

PETERS TOWNSHIP HIGH SCHOOL

TRANSPORTATION IMPACT ASSESSMENT

ZONING APPLICATION

FOR SUBMISSION TO:

Peters Township, Washington County, PA

Prepared For:

Peters Township School District
631 E. McMurray Road
McMurray, PA 15317

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TPD # PTOW.00067



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EXECUTIVE SUMMARY

Based on the results of the transportation impact assessment, TPD offers the following summary:

1. The study area intersections included in this TIA are as follows:
 - E. McMurray Road & Existing PTHS Access (West)
 - E. McMurray Road & Existing PTHS Access (East)
 - E. McMurray Road & Center Church Road (Signal)
 - E. McMurray Road & Center Church Road (Unsignalized)
 - E. McMurray Road & Shared Access Road (PTHS Access South)
 - Center Church Road & Clubview Drive/PTHS Access West
 - Center Church Road & Shared Access Road (PTHS Access North)
 - Shared Access Drive (PTHS Access North) & Student Drive (Internal intersection)
 - Shared Access Drive (PTHS Access South) & Bus Drive (Internal intersection)
 - Shared Access Drive (PTHS Access South) & Lower Access Road (Internal intersection)
2. The project site is located at the former Rolling Hills Country Club on McMurray Road.
3. The proposed development will consist of a new high school that will replace the existing high school located further west on McMurray Road.
4. The proposed development will include a public, Shared Access Road that will bisect the property with external intersections to McMurray Road and Center Church Road. The Shared Access Road is being designed in conjunction with the Township and the Peters Hill Park project. Final details of the Shared Access Road are still under design. It is generally understood that the High School Campus will have up to 3 access points to the Shared Access Road: Student Lot; Bus/Staff/Drop-off Lot; and a Lower Access Road. A fourth access to the High School Campus (secondary in nature) will be provided on Center Church Road opposite Clubview Drive.
5. The proposed development will generate 982 A.M. peak hour vehicle-trips, 613 School peak hour vehicle-trips, and 328 P.M. peak hour vehicle-trips.
6. Under the 2019 Projected Conditions, all study intersections will operate at the same overall intersection level of service (ILOS) under Base Conditions and Projected Conditions with the implementation of the recommended roadway improvements.

TABLE A: OVERALL INTERSECTION LEVEL OF SERVICE SUMMARY

Intersection - AM PEAK	Movement	Existing (2017)	Opening (2019)			
			Base No- Build	Projected		
				Signal	Roundabout	
3 Center Church Road & McMurray Road (Signal)	AM PEAK	B (11.5)	B (11.8)	B (10.9)		
	SCHOOL PEAK	B (11.8)	B (12.0)	B (10.3)		
	PM PEAK	B (15.0)	B (15.8)	B (14.9)		
4 Center Church Road & McMurray Road	AM PEAK	A (1.1)	A (1.1)	A (1.6)	A (1.9)	
	SCHOOL PEAK	A (1.5)	A (1.6)	A (1.4)		
	PM PEAK	A (1.8)	A (1.9)	A (1.7)		
5 Proposed PTHS Access South & McMurray Road	AM PEAK	-	-	C (21.9)	C (23.3)	B (13.2) B (14.4)
	SCHOOL PEAK	-	-	C (20.6)		C (20.1)
	PM PEAK	-	-	B (11.8)		B (10.3)
6 Center Church Road & Clubview/Prop PTHS Access West	AM PEAK	A (1.9)	A (1.9)	A (0.6)	A (1.3)	
	SCHOOL PEAK	A(1.4)	A(1.4)	A (1.6)		
	PM PEAK	A (1.5)	A(1.5)	A (1.7)		
7 Center Church Road & Proposed PTHS Access North	AM PEAK	-	-	A (2.6)	A (5.3)	
	SCHOOL PEAK	-	-	A (2.0)		
	PM PEAK	-	-	A (2.9)		
8 Student Drive & PTHS Access North	AM PEAK	-	-	A (1.3)	A (3.1)	A (5.8)
	SCHOOL PEAK	-	-	A (1.3)	A (3.1)	A (5.8)
	PM PEAK	-	-	A (1.3)	A (3.1)	A (5.8)
9 Bus Drive & PTHS Access South	AM PEAK	-	-	B (12.1)	B (12.5)	C (21.4)
	SCHOOL PEAK	-	-	B (15.3)	B (11.3)	
	PM PEAK	-	-	A (7.8)	A (7.5)	
10 Lower Access Rd & PTHS Access South	AM PEAK	-	-	-	B (10.2)	-
	SCHOOL PEAK	-	-	-	C (15.4)	
	PM PEAK	-	-	-	A (1.4)	

Base = No-Build scenario

Projected = Build scenario

Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

7. Traffic signal warrants were evaluated at the proposed McMurray Road & Shared Access Road intersection. With the development of the proposed High School, a traffic signal will be warranted at McMurray Road & Shared Access Road.
8. Turn lane warrants were evaluated at the proposed McMurray Road & Shared Access Road intersection and at the existing McMurray Road & Center Church Road (unsignalized) intersection.
 - If the secondary access to the High School Campus (via Center Church Road opposite Clubview Drive) is open in the AM, then the proposed High School traffic would warrant a 200' right turn lane on McMurray Road at Center Church Road.
 - With the development of the proposed High School, a 150' left turn lane and a 175' right turn lane would be warranted at the proposed traffic signal at McMurray Road & Shared Access Road.
 - An alternative to the traffic signal and turn lanes would be a roundabout at McMurray Road & Shared Access Road.
9. Based upon the traffic analysis, traffic signal warrants, and turn lane warrants, the following improvements are recommended.

Shared Access Road

- Continue to work with the Township on the design and layout of the proposed Shared Access Road. Potential access to the High School Campus will be via up to 3 points:
- Lower Access Road (this road is proposed as an add-alternate and may not be constructed). If this road is constructed, it shall be located a sufficient distance from McMurray Road to provide 300' of queue storage between McMurray Road and this access. (That's 300' of storage not center to center distance). To ensure that this access point does not back into either the traffic signal or roundabout, a 150' northbound left turn lane should be constructed.
- Bus/Staff/Visitor/Drop-off Driveway – primary access point. An analysis indicates that there should be two egress lanes from this lot (left/right). The left lane should provide at least 200' of storage. To ensure that this access point moves traffic efficiently, a 100' southbound right turn lane and a 200' northbound left turn lane should be constructed.
- Student Driveway – primary access point. To ensure that this access point moves traffic efficiently, a 100' westbound left turn lane should be constructed.

McMurray & Center Church (unsignalized)

- If the secondary access to the High School Campus (via Center Church Road opposite Clubview Drive) is open in the AM, then the proposed High School traffic would warrant a 200' right turn lane on McMurray Road at Center Church Road.
- If the secondary access to the High School Campus is closed, then no improvements would be needed at this intersection

McMurray & Shared Access Road

- The preferred alternative is to construct a single lane roundabout with a westbound slip ramp. This is subject to PennDOT approval.
- As an acceptable alternative, a traffic signal with a 150' westbound left turn lane and a 175' eastbound right turn lane is to be constructed.

Center Church Road & Clubview Drive/secondary High School Access

- As noted above, this access will require a gate. Access will be closed during school dismissal and PM peak hours (until 6PM). In addition, access may be closed during AM arrivals (starting at 6PM) in lieu of constructing the right turn lane on McMurray Road noted above.

Center Church Road & Share Access Road

- In conjunction with the final design of the Shared Access Road, the preferred alternative is for eastbound Center Church and the Shared Access Road to be aligned to form the through movement, while the northbound Center Church access forms the T-intersection (stop controlled).
10. With the implementation of the recommended improvements, TPD believe that the health, safety, and welfare of the general public will not be impacted from a traffic engineering perspective as a result of this development.

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Assessment (TIA) for the proposed Peters Township High School in Peters Township, Washington County, Pennsylvania. The project site is located at the former Rolling Hills Golf Course, as shown in **Figure 1**. The proposed development will consist of a new High School, as shown in **Figure 2**, which will replace the existing High School located further west on McMurray Road.

The proposed development will include a public, Shared Access Road that will bisect the property with external intersections to McMurray Road and Center Church Road. The High School Campus will have up to three access points to the Shared Access Road:

- Student Lot
- Bus/Staff/Drop-off Lot
- Lower Access Road.

A fourth access (secondary in nature) will be provided on Center Church Road opposite Clubview Drive.

EXISTING ROADWAY NETWORK

A field review of the existing roadway system in the study area was conducted. The existing roadway characteristics within the study area are summarized in **Table 1**. The PennDOT approved traffic signal plans are included in **Appendix A**.

TABLE 1: ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	Ownership	PennDOT Functional Classification	Predominant Directional Orientation	Posted Speed Limit
E. McMurray Road	State (SR 1002)	Minor Arterial	East-West	35 mph
Center Church Road	Township	-	North-South	25 mph

EXISTING TRAFFIC CONDITIONS

MANUAL TURNING MOVEMENT COUNTS

Manual traffic counts were conducted in 15-minute intervals during the weekday morning (6:00 to 9:00 A.M.) and weekday evening (2:00 to 6:00 P.M.) peak periods. Peak hours and count dates for the study area intersections are identified in **Table 2**. 2017 existing peak hour traffic volumes for the study intersections are summarized in **Figures 3-5**. The existing High School driveway

counts are summarized in **Figures 6-8**. Manual turning movement count sheets are summarized in **Appendix B**.

TABLE 2: MANUAL TRAFFIC COUNT INFORMATION

Intersection	Time Period	Date of Traffic Count	Intersection Peak Hour ¹
E. McMurray Road & PTHS Access West	Weekday A.M.	June 5, 2017	6:45 - 7:45 AM
	Weekday School	June 5, 2017	2:15 – 3:15 PM
	Weekday P.M.	June 5, 2017	4:45 – 5:45 PM
E. McMurray Road & PTHS Access East	Weekday A.M.	June 5, 2017	7:00 – 8:00 AM
	Weekday School	June 5, 2017	2:15 – 3:15 PM
	Weekday P.M.	June 5, 2017	4:30 – 5:30 PM
E. McMurray Road & Center Church Road (Signalized)	Weekday A.M.	January 21, 2016	7:00 – 8:00 AM
	Weekday School	January 21, 2016	2:30 – 3:30 PM
	Weekday P.M.	January 21, 2016	4:45 – 5:45 PM
E. McMurray Road & Center Church Road (Unsignalized)	Weekday A.M.	January 21, 2016	7:00 – 8:00 AM
	Weekday School	January 21, 2016	3:00 – 4:00 PM
	Weekday P.M.	January 21, 2016	4:45 – 5:45 PM
Center Church Road & Clubview Drive	Weekday A.M.	September 14, 2017	7:15 – 8:15 AM
	Weekday School	September 14, 2017	2:15 – 3:15 PM
	Weekday P.M.	September 14, 2017	4:45 – 5:45 PM

¹ Intersection Peak Hour is the 4 highest consecutive 15-minute count intervals at each intersection.

ANNUAL BACKGROUND GROWTH

A background growth factor for the roadways in the study area was developed based on growth factors obtained from the Southwestern Pennsylvania Commission (SPC). The SPC suggests using a background growth rate factor of 1.40% per year in Washington County for urban non-interstate roadways. As such, the background growth factor was compounded annually to yield growth rates to project 2017 Existing and 2019 Base Condition traffic volumes.

PROPOSED SITE ACCESS

The proposed development will include a public, Shared Access Road that will bisect the property with external intersections to McMurray Road and Center Church Road. The Shared Access Road is being designed in conjunction with the Township and the Peters Hill Park project. Final details of the Shared Access Road are still under design. It is generally understood that the High School Campus will have up to 3 access points to the Shared Access Road:

- Student Lot
- Bus/Staff/Drop-off Lot
- Lower Access Road (shown as an add-alternate at this time)

A fourth access to the High School Campus (secondary in nature) will be provided on Center Church Road opposite Clubview Drive.

New Intersections to be created by this development:

- Lower Access Road & Shared Access Road (PTHS Access South) – This access will be an optional bid-add with the site work. If built, it will need to intersect the Shared Access Road approximately 300' north of McMurray Road and will connect the Shared Access Road to the practice fields and the student parking lot.
- Bus Drive & Shared Access Road (PTHS Access South) – This access will be the main entrance to the campus for buses, staff, visitors, and student drop-offs.
- Student Drive & Shared Access Road (PTHS Access North) – This access will be the main entrance to the student parking lot.
- Center Church Road & Shared Access Road (PTHS Access North) – This access will be near the Center Presbyterian Church. Preliminary plans call for this intersection to be realigned so that eastbound Center Church is aligned with the Shared Access Road and northbound Center Church forms the T-intersection (stop controlled). This preliminary layout is still under design as part of the Township's efforts for the Shared Access Road and Peters Hill Park. The ultimate layout of this intersection will not affect the traffic analysis.
- Center Church Road & PTHS Access West – This access will be on Center Church Road opposite Clubview Drive. The School District has agreed to gate this access in the afternoon so that student egress will not be via this access. Students will be directed to the Shared Access Road for egress. There is one option under consideration to keep this entrance open in the mornings for ingress. If this entrance is open in the morning for ingress, there is an associated improvement on McMurray Road to construct a right turn lane at Center Church Road to facilitate these movements.

TRIP GENERATION

The trip generation volumes for the proposed High School were determined from manual turning movement counts at the existing High School. **Figures 6-8** summarize the existing traffic counts at the High School. For the future High School, the only significant increase in forecasted trips is

the addition of 90 student parking spaces. During the trip generation counts there were 310 student parking spaces; the proposed site plan shows 400 student parking spaces.

A set of assumptions were generated in order to most accurately represent the flow of traffic into and out of the high school.

AM Peak Hour:

- Buses all enter & exit
- Students all enter but do not exit
- Visitors, & drop-offs enter & exit

School Peak Hour:

- Buses enter & exit
- The majority of students (67%) exit
- Visitors & drop-offs enter & exit

PM Peak Hour:

- No buses to enter or exit
- No students enter, but remaining 33% exit
- Visitors, & drop-offs enter & exit

Table 3 shows the generated trips and the entering & exiting volumes for the analyzed time periods.

TABLE 3: TRIP GENERATION DATA

Land Use	Time Period	Calculated Volume	Entering
High School	Weekday A.M. Peak	982	70%
	Weekday School Peak	613	21%
	Weekday P.M. Peak	328	48%

The calculated trip generation for the proposed development for the opening year is shown in **Table 4**.

TABLE 4: TRIP GENERATION SUMMARY

Time Period	New Trips		
	Total	Enter	Exit
Weekday A.M. Peak	982	689	293
Weekday School Peak	613	129	484
Weekday P.M. Peak	328	156	172

Based on the trip generation analysis summarized in **Table 4** the proposed development will generate 982 A.M. peak hour vehicle-trips, 613 School peak hour vehicle-trips, and 328 P.M. peak hour vehicle-trips.

Detailed trip generation forecasts were made for students and for buses/staff/visitors/drop-off, since each of these user will have different access routes to the school. **Appendix C** contains additional supporting information regarding the forecasted site trip generation.

TRIP DISTRIBUTION

To forecast trips for the new High School, a map of student population was evaluated. Based upon student's homes and existing trip patterns at the existing High School, the new trips for the proposed High School were distributed to the local roadway network based on the percentages shown in **Table 5**. Supporting information is included in **Appendix C**.

TABLE 5: TRIP DISTRIBUTION PERCENTAGES – New Trips

Direction To/From	Distribution %
East via E. McMurray Road (SR 1002)	65%
West via E. McMurray Road (SR 1002)	15%
North via Center Church Road	15%
South via Center Church Road	5%
Total	100%

Several intermediate trip distribution calculations were performed to forecast future traffic volumes for the new school.

The existing traffic counts for the existing High School were subtracted from the existing traffic counts. **Figures 9-11** summarize the existing High School traffic removed from the network.

Since the site plan is not finalized yet, the study attempted to capture the various access options being considered for students. There are three AM student arrival options; two School Dismissal student options; and two PM peak hour student options. Each student access option routes traffic in a different direction around campus and as such, each access option was a separate traffic analysis.

AM STUDENT ACCESS OPTIONS

1. This option has student arrivals via the Student Lot entrance off the Shared Access Road and via the secondary access on Center Church Road opposite Clubview Drive. This access option will require a right turn lane on McMurray Road at Center Church Road. Given the cost of the turn lane, this option may be eliminated.
2. This option has student arrivals via the Student Lot entrance off the Shared Access Road and via the Lower Access Road off the Shared Access Road. The secondary access on Center Church Road opposite Clubview Drive would be closed with a gate during AM arrivals. The Lower Access Road is an add-alternate to the site plan and may not be constructed.
3. This option has ALL student arrivals via the Student Lot Entrance off the Shared Access Road.

SCHOOL DISMISSAL/PM PEAK HOUR STUDENT ACCESS OPTIONS

1. Students will have two options to egress the site via the Student Lot Entrance off the Shared Access Road or via the Bus/Staff/Visitor/Drop-off Access to the Shared Access Road. The secondary access to Center Church Road opposite Clubview Drive would be closed with a gate during School/PM peak hours.
2. Students will have three options to egress the site via the Student Lot Entrance off the Shared Access Road; via the Bus/Staff/Visitor/Drop-off Access to the Shared Access Road; or via the Lower Access Road to the Shared Access Road. The secondary access to Center Church Road opposite Clubview Drive would be closed with a gate during School/PM peak hours. The Lower Access Road is an add-alternate to the site plan and may not be constructed.

Trip distribution for students are shown in **Figures 12-18**.

Trip distribution for bus/staff/visitors/drop-offs are shown in **Figures 19-25**.

A summation of all trip distributions are provided in **Figures 26-32**.

BASE (NO-BUILD) CONDITIONS

2019 BASE (NO BUILD) VOLUMES

The additional traffic volumes due to background growth and background developments were added to the existing traffic data to produce 2019 base (no-build) condition traffic volumes. Base condition volumes for the weekday A.M., weekday school, and weekday P.M. peak hours are illustrated in **Figures 33-35** for the 2019 base (no build) conditions. Volume development worksheets are provided in **Appendix D**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed development were added to the 2019 base (no-build) condition traffic volumes to develop 2019 projected (build) condition traffic volumes.

Projected condition traffic volumes for the opening year of 2019 for the weekday A.M., School, and P.M. peak hours are shown in **Figures 36-42**, respectively. Traffic volume development worksheets are contained in **Appendix D**.

TRAFFIC SIGNAL AND TURN LANE WARRANTS

Traffic signal warrants were evaluated at the proposed McMurray Road & Shared Access Road intersection.

- With the development of the proposed High School, a traffic signal will be warranted at McMurray Road & Shared Access Road.

Turn lane warrants were evaluated at the proposed McMurray Road & Shared Access Road intersection and at the existing McMurray Road & Center Church Road (unsignalized) intersection.

- If the secondary access to the High School Campus (via Center Church Road opposite Clubview Drive) is open in the AM, then the proposed High School traffic would warrant a 200' right turn lane on McMurray Road at Center Church Road.
- With the development of the proposed High School, a 150' left turn lane and a 175' right turn lane would be warranted at the proposed traffic signal at McMurray Road & Shared Access Road.
- An alternative to the traffic signal and turn lanes would be a roundabout at McMurray Road & Shared Access Road.

Turn lane warrants and traffic signal warrants are contained in **Appendix E**.

LEVELS OF SERVICE FOR AN INTERSECTION

For analysis of intersections, level of service is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS criteria is stated in terms of control delay per vehicle for a one-hour analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The criteria are shown in **Table 6-7**. Delay, as it relates to level of service, is a complex measure and is dependent upon a number of variables.

For signalized intersections, these variables include the quality of vehicle progression, the cycle length, the green time ratio, and the volume/capacity ratio for the lane group in question. For unsignalized intersections, delay is related to the availability of gaps in the flow of traffic on the major street and the driver's discretion in selecting an appropriate gap for a particular movement from the minor street (straight across, left or right turn).

**TABLE 6: LEVEL OF SERVICE CRITERIA FOR
UN SIGNALIZED AND SIGNALIZED INTERSECTIONS¹**

Level of Service	Control Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

¹ Obtained from Exhibits 18-4 and 19-1 of the Transportation Research Board's Highway Capacity Manual 2010

CAPACITY ANALYSIS METHODOLOGY

Capacity analyses were conducted for the weekday A.M., weekday School and weekday P.M. peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the 2010 Highway Capacity Manual (HCM) using *Synchro 10* software, a Trafficware product. In addition, Publication 46 (PennDOT Traffic Engineering Manual) Chapter 10 was consulted regarding the methodologies related to the Highway Capacity Manual.

Publication 46 Guidance

Specifically, Chapter 10.4 was referenced for PA Default Values to be used in the HCM analysis. The following HCM input values were used:

- Saturation Flow Rate = **1800 pcphpl**
- Start-up loss time = **2.5 seconds**
- Extension of Effective Green Time = **3.5 seconds**
- Base Critical Headway and Follow-Up Times = **use suburban values**

Capacity Analysis

The following conditions were analyzed, as applicable:

- Existing Conditions;
- 2019 Base Conditions (Build-out year without development);
- 2019 Projected Conditions (Build-out year with development)
 - For each potential access scenario, both a traffic signal and a roundabout were considered at the proposed McMurray Road intersection with the Shared Access Road.

The HCM summary printouts are included in **Appendix E**. The existing traffic signal permit signal timings were used for the 2017 existing conditions. Optimized traffic signal timings at E. McMurray & PTHS Access South intersection were used for the 2019 projected signalized condition.

PennDOT's Transportation Impact Study Guidelines outlined in Strike-Off Letter 470-09-4, dated February 12, 2009 contain the following criteria regarding levels of service:

- Page 29 of the Guidelines state that if evaluation of the With Development Horizon Year Scenario to the Without Development Horizon Year Scenario indicates that the overall intersection level of service has dropped, the applicant will be required to mitigate the level of service if the increase in overall intersection delay is greater than 10-seconds. If the overall intersection delay increase is less than or equal to 10-seconds, mitigation of the intersection will not be required.
- Page 29 of the Guidelines state that for mitigation scenarios, applicants are expected to mitigate the overall intersection LOS to the original Without Development LOS; the 10-second delay variance is not applied to mitigation scenarios. Applicants may be required to address available storage and queue lengths at critical movements or approaches even if the overall LOS requirements are met.
- Page 31 of the Guidelines state that if signalization is the preferred alternative for mitigation, overall intersection LOS C in rural areas and LOS D in urban areas is acceptable.

- Page 31 of the Guidelines states new signalized or unsignalized intersection established to serve as access to the development shall be designed to operate at minimum level of service "C" for rural areas, and minimum level of service "D" for urban areas.

LEVELS OF SERVICE IN THE STUDY AREA

Level of Service analyses were conducted at the study area intersections using the HCM 2010 report from the *Synchro 10* software. Level of service (LOS) matrices for the study area intersections are shown in **Tables 7-9** for the weekday A.M., weekday School & weekday P.M. peak hours.

TABLE 7: WEEKDAY A.M. PEAK HOUR LEVEL OF SERVICE SUMMARY

Intersection - AM PEAK	Movement	Existing (2017)	Opening (2019)		
			Base No-Build	Projected Signal	Roundabout
3 Center Church Road & McMurray Road (Signal)	EB L	A (0.0)	A (0.0)	A (0.0)	
	EB T/R	B (11.8)	B (11.9)	B (12.0)	
	WB L	A (5.9)	A (6.0)	A (5.6)	
	WB T/R	A (7.7)	A (7.9)	A (4.8)	
	NB L/T	C (22.2)	C (23.1)	B (18.6)	
	NB R	C (20.6)	C (21.4)	B (19.4)	
	SB	A (0.0)	A (0.0)	A (0.0)	
	ILOS	B (11.5)	B (11.8)	B (10.9)	
4 Center Church Road & McMurray Road	EB L	A (9.3)	A (9.4)	A (9.8) A (8.7)	
	SB L	C (21.2)	C (21.9)	C (18.7) C (18.7)	
	SB R	B (12.9)	B (13.6)	B (10.3) B (10.5)	
	ILOS	A (1.1)	A (1.1)	A (1.6) A (1.9)	
5 Proposed PTHS Access South & McMurray Road	EB L	-	-	B (14.0) B (10.0)	
	EB T	-	-	A (8.0) A (7.9)	B (10.6) B (10.6)
	WB T	-	-	C (24.0) B (15.7)	A (8.5) A (5.7)
	WB R	-	-	A (5.4) B (17.6)	A (7.7) C (19.9)
	SB L	-	-	D (47.9) E (55.6)	C (25.0) B (12.9)
	SB R	-	-	C (23.7) C (25.7)	
	ILOS	-	-	C (21.9) C (23.3)	B (13.2) B (14.4)
6 Center Church Road & Clubview/Prop PTHS Access West	EB	A (8.8)	A (8.8)	A (9.1) A (8.8) A (8.9)	
	WB	-	-	A (0.0) A (0.0) A (0.0)	
	NB	A (7.4)	A (7.4)	A (7.4) A (7.4) A (7.4)	
	SB	-	-	A (0.0) A (0.0) A (0.0)	
	ILOS	A (1.9)	A (1.9)	A (0.6) A (1.3) A (1.3)	
7 Center Church Road & Proposed PTHS Access North	WB	-	-	A (0.0) A (0.0)	
	NB	-	-	B (10.6) B (11.9)	
	ILOS	-	-	A (2.6) A (5.3)	
8 Student Drive & PTHS Access North	WB	-	-	A (7.8) A (8.1) B (10.7)	
	NB	-	-	A (0.0) A (0.0) A (0.0)	
	ILOS	-	-	A (1.3) A (3.1) A (5.8)	
9 Bus Drive & PTHS Access South	EB L	-	-	E (49.5) F (72.7) F (295.6)	
	EB R	-	-	B (12.5) B (12.5) B (12.5)	
	NB	-	-	A (8.9) A (8.9) A (8.9)	
	ILOS	-	-	B (12.1) B (12.5) C (21.4)	
10 Lower Access Rd & PTHS Access South	NB	-	-	- B (10.2) -	
	EB	-	-	- A (0.0) -	
	ILOS	-	-	- A (2.3) -	

Existing = 2017 Existing scenario Base = 2019 No-Build scenario Projected = 2019 Build scenario

ILOS = Overall Intersection Level of Service; Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

TABLE 8: WEEKDAY SCHOOL PEAK HOUR LEVEL OF SERVICE SUMMARY

Intersection - School PEAK	Movement	Existing (2017)	Opening (2019)		
			Base No-Build	Projected Signal	Roundabout
3 Center Church Road & McMurray Road (Signal)	EB L	A (0.0)	A (0.0)	A (0.0)	
	EB T/R	B (12.9)	B (13.1)	B (12.8)	
	WB L	A (6.7)	A (6.9)	A (5.6)	
	WB T/R	A (3.2)	A (3.2)	A (4.3)	
	NB L/T	C (31.2)	C (32.4)	C (21.7)	
	NB R	C (30.7)	C (31.8)	C (21.8)	
	SB	A (0.0)	A (0.0)	A (0.0)	
	ILOS	B (11.8)	B (12.0)	B (10.3)	
4 Center Church Road & McMurray Road	EB L	A (8.3)	A (8.3)	A (8.4)	
	SB L	C (19.9)	C (20.7)	C (17.2)	
	SB R	B (10.6)	B (10.7)	B (11.1)	
	ILOS	A (1.5)	A (1.6)	A (1.4)	
5 Proposed PTHS Access South & McMurray Road	EB L	-	-	B (15.5)	
	EB T	-	-	B (18.0)	C (21.3)
	WB T	-	-	C (29.8)	A (5.3)
	WB R	-	-	A (3.3)	A (4.8)
	SB L	-	-	C (24.6)	D (29.0)
	SB R	-	-	B (13.2)	
	ILOS	-	-	C (20.6)	C (20.1)
6 Center Church Road & Clubview/Prop PTHS Access West	EB	A (9.1)	A (9.1)	A (9.0)	
	WB	-	-	A (0.0)	
	NB	A (7.5)	A (7.5)	A (7.5)	
	SB	-	-	A (0.0)	
	ILOS	A(1.4)	A(1.4)	A (1.6)	
7 Center Church Road & Proposed PTHS Access North	WB	-	-	A (0.0)	
	NB	-	-	A (9.9)	
	ILOS	-	-	A (2.0)	
8 Student Drive & PTHS Access North	WB	-	-	A (0.0)	
	NB	-	-	A (9.1)	
	ILOS	-	-	A (3.7)	
9 Bus Drive & PTHS Access South	EB L	-	-	B (13.0)	B (13.0)
	EB R	-	-	C (18.2)	B (13.0)
	NB	-	-	A (7.9)	A (7.9)
	ILOS	-	-	B (15.3)	B (11.3)
10 Lower Access Rd & PTHS Access South	NB	-	-	-	A (0.0)
	EB	-	-	-	C (15.4)
	ILOS	-	-	-	A (3.2)

Existing = 2017 Existing scenario Base = 2019 No-Build scenario Projected = 2019 Build scenario

ILOS = Overall Intersection Level of Service; Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

TABLE 9: WEEKDAY P.M. PEAK HOUR LEVEL OF SERVICE SUMMARY

Intersection - PM PEAK	Movement	Existing (2017)	Opening (2019)		
			Base No-Build	Projected Signal	Roundabout
3 Center Church Road & McMurray Road (Signal)	EB L	A (0.0)	A (0.0)	A (0.0)	
	EB T/R	B (17.0)	B (18.1)	B (16.7)	
	WB L	B (13.3)	B (14.9)	B (12.9)	
	WB T/R	A (3.2)	A (3.2)	A (3.1)	
	NB L/T	D (46.1)	D (47.3)	D (44.3)	
	NB R	D (46.0)	D (47.2)	D (45.8)	
	SB	A (0.0)	A (0.0)	A (0.0)	
	ILOS	B (15.0)	B (15.8)	B (14.9)	
4 Center Church Road & McMurray Road	EB L	A (8.8)	A (8.8)	A (8.7)	
	SB L	D (33.4)	E (35.9)	D (31.9)	
	SB R	B (12.3)	B (12.5)	B (12.0)	
	ILOS	A (1.8)	A (1.9)	A (1.7)	
5 Proposed PTHS Access South & McMurray Road	EB L	-	-	A (6.9)	
	EB T	-	-	A (9.6)	
	WB T	-	-	B (13.6)	
	WB R	-	-	A (3.1)	
	SB L	-	-	C (23.9)	
	SB R	-	-	C (21.2)	
6 Center Church Road & Clubview/Prop PTHS Access West	ILOS	-	-	B (11.8)	
	EB	A (9.1)	A (9.1)	A (9.1)	
	WB	-	-	A (0.0)	
	NB	A (7.4)	A (7.5)	A (7.4)	
	SB	-	-	A (0.0)	
	ILOS	A (1.5)	A(1.5)	A (1.7)	
7 Center Church Road & Proposed PTHS Access North	WB	-	-	A (0.0)	
	NB	-	-	A (9.3)	
	ILOS	-	-	A (2.9)	
8 Student Drive & PTHS Access North	WB	-	-	A (0.0)	
	NB	-	-	A (8.7)	
	ILOS	-	-	A (2.7)	
9 Bus Drive & PTHS Access South	EB L	-	-	B (11.1)	
	EB R	-	-	A (9.1)	
	NB	-	-	A (7.5)	
	ILOS	-	-	A (7.8)	
10 Lower Access Rd & PTHS Access South	NB	-	-	-	A (0.0)
	EB	-	-	-	A (9.1)
	ILOS	-	-	-	A (1.4)

Existing = 2017 Existing scenario

Base = 2019 No-Build scenario

Projected = 2019 Build scenario

ILOS = Overall Intersection Level of Service; Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

As shown in **Tables 7-9, under 2019 Projected Conditions the study area intersections will operate at the same overall intersection level of service (ILOS) as under 2019 Base Conditions** during the weekday A.M., P.M., and Saturday midday peak hours. As such, no mitigation is required.

95TH PERCENTILE QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using the HCM 2010 report from the *Synchro 10* software. For this analysis, the 95th percentile queue is defined as the queue length that is exceeded in 5% of the signal cycles. As an example, for a signal with a 90-second cycle, this means that the 95th percentile queue length will be exceeded during 2 of the 40 signal cycles that occur during the peak hour. The queue analysis results are summarized in **Table 10** for the analyzed peak hours. The queues come from the HCM summary printouts in **Appendix E**.

