

**TRAFFIC IMPACT STUDY**

**PARKBRIDGE CRAIGLEITH  
TOWN OF THE BLUE MOUNTAINS**

**PREPARED FOR:  
PARKBRIDGE LIFESTYLE COMMUNITIES INC.**

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## 1.0 Executive Summary

CF Crozier & Associates Inc. (Crozier) was retained by Parkbridge Lifestyle Communities Inc. to complete a Traffic Impact Study in support of planning applications for the proposed residential development in Craigleith, Town of The Blue Mountains, County of Grey. The Subject Property is bounded by Grey Road 19 and existing residents to the west, Lakeshore Road to the north with existing residents in the north east corner, the proposed Eden Oak development to the East, and the proposed Home Farm development and existing residential lots to the south. The location of the proposed development is reflected in Figure 1.

The Subject Property is approximately 26.68 hectares (65.92 acres) in size. The Concept Plan for the proposed development consists of 94 townhomes and 119 single-detached houses. The proposed Concept Plan is reflected in Figure 2.

Analysis of existing traffic volumes has determined that the roadway system operates at a Level of Service "B" or better under current conditions.

A two percent growth rate was calculated using Annual Average Daily Traffic (AADT) volumes and factored for all movements on the boundary road intersections. The Eden Oak residential development is located to the east of the Subject Property. Accordingly, trips generated by this development were distributed to the boundary road network per the original Traffic Impact Study (Crozier, 2012) and included in the future background traffic analyses. Additionally, Eden Oak (Trailshead) Inc. is committed to constructing a dedicated westbound left-turn lane at the intersection of Highway 26 and Lakeshore Road. Thus, traffic operations were analyzed with and without the westbound left-turn lane.

Intersection analyses of the 2031 future background traffic volumes indicate that the Highway 26 and Grey Road 19 intersection is anticipated to continue operating at a LOS "B" in the weekday a.m. and p.m. peak hours. The intersection of Highway 26 and Lakeshore Road is expected to operate at a LOS "C" and "D" during the weekday a.m. and p.m. peak hours, respectively. The intersection of Grey Road 19 and Lakeshore Road is anticipated to operate at a LOS "B" in the weekday a.m. and p.m. peak hours. The intersection of Grey Road 19 and Craigleith Road is anticipated to continue operating at a LOS "A" in the weekday a.m. and p.m. peak hours.

The proposed development is expected to add 34 and 56 primary trips to the boundary road network in the weekday a.m. and p.m. peak hours respectively.

2031 total traffic operations were compared with the future background traffic operations. Intersection analyses of the 2031 total traffic volumes indicate that the Highway 26 and Grey Road 19 intersection is anticipated to continue operating at a LOS "B" in the weekday a.m. and p.m. peak hours. The intersection of Highway 26 and Lakeshore Road is expected to operate at a LOS "C" during the weekday a.m. and p.m. peak hours. The intersection of Grey Road 19 and Lakeshore Road is anticipated to continue operating at a LOS "B" in the weekday a.m. and p.m. peak hours. The intersection of Grey Road 19 and Craigleith Road is anticipated to continue operating at a LOS "A" in the weekday a.m. and p.m. peak hours.

The addition of site generated traffic will not materially affect the operations of the Highway 26 and Lakeshore Road intersection, thus site entrances to Lakeshore Road are supportable.

The analysis undertaken within was prepared using Concept Plan dated October 20<sup>th</sup>, 2016. Any minor changes to the Plan will not materially affect the conclusions contained within this report. The proposed development can be supported from a traffic operations perspective.

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## **2.0 Introduction**

CF Crozier & Associates Inc. (Crozier) was retained by Parkbridge Lifestyle Communities Inc. to complete a Traffic Impact Study in support of planning applications for the proposed residential development in Craigleith, Town of The Blue Mountains, County of Grey.

The purpose of the study was to assess the impacts of the proposed development on the boundary road network and to recommend any required mitigation measures, if warranted.

The Subject Property is bounded by Grey Road 19 and existing residential properties to the west, Lakeshore Road to the north, the proposed Eden Oak residential development to the east, and the proposed Home Farm residential development and existing residential lots to the south.

The location of the Subject Property is reflected on the development Site Location Plan included as Figure 1.

The study analyzes the operations of the boundary road intersections, as well as the accesses to the Subject Property. The future traffic operations with and without the addition of the site generated vehicular trips are also analyzed.

The terms of reference for the study was confirmed with the Ministry, County and Town staff, with correspondence included in Appendix A. Notably, Ministry staff stated new access connections onto Lakeshore Road that significantly intensify the highway intersection will not be supported. This report addresses this element.

The study has been completed in accordance with the procedures set out in the Ontario Ministry of Transportation (MTO) "Traffic Impact Study Guidelines" and agreed upon Terms of Reference with the Town, County and MTO, with the associated analyses and findings outlined therein.

## **3.0 Existing Conditions**

### **3.1 Development Lands**

The Subject Property is an approximate 26.68 hectares (65.92 acres) undeveloped lot located in Craigleith, The Town of Blue Mountains, County of Grey. The subject property is bounded by Grey Road 19 and existing residents to the west, Lakeshore Road to the north with existing residents in the north east corner, the proposed Eden Oak development to the East, and the proposed Home Farm development and existing residential lots to the south. The Subject Property itself currently contains undeveloped forest and pasture lands.

### **3.2 Study Area**

The study area encompasses the boundary road network surrounding the Subject Property, and is described in Section 3.3.

### **3.3 Boundary Road Network**

With skewed directions, the directional orientation of Lakeshore Road and Highway 26 is ambiguous. To provide clarity throughout this report and in the supporting analysis Lakeshore Road and Highway 26 have been assigned an east-west orientation.

Grey Road 19 is a north-south two-way arterial roadway under the jurisdiction of County of Grey with a posted speed limit of 50 km/h. The roadway consists of one approximate 3.5 metre travel lane per direction and an approximate 2.0 metre wide paved shoulder on both sides of the roadway designated for pedestrian and cyclist traffic.

Highway 26 is an east-west provincial highway under the jurisdiction of the Ontario Ministry of Transportation (MTO) with a posted speed limit of 80 km/h. The roadway consists of one approximate 3.5 metre travel lane per direction and an approximate 3.25 metre wide granular shoulder on both sides of the roadway.

Lakeshore Road is an east-west two-way local road under the jurisdiction of the Town of The Blue Mountains with a posted speed limit of 50 km/h. The roadway consists of one approximate 3.25 metre travel lane per direction.

Craigleith Road is an east-west two-way collector roadway under the jurisdiction of the Town of The Blue Mountains with a posted speed limit of 50 km/h. The roadway consists of one approximate 4.5 metre travel lane per direction and an approximate 2.5 metre asphalt sidewalk on the south side of the roadway.

Fraser Crescent is a north-south two-way local road under the jurisdiction of the Town of The Blue Mountains. There is no posted speed limit and thus, it is assumed to be 50 km/h per municipal regulation. The roadway consists of one approximate 3.25 metre travel lane per direction.

The intersection of Grey Road 19 and Highway 26 is a signalized semi-actuated three-legged intersection. The south approach (Grey Road 19) consists of a right-turn lane and a left-turn lane with approximately 115 metres of effective storage. The west approach (Highway 26) consists of a through lane and an auxiliary right-turn lane with approximately 80 metres of effective storage. The east approach (Highway 26) consists of a through lane and a left-turn lane with approximately 190 metres of effective storage.

The intersection of Highway 26 and Lakeshore Road/Fraser Crescent is a two-way stop-controlled intersection. Each approach consists of a shared left/through/right-turn lane. The intersection is stop-controlled in the northbound and southbound directions and is free flowing in the eastbound and westbound directions (Highway 26).

The intersection of Grey Road 19 and Lakeshore Road is a two-way stop-controlled intersection. The east (Fraser Crescent) approach and west approach (Lakeshore Road) consists of a shared left/through/right-turn lane. The south approach (Grey Road 19) consists of a left turn lane extending to Highway 26 and a through/right-turn lane. The north approach (Grey Road 19) consists of a shared through/left-turn lane. The eastbound and westbound movements are stop controlled while the northbound and southbound movements are free-flowing.

The intersection of Grey Road 19 and Craigleith Road is a stop-controlled three-legged intersection. The west approach (Craigleith Road) consists of a shared left/right-turn lane. The south approach (Grey Road 19) consists of a shared through/left-turn lane. The north approach (Grey Road 19) consists of a shared through/right-turn lane. The eastbound movement is stop controlled while the northbound and southbound movements are free-flowing.

### 3.4 Development Proposal

The Subject Property will consist of 94 townhouses and 119 single-detached houses. The development Concept Plan dated October 20<sup>th</sup>, 2016 proposes two full moves accesses to Lakeshore Road and one full move access to Grey Road 19. The access to Grey Road 19, referred to as Street 1, will form the fourth leg (east approach) of the Grey Road 19 and Craigeleith Road intersection. The westernmost access to Lakeshore Road is referred to as Street 4 and the easternmost access to Lake Shore Road is referred to as Street 6 for the remainder of the report.

### 3.5 Traffic Data

Turning movement counts for the boundary road intersections were undertaken by Ontario Traffic Inc. staff from 6:00 to 10:00 a.m. and from 3:00 to 7:00 p.m. on August 26<sup>th</sup>, 2016. A summer Friday was selected for traffic counts as MTO data for the segment of Highway 26 between Grey Roads 19 & 21 show greater summer average weekday Daily Traffic Volumes (2013: 11,300 vehicles) than Average Annual Daily Traffic Volumes (2013: 9,150 vehicles) or Winter Average Daily Traffic volumes (2013: 7,800). The traffic count data is summarized in Appendix C. Figure 3 illustrates the 2016 existing traffic volumes.

### 3.6 Intersection Operations

The operations of the critical intersections were analyzed on the basis of the traffic volumes illustrated in Figure 3.

**Table 1**  
**2016 Existing Level of Service**

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio
Highway 26 and Grey Road 19	Signal	A.M.	B	12.0 s	0.36 (EBT)
		P.M.	B	13.7 s	0.59 (NBL)
Highway 26 and Lakeshore Road	Stop	A.M.	B	10.5 s	0.02 (NB)
		P.M.	B	12.0 s	0.01 (NB)
Grey Road 19 and Lakeshore Road	Stop	A.M.	A	9.9 s	0.01 (WB)
		P.M.	A	9.9 s	0.01 (WB)
Grey Road 19 and Craigeleith Road	Stop	A.M.	A	9.0 s	0.03 (EB)
		P.M.	A	9.4 s	0.04 (EB)

*Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach; ie., Lakeshore Road and Craigeleith Road*

The signalized intersection of Highway 26 and Grey Road 19 is currently operating at a LOS "B" in both the weekday a.m. and p.m. peak hours. The delays of 12.0 seconds and 13.7 seconds and maximum volume-to-capacity ratios of 0.36 (EBT) and 0.59 (NBL) in the weekday a.m. and p.m. peak hours, respectively,

indicate that the intersection is operating efficiently with minor delays and with reserve capacity to accommodate future increases in volume.

The two-way stop controlled intersection of Highway 26 and Lakeshore Road is currently operating at a LOS "B" in both the weekday a.m. and p.m. peak hours. The delays of 10.5 seconds and 12.0 seconds and maximum volume-to-capacity ratios of 0.02 (NB) and 0.01 (NB) in the a.m. and p.m. peak hours, respectively, indicate that the intersection is operating efficiently with minor delays. This is a result of the low vehicular volumes as the minor road approaches.

The two-way stop controlled intersection of Grey Road 19 and Lakeshore Road is currently operating at a LOS "A" in both the weekday a.m. and p.m. peak hours. The delay of 9.9 seconds and maximum volume-to-capacity ratio of 0.01 (WB) in the a.m. and p.m. peak hours, indicate that the intersection is operating efficiently with minor delays and with reserve capacity to accommodate future increases in traffic volume.

The two-way stop controlled intersection of Grey Road 19 and Craigeith Road is currently operating at a LOS "A" in both the weekday a.m. and p.m. peak hours. The delays of 9.0 seconds and 9.4 seconds and maximum volume-to-capacity ratios of 0.03 (NB) and 0.04 (NB) in the a.m. and p.m. peak hours, respectively, indicate that the intersection is operating efficiently with minor delays and with reserve capacity to accommodate future increases in volume.

The traffic metrics listed above indicate that there are no traffic operational issues at the analyzed intersection under existing conditions.

#### **4.0 Future Background Conditions**

##### **4.1 Horizon Years**

The subject development is anticipated to be fully built out and occupied by 2021; therefore horizon years of 2026 and 2031 are assumed, representing five and ten year horizons, per MTO TIS Guidelines.

##### **4.2 Growth Rate**

Traffic growth rates were calculated based on historical AADT data provided by the Ministry of Transportation at the intersection of Highway 26 and Grey Road 19. Traffic volumes for the years 2006 to 2012 were used to calculate an average annual compounded growth rate of 1.69 percent. For the purpose of conservative analysis, an industry standard two percent growth rate was applied to the traffic volumes at all subject intersections.

##### **4.3 Background Trip Generation**

Two residential developments, the Eden Oak development and the Chaisson development are proposed east of the subject site and will contribute to the future background traffic on the boundary road network, and is thus included in the future background traffic analyses. Eden Oak is a proposed residential development consisting of 217 townhouse units, and the Chaisson proposed development residential will consist of eight single detached units.

Table 2 outlines the trip generation per Institute of Transportation Engineers (ITE) Trip Generation Manual, 8<sup>th</sup> Edition, as described in the original Eden Oak Blue Trails Development Traffic Impact Study (Crozier, 2012).



**Table 2**  
**Future Background Trip Generation: Eden Oak Development**

Use	Units	Roadway Peak Hour	Number of Trips		
			Inbound	Outbound	Total
Single Family Detached (LU 210) (Chaisson Lands)	8	Weekday A.M.	2	4	6
		Weekday P.M.	5	3	8
Residential Condo/Townhouse (LU 230)	217	Weekday A.M.	16	79	95
		Weekday P.M.	76	37	113
Total	225	Weekday A.M.	18	83	101
		Weekday P.M.	81	40	121

*Note: The trip generation above was adopted from the original Eden Oak TIS (Crozier, 2012)*

#### 4.4 Background Trip Distribution

The trips generated by the Eden Oak Blue Trails Development during future background scenarios were distributed on the basis of the trip distribution described in the original Eden Oak Blue Trails Development Traffic Impact Study (Crozier, 2012).

The trips generated by the Eden Oak development were distributed to the boundary roadways based on the location of retail, commercial and recreational destinations. With the Town of Collingwood located to the east of the subject lands, 60 percent of trips were assumed to travel to and from the east along Highway 26. 20 percent of trips were assumed to travel to and from the west along Lakeshore Road for the recreational and leisure destinations associated with the Niagara Escarpment, primarily the Village at Blue. The remaining 20 percent of trips were assumed to travel to and from Thornbury and areas west along Highway 26.

Refer to Figures 4 and 5 for background development trip distribution and trip assignments, respectively.

#### 4.5 Future Roadway Improvements

Per the Eden Oak TIS (Crozier, 2012) a westbound left turn lane at the intersection of Highway 26 and Lakeshore Road is recommended to support the Eden Oak residential development. While the timing is not confirmed at this time, implementation is required at the 45<sup>th</sup> Eden Oak unit. Additionally, we have assumed that this would occur before full buildout of Parkbridge Craigeith. Thus, per email correspondence with Brian Worsley at the Town of The Blue Mountains, included in Appendix A, future background and future total traffic operations for the horizon years 2021, 2026 and 2031 were analyzed with and without a westbound left-turn lane at the intersection of Highway 26 and Lakeshore Road.

#### 4.6 Intersection Operations

Tables 3 through 5 outline the 2021 through 2031 future background traffic levels of service associated with the boundary road network as based on the future background traffic volumes illustrated in Figures 6 through 8, with detailed capacity analyses included in Appendix E.

Analysis of the intersection of Highway 26 and Grey Road 19 through horizon year 2031 was analyzed on the basis of existing signal timings.

**Table 3**  
**2021 Future Background Level of Service**

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio
Highway 26 and Grey Road 19	Signal	A.M.	B	12.3 s	0.4 (EBT)
		P.M.	B	14.6 s	0.65 (NBL)
Highway 26 and Lakeshore Road (Existing Configuration)	Stop	A.M.	B	13.4 s	0.17 (NB)
		P.M.	C	19.2 s	0.15 (NB)
Highway 26 and Lakeshore Road (With WB Left Turn Lane)	Stop	A.M.	B	13.4 s	0.17 (NB)
		P.M.	C	18.9 s	0.14 (NB)
Grey Road 19 and Lakeshore Road	Stop	A.M.	B	10.9 s	0.04 (WB)
		P.M.	B	11.5 s	0.03 (WB)
Grey Road 19 and Craigeith Road	Stop	A.M.	A	9.2 s	0.04 (EB)
		P.M.	A	9.6 s	0.05 (EB)

*Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach; ie., Lakeshore Road and Craigeith Road*

**Table 4**  
**2026 Future Background Level of Service**

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio
Highway 26 and Grey Road 19	Signal	A.M.	B	12.7 s	0.44 (EBT)
		P.M.	B	16.6 s	0.72 (NBL)
Highway 26 and Lakeshore Road (Existing Configuration)	Stop	A.M.	B	14.3 s	0.18 (NB)
		P.M.	C	21.9 s	0.17 (NB)
Highway 26 and Lakeshore Road (With WB Left Turn Lane)	Stop	A.M.	B	14.2 s	0.18 (NB)
		P.M.	C	21.5 s	0.17 (NB)
Grey Road 19 and Lakeshore Road	Stop	A.M.	B	11.1 s	0.05 (WB)
		P.M.	B	11.8 s	0.03 (WB)
Grey Road 19 and Craigeith Road	Stop	A.M.	A	9.3 s	0.04 (EB)
		P.M.	A	9.8 s	0.06 (EB)

*Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach; ie., Lakeshore Road and Craigeith Road*

**Table 5**  
**2031 Future Background Level of Service**

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio
Highway 26 and Grey Road 19	Signal	A.M.	B	13.7 s	0.56 (NBL)
		P.M.	B	17.2 s	0.80 (NBL)
Highway 26 and Lakeshore Road (Existing Configuration)	Stop	A.M.	C	15.4 s	0.20 (NB)
		P.M.	D	25.8 s	0.21 (NB)
Highway 26 and Lakeshore Road (With WB Left Turn Lane)	Stop	A.M.	C	15.4 s	0.20 (NB)
		P.M.	D	25.1 s	0.20 (NB)
Grey Road 19 and Lakeshore Road	Stop	A.M.	B	11.6 s	0.04 (WB)
		P.M.	B	12.2 s	0.04 (WB)
Grey Road 19 and Craigeleith Road	Stop	A.M.	A	9.4 s	0.05 (EB)
		P.M.	A	9.9 s	0.06 (EB)

*Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach; ie., Lakeshore Road and Craigeleith Road*

The intersection of Highway 26 and Grey Road 19 is expected continue operating at a LOS "B" in the weekday a.m. and p.m. peak hours through to the 2031 future background horizon year. The control delay of 13.7 seconds and 17.2 seconds in the a.m. and p.m. peak hours, respectively, represent an increase of 3.5 seconds or less when compared with the 2016 existing traffic conditions. The maximum volume-to-capacity ratio is expected to increase to 0.56 (NBL) and 0.80 (NBL) in the a.m. and p.m. peak hours, respectively representing an increase of 0.21 or less, when compared with 2016 existing traffic conditions. These metrics indicate that the intersection is expected to continue operating efficiently with minimal delays under 2031 future background traffic conditions with reserve capacity to accommodate increases in traffic volume.

The intersection of Highway 26 and Lakeshore Road was analyzed with and without a westbound left-turn lane. In both scenarios the intersection is expected to operate at a LOS "C" and "D" in the weekday a.m. and p.m. peak hours, respectively, through to the 2031 future background horizon year. The left-turn lane is expected to reduce the control delay by 0.7 seconds or less in the weekday p.m. peak hour and have no material impact to the weekday a.m. peak hour delay or maximum volume-to-capacity ratio. This is because the metric for an unsignalised intersection is the delay of the minor road approach. The intersection is expected to operate with delays of 15.4 seconds and 25.1 seconds and maximum volume-to-capacity ratios of 0.20 (NB) and 0.21 (NB) or less in the weekday a.m. and p.m. peak hours, respectively. These metrics indicate that the intersection is expected to continue operating efficiently with minimal delays under 2031 future background traffic conditions with reserve capacity to accommodate increases in traffic

volume.

The intersection of Grey Road 19 and Lakeshore Road is expected to operate at a LOS "B" in the weekday a.m. and p.m. peak hours through the 2031 future background study horizon. The control delay of 11.6 seconds and 12.2 seconds in the a.m. and p.m. peak hour, respectively, represents an increase of 1.7 seconds and 2.3 seconds when compared to the 2016 existing traffic conditions. The maximum volume-to-capacity ratio is expected to increase to 0.04 (WB) in the a.m. and p.m. peak hour representing an increase of 0.03, when compared with 2016 existing traffic conditions. These metrics indicate that the intersection is expected to continue operating efficiently with minimal delays under 2031 future background traffic conditions with reserve capacity to accommodate increases in traffic volume.

The intersection of Grey Road 19 and Craigeleith Road is expected continue operating at a LOS "A" in the weekday a.m. and p.m. peak hours through the 2031 future background study horizon. The control delay of 9.4 seconds and 9.9 seconds in the a.m. and p.m. peak hour, respectively, represents an increase of 0.4 seconds and 0.5 seconds when compared to the 2016 existing traffic conditions. The maximum volume-to-capacity ratio is expected to increase to 0.05 (NBL) and 0.06 (NBL) in the a.m. and p.m. peak hour representing an increase of 0.02 when compared with 2016 existing traffic conditions. These metrics indicate that the intersection is expected to continue operating efficiently with minimal delays under 2031 future background traffic conditions with reserve capacity to accommodate increases in traffic volume.

## 5.0 Site Generated Traffic

### 5.1 Trip Generation

The proposed development will result in additional vehicles on the boundary road network that previously did not exist. The proposed development will also result in additional turning movements at the boundary road intersections. Parkbridge Lifestyle Communities Inc. (Parkbridge) is Canada's leading owner, operator and developer of residential land lease communities, recreational resorts and marinas. This proposed development will provide recreational homes for families and retirees. As such, the development was analyzed using the average rates found in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 8<sup>th</sup> Edition, under Land Use Category 260 "Recreational Homes". Per the Concept Plan (Figure 2) dated October 20<sup>th</sup>, 2016 the Subject Property is comprised of 213 units. This is consistent with area demographics as a material properties of residents in the area are seasonal or part time.

Per the ITE Trip Generation Manual, the proposed residential development is forecasted to generate a total of 34 and 56 trips during the weekday a.m. and p.m. peak periods, respectively for the subject property.

The forecasted trips are tabulated in Table 6.

**Table 6**  
**Trip Generation**

Subject Property Use	Roadway Peak Hour	Number of Trips		
		Inbound	Outbound	Total
Recreational Homes (Cat 260)	Weekday A.M.	23	11	34
	Weekday P.M.	23	33	56

## 5.2 Trip Distribution and Assignment

The trips generated by the development were distributed to the boundary roadways based on the trip distribution described for the traffic generated by the Eden Oak development, outlined in Section 4.5. The distribution is based on the location of retail, commercial and recreational destinations. With the Town of Collingwood located to the east of the subject lands, 60 percent of trips were assumed to travel to and from the east, 20 percent of trips were assumed to travel to and from the west towards Thurnbury, and the remaining 20 percent as assumed to travel to and from the south for the recreational and leisure destinations associated with the Niagara Escarpment, primarily the Village at Blue Mountain. Below is a breakdown of the roadways used to travel in each direction.

- 50% to/from east via Highway 26
- 10% to/from east via Grey Road 19/Mountain Road
- 15% to/from west via Highway 26
- 20% to/from south via Grey Road 19
- 5% to/from west via Grey Road 19/Highway 26

The trips generated by the proposed development were assigned to the boundary road network as per the distribution illustrated in Figure 9. The trip assignment is illustrated in Figure 10.

## 6.0 Total Future Conditions

### 6.1 Basis of Assessment

The traffic impacts arising from the proposed development were assessed on the basis of the site generated traffic illustrated in Figure 10 being superimposed on the future background traffic volumes in Figures 6 through 8. The resulting total traffic volumes for the weekday a.m. and p.m. peak hours are illustrated in Figures 11 through 13 for the 2021 through 2031 horizon years.

The two site accesses on Lakeshore Road were not analyzed since the low traffic volumes on Lakeshore Road, Street 4 and Street 6 are not typically associated with traffic operational issues.

### 6.2 Auxiliary Lane Assessment

Left turn and right turn lane warrants were not undertaken at the site entrance to Grey Road 19. This was because of the low volumes forecast to enter at this location (max seven northbound right turn vehicles and one southbound left turn vehicle). Similarly, auxiliary lane assessments were not undertaken at the Lakeshore Road enhances due to the low vehicle volumes (max 90 vehicles in all directions).

### 6.3 Intersection Operations

Tables 7 through 9 outline the 2021 through 2031 future total traffic conditions associated with the boundary road network, with detailed capacity analyses included in Appendix F

Analysis of the intersection of Highway 26 and Grey Road 19 through horizon year 2031 was analyzed on the basis of existing signal timings.

**Table 7**  
**2021 Future Total Level of Service**

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio
Highway 26 and Grey Road 19	Signal	A.M.	B	12.4 s	0.40 (EBT)
		P.M.	B	14.8 s	0.67 (NBL)
Highway 26 and Lakeshore Road (Existing Configuration)	Stop	A.M.	B	13.6 s	0.18 (NB)
		P.M.	C	18.5 s	0.19 (NB)
Highway 26 and Lakeshore Road (With WB Left Turn Lane)	Stop	A.M.	B	13.5 s	0.18 (NB)
		P.M.	C	18.2 s	0.19 (NB)
Grey Road 19 and Lakeshore Road	Stop	A.M.	B	10.9 s	0.04 (WB)
		P.M.	B	11.3 s	0.04 (WB)
Grey Road 19 and Craigleith Road/Street 1	Stop	A.M.	B	10.7 s	0.04 (EB)
		P.M.	B	13.2 s	0.05 (EB)

*Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach; ie., Lakeshore Road and Craigleith Road*

**Table 8**  
**2026 Future Total Level of Service**

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio
Highway 26 and Grey Road 19	Signal	A.M.	B	12.8 s	0.44 (EBT)
		P.M.	B	16.9 s	0.74 (NBL)
Highway 26 and Lakeshore Road (Existing Configuration)	Stop	A.M.	B	14.5 s	0.19 (NB)
		P.M.	C	21.0 s	0.22 (NB)
Highway 26 and Lakeshore Road (With WB Left Turn Lane)	Stop	A.M.	B	14.5 s	0.19 (NB)
		P.M.	C	20.6 s	0.22 (NB)
Grey Road 19 and Lakeshore Road	Stop	A.M.	B	11.2 s	0.05 (WB)
		P.M.	B	11.6 s	0.04 (WB)
Grey Road 19 and Craigeith Road	Stop	A.M.	B	11.0 s	0.04 (EB)
		P.M.	B	14.0 s	0.06 (EB)

*Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach; ie., Lakeshore Road and Craigeith Road*



**Table 9**  
**2031 Future Total Level of Service**

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio
Highway 26 and Grey Road 19	Signal	A.M.	B	13.8 s	0.58 (NBL)
		P.M.	B	17.5 s	0.82 (NBL)
Highway 26 and Lakeshore Road (Existing Configuration)	Stop	A.M.	C	15.6 s	0.22 (NB)
		P.M.	C	24.8 s	0.26 (NB)
Highway 26 and Lakeshore Road (With WB Left Turn Lane)	Stop	A.M.	C	15.6 s	0.21 (NB)
		P.M.	C	24.1 s	0.25 (NB)
Grey Road 19 and Lakeshore Road	Stop	A.M.	B	11.5 s	0.05 (WB)
		P.M.	B	12.0 s	0.04 (WB)
Grey Road 19 and Craigeith Road	Stop	A.M.	B	11.3 s	0.05 (EB)
		P.M.	B	14.9 s	0.06 (EB)

*Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. The Level of Service of a stop-controlled intersection is based on the delay associated with the critical minor road approach; ie., Lakeshore Road and Craigeith Road*

The intersection of Highway 26 and Grey Road 19 is expected continue operating at a LOS "B" in the weekday a.m. and p.m. peak hours through to the 2031 future total horizon year. The control delay of 13.8 seconds and 17.5 seconds and maximum volume-to-capacity ratios 0.58 (NBL) and 0.82 (NBL) in the a.m. and p.m. peak hours, respectively indicate that the intersection is expected to operate efficiently with minor increases to control delay given the addition of the site generated traffic.

The intersection of Highway 26 and Lakeshore Road was analyzed with and without a westbound left-turn lane. In both scenarios the intersection is expected to operate at a LOS "C" in the weekday a.m. and p.m. peak hour through to the 2031 future total horizon year. The left-turn lane is expected to reduce the control delay by 0.7 seconds or less in the weekday p.m. peak hour and have no material impact to the weekday a.m. peak hour delay or maximum volume-to-capacity ratio. The intersection is expected to operate with delays of 15.6 seconds and 24.1 seconds and maximum volume-to-capacity ratios of 0.22 (NB) and 0.25 (NB) in the weekday a.m. and p.m. peak hours, respectively. These metrics indicate that the intersection is expected to operate efficiently with minor increases to control delay given the addition of the site generated traffic.

It is highlighted that the traffic metrics for Highway 26 and Lakeshore Road intersection will remain vertically unchanged in the a.m. peak hour and improve by one second in the p.m. peak hour, as compared to Future Background operations. This is a result of site generated traffic volumes being added to the low delay northbound right turn movement, thereby improving average delay at the intersection.

The intersection of Grey Road 19 and Lakeshore Road is expected to continue operating at a LOS "B" in the weekday a.m. and p.m. peak hours through the 2031 future total study horizon. The control delay of 11.5 seconds and 12.0 seconds and maximum volume-to-capacity ratios of 0.05 (WB) and 0.04 (WB) in the a.m. and p.m. peak hours, respectively indicate that the intersection is expected to operate efficiently with minor increases to control delay given the addition of the site generated traffic.

