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TRAFFIC PLANNING AND DESIGN, INC.

WAWA – Lancaster Avenue (S.R. 0030) & Aberdeen Avenue
Transportation Impact Study
Radnor Township, Delaware County

For Submission To:
PennDOT District 6-0 & Radnor Township

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WAWA – LANCASTER AVENUE & ABERDEEN AVENUE TRANSPORTATION IMPACT STUDY

FOR SUBMISSION TO:

Radnor Township, Delaware County, PA
& PennDOT District 6-0

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EXECUTIVE SUMMARY

The purpose of this study is to examine the potential traffic impact associated with the Proposed WAWA Convenience Market with Gasoline on the roadway network in Radnor Township, Delaware County, PA. Based on this evaluation, the following conclusions were reached:

- The project site is located on the southeastern corner of Lancaster Avenue (S.R. 0030) and Aberdeen Avenue. The Existing Site consists of the following uses:
  - Sunoco – Ten (10) Fueling Positions, Four (4) Service Bays;
  - BP - Eight (8) Fueling Positions, One (1) Carwash Tunnel.
- Access to the Existing Site is provided by four (4) curb cuts to Lancaster Avenue (S.R. 0030) and two (2) curb cuts to Aberdeen Avenue.
- The Proposed Site will replace these existing uses with a 4,736 s.f. WAWA Convenience Market with 12 fueling positions.
- Access to the Proposed Site will be provided by:
  - One (1) full-access driveway to Lancaster Avenue (S.R. 0030)
  - One (1) right-in/right-out driveway to Lancaster Avenue (S.R. 0030)
  - One (1) full-access driveway to Aberdeen Avenue.
- The measured sight distances at the site driveways exceed all PennDOT Sight Distance Criteria.
- The Proposed Site will generated 104 new trips during the weekday A.M. peak hour, 84 new trips during the weekday P.M. peak hour, 113 new trips during the Saturday Midday peak hour, and 113 new trips during the Sunday peak hour.
- Based on the counts conducted at the Existing Site driveways, the Existing Site(s) generate 130 total trips during the weekday A.M. peak hour, 202 total trips during the weekday P.M. peak hour, 209 total trips during the Saturday Midday peak hour, and 124 total trips during the Sunday peak hour.
- Under all projected (build) conditions with the development of the proposed site and with site-related recommendations outlined in **Table II** (Without the PennDOT-requested northbound right turn (NBR) lane on Aberdeen Avenue), all study area intersections will satisfy PennDOT ILOS Standards. ***It should be noted that with the addition of the PennDOT requested northbound right turn lane on Aberdeen Avenue approaching Route 30, the ILOS drops to a ILOS D from the ILOS B in the projected conditions A.M. peak hour.***
- Levels of Service (LOS) for the study area intersections have been summarized in matrix form. **Table I** details the overall intersection LOS for each study area intersection:

TABLE I
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Peak Hour	2018 Exist	2020			2025			Satisfied ILOS?
			Base	Proj.[1]	Proj.[2]	Base	Proj.[1]	Proj.[2]	
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	AM Peak	B(17.2)	B(17.4)	C(22.7)	D(38.0)	B(17.8)	C(23.1)	D(40.4)	Yes[3]
	PM Peak	A(8.8)	B(10.2)	B(10.8)	B(13.1)	B(10.2)	B(10.7)	B(12.9)	
	SAT Peak	B(13.0)	B(13.1)	B(14.6)	B(15.9)	B(13.2)	B(14.5)	B(15.8)	
	SUN Peak	A(9.9)	A(10.0)	B(12.1)	B(12.2)	A(10.1)	B(12.2)	B(12.3)	
Lancaster Avenue (S.R. 0030) & Existing Western Sunoco Driveway	AM Peak	A(0.0)	A(0.0)	--		A(0.0)	--		N/A
	PM Peak	A(0.0)	A(0.0)	--		A(0.0)	--		
	SAT Peak	A(0.0)	A(0.0)	--		A(0.0)	--		
	SUN Peak	A(0.0)	A(0.0)	--		A(0.0)	--		
Lancaster Avenue (S.R. 0030) & Existing Eastern Sunoco Driveway/ Proposed RIRO Driveway	AM Peak	A(0.2)	A(0.2)	A(0.1)		A(0.2)	A(0.1)		N/A
	PM Peak	A(0.2)	A(0.2)	A(0.1)		A(0.2)	A(0.1)		
	SAT Peak	A(0.1)	A(0.1)	A(0.1)		A(0.1)	A(0.1)		
	SUN Peak	A(0.2)	A(0.2)	A(0.1)		A(0.2)	A(0.1)		
Lancaster Avenue (S.R. 0030) & Existing Western BP Driveway	AM Peak	A(0.0)	A(0.0)	--		A(0.0)	--		N/A
	PM Peak	A(0.1)	A(0.1)	--		A(0.1)	--		
	SAT Peak	A(0.2)	A(0.2)	--		A(0.2)	--		
	SUN Peak	A(0.0)	A(0.0)	--		A(0.0)	--		
Lancaster Avenue (S.R. 0030) & Existing Eastern BP Driveway/ Proposed Driveway	AM Peak	A(0.1)	A(0.1)	A(1.6)		A(0.1)	A(1.6)		Yes
	PM Peak	A(0.3)	A(0.3)	A(1.1)		A(0.3)	A(1.1)		
	SAT Peak	A(0.4)	A(0.3)	A(1.0)		A(0.4)	A(1.0)		
	SUN Peak	A(0.3)	A(0.3)	A(1.2)		A(0.3)	A(1.2)		
Aberdeen Avenue & Existing Northern Sunoco Driveway	AM Peak	A(0.5)	A(0.5)	--		A(0.5)	--		N/A
	PM Peak	A(0.4)	A(0.4)	--		A(0.4)	--		
	SAT Peak	A(0.5)	A(0.5)	--		A(0.5)	--		
	SUN Peak	A(0.6)	A(0.6)	--		A(0.6)	--		
Aberdeen Avenue & Existing Southern Sunoco Driveway/ Proposed Driveway	AM Peak	A(0.2)	A(0.2)	A(3.0)		A(0.2)	A(3.0)		Yes
	PM Peak	A(0.4)	A(0.4)	A(2.8)		A(0.4)	A(2.8)		
	SAT Peak	A(0.1)	A(0.1)	A(2.6)		A(0.1)	A(2.6)		
	SUN Peak	A(0.5)	A(0.5)	A(3.4)		A(0.5)	A(3.3)		
Lancaster Avenue (S.R. 0030) & Wayne Avenue	AM Peak	B(15.0)	B(15.1)	B(14.8)		B(15.4)	B(15.0)		Yes
	PM Peak	B(16.7)	B(16.4)	B(16.2)		B(16.6)	B(16.3)		
	SAT Peak	B(15.7)	B(15.7)	B(15.5)		B(15.9)	B(15.7)		
	SUN Peak	B(15.9)	B(16.0)	B(16.0)		B(16.0)	B(16.0)		

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = With Site-Related Recommendations
2 = With PennDOT-requested NBR lane
3 = Intersection doesn't meet ILOS Standards with PennDOT-requested NBR lane

TABLE I (CONTINUED)
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Peak Hour	2018 Exist	2020		2025		Satisfied ILOS?
			Base	Proj.[1]	Base	Proj.[1]	
Lancaster Avenue (S.R. 0030) & Louella Avenue	AM Peak	A(4.8)	A(4.9)	A(4.7)	A(5.1)	A(4.8)	Yes
	PM Peak	A(4.7)	A(4.5)	A(4.6)	A(4.5)	A(4.6)	
	SAT Peak	A(5.7)	A(5.6)	A(6.0)	A(5.7)	A(6.1)	
	SUN Peak	A(3.6)	A(3.6)	A(3.8)	A(3.7)	A(4.0)	
Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road	AM Peak	B(10.7)	B(10.6)	B(10.9)	B(11.0)	B(11.2)	Yes
	PM Peak	A(8.5)	A(8.5)	A(8.5)	A(8.4)	A(8.5)	
	SAT Peak	A(7.4)	A(7.4)	A(7.5)	A(7.5)	A(7.4)	
	SUN Peak	A(6.6)	A(6.6)	A(6.6)	A(6.7)	A(6.7)	
Aberdeen Avenue & Midland Avenue	AM Peak	A(9.9)	A(10.0)	A(9.9)	B(10.1)	A(10.0)	Yes
	PM Peak	A(8.6)	A(8.6)	A(8.5)	A(8.6)	A(8.6)	
	SAT Peak	A(8.1)	A(8.1)	A(8.0)	A(8.1)	A(8.1)	
	SUN Peak	A(7.6)	A(7.6)	A(7.6)	A(7.6)	A(7.6)	
Louella Avenue & Midland Avenue	AM Peak	A(2.2)	A(2.2)	A(2.2)	A(2.3)	A(2.2)	Yes
	PM Peak	A(2.8)	A(2.8)	A(2.8)	A(2.8)	A(2.8)	
	SAT Peak	A(3.6)	A(3.5)	A(3.6)	A(3.6)	A(3.5)	
	SUN Peak	A(4.1)	A(4.1)	A(4.1)	A(4.0)	A(4.0)	

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = With Site-Related Recommendations

Site-related recommendations are summarized in **Table II**:

TABLE II
RECOMMENDATIONS

Intersection	Recommendation
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	Although not needed to mitigate the impact of the Proposed Site, as requested by PennDOT, provide a separate northbound right turn (NBR) lane on Aberdeen Avenue
	Optimize signal timings and provide for Traffic Adaptive Signal Equipment
	Work with PennDOT and Radnor Township to provide/upgrade Pedestrian/ADA facilities at this intersection, to the extent feasible
Lancaster Avenue (S.R. 0030) & Western Proposed Driveway	Restrict left-turn ingress/egress physically via a raised island
	Provide adequate ingress radii to facilitate access to/from the site
	Work with PennDOT and Radnor Township to provide/upgrade Pedestrian/ADA facilities at this intersection, to the extent feasible
Lancaster Avenue (S.R. 0030) & Eastern Proposed Driveway	Provide adequate ingress/egress radii to facilitate access to/from the site
	Provide a "STOP"-sign on the NB egress approach of the driveway
	Work with PennDOT and Radnor Township to provide/upgrade Pedestrian/ADA facilities at this intersection, to the extent feasible
Aberdeen Avenue & Proposed Driveway	Provide adequate ingress/egress radii to facilitate access to/from the site
	Provide a "STOP"-sign on the WB egress approach of the driveway
	Provide "Do Not Block Intersection" signage on NB Aberdeen Avenue
	Work with PennDOT and Radnor Township to provide/upgrade Pedestrian/ADA facilities at this intersection, to the extent feasible

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Study (TIS) for a proposed WAWA Convenience Market with Gasoline in Radnor Township, Delaware County, Pennsylvania. The project site is located on the southeastern corner of Lancaster Avenue (S.R. 0030) and Aberdeen Avenue, as shown in **Figure 1**. The Existing Site consists of the following uses:

- Sunoco – Ten (10) Fueling Positions, Four (4) Service Bays;
- BP - Eight (8) Fueling Positions, One (1) Carwash Tunnel.

As shown in **Figure 2**, the Proposed Site will replace these existing uses with a 4,736 s.f. WAWA Convenience Market with 12 fueling positions.

Access to the Existing Site is provided by four (4) curb cuts to Lancaster Avenue (S.R. 0030) and two (2) curb cuts to Aberdeen Avenue. Access to the Proposed Site will be provided by:

- One (1) full-access driveway to Lancaster Avenue (S.R. 0030)
- One (1) right-in/right-out driveway to Lancaster Avenue (S.R. 0030)
- One (1) full-access driveway to Aberdeen Avenue.

TPD assumed future years of 2020 and 2025.

This report has been prepared in accordance with PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated July, 2017. The scope of this study has also been confirmed through PennDOT's Scoping Process, via the PennDOT Scoping Review, dated July 12, 2018. All relevant correspondence pertaining to this project has been included in **Appendix A**.

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**. Photographs of the study area intersections are included in **Appendix B**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	State Route	Functional Classification/ Roadway Type	Predominant Directional Orientation	Average Daily Traffic[1]	Posted Speed Limit
Lancaster Avenue	S.R. 0030	Urban Principal Arterial	East-West	28,086	25-35 mph
Aberdeen Avenue	N/A	Local Road	North-South	N/A	25 mph
Wayne Avenue	S.R. 1046	Urban Collector (North of S.R. 0030) Minor Arterial (South of S.R. 0030)	North-South	6,604	25 mph
Louella Avenue	N/A	Local Road	North-South	N/A	25 mph
St. Davids Road	N/A	Local Road	North-South	N/A	25 mph
Chamounix Road	N/A	Local Road	North-South	N/A	25 mph
Midland Avenue	N/A	Local Road	East-West	N/A	25 mph

1 = PennDOT iTMS Website (August 2018)

Bicycle and Pedestrian Facilities

Based on observations during field visits, pedestrian ramps, push buttons, and crosswalks, exist at all the signalized intersections in the Study Area. Sidewalk exists along both site frontages. There are no specific bicycle facilities in the Study Area.

Mass Transit Facilities

Bus service is provided in the Study Area via SEPTA Bus Routes 105 and 106, with stops at the intersection with Aberdeen Avenue and at Pembroke Avenue to the east. The closest train service is provided in the Study Area at the Wayne and St. Davids Stations on the SEPTA Paoli Line, located less than 1 mile away.

Crash Data Investigation

Crash data were obtained from PennDOT for the study area intersections. PennDOT defines a reportable crash as follows, "A reportable (crash) is one in which an injury or fatality occurs or if at least one of the vehicles involved requires towing from the scene." Reportable crashes were tabulated for the five-year time period beginning 01/01/2013 and ending 12/31/2017. For a given intersection, PennDOT considers a crash occurrence of 5 reportable, correctable crashes over a continuous twelve-month period during the past five years to be a threshold value, above which the intersection design should be reviewed to examine if corrective measures can be taken to enhance safety. The number of reportable crashes at the study area intersections is shown in **Table 2.**

TABLE 2
PENNDOT TOTAL REPORTABLE (CORRECTABLE) CRASH DATA

Study Area Intersection	Total Number of Reportable Crashes				
	2013	2014	2015	2016	2017
Lancaster Avenue & Aberdeen Avenue	5(3)	4(1)	2(1)	1(0)	1(1)
Lancaster Avenue & Louella Avenue	2(0)	2(1)	0(0)	1(0)	0(0)
Lancaster Avenue & Wayne Avenue	2(2)	3(1)	3(1)	2(2)	2(1)
Lancaster Avenue & St. Davids Road/Chamounix Road	7(3)	3(1)	2(0)	2(0)	1(0)
Aberdeen Road & Midland Avenue	0(0)	0(0)	0(0)	0(0)	1(0)
Louella Avenue & Midland Avenue	0(0)	0(0)	0(0)	0(0)	0(0)

Total Reportable Crashes (Correctable Crashes)

Based on a review of the crash data in **Table 2**, there were no twelve-month periods during the past five years where 5 or more crashes occurred that were deemed correctable.

EXISTING TRAFFIC CONDITIONS

Manual Turning Movement Counts

Manual traffic counts were conducted on 15-minute intervals during the weekday morning (7:00 to 9:00 A.M.), weekday evening (2:00 to 6:00 P.M.), Saturday midday (11:00 A.M. to 1:00 P.M.), and Sunday church (9:00 to 11:30 A.M.) peak periods. ***The Sunday church peak time period was determined based on correspondence with the local churches pertaining to the peak service attendance on Sunday.*** Data pertaining to heavy vehicles, pedestrians and transit vehicles were observed during the manual counts. Peak hours and count dates for the study area intersections are identified in **Table 3**.

TABLE 3
MANUAL TRAFFIC COUNT INFORMATION[1]

Intersection	Date of Traffic Counts[1]	Time Period	Intersection Peak Hour[2]
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	Thursday, May 31, 2018/ Tuesday, September 11, 2018	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:45 to 5:45 P.M.
	Saturday, June 2, 2018	SAT Midday	11:15 A.M. to 12:15 P.M.
	Sunday, September 9, 2018	SUN Peak	10:30 to 11:30 A.M.
Lancaster Avenue (S.R. 0030) & Existing Sunoco/BP Driveways (4)	Thursday, May 31, 2018/ Tuesday, September 11, 2018	Weekday A.M.	7:00 to 8:00 A.M.[3]
		Weekday P.M.	2:45 to 3:45 P.M.[3]
	Saturday, June 2, 2018	SAT Midday	11:00 A.M. to 12:00 P.M.[3]
	Sunday, September 9, 2018	SUN Peak	10:15 to 11:15 A.M.[3]
Aberdeen Avenue & Existing Sunoco Driveways (2)	Thursday, May 31, 2018/ Tuesday, September 11, 2018	Weekday A.M.	7:00 to 8:00 A.M.[3]
		Weekday P.M.	2:45 to 3:45 P.M.[3]
	Saturday, June 2, 2018	SAT Midday	11:00 A.M. to 12:00 P.M.[3]
	Sunday, September 9, 2018	SUN Peak	10:15 to 11:15 A.M.[3]
Lancaster Avenue (S.R. 0030) & Wayne Avenue	Tuesday, September 11, 2018	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:30 to 5:30 P.M
	Saturday, June 2, 2018	SAT Midday	11:45 A.M. to 12:45 P.M.
	Sunday, September 9, 2018	SUN Peak	10:30 to 11:30 A.M.
Lancaster Avenue (S.R. 0030) & Louella Avenue	Tuesday, September 11, 2018	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:30 to 5:30 P.M
	Saturday, September 8, 2018	SAT Midday	11:45 A.M. to 12:45 P.M.
	Sunday, September 9, 2018	SUN Peak	10:30 to 11:30 A.M.
Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road	Tuesday, September 11, 2018	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	5:00 to 6:00 P.M
	Saturday, September 8, 2018	SAT Midday	11:45 A.M. to 12:45 P.M.
	Sunday, September 9, 2018	SUN Peak	10:30 to 11:30 A.M.
Aberdeen Avenue & Midland Avenue	Tuesday, September 11, 2018	Weekday A.M.	7:30 to 8:30 A.M.
		Weekday P.M.	2:45 to 3:45 P.M
	Saturday, September 8, 2018	SAT Midday	11:00 A.M. to 12:00 P.M.
	Sunday, September 9, 2018	SUN Peak	10:30 to 11:30 A.M.
Louella Avenue & Midland Avenue	Tuesday, September 11, 2018	Weekday A.M.	7:15 to 8:15 A.M.
		Weekday P.M.	2:45 to 3:45 P.M
	Saturday, September 8, 2018	SAT Midday	11:30 A.M. to 12:30 P.M.
	Sunday, September 9, 2018	SUN Peak	9:45 to 10:45 A.M.

1 =Schools confirmed to be in session
2 =Peak Hour consists of the four consecutive 15-minute intervals where the highest traffic volumes occur
3 =Site Peak Hour

The 2018 Existing Condition traffic volumes for the weekday A.M., weekday P.M., Saturday Midday and Sunday church peak hours are illustrated in **Figures 3-6**. Manual traffic count data sheets are provided in **Appendix C**.

Speed Study

TPD conducted a speed study using a Decatur Radar Gun on Lancaster Avenue and Aberdeen Avenue, in the vicinity of the proposed site driveway locations. The travel speed, as defined by PennDOT, is established by determining the 85th percentile speed, which is the speed which 85% of the drivers travel at or below. Based on the speed study, the 85th percentile speed on Lancaster Avenue in the vicinity of the proposed site driveway locations was found to be **38 m.p.h.** eastbound, and **39 m.p.h.** westbound. The 85th percentile speed on Aberdeen Avenue in the vicinity of the proposed site driveway location was found to be **28 m.p.h.** northbound, and **28 m.p.h.** southbound. The speed study worksheets are included in **Appendix C**.

BASE (NO-BUILD) CONDITIONS

A background growth factor for the roadways in the study area was developed based on growth factors for August 2018 to July 2019 obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 0.00% per year in Delaware County for urban non-interstate roadways. However, to be conservative, TPD utilized the previous BPR growth trend factor of 0.38% per year. As such, the background growth factor was applied annually to yield overall growth percentages of 0.76% (0.38% per year compounded over 2 years) for the 2020 Opening Year and 2.69% (0.38% per year compounded over 7 years) for the 2025 Design Year.

The additional traffic volumes due to background growth were added to the existing traffic data to produce 2020 and 2025 Base Conditions, as illustrated in **Figures 7-14.**

SCHEDULED ROADWAY IMPROVEMENTS

Based on a review of the PennDOT 12-Year Plan and the DVRPC Transportation Improvement Program (TIP), there are no planned roadway improvements in the vicinity of the proposed site.

PROPOSED SITE ACCESS

Access to the Existing Site is provided by four (4) curb cuts to Lancaster Avenue (S.R. 0030) and two (2) curb cuts to Aberdeen Avenue. Access to the Proposed Site will be provided by:

- One (1) full-access driveway to Lancaster Avenue (S.R. 0030)
- One (1) right-in/right-out driveway to Lancaster Avenue (S.R. 0030)
- One (1) full-access driveway to Aberdeen Avenue.

Sight Distance Analysis

A sight distance analysis was prepared for the proposed site driveways. In general, recommended safe sight distances depend upon the posted speed limit and roadway grades. The existing sight distances at the proposed driveways were measured in accordance with PennDOT Publication 282 Highway Occupancy Permit Guidelines and compared to PennDOT's desirable sight distance standard, which is identified in 67 PA Code Chapter 441.8(h), "Access to and Occupancy of Highways by Driveways and Local Roads." In addition, measured sight distances at the proposed driveways were compared to PennDOT's safe stopping sight distance standard, which is calculated by the following equation:

$$\mathbf{SSSD = 1.47VT + V^2/[30(f \pm g)]}$$

SSSD = safe stopping sight distance (acceptable sight distance)
V = Vehicle Speed
T = Perception Reaction Time of Driver (2.5 seconds)
f = Coefficient of Friction for Wet Pavements
g = Percent of Roadway Grade Divided by 100

Table 4 shows the measured, desirable, acceptable (SSSD), and required sight distances at the site driveways for vehicles entering and exiting the site.

TABLE 4
SIGHT DISTANCE ANALYSIS
PROPOSED SITE DRIVEWAYS

	Direction	Posted Speed Limit (mph)	85th Percentile Speed (mph)	Sight Distances (feet)			
				Grade[1] (%)	DES[2]	SSSD[3]	EXIST
Lancaster Avenue Full-Access Driveway							
Exiting Movements	*To the left*	35	38	+1	300[4]	274	**500+**
	To the right	35	39	-1	350[4]	293	**500+**
Entering Left Turns	*Approaching same direction*	35	39	-1	N/A	293	**500+**
	Approaching opposite direction	35	38	+1	320[4]	274	**500+**
Lancaster Avenue RIRO Driveway							
Exiting Movements	*To the left*	35	38	+1	300[4]	274	**500+**
	To the right	35	39	-1	350[4]	293	**500+**
Entering Left Turns	*Approaching same direction*	35	39	-1	N/A	293	**500+**
	Approaching opposite direction	35	38	+1	320[4]	274	**500+**
Aberdeen Avenue Full-Access Driveway							
Exiting Movements	*To the left*	25	28	+2	250	174	**500+**
	To the right	25	28	-2	195	183	**500+**
Entering Left Turns	*Approaching same direction*	25	28	-2	N/A	183	**500+**
	Approaching opposite direction	25	28	+2	190	174	**500+**

DES = PennDOT Desirable Sight Distance
SSSD = PennDOT Acceptable Sight Distance
EXIST = Existing (measured) Sight Distance

1 = Roadway Grade Approaching Driveway
2 = Based on the posted speed
3 = Based on the 85th Percentile Speed
4 = Based on 4 Lane Cross-Section

As shown in **Table 4** above, the measured sight distances at the site driveways exceed all PennDOT Sight Distance Criteria.

TRIP GENERATION

The trip generation rates for the proposed site were obtained from the manual *Trip Generation*, Tenth Edition, 2017, an Institute of Transportation Engineers (ITE) Informational Report. The data are categorized by Land Use Codes, with total vehicular trips for a given land use estimated using an independent variable and statistically generated rates or equations.

Table 5 shows the rates/equations and directional percentages for the analyzed time periods.

TABLE 5
TRIP GENERATION DATA – PROPOSED SITE

Land Use (ITE #)	Time Period	Size (X)	Rate	Enter %	Pass-By %
Super Convenience Market/ Gas Station (#960)	Average Weekday	4.736 ksf	***T = 837.58*(X)***	50%	N/A
	Weekday AM Peak Hour		T = 83.14*(X)	50%	76%
			T = 137.38*(X) – 264.53		
	Weekday PM Peak Hour		***T = 69.28*(X)***	50%	76%
	Saturday Midday Peak Hour		***T = 63.80*(X)***	50%	66%[1]
			T = 104.71*(X) – 204.23		
	Sunday Peak Hour[2]		T = 63.80*(X)	50%	66%[1]
			T = 104.71*(X) – 204.23		
	Average Weekday	12 fp	T = 230.52*(X)	50%	N/A
	Weekday AM Peak Hour		T = 28.08*(X)	50%	76%
	Weekday PM Peak Hour		T = 22.96*(X)	50%	76%
	Saturday Midday Peak Hour		T = 23.26*(X)	50%	66%[1]
	Sunday Peak Hour[2]		T = 23.26*(X)	50%	66%[1]

T = Total Trips; X = Independent Variable, ksf = 1000 sf, fp = fueling position
[1]No data available, used 10% less than P.M. peak hour.
[2]No data available, used Saturday midday peak hour data.
Bold/Italics = Higher Generation Utilized

The results of the trip generation calculations are summarized in **Table 6**.

TABLE 6
TRIP GENERATION – PROPOSED DEVELOPMENT

Peak Hour	Land use Code	Size	Total	Pass-By Trips			New Trips		
				Total	Enter	Exit	Total	Enter	Exit
Average Weekday	#960	4.736 ksf	4282	N/A	N/A	N/A	4282	2141	2141
Weekday A.M.			438	334	167	167	104	52	52
Weekday P.M.			354	270	135	135	84	42	42
SAT Midday			331	218	109	109	113	57	56
SUN Peak			331	218	109	109	113	57	56

Based on the information contained in Table 6, the Proposed Site will generated 104 new trips during the weekday A.M. peak hour, 84 new trips during the weekday P.M. peak hour, 113 new trips during the Saturday Midday peak hour, and 113 new trips during the Sunday peak hour.

Based on the counts conducted at the Existing Site driveways, the Existing Site(s) generate 130 total trips during the weekday A.M. peak hour, 202 total trips during the weekday P.M. peak hour, 209 total trips during the Saturday Midday peak hour, and 124 total trips during the Sunday peak hour.

TRIP DISTRIBUTION

New Trips

The distribution and assignment of new trips generated by the proposed development was based upon existing traffic patterns in the Study Area. Based on this evaluation, the new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 7.**

TABLE 7
TRIP DISTRIBUTION PERCENTAGES – NEW TRIPS

Direction - To/From	Assignment - To/From	Distribution Percentage AM/PM/SAT/SUN
East	via Lancaster Avenue	36%
West	via Lancaster Avenue	27%
North	via Wayne Avenue	8%
North	via Aberdeen Avenue	7%
South	via Wayne Avenue	6%
North	via Chamounix Road	5%
South	via Aberdeen Avenue	4%
South	via St. Davids Road	3%
South	via Louella Avenue	2%
East	via Midland Avenue	2%

Pass-By Trips

Pass-by trips were established based on the existing thru traffic passing the proposed site driveways. The percentages used for the distribution of pass-by trips to the project site are shown below in **Table 8**.

TABLE 8
TRIP DISTRIBUTION PERCENTAGES – PASS-BY TRIPS

Direction	Pass-by Trip Distribution Percentages			
	Weekday A.M.	Weekday P.M.	SAT Midday	SUN Peak
WB Lancaster Avenue	45%	45%	45%	44%
EB Lancaster Avenue	42%	42%	41%	44%
NB Aberdeen Avenue	9%	6%	8%	7%
SB Aberdeen Avenue	4%	7%	6%	5%

Existing Site Re-distributions

With the development of the Proposed WAWA with Gasoline, the Existing Site will be replaced. Therefore, the traffic associated with the Existing Site was removed via a re-distribution of base condition traffic. TPD assumed that the Existing Site driveways display the pass-by characteristics of ITE #945 (Gasoline/Service Station with Convenience Market). Therefore TPD assumed the volumes at the Existing Site Driveways consisted of 62%, 56%, 46% (PM minus 10%), and 46% (PM minus 10%) pass-by trips during the weekday A.M., P.M., Saturday midday and Sunday peak hours, respectively. These re-distributions are included in **Figures 15-18.**

The distribution of site-generated trips for the proposed development during the weekday A.M., P.M., Saturday Midday and Sunday peak hours are shown in **Figures 19-22**. The trip assignment percentage information is included in **Appendix D**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed development and the re-distribution of base condition traffic were added to the base (no-build) conditions to develop respective projected (build) condition traffic volumes, as shown in **Figures 23-30**. Volume development spreadsheets are contained in **Appendix E.**

DRIVEWAY CLASSIFICATION

Driveways intersecting state roads are classified in the Pennsylvania Code, Title 67, Chapter 441. Low volume driveways are used by 25 to 750 vehicles per day. A medium volume driveway is used by 750 to 1500 vehicles per day. High volume driveways are used by more than 1500 vehicles per day. Based on the anticipated site trip generation and the assignment of site traffic, the classifications of the site driveways intersecting state roads are listed in **Table 9.**

TABLE 9
DRIVEWAY CLASSIFICATIONS

Road	Driveway	Weekday Trips	Weekday Vehicles	Driveway Type
Lancaster Avenue (S.R. 0030)	Eastern Driveway	1904	952	Medium Volume
Lancaster Avenue (S.R. 0030)	Western Driveway	666	333	Low Volume
Aberdeen Avenue	Proposed Driveway	1712	856	Medium Volume

Note: A "trip" equals an entering or an exiting vehicle. Therefore, weekday vehicles = weekday trips/2.

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 10**. 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 10
LEVEL OF SERVICE CRITERIA
UNSIGNALIZED AND SIGNALIZED INTERSECTIONS [1]

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 or v/c > 1.0	> 50 or v/c > 1.0

[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., P.M., Saturday midday, and Sunday church 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.

The following conditions were analyzed, as applicable:

- 2018 Existing conditions;
- 2020 Base conditions (Build-out year without development);
- 2025 Base conditions (Design year without development);
- 2020 Projected conditions (Build-out year with development);
- 2025 Projected conditions (Design year with development).

It should be noted that based on methodologies contained in Chapter 10 of PennDOT's Publication 46, TPD adjusted the following 2010 HCM default values in the *Synchro 10* capacity analysis. These adjustments were made at the signalized intersections within the study area for all time periods based on the study area location being classified as Suburban:

- Base saturation flow rates for signalized intersections. The saturation flow rate was changed from the default value of 1900 to 1800 based on Exhibit 10-9.
- Start-up lost time and extension of effective green time for signalized intersections. The startup lost time was changed from the default value of 2.0 seconds to 2.5 seconds. Based on the total clearance time (yellow plus all-red time) being greater than 5 seconds, the extension of green time was changed from the default value of 2 seconds to 3.5 seconds. These adjusted values are based on Exhibit 10-10.
- Critical and Follow-Up Gap times were adjusted relative to the difference between default and PA Default values contained in Exhibits 10-11 and 10-12. As requested by PennDOT, worksheets/tables showing how these values were calculated are included in **Appendix F**.

In addition, capacity analyses were conducted at the proposed site driveway intersections under the projected conditions. As requested, lane utilization calculations were assumed and calculated along Lancaster Avenue (S.R. 0030) along the site frontage due to the lack of left-turn lanes and the effects of left-turn movements in the Study Area. These Lane Utilization calculations are included in **Appendix G**. The capacity analysis worksheets are included in **Appendix H**. The PennDOT-approved signal plans are included in **Appendix I**.

In order to determine the true impact of the Proposed Site during the Design Year analysis, TPD optimized the signal timings under design year base (future no-build) conditions. TPD utilized these optimized timings under design year projected (future build) conditions.

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 LOS C for rural areas, and minimum LOS D for urban areas.

LEVELS OF SERVICE IN THE STUDY AREA

Level of service (LOS) matrices for the study area intersections are shown in **Tables 11-12**.

TABLE 11
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	Weekday AM							Weekday PM						
		2018 Exist	2020			2025			2018 Exist	2020			2025		
			Base	Proj.[1]	Proj.[2]	Base	Proj.[1]	Proj.[2]		Base	Proj.[1]	Proj.[2]	Base	Proj.[1]	Proj.[2]
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	EBLTR	B	B	C	C	B	C	C	A	A	A	A	A	A	A
	WBLTR	B	B	B	B	B	B	B	A	A	A	B	A	A	B
	NBLT	C	C	D	C	C	D	C	B	B	C	B	B	C	B
	NBR				C			C				B			B
	SBLTR	D	D	D	F(147.0)	D	D	F(163.8)	C	C	C	C	C	C	C
	ILOS	**B(17.2)**	**B(17.4)**	**C(22.7)**	**D(38.0)**	**B(17.8)**	**C(23.1)**	**D(40.4)**	**A(8.8)**	**B(10.2)**	**B(10.8)**	**B(13.1)**	**B(10.2)**	**B(10.7)**	**B(12.9)**
Lancaster Avenue (S.R. 0030) & Existing Western Sunoco Driveway	WBL	A	A	--		A	--		A	A	--		A	--	
	NBLR	A	A	--		A	--		A	A	--		A	--	
	ILOS	**A(0.0)**	**A(0.0)**	**--**		**A(0.0)**	**--**		**A(0.0)**	**A(0.0)**	**--**		**A(0.0)**	**--**	
Lancaster Avenue (S.R. 0030) & Existing Eastern Sunoco Driveway/ Proposed RIRO Driveway	WBL	A	A	--		A	--		A	A	--		A	--	
	NBL	C	C	--		C	--		B	B	--		B	--	
	NBR			A			A				A			A	
	ILOS	**A(0.2)**	**A(0.2)**	**A(0.1)**		**A(0.2)**	**A(0.1)**		**A(0.2)**	**A(0.2)**	**A(0.1)**		**A(0.2)**	**A(0.1)**	
Lancaster Avenue (S.R. 0030) & Existing Western BP Driveway	WBL	A	A	--		A	--		A	A	--		A	--	
	NBLR	A	A	--		A	--		A	A	--		A	--	
	ILOS	**A(0.0)**	**A(0.0)**	**--**		**A(0.0)**	**--**		**A(0.1)**	**A(0.1)**	**--**		**A(0.1)**	**--**	
Lancaster Avenue (S.R. 0030) & Existing Eastern BP Driveway/ Proposed Driveway	WBL	A	A	A		A	A		A	A	A		A	A	
	NBL	B	C	C		C	C		C	C	C		C	C	
	NBR														
	ILOS	**A(0.1)**	**A(0.1)**	**A(1.6)**		**A(0.1)**	**A(1.6)**		**A(0.3)**	**A(0.3)**	**A(1.1)**		**A(0.3)**	**A(1.1)**	
Aberdeen Avenue & Existing Northern Sunoco Driveway	WBLR	A	A	--		A	--		A	A	--		A	--	
	SBL	A	A	--		A	--		A	A	--		A	--	
	ILOS	**A(0.5)**	**A(0.5)**	**--**		**A(0.5)**	**--**		**A(0.4)**	**A(0.4)**	**--**		**A(0.4)**	**--**	
Aberdeen Avenue & Existing Southern Sunoco Driveway/ Proposed Driveway	WBLR	A	A	B		A	B		A	A	A		A	A	
	SBL	A	A	A		A	A		A	A	A		A	A	
	ILOS	**A(0.2)**	**A(0.2)**	**A(3.0)**		**A(0.2)**	**A(3.0)**		**A(0.4)**	**A(0.4)**	**A(2.8)**		**A(0.4)**	**A(2.8)**	
Lancaster Avenue (S.R. 0030) & Wayne Avenue	EBLTR	A	A	A		A	A		A	A	A		A	A	
	WBLT	A	A	A		A	A		A	A	A		A	A	
	WBR	A	A	A		A	A		A	A	A		A	A	
	NBL	D	D	D		D	D		D	D	D		D	D	
	NBTR	D	D	D		D	D		D	D	D		D	D	
	SBL	E	E	E		E	E		E	E	E		E	E	
	SBTR	D	D	D		D	D		E	E	E		E	E	
	ILOS	**B(15.0)**	**B(15.1)**	**B(14.8)**		**B(15.4)**	**B(15.0)**		**B(16.7)**	**B(16.4)**	**B(16.2)**		**B(16.6)**	**B(16.3)**	

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = Projected conditions with site-related recommendations
2 = With NBR lane requested by PennDOT

TABLE 11 (CONTINUED)
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	Weekday AM					Weekday PM				
		2018 Exist	2020		2025		2018 Exist	2020		2025	
			Base	Proj.[1]	Base	Proj.[1]		Base	Proj.[1]	Base	Proj.[1]
Lancaster Avenue (S.R. 0030) & Louella Avenue	EBTR	A	A	A	A	A	A	A	A	A	A
	WBLT	A	A	A	A	A	A	A	A	A	A
	NBLR	D	D	D	D	D	C	C	C	C	C
	ILOS	**A(4.8)**	**A(4.9)**	**A(4.7)**	**A(5.1)**	**A(4.8)**	**A(4.7)**	**A(4.5)**	**A(4.6)**	**A(4.5)**	**A(4.6)**
Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road	EBLTR	A	A	A	A	A	A	A	A	A	A
	WBLTR	B	B	B	B	B	A	A	A	A	A
	NBLTR	C	C	C	C	C	D	D	D	D	D
	SBLTR	C	C	C	C	C	D	D	D	D	D
	ILOS	**B(10.7)**	**B(10.6)**	**B(10.9)**	**B(11.0)**	**B(11.2)**	**A(8.5)**	**A(8.5)**	**A(8.5)**	**A(8.4)**	**A(8.5)**
Aberdeen Avenue & Midland Avenue	EBLTR	A	A	A	A	A	A	A	A	A	A
	WBLTR	A	A	A	A	A	A	A	A	A	A
	NBLTR	B	B	B	B	B	A	A	A	A	A
	SBLTR	A	A	A	A	A	A	A	A	A	A
	ILOS	**A(9.9)**	**A(10.0)**	**A(9.9)**	**B(10.1)**	**A(10.0)**	**A(8.6)**	**A(8.6)**	**A(8.5)**	**A(8.6)**	**A(8.6)**
Louella Avenue & Midland Avenue	WBLR	A	A	A	A	A	A	A	A	A	A
	SBL	A	A	A	A	A	A	A	A	A	A
	ILOS	**A(2.2)**	**A(2.2)**	**A(2.2)**	**A(2.3)**	**A(2.2)**	**A(2.8)**	**A(2.8)**	**A(2.8)**	**A(2.8)**	**A(2.8)**

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = Projected conditions with site-related recommendations

TABLE 12
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	SAT Midday							SUN Peak						
		2018	2020			2025			2018	2020			2025		
		Exist	Base	Proj.[1]	Proj.[2]	Base	Proj.[1]	Proj.[2]	Exist	Base	Proj.[1]	Proj.[2]	Base	Proj.[1]	Proj.[2]
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	EBLTR	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	WBLTR	A	A	A	B	A	A	B	A	A	A	A	A	A	A
	NBLT	D	D	D	C	D	D	C	D	D	D	D	D	D	D
	NBR				C			C				D			D
	SBLTR	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	ILOS	**B(13.0)**	**B(13.1)**	**B(14.6)**	**B(15.9)**	**B(13.2)**	**B(14.5)**	**B(15.8)**	**A(9.9)**	**A(10.0)**	**B(12.1)**	**B(12.2)**	**A(10.1)**	**B(12.2)**	**B(12.3)**
Lancaster Avenue (S.R. 0030) & Existing Western Sunoco Driveway	WBL	A	A	--		A	--		A	A	--		A	--	
	NBLR	A	A	--		A	--		A	A	--		A	--	
	ILOS	**A(0.0)**	**A(0.0)**	**--**		**A(0.0)**	**--**		**A(0.0)**	**A(0.0)**	**--**		**A(0.0)**	**--**	
Lancaster Avenue (S.R. 0030) & Existing Eastern Sunoco Driveway/ Proposed RIRO Driveway	WBL	A	A	--		A	--		A	A	--		A	--	
	NBL	B	B	--		B	--		B	B	--		B	--	
	NBR			A			A				A			A	
	ILOS	**A(0.1)**	**A(0.1)**	**A(0.1)**		**A(0.1)**	**A(0.1)**		**A(0.2)**	**A(0.2)**	**A(0.1)**		**A(0.2)**	**A(0.1)**	
Lancaster Avenue (S.R. 0030) & Existing Western BP Driveway	WBL	A	A	--		A	--		A	A	--		A	--	
	NBLR	C	C	--		C	--		B	B	--		B	--	
	ILOS	**A(0.2)**	**A(0.2)**	**--**		**A(0.2)**	**--**		**A(0.0)**	**A(0.0)**	**--**		**A(0.0)**	**--**	
Lancaster Avenue (S.R. 0030) & Existing Eastern BP Driveway/ Proposed Driveway	WBL	A	A	A		A	A		A	A	A		A	A	
	NBL	B	B	B		B	B		B	B	B		B	B	
	NBR														
	ILOS	**A(0.4)**	**A(0.3)**	**A(1.0)**		**A(0.4)**	**A(1.0)**		**A(0.3)**	**A(0.3)**	**A(1.2)**		**A(0.3)**	**A(1.2)**	
Aberdeen Avenue & Existing Northern Sunoco Driveway	WBLR	A	A	--		A	--		A	A	--		A	--	
	SBL	A	A	--		A	--		A	A	--		A	--	
	ILOS	**A(0.5)**	**A(0.5)**	**--**		**A(0.5)**	**--**		**A(0.6)**	**A(0.6)**	**--**		**A(0.6)**	**--**	
Aberdeen Avenue & Existing Southern Sunoco Driveway/ Proposed Driveway	WBLR	A	A	A		A	A		A	A	A		A	A	
	SBL	A	A	A		A	A		A	A	A		A	A	
	ILOS	**A(0.1)**	**A(0.1)**	**A(2.6)**		**A(0.1)**	**A(2.6)**		**A(0.5)**	**A(0.5)**	**A(3.4)**		**A(0.5)**	**A(3.3)**	
Lancaster Avenue (S.R. 0030) & Wayne Avenue	EBLTR	A	A	A		A	A		A	A	A		A	A	
	WBLT	A	A	A		A	A		A	A	A		A	A	
	WBR	A	A	A		A	A		A	A	D		D	A	
	NBL	E	E	E		E	E		D	D	D		D	D	
	NBTR	E	E	E		E	E		E	E	E		E	E	
	SBL	E	E	E		E	E		E	E	E		E	E	
	SBTR	E	E	E		E	E		E	E	E		E	E	
	ILOS	**B(15.7)**	**B(15.7)**	**B(15.5)**		**B(15.9)**	**B(15.7)**		**B(15.9)**	**B(16.0)**	**B(16.0)**		**B(16.0)**	**B(16.0)**	

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = Projected conditions with site-related recommendations
2 = With NBR lane requested by PennDOT

TABLE 12 (CONTINUED)
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	SAT Midday					SUN Peak				
		2018 Exist	2020		2025		2018 Exist	2020		2025	
			Base	Proj.[1]	Base	Proj.[1]		Base	Proj.[1]	Base	Proj.[1]
Lancaster Avenue (S.R. 0030) & Louella Avenue	EBTR	A	A	A	A	A	A	A	A	A	A
	WBLT	A	A	A	A	A	A	A	A	A	A
	NBLR	E	E	E	E	E	E	E	E	E	E
	ILOS	**A(5.7)**	**A(5.6)**	**A(6.0)**	**A(5.7)**	**A(6.1)**	**A(3.6)**	**A(3.6)**	**A(3.8)**	**A(3.7)**	**A(4.0)**
Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road	EBLTR	A	A	A	A	A	A	A	A	A	A
	WBLTR	A	A	A	A	A	A	A	A	A	A
	NBLTR	D	D	D	D	D	D	D	D	D	D
	SBLTR	D	D	D	D	D	D	D	D	D	D
	ILOS	**A(7.4)**	**A(7.4)**	**A(7.5)**	**A(7.5)**	**A(7.4)**	**A(6.6)**	**A(6.6)**	**A(6.6)**	**A(6.7)**	**A(6.7)**
Aberdeen Avenue & Midland Avenue	EBLTR	A	A	A	A	A	A	A	A	A	A
	WBLTR	A	A	A	A	A	A	A	A	A	A
	NBLTR	A	A	A	A	A	A	A	A	A	A
	SBLTR	A	A	A	A	A	A	A	A	A	A
	ILOS	**A(8.1)**	**A(8.1)**	**A(8.0)**	**A(8.1)**	**A(8.1)**	**A(7.6)**	**A(7.6)**	**A(7.6)**	**A(7.6)**	**A(7.6)**
Louella Avenue & Midland Avenue	WBLR	A	A	A	A	A	A	A	A	A	A
	SBL	A	A	A	A	A	A	A	A	A	A
	ILOS	**A(3.6)**	**A(3.5)**	**A(3.6)**	**A(3.6)**	**A(3.5)**	**A(4.1)**	**A(4.1)**	**A(4.1)**	**A(4.0)**	**A(4.0)**

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = Projected conditions with site-related recommendations
2 = With NBR lane requested by PennDOT

As shown in **Tables 11-12**, under all projected (build) conditions with the development of the proposed site, with site-related recommendations outlined in **Table 19 (Without the PennDOT-requested NBR on Aberdeen Avenue)**, all study area intersections will satisfy PennDOT ILOS Standards.

95TH PERCENTILE QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *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 **Tables 13-16**.

