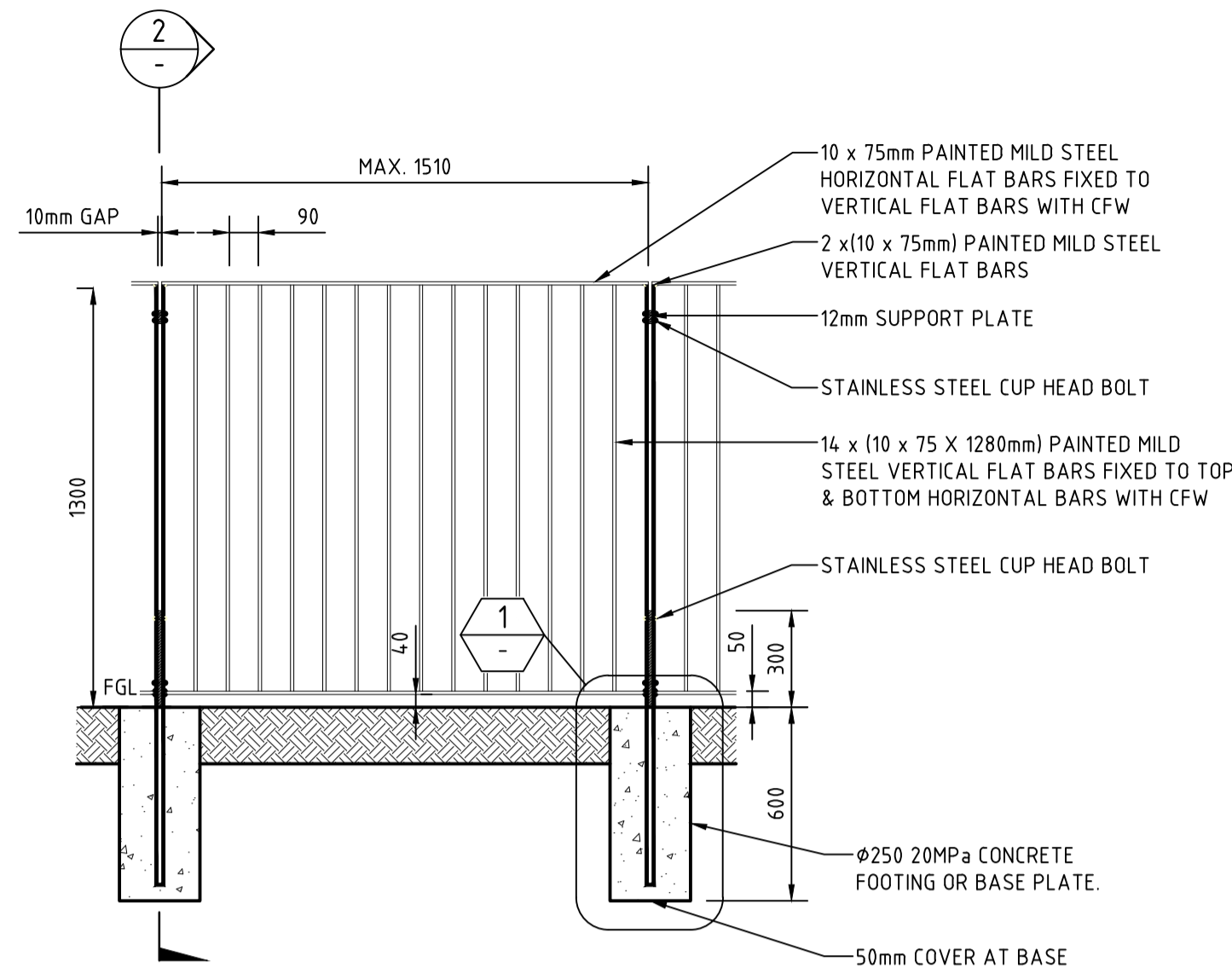
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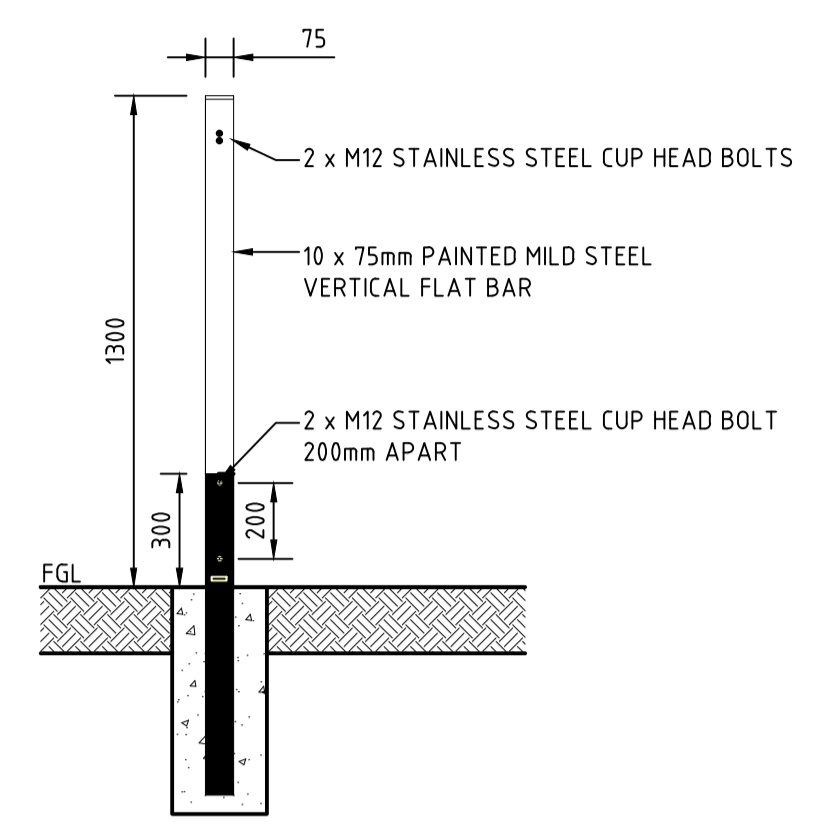
Drawn	Date
BML	19/01/2018
Checked	Date
MS	19/01/2018
Designed	Date
MS	19/01/2018
Verified	Date
Approved	Date

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	TYPICAL RETAINING WALL DETAILS SHEET 1

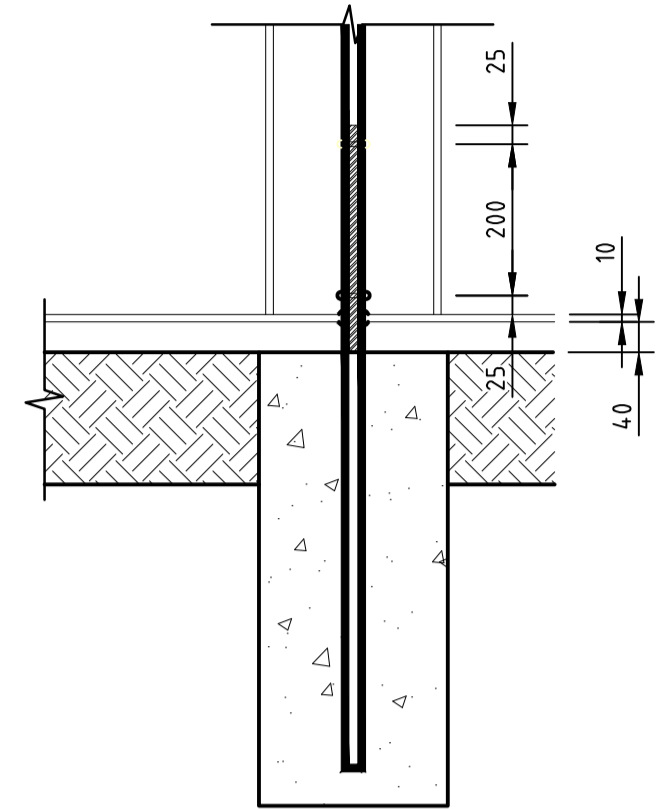
Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES
Datum	AHD
Scale	AS SHOWN
Size	A1
Drawing Number	CV-CARDNO-EWC1-1851
Revision	2



HAND RAIL ELEVATION
SCALE 1:20



SECTION 2
SCALE 1:20



DETAIL 1
SCALE 1:10

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2	25/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



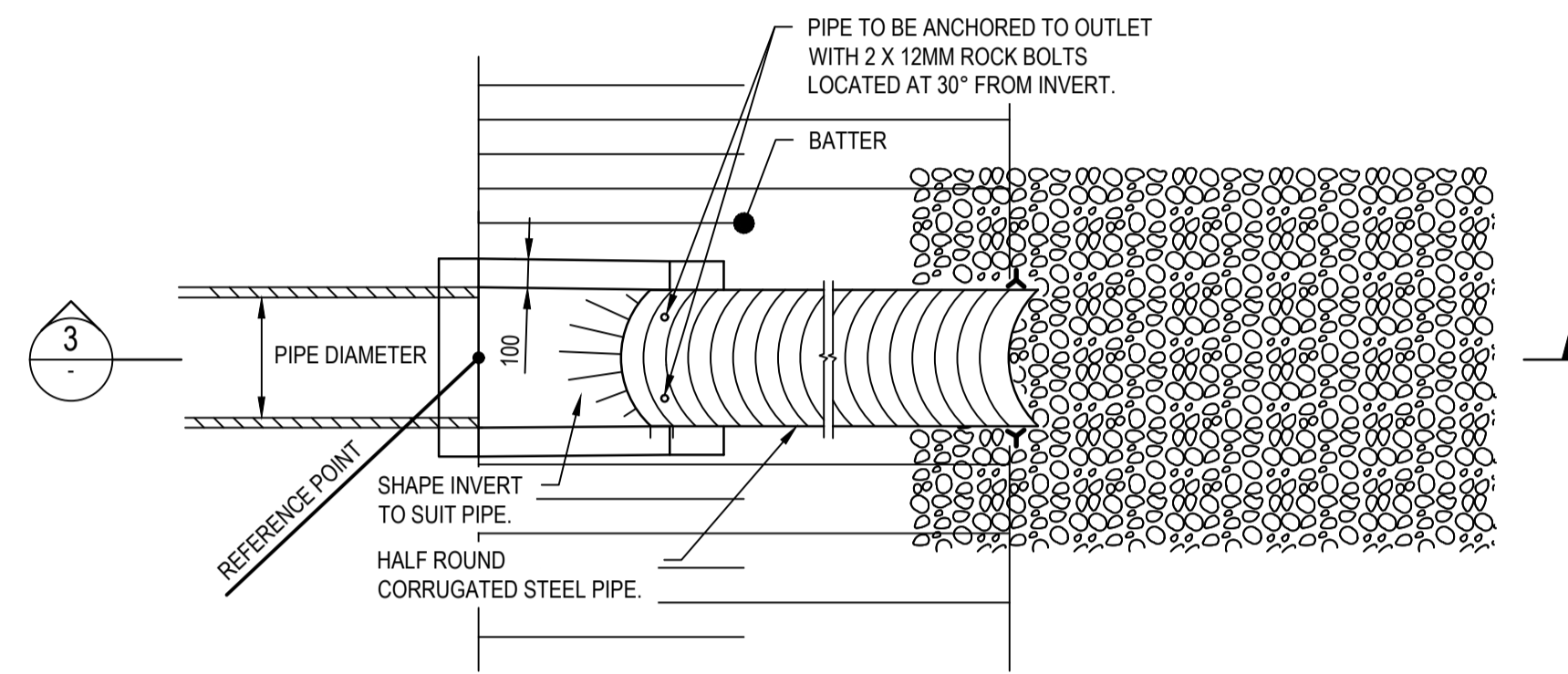
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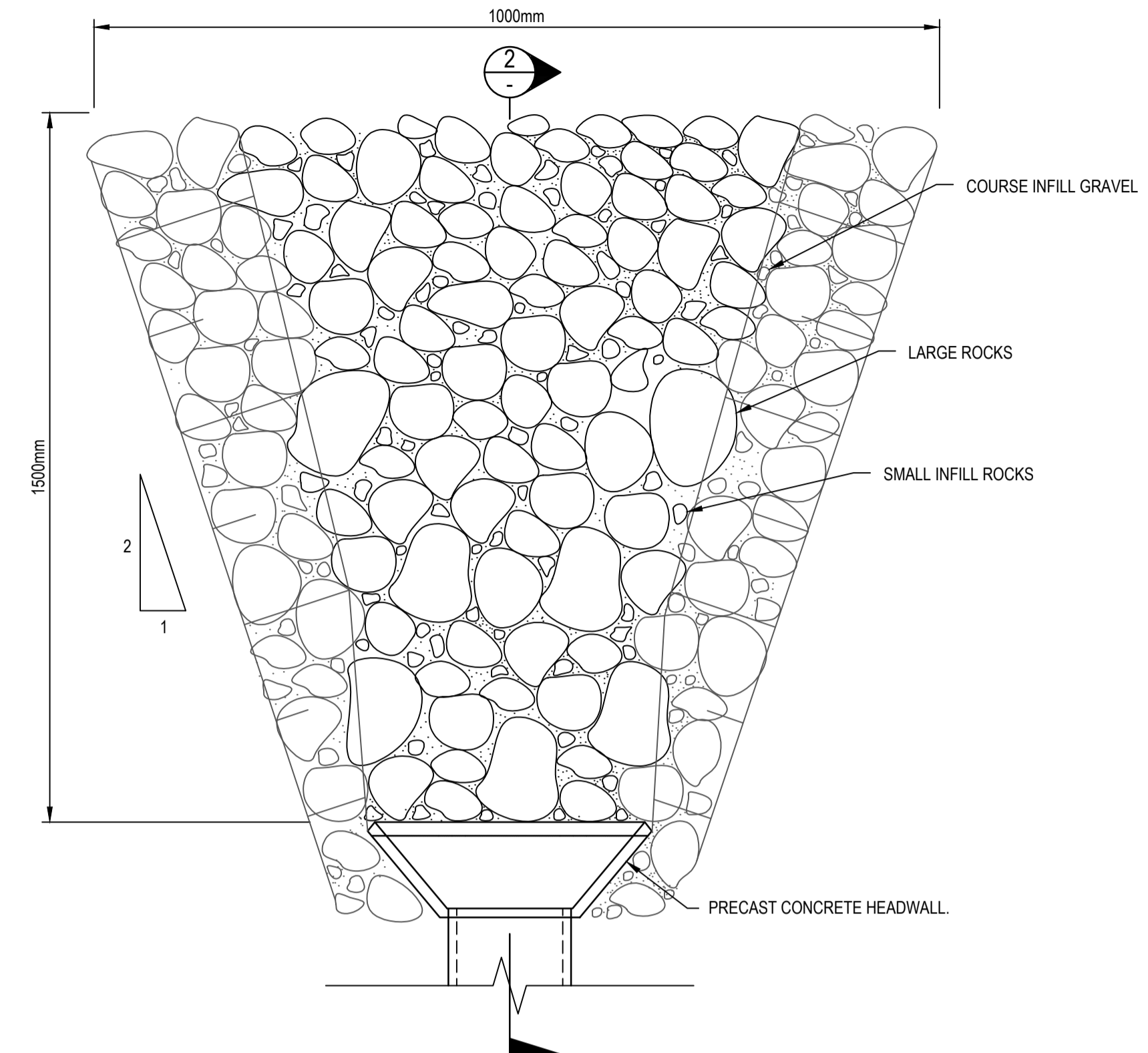
Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	TYPICAL RETAINING WALL DETAILS SHEET 2

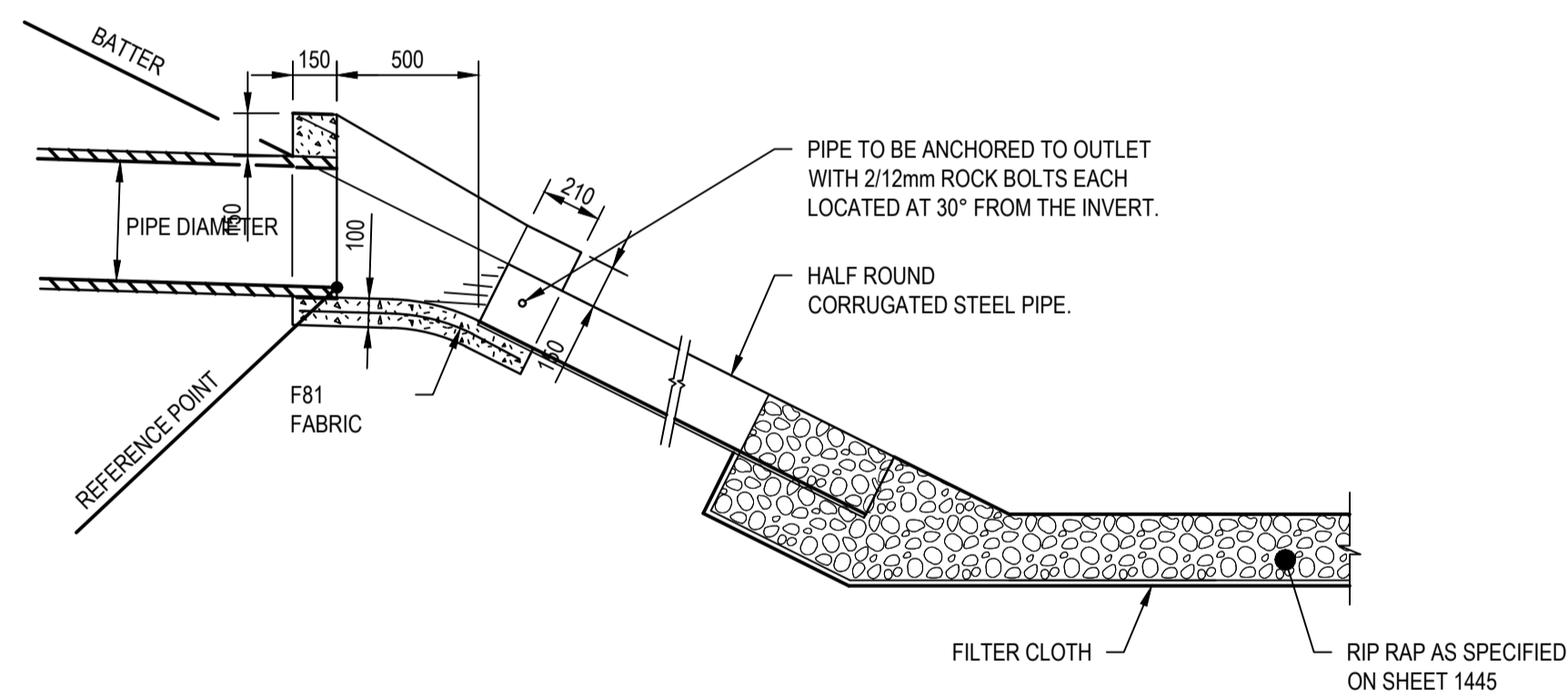
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Datum	AHD	Scale	AS SHOWN
Size		Size	A1
Drawing Number	CV-CARDNO-EWC1-1852		Revision
			2




BATTER DRAIN DETAIL
NOT TO SCALE

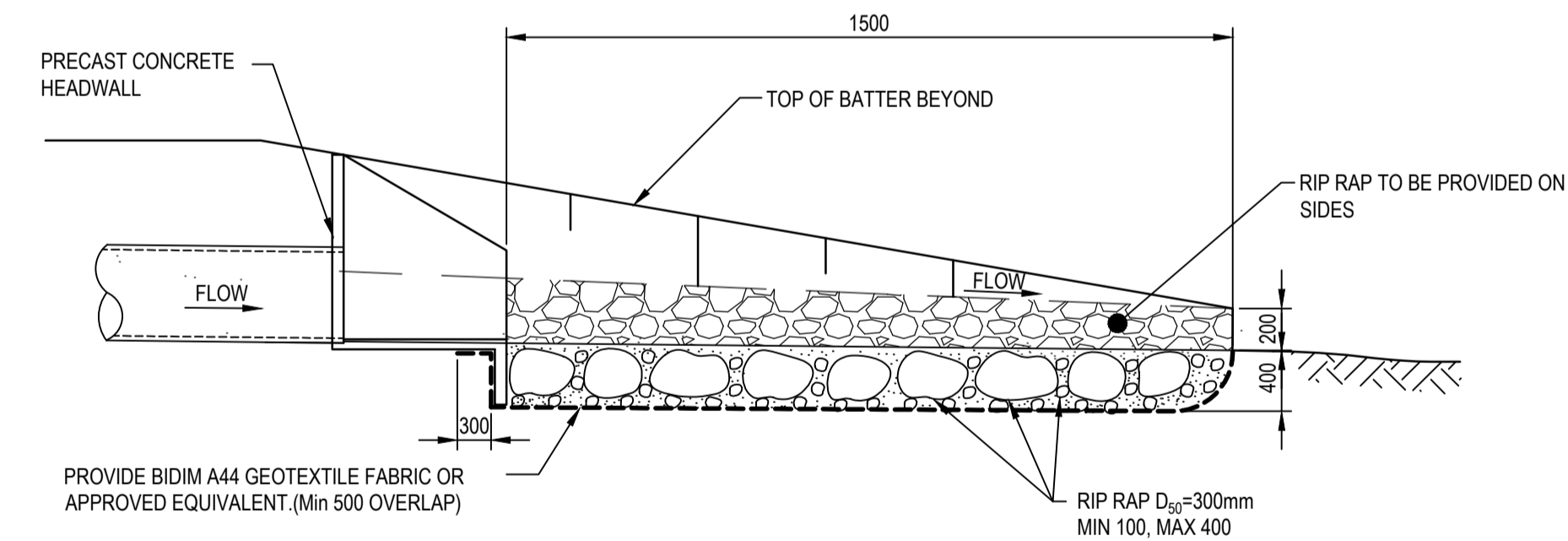


TYPICAL HEADWALL SCOUR PROTECTION PLAN
NOT TO SCALE



SECTION 3
NOT TO SCALE

- NOTES**
1. TOP LIP OF HALF ROUND CORRUGATED STEEL PIPE TO BE INSTALLED FLUSH WITH THE COMPACTED BATTER SURFACE.
 2. HALF ROUND CORRUGATED STEEL PIPE TO BE FASTENED WITH 4mm WIRE TO TWO 1350mm STAR PICKETS AT LOWER END OF CSP PIPE.
 3. 1350mm STAR PICKETS TO BE PROVIDED AT POINTS MARKED  (FOR FASTENING PURPOSES).
 4. CONCRETE TO BE N25.
 5. ADAPTED FROM RMS DRAWING MD.R11.C06.A.1



SECTION 2
NOT TO SCALE

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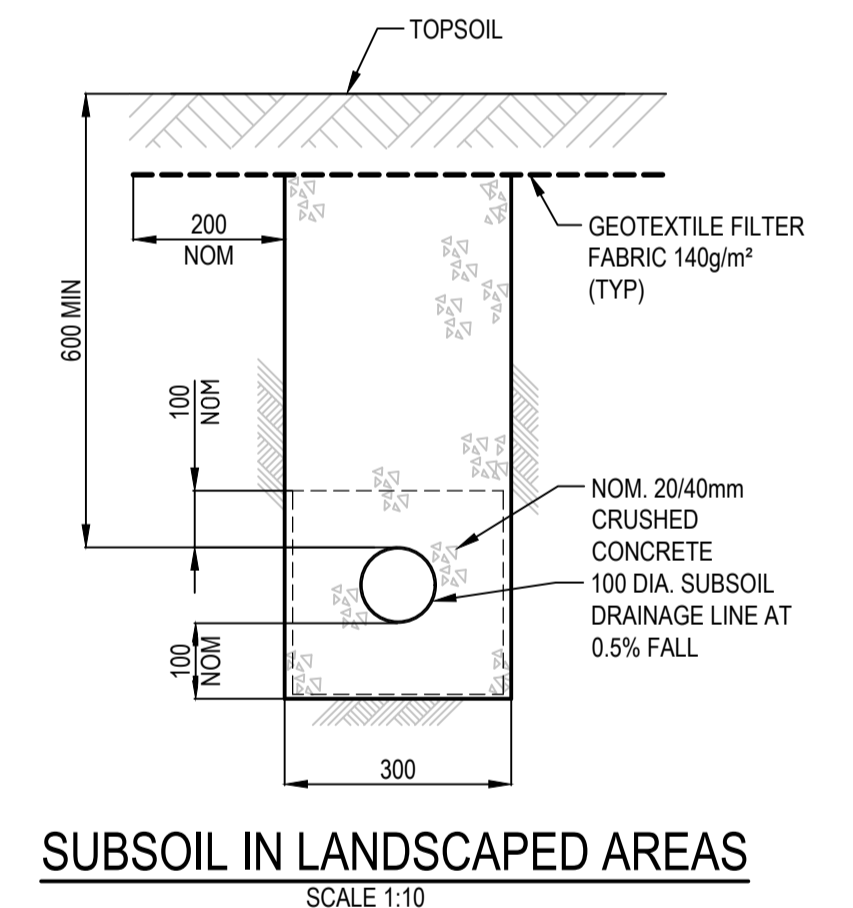
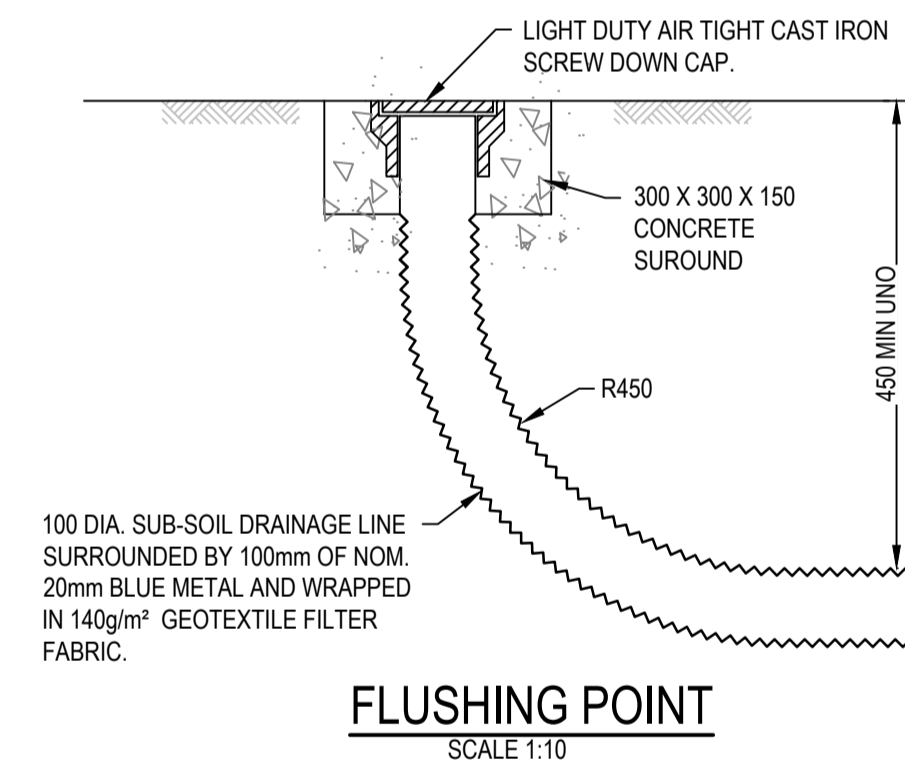
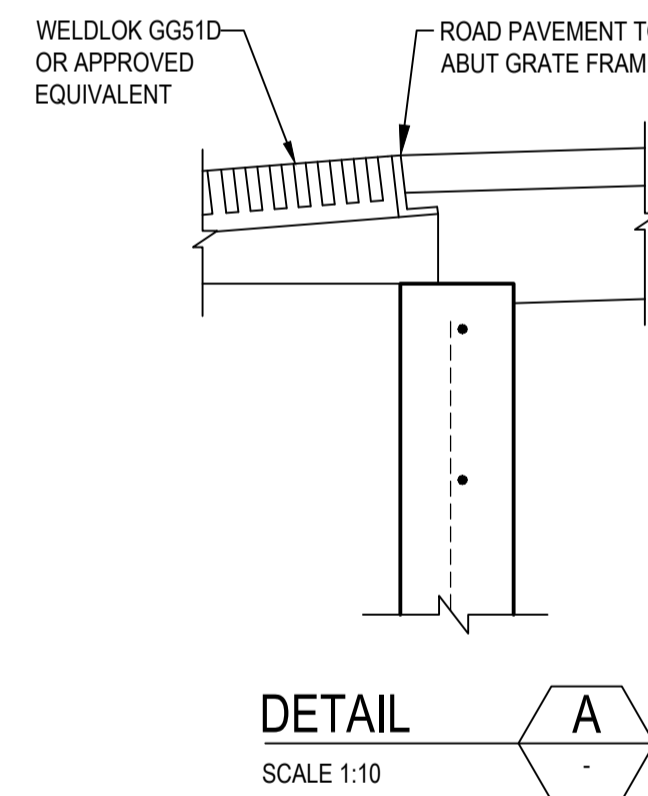
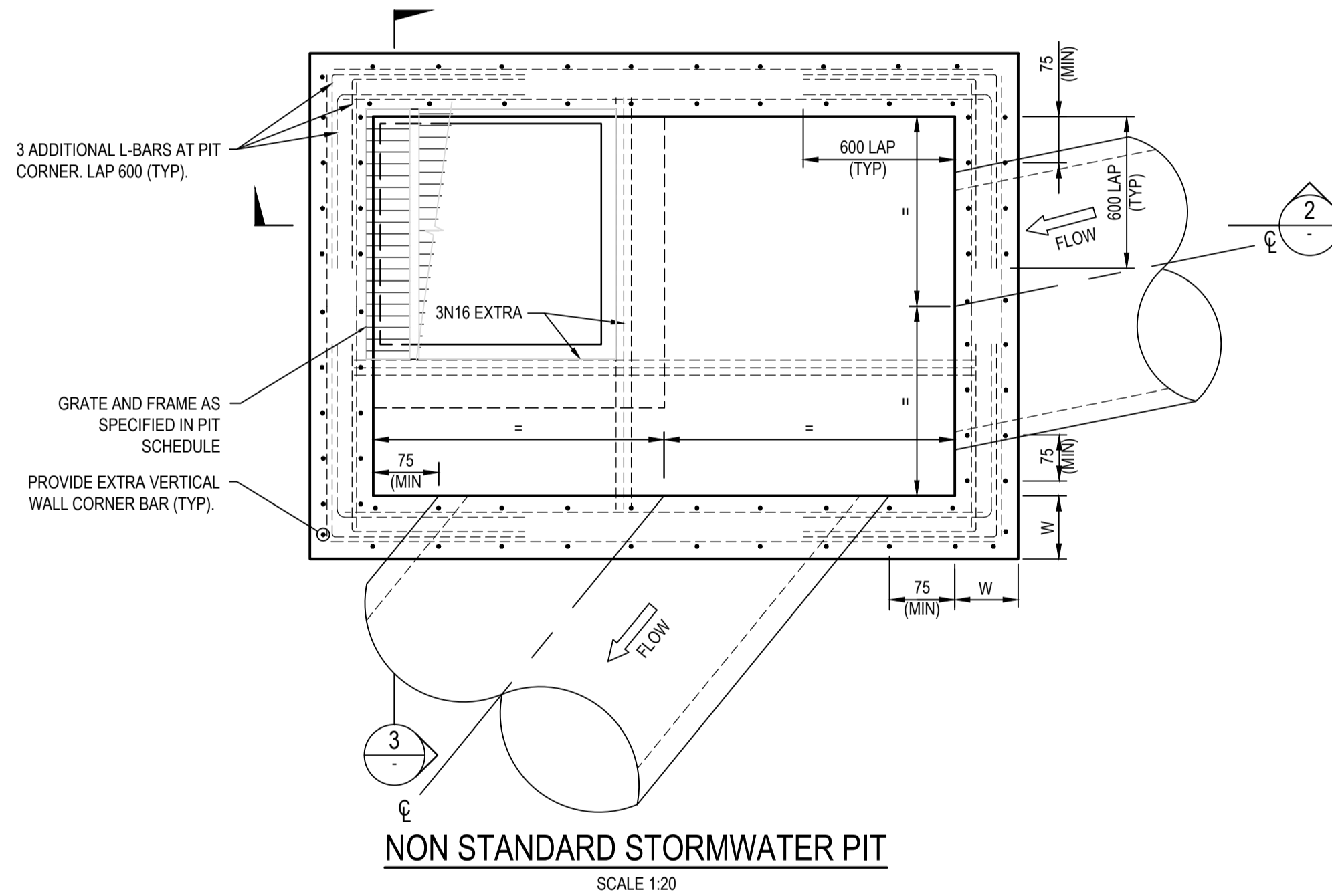
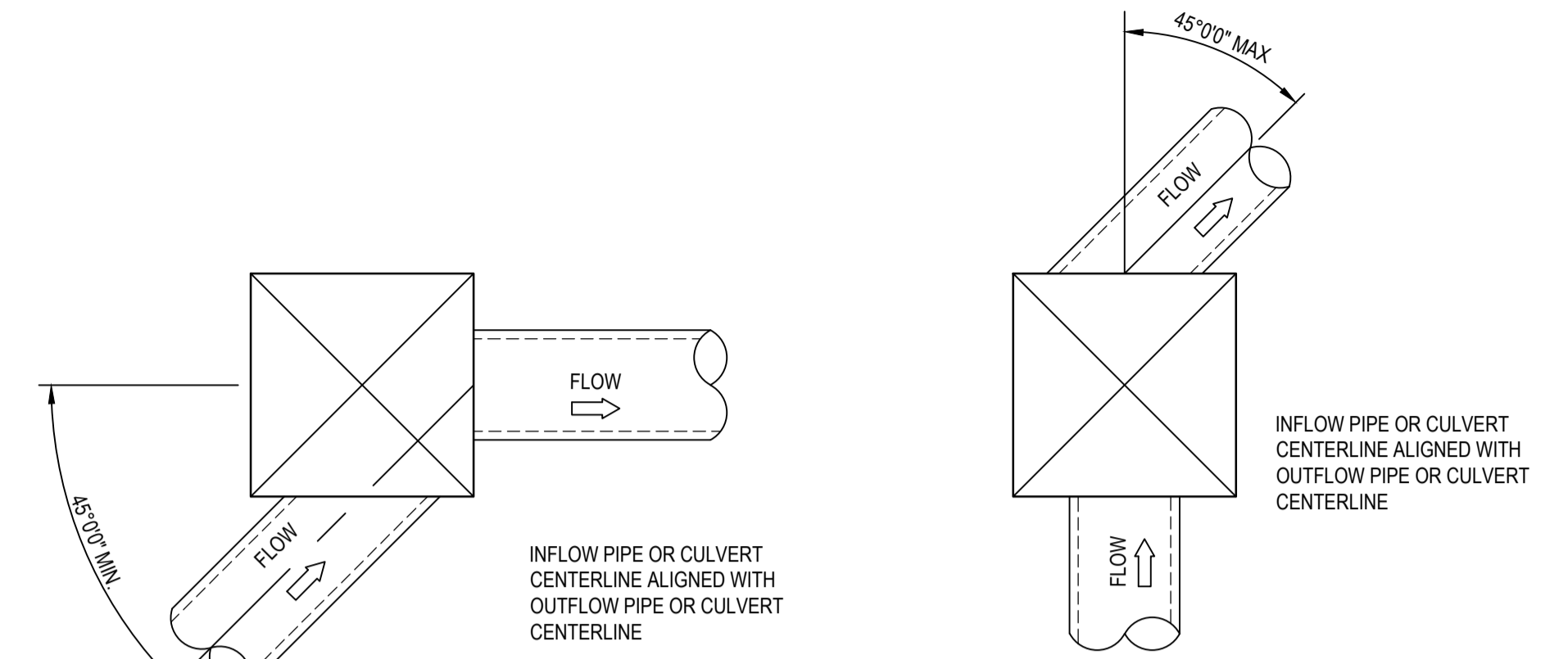
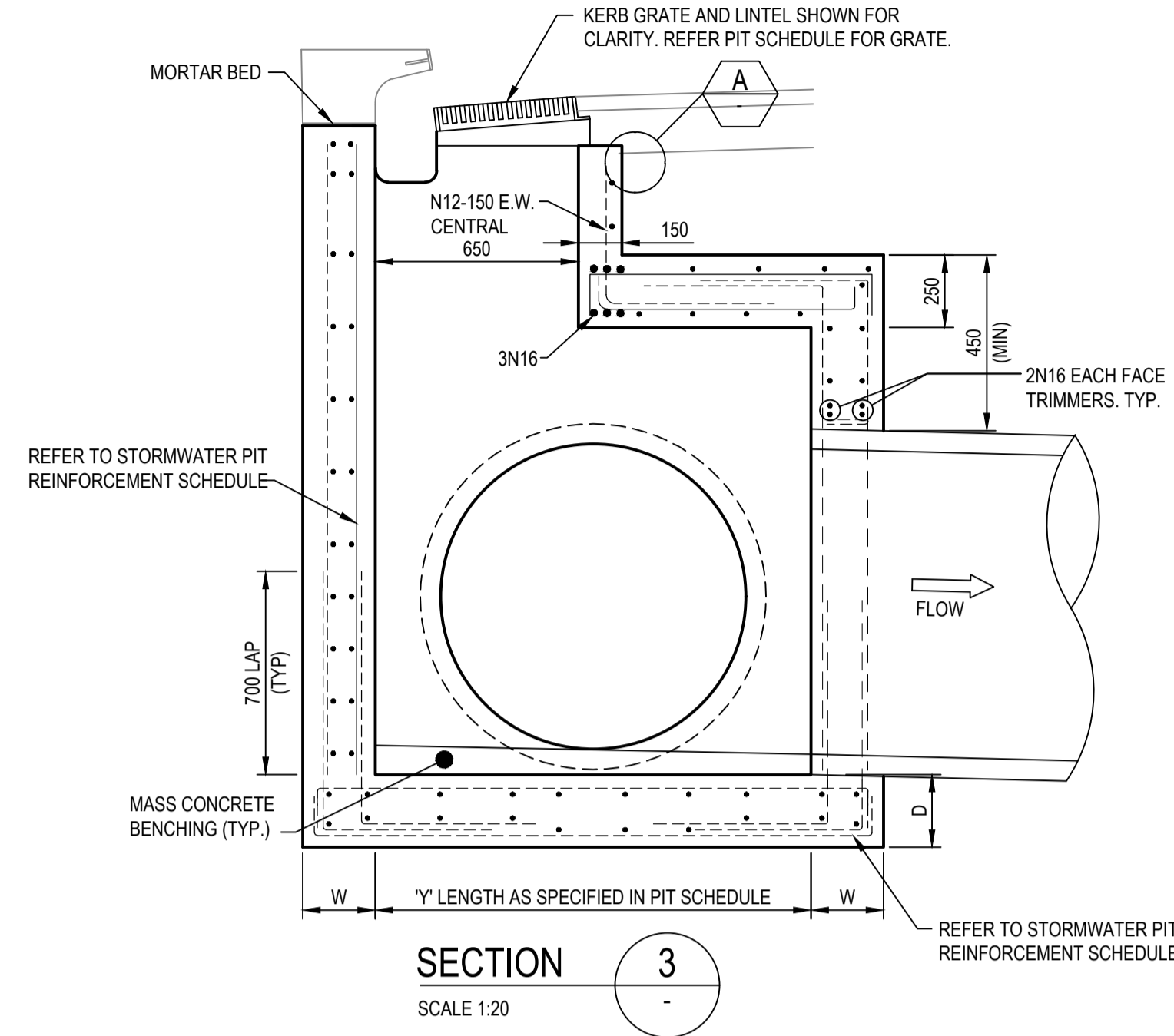
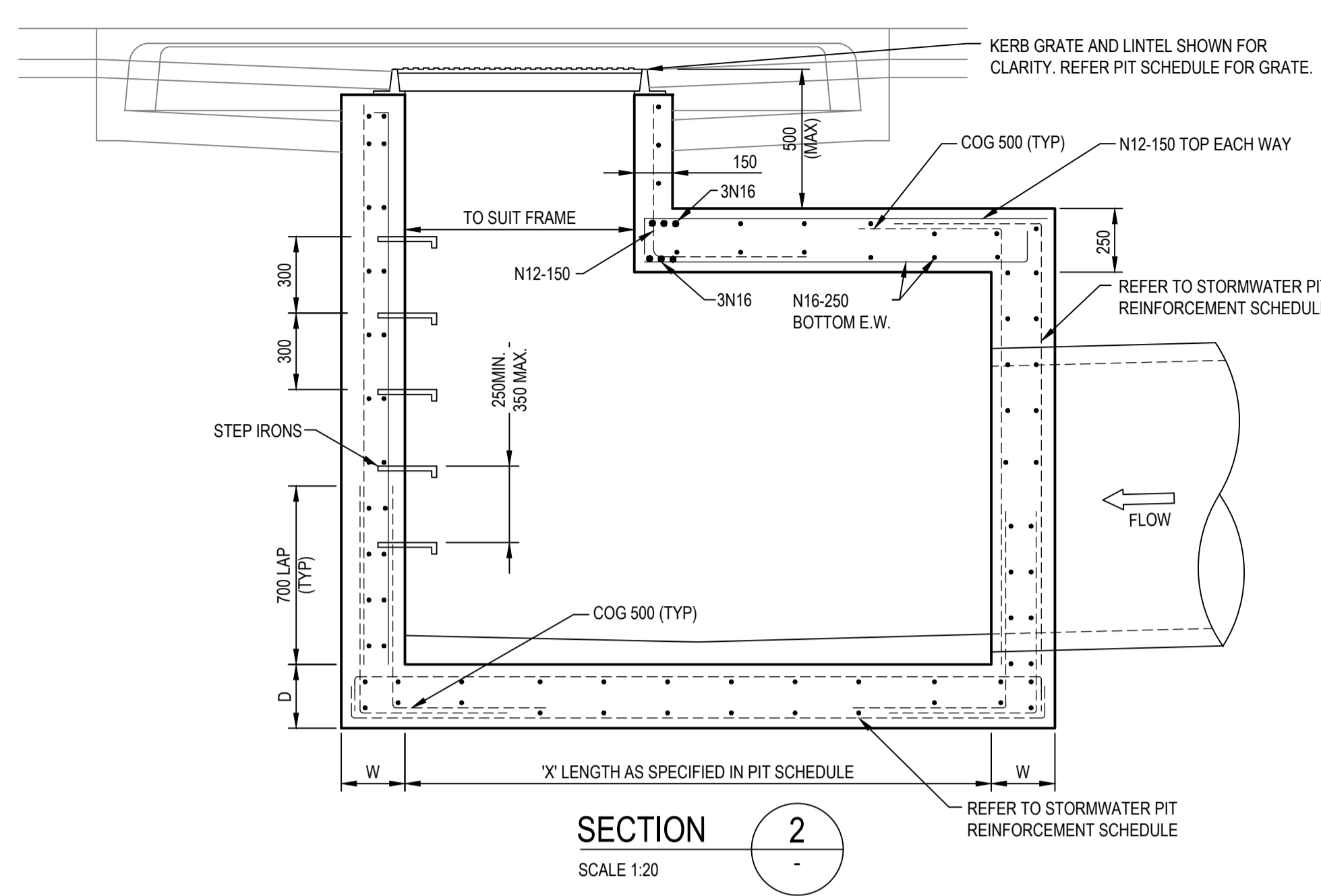
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Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	STORMWATER DRAINAGE DETAILS SHEET 1

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	AHD	Scale	AS SHOWN	
Size		Size	A1	
Drawing Number	CV-CARDNO-EWC1-2201		Revision	2

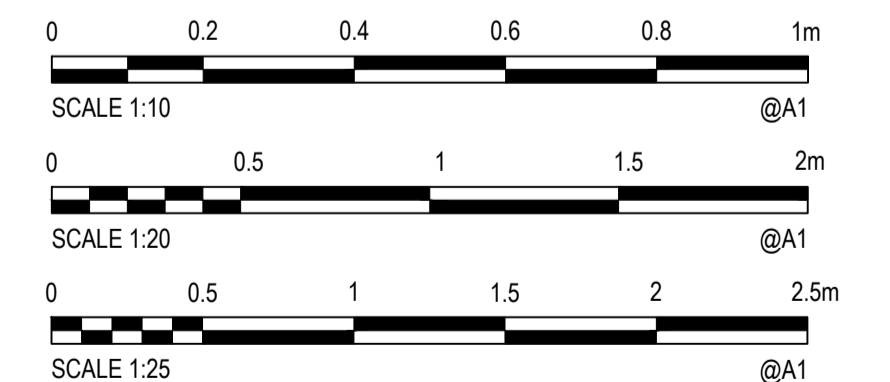


IMPORTANT NOTE: PIT STANDARD DETAILS

FOR PITS WIDER THAN 1200mm AND/OR DEEPER THAN 2000mm REFER TO THE BELOW TABLE AND DETAILS.

NON STANDARD STORMWATER PIT REINFORCEMENT SCHEDULE						
PIT DIMENSIONS(mm)		WALL DIMENSIONS(mm)		VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	BASE REINFORCEMENT
LENGTH 'X', 'Y'	DEPTH 'H'	BASE THICKNESS 'D'	WALL THICKNESS 'W'			
1200<X,Y<3300	2000<H<3900	230	230	N12-200 E.F.	N12-200 E.F.	N12-200 E.F.
X,Y<1200	H<6000	230	230	N16-250 E.F.	N16-250 E.F.	N16-250 E.F.

NOTE: PIT REINFORCEMENT TO BE SELECTED USING MAXIMUM PIT DIMENSION



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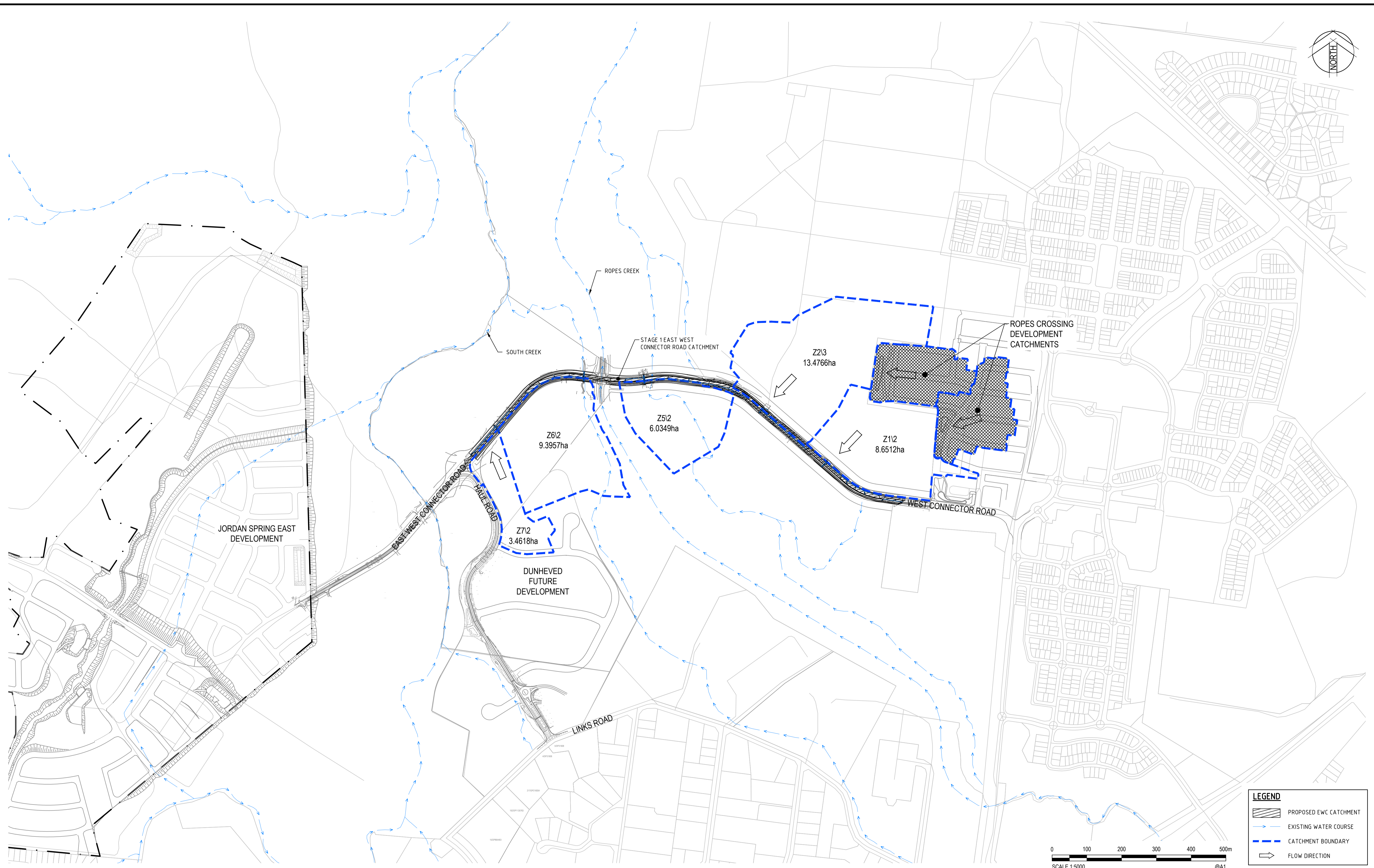
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Checked	Date	Project
MS	19/01/2018	EAST WEST CONNECTOR ROAD
Designed	Date	STAGE 1 - CIVIL WORKS
MS	19/01/2018	DEVELOPMENT APPLICATION
Verified	Date	Title
		STORMWATER DRAINAGE DETAILS
Approved		SHEET 2

Datum	Scale	Size
AHD	AS SHOWN	A1
Drawing Number	Revision	
CV-CARDNO-EWC1-2202	2	

Status: **FOR INFORMATION ONLY**
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XREFs: XR-89914020-2301-CI-CADASTRAL; XR-89914020-2301-CI-JORDAN SPRINGS EAST LOT BDY; XR-89914020-2301-CI-JORDAN SPRINGS EAST; XR-89914020-2301-CI-EXISTING ROAD; Xref-89914020-Client Logos; XR-89914020-2301-CI-VARIOUS SITE BOUNDARY; XR-89914020-2301-CI-CATCHMENTS; EXTERNAL; DATE PLOTTED: 25 January 2018 4:00 PM BY: MARY DOZA
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LEGEND

- PROPOSED EWC CATCHMENT
- EXISTING WATER COURSE
- CATCHMENT BOUNDARY
- FLOW DIRECTION

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Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 1 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EXTERNAL STORMWATER CATCHMENT PLAN

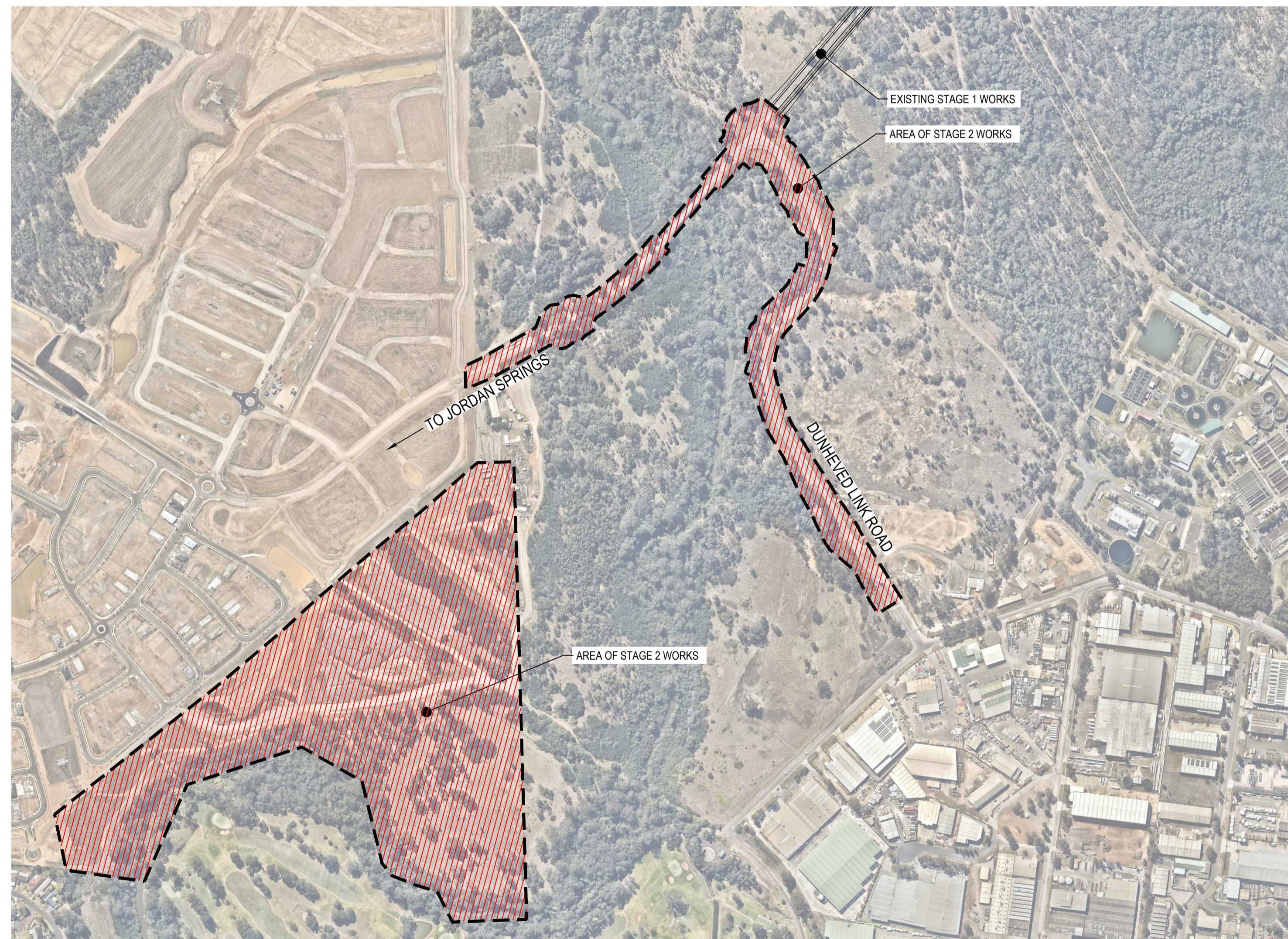
Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	1:5000
Size	A1	Revision	2
Drawing Number	CV-CARDNO-EWC1-2351		

LENDLEASE

EAST WEST CONNECTOR ROAD - STAGE 2



CIVIL WORKS AND REGIONAL OPEN SPACE BULK EARTHWORKS DEVELOPMENT APPLICATION



SCHEDULE OF DRAWINGS

DRAWING No.	DESCRIPTION
CV-CARDNO-EWC2-1001	COVER SHEET AND DRAWING SCHEDULE
CV-CARDNO-EWC2-1011	GENERAL NOTES AND LEGENDS
CV-CARDNO-EWC2-1021	GENERAL ARRANGEMENT PLAN
CV-CARDNO-EWC2-1031	DEVELOPMENT APPLICATION STAGING PLAN AND ROAD HIERARCHY PLAN
CV-CARDNO-EWC2-1041	CIVIL WORKS - EXISTING SERVICES AND SURVEY PLAN SHEET 01
CV-CARDNO-EWC2-1042	CIVIL WORKS - EXISTING SERVICES AND SURVEY PLAN SHEET 02
CV-CARDNO-EWC2-1051	REGIONAL OPEN SPACE - EXISTING SERVICES AND SURVEY PLAN SHEET 01
CV-CARDNO-EWC2-1052	REGIONAL OPEN SPACE - EXISTING SERVICES AND SURVEY PLAN SHEET 02
CV-CARDNO-EWC2-1101	CIVIL WORKS - EROSION & SEDIMENTATION CONTROL PLAN
CV-CARDNO-EWC2-1102	CIVIL WORKS - EROSION & SEDIMENTATION CONTROL PLAN
CV-CARDNO-EWC2-1111	REGIONAL OPEN SPACE - EROSION & SEDIMENTATION CONTROL PLAN SHEET 01
CV-CARDNO-EWC2-1112	REGIONAL OPEN SPACE - EROSION & SEDIMENTATION CONTROL PLAN SHEET 02
CV-CARDNO-EWC2-1131	EROSION & SEDIMENTATION CONTROL DETAILS
CV-CARDNO-EWC2-1251	TYPICAL ROAD CROSS SECTIONS
CV-CARDNO-EWC2-1301	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 01
CV-CARDNO-EWC2-1302	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 02
CV-CARDNO-EWC2-1303	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 03
CV-CARDNO-EWC2-1304	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 04
CV-CARDNO-EWC2-1305	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 05
CV-CARDNO-EWC2-1311	REGIONAL OPEN SPACE - BULK EARTHWORKS PLAN SHEET 01
CV-CARDNO-EWC2-1312	REGIONAL OPEN SPACE - BULK EARTHWORKS PLAN SHEET 02
CV-CARDNO-EWC2-1313	REGIONAL OPEN SPACE - BULK EARTHWORKS PLAN SHEET 03
CV-CARDNO-EWC2-1314	REGIONAL OPEN SPACE - BULK EARTHWORKS PLAN SHEET 04
CV-CARDNO-EWC2-1315	REGIONAL OPEN SPACE - BULK EARTHWORKS PLAN SHEET 05
CV-CARDNO-EWC2-1351	CIVIL WORKS - ROAD LONGITUDINAL SECTIONS SHEET 01
CV-CARDNO-EWC2-1352	CIVIL WORKS - ROAD LONGITUDINAL SECTIONS SHEET 02
CV-CARDNO-EWC2-1601	ROAD TYPICAL DETAILS
CV-CARDNO-EWC2-1701	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 01
CV-CARDNO-EWC2-1702	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 02
CV-CARDNO-EWC2-1703	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 03
CV-CARDNO-EWC2-1704	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 04
CV-CARDNO-EWC2-1705	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 05
CV-CARDNO-EWC2-2201	STORMWATER DRAINAGE DETAILS SHEET 01
CV-CARDNO-EWC2-2202	STORMWATER DRAINAGE DETAILS SHEET 02
CV-CARDNO-EWC2-2301	INTERNAL STORMWATER CATCHMENT PLAN SHEET 01
CV-CARDNO-EWC2-2302	INTERNAL STORMWATER CATCHMENT PLAN SHEET 02
CV-CARDNO-EWC2-2351	EXTERNAL STORMWATER CATCHMENT PLAN

DATE PLOTTED: 19 January 2018 4:17 PM BY: MEGHA SHAKYA
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Verified		Date	19/01/2018		
Approved		Date			

Datum	AHD	Date	19/01/2018	Scale	N.T.S	Size	A1	
Drawing Number	CV-CARDNO-EWC2-1001						Revision	1

GENERAL

- 1. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH PENRITH CITY COUNCIL GUIDELINES.
2. PENRITH CITY COUNCIL STANDARD DETAILS TO BE USED WHERE POSSIBLE.

