1255 Fuller Avenue
Town of Penetanguishene

Traffic Impact Study for
1000239074 Ontario Inc.

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Executive Summary

This report summarizes the traffic impact study prepared for the proposed residential development located on the east side of Fuller Avenue, south of Sandy Bay Road, municipally known as 1255 Fuller Avenue in the Town of Penetanguishene [Town]. The report assesses the impact of traffic related to the development on the adjacent roadway and provides recommendations to accommodate this traffic in a safe and efficient manner.

The proposed development is anticipated to include 27 single-detached units, 4 semi-detached units and 33 townhouse units. Access to the development will be provided via one full-movement access onto Sandy Bay Road [Site Access].

The scope of this analysis includes a review of the following intersections:

- Fuller Avenue / Robert Street East;
- Fuller Avenue / Sandy Bay Road;
- Fuller Avenue / Broad Street; and
- Sandy Bay Road / Site Access.

Conclusions

1. The proposed development is expected to generate a total of 40 AM and 50 PM peak hour trips.
2. Detailed intersection counts were commissioned at the study intersections by JD Engineering.
3. An intersection operation analysis was completed at the study area intersections using the existing and background (2025, 2030 and 2035) traffic volumes, with consideration for the projected adjacent development traffic growth and without the proposed development traffic. This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development.
4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
5. An intersection operation analysis was completed under total (2025, 2030 and 2035) traffic volumes with the proposed development operational at the study area intersections. No improvements are recommended within the study area.
6. The proposed Site Accesses will operate efficiently with one-way stop control for egress movements. A single lane for ingress and egress movements will provide the necessary capacity to convey the traffic volume generated by the proposed development.
7. The sight distance available for the proposed Site Access is suitable for the intended use.
8. In summary, the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

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1 Introduction

1.1 Background

1000239074 Ontario Inc. [the Developer] is proposing a residential development located on the east side of Fuller Avenue, south of Sandy Bay Road, municipally known as 1255 Fuller Avenue in the Town of Penetanguishene [Town].

The proposed development is anticipated to include 27 single-detached units, 4 semi-detached units and 33 townhouse units. Access to the development will be provided via one full-movement access onto Sandy Bay Road [Site Access].

It is anticipated that ultimate build-out will occur by 2025.

The Developer has retained **JD Northcote Engineering Inc.** [JD Engineering] to prepare this traffic impact study in support of the proposed development.

1.2 Study Area

Figure 1 shows the location of the subject site and study area intersections in relation to the surrounding area. The Draft Plan of Subdivision by Morgan Planning & Development Inc. is provided in **Appendix A**.

The subject site is bound by Fuller Avenue to the west, Sandy Bay Road to the north, and existing residential lands to the east and south.

Through consultation with the Town, the following intersections are included in the traffic impact study:

- Fuller Avenue / Robert Street East;
- Fuller Avenue / Sandy Bay Road;
- Fuller Avenue / Broad Street; and
- Sandy Bay Road / Site Access.

Figure 1 – Proposed Site Location and Study Area

1.3 Study Scope and Objectives

The purpose of this study is to identify the potential impacts to traffic flow at the site accesses and on the surrounding roadway network. The study analysis includes the following tasks:

- Consult with the Town to address any traffic-related issues or concerns they have with the proposed development;
- Determine existing traffic volumes and circulation patterns;
- Estimate future traffic volumes if the proposed development was not constructed, including the impact of additional proposed developments in the area;
- Complete level-of-service [LOS] analysis of horizon year (without the proposed development) traffic conditions and identify operational deficiencies;
- Estimate the amount of traffic that would be generated by the proposed development and assign to the roadway network;
- Complete LOS analysis of horizon year (with the proposed development) traffic conditions and identify additional operational deficiencies;
- Identify improvement options to address operational deficiencies;
- Review the proposed intersection spacing;

- Review the available sight distance at the proposed site access driveway; and
- Document findings and recommendations in a final report.

1.4 Horizon Year and Analysis Periods

Traffic scenarios for the existing year, ultimate buildout horizon year (2025), 5-year post-buildout horizon year (2030) and 10-year post-buildout horizon year (2035) were selected for analysis of traffic operations in the study area. The weekday morning [AM] and weekday afternoon [PM] peak hours have been selected as the analysis periods for this study.

2 Information Gathering

2.1 Street and Intersection Characteristics

Fuller Avenue is designated as a Major Road within the Town's Official Plan, having a two-lane, rural cross-section through the study area. Fuller Avenue has bike lanes on both sides of the road and a posted speed limit of 60km/h. Fuller Avenue is under the jurisdiction of the Town.

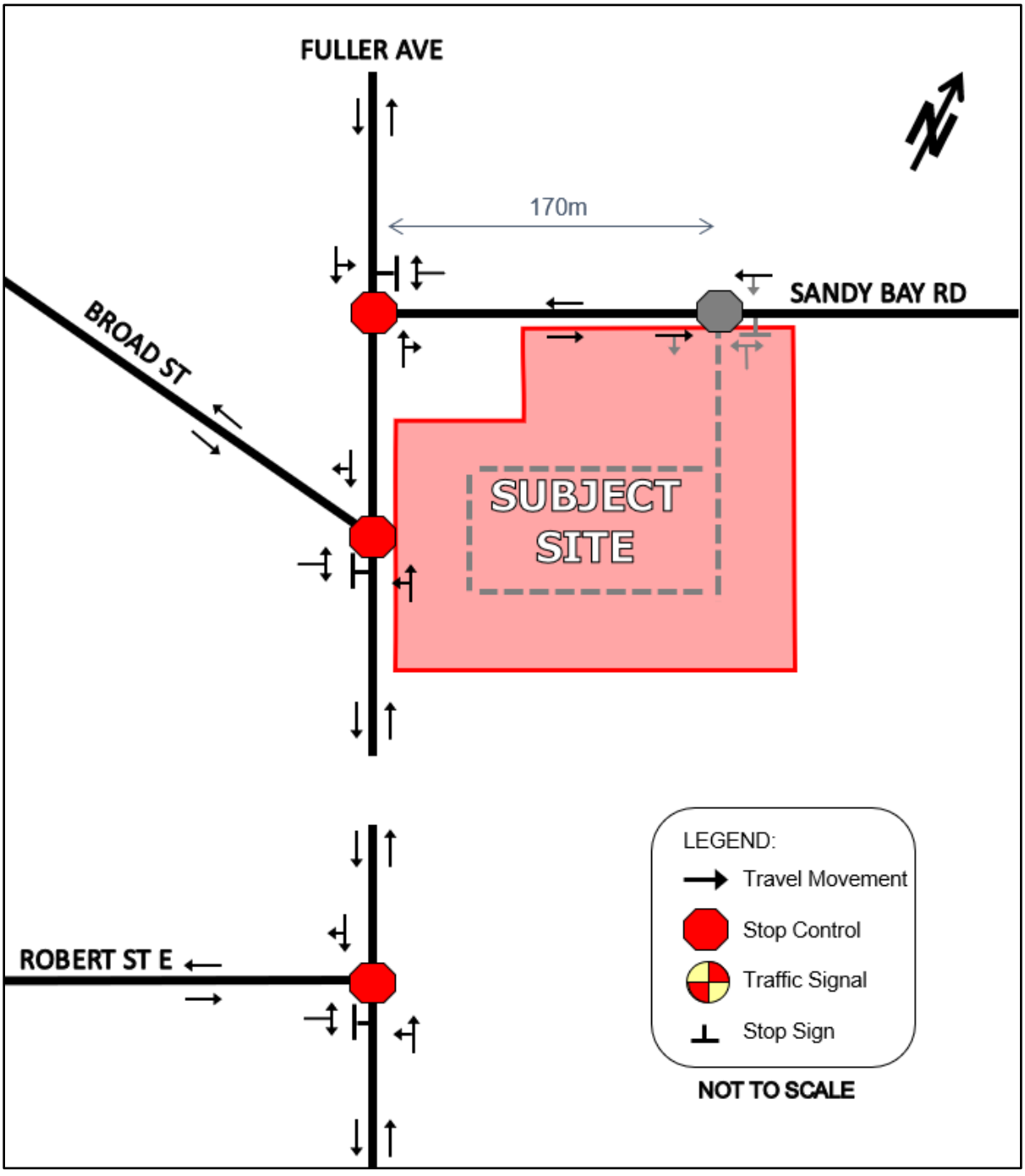
Robert Street East is designated as a Major Road within the Town's Official Plan, having a two-lane, rural cross-section through the study area. Robert Street has a posted speed limit of 50km/h and is under the jurisdiction of the Town.

Sandy Bay Road is designated as a Local Road within the Town's Official Plan, having a two-lane, rural cross-section through the study area. Sandy Bay Road has a posted speed limit of 60km/h and is under the jurisdiction of the Town.

Broad Street is designated as a Local Road within the Town's Official Plan, having a two-lane, rural cross-section through the study area. Broad Street has an unposted (assumed) speed limit of 50km/h and is under the jurisdiction of the Town.

The existing intersection spacing and lane configuration within the study area is illustrated in **Figure 2**.

Figure 2 – Existing Intersection Spacing and Lane Configuration within Study Area



2.2 Local Transportation Infrastructure Improvements

Based on our discussions with Town Staff, the detailed design for the improvements to the Robert Street East / Fuller Avenue intersection is nearing completion, with construction scheduled for 2024. The improvements were based upon the recommendations made in the *1145 Fuller Avenue Traffic Impact Study* [1145 Fuller TIS] completed by JD Engineering on November 22nd, 2018, noted below:

Robert Street East / Fuller Avenue

- Signalization of intersection
- Northbound left turn auxiliary lane;
  - (45 metre storage length and 55 metre taper length)
- Southbound right turn auxiliary lane;
  - (30 metre storage length and 60 metre taper length)
- Eastbound right turn auxiliary lane.
  - (30 metre storage length and 30 metre taper length)

For the purpose of this study, the above improvements have been applied to the 2025 horizon year (and beyond). Signal timing used in the 1145 Fuller Avenue TIS has applied.

2.3 Transit Access

The Midland Penetanguishene Transit [MPTS] provides one bus routes within the study area; the Penetanguishene route provides service to various points of interest within the Town, travelling along Robert Street West, Broad Street, and Fuller Avenue, adjacent to the study area. This bus operates between 06:25 – 17:25 on weekdays and 08:25 – 16:25 on Saturdays with service every 60 minutes. There is no bus service on Sundays or Holidays. This bus route provides a "flag on" service where passengers are not required to be at a bus stop and can flag down the bus along its route to get on the bus. The closest bus stop is located at the southwest corner of the Church Steet / Broad Street intersection.

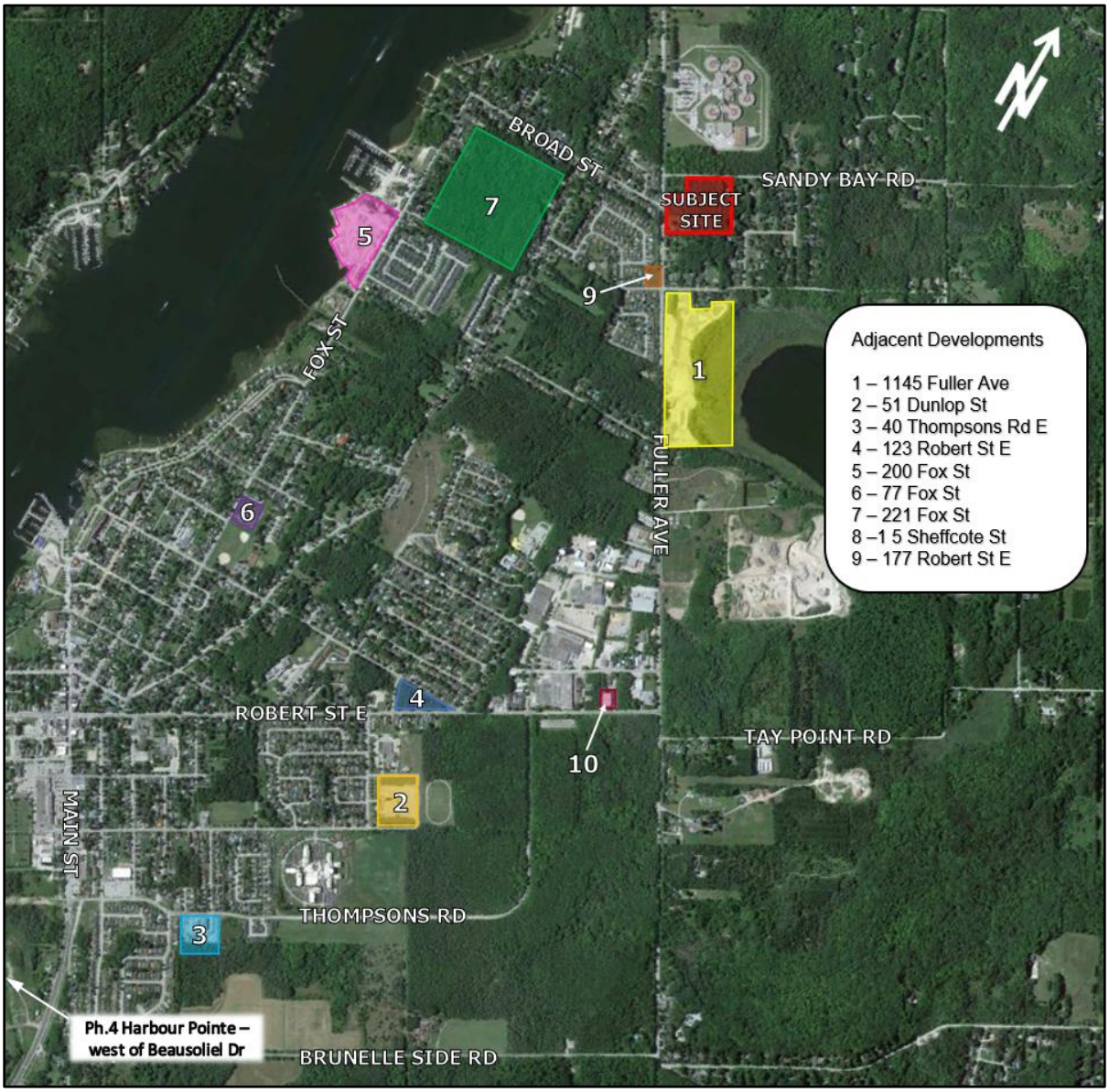
2.4 Development Growth

In review of the Town's development information and through discussions with Town planning staff, the following developments have been noted for consideration with respect to impacts on the local traffic volumes / infrastructure capacity:

- 1145 Fuller Avenue – 0.56 acre commercial block, 102 single detached units, 86 townhouse units and 0.56 acre multi-density block;
- 40 Thompsons Road East – 36 residential units;
- St. Andrews Village – 126 single detached units, 47 townhouse units and approximately 30 medium density units;
- 51 Dunlop Street – final land use not known;
- 123 Robert Street East – 33 townhouse units;
- 200 Fox Street – marina, 22 townhouse units, 28 single detached units and 12 medium density units;
- 77 Fox Street – 56 rental units;
- 221 Fox Street – 88 townhouse units;
- Phase 4 Harbour Pointe Subdivision – 31 single detached units;
- 15 Sheffcote Street – 1,813 ft^2 commercial spaces and two residential units; and.
- 177 Robert Street East – 44,202 ft^2 industrial facility.

Figure 3 illustrates the location of the above developments in relation to the subject site.

Figure 3 – Adjacent Development Location



In review of the adjacent development locations and local area traffic routes, it is evident that traffic volumes generated from a number of the proposed developments will not traverse the study intersections. In general, motorists destined to, or originating from developments located to the west and south of the Subject Site, are likely to utilize the Main Street and Fox Street as primary travel routes. Consequently, only the adjacent developments that will generate traffic through the study intersection have been considered in the proceeding analyses.

Table 1 summarizes the adjacent developments details.

Table 1 – Adjacent Development Summary

No.	Development	Development Stats	Traffic Generation Reference	Build-out Horizon
1	1145 Fuller Ave	0.56-acre commercial block, 102 single detached units, 86 townhouse units and 0.56-acre multi-density block;	1145 Fuller TIS	2025
2	15 Sheffcote St	1,813 ft^2 commercial spaces and two residential units	1145 Fuller TIS	2025
3	177 Robert St E	44,202 ft^2 industrial facility	1145 Fuller TIS	2025
4	123 Robert St E	33 Townhouse units	ITE Rates	2025

2.4.1 Development Growth Traffic Generation

Traffic volumes generated by the 1145 Fuller Avenue, 15 Sheffcote Street and 177 Robert Street East developments have been determined based on the 1145 Fuller TIS (Excerpts provided in **Appendix B**). For the remaining 123 Robert Street East development, traffic volumes have been calculated based on the data provided in the Institute of Transportation Engineers [ITE] Trip Generation Manual (11th Edition) [ITE Trip Generation Manual].

The following ITE land uses have been applied to estimate the traffic from the adjacent development:

- ITE land use 220 (Multifamily Housing (Low-Rise)) – General Urban / Suburban Setting.

The AM and PM peak hour traffic generation for the adjacent developments do not exactly align with the AM and PM peak hour in the traffic counts; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

The traffic rates used to estimate trip generation of the adjacent development are illustrated below in Error! Reference source not found..

Table 2 – ITE Traffic Generation Rates & Equations

Land Use	Trip Basis	AM Peak Hour			PM/EVE Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Multi-Family Housing (Low-Rise) ITE Land Use: 220	rate (units)	0.1	0.3	0.4	0.32	0.19	0.51

The estimated trip generation of the adjacent developments is illustrated below in **Table 3**.

Table 3 – Estimated Traffic Generation – Adjacent Developments

Development	Land Use	Size	AM Peak Hour			PM Peak Hour		
			IN	OUT	TOTAL	IN	OUT	TOTAL
123 Robert St E	Townhouse units	33 units	3	11	14	11	6	17

As noted in **Table 1**, all development has been assumed to be built-out by the 2025 horizon year.

2.4.2 Adjacent Development Traffic Volume Assignment

The traffic assignment for the adjacent development traffic have been established based on the respective background traffic studies noted in **Table 1**.

For the adjacent development that did not have a traffic study (123 Robert Street E), traffic volumes have been distributed to the study area road network based on the traffic distribution developed in Section 4.4, in context with the location of the development area.

The assignment of the adjacent development volumes through the study area road network is illustrated in **Figure 4** through Error! Reference source not found..

2.5 Background Traffic Growth

Based on discussions with Town staff, and in order to remain consistent with other traffic studies completed in the area, a background growth rate of 2% has been applied to the study area.

2.6 Traffic Counts

Detailed turning movement traffic and pedestrian counts were commissioned by JD Engineering at the study intersections. **Table 4** summarizes the traffic count data collection information.

Table 4 – Traffic Count Data

Intersection (N-S Street / E-W Street)	Count Date	AM Peak Hour	PM Peak Hour	Source
Fuller Avenue / Sandy Bay Road	Tuesday January 10, 2023	07:15 – 08:15	16:00 – 17:00	JD Eng.*
Fuller Avenue / Broad Street	Tuesday January 10, 2023	07:15 – 08:15	16:00 – 17:00	JD Eng.*
Fuller Avenue / Robert Street East	Tuesday January 10, 2023	07:30 – 08:30	16:00 – 17:00	JD Eng.*

*Counts were completed by Accu-Traffic Inc. on behalf of JD Engineering.

Detailed traffic count data can be found in **Appendix C**.

2.7 Existing Traffic Volumes

The 2023 existing AM, and PM peak hour traffic volumes in the study area are illustrated in **Figure 9.**

2.8 Horizon Year Traffic Volumes

The background (2025, 2030 and 2035) horizon year traffic volumes are illustrated in Error! Reference source not found. through **Figure 12**. The background volumes are based on the existing (2023) traffic volumes, adjusted to reflect the annual background growth rate of 2%, in addition to the noted adjacent development traffic volumes (outlined in Section 2.4).

3 Intersection Operation without Proposed Development

3.1 Introduction

Existing and background horizon operational conditions were established to determine how the street network within the study area is currently functioning without the proposed development. This provides a base case scenario to compare with future development scenarios. Traffic operations within the study area were evaluated using the existing and future background traffic volumes with the existing road configuration and traffic control. The intersection performance was measured using the traffic analysis software, Synchro 11, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analyzing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 11 enables the study area to be graphically defined in terms of streets and intersections, along with their geometric and traffic control characteristics. The user is able to evaluate both signalized and unsignalized intersections in relation to each other, thus not only providing level of service for the individual intersections, but also enabling an assessment of the impact the various intersections in a network have on each other in terms of spacing, traffic congestion, delay, and queuing.

The intersection operations were also evaluated in terms of the LOS. LOS is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. This delay includes deceleration delay, queue move-up time, stopped delay, and acceleration delay. LOS is expressed on a scale of A through F, where LOS A represents very little delay (i.e. less than 10 seconds per vehicle) and LOS F represents very high delay (i.e. greater than 50 seconds per vehicle for a stop sign controlled intersection and greater than 80 seconds per vehicle for a signalized intersection).

The LOS criteria for signalized and stop sign-controlled intersections are shown in **Table 5**. A description of traffic performance characteristics is included for each LOS.

Table 5 – Level of Service Criteria for Intersections

LOS	LOS Description	Control Delay (seconds per vehicle)	
		Signalized Intersections	**Stop Controlled Intersections**
A	Very low delay; most vehicles do not stop (**Excellent**)	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop (**Very Good**)	between 10.0 and 20.0	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping **(Good**)	between 20.0 and 35.0	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop (**Satisfactory**)	between 35.0 and 55.0	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of **acceptable** delay	between 55.0 and 80.0	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection (**Unacceptable**)	greater than 80.0	greater than 50.0

3.2 Existing Intersection Operation

The results of the LOS analysis under existing (2023) traffic volumes during the AM and PM peak hours can be found below in Error! Reference source not found.. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix D**.

Table 6 – Existing (2023) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
Fuller Avenue / Broad Street (unsignalized)	-	1.5	A	-	-	-	1.5	A	-	-
EB	0.08	9.1	A	-	2	0.08	11.9	B	-	2
Fuller Avenue / Sandy Bay Road (unsignalized)	-	1.5	A	-	-	-	1.1	A	-	-
WB	0.11	11.9	B	-	3	0.07	11.6	B	-	2
Fuller Avenue / Robert Street East (unsignalized)	-	8.7	A	-	-	-	5.9	A	-	-
EB	0.59	22.7	C	-	31	0.45	18.2	C	-	19

The results of the LOS analysis indicate that the study area intersections are operating within the typical design limits noted in Section 3.1.

An analysis was completed for left turn movements at the study area unsignalized intersections, based on the criteria outlined in Appendix 9A of the Ontario Ministry of Transportation Design Supplement for TAC Geometric Design Guide for Canadian Roads June 2017 [MTO DS]. According to the above-noted criteria, a left turn lane is not warranted (results are provided in **Appendix H**).

A review of the need for an additional auxiliary right turn lane at the study area unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, an auxiliary right turn lane is not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the study area unsignalized intersections (results are provided in **Appendix I**).

No infrastructure improvements are recommended within the study area.

3.3 Background (2025) Intersection Operation

The results of the LOS analysis under background (2025) traffic volumes during the AM and PM peak hour can be found below in **Table 7**. Existing intersection geometry has been utilized for this scenario and traffic control have been utilized for this scenario along with the improvements to the Robert Street East / Fuller Avenue intersection, as noted in Section 2.2. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 7 – Background (2025) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
Fuller Avenue / Broad Street (unsignalized)	-	1.9	A	-	-	-	1.8	A	-	-
EB	0.10	9.2	A	-	3	0.10	12.2	B	-	3
Fuller Avenue / Sandy Bay Road (unsignalized)	-	1.5	A	-	-	-	1.1	A	-	-
WB	0.12	12.1	B	-	3	0.08	11.8	B	-	2
Fuller Avenue / Robert Street East (signalized)	0.33	14.6	B	-	-	0.35	13.9	B	-	-
EBL	0.60	35.3	D	-	33	0.53	33.9	C	-	39
EBR	0.11	29.5	C	30	4	0.11	30.0	C	30	17
NBL	0.21	4.7	A	45	14	0.24	4.5	A	45	16
NBT	0.24	5.2	A	-	26	0.14	4.2	A	-	17
SBT	0.21	10.2	B	-	34	0.32	10.7	B	-	37
SBR	0.09	9.3	A	30	9	0.18	9.5	A	30	4

The results of the LOS analysis indicate that the study area intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue for the southbound through movement at the Fuller Avenue / Robert Street intersection extends marginally beyond the southbound right lane storage length during both the AM and PM peak hour. However, the southbound right turn movement can be accommodated within the southbound right turn taper length. Consequently, no change to the design is required.

The anticipated 95th percentile queues for all other movements can be accommodated by the auxiliary lane storage lengths.

An analysis was completed for left turn movements at the study area unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria a left turn lane is not warranted (results are provided in **Appendix H**).

