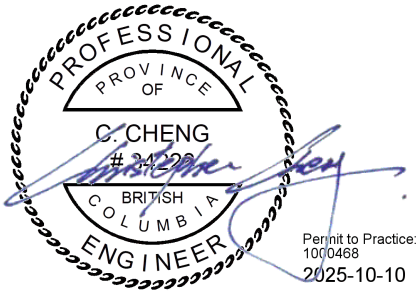
MEMO

DATE:	October 10, 2025
PROJECT NO:	08-25-0055
PROJECT:	**7261 Lantzville Road**
SUBJECT:	**Transportation Study**
TO:	Russ McMann McMann Group Inc.
PREPARED BY:	Kieran Quan, EIT
REVIEWED BY:	Jason Potter, M.Sc., PTP
APPROVED BY:	Christephen Cheng, M.Eng., P.Eng.



1. INTRODUCTION

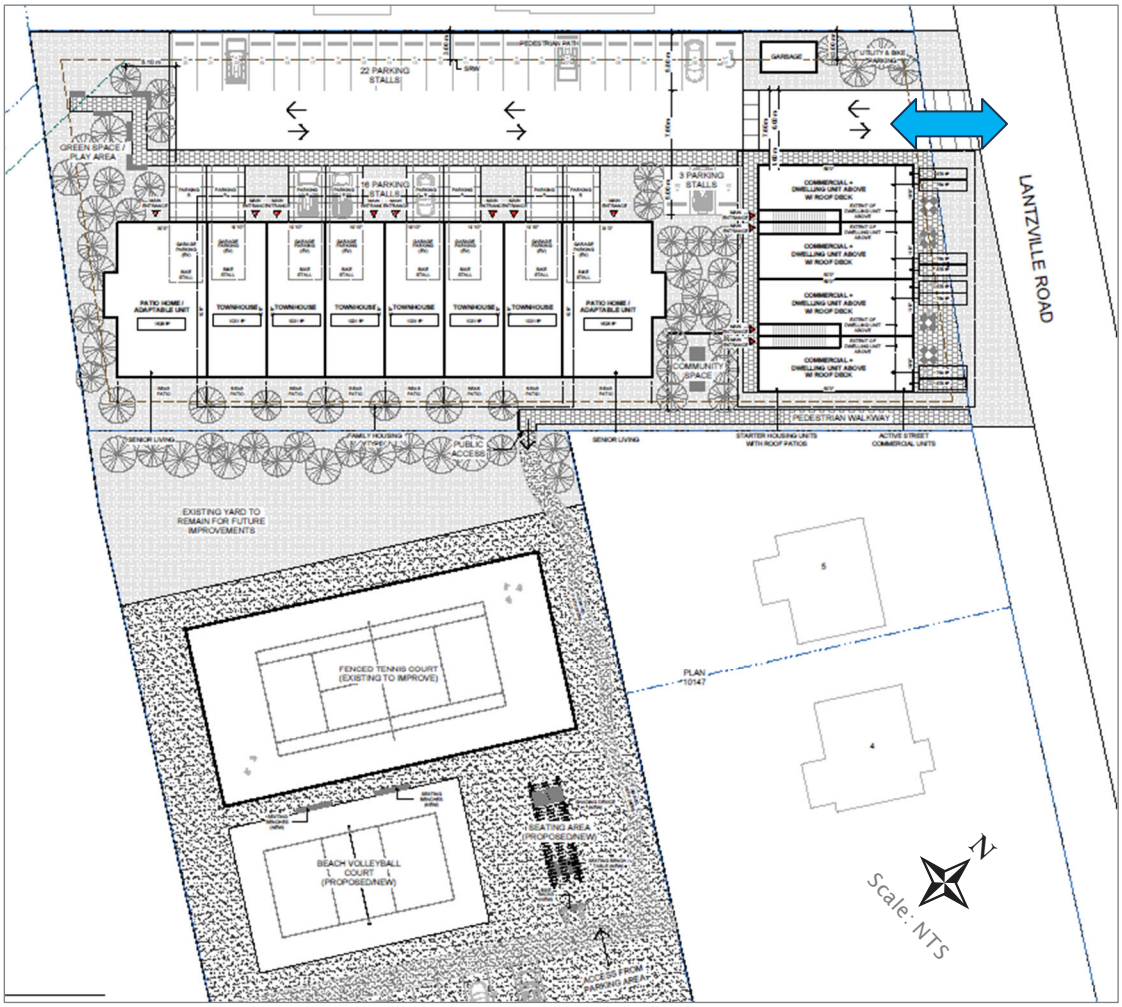
McMann Group Inc. (the developer) is proposing to rezone the 7261 Lantzville Road site in the District of Lantzville (the District), BC. The rezoning will be for a proposed residential and commercial development, comprised of six (6) townhomes, two (2) patio homes, and a mixed-use building with four (4) 1-bedroom units and approximately 326 m^2 of ground-floor commercial space. The proposed development is seeking a variance in the vehicle parking space supply of one (1) vehicle parking space below the bylaw requirement. Vehicle access is proposed on Lantzville Road.

Bunt & Associates Engineering Ltd. (Bunt) has completed a Transportation Study (in accordance with the District-approved Terms of Reference attached in **Appendix A**) to accompany the rezoning application, which includes the following:

- The transportation context of the site, including the adjacent road network, active transportation facilities, and transit service.
- The proposed development estimated AM and PM peak hour vehicle trip generation.
- Vehicle operations analysis of forecasted traffic at the proposed site access.
- A summary of the proposed off-street vehicle, bicycle, and loading space supplies and a comparison to the requirements outlined in the district Zoning Bylaw.
- A review of the appropriateness of the parking supply, which is a proposed variance below the bylaw supply requirement.
- A swept path analysis of passenger vehicle access, circulation, and parking maneuvers, as well as waste collection maneuvers.

The study's analysis, findings, and recommendations are summarized in this technical memo. **Figure 1** illustrates the proposed site plan, with the site access shown with a blue double arrow.

Figure 1: Proposed Site Plan



Background Image Source: McMann Group Inc.

2. TRANSPORTATION CONTEXT

2.1 Land Use

The proposed site is currently occupied by a single-family home, which is proposed to be replaced by the proposed development. The zoning is currently 'F-SA', Future Study Area, where single-family homes are the primary land use.

2.2 Road Network

Lantzville Road is an east-west arterial road with one travel lane in each direction. It serves as the main route through the District of Lantzville, connecting residential neighborhoods, the commercial center, and the neighboring City of Nanaimo. Ware Road and Dickinson Road, both north-south collector roads, intersect with Lantzville Road near the site and provide access to nearby neighborhoods and Island Highway.

2.3 Transit Network

One transit route operates in the study area: the #31. The #31 offers service approximately every hour from morning to evening commute times, on both weekdays and weekends. The route loops clockwise around the District, via Aulds/Philip/Harley Roads, and via Lantzville Road, connecting areas between Woodgrove Exchange in Nanaimo and the Snaw-Naw-As market. Woodgrove Exchange connects directly to ten routes in the City of Nanaimo. Although this hourly transit service is not considered frequent, it is consistent and provides connections to other transit options. A bus stop for the #31 is within 100 m of the site on Lantzville Road.

2.4 Cycling & Walking Network

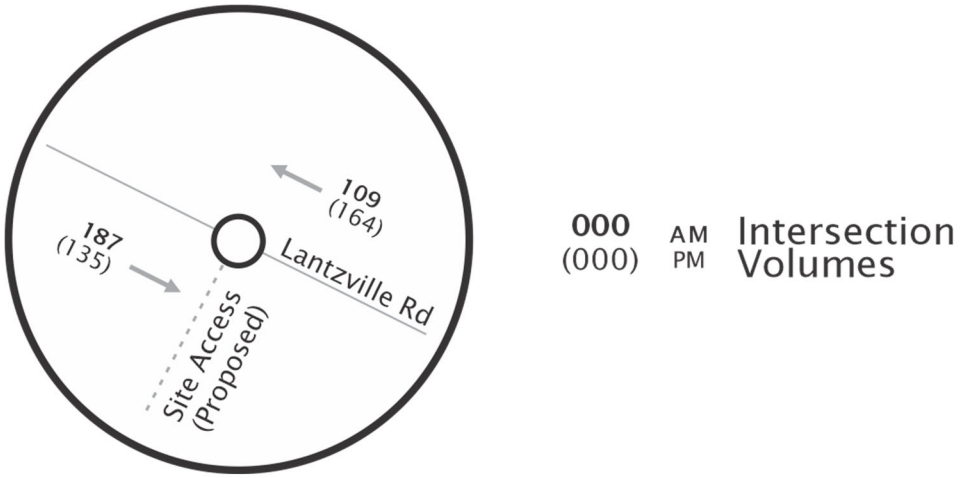
Lantzville Road features a bike lane on its north side and a paved shoulder with a fog line on the south side. Sidewalks on Lantzville Road are available approximately 200m to the east of the proposed site. These sidewalks coincide with a commercial center, with several options for dining, shopping, and other services. The site is also less than 5 minutes' walking distance from Seaview Elementary School.