The intersection of Grey Road 19 and Craigeith Road is expected to operate at a LOS "B" in the weekday a.m. and p.m. peak hours through the 2031 future total study horizon. The control delay of 11.3 seconds and 14.9 seconds in the a.m. and p.m. peak hour, respectively, represents an increase of 0.4 seconds and 0.5 seconds and maximum volume-to-capacity ratios of 0.05 (NBL) and 0.06 (NBL) in the a.m. and p.m. peak hour, respectively indicate that the intersection is expected to operate efficiently with minor increases to control delay given the addition of the site generated traffic.

#### 6.4 Lakeshore Road Entrance Feasibility

The feasibility of entrances to Lakeshore Road was assessed based on the MTO comment that significant intensification to the Highway 26/Lakeshore Road intersection would not be supported.

Per section 6.3, the average delay to vehicles entering Highway 26 from Lakeshore will not materially change with the addition of site generated traffic. Thus, entrances to Lakeshore Road are feasible from this perspective.

Further investigation of delay to Highway 26 through vehicles was undertaken to determine if site generated traffic would materially affect Highway 26 traffic flow.

No site generated eastbound right turns are forecast, thus there will be no impact to eastbound Highway 26 traffic flow. During the critical p.m. peak hour, 12 site generated vehicles will be added to the westbound left turn movement. When compared to the future background traffic conditions, no impact will result to the Highway 26 westbound traffic flow due to the future turn lane, and the control delay for the westbound, left turn movement will remain unchanged at 9.4 seconds in the 2031 horizon year.

Accordingly, it is concluded that the provision of site entrances to Lakeshore Road will not have a material impact to the Highway 26 and Lakeshore Road intersection and are therefore supportable.

## 7.0 Conclusions

Intersection analysis of the 2016 existing traffic volumes determined that the roadway system operates at a Level of Service "B" or better during the weekday a.m. and p.m. peak hours.

The Eden Oak residential development is located to the east of the Subject Property. Accordingly, trips generated by this development were distributed to the boundary road network per the original Traffic Impact Study (Crozier, 2012) and included in the future background traffic analyses. Additionally, Eden Oak (Trailshead) Inc. is committed to constructing a dedicated westbound left-turn lane at the intersection of Highway 26 and Lakeshore Road. Accordingly, traffic operations were analyzed with and without the westbound left-turn lane.

Intersection analyses of the 2031 future background traffic volumes indicate that the Highway 26 and Grey Road 19 intersection is anticipated to continue operating at a LOS "B" in the weekday a.m. and p.m. peak

hours. The intersection of Highway 26 and Lakeshore Road is expected to operate at a LOS "C" and "D" during the weekday a.m. and p.m. peak hours, respectively. The intersection of Grey Road 19 and Lakeshore Road is anticipated to operate at a LOS "B" in the weekday a.m. and p.m. peak hours. The intersection of Grey Road 19 and Craigeith Road is anticipated to continue operating at a LOS "A" in the weekday a.m. and p.m. peak hours.

The proposed development is expected to add 34 and 56 primary trips to the boundary road network in the weekday a.m. and p.m. peak hours respectively.

2031 total traffic operations were compared with the future background traffic operations. Intersection analyses of the 2031 total traffic volumes indicate that the Highway 26 and Grey Road 19 intersection is anticipated to continue operating at a LOS "B" in the weekday a.m. and p.m. peak hours. The intersection of Highway 26 and Lakeshore Road is expected to operate at a LOS "C" during the weekday a.m. and p.m. peak hours. The intersection of Grey Road 19 and Lakeshore Road is anticipated to continue operating at a LOS "B" in the weekday a.m. and p.m. peak hours. The intersection of Grey Road 19 and Craigeith Road is anticipated to continue operating at a LOS "A" in the weekday a.m. and p.m. peak hours.

The addition of site generated traffic will not materially affect the operations of the Highway 26 and Lakeshore Road intersection, thus site entrances to Lakeshore Road are supportable.

The analysis undertaken within was prepared using Concept Plan dated October 20<sup>th</sup>, 2016. Any minor changes to the Plan will not materially affect the conclusions contained within this report.

The proposed development can be supported from a traffic operations perspective.

Prepared by,

**C.F. CROZIER & ASSOCIATES INC.**

*Alexander J. W. Fleming*  
Alexander J. W. Fleming, MBA, P.Eng.  
Associate

/MF



**C.F. CROZIER & ASSOCIATES INC.**

*M. Ferguson*

Madeleine Ferguson, B.Eng.Soc, E.I.T

J:\1000\1046-Parkbridge Lifestyle\4031-Craigeith Fogal Land Acq\Traffic\2016.12.02 - Parkbridge TIS

# APPENDIX A

## Correspondence

## Madeleine Ferguson

---

**From:** Katzirz, Zsolt (MTO) <Zsolt.Katzirz@ontario.ca>  
**Sent:** Tuesday, December 13, 2016 9:16 AM  
**To:** Madeleine Ferguson  
**Subject:** RE: Craigleith Residential Development - TIS Terms of Reference  
**Attachments:** Craigleith Residential Development - Aerial Photo.pdf

Madeline,

MTO is not supportive of any further intensification on the Highway 26 intersection with Lakeshore Road, therefore MTO will not be supportive of any new access connections onto Lakeshore Road that significantly intensify the highway intersection. Please revise site access. I have attached our current TIS guideline.

Feel free to contact me for further information or discussion.

Regards,

Zsolt Katzirz | Corridor Management Planner (A)  
Highway Corridor Management | West Region | Engineering Office  
Provincial Highways Management | Ministry of Transportation  
1st Floor | 659 Exeter Road | London, ON, N6E 1L3  
Telephone: 519-873-4598 | Toll Free: 1-800-265-6072 Ext. 4598  
Fax: (519) 873-4228 | E-mail: [zsolt.katzirz@ontario.ca](mailto:zsolt.katzirz@ontario.ca)  
*Please consider the environment before printing this email*



Highway  
Corridor  
Management

Public Website: <http://www.mto.gov.on.ca/english/engineering/management/corridor/index.shtml>

---

**From:** Secord, David (MTO)  
**Sent:** October-28-16 12:12 PM  
**To:** [mferguson@cfcrozier.ca](mailto:mferguson@cfcrozier.ca)  
**Cc:** Katzirz, Zsolt (MTO)  
**Subject:** FW: Craigleith Residential Development - TIS Terms of Reference

Madeleine

There is a scheduled meeting with the municipality and associated stakeholders November 2, 2016, pertaining to the subject area. It would be advantageous to hold off on direction for the terms of reference for the TIS until post meeting. There is a larger scaled transportation study/EA pending for this area of Hwy 26 thus the details of such are relevant to discussion in advance of the individual TIS. A resultant Highway Access Management Plan may be warranted.

Zsolt Katzirz is the MTO Corridor Management Planner assigned to this file.

Zsolt and I look forward to representing MTO and working with you on this project.

Regards,

Dave

*David Secord*

Senior Project Manager  
Corridor Management Section, West Region  
Ministry of Transportation  
659 Exeter Road

London Ontario N6E 1L3  
519-873-4596  
[David.Secord@ontario.ca](mailto:David.Secord@ontario.ca)

---

**From:** Madeleine Ferguson [<mailto:mferguson@cfcrozier.ca>]  
**Sent:** October-28-16 11:36 AM  
**To:** Brian Worsley; Patrick Hoy; Secord, David (MTO)  
**Cc:** Jon Proctor; Alex Fleming  
**Subject:** Craigeith Residential Development - TIS Terms of Reference

Good morning all,

As a follow up to the voicemail messages I left earlier, I wanted to provide you with our proposed Terms of Reference for the Traffic Impact Study for a residential development in Craigeith, Town of Blue Mountain in the County of Grey. The proposed residential development includes 94 townhouses and 119 single family detached houses. The attached aerial photo illustrates the site location, as well as the location of the proposed site accesses.

We understand that the Traffic Impact Study must conform to the Ontario Ministry of Transportation Standards, and we will therefore follow requirements outlined in the Ministry of Transportation "Traffic Impact Study Guidelines".

With this in mind, we propose the following Terms of Reference for the study:

1. The study of the intersections of Grey County Road 19 and Craigeith Road, Grey County Road 19 and Lakeshore Drive East, Highway 26 and Grey County Road 19, and Highway 26 and Lakeshore Drive East/Fraser Crescent is assumed to be sufficient to determine the traffic effects of the proposed development on the surrounding road network;
2. Traffic counts were taken on Friday, August 26<sup>th</sup>, 2016 in order to capture the summer peak traffic volumes. The Friday a.m. and p.m. peak hours will be analyzed and accordingly, traffic counts were undertaken between 6:00-10:00 a.m. and 3:00-7:00 p.m.;
3. The study horizons comprise of the full buildout year, assumed as 2021, as well as five (2026) and ten (2031) years beyond;
4. Future traffic volumes will be calculated based on growth rates calculated using historical AADT data on Highway 26 and applied to all intersections. Additionally, trips generated from other planned developments in the area will be considered in the future background traffic volume calculations;
5. Trip distribution will be based on the existing travel patterns observed in the traffic counts;
6. It is our understanding that a left-turn lane is planned to be constructed at the intersection of Highway 26 and Lakeshore Road/Fraser Crescent so this will be taken into account in our future traffic analyses; and,
7. The Transportation Impact Study will also examine other typical elements, such as sight distance at the development entrances and other elements detailed in the guidelines.

We appreciate any feedback you may have on this approach to the TIS, and kindly request signal timing data for the intersection of Grey County Road 19 and Highway 26 if available.

Thank you and Best Regards,

Madeleine

| **MADELEINE FERGUSON** E.I.T. | C.F. CROZIER & ASSOCIATES

| 40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3

| [cfcrozier.ca](http://cfcrozier.ca) | [mferguson@cfcrozier.ca](mailto:mferguson@cfcrozier.ca) | tel 705 446 3510



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## Madeleine Ferguson

---

**From:** Brian Worsley <bworsley@thebluemountains.ca>  
**Sent:** Friday, December 02, 2016 11:02 AM  
**To:** Madeleine Ferguson  
**Subject:** RE: Craigeith Residential Development - TIS Terms of Reference

Madeline, sorry for the delayed response, I can't claim to be have any great depth of knowledge on traffic, so suggest a conservative approach to avoid (or at least mitigate) the possibility for last minute comments requiring extra work.

But

1. Ok;
2. I suspect a summer Friday may not be the peak condition, one day may not be enough, and a winter weekend may have more traffic;
3. Ok;
4. Traffic growth on 26, may not reflect that on 19, the County should have some data;
5. Ok;
6. The left turn lane may be constructed, but the analysis should consider with and without.
7. Ok;
8. please contact the County for the 19 Hwy # 26 light timing; if you don't have a contact, let me know.

Thanks

Brian

---

**From:** Madeleine Ferguson [mailto:mferguson@cfcrozier.ca]  
**Sent:** November 30, 2016 11:34 AM  
**To:** Brian Worsley <bworsley@thebluemountains.ca>  
**Subject:** RE: Craigeith Residential Development - TIS Terms of Reference

Hi Brian,

I just wanted to follow up with you regarding our proposed terms of reference for this file. The County of Grey is satisfied with the terms and we would like to receive approval from the Town so we can continue with our work on this project.

Please let me know if you have any questions and I would be happy to discuss further.

Thanks in advance,

| **MADELEINE FERGUSON** E.I.T. | C.F. CROZIER & ASSOCIATES

| 40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3

| [cfcrozier.ca](http://cfcrozier.ca) | [mferguson@cfcrozier.ca](mailto:mferguson@cfcrozier.ca) | tel 705 446 3510



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**From:** Madeleine Ferguson

**Sent:** Friday, October 28, 2016 11:34 AM

**To:** Brian Worsley <[bworsley@thebluemountains.ca](mailto:bworsley@thebluemountains.ca)>; Patrick Hoy <[Pat.hoy@grey.ca](mailto:Pat.hoy@grey.ca)>; David Secord <[David.Secord@ontario.ca](mailto:David.Secord@ontario.ca)>

**Cc:** Jon Proctor <[jproctor@cfcrozier.ca](mailto:jproctor@cfcrozier.ca)>; Alex Fleming <[afleming@cfcrozier.ca](mailto:afleming@cfcrozier.ca)>

**Subject:** Craigeith Residential Development - TIS Terms of Reference

Good morning all,

As a follow up to the voicemail messages I left earlier, I wanted to provide you with our proposed Terms of Reference for the Traffic Impact Study for a residential development in Craigeith, Town of Blue Mountain in the County of Grey. The proposed residential development includes 94 townhouses and 119 single family detached houses. The attached aerial photo illustrates the site location, as well as the location of the proposed site accesses.

We understand that the Traffic Impact Study must conform to the Ontario Ministry of Transportation Standards, and we will therefore follow requirements outlined in the Ministry of Transportation "Traffic Impact Study Guidelines".

With this in mind, we propose the following Terms of Reference for the study:

1. The study of the intersections of Grey County Road 19 and Craigeith Road, Grey County Road 19 and Lakeshore Drive East, Highway 26 and Grey County Road 19, and Highway 26 and Lakeshore Drive East/Fraser Crescent is assumed to be sufficient to determine the traffic effects of the proposed development on the surrounding road network;
2. Traffic counts were taken on Friday, August 26<sup>th</sup>, 2016 in order to capture the summer peak traffic volumes. The Friday a.m. and p.m. peak hours will be analyzed and accordingly, traffic counts were undertaken between 6:00-10:00 a.m. and 3:00-7:00 p.m.;
3. The study horizons comprise of the full buildout year, assumed as 2021, as well as five (2026) and ten (2031) years beyond;
4. Future traffic volumes will be calculated based on growth rates calculated using historical AADT data on Highway 26 and applied to all intersections. Additionally, trips generated from other planned developments in the area will be considered in the future background traffic volume calculations;
5. Trip distribution will be based on the existing travel patterns observed in the traffic counts;
6. It is our understanding that a left-turn lane is planned to be constructed at the intersection of Highway 26 and Lakeshore Road/Fraser Crescent so this will be taken into account in our future traffic analyses; and,
7. The Transportation Impact Study will also examine other typical elements, such as sight distance at the development entrances and other elements detailed in the guidelines.

We appreciate any feedback you may have on this approach to the TIS, and kindly request signal timing data for the intersection of Grey County Road 19 and Highway 26 if available.

Thank you and Best Regards,

Madeleine

| **MADELEINE FERGUSON** E.I.T. | C.F. CROZIER & ASSOCIATES

| 40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3

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## Madeleine Ferguson

---

**From:** Marck, Matt <Matt.Marck@grey.ca>  
**Sent:** Monday, October 31, 2016 11:43 AM  
**To:** Madeleine Ferguson  
**Subject:** RE: Craigleith Residential Development - TIS Terms of Reference

Hi Madeleine,

The TIS terms of reference for the proposed development seem appropriate. The signals at Hwy. 26 and Grey Road 19 are with MTO.

Regards,

**Matt Marck**  
*Engineering Manager*  
Phone: +1 519-376-2205



---

**From:** Madeleine Ferguson [<mailto:mferguson@cfcrozier.ca>]  
**Sent:** October-28-16 1:41 PM  
**To:** Hoy, Pat  
**Subject:** RE: Craigleith Residential Development - TIS Terms of Reference

Thanks Pat,

| **MADELEINE FERGUSON** E.I.T. | C.F. CROZIER & ASSOCIATES  
| 40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3  
| [cfcrozier.ca](http://cfcrozier.ca) | [mferguson@cfcrozier.ca](mailto:mferguson@cfcrozier.ca) | tel 705 446 3510



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**From:** Hoy, Pat [<mailto:Pat.Hoy@grey.ca>]  
**Sent:** Friday, October 28, 2016 12:40 PM  
**To:** Madeleine Ferguson <[mferguson@cfcrozier.ca](mailto:mferguson@cfcrozier.ca)>; Brian Worsley <[bworsley@thebluemountains.ca](mailto:bworsley@thebluemountains.ca)>; David Secord <[David.Secord@ontario.ca](mailto:David.Secord@ontario.ca)>

**Cc:** Jon Proctor <jproctor@cfcrozier.ca>; Alex Fleming <afleming@cfcrozier.ca>  
**Subject:** RE: Craigeith Residential Development - TIS Terms of Reference

Thanks, I've forwarded this on to Matt Marck (Engineering Manager) in our office.

**Pat Hoy**

*Director of Transportation Services*  
Phone: +1 519-372-0219 ext. 1391



---

**From:** Madeleine Ferguson [mailto:mferguson@cfcrozier.ca]  
**Sent:** October-28-16 11:36 AM  
**To:** Brian Worsley; Hoy, Pat; David Secord  
**Cc:** Jon Proctor; Alex Fleming  
**Subject:** Craigeith Residential Development - TIS Terms of Reference

Good morning all,

As a follow up to the voicemail messages I left earlier, I wanted to provide you with our proposed Terms of Reference for the Traffic Impact Study for a residential development in Craigeith, Town of Blue Mountain in the County of Grey. The proposed residential development includes 94 townhouses and 119 single family detached houses. The attached aerial photo illustrates the site location, as well as the location of the proposed site accesses.

We understand that the Traffic Impact Study must conform to the Ontario Ministry of Transportation Standards, and we will therefore follow requirements outlined in the Ministry of Transportation "Traffic Impact Study Guidelines".

With this in mind, we propose the following Terms of Reference for the study:

1. The study of the intersections of Grey County Road 19 and Craigeith Road, Grey County Road 19 and Lakeshore Drive East, Highway 26 and Grey County Road 19, and Highway 26 and Lakeshore Drive East/Fraser Crescent is assumed to be sufficient to determine the traffic effects of the proposed development on the surrounding road network;
2. Traffic counts were taken on Friday, August 26<sup>th</sup>, 2016 in order to capture the summer peak traffic volumes. The Friday a.m. and p.m. peak hours will be analyzed and accordingly, traffic counts were undertaken between 6:00-10:00 a.m. and 3:00-7:00 p.m.;
3. The study horizons comprise of the full buildout year, assumed as 2021, as well as five (2026) and ten (2031) years beyond;
4. Future traffic volumes will be calculated based on growth rates calculated using historical AADT data on Highway 26 and applied to all intersections. Additionally, trips generated from other planned developments in the area will be considered in the future background traffic volume calculations;
5. Trip distribution will be based on the existing travel patterns observed in the traffic counts;
6. It is our understanding that a left-turn lane is planned to be constructed at the intersection of Highway 26 and Lakeshore Road/Fraser Crescent so this will be taken into account in our future traffic analyses; and,

7. The Transportation Impact Study will also examine other typical elements, such as sight distance at the development entrances and other elements detailed in the guidelines.

We appreciate any feedback you may have on this approach to the TIS, and kindly request signal timing data for the intersection of Grey County Road 19 and Highway 26 if available.

Thank you and Best Regards,

Madeleine

| **MADELEINE FERGUSON** E.I.T. | C.F. CROZIER & ASSOCIATES

| 40 Huron Street, Suite 301 | Collingwood, ON L9Y 4R3

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# APPENDIX B

## Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	$\leq 10$	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	$> 10$ and $\leq 15$	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	$> 15$ and $\leq 25$	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	$> 25$ and $\leq 35$	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	$> 35$ and $\leq 50$	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	$> 50$	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

## Level of Service Definitions

### Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	$\leq 10$	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	$> 10$ and $\leq 20$	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	$> 20$ and $\leq 35$	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	$> 35$ and $\leq 55$	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	$> 55$ and $\leq 80$	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	$> 80$	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board



# APPENDIX C

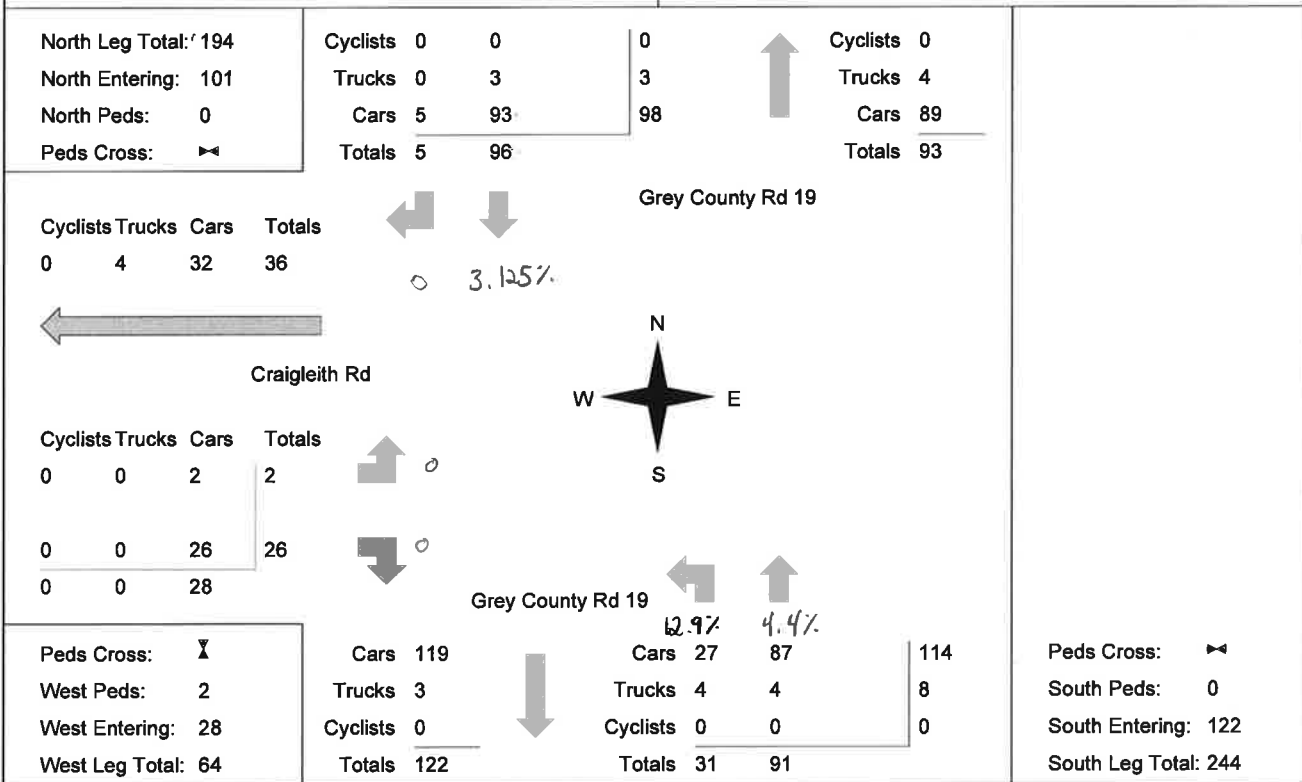
## Turning Movement Counts

# Ontario Traffic Inc.

<b>Morning Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 6:00:00 <b>To:</b> 10:00:00	<b>One Hour Peak</b> <b>From:</b> 8:45:00 <b>To:</b> 9:45:00
-----------------------------	--	--

<b>Municipality:</b> Craigeith <b>Site #:</b> 1625100001 <b>Intersection:</b> Grey County Rd 19 & Craigeith Rd <b>TFR File #:</b> 1 <b>Count date:</b> 26-Aug-16	<b>Weather conditions:</b>  <b>Person(s) who counted:</b>
--	---

**\*\* Non-Signalized Intersection \*\***      **Major Road:** Grey County Rd 19 runs N/S



## Comments

# Ontario Traffic Inc.

## Afternoon Peak Diagram

### Specified Period

From: 15:00:00

To: 19:00:00

### One Hour Peak

From: 15:30:00

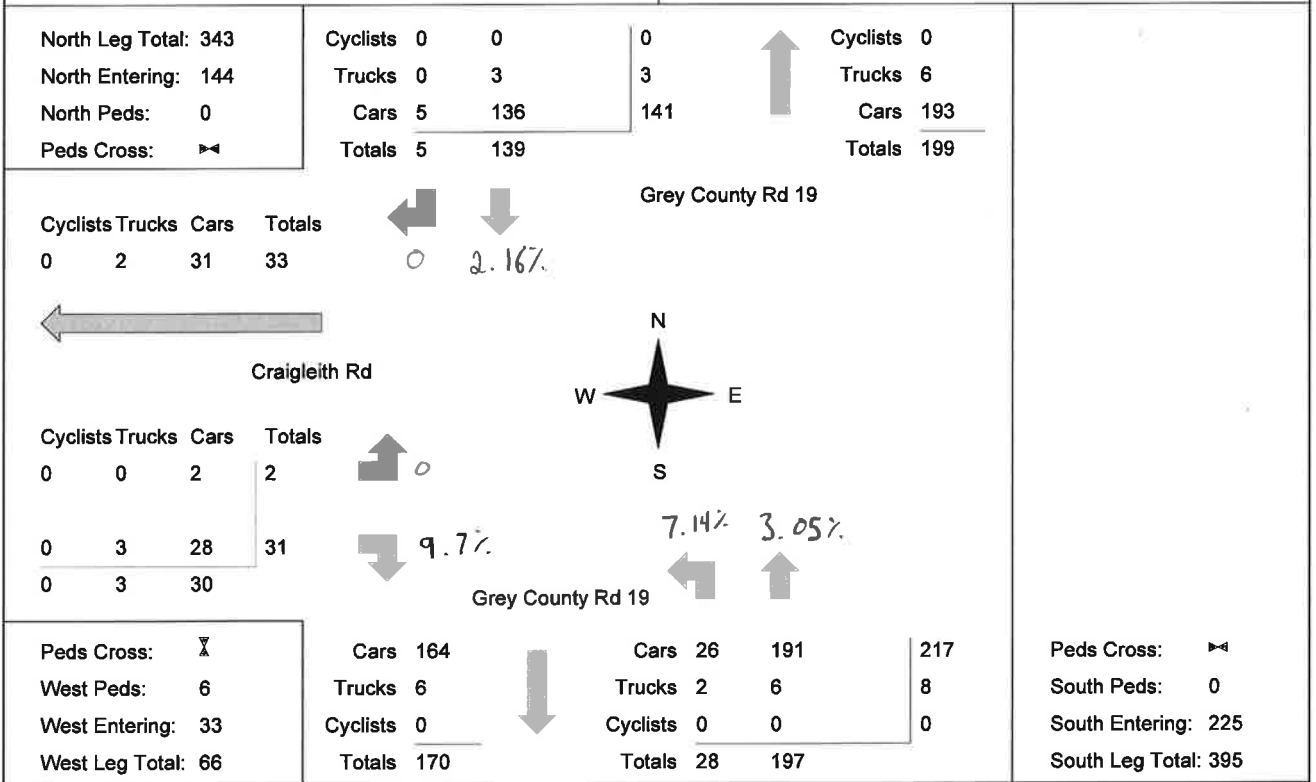
To: 16:30:00

**Municipality:** Craigleith  
**Site #:** 1625100001  
**Intersection:** Grey County Rd 19 & Craigleith Rd  
**TFR File #:** 1  
**Count date:** 26-Aug-16

**Weather conditions:**  
**Person(s) who counted:**

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

**Major Road:** Grey County Rd 19 runs N/S



## Comments

# Ontario Traffic Inc.

## Total Count Diagram

**Municipality:** Craigeith  
**Site #:** 1625100001  
**Intersection:** Grey County Rd 19 & Craigeith Rd  
**TFR File #:** 1  
**Count date:** 26-Aug-16

**Weather conditions:**  
**Person(s) who counted:**

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

**Major Road:** Grey County Rd 19 runs N/S

North Leg Total: 1641  
 North Entering: 809  
 North Peds: 0  
 Peds Cross: ▶

Cyclists	0	0	0
Trucks	0	19	19
Cars	40	750	790
<b>Totals</b>	<b>40</b>	<b>769</b>	

Cyclists	0
Trucks	29
Cars	803
<b>Totals</b>	<b>832</b>

Cyclists	Trucks	Cars	Totals
0	12	201	213

Cyclists	Trucks	Cars	Totals
0	0	24	24
0	13	135	148
0	13	159	

Peds Cross: ⚡  
 West Peds: 13  
 West Entering: 172  
 West Leg Total: 385

Cars	885
Trucks	32
Cyclists	0
<b>Totals</b>	<b>917</b>



Cars	161	779	940
Trucks	12	29	41
Cyclists	0	0	0
<b>Totals</b>	<b>173</b>	<b>808</b>	

Peds Cross: ▶  
 South Peds: 0  
 South Entering: 981  
 South Leg Total: 1898

### Comments

# Ontario Traffic Inc. Traffic Count Summary

Intersection: Grey County Rd 19 & Craigleith Rd      Count Date: 26-Aug-16      Municipality: Craigleith

North Approach Totals						South Approach Totals						
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	North/South Total Approaches	Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	0	23	0	23	0	39	7:00:00	4	12	0	16	0
8:00:00	0	52	1	53	0	119	8:00:00	16	50	0	66	0
9:00:00	0	97	5	102	0	197	9:00:00	24	71	0	95	0
10:00:00	0	94	6	100	0	221	10:00:00	29	92	0	121	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	0	135	9	144	0	348	16:00:00	30	174	0	204	0
17:00:00	0	137	4	141	0	327	17:00:00	24	162	0	186	0
18:00:00	0	137	7	144	0	320	18:00:00	22	154	0	176	0
19:00:00	0	94	8	102	0	218	19:00:00	24	92	0	116	0
<b>Totals:</b>	0	769	40	809	0	1789		173	807	0	980	0
East Approach Totals						West Approach Totals						
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds	East/West Total Approaches	Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	0	0	0	0	0	3	7:00:00	1	0	2	3	0
8:00:00	0	0	0	0	0	15	8:00:00	2	0	13	15	2
9:00:00	0	0	0	0	0	23	9:00:00	4	0	19	23	2
10:00:00	0	0	0	0	0	26	10:00:00	2	0	24	26	2
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0	34	16:00:00	2	0	32	34	0
17:00:00	0	0	0	0	0	26	17:00:00	4	0	22	26	6
18:00:00	0	0	0	0	0	27	18:00:00	5	0	22	27	1
19:00:00	0	0	0	0	0	18	19:00:00	4	0	14	18	0
<b>Totals:</b>	0	0	0	0	0	172		24	0	148	172	13
<b>Calculated Values for Traffic Crossing Major Street</b>												
Hours Ending:	7:00	8:00	9:00	10:00		16:00	17:00	18:00	19:00			
Crossing Values:	1	2	4	2		2	4	5	4			











