Sigma Consultants Ltd

Infrastructure assessment report

66 McFetridge Drive, Hamurana

Report Number: 9047.100

Project Number: 9047

27 January 2023

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Document History and Status

Revision number	Changes Made / description	By	Date
1	Initial Report	Adam Tokelove	27 January 2023

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1 Scope of Report

Sigma Consultants Ltd has been engaged to provide an infrastructure report to support a subdivision application for Millbrow Estate. The site of interest is 66 Mcfetridge Drive consisting of Lot 7 DP 392696, Lot 8 DP 392696 and Lot 1 558193.

2 Proposed project

The site is located to the south of McFetridge Drive, sloping south towards Hamurana Road. The site falls in elevation from 340msl down to 320msl. The northern end of the site is gradually sloping pasture. From there an east /west ridge rises 10m from the northern plains before falling toward the Lake, with two main spurs that extend southward along the eastern boundary and western boundary, separated by a central gully system and a series of gully heads. The central gully system extends southward down the eastern extent of the site toward a wetland feature at the northern extent of the site.

The Awahou awa is approximately 1.5km away and is the closest surface waterbody. The farm and proposed subdivision fall within the area shown as the Kaikaitahuna/ Hamurana Springs aquifer in the GNS / BOPRC assessment report.

A farm access race extends, from the McFetridge Drive and Jackson Road intersection, in a south easterly direction. This race follows an historic tramline which was developed in relation the harvesting of indigenous forest.

It is proposed to subdivide the property and provide a total of 91 sections on completion.

The existing property currently contains two dwellings and the proposed subdivision will create a total of 91 lots (an additional 89 dwellings). The site includes already established and revegetated wetlands and ponds and the proposed subdivision will establish additional native vegetation to enhance the gully system and stormwater runoff across the site. The lot sizes range from 2,320m2 to 4.9ha in size with clusters of housing separated by native vegetation. The main lot (Lot 94) will contain 21.5ha with a series of lots (Lots 92 and 93) to create a network of recreational paths. The subdivision will be accessed from Jackson Road and will be connected to electricity and telecommunications services.

Services are proposed as follows:

- Wastewater: connection to Rotorua lakes sewer is proposed for all sites.
- Stormwater: stormwater flowpaths through the site will be managed at the same or lower levels of flow. Stormwater from buildings and hard surfaces will be collected and disposed of within the site as far as practical.
- Water: a description of the water supply is given below. The provision of an adequate and potable water supply, including for fire fighting purposes, is required for all sites and buildings.
- Roading: an internal road network will be constructed to provide access to all sites
- Telecom and Power will be provided to each new site

3 Wastewater

Council has been approached with respect to connecting to the low pressure wastewater network at Tauranga Direct Road (SH 36). There is currently capacity within the system with minor upgrades.

Detailed design as to head limiting with respect to the low pressure system will need to be undertaken to keep the system below 55m of head, however there are multiple potential solutions to this.

A copy of Paula Meredith's email regarding this is included in the Appendices.

4 Water supply

4.1 Existing situation

The site currently obtains its water supply as follows:

- The farm extracts 30m3/day for the dwellings and process water in the milking shed.

- Lot 2 DP558193 and Lot 8 DP 392696 (amalgamated) has an allocation from the Kaharoa Water Scheme of 24.1 m3 per day.
- Lot 7 DP392696 has an allocation of 2.6 m3 per day.
- A bore provides 35 m3 per day.

Therefore, there is a current total allocated of 61.7m3 per day.

4.2 Proposed scheme

It is proposed to create an additional 91 lots. Allowing for 5 people per household, average, and 200 litres / person per day this requires a water supply as follows:

91 x 200 x 5 = 91,000 litres / day or 91m3 / day

This is therefore more than that available from the current water take allowance.

In order to comply with the requirements of SNZ PAS 4509:2008 (fire fighting water supply), water storage tanks will need to be installed on each property.

It is therefore reasonable to require each house to use rainwater water supply, with a trickle top up allowance, of (60m3 / 91 houses) approximately 600 litres per household.

This will ensure that there is no additional effect on the aquifer and will provide some reduction in stormwater flows.

Alternatives are also being considered such as to allow an average take of 45m3 / day (so a net average reduction), with a peak of 91m3 /day (averaged annually), to supplement rainwater capture within each lot. This would mean that over the summer, tanker trucks would not be required. Over winter, when there is a greater amount of rainwater available, then the take from the aquifer would reduce. It would be possible to allow for / encourage some deeper stormwater disposal to give some aquifer replenishment.

5 Stormwater disposal

It is proposed for each new dwelling to have on-site rainwater tanks. The overflows from each tank will discharge to soakage pits. (On-site soils testing shows generally sandy soils well suited to stormwater soakage). Soakpits will be sized to accommodate the full 10 year 1 hour event as per the NZ Building code.

Overflow from the soakpits will be directed to designated overland flow paths, or the roading corridors, as necessary.

Road flows will be discharged to soakage, with the overflows running down open channels in the road reserves.

At this stage a pond is proposed on the southern portion of the property to provide any additional detention to provide hydraulic neutrality, and to encourage groundwater recharge.

6 Roading

Stantec have completed a roading infrastructure report for the proposed development, dealing with exterior effects.

Within the subdivision new roading infrastructure is proposed, to comply with the Waikato Regional Infrastructure Technical Specifications (RITS).

7 Closure

In our opinion, the site may be developed without the need for significant upgrades to receiving systems.

Sigma Consultants Ltd

Adam Tokelove CMEngNZ, CPEng, IntPE(NZ)
Principal Civil Engineer, Sigma Consultants Ltd
27 January 2022

Appendix 1 - Proposed Civil Engineering Plans

rev	date	issue/revision detail	by	chk

client
CALAND HOLDINGS

project
MILBROW ESTATE
66 MCFETRIDGE DRIVE

drawing title
SERVICES
INDEX PLAN
SHEET 1 OF 12

Scale
1:400 (A1)

File Number
9047

drawing number
9047-C-200

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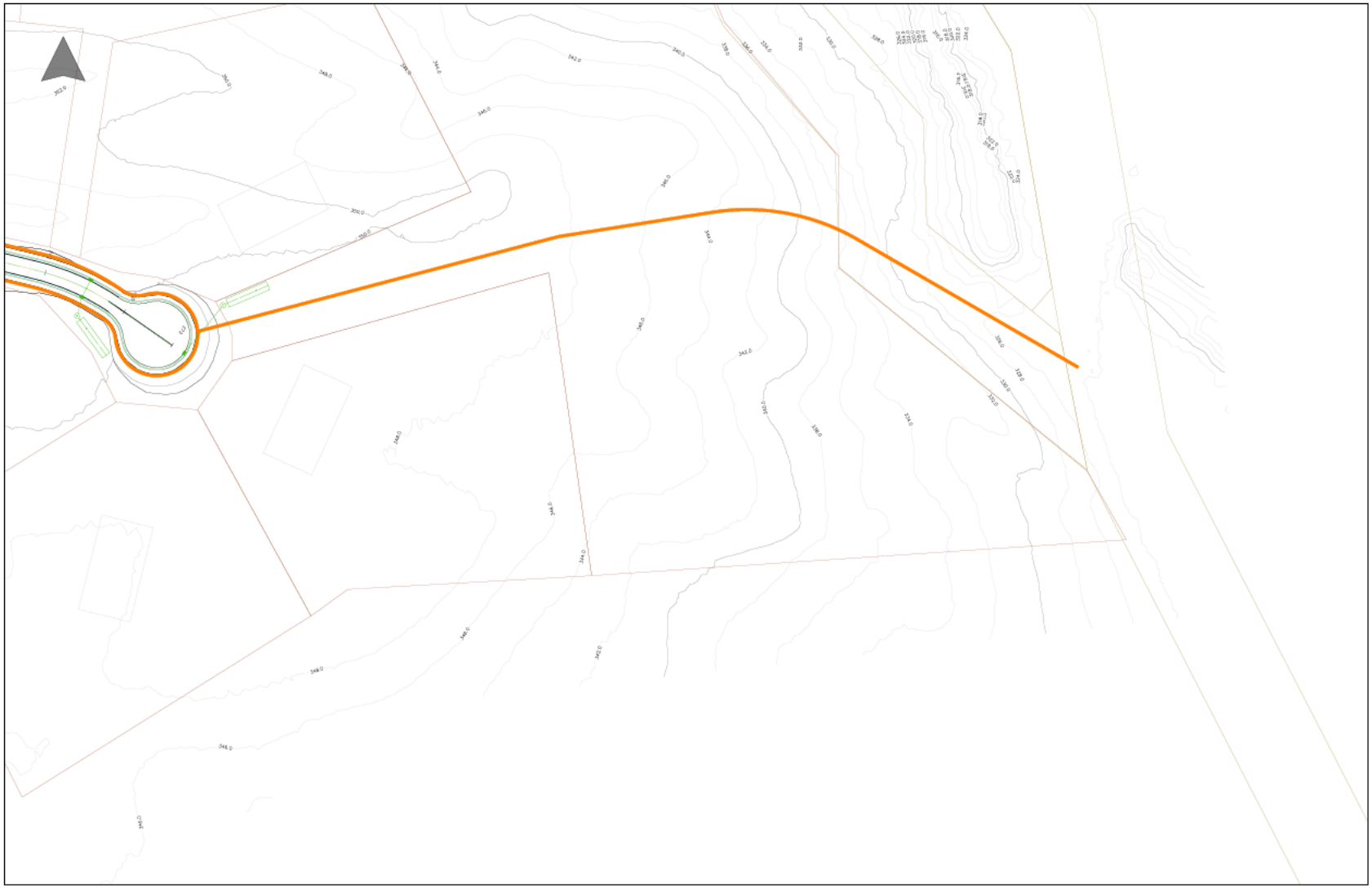

