



Technical Memorandum

To: Hugo Lalonde; Zeyad Hassan – Caivan

Date: 2022-12-09

Cc:

From: Adam Laporte; Andrew Harte – CGH

Project Number: 2022-008

Re: Conservancy East – Borrisokane Proposed Intersection Design

1 Introduction

This memo reviews the design rationale and presents the design criteria of the proposed roadway modifications to support the Conservancy East Lands (3285, 3288 & 3305 Borrisokane Road Transportation Impact Assessment, CGH, 2021). The Conservancy East Phase 5 lands include the parcel on the west side of Borrisokane Road, with the conceptual Bus Rapid Transit (BRT) Corridor on the northern limits.

2 Existing Conditions and Design Constraints

Borrisokane Road is an arterial roadway with an existing 20 m right-of-way (ROW), which generally runs north to south. Additional property along the frontage of both Conservancy East and West parcels is planned to be conveyed for future widening beyond the existing 20.0 m corridor, allowing for a 37.5 m ROW along the Borrisokane corridor. The existing road has a rural two-lane cross section which consists of paved travel lanes and gravel shoulders. The current posted speed limit of this roadway is 80 km/h along the frontage of the Conservancy development.

The presence of a bridge structure crossing the Jock River, located approximately 200 m south of the site access along with a future BRT corridor intersection at the extension of Chapman Mills Drive have placed constraints on the design of an urbanized protected intersections at the site access.

The area is serviced by overhead power and telecommunication which span between utility poles within the existing road corridor ROW. The poles are located roughly 5-7 m from the travel lanes and run along the east side of Borrisokane Road. This constraint has informed the alignment, which pushes the roadway as far west as possible within the ROW to minimize impacts to the utility poles

3 Design Rationale and Considerations

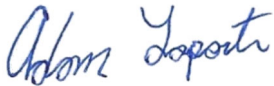
A signalized protected intersection is proposed as an ultimate configuration at both the site access and transit corridor crossing locations. Widening through this section of the corridor are also proposed to accommodate additional warranted turn lanes. An interim unsignalized condition including widening to accommodate the warranted turn lanes will be developed in coordination with the ultimate design, with an emphasis on minimizing throwaway works.

The proposed intersection (the criteria for which are provided in Attachment A and the design drawings in Attachment B) geometry requirements cannot be met with the existing posted speed limit, without impacting the existing bridge structure to the south of the site. Accordingly, a speed reduction for northbound traffic on Borrisokane Road is proposed. The location for the speed increase for southbound motorists would be relocated south of the subject site access, allowing for the required posted speed of 50 km/h along the entire site frontage to meet design criteria.

Where TAC or City minimums could not be met (see attached design criteria provided in Attachment A), priority was given to storage and deceleration lane length based on forecasted traffic volumes in the aforementioned Transportation Impact Assessment. Taper length results are based on remaining available space. Due to the short distance between the intersection of the site access and future BRT corridor, some compromises were made regarding turn lane geometry. The compromised criteria are displayed in red, in the attached design criteria table in Attachment A.

4 Conclusion

A reduced design speed paired with an urbanized cross section and protected intersections are proposed as the roadway modifications to support the Conservancy development.