# Ontario Traffic Inc.

## Morning Peak Diagram

### Specified Period

**From:** 6:00:00  
**To:** 10:00:00

### One Hour Peak

**From:** 8:30:00  
**To:** 9:30:00

**Municipality:** Craigeleith  
**Site #:** 1625100002  
**Intersection:** Grey County Rd 19 & Lakeshore Dr  
**TFR File #:** 2  
**Count date:** 26-Aug-16

**Weather conditions:**  
**Person(s) who counted:**

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

**Major Road:** Grey County Rd 19 runs N/S

North Leg Total: 239 North Entering: 117 North Peds: 0 Peds Cross: $\swarrow$	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Cyclists</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>7</td><td>1</td><td>8</td></tr> <tr><td>Cars</td><td>0</td><td>105</td><td>4</td><td>109</td></tr> <tr><td><b>Totals</b></td><td><b>0</b></td><td><b>112</b></td><td><b>5</b></td><td></td></tr> </table>	Cyclists	0	0	0	0	Trucks	0	7	1	8	Cars	0	105	4	109	<b>Totals</b>	<b>0</b>	<b>112</b>	<b>5</b>			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Cyclists</td><td>0</td></tr> <tr><td>Trucks</td><td>6</td></tr> <tr><td>Cars</td><td>116</td></tr> <tr><td><b>Totals</b></td><td><b>122</b></td></tr> </table>	Cyclists	0	Trucks	6	Cars	116	<b>Totals</b>	<b>122</b>	East Leg Total: 15 East Entering: 7 East Peds: 5 Peds Cross: $\swarrow$																												
Cyclists	0	0	0	0																																																								
Trucks	0	7	1	8																																																								
Cars	0	105	4	109																																																								
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<div style="display: flex; justify-content: space-between; align-items: center;"> <table border="1" style="border-collapse: collapse;"> <thead> <tr><th>Cyclists</th><th>Trucks</th><th>Cars</th><th>Totals</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> </tbody> </table> <div style="text-align: center;"> <p>Grey County Rd 19</p> <p>← 6.25%    ↓ 20%    → 25%</p> <p>← 33%</p> </div> <table border="1" style="border-collapse: collapse;"> <thead> <tr><th>Cars</th><th>Trucks</th><th>Cyclists</th><th>Totals</th></tr> </thead> <tbody> <tr><td>3</td><td>1</td><td>0</td><td>4</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>2</td><td>1</td><td>0</td><td>3</td></tr> <tr><td>5</td><td>2</td><td>0</td><td>8</td></tr> </tbody> </table> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <table border="1" style="border-collapse: collapse;"> <thead> <tr><th>Cyclists</th><th>Trucks</th><th>Cars</th><th>Totals</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> </tbody> </table> <div style="text-align: center;"> <p>Lakeshore Dr E</p> <p>←</p> <p>← 4.24%    ↑ 33%</p> <p>→</p> </div> <table border="1" style="border-collapse: collapse;"> <thead> <tr><th>Cars</th><th>Trucks</th><th>Cyclists</th><th>Totals</th></tr> </thead> <tbody> <tr><td>6</td><td>2</td><td>0</td><td>8</td></tr> </tbody> </table> </div>					Cyclists	Trucks	Cars	Totals	0	0	0	0	Cars	Trucks	Cyclists	Totals	3	1	0	4	0	0	0	0	2	1	0	3	5	2	0	8	Cyclists	Trucks	Cars	Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Cars	Trucks	Cyclists	Totals	6	2	0	8
Cyclists	Trucks	Cars	Totals																																																									
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Cars	Trucks	Cyclists	Totals																																																									
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Cars	Trucks	Cyclists	Totals																																																									
6	2	0	8																																																									
Peds Cross: $\swarrow$ West Peds: 5 West Entering: 0 West Leg Total: 0	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Cars</td><td>107</td><td>Cars</td><td>0</td><td>113</td><td>2</td><td>115</td></tr> <tr><td>Trucks</td><td>8</td><td>Trucks</td><td>0</td><td>5</td><td>1</td><td>6</td></tr> <tr><td>Cyclists</td><td>0</td><td>Cyclists</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td><b>Totals</b></td><td><b>115</b></td><td><b>Totals</b></td><td><b>0</b></td><td><b>118</b></td><td><b>3</b></td><td></td></tr> </table>	Cars	107	Cars	0	113	2	115	Trucks	8	Trucks	0	5	1	6	Cyclists	0	Cyclists	0	0	0	0	<b>Totals</b>	<b>115</b>	<b>Totals</b>	<b>0</b>	<b>118</b>	<b>3</b>		Peds Cross: $\swarrow$ South Peds: 1 South Entering: 121 South Leg Total: 236																														
Cars	107	Cars	0	113	2	115																																																						
Trucks	8	Trucks	0	5	1	6																																																						
Cyclists	0	Cyclists	0	0	0	0																																																						
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## Comments

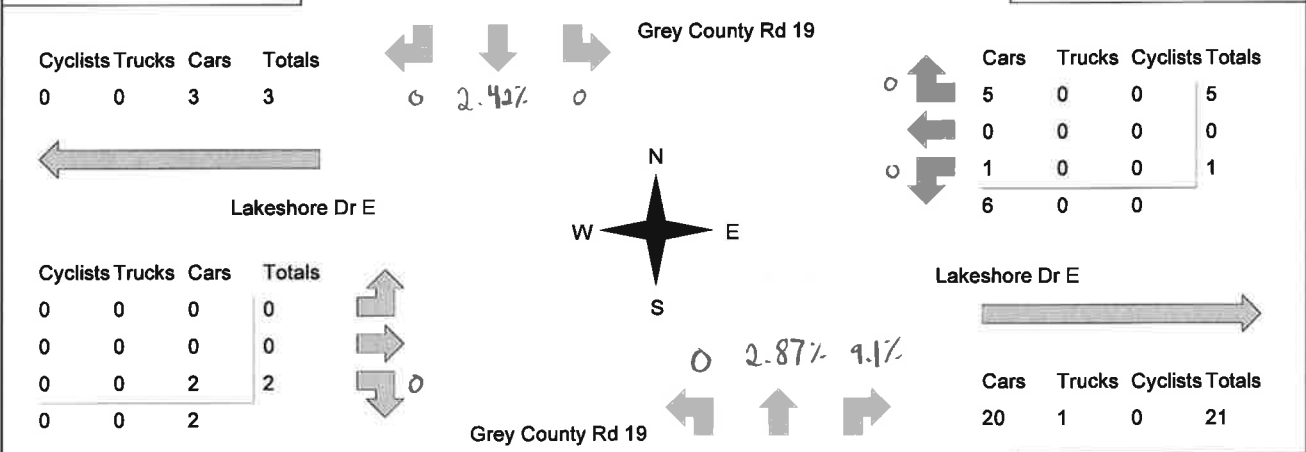
# Ontario Traffic Inc.

<b>Afternoon Peak Diagram</b>	<b>Specified Period</b> From: 15:00:00 To: 19:00:00	<b>One Hour Peak</b> From: 15:30:00 To: 16:30:00
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<b>Municipality:</b> Craigleith <b>Site #:</b> 1625100002 <b>Intersection:</b> Grey County Rd 19 & Lakeshore Dr <b>TFR File #:</b> 2 <b>Count date:</b> 26-Aug-16	<b>Weather conditions:</b>  <b>Person(s) who counted:</b>
---	---

**\*\* Non-Signalized Intersection \*\***      **Major Road:** Grey County Rd 19 runs N/S

North Leg Total: 390 North Entering: 176 North Peds: 0 Peds Cross: 2	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td>Cyclists</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>4</td><td>0</td><td>4</td></tr> <tr><td>Cars</td><td>1</td><td>161</td><td>10</td><td>172</td></tr> <tr><td><b>Totals</b></td><td><b>1</b></td><td><b>165</b></td><td><b>10</b></td><td></td></tr> </table>	Cyclists	0	0	0	0	Trucks	0	4	0	4	Cars	1	161	10	172	<b>Totals</b>	<b>1</b>	<b>165</b>	<b>10</b>			<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td>Cyclists</td><td>0</td></tr> <tr><td>Trucks</td><td>6</td></tr> <tr><td>Cars</td><td>208</td></tr> <tr><td><b>Totals</b></td><td><b>214</b></td></tr> </table>	Cyclists	0	Trucks	6	Cars	208	<b>Totals</b>	<b>214</b>	East Leg Total: 27 East Entering: 6 East Peds: 0 Peds Cross: 2
Cyclists	0	0	0	0																												
Trucks	0	4	0	4																												
Cars	1	161	10	172																												
<b>Totals</b>	<b>1</b>	<b>165</b>	<b>10</b>																													
Cyclists	0																															
Trucks	6																															
Cars	208																															
<b>Totals</b>	<b>214</b>																															



Peds Cross: 2 West Peds: 3 West Entering: 2 West Leg Total: 5	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>164</td></tr> <tr><td>Trucks</td><td>4</td></tr> <tr><td>Cyclists</td><td>0</td></tr> <tr><td><b>Totals</b></td><td><b>168</b></td></tr> </table>	Cars	164	Trucks	4	Cyclists	0	<b>Totals</b>	<b>168</b>		<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>2</td><td>203</td><td>10</td><td>215</td></tr> <tr><td>Trucks</td><td>0</td><td>6</td><td>1</td><td>7</td></tr> <tr><td>Cyclists</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td><b>Totals</b></td><td><b>2</b></td><td><b>209</b></td><td><b>11</b></td><td></td></tr> </table>	Cars	2	203	10	215	Trucks	0	6	1	7	Cyclists	0	0	0	0	<b>Totals</b>	<b>2</b>	<b>209</b>	<b>11</b>		Peds Cross: 2 South Peds: 0 South Entering: 222 South Leg Total: 390
Cars	164																															
Trucks	4																															
Cyclists	0																															
<b>Totals</b>	<b>168</b>																															
Cars	2	203	10	215																												
Trucks	0	6	1	7																												
Cyclists	0	0	0	0																												
<b>Totals</b>	<b>2</b>	<b>209</b>	<b>11</b>																													

## Comments

# Ontario Traffic Inc.

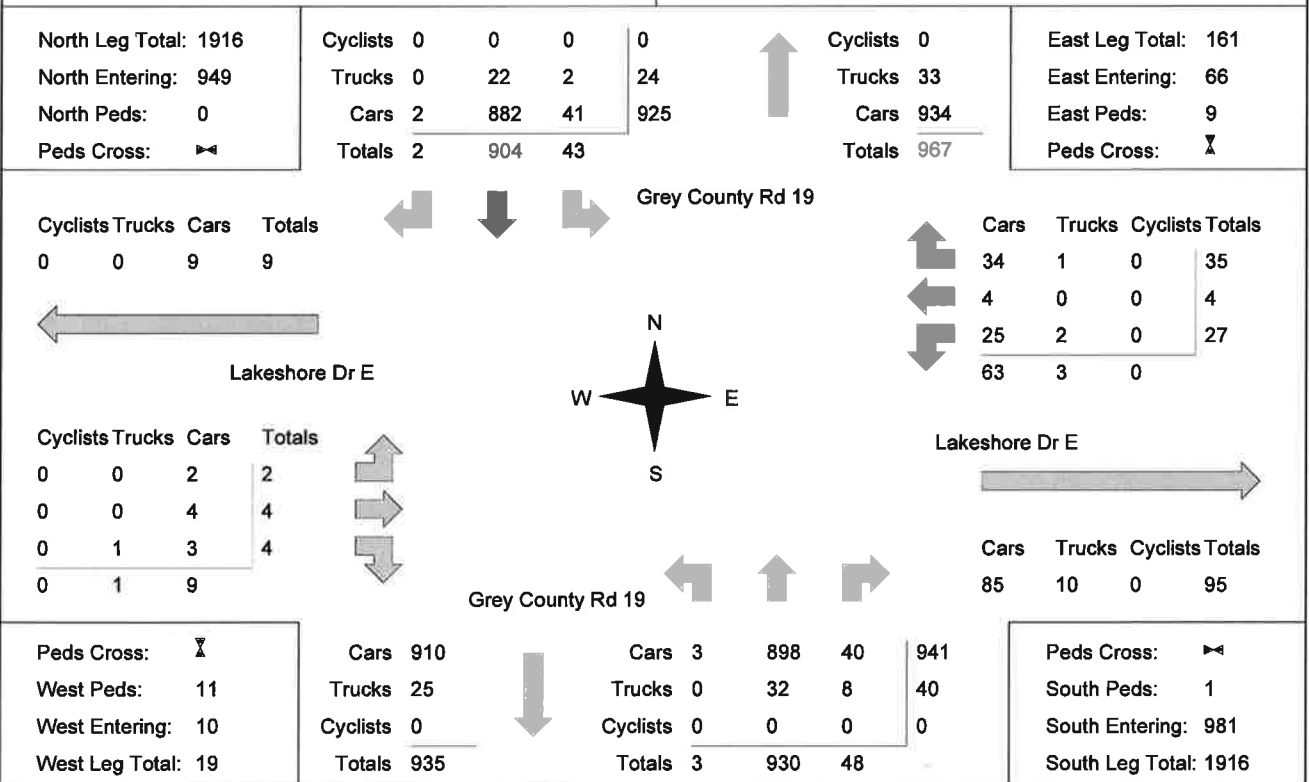
## Total Count Diagram

**Municipality:** Craigeleith  
**Site #:** 1625100002  
**Intersection:** Grey County Rd 19 & Lakeshore Dr  
**TFR File #:** 2  
**Count date:** 26-Aug-16

**Weather conditions:**  
**Person(s) who counted:**

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

**Major Road:** Grey County Rd 19 runs N/S



### Comments

# Ontario Traffic Inc. Traffic Count Summary

Intersection: Grey County Rd 19 & Lakeshore D

Count Date: 26-Aug-16

Municipality: Craigeleith

<b>North Approach Totals</b>						North/South Total Approaches	<b>South Approach Totals</b>					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	0	25	0	25	0	41	7:00:00	0	16	0	16	0
8:00:00	1	66	0	67	0	130	8:00:00	0	59	4	63	0
9:00:00	7	105	0	112	0	198	9:00:00	0	81	5	86	1
10:00:00	8	98	0	106	0	234	10:00:00	0	125	3	128	0
15:00:00	0	4	0	4	0	4	15:00:00	0	0	0	0	0
16:00:00	5	159	0	164	0	369	16:00:00	3	190	12	205	0
17:00:00	5	155	1	161	0	358	17:00:00	0	187	10	197	0
18:00:00	12	163	0	175	0	353	18:00:00	0	169	9	178	0
19:00:00	5	128	1	134	0	242	19:00:00	0	103	5	108	0
<b>Totals:</b>	43	903	2	948	0	1929		3	930	48	981	1
<b>East Approach Totals</b>						East/West Total Approaches	<b>West Approach Totals</b>					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	1	0	0	1	0	1	6:00:00	0	0	0	0	0
7:00:00	0	0	0	0	0	1	7:00:00	0	0	1	1	0
8:00:00	3	0	3	6	1	6	8:00:00	0	0	0	0	2
9:00:00	5	0	3	8	3	9	9:00:00	1	0	0	1	5
10:00:00	5	0	5	10	5	10	10:00:00	0	0	0	0	1
15:00:00	0	0	1	1	0	1	15:00:00	0	0	0	0	0
16:00:00	4	0	3	7	0	9	16:00:00	1	0	1	2	0
17:00:00	2	0	7	9	0	11	17:00:00	0	0	2	2	3
18:00:00	2	4	4	10	0	14	18:00:00	0	4	0	4	0
19:00:00	5	0	9	14	0	14	19:00:00	0	0	0	0	0
<b>Totals:</b>	27	4	35	66	9	76		2	4	4	10	11
<b>Calculated Values for Traffic Crossing Major Street</b>												
Hours Ending:	7:00	8:00	9:00	10:00			16:00	17:00	18:00	19:00		
Crossing Values:	0	3	7	5			5	2	6	5		











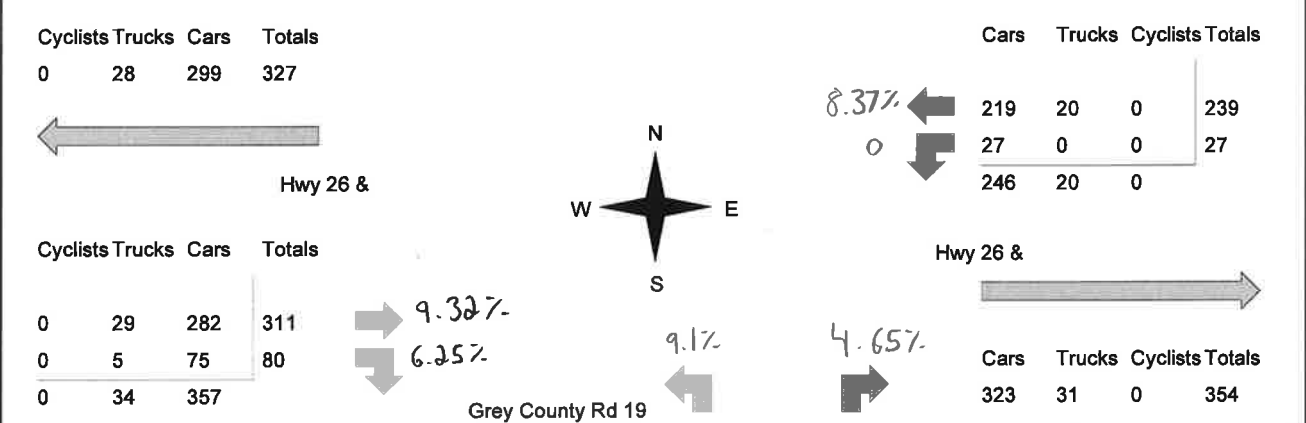
# Ontario Traffic Inc.

<b>Morning Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 6:00:00 <b>To:</b> 10:00:00	<b>One Hour Peak</b> <b>From:</b> 9:00:00 <b>To:</b> 10:00:00
-----------------------------	--	---

<b>Municipality:</b> Craigleith <b>Site #:</b> 1625100003 <b>Intersection:</b> Hwy 26 & & Grey County Rd 19 <b>TFR File #:</b> 22 <b>Count date:</b> 26-Aug-16	<b>Weather conditions:</b>  <b>Person(s) who counted:</b>
--	---

**\*\* Signalized Intersection \*\***      **Major Road:** Hwy 26 & runs W/E

East Leg Total: 620  
 East Entering: 266  
 East Peds: 0  
 Peds Cross: 1



<b>Peds Cross:</b> 1 <b>West Peds:</b> 0 <b>West Entering:</b> 391 <b>West Leg Total:</b> 718	<table border="1" style="width: 100%;"> <tr><td>Cars</td><td>102</td></tr> <tr><td>Trucks</td><td>5</td></tr> <tr><td>Cyclists</td><td>0</td></tr> <tr><td><b>Totals</b></td><td><b>107</b></td></tr> </table>	Cars	102	Trucks	5	Cyclists	0	<b>Totals</b>	<b>107</b>	<table border="1" style="width: 100%;"> <tr><td>Cars</td><td>80</td></tr> <tr><td>Trucks</td><td>8</td></tr> <tr><td>Cyclists</td><td>0</td></tr> <tr><td><b>Totals</b></td><td><b>88</b></td></tr> </table>	Cars	80	Trucks	8	Cyclists	0	<b>Totals</b>	<b>88</b>	<table border="1" style="width: 100%;"> <tr><td>Cars</td><td>41</td></tr> <tr><td>Trucks</td><td>2</td></tr> <tr><td>Cyclists</td><td>0</td></tr> <tr><td><b>Totals</b></td><td><b>43</b></td></tr> </table>	Cars	41	Trucks	2	Cyclists	0	<b>Totals</b>	<b>43</b>	<b>Peds Cross:</b> 1 <b>South Peds:</b> 3 <b>South Entering:</b> 131 <b>South Leg Total:</b> 238
Cars	102																											
Trucks	5																											
Cyclists	0																											
<b>Totals</b>	<b>107</b>																											
Cars	80																											
Trucks	8																											
Cyclists	0																											
<b>Totals</b>	<b>88</b>																											
Cars	41																											
Trucks	2																											
Cyclists	0																											
<b>Totals</b>	<b>43</b>																											

## Comments

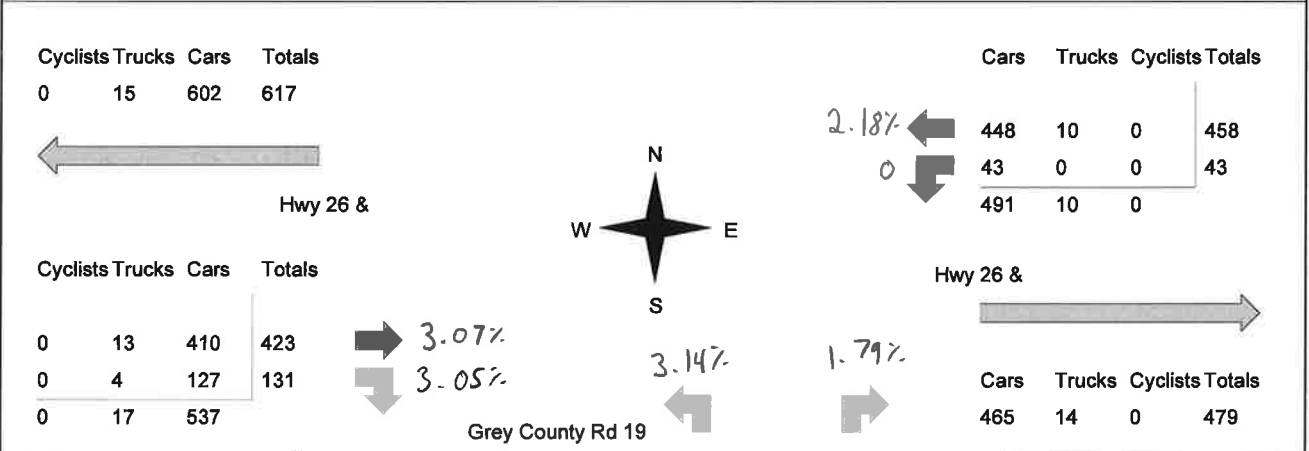
# Ontario Traffic Inc.

<b>Afternoon Peak Diagram</b>	<b>Specified Period</b> <b>From:</b> 15:00:00 <b>To:</b> 19:00:00	<b>One Hour Peak</b> <b>From:</b> 15:30:00 <b>To:</b> 16:30:00
-------------------------------	---	--

<b>Municipality:</b> Craigeleith <b>Site #:</b> 1625100003 <b>Intersection:</b> Hwy 26 & Grey County Rd 19 <b>TFR File #:</b> 22 <b>Count date:</b> 26-Aug-16	<b>Weather conditions:</b>  <b>Person(s) who counted:</b>
---	---

** Signalized Intersection **	Major Road: Hwy 26 & runs W/E
-------------------------------	-------------------------------

East Leg Total: 980
East Entering: 501
East Peds: 0
Peds Cross: 1



Peds Cross: 1 West Peds: 554 West Entering: 1171 West Leg Total: 1171	Cars 170 Trucks 4 Cyclists 0 Totals 174	Cars 154 Trucks 5 Cyclists 0 Totals 159	Cars 55 Trucks 1 Cyclists 0 Totals 56
--	--	--	--

**Comments**

# Ontario Traffic Inc.

## Total Count Diagram

**Municipality:** Craigeleith  
**Site #:** 1625100003  
**Intersection:** Hwy 26 & & Grey County Rd 19  
**TFR File #:** 22  
**Count date:** 26-Aug-16

**Weather conditions:**  
**Person(s) who counted:**

**\*\* Signalized Intersection \*\***

**Major Road:** Hwy 26 & runs W/E

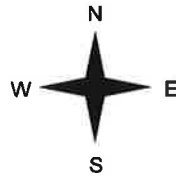
East Leg Total: 5694  
 East Entering: 2845  
 East Peds: 0  
 Peds Cross: X

Cyclists	Trucks	Cars	Totals
0	113	3115	3228

Cars	Trucks	Cyclists	Totals
------	--------	----------	--------



Hwy 26 &



2464	88	0	2552
289	4	0	293
2753	92	0	

Cyclists	Trucks	Cars	Totals
----------	--------	------	--------

Hwy 26 &

0	137	2411	2548
0	21	637	658
0	158	3048	

Cars	Trucks	Cyclists	Totals
2704	145	0	2849

Grey County Rd 19

Peds Cross:	X
West Peds:	5
West Entering:	3206
West Leg Total:	6434

Cars	926
Trucks	25
Cyclists	0
Totals	951

Cars	651	293	944
Trucks	25	8	33
Cyclists	0	0	0
Totals	676	301	

Peds Cross:	▶◀
South Peds:	26
South Entering:	977
South Leg Total:	1928

### Comments

# Ontario Traffic Inc. Traffic Count Summary

Intersection: Hwy 26 & Grey County Rd 19

Count Date: 26-Aug-16

Municipality: Craigeleith

<b>North Approach Totals</b>						North/South Total Approaches	<b>South Approach Totals</b>					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	0	0	0	0	0	18	7:00:00	11	0	7	18	0
8:00:00	0	0	0	0	0	62	8:00:00	44	0	18	62	4
9:00:00	0	0	0	0	0	85	9:00:00	49	0	36	85	5
10:00:00	0	0	0	0	0	131	10:00:00	88	0	43	131	3
15:00:00	0	0	0	0	0	4	15:00:00	2	0	2	4	0
16:00:00	0	0	0	0	0	194	16:00:00	139	0	55	194	5
17:00:00	0	0	0	0	0	196	17:00:00	139	0	57	196	8
18:00:00	0	0	0	0	0	174	18:00:00	116	0	58	174	1
19:00:00	0	0	0	0	0	113	19:00:00	88	0	25	113	0
<b>Totals:</b>	0	0	0	0	0	977		676	0	301	977	26
<b>East Approach Totals</b>						East/West Total Approaches	<b>West Approach Totals</b>					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	3	0	3	0	6	6:00:00	0	3	0	3	0
7:00:00	6	125	0	131	0	286	7:00:00	0	132	23	155	0
8:00:00	20	222	0	242	0	551	8:00:00	0	262	47	309	0
9:00:00	37	278	0	315	0	669	9:00:00	0	279	75	354	2
10:00:00	27	239	0	266	0	657	10:00:00	0	311	80	391	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	43	430	0	473	0	1008	16:00:00	0	414	121	535	1
17:00:00	41	439	0	480	0	1008	17:00:00	0	408	120	528	0
18:00:00	61	464	0	525	0	1062	18:00:00	0	421	116	537	2
19:00:00	58	351	0	409	0	801	19:00:00	0	316	76	392	0
<b>Totals:</b>	293	2551	0	2844	0	6048		0	2546	658	3204	5
<b>Calculated Values for Traffic Crossing Major Street</b>												
Hours Ending:	7:00	8:00	9:00	10:00		16:00	17:00	18:00	19:00			
Crossing Values:	11	44	51	88		140	139	118	88			











# Ontario Traffic Inc.

## Morning Peak Diagram

### Specified Period

From: 6:00:00  
To: 10:00:00

### One Hour Peak

From: 8:15:00  
To: 9:15:00

**Municipality:** Craigeith  
**Site #:** 1625100004  
**Intersection:** Hwy 26 & Lakeshore Dr E-Fraser Cr  
**TFR File #:** 3  
**Count date:** 26-Aug-16