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SHEET 2 OF 12

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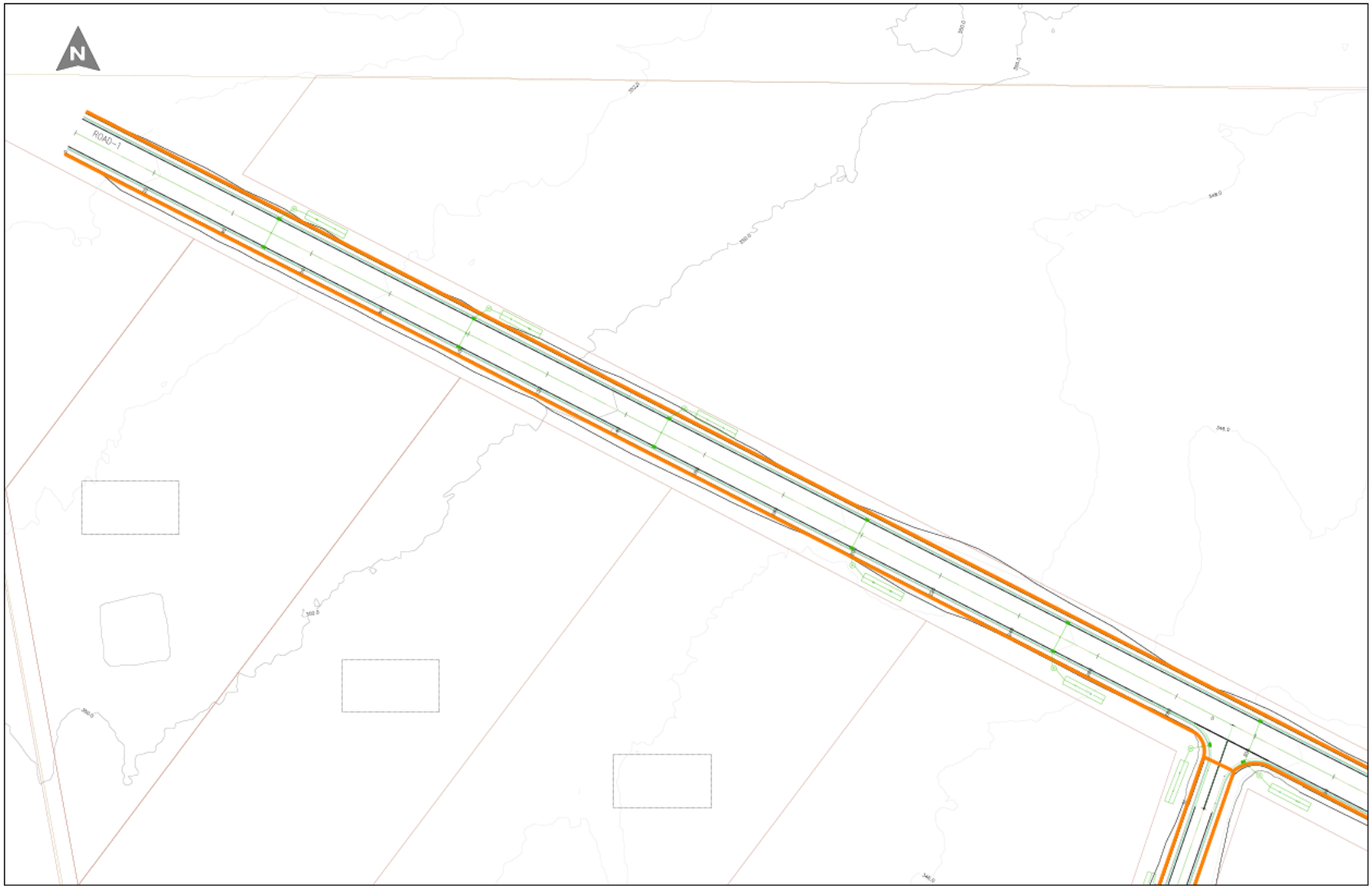

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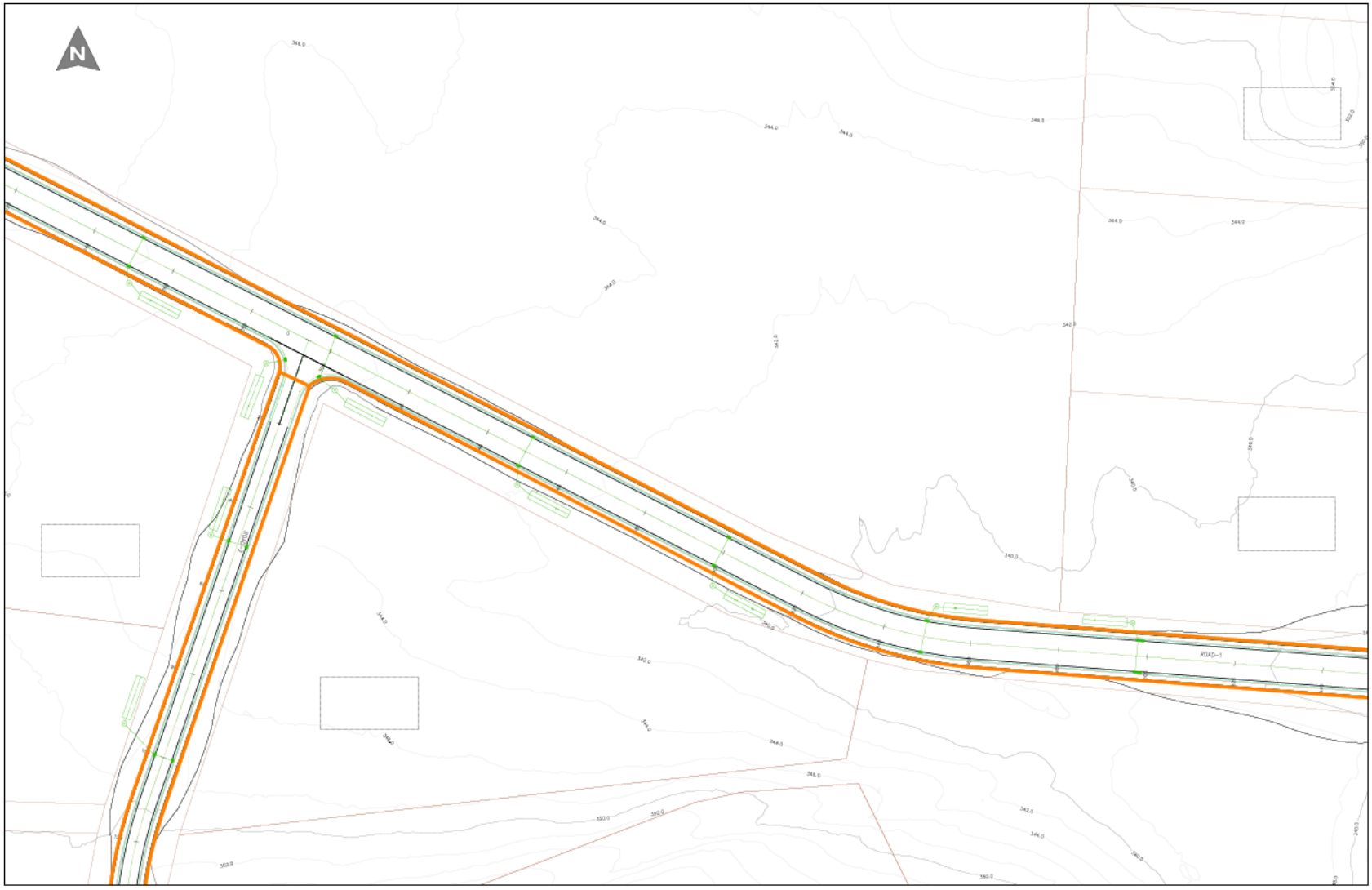