TABLE 13
95TH PERCENTILE QUEUE ANALYSIS

Intersection	Movement/ Storage		Weekday AM					
			2020			2025		
			Base	Proj.		Base	Proj.	
				1	2		1	2
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	EBLT	--	285	398	438	293	408	453
	EBTR	--	290	393	415	300	403	425
	WBLT	[80]/ [250]	373	370	423	385	383	465
	WBTR	--	340	363	408	350	373	415
	NBLT	[135]	255	393	305	260	398	308
	NBR	75			40			43
	SBLTR	--	375	353	723	383	360	765
Lancaster Avenue (S.R. 0030) & Existing Western Sunoco Driveway	WBL	--	<25	--		<25	--	
	NBLR	--	<25	--		<25	--	
Lancaster Avenue (S.R. 0030) & Existing Eastern Sunoco Driveway/ Proposed RIRO Driveway	WBL	--	<25	--		<25	--	
	NBL	--	<25	--		<25	--	
	NBR	--	<25	<25		<25	<25	
Lancaster Avenue (S.R. 0030) & Existing Western BP Driveway	WBLR	--	<25	--		<25	--	
	SBL	--	<25	--		<25	--	
Lancaster Avenue (S.R. 0030) & Existing Eastern BP Driveway/ Proposed Driveway	WBL	--	<25	<25		<25	<25	
	NBLR	--	<25	30		<25	33	
Aberdeen Avenue & Existing Northern Sunoco Driveway	WBLR	--	<25	--		<25	--	
	SBL	--	<25	--		<25	--	

Base = No-Build scenario, Proj. = Build scenario,
1 = With Site-Related Recommendations
2 = With NBR Requested By PennDOT
[Storage to next study area intersection]

TABLE 13 (CONTINUED)
95TH PERCENTILE QUEUE ANALYSIS

Intersection	Movement/ Storage		Weekday AM				
			2020			2025	
			Base	Proj.		Base	Proj.
				1	2		1	2
Aberdeen Avenue & Existing Southern Sunoco Driveway/ Proposed Driveway	WBLR	--	<25	<25		<25	<25
	SBL	[135]	<25	<25		<25	<25
Lancaster Avenue (S.R. 0030) & Wayne Avenue	EBLTR	1000+	157	160		163	165
	WBLT	625	154	136		163	146
	WBR	160	52	44		53	48
	NBL	70	55	55		57	57
	NBTR	1000+	149	149		152	152
	SBL	85	117	117		120	120
	SBTR	470	136	136		138	138
Lancaster Avenue (S.R. 0030) & Louella Avenue	EBTR	625	70	70		71	71
	WBLT	1000+	43	71		44	72
	NBLR	[400]	98	98		101	101
Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road	EBLT	1000+	198	200		200	203
	EBTR	1000+	183	185		188	190
	WBLT	1000+	375	385		390	403
	WBTR	1000+	335	340		350	363
	NBLTR	1000+	130	130		130	133
	SBLTR	1000+	148	150		148	150
Aberdeen Avenue & Midland Avenue	EBLTR	1000+	<25	<25		<25	<25
	WBLTR	1000+	<25	<25		<25	<25
	NBLTR	400	48	48		50	50
	SBLTR	[240]	<25	<25		<25	<25
Louella Avenue & Midland Avenue	WBLR	1000+	<25	<25		<25	<25
	SBL	400	<25	<25		<25	<25

Base = No-Build scenario, Proj. = Build scenario,
1 = With Site-Related Recommendations
2 = With NBR Requested By PennDOT
[Storage to next study area intersection]

TABLE 14
95TH PERCENTILE QUEUE ANALYSIS

Intersection	Movement/ Storage		Weekday PM					
			2020			2025		
			Base	Proj.		Base	Proj.	
				1	2		1	2
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	EBLT	--	195	198	223	193	190	220
	EBTR	--	190	188	215	195	190	220
	WBLT	[80]/ [250]	240	233	265	235	228	263
	WBTR	--	218	215	248	220	223	258
	NBLT	[135]	85	148	110	85	145	108
	NBR	75			<25			<25
	SBLTR	--	225	228	238	218	223	230
Lancaster Avenue (S.R. 0030) & Existing Western Sunoco Driveway	WBL	--	<25	--		<25	--	
	NBLR	--	<25	--		<25	--	
Lancaster Avenue (S.R. 0030) & Existing Eastern Sunoco Driveway/ Proposed RIRO Driveway	WBL	--	<25	--		<25	--	
	NBL	--	<25	--		<25	--	
	NBR	--	<25	<25		<25	<25	
Lancaster Avenue (S.R. 0030) & Existing Western BP Driveway	WBLR	--	<25	--		<25	--	
	SBL	--	<25	--		<25	--	
Lancaster Avenue (S.R. 0030) & Existing Eastern BP Driveway/ Proposed Driveway	WBL	--	<25	<25		<25	<25	
	NBLR	--	<25	<25		<25	<25	
Aberdeen Avenue & Existing Northern Sunoco Driveway	WBLR	--	<25	--		<25	--	
	SBL	--	<25	--		<25	--	
Aberdeen Avenue & Existing Southern Sunoco Driveway/ Proposed Driveway	WBLR	--	<25	<25		<25	<25	
	SBL	[135]	<25	<25		<25	<25	
Lancaster Avenue (S.R. 0030) & Wayne Avenue	EBLTR	1000+	184	180		192	187	
	WBLT	625	91	106		98	113	
	WBR	160	26	29		23	26	
	NBL	70	38	38		39	39	
	NBTR	1000+	146	144		147	145	
	SBL	85	136	130		137	132	
	SBTR	470	211	211		214	214	
Lancaster Avenue (S.R. 0030) & Louella Avenue	EBTR	625	138	133		129	123	
	WBLT	1000+	35	42		36	43	
	NBLR	[400]	39	39		40	39	

Base = No-Build scenario, Proj. = Build scenario,
1 = With Site-Related Recommendations
2 = With NBR Requested By PennDOT
[Storage to next study area intersection]

TABLE 14 (CONTINUED)
95TH PERCENTILE QUEUE ANALYSIS

Intersection	Movement/ Storage		Weekday PM			
			2020		2025	
			Base	Proj.	Base	Proj.
				1		1
Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road	EBLT	1000+	228	228	213	213
	EBTR	1000+	230	235	240	240
	WBLT	1000+	283	285	268	268
	WBTR	1000+	273	275	285	288
	NBLTR	1000+	78	78	78	78
	SBLTR	1000+	193	193	188	188
Aberdeen Avenue & Midland Avenue	EBLTR	1000+	<25	<25	<25	<25
	WBLTR	1000+	<25	<25	<25	<25
	NBLTR	400	<25	<25	<25	<25
	SBLTR	[240]	<25	<25	<25	<25
Louella Avenue & Midland Avenue	WBLR	1000+	<25	<25	<25	<25
	SBL	400	<25	<25	<25	<25

Base = No-Build scenario, Proj. = Build scenario,
1 = With Site-Related Recommendations
2 = With NBR Requested By PennDOT
[Storage to next study area intersection]

TABLE 15
95TH PERCENTILE QUEUE ANALYSIS

Intersection	Movement/ Storage		SAT Midday					
			2020			2025		
			Base	Proj.		Base	Proj.	
				1	2		1	2
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	EBLT	--	<25	<25	<25	<25	<25	<25
	EBTR	--	<25	<25	<25	<25	<25	<25
	WBLT	[80]/ [250]	288	285	343	298	288	343
	WBTR	--	258	270	325	270	280	335
	NBLT	[135]	225	315	235	228	313	235
	NBR	75			48			48
	SBLTR	--	345	343	353	350	340	353
Lancaster Avenue (S.R. 0030) & Existing Western Sunoco Driveway	WBL	--	<25	--		<25	--	
	NBLR	--	<25	--		<25	--	
Lancaster Avenue (S.R. 0030) & Existing Eastern Sunoco Driveway/ Proposed RIRO Driveway	WBL	--	<25	--		<25	--	
	NBL	--	<25	--		<25	--	
	NBR	--	<25	<25		<25	<25	
Lancaster Avenue (S.R. 0030) & Existing Western BP Driveway	WBLR	--	<25	--		<25	--	
	SBL	--	<25	--		<25	--	

Base = No-Build scenario, Proj. = Build scenario
1 = With Site-Related Recommendations
2 = With NBR Requested By PennDOT
[Storage to next study area intersection]

TABLE 15 (CONTINUED)
95TH PERCENTILE QUEUE ANALYSIS

Intersection	Movement/ Storage		SAT Midday			
			2020		2025	
			Base	Proj. 1	Base	Proj. 1
Lancaster Avenue (S.R. 0030) & Existing Eastern BP Driveway/ Proposed Driveway	WBL	--	<25	<25	<25	<25
	NBLR	--	<25	<25	<25	<25
Aberdeen Avenue & Existing Northern Sunoco Driveway	WBLR	--	<25	--	<25	--
	SBL	--	<25	--	<25	--
Aberdeen Avenue & Existing Southern Sunoco Driveway/ Proposed Driveway	WBLR	--	<25	<25	<25	<25
	SBL	[135]	<25	<25	<25	<25
Lancaster Avenue (S.R. 0030) & Wayne Avenue	EBLTR	1000+	149	148	155	153
	WBLT	625	67	67	68	68
	WBR	160	<25	<25	<25	<25
	NBL	70	87	87	89	89
	NBTR	1000+	178	178	181	179
	SBL	85	97	97	98	98
	SBTR	470	165	165	169	170
Lancaster Avenue (S.R. 0030) & Louella Avenue	EBTR	625	91	90	93	93
	WBLT	1000+	41	69	41	70
	NBLR	[400]	136	136	139	139
Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road	EBLT	1000+	180	175	190	165
	EBTR	1000+	180	175	190	178
	WBLT	1000+	218	223	223	213
	WBTR	1000+	215	218	218	225
	NBLTR	1000+	100	100	100	98
	SBLTR	1000+	153	158	158	153
Aberdeen Avenue & Midland Avenue	EBLTR	1000+	<25	<25	<25	<25
	WBLTR	1000+	<25	<25	<25	<25
	NBLTR	400	<25	<25	<25	<25
	SBLTR	[240]	<25	<25	<25	<25
Louella Avenue & Midland Avenue	WBLR	1000+	<25	<25	<25	<25
	SBL	400	<25	<25	<25	<25

Base = No-Build scenario, Proj. = Build scenario,
1 = With Site-Related Recommendations
2 = With NBR Requested By PennDOT
[Storage to next study area intersection]

TABLE 16
95TH PERCENTILE QUEUE ANALYSIS

Intersection	Movement/ Storage		SUN Peak					
			2020			2025		
			Base	Proj.		Base	Proj.	
				1	2		1	2
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	EBLT	--	<25	<25	<25	<25	<25	<25
	EBTR	--	<25	<25	<25	<25	<25	<25
	WBLT	[80]/ [250]	138	138	170	140	143	180
	WBTR	--	123	128	158	125	135	168
	NBLT	[135]	145	235	188	150	240	190
	NBR	75			38			38
	SBLTR	--	213	210	220	218	218	225
Lancaster Avenue (S.R. 0030) & Existing Western Sunoco Driveway	WBL	--	<25	--		<25	--	
	NBLR	--	<25	--		<25	--	
Lancaster Avenue (S.R. 0030) & Existing Eastern Sunoco Driveway/ Proposed RIRO Driveway	WBL	--	<25	--		<25	--	
	NBL	--	<25	--		<25	--	
	NBR	--	<25	<25		<25	<25	
Lancaster Avenue (S.R. 0030) & Existing Western BP Driveway	WBLR	--	<25	--		<25	--	
	SBL	--	<25	--		<25	--	
Lancaster Avenue (S.R. 0030) & Existing Eastern BP Driveway/ Proposed Driveway	WBL	--	<25	<25		<25	<25	
	NBLR	--	<25	<25		<25	<25	
Aberdeen Avenue & Existing Northern Sunoco Driveway	WBLR	--	<25	--		<25	--	
	SBL	--	<25	--		<25	--	
Aberdeen Avenue & Existing Southern Sunoco Driveway/ Proposed Driveway	WBLR	--	<25	<25		<25	<25	
	SBL	[135]	<25	<25		<25	<25	
Lancaster Avenue (S.R. 0030) & Wayne Avenue	EBLTR	1000+	97	98		103	103	
	WBLT	625	47	47		49	49	
	WBR	160	<25	<25		<25	<25	
	NBL	70	51	51		54	54	
	NBTR	1000+	141	142		144	144	
	SBL	85	105	106		104	107	
	SBTR	470	152	152		155	155	
Lancaster Avenue (S.R. 0030) & Louella Avenue	EBTR	625	42	42		46	47	
	WBLT	1000+	28	51		30	54	
	NBLR	[400]	73	73		77	77	

Base = No-Build scenario, Proj. = Build scenario,
1 = With Site-Related Recommendations
2 = With NBR Requested By PennDOT
[Storage to next study area intersection]

TABLE 16 (CONTINUED)
95TH PERCENTILE QUEUE ANALYSIS

Intersection	Movement/ Storage		SUN Peak			
			2020		2025	
			Base	Proj.	Base	Proj.
				1		1
Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road	EBLT	1000+	103	110	110	113
	EBTR	1000+	95	100	103	103
	WBLT	1000+	118	120	123	125
	WBTR	1000+	110	113	113	120
	NBLTR	1000+	90	90	93	93
	SBLTR	1000+	103	105	105	108
Aberdeen Avenue & Midland Avenue	EBLTR	1000+	<25	<25	<25	<25
	WBLTR	1000+	<25	<25	<25	<25
	NBLTR	400	<25	<25	<25	<25
	SBLTR	[240]	<25	<25	<25	<25
Louella Avenue & Midland Avenue	WBLR	1000+	<25	<25	<25	<25
	SBL	400	<25	<25	<25	<25

Base = No-Build scenario, Proj. = Build scenario,
1 = With Site-Related Recommendations
[Storage to next study area intersection]

Queue analysis worksheets are included with the capacity analysis worksheets provided in the **Appendix H.**

AUXILIARY TURN LANE ANALYSIS

Methodology

TPD evaluated auxiliary turn lane warrants at the Proposed Full-Access Driveways. The warrant analysis methodology contained within Chapter 11 of PennDOT's *Publication 46*, Section 11.17 and Strike-Off Letter 470-08-07 was utilized for this evaluation.

Findings

Table 17 summarizes the results of the auxiliary turn lane analysis at the site access intersections.

TABLE 17
AUXILIARY TURN LANE ANALYSIS SUMMARY

Intersection	Auxiliary Lane	Warrant Satisfied?	Required Lane Length	Proposed Lane Length
Proposed Full-Access Lancaster Avenue Driveway	WB Left-Turn Lane	Yes	75'	None
	EB Right-Turn Lane	No	--	--
Proposed RIRO Lancaster Avenue Driveway	EB Right-Turn Lane	No	--	--
Proposed Aberdeen Avenue Driveway	SB Left-Turn Lane	No	--	--
	NB Right-Turn Lane	No	--	--

As shown in Table 17, left-turn lane warrants are satisfied at the Proposed Full-Access Driveway on Lancaster Avenue (S.R. 0030). However, limited ROW is available and left-turn lanes are not currently provided along this area of the Lancaster Avenue corridor due to the location of existing access, parking and businesses located in close proximity to the roadway. It should also be noted that, based on a review of the existing operations along the Lancaster Avenue (S.R. 0030) site frontage, the inside WB lane was being utilized for left-turn movements into the Existing Sunoco,

the Existing BP, and onto SB Aberdeen Avenue. Therefore, it is TPD's opinion that the provision of a left-turn lane is not practical/necessary.

The calculations for the auxiliary turn lane warrants are included in **Appendix J**.

GAP ANALYSIS

TPD performed a Gap Study at the Proposed Full-Access Driveway locations during the respective peak hours at the adjacent signalized intersection, utilizing MIOVISION Video Technology. The number and duration of gaps available for these movements were documented. The duration of gaps in traffic directly relates to the capacity (number of vehicles) that can make the identified movements. In order for a vehicle to make the identified movements at these locations, a large enough gap in traffic must be present for those movements to occur. TPD determined the necessary Critical Gap and Follow-Up Gap needed for the evaluated movements based on values contained in Exhibit 10-11 and Exhibit 10-12 of PennDOT Pub 46, and PA Default Values. Based on this, the following peak hours and gaps were utilized:

- Weekday A.M. – 7:45-8:45 A.M.
- Weekday P.M. – 4:45-5:45 P.M.
- SAT Midday – 11:15 A.M.-12:15 P.M.
- Left-Turn Egress – Lancaster Avenue - Critical Gap of 7.7 seconds and Follow-Up Gap of 2.8 seconds
- Left-Turn Egress – Aberdeen Avenue - Critical Gap of 6.4 seconds and Follow-Up Gap of 3.0 seconds

The number and time duration of gaps counted during the peak hours were compared to the standards outlined above, in order to determine the total number of vehicles that can be served during the peak hours. It should be noted that, since the gap counts were performed during existing conditions, the results account for queuing from adjacent signals. The Sunday peak hour gaps were not analyzed, as the volumes as vehicular volumes along Lancaster Avenue are lower than during the other peak periods.

Gap Study Data (Existing Conditions) are included in **Appendix K.**

TPD then compared the following:
- Total existing capacity calculated based on the field gap counts (**Appendix K**)
- Total future capacity calculated based on projection of future growth.
- Projected vehicle demand (left-turn egress).

Table 18 shows this comparison.

TABLE 18
GAP ANALYSIS – LEFT-TURN EGRESS

Intersection	Peak Hour	Egress Movement[1]	2018 Existing[2]	Existing Gap Capacity[3]	2025 Projected[2]	Reduction Factor[4]	Future Gap Capacity[5]
Lancaster Avenue (S.R. 0030) Full-Access Driveway	A.M.	26	1949	72	1997	0.976	70
	P.M.	21	1986	75	2028	0.979	73
	SAT	21	1737	102	1772	0.980	99
Aberdeen Avenue Full-Access Driveway	A.M.	12	335	482	361	0.928	447
	P.M.	12	268	636	294	0.912	580
	SAT	10	284	491	309	0.919	451

[1]Left-Turn Egress, [2]Conflicting Vehicles on Respective Main Street, [3]Appendix J
*[4]2018 Existing/2025 Projected, [5]Existing Gap Capacity * Reduction Factor*

As shown in **Table 18**, sufficient gaps will exist to serve the anticipated number of left-turn egress vehicles in both existing and future gap scenarios.

RECOMMENDATIONS

TPD has made the following recommendations in relation to the Proposed WAWA in Radnor Township, as outlined in **Table 19**:

TABLE 19
RECOMMENDATIONS

Intersection	Recommendation
Lancaster Avenue (S.R. 0030) & Aberdeen Avenue	Although not needed to mitigate the impact of the Proposed Site, as requested by PennDOT, provide a northbound right turn (NBR) lane on Aberdeen Avenue
	Optimize signal timings and provide for Traffic Adaptive Signal Equipment
	Work with PennDOT and Radnor Township to provide/upgrade Pedestrian/ADA facilities at this intersection, to the extent feasible
Lancaster Avenue (S.R. 0030) & Western Proposed Driveway	Restrict left-turn ingress/egress physically via a raised island
	Provide adequate ingress radii to facilitate access to/from the site
	Work with PennDOT and Radnor Township to provide/upgrade Pedestrian/ADA facilities at this intersection, to the extent feasible
Lancaster Avenue (S.R. 0030) & Eastern Proposed Driveway	Provide adequate ingress/egress radii to facilitate access to/from the site
	Provide a "STOP"-sign on the NB egress approach of the driveway
	Work with PennDOT and Radnor Township to provide/upgrade Pedestrian/ADA facilities at this intersection, to the extent feasible
Aberdeen Avenue & Proposed Driveway	Provide adequate ingress/egress radii to facilitate access to/from the site
	Provide a "STOP"-sign on the WB egress approach of the driveway
	Provide "Do Not Block Intersection" signage on NB Aberdeen Avenue
	Work with PennDOT and Radnor Township to provide/upgrade Pedestrian/ADA facilities at this intersection, to the extent feasible

As part of PennDOT's HOP process, the applicant will coordinate and fund the implementation of the recommended roadway improvements. Preliminary construction costs have not been determined at this time.

CONCLUSIONS

Based on the results of the transportation impact study, TPD offers the following conclusions:

- The project site is located on the southeastern corner of Lancaster Avenue (S.R. 0030) and Aberdeen Avenue. The Existing Site consists of the following uses:
  - Sunoco – Ten (10) Fueling Positions, Four (4) Service Bays;
  - BP - Eight (8) Fueling Positions, One (1) Carwash Tunnel.
- Access to the Existing Site is provided by four (4) curb cuts to Lancaster Avenue (S.R. 0030) and two (2) curb cuts to Aberdeen Avenue.
- The Proposed Site will replace these existing uses with a 4.736 s.f. WAWA Convenience Market with 12 fueling positions.

- Access to the Proposed Site will be provided by:
  - One (1) full-access driveway to Lancaster Avenue (S.R. 0030)
  - One (1) right-in/right-out driveway to Lancaster Avenue (S.R. 0030)
  - One (1) full-access driveway to Aberdeen Avenue.
- The measured sight distances at the site driveways exceed all PennDOT Sight Distance Criteria.
- The Proposed Site will generated 104 new trips during the weekday A.M. peak hour, 84 new trips during the weekday P.M. peak hour, 113 new trips during the Saturday Midday peak hour, and 113 new trips during the Sunday peak hour.
- Based on the counts conducted at the Existing Site driveways, the Existing Site(s) generate 130 total trips during the weekday A.M. peak hour, 202 total trips during the weekday P.M. peak hour, 209 total trips during the Saturday Midday peak hour, and 124 total trips during the Sunday peak hour
- Under all projected (build) conditions with the development of the proposed site and with site-related recommendations outlined in Table 19 (without the PennDOT-requested NBR on Aberdeen Avenue), all study area intersections will satisfy PennDOT ILOS Standards. ***It should be noted that with the addition of the PennDOT requested northbound right turn lane on Aberdeen Avenue approaching Route 30, the ILOS drops to a ILOS D from the ILOS B in the projected conditions A.M. peak hour.***

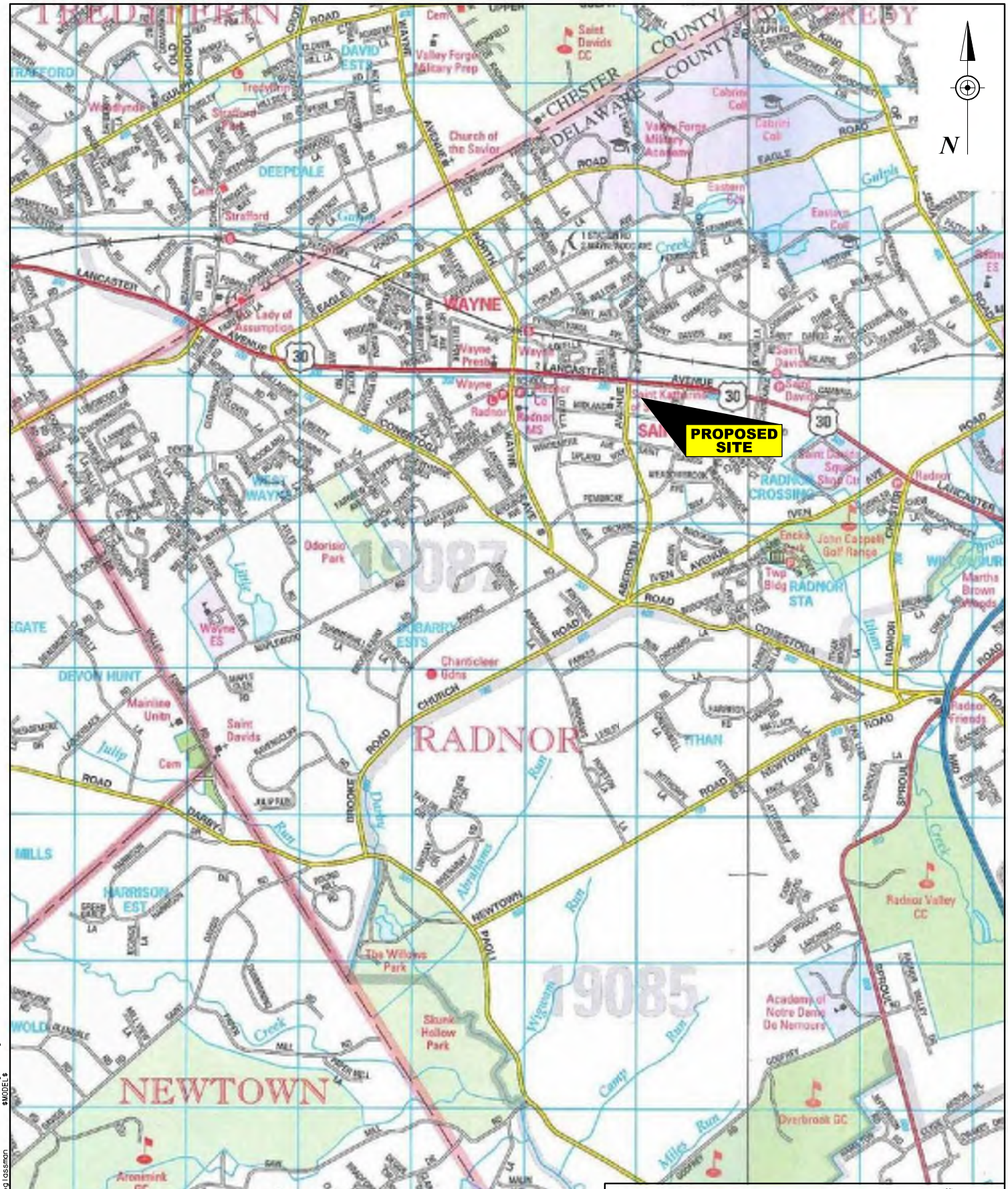

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FIGURE 1

STUDY AREA

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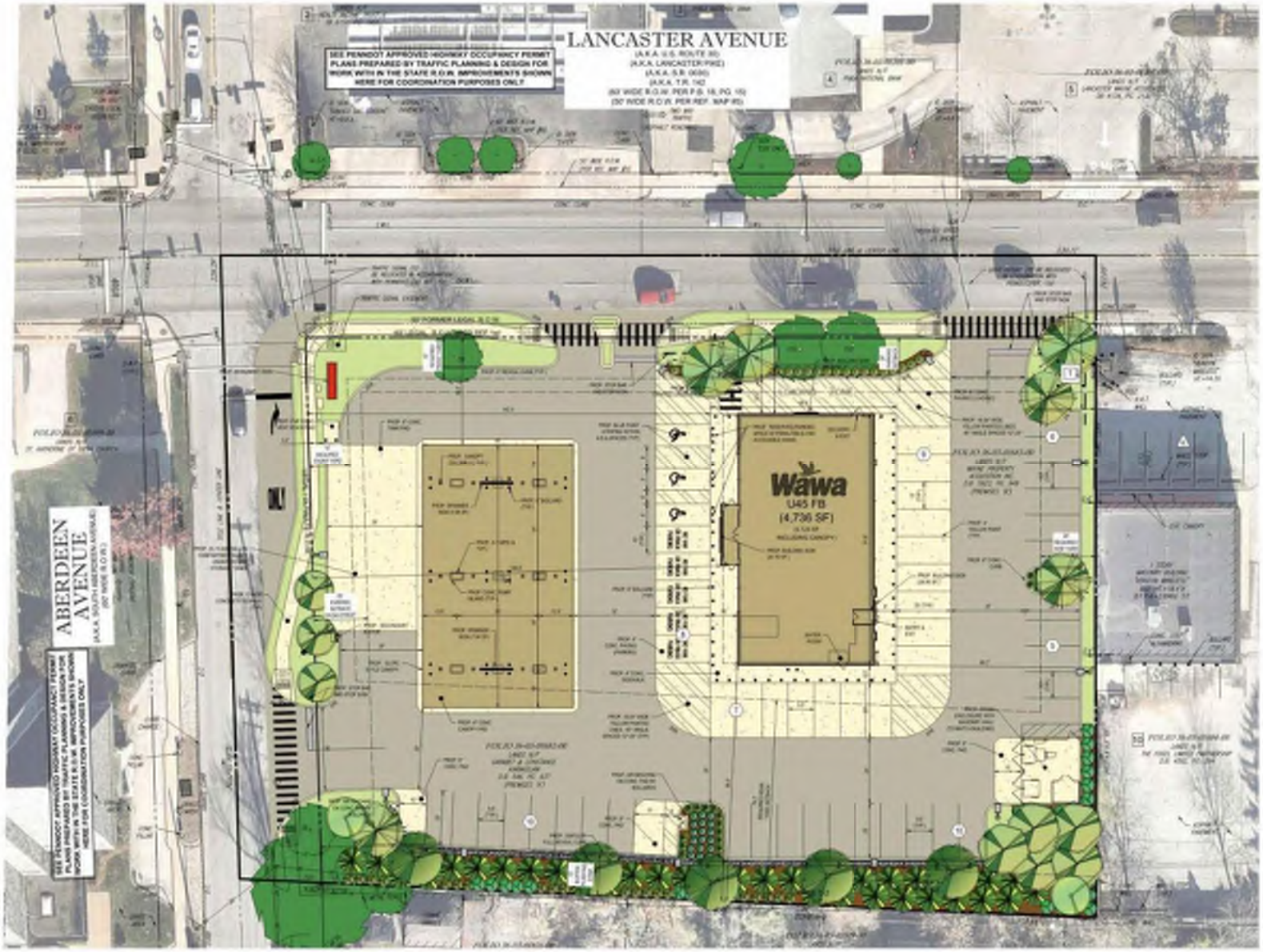

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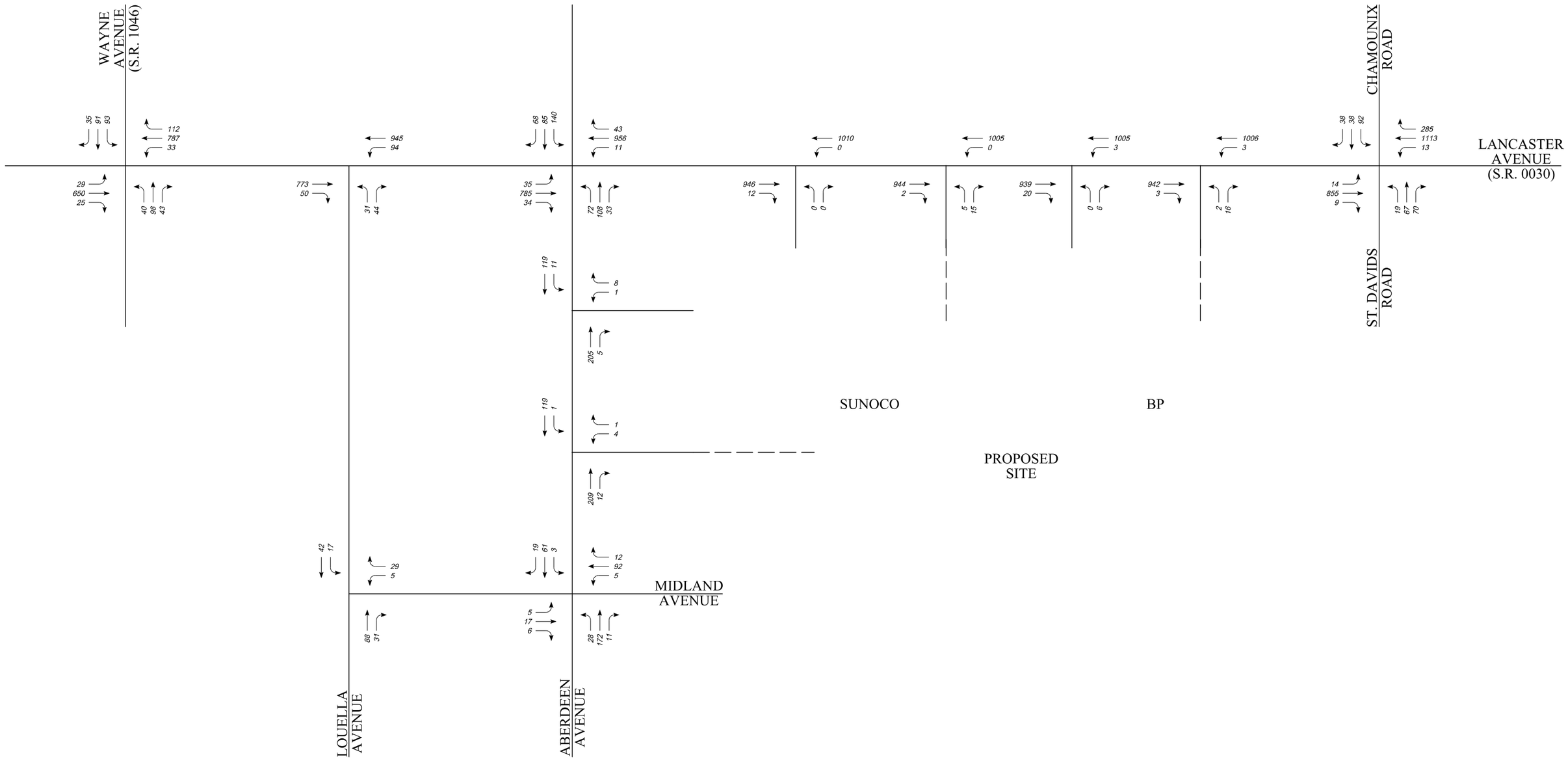
FIGURE 2

PROPOSED SITE PLAN



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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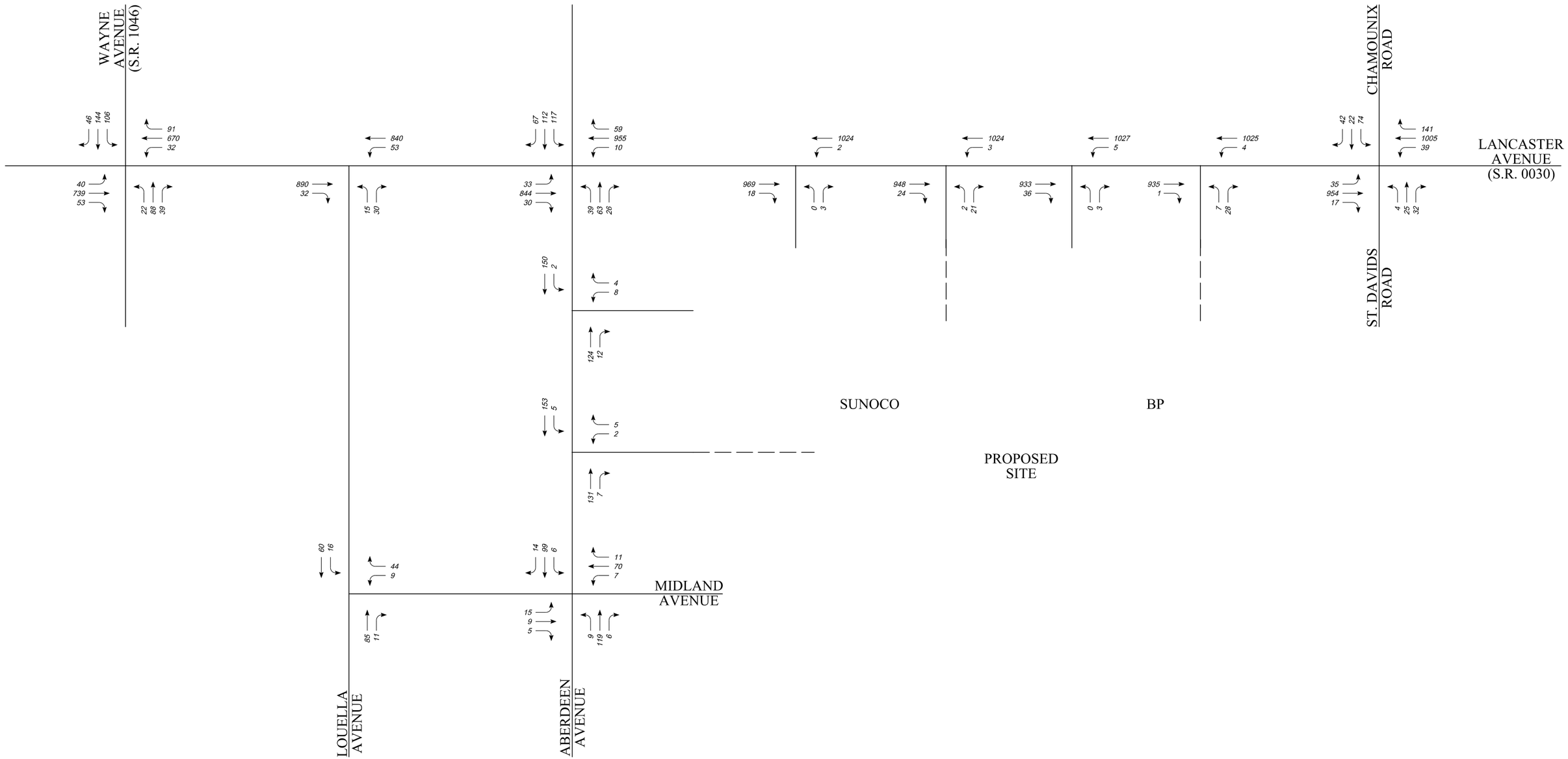
FIGURE 3

2018 EXISTING CONDITIONS
WEEKDAY AM PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:18 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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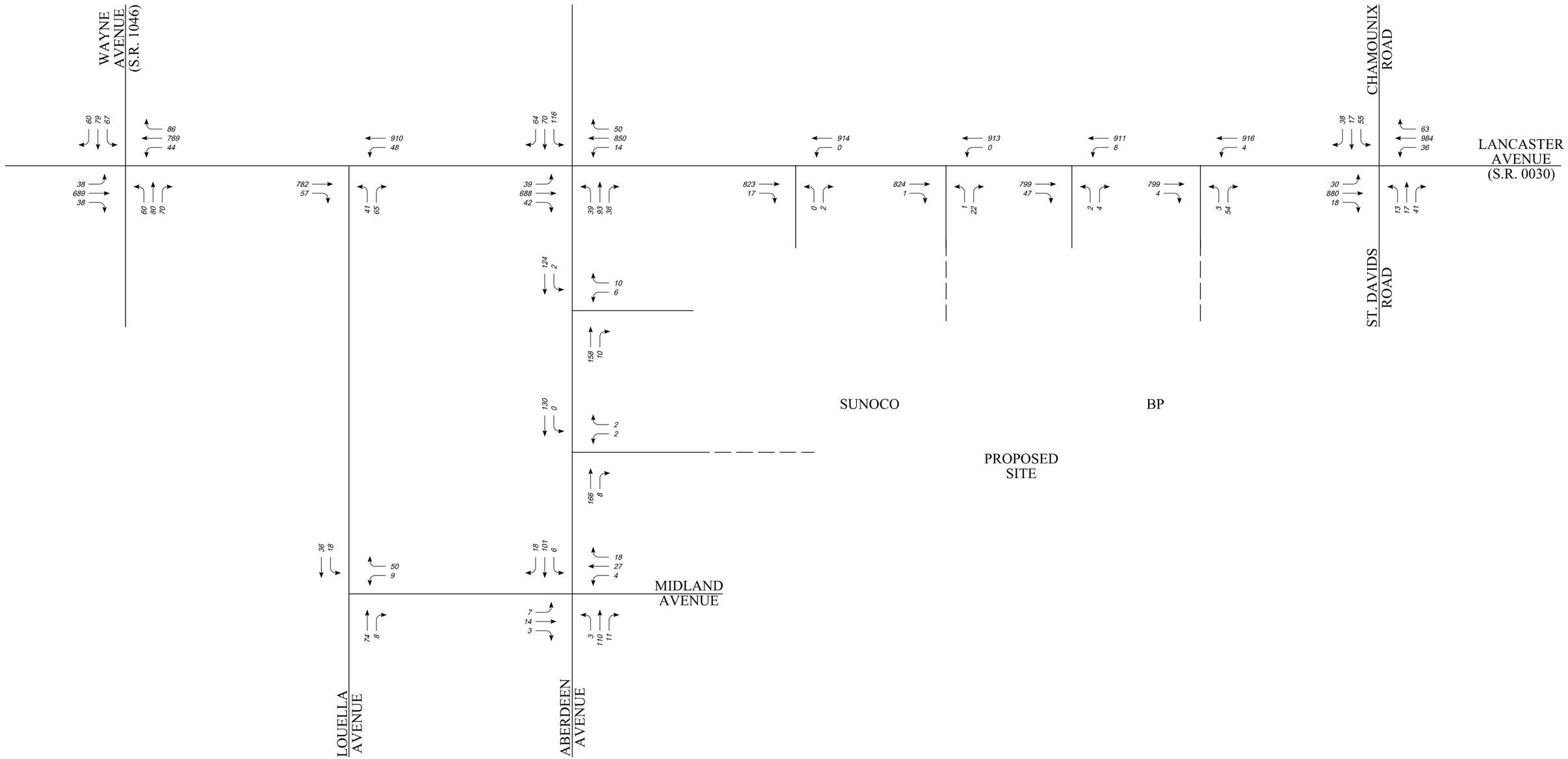
FIGURE 4

2018 EXISTING CONDITIONS
WEEKDAY PM PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassmon\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:19 PM pglassmon $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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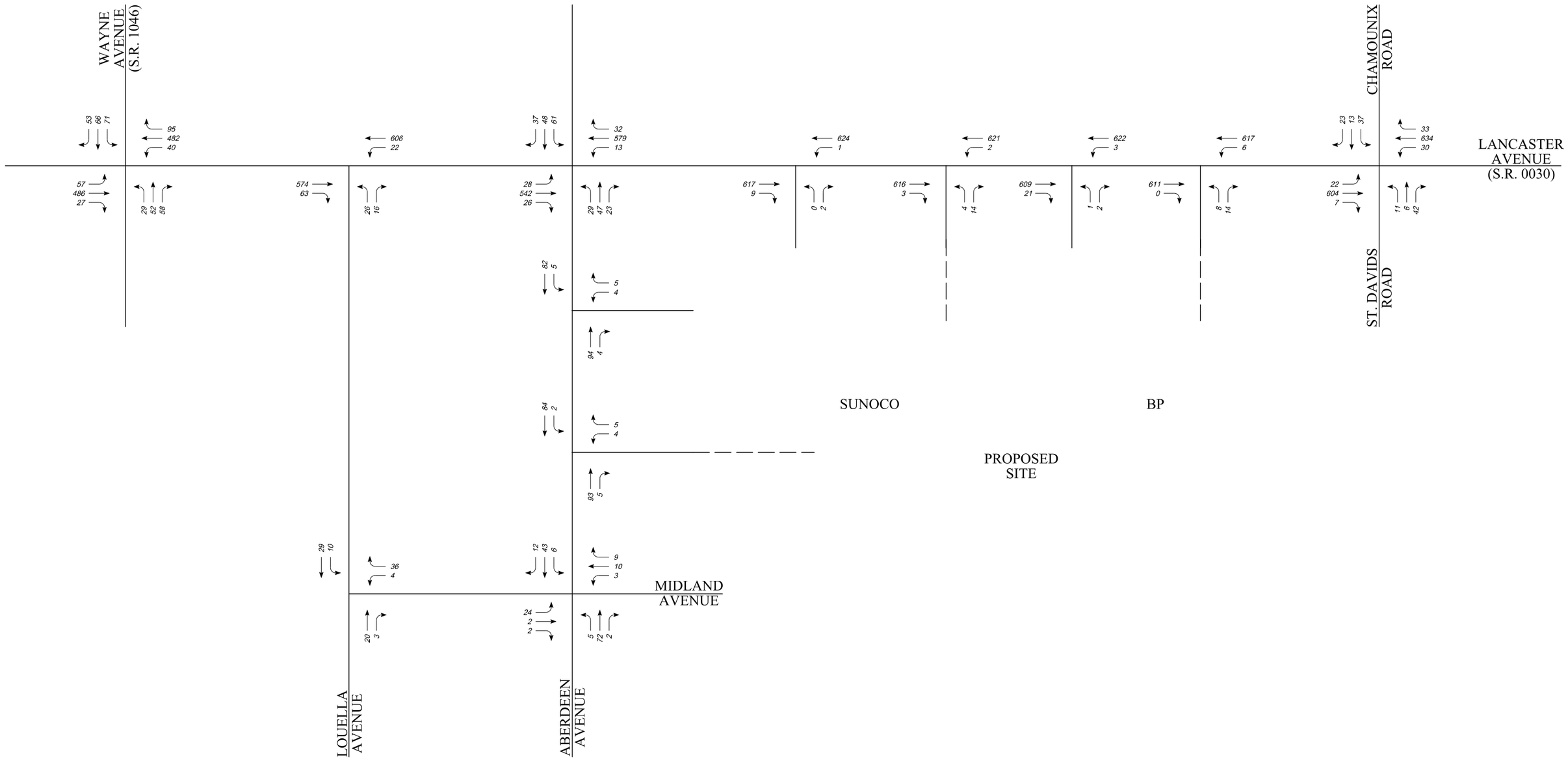
FIGURE 5

2018 EXISTING CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES

N

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:20 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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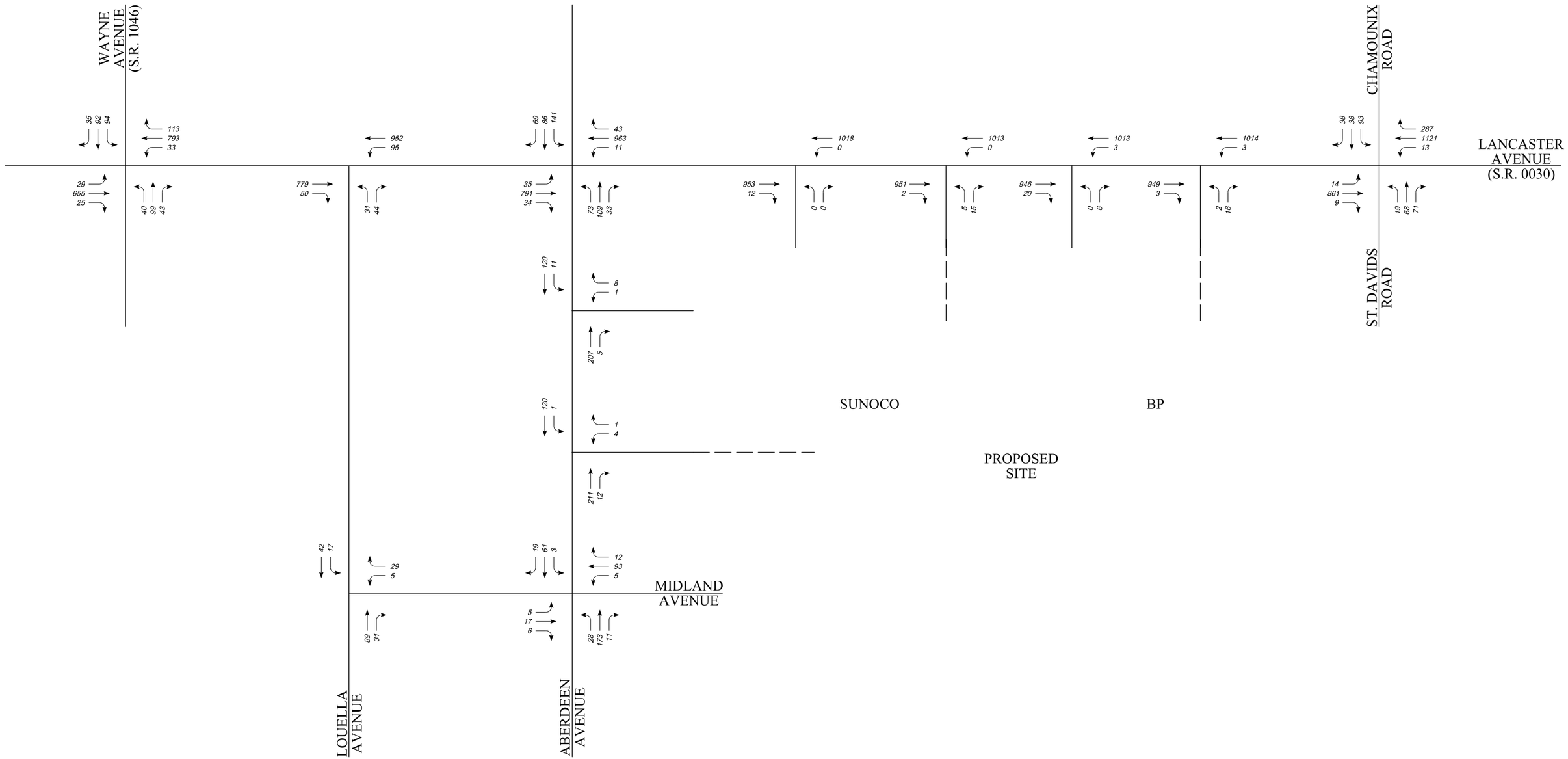
FIGURE 6

2018 EXISTING CONDITIONS
SUNDAY PEAK HOUR
TRAFFIC VOLUMES

N

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:21 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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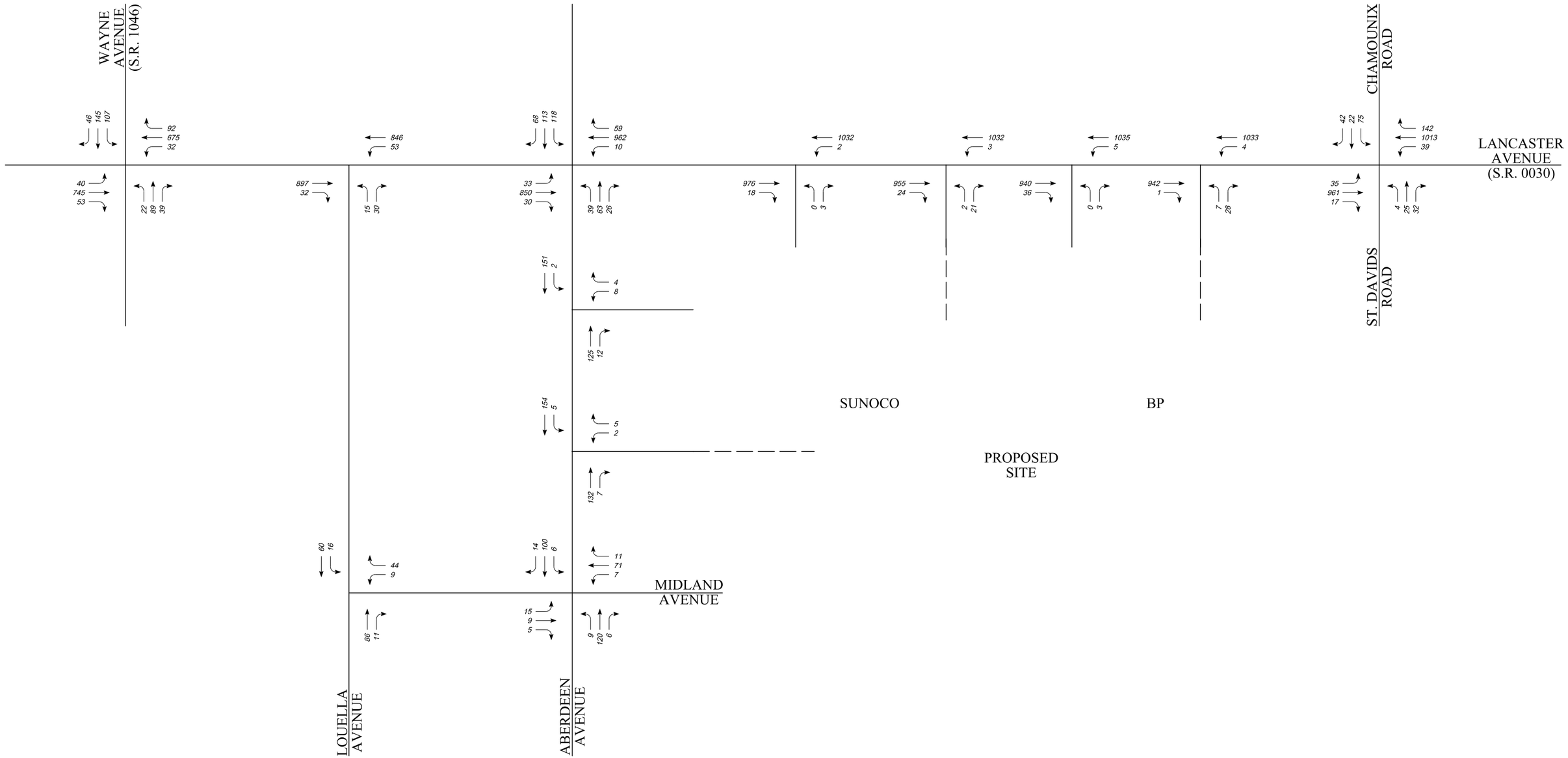
FIGURE 7

2020 BASE (NO-BUILD) CONDITIONS
WEEKDAY AM PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:22 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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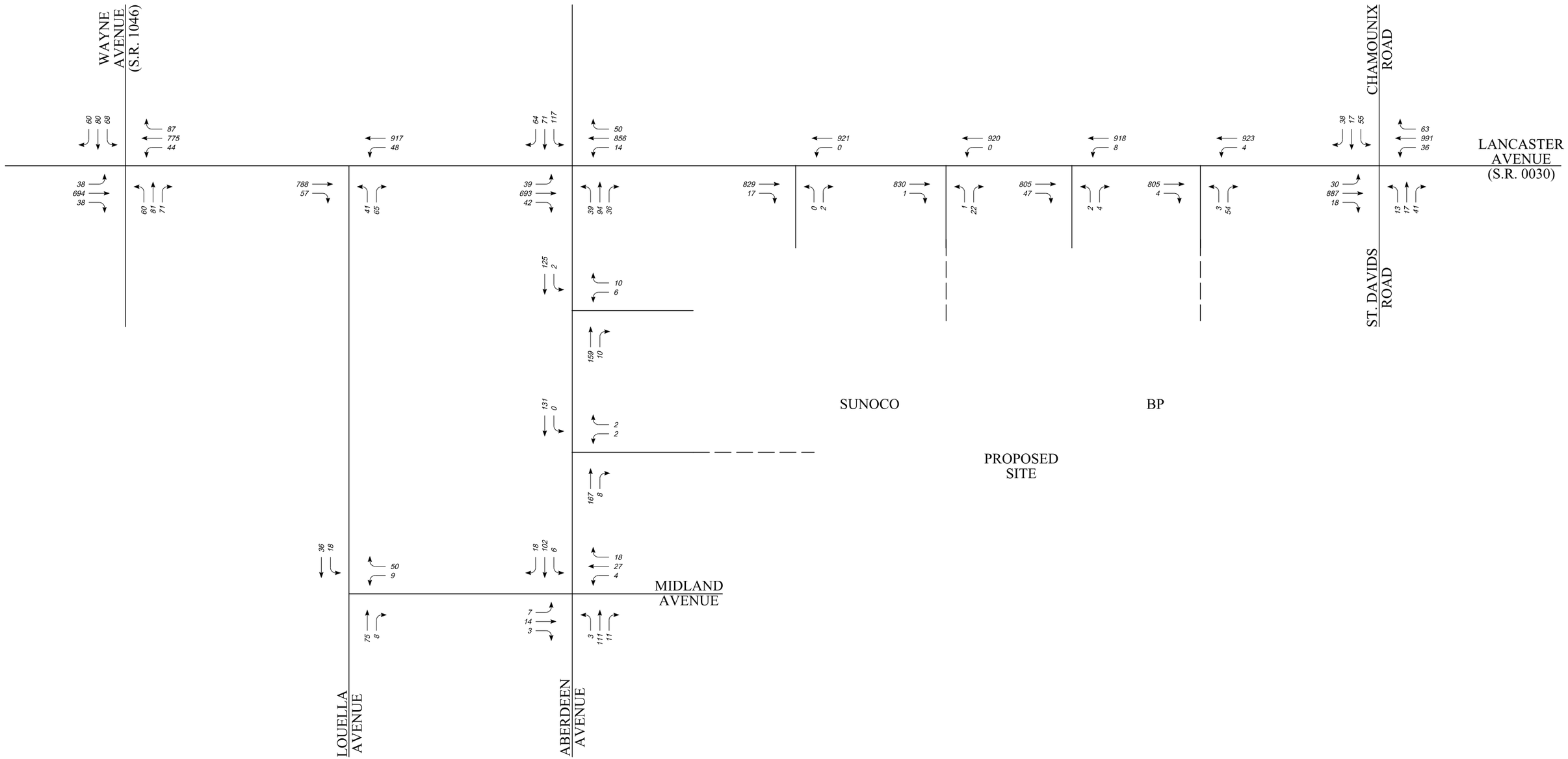
FIGURE 8

2020 BASE (NO-BUILD) CONDITIONS
WEEKDAY PM PEAK HOUR
TRAFFIC VOLUMES

N

c:\pwworking\projectwise\pglassmon\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:23 PM pglassmon $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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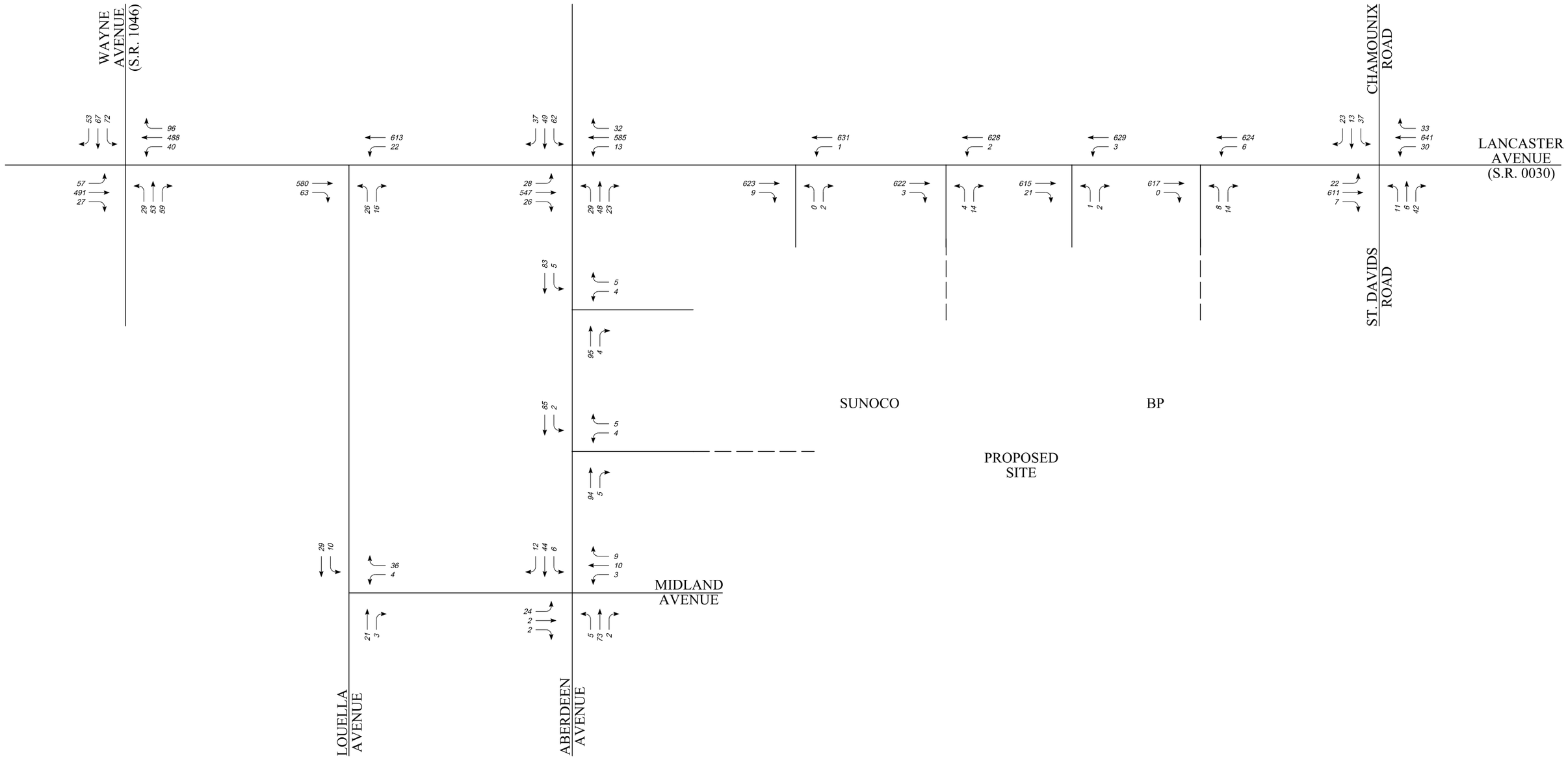
FIGURE 9

