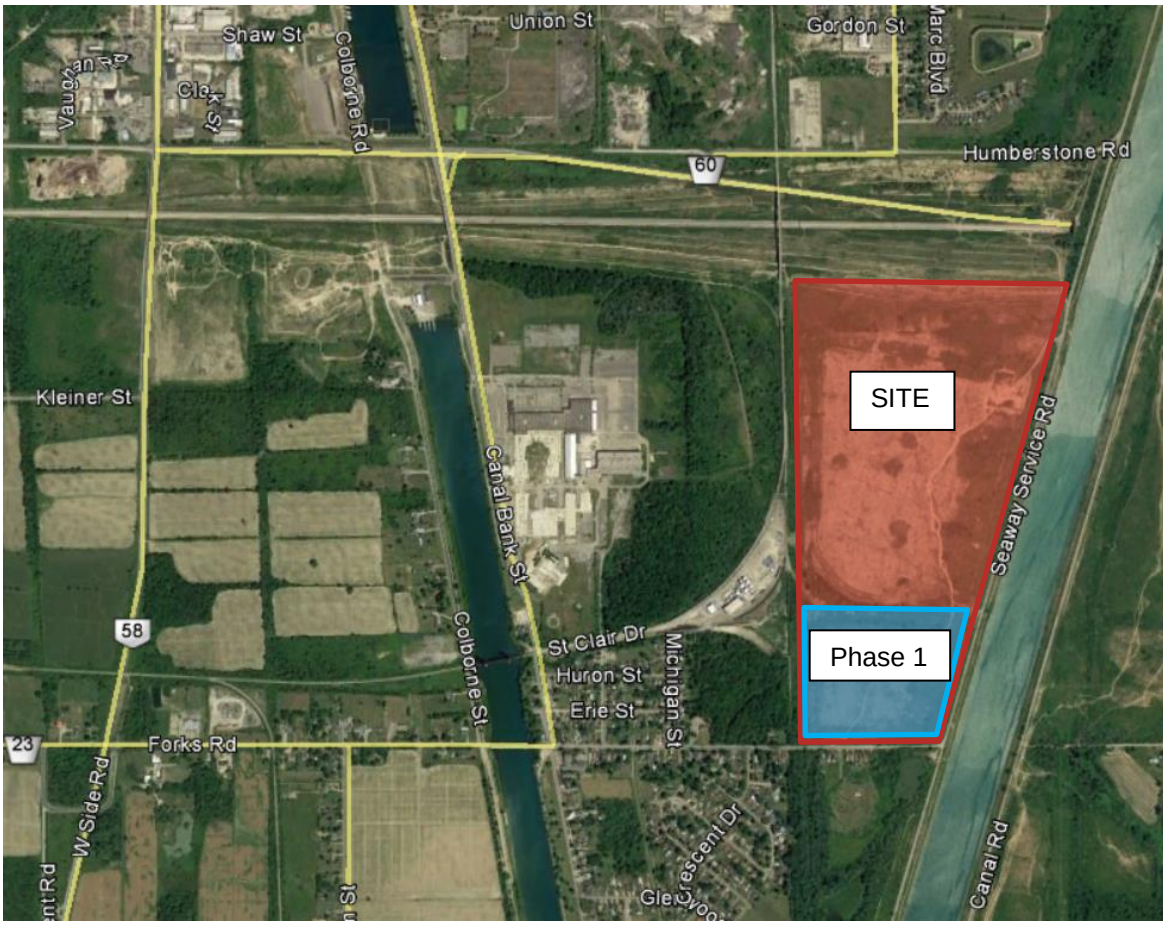
201-02725-00

555 CANAL BANK DEVELOPMENTS GP INC.

401 CANAL BANK STREET DRAFT PLAN OF SUBDIVISION – PHASE 1

UPDATED TRAFFIC ANALYSIS (PHASE 1)

MARCH 2020



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MEMO

TO: Jeffrey Swartz, P.Eng. – 555 Canal Bank Developments GP Inc.

FROM: Nawfal Kammah, B.Eng., E.I.T. & David Lukezic, M.Eng. LEL, RPP – WSP

SUBJECT: **401 Canal Bank Street Draft Plan of Subdivision Phase 1 – Updated Traffic Analysis (Phase 1)**

DATE: **March 10, 2020**

EXECUTIVE SUMMARY

WSP assessed the traffic impacts associated by the Phase 1 development of the proposed 401 Canal Bank Street Draft Plan of Subdivision, which consists of 263 dwelling units. The proposed Phase 1 development is projected to generate a total of 184 trips during the AM peak hour (46 inbound and 138 outbound) and a total of 242 trips during the PM peak hour (153 inbound and 59 outbound). Review of the forecasted 2027 future total conditions confirms that the addition of the Phase 1 development is projected to have minor impacts to the boundary road network. The addition of site traffic is projected to increase delay by a maximum of 4 seconds at turning movements within the study area, which is not significant.

In order to accommodate site traffic, the only recommendation identified as part of this analysis is the signal timing optimization for the intersection of Highway 58 at Townline Tunnel Road during the PM peak hour. Additionally, unrelated to the proposed development, WSP recommends that the intersection of Kingsway at Forks Road operate under two-way stop-control, with Kingsway operating under free flow conditions until the Forks Road Bridge is re-opened, as to improve delay at the intersection.

Overall, WSP is of the opinion that the existing roadway network can accommodate the proposed Phase 1 development. As stated in this memorandum, a more comprehensive analysis and fulsome TIS with new traffic counts will be completed for the overall proposed subdivision once the remaining density is confirmed and the plans for the west parcel (former John Deere Factory) are further developed. The overall subdivision TIS will be completed based on updated traffic data and correspondence with the City and MTO to confirm all study parameters

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INTRODUCTION

WSP has been retained to complete an updated traffic analysis in support of the 401 Canal Bank Street Draft Plan of Subdivision Phase 1 Development, proposed within the City of Welland. The proposed subdivision is bounded by Forks Road to the south, the Welland Canal to the east and rail lines to the west and north, with access proposed via Forks Road. Phase 1 of the development includes the southern portion of the subject lands. Please refer to **Attachment A** for the overall Conceptual Plan of Subdivision and the approximate boundary of Phase 1.

It is WSP's understanding that a Traffic Impact Study for the proposed Subdivision was prepared by Paradigm Transportation Solutions Limited (referred to as Paradigm hereafter) in June of 2019. The study was based on 787 proposed dwelling units but did not account for the Forks Road Bridge closure (on November 2, 2018), which has impacted the flow of traffic within the study area. Accordingly, an updated study for the proposed development is required to confirm if the existing transportation network can accommodate the Phase 1 development, and if any improvements are required.

The latest draft plan of subdivision for the proposed development identifies a density of approximately 1,405 dwelling units. As part of this memorandum, WSP only assessed the traffic impacts associated by the proposed Phase 1 development, which consists of 263 dwelling units. The analysis findings have been detailed below.

It should be noted that the analysis completed a part of this memorandum is based on the data from the Paradigm June 2019 study (with applicable traffic redistribution, as detailed below). A more comprehensive analysis and a fulsome TIS with new traffic counts will be completed for the overall proposed subdivision once the remaining density is confirmed and the plans for the west parcel (former John Deere Factory) are further developed. The overall subdivision TIS will be completed based on updated traffic data and correspondence with the City and MTO to confirm all study parameters.

STUDY INTERSECTIONS

As part of this memorandum, WSP assessed traffic operations at the same study intersections as within the Paradigm June 2019 TIS study, except for the intersections of Reaker Road at Highway 58A and at Netherby Road as the redistribution of traffic created by the Forks Road Bridge closure does not impact traffic at these two intersections. The intersections assessed have been listed below:

1. Nugent Road at Forks Road
2. Highway 58 at Forks Road Access
3. Forks Road at Highway 58 Access
4. Kingsway (Canal Bank Street) at Forks Road
5. Highway 58 at Townline Tunnel Road
6. Townline Tunnel Road at Canal Bank Street

Please refer to **Figure 1** for the illustrated lane configurations at the study intersections.

TRAFFIC DATA

In order to derive the 2020 existing traffic volumes along the study intersections, WSP used turning movement counts (TMC) from the Paradigm June 2019 study. Surveys dated November and December of 2017 were completed at the study intersections on a weekday during the AM period (6-9), Midday period (11-1) and PM period (4-7). Only the AM and PM peak hours of traffic were assessed as part of this review. The surveyed traffic data was grown to the 2020 horizon year using a 2% annual growth rate, as recommended to Paradigm by City staff.

In addition to the baseline traffic growth, a redistribution of traffic was applied in order to account for the Forks Road Bridge closure. Please refer to **Figure 2** and **Figure 3** for the derived 2020 existing traffic volumes during the AM and PM peak hours, respectively. The surveyed TMC data has been included in **Attachment B**.

EXISTING CONDITIONS

WSP completed a review of existing traffic conditions. The peak hour factor, pedestrian volumes and heavy vehicle percentages surveyed for each intersection from the TMC data was used as part of this analysis. The review has been completed using the Synchro 10.0 software with HCM 2000 methodology.

Table 1 provides a summary of the intersection traffic operations under existing conditions. It should be noted that only critical movements (movements with a volume-to-capacity ratio of 0.85 or higher, or LOS E or F), as well as movements operating under stop control were documented. The LOS definitions have been included in **Attachment C**, and the Synchro results have been included in **Attachment D**. The existing signal timing plans for the study intersections were coded as within the Synchro reports from the Paradigm June 2019 study (the actual signal timing plans were not provided in the report).

Table 1 2020 Existing Traffic Conditions

Intersection Movement	Control Type	AM Peak Hour			PM Peak Hour		
		V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Nugent Road at Forks Road	**Stop-Controlled**						
Northbound Left+Right		0.19	10	B	0.33	12	B
Highway 58 at Forks Road Access	**Stop-Controlled**						
Eastbound Right		0.09	11	B	0.14	13	B
Westbound Right		0.40	16	C	0.42	15	B
Highway 58 Access at Forks Road	**Stop-Controlled**						
Northbound Left+Right		0.13	12	B	0.13	14	B
Kingsway at Forks Road	**Stop-Controlled**	**0.19**	**7**	**A**	**0.27**	**8**	**A**
Eastbound Left+Through+Right		0.00	0	A	0.00	0	A
Westbound Left+Through+Right		0.08	7	A	0.06	7	A
Northbound Left+Through+Right		0.12	8	A	0.07	8	A
Southbound Left+Through+Right		0.05	8	A	0.23	8	A
Highway 58 at Townline Tunnel Road	**Signalized**	**0.60**	**18**	**B**	**0.74**	**23**	**C**
Townline Tunnel Road at Canal Bank Street	**Signalized**	**0.39**	**14**	**B**	**0.45**	**15**	**B**

Based on the above table, the intersections currently operate with good LOS C or better during the study periods. No turning movements currently operate under critical conditions, showing available capacity for future traffic growth.

FUTURE BACKGROUND CONDITIONS

The Applicant informed WSP that Phase 1 of the proposed development is projected to become operational by the year 2022. Accordingly, a 5-year horizon past opening year was selected to assess future conditions.

The 2027 future background traffic conditions were derived by applying a general growth rate to the existing volumes. Per the Paradigm June 2019 report, AADT data along Highway 58 shows an average annual growth rate of 1.7% along the corridor. Accordingly, for the purpose of conservative analysis, WSP applied an annual 2% growth rate to the existing traffic volumes in order to derive the 2027 baseline volumes (as approved by the City in the Paradigm June 2019 report).

In addition to general growth, WSP included the planned adjacent development traffic volumes. Traffic generated by the 291 dwelling units planned for the lands south of Forks Road was included, as within the Paradigm June 2019 study. The traffic volumes were derived based on the TIS completed for the proposed development, with a redistribution of traffic to account for the Forks Road Bridge closure.

Please refer to **Figure 4** and **Figure 5** for the 2027 future background traffic volumes during the AM and PM peak hours, respectively. **Table 2** provides a summary of the project traffic operations at the study intersections. The Synchro results have been included in **Attachment D**. No changes were made to the existing traffic signal timings.

Table 2 2027 Future Background Traffic Conditions

Intersection Movement	Control Type	AM Peak Hour			PM Peak Hour		
		V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Nugent Road at Forks Road	**Stop-Controlled**						
Northbound Left+Right		0.26	11	B	0.41	13	B
Highway 58 at Forks Road Access	**Stop-Controlled**						
Eastbound Right		0.11	11	B	0.17	14	B
Westbound Right		0.53	20	C	0.59	20	C
Highway 58 Access at Forks Road	**Stop-Controlled**						
Northbound Left+Right		0.18	14	B	0.20	19	C
Kingsway at Forks Road	**Stop-Controlled**	**0.34**	**9**	**A**	**0.42**	**11**	**B**
Eastbound Left+Through+Right		0.00	0	A	0.00	0	A
Westbound Left+Through+Right		0.16	8	A	0.11	8	A
Northbound Left+Through+Right		0.32	9	A	0.19	9	A
Southbound Left+Through+Right		0.14	8	A	0.51	12	B
Highway 58 at Townline Tunnel Road	**Signalized**	**0.71**	**21**	**C**	**0.85**	**30**	**C**
Westbound Left		-	-	-	0.93	52	D
Townline Tunnel Road at Canal Bank Street	**Signalized**	**0.51**	**16**	**B**	**0.61**	**17**	**B**

Based on the above table, the intersections are projected to operate with good LOS C or better during the study periods. All turning movements are projected to operate under the critical threshold, with the exception of the westbound left-turn at the intersection of Highway 58 at Townline Tunnel Road during the PM peak hour, projected at LOS D and a v/c of 0.93.

All turning movements are projected to operate below capacity, with a maximum turning movement delay of 52 seconds for the aforementioned critical movement. Accordingly, the 2027 future background conditions are projected to be acceptable.

FUTURE TOTAL CONDITIONS

The 2027 future total conditions were derived by applying the forecasted site generated trips to the future background conditions.

The site generated trips were forecasted using the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition). The Land Use Code (LUC) 210 – Single Family Detached Housing was used for the 219 single detached dwelling units proposed, while LUC 230 – Multifamily Housing (Low Rise) was used for the 44 townhouse dwelling units proposed. The site generated trips were then assigned to the study roadways based on the existing traffic distribution.

Please refer to **Table 3** for the projected site trip generation and **Table 4** for the projected site trip distribution.

Table 3 Site Generated Trips

Site Component	Source	Number of Dwelling units	Item	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Single Detached Housing	ITE LUC 210	219	Directional Distribution	25%	75%	100%	63%	37%	100%
			Trip Rate	T=0.74X			T=0.99X		
			Trips	41	122	163	137	80	217
Townhouses	ITE LUC 220	44	Directional Distribution	23%	77%	100%	63%	37%	100%
			Trip Rate	T=0.46X			T=0.56X		
			Trips	5	16	21	16	9	25
Total Site Generated Trips				**46**	**138**	**184**	**153**	**89**	**242**

Table 4 Site Trip Distribution

To/From	Distribution
North	40%
South	25%
East	25%
West	10%

The projected site generated trips were distributed to the boundary road network for the AM and PM peak hour, as illustrated in **Figure 6** and **Figure 7**, respectively. WSP then derived the 2027 future total traffic volumes for the AM and PM peak hour, as illustrated in **Figure 8** and **Figure 9**, respectively.

For the purpose of conservative analysis, WSP assessed the traffic operations assuming only one access to the proposed development via Forks Road as part of this preliminary review.

Table 5 provides a summary of the projected traffic operations under the 2027 future total conditions. The Synchro results have been included in **Attachment D**. No changes to the existing signal timing plans were made.

Table 5 2027 Future Total Traffic Conditions

Intersection Movement	Control Type	AM Peak Hour			PM Peak Hour		
		V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Nugent Road at Forks Road	**Stop-Controlled**						
Northbound Left+Right		0.28	11	B	0.43	13	B
Highway 58 at Forks Road Access	**Stop-Controlled**						
Eastbound Right		0.11	12	B	0.18	14	B
Westbound Right		0.55	21	C	0.65	23	C
Highway 58 Access at Forks Road	**Stop-Controlled**						
Northbound Left+Right		0.18	14	B	0.20	19	C
Kingsway at Forks Road	**Stop-Controlled**	**0.45**	**10**	**A**	**0.56**	**18**	**C**
Eastbound Left+Through+Right		0.00	0	A	0.00	0	A
Westbound Left+Through+Right		0.36	10	A	0.27	10	A
Northbound Left+Through+Right		0.35	10	B	0.22	10	A
Southbound Left+Through+Right		0.22	10	A	0.78	22	C
Highway 58 at Townline Tunnel Road	**Signalized**	**0.75**	**23**	**C**	**0.89**	**35**	**C**
Westbound Left		-	-	-	1.02	77	E
Townline Tunnel Road at Canal Bank Street	**Signalized**	**0.60**	**18**	**B**	**0.75**	**20**	**B**
Northbound Left		-	-	-	0.88	46	D
Forks Road at Site Access	**Stop-Controlled**						
Southbound Right		0.14	9	A	0.09	9	A

Based on the above table, the intersections are projected to operate with acceptable LOS C or better during the study periods. All turning movements are projected to operate under capacity, with the exception of the westbound left-turn movement at the intersection of Highway 58 at Townline Tunnel Road during the PM peak hour projected at LOS E and a v/c of 1.02.

The above projected future total traffic conditions are based on existing signal timing plans. In order to improve the projected delay and forecast all turning movements below capacity, WSP recommends optimizing the signal timing splits for the intersection of Highway 58 at Townline Tunnel Road during the PM peak hour.

Additionally, unrelated to the proposed development, WSP recommends modifying the all-way stop-control at the intersection of Forks Road at Kingsway to a two-way stop-control until the Forks Road Bridge is reopened. With the bridge closure, the only conflicting movement to traffic along Kingsway is along Forks Road at the westbound approach. As the intersection primarily operates as a T-intersection, a two-way stop-control with Kingsway under free-flow would be more adequate to improve traffic operations as northbound and southbound vehicles would operate with reduced delay.

The projected traffic operations with the applied recommendation have been summarized in **Table 6**.

Table 6 2027 Future Total Traffic Conditions with Applied Recommendations

Intersection Movement	Control Type	AM Peak Hour			PM Peak Hour		
		V/C	Delay (sec.)	LOS	V/C	Delay (sec.)	LOS
Kingsway at Forks Road	**Stop-Controlled**						
Eastbound Left+Through+Right		0.00	0	A	0.00	0	A
Westbound Left+Through+Right		0.38	12	B	0.21	10	B
Northbound Left+Through+Right		0.00	0	A	0.00	0	A
Southbound Left+Through+Right		0.07	5	A	0.21	5	A
Highway 58 at Townline Tunnel Road	**Signalized**				**0.87**	**31**	**C**
Westbound Left					0.92	48	D

With the applied recommendations, the westbound left-turn at the intersection of Highway 58 at Townline Tunnel Road is projected to operate below capacity at LOS D during the PM peak hour. Additionally, delay is projected to improve at the northbound and southbound approaches of the Kingsway at Forks Road intersection (operating under free flow) during the study periods. Delay at the southbound approach is projected to reduce from 22 seconds to 5 seconds during the PM peak hour.

The addition of the Phase 1 proposed development is projected to increase delay by a maximum of 4 seconds at turning movements within the study area, which is not significant. Under the 2027 future total conditions, the overall signalized intersections and all turning movements at the stop-control intersections are projected to operate with LOS C or better, confirming that the proposed Phase 1 development can be accommodated by the existing roadway network.

CONCLUSION

The proposed Phase 1 development is projected to generate a total of 184 trips during the AM peak hour (46 inbound and 138 outbound) and a total of 242 trips during the PM peak hour (153 inbound and 59 outbound). Review of the forecasted 2027 future total conditions confirms that the addition of the Phase 1 development is projected to have minor impacts to the boundary road network. The addition of site traffic is projected to increase delay by a maximum of 4 seconds at turning movements within the study area, which is not significant.

In order to accommodate site traffic, the only recommendation identified as part of this analysis is the signal timing optimization for the intersection of Highway 58 at Townline Tunnel Road during the PM peak hour. Additionally, unrelated to the proposed development, WSP recommends that the intersection of Kingsway at Forks Road operate under two-way stop-control, with Kingsway operating under free flow conditions until the Forks Road Bridge is re-opened, as to improve delay at the intersection.

Overall, WSP is of the opinion that the existing roadway network can accommodate the proposed Phase 1 development. As stated in this memorandum, a more comprehensive analysis and fulsome TIS with new traffic counts will be completed for the overall proposed subdivision once the remaining density is confirmed and the plans for the west parcel (former John Deere Factory) are further developed. The overall subdivision TIS will be completed based on updated traffic data and correspondence with the City and MTO to confirm all study parameters.

Should you have any questions about this memorandum, please do not hesitate to contact us.

Thank you.

REF: 201-02725-00

Enclosed:

Attachment A – Conceptual Plan of Subdivision

Attachment B – TMC Data

Attachment C – LOS Definition

Attachment D – Synchro Results

Figure 1 – Existing Lane Configuration

Figure 2 – 2020 Existing Traffic Volumes – AM Peak Hour

Figure 3 – 2020 Existing Traffic Volumes – PM Peak Hour

Figure 4 – 2027 Future Background Traffic Volumes – AM Peak Hour

Figure 5 – 2027 Future Background Traffic Volumes – PM Peak Hour

Figure 6 – Site Generated Traffic Volumes – AM Peak Hour

Figure 7 – Site Generated Traffic Volumes – PM Peak Hour

Figure 8 – 2027 Future Total Traffic Volumes – AM Peak Hour

Figure 9 – 2027 Future Total Traffic Volumes – PM Peak Hour

ATTACHMENT

FIGURES

ATTACHMENT

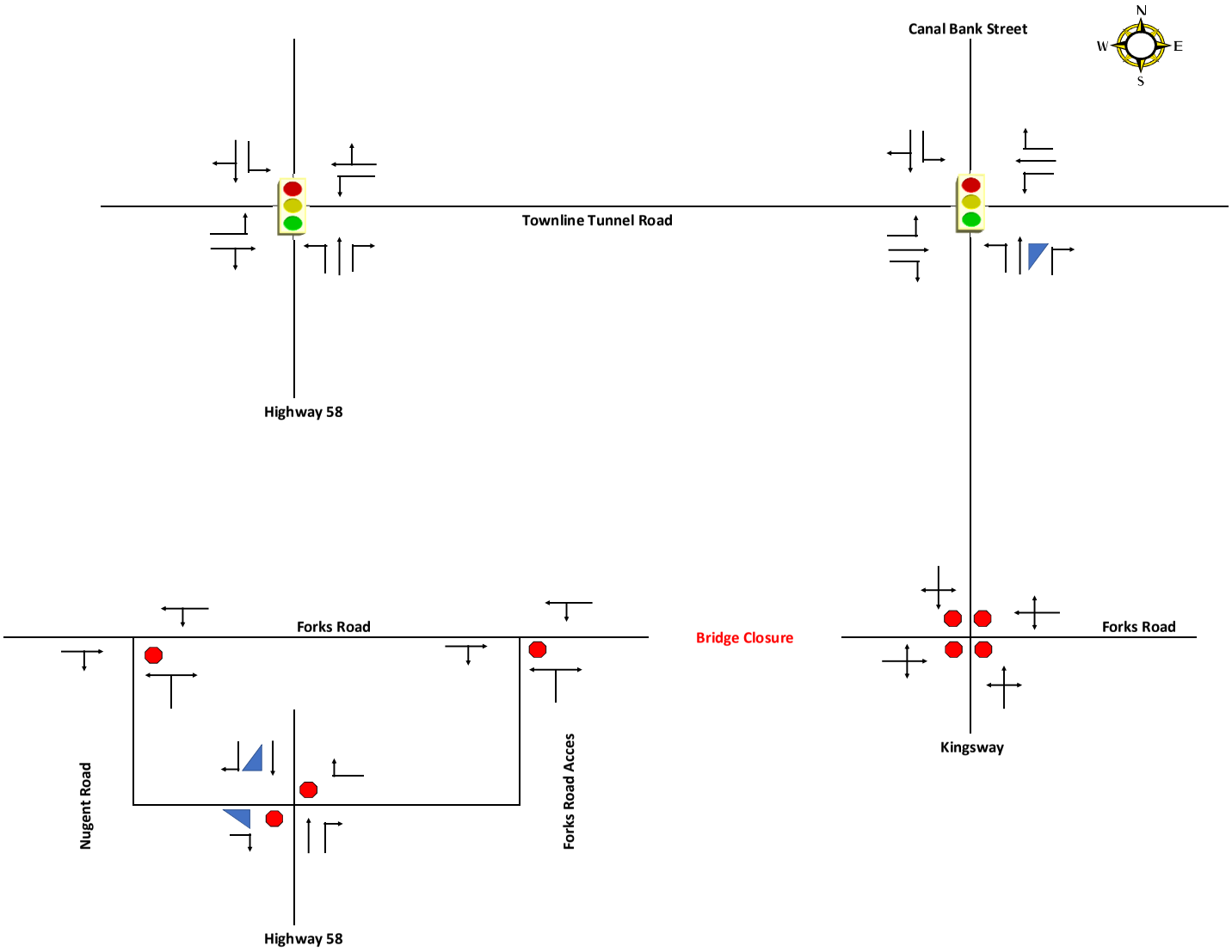

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Figure 1

Existing Lane Configuration

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Stop Control | Traffic Signal | Channelized Turn | Lane Configuration

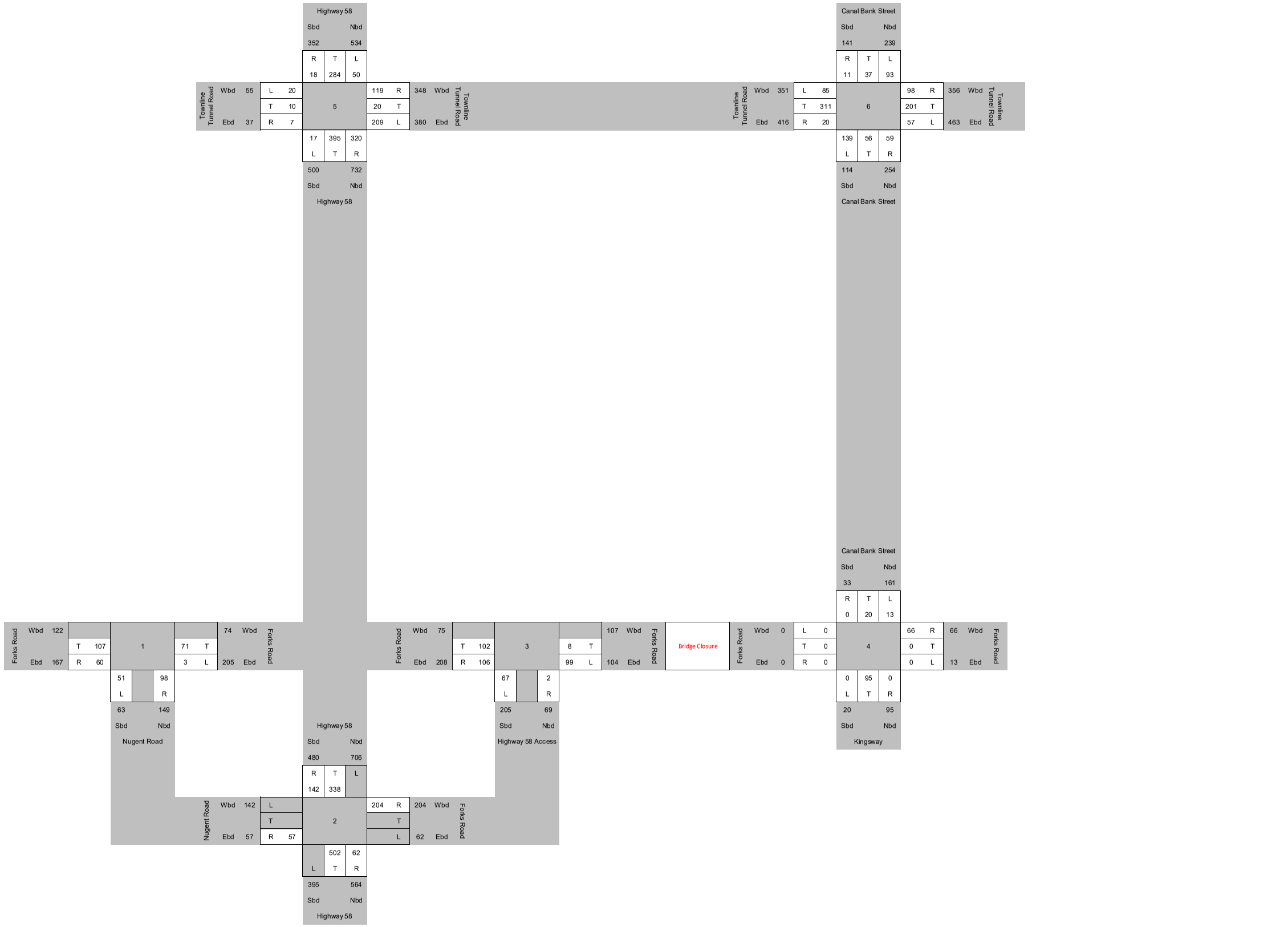

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Figure 2

Derived 2020 Existing Traffic Volumes - AM Peak Hour

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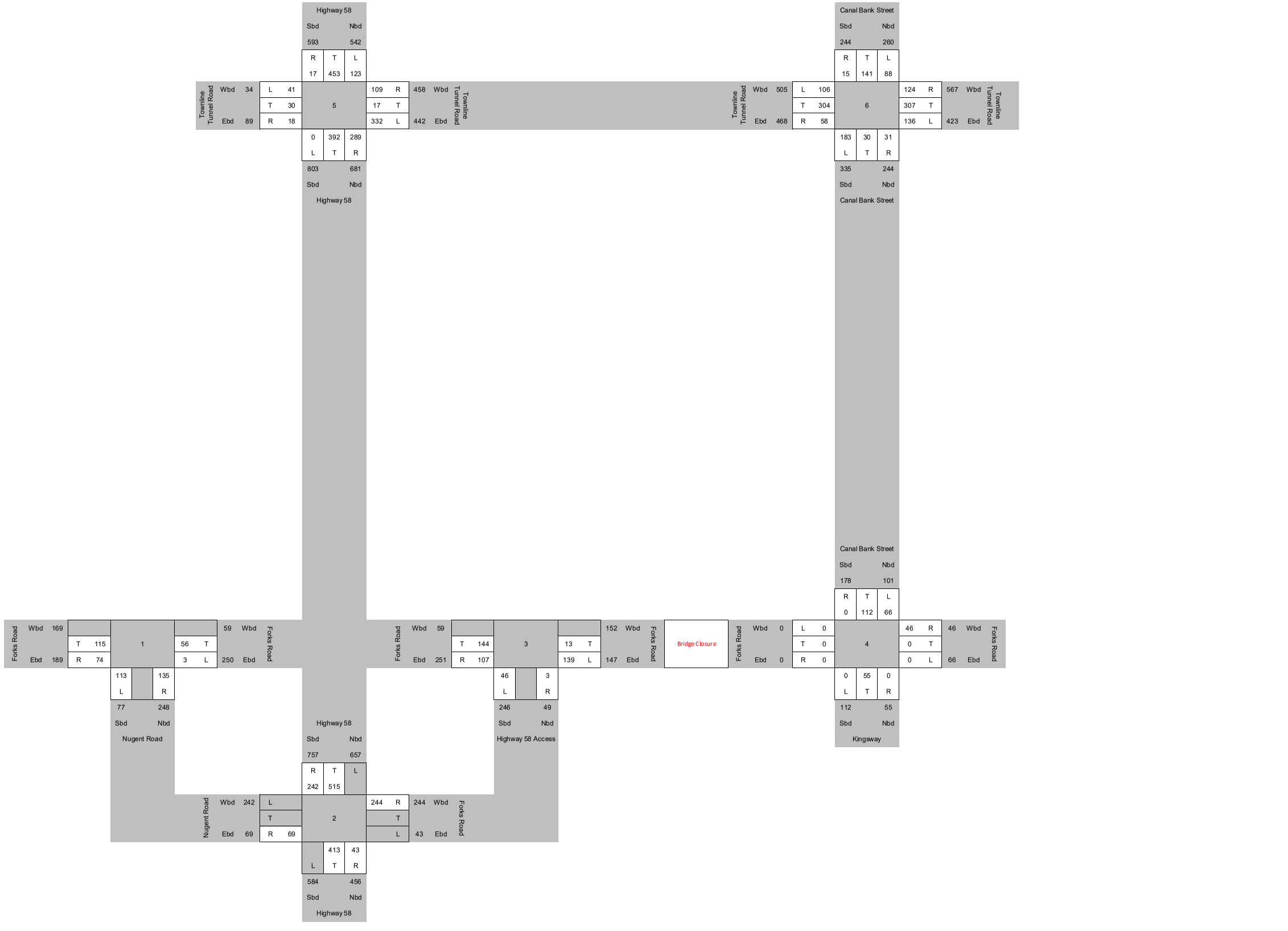