**Weather conditions:**  
**Person(s) who counted:**

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

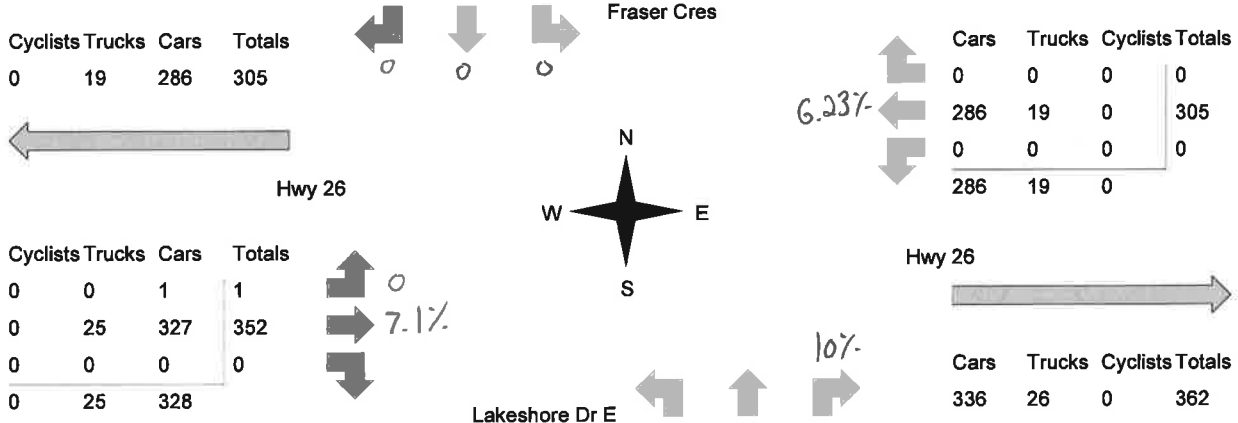
**Major Road:** Hwy 26 runs W/E

North Leg Total:	1
North Entering:	0
North Peds:	0
Peds Cross:	↔

Cyclists	0	0	0	0
Trucks	0	0	0	0
Cars	0	0	0	0
Totals	0	0	0	0

Cyclists	0
Trucks	0
Cars	1
Totals	1

East Leg Total:	667
East Entering:	305
East Peds:	0
Peds Cross:	↔



Peds Cross:	↔
West Peds:	0
West Entering:	353
West Leg Total:	658

Cars	0	0	0	9	9
Trucks	0	0	0	1	1
Cyclists	0	0	0	0	0
Totals	0	0	0	10	10

Cars	0	0	9	9
Trucks	0	0	1	1
Cyclists	0	0	0	0
Totals	0	0	10	10

Peds Cross:	↔
South Peds:	0
South Entering:	10
South Leg Total:	10

### Comments

# Ontario Traffic Inc.

## Afternoon Peak Diagram

### Specified Period

From: 15:00:00

To: 19:00:00

### One Hour Peak

From: 17:00:00

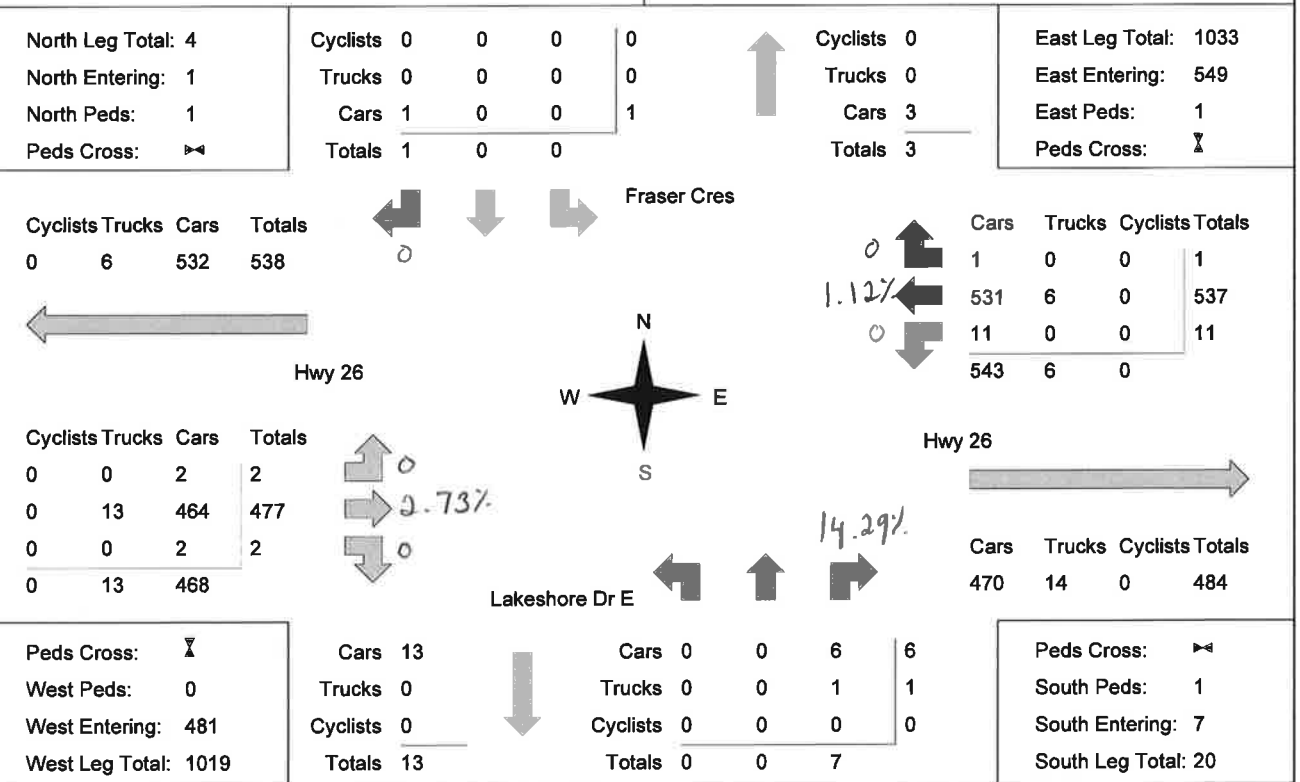
To: 18:00:00

**Municipality:** Craigeith  
**Site #:** 1625100004  
**Intersection:** Hwy 26 & Lakeshore Dr E-Fraser Cr  
**TFR File #:** 3  
**Count date:** 26-Aug-16

**Weather conditions:**  
**Person(s) who counted:**

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

**Major Road:** Hwy 26 runs W/E



## Comments

# Ontario Traffic Inc.

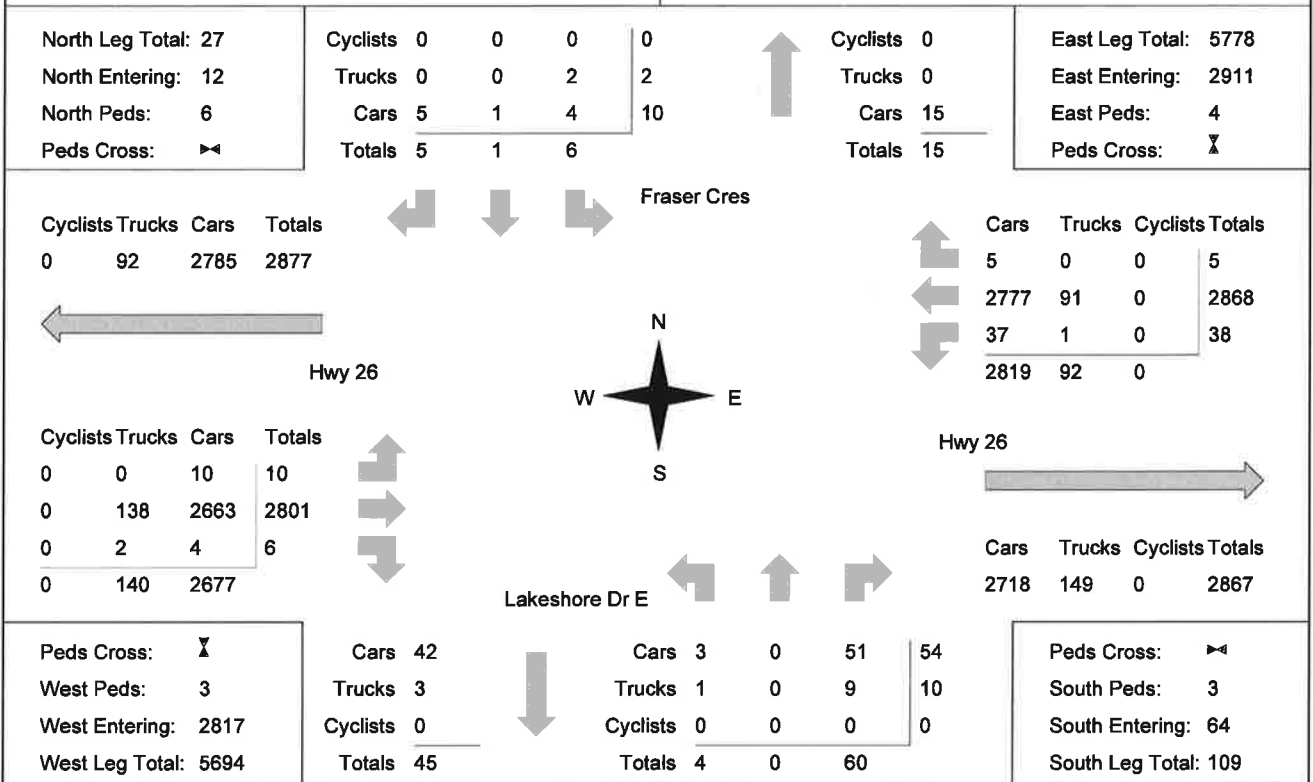
## Total Count Diagram

**Municipality:** Craigeleith  
**Site #:** 1625100004  
**Intersection:** Hwy 26 & Lakeshore Dr E-Fraser Cr  
**TFR File #:** 3  
**Count date:** 26-Aug-16

**Weather conditions:**  
**Person(s) who counted:**

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

**Major Road:** Hwy 26 runs W/E



### Comments

# Ontario Traffic Inc. Traffic Count Summary

Intersection: Hwy 26 & Lakeshore Dr E-Fraser ( ) Count Date: 26-Aug-16 Municipality: Craigeleith

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	0	6:00:00	0	0	0	0	0
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	0	0
8:00:00	2	0	0	2	2	8	8:00:00	0	0	6	6	0
9:00:00	0	0	0	0	0	9	9:00:00	1	0	8	9	0
10:00:00	1	1	0	2	1	14	10:00:00	2	0	10	12	1
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	3	0	1	4	0	13	16:00:00	0	0	9	9	0
17:00:00	0	0	2	2	1	12	17:00:00	1	0	9	10	1
18:00:00	0	0	1	1	1	8	18:00:00	0	0	7	7	1
19:00:00	0	0	1	1	1	12	19:00:00	0	0	11	11	0
<b>Totals:</b>	6	1	5	12	6	76		4	0	60	64	3
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
6:00:00	0	0	0	0	0	1	6:00:00	0	1	0	1	0
7:00:00	0	131	0	131	0	260	7:00:00	0	129	0	129	0
8:00:00	7	243	0	250	1	528	8:00:00	2	276	0	278	0
9:00:00	0	306	1	307	0	623	9:00:00	1	314	1	316	0
10:00:00	5	277	0	282	0	624	10:00:00	0	342	0	342	0
15:00:00	0	2	0	2	0	14	15:00:00	0	12	0	12	0
16:00:00	5	476	1	482	0	942	16:00:00	2	456	2	460	0
17:00:00	8	479	0	487	2	941	17:00:00	1	452	1	454	2
18:00:00	11	537	1	549	1	1030	18:00:00	2	477	2	481	0
19:00:00	2	415	2	419	0	762	19:00:00	2	341	0	343	1
<b>Totals:</b>	38	2866	5	2909	4	5725		10	2800	6	2816	3
<b>Calculated Values for Traffic Crossing Major Street</b>												
Hours Ending:	7:00	8:00	9:00	10:00			16:00	17:00	18:00	19:00		
Crossing Values:	0	3	1	4			3	5	1	1		











# APPENDIX D

## AADT Data

Data from Hwy 26 and Grey Road 19

Year	AADT		
2006	7950	2.05%	1.32%
2009	8450		
2012	8600		
	Average Growth Rate		1.69%

Highway	Location Description	Dist	Year	Patt Type	AADT	SADT	SAWDT	WADT	AR
			1993	CR	7,300	9,100	8,800	6,200	1.5
			1994	CR	7,200	9,200	8,800	6,050	1.5
			1995	CR	7,200	9,200	8,850	6,050	1.1
			1996	CR	7,450	9,250	8,200	6,550	1.6
			1997	CR	7,500	9,600	9,250	6,300	0.8
			1998	CR	7,550	9,600	9,200	6,350	0.8
			1999	CR	7,600	9,600	9,200	6,400	1.5
			2000	CR	7,950	10,000	9,600	6,700	0.6
			2001	CR	8,100	10,200	9,800	6,800	1.4
			2002	CR	8,450	10,700	10,200	7,150	1.0
			2003	CR	8,650	10,900	10,500	7,350	0.9
			2004	CR	8,550	10,600	10,200	7,250	1.1
			2005	CR	8,550	10,600	10,200	7,250	0.6
			2006	CR	8,550	10,600	10,100	7,250	1.4
			2007	CR	8,750	10,800	10,700	7,400	1.7
			2008	CR	8,550	10,300	10,300	7,200	0.8
			2009	CR	8,950	10,800	10,400	7,550	1.1
			2010	CR	8,900	10,700	10,300	7,550	1.1
			2011	CR	8,900	10,400	10,500	7,900	N/A
			2012	CR	8,300	9,950	9,800	7,050	N/A
26	GREY RD 19 (S)	7.1	1988	CR	5,750	6,600	6,400	5,000	0.9
			1989	CR	6,150	7,000	6,900	5,400	1.0
			1990	CR	6,550	9,500	9,100	4,750	0.6
			1991	CR	6,750	9,400	9,100	4,950	0.9
			1992	CR	6,900	9,500	9,300	5,300	0.4
			1993	CR	6,300	7,900	7,600	5,300	0.8
			1994	CR	6,300	8,050	7,700	5,300	0.7
			1995	CR	6,300	8,050	7,750	5,300	0.9
			1996	CR	6,400	8,200	7,850	5,400	1.1
			1997	CR	6,550	8,400	8,050	5,500	0.7
			1998	CR	6,650	8,450	8,100	5,600	1.0
			1999	CR	6,700	8,450	8,100	5,650	0.7
			2000	CR	7,100	8,950	8,600	6,000	0.7
			2001	CR	7,250	9,150	8,750	6,100	0.9
			2002	CR	7,450	9,400	9,000	6,300	0.7
			2003	CR	7,800	9,850	9,450	6,650	0.9
			2004	CR	7,850	9,750	9,400	6,650	0.7
			2005	CR	7,800	9,650	9,300	6,600	1.4

Highway	Location Description	Dist	Year	Patt Type	AADT	SADT	SAWDT	WADT	AR
26	GREY ROAD 19 (S)		2006	CR	7,950	9,850	9,450	6,750	0.8
			2007	CR	8,100	10,000	9,950	6,850	1.0
			2008	CR	8,100	9,800	9,750	6,850	0.6
			2009	CR	8,450	10,200	9,800	7,150	0.4
			2010	CR	8,600	10,300	9,950	7,250	0.6
			2011	CR	8,600	10,100	10,100	7,650	N/A
			2012	CR	8,600	10,300	10,100	7,300	N/A
26	THORNBURY ELTS - START OF NA	2.3							
26	PEEL STREET CULVERT	9.7	1988	UC	4,400	5,100	4,950	3,850	0.4
			1989	UC	4,600	5,200	5,100	4,050	0.5
			1990	UC	4,750	6,900	6,600	3,450	0.9
			1991	UC	4,800	6,700	6,400	3,550	0.9
			1992	UC	4,900	6,800	6,600	3,750	0.8
			1993	UC	5,200	7,100	7,000	4,050	1.1
			1994	UC	5,150	7,200	7,150	3,900	1.0
			1995	UC	5,300	7,350	7,300	4,000	1.4
			1996	UC	5,400	7,300	7,350	4,100	0.9
			1997	UC	5,550	7,500	7,550	4,200	0.8
			1998	UC	5,650	7,550	7,650	4,250	1.2
			1999	UC	5,650	7,500	7,650	4,250	1.3
			2000	UC	5,850	7,850	7,900	4,400	0.9
			2001	UC	5,950	7,950	8,050	4,450	1.0
			2002	UC	6,050	8,150	8,200	4,550	1.4
			2003	UC	6,200	8,300	8,350	4,650	1.6
			2004	UC	6,250	8,300	8,400	4,750	0.6
			2005	UC	6,250	8,300	8,350	4,700	0.8
			2006	UC	6,250	8,550	8,350	4,600	1.9
			2007	UC	6,300	8,650	8,900	4,650	1.4
			2008	UC	6,300	6,650	6,250	5,900	1.0
			2009	UC	6,300	6,650	7,350	5,950	1.4
			2010	UC	6,300	6,650	7,350	5,900	1.4
			2011	UC	6,300	6,300	6,500	6,000	N/A
			2012	UC	6,350	6,350	6,800	6,050	N/A
26	MEAFORD ELTS - START OF NA	3.3							
26	FORMER TWN OF MEAFORD W LTS - END OF NA	16.2	1988	IC	3,850	4,450	4,350	3,350	0.9
			1989	IC	3,950	4,500	4,450	3,500	1.1
			1990	IC	4,100	5,900	5,700	2,950	1.0
			1991	IC	4,200	5,800	5,600	3,100	1.1

196

Pretimed

**PRETIMED ONTARIO 233 PROGRAM**

**T.O.D. FUNCTIONS**

	PHASE								PHASES	TIME	DAY OF WEEK							PHASES / BITS													
	Column F										Column 4																				
	1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8	S	M	T	W	T	F	S	1	2	3	4	5	6
WALK	-	35				35	12		PERMIT	X	X																				
DONT WALK	-	5				5	5		RED LOCK													X	X	X	X	X	X				
MIN INITIAL	5	40				40	10		YELLOW LOCK												X	X	X	X	X	X					
TYPE 3 LIMIT	-	-				-	-		VEH MIN CALL	X																					
ADD PER VEH	-	-				-	-		PED RECALL		X																				
VEH EXT	2.0	5.0				5.0	3.0		PEDESTRIANS																						
MAX GAP	2.0	5.0				5.0	3.0		REST IN WALK																						
MIN GAP	2.0	5.0				5.0	3.0		RED REST																						
MAX LIMIT	10	50				50	15		DOUBLE ENTRY		X																				
MAXIMUM 2	-	-				-	-		VEH MAX CALL																						
ADV / DLY WALK	-	-				-	-		SOFT RECALL																						
SEQUENCE TO	-	-				-	-		MAXIMUM 2																						
COND SRV MIN	-	-				-	-		CORD SERVICE																						
REDUCE EVERY	-	-				-	-		MAN CONT CALL																						
YELLOW	2.0	5.9				5.9	5.0		YELLOW START		X																				
RED CLEAR	-	1.5				1.5	1.4		FIRST PHASES																						

PHASE BANK # < C + O + F = 1 >

< C + O + F = 1 >

< C + O + 7 = 1 >

< C + O + E = 27 >

**LOCATION: HWY 26 & GREY RD 19 (BLUE MTN.RD.)**

**BI Tran Systems, Inc.**  
 510 Bercut Dr., Sacramento, Calif. 95814  
 916.441-0260  
 Traffic Signal Program 233 Ontario  
 Timing Sheet #2  
 Revised (02/95)

**Issued Date: MAR/2002**

**Installed Date:**

**T.O.D. FUNCTIONS**

- 0 = PERMIT PHASES    A = VEH SOFT RECALL
- 1 = RED LOCK        B = MAXIMUM 2
- 2 = YELLOW LOCK    C = CONDITIONAL SERVICE
- 3 = VEH MIN RECALL    D = LAG PHASES
- 4 = PED RECALL       E = BIT 1 - LOCAL OVERRIDE
- 5 -                    BIT 4 - DISABLE DET OFF MONITOR
- 6 - REST IN WALK    BIT 7 - DET COUNT MONITOR
- 7 = RED REST        BIT 8 - REAL TIME SPLIT MONITOR
- 8 = DOUBLE ENTRY    F = OUTPUT BITS 1 THRU 4
- 9 = VEH MAX RECALL

Actuated

PHASE								
	1	2	3	4	5	6	7	8
0	WALK	-	15			15	12	
1	DON'T WALK	-	5			5	5	
2	MIN INITIAL	5	20			20	10	
3	TYPE 3 LIMIT	-	-			-	-	
4	ADD PER VEH	-	-			-	-	
5	VEH EXT	2.0	5.0			5.0	3.0	
6	MAX GAP	2.0	5.0			5.0	3.0	
7	MIN GAP	2.0	5.0			5.0	3.0	
8	MAX LIMIT	20	50			50	25	
9	MAXIMUM 2	-	-			-	-	
A	ADV/DLY WALK	-	-			-	-	
B	SEQUENCE TO	-	-			-	-	
C	COND SRV MIN	-	-			-	-	
D	REDUCE EVERY	-	-			-	-	
E	YELLOW	2.0	5.9			5.9	5.0	
F	RED CLEAR	-	1.5			1.5	1.4	

PHASE BANK #1 < C + O + F = 1 >

ALL RED START  
(F/1 + C + O) = 5.0  
RED REVERT  
(F/1 + O + F) = 5.0

COLUMN F PHASES									
	0	1	2	3	4	5	6	7	8
0	PERMIT	X	X						
1	RED LOCK			X					
2	YELLOW LOCK				X				
3	VEH MIN CALL								
4	PED RECALL			X					
5	PEDESTRIANS								
6	YIELD AT FL DW								
7	RED REST								
8	DOUBLE ENTRY			X					
9	VEH MAX CALL								
A	SOFT RECALL								
B	MAXIMUM 2								
C	COND SERVICE								
D	MAN CONT CALL								
E	YELLOW START			X					
F	FIRST PHASES								

< C + O + F = 1 >

COMM ADDRESS (C/O + O + O) = 1  
ZONE ADDRESS (C/O + O + 1) = 1 - Always  
AREA NUMBER (C/O + O + 2) = 1 - Region/Agcy #  
AREA ADDRESS (C/O + O + 3) = 214 - Assigned by System Admin

PREEMPT	A	B	C
MINIMUMS	RR1-2	SP	EMER
	SPEV1	EV2	VEH

Issued Date: Mar-02  
Installed Date:

ONTARIO 233 PROGRAM  
HWY 26 at RR 19/BLUE MTN RD.

Column E Phases / Bits								
	1	2	3	4	5	6	7	8
0	EXCLUSIVE							
1	RR1 CLEAR							
2	RR2 CLEAR							
3	RR2 LTD SRV							
4	PROT/PERM	X						
5	FLH TO PREMIT							
6	FLASH ENTRY							
7	DISABL MIN YEL	X						
8	DISABLOVP YEL							
9	OVV FLH YEL							
A	EM VEH A							
B	EM VEH B							
C	EM VEH C							
D	EM VEH D							
E	EXTRA 1	X						
F	IC-SELECT		X					

< C + O + E = 125 >

FLASH TO PREEMPT

- 1 = EVA
- 2 = EVB
- 3 = EVC
- 4 = EVD
- 5 = RR1
- 6 = RR2
- 7 = SE1
- 8 = SE2
- 1 = TBC TYPE 1
- 2 = NEMA EXT. COORD.
- 3 = DAYLIGHT SAVINGS
- 4 =
- 5 = EXPANDED STATUS REPORTING
- 6 = INTERNATIONAL PED
- 7 = CLEAR OUTPUTS DURING FLASH
- 8 = SPLIT RING

Column F								
	1	2	3	4	5	6	7	8
0	ADV GRN FLH	X						
1	PHASE FLASH							
2	FLASH WALK							
3	GUAR PASS							
4	SIMUL GAP							
5	SEQ TIMING							
6	ADV WALK							
7	DELAY WALK							
8	EXT RECALL							
9								
A	MAX EXTEN							
B	INH PED RSRV							
C	SEMI ACTUATD							
D	STRV VEH CALL	X						
E	STRV PED CALL		X					
F				X				

SPECIALS < C + O + F = 2 >

EXTRA 2

- 1 = AWR ON DURING PHASE INITIAL
- 2 = LMU INSTALLED
- 2 = 2 WAY MODEM
- 3 = 7 WIRE SLAVE
- 4 = FLASH / FREE
- 5 = SIMPLER MASTER
- 7 = 7 WIRE MASTER
- 8 = OFFSET INTURP

Dial-out Telephone									
Number	D	1	2	3	4	5	6	7	8
0	NO. OF DIGITS	11							
1	1st DIGIT	1							
2	2nd DIGIT	9							
3	3rd DIGIT	0							
4	4th DIGIT	5							
5	5th DIGIT	7							
6	6th DIGIT	0							
7	7th DIGIT	4							
8	8th DIGIT	3							
9	9th DIGIT	0							
A	10th DIGIT	0							
B	11th DIGIT	6							
C									
D									
E									
F									

< C + O + C = 5 >

IC SELECT

- 1 = STOP TIME
- 2 = FLASH SENCE
- 3 = KEYBOARD ENTRY
- 4 = MANUAL PLAN
- 5 = ENABLE POLICE CONTROL
- 6 = EXTERNAL ALARM
- 7 = DETECTOR FAILURE

# APPENDIX E

## Detailed Capacity Analysis



**Intersection**

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	352	0	0	305	0	0	0	10	0	0	0
Future Vol, veh/h	1	352	0	0	305	0	0	0	10	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	383	0	0	332	0	0	0	11	0	0	0

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	332	0	0	383
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.16
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.254
Pot Cap-1 Maneuver	1239	-	-	1154
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1239	-	-	1154
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	10.5	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	669	1239	-	-	1154	-	-	-
HCM Lane V/C Ratio	0.016	0.001	-	-	-	-	-	-
HCM Control Delay (s)	10.5	7.9	0	-	0	-	-	0
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

**Intersection**

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	477	2	11	537	1	0	0	7	0	0	1
Future Vol, veh/h	2	477	2	11	537	1	0	0	7	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	518	2	12	584	1	0	0	8	0	0	1

Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	585	0	0	521	0	0	1133	1133	520	1136	1133	584
Stage 1	-	-	-	-	-	-	524	524	-	608	608	-
Stage 2	-	-	-	-	-	-	609	609	-	528	525	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	1000	-	-	1056	-	-	182	205	533	181	205	515
Stage 1	-	-	-	-	-	-	540	533	-	486	489	-
Stage 2	-	-	-	-	-	-	486	488	-	538	533	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1000	-	-	1056	-	-	179	201	533	176	201	515
Mov Cap-2 Maneuver	-	-	-	-	-	-	179	201	-	176	201	-
Stage 1	-	-	-	-	-	-	538	531	-	485	481	-
Stage 2	-	-	-	-	-	-	477	480	-	529	531	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	11.9	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	533	1000	-	-	1056	-	-	515
HCM Lane V/C Ratio	0.014	0.002	-	-	0.011	-	-	0.002
HCM Control Delay (s)	11.9	8.6	0	-	8.4	0	-	12
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	3	0	4	0	118	3	5	112	0
Future Vol, veh/h	0	0	0	3	0	4	0	118	3	5	112	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	25	0	4	33	20	6	0
Mvmt Flow	0	0	0	3	0	4	0	128	3	5	122	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	265	265	122	263	263	130	122	0	0	132	0	0
Stage 1	133	133	-	130	130	-	-	-	-	-	-	-
Stage 2	132	132	-	133	133	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	692	644	935	631	646	862	1478	-	-	1349	-	-
Stage 1	875	790	-	804	792	-	-	-	-	-	-	-
Stage 2	876	791	-	801	790	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	686	641	935	629	643	862	1478	-	-	1349	-	-
Mov Cap-2 Maneuver	686	641	-	629	643	-	-	-	-	-	-	-
Stage 1	875	787	-	804	792	-	-	-	-	-	-	-
Stage 2	872	791	-	798	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.9	0	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1478	-	-	-	744	1349	-	-
HCM Lane V/C Ratio	-	-	-	-	0.01	0.004	-	-
HCM Control Delay (s)	0	-	-	0	9.9	7.7	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	2	1	0	5	2	209	11	10	165	1
Future Vol, veh/h	0	0	2	1	0	5	2	209	11	10	165	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	2	1	0	5	2	227	12	11	179	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	442	445	180	441	440	233	180	0	0	239	0	0
Stage 1	202	202	-	238	238	-	-	-	-	-	-	-
Stage 2	240	243	-	203	202	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	529	511	868	530	514	811	1408	-	-	1340	-	-
Stage 1	805	738	-	770	712	-	-	-	-	-	-	-
Stage 2	768	708	-	804	738	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	521	506	868	524	509	811	1408	-	-	1340	-	-
Mov Cap-2 Maneuver	521	506	-	524	509	-	-	-	-	-	-	-
Stage 1	804	731	-	769	711	-	-	-	-	-	-	-
Stage 2	762	707	-	795	731	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	9.9	0.1	0.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1408	-	-	868	743	1340	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.009	0.008	-	-
HCM Control Delay (s)	7.6	-	-	9.2	9.9	7.7	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

**Intersection**

Int Delay, s/veh 1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↗	↗	
Traffic Vol, veh/h	2	26	31	91	96	5
Future Vol, veh/h	2	26	31	91	96	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	13	4	3	0
Mvmt Flow	2	28	34	99	104	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	273	107	110
Stage 1	107	-	-
Stage 2	166	-	-
Critical Hdwy	6.4	6.2	4.23
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.317
Pot Cap-1 Maneuver	721	953	1414
Stage 1	922	-	-
Stage 2	868	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	703	953	1414
Mov Cap-2 Maneuver	703	-	-
Stage 1	922	-	-
Stage 2	846	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	929	-	-
HCM Lane V/C Ratio	0.024	-	0.033	-	-
HCM Control Delay (s)	7.6	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘			↗	↗	
Traffic Vol, veh/h	2	31	28	197	139	5
Future Vol, veh/h	2	31	28	197	139	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	10	7	3	2	0
Mvmt Flow	2	34	30	214	151	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	429	154	157	0	-	0
Stage 1	154	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.4	6.3	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.39	2.263	-	-	-
Pot Cap-1 Maneuver	587	871	1393	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	573	871	1393	-	-	-
Mov Cap-2 Maneuver	573	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	757	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1393	-	844	-	-
HCM Lane V/C Ratio	0.022	-	0.042	-	-
HCM Control Delay (s)	7.6	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2016 Existing - AM  
12/13/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↖	↗
Traffic Volume (vph)	311	80	27	239	88	43
Future Volume (vph)	311	80	27	239	88	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1724	1507	1785	1740	1674	1555
Flt Permitted			0.514		0.950	
Satd. Flow (perm)	1724	1507	966	1740	1674	1555
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		87				47
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	0%	8%	9%	5%
Adj. Flow (vph)	338	87	29	260	96	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	338	87	29	260	96	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.36	0.10	0.04	0.22	0.35	0.16
Control Delay	12.7	2.6	3.2	5.9	37.7	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	2.6	3.2	5.9	37.7	11.6
LOS	B	A	A	A	D	B
Approach Delay	10.7			5.6	29.1	
Approach LOS	B			A	C	
Queue Length 50th (m)	30.9	0.0	1.1	14.8	15.0	0.0
Queue Length 95th (m)	48.2	6.1	3.0	23.7	29.2	9.1
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	950	869	807	1188	276	295
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	0.36	0.10	0.04	0.22	0.35	0.16

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.36  
 Intersection Signal Delay: 12.0  
 Intersection Capacity Utilization 53.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

**Splits and Phases: 8: Grey Road 19 & Highway 26**

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	



Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2016 Existing - PM  
12/13/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	423	131	43	458	159	56
Future Volume (vph)	423	131	43	458	159	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1824	1551	1785	1842	1772	1601
Flt Permitted			0.416		0.950	
Satd. Flow (perm)	1824	1551	782	1842	1772	1601
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		142				61
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	0%	2%	3%	2%
Adj. Flow (vph)	460	142	47	498	173	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	460	142	47	498	173	61
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.46	0.15	0.07	0.40	0.59	0.19
Control Delay	14.1	2.2	3.3	7.4	44.4	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	2.2	3.3	7.4	44.4	10.9
LOS	B	A	A	A	D	B
Approach Delay	11.3			7.0	35.7	
Approach LOS	B			A	D	
Queue Length 50th (m)	45.2	0.0	1.8	32.9	28.3	0.0
Queue Length 95th (m)	68.1	7.6	4.1	49.1	48.7	10.3
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	1005	918	691	1258	292	315
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	0.46	0.15	0.07	0.40	0.59	0.19

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 13.7  
 Intersection Capacity Utilization 56.0%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service B