SITWORKS NOTES

- 1. ORIGIN OF LEVELS- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO CARDNO.
3. MAKE SMOOTH CONNECTION WITH EXISTING WORKS AND SURFACES.
4. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
5. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
6. PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
7. ASPHALTIC CONCRETE SHALL CONFORM TO R.M.S. SPECIFICATION R116.
8. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, AND COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m² OF BASECOURSE MATERIAL PLACED.
9. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 100m² OF SUB-BASE COURSE MATERIAL PLACED.
10. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S. FORM 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF CARDNO AND THE SUPERINTENDENT.

BULK EARTHWORKS NOTES

- 1. ORIGIN OF LEVELS: REFER SURVEY NOTES
2. STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND STOCK PILE AS DIRECTED BY SUPERINTENDENT FOR FUTURE REUSE.
3. EXCAVATED MATERIAL TO BE USED AS STRUCTURAL FILL PROVIDED THE PLACEMENT MOISTURE CONTENT OF THE MATERIAL IS +/- 2% OF THE OPTIMUM MOISTURE CONTENT.
4. COMPACT FILL AREAS AND SUBGRADE TO NOT LESS THAN:
LOCATION STANDARD DRY DENSITY (AS 1289 E 5.1.1.)
UNDER BUILDING SLABS ON GROUND 98%
UNDER ROADS AND CARPARKS 100%
LANDSCAPED AREAS UNLESS NOTED OTHERWISE 98%
5. FOR NON COHESIVE MATERIAL, COMPACT TO 75% DENSITY INDEX.
6. BEFORE PLACING FILL, PROOF ROLL EXPOSED SUBGRADE WITH AN 8 TONNE (MIN) DEADWEIGHT SMOOTH DRUM VIBRATORY ROLLER TO DETECT THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 2mm MOVEMENT UNDER ROLLER).
7. FREQUENCY OF COMPACTION TESTING SHALL BE NOT LESS THAN- (A) 1 TEST PER 1,000m² OF FILL PLACED PER LAYER OF FILL. (B) 3 TESTS PER VISIT (C) 1 TEST PER 1000m² OF EXPOSED SUBGRADE "LEVEL 1" TESTING SHALL BE TESTING IN ACCORDANCE WITH AS 3798 (1996).
8. FILLING TO BE PLACED IN MAXIMUM 200mm - LOOSE LAYERS AND COMPACTED AS SPECIFIED
9. NO FILLING SHALL TAKE PLACE TO EXPOSED SUBGRADE UNTIL THE AREA HAS BEEN PROOF ROLLED IN THE PRESENCE OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER AND APPROVAL GIVEN IN WRITING THAT FILLING CAN PROCEED.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

- 1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, NSW OFFICE OF WATER, SYDNEY WATER, THE OFFICE OF ENVIRONMENT AND HERITAGE, AND LENDLEASE'S REPRESENTATIVE. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED OR AS OTHERWISE DIRECTED BY THE SUPERINTENDENT. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH a. LOCAL AUTHORITY REQUIREMENTS b. EPA REQUIREMENTS c. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

- 6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
a. INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
b. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
c. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN (D) INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
d. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS, WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

- 7. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
8. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS IS PRACTICABLE AFTER THE COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

- 9. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
10. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
11. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE. I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
12. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
a. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
b. ENSURING THAT NOTHING IS NAILED TO THEM
c. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
(i) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
(ii) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
(iii) CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

NOISE

EPA AND COUNCIL REQUIREMENTS MUST BE ADHERED TO REGARDING LEVEL OF NOISE AND WORKING HOURS TO ENSURE THAT RESIDENTS AND OTHER APPLICABLE NEIGHBORS TO THE SITE ARE NOT DISTURBED UNREASONABLY. THE GENERATION OF NOISE MUST BE MINIMISED.

DUST

DUST MUST BE MINIMISED TO ENSURE THERE IS NO HEALTH RISK OR LOSS OF AMENITY.

STAGING OF WORKS

STRIPPING WORKS ARE TO BE STAGED TO MINIMISE EXTENT OF EXPOSED AREA. WEATHER CONDITIONS TO BE ASSESSED PRIOR TO UNDERTAKING STRIPPING.

STOCKPILE PROTECTION

SEDIMENT RETENTION STRUCTURES TO BE PLACED DOWNSLOPE OF ANY STOCKPILES. STOCKPILE IN PLACE > 28 DAYS TO BE TEMPORARILY GRASSED.

VEHICLE AND ROAD MANAGEMENT

SITE ACCESS TO BE RESTRICTED TO ALLOCATED TRUCK ROUTES. EXTERNAL ROADS TO BE SWEEP REGULARLY FOR DURATION OF WORKS.

EXISTING UNDERGROUND SERVICES NOTES

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. CARDNO CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY 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.

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. 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.

STORMWATER DRAINAGE NOTES

- 1. STORMWATER DESIGN CRITERIA: (A) AVERAGE RECURRENCE INTERVAL: 5 YEAR ARI PIPED DRAINAGE 100 YEAR ARI OVERLAND FLOW (B) RAINFALL INTENSITIES: TIME OF CONCENTRATION: 5 MINUTES 5 YEAR ARI= 126mm/hr 100 YEAR ARI= 219mm/hr
2. PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
3. PIPES 300 DIA AND LESS SHALL BE DWV GRADE (CLASS S8) uPVC WITH SOLVENT WELDED JOINTS.
4. EQUIVALENT STRENGTH FRP PIPES MAY BE USED.
5. ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
6. PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.
7. PIPES TO BE INSTALLED TO TYPE HS1 SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).
8. REFER TO ASINZS 3725:2007 TABLE B1 FOR REQUIRED FILL DEPTHS ABOVE PIPE BARREL PRIOR TO USE OF COMPACTION MACHINERY OR TRAVERSING OF PIPES BY GENERAL SITE EQUIPMENT.
9. WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 (2007) TO DETERMINE THE APPROPRIATE PIPE CLASS. PROPOSED PIPE CLASS SHALL BE REVIEWED BY CARDNO PRIOR TO INSTALLATION.
10. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500.3 (2015).
11. THE USE OF PRECAST PITS IS ONLY PERMITTED WITH THE APPROVAL OF PENRITH CITY COUNCIL'S ENGINEER.
12. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
13. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC DWV SEWER GRADE PIPE IS TO BE USED.
14. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
15. GRATES AND COVERS SHALL CONFORM TO AS 3996. MINIMUM CLASS C.
16. ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.
17. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.

STORMWATER DRAINAGE NOTES CONTINUED

- 18. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

TELSTRA - DUTY OF CARE NOTE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY WHEELANS INSTIES BEING REGISTERED SURVEYORS. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. CARDNO DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT CARDNO THE FOLLOWING NOTES HAVE BEEN TAKEN DIRECTLY FROM THE ORIGINAL SURVEY DOCUMENTS.

STREET FURNITURE

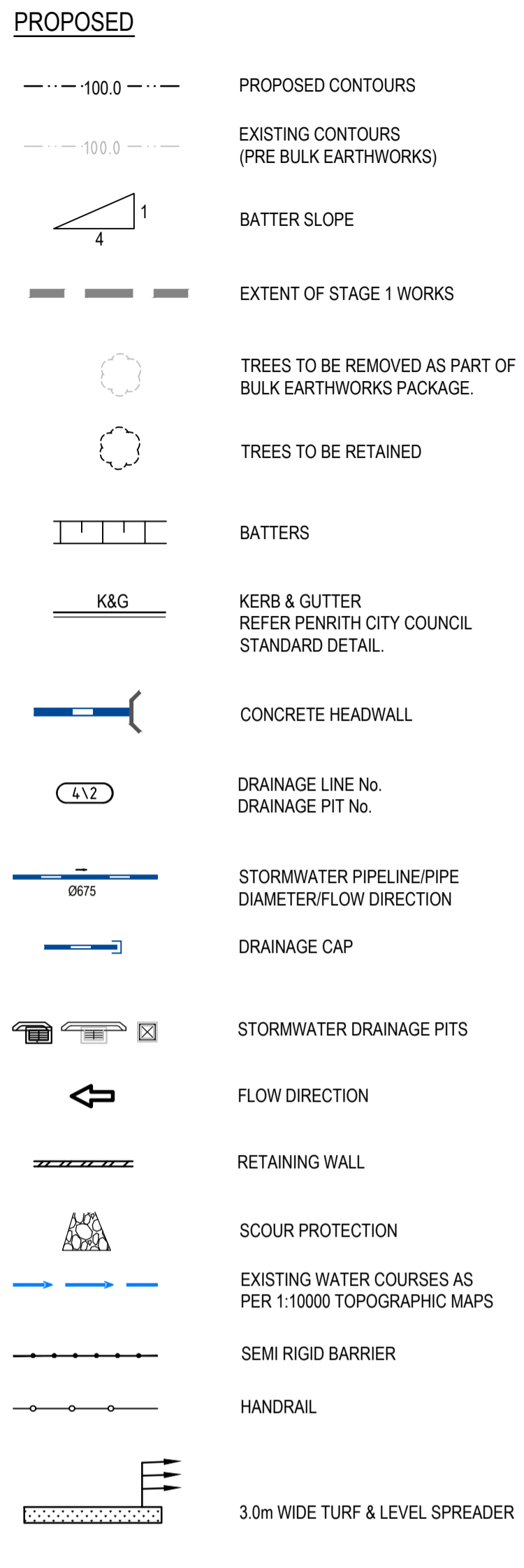
- 1. ALL LIGHT POLES, STREET NAMES AND BUS SHELTERS IN THIS SUBDIVISION WILL BE BLACK POWDER COATED TO THE SATISFACTION OF PENRITH CITY COUNCIL. FURTHER THAT THESE LIGHT POLES WILL COMPLY WITH COUNCIL'S SPECIFICATIONS.
2. ALL LIGHT POLES ARE TO BE TYPE 'MACARTHUR'. REFER ELECTRICAL DESIGN DRAWINGS.

CONCRETE NOTES

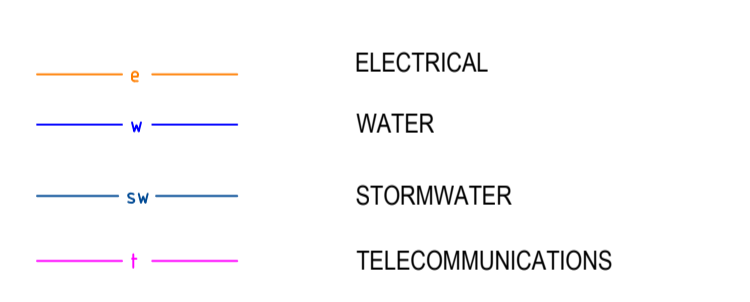
- 1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONCRETE QUALITY ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.
3. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY CARDNO.
4. CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm TOP AND 70mm FOR EXTERNAL EDGES UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
6. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED AND CURED IN ACCORDANCE WITH R.T.A. SPECIFICATION R83.

Table with 4 columns: ELEMENT, AS 3600 Fc MPa AT 28 DAYS, SPECIFIED SLUMP, NOMINAL AGG. SIZE. Rows include VEHICULAR BASE, KERBS AND PATHS, PITS, FOUNDATIONS & CULVERT BASE SLABS.

PROPOSED WORKS LEGEND



EXISTING WORKS LEGEND



REINFORCEMENT NOTES

- 1. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION. SPLICES IN THE REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN. THE WRITTEN APPROVAL OF THE ENGINEER SHALL BE OBTAINED FOR ANY OTHER SPLICES. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT.
2. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED IN WRITING BY THE ENGINEER.
3. REINFORCEMENT SYMBOLS - N - DENOTES GRADE 400N TEMPCOORE DEFORMED BARS TO AS 1302 R - DENOTES GRADE 250R HOT ROLLED PLAIN BARS TO AS 1302 SL - DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304 W - DENOTES HARD-DRAWN PLAIN WIRE TO AS 1303
4. REINFORCEMENT COGS AND EXTENSIONS TO BE IN ACCORDANCE WITH AS3600.
5. THE FIGURES FOLLOWING THE FABRICS SYMBOL 'SL' IS THE REFERENCE NUMBER FOR FABRIC TO AS 1304. ALL REINFORCEMENT FABRIC SHALL COMPLY WITH AS1303 AND AS1304 AND SHALL BE SUPPLIED AS FLAT SHEETS.
6. FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF WIRE.
7. PLACE SUFFICIENT BAR CHAIRS UNDER BOTTOM REINFORCING RODS AND TOP CROSSRODS IN SLABS TO ALLOW THEM TO BE SUPPORTED IN THEIR CORRECT POSITIONS DURING CONCRETING (NOT GREATER THAN 900mm CENTRES BOTH WAYS)
8. REINFORCEMENT LAYERS DENOTED THUS UNO - TT - DENOTES TOP BARS LAID LAST IN TOP T - DENOTES TOP BARS LAID FIRST IN TOP B - DENOTES BOTTOM BARS LAID SECOND IN BOTTOM BB - DENOTES BOTTOM BARS LAID FIRST IN BOTTOM
9. WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-300 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 450mm UNLESS NOTED OTHERWISE.
10. MINIMUM LAP LENGTHS UNLESS NOTED OTHERWISE SHALL BE - 500 FOR N12 BARS 600 FOR N16 BARS 900 FOR N20 BARS 1000 FOR N24 BARS 1200 FOR N28 BARS 1500 FOR N32 BARS 1800 FOR N36 BARS

Revision table with columns: Rev, Date, Description, MS, Des, Verif, Appd. Row 1: 1, 19/01/2018, DRAFT - ISSUED FOR RSA, MS.



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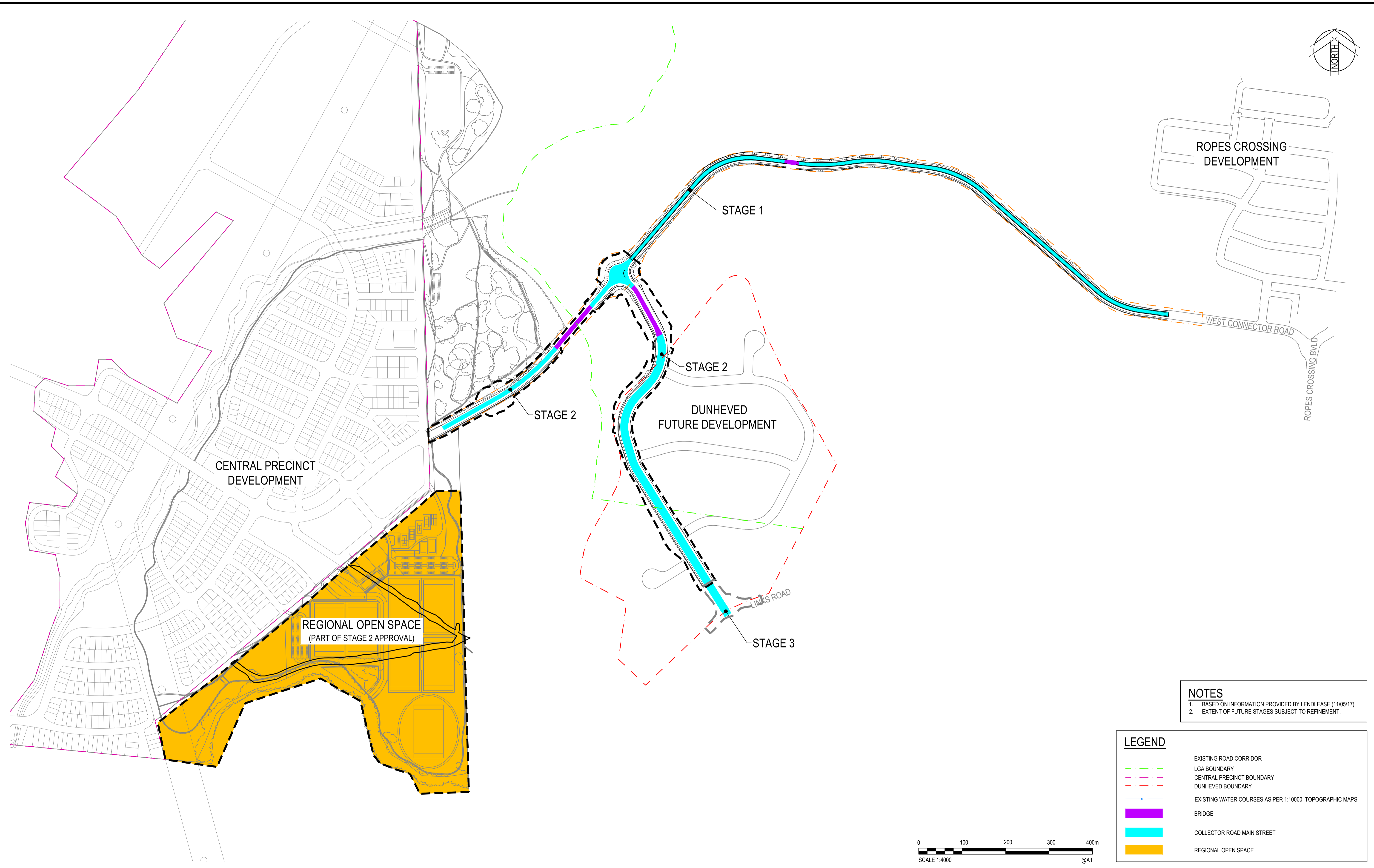
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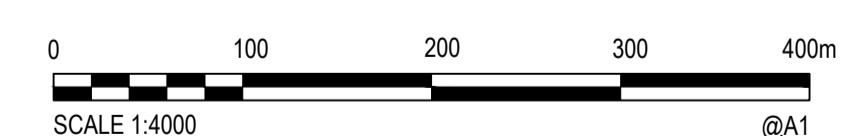
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NOTES
 1. BASED ON INFORMATION PROVIDED BY LENDLEASE (11/05/17).
 2. EXTENT OF FUTURE STAGES SUBJECT TO REFINEMENT.

LEGEND	
	EXISTING ROAD CORRIDOR
	LGA BOUNDARY
	CENTRAL PRECINCT BOUNDARY
	DUNHEVED BOUNDARY
	EXISTING WATER COURSES AS PER 1:10000 TOPOGRAPHIC MAPS
	BRIDGE
	COLLECTOR ROAD MAIN STREET
	REGIONAL OPEN SPACE



Rev.	Date	R.I.P	REVISION IN PROGRESS	Description	MS	Des.	Verif.	Appd.
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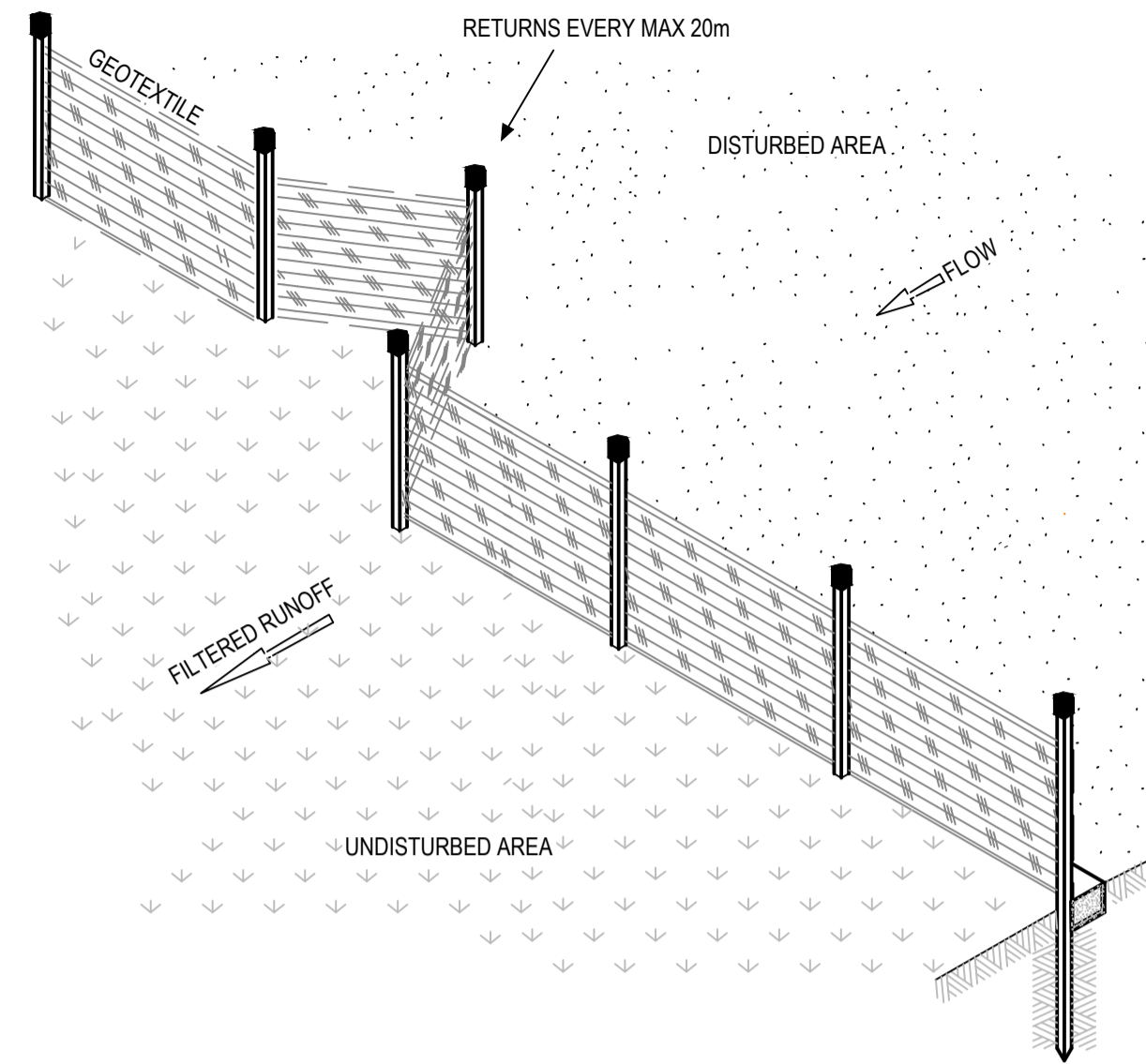


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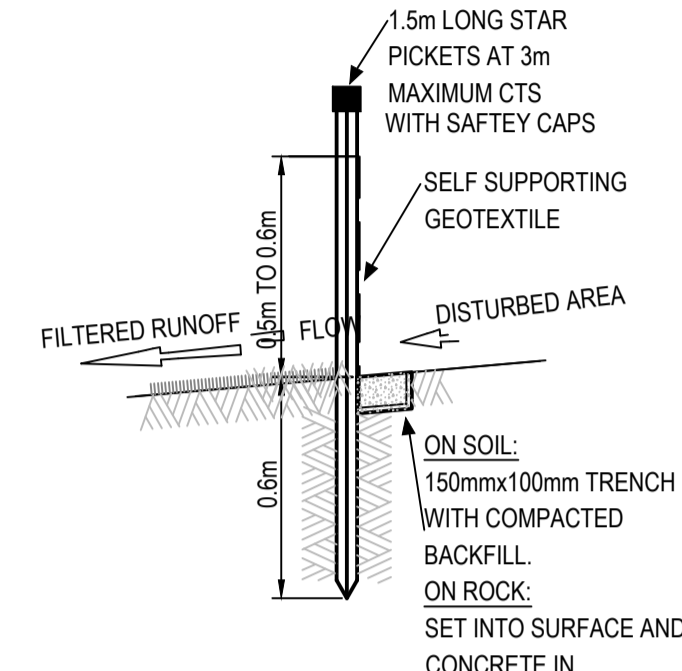
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Drawn	Date	Client
BML	R.I.P	LENDLEASE
Checked	Date	Project
MS	R.I.P	EAST WEST CONNECTOR ROAD - STAGE 2
Designed	Date	CIVIL WORKS AND REGIONAL OPEN SPACE
MS	R.I.P	BULK EARTHWORKS DEVELOPMENT APPLICATION
Verified	Date	Title
MS	R.I.P	DEVELOPMENT APPLICATION STAGING PLAN AND ROAD HIERARCHY PLAN
Approved	Date	
	R.I.P	

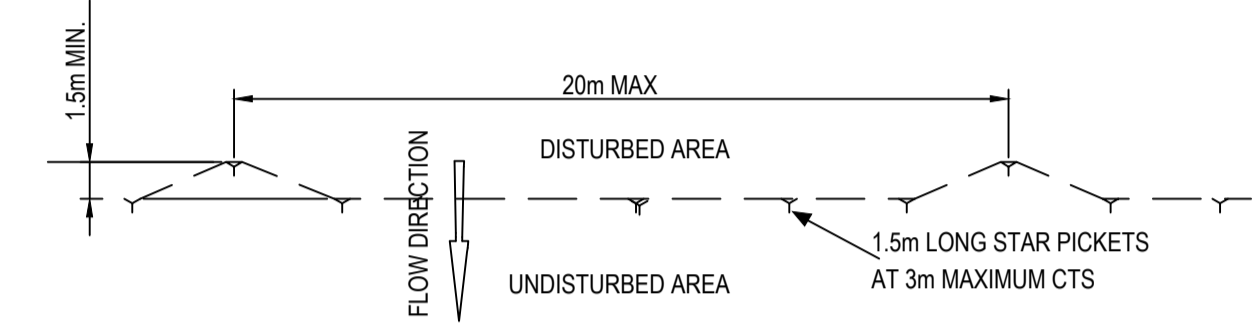
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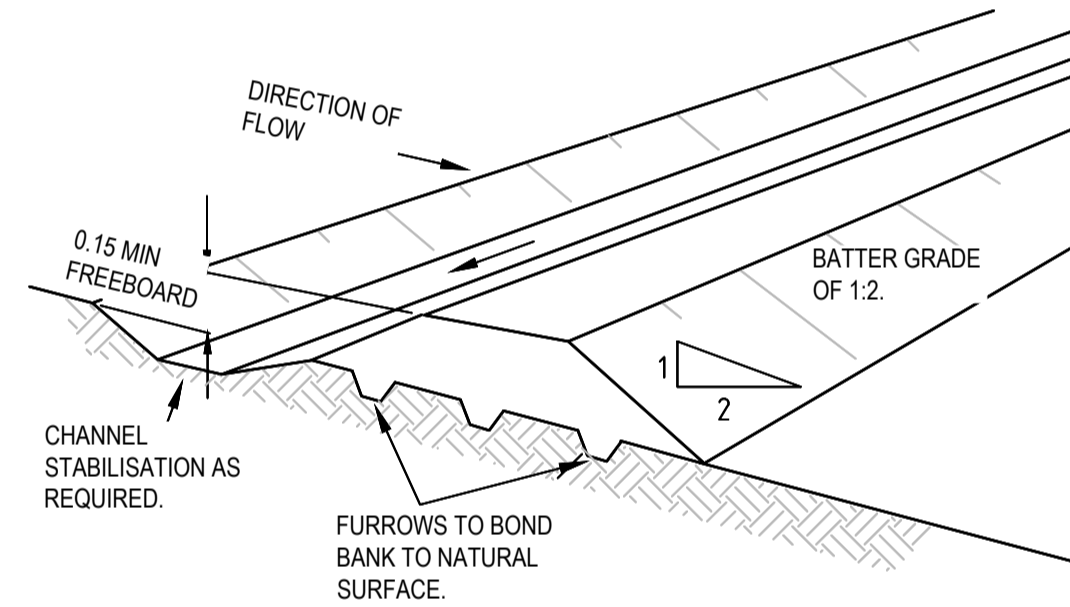
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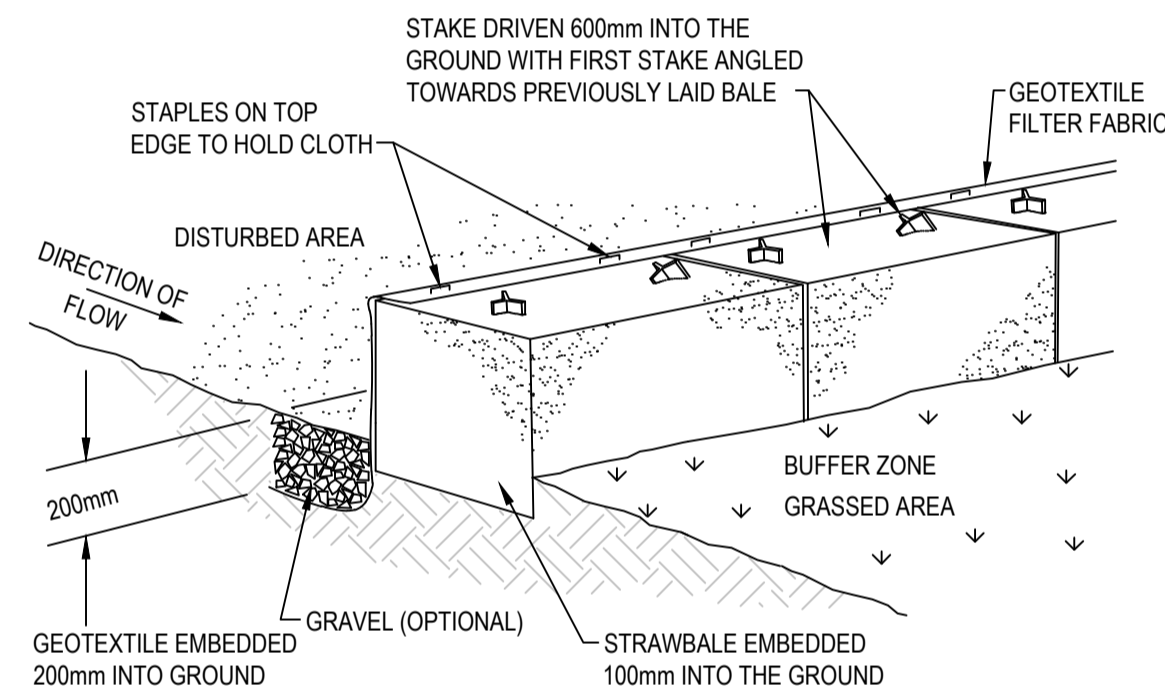
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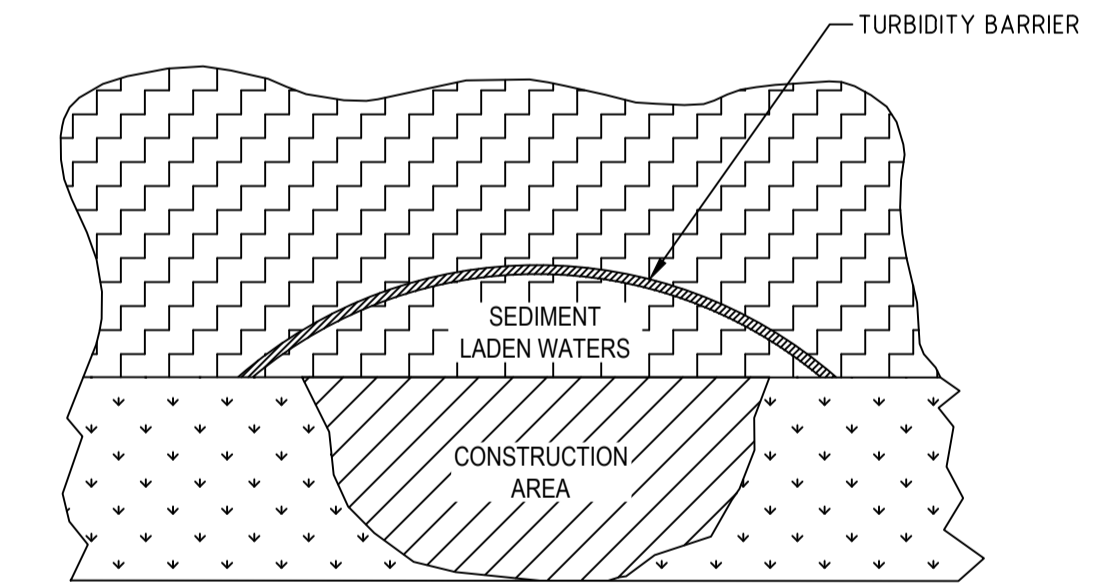
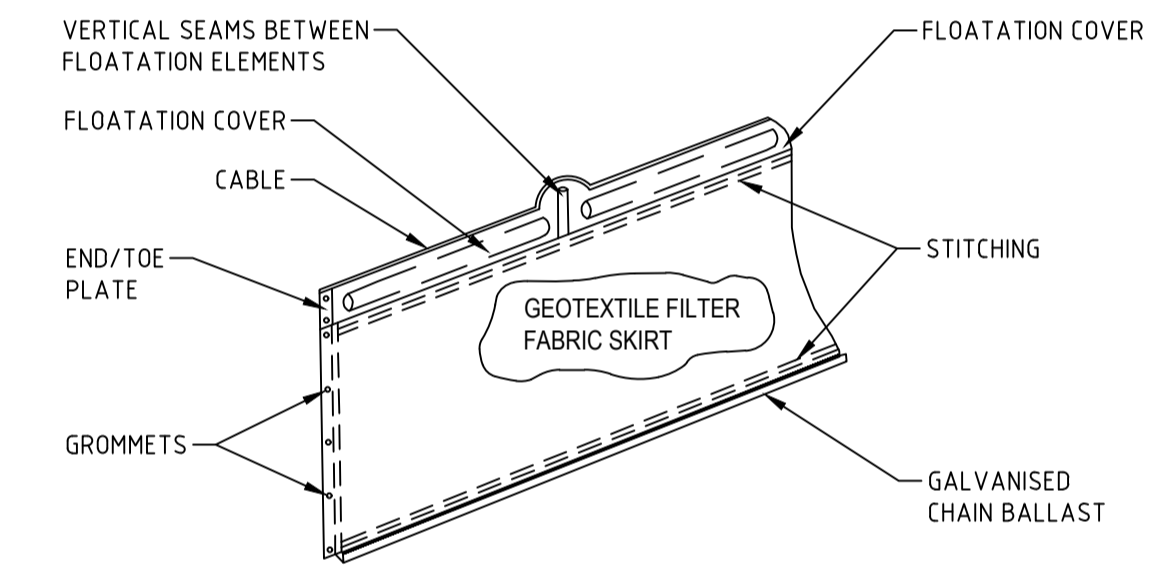
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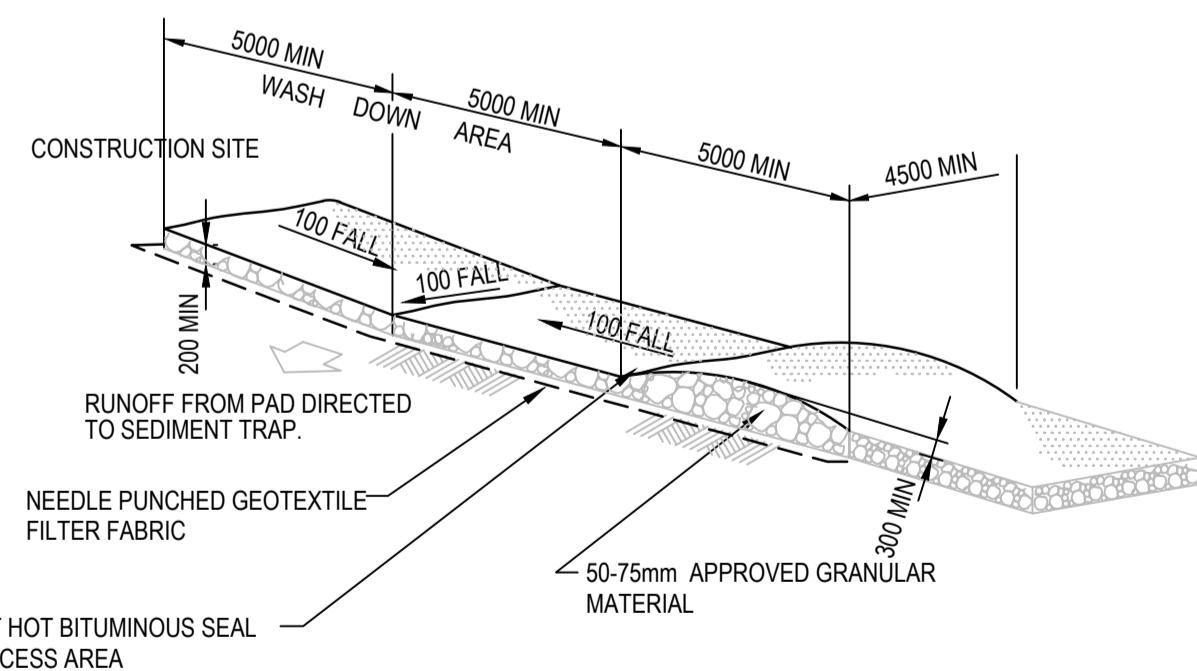
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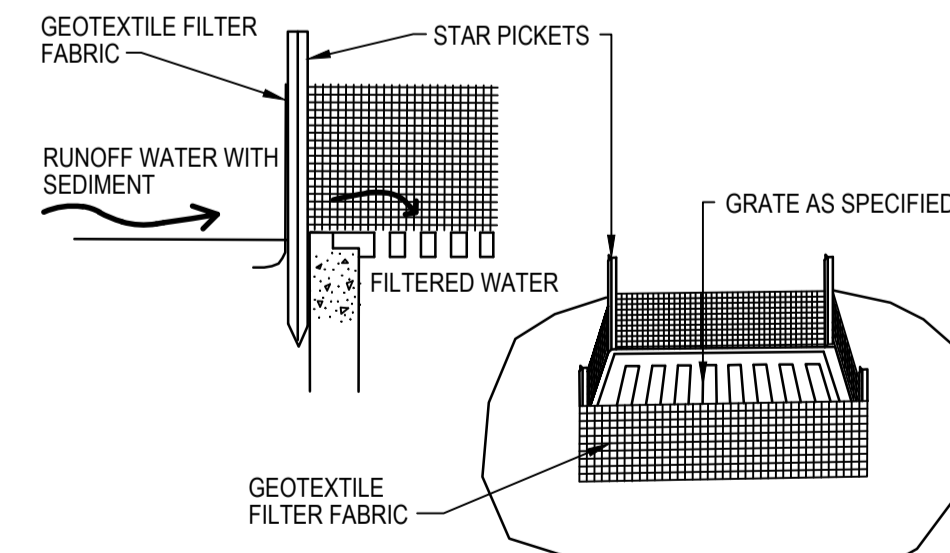
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NTS



TURBIDITY BARRIER
NOT TO SCALE



STABILISED SITE ENTRY/EXIT WITH WHEEL WASH
NOT TO SCALE



GEOTEXTILE FILTER PIT SURROUND
NTS

Rev.	Date	Description	Des.	Verif.	Appd.
1		R.I.P REVISION IN PROGRESS		MS	



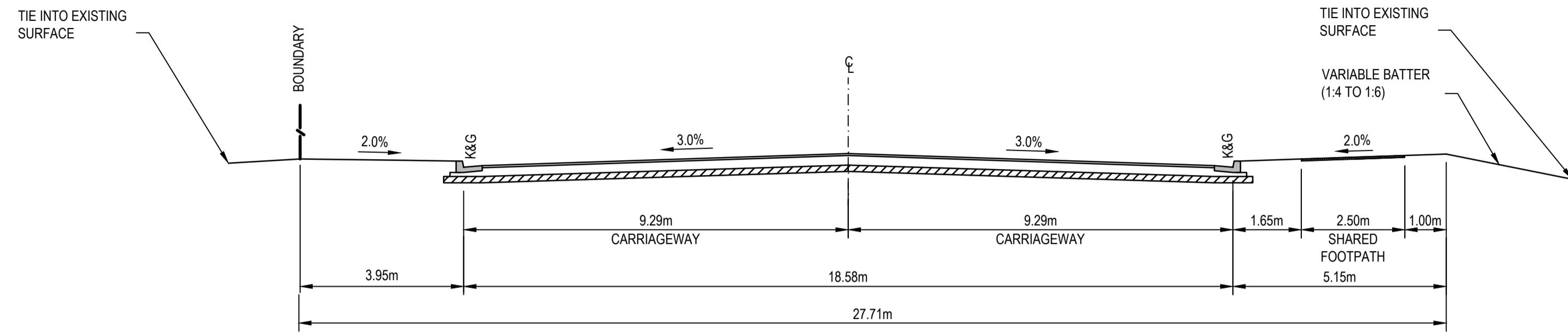
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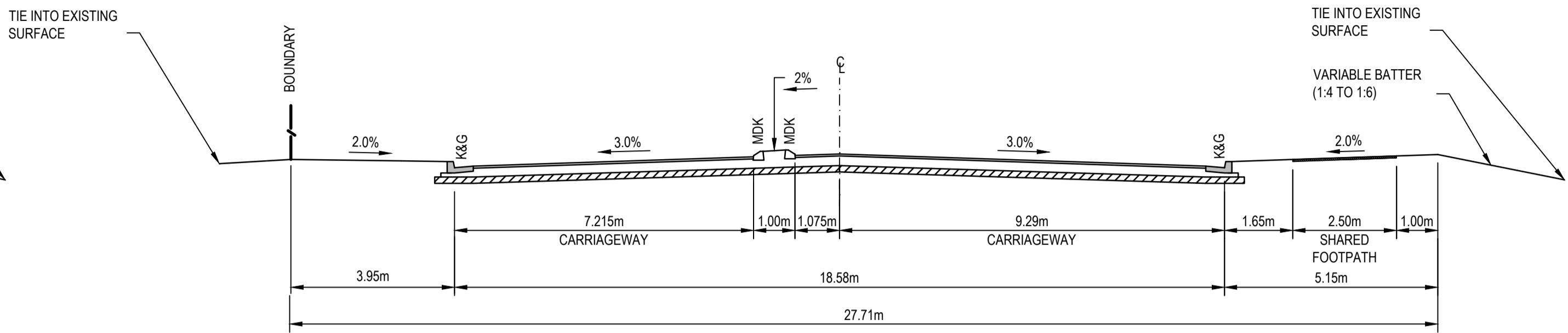
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Approved		Date	R.I.P

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE BULK EARTHWORKS DEVELOPMENT APPLICATION
Title	EROSION & SEDIMENTATION CONTROL DETAILS

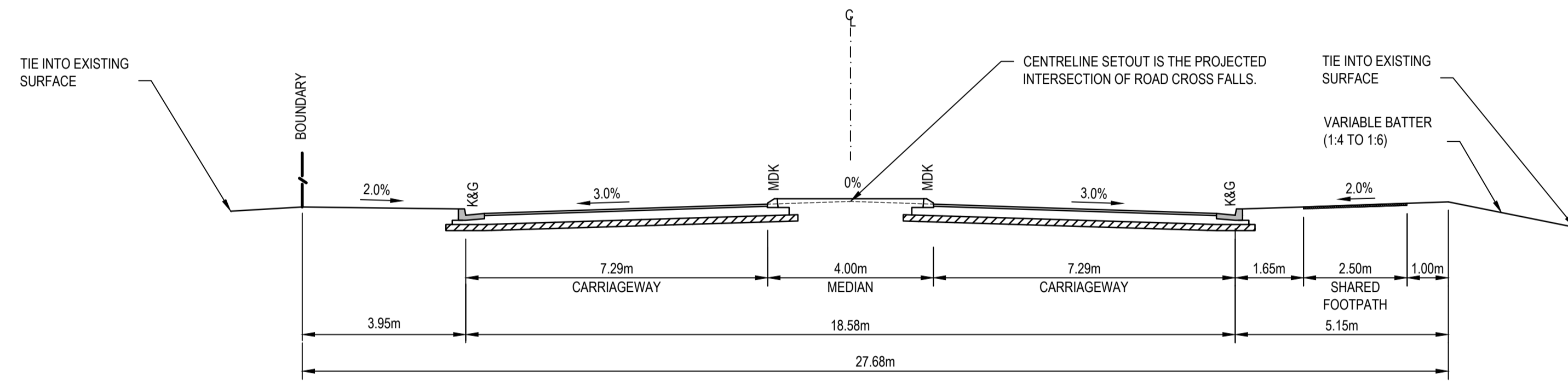
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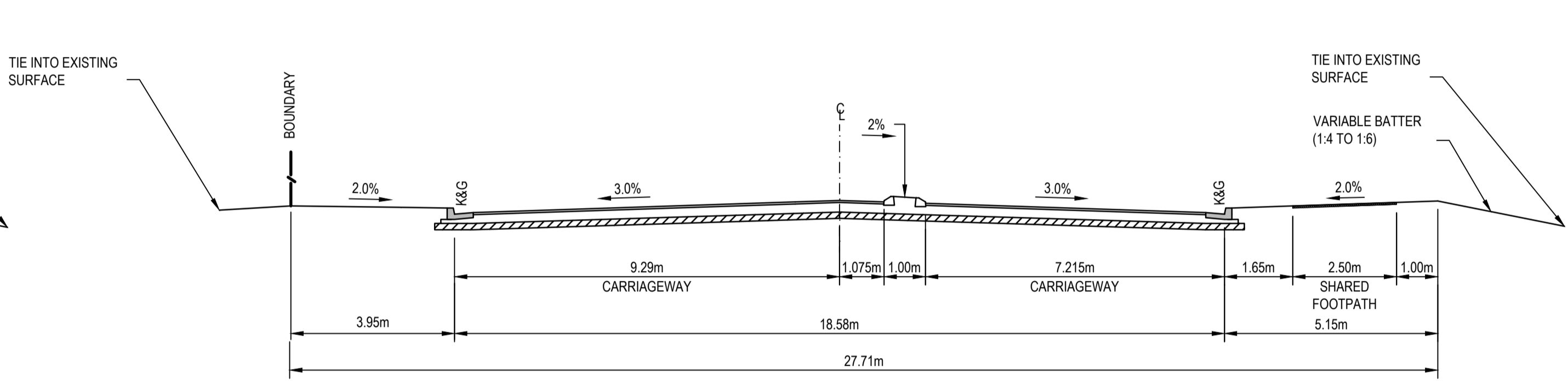
DUNHEVED LINKS ROAD (TYPE 2)
 PAVEMENT TYPE 1 CH. 205.882 - 261.417
 SCALE 1:100 465.000 - 501.063
 676.673 - 773.414
 907.123 - 907.128



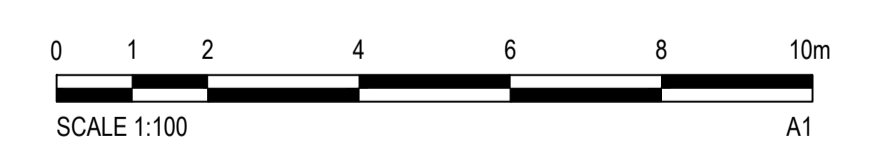
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 PAVEMENT TYPE 1 CH. 205.882 - 261.417
 SCALE 1:100 465.000 - 501.063
 676.673 - 773.414
 907.123 - 907.128



DUNHEVED LINKS ROAD (TYPE 4)
 PAVEMENT TYPE 1 CH. 292.384 - 465.000
 SCALE 1:100 532.493 - 676.673
 773.414 - 850.549



DUNHEVED LINKS ROAD (TYPE 5)
 PAVEMENT TYPE 1 CH. 205.882 - 261.417
 SCALE 1:100 465.000 - 501.063
 676.673 - 773.414
 907.123 - 907.128



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Rev.	Date	Description	Des.	Verif.	Appd.
1		R.I.P REVISION IN PROGRESS		MS	



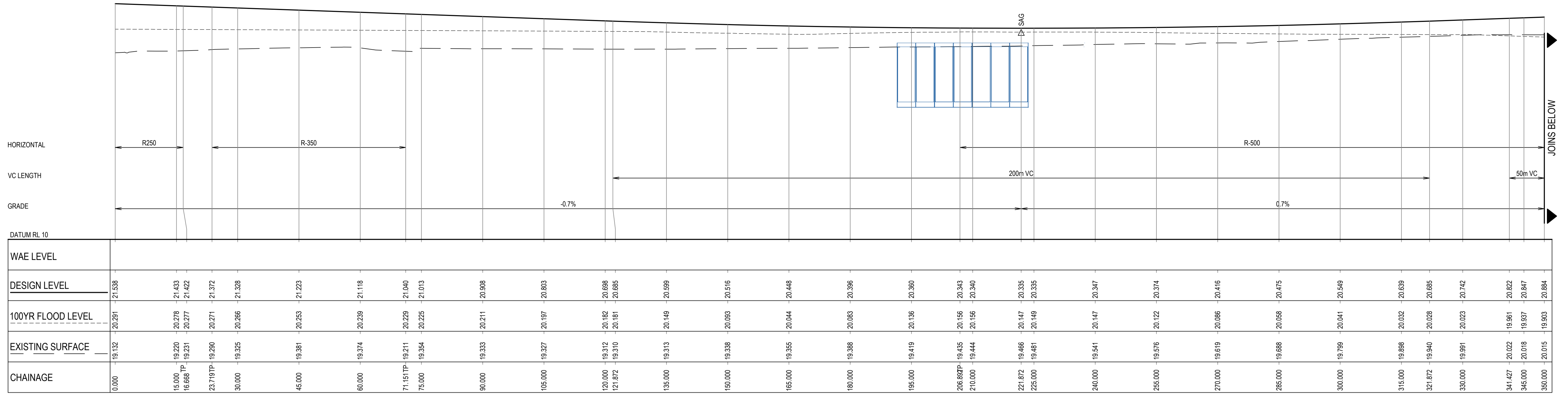
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Drawn	Date	Client
BML	R.I.P	LENLEASE
Checked	Date	Project
MS	R.I.P	EAST WEST CONNECTOR ROAD - STAGE 2
Designed	Date	CIVIL WORKS AND REGIONAL OPEN SPACE
MS	R.I.P	BULK EARTHWORKS DEVELOPMENT APPLICATION
Verified	Date	Title
	R.I.P	TYPICAL ROAD CROSS SECTIONS
Approved	Date	
	R.I.P	

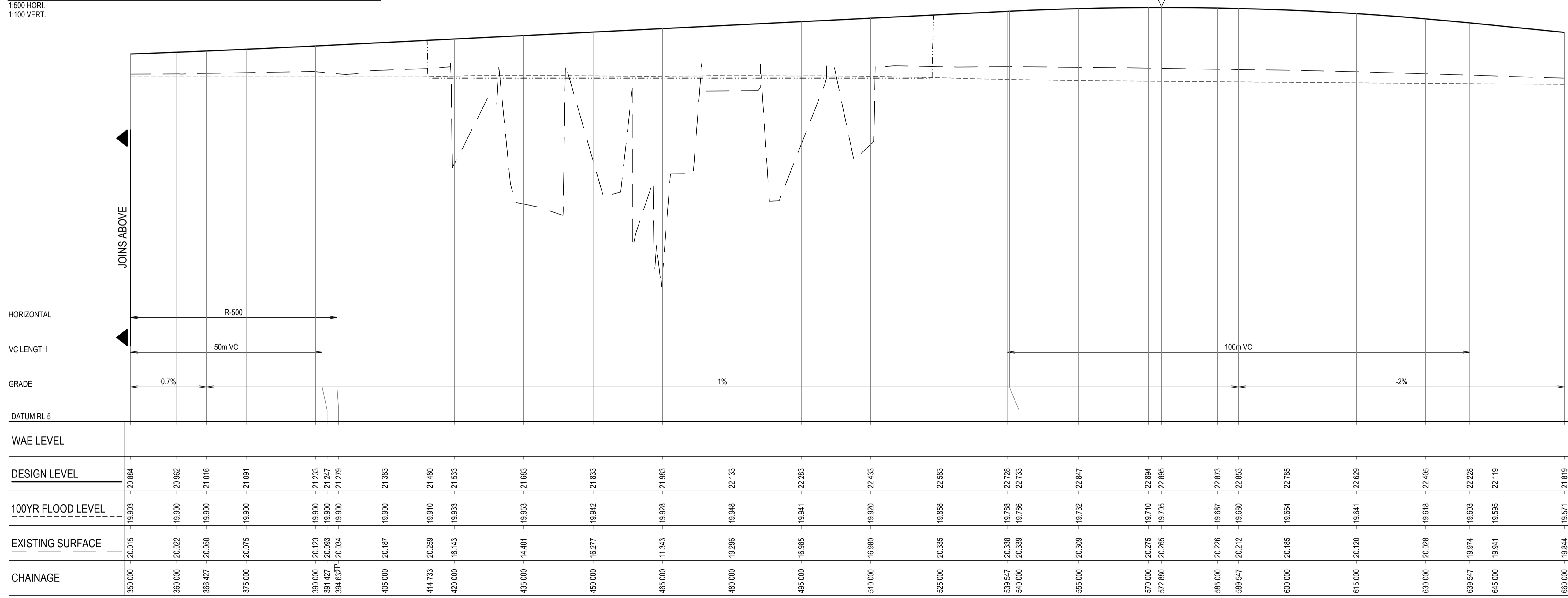
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CV-CARDNO-EWC2-1251		1	

Status: **PRELIMINARY**
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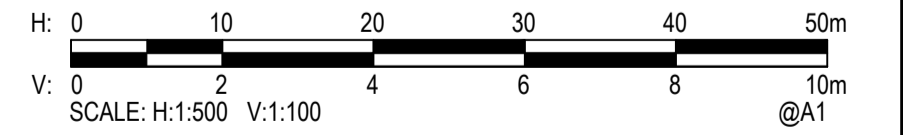
EAST-WEST CONNECTOR ROAD LONGITUDINAL SECTION

1:500 HORI.
1:100 VERT.



EAST-WEST CONNECTOR ROAD LONGITUDINAL SECTION

1:500 HORI.
1:100 VERT.



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1	19/01/2018	DRAFT - ISSUED FOR RSA		MS	



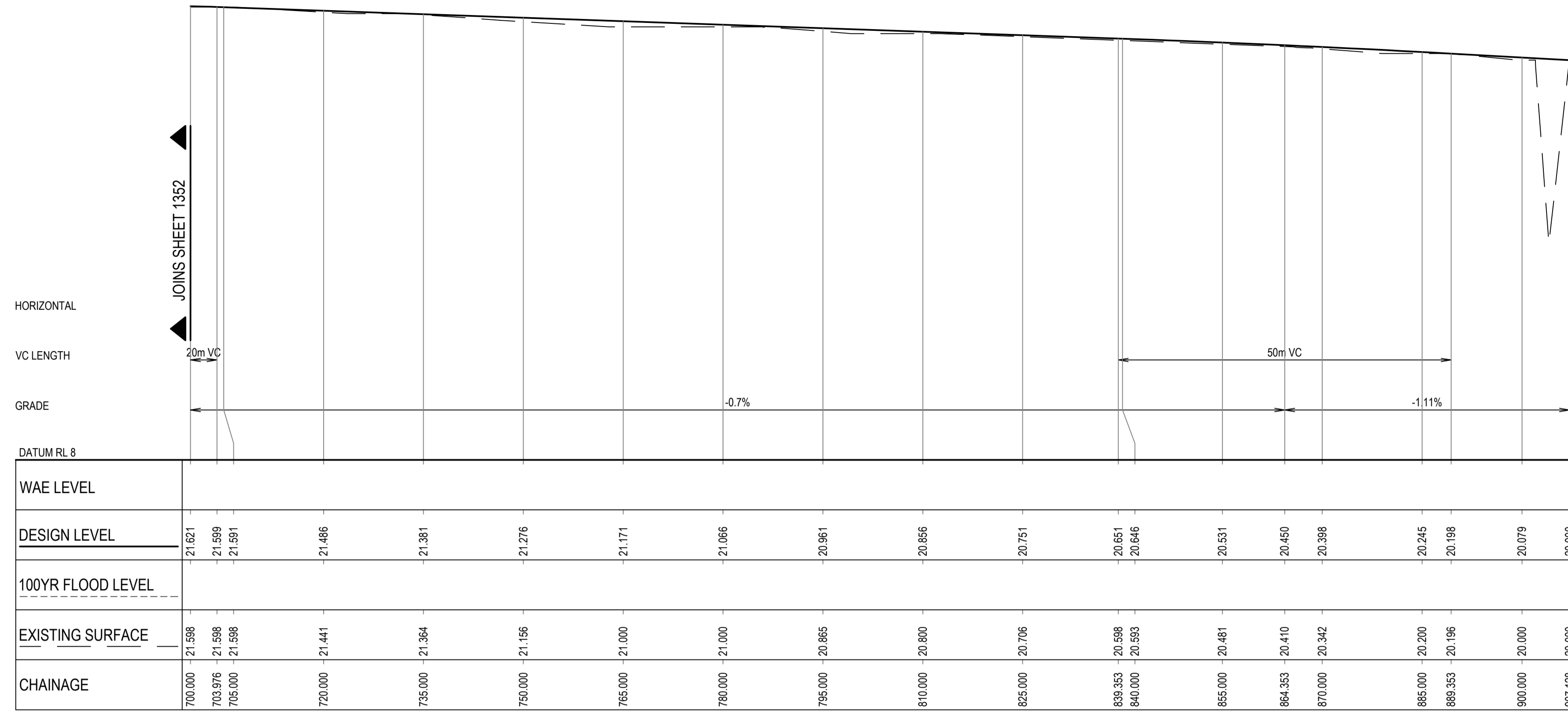
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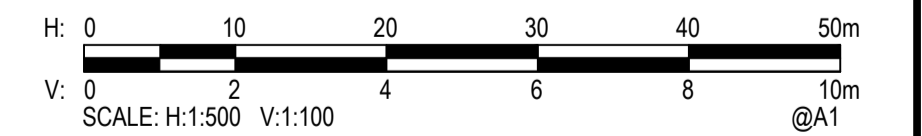
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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE BULK EARTHWORKS DEVELOPMENT APPLICATION
Title	CIVIL WORKS - ROAD LONGITUDINAL SECTIONS SHEET 01

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES						
Datum	AHD	Date	19/01/2018	Scale	AS SHOWN	Size	A1
Drawing Number	CV-CARDNO-EWC2-1351			Revision	1		



DUNHEVED LINKS ROAD LONGITUDINAL SECTION
 1:500 HORI.
 1:100 VERT.