TABLE 10: 95TH PERCENTILE QUEUE ANALYSIS

Intersection		Movement	Available Storage	Existing (2017)	Weekday AM Peak		
					Opening (2019)		
					Base	Projected	
3	Center Church Road & McMurray Road (Signal)	EB L	100	0	0	0	-
		EB T/R	-	238	249	181	-
		WB L	220	11	12	15	-
		WB T/R	-	279	294	96	-
		NB L/T	-	126	133	78	-
		NB R	140	69	71	94	-
4	Center Church Road & McMurray Road	SB	-	0	0	0	-
		EB L	130	5	5	13/10	-
		SB L	-	5	8	5/5	-
5	Proposed PTHS Access South & McMurray Road	SB R	150	5	5	3/3	-
		EB L	-	-	-	23	50/50
		EB T	-	-	-	90	
		WB T	-	-	-	402	75/25
		WB R	-	-	-	0	50/250
6	Center Church Road & Clubview/Prop PTHS Access West	SB L	-	-	-	149	200/100
		SB R	-	-	-	0	
		EB	-	3	3	3/3/3	-
		WB	-	-	-	0/0/0	-
7	Center Church Road & Proposed PTHS Access North	NB	-	3	3	3/3/3	-
		SB	-	-	-	0/0/0	-
		WB	-	-	-	0	-
8	Student Drive & PTHS Access North	NB	-	-	-	13/40	-
		WB	-	-	-	3/13/65	-
		NB	-	-	-	0/0/0	-
9	Bus Drive & PTHS Access North	EB L	-	-	-	70/93/180	-
		EB R	-	-	-	80/80/80	-
		NB	-	-	-	43/43/43	-
10	Lower Access Road & PTHS Access South	NB	-	-	-	40	-
		EB	-	-	-	-	-

Weekday School Peak

Intersection	Movement	Available Storage	Existing (2017)	Opening (2019)		
				Base		Projected
				No-Build	Signal	Round
3 Center Church Road & McMurray Road (Signal)	EB L	100	0	0	0	-
	EB T/R	-	445	467	252	-
	WB L	220	16	16	23	-
	WB T/R	-	88	91	96	-
	NB L/T	-	99	104	69	-
	NB R	140	73	76	63	-
4 Center Church Road & McMurray Road	SB	-	0	0	0	-
	EB L	130	3	3	3	-
	SB L	-	13	15	10	-
5 Proposed PTHS Access South & McMurray Road	SB R	150	5	5	5	-
	EB L	-	-	-	20	150
	EB T	-	-	-	261	
	WB T	-	-	-	275	25
	WB R	-	-	-	0	25
6 Center Church Road & Clubview/Prop PTHS Access West	SB L	-	-	-	195	300
	SB R	-	-	-	0	
	EB	-	3	3	3	-
	WB	-	0	0	0	-
7 Center Church Road & Proposed PTHS Access North	NB	-	0	0	0	-
	SB	-	0	0	0	-
8 Student Drive & PTHS Access North	WB	-	-	-	0	-
	NB	-	-	-	5	-
9 Bus Drive & PTHS Access North	EB L	-	-	-	10/10	-
	EB R	-	-	-	188/95	-
	NB	-	-	-	13/13	-
10 Lower Access Road & PTHS Access South	NB	-	-	-	0	-
	EB	-	-	-	5	-

Weekday PM Peak

Intersection	Movement	Available Storage	Existing (2017)	Opening (2019)		
				Base		Projected
				No-Build	Signal	Round
3 Center Church Road & McMurray Road (Signal)	EB L	100	0	0	0	-
	EB T/R	-	1030	1085	1030	-
	WB L	220	23	23	27	-
	WB T/R	-	150	158	142	-
	NB L/T	-	115	118	101	-
	NB R	140	95	98	109	-
4 Center Church Road & McMurray Road	SB	-	0	0	0	-
	EB L	130	5	5	5	-
	SB L	-	25	28	25	-
5 Proposed PTHS Access South & McMurray Road	SB R	150	10	10	8	-
	EB L	-	-	-	15	175
	EB T	-	-	-	394	
	WB T	-	-	-	305	50
	WB R	-	-	-	5	0
6 Center Church Road & Clubview/Prop PTHS Access West	SB L	-	-	-	99	25
	SB R	-	-	-	18	
	EB	-	3	3	3	-
	WB	-	0	0	0	-
7 Center Church Road & Proposed PTHS Access North	NB	-	0	0	0	-
	SB	-	0	0	0	-
8 Student Drive & PTHS Access North	WB	-	-	-	0	-
	NB	-	-	-	3	-
9 Bus Drive & PTHS Access North	EB L	-	-	-	3/3	-
	EB R	-	-	-	18/10	-
	NB	-	-	-	10/10	-
10 Lower Access Road & PTHS Access South	NB	-	-	-	0	-
	EB	-	-	-	5	-

Queues reported from the HCM2010 report in SYNCHRO 10 for unsignalized intersections

Queues reported from SYNCHRO for signalized intersections

Assumed vehicle length = 25

As shown in **Table 10**, all of the projected condition queues will be accommodated within the existing storage lengths.

RECOMMENDATIONS

Based upon the traffic analysis, traffic signal warrants, and turn lane warrants, the following improvements are recommended.

Shared Access Road

- Continue to work with the Township on the design and layout of the proposed Shared Access Road. Potential access to the High School Campus will be via up to 3 points:
 - Lower Access Road (this road is proposed as an add-alternate and may not be constructed). If this road is constructed, it shall be located a sufficient distance from McMurray Road to provide 300' of queue storage between McMurray Road and this access. (That's 300' of storage not center to center distance). To ensure that this access point does not back into either the traffic signal or roundabout, a 150' northbound left turn lane should be constructed.
 - Bus/Staff/Visitor/Drop-off Driveway – primary access point. An analysis indicates that there should be two egress lanes from this lot (left/right). The left lane should provide at least 200' of storage. To ensure that this access point moves traffic efficiently, a 100' southbound right turn lane and a 200' northbound left turn lane should be constructed.
 - Student Driveway – primary access point. To ensure that this access point moves traffic efficiently, a 100' westbound left turn lane should be constructed.

McMurray & Center Church (unsignalized)

- If the secondary access to the High School Campus (via Center Church Road opposite Clubview Drive) is open in the AM, then the proposed High School traffic would warrant a 200' right turn lane on McMurray Road at Center Church Road.
- If the secondary access to the High School Campus is closed, then no improvements would be needed at this intersection

McMurray & Shared Access Road

- The preferred alternative is to construct a single lane roundabout with a westbound slip ramp. This is subject to PennDOT approval.
- As an acceptable alternative, a traffic signal with a 150' westbound left turn lane and a 175' eastbound right turn lane is to be constructed.

Center Church Road & Clubview Drive/secondary High School Access

- As noted above, this access will require a gate. Access will be closed during school dismissal and PM peak hours (until 6PM). In addition, access may be closed during AM arrivals (starting at 6PM) in lieu of constructing the right turn lane on McMurray Road noted above.

Center Church Road & Share Access Road

- In conjunction with the final design of the Shared Access Road, the preferred alternative is for eastbound Center Church and the Shared Access Road to be aligned to form the through movement, while the northbound Center Church access forms the T-intersection (stop controlled).

CONCLUSIONS

1. The study area intersections included in this TIA are as follows:
 - E. McMurray Road & Existing PTHS Access (West)
 - E. McMurray Road & Existing PTHS Access (East)
 - E. McMurray Road & Center Church Road (Signal)
 - E. McMurray Road & Center Church Road (Unsignalized)
 - E. McMurray Road & Shared Access Road (PTHS Access South)
 - Center Church Road & Clubview Drive/PTHS Access West
 - Center Church Road & Shared Access Road (PTHS Access North)
 - Shared Access Drive (PTHS Access North) & Student Drive (Internal intersection)
 - Shared Access Drive (PTHS Access South) & Bus Drive (Internal intersection)
 - Shared Access Drive (PTHS Access South) & Lower Access Road (Internal intersection)
2. The project site is located at the former Rolling Hills Country Club on McMurray Road.
3. The proposed development will consist of a new high school that will replace the existing high school located further west on McMurray Road.
4. The proposed development will include a public, Shared Access Road that will bisect the property with external intersections to McMurray Road and Center Church Road. The Shared Access Road is being designed in conjunction with the Township and the Peters Hill Park project. Final details of the Shared Access Road are still under design. It is generally understood that the High School Campus will have up to 3 access points to the Shared Access Road: Student Lot; Bus/Staff/Drop-off Lot; and a Lower Access Road. A fourth access to the High School Campus (secondary in nature) will be provided on Center Church Road opposite Clubview Drive.
5. The proposed development will generate 982 A.M. peak hour vehicle-trips, 613 School peak hour vehicle-trips, and 328 P.M. peak hour vehicle-trips.
6. Under the 2019 Projected Conditions, all study intersections will operate at the same overall intersection level of service (ILOS) under Base Conditions and Projected Conditions with the implementation of the recommended roadway improvements.

TABLE 11: OVERALL INTERSECTION LEVEL OF SERVICE SUMMARY

Intersection - AM PEAK	Movement	Existing (2017)	Opening (2019)				
			Base No- Build	Projected			
				Signal	Roundabout		
3 Center Church Road & McMurray Road (Signal)	AM PEAK	B (11.5)	B (11.8)	B (10.9)			
	SCHOOL PEAK	B (11.8)	B (12.0)	B (10.3)			
	PM PEAK	B (15.0)	B (15.8)	B (14.9)			
4 Center Church Road & McMurray Road	AM PEAK	A (1.1)	A (1.1)	A (1.6)	A (1.9)		
	SCHOOL PEAK	A (1.5)	A (1.6)	A (1.4)			
	PM PEAK	A (1.8)	A (1.9)	A (1.7)			
5 Proposed PTHS Access South & McMurray Road	AM PEAK	-	-	C (21.9)	C (23.3)	B (13.2)	B (14.4)
	SCHOOL PEAK	-	-	C (20.6)		C (20.1)	
	PM PEAK	-	-	B (11.8)		B (10.3)	
6 Center Church Road & Clubview/Prop PTHS Access West	AM PEAK	A (1.9)	A (1.9)	A (0.6)	A (1.3)	A (1.3)	
	SCHOOL PEAK	A(1.4)	A(1.4)	A (1.6)			
	PM PEAK	A (1.5)	A (1.5)	A (1.7)			
7 Center Church Road & Proposed PTHS Access North	AM PEAK	-	-	A (2.6)	A (5.3)		
	SCHOOL PEAK	-	-	A (2.0)			
	PM PEAK	-	-	A (2.9)			
8 Student Drive & PTHS Access North	AM PEAK	-	-	A (1.3)	A (3.1)	A (5.8)	
	SCHOOL PEAK	-	-	A (1.3)	A (3.1)	A (5.8)	
	PM PEAK	-	-	A (1.3)	A (3.1)	A (5.8)	
9 Bus Drive & PTHS Access South	AM PEAK	-	-	B (12.1)	B (12.5)	C (21.4)	
	SCHOOL PEAK	-	-	B (15.3)	B (11.3)		
	PM PEAK	-	-	A (7.8)	A (7.5)		
10 Lower Access Rd & PTHS Access South	AM PEAK	-	-	-	B (10.2)	-	
	SCHOOL PEAK	-	-	-	C (15.4)		
	PM PEAK	-	-	-	A (1.4)		

Base = No-Build scenario

Projected = Build scenario

Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

7. Traffic signal warrants were evaluated at the proposed McMurray Road & Shared Access Road intersection. With the development of the proposed High School, a traffic signal will be warranted at McMurray Road & Shared Access Road.
8. Turn lane warrants were evaluated at the proposed McMurray Road & Shared Access Road intersection and at the existing McMurray Road & Center Church Road (unsignalized) intersection.
 - If the secondary access to the High School Campus (via Center Church Road opposite Clubview Drive) is open in the AM, then the proposed High School traffic would warrant a 200' right turn lane on McMurray Road at Center Church Road.
 - With the development of the proposed High School, a 150' left turn lane and a 175' right turn lane would be warranted at the proposed traffic signal at McMurray Road & Shared Access Road.
 - An alternative to the traffic signal and turn lanes would be a roundabout at McMurray Road & Shared Access Road.
9. Based upon the traffic analysis, traffic signal warrants, and turn lane warrants, the following improvements are recommended.

Shared Access Road

- Continue to work with the Township on the design and layout of the proposed Shared Access Road. Potential access to the High School Campus will be via up to 3 points:
- Lower Access Road (this road is proposed as an add-alternate and may not be constructed). If this road is constructed, it shall be located a sufficient distance from McMurray Road to provide 300' of queue storage between McMurray Road and this access. (That's 300' of storage not center to center distance). To ensure that this access point does not back into either the traffic signal or roundabout, a 150' northbound left turn lane should be constructed.
- Bus/Staff/Visitor/Drop-off Driveway – primary access point. An analysis indicates that there should be two egress lanes from this lot (left/right). The left lane should provide at least 200' of storage. To ensure that this access point moves traffic efficiently, a 100' southbound right turn lane and a 200' northbound left turn lane should be constructed.
- Student Driveway – primary access point. To ensure that this access point moves traffic efficiently, a 100' westbound left turn lane should be constructed.

McMurray & Center Church (unsignalized)

- If the secondary access to the High School Campus (via Center Church Road opposite Clubview Drive) is open in the AM, then the proposed High School traffic would warrant a 200' right turn lane on McMurray Road at Center Church Road.
- If the secondary access to the High School Campus is closed, then no improvements would be needed at this intersection

McMurray & Shared Access Road

- The preferred alternative is to construct a single lane roundabout with a westbound slip ramp. This is subject to PennDOT approval.
- As an acceptable alternative, a traffic signal with a 150' westbound left turn lane and a 175' eastbound right turn lane is to be constructed.

Center Church Road & Clubview Drive/secondary High School Access

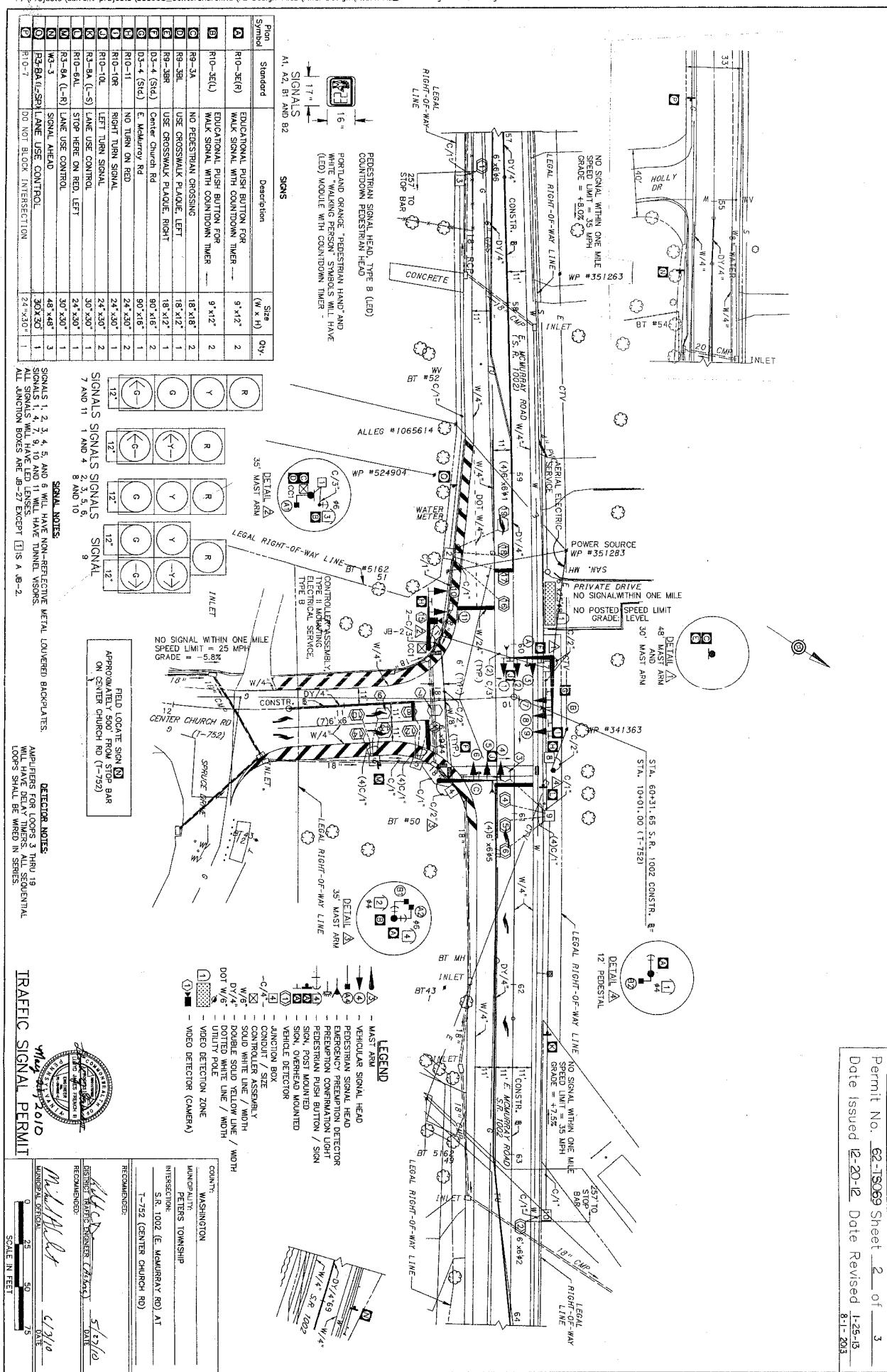
- As noted above, this access will require a gate. Access will be closed during school dismissal and PM peak hours (until 6PM). In addition, access may be closed during AM arrivals (starting at 6PM) in lieu of constructing the right turn lane on McMurray Road noted above.

Center Church Road & Share Access Road

- In conjunction with the final design of the Shared Access Road, the preferred alternative is for eastbound Center Church and the Shared Access Road to be aligned to form the through movement, while the northbound Center Church access forms the T-intersection (stop controlled).
10. With the implementation of the recommended improvements, TPD believe that the health, safety, and welfare of the general public will not be impacted from a traffic engineering perspective as a result of this development.

Appendix A

Existing Signal Plans



Appendix B

Manual Turning Movement Counts

Study Name PTOW.00066 Peters High School West Driveway

Start Date 06/05/2017

Site Code

Project PTOW.00066

Type Road

Classification Totals

Start Time	E McMurray Rd Westbound			West Driveway Northbound			E McMurray Rd Eastbound			Total	Hourly Total	PHF
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn			
6:00 AM	55	3	0	0	0	0	2	17	0	77	77	
6:15 AM	54	3	0	0	0	0	3	26	0	86	163	
6:30 AM	94	6	0	0	4	0	8	41	0	153	316	
6:45 AM	107	25	0	11	13	0	37	33	0	226	542	0.60
7:00 AM	67	67	0	45	51	0	95	32	0	357	822	0.58
7:15 AM	67	65	0	76	65	0	113	37	0	423	1159	0.68
7:30 AM	118	6	0	3	6	0	5	56	0	194	1200	0.71
7:45 AM	129	5	0	6	5	0	10	37	0	192	1166	0.69
8:00 AM	154	19	0	4	3	0	23	59	0	262	1071	0.63
8:15 AM	128	7	0	3	4	0	3	50	0	195	843	0.80
8:30 AM	97	11	0	2	4	0	10	58	0	182	831	0.79
8:45 AM	128	16	0	14	23	0	22	66	0	269	908	0.84
AM PEAK	381	143	0	130	127	0	223	162	0			
Truck %	3%	10%	0%	1%	5%	0%	4%	10%	0%			
2:00 PM	98	31	0	3	2	0	23	101	0	258	258	
2:15 PM	96	15	0	83	74	0	14	87	0	369	627	
2:30 PM	133	8	0	24	28	0	20	162	0	375	1002	
2:45 PM	107	8	0	5	39	0	8	138	0	305	1307	0.87
3:00 PM	104	17	0	8	22	0	21	146	0	318	1367	0.91
3:15 PM	107	4	0	14	29	0	11	137	0	302	1300	0.87
3:30 PM	112	6	0	5	11	0	8	132	0	274	1199	0.94
3:45 PM	139	8	0	10	16	0	12	137	0	322	1216	0.94
SC PEAK	440	48	0	120	163	0	63	533	0			
Truck %	3%	13%	0%	23%	5%	0%	3%	2%	0%			
4:00 PM	130	5	0	8	11	0	10	157	0	321	1219	0.95
4:15 PM	126	5	0	4	9	0	9	139	0	292	1209	0.94
4:30 PM	91	7	0	2	14	0	12	156	0	282	1217	0.94
4:45 PM	113	6	0	3	16	0	23	181	0	342	1237	0.90
5:00 PM	115	5	0	4	21	0	14	173	0	332	1248	0.91
5:15 PM	134	8	0	1	16	0	12	191	0	362	1318	0.91
5:30 PM	141	16	0	2	17	0	16	177	0	369	1405	0.95
5:45 PM	101	13	0	4	15	0	22	175	0	330	1393	0.94
PM PEAK	503	35	0	10	70	0	65	722	0			
Truck %	1%	0%	0%	0%	0%	0%	0%	0%	0%			

Study Name PTOW.00066 Peters High School East Driveway

Start Date 06/05/2017

Site Code

Project PTOW.00066

Type Road

Classification Totals

Start Time	E McMurray Rd Westbound			West Driveway Northbound			E McMurray Rd Eastbound			Total	Hourly Total	PHF
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn			
6:00 AM	59	2	0	0	0	0	0	15	0	76	76	
6:15 AM	57	3	0	1	0	0	0	23	0	84	160	
6:30 AM	98	1	0	0	0	0	0	43	0	142	302	
6:45 AM	132	27	0	4	1	0	0	42	0	206	508	0.62
7:00 AM	135	92	0	22	0	0	0	74	0	323	755	0.58
7:15 AM	128	134	0	14	0	0	3	110	0	389	1060	0.68
7:30 AM	126	2	0	0	0	0	0	63	0	191	1109	0.71
7:45 AM	125	2	0	0	0	0	0	45	0	172	1075	0.69
8:00 AM	173	1	0	1	1	0	0	64	0	240	992	0.64
8:15 AM	132	3	0	5	1	0	0	50	0	191	794	0.83
8:30 AM	114	0	0	3	0	0	0	57	0	174	777	0.81
8:45 AM	144	2	0	0	0	0	0	79	0	225	830	0.86
AM PEAK	514	230	0	36	0	0	3	292	0			
Truck %	5%	0%	0%	61%	0%	0%	0%	6%	0%			
2:00 PM	126	2	0	0	5	0	0	103	0	236	236	
2:15 PM	99	1	0	63	16	0	0	147	0	326	562	
2:30 PM	127	1	0	21	5	0	1	202	0	357	919	
2:45 PM	109	5	0	24	1	0	0	150	0	289	1208	0.85
3:00 PM	133	8	0	10	1	0	2	140	0	294	1266	0.89
3:15 PM	114	7	0	12	0	0	0	148	0	281	1221	0.86
3:30 PM	102	3	0	10	0	0	0	147	0	262	1126	0.96
3:45 PM	150	8	0	14	1	0	0	148	0	321	1158	0.90
SCH PEAK	468	15	0	118	23	0	3	639	0			
Truck %	4%	7%	0%	1%	4%	0%	0%	5%	0%			
4:00 PM	142	4	0	12	2	0	0	164	0	324	1188	0.92
4:15 PM	123	9	0	16	1	0	0	146	0	295	1202	0.93
4:30 PM	104	19	0	15	0	0	0	160	0	298	1238	0.96
4:45 PM	119	28	0	24	1	0	0	167	0	339	1256	0.93
5:00 PM	124	10	0	12	0	0	1	191	0	338	1270	0.94
5:15 PM	141	12	0	10	0	0	0	189	0	352	1327	0.94
5:30 PM	159	5	0	13	2	0	0	174	0	353	1382	0.98
5:45 PM	115	4	0	19	2	0	0	180	0	320	1363	0.97
PM PEAK	543	55	0	59	3	0	1	721	0			
Truck %	1%	0%	0%	0%	0%	0%	0%	0%	0%			

Study Name: McMurray Rd & Center Church Rd (Signalized)

Start Date: 1/21/2016

Start Time: 7:00:00 AM

Site Code: 00000000

Classification: Totals

Start Time	McMurray Westbound		Center Church Northbound		McMurray Eastbound		Total	Hourly Total	PHF
	Left	Thru	Left	Right	Thru	Right			
6:00:00 AM	1	27	6	4	14	2	54	54	
6:15:00 AM	2	41	9	5	22	3	82	136	
6:30:00 AM	3	63	13	8	33	5	125	261	
6:45:00 AM	5	85	18	11	45	7	171	432	0.63
7:00:00 AM	2	156	73	15	77	15	338	716	0.53
7:15:00 AM	4	125	30	10	108	19	296	930	0.69
7:30:00 AM	4	125	15	23	67	11	245	1050	0.78
7:45:00 AM	8	136	19	19	63	6	251	1130	0.84
8:00:00 AM	5	137	27	23	63	9	264	1056	0.89
8:15:00 AM	6	117	26	12	48	9	218	978	0.93
8:30:00 AM	14	126	17	16	60	3	236	969	0.92
8:45:00 AM	13	123	13	20	63	14	246	964	0.91
AM Peak	18	542	137	67	315	51			
Trucks	0%	3%	4%	4%	8%	8%			
2:00 PM	10	73	10	10	95	13	211	211	
2:15 PM	17	55	14	11	140	25	262	473	
2:30 PM	13	84	23	11	144	26	301	774	
2:45 PM	11	77	25	11	120	32	276	1050	0.87
3:00 PM	10	95	9	14	112	16	256	1095	0.91
3:15 PM	20	84	26	20	131	25	306	1139	0.93
3:30 PM	14	78	14	14	123	33	276	1114	0.91
3:45 PM	16	90	24	10	134	26	300	1138	0.93
SCH Peak	51	311	71	47	516	99			
Trucks	0%	8%	0%	4%	5%	8%			
4:00 PM	13	119	19	14	123	32	320	1202	0.94
4:15 PM	20	107	13	10	171	24	345	1241	0.90
4:30 PM	16	108	22	17	125	28	316	1281	0.93
4:45 PM	12	126	24	14	174	25	375	1356	0.90
5:00 PM	22	102	20	15	195	38	392	1428	0.91
5:15 PM	23	107	13	11	190	26	370	1453	0.93
5:30 PM	20	147	16	16	189	41	429	1566	0.91
5:45 PM	20	119	26	19	126	32	342	1533	0.89
PM Peak	77	482	73	56	748	130			
Trucks	4%	1%	0%	7%	1%	2%			

Study Name: McMurray Rd & Center Church Rd (Unsignalized)

Start Date: 1/21/2016

Start Time: 7:00:00 AM

Site Code: 00000000

Classification: Totals

Start Time	Center Church Southbound		McMurray Rd Westbound		McMurray Rd Eastbound		Total	Hourly Total	PHF
	Left	Right	Thru	Right	Left	Thru			
6:00 AM	1	2	27	2	3	15	50	50	
6:15 AM	2	3	40	3	4	23	75	125	
6:30 AM	2	4	62	4	6	35	113	238	
6:45 AM	3	5	84	6	8	48	154	392	0.64
7:00 AM	2	6	170	16	16	80	290	632	0.54
7:15 AM	6	3	112	13	16	102	252	809	0.70
7:30 AM	1	6	123	10	13	75	228	924	0.80
7:45 AM	7	8	140	8	8	73	244	1014	0.87
8:00 AM	5	13	129	6	13	69	235	959	0.95
8:15 AM	3	10	94	4	7	54	172	879	0.90
8:30 AM	9	9	141	11	8	67	245	896	0.91
8:45 AM	8	11	124	5	18	67	233	885	0.90
AM Peak	16	23	545	47	53	330			
Truck %	6%	9%	2%	2%	6%	8%			

2:00 PM	9	9	73	6	10	96	203	203	
2:15 PM	10	15	71	8	14	132	250	453	
2:30 PM	15	12	83	10	14	147	281	734	
2:45 PM	6	11	82	5	9	122	235	969	0.86
3:00 PM	7	5	98	2	6	129	247	1013	0.90
3:15 PM	5	12	96	4	13	121	251	1014	0.90
3:30 PM	4	8	93	10	6	133	254	987	0.97
3:45 PM	13	10	103	7	10	141	284	1036	0.91
PM Peak	38	43	334	25	43	530			
Truck %	0%	0%	3%	8%	5%	4%			
4:00 PM	5	15	125	12	12	125	294	1083	0.92
4:15 PM	15	18	99	4	13	170	319	1151	0.90
4:30 PM	12	11	111	7	13	131	285	1182	0.93
4:45 PM	9	10	131	8	15	175	348	1246	0.90
5:00 PM	10	16	114	7	14	186	347	1299	0.93
5:15 PM	12	15	114	5	12	192	350	1330	0.95
5:30 PM	11	18	147	6	12	189	383	1428	0.93
5:45 PM	11	15	119	10	14	131	300		0.90
PM Peak	42	59	506	26	53	742			
Truck %	0%	0%	1%	0%	0%	0%			

File Name: Center Church Rd & Clubview Drive
 Start Date: 9/14/2017
 Start Time: 6:00 AM
 Site Code: 00000000

Classification: Totals

Start Time	Center Church Southbound		Center Church Northbound		Club View Drive Eastbound		Total	Hourly Total	PHF
	Thru	Right	Left	Thru	Left	Right			
6:00 AM	1	0	0	0	0	2	3		
6:15 AM	6	0	0	5	0	2	13		
6:30 AM	9	0	1	18	0	6	34		
6:45 AM	8	2	0	14	0	1	25	75	
7:00 AM	7	1	6	11	1	2	28	100	
7:15 AM	7	1	3	16	0	3	30	117	
7:30 AM	6	0	5	13	0	3	27	110	
7:45 AM	13	1	4	23	3	1	45	130	0.72
AM Peak	33	3	18	63	4	9			
% Heavy	12%	0%	6%	6%	0%	0%			
8:00 AM	14	1	18	5	2	2	42	144	
8:15 AM	12	0	11	4	0	1	28	142	
8:30 AM	9	0	14	2	0	0	25	140	
8:45 AM	10	1	12	3	1	2	29	124	
2:00 PM	17	2	3	13	1	1	37		
2:15 PM	15	1	5	12	0	2	35		
2:30 PM	22	2	4	15	2	3	48		
2:45 PM	19	1	2	14	2	1	39	159	
3:00 PM	17	1	3	13	1	2	37	159	0.83
SC Peak	73	5	14	54	5	8			
% Heavy	4%	0%	7%	6%	20%	0%			
3:15 PM	15	1	2	10	1	1	30	154	
3:30 PM	16	2	1	11	1	2	33	139	
3:45 PM	11	0	3	12	0	2	28	128	
4:00 PM	13	2	2	9	1	1	28	119	
4:15 PM	15	1	4	11	1	3	35	124	
4:30 PM	18	2	3	13	0	2	38	129	
4:45 PM	21	1	3	12	1	3	41	142	
5:00 PM	23	3	5	15	2	2	50	164	
5:15 PM	24	2	6	18	2	3	55	184	
5:30 PM	21	1	4	16	1	4	47	193	0.88
PM Peak	89	7	18	61	6	12			
% Heavy	1%	0%	0%	2%	17%	0%			
5:45 PM	22	1	2	13	1	2			

PTHS Network Peak

Time	West Driveway	East Driveway	McMurray & Center Church (Signalized)	McMurray & Center Church (Unsignalized)	Center Church & Clubview
6:00 AM	77	76	54	50	3
6:15 AM	86	84	82	75	13
6:30 AM	153	142	125	113	34
6:45 AM	226	206	171	154	25
7:00 AM	357	323	338	290	28
7:15 AM	423	389	296	252	30
7:30 AM	194	191	245	228	27
7:45 AM	192	172	251	244	45
8:00 AM	262	240	264	235	42
8:15 AM	195	191	218	172	28
8:30 AM	182	174	236	245	25
8:45 AM	269	225	246	233	29

Time	West Driveway	East Driveway	McMurray & Center Church (Signalized)	McMurray & Center Church (Unsignalized)	Center Church & Clubview	TOTAL	HOURLY TOTAL
6:00 AM	77	76	54	50	3	260	260
6:15 AM	86	84	82	75	13	340	600
6:30 AM	153	142	125	113	34	567	1167
6:45 AM	226	206	171	154	25	782	1949
7:00 AM	357	323	338	290	28	1336	3025
7:15 AM	423	389	296	252	30	1390	4075
7:30 AM	194	191	245	228	27	885	4393
7:45 AM	192	172	251	244	45	904	4515
8:00 AM	262	240	264	235	42	1043	4222
8:15 AM	195	191	218	172	28	804	3636
8:30 AM	182	174	236	245	25	862	3613
8:45 AM	269	225	246	233	29	1002	3711

Time	West Driveway	East Driveway	McMurray & Center Church (Signalized)	McMurray & Center Church (Unsignalized)	Center Church & Clubview	TOTAL	HOURLY TOTAL
2:00 PM	258	236	211	203	37	945	945
2:15 PM	369	326	262	250	35	1242	2187
2:30 PM	375	357	301	281	48	1362	3549
2:45 PM	305	289	276	235	39	1144	4693
3:00 PM	318	294	256	247	37	1152	4900
3:15 PM	302	281	306	251	30	1170	4828
3:30 PM	274	262	276	254	33	1099	4565
3:45 PM	322	321	300	284	28	1255	4676
4:00 PM	321	324	320	294	28	1287	4811
4:15 PM	292	295	345	319	35	1286	4927
4:30 PM	282	298	316	285	38	1219	5047
4:45 PM	342	339	375	348	41	1445	5237
5:00 PM	332	338	392	347	50	1459	5409
5:15 PM	362	352	370	350	55	1489	5612
5:30 PM	369	353	429	383	47	1581	5974
5:45 PM	330	320	342	300	41	1333	5862

School Peak (Dismissals)