3. TRAFFIC ANALYSIS

3.1 Existing Traffic Volumes

Bunt collected traffic data on Lantzville Road at the approximate location of the proposed site access on Wednesday, September 17, 2025, from 7:00-9:00 AM and 3:00-6:00 PM. A detailed summary of traffic data is provided in **Appendix B**. The AM and PM peak hours of vehicle traffic were found to be 7:45-8:45 AM and 3:30-4:30 PM, respectively. **Figure 2** illustrates the AM and PM peak hour traffic volumes on Lantzville Road.

Figure 2: Existing Peak Hour Traffic Volumes



3.2 Site Vehicle Trip Generation

The proposed development vehicle weekday peak hour trip generation was estimated using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. **Tables 1** and **2** summarize the trip rates and the resulting trip generation estimate, respectively.

Table 1: Peak Hour Vehicle Trip Rates

LAND USE	UNITS	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
ITE 215 – Single-Family Attached Housing	Dwellings	0.12	0.36	0.48	0.34	0.25	0.59
ITE 220 – Multifamily Housing (Low-Rise)	Dwellings	0.10	0.30	0.40	0.32	0.19	0.51
ITE 822 – Strip Retail Plaza (<40k SF)	1000 SF	1.42	0.94	2.36	3.30	3.30	6.59

Table 2: Estimated Peak Hour Site Vehicle Trips

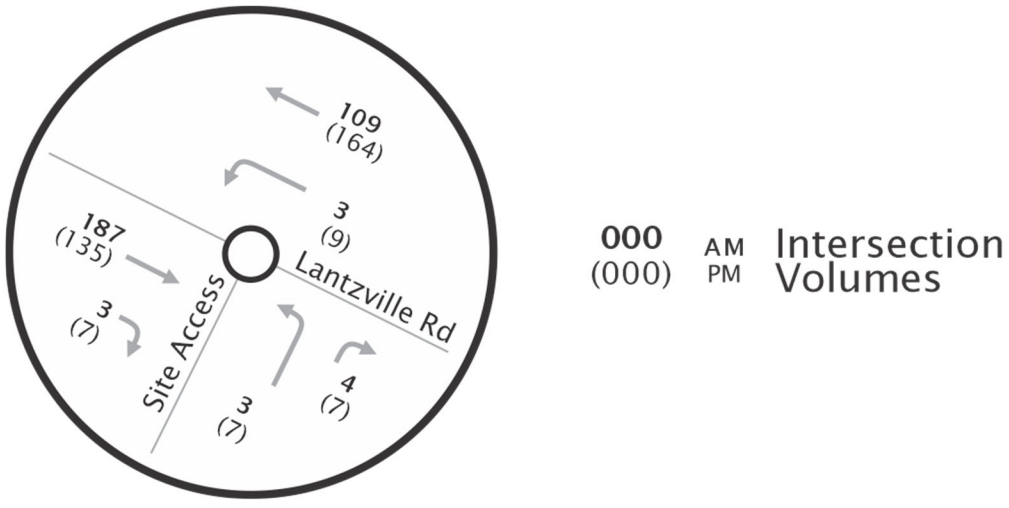
LAND USE	AM PEAK HOUR			PM PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
ITE 215 - Townhome / Patio Home (8 units)	1	3	4	3	1	4
ITE 220 - 1-Bedroom Apartments (4 units)	0	1	1	1	1	2
ITE 822 - Ground-Floor Commercial (3.5k SF)	5	3	8	12	12	24
TOTAL	**6**	**7**	**13**	**16**	**14**	**30**

The proposed development is estimated to generate 13 (6 in, 7 out) and 30 (16 in, 14 out) vehicle trips in the AM and PM peak hours, respectively. This equates to approximately one new vehicle trip every 2-4 minutes when distributed evenly across the peak hour.

3.3 Total Traffic Volumes

The estimated site-generated vehicle trips were distributed to/from westbound or eastbound on Lantzville Road, based on existing traffic patterns in each of the AM and PM peak hours. These were then added to the existing traffic volumes on Lantzville Road to estimate the future traffic volume at the Site Access & Lantzville Road intersection. **Figure 3** illustrates the estimated total traffic volume at the site access.

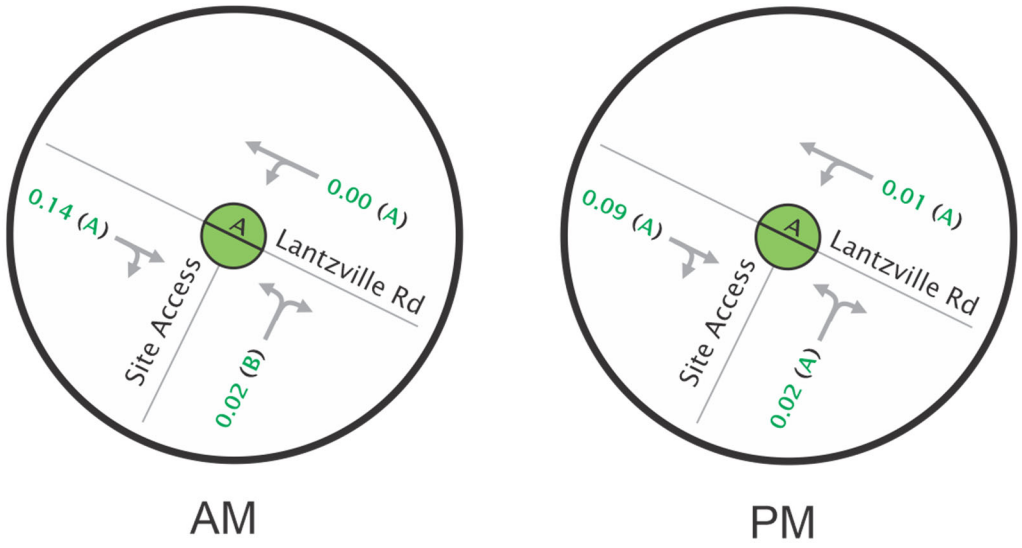
Figure 3: Total Peak Hour Traffic Volumes



3.4 Future Traffic Operations

The total traffic operations of the site access intersection were assessed using the methods outlined in the 2000 Highway Capacity Manual (HCM), using Synchro 11 analysis software. The traffic operations were evaluated using the performance measures of Level of Service (LOS) and volume-to-capacity (V/C) ratio. **Figure 4** illustrates these key performance measures for each intersection approach, in both the AM and PM peak hours. Detailed outputs are provided in **Appendix C**.

Figure 4: Total Peak Hour Traffic Operations



The proposed site access is anticipated to operate at LOS B or better, with a volume-to-capacity ratio of 0.02 or less. This indicates that, on average, vehicles exiting the site will wait 15 seconds or less to turn onto Lantzville Road during peak periods, and that the approach is not nearing its capacity. This is considered well within acceptable performance; therefore, no roadway or traffic control improvements are anticipated to be required due to site traffic.

4. BYLAW SUPPLY REVIEW

Off-street Vehicle, bicycle, and loading space supply requirements are outlined in Section 2.6 of the District of Lantzville's *Zoning Bylaw No. 180, 2020* (the bylaw). The following subsections review the compliance of the proposed development with these requirements.

4.1 Vehicle Parking

The bylaw separates vehicle parking requirements into two main categories: long-term (for residents and employees) and short-term (for visitors and customers). **Table 3** summarizes both the long-term and short-term vehicle parking space supply requirements, as well as the proposed supply.

Table 3: Vehicle Parking Supply Requirements

BYLAW REF.	LAND USE	DENSITY	PARKING TYPE	BYLAW RATE	REQUIREMENT	PROVIDED	DIFFERENCE
Table 2.6.1	Townhouse / Patio Home	8 units	Long-term	2 per unit	16 long-term	16 long-term	-
Table 2.6.1	Apartment	4 bedrooms	Long-term	1 per bedroom	4 long-term	4 long-term	-
Table 2.6.1	Retail	4 employees	Long-term	1 per employee	4 long-term	4 long-term	-
Table 2.6.1	Townhouse / Patio Home	8 units	Short-term	0.15 per unit	1 short-term	1 short-term	-
Table 2.6.1	Apartment	4 units	Short-term	0.25 per unit	1 short-term	1 short-term	-
Table 2.6.1	Retail	326 m^2	Short-term	1 per 20 m^2	16 short-term	15 short-term	-1 short-term
				TOTAL	24 LONG-TERM 18 SHORT-TERM	24 LONG-TERM 17 SHORT-TERM	-1 SHORT-TERM

The proposed development will meet the long-term parking supply requirements for both residential and retail uses, as well as the short-term parking supply requirements for the residential land uses.

The development is seeking a variance of -1 short-term parking spaces from the requirement for the retail land use. The appropriateness of this variance is discussed in Section 4.1.1.

Accessible Parking

The proposed development will provide one (1) accessible parking space, sized at 3.70m x 5.60m.

Small Car Parking

Per the bylaw, up to 25% of vehicle parking spaces may be designated as 'small car' and reduced to 4.6 m in length for 90-degree parking; this equates to a maximum of 10 small car spaces allowed. Bunt has recommended parking space alterations that would result in a total of four (4) small vehicle spaces.

EV Charging Stations

The bylaw requirements for on-site Level 2 (L2) Electric Vehicle (EV) charging stations are as follows:

- Commercial: 1 per parcel + 1 per 20 spaces in excess of the first 20 parking spaces
- Residential: 1 per parcel + 1 per 10 dwelling units

The proposed development requires three (3) L2 EV charging stations. The proposed development will exceed this requirement by providing four (4) L2 EV charging stations.