XREF: \\ref-8091020-Client_Logos
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Rev.	Date	Description	Des.	Verif.	Appd.
2		REVISION IN PROGRESS			



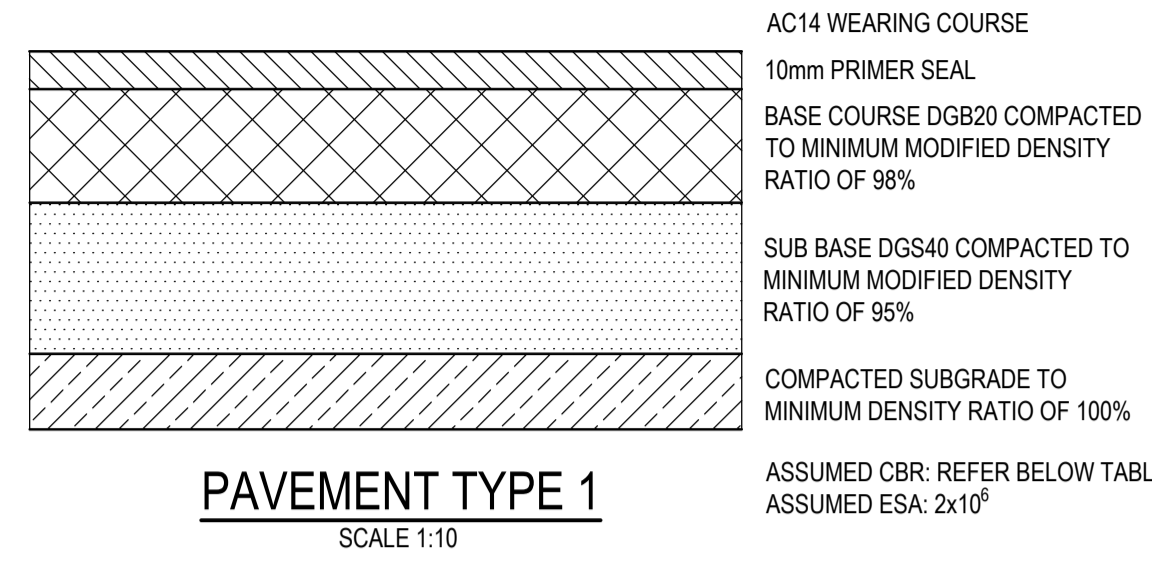
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Checked	Date
	R.I.P
Designed	Date
	R.I.P
Verified	Date
	R.I.P
Approved	Date
	R.I.P

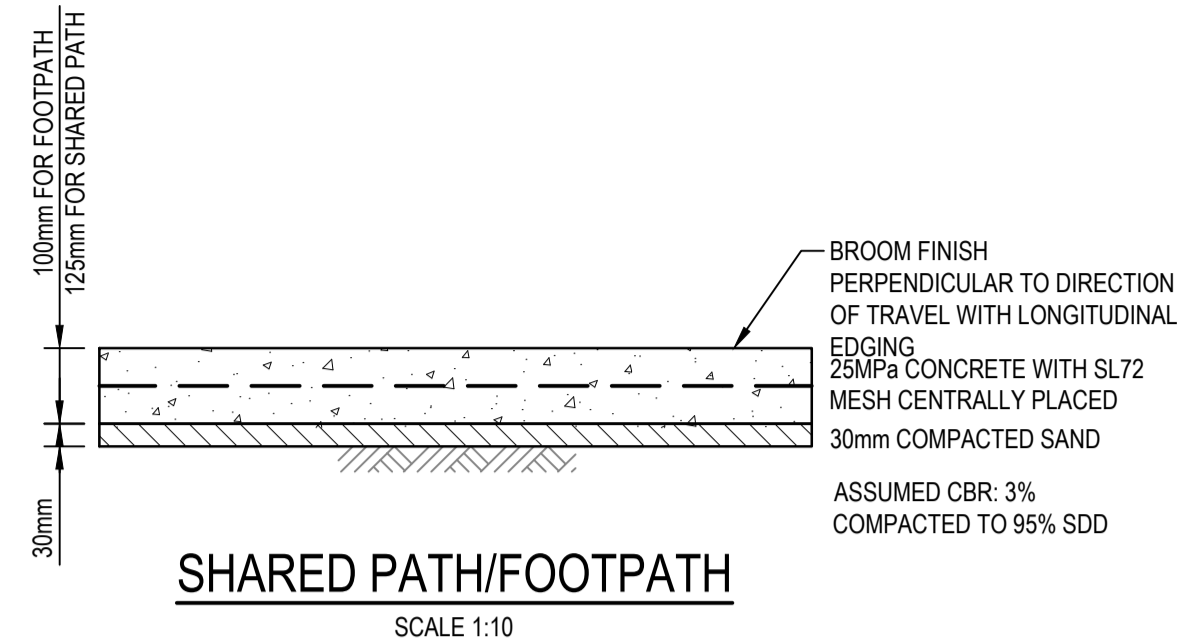
Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 2 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROAD LONGITUDINAL SECTIONS SHEET 01

Status	PRELIMINARY NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	Date	Scale	Size	
AHD	R.I.P	AS SHOWN	A1	
Drawing Number	CV-CARDNO-EWC02-1351			Revision
				2



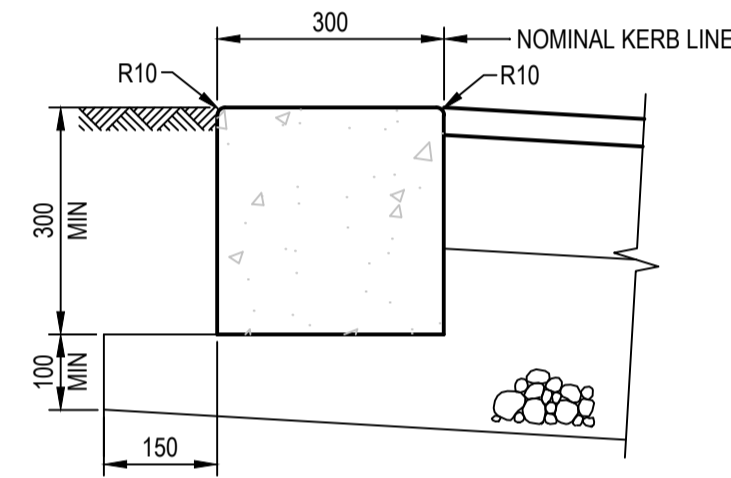
PAVEMENT TYPE 1
SCALE 1:10

PAVEMENT 1 DESIGN		
DESIGN SUBGRADE	CBR 3%	CBR 5%
WEARING SURFACE	50mm AC10	50mm AC10
SINGLE COAT FLUSH SEAL	7mm	7mm
BASECOURSE	150mm	150mm
SUBBASE	410mm	290mm
TOTAL THICKNESS	610mm	490mm

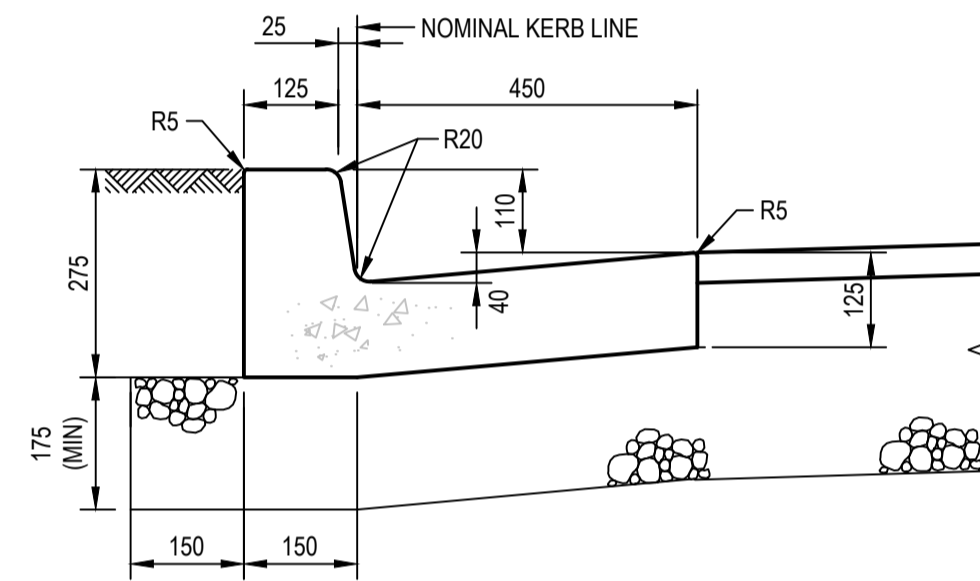


SHARED PATH/FOOTPATH
SCALE 1:10

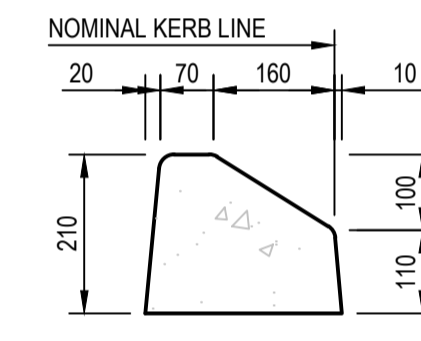
- NOTES**
- SAWCUT PATH OR TROWELLED DUMMY JOINT AT 2m SPACING.
 - EVERY THIRD JOINT TO BE FULL DEPTH DOWELLED EXPANSION JOINT.



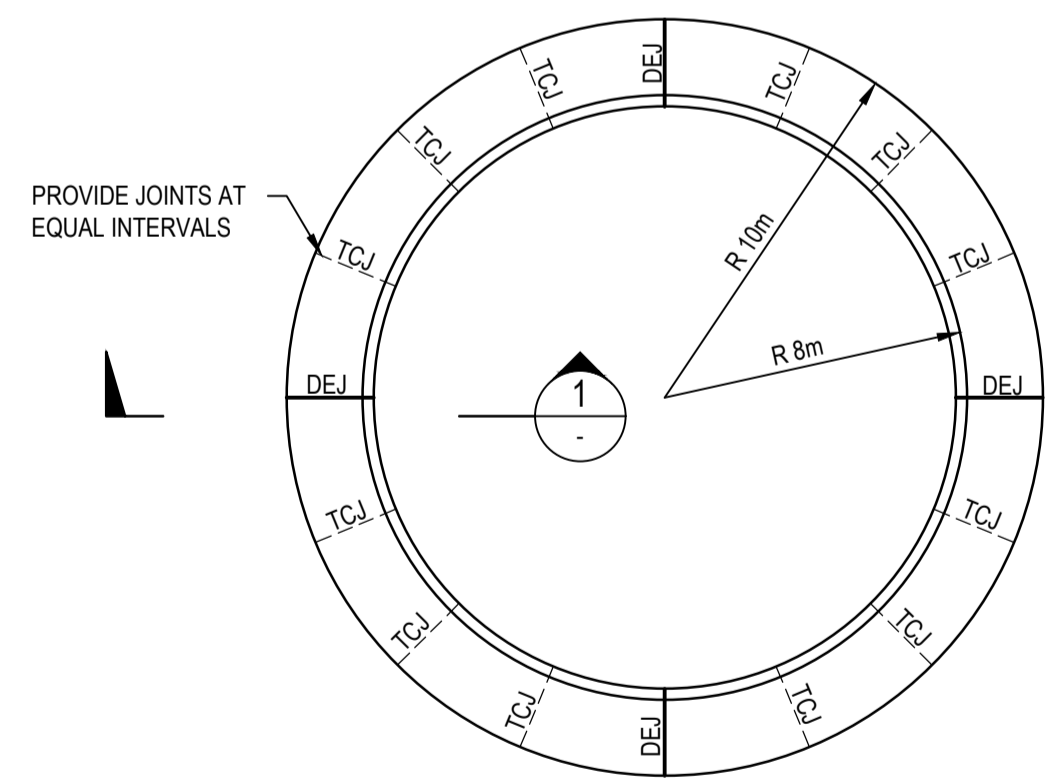
FLUSH KERB (FK)
SCALE 1:10



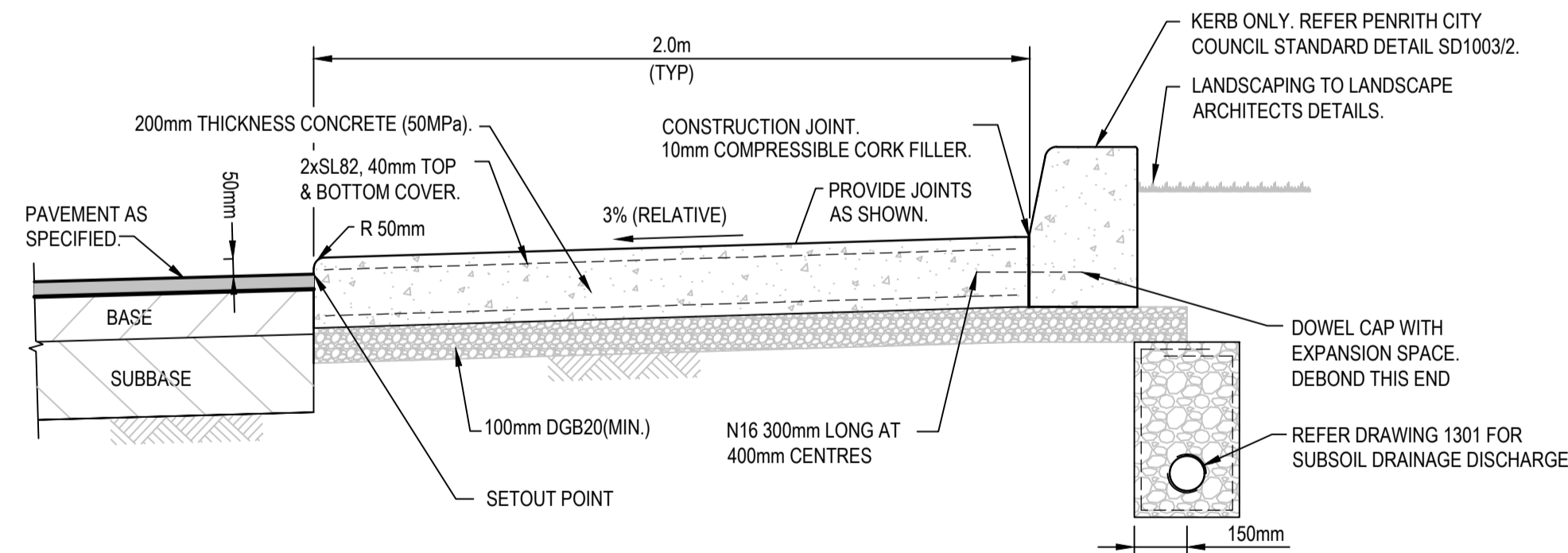
KERB AND GUTTER (K&G)
SCALE 1:10



MEDIAN KERB (MDK)
(RMS SF KERB)
SCALE 1:10



ROUNDAABOUT CENTRE ISLAND PLAN
SCALE 1:200



SECTION 1
NTS
ROUNDAABOUT CENTRE ISLAND DETAIL

- NOTES**
- ROUNDAABOUT ANNULUS SHALL BE GRADED AT 3% RELATIVE TO ROAD GRADE NOT 3% ABSOLUTE.

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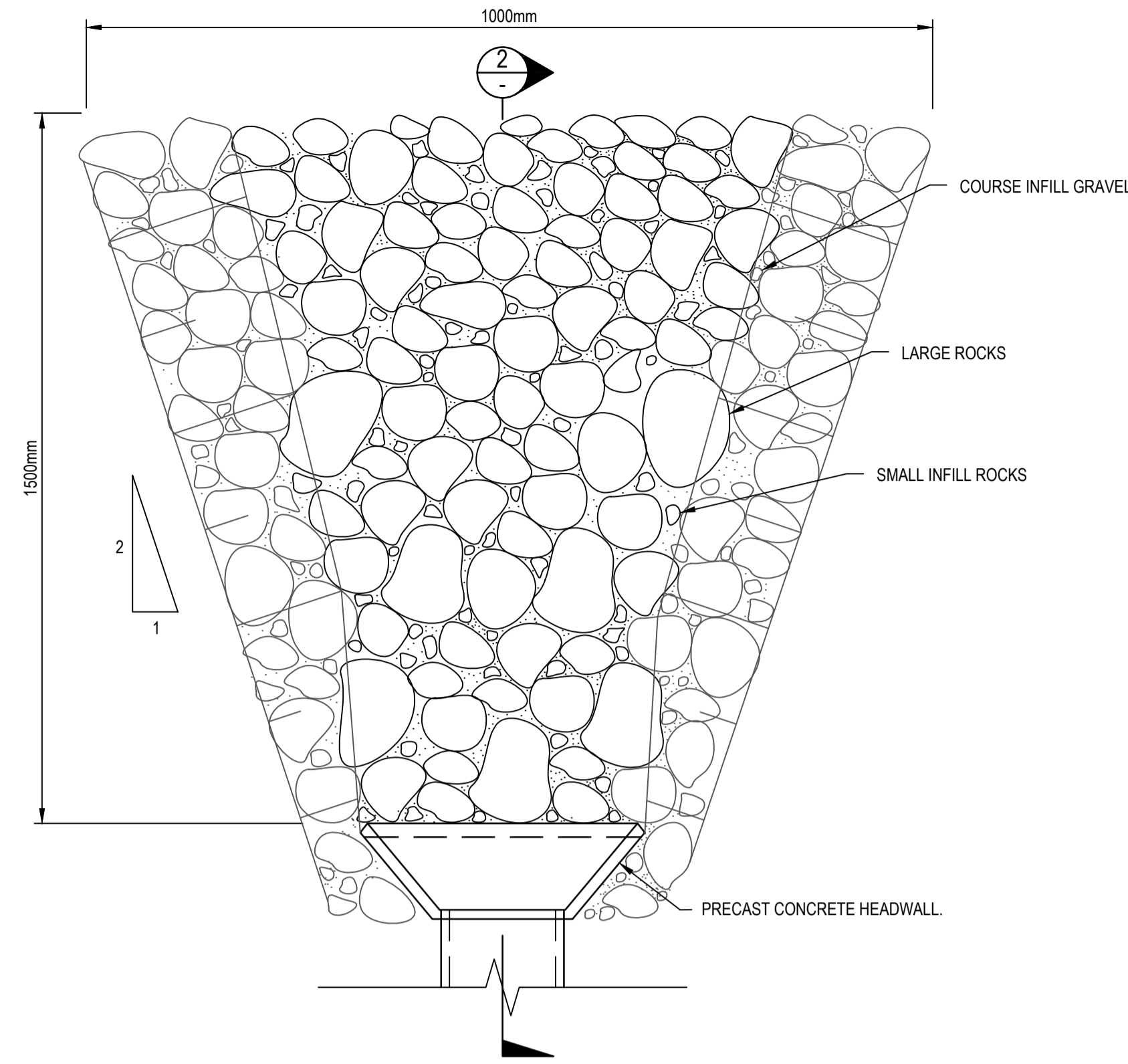
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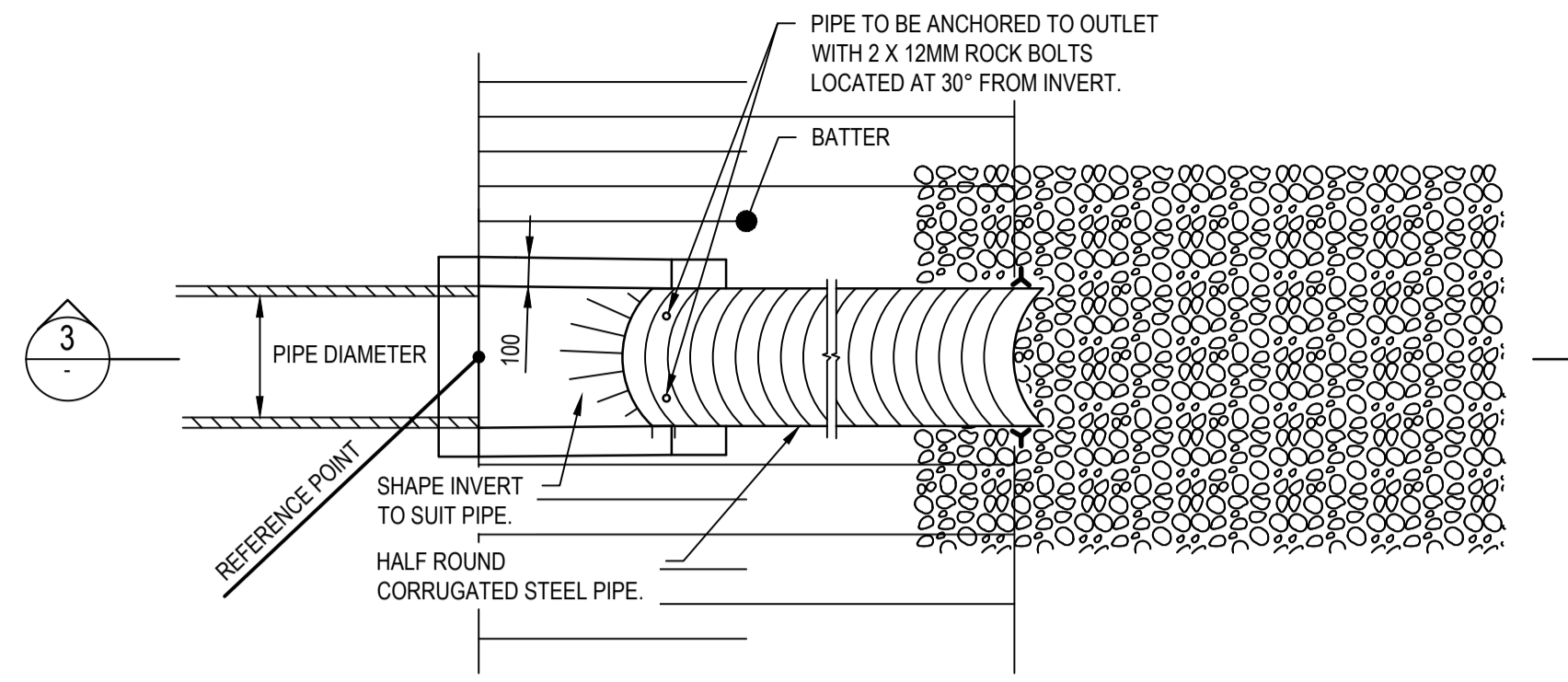
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Checked	MS	Date	R.I.P
Designed	MS	Date	R.I.P
Verified		Date	R.I.P
Approved		Date	R.I.P

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE BULK EARTHWORKS DEVELOPMENT APPLICATION
Title	ROAD TYPICAL DETAILS

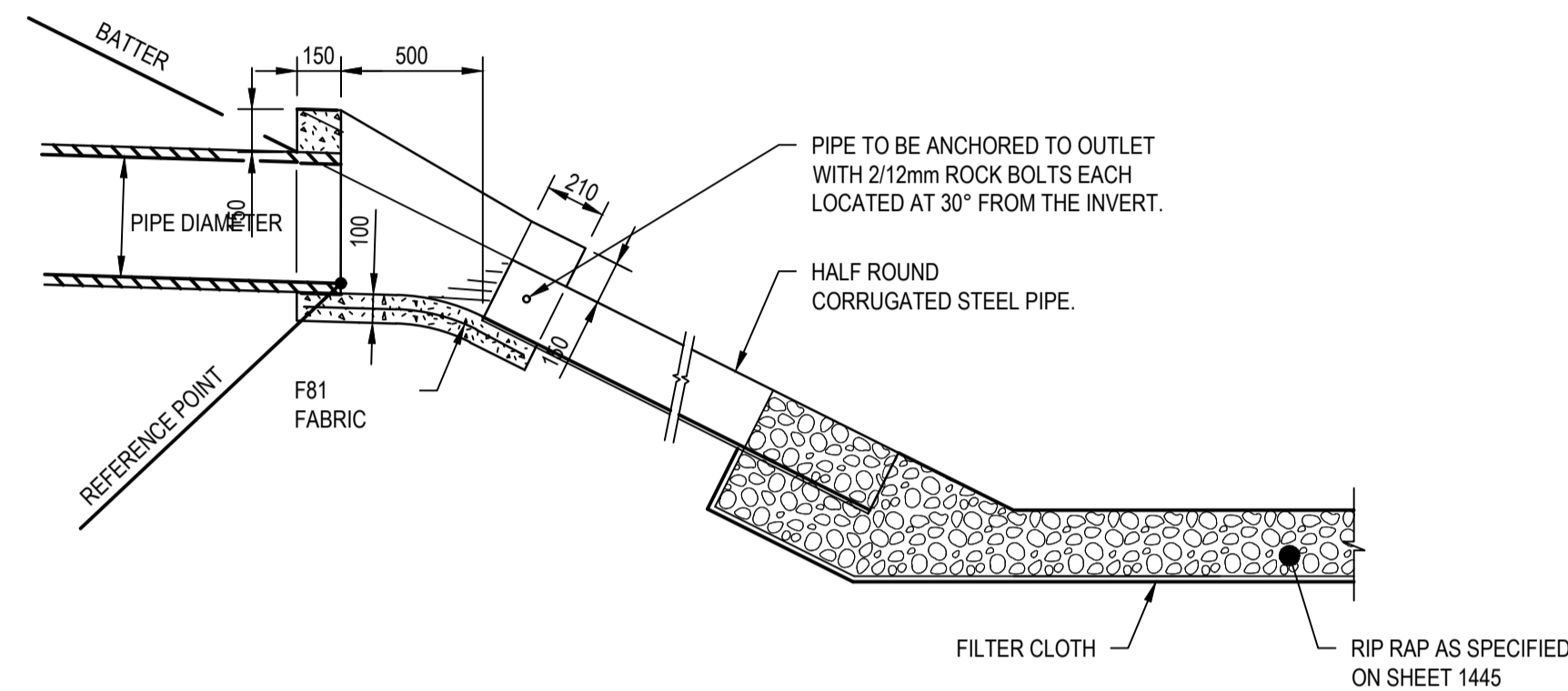
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NOT TO BE USED FOR CONSTRUCTION PURPOSES					
Datum	AHD	Date	R.I.P	Scale	AS SHOWN
Size				Size	A1
Drawing Number	CV-CARDNO-EWC2-1601			Revision	1



OUTLET 6:1 HEADWALL SCOUR PROTECTION PLAN
NOT TO SCALE

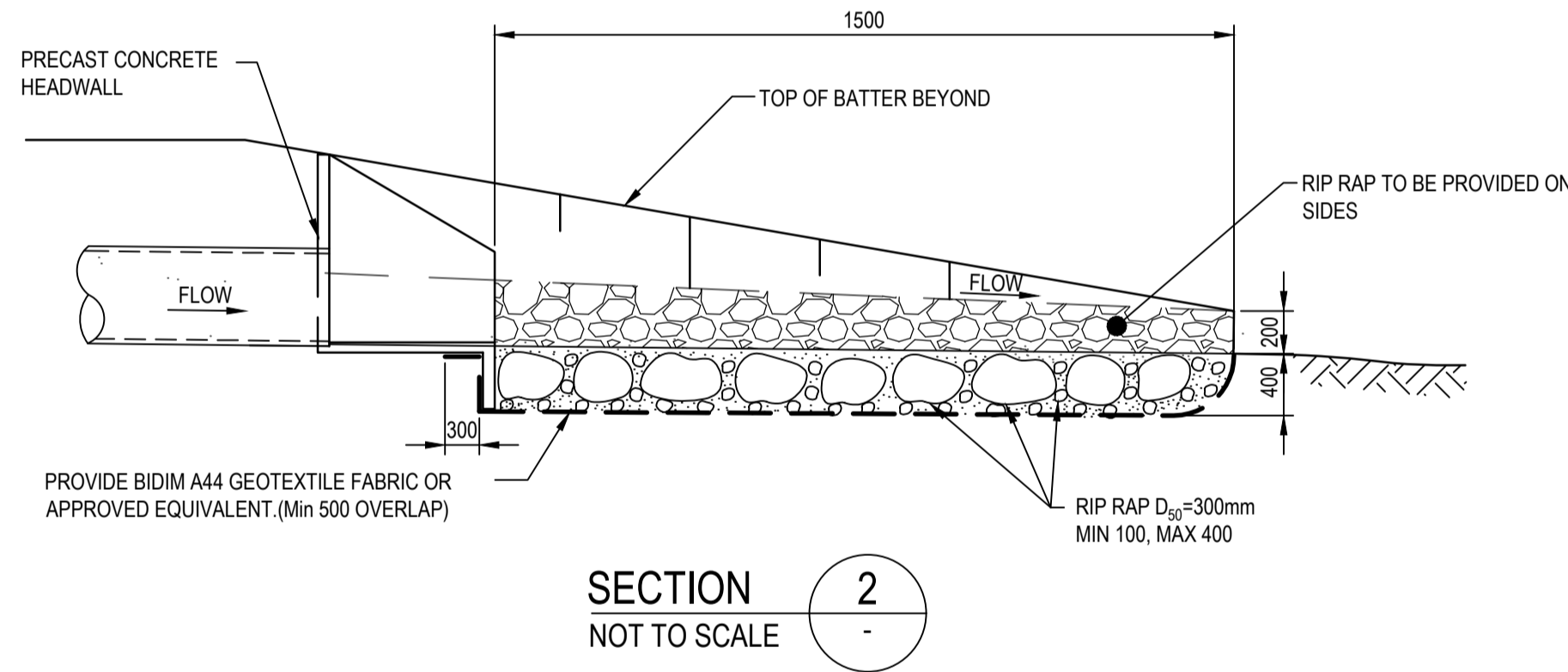


BATTER DRAIN DETAIL
NOT TO SCALE

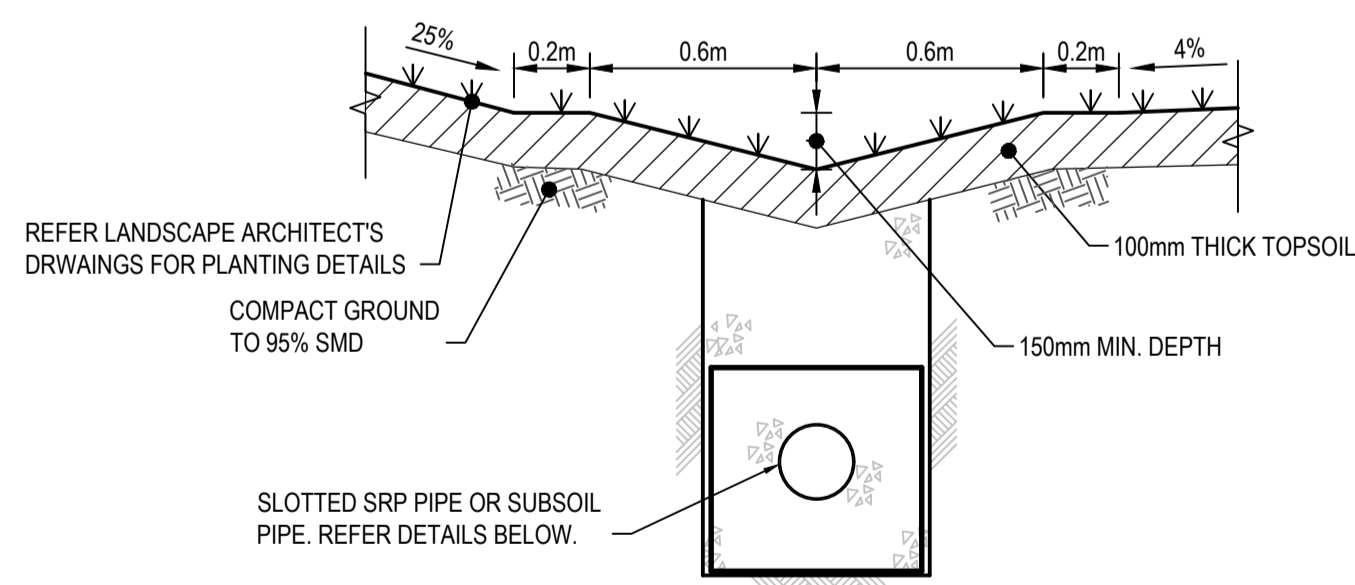


SECTION 3
NOT TO SCALE

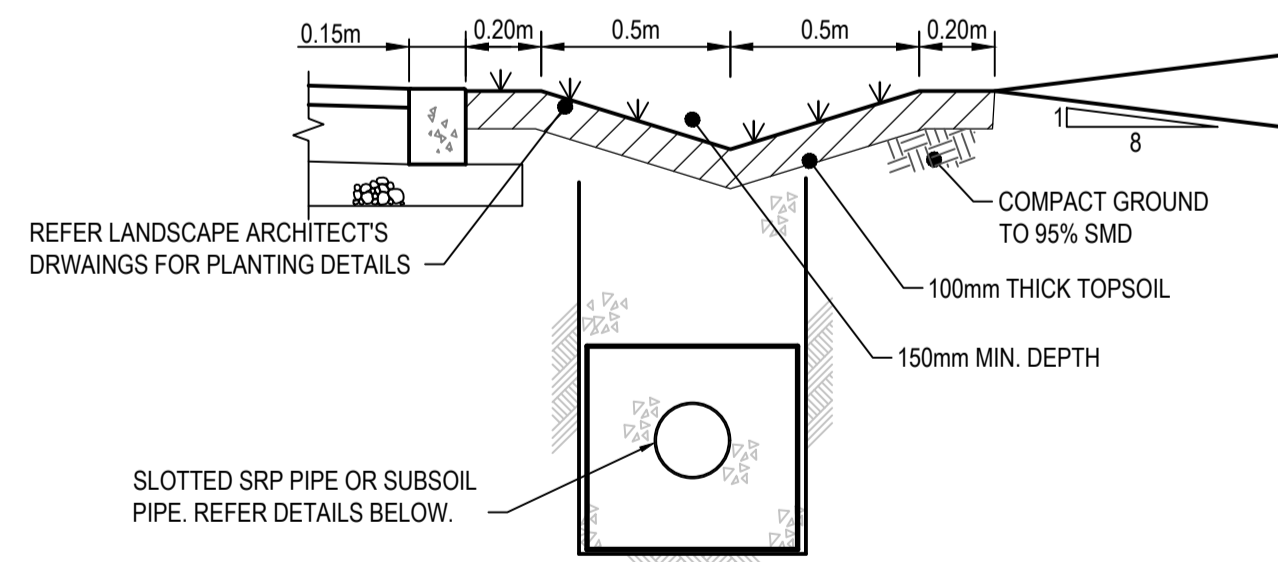
- NOTES**
1. TOP LIP OF HALF ROUND CORRUGATED STEEL PIPE TO BE INSTALLED FLUSH WITH THE COMPACTED BATTER SURFACE.
 2. HALF ROUND CORRUGATED STEEL PIPE TO BE FASTENED WITH 4mm WIRE TO TWO 1350mm STAR PICKETS AT LOWER END OF CSP PIPE.
 3. 1350mm STAR PICKETS TO BE PROVIDED AT POINTS MARKED FOR FASTENING PURPOSES).
 4. CONCRETE TO BE N25.
 5. ADAPTED FROM RMS DRAWING MD.R11.C06.A.1



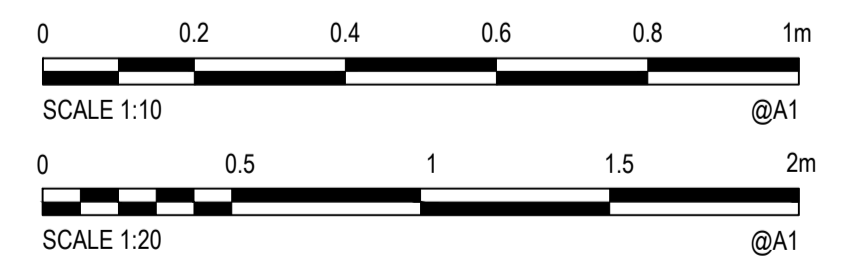
SECTION 2
NOT TO SCALE



TYPICAL SECTION THROUGH TABLE DRAIN (LEFT SIDE OF EAST WEST CONNECTOR ROAD)
SCALE 1:20



TYPICAL SECTION THROUGH TABLE DRAIN BEHIND FLUSH KERB (RIGHT SIDE OF EAST WEST CONNECTOR ROAD)
SCALE 1:20



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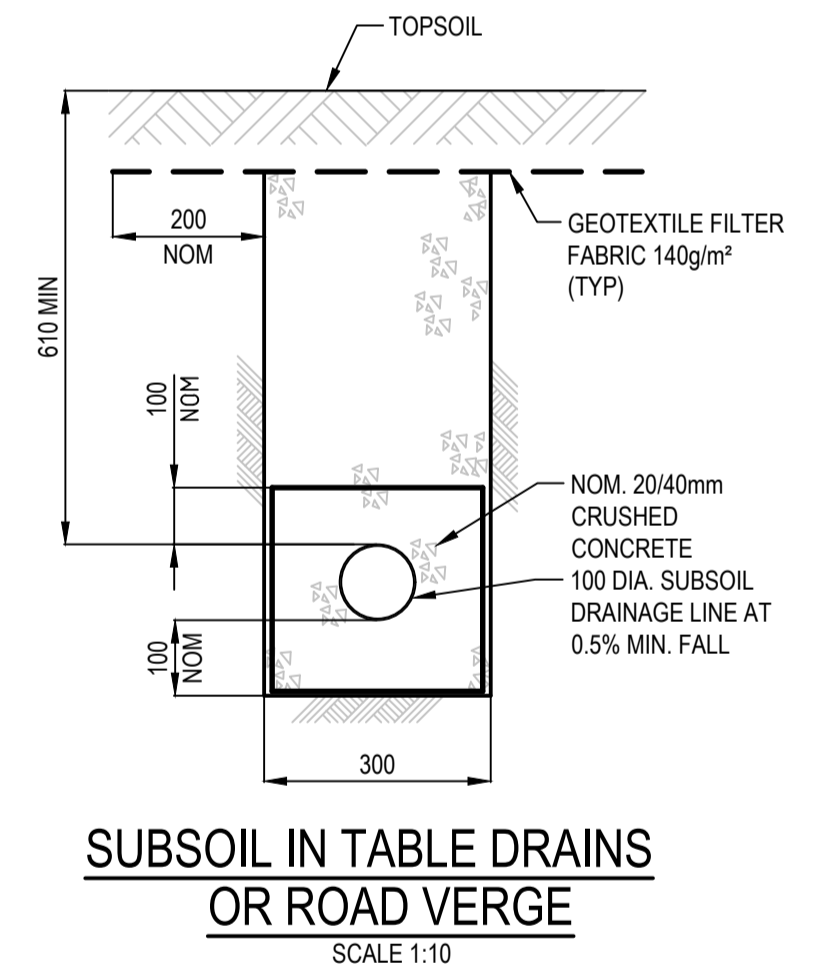
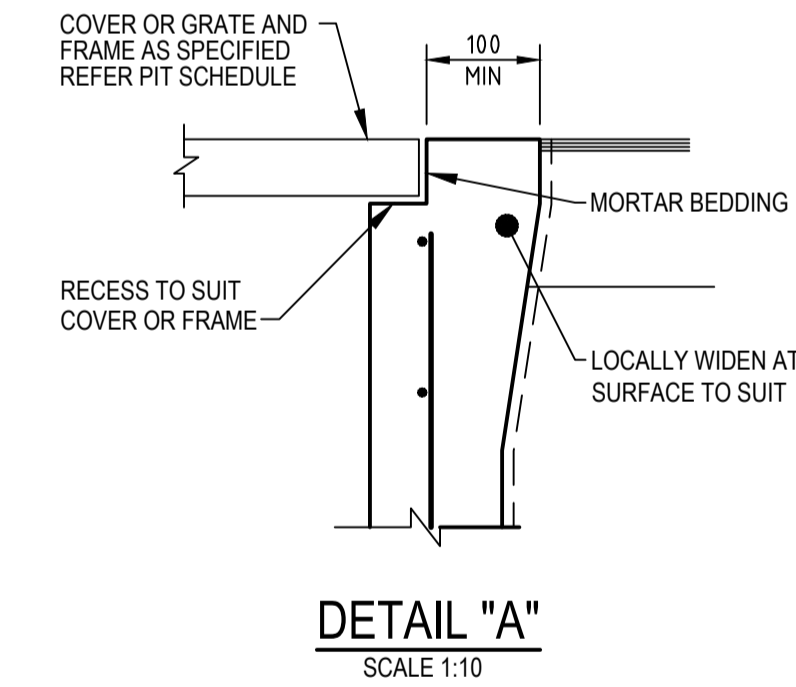
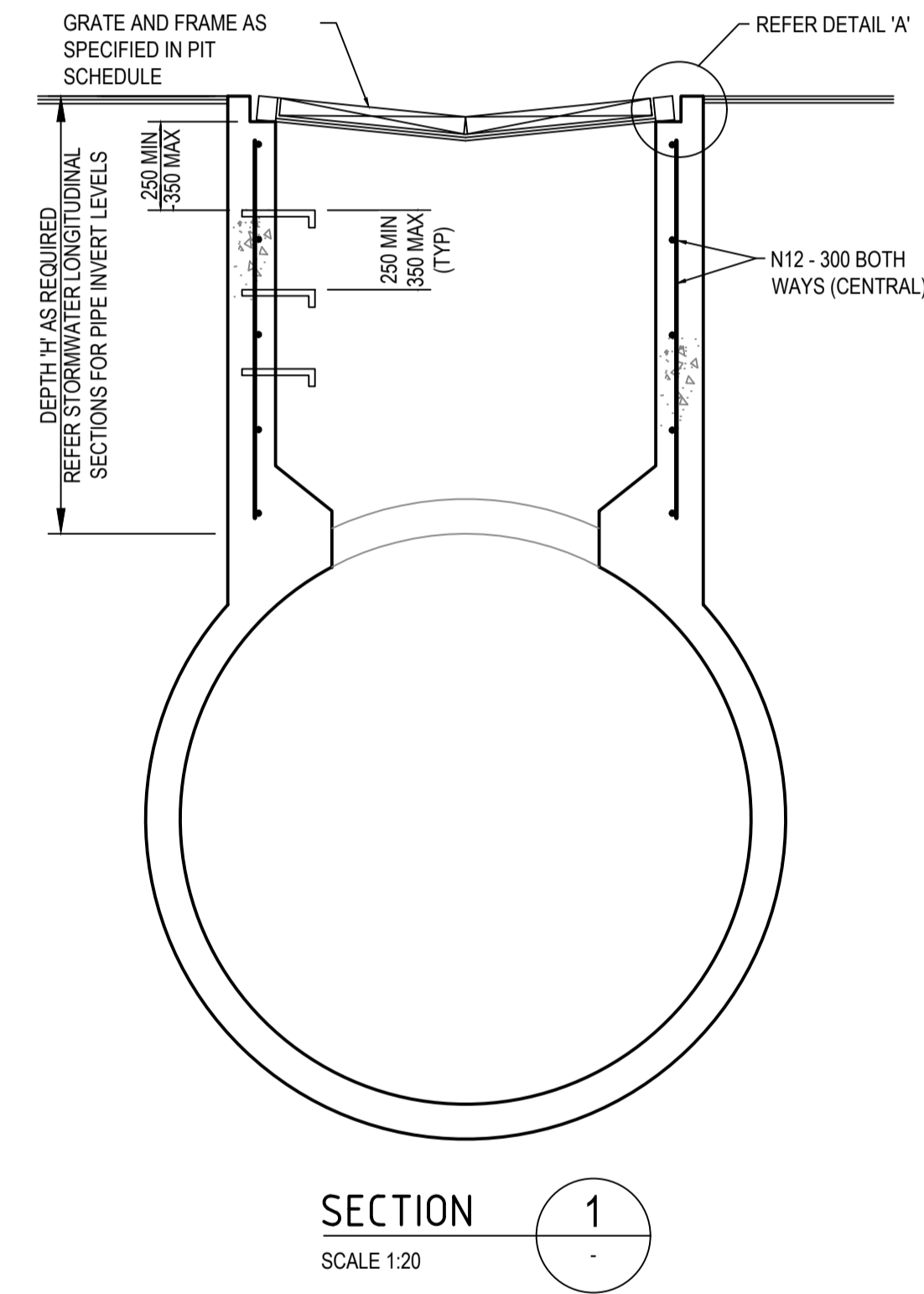
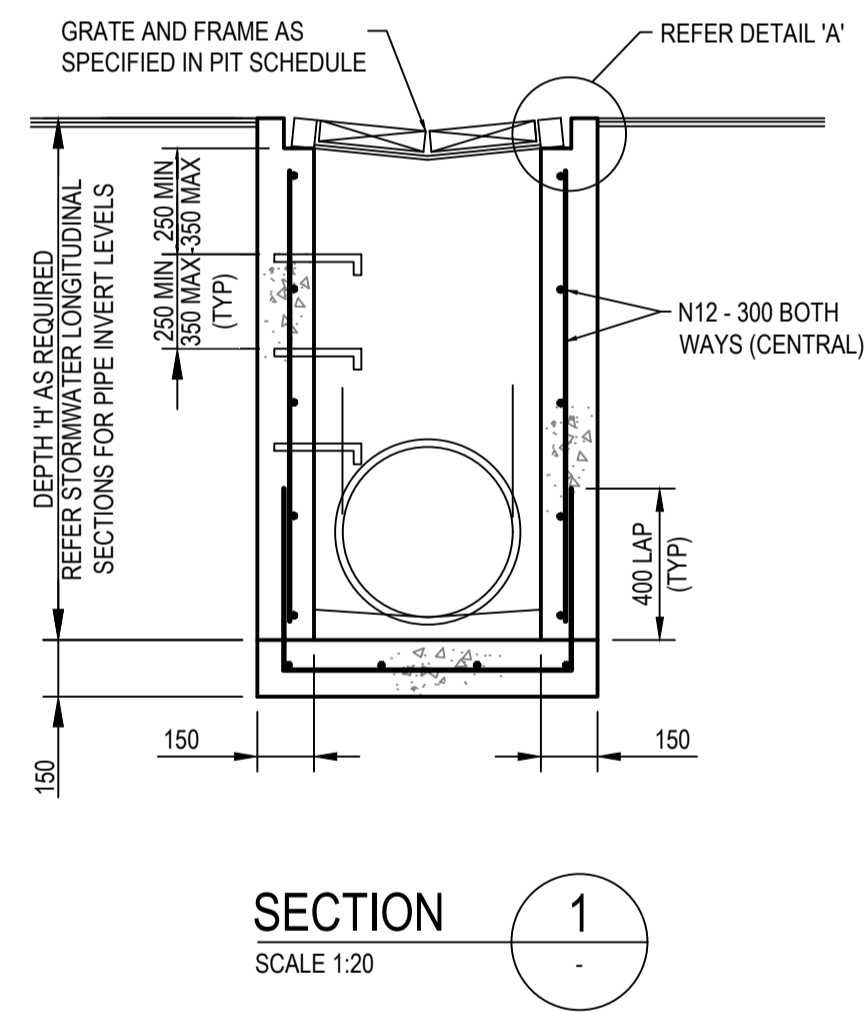
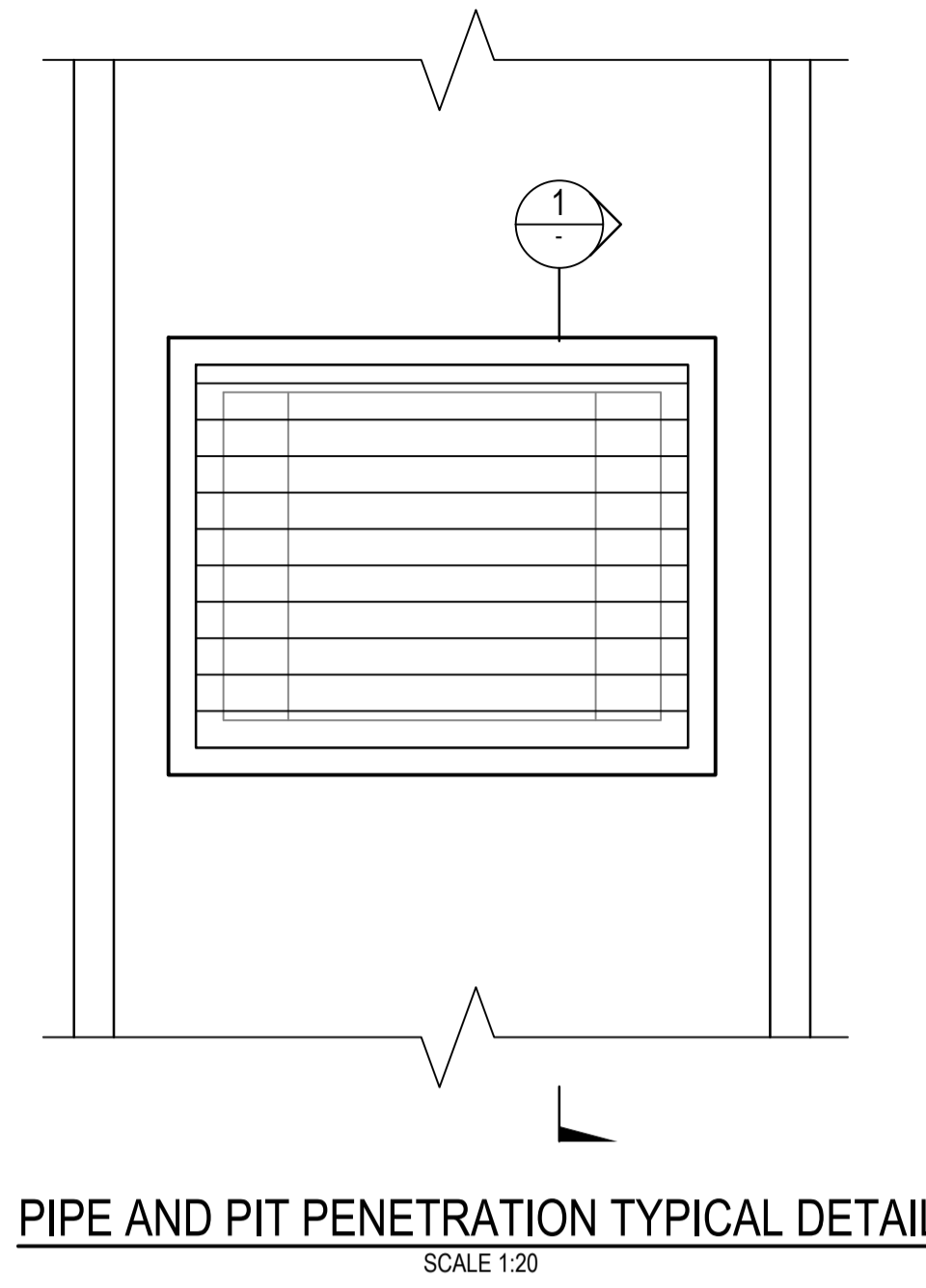
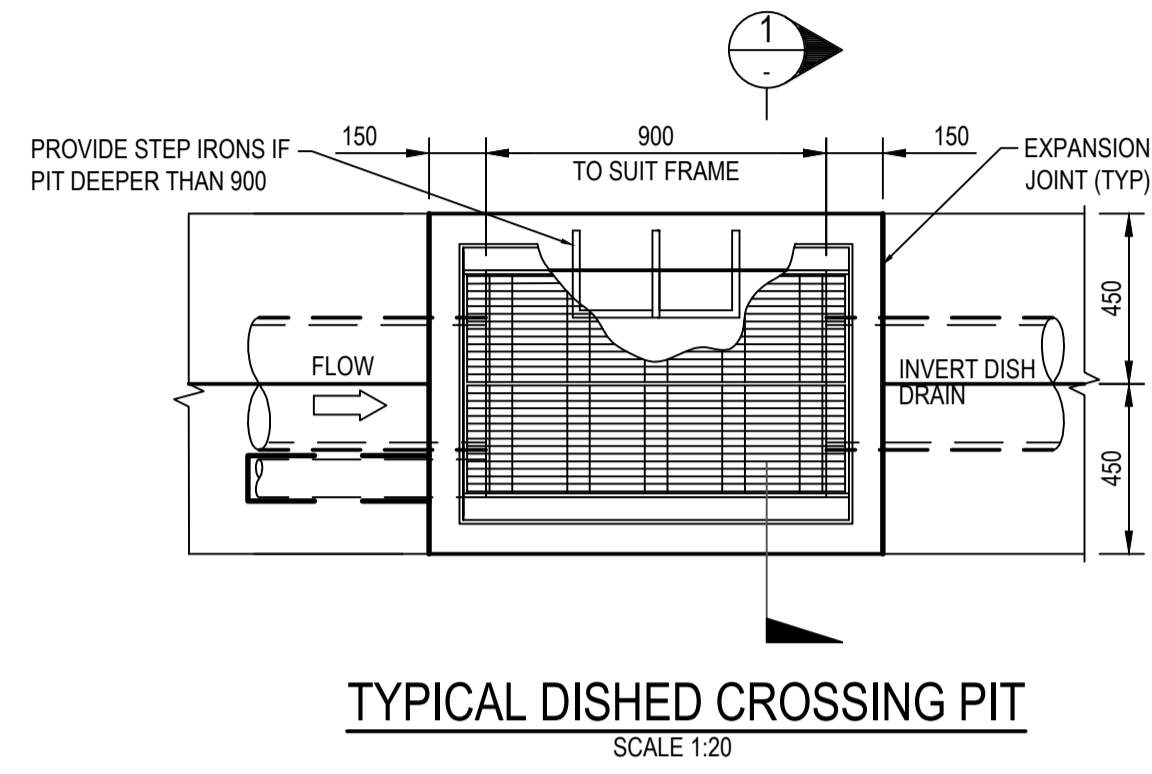
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Checked	MS	Date	R.I.P
Designed	MS	Date	R.I.P
Verified	MS	Date	R.I.P
Approved		Date	R.I.P

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE BULK EARTHWORKS DEVELOPMENT APPLICATION
Title	STORMWATER DRAINAGE DETAILS
R.I.P	SHEET 01

Status	PRELIMINARY			
	NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	AHD	Date	R.I.P	Scale
				AS SHOWN
Size				A1
Drawing Number	CV-CARDNO-EWC2-2201			Revision
				1



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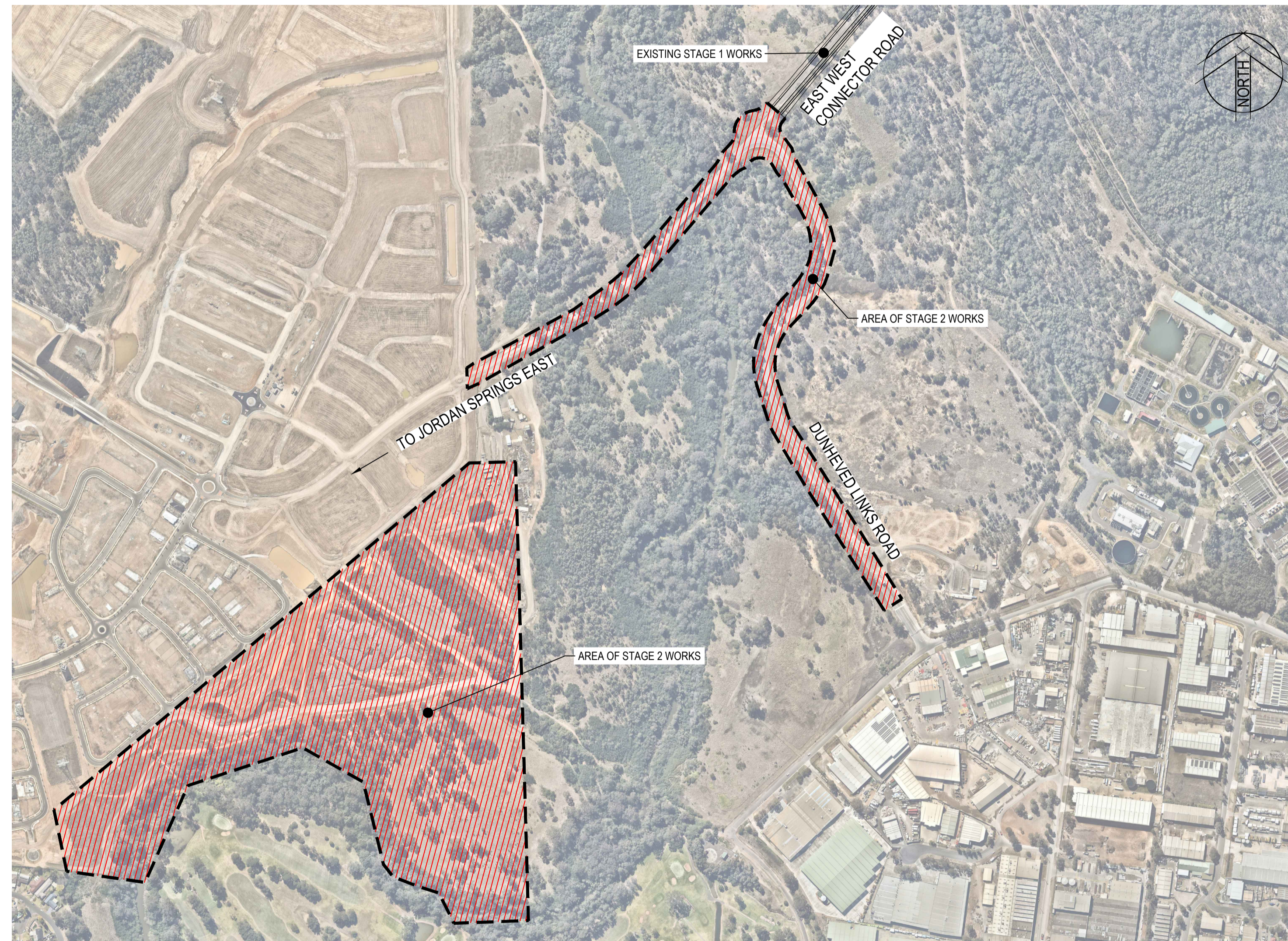
Drawn	Date	Client
BML	R.I.P	LENLEASE
Checked	Date	Project
MS	R.I.P	EAST WEST CONNECTOR ROAD - STAGE 2
Designed	Date	CIVIL WORKS AND REGIONAL OPEN SPACE
MS	R.I.P	BULK EARTHWORKS DEVELOPMENT APPLICATION
Verified	Date	Title
MS	R.I.P	STORMWATER DRAINAGE DETAILS
Approved	Date	
	R.I.P	SHEET 02

Datum	Date	Scale	Size
AHD	R.I.P	AS SHOWN	A1
Drawing Number		Revision	
CV-CARDNO-EWC2-2202		1	

Status: **PRELIMINARY**
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LENDLEASE EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE BULK EARTHWORKS DEVELOPMENT APPLICATION



SCHEDULE OF DRAWINGS

DRAWING No.	DESCRIPTION
CV-CARDNO-EWC2-1001	COVER SHEET AND DRAWING SCHEDULE
CV-CARDNO-EWC2-1011	GENERAL NOTES AND LEGENDS
CV-CARDNO-EWC2-1021	GENERAL ARRANGEMENT PLAN
CV-CARDNO-EWC2-1031	DEVELOPMENT APPLICATION STAGING PLAN AND ROAD HIERARCHY PLAN
CV-CARDNO-EWC2-1041	CIVIL WORKS - EXISTING SERVICES AND SURVEY PLAN SHEET 01
CV-CARDNO-EWC2-1042	CIVIL WORKS - EXISTING SERVICES AND SURVEY PLAN SHEET 02
CV-CARDNO-EWC2-1051	REGIONAL OPEN SPACE - EXISTING SERVICES AND SURVEY PLAN SHEET 01
CV-CARDNO-EWC2-1052	REGIONAL OPEN SPACE - EXISTING SERVICES AND SURVEY PLAN SHEET 02
CV-CARDNO-EWC2-1101	CIVIL WORKS - EROSION & SEDIMENTATION CONTROL PLAN SHEET 01
CV-CARDNO-EWC2-1102	CIVIL WORKS - EROSION & SEDIMENTATION CONTROL PLAN SHEET 02
CV-CARDNO-EWC2-1111	REGIONAL OPEN SPACE - EROSION & SEDIMENTATION CONTROL PLAN SHEET 01
CV-CARDNO-EWC2-1112	REGIONAL OPEN SPACE - EROSION & SEDIMENTATION CONTROL PLAN SHEET 02
CV-CARDNO-EWC2-1131	EROSION & SEDIMENTATION CONTROL PLAN DETAILS
CV-CARDNO-EWC2-1141	CIVIL WORKS - CUT/FILL PLAN SHEET 01
CV-CARDNO-EWC2-1142	CIVIL WORKS - CUT/FILL PLAN SHEET 02
CV-CARDNO-EWC2-1151	REGIONAL OPEN SPACE - CUT/FILL PLAN
CV-CARDNO-EWC2-1161	CIVIL WORKS - TREE REMOVAL PLAN SHEET 01
CV-CARDNO-EWC2-1162	CIVIL WORKS - TREE REMOVAL PLAN SHEET 02
CV-CARDNO-EWC2-1171	REGIONAL OPEN SPACE - TREE REMOVAL PLAN
CV-CARDNO-EWC2-1251	TYPICAL ROAD CROSS SECTIONS
CV-CARDNO-EWC2-1301	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 01
CV-CARDNO-EWC2-1302	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 02
CV-CARDNO-EWC2-1303	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 03
CV-CARDNO-EWC2-1304	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 04
CV-CARDNO-EWC2-1305	CIVIL WORKS - ROADS & STORMWATER PLAN SHEET 05
CV-CARDNO-EWC2-1311	REGIONAL OPEN SPACE - BULK EARTHWORKS PLAN SHEET 01
CV-CARDNO-EWC2-1312	REGIONAL OPEN SPACE - BULK EARTHWORKS PLAN SHEET 02
CV-CARDNO-EWC2-1351	CIVIL WORKS - ROAD LONGITUDINAL SECTIONS SHEET 01
CV-CARDNO-EWC2-1352	CIVIL WORKS - ROAD LONGITUDINAL SECTIONS SHEET 02
CV-CARDNO-EWC2-1353	CIVIL WORKS - ROAD LONGITUDINAL SECTIONS SHEET 03
CV-CARDNO-EWC2-1601	ROAD TYPICAL DETAILS
CV-CARDNO-EWC2-1701	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 01
CV-CARDNO-EWC2-1702	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 02
CV-CARDNO-EWC2-1703	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 03
CV-CARDNO-EWC2-1704	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 04
CV-CARDNO-EWC2-1705	CIVIL WORKS - PAVEMENT, SIGNAGE AND LINEMARKING PLAN SHEET 05
CV-CARDNO-EWC2-2201	STORMWATER DRAINAGE DETAILS SHEET 01
CV-CARDNO-EWC2-2202	STORMWATER DRAINAGE DETAILS SHEET 02
CV-CARDNO-EWC2-2301	INTERNAL STORMWATER CATCHMENT PLAN
CV-CARDNO-EWC2-2351	EXTERNAL STORMWATER CATCHMENT PLAN

XREFs: XR-89914020-CI-23-AERIAL; XR-89914020-2301-CI-ROPEES CREEK BRIDGE; XR-89914020-CI-23-02-BOUNDARIES
 CAD File: N:\Paramattha\Projects\89914020_CENTRAL_PRECINCT_ADI_ST_MARYS\Drawings\23_East West Collector Road\DA02_Stage 2\Drawings\CV-CARDNO-EWC2-1001-DWG(2).dwg

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1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		

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Checked MS	Date 19/01/2018	NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Designed MS	Date 19/01/2018	Datum	Scale	Size	
Verified	Date	AHD	N.T.S	A1	
Approved		Drawing Number	Revision		
		CV-CARDNO-EWC2-1001	2		

GENERAL

- 1. ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH PENRITH CITY COUNCIL GUIDELINES.
2. PENRITH CITY COUNCIL STANDARD DETAILS TO BE USED WHERE POSSIBLE.