A review of the need for an additional auxiliary right turn lane at the study area unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, an auxiliary right turn lane is not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the study area unsignalized intersections (results are provided in **Appendix I**).

No additional improvements are recommended within the study area.

3.4 Background (2030) Intersection Operation

The results of the LOS analysis under background (2030) traffic volumes during the AM and PM peak hour can be found below in **Table 7**. Existing intersection geometry has been utilized for this scenario and traffic control have been utilized for this scenario along with the improvements to the Robert Street East / Fuller Avenue intersection, as noted in Section 2.2. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 8 – Background (2030) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
Fuller Avenue / Broad Street (unsignalized)	-	1.9	A	-	-	-	1.9	A	-	-
EB	0.11	9.4	A	-	3	0.13	12.9	B	-	3
Fuller Avenue / Sandy Bay Road (unsignalized)	-	1.6	A	-	-	-	1.1	A	-	-
WB	0.14	12.7	B	-	4	0.09	12.4	B	-	2
Fuller Avenue / Robert Street East (signalized)	0.36	15.0	B	-	-	0.38	14.2	B	-	-
EBL	0.62	36.0	D	-	35	0.55	34.2	C	-	41
EBR	0.12	29.4	C	30	4	0.12	30.0	C	30	17
NBL	0.24	4.9	A	45	16	0.28	4.8	A	45	18
NBT	0.26	5.6	A	-	30	0.15	4.4	A	-	19
SBT	0.23	10.8	B	-	38	0.35	11.3	B	-	41
SBR	0.10	9.8	A	30	9	0.21	10.0	A	30	6

The results of the LOS analysis indicate that the study area intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue for the southbound through movement at the Fuller Avenue / Robert Street intersection extends marginally beyond the southbound right lane storage length during both the AM and PM peak hour. However, the southbound right turn movement can be accommodated within the southbound right turn taper length. Consequently, no change to the design is required.

The anticipated 95th percentile queues for all other movements can be accommodated by the auxiliary lane storage lengths.

An analysis was completed for left turn movements at the study area unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria a left turn lane is not warranted (results are provided in **Appendix H**).

A review of the need for an additional auxiliary right turn lane at the study area unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, an auxiliary right turn lane is not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the study area unsignalized intersections (results are provided in **Appendix I**).

No additional improvements are recommended within the study area.

3.5 Background (2035) Intersection Operation

The results of the LOS analysis under background (2035) traffic volumes during the AM and PM peak hour can be found below in **Table 7**. Existing intersection geometry has been utilized for this scenario and traffic control have been utilized for this scenario along with the improvements to the Robert Street East / Fuller Avenue intersection, as noted in Section 2.2. Detailed output of the Synchro analysis can be found in **Appendix E**.

Table 9 – Background (2035) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
Fuller Avenue / Broad Street (unsignalized)	-	1.9	A	-	-	-	2.0	A	-	-
EB	0.12	9.5	A	-	3	0.14	13.7	B	-	4.0
Fuller Avenue / Sandy Bay Road (unsignalized)	-	1.8	A	-	-	-	1.2	A	-	-
WB	0.16	13.5	B	-	4	0.11	13.0	B	-	3
Fuller Avenue / Robert Street East (signalized)	0.39	15.5	B	-	-	0.41	14.6	B	-	-
EBL	0.65	36.9	D	-	38	0.56	34.5	C	-	43
EBR	0.13	29.3	C	30	4	0.13	29.9	C	30	18
NBL	0.26	5.2	A	45	18	0.32	5.2	A	45	20
NBT	0.29	6.0	A	-	34	0.16	4.5	A	-	21
SBT	0.25	11.5	B	-	43	0.38	12.1	B	-	47
SBR	0.10	10.3	B	30	10	0.24	10.6	B	30	9

The results of the LOS analysis indicate that the study area intersections are operating within the typical design limits noted in Section 4.2.

The anticipated 95th percentile queue for the southbound through movement at the Fuller Avenue / Robert Street intersection extends marginally beyond the southbound right lane storage length during both the AM and PM peak hour. However, the southbound right turn movement can be accommodated within the southbound right turn taper length. Consequently, no change to the design is required.

The anticipated 95th percentile queues for all other movements can be accommodated by the existing auxiliary lane storage lengths.

An analysis was completed for left turn movements at the study area unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria a left turn lane is not warranted (results are provided in **Appendix H**).

A review of the need for an additional auxiliary right turn lane at the study area unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, an auxiliary right turn lane is not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the study area unsignalized intersections (results are provided in **Appendix I**).

No additional improvements are recommended within the study area.

4 Proposed Development Traffic Generation and Assignment

4.1 Traffic Generation

The traffic generation for proposed development has been estimated based the type of land use, development size and data provided in the ITE Trip Generation Manual. The following ITE land use has been applied to estimate the traffic for the proposed development:

- ITE land use 210 (Single-Family Detached);
- ITE land use 220 (Multifamily Housing (Low-Rise)).

The utilized traffic rates and estimated trip generation of the proposed development is illustrated below in **Table 10 and Table 11.**

Table 10 – ITE Traffic Generation Trip Rates & Fitted Curve Equations (Subject Site)

Land Use	Trip Basis	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached ITE Land Use: 210	equation (units)	Ln(T) = 0.91 Ln(X) + 0.12			Ln(T) = 0.94 Ln(X) + 0.27		
	distribution	25%	75%	100%	63%	37%	100%
Multifamily Housing (Low-Rise) ITE Land Use: 220	rate (units)	0.10	0.30	0.40	0.32	0.19	0.51

Table 11 – Estimated Trip Generation of the Proposed Development

Land Use	Units	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Single-Family Detached ITE Land Use: 210	31	6	20	26	21	12	33
Multifamily Housing (Low-Rise) ITE Land Use: 220	33	3	11	14	11	6	17
Total Trips	**64 units**	**9**	**31**	**40**	**32**	**18**	**50**

To be conservative, the 4 semi-detached units have been counted as single-detached units to give a total of 31 single-detached units for the traffic generation. Additionally, no transportation modal split reduction has been applied to the above-noted traffic generation calculation.

4.2 Traffic Assignment

For the purposes of this study, it has been assumed that all traffic generated by the proposed development will be new traffic and would not be in the study area if the development was not constructed.

The ITE data provides the anticipated percentage of new traffic entering and exiting during the peak hour. The distribution of traffic has been calculated based on the 2016 Transportation Tomorrow Survey [TTS] data for traffic zone 8573 retrieved using the TTS Internet Data Retrieval System [IDRS] (output

attached as **Appendix F**). TTS data provides historical origin and destination work trip percentages for specific areas within the County and the Greater Toronto and Hamilton Area [GTHA].

Traffic distribution for the trips generated by the proposed development is expected to generally follow commuter travel patterns. Our analysis is based on egress traffic during the AM peak hour. Logically, the distribution of ingress traffic will follow the inverse of the exiting traffic distribution. For each of the individual areas identified in the TTS data, we have selected the probable route of travel, assuming drivers will select their route primarily based on travel time.

The distribution of trips is illustrated in Error! Reference source not found. using the methodology outlined above.

Table 12 – Proposed Development Traffic Distribution

Travel Direction (to / from)	Percent of Total Traffic Generation
West via Broad Street	5%
West via Robert Street West	31%
South via Fuller Avenue	64%
TOTAL	**100%**

The site traffic assignment for buildout of the proposed developments for the AM and PM peak hour is illustrated in **Figure 13**.

4.3 Total Horizon Year Traffic Volumes with the Proposed Development

For the total (2025, 2030 and 2035) horizon year traffic volumes, the proposed development traffic was added to the background (2025, 2030 and 2035) traffic volumes. The resulting total (2025, 2030 and 2035) horizon year traffic volume for the AM and PM peak hour are illustrated in Error! Reference source not found. through **Figure 16**.

5 Intersection Operation with Proposed Development

5.1 Total (2025) Intersection Operation

The results of the LOS analysis under total (2025) traffic volumes during the AM and PM peak hour can be found below in **Table 13** Existing intersection geometry has been utilized for this scenario and traffic control have been utilized for this scenario along with the improvements to the Robert Street East / Fuller Avenue intersection, as noted in Section 2.2. Stop control has been assumed at the Site Access egress movement. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 13 – Total (2025) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
Fuller Avenue / Broad Street (unsignalized)	-	1.8	A	-	-	-	1.7	A	-	-
EB	0.11	9.4	A	-	3	0.11	12.7	B	-	4.0
Site Access / Sandy Bay Road (unsignalized)	-	2.6	A	-	-	-	1.3	A	-	-
NB	0.04	9.0	A	-	1	0.02	9.1	A	-	3
Fuller Avenue / Sandy Bay Road (unsignalized)	-	2.3	A	-	-	-	1.8	A	-	-
WB	0.19	12.9	B	-	6	0.15	12.7	B	-	4
Fuller Avenue / Robert Street East (signalized)	0.34	14.7	B	-	-	0.37	14.1	B	-	-
EBL	0.60	35.4	D	-	34	0.55	34.5	C	-	42
EBR	0.11	29.4	C	30	4	0.11	29.9	C	30	16
NBL	0.21	4.7	A	45	14	0.25	4.7	A	45	16
NBT	0.25	5.4	A	-	27	0.15	4.5	A	-	20
SBT	0.23	10.6	B	-	38	0.33	11.1	B	-	40
SBR	0.10	9.5	A	30	9	0.19	9.8	A	30	5

The results of the LOS analysis indicate that the study area intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue for the southbound through movement at the Fuller Avenue / Robert Street intersection extends marginally beyond the southbound right lane storage length during both the AM and PM peak hour. However, the southbound right turn movement can be accommodated within the southbound right turn taper length. Consequently, no change to the design is required.

The anticipated 95th percentile queues for all other movements can be accommodated by the auxiliary lane storage lengths.

An analysis was completed for left turn movements at the study area unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria a left turn lane is not warranted (results are provided in **Appendix H**).

A review of the need for an additional auxiliary right turn lane at the study area unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, an auxiliary right turn lane is not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the study area unsignalized intersections (results are provided in **Appendix I**).

No additional improvements are recommended within the study area.

5.2 Total (2030) Intersection Operation

The results of the LOS analysis under total (2030) traffic volumes during the AM and PM peak hour can be found below in **Table 14**. Existing intersection geometry has been utilized for this scenario and traffic control have been utilized for this scenario along with the improvements to the Robert Street East / Fuller Avenue intersection, as noted in Section 2.2. Stop control has been assumed at the Site Access egress movement. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 14 – Total (2030) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
Fuller Avenue / Broad Street (unsignalized)	-	1.8	A	-	-	-	1.8	A	-	-
EB	0.12	9.6	A	-	3	0.14	13.6	B	-	4
Site Access / Sandy Bay Road (unsignalized)	-	2.5	A	-	-	-	1.3	A	-	-
NB	0.04	9.1	A	-	1	0.02	9.1	A	-	1
Fuller Avenue / Sandy Bay Road (unsignalized)	-	2.4	A	-	-	-	1.8	A	-	-
WB	0.21	13.6	B	-	6	0.17	13.4	B	-	5
Fuller Avenue / Robert Street East (signalized)	0.36	15.0	B	-	-	0.40	14.4	B	-	-
EBL	0.63	36.2	D	-	36	0.57	34.5	C	-	44
EBR	0.12	29.3	C	30	4	0.12	29.8	C	30	17
NBL	0.24	5.0	A	45	16	0.29	5.0	A	45	18
NBT	0.27	5.7	A	-	31	0.16	4.6	A	-	21
SBT	0.25	11.1	B	-	42	0.37	11.8	B	-	44
SBR	0.10	9.9	A	30	9	0.22	10.4	B	30	7

The results of the LOS analysis indicate that the study area intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue for the southbound through movement at the Fuller Avenue / Robert Street intersection extends marginally beyond the southbound right lane storage length during both the AM and PM peak hour. However, the southbound right turn movement can be accommodated within the southbound right turn taper length. Consequently, no change to the design is required.

The anticipated 95th percentile queues for all other movements can be accommodated by the auxiliary lane storage lengths.

An analysis was completed for left turn movements at the study area unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria a left turn lane is not warranted (results are provided in **Appendix H**).

A review of the need for an additional auxiliary right turn lane at the study area unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, an auxiliary right turn lane is not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the study area unsignalized intersections (results are provided in **Appendix I**).

No additional improvements are recommended within the study area.

5.3 Total (2035) Intersection Operation

The results of the LOS analysis under total (2035) traffic volumes during the AM and PM peak hour can be found below in **Table 15**. Existing intersection geometry has been utilized for this scenario and traffic control have been utilized for this scenario along with the improvements to the Robert Street East / Fuller Avenue intersection, as noted in Section 2.2. Stop control has been assumed at the Site Access egress movement. Detailed output of the Synchro analysis can be found in **Appendix G**.

Table 15 – Total (2035) LOS

Location (N-S Street / E-W Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Storage	Model				Storage	Model
Fuller Avenue / Broad Street (unsignalized)	-	4.6	A	-	-	-	1.9	A	-	-
EB	0.13	9.6	A	-	4	0.16	14.5	B	-	4
Site Access / Sandy Bay Road (unsignalized)	-	2.4	A	-	-	-	1.2	A	-	-
NB	0.04	9.1	A	-	1	0.02	9.2	A	-	1
Fuller Avenue / Sandy Bay Road (unsignalized)	-	2.6	A	-	-	-	1.9	A	-	-
WB	0.25	14.6	B	-	8	0.19	14.2	B	-	6
Fuller Avenue / Robert Street East (signalized)	0.40	15.5	B	-	-	0.40	14.4	B	-	-
EBL	0.66	37.3	D	-	38	0.59	35.0	D	-	46
EBR	0.13	29.2	C	30	4	0.13	29.8	C	30	18
NBL	0.27	6.1	A	45	18	0.33	5.4	A	45	21
NBT	0.30	5.7	A	-	35	0.18	4.7	A	-	23
SBT	0.28	11.9	B	-	47	0.40	12.5	B	-	50
SBR	0.11	10.4	B	30	10	0.25	11.0	B	30	10

The results of the LOS analysis indicate that the study area intersections are operating within the typical design limits noted in Section 3.1.

The anticipated 95th percentile queue for the southbound through movement at the Fuller Avenue / Robert Street intersection extends marginally beyond the southbound right lane storage length during both the AM and PM peak hour. However, the southbound right turn movement can be accommodated within the southbound right turn taper length. Consequently, no change to the design is required.

The anticipated 95th percentile queues for all other movements can be accommodated by the auxiliary lane storage lengths.

An analysis was completed for left turn movements at the study area unsignalized intersections, based on the criteria outlined in Appendix 9A of the MTO DS. According to the above-noted criteria a left turn lane is not warranted (results are provided in **Appendix H**).

A review of the need for an additional auxiliary right turn lane at the study area unsignalized intersections was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, an auxiliary right turn lane is not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the study area unsignalized intersections (results are provided in **Appendix I**).

No additional improvements are recommended within the study area.

5.4 Site Access

The Site Access will operate efficiently as a full-movement access, with one-way stop control for the egress movements . A single ingress and egress lane will provide the necessary capacity to service the proposed development.

The proposed spacing between the Site Access and Fuller Avenue to the to the west and Concession Road to the east is greater than the minimum intersection spacing requirements as identified in the Transportation Association of Canada Design Guide for Canadian Roads (2017) [TAC Guidelines] – Figure 8.8.2 (Suggested Minimum Corner Clearance to Accesses at Major Intersections) – 35 meters for arterial roads for unsignalized conditions.

5.5 Sight Distance Review

A review of the available sight distances for the proposed Site Access was completed as part of this analysis.

The sight distance east of the Site Access was measured at greater than 200 metres, satisfying both the minimum sight stopping and intersection sight distance requirements as identified in the TAC Guidelines for a design speed of 80km/h (130 and 170 meters, respectively).

The sight distance west of the Site Access was measured at approximately 150 metres, satisfying both the minimum sight stopping and intersection sight distance requirements as identified in the TAC Guidelines for a design speed of 80km/h (130 and 145 meters, respectively).

As such, there are no issue with the sight distance available for the proposed West Access.

6 Summary

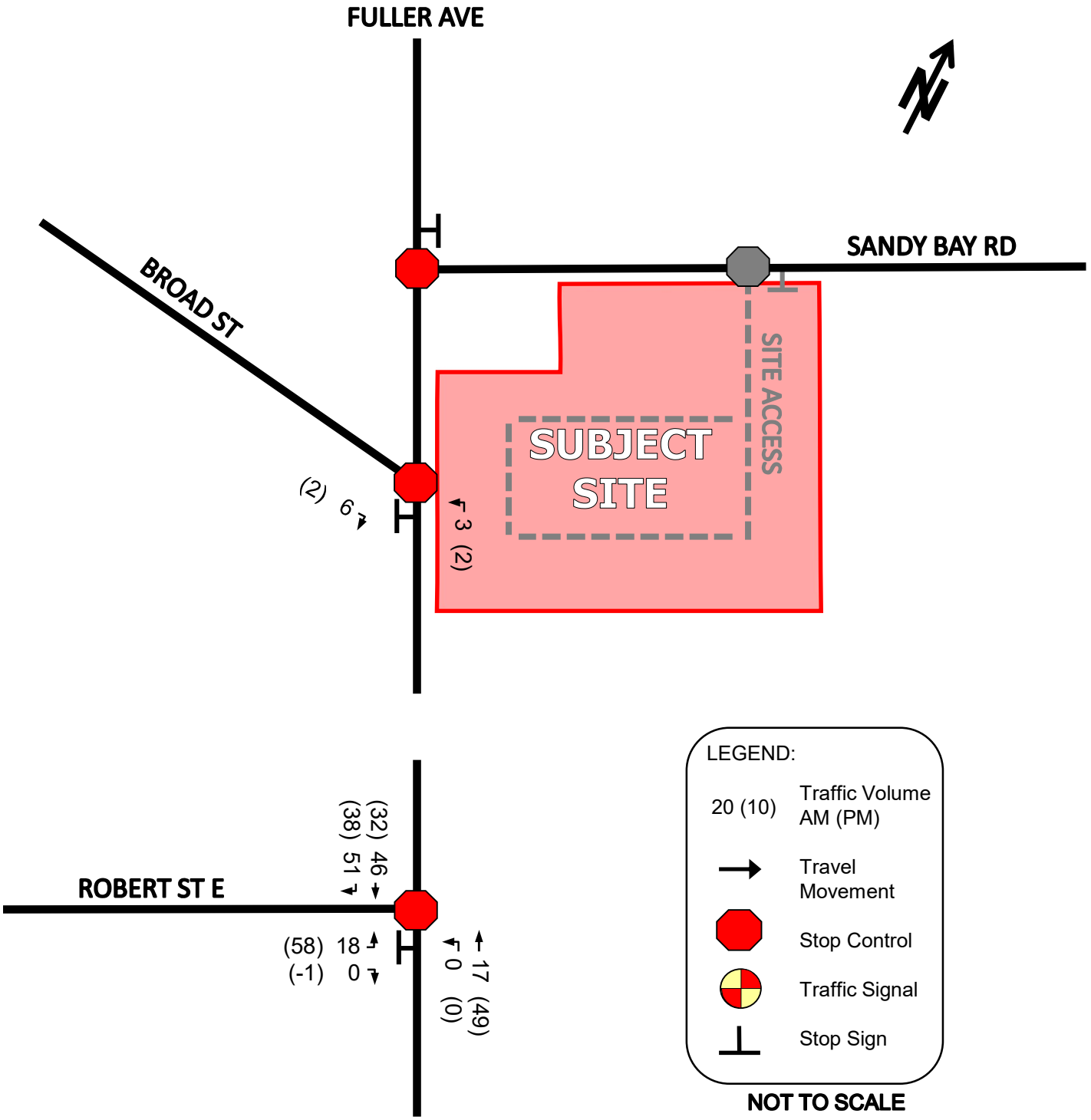
1000239074 Ontario Inc. retained **JD Engineering** to prepare this traffic impact study in support of the proposed residential development in the Town of Penetanguishene. The proposed Draft Plan of Subdivision is shown in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

1. The proposed development is expected to generate a total of 40 AM and 50 PM peak hour trips.
2. Detailed intersection counts were commissioned at the study intersections by JD Engineering.
3. An intersection operation analysis was completed at the study area intersections, using the existing and background (2025, 2030 and 2035) traffic volumes, with consideration for the projected adjacent development traffic growth and without the proposed development traffic.

This enabled a review of existing and future traffic deficiencies that would be present without the influence of the proposed development.

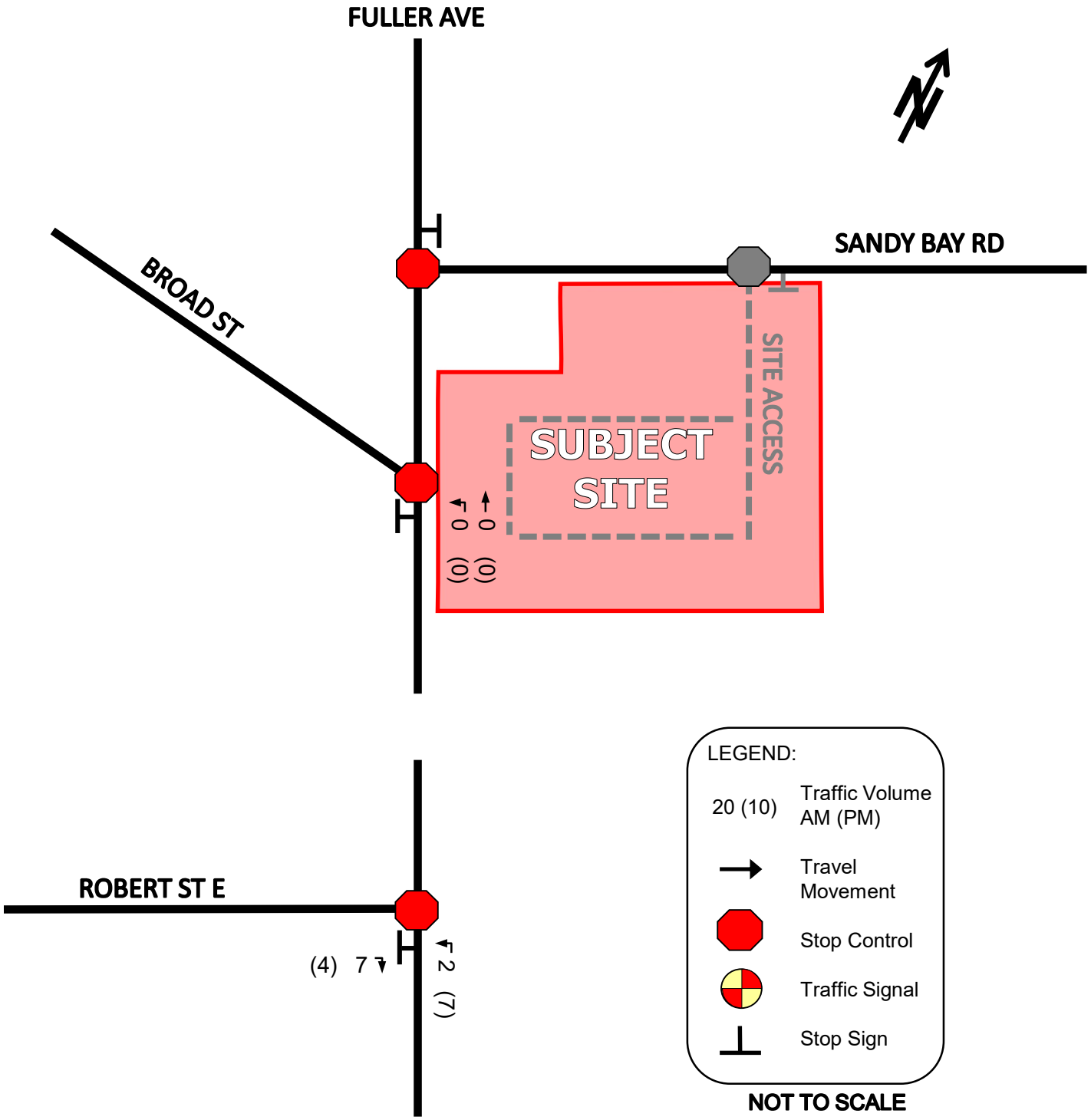
4. An estimate of the amount of traffic that would be generated by the Subject Site was prepared and assigned to the study area streets and intersections.
5. An intersection operation analysis was completed under total (2025, 2030 and 2035) traffic volumes with the proposed development operational at the study area intersections. No improvements are recommended within the study area.
6. The proposed Site Accesses will operate efficiently with one-way stop control for egress movements. A single lane for ingress and egress movements will provide the necessary capacity to convey the traffic volume generated by the proposed development.
7. The sight distance available for the proposed West Access is suitable for the intended use.
8. In summary, the proposed development will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