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Figure 3

Derived 2020 Existing Traffic Volumes - PM Peak Hour

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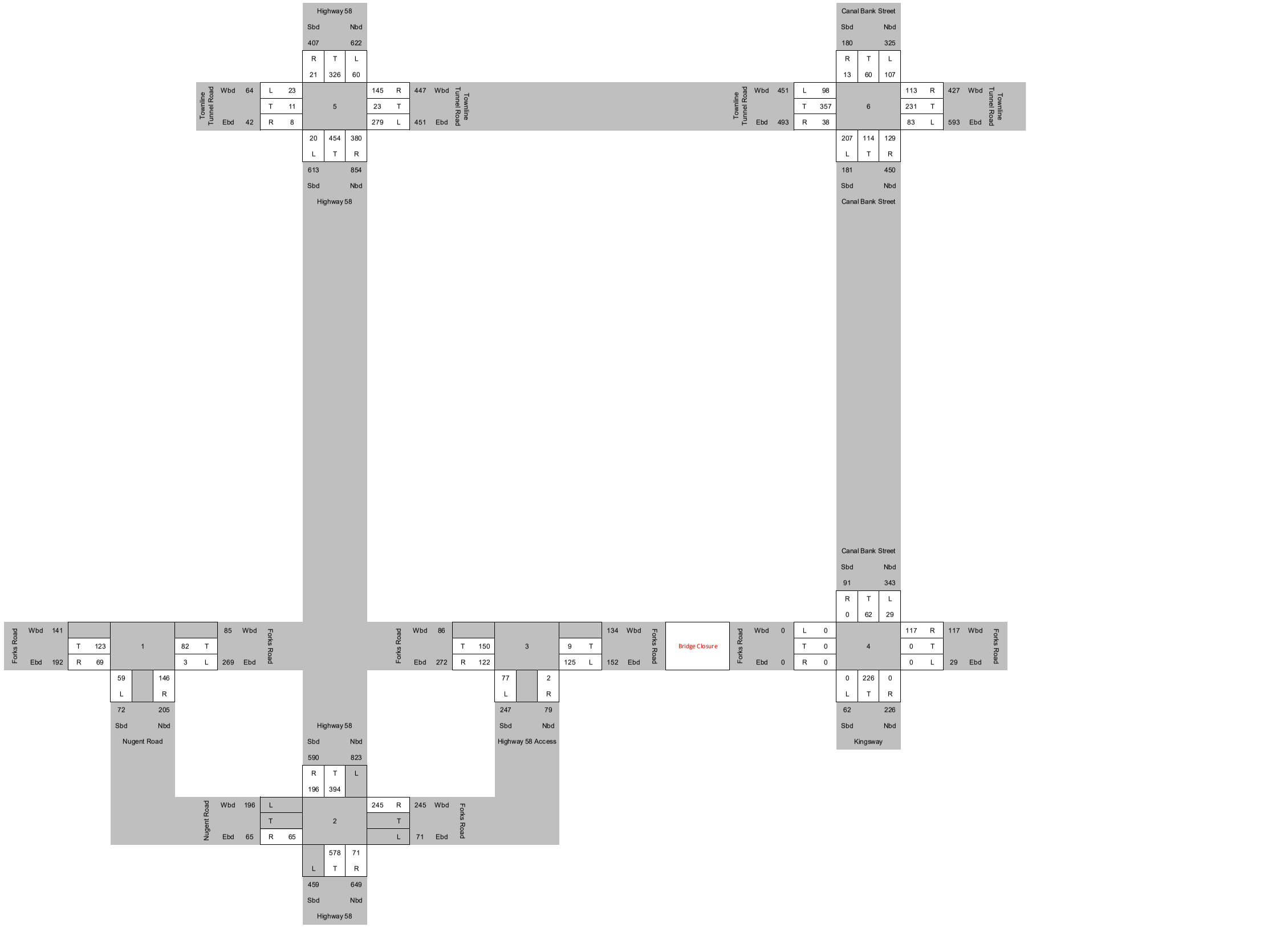

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Figure 4

2027 Future Background Traffic - AM Peak Hour

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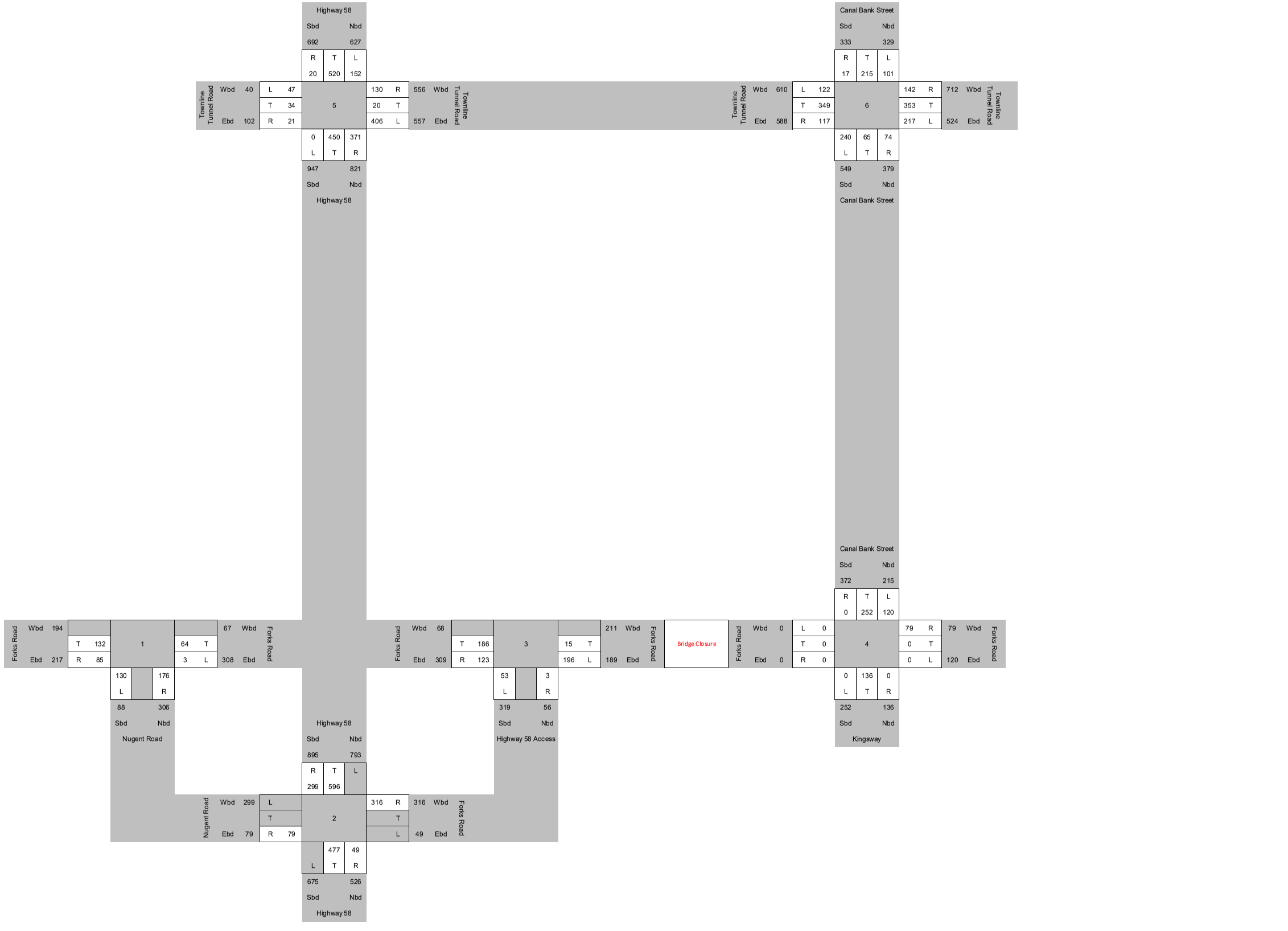

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Figure 5

2027 Future Background Traffic - PM Peak Hour

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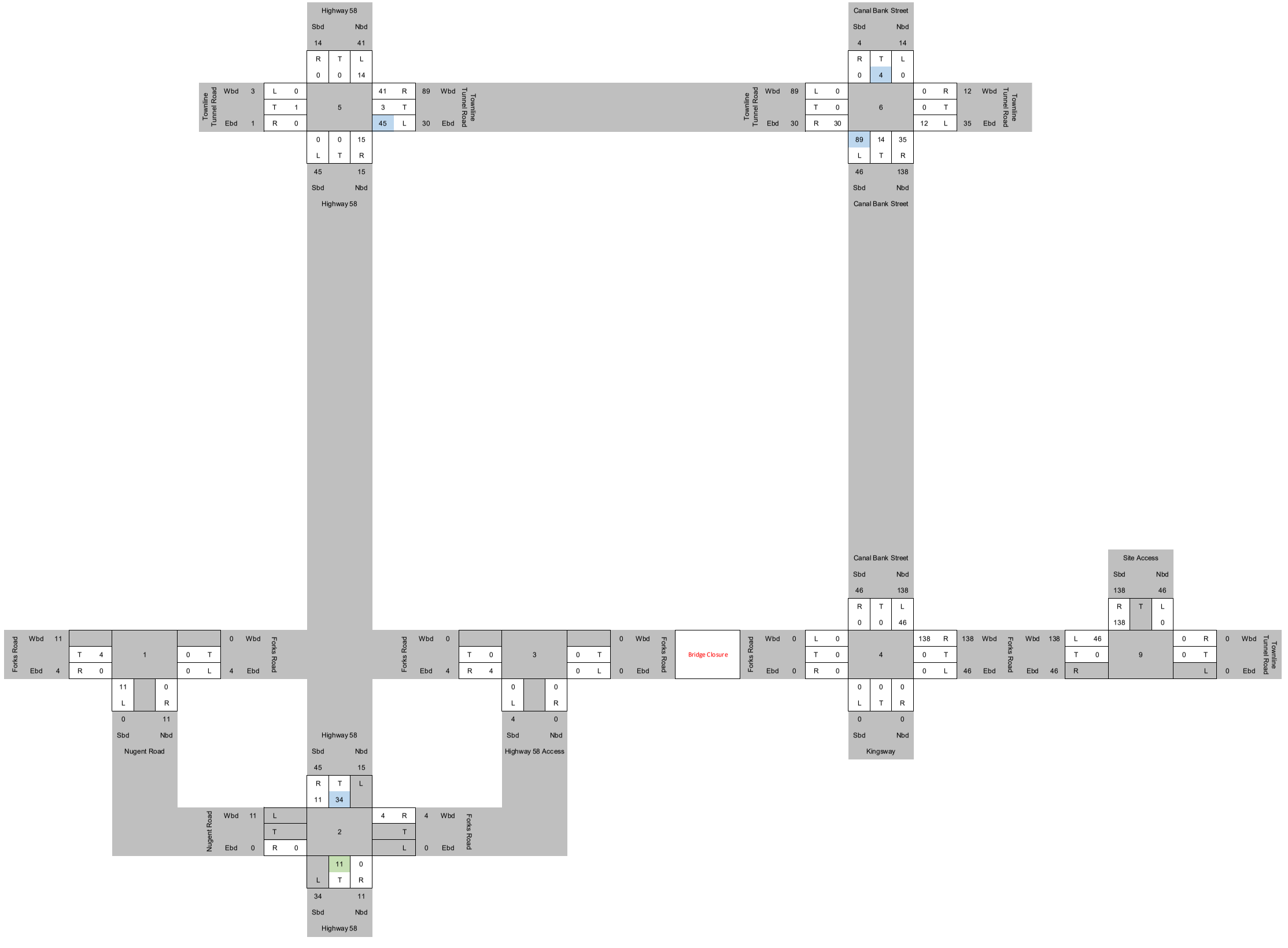

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Figure 6		IN	OUT		IN	OUT		IN	OUT		
Site Generated Trips - AM Peak Hour	Trip Gen	46	138	Boundaries	46	138	Access	46	138	Rounded Up	Rounded Down
Dain City Development, Welland - Transportation Study Memorandum											

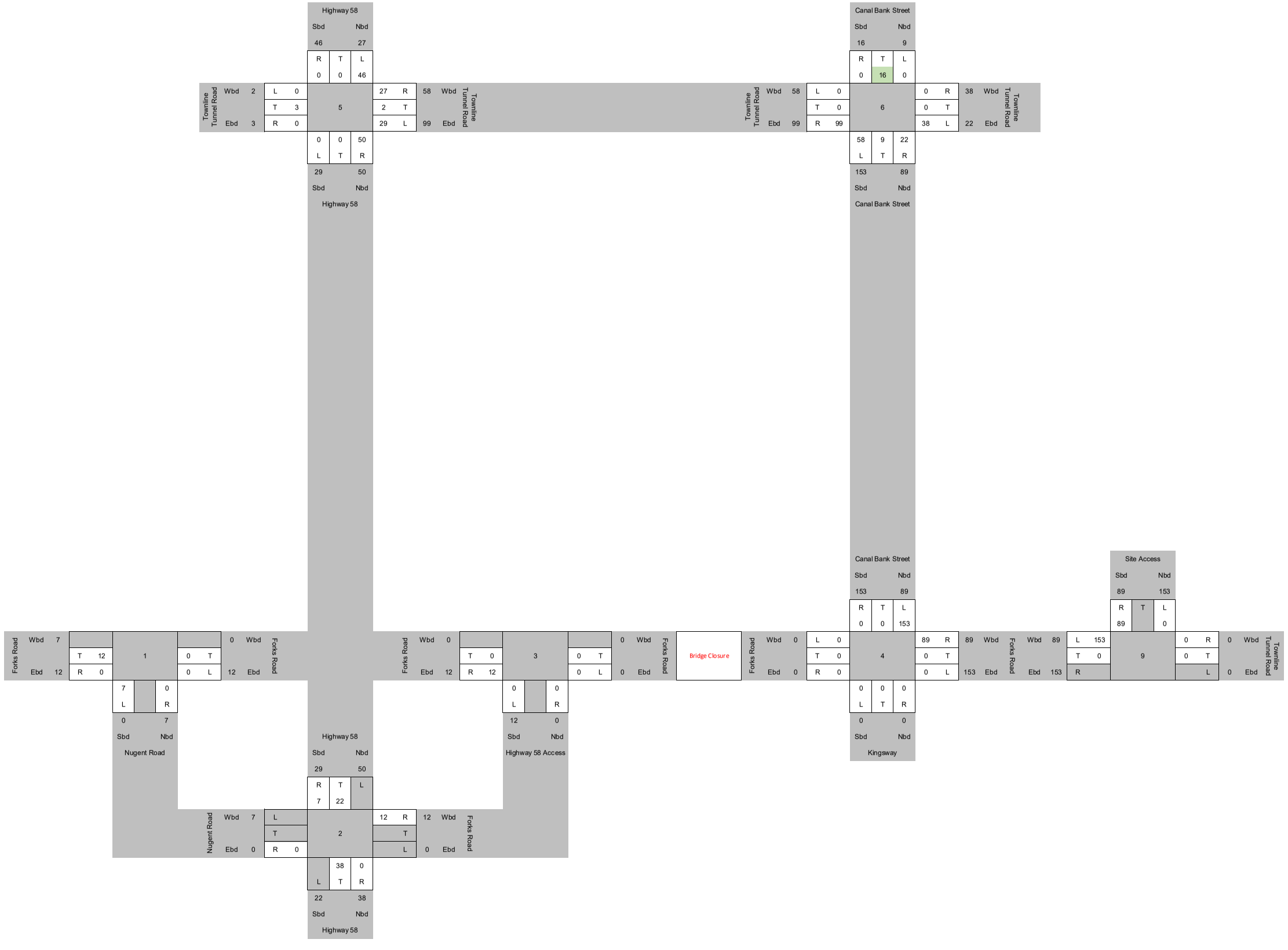

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Figure 7		IN	OUT		IN	OUT		IN	OUT		
Site Generated Trips - PM Peak Hour	Trip Gen	153	89	Boundaries	153	89	Access	153	89	Rounded Up	Rounded Down
Dain City Development, Welland - Transportation Study Memorandum											

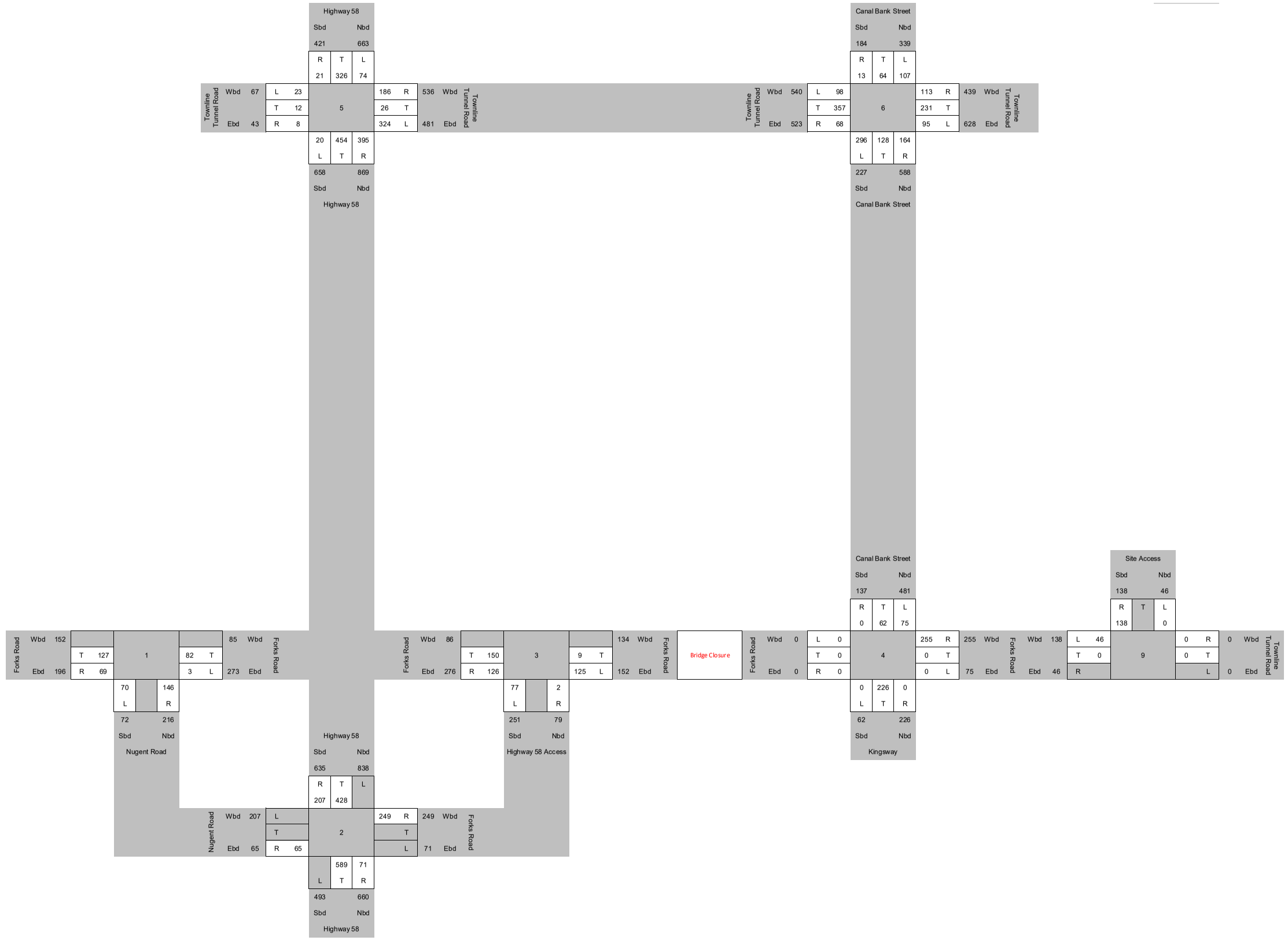

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Figure 8

2027 Future Total Traffic - AM Peak Hour

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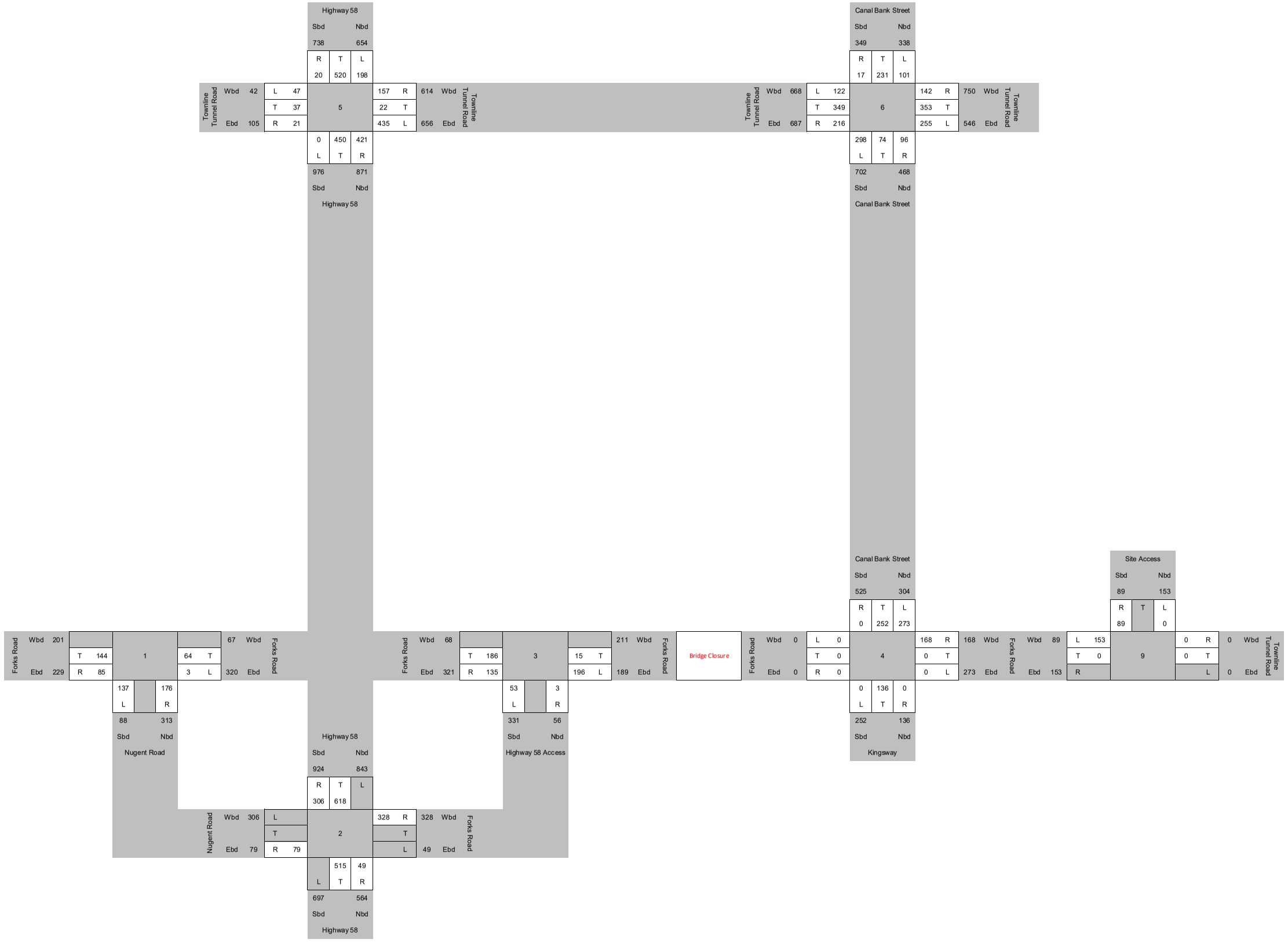


Scale: NTS

Figure 9

2027 Future Total Traffic - PM Peak Hour

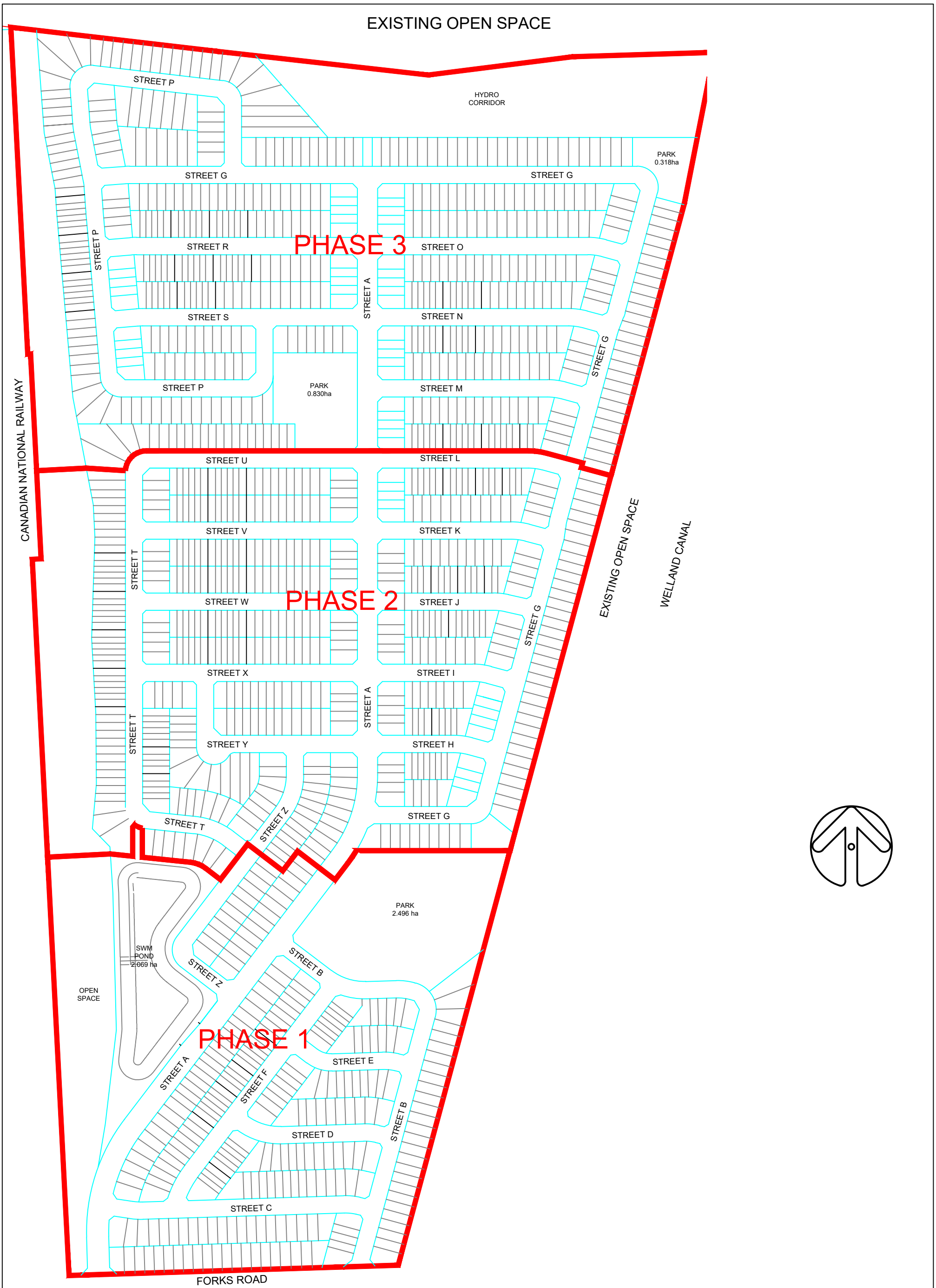
Dain City Development, Welland - Transportation Study Memorandum

ATTACHMENT

A CONCEPTUAL PLAN OF SUBDIVISON

ATTACHMENT

CONCEPT ONLY - REQUIRES ALL APPROVALS INCLUDING BUT NOT LIMITED TO PLANNING, ENGINEERING AND ZONING APPROVALS



PHASING CONCEPT - 401 CANAL BANK STREET, WELLAND

SCALE: NTS

MARCH 4,2020

ATTACHMENT

B TMC DATA

ATTACHMENT

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Rd & Kingsway
Site Code:
Start Date: 11/15/2017

Turning Movement Data

Start Time	Forks Road Eastbound						Forks Road Westbound						Kingsway Northbound						Kingsway Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	9	0	1	0	0	10	0	2	5	0	0	7	2	4	0	0	0	6	1	1	5	0	0	7	30
6:15 AM	21	0	0	0	0	21	0	2	3	0	0	5	4	7	0	0	2	11	2	4	13	0	0	19	56
6:30 AM	27	1	1	0	0	29	0	4	6	0	0	10	4	11	0	0	2	15	0	2	19	0	0	21	75
6:45 AM	17	1	0	0	0	18	0	1	4	0	0	5	2	8	0	0	0	10	0	3	25	0	0	28	61
Hourly Total	74	2	2	0	0	78	0	9	18	0	0	27	12	30	0	0	4	42	3	10	62	0	0	75	222
7:00 AM	20	0	0	0	0	20	0	6	5	0	0	11	6	18	0	0	0	24	2	4	16	0	0	22	77
7:15 AM	18	1	1	0	0	20	0	4	14	0	1	18	2	14	0	0	0	16	1	6	19	0	0	26	80
7:30 AM	29	2	4	0	0	35	0	3	16	0	0	19	7	23	0	0	0	30	3	7	17	0	2	27	111
7:45 AM	43	1	1	0	0	45	0	5	11	0	0	16	2	12	0	0	2	14	0	4	18	0	0	22	97
Hourly Total	110	4	6	0	0	120	0	18	46	0	1	64	17	67	0	0	2	84	6	21	70	0	2	97	365
8:00 AM	21	3	0	0	0	24	0	3	10	0	0	13	9	13	0	0	0	22	2	1	22	0	0	25	84
8:15 AM	33	0	2	0	0	35	0	3	11	0	0	14	6	18	0	0	0	24	2	0	15	0	0	17	90
8:30 AM	30	2	2	0	1	34	0	2	2	0	2	4	3	12	0	0	0	15	2	3	14	0	0	19	72
8:45 AM	28	0	1	0	0	29	0	4	7	0	3	11	2	13	0	0	2	15	4	1	20	0	0	25	80
Hourly Total	112	5	5	0	1	122	0	12	30	0	5	42	20	56	0	0	2	76	10	5	71	0	0	86	326
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	24	1	2	0	1	27	0	3	6	0	1	9	2	9	0	0	1	11	4	9	23	0	0	36	83
11:15 AM	22	2	3	0	0	27	0	4	6	0	0	10	1	11	1	0	0	13	6	11	23	0	0	40	90
11:30 AM	21	1	1	0	0	23	1	2	1	0	0	4	1	10	0	0	0	11	6	7	23	0	0	36	74
11:45 AM	35	2	1	0	0	38	0	2	7	0	0	9	3	10	0	0	0	13	6	8	22	0	0	36	96
Hourly Total	102	6	7	0	1	115	1	11	20	0	1	32	7	40	1	0	1	48	22	35	91	0	0	148	343
12:00 PM	36	2	1	0	0	39	0	1	5	0	0	6	3	10	0	0	0	13	8	16	21	0	0	45	103
12:15 PM	21	1	4	0	0	26	0	0	5	0	0	5	3	8	0	0	0	11	2	10	14	0	0	26	68
12:30 PM	19	1	3	0	1	23	0	1	9	0	1	10	2	18	2	0	0	22	7	7	15	0	0	29	84
12:45 PM	26	3	5	0	0	34	0	2	5	0	0	7	3	8	0	0	0	11	7	4	25	0	0	36	88
Hourly Total	102	7	13	0	1	122	0	4	24	0	1	28	11	44	2	0	0	57	24	37	75	0	0	136	343
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	45	5	6	0	0	56	0	4	6	0	0	10	5	10	0	0	0	15	13	22	39	0	0	74	155
4:15 PM	40	3	5	0	0	48	0	4	7	0	0	11	7	13	0	0	1	20	12	24	36	0	0	72	151
4:30 PM	35	2	5	0	0	42	0	1	8	0	0	9	0	10	0	0	0	10	7	17	33	0	0	57	118
4:45 PM	27	4	7	0	0	38	0	2	11	0	0	13	1	6	0	0	1	7	16	20	33	0	0	69	127
Hourly Total	147	14	23	0	0	184	0	11	32	0	0	43	13	39	0	0	2	52	48	83	141	0	0	272	551
5:00 PM	33	4	4	0	2	41	0	2	5	0	2	7	2	10	0	0	2	12	15	20	29	0	2	64	124
5:15 PM	19	3	9	0	0	31	0	3	7	0	0	10	3	16	0	0	0	19	19	21	26	0	0	66	126
5:30 PM	19	6	3	0	0	28	1	5	7	0	2	13	1	9	0	0	0	10	6	18	21	0	1	45	96
5:45 PM	23	4	4	0	0	31	1	4	6	0	0	11	2	9	0	0	0	11	10	11	23	0	0	44	97
Hourly Total	94	17	20	0	2	131	2	14	25	0	4	41	8	44	0	0	2	52	50	70	99	0	3	219	443