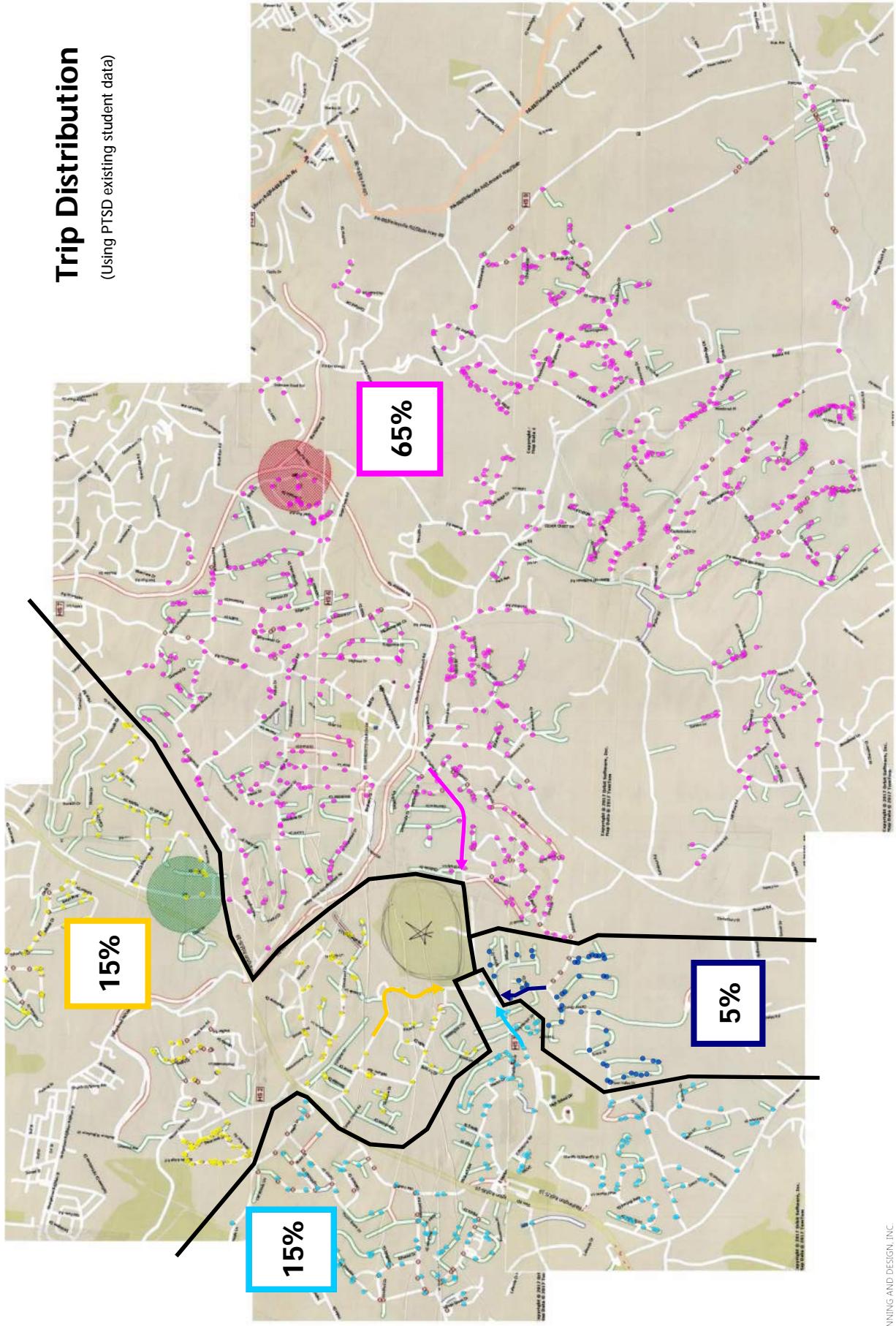
PM Peak (Arrivals)

Appendix C

Trip Generation

Trip Distribution

(Using PTSD existing student data)



PTHS Trip Gen

AM Entering Trips

Total Trips = 689

599 Entering per count (plus 90 new students)	30 Buses	259 Staff & Visitors	400 Students
From West	15%	4	39
From East	65%	20	168
From North	15%	4	39
From South	5%	2	13

SC Entering Trips

Total Trips = 129

129 Entering per count	30 Buses	99 Staff & Visitors	0 Students
From West	15%	4	15
From East	65%	20	64
From North	15%	4	15
From South	5%	2	5

PM Entering Trips

Total Trips = 156

156 Entering per count	0 Buses	156 Staff & Visitors	0 Students
From West	15%	0	23
From East	65%	0	102
From North	15%	0	23
From South	5%	0	8

AM Exiting Trips

Total Trips = 293

293 Exiting per count	30 Buses	263 Staff & Visitors	0 Students
To West	15%	4	39
To East	65%	20	172
To North	15%	4	39
To South	5%	2	13

SC Exiting Trips

Total Trips = 484
(67% of students exit)

424 Exiting per count (plus 60 new students)	30 Buses	189 Staff & Visitors	265 Students
To West	15%	4	28
To East	65%	20	123
To North	15%	4	28
To South	5%	2	10

PM Exiting Trips

Total Trips = 172
(33% of students exit)

142 Entering per count (plus 30 new students)	0 Buses	37 Staff & Visitors	135 Students
To West	15%	0	6
To East	65%	0	24
To North	15%	0	5
To South	5%	0	2

Entering Students

Arrivals

Campus Identification,
Signage, and Wayfinding
Primary Intersection /
Campus Entry Point

- Realigned Intersection at Center Church Road
- Existing High-Tension Power Line Easement
- Existing Ridge-Line Preservation Area

Wetland Preservation	Student Parking Lot 400+ Spaces Shown	30-Bus Drop-Off Plaza w/ 120 Event Parking Spaces	Secondary Intersection / Campus Entry Point	Enhanced Drainage-Way	Loading / Service Road	Practice Field Parking 42 Spaces Shown	Practice Field with Berm Seating Area	Enhanced Meadow, Fields and Drainage-ways.	Lower Access Road
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**1 - Gate Open, Right turn lane
at Center Church Rd &
McMurray Rd**

2 - Lower Access Road open
& gate open

3 - Gate closed

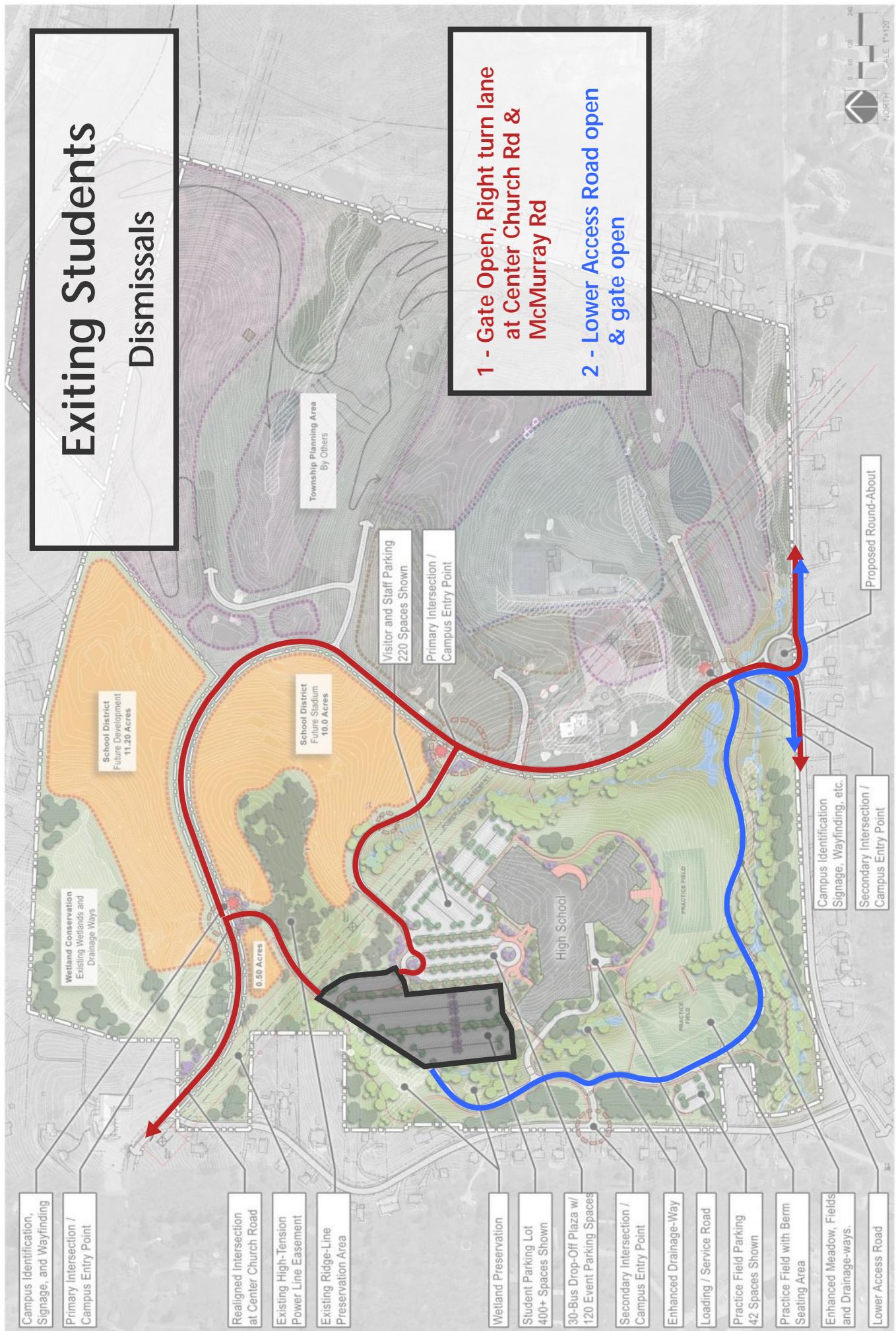
Proposed Round-About
Secondary Intersection /
Campus Entry Point

DISTRICT MASTER PLAN - PREFERRED OPTION

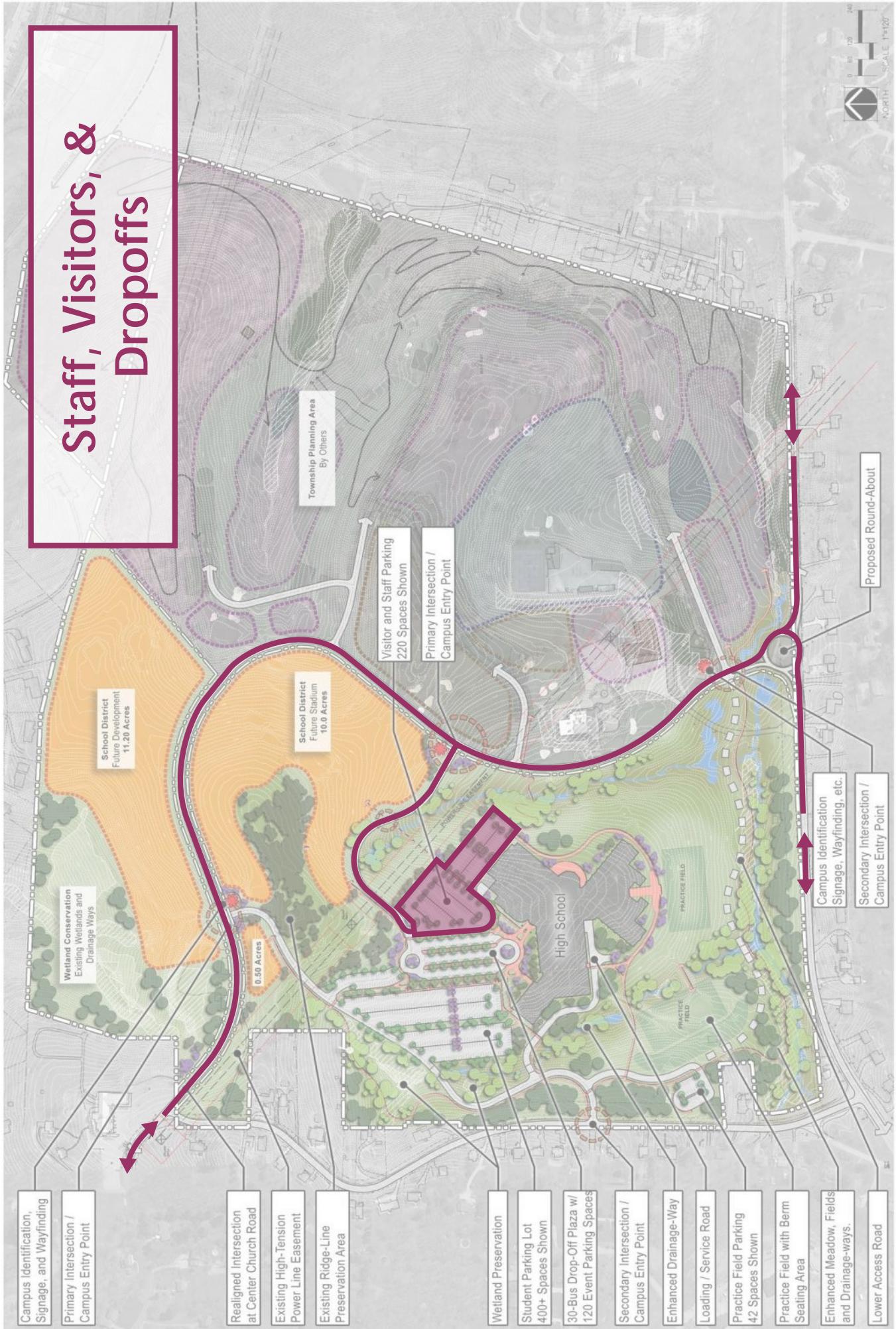
Exiting Students Dismissals

**1 - Gate Open, Right turn lane
at Center Church Rd &
McMurray Rd**

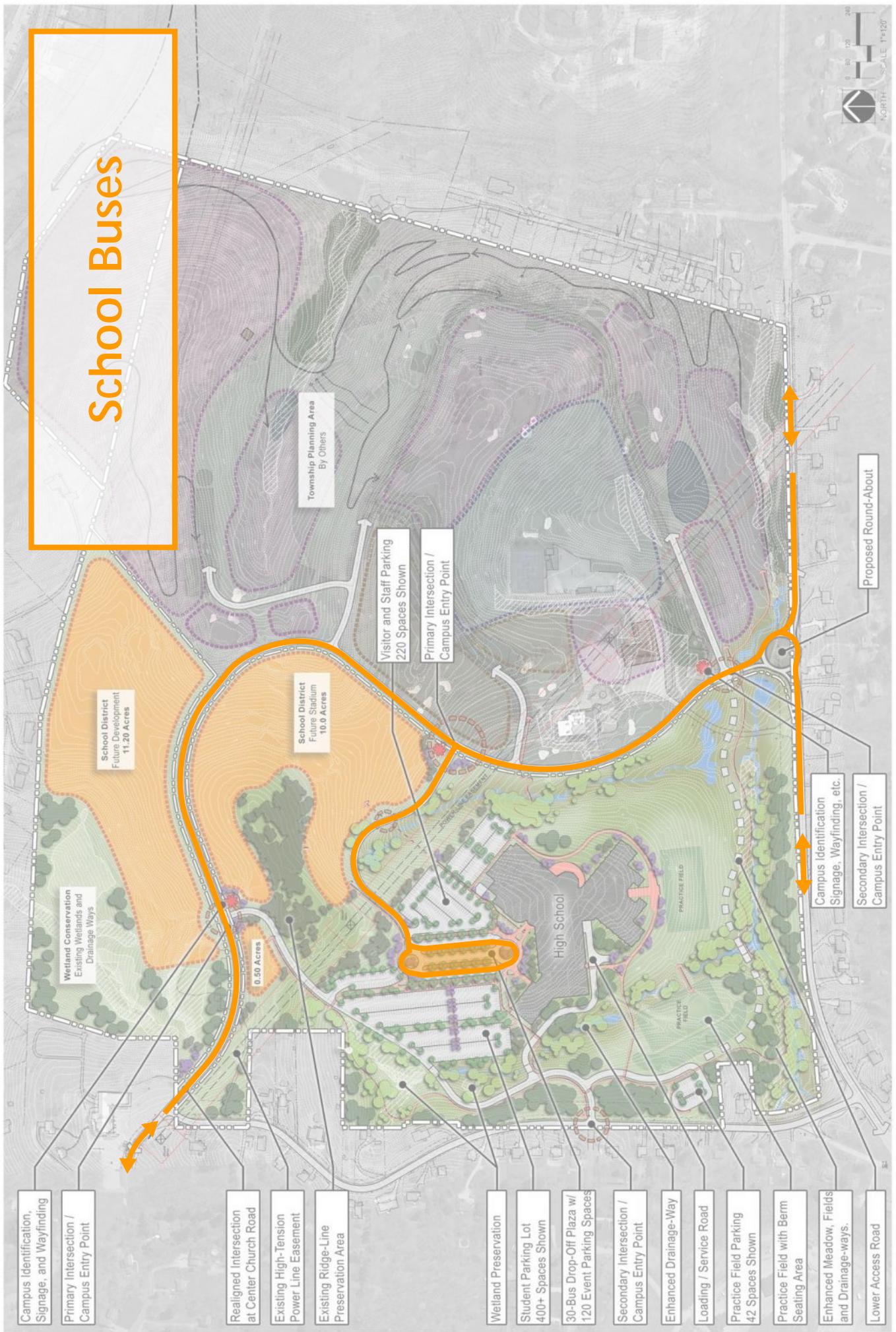
**2 - Lower Access Road open
& gate open**



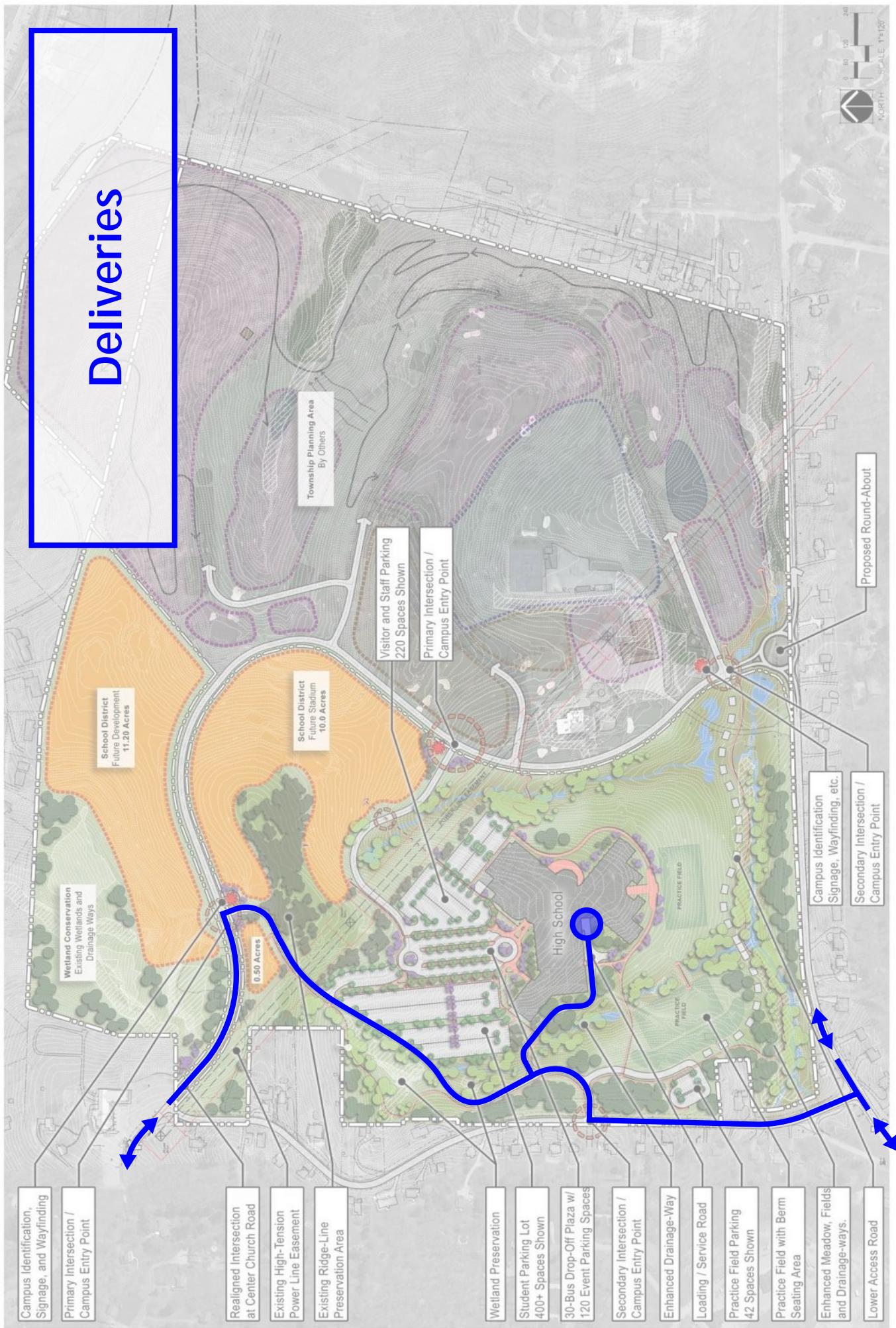
Staff, Visitors, & Dropoffs



School Buses



Deliveries



Appendix D

Volume Development Worksheets

TPD# PTOW.00066

9/25/2017

Traffic Volumes Worksheet

Intersection:

Synchro Node:

McMurray Road (SR 1002) & Existing PTHS Access West

1	Adjacent intersections:	West	0	East	2	North	0	South	0
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Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		162	223	143	381		127		130				1166
Balancing													0
2017 Existing Volumes (Balanced)	0	162	223	143	381	0	127	0	130	0	0	0	1166
Base growth (1.4% compounded for 2 yrs)	0	5	6	4	11	0	4	0	0	0	0	0	30
													0
													0
2019 Base (No-Build) Volumes	0	167	229	147	392	0	131	0	130	0	0	0	1196
Existing School Trips Removed		-3	-223	-143			-127		-130				-626
Proposed School Trips Added (Students) AM1		59											
Proposed School Trips Added (Buses, Staff, Visitors) AM1		43			43								
Proposed School Trips Added (Students) AM2		59											
Proposed School Trips Added (Buses, Staff, Visitors) AM2		43			43								
Proposed School Trips Added (Students) AM3		59											
Proposed School Trips Added (Buses, Staff, Visitors) AM3		43			43								
Total Trip Distribution AM1	0	99	-223	-143	43	0	-127	0	-130	0	0	0	-481
Total Trip Distribution AM2	0	99	-223	-143	43	0	-127	0	-130	0	0	0	-481
Total Trip Distribution AM3	0	99	-223	-143	43	0	-127	0	-130	0	0	0	-481
2019 Projected (Build) Volumes AM1	0	266	6	4	435	0	4	0	0	0	0	0	715
2019 Projected (Build) Volumes AM2	0	266	6	4	435	0	4	0	0	0	0	0	715
2019 Projected (Build) Volumes AM3	0	266	6	4	435	0	4	0	0	0	0	0	715

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		533	63	48	440		163		120				1367
Balancing													0
2017 Existing Volumes (Balanced)	0	533	63	48	440	0	163	0	120	0	0	0	1367
Base growth (1.4% compounded for 2 yrs)	0	15	2	1	12	0	5	0	3	0	0	0	38
													0
													0
2019 Base (No-Build) Volumes	0	548	65	49	452	0	168	0	123	0	0	0	1405
Existing School Trips Removed		-3	-63	-48	-23		-163		-120				-420
Proposed School Trips Added (Students) SC1					37								
Proposed School Trips Added (Buses, Staff, Visitors) SC1		19			35								
Proposed School Trips Added (Students) SC2					37								
Proposed School Trips Added (Buses, Staff, Visitors) SC2		19			35								
Total Trip Distribution SC1	0	16	-63	-48	49	0	-163	0	-120	0	0	0	-329
Total Trip Distribution SC2	0	16	-63	-48	49	0	-163	0	-120	0	0	0	-329
2019 Projected (Build) Volumes SC1	0	564	2	1	501	0	5	0	3	0	0	0	1076
2019 Projected (Build) Volumes SC2	0	564	2	1	501	0	5	0	3	0	0	0	1076

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		722	65	35	503		70		10				1405
Balancing													0
2017 Existing Volumes (Balanced)	0	722	65	35	503	0	70	0	10	0	0	0	1405
Base growth (1.4% compounded for 2 yrs)	0	20	2	1	14	0	2	0	0	0	0	0	39
													0
													0
2019 Base (No-Build) Volumes	0	742	67	36	517	0	72	0	10	0	0	0	1444
Existing School Trips Removed		-1	-65	-35	-3		-70		-10				-184
Proposed School Trips Added (Students) PM1					14								14
Proposed School Trips Added (Buses, Staff, Visitors) PM1		23			11								
Proposed School Trips Added (Students) PM2					14								
Proposed School Trips Added (Buses, Staff, Visitors) PM2		23			11								
Total Trip Distribution PM1	0	22	-65	-35	22	0	-70	0	-10	0	0	0	-136
Total Trip Distribution PM2	0	22	-65	-35	22	0	-70	0	-10	0	0	0	-136
2019 Projected (Build) Volumes PM1	0	764	2	1	539	0	2	0	0	0	0	0	1308
2019 Projected (Build) Volumes PM2	0	764	2	1	539	0	2	0	0	0	0	0	1308

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9/25/2017

Traffic Volumes Worksheet

Intersection:

Synchro Node:

McMurray Road (SR 1002) & Existing PTHS Access East

2 Adjacent intersections: West 1 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		292	3	230	514		0		36				1075
Balancing													0
2017 Existing Volumes (Balanced)	0	292	3	230	514	0	0	0	36	0	0	0	1075
Base growth (1.4% compounded for 2 yrs)	0	8	0	6	14	0	0	0	0	0	0	0	28
													0
													0
2019 Base (No-Build) Volumes	0	300	3	236	528	0	0	0	36	0	0	0	1103
Existing School Trips Removed		-130	-3	-230	-143				-36				-542
Proposed School Trips Added (Students) AM1		59											
Proposed School Trips Added (Buses, Staff, Visitors) AM1		43			43								
Proposed School Trips Added (Students) AM2		59											
Proposed School Trips Added (Buses, Staff, Visitors) AM2		43			43								
Proposed School Trips Added (Students) AM3		59											
Proposed School Trips Added (Buses, Staff, Visitors) AM3		43			43								
Total Trip Distribution AM1	0	-28	-3	-230	-100	0	0	0	-36	0	0	0	-397
Total Trip Distribution AM2	0	-28	-3	-230	-100	0	0	0	-36	0	0	0	-397
Total Trip Distribution AM3	0	-28	-3	-230	-100	0	0	0	-36	0	0	0	-397
2019 Projected (Build) Volumes AM1	0	272	0	6	428	0	0	0	0	0	0	0	706
2019 Projected (Build) Volumes AM2	0	272	0	6	428	0	0	0	0	0	0	0	706
2019 Projected (Build) Volumes AM3	0	272	0	6	428	0	0	0	0	0	0	0	706

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		639	3	15	468		23		118				1266
Balancing													0
2017 Existing Volumes (Balanced)	0	639	3	15	468	0	23	0	118	0	0	0	1266
Base growth (1.4% compounded for 2 yrs)	0	18	0	0	13	0	1	0	3	0	0	0	35
													0
													0
2019 Base (No-Build) Volumes	0	657	3	15	481	0	24	0	121	0	0	0	1301
Existing School Trips Removed		-120	-3	-15	-48		-23		-118				-327
Proposed School Trips Added (Students) SC1					37								
Proposed School Trips Added (Buses, Staff, Visitors) SC1		19			35								
Proposed School Trips Added (Students) SC2					37								
Proposed School Trips Added (Buses, Staff, Visitors) SC2		19			35								
Total Trip Distribution SC1	0	-101	-3	-15	24	0	-23	0	-118	0	0	0	-236
Total Trip Distribution SC2	0	-101	-3	-15	24	0	-23	0	-118	0	0	0	-236
2019 Projected (Build) Volumes SC1	0	556	0	0	505	0	1	0	3	0	0	0	1065
2019 Projected (Build) Volumes SC2	0	556	0	0	505	0	1	0	3	0	0	0	1065

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		721	1	55	543		3		59				0
Balancing													0
2017 Existing Volumes (Balanced)	0	721	1	55	543	0	3	0	59	0	0	0	1382
Base growth (1.4% compounded for 2 yrs)	0	20	0	2	15	0	0	0	2	0	0	0	39
													0
													0
2019 Base (No-Build) Volumes	0	741	1	57	558	0	3	0	61	0	0	0	1421
Existing School Trips Removed		-10	-1	-55	-35		-3		-59				-163
Proposed School Trips Added (Students) PM1					14								14
Proposed School Trips Added (Buses, Staff, Visitors) PM1		23			11								
Proposed School Trips Added (Students) PM2					14								
Proposed School Trips Added (Buses, Staff, Visitors) PM2		23			11								
Total Trip Distribution PM1	0	13	-1	-55	-10	0	-3	0	-59	0	0	0	-115
Total Trip Distribution PM2	0	13	-1	-55	-10	0	-3	0	-59	0	0	0	-115
2019 Projected (Build) Volumes PM1	0	754	0	2	548	0	0	0	2	0	0	0	1306
2019 Projected (Build) Volumes PM2	0	754	0	2	548	0	0	0	2	0	0	0	1306

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Traffic Volumes Worksheet

Intersection:

Synchro Node:

McMurray Road (SR 1002) & Center Church Road (SIGNALIZED)

3 Adjacent intersections: West 2 East 4 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		315	51	18	542		137		67				1130
Balancing													0
2017 Existing Volumes (Balanced)	0	315	51	18	542	0	137	0	67	0	0	0	1130
Base growth (1.4% compounded for 2 yrs)	0	9	1	1	15	0	4	0	0	0	0	0	30
													0
													0
2019 Base (No-Build) Volumes	0	324	52	19	557	0	141	0	67	0	0	0	1160
Existing School Trips Removed		-141	-25		-317		-56						-539
Proposed School Trips Added (Students) AM1		59						21					
Proposed School Trips Added (Buses, Staff, Visitors) AM1		43		15	43			15					
Proposed School Trips Added (Students) AM2		59						21					
Proposed School Trips Added (Buses, Staff, Visitors) AM2		43		15	43			15					
Proposed School Trips Added (Students) AM3		59						21					
Proposed School Trips Added (Buses, Staff, Visitors) AM3		43		15	43			15					
Total Trip Distribution AM1	0	-39	-25	15	-274	0	-56	0	36	0	0	0	-343
Total Trip Distribution AM2	0	-39	-25	15	-274	0	-56	0	36	0	0	0	-343
Total Trip Distribution AM3	0	-39	-25	15	-274	0	-56	0	36	0	0	0	-343
2019 Projected (Build) Volumes AM1	0	285	27	34	283	0	85	0	103	0	0	0	817
2019 Projected (Build) Volumes AM2	0	285	27	34	283	0	85	0	103	0	0	0	817
2019 Projected (Build) Volumes AM3	0	285	27	34	283	0	85	0	103	0	0	0	817

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		516	99	51	311		71		47				1095
Balancing													0
2017 Existing Volumes (Balanced)	0	516	99	51	311	0	71	0	47	0	0	0	1095
Base growth (1.4% compounded for 2 yrs)	0	15	3	1	9	0	2	0	1	0	0	0	31
													0
													0
2019 Base (No-Build) Volumes	0	531	102	52	320	0	73	0	48	0	0	0	1126
Existing School Trips Removed		-202	-36		-54		-9						-301
Proposed School Trips Added (Students) SC1				13	37								
Proposed School Trips Added (Buses, Staff, Visitors) SC1		19		12	35				7				
Proposed School Trips Added (Students) SC2				13	37								
Proposed School Trips Added (Buses, Staff, Visitors) SC2		19		12	35				7				
Total Trip Distribution SC1	0	-183	-36	25	18	0	-9	0	7	0	0	0	-178
Total Trip Distribution SC2	0	-183	-36	25	18	0	-9	0	7	0	0	0	-178
2019 Projected (Build) Volumes SC1	0	348	66	77	338	0	64	0	55	0	0	0	948
2019 Projected (Build) Volumes SC2	0	348	66	77	338	0	64	0	55	0	0	0	948

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts		748	130	77	482		73		56				0
Balancing													0
2017 Existing Volumes (Balanced)	0	748	130	77	482	0	73	0	56	0	0	0	1566
Base growth (1.4% compounded for 2 yrs)	0	21	4	2	14	0	2	0	2	0	0	0	45
													0
													0
2019 Base (No-Build) Volumes	0	769	134	79	496	0	75	0	58	0	0	0	1611
Existing School Trips Removed		-59	-10		-77		-13						-159
Proposed School Trips Added (Students) PM1				5	14								19
Proposed School Trips Added (Buses, Staff, Visitors) PM1		23		3	11				8				
Proposed School Trips Added (Students) PM2				5	14								
Proposed School Trips Added (Buses, Staff, Visitors) PM2		23		3	11				8				
Total Trip Distribution PM1	0	-36	-10	8	-52	0	-13	0	8	0	0	0	-95
Total Trip Distribution PM2	0	-36	-10	8	-52	0	-13	0	8	0	0	0	-95
2019 Projected (Build) Volumes PM1	0	733	124	87	444	0	62	0	66	0	0	0	1516
2019 Projected (Build) Volumes PM2	0	733	124	87	444	0	62	0	66	0	0	0	1516

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Traffic Volumes Worksheet

Intersection:

Synchro Node:

McMurray Road (SR 1002) & Center Church Road												
4	Adjacent intersections:			West	3	East	5	North	6	South	0	