Figure 4 – Adjacent Development Traffic Volumes – 1145 Fuller Avenue



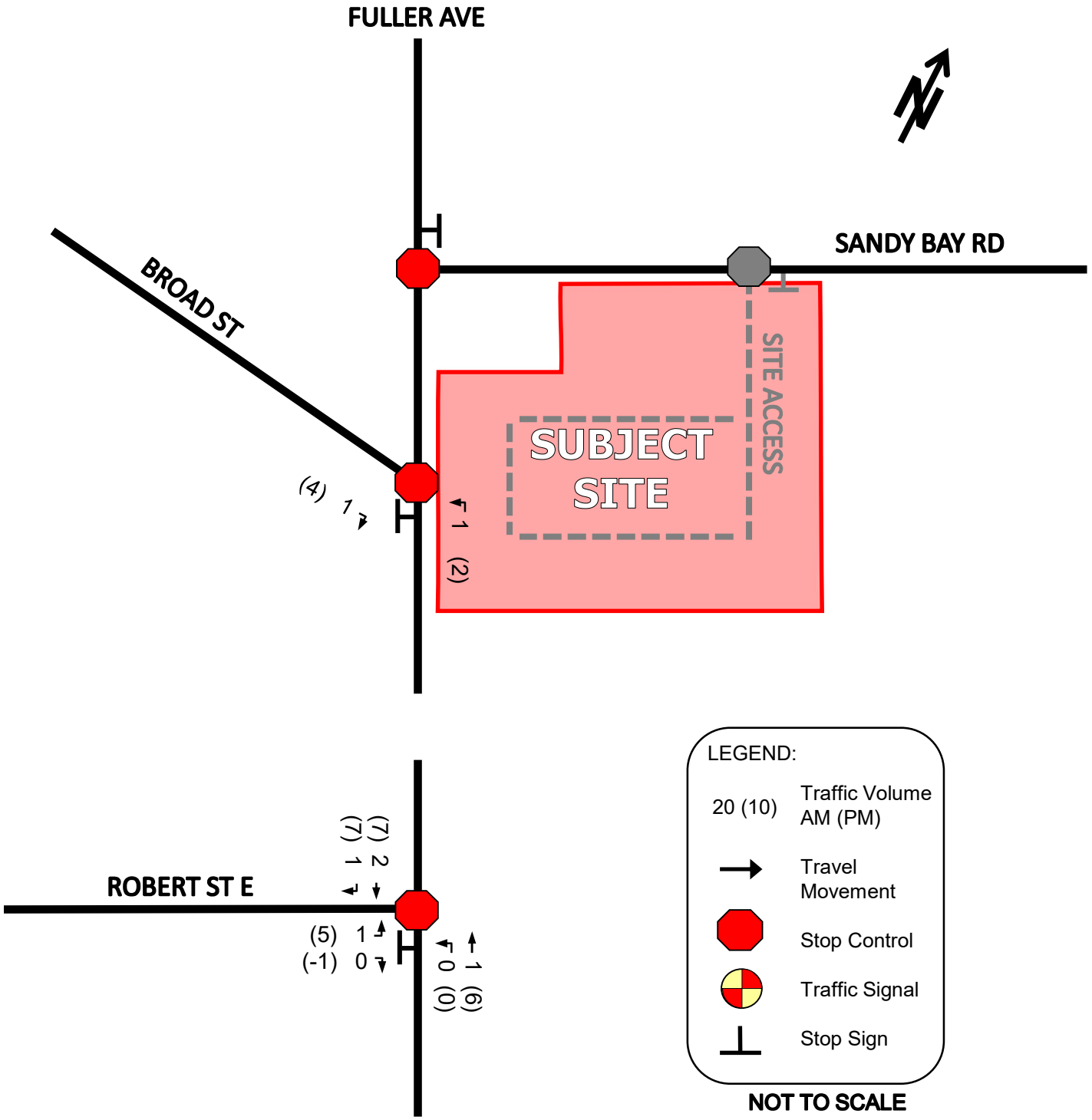
ENGINEERING

Figure 5: Adjacent Development Traffic Volumes – 123 Robert Street East



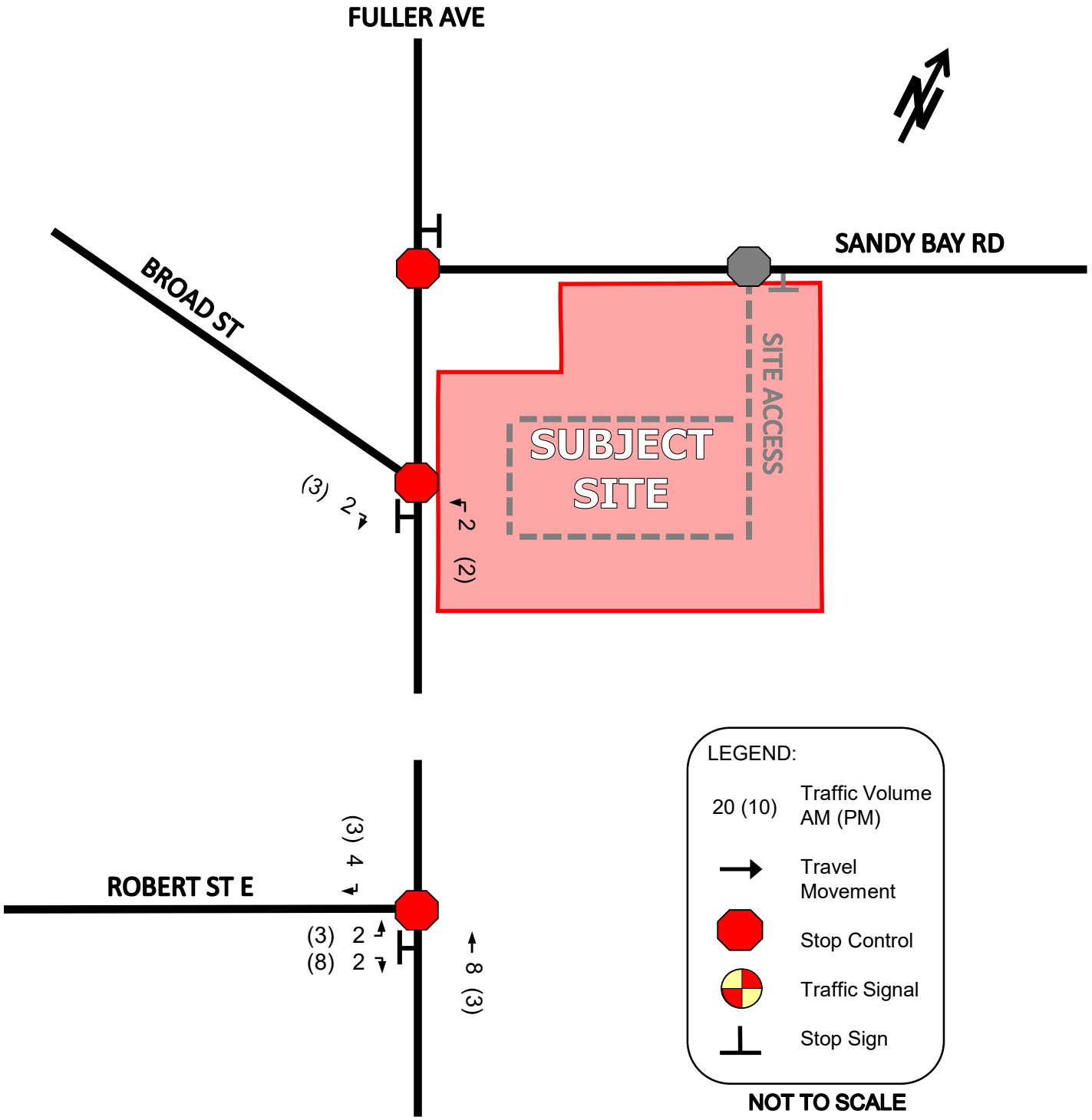
ENGINEERING

Figure 6: Adjacent Development Traffic Volumes – 15 Sheffcote Street



ENGINEERING

Figure 7: Adjacent Development Traffic Volumes - 177 Robert Street East



ENGINEERING

Figure 8: Adjacent Development Traffic Volumes – Total (2025)

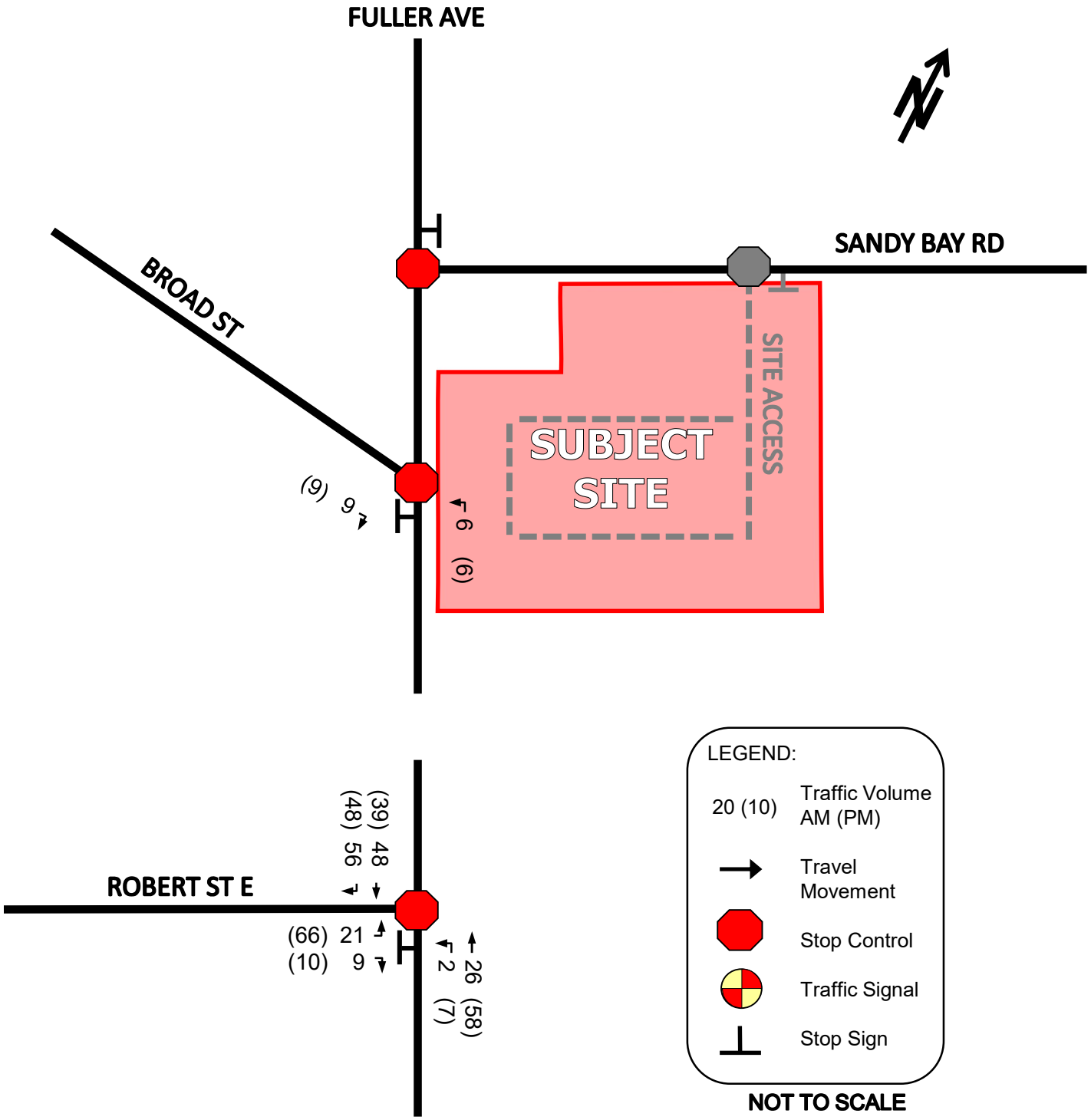


Figure 9 – Existing (2022) Traffic Volumes

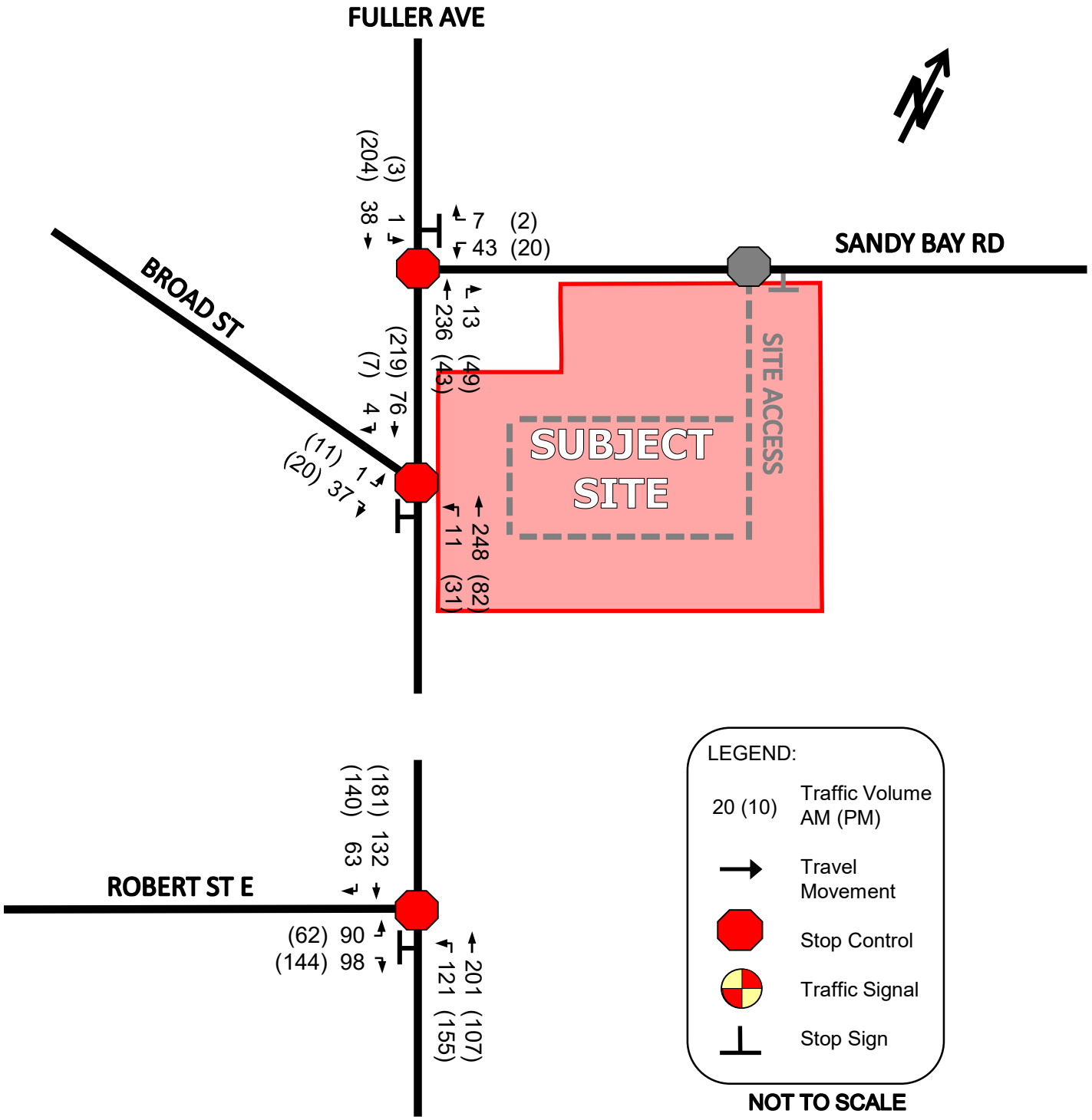
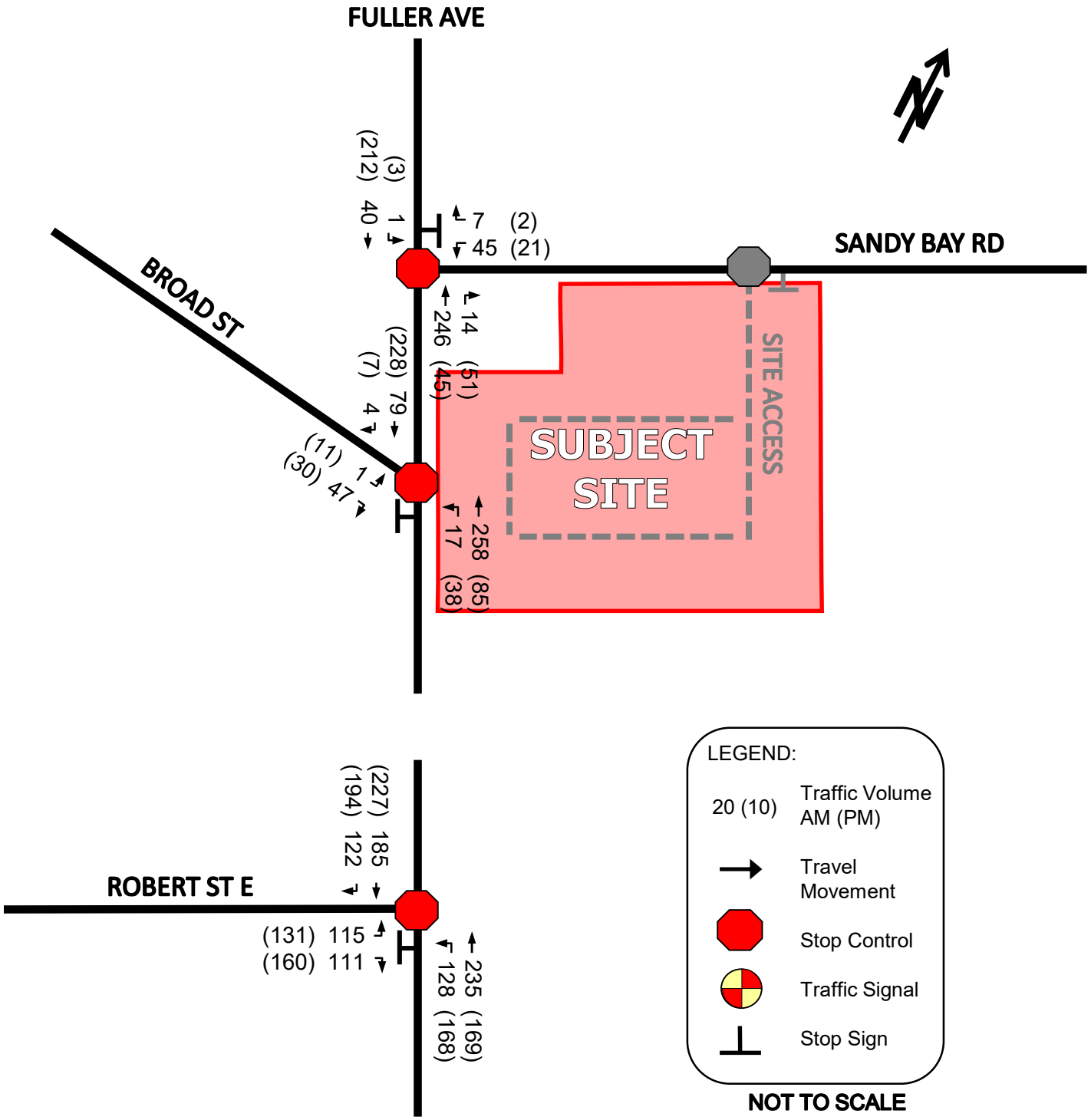


Figure 10 – Background (2025) Traffic Volumes



ENGINEERING

Figure 11 – Background (2030) Traffic Volumes

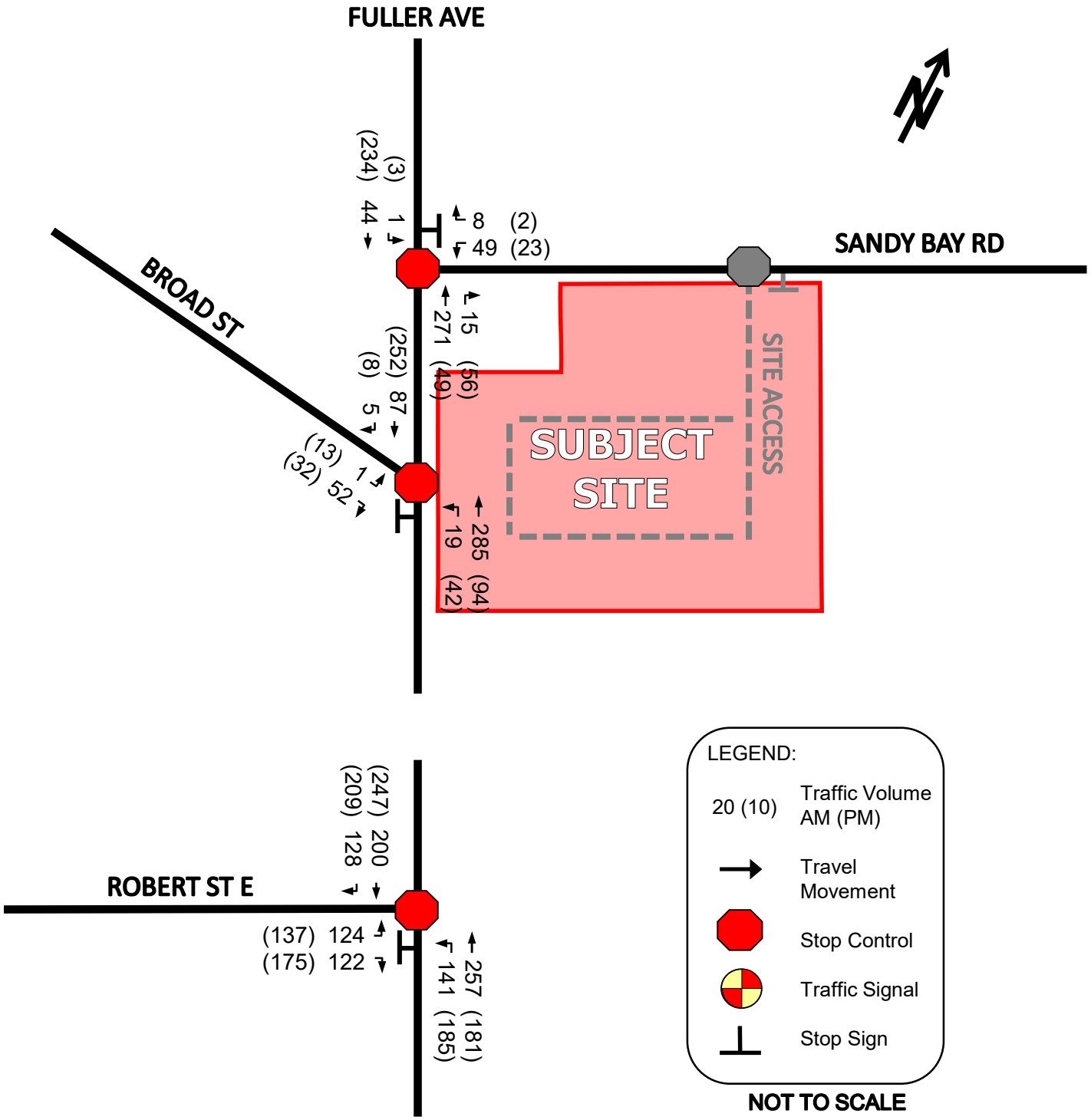
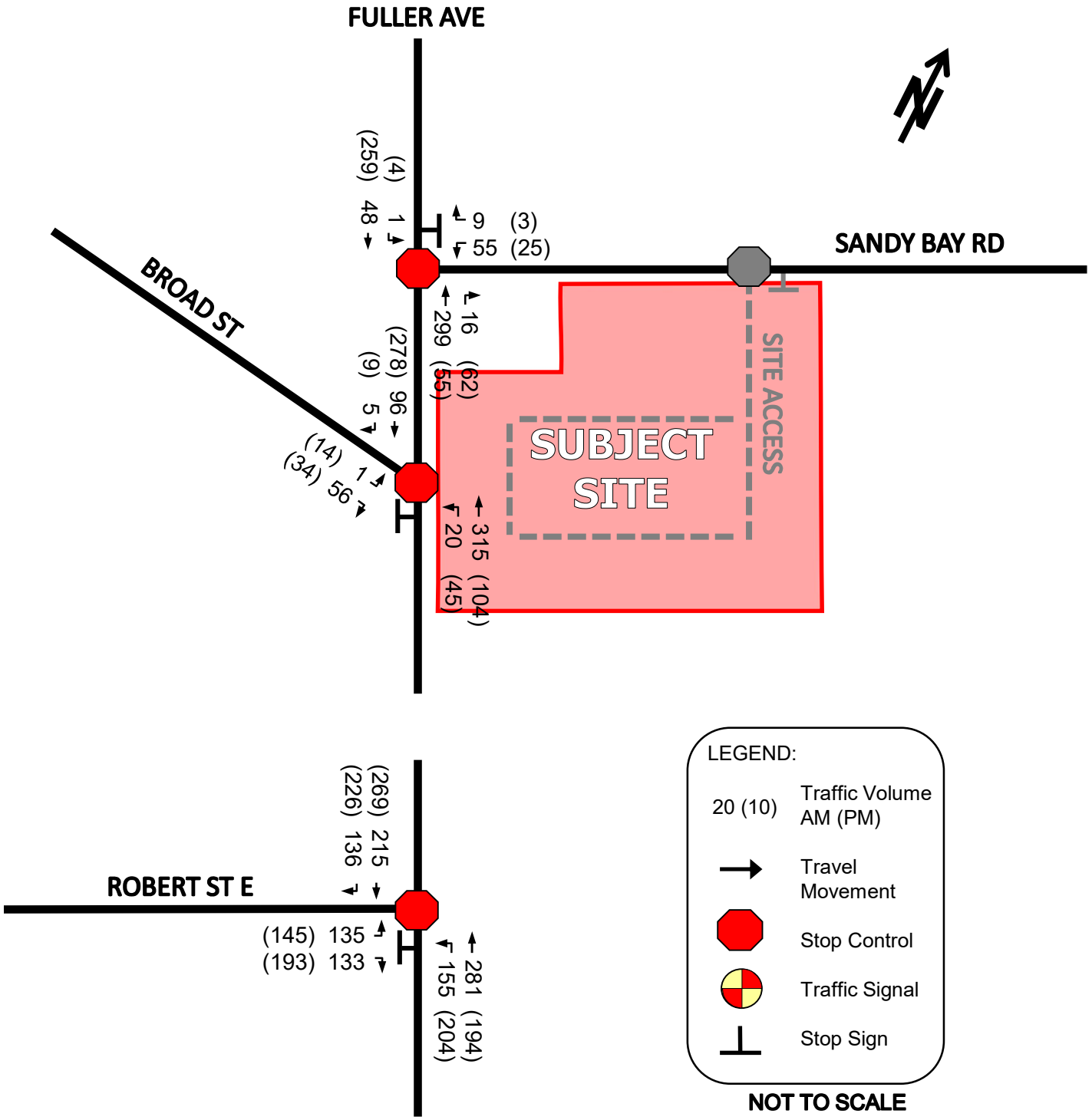