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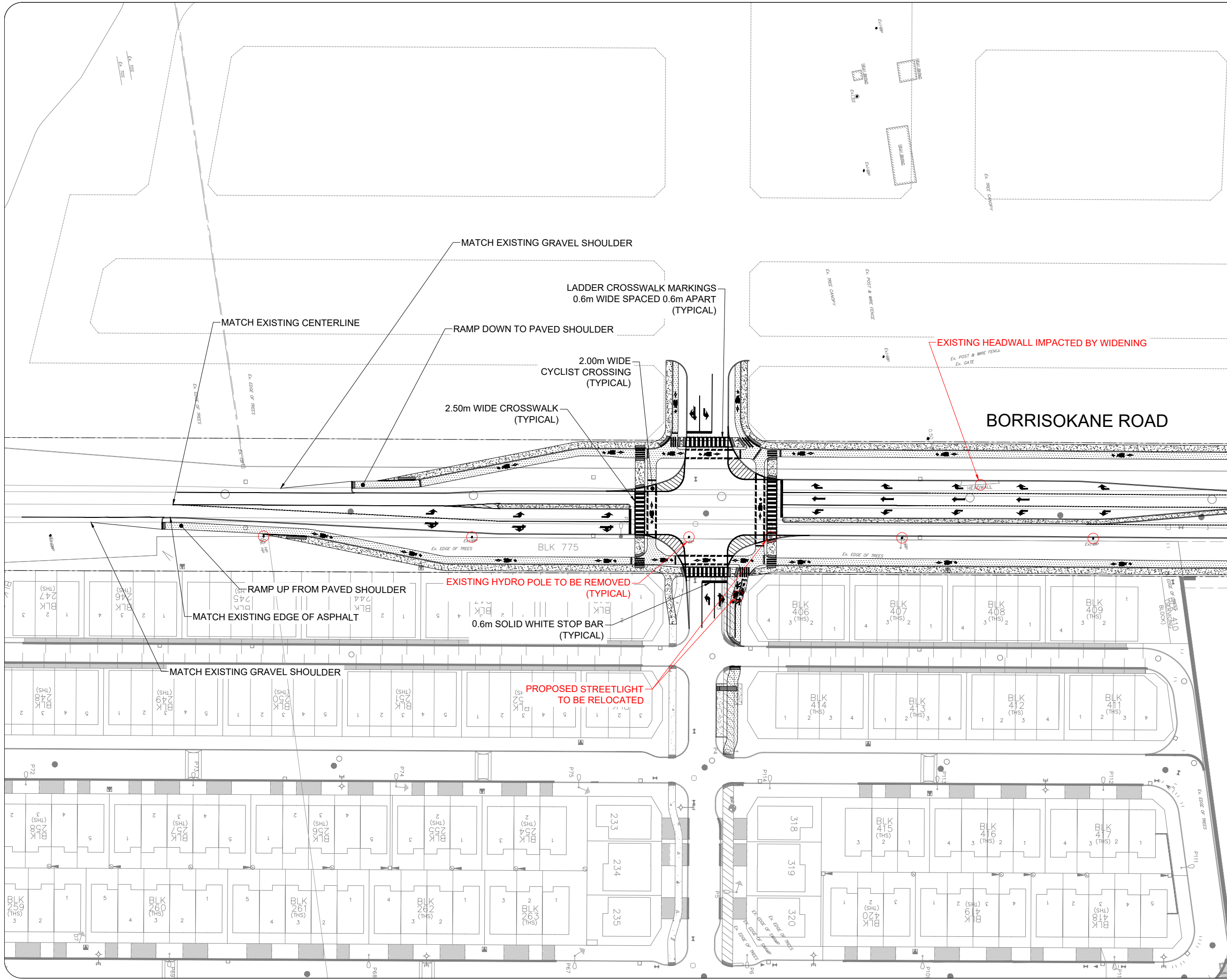
Attachment A