6:00 PM	22	1	5	0	0	28	1	3	8	0	2	12	2	11	2	0	0	15	14	11	23	0	0	48	103
6:15 PM	24	2	2	0	0	28	0	5	7	0	0	12	4	8	0	0	0	12	10	10	13	0	0	33	85
6:30 PM	18	5	2	0	0	25	0	1	3	0	0	4	4	13	1	0	0	18	6	14	18	0	0	38	85
6:45 PM	18	3	3	0	0	24	0	2	10	0	0	12	1	8	1	0	0	10	3	6	17	0	0	26	72
Hourly Total	82	11	12	0	0	105	1	11	28	0	2	40	11	40	4	0	0	55	33	41	71	0	0	145	345
Grand Total	823	66	88	0	5	977	4	90	223	0	14	317	99	360	7	0	13	466	196	302	680	0	5	1178	2938
Approach %	84.2	6.8	9.0	0.0	-	-	1.3	28.4	70.3	0.0	-	-	21.2	77.3	1.5	0.0	-	-	16.6	25.6	57.7	0.0	-	-	-
Total %	28.0	2.2	3.0	0.0	-	33.3	0.1	3.1	7.6	0.0	-	10.8	3.4	12.3	0.2	0.0	-	15.9	6.7	10.3	23.1	0.0	-	40.1	-
Motorcycles	1	0	0	0	-	1	0	0	1	0	-	1	2	2	0	0	-	4	1	1	0	0	-	2	8
% Motorcycles	0.1	0.0	0.0	-	-	0.1	0.0	0.0	0.4	-	-	0.3	2.0	0.6	0.0	-	-	0.9	0.5	0.3	0.0	-	-	0.2	0.3
Cars	613	55	64	0	-	732	3	69	173	0	-	245	69	271	7	0	-	347	153	229	515	0	-	897	2221
% Cars	74.5	83.3	72.7	-	-	74.9	75.0	76.7	77.6	-	-	77.3	69.7	75.3	100.0	-	-	74.5	78.1	75.8	75.7	-	-	76.1	75.6
Light Goods Vehicles	203	11	22	0	-	236	1	20	43	0	-	64	26	77	0	0	-	103	40	59	157	0	-	256	659
% Light Goods Vehicles	24.7	16.7	25.0	-	-	24.2	25.0	22.2	19.3	-	-	20.2	26.3	21.4	0.0	-	-	22.1	20.4	19.5	23.1	-	-	21.7	22.4
Buses	1	0	2	0	-	3	0	0	5	0	-	5	1	6	0	0	-	7	1	9	0	0	-	10	25
% Buses	0.1	0.0	2.3	-	-	0.3	0.0	0.0	2.2	-	-	1.6	1.0	1.7	0.0	-	-	1.5	0.5	3.0	0.0	-	-	0.8	0.9
Single-Unit Trucks	5	0	0	0	-	5	0	1	0	0	-	1	1	3	0	0	-	4	0	3	8	0	-	11	21
% Single-Unit Trucks	0.6	0.0	0.0	-	-	0.5	0.0	1.1	0.0	-	-	0.3	1.0	0.8	0.0	-	-	0.9	0.0	1.0	1.2	-	-	0.9	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	1	0	0	-	1	1	1	0	0	-	2	4
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.4	-	-	0.3	0.0	0.3	0.0	-	-	0.2	0.5	0.3	0.0	-	-	0.2	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	5	-	-	-	-	-	14	-	-	-	-	-	13	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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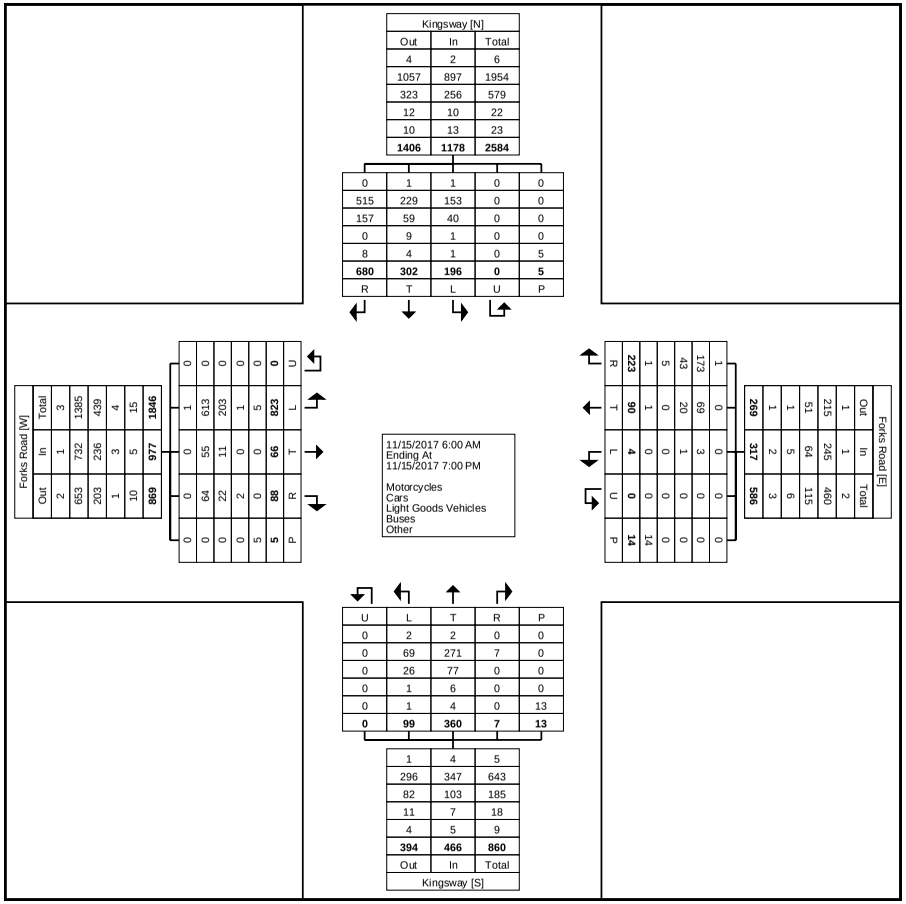
519-896-3163 cbowness@ptsl.com

Count Name: Forks Rd & Kingsway
Site Code:
Start Date: 11/15/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Rd & Kingsway
Site Code:
Start Date: 11/15/2017

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Forks Road Eastbound						Forks Road Westbound						Kingsway Northbound						Kingsway Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	29	2	4	0	0	35	0	3	16	0	0	19	7	23	0	0	0	30	3	7	17	0	2	27	111
7:45 AM	43	1	1	0	0	45	0	5	11	0	0	16	2	12	0	0	2	14	0	4	18	0	0	22	97
8:00 AM	21	3	0	0	0	24	0	3	10	0	0	13	9	13	0	0	0	22	2	1	22	0	0	25	84
8:15 AM	33	0	2	0	0	35	0	3	11	0	0	14	6	18	0	0	0	24	2	0	15	0	0	17	90
Total	126	6	7	0	0	139	0	14	48	0	0	62	24	66	0	0	2	90	7	12	72	0	2	91	382
Approach %	90.6	4.3	5.0	0.0	-	-	0.0	22.6	77.4	0.0	-	-	26.7	73.3	0.0	0.0	-	-	7.7	13.2	79.1	0.0	-	-	-
Total %	33.0	1.6	1.8	0.0	-	36.4	0.0	3.7	12.6	0.0	-	16.2	6.3	17.3	0.0	0.0	-	23.6	1.8	3.1	18.8	0.0	-	23.8	-
PHF	0.733	0.500	0.438	0.000	-	0.772	0.000	0.700	0.750	0.000	-	0.816	0.667	0.717	0.000	0.000	-	0.750	0.583	0.429	0.818	0.000	-	0.843	0.860
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars	96	3	3	0	-	102	0	11	34	0	-	45	19	51	0	0	-	70	5	10	54	0	-	69	286
% Cars	76.2	50.0	42.9	-	-	73.4	-	78.6	70.8	-	-	72.6	79.2	77.3	-	-	-	77.8	71.4	83.3	75.0	-	-	75.8	74.9
Light Goods Vehicles	28	3	3	0	-	34	0	3	10	0	-	13	5	13	0	0	-	18	1	1	16	0	-	18	83
% Light Goods Vehicles	22.2	50.0	42.9	-	-	24.5	-	21.4	20.8	-	-	21.0	20.8	19.7	-	-	-	20.0	14.3	8.3	22.2	-	-	19.8	21.7
Buses	1	0	1	0	-	2	0	0	4	0	-	4	0	2	0	0	-	2	1	1	0	0	-	2	10
% Buses	0.8	0.0	14.3	-	-	1.4	-	0.0	8.3	-	-	6.5	0.0	3.0	-	-	-	2.2	14.3	8.3	0.0	-	-	2.2	2.6
Single-Unit Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	3
% Single-Unit Trucks	0.8	0.0	0.0	-	-	0.7	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	2.8	-	-	2.2	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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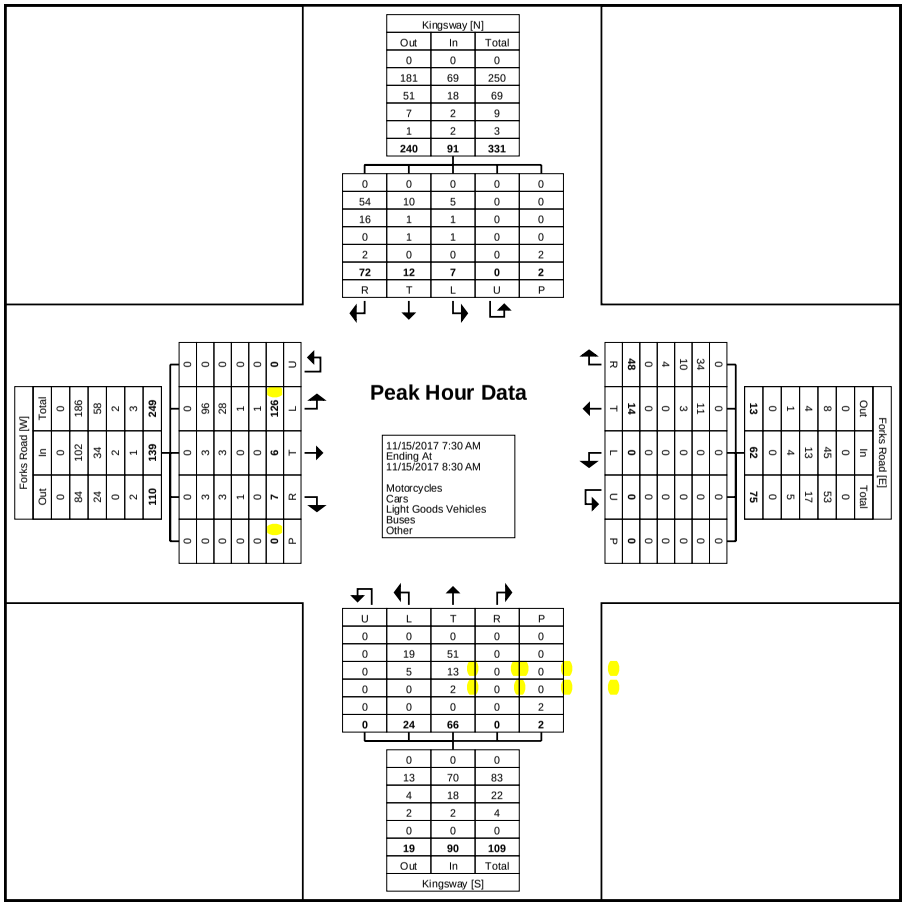

Turning Movement Peak Hour Data Plot (7:30 AM)

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Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Rd & Kingsway
Site Code:
Start Date: 11/15/2017

Turning Movement Peak Hour Data (11:15 AM)

Start Time	Forks Road Eastbound						Forks Road Westbound						Kingsway Northbound						Kingsway Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:15 AM	22	2	3	0	0	27	0	4	6	0	0	10	1	11	1	0	0	13	6	11	23	0	0	40	90
11:30 AM	21	1	1	0	0	23	1	2	1	0	0	4	1	10	0	0	0	11	6	7	23	0	0	36	74
11:45 AM	35	2	1	0	0	38	0	2	7	0	0	9	3	10	0	0	0	13	6	8	22	0	0	36	96
12:00 PM	36	2	1	0	0	39	0	1	5	0	0	6	3	10	0	0	0	13	8	16	21	0	0	45	103
Total	114	7	6	0	0	127	1	9	19	0	0	29	8	41	1	0	0	50	26	42	89	0	0	157	363
Approach %	89.8	5.5	4.7	0.0	-	-	3.4	31.0	65.5	0.0	-	-	16.0	82.0	2.0	0.0	-	-	16.6	26.8	56.7	0.0	-	-	-
Total %	31.4	1.9	1.7	0.0	-	35.0	0.3	2.5	5.2	0.0	-	8.0	2.2	11.3	0.3	0.0	-	13.8	7.2	11.6	24.5	0.0	-	43.3	-
PHF	0.792	0.875	0.500	0.000	-	0.814	0.250	0.563	0.679	0.000	-	0.725	0.667	0.932	0.250	0.000	-	0.962	0.813	0.656	0.967	0.000	-	0.872	0.881
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	12.5	0.0	0.0	-	-	2.0	0.0	0.0	0.0	-	-	0.0	0.3
Cars	79	6	4	0	-	89	1	6	16	0	-	23	3	31	1	0	-	35	23	28	67	0	-	118	265
% Cars	69.3	85.7	66.7	-	-	70.1	100.0	66.7	84.2	-	-	79.3	37.5	75.6	100.0	-	-	70.0	88.5	66.7	75.3	-	-	75.2	73.0
Light Goods Vehicles	33	1	2	0	-	36	0	3	3	0	-	6	3	9	0	0	-	12	3	10	21	0	-	34	88
% Light Goods Vehicles	28.9	14.3	33.3	-	-	28.3	0.0	33.3	15.8	-	-	20.7	37.5	22.0	0.0	-	-	24.0	11.5	23.8	23.6	-	-	21.7	24.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	2.4	0.0	-	-	0.6	0.3
Single-Unit Trucks	2	0	0	0	-	2	0	0	0	0	-	0	1	0	0	0	-	1	0	2	1	0	-	3	6
% Single-Unit Trucks	1.8	0.0	0.0	-	-	1.6	0.0	0.0	0.0	-	-	0.0	12.5	0.0	0.0	-	-	2.0	0.0	4.8	1.1	-	-	1.9	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	2.4	0.0	-	-	2.0	0.0	2.4	0.0	-	-	0.6	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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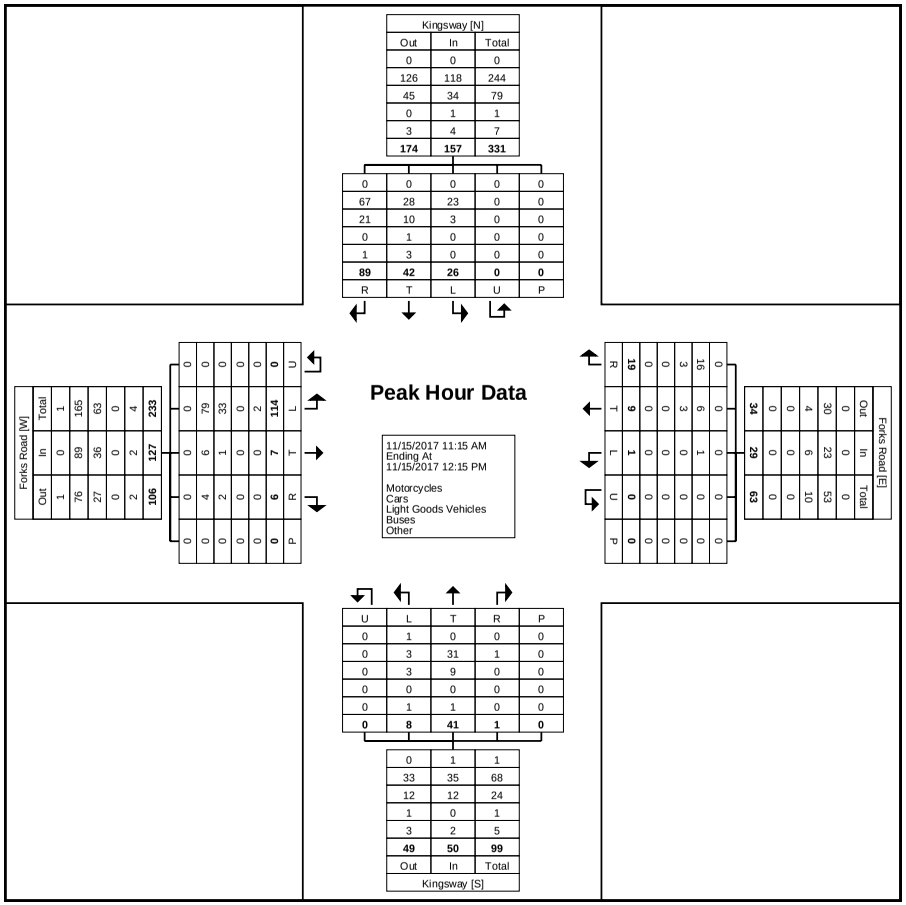

Turning Movement Peak Hour Data Plot (11:15 AM)

Paradigm Transportation Solutions Limited
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Count Name: Forks Rd & Kingsway
Site Code:
Start Date: 11/15/2017

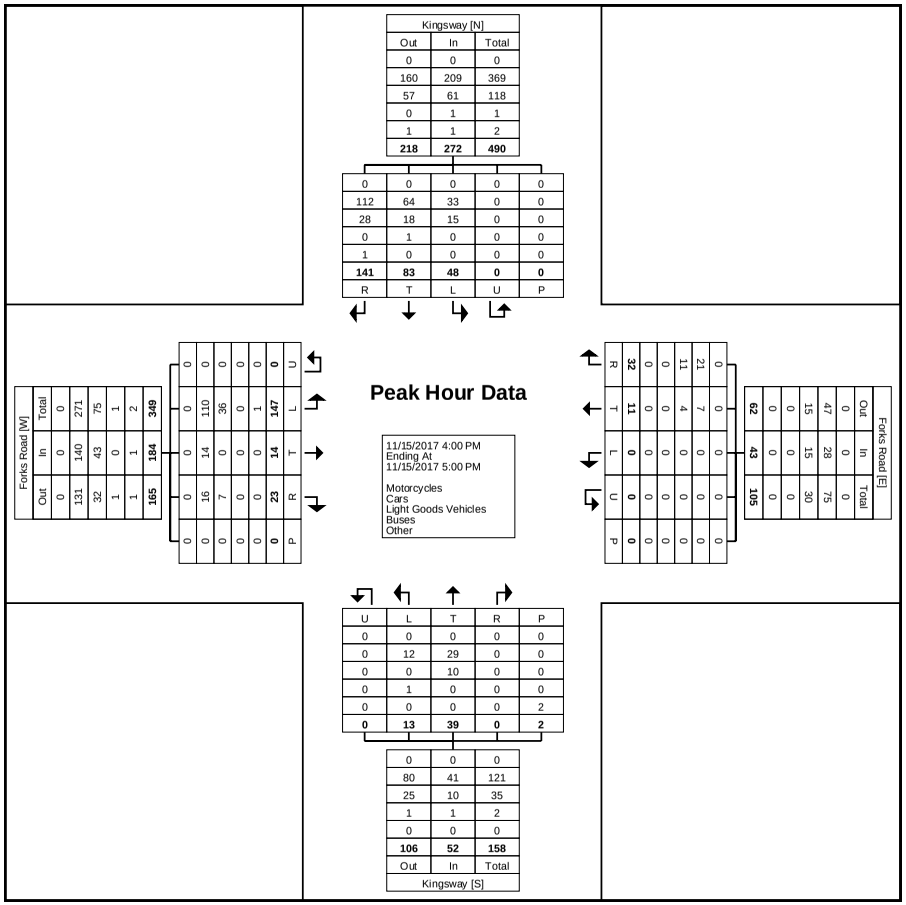
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Forks Road Eastbound						Forks Road Westbound						Kingsway Northbound						Kingsway Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	45	5	6	0	0	56	0	4	6	0	0	10	5	10	0	0	0	15	13	22	39	0	0	74	155
4:15 PM	40	3	5	0	0	48	0	4	7	0	0	11	7	13	0	0	1	20	12	24	36	0	0	72	151
4:30 PM	35	2	5	0	0	42	0	1	8	0	0	9	0	10	0	0	0	10	7	17	33	0	0	57	118
4:45 PM	27	4	7	0	0	38	0	2	11	0	0	13	1	6	0	0	1	7	16	20	33	0	0	69	127
Total	147	14	23	0	0	184	0	11	32	0	0	43	13	39	0	0	2	52	48	83	141	0	0	272	551
Approach %	79.9	7.6	12.5	0.0	-	-	0.0	25.6	74.4	0.0	-	-	25.0	75.0	0.0	0.0	-	-	17.6	30.5	51.8	0.0	-	-	-
Total %	26.7	2.5	4.2	0.0	-	33.4	0.0	2.0	5.8	0.0	-	7.8	2.4	7.1	0.0	0.0	-	9.4	8.7	15.1	25.6	0.0	-	49.4	-
PHF	0.817	0.700	0.821	0.000	-	0.821	0.000	0.688	0.727	0.000	-	0.827	0.464	0.750	0.000	0.000	-	0.650	0.750	0.865	0.904	0.000	-	0.919	0.889
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars	110	14	16	0	-	140	0	7	21	0	-	28	12	29	0	0	-	41	33	64	112	0	-	209	418
% Cars	74.8	100.0	69.6	-	-	76.1	-	63.6	65.6	-	-	65.1	92.3	74.4	-	-	-	78.8	68.8	77.1	79.4	-	-	76.8	75.9
Light Goods Vehicles	36	0	7	0	-	43	0	4	11	0	-	15	0	10	0	0	-	10	15	18	28	0	-	61	129
% Light Goods Vehicles	24.5	0.0	30.4	-	-	23.4	-	36.4	34.4	-	-	34.9	0.0	25.6	-	-	-	19.2	31.3	21.7	19.9	-	-	22.4	23.4
Buses	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	1	0	0	-	1	2
% Buses	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	7.7	0.0	-	-	-	1.9	0.0	1.2	0.0	-	-	0.4	0.4
Single-Unit Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	2
% Single-Unit Trucks	0.7	0.0	0.0	-	-	0.5	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.7	-	-	0.4	0.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Rd & Kingsway
Site Code:
Start Date: 11/15/2017



Turning Movement Peak Hour Data Plot (4:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Rd & Kingsway
Site Code:
Start Date: 11/15/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017

Turning Movement Data

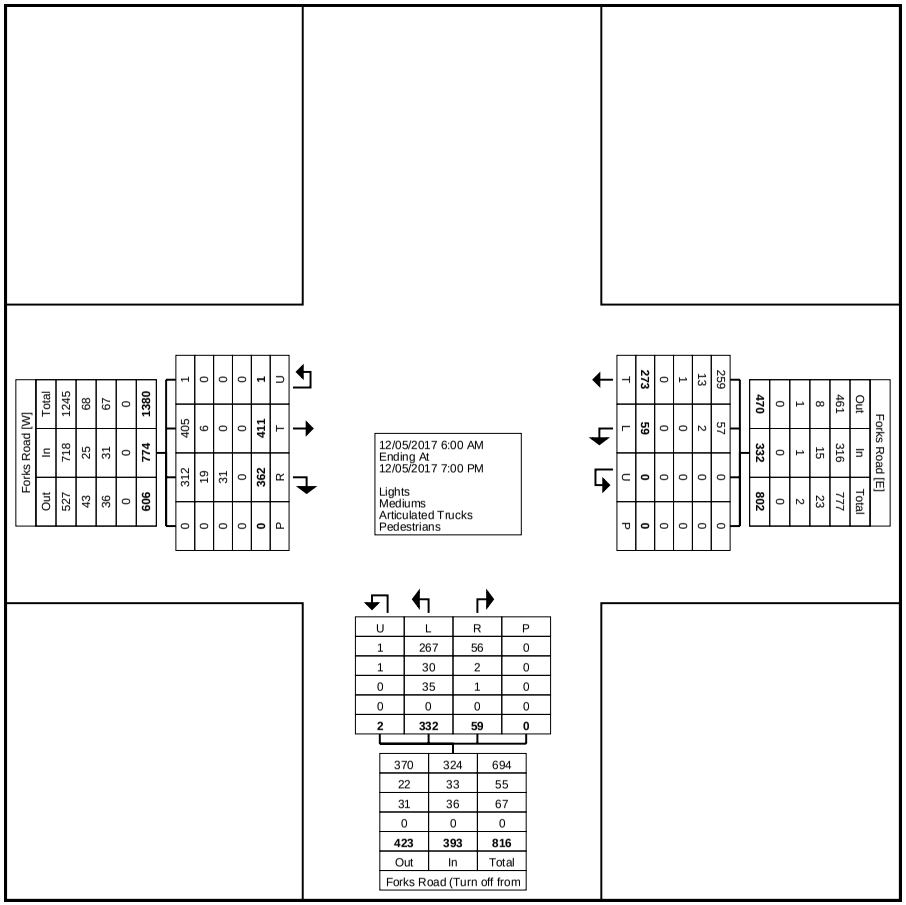
Start Time	Forks Road Eastbound					Forks Road Westbound					Forks Road (Turn off from Hwy 58) Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
6:00 AM	10	7	0	0	17	1	5	0	0	6	8	0	0	0	8	31
6:15 AM	10	8	0	0	18	1	2	0	0	3	10	0	0	0	10	31
6:30 AM	23	8	0	0	31	0	12	0	0	12	12	2	0	0	14	57
6:45 AM	13	13	0	0	26	1	10	0	0	11	14	0	0	0	14	51
Hourly Total	56	36	0	0	92	3	29	0	0	32	44	2	0	0	46	170
7:00 AM	12	12	0	0	24	0	5	0	0	5	17	0	0	0	17	46
7:15 AM	13	14	0	0	27	1	7	0	0	8	14	2	0	0	16	51
7:30 AM	15	12	0	0	27	0	6	0	0	6	20	1	1	0	22	55
7:45 AM	13	16	0	0	29	2	10	0	0	12	16	2	0	0	18	59
Hourly Total	53	54	0	0	107	3	28	0	0	31	67	5	1	0	73	211
8:00 AM	13	17	0	0	30	2	7	0	0	9	12	3	0	0	15	54
8:15 AM	12	14	0	0	26	1	8	0	0	9	8	1	0	0	9	44
8:30 AM	14	16	0	0	30	3	9	0	0	12	14	1	0	0	15	57
8:45 AM	5	9	0	0	14	2	10	0	0	12	16	3	0	0	19	45
Hourly Total	44	56	0	0	100	8	34	0	0	42	50	8	0	0	58	200
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	18	13	0	0	31	2	7	0	0	9	11	3	0	0	14	54
11:15 AM	10	11	0	0	21	5	8	0	0	13	11	1	0	0	12	46
11:30 AM	9	10	0	0	19	4	7	0	0	11	19	3	0	0	22	52
11:45 AM	13	14	0	0	27	3	11	0	0	14	9	5	0	0	14	55
Hourly Total	50	48	0	0	98	14	33	0	0	47	50	12	0	0	62	207
12:00 PM	12	6	0	0	18	2	7	0	0	9	5	3	0	0	8	35
12:15 PM	9	8	0	0	17	1	11	0	0	12	12	1	0	0	13	42
12:30 PM	11	18	0	0	29	2	4	0	0	6	6	4	0	0	10	45
12:45 PM	12	10	0	0	22	2	6	0	0	8	10	3	0	0	13	43
Hourly Total	44	42	0	0	86	7	28	0	0	35	33	11	0	0	44	165
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	11	15	0	0	26	8	10	0	0	18	12	2	0	0	14	58
4:15 PM	20	13	0	0	33	4	14	0	0	18	11	3	0	0	14	65
4:30 PM	23	9	0	0	32	2	11	0	0	13	10	4	0	0	14	59
4:45 PM	11	15	0	0	26	2	11	0	0	13	10	1	0	0	11	50
Hourly Total	65	52	0	0	117	16	46	0	0	62	43	10	0	0	53	232
5:00 PM	16	19	0	0	35	1	13	0	0	14	9	0	0	0	9	58
5:15 PM	12	13	0	0	25	2	13	0	0	15	6	4	0	0	10	50
5:30 PM	15	15	0	0	30	1	13	0	0	14	6	0	0	0	6	50
5:45 PM	18	4	0	0	22	2	5	0	0	7	5	4	0	0	9	38
Hourly Total	61	51	0	0	112	6	44	0	0	50	26	8	0	0	34	196
6:00 PM	9	7	0	0	16	1	7	0	0	8	3	2	0	0	5	29

6:15 PM	5	8	0	0	13	1	11	0	0	12	3	0	0	0	3	28
6:30 PM	13	4	0	0	17	0	9	0	0	9	7	1	0	0	8	34
6:45 PM	11	4	1	0	16	0	4	0	0	4	6	0	1	0	7	27
Hourly Total	38	23	1	0	62	2	31	0	0	33	19	3	1	0	23	118
Grand Total	411	362	1	0	774	59	273	0	0	332	332	59	2	0	393	1499
Approach %	53.1	46.8	0.1	-	-	17.8	82.2	0.0	-	-	84.5	15.0	0.5	-	-	-
Total %	27.4	24.1	0.1	-	51.6	3.9	18.2	0.0	-	22.1	22.1	3.9	0.1	-	26.2	-
Lights	405	312	1	-	718	57	259	0	-	316	267	56	1	-	324	1358
% Lights	98.5	86.2	100.0	-	92.8	96.6	94.9	-	-	95.2	80.4	94.9	50.0	-	82.4	90.6
Mediums	6	19	0	-	25	2	13	0	-	15	30	2	1	-	33	73
% Mediums	1.5	5.2	0.0	-	3.2	3.4	4.8	-	-	4.5	9.0	3.4	50.0	-	8.4	4.9
Articulated Trucks	0	31	0	-	31	0	1	0	-	1	35	1	0	-	36	68
% Articulated Trucks	0.0	8.6	0.0	-	4.0	0.0	0.4	-	-	0.3	10.5	1.7	0.0	-	9.2	4.5
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Forks Road Eastbound					Forks Road Westbound					Forks Road (Turn off from Hwy 58) Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:15 AM	13	14	0	0	27	1	7	0	0	8	14	2	0	0	16	51
7:30 AM	15	12	0	0	27	0	6	0	0	6	20	1	1	0	22	55
7:45 AM	13	16	0	0	29	2	10	0	0	12	16	2	0	0	18	59
8:00 AM	13	17	0	0	30	2	7	0	0	9	12	3	0	0	15	54
Total	54	59	0	0	113	5	30	0	0	35	62	8	1	0	71	219
Approach %	47.8	52.2	0.0	-	-	14.3	85.7	0.0	-	-	87.3	11.3	1.4	-	-	-
Total %	24.7	26.9	0.0	-	51.6	2.3	13.7	0.0	-	16.0	28.3	3.7	0.5	-	32.4	-
PHF	0.900	0.868	0.000	-	0.942	0.625	0.750	0.000	-	0.729	0.775	0.667	0.250	-	0.807	0.928
Lights	52	49	0	-	101	5	30	0	-	35	54	7	0	-	61	197
% Lights	96.3	83.1	-	-	89.4	100.0	100.0	-	-	100.0	87.1	87.5	0.0	-	85.9	90.0
Mediums	2	6	0	-	8	0	0	0	-	0	4	1	1	-	6	14
% Mediums	3.7	10.2	-	-	7.1	0.0	0.0	-	-	0.0	6.5	12.5	100.0	-	8.5	6.4
Articulated Trucks	0	4	0	-	4	0	0	0	-	0	4	0	0	-	4	8
% Articulated Trucks	0.0	6.8	-	-	3.5	0.0	0.0	-	-	0.0	6.5	0.0	0.0	-	5.6	3.7
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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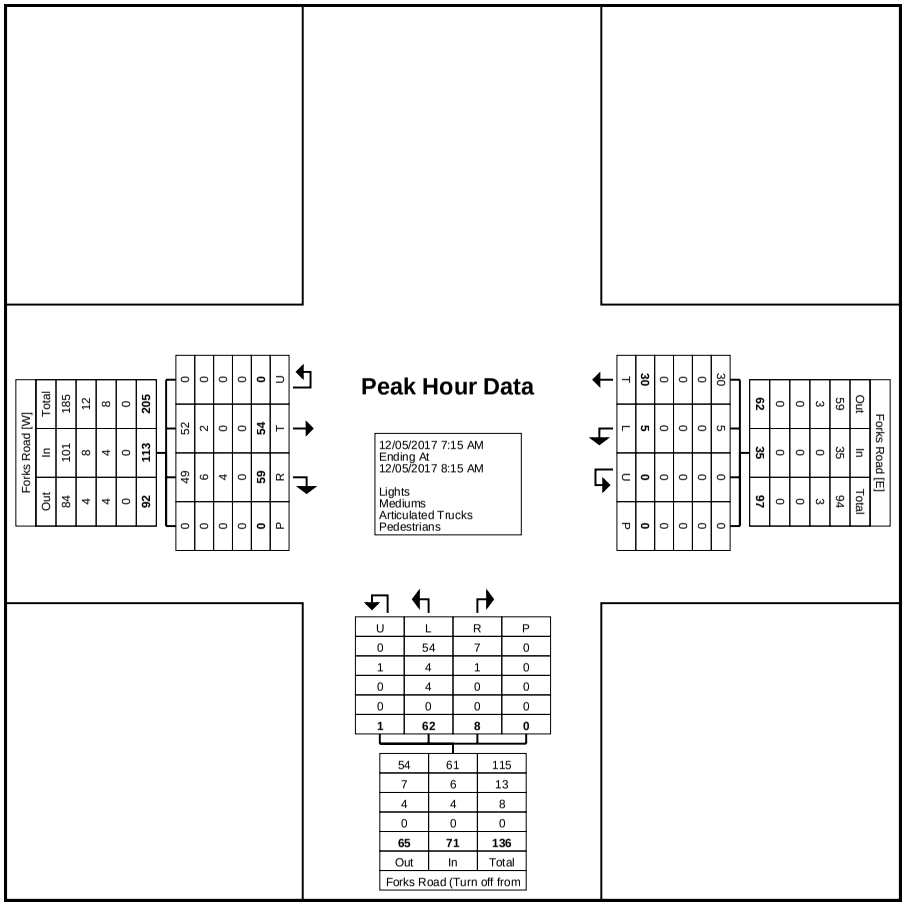
Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017