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts	53	330			545	47				16	23		1014
Balancing													0
2017 Existing Volumes (Balanced)	53	330	0	0	545	47	0	0	0	16	0	23	1014
Base growth (1.4% compounded for 2 yrs)	1	9	0	0	15	1	0	0	0	0	0	1	27
													0
													0
2019 Base (No-Build) Volumes	54	339	0	0	560	48	0	0	0	16	0	24	1041
Existing School Trips Removed	-14	-127			-303							-14	-458
Proposed School Trips Added (Students) AM1	80				231								
Proposed School Trips Added (Buses, Staff, Visitors) AM1	58			58									
Proposed School Trips Added (Students) AM2	80				58								
Proposed School Trips Added (Buses, Staff, Visitors) AM2	58			58									
Proposed School Trips Added (Students) AM3	80				58								
Proposed School Trips Added (Buses, Staff, Visitors) AM3	58			58									
Total Trip Distribution AM1	66	-69	0	0	-245	231	0	0	0	0	0	-14	-31
Total Trip Distribution AM2	66	-69	0	0	-245	0	0	0	0	0	0	-14	-262
Total Trip Distribution AM3	66	-69	0	0	-245	0	0	0	0	0	0	-14	-262
2019 Projected (Build) Volumes AM1	120	270	0	0	315	279	0	0	0	16	0	10	1010
2019 Projected (Build) Volumes AM2	120	270	0	0	315	48	0	0	0	16	0	10	779
2019 Projected (Build) Volumes AM3	120	270	0	0	315	48	0	0	0	16	0	10	779

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts	43	530			334	25				38	43		1013
Balancing													0
2017 Existing Volumes (Balanced)	43	530	0	0	334	25	0	0	0	38	0	43	1013
Base growth (1.4% compounded for 2 yrs)	1	15	0	0	9	1	0	0	0	1	0	1	28
													0
													0
2019 Base (No-Build) Volumes	44	545	0	0	343	26	0	0	0	39	0	44	1041
Existing School Trips Removed	-20	-182			-49							-5	-256
Proposed School Trips Added (Students) SC1					50								
Proposed School Trips Added (Buses, Staff, Visitors) SC1	26			47									
Proposed School Trips Added (Students) SC2				50									
Proposed School Trips Added (Buses, Staff, Visitors) SC2	26			47									
Total Trip Distribution SC1	-20	-156	0	0	48	0	0	0	0	0	0	-5	-133
Total Trip Distribution SC2	-20	-156	0	0	48	0	0	0	0	0	0	-5	-133
2019 Projected (Build) Volumes SC1	24	389	0	0	391	26	0	0	0	39	0	39	908
2019 Projected (Build) Volumes SC2	24	389	0	0	391	26	0	0	0	39	0	39	908

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts	53	742			506	26				42	59		0
Balancing													0
2017 Existing Volumes (Balanced)	53	742	0	0	506	26	0	0	0	42	0	59	1428
Base growth (1.4% compounded for 2 yrs)	1	21	0	0	14	1	0	0	0	1	0	2	40
													0
													0
2019 Base (No-Build) Volumes	54	763	0	0	520	27	0	0	0	43	0	61	1468
Existing School Trips Removed	-6	-53			-69							-8	-136
Proposed School Trips Added (Students) PM1					19								19
Proposed School Trips Added (Buses, Staff, Visitors) PM1	31			14									
Proposed School Trips Added (Students) PM2				19									
Proposed School Trips Added (Buses, Staff, Visitors) PM2	31			14									
Total Trip Distribution PM1	-6	-22	0	0	-36	0	0	0	0	0	0	-8	-72
Total Trip Distribution PM2	-6	-22	0	0	-36	0	0	0	0	0	0	-8	-72
2019 Projected (Build) Volumes PM1	48	741	0	0	484	27	0	0	0	43	0	53	1396
2019 Projected (Build) Volumes PM2	48	741	0	0	484	27	0	0	0	43	0	53	1396

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Traffic Volumes Worksheet

Intersection:

Synchro Node:

McMurray Road (SR 1002) & Proposed PTHS Access

5 Adjacent intersections: West 4 East 0 North 10 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2017 Existing Counts		346			592								938
Balancing													0
2017 Existing Volumes (Balanced)	0	346	0	0	592	0	0	0	0	0	0	0	938
Base growth (1.4% compounded for 2 yrs)	0	10	0	0	17	0	0	0	0	0	0	0	27
													0
													0
2019 Base (No-Build) Volumes	0	356	0	0	609	0	0	0	0	0	0	0	965
Existing School Trips Removed		-127			-303								-430
Proposed School Trips Added (Students) AM1				231	30								
Proposed School Trips Added (Buses, Staff, Visitors) AM1	58				188					192		58	
Proposed School Trips Added (Students) AM2				261									
Proposed School Trips Added (Buses, Staff, Visitors) AM2	58			188						(192)		58	
Proposed School Trips Added (Students) AM3				261									
Proposed School Trips Added (Buses, Staff, Visitors) AM3	58			188						192		58	
Total Trip Distribution AM1	58	-127	0	0	-72	218	0	0	0	192	0	58	327
Total Trip Distribution AM2	58	-127	0	0	-303	449	0	0	0	192	0	58	327
Total Trip Distribution AM3	58	-127	0	0	-303	449	0	0	0	192	0	58	327
2019 Projected (Build) Volumes AM1	58	229	0	0	537	218	0	0	0	192	0	58	1292
2019 Projected (Build) Volumes AM2	58	229	0	0	306	449	0	0	0	192	0	58	1292
2019 Projected (Build) Volumes AM3	58	229	0	0	306	449	0	0	0	192	0	58	1292

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2017 Existing Counts		568			359								927
Balancing													0
2017 Existing Volumes (Balanced)	0	568	0	0	359	0	0	0	0	0	0	0	927
Base growth (1.4% compounded for 2 yrs)	0	16	0	0	10	0	0	0	0	0	0	0	26
													0
													0
2019 Base (No-Build) Volumes	0	584	0	0	369	0	0	0	0	0	0	0	953
Existing School Trips Removed		-182			-49								-231
Proposed School Trips Added (Students) SC1											163	50	
Proposed School Trips Added (Buses, Staff, Visitors) SC1	26				84						153	47	
Proposed School Trips Added (Students) SC2											163	50	
Proposed School Trips Added (Buses, Staff, Visitors) SC2	26			84							(153)	47	
Total Trip Distribution SC1	26	-182	0	0	-49	84	0	0	0	316	0	97	292
Total Trip Distribution SC2	26	-182	0	0	-49	84	0	0	0	316	0	97	292
2019 Projected (Build) Volumes SC1	26	402	0	0	320	84	0	0	0	316	0	97	1245
2019 Projected (Build) Volumes SC2	26	402	0	0	320	84	0	0	0	316	0	97	1245

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2017 Existing Counts		784			532								0
Balancing													0
2017 Existing Volumes (Balanced)	0	784	0	0	532	0	0	0	0	0	0	0	1316
Base growth (1.4% compounded for 2 yrs)	0	22	0	0	15	0	0	0	0	0	0	0	37
													0
													0
2019 Base (No-Build) Volumes	0	806	0	0	547	0	0	0	0	0	0	0	1353
Existing School Trips Removed		-53			-69								-122
Proposed School Trips Added (Students) PM1											66	19	85
Proposed School Trips Added (Buses, Staff, Visitors) PM1	31				102						47	14	
Proposed School Trips Added (Students) PM2											66	19	
Proposed School Trips Added (Buses, Staff, Visitors) PM2	31			102							47	14	
Total Trip Distribution PM1	31	-53	0	0	-69	102	0	0	0	113	0	33	157
Total Trip Distribution PM2	31	-53	0	0	-69	102	0	0	0	113	0	33	157
2019 Projected (Build) Volumes PM1	31	753	0	0	478	102	0	0	0	113	0	33	1510
2019 Projected (Build) Volumes PM2	31	753	0	0	478	102	0	0	0	113	0	33	1510

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Traffic Volumes Worksheet

Intersection:

Synchro Node:

Center Church Road & Proposed PTHS Access South

6 Adjacent intersections: West 0 East 0 North 7 South 4

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2017 Existing Counts	4		9				18	63			33	3	130
Balancing													0
2017 Existing Volumes (Balanced)	4	0	9	0	0	0	18	63	0	0	33	3	130
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	1	2	0	0	1	0	4
													0
													0
2019 Base (No-Build) Volumes	4	0	9	0	0	0	19	65	0	0	34	3	134
Existing School Trips Removed								-14			-14		-28
Proposed School Trips Added (Students) AM1									311				
Proposed School Trips Added (Buses, Staff, Visitors) AM1													
Proposed School Trips Added (Students) AM2									80				
Proposed School Trips Added (Buses, Staff, Visitors) AM2													
Proposed School Trips Added (Students) AM3									80				
Proposed School Trips Added (Buses, Staff, Visitors) AM3													
Total Trip Distribution AM1	0	0	0	0	0	0	0	-14	311	0	-14	0	283
Total Trip Distribution AM2	0	0	0	0	0	0	0	-14	80	0	-14	0	52
Total Trip Distribution AM3	0	0	0	0	0	0	0	66	0	0	-14	0	52
2019 Projected (Build) Volumes AM1	4	0	9	0	0	0	19	51	311	0	20	3	417
2019 Projected (Build) Volumes AM2	4	0	9	0	0	0	19	51	80	0	20	3	186
2019 Projected (Build) Volumes AM3	4	0	9	0	0	0	19	131	0	0	20	3	186

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2017 Existing Counts	5		8				14	54			73	5	159
Balancing													0
2017 Existing Volumes (Balanced)	5	0	8	0	0	0	14	54	0	0	73	5	159
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	2	0	0	2	0	4
													0
													0
2019 Base (No-Build) Volumes	5	0	8	0	0	0	14	56	0	0	75	5	163
Existing School Trips Removed								-20			-5		-25
Proposed School Trips Added (Students) SC1													
Proposed School Trips Added (Buses, Staff, Visitors) SC1													
Proposed School Trips Added (Students) SC2													
Proposed School Trips Added (Buses, Staff, Visitors) SC2													
Total Trip Distribution SC1	0	0	0	0	0	0	0	-20	0	0	-5	0	-25
Total Trip Distribution SC2	0	0	0	0	0	0	0	-20	0	0	-5	0	-25
2019 Projected (Build) Volumes SC1	5	0	8	0	0	0	14	36	0	0	70	5	138
2019 Projected (Build) Volumes SC2	5	0	8	0	0	0	14	36	0	0	70	5	138

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2017 Existing Counts	6		12				18	61			89	7	0
Balancing													0
2017 Existing Volumes (Balanced)	6	0	12	0	0	0	18	61	0	0	89	7	193
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	1	2	0	0	3	0	6
													0
													0
2019 Base (No-Build) Volumes	6	0	12	0	0	0	19	63	0	0	92	7	199
Existing School Trips Removed								-6			-8		-14
Proposed School Trips Added (Students) PM1													0
Proposed School Trips Added (Buses, Staff, Visitors) PM1													
Proposed School Trips Added (Students) PM2													
Proposed School Trips Added (Buses, Staff, Visitors) PM2													
Total Trip Distribution PM1	0	0	0	0	0	0	0	-6	0	0	-8	0	-14
Total Trip Distribution PM2	0	0	0	0	0	0	0	-6	0	0	-8	0	-14
2019 Projected (Build) Volumes PM1	6	0	12	0	0	0	19	57	0	0	84	7	185
2019 Projected (Build) Volumes PM2	6	0	12	0	0	0	19	57	0	0	84	7	185

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Traffic Volumes Worksheet

Intersection:

Synchro Node:

Center Church Road & Proposed PTHS Access North

7 Adjacent intersections: West 0 East 8 North 0 South 6

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts			36				67						103
Balancing													0
2017 Existing Volumes (Balanced)	0	0	36	0	0	0	67	0	0	0	0	0	103
Base growth (1.4% compounded for 2 yrs)	0	0	1	0	0	0	2	0	0	0	0	0	3
													0
													0
2019 Base (No-Build) Volumes	0	0	37	0	0	0	69	0	0	0	0	0	106
Existing School Trips Removed			-14				-14						-28
Proposed School Trips Added (Students) AM1			59										
Proposed School Trips Added (Buses, Staff, Visitors) AM1			43			43							
Proposed School Trips Added (Students) AM2			59										
Proposed School Trips Added (Buses, Staff, Visitors) AM2			43			43							
Proposed School Trips Added (Students) AM3			59										
Proposed School Trips Added (Buses, Staff, Visitors) AM3			43			43							
Total Trip Distribution AM1	0	102	-14	0	43	0	-14	0	0	0	0	0	117
Total Trip Distribution AM2	0	102	-14	0	43	0	-14	0	0	0	0	0	117
Total Trip Distribution AM3	0	102	-14	0	43	0	-14	0	80	0	0	0	197
2019 Projected (Build) Volumes AM1	0	102	23	0	43	0	55	0	0	0	0	0	223
2019 Projected (Build) Volumes AM2	0	102	23	0	43	0	55	0	0	0	0	0	223
2019 Projected (Build) Volumes AM3	0	102	23	0	43	0	55	0	80	0	0	0	303

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts			78				59						137
Balancing													0
2017 Existing Volumes (Balanced)	0	0	78	0	0	0	59	0	0	0	0	0	137
Base growth (1.4% compounded for 2 yrs)	0	0	2	0	0	0	2	0	0	0	0	0	4
													0
													0
2019 Base (No-Build) Volumes	0	0	80	0	0	0	61	0	0	0	0	0	141
Existing School Trips Removed			-5				-20						-25
Proposed School Trips Added (Students) SC1						37							
Proposed School Trips Added (Buses, Staff, Visitors) SC1		19				34							
Proposed School Trips Added (Students) SC2						37							
Proposed School Trips Added (Buses, Staff, Visitors) SC2		19				34							
Total Trip Distribution SC1	0	19	-5	0	71	0	-20	0	0	0	0	0	65
Total Trip Distribution SC2	0	19	-5	0	71	0	-20	0	0	0	0	0	65
2019 Projected (Build) Volumes SC1	0	19	75	0	71	0	41	0	0	0	0	0	206
2019 Projected (Build) Volumes SC2	0	19	75	0	71	0	41	0	0	0	0	0	206

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts			96				67						0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	96	0	0	0	67	0	0	0	0	0	163
Base growth (1.4% compounded for 2 yrs)	0	0	3	0	0	0	2	0	0	0	0	0	5
													0
													0
2019 Base (No-Build) Volumes	0	0	99	0	0	0	69	0	0	0	0	0	168
Existing School Trips Removed			-8				-6						-14
Proposed School Trips Added (Students) PM1						15							15
Proposed School Trips Added (Buses, Staff, Visitors) PM1		23				11							
Proposed School Trips Added (Students) PM2						15							
Proposed School Trips Added (Buses, Staff, Visitors) PM2		23				11							
Total Trip Distribution PM1	0	23	-8	0	26	0	-6	0	0	0	0	0	35
Total Trip Distribution PM2	0	23	-8	0	26	0	-6	0	0	0	0	0	35
2019 Projected (Build) Volumes PM1	0	23	91	0	26	0	63	0	0	0	0	0	203
2019 Projected (Build) Volumes PM2	0	23	91	0	26	0	63	0	0	0	0	0	203

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Traffic Volumes Worksheet

Intersection:

Synchro Node:

Student Parking Lot & PTHS Access (to Center Church)

8 Adjacent intersections: West 7 East 9 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) AM1				59	30								
Proposed School Trips Added (Buses, Staff, Visitors) AM1	43				43								
Proposed School Trips Added (Students) AM2				59	91								
Proposed School Trips Added (Buses, Staff, Visitors) AM2	43				43								
Proposed School Trips Added (Students) AM3				139	261								
Proposed School Trips Added (Buses, Staff, Visitors) AM3	43				43								
Total Trip Distribution AM1	0	43	59	30	43	0	0	0	0	0	0	0	175
Total Trip Distribution AM2	0	43	59	91	43	0	0	0	0	0	0	0	236
Total Trip Distribution AM3	0	43	139	261	43	0	0	0	0	0	0	0	486
2019 Projected (Build) Volumes AM1	0	43	59	30	43	0	0	0	0	0	0	0	175
2019 Projected (Build) Volumes AM2	0	43	59	91	43	0	0	0	0	0	0	0	236
2019 Projected (Build) Volumes AM3	0	43	139	261	43	0	0	0	0	0	0	0	486

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) SC1							37						
Proposed School Trips Added (Buses, Staff, Visitors) SC1	19			34									
Proposed School Trips Added (Students) SC2							37						
Proposed School Trips Added (Buses, Staff, Visitors) SC2	19			34									
Total Trip Distribution SC1	0	19	0	0	34	0	37	0	0	0	0	0	90
Total Trip Distribution SC2	0	19	0	0	34	0	37	0	0	0	0	0	90
2019 Projected (Build) Volumes SC1	0	19	0	0	34	0	37	0	0	0	0	0	90
2019 Projected (Build) Volumes SC2	0	19	0	0	34	0	37	0	0	0	0	0	90

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) PM1							15						15
Proposed School Trips Added (Buses, Staff, Visitors) PM1	23			11									
Proposed School Trips Added (Students) PM2							15						
Proposed School Trips Added (Buses, Staff, Visitors) PM2	23			11									
Total Trip Distribution PM1	0	23	0	0	11	0	15	0	0	0	0	0	49
Total Trip Distribution PM2	0	23	0	0	11	0	15	0	0	0	0	0	49
2019 Projected (Build) Volumes PM1	0	23	0	0	11	0	15	0	0	0	0	0	49
2019 Projected (Build) Volumes PM2	0	23	0	0	11	0	15	0	0	0	0	0	49

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9/25/2017

Traffic Volumes Worksheet

Intersection:

Synchro Node:

Bus/Staff Drive & PTHS Access (to McMurray)

9	Adjacent intersections:	West	0	East	0	North	8	South	10
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Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) AM1									30				
Proposed School Trips Added (Buses, Staff, Visitors) AM1	43	250					246						43
Proposed School Trips Added (Students) AM2								91					
Proposed School Trips Added (Buses, Staff, Visitors) AM2	43	250					246						43
Proposed School Trips Added (Students) AM3									261				
Proposed School Trips Added (Buses, Staff, Visitors) AM3	43	250					246						43
Total Trip Distribution AM1	43	0	250	0	0	0	246	30	0	0	0	43	612
Total Trip Distribution AM2	43	0	250	0	0	0	246	91	0	0	0	43	673
Total Trip Distribution AM3	43	0	250	0	0	0	246	261	0	0	0	43	843
2019 Projected (Build) Volumes AM1	43	0	250	0	0	0	246	30	0	0	0	43	612
2019 Projected (Build) Volumes AM2	43	0	250	0	0	0	246	91	0	0	0	43	673
2019 Projected (Build) Volumes AM3	43	0	250	0	0	0	246	261	0	0	0	43	843

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) SC1			213										
Proposed School Trips Added (Buses, Staff, Visitors) SC1	34	200					110						19
Proposed School Trips Added (Students) SC2			111										
Proposed School Trips Added (Buses, Staff, Visitors) SC2	34	200					110						19
Total Trip Distribution SC1	34	0	413	0	0	0	110	0	0	0	0	19	576
Total Trip Distribution SC2	34	0	311	0	0	0	110	0	0	0	0	19	474
2019 Projected (Build) Volumes SC1	34	0	413	0	0	0	110	0	0	0	0	19	576
2019 Projected (Build) Volumes SC2	34	0	311	0	0	0	110	0	0	0	0	19	474

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) PM1			85										85
Proposed School Trips Added (Buses, Staff, Visitors) PM1	11	61					133						23
Proposed School Trips Added (Students) PM2			42										
Proposed School Trips Added (Buses, Staff, Visitors) PM2	11	61					133						23
Total Trip Distribution PM1	11	0	146	0	0	0	133	0	0	0	0	23	313
Total Trip Distribution PM2	11	0	103	0	0	0	133	0	0	0	0	23	270
2019 Projected (Build) Volumes PM1	11	0	146	0	0	0	133	0	0	0	0	23	313
2019 Projected (Build) Volumes PM2	11	0	103	0	0	0	133	0	0	0	0	23	270

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Traffic Volumes Worksheet

Intersection:

Synchro Node:

Bus/Staff Drive & PTHS Access (to McMurray)

9	Adjacent intersections:	West	0	East	0	North	9	South	5
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Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) AM1									30				
Proposed School Trips Added (Buses, Staff, Visitors) AM1								246				250	
Proposed School Trips Added (Students) AM2								170	91				
Proposed School Trips Added (Buses, Staff, Visitors) AM2								246				250	
Proposed School Trips Added (Students) AM3								261					
Proposed School Trips Added (Buses, Staff, Visitors) AM3								246				250	
Total Trip Distribution AM1	0	0	0	0	0	0	0	276	0	0	250	0	526
Total Trip Distribution AM2	0	0	0	0	0	0	170	337	0	0	250	0	757
Total Trip Distribution AM3	0	0	0	0	0	0	0	507	0	0	250	0	757
2019 Projected (Build) Volumes AM1	0	0	0	0	0	0	0	276	0	0	250	0	526
2019 Projected (Build) Volumes AM2	0	0	0	0	0	0	170	337	0	0	250	0	757
2019 Projected (Build) Volumes AM3	0	0	0	0	0	0	0	507	0	0	250	0	757

Time Period: Weekday School Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) SC1												213	
Proposed School Trips Added (Buses, Staff, Visitors) SC1									110			200	
Proposed School Trips Added (Students) SC2			112									111	
Proposed School Trips Added (Buses, Staff, Visitors) SC2									110			200	
Total Trip Distribution SC1	0	0	0	0	0	0	0	110	0	0	413	0	523
Total Trip Distribution SC2	0	0	112	0	0	0	0	110	0	0	311	0	533
2019 Projected (Build) Volumes SC1	0	0	0	0	0	0	0	110	0	0	413	0	523
2019 Projected (Build) Volumes SC2	0	0	112	0	0	0	0	110	0	0	311	0	533

Time Period: Weekday PM Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2017 Existing Counts													0
Balancing													0
2017 Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (1.4% compounded for 2 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
													0
2019 Base (No-Build) Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing School Trips Removed													0
Proposed School Trips Added (Students) PM1												85	85
Proposed School Trips Added (Buses, Staff, Visitors) PM1									133			61	
Proposed School Trips Added (Students) PM2			43									42	
Proposed School Trips Added (Buses, Staff, Visitors) PM2									133			61	
Total Trip Distribution PM1	0	0	0	0	0	0	0	133	0	0	146	0	279
Total Trip Distribution PM2	0	0	43	0	0	0	0	133	0	0	103	0	279
2019 Projected (Build) Volumes PM1	0	0	0	0	0	0	0	133	0	0	146	0	279
2019 Projected (Build) Volumes PM2	0	0	43	0	0	0	0	133	0	0	103	0	279

Appendix E

Traffic Signal Warrants & Turn Lane Warrants

Traffic Signal Warrant Summary

PennDOT Warrant (xi) - Peak Hour Volume

Municipality:	Peters Township	Analyst:	P. LaRosa
County:	Washington	TPD Project #:	PTOW.00066

	<u>Street Name</u>	<u>Lanes</u>	<u>Speed</u>	<u>Direction</u>
Major Street:	McMurray Road	1	35	East-West
Minor Street:	PTHS Access	1	X	North-South

Volume Level Criteria

1. Is the critical speed of major street > 40 mph? No
2. Is the intersection in a built-up area of isolated community of <10,000 population? No

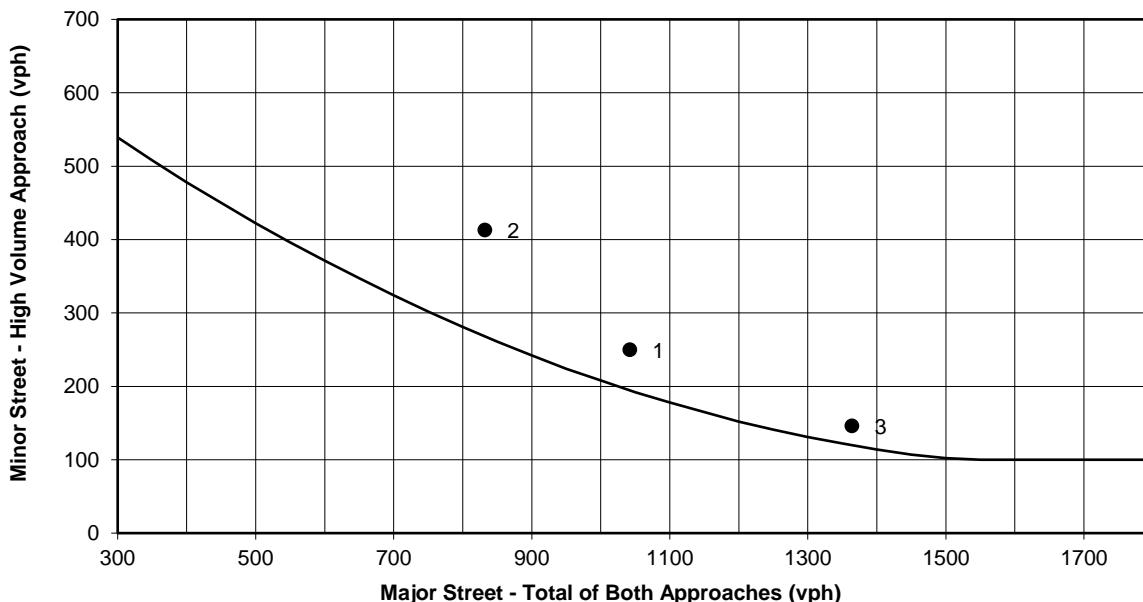
Normal values apply

PennDOT Warrant xi - Peak Hour

Condition	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2019 Build AM	58	229	-	-	537	218	-	-	-	192	-	58
2019 Build School	26	402	-	-	320	84	-	-	-	316	-	97
2019 Build PM	31	753	-	-	478	102	-	-	-	113	-	33

Results

Condition	Major Street Volume	Minor Street Volume	Minor Street Warrant	Meets Warrant?
1 2019 Build AM	1042	250	195	yes
2 2019 Build School	832	413	268	yes
3 2019 Build PM	1364	146	120	yes
4				
5				
6				



Traffic Signal Warrant Summary

MUTCD Warrant 3 - Four Hour Volume

Municipality:	Peters Twp	Analyst:	MM
County:	Washington	TPD Project #:	PTOW 00066
Condition:	2019 Build		

	Street Name	Lanes	Speed	Direction
Major Street:	McMurray	1	35	East-West
Minor Street:	Shared Access Road	1	X	North-South

Volume Level Criteria

1. Is the critical speed of major street > 40 mph? No _____
2. Is the intersection in a built-up area of isolated community of <10,000 population? No _____

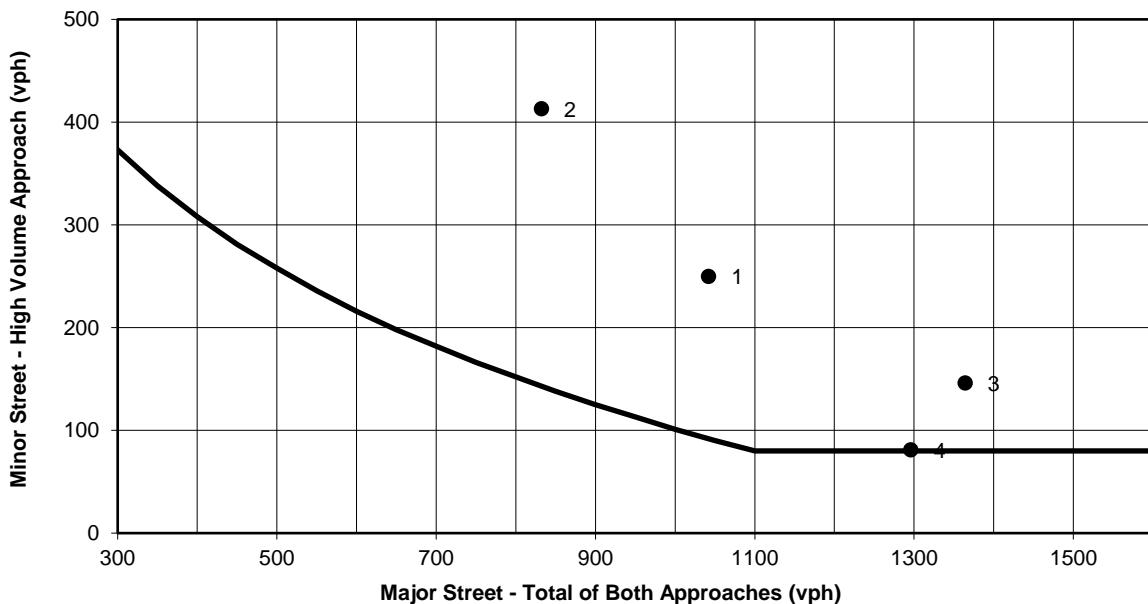
Normal values apply

MUTCD Warrant 3 - Four Hour Volume

Hour	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM Peak	58	229	-	-	537	218	-	-	-	192	-	58
School Peak	26	402	-	-	320	84	-	-	-	316	-	97
PM Peak	31	753	-	-	478	102	-	-	-	113	-	33
PM Peak 2	15	753	-	-	478	50	-	-	-	65	-	16

Results

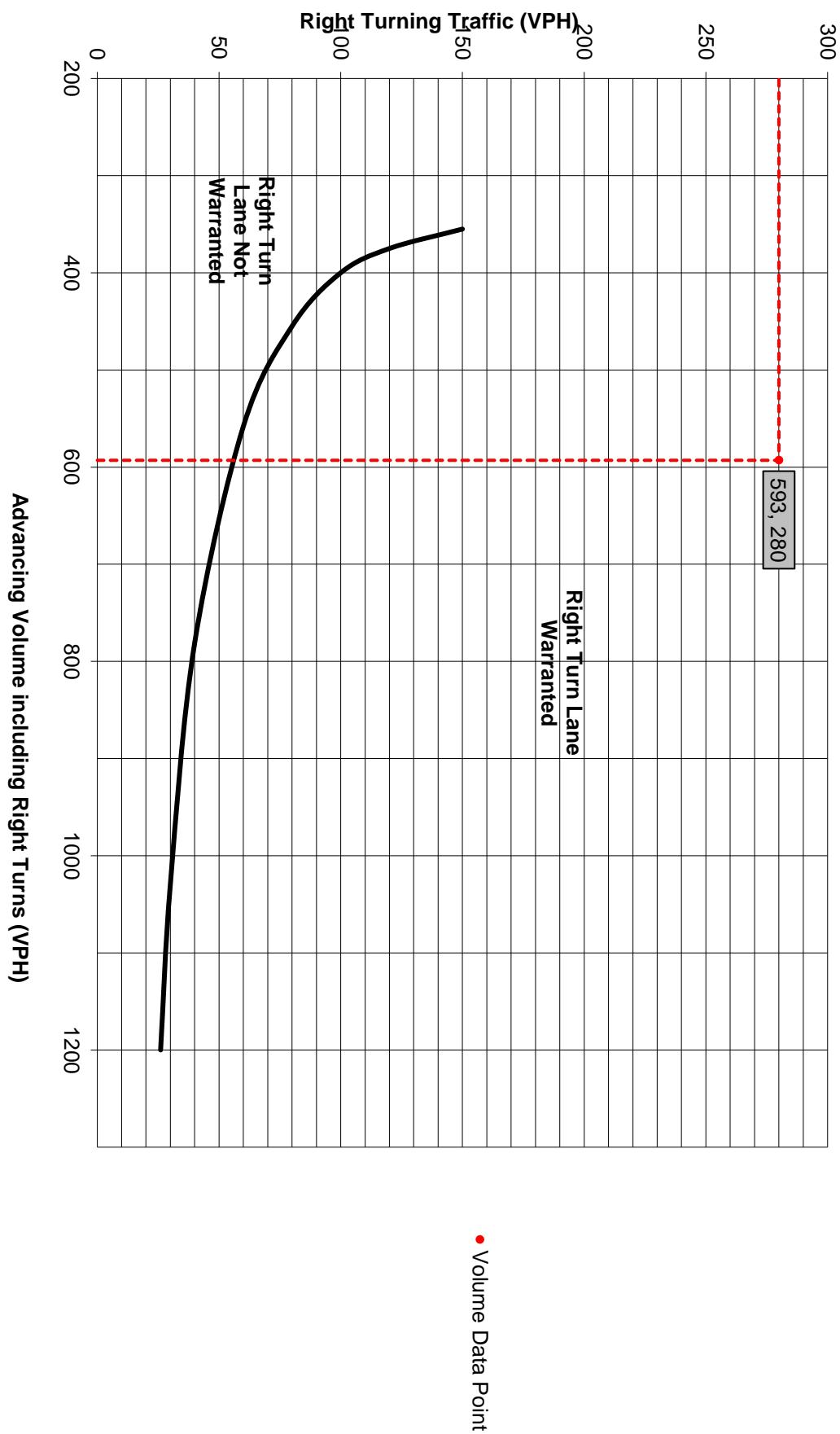
Condition	Major Street Volume	Minor Street Volume	Minor Street Warrant	Meets Warrant?
1 AM Peak	1042	250	92	yes
2 School Peak	832	413	143	yes
3 PM Peak	1364	146	80	yes
4 PM Peak 2	1296	81	80	yes
5				
6				