SITWORKS NOTES

- 1. ORIGIN OF LEVELS- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO CARDNO.
3. MAKE SMOOTH CONNECTION WITH EXISTING WORKS AND SURFACES.
4. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
5. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
6. PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
7. ASPHALTIC CONCRETE SHALL CONFORM TO R.M.S. SPECIFICATION R116.
8. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, COMPACTED TO MINIMUM 96% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m² OF BASECOURSE MATERIAL PLACED.
9. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A S 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 100m² OF SUB-BASE COURSE MATERIAL PLACED.
10. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S. FORM 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF CARDNO AND THE SUPERINTENDENT.

BULK EARTHWORKS NOTES

- 1. ORIGIN OF LEVELS- REFER SURVEY NOTES
2. STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND STOCK PILE AS DIRECTED BY SUPERINTENDENT FOR FUTURE REUSE.
3. EXCAVATED MATERIAL TO BE USED AS STRUCTURAL FILL PROVIDED THE PLACEMENT MOISTURE CONTENT OF THE MATERIAL IS +/- 2% OF THE OPTIMUM MOISTURE CONTENT.
4. COMPACT FILL AREAS AND SUBGRADE TO NOT LESS THAN:
LOCATION STANDARD DRY DENSITY (AS 1289 5.1.1.)
UNDER BUILDING SLABS ON GROUND 98%
UNDER ROADS AND CARPARKS 100%
LANDSCAPED AREAS UNLESS NOTED OTHERWISE 98%
5. FOR NON COHESIVE MATERIAL, COMPACT TO 75% DENSITY INDEX.
6. BEFORE PLACING FILL, PROOF ROLL EXPOSED SUBGRADE WITH AN 8 TONNE (MIN) DEADWEIGHT SMOOTH DRUM VIBRATORY ROLLER TO DETECT THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 2mm MOVEMENT UNDER ROLLER).
7. FREQUENCY OF COMPACTION TESTING SHALL BE NOT LESS THAN- (A) 1 TEST PER 1,000m² OF FILL PLACED PER LAYER OF FILL. (B) 3 TESTS PER VISIT (C) 1 TEST PER 1000m² OF EXPOSED SUBGRADE "LEVEL 1" TESTING SHALL BE TESTING IN ACCORDANCE WITH AS 3798 (1996).
8. FILLING TO BE PLACED IN MAXIMUM 200mm - LOOSE LAYERS AND COMPACTED AS SPECIFIED
9. NO FILLING SHALL TAKE PLACE TO EXPOSED SUBGRADE UNTIL THE AREA HAS BEEN PROOF ROLLED IN THE PRESENCE OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER AND APPROVAL GIVEN IN WRITING THAT FILLING CAN PROCEED.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

- 1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, NSW OFFICE OF WATER, SYDNEY WATER, THE OFFICE OF ENVIRONMENT AND HERITAGE, AND LENDLEASE'S REPRESENTATIVE. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND REPRESENT THE MINIMUM REQUIREMENT ONLY.
2. THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED OR AS OTHERWISE DIRECTED BY THE SUPERINTENDENT. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH a. LOCAL AUTHORITY REQUIREMENTS b. EPA REQUIREMENTS c. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERRECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.
6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE: a. INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL. b. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL. c. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN (D) INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN. d. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

LAND DISTURBANCE

- 7. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
8. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS IS PRACTICABLE AFTER THE COMPLETION OF CONSTRUCTION ACTIVITIES.

EROSION CONTROL

- 9. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.

- 10. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.

SEDIMENT CONTROL

- 11. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
12. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY: a. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE b. ENSURING THAT NOTHING IS NAILED TO THEM c. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS: (I) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER (II) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH (III) CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

NOISE

EPA AND COUNCIL REQUIREMENTS MUST BE ADHERED TO REGARDING LEVEL OF NOISE AND WORKING HOURS TO ENSURE THAT RESIDENTS AND OTHER APPLICABLE NEIGHBORS TO THE SITE ARE NOT DISTURBED UNREASONABLY. THE GENERATION OF NOISE MUST BE MINIMISED.

DUST

DUST MUST BE MINIMISED TO ENSURE THERE IS NO HEALTH RISK OR LOSS OF AMENITY.

STAGING OF WORKS

STRIPPING WORKS ARE TO BE STAGED TO MINIMISE EXTENT OF EXPOSED AREA. WEATHER CONDITIONS TO BE ASSESSED PRIOR TO UNDERTAKING STRIPPING.

STOCKPILE PROTECTION

SEDIMENT RETENTION STRUCTURES TO BE PLACED DOWNSLOPE OF ANY STOCKPILES. STOCKPILE IN PLACE > 28 DAYS TO BE TEMPORARILY GRASSED.

VEHICLE AND ROAD MANAGEMENT

SITE ACCESS TO BE RESTRICTED TO ALLOCATED TRUCK ROUTES. EXTERNAL ROADS TO BE SWEEPED REGULARLY FOR DURATION OF WORKS.

EXISTING UNDERGROUND SERVICES NOTES

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. CARDNO CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY 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.

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. 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.

STORMWATER DRAINAGE NOTES

- 1. STORMWATER DESIGN CRITERIA- (A) AVERAGE RECURRENCE INTERVAL: 5 YEAR ARI PIPED DRAINAGE 100 YEAR ARI OVERLAND FLOW (B) RAINFALL INTENSITIES: TIME OF CONCENTRATION: 5 MINUTES 5 YEAR ARI= 126mm/hr 100 YEAR ARI= 219mm/hr

- 2. PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS 'Z' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
3. PIPES 300 DIA AND LESS SHALL BE DWV GRADE (CLASS SN8) uPVC WITH SOLVENT WELDED JOINTS.
4. EQUIVALENT STRENGTH FRC PIPES MAY BE USED.

- 5. ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
6. PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.

- 7. PIPES TO BE INSTALLED TO TYPE HS1 SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).

- 8. REFER TO ASINZS 3725:2007 TABLE B1 FOR REQUIRED FILL DEPTHS ABOVE PIPE BARREL PRIOR TO USE OF COMPACTION MACHINERY OR TRAVERSING OF PIPES BY GENERAL SITE EQUIPMENT.

- 9. WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 (2007) TO DETERMINE THE APPROPRIATE PIPE CLASS. PROPOSED PIPE CLASS SHALL BE REVIEWED BY CARDNO PRIOR TO INSTALLATION.

- 10. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500.3 (2015).

- 11. THE USE OF PRECAST PITS IS ONLY PERMITTED WITH THE APPROVAL OF PENRITH CITY COUNCIL'S ENGINEER.

- 12. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.

- 13. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC DWV SEWER GRADE PIPE IS TO BE USED.

- 14. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.

- 15. GRATES AND COVERS SHALL CONFORM TO AS 3996. MINIMUM CLASS C.

- 16. ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.

- 17. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.

STORMWATER DRAINAGE NOTES CONTINUED

- 18. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

TELSTRA - DUTY OF CARE NOTE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POT-HOLING TO IDENTIFY ITS LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO ITS PROPERTY AND LOSSES CAUSED TO TELSTRA AND ITS CUSTOMERS.

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY WHELANS INSITES, BEING REGISTERED SURVEYORS. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. CARDNO DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT CARDNO THE FOLLOWING NOTES HAVE BEEN TAKEN DIRECTLY FROM THE ORIGINAL SURVEY DOCUMENTS.

STREET FURNITURE

- 1. ALL LIGHT POLES, STREET NAMES AND BUS SHELTERS IN THIS SUBDIVISION WILL BE BLACK POWDER COATED TO THE SATISFACTION OF PENRITH CITY COUNCIL. FURTHER THAT THESE LIGHT POLES WILL COMPLY WITH COUNCIL'S SPECIFICATIONS.
2. ALL LIGHT POLES ARE TO BE TYPE 'MACARTHUR'. REFER ELECTRICAL DESIGN DRAWINGS.

CONCRETE NOTES

- 1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONCRETE QUALITY ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

Table with 4 columns: ELEMENT, AS 3600 Fc MPa AT 28 DAYS, SPECIFIED SLUMP, NOMINAL AGG. SIZE. Rows include VEHICULAR BASE, KERBS AND PATHS, PITS, FOUNDATIONS & CULVERT BASE SLABS.

- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379.

- 3. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY CARDNO.
4. CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm TOP AND 70mm FOR EXTERNAL EDGES UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
6. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED AND CURED IN ACCORDANCE WITH R.T.A. SPECIFICATION R83.

PROPOSED WORKS LEGEND

PROPOSED

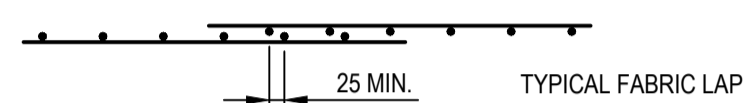
- 100.0 PROPOSED CONTOURS
BATTER SLOPE
EXTENT OF STAGE 1 WORKS
TREES TO BE REMOVED AS PART OF BULK EARTHWORKS PACKAGE.
TREES TO BE RETAINED
BATTERS
K&G KERB & GUTTER REFER PENRITH CITY COUNCIL STANDARD DETAIL.
CONCRETE HEADWALL
DRAINAGE LINE No. DRAINAGE PIT No.
STORMWATER PIPELINE/PIPE DIAMETER/FLOW DIRECTION
DRAINAGE CAP
STORMWATER DRAINAGE PITS
FLOW DIRECTION
RETAINING WALL
SCOUR PROTECTION
EXISTING WATER COURSES AS PER 1:10000 TOPOGRAPHIC MAPS
SEMI RIGID BARRIER
HANDRAIL
3.0m WIDE TURF & LEVEL SPREADER

EXISTING WORKS LEGEND

- 100.0 EXISTING CONTOURS (PRE BULK EARTHWORKS)
ELECTRICAL
WATER
STORMWATER
TELECOMMUNICATIONS

REINFORCEMENT NOTES

- 1. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION. SPLICES IN THE REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN. THE WRITTEN APPROVAL OF THE ENGINEER SHALL BE OBTAINED FOR ANY OTHER SPLICES. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT.
2. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED IN WRITING BY THE ENGINEER.
3. REINFORCEMENT SYMBOLS - N - DENOTES GRADE 400N TEMPORRE DEFORMED BARS TO AS 1302 R - DENOTES GRADE 250R HOT ROLLED PLAIN BARS TO AS 1302 SL - DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304 W - DENOTES HARD-DRAWN PLAIN WIRE TO AS 1303
4. REINFORCEMENT COGS AND EXTENSIONS TO BE IN ACCORDANCE WITH AS3600.
5. THE FIGURES FOLLOWING THE FABRICS SYMBOL 'SL' IS THE REFERENCE NUMBER FOR FABRIC TO AS 1304. ALL REINFORCEMENT FABRIC SHALL COMPLY WITH AS1303 AND AS1304 AND SHALL BE SUPPLIED AS FLAT SHEETS.



- 6. FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF WIRE.
7. PLACE SUFFICIENT BAR CHAIRS UNDER BOTTOM REINFORCING RODS AND TOP CROSSRODS IN SLABS TO ALLOW THEM TO BE SUPPORTED IN THEIR CORRECT POSITIONS DURING CONCRETING (NOT GREATER THAN 900mm CENTRES BOTH WAYS)
8. REINFORCEMENT LAYERS DENOTED THUS UNO - TT - DENOTES TOP BARS LAID LAST IN TOP B - DENOTES BOTTOM BARS LAID SECOND IN BOTTOM BB - DENOTES BOTTOM BARS LAID FIRST IN BOTTOM WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-300 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 450mm UNLESS NOTED OTHERWISE. MINIMUM LAP LENGTHS UNLESS NOTED OTHERWISE SHALL BE - 500 FOR N12 BARS 600 FOR N16 BARS 900 FOR N20 BARS 1000 FOR N24 BARS 1200 FOR N28 BARS 1500 FOR N32 BARS 1800 FOR N36 BARS



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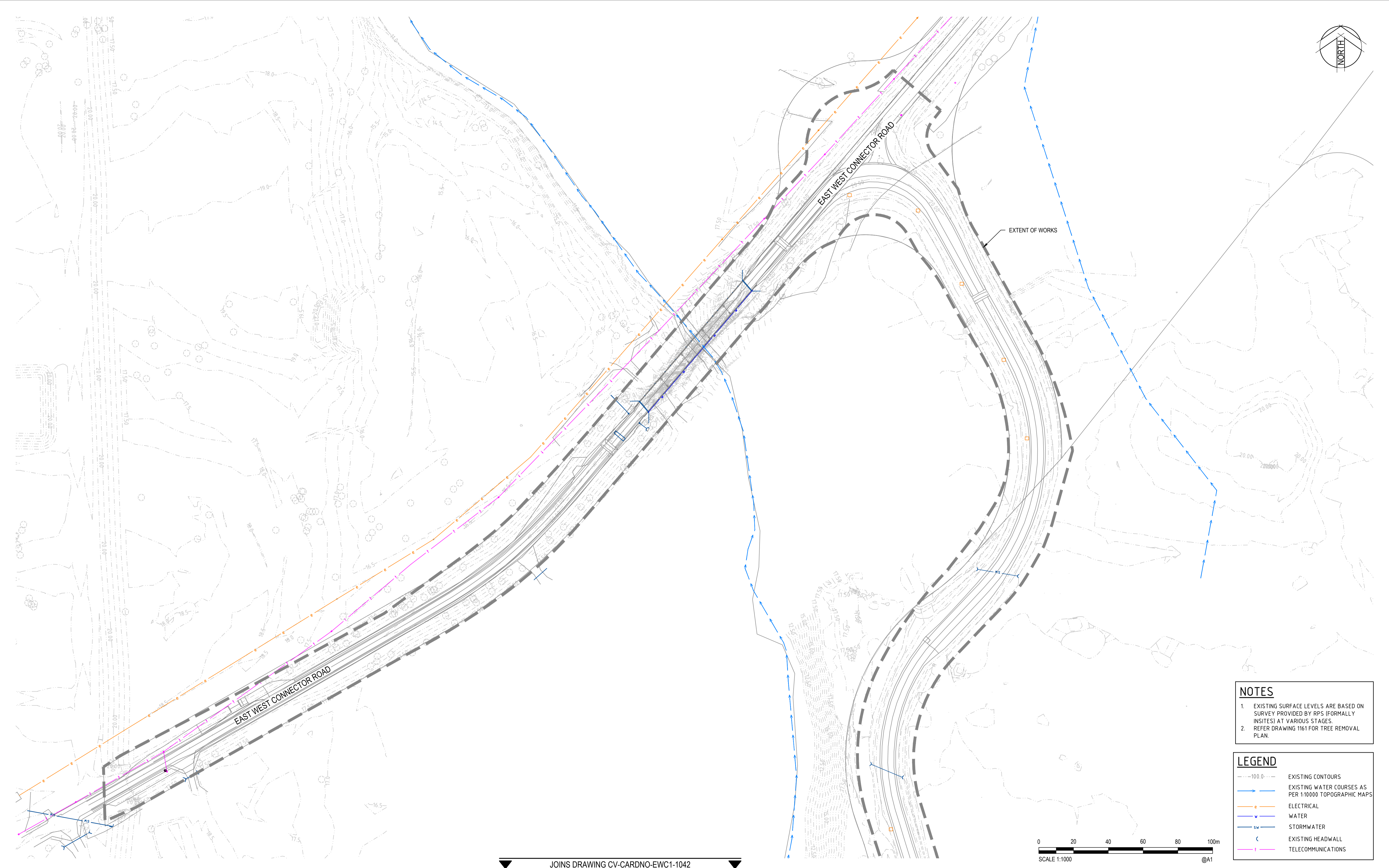
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Table with 2 columns: Action (Drawn, Checked, Designed, Verified, Approved) and Date (19/01/2018).

Table with 2 columns: Client (LENLEASE) and Project (EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE). Includes Title: GENERAL NOTES AND LEGENDS.

Table with 2 columns: Status (FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES) and Drawing Number (CV-CARDNO-EWC2-1011). Includes Scale (N.T.S) and Size (A1).

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 DATE PLOTTED: 31 January 2018 4:12 PM BY: BRITTANY DEBONO



JOINS DRAWING CV-CARDNO-EWC1-1042

NOTES

- EXISTING SURFACE LEVELS ARE BASED ON SURVEY PROVIDED BY RPS (FORMALLY INSITES) AT VARIOUS STAGES.
- REFER DRAWING 1161 FOR TREE REMOVAL PLAN.

LEGEND

- - - 100.0 - - - EXISTING CONTOURS
- — — EXISTING WATER COURSES AS PER 1:10000 TOPOGRAPHIC MAPS
- — — ELECTRICAL
- — — WATER
- sw — — — STORMWATER
- H — — — EXISTING HEADWALL
- — — TELECOMMUNICATIONS

Rev.	Date	Description	Des.	Verif.	Appd.
2	31/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client **LENLEASE**

Project **EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE**

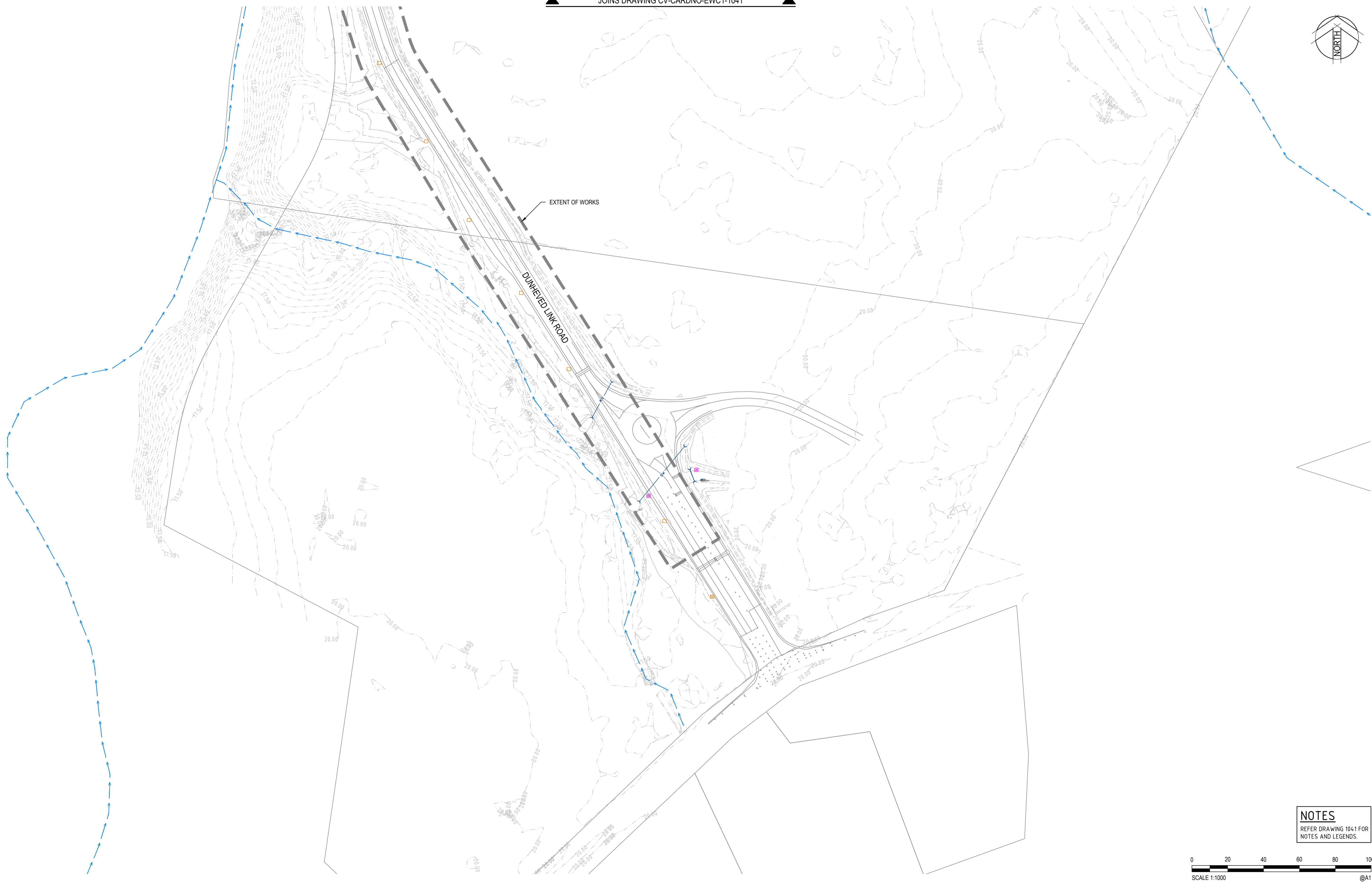
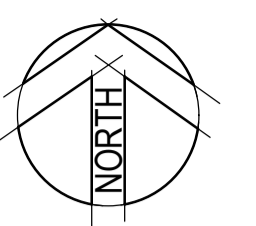
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Status **FOR INFORMATION ONLY**
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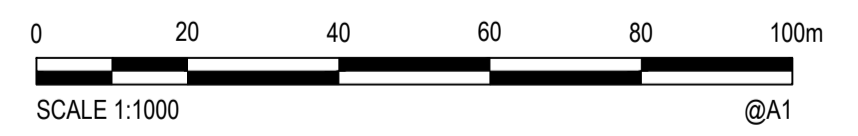
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Drawing Number **CV-CARDNO-EWC2-1041** Revision **2**

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 DATE PLOTTED: 31 January 2018 4:12 PM BY: BRITTANY DEBONO



NOTES
 REFER DRAWING 1041 FOR
 NOTES AND LEGENDS.



Rev.	Date	Description	Des.	Verif.	Appd.
2	31/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



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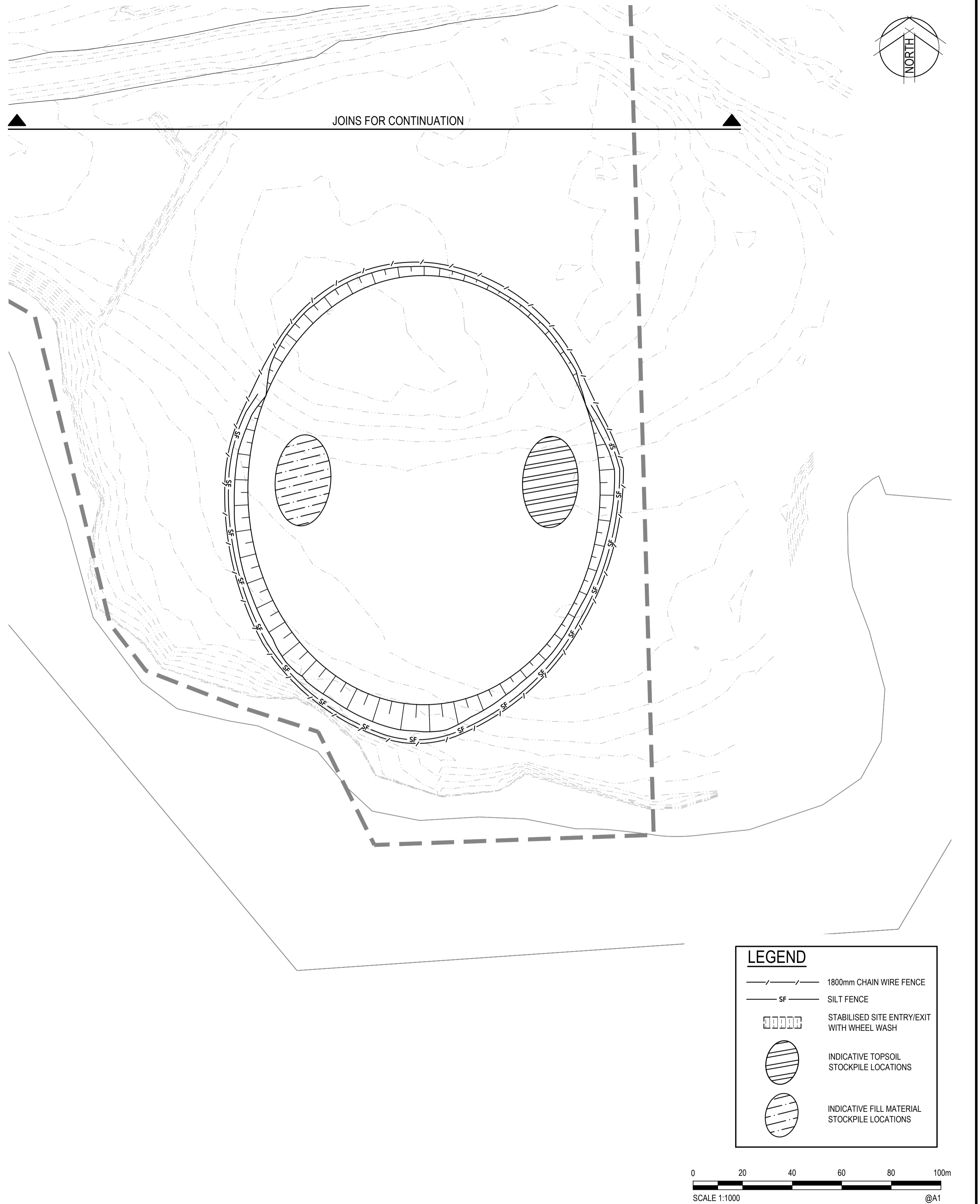
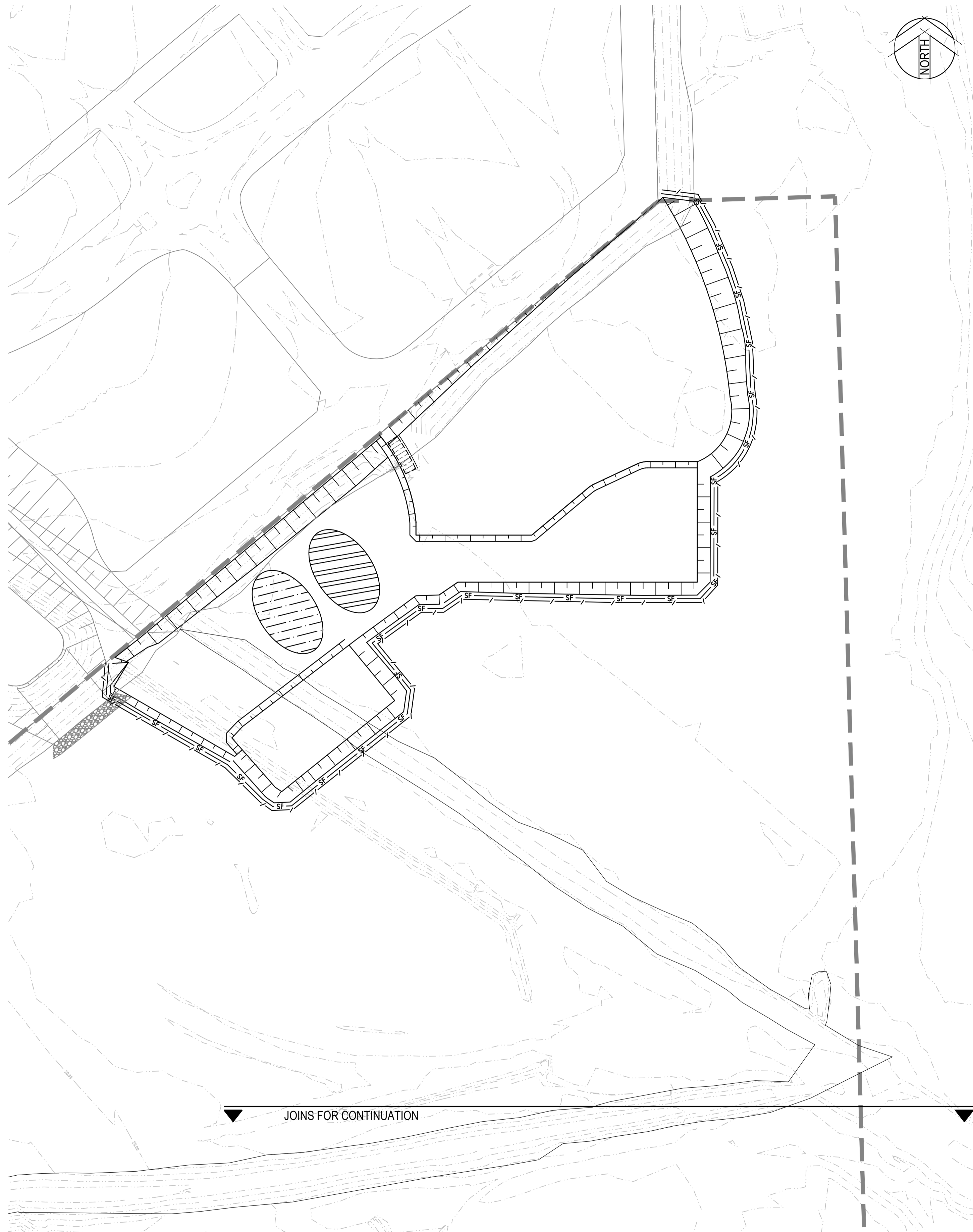
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Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	CIVIL WORKS - EXISTING SERVICES AND SURVEY PLAN SHEET 02

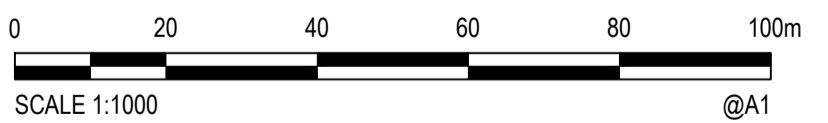
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Datum	AHD	Scale	1:1000
Drawing Number	CV-CARDNO-EWC2-1042	Size	A1
Revision			2

DATE PLOTTED: 31 January 2018 4:15 PM BY: BRITTANY DEBONO

XREFs: XR-89914020-CI-23-CADASTRAL; XR-89914020-CI-23-DESIGN; XR-89914020-Client; XR-89914020-CI-23-02-BOUNDARIES; XR-89914020-CI-23-02-REGIONAL SPACE; XR-89914020-CI-23-02-EXIST CONTOURS 500
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LEGEND	
	1800mm CHAIN WIRE FENCE
	SILT FENCE
	STABILISED SITE ENTRY/EXIT WITH WHEEL WASH
	INDICATIVE TOPSOIL STOCKPILE LOCATIONS
	INDICATIVE FILL MATERIAL STOCKPILE LOCATIONS



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2	31/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



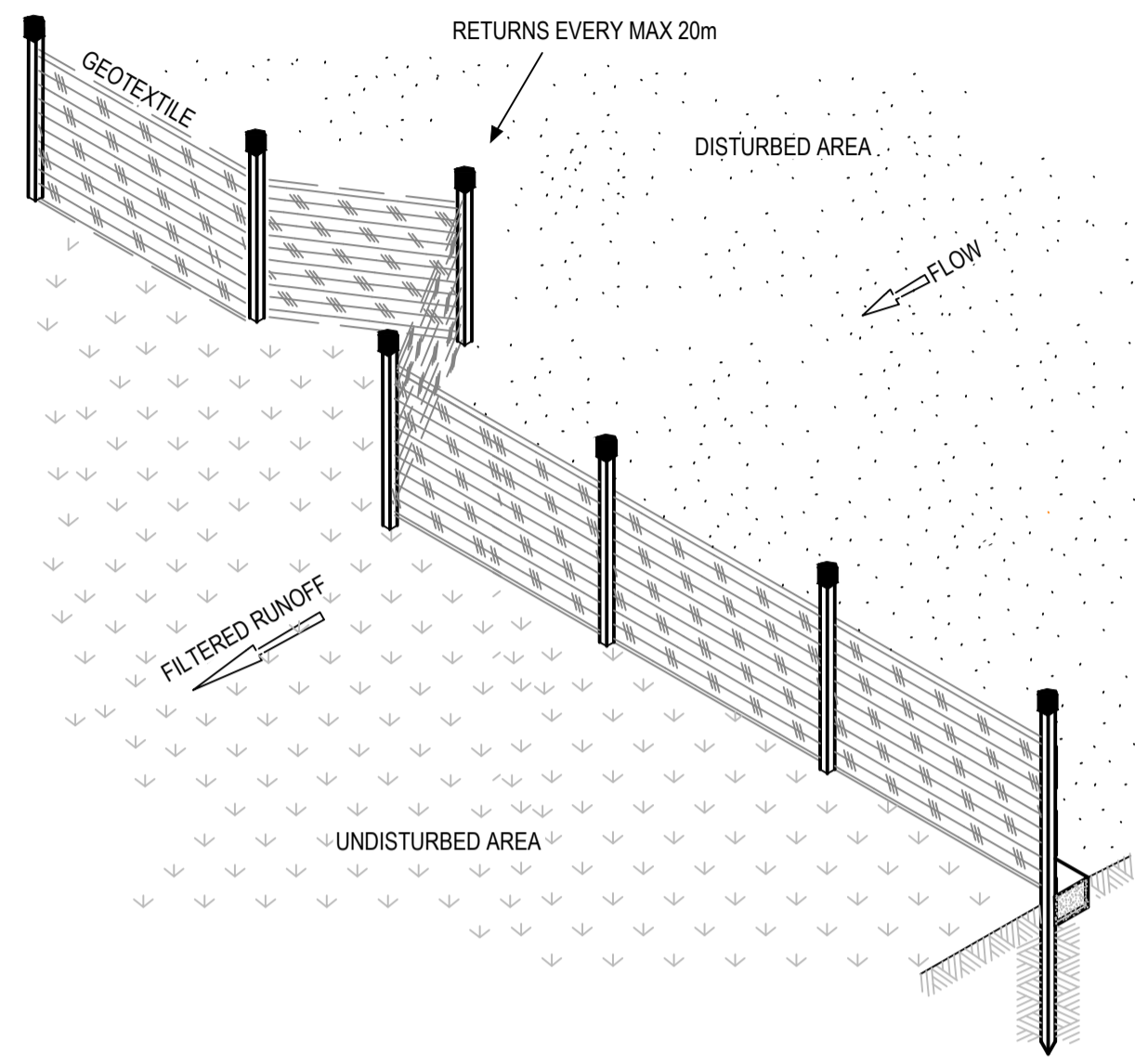
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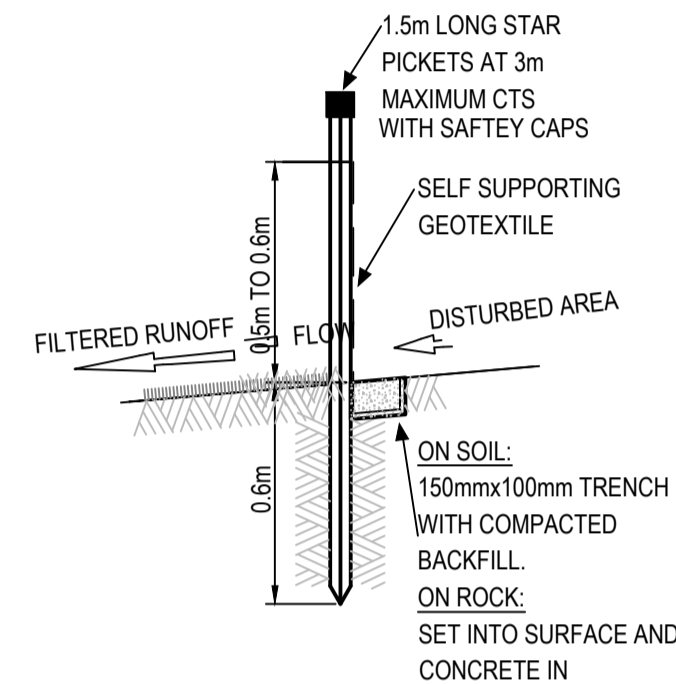
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BML	19/01/2018	LENLEASE
Checked	Date	Project
MS	19/01/2018	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Designed	Date	Title
MS	19/01/2018	REGIONAL OPEN SPACE - EROSION & SEDIMENTATION CONTROL PLAN
Verified	Date	
Approved		

Datum	AHD	Scale	1:1000	Size	A1
Drawing Number	CV-CARDNO-EWC2-1111			Revision	2

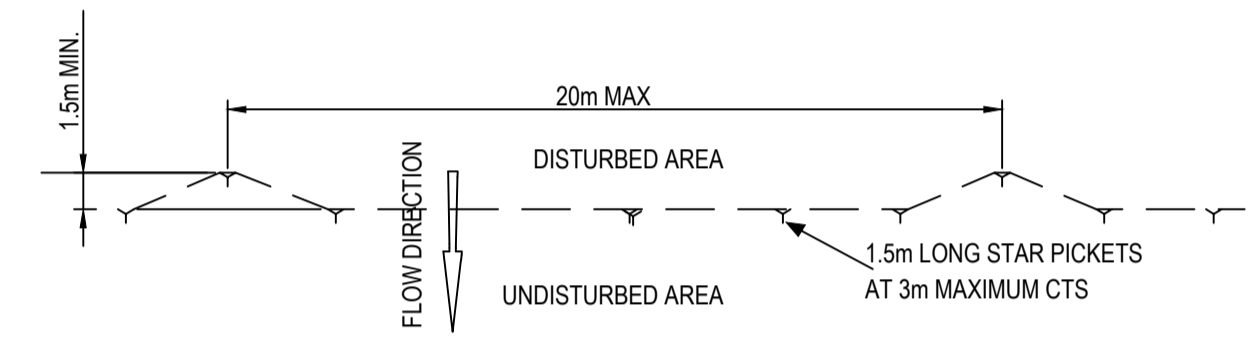
Status: **FOR INFORMATION ONLY**
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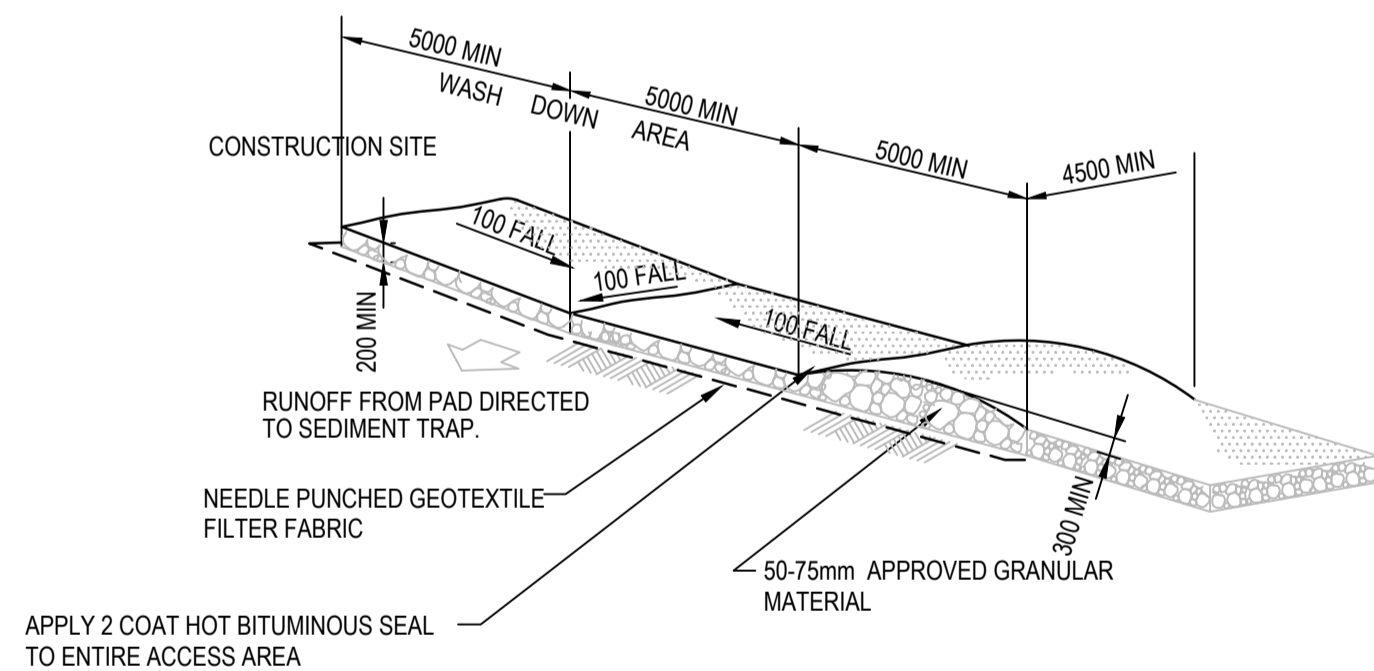
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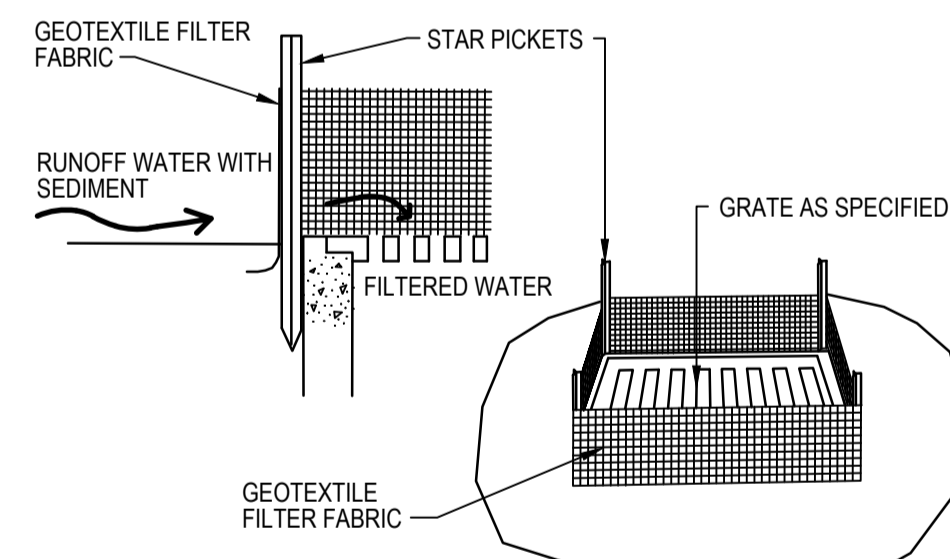
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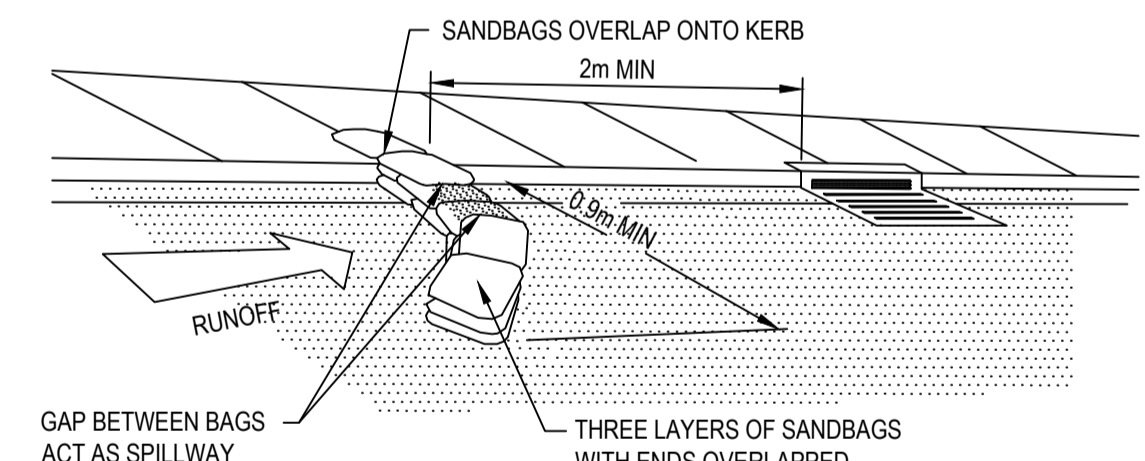
SEDIMENT FENCE PLAN
NOT TO SCALE



STABILISED SITE ENTRY/EXIT WITH WHEEL WASH
NOT TO SCALE



GEOTEXTILE FILTER PIT SURROUND
NTS



SANDBAG SEDIMENT TRAP FOR KERB INLET ON GRADE
NTS

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1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



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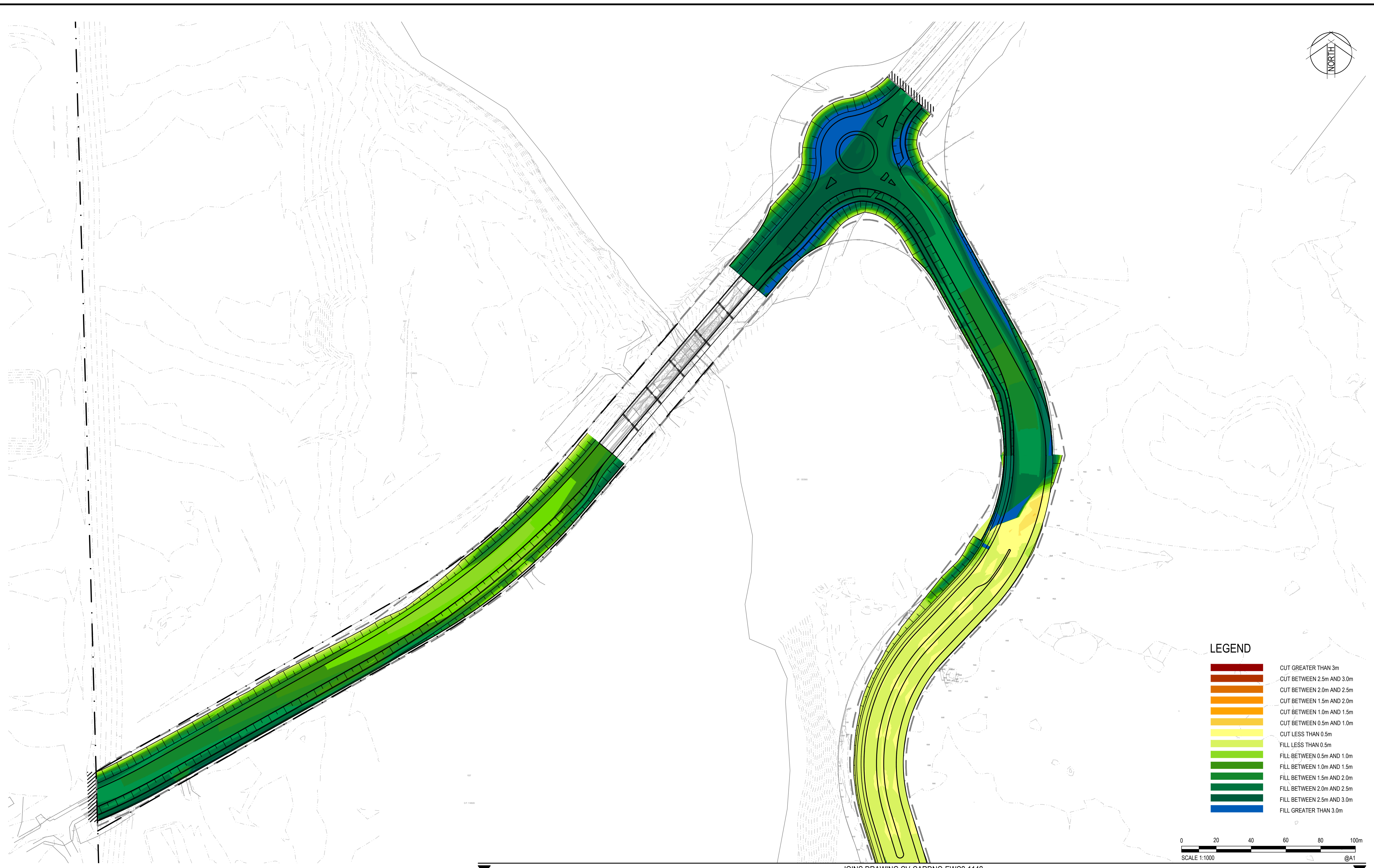
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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	EROSION & SEDIMENTATION CONTROL DETAILS

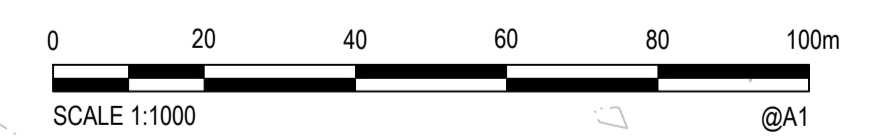
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Drawing Number	CV-CARDNO-EWC2-1131	Size	A1
Revision			2

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 DATE PLOTTED: 31 January 2018 4:16 PM BY: BRITTANY DEBONO



LEGEND

[Red]	CUT GREATER THAN 3m
[Dark Orange]	CUT BETWEEN 2.5m AND 3.0m
[Orange]	CUT BETWEEN 2.0m AND 2.5m
[Light Orange]	CUT BETWEEN 1.5m AND 2.0m
[Yellow-Orange]	CUT BETWEEN 1.0m AND 1.5m
[Yellow]	CUT BETWEEN 0.5m AND 1.0m
[Light Yellow]	CUT LESS THAN 0.5m
[Light Green]	FILL LESS THAN 0.5m
[Green]	FILL BETWEEN 0.5m AND 1.0m
[Dark Green]	FILL BETWEEN 1.0m AND 1.5m
[Medium Green]	FILL BETWEEN 1.5m AND 2.0m
[Dark Green]	FILL BETWEEN 2.0m AND 2.5m
[Very Dark Green]	FILL BETWEEN 2.5m AND 3.0m
[Blue]	FILL GREATER THAN 3.0m



JOINS DRAWING CV-CARDNO-EWC2-1142

Rev.	Date	Description	Des.	Verif.	Appd.
1	1/31/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM



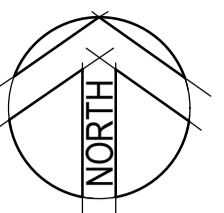
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Drawn	Date	Client
BJD	31/01/2018	LENLEASE
Checked	Date	Project
MS	31/01/2018	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Designed	Date	Title
MS	31/01/2018	CIVIL WORKS - CUT/FILL PLAN SHEET 01
Verified	Date	
Approved		

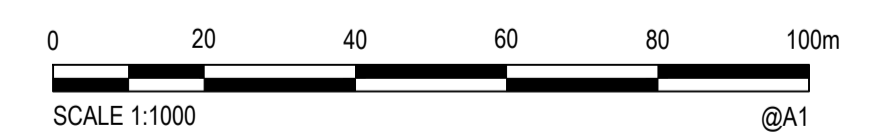
Datum	AHD	Scale	1:1000	Size	A1	
Drawing Number	CV-CARDNO-EWC2-1141				Revision	1

Status: **FOR INFORMATION ONLY**
 NOT TO BE USED FOR CONSTRUCTION PURPOSES



LEGEND

- CUT GREATER THAN 3m
- CUT BETWEEN 2.5m AND 3.0m
- CUT BETWEEN 2.0m AND 2.5m
- CUT BETWEEN 1.5m AND 2.0m
- CUT BETWEEN 1.0m AND 1.5m
- CUT BETWEEN 0.5m AND 1.0m
- CUT LESS THAN 0.5m
- FILL LESS THAN 0.5m
- FILL BETWEEN 0.5m AND 1.0m
- FILL BETWEEN 1.0m AND 1.5m
- FILL BETWEEN 1.5m AND 2.0m
- FILL BETWEEN 2.0m AND 2.5m
- FILL BETWEEN 2.5m AND 3.0m
- FILL GREATER THAN 3.0m



Rev.	Date	Description	Des.	Verif.	Appd.
1	31/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM



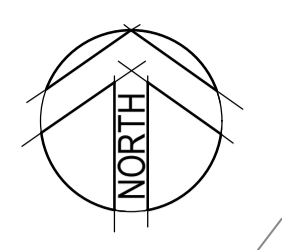
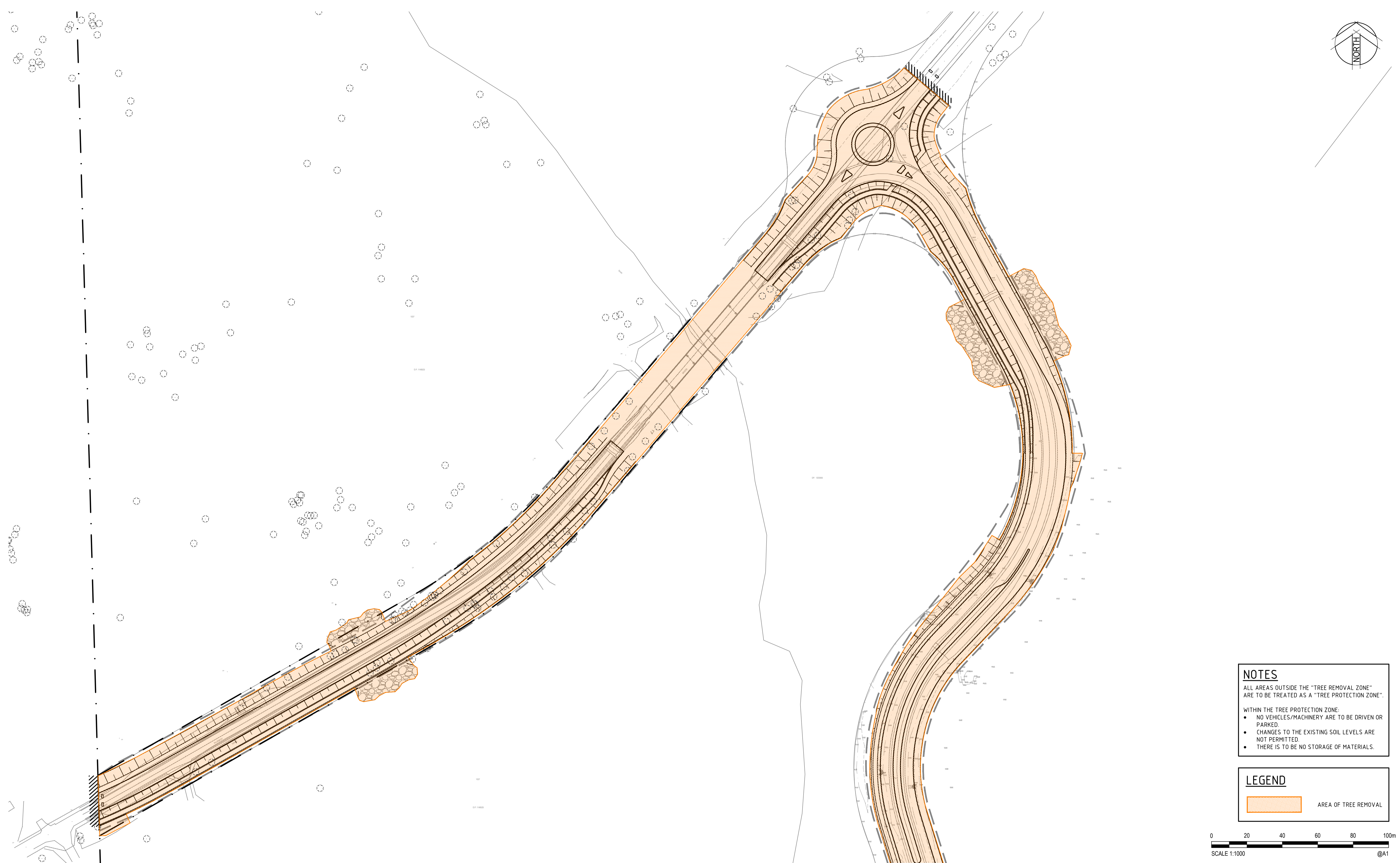
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Drawn	BJD	Date	31/01/2018
Checked	MS	Date	31/01/2018
Designed	MS	Date	31/01/2018
Verified		Date	
Approved		Date	

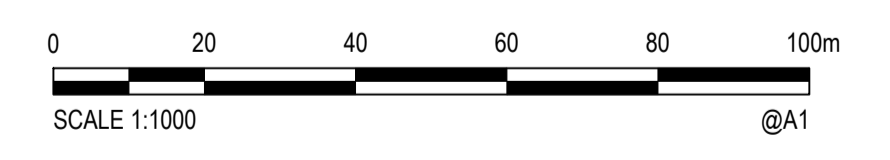
Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	CIVIL WORKS - CUT/FILL PLAN SHEET 02

Status	FOR INFORMATION ONLY		
NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	AHD	Scale	1:1000
Size			A1
Drawing Number	CV-CARDNO-EWC2-1142		Revision
			1



NOTES
 ALL AREAS OUTSIDE THE "TREE REMOVAL ZONE" ARE TO BE TREATED AS A "TREE PROTECTION ZONE".
 WITHIN THE TREE PROTECTION ZONE:
 • NO VEHICLES/MACHINERY ARE TO BE DRIVEN OR PARKED.
 • CHANGES TO THE EXISTING SOIL LEVELS ARE NOT PERMITTED.
 • THERE IS TO BE NO STORAGE OF MATERIALS.