Intersection Design Criteria





Criteria	Existing Condition	Target Value	Achieved Value	Notes
General				
Posted Speed	80km/h	50km/h	50km/h	
Design Speed	100km/h	60km/hr	60km/hr	
Shoulder Width	1.0m	2.5m	2.5m	
Borrisokane Road @ Conservancy Way				
NB Through/Right Lane Width	N/A	N/A	3.50m	
NB Left Turn Lane Width	N/A	N/A	3.50m	
SB Right Turn Lane Width	N/A	N/A	3.50m	
SB Through Lane Width	N/A	N/A	3.50m	
SB Left Turn Lane Width	N/A	N/A	3.50m	
EB Through/Right Lane Width	N/A	N/A	3.50m	
EB Left Turn Lane Width	N/A	N/A	3.50m	
WB Through/Right Lane Width	N/A	N/A	3.50m	
WB Left Turn Lane Width	N/A	N/A	3.50m	
Receiving Lane Widths	N/A	N/A	4.50m	
NB Left Turn Taper Ratio	N/A	15:1	26.25m	
NB Left Turn Lane Parallel Length	N/A	30m	30m	
SB Right Turn Taper Ratio	N/A	63m	52.5m	* should be 63m
SB Right Turn Lane Parallel Length	N/A	43m	50m	
SB Right Turn Lane Storage	N/A	27.8m	40m	
SB Left Turn Lane Taper Ratio	N/A	52.5m	38.65m	* shared with NBL
SB Left Turn Lane Parallel Length	N/A	50m	50m	
SB Left Turn Lane Storage	N/A	40m	40m	
EB Through/Right Turn Lane Taper Ratio	N/A	18:1	N/A	*short block, only storage provided.
EB Through/Right Turn Lane Storage	N/A	1.6m	10m	*storage requirement calculated at 1.6m
EB Left Turn Lane Taper Ratio	N/A	15:1	N/A	*short block, only storage provided
EB Left Turn Lane Storage	N/A	37.5m	10m	*37.5m for signalized lefts
WB Left Turn Lane Taper Ratio	N/A	15:1	N/A	*short block, only storage provided.
WB Left Turn Lane Storage	N/A	37.5m	10m	*37.5m for signalized lefts
WB Through/Right Turn Lane Taper Ratio	N/A	18:1	N/A	*short block, only storage provided.
WB Through/Right Turn Lane Storage	N/A	16.6m	10m	*short block, can only fit this much
Borrisokane Road @ Collector/BRT Intersection				
NB Left Turn Lane Width	N/A	N/A	3.50m	
NB Through Lane Width	N/A	N/A	3.50m	
SB Right Turn Lane Width	N/A	N/A	3.00m	*was reduced in BRT options previously
SB Through/Left Turn Lane Width	N/A	N/A	3.50m	
EB Left Turn Lane Width	N/A	N/A	3.50m	
EB Through Lane Width	N/A	N/A	3.50m	
EB Right Turn Lane Width	N/A	N/A	3.50m	
NB Left Turn Lane Taper Ratio	N/A	52.5m	38.65m	*shared with SBL, SBL prioritized based on traffic volumes
NB Left Turn Lane Parallel Length	N/A	45.45m	9.90m	*target value should be 35m with proper taper, increased since taper is reduced.
NB Left Turn Lane Storage	N/A	37.5m	15m	
SB Through/Left Turn Lane Taper Ratio	N/A	15:1	N/A	* 2 lanes north of intersection, no taper provided.
SB Through/Left Turn Lane Parallel Length	N/A	N/A	N/A	* 2 lanes north of intersection, all parallel
SB Through/Left Turn Lane Storage	N/A	120m	N/A	* 2 lanes north of intersection, storage can be lengthened/shorted by paint as required.
SB Right Turn Lane Taper	N/A	15:1	N/A	* 2 lanes north of intersection, no taper provided.
SB Right Turn Lane Parallel Length	N/A	N/A	N/A	* 2 lanes north of intersection, all parallel
SB Right Turn Lane Storage Length	N/A	25m	N/A	* 2 lanes north of intersection, storage can be lengthened/shorted by paint as required.
EB Right Turn Lane Taper Ratio	N/A	18:1	N/A	* 2 lanes East of intersection, no taper provided.
EB Right Turn Lane Storage	N/A	2m	37.5m	* 2 lanes East of intersection, storage can be extended/shortened by paint as required.
EB Left Turn Lane Taper Ratio	N/A	37.5m	45m	*left turn lane is 3m wide from BRT exercise (minimizing ROW as requested)
EB Left Turn Lane Storage	N/A	25m	37.5m	*storage calc requires 25m, 37.5m min. for signalized lefts.

Attachment B

Intersection Design Drawings



Notes:

-  CONCRETE SIDEWALK
-  TRUCK APRON
-  TACTILE WALKING SURFACE INDICATOR
-  ASPHALT CYCLE TRACK / MULTI USE PATHWAY

02	Issued for Review	BB	2022-11-25
01	Issued for Review	BB	2022-10-13
REV:	DESCRIPTION:	BY:	DATE:
STATUS:			



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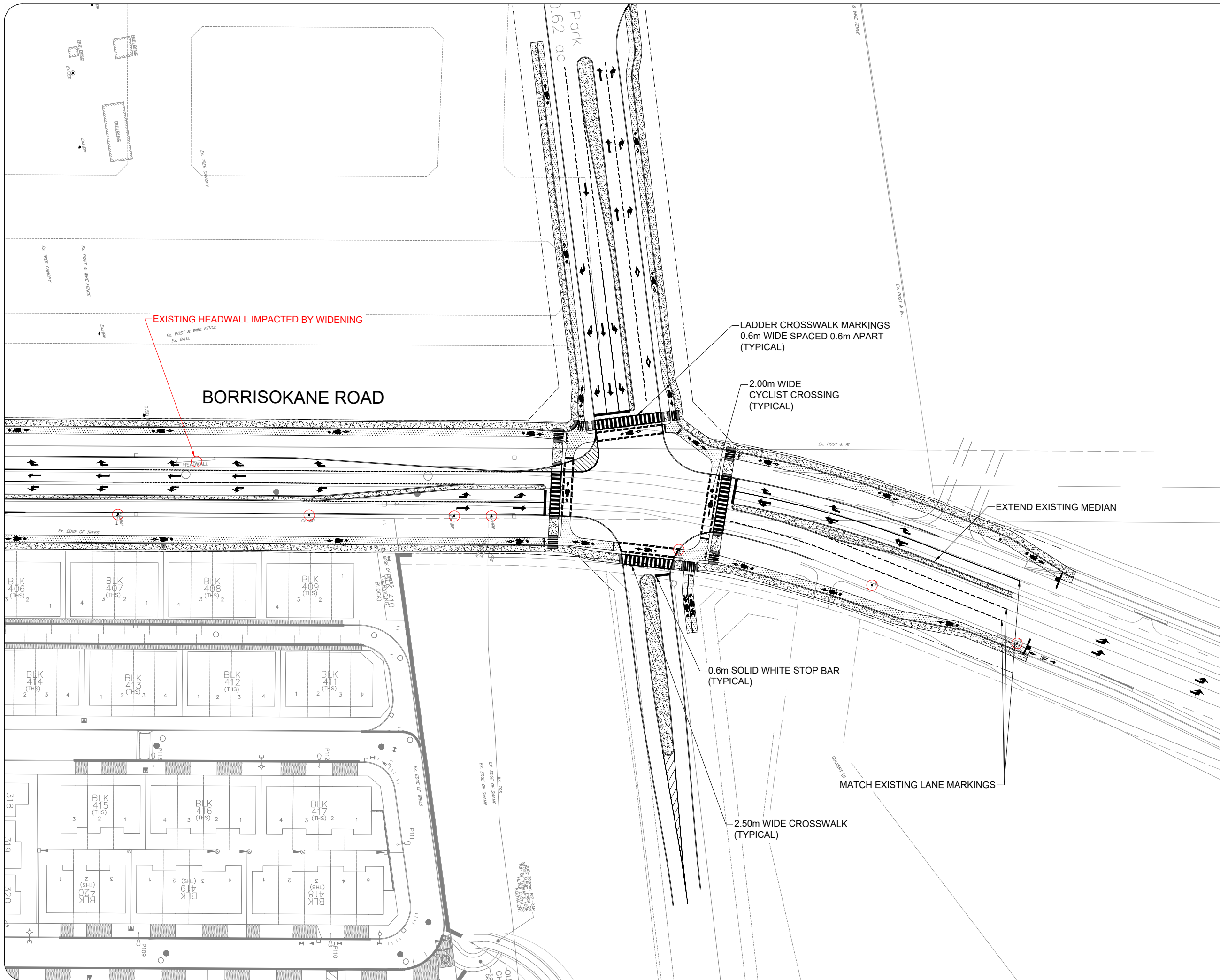
CLIENT: **Caivan Communities**

ARCHITECT:





SITE: **Conservancy East**

TITLE: **Borriskane Road Modifications**

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2022-11-25	BB	AH
PROJECT NO:	DRAWING NO:	REVISION:	
2022-008	001	02	



Notes:

-  CONCRETE SIDEWALK
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SCALE AT A3: NTS	DATE: 2022-11-25	DRAWN: BB	CHECKED: AH
PROJECT NO: 2022-008	DRAWING NO: 002	REVISION: 02	

Notes:

SIGNAGE FOR SPEED CHANGE ZONES ARE SHOWN SCHEMATICALLY AND LOCATIONS ARE NOT AS SHOWN IN DRAWINGS. REFER TO NOTES AND DIMENSIONS FOR EXACT LOCATIONS OF PROPOSED SPEED CHANGE ZONE SIGNAGE.