2020 BASE (NO-BUILD) CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:24 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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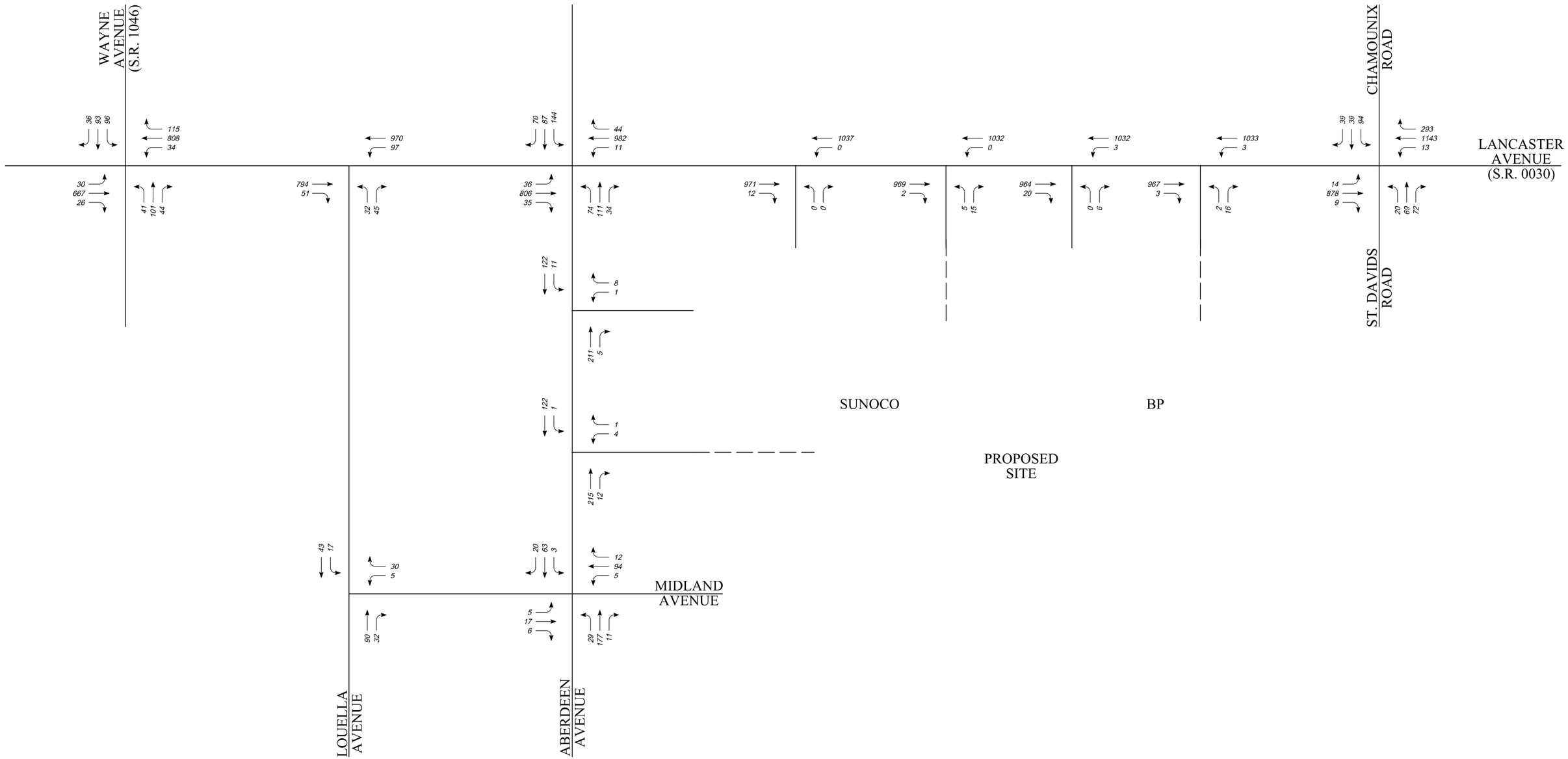
FIGURE 10

2020 BASE (NO-BUILD) CONDITIONS
SUNDAY PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:25 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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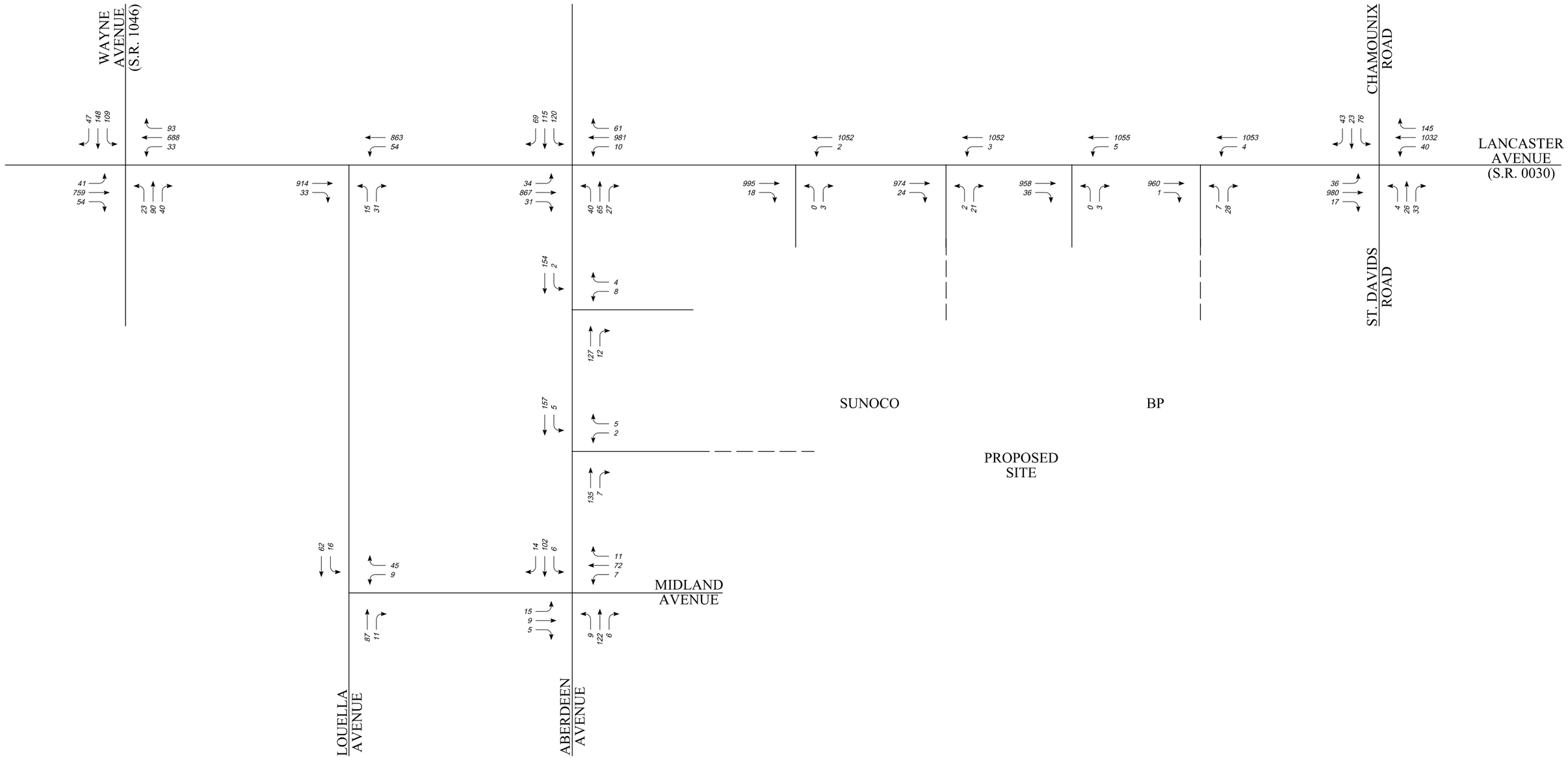
FIGURE 11

2025 BASE (NO-BUILD) CONDITIONS
WEEKDAY AM PEAK HOUR
TRAFFIC VOLUMES

c:\pwwork\hq\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:26 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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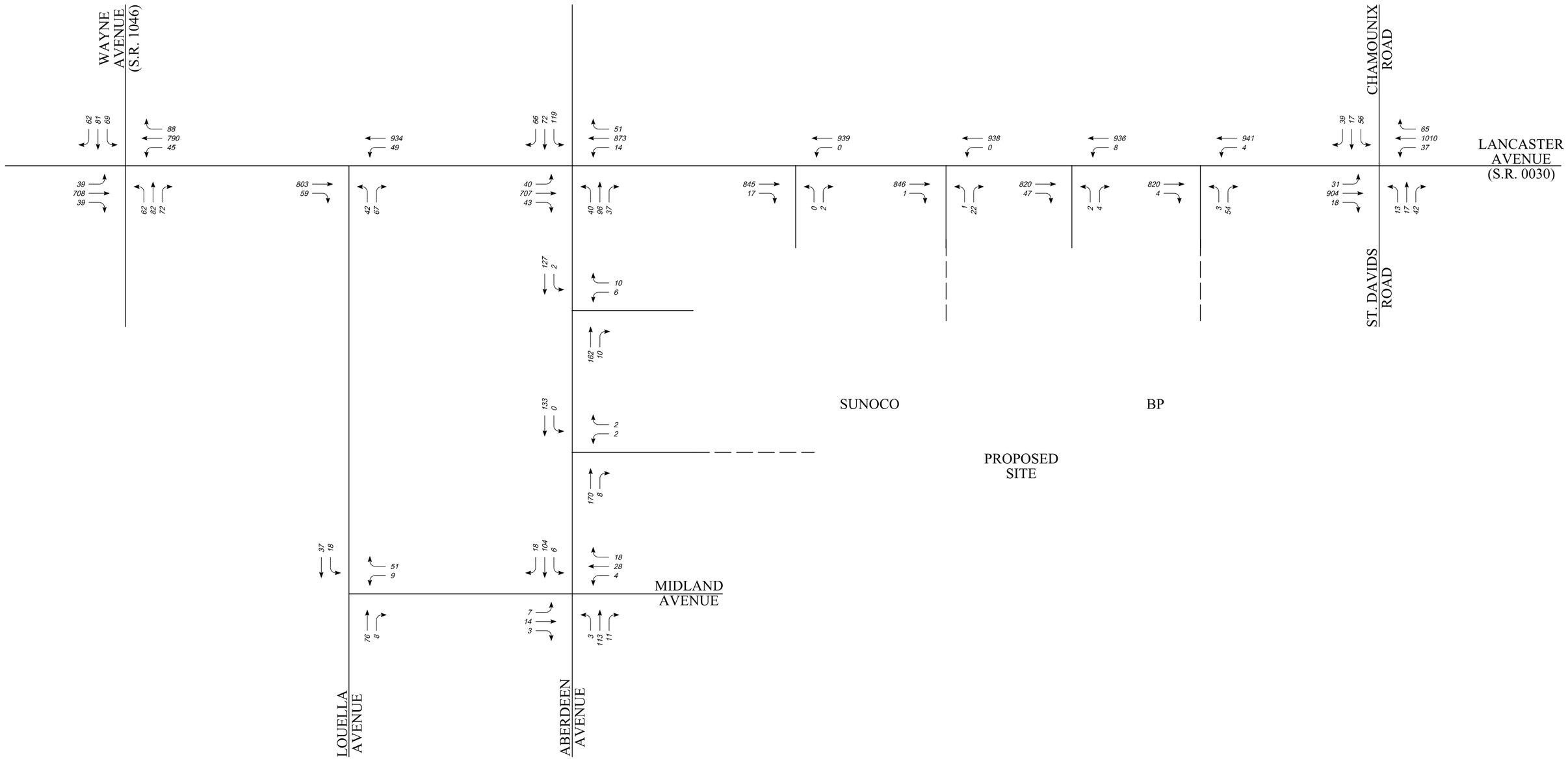
FIGURE 12

2025 BASE (NO-BUILD) CONDITIONS
WEEKDAY PM PEAK HOUR
TRAFFIC VOLUMES

c:\pwwork\hq\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:27 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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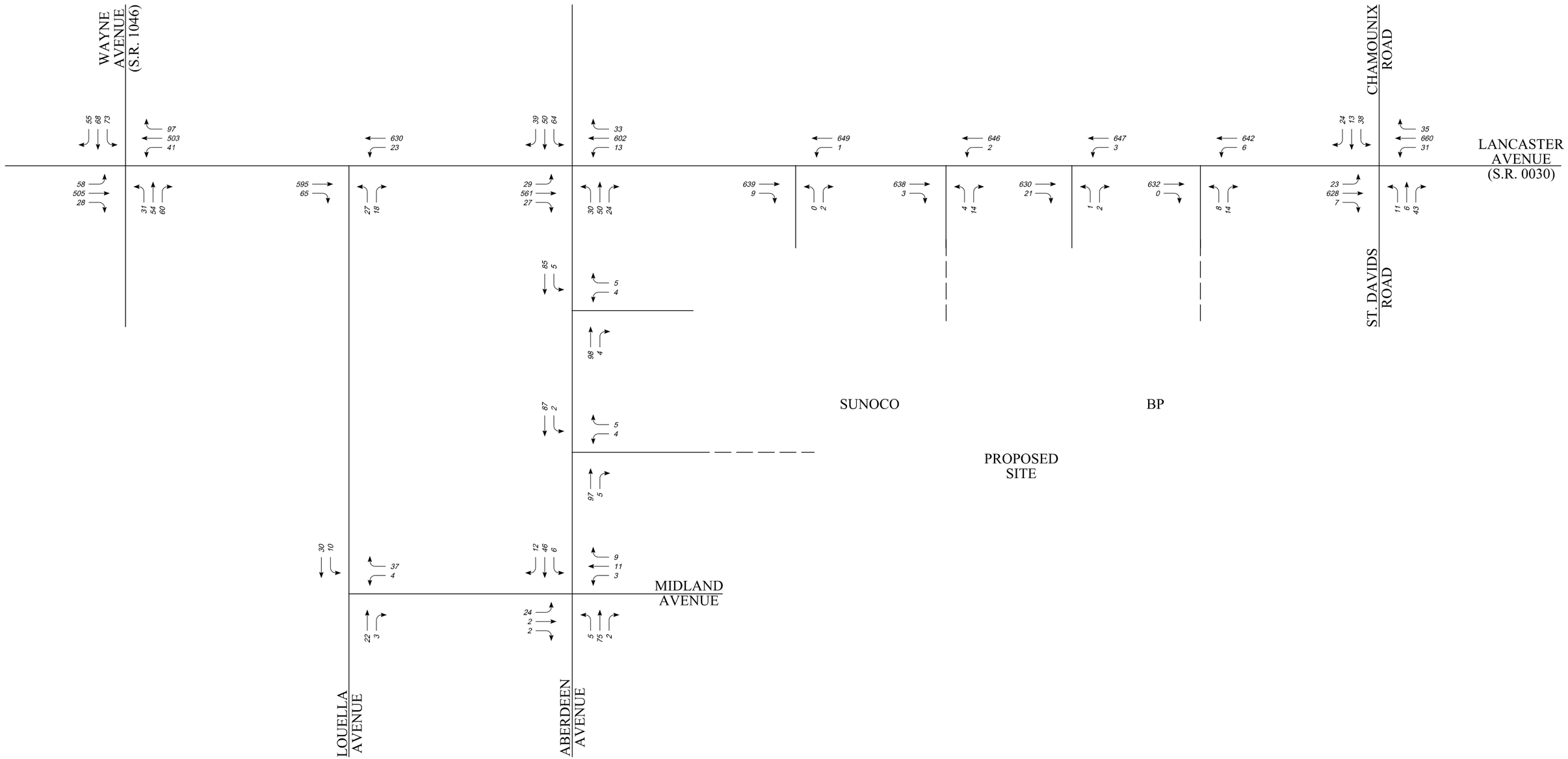
FIGURE 13

2025 BASE (NO-BUILD) CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassmon\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:28 PM pglassmon $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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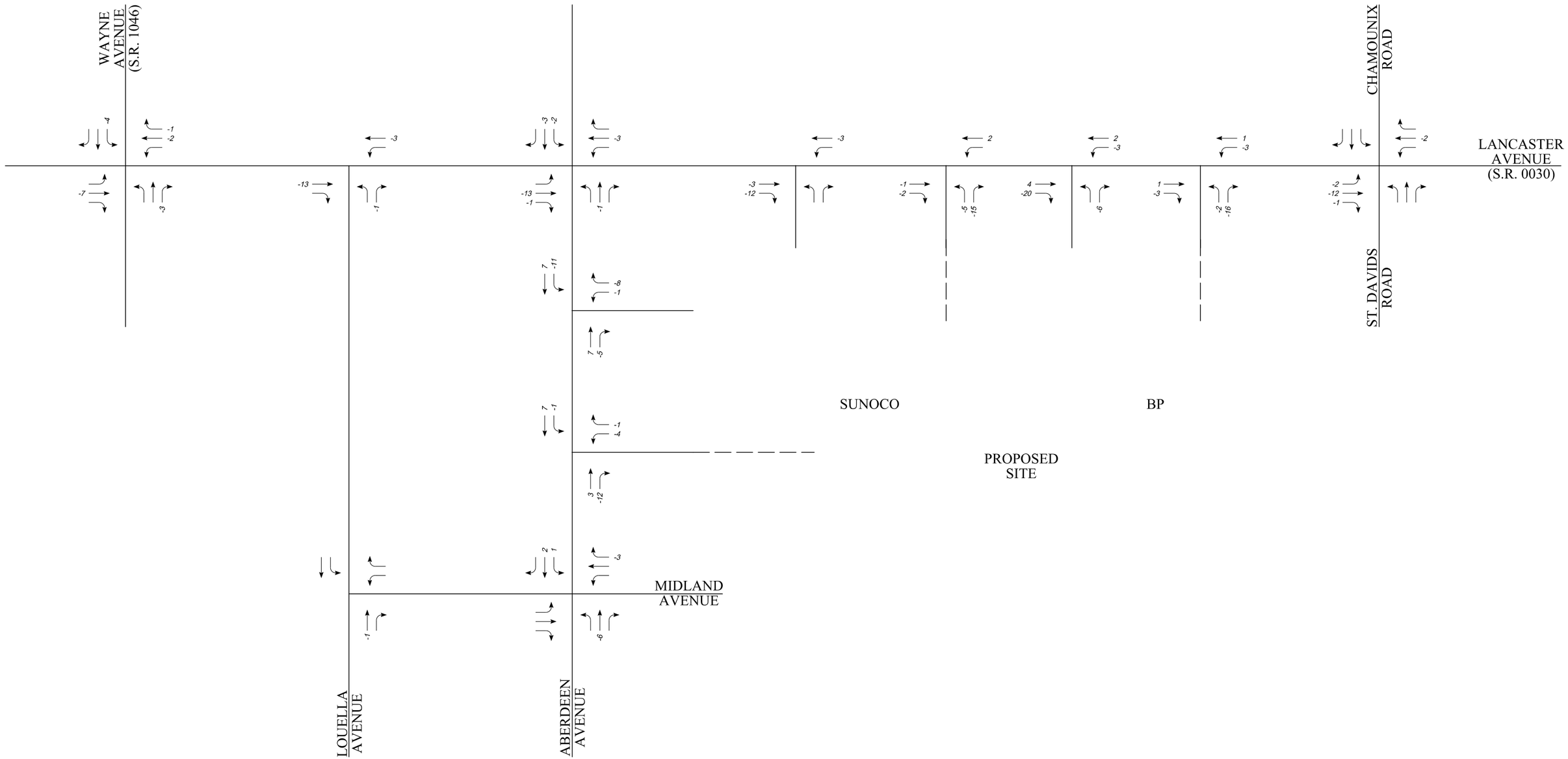
FIGURE 14

2025 BASE (NO-BUILD) CONDITIONS
SUNDAY PEAK HOUR
TRAFFIC VOLUMES

c:\pwwork\hq\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:29 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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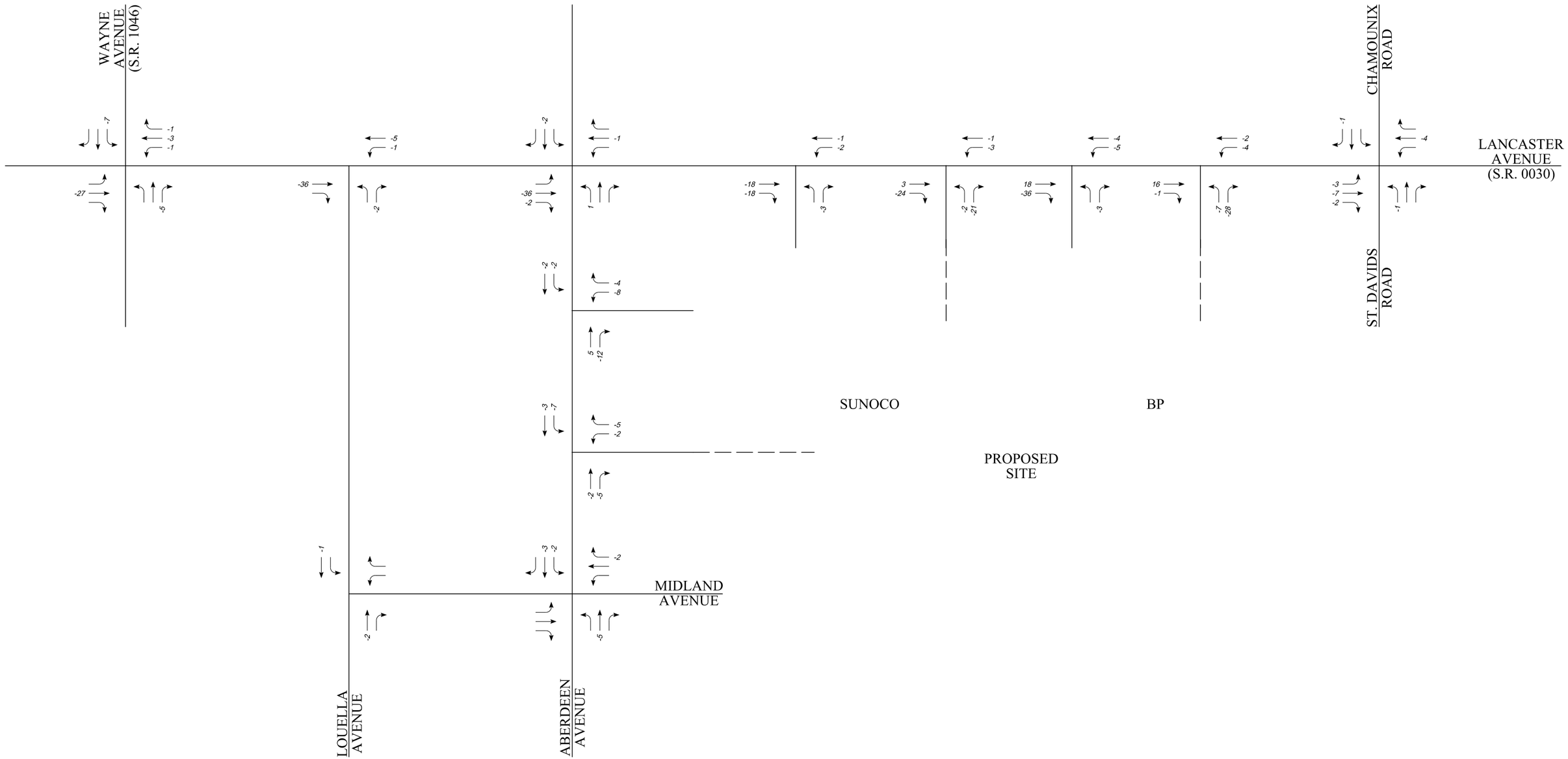
FIGURE 15

BASE REDISTRIBUTIONS
WEEKDAY AM PEAK HOUR

c:\pwork\hq\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:38 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 16

BASE REDISTRIBUTIONS
WEEKDAY PM PEAK HOUR

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:39 PM pglassman $MODEL$

KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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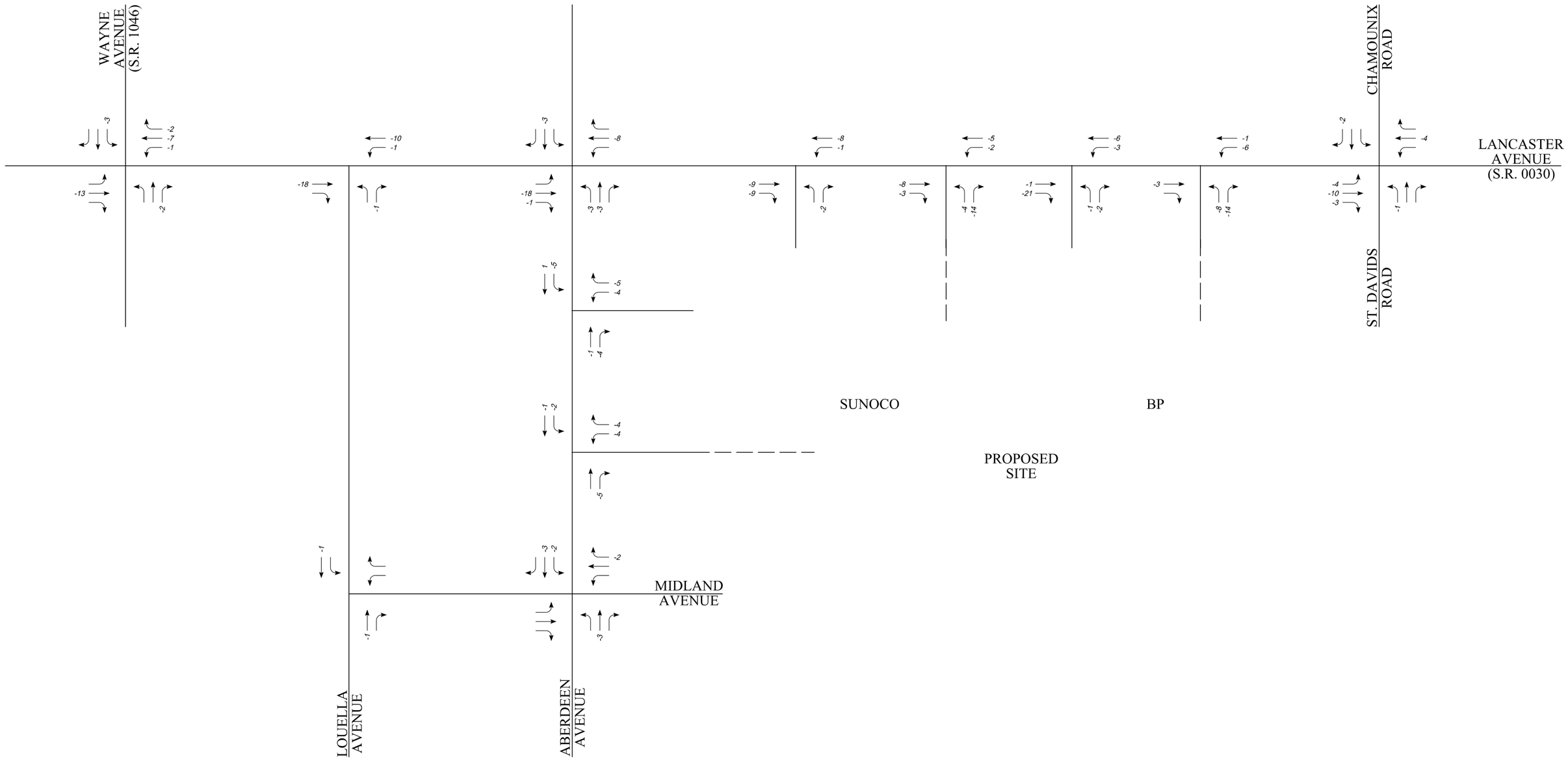
FIGURE 17

BASE REDISTRIBUTIONS
SATURDAY MIDDAY PEAK HOUR



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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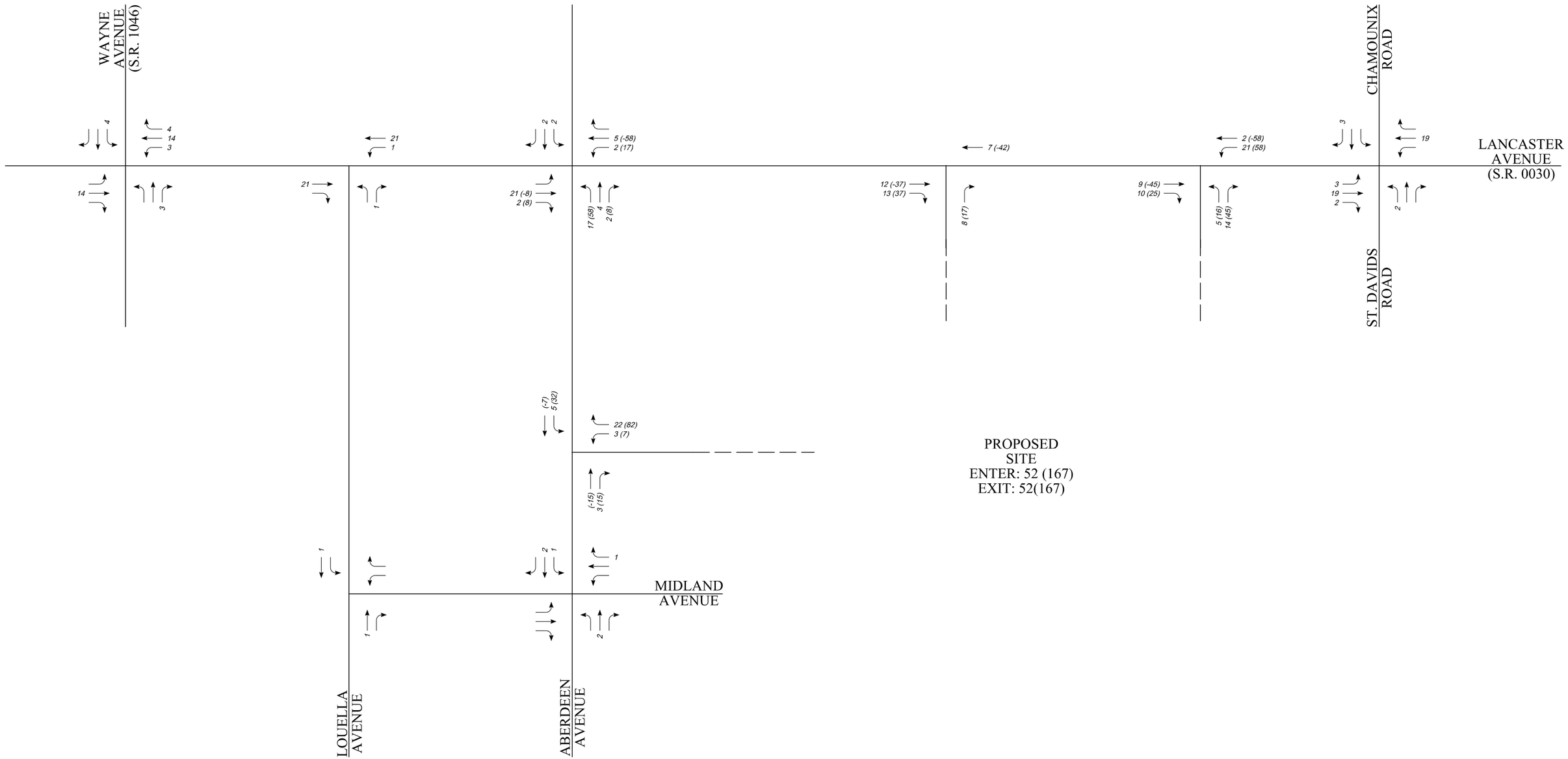
FIGURE 18

BASE REDISTRIBUTIONS
SUNDAY PEAK HOUR

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:41 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

NEW(PASS-BY)TRIPS

SCHEMATIC DRAWING:NOT TO SCALE

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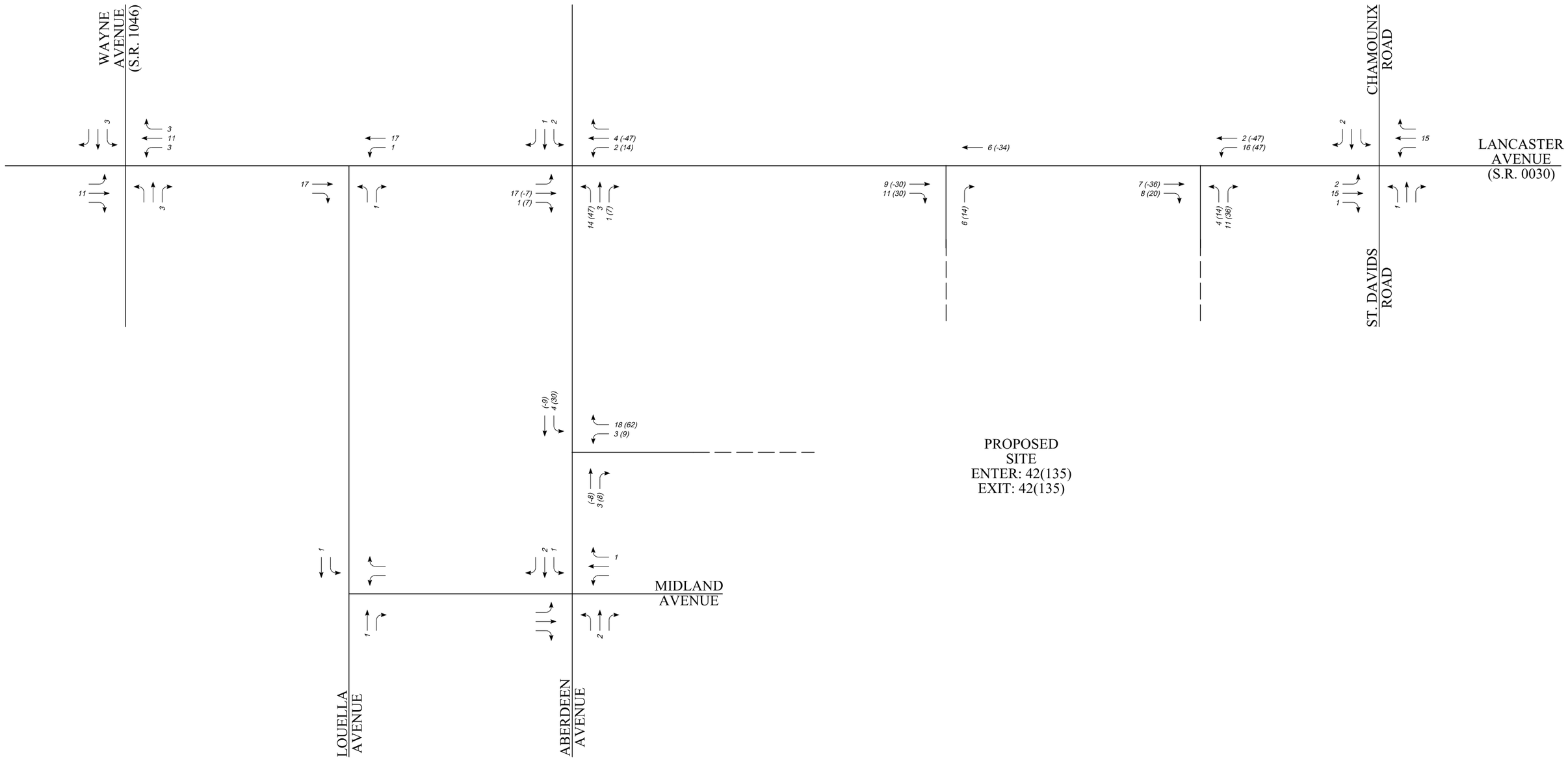
FIGURE 19

TRIP DISTRIBUTIONS
WEEKDAY AM PEAK HOUR

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:30 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

NEW(PASS-BY)TRIPS

SCHEMATIC DRAWING:NOT TO SCALE

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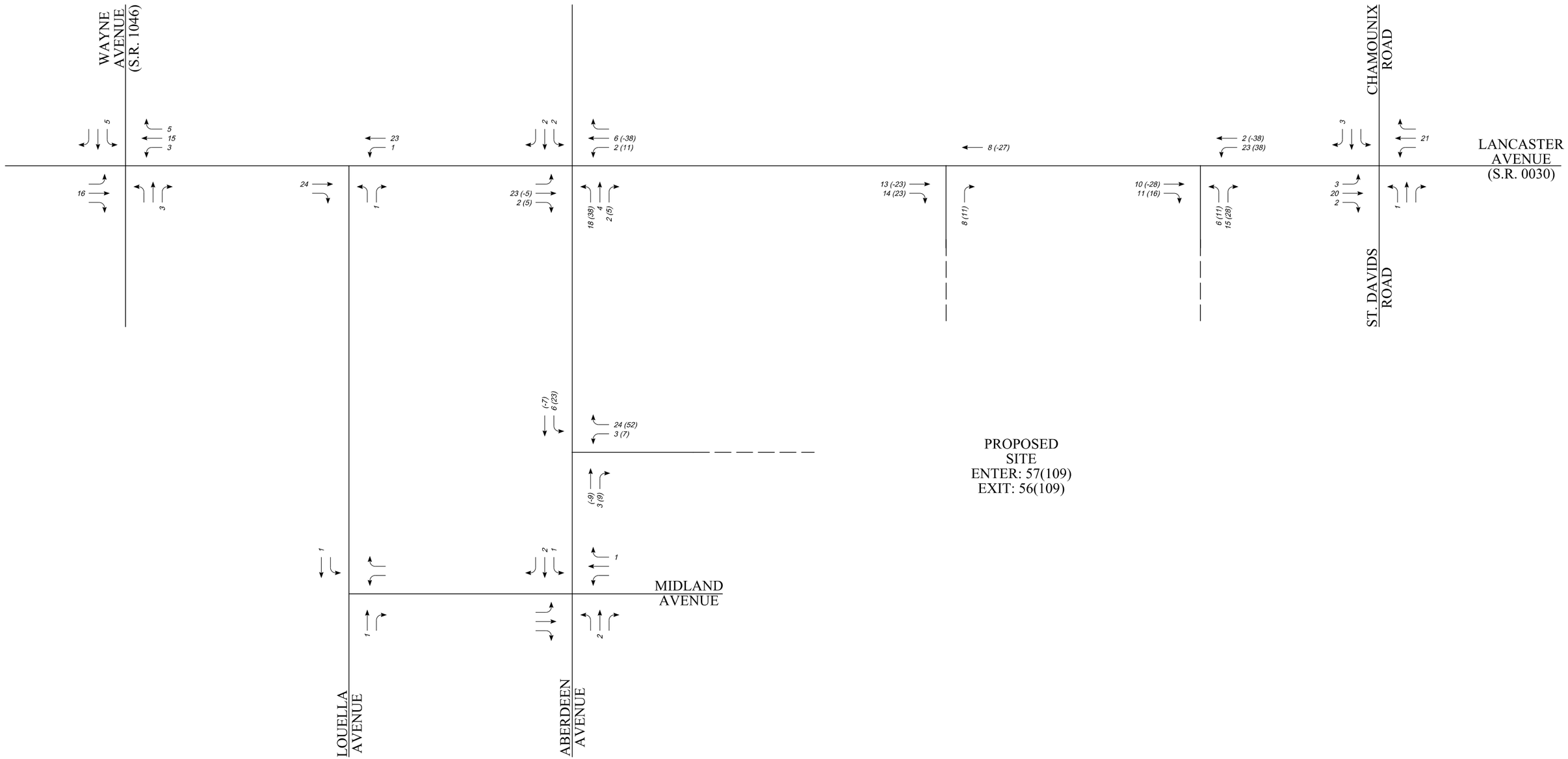
FIGURE 20

TRIP DISTRIBUTIONS
WEEKDAY PM PEAK HOUR

N

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:31 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

NEW(PASS-BY)TRIPS

SCHEMATIC DRAWING:NOT TO SCALE

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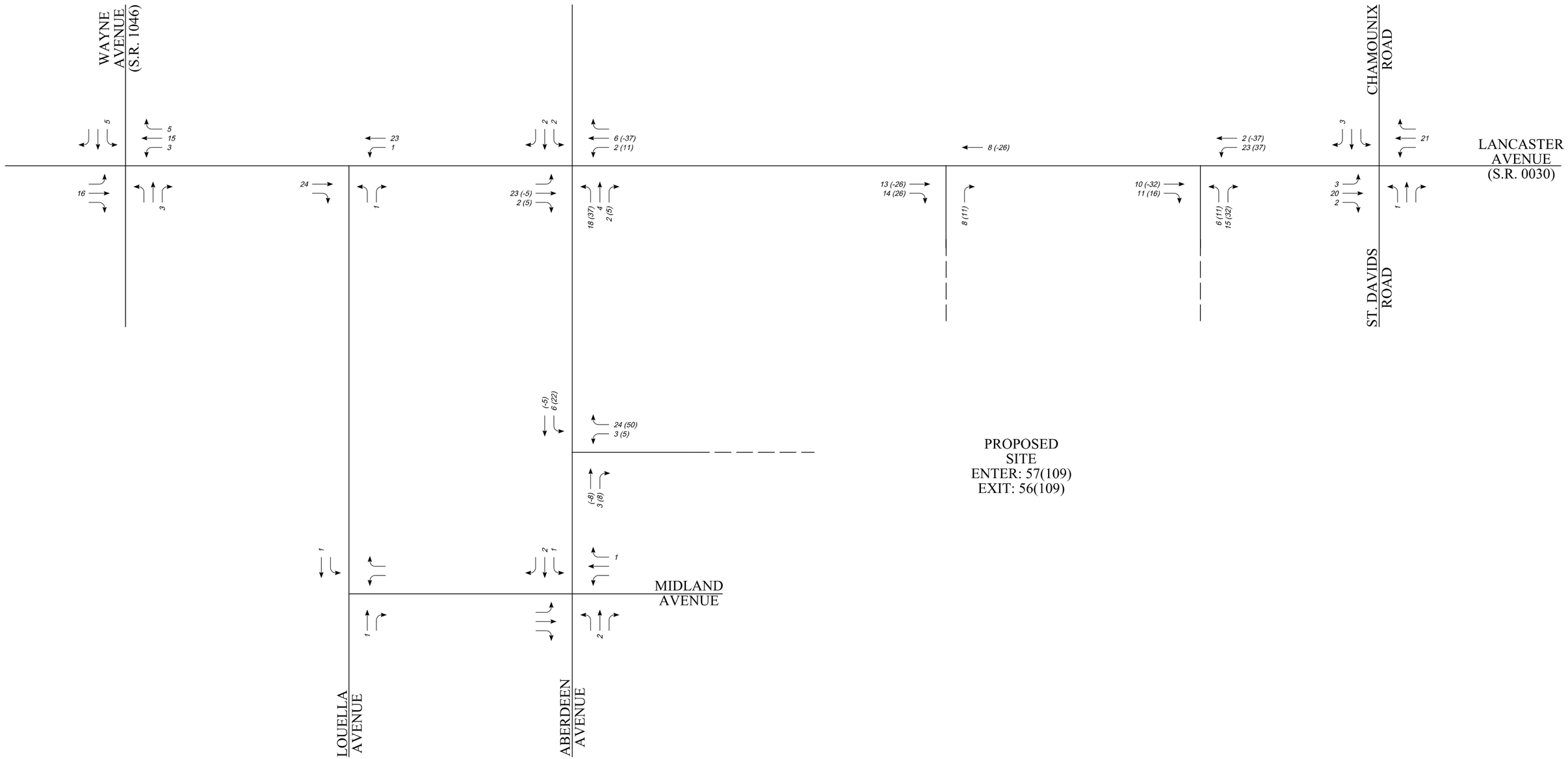
FIGURE 21

TRIP DISTRIBUTIONS
SATURDAY MIDDAY PEAK HOUR

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:32 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

NEW(PASS-BY)TRIPS

SCHEMATIC DRAWING:NOT TO SCALE

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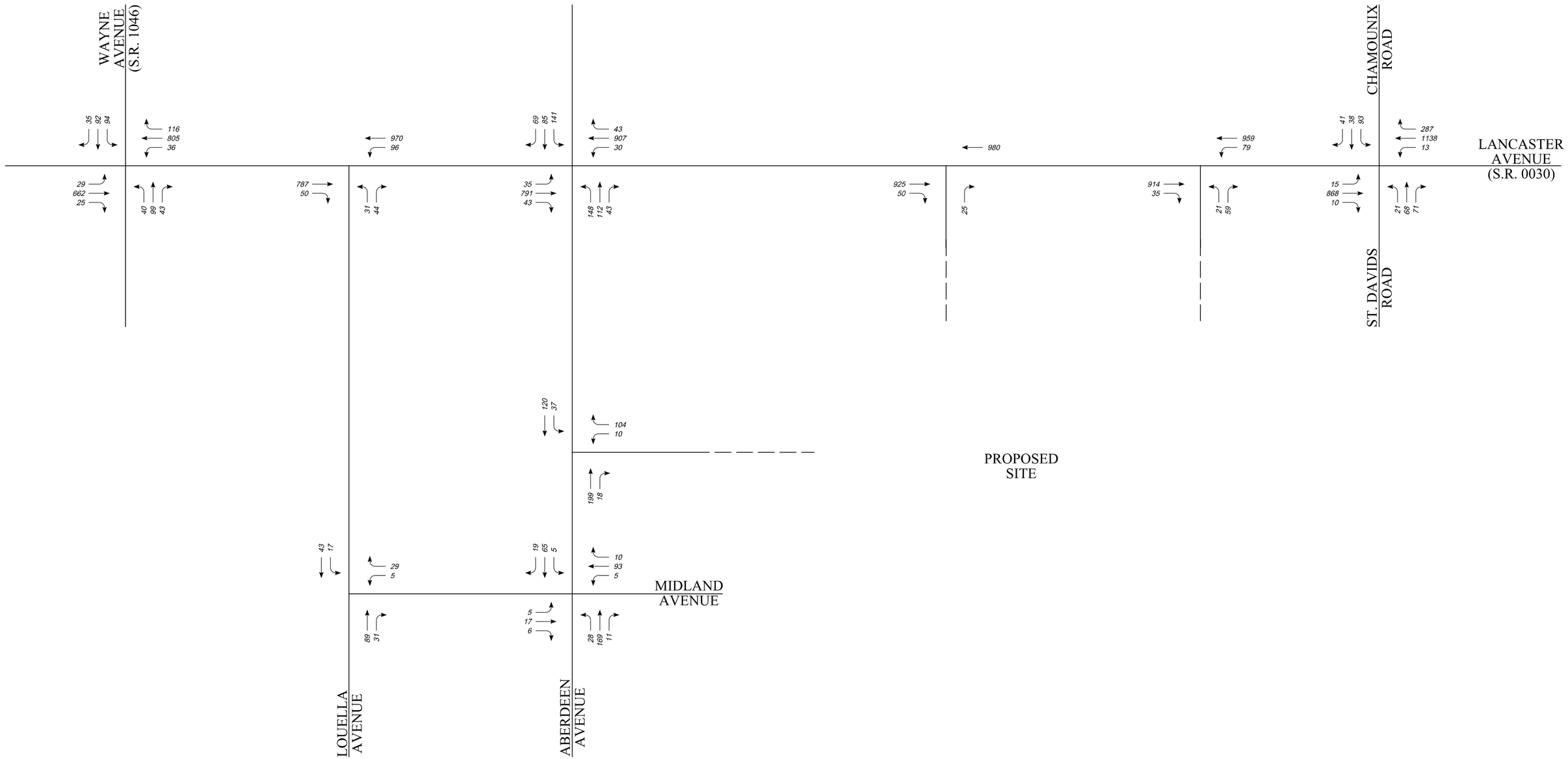
FIGURE 22

TRIP DISTRIBUTIONS
SUNDAY PEAK HOUR

N

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:33 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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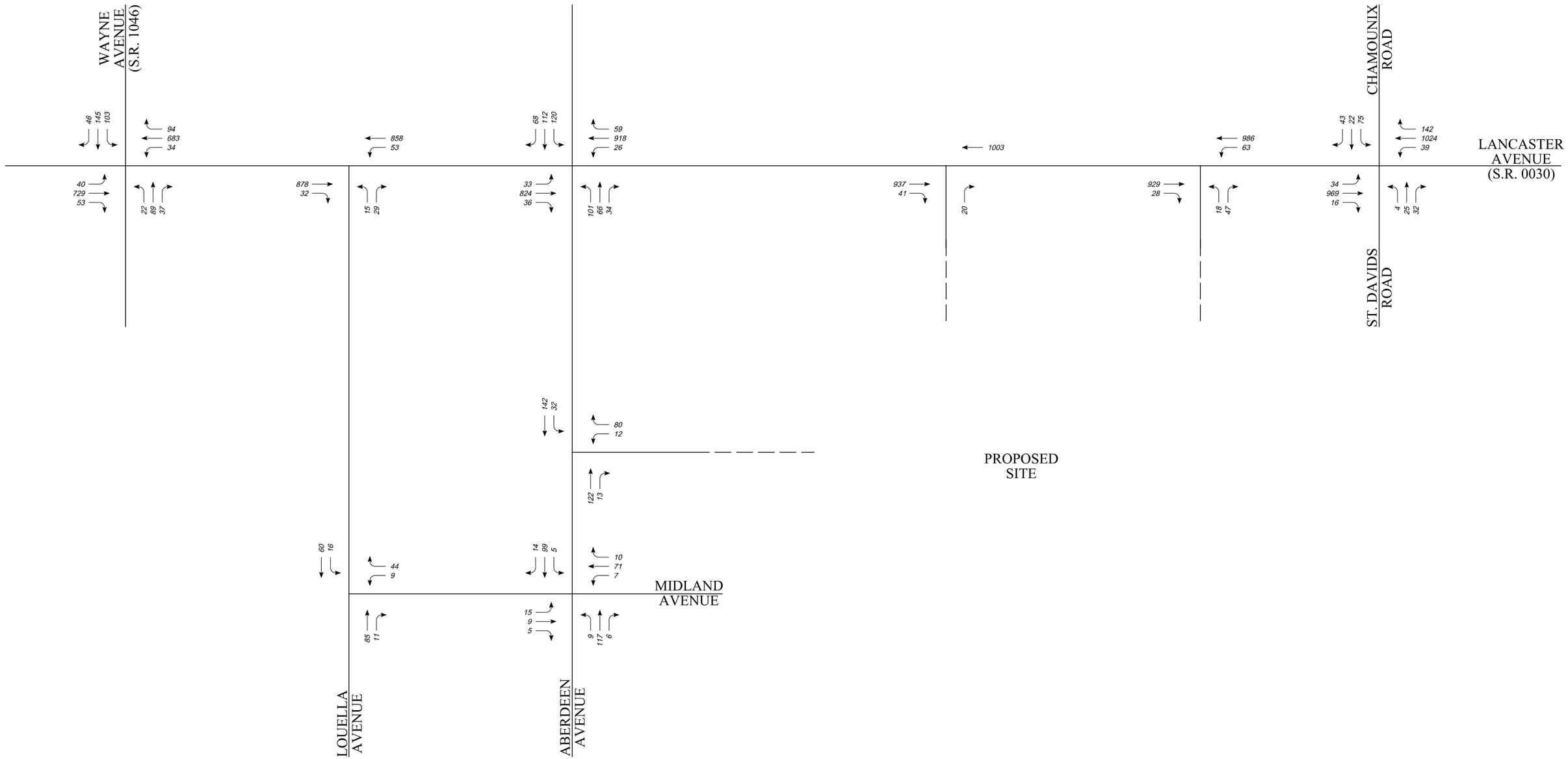
FIGURE 23

