



Jordan Springs Village 5  
Residential Subdivision  
Concept Design Road Safety  
Audit

transportation planning, design and delivery

# Jordan Springs Village 5


## Residential Subdivision

### Concept Design Road Safety Audit

Issue: A 25/06/14

Client: Maryland Development Group  
Reference: 12S1267310  
GTA Consultants Office: NSW

#### Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A-Dr	13/06/14	Draft	Santi Botross,	Wayne Johnson	Ken Hollyoak	Ken Hollyoak
A	25/06/14	Final	Wayne Johnson	Wayne Johnson	Ken Hollyoak	

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## Audit Summary

RSA No.:	12S1267310
Audited Project:	Jordan Springs – Village 5 Residential Subdivision
Audit for:	Maryland Development Group (NSW)
Address:	2/88 Phillip Street, Parramatta NSW 2150
Telephone:	02 8016 6520
Project Sponsor	Ahmad Ali, Development Manager
Auditors:	Wayne Johnson [BE (Civil), Senior Project Manager] Senior Road Safety Auditor (Level 3 RMS) Lead Road Safety Auditor  and Santi Botross [Traffic and Transport Consultant] Active Observer  and Ken Hollyoak [Eur Ing BSC, MSc CEng, MICE, FIHT, MIEAUST, CPEng, Director] (Level 3 RMS) Audit Reviewer
Audit type	Pre-construction – Concept design
Commencement meeting:	26 May 2014
Audit date:	29 May 2014
Completion meeting:	16 June 2014 via a telephone conversation
Previous audit no:	N/A
Previous audit:	N/A

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# 1. Introduction

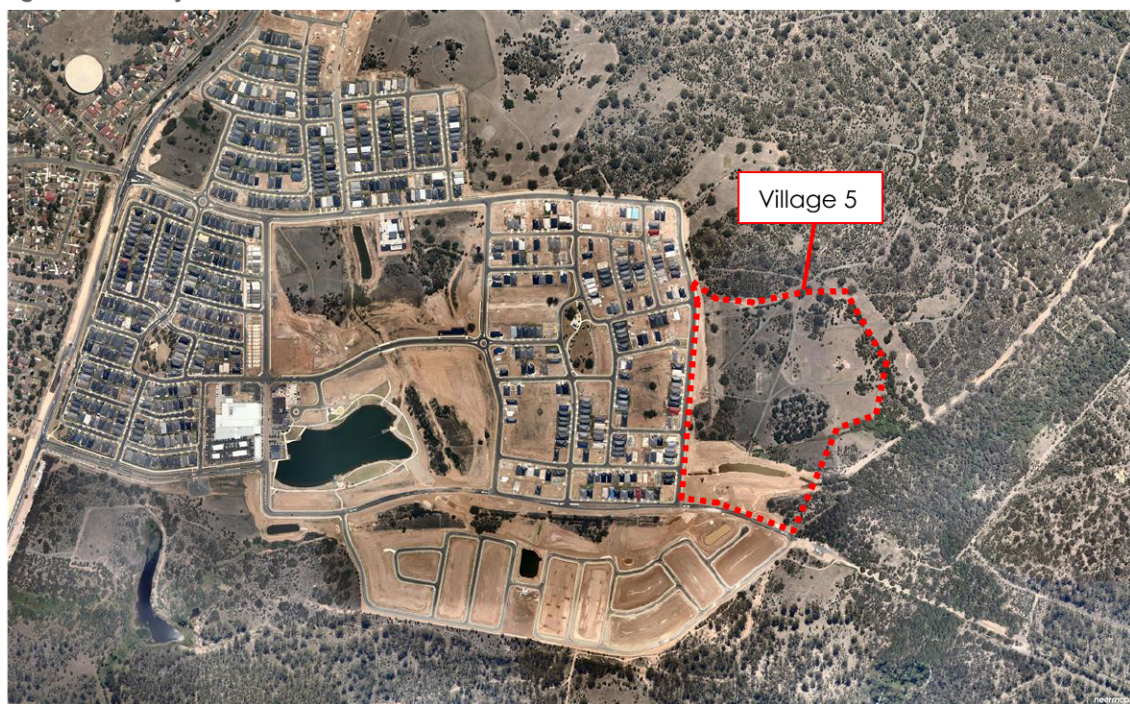
## 1.1 Background

GTA Consultants has been commissioned by Maryland Development Group to undertake a Pre-construction Concept Design Road Safety Audit (RSA) for the development of Village 5 of the Jordan Springs residential subdivision.

Village 5 is the eastern most site of the Jordan Springs subdivision. It is bounded by Village 2 and Village 4, which are located west and south of Village 5, respectively. Village 5 is proposed to contain 265 lots as well as a detention basin, future East Lake, toward the southern end of the village. Village 5 is bounded by the Regional Park to the north and east. The proposed road network within Village 5 is to adjoin with the newly developed network within stages 2C and 4E.

The location of Village 5 within the Jordan Springs residential subdivision is shown in Figure 1.1. The extent of the audit is that contained within the red boundary.

**Figure 1.1: Subject Site and its Environs**



Basemap Source: Nearmap

## 1.2 Aim and Objectives

A road safety audit is defined as "a formal examination of a future road or an existing road, in which an independent, qualified team reports on the project's crash potential and safety performance" (Austroads 2009).

The objective of a road safety audit is to identify potential safety risks for road users and to ensure that measures to eliminate or reduce the risks are fully considered.

## 1.3 Supporting Information

The following documents have been provided by the Client for reference only and are also provided in Appendix A as Audited Material:

- 9343/03DA01-B
- 9343/03DA02-B
- 9343/03DA03-B
- 9343/03DA06-B
- 9343/03DA07-B
- 9343/03DA08-B
- 9343/03DA09-B
- 9343/03DA10-B
- 9343/03DA11-B

## 1.4 Checklists and Reference Material

The audit has been carried out in accordance with the RMS Accident Reduction Guide Part 2 Road Safety Audits 2005 and the Austroads Guide to Road Safety Part 6: Road Safety Audit (2009). Key elements examined included:

- path width
- kerb ramps
- pedestrian facilities and protection
- sight distance and visibility
- readability of alignment and intersections
- road network layout and geometry.

## 2. Road Safety Audit Program

### 2.1 Commencement Meeting

A commencement meeting in the form of an email conversation between Wayne Johnson (Road Safety Auditor), and Ahmad Ali (Development Manager, Jordan Springs) occurred on Monday 26 May 2014. The purpose, depth and scope of the project were discussed.

### 2.2 Site and Field Audits

No site inspections were undertaken as GTA Consultants are familiar with the site having undertaken numerous site visits in the past.

### 2.3 Completion Meeting

A completion meeting in the form of an email and telephone conversation between Wayne Johnson (Road Safety Auditor) and Ahmad Ali (Development Manager, Jordan Springs) occurred on Monday 16 June 2014. In addition, 'designer responses' to our risks were received from Andrew Szymik (JWP) on 25<sup>th</sup> June 2014 via an email.



## 3. Road Safety Audit Findings

### 3.1 Introduction

The audit findings have been documented in the Table 3.3, whilst a number of observations have also been recorded and summarised in Table 3.2.

Table 3.3 provides specific details of the nature of the audit non-conformances and a risk rating as high, medium or low. The risk ratings have been based on the risk matrix presented in Table 3.1, which has been adapted from the standard Austroads Risk Matrix.

**Table 3.1: Risk Matrix**

LIKELIHOOD \ SEVERITY	Improbable	Occasional	Highly Probable
Minor	Low	Low	Medium
Moderate	Low	Medium	High
Major	Medium	High	High

The terms in Table 3.1 are described below.

Likelihood:

- Highly probable: It is likely that more than one crash of this type could occur within a five year period.
- Occasional: It is likely that less than one crash of this type could occur within a five year period.
- Improbable: Less than one crash of this type could occur within a 10 year period.

Severity:

- Major: The crash is likely to result in a fatality or serious injuries.
- Moderate: The crash is likely to result in minor injuries or large scale of property damage.
- Minor: The crash is likely to result in minor property damage or many near miss crash events.

Priority:

- High: Very important, and needs to be addressed urgently.
- Medium: Important, and needs to be addressed as soon as possible.
- Low: Needs to be considered as part of regular maintenance/planning program.