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION																																											
Municipality:	Peter's Township		Analysis Date:	9/19/2017																																							
County:	Washington County		Conducted By:	PL																																							
PennDOT Engineering District:	12		Checked By:																																								
			Agency/Company Name:	Traffic Planning and Design, Inc.																																							
Intersection & Approach Description:	E. McMurray Road & Proposed PTHS Access																																										
Analysis Period:	2019 Projected (Build)		Number of Approach Lanes:	1																																							
Design Hour:	School Peak Hour		Undivided or Divided Highway:	Undivided																																							
Intersection Control:	Unsignalized		Type of Analysis:																																								
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Right Turn Lane																																							
Type of Terrain:	Level																																										
VOLUME CALCULATIONS																																											
Left Turn Lane Volume Calculations																																											
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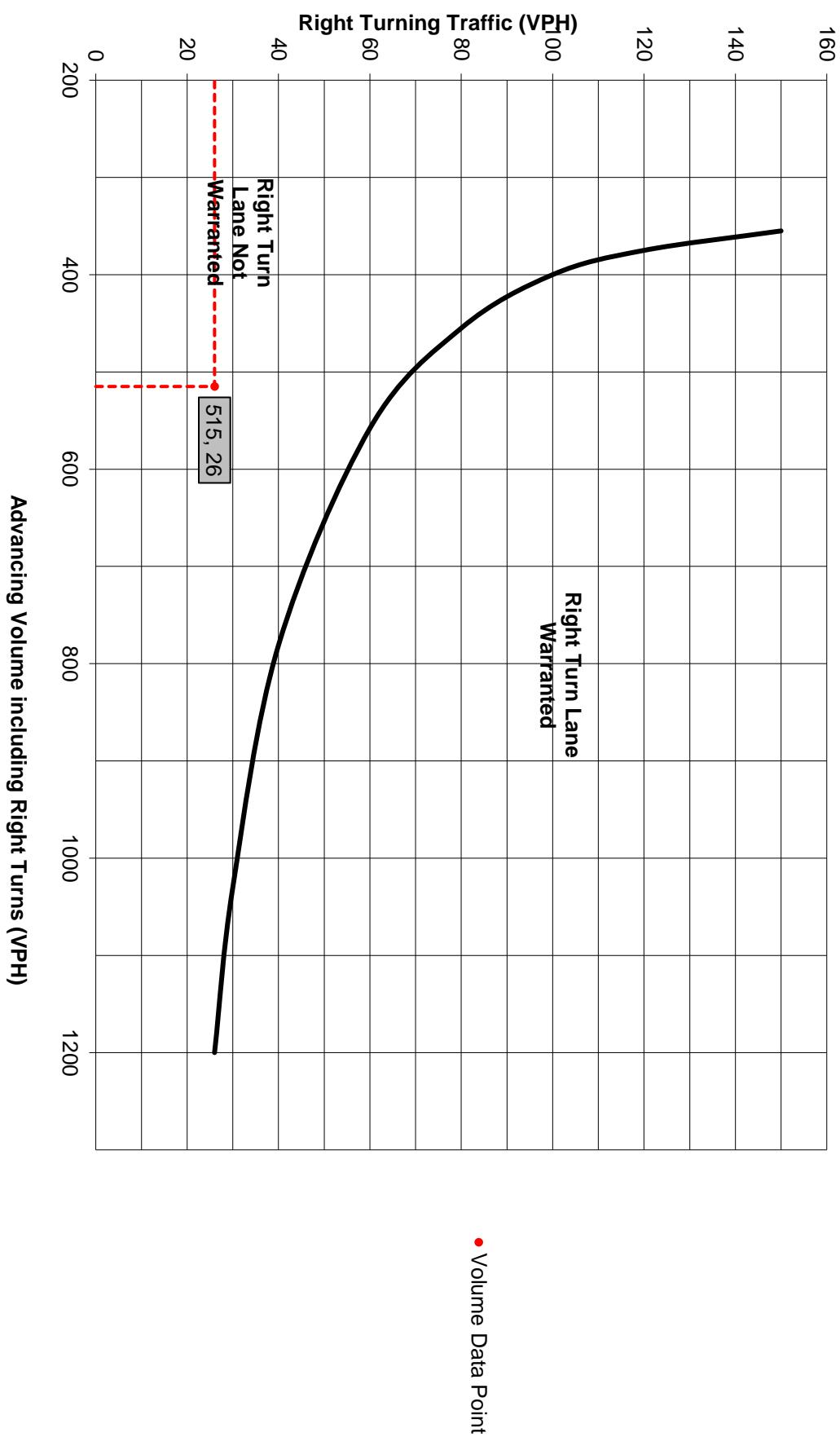
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(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

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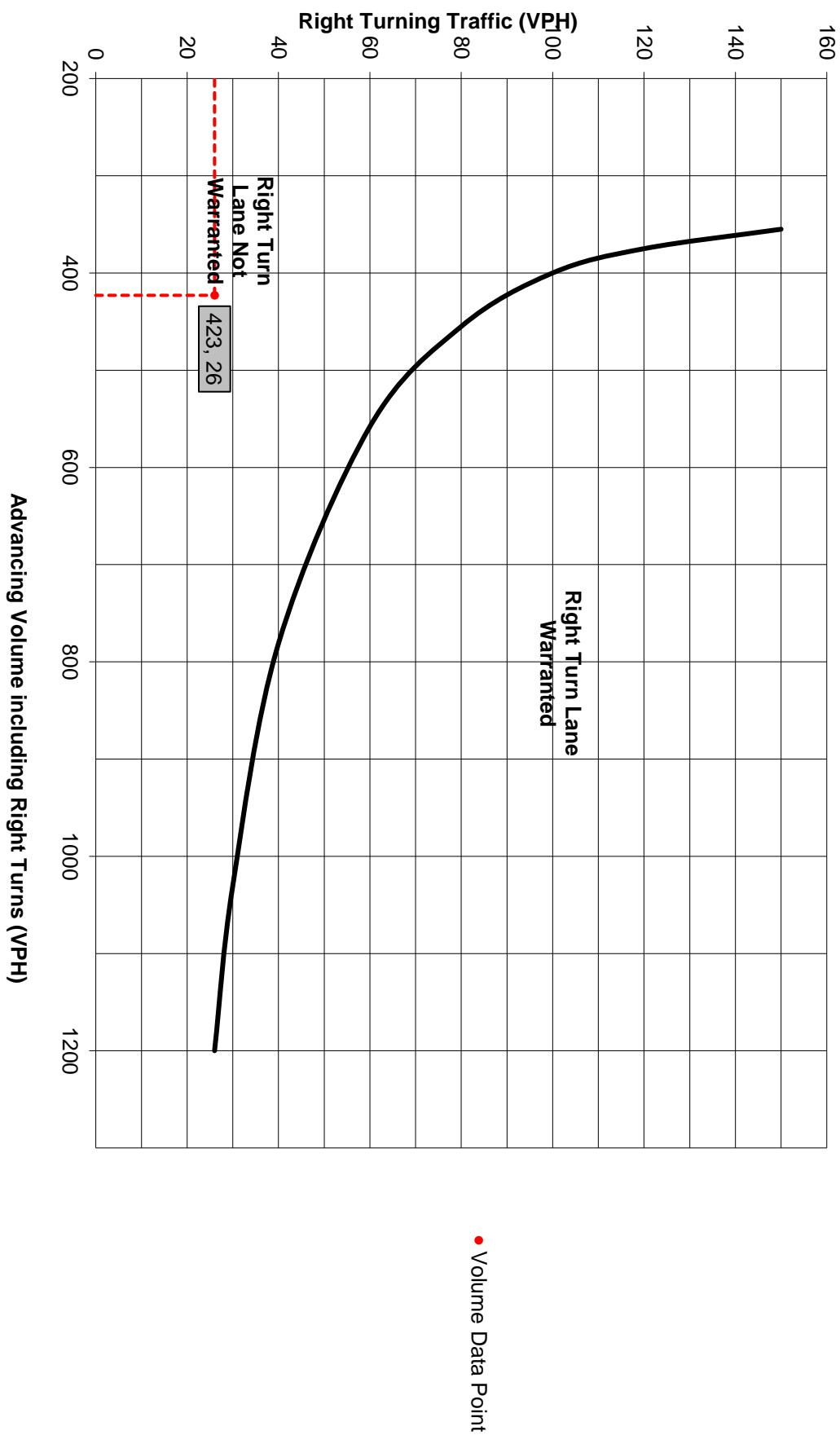
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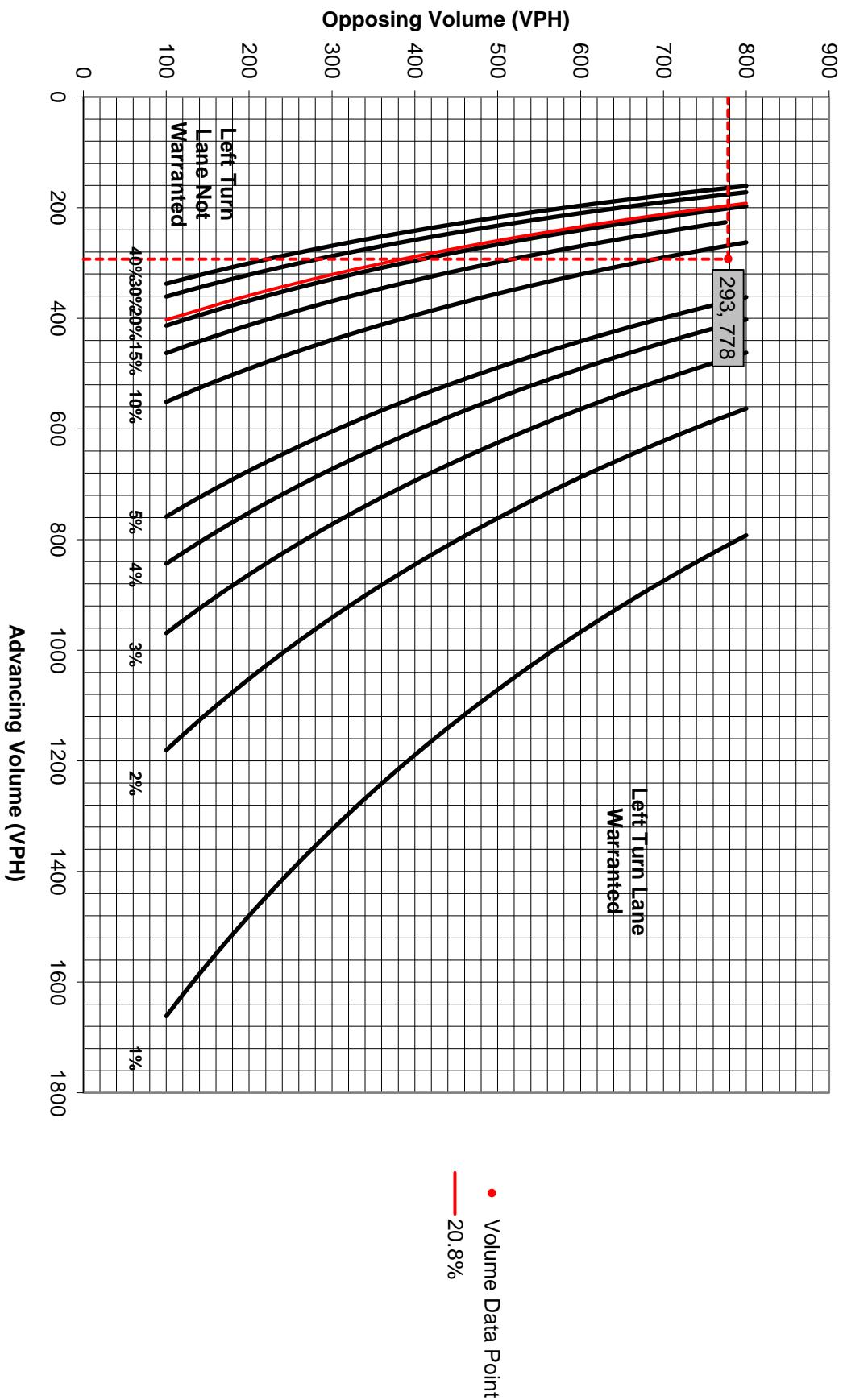
**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

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Analysis Period:	2019 Projected (Build)		Number of Approach Lanes:	1																																							
Design Hour:	AM Peak Hour		Undivided or Divided Highway:	Undivided																																							
Intersection Control:	Signalized		Type of Analysis:																																								
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Left Turn Lane																																							
Type of Terrain:	Level																																										
VOLUME CALCULATIONS																																											
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Additional Findings: N/A																																											
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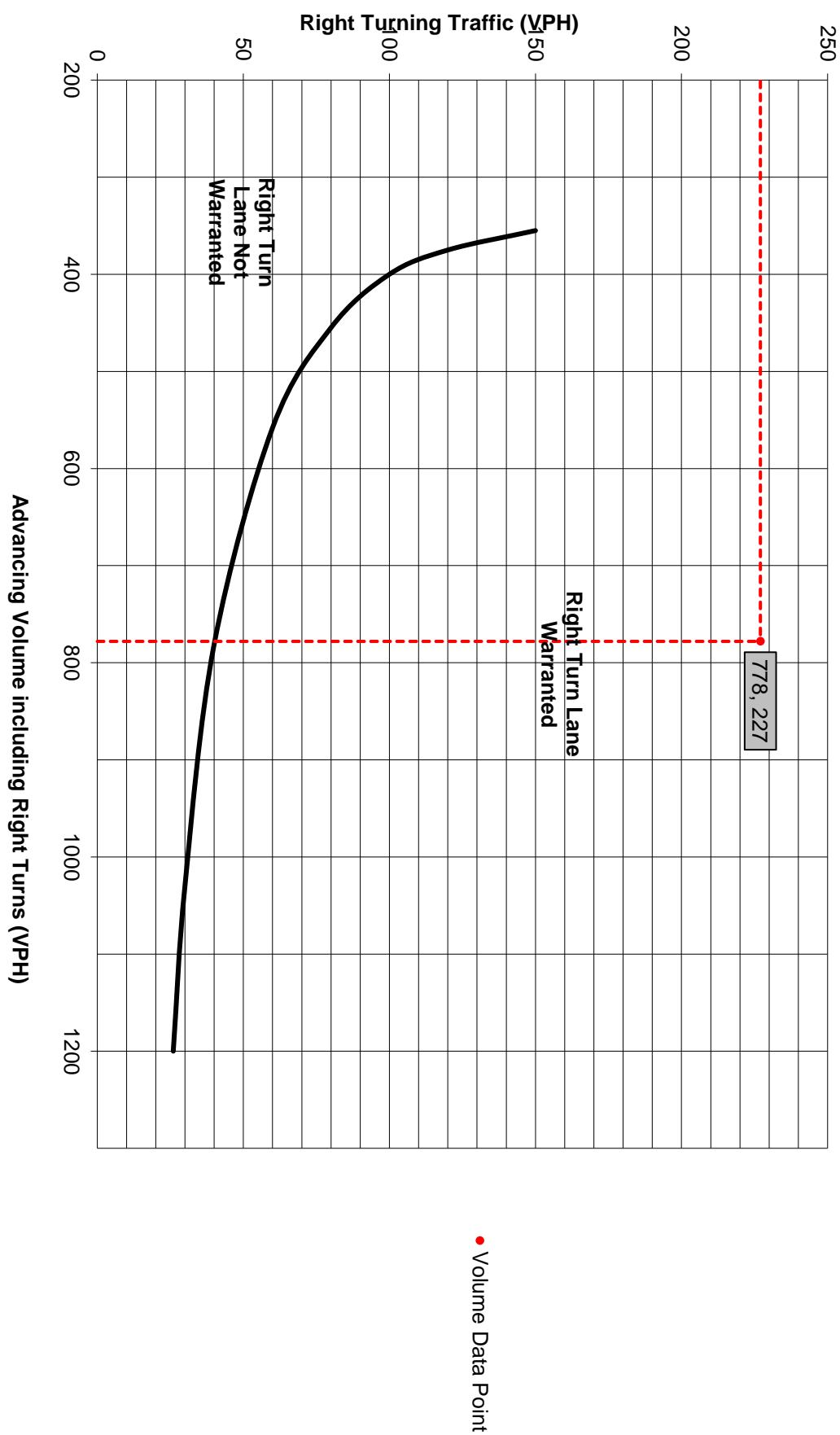
**Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

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Additional Findings: N/A																																											
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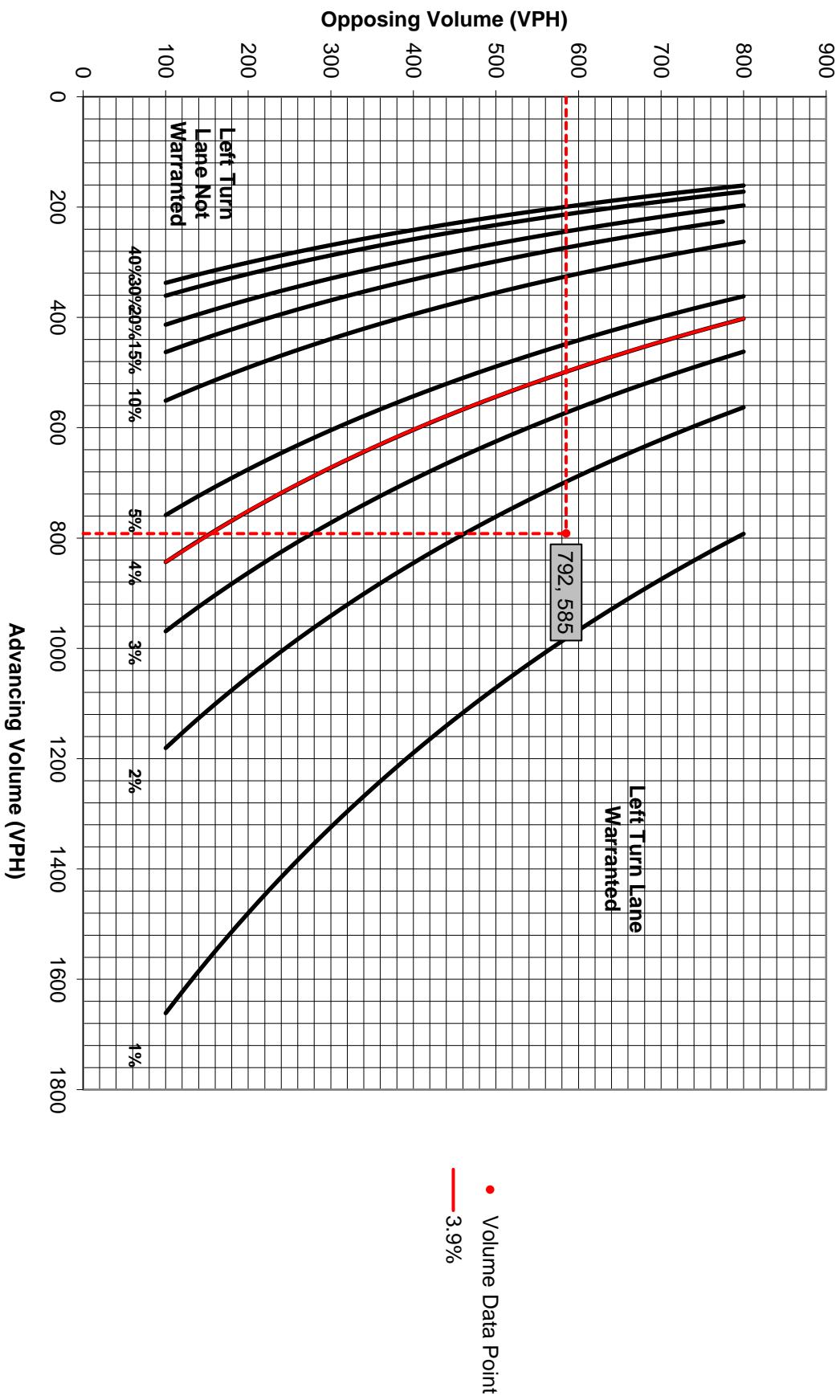
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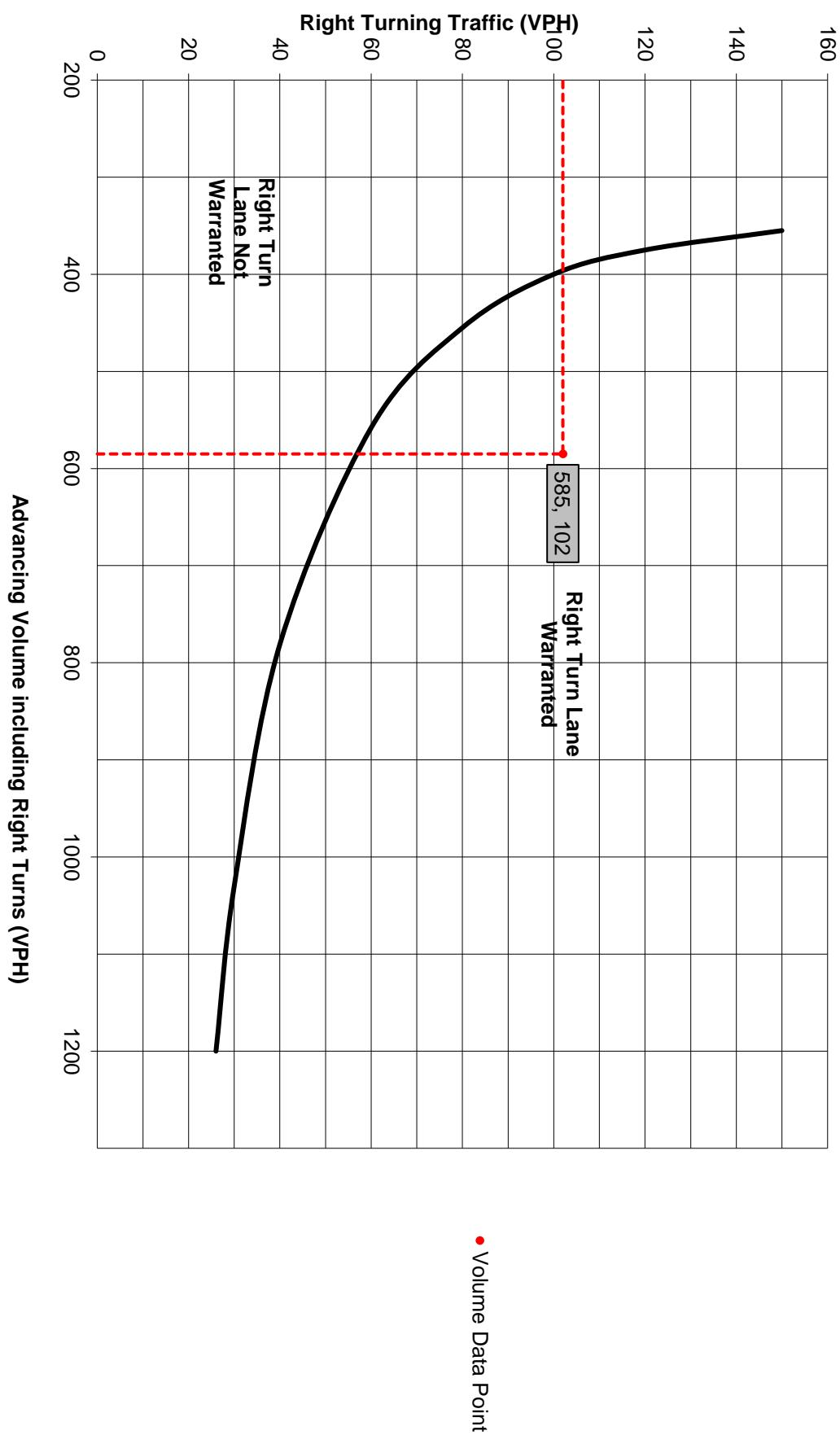
**Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

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Design Hour:	PM Peak Hour		Undivided or Divided Highway:	Undivided																																							
Intersection Control:	Signalized		Type of Analysis:																																								
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Right Turn Lane																																							
Type of Terrain:	Level																																										
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Additional Findings: N/A																																											
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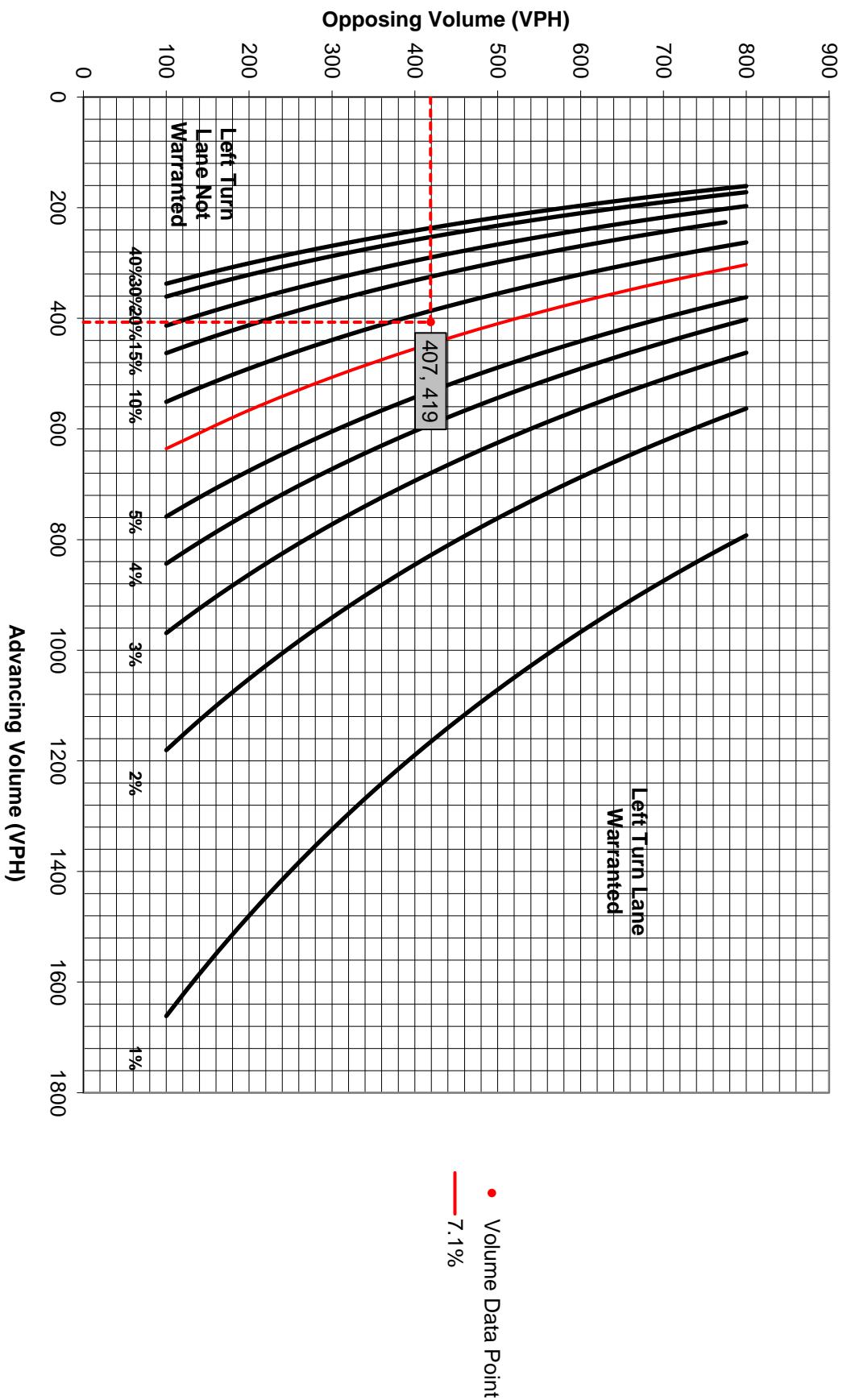
**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

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Analysis Period:	2019 Projected (Build)		Number of Approach Lanes:	1																																							
Design Hour:	SC Peak Hour		Undivided or Divided Highway:	Undivided																																							
Intersection Control:	Signalized		Type of Analysis:																																								
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Left Turn Lane																																							
Type of Terrain:	Level																																										
VOLUME CALCULATIONS																																											
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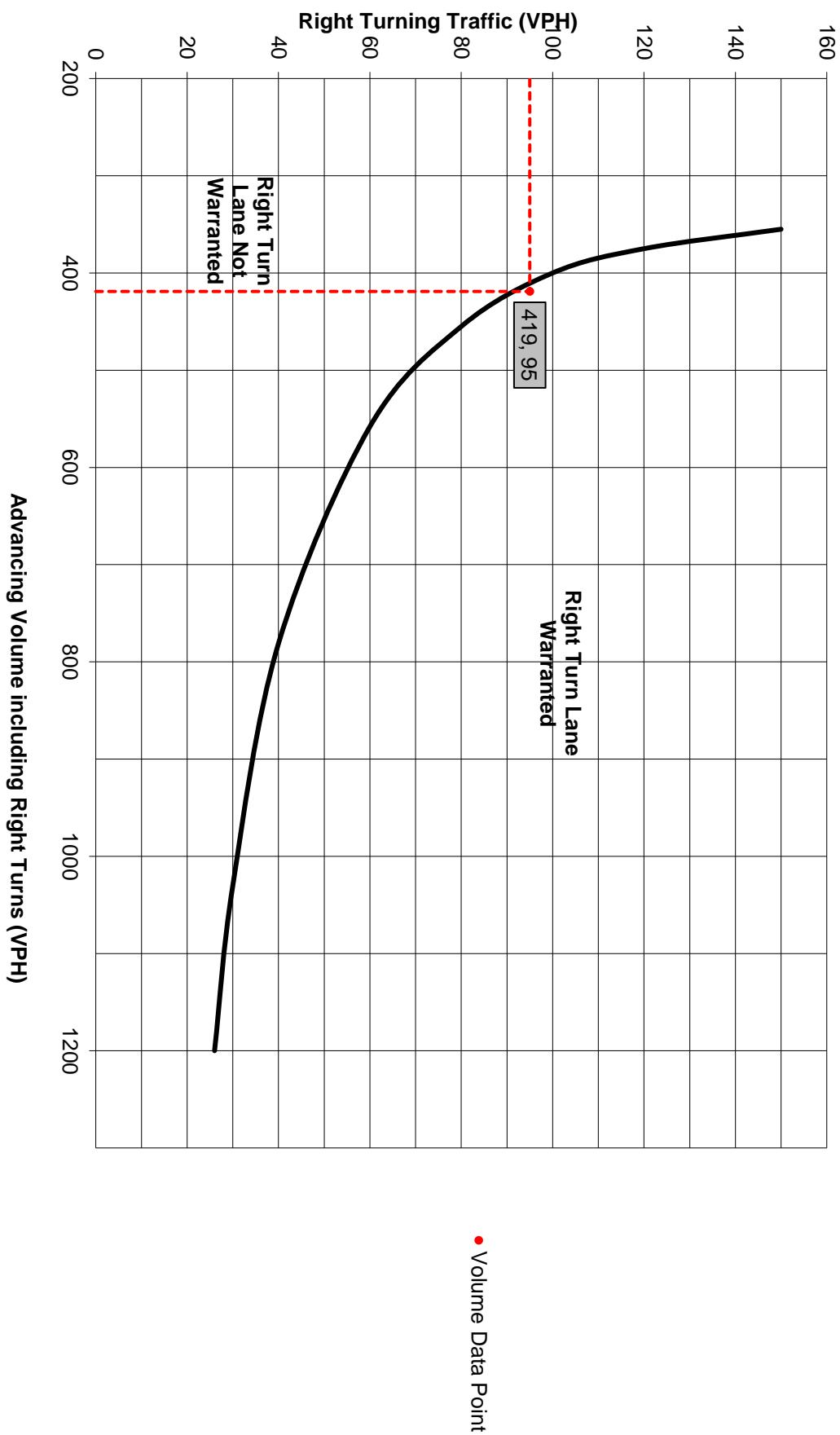
**Figure 1. Warrant for left turn lanes on two-lane roadways
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(L = % Left Turns in Advancing Volume)



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Movement	Include?	Volume	% Trucks	PCEV																																							
Advancing	Left	Yes	0	0.0%	0																																						
	Through	-	320	2.0%	324																																						
	Right	-	84	24.0%	95																																						
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Applicable Warrant Figure:			Applicable Warrant Figure:																																								
N/A			Figure 9																																								
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Type of Traffic Control	Speed (MPH)																																										
	25-35		40-45		50-60																																						
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Signalized	High	Low	High	Low	High	Low																																					
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Additional Findings: N/A																																											
Additional Comments / Justifications:																																											
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Appendix F

HCM Capacity Analysis Printouts (LOS & Queue)

Intersection	Peak	PHF	Truck Percentages											
			Eastbound			Westbound			Northbound			Southbound		
			L	T	R	L	T	R	L	T	R	L	T	R
1 Existing PTHS Access (West) & McMurray Road	AM	0.69	-	10	4	10	3	-	5	-	1	-	-	-
	SC	0.91	-	2	3	13	3	-	5	-	23	-	-	-
	PM	0.95	-	0	0	0	1	-	0	-	0	-	-	-
2 Existing PTHS Access (East) & McMurray Road	AM	0.69	-	6	0	0	5	-	0	-	61	-	-	-
	SC	0.89	-	5	0	7	4	-	4	-	1	-	-	-
	PM	0.98	-	0	0	0	1	-	0	-	0	-	-	-
3 Center Church Road & McMurray Road (Signal)	AM	0.84	0	8	8	0	3	0	4	0	4	0	0	0
	SC	0.91	0	5	8	0	8	0	0	0	4	0	0	0
	PM	0.91	0	1	2	4	1	0	0	0	7	0	0	0
4 Center Church Road & McMurray Road	AM	0.87	6	8	-	-	2	2	-	-	-	6	-	9
	SC	0.90	5	4	-	-	3	8	-	-	-	0	-	0
	PM	0.93	0	0	-	-	1	0	-	-	-	0	-	0
5 McMurray & PTHS Access South	AM	0.92 thru 0.47 turns	9	8	-	-	2	9/4/4	-	-	-	10	-	9
	SC	0.92 thru 0.52 turns	19	4	-	-	3	24	-	-	-	6	-	5
	PM	0.92 thru 0.74 turns	0	0	-	-	1	0	-	-	-	0	-	0
6 Center Church Road & Proposed PTHS Access West/Clubview Drive	AM	0.72	0	0	0	0	0	0	6	6	0	0	12	0
	SC	0.83	20	0	0	0	0	0	7	6	0	0	4	0
	PM	0.88	17	0	0	0	0	0	0	2	0	0	1	0
7 Center Church Road & Proposed PTHS Access North	AM	0.47	-	5	11	0	12	-	6	-	0	-	-	-
	SC	0.52	-	26	4	0	7	-	7	-	0	-	-	-
	PM	0.74	-	0	1	0	0	-	3	-	0	-	-	-
8 PTHS Access & Student Drive	AM	0.47	-	12	0	0	12	-	0	-	0	-	-	-
	SC	0.52	-	26	0	0	15	-	0	-	0	-	-	-
	PM	0.74	-	0	0	0	0	-	0	-	0	-	-	-
9 PTHS Access & Bus Drive	AM	0.47	12	-	10	-	-	-	10	0	-	-	0	12
	SC	0.52	15	-	6/8	-	-	-	23	0	-	-	0	26
	PM	0.74	0	-	0	-	-	-	0	0	-	-	0	0
10 PTHS Access South & Lower Access Road	AM	0.47	0	-	0	-	-	-	0	10	-	-	10	0
	SC	0.52	0	-	0	-	-	-	0	23	-	-	8	0
	PM	0.74	0	-	0	-	-	-	0	0	-	-	0	0