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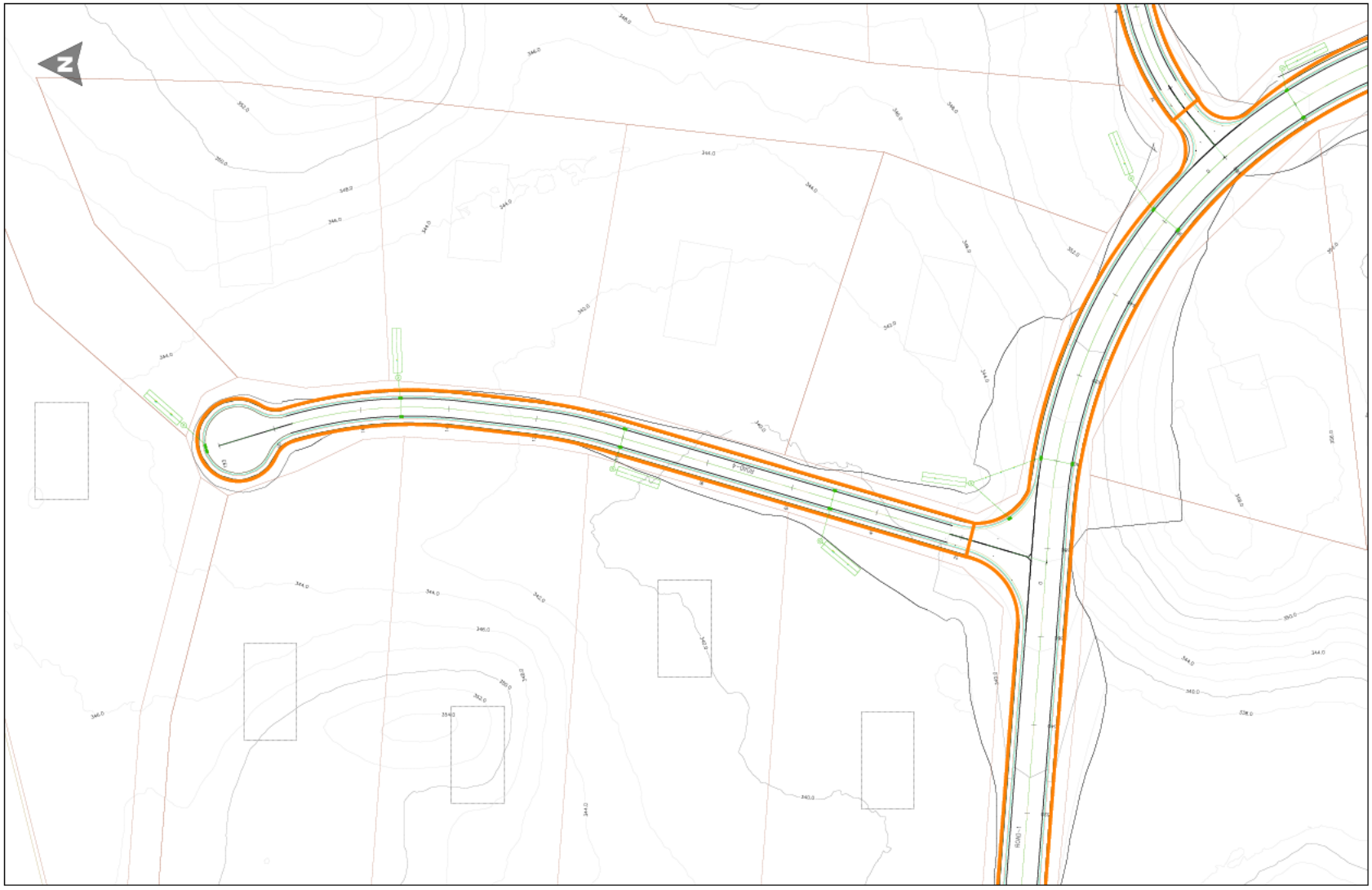

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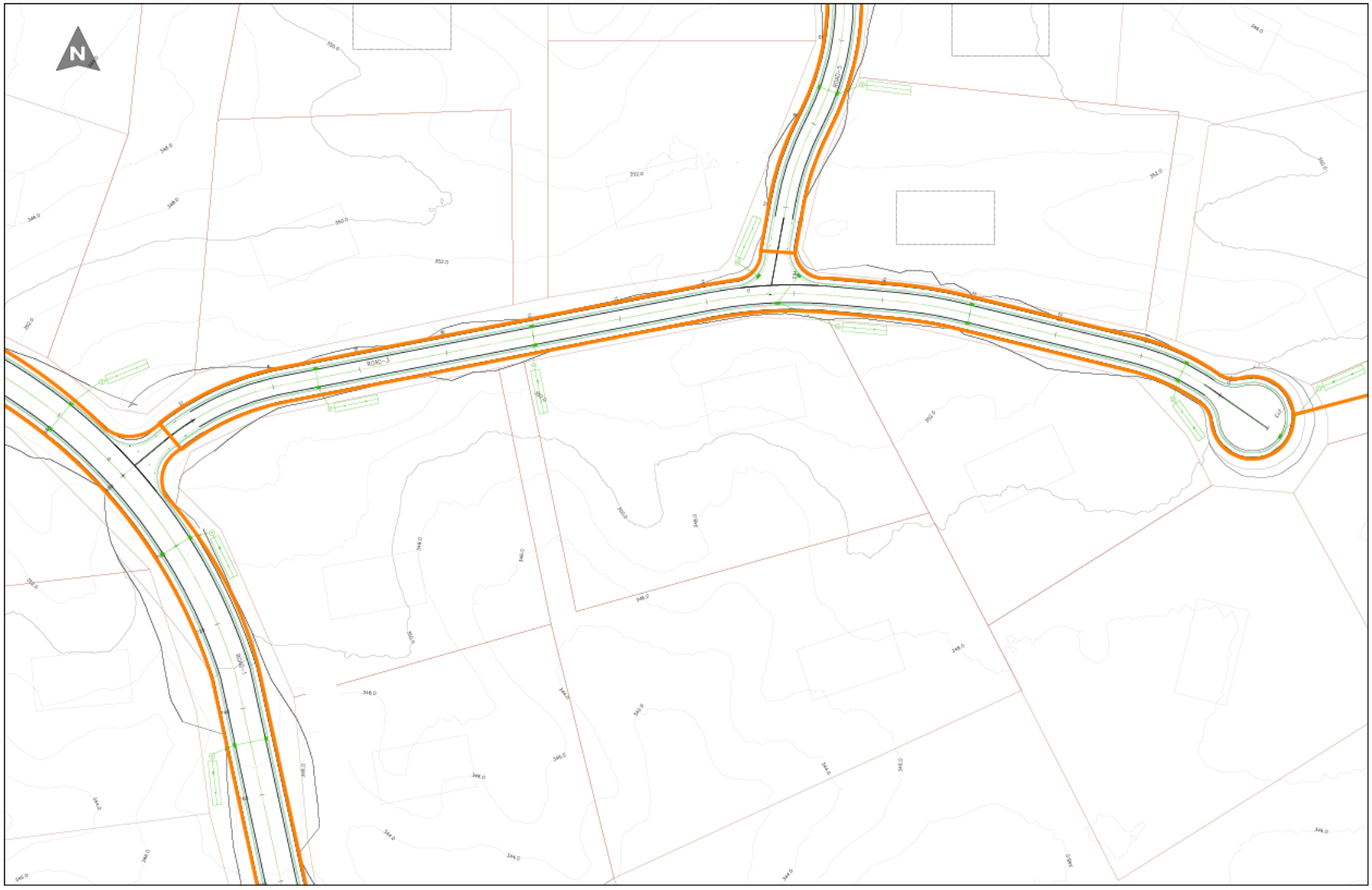