### 3.2 Responding to the Audit Report

As set out in the road safety guidelines, responsibility for the road design always rests with the designer/project manager, and not with the auditor. A project manager is under no obligation to accept all of the audit findings. Also, it is not the role of the auditor to agree to or approve of the project manager's response to the audit. Rather, the audit provides the opportunity to highlight potential problems and have them formally considered by the project manager, in conjunction with all other project considerations.

This formal road safety audit report should be responded to in writing. If any recommendations in this report are rejected by the Project Manager, then in each case reasons for this rejection



should be included in the written response. Acceptance of a recommendation may require no further comment, but an explanation of how or when the action will be taken may be useful, and should be provided where possible.

### 3.3 Key Findings in Previous Audits

No details were provided of any previous Road Safety Audit for this project.

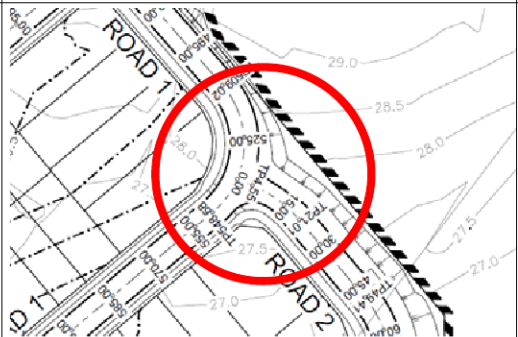
### 3.4 Findings

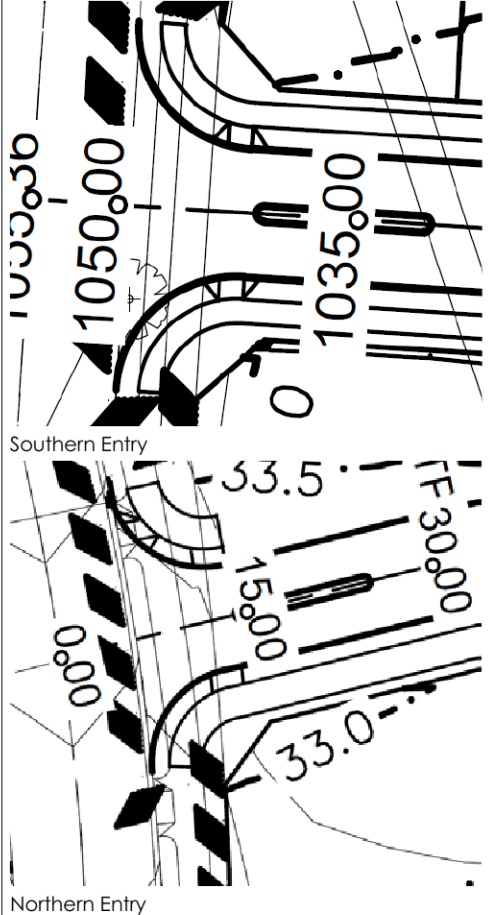
Table 3.2 includes a number of general observations and assumptions that are to be noted. The key issues identified from the audit are presented in the log in Table 3.3.

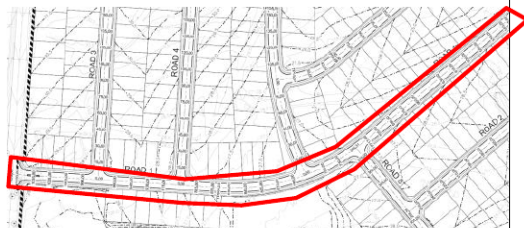
**Table 3.2: Road Safety Audit Observations and Assumptions**

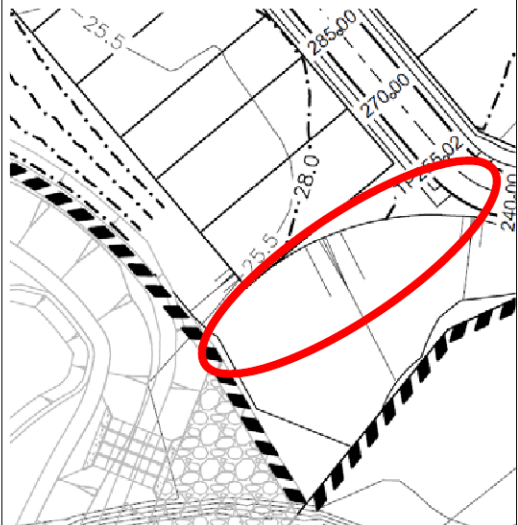
No.	Description of Observation or Assumption
1	Plans showing the proposed lighting, draining, signage and linemarking have not been provided. As a result, these could not be assessed as part of the audit.
2	There is no indication of where access to any development lots within Village 5 would be provided. These have therefore not been considered.
3	Swept path analysis has not been provided, as a result, these could not be assessed as part of the audit.
4	The provided plans do not show any road side vegetation and streetscape. Consequently, the safe intersection sight distances (approach sight distance and stopping distance) were not able to be adequately assessed.


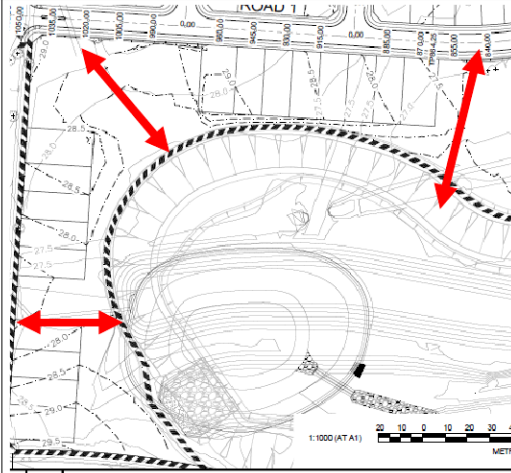
Table 3.3: Road Safety Audit Findings

No.	Description	Classification	Figure	Likelihood	Severity	Risk Rating	Designer's Response	Penrith City Council (accepted/rejected)
1	The plans indicate that the northern and southern legs of the proposed eastern road will be offset. This may cause motorist confusion regarding which approach has priority, resulting in a side impact collision.	Road Alignment		Improbable	Moderate	Low	Road No 1 to have priority 'Give Way' signage and line marking at detail design.	

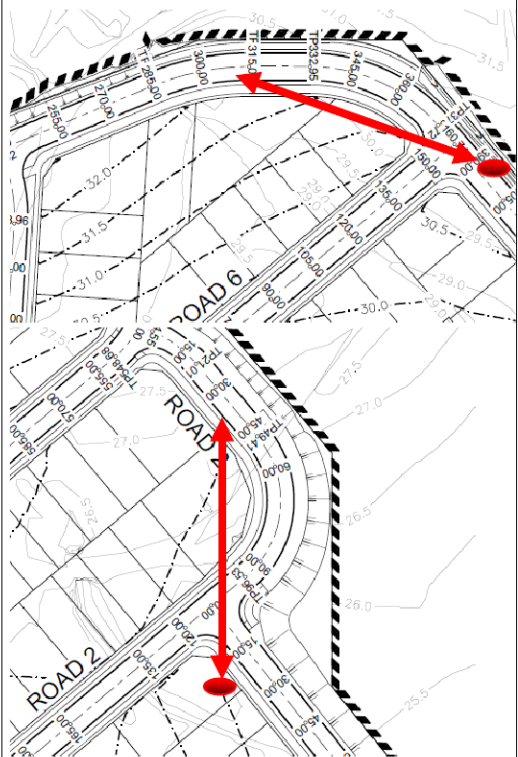
No.	Description	Classification	Figure	Likelihood	Severity	Risk Rating	Designer's Response	Penrith City Council (accepted/rejected)
2	A median island stop sign treatment is provided at the intersections of Greenwood Parkway and Road 1. However, there does not appear sufficient road geometry to accommodate a 12.5m heavy rigid vehicle turning left from Greenwood Parkway into Road 1. Consequently, a 12.5m heavy rigid vehicle may need to reverse to complete its turning manoeuvre which is an unsafe manoeuvre in a pedestrian environment.	Traffic Management Devices	 <p>Southern Entry</p> <p>Northern Entry</p>	Improbable	Moderate	Low	<p>12.5m truck can exit. No allowance for entry.</p> <p>An 8.8m service vehicle has been allowed for in all directions.</p> <p>Geometry has been amended. 12.5m truck allowance for entry and exit movements (Council request for this intersection).</p>	