Turning Movement Peak Hour Data Plot (7:15 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Forks Road Eastbound					Forks Road Westbound					Forks Road (Turn off from Hwy 58) Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:00 AM	18	13	0	0	31	2	7	0	0	9	11	3	0	0	14	54
11:15 AM	10	11	0	0	21	5	8	0	0	13	11	1	0	0	12	46
11:30 AM	9	10	0	0	19	4	7	0	0	11	19	3	0	0	22	52
11:45 AM	13	14	0	0	27	3	11	0	0	14	9	5	0	0	14	55
Total	50	48	0	0	98	14	33	0	0	47	50	12	0	0	62	207
Approach %	51.0	49.0	0.0	-	-	29.8	70.2	0.0	-	-	80.6	19.4	0.0	-	-	-
Total %	24.2	23.2	0.0	-	47.3	6.8	15.9	0.0	-	22.7	24.2	5.8	0.0	-	30.0	-
PHF	0.694	0.857	0.000	-	0.790	0.700	0.750	0.000	-	0.839	0.658	0.600	0.000	-	0.705	0.941
Lights	48	41	0	-	89	14	30	0	-	44	32	12	0	-	44	177
% Lights	96.0	85.4	-	-	90.8	100.0	90.9	-	-	93.6	64.0	100.0	-	-	71.0	85.5
Mediums	2	4	0	-	6	0	2	0	-	2	7	0	0	-	7	15
% Mediums	4.0	8.3	-	-	6.1	0.0	6.1	-	-	4.3	14.0	0.0	-	-	11.3	7.2
Articulated Trucks	0	3	0	-	3	0	1	0	-	1	11	0	0	-	11	15
% Articulated Trucks	0.0	6.3	-	-	3.1	0.0	3.0	-	-	2.1	22.0	0.0	-	-	17.7	7.2
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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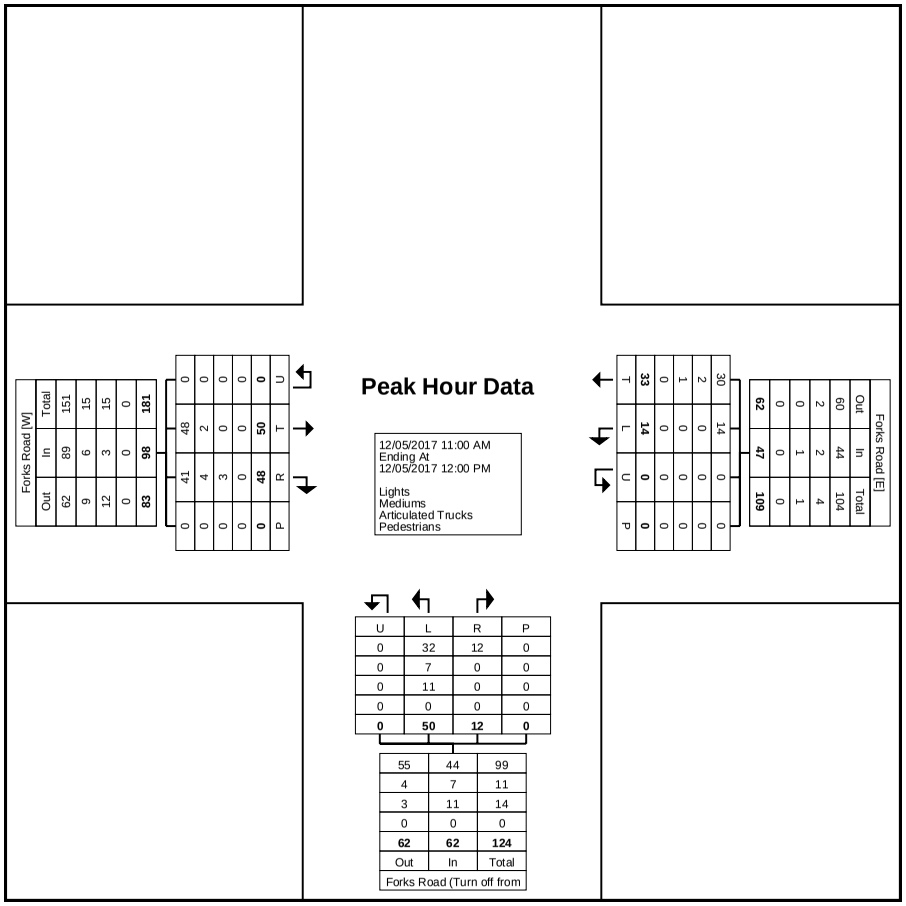
Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017



Turning Movement Peak Hour Data Plot (11:00 AM)

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22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Forks Road Eastbound					Forks Road Westbound					Forks Road (Turn off from Hwy 58) Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	11	15	0	0	26	8	10	0	0	18	12	2	0	0	14	58
4:15 PM	20	13	0	0	33	4	14	0	0	18	11	3	0	0	14	65
4:30 PM	23	9	0	0	32	2	11	0	0	13	10	4	0	0	14	59
4:45 PM	11	15	0	0	26	2	11	0	0	13	10	1	0	0	11	50
Total	65	52	0	0	117	16	46	0	0	62	43	10	0	0	53	232
Approach %	55.6	44.4	0.0	-	-	25.8	74.2	0.0	-	-	81.1	18.9	0.0	-	-	-
Total %	28.0	22.4	0.0	-	50.4	6.9	19.8	0.0	-	26.7	18.5	4.3	0.0	-	22.8	-
PHF	0.707	0.867	0.000	-	0.886	0.500	0.821	0.000	-	0.861	0.896	0.625	0.000	-	0.946	0.892
Lights	65	43	0	-	108	15	44	0	-	59	34	10	0	-	44	211
% Lights	100.0	82.7	-	-	92.3	93.8	95.7	-	-	95.2	79.1	100.0	-	-	83.0	90.9
Mediums	0	5	0	-	5	1	2	0	-	3	5	0	0	-	5	13
% Mediums	0.0	9.6	-	-	4.3	6.3	4.3	-	-	4.8	11.6	0.0	-	-	9.4	5.6
Articulated Trucks	0	4	0	-	4	0	0	0	-	0	4	0	0	-	4	8
% Articulated Trucks	0.0	7.7	-	-	3.4	0.0	0.0	-	-	0.0	9.3	0.0	-	-	7.5	3.4
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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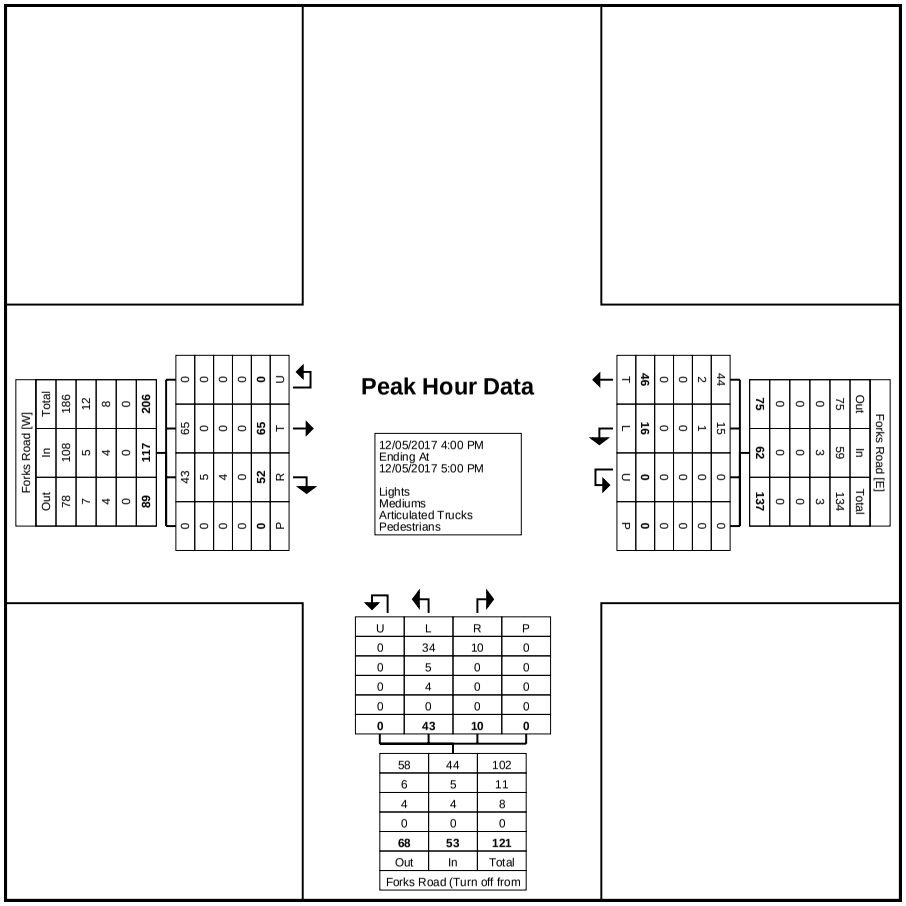
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017



Turning Movement Peak Hour Data Plot (4:00 PM)

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Count Name: Forks Road & Forks Road
Site Code:
Start Date: 12/05/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017

Turning Movement Data

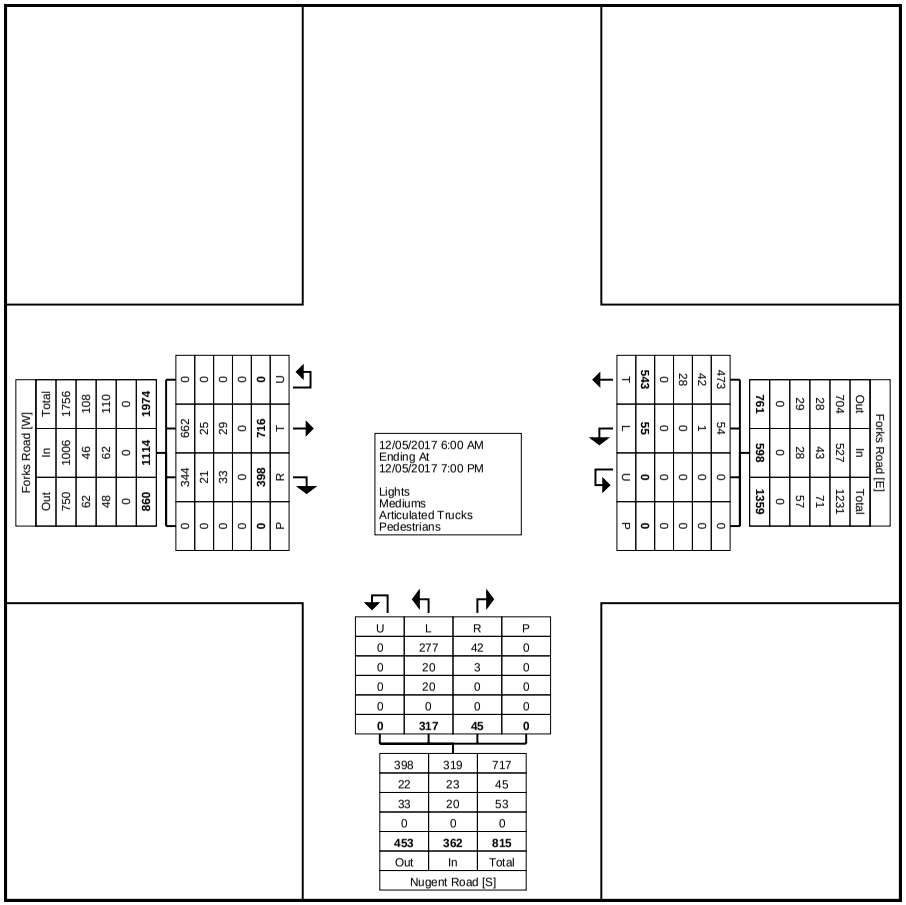
Start Time	Forks Road Eastbound					Forks Road Westbound					Nugent Road Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
6:00 AM	17	5	0	0	22	0	12	0	0	12	11	0	0	0	11	45
6:15 AM	17	6	0	0	23	0	13	0	0	13	8	1	0	0	9	45
6:30 AM	29	8	0	0	37	2	23	0	0	25	5	1	0	0	6	68
6:45 AM	25	5	0	0	30	2	21	0	0	23	5	1	0	0	6	59
Hourly Total	88	24	0	0	112	4	69	0	0	73	29	3	0	0	32	217
7:00 AM	21	5	0	0	26	1	19	0	0	20	3	0	0	0	3	49
7:15 AM	23	10	0	0	33	0	22	0	0	22	8	3	0	0	11	66
7:30 AM	22	16	0	0	38	3	22	0	0	25	7	3	0	0	10	73
7:45 AM	27	17	0	0	44	4	21	0	0	25	7	2	0	0	9	78
Hourly Total	93	48	0	0	141	8	84	0	0	92	25	8	0	0	33	266
8:00 AM	29	14	0	0	43	3	17	0	0	20	11	1	0	0	12	75
8:15 AM	24	11	0	0	35	2	14	0	0	16	6	2	0	0	8	59
8:30 AM	29	10	0	0	39	1	21	0	0	22	9	0	0	0	9	70
8:45 AM	14	10	0	0	24	4	23	0	0	27	8	0	0	0	8	59
Hourly Total	96	45	0	0	141	10	75	0	0	85	34	3	0	0	37	263
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	27	12	0	0	39	2	17	0	0	19	4	4	0	0	8	66
11:15 AM	19	17	0	0	36	1	17	0	0	18	9	2	0	0	11	65
11:30 AM	17	8	0	0	25	1	24	0	0	25	7	1	0	0	8	58
11:45 AM	26	8	0	0	34	3	18	0	0	21	9	0	0	0	9	64
Hourly Total	89	45	0	0	134	7	76	0	0	83	29	7	0	0	36	253
12:00 PM	18	7	0	0	25	0	12	0	0	12	11	0	0	0	11	48
12:15 PM	15	14	0	0	29	2	19	0	0	21	10	2	0	0	12	62
12:30 PM	26	9	0	0	35	0	12	0	0	12	9	3	0	0	12	59
12:45 PM	19	11	0	0	30	0	15	0	0	15	7	3	0	0	10	55
Hourly Total	78	41	0	0	119	2	58	0	0	60	37	8	0	0	45	224
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	25	18	0	0	43	3	19	0	0	22	24	0	0	0	24	89
4:15 PM	32	17	0	0	49	3	22	0	0	25	20	1	0	0	21	95
4:30 PM	25	19	0	0	44	1	19	0	0	20	18	6	0	0	24	88
4:45 PM	26	16	0	0	42	2	20	0	0	22	17	1	0	0	18	82
Hourly Total	108	70	0	0	178	9	80	0	0	89	79	8	0	0	87	354
5:00 PM	33	14	0	0	47	2	17	0	0	19	20	3	0	0	23	89
5:15 PM	24	15	0	0	39	2	17	0	0	19	11	0	0	0	11	69
5:30 PM	28	26	0	0	54	5	10	0	0	15	16	1	0	0	17	86
5:45 PM	21	21	0	0	42	0	12	0	0	12	7	1	0	0	8	62
Hourly Total	106	76	0	0	182	9	56	0	0	65	54	5	0	0	59	306
6:00 PM	16	13	0	0	29	1	9	0	0	10	11	0	0	0	11	50

6:15 PM	12	12	0	0	24	3	11	0	0	14	9	1	0	0	10	48
6:30 PM	17	9	0	0	26	1	15	0	0	16	5	0	0	0	5	47
6:45 PM	13	15	0	0	28	1	10	0	0	11	5	2	0	0	7	46
Hourly Total	58	49	0	0	107	6	45	0	0	51	30	3	0	0	33	191
Grand Total	716	398	0	0	1114	55	543	0	0	598	317	45	0	0	362	2074
Approach %	64.3	35.7	0.0	-	-	9.2	90.8	0.0	-	-	87.6	12.4	0.0	-	-	-
Total %	34.5	19.2	0.0	-	53.7	2.7	26.2	0.0	-	28.8	15.3	2.2	0.0	-	17.5	-
Lights	662	344	0	-	1006	54	473	0	-	527	277	42	0	-	319	1852
% Lights	92.5	86.4	-	-	90.3	98.2	87.1	-	-	88.1	87.4	93.3	-	-	88.1	89.3
Mediums	25	21	0	-	46	1	42	0	-	43	20	3	0	-	23	112
% Mediums	3.5	5.3	-	-	4.1	1.8	7.7	-	-	7.2	6.3	6.7	-	-	6.4	5.4
Articulated Trucks	29	33	0	-	62	0	28	0	-	28	20	0	0	-	20	110
% Articulated Trucks	4.1	8.3	-	-	5.6	0.0	5.2	-	-	4.7	6.3	0.0	-	-	5.5	5.3
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Forks Road Eastbound					Forks Road Westbound					Nugent Road Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:15 AM	23	10	0	0	33	0	22	0	0	22	8	3	0	0	11	66
7:30 AM	22	16	0	0	38	3	22	0	0	25	7	3	0	0	10	73
7:45 AM	27	17	0	0	44	4	21	0	0	25	7	2	0	0	9	78
8:00 AM	29	14	0	0	43	3	17	0	0	20	11	1	0	0	12	75
Total	101	57	0	0	158	10	82	0	0	92	33	9	0	0	42	292
Approach %	63.9	36.1	0.0	-	-	10.9	89.1	0.0	-	-	78.6	21.4	0.0	-	-	-
Total %	34.6	19.5	0.0	-	54.1	3.4	28.1	0.0	-	31.5	11.3	3.1	0.0	-	14.4	-
PHF	0.871	0.838	0.000	-	0.898	0.625	0.932	0.000	-	0.920	0.750	0.750	0.000	-	0.875	0.936
Lights	91	46	0	-	137	10	74	0	-	84	29	7	0	-	36	257
% Lights	90.1	80.7	-	-	86.7	100.0	90.2	-	-	91.3	87.9	77.8	-	-	85.7	88.0
Mediums	6	5	0	-	11	0	7	0	-	7	1	2	0	-	3	21
% Mediums	5.9	8.8	-	-	7.0	0.0	8.5	-	-	7.6	3.0	22.2	-	-	7.1	7.2
Articulated Trucks	4	6	0	-	10	0	1	0	-	1	3	0	0	-	3	14
% Articulated Trucks	4.0	10.5	-	-	6.3	0.0	1.2	-	-	1.1	9.1	0.0	-	-	7.1	4.8
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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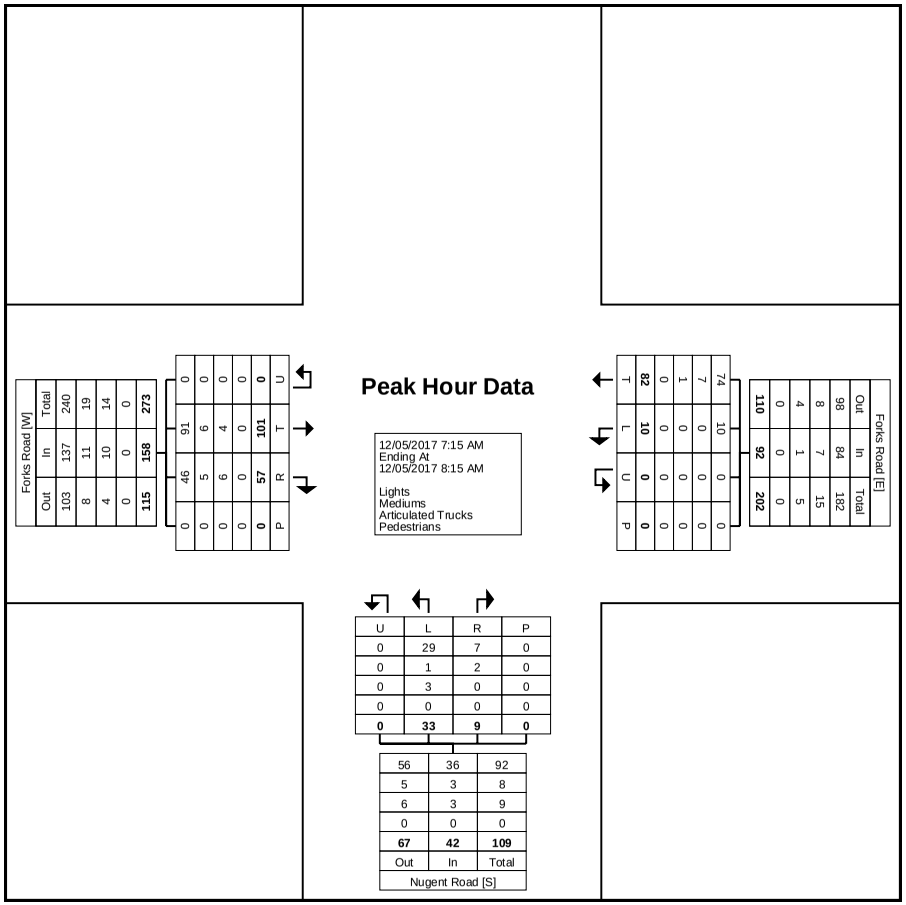
Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017



Turning Movement Peak Hour Data Plot (7:15 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Forks Road Eastbound					Forks Road Westbound					Nugent Road Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:00 AM	27	12	0	0	39	2	17	0	0	19	4	4	0	0	8	66
11:15 AM	19	17	0	0	36	1	17	0	0	18	9	2	0	0	11	65
11:30 AM	17	8	0	0	25	1	24	0	0	25	7	1	0	0	8	58
11:45 AM	26	8	0	0	34	3	18	0	0	21	9	0	0	0	9	64
Total	89	45	0	0	134	7	76	0	0	83	29	7	0	0	36	253
Approach %	66.4	33.6	0.0	-	-	8.4	91.6	0.0	-	-	80.6	19.4	0.0	-	-	-
Total %	35.2	17.8	0.0	-	53.0	2.8	30.0	0.0	-	32.8	11.5	2.8	0.0	-	14.2	-
PHF	0.824	0.662	0.000	-	0.859	0.583	0.792	0.000	-	0.830	0.806	0.438	0.000	-	0.818	0.958
Lights	79	39	0	-	118	7	55	0	-	62	21	7	0	-	28	208
% Lights	88.8	86.7	-	-	88.1	100.0	72.4	-	-	74.7	72.4	100.0	-	-	77.8	82.2
Mediums	7	2	0	-	9	0	9	0	-	9	2	0	0	-	2	20
% Mediums	7.9	4.4	-	-	6.7	0.0	11.8	-	-	10.8	6.9	0.0	-	-	5.6	7.9
Articulated Trucks	3	4	0	-	7	0	12	0	-	12	6	0	0	-	6	25
% Articulated Trucks	3.4	8.9	-	-	5.2	0.0	15.8	-	-	14.5	20.7	0.0	-	-	16.7	9.9
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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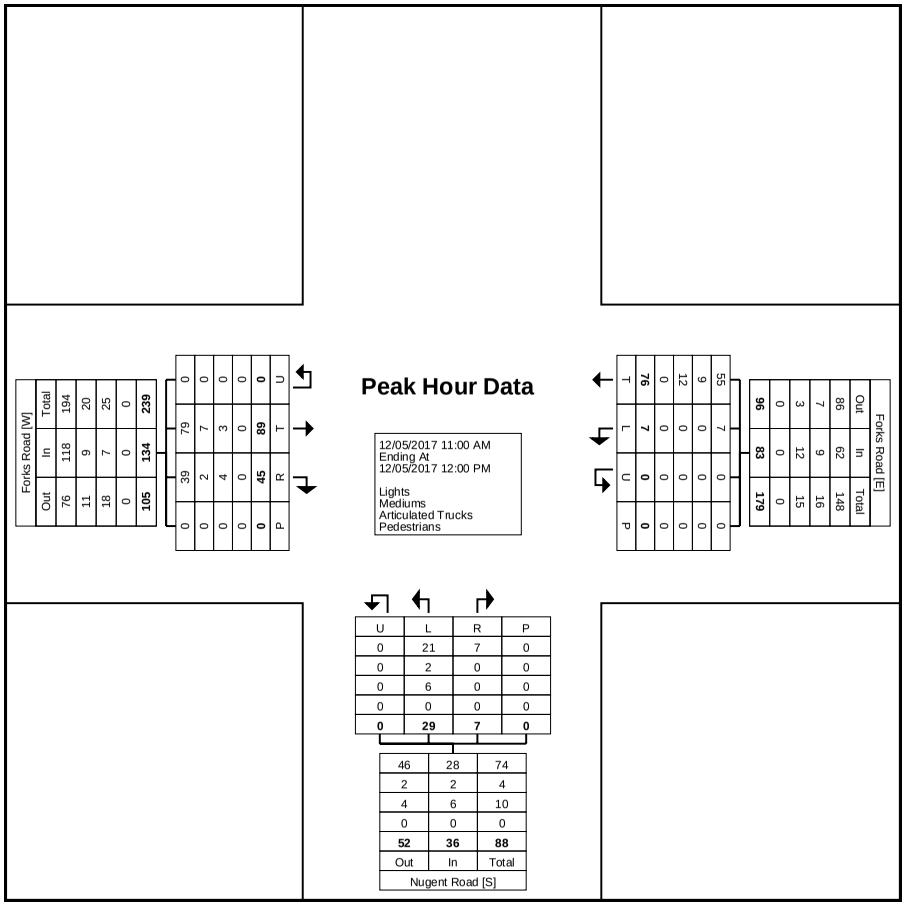
Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017



Turning Movement Peak Hour Data Plot (11:00 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Forks Road Eastbound					Forks Road Westbound					Nugent Road Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	25	18	0	0	43	3	19	0	0	22	24	0	0	0	24	89
4:15 PM	32	17	0	0	49	3	22	0	0	25	20	1	0	0	21	95
4:30 PM	25	19	0	0	44	1	19	0	0	20	18	6	0	0	24	88
4:45 PM	26	16	0	0	42	2	20	0	0	22	17	1	0	0	18	82
Total	108	70	0	0	178	9	80	0	0	89	79	8	0	0	87	354
Approach %	60.7	39.3	0.0	-	-	10.1	89.9	0.0	-	-	90.8	9.2	0.0	-	-	-
Total %	30.5	19.8	0.0	-	50.3	2.5	22.6	0.0	-	25.1	22.3	2.3	0.0	-	24.6	-
PHF	0.844	0.921	0.000	-	0.908	0.750	0.909	0.000	-	0.890	0.823	0.333	0.000	-	0.906	0.932
Lights	99	65	0	-	164	8	71	0	-	79	71	8	0	-	79	322
% Lights	91.7	92.9	-	-	92.1	88.9	88.8	-	-	88.8	89.9	100.0	-	-	90.8	91.0
Mediums	5	5	0	-	10	1	5	0	-	6	5	0	0	-	5	21
% Mediums	4.6	7.1	-	-	5.6	11.1	6.3	-	-	6.7	6.3	0.0	-	-	5.7	5.9
Articulated Trucks	4	0	0	-	4	0	4	0	-	4	3	0	0	-	3	11
% Articulated Trucks	3.7	0.0	-	-	2.2	0.0	5.0	-	-	4.5	3.8	0.0	-	-	3.4	3.1
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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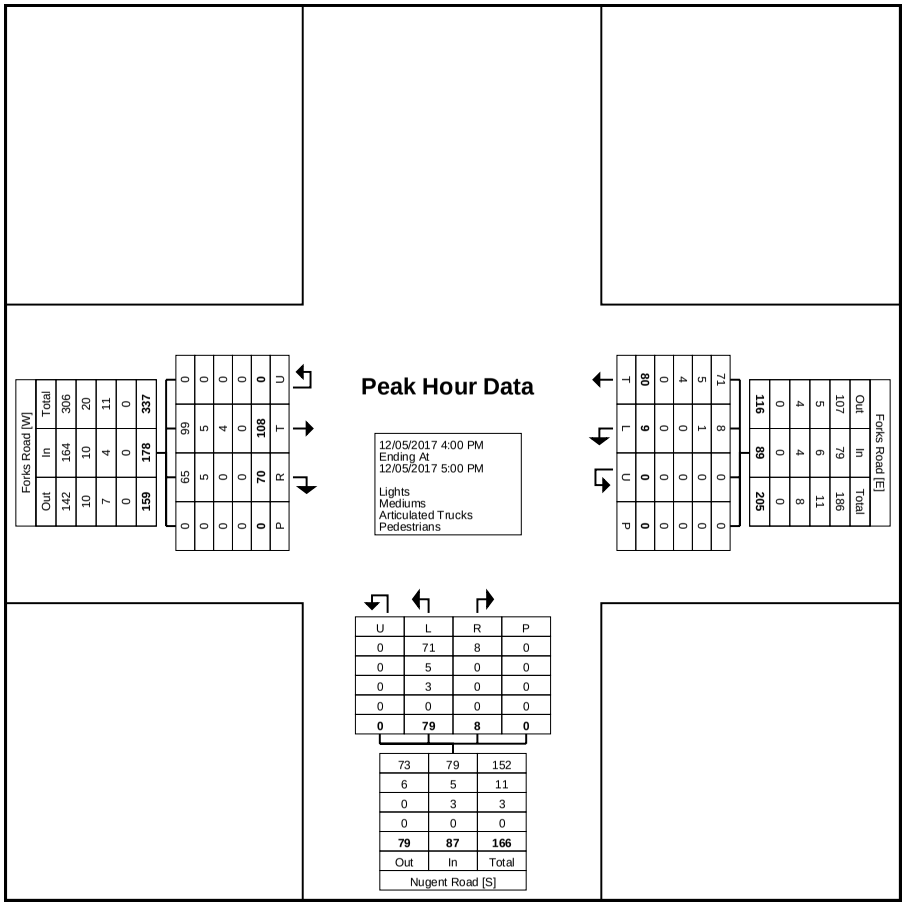
Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017
Page No: 9



Turning Movement Peak Hour Data Plot (4:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Forks Road & Nugent Road
Site Code:
Start Date: 12/05/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017