LEGEND
 AREA OF TREE REMOVAL



JOINS DRAWING CV-CARDNO-EWC2-1142

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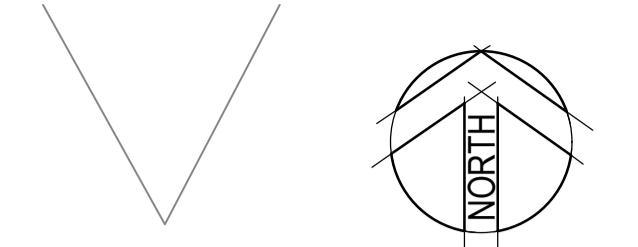
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Designed	MS	Date	31/01/2018
Verified		Date	
Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	CIVIL WORKS - TREE REMOVAL PLAN SHEET 01

Status	FOR INFORMATION ONLY		
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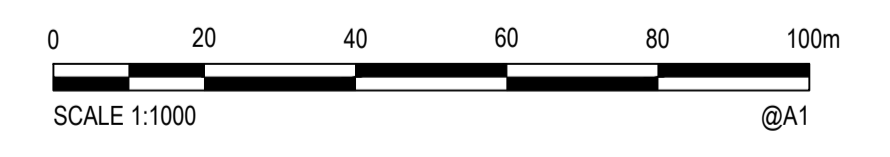
DATE PLOTTED: 31 January 2018 4:17 PM BY: BRITTANY DEBONO

JOINS DRAWING CV-CARDNO-EWC2-1141



NOTES
 ALL AREAS OUTSIDE THE "TREE REMOVAL ZONE" ARE TO BE TREATED AS A "TREE PROTECTION ZONE".
 WITHIN THE TREE PROTECTION ZONE:
 • NO VEHICLES/MACHINERY ARE TO BE DRIVEN OR PARKED.
 • CHANGES TO THE EXISTING SOIL LEVELS ARE NOT PERMITTED.
 • THERE IS TO BE NO STORAGE OF MATERIALS.

LEGEND
 AREA OF TREE REMOVAL



XREFs: XR-89914020-CI-23-SURVEY; XR-89914020-CI-23-EXISTING TREES; XR-89914020-CI-23-BOUNDARIES; XR-89914020-CI-23-02-DESIGN; XR-89914020-SURVEY; XR-89914020-CLIENT LOGOS
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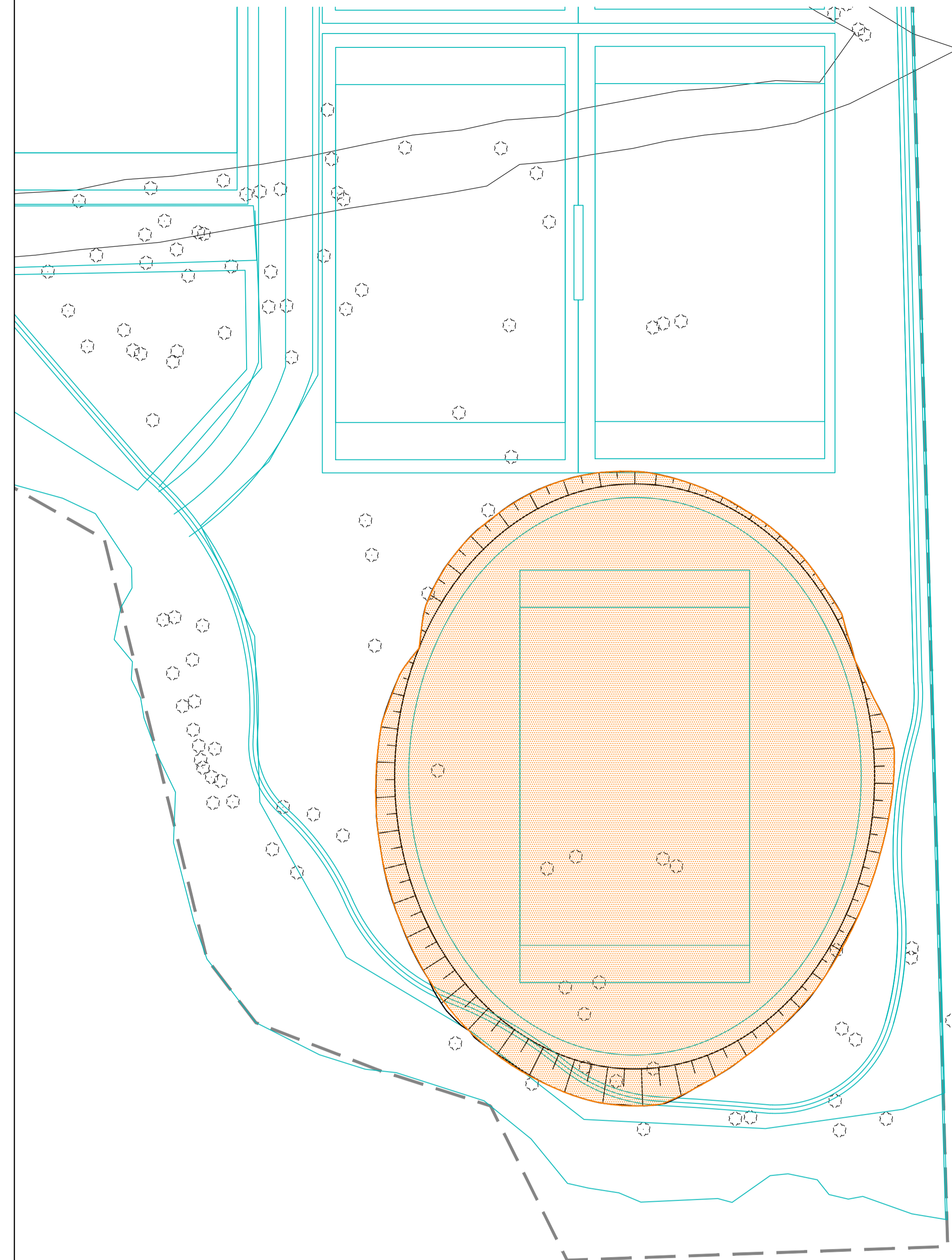
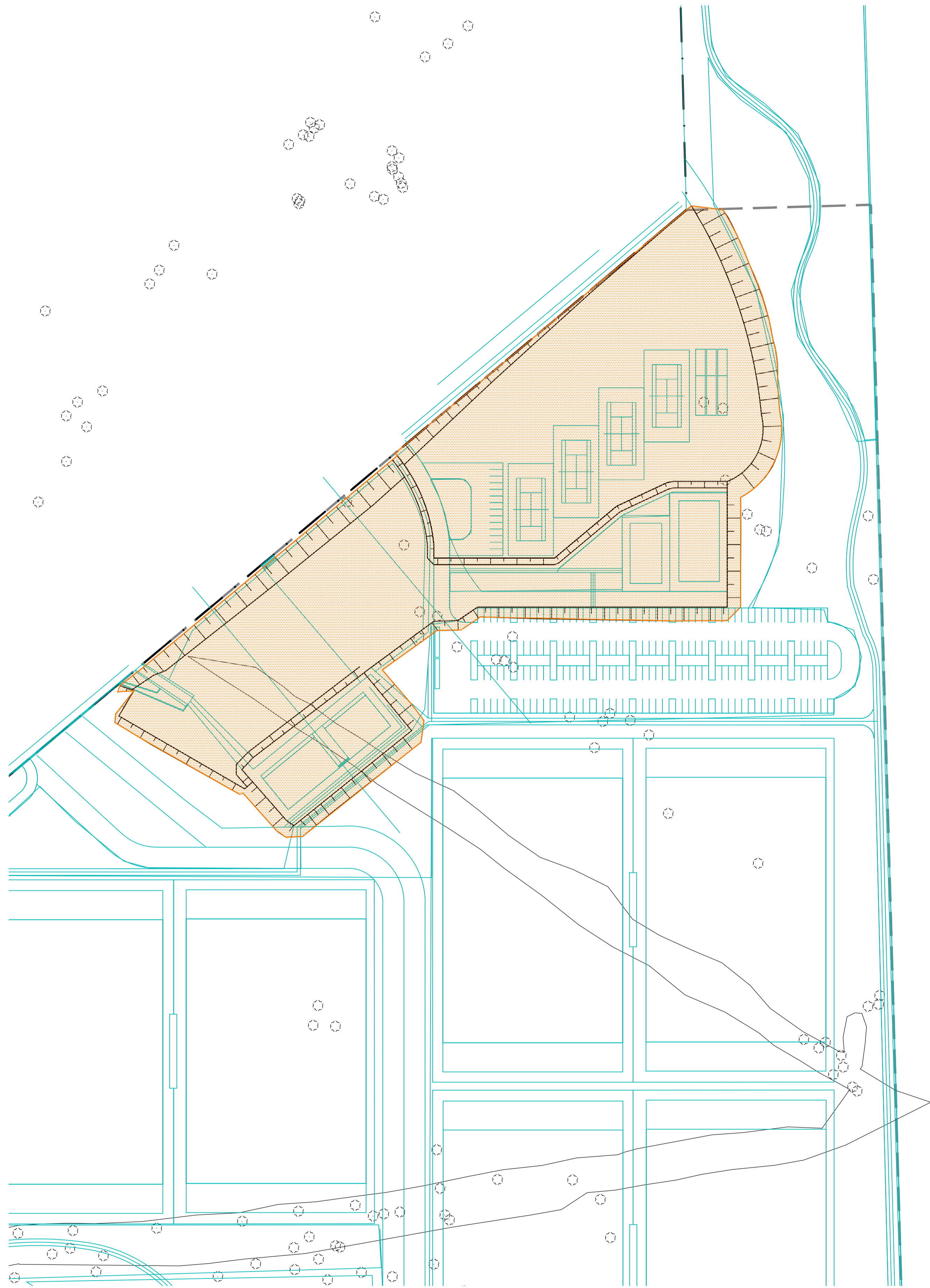


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Drawn	Date	Client
BJD	31/01/2018	LENLEASE
Checked	Date	Project
MS	31/01/2018	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Designed	Date	Title
MS	31/01/2018	CIVIL WORKS - TREE REMOVAL PLAN SHEET 02
Verified	Date	
Approved		

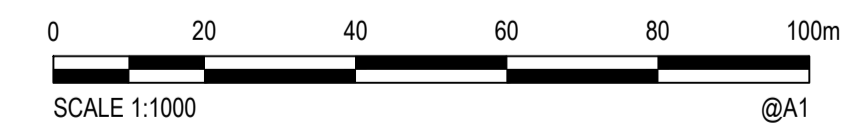
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FOR INFORMATION ONLY		
NOT TO BE USED FOR CONSTRUCTION PURPOSES		
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Rev.	Date	Description	Des.	Verif.	Appd.
1	31/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM



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 WITHIN THE TREE PROTECTION ZONE:
 • NO VEHICLES/MACHINERY ARE TO BE DRIVEN OR PARKED.
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LEGEND
 AREA OF TREE REMOVAL



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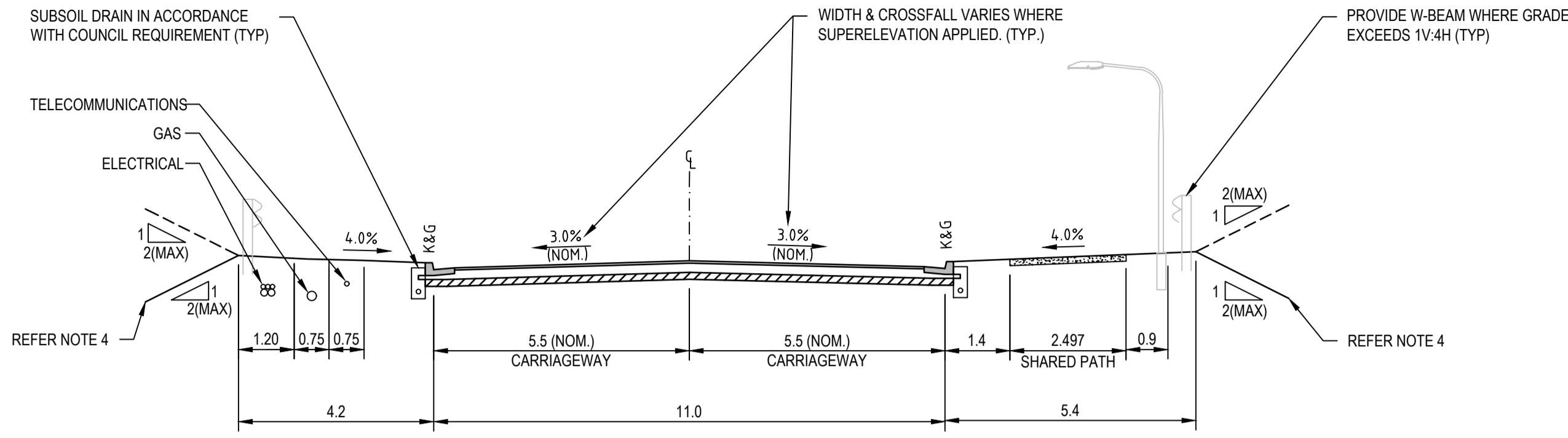


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Drawn	Date	Client
BJD	31/01/2018	LENLEASE
Checked	Date	Project
MS	31/01/2018	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Designed	Date	Title
MS	31/01/2018	REGIONAL OPEN SPACE - TREE REMOVAL PLAN
Verified	Date	
Approved		

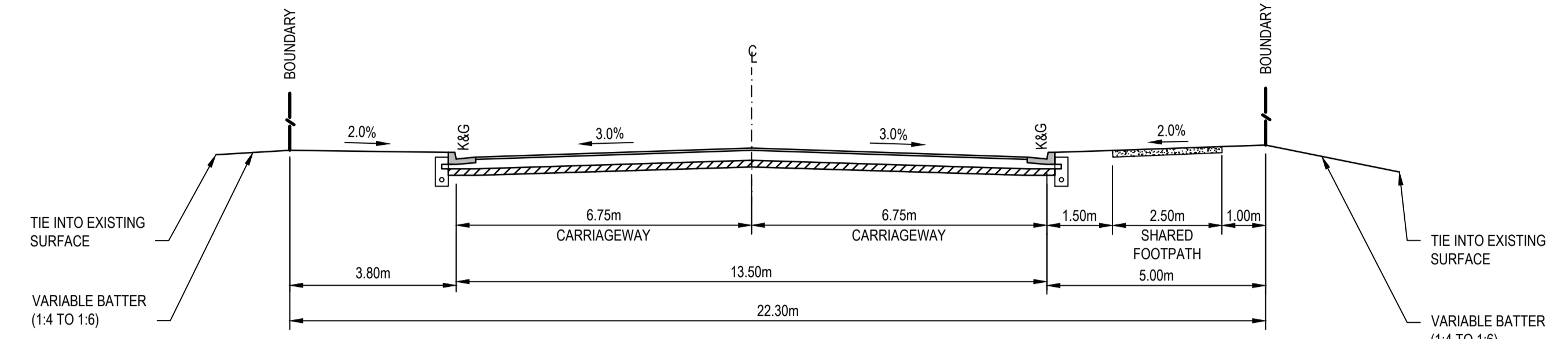
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Status: **FOR INFORMATION ONLY**
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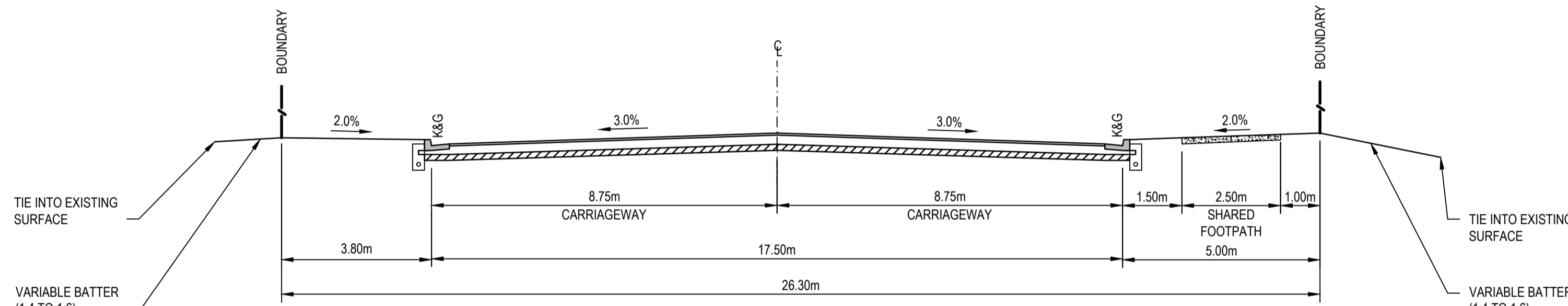
EAST WEST CONNECTOR ROAD TYPICAL CROSS SECTION

PAVEMENT TYPE 1
SCALE 1:100



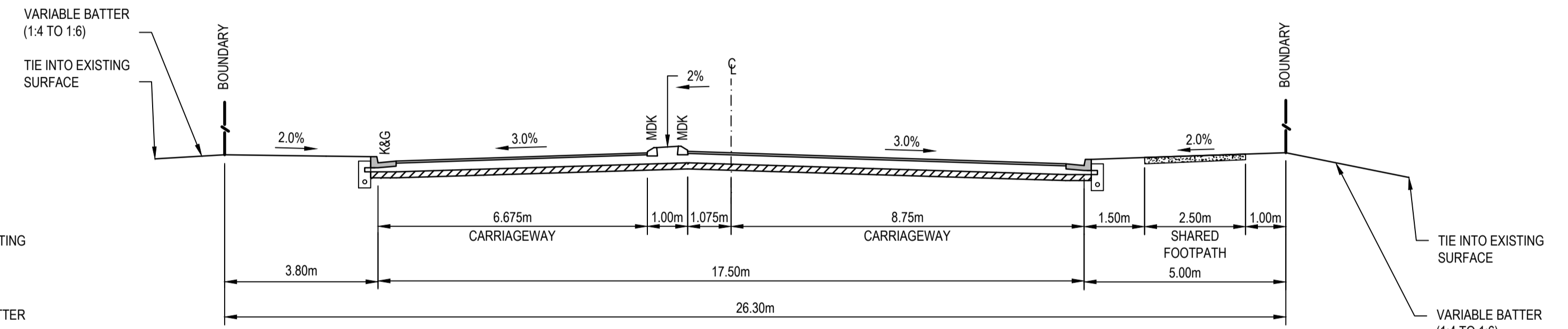
DUNHEVED LINKS ROAD (TYPE 1)

PAVEMENT TYPE 1 CH. 45 - 149
SCALE 1:100



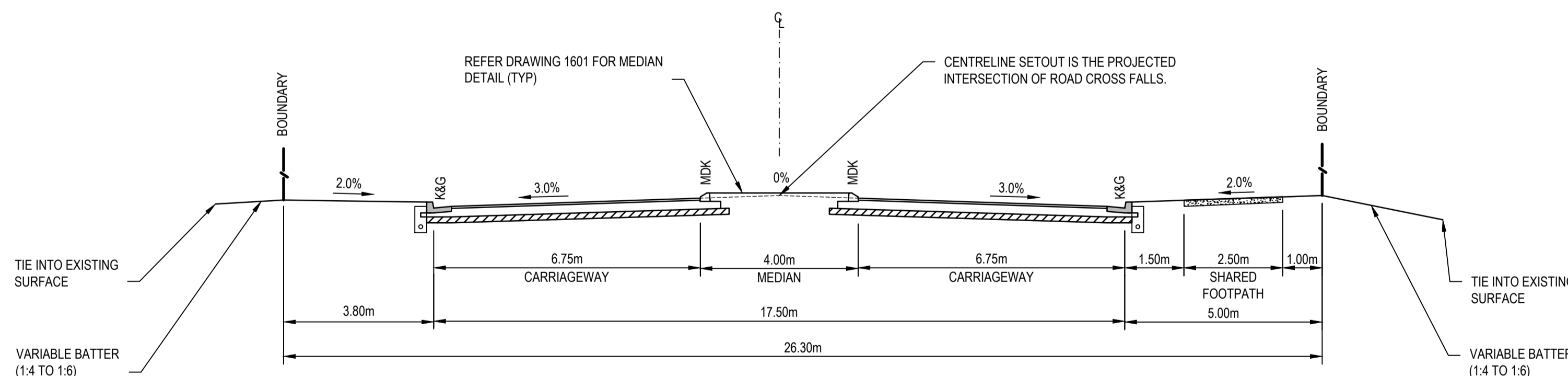
DUNHEVED LINKS ROAD (TYPE 2)

PAVEMENT TYPE 1 CH. 206 - 261
SCALE 1:100 465 - 501
677 - 707
740 - 773



DUNHEVED LINKS ROAD (TYPE 3)

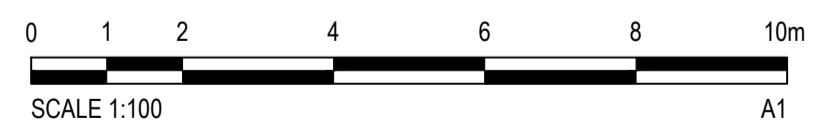
PAVEMENT TYPE 1 CH. 261 - 282
SCALE 1:100 501 - 528
707 - 727



DUNHEVED LINKS ROAD (TYPE 4)

PAVEMENT TYPE 1 CH. 292 - 465
SCALE 1:100 532 - 677
773 - 824

- NOTES**
1. TYPICAL ROAD CROSS SECTIONS ARE BASED UPON INFORMATION PROVIDED BY LENDLEASE. STREET SCAPES ARE INDICATIVE ONLY & SUBJECT TO DETAILED DESIGN BY LANDSCAPE ARCHITECT.
 2. SERVICE ALLOCATIONS ARE INDICATIVE ONLY. REFER TO SEPARATE SERVICE DRAWING PACKAGES FOR ALIGNMENT & DETAILS.
 3. CONSTRUCTION OF FOOTPATH TO BE DEFERRED UNTIL DIRECTED BY THE SITE SUPERINTENDENT.
 4. TIE INTO EXISTING SURFACE OR PROVIDE RETAINING WALL STRUCTURE IF BATTER EXTENDS BEYOND EXISTING ROAD CORRIDOR. REFER DRAWING 1301-1305 FOR RETAINING WALL LOCATIONS. BATTER SURFACE TO BE STABILIZED.



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2	31/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



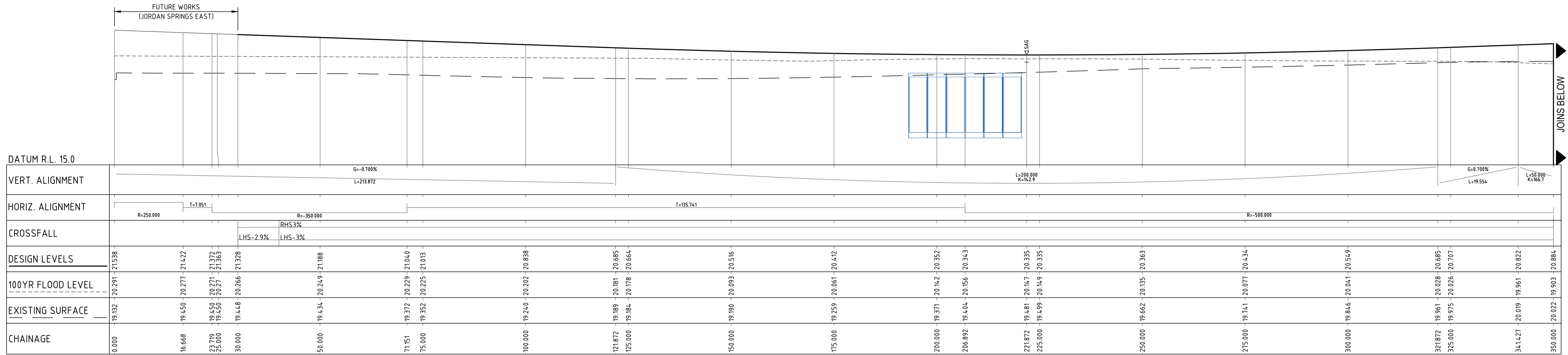
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Drawn	BML	Date	19/01/2018
Checked	MS	Date	19/01/2018
Designed	MS	Date	19/01/2018
Verified		Date	
Approved			

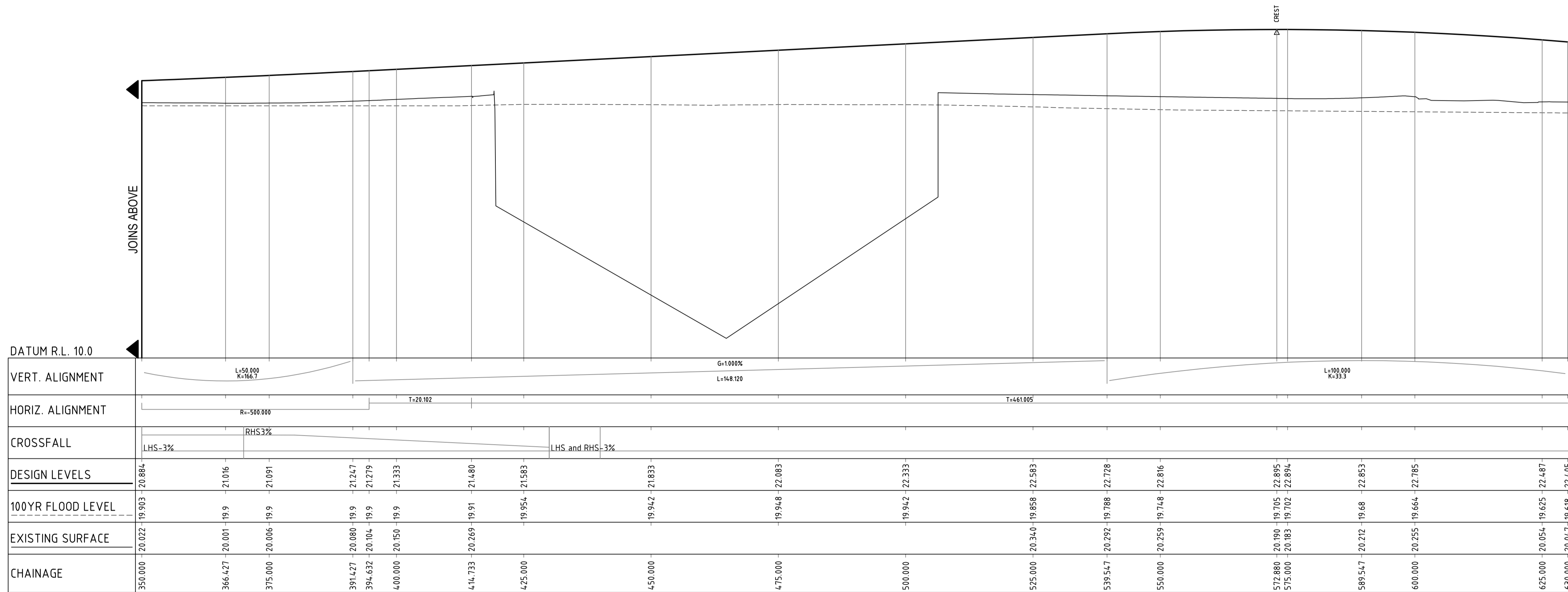
Client	LENDLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	TYPICAL ROAD CROSS SECTIONS

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Size	A1	Revision	2
Drawing Number	CV-CARDNO-EWC2-1251		



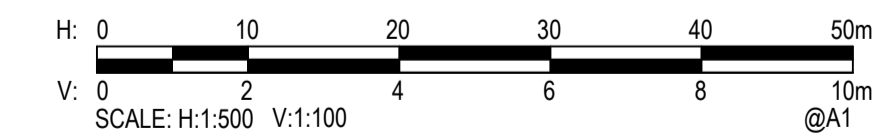
EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION

1:500 HORI.
1:100 VERT.



EAST WEST CONNECTOR ROAD LONGITUDINAL SECTION

1:500 HORI.
1:100 VERT.



Rev.	Date	Description	Des.	Verif.	Appd.
2	31/01/2018	DRAFT - ISSUED FOR CLIENT REVIEW	MS		ARM
1	19/01/2018	DRAFT - ISSUED FOR RSA	MS		



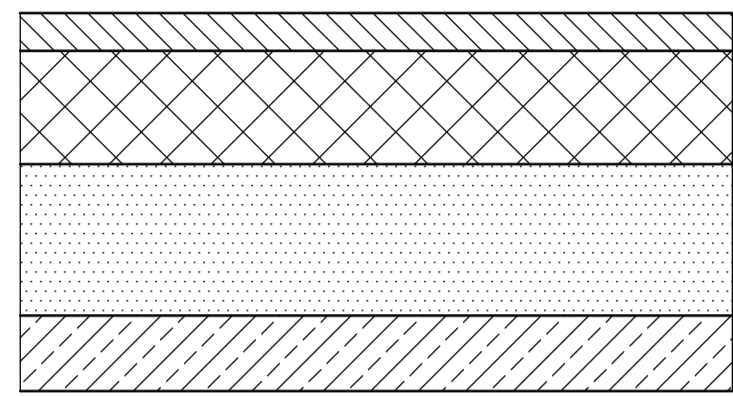
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Approved		Date	

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	CIVIL WORKS - ROAD LONGITUDINAL SECTIONS SHEET 01

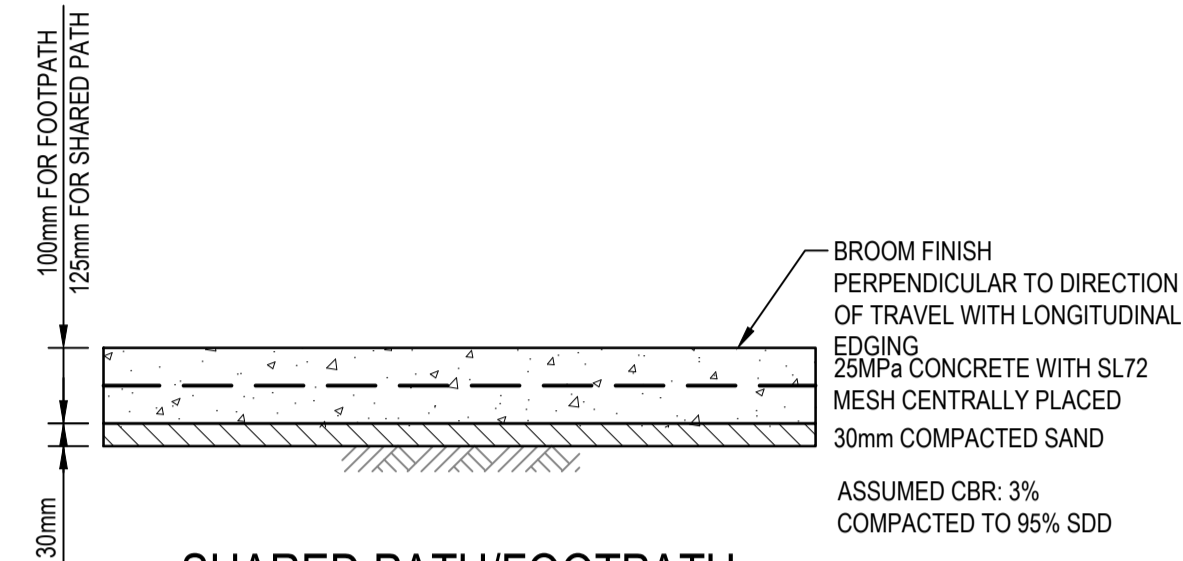
Status	FOR INFORMATION ONLY		
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Datum	AHD	Scale	AS SHOWN
Drawing Number	CV-CARDNO-EWC2-1351	Size	A1
Revision			2



PAVEMENT TYPE 1
SCALE 1:10

PAVEMENT 1 DESIGN		
DESIGN SUBGRADE	CBR 3%	CBR 5%
WEARING SURFACE	50mm AC10	50mm AC10
SINGLE COAT FLUSH SEAL	7mm	7mm
BASECOURSE	150mm	150mm
SUBBASE	410mm	290mm
TOTAL THICKNESS	610mm	490mm

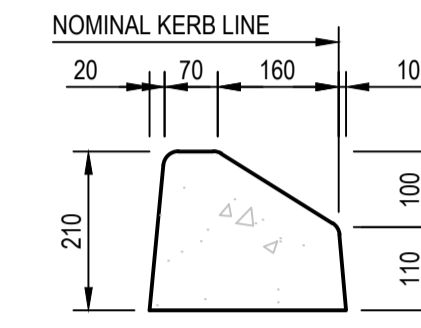
AC14 WEARING COURSE
10mm PRIMER SEAL
BASE COURSE DGB20 COMPACTED TO MINIMUM MODIFIED DENSITY RATIO OF 98%
SUB BASE DGS40 COMPACTED TO MINIMUM MODIFIED DENSITY RATIO OF 95%
COMPACTED SUBGRADE TO MINIMUM DENSITY RATIO OF 100%
ASSUMED CBR: REFER BELOW TABLE
ASSUMED ESA: 2x10°



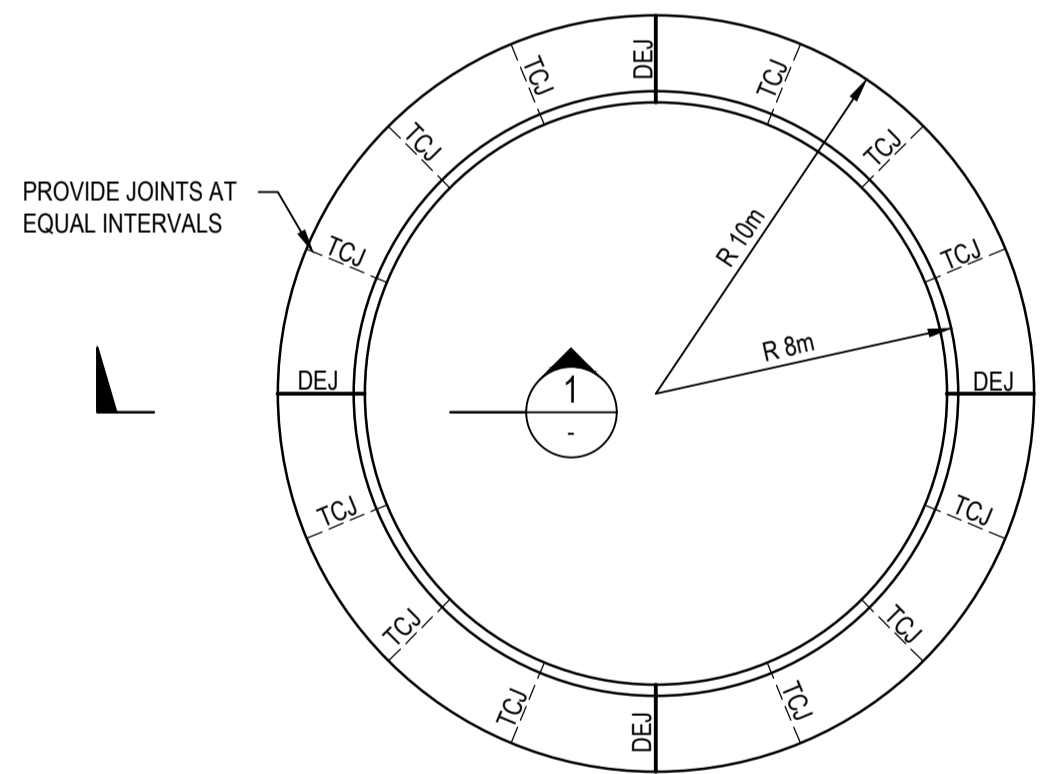
SHARED PATH/FOOTPATH
SCALE 1:10

NOTES

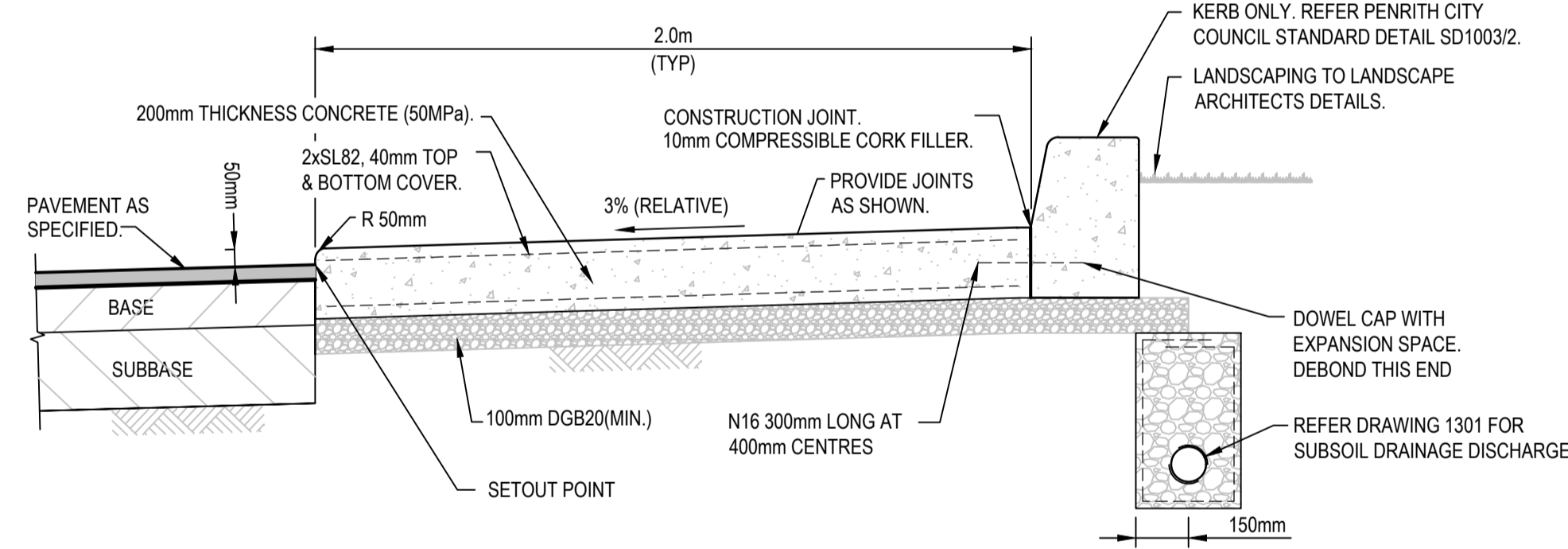
- SAWCUT PATH OR TROWELLED DUMMY JOINT AT 2m SPACING.
- EVERY THIRD JOINT TO BE FULL DEPTH DOWELLED EXPANSION JOINT.



MEDIAN KERB (MDK)
(RMS SF KERB)
SCALE 1:10



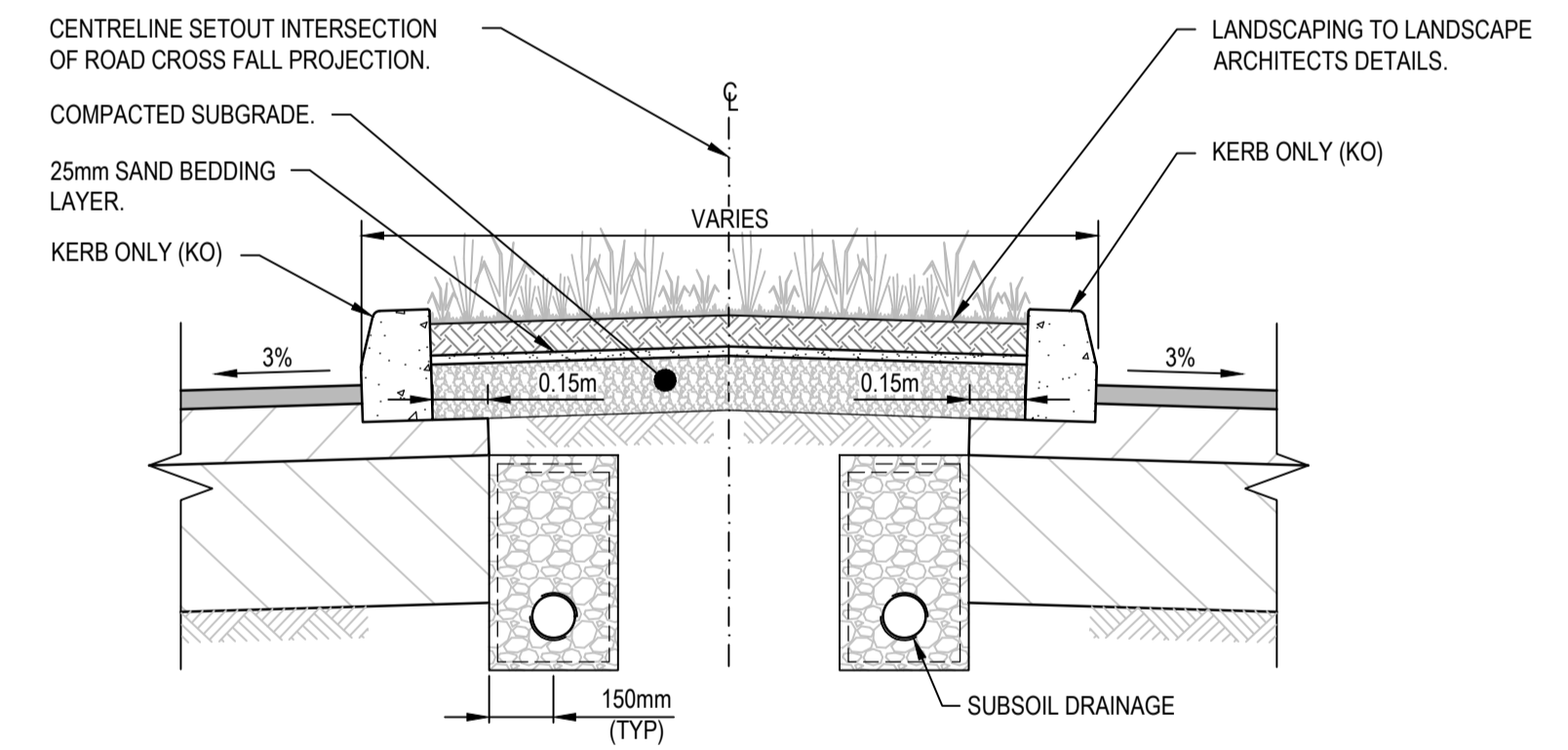
ROUNDAABOUT CENTRE ISLAND PLAN
SCALE 1:200



SECTION 1
NTS
ROUNDAABOUT CENTRE ISLAND DETAIL

NOTES

ROUNDAABOUT ANNULUS SHALL BE GRADED AT 3% RELATIVE TO ROAD GRADE NOT 3% ABSOLUTE.



TYPICAL CENTRAL MEDIAN DETAIL
SCALE 1:20



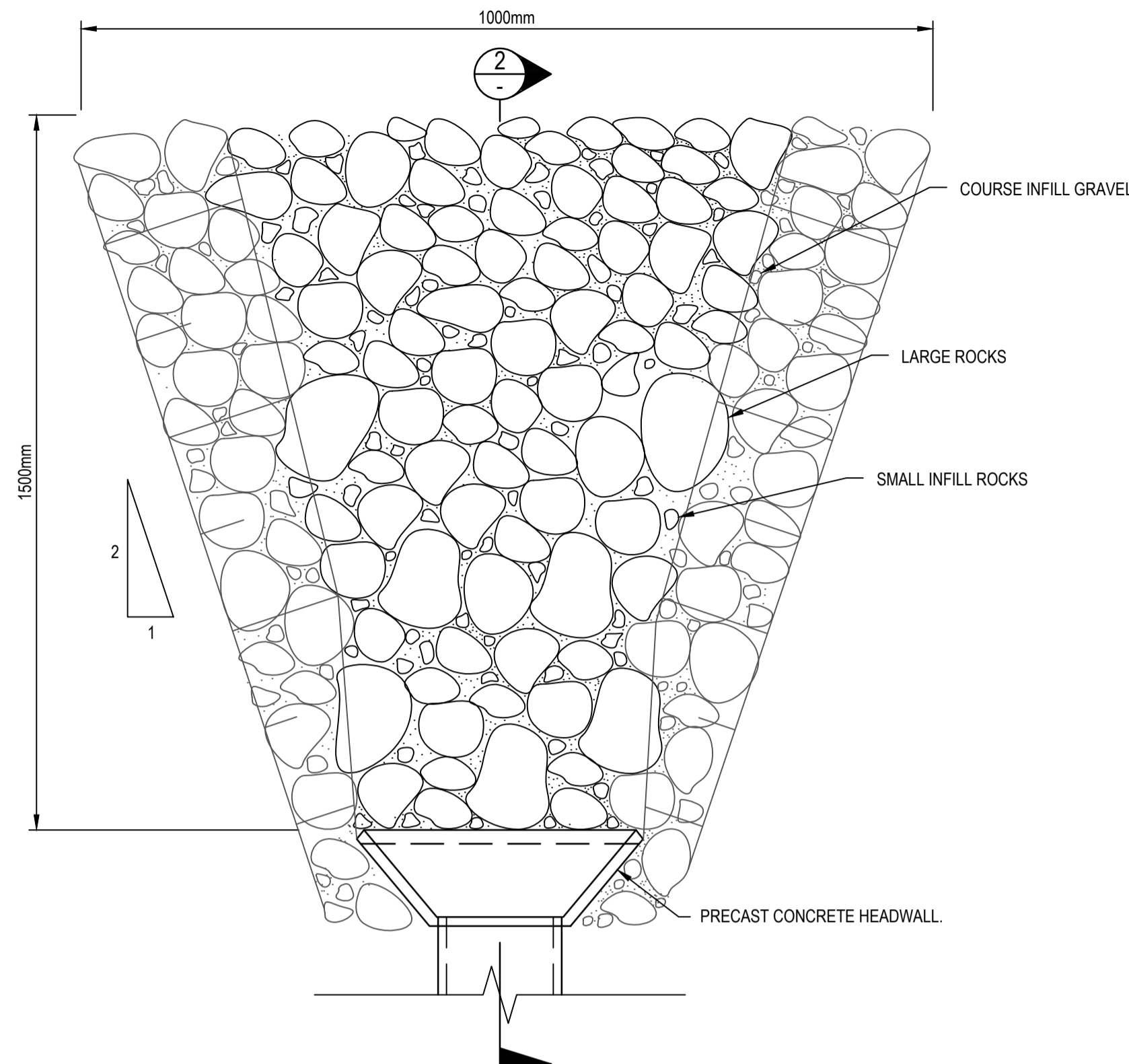
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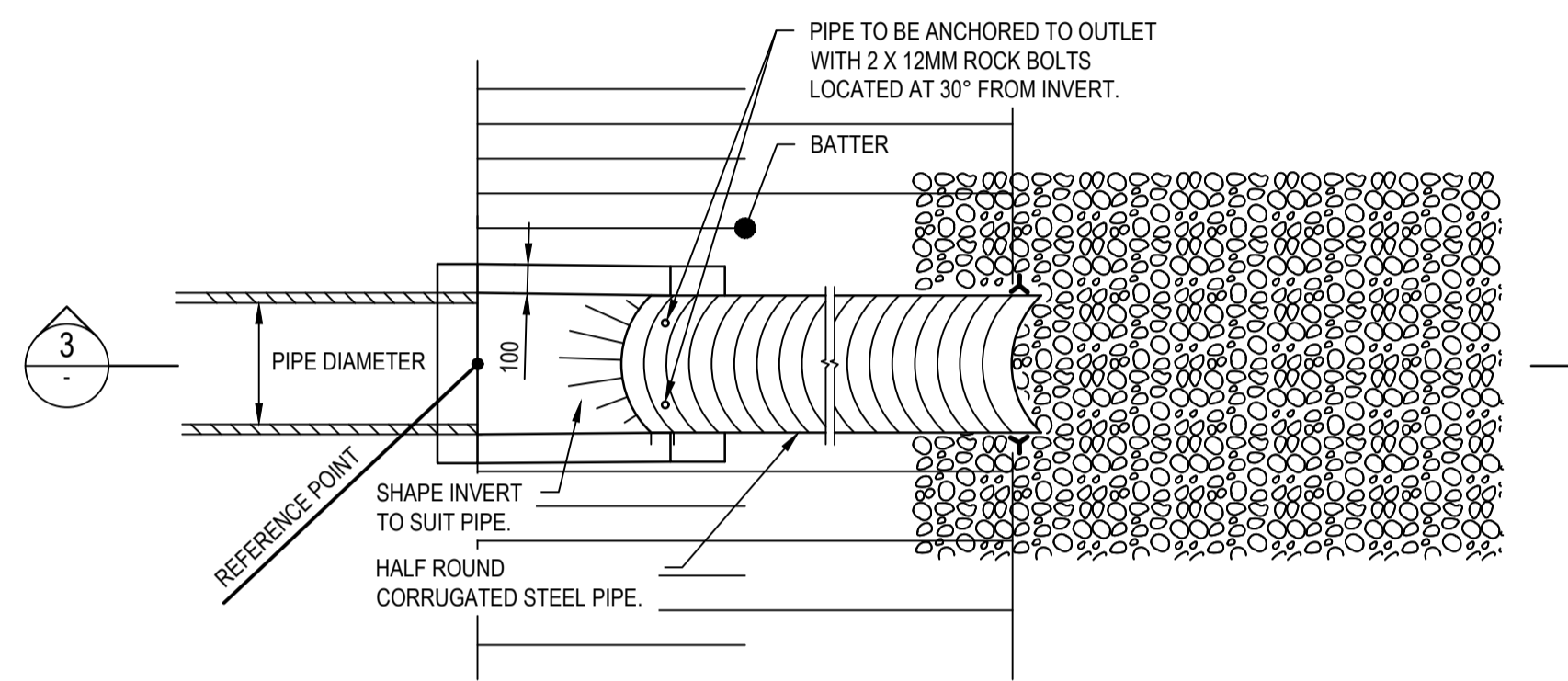
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	ROAD TYPICAL DETAILS