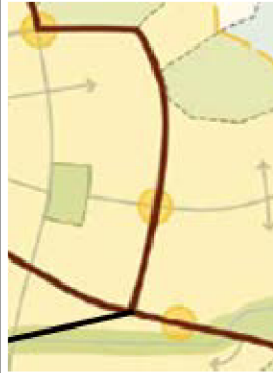

No.	Description	Classification	Figure	Likelihood	Severity	Risk Rating	Designer's Response	Penrith City Council (accepted/rejected)
3	The plans indicate that Road 1 will not have any traffic calming devices. Since the geometry of this road is long and relatively straight, motorists may be inclined to travel at a greater speed than the restricted speed limit through the area. This may cause an incident to occur with another vehicle or a pedestrian.	Road Alignment, Traffic Management Devices		Occasional	Moderate	Medium	Intersection with Road No 5 to include a paved or different pavement finish.	
4	The proposed pedestrian footpath on the eastern road verge (corner of Road No 2 and Road No 8) does not continue in either direction. This may encourage pedestrians to walk along the eastern road verge, increasing the likelihood of tripping or falling.	Pedestrian Infrastructure		Improbable	Minor	Low	Footpath/ramps cross both roads. Look out area proposed immediately adjacent (east)	


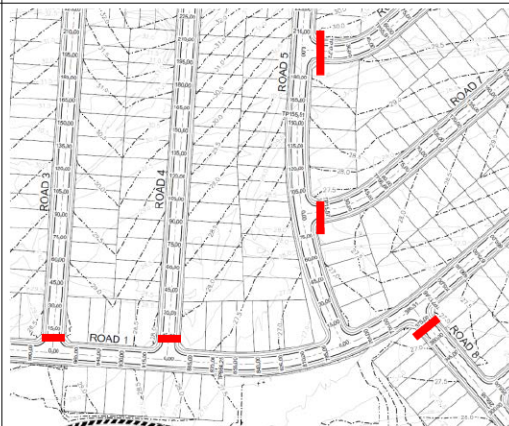
No.	Description	Classification	Figure	Likelihood	Severity	Risk Rating	Designer's Response	Penrith City Council (accepted/rejected)
5	The footpath on the south-western side of Road 8 ends at the pedestrian crossing. There is likely to be a pedestrian desire line between residential houses to the east of Village 5 and East Lake. Pedestrians may attempt to cross the batter (between the Road 8 footpath and the East Lake footpath) which would increase the likelihood of pedestrians tripping or falling.	Pedestrian Infrastructure		Improbable	Minor	Low	Plans/Layout amended	

No.	Description	Classification	Figure	Likelihood	Severity	Risk Rating	Designer's Response	Penrith City Council (accepted/rejected)
6	The shared path on the north side of Road 8 ends at the pedestrian crossing. Consequently, cyclists may continue west on the footpath which may lead to conflict with pedestrians. Furthermore, cyclists may cross onto the westbound travel lane whilst cycling which may lead to conflict with vehicles, particularly given the upstream 'blind' corner.	Cycling Infrastructure		Improbable	Moderate	Low	'End Shared Path' treatment to be added at detailed design. Share path continues south west to lake.	
7	It appears as though the future East Lake will have a pedestrian footpath around the perimeter of the Lake. There appears to be a lack of pedestrian footpath connections between the Lake and adjoining footpath. The gradient of the parkland surrounding the park is unclear. Without any pedestrian facilities connecting footpath surrounding the lake and road network footpath pedestrians may trip and fall.	Pedestrian Infrastructure		Improbable	Moderate	Low	Pedestrian connectivity provided at east and west edges of lake. Additional connectivity to be addresses as part of future lake DA	



No.	Description	Classification	Figure	Likelihood	Severity	Risk Rating	Designer's Response	Penrith City Council (accepted/rejected)
8	The Safe Intersection Sight Distance from Road 6 and Road 8 towards the north may be restricted by the residential building envelope and any road verge landscaping. A Safe Intersection Sight Distance of 90m is required with a design speed of 50km/hr (or 67m for 40km/hr) to accord with the Austroad Part 4A: Unsignalised and Signalised Intersections design guidelines.	Road Alignment		Improbable	Moderate	Low	<p>Sight distance of approximately 50m, provided road geometry creates a Reduction in velocity (approaching curve/bend). Also a low speed environment to be supplemented with signage and line marking.</p> <p>Road geometry (curvature/bends) are not conducive to high operating speeds. Low speed environment with similar arrangements elsewhere in Jordan Springs.</p>	

No.	Description	Classification	Figure	Likelihood	Severity	Risk Rating	Designer's Response	Penrith City Council (accepted/rejected)
9	The Development Control Strategy identifies a bus route along Greenwood Parkway. It is thought that if the bus stops are located in close proximity to Nabilla Street (Stage 2) or Road 1 (Stage 5) the sight distances from these streets would be restricted.	Bus Infrastructure		Improbable	Moderate	Low	Bus stop locations to be determined by bus operator.	
10	There does not appear to be any vehicle access facilities from Village 5 to the regional park. A lack of vehicle access facilities to the regional park may put residents located adjacent to the regional park in danger in the unlikely event of an emergency.	Access impacts		Improbable	Moderate	Low	Three regional park access points have been provided (as per the plan of management). To be delivered in the future by NPWS.	

No.	Description	Classification	Figure	Likelihood	Severity	Risk Rating	Designer's Response	Penrith City Council (accepted/rejected)
11	Road No 8 narrows on the approach to Road 1. Consequently a heavy vehicle may not be able to safely manoeuvre into and out of Road 8 which may lead to a side impact/ head on collision.	Road alignment and cross section		Improbable	Moderate	Low	Full analysis and design (including sweep paths) to be assessed during detailed design. Currently allows for a single 8.8m vehicle.	
12	There is a lack of pedestrian kerb ramp facilities across a number of internal roads. Consequently pedestrians may trip and fall when crossing the road.	Pedestrian Infrastructure		Improbable	Moderate	Low	Plans amended.	

## 4. Formal Statement

We, the undersigned, declare that we have reviewed the material and data listed in this report and identified the safety and operational issues presented in Table 3.2 and Table 3.3.

It should be noted that while every effort has been made to identify potential safety hazards, no guarantee can be made that every risk in road safety has been identified.

Further, if all the findings in this report were to be addressed, this would not guarantee that the site is "safe", rather, the level of safety of the facility should be improved.

We recommend that points of concern be investigated and corrective actions implemented as soon as is practicable.