2020 PROJECTED (BUILD) CONDITIONS
WEEKDAY AM PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:34 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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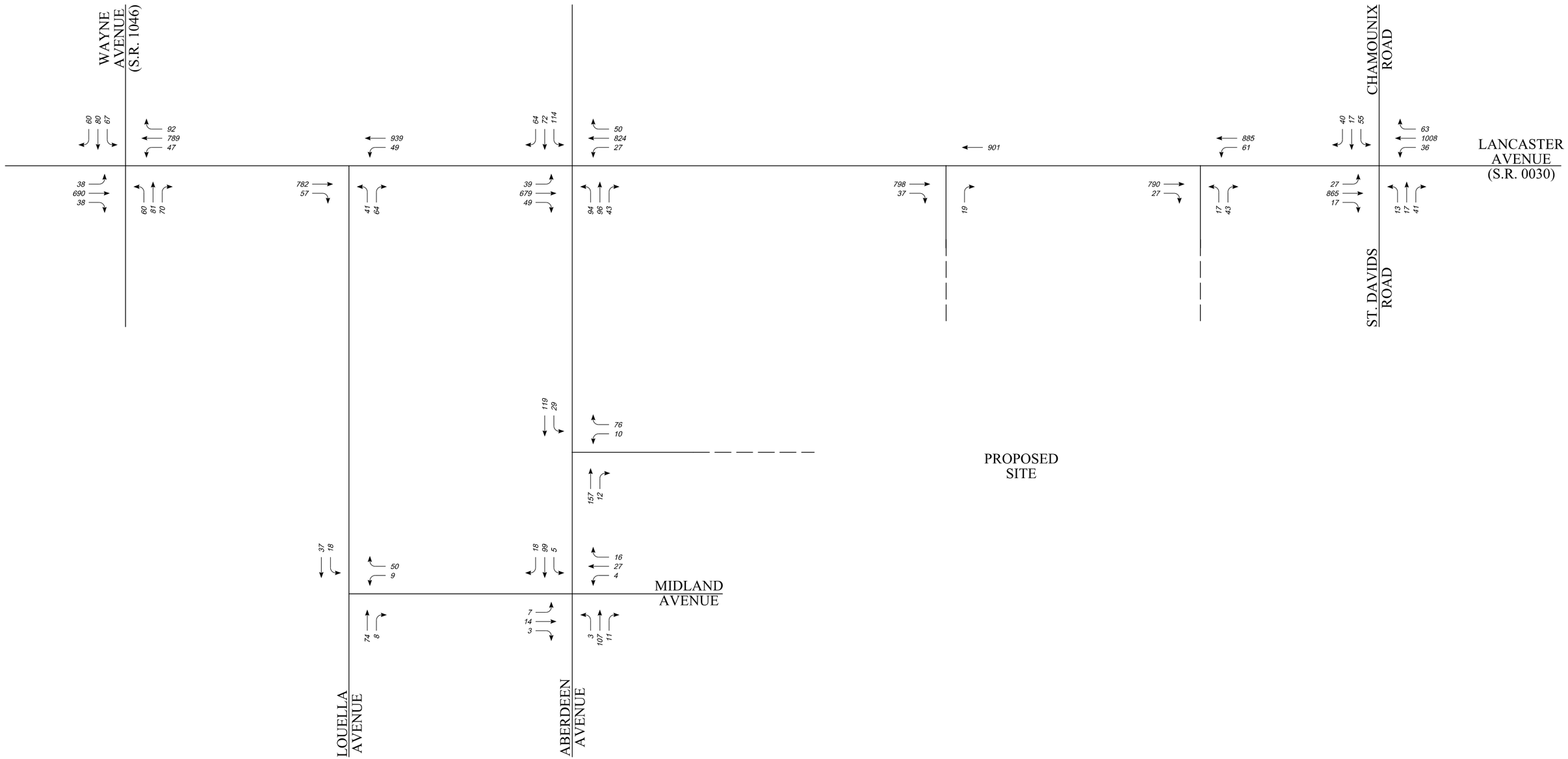
FIGURE 24

2020 PROJECTED (BUILD) CONDITIONS
WEEKDAY PM PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:35 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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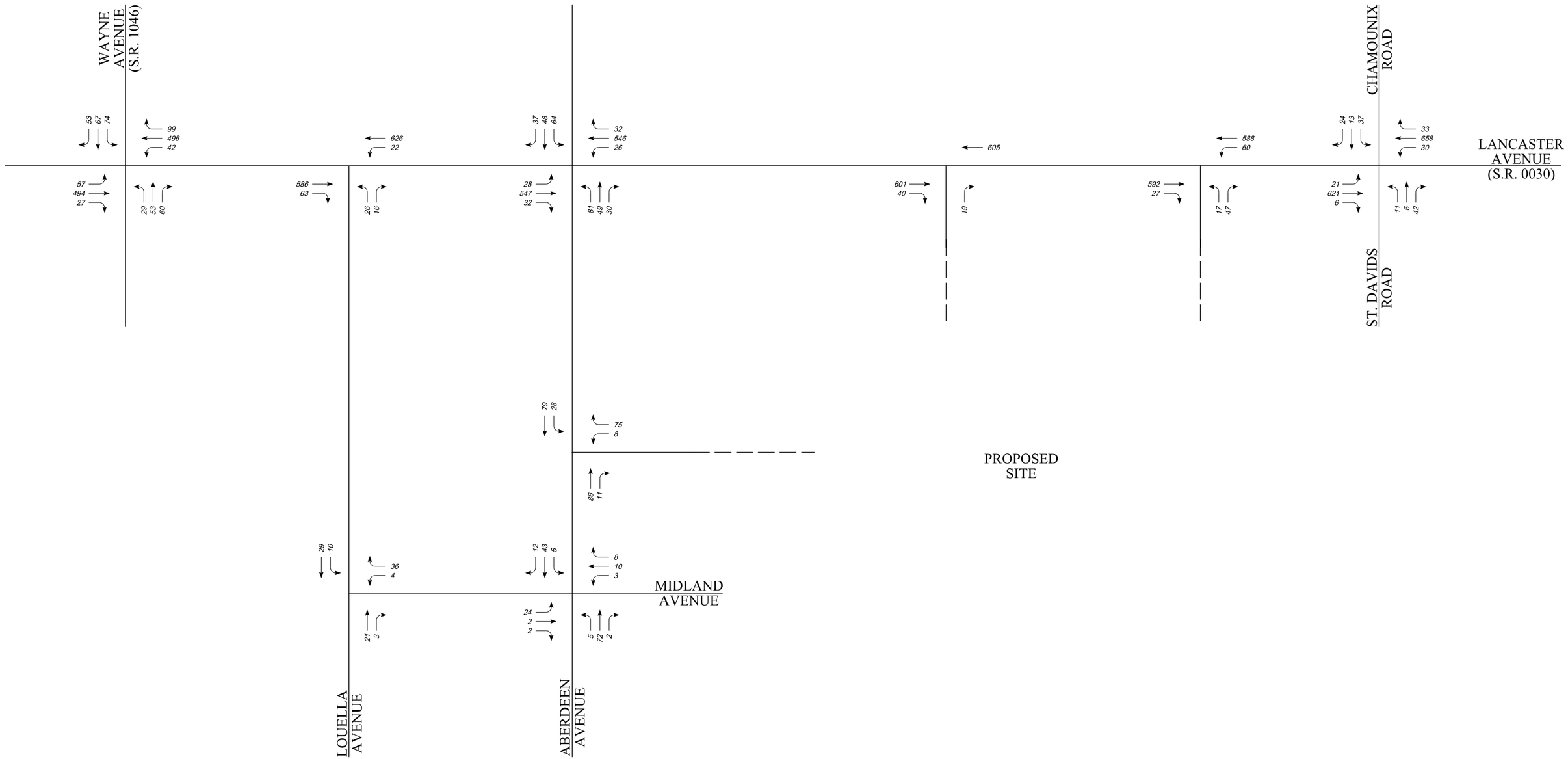
FIGURE 25

2020 PROJECTED (BUILD) CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES

N

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:36 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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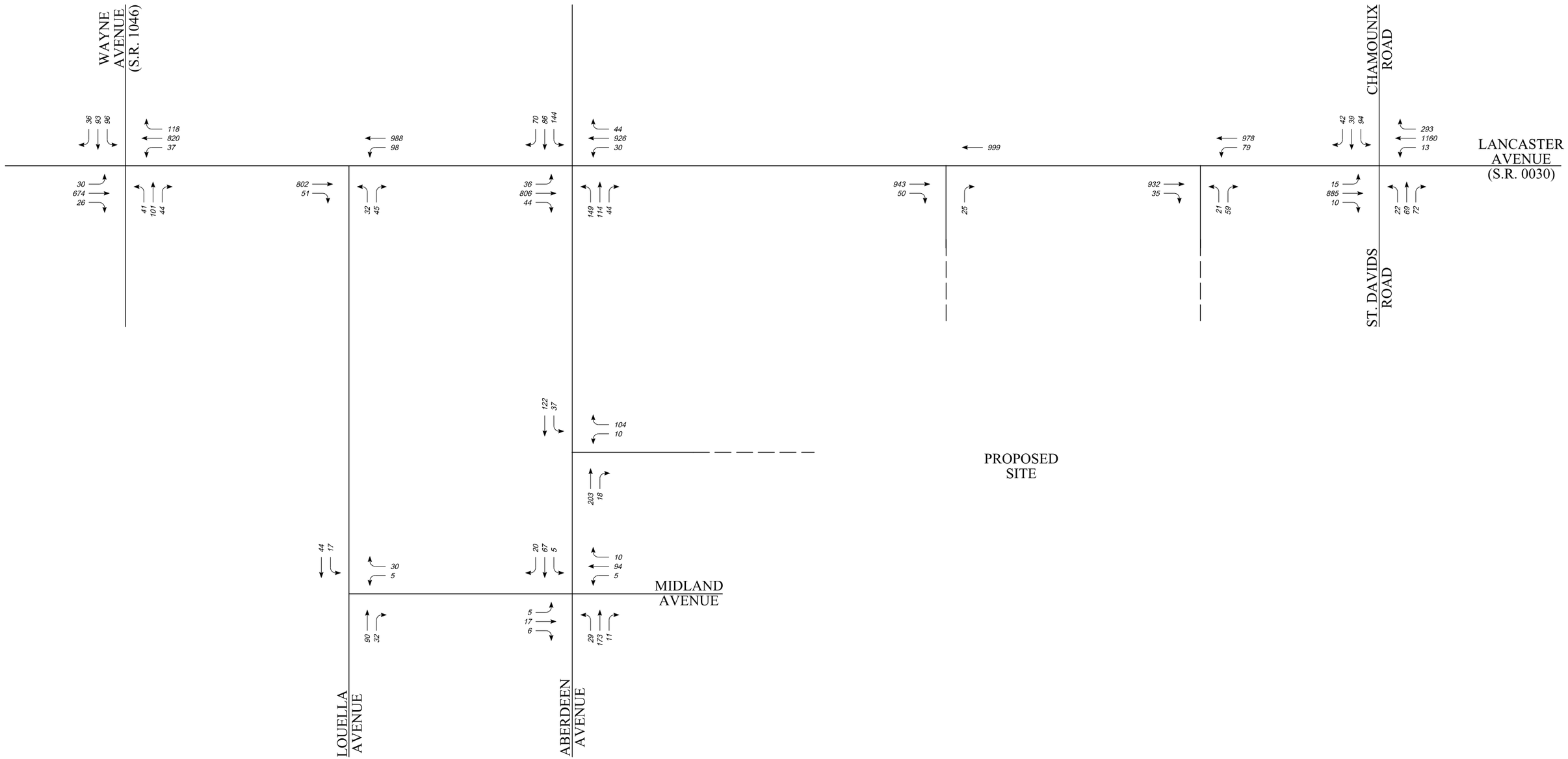
FIGURE 26

2020 PROJECTED (BUILD) CONDITIONS
SUNDAY PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:37 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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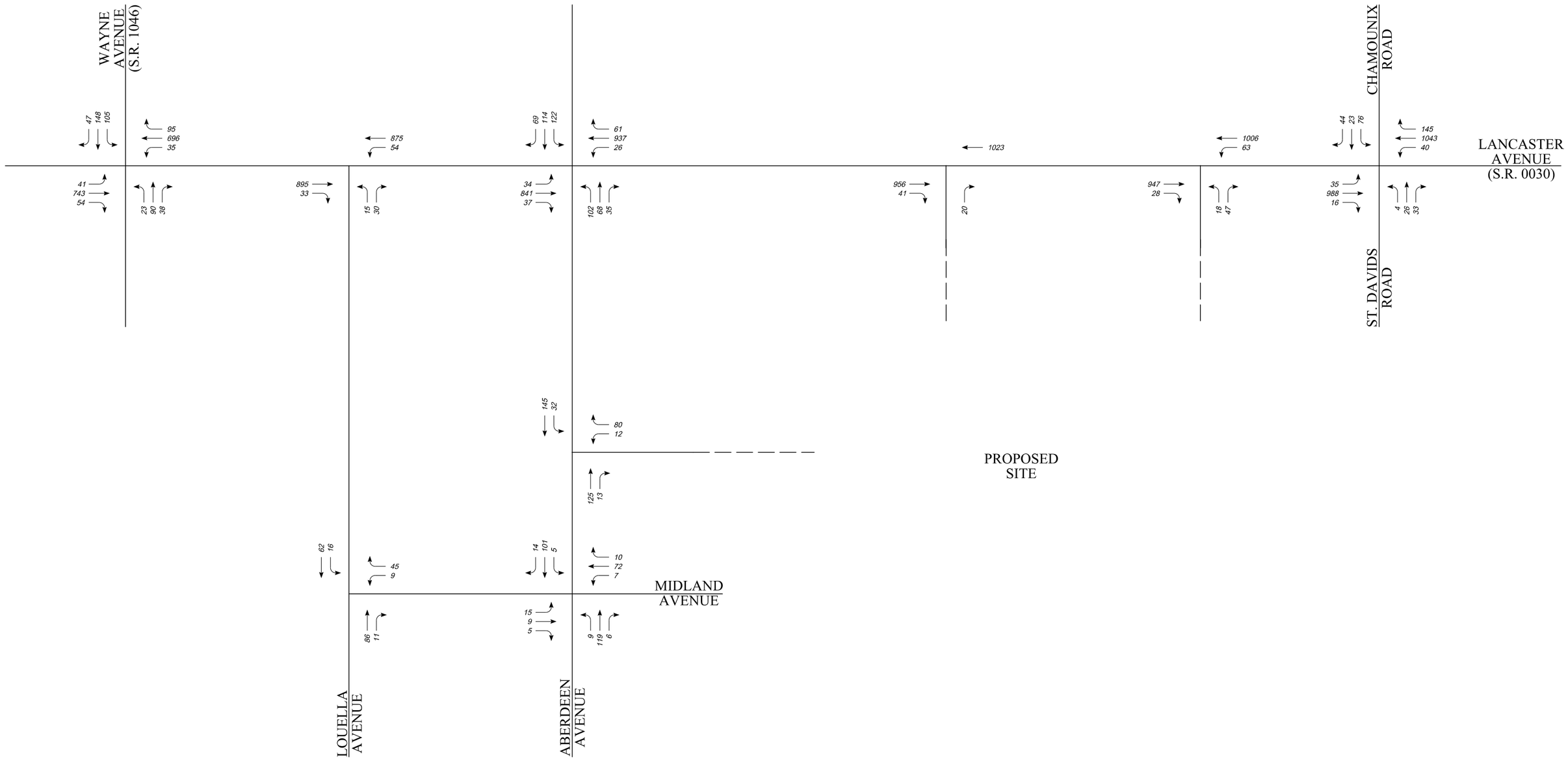
FIGURE 27

2025 PROJECTED (BUILD) CONDITIONS
WEEKDAY AM PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:42 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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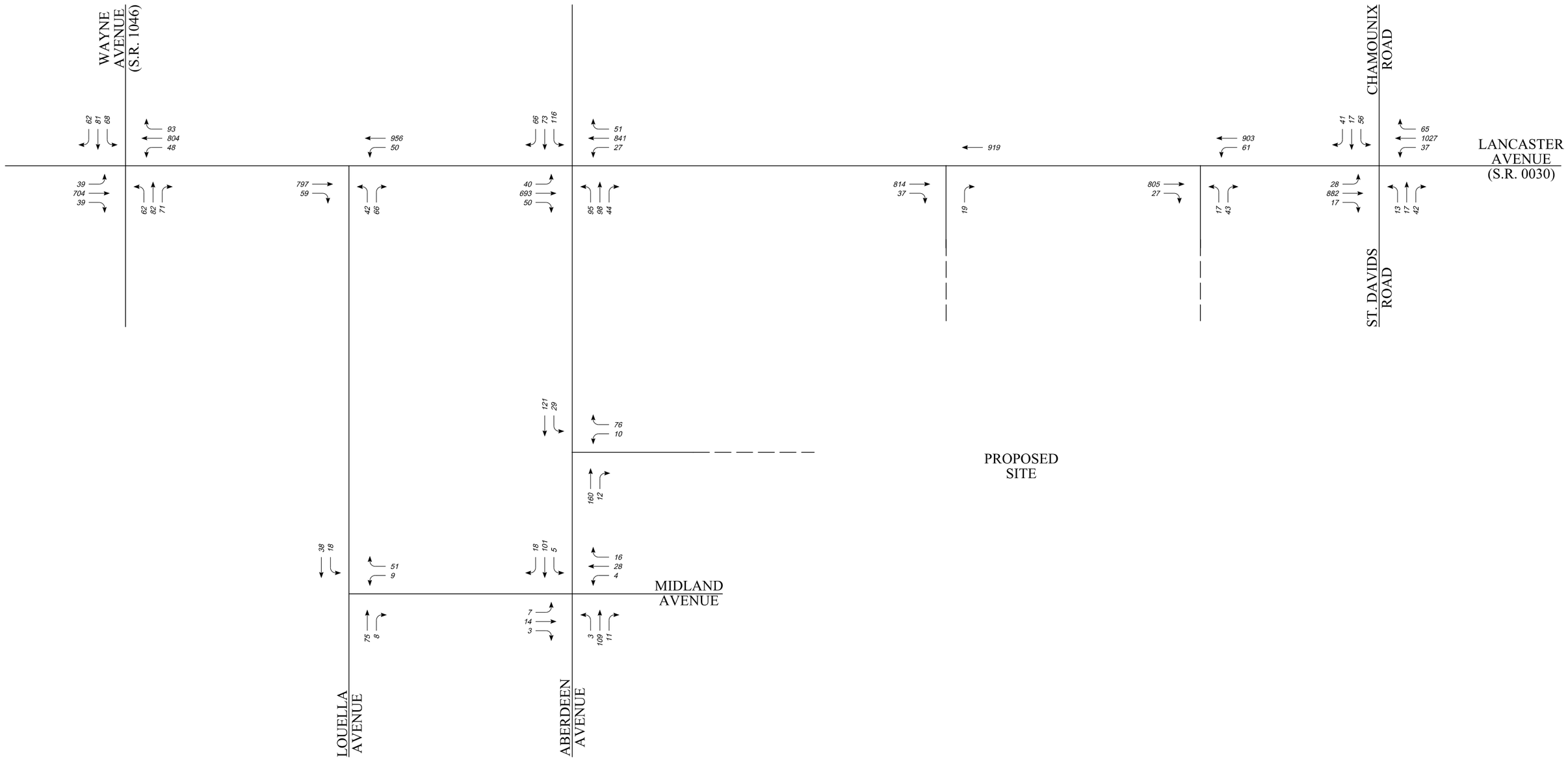
FIGURE 28

2025 PROJECTED (BUILD) CONDITIONS
WEEKDAY PM PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:43 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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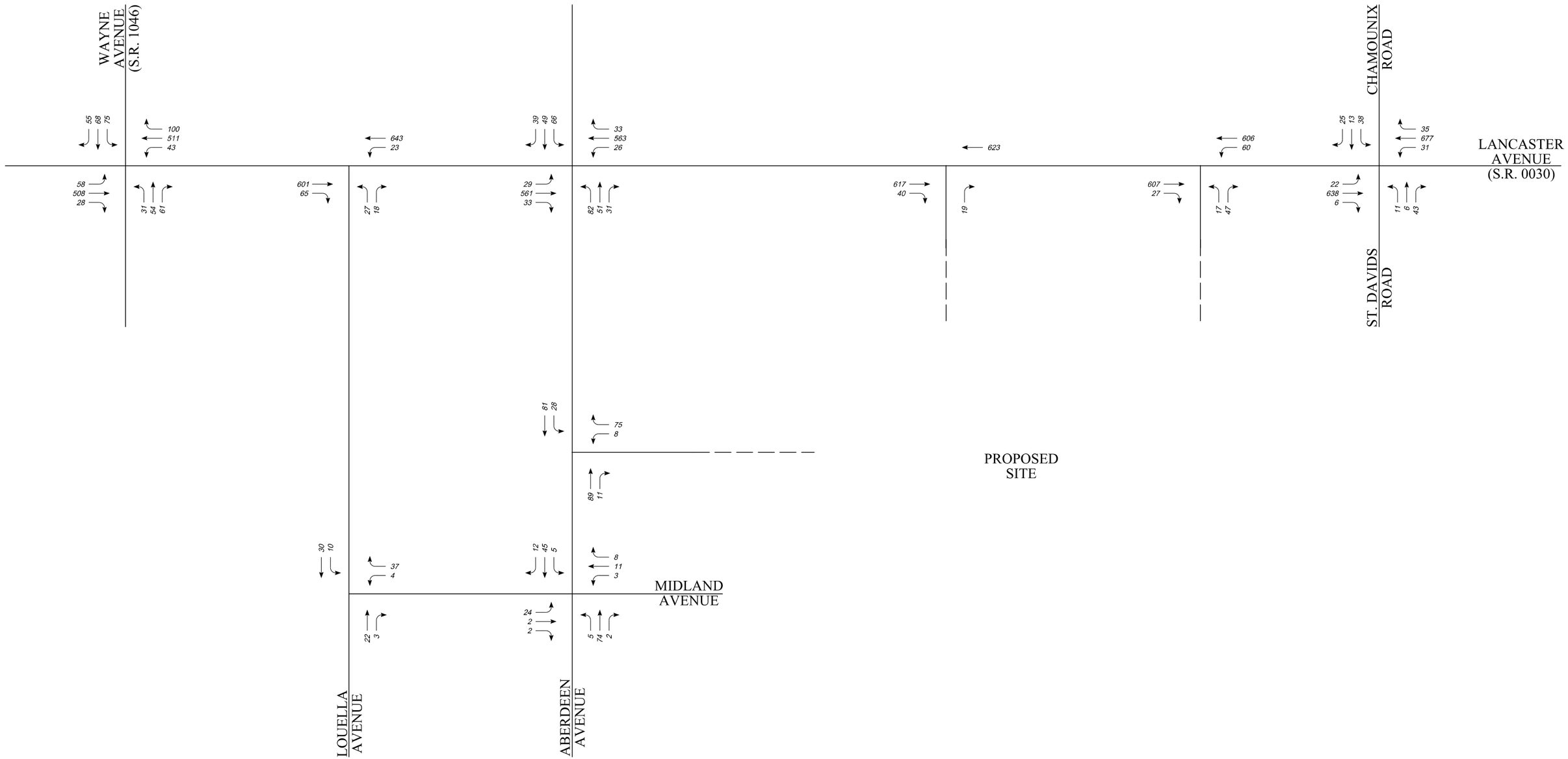
FIGURE 29

2025 PROJECTED (BUILD) CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:43 PM pglassman $MODEL$



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 30

2025 PROJECTED (BUILD) CONDITIONS
SUNDAY PEAK HOUR
TRAFFIC VOLUMES

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:23:44 PM pglassman $MODEL$

APPENDIX A

PROJECT CORRESPONDENCE

Glassman, Paige

From: Hans Brouwers <hbrouwers@stkatharineofsiena.org>
Sent: Thursday, August 02, 2018 5:07 PM
To: Bressler, Matt
Subject: Radnor traffic study

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Matthew,

Thank you for contacting Barbara Lombardi, our parish secretary, regarding the traffic study that your firm is performing in Radnor Township; allow me to respond to your questions. As you noted, we have three Sunday services. You may know that we, like all other parishes in the Archdiocese of Philadelphia, take a count of our Sunday attendance for entire month of October; we then report that to the appropriate office at the Archdiocese. So, I can provide you with rather accurate figures of average attendance for these services: 8:00am - 140; 9:30am - 350; 11:30am - 225. I hope that information is helpful.

Feel free to contact me if you have any further questions or concerns. Msgr. Brouwers

--
Reverend Monsignor Hans A. L. Brouwers
St. Katharine of Siena Rectory
104 S. Aberdeen Avenue
Wayne, PA 19087
USA

MEMORANDUM

Date: July 31, 2018

To: Steve F. Norcini, P.E.
Radnor Township Engineer

From: Amy Kaminski, P.E., PTOE
Gilmore & Associates, Inc.

cc: Superintendent Christopher Flanagan, Radnor Township Police Department
Kevin Kochanski, ASLA, R.L.A., Director of Community Development
Ken Piree, Radnor Township Police Officer
Roger Phillips, P.E., Senior Associate, Gannett Fleming, Inc.
Damon Drummond, P.E., PTOE, Gilmore & Associates, Inc.
Leslie A. Salsbury, E.I.T., Gilmore & Associates, Inc.

Reference: Wawa – 302-306 E. Lancaster Avenue (S.R. 0030) & Aberdeen Avenue
PennDOT Traffic Log No.: D18-009XP
TIS Scoping Application Review 2
Radnor Township, Delaware County, PA
G&A 18-06057

We have reviewed the TIS Scoping Application prepared for Wayne Property Acquisitions, Inc., (Wawa near West Lancaster Avenue and Aberdeen Avenue) based on discussion at the recent Radnor Community Development Meeting Committee meeting held on Tuesday, July 17, 2018 and offer the following comments for your consideration:

A. BACKGROUND

The subject properties are situation in the C-2 Commercial Zoning District operating under the permitted By-Right retail use. The parcels are located along the south side of Lancaster Avenue, east of Aberdeen Avenue at 302 E. Lancaster Avenue and 306 E. Lancaster Avenue. The parcel located at 302 E. Lancaster Avenue currently operates as a full-service motor vehicle repair shop along with the retail sale of gasoline and the parcel located at 306 E. Lancaster Avenue operates as a car wash and includes the retail sale of gasoline. The Applicant proposes consolidating the two parcels, demolishing the existing structures and constructing a new retail convenience store of 5,112 SF, with 55 parking spaces and offer the retail sale of gasoline at 12 retail gas pumps.

B. DOCUMENTS REVIEWED

1. Zoning Opinion letter issued by Kevin Kochanski, RLA, CZO, Radnor Township Director of Community Development; addressed to Nick Caniglia, Esq., of Pierce, Caniglia & Taylor, dated April 27, 2018.

2. Transportation Impact Study (TIS) Scoping Application, prepared for Wawa – Lancaster Avenue & Aberdeen Avenue, prepared by Traffic Planning and Design, dated June 13, 2018.

3. Concept Plan, prepared for Wayne Property Acquisition, Inc., prepared by Bohler Engineering, dated April 9, 2018.

4. PennDOT Scoping Application Review, prepared by PennDOT, addressed to Matthew I. Hammond, P.E., Traffic Planning and Design, dated July 12, 2018.

C. TRANSPORTATION COMMENTS

We note several traffic and pedestrian generators are located within near proximity of the proposed development: St. Katherines of Siena Parish, St. Mary's Episcopal Church, St. Katherines School (Kindergarten – 8th grade), and Radnor Middle School (6th - 8th grade). We recommend the Applicant address the following comments in the impending Transportation Impact Study. If the Applicant is agreeable to the following modifications, we find it unnecessary to schedule a Scoping Application meeting to discuss the project with PennDOT:

1. §255-26 – In addition to the reviewed information proposed by the Applicant in the Transportation Impact Study Scoping Application and based on the requirements of this section of the Township Ordinance, the Applicant shall also address the following items in the Transportation Impact Study:

   i) All traffic counts must be performed while local schools are in session.

   ii) Pedestrian counts must be obtained for all studied intersections.

   iii) Weekday traffic counts must capture the morning arrival and afternoon dismissal for both schools. Please contact the identified schools to ensure the count period is extended to include 30 minutes prior to and after the start of school along with 30 minutes prior to and after the afternoon dismissal.

   iv) Sunday counts must be obtained; contact both church offices to determine the peak attendance period on Sunday. Obtain vehicular and pedestrian counts 30 minutes prior to and after the noted attendance period.

   v) Expand the study area to include the following additional intersections:

      - Lancaster Avenue & Wayne Avenue
      - Lancaster Avenue & Louella Avenue
      - Lancaster Avenue & St. Davids Road/Chamounix Road
      - Aberdeen Avenue and Midland Avenue
      - Midland Avenue & Louella Avenue

   vi) Include the 24 hour ADT volumes and speed data for the following roadway segments:

- Lancaster Avenue
- Aberdeen Avenue

vii) Verify the size of the proposed building. The scoping application notes the retail building as 4,736 SF in size while the provided concept plan notes the retail building as 5,112 SF in size.

viii) The Scoping Application indicates the distribution and assignment will be based on the existing traffic patterns, roadways surrounding the site and the proposed site driveway location and configuration. We would prefer the Distribution and Assignment more heavily favor the existing site distribution because we anticipate the traffic associated with future retail use will behave similar to the current retail use.

ix) Section 17 *Other Needed Analyses;* left turn signal phasing analysis shall be prepared for all signalized intersections on all approaches.

D. REVIEW OF PROVIDED CONCEPT PLAN

The following comments are based on a sketch plan review of the provided concept plan; any comments identified as a Subdivision and Land Development Ordinance comment (identified by the "**§**") shall be addressed during the eventual Land Development process or the Applicant will be required to seek a waiver.

1. §255-27.B(3)(b) (Lancaster Avenue) and (d) (Aberdeen Avenue); and §255-27.C(1) – The Township legal Right-of-Way on Lancaster Avenue (S.R. 0030) is 80'; and on Aberdeen Avenue, the Township legal Right-of-Way is 60'.

2. §255-27.I(2) – Access to parking areas on commercial sites shall be controlled and shall be so located as to provide a minimum of 200 feet between points of access. We recommend eliminating the western-most Lancaster Avenue access.

3. §255-30.E – We recommend relocating the loading area to a more optimal onsite location; the current location is too close to both proposed driveways to Lancaster Avenue and will likely disrupt onsite circulation.

4. 255-37.B. – The Township requires a minimum 4' sidewalk width; in addition, the Township requires a 2' grass verge between the face of curb and the closest edge of the sidewalk. It may be necessary to increase the width of the sidewalk to 5' if traffic counts indicate a significant presence of pedestrian traffic volumes.

5. Radnor Township may want to consider prohibiting left turns out of the access to Aberdeen Avenue through the construction of a channelized island and request the Applicant investigate a dedicated northbound right turn lane on Aberdeen Avenue at Lancaster Avenue.

6. Radnor Township may want to consider prohibiting onstreet parking along the northbound approach of the eastern curbline on Aberdeen Avenue; we are concerned with the interaction between turn movements at the proposed site driveway and parking maneuvers into and out the parking spaces. Eliminating the onstreet parking spaces would also ensure Wawa patrons use the proposed off-street parking spaces: at various existing Wawas, we have observed large trucks,

tractor-trailers, and landscaping trucks parking onstreet in favor of utilizing off-street parking.

7. Given the land development project is located along Aberdeen Avenue and which is included in the Wayne Business Overlay District (WBOD), the Township may want to consider requesting the Applicant include similar site amenities to the standards required in the WBOD, in particular but not limited to street trees, and ornamental lighting.

8. We recommend the Applicant relocate the Air Machine (tire filling station) further away from the proposed driveway access on Aberdeen Avenue and the neighborhood to minimize: the potential conflicts with vehicles utilizing this driveway and the potential noise associated with the machine, respectively .

9. The Township is intending on installing a Traffic Adaptive System along Lancaster Avenue that will extend from the Radnor Township municipal line beginning at County Line Road and continuing west and including all signalized intersections to the Radnor Financial Center/St. David's Square Shopping Center intersection on Lancaster Avenue. St. Davids Road/Chamounix Road, Louella Avenue and Wayne Avenue are the next three logical intersections to be included in the Traffic Adaptive System.

10. Radnor Township has requested the Applicant provide an updated controller cabinet and a controller capable of Traffic Adaptive. In addition, the intersection of Lancaster Avenue and Aberdeen Avenue should be upgraded to include an Accessible Pedestrian Signal (APS) with audible messaging and a Lead Pedestrian Interval.

11. The Township is requesting the Applicant fully investigate a shared driveway access with several businesses located along E. Lancaster Avenue to the east (Verizon and CVS). The intent of a shared driveway access is to:

    i) To reduce the number of curb cuts along the south side of E. Lancaster Avenue

    ii) Shift the left turn movements into and out of the proposed Wawa further away from the signalized intersection (further east) and eliminate the need for the “courtesy gap left turn movement”.

    iii) Allow internal retail interaction between the three retail sites

pennsylvania
DEPARTMENT OF TRANSPORTATION

July 12, 2018

RADNOR TOWNSHIP, DELAWARE COUNTY
WAYNE PROPERTY ACQUISITION, INC.
HIGHWAY OCCUPANCY PERMIT APPLICATION NO. PRE1532
WAWA – LANCASTER AVE (SR 0030) & ABERDEEN AVENUE
TRAFFIC LOG NO.: D18-009XP
SCOPING APPLICATION REVIEW

Matthew I. Hammond, P.E.
Traffic Planning and Design, Inc.
812 W. Hamilton Street, Suite 402
Allentown, PA 18018

Dear Mr. Hammond:

The Department has reviewed the Scoping Application submission for compliance with applicable Department Regulations. This preliminary review has identified deficiencies that must be addressed in order for your application submission to be processed as efficiently as possible. Please be advised, our comments below are intended to gather the pertinent information needed in order to determine the scope of improvements that will be necessary to mitigate the traffic impacts of this development. Please note that further analysis of the amended information along with an evaluation of the physical characteristics of the area may identify further improvements.

The Department understands that the provided analysis is preliminary in nature. As such, the Department reserves the right to make future additional comments based on the formal submission in EPS.

Our comments on your scoping submission are as follows:

SCOPING COMMENTS

1. The PennDOT project number for this preliminary review, D18-009XP, must be referenced in EPS when the formal Highway Occupancy Permit (HOP) application is submitted.
2. The western site access driveway along Lancaster Avenue (SR 0030) must be reduced in width and reconfigured as a right-in driveway.
3. A right turn lane must be provided on the northbound approach of Aberdeen Avenue. The right turn lane will improve capacity at the intersection.
4. A formal Transportation Impact Study (TIS) will be required for this site. Please note that District 6-0 is accepting Transportation Impact Study (TIS) submissions via EPS. This will provide a more efficient and timely review of the submissions for the applicants while also assisting the Department with document management. Note that utilizing EPS will require a formal permit application be made for the access; therefore, submissions should be sure to include:

a. A transmittal letter including responses to Scoping comments or comments from previous reviews

b. Scoping Meeting Request Form

c. Minutes of the Scoping meeting or any previous minutes (as appropriate)

d. Forms M950-MPC and M950-AA (as appropriate)

e. Previously completed municipal reviews (if any)

f. Electronic copies of capacity analysis files (e.g. HCS or Synchro)

5. A left turn in at the eastern site access along Lancaster Avenue (SR 0030) may impact traffic at the adjacent intersection of Lancaster Avenue (SR 0030) / Aberdeen Avenue by blocking through movements in the left lane. The TIA must evaluate the existing lane utilization at this intersection and analyze the traffic signal using appropriate adjustments to the lane utilization factor. The assumptions and process must be documented in the text TIS.

6. The traffic signal at the Lancaster Avenue (SR 0030) / Aberdeen Avenue intersection is part of the Lancaster Avenue (I-0013) system with a master controller at the Radnor Township Maintenance Building. Any significant revisions to the signal timings, or significant changes to the Lancaster Avenue (SR 0030) / Aberdeen Avenue intersection will require optimized system timings and an update of the System Permit Plan.

7. Site trip distribution should be determined utilizing the new turning movement counts collected at the existing site access driveways.

8. The application of a Trip Credit for the existing Sunoco site will be acceptable based on new traffic counts collected at each existing site access driveway.

9. Coordinate with Radnor Township to determine any other projects within the study area to be added to the base traffic.

10. The Growth Rate assumption of 0.38% is acceptable.

11. The scoping application identifies three low volume driveways. Ensure the EPS application reports the driveway classification based on the total site volume.

12. With respect to the formal permit application, please ensure that the following items are addressed:

    a. Please be advised that pursuant to and in accordance with Title 67, Chapter 441.8(h)(2)(iv) of the code, the Safe Stopping Sight Distance is the absolute minimum acceptable sight distance for driveways. It is the designer's responsibility to ensure that this minimum requirement is satisfied. Furthermore, it should also be understood that any comments made (or guidance given) in this correspondence are preliminary in nature and the Department reserves the right to change, alter, withdraw, or amend them as it deems necessary in the future.

    b. It should be understood that in accordance with PennDOT Strike-Off Letter 470-10-03 and pursuant to section 421 of the State Highway Law (36 P.S. § 670-421) the installation of drainage facilities within the Legal Right-of-Way may necessitate additional permitting requirements, including, but not limited to, a separate Highway Occupancy Permit from the Municipality for the future maintenance of the new drainage facilities.

    c. ADA compliance within the limits of work (along the access frontage at a minimum) must be evaluated in the final design (i.e. new/modified facilities, impact to SEPTA bus stops, etc.).

Ensure that all pedestrian improvements along the site frontages, at all site access points, and all study area signalized intersections are ADA compliant.

d. Department records indicate that PennDOT Fiber Optic facilities are present within the proposed limits of work and may be impacted by the anticipated improvements. Be advised that if fiber optic facilities are affected, the applicant is responsible for the relocation of the fiber, testing of the fiber communications both during construction and after the relocation of the fiber indicated on the approved plans, and the associated costs. Any relocation will need to be performed by a communications contractor that is acceptable to the District Traffic Unit and the Highway Occupancy Permit will not be issued until the fiber optic impact has been reviewed and the relocation scheme ultimately approved by the Department.

e. Consistent with current Department Policy, applicants for Highway Occupancy Permits must apply for an EPS Business Partner ID (BPID). The BPID is to be used in the establishment of a billing account for the invoicing of inspection costs. For information on obtaining a BPID, you may visit:

https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp

[Please make sure that you follow the instructions that are in the "PINK" area]. After a BPID is obtained and activated by the system administrator, please provide the following information in the applicant contact information tab under "Applicant Team":

i) BPID (please ensure that the BPID is searchable through the "looking glass" feature)

ii) Contact information (name/title/phone/email) for a "general" contact person (person that typically deals with the Highway Occupancy Permit application process)

iii) Contact information (name/title/phone/email) for a "billing" contact person (person that typically deals with the Highway Occupancy Permit invoicing process)

The Department has performed this preliminary review based only on the limited information provided. We reserve the right to make future, additional, detailed comments based on subsequent submissions. If you have any questions pertaining to the technical aspects of this review, please contact Scott Bechard, AICP of Dawood Engineering, Inc. at sbechard@dawood.cc or 717.732.8576.

Respectfully,

Susan La Penta

Susan LaPenta
District Traffic Services Division Manager
Engineering District 6-0

cc: F. Hanney
A. Patel, P.E.
A. Antonelli
Traffic Services File
Radnor Township
Delaware County Planning Commission.

TRAFFIC PLANNING AND DESIGN, INC.

WWW.TRAFFICPD.COM

June 13, 2018

Mr. Francis J. Hanney
Traffic Services Manager
PennDOT District 6-0
7000 Geerdes Boulevard
King of Prussia, PA 19406

RE: TRANSPORTATION IMPACT STUDY (TIS) SCOPING APPLICATION

WAWA – Lancaster Avenue (S.R. 0030) & Aberdeen Avenue

Radnor Township, Delaware County

TPD No. KARA.00010

Dear Mr. Hanney:

On behalf of Wayne Property Acquisition, Inc., Traffic Planning and Design, Inc. (TPD) has prepared the following TIA Scoping Meeting Application for the above referenced project. This scoping application has been prepared in accordance with the application procedures outlined in PennDOT's Publication 282, Appendix A, dated July, 2017.

Scoping Meeting Date: TBD
Applicant: Wayne Property Acquisition, Inc.
Applicant's Consultant: Traffic Planning and Design, Inc. (TPD) – Matthew Hammond
Applicant's Primary Contact: Peter Karakelian

1. *LOCATION OF PROPOSED DEVELOPMENT:*
   PennDOT Engineering Dist: 6-0 County: Delaware
   Municipality: Radnor Township
   State Route(s) (SR): Lancaster Avenue (S.R. 0030)
   Segment(s): 0040 Offset(s): 0000 to 0300

   Are 102" wide combinations (w/trailer lengths greater than 28') allowed access to SR in accordance with 75 PA. C.S. (4908): Yes

   Please refer to the attached **Figure 1** which shows the project location. The proposed site plan is **attached**.

2. *DESCRIPTION OF PROPOSED DEVELOPMENT:*
   - Existing Land Use: The existing site contains the following:
     - Sunoco – Convenience Store, Ten (10) Fueling Positions, Four (4) Service Bays
     - BP - Convenience Store, Eight (8) Fueling Positions, One (1) Carwash Tunnel.

- Existing Site Access: The existing site is served by four (4) driveway locations to Lancaster Avenue (S.R. 0030) and two (2) driveway locations to Aberdeen Avenue
- Proposed Land Use: A 4.736 ksf WAWA Convenience Market with twelve (12) fueling positions
- Proposed Site Access: The site will be served by two (2) driveway locations to Lancaster Avenue (S.R. 0030) and one (1) driveway location to Aberdeen Avenue
- Community Linkages (access to neighboring properties, cross easements, pedestrian and transit accommodations): N/A

3. *DEVELOPMENT SCHEDULE AND STAGING:*
   - Anticipated Opening Date: 2020
   - Design Year: 2025
   - Describe Proposed Development/Staging: N/A

4. *TRIP GENERATION:*

   Trip generation for the proposed development will be based on:

   ☒ ITE Trip Generation Manual (10th Edition).
   - Super Convenience Market/Gas Station (ITE #960)

   ☐ Other independent surveys.

TABLE 1
TRIP GENERATION DATA – PROPOSED SITE

Land Use (ITE #)	Time Period	Size (X)	Rate	Enter %	Pass-By %
Super Convenience Market/ Gas Station (#960)	Average Weekday	4.736 ksf	***T = 837.58*(X)***	50%	N/A
	Weekday AM Peak Hour		***T = 83.14*(X)***	50%	76%
			T = 137.38*(X) – 264.53		
	Weekday PM Peak Hour		***T = 69.28*(X)***	50%	76%
	Saturday Midday Peak Hour		***T = 63.80*(X)***	50%	66%[1]
			T = 104.71*(X) – 204.23		
	Average Weekday	12 fp	T = 230.52*(X)	50%	N/A
	Weekday AM Peak Hour		T = 28.08*(X)	50%	76%
	Weekday PM Peak Hour		T = 22.96*(X)	50%	76%
	Saturday Midday Peak Hour		T = 23.26*(X)	50%	66%[1]

T = Total Trips; X = Independent Variable, ksf = 1000 sf, fp = fueling position
[1]No data available, used 10% less than P.M. peak hour.
Bold/Italics = Higher Generation Utilized

The results of the trip generation calculations are summarized in **Table 2**.

TABLE 2
TRIP GENERATION – PROPOSED DEVELOPMENT

Peak Hour	Land use Code	Size	Total	Pass-By Trips			New Trips		
				Total	Enter	Exit	Total	Enter	Exit
Average Weekday	#960	4.736 ksf	3968	N/A	N/A	N/A	3968	1984	1984
Weekday A.M.			394	300	150	150	94	47	47
Weekday P.M.			328	250	125	125	78	39	39
SAT Midday			302	200	100	100	102	51	51

As noted above, the Proposed WAWA will replace two (2) existing convenience market/gas station uses. Therefore, a large portion of the trip generation shown above already exists in the Study Area. Counts will be performed at the existing driveways to quantify the increase in traffic due to the Proposed Site. Also, the trip generation shown above represents a conservative estimate.

5. *ESTIMATED DAILY TRIP GENERATION/DRIVEWAY CLASSIFICATION:*
   a. Estimated Daily Trip Generation of Proposed Development: 3968 trips/day or 1984 vehicles/day (not including a credit for the existing uses)
   b. Driveway Classification Based on Trip Generation: Three (3) Low Volume Driveways = 25-750 vehicles/day

6. *TRANSPORTATION IMPACT STUDY REQUIRED?*
   ☐ No
   ☒ Yes, based on:
      ☒ 3,000 or more vehicle trips/day generated (before accounting for existing site uses)
      ☐ During any one-hour time period, 100 or more new (added) vehicle trips generated entering or 100 or more new (added) vehicle trips generated exiting development.
      ☐ Other considerations as described below:

7. *TRAFFIC IMPACT ASSESSMENT REQUIRED?* ☒ **No** ☐ **Yes**

8. *TIS STUDY AREA:*
   - Roadway and Study Intersections
     - Lancaster Avenue (S.R. 0030) & Aberdeen Avenue (Signalized)
     - Lancaster Avenue (S.R. 0030) & Existing Driveways (4)
     - Aberdeen Avenue & Existing Driveways (2)
   - Land use context (Refer to Smart Transportation Handbook)
     - Suburban center
   - Known Congestion Areas
     - TBD
   - Known Safety Concerns
     - TBD
   - Known Environmental Constraints
     - TBD
   - Pedestrian/Bike Review (Community Centers, Parks, Schools, etc.)
     - Will be addressed in the TIA
   - Transit Review (Current routes/stops)
     - Will be addressed in the TIA

9. *STUDY AREA TYPE:*
   Urban ☒ Rural ☐

Per PennDOT's Functional Classification Map, Lancaster Avenue (S.R. 0030) is defined as an Urban Principal Arterial.

10. *TIS ANALYSIS PERIOD AND TIMES:*
    - Weekday A.M. peak hour (peak hour within the 7:00-9:00 A.M. peak period);
    - Weekday P.M. peak hour (peak hour within the 4:00-6:00 P.M. peak period);
    - SAT Midday peak hour (peak hour within the 11:00 A.M.-1:00 P.M. peak period).

    Study Years to be evaluated:
    - 2018 Existing Conditions

- 2020 Opening/Buildout Year
- 2025 Design Year

11. *TRAFFIC ADJUSTMENT FACTORS:*
    a. Seasonal Adjustment: (Identify counts requiring adjustment and methodology): None
    b. Annual Base Traffic Growth: 0.00%/year based on PennDOT Bureau of Planning and Research (BPR) data pertaining to urban non-interstate roadways in Delaware County. Will assume 0.38%/year growth to be consistent with previous version of PennDOT BPR Data.
    c. Pass-By Trips: See Tables 1-2 Above
    d. Captured Trips for Multi-Use Sites: None
    e. Modal Split Reductions: None
    f. Other Reduction: Trip Generation Credit for Existing Site(s) based on driveway counts

12. *OTHER PROJECTS WITHIN STUDY AREA TO BE ADDED TO BASE TRAFFIC:*
    - To be determined through the scoping process.

13. *TRIP DISTRIBUTION AND ASSIGNMENT:*

    TPD recommends distributing and assigning trips to the surrounding roadways based upon an evaluation of the following: (1) existing traffic patterns, (2) roadways surrounding the site, and (3) the proposed site driveway location and configuration.

14. *APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:*

Location	Time Period	Count Type
All Existing "Roadway and Study Intersections" noted in #8 above	Weekday A.M. Peak Hour	Manual Turning Movement Count
	Weekday P.M. Peak Hour	
	SAT Midday Peak Hour	
Proposed Driveways	Weekday A.M. Peak Hour	Gap Study
	Weekday P.M. Peak Hour	
	SAT Midday Peak Hour	

15. *CAPACITY/LOS ANALYSIS:*
    Capacity analyses to be conducted at the study area intersections for the peak hours and study years to be evaluated according to the methodologies contained in the 2010 HCM (where applicable), utilizing SYNCHRO 10 software. In addition, capacity analyses will be conducted at the proposed site driveway intersection under opening year conditions.

16. *ROADWAY IMPROVEMENTS/MODIFICATIONS BY OTHERS TO BE INCLUDED:*
    None Found

17. *OTHER NEEDED ANALYSES:*
    a. Sight Distance Analysis: Yes
    b. Signal Warrant Analysis: No
    c. Required Signal Phasing/Timing Modifications: As Needed
    d. Traffic Signal Corridor/Network Analysis: N/A
    e. Analysis of the Need for Turning Lanes: Yes
    f. Turning Lane Lengths: Utilizing Pub. 46, Chapter 11
    g. Left Turn Signal Phasing Analysis: As Needed

h. Queuing Analysis: Utilizing SYNCHRO 95th percentile queues
i. Gap Studies: Yes
j. Crash Analysis: Yes
k. Weaving Analysis: N/A
l. Other Required Studies: As Needed

18. ADDITIONAL COMMENTS OR RECOMMENDATIONS RELATIVE TO THE SCOPE OF THE TIS:

TBD

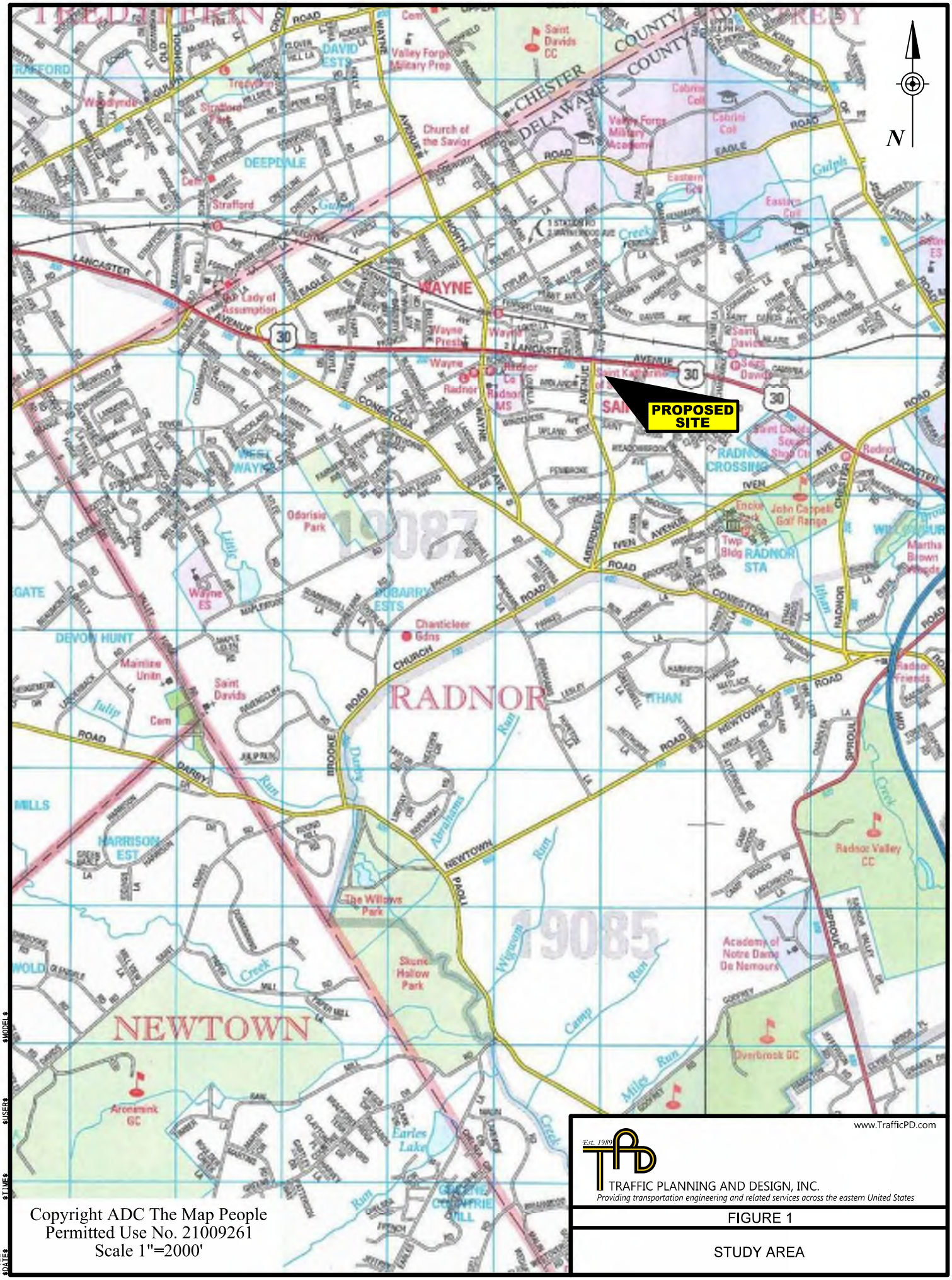
TRAFFIC PLANNING AND DESIGN, INC.