Figure 12 – Background (2035) Traffic Volumes



ENGINEERING

Figure 13 –Site Traffic Assignment

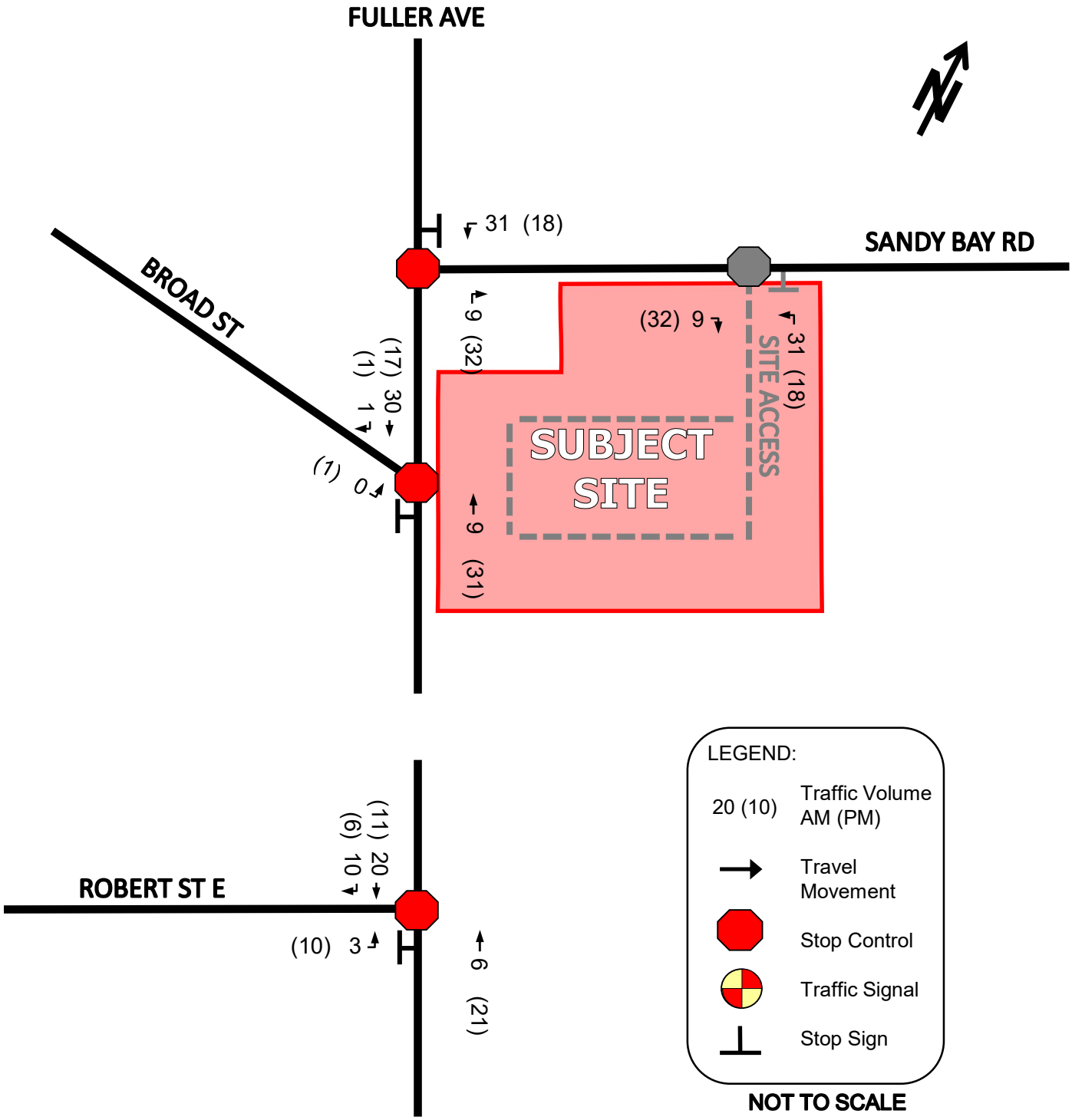
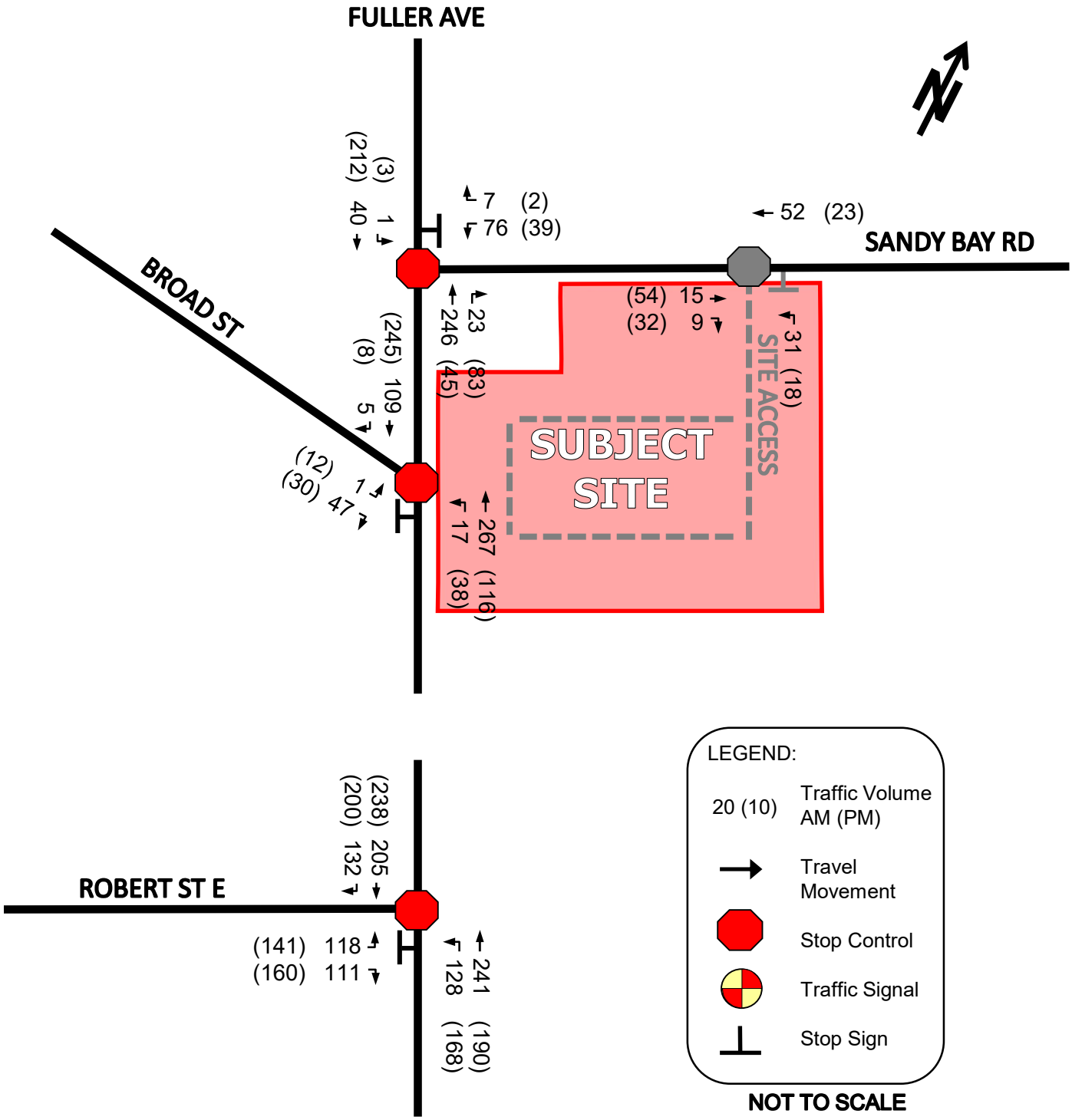


Figure 14 – Total (2025) Traffic Volumes



ENGINEERING

Figure 15 – Total (2030) Traffic Volumes

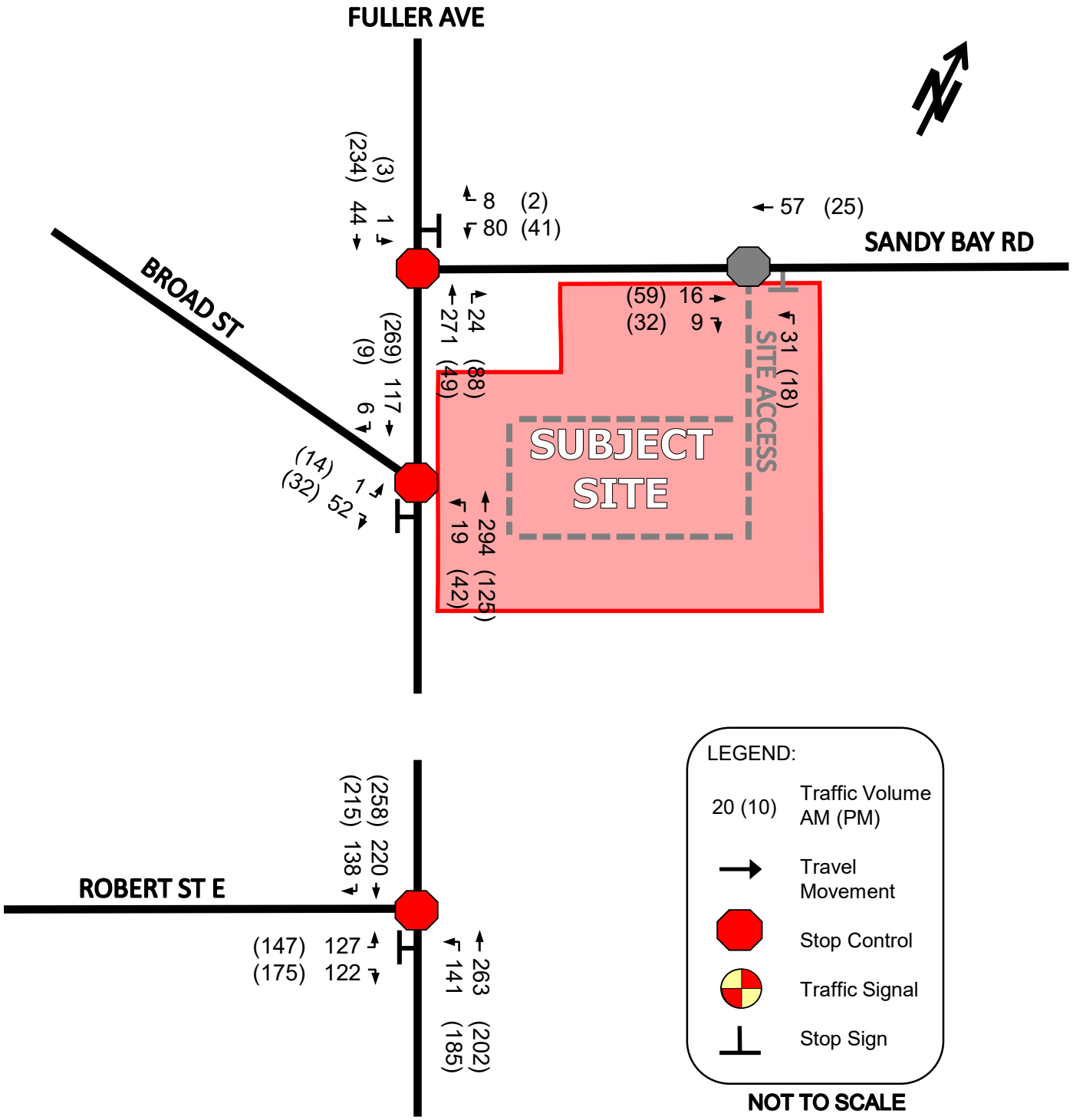
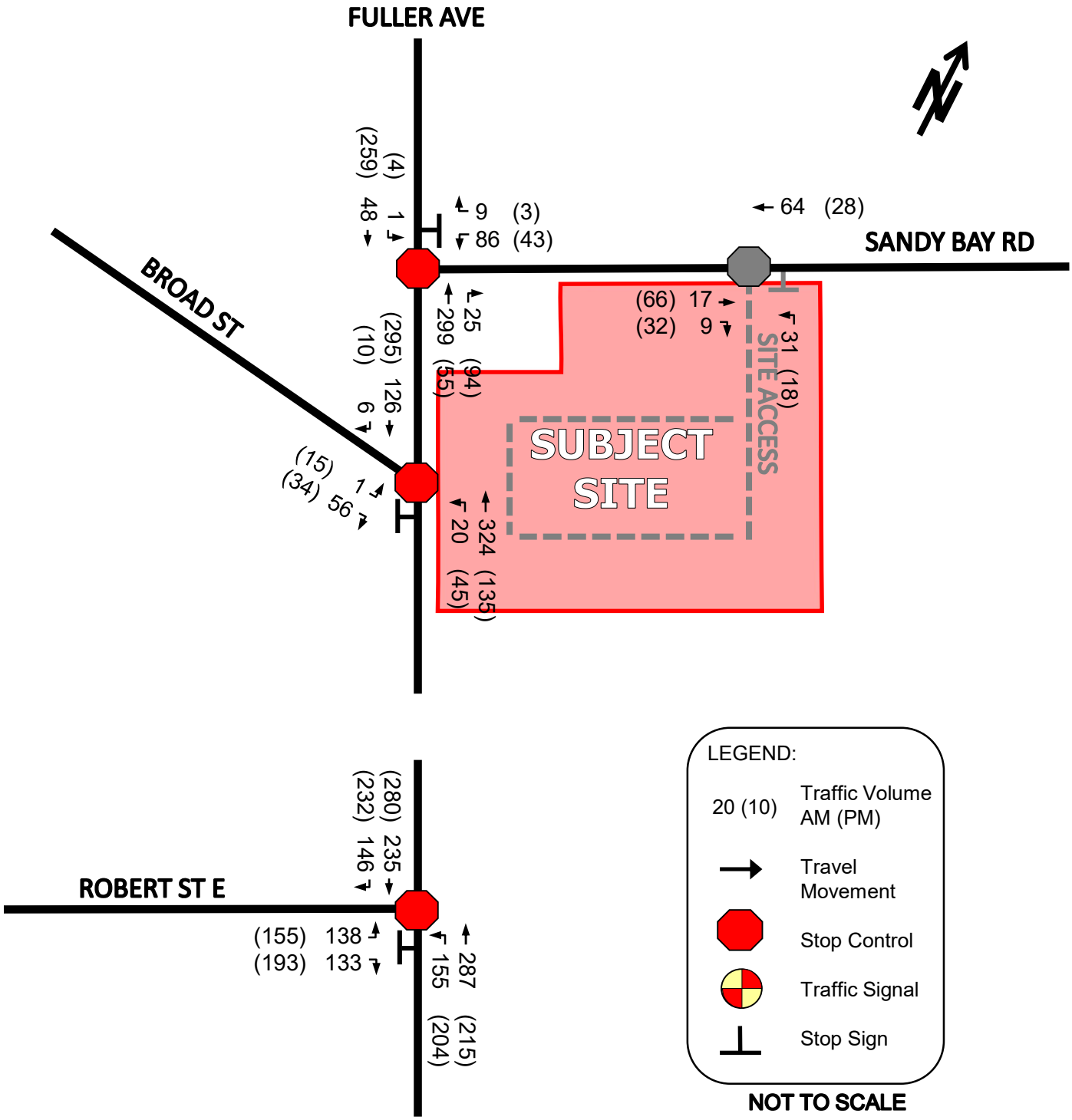


Figure 16 – Total (2035) Traffic Volumes

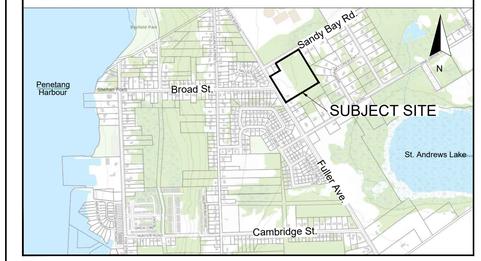


Appendix A – Site Plan

RESIDENTIAL TWO (R2) ZONE: SINGLE DETACHED		
Provisions	**Required**	**Provided**
Additional Dwelling Units (table 6.2.1)	Permitted	Permitted
Min. Lot Frontage	15.00m	12.02m
Min Lot Area	460.00m^2	351.59m^2
Min. Front Yard	6.00m	> = 6.00m
Min. Interior Side Yard	1.20m	> = 1.20m
Min. Exterior Side Yard	4.50m	> = 4.50m
Min. Rear Yard	7.50m	> = 7.50m
Min. Setback to Garage	6.00m	> = 6.00m
Max. Height	11.00m	< = 11.00m
Max. Lot Coverage	35%	> = 35%
Required Parking (table 5.3.1.1)	2 parking spaces / dwelling unit	2 parking spaces / dwelling unit

RESIDENTIAL TWO (R2) ZONE: SEMI - DETACHED		
Provisions	**Required**	**Provided**
Additional Dwelling Units (table 6.2.1)	Permitted	Permitted
Min. Lot Frontage	11.00m / unit	11.00m
Min Lot Area	330.00m^2 / unit	378.80m^2
Min. Front Yard	6.00m	> = 6.00m
Min. Interior Side Yard	1.20m	> = 1.20m
Min. Exterior Side Yard	4.50m	> = 4.50m
Min. Rear Yard	7.50m	> = 7.50m
Min. Setback to Garage	6.00m	> = 6.00m
Max. Height	11.00m	< = 11.00m
Max. Lot Coverage	35%	> = 35%
Required Parking (table 5.3.1.1)	2 parking spaces / dwelling unit	2 parking spaces / dwelling unit

KEY MAP n.t.s.



DRAFT PLAN OF SUBDIVISION

Topographic Plan of Survey
of Part of Lot B1, Registered Plan No. 69
(Geographic Township of Tay)
Town of Penetanguishene,
County of Simcoe

Scale
0 10 20 30 40 50m

LEGEND

SUBJECT LANDS (38,555.09m^2 / 3.855ha)

OWNER'S CERTIFICATE
I HEREBY AUTHORIZE INNOVATIVE PLANNING SOLUTIONS TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

DATE YORK CAPITAL PROPERTIES INC.

SURVEYOR'S CERTIFICATE
I CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE J. EVEN, O.L.S.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

a) SHOWN ON PLAN
b) SHOWN ON PLAN
c) SEE KEY PLAN
d) RESIDENTIAL
e) SHOWN ON PLAN
f) SHOWN ON PLAN
g) SHOWN ON PLAN
h) MUNICIPAL WATER
i) SAND, SILT GLACIAL TILL
j) SHOWN ON PLAN
k) MUNICIPAL WATER & SEWAGE
l) NONE

LAND USE STATISTICS			
LAND USE	**LOT No. / BLK. No.**	**UNITS**	**AREA (ha)**
Single - Detached Residential	1 - 20, 23 - 29	27	1.341
Semi - Detached Residential	21 - 22	4	0.226
Standard Townhouse Dwellings	30 - 35	33	0.891
Walk-way / Servicing	36		0.018
S.W.M. Pond	37		0.463
Streets 'A' & 'B'			0.916
TOTAL	**37**	**64**	**3.855**

RESIDENTIAL THREE (R3) ZONE: TOWNHOSUE		
Provisions	**Required**	**Provided**
Additional Dwelling Units (table 6.2.1)	Not Permitted	Permitted
Min. Lot Frontage	7.50m	7.50m
Min Lot Area	220.00m^2	213.97m^2
Min. Front Yard	6.00m / unit	> = 6.00m
Min. Interior Side Yard	0.00m	0.00m
Min. Exterior Side Yard	4.50m	> = 4.50m
Min. Rear Yard	7.50m	> = 7.50m
Min. Setback to Garage	6.00m	> = 6.00m
Max. Height	11.00m	< = 11.00m
Max. Lot Coverage	35%	> = 35%
Required Parking (table 5.3.1.1)	2 parking spaces / dwelling unit	2 parking spaces / dwelling unit

Town of Penetanguishene Zoning By-Law No. 2022-17, June 8, 2022

IPS INNOVATIVE PLANNING SOLUTIONS
PLANNERS • PROJECT MANAGERS • LAND DEVELOPERS
647 WELHAM ROAD, UNIT 9, BARRIE, ON, L4N 0B7
tel: 705 • 812 • 3281 fax: 705 • 812 • 3438 e: info@ipsconsultinginc.com www.ipsconsultinginc.com

Date:	August 1, 2023	Drawn By:	A.S.
File:	23 - 1314	Checked:	J.A. / K.B.