**Wayne Johnson**

**Lead Road Safety Auditor**



**Ken Hollyoak**

**Road Safety Audit Reviewer**

**Date: 25 June 2014**

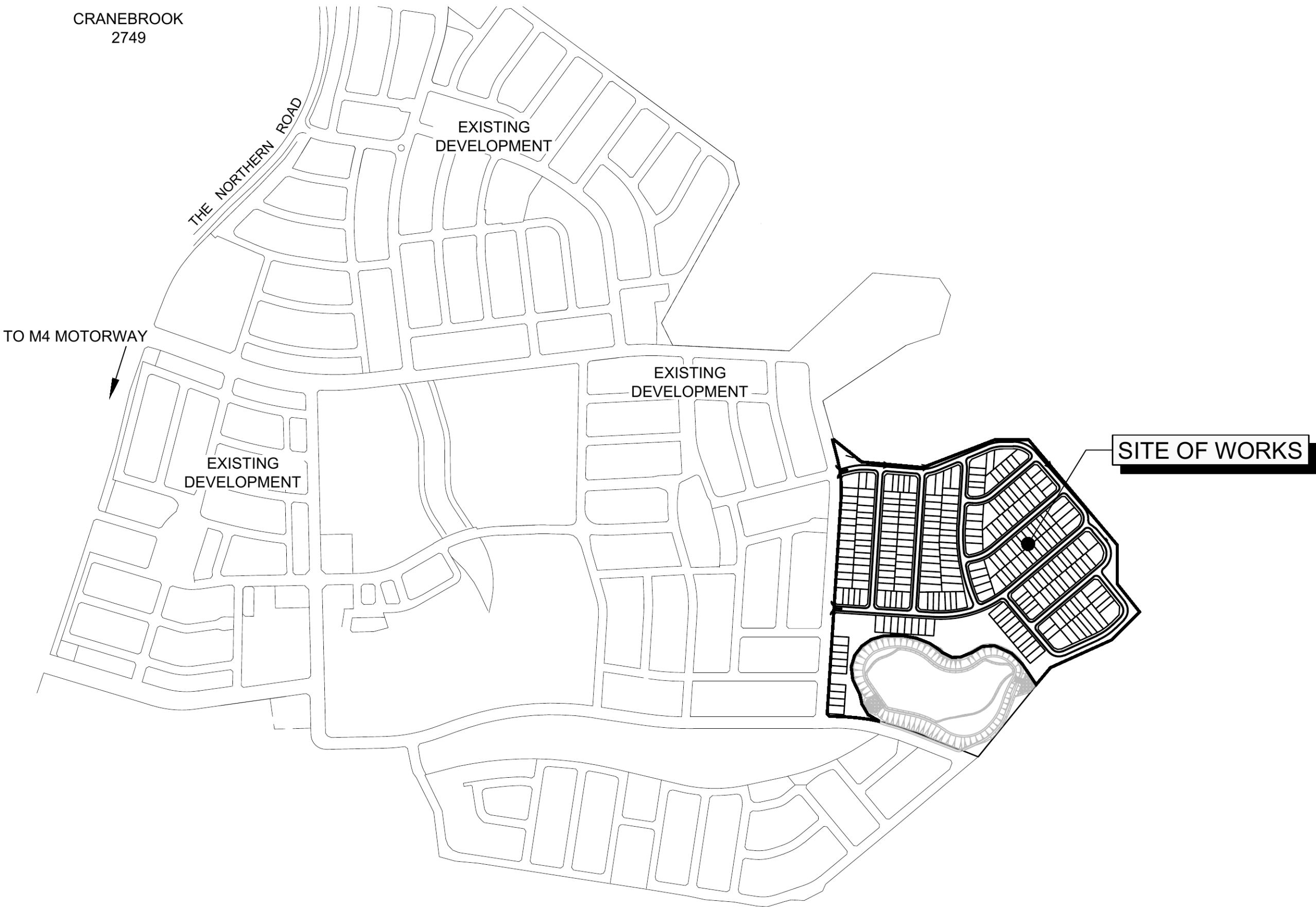
## Appendix A

### Audited Material





JORDAN SPRINGS - VILLAGE 5  
DEVELOPMENT APPLICATION  
PROPOSED LOT, ROAD AND DRAINAGE WORKS



LOCALITY SKETCH

Prepared By:

**J. WYNDHAM PRINCE**  
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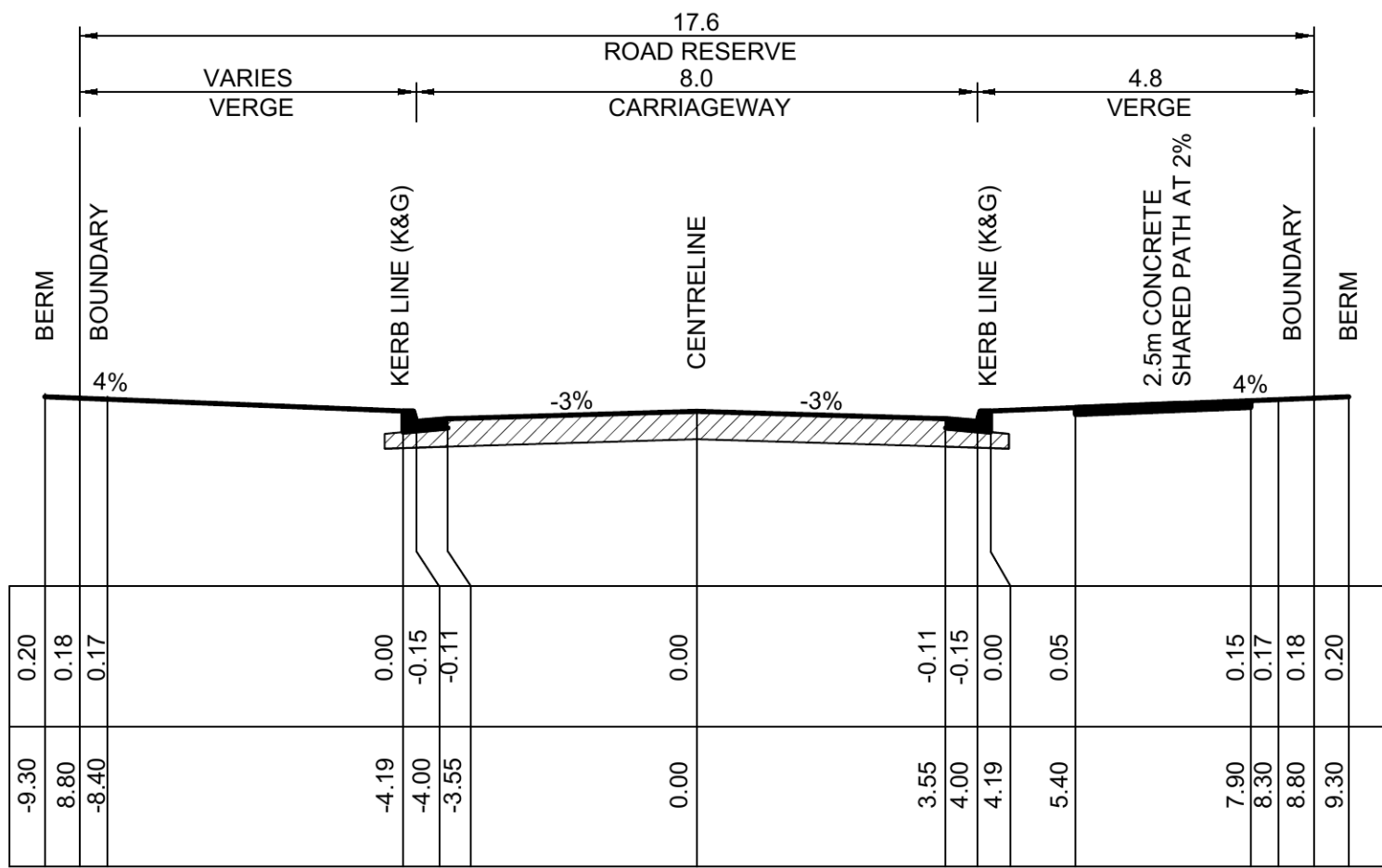
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9343/03DA02	TYPICAL ROAD CROSS SECTIONS	B
9343/03DA03	ROAD LAYOUT PLAN	B
9343/03DA04	STORMWATER LAYOUT PLN	B
9343/03DA05	CUT/FILL PLAN AND TREE REMOVAL	B
9343/03DA06	ROAD LONGITUDINAL SECTIONS ROAD 1	B
9343/03DA07	ROAD LONGITUDINAL SECTIONS ROAD 1 & 2	B
9343/03DA08	ROAD LONGITUDINAL SECTIONS ROAD 3 & 4	B
9343/03DA09	ROAD LONGITUDINAL SECTIONS ROAD 5 & 6	B
9343/03DA10	ROAD LONGITUDINAL SECTIONS ROAD 7 & 8	B
9343/03DA11	ROAD LONGITUDINAL SECTIONS ROAD 8	B
9343/03DA12	SITE SECTION 1	B
9343/03DA13	SITE SECTION 2	B
9343/03DA14	G.P.T ACCESS PLAN	B
9343/03DA15	SOIL & WATER MANAGEMENT PLAN	B