Matthew I. Hammond, P.E.
Executive Vice President

mhammond@TrafficPD.com

Attachments: Figure 1 – Study Area
Proposed Site Plan
PennDOT iTMS Data

cc: Radnor Township
Peter Karakelian, Wayne Property Acquisition, Inc.
Project Team
TPD File



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Providing transportation engineering and related services across the eastern United States

FIGURE 1

STUDY AREA

$MODEL$
$USER$
$TIME$
$FILE$
$DATE$

TMS Site 24557: Traffic Monitoring Report

Traffic Report Summary

Location Description: Btwn Pembroke Ave & Saint Davids Rd.

Details

Type of Count	MACHINE CLASS
Type of Site	Portable
Schedule	1 TIME/YR
Duration	24 HRS
Frequency Cycle	03
Cycle Year	01

Location

County	DELAWARE (23)
Route	0030
Segment	0040
Offset	1500
Latitude	40.04318
Longitude	-75.37598

Map

Traffic Data

Date	Volume	Truck Volume	Truck %	Volume Graph
Aug 19, 1993	24,248			
Aug 03, 1999	29,953			
Oct 22, 2002	28,331			
Jan 04, 2006	26,750			
Oct 15, 2008	28,779			
Oct 18, 2011	13,465	558	4.1	
Oct 28, 2014	28,086			

TMS Site 24557: Traffic Monitoring Report

Traffic Report Summary

Location Description: Btwn Pembroke Ave & Saint Davids Rd.

Details

Type of Count	MACHINE CLASS
Type of Site	Portable
Schedule	1 TIME/YR
Duration	24 HRS
Frequency Cycle	03
Cycle Year	01

Location

County	DELAWARE (23)
Route	0030
Segment	0040
Offset	1500
Latitude	40.04318
Longitude	-75.37598

Map

Traffic Data

Date	Volume	Truck Volume	Truck %	Volume Graph
Aug 19, 1993	24,248			
Aug 03, 1999	29,953			
Oct 22, 2002	28,331			
Jan 04, 2006	26,750			
Oct 15, 2008	28,779			
Oct 18, 2011	13,465	558	4.1	
Oct 28, 2014	28,086			

APPENDIX B

STUDY AREA PHOTOGRAPHS

Job #: *KARA.00010* *Date Taken:* *June, 2018* *Intersection Of:* *Lancaster Avenue (SR 0030) and Aberdeen Avenue*

Direction / Road: EB Lancaster Avenue (SR 0030)

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: EB Lancaster Avenue (SR 0030)

Approach / Departure: Departure

Distance:

Job #: *KARA.00010* *Date Taken:* *June, 2018* *Intersection Of:* *Lancaster Avenue (SR 0030) and Aberdeen Avenue*

Direction / Road: WB Lancaster Avenue (SR 0030)

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: WB Lancaster Avenue (SR 0030)

Approach / Departure: Departure

Distance:

Job #: KARA.00010 *Date Taken:* June, 2018 *Intersection Of:* Lancaster Avenue (SR 0030) and Aberdeen Avenue

Direction / Road: NB S. Aberdeen Avenue
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: NB N. Aberdeen Avenue
Approach / Departure: Departure
Distance:

Job #: KARA.00010 *Date Taken:* June, 2018 *Intersection Of:* Lancaster Avenue (SR 0030) and Aberdeen Avenue

Direction / Road: SB N. Aberdeen Avenue

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: SB S. Aberdeen Avenue

Approach / Departure: Departure

Distance:

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Wayne Ave & Lancaster Ave*

Direction / Road: NB Wayne Ave
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: NB Wayne Ave
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Wayne Ave & Lancaster Ave*

Direction / Road: NB Wayne Ave

Approach / Departure: Departure

Distance: 50 feet

Direction / Road: NB Wayne Ave

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Wayne Ave & Lancaster Ave*

Direction / Road: SB Wayne Ave
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: SB Wayne Ave
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Wayne Ave & Lancaster Ave*

Direction / Road: SB Wayne Ave
Approach / Departure: Departure
Distance: 50 feet

Direction / Road: SB Wayne Ave
Approach / Departure: Departure
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Wayne Ave & Lancaster Ave*

Direction / Road: EB Lancaster Ave

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: EB Lancaster Ave

Approach / Departure: Approach

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Wayne Ave & Lancaster Ave*

Direction / Road: EB Lancaster Ave

Approach / Departure: Departure

Distance: 50 Feet

Direction / Road: EB Lancaster Ave

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Wayne Ave & Lancaster Ave*

Direction / Road: WB Lancaster Ave

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: WB Lancaster Ave

Approach / Departure: Approach

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Wayne Ave & Lancaster Ave*

Direction / Road: WB Lancaster Ave

Approach / Departure: Departure

Distance: 50 feet

Direction / Road: WB Lancaster Ave

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Lancaster Ave*

Direction / Road: NB Louella Ave
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: NB Louella Ave
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Lancaster Ave*

Direction / Road: SB Louella Ave
Approach / Departure: Departure
Distance: 50 feet

Direction / Road: SB Louella Ave
Approach / Departure: Departure
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Lancaster Ave*

Direction / Road: EB Lancaster Ave
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: EB Lancaster Ave
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Lancaster Ave*

Direction / Road: EB Lancaster Ave
Approach / Departure: Departure
Distance: 50 Feet

Direction / Road: EB Lancaster Ave
Approach / Departure: Departure
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Lancaster Ave*

Direction / Road: WB Lancaster Ave

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: WB Lancaster Ave

Approach / Departure: Approach

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Lancaster Ave*

Direction / Road: WB Lancaster Ave

Approach / Departure: Departure

Distance: 50 feet

Direction / Road: WB Lancaster Ave

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Chamounix Rd & Lancaster Ave*

Direction / Road: NB Chamounix Rd
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: NB Chamounix Rd
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Chamounix Rd & Lancaster Ave*

Direction / Road: NB Chamounix Rd

Approach / Departure: Departure

Distance: 50 feet

Direction / Road: NB Chamounix Rd

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Chamounix Rd & Lancaster Ave*

Direction / Road: SB Chamounix Rd

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: SB Chamounix Rd

Approach / Departure: Approach

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Chamounix Rd & Lancaster Ave*

Direction / Road: SB Chamounix Rd

Approach / Departure: Departure

Distance: 50 feet

Direction / Road: SB Chamounix Rd

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Chamounix Rd & Lancaster Ave*

Direction / Road: EB Lancaster Ave

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: EB Lancaster Ave

Approach / Departure: Approach

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Chamounix Rd & Lancaster Ave*

Direction / Road: EB Lancaster Ave

Approach / Departure: Departure

Distance: 50 Feet

Direction / Road: EB Lancaster Ave

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Chamounix Rd & Lancaster Ave*

Direction / Road: WB Lancaster Ave

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: WB Lancaster Ave

Approach / Departure: Approach

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Chamounix Rd & Lancaster Ave*

Direction / Road: WB Lancaster Ave

Approach / Departure: Departure

Distance: 50 feet

Direction / Road: WB Lancaster Ave

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Aberdeen Ave & Midland Ave*

Direction / Road: NB Aberdeen Ave
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: NB Aberdeen Ave
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Aberdeen Ave & Midland Ave*

Direction / Road: NB Aberdeen Ave
Approach / Departure: Departure
Distance: 50 feet

Direction / Road: NB Aberdeen Ave
Approach / Departure: Departure
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Aberdeen Ave & Midland Ave*

Direction / Road: SB Aberdeen Ave
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: SB Aberdeen Ave
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Aberdeen Ave & Midland Ave*

Direction / Road: SB Aberdeen Ave
Approach / Departure: Departure
Distance: 50 feet

Direction / Road: SB Aberdeen Ave
Approach / Departure: Departure
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Aberdeen Ave & Midland Ave*

Direction / Road: EB Midland Ave

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: EB Midland Ave

Approach / Departure: Approach

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Aberdeen Ave & Midland Ave*

Direction / Road: EB Midland Ave
Approach / Departure: Departure
Distance: 50 Feet

Direction / Road: EB Midland Ave
Approach / Departure: Departure
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Aberdeen Ave & Midland Ave*

Direction / Road: WB Midland Ave

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: WB Midland Ave

Approach / Departure: Approach

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Aberdeen Ave & Midland Ave*

Direction / Road: WB Midland Ave

Approach / Departure: Departure

Distance: 50 feet

Direction / Road: WB Midland Ave

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Midland Ave*

Direction / Road: NB Louella Ave
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: NB Louella Ave
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Midland Ave*

Direction / Road: NB Louella Ave
Approach / Departure: Departure
Distance: 50 feet

Direction / Road: NB Louella Ave
Approach / Departure: Departure
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Midland Ave*

Direction / Road: SB Louella Ave
Approach / Departure: Approach
Distance: 50 feet

Direction / Road: SB Louella Ave
Approach / Departure: Approach
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Midland Ave*

Direction / Road: SB Louella Ave
Approach / Departure: Departure
Distance: 50 feet

Direction / Road: SB Louella Ave
Approach / Departure: Departure
Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Midland Ave*

Direction / Road: EB Midland Ave

Approach / Departure: Departure

Distance: 50 Feet

Direction / Road: EB Midland Ave

Approach / Departure: Departure

Distance: 200 feet

Job #: *KARA.00010* *Date Taken:* *08/17/2018* *Intersection Of:* *Louella Ave & Midland Ave*

Direction / Road: WB Midland Ave

Approach / Departure: Approach

Distance: 50 feet

Direction / Road: WB Midland Ave

Approach / Departure: Approach

Distance: 200 feet

APPENDIX C

MANUAL COUNT PRINTOUTS

Counter:: MIO
Counted By:: BH
Weather:: Clear

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 mbressler@trafficpd.com

Count Name: Aberdeen Ave and Lancaster Ave
Site Code: 1
Start Date: 05/31/2018
Page No: 1

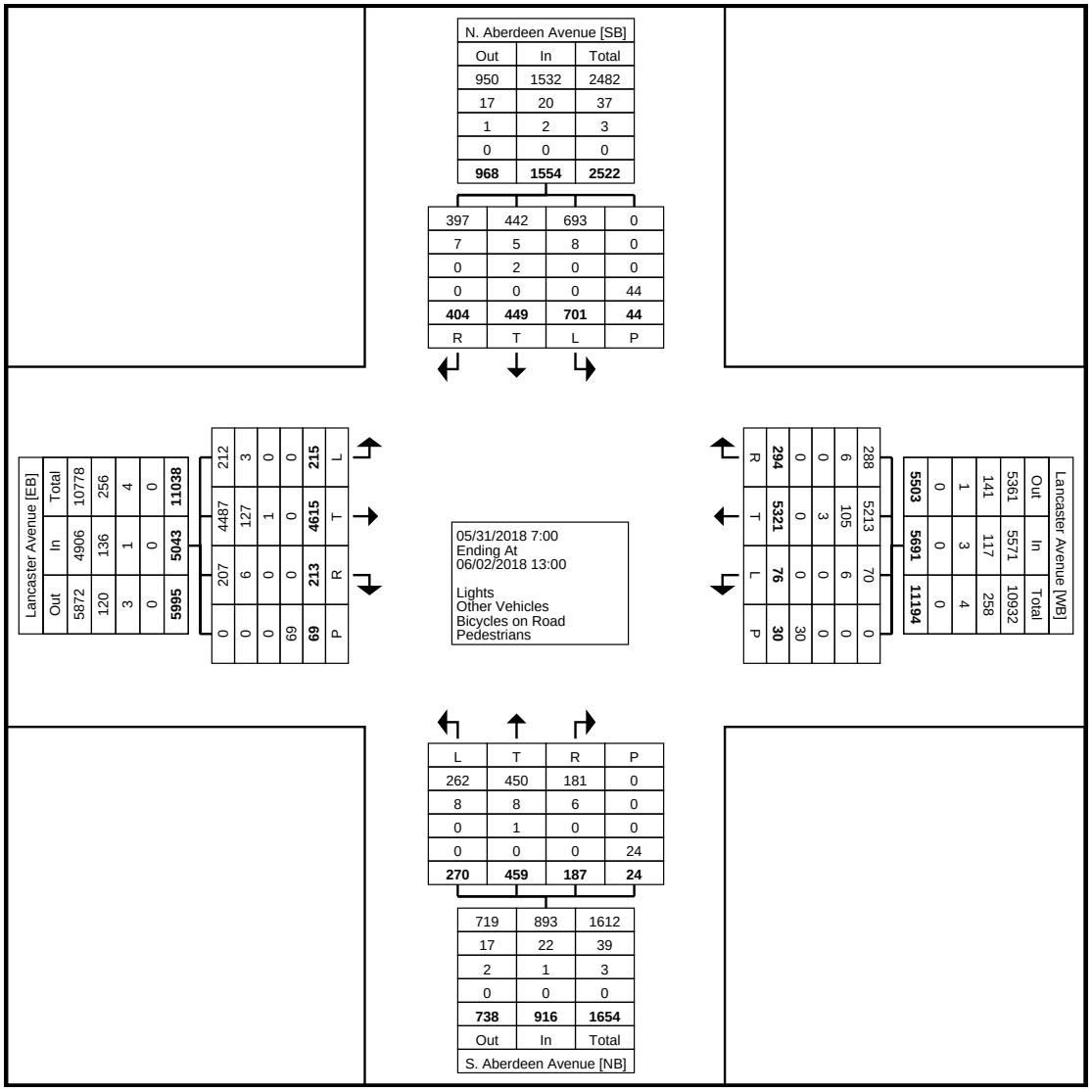
Turning Movement Data

Start Time	Lancaster Avenue Eastbound					Lancaster Avenue Westbound					S. Aberdeen Avenue Northbound					N. Aberdeen Avenue Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
7:00	4	158	6	2	168	1	195	7	0	203	8	11	2	0	21	21	7	6	1	34	426
7:15	7	214	8	0	229	1	215	10	0	226	11	13	2	0	26	20	10	6	1	36	517
7:30	3	206	9	3	218	2	244	14	0	260	7	12	4	0	23	26	17	13	0	56	557
7:45	8	177	10	4	195	4	241	6	3	251	19	31	10	1	60	43	33	24	1	100	606
Hourly Total	22	755	33	9	810	8	895	37	3	940	45	67	18	1	130	110	67	49	3	226	2106
8:00	11	225	8	5	244	3	241	17	0	261	26	27	12	1	65	44	20	12	0	76	646
8:15	7	190	6	1	203	1	243	9	0	253	13	30	6	0	49	23	18	8	0	49	554
8:30	9	193	10	11	212	3	231	11	1	245	14	20	5	2	39	30	14	24	1	68	564
8:45	5	185	11	3	201	3	269	7	0	279	13	16	2	0	31	29	16	13	0	58	569
Hourly Total	32	793	35	20	860	10	984	44	1	1038	66	93	25	3	184	126	68	57	1	251	2333
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16:00	10	184	8	3	202	3	216	23	1	242	8	19	11	3	38	32	19	14	0	65	547
16:15	9	190	12	0	211	5	213	11	2	229	7	24	9	2	40	22	23	17	2	62	542
16:30	10	209	7	1	226	5	205	12	0	222	5	19	10	1	34	33	18	25	2	76	558
16:45	4	202	6	0	212	2	236	12	1	250	9	24	7	1	40	28	31	14	1	73	575
Hourly Total	33	785	33	4	851	15	870	58	4	943	29	86	37	7	152	115	91	70	5	276	2222
17:00	8	209	12	1	229	3	233	14	1	250	9	17	6	0	32	33	19	12	0	64	575
17:15	8	218	5	6	231	2	238	11	2	251	11	13	8	0	32	30	34	20	1	84	598
17:30	13	215	7	1	235	3	248	22	2	273	10	9	5	2	24	26	28	21	1	75	607
17:45	3	209	6	5	218	5	217	22	5	244	7	18	8	3	33	40	18	13	10	71	566
Hourly Total	32	851	30	13	913	13	936	69	10	1018	37	57	27	5	121	129	99	66	12	294	2346
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	21	162	9	5	192	4	183	7	1	194	19	14	14	1	47	31	7	32	2	70	503
11:15	5	192	11	4	208	5	211	10	3	226	11	20	7	5	38	28	19	10	3	57	529
11:30	9	159	11	5	179	0	228	8	3	236	8	18	13	0	39	36	14	16	9	66	520
11:45	7	187	10	1	204	7	215	17	1	239	11	24	8	1	43	24	12	22	1	58	544
Hourly Total	42	700	41	15	783	16	837	42	8	895	49	76	42	7	167	119	52	80	15	251	2096
12:00	18	150	10	2	178	2	196	15	2	213	9	31	8	1	48	28	25	16	2	69	508
12:15	14	202	11	3	227	3	192	13	1	208	9	11	9	0	29	21	10	21	3	52	516
12:30	9	185	13	2	207	6	187	9	0	202	10	23	11	0	44	29	21	24	2	74	527
12:45	13	194	7	1	214	3	224	7	1	234	16	15	10	0	41	24	16	21	1	61	550
Hourly Total	54	731	41	8	826	14	799	44	4	857	44	80	38	1	162	102	72	82	8	256	2101
Grand Total	215	4615	213	69	5043	76	5321	294	30	5691	270	459	187	24	916	701	449	404	44	1554	13204
Approach %	4.3	91.5	4.2	-	-	1.3	93.5	5.2	-	-	29.5	50.1	20.4	-	-	45.1	28.9	26.0	-	-	-
Total %	1.6	35.0	1.6	-	38.2	0.6	40.3	2.2	-	43.1	2.0	3.5	1.4	-	6.9	5.3	3.4	3.1	-	11.8	-
Lights	212	4487	207	-	4906	70	5213	288	-	5571	262	450	181	-	893	693	442	397	-	1532	12902
% Lights	98.6	97.2	97.2	-	97.3	92.1	98.0	98.0	-	97.9	97.0	98.0	96.8	-	97.5	98.9	98.4	98.3	-	98.6	97.7
Other Vehicles	3	127	6	-	136	6	105	6	-	117	8	8	6	-	22	8	5	7	-	20	295
% Other Vehicles	1.4	2.8	2.8	-	2.7	7.9	2.0	2.0	-	2.1	3.0	1.7	3.2	-	2.4	1.1	1.1	1.7	-	1.3	2.2
Bicycles on Road	0	1	0	-	1	0	3	0	-	3	0	1	0	-	1	0	2	0	-	2	7
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.1	0.0	0.2	0.0	-	0.1	0.0	0.4	0.0	-	0.1	0.1
Pedestrians	-	-	-	69	-	-	-	-	30	-	-	-	-	24	-	-	-	-	44	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Counter:: MIO
Counted By:: BH
Weather:: Clear

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 mbressler@trafficpd.com

Count Name: Aberdeen Ave and Lancaster Ave
Site Code: 1
Start Date: 05/31/2018
Page No: 2



Turning Movement Data Plot

Counter:: MIO
Counted By:: BH
Weather:: Clear

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 mbressler@trafficpd.com

Count Name: Aberdeen Ave and Lancaster Ave
Site Code: 1
Start Date: 05/31/2018

Turning Movement Peak Hour Data (7:45)

Start Time	Lancaster Avenue Eastbound					Lancaster Avenue Westbound					S. Aberdeen Avenue Northbound					N. Aberdeen Avenue Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
7:45	8	177	10	4	195	4	241	6	3	251	19	31	10	1	60	43	33	24	1	100	606
8:00	11	225	8	5	244	3	241	17	0	261	26	27	12	1	65	44	20	12	0	76	646
8:15	7	190	6	1	203	1	243	9	0	253	13	30	6	0	49	23	18	8	0	49	554
8:30	9	193	10	11	212	3	231	11	1	245	14	20	5	2	39	30	14	24	1	68	564
Total	35	785	34	21	854	11	956	43	4	1010	72	108	33	4	213	140	85	68	2	293	2370
Approach %	4.1	91.9	4.0	-	-	1.1	94.7	4.3	-	-	33.8	50.7	15.5	-	-	47.8	29.0	23.2	-	-	-
Total %	1.5	33.1	1.4	-	36.0	0.5	40.3	1.8	-	42.6	3.0	4.6	1.4	-	9.0	5.9	3.6	2.9	-	12.4	-
PHF	0.795	0.872	0.850	-	0.875	0.688	0.984	0.632	-	0.967	0.692	0.871	0.688	-	0.819	0.795	0.644	0.708	-	0.733	0.917
Lights	34	755	33	-	822	9	921	43	-	973	66	103	30	-	199	139	83	66	-	288	2282
% Lights	97.1	96.2	97.1	-	96.3	81.8	96.3	100.0	-	96.3	91.7	95.4	90.9	-	93.4	99.3	97.6	97.1	-	98.3	96.3
Other Vehicles	1	30	1	-	32	2	35	0	-	37	6	5	3	-	14	1	2	2	-	5	88
% Other Vehicles	2.9	3.8	2.9	-	3.7	18.2	3.7	0.0	-	3.7	8.3	4.6	9.1	-	6.6	0.7	2.4	2.9	-	1.7	3.7
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	21	-	-	-	-	4	-	-	-	-	4	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Counter:: MIO
Counted By:: BH
Weather:: Clear

Traffic Planning and Design, Inc
2500 East High Street
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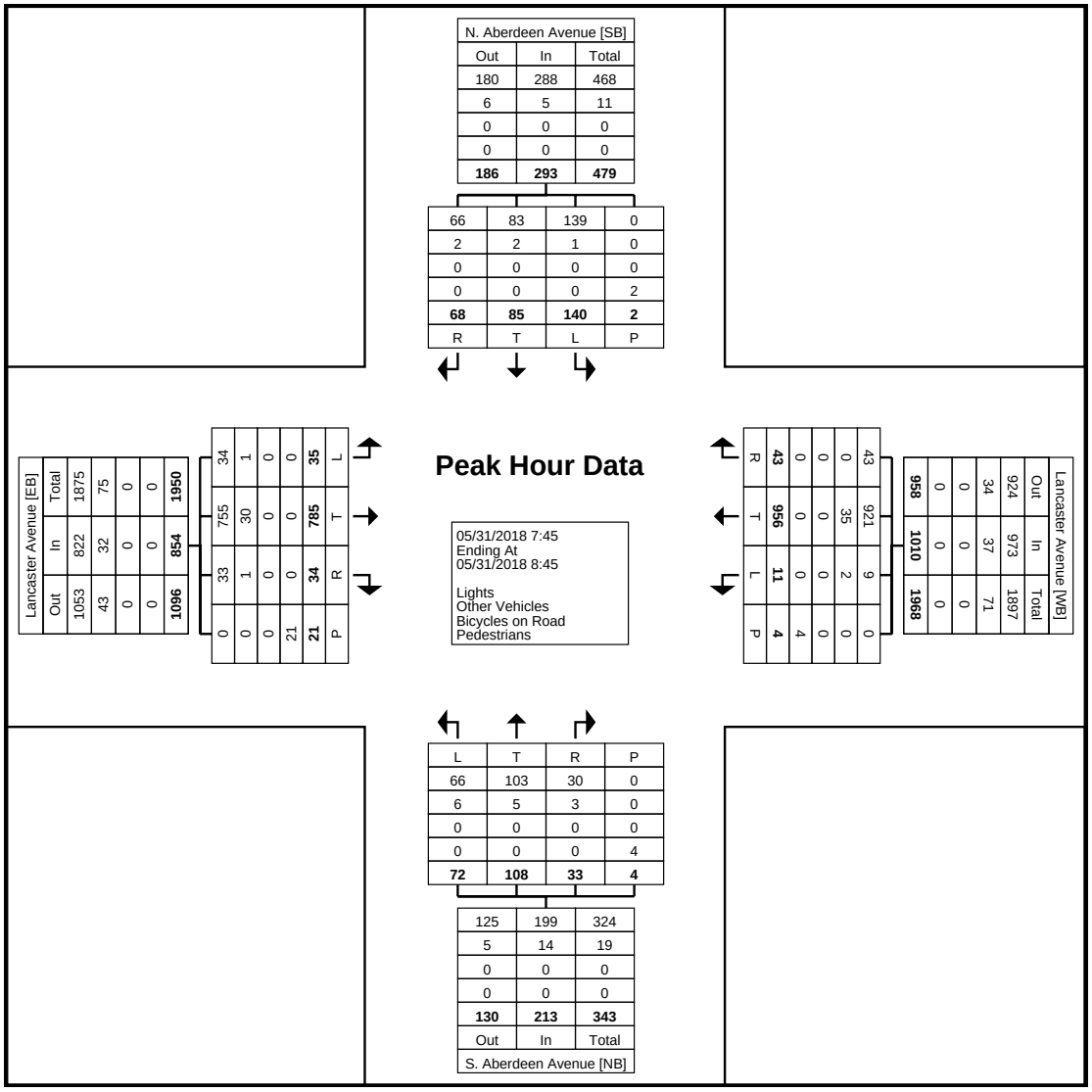
Count Name: Aberdeen Ave and Lancaster Ave
Site Code: 1
Start Date: 05/31/2018
Page No: 4



Turning Movement Peak Hour Data Plot (7:45)

Counter:: MIO
Counted By:: BH
Weather:: Clear

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 mbressler@trafficpd.com

Count Name: Aberdeen Ave and Lancaster Ave
Site Code: 1
Start Date: 05/31/2018

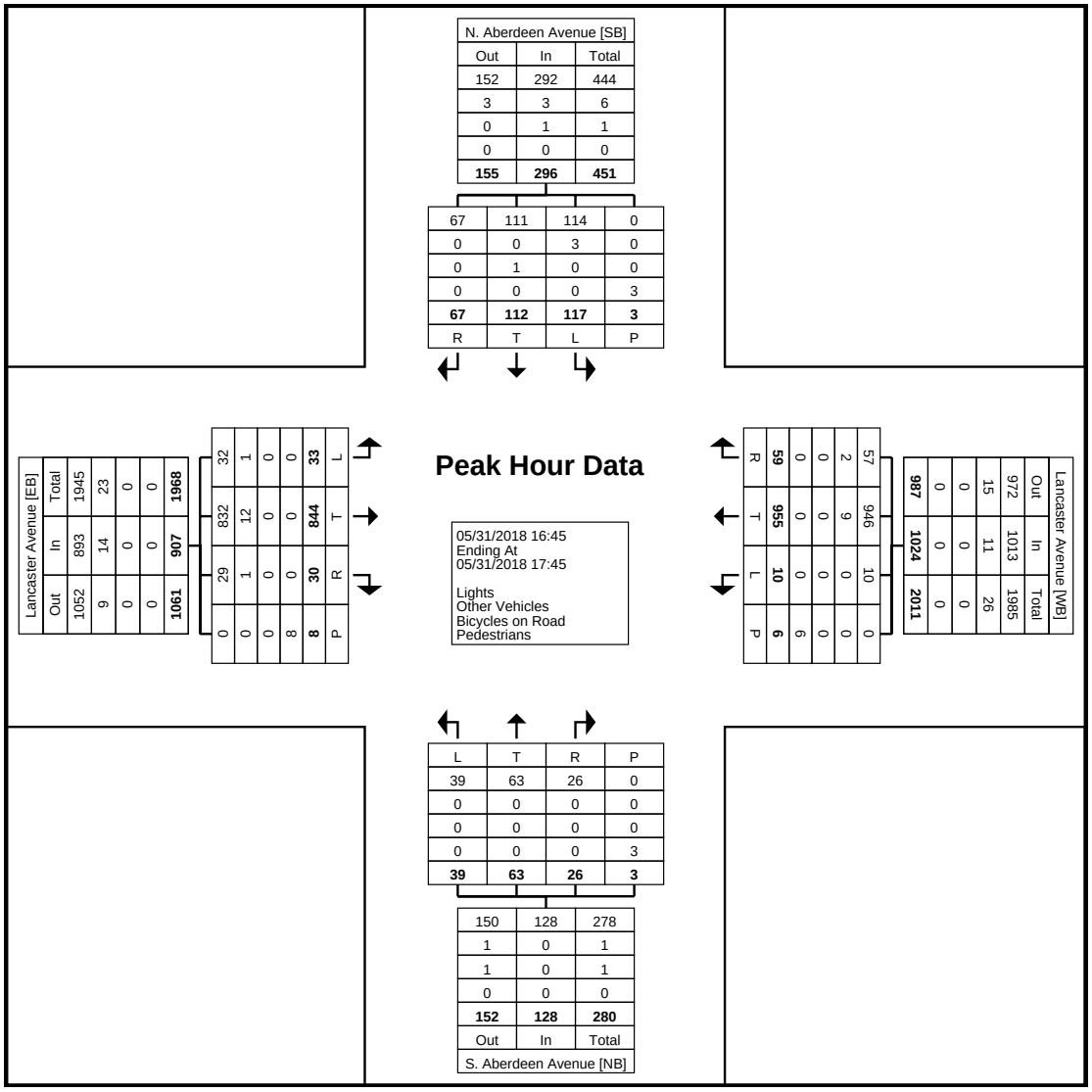
Turning Movement Peak Hour Data (16:45)

Start Time	Lancaster Avenue Eastbound					Lancaster Avenue Westbound					S. Aberdeen Avenue Northbound					N. Aberdeen Avenue Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
16:45	4	202	6	0	212	2	236	12	1	250	9	24	7	1	40	28	31	14	1	73	575
17:00	8	209	12	1	229	3	233	14	1	250	9	17	6	0	32	33	19	12	0	64	575
17:15	8	218	5	6	231	2	238	11	2	251	11	13	8	0	32	30	34	20	1	84	598
17:30	13	215	7	1	235	3	248	22	2	273	10	9	5	2	24	26	28	21	1	75	607
Total	33	844	30	8	907	10	955	59	6	1024	39	63	26	3	128	117	112	67	3	296	2355
Approach %	3.6	93.1	3.3	-	-	1.0	93.3	5.8	-	-	30.5	49.2	20.3	-	-	39.5	37.8	22.6	-	-	-
Total %	1.4	35.8	1.3	-	38.5	0.4	40.6	2.5	-	43.5	1.7	2.7	1.1	-	5.4	5.0	4.8	2.8	-	12.6	-
PHF	0.635	0.968	0.625	-	0.965	0.833	0.963	0.670	-	0.938	0.886	0.656	0.813	-	0.800	0.886	0.824	0.798	-	0.881	0.970
Lights	32	832	29	-	893	10	946	57	-	1013	39	63	26	-	128	114	111	67	-	292	2326
% Lights	97.0	98.6	96.7	-	98.5	100.0	99.1	96.6	-	98.9	100.0	100.0	100.0	-	100.0	97.4	99.1	100.0	-	98.6	98.8
Other Vehicles	1	12	1	-	14	0	9	2	-	11	0	0	0	-	0	3	0	0	-	3	28
% Other Vehicles	3.0	1.4	3.3	-	1.5	0.0	0.9	3.4	-	1.1	0.0	0.0	0.0	-	0.0	2.6	0.0	0.0	-	1.0	1.2
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.9	0.0	-	0.3	0.0
Pedestrians	-	-	-	8	-	-	-	-	6	-	-	-	-	3	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Counter:: MIO
Counted By:: BH
Weather:: Clear

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 mbressler@trafficpd.com

Count Name: Aberdeen Ave and Lancaster Ave
Site Code: 1
Start Date: 05/31/2018
Page No: 6



Turning Movement Peak Hour Data Plot (16:45)

Counter:: MIO
Counted By:: BH
Weather:: Clear

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Pottstown, Pennsylvania, United States 19464
610.326.3100 mbressler@trafficpd.com

Count Name: Aberdeen Ave and Lancaster Ave
Site Code: 1
Start Date: 05/31/2018

Turning Movement Peak Hour Data (11:15)

Start Time	Lancaster Avenue Eastbound					Lancaster Avenue Westbound					S. Aberdeen Avenue Northbound					N. Aberdeen Avenue Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:15	5	192	11	4	208	5	211	10	3	226	11	20	7	5	38	28	19	10	3	57	529
11:30	9	159	11	5	179	0	228	8	3	236	8	18	13	0	39	36	14	16	9	66	520
11:45	7	187	10	1	204	7	215	17	1	239	11	24	8	1	43	24	12	22	1	58	544
12:00	18	150	10	2	178	2	196	15	2	213	9	31	8	1	48	28	25	16	2	69	508
Total	39	688	42	12	769	14	850	50	9	914	39	93	36	7	168	116	70	64	15	250	2101
Approach %	5.1	89.5	5.5	-	-	1.5	93.0	5.5	-	-	23.2	55.4	21.4	-	-	46.4	28.0	25.6	-	-	-
Total %	1.9	32.7	2.0	-	36.6	0.7	40.5	2.4	-	43.5	1.9	4.4	1.7	-	8.0	5.5	3.3	3.0	-	11.9	-
PHF	0.542	0.896	0.955	-	0.924	0.500	0.932	0.735	-	0.956	0.886	0.750	0.692	-	0.875	0.806	0.700	0.727	-	0.906	0.966
Lights	39	674	41	-	754	13	833	49	-	895	39	91	36	-	166	115	70	63	-	248	2063
% Lights	100.0	98.0	97.6	-	98.0	92.9	98.0	98.0	-	97.9	100.0	97.8	100.0	-	98.8	99.1	100.0	98.4	-	99.2	98.2
Other Vehicles	0	13	1	-	14	1	14	1	-	16	0	1	0	-	1	1	0	1	-	2	33
% Other Vehicles	0.0	1.9	2.4	-	1.8	7.1	1.6	2.0	-	1.8	0.0	1.1	0.0	-	0.6	0.9	0.0	1.6	-	0.8	1.6
Bicycles on Road	0	1	0	-	1	0	3	0	-	3	0	1	0	-	1	0	0	0	-	0	5
% Bicycles on Road	0.0	0.1	0.0	-	0.1	0.0	0.4	0.0	-	0.3	0.0	1.1	0.0	-	0.6	0.0	0.0	0.0	-	0.0	0.2
Pedestrians	-	-	-	12	-	-	-	-	9	-	-	-	-	7	-	-	-	-	15	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Counter:: MIO
Counted By:: BH
Weather:: Clear

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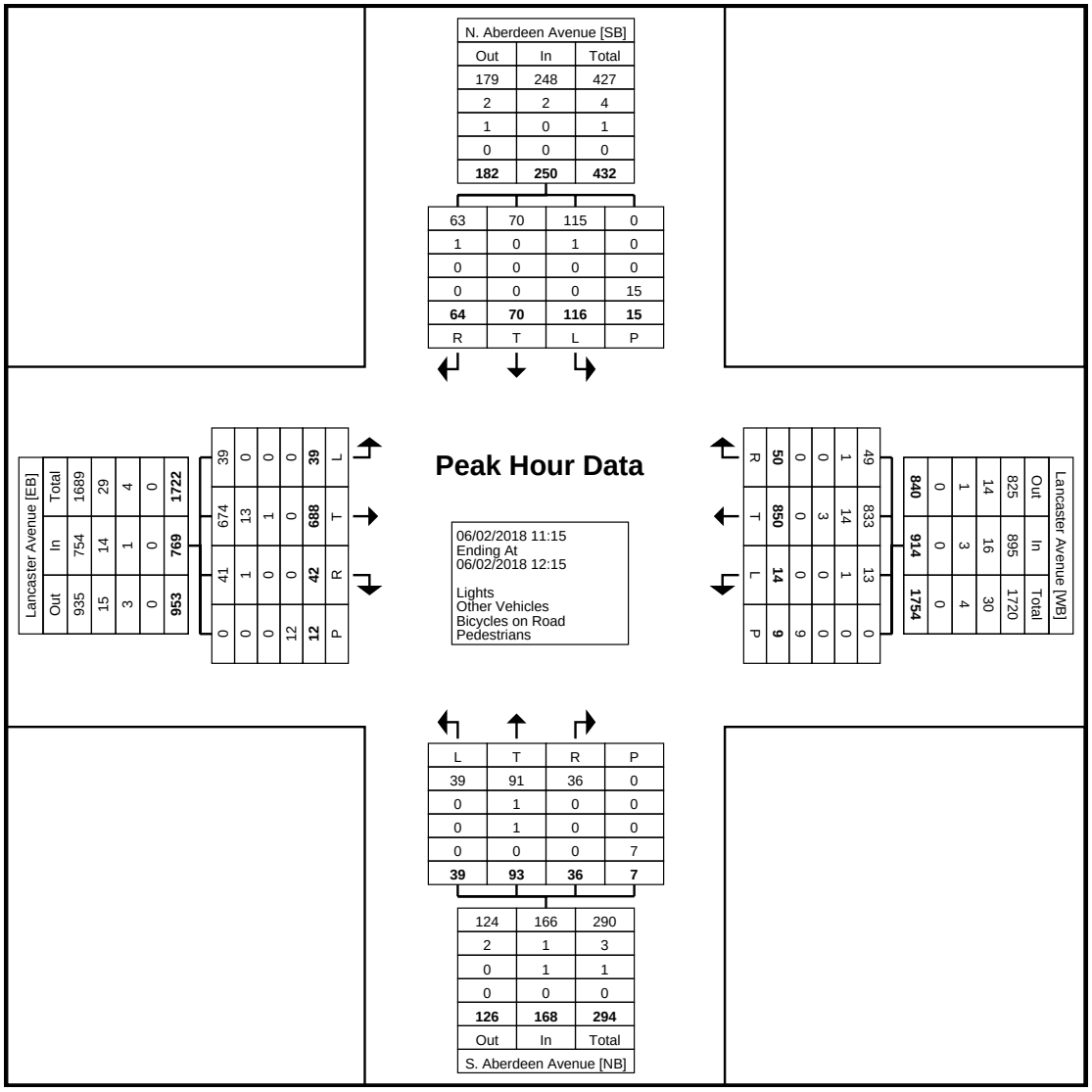
Count Name: Aberdeen Ave and Lancaster Ave
Site Code: 1
Start Date: 05/31/2018



Turning Movement Peak Hour Data Plot (11:15)

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Radnor, PA
Lancaster Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.043737, -75.381298

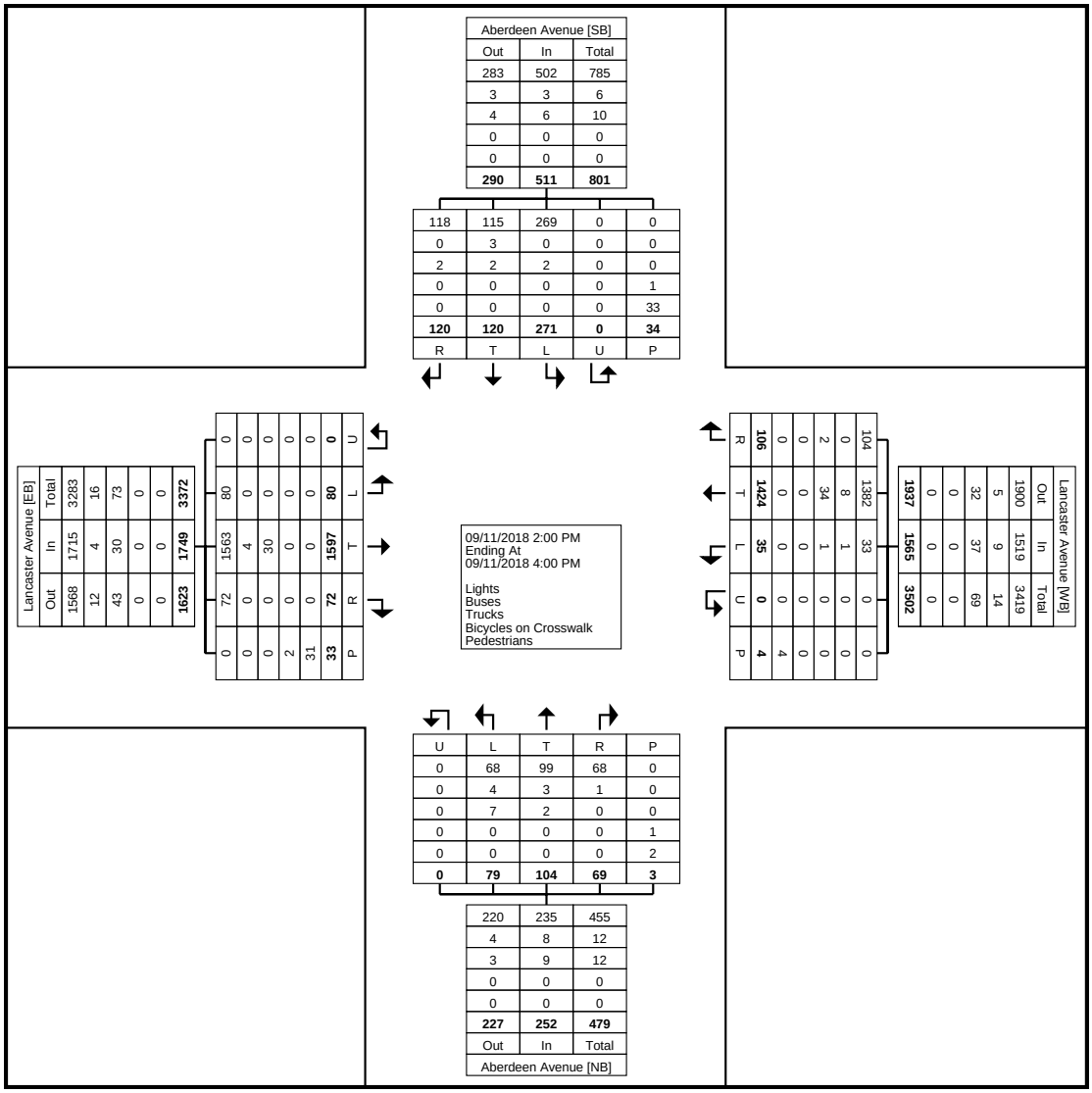
Count Name: Lancaster Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Aberdeen Avenue Northbound							Aberdeen Avenue Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
2:00 PM	9	180	7	0	0	1	196	1	159	19	1	0	0	180	9	13	6	0	0	1	28	27	13	14	1	0	0	55	459
2:15 PM	12	195	11	0	0	1	218	0	192	11	0	0	1	203	8	11	9	1	0	1	29	25	14	13	2	0	1	54	504
2:30 PM	10	202	6	0	0	0	218	6	176	9	1	0	1	192	9	11	4	1	0	0	25	33	13	20	0	0	2	66	501
2:45 PM	8	176	9	0	0	1	193	3	189	19	3	0	0	214	13	8	10	0	0	0	31	38	20	13	1	0	3	72	510
Hourly Total	39	753	33	0	0	3	825	10	716	58	5	0	2	789	39	43	29	2	0	2	113	123	60	60	4	0	6	247	1974
3:00 PM	5	204	12	0	0	8	221	7	167	9	0	0	0	183	14	16	12	2	0	0	44	39	7	16	0	0	6	62	510
3:15 PM	12	238	6	0	0	10	256	5	170	14	0	0	1	189	11	19	5	1	0	0	36	41	16	10	0	0	13	67	548
3:30 PM	15	195	15	1	0	9	226	6	179	11	0	0	0	196	10	13	8	2	0	0	33	30	17	16	0	0	4	63	518
3:45 PM	9	207	5	0	0	3	221	7	192	9	0	0	1	208	5	13	7	1	0	1	26	38	20	14	0	0	5	72	527
Hourly Total	41	844	38	1	0	30	924	25	708	43	0	0	2	776	40	61	32	6	0	1	139	148	60	56	0	0	28	264	2103
Grand Total	80	1597	71	1	0	33	1749	35	1424	101	5	0	4	1565	79	104	61	8	0	3	252	271	120	116	4	0	34	511	4077
Approach %	4.6	91.3	4.1	0.1	0.0	-	-	2.2	91.0	6.5	0.3	0.0	-	-	31.3	41.3	24.2	3.2	0.0	-	-	53.0	23.5	22.7	0.8	0.0	-	-	-
Total %	2.0	39.2	1.7	0.0	0.0	-	42.9	0.9	34.9	2.5	0.1	0.0	-	38.4	1.9	2.6	1.5	0.2	0.0	-	6.2	6.6	2.9	2.8	0.1	0.0	-	12.5	-
Lights	80	1563	71	1	0	-	1715	33	1382	99	5	0	-	1519	68	99	60	8	0	-	235	269	115	114	4	0	-	502	3971
% Lights	100.0	97.9	100.0	100.0	-	-	98.1	94.3	97.1	98.0	100.0	-	-	97.1	86.1	95.2	98.4	100.0	-	-	93.3	99.3	95.8	98.3	100.0	-	-	98.2	97.4
Buses	0	4	0	0	0	-	4	1	8	0	0	0	-	9	4	3	1	0	0	-	8	0	3	0	0	0	-	3	24
% Buses	0.0	0.3	0.0	0.0	-	-	0.2	2.9	0.6	0.0	0.0	-	-	0.6	5.1	2.9	1.6	0.0	-	-	3.2	0.0	2.5	0.0	0.0	-	-	0.6	0.6
Trucks	0	30	0	0	0	-	30	1	34	2	0	0	-	37	7	2	0	0	0	-	9	2	2	2	0	0	-	6	82
% Trucks	0.0	1.9	0.0	0.0	-	-	1.7	2.9	2.4	2.0	0.0	-	-	2.4	8.9	1.9	0.0	0.0	-	-	3.6	0.7	1.7	1.7	0.0	-	-	1.2	2.0
Bicycles on Crosswalk	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	6.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	33.3	-	-	-	-	-	-	2.9	-	-
Pedestrians	-	-	-	-	-	31	-	-	-	-	-	-	4	-	-	-	-	-	-	2	-	-	-	-	-	-	33	-	-
% Pedestrians	-	-	-	-	-	93.9	-	-	-	-	-	-	100.0	-	-	-	-	-	-	66.7	-	-	-	-	-	-	97.1	-	-

Radnor, PA
Lancaster Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.043737, -75.381298

Count Name: Lancaster Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018
Page No: 2



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Radnor, PA
Lancaster Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.043737, -75.381298

Count Name: Lancaster Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Aberdeen Avenue Northbound							Aberdeen Avenue Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
3:00 PM	5	204	12	0	0	8	221	7	167	9	0	0	0	183	14	16	12	2	0	0	44	39	7	16	0	0	6	62	510
3:15 PM	12	238	6	0	0	10	256	5	170	14	0	0	1	189	11	19	5	1	0	0	36	41	16	10	0	0	13	67	548
3:30 PM	15	195	15	1	0	9	226	6	179	11	0	0	0	196	10	13	8	2	0	0	33	30	17	16	0	0	4	63	518
3:45 PM	9	207	5	0	0	3	221	7	192	9	0	0	1	208	5	13	7	1	0	1	26	38	20	14	0	0	5	72	527
Total	41	844	38	1	0	30	924	25	708	43	0	0	2	776	40	61	32	6	0	1	139	148	60	56	0	0	28	264	2103
Approach %	4.4	91.3	4.1	0.1	0.0	-	-	3.2	91.2	5.5	0.0	0.0	-	-	28.8	43.9	23.0	4.3	0.0	-	-	56.1	22.7	21.2	0.0	0.0	-	-	-
Total %	1.9	40.1	1.8	0.0	0.0	-	43.9	1.2	33.7	2.0	0.0	0.0	-	36.9	1.9	2.9	1.5	0.3	0.0	-	6.6	7.0	2.9	2.7	0.0	0.0	-	12.6	-
PHF	0.683	0.887	0.633	0.250	0.000	-	0.902	0.893	0.922	0.768	0.000	0.000	-	0.933	0.714	0.803	0.667	0.750	0.000	-	0.790	0.902	0.750	0.875	0.000	0.000	-	0.917	0.959
Lights	41	830	38	1	0	-	910	24	691	42	0	0	-	757	39	58	32	6	0	-	135	148	58	55	0	0	-	261	2063
% Lights	100.0	98.3	100.0	100.0	-	-	98.5	96.0	97.6	97.7	-	-	-	97.6	97.5	95.1	100.0	100.0	-	-	97.1	100.0	96.7	98.2	-	-	-	98.9	98.1
Buses	0	3	0	0	0	-	3	0	4	0	0	0	-	4	0	1	0	0	0	-	1	0	0	0	0	0	-	0	8
% Buses	0.0	0.4	0.0	0.0	-	-	0.3	0.0	0.6	0.0	-	-	-	0.5	0.0	1.6	0.0	0.0	-	-	0.7	0.0	0.0	0.0	-	-	-	0.0	0.4
Trucks	0	11	0	0	0	-	11	1	13	1	0	0	-	15	1	2	0	0	0	-	3	0	2	1	0	0	-	3	32
% Trucks	0.0	1.3	0.0	0.0	-	-	1.2	4.0	1.8	2.3	-	-	-	1.9	2.5	3.3	0.0	0.0	-	-	2.2	0.0	3.3	1.8	-	-	-	1.1	1.5
Bicycles on Crosswalk	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	6.7	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	28	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	28	-	-
% Pedestrians	-	-	-	-	-	93.3	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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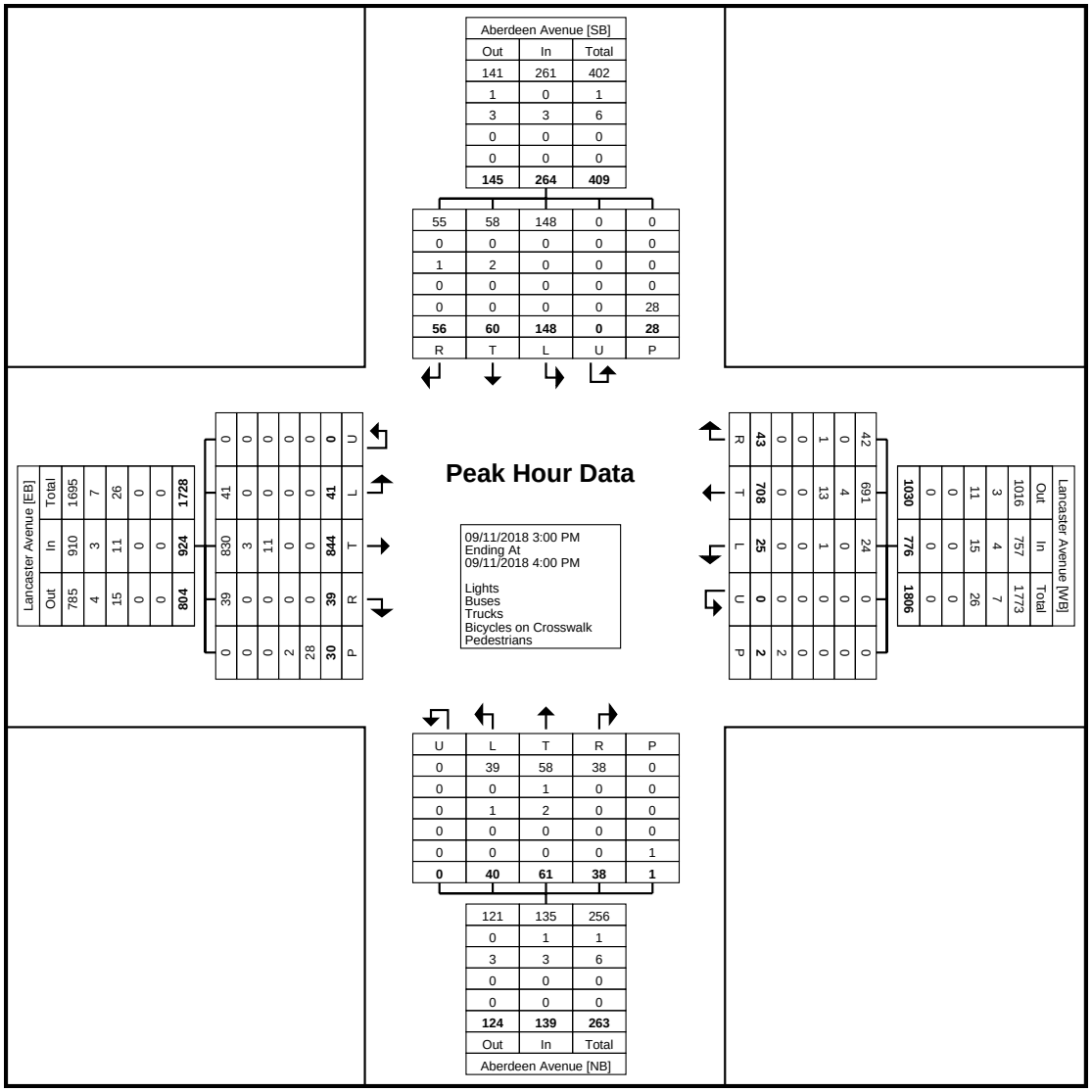
Radnor, PA
Lancaster Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.043737, -75.381298

