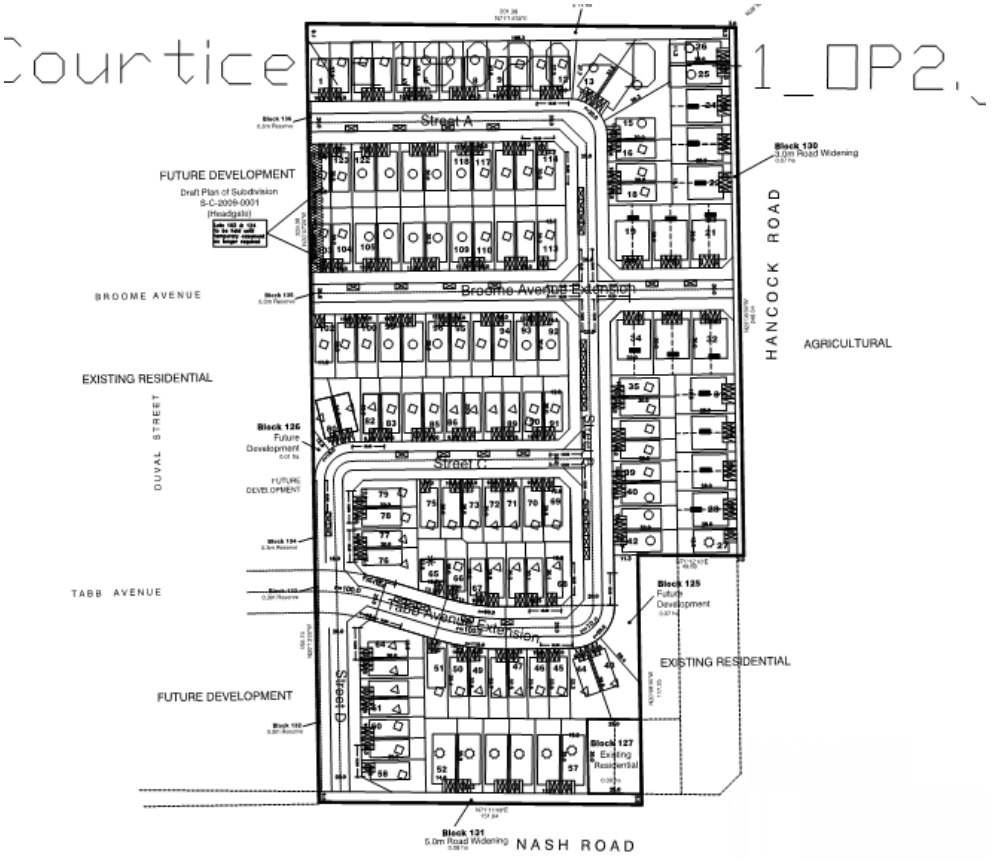
TROLLEYBUS DEVELOPMENT

1828-1840 NASH ROAD AND 3090-3158 HANCOCK ROAD

TRANSPORTATION IMPACT STUDY ADDENDUM AND RESPONSE TO COMMENTS

JULY 13, 2020



1828-1840 NASH ROAD AND 3090-3158 HANCOCK ROAD

TIS ADDENDUM AND RESPONSE TO COMMENTS

TROLLEYBUS DEVELOPMENT

PROJECT NO.: 17M-02249-00
DATE: JULY 13, 2020

WSP
100 COMMERCE VALLEY DRIVE WEST
THORNHILL, ON, CANADA L3T 0A1

WSP.COM

July 13, 2020

TROLLEYBUS DEVELOPMENT
Greg Gilbert, RPP, M.PL
Director, Planning & Design
4950 Yonge Street, Suite 900
Toronto, ON. M2N 6K1

Dear Mr. Gilbert

Subject: 1828-1840 Nash Road and 3090-3158 Hancock Road, Response to City's Comments

WSP submitted a Transportation Impact Study (TIS) dated April 30, 2018 and a subsequent TIS Addendum dated June 27, 2019 in support of the residential development at 1828-1840 Nash Road and 3090-3158 Hancock Road in the Municipality of Clarington. Since then, comments have been received and a revised site plan has been prepared by the project team. The purpose of this TIS Addendum is to respond to the transportation comments and incorporate the updated site plan.

Yours sincerely,

WSP

Peter Yu, P.Eng., PMP
Project Manager
Planning and Advisory, Transportation

WSP ref.: 17M-02249-00

TABLE OF CONTENTS

ATTACHMENTS

1 BACKGROUND

The project team has developed an updated site plan for 1828-1840 Nash Road and 3090-3158 Hancock Road as shown below in **Figure 1**. **Table 1** summarizes the sites statistics of this updated site plan relative to the previous submissions. It should be noted that aspects of the previous transportation submission that are still relevant for this submission and have not received comments for (i.e., existing transit services & existing intersection operations assessment) will not be repeated in this TIS Addendum.

Figure 1 - 1828-1840 Nash Road and 3090-3158 Hancock Road Updated Site Plan

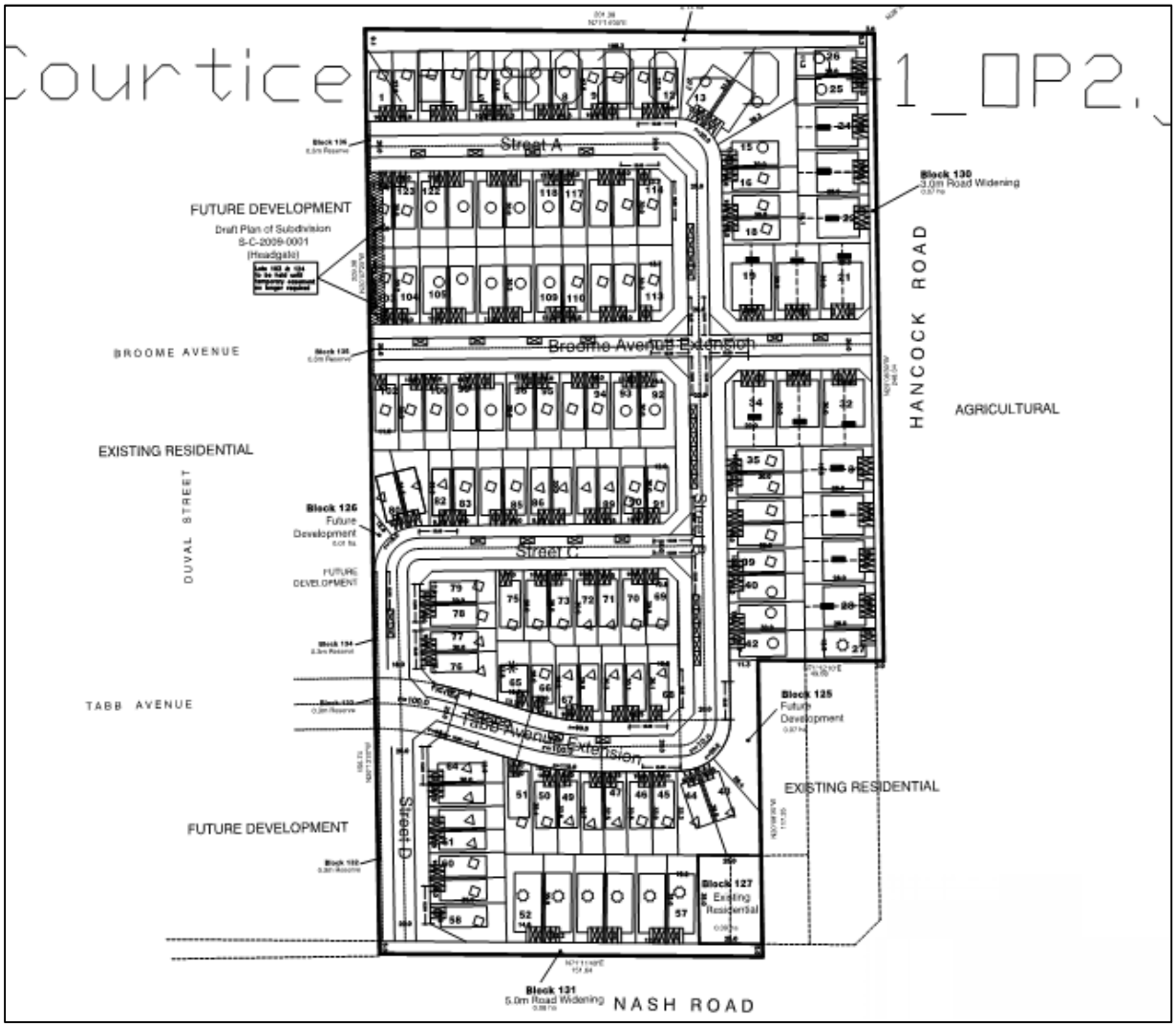


Table 1 - Site Statistics Summary

Submission	Date	Uses	Total
TIS	April 2018	44 Townhouse units 106 Single detached units	150 units
TIS Addendum	June 2019	66 Townhouse units 85 Single detached units	151 units
Current submission	June 2020	114 Single detached units 26 Semi-detached units	140 units

2 FUTURE BACKGROUND TRAFFIC EVALUATION

FUTURE BACKGROUND DEVELOPMENT AND CORRIDOR TRAFFIC GROWTH

Consistent with the previous TIS submissions, an annual growth rate of 1.5% has been applied on Regional Highway 2 and 2% on Courtice Road. For the Municipality of Clarington roads, a conservative growth of 1% per year has been applied. These growth rates were applied to the existing traffic volumes for a period of 5 years, consistent with the previous studies.

At the time of the previous TIS submissions, other development proposals by Trolleybus had not yet been submitted. For a holistic evaluation, the two other Trolleybus residential developments at 3091, 3105, 3121, 3133 & 3147 Courtice Road and 2910 and 2936 Hancock Road have been included as background developments in this study. **Figure 2** illustrates the combined site-generated volumes of these background developments, which are based on the addition of the site-generated volumes by each development as documented in their respective TIS's dated December 13, 2018 and February 24, 2020.