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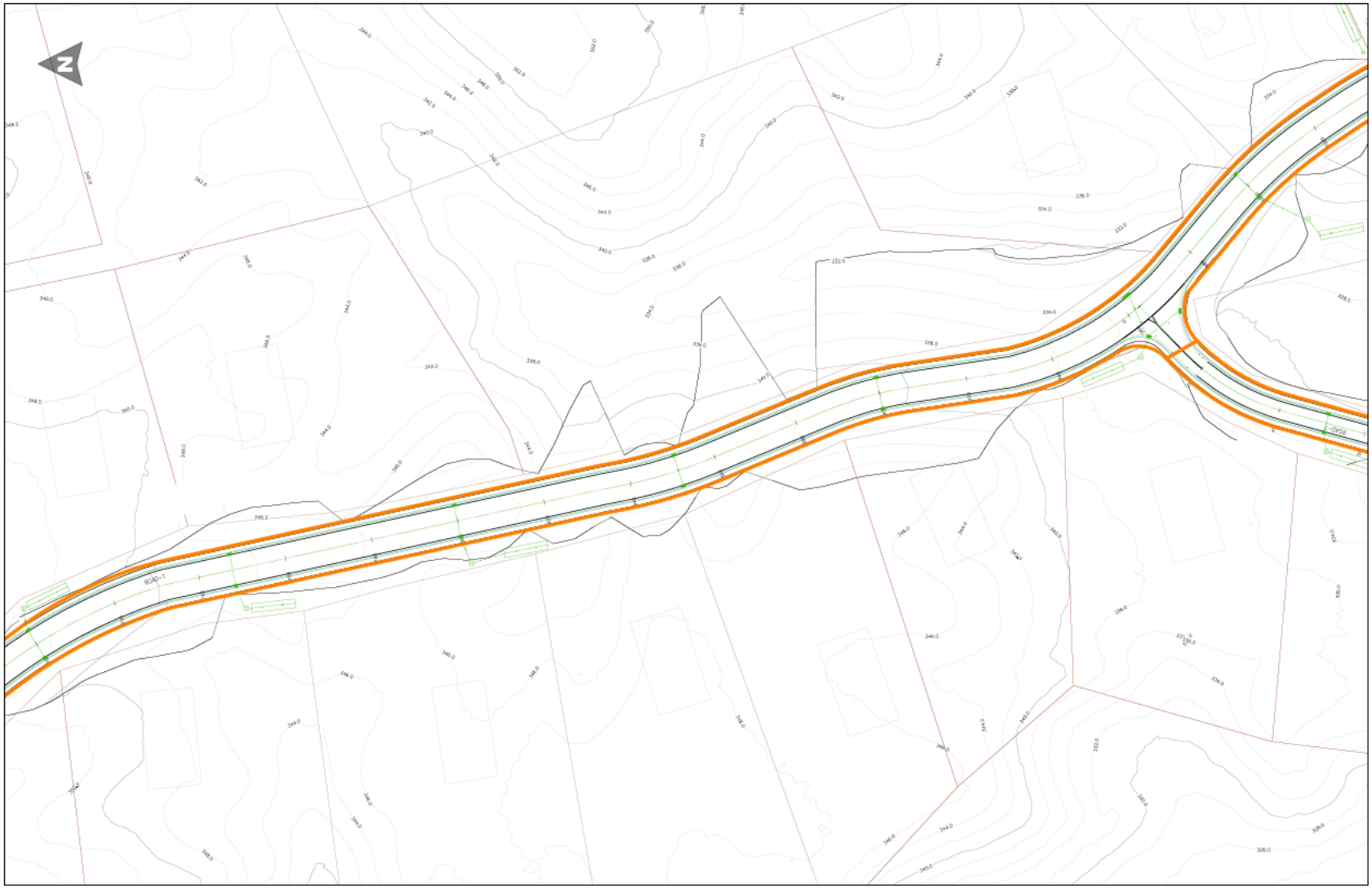

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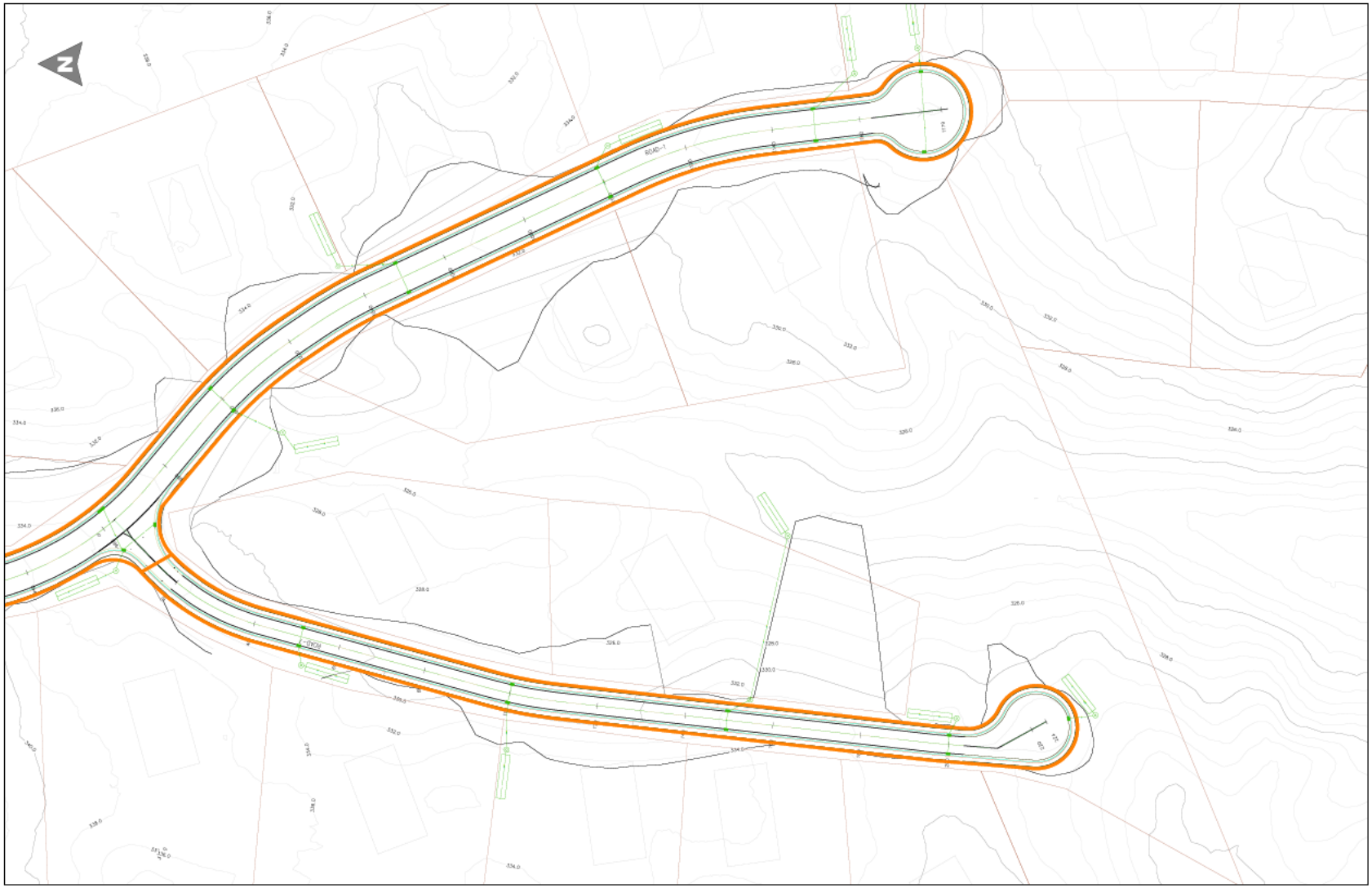