Appendix B –
Adjacent Development Excerpts

Figure 3 – 15 Sheffcote Street – Residential Traffic Assignment

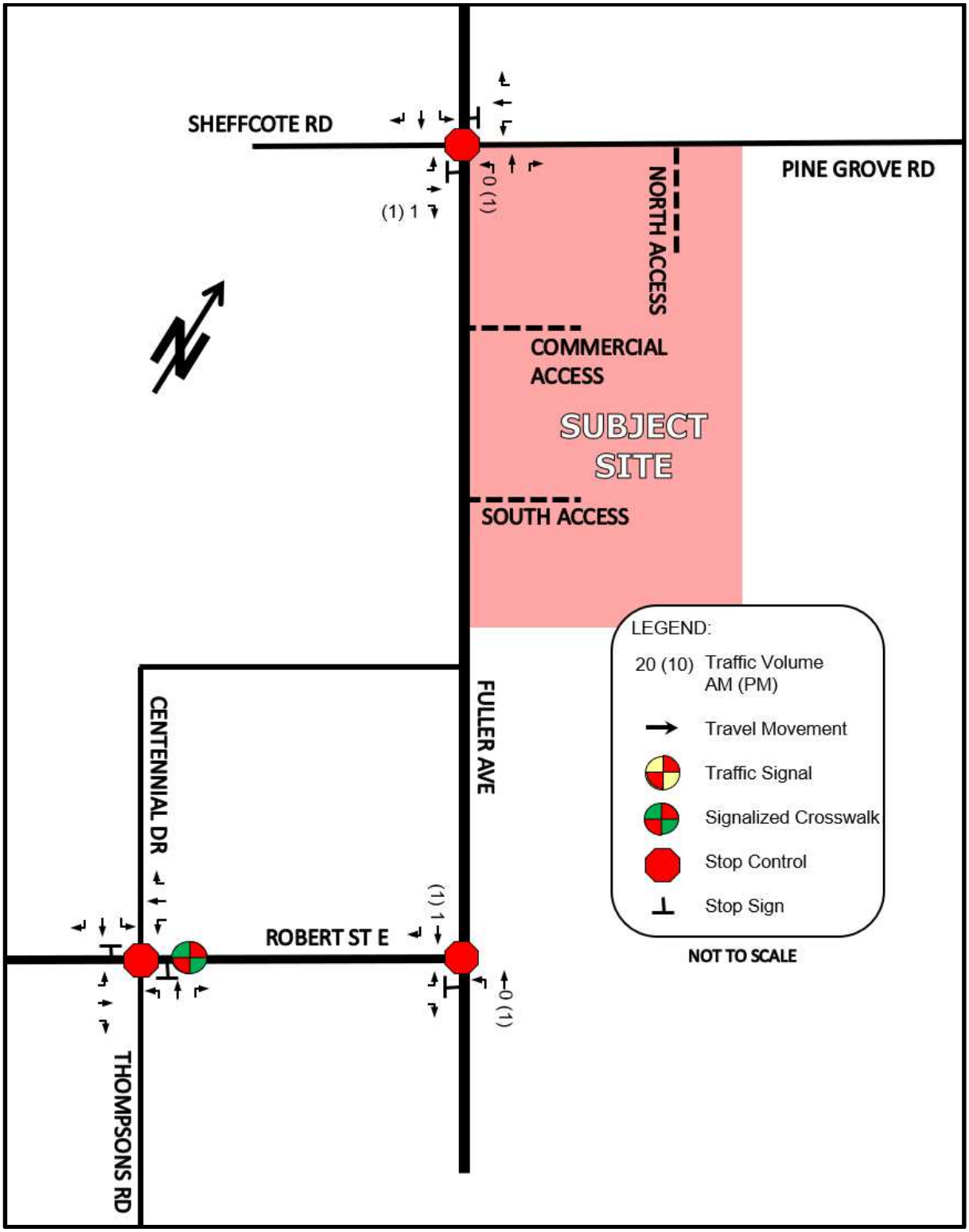


Figure 4 – 15 Sheffcote Street – Commercial Pass-by Traffic Assignment

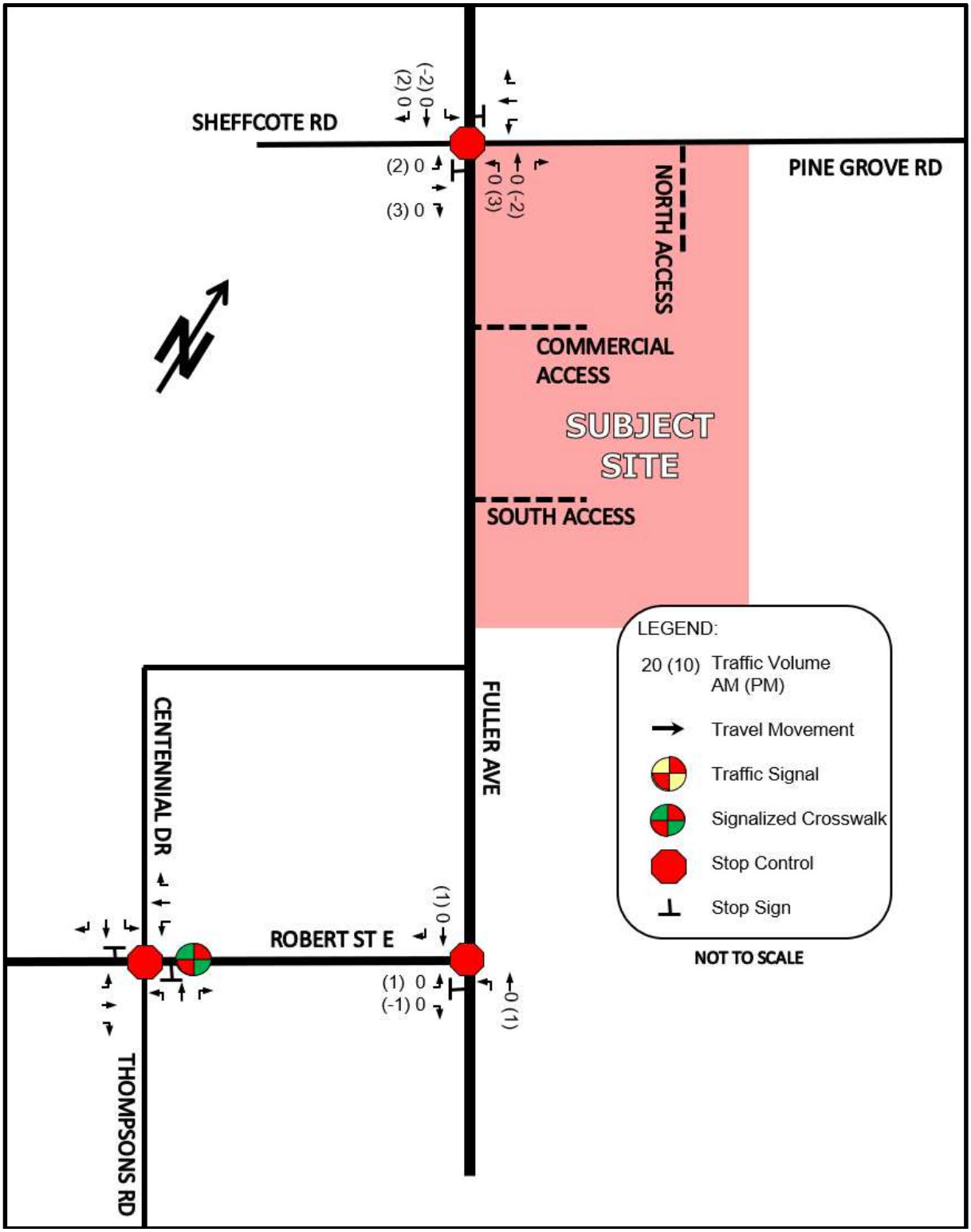


Figure 5 – 15 Sheffcote Street – Commercial Primary Traffic Assignment

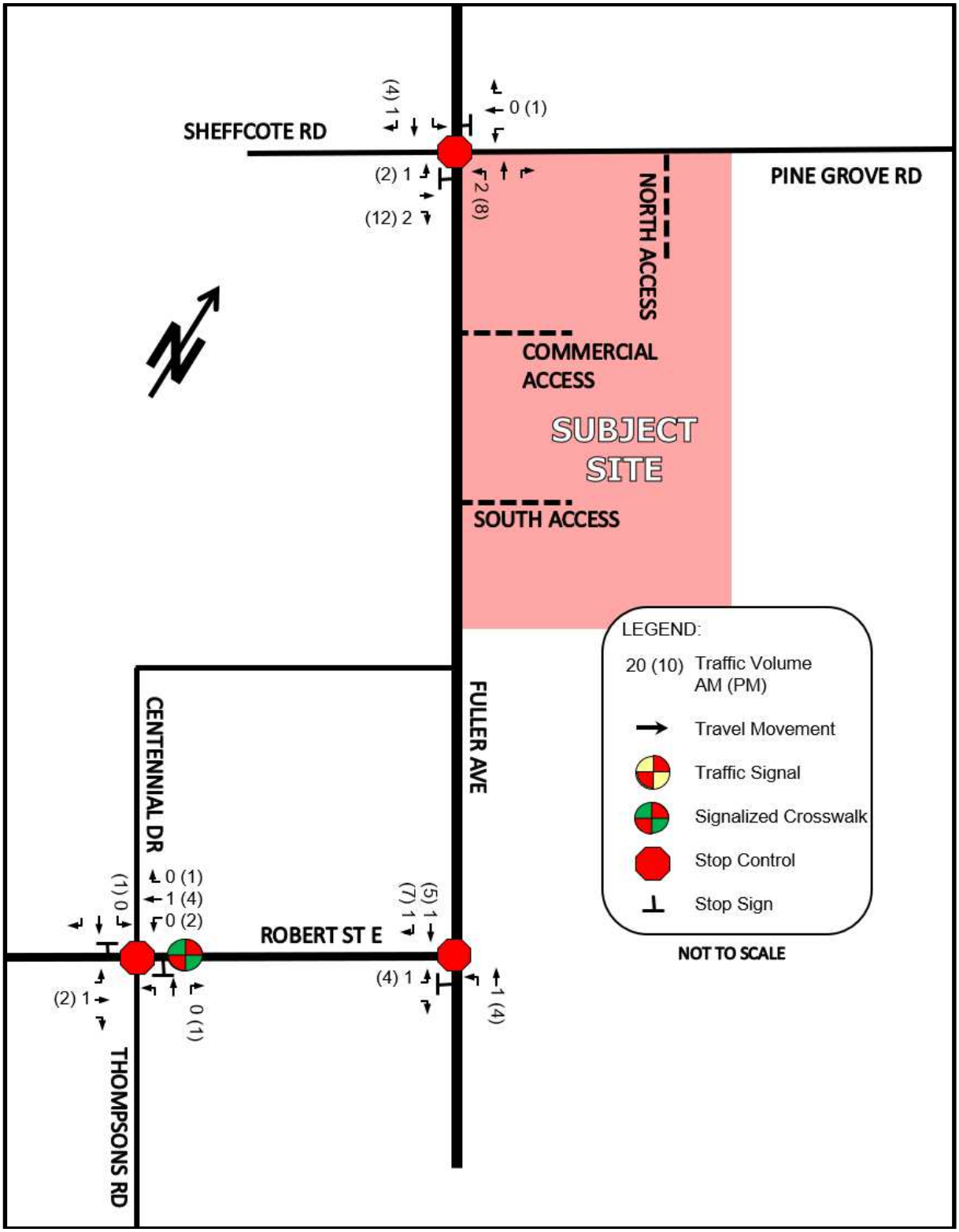


Figure 6 – 177 Robert Street East – Traffic Assignment

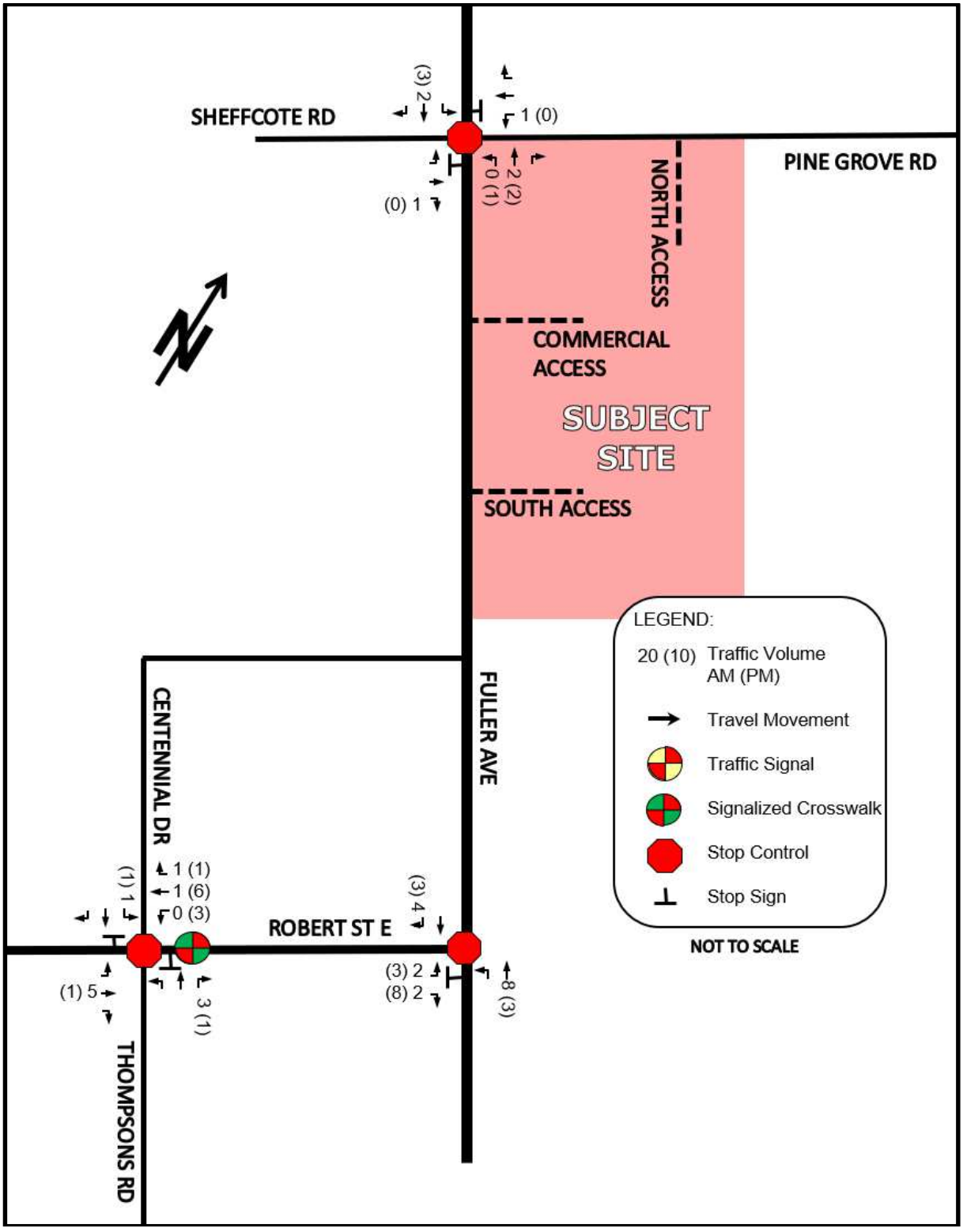


Figure 9 – Proposed Development – Residential Traffic Assignment

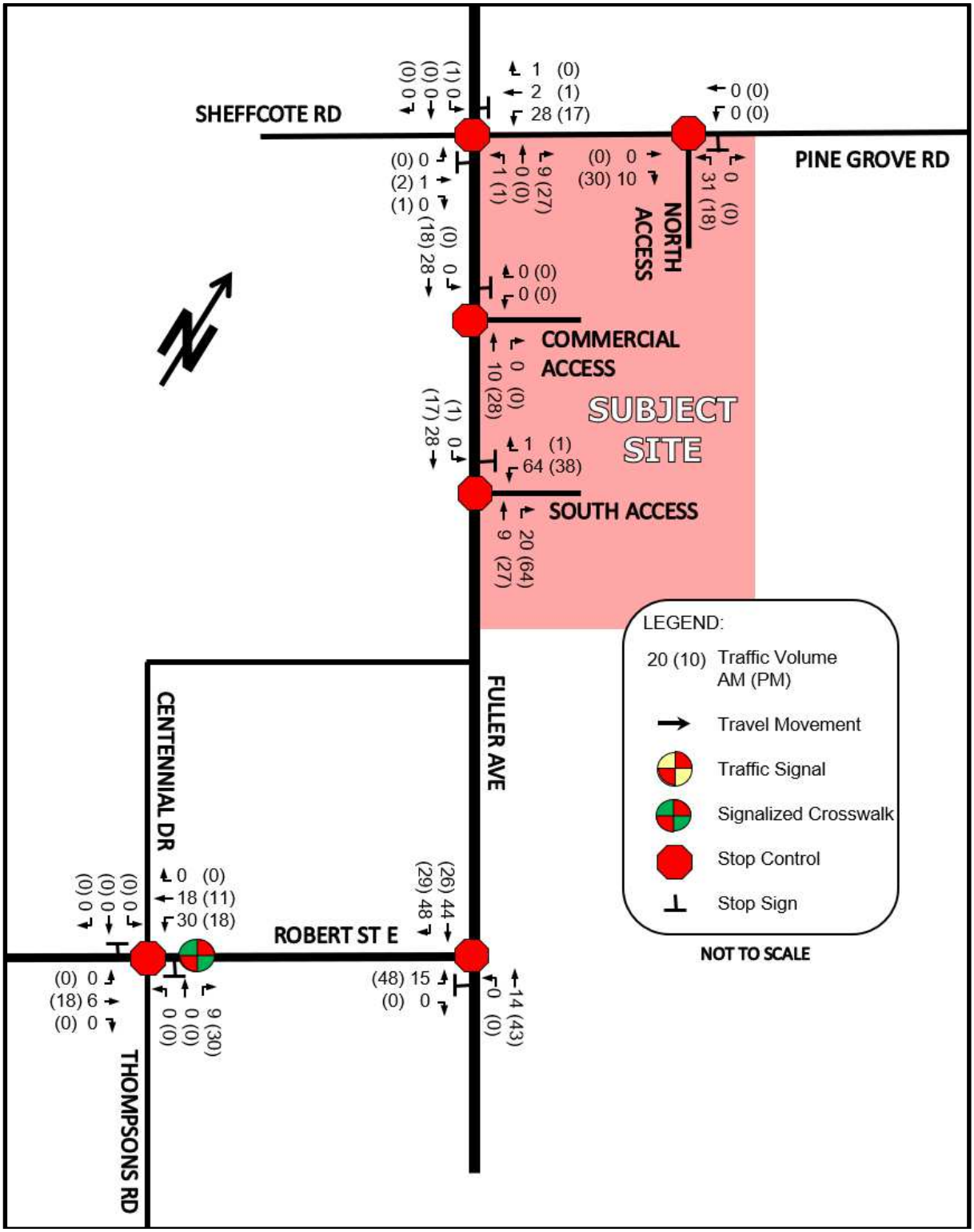


Figure 10 – Proposed Development – Commercial Pass-by Traffic Assignment

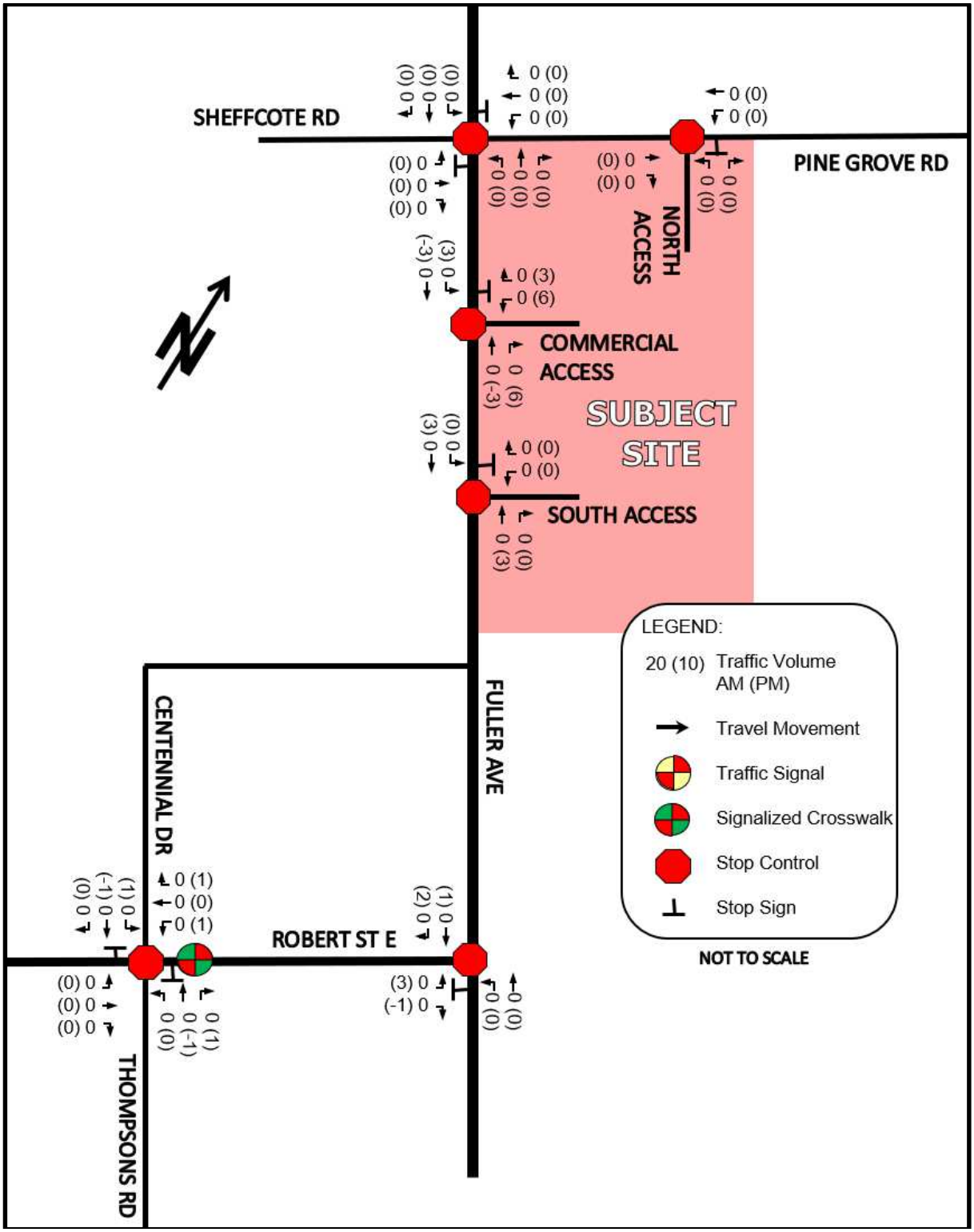
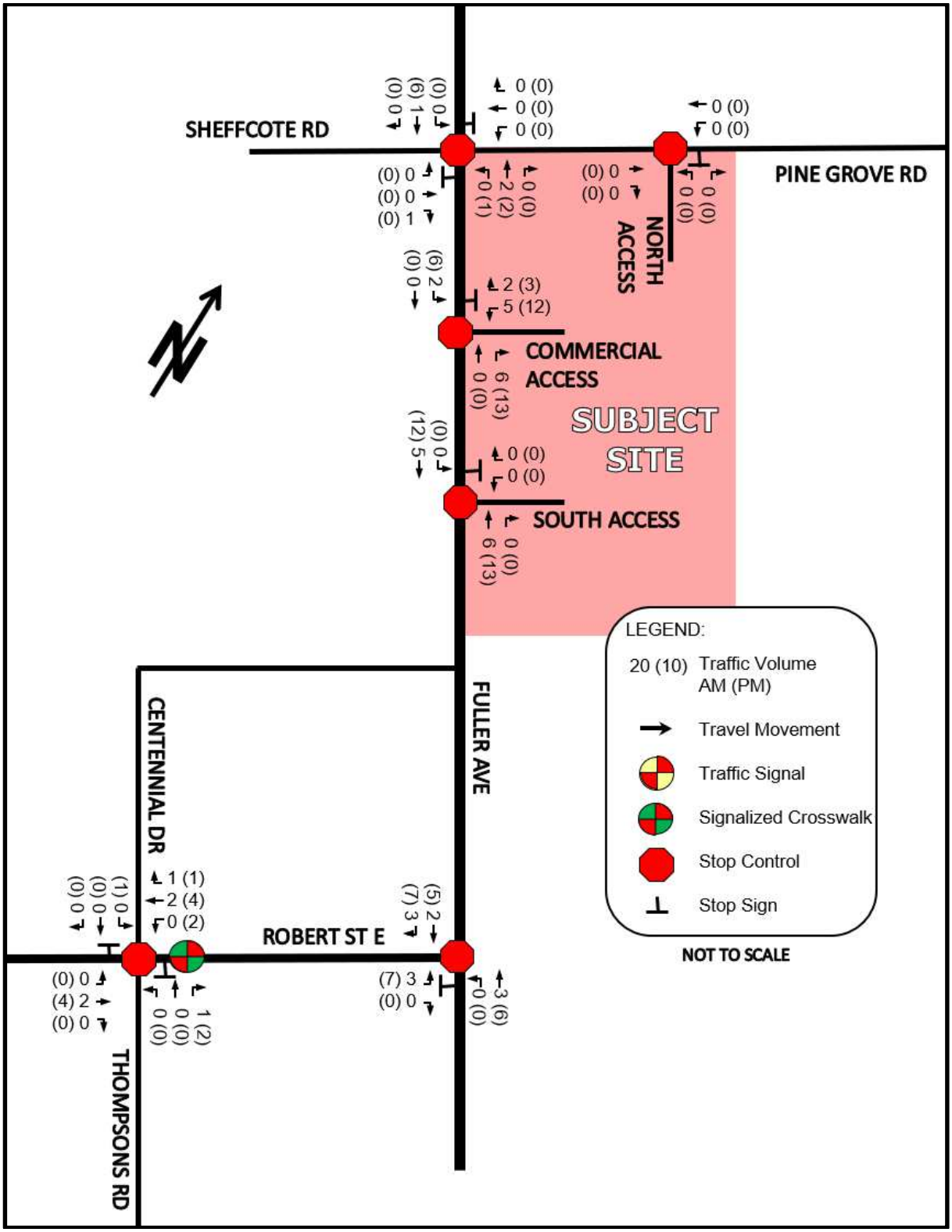