4.1.1 Short-Term Retail Parking - Variance Review

As previously noted, the development is seeking a variance of -1 short-term parking spaces from the requirement for the retail land use. The proposed supply of 15 short-term retail spaces, as opposed to 16 retail spaces, is considered adequate based on the following:

- The retail land use is proposed to comprise four small stores fronting Lantzville Road. The size of these stores is anticipated to be well-suited to local community-serving uses (e.g., local art, small cafés/bakeries, specialty clothing, etc.), which typically attract walking traffic from local neighbourhood residents, as opposed to regional vehicle trips. As a result, the proposed four retail stores are anticipated to have a reduced vehicle parking demand compared to a larger individual retail use, such as a retail chain.
- The bylaw requirement of 1 short-term space per 20 m^2 of retail GFA is high when compared to nearby municipalities. For example, per the City of Nanaimo *Off-Street Parking Regulations Bylaw 2018*, the number of required vehicle parking spaces can be reduced by 10% when residential and retail land uses share the same lot. If the same reduction were applied to the proposed development, only 14 short-term retail spaces would be required, making the proposed development compliant.

4.2 Bicycle Parking

Table 4 summarizes both the long-term and short-term bicycle parking space supply requirements, as well as the proposed supply.

Table 4: Bicycle Parking Supply Requirements

BYLAW REF.	LAND USE	DENSITY	PARKING TYPE	BYLAW RATE	REQUIREMENT	PROVIDED	DIFFERENCE
Table 2.6.5	Townhouse / Patio Home / Apartment	12 units	Long-term	1 per unit	12 long-term	12 long-term	-
Table 2.6.5	Retail	326 m^2	Long-term	1 per 50 m^2	7 long-term	0 long-term	-7 long-term
Table 2.6.5	Townhouse / Patio Home / Apartment	12 units	Short-term	1 per 5 units	2 short-term	2 short-term	-
Table 2.6.5	Retail	326 m^2	Short-term	1 per 25 m^2	14 short-term	9 short-term	-5 short-term
				TOTAL	19 LONG-TERM 16 SHORT-TERM	12 LONG-TERM 11 SHORT-TERM	-7 LONG-TERM -5 SHORT-TERM

The proposed development will meet the long-term and short-term parking supply requirements for the residential land uses. The townhomes and patio homes will feature long-term bicycle storage in their garages, while the apartments will offer the option to store bicycles within the units. An 11-space bicycle

rack is proposed in the recreational area, on the south side of the parcel, to serve as short-term bicycle parking.

The proposed development is seeking a variance below the bylaw requirement for both long-term and short-term bicycle parking spaces for the retail land use. This proposed variance is sought based on comparable rates in the City of Nanaimo, which is discussed below.

4.2.1 Retail Bicycle Parking - Variance Review

The cycling mode share in the District is significantly lower than in the City of Nanaimo. Despite this, the City of Nanaimo's off-street parking bylaw specifies a much lower bicycle parking requirement, at 0.2 long-term spaces and 0.6 short-term spaces per 100 m^2 of retail GFA. If these rates were applied to the proposed development, only one (1) long-term and two (2) short-term bicycle parking spaces would be required for the retail land use. The development would then significantly exceed the short-term bicycle parking requirement.

Regarding long-term bicycle parking for retail employees, the proposed strategy is for employees to store their bikes in the short-term bicycle parking rack located at the rear of the building, which will be out of sight from the street.

4.3 Loading Space Supply

Table 5 summarizes the loading space supply requirement and the proposed supply.

Table 4: Loading Space Supply Requirements

BYLAW REF.	LAND USE	DENSITY	PARKING TYPE	BYLAW RATE	REQUIREMENT	PROVIDED	DIFFERENCE
Table 2.6.15	Retail	326 m^2	Loading (2.6m x 5.8m)	1 for less than 1,000 m^2	1	1	-
				TOTAL	1 LOADING SPACE	1 LOADING SPACE	-

The proposed development will meet the loading space supply requirement, with one 2.6m x 5.8m loading space located at the northwest corner of the site.

5. SWEPT PATH ANALYSIS

A swept path analysis of passenger vehicle access, circulation, and parking maneuvers, as well as loading and waste collection operations, was conducted using AutoTURN software. The analysis is attached as **Appendix D**, and includes the following design considerations and recommendations:

- Confirm that the hatched surface on either side of the driveway access is drivable for vehicles (as indicated in **Exhibit 1**)
- Parking space #22 is not accessible for the large design vehicle (P-TAC, 5.6m long); therefore, design and designate space #22 as a 'small car' space (see **Exhibit 3**).
- **Exhibits 4** and **5** illustrate waste collection maneuvers with a front-loading and side-loading waste collection truck, respectively. Because the trucks cannot turn around on site, the proposed strategy is for the trucks to drive forward onto the site, tip the waste bins, and then reverse out onto Lantzville Road. This operation must always have a "spotter", an operator who will supervise the vehicle's maneuvers and mitigate the risk that the truck will conflict with other road users when reversing onto the public right-of-way. As noted, the waste collection strategy, as shown, must be confirmed with the waste collection service provider for the site.
- The required 2.6m x 5.8m loading space can accommodate vehicles similar in size to large pick-up trucks. **Exhibit 6** illustrates a similar-sized design vehicle accessing the loading space using a front-in maneuver, allowing goods to be unloaded from the rear.

6. RECOMMENDATIONS

The following are the key findings and recommendations of the study:

- Based on the traffic analysis, no roadway or traffic control improvements are anticipated to be required due to site traffic.
- The proposed variance of -1 short-term retail parking spaces from the bylaw requirement is anticipated to be adequate based on the proposed type of retail land use (small, local-serving stores) and when compared to nearby municipal bylaws such as the City of Nanaimo.
- The proposed variance for bicycle parking below the bylaw requirement for the retail land use is sought based on a comparison to the City of Nanaimo, which has a significantly lower requirement as well as a higher cycling mode share.
- Based on the swept path analysis:
    - The surface adjacent to the proposed driveway access should be confirmed as drivable.
    - Parking space #22 should be designated and designed as a 'small car' space.
    - The waste collection strategy must be confirmed with the waste service provider.

APPENDIX A

Terms of Reference

MEMO

DATE: September 2, 2025
PROJECT NO: 08-25-0055
PROJECT: 7261 Lantzville Road
SUBJECT: Proposed Terms of Reference (ToR) for Transportation Study

TO: George Robinson, Director of Planning & Community Services
District of Lantzville

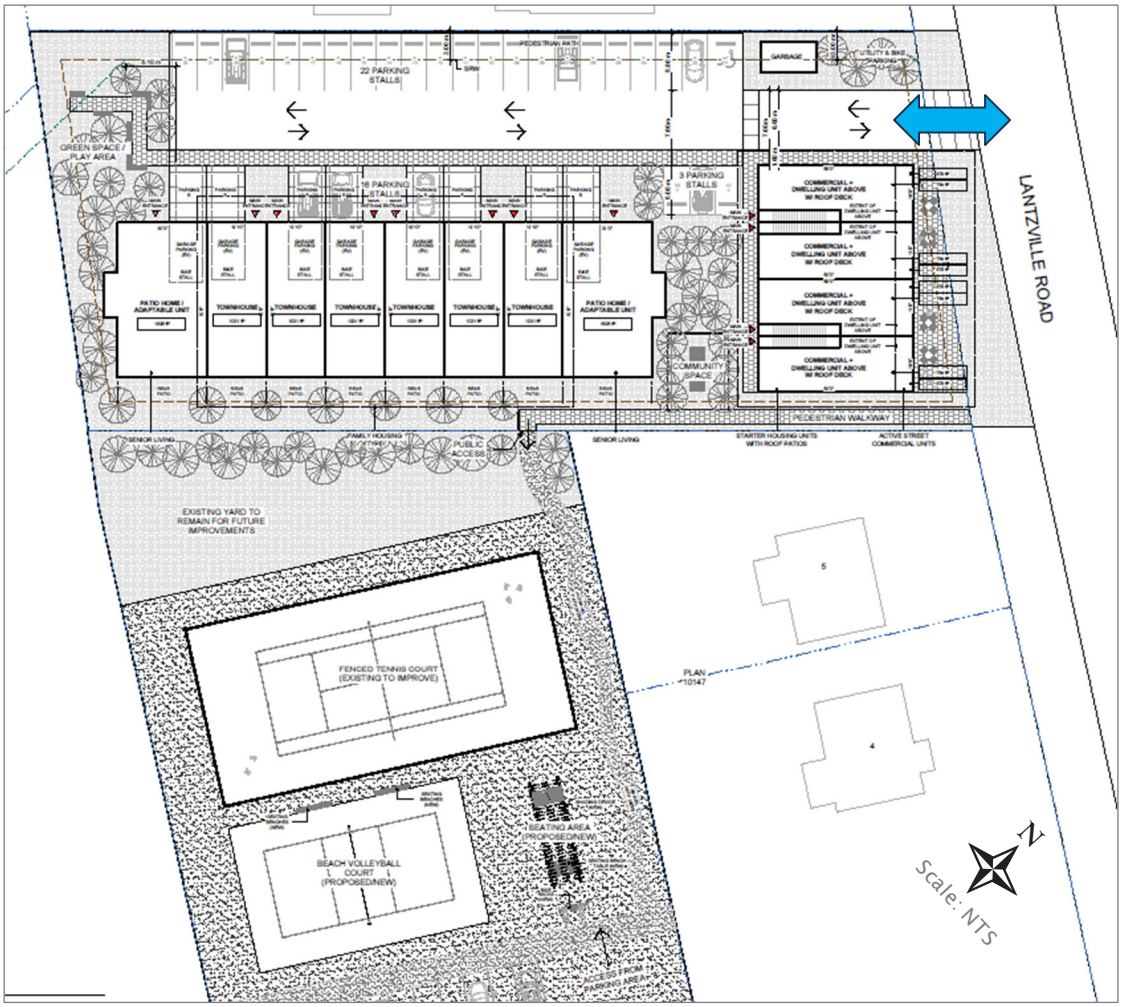
PREPARED BY: Kieran Quan, EIT
REVIEWED BY: Jason Potter, M.Sc., PTP