Rb-1A (OTM)
"80km/h" MAXIMUM SPEED SIGN
600mm x 900mm

Rb-3 (OTM)
"80 km/h BEGINS" SIGN
600mm x 1100mm

Rb-3 (OTM)
"60km/h BEGINS" SIGN
600mm x 1100mm

Rb-3 (OTM)
"50km/h BEGINS" SIGN
600mm x 1100mm

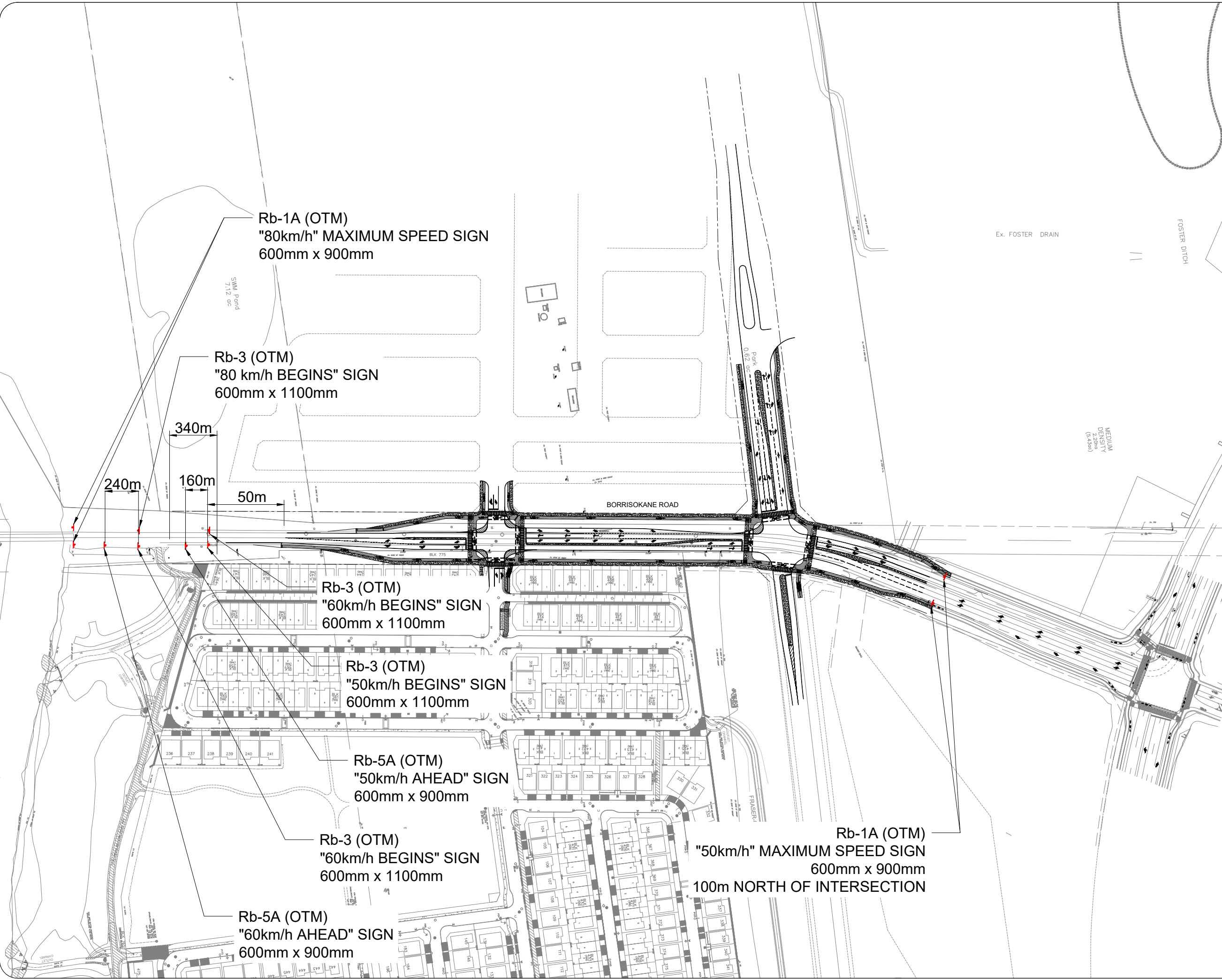
Rb-5A (OTM)
"50km/h AHEAD" SIGN
600mm x 900mm

Rb-3 (OTM)
"60km/h BEGINS" SIGN
600mm x 1100mm

Rb-5A (OTM)
"60km/h AHEAD" SIGN
600mm x 900mm

Rb-1A (OTM)
"50km/h" MAXIMUM SPEED SIGN
600mm x 900mm
100m NORTH OF INTERSECTION

340m
240m
160m
50m



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CLIENT: Caivan Communities

ARCHITECT:

SITE: Conservancy East

TITLE: Borriskane Road Speed Reduction Signage

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2022-11-25	BB	AH
PROJECT NO:	DRAWING NO:	REVISION:	
2022-008	003	02	