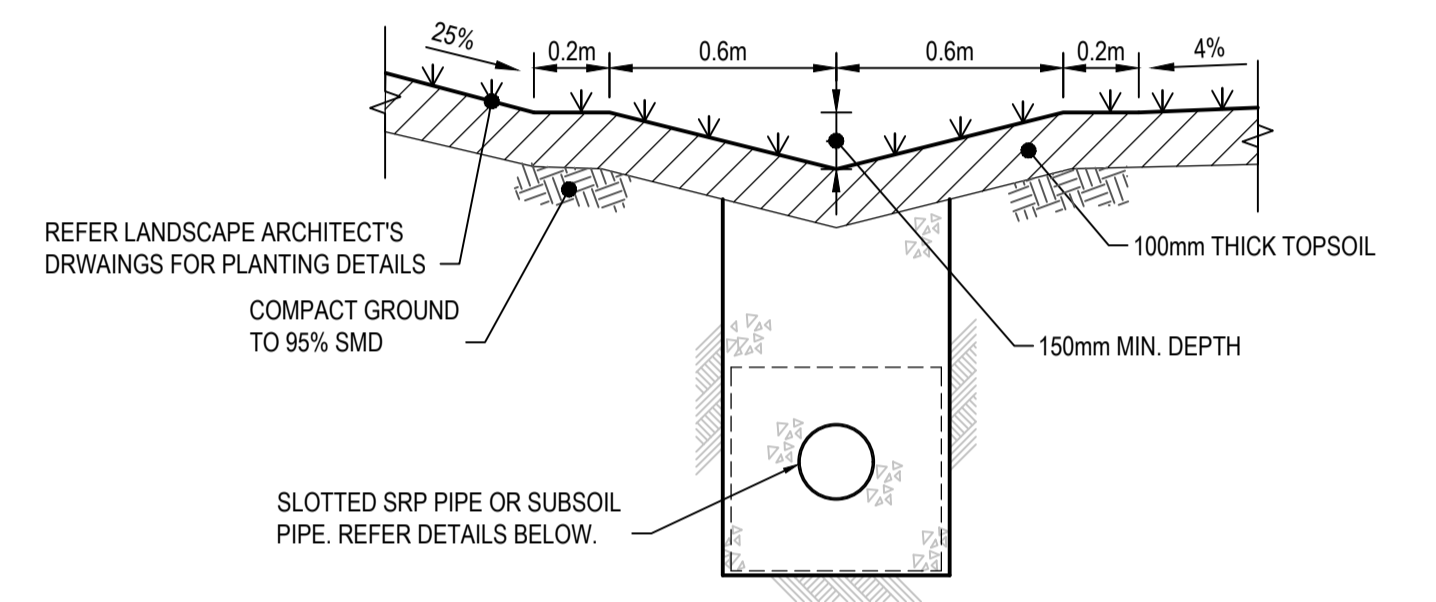
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Size		Revision	A1
Drawing Number	CV-CARDNO-EWC2-1601	Revision	2



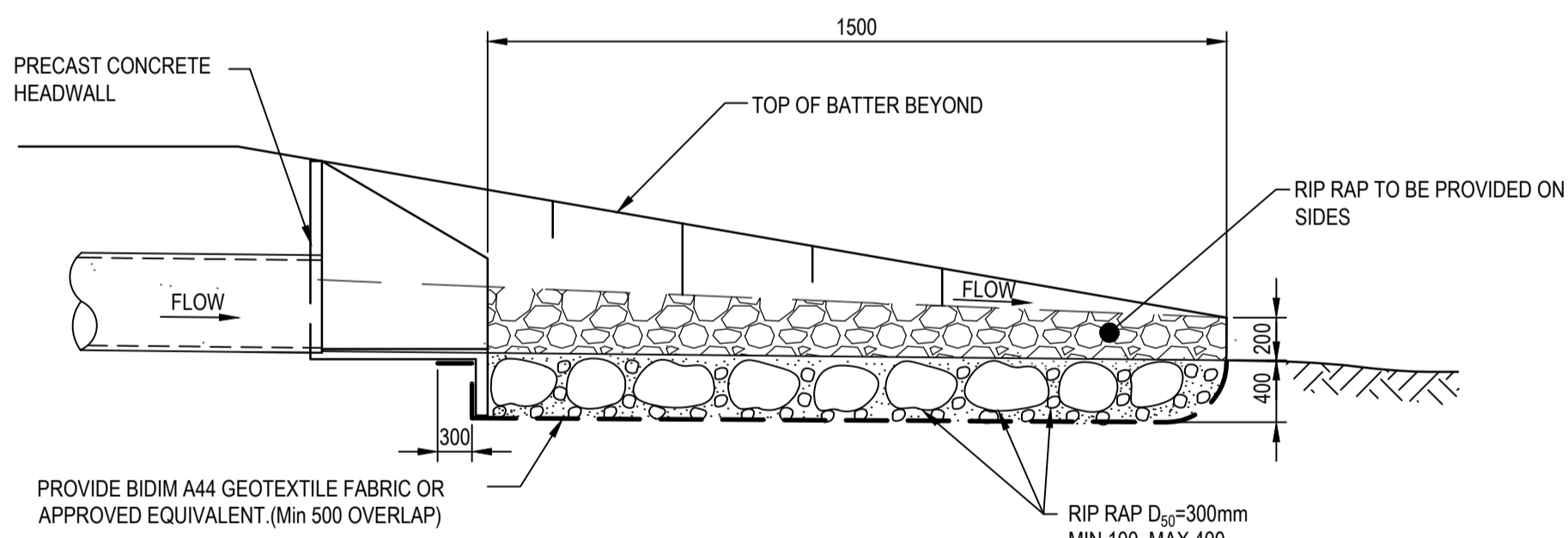
OUTLET 61 HEADWALL SCOUR PROTECTION PLAN
NOT TO SCALE



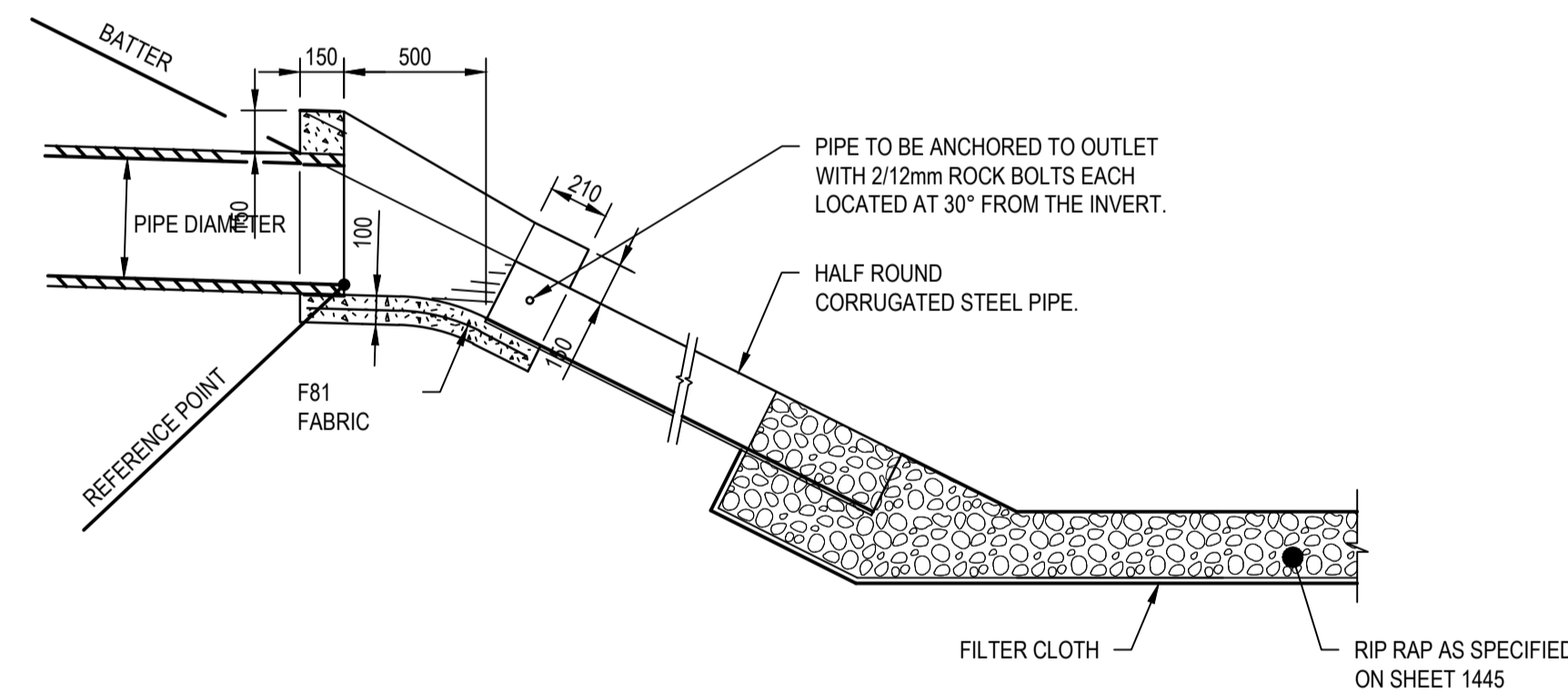
BATTER DRAIN DETAIL
NOT TO SCALE



**TYPICAL SECTION THROUGH TABLE DRAIN
(LEFT SIDE OF EAST WEST CONNECTOR ROAD)**
SCALE 1:20

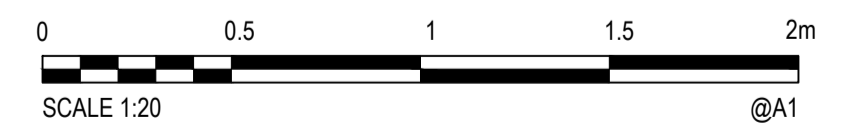


SECTION 2
NOT TO SCALE



SECTION 3
NOT TO SCALE

- NOTES**
1. TOP LIP OF HALF ROUND CORRUGATED STEEL PIPE TO BE INSTALLED FLUSH WITH THE COMPACTED BATTER SURFACE.
 2. HALF ROUND CORRUGATED STEEL PIPE TO BE FASTENED WITH 4mm WIRE TO TWO 1350mm STAR PICKETS AT LOWER END OF CSP PIPE.
 3. 1350mm STAR PICKETS TO BE PROVIDED AT POINTS MARKED \blacktriangle (FOR FASTENING PURPOSES).
 4. CONCRETE TO BE N25.
 5. ADAPTED FROM RMS DRAWING MD.R11.C06.A.1



XREFs: Xref:89914020-Client-Logs
CAD File: N:\Paramattha\Projects\89914020-CENTRAL PRECINCT_ADI ST MARYS\Drawings\23 East West Collector Road DA102 Stage 2\Drawings\CV-CARDNO-EWC2-2201-2202-DWG(2).dwg

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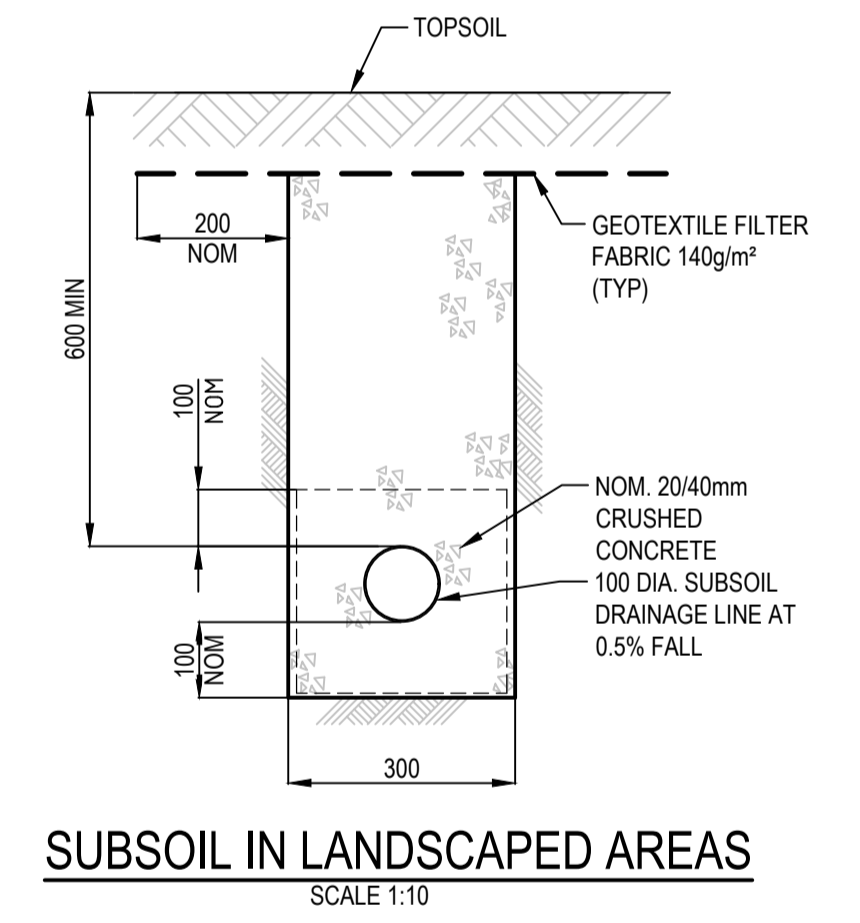
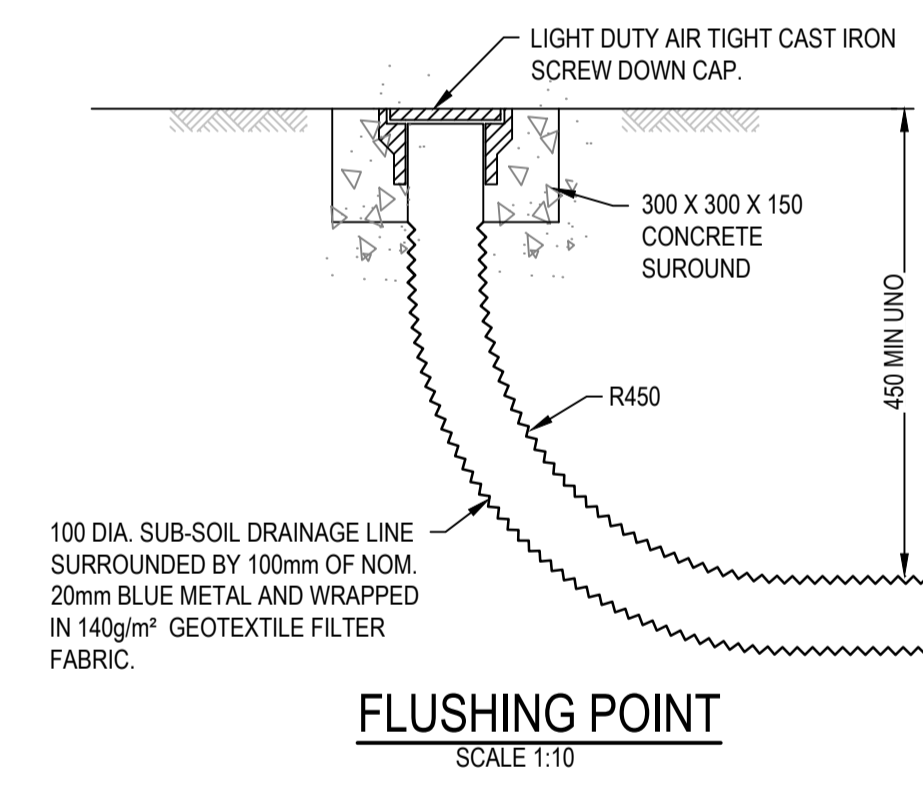
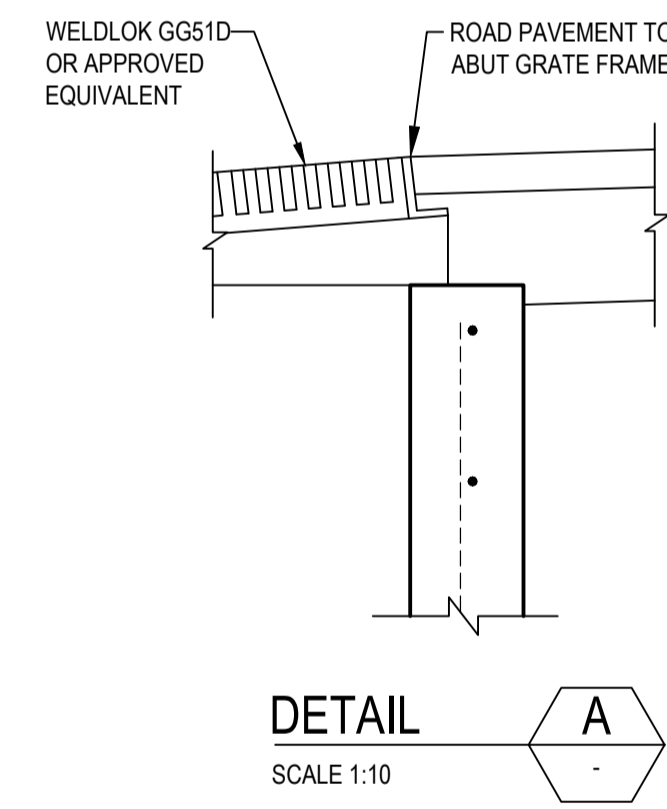
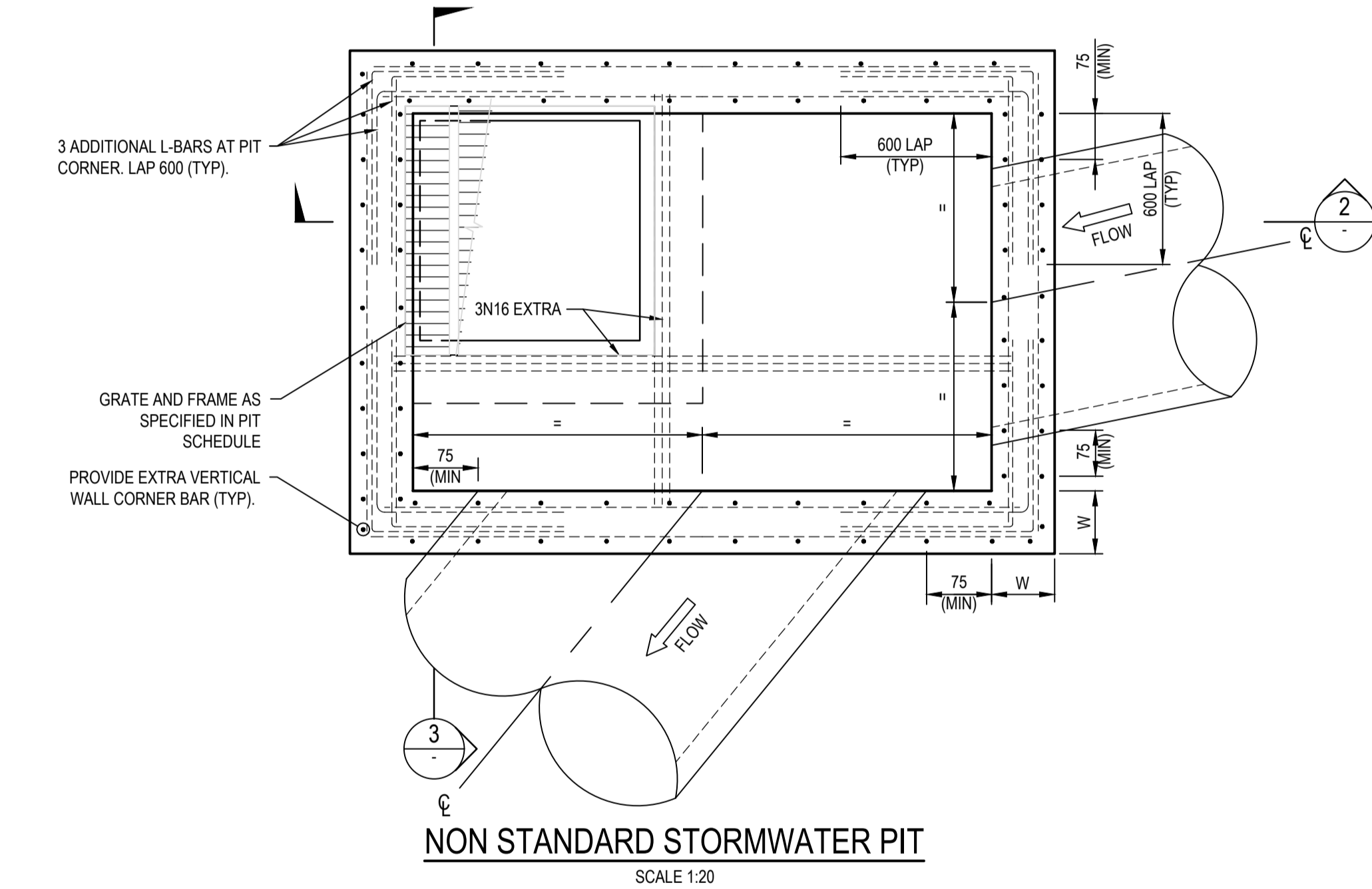
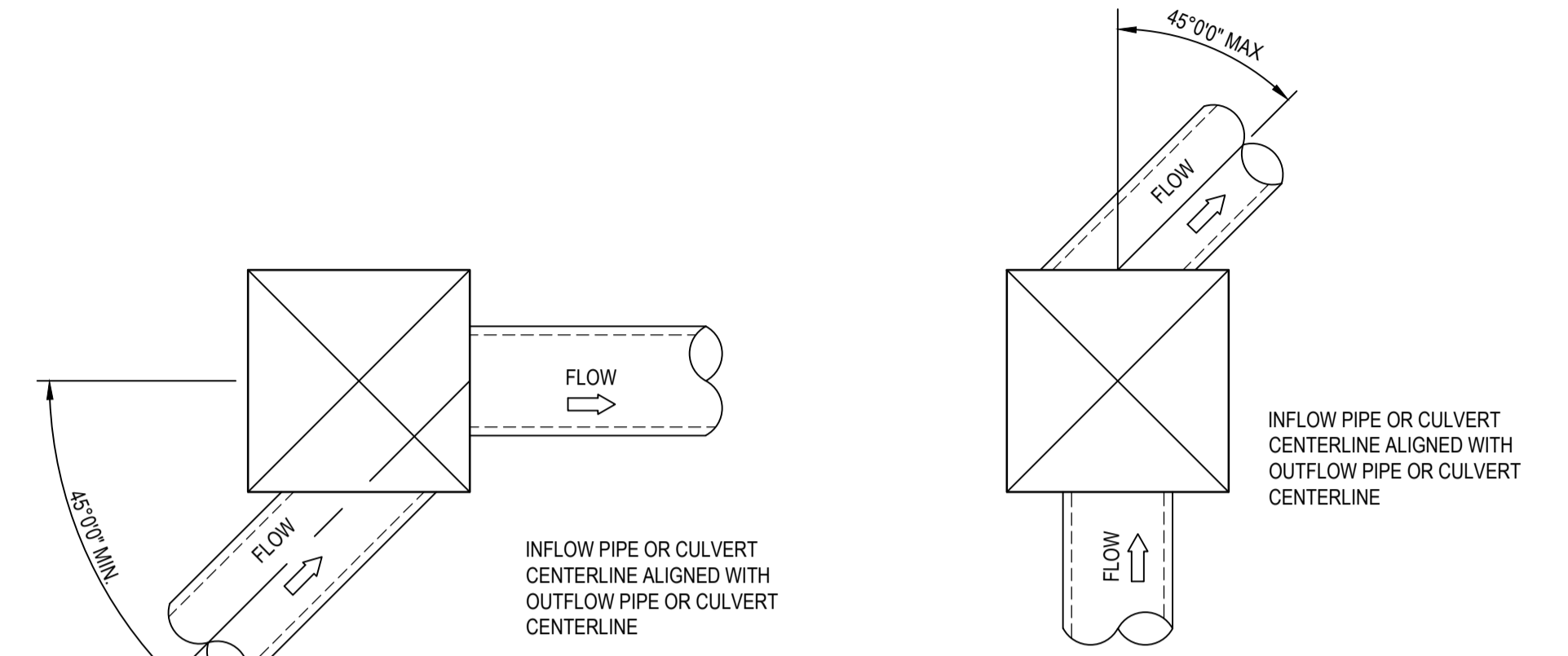
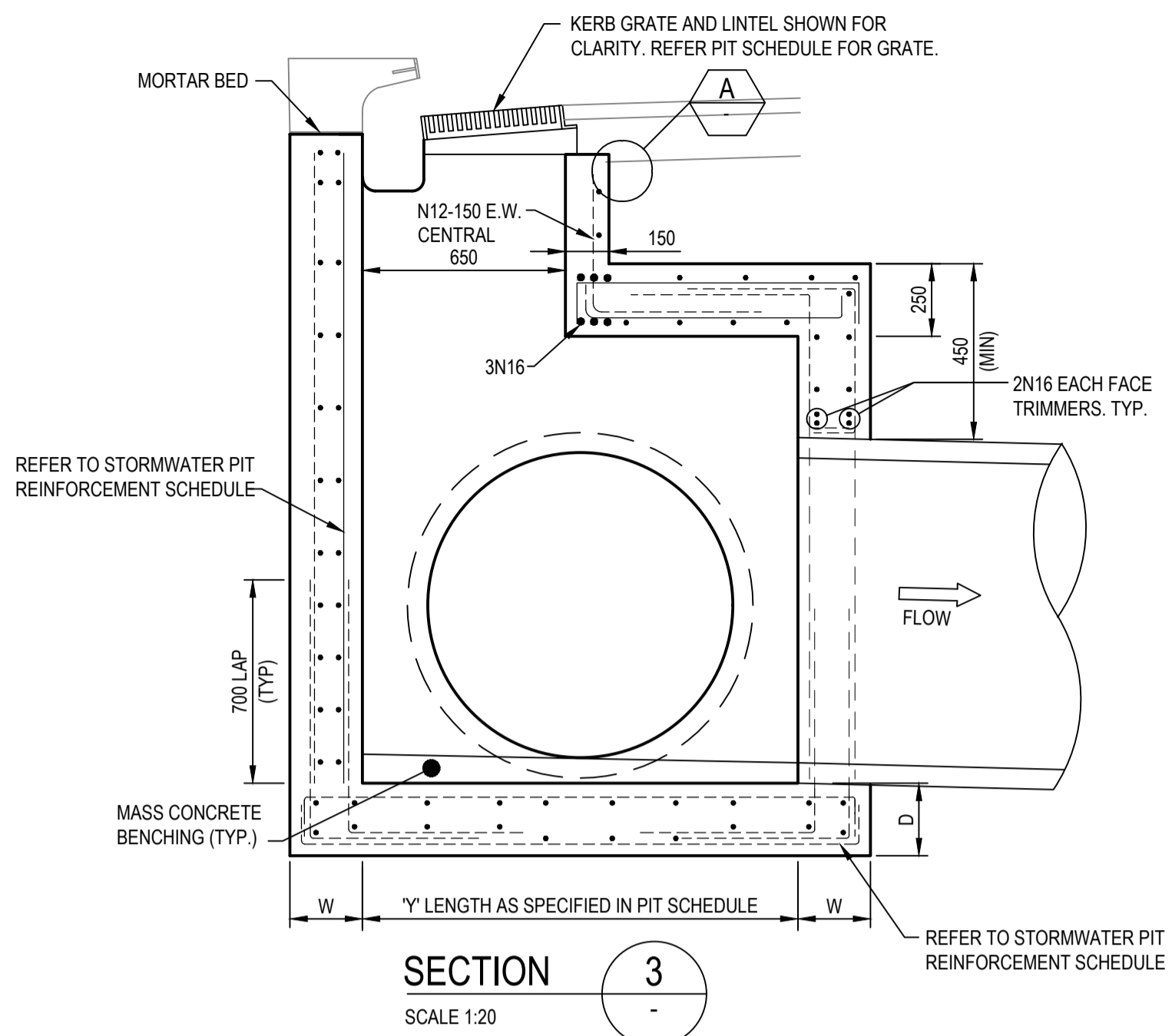
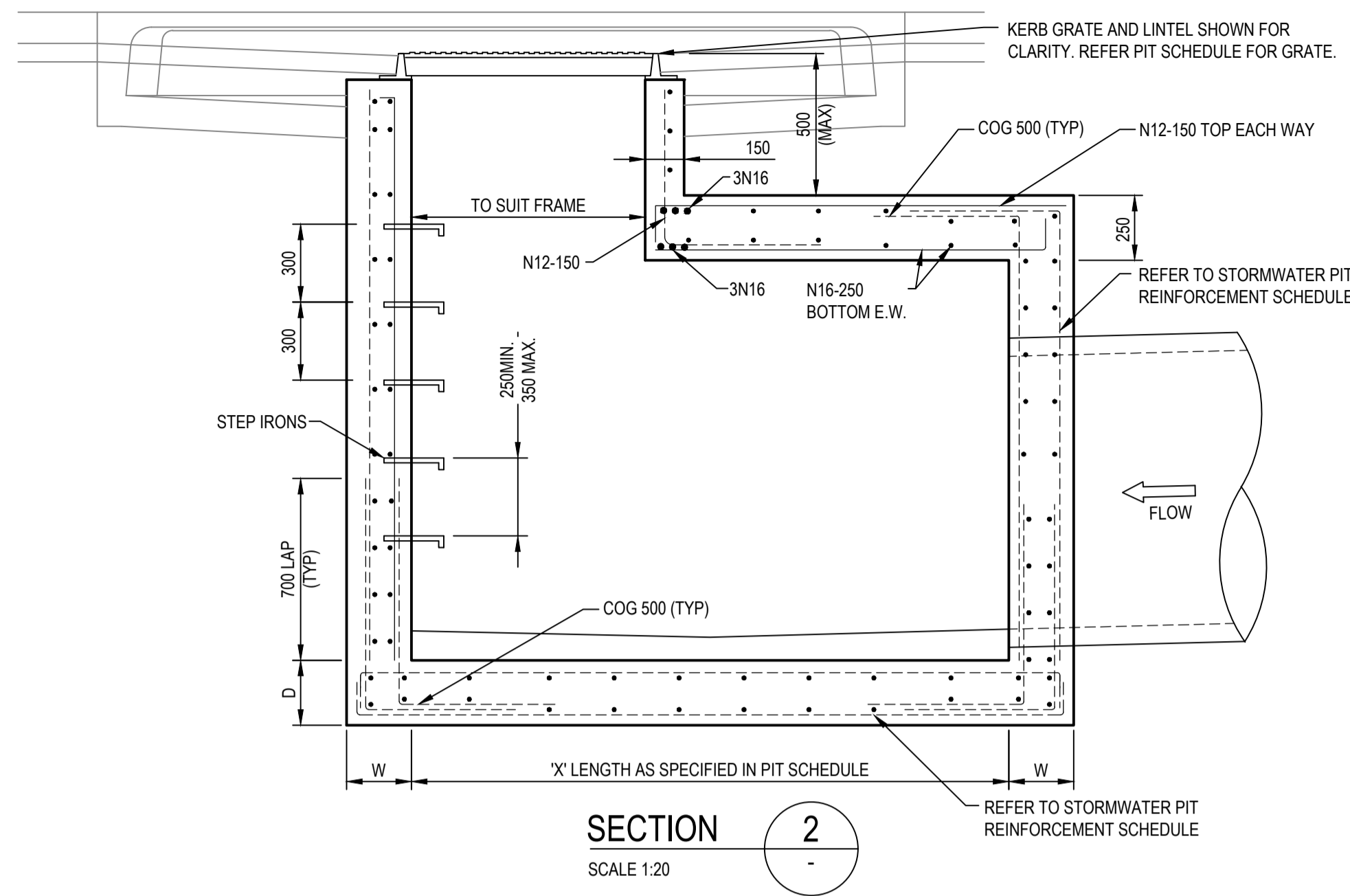
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	STORMWATER DRAINAGE DETAILS
	SHEET 01

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	AHD	Date	Scale	AS SHOWN
Drawing Number	CV-CARDNO-EWC2-2201	Size	A1	Revision
				2



IMPORTANT NOTE: PIT STANDARD DETAILS

FOR PITS WIDER THAN 1200mm AND/OR DEEPER THAN 2000mm REFER TO THE BELOW TABLE AND DETAILS.

NON STANDARD STORMWATER PIT REINFORCEMENT SCHEDULE						
PIT DIMENSIONS(mm)		WALL DIMENSIONS(mm)		VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	BASE REINFORCEMENT
LENGTH 'X','Y'	DEPTH 'H'	BASE THICKNESS 'D'	WALL THICKNESS 'W'			
1200<X,Y<3300	2000<H<3900	230	230	N12-200 E.F.	N12-200 E.F.	N12-200 E.F.
X,Y<1200	H<6000	230	230	N16-250 E.F.	N16-250 E.F.	N16-250 E.F.

NOTE: PIT REINFORCEMENT TO BE SELECTED USING MAXIMUM PIT DIMENSION

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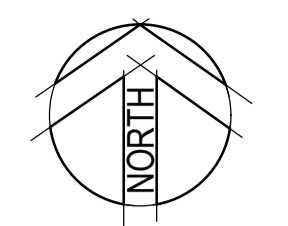
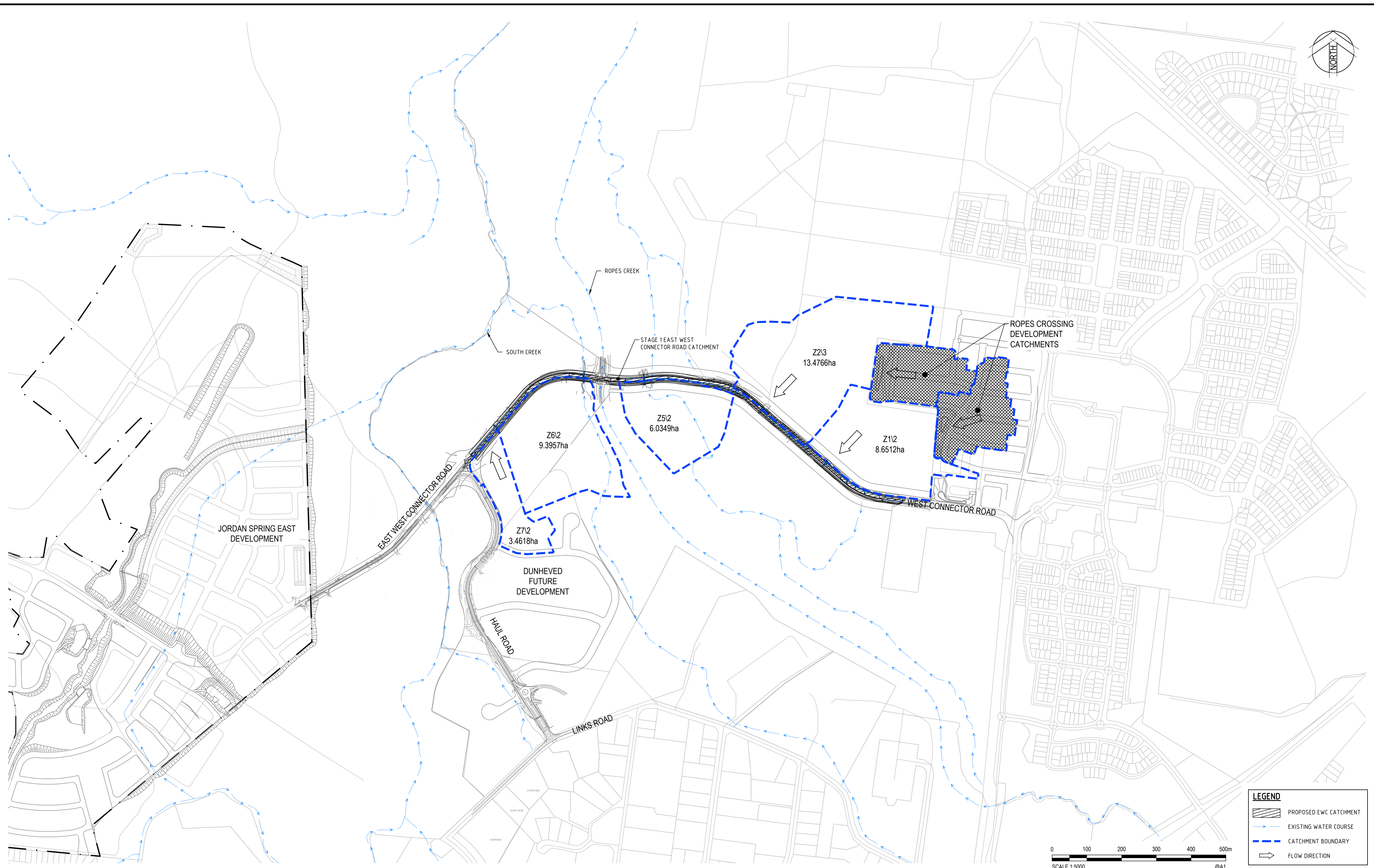
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Verified		Date	
Approved			

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	STORMWATER DRAINAGE DETAILS
Sheet	SHEET 02

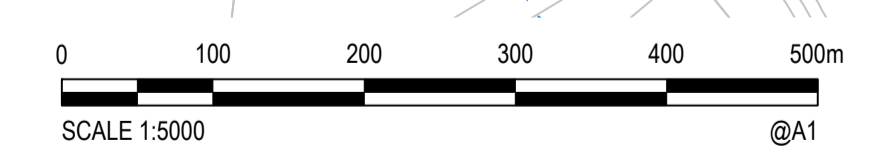
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Scale	AS SHOWN	Size	A1
Drawing Number	CV-CARDNO-EWC2-2202	Revision	2

XREFs: XR-89914020-2301-CI-CADASTRAL; XR-89914020-2301-CI-JORDAN SPRINGS EAST; XR-89914020-2301-CI-JORDAN SPRINGS EAST; XR-89914020-2301-CI-EXISTING ROAD; Xref-89914020-Client Logos; XR-89914020-2301-CI-VARIOUS SITE BOUNDARY; XR-89914020-2301-CI-CATCHMENTS; EXTERNAL; CAD File: N:\Paramattha\Projects\89914020_CENTRAL_PRECINCT_ADI_ST_MARYS\Drawings\23 East Collector Road DA02 Stage 2\Drawings\CV-CARDNO-EWC2-2351-DWG(2).dwg; DATE PLOTTED: 31 January 2018 4:23 PM BY: BRITTANY DEBONO



LEGEND

- PROPOSED EWC CATCHMENT
- EXISTING WATER COURSE
- CATCHMENT BOUNDARY
- FLOW DIRECTION



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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD AND DUNHEVED LINKS ROAD - STAGE 2 CIVIL WORKS AND REGIONAL OPEN SPACE
Title	EXTERNAL STORMWATER CATCHMENT PLAN

Status	FOR INFORMATION ONLY		
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Datum	AHD	Scale	1:5000
Date		Size	A1
Drawing Number	CV-CARDNO-EWC2-2351	Revision	2

LENDLEASE

EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION



SCHEDULE OF DRAWINGS

DRAWING No.	DESCRIPTION
CV-CARDNO-EWC3-1001	COVER SHEET & DRAWING SCHEDULE
CV-CARDNO-EWC3-1011	GENERAL NOTES AND LEGENDS
CV-CARDNO-EWC3-1041	DEVELOPMENT APPLICATION STAGING PLAN & ROAD HIERARCHY PLAN
CV-CARDNO-EWC3-1051	EXISTING SERVICES & SURVEY PLAN
CV-CARDNO-EWC3-1101	EROSION & SEDIMENT CONTROL PLAN
CV-CARDNO-EWC3-1131	EROSION & SEDIMENT CONTROL DETAILS
CV-CARDNO-EWC3-1141	CUT/FILL PLAN
CV-CARDNO-EWC3-1151	TREE REMOVAL PLAN
CV-CARDNO-EWC3-1251	TYPICAL ROAD CROSS SECTIONS AND DETAILS
CV-CARDNO-EWC3-1301	ROADS & STORMWATER PLAN
CV-CARDNO-EWC3-1351	ROAD LONGITUDINAL SECTIONS
CV-CARDNO-EWC3-1601	SITWORKS DETAILS
CV-CARDNO-EWC3-1701	PAVEMENT, SIGNAGE AND LINEMARKING PLAN
CV-CARDNO-EWC3-2201	STORMWATER DRAINAGE DETAILS SHEET 1
CV-CARDNO-EWC3-2202	STORMWATER DRAINAGE DETAILS SHEET 2
CV-CARDNO-EWC3-2301	INTERNAL STORMWATER CATCHMENT PLAN
CV-CARDNO-EWC3-2351	EXTERNAL STORMWATER CATCHMENT PLAN

DATE PLOTTED: 2 February 2018 3:06 PM BY: MARY DOZA
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GENERAL

- ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH PENRITH CITY COUNCIL ENGINEERING CONSTRUCTION SPECIFICATION FOR CIVIL WORKS.
- PENRITH CITY COUNCIL STANDARD DETAILS TO BE USED AT ALL TIMES.

SITEWORKS NOTES

- ORIGIN OF LEVELS:- REFER SURVEY NOTES.
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO CARDNO.
- MAKE SMOOTH CONNECTION WITH EXISTING WORKS AND SURFACES.
- ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
- ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
- PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
- ASPHALTIC CONCRETE SHALL CONFORM TO R.M.S. SPECIFICATION R116.
- ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m² OF BASECOURSE MATERIAL PLACED.
- ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH R.M.S. FORM 3051, AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 100m² OF SUB-BASE COURSE MATERIAL PLACED.
- AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH R.M.S. FORM 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF PENRITH CITY COUNCIL AND THE SUPERINTENDENT.
- A HANDRAIL OR SAFETY BARRIER IS TO BE PROVIDED AT THE TOP OF ALL HEADWALLS AND RETAINING WALLS GREATER THAN 1m HIGH IN ACCORDANCE WITH THE LENDLEASE GMR'S.

BULK EARTHWORKS NOTES

- ORIGIN OF LEVELS: REFER SURVEY NOTES
- STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND STOCK PILE AS DIRECTED BY SUPERINTENDENT FOR FUTURE REUSE.
- EXCAVATED MATERIAL TO BE USED AS STRUCTURAL FILL PROVIDED THE PLACEMENT MOISTURE CONTENT OF THE MATERIAL IS +/- 2% OF THE OPTIMUM MOISTURE CONTENT.
- COMPACT FILL AREAS AND SUBGRADE TO NOT LESS THAN:

LOCATION	STANDARD DRY DENSITY (AS 1289 E 5.1.1.)
UNDER BUILDING SLABS ON GROUND	98%
UNDER ROADS AND CARPARKS	100%
LANDSCAPED AREAS UNLESS NOTED OTHERWISE	98%
- FOR NON COHESIVE MATERIAL, COMPACT TO 75% DENSITY INDEX.
- BEFORE PLACING FILL, PROOF ROLL EXPOSED SUBGRADE WITH AN 8 TONNE (MIN) DEADWEIGHT SMOOTH DRUM VIBRATORY ROLLER TO DETECT THEN REMOVE SOFT SPOTS (AREAS WITH MORE THAN 2mm MOVEMENT UNDER ROLLER).
- FREQUENCY OF COMPACTION TESTING SHALL BE NOT LESS THAN-
 - 1 TEST PER 1,000m² OF FILL PLACED PER LAYER OF FILL.
 - 3 TESTS PER VISIT
 - 1 TEST PER 1000m² OF EXPOSED SUBGRADE "LEVEL 1" TESTING SHALL BE TESTING IN ACCORDANCE WITH AS 3798 (1996).
- FILLING TO BE PLACED IN MAXIMUM 300mm - LOOSE LAYERS AND COMPACTED AS SPECIFIED
- NO FILLING SHALL TAKE PLACE TO EXPOSED SUBGRADE UNTIL THE AREA HAS BEEN PROOF ROLLED IN THE PRESENCE OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER AND APPROVAL GIVEN IN WRITING THAT FILLING CAN PROCEED.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONTROL OF EROSION AND SEDIMENTATION TO THE SATISFACTION OF COUNCIL, NSW OFFICE OF WATER, SYDNEY WATER, THE OFFICE OF ENVIRONMENT AND HERITAGE, AND LENDLEASE'S REPRESENTATIVE. TO THIS END, THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE DRAWINGS SHALL ONLY BE USED AS A GUIDE BY THE CONTRACTOR, AND REPRESENT THE MINIMUM REQUIREMENT ONLY.
- THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED OR AS OTHERWISE DIRECTED BY THE SUPERINTENDENT. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
 - LOCAL AUTHORITY REQUIREMENTS
 - EPA REQUIREMENTS
 - NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
- MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
- WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
- CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

- WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
 - INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
 - CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
 - INSTALL SEDIMENT BASIN AS SHOWN ON PLAN (D). INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
 - UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.
- DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
- FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS IS PRACTICABLE AFTER THE COMPLETION OF CONSTRUCTION ACTIVITIES.

EROSION CONTROL

- DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
- FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS IS PRACTICABLE AFTER THE COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

- STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
- ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
- WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
- TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
- ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
- ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
 - PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
 - ENSURING THAT NOTHING IS NAILED TO THEM
 - PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
 - ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
 - A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
 - CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

NOISE

EPA AND COUNCIL REQUIREMENTS MUST BE ADHERED TO REGARDING LEVEL OF NOISE AND WORKING HOURS TO ENSURE THAT RESIDENTS AND OTHER APPLICABLE NEIGHBORS TO THE SITE ARE NOT DISTURBED UNREASONABLY. THE GENERATION OF NOISE MUST BE MINIMISED.

DUST

DUST MUST BE MINIMISED TO ENSURE THERE IS NO HEALTH RISK OR LOSS OF AMENITY.

STAGING OF WORKS

STRIPPING WORKS ARE TO BE STAGED TO MINIMISE EXTENT OF EXPOSED AREA. WEATHER CONDITIONS TO BE ASSESSED PRIOR TO UNDERTAKING STRIPPING.

STOCKPILE PROTECTION

SEDIMENT RETENTION STRUCTURES TO BE PLACED DOWNSLOPE OF ANY STOCKPILES. STOCKPILE IN PLACE > 28 DAYS TO BE TEMPORARILY GRASSED.

VEHICLE AND ROAD MANAGEMENT

SITE ACCESS TO BE RESTRICTED TO ALLOCATED TRUCK ROUTES. EXTERNAL ROADS TO BE SWEEP REGULARLY FOR DURATION OF WORKS.

EXISTING UNDERGROUND SERVICES NOTES

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. CARDNO CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY 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.

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. 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.

STORMWATER DRAINAGE NOTES

- STORMWATER DESIGN CRITERIA:
 - AVERAGE RECURRENCE INTERVAL:
 - 5 YEAR ARI PIPED DRAINAGE
 - 100 YEAR ARI OVERLAND FLOW
 - RAINFALL INTENSITIES: TIME OF CONCENTRATION:
 - 5 MINUTES
 - 5 YEAR ARI= 126mm/hr
 - 100 YEAR ARI= 219mm/hr
- PIPES 375 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '2' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
- PIPES 300 DIA AND LESS SHALL BE DWV GRADE (CLASS SN8) uPVC WITH SOLVENT WELDED JOINTS.
- EQUIVALENT STRENGTH FRC PIPES MIN CLASS 3 MAY BE USED SUBJECT TO PRIOR APPROVAL BY PENRITH CITY COUNCIL.
- ALL PIPES ARE TO BE UNIFORMLY SUPPORTED ALONG THE LENGTH OF THE BARREL BY SUITABLE FILL MATERIAL. REFER TO BEDDING SUPPORT TYPE.
- PIPES WITH SOCKETS SHALL BE LAID IN BEDDING WHERE SUITABLE RECESSES HAVE BEEN PROVIDED TO ENSURE PIPES DO NOT BEAR ON THEIR SOCKETS.
- PIPES TO BE INSTALLED TO TYPE H51 SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).
- REFER TO AS/NZS 3725:2007 TABLE B1 FOR REQUIRED FILL DEPTHS ABOVE PIPE BARREL PRIOR TO USE OF COMPACTION MACHINERY OR TRAVERSING OF PIPES BY GENERAL SITE EQUIPMENT.
- WHERE WORKING METHODS REQUIRE HIGHER CLASS PIPE, THE CONTRACTOR SHALL REFER TO AS 3725 (2007) TO DETERMINE THE APPROPRIATE PIPE CLASS. PROPOSED PIPE CLASS SHALL BE REVIEWED BY CARDNO PRIOR TO INSTALLATION.
- ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500.3 (2015).
- THE USE OF PRECAST PITS IS ONLY PERMITTED WITH THE PRIOR APPROVAL OF PENRITH CITY COUNCIL.
- ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
- WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC DWV SEWER GRADE PIPE IS TO BE USED.
- CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
- GRATES AND COVERS SHALL CONFORM TO AS 3996. MINIMUM CLASS C. UNLESS NOTED OTHERWISE.
- ALL BOX CULVERTS SHALL BE STRUCTURALLY DESIGNED BY THE MANUFACTURER AND DELIVERED TO SITE AS FIT FOR PURPOSE.
- AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.

STORMWATER DRAINAGE NOTES CONTINUED

- ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.

TELSTRA - DUTY OF CARE NOTE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY ITS LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO ITS PROPERTY AND LOSSES CAUSED TO TELSTRA AND ITS CUSTOMERS.

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN INVESTIGATED BY RPS GROUP P/L (FORMERLY WHELAN'S INSTIES), BEING REGISTERED SURVEYORS. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. CARDNO DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT CARDNO.

ROOF WATER KERB OUTLETS

- KERB OUTLETS TO BE PROVIDED IN ACCORDANCE WITH PENRITH CITY COUNCILS CIVIL WORKS SPECIFICATION AT EACH LOT WHERE INTERALLOTMENT DRAINAGE IS NOT PROVIDED
- KERB OUTLETS ARE TO BE CONSTRUCTED AT THE SAME TIME KERBS ARE POURED.

STREET FURNITURE

- ALL LIGHT POLES, STREET NAMES AND BUS SHELTERS IN THIS SUBDIVISION WILL BE GALVANISED BLACK POWDER COATED TO THE SATISFACTION OF PENRITH CITY COUNCIL. FURTHER THAT THESE LIGHT POLES WILL COMPLY WITH COUNCIL'S SPECIFICATIONS.
- ALL LIGHT POLES ARE TO BE TYPE 'MACARTHUR'. REFER ELECTRICAL DESIGN DRAWINGS.

CONCRETE NOTES

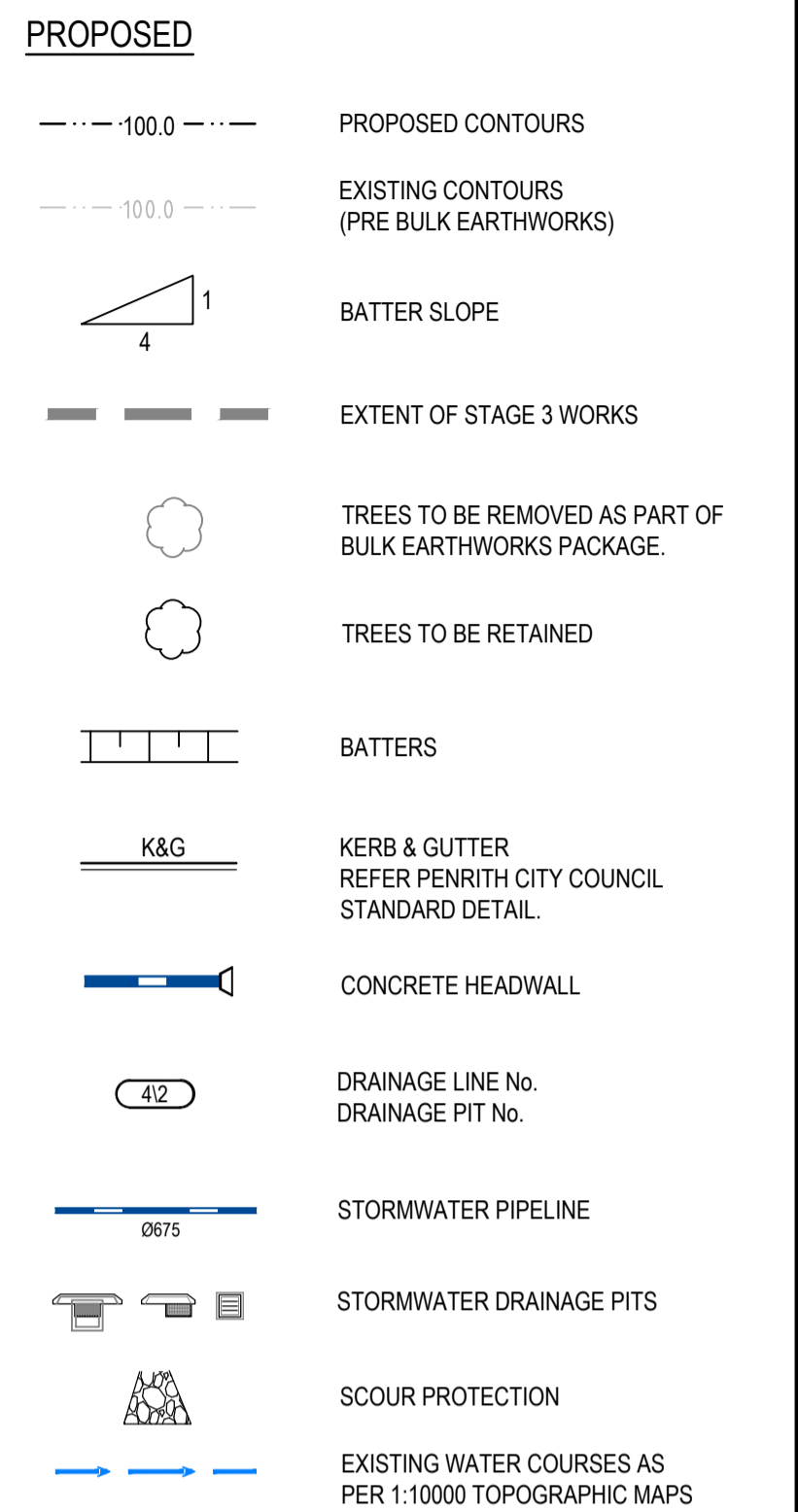
- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
- CONCRETE QUALITY

ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

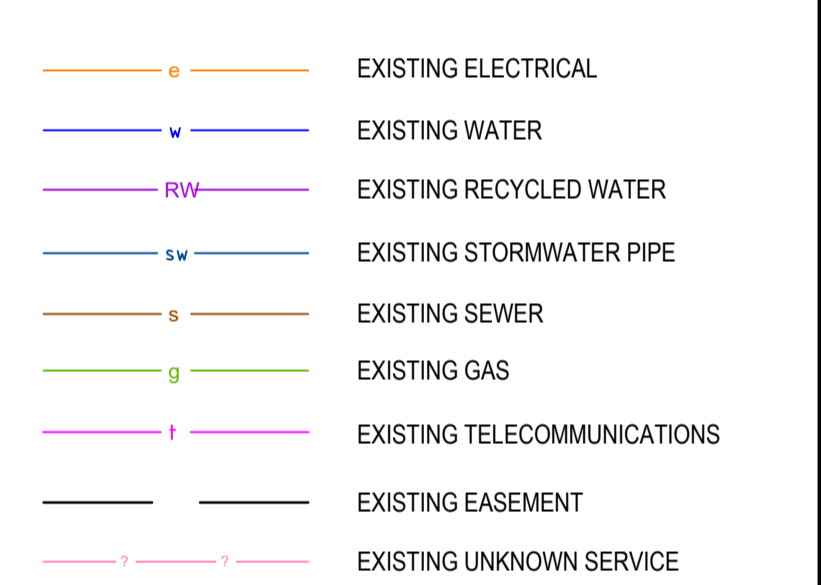
ELEMENT	AS 3600 Fc MPa AT 28 DAYS	SPECIFIED SLUMP	NOMINAL AGG. SIZE
VEHICULAR BASE	32	60	20
KERBS AND PATHS	25	80	20
PITS, FOUNDATIONS & CULVERT BASE SLABS	40	80	20
HEADWALL	40	80	20

- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379.
- NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY CARDNO.
- CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm TOP AND 70mm FOR EXTERNAL EDGES UNLESS NOTED OTHERWISE.
- ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
- THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED AND CURED IN ACCORDANCE WITH R.T.A. SPECIFICATION R83.