1. INTRODUCTION

Bunt & Associates Ltd. (Bunt) has been retained by McMann Group Inc. (McMann) to prepare a Transportation Study for the proposed rezoning at 7261 Lantzville Road in the District of Lantzville (District), BC. The proposed development features six (6) townhomes, two (2) patio homes, and a mixed-use building with four (4) 1-bedroom units and approximately 326 m^2 of ground-floor commercial space. The proposed development is seeking a parking space supply variance of three (3) vehicle parking spaces below the bylaw requirement. Vehicle access is proposed on Lantzville Road. **Figure 1** (next page) illustrates the proposed site plan, with the access point indicated by a blue double arrow.

Bunt will prepare the Transportation Study in the form of a technical memorandum. The following has been prepared for District staff to serve as the study Terms of Reference (ToR), which includes the proposed scope of work, methodology, and assumptions.

Figure 1: Proposed Site Plan (*access point shown as a blue double arrow*)



Background Image Source: McMann Group Inc.

2. PROPOSED WORK PLAN

Bunt proposes to prepare a technical memo using the following work plan:

2.1 Introduction

- Provide project background and present the study's purpose
- Overview of the proposed development, including land uses, density, parking supplies, and site access configuration

2.2 Traffic Operations Analysis

- Collect weekday AM and PM traffic data at one location: Lantzville Road & Tweedhope Road / Lantzville School Road.

  Traffic data is proposed to be collected on a weekday from 7:00 – 9:00 AM and 3:00 – 6:00 PM. This data collection intends to understand the two-way vehicle volumes on Lantzville Road during peak hours, which will be used to anticipate traffic operation issues (if any) at the proposed site access.

- Estimate the future peak hour trip generation of the development using vehicle trip rates from the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.
- Estimate site trip distribution and assignment based on existing traffic patterns.
- Analyze site access traffic operations by modelling the proposed site access in Synchro/SimTraffic 11 software and adding estimated site traffic at the access to the existing volumes on Lantzville Road.
- Identify mitigation measures (if any) to address the impact of the proposed access and development traffic.

2.3 Off-Street Supply Review

- Confirm compliance with the off-street vehicle, bicycle, and loading space supply requirements outlined in the Zoning Bylaw.
- Review the appropriateness of the proposed variance below the bylaw requirement for vehicle parking space supply, by examining the transportation context of the site, and bylaw rates and parking demand data of nearby municipalities such as the City of Nanaimo.

2.4 Site Design Review

- Perform access, circulation, and parking maneuver swept path analysis using AutoTURN software to confirm that passenger vehicles and waste collection vehicles will be able to maneuver and operate in the proposed site.

2.5 Conclusions & Recommendations

- Summarize the study findings and recommendations in a technical memorandum (to be submitted electronically to the District for review and feedback).

The attached information is provided to support the agency's review process and shall not be distributed to other parties without written consent from Bunt & Associates Engineering Ltd.

APPENDIX B

Traffic Data

Lantzville Rd @ Tweedhope Rd – Lantzville, BC

Project#:	08-25-0055	**Weather:**	Sun	**Analysis Period:**	7:45 - 8:45
Date:	Jun 21, 2025 (Sat)	**Road Cond:**	Dry	**Intersection Peak:**	7:45 - 8:45
Notes:					

TIME	AUTOMOBILE COUNT												PEDESTRIANS			
INTERVAL	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	N	S	E	W
7:00 - 7:15	0	0	1	0	0	3	0	16	1	0	10	0	0	0	0	0
7:15 - 7:30	0	1	0	1	0	0	0	20	0	4	13	0	1	0	2	0
7:30 - 7:45	1	0	2	0	0	0	0	38	4	8	11	1	0	0	0	0
7:45 - 8:00	2	0	2	0	0	1	0	41	3	10	19	0	0	1	0	0
8:00 - 8:15	1	0	7	2	0	1	0	46	2	13	16	0	0	2	3	0
8:15 - 8:30	3	0	11	0	1	1	1	24	20	22	26	0	0	0	1	0
8:30 - 8:45	16	0	30	0	0	1	0	35	15	21	22	1	2	0	1	0
8:45 - 9:00	6	0	3	2	0	0	0	29	0	4	19	2	0	0	0	0
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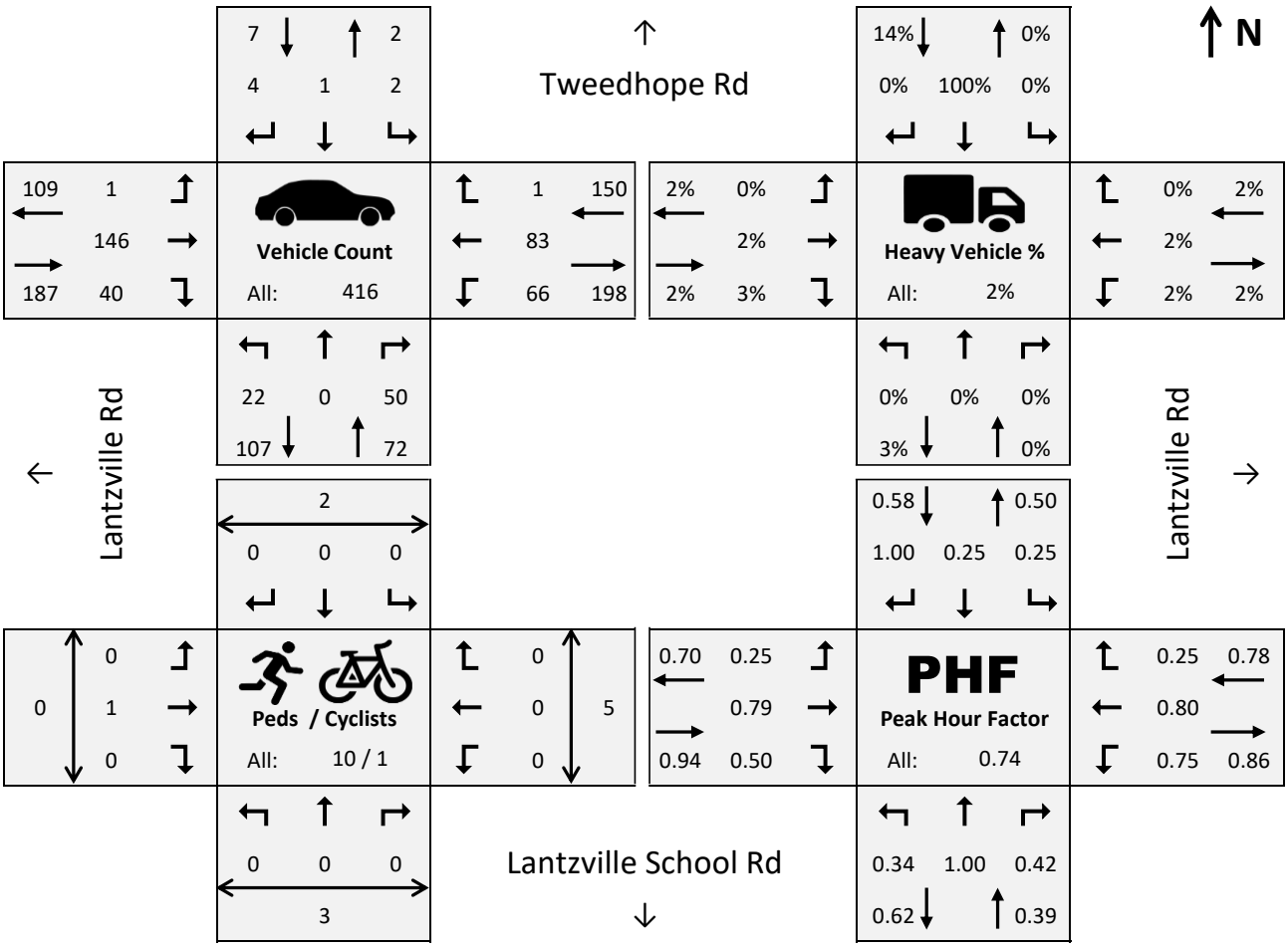

Lantzville Rd @ Tweedhope Rd – Lantzville, BC

Project#:	08-25-0055	**Weather:**	Sun	**Analysis Period:**	15:30 - 16:30
Date:	Sep 17, 2025 (Wed)	**Road Cond:**	Dry	**Intersection Peak:**	15:30 - 16:30
Notes:					