The resulting future background volumes with the general growth and the background development volumes are shown in **Figure 3**.

FUTURE BACKGROUND OPERATIONS

The background traffic operations were analyzed on the basis of the future background traffic forecasts illustrated in Figure 3. The resulting levels of service are outlined in **Table 2** with the details related to the intersection operations provided in **Attachment A.**

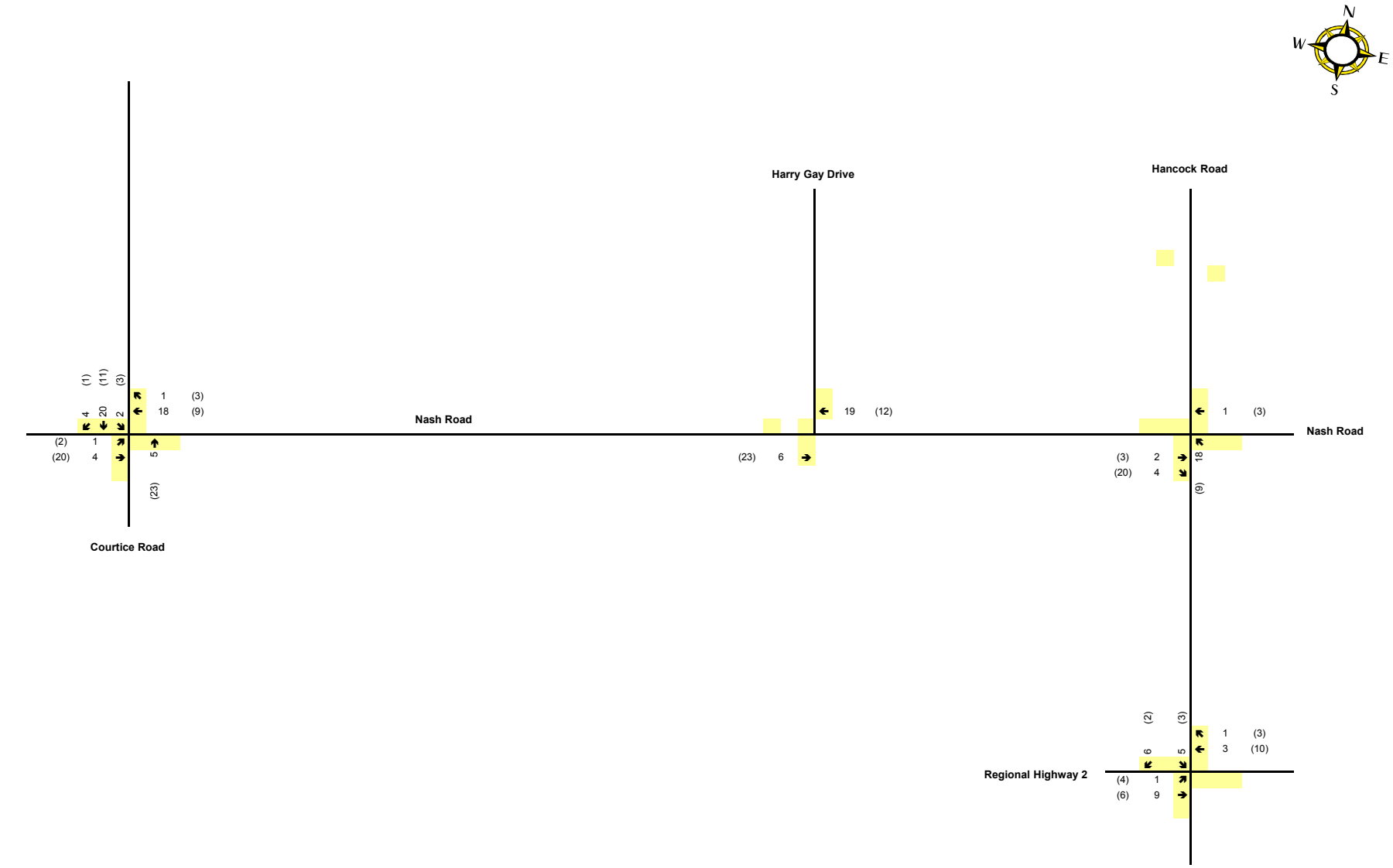
Table 2: Future Background Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Hancock Road and Nash Road[2]	A (8)	--	A (8)	--
Courtice Road and Nash Road[2]	B (12)	--	C (21)	--
Nash Road and Harry Gay Drive[1]	A (10)	SB-LR (0.08)	A (10)	SB-LR (0.05)
Hancock Road and Regional Highway 2[1]	C (22)	SB-TLR (0.05)	D (28)	SB-TLR (0.08)

[1] For two-way stop controlled intersections, the level of service is based on the delay associated with the critical movement.

[2] For all-way stop controlled intersections, the level of service is based on the overall intersection delay.

As shown in Table 2, all of the study intersections are forecast to continue operating at an acceptable Level of Service (LOS) 'D' or better with no capacity constraints. This indicates that there are capacity for the boundary intersections to accommodate additional traffic beyond the general growth and the background developments.