Count Name: Lancaster Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018
Page No: 4



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Radnor, PA
Lancaster Ave & Aberdeen Ave
Sunday, September 9, 2018
Location: 40.043737, -75.381298

Count Name: Lancaster Ave/Aberdeen Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Aberdeen Avenue Northbound							Aberdeen Avenue Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
9:00 AM	13	75	3	0	0	1	91	4	125	5	0	0	0	134	8	3	5	0	0	0	16	16	3	13	3	0	0	35	276
9:15 AM	5	116	13	0	0	9	134	5	96	3	0	0	1	104	8	9	2	0	0	1	19	8	17	9	1	0	2	35	292
9:30 AM	8	102	3	0	0	19	113	3	120	2	0	0	0	125	5	4	2	0	0	3	11	10	10	10	0	0	3	30	279
9:45 AM	5	129	8	0	0	3	142	1	134	9	1	0	0	145	12	5	0	0	0	2	17	8	5	10	1	0	0	24	328
Hourly Total	31	422	27	0	0	32	480	13	475	19	1	0	1	508	33	21	9	0	0	6	63	42	35	42	5	0	5	124	1175
10:00 AM	2	117	0	0	0	5	119	2	113	3	0	0	2	118	6	12	4	0	0	2	22	10	6	13	0	0	0	29	288
10:15 AM	15	113	8	0	0	24	136	2	124	8	0	0	9	134	17	12	12	0	0	7	41	21	6	8	0	0	7	35	346
10:30 AM	6	123	8	0	0	4	137	1	160	7	0	0	6	168	13	12	5	0	0	0	30	17	9	11	0	1	0	38	373
10:45 AM	10	140	8	0	0	2	158	3	142	7	0	0	0	152	4	6	3	1	0	0	14	9	8	11	0	0	0	28	352
Hourly Total	33	493	24	0	0	35	550	8	539	25	0	0	17	572	40	42	24	1	0	9	107	57	29	43	0	1	7	130	1359
11:00 AM	7	149	6	1	0	5	163	1	133	6	1	0	0	141	6	17	7	0	0	0	30	19	8	4	4	0	0	35	369
11:15 AM	5	130	3	0	0	11	138	8	144	10	1	0	0	163	6	12	7	0	0	0	25	15	23	7	0	0	1	45	371
Grand Total	76	1194	60	1	0	83	1331	30	1291	60	3	0	18	1384	85	92	47	1	0	15	225	133	95	96	9	1	13	334	3274
Approach %	5.7	89.7	4.5	0.1	0.0	-	-	2.2	93.3	4.3	0.2	0.0	-	-	37.8	40.9	20.9	0.4	0.0	-	-	39.8	28.4	28.7	2.7	0.3	-	-	-
Total %	2.3	36.5	1.8	0.0	0.0	-	40.7	0.9	39.4	1.8	0.1	0.0	-	42.3	2.6	2.8	1.4	0.0	0.0	-	6.9	4.1	2.9	2.9	0.3	0.0	-	10.2	-
Lights	76	1186	60	1	0	-	1323	28	1288	60	3	0	-	1379	85	92	47	1	0	-	225	132	95	96	9	1	-	333	3260
% Lights	100.0	99.3	100.0	100.0	-	-	99.4	93.3	99.8	100.0	100.0	-	-	99.6	100.0	100.0	100.0	100.0	-	-	100.0	99.2	100.0	100.0	100.0	100.0	-	99.7	99.6
Buses	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	8	0	0	0	-	8	2	3	0	0	0	-	5	0	0	0	0	0	-	0	1	0	0	0	0	-	1	14
% Trucks	0.0	0.7	0.0	0.0	-	-	0.6	6.7	0.2	0.0	0.0	-	-	0.4	0.0	0.0	0.0	0.0	-	-	0.0	0.8	0.0	0.0	0.0	0.0	-	0.3	0.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	6.7	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	83	-	-	-	-	-	-	18	-	-	-	-	-	-	14	-	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	93.3	-	-	-	-	-	-	100.0	-	-

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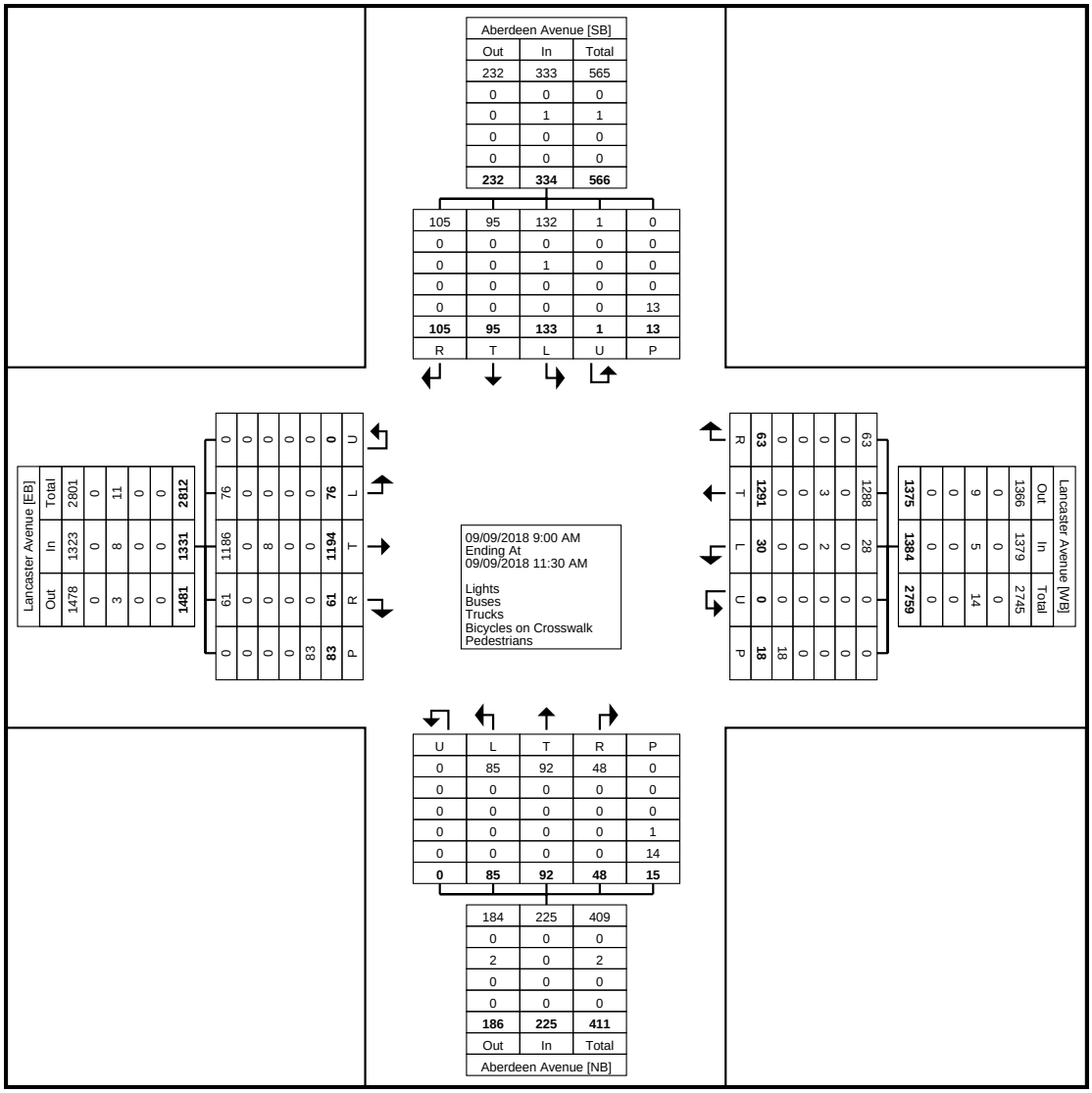
Radnor, PA
Lancaster Ave & Aberdeen Ave
Sunday, September 9, 2018
Location: 40.043737, -75.381298

Count Name: Lancaster Ave/Aberdeen Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 2



Turning Movement Data Plot

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184 Baker Rd

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Radnor, PA
Lancaster Ave & Aberdeen Ave
Sunday, September 9, 2018
Location: 40.043737, -75.381298

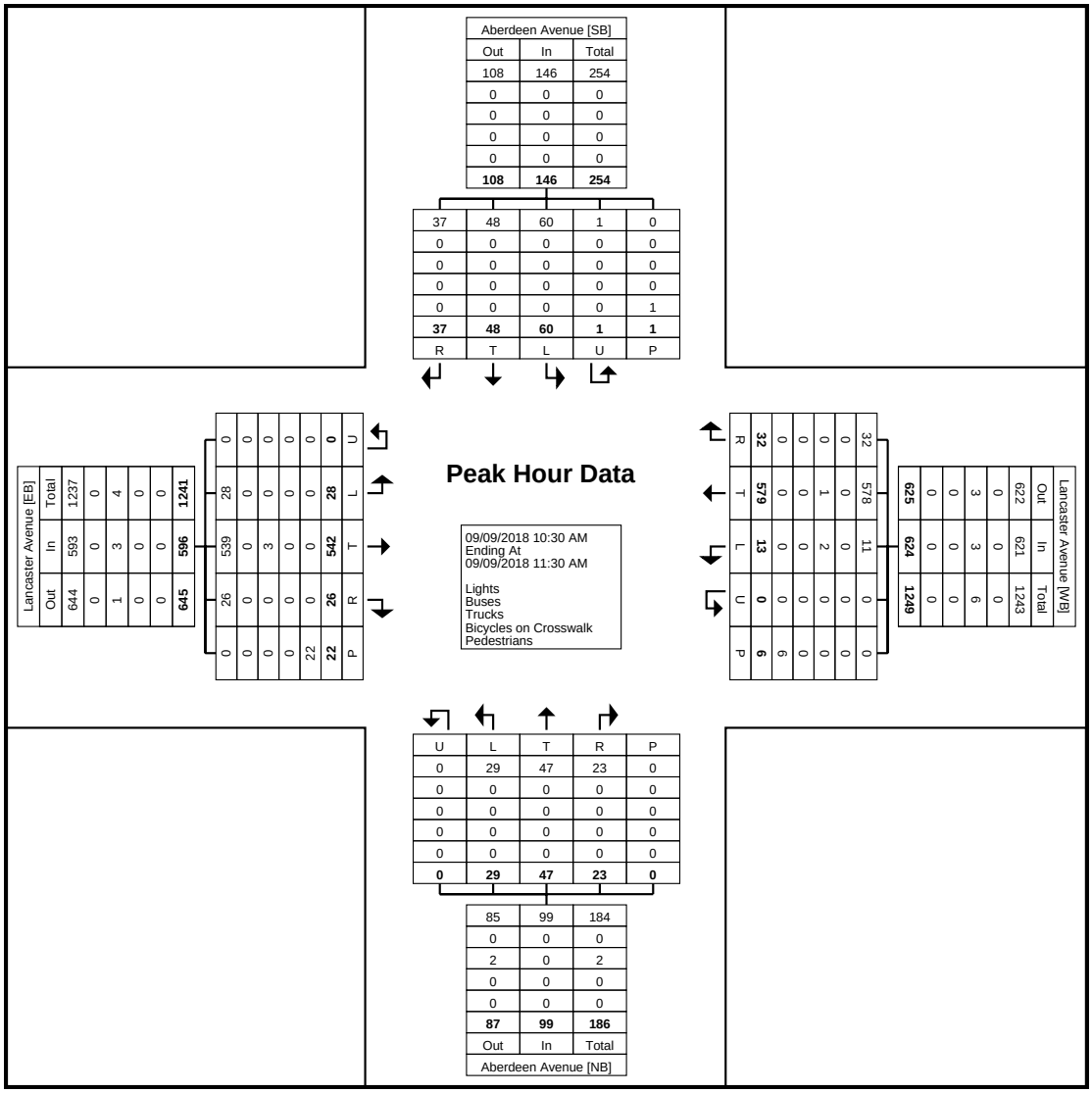
Count Name: Lancaster Ave/Aberdeen Ave-Sun
Site Code:
Start Date: 09/09/2018

Turning Movement Peak Hour Data (10:30 AM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Aberdeen Avenue Northbound							Aberdeen Avenue Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
10:30 AM	6	123	8	0	0	4	137	1	160	7	0	0	6	168	13	12	5	0	0	0	30	17	9	11	0	1	0	38	373
10:45 AM	10	140	8	0	0	2	158	3	142	7	0	0	0	152	4	6	3	1	0	0	14	9	8	11	0	0	0	28	352
11:00 AM	7	149	6	1	0	5	163	1	133	6	1	0	0	141	6	17	7	0	0	0	30	19	8	4	4	0	0	35	369
11:15 AM	5	130	3	0	0	11	138	8	144	10	1	0	0	163	6	12	7	0	0	0	25	15	23	7	0	0	1	45	371
Total	28	542	25	1	0	22	596	13	579	30	2	0	6	624	29	47	22	1	0	0	99	60	48	33	4	1	1	146	1465
Approach %	4.7	90.9	4.2	0.2	0.0	-	-	2.1	92.8	4.8	0.3	0.0	-	-	29.3	47.5	22.2	1.0	0.0	-	-	41.1	32.9	22.6	2.7	0.7	-	-	-
Total %	1.9	37.0	1.7	0.1	0.0	-	40.7	0.9	39.5	2.0	0.1	0.0	-	42.6	2.0	3.2	1.5	0.1	0.0	-	6.8	4.1	3.3	2.3	0.3	0.1	-	10.0	-
PHF	0.700	0.909	0.781	0.250	0.000	-	0.914	0.406	0.905	0.750	0.500	0.000	-	0.929	0.558	0.691	0.786	0.250	0.000	-	0.825	0.789	0.522	0.750	0.250	0.250	-	0.811	0.982
Lights	28	539	25	1	0	-	593	11	578	30	2	0	-	621	29	47	22	1	0	-	99	60	48	33	4	1	-	146	1459
% Lights	100.0	99.4	100.0	100.0	-	-	99.5	84.6	99.8	100.0	100.0	-	-	99.5	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	100.0	100.0	-	100.0	99.6
Buses	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	3	0	0	0	-	3	2	1	0	0	0	-	3	0	0	0	0	0	-	0	0	0	0	0	0	-	0	6
% Trucks	0.0	0.6	0.0	0.0	-	-	0.5	15.4	0.2	0.0	0.0	-	-	0.5	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	22	-	-	-	-	-	-	6	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Radnor, PA
Lancaster Ave & Aberdeen Ave
Sunday, September 9, 2018
Location: 40.043737, -75.381298

Count Name: Lancaster Ave/Aberdeen Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 4



Turning Movement Peak Hour Data Plot (10:30 AM)

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Radnor, PA
Lancaster Ave & Wayne Ave
Tuesday, September 11, 2018
Location: 40.044058, -75.387867

Count Name: Lancaster Ave/Wayne Ave
Site Code:
Start Date: 09/11/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Wayne Avenue Northbound							Wayne Avenue Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:00 AM	5	131	5	0	0	3	141	8	178	14	0	0	7	200	2	11	5	1	0	2	19	19	11	3	0	0	0	33	393
7:15 AM	1	164	8	0	0	1	173	6	159	13	0	0	6	178	6	11	6	0	0	0	23	11	17	7	0	0	1	35	409
7:30 AM	1	147	4	0	0	3	152	9	183	20	0	0	26	212	1	14	10	0	0	3	25	22	26	4	0	0	0	52	441
7:45 AM	4	196	7	0	0	0	207	7	187	26	0	0	8	220	15	23	18	0	0	1	56	38	28	7	1	0	0	74	557
Hourly Total	11	638	24	0	0	7	673	30	707	73	0	0	47	810	24	59	39	1	0	6	123	90	82	21	1	0	1	194	1800
8:00 AM	6	165	7	0	0	2	178	6	194	36	1	0	8	237	11	28	8	0	0	3	47	21	24	7	2	0	0	54	516
8:15 AM	9	142	4	0	0	8	155	7	193	24	0	1	4	225	6	18	11	0	0	1	35	18	23	4	0	0	5	45	460
8:30 AM	10	147	7	0	0	3	164	12	213	25	0	0	4	250	8	29	6	0	0	2	43	16	16	14	0	0	6	46	503
8:45 AM	13	137	5	0	0	5	155	4	180	28	0	0	5	212	5	38	7	0	0	7	50	28	25	6	0	0	3	59	476
Hourly Total	38	591	23	0	0	18	652	29	780	113	1	1	21	924	30	113	32	0	0	13	175	83	88	31	2	0	14	204	1955
9:00 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:00 PM	12	142	7	0	0	5	161	5	144	22	0	0	14	171	6	10	13	0	0	5	29	29	20	7	2	0	1	58	419
2:15 PM	8	155	10	0	0	7	173	7	157	24	2	0	7	190	7	20	8	0	0	8	35	32	14	20	3	0	3	69	467
2:30 PM	6	180	11	0	0	7	197	8	126	23	0	0	5	157	11	18	12	0	0	8	41	31	18	4	1	0	7	54	449
2:45 PM	8	149	9	0	0	11	166	14	151	13	0	0	11	178	10	19	11	0	0	4	40	28	25	9	0	0	3	62	446
Hourly Total	34	626	37	0	0	30	697	34	578	82	2	0	37	696	34	67	44	0	0	25	145	120	77	40	6	0	14	243	1781
3:00 PM	11	169	12	0	0	10	192	7	141	20	1	0	38	169	7	15	10	0	0	10	32	32	14	11	0	0	13	57	450
3:15 PM	8	176	8	0	0	13	192	10	140	17	0	0	15	167	8	25	12	0	0	6	45	33	28	7	0	0	7	68	472
3:30 PM	6	170	12	0	0	10	188	4	148	28	0	0	17	180	5	11	9	0	0	7	25	27	25	10	0	0	15	62	455
3:45 PM	2	172	11	0	0	8	185	11	159	20	0	0	8	190	6	23	11	0	0	4	40	22	34	13	2	0	7	71	486
Hourly Total	27	687	43	0	0	41	757	32	588	85	1	0	78	706	26	74	42	0	0	27	142	114	101	41	2	0	42	258	1863
4:00 PM	6	168	8	0	0	9	182	13	136	23	2	0	11	174	3	12	17	0	0	2	32	20	22	7	1	0	3	50	438
4:15 PM	4	135	8	0	0	6	147	12	169	24	0	0	7	205	7	14	8	0	0	3	29	27	22	6	0	0	3	55	436
4:30 PM	7	183	11	0	0	2	201	4	177	18	0	0	3	199	6	18	7	0	0	4	31	35	34	7	0	0	3	76	507
4:45 PM	8	173	17	0	0	9	198	12	164	26	0	0	6	202	6	19	18	0	0	4	43	27	43	17	0	0	2	87	530
Hourly Total	25	659	44	0	0	26	728	41	646	91	2	0	27	780	22	63	50	0	0	13	135	109	121	37	1	0	11	268	1911
5:00 PM	12	196	12	0	0	10	220	6	160	19	0	0	7	185	6	20	9	0	0	1	35	24	27	14	0	0	13	65	505
5:15 PM	13	187	13	0	0	11	213	10	169	26	2	0	12	207	4	31	5	0	0	2	40	20	40	8	0	0	5	68	528
5:30 PM	10	149	16	0	0	8	175	7	163	23	1	0	13	194	5	19	5	1	0	8	30	21	34	19	0	0	9	74	473
5:45 PM	20	165	12	0	0	3	197	6	194	17	1	0	11	218	7	22	15	0	0	1	44	26	36	6	1	0	3	69	528
Hourly Total	55	697	53	0	0	32	805	29	686	85	4	0	43	804	22	92	34	1	0	12	149	91	137	47	1	0	30	276	2034
Grand Total	190	3899	224	0	0	154	4313	195	3985	529	10	1	253	4720	158	468	241	2	0	96	869	607	606	217	13	0	112	1443	11345
Approach %	4.4	90.4	5.2	0.0	0.0	-	-	4.1	84.4	11.2	0.2	0.0	-	-	18.2	53.9	27.7	0.2	0.0	-	-	42.1	42.0	15.0	0.9	0.0	-	-	-
Total %	1.7	34.4	2.0	0.0	0.0	-	38.0	1.7	35.1	4.7	0.1	0.0	-	41.6	1.4	4.1	2.1	0.0	0.0	-	7.7	5.4	5.3	1.9	0.1	0.0	-	12.7	-
Lights	183	3804	220	0	0	-	4207	189	3877	514	9	1	-	4590	150	455	229	2	0	-	836	584	582	211	13	0	-	1390	11023
% Lights	96.3	97.6	98.2	-	-	-	97.5	96.9	97.3	97.2	90.0	100.0	-	97.2	94.9	97.2	95.0	100.0	-	-	96.2	96.2	96.0	97.2	100.0	-	-	96.3	97.2
Buses	1	17	1	0	0	-	19	1	27	2	0	0	-	30	1	7	2	0	0	-	10	10	8	0	0	0	-	18	77
% Buses	0.5	0.4	0.4	-	-	-	0.4	0.5	0.7	0.4	0.0	0.0	-	0.6	0.6	1.5	0.8	0.0	-	-	1.2	1.6	1.3	0.0	0.0	-	-	1.2	0.7
Trucks	6	78	3	0	0	-	87	5	81	13	1	0	-	100	7	6	10	0	0	-	23	13	16	6	0	0	-	35	245
% Trucks	3.2	2.0	1.3	-	-	-	2.0	2.6	2.0	2.5	10.0	0.0	-	2.1	4.4	1.3	4.1	0.0	-	-	2.6	2.1	2.6	2.8	0.0	-	-	2.4	2.2
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	-	3	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	1.9	-	-	-	-	-	-	1.2	-	-	-	-	-	-	1.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	151	-	-	-	-	-	-	250	-	-	-	-	-	-	95	-	-	-	-	-	-	112	-	-
% Pedestrians	-	-	-	-	-	98.1	-	-	-	-	-	-	98.8	-	-	-	-	-	-	99.0	-	-	-	-	-	-	100.0	-	-

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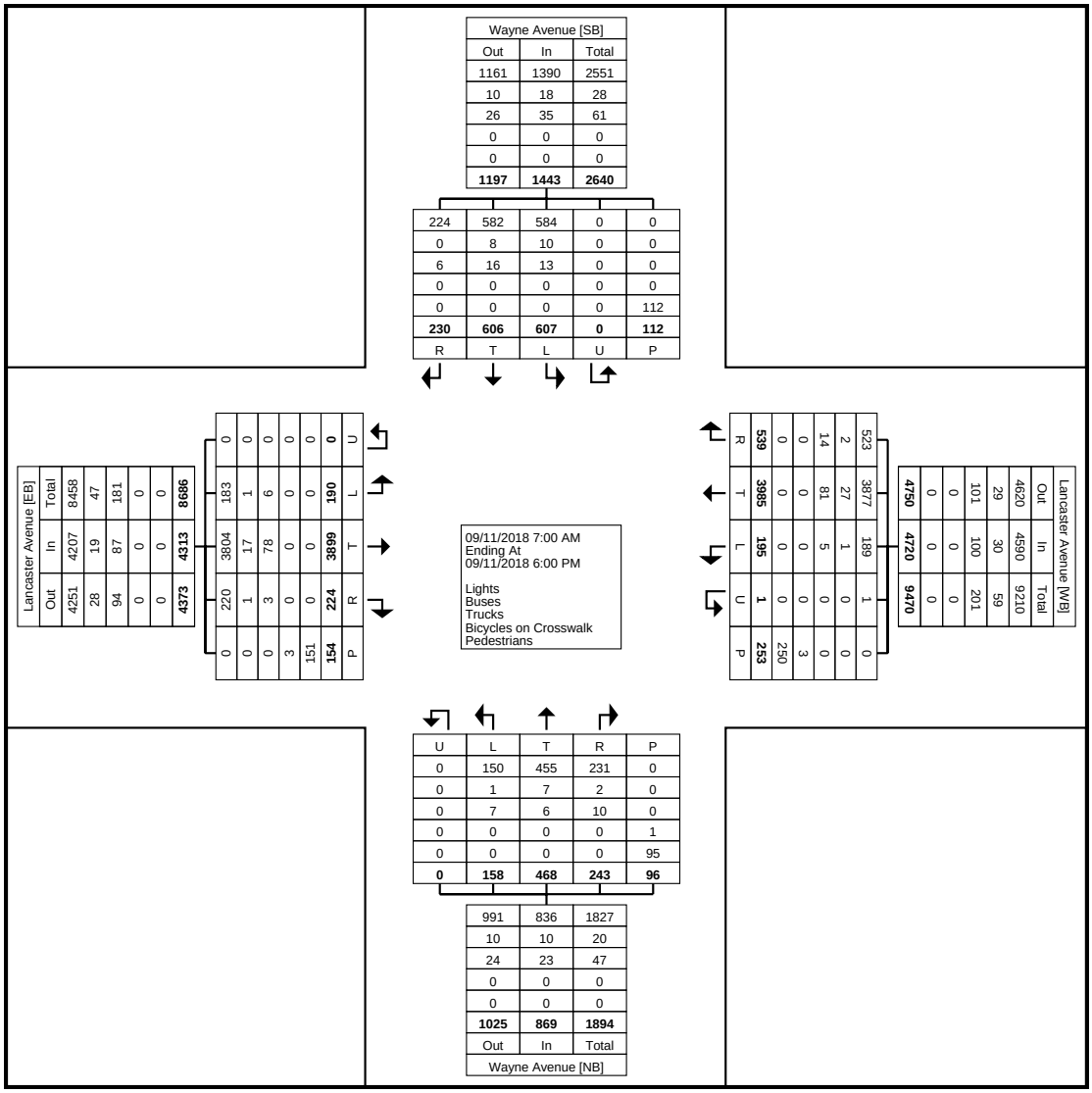

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Count Name: Lancaster Ave/Wayne Ave
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Turning Movement Peak Hour Data (7:45 AM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Wayne Avenue Northbound							Wayne Avenue Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:45 AM	4	196	7	0	0	0	207	7	187	26	0	0	8	220	15	23	18	0	0	1	56	38	28	7	1	0	0	74	557
8:00 AM	6	165	7	0	0	2	178	6	194	36	1	0	8	237	11	28	8	0	0	3	47	21	24	7	2	0	0	54	516
8:15 AM	9	142	4	0	0	8	155	7	193	24	0	1	4	225	6	18	11	0	0	1	35	18	23	4	0	0	5	45	460
8:30 AM	10	147	7	0	0	3	164	12	213	25	0	0	4	250	8	29	6	0	0	2	43	16	16	14	0	0	6	46	503
Total	29	650	25	0	0	13	704	32	787	111	1	1	24	932	40	98	43	0	0	7	181	93	91	32	3	0	11	219	2036
Approach %	4.1	92.3	3.6	0.0	0.0	-	-	3.4	84.4	11.9	0.1	0.1	-	-	22.1	54.1	23.8	0.0	0.0	-	-	42.5	41.6	14.6	1.4	0.0	-	-	-
Total %	1.4	31.9	1.2	0.0	0.0	-	34.6	1.6	38.7	5.5	0.0	0.0	-	45.8	2.0	4.8	2.1	0.0	0.0	-	8.9	4.6	4.5	1.6	0.1	0.0	-	10.8	-
PHF	0.725	0.829	0.893	0.000	0.000	-	0.850	0.667	0.924	0.771	0.250	0.250	-	0.932	0.667	0.845	0.597	0.000	0.000	-	0.808	0.612	0.813	0.571	0.375	0.000	-	0.740	0.914
Lights	28	629	25	0	0	-	682	30	760	106	1	1	-	898	36	96	40	0	0	-	172	85	82	30	3	0	-	200	1952
% Lights	96.6	96.8	100.0	-	-	-	96.9	93.8	96.6	95.5	100.0	100.0	-	96.4	90.0	98.0	93.0	-	-	-	95.0	91.4	90.1	93.8	100.0	-	-	91.3	95.9
Buses	0	3	0	0	0	-	3	0	7	1	0	0	-	8	1	1	0	0	0	-	2	5	3	0	0	0	-	8	21
% Buses	0.0	0.5	0.0	-	-	-	0.4	0.0	0.9	0.9	0.0	0.0	-	0.9	2.5	1.0	0.0	-	-	-	1.1	5.4	3.3	0.0	0.0	-	-	3.7	1.0
Trucks	1	18	0	0	0	-	19	2	20	4	0	0	-	26	3	1	3	0	0	-	7	3	6	2	0	0	-	11	63
% Trucks	3.4	2.8	0.0	-	-	-	2.7	6.3	2.5	3.6	0.0	0.0	-	2.8	7.5	1.0	7.0	-	-	-	3.9	3.2	6.6	6.3	0.0	-	-	5.0	3.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	13	-	-	-	-	-	-	24	-	-	-	-	-	-	7	-	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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Lancaster Ave & Wayne Ave
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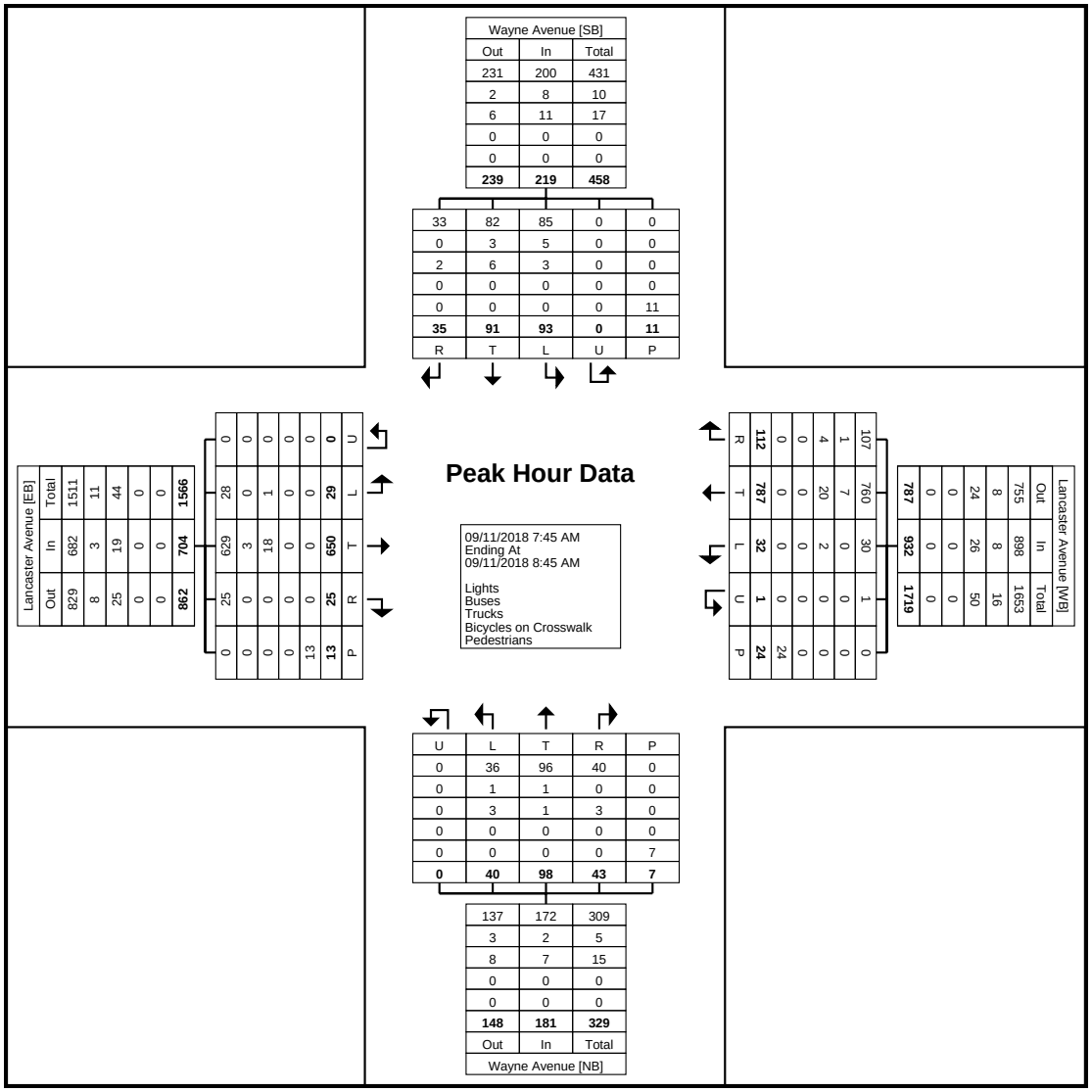

Turning Movement Peak Hour Data Plot (7:45 AM)

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Lancaster Ave & Wayne Ave
Tuesday, September 11, 2018
Location: 40.044058, -75.387867

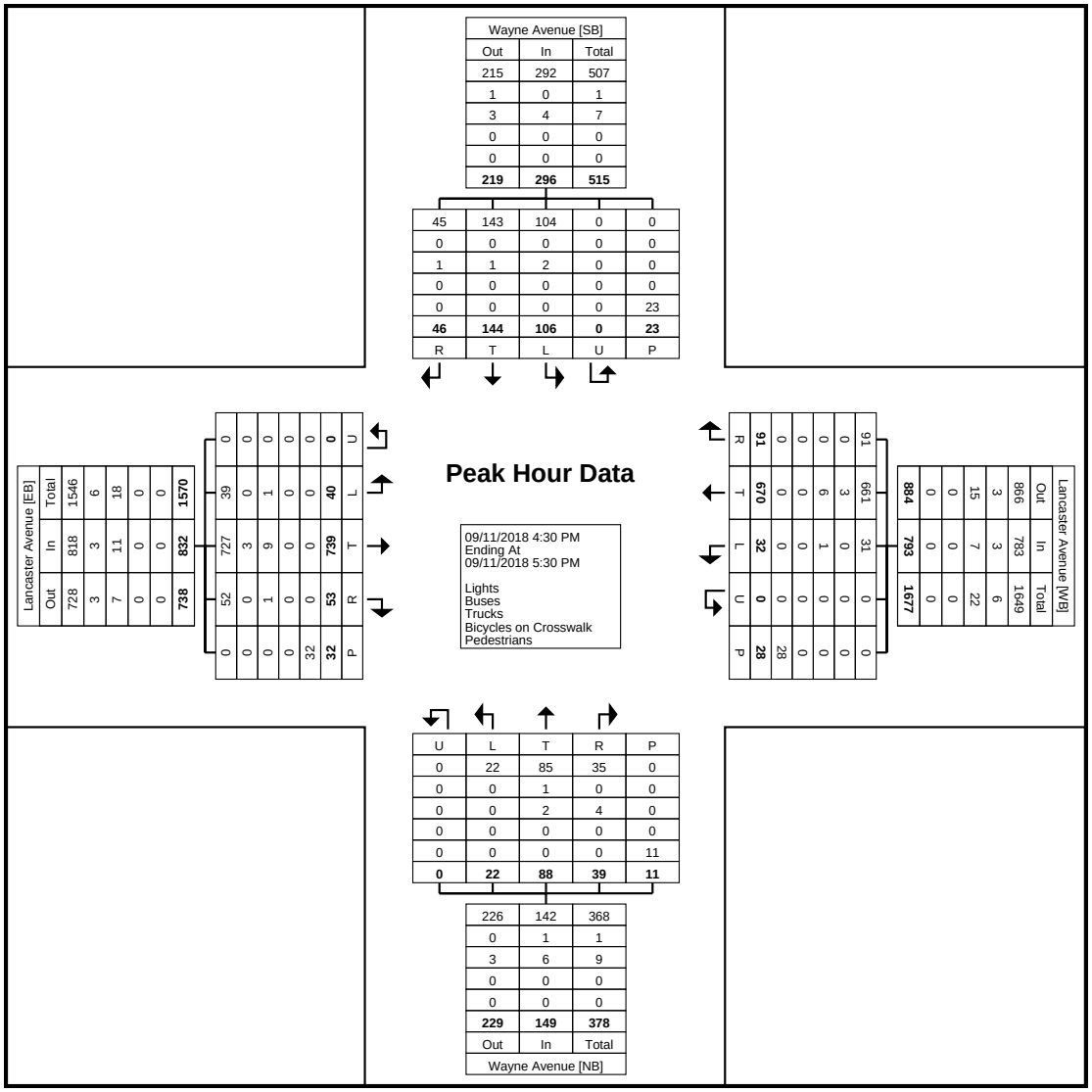
Count Name: Lancaster Ave/Wayne Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Wayne Avenue Northbound							Wayne Avenue Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
4:30 PM	7	183	11	0	0	2	201	4	177	18	0	0	3	199	6	18	7	0	0	4	31	35	34	7	0	0	3	76	507
4:45 PM	8	173	17	0	0	9	198	12	164	26	0	0	6	202	6	19	18	0	0	4	43	27	43	17	0	0	2	87	530
5:00 PM	12	196	12	0	0	10	220	6	160	19	0	0	7	185	6	20	9	0	0	1	35	24	27	14	0	0	13	65	505
5:15 PM	13	187	13	0	0	11	213	10	169	26	2	0	12	207	4	31	5	0	0	2	40	20	40	8	0	0	5	68	528
Total	40	739	53	0	0	32	832	32	670	89	2	0	28	793	22	88	39	0	0	11	149	106	144	46	0	0	23	296	2070
Approach %	4.8	88.8	6.4	0.0	0.0	-	-	4.0	84.5	11.2	0.3	0.0	-	-	14.8	59.1	26.2	0.0	0.0	-	-	35.8	48.6	15.5	0.0	0.0	-	-	-
Total %	1.9	35.7	2.6	0.0	0.0	-	40.2	1.5	32.4	4.3	0.1	0.0	-	38.3	1.1	4.3	1.9	0.0	0.0	-	7.2	5.1	7.0	2.2	0.0	0.0	-	14.3	-
PHF	0.769	0.943	0.779	0.000	0.000	-	0.945	0.667	0.946	0.856	0.250	0.000	-	0.958	0.917	0.710	0.542	0.000	0.000	-	0.866	0.757	0.837	0.676	0.000	0.000	-	0.851	0.976
Lights	39	727	52	0	0	-	818	31	661	89	2	0	-	783	22	85	35	0	0	-	142	104	143	45	0	0	-	292	2035
% Lights	97.5	98.4	98.1	-	-	-	98.3	96.9	98.7	100.0	100.0	-	-	98.7	100.0	96.6	89.7	-	-	-	95.3	98.1	99.3	97.8	-	-	-	98.6	98.3
Buses	0	3	0	0	0	-	3	0	3	0	0	0	-	3	0	1	0	0	0	-	1	0	0	0	0	0	-	0	7
% Buses	0.0	0.4	0.0	-	-	-	0.4	0.0	0.4	0.0	0.0	-	-	0.4	0.0	1.1	0.0	-	-	-	0.7	0.0	0.0	0.0	-	-	-	0.0	0.3
Trucks	1	9	1	0	0	-	11	1	6	0	0	0	-	7	0	2	4	0	0	-	6	2	1	1	0	0	-	4	28
% Trucks	2.5	1.2	1.9	-	-	-	1.3	3.1	0.9	0.0	0.0	-	-	0.9	0.0	2.3	10.3	-	-	-	4.0	1.9	0.7	2.2	-	-	-	1.4	1.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	32	-	-	-	-	-	-	28	-	-	-	-	-	-	11	-	-	-	-	-	-	23	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Radnor, PA
Lancaster Ave & Wayne Ave
Tuesday, September 11, 2018
Location: 40.044058, -75.387867

Count Name: Lancaster Ave/Wayne Ave
Site Code:
Start Date: 09/11/2018
Page No: 6



Turning Movement Peak Hour Data Plot (4:30 PM)

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Radnor, PA
Lancaster Ave & Wayne Ave
Saturday, September 8, 2018
Location: 40.044058, -75.387867

Count Name: Lancaster Ave/Wayne Ave-Sat
Site Code:
Start Date: 09/08/2018

Turning Movement Data

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Wayne Avenue Northbound							Wayne Avenue Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
11:00 AM	6	146	7	0	0	2	159	10	164	20	0	0	11	194	8	10	10	0	0	3	28	16	22	15	0	0	2	53	434
11:15 AM	13	151	7	0	0	5	171	11	183	25	0	0	7	219	9	13	7	1	0	7	30	17	14	19	0	0	1	50	470
11:30 AM	8	165	11	1	0	1	185	4	157	25	0	0	17	186	18	22	14	0	0	3	54	15	22	11	0	0	6	48	473
11:45 AM	9	181	12	0	0	14	202	17	174	17	0	0	6	208	19	13	24	1	0	2	57	11	17	16	0	0	7	44	511
Hourly Total	36	643	37	1	0	22	717	42	678	87	0	0	41	807	54	58	55	2	0	15	169	59	75	61	0	0	16	195	1888
12:00 PM	9	171	11	0	0	5	191	10	200	21	1	0	7	232	12	20	16	2	0	10	50	18	17	24	0	0	8	59	532
12:15 PM	10	167	7	0	0	8	184	8	213	22	1	0	6	244	15	21	15	0	0	22	51	18	26	13	0	0	2	57	536
12:30 PM	10	170	8	0	0	5	188	9	182	24	0	0	8	215	14	26	12	0	0	13	52	20	19	7	0	0	6	46	501
12:45 PM	14	154	7	0	0	3	175	5	179	39	0	0	4	223	5	14	10	0	0	8	29	22	25	19	0	0	11	66	493
Hourly Total	43	662	33	0	0	21	738	32	774	106	2	0	25	914	46	81	53	2	0	53	182	78	87	63	0	0	27	228	2062
Grand Total	79	1305	70	1	0	43	1455	74	1452	193	2	0	66	1721	100	139	108	4	0	68	351	137	162	124	0	0	43	423	3950
Approach %	5.4	89.7	4.8	0.1	0.0	-	-	4.3	84.4	11.2	0.1	0.0	-	-	28.5	39.6	30.8	1.1	0.0	-	-	32.4	38.3	29.3	0.0	0.0	-	-	-
Total %	2.0	33.0	1.8	0.0	0.0	-	36.8	1.9	36.8	4.9	0.1	0.0	-	43.6	2.5	3.5	2.7	0.1	0.0	-	8.9	3.5	4.1	3.1	0.0	0.0	-	10.7	-
Lights	78	1287	70	1	0	-	1436	71	1436	191	2	0	-	1700	100	139	108	4	0	-	351	135	161	123	0	0	-	419	3906
% Lights	98.7	98.6	100.0	100.0	-	-	98.7	95.9	98.9	99.0	100.0	-	-	98.8	100.0	100.0	100.0	100.0	-	-	100.0	98.5	99.4	99.2	-	-	-	99.1	98.9
Buses	0	2	0	0	0	-	2	0	3	0	0	0	-	3	0	0	0	0	0	-	0	0	0	0	0	0	-	0	5
% Buses	0.0	0.2	0.0	0.0	-	-	0.1	0.0	0.2	0.0	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	-	0.0	0.1
Trucks	1	16	0	0	0	-	17	3	13	2	0	0	-	18	0	0	0	0	0	-	0	2	1	1	0	0	-	4	39
% Trucks	1.3	1.2	0.0	0.0	-	-	1.2	4.1	0.9	1.0	0.0	-	-	1.0	0.0	0.0	0.0	0.0	-	-	0.0	1.5	0.6	0.8	-	-	-	0.9	1.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	3.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	4.7	-	-
Pedestrians	-	-	-	-	-	43	-	-	-	-	-	-	64	-	-	-	-	-	-	68	-	-	-	-	-	-	41	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	97.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	95.3	-	-

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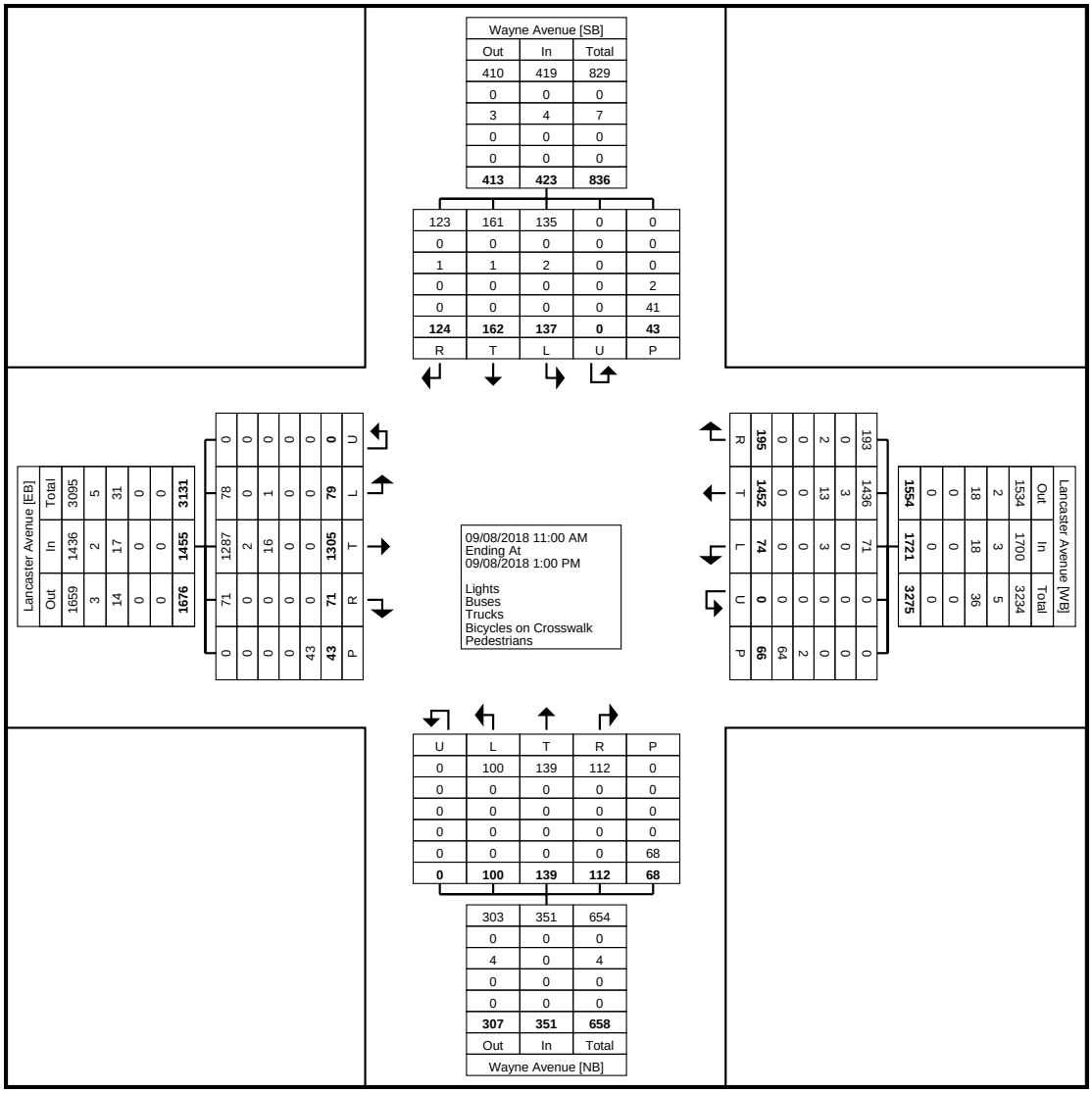
Radnor, PA
Lancaster Ave & Wayne Ave
Saturday, September 8, 2018
Location: 40.044058, -75.387867

Count Name: Lancaster Ave/Wayne Ave-Sat
Site Code:
Start Date: 09/08/2018
Page No: 2



09/08/2018 11:00 AM
Ending At
09/08/2018 1:00 PM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Wayne Avenue [SB]

Out	In	Total
410	419	829
0	0	0
3	4	7
0	0	0
0	0	0
413	**423**	**836**

R	T	L	U	P
123	161	135	0	0
0	0	0	0	0
1	1	2	0	0
0	0	0	0	2
0	0	0	0	41
124	**162**	**137**	**0**	**43**

Lancaster Avenue [EB]

Total	In	Out
3095	1436	1659
5	2	3
31	17	14
0	0	0
0	0	0
3131	**1455**	**1676**

U	L	T	R	P
0	78	1287	71	0
0	0	2	0	0
0	1	16	0	0
0	0	0	0	0
0	0	0	0	43
0	**79**	**1305**	**71**	**43**

Lancaster Avenue [WB]

Out	In	Total
1534	1700	3234
2	3	5
18	18	36
0	0	0
0	0	0
1554	**1721**	**3275**

R	T	L	U	P
193	1436	71	0	0
0	3	0	0	0
2	13	3	0	0
0	0	0	0	2
0	0	0	0	64
195	**1452**	**74**	**0**	**66**

U	L	T	R	P
0	100	139	112	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	68
0	**100**	**139**	**112**	**68**

Out	In	Total
303	351	654
0	0	0
4	0	4
0	0	0
0	0	0
307	**351**	**658**

Wayne Avenue [NB]

Turning Movement Data Plot

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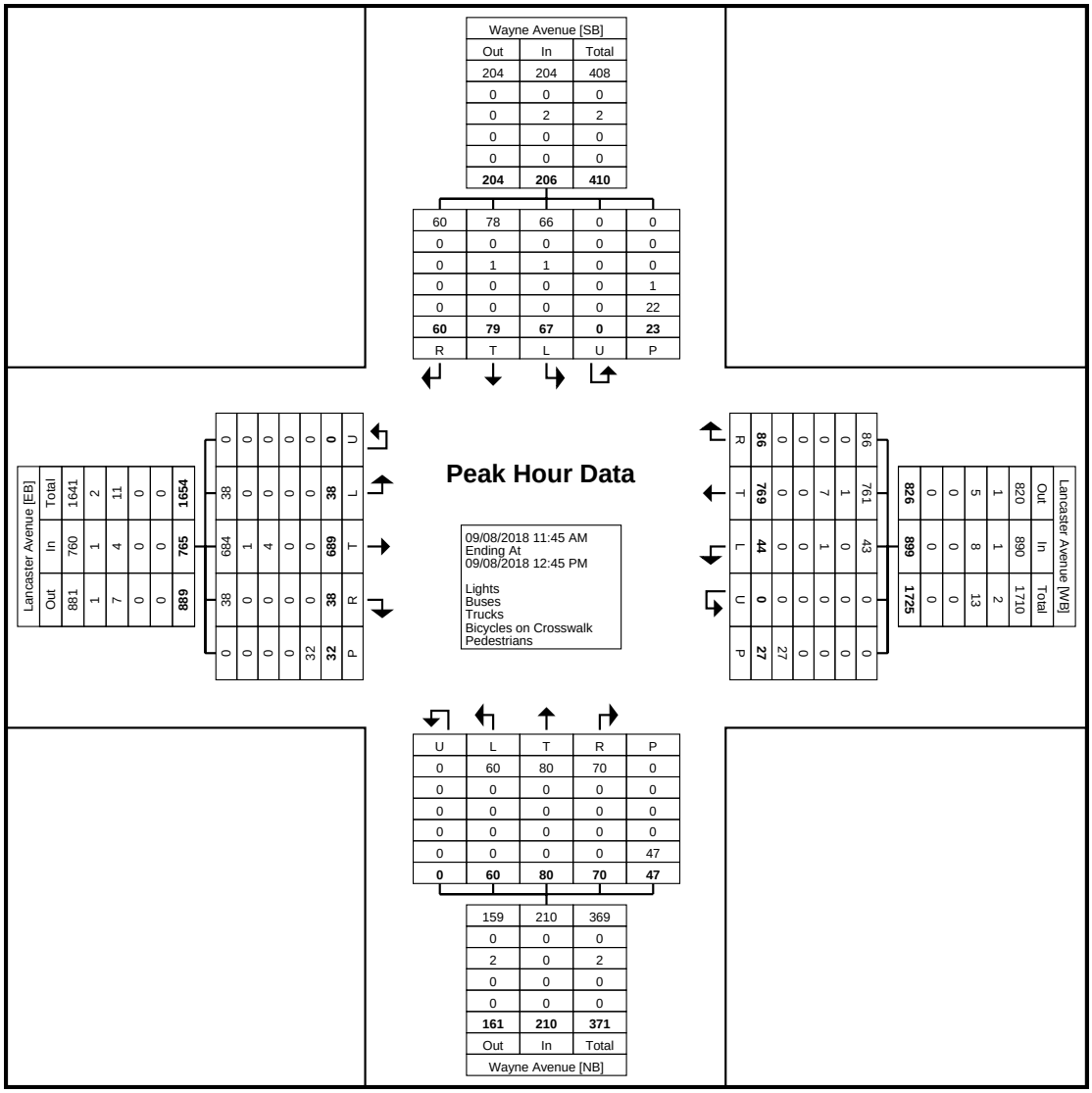
Radnor, PA
Lancaster Ave & Wayne Ave
Saturday, September 8, 2018
Location: 40.044058, -75.387867