**Splits and Phases: 8: Grey Road 19 & Highway 26**

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	389	4	10	337	0	16	0	62	0	0	0
Future Vol, veh/h	1	389	4	10	337	0	16	0	62	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	423	4	11	366	0	17	0	67	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	366	0	0	427	0	0	815	815	425	849	817	366
Stage 1	-	-	-	-	-	-	427	427	-	388	388	-
Stage 2	-	-	-	-	-	-	388	388	-	461	429	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1204	-	-	1111	-	-	298	303	634	283	313	684
Stage 1	-	-	-	-	-	-	610	572	-	640	612	-
Stage 2	-	-	-	-	-	-	640	595	-	584	587	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1204	-	-	1111	-	-	295	299	634	250	309	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	299	-	250	309	-
Stage 1	-	-	-	-	-	-	609	571	-	639	605	-
Stage 2	-	-	-	-	-	-	632	588	-	521	586	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	13.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	513	1204	-	-	1111	-	-	-
HCM Lane V/C Ratio	0.165	0.001	-	-	0.01	-	-	-
HCM Control Delay (s)	13.4	8	0	-	8.3	0	-	0
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	-

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	527	18	61	593	1	8	0	32	0	0	1
Future Vol, veh/h	2	527	18	61	593	1	8	0	32	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	573	20	66	645	1	9	0	35	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	646	0	0	592	0	0	1365	1365	583	1382	1375	645
Stage 1	-	-	-	-	-	-	587	587	-	778	778	-
Stage 2	-	-	-	-	-	-	778	778	-	604	597	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	949	-	-	994	-	-	126	149	490	122	147	476
Stage 1	-	-	-	-	-	-	499	500	-	392	410	-
Stage 2	-	-	-	-	-	-	392	410	-	489	495	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	949	-	-	994	-	-	115	133	490	104	131	476
Mov Cap-2 Maneuver	-	-	-	-	-	-	115	133	-	104	131	-
Stage 1	-	-	-	-	-	-	498	499	-	391	367	-
Stage 2	-	-	-	-	-	-	350	367	-	453	494	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	19.2	12.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	297	949	-	-	994	-	-	476
HCM Lane V/C Ratio	0.146	0.002	-	-	0.067	-	-	0.002
HCM Control Delay (s)	19.2	8.8	0	-	8.9	0	-	12.6
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0.2	-	-	0

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	1	389	4	10	337	0	16	0	62	0	0	0
Future Vol, veh/h	1	389	4	10	337	0	16	0	62	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	423	4	11	366	0	17	0	67	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	366	0	0	427	0	0	815	815	425	849	817	366
Stage 1	-	-	-	-	-	-	427	427	-	388	388	-
Stage 2	-	-	-	-	-	-	388	388	-	461	429	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1204	-	-	1111	-	-	298	303	634	283	313	684
Stage 1	-	-	-	-	-	-	610	572	-	640	612	-
Stage 2	-	-	-	-	-	-	640	595	-	584	587	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1204	-	-	1111	-	-	296	300	634	251	310	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	296	300	-	251	310	-
Stage 1	-	-	-	-	-	-	609	571	-	639	606	-
Stage 2	-	-	-	-	-	-	634	589	-	521	586	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	13.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	514	1204	-	-	1111	-	-	-
HCM Lane V/C Ratio	0.165	0.001	-	-	0.01	-	-	-
HCM Control Delay (s)	13.4	8	0	-	8.3	-	-	0
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	-

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Traffic Vol, veh/h	2	527	18	61	593	1	8	0	32	0	0	1
Future Vol, veh/h	2	527	18	61	593	1	8	0	32	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	573	20	66	645	1	9	0	35	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	646	0	0	592	0	0	1365	1365	583	1382	1375	645
Stage 1	-	-	-	-	-	-	587	587	-	778	778	-
Stage 2	-	-	-	-	-	-	778	778	-	604	597	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	949	-	-	994	-	-	126	149	490	122	147	476
Stage 1	-	-	-	-	-	-	499	500	-	392	410	-
Stage 2	-	-	-	-	-	-	392	410	-	489	495	-
Platoon blocked, %		-	-		-	-		-	-		-	-
Mov Cap-1 Maneuver	949	-	-	994	-	-	119	139	490	107	137	476
Mov Cap-2 Maneuver	-	-	-	-	-	-	119	139	-	107	137	-
Stage 1	-	-	-	-	-	-	498	499	-	391	383	-
Stage 2	-	-	-	-	-	-	365	383	-	453	494	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	18.9	12.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	302	949	-	-	994	-	-	476
HCM Lane V/C Ratio	0.144	0.002	-	-	0.067	-	-	0.002
HCM Control Delay (s)	18.9	8.8	0	-	8.9	-	-	12.6
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0.2	-	-	0

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	19	0	4	0	130	7	6	124	0
Future Vol, veh/h	0	0	0	19	0	4	0	130	7	6	124	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	25	0	4	33	20	6	0
Mvmt Flow	0	0	0	21	0	4	0	141	8	7	135	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	295	297	135	293	293	145	135	0	0	149	0	0
Stage 1	148	148	-	145	145	-	-	-	-	-	-	-
Stage 2	147	149	-	148	148	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	661	618	919	602	621	845	1462	-	-	1329	-	-
Stage 1	859	779	-	789	781	-	-	-	-	-	-	-
Stage 2	860	778	-	786	779	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	655	614	919	599	617	845	1462	-	-	1329	-	-
Mov Cap-2 Maneuver	655	614	-	599	617	-	-	-	-	-	-	-
Stage 1	859	774	-	789	781	-	-	-	-	-	-	-
Stage 2	856	778	-	781	774	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.9	0	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1462	-	-	-	631	1329	-	-
HCM Lane V/C Ratio	-	-	-	-	0.04	0.005	-	-
HCM Control Delay (s)	0	-	-	0	10.9	7.7	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	2	9	0	6	2	231	28	11	182	1
Future Vol, veh/h	0	0	2	9	0	6	2	231	28	11	182	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	2	10	0	7	2	251	30	12	198	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	496	508	198	494	494	266	199	0	0	282	0	0
Stage 1	222	222	-	271	271	-	-	-	-	-	-	-
Stage 2	274	286	-	223	223	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	487	471	848	489	479	778	1385	-	-	1292	-	-
Stage 1	785	723	-	739	689	-	-	-	-	-	-	-
Stage 2	736	679	-	784	723	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	479	466	848	483	474	778	1385	-	-	1292	-	-
Mov Cap-2 Maneuver	479	466	-	483	474	-	-	-	-	-	-	-
Stage 1	784	716	-	738	688	-	-	-	-	-	-	-
Stage 2	729	678	-	774	716	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	11.5	0.1	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1385	-	-	848	569	1292	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.029	0.009	-	-
HCM Control Delay (s)	7.6	-	-	9.3	11.5	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-



**Intersection**

Int Delay, s/veh 1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	2	29	34	104	122	6
Future Vol, veh/h	2	29	34	104	122	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	13	4	3	0
Mvmt Flow	2	32	37	113	133	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	323	136	139	0	-	0
Stage 1	136	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.23	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.317	-	-	-
Pot Cap-1 Maneuver	675	918	1380	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	655	918	1380	-	-	-
Mov Cap-2 Maneuver	655	-	-	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	825	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1380	-	895	-	-
HCM Lane V/C Ratio	0.027	-	0.038	-	-
HCM Control Delay (s)	7.7	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

**Intersection**

Int Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	1	
Traffic Vol, veh/h	2	34	31	234	161	6
Future Vol, veh/h	2	34	31	234	161	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	10	7	3	2	0
Mvmt Flow	2	37	34	254	175	7

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	500	178	182 0
Stage 1	178	-	- -
Stage 2	322	-	- -
Critical Hdwy	6.4	6.3	4.17 -
Critical Hdwy Stg 1	5.4	-	- -
Critical Hdwy Stg 2	5.4	-	- -
Follow-up Hdwy	3.5	3.39	2.263 -
Pot Cap-1 Maneuver	534	845	1364 -
Stage 1	858	-	- -
Stage 2	739	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	519	845	1364 -
Mov Cap-2 Maneuver	519	-	- -
Stage 1	858	-	- -
Stage 2	718	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1364	-	817	-	-
HCM Lane V/C Ratio	0.025	-	0.048	-	-
HCM Control Delay (s)	7.7	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	347	88	30	280	97	47
Future Volume (vph)	347	88	30	280	97	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1724	1507	1785	1740	1674	1555
Flt Permitted			0.482		0.950	
Satd. Flow (perm)	1724	1507	906	1740	1674	1555
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		96				51
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	0%	8%	9%	5%
Adj. Flow (vph)	377	96	33	304	105	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	96	33	304	105	51
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.40	0.11	0.04	0.26	0.38	0.17
Control Delay	13.3	2.5	3.2	6.2	38.4	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	2.5	3.2	6.2	38.4	11.5
LOS	B	A	A	A	D	B
Approach Delay	11.1			5.9	29.6	
Approach LOS	B			A	C	
Queue Length 50th (m)	35.5	0.0	1.3	17.8	16.5	0.0
Queue Length 95th (m)	54.7	6.3	3.2	28.0	31.6	9.5
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	950	873	769	1188	276	299
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	0.11	0.04	0.26	0.38	0.17

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.40  
 Intersection Signal Delay: 12.3  
 Intersection Capacity Utilization 53.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

**Splits and Phases: 8: Grey Road 19 & Highway 26**

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2021 - Future Background - PM  
12/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↘	↗
Traffic Volume (vph)	483	145	47	514	176	62
Future Volume (vph)	483	145	47	514	176	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected			0.950		0.950	
Satd. Flow (prot)	1824	1551	1785	1842	1772	1601
Fl <sub>t</sub> Permitted			0.367		0.950	
Satd. Flow (perm)	1824	1551	690	1842	1772	1601
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		158				67
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	0%	2%	3%	2%
Adj. Flow (vph)	525	158	51	559	191	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	525	158	51	559	191	67
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.52	0.17	0.08	0.44	0.65	0.21
Control Delay	15.2	2.2	3.4	7.9	47.3	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	2.2	3.4	7.9	47.3	10.6
LOS	B	A	A	A	D	B
Approach Delay	12.2			7.5	37.8	
Approach LOS	B			A	D	
Queue Length 50th (m)	54.2	0.0	1.9	38.7	31.6	0.0
Queue Length 95th (m)	80.7	7.9	4.4	57.6	#56.8	10.8
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	1005	925	632	1258	292	320
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	0.52	0.17	0.08	0.44	0.65	0.21

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 14.6  
 Intersection Capacity Utilization 60.3%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: B  
 ICU Level of Service B

**Splits and Phases: 8: Grey Road 19 & Highway 26**

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	4		↕	0		↕	63		↕	0
Traffic Vol, veh/h	1	429	4	10	372	0	16	0	63	0	0	0
Future Vol, veh/h	1	429	4	10	372	0	16	0	63	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	466	4	11	404	0	17	0	68	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	404	0	0	471	0	0	897	897	468	931	899	404
Stage 1	-	-	-	-	-	-	471	471	-	426	426	-
Stage 2	-	-	-	-	-	-	426	426	-	505	473	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1166	-	-	1070	-	-	263	271	599	249	281	651
Stage 1	-	-	-	-	-	-	577	546	-	610	589	-
Stage 2	-	-	-	-	-	-	610	572	-	553	562	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1166	-	-	1070	-	-	260	267	599	218	277	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	260	267	-	218	277	-
Stage 1	-	-	-	-	-	-	576	545	-	609	581	-
Stage 2	-	-	-	-	-	-	602	565	-	489	561	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	14.3	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	474	1166	-	-	1070	-	-	-
HCM Lane V/C Ratio	0.181	0.001	-	-	0.01	-	-	-
HCM Control Delay (s)	14.3	8.1	0	-	8.4	0	-	0
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	-

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	582	18	62	655	1	8	0	33	0	0	1
Future Vol, veh/h	2	582	18	62	655	1	8	0	33	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	633	20	67	712	1	9	0	36	0	0	1

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	713	0	0	652	0	0	1495	1495	642	1512	1504	713
Stage 1	-	-	-	-	-	-	647	647	-	847	847	-
Stage 2	-	-	-	-	-	-	848	848	-	665	657	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	896	-	-	944	-	-	102	124	453	100	123	435
Stage 1	-	-	-	-	-	-	463	470	-	359	381	-
Stage 2	-	-	-	-	-	-	359	380	-	453	465	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	896	-	-	944	-	-	92	109	453	84	108	435
Mov Cap-2 Maneuver	-	-	-	-	-	-	92	109	-	84	108	-
Stage 1	-	-	-	-	-	-	461	468	-	358	336	-
Stage 2	-	-	-	-	-	-	316	335	-	415	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	21.9	13.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	257	896	-	-	944	-	-	435
HCM Lane V/C Ratio	0.173	0.002	-	-	0.071	-	-	0.002
HCM Control Delay (s)	21.9	9	0	-	9.1	0	-	13.3
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.2	-	-	0



**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	1	429	4	10	372	0	16	0	63	0	0	0
Future Vol, veh/h	1	429	4	10	372	0	16	0	63	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	466	4	11	404	0	17	0	68	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	404	0	0	471	0	0	897	897	468	931	899	404
Stage 1	-	-	-	-	-	-	471	471	-	426	426	-
Stage 2	-	-	-	-	-	-	426	426	-	505	473	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1166	-	-	1070	-	-	263	271	599	249	281	651
Stage 1	-	-	-	-	-	-	577	546	-	610	589	-
Stage 2	-	-	-	-	-	-	610	572	-	553	562	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1166	-	-	1070	-	-	261	268	599	219	278	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	261	268	-	219	278	-
Stage 1	-	-	-	-	-	-	576	545	-	609	583	-
Stage 2	-	-	-	-	-	-	604	566	-	489	561	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	14.2	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	475	1166	-	-	1070	-	-	-
HCM Lane V/C Ratio	0.181	0.001	-	-	0.01	-	-	-
HCM Control Delay (s)	14.2	8.1	0	-	8.4	-	-	0
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	-

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	2	582	18	62	655	1	8	0	33	0	0	1
Future Vol, veh/h	2	582	18	62	655	1	8	0	33	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	633	20	67	712	1	9	0	36	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	713	0	0	652	0	0	1495	1495	642	1512	1504	713
Stage 1	-	-	-	-	-	-	647	647	-	847	847	-
Stage 2	-	-	-	-	-	-	848	848	-	665	657	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	896	-	-	944	-	-	102	124	453	100	123	435
Stage 1	-	-	-	-	-	-	463	470	-	359	381	-
Stage 2	-	-	-	-	-	-	359	380	-	453	465	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	896	-	-	944	-	-	96	115	453	87	114	435
Mov Cap-2 Maneuver	-	-	-	-	-	-	96	115	-	87	114	-
Stage 1	-	-	-	-	-	-	461	468	-	358	354	-
Stage 2	-	-	-	-	-	-	333	353	-	415	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	21.5	13.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	263	896	-	-	944	-	-	435
HCM Lane V/C Ratio	0.169	0.002	-	-	0.071	-	-	0.002
HCM Control Delay (s)	21.5	9	0	-	9.1	-	-	13.3
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.2	-	-	0

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	19	0	4	0	144	7	7	137	0
Future Vol, veh/h	0	0	0	19	0	4	0	144	7	7	137	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	25	0	4	33	20	6	0
Mvmt Flow	0	0	0	21	0	4	0	157	8	8	149	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	327	328	149	324	324	160	149	0	0	164	0	0
Stage 1	164	164	-	160	160	-	-	-	-	-	-	-
Stage 2	163	164	-	164	164	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	630	594	903	574	597	828	1445	-	-	1312	-	-
Stage 1	843	766	-	774	769	-	-	-	-	-	-	-
Stage 2	844	766	-	770	766	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	623	590	903	571	593	828	1445	-	-	1312	-	-
Mov Cap-2 Maneuver	623	590	-	571	593	-	-	-	-	-	-	-
Stage 1	843	761	-	774	769	-	-	-	-	-	-	-
Stage 2	840	766	-	765	761	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.2	0	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1445	-	-	-	604	1312	-	-
HCM Lane V/C Ratio	-	-	-	-	0.041	0.006	-	-
HCM Control Delay (s)	0	-	-	0	11.2	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	2		↕	7	↕	↕	29		↕	1
Traffic Vol, veh/h	0	0	2	9	0	7	2	255	29	12	201	1
Future Vol, veh/h	0	0	2	9	0	7	2	255	29	12	201	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	2	10	0	8	2	277	32	13	218	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	546	558	219	543	543	293	220	0	0	309	0	0
Stage 1	245	245	-	297	297	-	-	-	-	-	-	-
Stage 2	301	313	-	246	246	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	452	441	826	454	450	751	1361	-	-	1263	-	-
Stage 1	763	707	-	716	671	-	-	-	-	-	-	-
Stage 2	712	661	-	762	706	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	443	435	826	448	444	751	1361	-	-	1263	-	-
Mov Cap-2 Maneuver	443	435	-	448	444	-	-	-	-	-	-	-
Stage 1	762	699	-	715	670	-	-	-	-	-	-	-
Stage 2	704	660	-	751	698	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	11.8	0.1	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1361	-	-	826	544	1263	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.032	0.01	-	-
HCM Control Delay (s)	7.6	-	-	9.4	11.8	7.9	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

**Intersection**

Int Delay, s/veh 1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	2	32	38	114	133	7
Future Vol, veh/h	2	32	38	114	133	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	13	4	3	0
Mvmt Flow	2	35	41	124	145	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	355	148	152	0	-	0
Stage 1	148	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.23	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.317	-	-	-
Pot Cap-1 Maneuver	647	904	1364	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	626	904	1364	-	-	-
Mov Cap-2 Maneuver	626	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	805	-	-	-	-	-

Approach	EB		NB		SB
HCM Control Delay, s	9.3		1.9		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1364	-	881	-	-
HCM Lane V/C Ratio	0.03	-	0.042	-	-
HCM Control Delay (s)	7.7	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	2	38	34	257	177	7
Future Vol, veh/h	2	38	34	257	177	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	10	7	3	2	0
Mvmt Flow	2	41	37	279	192	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	549	196	200	0	-	0
Stage 1	196	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Critical Hdwy	7.1	6.3	4.17	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.5	3.39	2.263	-	-	-
Pot Cap-1 Maneuver	450	825	1343	-	-	-
Stage 1	810	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	439	825	1343	-	-	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	646	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1343	-	790	-	-
HCM Lane V/C Ratio	0.028	-	0.055	-	-
HCM Control Delay (s)	7.8	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2026 - Future Background - AM  
12/13/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	383	97	33	307	107	52
Future Volume (vph)	383	97	33	307	107	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1724	1507	1785	1740	1674	1555
Flt Permitted			0.450		0.950	
Satd. Flow (perm)	1724	1507	846	1740	1674	1555
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		105				57
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	0%	8%	9%	5%
Adj. Flow (vph)	416	105	36	334	116	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	416	105	36	334	116	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.44	0.12	0.05	0.28	0.42	0.19
Control Delay	13.9	2.4	3.2	6.4	39.4	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	2.4	3.2	6.4	39.4	11.1
LOS	B	A	A	A	D	B
Approach Delay	11.6			6.1	30.1	
Approach LOS	B			A	C	
Queue Length 50th (m)	40.3	0.0	1.4	19.9	18.4	0.0
Queue Length 95th (m)	61.6	6.6	3.4	31.1	34.3	10.0
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	950	877	731	1188	276	304
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	0.44	0.12	0.05	0.28	0.42	0.19

Intersection Summary

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.44  
 Intersection Signal Delay: 12.7  
 Intersection Capacity Utilization 53.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 8: Grey Road 19 & Highway 26

02 (R)	03	04
21.4 s	12 s	57.5 s
	08	
	57.5 s	

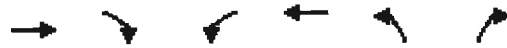


Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2026 - Future Background - PM  
12/13/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↘	↗
Traffic Volume (vph)	532	60	52	567	194	68
Future Volume (vph)	532	60	52	567	194	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected			0.950		0.950	
Satd. Flow (prot)	1824	1551	1785	1842	1772	1601
Fl <sub>t</sub> Permitted			0.328		0.950	
Satd. Flow (perm)	1824	1551	616	1842	1772	1601
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		65				74
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	0%	2%	3%	2%
Adj. Flow (vph)	578	65	57	616	211	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	578	65	57	616	211	74
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.58	0.07	0.10	0.49	0.72	0.23
Control Delay	16.3	2.9	3.5	8.5	51.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	2.9	3.5	8.5	51.6	10.2
LOS	B	A	A	A	D	B
Approach Delay	14.9			8.1	40.9	
Approach LOS	B			A	D	
Queue Length 50th (m)	62.3	0.0	2.2	44.5	35.4	0.0
Queue Length 95th (m)	92.4	5.2	4.8	66.1	#65.6	11.3
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	1005	884	586	1258	292	325
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	0.58	0.07	0.10	0.49	0.72	0.23

Intersection Summary

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 16.6  
 Intersection Capacity Utilization 63.1%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 8: Grey Road 19 & Highway 26

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

**Intersection**

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	389	4	22	337	0	16	0	67	0	0	0
Future Vol, veh/h	1	389	4	22	337	0	16	0	67	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	423	4	24	366	0	17	0	73	0	0	0

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	366	0	0	427	0	0	841	841	425	878	843	366
Stage 1	-	-	-	-	-	-	427	427	-	414	414	-
Stage 2	-	-	-	-	-	-	414	414	-	464	429	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1204	-	-	1111	-	-	287	292	634	271	303	684
Stage 1	-	-	-	-	-	-	610	572	-	620	597	-
Stage 2	-	-	-	-	-	-	620	579	-	582	587	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1204	-	-	1111	-	-	281	284	634	235	295	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	281	284	-	235	295	-
Stage 1	-	-	-	-	-	-	609	571	-	619	581	-
Stage 2	-	-	-	-	-	-	603	563	-	515	586	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	13.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	510	1204	-	-	1111	-	-	-
HCM Lane V/C Ratio	0.177	0.001	-	-	0.022	-	-	-
HCM Control Delay (s)	13.6	8	0	-	8.3	0	-	0
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	-

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	527	18	73	593	1	8	0	49	0	0	1
Future Vol, veh/h	2	527	18	73	593	1	8	0	49	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	573	20	79	645	1	9	0	53	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	646	0	0	592	0	0	1391	1391	583	1418	1401	645
Stage 1	-	-	-	-	-	-	587	587	-	804	804	-
Stage 2	-	-	-	-	-	-	804	804	-	614	597	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	949	-	-	994	-	-	121	143	490	116	141	476
Stage 1	-	-	-	-	-	-	499	500	-	380	398	-
Stage 2	-	-	-	-	-	-	380	398	-	483	495	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	949	-	-	994	-	-	109	125	490	93	123	476
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	125	-	93	123	-
Stage 1	-	-	-	-	-	-	498	499	-	379	349	-
Stage 2	-	-	-	-	-	-	332	349	-	429	494	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	18.5	12.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	329	949	-	-	994	-	-	476
HCM Lane V/C Ratio	0.188	0.002	-	-	0.08	-	-	0.002
HCM Control Delay (s)	18.5	8.8	0	-	8.9	0	-	12.6
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.3	-	-	0

**Intersection**

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	4	↕	↕	0	↕	↕	67	0	↕	0
Traffic Vol, veh/h	1	389	4	22	337	0	16	0	67	0	0	0
Future Vol, veh/h	1	389	4	22	337	0	16	0	67	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	423	4	24	366	0	17	0	73	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	366	0	0	427	0	0	841	841	425	878	843	366
Stage 1	-	-	-	-	-	-	427	427	-	414	414	-
Stage 2	-	-	-	-	-	-	414	414	-	464	429	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1204	-	-	1111	-	-	287	292	634	271	303	684
Stage 1	-	-	-	-	-	-	610	572	-	620	597	-
Stage 2	-	-	-	-	-	-	620	579	-	582	587	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1204	-	-	1111	-	-	282	285	634	236	296	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	282	285	-	236	296	-
Stage 1	-	-	-	-	-	-	609	571	-	619	584	-
Stage 2	-	-	-	-	-	-	607	566	-	515	586	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	13.5	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	511	1204	-	-	1111	-	-	-
HCM Lane V/C Ratio	0.177	0.001	-	-	0.022	-	-	-
HCM Control Delay (s)	13.5	8	0	-	8.3	-	-	0
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	-

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	2	527	18	73	593	1	8	0	49	0	0	1
Future Vol, veh/h	2	527	18	73	593	1	8	0	49	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	573	20	79	645	1	9	0	53	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	646	0	0	592	0	0	1391	1391	583	1418	1401	645
Stage 1	-	-	-	-	-	-	587	587	-	804	804	-
Stage 2	-	-	-	-	-	-	804	804	-	614	597	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	949	-	-	994	-	-	121	143	490	116	141	476
Stage 1	-	-	-	-	-	-	499	500	-	380	398	-
Stage 2	-	-	-	-	-	-	380	398	-	483	495	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	949	-	-	994	-	-	113	131	490	97	129	476
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	131	-	97	129	-
Stage 1	-	-	-	-	-	-	498	499	-	379	366	-
Stage 2	-	-	-	-	-	-	349	366	-	429	494	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	18.2	12.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	334	949	-	-	994	-	-	476
HCM Lane V/C Ratio	0.185	0.002	-	-	0.08	-	-	0.002
HCM Control Delay (s)	18.2	8.8	0	-	8.9	-	-	12.6
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.3	-	-	0

**Intersection**

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	19	0	6	0	130	8	10	125	0
Future Vol, veh/h	0	0	0	19	0	6	0	130	8	10	125	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	25	0	4	33	20	6	0
Mvmt Flow	0	0	0	21	0	7	0	141	9	11	136	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	307	308	136	304	304	146	136	0	0	150	0	0
Stage 1	158	158	-	146	146	-	-	-	-	-	-	-
Stage 2	149	150	-	158	158	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	649	609	918	592	613	844	1461	-	-	1328	-	-
Stage 1	849	771	-	788	780	-	-	-	-	-	-	-
Stage 2	858	777	-	776	771	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	640	604	918	588	607	844	1461	-	-	1328	-	-
Mov Cap-2 Maneuver	640	604	-	588	607	-	-	-	-	-	-	-
Stage 1	849	764	-	788	780	-	-	-	-	-	-	-
Stage 2	851	777	-	769	764	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.9	0	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1461	-	-	-	634	1328	-	-
HCM Lane V/C Ratio	-	-	-	-	0.043	0.008	-	-
HCM Control Delay (s)	0	-	-	0	10.9	7.7	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

**Intersection**

Int Delay, s/veh 0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	2	9	0	10	2	232	29	15	183	1
Future Vol, veh/h	0	0	2	9	0	10	2	232	29	15	183	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	2	10	0	11	2	252	32	16	199	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	510	520	199	505	505	268	200	0	0	284	0	0
Stage 1	232	232	-	272	272	-	-	-	-	-	-	-
Stage 2	278	288	-	233	233	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	477	463	847	481	473	776	1384	-	-	1290	-	-
Stage 1	775	716	-	738	688	-	-	-	-	-	-	-
Stage 2	733	677	-	775	716	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	465	456	847	474	466	776	1384	-	-	1290	-	-
Mov Cap-2 Maneuver	465	456	-	474	466	-	-	-	-	-	-	-
Stage 1	774	706	-	737	687	-	-	-	-	-	-	-
Stage 2	722	676	-	762	706	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	11.3	0.1	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1384	-	-	847	596	1290	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.035	0.013	-	-
HCM Control Delay (s)	7.6	-	-	9.3	11.3	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-



**Intersection**

Int Delay, s/veh 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	29	3	0	1	34	104	7	1	122	6
Future Vol, veh/h	2	0	29	3	0	1	34	104	7	1	122	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	2	2	2	13	4	2	2	3	0
Mvmt Flow	2	0	32	3	0	1	37	113	8	1	133	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	329	333	136	345	332	117	139	0	0	121	0	0
Stage 1	138	138	-	191	191	-	-	-	-	-	-	-
Stage 2	191	195	-	154	141	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.12	6.52	6.22	4.23	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.518	4.018	3.318	2.317	-	-	2.218	-	-
Pot Cap-1 Maneuver	628	587	918	609	588	935	1380	-	-	1467	-	-
Stage 1	870	782	-	811	742	-	-	-	-	-	-	-
Stage 2	815	739	-	848	780	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	613	569	918	575	570	935	1380	-	-	1467	-	-
Mov Cap-2 Maneuver	613	569	-	575	570	-	-	-	-	-	-	-
Stage 1	845	781	-	787	720	-	-	-	-	-	-	-
Stage 2	790	718	-	818	779	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	10.7	1.8	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1380	-	-	889	636	1467	-	-
HCM Lane V/C Ratio	0.027	-	-	0.038	0.007	0.001	-	-
HCM Control Delay (s)	7.7	0	-	9.2	10.7	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	0	-	-

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	34	10	0	1	31	234	7	1	161	6
Future Vol, veh/h	2	0	34	10	0	1	31	234	7	1	161	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	10	2	2	2	7	3	2	2	2	0
Mvmt Flow	2	0	37	11	0	1	34	254	8	1	175	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	506	509	178	525	510	258	182	0	0	262	0	0
Stage 1	180	180	-	326	326	-	-	-	-	-	-	-
Stage 2	326	329	-	199	184	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.3	7.12	6.52	6.22	4.17	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.39	3.518	4.018	3.318	2.263	-	-	2.218	-	-
Pot Cap-1 Maneuver	480	467	845	463	467	781	1364	-	-	1302	-	-
Stage 1	826	750	-	687	648	-	-	-	-	-	-	-
Stage 2	691	646	-	803	747	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	468	453	845	433	453	781	1364	-	-	1302	-	-
Mov Cap-2 Maneuver	468	453	-	433	453	-	-	-	-	-	-	-
Stage 1	802	749	-	667	629	-	-	-	-	-	-	-
Stage 2	670	627	-	767	746	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	13.2	0.9	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1364	-	-	809	451	1302	-	-
HCM Lane V/C Ratio	0.025	-	-	0.048	0.027	0.001	-	-
HCM Control Delay (s)	7.7	0	-	9.7	13.2	7.8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2021 - Future Total - AM  
12/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	347	93	30	280	100	47
Future Volume (vph)	347	93	30	280	100	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1724	1507	1785	1740	1674	1555
Flt Permitted			0.482		0.950	
Satd. Flow (perm)	1724	1507	906	1740	1674	1555
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		101				51
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	0%	8%	9%	5%
Adj. Flow (vph)	377	101	33	304	109	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	101	33	304	109	51
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.40	0.12	0.04	0.26	0.39	0.17
Control Delay	13.3	2.4	3.2	6.2	38.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	2.4	3.2	6.2	38.8	11.5
LOS	B	A	A	A	D	B
Approach Delay	11.0			5.9	30.1	
Approach LOS	B			A	C	
Queue Length 50th (m)	35.5	0.0	1.3	17.8	17.2	0.0
Queue Length 95th (m)	54.7	6.5	3.2	28.0	32.6	9.5
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	950	875	769	1188	276	299
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	0.12	0.04	0.26	0.39	0.17