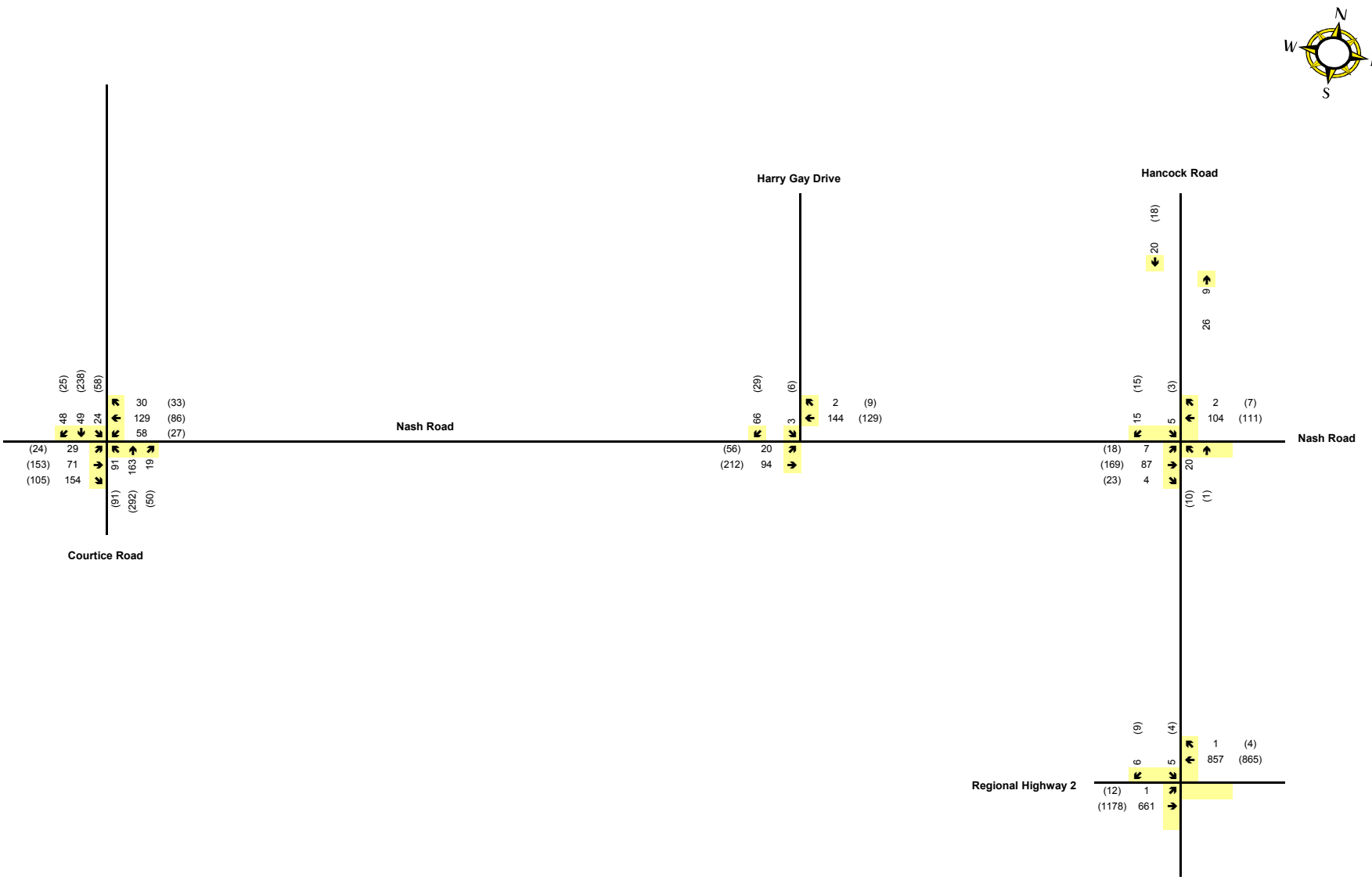


LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 2

Background Development-Generated Traffic Volumes



LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 3

2024 Future Background Traffic Volumes

3 SITE-GENERATED TRAFFIC

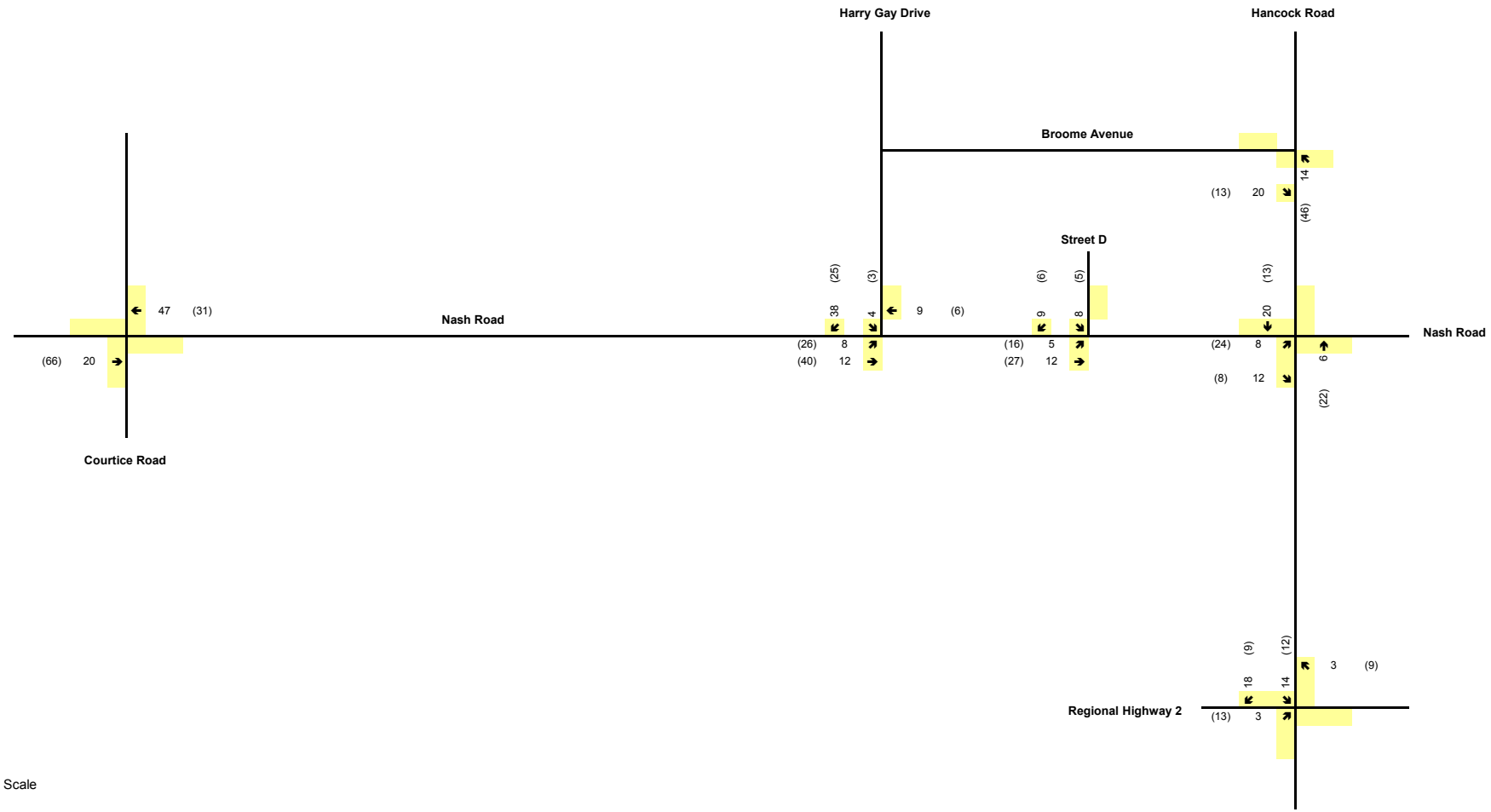
As noted in Table 1, the overall unit count is slightly lower than the previous submissions and the residential housing type has been adjusted based on feedback from the review agency. The auto trip generation for the current site plan, which is based on the same methodology as the previous submissions, is presented in **Table 3**.

Table 3 - Trip Generation

ITE LAND USE CODE (MAGNITUDE)	WEEKDAY A.M. PEAK HOUR		WEEKDAY P.M. PEAK HOUR	
	Inbound Trips	Outbound Trips	Inbound Trips	Outbound Trips
210 Single Detached units (140)	26	79	88	52
NET TOTAL	**105**		**140**	

The proposed development is forecast to generate 105 trips during the weekday a.m. peak hour, and 140 trips during the weekday p.m. peak hour. Relative to the previous June 2019 submission, this is an increase of 12 and 20 trips during the a.m. and p.m. peak hours, respectively. The trip generation is conservative since it assumes that the semi-detached units will generate traffic at the same rate as the detached houses, when in fact the number of residential parking supply for the semi-detached are lower.

The traffic assignment and distribution are based on the existing traffic patterns around the study area. **Figure 4** illustrates the resulting traffic assignment to the boundary road network. This traffic assignment accounts for the addition of a direct connection of Street D to Nash Road, which is an improvement implemented based on feedback from the agency staff.



Not To Scale

LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 4

Site-Generated Traffic Volumes

4 FUTURE TOTAL TRAFFIC EVALUATION

The future total traffic volumes were estimated by superimposing the site-generated traffic volumes shown in Figure 4 onto the future background traffic volumes in Figure 3. The resulting future total traffic forecasts are illustrated in **Figure 5**. The same assumptions made in the previous submission in terms of volume continuation along the extension of Broome Avenue has been maintained.

The future total lane configurations are shown in **Figure 6**. The resulting intersection operations are outlined in **Table 4**. Synchro worksheets are provided in **Attachment B**.

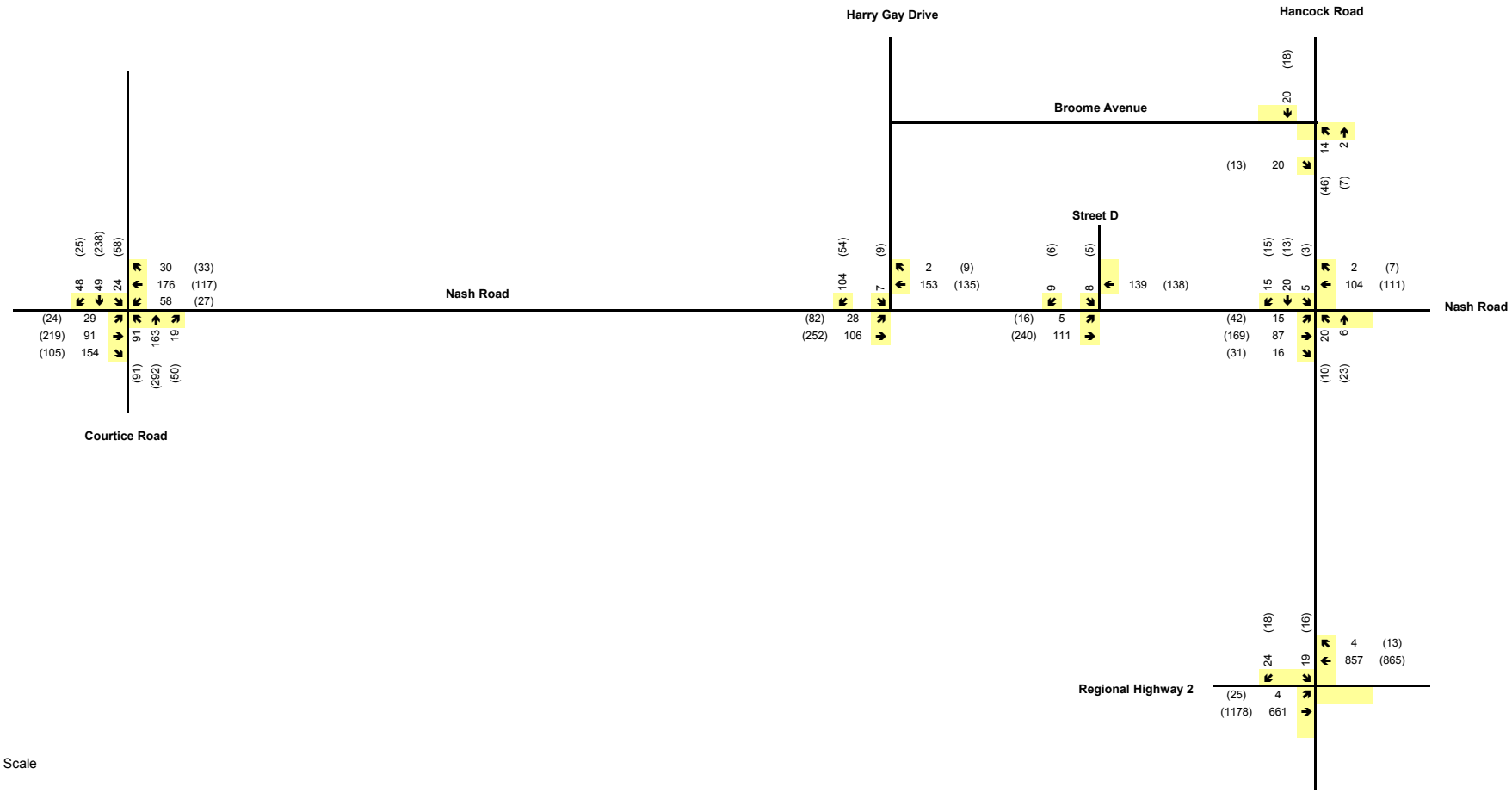
Table 4: Future Total Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Hancock Road and Nash Road[2]	A (8)	--	A (9)	--
Courtice Road and Nash Road[2]	B (13)	--	D (30)	--
Nash Road and Harry Gay Drive[1]	A (10)	SB-LR (0.14)	B (10)	SB-LR (0.09)
Hancock Road and Regional Highway 2[1]	D (27)	SB-TLR (0.22)	E (48)	SB-TLR (0.30)
Hancock Road and Broome Avenue[1]	A (9)	EB-LR (0.02)	A (8)	EB-LR (0.01)
Nash Road and Street D[1]	A (10)	SB-LR (0.02)	B (10)	SB-LR (0.02)

[1] For two-way stop controlled intersections, the level of service is based on the delay associated with the critical movement.

[2] For all-way stop controlled intersections, the level of service is based on the overall intersection delay.