Figure 11 – Proposed Development – Commercial Primary Traffic Assignment



Appendix C –
Traffic Count Data

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

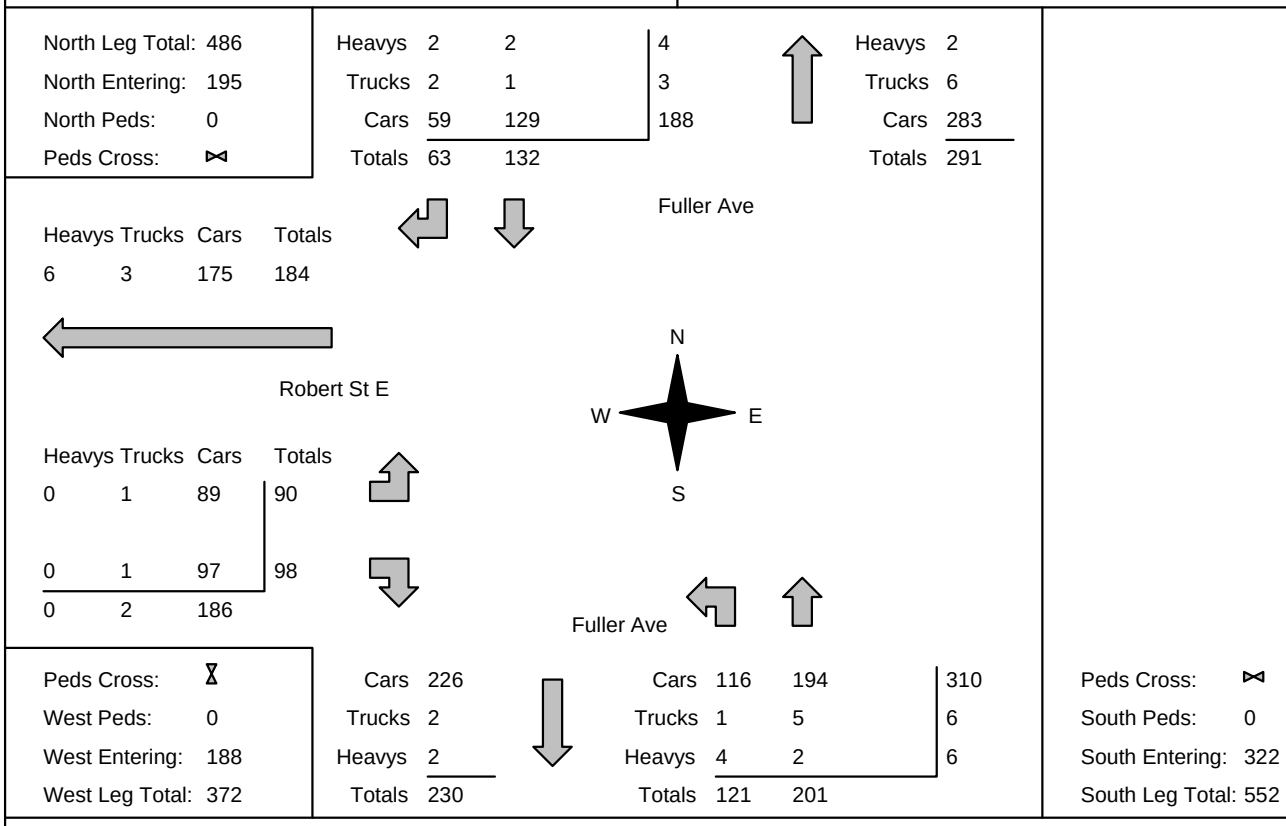
Municipality: Penetanguishene
Site #: 2300200001
Intersection: Fuller Ave & Robert St E
TFR File #: 1
Count date: 10-Jan-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Fuller Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Penetanguishene
Site #: 2300200001
Intersection: Fuller Ave & Robert St E
TFR File #: 1
Count date: 10-Jan-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Fuller Ave runs N/S

North Leg Total: 490
North Entering: 321
North Peds: 0
Peds Cross: ⋈

Heavys	0	2	2
Trucks	1	0	1
Cars	139	179	318
Totals	140	181	

Heavys	1
Trucks	2
Cars	166
Totals	169

Fuller Ave

Heavys	Trucks	Cars	Totals
0	4	291	295

Robert St E

N
W E
S

Heavys	Trucks	Cars	Totals
0	1	61	62
1	2	141	144
1	3	202	

Fuller Ave

Peds Cross: ⧖
West Peds: 0
West Entering: 206
West Leg Total: 501

Cars	320		
Trucks	2		
Heavys	3		
Totals	325		

Cars	152	105	257
Trucks	3	1	4
Heavys	0	1	1
Totals	155	107	

Peds Cross: ⋈
South Peds: 0
South Entering: 262
South Leg Total: 587

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

Municipality: Penetanguishene
Site #: 2300200002
Intersection: Fuller Ave & Sandy Bay Rd
TFR File #: 1
Count date: 10-Jan-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

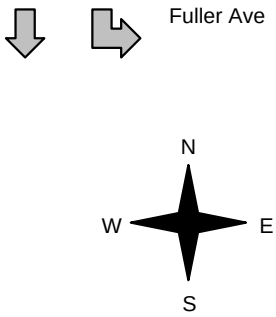
Major Road: Fuller Ave runs N/S

North Leg Total: 282
North Entering: 39
North Peds: 0
Peds Cross: ⋈

Heavys	2	0	2
Trucks	1	0	1
Cars	35	1	36
Totals	38	1	

Heavys	1
Trucks	5
Cars	237
Totals	243

East Leg Total: 64
East Entering: 50
East Peds: 0
Peds Cross: ⧗



	Cars	Trucks	Heavys	Totals
	7	0	0	7
	43	0	0	43
	50	0	0	

Sandy Bay Rd

	Cars	Trucks	Heavys	Totals
	13	0	1	14

Fuller Ave

Cars	78		
Trucks	1		
Heavys	2		
Totals	81		

Cars	230	12	242
Trucks	5	0	5
Heavys	1	1	2
Totals	236	13	

Peds Cross: ⋈
South Peds: 0
South Entering: 249
South Leg Total: 330

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Penetanguishene
Site #: 2300200002
Intersection: Fuller Ave & Sandy Bay Rd
TFR File #: 1
Count date: 10-Jan-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

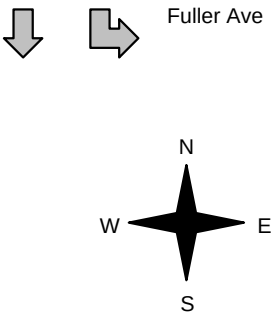
Major Road: Fuller Ave runs N/S

North Leg Total: 252
North Entering: 207
North Peds: 1
Peds Cross: ⋈

Heavys	1	0	1
Trucks	0	0	0
Cars	203	3	206
Totals	204	3	

Heavys	0
Trucks	1
Cars	44
Totals	45

East Leg Total: 74
East Entering: 22
East Peds: 1
Peds Cross: ⋈



	Cars	Trucks	Heavys	Totals
	2	0	0	2
	20	0	0	20
	22	0	0	

Sandy Bay Rd

Cars	Trucks	Heavys	Totals
52	0	0	52

Fuller Ave

Cars	223		
Trucks	0		
Heavys	1		
Totals	224		

Cars	42	49	91
Trucks	1	0	1
Heavys	0	0	0
Totals	43	49	

Peds Cross: ⋈
South Peds: 0
South Entering: 92
South Leg Total: 316

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 7:15:00
To: 8:15:00

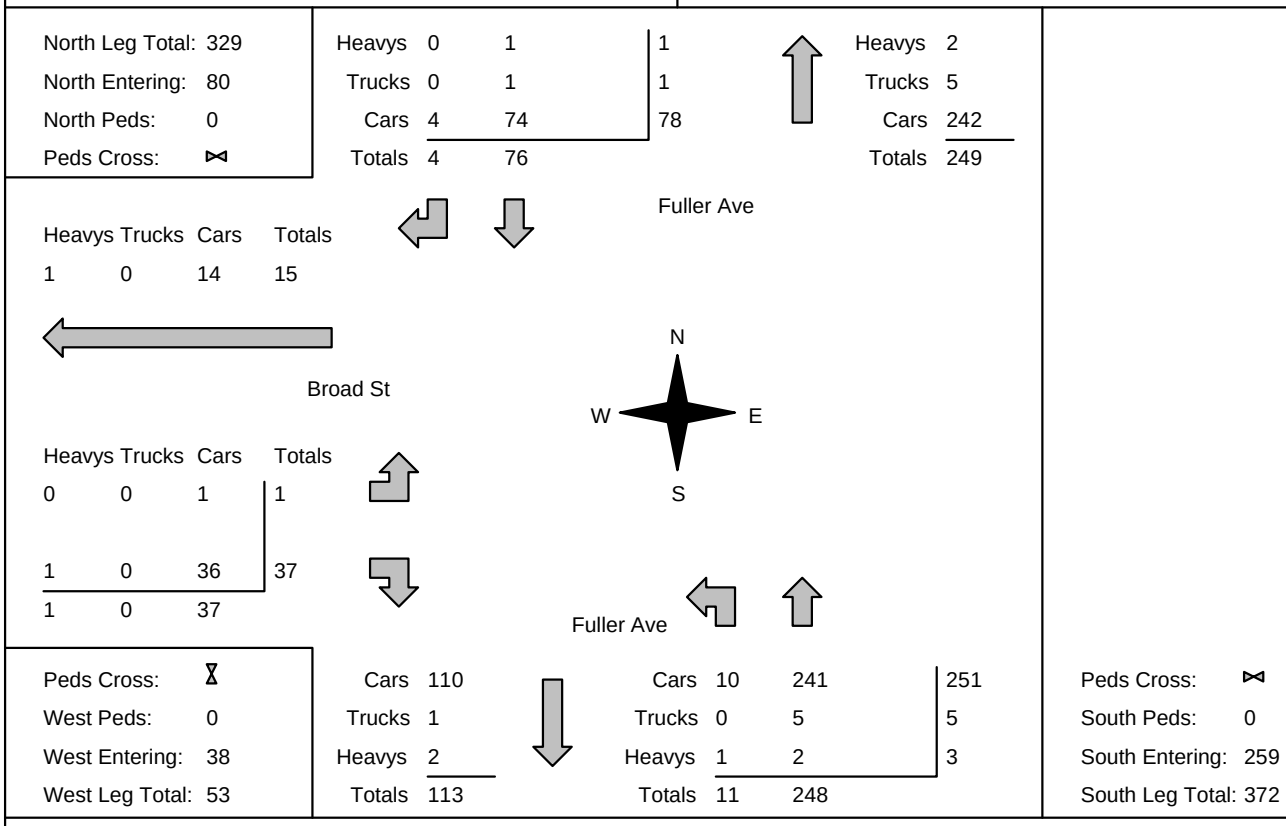
Municipality: Penetanguishene
Site #: 2300200003
Intersection: Fuller Ave & Broad St
TFR File #: 1
Count date: 10-Jan-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Fuller Ave runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

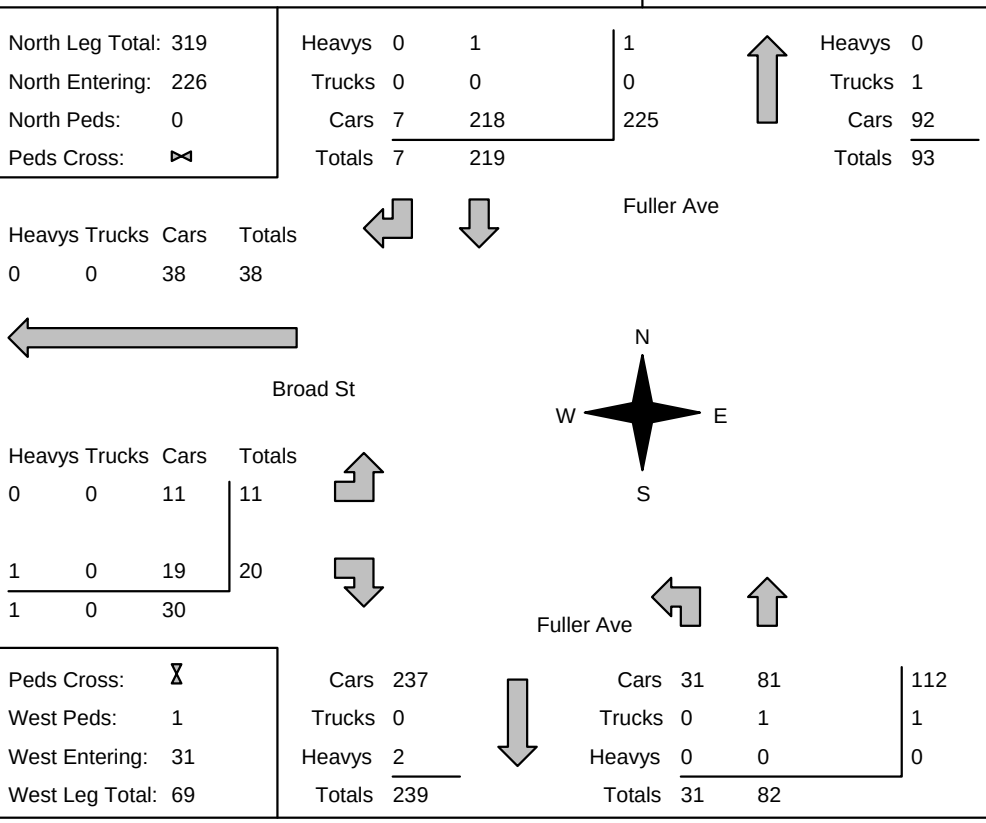
Municipality: Penetanguishene
Site #: 2300200003
Intersection: Fuller Ave & Broad St
TFR File #: 1
Count date: 10-Jan-23

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Fuller Ave runs N/S



Comments

Appendix D –
Synchro Analysis Output –
Existing Traffic Volumes

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	37	11	248	76	4
Future Volume (Veh/h)	1	37	11	248	76	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.64	0.64	0.91	0.91
Hourly flow rate (vph)	2	74	17	388	84	4
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	509	87	89			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	509	87	89			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	92	99			
cM capacity (veh/h)	521	968	1462			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	76	405	88
Volume Left	2	17	0
Volume Right	74	0	4
cSH	947	1462	1700
Volume to Capacity	0.08	0.01	0.05
Queue Length 95th (m)	2.1	0.3	0.0
Control Delay (s)	9.1	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	7	236	13	1	38
Future Volume (Veh/h)	43	7	236	13	1	38
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.64	0.64	0.65	0.65
Hourly flow rate (vph)	55	9	369	20	2	58
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	441	379			389	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	441	379			389	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			100	
cM capacity (veh/h)	576	672			1181	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	64	389	60
Volume Left	55	0	2
Volume Right	9	20	0
cSH	588	1700	1181
Volume to Capacity	0.11	0.23	0.00
Queue Length 95th (m)	2.9	0.0	0.0
Control Delay (s)	11.9	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	90	98	121	201	132	63
Future Volume (Veh/h)	90	98	121	201	132	63
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.65	0.65	0.77	0.77	0.87	0.87
Hourly flow rate (vph)	138	151	157	261	152	72
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	763	188	224			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	763	188	224			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	58	82	88			
cM capacity (veh/h)	330	857	1333			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	289	418	224
Volume Left	138	157	0
Volume Right	151	0	72
cSH	486	1333	1700
Volume to Capacity	0.59	0.12	0.13
Queue Length 95th (m)	30.5	3.2	0.0
Control Delay (s)	22.7	3.7	0.0
Lane LOS	C	A	
Approach Delay (s)	22.7	3.7	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	20	31	82	219	7
Future Volume (Veh/h)	11	20	31	82	219	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.78	0.78	0.56	0.56
Hourly flow rate (vph)	16	29	40	105	391	12
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	583	398	404			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	583	398	404			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	96	97			
cM capacity (veh/h)	461	645	1165			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	45	145	403
Volume Left	16	40	0
Volume Right	29	0	12
cSH	565	1165	1700
Volume to Capacity	0.08	0.03	0.24
Queue Length 95th (m)	2.1	0.9	0.0
Control Delay (s)	11.9	2.5	0.0
Lane LOS	B	A	
Approach Delay (s)	11.9	2.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	2	43	49	3	204
Future Volume (Veh/h)	20	2	43	49	3	204
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.79	0.79	0.57	0.57
Hourly flow rate (vph)	40	4	54	62	5	358
Pedestrians	1					1
Lane Width (m)	3.6					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	454	87			117	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	454	87			117	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	100			100	
cM capacity (veh/h)	565	975			1483	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	44	116	363
Volume Left	40	0	5
Volume Right	4	62	0
cSH	588	1700	1483
Volume to Capacity	0.07	0.07	0.00
Queue Length 95th (m)	1.9	0.0	0.1
Control Delay (s)	11.6	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	62	144	155	107	181	140
Future Volume (Veh/h)	62	144	155	107	181	140
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.95	0.95	0.69	0.69
Hourly flow rate (vph)	67	157	163	113	262	203
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	802	364	465			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	802	364	465			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	78	77	85			
cM capacity (veh/h)	300	681	1096			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	224	276	465
Volume Left	67	163	0
Volume Right	157	0	203
cSH	494	1096	1700
Volume to Capacity	0.45	0.15	0.27
Queue Length 95th (m)	18.6	4.2	0.0
Control Delay (s)	18.2	5.8	0.0
Lane LOS	C	A	
Approach Delay (s)	18.2	5.8	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E –
Synchro Analysis Output –
Background Traffic Volumes

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	47	17	258	79	4
Future Volume (Veh/h)	1	47	17	258	79	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.64	0.64	0.91	0.91
Hourly flow rate (vph)	2	94	27	403	87	4
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	547	90	92			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	547	90	92			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	90	98			
cM capacity (veh/h)	492	964	1459			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	96	430	91
Volume Left	2	27	0
Volume Right	94	0	4
cSH	945	1459	1700
Volume to Capacity	0.10	0.02	0.05
Queue Length 95th (m)	2.7	0.5	0.0
Control Delay (s)	9.2	0.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	0.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	45	7	246	14	1	40
Future Volume (Veh/h)	45	7	246	14	1	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.64	0.64	0.65	0.65
Hourly flow rate (vph)	58	9	384	22	2	62
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	461	395			406	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	461	395			406	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			100	
cM capacity (veh/h)	561	659			1164	

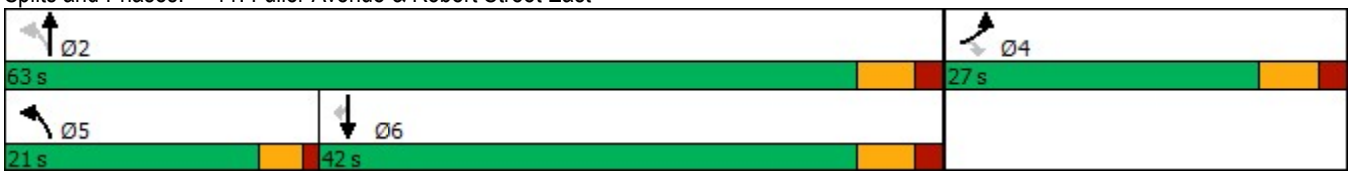
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	67	406	64
Volume Left	58	0	2
Volume Right	9	22	0
cSH	573	1700	1164
Volume to Capacity	0.12	0.24	0.00
Queue Length 95th (m)	3.2	0.0	0.0
Control Delay (s)	12.1	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	12.1	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	115	111	128	235	185	122
Future Volume (vph)	115	111	128	235	185	122
Lane Group Flow (vph)	177	171	166	305	213	140
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.60	0.42	0.20	0.24	0.21	0.16
Control Delay	40.8	8.4	4.9	5.8	11.5	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	8.4	4.9	5.8	11.5	2.8
Queue Length 50th (m)	27.5	0.0	7.1	15.7	16.7	0.0
Queue Length 95th (m)	32.6	4.3	13.8	26.4	34.1	8.5
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	453	533	889	1272	1011	891
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.32	0.19	0.24	0.21	0.16

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 82.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	115	111	128	235	185	122
Future Volume (vph)	115	111	128	235	185	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1736	1845	1863	1524
Flt Permitted	0.95	1.00	0.57	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	1048	1845	1863	1524
Peak-hour factor, PHF	0.65	0.65	0.77	0.77	0.87	0.87
Adj. Flow (vph)	177	171	166	305	213	140
RTOR Reduction (vph)	0	143	0	0	0	64
Lane Group Flow (vph)	177	28	166	305	213	76
Heavy Vehicles (%)	1%	1%	4%	3%	2%	6%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	13.7	13.7	57.1	57.1	45.0	45.0
Effective Green, g (s)	13.7	13.7	57.1	57.1	45.0	45.0
Actuated g/C Ratio	0.17	0.17	0.69	0.69	0.54	0.54
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	295	264	790	1272	1012	828
v/s Ratio Prot	c0.10		0.02	c0.17	0.11	
v/s Ratio Perm		0.02	0.12			0.05
v/c Ratio	0.60	0.11	0.21	0.24	0.21	0.09
Uniform Delay, d1	32.0	29.4	4.5	4.8	9.7	9.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.2	0.1	0.4	0.5	0.2
Delay (s)	35.3	29.5	4.7	5.2	10.2	9.3
Level of Service	D	C	A	A	B	A
Approach Delay (s)	32.5			5.0	9.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	82.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	30	38	85	228	7
Future Volume (Veh/h)	11	30	38	85	228	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.78	0.78	0.56	0.56
Hourly flow rate (vph)	16	43	49	109	407	12
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	621	414	420			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	621	414	420			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	93	96			
cM capacity (veh/h)	435	631	1149			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	59	158	419
Volume Left	16	49	0
Volume Right	43	0	12
cSH	562	1149	1700
Volume to Capacity	0.10	0.04	0.25
Queue Length 95th (m)	2.8	1.1	0.0
Control Delay (s)	12.2	2.8	0.0
Lane LOS	B	A	
Approach Delay (s)	12.2	2.8	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	32.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	2	45	51	3	212
Future Volume (Veh/h)	21	2	45	51	3	212
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.79	0.79	0.57	0.57
Hourly flow rate (vph)	42	4	57	65	5	372
Pedestrians	1					1
Lane Width (m)	3.6					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	472	92			123	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	472	92			123	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	100			100	
cM capacity (veh/h)	551	970			1475	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	46	122	377
Volume Left	42	0	5
Volume Right	4	65	0
cSH	573	1700	1475
Volume to Capacity	0.08	0.07	0.00
Queue Length 95th (m)	2.1	0.0	0.1
Control Delay (s)	11.8	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	0.1
Approach LOS	B		

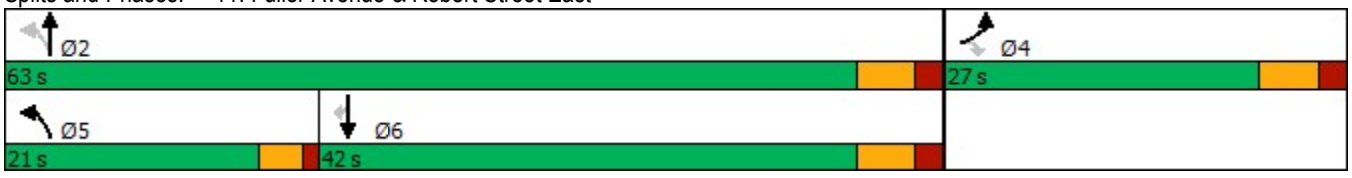
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	131	160	168	169	227	194
Future Volume (vph)	131	160	168	169	227	194
Lane Group Flow (vph)	142	174	177	178	329	281
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	4.5	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.53	0.45	0.24	0.14	0.32	0.28
Control Delay	39.4	9.2	4.6	4.7	11.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	9.2	4.6	4.7	11.8	2.5
Queue Length 50th (m)	21.6	0.0	6.9	7.8	26.3	0.7
Queue Length 95th (m)	39.3	16.6	15.7	17.1	36.9	4.0
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	457	537	842	1306	1038	1004
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.32	0.21	0.14	0.32	0.28

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 81.4
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	131	160	168	169	227	194
Future Volume (vph)	131	160	168	169	227	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1881	1599
Flt Permitted	0.95	1.00	0.49	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	916	1863	1881	1599
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.69	0.69
Adj. Flow (vph)	142	174	177	178	329	281
RTOR Reduction (vph)	0	148	0	0	0	121
Lane Group Flow (vph)	142	26	177	178	329	160
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	12.3	12.3	57.1	57.1	45.0	45.0
Effective Green, g (s)	12.3	12.3	57.1	57.1	45.0	45.0
Actuated g/C Ratio	0.15	0.15	0.70	0.70	0.55	0.55
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	267	239	727	1306	1039	883
v/s Ratio Prot	c0.08		c0.02	0.10	c0.17	
v/s Ratio Perm		0.02	0.15			0.10
v/c Ratio	0.53	0.11	0.24	0.14	0.32	0.18
Uniform Delay, d1	31.9	29.8	4.3	4.0	9.9	9.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.2	0.2	0.2	0.8	0.5
Delay (s)	33.9	30.0	4.5	4.2	10.7	9.5
Level of Service	C	C	A	A	B	A
Approach Delay (s)	31.8			4.4	10.1	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	52	19	285	87	5
Future Volume (Veh/h)	1	52	19	285	87	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.64	0.64	0.91	0.91
Hourly flow rate (vph)	2	104	30	445	96	5
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	604	100	102			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604	100	102			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	89	98			
cM capacity (veh/h)	454	953	1446			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	106	475	101
Volume Left	2	30	0
Volume Right	104	0	5
cSH	933	1446	1700
Volume to Capacity	0.11	0.02	0.06
Queue Length 95th (m)	3.1	0.5	0.0
Control Delay (s)	9.4	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	49	8	271	15	1	44
Future Volume (Veh/h)	49	8	271	15	1	44
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.64	0.64	0.65	0.65
Hourly flow rate (vph)	63	10	423	23	2	68
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	506	434			446	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	506	434			446	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	98			100	
cM capacity (veh/h)	528	626			1125	