Count Name: Lancaster Ave/Wayne Ave-Sat
Site Code:
Start Date: 09/08/2018

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Wayne Avenue Northbound							Wayne Avenue Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
11:45 AM	9	181	12	0	0	14	202	17	174	17	0	0	6	208	19	13	24	1	0	2	57	11	17	16	0	0	7	44	511
12:00 PM	9	171	11	0	0	5	191	10	200	21	1	0	7	232	12	20	16	2	0	10	50	18	17	24	0	0	8	59	532
12:15 PM	10	167	7	0	0	8	184	8	213	22	1	0	6	244	15	21	15	0	0	22	51	18	26	13	0	0	2	57	536
12:30 PM	10	170	8	0	0	5	188	9	182	24	0	0	8	215	14	26	12	0	0	13	52	20	19	7	0	0	6	46	501
Total	38	689	38	0	0	32	765	44	769	84	2	0	27	899	60	80	67	3	0	47	210	67	79	60	0	0	23	206	2080
Approach %	5.0	90.1	5.0	0.0	0.0	-	-	4.9	85.5	9.3	0.2	0.0	-	-	28.6	38.1	31.9	1.4	0.0	-	-	32.5	38.3	29.1	0.0	0.0	-	-	-
Total %	1.8	33.1	1.8	0.0	0.0	-	36.8	2.1	37.0	4.0	0.1	0.0	-	43.2	2.9	3.8	3.2	0.1	0.0	-	10.1	3.2	3.8	2.9	0.0	0.0	-	9.9	-
PHF	0.950	0.952	0.792	0.000	0.000	-	0.947	0.647	0.903	0.875	0.500	0.000	-	0.921	0.789	0.769	0.698	0.375	0.000	-	0.921	0.838	0.760	0.625	0.000	0.000	-	0.873	0.970
Lights	38	684	38	0	0	-	760	43	761	84	2	0	-	890	60	80	67	3	0	-	210	66	78	60	0	0	-	204	2064
% Lights	100.0	99.3	100.0	-	-	-	99.3	97.7	99.0	100.0	100.0	-	-	99.0	100.0	100.0	100.0	100.0	-	-	100.0	98.5	98.7	100.0	-	-	-	99.0	99.2
Buses	0	1	0	0	0	-	1	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	2
% Buses	0.0	0.1	0.0	-	-	-	0.1	0.0	0.1	0.0	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	-	0.0	0.1
Trucks	0	4	0	0	0	-	4	1	7	0	0	0	-	8	0	0	0	0	0	-	0	1	1	0	0	0	-	2	14
% Trucks	0.0	0.6	0.0	-	-	-	0.5	2.3	0.9	0.0	0.0	-	-	0.9	0.0	0.0	0.0	0.0	-	-	0.0	1.5	1.3	0.0	-	-	-	1.0	0.7
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	4.3	-	-
Pedestrians	-	-	-	-	-	32	-	-	-	-	-	-	27	-	-	-	-	-	-	47	-	-	-	-	-	-	22	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	95.7	-	-



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

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Radnor, PA
Lancaster Ave & Wayne Ave
Sunday, September 9, 2018
Location: 40.044058, -75.387867

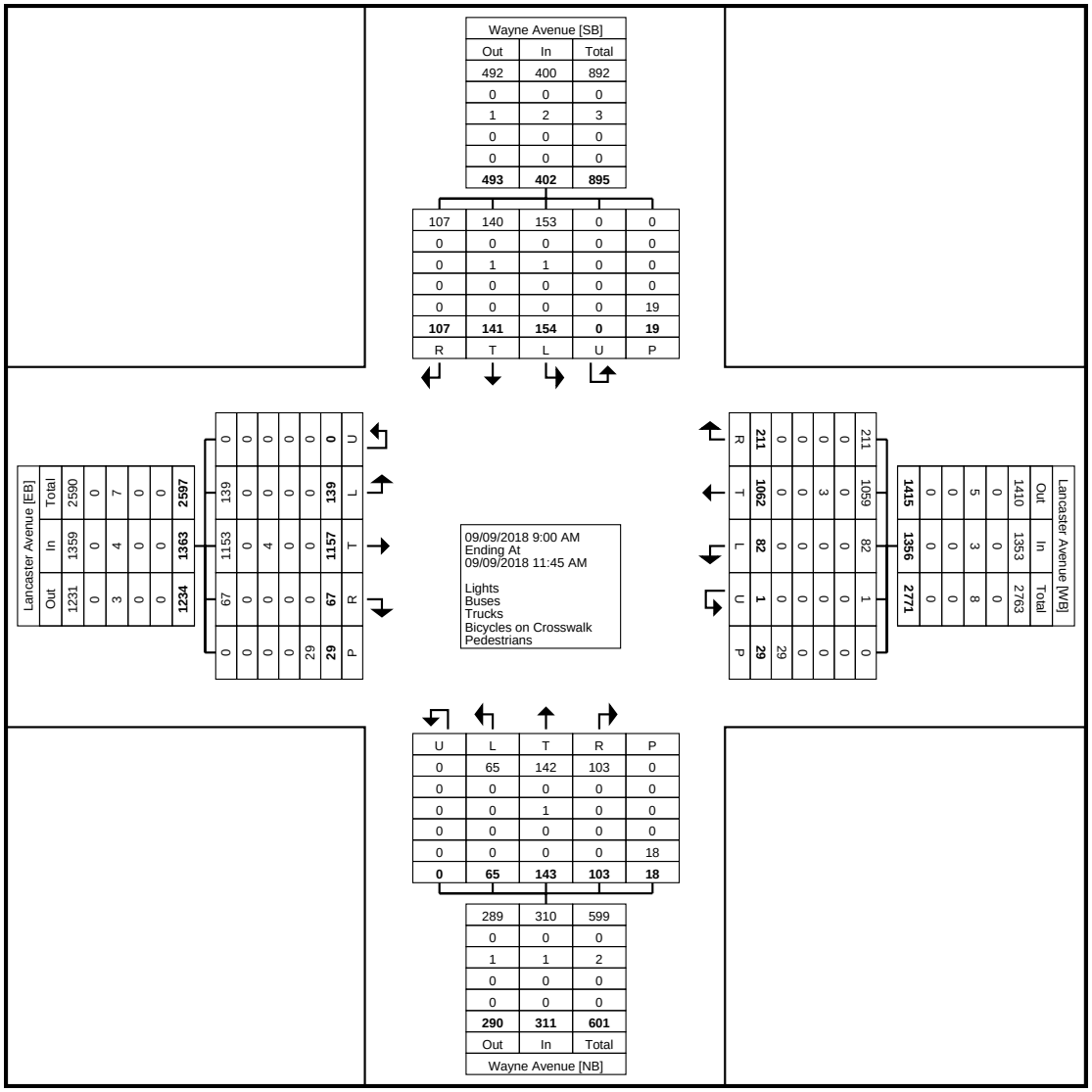
Count Name: Lancaster Ave/Wayne Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Wayne Avenue Northbound							Wayne Avenue Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
9:00 AM	20	95	1	0	0	0	116	6	93	29	1	0	1	129	4	16	5	0	0	1	25	13	10	13	1	0	0	37	307
9:15 AM	20	130	8	0	0	3	158	5	71	16	0	0	1	92	4	15	8	0	0	0	27	16	13	10	0	0	6	39	316
9:30 AM	21	112	5	0	0	3	138	9	101	13	0	0	1	123	9	16	9	0	0	2	34	8	9	9	0	0	2	26	321
9:45 AM	7	120	8	0	0	1	135	11	112	13	0	0	7	136	4	12	9	0	0	1	25	11	15	7	0	0	0	33	329
Hourly Total	68	457	22	0	0	7	547	31	377	71	1	0	10	480	21	59	31	0	0	4	111	48	47	39	1	0	8	135	1273
10:00 AM	5	110	9	0	0	6	124	7	108	12	0	0	6	127	3	11	9	1	0	2	24	13	8	8	0	0	3	29	304
10:15 AM	9	104	9	0	0	0	122	5	95	32	0	0	3	132	12	21	3	1	0	1	37	22	20	6	0	0	1	48	339
10:30 AM	16	123	10	0	0	1	149	13	119	30	0	0	1	162	3	14	20	0	0	0	37	15	20	13	0	0	4	48	396
10:45 AM	15	121	8	0	0	6	144	12	129	26	1	0	7	168	14	13	7	1	0	0	35	20	18	13	0	0	0	51	398
Hourly Total	45	458	36	0	0	13	539	37	451	100	1	0	17	589	32	59	39	3	0	3	133	70	66	40	0	0	8	176	1437
11:00 AM	13	135	6	0	0	3	154	7	112	20	1	0	2	140	4	12	19	0	0	7	35	17	12	16	0	0	3	45	374
11:15 AM	13	107	3	0	0	6	123	7	122	17	0	1	0	147	8	13	11	0	0	4	32	19	16	11	0	0	0	46	348
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	139	1157	67	0	0	29	1363	82	1062	208	3	1	29	1356	65	143	100	3	0	18	311	154	141	106	1	0	19	402	3432
Approach %	10.2	84.9	4.9	0.0	0.0	-	-	6.0	78.3	15.3	0.2	0.1	-	-	20.9	46.0	32.2	1.0	0.0	-	-	38.3	35.1	26.4	0.2	0.0	-	-	-
Total %	4.1	33.7	2.0	0.0	0.0	-	39.7	2.4	30.9	6.1	0.1	0.0	-	39.5	1.9	4.2	2.9	0.1	0.0	-	9.1	4.5	4.1	3.1	0.0	0.0	-	11.7	-
Lights	139	1153	67	0	0	-	1359	82	1059	208	3	1	-	1353	65	142	100	3	0	-	310	153	140	106	1	0	-	400	3422
% Lights	100.0	99.7	100.0	-	-	-	99.7	100.0	99.7	100.0	100.0	100.0	-	99.8	100.0	99.3	100.0	100.0	-	-	99.7	99.4	99.3	100.0	100.0	-	-	99.5	99.7
Buses	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	4	0	0	0	-	4	0	3	0	0	0	-	3	0	1	0	0	0	-	1	1	1	0	0	0	-	2	10
% Trucks	0.0	0.3	0.0	-	-	-	0.3	0.0	0.3	0.0	0.0	0.0	-	0.2	0.0	0.7	0.0	0.0	-	-	0.3	0.6	0.7	0.0	0.0	-	-	0.5	0.3
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	29	-	-	-	-	-	-	29	-	-	-	-	-	-	18	-	-	-	-	-	-	19	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Radnor, PA
Lancaster Ave & Wayne Ave
Sunday, September 9, 2018
Location: 40.044058, -75.387867

Count Name: Lancaster Ave/Wayne Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 2



Turning Movement Data Plot

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Radnor, PA
Lancaster Ave & Wayne Ave
Sunday, September 9, 2018
Location: 40.044058, -75.387867

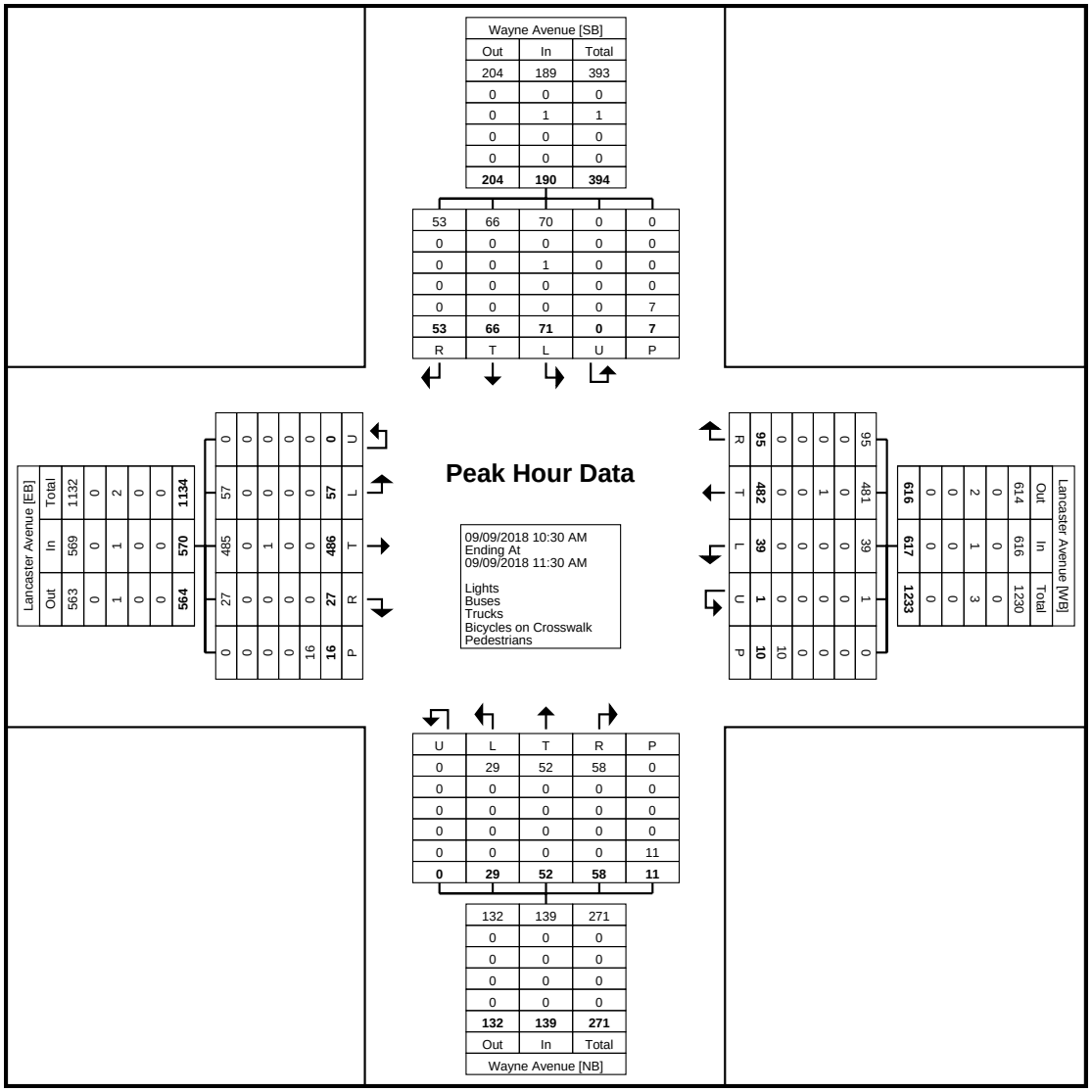
Count Name: Lancaster Ave/Wayne Ave-Sun
Site Code:
Start Date: 09/09/2018

Turning Movement Peak Hour Data (10:30 AM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							Wayne Avenue Northbound							Wayne Avenue Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
10:30 AM	16	123	10	0	0	1	149	13	119	30	0	0	1	162	3	14	20	0	0	0	37	15	20	13	0	0	4	48	396
10:45 AM	15	121	8	0	0	6	144	12	129	26	1	0	7	168	14	13	7	1	0	0	35	20	18	13	0	0	0	51	398
11:00 AM	13	135	6	0	0	3	154	7	112	20	1	0	2	140	4	12	19	0	0	7	35	17	12	16	0	0	3	45	374
11:15 AM	13	107	3	0	0	6	123	7	122	17	0	1	0	147	8	13	11	0	0	4	32	19	16	11	0	0	0	46	348
Total	57	486	27	0	0	16	570	39	482	93	2	1	10	617	29	52	57	1	0	11	139	71	66	53	0	0	7	190	1516
Approach %	10.0	85.3	4.7	0.0	0.0	-	-	6.3	78.1	15.1	0.3	0.2	-	-	20.9	37.4	41.0	0.7	0.0	-	-	37.4	34.7	27.9	0.0	0.0	-	-	-
Total %	3.8	32.1	1.8	0.0	0.0	-	37.6	2.6	31.8	6.1	0.1	0.1	-	40.7	1.9	3.4	3.8	0.1	0.0	-	9.2	4.7	4.4	3.5	0.0	0.0	-	12.5	-
PHF	0.891	0.900	0.675	0.000	0.000	-	0.925	0.750	0.934	0.775	0.500	0.250	-	0.918	0.518	0.929	0.713	0.250	0.000	-	0.939	0.888	0.825	0.828	0.000	0.000	-	0.931	0.952
Lights	57	485	27	0	0	-	569	39	481	93	2	1	-	616	29	52	57	1	0	-	139	70	66	53	0	0	-	189	1513
% Lights	100.0	99.8	100.0	-	-	-	99.8	100.0	99.8	100.0	100.0	100.0	-	99.8	100.0	100.0	100.0	100.0	-	-	100.0	98.6	100.0	100.0	-	-	-	99.5	99.8
Buses	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0
Trucks	0	1	0	0	0	-	1	0	1	0	0	0	-	1	0	0	0	0	0	-	0	1	0	0	0	0	-	1	3
% Trucks	0.0	0.2	0.0	-	-	-	0.2	0.0	0.2	0.0	0.0	0.0	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	1.4	0.0	0.0	-	-	-	0.5	0.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	16	-	-	-	-	-	-	10	-	-	-	-	-	-	11	-	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Radnor, PA
Lancaster Ave & Wayne Ave
Sunday, September 9, 2018
Location: 40.044058, -75.387867

Count Name: Lancaster Ave/Wayne Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 4



Turning Movement Peak Hour Data Plot (10:30 AM)

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Radnor, PA
Lancaster Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave
Site Code:
Start Date: 09/11/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound						Lancaster Avenue Westbound					Louella Avenue Northbound						
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:00 AM	155	5	0	0	0	160	11	197	0	0	208	0	4	0	0	0	4	372
7:15 AM	185	5	1	0	0	191	22	194	0	1	216	8	5	0	0	2	13	420
7:30 AM	154	11	0	0	1	165	24	213	0	3	237	7	3	0	0	7	10	412
7:45 AM	238	27	0	0	1	265	37	206	0	1	243	13	18	0	0	2	31	539
Hourly Total	732	48	1	0	2	781	94	810	0	5	904	28	30	0	0	11	58	1743
8:00 AM	197	11	0	0	2	208	13	249	0	1	262	7	11	0	0	2	18	488
8:15 AM	170	6	0	0	1	176	28	231	0	0	259	5	5	1	0	2	11	446
8:30 AM	168	6	0	0	0	174	16	260	0	0	276	6	9	0	0	0	15	465
8:45 AM	174	6	0	0	5	180	16	241	0	1	257	13	10	0	0	2	23	460
Hourly Total	709	29	0	0	8	738	73	981	0	2	1054	31	35	1	0	6	67	1859
9:00 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
2:00 PM	190	8	0	0	3	198	12	176	0	0	188	5	10	0	0	0	15	401
2:15 PM	195	12	0	0	2	207	10	192	0	2	202	4	12	0	0	1	16	425
2:30 PM	209	19	1	0	3	229	20	191	0	7	211	3	7	0	0	0	10	450
2:45 PM	180	18	2	0	2	200	18	178	0	4	196	8	12	0	0	0	20	416
Hourly Total	774	57	3	0	10	834	60	737	0	13	797	20	41	0	0	1	61	1692
3:00 PM	211	11	0	0	20	222	17	174	0	1	191	10	27	1	0	2	38	451
3:15 PM	225	10	0	0	8	235	20	170	0	1	190	8	16	0	0	0	24	449
3:30 PM	194	8	0	0	4	202	24	189	0	3	213	10	16	0	0	2	26	441
3:45 PM	203	12	0	0	3	215	16	184	0	1	200	2	11	0	0	7	13	428
Hourly Total	833	41	0	0	35	874	77	717	0	6	794	30	70	1	0	11	101	1769
4:00 PM	198	9	0	0	6	207	9	186	0	2	195	5	14	0	0	3	19	421
4:15 PM	165	7	0	0	5	172	8	184	0	0	192	5	8	0	0	3	13	377
4:30 PM	233	13	0	0	3	246	15	209	0	5	224	5	11	0	0	4	16	486
4:45 PM	220	9	0	0	5	229	10	218	0	2	228	1	6	1	0	0	8	465
Hourly Total	816	38	0	0	19	854	42	797	0	9	839	16	39	1	0	10	56	1749
5:00 PM	222	4	0	0	14	226	13	213	0	1	226	5	7	0	0	1	12	464
5:15 PM	215	6	0	0	7	221	15	200	0	0	215	4	4	1	0	2	9	445
5:30 PM	171	7	0	0	2	178	15	205	0	1	220	4	8	0	0	0	12	410
5:45 PM	207	7	0	0	4	214	12	208	0	0	220	3	5	0	0	1	8	442
Hourly Total	815	24	0	0	27	839	55	826	0	2	881	16	24	1	0	4	41	1761
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	4679	237	4	0	101	4920	401	4869	0	37	5270	141	239	4	0	43	384	10574
Approach %	95.1	4.8	0.1	0.0	-	-	7.6	92.4	0.0	-	-	36.7	62.2	1.0	0.0	-	-	-
Total %	44.3	2.2	0.0	0.0	-	46.5	3.8	46.0	0.0	-	49.8	1.3	2.3	0.0	0.0	-	3.6	-
Lights	4561	222	4	0	-	4787	386	4739	0	-	5125	136	231	4	0	-	371	10283
% Lights	97.5	93.7	100.0	-	-	97.3	96.3	97.3	-	-	97.2	96.5	96.7	100.0	-	-	96.6	97.2
Buses	18	11	0	0	-	29	4	32	0	-	36	0	3	0	0	-	3	68
% Buses	0.4	4.6	0.0	-	-	0.6	1.0	0.7	-	-	0.7	0.0	1.3	0.0	-	-	0.8	0.6
Trucks	100	4	0	0	-	104	11	98	0	-	109	5	5	0	0	-	10	223
% Trucks	2.1	1.7	0.0	-	-	2.1	2.7	2.0	-	-	2.1	3.5	2.1	0.0	-	-	2.6	2.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	2.3	-	-
Pedestrians	-	-	-	-	101	-	-	-	-	37	-	-	-	-	-	42	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	97.7	-	-

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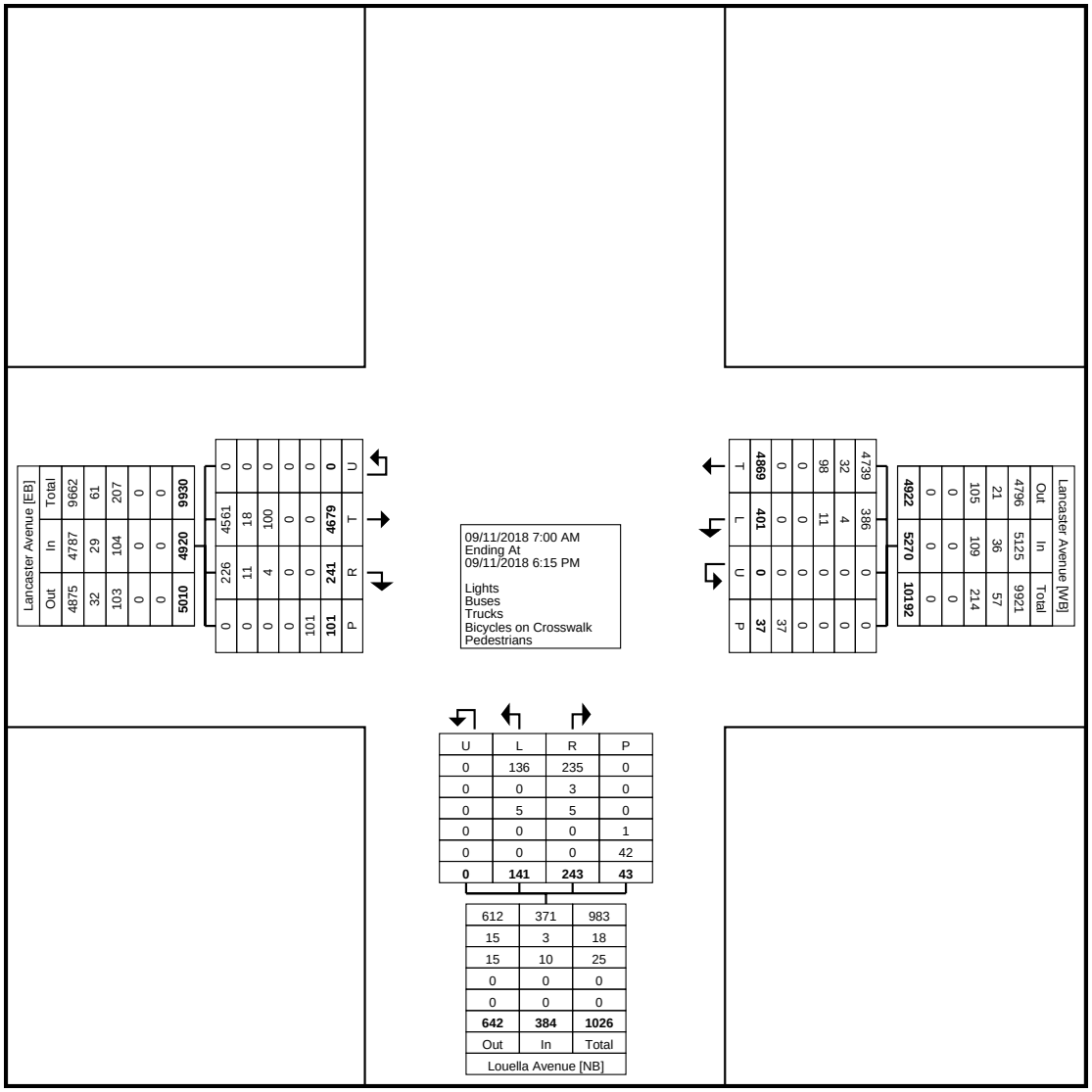
Radnor, PA
Lancaster Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave
Site Code:
Start Date: 09/11/2018
Page No: 2



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Radnor, PA
Lancaster Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.043928, -75.385359

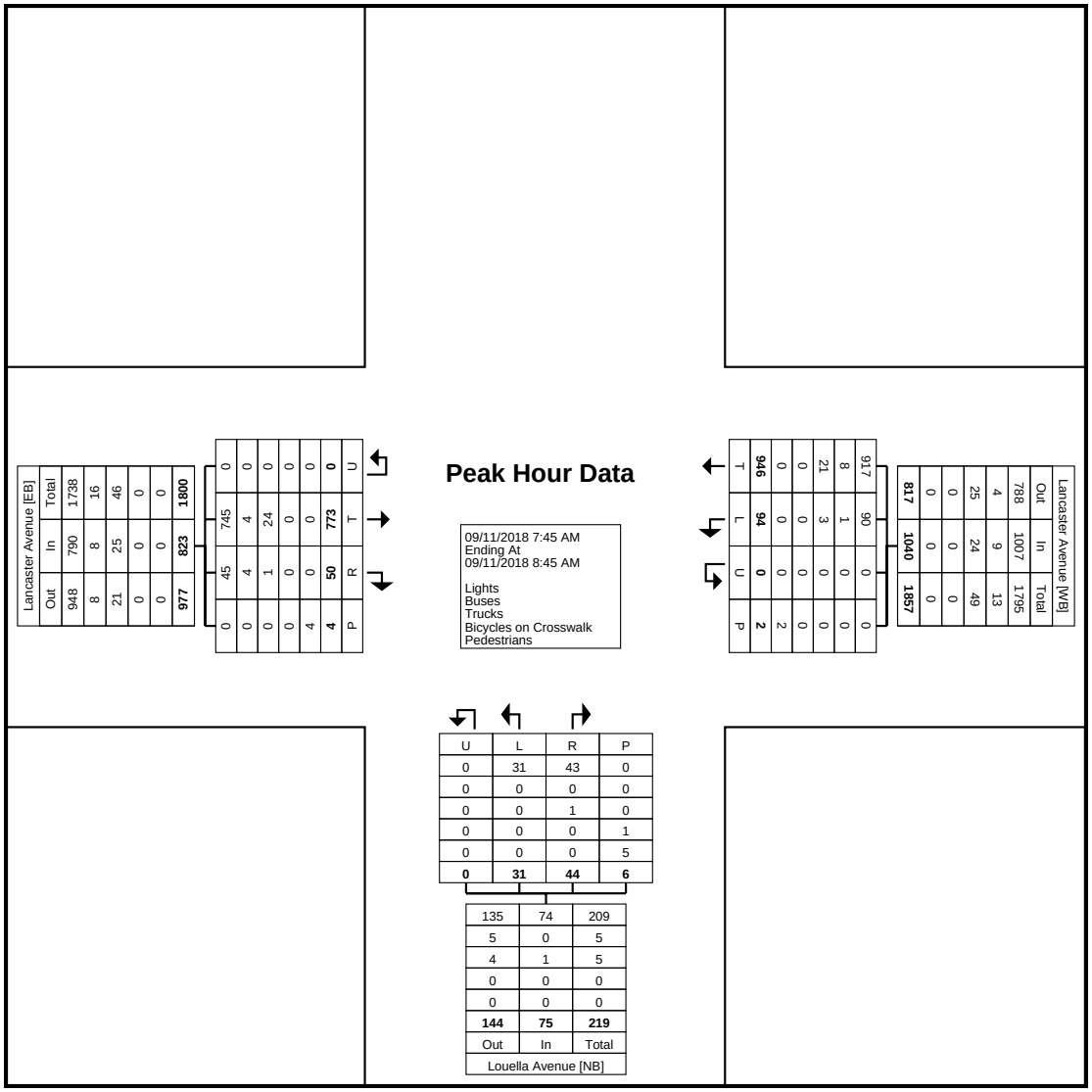
Count Name: Lancaster Ave/Louella Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Lancaster Avenue Eastbound						Lancaster Avenue Westbound					Louella Avenue Northbound						
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:45 AM	238	27	0	0	1	265	37	206	0	1	243	13	18	0	0	2	31	539
8:00 AM	197	11	0	0	2	208	13	249	0	1	262	7	11	0	0	2	18	488
8:15 AM	170	6	0	0	1	176	28	231	0	0	259	5	5	1	0	2	11	446
8:30 AM	168	6	0	0	0	174	16	260	0	0	276	6	9	0	0	0	15	465
Total	773	50	0	0	4	823	94	946	0	2	1040	31	43	1	0	6	75	1938
Approach %	93.9	6.1	0.0	0.0	-	-	9.0	91.0	0.0	-	-	41.3	57.3	1.3	0.0	-	-	-
Total %	39.9	2.6	0.0	0.0	-	42.5	4.9	48.8	0.0	-	53.7	1.6	2.2	0.1	0.0	-	3.9	-
PHF	0.812	0.463	0.000	0.000	-	0.776	0.635	0.910	0.000	-	0.942	0.596	0.597	0.250	0.000	-	0.605	0.899
Lights	745	45	0	0	-	790	90	917	0	-	1007	31	42	1	0	-	74	1871
% Lights	96.4	90.0	-	-	-	96.0	95.7	96.9	-	-	96.8	100.0	97.7	100.0	-	-	98.7	96.5
Buses	4	4	0	0	-	8	1	8	0	-	9	0	0	0	0	-	0	17
% Buses	0.5	8.0	-	-	-	1.0	1.1	0.8	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.9
Trucks	24	1	0	0	-	25	3	21	0	-	24	0	1	0	0	-	1	50
% Trucks	3.1	2.0	-	-	-	3.0	3.2	2.2	-	-	2.3	0.0	2.3	0.0	-	-	1.3	2.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	16.7	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	2	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	83.3	-	-

Radnor, PA
Lancaster Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave
Site Code:
Start Date: 09/11/2018
Page No: 4



Turning Movement Peak Hour Data Plot (7:45 AM)

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Radnor, PA
Lancaster Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.043928, -75.385359

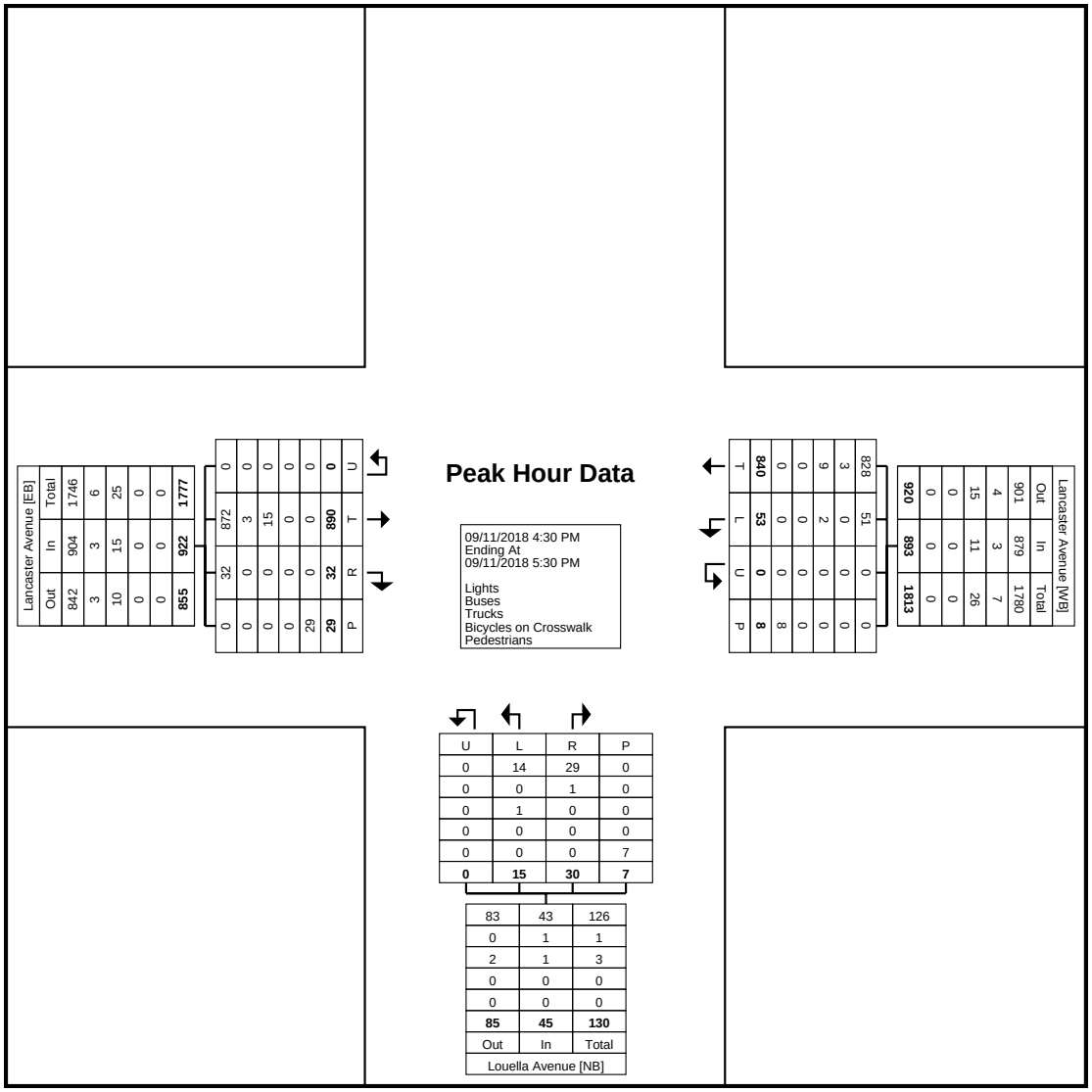
Count Name: Lancaster Ave/Louella Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Lancaster Avenue Eastbound						Lancaster Avenue Westbound					Louella Avenue Northbound						
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
4:30 PM	233	13	0	0	3	246	15	209	0	5	224	5	11	0	0	4	16	486
4:45 PM	220	9	0	0	5	229	10	218	0	2	228	1	6	1	0	0	8	465
5:00 PM	222	4	0	0	14	226	13	213	0	1	226	5	7	0	0	1	12	464
5:15 PM	215	6	0	0	7	221	15	200	0	0	215	4	4	1	0	2	9	445
Total	890	32	0	0	29	922	53	840	0	8	893	15	28	2	0	7	45	1860
Approach %	96.5	3.5	0.0	0.0	-	-	5.9	94.1	0.0	-	-	33.3	62.2	4.4	0.0	-	-	-
Total %	47.8	1.7	0.0	0.0	-	49.6	2.8	45.2	0.0	-	48.0	0.8	1.5	0.1	0.0	-	2.4	-
PHF	0.955	0.615	0.000	0.000	-	0.937	0.883	0.963	0.000	-	0.979	0.750	0.636	0.500	0.000	-	0.703	0.957
Lights	872	32	0	0	-	904	51	828	0	-	879	14	27	2	0	-	43	1826
% Lights	98.0	100.0	-	-	-	98.0	96.2	98.6	-	-	98.4	93.3	96.4	100.0	-	-	95.6	98.2
Buses	3	0	0	0	-	3	0	3	0	-	3	0	1	0	0	-	1	7
% Buses	0.3	0.0	-	-	-	0.3	0.0	0.4	-	-	0.3	0.0	3.6	0.0	-	-	2.2	0.4
Trucks	15	0	0	0	-	15	2	9	0	-	11	1	0	0	0	-	1	27
% Trucks	1.7	0.0	-	-	-	1.6	3.8	1.1	-	-	1.2	6.7	0.0	0.0	-	-	2.2	1.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	29	-	-	-	-	8	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Radnor, PA
Lancaster Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave
Site Code:
Start Date: 09/11/2018
Page No: 6



Turning Movement Peak Hour Data Plot (4:30 PM)

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Radnor, PA
Lancaster Ave & Louella Ave
Saturday, September 8, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave-Sat
Site Code:
Start Date: 09/08/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound						Lancaster Avenue Westbound					Louella Avenue Northbound						
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
11:00 AM	164	10	0	0	2	174	15	203	0	2	218	4	6	0	0	8	10	402
11:15 AM	184	5	0	0	7	189	9	216	0	8	225	3	14	0	0	2	17	431
11:30 AM	170	16	0	0	10	186	10	181	0	6	191	10	25	0	0	1	35	412
11:45 AM	205	14	1	0	9	220	9	213	0	5	222	10	19	0	0	1	29	471
Hourly Total	723	45	1	0	28	769	43	813	0	21	856	27	64	0	0	12	91	1716
12:00 PM	204	12	0	0	6	216	4	243	0	7	247	12	19	0	0	1	31	494
12:15 PM	186	15	0	0	11	201	19	229	0	5	248	9	14	0	0	6	23	472
12:30 PM	187	15	0	0	4	202	16	225	0	0	241	10	13	0	0	9	23	466
12:45 PM	187	13	0	0	8	200	10	216	0	4	226	5	6	1	0	3	12	438
Hourly Total	764	55	0	0	29	819	49	913	0	16	962	36	52	1	0	19	89	1870
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1487	100	1	0	57	1588	92	1726	0	37	1818	63	116	1	0	31	180	3586
Approach %	93.6	6.3	0.1	0.0	-	-	5.1	94.9	0.0	-	-	35.0	64.4	0.6	0.0	-	-	-
Total %	41.5	2.8	0.0	0.0	-	44.3	2.6	48.1	0.0	-	50.7	1.8	3.2	0.0	0.0	-	5.0	-
Lights	1467	100	1	0	-	1568	91	1705	0	-	1796	63	115	1	0	-	179	3543
% Lights	98.7	100.0	100.0	-	-	98.7	98.9	98.8	-	-	98.8	100.0	99.1	100.0	-	-	99.4	98.8
Buses	2	0	0	0	-	2	0	3	0	-	3	0	0	0	0	-	0	5
% Buses	0.1	0.0	0.0	-	-	0.1	0.0	0.2	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	18	0	0	0	-	18	1	18	0	-	19	0	1	0	0	-	1	38
% Trucks	1.2	0.0	0.0	-	-	1.1	1.1	1.0	-	-	1.0	0.0	0.9	0.0	-	-	0.6	1.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	6.5	-	-
Pedestrians	-	-	-	-	57	-	-	-	-	37	-	-	-	-	-	29	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	93.5	-	-

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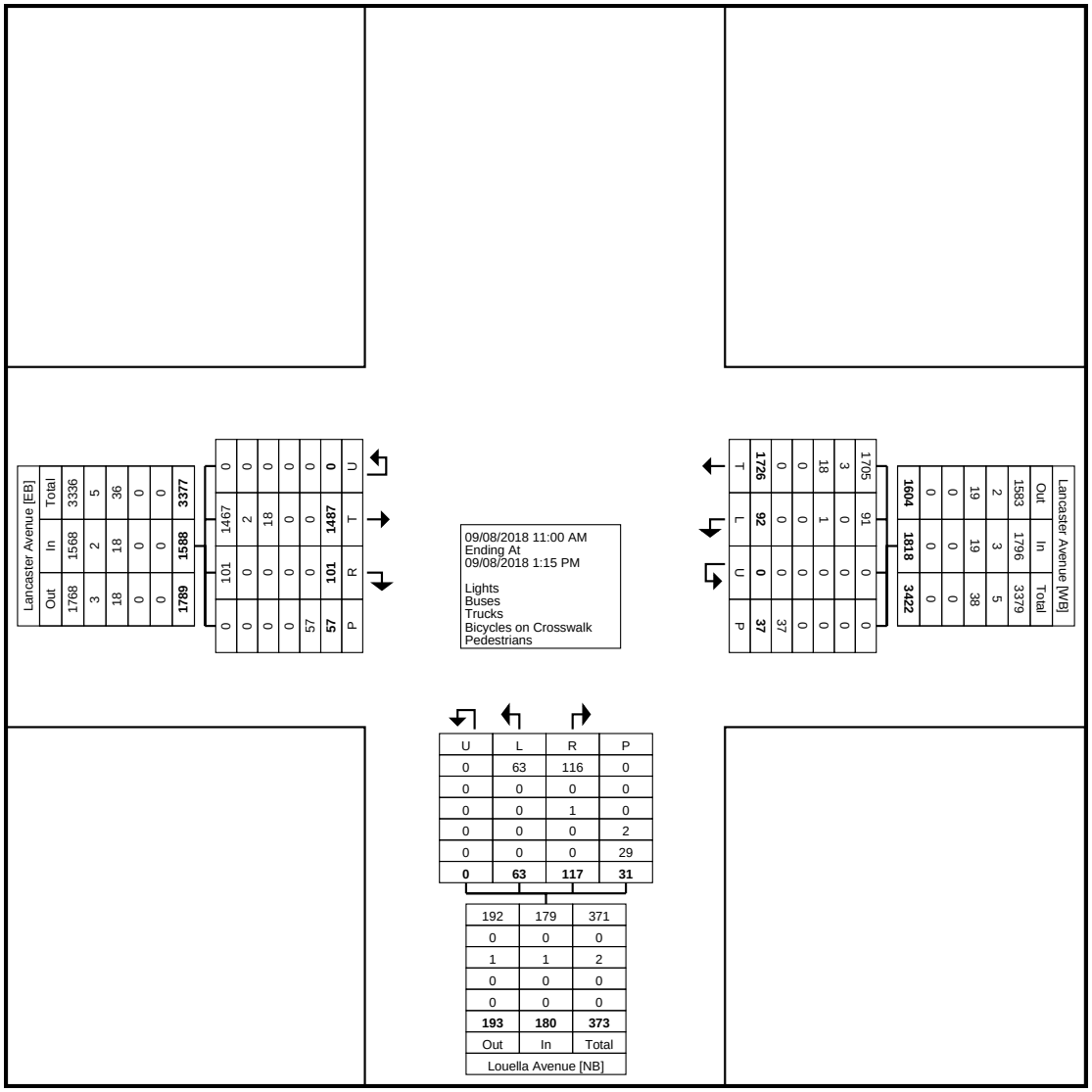
Radnor, PA
Lancaster Ave & Louella Ave
Saturday, September 8, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave-Sat
Site Code:
Start Date: 09/08/2018
Page No: 2



Turning Movement Data Plot

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Radnor, PA
Lancaster Ave & Louella Ave
Saturday, September 8, 2018
Location: 40.043928, -75.385359

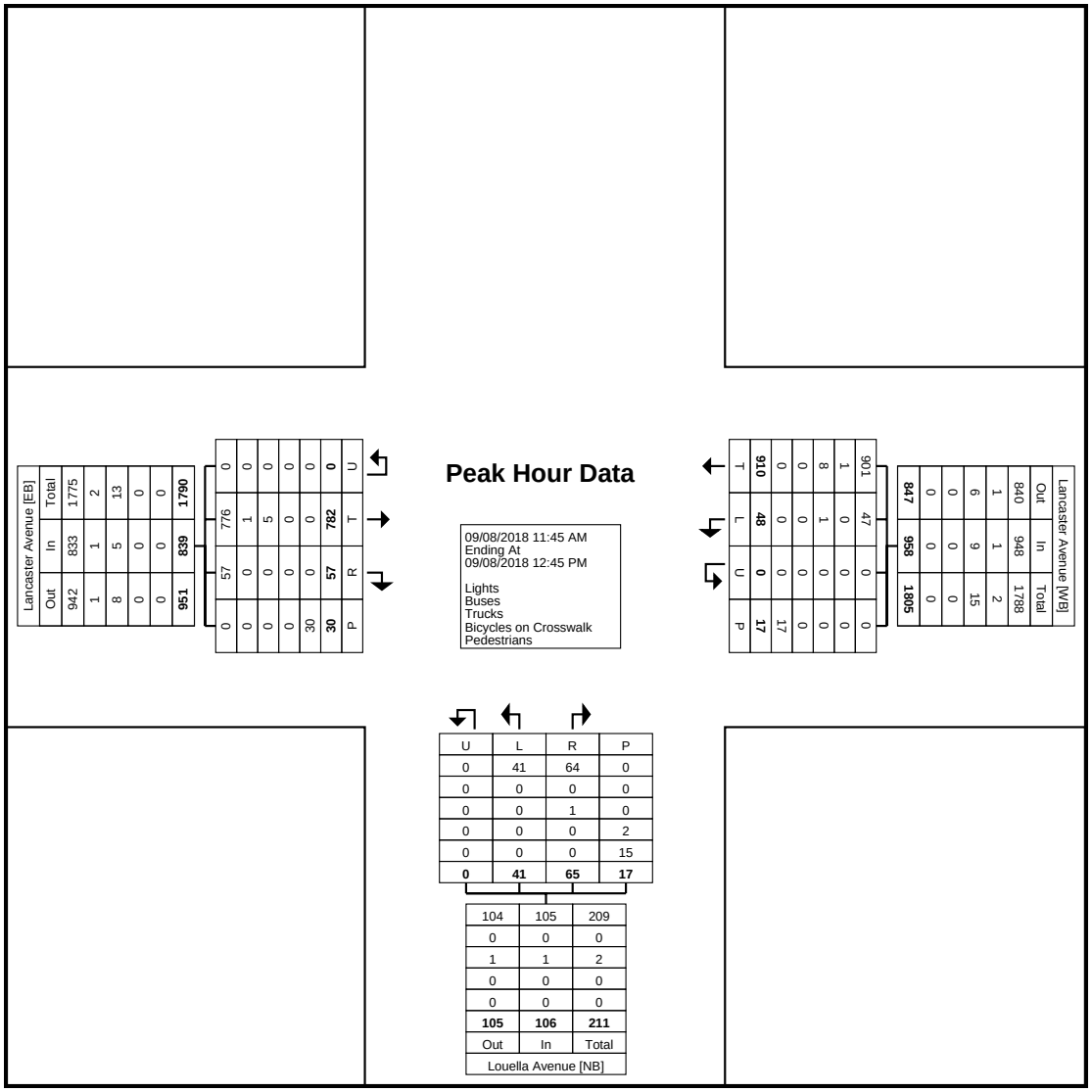
Count Name: Lancaster Ave/Louella Ave-Sat
Site Code:
Start Date: 09/08/2018

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Lancaster Avenue Eastbound						Lancaster Avenue Westbound					Louella Avenue Northbound						
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
11:45 AM	205	14	1	0	9	220	9	213	0	5	222	10	19	0	0	1	29	471
12:00 PM	204	12	0	0	6	216	4	243	0	7	247	12	19	0	0	1	31	494
12:15 PM	186	15	0	0	11	201	19	229	0	5	248	9	14	0	0	6	23	472
12:30 PM	187	15	0	0	4	202	16	225	0	0	241	10	13	0	0	9	23	466
Total	782	56	1	0	30	839	48	910	0	17	958	41	65	0	0	17	106	1903
Approach %	93.2	6.7	0.1	0.0	-	-	5.0	95.0	0.0	-	-	38.7	61.3	0.0	0.0	-	-	-
Total %	41.1	2.9	0.1	0.0	-	44.1	2.5	47.8	0.0	-	50.3	2.2	3.4	0.0	0.0	-	5.6	-
PHF	0.954	0.933	0.250	0.000	-	0.953	0.632	0.936	0.000	-	0.966	0.854	0.855	0.000	0.000	-	0.855	0.963
Lights	776	56	1	0	-	833	47	901	0	-	948	41	64	0	0	-	105	1886
% Lights	99.2	100.0	100.0	-	-	99.3	97.9	99.0	-	-	99.0	100.0	98.5	-	-	-	99.1	99.1
Buses	1	0	0	0	-	1	0	1	0	-	1	0	0	0	0	-	0	2
% Buses	0.1	0.0	0.0	-	-	0.1	0.0	0.1	-	-	0.1	0.0	0.0	-	-	-	0.0	0.1
Trucks	5	0	0	0	-	5	1	8	0	-	9	0	1	0	0	-	1	15
% Trucks	0.6	0.0	0.0	-	-	0.6	2.1	0.9	-	-	0.9	0.0	1.5	-	-	-	0.9	0.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	11.8	-	-
Pedestrians	-	-	-	-	30	-	-	-	-	17	-	-	-	-	-	15	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	88.2	-	-

Radnor, PA
Lancaster Ave & Louella Ave
Saturday, September 8, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave-Sat
Site Code:
Start Date: 09/08/2018
Page No: 4



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

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Radnor, PA
Lancaster Ave & Louella Ave
Sunday, September 9, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave-Sun
Site Code:
Start Date: 09/09/2018