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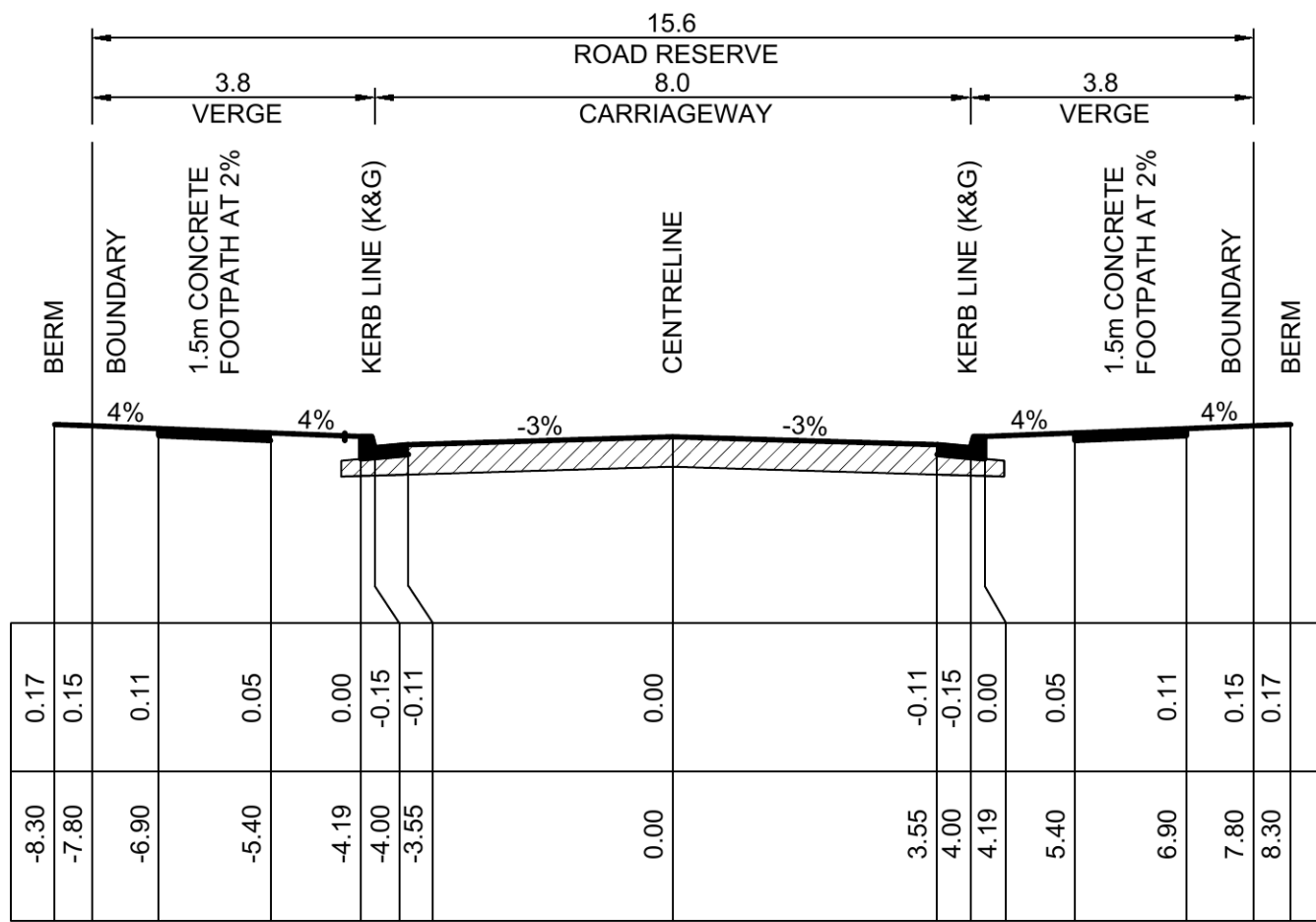
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FILE No. 934303DA01



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TYPICAL CROSS SECTION 1  
ROAD 1 (CH0.00 - 537.08) ROAD 2 (CH0.00 - 110.00)  
ROAD 8 (CH0.00 - 255.02)  
1:100 NATURAL



TYPICAL CROSS SECTION 2  
ROAD 1 (CH 537.08 - END), ROAD 2 (CH110.00 - END),  
3, 4, 5, 6, 7 & ROAD 8 (CH255.02 - END)  
(15.6m ROAD RESERVE)  
1:100 NATURAL

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JORDAN SPRINGS  
VILLAGE 5  
TYPICAL ROAD CROSS SECTIONS

PLAN No:  
9343/03DA02 **B**

FILE No: 934303DA02

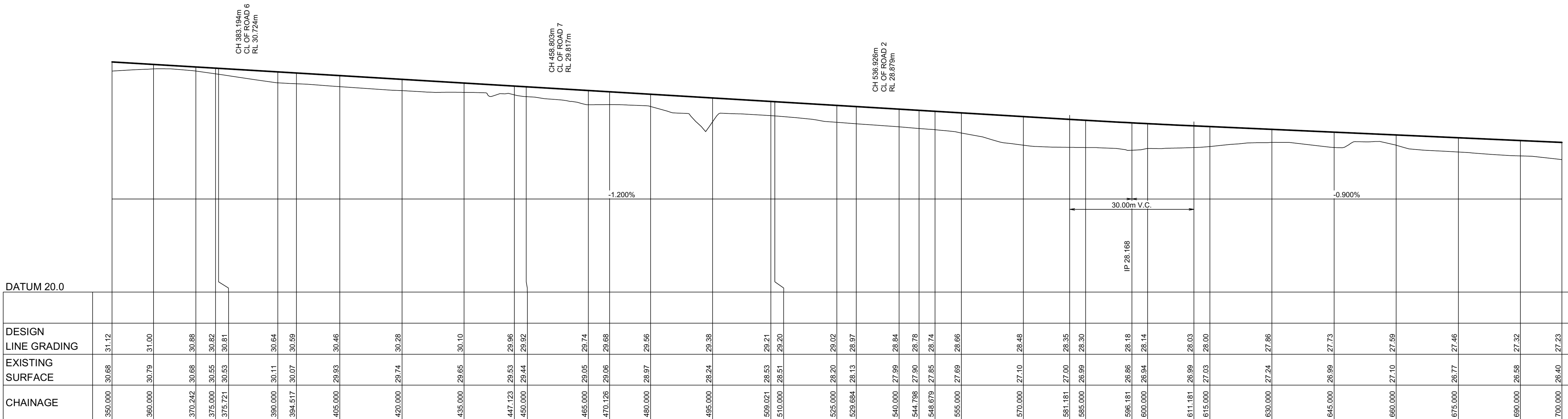
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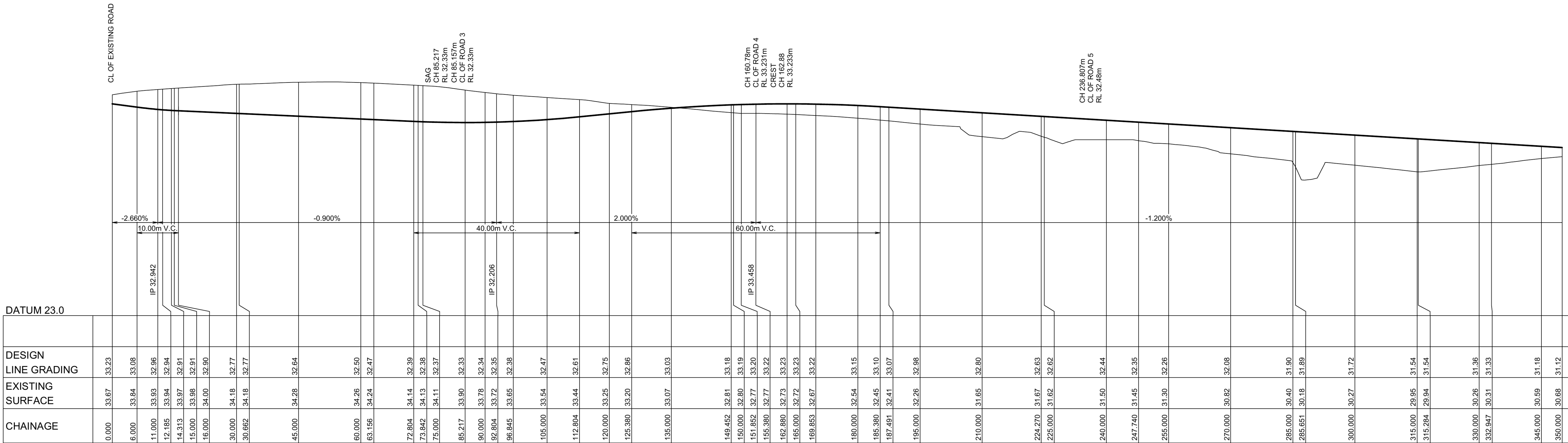