Almost all of the study intersections continue to operate at acceptable LOS 'D' or better and all of the movements operate well within capacity. The only exception is at the intersection of Hancock Road and Regional Highway 2 operates at LOS 'E' during the weekday p.m. peak hour, consistent with the previous transportation submissions. However, the average delay is only 13 seconds beyond the LOS 'D' threshold and the movements will operate well within capacity and since the intersection is minor street stop-controlled, there are minimal impact on the free flow highway approaches. It is also worth noting that there is an alternative route to the west from the signalized intersection of Regional Highway 2 and Courtice Road. The site-generated traffic will self-regulate with the assistance of real-time traffic technologies such as Google Map and utilize the route that minimizes their travel time. The addition of the Street D intersection onto Nash Road is also forecast to operate well with minimal delays, which is important for the neighbourhood street network resiliency. Based on the findings of the future total conditions, the site-generated traffic of the proposed development can be accommodated by the existing road network without any roadway improvements.



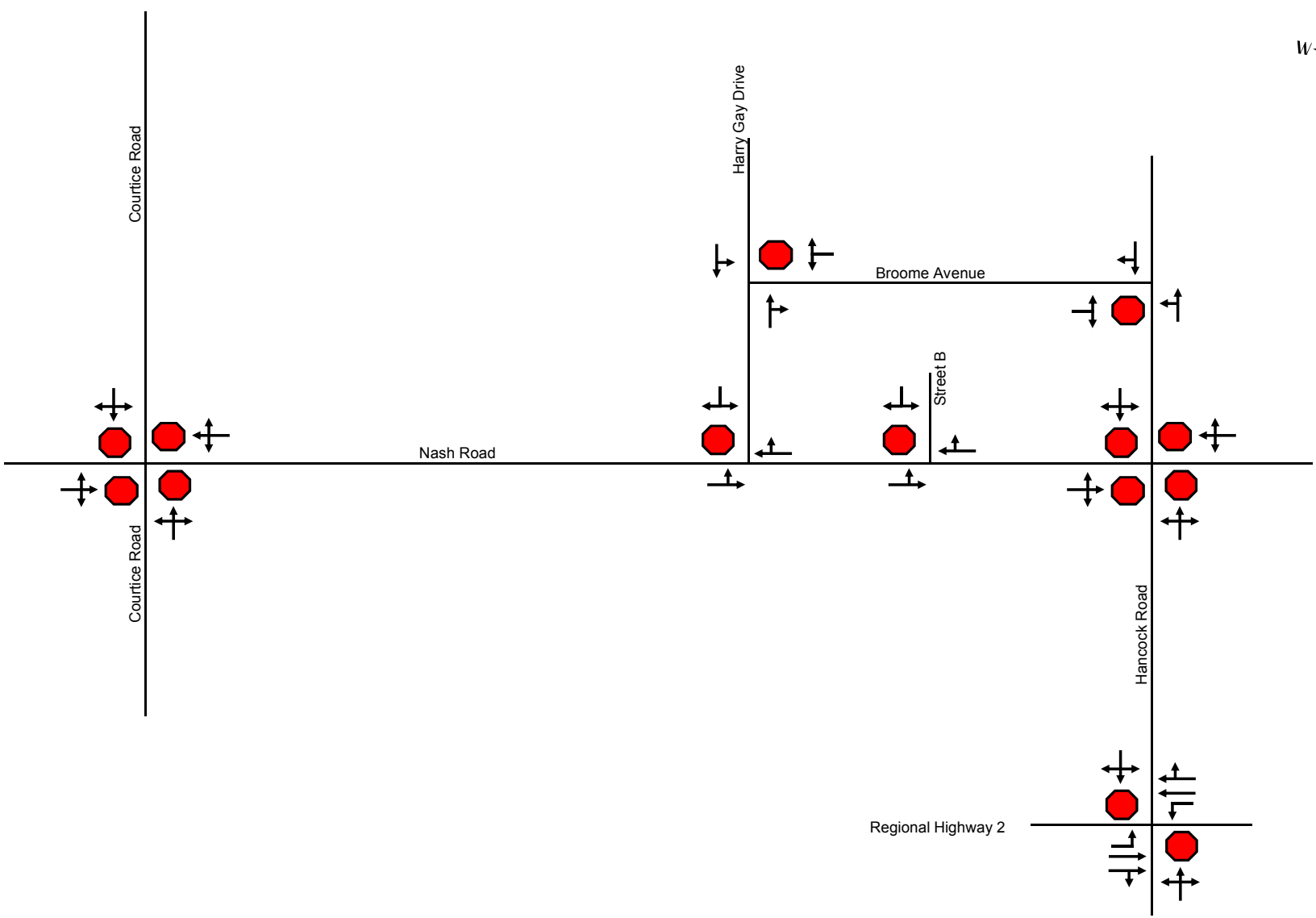
Not To Scale

LEGEND

XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes

FIGURE 5

2024 Future Total Traffic Volumes



Not To Scale

LEGEND

Stop Control

Lane Configurations

FIGURE 6

Future Lane Configurations

5 TRANSPORTATION COMMENTS RESPONSE

The review agency comments received have been responded to in this section.

NEIGHBOURHOOD PLAN AND SUBDIVISION DESIGN

1 ***Comment 1.1.3.*** *While townhouses are encouraged and supported by the Neighbourhood Plan adjacent to Nash and Hancock roads, street townhouses within the neighbourhood can create challenges. Meeting on-street parking requirements (see Engineering comment 2.5) and distributing on-street parking can become more difficult. The entrances to the neighbourhood are not adjacent to the townhouses which leaves the densest portions of the plan interior to the neighbourhood creating additional traffic on local roads instead of directly adjacent to arterial and collect roads.*

Response: Noted, the project team has updated the site plan and there are no longer any townhouses proposed. The associated changes in parking requirements and traffic have been evaluated in other sections of this study.

2 ***Comment 2.*** *A window street has been proposed adjacent to Nash Road. The Official Plan discourages window streets and the Neighbourhood Plan did not envision window streets.*

Response: Noted, the project team has updated the site plan to remove the window street parallel to Nash Road. Instead, a direct connection is made onto Nash Road via Street D. This has been accounted for in this study.

3 ***Comment 2a.*** *While not included in the Neighbourhood Plan staff continue to believe that Street C should extend and connect to Nash Road. This would achieve the connectivity goals of the Official Plan and provide a mid-block connection from the internal neighbourhood to Nash Road. This access could provide options for servicing and private laneways for townhouses to front onto Nash Road.*

Response: Noted, this has been addressed with the direct connection of Street D to Nash Road, which enhances the neighbourhood connectivity.

4 ***Comment 2b****. Without the street connection the neighbourhood may require an agreement or upfront development of roads on adjacent lands to the west. Street C connecting to Nash could provide additional servicing options.*

Response: Noted, this comment is no longer applicable with the responses by the project team as noted above.

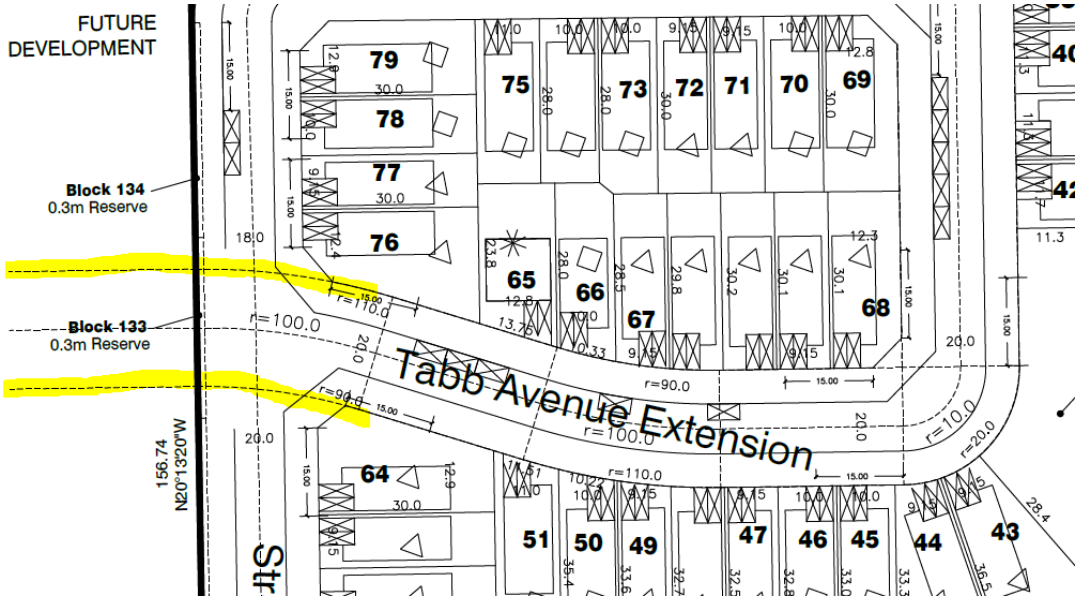
5 ***Comment 3****. Street B was straightened and the lands to the east added to a future development block since the first proposal. A temporary turning circle will be required at the south end of Street B. Creating a street and development pattern as discussed in comment 2 above would eliminate the need for at least one of the temporary circles and potentially both.*

Response: These comments are no longer applicable based on the changes to the site plan. There is no longer the need for a temporary cul-de-sac/traffic circle.

GENERAL DRAFT PLAY LAYOUT

6 ***Comment.*** *The alignment of Tabb Avenue currently does not align with the existing constructed terminus. The proposed radius should be revised to a minimum of 200 metres (centreline) to meet requirements. Please provide a sketch illustrating the centreline radius from the existing terminus to the proposed layout.*

Response: Noted, the extension of Tabb Avenue has been better designed and shown relative to the configuration of the existing terminus of Tabb Avenue. A closeup of the design is shown below, which is suitable considering the traffic volumes through the street would be fairly low and limited to local traffic only.