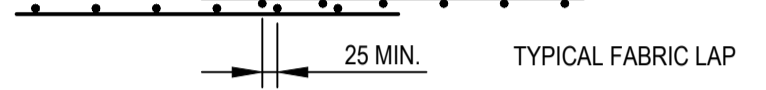
PROPOSED WORKS LEGEND



EXISTING WORKS LEGEND



REINFORCEMENT NOTES

- REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY. IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
- SPLICES IN THE REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN. THE WRITTEN APPROVAL OF THE ENGINEER SHALL BE OBTAINED FOR ANY OTHER SPLICES. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT.
- WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED IN WRITING BY THE ENGINEER.
- REINFORCEMENT SYMBOLS -
 - N - DENOTES GRADE 400N TEMPPORE DEFORMED BARS TO AS 1302
 - R - DENOTES GRADE 250R HOT ROLLED PLAIN BARS TO AS 1302
 - SL - DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304
 - W - DENOTES HARD-DRAWN PLAIN WIRE TO AS 1303
- REINFORCEMENT COGS AND EXTENSIONS TO BE IN ACCORDANCE WITH AS3600.
 - NUMBER OF BARS IN GROUP
 - BAR GRADE AND TYPE
 - NOMINAL BAR SIZE IN mm
 - SPACING IN mm
- THE FIGURES FOLLOWING THE FABRICS SYMBOL 'SL' IS THE REFERENCE NUMBER FOR FABRIC TO AS 1304.
- ALL REINFORCEMENT FABRIC SHALL COMPLY WITH AS1303 AND AS1304 AND SHALL BE SUPPLIED AS FLAT SHEETS.
 -  TYPICAL FABRIC LAP
- FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF WIRE.
- PLACE SUFFICIENT BAR CHAIRS UNDER BOTTOM REINFORCING RODS AND TOP CROSSRODS IN SLABS TO ALLOW THEM TO BE SUPPORTED IN THEIR CORRECT POSITIONS DURING CONCRETING (NOT GREATER THAN 900mm CENTRES BOTH WAYS)
- REINFORCEMENT LAYERS DENOTED THUS UNO -
 - TT - DENOTES TOP BARS LAID LAST IN TOP
 - T - DENOTES BOTTOM BARS LAID FIRST IN BOTTOM
 - BB - DENOTES BOTTOM BARS LAID SECOND IN BOTTOM
- WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-300 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 450mm UNLESS NOTED OTHERWISE.
- MINIMUM LAP LENGTHS UNLESS NOTED OTHERWISE SHALL BE -
 - 500 FOR N12 BARS
 - 600 FOR N16 BARS
 - 900 FOR N20 BARS
 - 1000 FOR N24 BARS
 - 1200 FOR N28 BARS
 - 1500 FOR N32 BARS
 - 1800 FOR N36 BARS



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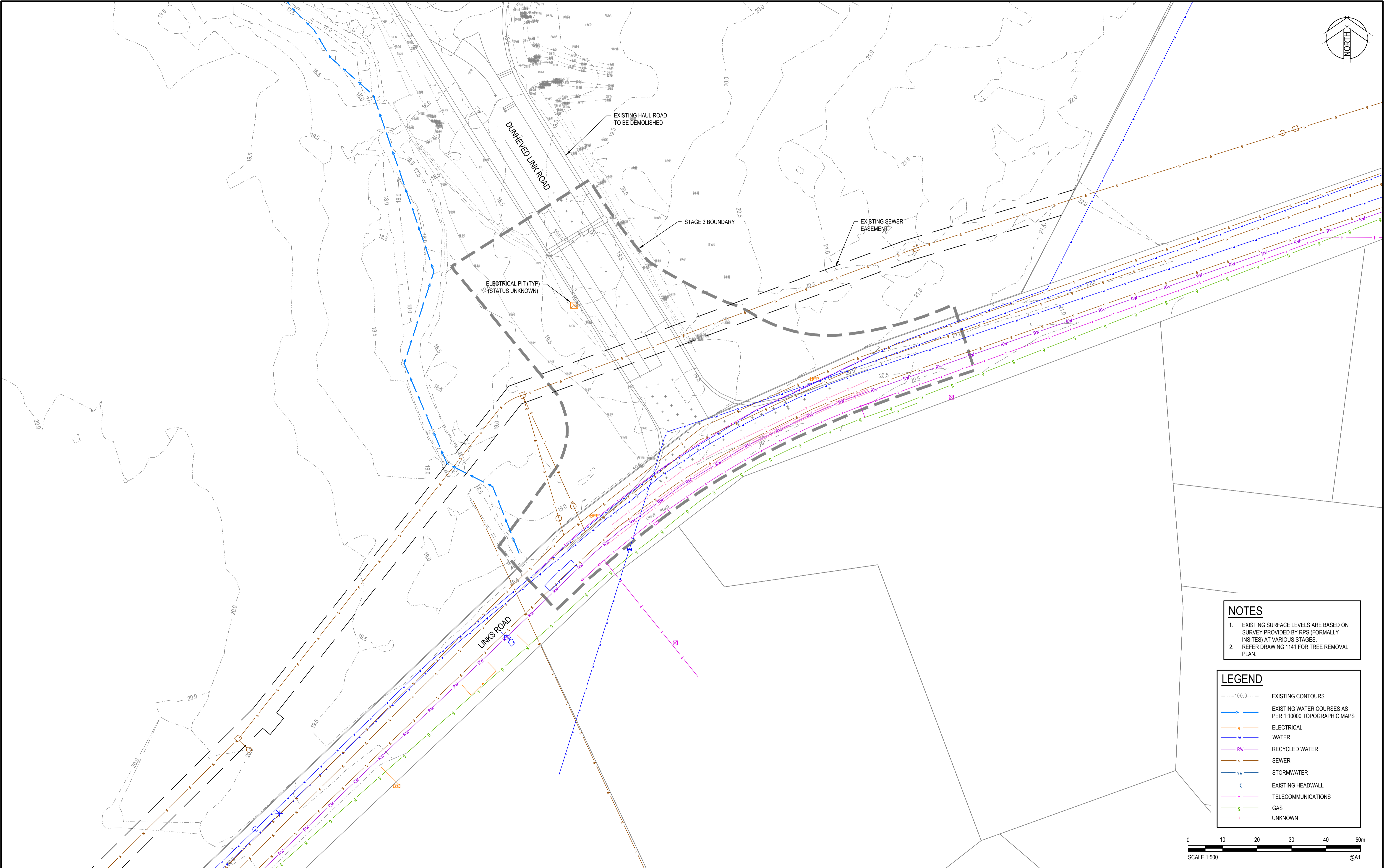


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Checked	DAC	Date	02.02.18
Designed	BJD	Date	02.02.18
Verified	ARM	Date	02.02.18
Approved	ARM	Date	02.02.18

Client	LENDLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	GENERAL NOTES AND LEGENDS

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES
Datum	AHD
Scale	N.T.S
Size	A1
Drawing Number	CV-CARDNO-EWC3-1011
Revision	1

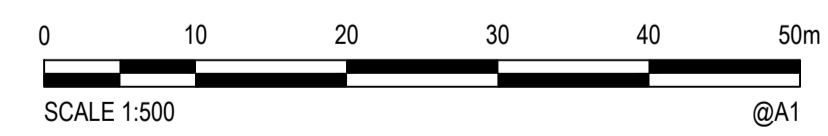


NOTES

- EXISTING SURFACE LEVELS ARE BASED ON SURVEY PROVIDED BY RPS (FORMALLY INSITES) AT VARIOUS STAGES.
- REFER DRAWING 1141 FOR TREE REMOVAL PLAN.

LEGEND

- 10.0--- EXISTING CONTOURS
- e--- EXISTING WATER COURSES AS PER 1:10000 TOPOGRAPHIC MAPS
- w--- ELECTRICAL
- RW--- WATER
- s--- RECYCLED WATER
- SW--- SEWER
- SW--- STORMWATER
- <--- EXISTING HEADWALL
- g--- TELECOMMUNICATIONS
- g--- GAS
- ?--- UNKNOWN



Rev.	Date	Description	Des.	Verif.	Appd.
1	02.02.18	DRAFT - ISSUED FOR CLIENT REVIEW	BJD	ARM	



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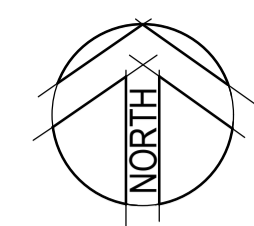
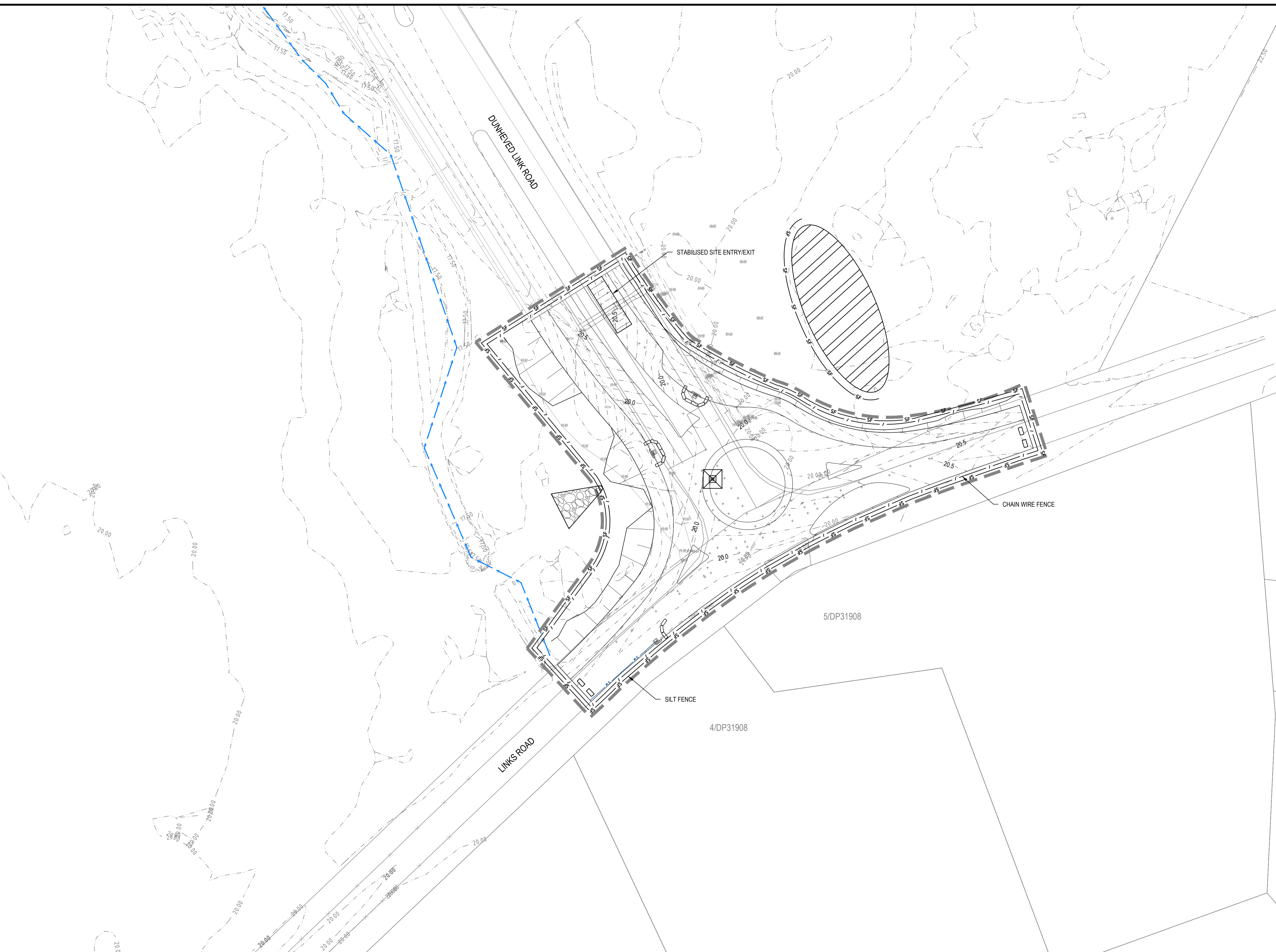
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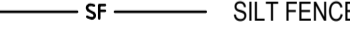

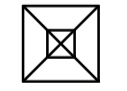
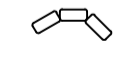
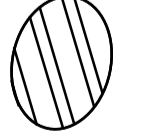
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 Project **EAST WEST CONNECTOR ROAD**
STAGE 3 - CIVIL WORKS
DEVELOPMENT APPLICATION
 Title **EXISTING SERVICES & SURVEY PLAN**

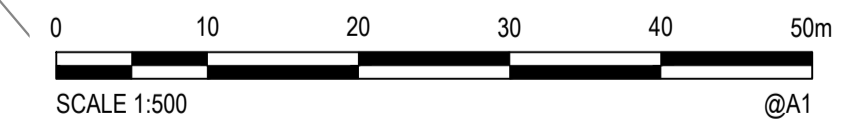
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Datum	AHD	Scale	1:500
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			1

XREFs: XR-89914020-CI-23-EXISTING CONTOURS; XR-89914020-CI-23-CADASTRAL; XR-89914020-CI-23-SURVEY; XR-89914020-CI-23-SOUTH CREEK BRIDGE; XR-89914020-CI-23-03-BOUNDARIES; XR-89914020-CI-23-03-DESIGN; XR-89914020-CI-23-03-DESIGN CONTOURS 500; XR-89914020-CI-23-03-DESIGN DATE PLOTTED: 2 February 2018 3:06 PM BY: MARY DOZA
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- NOTES**
1. ALL CONSTRUCTION ACCESS FROM THE NORTH.
 2. NO WORKS TO BE UNDERTAKEN OUTSIDE OF SITE BOUNDARY. CHAINWIRE FENCE & SILT FENCE SHOWN OUTSIDE OF BOUNDARY FOR CLARITY ONLY.
 3. ACTUAL CONFIGURATION OF WORKS WILL BE DEPENDENT ON STAGING AS REQUIRED FOR LINKS ROAD TRAFFIC OPERATION.

- LEGEND**
-  1800mm CHAIN WIRE FENCE
 -  SILT FENCE
 -  STABILISED SITE ENTRY/EXIT WITH WHEEL WASH
 -  GEOTEXTILE FILTER PIT SURROUND
 -  SAND BAGS
 -  INDICATIVE TOPSOIL STOCKPILE LOCATIONS



Rev.	Date	Description	Des.	Verf.	Appd.
1	02.02.18	DRAFT - ISSUED FOR CLIENT REVIEW			
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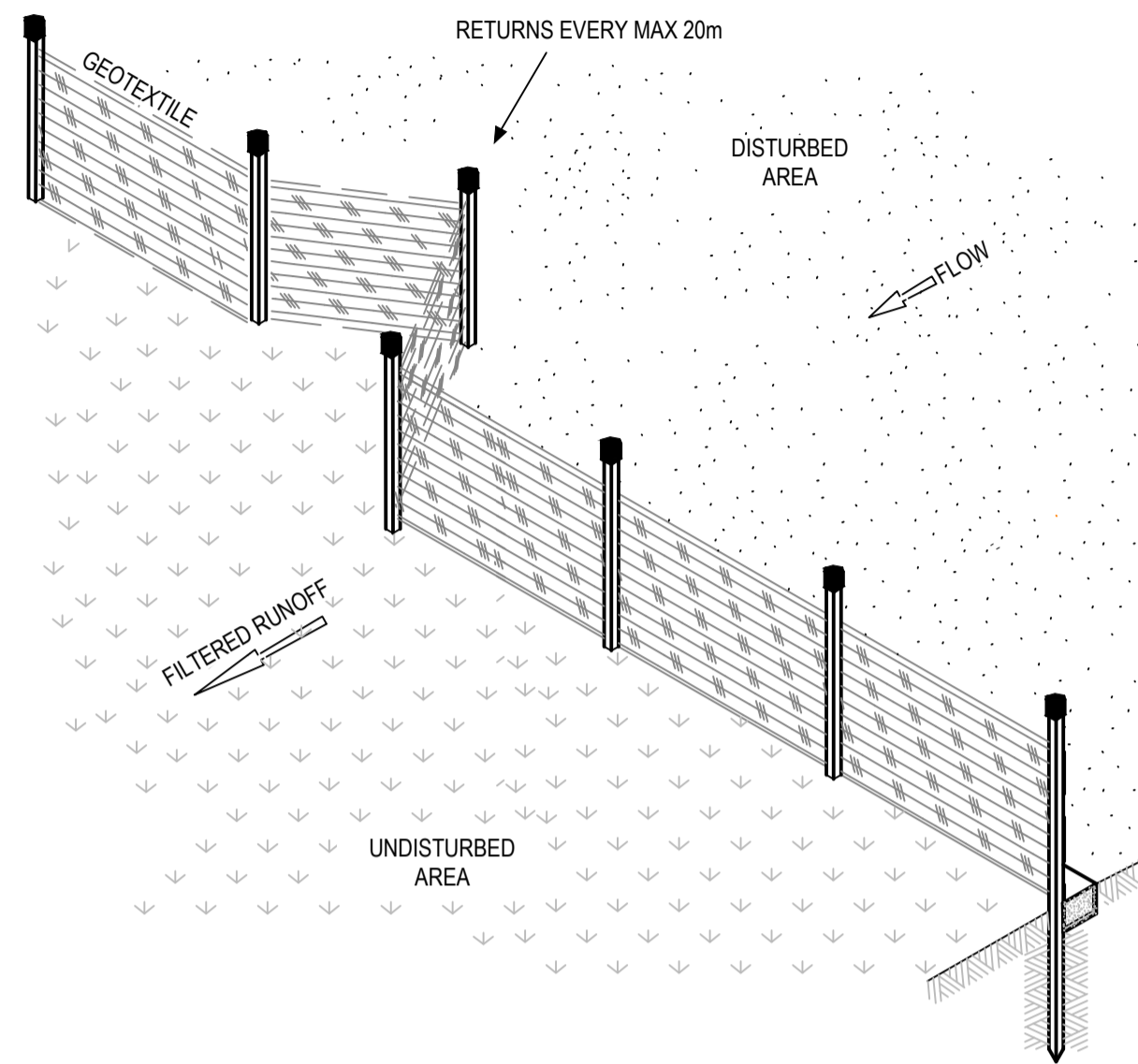


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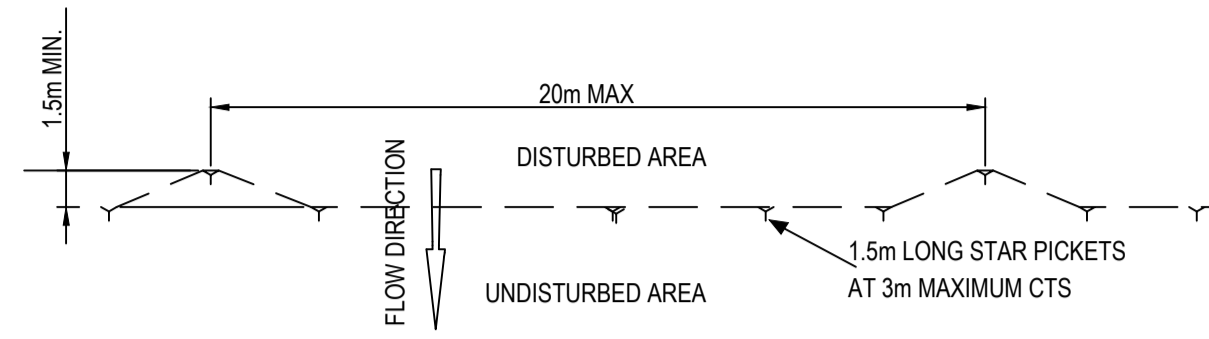
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Approved	ARM	Date	02.02.18

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EROSION & SEDIMENT CONTROL PLAN

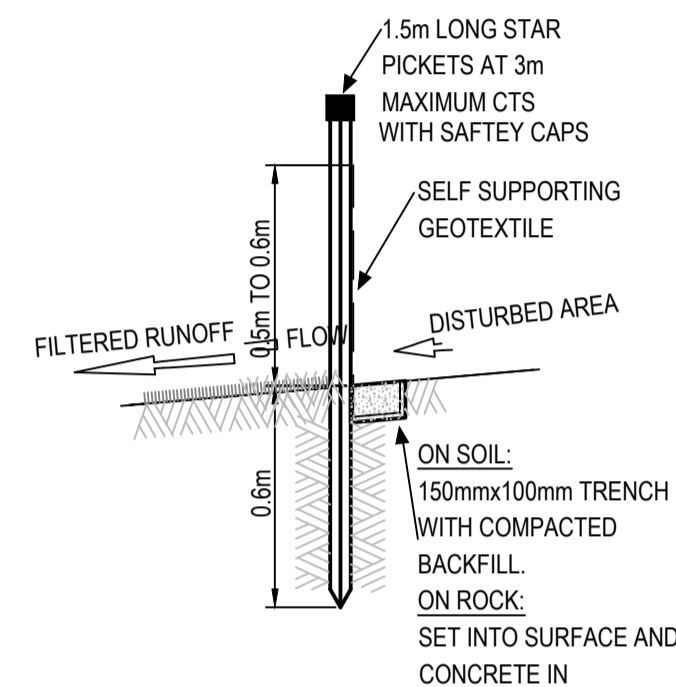
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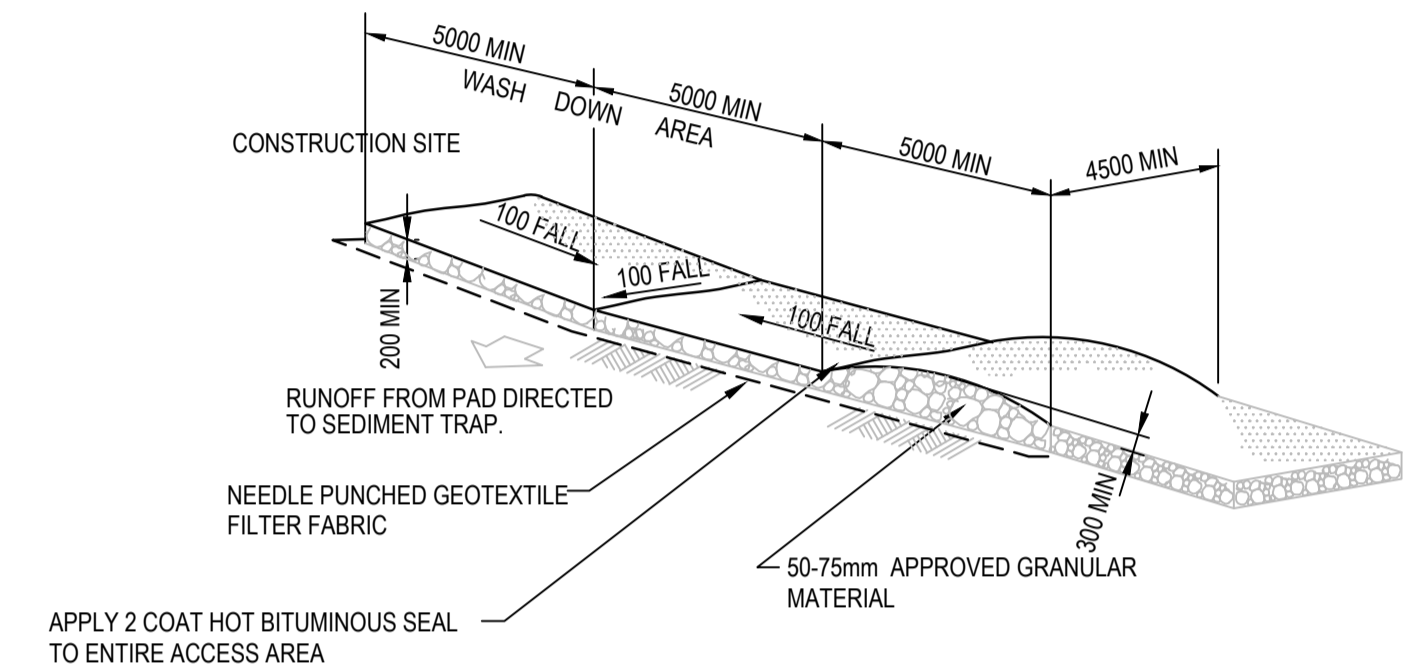
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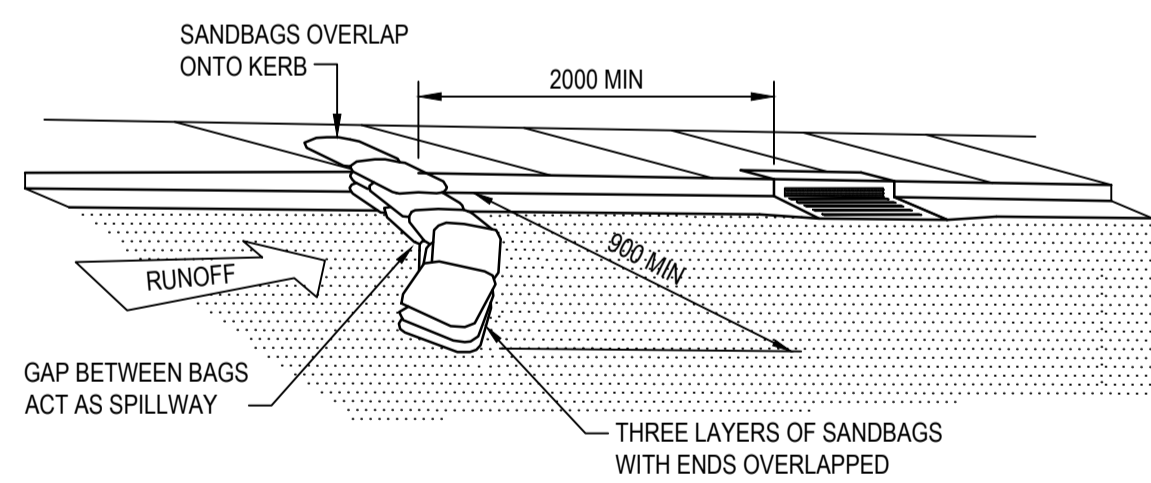
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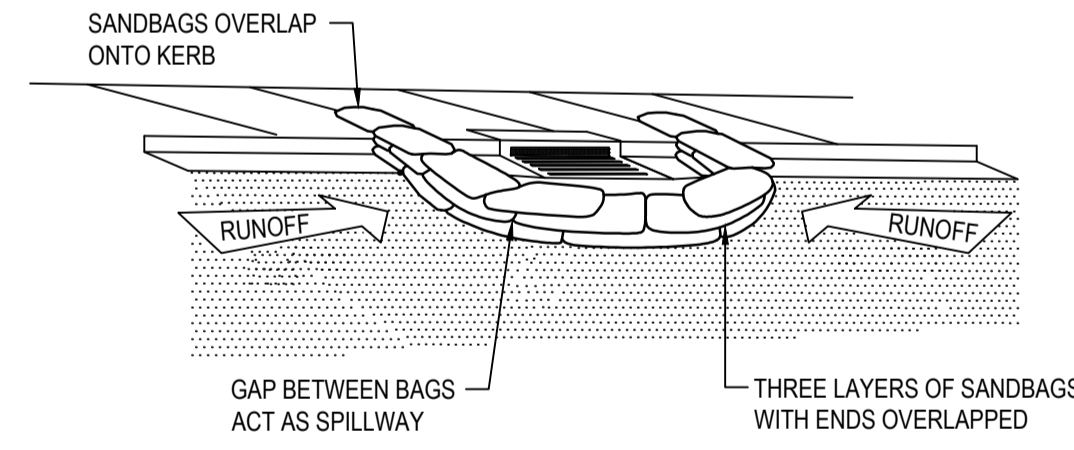
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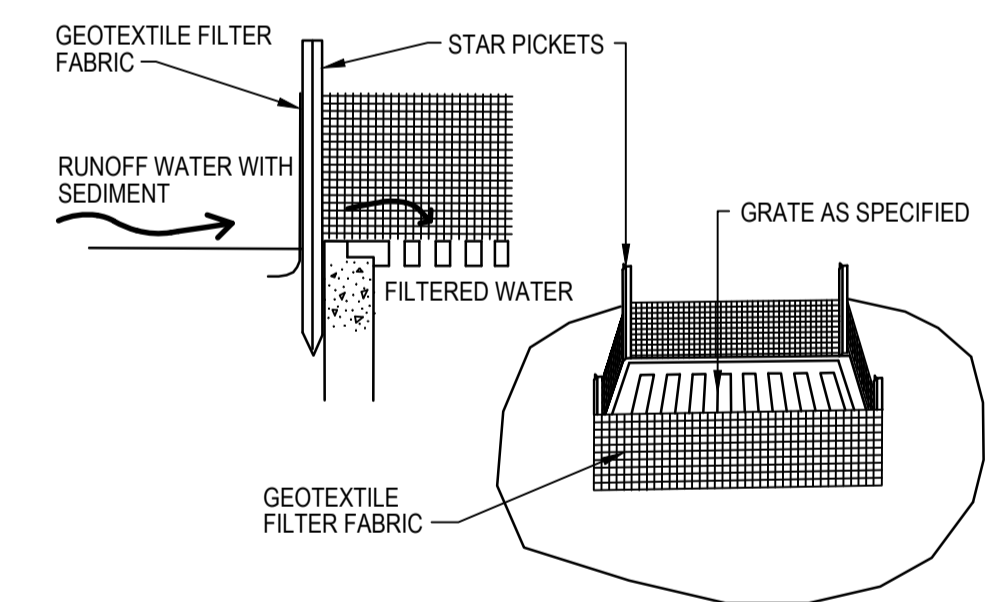
STABILISED SITE ENTRY/EXIT WITH WHEEL WASH
NOT TO SCALE



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



SEDIMENT TRAP FOR KERB INLET (AT LOW POINT - SANDBAG)
NOT TO SCALE



GEOTEXTILE FILTER PIT SURROUND
NTS



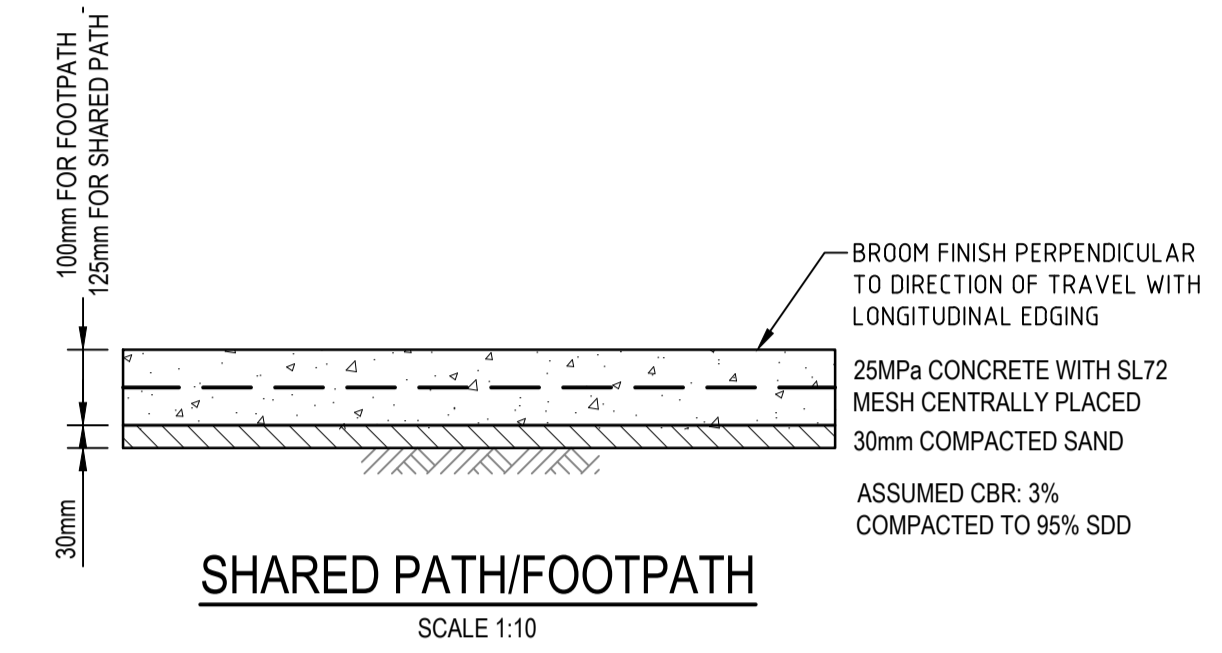
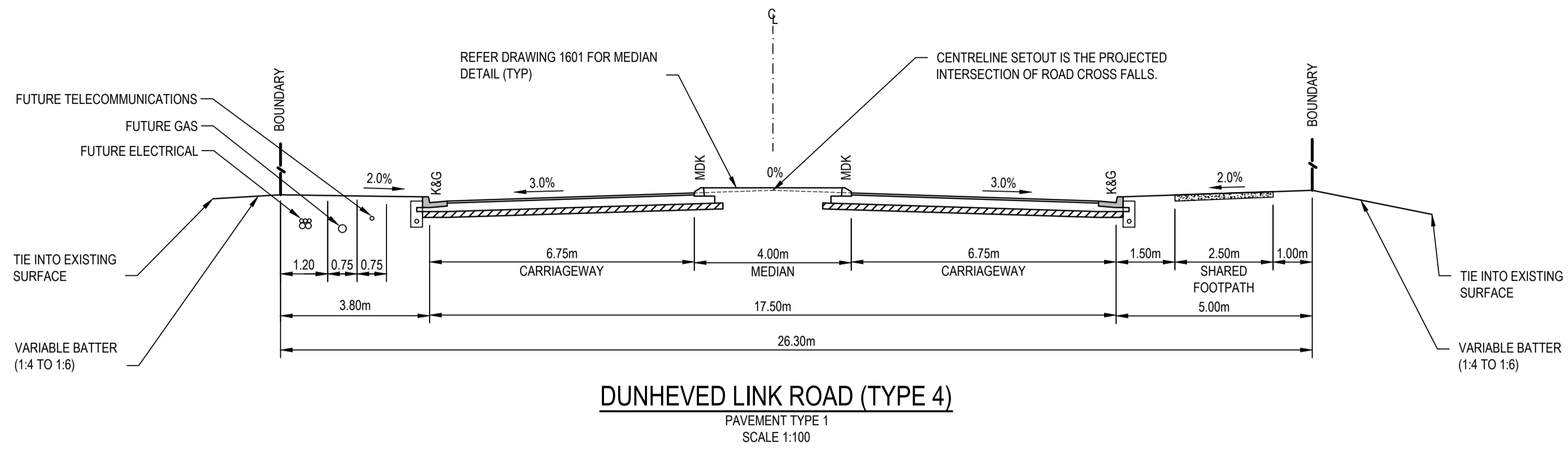
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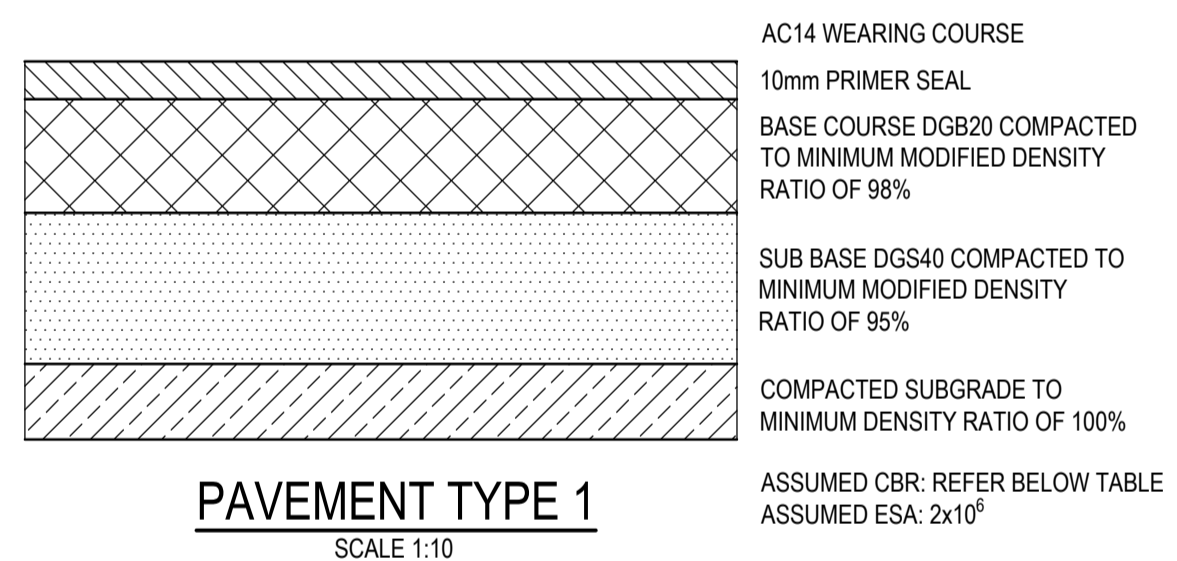
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Approved	ARM	Date	02.02.18

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EROSION & SEDIMENT CONTROL DETAILS

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Size		Size	A1
Drawing Number	CV-CARDNO-EWC3-1131		Revision
			1

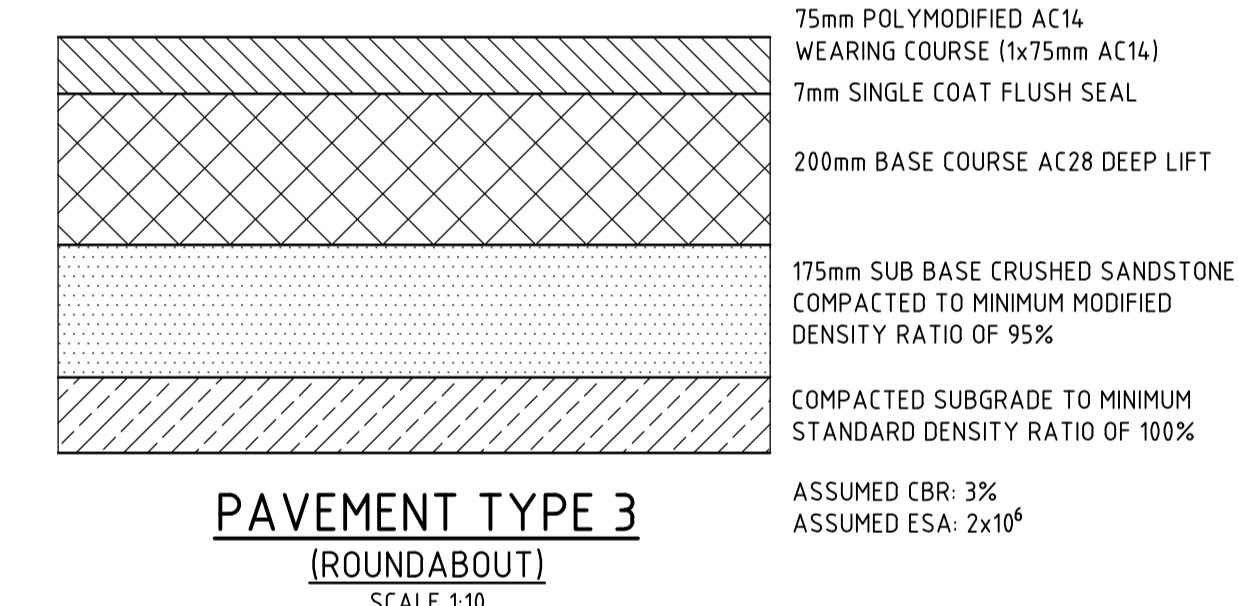


NOTES
 1. SAWCUT PATH OR TROWELLED DUMMY JOINT AT 2m SPACING.
 2. EVERY THIRD JOINT TO BE FULL DEPTH DOWELLED EXPANSION JOINT.

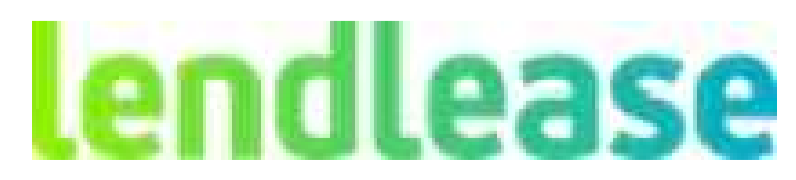
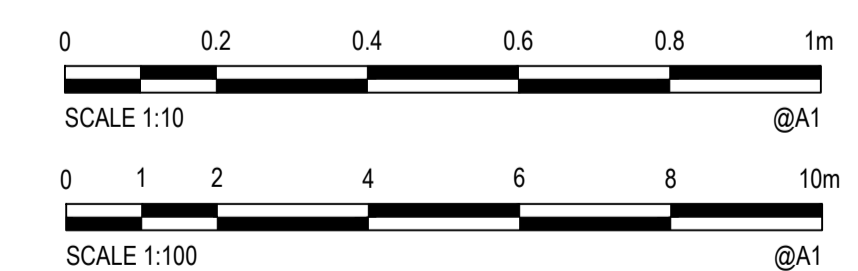


PAVEMENT 1 DESIGN

DESIGN SUBGRADE	CBR 3%	CBR 5%
WEARING SURFACE	50mm AC10	50mm AC10
SINGLE COAT FLUSH SEAL	7mm	7mm
BASE COURSE	150mm	150mm
SUBBASE	410mm	290mm
TOTAL THICKNESS	610mm	490mm



NOTES
 1. TYPICAL ROAD CROSS SECTIONS ARE BASED UPON INFORMATION PROVIDED BY LENDLEASE. STREET SCAPES ARE INDICATIVE ONLY & SUBJECT TO DETAILED DESIGN BY LANDSCAPE ARCHITECT.
 2. SERVICE ALLOCATIONS ARE INDICATIVE ONLY. REFER TO SEPARATE SERVICE DRAWING PACKAGES FOR ALIGNMENT & DETAILS.
 3. CONSTRUCTION OF FOOTPATH TO BE DEFERRED UNTIL DIRECTED BY THE SITE SUPERINTENDENT.
 4. TIE INTO EXISTING SURFACE OR PROVIDE RETAINING WALL STRUCTURE IF BATTER EXTENDS BEYOND EXISTING ROAD CORRIDOR.



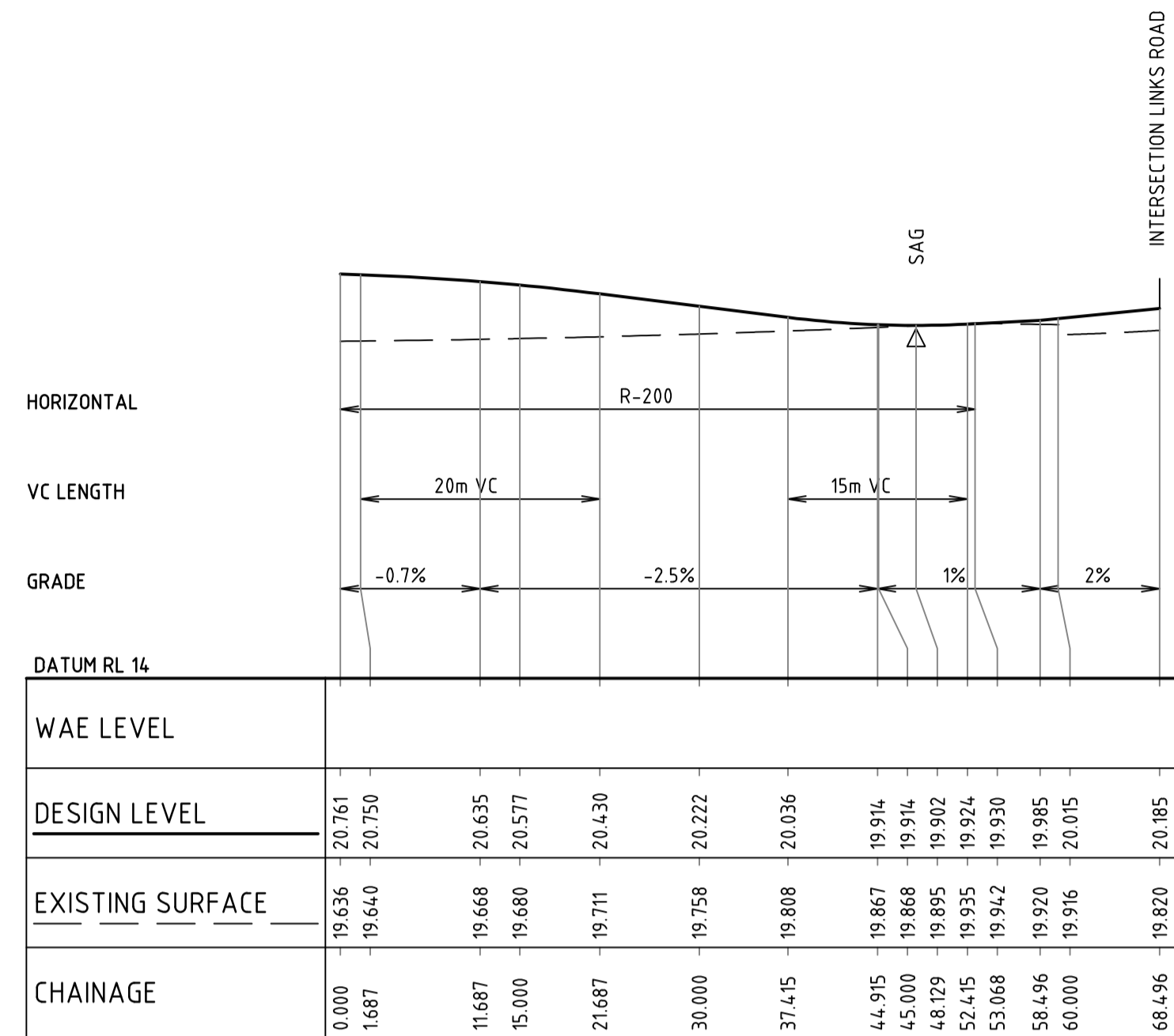
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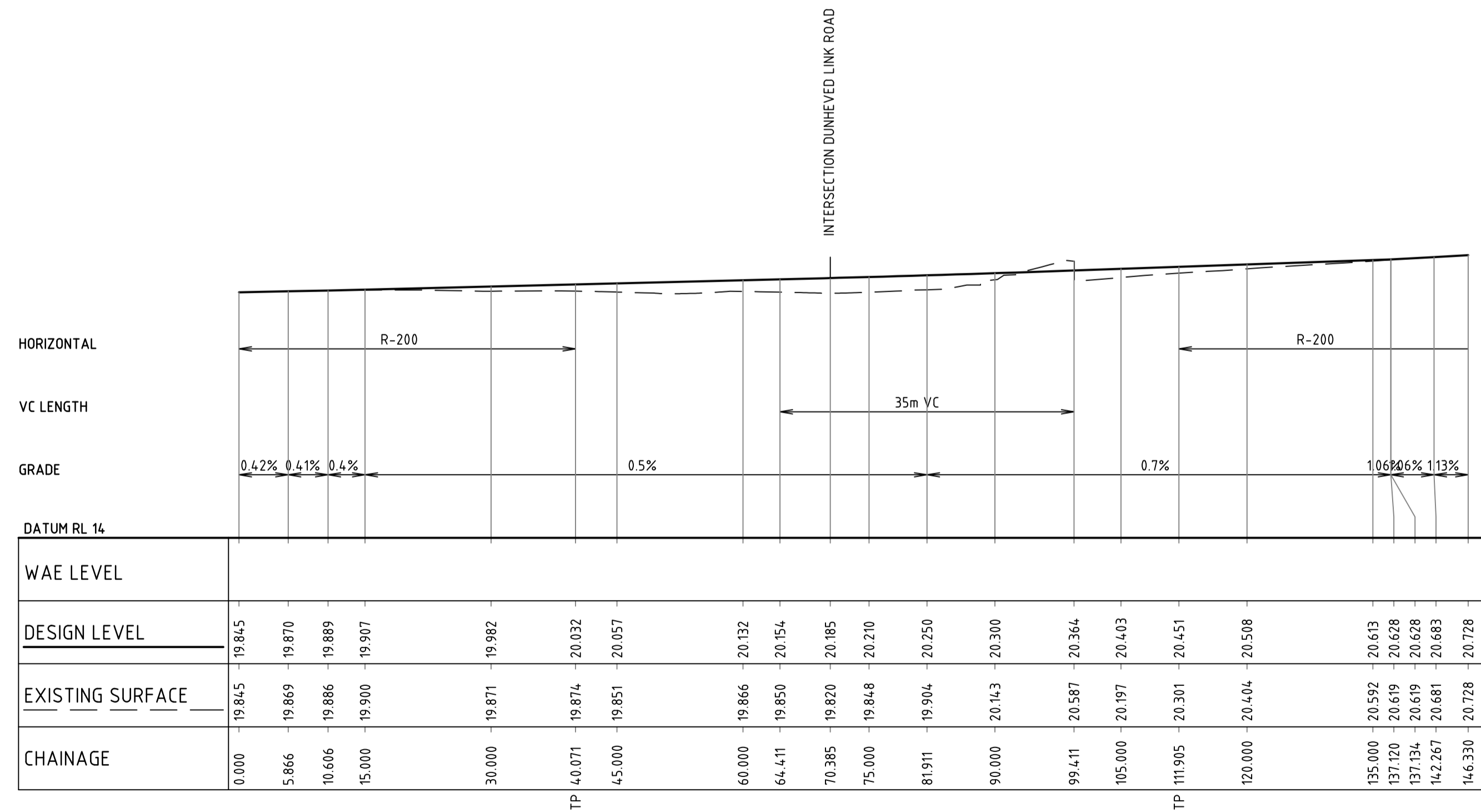
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Checked	DAC	Date	02.02.18
Designed	BJD	Date	02.02.18
Verified	ARM	Date	02.02.18
Approved	ARM	Date	02.02.18

Client: LENDLEASE
 Project: EAST WEST CONNECTOR ROAD
 STAGE 3 - CIVIL WORKS
 DEVELOPMENT APPLICATION
 Title: TYPICAL ROAD CROSS SECTIONS AND DETAILS

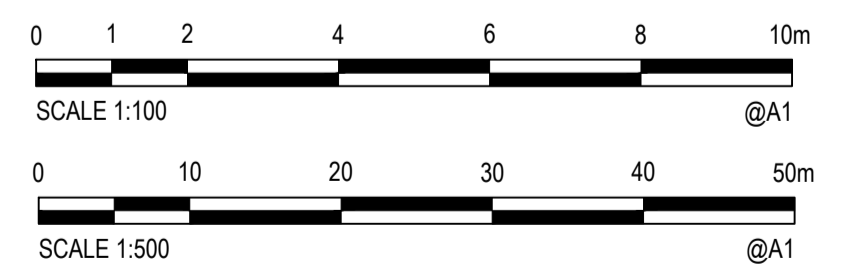
Status	FOR INFORMATION ONLY		
NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	AHD	Scale	AS SHOWN
Size			A1
Drawing Number	CV-CARDNO-EWC3-1251		Revision
			1



DUNHEVED LINK ROAD LONGITUDINAL SECTION
 1:500 HORI.
 1:100 VERT.



LINKS ROAD LONGITUDINAL SECTION
 1:500 HORI.
 1:100 VERT.



Rev.	Date	Description	Des.	Verif.	Appd.
1	02.02.18	DRAFT - ISSUED FOR CLIENT REVIEW		BJD	ARM



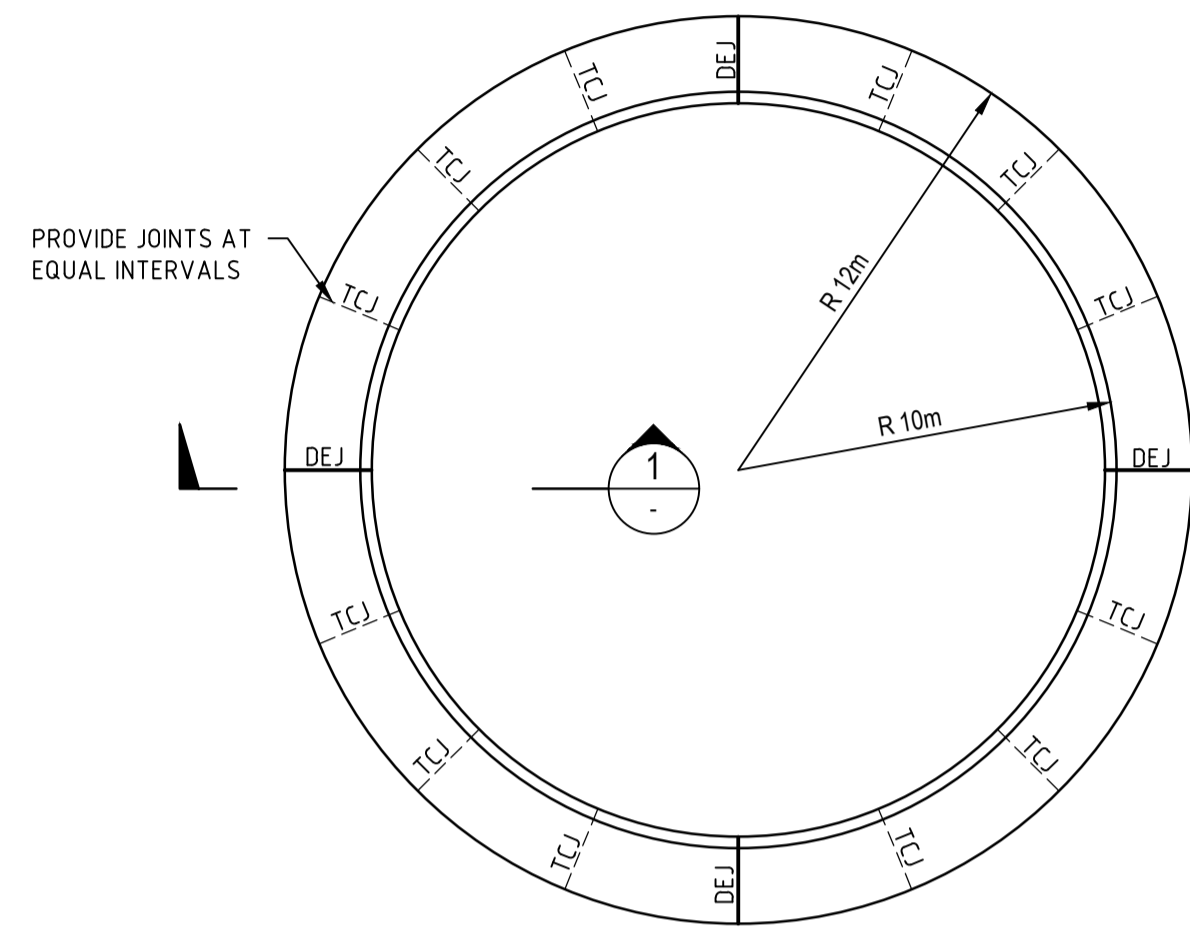
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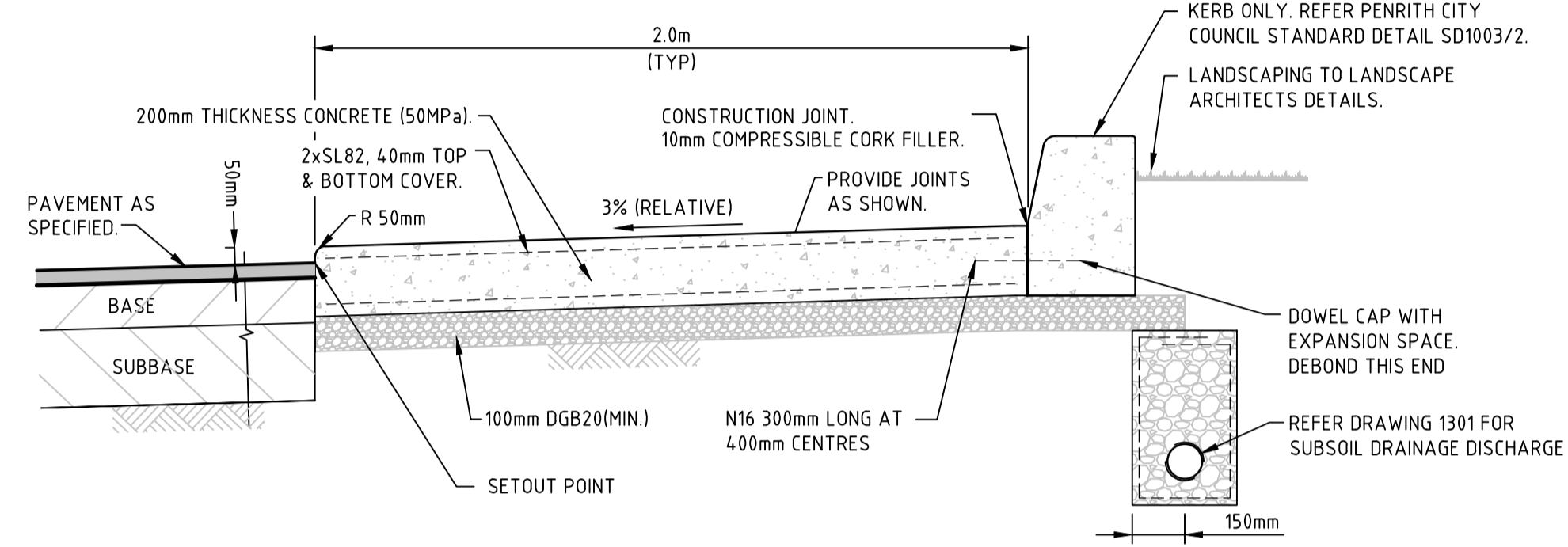
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Checked	DAC	Date	02.02.18
Designed	BJD	Date	02.02.18
Verified	ARM	Date	02.02.18
Approved	ARM	Date	02.02.18

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	ROAD LONGITUDINAL SECTIONS

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Size	A1	Revision	1
Drawing Number	CV-CARDNO-EWC3-1351		



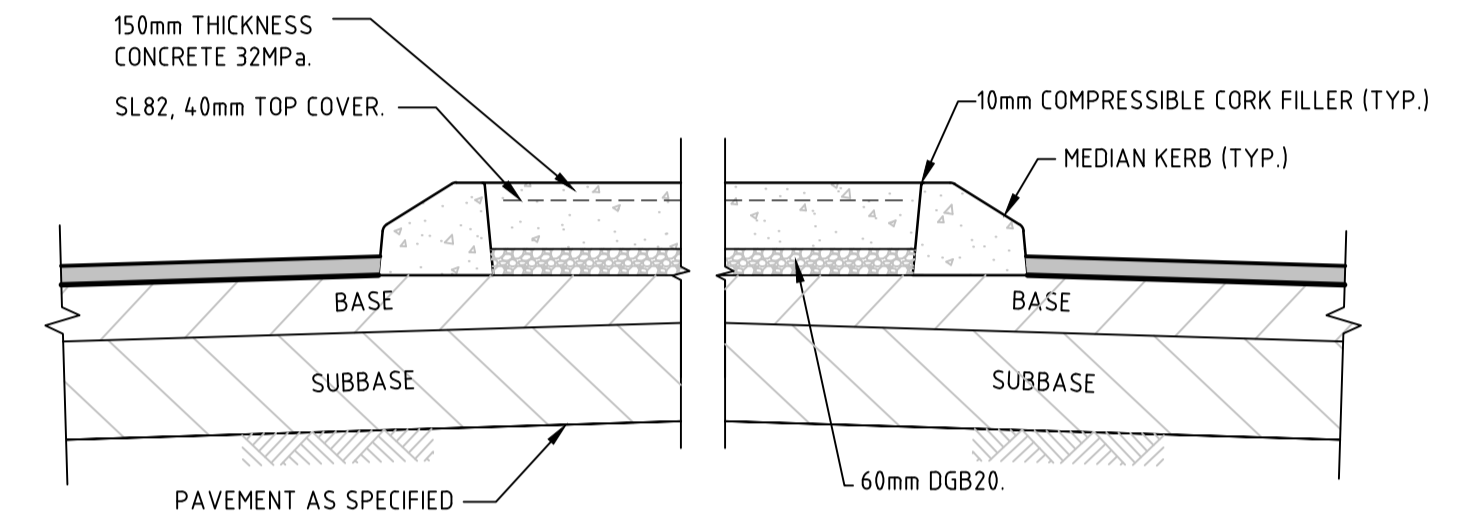
ROUNDABOUT CENTRE ISLAND PLAN
SCALE 1:200



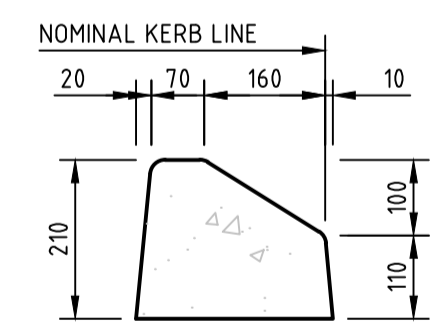
SECTION 1
NTS

ROUNDABOUT CENTRE ISLAND DETAIL

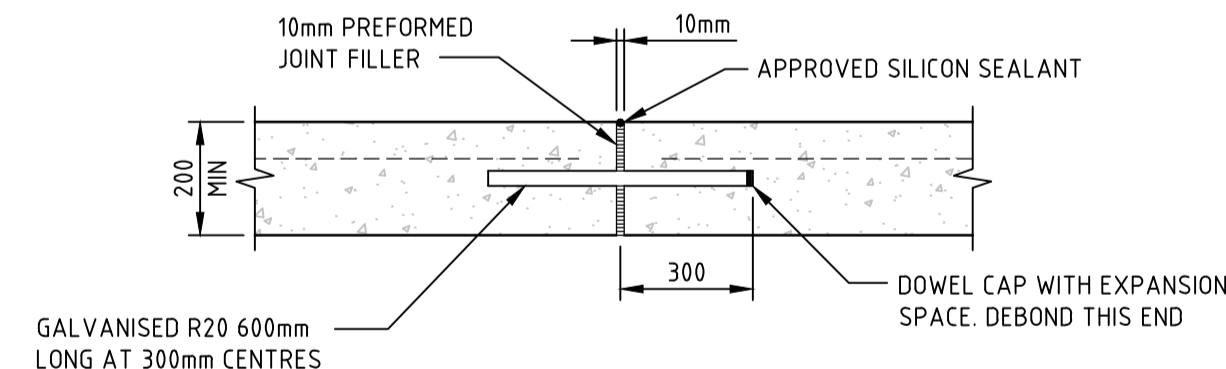
NOTES
ROUNDABOUT ANNULUS SHALL BE GRADED AT 3% RELATIVE TO ROAD GRADE NOT 3% ABSOLUTE.