Turning Movement Data

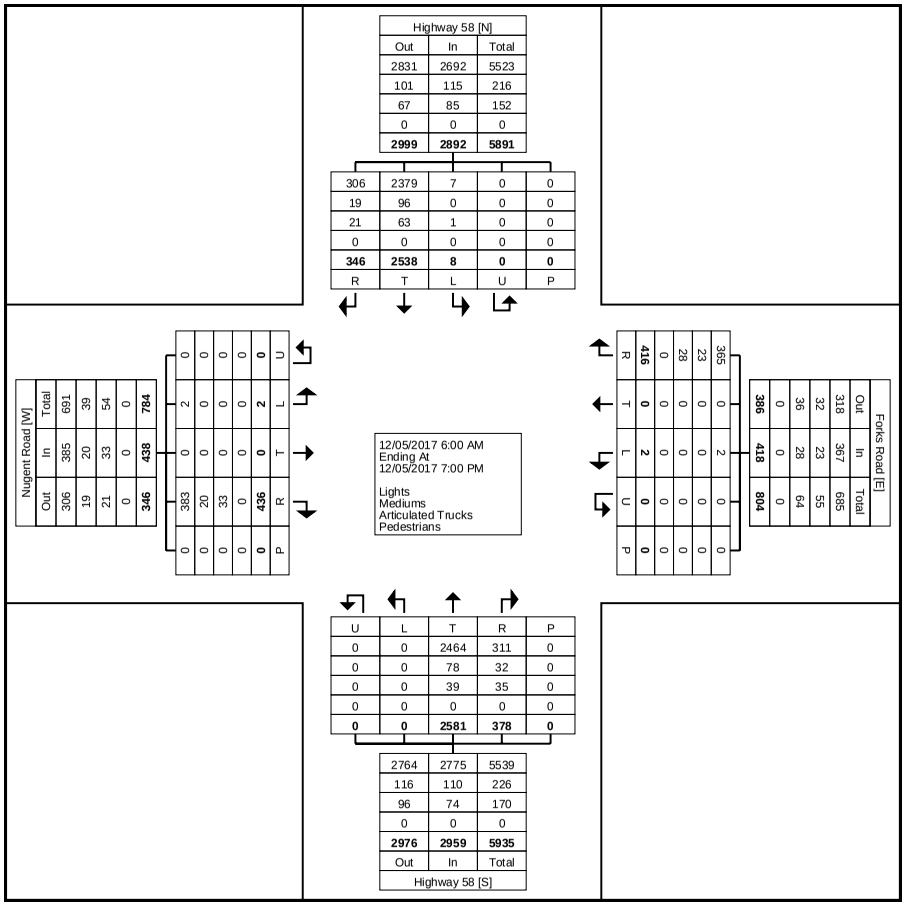
Start Time	Nugent Road Eastbound						Forks Road Westbound						Highway 58 Northbound						Highway 58 Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	0	0	5	0	0	5	0	0	5	0	0	5	0	34	8	0	0	42	0	23	10	0	0	33	85
6:15 AM	0	0	6	0	0	6	0	0	12	0	0	12	0	43	10	0	0	53	0	23	9	0	0	32	103
6:30 AM	0	0	7	0	0	7	0	0	6	0	0	6	0	69	14	0	0	83	0	51	5	0	0	56	152
6:45 AM	0	0	8	0	0	8	0	0	14	0	0	14	0	48	12	0	0	60	0	43	6	0	0	49	131
Hourly Total	0	0	26	0	0	26	0	0	37	0	0	37	0	194	44	0	0	238	0	140	30	0	0	170	471
7:00 AM	0	0	7	0	0	7	0	0	10	0	0	10	0	77	17	0	0	94	0	35	4	0	0	39	150
7:15 AM	0	0	10	0	0	10	0	0	17	0	0	17	0	76	16	0	0	92	0	56	11	0	0	67	186
7:30 AM	0	0	18	0	0	18	0	0	11	0	0	11	0	125	22	0	0	147	0	73	10	0	0	83	259
7:45 AM	0	0	15	0	0	15	0	0	20	0	0	20	0	127	18	0	0	145	0	79	8	0	0	87	267
Hourly Total	0	0	50	0	0	50	0	0	58	0	0	58	0	405	73	0	0	478	0	243	33	0	0	276	862
8:00 AM	0	0	15	0	0	15	0	0	17	0	0	17	0	108	15	0	0	123	0	82	11	0	0	93	248
8:15 AM	0	0	13	0	0	13	0	0	15	0	0	15	0	107	9	0	0	116	0	77	7	0	0	84	228
8:30 AM	0	0	10	0	0	10	0	0	19	0	0	19	0	98	13	0	0	111	2	73	9	0	0	84	224
8:45 AM	0	0	14	0	0	14	0	0	13	0	0	13	0	106	19	0	0	125	0	67	8	0	0	75	227
Hourly Total	0	0	52	0	0	52	0	0	64	0	0	64	0	419	56	0	0	475	2	299	35	0	0	336	927
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	0	14	0	0	14	0	0	16	0	0	16	0	91	13	0	0	104	1	73	6	0	0	80	214
11:15 AM	0	0	17	0	0	17	0	0	16	0	0	16	0	90	11	0	0	101	0	92	11	0	0	103	237
11:30 AM	0	0	10	0	0	10	0	0	15	0	0	15	0	73	22	0	0	95	0	76	9	0	0	85	205
11:45 AM	0	0	12	0	0	12	0	0	17	0	0	17	0	83	13	0	0	96	0	89	8	0	0	97	222
Hourly Total	0	0	53	0	0	53	0	0	64	0	0	64	0	337	59	0	0	396	1	330	34	0	0	365	878
12:00 PM	0	0	6	0	0	6	0	0	7	0	0	7	0	72	8	0	0	80	0	99	10	0	0	109	202
12:15 PM	1	0	13	0	0	14	0	0	9	0	0	9	0	71	13	0	0	84	1	72	12	0	0	85	192
12:30 PM	0	0	9	0	0	9	0	0	21	0	0	21	0	97	7	0	0	104	2	83	10	0	0	95	229
12:45 PM	1	0	10	0	0	11	0	0	11	0	0	11	0	74	12	0	0	86	2	74	10	0	0	86	194
Hourly Total	2	0	38	0	0	40	0	0	48	0	0	48	0	314	40	0	0	354	5	328	42	0	0	375	817
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	21	0	0	21	0	0	19	0	0	19	0	83	13	0	0	96	0	119	23	0	0	142	278
4:15 PM	0	0	21	0	0	21	0	0	19	0	0	19	0	76	14	0	0	90	0	122	19	0	0	141	271
4:30 PM	0	0	18	0	0	18	0	0	11	0	0	11	0	116	13	0	0	129	0	122	22	0	0	144	302
4:45 PM	0	0	17	0	0	17	1	0	13	0	0	14	0	96	11	0	0	107	0	116	17	0	0	133	271
Hourly Total	0	0	77	0	0	77	1	0	62	0	0	63	0	371	51	0	0	422	0	479	81	0	0	560	1122
5:00 PM	0	0	16	0	0	16	0	0	23	0	0	23	0	94	10	0	0	104	0	119	23	0	0	142	285
5:15 PM	0	0	18	0	0	18	0	0	14	0	0	14	0	77	8	0	0	85	0	140	11	0	0	151	268
5:30 PM	0	0	29	0	0	29	0	0	17	0	0	17	0	73	6	0	0	79	0	101	17	0	0	118	243
5:45 PM	0	0	20	0	0	20	0	0	6	0	0	6	0	82	9	0	0	91	0	65	8	0	0	73	190
Hourly Total	0	0	83	0	0	83	0	0	60	0	0	60	0	326	33	0	0	359	0	425	59	0	0	484	986

6:00 PM	0	0	16	0	0	16	1	0	7	0	0	8	0	64	6	0	0	70	0	76	11	0	0	87	181
6:15 PM	0	0	15	0	0	15	0	0	9	0	0	9	0	56	4	0	0	60	0	89	9	0	0	98	182
6:30 PM	0	0	10	0	0	10	0	0	4	0	0	4	0	54	7	0	0	61	0	68	6	0	0	74	149
6:45 PM	0	0	16	0	0	16	0	0	3	0	0	3	0	41	5	0	0	46	0	61	6	0	0	67	132
Hourly Total	0	0	57	0	0	57	1	0	23	0	0	24	0	215	22	0	0	237	0	294	32	0	0	326	644
Grand Total	2	0	436	0	0	438	2	0	416	0	0	418	0	2581	378	0	0	2959	8	2538	346	0	0	2892	6707
Approach %	0.5	0.0	99.5	0.0	-	-	0.5	0.0	99.5	0.0	-	-	0.0	87.2	12.8	0.0	-	-	0.3	87.8	12.0	0.0	-	-	-
Total %	0.0	0.0	6.5	0.0	-	6.5	0.0	0.0	6.2	0.0	-	6.2	0.0	38.5	5.6	0.0	-	44.1	0.1	37.8	5.2	0.0	-	43.1	-
Lights	2	0	383	0	-	385	2	0	365	0	-	367	0	2464	311	0	-	2775	7	2379	306	0	-	2692	6219
% Lights	100.0	-	87.8	-	-	87.9	100.0	-	87.7	-	-	87.8	-	95.5	82.3	-	-	93.8	87.5	93.7	88.4	-	-	93.1	92.7
Mediums	0	0	20	0	-	20	0	0	23	0	-	23	0	78	32	0	-	110	0	96	19	0	-	115	268
% Mediums	0.0	-	4.6	-	-	4.6	0.0	-	5.5	-	-	5.5	-	3.0	8.5	-	-	3.7	0.0	3.8	5.5	-	-	4.0	4.0
Articulated Trucks	0	0	33	0	-	33	0	0	28	0	-	28	0	39	35	0	-	74	1	63	21	0	-	85	220
% Articulated Trucks	0.0	-	7.6	-	-	7.5	0.0	-	6.7	-	-	6.7	-	1.5	9.3	-	-	2.5	12.5	2.5	6.1	-	-	2.9	3.3
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017

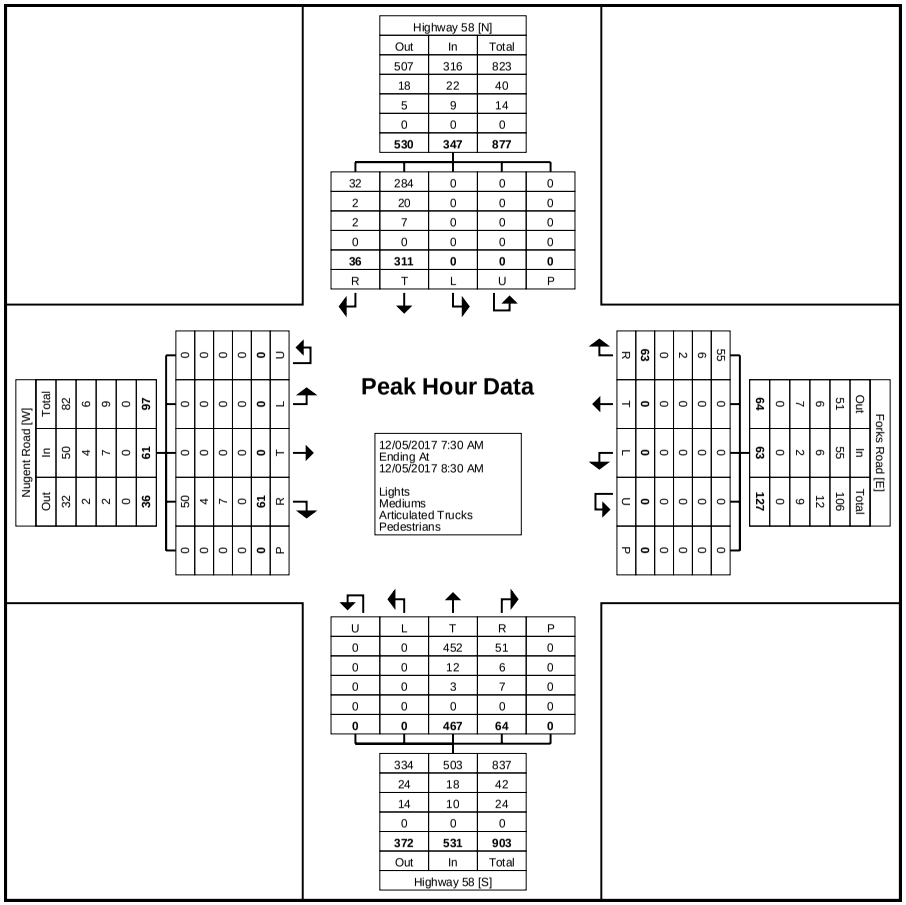
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Nugent Road Eastbound						Forks Road Westbound						Highway 58 Northbound						Highway 58 Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	0	0	18	0	0	18	0	0	11	0	0	11	0	125	22	0	0	147	0	73	10	0	0	83	259
7:45 AM	0	0	15	0	0	15	0	0	20	0	0	20	0	127	18	0	0	145	0	79	8	0	0	87	267
8:00 AM	0	0	15	0	0	15	0	0	17	0	0	17	0	108	15	0	0	123	0	82	11	0	0	93	248
8:15 AM	0	0	13	0	0	13	0	0	15	0	0	15	0	107	9	0	0	116	0	77	7	0	0	84	228
Total	0	0	61	0	0	61	0	0	63	0	0	63	0	467	64	0	0	531	0	311	36	0	0	347	1002
Approach %	0.0	0.0	100.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.0	87.9	12.1	0.0	-	-	0.0	89.6	10.4	0.0	-	-	-
Total %	0.0	0.0	6.1	0.0	-	6.1	0.0	0.0	6.3	0.0	-	6.3	0.0	46.6	6.4	0.0	-	53.0	0.0	31.0	3.6	0.0	-	34.6	-
PHF	0.000	0.000	0.847	0.000	-	0.847	0.000	0.000	0.788	0.000	-	0.788	0.000	0.919	0.727	0.000	-	0.903	0.000	0.948	0.818	0.000	-	0.933	0.938
Lights	0	0	50	0	-	50	0	0	55	0	-	55	0	452	51	0	-	503	0	284	32	0	-	316	924
% Lights	-	-	82.0	-	-	82.0	-	-	87.3	-	-	87.3	-	96.8	79.7	-	-	94.7	-	91.3	88.9	-	-	91.1	92.2
Mediums	0	0	4	0	-	4	0	0	6	0	-	6	0	12	6	0	-	18	0	20	2	0	-	22	50
% Mediums	-	-	6.6	-	-	6.6	-	-	9.5	-	-	9.5	-	2.6	9.4	-	-	3.4	-	6.4	5.6	-	-	6.3	5.0
Articulated Trucks	0	0	7	0	-	7	0	0	2	0	-	2	0	3	7	0	-	10	0	7	2	0	-	9	28
% Articulated Trucks	-	-	11.5	-	-	11.5	-	-	3.2	-	-	3.2	-	0.6	10.9	-	-	1.9	-	2.3	5.6	-	-	2.6	2.8
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017



Turning Movement Peak Hour Data Plot (7:30 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017

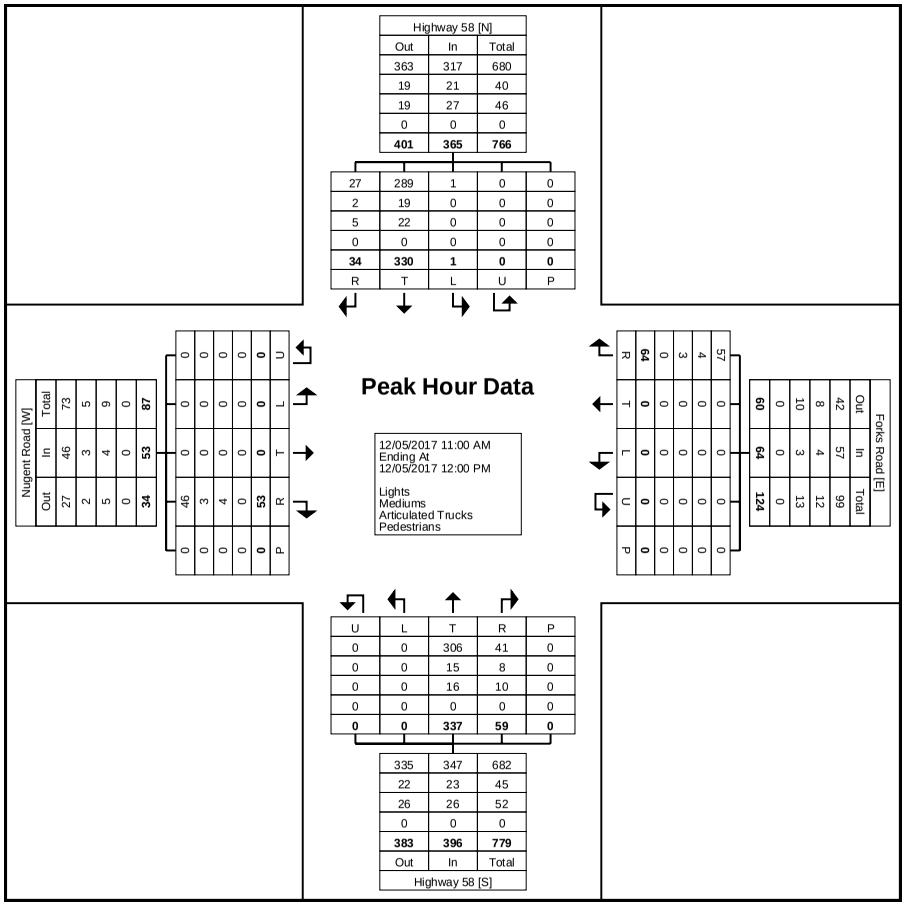
Turning Movement Peak Hour Data (11:00 AM)

Start Time	Nugent Road Eastbound						Forks Road Westbound						Highway 58 Northbound						Highway 58 Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
11:00 AM	0	0	14	0	0	14	0	0	16	0	0	16	0	91	13	0	0	104	1	73	6	0	0	80	214
11:15 AM	0	0	17	0	0	17	0	0	16	0	0	16	0	90	11	0	0	101	0	92	11	0	0	103	237
11:30 AM	0	0	10	0	0	10	0	0	15	0	0	15	0	73	22	0	0	95	0	76	9	0	0	85	205
11:45 AM	0	0	12	0	0	12	0	0	17	0	0	17	0	83	13	0	0	96	0	89	8	0	0	97	222
Total	0	0	53	0	0	53	0	0	64	0	0	64	0	337	59	0	0	396	1	330	34	0	0	365	878
Approach %	0.0	0.0	100.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.0	85.1	14.9	0.0	-	-	0.3	90.4	9.3	0.0	-	-	-
Total %	0.0	0.0	6.0	0.0	-	6.0	0.0	0.0	7.3	0.0	-	7.3	0.0	38.4	6.7	0.0	-	45.1	0.1	37.6	3.9	0.0	-	41.6	-
PHF	0.000	0.000	0.779	0.000	-	0.779	0.000	0.000	0.941	0.000	-	0.941	0.000	0.926	0.670	0.000	-	0.952	0.250	0.897	0.773	0.000	-	0.886	0.926
Lights	0	0	46	0	-	46	0	0	57	0	-	57	0	306	41	0	-	347	1	289	27	0	-	317	767
% Lights	-	-	86.8	-	-	86.8	-	-	89.1	-	-	89.1	-	90.8	69.5	-	-	87.6	100.0	87.6	79.4	-	-	86.8	87.4
Mediums	0	0	3	0	-	3	0	0	4	0	-	4	0	15	8	0	-	23	0	19	2	0	-	21	51
% Mediums	-	-	5.7	-	-	5.7	-	-	6.3	-	-	6.3	-	4.5	13.6	-	-	5.8	0.0	5.8	5.9	-	-	5.8	5.8
Articulated Trucks	0	0	4	0	-	4	0	0	3	0	-	3	0	16	10	0	-	26	0	22	5	0	-	27	60
% Articulated Trucks	-	-	7.5	-	-	7.5	-	-	4.7	-	-	4.7	-	4.7	16.9	-	-	6.6	0.0	6.7	14.7	-	-	7.4	6.8
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017



Turning Movement Peak Hour Data Plot (11:00 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017

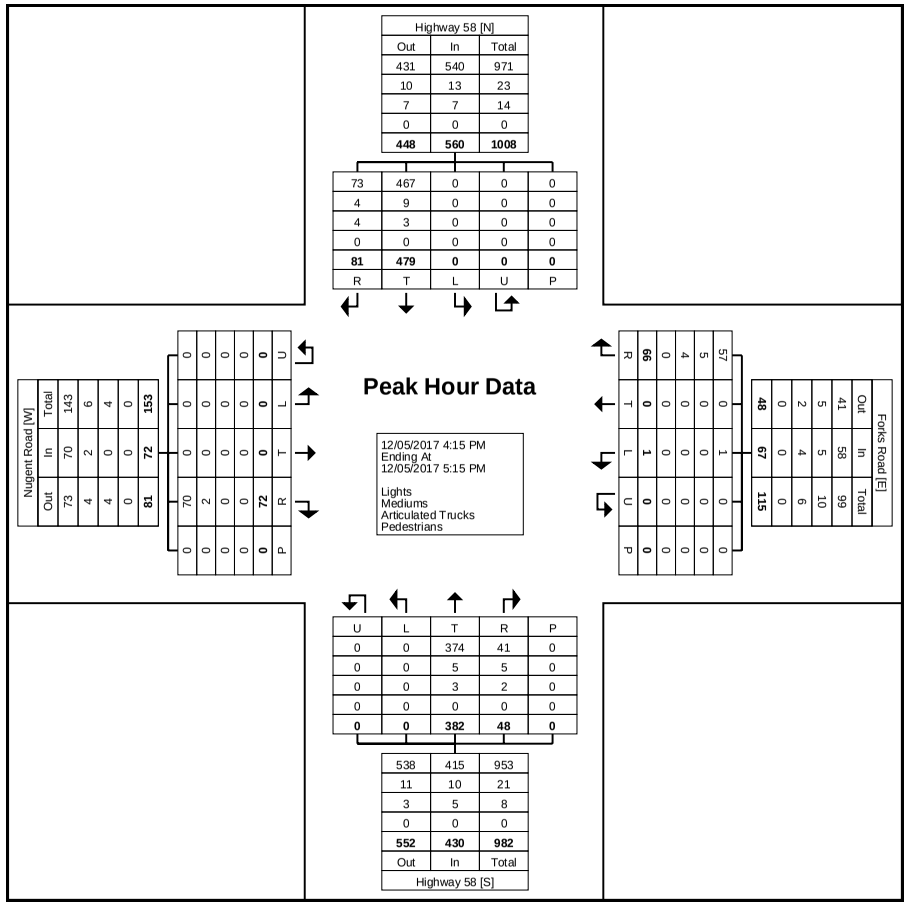
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Nugent Road Eastbound						Forks Road Westbound						Highway 58 Northbound						Highway 58 Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:15 PM	0	0	21	0	0	21	0	0	19	0	0	19	0	76	14	0	0	90	0	122	19	0	0	141	271
4:30 PM	0	0	18	0	0	18	0	0	11	0	0	11	0	116	13	0	0	129	0	122	22	0	0	144	302
4:45 PM	0	0	17	0	0	17	1	0	13	0	0	14	0	96	11	0	0	107	0	116	17	0	0	133	271
5:00 PM	0	0	16	0	0	16	0	0	23	0	0	23	0	94	10	0	0	104	0	119	23	0	0	142	285
Total	0	0	72	0	0	72	1	0	66	0	0	67	0	382	48	0	0	430	0	479	81	0	0	560	1129
Approach %	0.0	0.0	100.0	0.0	-	-	1.5	0.0	98.5	0.0	-	-	0.0	88.8	11.2	0.0	-	-	0.0	85.5	14.5	0.0	-	-	-
Total %	0.0	0.0	6.4	0.0	-	6.4	0.1	0.0	5.8	0.0	-	5.9	0.0	33.8	4.3	0.0	-	38.1	0.0	42.4	7.2	0.0	-	49.6	-
PHF	0.000	0.000	0.857	0.000	-	0.857	0.250	0.000	0.717	0.000	-	0.728	0.000	0.823	0.857	0.000	-	0.833	0.000	0.982	0.880	0.000	-	0.972	0.935
Lights	0	0	70	0	-	70	1	0	57	0	-	58	0	374	41	0	-	415	0	467	73	0	-	540	1083
% Lights	-	-	97.2	-	-	97.2	100.0	-	86.4	-	-	86.6	-	97.9	85.4	-	-	96.5	-	97.5	90.1	-	-	96.4	95.9
Mediums	0	0	2	0	-	2	0	0	5	0	-	5	0	5	5	0	-	10	0	9	4	0	-	13	30
% Mediums	-	-	2.8	-	-	2.8	0.0	-	7.6	-	-	7.5	-	1.3	10.4	-	-	2.3	-	1.9	4.9	-	-	2.3	2.7
Articulated Trucks	0	0	0	0	-	0	0	0	4	0	-	4	0	3	2	0	-	5	0	3	4	0	-	7	16
% Articulated Trucks	-	-	0.0	-	-	0.0	0.0	-	6.1	-	-	6.0	-	0.8	4.2	-	-	1.2	-	0.6	4.9	-	-	1.3	1.4
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017



Turning Movement Peak Hour Data Plot (4:15 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Highway 58 & Forks Road
Site Code:
Start Date: 12/05/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Townline Tunnel Rd & Canal Bank St
Site Code:
Start Date: 11/15/2017

Turning Movement Data

Start Time	Townline Tunnel Road Eastbound						Townline Tunnel Road Westbound						Canal Bank Street Northbound						Canal Bank Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	0	24	2	0	0	26	2	12	9	0	0	23	0	9	13	0	0	22	8	4	0	0	0	12	83
6:15 AM	1	50	0	0	0	51	12	24	9	0	0	45	1	11	21	0	0	33	20	9	2	0	0	31	160
6:30 AM	0	52	3	0	0	55	14	24	19	0	0	57	0	21	32	0	0	53	24	11	1	0	0	36	201
6:45 AM	2	45	0	0	0	47	20	36	20	0	0	76	4	7	21	0	0	32	15	9	0	0	0	24	179
Hourly Total	3	171	5	0	0	179	48	96	57	0	0	201	5	48	87	0	0	140	67	33	3	0	0	103	623
7:00 AM	1	53	1	0	0	55	12	21	13	0	0	46	4	17	21	0	0	42	12	10	0	0	0	22	165
7:15 AM	4	50	3	0	0	57	13	39	12	0	0	64	2	17	24	0	0	43	18	9	1	0	0	28	192
7:30 AM	4	57	1	0	0	62	19	45	15	0	0	79	10	21	41	0	0	72	22	11	1	0	0	34	247
7:45 AM	6	55	1	0	0	62	11	61	34	0	0	106	3	41	30	0	0	74	20	7	6	0	0	33	275
Hourly Total	15	215	6	0	0	236	55	166	74	0	0	295	19	96	116	0	0	231	72	37	8	0	0	117	879
8:00 AM	3	63	2	0	0	68	13	47	12	0	0	72	4	21	25	0	0	50	18	10	2	0	0	30	220
8:15 AM	7	52	3	0	0	62	11	36	31	0	0	78	5	30	26	0	0	61	28	7	1	0	0	36	237
8:30 AM	8	45	2	0	0	55	8	36	16	0	0	60	2	28	30	0	0	60	11	17	1	0	0	29	204
8:45 AM	7	47	2	0	0	56	10	32	26	0	0	68	1	19	30	0	0	50	20	12	1	0	0	33	207
Hourly Total	25	207	9	0	0	241	42	151	85	0	0	278	12	98	111	0	0	221	77	46	5	0	0	128	868
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	9	29	3	0	0	41	13	26	7	0	0	46	5	31	11	0	0	47	7	29	1	0	0	37	171
11:15 AM	3	49	2	0	0	54	12	23	9	0	0	44	3	19	15	0	0	37	17	33	1	0	0	51	186
11:30 AM	5	33	5	0	1	43	11	26	7	0	0	44	2	26	11	0	0	39	11	23	4	0	0	38	164
11:45 AM	3	34	6	0	0	43	11	37	12	0	0	60	4	39	9	0	0	52	11	20	2	0	0	33	188
Hourly Total	20	145	16	0	1	181	47	112	35	0	0	194	14	115	46	0	0	175	46	105	8	0	0	159	709
12:00 PM	4	36	5	0	1	45	13	28	11	0	0	52	1	40	9	0	0	50	6	27	3	0	0	36	183
12:15 PM	3	30	4	0	0	37	9	42	10	0	0	61	4	32	18	0	0	54	8	24	3	0	0	35	187
12:30 PM	3	25	2	0	0	30	11	27	17	0	0	55	5	32	15	0	0	52	10	18	5	0	0	33	170
12:45 PM	5	36	2	0	0	43	14	27	20	0	0	61	4	25	12	0	1	41	11	15	8	0	0	34	179
Hourly Total	15	127	13	0	1	155	47	124	58	0	0	229	14	129	54	0	1	197	35	84	19	0	0	138	719
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	4	51	3	0	0	58	41	55	23	0	0	119	3	27	36	0	0	66	14	31	1	0	0	46	289
4:15 PM	7	37	4	0	0	48	31	76	32	0	0	139	3	27	29	0	0	59	21	30	4	0	0	55	301
4:30 PM	1	57	3	0	1	61	30	65	22	0	0	117	3	30	21	0	0	54	19	36	3	0	0	58	290
4:45 PM	7	56	2	0	0	65	33	70	38	0	0	141	1	23	26	0	0	50	17	35	4	0	0	56	312
Hourly Total	19	201	12	0	1	232	135	266	115	0	0	516	10	107	112	0	0	229	71	132	12	0	0	215	1192
5:00 PM	11	63	9	0	0	83	34	78	25	0	0	137	0	22	27	0	0	49	26	32	3	0	0	61	330
5:15 PM	2	49	7	0	0	58	21	69	35	0	0	125	4	27	13	0	0	44	20	29	3	0	0	52	279
5:30 PM	4	30	3	0	0	37	28	59	31	0	0	118	0	23	11	0	0	34	22	26	6	0	0	54	243
5:45 PM	2	32	3	0	0	37	26	37	17	0	0	80	1	20	21	0	0	42	8	24	2	0	0	34	193
Hourly Total	19	174	22	0	0	215	109	243	108	0	0	460	5	92	72	0	0	169	76	111	14	0	0	201	1045