RED - value calculated from adj intersection data

Green - Assumed 0% - not a truck movement

Purple - Calculated assuming 30 arriving/30 departing buses

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	315	51	18	542	0	137	0	67	0	0	0
Future Volume (veh/h)	0	315	51	18	542	0	137	0	67	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1600	1728	1728	1678	1728	1854	1783	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	375	61	21	645	0	163	0	80	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	8	8	0	3	3	0	0	4	0	0	0
Cap, veh/h	467	683	111	509	1091	0	264	0	236	0	3	0
Arrive On Green	0.00	0.51	0.51	0.05	0.65	0.00	0.16	0.00	0.16	0.00	0.00	0.00
Sat Flow, veh/h	1646	1343	218	1646	1678	0	1698	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	436	21	645	0	163	0	80	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1561	1646	1678	0	1698	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	10.3	0.3	11.8	0.0	4.8	0.0	2.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.3	0.3	11.8	0.0	4.8	0.0	2.5	0.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	467	0	795	509	1091	0	264	0	236	0	3	0
V/C Ratio(X)	0.00	0.00	0.55	0.04	0.59	0.00	0.62	0.00	0.34	0.00	0.00	0.00
Avail Cap(c_a), veh/h	799	0	2341	1069	2826	0	990	0	884	0	367	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.0	5.9	5.4	0.0	21.3	0.0	20.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.7	0.0	2.4	0.0	0.9	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.0	0.1	6.1	0.0	2.3	0.0	1.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	11.8	5.9	7.7	0.0	22.2	0.0	20.6	0.0	0.0	0.0
LnGrp LOS			B	A	A		C		C			
Approach Vol, veh/h	436			666			243			0		
Approach Delay, s/veh	11.8			7.7			21.7			0.0		
Approach LOS	B			A			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R _c), s	0.0	40.1		13.9	7.6	32.5		0.0				
Change Period (Y+R _c), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (G _{max}), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g _{c+l1}), s	0.0	13.8		6.8	2.3	12.3		0.0				
Green Ext Time (p _c), s	0.0	20.3		0.8	0.0	11.2		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			11.5									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	53	330	545	47	16	23
Future Vol, veh/h	53	330	545	47	16	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	8	2	2	6	9
Mvmt Flow	61	379	626	54	18	26

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	680	0	-
Stage 1	-	-	653
Stage 2	-	-	501
Critical Hdwy	4.16	-	-
Critical Hdwy Stg 1	-	-	4.86
Critical Hdwy Stg 2	-	-	4.86
Follow-up Hdwy	2.254	-	-
Pot Cap-1 Maneuver	894	-	-
Stage 1	-	-	569
Stage 2	-	-	653
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	894	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	530
Stage 2	-	-	653

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	894	-	-	-	241	481
HCM Lane V/C Ratio	0.068	-	-	-	0.076	0.055
HCM Control Delay (s)	9.3	-	-	-	21.2	12.9
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2	0.2

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	4	0	9	0	0	0	18	63	0	0	33	3
Future Vol, veh/h	4	0	9	0	0	0	18	63	0	0	33	3
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	0	0	0	0	6	6	0	0	12	0
Mvmt Flow	6	0	13	0	0	0	25	88	0	0	46	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	186	186	48	193	188	88	50	0	0	88	0	0
Stage 1	48	48	-	138	138	-	-	-	-	-	-	-
Stage 2	138	138	-	55	50	-	-	-	-	-	-	-
Critical Hdwy	5.5	4.9	5.4	7.1	6.5	6.2	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	846	773	1038	771	710	976	1531	-	-	1520	-	-
Stage 1	991	877	-	870	786	-	-	-	-	-	-	-
Stage 2	925	836	-	962	857	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	835	760	1038	752	698	976	1531	-	-	1520	-	-
Mov Cap-2 Maneuver	835	760	-	752	698	-	-	-	-	-	-	-
Stage 1	974	877	-	855	773	-	-	-	-	-	-	-
Stage 2	909	822	-	950	857	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	0	1.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1531	-	-	966	-	1520	-	-
HCM Lane V/C Ratio	0.016	-	-	0.019	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.8	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	324	52	19	557	0	141	0	67	0	0	0
Future Volume (veh/h)	0	324	52	19	557	0	141	0	67	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1600	1728	1728	1678	1728	1854	1783	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	386	62	23	663	0	168	0	80	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	8	8	0	3	3	0	0	4	0	0	0
Cap, veh/h	456	696	112	507	1101	0	266	0	238	0	3	0
Arrive On Green	0.00	0.52	0.52	0.05	0.66	0.00	0.16	0.00	0.16	0.00	0.00	0.00
Sat Flow, veh/h	1646	1346	216	1646	1678	0	1698	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	448	23	663	0	168	0	80	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1562	1646	1678	0	1698	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	10.9	0.3	12.6	0.0	5.2	0.0	2.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.9	0.3	12.6	0.0	5.2	0.0	2.6	0.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	456	0	808	507	1101	0	266	0	238	0	3	0
V/C Ratio(X)	0.00	0.00	0.55	0.05	0.60	0.00	0.63	0.00	0.34	0.00	0.00	0.00
Avail Cap(c_a), veh/h	775	0	2253	1040	2719	0	952	0	850	0	353	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.2	6.0	5.5	0.0	22.1	0.0	21.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.7	0.0	2.4	0.0	0.9	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.2	0.1	6.5	0.0	2.5	0.0	1.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	11.9	6.0	7.9	0.0	23.1	0.0	21.4	0.0	0.0	0.0
LnGrp LOS			B	A	A		C		C			
Approach Vol, veh/h	448			686			248			0		
Approach Delay, s/veh	11.9			7.9			22.5			0.0		
Approach LOS	B			A			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	41.8		14.3	7.8	34.0		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	14.6		7.2	2.3	12.9		0.0				
Green Ext Time (p_c), s	0.0	21.2		0.8	0.0	11.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			11.8									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	54	339	560	48	16	24
Future Vol, veh/h	54	339	560	48	16	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	8	2	2	6	9
Mvmt Flow	62	390	644	55	18	28

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	699	0	-
Stage 1	-	-	672
Stage 2	-	-	514
Critical Hdwy	4.16	-	-
Critical Hdwy Stg 1	-	-	4.86
Critical Hdwy Stg 2	-	-	4.86
Follow-up Hdwy	2.254	-	-
Pot Cap-1 Maneuver	879	-	-
Stage 1	-	-	559
Stage 2	-	-	645
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	879	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	519
Stage 2	-	-	645

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	879	-	-	-	231	469
HCM Lane V/C Ratio	0.071	-	-	-	0.08	0.059
HCM Control Delay (s)	9.4	-	-	-	21.9	13.2
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3	0.2

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	4	0	9	0	0	0	19	65	0	0	34	3
Future Vol, veh/h	4	0	9	0	0	0	19	65	0	0	34	3
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	0	0	0	0	6	6	0	0	12	0
Mvmt Flow	6	0	13	0	0	0	26	90	0	0	47	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	191	191	49	198	193	90	51	0	0	90	0	0
Stage 1	49	49	-	142	142	-	-	-	-	-	-	-
Stage 2	142	142	-	56	51	-	-	-	-	-	-	-
Critical Hdwy	5.5	4.9	5.4	7.1	6.5	6.2	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	842	770	1037	765	706	973	1530	-	-	1518	-	-
Stage 1	991	877	-	866	783	-	-	-	-	-	-	-
Stage 2	922	834	-	961	856	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	830	756	1037	745	693	973	1530	-	-	1518	-	-
Mov Cap-2 Maneuver	830	756	-	745	693	-	-	-	-	-	-	-
Stage 1	973	877	-	850	769	-	-	-	-	-	-	-
Stage 2	905	819	-	949	856	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	0	1.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1530	-	-	963	-	1518	-	-
HCM Lane V/C Ratio	0.017	-	-	0.019	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.8	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

HCM 2010 Signalized Intersection Summary
3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	285	27	34	283	0	85	0	103	0	0	0
Future Volume (veh/h)	0	285	27	34	283	0	85	0	103	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1600	1728	1728	1678	1728	1854	1783	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	339	32	40	337	0	101	0	123	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	8	8	0	3	3	0	0	4	0	0	0
Cap, veh/h	615	647	61	551	1057	0	246	0	220	0	4	0
Arrive On Green	0.00	0.45	0.45	0.07	0.63	0.00	0.15	0.00	0.15	0.00	0.00	0.00
Sat Flow, veh/h	1646	1440	136	1646	1678	0	1698	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	371	40	337	0	101	0	123	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1576	1646	1678	0	1698	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	7.9	0.5	4.3	0.0	2.5	0.0	3.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	7.9	0.5	4.3	0.0	2.5	0.0	3.5	0.0	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	615	0	709	551	1057	0	246	0	220	0	4	0
V/C Ratio(X)	0.00	0.00	0.52	0.07	0.32	0.00	0.41	0.00	0.56	0.00	0.00	0.00
Avail Cap(c_a), veh/h	999	0	2733	1170	3269	0	1145	0	1022	0	424	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.3	5.6	4.0	0.0	18.1	0.0	18.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.8	0.0	0.8	0.0	0.4	0.0	0.8	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.9	0.2	2.2	0.0	1.2	0.0	1.5	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	12.0	5.6	4.8	0.0	18.6	0.0	19.4	0.0	0.0	0.0
LnGrp LOS			B	A	A		B		B			
Approach Vol, veh/h		371			377			224			0	
Approach Delay, s/veh		12.0			4.9			19.0			0.0	
Approach LOS		B			A			B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	34.4		12.3	8.4	26.0		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	6.3		5.5	2.5	9.9		0.0				
Green Ext Time (p_c), s	0.0	8.0		0.6	0.0	9.1		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			10.9									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	120	270	315	279	16	10
Future Vol, veh/h	120	270	315	279	16	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	175	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	8	2	2	6	9
Mvmt Flow	138	310	362	321	18	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	683	0	-
Stage 1	-	-	362
Stage 2	-	-	586
Critical Hdwy	4.16	-	-
Critical Hdwy Stg 1	-	-	4.86
Critical Hdwy Stg 2	-	-	4.86
Follow-up Hdwy	2.254	-	-
Pot Cap-1 Maneuver	892	-	-
Stage 1	-	-	739
Stage 2	-	-	605
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	892	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	624
Stage 2	-	-	605

Approach	EB	WB	SB
HCM Control Delay, s	3	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	892	-	-	-	281	688
HCM Lane V/C Ratio	0.155	-	-	-	0.065	0.017
HCM Control Delay (s)	9.8	-	-	-	18.7	10.3
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.2	0.1

HCM 2010 Signalized Intersection Summary

5: E McMurray Rd & PTHS Access South

09/23/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘
Traffic Volume (veh/h)	58	229	537	218	192	58
Future Volume (veh/h)	58	229	537	218	192	58
Number	5	2	6	16	7	14
Initial Q (Q _b), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1717	1712	1602	1685	1701
Adj Flow Rate, veh/h	123	249	584	464	409	123
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.47	0.92	0.92	0.47	0.47	0.47
Percent Heavy Veh, %	9	8	2	9	10	9
Cap, veh/h	314	1038	792	1019	459	413
Arrive On Green	0.08	0.60	0.46	0.46	0.29	0.29
Sat Flow, veh/h	1620	1717	1712	1362	1605	1446
Grp Volume(v), veh/h	123	249	584	464	409	123
Grp Sat Flow(s), veh/h/ln	1620	1717	1712	1362	1605	1446
Q Serve(g_s), s	2.9	5.5	22.8	10.7	20.0	5.4
Cycle Q Clear(g_c), s	2.9	5.5	22.8	10.7	20.0	5.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	314	1038	792	1019	459	413
V/C Ratio(X)	0.39	0.24	0.74	0.46	0.89	0.30
Avail Cap(c_a), veh/h	381	1194	877	1087	470	423
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	7.5	18.0	3.9	28.1	22.9
Incr Delay (d2), s/veh	0.8	0.5	6.1	1.5	19.8	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.3	2.7	12.0	8.9	11.4	4.9
LnGrp Delay(d), s/veh	14.0	8.0	24.0	5.4	47.9	23.7
LnGrp LOS	B	A	C	A	D	C
Approach Vol, veh/h	372	1048		532		
Approach Delay, s/veh	10.0	15.8		42.3		
Approach LOS	B	B		D		
Timer	1	2	3	4	5	6
Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s	54.5		27.4	11.6	42.9	
Change Period (Y+Rc), s	6.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	56.0		23.0	9.0	41.0	
Max Q Clear Time (g_c+l1), s	7.5		22.0	4.9	24.8	
Green Ext Time (p_c), s	5.2		0.4	0.1	12.1	
Intersection Summary						
HCM 2010 Ctrl Delay			21.9			
HCM 2010 LOS			C			

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	4	0	9	0	0	0	19	51	311	0	20	3
Future Vol, veh/h	4	0	9	0	0	0	19	51	311	0	20	3
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	0	0	0	0	6	6	0	0	12	0
Mvmt Flow	6	0	13	0	0	0	26	71	432	0	28	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	369	585	30	376	371	287	32	0	0	503	0	0
Stage 1	30	30	-	339	339	-	-	-	-	-	-	-
Stage 2	339	555	-	37	32	-	-	-	-	-	-	-
Critical Hdwy	5.5	4.9	5.4	7.1	6.5	6.2	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	697	552	1057	585	562	757	1555	-	-	1072	-	-
Stage 1	1005	886	-	680	643	-	-	-	-	-	-	-
Stage 2	790	661	-	984	872	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	684	538	1057	567	548	757	1555	-	-	1072	-	-
Mov Cap-2 Maneuver	684	538	-	567	548	-	-	-	-	-	-	-
Stage 1	980	886	-	663	627	-	-	-	-	-	-	-
Stage 2	770	644	-	972	872	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	0.4	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	905	-	1072	-	-
HCM Lane V/C Ratio	0.017	-	-	0.02	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

Intersection

Int Delay, s/veh 2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	102	23	0	43	55	0
Future Vol, veh/h	102	23	0	43	55	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	-5	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	5	11	0	12	6	0
Mvmt Flow	217	49	0	91	117	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	266	0	333
Stage 1	-	-	-	-	242
Stage 2	-	-	-	-	91
Critical Hdwy	-	-	4.1	-	4.86
Critical Hdwy Stg 1	-	-	-	-	3.86
Critical Hdwy Stg 2	-	-	-	-	3.86
Follow-up Hdwy	-	-	2.2	-	3.554
Pot Cap-1 Maneuver	-	-	1310	-	758
Stage 1	-	-	-	-	878
Stage 2	-	-	-	-	961
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1310	-	758
Mov Cap-2 Maneuver	-	-	-	-	758
Stage 1	-	-	-	-	878
Stage 2	-	-	-	-	961

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	758	-	-	1310	-
HCM Lane V/C Ratio	0.154	-	-	-	-
HCM Control Delay (s)	10.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	43	59	30	43	0	0
Future Vol, veh/h	43	59	30	43	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	12	0	0	12	0	0
Mvmt Flow	91	126	64	91	0	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	217	0	373 154
Stage 1	-	-	-	-	154 -
Stage 2	-	-	-	-	219 -
Critical Hdwy	-	-	4.1	-	4.8 5.4
Critical Hdwy Stg 1	-	-	-	-	3.8 -
Critical Hdwy Stg 2	-	-	-	-	3.8 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1365	-	746 928
Stage 1	-	-	-	-	941 -
Stage 2	-	-	-	-	906 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1365	-	709 928
Mov Cap-2 Maneuver	-	-	-	-	709 -
Stage 1	-	-	-	-	895 -
Stage 2	-	-	-	-	906 -

Approach	EB	WB	NE
HCM Control Delay, s	0	3.2	0
HCM LOS			A

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1365	-
HCM Lane V/C Ratio	-	-	-	0.047	-
HCM Control Delay (s)	0	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.1	-

Intersection

Int Delay, s/veh 12.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↖	↖
Traffic Vol, veh/h	43	250	246	30	0	43
Future Vol, veh/h	43	250	246	30	0	43
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	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-4	-	-	8	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	12	10	10	0	0	12
Mvmt Flow	91	532	523	64	0	91

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1156	46	91
Stage 1	46	-	-
Stage 2	1110	-	-
Critical Hdwy	5.72	5.9	4.2
Critical Hdwy Stg 1	4.72	-	-
Critical Hdwy Stg 2	4.72	-	-
Follow-up Hdwy	3.608	3.39	2.29
Pot Cap-1 Maneuver	268	1006	1455
Stage 1	961	-	-
Stage 2	386	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	168	1006	1455
Mov Cap-2 Maneuver	168	-	-
Stage 1	603	-	-
Stage 2	386	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.9	7.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1455	-	168	1006	-	-
HCM Lane V/C Ratio	0.36	-	0.545	0.529	-	-
HCM Control Delay (s)	8.9	0	49.5	12.5	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	1.7	-	2.8	3.2	-	-

Intersection

Intersection Delay, s/veh 13.2

Intersection LOS B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	372	1048	532
Demand Flow Rate, veh/h	403	1102	584
Vehicles Circulating, veh/h	450	134	596
Vehicles Exiting, veh/h	730	719	134
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.6	8.1	25.0
Approach LOS	B	A	C

Lane	Left	Left	Bypass	Left
Designated Moves	LT	T	R	LR
Assumed Moves	LT	T	R	LR
RT Channelized Yield				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	506	4.976
Entry Flow, veh/h	403	596	1204	584
Cap Entry Lane, veh/h	872	1204	0.917	751
Entry HV Adj Factor	0.923	0.980	464	0.911
Flow Entry, veh/h	372	584	1104	532
Cap Entry, veh/h	805	1180	0.420	684
V/C Ratio	0.462	0.495	7.7	0.777
Control Delay, s/veh	10.6	8.5	A	25.0
LOS	B	A	2	C
95th %tile Queue, veh	2	3		8

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	285	27	34	283	0	85	0	103	0	0	0
Future Volume (veh/h)	0	285	27	34	283	0	85	0	103	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1600	1728	1728	1678	1728	1854	1783	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	339	32	40	337	0	101	0	123	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	8	8	0	3	3	0	0	4	0	0	0
Cap, veh/h	615	647	61	551	1057	0	246	0	220	0	4	0
Arrive On Green	0.00	0.45	0.45	0.07	0.63	0.00	0.15	0.00	0.15	0.00	0.00	0.00
Sat Flow, veh/h	1646	1440	136	1646	1678	0	1698	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	371	40	337	0	101	0	123	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1576	1646	1678	0	1698	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	7.9	0.5	4.3	0.0	2.5	0.0	3.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	7.9	0.5	4.3	0.0	2.5	0.0	3.5	0.0	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	615	0	709	551	1057	0	246	0	220	0	4	0
V/C Ratio(X)	0.00	0.00	0.52	0.07	0.32	0.00	0.41	0.00	0.56	0.00	0.00	0.00
Avail Cap(c_a), veh/h	999	0	2733	1170	3269	0	1145	0	1022	0	424	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.3	5.6	4.0	0.0	18.1	0.0	18.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.8	0.0	0.8	0.0	0.4	0.0	0.8	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.9	0.2	2.2	0.0	1.2	0.0	1.5	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	12.0	5.6	4.8	0.0	18.6	0.0	19.4	0.0	0.0	0.0
LnGrp LOS			B	A	A		B		B			
Approach Vol, veh/h		371			377			224			0	
Approach Delay, s/veh		12.0			4.9			19.0			0.0	
Approach LOS		B			A			B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	34.4		12.3	8.4	26.0		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	6.3		5.5	2.5	9.9		0.0				
Green Ext Time (p_c), s	0.0	8.0		0.6	0.0	9.1		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			10.9									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	120	270	315	48	16	10
Future Vol, veh/h	120	270	315	48	16	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	8	2	2	6	9
Mvmt Flow	138	310	362	55	18	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	417	0	-
Stage 1	-	-	390
Stage 2	-	-	586
Critical Hdwy	4.16	-	-
Critical Hdwy Stg 1	-	-	4.86
Critical Hdwy Stg 2	-	-	4.86
Follow-up Hdwy	2.254	-	-
Pot Cap-1 Maneuver	1121	-	-
Stage 1	-	-	721
Stage 2	-	-	605
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1121	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	632
Stage 2	-	-	605

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1121	-	-	-	282	665
HCM Lane V/C Ratio	0.123	-	-	-	0.065	0.017
HCM Control Delay (s)	8.7	-	-	-	18.7	10.5
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.2	0.1

HCM 2010 Signalized Intersection Summary

5: E McMurray Rd & PTHS Access South

09/23/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘
Traffic Volume (veh/h)	58	229	306	449	192	58
Future Volume (veh/h)	58	229	306	449	192	58
Number	5	2	6	16	7	14
Initial Q (Q _b), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1717	1712	1679	1685	1701
Adj Flow Rate, veh/h	123	249	333	955	409	123
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.47	0.92	0.92	0.47	0.47	0.47
Percent Heavy Veh, %	9	8	2	4	10	9
Cap, veh/h	356	1063	829	1086	444	400
Arrive On Green	0.08	0.62	0.48	0.48	0.28	0.28
Sat Flow, veh/h	1620	1717	1712	1427	1605	1446
Grp Volume(v), veh/h	123	249	333	955	409	123
Grp Sat Flow(s), veh/h/ln	1620	1717	1712	1427	1605	1446
Q Serve(g_s), s	3.0	5.6	10.8	41.9	21.4	5.8
Cycle Q Clear(g_c), s	3.0	5.6	10.8	41.9	21.4	5.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	356	1063	829	1086	444	400
V/C Ratio(X)	0.35	0.23	0.40	0.88	0.92	0.31
Avail Cap(c_a), veh/h	418	1129	829	1086	444	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	7.3	14.3	7.5	30.4	24.8
Incr Delay (d2), s/veh	0.6	0.5	1.4	10.1	25.1	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.3	2.8	5.4	25.6	12.5	5.2
LnGrp Delay(d), s/veh	10.0	7.9	15.7	17.6	55.6	25.7
LnGrp LOS	B	A	B	B	E	C
Approach Vol, veh/h	372	1288		532		
Approach Delay, s/veh	8.6	17.1		48.7		
Approach LOS	A	B		D		
Timer	1	2	3	4	5	6
Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s	58.7		28.0	11.7	47.0	
Change Period (Y+Rc), s	6.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	56.0		23.0	9.0	41.0	
Max Q Clear Time (g_c+l1), s	7.6		23.4	5.0	43.9	
Green Ext Time (p_c), s	5.2		0.0	0.1	0.0	
Intersection Summary						
HCM 2010 Ctrl Delay			23.3			
HCM 2010 LOS			C			

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	4	0	9	0	0	0	19	51	80	0	20	3
Future Vol, veh/h	4	0	9	0	0	0	19	51	80	0	20	3
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	0	0	0	0	6	6	0	0	12	0
Mvmt Flow	6	0	13	0	0	0	26	71	111	0	28	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	209	264	30	216	211	127	32	0	0	182	0	0
Stage 1	30	30	-	179	179	-	-	-	-	-	-	-
Stage 2	179	234	-	37	32	-	-	-	-	-	-	-
Critical Hdwy	5.5	4.9	5.4	7.1	6.5	6.2	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	826	725	1057	745	690	929	1555	-	-	1405	-	-
Stage 1	1005	886	-	827	755	-	-	-	-	-	-	-
Stage 2	896	793	-	984	872	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	814	711	1057	726	677	929	1555	-	-	1405	-	-
Mov Cap-2 Maneuver	814	711	-	726	677	-	-	-	-	-	-	-
Stage 1	986	886	-	811	741	-	-	-	-	-	-	-
Stage 2	879	778	-	972	872	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	0	0.9	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	968	-	1405	-	-
HCM Lane V/C Ratio	0.017	-	-	0.019	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.8	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

Intersection

Int Delay, s/veh 2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	102	23	0	43	55	0
Future Vol, veh/h	102	23	0	43	55	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	-5	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	5	11	0	12	6	0
Mvmt Flow	217	49	0	91	117	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	266	0	333
Stage 1	-	-	-	-	242
Stage 2	-	-	-	-	91
Critical Hdwy	-	-	4.1	-	4.86
Critical Hdwy Stg 1	-	-	-	-	3.86
Critical Hdwy Stg 2	-	-	-	-	3.86
Follow-up Hdwy	-	-	2.2	-	3.554
Pot Cap-1 Maneuver	-	-	1310	-	758
Stage 1	-	-	-	-	878
Stage 2	-	-	-	-	961
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1310	-	758
Mov Cap-2 Maneuver	-	-	-	-	758
Stage 1	-	-	-	-	878
Stage 2	-	-	-	-	961

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	758	-	-	1310	-
HCM Lane V/C Ratio	0.154	-	-	-	-
HCM Control Delay (s)	10.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection

Int Delay, s/veh 3.1

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	43	59	91	43	0	0
Future Vol, veh/h	43	59	91	43	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	12	0	0	12	0	0
Mvmt Flow	91	126	194	91	0	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	217	0	633
Stage 1	-	-	-	-	154
Stage 2	-	-	-	-	479
Critical Hdwy	-	-	4.1	-	4.8
Critical Hdwy Stg 1	-	-	-	-	3.8
Critical Hdwy Stg 2	-	-	-	-	3.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1365	-	592
Stage 1	-	-	-	-	941
Stage 2	-	-	-	-	776
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1365	-	503
Mov Cap-2 Maneuver	-	-	-	-	503
Stage 1	-	-	-	-	800
Stage 2	-	-	-	-	776

Approach	EB	WB	NE
HCM Control Delay, s	0	5.5	0
HCM LOS			A

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1365	-
HCM Lane V/C Ratio	-	-	-	0.142	-
HCM Control Delay (s)	0	-	-	8.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.5	-

Intersection

Int Delay, s/veh 12.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↖	↖
Traffic Vol, veh/h	43	250	246	91	0	43
Future Vol, veh/h	43	250	246	91	0	43
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	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-4	-	-	8	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	12	10	10	0	0	12
Mvmt Flow	91	532	523	194	0	91

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1286	46	91 0
Stage 1	46	-	-
Stage 2	1240	-	-
Critical Hdwy	5.72	5.9	4.2
Critical Hdwy Stg 1	4.72	-	-
Critical Hdwy Stg 2	4.72	-	-
Follow-up Hdwy	3.608	3.39	2.29
Pot Cap-1 Maneuver	230	1006	1455
Stage 1	961	-	-
Stage 2	343	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	137	1006	1455
Mov Cap-2 Maneuver	137	-	-
Stage 1	574	-	-
Stage 2	343	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.3	6.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1455	-	137	1006	-	-
HCM Lane V/C Ratio	0.36	-	0.668	0.529	-	-
HCM Control Delay (s)	8.9	0	72.7	12.5	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	1.7	-	3.7	3.2	-	-

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑		↑
Traffic Vol, veh/h	0	0	170	337	250	0
Future Vol, veh/h	0	0	170	337	250	0
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, %	-6	-	-	8	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	0	0	0	10	10	0
Mvmt Flow	0	0	362	717	532	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1973	532	532 0 - 0
Stage 1	532	-	-
Stage 2	1441	-	-
Critical Hdwy	5.2	5.6	4.1 - - -
Critical Hdwy Stg 1	4.2	-	-
Critical Hdwy Stg 2	4.2	-	-
Follow-up Hdwy	3.5	3.3	2.2 - - -
Pot Cap-1 Maneuver	134	603	1046 - - -
Stage 1	708	-	-
Stage 2	356	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	57	603	1046 - - -
Mov Cap-2 Maneuver	57	-	-
Stage 1	301	-	-
Stage 2	356	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	3.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1046	-	-	-	-
HCM Lane V/C Ratio	0.346	-	-	-	-
HCM Control Delay (s)	10.2	0	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	1.6	-	-	-	-

Intersection

Intersection Delay, s/veh 14.4

Intersection LOS B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	372	1288	532
Demand Flow Rate, veh/h	403	1333	584
Vehicles Circulating, veh/h	450	134	340
Vehicles Exiting, veh/h	474	719	134
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.6	16.2	12.9
Approach LOS	B	C	B

Lane	Left	Left	Bypass	Left
Designated Moves	LT	T	R	LR
Assumed Moves	LT	T	R	LR
RT Channelized Yield				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	993	4.976
Entry Flow, veh/h	403	340	1204	584
Cap Entry Lane, veh/h	872	1204	0.962	976
Entry HV Adj Factor	0.923	0.980	955	0.911
Flow Entry, veh/h	372	333	1157	532
Cap Entry, veh/h	805	1180	0.825	889
V/C Ratio	0.462	0.282	19.9	0.599
Control Delay, s/veh	10.6	5.7	C	12.9
LOS	B	A	10	B
95th %tile Queue, veh	2	1	4	

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	285	27	34	283	0	85	0	103	0	0	0
Future Volume (veh/h)	0	285	27	34	283	0	85	0	103	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1600	1728	1728	1678	1728	1854	1783	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	339	32	40	337	0	101	0	123	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	8	8	0	3	3	0	0	4	0	0	0
Cap, veh/h	615	647	61	551	1057	0	246	0	220	0	4	0
Arrive On Green	0.00	0.45	0.45	0.07	0.63	0.00	0.15	0.00	0.15	0.00	0.00	0.00
Sat Flow, veh/h	1646	1440	136	1646	1678	0	1698	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	371	40	337	0	101	0	123	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1576	1646	1678	0	1698	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	7.9	0.5	4.3	0.0	2.5	0.0	3.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	7.9	0.5	4.3	0.0	2.5	0.0	3.5	0.0	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	615	0	709	551	1057	0	246	0	220	0	4	0
V/C Ratio(X)	0.00	0.00	0.52	0.07	0.32	0.00	0.41	0.00	0.56	0.00	0.00	0.00
Avail Cap(c_a), veh/h	999	0	2733	1170	3269	0	1145	0	1022	0	424	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.3	5.6	4.0	0.0	18.1	0.0	18.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	2.8	0.0	0.8	0.0	0.4	0.0	0.8	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.9	0.2	2.2	0.0	1.2	0.0	1.5	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	12.0	5.6	4.8	0.0	18.6	0.0	19.4	0.0	0.0	0.0
LnGrp LOS			B	A	A		B		B			
Approach Vol, veh/h		371			377			224			0	
Approach Delay, s/veh		12.0			4.9			19.0			0.0	
Approach LOS		B			A			B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	34.4		12.3	8.4	26.0		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	6.3		5.5	2.5	9.9		0.0				
Green Ext Time (p_c), s	0.0	8.0		0.6	0.0	9.1		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			10.9									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	120	270	315	48	16	10
Future Vol, veh/h	120	270	315	48	16	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	8	2	2	6	9
Mvmt Flow	138	310	362	55	18	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	417	0	-
Stage 1	-	-	390
Stage 2	-	-	586
Critical Hdwy	4.16	-	-
Critical Hdwy Stg 1	-	-	4.86
Critical Hdwy Stg 2	-	-	4.86
Follow-up Hdwy	2.254	-	-
Pot Cap-1 Maneuver	1121	-	-
Stage 1	-	-	721
Stage 2	-	-	605
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1121	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	632
Stage 2	-	-	605

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1121	-	-	-	282	665
HCM Lane V/C Ratio	0.123	-	-	-	0.065	0.017
HCM Control Delay (s)	8.7	-	-	-	18.7	10.5
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.2	0.1

HCM 2010 Signalized Intersection Summary

5: E McMurray Rd & PTHS Access South

09/23/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↗	↑ ↗	↑ ↗	↑ ↗	↑ ↗
Traffic Volume (veh/h)	58	229	306	449	192	58
Future Volume (veh/h)	58	229	306	449	192	58
Number	5	2	6	16	7	14
Initial Q (Q _b), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1717	1712	1679	1685	1701
Adj Flow Rate, veh/h	123	249	333	955	409	123
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.47	0.92	0.92	0.47	0.47	0.47
Percent Heavy Veh, %	9	8	2	4	10	9
Cap, veh/h	356	1063	829	1086	444	400
Arrive On Green	0.08	0.62	0.48	0.48	0.28	0.28
Sat Flow, veh/h	1620	1717	1712	1427	1605	1446
Grp Volume(v), veh/h	123	249	333	955	409	123
Grp Sat Flow(s), veh/h/ln	1620	1717	1712	1427	1605	1446
Q Serve(g_s), s	3.0	5.6	10.8	41.9	21.4	5.8
Cycle Q Clear(g_c), s	3.0	5.6	10.8	41.9	21.4	5.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	356	1063	829	1086	444	400
V/C Ratio(X)	0.35	0.23	0.40	0.88	0.92	0.31
Avail Cap(c_a), veh/h	418	1129	829	1086	444	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.4	7.3	14.3	7.5	30.4	24.8
Incr Delay (d2), s/veh	0.6	0.5	1.4	10.1	25.1	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.3	2.8	5.4	25.6	12.5	5.2
LnGrp Delay(d), s/veh	10.0	7.9	15.7	17.6	55.6	25.7
LnGrp LOS	B	A	B	B	E	C
Approach Vol, veh/h	372	1288		532		
Approach Delay, s/veh	8.6	17.1		48.7		
Approach LOS	A	B		D		
Timer	1	2	3	4	5	6
Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s	58.7		28.0	11.7	47.0	
Change Period (Y+Rc), s	6.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	56.0		23.0	9.0	41.0	
Max Q Clear Time (g_c+l1), s	7.6		23.4	5.0	43.9	
Green Ext Time (p_c), s	5.2		0.0	0.1	0.0	
Intersection Summary						
HCM 2010 Ctrl Delay			23.3			
HCM 2010 LOS			C			