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.40  
 Intersection Signal Delay: 12.4  
 Intersection Capacity Utilization 53.2%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A

**Splits and Phases: 8: Grey Road 19 & Highway 26**

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2021 - Future Total - PM  
12/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↖	↗
Traffic Volume (vph)	483	150	47	514	181	62
Future Volume (vph)	483	150	47	514	181	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected			0.950		0.950	
Satd. Flow (prot)	1824	1551	1785	1842	1772	1601
Fl <sub>t</sub> Permitted			0.367		0.950	
Satd. Flow (perm)	1824	1551	690	1842	1772	1601
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		163				67
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	0%	2%	3%	2%
Adj. Flow (vph)	525	163	51	559	197	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	525	163	51	559	197	67
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2021 - Future Total - PM  
12/16/2016



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.52	0.18	0.08	0.44	0.67	0.21
Control Delay	15.2	2.1	3.4	7.9	48.5	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	2.1	3.4	7.9	48.5	10.6
LOS	B	A	A	A	D	B
Approach Delay	12.1			7.5	38.9	
Approach LOS	B			A	D	
Queue Length 50th (m)	54.2	0.0	1.9	38.7	32.7	0.0
Queue Length 95th (m)	80.7	8.1	4.4	57.6	#59.4	10.8
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	1005	928	632	1258	292	320
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	0.52	0.18	0.08	0.44	0.67	0.21

Intersection Summary

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.67  
 Intersection Signal Delay: 14.8  
 Intersection Capacity Utilization 60.6%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 8: Grey Road 19 & Highway 26

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	4		↕	0		↕	64		↕	0
Traffic Vol, veh/h	1	474	4	10	411	0	16	0	64	0	0	0
Future Vol, veh/h	1	474	4	10	411	0	16	0	64	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	515	4	11	447	0	17	0	70	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	447	0	0	520	0	0	988	988	517	1022	990	447
Stage 1	-	-	-	-	-	-	520	520	-	468	468	-
Stage 2	-	-	-	-	-	-	468	468	-	554	522	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1124	-	-	1026	-	-	228	239	562	216	248	616
Stage 1	-	-	-	-	-	-	543	519	-	579	565	-
Stage 2	-	-	-	-	-	-	579	548	-	520	534	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1124	-	-	1026	-	-	225	235	562	187	244	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	225	235	-	187	244	-
Stage 1	-	-	-	-	-	-	542	518	-	578	557	-
Stage 2	-	-	-	-	-	-	571	540	-	455	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	15.4	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	432	1124	-	-	1026	-	-	-
HCM Lane V/C Ratio	0.201	0.001	-	-	0.011	-	-	-
HCM Control Delay (s)	15.4	8.2	0	-	8.5	0	-	0
HCM Lane LOS	C	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	-

**Intersection**

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	643	18	63	723	1	8	0	34	0	0	1
Future Vol, veh/h	2	643	18	63	723	1	8	0	34	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	699	20	68	786	1	9	0	37	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	787	0	0	718	0	0	1637	1637	709	1655	1646	786
Stage 1	-	-	-	-	-	-	713	713	-	923	923	-
Stage 2	-	-	-	-	-	-	924	924	-	732	723	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	841	-	-	892	-	-	81	102	415	79	100	395
Stage 1	-	-	-	-	-	-	426	438	-	326	351	-
Stage 2	-	-	-	-	-	-	326	351	-	416	434	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	841	-	-	892	-	-	72	88	415	64	86	395
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	88	-	64	86	-
Stage 1	-	-	-	-	-	-	424	436	-	325	304	-
Stage 2	-	-	-	-	-	-	281	304	-	377	432	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	25.8	14.1
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	218	841	-	-	892	-	-	395
HCM Lane V/C Ratio	0.209	0.003	-	-	0.077	-	-	0.003
HCM Control Delay (s)	25.8	9.3	0	-	9.4	0	-	14.1
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.2	-	-	0



**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	1	474	4	10	411	0	16	0	64	0	0	0
Future Vol, veh/h	1	474	4	10	411	0	16	0	64	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	515	4	11	447	0	17	0	70	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	447	0	0	520	0	0	988	988	517	1022	990	447
Stage 1	-	-	-	-	-	-	520	520	-	468	468	-
Stage 2	-	-	-	-	-	-	468	468	-	554	522	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1124	-	-	1026	-	-	228	239	562	216	248	616
Stage 1	-	-	-	-	-	-	543	519	-	579	565	-
Stage 2	-	-	-	-	-	-	579	548	-	520	534	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1124	-	-	1026	-	-	226	236	562	188	245	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	236	-	188	245	-
Stage 1	-	-	-	-	-	-	542	518	-	578	559	-
Stage 2	-	-	-	-	-	-	573	542	-	455	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	15.4	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	433	1124	-	-	1026	-	-	-
HCM Lane V/C Ratio	0.201	0.001	-	-	0.011	-	-	-
HCM Control Delay (s)	15.4	8.2	0	-	8.5	-	-	0
HCM Lane LOS	C	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	-

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	2	643	18	63	723	1	8	0	34	0	0	1
Future Vol, veh/h	2	643	18	63	723	1	8	0	34	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	699	20	68	786	1	9	0	37	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	787	0	0	718	0	0	1637	1637	709	1655	1646	786
Stage 1	-	-	-	-	-	-	713	713	-	923	923	-
Stage 2	-	-	-	-	-	-	924	924	-	732	723	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	841	-	-	892	-	-	81	102	415	79	100	395
Stage 1	-	-	-	-	-	-	426	438	-	326	351	-
Stage 2	-	-	-	-	-	-	326	351	-	416	434	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	841	-	-	892	-	-	76	94	415	68	92	395
Mov Cap-2 Maneuver	-	-	-	-	-	-	76	94	-	68	92	-
Stage 1	-	-	-	-	-	-	424	436	-	325	324	-
Stage 2	-	-	-	-	-	-	300	324	-	377	432	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	25.1	14.1
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	224	841	-	-	892	-	-	395
HCM Lane V/C Ratio	0.204	0.003	-	-	0.077	-	-	0.003
HCM Control Delay (s)	25.1	9.3	0	-	9.4	-	-	14.1
HCM Lane LOS	D	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0

**Intersection**

Int Delay, s/veh 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	19	0	4	0	159	7	8	151	0
Future Vol, veh/h	0	0	0	19	0	4	0	159	7	8	151	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	25	0	4	33	20	6	0
Mvmt Flow	0	0	0	21	0	4	0	173	8	9	164	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	361	362	164	359	359	177	164	0	0	180	0	0
Stage 1	182	182	-	177	177	-	-	-	-	-	-	-
Stage 2	179	180	-	182	182	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	598	569	886	543	571	810	1427	-	-	1294	-	-
Stage 1	824	753	-	758	756	-	-	-	-	-	-	-
Stage 2	827	754	-	753	753	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	591	564	886	540	566	810	1427	-	-	1294	-	-
Mov Cap-2 Maneuver	591	564	-	540	566	-	-	-	-	-	-	-
Stage 1	824	747	-	758	756	-	-	-	-	-	-	-
Stage 2	823	754	-	747	747	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.6	0	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1427	-	-	-	573	1294	-	-
HCM Lane V/C Ratio	-	-	-	-	0.044	0.007	-	-
HCM Control Delay (s)	0	-	-	0	11.6	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	2	9	0	8	2	282	30	13	222	1
Future Vol, veh/h	0	0	2	9	0	8	2	282	30	13	222	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	2	10	0	9	2	307	33	14	241	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	602	613	242	598	598	323	242	0	0	339	0	0
Stage 1	270	270	-	327	327	-	-	-	-	-	-	-
Stage 2	332	343	-	271	271	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	414	410	802	417	418	723	1336	-	-	1231	-	-
Stage 1	740	690	-	690	651	-	-	-	-	-	-	-
Stage 2	686	641	-	739	689	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	405	404	802	411	412	723	1336	-	-	1231	-	-
Mov Cap-2 Maneuver	405	404	-	411	412	-	-	-	-	-	-	-
Stage 1	739	681	-	689	650	-	-	-	-	-	-	-
Stage 2	677	640	-	727	680	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	12.2	0	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1336	-	-	802	516	1231	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.036	0.011	-	-
HCM Control Delay (s)	7.7	-	-	9.5	12.2	8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

**Intersection**

Int Delay, s/veh 1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑	↑	
Traffic Vol, veh/h	2	35	42	125	145	8
Future Vol, veh/h	2	35	42	125	145	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	13	4	3	0
Mvmt Flow	2	38	46	136	158	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	389	162	166	0	-	0
Stage 1	162	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.23	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.317	-	-	-
Pot Cap-1 Maneuver	619	888	1348	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	596	888	1348	-	-	-
Mov Cap-2 Maneuver	596	-	-	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	785	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1348	-	865	-	-
HCM Lane V/C Ratio	0.034	-	0.046	-	-
HCM Control Delay (s)	7.8	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	2	42	38	282	195	8
Future Vol, veh/h	2	42	38	282	195	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	10	7	3	2	0
Mvmt Flow	2	46	41	307	212	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	605	216	221 0
Stage 1	216	-	- -
Stage 2	389	-	- -
Critical Hdwy	6.4	6.3	4.17 -
Critical Hdwy Stg 1	5.4	-	- -
Critical Hdwy Stg 2	5.4	-	- -
Follow-up Hdwy	3.5	3.39	2.263 -
Pot Cap-1 Maneuver	464	804	1319 -
Stage 1	825	-	- -
Stage 2	689	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	447	804	1319 -
Mov Cap-2 Maneuver	447	-	- -
Stage 1	825	-	- -
Stage 2	664	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1319	-	776	-	-
HCM Lane V/C Ratio	0.031	-	0.062	-	-
HCM Control Delay (s)	7.8	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	422	107	36	337	118	57
Future Volume (vph)	422	107	36	337	118	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.83	
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1724	1507	1785	1740	1674	1555
Flt Permitted			0.417		0.950	
Satd. Flow (perm)	1724	1507	783	1740	1385	1555
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		116				62
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Confl. Peds. (#/hr)					57	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	0%	8%	9%	5%
Adj. Flow (vph)	459	116	39	366	128	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	459	116	39	366	128	62
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.48	0.13	0.06	0.31	0.56	0.20
Control Delay	14.6	2.4	3.3	6.6	45.5	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	2.4	3.3	6.6	45.5	10.9
LOS	B	A	A	A	D	B
Approach Delay	12.2			6.3	34.2	
Approach LOS	B			A	C	
Queue Length 50th (m)	46.1	0.0	1.5	22.3	20.8	0.0
Queue Length 95th (m)	69.9	6.9	3.7	34.6	38.9	10.5
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	950	882	691	1188	228	308
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	0.13	0.06	0.31	0.56	0.20

Intersection Summary

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.56  
 Intersection Signal Delay: 13.7  
 Intersection Capacity Utilization 53.2%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A

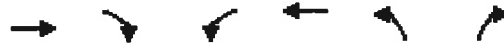
Splits and Phases: 8: Grey Road 19 & Highway 26

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	



Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	586	177	57	625	214	75
Future Volume (vph)	586	177	57	625	214	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected			0.950		0.950	
Satd. Flow (prot)	1824	1551	1785	1842	1772	1601
Fl <sub>t</sub> Permitted			0.285		0.950	
Satd. Flow (perm)	1824	1551	535	1842	1772	1601
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		192				82
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	0%	2%	3%	2%
Adj. Flow (vph)	637	192	62	679	233	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	637	192	62	679	233	82
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.63	0.20	0.12	0.54	0.80	0.25
Control Delay	17.7	2.1	3.6	9.2	57.9	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	2.1	3.6	9.2	57.9	10.1
LOS	B	A	A	A	E	B
Approach Delay	14.1			8.7	45.5	
Approach LOS	B			A	D	
Queue Length 50th (m)	71.9	0.0	2.4	51.8	39.6	0.0
Queue Length 95th (m)	106.7	8.7	5.2	76.7	#75.6	11.8
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	1005	941	534	1258	292	332
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	0.63	0.20	0.12	0.54	0.80	0.25

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 17.2  
 Intersection Capacity Utilization 64.2%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: B  
 ICU Level of Service C

**Splits and Phases: 8: Grey Road 19 & Highway 26**

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

**Intersection**

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	429	4	22	372	0	16	0	68	0	0	0
Future Vol, veh/h	1	429	4	22	372	0	16	0	68	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	466	4	24	404	0	17	0	74	0	0	0

Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	404	0	0	471	0	0	923	923	468	960	925	404
Stage 1	-	-	-	-	-	-	471	471	-	452	452	-
Stage 2	-	-	-	-	-	-	452	452	-	508	473	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1166	-	-	1070	-	-	252	262	599	238	271	651
Stage 1	-	-	-	-	-	-	577	546	-	591	574	-
Stage 2	-	-	-	-	-	-	591	557	-	551	562	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1166	-	-	1070	-	-	246	254	599	204	263	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	246	254	-	204	263	-
Stage 1	-	-	-	-	-	-	576	545	-	590	557	-
Stage 2	-	-	-	-	-	-	574	541	-	483	561	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	14.5	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	470	1166	-	-	1070	-	-	-
HCM Lane V/C Ratio	0.194	0.001	-	-	0.022	-	-	-
HCM Control Delay (s)	14.5	8.1	0	-	8.4	0	-	0
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	-

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	582	18	74	655	1	8	0	50	0	0	1
Future Vol, veh/h	2	582	18	74	655	1	8	0	50	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	633	20	80	712	1	9	0	54	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	713	0	0	652	0	0	1521	1521	642	1547	1530	713
Stage 1	-	-	-	-	-	-	647	647	-	873	873	-
Stage 2	-	-	-	-	-	-	874	874	-	674	657	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	896	-	-	944	-	-	98	120	453	94	118	435
Stage 1	-	-	-	-	-	-	463	470	-	348	370	-
Stage 2	-	-	-	-	-	-	347	370	-	448	465	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	896	-	-	944	-	-	87	103	453	74	101	435
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	103	-	74	101	-
Stage 1	-	-	-	-	-	-	461	468	-	347	318	-
Stage 2	-	-	-	-	-	-	298	318	-	393	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	21	13.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	287	896	-	-	944	-	-	435
HCM Lane V/C Ratio	0.22	0.002	-	-	0.085	-	-	0.002
HCM Control Delay (s)	21	9	0	-	9.2	0	-	13.3
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.3	-	-	0

**Intersection**

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	1	429	4	22	372	0	16	0	68	0	0	0
Future Vol, veh/h	1	429	4	22	372	0	16	0	68	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	466	4	24	404	0	17	0	74	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	404	0	0	471	0	0	923	923	468	960	925	404
Stage 1	-	-	-	-	-	-	471	471	-	452	452	-
Stage 2	-	-	-	-	-	-	452	452	-	508	473	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1166	-	-	1070	-	-	252	262	599	238	271	651
Stage 1	-	-	-	-	-	-	577	546	-	591	574	-
Stage 2	-	-	-	-	-	-	591	557	-	551	562	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1166	-	-	1070	-	-	247	256	599	205	265	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	247	256	-	205	265	-
Stage 1	-	-	-	-	-	-	576	545	-	590	561	-
Stage 2	-	-	-	-	-	-	578	545	-	483	561	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	14.5	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	471	1166	-	-	1070	-	-	-
HCM Lane V/C Ratio	0.194	0.001	-	-	0.022	-	-	-
HCM Control Delay (s)	14.5	8.1	0	-	8.4	-	-	0
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	-

**Intersection**

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘			↕			↕	
Traffic Vol, veh/h	2	582	18	74	655	1	8	0	50	0	0	1
Future Vol, veh/h	2	582	18	74	655	1	8	0	50	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	633	20	80	712	1	9	0	54	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	713	0	0	652	0	0	1521	1521	642	1547	1530	713
Stage 1	-	-	-	-	-	-	647	647	-	873	873	-
Stage 2	-	-	-	-	-	-	874	874	-	674	657	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	896	-	-	944	-	-	98	120	453	94	118	435
Stage 1	-	-	-	-	-	-	463	470	-	348	370	-
Stage 2	-	-	-	-	-	-	347	370	-	448	465	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	896	-	-	944	-	-	91	109	453	77	108	435
Mov Cap-2 Maneuver	-	-	-	-	-	-	91	109	-	77	108	-
Stage 1	-	-	-	-	-	-	461	468	-	347	339	-
Stage 2	-	-	-	-	-	-	317	339	-	393	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	20.6	13.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	293	896	-	-	944	-	-	435
HCM Lane V/C Ratio	0.215	0.002	-	-	0.085	-	-	0.002
HCM Control Delay (s)	20.6	9	0	-	9.2	-	-	13.3
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.3	-	-	0

**Intersection**

Int Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	19	0	6	0	145	8	11	138	0
Future Vol, veh/h	0	0	0	19	0	6	0	145	8	11	138	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	25	0	4	33	20	6	0
Mvmt Flow	0	0	0	21	0	7	0	158	9	12	150	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	339	340	150	336	336	162	150	0	0	166	0	0
Stage 1	174	174	-	162	162	-	-	-	-	-	-	-
Stage 2	165	166	-	174	174	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	619	585	902	563	588	826	1444	-	-	1310	-	-
Stage 1	833	759	-	772	768	-	-	-	-	-	-	-
Stage 2	842	765	-	761	759	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	609	579	902	559	582	826	1444	-	-	1310	-	-
Mov Cap-2 Maneuver	609	579	-	559	582	-	-	-	-	-	-	-
Stage 1	833	751	-	772	768	-	-	-	-	-	-	-
Stage 2	835	765	-	753	751	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.2	0	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1444	-	-	-	606	1310	-	-
HCM Lane V/C Ratio	-	-	-	-	0.045	0.009	-	-
HCM Control Delay (s)	0	-	-	0	11.2	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

**Intersection**

Int Delay, s/veh 0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	2	9	0	11	2	256	30	16	202	1
Future Vol, veh/h	0	0	2	9	0	11	2	256	30	16	202	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	2	10	0	12	2	278	33	17	220	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	560	570	220	555	554	295	221	0	0	311	0	0
Stage 1	255	255	-	299	299	-	-	-	-	-	-	-
Stage 2	305	315	-	256	255	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	442	434	825	445	443	749	1360	-	-	1261	-	-
Stage 1	754	700	-	714	670	-	-	-	-	-	-	-
Stage 2	709	659	-	753	700	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	429	427	825	438	436	749	1360	-	-	1261	-	-
Mov Cap-2 Maneuver	429	427	-	438	436	-	-	-	-	-	-	-
Stage 1	753	690	-	713	669	-	-	-	-	-	-	-
Stage 2	697	658	-	740	690	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	11.6	0.1	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1360	-	-	825	568	1261	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.038	0.014	-	-
HCM Control Delay (s)	7.7	-	-	9.4	11.6	7.9	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-



**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	32	3	0	1	38	114	7	1	133	7
Future Vol, veh/h	2	0	32	3	0	1	38	114	7	1	133	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	2	2	2	13	4	2	2	3	0
Mvmt Flow	2	0	35	3	0	1	41	124	8	1	145	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	362	365	148	378	364	128	152	0	0	132	0	0
Stage 1	151	151	-	210	210	-	-	-	-	-	-	-
Stage 2	211	214	-	168	154	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.12	6.52	6.22	4.23	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.518	4.018	3.318	2.317	-	-	2.218	-	-
Pot Cap-1 Maneuver	598	563	904	580	564	922	1364	-	-	1453	-	-
Stage 1	856	772	-	792	728	-	-	-	-	-	-	-
Stage 2	796	725	-	834	770	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	582	544	904	544	545	922	1364	-	-	1453	-	-
Mov Cap-2 Maneuver	582	544	-	544	545	-	-	-	-	-	-	-
Stage 1	829	771	-	767	705	-	-	-	-	-	-	-
Stage 2	770	702	-	801	769	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	11	1.8	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1364	-	-	876	606	1453	-	-
HCM Lane V/C Ratio	0.03	-	-	0.042	0.007	0.001	-	-
HCM Control Delay (s)	7.7	0	-	9.3	11	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	0	-	-

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	38	10	0	1	34	257	7	1	177	7
Future Vol, veh/h	2	0	38	10	0	1	34	257	7	1	177	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	10	2	2	2	7	3	2	2	2	0
Mvmt Flow	2	0	41	11	0	1	37	279	8	1	192	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	556	559	196	576	559	283	200	0	0	287	0	0
Stage 1	198	198	-	357	357	-	-	-	-	-	-	-
Stage 2	358	361	-	219	202	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.3	7.12	6.52	6.22	4.17	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.39	3.518	4.018	3.318	2.263	-	-	2.218	-	-
Pot Cap-1 Maneuver	445	438	825	428	438	756	1343	-	-	1275	-	-
Stage 1	808	737	-	661	628	-	-	-	-	-	-	-
Stage 2	664	626	-	783	734	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	433	423	825	396	423	756	1343	-	-	1275	-	-
Mov Cap-2 Maneuver	433	423	-	396	423	-	-	-	-	-	-	-
Stage 1	781	736	-	639	607	-	-	-	-	-	-	-
Stage 2	641	605	-	743	733	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	14	0.9	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1343	-	-	789	414	1275	-	-
HCM Lane V/C Ratio	0.028	-	-	0.055	0.029	0.001	-	-
HCM Control Delay (s)	7.8	0	-	9.8	14	7.8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2026 - Future Total - AM  
12/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↘	↗
Traffic Volume (vph)	383	102	33	307	110	52
Future Volume (vph)	383	102	33	307	110	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected			0.950		0.950	
Satd. Flow (prot)	1724	1507	1785	1740	1674	1555
Fl <sub>t</sub> Permitted			0.450		0.950	
Satd. Flow (perm)	1724	1507	846	1740	1674	1555
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		111				57
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	0%	8%	9%	5%
Adj. Flow (vph)	416	111	36	334	120	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	416	111	36	334	120	57
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.44	0.13	0.05	0.28	0.43	0.19
Control Delay	13.9	2.4	3.2	6.4	39.8	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	2.4	3.2	6.4	39.8	11.1
LOS	B	A	A	A	D	B
Approach Delay	11.5			6.1	30.5	
Approach LOS	B			A	C	
Queue Length 50th (m)	40.3	0.0	1.4	19.9	19.1	0.0
Queue Length 95th (m)	61.6	6.8	3.4	31.1	35.5	10.0
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	950	880	731	1188	276	304
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	0.44	0.13	0.05	0.28	0.43	0.19

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.44  
 Intersection Signal Delay: 12.8  
 Intersection Capacity Utilization 53.2%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A

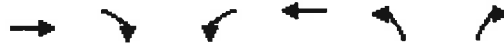
**Splits and Phases: 8: Grey Road 19 & Highway 26**

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2026 - Future Total - PM  
12/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	532	65	52	567	199	68
Future Volume (vph)	532	65	52	567	199	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1824	1551	1785	1842	1772	1601
Flt Permitted			0.328		0.950	
Satd. Flow (perm)	1824	1551	616	1842	1772	1601
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		71				74
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	0%	2%	3%	2%
Adj. Flow (vph)	578	71	57	616	216	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	578	71	57	616	216	74
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.58	0.08	0.10	0.49	0.74	0.23
Control Delay	16.3	2.8	3.5	8.5	52.9	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	2.8	3.5	8.5	52.9	10.2
LOS	B	A	A	A	D	B
Approach Delay	14.8			8.1	42.0	
Approach LOS	B			A	D	
Queue Length 50th (m)	62.3	0.0	2.2	44.5	36.3	0.0
Queue Length 95th (m)	92.4	5.5	4.8	66.1	#67.9	11.3
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	1005	886	586	1258	292	325
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	0.58	0.08	0.10	0.49	0.74	0.23

Intersection Summary

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6; Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 16.9  
 Intersection Capacity Utilization 63.4%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 8: Grey Road 19 & Highway 26

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	474	4	22	411	0	16	0	69	0	0	0
Future Vol, veh/h	1	474	4	22	411	0	16	0	69	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	515	4	24	447	0	17	0	75	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	447	0	0	520	0	0	1015	1015	517	1052	1017	447
Stage 1	-	-	-	-	-	-	520	520	-	495	495	-
Stage 2	-	-	-	-	-	-	495	495	-	557	522	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1124	-	-	1026	-	-	219	231	562	206	239	616
Stage 1	-	-	-	-	-	-	543	519	-	560	549	-
Stage 2	-	-	-	-	-	-	560	533	-	518	534	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1124	-	-	1026	-	-	214	224	562	174	231	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	214	224	-	174	231	-
Stage 1	-	-	-	-	-	-	542	518	-	559	532	-
Stage 2	-	-	-	-	-	-	543	516	-	448	533	-

Approach	EB			WB			NB			SB
HCM Control Delay, s	0			0.4			15.6			0
HCM LOS							C			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	430	1124	-	-	1026	-	-	-
HCM Lane V/C Ratio	0.215	0.001	-	-	0.023	-	-	-
HCM Control Delay (s)	15.6	8.2	0	-	8.6	0	-	0
HCM Lane LOS	C	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	-

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	643	18	75	723	1	8	0	51	0	0	1
Future Vol, veh/h	2	643	18	75	723	1	8	0	51	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	699	20	82	786	1	9	0	55	0	0	1

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	787	0	0	718	0	0	1663	1663	709	1690	1672	786
Stage 1	-	-	-	-	-	-	713	713	-	949	949	-
Stage 2	-	-	-	-	-	-	950	950	-	741	723	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	841	-	-	892	-	-	78	98	415	75	97	395
Stage 1	-	-	-	-	-	-	426	438	-	315	342	-
Stage 2	-	-	-	-	-	-	315	341	-	411	434	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	841	-	-	892	-	-	68	82	415	57	81	395
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	82	-	57	81	-
Stage 1	-	-	-	-	-	-	424	436	-	314	286	-
Stage 2	-	-	-	-	-	-	263	285	-	355	432	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	24.8	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	245	841	-	-	892	-	-	395
HCM Lane V/C Ratio	0.262	0.003	-	-	0.091	-	-	0.003
HCM Control Delay (s)	24.8	9.3	0	-	9.4	0	-	14.1
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1	0	-	-	0.3	-	-	0



**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	1	474	4	22	411	0	16	0	69	0	0	0
Future Vol, veh/h	1	474	4	22	411	0	16	0	69	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	6	0	0	0	10	0	0	0	0
Mvmt Flow	1	515	4	24	447	0	17	0	75	0	0	0

Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	447	0	0	520	0	0	1015	1015	517	1052	1017	447
Stage 1	-	-	-	-	-	-	520	520	-	495	495	-
Stage 2	-	-	-	-	-	-	495	495	-	557	522	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.6	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4.09	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1124	-	-	1026	-	-	219	231	562	206	239	616
Stage 1	-	-	-	-	-	-	543	519	-	560	549	-
Stage 2	-	-	-	-	-	-	560	533	-	518	534	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1124	-	-	1026	-	-	215	225	562	175	233	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	215	225	-	175	233	-
Stage 1	-	-	-	-	-	-	542	518	-	559	536	-
Stage 2	-	-	-	-	-	-	547	521	-	448	533	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	15.6	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	431	1124	-	-	1026	-	-	-
HCM Lane V/C Ratio	0.214	0.001	-	-	0.023	-	-	-
HCM Control Delay (s)	15.6	8.2	0	-	8.6	-	-	0
HCM Lane LOS	C	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	-

**Intersection**

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	2	643	18	75	723	1	8	0	51	0	0	1
Future Vol, veh/h	2	643	18	75	723	1	8	0	51	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	1	0	0	0	14	0	0	0
Mvmt Flow	2	699	20	82	786	1	9	0	55	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	787	0	0	718	0	0	1663	1663	709	1690	1672	786
Stage 1	-	-	-	-	-	-	713	713	-	949	949	-
Stage 2	-	-	-	-	-	-	950	950	-	741	723	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.34	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.426	3.5	4	3.3
Pot Cap-1 Maneuver	841	-	-	892	-	-	78	98	415	75	97	395
Stage 1	-	-	-	-	-	-	426	438	-	315	342	-
Stage 2	-	-	-	-	-	-	315	341	-	411	434	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	841	-	-	892	-	-	72	89	415	60	88	395
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	89	-	60	88	-
Stage 1	-	-	-	-	-	-	424	436	-	314	311	-
Stage 2	-	-	-	-	-	-	285	310	-	355	432	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	24.1	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	252	841	-	-	892	-	-	395
HCM Lane V/C Ratio	0.254	0.003	-	-	0.091	-	-	0.003
HCM Control Delay (s)	24.1	9.3	0	-	9.4	-	-	14.1
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	1	0	-	-	0.3	-	-	0