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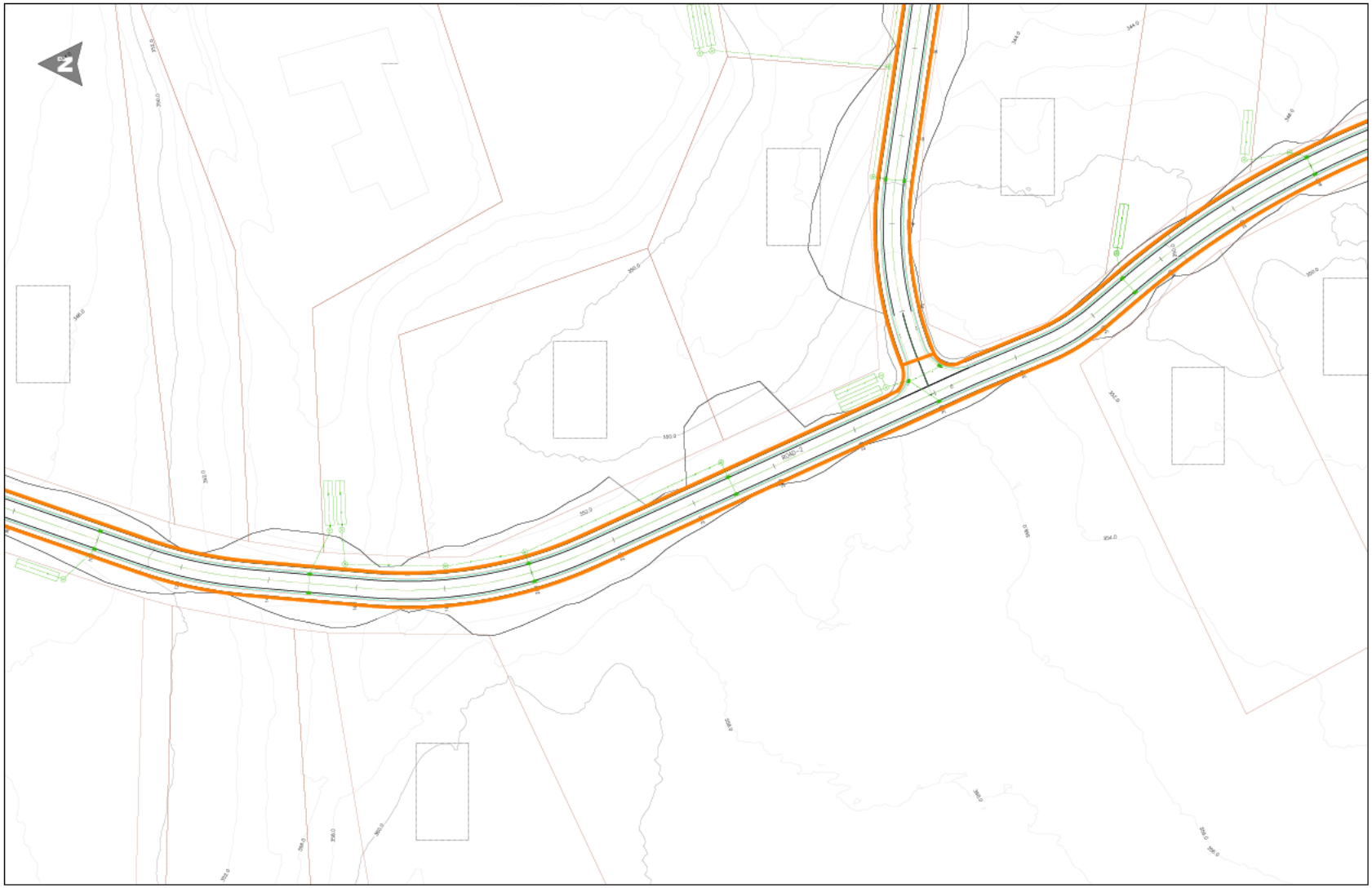

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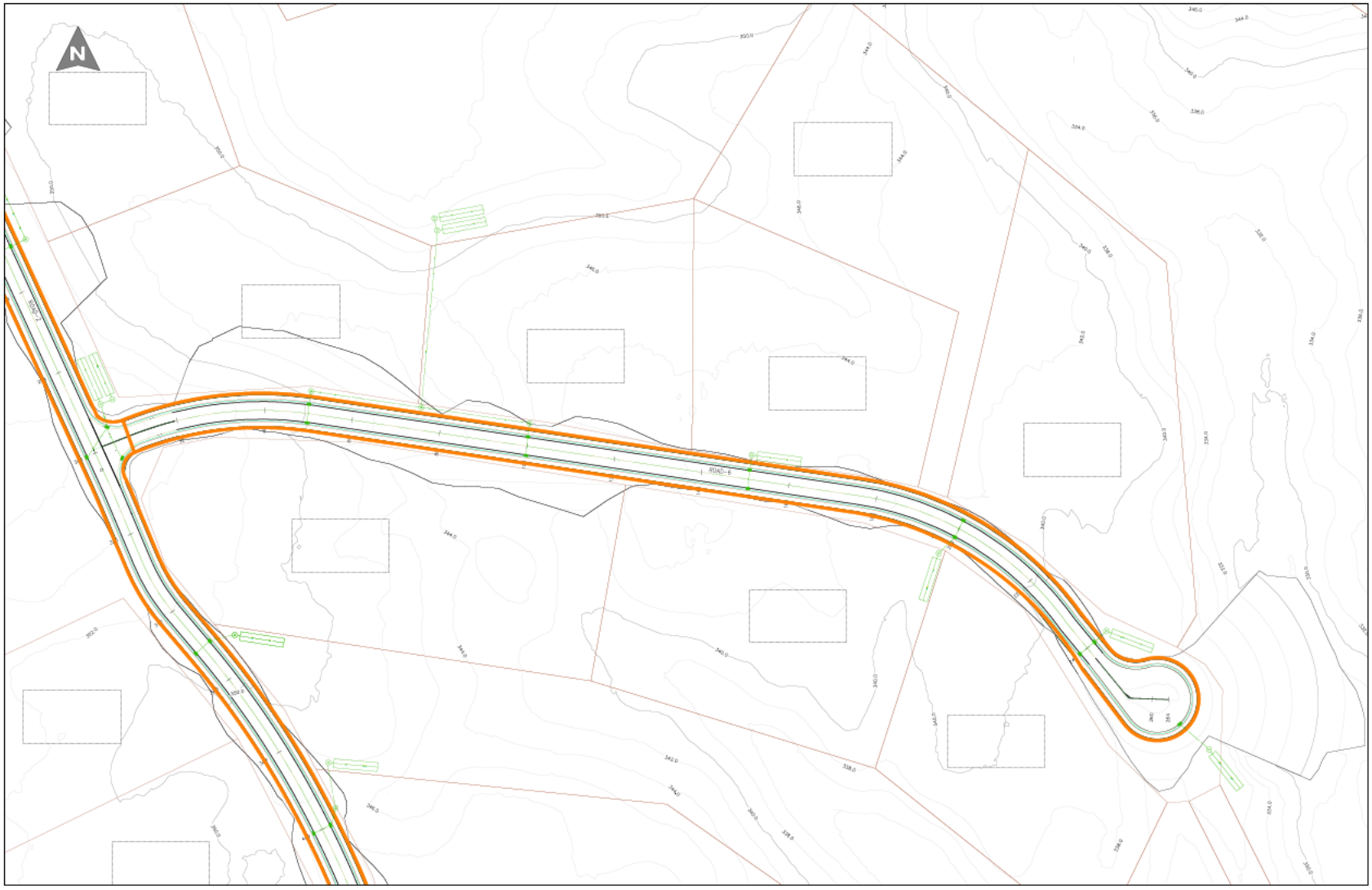