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	4	0	9	0	0	0	19	131	0	0	20	3
Future Vol, veh/h	4	0	9	0	0	0	19	131	0	0	20	3
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	0	0	0	0	6	6	0	0	12	0
Mvmt Flow	6	0	13	0	0	0	26	182	0	0	28	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	264	264	30	271	266	182	32	0	0	182	0	0
Stage 1	30	30	-	234	234	-	-	-	-	-	-	-
Stage 2	234	234	-	37	32	-	-	-	-	-	-	-
Critical Hdwy	5.5	4.9	5.4	7.1	6.5	6.2	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.5	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	779	725	1057	686	643	866	1555	-	-	1405	-	-
Stage 1	1005	886	-	774	715	-	-	-	-	-	-	-
Stage 2	858	793	-	984	872	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	768	711	1057	668	631	866	1555	-	-	1405	-	-
Mov Cap-2 Maneuver	768	711	-	668	631	-	-	-	-	-	-	-
Stage 1	986	886	-	759	701	-	-	-	-	-	-	-
Stage 2	842	778	-	972	872	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	0	0.9	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	947	-	1405	-	-
HCM Lane V/C Ratio	0.017	-	-	0.019	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-

Intersection

Int Delay, s/veh 5.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	102	23	0	43	55	80
Future Vol, veh/h	102	23	0	43	55	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	-5	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	5	11	0	12	6	0
Mvmt Flow	217	49	0	91	117	170

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	266	0	333
Stage 1	-	-	-	-	242
Stage 2	-	-	-	-	91
Critical Hdwy	-	-	4.1	-	4.86
Critical Hdwy Stg 1	-	-	-	-	3.86
Critical Hdwy Stg 2	-	-	-	-	3.86
Follow-up Hdwy	-	-	2.2	-	3.554
Pot Cap-1 Maneuver	-	-	1310	-	758
Stage 1	-	-	-	-	878
Stage 2	-	-	-	-	961
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1310	-	758
Mov Cap-2 Maneuver	-	-	-	-	758
Stage 1	-	-	-	-	878
Stage 2	-	-	-	-	961

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	808	-	-	1310	-
HCM Lane V/C Ratio	0.355	-	-	-	-
HCM Control Delay (s)	11.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1.6	-	-	0	-

Intersection

Int Delay, s/veh 5.8

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑		↔		↑	
Traffic Vol, veh/h	43	139	261	43	0	0
Future Vol, veh/h	43	139	261	43	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	12	0	0	12	0	0
Mvmt Flow	91	296	555	91	0	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	387	0	1440
Stage 1	-	-	-	-	239
Stage 2	-	-	-	-	1201
Critical Hdwy	-	-	4.1	-	4.8
Critical Hdwy Stg 1	-	-	-	-	3.8
Critical Hdwy Stg 2	-	-	-	-	3.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1183	-	280
Stage 1	-	-	-	-	896
Stage 2	-	-	-	-	491
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1183	-	142
Mov Cap-2 Maneuver	-	-	-	-	142
Stage 1	-	-	-	-	453
Stage 2	-	-	-	-	491

Approach	EB	WB	NE
HCM Control Delay, s	0	9.2	0
HCM LOS			A

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1183	-
HCM Lane V/C Ratio	-	-	-	0.469	-
HCM Control Delay (s)	0	-	-	10.7	0
HCM Lane LOS	A	-	-	B	A
HCM 95th %tile Q(veh)	-	-	-	2.6	-

Intersection

Int Delay, s/veh 21.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖
Traffic Vol, veh/h	43	250	246	261	0	43
Future Vol, veh/h	43	250	246	261	0	43
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	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-4	-	-	8	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	12	10	10	0	0	12
Mvmt Flow	91	532	523	555	0	91

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1647	46	91 0
Stage 1	46	-	-
Stage 2	1601	-	-
Critical Hdwy	5.72	5.9	4.2
Critical Hdwy Stg 1	4.72	-	-
Critical Hdwy Stg 2	4.72	-	-
Follow-up Hdwy	3.608	3.39	2.29
Pot Cap-1 Maneuver	149	1006	1455
Stage 1	961	-	-
Stage 2	246	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	~ 72	1006	1455
Mov Cap-2 Maneuver	~ 72	-	-
Stage 1	461	-	-
Stage 2	246	-	-

Approach	EB	NB	SB
HCM Control Delay, s	54	4.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1455	-	72	1006	-	-
HCM Lane V/C Ratio	0.36	-	1.271	0.529	-	-
HCM Control Delay (s)	8.9	0	295.6	12.5	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	1.7	-	7.2	3.2	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			↑		↑
Traffic Vol, veh/h	0	0	0	507	250	0
Future Vol, veh/h	0	0	0	507	250	0
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, %	-6	-	-	8	-8	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	0	0	0	10	10	0
Mvmt Flow	0	0	0	1079	532	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1611	532	532 0
Stage 1	532	-	-
Stage 2	1079	-	-
Critical Hdwy	5.2	5.6	4.1 -
Critical Hdwy Stg 1	4.2	-	-
Critical Hdwy Stg 2	4.2	-	-
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	199	603	1046 -
Stage 1	708	-	-
Stage 2	472	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	199	603	1046 -
Mov Cap-2 Maneuver	199	-	-
Stage 1	708	-	-
Stage 2	472	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1046	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection

Intersection Delay, s/veh 14.4

Intersection LOS B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	372	1288	532
Demand Flow Rate, veh/h	403	1333	584
Vehicles Circulating, veh/h	450	134	340
Vehicles Exiting, veh/h	474	719	134
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.6	16.2	12.9
Approach LOS	B	C	B

Lane	Left	Left	Bypass	Left
Designated Moves	LT	T	R	LR
Assumed Moves	LT	T	R	LR
RT Channelized Yield				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	993	4.976
Entry Flow, veh/h	403	340	1204	584
Cap Entry Lane, veh/h	872	1204	0.962	976
Entry HV Adj Factor	0.923	0.980	955	0.911
Flow Entry, veh/h	372	333	1157	532
Cap Entry, veh/h	805	1180	0.825	889
V/C Ratio	0.462	0.282	19.9	0.599
Control Delay, s/veh	10.6	5.7	C	12.9
LOS	B	A	10	B
95th %tile Queue, veh	2	1	4	

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	516	99	51	311	0	71	0	47	0	0	0
Future Volume (veh/h)	0	516	99	51	311	0	71	0	47	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1638	1728	1728	1600	1728	1854	1854	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	567	109	56	342	0	78	0	52	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	5	5	0	8	8	0	0	4	0	0	0
Cap, veh/h	729	824	158	468	1214	0	163	0	140	0	3	0
Arrive On Green	0.00	0.62	0.62	0.07	0.76	0.00	0.09	0.00	0.09	0.00	0.00	0.00
Sat Flow, veh/h	1646	1336	257	1646	1600	0	1766	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	676	56	342	0	78	0	52	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1593	1646	1600	0	1766	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	19.9	0.7	4.6	0.0	3.0	0.0	2.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	19.9	0.7	4.6	0.0	3.0	0.0	2.3	0.0	0.0	0.0
Prop In Lane	1.00			0.16	1.00		0.00	1.00	1.00	0.00	0.00	0.00
Lane Grp Cap(c), veh/h	729	0	983	468	1214	0	163	0	140	0	3	0
V/C Ratio(X)	0.00	0.00	0.69	0.12	0.28	0.00	0.48	0.00	0.37	0.00	0.00	0.00
Avail Cap(c_a), veh/h	983	0	1828	841	2062	0	788	0	676	0	280	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.0	6.6	2.6	0.0	30.4	0.0	30.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	3.9	0.0	0.6	0.0	0.8	0.0	0.6	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.7	0.4	2.2	0.0	1.5	0.0	1.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	12.9	6.7	3.2	0.0	31.2	0.0	30.7	0.0	0.0	0.0
LnGrp LOS			B	A	A		C		C			
Approach Vol, veh/h	676			398			130			0		
Approach Delay, s/veh	12.9			3.7			31.0			0.0		
Approach LOS	B			A			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	58.6		12.0	10.0	48.6		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	6.6		5.0	2.7	21.9		0.0				
Green Ext Time (p_c), s	0.0	8.2		0.4	0.0	20.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			11.8									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Vol, veh/h	43	530		334	25	38	43
Future Vol, veh/h	43	530		334	25	38	43
Conflicting Peds, #/hr	0	0		0	0	0	0
Sign Control	Free	Free		Free	Free	Stop	Stop
RT Channelized	-	None		-	None	-	None
Storage Length	130	-		-	-	0	150
Veh in Median Storage, #	-	0		0	-	0	-
Grade, %	-	-7		7	-	-3	-
Peak Hour Factor	90	90		90	90	90	90
Heavy Vehicles, %	5	4		3	8	0	0
Mvmt Flow	48	589		371	28	42	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	399	0	-	0	1070	385
Stage 1	-	-	-	-	385	-
Stage 2	-	-	-	-	685	-
Critical Hdwy	4.15	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.245	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1144	-	-	-	295	689
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1144	-	-	-	283	689
Mov Cap-2 Maneuver	-	-	-	-	283	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	565	-

Approach	EB		WB		SB	
HCM Control Delay, s	0.6		0		15	
HCM LOS					C	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1144	-	-	-	283	689
HCM Lane V/C Ratio	0.042	-	-	-	0.149	0.069
HCM Control Delay (s)	8.3	-	-	-	19.9	10.6
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	0.2

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	5	0	8	0	0	0	14	54	0	0	73	5
Future Vol, veh/h	5	0	8	0	0	0	14	54	0	0	73	5
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	20	0	0	0	0	0	7	6	0	0	4	0
Mvmt Flow	6	0	10	0	0	0	17	65	0	0	88	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	190	190	91	195	193	65	94	0	0	65	0	0
Stage 1	91	91	-	99	99	-	-	-	-	-	-	-
Stage 2	99	99	-	96	94	-	-	-	-	-	-	-
Critical Hdwy	5.7	4.9	5.4	7.1	6.5	6.2	4.17	-	-	4.1	-	-
Critical Hdwy Stg 1	4.7	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.7	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.3	3.5	4	3.3	2.263	-	-	2.2	-	-
Pot Cap-1 Maneuver	797	771	992	769	706	1005	1469	-	-	1550	-	-
Stage 1	910	857	-	912	817	-	-	-	-	-	-	-
Stage 2	904	854	-	916	821	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	790	762	992	754	698	1005	1469	-	-	1550	-	-
Mov Cap-2 Maneuver	790	762	-	754	698	-	-	-	-	-	-	-
Stage 1	899	857	-	901	807	-	-	-	-	-	-	-
Stage 2	893	844	-	907	821	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	1.5	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1469	-	-	903	-	1550	-	-
HCM Lane V/C Ratio	0.011	-	-	0.017	-	-	-	-
HCM Control Delay (s)	7.5	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	531	102	52	320	0	73	0	48	0	0	0
Future Volume (veh/h)	0	531	102	52	320	0	73	0	48	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1638	1728	1728	1600	1728	1854	1854	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	584	112	57	352	0	80	0	53	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	5	5	0	8	8	0	0	4	0	0	0
Cap, veh/h	730	837	160	460	1224	0	160	0	137	0	2	0
Arrive On Green	0.00	0.63	0.63	0.07	0.77	0.00	0.09	0.00	0.09	0.00	0.00	0.00
Sat Flow, veh/h	1646	1337	256	1646	1600	0	1766	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	696	57	352	0	80	0	53	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1593	1646	1600	0	1766	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	21.1	0.7	4.8	0.0	3.1	0.0	2.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	21.1	0.7	4.8	0.0	3.1	0.0	2.4	0.0	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	730	0	997	460	1224	0	160	0	137	0	2	0
V/C Ratio(X)	0.00	0.00	0.70	0.12	0.29	0.00	0.50	0.00	0.39	0.00	0.00	0.00
Avail Cap(c_a), veh/h	976	0	1774	820	2002	0	765	0	656	0	272	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.0	6.9	2.6	0.0	31.5	0.0	31.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	4.0	0.0	0.6	0.0	0.9	0.0	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	10.2	0.4	2.3	0.0	1.6	0.0	1.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	13.1	6.9	3.2	0.0	32.4	0.0	31.8	0.0	0.0	0.0
LnGrp LOS			B	A	A		C		C			
Approach Vol, veh/h	696			409			133			0		
Approach Delay, s/veh	13.1			3.7			32.2			0.0		
Approach LOS	B			A			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	60.6		12.1	10.1	50.5		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	6.8		5.1	2.7	23.1		0.0				
Green Ext Time (p_c), s	0.0	8.5		0.4	0.0	21.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			12.0									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	44	545	343	26	39	44
Future Vol, veh/h	44	545	343	26	39	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	4	3	8	0	0
Mvmt Flow	49	606	381	29	43	49

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	410	0	-
Stage 1	-	-	396
Stage 2	-	-	704
Critical Hdwy	4.15	-	-
Critical Hdwy Stg 1	-	-	4.8
Critical Hdwy Stg 2	-	-	4.8
Follow-up Hdwy	2.245	-	-
Pot Cap-1 Maneuver	1133	-	-
Stage 1	-	-	731
Stage 2	-	-	556
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1133	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	700
Stage 2	-	-	556

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	15.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1133	-	-	-	273	680
HCM Lane V/C Ratio	0.043	-	-	-	0.159	0.072
HCM Control Delay (s)	8.3	-	-	-	20.7	10.7
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6	0.2

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	5	0	8	0	0	0	14	56	0	0	75	5
Future Vol, veh/h	5	0	8	0	0	0	14	56	0	0	75	5
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	20	0	0	0	0	0	7	6	0	0	4	0
Mvmt Flow	6	0	10	0	0	0	17	67	0	0	90	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	194	194	93	199	197	67	96	0	0	67	0	0
Stage 1	93	93	-	101	101	-	-	-	-	-	-	-
Stage 2	101	101	-	98	96	-	-	-	-	-	-	-
Critical Hdwy	5.7	4.9	5.4	7.1	6.5	6.2	4.17	-	-	4.1	-	-
Critical Hdwy Stg 1	4.7	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.7	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.3	3.5	4	3.3	2.263	-	-	2.2	-	-
Pot Cap-1 Maneuver	793	768	990	764	702	1002	1467	-	-	1547	-	-
Stage 1	908	857	-	910	815	-	-	-	-	-	-	-
Stage 2	902	853	-	913	819	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	786	759	990	749	694	1002	1467	-	-	1547	-	-
Mov Cap-2 Maneuver	786	759	-	749	694	-	-	-	-	-	-	-
Stage 1	897	857	-	899	805	-	-	-	-	-	-	-
Stage 2	891	843	-	904	819	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	1.5	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1467	-	-	900	-	1547	-	-
HCM Lane V/C Ratio	0.011	-	-	0.017	-	-	-	-
HCM Control Delay (s)	7.5	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	348	66	77	338	0	64	0	55	0	0	0
Future Volume (veh/h)	0	348	66	77	338	0	64	0	55	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1638	1728	1728	1600	1728	1854	1854	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	382	73	85	371	0	70	0	60	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	5	5	0	8	8	0	0	4	0	0	0
Cap, veh/h	622	653	125	561	1094	0	205	0	176	0	3	0
Arrive On Green	0.00	0.49	0.49	0.10	0.68	0.00	0.12	0.00	0.12	0.00	0.00	0.00
Sat Flow, veh/h	1646	1338	256	1646	1600	0	1766	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	455	85	371	0	70	0	60	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1593	1646	1600	0	1766	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	10.7	1.1	5.0	0.0	1.9	0.0	1.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.7	1.1	5.0	0.0	1.9	0.0	1.9	0.0	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	622	0	778	561	1094	0	205	0	176	0	3	0
V/C Ratio(X)	0.00	0.00	0.59	0.15	0.34	0.00	0.34	0.00	0.34	0.00	0.00	0.00
Avail Cap(c_a), veh/h	964	0	2459	1055	2775	0	1060	0	910	0	377	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.6	5.6	3.4	0.0	21.3	0.0	21.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	3.2	0.0	0.8	0.0	0.4	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.4	0.5	2.4	0.0	1.0	0.0	0.8	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	12.8	5.6	4.3	0.0	21.7	0.0	21.8	0.0	0.0	0.0
LnGrp LOS			B	A	A		C		C			
Approach Vol, veh/h	455			456			130			0		
Approach Delay, s/veh	12.8			4.5			21.7			0.0		
Approach LOS	B			A			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	40.9		11.6	10.3	30.6		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	7.0		3.9	3.1	12.7		0.0				
Green Ext Time (p_c), s	0.0	9.1		0.3	0.1	11.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			10.3									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	24	389	391	26	39	39
Future Vol, veh/h	24	389	391	26	39	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	4	3	8	0	0
Mvmt Flow	27	432	434	29	43	43

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	463	0	-	0	935	449
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	486	-
Critical Hdwy	4.15	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.245	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1083	-	-	-	347	638
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	675	-
Platoon blocked, %	-	-	-	-		
Mov Cap-1 Maneuver	1083	-	-	-	338	638
Mov Cap-2 Maneuver	-	-	-	-	338	-
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	675	-

Approach	EB		WB		SB	
HCM Control Delay, s	0.5		0		14.2	
HCM LOS					B	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1083	-	-	-	338	638
HCM Lane V/C Ratio	0.025	-	-	-	0.128	0.068
HCM Control Delay (s)	8.4	-	-	-	17.2	11.1
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.2

HCM 2010 Signalized Intersection Summary

5: E McMurray Rd & PTHS Access South

09/23/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↗	↑ ↗	↑ ↗	↑ ↗	↑ ↗
Traffic Volume (veh/h)	26	402	320	84	316	97
Future Volume (veh/h)	26	402	320	84	316	97
Number	5	2	6	16	7	14
Initial Q (Q _b), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1558	1783	1695	1408	1749	1766
Adj Flow Rate, veh/h	50	437	348	162	608	187
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.52	0.92	0.92	0.52	0.52	0.52
Percent Heavy Veh, %	19	4	3	24	6	5
Cap, veh/h	291	773	502	880	732	659
Arrive On Green	0.07	0.43	0.30	0.30	0.44	0.44
Sat Flow, veh/h	1484	1783	1695	1197	1666	1501
Grp Volume(v), veh/h	50	437	348	162	608	187
Grp Sat Flow(s), veh/h/ln	1484	1783	1695	1197	1666	1501
Q Serve(g_s), s	1.5	13.0	12.9	2.9	22.9	5.7
Cycle Q Clear(g_c), s	1.5	13.0	12.9	2.9	22.9	5.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	291	773	502	880	732	659
V/C Ratio(X)	0.17	0.57	0.69	0.18	0.83	0.28
Avail Cap(c_a), veh/h	400	1056	646	981	916	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.3	15.1	22.1	2.9	17.6	12.7
Incr Delay (d2), s/veh	0.3	3.0	7.7	0.5	7.1	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.6	7.0	7.1	2.7	11.9	5.8
LnGrp Delay(d), s/veh	15.5	18.0	29.8	3.3	24.6	13.2
LnGrp LOS	B	B	C	A	C	B
Approach Vol, veh/h		487	510		795	
Approach Delay, s/veh		17.8	21.4		21.9	
Approach LOS		B	C		C	
Timer	1	2	3	4	5	6
Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		35.8		35.1	9.8	26.0
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0
Max Green Setting (Gmax), s		41.0		38.0	9.0	26.0
Max Q Clear Time (g_c+l1), s		15.0		24.9	3.5	14.9
Green Ext Time (p_c), s		8.2		5.3	0.0	5.0
Intersection Summary						
HCM 2010 Ctrl Delay			20.6			
HCM 2010 LOS			C			

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	5	0	8	0	0	0	14	36	0	0	70	5
Future Vol, veh/h	5	0	8	0	0	0	14	36	0	0	70	5
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	20	0	0	0	0	0	7	6	0	0	4	0
Mvmt Flow	6	0	10	0	0	0	17	43	0	0	84	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	164	164	87	169	167	43	90	0	0	43	0	0
Stage 1	87	87	-	77	77	-	-	-	-	-	-	-
Stage 2	77	77	-	92	90	-	-	-	-	-	-	-
Critical Hdwy	5.7	4.9	5.4	7.1	6.5	6.2	4.17	-	-	4.1	-	-
Critical Hdwy Stg 1	4.7	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.7	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.3	3.5	4	3.3	2.263	-	-	2.2	-	-
Pot Cap-1 Maneuver	820	788	996	799	729	1033	1474	-	-	1579	-	-
Stage 1	913	859	-	937	835	-	-	-	-	-	-	-
Stage 2	920	864	-	920	824	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	813	779	996	784	720	1033	1474	-	-	1579	-	-
Mov Cap-2 Maneuver	813	779	-	784	720	-	-	-	-	-	-	-
Stage 1	902	859	-	926	825	-	-	-	-	-	-	-
Stage 2	909	854	-	911	824	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	0	2.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1474	-	-	917	-	1579	-	-
HCM Lane V/C Ratio	0.011	-	-	0.017	-	-	-	-
HCM Control Delay (s)	7.5	0	-	9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Intersection

Int Delay, s/veh 2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	75	0	71	41	0
Future Vol, veh/h	19	75	0	71	41	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	-5	-8	-
Peak Hour Factor	52	52	52	52	52	52
Heavy Vehicles, %	26	4	0	7	7	0
Mvmt Flow	37	144	0	137	79	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	181	0	246
Stage 1	-	-	-	-	109
Stage 2	-	-	-	-	137
Critical Hdwy	-	-	4.1	-	4.87
Critical Hdwy Stg 1	-	-	-	-	3.87
Critical Hdwy Stg 2	-	-	-	-	3.87
Follow-up Hdwy	-	-	2.2	-	3.563
Pot Cap-1 Maneuver	-	-	1407	-	816
Stage 1	-	-	-	-	948
Stage 2	-	-	-	-	932
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1407	-	816
Mov Cap-2 Maneuver	-	-	-	-	816
Stage 1	-	-	-	-	948
Stage 2	-	-	-	-	932

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	816	-	-	1407	-
HCM Lane V/C Ratio	0.097	-	-	-	-
HCM Control Delay (s)	9.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection

Int Delay, s/veh 3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	0	0	34	37	0
Future Vol, veh/h	19	0	0	34	37	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-8	-
Peak Hour Factor	52	52	52	52	52	52
Heavy Vehicles, %	26	0	0	15	0	0
Mvmt Flow	37	0	0	65	71	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	37	0	102
Stage 1	-	-	-	-	37
Stage 2	-	-	-	-	65
Critical Hdwy	-	-	4.1	-	4.8
Critical Hdwy Stg 1	-	-	-	-	3.8
Critical Hdwy Stg 2	-	-	-	-	3.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1587	-	943
Stage 1	-	-	-	-	1007
Stage 2	-	-	-	-	991
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1587	-	943
Mov Cap-2 Maneuver	-	-	-	-	943
Stage 1	-	-	-	-	1007
Stage 2	-	-	-	-	991

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	943	-	-	1587	-
HCM Lane V/C Ratio	0.075	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection

Int Delay, s/veh 15.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↔	↑	↑	↓
Traffic Vol, veh/h	34	413	110	0	0	19
Future Vol, veh/h	34	413	110	0	0	19
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	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-4	-	-	8	-8	-
Peak Hour Factor	52	52	52	52	52	52
Heavy Vehicles, %	15	6	23	0	0	26
Mvmt Flow	65	794	212	0	0	37

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	443	19	37
Stage 1	19	-	-
Stage 2	424	-	-
Critical Hdwy	5.75	5.86	4.33
Critical Hdwy Stg 1	4.75	-	-
Critical Hdwy Stg 2	4.75	-	-
Follow-up Hdwy	3.635	3.354	2.407
Pot Cap-1 Maneuver	605	1050	1448
Stage 1	975	-	-
Stage 2	696	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	517	1050	1448
Mov Cap-2 Maneuver	517	-	-
Stage 1	833	-	-
Stage 2	696	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.8	7.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1448	-	517	1050	-	-
HCM Lane V/C Ratio	0.146	-	0.126	0.756	-	-
HCM Control Delay (s)	7.9	0	13	18.2	-	-
HCM Lane LOS	A	A	B	C	-	-
HCM 95th %tile Q(veh)	0.5	-	0.4	7.5	-	-

Intersection

Intersection Delay, s/veh 20.1

Intersection LOS C

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	487	510	795
Demand Flow Rate, veh/h	514	559	840
Vehicles Circulating, veh/h	644	59	358
Vehicles Exiting, veh/h	554	1098	59
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	21.3	5.2	29.0
Approach LOS	C	A	D

Lane	Left	Left	Bypass	Left
Designated Moves	LT	T	R	LR
Assumed Moves	LT	T	R	LR
RT Channelized Yield				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609		2.609
Critical Headway, s	4.976	4.976	201	4.976
Entry Flow, veh/h	514	358	1299	840
Cap Entry Lane, veh/h	715	1299	0.806	958
Entry HV Adj Factor	0.947	0.971	162	0.946
Flow Entry, veh/h	487	348	1048	795
Cap Entry, veh/h	677	1261	0.155	906
V/C Ratio	0.718	0.276	4.8	0.877
Control Delay, s/veh	21.3	5.3	A	29.0
LOS	C	A	1	D
95th %tile Queue, veh	6	1		12

HCM 2010 Signalized Intersection Summary
3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	348	66	77	338	0	64	0	55	0	0	0
Future Volume (veh/h)	0	348	66	77	338	0	64	0	55	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1638	1728	1728	1600	1728	1854	1854	1783	1800	1800	1800
Adj Flow Rate, veh/h	0	382	73	85	371	0	70	0	60	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	5	5	0	8	8	0	0	4	0	0	0
Cap, veh/h	622	653	125	561	1094	0	205	0	176	0	3	0
Arrive On Green	0.00	0.49	0.49	0.10	0.68	0.00	0.12	0.00	0.12	0.00	0.00	0.00
Sat Flow, veh/h	1646	1338	256	1646	1600	0	1766	0	1515	0	1800	0
Grp Volume(v), veh/h	0	0	455	85	371	0	70	0	60	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1593	1646	1600	0	1766	0	1515	0	1800	0
Q Serve(g_s), s	0.0	0.0	10.7	1.1	5.0	0.0	1.9	0.0	1.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	10.7	1.1	5.0	0.0	1.9	0.0	1.9	0.0	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	622	0	778	561	1094	0	205	0	176	0	3	0
V/C Ratio(X)	0.00	0.00	0.59	0.15	0.34	0.00	0.34	0.00	0.34	0.00	0.00	0.00
Avail Cap(c_a), veh/h	964	0	2459	1055	2775	0	1060	0	910	0	377	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	9.6	5.6	3.4	0.0	21.3	0.0	21.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	3.2	0.0	0.8	0.0	0.4	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.4	0.5	2.4	0.0	1.0	0.0	0.8	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	12.8	5.6	4.3	0.0	21.7	0.0	21.8	0.0	0.0	0.0
LnGrp LOS			B	A	A		C		C			
Approach Vol, veh/h	455			456			130			0		
Approach Delay, s/veh	12.8			4.5			21.7			0.0		
Approach LOS	B			A			C					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	40.9		11.6	10.3	30.6		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	7.0		3.9	3.1	12.7		0.0				
Green Ext Time (p_c), s	0.0	9.1		0.3	0.1	11.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			10.3									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	24	389	391	26	39	39
Future Vol, veh/h	24	389	391	26	39	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	4	3	8	0	0
Mvmt Flow	27	432	434	29	43	43

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	463	0	-
Stage 1	-	-	449
Stage 2	-	-	486
Critical Hdwy	4.15	-	-
Critical Hdwy Stg 1	-	-	4.8
Critical Hdwy Stg 2	-	-	4.8
Follow-up Hdwy	2.245	-	-
Pot Cap-1 Maneuver	1083	-	-
Stage 1	-	-	698
Stage 2	-	-	675
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1083	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	681
Stage 2	-	-	675

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1083	-	-	-	338	638
HCM Lane V/C Ratio	0.025	-	-	-	0.128	0.068
HCM Control Delay (s)	8.4	-	-	-	17.2	11.1
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.2

HCM 2010 Signalized Intersection Summary

5: E McMurray Rd & PTHS Access South

09/23/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↗	↑ ↗	↑ ↗	↑ ↗	↑ ↗
Traffic Volume (veh/h)	26	402	320	84	316	97
Future Volume (veh/h)	26	402	320	84	316	97
Number	5	2	6	16	7	14
Initial Q (Q _b), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1558	1783	1695	1408	1749	1766
Adj Flow Rate, veh/h	50	437	348	162	608	187
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.52	0.92	0.92	0.52	0.52	0.52
Percent Heavy Veh, %	19	4	3	24	6	5
Cap, veh/h	291	773	502	880	732	659
Arrive On Green	0.07	0.43	0.30	0.30	0.44	0.44
Sat Flow, veh/h	1484	1783	1695	1197	1666	1501
Grp Volume(v), veh/h	50	437	348	162	608	187
Grp Sat Flow(s), veh/h/ln	1484	1783	1695	1197	1666	1501
Q Serve(g_s), s	1.5	13.0	12.9	2.9	22.9	5.7
Cycle Q Clear(g_c), s	1.5	13.0	12.9	2.9	22.9	5.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	291	773	502	880	732	659
V/C Ratio(X)	0.17	0.57	0.69	0.18	0.83	0.28
Avail Cap(c_a), veh/h	400	1056	646	981	916	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.3	15.1	22.1	2.9	17.6	12.7
Incr Delay (d2), s/veh	0.3	3.0	7.7	0.5	7.1	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.6	7.0	7.1	2.7	11.9	5.8
LnGrp Delay(d), s/veh	15.5	18.0	29.8	3.3	24.6	13.2
LnGrp LOS	B	B	C	A	C	B
Approach Vol, veh/h		487	510		795	
Approach Delay, s/veh		17.8	21.4		21.9	
Approach LOS		B	C		C	
Timer	1	2	3	4	5	6
Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		35.8		35.1	9.8	26.0
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0
Max Green Setting (Gmax), s		41.0		38.0	9.0	26.0
Max Q Clear Time (g_c+l1), s		15.0		24.9	3.5	14.9
Green Ext Time (p_c), s		8.2		5.3	0.0	5.0
Intersection Summary						
HCM 2010 Ctrl Delay			20.6			
HCM 2010 LOS			C			

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	5	0	8	0	0	0	14	36	0	0	70	5
Future Vol, veh/h	5	0	8	0	0	0	14	36	0	0	70	5
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	20	0	0	0	0	0	7	6	0	0	4	0
Mvmt Flow	6	0	10	0	0	0	17	43	0	0	84	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	164	164	87	169	167	43	90	0	0	43	0	0
Stage 1	87	87	-	77	77	-	-	-	-	-	-	-
Stage 2	77	77	-	92	90	-	-	-	-	-	-	-
Critical Hdwy	5.7	4.9	5.4	7.1	6.5	6.2	4.17	-	-	4.1	-	-
Critical Hdwy Stg 1	4.7	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.7	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.3	3.5	4	3.3	2.263	-	-	2.2	-	-
Pot Cap-1 Maneuver	820	788	996	799	729	1033	1474	-	-	1579	-	-
Stage 1	913	859	-	937	835	-	-	-	-	-	-	-
Stage 2	920	864	-	920	824	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	813	779	996	784	720	1033	1474	-	-	1579	-	-
Mov Cap-2 Maneuver	813	779	-	784	720	-	-	-	-	-	-	-
Stage 1	902	859	-	926	825	-	-	-	-	-	-	-
Stage 2	909	854	-	911	824	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	0	2.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1474	-	-	917	-	1579	-	-
HCM Lane V/C Ratio	0.011	-	-	0.017	-	-	-	-
HCM Control Delay (s)	7.5	0	-	9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Intersection

Int Delay, s/veh 2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	75	0	71	41	0
Future Vol, veh/h	19	75	0	71	41	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	-5	-8	-
Peak Hour Factor	52	52	52	52	52	52
Heavy Vehicles, %	26	4	0	7	7	0
Mvmt Flow	37	144	0	137	79	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	181	0	246
Stage 1	-	-	-	-	109
Stage 2	-	-	-	-	137
Critical Hdwy	-	-	4.1	-	4.87
Critical Hdwy Stg 1	-	-	-	-	3.87
Critical Hdwy Stg 2	-	-	-	-	3.87
Follow-up Hdwy	-	-	2.2	-	3.563
Pot Cap-1 Maneuver	-	-	1407	-	816
Stage 1	-	-	-	-	948
Stage 2	-	-	-	-	932
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1407	-	816
Mov Cap-2 Maneuver	-	-	-	-	816
Stage 1	-	-	-	-	948
Stage 2	-	-	-	-	932