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	0	19	0	6	0	160	8	12	152	0
Future Vol, veh/h	0	0	0	19	0	6	0	160	8	12	152	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	33	0	25	0	4	33	20	6	0
Mvmt Flow	0	0	0	21	0	7	0	174	9	13	165	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	373	374	165	369	369	178	165	0	0	183	0	0
Stage 1	191	191	-	178	178	-	-	-	-	-	-	-
Stage 2	182	183	-	191	191	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.43	6.5	6.45	4.1	-	-	4.3	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.43	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.797	4	3.525	2.2	-	-	2.38	-	-
Pot Cap-1 Maneuver	588	560	885	534	563	809	1426	-	-	1291	-	-
Stage 1	815	746	-	757	756	-	-	-	-	-	-	-
Stage 2	824	752	-	744	746	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	578	554	885	530	557	809	1426	-	-	1291	-	-
Mov Cap-2 Maneuver	578	554	-	530	557	-	-	-	-	-	-	-
Stage 1	815	738	-	757	756	-	-	-	-	-	-	-
Stage 2	817	752	-	736	738	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	11.5	0	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1426	-	-	-	578	1291	-	-
HCM Lane V/C Ratio	-	-	-	-	0.047	0.01	-	-
HCM Control Delay (s)	0	-	-	0	11.5	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	2	9	0	12	2	283	31	17	223	1
Future Vol, veh/h	0	0	2	9	0	12	2	283	31	17	223	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	600	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	3	9	0	2	0
Mvmt Flow	0	0	2	10	0	13	2	308	34	18	242	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	615	626	243	610	609	324	243	0	0	341	0	0
Stage 1	280	280	-	329	329	-	-	-	-	-	-	-
Stage 2	335	346	-	281	280	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	406	403	801	409	412	722	1335	-	-	1229	-	-
Stage 1	731	683	-	688	650	-	-	-	-	-	-	-
Stage 2	683	639	-	730	683	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	393	396	801	402	404	722	1335	-	-	1229	-	-
Mov Cap-2 Maneuver	393	396	-	402	404	-	-	-	-	-	-	-
Stage 1	730	671	-	687	649	-	-	-	-	-	-	-
Stage 2	670	638	-	716	671	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	12	0	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1335	-	-	801	538	1229	-	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.042	0.015	-	-
HCM Control Delay (s)	7.7	-	-	9.5	12	8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	35	3	0	1	42	125	7	1	145	8
Future Vol, veh/h	2	0	35	3	0	1	42	125	7	1	145	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	2	2	2	13	4	2	2	3	0
Mvmt Flow	2	0	38	3	0	1	46	136	8	1	158	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	396	399	162	414	399	140	166	0	0	143	0	0
Stage 1	164	164	-	231	231	-	-	-	-	-	-	-
Stage 2	232	235	-	183	168	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.12	6.52	6.22	4.23	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.518	4.018	3.318	2.317	-	-	2.218	-	-
Pot Cap-1 Maneuver	568	539	888	549	539	908	1348	-	-	1440	-	-
Stage 1	843	762	-	772	713	-	-	-	-	-	-	-
Stage 2	775	710	-	819	759	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	551	519	888	510	519	908	1348	-	-	1440	-	-
Mov Cap-2 Maneuver	551	519	-	510	519	-	-	-	-	-	-	-
Stage 1	812	761	-	743	687	-	-	-	-	-	-	-
Stage 2	745	684	-	783	758	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	11.3	1.9	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1348	-	-	860	573	1440	-	-
HCM Lane V/C Ratio	0.034	-	-	0.047	0.008	0.001	-	-
HCM Control Delay (s)	7.8	0	-	9.4	11.3	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	0	-	-

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	42	10	0	1	38	282	7	1	195	8
Future Vol, veh/h	2	0	42	10	0	1	38	282	7	1	195	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	10	2	2	2	7	3	2	2	2	0
Mvmt Flow	2	0	46	11	0	1	41	307	8	1	212	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	611	615	216	634	616	310	221	0	0	314	0	0
Stage 1	218	218	-	393	393	-	-	-	-	-	-	-
Stage 2	393	397	-	241	223	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.3	7.12	6.52	6.22	4.17	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.39	3.518	4.018	3.318	2.263	-	-	2.218	-	-
Pot Cap-1 Maneuver	409	407	804	392	406	730	1319	-	-	1246	-	-
Stage 1	789	723	-	632	606	-	-	-	-	-	-	-
Stage 2	636	603	-	762	719	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	396	391	804	359	390	730	1319	-	-	1246	-	-
Mov Cap-2 Maneuver	396	391	-	359	390	-	-	-	-	-	-	-
Stage 1	759	722	-	608	583	-	-	-	-	-	-	-
Stage 2	611	580	-	718	718	-	-	-	-	-	-	-

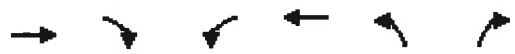
Approach	EB	WB	NB	SB
HCM Control Delay, s	10	14.9	0.9	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1319	-	-	768	376	1246	-	-
HCM Lane V/C Ratio	0.031	-	-	0.062	0.032	0.001	-	-
HCM Control Delay (s)	7.8	0	-	10	14.9	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2031 - Future Total - AM  
12/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↖	↗
Traffic Volume (vph)	422	112	36	337	121	57
Future Volume (vph)	422	112	36	337	121	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.83	
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1724	1507	1785	1740	1674	1555
Flt Permitted			0.417		0.950	
Satd. Flow (perm)	1724	1507	783	1740	1385	1555
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		122				62
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Confl. Peds. (#/hr)					57	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	6%	0%	8%	9%	5%
Adj. Flow (vph)	459	122	39	366	132	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	459	122	39	366	132	62
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.48	0.14	0.06	0.31	0.58	0.20
Control Delay	14.6	2.3	3.3	6.6	46.3	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	2.3	3.3	6.6	46.3	10.9
LOS	B	A	A	A	D	B
Approach Delay	12.1			6.3	35.0	
Approach LOS	B			A	C	
Queue Length 50th (m)	46.1	0.0	1.5	22.3	21.5	0.0
Queue Length 95th (m)	69.9	7.0	3.7	34.6	39.9	10.5
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	950	885	691	1188	228	308
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	0.14	0.06	0.31	0.58	0.20

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.58  
 Intersection Signal Delay: 13.8  
 Intersection Capacity Utilization 53.2%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 8: Grey Road 19 & Highway 26

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	



Lanes, Volumes, Timings  
8: Grey Road 19 & Highway 26

2031 - Future Total - PM  
12/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↙	↑	↙	↗
Traffic Volume (vph)	586	182	57	625	219	75
Future Volume (vph)	586	182	57	625	219	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.7	3.7
Storage Length (m)		80.0	190.0		50.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.6		7.6	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected			0.950		0.950	
Satd. Flow (prot)	1824	1551	1785	1842	1772	1601
Fl <sub>t</sub> Permitted			0.285		0.950	
Satd. Flow (perm)	1824	1551	535	1842	1772	1601
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		198				82
Link Speed (k/h)	50			80	80	
Link Distance (m)	533.4			281.9	68.7	
Travel Time (s)	38.4			12.7	3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	0%	2%	3%	2%
Adj. Flow (vph)	637	198	62	679	238	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	637	198	62	679	238	82
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.5			3.5	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.9			4.9	4.9	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	1.01	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Turn Type	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	4		3	8		
Permitted Phases		4	8		2	2
Minimum Split (s)	47.4	47.4	9.5	47.4	16.4	16.4
Total Split (s)	57.5	57.5	12.0	57.5	21.4	21.4
Total Split (%)	63.3%	63.3%	13.2%	63.3%	23.5%	23.5%
Maximum Green (s)	50.1	50.1	10.0	50.1	15.0	15.0
Yellow Time (s)	5.9	5.9	2.0	5.9	5.0	5.0
All-Red Time (s)	1.5	1.5	0.0	1.5	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.4	7.4	2.0	7.4	6.4	6.4
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Walk Time (s)	35.0	35.0		35.0		
Flash Dont Walk (s)	5.0	5.0		5.0		
Pedestrian Calls (#/hr)	0	0		0		
Act Effct Green (s)	50.1	50.1	67.5	62.1	15.0	15.0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.55	0.55	0.74	0.68	0.17	0.17
v/c Ratio	0.63	0.21	0.12	0.54	0.82	0.25
Control Delay	17.7	2.1	3.6	9.2	59.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	2.1	3.6	9.2	59.7	10.1
LOS	B	A	A	A	E	B
Approach Delay	14.0			8.7	47.0	
Approach LOS	B			A	D	
Queue Length 50th (m)	71.9	0.0	2.4	51.8	40.6	0.0
Queue Length 95th (m)	106.7	8.9	5.2	76.7	#77.8	11.8
Internal Link Dist (m)	509.4			257.9	44.7	
Turn Bay Length (m)		80.0	190.0		50.0	
Base Capacity (vph)	1005	943	534	1258	292	332
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	0.63	0.21	0.12	0.54	0.82	0.25

Intersection Summary

Area Type: Other  
 Cycle Length: 90.9  
 Actuated Cycle Length: 90.9  
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.82  
 Intersection Signal Delay: 17.5  
 Intersection Capacity Utilization 64.5%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

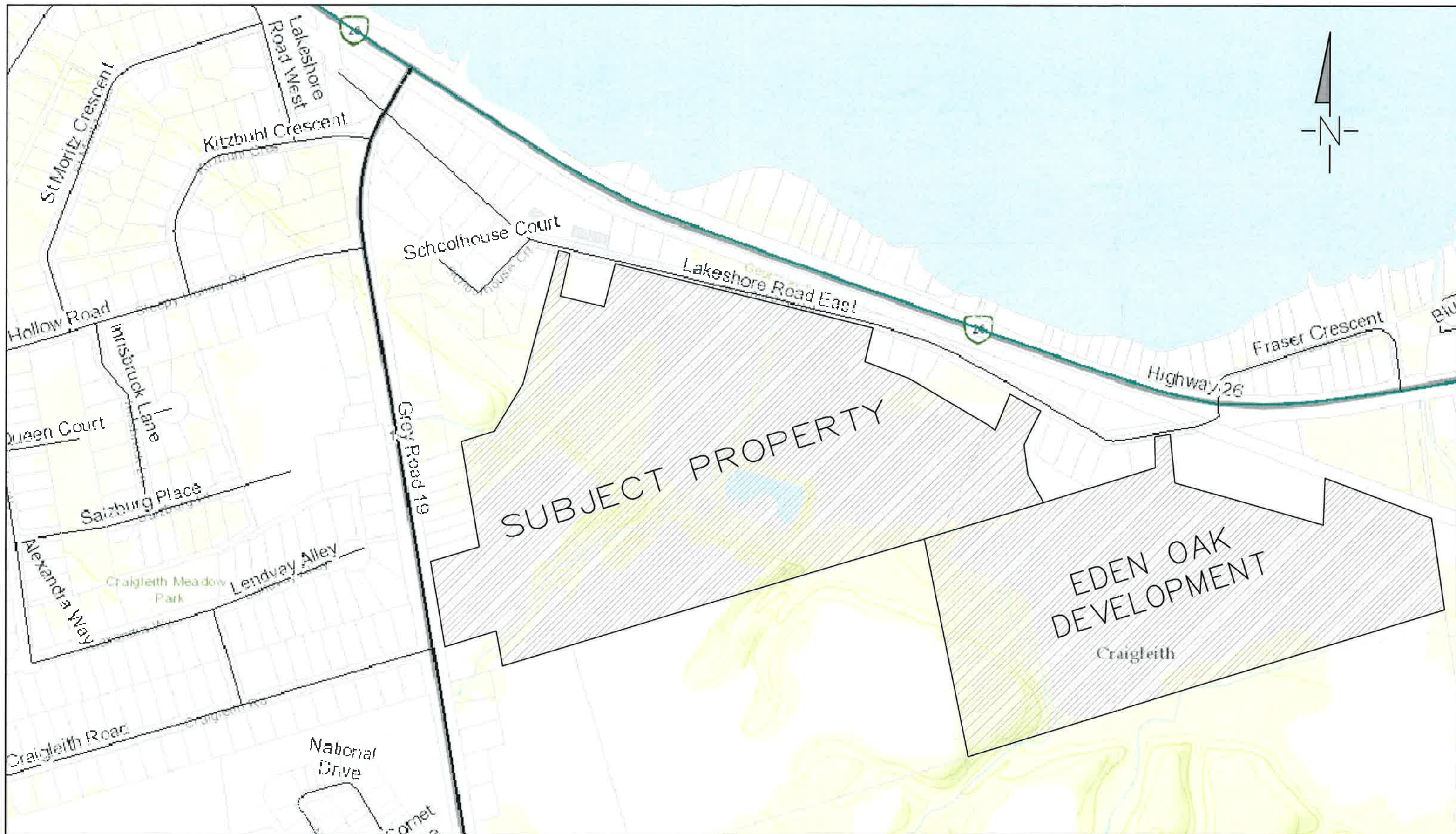
Intersection LOS: B  
 ICU Level of Service C



Splits and Phases: 8: Grey Road 19 & Highway 26

Ø2 (R)	Ø3	Ø4
21.4 s	12 s	57.5 s
	Ø8	
	57.5 s	

# FIGURES

<b>Figure 1:</b>	Site Location
<b>Figure 2:</b>	Concept Plan
<b>Figure 3:</b>	2016 Existing Traffic Volumes
<b>Figure 4:</b>	Background Trip Distribution
<b>Figure 5:</b>	Background Trip Assignment
<b>Figure 6:</b>	2021 Future Background Traffic Volumes
<b>Figure 7:</b>	2026 Future Background Traffic Volumes
<b>Figure 8:</b>	2031 Future Background Traffic Volumes
<b>Figure 9:</b>	Primary Trip Distribution
<b>Figure 10:</b>	Primary Trip Assignment
<b>Figure 11:</b>	2019 Total Traffic Volumes
<b>Figure 12:</b>	2024 Total Traffic Volumes
<b>Figure 13:</b>	2031 Total Traffic Volumes



	<p>Legend</p> <p> = SUBJECT PROPERTY</p>	<p>Project</p> <p>PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS</p> <p>Drawing</p> <p>SITE LOCATION</p>	<p> <b>CROZIER &amp; ASSOCIATES</b> Consulting Engineers</p> <p>THE HARBOUREGE BUILDING, 40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3 705 446-3510 T 705 446-3520 F www.crozier.ca info@crozier.ca</p> <table border="1"> <tr> <td>Drawn By</td> <td>C.W.</td> <td>Design By</td> <td>C.W./M.F.</td> <td>Project</td> <td>1046-4031</td> </tr> <tr> <td>Scale</td> <td>1:1000</td> <td>Date</td> <td>12/21/2016</td> <td>Check By</td> <td>A.J.F.</td> </tr> <tr> <td colspan="5"></td> <td>Drawing</td> <td>FIG. 1</td> </tr> </table>	Drawn By	C.W.	Design By	C.W./M.F.	Project	1046-4031	Scale	1:1000	Date	12/21/2016	Check By	A.J.F.						Drawing	FIG. 1
Drawn By	C.W.	Design By	C.W./M.F.	Project	1046-4031																	
Scale	1:1000	Date	12/21/2016	Check By	A.J.F.																	
					Drawing	FIG. 1																

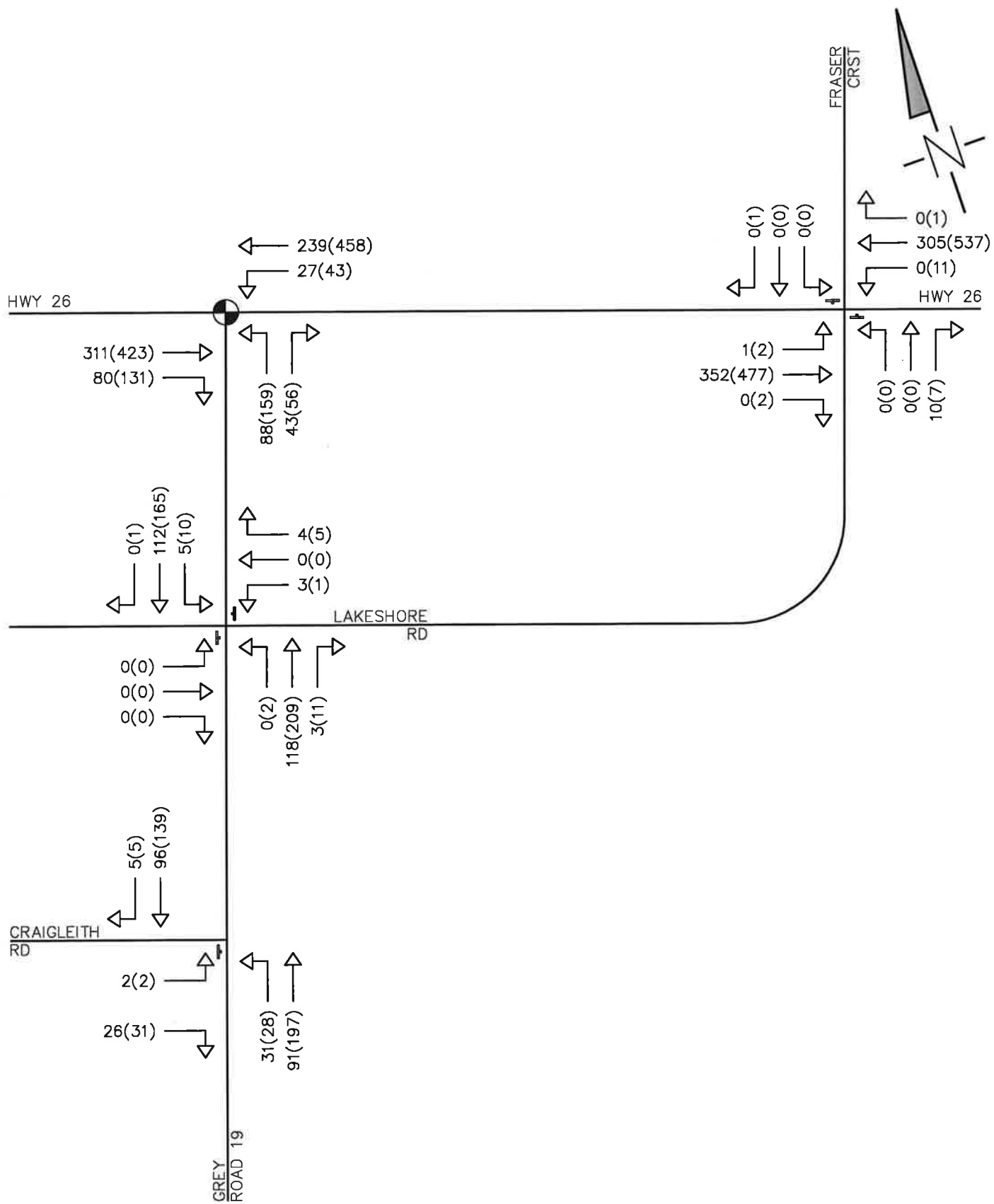
**LEGEND**

- SENSITIVE AREAS
- RESIDENTIAL - SINGLE DETACHED
- RESIDENTIAL - ATTACHED
- REC CENTRE
- OPEN SPACE



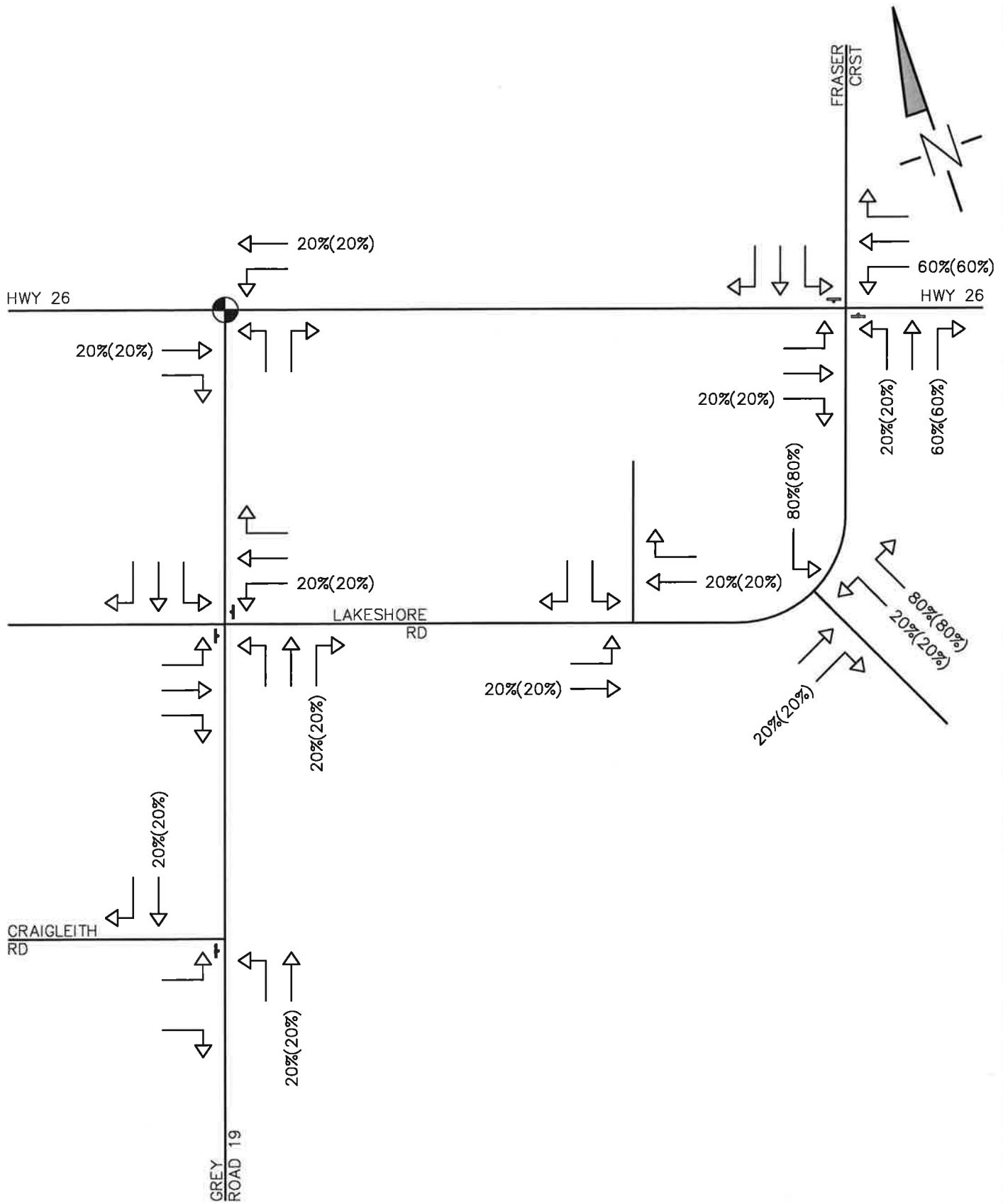
Site Stats

	area A	area B	area C	area D	Total
	#	#	#	#	
Towns @7m x 30m	6	45	43		94
Singles @12m x 30m			14		14
Singles @14m x 25m		8	39	58	105
<b>Subtotal Units</b>	<b>6</b>	<b>53</b>	<b>96</b>	<b>58</b>	<b>213</b>
Frontage	m	m	m	m	m
<b>Total Frontage Length</b>	<b>50</b>	<b>545</b>	<b>1132</b>	<b>837</b>	<b>2564</b>
Roads @12m ROW					1987
Lanes @8m ROW					343
<b>Total Road Length</b>					<b>2330</b>





NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.


<b>Legend</b> SIGNAL CONTROL STOP CONTROL XX(YY) AM (PM)	<b>Project</b> PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS	 <b>CROZIER &amp; ASSOCIATES</b> Consulting Engineers <small>THE HARRISON EDGE BUILDING          40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3          705-446-0510 F          705-446-3523 F          WWW.CFCROZIER.CA          INFO@CFCROZIER.CA</small>											
	<b>Drawing</b> 2016 EXISTING TRAFFIC VOLUMES		<table border="1"> <tr> <td>Drawn By</td> <td>K.J.L.</td> <td>Design By</td> <td>M.F.</td> <td>Project</td> <td>1046-4031</td> </tr> <tr> <td>Scale</td> <td>N.T.S.</td> <td>Date</td> <td>DEC. 09, 2016</td> <td>Check By</td> <td>M.L.</td> </tr> </table>	Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	Scale	N.T.S.	Date	DEC. 09, 2016
Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031								
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.								



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS		
Drawing	BACKGROUND TRIP DISTRIBUTION (EDEN OAK)		

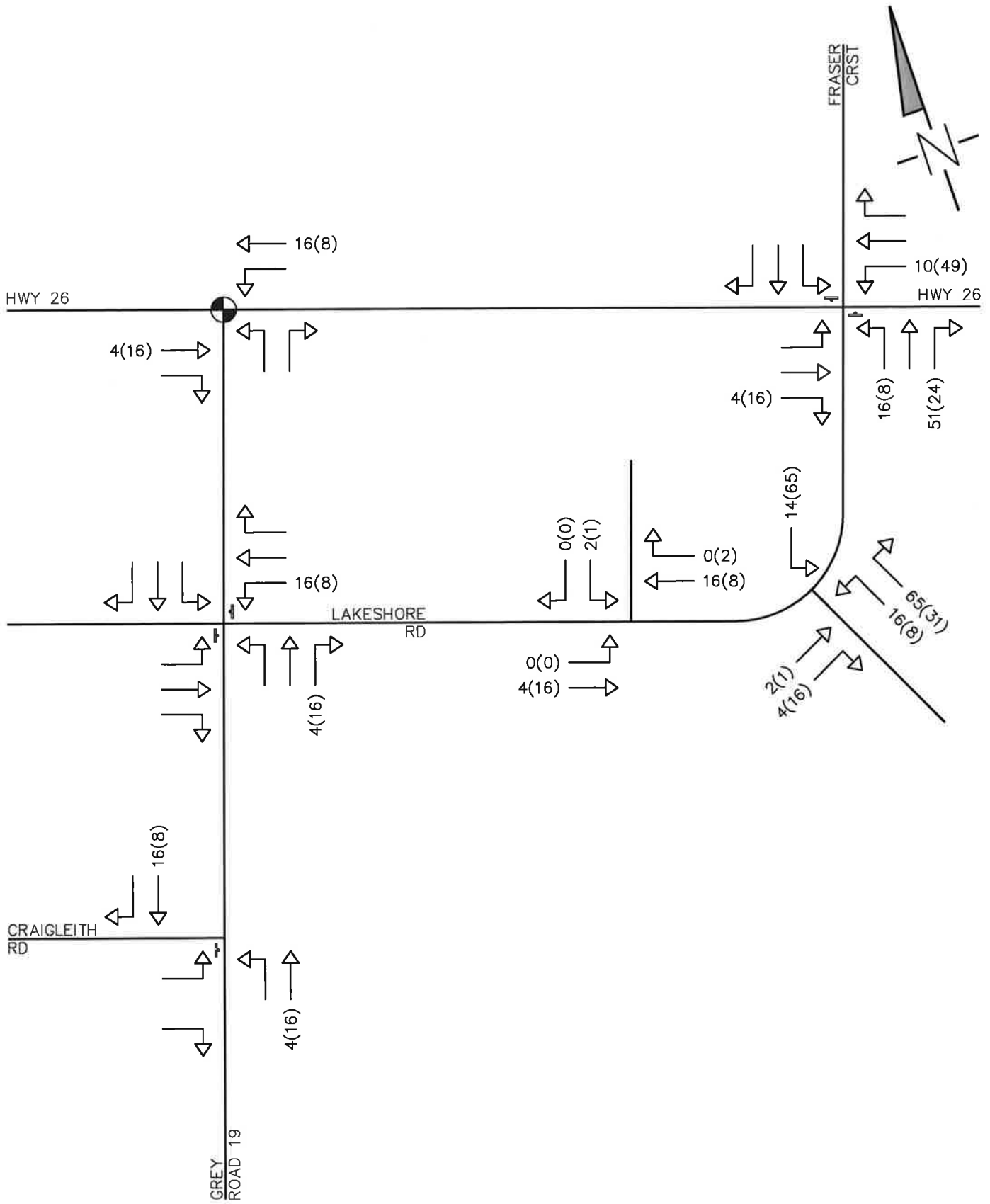


**CROZIER & ASSOCIATES**  
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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.	
					Drawing	FIG. 4



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS		
Drawing	BACKGROUND TRIP ASSIGNMENT (EDEN OAK)		

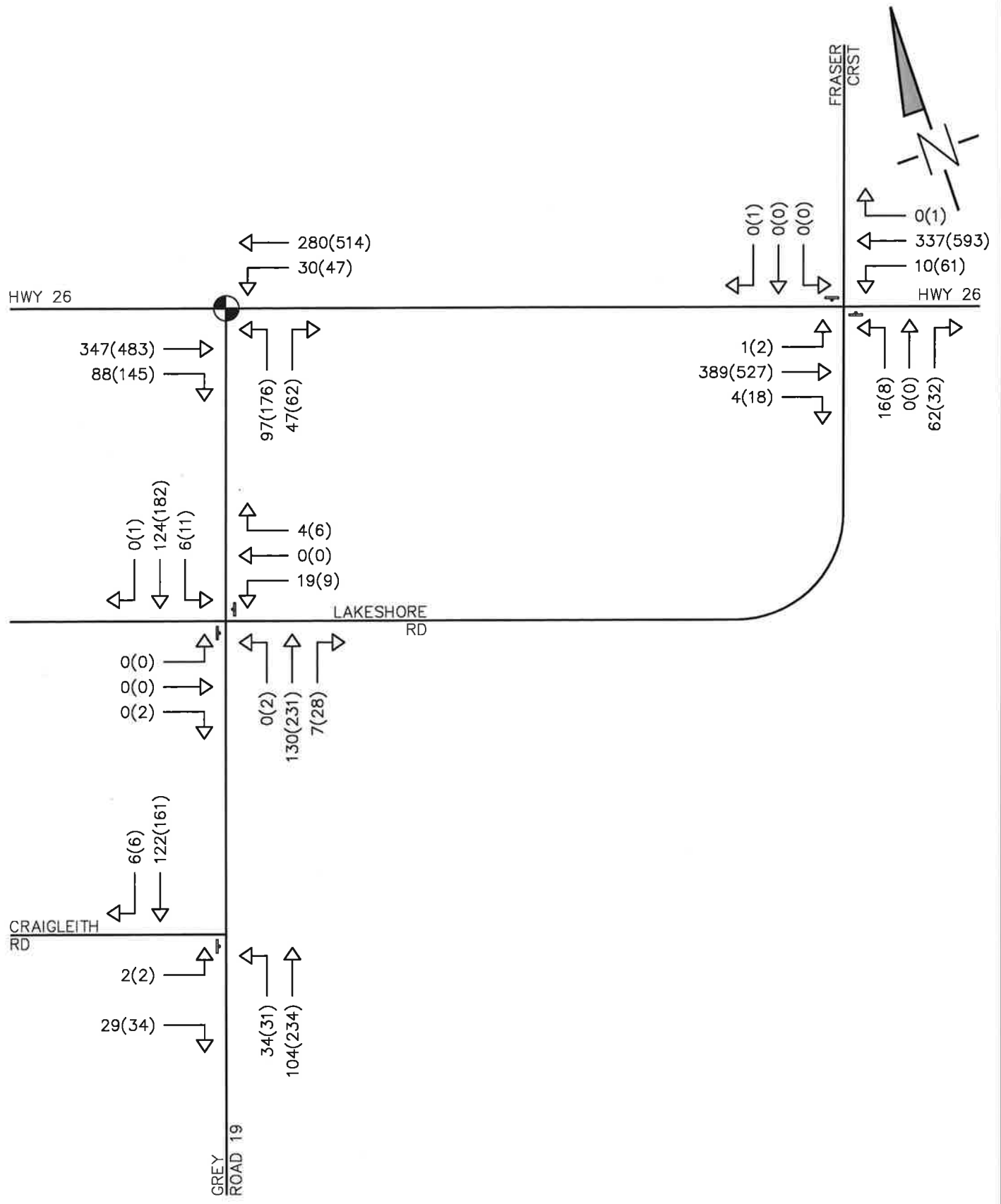
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Consulting Engineers