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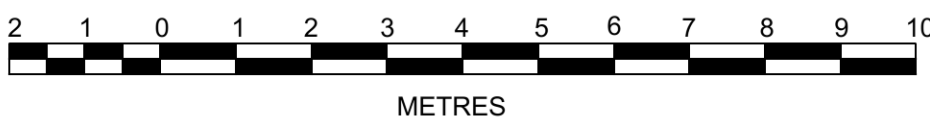


LONGITUDINAL SECTION ROAD 1  
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VERTICAL SCALE 1:100

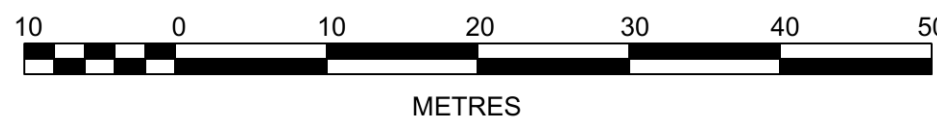


LONGITUDINAL SECTION ROAD 1  
HORIZONTAL SCALE 1:500  
VERTICAL SCALE 1:100

1:100 (AT A1)



1:500 (AT A1)



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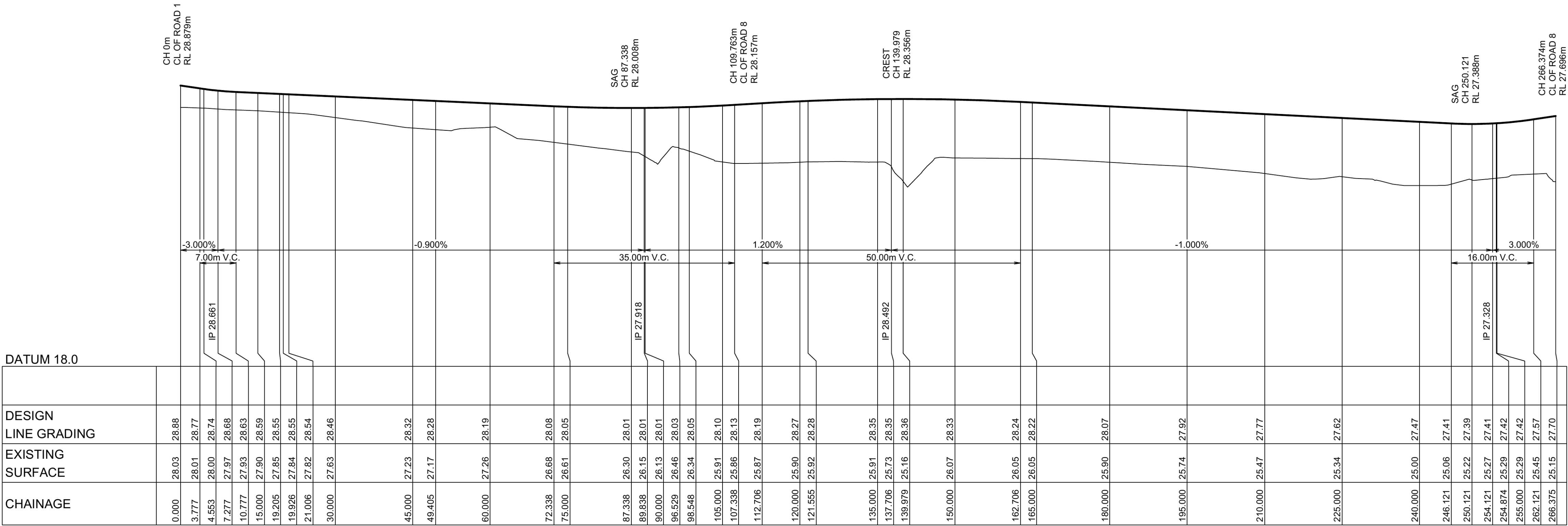
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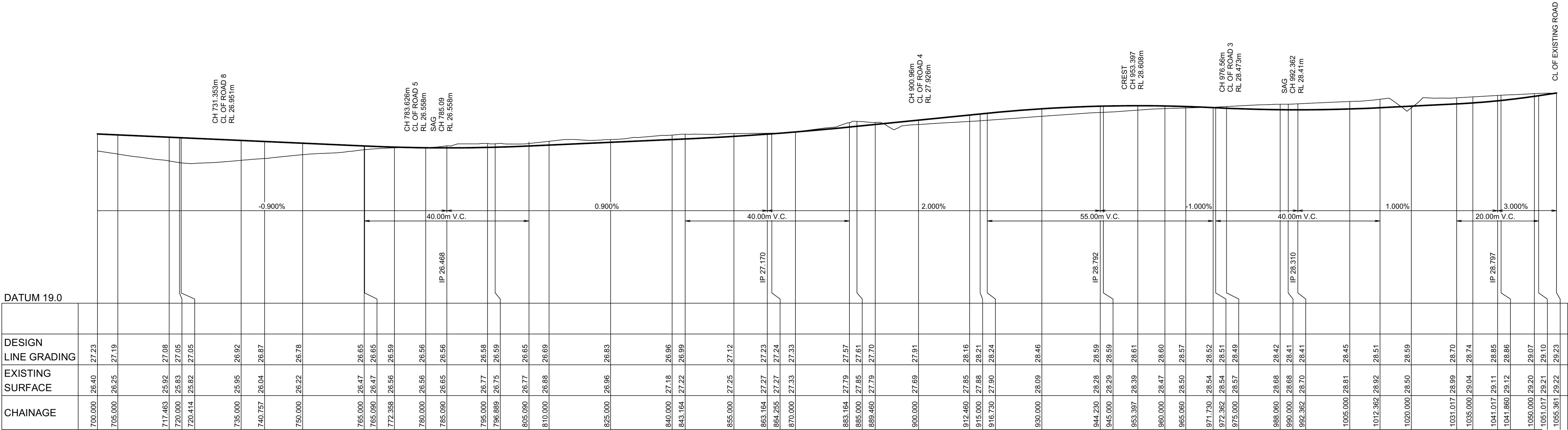
JORDAN SPRINGS  
VILLAGE 5  
ROAD LONGITUDINAL SECTIONS  
ROAD 1

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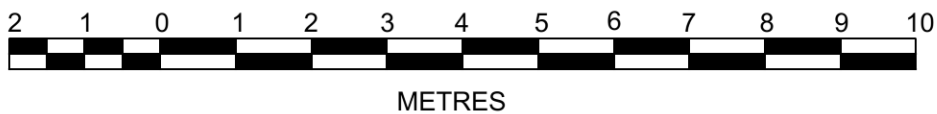


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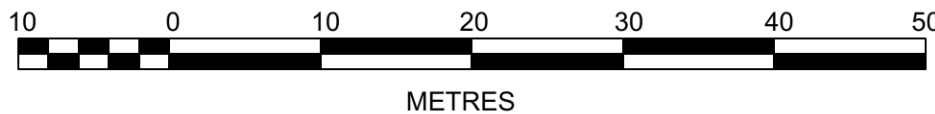


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1:100 (AT A1)



1:500 (AT A1)