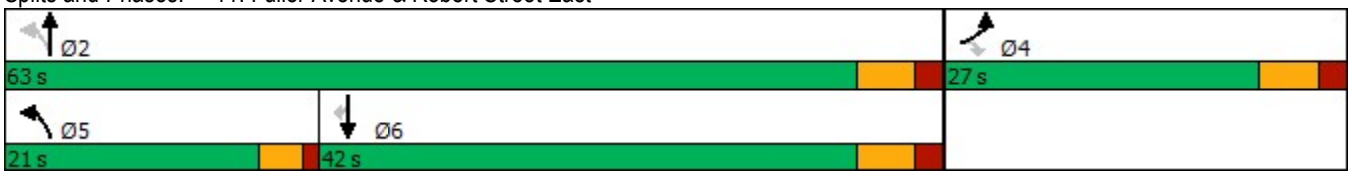
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	73	446	70
Volume Left	63	0	2
Volume Right	10	23	0
cSH	540	1700	1125
Volume to Capacity	0.14	0.26	0.00
Queue Length 95th (m)	3.7	0.0	0.0
Control Delay (s)	12.7	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	12.7	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	124	122	141	257	200	128
Future Volume (vph)	124	122	141	257	200	128
Lane Group Flow (vph)	191	188	183	334	230	147
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.62	0.44	0.23	0.26	0.23	0.17
Control Delay	41.3	8.2	5.3	6.2	12.3	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	8.2	5.3	6.2	12.3	2.9
Queue Length 50th (m)	29.9	0.0	8.2	18.1	18.8	0.0
Queue Length 95th (m)	34.8	3.9	15.6	29.9	38.1	8.9
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	450	543	874	1262	995	882
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.35	0.21	0.26	0.23	0.17

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 83.4
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	32	42	94	252	8
Future Volume (Veh/h)	13	32	42	94	252	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.78	0.78	0.56	0.56
Hourly flow rate (vph)	19	46	54	121	450	14
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	687	458	465			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	687	458	465			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	92	95			
cM capacity (veh/h)	395	596	1106			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	65	175	464
Volume Left	19	54	0
Volume Right	46	0	14
cSH	519	1106	1700
Volume to Capacity	0.13	0.05	0.27
Queue Length 95th (m)	3.4	1.2	0.0
Control Delay (s)	12.9	2.9	0.0
Lane LOS	B	A	
Approach Delay (s)	12.9	2.9	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	2	49	56	3	234
Future Volume (Veh/h)	23	2	49	56	3	234
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.79	0.79	0.57	0.57
Hourly flow rate (vph)	46	4	62	71	5	411
Pedestrians	1					1
Lane Width (m)	3.6					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	520	100			134	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	520	100			134	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	100			100	
cM capacity (veh/h)	518	960			1462	

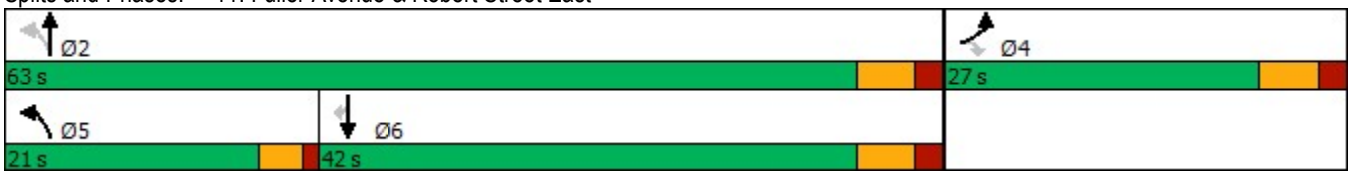
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	133	416
Volume Left	46	0	5
Volume Right	4	71	0
cSH	538	1700	1462
Volume to Capacity	0.09	0.08	0.00
Queue Length 95th (m)	2.4	0.0	0.1
Control Delay (s)	12.4	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	12.4	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	137	175	185	181	247	209
Future Volume (vph)	137	175	185	181	247	209
Lane Group Flow (vph)	149	190	195	191	358	303
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	4.5	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.55	0.47	0.27	0.15	0.35	0.30
Control Delay	39.7	9.0	4.9	4.8	12.5	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	9.0	4.9	4.8	12.5	3.2
Queue Length 50th (m)	22.8	0.0	7.8	8.5	29.7	2.4
Queue Length 95th (m)	41.0	17.1	17.7	18.7	41.4	6.1
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	455	548	815	1302	1028	995
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.35	0.24	0.15	0.35	0.30

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 81.6
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	137	175	185	181	247	209
Future Volume (vph)	137	175	185	181	247	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1881	1599
Flt Permitted	0.95	1.00	0.47	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	869	1863	1881	1599
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.69	0.69
Adj. Flow (vph)	149	190	195	191	358	303
RTOR Reduction (vph)	0	161	0	0	0	121
Lane Group Flow (vph)	149	29	195	191	358	182
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	12.6	12.6	57.1	57.1	44.7	44.7
Effective Green, g (s)	12.6	12.6	57.1	57.1	44.7	44.7
Actuated g/C Ratio	0.15	0.15	0.70	0.70	0.55	0.55
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	272	244	699	1302	1029	874
v/s Ratio Prot	c0.08		c0.03	0.10	c0.19	
v/s Ratio Perm		0.02	0.17			0.11
v/c Ratio	0.55	0.12	0.28	0.15	0.35	0.21
Uniform Delay, d1	31.9	29.8	4.6	4.1	10.3	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.2	0.2	0.2	0.9	0.5
Delay (s)	34.2	30.0	4.8	4.4	11.3	10.0
Level of Service	C	C	A	A	B	A
Approach Delay (s)	31.8			4.6	10.7	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	124	122	141	257	200	128
Future Volume (vph)	124	122	141	257	200	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1736	1845	1863	1524
Flt Permitted	0.95	1.00	0.56	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	1031	1845	1863	1524
Peak-hour factor, PHF	0.65	0.65	0.77	0.77	0.87	0.87
Adj. Flow (vph)	191	188	183	334	230	147
RTOR Reduction (vph)	0	156	0	0	0	68
Lane Group Flow (vph)	191	32	183	334	230	79
Heavy Vehicles (%)	1%	1%	4%	3%	2%	6%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	14.3	14.3	57.1	57.1	44.6	44.6
Effective Green, g (s)	14.3	14.3	57.1	57.1	44.6	44.6
Actuated g/C Ratio	0.17	0.17	0.68	0.68	0.53	0.53
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	306	274	777	1263	996	814
v/s Ratio Prot	c0.11		0.02	c0.18	0.12	
v/s Ratio Perm		0.02	0.14			0.05
v/c Ratio	0.62	0.12	0.24	0.26	0.23	0.10
Uniform Delay, d1	32.1	29.2	4.8	5.1	10.3	9.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.9	0.2	0.2	0.5	0.5	0.2
Delay (s)	36.0	29.4	4.9	5.6	10.8	9.8
Level of Service	D	C	A	A	B	A
Approach Delay (s)	32.7			5.3	10.4	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	56	20	315	96	5
Future Volume (Veh/h)	1	56	20	315	96	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.64	0.64	0.91	0.91
Hourly flow rate (vph)	2	112	31	492	105	5
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	662	108	111			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	662	108	111			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	88	98			
cM capacity (veh/h)	420	942	1435			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	114	523	110
Volume Left	2	31	0
Volume Right	112	0	5
cSH	922	1435	1700
Volume to Capacity	0.12	0.02	0.06
Queue Length 95th (m)	3.4	0.5	0.0
Control Delay (s)	9.5	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.5	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	9	299	16	1	48
Future Volume (Veh/h)	55	9	299	16	1	48
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.64	0.64	0.65	0.65
Hourly flow rate (vph)	71	12	467	25	2	74
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	558	480			492	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	558	480			492	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	98			100	
cM capacity (veh/h)	494	590			1082	

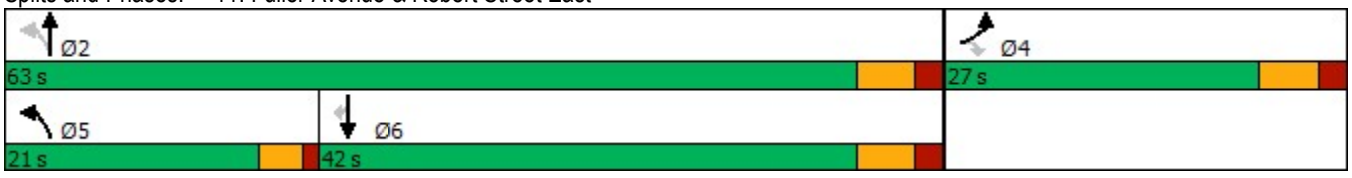
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	83	492	76
Volume Left	71	0	2
Volume Right	12	25	0
cSH	506	1700	1082
Volume to Capacity	0.16	0.29	0.00
Queue Length 95th (m)	4.7	0.0	0.0
Control Delay (s)	13.5	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	13.5	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	135	133	155	281	215	136
Future Volume (vph)	135	133	155	281	215	136
Lane Group Flow (vph)	208	205	201	365	247	156
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.65	0.45	0.26	0.29	0.25	0.18
Control Delay	42.1	7.9	5.7	6.7	13.2	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	7.9	5.7	6.7	13.2	3.0
Queue Length 50th (m)	32.9	0.0	9.5	21.1	21.3	0.0
Queue Length 95th (m)	37.5	3.6	17.7	34.1	42.7	9.5
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	446	553	854	1252	977	873
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.37	0.24	0.29	0.25	0.18

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 84.2
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	34	45	104	278	9
Future Volume (Veh/h)	14	34	45	104	278	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.78	0.78	0.56	0.56
Hourly flow rate (vph)	20	49	58	133	496	16
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	754	505	513			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	754	505	513			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	91	95			
cM capacity (veh/h)	359	561	1062			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	69	191	512
Volume Left	20	58	0
Volume Right	49	0	16
cSH	482	1062	1700
Volume to Capacity	0.14	0.05	0.30
Queue Length 95th (m)	4.0	1.4	0.0
Control Delay (s)	13.7	3.0	0.0
Lane LOS	B	A	
Approach Delay (s)	13.7	3.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	3	55	62	4	259
Future Volume (Veh/h)	25	3	55	62	4	259
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.79	0.79	0.57	0.57
Hourly flow rate (vph)	50	6	70	78	7	454
Pedestrians	1					1
Lane Width (m)	3.6					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	578	111			149	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	578	111			149	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			100	
cM capacity (veh/h)	478	946			1444	

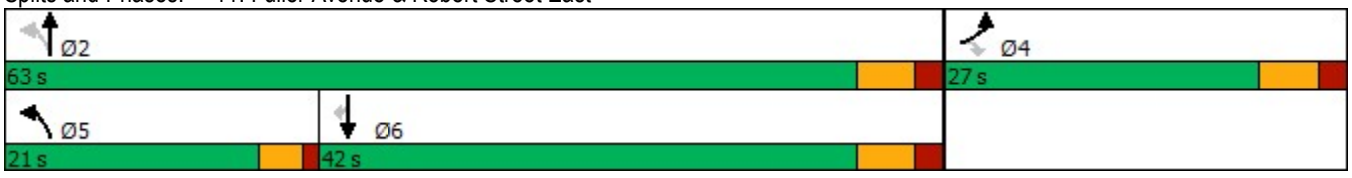
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	56	148	461
Volume Left	50	0	7
Volume Right	6	78	0
cSH	505	1700	1444
Volume to Capacity	0.11	0.09	0.00
Queue Length 95th (m)	3.0	0.0	0.1
Control Delay (s)	13.0	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	13.0	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	145	193	204	194	269	226
Future Volume (vph)	145	193	204	194	269	226
Lane Group Flow (vph)	158	210	215	204	390	328
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	4.5	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.56	0.49	0.31	0.16	0.38	0.33
Control Delay	40.0	8.9	5.3	5.1	13.5	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	8.9	5.3	5.1	13.5	3.9
Queue Length 50th (m)	24.3	0.0	9.0	9.5	34.1	4.5
Queue Length 95th (m)	43.1	17.8	19.9	20.5	46.7	8.7
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	453	561	784	1295	1013	984
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.37	0.27	0.16	0.38	0.33

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 82.1
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	145	193	204	194	269	226
Future Volume (vph)	145	193	204	194	269	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1881	1599
Flt Permitted	0.95	1.00	0.44	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	816	1863	1881	1599
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.69	0.69
Adj. Flow (vph)	158	210	215	204	390	328
RTOR Reduction (vph)	0	177	0	0	0	122
Lane Group Flow (vph)	158	33	215	204	390	206
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	13.0	13.0	57.1	57.1	44.3	44.3
Effective Green, g (s)	13.0	13.0	57.1	57.1	44.3	44.3
Actuated g/C Ratio	0.16	0.16	0.70	0.70	0.54	0.54
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	280	250	669	1295	1014	862
v/s Ratio Prot	c0.09		c0.03	0.11	c0.21	
v/s Ratio Perm		0.02	0.19			0.13
v/c Ratio	0.56	0.13	0.32	0.16	0.38	0.24
Uniform Delay, d1	31.9	29.7	4.9	4.3	11.0	10.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	0.2	0.3	0.3	1.1	0.7
Delay (s)	34.5	29.9	5.2	4.5	12.1	10.6
Level of Service	C	C	A	A	B	B
Approach Delay (s)	31.9			4.9	11.4	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	82.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	135	133	155	281	215	136
Future Volume (vph)	135	133	155	281	215	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1736	1845	1863	1524
Flt Permitted	0.95	1.00	0.55	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	1007	1845	1863	1524
Peak-hour factor, PHF	0.65	0.65	0.77	0.77	0.87	0.87
Adj. Flow (vph)	208	205	201	365	247	156
RTOR Reduction (vph)	0	168	0	0	0	74
Lane Group Flow (vph)	208	37	201	365	247	82
Heavy Vehicles (%)	1%	1%	4%	3%	2%	6%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	15.0	15.0	57.1	57.1	44.2	44.2
Effective Green, g (s)	15.0	15.0	57.1	57.1	44.2	44.2
Actuated g/C Ratio	0.18	0.18	0.68	0.68	0.53	0.53
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	318	285	760	1252	979	800
v/s Ratio Prot	c0.12		0.03	c0.20	0.13	
v/s Ratio Perm		0.02	0.15			0.05
v/c Ratio	0.65	0.13	0.26	0.29	0.25	0.10
Uniform Delay, d1	32.1	29.1	5.0	5.4	10.9	10.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8	0.2	0.2	0.6	0.6	0.3
Delay (s)	36.9	29.3	5.2	6.0	11.5	10.3
Level of Service	D	C	A	A	B	B
Approach Delay (s)	33.1			5.7	11.0	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Appendix F –
Transportation Tomorrow Survey – Excerpt

Wed Jan 25 2023 16:21:36 GMT-0500 (Eastern Standard Time) - Run Time: 2469ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of household - gta06_hhld

Filters:
(2006 GTA zone of household - gta06_hhld In 8573
and
Trip purpose of destination - pui R
and
Start time of trip - start_time In 700 - 900)

Trip 2016
Table:

Project: 1255 Fuller Avenue TIS

TO (Destination)	FROM (Origin)													
	8573	Trip %	Destinatio	North via Fuller	East via Sandy Bay	West via Broad st	south via fuller	West via Robert	North via Fuller	East via Sandy Bay	West via Broad st	south via fuller	West via Robert
2095	18	9.14%	Vaughan	0%	0%	0%	50%	50%	0.00%	0.00%	0.00%	4.57%	4.57%
2207	12	6.09%	Richmond	0%	0%	0%	50%	50%	0.00%	0.00%	0.00%	3.05%	3.05%
8571	12	6.09%	Tiny	0%	0%	0%	20%	80%	0.00%	0.00%	0.00%	1.22%	4.87%
8574	6	3.05%	Penetangu	0%	0%	20%	20%	60%	0.00%	0.00%	0.61%	0.61%	1.83%
8576	18	9.14%	Midland	0%	0%	0%	80%	20%	0.00%	0.00%	0.00%	7.31%	1.83%
8578	25	12.69%	Midland	0%	0%	0%	80%	20%	0.00%	0.00%	0.00%	10.15%	2.54%
8604	31	15.74%	Tiny	0%	0%	0%	20%	80%	0.00%	0.00%	0.00%	3.15%	12.59%
8660	44	22.34%	Tay	0%	0%	0%	100%	0%	0.00%	0.00%	0.00%	22.34%	0.00%
8665	31	15.74%	Penetangu	0%	0%	25%	75%	0%	0.00%	0.00%	3.93%	11.80%	0.00%
TOTAL	197	100.00%							0.00%	0.00%	4.54%	64.19%	31.27%
							Total of totals		100.00%				

Appendix G – Synchro Analysis Output – Total Traffic Volumes

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	47	17	267	109	5
Future Volume (Veh/h)	1	47	17	267	109	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.64	0.64	0.91	0.91
Hourly flow rate (vph)	2	94	27	417	120	5
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	594	124	126			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	594	124	126			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	90	98			
cM capacity (veh/h)	461	924	1417			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	96	444	125
Volume Left	2	27	0
Volume Right	94	0	5
cSH	905	1417	1700
Volume to Capacity	0.11	0.02	0.07
Queue Length 95th (m)	2.8	0.5	0.0
Control Delay (s)	9.4	0.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	0.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	15	9	0	52	31	0
Future Volume (Veh/h)	15	9	0	52	31	0
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)	16	10	0	57	34	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			26		78	21
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			26		78	21
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		96	100
cM capacity (veh/h)			1588		925	1056

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	26	57	34
Volume Left	0	0	34
Volume Right	10	0	0
cSH	1700	1588	925
Volume to Capacity	0.02	0.00	0.04
Queue Length 95th (m)	0.0	0.0	0.9
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	76	7	246	23	1	40
Future Volume (Veh/h)	76	7	246	23	1	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.64	0.64	0.65	0.65
Hourly flow rate (vph)	97	9	384	36	2	62
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	468	402			420	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468	402			420	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	99			100	
cM capacity (veh/h)	556	653			1150	

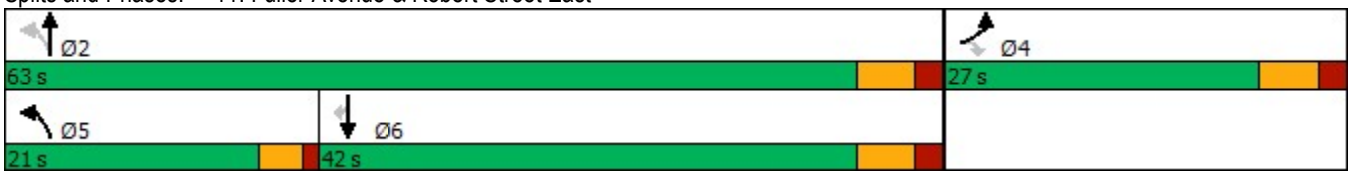
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	106	420	64
Volume Left	97	0	2
Volume Right	9	36	0
cSH	563	1700	1150
Volume to Capacity	0.19	0.25	0.00
Queue Length 95th (m)	5.5	0.0	0.0
Control Delay (s)	12.9	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	12.9	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	118	111	128	241	205	132
Future Volume (vph)	118	111	128	241	205	132
Lane Group Flow (vph)	182	171	166	313	236	152
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.61	0.42	0.21	0.25	0.23	0.17
Control Delay	40.9	8.3	5.0	6.0	11.9	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	8.3	5.0	6.0	11.9	2.7
Queue Length 50th (m)	28.4	0.0	7.2	16.5	18.9	0.0
Queue Length 95th (m)	33.5	4.1	14.0	27.4	38.0	8.8
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	452	532	875	1268	1007	894
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.32	0.19	0.25	0.23	0.17

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 83.1
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	118	111	128	241	205	132
Future Volume (vph)	118	111	128	241	205	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1736	1845	1863	1524
Flt Permitted	0.95	1.00	0.56	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	1026	1845	1863	1524
Peak-hour factor, PHF	0.65	0.65	0.77	0.77	0.87	0.87
Adj. Flow (vph)	182	171	166	313	236	152
RTOR Reduction (vph)	0	142	0	0	0	70
Lane Group Flow (vph)	182	29	166	313	236	82
Heavy Vehicles (%)	1%	1%	4%	3%	2%	6%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	14.0	14.0	57.1	57.1	44.9	44.9
Effective Green, g (s)	14.0	14.0	57.1	57.1	44.9	44.9
Actuated g/C Ratio	0.17	0.17	0.69	0.69	0.54	0.54
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	301	269	775	1267	1006	823
v/s Ratio Prot	c0.10		0.02	c0.17	0.13	
v/s Ratio Perm		0.02	0.13			0.05
v/c Ratio	0.60	0.11	0.21	0.25	0.23	0.10
Uniform Delay, d1	32.0	29.3	4.6	4.9	10.1	9.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	0.2	0.1	0.5	0.5	0.2
Delay (s)	35.4	29.4	4.7	5.4	10.6	9.5
Level of Service	D	C	A	A	B	A
Approach Delay (s)	32.5			5.2	10.2	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	30	38	116	245	8
Future Volume (Veh/h)	12	30	38	116	245	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.78	0.78	0.56	0.56
Hourly flow rate (vph)	17	43	49	149	438	14
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	693	446	453			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	693	446	453			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	93	96			
cM capacity (veh/h)	394	606	1117			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	60	198	452
Volume Left	17	49	0
Volume Right	43	0	14
cSH	526	1117	1700
Volume to Capacity	0.11	0.04	0.27
Queue Length 95th (m)	3.1	1.1	0.0
Control Delay (s)	12.7	2.4	0.0
Lane LOS	B	A	
Approach Delay (s)	12.7	2.4	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	54	32	0	23	18	0
Future Volume (Veh/h)	54	32	0	23	18	0
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)	59	35	0	25	20	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		102	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		102	76
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		98	100
cM capacity (veh/h)			1500		897	985

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	94	25	20
Volume Left	0	0	20
Volume Right	35	0	0
cSH	1700	1500	897
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.5
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	39	2	45	83	3	212
Future Volume (Veh/h)	39	2	45	83	3	212
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.79	0.79	0.57	0.57
Hourly flow rate (vph)	78	4	57	105	5	372
Pedestrians	1					1
Lane Width (m)	3.6					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	492	112			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	492	112			163	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	100			100	
cM capacity (veh/h)	537	946			1427	

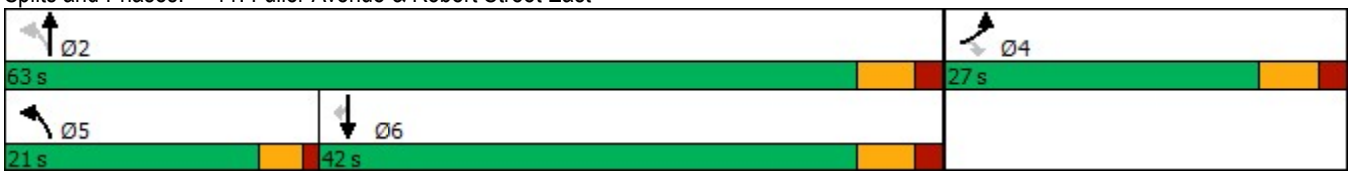
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	162	377
Volume Left	78	0	5
Volume Right	4	105	0
cSH	549	1700	1427
Volume to Capacity	0.15	0.10	0.00
Queue Length 95th (m)	4.2	0.0	0.1
Control Delay (s)	12.7	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	12.7	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	141	160	168	190	238	200
Future Volume (vph)	141	160	168	190	238	200
Lane Group Flow (vph)	153	174	177	200	345	290
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	4.5	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.56	0.44	0.24	0.15	0.33	0.29
Control Delay	39.9	8.9	4.8	4.9	12.2	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	8.9	4.8	4.9	12.2	2.9
Queue Length 50th (m)	23.4	0.0	7.1	9.1	28.3	1.6
Queue Length 95th (m)	41.9	16.4	16.3	19.7	39.5	5.2
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	454	536	824	1299	1032	997
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.32	0.21	0.15	0.33	0.29