TIME INTERVAL	AUTOMOBILE COUNT												PEDESTRIANS			
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	N	S	E	W
15:00 - 15:15	1	0	5	2	0	1	0	31	0	2	48	1	0	0	0	0
15:15 - 15:30	1	0	4	0	0	0	0	31	0	4	34	0	0	0	0	0
15:30 - 15:45	0	0	7	2	0	0	0	30	1	3	33	2	2	1	0	0
15:45 - 16:00	0	0	12	0	0	2	0	29	3	2	41	2	1	0	0	0
16:00 - 16:15	4	0	3	2	0	0	1	38	0	1	43	0	0	1	0	0
16:15 - 16:30	1	0	5	0	0	1	3	30	0	5	39	1	0	0	0	0
16:30 - 16:45	2	0	0	0	0	0	0	36	1	0	37	0	0	5	0	0
16:45 - 17:00	0	0	3	0	0	0	0	37	2	2	45	0	0	0	1	0
17:00 - 17:15	1	0	3	0	0	1	0	37	2	2	37	0	0	0	0	0
17:15 - 17:30	1	0	4	0	0	0	0	45	0	3	43	0	2	3	0	0
17:30 - 17:45	0	0	1	1	0	1	2	30	0	0	40	1	3	0	1	0
17:45 - 18:00	1	0	1	1	0	0	0	29	2	5	36	1	3	1	4	2
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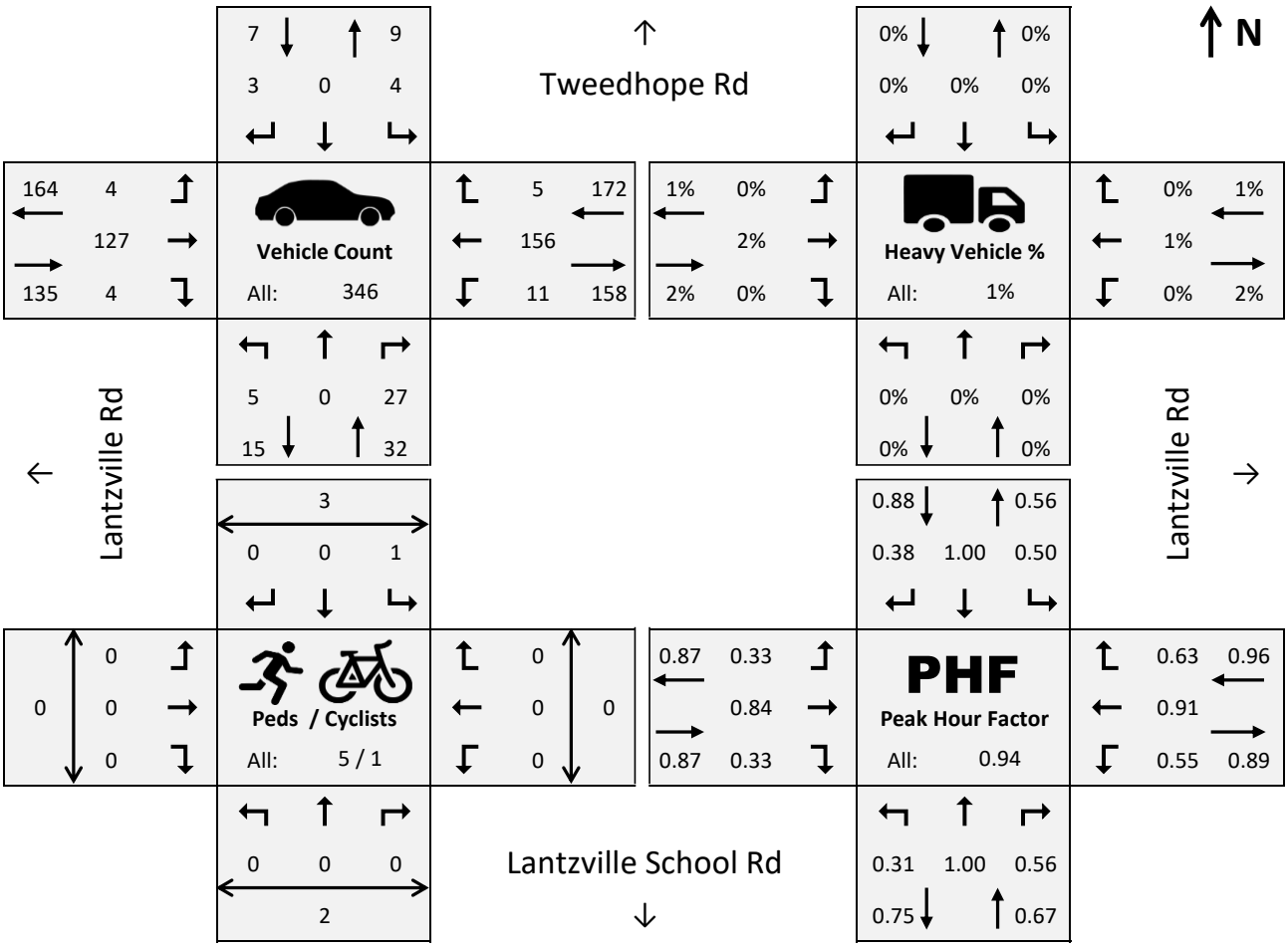

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APPENDIX C

Traffic Modelling Outputs

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	187	3	3	109	3	4
Future Volume (Veh/h)	187	3	3	109	3	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	234	4	4	136	4	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			238		380	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			238		380	236
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1329		620	803

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	238	140	9
Volume Left	0	4	4
Volume Right	4	0	5
cSH	1700	1329	710
Volume to Capacity	0.14	0.00	0.01
Queue Length 95th (m)	0.0	0.1	0.3
Control Delay (s)	0.0	0.2	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.1
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	150	40	66	86	1	22	0	50	2	1	4
Future Volume (Veh/h)	1	150	40	66	86	1	22	0	50	2	1	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	1	203	54	89	116	1	30	0	68	3	1	5
Pedestrians					5			3			2	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		137										
pX, platoon unblocked												
vC, conflicting volume	119			260			535	532	238	602	558	118
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	119			260			535	532	238	602	558	118
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	7.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.9	3.3
p0 queue free %	100			93			93	100	92	99	100	99
cM capacity (veh/h)	1479			1301			429	423	801	356	304	937

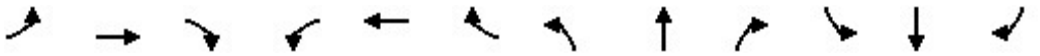
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	258	206	98	9
Volume Left	1	89	30	3
Volume Right	54	1	68	5
cSH	1479	1301	633	528
Volume to Capacity	0.00	0.07	0.15	0.02
Queue Length 95th (m)	0.0	1.8	4.4	0.4
Control Delay (s)	0.0	3.8	11.7	11.9
Lane LOS	A	A	B	B
Approach Delay (s)	0.0	3.8	11.7	11.9
Approach LOS			B	B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	135	7	9	164	7	7
Future Volume (Veh/h)	135	7	9	164	7	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	144	7	10	174	7	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			151		342	148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			151		342	148
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1430		650	899

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	151	184	14
Volume Left	0	10	7
Volume Right	7	0	7
cSH	1700	1430	755
Volume to Capacity	0.09	0.01	0.02
Queue Length 95th (m)	0.0	0.2	0.5
Control Delay (s)	0.0	0.5	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	0.5	9.9
Approach LOS			A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	26.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	134	4	11	165	5	5	0	27	4	0	3
Future Volume (Veh/h)	4	134	4	11	165	5	5	0	27	4	0	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	4	143	4	12	176	5	5	0	29	4	0	3
Pedestrians								2			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		137										
pX, platoon unblocked												
vC, conflicting volume	184			149			360	363	147	388	362	182
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	184			149			360	363	147	388	362	182
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	97	99	100	100
cM capacity (veh/h)	1399			1442			589	559	904	549	560	864