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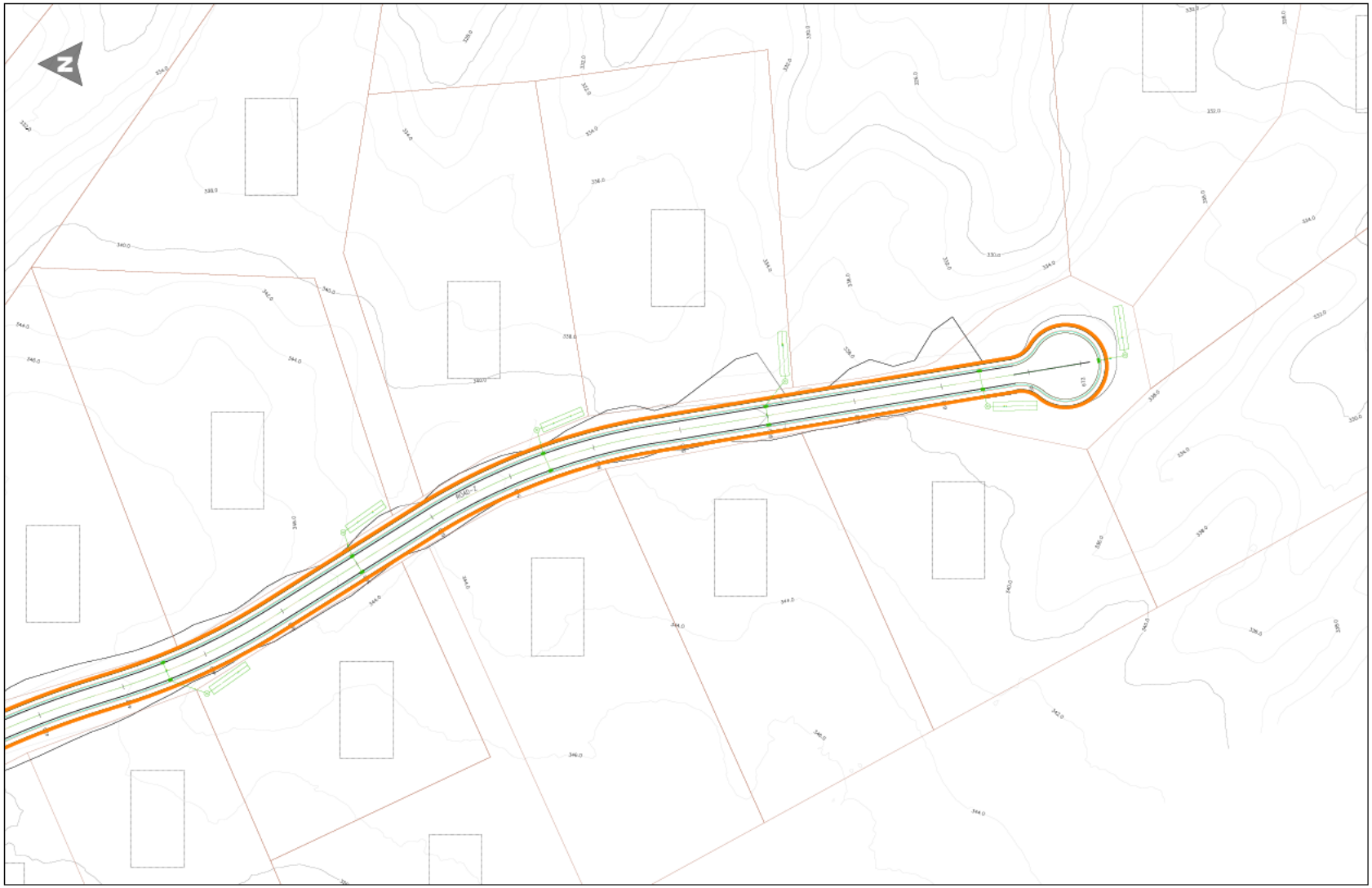

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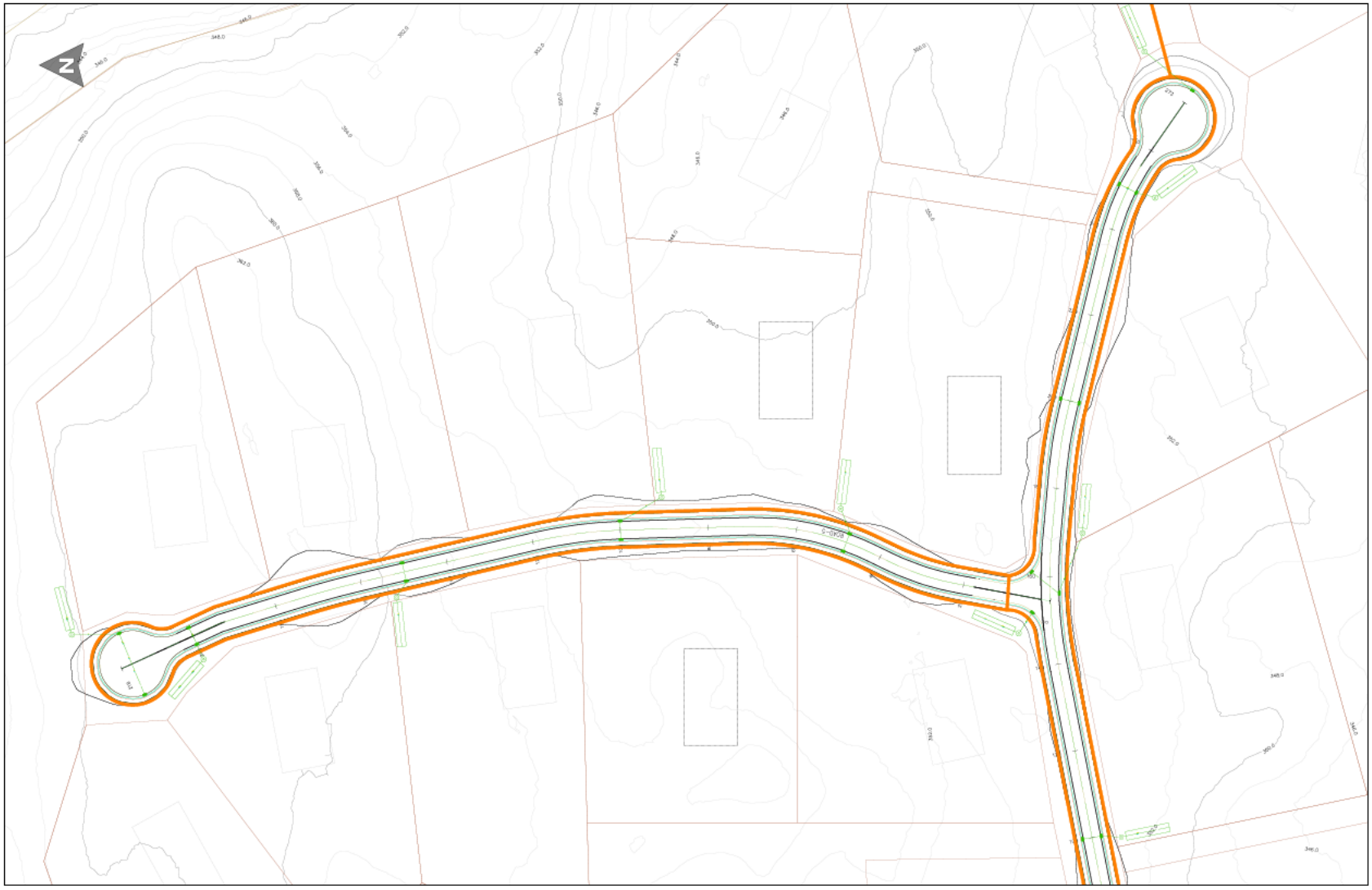
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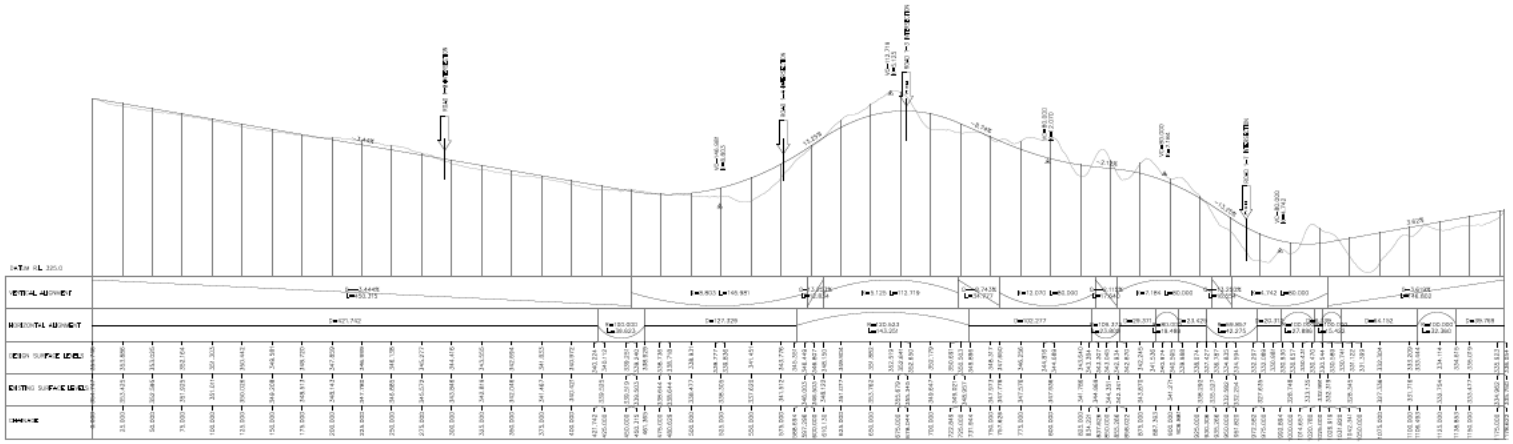