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 81.8
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	141	160	168	190	238	200
Future Volume (vph)	141	160	168	190	238	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1881	1599
Flt Permitted	0.95	1.00	0.48	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	889	1863	1881	1599
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.69	0.69
Adj. Flow (vph)	153	174	177	200	345	290
RTOR Reduction (vph)	0	147	0	0	0	120
Lane Group Flow (vph)	153	27	177	200	345	170
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	12.8	12.8	57.1	57.1	45.0	45.0
Effective Green, g (s)	12.8	12.8	57.1	57.1	45.0	45.0
Actuated g/C Ratio	0.16	0.16	0.70	0.70	0.55	0.55
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	276	247	706	1298	1033	878
v/s Ratio Prot	c0.09		c0.02	0.11	c0.18	
v/s Ratio Perm		0.02	0.15			0.11
v/c Ratio	0.55	0.11	0.25	0.15	0.33	0.19
Uniform Delay, d1	31.9	29.7	4.5	4.2	10.2	9.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.2	0.2	0.3	0.9	0.5
Delay (s)	34.3	29.9	4.7	4.5	11.1	9.8
Level of Service	C	C	A	A	B	A
Approach Delay (s)	31.9			4.6	10.5	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	52	19	294	117	6
Future Volume (Veh/h)	1	52	19	294	117	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.64	0.64	0.91	0.91
Hourly flow rate (vph)	2	104	30	459	129	7
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	652	134	137			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	652	134	137			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	89	98			
cM capacity (veh/h)	426	912	1404			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	106	489	136
Volume Left	2	30	0
Volume Right	104	0	7
cSH	893	1404	1700
Volume to Capacity	0.12	0.02	0.08
Queue Length 95th (m)	3.2	0.5	0.0
Control Delay (s)	9.6	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	16	9	0	57	31	0
Future Volume (Veh/h)	16	9	0	57	31	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	10	0	62	34	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			27		84	22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			27		84	22
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		96	100
cM capacity (veh/h)			1587		918	1055

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	27	62	34
Volume Left	0	0	34
Volume Right	10	0	0
cSH	1700	1587	918
Volume to Capacity	0.02	0.00	0.04
Queue Length 95th (m)	0.0	0.0	0.9
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	8	271	24	1	44
Future Volume (Veh/h)	80	8	271	24	1	44
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.64	0.64	0.65	0.65
Hourly flow rate (vph)	103	10	423	38	2	68
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	514	442			461	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	514	442			461	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	98			100	
cM capacity (veh/h)	523	620			1111	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	113	461	70
Volume Left	103	0	2
Volume Right	10	38	0
cSH	530	1700	1111
Volume to Capacity	0.21	0.27	0.00
Queue Length 95th (m)	6.4	0.0	0.0
Control Delay (s)	13.6	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	13.6	0.0	0.3
Approach LOS	B		

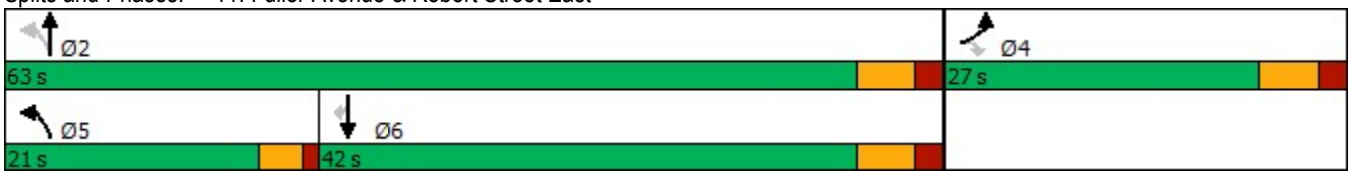
Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	127	122	141	263	220	138
Future Volume (vph)	127	122	141	263	220	138
Lane Group Flow (vph)	195	188	183	342	253	159
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.63	0.44	0.23	0.27	0.26	0.18
Control Delay	41.5	8.1	5.4	6.4	12.6	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	8.1	5.4	6.4	12.6	2.8
Queue Length 50th (m)	30.7	0.0	8.3	18.9	21.2	0.0
Queue Length 95th (m)	35.5	3.9	15.7	31.0	42.3	9.3
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	449	543	857	1260	992	886
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.35	0.21	0.27	0.26	0.18

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 83.6
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	127	122	141	263	220	138
Future Volume (vph)	127	122	141	263	220	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1736	1845	1863	1524
Flt Permitted	0.95	1.00	0.55	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	1001	1845	1863	1524
Peak-hour factor, PHF	0.65	0.65	0.77	0.77	0.87	0.87
Adj. Flow (vph)	195	188	183	342	253	159
RTOR Reduction (vph)	0	155	0	0	0	74
Lane Group Flow (vph)	195	33	183	342	253	85
Heavy Vehicles (%)	1%	1%	4%	3%	2%	6%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	14.5	14.5	57.1	57.1	44.6	44.6
Effective Green, g (s)	14.5	14.5	57.1	57.1	44.6	44.6
Actuated g/C Ratio	0.17	0.17	0.68	0.68	0.53	0.53
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	309	277	758	1260	993	813
v/s Ratio Prot	c0.11		0.02	c0.19	0.14	
v/s Ratio Perm		0.02	0.14			0.06
v/c Ratio	0.63	0.12	0.24	0.27	0.25	0.10
Uniform Delay, d1	32.1	29.2	4.8	5.2	10.5	9.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	0.2	0.2	0.5	0.6	0.3
Delay (s)	36.2	29.3	5.0	5.7	11.1	9.9
Level of Service	D	C	A	A	B	A
Approach Delay (s)	32.8			5.4	10.7	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	83.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	32	42	125	269	9
Future Volume (Veh/h)	14	32	42	125	269	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.78	0.78	0.56	0.56
Hourly flow rate (vph)	20	46	54	160	480	16
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	757	489	497			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	757	489	497			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	92	95			
cM capacity (veh/h)	359	573	1076			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	66	214	496
Volume Left	20	54	0
Volume Right	46	0	16
cSH	485	1076	1700
Volume to Capacity	0.14	0.05	0.29
Queue Length 95th (m)	3.7	1.3	0.0
Control Delay (s)	13.6	2.5	0.0
Lane LOS	B	A	
Approach Delay (s)	13.6	2.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	59	32	0	25	18	0
Future Volume (Veh/h)	59	32	0	25	18	0
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)	64	35	0	27	20	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			99		108	82
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			99		108	82
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		98	100
cM capacity (veh/h)			1494		889	978

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	99	27	20
Volume Left	0	0	20
Volume Right	35	0	0
cSH	1700	1494	889
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	41	2	49	88	3	234
Future Volume (Veh/h)	41	2	49	88	3	234
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.79	0.79	0.57	0.57
Hourly flow rate (vph)	82	4	62	111	5	411
Pedestrians	1					1
Lane Width (m)	3.6					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	540	120			174	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	540	120			174	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	100			100	
cM capacity (veh/h)	504	936			1414	

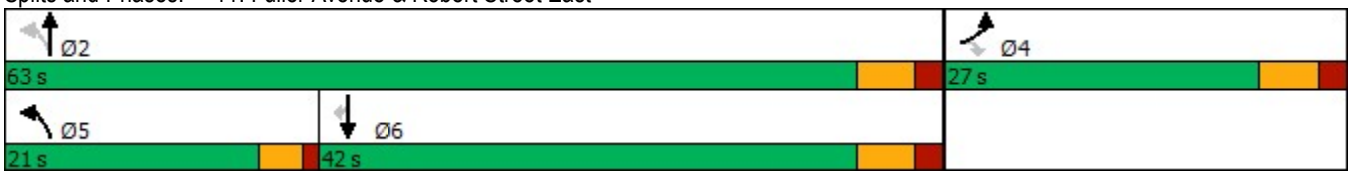
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	86	173	416
Volume Left	82	0	5
Volume Right	4	111	0
cSH	515	1700	1414
Volume to Capacity	0.17	0.10	0.00
Queue Length 95th (m)	4.8	0.0	0.1
Control Delay (s)	13.4	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	13.4	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	147	175	185	202	258	215
Future Volume (vph)	147	175	185	202	258	215
Lane Group Flow (vph)	160	190	195	213	374	312
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	4.5	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.57	0.46	0.28	0.16	0.37	0.32
Control Delay	40.1	8.8	5.1	5.1	13.0	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	8.8	5.1	5.1	13.0	3.5
Queue Length 50th (m)	24.6	0.0	8.1	10.0	32.0	3.4
Queue Length 95th (m)	43.7	16.9	18.3	21.4	44.3	7.4
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	452	546	797	1294	1021	988
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.35	0.24	0.16	0.37	0.32

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 82.2
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	147	175	185	202	258	215
Future Volume (vph)	147	175	185	202	258	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1881	1599
Flt Permitted	0.95	1.00	0.45	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	842	1863	1881	1599
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.69	0.69
Adj. Flow (vph)	160	190	195	213	374	312
RTOR Reduction (vph)	0	160	0	0	0	121
Lane Group Flow (vph)	160	30	195	213	374	191
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	13.1	13.1	57.1	57.1	44.6	44.6
Effective Green, g (s)	13.1	13.1	57.1	57.1	44.6	44.6
Actuated g/C Ratio	0.16	0.16	0.69	0.69	0.54	0.54
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	282	252	680	1294	1020	867
v/s Ratio Prot	c0.09		c0.03	0.11	c0.20	
v/s Ratio Perm		0.02	0.17			0.12
v/c Ratio	0.57	0.12	0.29	0.16	0.37	0.22
Uniform Delay, d1	31.9	29.6	4.8	4.3	10.7	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	0.2	0.2	0.3	1.0	0.6
Delay (s)	34.5	29.8	5.0	4.6	11.8	10.4
Level of Service	C	C	A	A	B	B
Approach Delay (s)	32.0			4.8	11.1	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	56	20	0	126	6
Future Volume (Veh/h)	1	56	20	0	126	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.64	0.64	0.91	0.91
Hourly flow rate (vph)	2	112	31	0	138	7
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	204	142	146			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	204	142	146			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	88	98			
cM capacity (veh/h)	770	902	1393			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	114	31	145
Volume Left	2	31	0
Volume Right	112	0	7
cSH	899	1393	1700
Volume to Capacity	0.13	0.02	0.09
Queue Length 95th (m)	3.5	0.5	0.0
Control Delay (s)	9.6	7.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	7.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	17	9	0	64	31	0
Future Volume (Veh/h)	17	9	0	64	31	0
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)	18	10	0	70	34	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			28		93	23
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			28		93	23
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		96	100
cM capacity (veh/h)			1585		907	1054

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	28	70	34
Volume Left	0	0	34
Volume Right	10	0	0
cSH	1700	1585	907
Volume to Capacity	0.02	0.00	0.04
Queue Length 95th (m)	0.0	0.0	0.9
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	13.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	86	9	299	25	1	48
Future Volume (Veh/h)	86	9	299	25	1	48
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.64	0.64	0.65	0.65
Hourly flow rate (vph)	110	12	467	39	2	74
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	564	486			506	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	564	486			506	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	98			100	
cM capacity (veh/h)	489	585			1069	

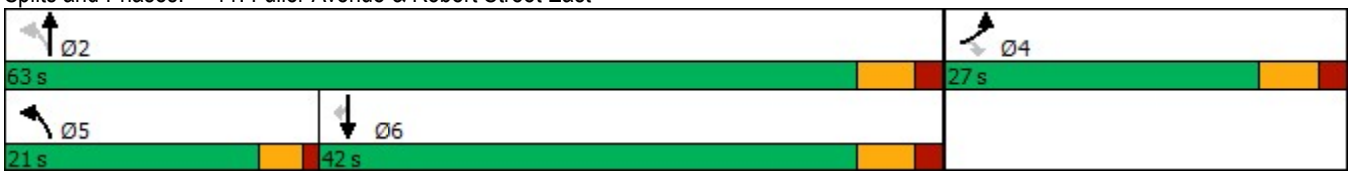
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	122	506	76
Volume Left	110	0	2
Volume Right	12	39	0
cSH	497	1700	1069
Volume to Capacity	0.25	0.30	0.00
Queue Length 95th (m)	7.7	0.0	0.0
Control Delay (s)	14.6	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	14.6	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	138	133	155	287	235	146
Future Volume (vph)	138	133	155	287	235	146
Lane Group Flow (vph)	212	205	201	373	270	168
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.66	0.45	0.26	0.30	0.28	0.19
Control Delay	42.5	7.8	5.8	6.8	13.5	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	7.8	5.8	6.8	13.5	2.9
Queue Length 50th (m)	33.7	0.0	9.6	21.9	23.7	0.0
Queue Length 95th (m)	38.1	3.6	17.7	34.8	46.5	9.9
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	446	553	834	1250	975	877
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.37	0.24	0.30	0.28	0.19

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 84.3
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 11: Fuller Avenue & Robert Street East



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	138	133	155	287	235	146
Future Volume (vph)	138	133	155	287	235	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1736	1845	1863	1524
Flt Permitted	0.95	1.00	0.53	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	969	1845	1863	1524
Peak-hour factor, PHF	0.65	0.65	0.77	0.77	0.87	0.87
Adj. Flow (vph)	212	205	201	373	270	168
RTOR Reduction (vph)	0	168	0	0	0	80
Lane Group Flow (vph)	212	37	201	373	270	88
Heavy Vehicles (%)	1%	1%	4%	3%	2%	6%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	15.1	15.1	57.1	57.1	44.1	44.1
Effective Green, g (s)	15.1	15.1	57.1	57.1	44.1	44.1
Actuated g/C Ratio	0.18	0.18	0.68	0.68	0.52	0.52
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	320	286	739	1251	975	798
v/s Ratio Prot	c0.12		0.03	c0.20	0.14	
v/s Ratio Perm		0.02	0.16			0.06
v/c Ratio	0.66	0.13	0.27	0.30	0.28	0.11
Uniform Delay, d1	32.2	29.0	5.1	5.5	11.2	10.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.2	0.2	0.6	0.7	0.3
Delay (s)	37.3	29.2	5.3	6.1	11.9	10.4
Level of Service	D	C	A	A	B	B
Approach Delay (s)	33.3			5.8	11.3	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	34	45	135	295	10
Future Volume (Veh/h)	15	34	45	135	295	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.78	0.78	0.56	0.56
Hourly flow rate (vph)	21	49	58	173	527	18
Pedestrians	1					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	826	537	546			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	826	537	546			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	91	94			
cM capacity (veh/h)	325	538	1033			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	70	231	545
Volume Left	21	58	0
Volume Right	49	0	18
cSH	449	1033	1700
Volume to Capacity	0.16	0.06	0.32
Queue Length 95th (m)	4.4	1.4	0.0
Control Delay (s)	14.5	2.6	0.0
Lane LOS	B	A	
Approach Delay (s)	14.5	2.6	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	66	32	0	28	18	0
Future Volume (Veh/h)	66	32	0	28	18	0
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)	72	35	0	30	20	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			107		120	90
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			107		120	90
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		98	100
cM capacity (veh/h)			1484		876	968

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	107	30	20
Volume Left	0	0	20
Volume Right	35	0	0
cSH	1700	1484	876
Volume to Capacity	0.06	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	3	55	94	4	259
Future Volume (Veh/h)	43	3	55	94	4	259
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.79	0.79	0.57	0.57
Hourly flow rate (vph)	86	6	70	119	7	454
Pedestrians	1					1
Lane Width (m)	3.6					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	598	132			190	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	598	132			190	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	99			99	
cM capacity (veh/h)	465	922			1395	

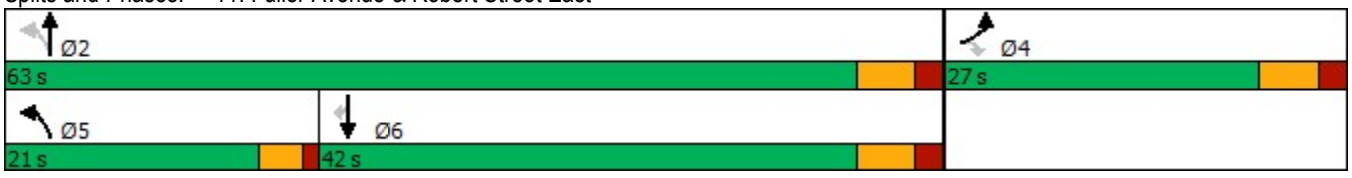
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	92	189	461
Volume Left	86	0	7
Volume Right	6	119	0
cSH	481	1700	1395
Volume to Capacity	0.19	0.11	0.01
Queue Length 95th (m)	5.6	0.0	0.1
Control Delay (s)	14.2	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	14.2	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	155	193	204	215	280	232
Future Volume (vph)	155	193	204	215	280	232
Lane Group Flow (vph)	168	210	215	226	406	336
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	4.5	10.0	10.0	10.0
Minimum Split (s)	25.0	25.0	9.0	30.0	30.0	30.0
Total Split (s)	27.0	27.0	21.0	63.0	42.0	42.0
Total Split (%)	30.0%	30.0%	23.3%	70.0%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
v/c Ratio	0.59	0.49	0.32	0.18	0.40	0.34
Control Delay	40.5	8.7	5.6	5.3	14.0	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	8.7	5.6	5.3	14.0	4.3
Queue Length 50th (m)	26.0	0.0	9.2	10.8	36.3	5.4
Queue Length 95th (m)	45.6	17.7	20.5	23.2	49.9	9.9
Internal Link Dist (m)	263.3			1013.1	521.8	
Turn Bay Length (m)		30.0	45.0			30.0
Base Capacity (vph)	451	559	768	1289	1007	977
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	0.28	0.18	0.40	0.34

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 82.5
Natural Cycle: 65
Control Type: Semi Act-Uncoord

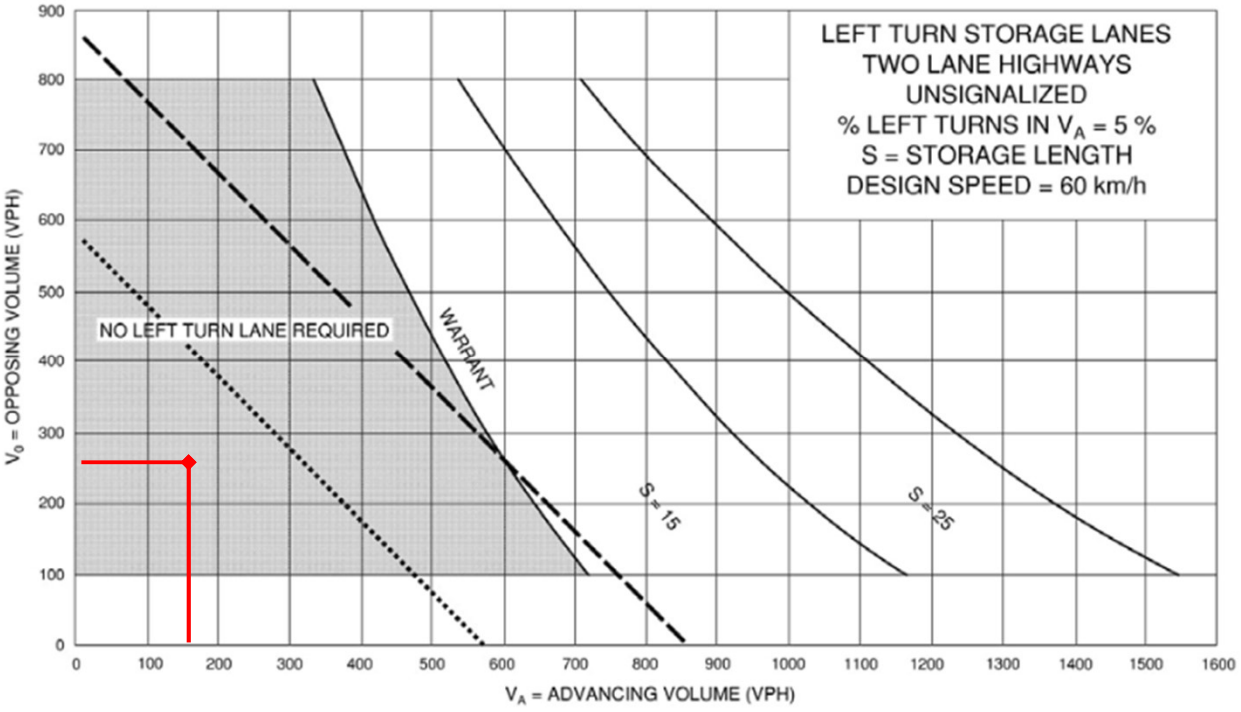
Splits and Phases: 11: Fuller Avenue & Robert Street East



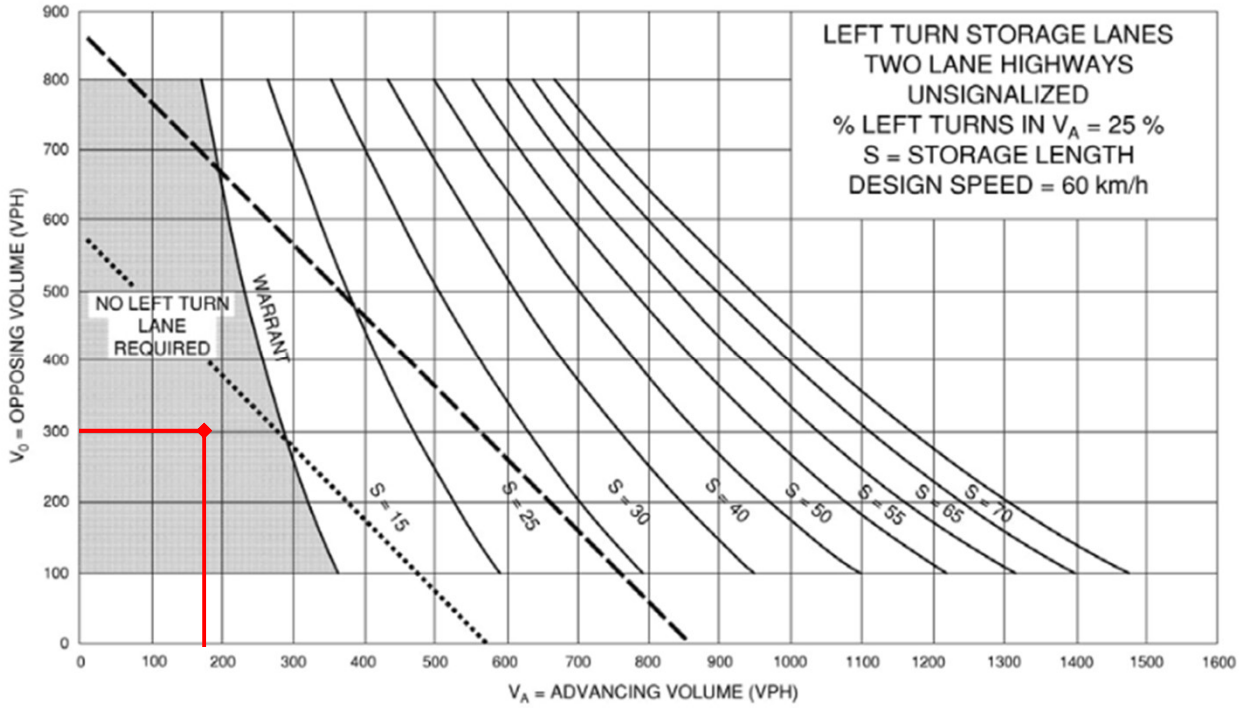
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	155	193	204	215	280	232
Future Volume (vph)	155	193	204	215	280	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1881	1599
Flt Permitted	0.95	1.00	0.42	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	790	1863	1881	1599
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.69	0.69
Adj. Flow (vph)	168	210	215	226	406	336
RTOR Reduction (vph)	0	176	0	0	0	122
Lane Group Flow (vph)	168	34	215	226	406	214
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	13.4	13.4	57.1	57.1	44.2	44.2
Effective Green, g (s)	13.4	13.4	57.1	57.1	44.2	44.2
Actuated g/C Ratio	0.16	0.16	0.69	0.69	0.54	0.54
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	287	257	652	1289	1007	856
v/s Ratio Prot	c0.09		c0.04	0.12	c0.22	
v/s Ratio Perm		0.02	0.19			0.13
v/c Ratio	0.59	0.13	0.33	0.18	0.40	0.25
Uniform Delay, d1	32.0	29.6	5.1	4.5	11.3	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	0.2	0.3	0.3	1.2	0.7
Delay (s)	35.0	29.8	5.4	4.7	12.5	11.0
Level of Service	D	C	A	A	B	B
Approach Delay (s)	32.1			5.1	11.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Appendix H –
MTO Left Turn Analysis



Total (2035) PM Peak – SB on Fuller Avenue at Fuller Avenue / Sandy Bay Road



Total (2035) PM Peak – NB on Fuller Avenue at Fuller Avenue / Broad Street

Appendix I –
OTM Signal Justification Sheets

Justification No. 7 - Total (2035) Traffic

Site Access / Sandy Bay Road

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	66	7%	3%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	255	12	5%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	44	5%	3%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	12	7%		NO	NO

Justification No. 7 - Total (2035) Traffic

Fuller Avenue / Sandy Bay Road

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	248	28%	14%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	255	52	20%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	167	19%	12%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	49	29%		NO	NO

Justification No. 7 - Total (2035) Traffic

Fuller Avenue / Broad Street

Justification	Description		Compliance			Signal Warrant	Underground Provisions Warrant
			Sectional		Entire %		
		Rest. Flow	Numerical	%			
1. Minimum Vehicluar Volume	A. Vehicle volume, all aproaches (average hour)	900	267	30%	7%	NO	NO
	B. Vehicle volume, along minor streets (average hour)	255	27	10%		NO	NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	236	26%	2%	NO	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	170	4	2%		NO	NO