6:00 PM	1	38	3	0	0	42	24	25	10	0	0	59	2	20	18	0	0	40	19	21	2	0	0	42	183
6:15 PM	0	28	0	0	0	28	14	24	8	0	0	46	0	26	17	0	0	43	17	16	4	0	0	37	154
6:30 PM	2	21	3	0	0	26	13	34	9	0	0	56	1	20	8	0	0	29	12	24	3	0	0	39	150
6:45 PM	2	12	0	0	0	14	11	27	14	0	0	52	0	14	23	0	0	37	11	17	1	0	0	29	132
Hourly Total	5	99	6	0	0	110	62	110	41	0	0	213	3	80	66	0	0	149	59	78	10	0	0	147	619
Grand Total	121	1339	89	0	3	1549	545	1268	573	0	0	2386	82	765	664	0	1	1511	503	626	79	0	0	1208	6654
Approach %	7.8	86.4	5.7	0.0	-	-	22.8	53.1	24.0	0.0	-	-	5.4	50.6	43.9	0.0	-	-	41.6	51.8	6.5	0.0	-	-	-
Total %	1.8	20.1	1.3	0.0	-	23.3	8.2	19.1	8.6	0.0	-	35.9	1.2	11.5	10.0	0.0	-	22.7	7.6	9.4	1.2	0.0	-	18.2	-
Motorcycles	0	1	0	0	-	1	2	1	1	0	-	4	0	3	2	0	-	5	1	2	0	0	-	3	13
% Motorcycles	0.0	0.1	0.0	-	-	0.1	0.4	0.1	0.2	-	-	0.2	0.0	0.4	0.3	-	-	0.3	0.2	0.3	0.0	-	-	0.2	0.2
Cars	81	831	57	0	-	969	407	756	439	0	-	1602	43	587	490	0	-	1120	379	482	59	0	-	920	4611
% Cars	66.9	62.1	64.0	-	-	62.6	74.7	59.6	76.6	-	-	67.1	52.4	76.7	73.8	-	-	74.1	75.3	77.0	74.7	-	-	76.2	69.3
Light Goods Vehicles	28	339	24	0	-	391	126	335	117	0	-	578	29	151	165	0	-	345	108	119	13	0	-	240	1554
% Light Goods Vehicles	23.1	25.3	27.0	-	-	25.2	23.1	26.4	20.4	-	-	24.2	35.4	19.7	24.8	-	-	22.8	21.5	19.0	16.5	-	-	19.9	23.4
Buses	5	5	5	0	-	15	3	4	4	0	-	11	6	4	3	0	-	13	3	3	4	0	-	10	49
% Buses	4.1	0.4	5.6	-	-	1.0	0.6	0.3	0.7	-	-	0.5	7.3	0.5	0.5	-	-	0.9	0.6	0.5	5.1	-	-	0.8	0.7
Single-Unit Trucks	6	82	2	0	-	90	4	71	11	0	-	86	2	6	3	0	-	11	11	8	3	0	-	22	209
% Single-Unit Trucks	5.0	6.1	2.2	-	-	5.8	0.7	5.6	1.9	-	-	3.6	2.4	0.8	0.5	-	-	0.7	2.2	1.3	3.8	-	-	1.8	3.1
Articulated Trucks	1	81	1	0	-	83	3	101	1	0	-	105	2	2	1	0	-	5	1	0	0	0	-	1	194
% Articulated Trucks	0.8	6.0	1.1	-	-	5.4	0.6	8.0	0.2	-	-	4.4	2.4	0.3	0.2	-	-	0.3	0.2	0.0	0.0	-	-	0.1	2.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	12	0	0	-	12	0	12	0	0	-	12	24
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.6	0.0	-	-	0.8	0.0	1.9	0.0	-	-	1.0	0.4
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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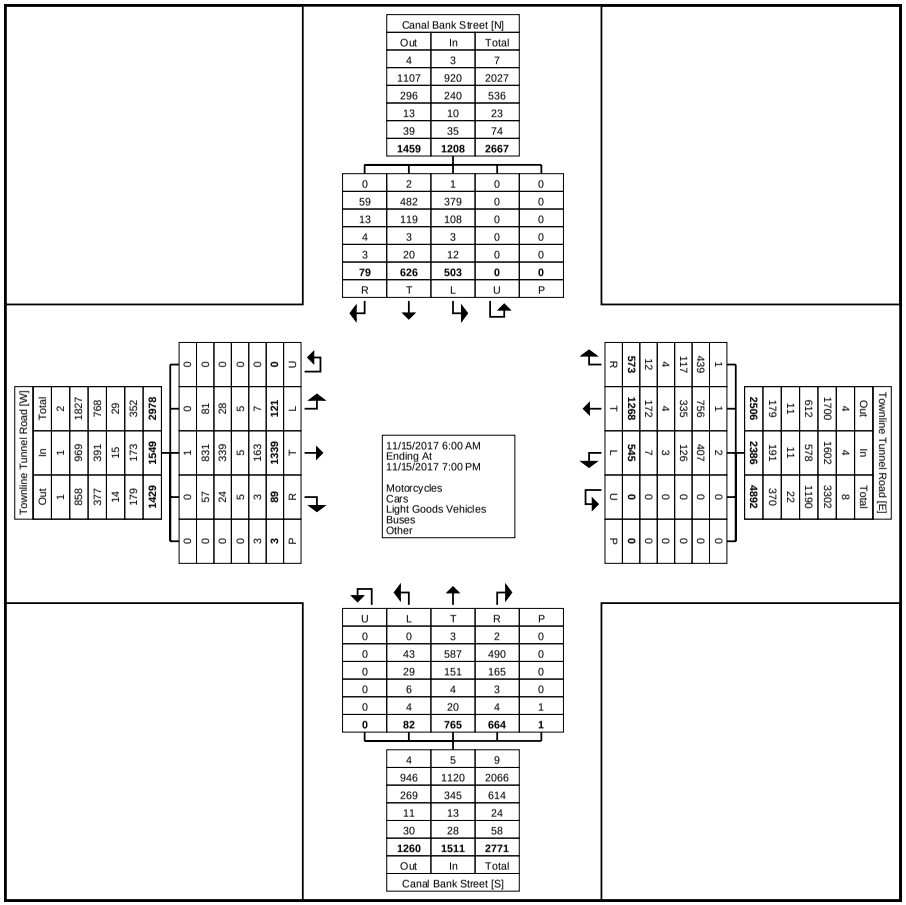
Count Name: Townline Tunnel Rd & Canal Bank St
Site Code:
Start Date: 11/15/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
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Count Name: Townline Tunnel Rd & Canal Bank St
Site Code:
Start Date: 11/15/2017

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Townline Tunnel Road Eastbound						Townline Tunnel Road Westbound						Canal Bank Street Northbound						Canal Bank Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	4	57	1	0	0	62	19	45	15	0	0	79	10	21	41	0	0	72	22	11	1	0	0	34	247
7:45 AM	6	55	1	0	0	62	11	61	34	0	0	106	3	41	30	0	0	74	20	7	6	0	0	33	275
8:00 AM	3	63	2	0	0	68	13	47	12	0	0	72	4	21	25	0	0	50	18	10	2	0	0	30	220
8:15 AM	7	52	3	0	0	62	11	36	31	0	0	78	5	30	26	0	0	61	28	7	1	0	0	36	237
Total	20	227	7	0	0	254	54	189	92	0	0	335	22	113	122	0	0	257	88	35	10	0	0	133	979
Approach %	7.9	89.4	2.8	0.0	-	-	16.1	56.4	27.5	0.0	-	-	8.6	44.0	47.5	0.0	-	-	66.2	26.3	7.5	0.0	-	-	-
Total %	2.0	23.2	0.7	0.0	-	25.9	5.5	19.3	9.4	0.0	-	34.2	2.2	11.5	12.5	0.0	-	26.3	9.0	3.6	1.0	0.0	-	13.6	-
PHF	0.714	0.901	0.583	0.000	-	0.934	0.711	0.775	0.676	0.000	-	0.790	0.550	0.689	0.744	0.000	-	0.868	0.786	0.795	0.417	0.000	-	0.924	0.890
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars	18	148	5	0	-	171	37	113	74	0	-	224	10	94	91	0	-	195	69	29	7	0	-	105	695
% Cars	90.0	65.2	71.4	-	-	67.3	68.5	59.8	80.4	-	-	66.9	45.5	83.2	74.6	-	-	75.9	78.4	82.9	70.0	-	-	78.9	71.0
Light Goods Vehicles	2	51	1	0	-	54	14	49	14	0	-	77	7	15	28	0	-	50	18	4	1	0	-	23	204
% Light Goods Vehicles	10.0	22.5	14.3	-	-	21.3	25.9	25.9	15.2	-	-	23.0	31.8	13.3	23.0	-	-	19.5	20.5	11.4	10.0	-	-	17.3	20.8
Buses	0	0	1	0	-	1	2	1	4	0	-	7	5	3	1	0	-	9	0	0	1	0	-	1	18
% Buses	0.0	0.0	14.3	-	-	0.4	3.7	0.5	4.3	-	-	2.1	22.7	2.7	0.8	-	-	3.5	0.0	0.0	10.0	-	-	0.8	1.8
Single-Unit Trucks	0	12	0	0	-	12	1	12	0	0	-	13	0	0	1	0	-	1	1	1	1	0	-	3	29
% Single-Unit Trucks	0.0	5.3	0.0	-	-	4.7	1.9	6.3	0.0	-	-	3.9	0.0	0.0	0.8	-	-	0.4	1.1	2.9	10.0	-	-	2.3	3.0
Articulated Trucks	0	16	0	0	-	16	0	14	0	0	-	14	0	0	1	0	-	1	0	0	0	0	-	0	31
% Articulated Trucks	0.0	7.0	0.0	-	-	6.3	0.0	7.4	0.0	-	-	4.2	0.0	0.0	0.8	-	-	0.4	0.0	0.0	0.0	-	-	0.0	3.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.9	0.0	-	-	0.4	0.0	2.9	0.0	-	-	0.8	0.2
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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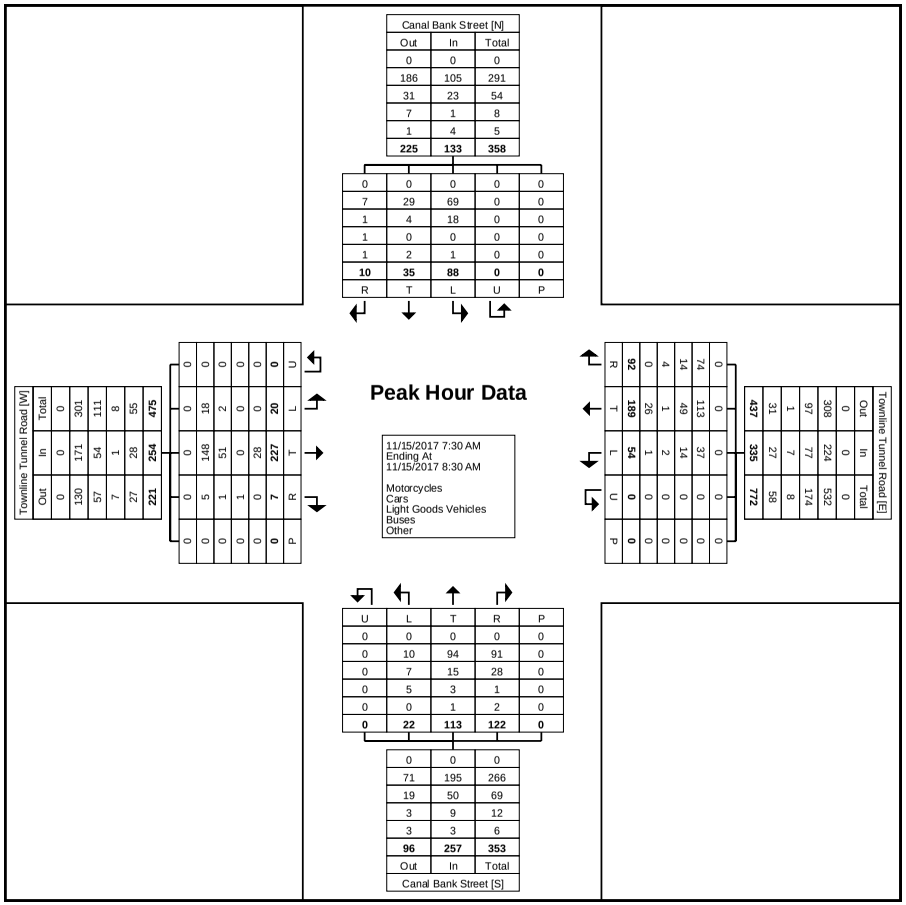

Turning Movement Peak Hour Data Plot (7:30 AM)

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Count Name: Townline Tunnel Rd & Canal Bank St
Site Code:
Start Date: 11/15/2017

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Townline Tunnel Road Eastbound						Townline Tunnel Road Westbound						Canal Bank Street Northbound						Canal Bank Street Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
11:45 AM	3	34	6	0	0	43	11	37	12	0	0	60	4	39	9	0	0	52	11	20	2	0	0	33	188
12:00 PM	4	36	5	0	1	45	13	28	11	0	0	52	1	40	9	0	0	50	6	27	3	0	0	36	183
12:15 PM	3	30	4	0	0	37	9	42	10	0	0	61	4	32	18	0	0	54	8	24	3	0	0	35	187
12:30 PM	3	25	2	0	0	30	11	27	17	0	0	55	5	32	15	0	0	52	10	18	5	0	0	33	170
Total	13	125	17	0	1	155	44	134	50	0	0	228	14	143	51	0	0	208	35	89	13	0	0	137	728
Approach %	8.4	80.6	11.0	0.0	-	-	19.3	58.8	21.9	0.0	-	-	6.7	68.8	24.5	0.0	-	-	25.5	65.0	9.5	0.0	-	-	-
Total %	1.8	17.2	2.3	0.0	-	21.3	6.0	18.4	6.9	0.0	-	31.3	1.9	19.6	7.0	0.0	-	28.6	4.8	12.2	1.8	0.0	-	18.8	-
PHF	0.813	0.868	0.708	0.000	-	0.861	0.846	0.798	0.735	0.000	-	0.934	0.700	0.894	0.708	0.000	-	0.963	0.795	0.824	0.650	0.000	-	0.951	0.968
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars	4	75	11	0	-	90	31	68	32	0	-	131	7	102	37	0	-	146	31	72	10	0	-	113	480
% Cars	30.8	60.0	64.7	-	-	58.1	70.5	50.7	64.0	-	-	57.5	50.0	71.3	72.5	-	-	70.2	88.6	80.9	76.9	-	-	82.5	65.9
Light Goods Vehicles	6	27	4	0	-	37	12	33	14	0	-	59	6	27	13	0	-	46	4	13	2	0	-	19	161
% Light Goods Vehicles	46.2	21.6	23.5	-	-	23.9	27.3	24.6	28.0	-	-	25.9	42.9	18.9	25.5	-	-	22.1	11.4	14.6	15.4	-	-	13.9	22.1
Buses	1	1	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Buses	7.7	0.8	0.0	-	-	1.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	1	11	1	0	-	13	1	17	3	0	-	21	0	2	1	0	-	3	0	3	1	0	-	4	41
% Single-Unit Trucks	7.7	8.8	5.9	-	-	8.4	2.3	12.7	6.0	-	-	9.2	0.0	1.4	2.0	-	-	1.4	0.0	3.4	7.7	-	-	2.9	5.6
Articulated Trucks	1	11	1	0	-	13	0	16	1	0	-	17	1	2	0	0	-	3	0	0	0	0	-	0	33
% Articulated Trucks	7.7	8.8	5.9	-	-	8.4	0.0	11.9	2.0	-	-	7.5	7.1	1.4	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	4.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	10	0	0	-	10	0	1	0	0	-	1	11
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	7.0	0.0	-	-	4.8	0.0	1.1	0.0	-	-	0.7	1.5
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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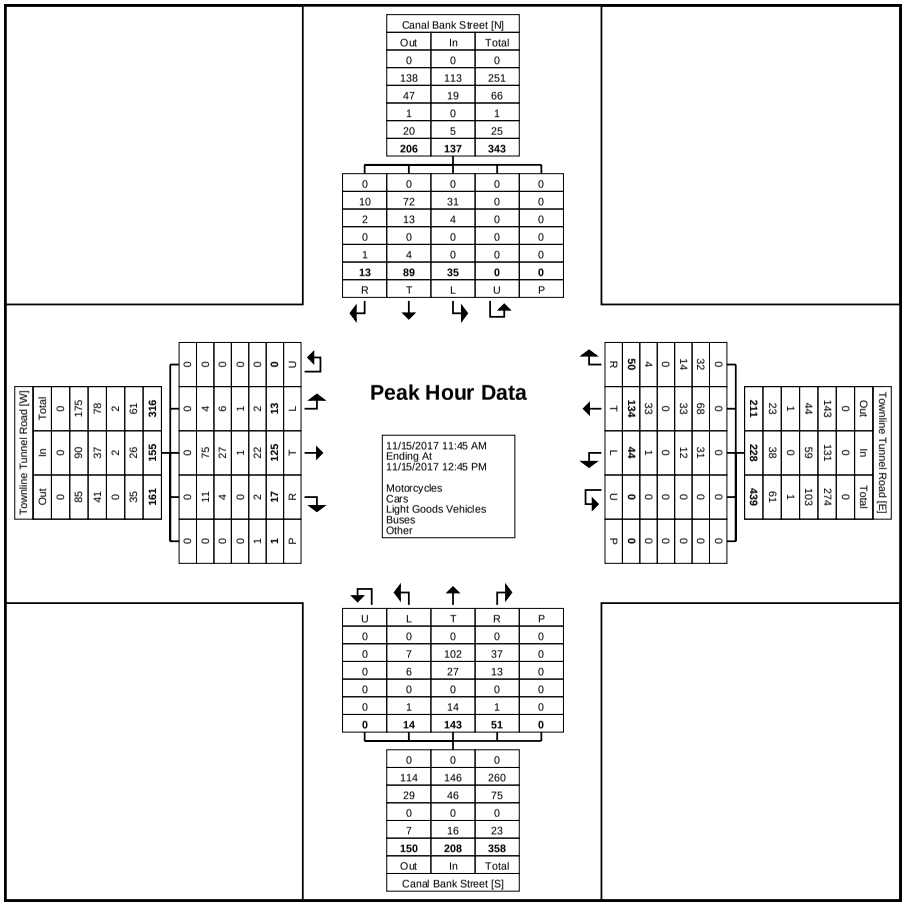

Turning Movement Peak Hour Data Plot (11:45 AM)

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Count Name: Townline Tunnel Rd & Canal Bank St
Site Code:
Start Date: 11/15/2017

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Townline Tunnel Road Eastbound						Townline Tunnel Road Westbound						Canal Bank Street Northbound						Canal Bank Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:15 PM	7	37	4	0	0	48	31	76	32	0	0	139	3	27	29	0	0	59	21	30	4	0	0	55	301
4:30 PM	1	57	3	0	1	61	30	65	22	0	0	117	3	30	21	0	0	54	19	36	3	0	0	58	290
4:45 PM	7	56	2	0	0	65	33	70	38	0	0	141	1	23	26	0	0	50	17	35	4	0	0	56	312
5:00 PM	11	63	9	0	0	83	34	78	25	0	0	137	0	22	27	0	0	49	26	32	3	0	0	61	330
Total	26	213	18	0	1	257	128	289	117	0	0	534	7	102	103	0	0	212	83	133	14	0	0	230	1233
Approach %	10.1	82.9	7.0	0.0	-	-	24.0	54.1	21.9	0.0	-	-	3.3	48.1	48.6	0.0	-	-	36.1	57.8	6.1	0.0	-	-	-
Total %	2.1	17.3	1.5	0.0	-	20.8	10.4	23.4	9.5	0.0	-	43.3	0.6	8.3	8.4	0.0	-	17.2	6.7	10.8	1.1	0.0	-	18.7	-
PHF	0.591	0.845	0.500	0.000	-	0.774	0.941	0.926	0.770	0.000	-	0.947	0.583	0.850	0.888	0.000	-	0.898	0.798	0.924	0.875	0.000	-	0.943	0.934
Motorcycles	0	0	0	0	-	0	1	0	1	0	-	2	0	2	0	0	-	2	0	1	0	0	-	1	5
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.8	0.0	0.9	-	-	0.4	0.0	2.0	0.0	-	-	0.9	0.0	0.8	0.0	-	-	0.4	0.4
Cars	17	135	11	0	-	163	95	165	90	0	-	350	4	79	79	0	-	162	59	114	13	0	-	186	861
% Cars	65.4	63.4	61.1	-	-	63.4	74.2	57.1	76.9	-	-	65.5	57.1	77.5	76.7	-	-	76.4	71.1	85.7	92.9	-	-	80.9	69.8
Light Goods Vehicles	9	54	7	0	-	70	32	90	24	0	-	146	3	19	24	0	-	46	21	14	1	0	-	36	298
% Light Goods Vehicles	34.6	25.4	38.9	-	-	27.2	25.0	31.1	20.5	-	-	27.3	42.9	18.6	23.3	-	-	21.7	25.3	10.5	7.1	-	-	15.7	24.2
Buses	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.4	0.2
Single-Unit Trucks	0	14	0	0	-	14	0	15	2	0	-	17	0	1	0	0	-	1	2	1	0	0	-	3	35
% Single-Unit Trucks	0.0	6.6	0.0	-	-	5.4	0.0	5.2	1.7	-	-	3.2	0.0	1.0	0.0	-	-	0.5	2.4	0.8	0.0	-	-	1.3	2.8
Articulated Trucks	0	10	0	0	-	10	0	18	0	0	-	18	0	0	0	0	-	0	1	0	0	0	-	1	29
% Articulated Trucks	0.0	4.7	0.0	-	-	3.9	0.0	6.2	0.0	-	-	3.4	0.0	0.0	0.0	-	-	0.0	1.2	0.0	0.0	-	-	0.4	2.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	2	0	0	-	2	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.5	0.0	1.5	0.0	-	-	0.9	0.2
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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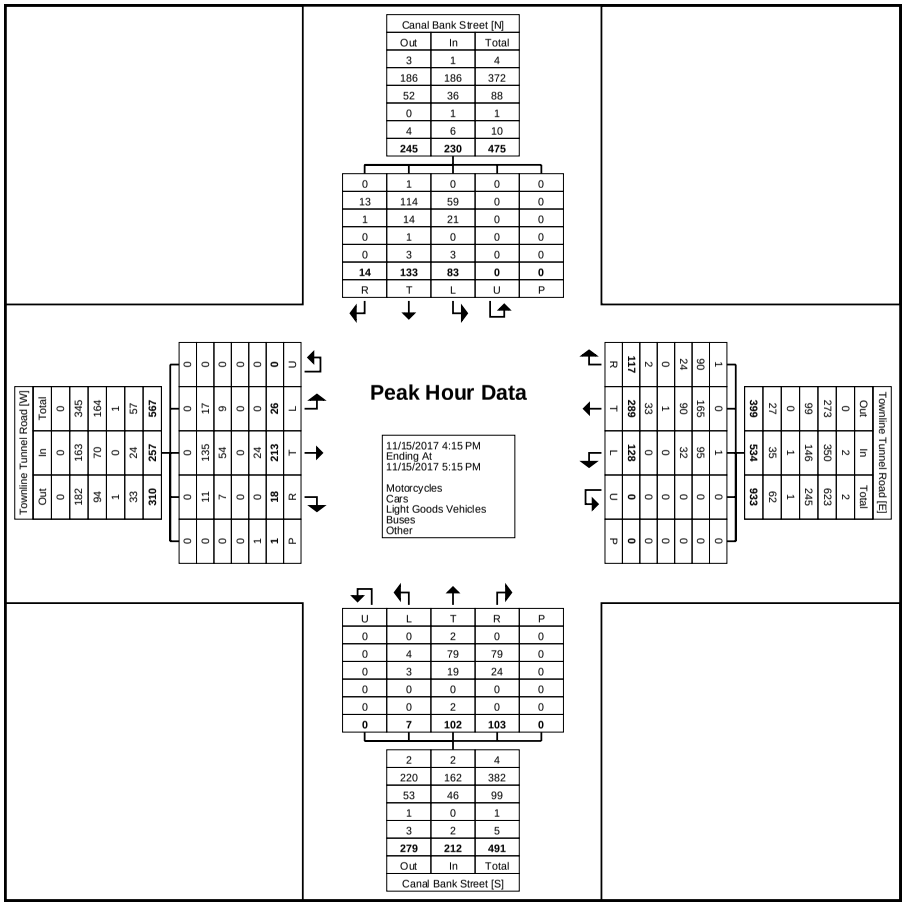

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Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Townline Tunnel Road & Westside Road
Site Code:
Start Date: 12/05/2017

Turning Movement Data

Start Time	Humberstone Road Eastbound						Townline Tunnel Road Westbound						Westside Road Northbound						Westside Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	0	0	16	0	8	0	0	24	0	25	13	0	0	38	10	20	0	0	0	30	92
6:15 AM	1	0	1	0	0	2	11	0	10	0	0	21	1	30	31	0	0	62	13	27	0	0	0	40	125
6:30 AM	0	0	1	0	0	1	8	1	11	0	0	20	0	54	27	0	0	81	10	46	0	0	0	56	158
6:45 AM	0	0	0	0	0	0	12	1	19	0	0	32	0	43	23	0	0	66	10	38	1	0	0	49	147
Hourly Total	1	0	2	0	0	3	47	2	48	0	0	97	1	152	94	0	0	247	43	131	1	0	0	175	522
7:00 AM	0	2	0	0	0	2	8	0	14	0	0	22	3	54	28	0	0	85	12	34	1	0	0	47	156
7:15 AM	1	2	1	0	0	4	20	2	15	0	0	37	3	58	37	0	0	98	21	47	4	0	0	72	211
7:30 AM	4	1	2	0	0	7	24	3	33	0	0	60	7	81	57	0	0	145	13	63	3	0	0	79	291
7:45 AM	4	1	1	0	0	6	30	3	41	0	0	74	5	107	39	0	0	151	11	64	7	0	0	82	313
Hourly Total	9	6	4	0	0	19	82	8	103	0	0	193	18	300	161	0	0	479	57	208	15	0	0	280	971
8:00 AM	7	2	3	0	0	12	20	5	18	0	0	43	2	103	25	0	0	130	11	69	7	0	0	87	272
8:15 AM	4	5	1	0	0	10	17	8	16	0	0	41	2	85	42	0	0	129	12	72	0	0	0	84	264
8:30 AM	3	3	3	0	0	9	24	2	13	0	0	39	0	92	28	0	0	120	14	66	0	0	0	80	248
8:45 AM	6	1	2	0	0	9	16	3	19	0	0	38	2	98	25	0	0	125	18	57	4	0	0	79	251
Hourly Total	20	11	9	0	0	40	77	18	66	0	0	161	6	378	120	0	0	504	55	264	11	0	0	330	1035
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	11	2	5	0	0	18	12	10	17	0	0	39	4	74	25	0	0	103	18	79	14	0	0	111	271
11:15 AM	16	2	6	0	0	24	19	7	22	0	0	48	5	82	23	0	0	110	18	66	6	0	0	90	272
11:30 AM	10	8	4	0	0	22	14	7	19	0	0	40	2	74	18	0	0	94	17	72	4	0	0	93	249
11:45 AM	4	2	4	0	0	10	17	6	27	0	0	50	5	90	17	0	0	112	11	81	7	0	0	99	271
Hourly Total	41	14	19	0	0	74	62	30	85	0	0	177	16	320	83	0	0	419	64	298	31	0	0	393	1063
12:00 PM	9	11	9	0	0	29	19	2	11	0	0	32	5	58	16	0	0	79	17	87	4	0	0	108	248
12:15 PM	7	2	4	0	0	13	17	6	19	0	0	42	1	62	23	0	0	86	20	76	4	0	0	100	241
12:30 PM	6	6	1	0	0	13	19	3	17	0	0	39	0	79	28	0	0	107	14	75	9	0	0	98	257
12:45 PM	8	9	6	0	0	23	17	4	12	0	0	33	5	72	19	0	0	96	40	73	4	0	0	117	269
Hourly Total	30	28	20	0	0	78	72	15	59	0	0	146	11	271	86	0	0	368	91	311	21	0	0	423	1015
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	9	6	7	0	0	22	30	2	25	0	0	57	3	96	14	0	0	113	18	104	8	0	0	130	322
4:15 PM	6	1	4	0	0	11	42	6	21	0	0	69	0	88	13	0	0	101	25	102	9	0	0	136	317
4:30 PM	13	7	5	0	0	25	37	4	23	0	0	64	0	107	19	0	1	126	33	114	4	0	0	151	366
4:45 PM	5	10	3	0	0	18	44	4	20	0	0	68	0	97	22	0	0	119	25	97	3	0	0	125	330
Hourly Total	33	24	19	0	0	76	153	16	89	0	0	258	3	388	68	0	1	459	101	417	24	0	0	542	1335
5:00 PM	15	10	5	0	0	30	36	2	26	0	0	64	0	90	29	0	0	119	33	114	0	0	0	147	360
5:15 PM	2	1	2	0	0	5	50	0	23	0	0	73	0	73	26	0	0	99	20	109	1	0	0	130	307
5:30 PM	1	2	0	0	0	3	43	2	13	0	0	58	0	67	23	0	0	90	23	81	0	0	0	104	255
5:45 PM	0	2	1	0	0	3	14	1	10	0	0	25	0	76	17	0	0	93	16	60	0	0	0	76	197
Hourly Total	18	15	8	0	0	41	143	5	72	0	0	220	0	306	95	0	0	401	92	364	1	0	0	457	1119

6:00 PM	1	0	0	0	0	1	29	0	14	0	0	43	0	58	15	0	0	73	8	69	0	0	0	77	194
6:15 PM	1	0	1	0	0	2	28	1	10	0	0	39	1	55	13	0	0	69	18	75	0	0	0	93	203
6:30 PM	0	0	1	0	0	1	27	0	11	0	0	38	0	55	11	0	0	66	15	61	1	0	0	77	182
6:45 PM	0	0	1	0	0	1	13	1	8	0	0	22	1	34	6	0	0	41	8	51	0	0	0	59	123
Hourly Total	2	0	3	0	0	5	97	2	43	0	0	142	2	202	45	0	0	249	49	256	1	0	0	306	702
Grand Total	154	98	84	0	0	336	733	96	565	0	0	1394	57	2317	752	0	1	3126	552	2249	105	0	0	2906	7762
Approach %	45.8	29.2	25.0	0.0	-	-	52.6	6.9	40.5	0.0	-	-	1.8	74.1	24.1	0.0	-	-	19.0	77.4	3.6	0.0	-	-	-
Total %	2.0	1.3	1.1	0.0	-	4.3	9.4	1.2	7.3	0.0	-	18.0	0.7	29.9	9.7	0.0	-	40.3	7.1	29.0	1.4	0.0	-	37.4	-
Lights	133	80	79	0	-	292	623	80	507	0	-	1210	50	2244	668	0	-	2962	508	2158	90	0	-	2756	7220
% Lights	86.4	81.6	94.0	-	-	86.9	85.0	83.3	89.7	-	-	86.8	87.7	96.8	88.8	-	-	94.8	92.0	96.0	85.7	-	-	94.8	93.0
Mediums	21	18	5	0	-	44	48	16	32	0	-	96	7	58	33	0	-	98	31	73	15	0	-	119	357
% Mediums	13.6	18.4	6.0	-	-	13.1	6.5	16.7	5.7	-	-	6.9	12.3	2.5	4.4	-	-	3.1	5.6	3.2	14.3	-	-	4.1	4.6
Articulated Trucks	0	0	0	0	-	0	62	0	26	0	-	88	0	15	51	0	-	66	13	18	0	0	-	31	185
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	8.5	0.0	4.6	-	-	6.3	0.0	0.6	6.8	-	-	2.1	2.4	0.8	0.0	-	-	1.1	2.4
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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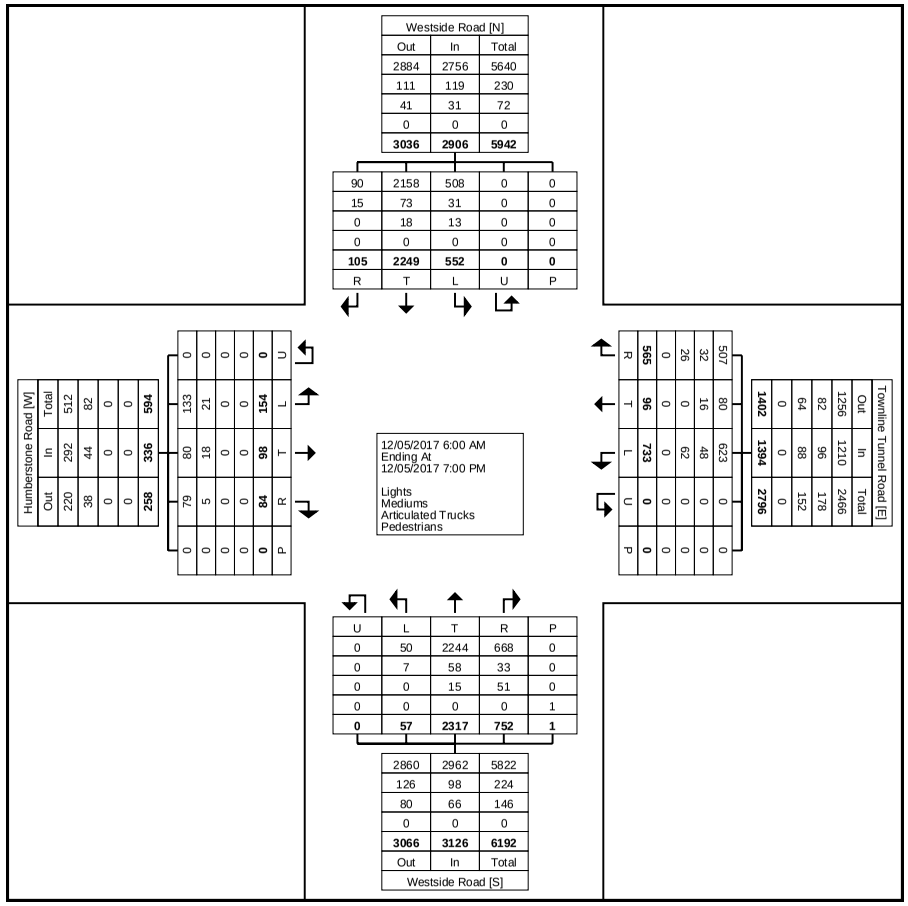
Site Code:
Start Date: 12/05/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Townline Tunnel Road & Westside Road
Site Code:
Start Date: 12/05/2017