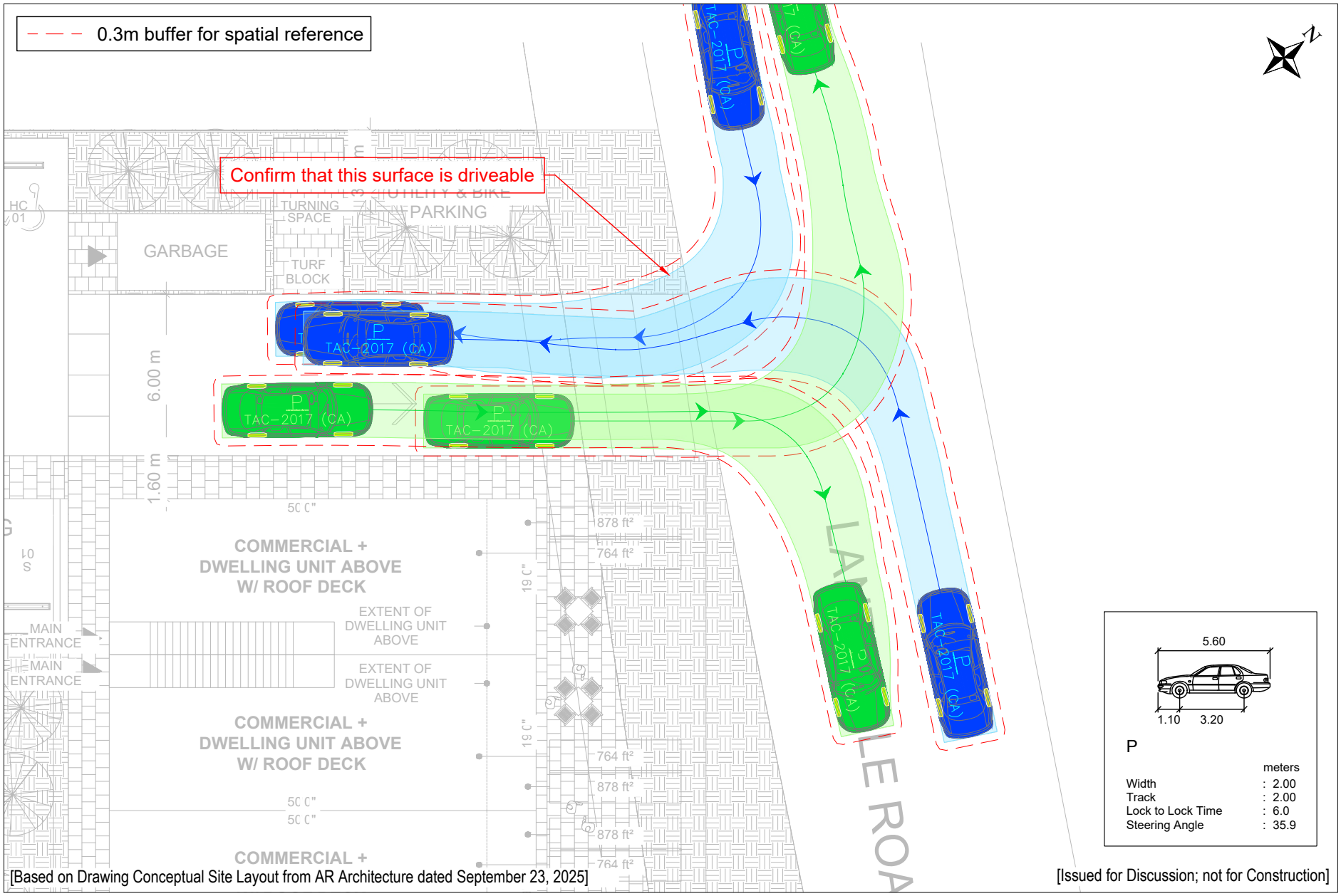
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	151	193	34	7
Volume Left	4	12	5	4
Volume Right	4	5	29	3
cSH	1399	1442	838	650
Volume to Capacity	0.00	0.01	0.04	0.01
Queue Length 95th (m)	0.1	0.2	1.0	0.3
Control Delay (s)	0.2	0.5	9.5	10.6
Lane LOS	A	A	A	B
Approach Delay (s)	0.2	0.5	9.5	10.6
Approach LOS			A	B

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	24.0%	ICU Level of Service	A	
Analysis Period (min)	15			

The attached information is provided to support the agency's review process and shall not be distributed to other parties without written consent from Bunt & Associates Engineering Ltd.

APPENDIX D

Swept Path Analysis



[Based on Drawing Conceptual Site Layout from AR Architecture dated September 23, 2025]

[Issued for Discussion; not for Construction]

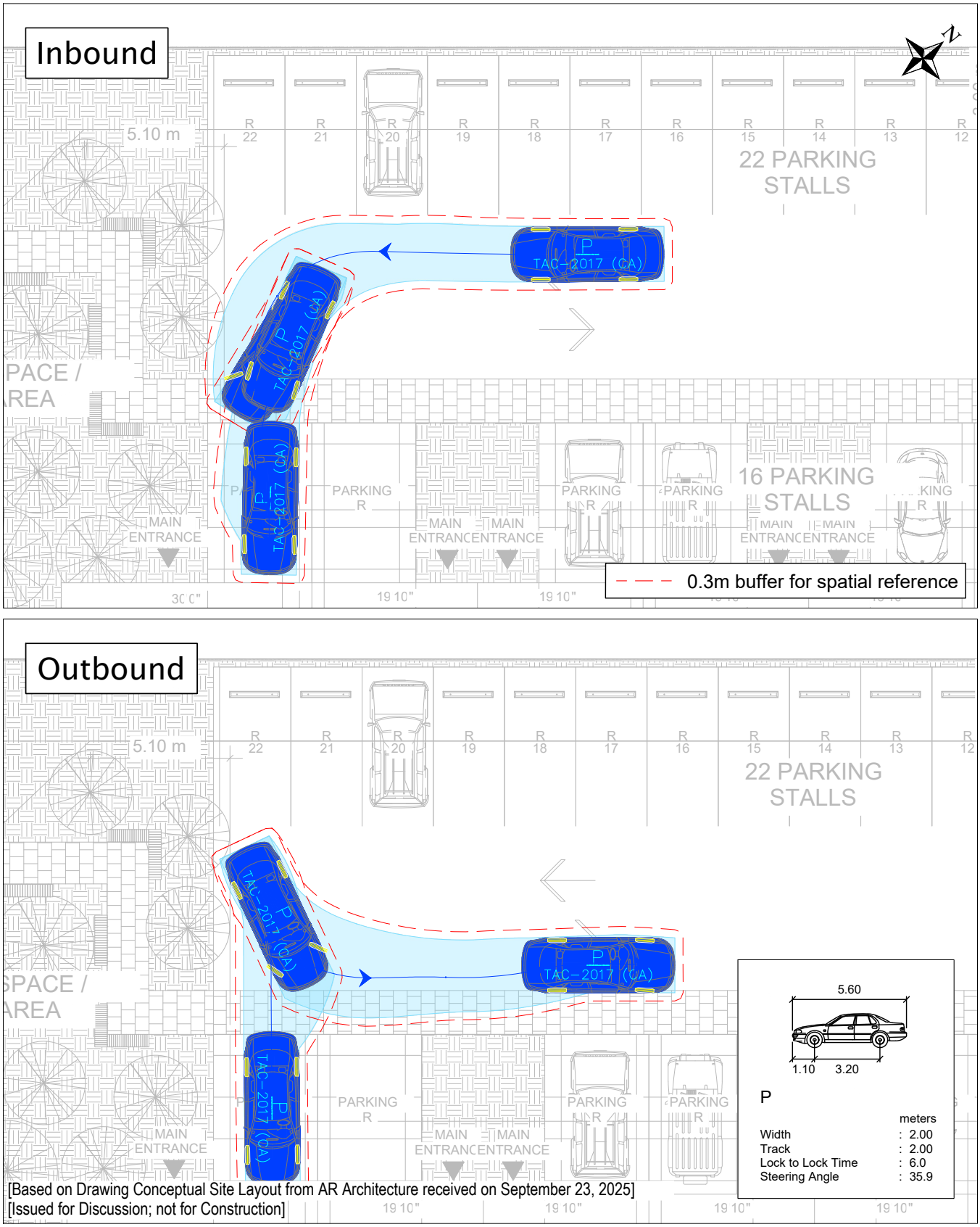
Exhibit 1

Passenger Vehicle Access

7261 Lantzville Road

08-25-0055 October 2025 Scale 1:200 on Letter Prepared by KQ

bunt & associates



[Based on Drawing Conceptual Site Layout from AR Architecture received on September 23, 2025]
[Issued for Discussion; not for Construction]