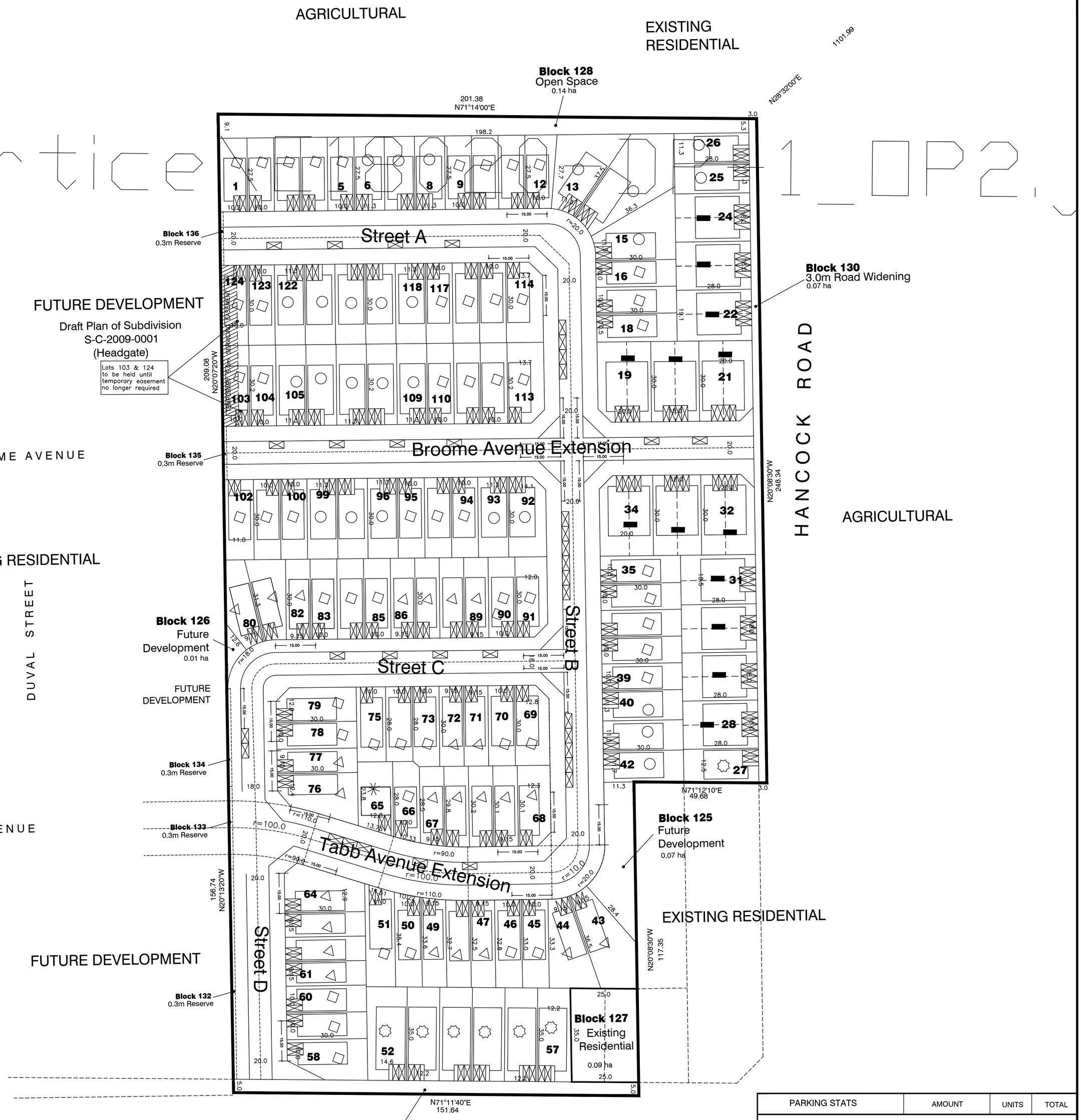


ON-STREET PARKING PLAN REQUIREMENTS/PARAMETERS

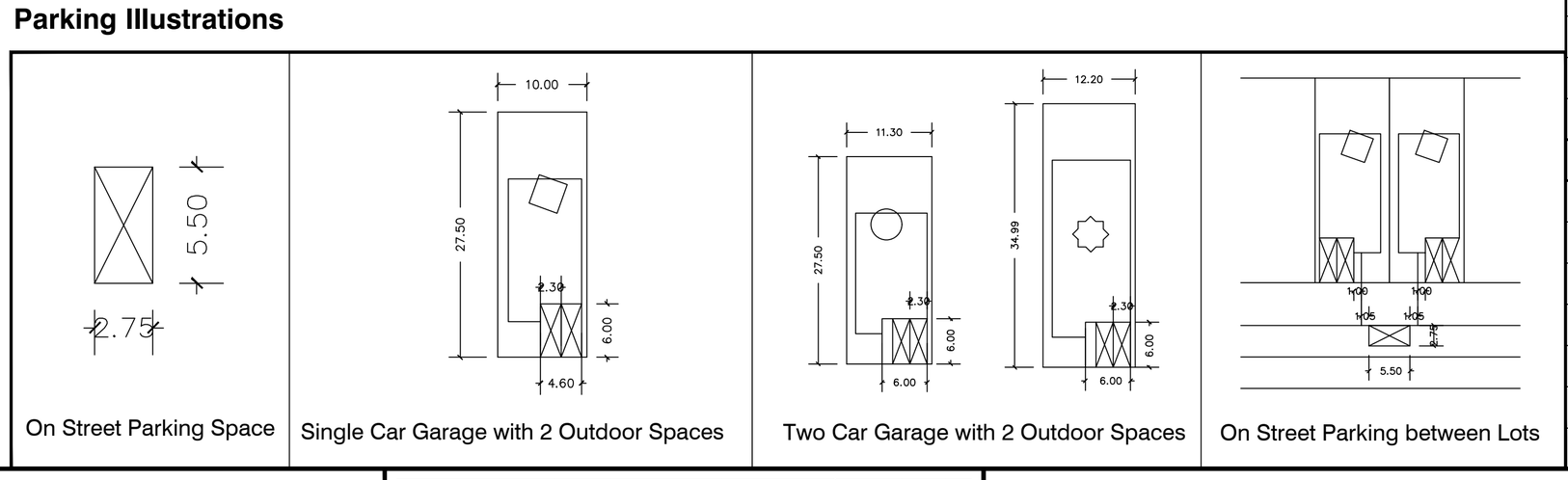
Comment. *The On-Street Parking Plan is not satisfactory as submitted. Please note the following requirements for the Plan. The outstanding parameters not addressed are in bold for clarity.*

- All on-street parking spaces must be depicted as 5.5 metres in length.
- Parking spaces cannot be located within 1.0 metres from an entrance or driveway.
- Parking spaces cannot be located within 15.0 metres of an intersection. This is measured from the curb lane of the intersecting road.
- Parking spaces cannot be depicted on a cul-de-sac.
- All driveways for single detached homes must be 4.6m wide for single car garages and 6.0 metres wide for two car garages and clearly illustrated on the plan.
- Within 3 metres adjacent to a fire hydrant or community mailbox.
- One on-street parking space is required for every 4 single or semi-detached units and one on-street parking space is required for every 3 street townhouse units.
- The parking requirements, the minimum number of required parking spaces and the total amount of on-street parking being provided must be noted on the Plan.

Response: The comments regarding the parking plan are noted and have been incorporated carefully into the updated on-street parking plan as shown in **Figure 7.** All of the comments have been addressed and typical parking space dimensions and offsets from driveways and intersections are shown in the parking plan. The parking details of the garages for each of the houses are shown in **Figure 8** – the . Driveway and Entrance Location Plan.



Parking Illustrations



PARKING STATS	AMOUNT	UNITS	TOTAL
On-Street Parking Requirement			
Semi-Detached	1 SPOT FOR EVERY 4 UNITS	26	7
Singles	1 SPOT FOR EVERY 4 UNITS	114	29
REQUIRED PARKING TOTAL			36
Proposed On-Street Parking			
Semi-Detached	1 SPOT FOR EVERY 4 UNITS	26	7
Singles	1 SPOT FOR EVERY 4 UNITS	114	29
PROPOSED PARKING TOTAL			36
RESIDENTIAL PARKING PROPOSED			
18.0m Wide Semi-Det. Res.	Single Car Garage with 2 Outdoor Spaces	26	78
9.15m Wide Detached Res.	Single Car Garage with 2 Outdoor Spaces	29	87
10.0m Wide Detached Res.	Single Car Garage with 2 Outdoor Spaces	53	159
11.3m Wide Detached Res.	Two Car Garage with 2 Outdoor Spaces	24	96
12.2m Wide Detached Res.	Two Car Garage with 2 Outdoor Spaces	7	28
Custom Detached Res.	Single Car Garage with 2 Outdoor Spaces	1	3
TOTAL		140	451

S-C-2018-0003, ZBA2018-0014

ON-STREET PARKING PLAN

FOR PART OF LOT 27 , CONCESSION 3
FORMER TOWNSHIP OF DARLINGTON
NOW BEING LOTS 1 TO 6, INCLUSIVE
LOTS 12 TO 17, INCLUSIVE
AND
PART OF LOT 18 REGISTERED PLAN No. 634
MUNICIPALITY OF CLARINGTON
REGIONAL MUNICIPALITY OF DURHAM

June 22, 2020

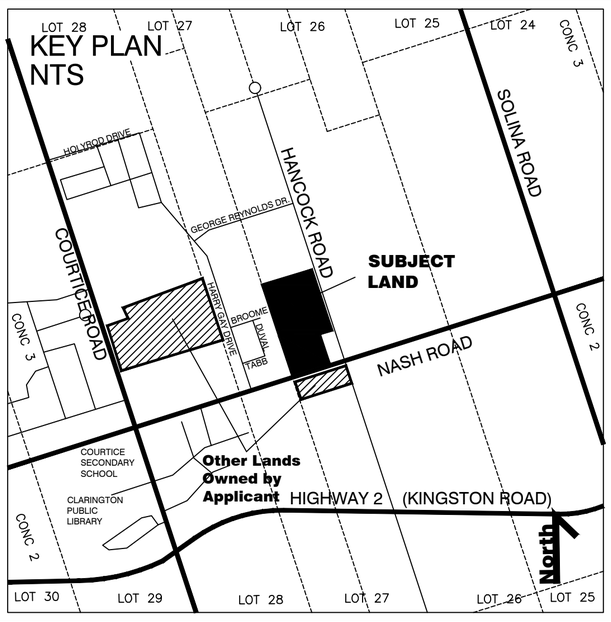


Figure 7

Note:
All dimensions on curves are chord lengths unless otherwise indicated.
Dashed lines representing adjacent future development are conceptual only.
Dashed lines representing 0.3m Reserves are exaggerated to illustrate location of reserve.