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Humberstone Road Eastbound						Townline Tunnel Road Westbound						Westside Road Northbound						Westside Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	4	1	2	0	0	7	24	3	33	0	0	60	7	81	57	0	0	145	13	63	3	0	0	79	291
7:45 AM	4	1	1	0	0	6	30	3	41	0	0	74	5	107	39	0	0	151	11	64	7	0	0	82	313
8:00 AM	7	2	3	0	0	12	20	5	18	0	0	43	2	103	25	0	0	130	11	69	7	0	0	87	272
8:15 AM	4	5	1	0	0	10	17	8	16	0	0	41	2	85	42	0	0	129	12	72	0	0	0	84	264
Total	19	9	7	0	0	35	91	19	108	0	0	218	16	376	163	0	0	555	47	268	17	0	0	332	1140
Approach %	54.3	25.7	20.0	0.0	-	-	41.7	8.7	49.5	0.0	-	-	2.9	67.7	29.4	0.0	-	-	14.2	80.7	5.1	0.0	-	-	-
Total %	1.7	0.8	0.6	0.0	-	3.1	8.0	1.7	9.5	0.0	-	19.1	1.4	33.0	14.3	0.0	-	48.7	4.1	23.5	1.5	0.0	-	29.1	-
PHF	0.679	0.450	0.583	0.000	-	0.729	0.758	0.594	0.659	0.000	-	0.736	0.571	0.879	0.715	0.000	-	0.919	0.904	0.931	0.607	0.000	-	0.954	0.911
Lights	14	5	7	0	-	26	68	15	101	0	-	184	15	362	156	0	-	533	42	257	16	0	-	315	1058
% Lights	73.7	55.6	100.0	-	-	74.3	74.7	78.9	93.5	-	-	84.4	93.8	96.3	95.7	-	-	96.0	89.4	95.9	94.1	-	-	94.9	92.8
Mediums	5	4	0	0	-	9	13	4	6	0	-	23	1	12	5	0	-	18	4	9	1	0	-	14	64
% Mediums	26.3	44.4	0.0	-	-	25.7	14.3	21.1	5.6	-	-	10.6	6.3	3.2	3.1	-	-	3.2	8.5	3.4	5.9	-	-	4.2	5.6
Articulated Trucks	0	0	0	0	-	0	10	0	1	0	-	11	0	2	2	0	-	4	1	2	0	0	-	3	18
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	11.0	0.0	0.9	-	-	5.0	0.0	0.5	1.2	-	-	0.7	2.1	0.7	0.0	-	-	0.9	1.6
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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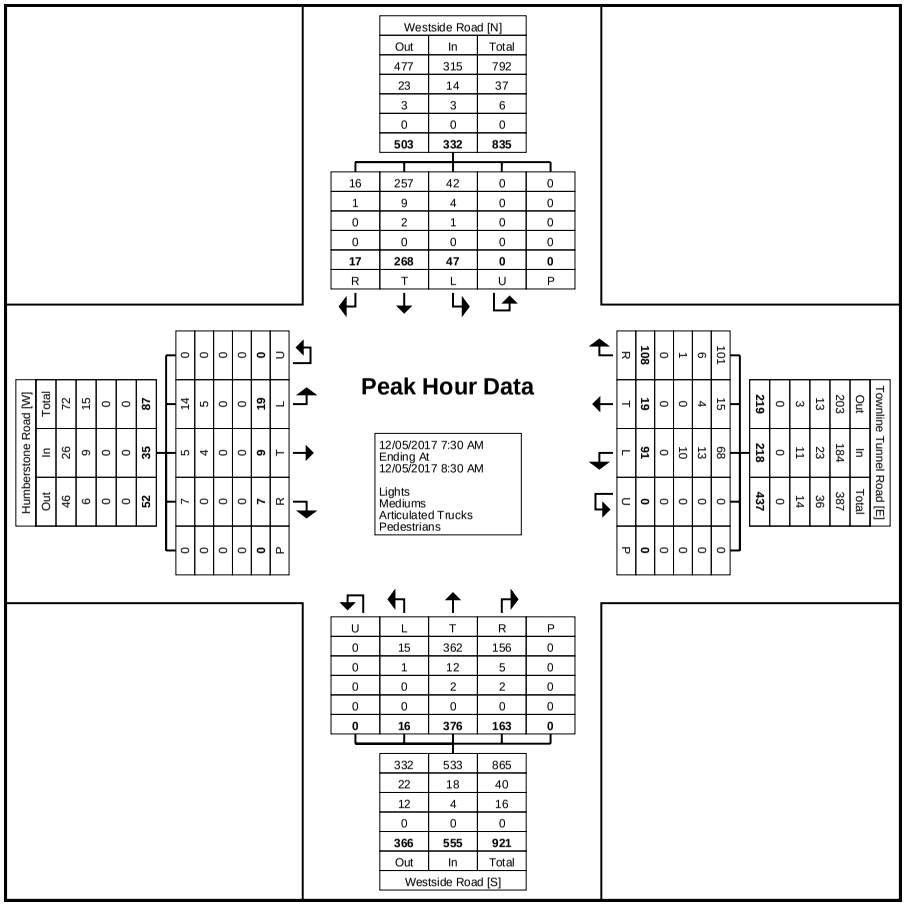
Site Code:
Start Date: 12/05/2017



Westside Road [N]		
Out	In	Total
477	315	792
23	14	37
3	3	6
0	0	0
503	**332**	**835**

16	257	42	0	0
1	9	4	0	0
0	2	1	0	0
0	0	0	0	0
17	**268**	**47**	**0**	**0**
R	T	L	U	P

Humberstone Road [W]							
	U	L	T	R	P	In	Total
Out	0	14	5	7	0	46	72
In	0	5	4	0	0	26	51
	0	0	0	0	0	6	6
	0	0	0	0	0	0	0
	0	**19**	**9**	**7**	**0**	**78**	**129**
Out	U	L	T	R	P	In	Total

R	**108**	0	1	6	101	Out	203
T	**19**	0	0	4	15	In	184
L	**91**	0	10	13	68	Total	387
U	**0**	0	0	0	0		
P	**0**	0	0	0	0		

Townline Tunnel Road [E]							
	R	T	L	U	P	In	Total
Out	**219**	0	3	13	203	0	0
In	**218**	0	11	23	184	0	0
	437	0	14	36	387	0	0
Out	R	T	L	U	P	In	Total

U	L	T	R	P	
0	15	362	156	0	
0	1	12	5	0	
0	0	2	2	0	
0	0	0	0	0	
0	**16**	**376**	**163**	**0**	

332	533	865
22	18	40
12	4	16
0	0	0
366	**555**	**921**
Out	In	Total
Westside Road [S]		

Turning Movement Peak Hour Data Plot (7:30 AM)

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Count Name: Townline Tunnel Road & Westside Road
Site Code:
Start Date: 12/05/2017

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Humberstone Road Eastbound						Townline Tunnel Road Westbound						Westside Road Northbound						Westside Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:00 AM	11	2	5	0	0	18	12	10	17	0	0	39	4	74	25	0	0	103	18	79	14	0	0	111	271
11:15 AM	16	2	6	0	0	24	19	7	22	0	0	48	5	82	23	0	0	110	18	66	6	0	0	90	272
11:30 AM	10	8	4	0	0	22	14	7	19	0	0	40	2	74	18	0	0	94	17	72	4	0	0	93	249
11:45 AM	4	2	4	0	0	10	17	6	27	0	0	50	5	90	17	0	0	112	11	81	7	0	0	99	271
Total	41	14	19	0	0	74	62	30	85	0	0	177	16	320	83	0	0	419	64	298	31	0	0	393	1063
Approach %	55.4	18.9	25.7	0.0	-	-	35.0	16.9	48.0	0.0	-	-	3.8	76.4	19.8	0.0	-	-	16.3	75.8	7.9	0.0	-	-	-
Total %	3.9	1.3	1.8	0.0	-	7.0	5.8	2.8	8.0	0.0	-	16.7	1.5	30.1	7.8	0.0	-	39.4	6.0	28.0	2.9	0.0	-	37.0	-
PHF	0.641	0.438	0.792	0.000	-	0.771	0.816	0.750	0.787	0.000	-	0.885	0.800	0.889	0.830	0.000	-	0.935	0.889	0.920	0.554	0.000	-	0.885	0.977
Lights	31	12	17	0	-	60	37	23	72	0	-	132	14	300	67	0	-	381	56	276	24	0	-	356	929
% Lights	75.6	85.7	89.5	-	-	81.1	59.7	76.7	84.7	-	-	74.6	87.5	93.8	80.7	-	-	90.9	87.5	92.6	77.4	-	-	90.6	87.4
Mediums	10	2	2	0	-	14	6	7	7	0	-	20	2	15	3	0	-	20	5	14	7	0	-	26	80
% Mediums	24.4	14.3	10.5	-	-	18.9	9.7	23.3	8.2	-	-	11.3	12.5	4.7	3.6	-	-	4.8	7.8	4.7	22.6	-	-	6.6	7.5
Articulated Trucks	0	0	0	0	-	0	19	0	6	0	-	25	0	5	13	0	-	18	3	8	0	0	-	11	54
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	30.6	0.0	7.1	-	-	14.1	0.0	1.6	15.7	-	-	4.3	4.7	2.7	0.0	-	-	2.8	5.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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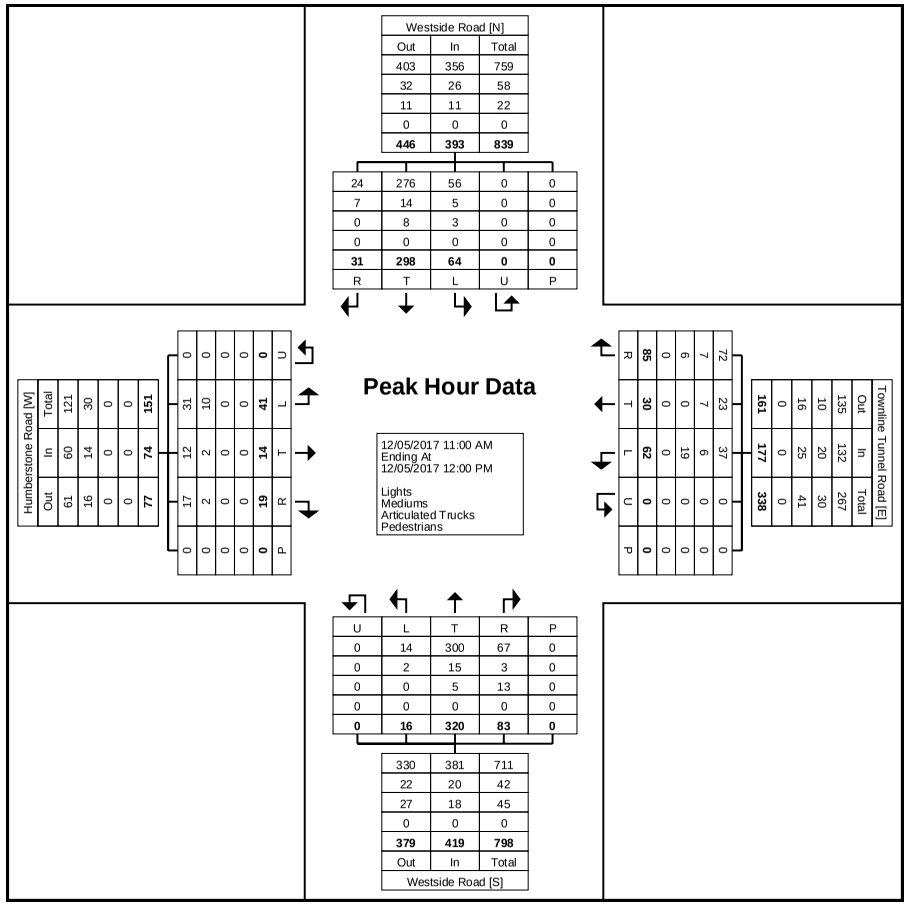

Turning Movement Peak Hour Data Plot (11:00 AM)

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Waterloo, Ontario, Canada N2J 1N8
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Count Name: Townline Tunnel Road & Westside Road
Site Code:
Start Date: 12/05/2017

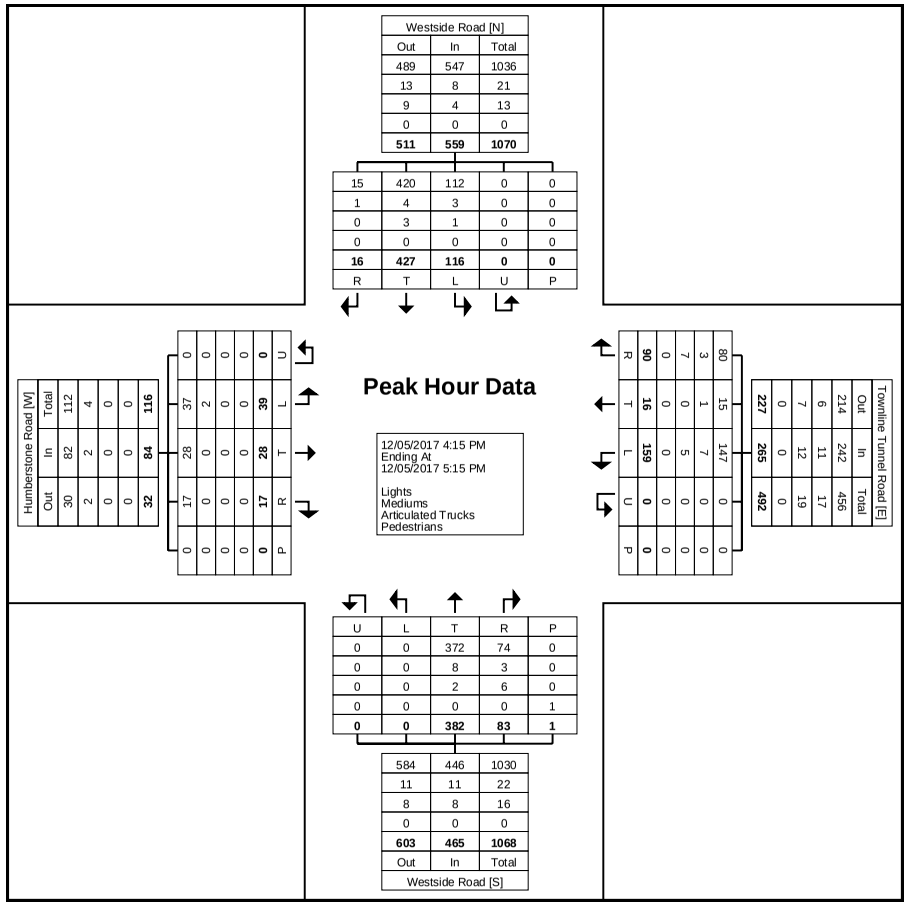
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Humberstone Road Eastbound						Townline Tunnel Road Westbound						Westside Road Northbound						Westside Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:15 PM	6	1	4	0	0	11	42	6	21	0	0	69	0	88	13	0	0	101	25	102	9	0	0	136	317
4:30 PM	13	7	5	0	0	25	37	4	23	0	0	64	0	107	19	0	1	126	33	114	4	0	0	151	366
4:45 PM	5	10	3	0	0	18	44	4	20	0	0	68	0	97	22	0	0	119	25	97	3	0	0	125	330
5:00 PM	15	10	5	0	0	30	36	2	26	0	0	64	0	90	29	0	0	119	33	114	0	0	0	147	360
Total	39	28	17	0	0	84	159	16	90	0	0	265	0	382	83	0	1	465	116	427	16	0	0	559	1373
Approach %	46.4	33.3	20.2	0.0	-	-	60.0	6.0	34.0	0.0	-	-	0.0	82.2	17.8	0.0	-	-	20.8	76.4	2.9	0.0	-	-	-
Total %	2.8	2.0	1.2	0.0	-	6.1	11.6	1.2	6.6	0.0	-	19.3	0.0	27.8	6.0	0.0	-	33.9	8.4	31.1	1.2	0.0	-	40.7	-
PHF	0.650	0.700	0.850	0.000	-	0.700	0.903	0.667	0.865	0.000	-	0.960	0.000	0.893	0.716	0.000	-	0.923	0.879	0.936	0.444	0.000	-	0.925	0.938
Lights	37	28	17	0	-	82	147	15	80	0	-	242	0	372	74	0	-	446	112	420	15	0	-	547	1317
% Lights	94.9	100.0	100.0	-	-	97.6	92.5	93.8	88.9	-	-	91.3	-	97.4	89.2	-	-	95.9	96.6	98.4	93.8	-	-	97.9	95.9
Mediums	2	0	0	0	-	2	7	1	3	0	-	11	0	8	3	0	-	11	3	4	1	0	-	8	32
% Mediums	5.1	0.0	0.0	-	-	2.4	4.4	6.3	3.3	-	-	4.2	-	2.1	3.6	-	-	2.4	2.6	0.9	6.3	-	-	1.4	2.3
Articulated Trucks	0	0	0	0	-	0	5	0	7	0	-	12	0	2	6	0	-	8	1	3	0	0	-	4	24
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	3.1	0.0	7.8	-	-	4.5	-	0.5	7.2	-	-	1.7	0.9	0.7	0.0	-	-	0.7	1.7
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Townline Tunnel Road & Westside Road
Site Code:
Start Date: 12/05/2017
Page No: 9



Turning Movement Peak Hour Data Plot (4:15 PM)

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Start Date: 12/05/2017

ATTACHMENT

C LOS DEFINITION

ATTACHMENT

LEVEL OF SERVICE DEFINITIONS AT SIGNALIZED INTERSECTIONS[1]

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. The criteria are given in the table below. Delay may be measured in the field or estimated using software such as Highway Capacity Software. Delay is a complex measure and is dependent upon a number of variables, including quality of progression, the cycle length, the green ratio, and the *v/c* ratio for the lane group in question.

Level of Service	Features	Control Delay per vehicle (sec)
A	LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favourable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10
B	LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10 and ≤ 20
C	LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	> 20 and ≤ 35
D	LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, long cycle lengths, of high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35 and ≤ 55
E	LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.	> 55 and ≤ 80
F	LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	> 80

(1) Highway Capacity Manual 2000

LEVEL OF SERVICE DEFINITIONS AT UNSIGNALIZED INTERSECTIONS[1]

The level of service criteria for unsignalized intersections are given in the table below. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation.

Level of Service	Features	Average Total Delay (sec/veh)
A	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.	≤ 10
B	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.	> 10 and ≤ 15
C	Average traffic delays occur. Operations are generally stable, but drivers emerging from the minor street may experience difficulty in completing their movement. This may occasionally impact on the stability of flow on the major street.	> 15 and ≤ 25
D	Long traffic delays occur. Motorists emerging from the minor street experience significant restriction and frustration. Drivers on the major street will experience congestion and delay as drivers emerging from the minor street interfere with the major through movements.	> 25 and ≤ 35
E	Very long traffic delays occur. Operations approach the capacity of the intersection.	> 35 and ≤ 50
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.	> 50

(1) Highway Capacity Manual 2000.

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ATTACHMENT

D SYNCHRO RESULTS

ATTACHMENT

ATTACHMENT

D-1 *2020 EXISTING*

ATTACHMENT

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	107	60	3	71	51	98
Future Volume (Veh/h)	107	60	3	71	51	98
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)	114	64	3	76	54	104
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			178		228	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			178		228	146
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		93	89
cM capacity (veh/h)			1410		750	906

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	178	79	158
Volume Left	0	3	54
Volume Right	64	0	104
cSH	1700	1410	846
Volume to Capacity	0.10	0.00	0.19
Queue Length 95th (m)	0.0	0.0	5.2
Control Delay (s)	0.0	0.3	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	10.2
Approach LOS			B

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	24.8%	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)	0	0	57	0	0	204	0	502	62	0	338	142
Future Volume (Veh/h)	0	0	57	0	0	204	0	502	62	0	338	142
Sign Control		Stop			Stop			Free			Free	
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)	0	0	61	0	0	217	0	534	66	0	360	151
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	1111	960	360	894	894	534	360			600		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1111	960	360	894	894	534	360			600		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	91	100	100	60	100			100		
cM capacity (veh/h)	113	259	689	241	283	546	1210			987		

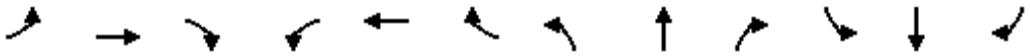
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	61	217	534	66	360	151
Volume Left	0	0	0	0	0	0
Volume Right	61	217	0	66	0	151
cSH	689	546	1700	1700	1700	1700
Volume to Capacity	0.09	0.40	0.31	0.04	0.21	0.09
Queue Length 95th (m)	2.2	14.4	0.0	0.0	0.0	0.0
Control Delay (s)	10.7	15.9	0.0	0.0	0.0	0.0
Lane LOS	B	C				
Approach Delay (s)	10.7	15.9	0.0		0.0	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	45.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	102	106	99	8	67	2
Future Volume (Veh/h)	102	106	99	8	67	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	110	114	106	9	72	2
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			224		388	167
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			224		388	167
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			92		87	100
cM capacity (veh/h)			1357		560	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	224	115	74
Volume Left	0	106	72
Volume Right	114	0	2
cSH	1700	1357	566
Volume to Capacity	0.13	0.08	0.13
Queue Length 95th (m)	0.0	1.9	3.4
Control Delay (s)	0.0	7.3	12.3
Lane LOS		A	B
Approach Delay (s)	0.0	7.3	12.3
Approach LOS			B

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		



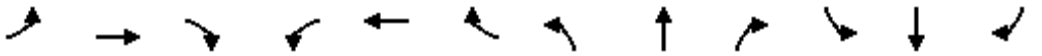
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	66	0	95	0	13	20	0
Future Volume (vph)	0	0	0	0	0	66	0	95	0	13	20	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	0	0	77	0	110	0	15	23	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	77	110	38
Volume Left (vph)	0	0	0	15
Volume Right (vph)	0	77	0	0
Hadj (s)	0.00	-0.60	0.00	0.13
Departure Headway (s)	4.3	3.6	4.1	4.3
Degree Utilization, x	0.00	0.08	0.12	0.05
Capacity (veh/h)	812	953	854	817
Control Delay (s)	7.3	6.9	7.7	7.5
Approach Delay (s)	0.0	6.9	7.7	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay		7.4		
Level of Service		A		
Intersection Capacity Utilization	19.2%	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 (vph)	20	10	7	209	20	119	17	395	320	50	284	18
Future Volume (vph)	20	10	7	209	20	119	17	395	320	50	284	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.7	7.7	7.7	3.0	7.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	0.87		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	1744		1648	1558		1685	1860	1478	1652	1845	
Flt Permitted	0.66	1.00		0.75	1.00		0.56	1.00	1.00	0.32	1.00	
Satd. Flow (perm)	1170	1744		1293	1558		994	1860	1478	558	1845	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	22	11	8	230	22	131	19	434	352	55	312	20
RTOR Reduction (vph)	0	5	0	0	90	0	0	0	232	0	3	0
Lane Group Flow (vph)	22	14	0	230	63	0	19	434	120	55	329	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	0%	0%	2%	0%	6%	0%	1%	2%	2%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	22.2	22.2		22.2	22.2		24.2	24.2	24.2	33.9	33.9	
Effective Green, g (s)	22.2	22.2		22.2	22.2		24.2	24.2	24.2	33.9	33.9	
Actuated g/C Ratio	0.31	0.31		0.31	0.31		0.34	0.34	0.34	0.48	0.48	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.7	7.7	7.7	3.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	366	546		405	488		339	635	505	370	883	
v/s Ratio Prot		0.01			0.04			c0.23		0.01	c0.18	
v/s Ratio Perm	0.02			c0.18			0.02		0.08	0.06		
v/c Ratio	0.06	0.02		0.57	0.13		0.06	0.68	0.24	0.15	0.37	
Uniform Delay, d1	17.0	16.8		20.3	17.4		15.6	20.0	16.7	10.7	11.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		1.8	0.1		0.1	3.0	0.2	0.2	0.3	
Delay (s)	17.1	16.8		22.1	17.5		15.7	23.1	16.9	10.9	12.0	
Level of Service	B	B		C	B		B	C	B	B	B	
Approach Delay (s)		17.0			20.3			20.2			11.8	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	17.7
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	311	20	57	201	98	139	56	59	93	37	11
Future Volume (vph)	85	311	20	57	201	98	139	56	59	93	37	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1740	1597	1785	1606	1566	1782	1701		1733	1665	
Flt Permitted	0.62	1.00	1.00	0.51	1.00	1.00	0.72	1.00		0.67	1.00	
Satd. Flow (perm)	1160	1740	1597	953	1606	1566	1354	1701		1230	1665	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	96	349	22	64	226	110	156	63	66	104	42	12
RTOR Reduction (vph)	0	0	11	0	0	58	0	43	0	0	8	0
Lane Group Flow (vph)	96	349	11	64	226	52	156	86	0	104	46	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	8%	0%	0%	17%	2%	0%	4%	0%	3%	11%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Effective Green, g (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Actuated g/C Ratio	0.49	0.49	0.49	0.47	0.47	0.47	0.34	0.34		0.33	0.33	
Clearance Time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Grp Cap (vph)	563	845	775	449	757	738	464	583		404	547	
v/s Ratio Prot		c0.20			0.14			0.05			0.03	
v/s Ratio Perm	0.08		0.01	0.07		0.03	c0.12			0.08		
v/c Ratio	0.17	0.41	0.01	0.14	0.30	0.07	0.34	0.15		0.26	0.08	
Uniform Delay, d1	10.1	11.6	9.3	10.5	11.4	10.1	17.1	15.9		17.2	16.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.5	0.0	0.7	1.0	0.2	2.0	0.5		1.5	0.3	
Delay (s)	10.7	13.1	9.4	11.1	12.4	10.3	19.0	16.4		18.8	16.5	
Level of Service	B	B	A	B	B	B	B	B		B	B	
Approach Delay (s)		12.4			11.6			17.9			18.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	115	74	3	56	113	135
Future Volume (Veh/h)	115	74	3	56	113	135
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	124	80	3	60	122	145
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			204		230	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			204		230	164
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		84	84
cM capacity (veh/h)			1380		754	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	204	63	267
Volume Left	0	3	122
Volume Right	80	0	145
cSH	1700	1380	820
Volume to Capacity	0.12	0.00	0.33
Queue Length 95th (m)	0.0	0.0	10.8
Control Delay (s)	0.0	0.4	11.5
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	11.5
Approach LOS			B

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	31.8%	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)	0	0	69	0	0	244	0	413	43	0	515	242
Future Volume (Veh/h)	0	0	69	0	0	244	0	413	43	0	515	242
Sign Control		Stop			Stop			Free			Free	
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)	0	0	73	0	0	260	0	439	46	0	548	257
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	1247	1033	548	987	987	439	548			485		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1247	1033	548	987	987	439	548			485		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	86	100	100	58	100			100		
cM capacity (veh/h)	88	234	540	198	249	618	1032			1088		

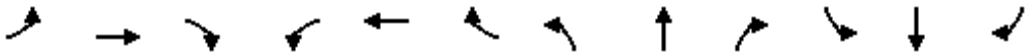
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	73	260	439	46	548	257
Volume Left	0	0	0	0	0	0
Volume Right	73	260	0	46	0	257
cSH	540	618	1700	1700	1700	1700
Volume to Capacity	0.14	0.42	0.26	0.03	0.32	0.15
Queue Length 95th (m)	3.5	15.8	0.0	0.0	0.0	0.0
Control Delay (s)	12.7	15.0	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	12.7	15.0	0.0		0.0	
Approach LOS	B	B				

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	43.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	144	107	139	13	46	3
Future Volume (Veh/h)	144	107	139	13	46	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	162	120	156	15	52	3
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			282		549	222
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			282		549	222
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			88		88	100
cM capacity (veh/h)			1292		426	823

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	282	171	55
Volume Left	0	156	52
Volume Right	120	0	3
cSH	1700	1292	438
Volume to Capacity	0.17	0.12	0.13
Queue Length 95th (m)	0.0	3.1	3.2
Control Delay (s)	0.0	7.5	14.4
Lane LOS		A	B
Approach Delay (s)	0.0	7.5	14.4
Approach LOS			B

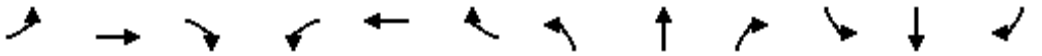
Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	46	0	55	0	66	112	0
Future Volume (vph)	0	0	0	0	0	46	0	55	0	66	112	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	0	0	0	52	0	62	0	74	126	0

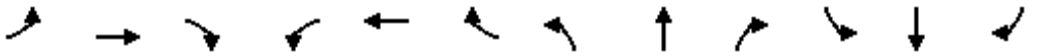
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	52	62	200
Volume Left (vph)	0	0	0	74
Volume Right (vph)	0	52	0	0
Hadj (s)	0.00	-0.60	0.00	0.08
Departure Headway (s)	4.5	3.9	4.2	4.2
Degree Utilization, x	0.00	0.06	0.07	0.23
Capacity (veh/h)	757	870	829	852
Control Delay (s)	7.5	7.1	7.5	8.4
Approach Delay (s)	0.0	7.1	7.5	8.4
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	26.9%	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 (vph)	41	30	18	332	17	109	0	392	289	123	453	17
Future Volume (vph)	41	30	18	332	17	109	0	392	289	123	453	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0			7.7	7.7	3.0	7.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	0.87			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	1759		1648	1554			1860	1478	1668	1851	
Flt Permitted	0.67	1.00		0.72	1.00			1.00	1.00	0.30	1.00	
Satd. Flow (perm)	1190	1759		1256	1554			1860	1478	532	1851	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	44	32	19	353	18	116	0	417	307	131	482	18
RTOR Reduction (vph)	0	12	0	0	75	0	0	0	210	0	2	0
Lane Group Flow (vph)	44	39	0	353	59	0	0	417	97	131	498	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	0%	0%	2%	0%	6%	0%	1%	2%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	27.9	27.9		27.9	27.9			25.3	25.3	37.3	37.3	
Effective Green, g (s)	27.9	27.9		27.9	27.9			25.3	25.3	37.3	37.3	
Actuated g/C Ratio	0.35	0.35		0.35	0.35			0.32	0.32	0.47	0.47	
Clearance Time (s)	7.0	7.0		7.0	7.0			7.7	7.7	3.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	415	614		438	542			588	468	376	864	
v/s Ratio Prot		0.02			0.04			c0.22		0.04	c0.27	
v/s Ratio Perm	0.04			c0.28					0.07	0.12		
v/c Ratio	0.11	0.06		0.81	0.11			0.71	0.21	0.35	0.58	
Uniform Delay, d1	17.6	17.3		23.5	17.6			24.1	20.0	13.3	15.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		10.4	0.1			3.9	0.2	0.6	0.9	
Delay (s)	17.7	17.3		33.9	17.7			28.0	20.2	13.9	16.5	
Level of Service	B	B		C	B			C	C	B	B	
Approach Delay (s)		17.5			29.5			24.7			15.9	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	17.7
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	304	58	136	307	124	183	30	31	88	141	15
Future Volume (vph)	106	304	58	136	307	124	183	30	31	88	141	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1740	1597	1785	1693	1566	1783	1678		1733	1799	
Flt Permitted	0.54	1.00	1.00	0.53	1.00	1.00	0.65	1.00		0.71	1.00	
Satd. Flow (perm)	1014	1740	1597	994	1693	1566	1221	1678		1304	1799	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	114	327	62	146	330	133	197	32	33	95	152	16
RTOR Reduction (vph)	0	0	32	0	0	70	0	22	0	0	5	0
Lane Group Flow (vph)	114	327	30	146	330	63	197	43	0	95	163	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	8%	0%	0%	11%	2%	0%	7%	0%	3%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Effective Green, g (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Actuated g/C Ratio	0.49	0.49	0.49	0.47	0.47	0.47	0.34	0.34		0.33	0.33	
Clearance Time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Grp Cap (vph)	492	845	775	468	798	738	418	575		428	591	
v/s Ratio Prot		0.19			c0.19			0.03			0.09	
v/s Ratio Perm	0.11		0.02	0.15		0.04	c0.16			0.07		
v/c Ratio	0.23	0.39	0.04	0.31	0.41	0.08	0.47	0.08		0.22	0.28	
Uniform Delay, d1	10.4	11.4	9.4	11.5	12.1	10.2	18.0	15.5		17.0	17.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.3	0.1	1.7	1.6	0.2	3.8	0.3		1.2	1.2	
Delay (s)	11.5	12.7	9.5	13.2	13.7	10.4	21.8	15.8		18.2	18.5	
Level of Service	B	B	A	B	B	B	C	B		B	B	
Approach Delay (s)		12.1			12.9			20.3			18.4	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

ATTACHMENT

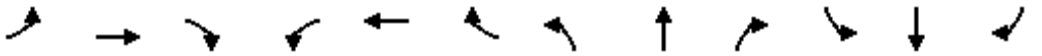
D-2 *2027 FUTURE BACKGROUND*

ATTACHMENT

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	123	69	3	82	59	146
Future Volume (Veh/h)	123	69	3	82	59	146
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)	131	73	3	87	63	155
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			204		260	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			204		260	168
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		91	82
cM capacity (veh/h)			1380		718	882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	204	90	218
Volume Left	0	3	63
Volume Right	73	0	155
cSH	1700	1380	827
Volume to Capacity	0.12	0.00	0.26
Queue Length 95th (m)	0.0	0.0	8.0
Control Delay (s)	0.0	0.3	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	10.9
Approach LOS			B