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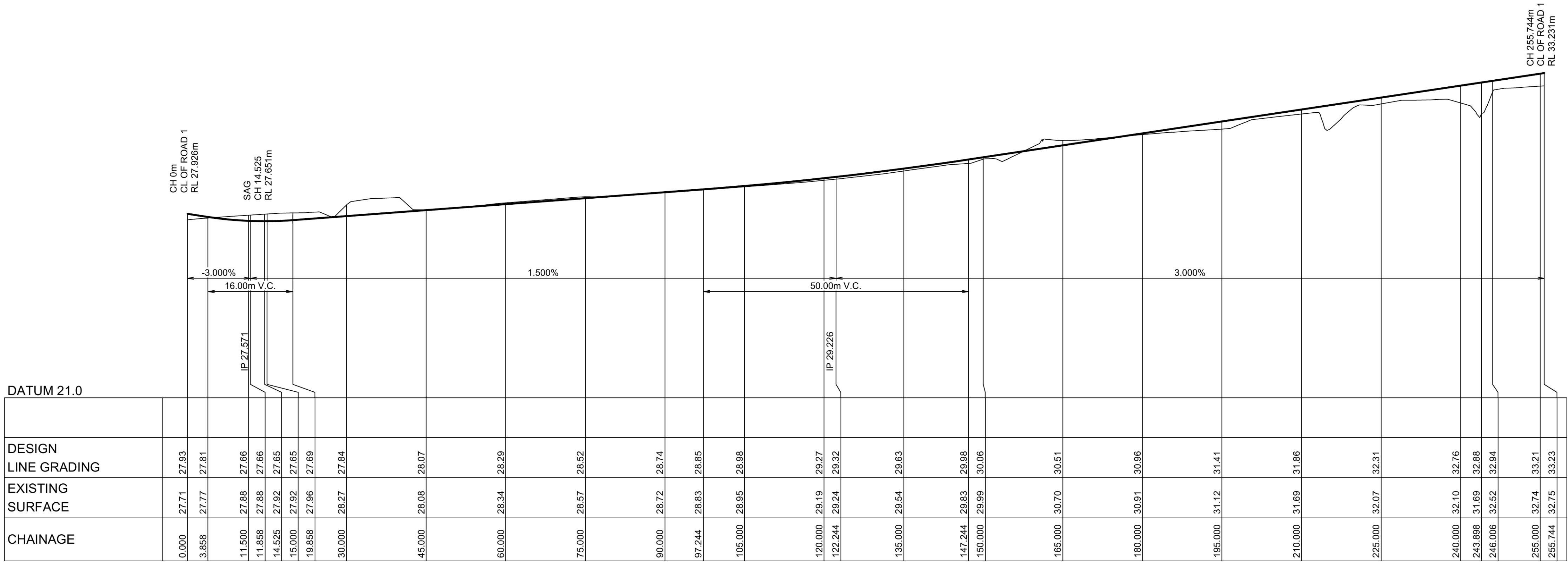
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JORDAN SPRINGS  
VILLAGE 5  
ROAD LONGITUDINAL SECTIONS  
ROAD 1 & 2

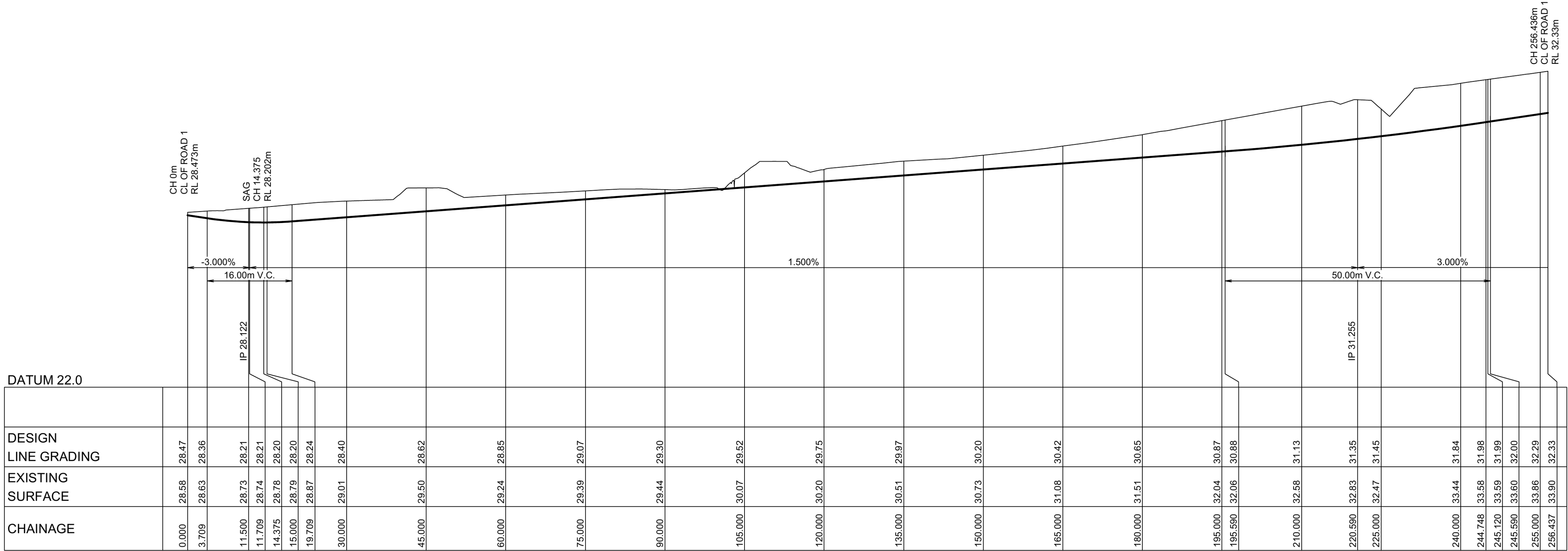
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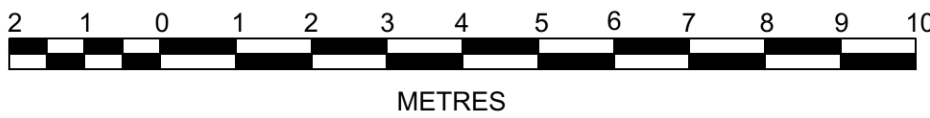


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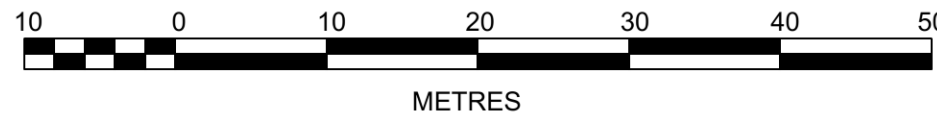


LONGITUDINAL SECTION ROAD 3  
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VERTICAL SCALE 1:100

1:100 (AT A1)



1:500 (AT A1)