Exhibit 2

Passenger Vehicle End Stall Parking #1

7261 Lantzville Road
08-25-0055 October 2025 Scale 1:200 on Letter Prepared by KQ

bunt & associates

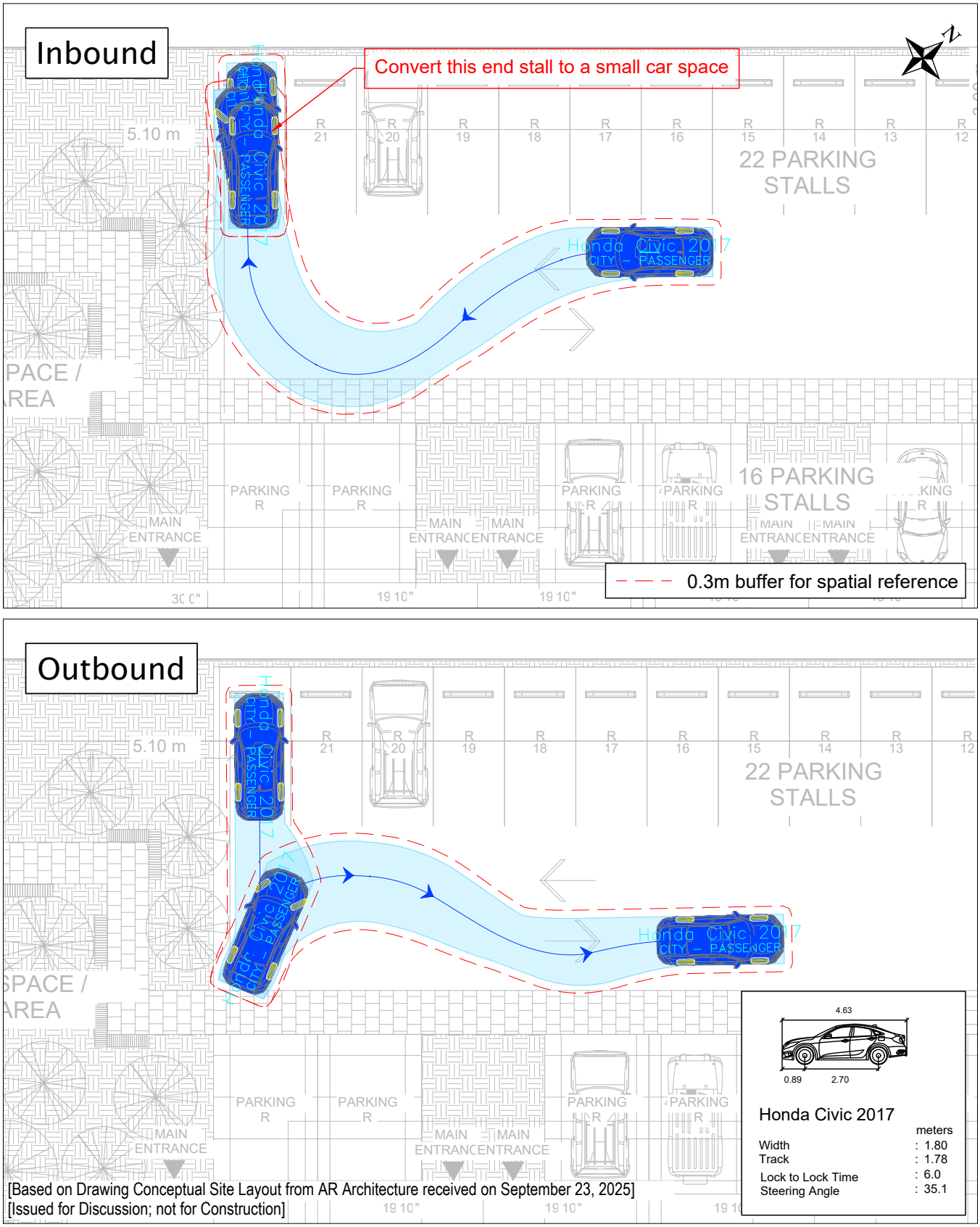
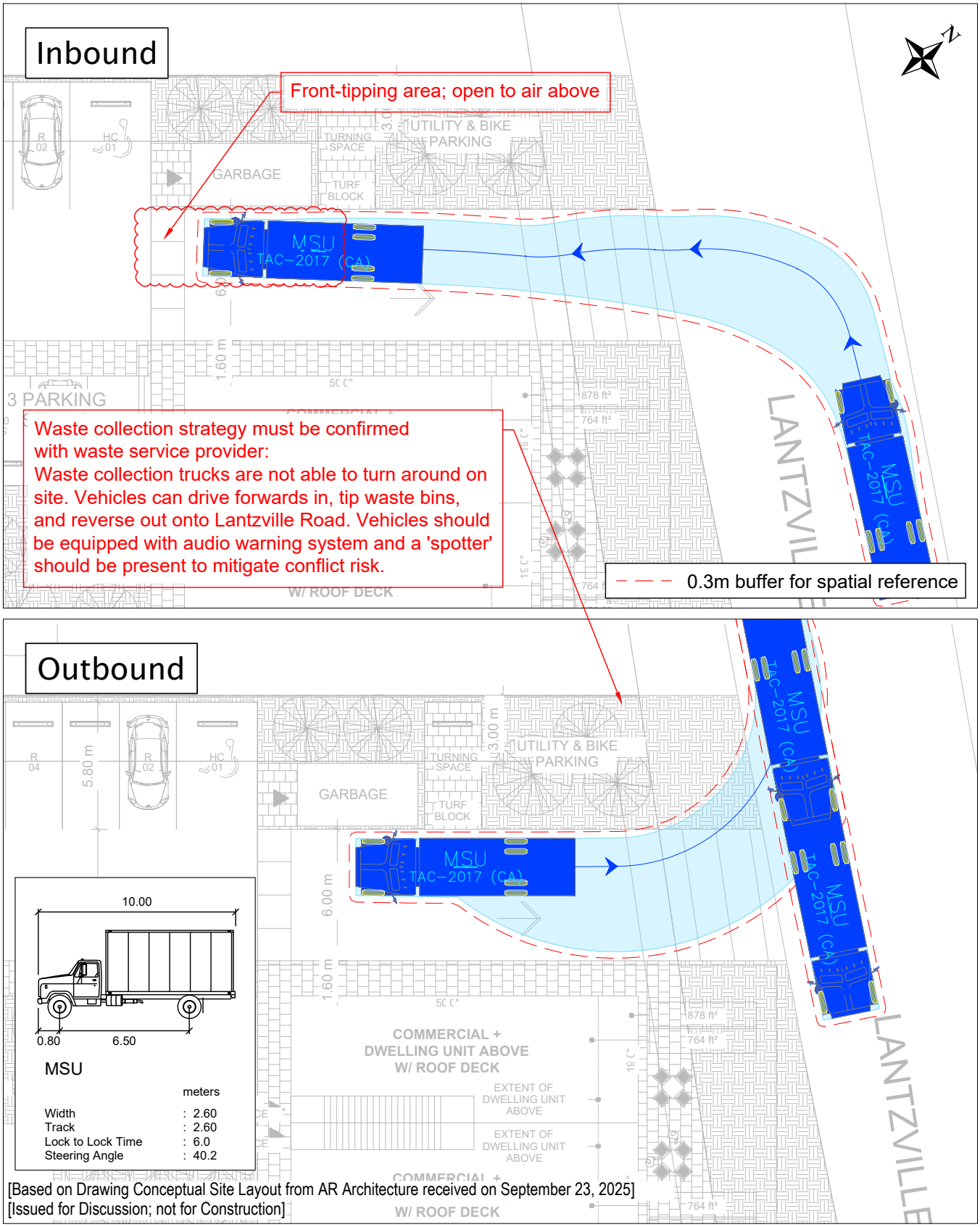


Exhibit 3

Passenger Vehicle End Stall Parking #2

7261 Lantzville Road
08-25-0055 October 2025 Scale 1:200 on Letter Prepared by KQ

bunt & associates



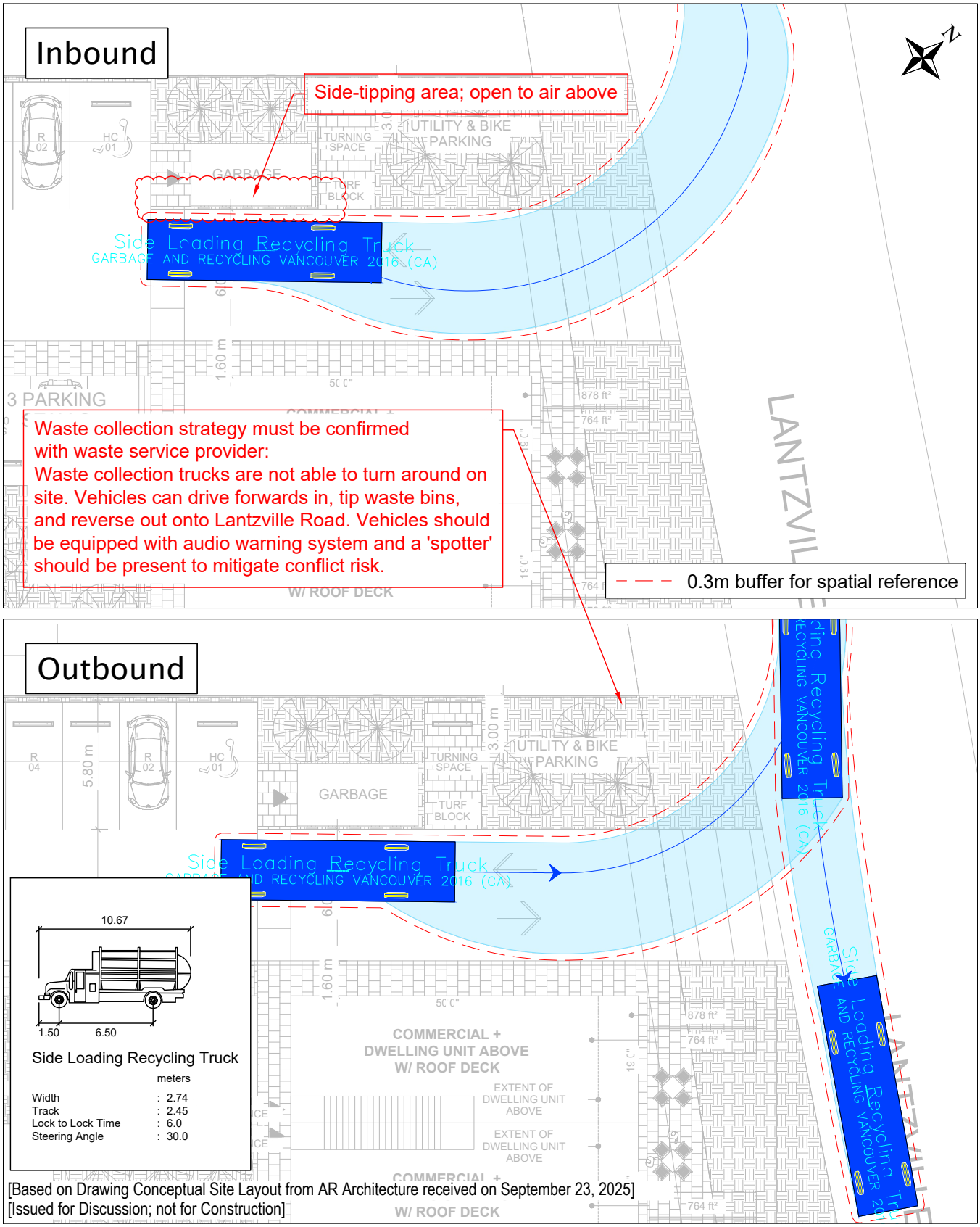
[Based on Drawing Conceptual Site Layout from AR Architecture received on September 23, 2025]
[Issued for Discussion; not for Construction]