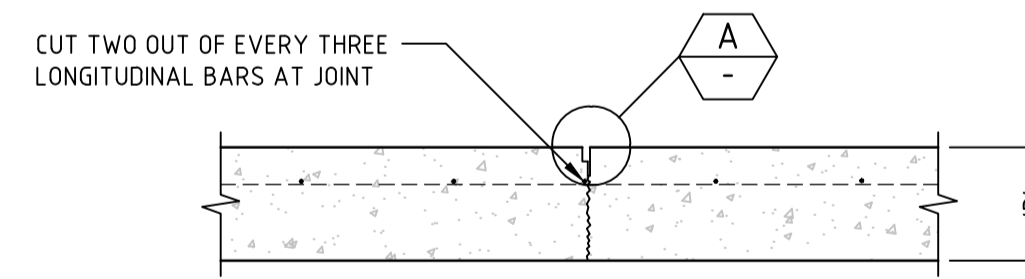
TYPICAL ROUNDABOUT SPLITTER ISLAND DETAIL
SCALE 1:20



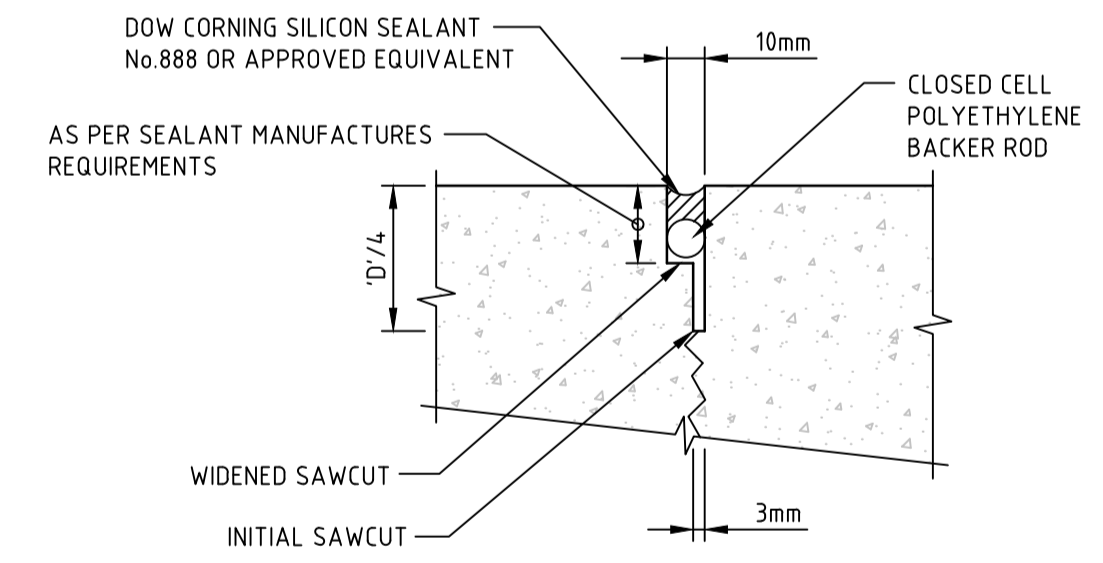
MEDIAN KERB (MDK)
(RMS SF KERB)
SCALE 1:10



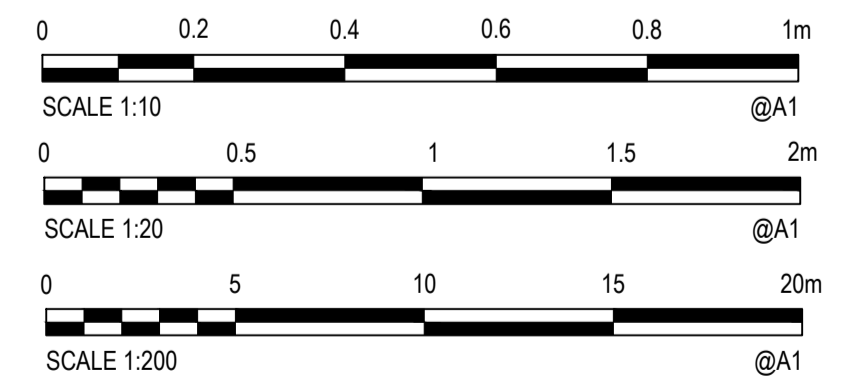
DOWELED EXPANSION JOINT (DEJ)
SCALE 1:10



TRANSVERSE CONTRACTION JOINT (TCJ)
SCALE 1:10



DETAIL A
NTS



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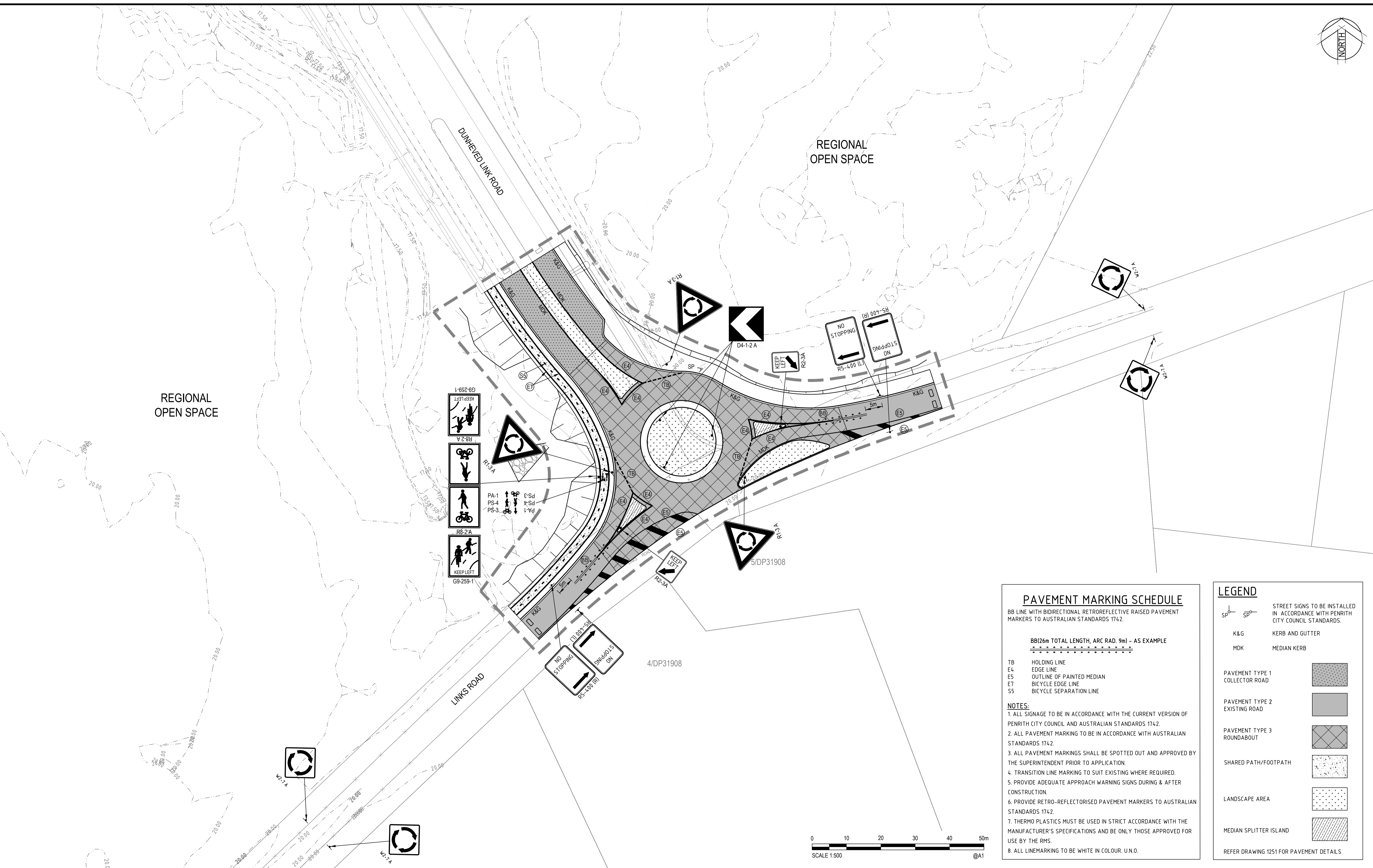
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Approved	ARM	Date	02.02.18

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	SITWORKS DETAILS

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Size	A1	Revision	1
Drawing Number	CV-CARDNO-EWC3-1601		

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 DATE PLOTTED: 2 February 2018 3:07 PM BY: MARY DOZA



PAVEMENT MARKING SCHEDULE

BB LINE WITH BIDIRECTIONAL RETROREFLECTIVE RAISED PAVEMENT MARKERS TO AUSTRALIAN STANDARDS 1742.

BB(26m TOTAL LENGTH, ARC RAD. 9m) - AS EXAMPLE

TB	HOLDING LINE
E4	EDGE LINE
E5	OUTLINE OF PAINTED MEDIAN
E7	BICYCLE EDGE LINE
SS	BICYCLE SEPARATION LINE

NOTES:

1. ALL SIGNAGE TO BE IN ACCORDANCE WITH THE CURRENT VERSION OF PENRITH CITY COUNCIL AND AUSTRALIAN STANDARDS 1742.
2. ALL PAVEMENT MARKING TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARDS 1742.
3. ALL PAVEMENT MARKINGS SHALL BE SPOTTED OUT AND APPROVED BY THE SUPERINTENDENT PRIOR TO APPLICATION.
4. TRANSITION LINE MARKING TO SUIT EXISTING WHERE REQUIRED.
5. PROVIDE ADEQUATE APPROACH WARNING SIGNS DURING & AFTER CONSTRUCTION.
6. PROVIDE RETRO-REFLECTORISED PAVEMENT MARKERS TO AUSTRALIAN STANDARDS 1742.
7. THERMO PLASTICS MUST BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND BE ONLY THOSE APPROVED FOR USE BY THE RMS.
8. ALL LINEMARKING TO BE WHITE IN COLOUR. U.N.O.

LEGEND

SP	STREET SIGNS TO BE INSTALLED IN ACCORDANCE WITH PENRITH CITY COUNCIL STANDARDS.
K&G	KERB AND GUTTER
MDK	MEDIAN KERB
PAVEMENT TYPE 1	COLLECTOR ROAD
PAVEMENT TYPE 2	EXISTING ROAD
PAVEMENT TYPE 3	ROUNDBOUT
SHARED PATH/FOOTPATH	
LANDSCAPE AREA	
MEDIAN SPLITTER ISLAND	

REFER DRAWING 1251 FOR PAVEMENT DETAILS



Rev.	Date	Description	Des.	Verif.	Appd.
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1	31.01.18	DRAFT - ISSUED FOR CLIENT REVIEW	BJD	ARM	



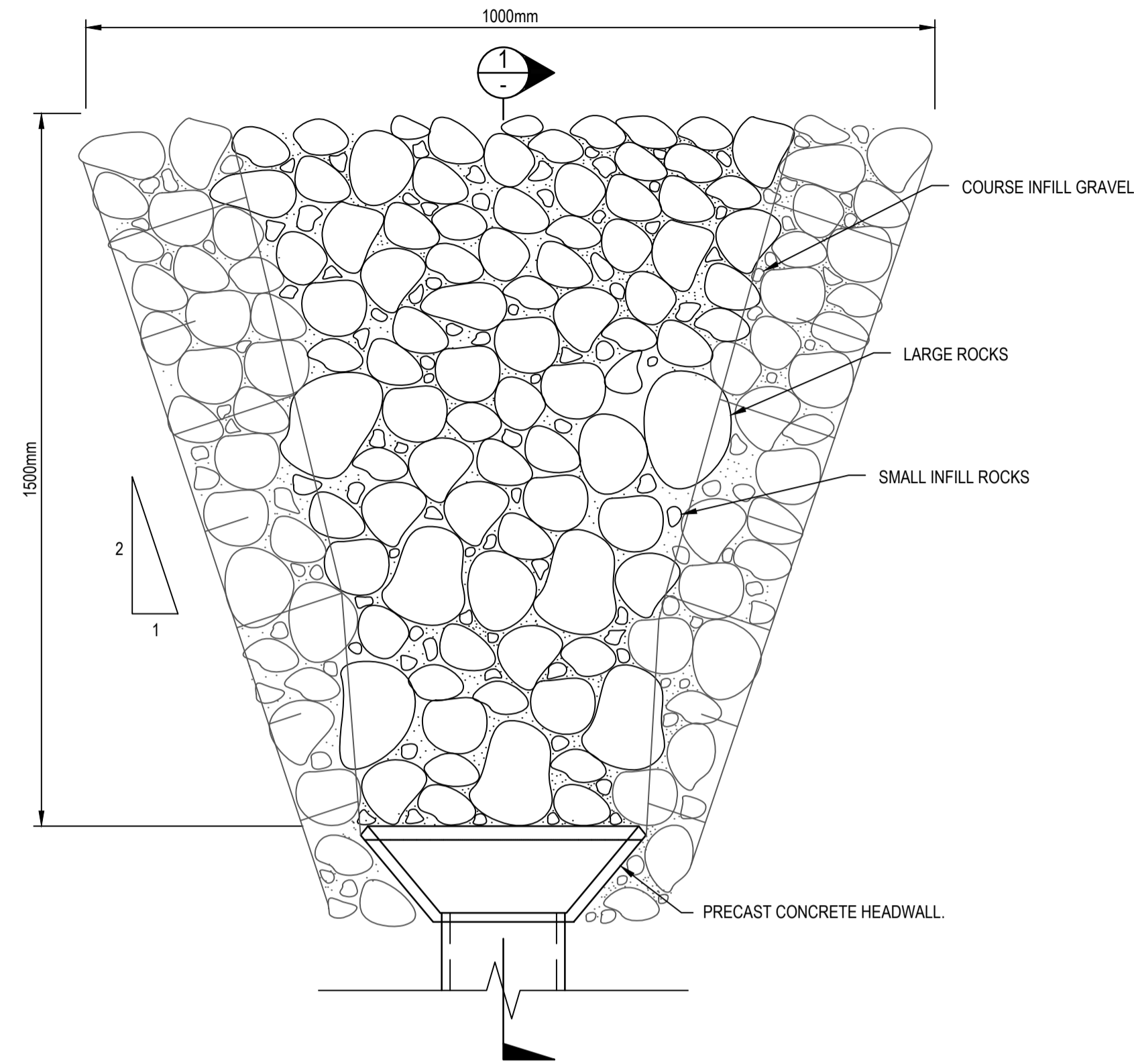
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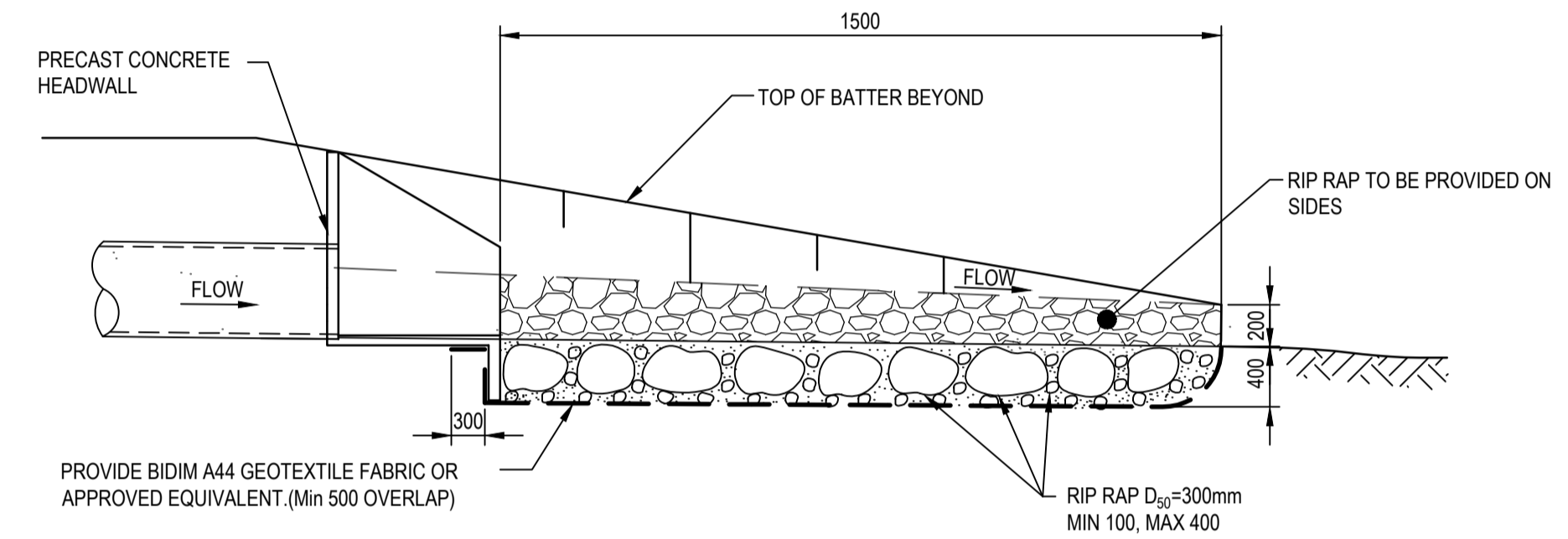
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Checked		Date	
Designed	BJD	Date	31.01.18
Verified	ARM	Date	02.02.18
Approved	ARM	Date	31.01.18

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	PAVEMENT, SIGNAGE AND LINEMARKING PLAN

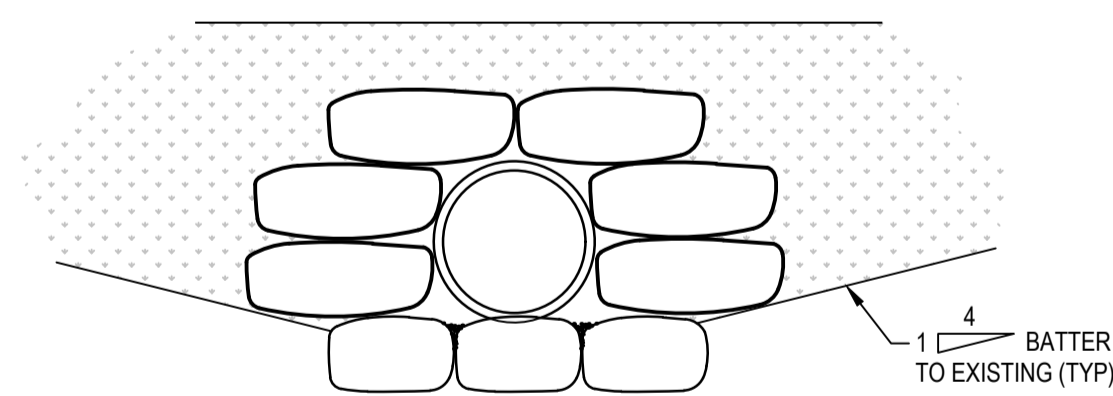
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NOT TO BE USED FOR CONSTRUCTION PURPOSES					
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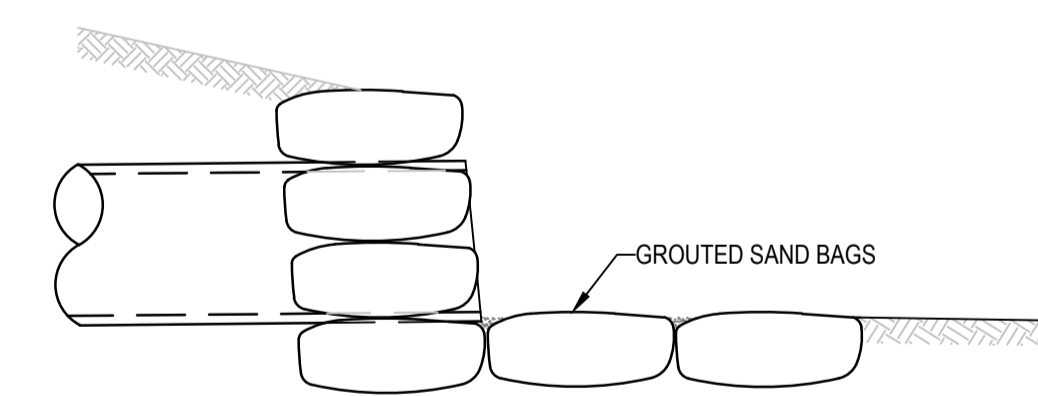
TYPICAL HEADWALL SCOUR PROTECTION PLAN
SCALE 1:50



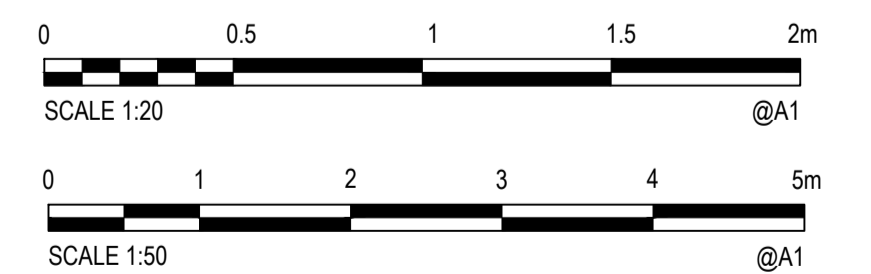
SECTION 1
NOT TO SCALE



TEMPORARY SANDBAG HEADWALL
SCALE 1:20



TEMPORARY SANDBAG HEADWALL SECTION
SCALE 1:20



Rev.	Date	Description	Des.	Verif.	Appd.
1	02.02.18	DRAFT - ISSUED FOR CLIENT REVIEW		BJD	ARM



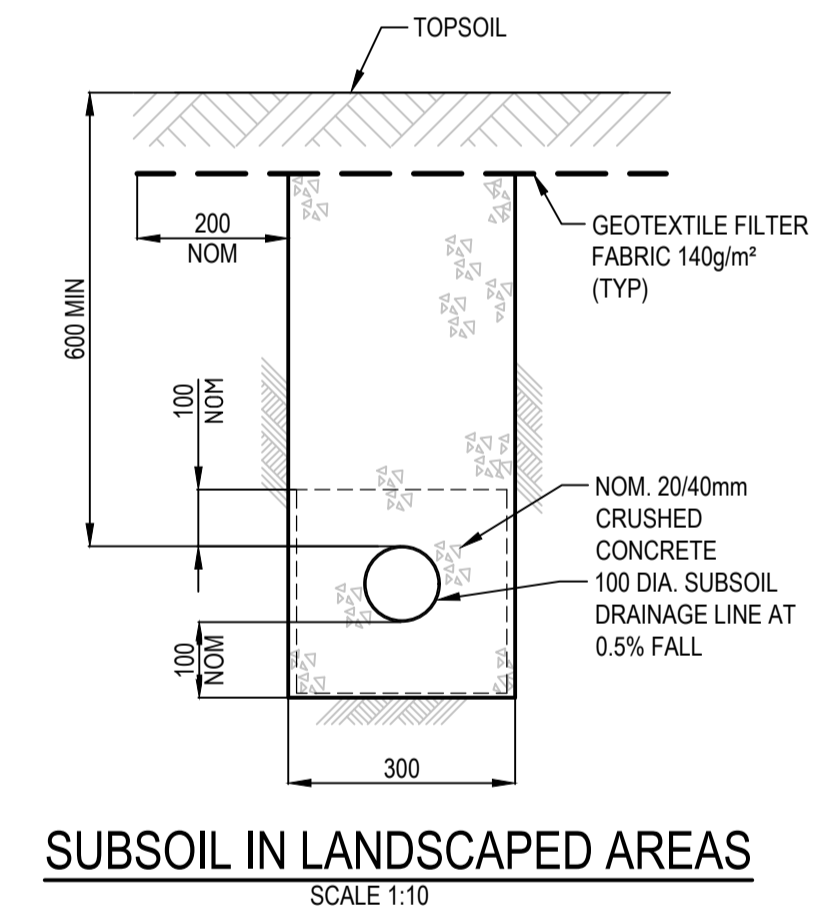
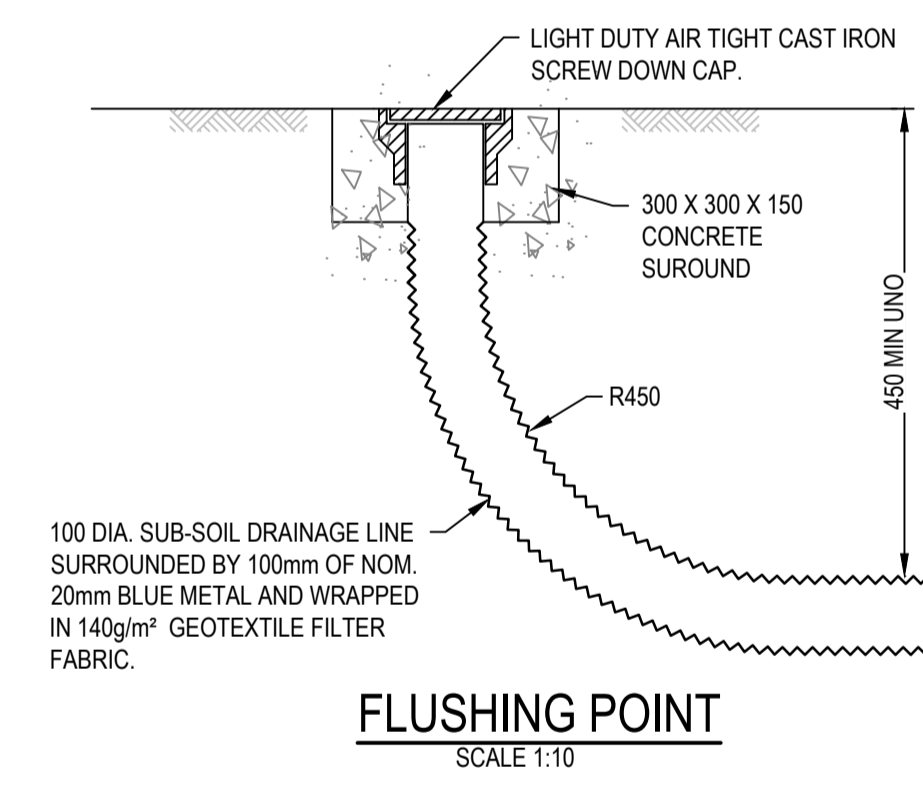
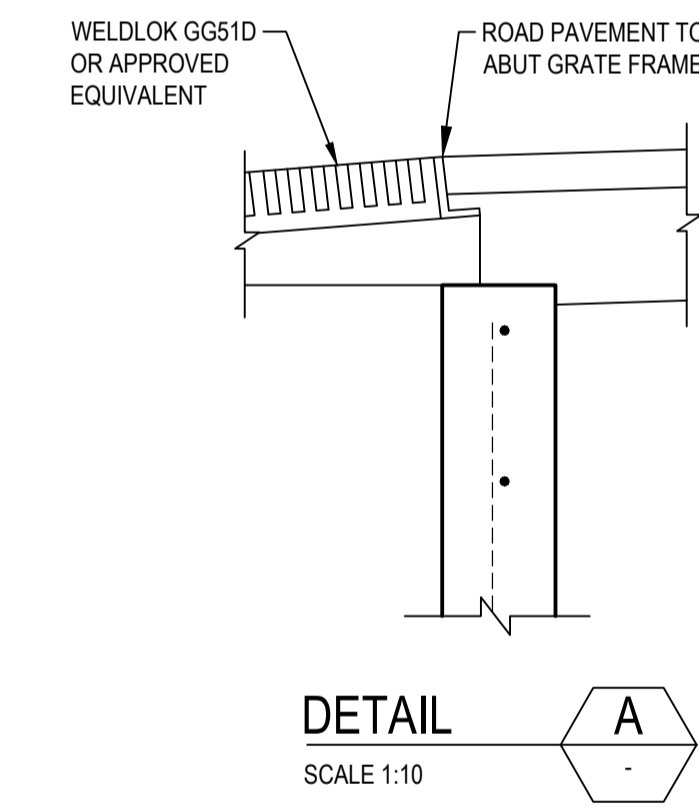
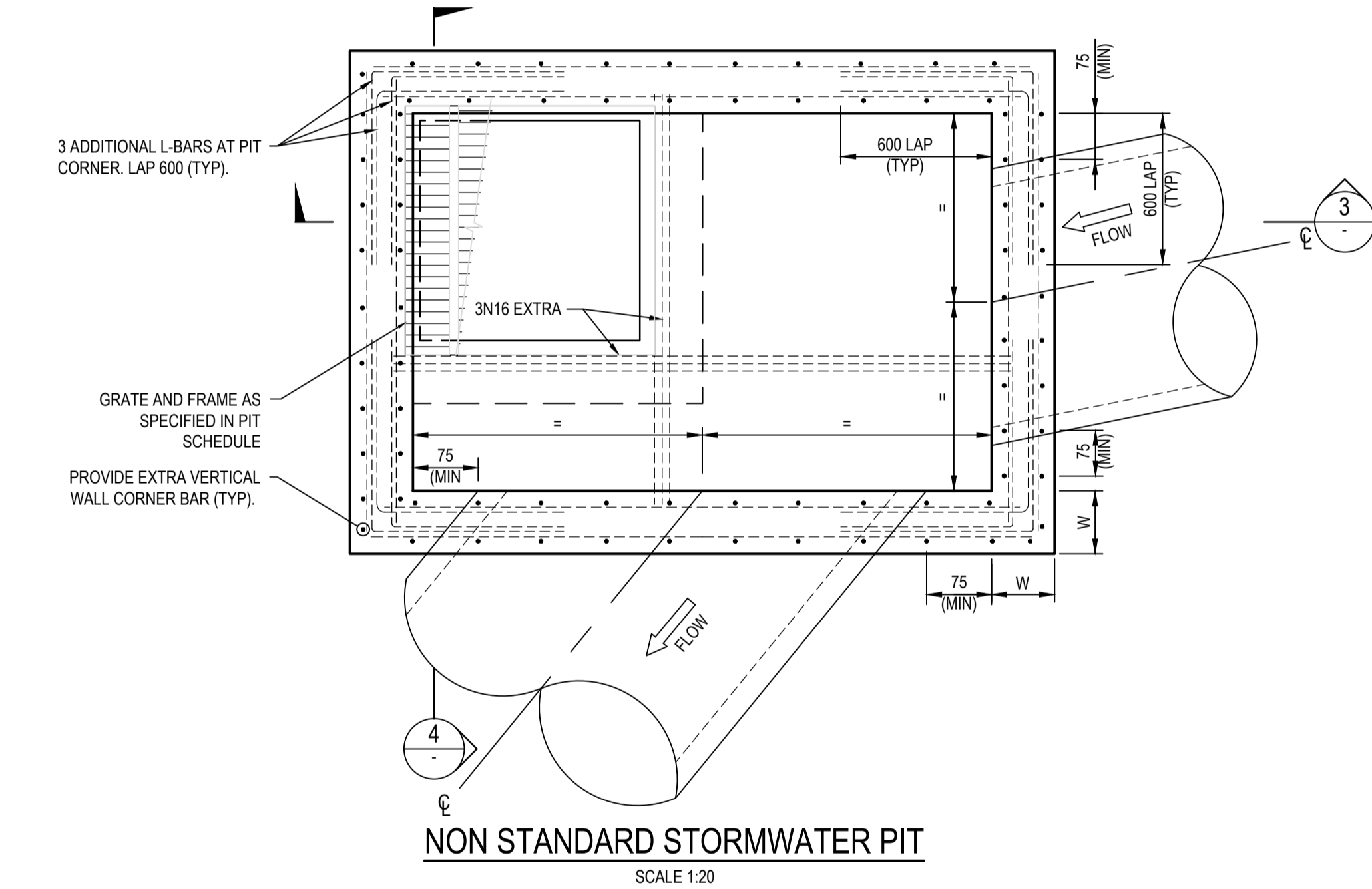
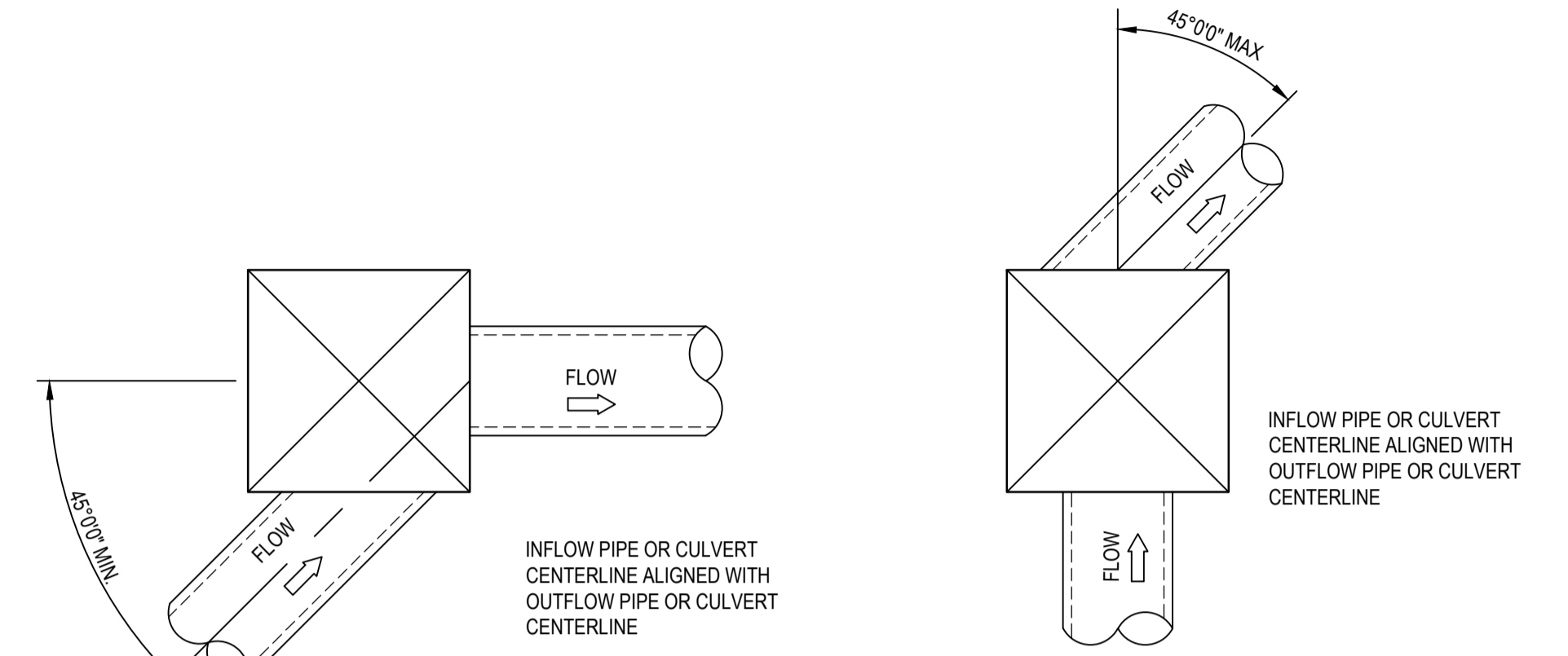
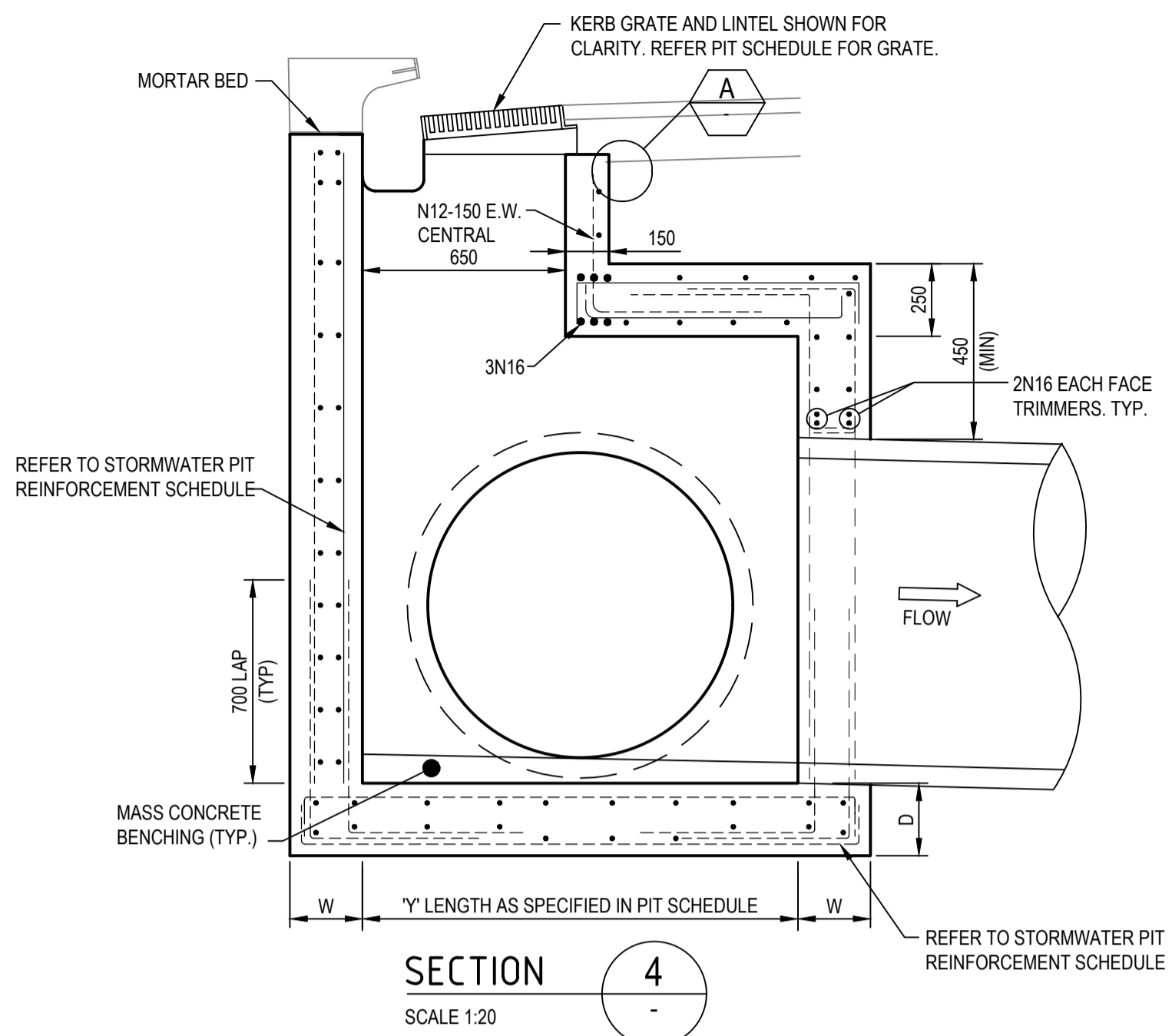
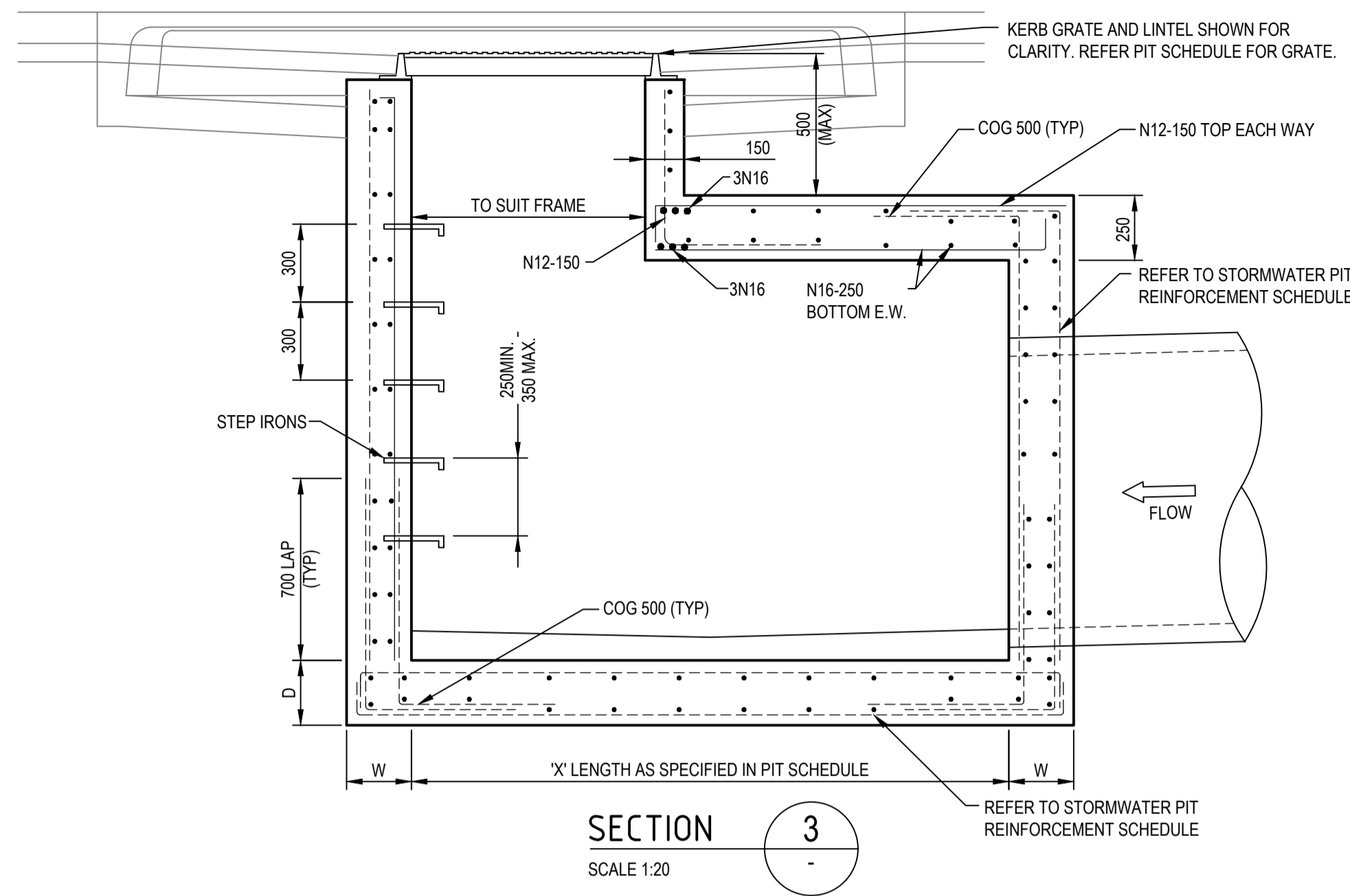
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Designed	BJD	Date	02.02.18
Verified	ARM	Date	02.02.18
Approved	ARM	Date	02.02.18

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	STORMWATER DRAINAGE DETAILS SHEET 1

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	AS SHOWN
Size	A1	Revision	1
Drawing Number	CV-CARDNO-EWC3-2201		

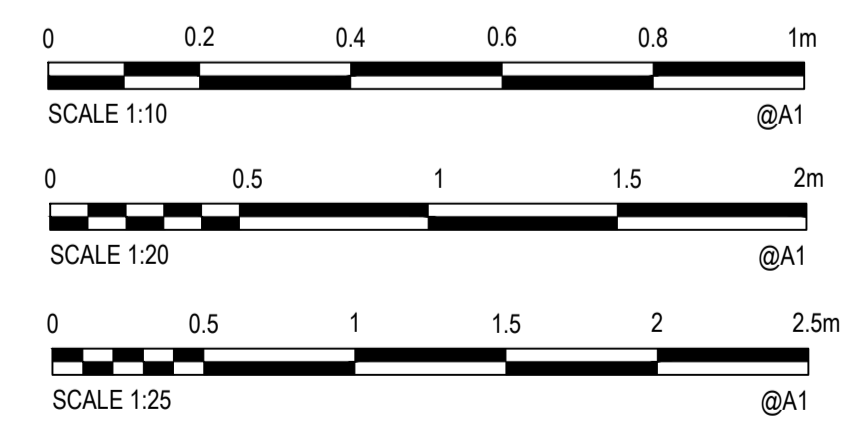


IMPORTANT NOTE: PIT STANDARD DETAILS

FOR PITS WIDER THAN 1200mm AND/OR DEEPER THAN 2000mm REFER TO THE BELOW TABLE AND DETAILS.

NON STANDARD STORMWATER PIT REINFORCEMENT SCHEDULE						
PIT DIMENSIONS(mm)		WALL DIMENSIONS(mm)		VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	BASE REINFORCEMENT
LENGTH 'X','Y'	DEPTH 'H'	BASE THICKNESS 'D'	WALL THICKNESS 'W'			
1200<X,Y<3300	2000<H<3900	230	230	N12-200 E.F.	N12-200 E.F.	N12-200 E.F.
X,Y<1200	H<6000	230	230	N16-250 E.F.	N16-250 E.F.	N16-250 E.F.

NOTE: PIT REINFORCEMENT TO BE SELECTED USING MAXIMUM PIT DIMENSION



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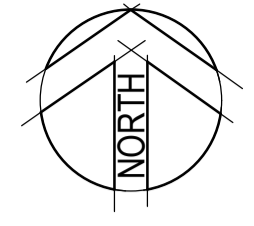
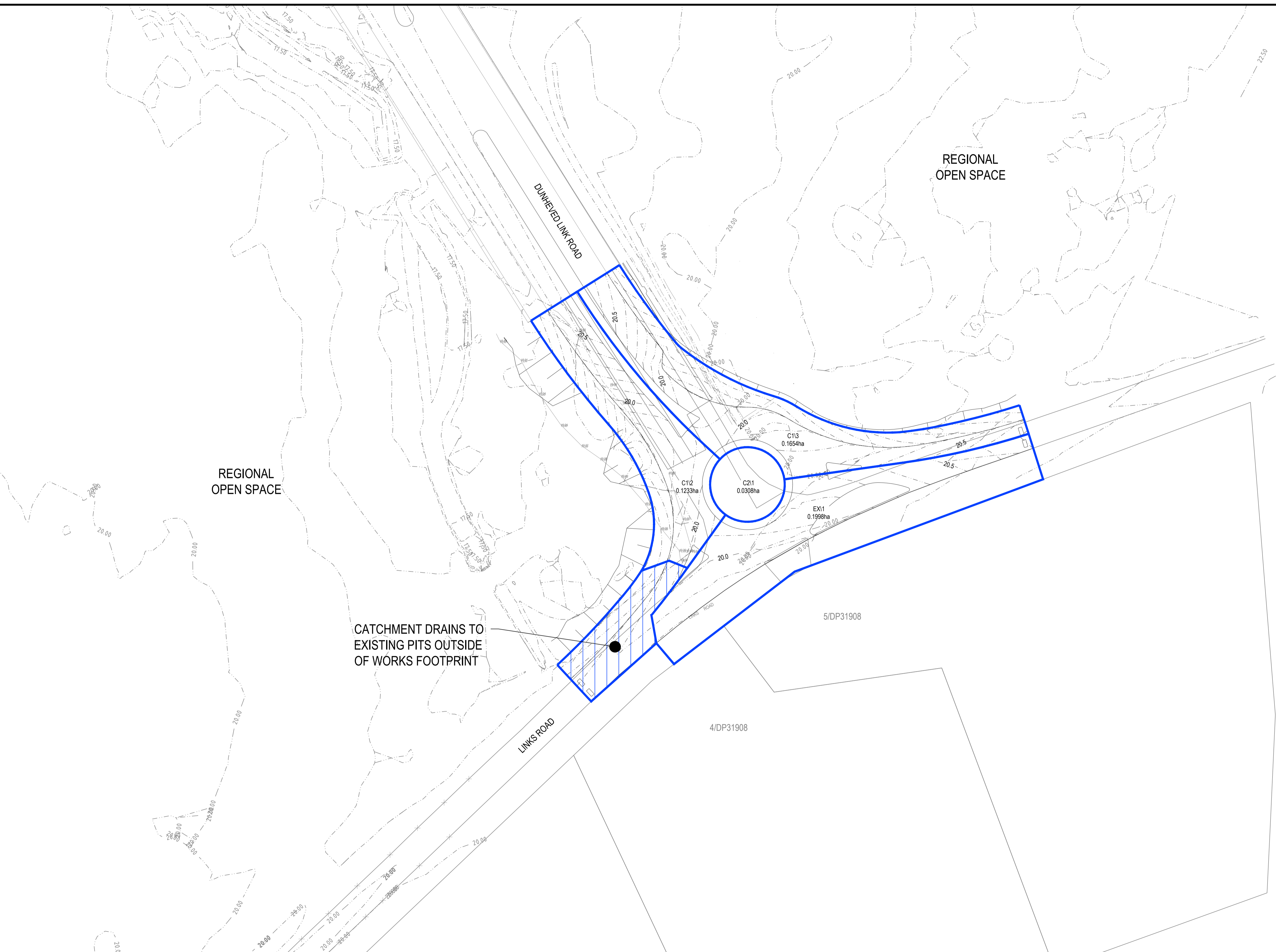
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Checked	DAC	Date	02.02.18
Designed	BJD	Date	02.02.18
Verified	ARM	Date	02.02.18
Approved	ARM	Date	02.02.18

Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	STORMWATER DRAINAGE DETAILS SHEET 2

Status	FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES	
Datum	AHD
Scale	AS SHOWN
Size	A1
Drawing Number	CV-CARDNO-EWC3-2202
Revision	1



LEGEND

CATCHMENT BOUNDARY

C1/1
0.1000ha CATCHMENT LABEL/AREA



Rev.	Date	Description	Des.	Verif.	Appd.
1	02.02.18	DRAFT - ISSUED FOR CLIENT REVIEW		BJD	ARM



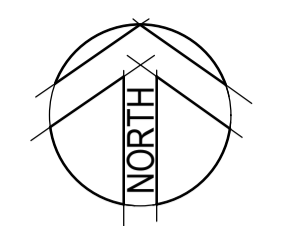
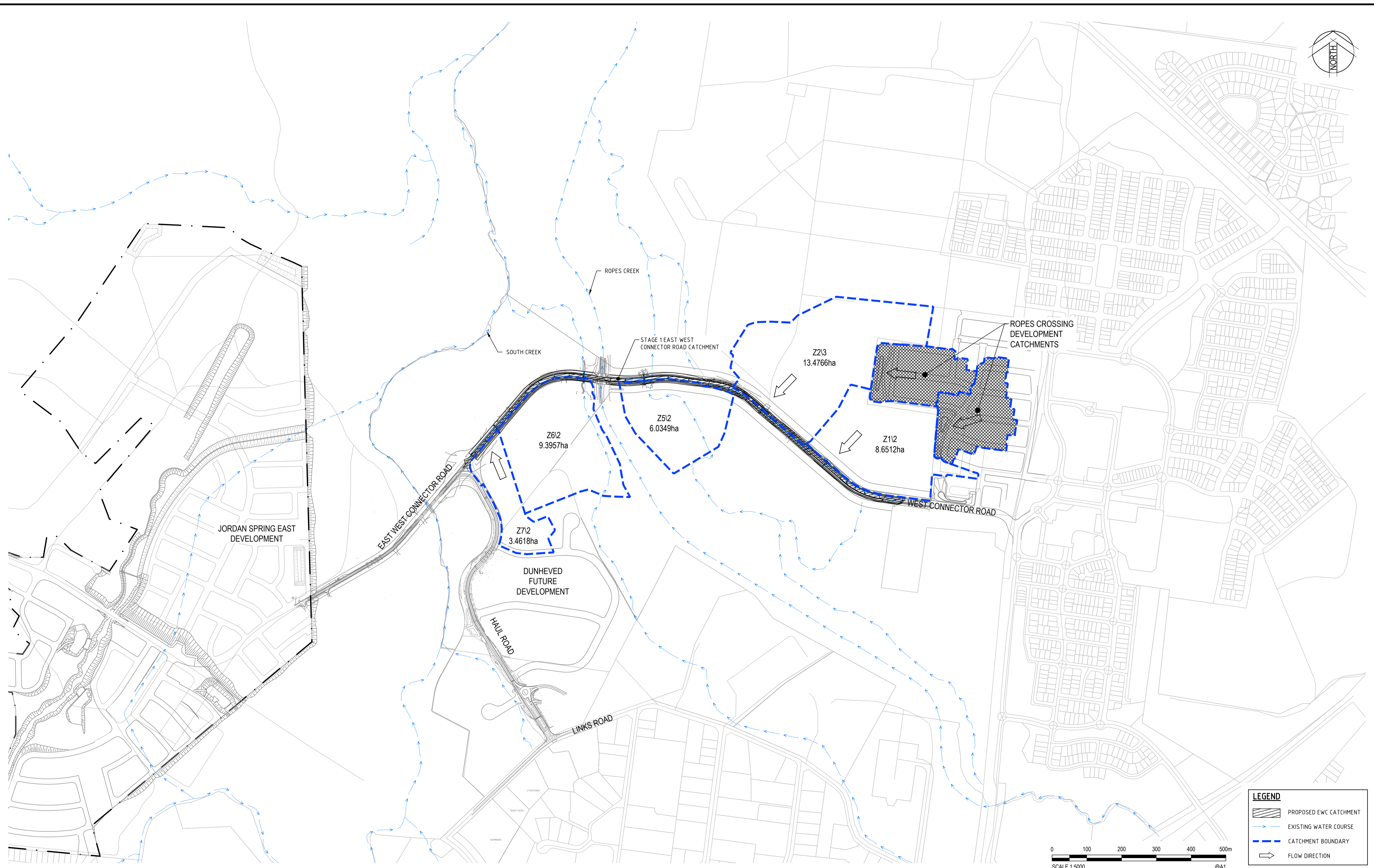
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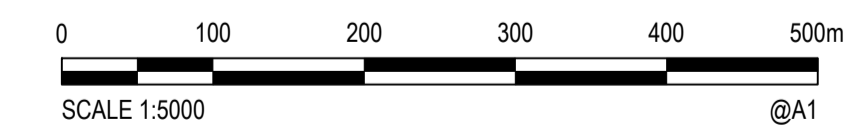
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MCD	02.02.18	LENLEASE
Checked	Date	Project
DAC	02.02.18	EAST WEST CONNECTOR ROAD
Designed	Date	Stage
BJD	02.02.18	STAGE 3 - CIVIL WORKS
Verified	Date	Application
ARM	02.02.18	DEVELOPMENT APPLICATION
Approved	Date	Title
ARM	02.02.18	INTERNAL STORMWATER CATCHMENT PLAN

Status		
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Datum	Scale	Size
AHD	1:500	A1
Drawing Number	Revision	
CV-CARDNO-EWC3-2301	1	

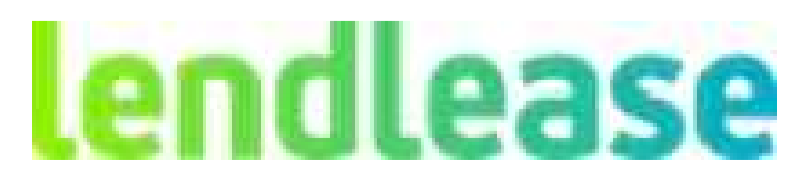
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LEGEND			
	PROPOSED EWC CATCHMENT		EXISTING WATER COURSE
	CATCHMENT BOUNDARY		FLOW DIRECTION



Rev.	Date	Description	Des.	Verif.	Appd.
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Client	LENLEASE
Project	EAST WEST CONNECTOR ROAD STAGE 3 - CIVIL WORKS DEVELOPMENT APPLICATION
Title	EXTERNAL STORMWATER CATCHMENT PLAN

Status	FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES		
Datum	AHD	Scale	1:5000
Size	A1	Revision	1
Drawing Number	CV-CARDNO-EWC3-2351		