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	816	-	-	1407	-
HCM Lane V/C Ratio	0.097	-	-	-	-
HCM Control Delay (s)	9.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection

Int Delay, s/veh 3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	0	0	34	37	0
Future Vol, veh/h	19	0	0	34	37	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-8	-
Peak Hour Factor	52	52	52	52	52	52
Heavy Vehicles, %	26	0	0	15	0	0
Mvmt Flow	37	0	0	65	71	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	37	0	102
Stage 1	-	-	-	-	37
Stage 2	-	-	-	-	65
Critical Hdwy	-	-	4.1	-	4.8
Critical Hdwy Stg 1	-	-	-	-	3.8
Critical Hdwy Stg 2	-	-	-	-	3.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1587	-	943
Stage 1	-	-	-	-	1007
Stage 2	-	-	-	-	991
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1587	-	943
Mov Cap-2 Maneuver	-	-	-	-	943
Stage 1	-	-	-	-	1007
Stage 2	-	-	-	-	991

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	943	-	-	1587	-
HCM Lane V/C Ratio	0.075	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection

Int Delay, s/veh 11.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↔	↑	↑	↓
Traffic Vol, veh/h	34	311	110	0	0	19
Future Vol, veh/h	34	311	110	0	0	19
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	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-4	-	-	8	-8	-
Peak Hour Factor	52	52	52	52	52	52
Heavy Vehicles, %	15	8	23	0	0	26
Mvmt Flow	65	598	212	0	0	37

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	443	19	37
Stage 1	19	-	-
Stage 2	424	-	-
Critical Hdwy	5.75	5.88	4.33
Critical Hdwy Stg 1	4.75	-	-
Critical Hdwy Stg 2	4.75	-	-
Follow-up Hdwy	3.635	3.372	2.407
Pot Cap-1 Maneuver	605	1044	1448
Stage 1	975	-	-
Stage 2	696	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	517	1044	1448
Mov Cap-2 Maneuver	517	-	-
Stage 1	833	-	-
Stage 2	696	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	7.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1448	-	517	1044	-	-
HCM Lane V/C Ratio	0.146	-	0.126	0.573	-	-
HCM Control Delay (s)	7.9	0	13	13	-	-
HCM Lane LOS	A	A	B	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.4	3.8	-	-

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	↑	↑	
Traffic Vol, veh/h	0	112	0	110	311	0
Future Vol, veh/h	0	112	0	110	311	0
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, %	-6	-	-	8	-8	-
Peak Hour Factor	52	52	52	52	52	52
Heavy Vehicles, %	0	0	0	23	8	0
Mvmt Flow	0	215	0	212	598	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	810	598	598 0
Stage 1	598	-	-
Stage 2	212	-	-
Critical Hdwy	5.2	5.6	4.1 -
Critical Hdwy Stg 1	4.2	-	-
Critical Hdwy Stg 2	4.2	-	-
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	461	559	989 -
Stage 1	675	-	-
Stage 2	889	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	461	559	989 -
Mov Cap-2 Maneuver	461	-	-
Stage 1	675	-	-
Stage 2	889	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	989	-	559	-	-
HCM Lane V/C Ratio	-	-	0.385	-	-
HCM Control Delay (s)	0	-	15.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.8	-	-

Intersection

Intersection Delay, s/veh 20.1

Intersection LOS C

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	487	510	795
Demand Flow Rate, veh/h	514	559	840
Vehicles Circulating, veh/h	644	59	358
Vehicles Exiting, veh/h	554	1098	59
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	21.3	5.2	29.0
Approach LOS	C	A	D

Lane	Left	Left	Bypass	Left
Designated Moves	LT	T	R	LR
Assumed Moves	LT	T	R	LR
RT Channelized			Yield	
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609		2.609
Critical Headway, s	4.976	4.976	201	4.976
Entry Flow, veh/h	514	358	1299	840
Cap Entry Lane, veh/h	715	1299	0.806	958
Entry HV Adj Factor	0.947	0.971	162	0.946
Flow Entry, veh/h	487	348	1048	795
Cap Entry, veh/h	677	1261	0.155	906
V/C Ratio	0.718	0.276	4.8	0.877
Control Delay, s/veh	21.3	5.3	A	29.0
LOS	C	A	1	D
95th %tile Queue, veh	6	1		12

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	748	130	77	482	0	73	0	56	0	0	0
Future Volume (veh/h)	0	748	130	77	482	0	73	0	56	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1708	1728	1662	1711	1728	1854	1854	1733	1800	1800	1800
Adj Flow Rate, veh/h	0	822	143	85	530	0	80	0	62	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	1	1	4	1	1	0	0	7	0	0	0
Cap, veh/h	673	998	174	336	1400	0	135	0	112	0	2	0
Arrive On Green	0.00	0.70	0.70	0.06	0.82	0.00	0.08	0.00	0.08	0.00	0.00	0.00
Sat Flow, veh/h	1646	1418	247	1582	1711	0	1766	0	1473	0	1800	0
Grp Volume(v), veh/h	0	0	965	85	530	0	80	0	62	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1665	1582	1711	0	1766	0	1473	0	1800	0
Q Serve(g_s), s	0.0	0.0	40.7	1.2	8.1	0.0	4.4	0.0	4.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	40.7	1.2	8.1	0.0	4.4	0.0	4.1	0.0	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	673	0	1172	336	1400	0	135	0	112	0	2	0
V/C Ratio(X)	0.00	0.00	0.82	0.25	0.38	0.00	0.59	0.00	0.55	0.00	0.00	0.00
Avail Cap(c_a), veh/h	853	0	1351	567	1560	0	557	0	465	0	198	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	10.4	13.2	2.4	0.0	44.6	0.0	44.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	6.6	0.1	0.8	0.0	1.6	0.0	1.6	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	20.6	1.2	4.0	0.0	2.2	0.0	1.7	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	17.0	13.3	3.2	0.0	46.1	0.0	46.0	0.0	0.0	0.0
LnGrp LOS			B	B	A		D		D			
Approach Vol, veh/h	965			615			142			0		
Approach Delay, s/veh	17.0			4.6			46.1			0.0		
Approach LOS	B			A			D					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	86.7		13.1	11.4	75.3		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	10.1		6.4	3.2	42.7		0.0				
Green Ext Time (p_c), s	0.0	14.9		0.4	0.1	26.5		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			15.0									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	53	742	506	26	42	59
Future Vol, veh/h	53	742	506	26	42	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	57	798	544	28	45	63

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	572	0	-
Stage 1	-	-	558
Stage 2	-	-	912
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	4.8
Critical Hdwy Stg 2	-	-	4.8
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1011	-	-
Stage 1	-	-	633
Stage 2	-	-	460
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1011	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	598
Stage 2	-	-	460

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	21.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1011	-	-	-	171	558
HCM Lane V/C Ratio	0.056	-	-	-	0.264	0.114
HCM Control Delay (s)	8.8	-	-	-	33.4	12.3
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1	0.4

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	6	0	12	0	0	0	18	61	0	0	89	7
Future Vol, veh/h	6	0	12	0	0	0	18	61	0	0	89	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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	17	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	7	0	14	0	0	0	20	69	0	0	101	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	214	214	105	221	218	69	109	0	0	69	0	0
Stage 1	105	105	-	109	109	-	-	-	-	-	-	-
Stage 2	109	109	-	112	109	-	-	-	-	-	-	-
Critical Hdwy	5.67	4.9	5.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	4.67	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.67	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	783	756	978	739	684	1000	1494	-	-	1545	-	-
Stage 1	907	851	-	901	809	-	-	-	-	-	-	-
Stage 2	904	849	-	898	809	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	774	745	978	721	674	1000	1494	-	-	1545	-	-
Mov Cap-2 Maneuver	774	745	-	721	674	-	-	-	-	-	-	-
Stage 1	894	851	-	888	798	-	-	-	-	-	-	-
Stage 2	891	837	-	885	809	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	1.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1494	-	-	899	-	1545	-	-
HCM Lane V/C Ratio	0.014	-	-	0.023	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

HCM 2010 Signalized Intersection Summary
 3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	769	134	79	496	0	75	0	58	0	0	0
Future Volume (veh/h)	0	769	134	79	496	0	75	0	58	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1708	1728	1662	1711	1728	1854	1854	1733	1800	1800	1800
Adj Flow Rate, veh/h	0	845	147	87	545	0	82	0	64	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	1	1	4	1	1	0	0	7	0	0	0
Cap, veh/h	667	1004	175	319	1404	0	136	0	113	0	2	0
Arrive On Green	0.00	0.71	0.71	0.06	0.82	0.00	0.08	0.00	0.08	0.00	0.00	0.00
Sat Flow, veh/h	1646	1418	247	1582	1711	0	1766	0	1473	0	1800	0
Grp Volume(v), veh/h	0	0	992	87	545	0	82	0	64	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1665	1582	1711	0	1766	0	1473	0	1800	0
Q Serve(g_s), s	0.0	0.0	44.0	1.2	8.6	0.0	4.6	0.0	4.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	44.0	1.2	8.6	0.0	4.6	0.0	4.3	0.0	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	667	0	1179	319	1404	0	136	0	113	0	2	0
V/C Ratio(X)	0.00	0.00	0.84	0.27	0.39	0.00	0.60	0.00	0.56	0.00	0.00	0.00
Avail Cap(c_a), veh/h	842	0	1318	543	1521	0	543	0	453	0	193	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	10.8	14.7	2.4	0.0	45.7	0.0	45.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	7.3	0.2	0.8	0.0	1.6	0.0	1.6	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	22.2	1.3	4.3	0.0	2.3	0.0	1.8	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	18.1	14.9	3.2	0.0	47.3	0.0	47.2	0.0	0.0	0.0
LnGrp LOS			B	B	A		D		D			
Approach Vol, veh/h	992			632			146			0		
Approach Delay, s/veh	18.1			4.8			47.3			0.0		
Approach LOS	B			A			D					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	89.0		13.4	11.5	77.5		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	10.6		6.6	3.2	46.0		0.0				
Green Ext Time (p_c), s	0.0	15.5		0.4	0.1	25.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			15.8									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	54	763	520	27	43	61
Future Vol, veh/h	54	763	520	27	43	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	130	-	-	-	0	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	7	-	-3	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	58	820	559	29	46	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	588	0	-	0	1510	574
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	936	-
Critical Hdwy	4.1	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	997	-	-	-	172	548
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %	-	-	-	-		
Mov Cap-1 Maneuver	997	-	-	-	162	548
Mov Cap-2 Maneuver	-	-	-	-	162	-
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	450	-

Approach	EB		WB		SB	
HCM Control Delay, s	0.6		0		22.2	
HCM LOS					C	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	997	-	-	-	162	548
HCM Lane V/C Ratio	0.058	-	-	-	0.285	0.12
HCM Control Delay (s)	8.8	-	-	-	35.9	12.5
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1	0.4

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	6	0	12	0	0	0	19	63	0	0	92	7
Future Vol, veh/h	6	0	12	0	0	0	19	63	0	0	92	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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	17	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	7	0	14	0	0	0	22	72	0	0	105	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	225	225	109	232	229	72	113	0	0	72	0	0
Stage 1	109	109	-	116	116	-	-	-	-	-	-	-
Stage 2	116	116	-	116	113	-	-	-	-	-	-	-
Critical Hdwy	5.67	4.9	5.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	4.67	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.67	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	773	749	973	727	674	996	1489	-	-	1541	-	-
Stage 1	904	849	-	894	803	-	-	-	-	-	-	-
Stage 2	899	846	-	894	806	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	764	738	973	709	664	996	1489	-	-	1541	-	-
Mov Cap-2 Maneuver	764	738	-	709	664	-	-	-	-	-	-	-
Stage 1	890	849	-	881	791	-	-	-	-	-	-	-
Stage 2	886	833	-	881	806	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	1.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1489	-	-	892	-	1541	-	-
HCM Lane V/C Ratio	0.015	-	-	0.023	-	-	-	-
HCM Control Delay (s)	7.5	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

HCM 2010 Signalized Intersection Summary
3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	733	124	87	444	0	62	0	66	0	0	0
Future Volume (veh/h)	0	733	124	87	444	0	62	0	66	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1708	1728	1662	1711	1728	1854	1854	1733	1800	1800	1800
Adj Flow Rate, veh/h	0	805	136	96	488	0	68	0	73	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	1	1	4	1	1	0	0	7	0	0	0
Cap, veh/h	691	992	168	346	1391	0	142	0	118	0	2	0
Arrive On Green	0.00	0.70	0.70	0.07	0.81	0.00	0.08	0.00	0.08	0.00	0.00	0.00
Sat Flow, veh/h	1646	1425	241	1582	1711	0	1766	0	1473	0	1800	0
Grp Volume(v), veh/h	0	0	941	96	488	0	68	0	73	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1666	1582	1711	0	1766	0	1473	0	1800	0
Q Serve(g_s), s	0.0	0.0	38.9	1.4	7.4	0.0	3.6	0.0	4.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	38.9	1.4	7.4	0.0	3.6	0.0	4.7	0.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	691	0	1159	346	1391	0	142	0	118	0	2	0
V/C Ratio(X)	0.00	0.00	0.81	0.28	0.35	0.00	0.48	0.00	0.62	0.00	0.00	0.00
Avail Cap(c_a), veh/h	873	0	1369	578	1579	0	564	0	471	0	201	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	10.5	12.7	2.4	0.0	43.4	0.0	43.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	6.2	0.2	0.7	0.0	0.9	0.0	1.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	19.5	1.3	3.7	0.0	1.8	0.0	2.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	16.7	12.9	3.1	0.0	44.3	0.0	45.8	0.0	0.0	0.0
LnGrp LOS			B	B	A		D		D			
Approach Vol, veh/h	941			584			141			0		
Approach Delay, s/veh	16.7			4.7			45.1			0.0		
Approach LOS	B			A			D					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	85.2		13.4	11.6	73.6		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	9.4		6.7	3.4	40.9		0.0				
Green Ext Time (p_c), s	0.0	13.2		0.3	0.1	26.7		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			14.9									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	48	741		484	27	43
Future Vol, veh/h	48	741		484	27	43
Conflicting Peds, #/hr	0	0		0	0	0
Sign Control	Free	Free		Free	Free	Stop
RT Channelized	-	None		-	None	-
Storage Length	130	-		-	-	0
Veh in Median Storage, #	-	0		0	-	0
Grade, %	-	-7		7	-	-3
Peak Hour Factor	93	93		93	93	93
Heavy Vehicles, %	0	0		1	0	0
Mvmt Flow	52	797		520	29	46
						57

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	549	0	-	0	1436	535
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	901	-
Critical Hdwy	4.1	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1031	-	-	-	189	574
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	464	-
Platoon blocked, %	-	-	-	-		
Mov Cap-1 Maneuver	1031	-	-	-	180	574
Mov Cap-2 Maneuver	-	-	-	-	180	-
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	464	-

Approach	EB		WB		SB	
HCM Control Delay, s	0.5		0		20.9	
HCM LOS					C	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1031	-	-	-	180	574
HCM Lane V/C Ratio	0.05	-	-	-	0.257	0.099
HCM Control Delay (s)	8.7	-	-	-	31.8	12
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1	0.3

HCM 2010 Signalized Intersection Summary

5: E McMurray Rd & PTHS Access South

09/23/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘		
Traffic Volume (veh/h)	31	753	478	102	113	33		
Future Volume (veh/h)	31	753	478	102	113	33		
Number	5	2	6	16	7	14		
Initial Q (Q _b), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1854	1854	1729	1746	1854	1854		
Adj Flow Rate, veh/h	42	818	520	138	153	45		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.74	0.92	0.92	0.74	0.74	0.74		
Percent Heavy Veh, %	0	0	1	0	0	0		
Cap, veh/h	475	1218	886	1058	353	315		
Arrive On Green	0.07	0.66	0.51	0.51	0.20	0.20		
Sat Flow, veh/h	1766	1854	1729	1484	1766	1576		
Grp Volume(v), veh/h	42	818	520	138	153	45		
Grp Sat Flow(s), veh/h/ln	1766	1854	1729	1484	1766	1576		
Q Serve(g_s), s	0.6	17.1	13.2	1.9	4.8	1.5		
Cycle Q Clear(g_c), s	0.6	17.1	13.2	1.9	4.8	1.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	475	1218	886	1058	353	315		
V/C Ratio(X)	0.09	0.67	0.59	0.13	0.43	0.14		
Avail Cap(c_a), veh/h	640	1675	1151	1285	672	600		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	6.9	6.6	10.7	2.9	22.1	20.8		
Incr Delay (d2), s/veh	0.1	3.0	2.8	0.3	1.8	0.4		
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%), veh/ln	0.3	9.6	6.9	1.3	2.5	1.5		
LnGrp Delay(d), s/veh	6.9	9.6	13.6	3.1	23.9	21.2		
LnGrp LOS	A	A	B	A	C	C		
Approach Vol, veh/h		860	658		198			
Approach Delay, s/veh		9.5	11.4		23.3			
Approach LOS		A	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+R _c), s		46.5		16.6	9.1	37.3		
Change Period (Y+R _c), s		6.0		5.0	6.0	6.0		
Max Green Setting (G _{max}), s		56.0		23.0	9.0	41.0		
Max Q Clear Time (g _{c+l1}), s		19.1		6.8	2.6	15.2		
Green Ext Time (p _c), s		21.4		1.1	0.0	11.8		
Intersection Summary								
HCM 2010 Ctrl Delay			11.8					
HCM 2010 LOS			B					

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	12	0	0	0	19	57	0	0	84	7
Future Vol, veh/h	6	0	12	0	0	0	19	57	0	0	84	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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	17	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	7	0	14	0	0	0	22	65	0	0	95	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	208	208	99	215	212	65	103	0	0	65	0	0
Stage 1	99	99	-	109	109	-	-	-	-	-	-	-
Stage 2	109	109	-	106	103	-	-	-	-	-	-	-
Critical Hdwy	5.67	4.9	5.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	4.67	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.67	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	788	759	984	746	689	1005	1502	-	-	1550	-	-
Stage 1	911	854	-	901	809	-	-	-	-	-	-	-
Stage 2	904	849	-	905	814	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	779	748	984	727	679	1005	1502	-	-	1550	-	-
Mov Cap-2 Maneuver	779	748	-	727	679	-	-	-	-	-	-	-
Stage 1	897	854	-	887	797	-	-	-	-	-	-	-
Stage 2	890	836	-	892	814	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	1.9	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1502	-	-	905	-	1550	-	-
HCM Lane V/C Ratio	0.014	-	-	0.023	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Intersection

Int Delay, s/veh 2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	23	91	0	26	63	0
Future Vol, veh/h	23	91	0	26	63	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	-5	-8	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	1	0	0	3	0
Mvmt Flow	31	123	0	35	85	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	154	0	128
Stage 1	-	-	-	-	93
Stage 2	-	-	-	-	35
Critical Hdwy	-	-	4.1	-	4.83
Critical Hdwy Stg 1	-	-	-	-	3.83
Critical Hdwy Stg 2	-	-	-	-	3.83
Follow-up Hdwy	-	-	2.2	-	3.527
Pot Cap-1 Maneuver	-	-	1439	-	915
Stage 1	-	-	-	-	967
Stage 2	-	-	-	-	1000
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1439	-	915
Mov Cap-2 Maneuver	-	-	-	-	915
Stage 1	-	-	-	-	967
Stage 2	-	-	-	-	1000

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	915	-	-	1439	-
HCM Lane V/C Ratio	0.093	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection

Int Delay, s/veh 2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↑	↑	↑	
Traffic Vol, veh/h	23	0	0	11	15	0
Future Vol, veh/h	23	0	0	11	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-8	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	31	0	0	15	20	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	31	0	46
Stage 1	-	-	-	-	31
Stage 2	-	-	-	-	15
Critical Hdwy	-	-	4.1	-	4.8
Critical Hdwy Stg 1	-	-	-	-	3.8
Critical Hdwy Stg 2	-	-	-	-	3.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1595	-	989
Stage 1	-	-	-	-	1011
Stage 2	-	-	-	-	1020
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1595	-	989
Mov Cap-2 Maneuver	-	-	-	-	989
Stage 1	-	-	-	-	1011
Stage 2	-	-	-	-	1020

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	989	-	-	1595	-
HCM Lane V/C Ratio	0.02	-	-	-	-
HCM Control Delay (s)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 7.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↔	↑	↑	
Traffic Vol, veh/h	11	146	133	0	0	23
Future Vol, veh/h	11	146	133	0	0	23
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	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-4	-	-	8	-8	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	15	197	180	0	0	31

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	376	16	31
Stage 1	16	-	-
Stage 2	360	-	-
Critical Hdwy	5.6	5.8	4.1
Critical Hdwy Stg 1	4.6	-	-
Critical Hdwy Stg 2	4.6	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	684	1071	1595
Stage 1	1016	-	-
Stage 2	770	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	607	1071	1595
Mov Cap-2 Maneuver	607	-	-
Stage 1	901	-	-
Stage 2	770	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	7.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1595	-	607	1071	-	-
HCM Lane V/C Ratio	0.113	-	0.024	0.184	-	-
HCM Control Delay (s)	7.5	0	11.1	9.1	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.1	0.7	-	-

Intersection

Intersection Delay, s/veh 10.3

Intersection LOS B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	860	658	198
Demand Flow Rate, veh/h	860	663	198
Vehicles Circulating, veh/h	153	42	525
Vehicles Exiting, veh/h	570	971	42
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	14.4	5.9	7.1
Approach LOS	B	A	A

Lane	Left	Left	Bypass	Left
Designated Moves	LT	T	R	LR
Assumed Moves	LT	T	R	LR
RT Channelized Yield				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	138	4.976
Entry Flow, veh/h	860	525	1322	198
Cap Entry Lane, veh/h	1180	1322	1.000	808
Entry HV Adj Factor	1.000	0.990	138	1.000
Flow Entry, veh/h	860	520	1322	198
Cap Entry, veh/h	1180	1309	0.104	808
V/C Ratio	0.729	0.397	3.6	0.245
Control Delay, s/veh	14.4	6.5	A	7.1
LOS	B	A	0	A
95th %tile Queue, veh	7	2		1

HCM 2010 Signalized Intersection Summary
3: Center Church Rd (SIG)/Driveway & E McMurray Rd

09/23/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖ ↗ ↘ ↙ ↖											
Traffic Volume (veh/h)	0	733	124	87	444	0	62	0	66	0	0	0
Future Volume (veh/h)	0	733	124	87	444	0	62	0	66	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1728	1708	1728	1662	1711	1728	1854	1854	1733	1800	1800	1800
Adj Flow Rate, veh/h	0	805	136	96	488	0	68	0	73	0	0	0
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	1	1	4	1	1	0	0	7	0	0	0
Cap, veh/h	691	992	168	346	1391	0	142	0	118	0	2	0
Arrive On Green	0.00	0.70	0.70	0.07	0.81	0.00	0.08	0.00	0.08	0.00	0.00	0.00
Sat Flow, veh/h	1646	1425	241	1582	1711	0	1766	0	1473	0	1800	0
Grp Volume(v), veh/h	0	0	941	96	488	0	68	0	73	0	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1666	1582	1711	0	1766	0	1473	0	1800	0
Q Serve(g_s), s	0.0	0.0	38.9	1.4	7.4	0.0	3.6	0.0	4.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	38.9	1.4	7.4	0.0	3.6	0.0	4.7	0.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	691	0	1159	346	1391	0	142	0	118	0	2	0
V/C Ratio(X)	0.00	0.00	0.81	0.28	0.35	0.00	0.48	0.00	0.62	0.00	0.00	0.00
Avail Cap(c_a), veh/h	873	0	1369	578	1579	0	564	0	471	0	201	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	10.5	12.7	2.4	0.0	43.4	0.0	43.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	6.2	0.2	0.7	0.0	0.9	0.0	1.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	19.5	1.3	3.7	0.0	1.8	0.0	2.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	16.7	12.9	3.1	0.0	44.3	0.0	45.8	0.0	0.0	0.0
LnGrp LOS			B	B	A		D		D			
Approach Vol, veh/h	941			584			141			0		
Approach Delay, s/veh	16.7			4.7			45.1			0.0		
Approach LOS	B			A			D					
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	85.2		13.4	11.6	73.6		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.5	6.0	6.0		6.5				
Max Green Setting (Gmax), s	10.0	90.0		30.5	20.0	80.0		10.0				
Max Q Clear Time (g_c+l1), s	0.0	9.4		6.7	3.4	40.9		0.0				
Green Ext Time (p_c), s	0.0	13.2		0.3	0.1	26.7		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			14.9									
HCM 2010 LOS			B									

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑	↑		↑	↑
Traffic Vol, veh/h	48	741		484	27	43
Future Vol, veh/h	48	741		484	27	43
Conflicting Peds, #/hr	0	0		0	0	0
Sign Control	Free	Free		Free	Free	Stop
RT Channelized	-	None		-	None	-
Storage Length	130	-		-	-	0
Veh in Median Storage, #	-	0		0	-	0
Grade, %	-	-7		7	-	-3
Peak Hour Factor	93	93		93	93	93
Heavy Vehicles, %	0	0		1	0	0
Mvmt Flow	52	797		520	29	46
						57

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	549	0	-	0	1436	535
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	901	-
Critical Hdwy	4.1	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1031	-	-	-	189	574
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	464	-
Platoon blocked, %	-	-	-	-		
Mov Cap-1 Maneuver	1031	-	-	-	180	574
Mov Cap-2 Maneuver	-	-	-	-	180	-
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	464	-

Approach	EB		WB		SB	
HCM Control Delay, s	0.5		0		20.9	
HCM LOS					C	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1031	-	-	-	180	574
HCM Lane V/C Ratio	0.05	-	-	-	0.257	0.099
HCM Control Delay (s)	8.7	-	-	-	31.8	12
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1	0.3

HCM 2010 Signalized Intersection Summary

5: E McMurray Rd & PTHS Access South

09/23/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘
Traffic Volume (veh/h)	31	753	478	102	113	33
Future Volume (veh/h)	31	753	478	102	113	33
Number	5	2	6	16	7	14
Initial Q (Q _b), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1854	1854	1729	1746	1854	1854
Adj Flow Rate, veh/h	42	818	520	138	153	45
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.74	0.92	0.92	0.74	0.74	0.74
Percent Heavy Veh, %	0	0	1	0	0	0
Cap, veh/h	475	1218	886	1058	353	315
Arrive On Green	0.07	0.66	0.51	0.51	0.20	0.20
Sat Flow, veh/h	1766	1854	1729	1484	1766	1576
Grp Volume(v), veh/h	42	818	520	138	153	45
Grp Sat Flow(s), veh/h/ln	1766	1854	1729	1484	1766	1576
Q Serve(g_s), s	0.6	17.1	13.2	1.9	4.8	1.5
Cycle Q Clear(g_c), s	0.6	17.1	13.2	1.9	4.8	1.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	475	1218	886	1058	353	315
V/C Ratio(X)	0.09	0.67	0.59	0.13	0.43	0.14
Avail Cap(c_a), veh/h	640	1675	1151	1285	672	600
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.9	6.6	10.7	2.9	22.1	20.8
Incr Delay (d2), s/veh	0.1	3.0	2.8	0.3	1.8	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.3	9.6	6.9	1.3	2.5	1.5
LnGrp Delay(d), s/veh	6.9	9.6	13.6	3.1	23.9	21.2
LnGrp LOS	A	A	B	A	C	C
Approach Vol, veh/h		860	658		198	
Approach Delay, s/veh		9.5	11.4		23.3	
Approach LOS		A	B		C	
Timer	1	2	3	4	5	6
Assigned Phs		2		4	5	6
Phs Duration (G+Y+R _c), s		46.5		16.6	9.1	37.3
Change Period (Y+R _c), s		6.0		5.0	6.0	6.0
Max Green Setting (G _{max}), s		56.0		23.0	9.0	41.0
Max Q Clear Time (g _{c+l1}), s		19.1		6.8	2.6	15.2
Green Ext Time (p _c), s		21.4		1.1	0.0	11.8
Intersection Summary						
HCM 2010 Ctrl Delay			11.8			
HCM 2010 LOS			B			

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	12	0	0	0	19	57	0	0	84	7
Future Vol, veh/h	6	0	12	0	0	0	19	57	0	0	84	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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-8	-	-	0	-	-	2	-	-	-2	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	17	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	7	0	14	0	0	0	22	65	0	0	95	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	208	208	99	215	212	65	103	0	0	65	0	0
Stage 1	99	99	-	109	109	-	-	-	-	-	-	-
Stage 2	109	109	-	106	103	-	-	-	-	-	-	-
Critical Hdwy	5.67	4.9	5.4	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	4.67	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	4.67	3.9	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	788	759	984	746	689	1005	1502	-	-	1550	-	-
Stage 1	911	854	-	901	809	-	-	-	-	-	-	-
Stage 2	904	849	-	905	814	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	779	748	984	727	679	1005	1502	-	-	1550	-	-
Mov Cap-2 Maneuver	779	748	-	727	679	-	-	-	-	-	-	-
Stage 1	897	854	-	887	797	-	-	-	-	-	-	-
Stage 2	890	836	-	892	814	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	0	1.9	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1502	-	-	905	-	1550	-	-
HCM Lane V/C Ratio	0.014	-	-	0.023	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9.1	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Intersection

Int Delay, s/veh 2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	23	91	0	26	63	0
Future Vol, veh/h	23	91	0	26	63	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	5	-	-	-5	-8	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	1	0	0	3	0
Mvmt Flow	31	123	0	35	85	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	154	0	128
Stage 1	-	-	-	-	93
Stage 2	-	-	-	-	35
Critical Hdwy	-	-	4.1	-	4.83
Critical Hdwy Stg 1	-	-	-	-	3.83
Critical Hdwy Stg 2	-	-	-	-	3.83
Follow-up Hdwy	-	-	2.2	-	3.527
Pot Cap-1 Maneuver	-	-	1439	-	915
Stage 1	-	-	-	-	967
Stage 2	-	-	-	-	1000
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1439	-	915
Mov Cap-2 Maneuver	-	-	-	-	915
Stage 1	-	-	-	-	967
Stage 2	-	-	-	-	1000

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	915	-	-	1439	-
HCM Lane V/C Ratio	0.093	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection

Int Delay, s/veh 2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↑	↑	↑	
Traffic Vol, veh/h	23	0	0	11	15	0
Future Vol, veh/h	23	0	0	11	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-8	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	31	0	0	15	20	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	31	0	46
Stage 1	-	-	-	-	31
Stage 2	-	-	-	-	15
Critical Hdwy	-	-	4.1	-	4.8
Critical Hdwy Stg 1	-	-	-	-	3.8
Critical Hdwy Stg 2	-	-	-	-	3.8
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1595	-	989
Stage 1	-	-	-	-	1011
Stage 2	-	-	-	-	1020
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1595	-	989
Mov Cap-2 Maneuver	-	-	-	-	989
Stage 1	-	-	-	-	1011
Stage 2	-	-	-	-	1020

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	989	-	-	1595	-
HCM Lane V/C Ratio	0.02	-	-	-	-
HCM Control Delay (s)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 7.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	11	103	133	0	0	23
Future Vol, veh/h	11	103	133	0	0	23
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	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-4	-	-	8	-8	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	15	139	180	0	0	31

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	376	16	31
Stage 1	16	-	-
Stage 2	360	-	-
Critical Hdwy	5.6	5.8	4.1
Critical Hdwy Stg 1	4.6	-	-
Critical Hdwy Stg 2	4.6	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	684	1071	1595
Stage 1	1016	-	-
Stage 2	770	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	607	1071	1595
Mov Cap-2 Maneuver	607	-	-
Stage 1	901	-	-
Stage 2	770	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	7.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1595	-	607	1071	-	-
HCM Lane V/C Ratio	0.113	-	0.024	0.13	-	-
HCM Control Delay (s)	7.5	0	11.1	8.9	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.1	0.4	-	-

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A		B	
Traffic Vol, veh/h	0	43	0	133	103	0
Future Vol, veh/h	0	43	0	133	103	0
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, %	-6	-	-	8	-8	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	58	0	180	139	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	319	139	139
Stage 1	139	-	-
Stage 2	180	-	-
Critical Hdwy	5.2	5.6	4.1
Critical Hdwy Stg 1	4.2	-	-
Critical Hdwy Stg 2	4.2	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	755	936	1457
Stage 1	935	-	-
Stage 2	909	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	755	936	1457
Mov Cap-2 Maneuver	755	-	-
Stage 1	935	-	-
Stage 2	909	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1457	-	936	-	-
HCM Lane V/C Ratio	-	-	0.062	-	-
HCM Control Delay (s)	0	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection

Intersection Delay, s/veh 10.3

Intersection LOS B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	860	658	198
Demand Flow Rate, veh/h	860	663	198
Vehicles Circulating, veh/h	153	42	525
Vehicles Exiting, veh/h	570	971	42
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	14.4	5.9	7.1
Approach LOS	B	A	A

Lane	Left	Left	Bypass	Left
Designated Moves	LT	T	R	LR
Assumed Moves	LT	T	R	LR
RT Channelized Yield				
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	138	4.976
Entry Flow, veh/h	860	525	1322	198
Cap Entry Lane, veh/h	1180	1322	1.000	808
Entry HV Adj Factor	1.000	0.990	138	1.000
Flow Entry, veh/h	860	520	1322	198
Cap Entry, veh/h	1180	1309	0.104	808
V/C Ratio	0.729	0.397	3.6	0.245
Control Delay, s/veh	14.4	6.5	A	7.1
LOS	B	A	0	A
95th %tile Queue, veh	7	2		1