THE HARBOUREDGE BUILDING  
40 HURON STREET, SUITE 3011, COLLINGWOOD, ON L9Y 4R3

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705-446-3920 F  
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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.	
					Drawing	FIG. 5





NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

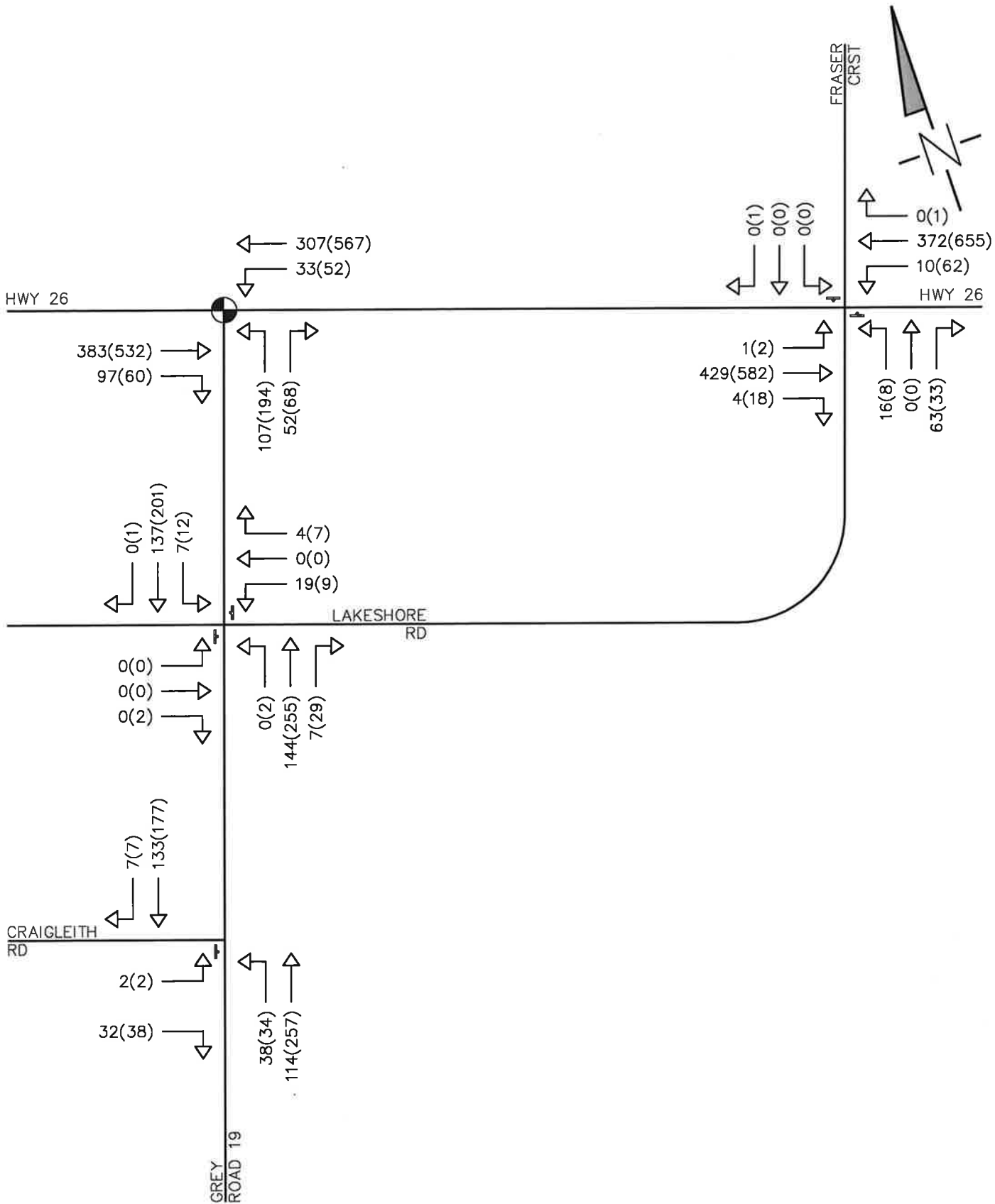
Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS	
Drawing	2021 FUTURE BACKGROUND	

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THE HARBOUR EDGE BUILDING,  
40 HURON STREET, SUITE  
301, COLLINGWOOD, ON  
L9Y 4R3

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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.	
					Drawing	FIG. 6



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

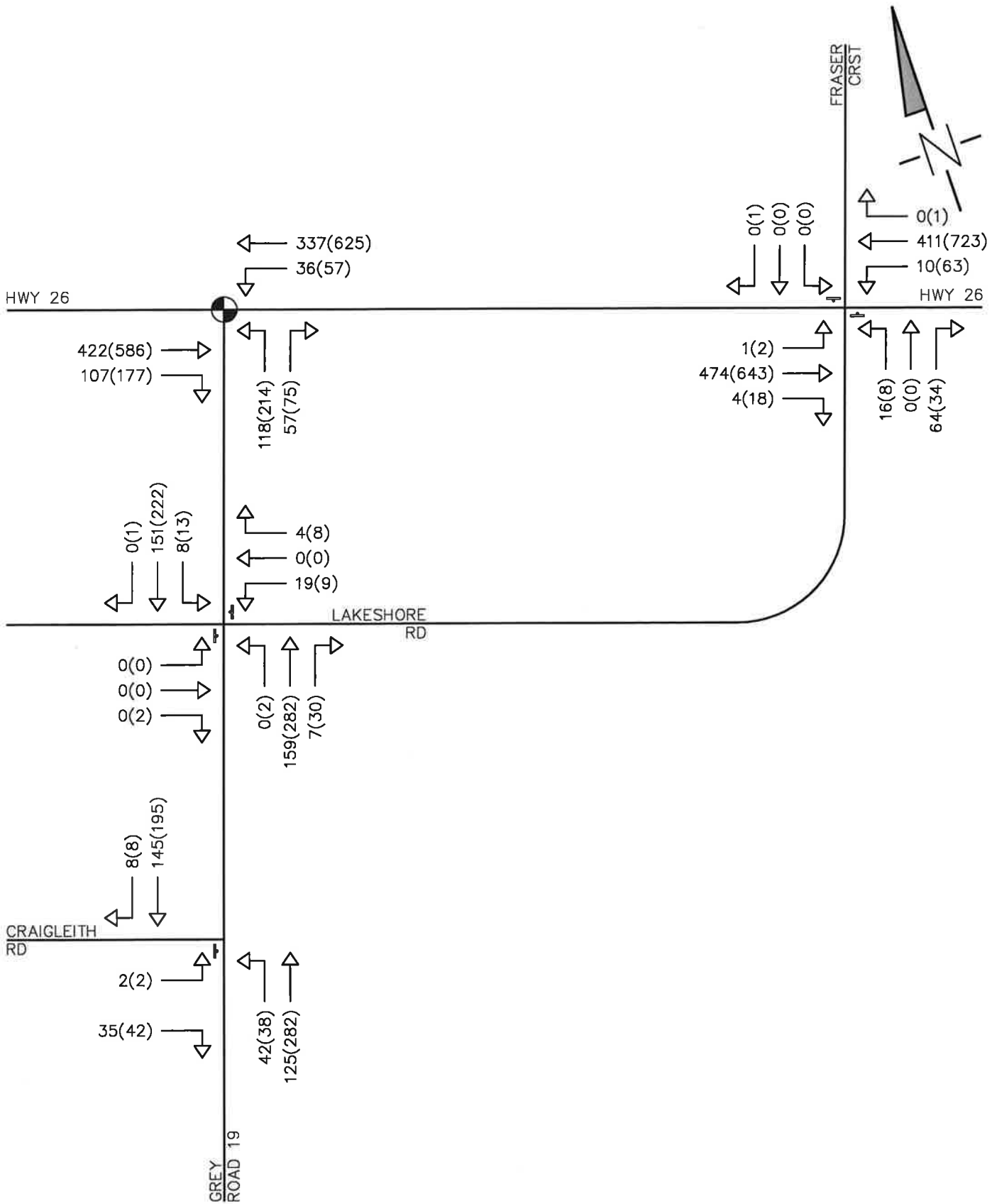
Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS	
Drawing	2026 FUTURE BACKGROUND	

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THE HARBORVIEW BUILDING  
40 HURON STREET, SUITE  
301, COLLINGSWOOD, ON  
L9V 4R3

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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.	
					Drawing	FIG. 7



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

Legend	
	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

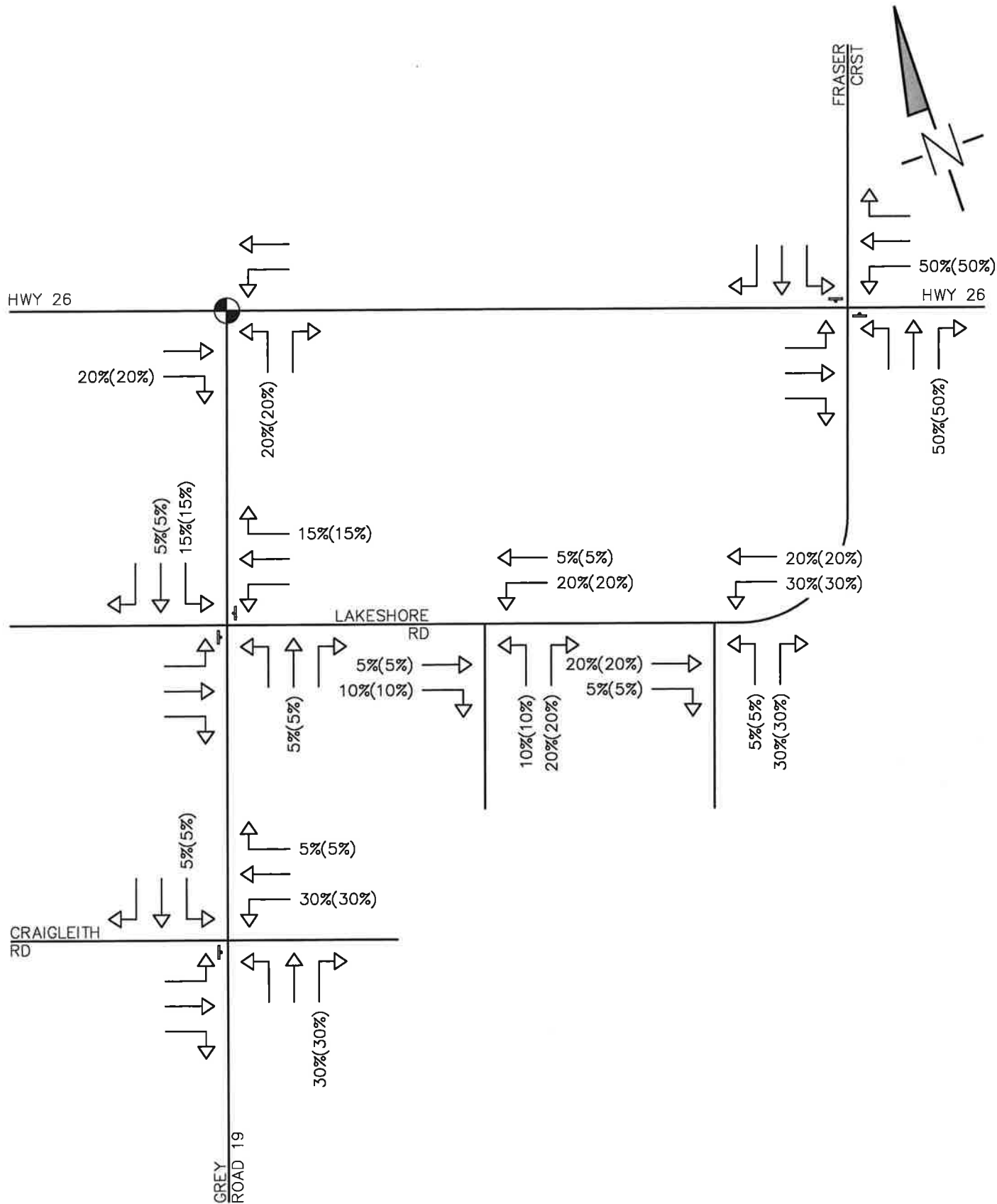
Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS	
Drawing	2031 FUTURE BACKGROUND	

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THE HARBOUREDGE BUILDING  
40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3

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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.	
					Drawing	FIG. 8



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS		
Drawing	PRIMARY TRIP DISTRIBUTION (PARKBRIDGE)		

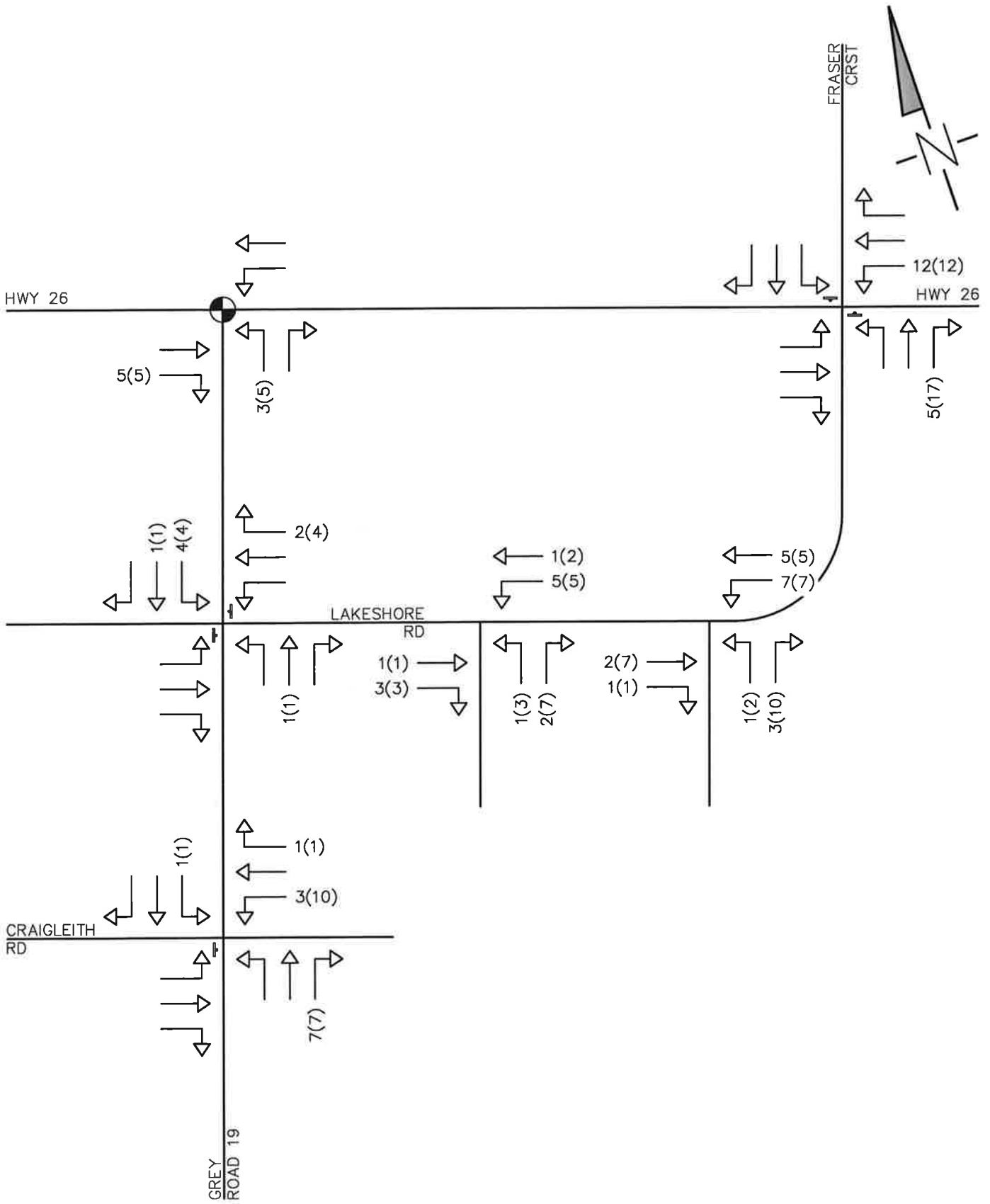


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THE HARBOR EDGE BUILDING  
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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.	
					Drawing	FIG. 9



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS		
Drawing	PRIMARY TRIP ASSIGNMENT (PARKBRIDGE)		

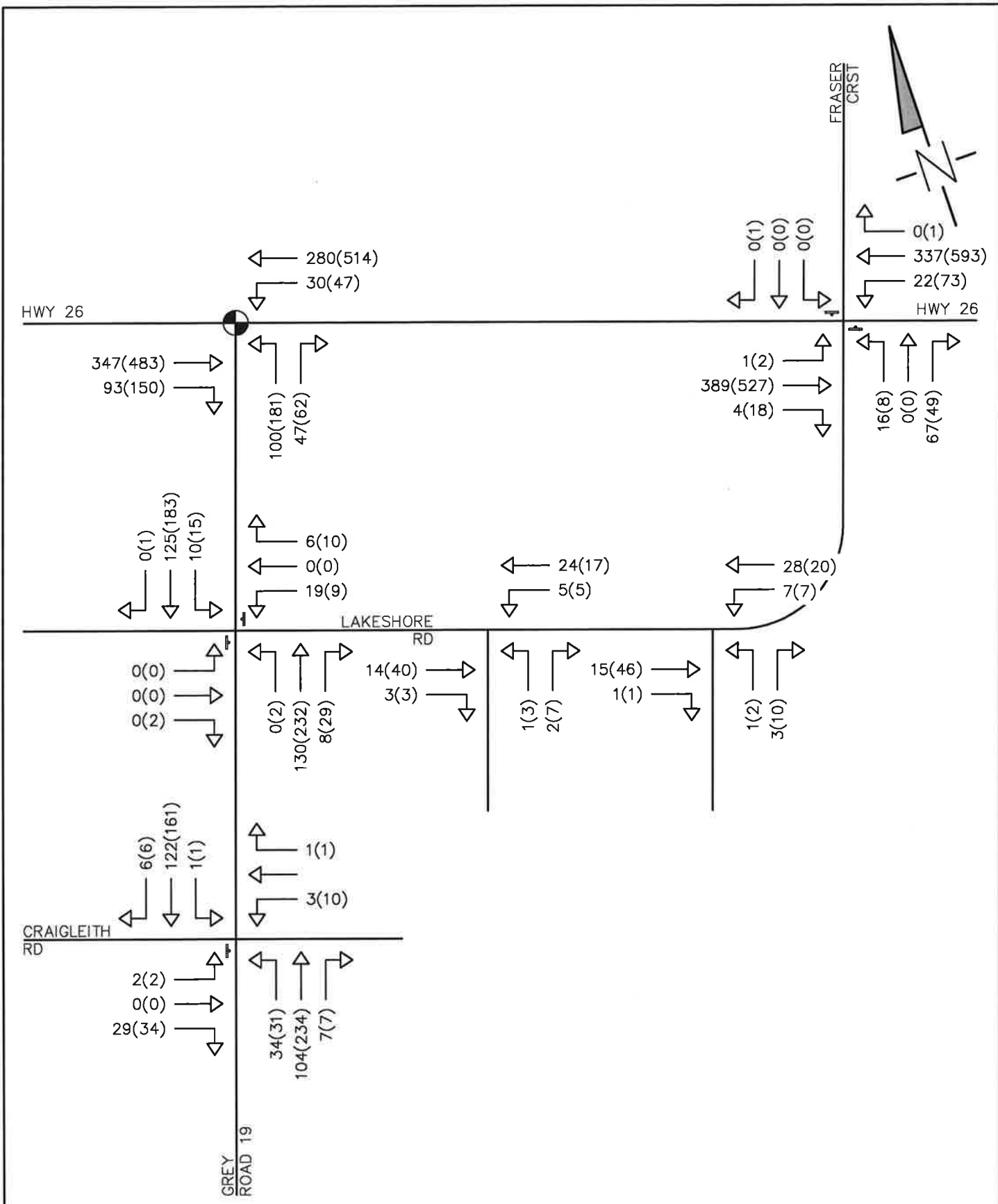


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THE HARBOUREDGE BUILDING  
40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3

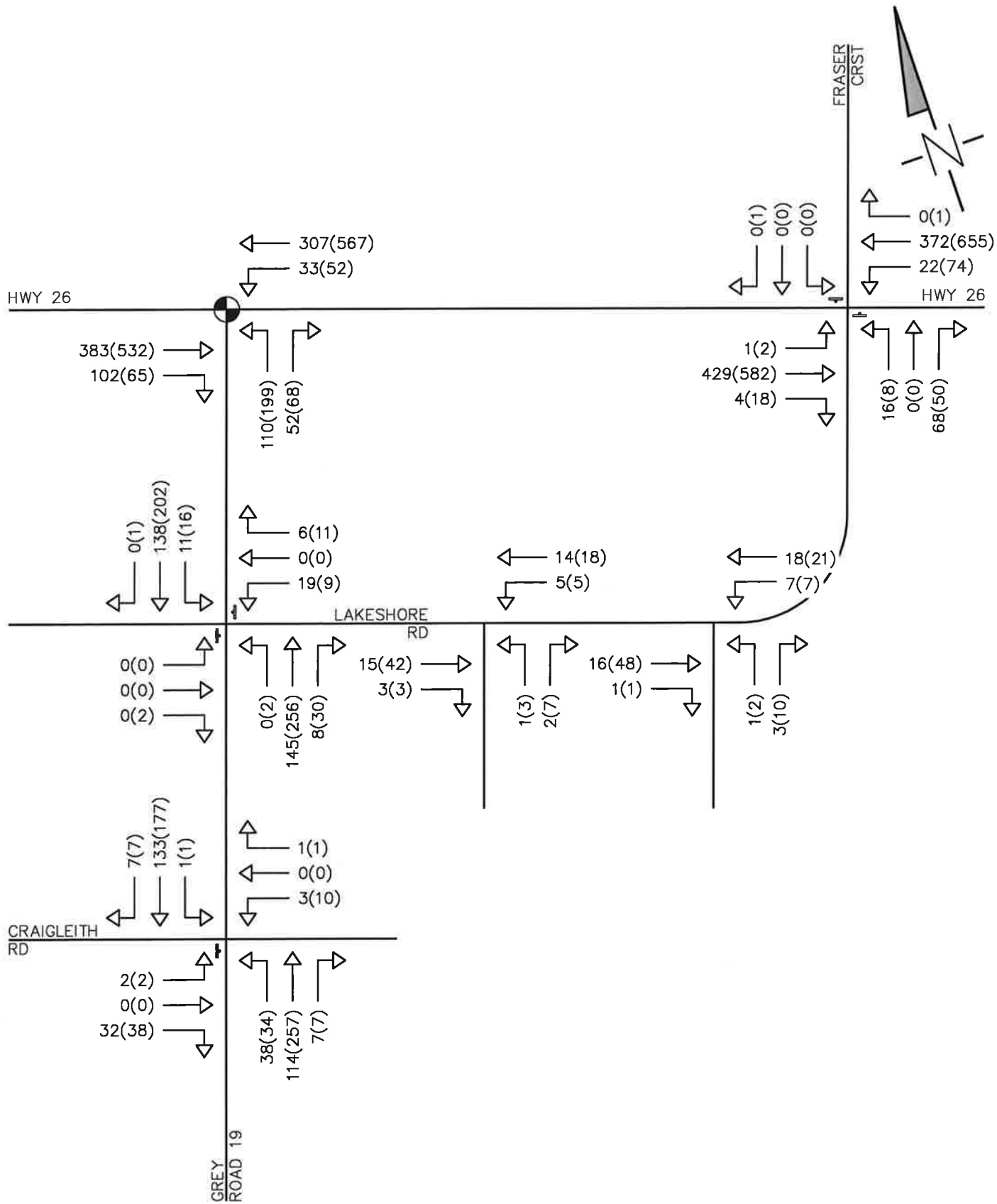
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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.	
					Drawing	FIG. 10



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

<b>Legend</b> SIGNAL CONTROL STOP CONTROL XX(YY) AM (PM)	<b>Project</b> PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS	<b>CROZIER &amp; ASSOCIATES</b> Consulting Engineers <small>THE HARBOUREDGE BUILDING          40 HURON STREET, SUITE          301, COLLINGWOOD, ON          L9Y 4R3</small> <small>705-446-3510 T          705-446-3520 F          WWW.CROZIER.CA          INFO@CROZIER.CA</small>											
	<b>Drawing</b> 2021 FUTURE TOTAL		<table border="1"> <tr> <td>Drawn By</td> <td>K.J.L.</td> <td>Design By</td> <td>M.F.</td> <td>Project</td> <td>1046-4031</td> </tr> <tr> <td>Scale</td> <td>N.T.S.</td> <td>Date</td> <td>DEC. 09, 2016</td> <td>Check By</td> <td>M.L.</td> </tr> </table>	Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	Scale	N.T.S.	Date	DEC. 09, 2016
Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031								
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.								



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

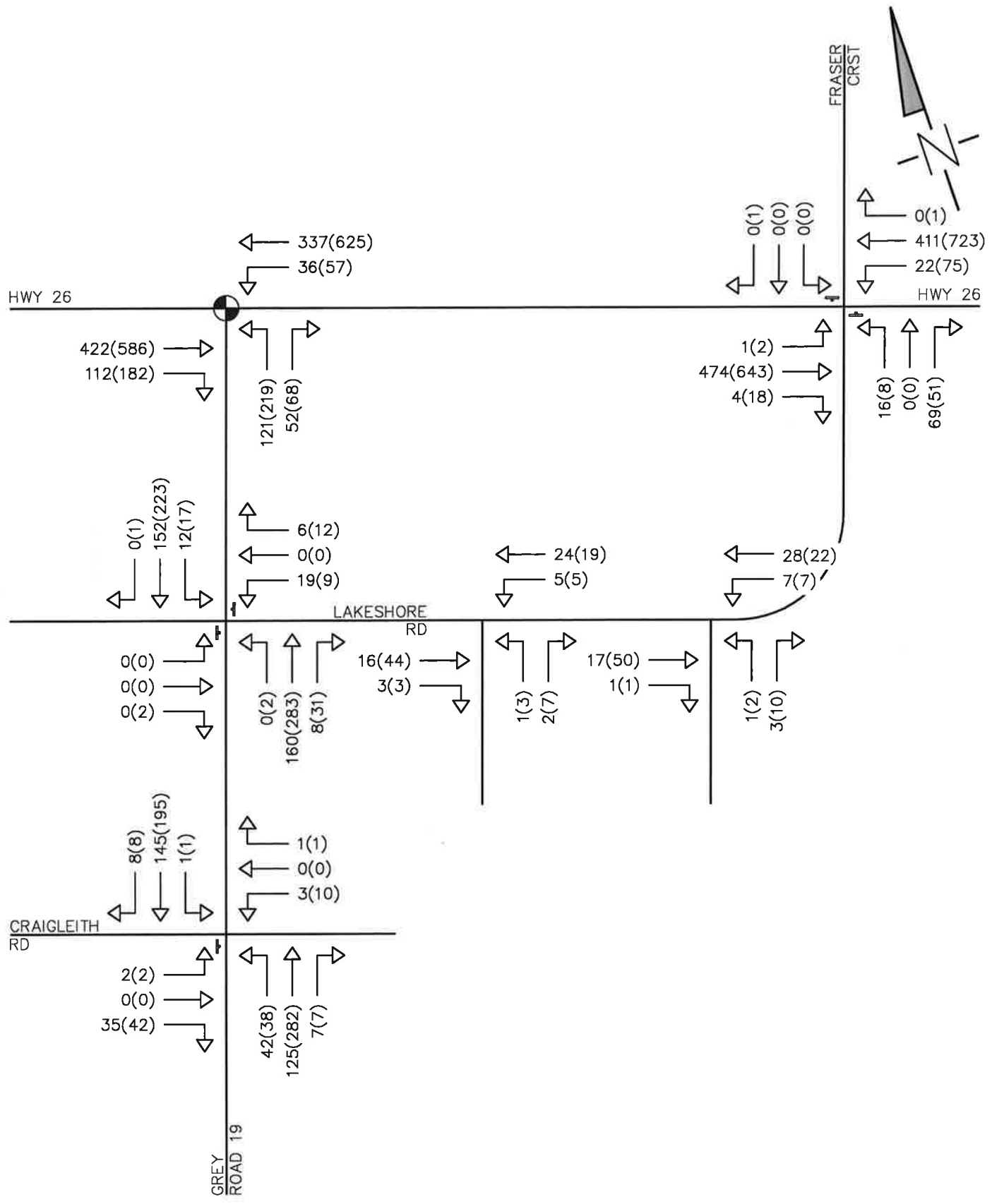
Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS	
Drawing	2026 FUTURE TOTAL	

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THE HARBOUREDGE BUILDING  
40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3

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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.L.	
					Drawing	FIG. 12



NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

	SIGNAL CONTROL
	STOP CONTROL
XX(YY)	AM (PM)

Project	PARKBRIDGE CRAIGLEITH TOWN OF THE BLUE MOUNTAINS	
Drawing	2031 FUTURE TOTAL	

**CROZIER & ASSOCIATES**  
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THE HARBOUREDGE BUILDING  
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Drawn By	K.J.L.	Design By	M.F.	Project	1046-4031	
Scale	N.T.S.	Date	DEC. 09, 2016	Check By	M.L.	
					Drawing	FIG. 13