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	29.6%	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)	0	0	65	0	0	245	0	578	71	0	394	196
Future Volume (Veh/h)	0	0	65	0	0	245	0	578	71	0	394	196
Sign Control		Stop			Stop			Free			Free	
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)	0	0	69	0	0	261	0	615	76	0	419	209
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	1295	1110	419	1034	1034	615	419			691		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1295	1110	419	1034	1034	615	419			691		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	89	100	100	47	100			100		
cM capacity (veh/h)	66	211	638	189	234	491	1151			913		

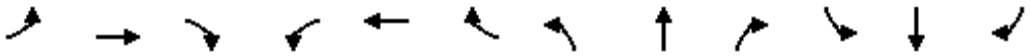
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	69	261	615	76	419	209
Volume Left	0	0	0	0	0	0
Volume Right	69	261	0	76	0	209
cSH	638	491	1700	1700	1700	1700
Volume to Capacity	0.11	0.53	0.36	0.04	0.25	0.12
Queue Length 95th (m)	2.7	23.4	0.0	0.0	0.0	0.0
Control Delay (s)	11.3	20.3	0.0	0.0	0.0	0.0
Lane LOS	B	C				
Approach Delay (s)	11.3	20.3	0.0		0.0	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	52.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	150	122	125	9	77	2
Future Volume (Veh/h)	150	122	125	9	77	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	161	131	134	10	83	2
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			292		504	226
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			292		504	226
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			90		82	100
cM capacity (veh/h)			1281		466	818

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	292	144	85
Volume Left	0	134	83
Volume Right	131	0	2
cSH	1700	1281	470
Volume to Capacity	0.17	0.10	0.18
Queue Length 95th (m)	0.0	2.7	5.0
Control Delay (s)	0.0	7.6	14.3
Lane LOS		A	B
Approach Delay (s)	0.0	7.6	14.3
Approach LOS			B

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		



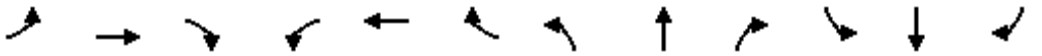
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	117	0	226	0	29	62	0
Future Volume (vph)	0	0	0	0	0	117	0	226	0	29	62	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	0	0	136	0	263	0	34	72	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	136	263	106
Volume Left (vph)	0	0	0	34
Volume Right (vph)	0	136	0	0
Hadj (s)	0.00	-0.60	0.00	0.12
Departure Headway (s)	4.9	4.1	4.3	4.6
Degree Utilization, x	0.00	0.16	0.32	0.14
Capacity (veh/h)	672	798	805	741
Control Delay (s)	7.9	7.9	9.3	8.3
Approach Delay (s)	0.0	7.9	9.3	8.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.7			
Level of Service	A			
Intersection Capacity Utilization	34.0%	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 (vph)	23	11	8	279	23	145	20	454	380	60	326	21
Future Volume (vph)	23	11	8	279	23	145	20	454	380	60	326	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.7	7.7	7.7	3.0	7.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	0.87		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	1741		1648	1555		1685	1860	1478	1652	1845	
Flt Permitted	0.64	1.00		0.74	1.00		0.54	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	1138	1741		1290	1555		950	1860	1478	435	1845	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	25	12	9	307	25	159	22	499	418	66	358	23
RTOR Reduction (vph)	0	6	0	0	107	0	0	0	260	0	3	0
Lane Group Flow (vph)	25	15	0	307	77	0	22	499	158	66	378	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	0%	0%	2%	0%	6%	0%	1%	2%	2%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	25.5	25.5		25.5	25.5		27.5	27.5	27.5	37.7	37.7	
Effective Green, g (s)	25.5	25.5		25.5	25.5		27.5	27.5	27.5	37.7	37.7	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.35	0.35	0.35	0.48	0.48	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.7	7.7	7.7	3.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	372	569		422	509		335	656	521	323	892	
v/s Ratio Prot		0.01			0.05			c0.27		0.02	c0.21	
v/s Ratio Perm	0.02			c0.24			0.02		0.11	0.08		
v/c Ratio	0.07	0.03		0.73	0.15		0.07	0.76	0.30	0.20	0.42	
Uniform Delay, d1	18.0	17.8		23.1	18.5		16.7	22.3	18.3	12.3	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		6.2	0.1		0.1	5.2	0.3	0.3	0.3	
Delay (s)	18.1	17.8		29.3	18.7		16.8	27.5	18.6	12.6	13.4	
Level of Service	B	B		C	B		B	C	B	B	B	
Approach Delay (s)		18.0			25.3			23.3			13.3	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	17.7
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	357	38	83	231	113	207	114	129	107	60	13
Future Volume (vph)	98	357	38	83	231	113	207	114	129	107	60	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1740	1597	1785	1606	1566	1782	1697		1733	1670	
Flt Permitted	0.60	1.00	1.00	0.46	1.00	1.00	0.70	1.00		0.53	1.00	
Satd. Flow (perm)	1125	1740	1597	859	1606	1566	1320	1697		975	1670	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	110	401	43	93	260	127	233	128	145	120	67	15
RTOR Reduction (vph)	0	0	22	0	0	67	0	58	0	0	10	0
Lane Group Flow (vph)	110	401	21	93	260	60	233	215	0	120	72	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	8%	0%	0%	17%	2%	0%	4%	0%	3%	11%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Effective Green, g (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Actuated g/C Ratio	0.49	0.49	0.49	0.47	0.47	0.47	0.34	0.34		0.33	0.33	
Clearance Time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Grp Cap (vph)	546	845	775	404	757	738	452	581		320	548	
v/s Ratio Prot		c0.23			0.16			0.13			0.04	
v/s Ratio Perm	0.10		0.01	0.11		0.04	c0.18			0.12		
v/c Ratio	0.20	0.47	0.03	0.23	0.34	0.08	0.52	0.37		0.38	0.13	
Uniform Delay, d1	10.3	12.0	9.4	11.0	11.7	10.2	18.4	17.3		18.0	16.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.9	0.1	1.3	1.2	0.2	4.2	1.8		3.3	0.5	
Delay (s)	11.1	13.9	9.4	12.3	12.9	10.4	22.5	19.1		21.3	17.0	
Level of Service	B	B	A	B	B	B	C	B		C	B	
Approach Delay (s)		13.0			12.1			20.7			19.6	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	132	85	3	64	130	176
Future Volume (Veh/h)	132	85	3	64	130	176
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	142	91	3	69	140	189
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			233		262	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			233		262	188
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		81	78
cM capacity (veh/h)			1346		723	860

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	233	72	329
Volume Left	0	3	140
Volume Right	91	0	189
cSH	1700	1346	796
Volume to Capacity	0.14	0.00	0.41
Queue Length 95th (m)	0.0	0.1	15.5
Control Delay (s)	0.0	0.3	12.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	12.7
Approach LOS			B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	36.8%	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)	0	0	79	0	0	316	0	477	49	0	596	299
Future Volume (Veh/h)	0	0	79	0	0	316	0	477	49	0	596	299
Sign Control		Stop			Stop			Free			Free	
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)	0	0	84	0	0	336	0	507	52	0	634	318
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	1477	1193	634	1141	1141	507	634			559		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1477	1193	634	1141	1141	507	634			559		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	83	100	100	41	100			100		
cM capacity (veh/h)	43	188	483	148	202	566	959			1022		

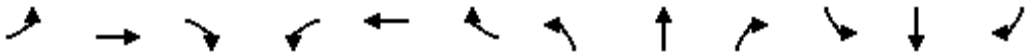
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	84	336	507	52	634	318
Volume Left	0	0	0	0	0	0
Volume Right	84	336	0	52	0	318
cSH	483	566	1700	1700	1700	1700
Volume to Capacity	0.17	0.59	0.30	0.03	0.37	0.19
Queue Length 95th (m)	4.7	29.4	0.0	0.0	0.0	0.0
Control Delay (s)	14.0	20.2	0.0	0.0	0.0	0.0
Lane LOS	B	C				
Approach Delay (s)	14.0	20.2	0.0		0.0	
Approach LOS	B	C				

Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	51.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	186	123	196	15	53	3
Future Volume (Veh/h)	186	123	196	15	53	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	209	138	220	17	60	3
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			347		735	278
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			347		735	278
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			82		81	100
cM capacity (veh/h)			1223		309	766

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	347	237	63
Volume Left	0	220	60
Volume Right	138	0	3
cSH	1700	1223	318
Volume to Capacity	0.20	0.18	0.20
Queue Length 95th (m)	0.0	5.0	5.5
Control Delay (s)	0.0	8.1	19.1
Lane LOS		A	C
Approach Delay (s)	0.0	8.1	19.1
Approach LOS			C

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	42.3%	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)	0	0	0	0	0	79	0	136	0	120	252	0
Future Volume (vph)	0	0	0	0	0	79	0	136	0	120	252	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	0	0	0	89	0	153	0	135	283	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	89	153	418
Volume Left (vph)	0	0	0	135
Volume Right (vph)	0	89	0	0
Hadj (s)	0.00	-0.60	0.00	0.08
Departure Headway (s)	5.3	4.6	4.6	4.4
Degree Utilization, x	0.00	0.11	0.19	0.51
Capacity (veh/h)	602	698	757	804
Control Delay (s)	8.3	8.2	8.7	11.8
Approach Delay (s)	0.0	8.2	8.7	11.8
Approach LOS	A	A	A	B

Intersection Summary				
Delay	10.6			
Level of Service	B			
Intersection Capacity Utilization	41.9%	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 (vph)	47	34	21	406	20	130	0	450	371	152	520	20
Future Volume (vph)	47	34	21	406	20	130	0	450	371	152	520	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0			7.7	7.7	3.0	7.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	0.87			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	1757		1648	1553			1860	1478	1668	1851	
Flt Permitted	0.66	1.00		0.72	1.00			1.00	1.00	0.21	1.00	
Satd. Flow (perm)	1164	1757		1247	1553			1860	1478	377	1851	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	50	36	22	432	21	138	0	479	395	162	553	21
RTOR Reduction (vph)	0	14	0	0	87	0	0	0	271	0	2	0
Lane Group Flow (vph)	50	44	0	432	72	0	0	479	124	162	572	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	0%	0%	2%	0%	6%	0%	1%	2%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	33.2	33.2		33.2	33.2			28.0	28.0	41.1	41.1	
Effective Green, g (s)	33.2	33.2		33.2	33.2			28.0	28.0	41.1	41.1	
Actuated g/C Ratio	0.37	0.37		0.37	0.37			0.31	0.31	0.46	0.46	
Clearance Time (s)	7.0	7.0		7.0	7.0			7.7	7.7	3.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	434	655		465	579			585	464	320	854	
v/s Ratio Prot		0.03			0.05			c0.26		0.06	c0.31	
v/s Ratio Perm	0.04			c0.35					0.08	0.18		
v/c Ratio	0.12	0.07		0.93	0.13			0.82	0.27	0.51	0.67	
Uniform Delay, d1	18.3	17.9		26.8	18.3			28.2	22.8	16.4	18.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		24.9	0.1			8.7	0.3	1.3	2.1	
Delay (s)	18.4	18.0		51.6	18.4			36.9	23.1	17.6	20.7	
Level of Service	B	B		D	B			D	C	B	C	
Approach Delay (s)		18.2			42.7			30.7			20.1	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	349	117	217	353	142	240	65	74	101	215	17
Future Volume (vph)	122	349	117	217	353	142	240	65	74	101	215	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1740	1597	1785	1693	1566	1783	1674		1733	1805	
Flt Permitted	0.49	1.00	1.00	0.48	1.00	1.00	0.59	1.00		0.66	1.00	
Satd. Flow (perm)	922	1740	1597	906	1693	1566	1109	1674		1207	1805	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	131	375	126	233	380	153	258	70	80	109	231	18
RTOR Reduction (vph)	0	0	65	0	0	81	0	53	0	0	4	0
Lane Group Flow (vph)	131	375	61	233	380	72	258	97	0	109	245	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	8%	0%	0%	11%	2%	0%	7%	0%	3%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Effective Green, g (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Actuated g/C Ratio	0.49	0.49	0.49	0.47	0.47	0.47	0.34	0.34		0.33	0.33	
Clearance Time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Grp Cap (vph)	447	845	775	427	798	738	380	573		396	593	
v/s Ratio Prot		0.22			0.22			0.06			0.14	
v/s Ratio Perm	0.14		0.04	c0.26		0.05	c0.23			0.09		
v/c Ratio	0.29	0.44	0.08	0.55	0.48	0.10	0.68	0.17		0.28	0.41	
Uniform Delay, d1	10.8	11.8	9.6	13.2	12.6	10.3	19.7	16.0		17.3	18.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	1.7	0.2	4.9	2.0	0.3	9.4	0.6		1.7	2.1	
Delay (s)	12.5	13.5	9.8	18.1	14.6	10.5	29.1	16.7		19.1	20.4	
Level of Service	B	B	A	B	B	B	C	B		B	C	
Approach Delay (s)		12.5			14.9			24.5			20.0	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

ATTACHMENT

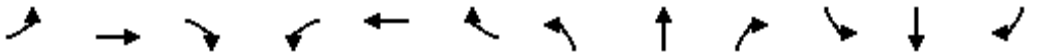
D-3 *2027 FUTURE TOTAL*

ATTACHMENT

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	127	69	3	82	70	146
Future Volume (Veh/h)	127	69	3	82	70	146
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)	135	73	3	87	74	155
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			208		264	172
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			208		264	172
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		90	82
cM capacity (veh/h)			1375		714	877

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	208	90	229
Volume Left	0	3	74
Volume Right	73	0	155
cSH	1700	1375	817
Volume to Capacity	0.12	0.00	0.28
Queue Length 95th (m)	0.0	0.0	8.7
Control Delay (s)	0.0	0.3	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	11.1
Approach LOS			B

Intersection Summary			
Average Delay	4.9		
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)	0	0	65	0	0	249	0	589	71	0	428	207
Future Volume (Veh/h)	0	0	65	0	0	249	0	589	71	0	428	207
Sign Control		Stop			Stop			Free			Free	
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)	0	0	69	0	0	265	0	627	76	0	455	220
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	1347	1158	455	1082	1082	627	455			703		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1347	1158	455	1082	1082	627	455			703		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	89	100	100	45	100			100		
cM capacity (veh/h)	59	198	609	175	219	484	1116			904		

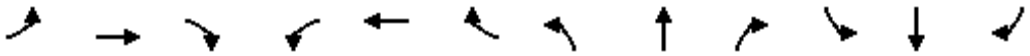
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	69	265	627	76	455	220
Volume Left	0	0	0	0	0	0
Volume Right	69	265	0	76	0	220
cSH	609	484	1700	1700	1700	1700
Volume to Capacity	0.11	0.55	0.37	0.04	0.27	0.13
Queue Length 95th (m)	2.9	24.7	0.0	0.0	0.0	0.0
Control Delay (s)	11.7	21.1	0.0	0.0	0.0	0.0
Lane LOS	B	C				
Approach Delay (s)	11.7	21.1	0.0		0.0	
Approach LOS	B	C				

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	53.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	150	126	125	9	77	2
Future Volume (Veh/h)	150	126	125	9	77	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	161	135	134	10	83	2
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			296		506	228
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			296		506	228
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			90		82	100
cM capacity (veh/h)			1277		464	816

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	296	144	85
Volume Left	0	134	83
Volume Right	135	0	2
cSH	1700	1277	469
Volume to Capacity	0.17	0.10	0.18
Queue Length 95th (m)	0.0	2.7	5.0
Control Delay (s)	0.0	7.6	14.4
Lane LOS		A	B
Approach Delay (s)	0.0	7.6	14.4
Approach LOS			B

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		



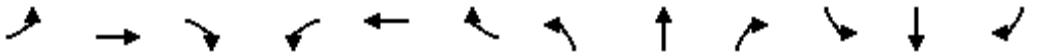
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	255	0	226	0	75	62	0
Future Volume (vph)	0	0	0	0	0	255	0	226	0	75	62	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	0	0	297	0	263	0	87	72	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	297	263	159
Volume Left (vph)	0	0	0	87
Volume Right (vph)	0	297	0	0
Hadj (s)	0.00	-0.60	0.00	0.15
Departure Headway (s)	5.4	4.3	4.8	5.1
Degree Utilization, x	0.00	0.36	0.35	0.22
Capacity (veh/h)	592	770	709	658
Control Delay (s)	8.4	9.7	10.4	9.6
Approach Delay (s)	0.0	9.7	10.4	9.6
Approach LOS	A	A	B	A

Intersection Summary				
Delay		9.9		
Level of Service		A		
Intersection Capacity Utilization		45.1%	ICU Level of Service	A
Analysis Period (min)		15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	12	8	324	26	186	20	454	395	74	326	21
Future Volume (vph)	23	12	8	324	26	186	20	454	395	74	326	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0		7.7	7.7	7.7	3.0	7.7	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	0.87		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	1748		1648	1551		1685	1860	1478	1652	1845	
Flt Permitted	0.59	1.00		0.74	1.00		0.54	1.00	1.00	0.24	1.00	
Satd. Flow (perm)	1049	1748		1289	1551		950	1860	1478	416	1845	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	25	13	9	356	29	204	22	499	434	81	358	23
RTOR Reduction (vph)	0	6	0	0	134	0	0	0	273	0	3	0
Lane Group Flow (vph)	25	16	0	356	99	0	22	499	161	81	378	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	0%	0%	2%	0%	6%	0%	1%	2%	2%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	28.3	28.3		28.3	28.3		28.6	28.6	28.6	39.2	39.2	
Effective Green, g (s)	28.3	28.3		28.3	28.3		28.6	28.6	28.6	39.2	39.2	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.35	0.35	0.35	0.48	0.48	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.7	7.7	7.7	3.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	361	601		443	533		330	647	514	312	879	
v/s Ratio Prot		0.01			0.06			c0.27		0.02	c0.21	
v/s Ratio Perm	0.02			c0.28			0.02		0.11	0.10		
v/c Ratio	0.07	0.03		0.80	0.19		0.07	0.77	0.31	0.26	0.43	
Uniform Delay, d1	18.1	17.8		24.4	18.9		17.9	23.9	19.6	13.5	14.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		10.1	0.2		0.1	5.7	0.4	0.4	0.3	
Delay (s)	18.2	17.9		34.6	19.1		18.0	29.6	20.0	14.0	14.5	
Level of Service	B	B		C	B		B	C	B	B	B	
Approach Delay (s)		18.0			28.4			24.9			14.4	
Approach LOS		B			C			C			B	

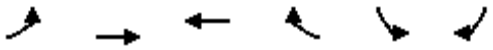
Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	17.7
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	357	68	95	231	113	296	128	164	107	64	13
Future Volume (vph)	98	357	68	95	231	113	296	128	164	107	64	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1740	1597	1785	1606	1566	1782	1691		1733	1671	
Flt Permitted	0.60	1.00	1.00	0.46	1.00	1.00	0.70	1.00		0.46	1.00	
Satd. Flow (perm)	1125	1740	1597	859	1606	1566	1314	1691		836	1671	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	110	401	76	107	260	127	333	144	184	120	72	15
RTOR Reduction (vph)	0	0	39	0	0	67	0	66	0	0	10	0
Lane Group Flow (vph)	110	401	37	107	260	60	333	262	0	120	77	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	8%	0%	0%	17%	2%	0%	4%	0%	3%	11%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Effective Green, g (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Actuated g/C Ratio	0.49	0.49	0.49	0.47	0.47	0.47	0.34	0.34		0.33	0.33	
Clearance Time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Grp Cap (vph)	546	845	775	404	757	738	450	579		274	549	
v/s Ratio Prot		c0.23			0.16			0.16			0.05	
v/s Ratio Perm	0.10		0.02	0.12		0.04	c0.25			0.14		
v/c Ratio	0.20	0.47	0.05	0.26	0.34	0.08	0.74	0.45		0.44	0.14	
Uniform Delay, d1	10.3	12.0	9.5	11.2	11.7	10.2	20.3	17.9		18.4	16.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.9	0.1	1.6	1.2	0.2	10.5	2.5		5.0	0.5	
Delay (s)	11.1	13.9	9.6	12.8	12.9	10.4	30.7	20.4		23.5	17.1	
Level of Service	B	B	A	B	B	B	C	C		C	B	
Approach Delay (s)		12.8			12.2			25.6			20.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	0	0	0	0	138
Future Volume (Veh/h)	46	0	0	0	0	138
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)	50	0	0	0	0	150
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	0				100	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				100	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				100	86
cM capacity (veh/h)	1623				871	1085

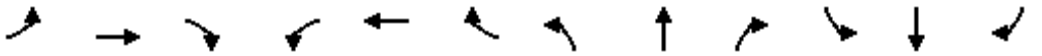
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	50	0	150
Volume Left	50	0	0
Volume Right	0	0	150
cSH	1623	1700	1085
Volume to Capacity	0.03	0.00	0.14
Queue Length 95th (m)	0.7	0.0	3.6
Control Delay (s)	7.3	0.0	8.8
Lane LOS	A		A
Approach Delay (s)	7.3	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	144	85	3	64	137	176
Future Volume (Veh/h)	144	85	3	64	137	176
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	155	91	3	69	147	189
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			246		276	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			246		276	200
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		79	78
cM capacity (veh/h)			1332		710	846

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	246	72	336
Volume Left	0	3	147
Volume Right	91	0	189
cSH	1700	1332	781
Volume to Capacity	0.14	0.00	0.43
Queue Length 95th (m)	0.0	0.1	16.6
Control Delay (s)	0.0	0.3	13.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	13.1
Approach LOS			B

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	37.8%	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)	0	0	79	0	0	328	0	515	49	0	618	306
Future Volume (Veh/h)	0	0	79	0	0	328	0	515	49	0	618	306
Sign Control		Stop			Stop			Free			Free	
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)	0	0	84	0	0	349	0	548	52	0	657	326
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	1554	1257	657	1205	1205	548	657			600		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1554	1257	657	1205	1205	548	657			600		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	82	100	100	35	100			100		
cM capacity (veh/h)	32	173	468	133	185	536	940			987		

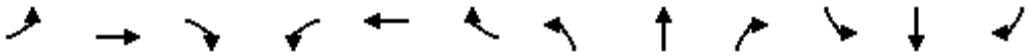
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	84	349	548	52	657	326
Volume Left	0	0	0	0	0	0
Volume Right	84	349	0	52	0	326
cSH	468	536	1700	1700	1700	1700
Volume to Capacity	0.18	0.65	0.32	0.03	0.39	0.19
Queue Length 95th (m)	4.9	35.4	0.0	0.0	0.0	0.0
Control Delay (s)	14.4	23.4	0.0	0.0	0.0	0.0
Lane LOS	B	C				
Approach Delay (s)	14.4	23.4	0.0		0.0	
Approach LOS	B	C				

Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	54.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	186	135	196	15	53	3
Future Volume (Veh/h)	186	135	196	15	53	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	209	152	220	17	60	3
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			361		742	285
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			361		742	285
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			82		80	100
cM capacity (veh/h)			1209		305	759

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	361	237	63
Volume Left	0	220	60
Volume Right	152	0	3
cSH	1700	1209	314
Volume to Capacity	0.21	0.18	0.20
Queue Length 95th (m)	0.0	5.0	5.6
Control Delay (s)	0.0	8.1	19.3
Lane LOS		A	C
Approach Delay (s)	0.0	8.1	19.3
Approach LOS			C

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	43.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	0	0	0	0	168	0	136	0	273	252	0
Future Volume (vph)	0	0	0	0	0	168	0	136	0	273	252	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	0	0	0	189	0	153	0	307	283	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	0	189	153	590
Volume Left (vph)	0	0	0	307
Volume Right (vph)	0	189	0	0
Hadj (s)	0.00	-0.60	0.00	0.11
Departure Headway (s)	6.1	5.1	5.2	4.7
Degree Utilization, x	0.00	0.27	0.22	0.78
Capacity (veh/h)	534	640	656	745
Control Delay (s)	9.1	9.9	9.6	22.2
Approach Delay (s)	0.0	9.9	9.6	22.2
Approach LOS	A	A	A	C

Intersection Summary				
Delay	17.6			
Level of Service	C			
Intersection Capacity Utilization	55.9%	ICU Level of Service	B	
Analysis Period (min)	15			

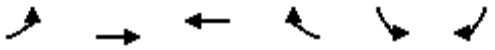
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	37	21	435	22	157	0	450	421	198	520	20
Future Volume (vph)	47	37	21	435	22	157	0	450	421	198	520	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0			7.7	7.7	3.0	7.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.87			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	1763		1648	1549			1860	1478	1668	1851	
Flt Permitted	0.64	1.00		0.72	1.00			1.00	1.00	0.21	1.00	
Satd. Flow (perm)	1131	1763		1244	1549			1860	1478	367	1851	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	50	39	22	463	23	167	0	479	448	211	553	21
RTOR Reduction (vph)	0	14	0	0	106	0	0	0	308	0	2	0
Lane Group Flow (vph)	50	47	0	463	84	0	0	479	140	211	572	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	0%	0%	2%	0%	6%	0%	1%	2%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	33.2	33.2		33.2	33.2			28.4	28.4	43.1	43.1	
Effective Green, g (s)	33.2	33.2		33.2	33.2			28.4	28.4	43.1	43.1	
Actuated g/C Ratio	0.36	0.36		0.36	0.36			0.31	0.31	0.47	0.47	
Clearance Time (s)	7.0	7.0		7.0	7.0			7.7	7.7	3.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	412	643		453	565			580	461	341	876	
v/s Ratio Prot		0.03			0.05			c0.26		0.08	c0.31	
v/s Ratio Perm	0.04			c0.37					0.09	0.21		
v/c Ratio	0.12	0.07		1.02	0.15			0.83	0.30	0.62	0.65	
Uniform Delay, d1	19.2	18.9		28.9	19.4			29.0	23.8	16.8	18.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		48.0	0.1			9.4	0.4	3.3	1.8	
Delay (s)	19.3	18.9		76.9	19.5			38.4	24.2	20.1	20.0	
Level of Service	B	B		E	B			D	C	C	C	
Approach Delay (s)		19.1			60.2			31.5			20.0	
Approach LOS		B			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	349	216	255	353	142	298	74	96	101	231	17
Future Volume (vph)	122	349	216	255	353	142	298	74	96	101	231	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1740	1597	1785	1693	1566	1783	1669		1733	1807	
Flt Permitted	0.49	1.00	1.00	0.48	1.00	1.00	0.57	1.00		0.64	1.00	
Satd. Flow (perm)	922	1740	1597	906	1693	1566	1064	1669		1171	1807	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	131	375	232	274	380	153	320	80	103	109	248	18
RTOR Reduction (vph)	0	0	119	0	0	81	0	66	0	0	4	0
Lane Group Flow (vph)	131	375	113	274	380	72	320	117	0	109	262	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	0%	8%	0%	0%	11%	2%	0%	7%	0%	3%	3%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Effective Green, g (s)	34.0	34.0	34.0	33.0	33.0	33.0	24.0	24.0		23.0	23.0	
Actuated g/C Ratio	0.49	0.49	0.49	0.47	0.47	0.47	0.34	0.34		0.33	0.33	
Clearance Time (s)	6.0	6.0	6.0	7.0	7.0	7.0	6.0	6.0		7.0	7.0	
Lane Grp Cap (vph)	447	845	775	427	798	738	364	572		384	593	
v/s Ratio Prot		0.22			0.22			0.07			0.15	
v/s Ratio Perm	0.14		0.07	c0.30		0.05	c0.30			0.09		
v/c Ratio	0.29	0.44	0.15	0.64	0.48	0.10	0.88	0.20		0.28	0.44	
Uniform Delay, d1	10.8	11.8	10.0	14.0	12.6	10.3	21.6	16.3		17.4	18.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	1.7	0.4	7.2	2.0	0.3	24.7	0.8		1.8	2.4	
Delay (s)	12.5	13.5	10.4	21.2	14.6	10.5	46.4	17.1		19.2	20.8	
Level of Service	B	B	B	C	B	B	D	B		B	C	
Approach Delay (s)		12.3			16.1			35.7			20.4	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

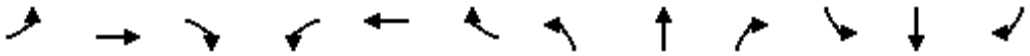
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	153	0	0	0	0	89
Future Volume (Veh/h)	153	0	0	0	0	89
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)	166	0	0	0	0	97
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	0				332	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				332	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	90				100	91
cM capacity (veh/h)	1623				595	1085

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	166	0	97
Volume Left	166	0	0
Volume Right	0	0	97
cSH	1623	1700	1085
Volume to Capacity	0.10	0.00	0.09
Queue Length 95th (m)	2.6	0.0	2.2
Control Delay (s)	7.5	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	7.5	0.0	8.6
Approach LOS			A

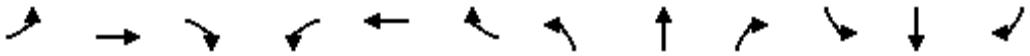
Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	0	0	0	0	255	0	226	0	75	62	0
Future Volume (Veh/h)	0	0	0	0	0	255	0	226	0	75	62	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	0	0	297	0	263	0	87	72	0
Pedestrians								2				
Lane Width (m)								3.5				
Walking Speed (m/s)								1.1				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	806	509	74	511	509	263	72			263		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	806	509	74	511	509	263	72			263		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	62	100			93		
cM capacity (veh/h)	178	439	992	451	439	781	1541			1313		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	297	263	159
Volume Left	0	0	0	87
Volume Right	0	297	0	0
cSH	1700	781	1541	1313
Volume to Capacity	0.00	0.38	0.00	0.07
Queue Length 95th (m)	0.0	13.6	0.0	1.6
Control Delay (s)	0.0	12.4	0.0	4.6
Lane LOS	A	B		A
Approach Delay (s)	0.0	12.4	0.0	4.6
Approach LOS	A	B		

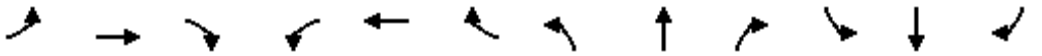
Intersection Summary				
Average Delay	6.1			
Intersection Capacity Utilization	45.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	0	0	0	0	0	168	0	136	0	273	252	0
Future Volume (Veh/h)	0	0	0	0	0	168	0	136	0	273	252	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	0	0	0	189	0	153	0	307	283	0
Pedestrians								2				
Lane Width (m)								3.5				
Walking Speed (m/s)								1.1				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1239	1050	285	1052	1050	153	283			153		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1239	1050	285	1052	1050	153	283			153		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	79	100			79		
cM capacity (veh/h)	101	180	757	172	180	898	1291			1440		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	189	153	590
Volume Left	0	0	0	307
Volume Right	0	189	0	0
cSH	1700	898	1291	1440
Volume to Capacity	0.00	0.21	0.00	0.21
Queue Length 95th (m)	0.0	6.0	0.0	6.1
Control Delay (s)	0.0	10.1	0.0	5.3
Lane LOS	A	B		A
Approach Delay (s)	0.0	10.1	0.0	5.3
Approach LOS	A	B		

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	55.9%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	37	21	435	22	157	0	450	421	198	520	20
Future Volume (vph)	47	37	21	435	22	157	0	450	421	198	520	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Total Lost time (s)	7.0	7.0		7.0	7.0			7.7	7.7	3.0	7.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	0.87			1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	1763		1648	1549			1860	1478	1668	1851	
Flt Permitted	0.64	1.00		0.72	1.00			1.00	1.00	0.21	1.00	
Satd. Flow (perm)	1131	1763		1244	1549			1860	1478	368	1851	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	50	39	22	463	23	167	0	479	448	211	553	21
RTOR Reduction (vph)	0	13	0	0	99	0	0	0	304	0	1	0
Lane Group Flow (vph)	50	48	0	463	91	0	0	479	144	211	573	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	0%	0%	2%	0%	6%	0%	1%	2%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	37.2	37.2		37.2	37.2			28.7	28.7	39.8	39.8	
Effective Green, g (s)	37.2	37.2		37.2	37.2			28.7	28.7	39.8	39.8	
Actuated g/C Ratio	0.41	0.41		0.41	0.41			0.31	0.31	0.43	0.43	
Clearance Time (s)	7.0	7.0		7.0	7.0			7.7	7.7	3.0	7.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	458	715		504	628			582	462	274	803	
v/s Ratio Prot		0.03			0.06			0.26		c0.07	0.31	
v/s Ratio Perm	0.04			c0.37					0.10	c0.27		
v/c Ratio	0.11	0.07		0.92	0.14			0.82	0.31	0.77	0.71	
Uniform Delay, d1	16.9	16.6		25.8	17.2			29.1	24.0	19.2	21.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		21.7	0.1			9.2	0.4	12.5	3.0	
Delay (s)	17.1	16.7		47.5	17.3			38.3	24.4	31.7	24.3	
Level of Service	B	B		D	B			D	C	C	C	
Approach Delay (s)		16.9			38.7			31.6			26.3	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	17.7
Intersection Capacity Utilization	103.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			