Scale 1 : 750
(24 x 36)

OWNER'S AUTHORIZATION

I AUTHORIZE THIS DRAFT PLAN OF SUBDIVISION TO BE SUBMITTED TO THE MUNICIPALITY OF CLARINGTON FOR APPROVAL.

SEE ORIGINAL FOR SIGNATURE — DATE
Peter Cohen, President
BV Courtice Inc.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

SEE ORIGINAL FOR SIGNATURE — DATE
R. Mc Rae, O.L.S.
J. D. Barnes Limited

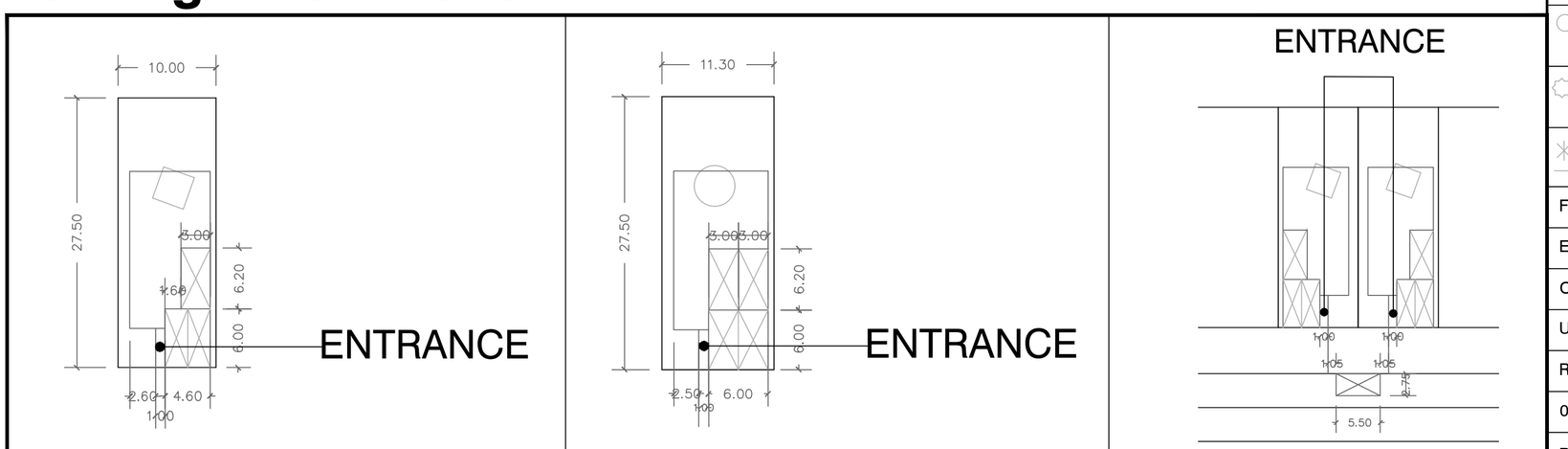
PLAN PREPARED BY

Whitney Dang, BURPI — DATE
Trolleybus Urban Development

TROLLEYBUS URBAN DEVELOPMENT

18M-00161-00

Parking Illustrations



SCHEDULE OF LAND USE

LAND USE	Lot/Block Number	Units	Area (ha)	Area (ac)
18.0m Wide Semi-Det. Res. Single Car Garage with 2 Outdoor Spaces	19-24, 28-34	26	4.47	11.0
9.15m Wide Detached Res. Single Car Garage with 2 Outdoor Spaces	35-38, 43, 44, 47-49, 61-64 67, 68, 71, 72, 76, 77, 80-82 86-89	29		
10.0m Wide Detached Res. Single Car Garage with 2 Outdoor Spaces	1-5, 9-12, 16-18, 35-39, 45, 46, 50 51, 58-60, 66, 69, 70, 73-75, 78, 79 83-85, 90, 91, 94-96, 100-104, 110-117, 123, 124	53		
11.3m Wide Detached Res. Two Car Garage with 2 Outdoor Spaces	6-8, 13-15, 25, 26, 40-42 92, 93, 97-99, 103, 105-109 118-122	24		
12.2m Wide Detached Res. Two Car Garage with 2 Outdoor Spaces	27, 52-57	7		
Custom Detached Res. Single Car Garage with 2 Outdoor Spaces	65	1		
Future Development	Blocks 125 & 126		0.08	0.2
Existing Residential	Block 127		0.09	0.2
Open Space	Block 128		0.14	0.3
Utility	Block 129		0.03	0.1
Road Widenings	Blocks 130 & 131		0.15	0.4
0.3m Reserve	Blocks 132 to 136		<0.01	<0.1
Roads			1.82	4.5
Total		140	6.78	16.7

S-C-2018-0003, ZBA2018-0014

DRIVEWAY AND ENTRANCE LOCATION PLAN

FOR PART OF LOT 27 , CONCESSION 3
FORMER TOWNSHIP OF DARLINGTON
NOW BEING LOTS 1 TO 6, INCLUSIVE
LOTS 12 TO 17, INCLUSIVE
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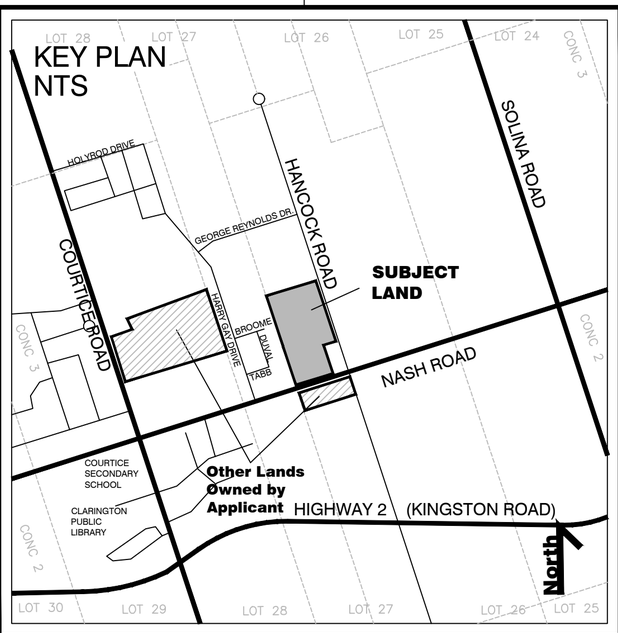
REGIONAL MUNICIPALITY OF DURHAM

June 16, 2020



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R. Mc Rae, O.L.S.
J. D. Barnes Limited
DATE

PLAN PREPARED BY

Whitney Dang, BURPI
Trolleybus Urban Development
DATE

18M-00161-00

Based on the updated statistics shown in Table 1, the resulting By-law parking requirements are summarized in **Table 5**. Based on the requirements, 315 spaces, including 35 on-street visitor spaces will be required.

Table 5 – Parking Requirements

Land Use	Minimum Parking Rate	Units/ GFA	Parking Standard
Single /semi Detached Dwelling	2 outdoor residential parking space per dwelling	140 units	280 spaces
	1 on-street visitor parking space per 4 dwellings	140 units	35 spaces
Total		**140 units**	**315 spaces**

The proposed car parking supply is summarized in **Table 6**. The 9.15m, 10m, 18m and custom houses feature 2 spaces in the driveway and 1 space in the garage. The remaining house types have 2 spaces in the driveway and 2 spaces in the garage. Therefore, the overall residential and visitor parking supplies satisfy the Clarington By-law requirements.

Table 6 – Parking Proposed

Category	Magnitude	Provided Spaces
18.0m wide Semi-Detached units	26 units	78 spaces
9.15m wide Detached units	29 units	87 spaces
10.0m wide Detached units	53 units	159 spaces
11.3m wide Detached units	24 units	96 spaces
12.2m wide Detached units	7 units	28 spaces
Custom Detached units	1 units	3 spaces
On-street Visitor Parking	140 units	36 spaces
Total	**140 units**	**451 spaces**

ENTRANCE AND DRIVEWAY LOCATION PLAN

7 **Comment:** The Entrance and Driveway Location Plan must be revised so that all on-site driveway parking spaces for all lots are indicated and conform to zoning requirements.

Response: Based on the updated driveway and entrance location plan as shown in **Figure 8**, all of the on-site driveway parking spaces for all of the residential lots proposed conform to the applicable zoning requirements (4.6m wide driveways for single car garage houses and 6.0 m wide driveway for two car garages houses). In addition, each of the garage parking spaces have an area of 18.6 sq.m. (3m wide and 6.2m long), which satisfies the minimum requirement.

8 **Comment:** Any future dwellings constructed on corner lots within the subject draft plan must have entrances, driveways and garages that are compatible with the required plan. Kinked driveways will not be permitted. The final plan is subject to the approval of the Director of Engineering Services prior to the approval of this draft plan.

Response: Noted, the driveways of the corner units have been carefully examined so that they are all a minimum of 6m long and 2.3m wide for each space in the driveway.