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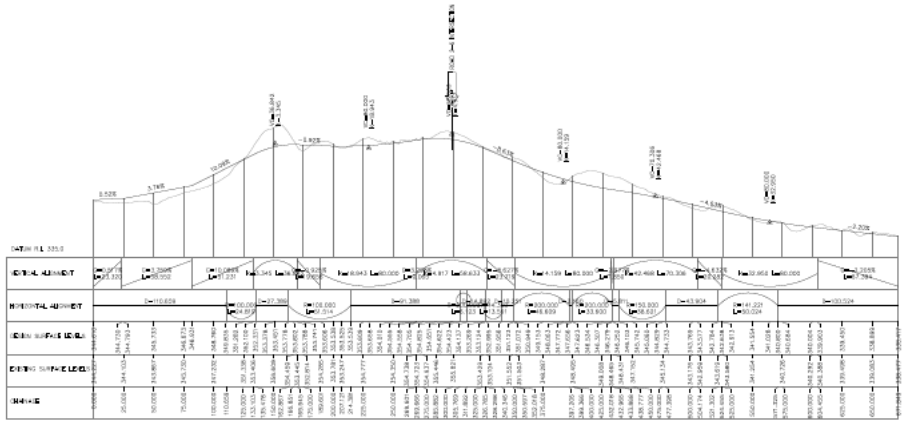

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ROAD 1 AND 2

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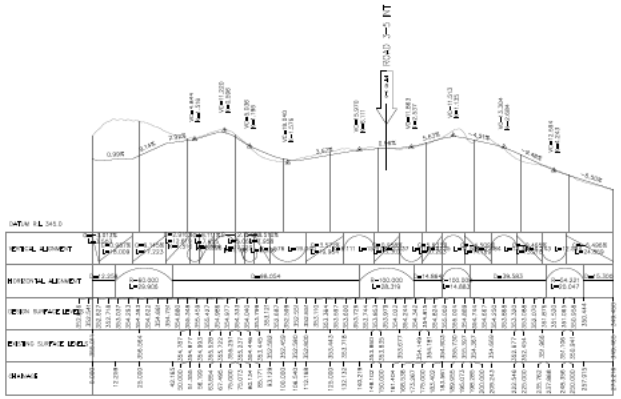

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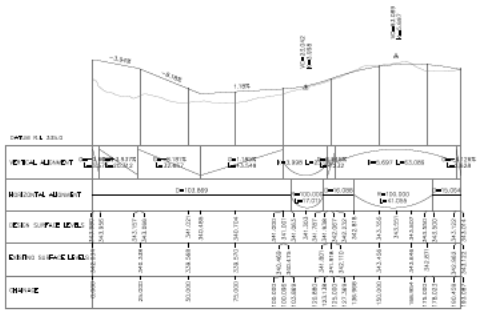

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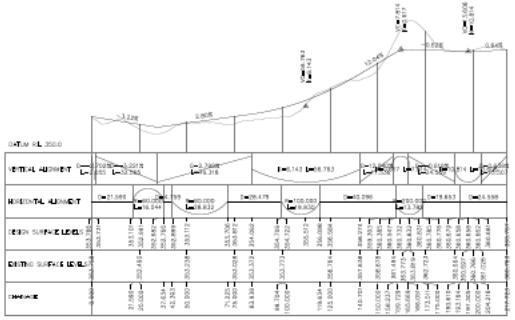

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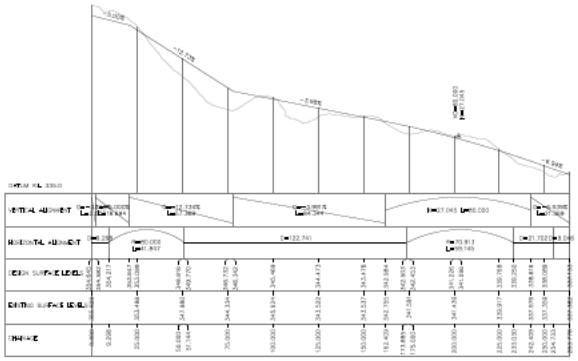

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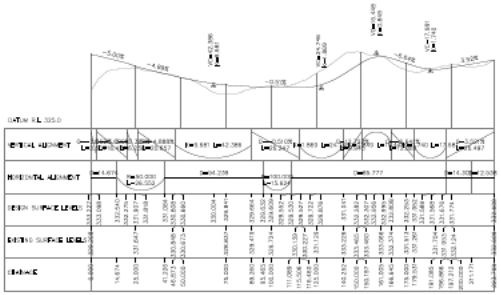

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project
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66 MCFETRIDGE DRIVE

drawing title
LONG SECTIONS
ROAD 2 TO 7

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9047

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CROSS SECTIONS
ROAD 1
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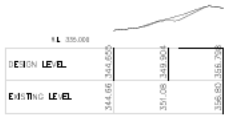

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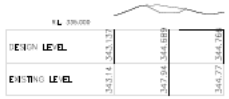

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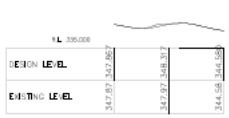

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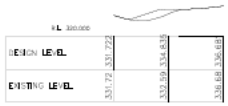

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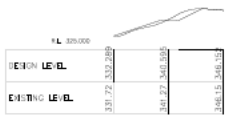

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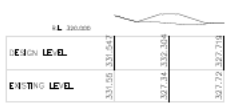

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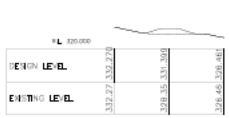

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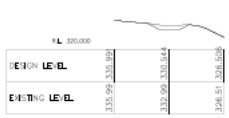

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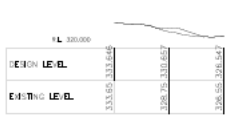

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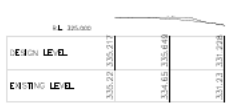

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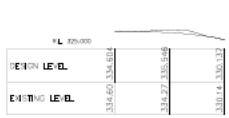

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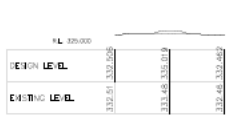

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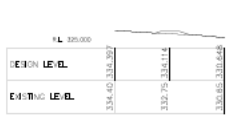

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rev	date	issue/revision detail	by	chk

client
CALAND HOLDINGS

project
MILBROW ESTATE
66 MCFETRIDGE DRIVE

drawing title
CROSS SECTIONS
ROAD 1
SHEET 2 OF 2

Scale

File Number
9047

drawing number
9047–CS–163

rev
A

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No.	Date	Issue/revision detail	By	Chk

client
CALAND HOLDINGS

project
MILBROW ESTATE
66 MCFETRIDGE DRIVE

drawing title
CROSS SECTIONS
ROAD 2
SHEET 1 OF 1

Scale

File Number
9047

drawing number
9047–CS–164

rev.
A

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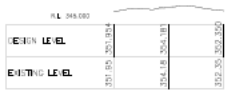

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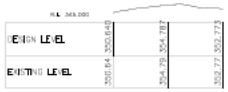

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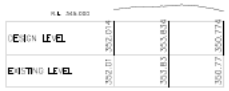

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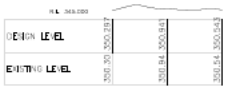

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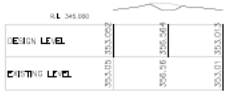

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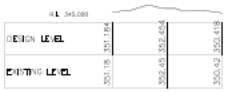

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CHAINAGE 00.000

CHAINAGE 100.000

CHAINAGE 200.000

no	date	issue/revision detail	by	chk

client
CALAND HOLDINGS

project
MILBROW ESTATE
66 MCFETRIDGE DRIVE

drawing title
CROSS SECTIONS
ROAD 3
SHEET 1 OF 1

Scale

File Number
9047

drawing number
9047–CS–165

rev
A

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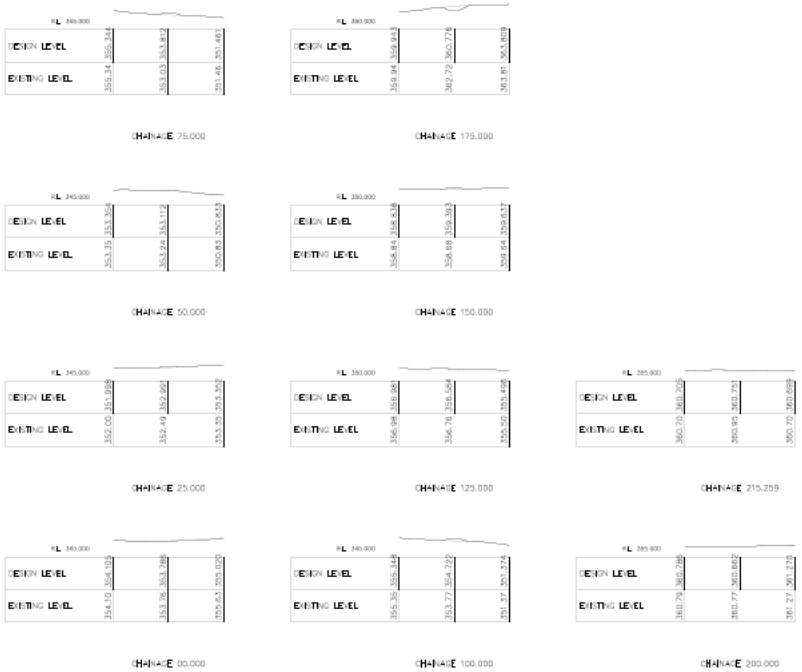

no	date	issue/revision detail	by	chk

client: CALAND HOLDINGS

project: MILBROW ESTATE
66 MCFETRIDGE DRIVE

drawing title: CROSS SECTIONS
ROAD 5
SHEET 1 OF 1

Scale:

File Number: 9047

drawing number: 9047–CS–167 rev: A

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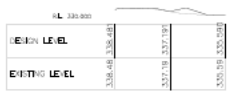

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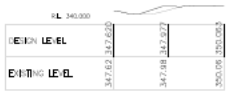

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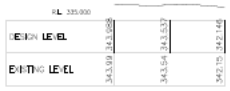

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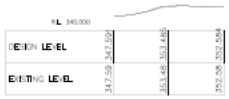

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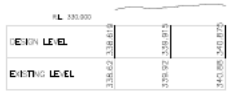

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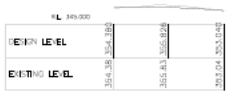

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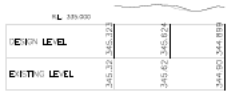

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no	date	issue/revision detail	by	chk

client
CALAND HOLDINGS

project
MILBROW ESTATE
66 MCFETRIDGE DRIVE

drawing title
CROSS SECTIONS
ROAD 6
SHEET 1 OF 1

Scale

file Number
9047

drawing number
9047-CS-168

rev
A

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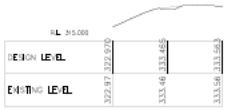

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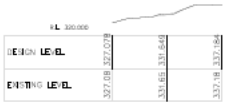

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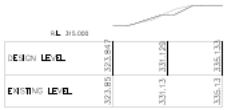

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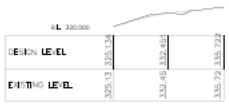

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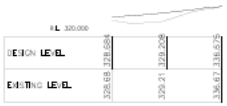

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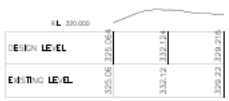

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no	date	issue/revision detail	by	chk

client: CALAND HOLDINGS

project: MILBROW ESTATE
66 MCFETRIDGE DRIVE

drawing title: CROSS SECTIONS
ROAD 7
SHEET 1 OF 1

Scale:

File Number: 9047

drawing number: 9047-CS-169

rev: A

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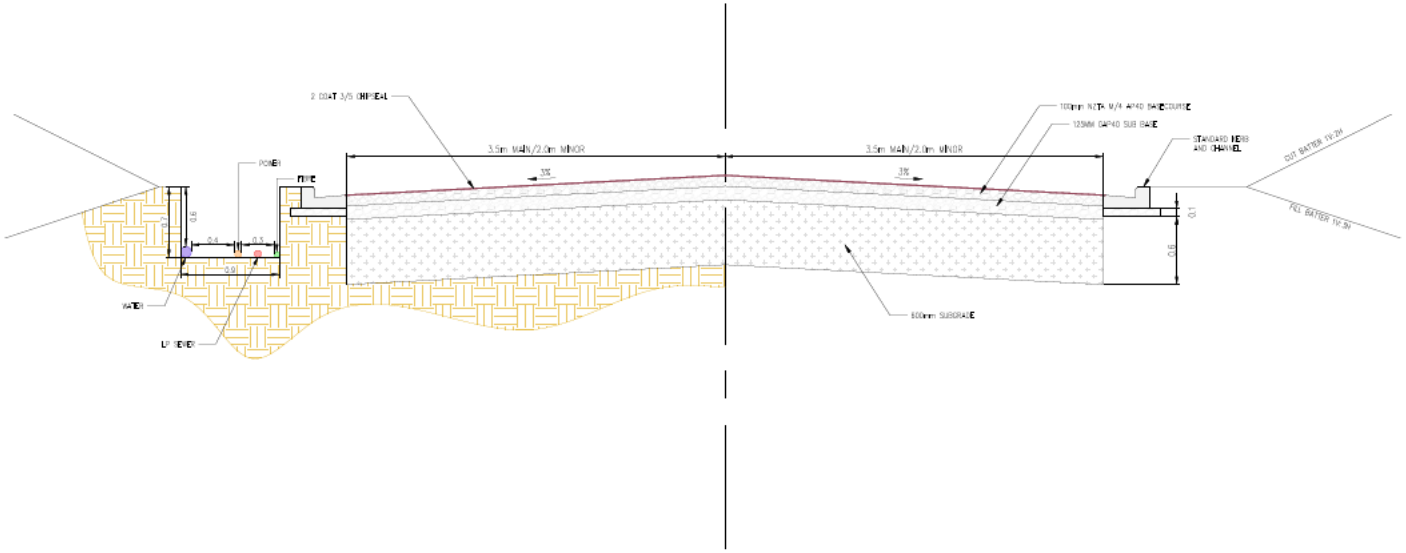

no	date	issue/revision detail	by	chk

client
CALAND HOLDINGS

project
MILBROW ESTATE
66 MCFETRIDGE DRIVE

drawing title
TYPICAL SECTION
AND COMMON SERVICES TRENCH
SHEET 1 OF 1

Scale

File Number
9047

drawing number
9047–CS–170

rev
A

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Appendix 2 - Paula Meredith email re wastewater

Subject: FW: Caland Holdings Ltd - 66 McFetridge Drive Hamurana - Sewer Connection
From: Ann Nicholas s 9(2)(a)
Date: 26/01/23, 08:01
To: Adam Tokelove s 9(2)(a)

Ann Nicholas

Sigma Consultants Ltd.
1281 Hinemoa Street, Rotorua 3010
P.O. Box 553, New Zealand

P s 9(2)(a)
F
DDI s 9(2)(a)
MOB s 9(2)(a)
E s 9(2)(a)
W www.sigmaconsult.co.nz

From: Paula Meredith s 9(2)(a) >
Sent: Wednesday, 25 January 2023 5:15 pm
To: Jean-Paul Gaston s 9(2)(a) >; Stuart Milsom s 9(2)(a) >; Ann Nicholas s 9(2)(a) >
Cc: Greg Manzano s 9(2)(a) ; Adam Henderson-Genefaas s 9(2)(a) >; Arturo Pingol s 9(2)(a)
Subject: RE: Caland Holdings Ltd - 66 McFetridge Drive Hamurana - Sewer Connection

Hi

I have had our design team look at this site and consider how sewerage reticulation may potentially be provided to the development. The assessment is based on the location of the property boundaries as shown on our GIS, evaluation of the topography of the site and consideration of where connection to the road might be provided and where a sewermain might be able to be laid. The assessment has not considered any proposed subdivision layout or sewer reticulation design as that information was not provided in the email below from Sigma.

There is enough capacity available for the additional 90 houses to connect to the sewerage scheme however upgrading and extension of the existing reticulation would be required. Due to the change in elevation of the site the use of Low Pressure Grinder Pumps (LPGP) may not be suitable as the pumps are designed to pump up to a maximum of 55m. Upgrading of the existing LPGP reticulation would be required however we do not have enough information to determine the extent and size of the mains required. The first likely connection to the sewerage scheme would be via Tauranga Direct Rd, however that needs to be confirmed as a suitable location, otherwise further investigation of Central Road would be required.

If the system was designed to include a pump station within the site then the pump station could pump directly to either the pump station at Fryer Rd or the pump station at Keith Rd. this would be subject to specific design. Financial contribution would be required to join the sewerage scheme as well as the developer paying for the construction of all of the new and upgraded reticulation, LPGPs and pump station.

Regards
Paula

Paula Meredith ***Kaihautū Whakawhanake*** *- Land Development Engineering Manager* | ***Ohu Whakawhanake Tūāpapa*** *- Land Development*
s 9(2)(a) | s 9(2)(a) | s 9(2)(a) | **W**: rotorualakescouncil.nz