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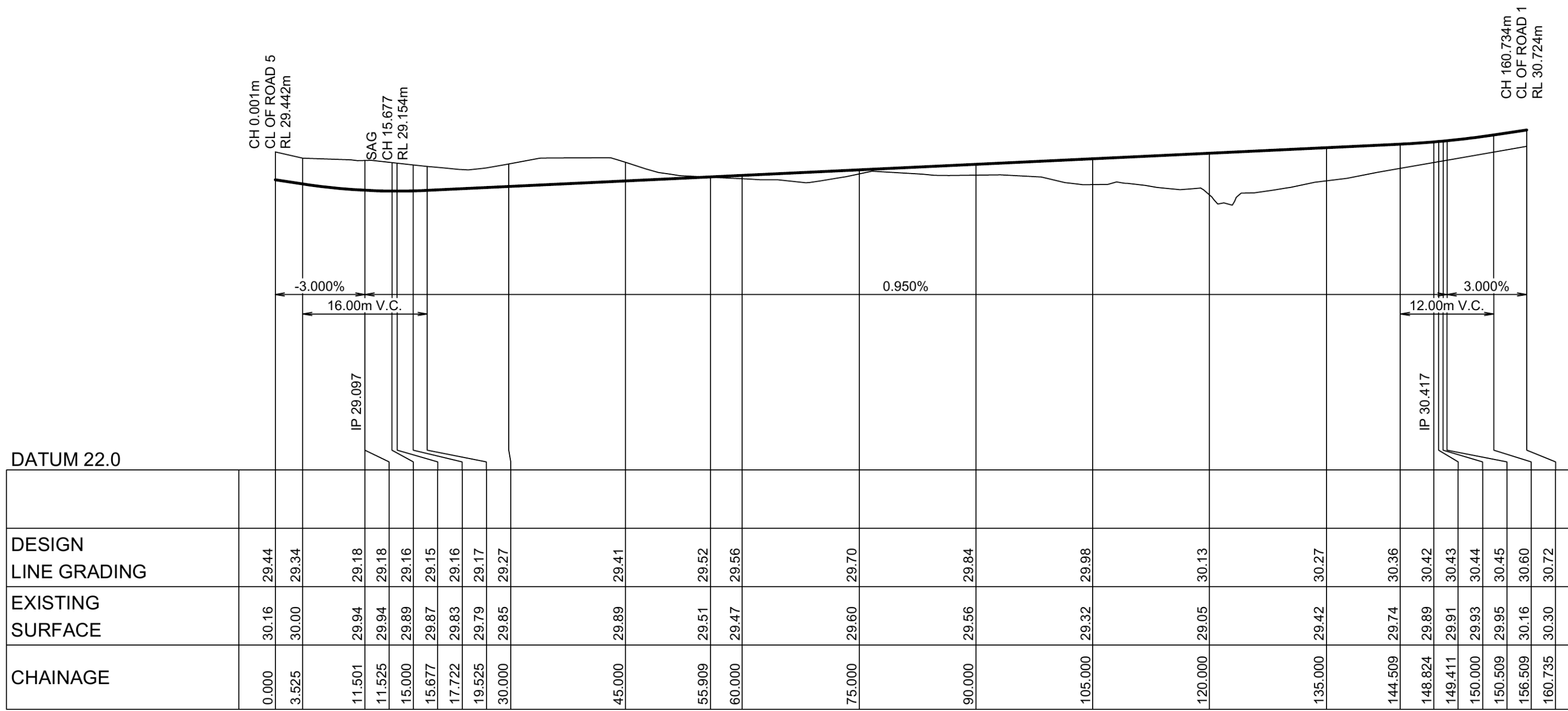
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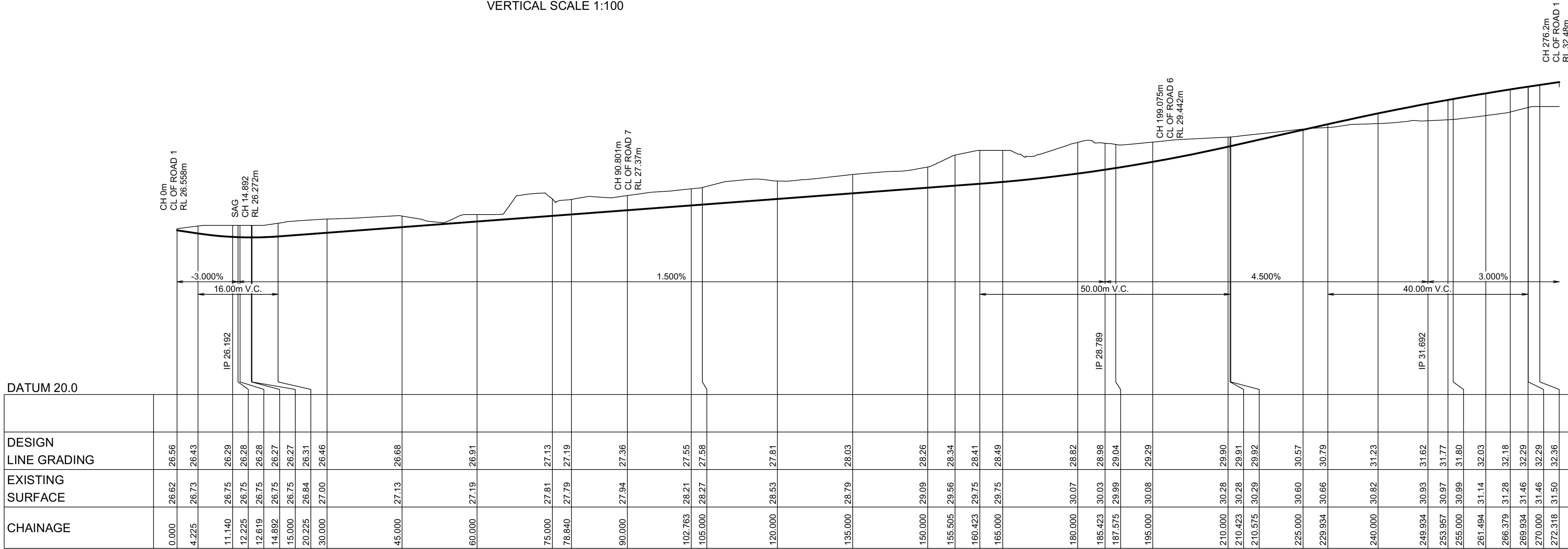
JORDAN SPRINGS  
VILLAGE 5  
ROAD LONGITUDINAL SECTIONS  
ROAD 3 & 4

PLAN No:	9343/03DA08	B
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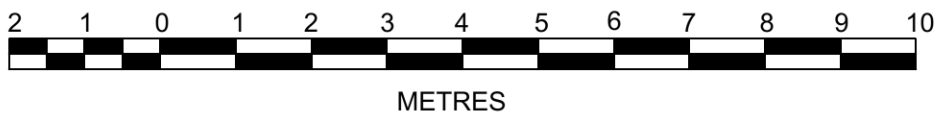


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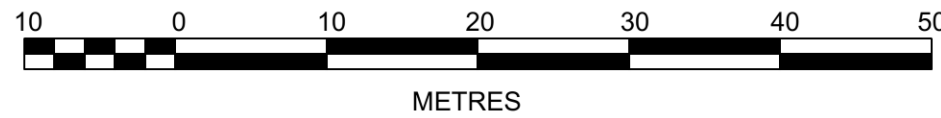


LONGITUDINAL SECTION ROAD 5  
HORIZONTAL SCALE 1:500  
VERTICAL SCALE 1:100

1:100 (AT A1)



1:500 (AT A1)



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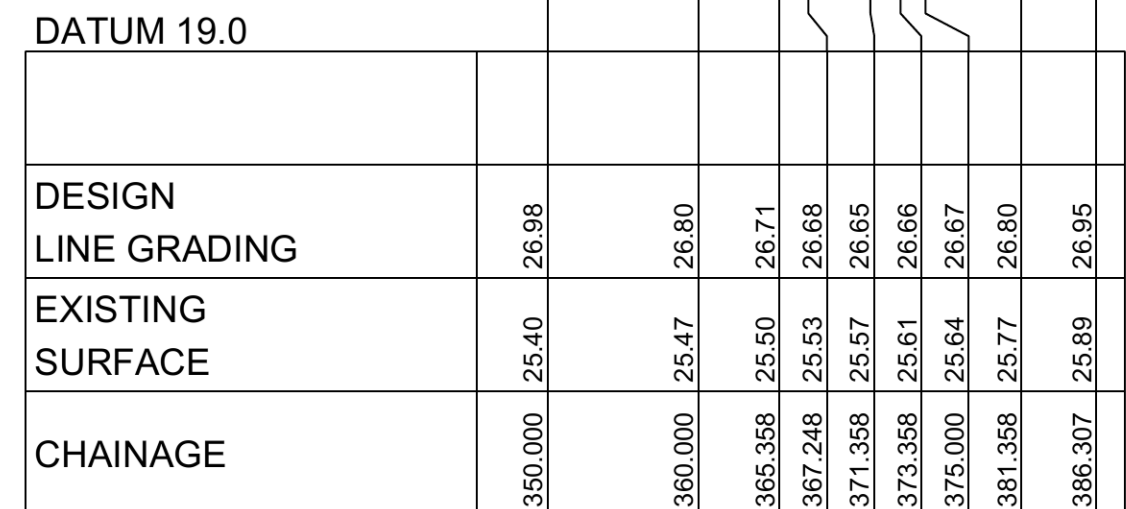
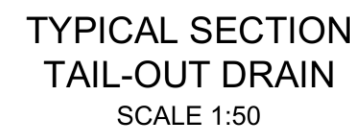
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JORDAN SPRINGS  
VILLAGE 5  
ROAD LONGITUDINAL SECTIONS  
ROAD 5 & 6

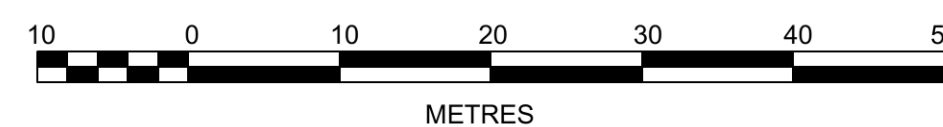
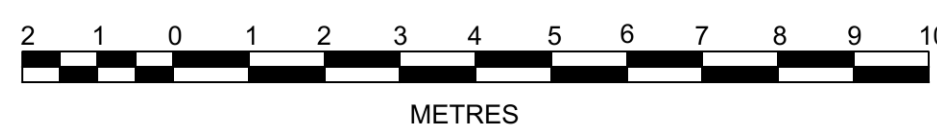
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FILE No:	934303DA09	
SHEET SIZE:	A1 ORIGINAL	







LONGITUDINAL SECTION ROAD 8  
HORIZONTAL SCALE 1:500  
VERTICAL SCALE 1:100



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JORDAN SPRINGS  
VILLAGE 5  
ROAD LONGITUDINAL SECTIONS  
ROAD 8

PLAN No: 9343/03DA11 B

FILE No: 934303DA11

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