PEDESTRIAN CONNECTIVITY

9 ***Comment*** *The applicant will be responsible for building a municipal sidewalk pedestrian connection from Hancock Road to the existing municipal sidewalk network. The current terminus of the municipal sidewalk system is located approximately 40 metres east of Harry Gay Drive. The required pedestrian connection will include external lands not owned by the applicant.*

Response: Noted, the project team understands that based on the Municipality of Clarington D.C. Background Study – Draft Calculations Technical Appendix, sidewalk and roadway urbanization improvements along the sections of Hancock Road and Nash Road along the subject development boundary are scheduled to be undertaken in the near-term (2022) by the Town (as shown in excerpts below in **Figure 9** from the D.C. document). These facilities would benefit the entire community so they can walk to & from their destinations in dedicated facilities.

Figure 9 – Excerpts from the Municipality of Clarington D.C. Background Study

79	Hancock Rd.	Nash Rd.	0.65km North	1.7	2022
80	Hancock Rd.	275m South of Nash. Rd.	Nash Rd.	1.7	2022
81	Nash Rd.	50m East of Harry Gay Dr.	Hancock Rd.	1.1	2022

Type of Work	Description
Road Works	
1.1	Semi Urban to Urban Collector
1.2	Rural to Urban Collector
1.3	Urban Collector Road Widening
1.4	Semi Urban Local Residential to Urban Local Residential
1.5	Urban Local Reconstruction
1.6	Widening and Fully Urbanize Rural Collector
1.7	Widening and Half Urbanize Rural Collector

URBAN SPRAWL

10 ***Comment*** *151 units X ~ 2 cars per household is adding over 300 cars to the community. The development as it stands has one entrance and one exit. This won't only create havoc during peak times, but will reduce public safety in the community. Many cyders including cycling groups utilize Nash rd., as it stands with current road sizes for both Nash, and Hancock, it would reduce road safety due to restricted width of the roads. Traffic jams*

Response: Noted, the unit count has decreased to 140 units and efforts have been made to provide another point of vehicular access onto Nash Road, which will help alleviate and disperse the traffic volumes that previously needed to circulate through the internal streets. Based on the conservative traffic evaluation completed, no traffic congestions or gridlocks are anticipated along Nash Road or the internal community.

STAFF REPORT - OCTOBER 22ND, 2019

11 ***Comment*** *Increased traffic in the neighbourhood. Also, increased traffic on Hancock Road as the only access to the subdivision until lands to the west are developed will be via Hancock Road;*

Response: Please see the response to comment 9 above.

12 ***Comment*** *Concerns with parking on public streets given the number of dwellings and townhouses being proposed;*

Response: The applicable on-street and residential By-law parking requirements have been fully satisfied in the updated site plan. The ample residential parking supply also means there will be a lower need to rely on on-street parking.

13 ***Comment*** *Many residents walk on Hancock Road, which is a rural road, and the increased traffic will make it dangerous as there are no sidewalks;*

Response: This has been addressed in the response to comment 8 above.

14 ***Comment*** *Durham Region Transit does not service this neighbourhood;*

Response: Noted, it is acknowledged that the subject site is currently outside of the 400m target distance from transit services. It is recommended that Durham Region Transit consider expanding the existing bus services further east as the Municipality of Clarington's vacant/under-utilized properties to the eastern boundary are developed.

6 CONCLUSION

Based on the evaluations within this TIS Addendum, it can be concluded that the updated site plan is very similar in terms of traffic trip generation to the previous submission and the associated traffic volumes can be accommodated by the existing road network.

There is no longer the need for a cul-de-sac or a window street in the development and a street connection onto Nash Road has been added to the site plan. The transportation-related comments received from various stakeholders have also been responded to in this submission.

The updated on-street shows that all of the visitor and residential spaces are fully compliant with the applicable standards and that the parking supply more than satisfies the By-law requirements. In addition, the updated driveway and entrance location plan shows that the garage and driveway configurations are compliant with the applicable requirements.

ATTACHMENTS

A FUTURE BACKGROUND TRAFFIC CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	87	4	0	104	2	20	0	0	5	0	15
Future Volume (vph)	7	87	4	0	104	2	20	0	0	5	0	15
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	97	4	0	116	2	22	0	0	6	0	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	109	118	22	23
Volume Left (vph)	8	0	22	6
Volume Right (vph)	4	2	0	17
Hadj (s)	0.12	0.02	0.20	-0.23
Departure Headway (s)	4.2	4.1	4.6	4.2
Degree Utilization, x	0.13	0.14	0.03	0.03
Capacity (veh/h)	832	854	733	809
Control Delay (s)	7.9	7.8	7.8	7.3
Approach Delay (s)	7.9	7.8	7.8	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay		7.8		
Level of Service		A		
Intersection Capacity Utilization		20.8%	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	661	0	0	857	1	0	0	0	5	0	6
Future Volume (Veh/h)	1	661	0	0	857	1	0	0	0	5	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	718	0	0	932	1	0	0	0	5	0	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	933			718			1193	1653	359	1294	1652	466
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	933			718			1193	1653	359	1294	1652	466
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	96	100	99
cM capacity (veh/h)	742			892			143	99	643	122	99	548

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	479	239	0	621	312	0	12
Volume Left	1	0	0	0	0	0	0	5
Volume Right	0	0	0	0	0	1	0	7
cSH	742	1700	1700	1700	1700	1700	1700	223
Volume to Capacity	0.00	0.28	0.14	0.00	0.37	0.18	0.00	0.05
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	0.0	0.0	22.0
Lane LOS	A						A	C
Approach Delay (s)	0.0			0.0			0.0	22.0
Approach LOS							A	C

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	33.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	94	144	2	3	66
Future Volume (Veh/h)	20	94	144	2	3	66
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)	21	100	153	2	3	70
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	157				298	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	157				298	156
tC, single (s)	4.2				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	98				100	92
cM capacity (veh/h)	1373				686	878

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	121	155	73
Volume Left	21	0	3
Volume Right	0	2	70
cSH	1373	1700	868
Volume to Capacity	0.02	0.09	0.08
Queue Length 95th (m)	0.4	0.0	2.2
Control Delay (s)	1.4	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	1.4	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	29	71	154	58	129	30	91	163	19	24	49	48
Future Volume (vph)	29	71	154	58	129	30	91	163	19	24	49	48
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	31	75	162	61	136	32	96	172	20	25	52	51

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	268	229	288	128
Volume Left (vph)	31	61	96	25
Volume Right (vph)	162	32	20	51
Hadj (s)	-0.22	0.01	0.14	0.13
Departure Headway (s)	5.3	5.6	5.7	6.0
Degree Utilization, x	0.40	0.36	0.45	0.21
Capacity (veh/h)	623	590	588	531
Control Delay (s)	11.8	11.7	13.3	10.6
Approach Delay (s)	11.8	11.7	13.3	10.6
Approach LOS	B	B	B	B

Intersection Summary			
Delay	12.1		
Level of Service	B		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	169	23	0	111	7	10	1	0	3	0	15
Future Volume (vph)	18	169	23	0	111	7	10	1	0	3	0	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	184	25	0	121	8	11	1	0	3	0	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	229	129	12	19
Volume Left (vph)	20	0	11	3
Volume Right (vph)	25	8	0	16
Hadj (s)	-0.05	0.01	0.18	-0.47
Departure Headway (s)	4.1	4.2	4.9	4.2
Degree Utilization, x	0.26	0.15	0.02	0.02
Capacity (veh/h)	874	840	681	777
Control Delay (s)	8.5	7.9	8.0	7.3
Approach Delay (s)	8.5	7.9	8.0	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay		8.2		
Level of Service		A		
Intersection Capacity Utilization		28.0%	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)	12	1178	0	0	865	4	0	0	0	4	0	9
Future Volume (Veh/h)	12	1178	0	0	865	4	0	0	0	4	0	9
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)	13	1253	0	0	920	4	0	0	0	4	0	10
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	924			1253			1749	2203	626	1574	2201	462
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	924			1253			1749	2203	626	1574	2201	462
tC, single (s)	5.8			4.1			7.5	6.5	6.9	7.5	6.5	8.6
tC, 2 stage (s)												
tF (s)	3.1			2.2			3.5	4.0	3.3	3.5	4.0	4.1
p0 queue free %	97			100			100	100	100	95	100	97
cM capacity (veh/h)	379			562			53	44	432	74	44	371

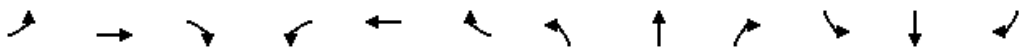
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	13	835	418	0	613	311	0	14
Volume Left	13	0	0	0	0	0	0	4
Volume Right	0	0	0	0	0	4	0	10
cSH	379	1700	1700	1700	1700	1700	1700	172
Volume to Capacity	0.03	0.49	0.25	0.00	0.36	0.18	0.00	0.08
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	0.0	0.0	2.1
Control Delay (s)	14.8	0.0	0.0	0.0	0.0	0.0	0.0	27.7
Lane LOS	B						A	D
Approach Delay (s)	0.2			0.0			0.0	27.7
Approach LOS							A	D

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	42.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	212	129	9	6	29
Future Volume (Veh/h)	56	212	129	9	6	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	230	140	10	7	32
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	151				498	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151				498	146
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	96				99	96
cM capacity (veh/h)	1441				512	890

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	291	150	39
Volume Left	61	0	7
Volume Right	0	10	32
cSH	1441	1700	786
Volume to Capacity	0.04	0.09	0.05
Queue Length 95th (m)	1.1	0.0	1.3
Control Delay (s)	1.9	0.0	9.8
Lane LOS	A		A
Approach Delay (s)	1.9	0.0	9.8
Approach LOS			A

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	24	153	105	27	86	33	91	292	50	58	238	25
Future Volume (vph)	24	153	105	27	86	33	91	292	50	58	238	25
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	25	159	109	28	90	34	95	304	52	60	248	26