Exhibit 4

Front-Loading Waste Collection

7261 Lantzville Road
08-25-0055 October 2025 Scale 1:250 on Letter Prepared by KQ

bunt & associates



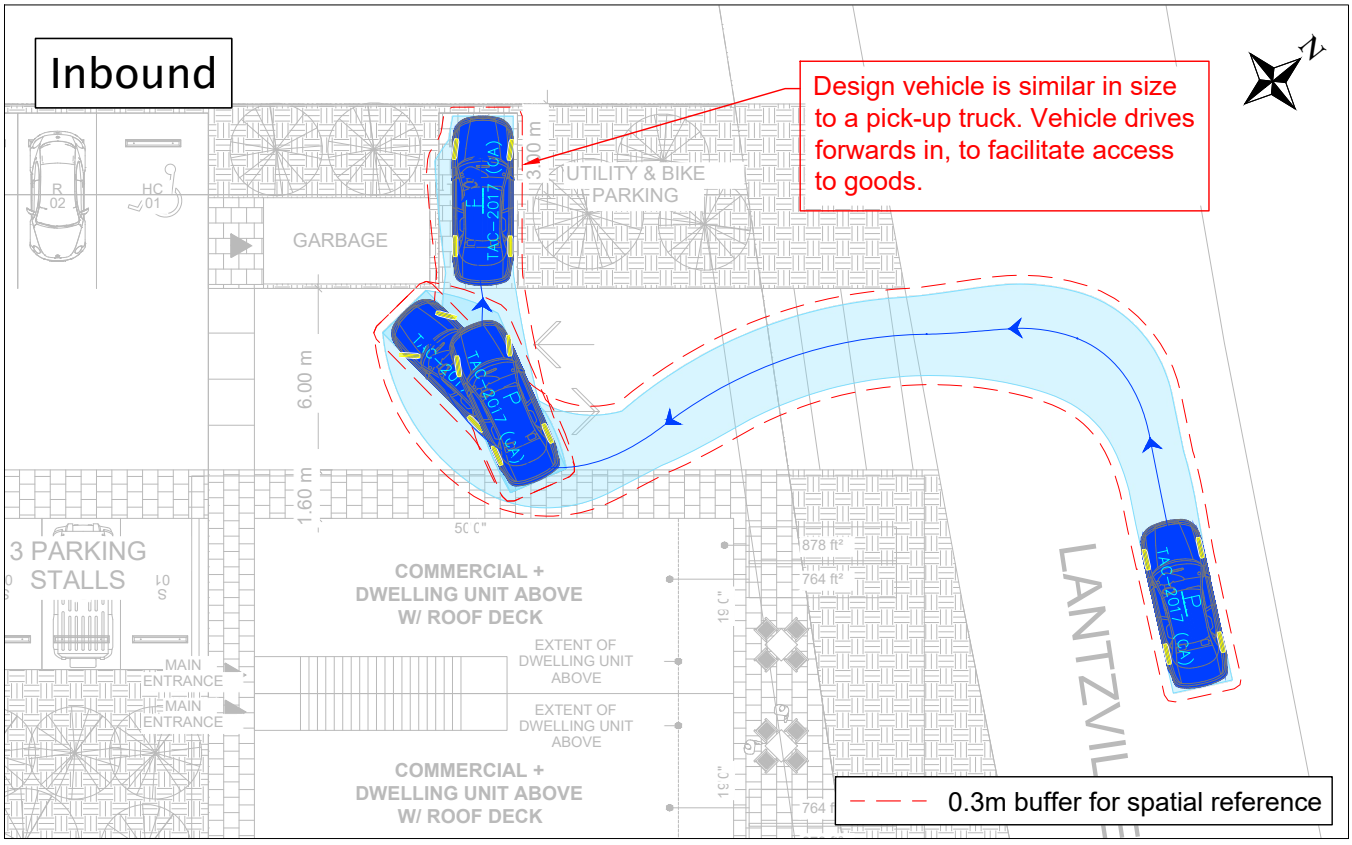
[Based on Drawing Conceptual Site Layout from AR Architecture received on September 23, 2025]
[Issued for Discussion; not for Construction]

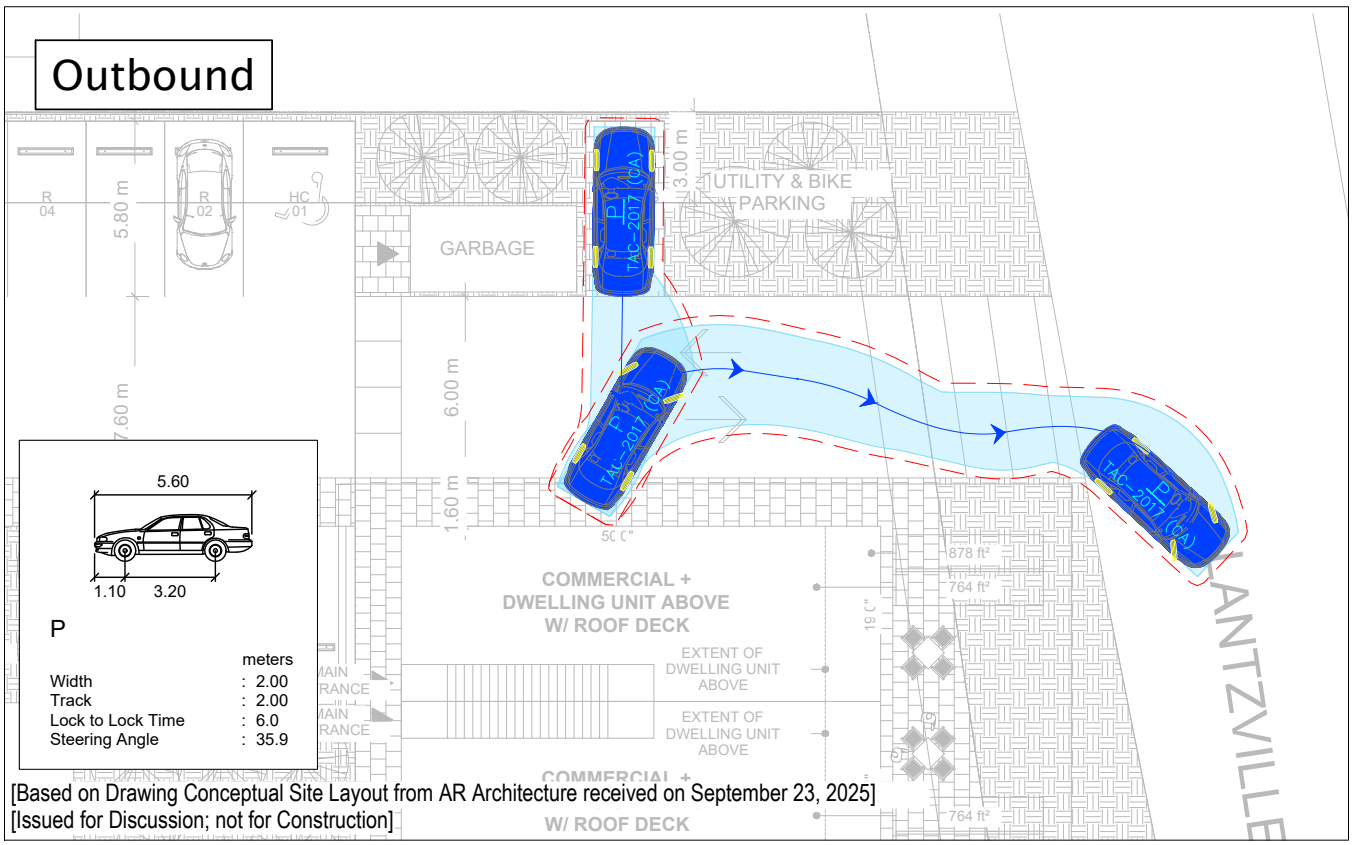
Exhibit 5

Front-Loading Waste Collection

7261 Lantzville Road
08-25-0055 October 2025 Scale 1:250 on Letter Prepared by KQ

bunt & associates





[Based on Drawing Conceptual Site Layout from AR Architecture received on September 23, 2025]
[Issued for Discussion; not for Construction]

Exhibit 6

Loading Space Access

7261 Lantzville Road
08-25-0055 October 2025 Scale 1:250 on Letter Prepared by KQ

bunt & associates