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	293	152	451	334
Volume Left (vph)	25	28	95	60
Volume Right (vph)	109	34	52	26
Hadj (s)	-0.17	-0.03	0.02	0.08
Departure Headway (s)	6.7	7.2	6.3	6.6
Degree Utilization, x	0.54	0.31	0.78	0.61
Capacity (veh/h)	484	422	544	509
Control Delay (s)	17.2	13.4	28.2	19.2
Approach Delay (s)	17.2	13.4	28.2	19.2
Approach LOS	C	B	D	C

Intersection Summary				
Delay	21.3			
Level of Service	C			
Intersection Capacity Utilization	57.9%	ICU Level of Service	B	
Analysis Period (min)	15			

ATTACHMENTS

B FUTURE TOTAL TRAFFIC CONDITIONS

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	20	14	2	20	0
Future Volume (Veh/h)	0	20	14	2	20	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	22	15	2	22	0
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	54	22	22			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	54	22	22			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	99			
cM capacity (veh/h)	945	1055	1593			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	22	17	22
Volume Left	0	15	0
Volume Right	22	0	0
cSH	1055	1593	1700
Volume to Capacity	0.02	0.01	0.01
Queue Length 95th (m)	0.5	0.2	0.0
Control Delay (s)	8.5	6.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	6.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	15	87	16	0	104	2	20	6	0	5	20	15
Future Volume (vph)	15	87	16	0	104	2	20	6	0	5	20	15
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	97	18	0	116	2	22	7	0	6	22	17

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	132	118	29	45
Volume Left (vph)	17	0	22	6
Volume Right (vph)	18	2	0	17
Hadj (s)	0.08	0.02	0.15	-0.12
Departure Headway (s)	4.3	4.2	4.7	4.4
Degree Utilization, x	0.16	0.14	0.04	0.05
Capacity (veh/h)	821	829	724	765
Control Delay (s)	8.1	7.9	7.8	7.6
Approach Delay (s)	8.1	7.9	7.8	7.6
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	25.6%	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	661	0	0	857	4	0	0	0	19	0	24
Future Volume (Veh/h)	4	661	0	0	857	4	0	0	0	19	0	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	718	0	0	932	4	0	0	0	21	0	26
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	936			718			1218	1662	359	1301	1660	468
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	936			718			1218	1662	359	1301	1660	468
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	99			100			100	100	100	83	100	95
cM capacity (veh/h)	740			892			132	98	643	120	98	547

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	479	239	0	621	315	0	47
Volume Left	4	0	0	0	0	0	0	21
Volume Right	0	0	0	0	0	4	0	26
cSH	740	1700	1700	1700	1700	1700	1700	211
Volume to Capacity	0.01	0.28	0.14	0.00	0.37	0.19	0.00	0.22
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	6.6
Control Delay (s)	9.9	0.0	0.0	0.0	0.0	0.0	0.0	26.8
Lane LOS	A						A	D
Approach Delay (s)	0.1			0.0			0.0	26.8
Approach LOS							A	D

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	33.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	111	139	0	8	9
Future Volume (Veh/h)	5	111	139	0	8	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	121	151	0	9	10
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				282	151
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151				282	151
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)	1430				706	895

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	126	151	19
Volume Left	5	0	9
Volume Right	0	0	10
cSH	1430	1700	794
Volume to Capacity	0.00	0.09	0.02
Queue Length 95th (m)	0.1	0.0	0.6
Control Delay (s)	0.3	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	0.3	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		19.9%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	106	153	2	7	104
Future Volume (Veh/h)	28	106	153	2	7	104
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)	30	113	163	2	7	111
Pedestrians					2	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	167				339	166
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167				339	166
tC, single (s)	4.2				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	98				99	87
cM capacity (veh/h)	1361				645	867

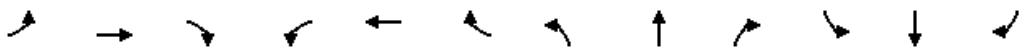
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	143	165	118
Volume Left	30	0	7
Volume Right	0	2	111
cSH	1361	1700	849
Volume to Capacity	0.02	0.10	0.14
Queue Length 95th (m)	0.5	0.0	3.9
Control Delay (s)	1.8	0.0	9.9
Lane LOS	A		A
Approach Delay (s)	1.8	0.0	9.9
Approach LOS			A

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	13	46	7	18	0
Future Volume (Veh/h)	0	13	46	7	18	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	14	50	8	20	0
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	128	20	20			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	128	20	20			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	97			
cM capacity (veh/h)	839	1058	1596			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	14	58	20
Volume Left	0	50	0
Volume Right	14	0	0
cSH	1058	1596	1700
Volume to Capacity	0.01	0.03	0.01
Queue Length 95th (m)	0.3	0.8	0.0
Control Delay (s)	8.4	6.3	0.0
Lane LOS	A	A	
Approach Delay (s)	8.4	6.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	42	169	31	0	111	7	10	23	0	3	13	15
Future Volume (vph)	42	169	31	0	111	7	10	23	0	3	13	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	46	184	34	0	121	8	11	25	0	3	14	16

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	264	129	36	33
Volume Left (vph)	46	0	11	3
Volume Right (vph)	34	8	0	16
Hadj (s)	-0.04	0.01	0.06	-0.27
Departure Headway (s)	4.2	4.3	4.9	4.5
Degree Utilization, x	0.31	0.16	0.05	0.04
Capacity (veh/h)	846	795	679	719
Control Delay (s)	9.0	8.1	8.1	7.7
Approach Delay (s)	9.0	8.1	8.1	7.7
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.6			
Level of Service	A			
Intersection Capacity Utilization	30.4%	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)	25	1178	0	0	865	13	0	0	0	16	0	18
Future Volume (Veh/h)	25	1178	0	0	865	13	0	0	0	16	0	18
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)	27	1253	0	0	920	14	0	0	0	17	0	19
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	934			1253			1786	2241	626	1608	2234	467
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	934			1253			1786	2241	626	1608	2234	467
tC, single (s)	5.8			4.1			7.5	6.5	6.9	7.5	6.5	8.6
tC, 2 stage (s)												
tF (s)	3.1			2.2			3.5	4.0	3.3	3.5	4.0	4.1
p0 queue free %	93			100			100	100	100	75	100	95
cM capacity (veh/h)	374			562			47	40	432	67	40	368

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	27	835	418	0	613	321	0	36
Volume Left	27	0	0	0	0	0	0	17
Volume Right	0	0	0	0	0	14	0	19
cSH	374	1700	1700	1700	1700	1700	1700	119
Volume to Capacity	0.07	0.49	0.25	0.00	0.36	0.19	0.00	0.30
Queue Length 95th (m)	1.9	0.0	0.0	0.0	0.0	0.0	0.0	9.4
Control Delay (s)	15.4	0.0	0.0	0.0	0.0	0.0	0.0	48.1
Lane LOS	C						A	E
Approach Delay (s)	0.3			0.0			0.0	48.1
Approach LOS							A	E

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	42.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	240	138	0	5	6
Future Volume (Veh/h)	16	240	138	0	5	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	261	150	0	5	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	150				445	150
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	150				445	150
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)	1431				564	896

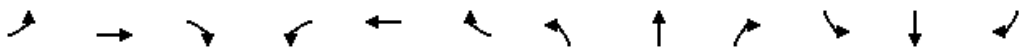
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	278	150	12
Volume Left	17	0	5
Volume Right	0	0	7
cSH	1431	1700	720
Volume to Capacity	0.01	0.09	0.02
Queue Length 95th (m)	0.3	0.0	0.4
Control Delay (s)	0.6	0.0	10.1
Lane LOS	A		B
Approach Delay (s)	0.6	0.0	10.1
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	82	252	135	9	9	54
Future Volume (Veh/h)	82	252	135	9	9	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	89	274	147	10	10	59
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	158				605	153
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	158				605	153
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	94				98	93
cM capacity (veh/h)	1433				435	882

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	363	157	69
Volume Left	89	0	10
Volume Right	0	10	59
cSH	1433	1700	768
Volume to Capacity	0.06	0.09	0.09
Queue Length 95th (m)	1.6	0.0	2.4
Control Delay (s)	2.3	0.0	10.2
Lane LOS	A		B
Approach Delay (s)	2.3	0.0	10.2
Approach LOS			B

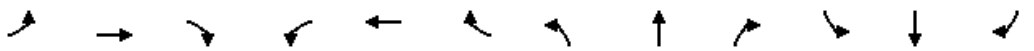
Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	24	219	105	27	117	33	91	292	50	58	238	25
Future Volume (vph)	24	219	105	27	117	33	91	292	50	58	238	25
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	25	228	109	28	122	34	95	304	52	60	248	26

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	362	184	451	334
Volume Left (vph)	25	28	95	60
Volume Right (vph)	109	34	52	26
Hadj (s)	-0.14	-0.02	0.02	0.08
Departure Headway (s)	7.2	8.0	7.0	7.4
Degree Utilization, x	0.73	0.41	0.88	0.69
Capacity (veh/h)	466	393	497	451
Control Delay (s)	27.3	16.5	42.4	25.1
Approach Delay (s)	27.3	16.5	42.4	25.1
Approach LOS	D	C	E	D

Intersection Summary				
Delay	30.4			
Level of Service	D			
Intersection Capacity Utilization	61.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	29	91	154	58	176	30	91	163	19	24	49	48
Future Volume (vph)	29	91	154	58	176	30	91	163	19	24	49	48
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	31	96	162	61	185	32	96	172	20	25	52	51

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	289	278	288	128
Volume Left (vph)	31	61	96	25
Volume Right (vph)	162	32	20	51
Hadj (s)	-0.19	0.01	0.14	0.13
Departure Headway (s)	5.5	5.7	5.9	6.3
Degree Utilization, x	0.44	0.44	0.47	0.22
Capacity (veh/h)	601	582	559	489
Control Delay (s)	12.8	13.1	14.1	11.0
Approach Delay (s)	12.8	13.1	14.1	11.0
Approach LOS	B	B	B	B

Intersection Summary			
Delay	13.0		
Level of Service	B		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		