Turning Movement Data

Start Time	Lancaster Avenue Eastbound						Lancaster Avenue Westbound					Louella Avenue Northbound						
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
9:00 AM	96	4	0	0	0	100	9	151	0	0	160	6	0	0	0	0	6	266
9:15 AM	138	9	0	0	0	147	2	98	0	0	100	6	3	0	0	0	9	256
9:30 AM	113	17	0	1	0	131	4	118	0	0	122	2	3	0	0	0	5	258
9:45 AM	138	12	0	1	5	151	7	140	0	0	147	4	4	0	0	0	8	306
Hourly Total	485	42	0	2	5	529	22	507	0	0	529	18	10	0	0	0	28	1086
10:00 AM	127	10	0	0	2	137	4	130	0	1	134	6	3	0	0	0	9	280
10:15 AM	120	6	1	0	3	127	9	131	0	2	140	8	8	0	0	2	16	283
10:30 AM	143	31	0	0	5	174	6	169	0	0	175	10	3	0	0	0	13	362
10:45 AM	148	8	0	0	2	156	4	150	0	0	154	6	5	0	0	3	11	321
Hourly Total	538	55	1	0	12	594	23	580	0	3	603	30	19	0	0	5	49	1246
11:00 AM	162	10	0	0	8	172	1	139	0	2	140	4	4	0	0	0	8	320
11:15 AM	121	13	1	0	3	135	11	148	0	2	159	6	4	0	0	0	10	304
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1306	120	2	2	28	1430	57	1374	0	7	1431	58	37	0	0	5	95	2956
Approach %	91.3	8.4	0.1	0.1	-	-	4.0	96.0	0.0	-	-	61.1	38.9	0.0	0.0	-	-	-
Total %	44.2	4.1	0.1	0.1	-	48.4	1.9	46.5	0.0	-	48.4	2.0	1.3	0.0	0.0	-	3.2	-
Lights	1299	120	2	2	-	1423	57	1371	0	-	1428	58	36	0	0	-	94	2945
% Lights	99.5	100.0	100.0	100.0	-	99.5	100.0	99.8	-	-	99.8	100.0	97.3	-	-	-	98.9	99.6
Buses	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Trucks	7	0	0	0	-	7	0	3	0	-	3	0	1	0	0	-	1	11
% Trucks	0.5	0.0	0.0	0.0	-	0.5	0.0	0.2	-	-	0.2	0.0	2.7	-	-	-	1.1	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	28	-	-	-	-	7	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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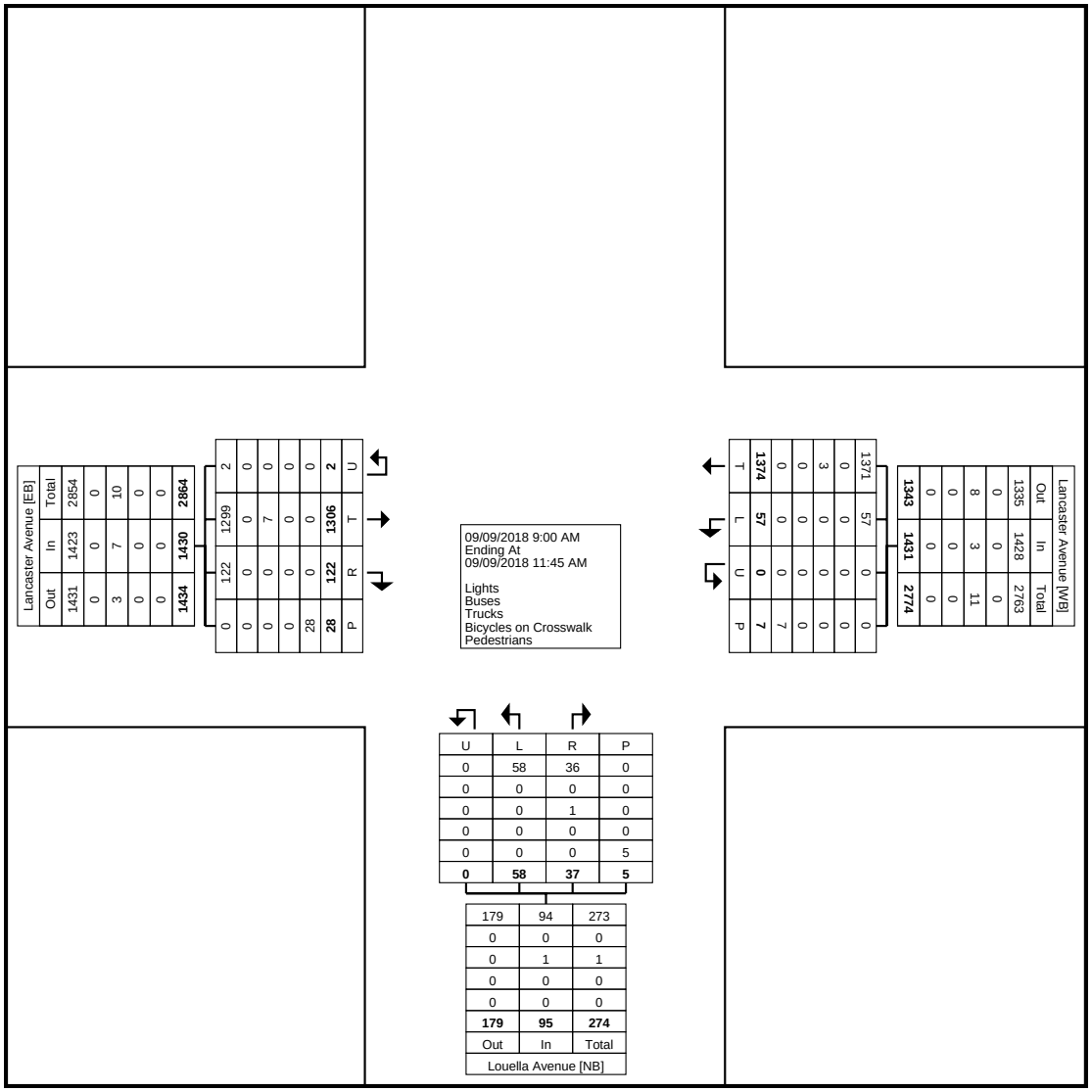
Radnor, PA
Lancaster Ave & Louella Ave
Sunday, September 9, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave-Sun
Site Code:
Start Date: 09/09/2018



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Radnor, PA
Lancaster Ave & Louella Ave
Sunday, September 9, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave-Sun
Site Code:
Start Date: 09/09/2018

Turning Movement Peak Hour Data (10:30 AM)

Start Time	Lancaster Avenue Eastbound						Lancaster Avenue Westbound					Louella Avenue Northbound						
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
10:30 AM	143	31	0	0	5	174	6	169	0	0	175	10	3	0	0	0	13	362
10:45 AM	148	8	0	0	2	156	4	150	0	0	154	6	5	0	0	3	11	321
11:00 AM	162	10	0	0	8	172	1	139	0	2	140	4	4	0	0	0	8	320
11:15 AM	121	13	1	0	3	135	11	148	0	2	159	6	4	0	0	0	10	304
Total	574	62	1	0	18	637	22	606	0	4	628	26	16	0	0	3	42	1307
Approach %	90.1	9.7	0.2	0.0	-	-	3.5	96.5	0.0	-	-	61.9	38.1	0.0	0.0	-	-	-
Total %	43.9	4.7	0.1	0.0	-	48.7	1.7	46.4	0.0	-	48.0	2.0	1.2	0.0	0.0	-	3.2	-
PHF	0.886	0.500	0.250	0.000	-	0.915	0.500	0.896	0.000	-	0.897	0.650	0.800	0.000	0.000	-	0.808	0.903
Lights	572	62	1	0	-	635	22	605	0	-	627	26	15	0	0	-	41	1303
% Lights	99.7	100.0	100.0	-	-	99.7	100.0	99.8	-	-	99.8	100.0	93.8	-	-	-	97.6	99.7
Buses	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Trucks	2	0	0	0	-	2	0	1	0	-	1	0	1	0	0	-	1	4
% Trucks	0.3	0.0	0.0	-	-	0.3	0.0	0.2	-	-	0.2	0.0	6.3	-	-	-	2.4	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	18	-	-	-	-	4	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Radnor, PA
Lancaster Ave & Louella Ave
Sunday, September 9, 2018
Location: 40.043928, -75.385359

Count Name: Lancaster Ave/Louella Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 4

Peak Hour Data

09/09/2018 10:30 AM
Ending At
09/09/2018 11:30 AM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Lancaster Avenue [EB]												
Out	631	0	1	0	0	0	**632**	63	572	0	0	0
In	635	0	2	0	0	0	**637**	0	0	0	0	0
Total	1266	0	3	0	0	0	**1269**	63	572	0	0	0

	U	R	T
	0	0	0
	0	0	0
	0	0	2
	0	0	0
	0	18	0
	0	**18**	**574**
	U	P	T

Lancaster Avenue [WB]												
Out	587	0	3	0	0	0	0	0	0	0	**580**	0
In	627	0	1	0	0	0	0	0	0	0	**628**	0
Total	1214	0	4	0	0	0	0	0	0	0	**1218**	0

	T	L	U	P
	605	0	0	0
	22	0	0	0
	0	0	0	0
	1	0	0	0
	0	0	0	0
	0	0	0	0
	606	**22**	**0**	**4**
	T	L	U	P

U	L	R	P
0	26	15	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	3
0	**26**	**16**	**3**

85	41	126
0	0	0
0	1	1
0	0	0
0	0	0
85	**42**	**127**
Out	In	Total
Louella Avenue [NB]		

Turning Movement Peak Hour Data Plot (10:30 AM)

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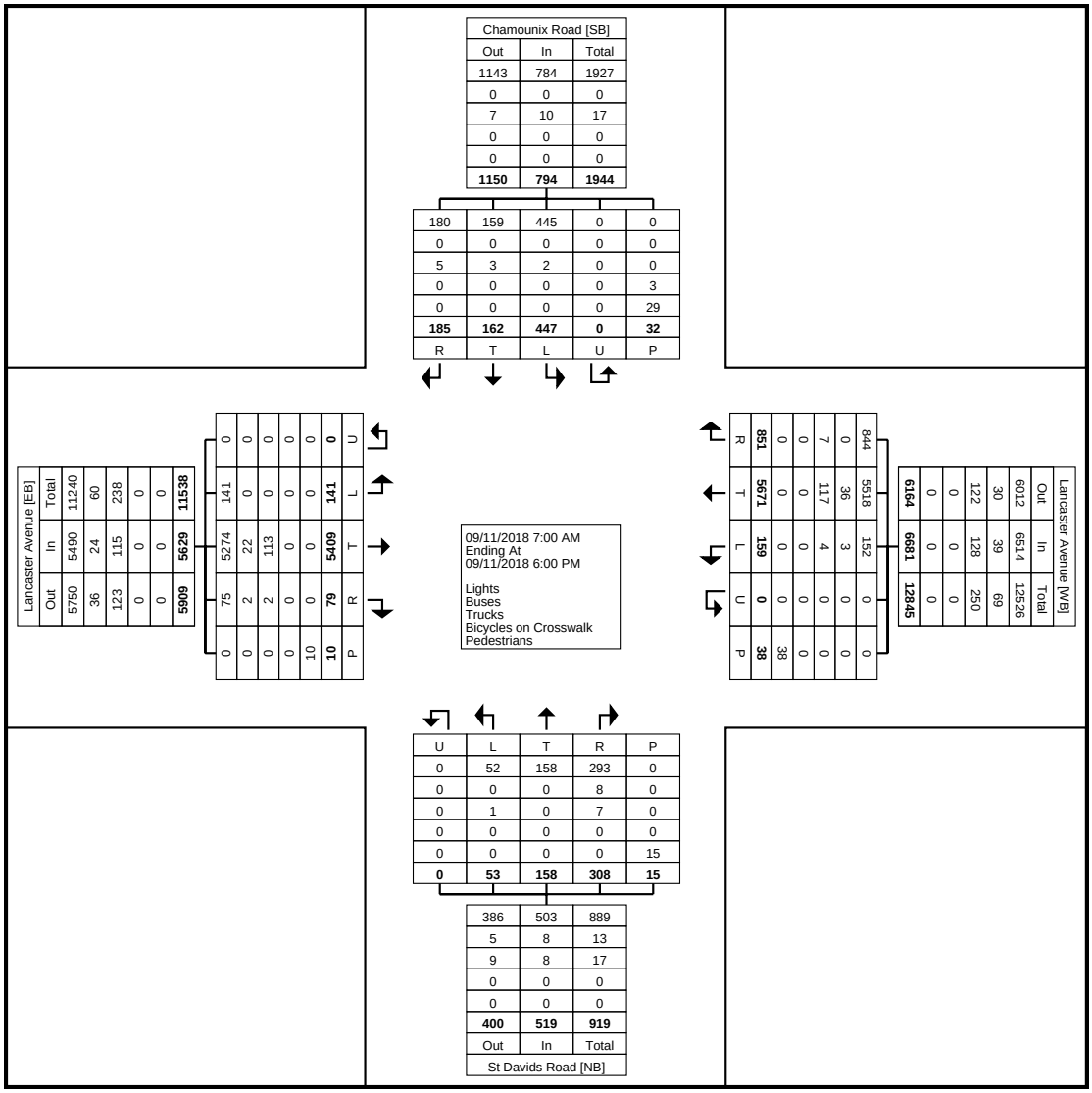
Radnor, PA
Lancaster Ave & St Davids St
Tuesday, September 11, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids
Site Code:
Start Date: 09/11/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							St Davids Road Northbound							Chamounix Road Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:00 AM	6	172	0	0	0	1	178	2	227	25	3	0	2	257	2	6	12	0	0	0	20	12	4	4	1	0	1	21	476
7:15 AM	4	189	0	0	0	0	193	4	246	24	2	0	2	276	3	5	17	1	0	2	26	17	4	4	0	0	1	25	520
7:30 AM	6	209	0	0	0	1	215	5	268	49	4	0	2	326	2	13	17	1	0	1	33	19	9	2	1	0	2	31	605
7:45 AM	1	234	2	1	0	0	238	8	289	74	4	0	5	375	1	22	19	3	0	0	45	22	20	16	0	0	1	58	716
Hourly Total	17	804	2	1	0	2	824	19	1030	172	13	0	11	1234	8	46	65	5	0	3	124	70	37	26	2	0	5	135	2317
8:00 AM	6	232	1	0	0	0	239	1	278	63	4	0	0	346	11	16	19	0	0	0	46	25	7	7	0	0	1	39	670
8:15 AM	5	196	2	0	0	2	203	2	265	56	5	0	0	328	5	17	12	0	0	0	34	20	6	5	0	0	2	31	596
8:30 AM	2	193	3	0	0	2	198	2	281	73	6	0	0	362	2	12	17	0	0	0	31	25	5	10	0	0	2	40	631
8:45 AM	5	198	2	0	0	3	205	6	267	62	9	0	2	344	4	5	14	0	0	0	23	23	7	10	0	0	0	40	612
Hourly Total	18	819	8	0	0	7	845	11	1091	254	24	0	2	1380	22	50	62	0	0	0	134	93	25	32	0	0	5	150	2509
9:00 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2:00 PM	5	220	4	0	0	0	229	2	201	11	1	0	1	215	1	4	12	0	0	1	17	8	2	5	0	0	0	15	476
2:15 PM	5	218	1	0	0	0	224	2	195	10	0	0	0	207	1	3	3	0	0	0	7	13	6	1	0	0	0	20	458
2:30 PM	5	214	3	1	0	0	223	13	224	11	1	0	0	249	1	3	10	0	0	1	14	10	4	11	1	0	0	26	512
2:45 PM	4	219	7	0	0	0	230	7	217	12	2	0	1	238	1	4	9	0	0	0	14	16	6	3	0	0	0	25	507
Hourly Total	19	871	15	1	0	0	906	24	837	44	4	0	2	909	4	14	34	0	0	2	52	47	18	20	1	0	0	86	1953
3:00 PM	8	232	3	1	0	0	244	4	206	28	0	0	1	238	1	4	20	0	0	0	25	18	5	5	0	0	3	28	535
3:15 PM	7	280	3	0	0	1	290	10	185	20	0	0	3	215	0	5	14	0	0	1	19	18	7	6	0	0	5	31	555
3:30 PM	3	230	2	0	0	0	235	6	201	11	0	0	0	218	3	2	18	0	0	0	23	25	9	8	2	0	1	44	520
3:45 PM	9	246	5	0	0	0	260	9	219	22	1	0	2	251	2	1	17	1	0	0	21	21	7	7	0	0	3	35	567
Hourly Total	27	988	13	1	0	1	1029	29	811	81	1	0	6	922	6	12	69	1	0	1	88	82	28	26	2	0	12	138	2177
4:00 PM	6	242	5	0	0	0	253	4	213	35	2	0	2	254	3	3	13	0	0	0	19	23	4	8	0	0	1	35	561
4:15 PM	10	209	9	2	0	0	230	11	226	22	1	0	1	260	2	2	8	0	0	3	12	23	8	9	0	0	2	40	542
4:30 PM	5	266	4	0	0	0	275	14	228	27	2	0	2	271	2	4	9	0	0	0	15	20	13	7	0	0	0	40	601
4:45 PM	4	256	1	0	0	0	261	8	228	27	1	0	4	264	2	2	8	2	0	3	14	15	7	9	1	0	2	32	571
Hourly Total	25	973	19	2	0	0	1019	37	895	111	6	0	9	1049	9	11	38	2	0	6	60	81	32	33	1	0	5	147	2275
5:00 PM	7	268	3	0	0	0	278	9	271	36	3	0	4	319	2	2	4	0	0	1	8	20	0	8	0	0	2	28	633
5:15 PM	11	245	4	0	0	0	260	12	229	31	1	0	1	273	2	11	8	0	0	0	21	15	6	8	0	0	2	29	583
5:30 PM	11	210	4	1	0	0	226	11	276	27	1	0	3	315	0	4	5	0	0	0	9	15	9	13	0	0	0	37	587
5:45 PM	6	231	5	0	0	0	242	7	229	41	1	0	0	278	0	8	15	0	0	2	23	24	7	13	0	0	1	44	587
Hourly Total	35	954	16	1	0	0	1006	39	1005	135	6	0	8	1185	4	25	32	0	0	3	61	74	22	42	0	0	5	138	2390
Grand Total	141	5409	73	6	0	10	5629	159	5671	797	54	0	38	6681	53	158	300	8	0	15	519	447	162	179	6	0	32	794	13623
Approach %	2.5	96.1	1.3	0.1	0.0	-	-	2.4	84.9	11.9	0.8	0.0	-	-	10.2	30.4	57.8	1.5	0.0	-	-	56.3	20.4	22.5	0.8	0.0	-	-	-
Total %	1.0	39.7	0.5	0.0	0.0	-	41.3	1.2	41.6	5.9	0.4	0.0	-	49.0	0.4	1.2	2.2	0.1	0.0	-	3.8	3.3	1.2	1.3	0.0	0.0	-	5.8	-
Lights	141	5274	69	6	0	-	5490	152	5518	790	54	0	-	6514	52	158	285	8	0	-	503	445	159	174	6	0	-	784	13291
% Lights	100.0	97.5	94.5	100.0	-	-	97.5	95.6	97.3	99.1	100.0	-	-	97.5	98.1	100.0	95.0	100.0	-	-	96.9	99.6	98.1	97.2	100.0	-	-	98.7	97.6
Buses	0	22	2	0	0	-	24	3	36	0	0	0	-	39	0	0	8	0	0	-	8	0	0	0	0	0	-	0	71
% Buses	0.0	0.4	2.7	0.0	-	-	0.4	1.9	0.6	0.0	0.0	-	-	0.6	0.0	0.0	2.7	0.0	-	-	1.5	0.0	0.0	0.0	0.0	-	-	0.0	0.5
Trucks	0	113	2	0	0	-	115	4	117	7	0	0	-	128	1	0	7	0	0	-	8	2	3	5	0	0	-	10	261
% Trucks	0.0	2.1	2.7	0.0	-	-	2.0	2.5	2.1	0.9	0.0	-	-	1.9	1.9	0.0	2.3	0.0	-	-	1.5	0.4	1.9	2.8	0.0	-	-	1.3	1.9
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	9.4	-	-
Pedestrians	-	-	-	-	-	10	-	-	-	-	-	-	38	-	-	-	-	-	-	15	-	-	-	-	-	-	29	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	90.6	-	-



Chamounix Road [SB]

Out	In	Total
1143	784	1927
0	0	0
7	10	17
0	0	0
0	0	0
1150	**794**	**1944**

R	T	L	U	P
180	159	445	0	0
0	0	0	0	0
5	3	2	0	0
0	0	0	0	3
0	0	0	0	29
185	**162**	**447**	**0**	**32**

Lancaster Avenue [EB]

Out	In	Total
5750	5490	11240
36	24	60
123	115	238
0	0	0
0	0	0
5909	**5629**	**11538**

U	L	T	R	P
0	141	5274	75	0
0	0	22	2	0
0	0	113	2	0
0	0	0	0	0
0	0	0	0	10
0	**141**	**5409**	**79**	**10**

09/11/2018 7:00 AM
Ending At
09/11/2018 6:00 PM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Lancaster Avenue [WB]

Out	In	Total
6012	6514	12526
30	39	69
122	128	250
0	0	0
0	0	0
6164	**6681**	**12845**

R	T	L	U	P
844	5518	152	0	0
0	36	3	0	0
7	117	4	0	0
0	0	0	0	0
0	0	0	0	38
851	**5671**	**159**	**0**	**38**

U	L	T	R	P
0	52	158	293	0
0	0	0	8	0
0	1	0	7	0
0	0	0	0	0
0	0	0	0	15
0	**53**	**158**	**308**	**15**

Out	In	Total
386	503	889
5	8	13
9	8	17
0	0	0
0	0	0
400	**519**	**919**

St Davids Road [NB]

Turning Movement Data Plot

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Radnor, PA
Lancaster Ave & St Davids St
Tuesday, September 11, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							St Davids Road Northbound							Chamounix Road Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:45 AM	1	234	2	1	0	0	238	8	289	74	4	0	5	375	1	22	19	3	0	0	45	22	20	16	0	0	1	58	716
8:00 AM	6	232	1	0	0	0	239	1	278	63	4	0	0	346	11	16	19	0	0	0	46	25	7	7	0	0	1	39	670
8:15 AM	5	196	2	0	0	2	203	2	265	56	5	0	0	328	5	17	12	0	0	0	34	20	6	5	0	0	2	31	596
8:30 AM	2	193	3	0	0	2	198	2	281	73	6	0	0	362	2	12	17	0	0	0	31	25	5	10	0	0	2	40	631
Total	14	855	8	1	0	4	878	13	1113	266	19	0	5	1411	19	67	67	3	0	0	156	92	38	38	0	0	6	168	2613
Approach %	1.6	97.4	0.9	0.1	0.0	-	-	0.9	78.9	18.9	1.3	0.0	-	-	12.2	42.9	42.9	1.9	0.0	-	-	54.8	22.6	22.6	0.0	0.0	-	-	-
Total %	0.5	32.7	0.3	0.0	0.0	-	33.6	0.5	42.6	10.2	0.7	0.0	-	54.0	0.7	2.6	2.6	0.1	0.0	-	6.0	3.5	1.5	1.5	0.0	0.0	-	6.4	-
PHF	0.583	0.913	0.667	0.250	0.000	-	0.918	0.406	0.963	0.899	0.792	0.000	-	0.941	0.432	0.761	0.882	0.250	0.000	-	0.848	0.920	0.475	0.594	0.000	0.000	-	0.724	0.912
Lights	14	825	8	1	0	-	848	13	1072	265	19	0	-	1369	19	67	64	3	0	-	153	91	36	37	0	0	-	164	2534
% Lights	100.0	96.5	100.0	100.0	-	-	96.6	100.0	96.3	99.6	100.0	-	-	97.0	100.0	100.0	95.5	100.0	-	-	98.1	98.9	94.7	97.4	-	-	-	97.6	97.0
Buses	0	4	0	0	0	-	4	0	8	0	0	0	-	8	0	0	3	0	0	-	3	0	0	0	0	0	-	0	15
% Buses	0.0	0.5	0.0	0.0	-	-	0.5	0.0	0.7	0.0	0.0	-	-	0.6	0.0	0.0	4.5	0.0	-	-	1.9	0.0	0.0	0.0	-	-	-	0.0	0.6
Trucks	0	26	0	0	0	-	26	0	33	1	0	0	-	34	0	0	0	0	0	-	0	1	2	1	0	0	-	4	64
% Trucks	0.0	3.0	0.0	0.0	-	-	3.0	0.0	3.0	0.4	0.0	-	-	2.4	0.0	0.0	0.0	0.0	-	-	0.0	1.1	5.3	2.6	-	-	-	2.4	2.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	16.7	-	-
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	-	5	-	-	-	-	-	-	0	-	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	83.3	-	-

Radnor, PA
Lancaster Ave & St Davids St
Tuesday, September 11, 2018
Location: 40.042926, -75.374171

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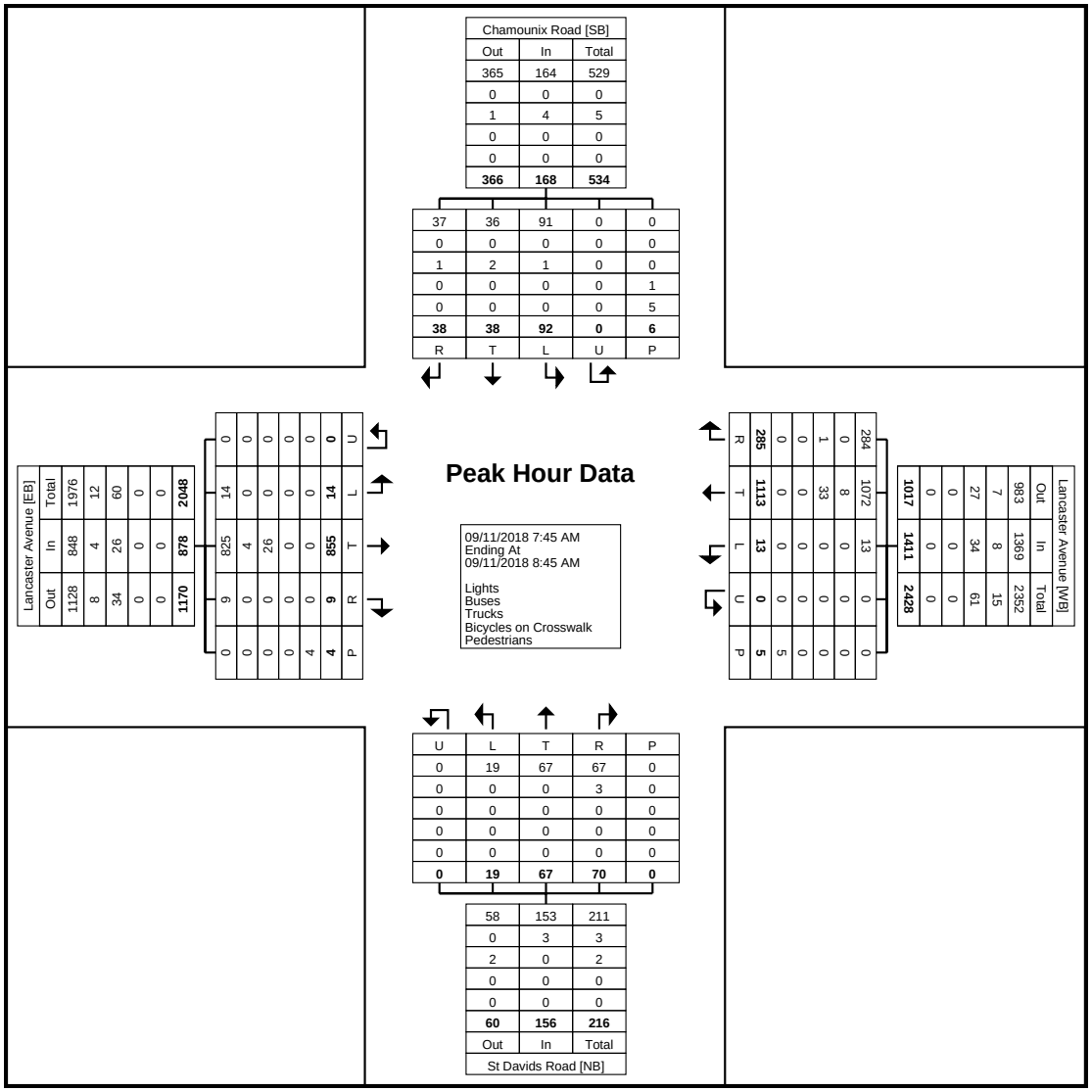
Count Name: Lancaster Ave/St Davids
Site Code:
Start Date: 09/11/2018
Page No: 4



Peak Hour Data

09/11/2018 7:45 AM
Ending At
09/11/2018 8:45 AM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Chamounix Road [SB]

Out	In	Total
365	164	529
0	0	0
1	4	5
0	0	0
0	0	0
366	**168**	**534**

R	T	L	U	P
37	36	91	0	0
0	0	0	0	0
1	2	1	0	0
0	0	0	0	1
0	0	0	0	5
38	**38**	**92**	**0**	**6**

Lancaster Avenue [EB]

Total	In	Out
1976	848	1128
12	4	8
60	26	34
0	0	0
0	0	0
2048	**878**	**1170**

U	L	T	R	P
0	14	825	9	0
0	0	4	0	0
0	0	26	0	0
0	0	0	0	0
0	0	0	0	4
0	**14**	**855**	**9**	**4**

Lancaster Avenue [WB]

Out	In	Total
983	1369	2352
7	8	15
27	34	61
0	0	0
0	0	0
1017	**1411**	**2428**

R	T	L	U	P
284	1072	13	0	0
0	8	0	0	0
1	33	0	0	0
0	0	0	0	0
0	0	0	0	5
285	**1113**	**13**	**0**	**5**

U	L	T	R	P
0	19	67	67	0
0	0	0	3	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	**19**	**67**	**70**	**0**

Out	In	Total
58	153	211
0	3	3
2	0	2
0	0	0
0	0	0
60	**156**	**216**

St Davids Road [NB]

Turning Movement Peak Hour Data Plot (7:45 AM)

Radnor, PA
Lancaster Ave & St Davids St
Tuesday, September 11, 2018
Location: 40.042926, -75.374171

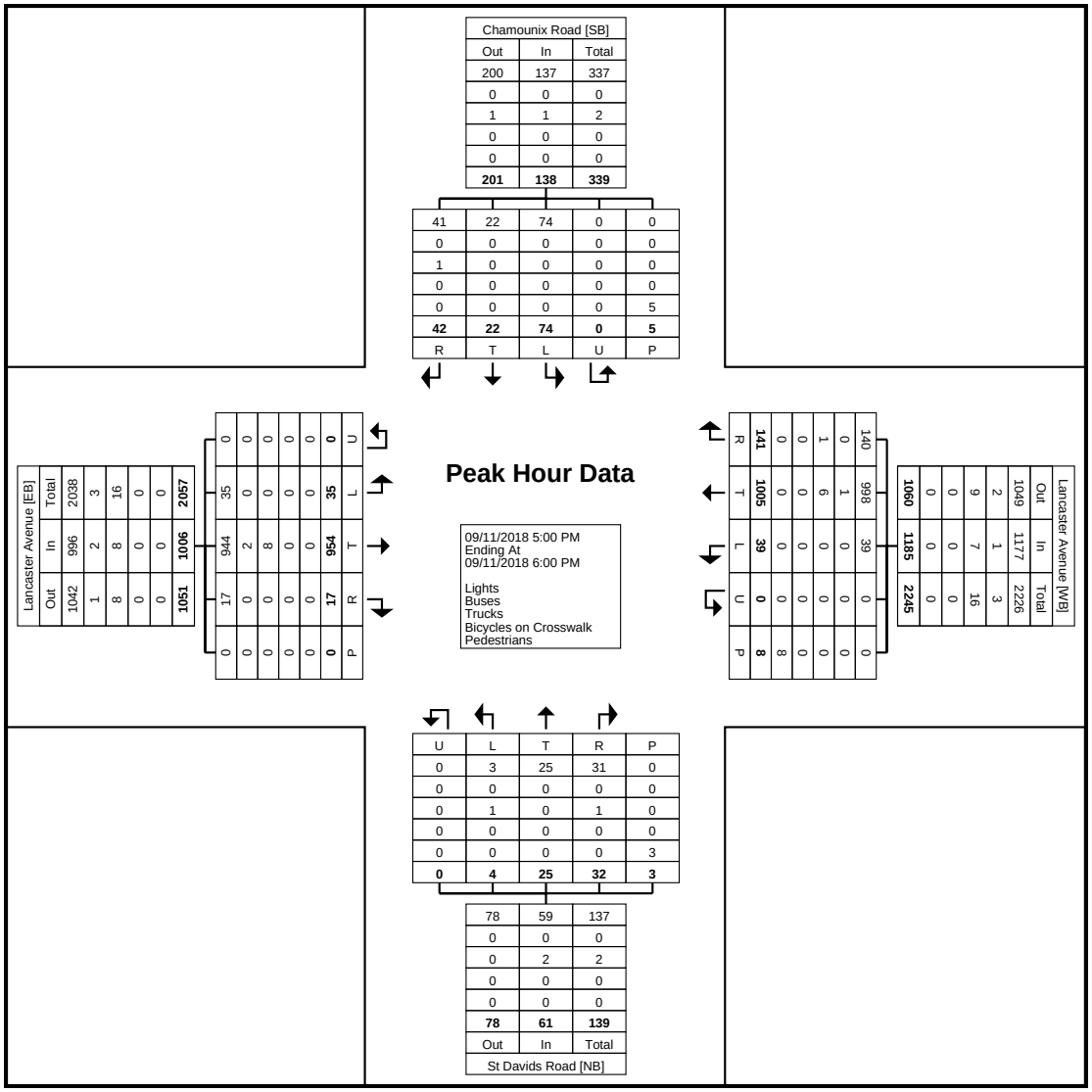
Count Name: Lancaster Ave/St Davids
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							St Davids Road Northbound							Chamounix Road Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
5:00 PM	7	268	3	0	0	0	278	9	271	36	3	0	4	319	2	2	4	0	0	1	8	20	0	8	0	0	2	28	633
5:15 PM	11	245	4	0	0	0	260	12	229	31	1	0	1	273	2	11	8	0	0	0	21	15	6	8	0	0	2	29	583
5:30 PM	11	210	4	1	0	0	226	11	276	27	1	0	3	315	0	4	5	0	0	0	9	15	9	13	0	0	0	37	587
5:45 PM	6	231	5	0	0	0	242	7	229	41	1	0	0	278	0	8	15	0	0	2	23	24	7	13	0	0	1	44	587
Total	35	954	16	1	0	0	1006	39	1005	135	6	0	8	1185	4	25	32	0	0	3	61	74	22	42	0	0	5	138	2390
Approach %	3.5	94.8	1.6	0.1	0.0	-	-	3.3	84.8	11.4	0.5	0.0	-	-	6.6	41.0	52.5	0.0	0.0	-	-	53.6	15.9	30.4	0.0	0.0	-	-	-
Total %	1.5	39.9	0.7	0.0	0.0	-	42.1	1.6	42.1	5.6	0.3	0.0	-	49.6	0.2	1.0	1.3	0.0	0.0	-	2.6	3.1	0.9	1.8	0.0	0.0	-	5.8	-
PHF	0.795	0.890	0.800	0.250	0.000	-	0.905	0.813	0.910	0.823	0.500	0.000	-	0.929	0.500	0.568	0.533	0.000	0.000	-	0.663	0.771	0.611	0.808	0.000	0.000	-	0.784	0.944
Lights	35	944	16	1	0	-	996	39	998	134	6	0	-	1177	3	25	31	0	0	-	59	74	22	41	0	0	-	137	2369
% Lights	100.0	99.0	100.0	100.0	-	-	99.0	100.0	99.3	99.3	100.0	-	-	99.3	75.0	100.0	96.9	-	-	-	96.7	100.0	100.0	97.6	-	-	-	99.3	99.1
Buses	0	2	0	0	0	-	2	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	3
% Buses	0.0	0.2	0.0	0.0	-	-	0.2	0.0	0.1	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	-	0.0	0.1
Trucks	0	8	0	0	0	-	8	0	6	1	0	0	-	7	1	0	1	0	0	-	2	0	0	1	0	0	-	1	18
% Trucks	0.0	0.8	0.0	0.0	-	-	0.8	0.0	0.6	0.7	0.0	-	-	0.6	25.0	0.0	3.1	-	-	-	3.3	0.0	0.0	2.4	-	-	-	0.7	0.8
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	8	-	-	-	-	-	-	3	-	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Radnor, PA
Lancaster Ave & St Davids St
Tuesday, September 11, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids
Site Code:
Start Date: 09/11/2018
Page No: 6



Turning Movement Peak Hour Data Plot (5:00 PM)

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Radnor, PA
Lancaster Ave & St Davids St
Saturday, September 8, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids-Sat
Site Code:
Start Date: 09/08/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							St Davids Road Northbound							Chamounix Raod Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
11:00 AM	8	183	3	0	0	0	194	9	211	9	0	0	3	229	3	2	14	0	0	0	19	12	5	7	5	0	1	29	471
11:15 AM	7	175	3	0	0	0	185	11	213	11	1	0	0	236	5	5	11	0	0	0	21	8	13	8	1	0	0	30	472
11:30 AM	6	199	5	0	0	1	210	4	197	10	1	0	1	212	2	3	16	0	0	0	21	10	5	2	3	0	1	20	463
11:45 AM	6	250	9	0	0	0	265	6	224	8	0	0	0	238	3	0	16	0	0	0	19	11	5	10	1	0	1	27	549
Hourly Total	27	807	20	0	0	1	854	30	845	38	2	0	4	915	13	10	57	0	0	0	80	41	28	27	10	0	3	106	1955
12:00 PM	8	202	2	1	0	0	213	6	252	18	1	0	0	277	2	4	9	0	0	0	15	14	2	11	2	0	0	29	534
12:15 PM	11	215	2	0	0	0	228	16	250	17	2	0	2	285	2	4	10	0	0	2	16	16	6	8	1	0	2	31	560
12:30 PM	5	213	4	0	0	0	222	8	258	17	0	0	2	283	6	9	6	0	0	0	21	14	4	4	1	0	2	23	549
12:45 PM	6	213	4	0	0	0	223	7	218	8	0	0	3	233	3	5	13	0	0	1	21	10	9	9	2	0	2	30	507
Hourly Total	30	843	12	1	0	0	886	37	978	60	3	0	7	1078	13	22	38	0	0	3	73	54	21	32	6	0	6	113	2150
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	57	1650	32	1	0	1	1740	67	1823	98	5	0	11	1993	26	32	95	0	0	3	153	95	49	59	16	0	9	219	4105
Approach %	3.3	94.8	1.8	0.1	0.0	-	-	3.4	91.5	4.9	0.3	0.0	-	-	17.0	20.9	62.1	0.0	0.0	-	-	43.4	22.4	26.9	7.3	0.0	-	-	-
Total %	1.4	40.2	0.8	0.0	0.0	-	42.4	1.6	44.4	2.4	0.1	0.0	-	48.6	0.6	0.8	2.3	0.0	0.0	-	3.7	2.3	1.2	1.4	0.4	0.0	-	5.3	-
Lights	57	1626	32	1	0	-	1716	66	1799	98	5	0	-	1968	25	32	95	0	0	-	152	94	49	59	16	0	-	218	4054
% Lights	100.0	98.5	100.0	100.0	-	-	98.6	98.5	98.7	100.0	100.0	-	-	98.7	96.2	100.0	100.0	-	-	-	99.3	98.9	100.0	100.0	100.0	-	-	99.5	98.8
Buses	0	2	0	0	0	-	2	0	3	0	0	0	-	3	0	0	0	0	0	-	0	0	0	0	0	0	-	0	5
% Buses	0.0	0.1	0.0	0.0	-	-	0.1	0.0	0.2	0.0	0.0	-	-	0.2	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	0	22	0	0	0	-	22	1	21	0	0	0	-	22	1	0	0	0	0	-	1	1	0	0	0	0	-	1	46
% Trucks	0.0	1.3	0.0	0.0	-	-	1.3	1.5	1.2	0.0	0.0	-	-	1.1	3.8	0.0	0.0	-	-	-	0.7	1.1	0.0	0.0	0.0	-	-	0.5	1.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	-	11	-	-	-	-	-	-	3	-	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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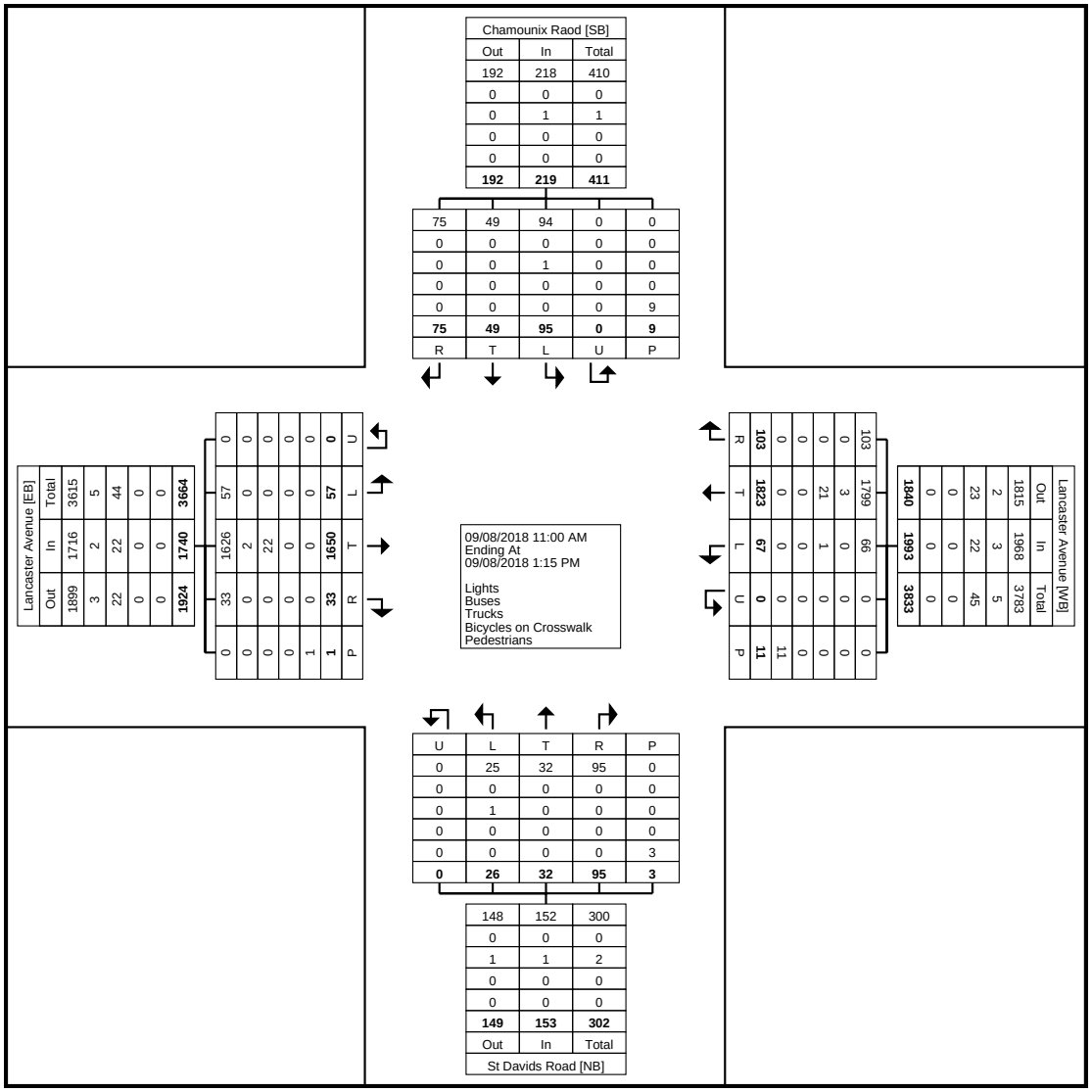
Radnor, PA
Lancaster Ave & St Davids St
Saturday, September 8, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids-Sat
Site Code:
Start Date: 09/08/2018
Page No: 2



Turning Movement Data Plot

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Radnor, PA
Lancaster Ave & St Davids St
Saturday, September 8, 2018
Location: 40.042926, -75.374171

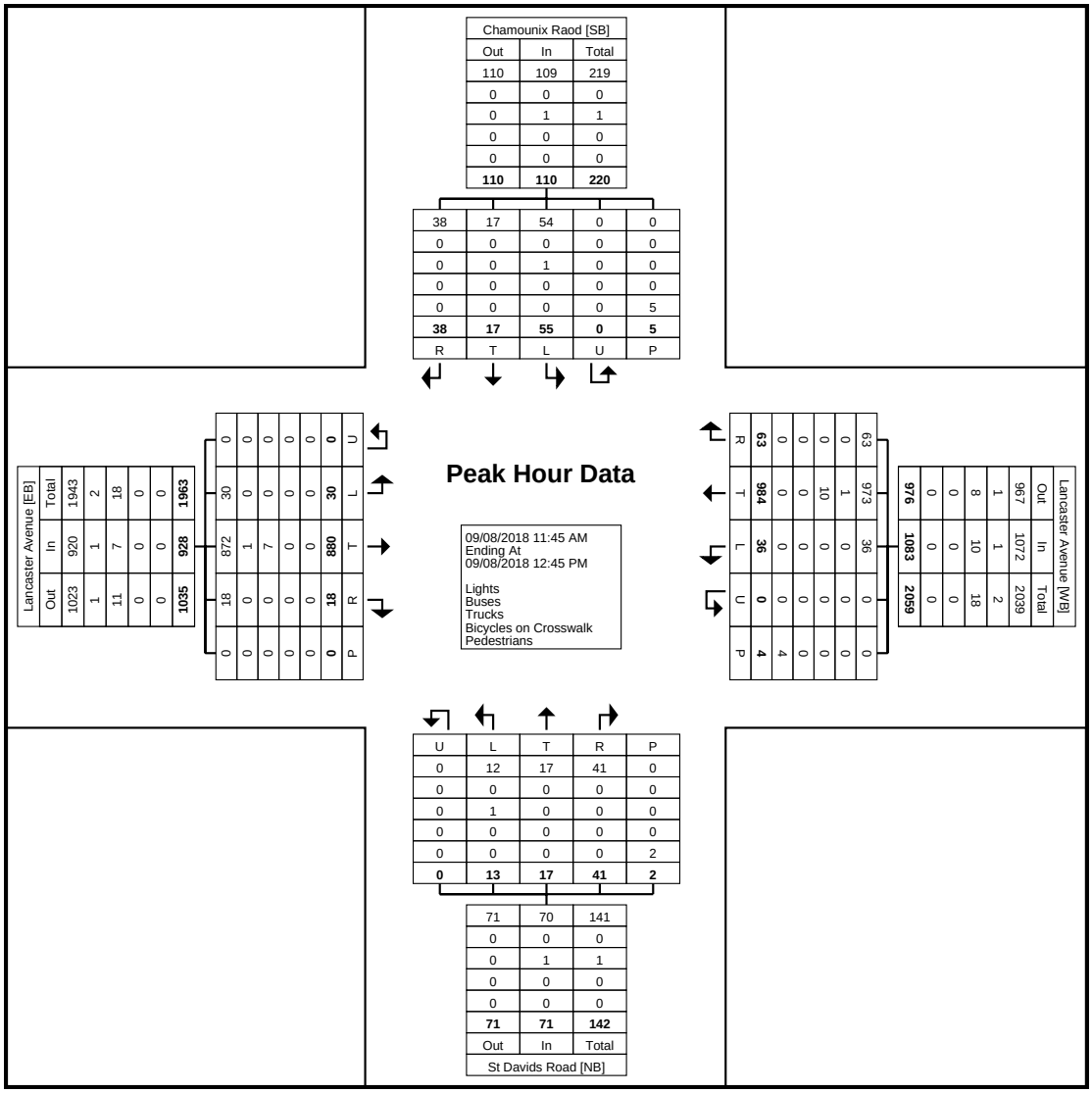
Count Name: Lancaster Ave/St Davids-Sat
Site Code:
Start Date: 09/08/2018

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							St Davids Road Northbound							Chamounix Raod Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
11:45 AM	6	250	9	0	0	0	265	6	224	8	0	0	0	238	3	0	16	0	0	0	19	11	5	10	1	0	1	27	549
12:00 PM	8	202	2	1	0	0	213	6	252	18	1	0	0	277	2	4	9	0	0	0	15	14	2	11	2	0	0	29	534
12:15 PM	11	215	2	0	0	0	228	16	250	17	2	0	2	285	2	4	10	0	0	2	16	16	6	8	1	0	2	31	560
12:30 PM	5	213	4	0	0	0	222	8	258	17	0	0	2	283	6	9	6	0	0	0	21	14	4	4	1	0	2	23	549
Total	30	880	17	1	0	0	928	36	984	60	3	0	4	1083	13	17	41	0	0	2	71	55	17	33	5	0	5	110	2192
Approach %	3.2	94.8	1.8	0.1	0.0	-	-	3.3	90.9	5.5	0.3	0.0	-	-	18.3	23.9	57.7	0.0	0.0	-	-	50.0	15.5	30.0	4.5	0.0	-	-	-
Total %	1.4	40.1	0.8	0.0	0.0	-	42.3	1.6	44.9	2.7	0.1	0.0	-	49.4	0.6	0.8	1.9	0.0	0.0	-	3.2	2.5	0.8	1.5	0.2	0.0	-	5.0	-
PHF	0.682	0.880	0.472	0.250	0.000	-	0.875	0.563	0.953	0.833	0.375	0.000	-	0.950	0.542	0.472	0.641	0.000	0.000	-	0.845	0.859	0.708	0.750	0.625	0.000	-	0.887	0.979
Lights	30	872	17	1	0	-	920	36	973	60	3	0	-	1072	12	17	41	0	0	-	70	54	17	33	5	0	-	109	2171
% Lights	100.0	99.1	100.0	100.0	-	-	99.1	100.0	98.9	100.0	100.0	-	-	99.0	92.3	100.0	100.0	-	-	-	98.6	98.2	100.0	100.0	100.0	-	-	99.1	99.0
Buses	0	1	0	0	0	-	1	0	1	0	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	2
% Buses	0.0	0.1	0.0	0.0	-	-	0.1	0.0	0.1	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Trucks	0	7	0	0	0	-	7	0	10	0	0	0	-	10	1	0	0	0	0	-	1	1	0	0	0	0	-	1	19
% Trucks	0.0	0.8	0.0	0.0	-	-	0.8	0.0	1.0	0.0	0.0	-	-	0.9	7.7	0.0	0.0	-	-	-	1.4	1.8	0.0	0.0	0.0	-	-	0.9	0.9
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	4	-	-	-	-	-	-	2	-	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Radnor, PA
Lancaster Ave & St Davids St
Saturday, September 8, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids-Sat
Site Code:
Start Date: 09/08/2018
Page No: 4



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

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Radnor, PA
Lancaster Ave & St Davids St
Sunday, September 9, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids-Sun
Site Code:
Start Date: 09/09/2018
Page No: 1

Turning Movement Data

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							St Davids Road Northbound							Chamounix Road Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
9:00 AM	10	95	0	0	0	1	105	0	118	8	0	0	0	126	0	1	5	0	0	0	6	9	1	13	2	0	1	25	262
9:15 AM	4	115	1	0	0	0	120	3	95	2	0	0	0	100	5	1	2	0	0	0	8	8	3	2	2	0	0	15	243
9:30 AM	1	124	0	0	0	0	125	9	128	3	1	0	0	141	1	2	8	2	0	1	13	10	2	5	1	0	1	18	297
9:45 AM	6	139	1	0	0	1	146	4	134	6	1	0	0	145	3	6	7	0	0	1	16	11	4	7	3	0	4	25	332
Hourly Total	21	473	2	0	0	2	496	16	475	19	2	0	0	512	9	10	22	2	0	2	43	38	10	27	8	0	6	83	1134
10:00 AM	4	132	1	0	0	0	137	2	117	7	0	0	1	126	5	0	5	0	0	0	10	11	1	3	0	0	0	15	288
10:15 AM	4	143	0	1	0	0	148	6	123	5	1	0	2	135	4	2	5	0	0	0	11	15	2	5	2	0	0	24	318
10:30 AM	4	154	3	1	0	0	162	4	174	7	1	0	0	186	1	0	7	0	0	0	8	7	1	5	0	0	0	13	369
10:45 AM	5	142	0	0	0	0	147	6	144	9	0	0	0	159	6	2	15	0	0	0	23	8	3	2	3	0	0	16	345
Hourly Total	17	571	4	2	0	0	594	18	558	28	2	0	3	606	16	4	32	0	0	0	52	41	7	15	5	0	0	68	1320
11:00 AM	4	165	1	0	0	0	170	11	146	2	0	0	1	159	2	1	10	0	0	0	13	6	6	2	3	0	0	17	359
11:15 AM	9	143	2	0	0	0	154	9	170	13	1	0	0	193	2	3	10	0	0	0	15	16	3	8	0	0	0	27	389
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	51	1352	9	2	0	2	1414	54	1349	62	5	0	4	1470	29	18	74	2	0	2	123	101	26	52	16	0	6	195	3202
Approach %	3.6	95.6	0.6	0.1	0.0	-	-	3.7	91.8	4.2	0.3	0.0	-	-	23.6	14.6	60.2	1.6	0.0	-	-	51.8	13.3	26.7	8.2	0.0	-	-	-
Total %	1.6	42.2	0.3	0.1	0.0	-	44.2	1.7	42.1	1.9	0.2	0.0	-	45.9	0.9	0.6	2.3	0.1	0.0	-	3.8	3.2	0.8	1.6	0.5	0.0	-	6.1	-
Lights	51	1344	9	2	0	-	1406	54	1346	61	5	0	-	1466	29	18	73	2	0	-	122	101	26	52	16	0	-	195	3189
% Lights	100.0	99.4	100.0	100.0	-	-	99.4	100.0	99.8	98.4	100.0	-	-	99.7	100.0	100.0	98.6	100.0	-	-	99.2	100.0	100.0	100.0	100.0	-	-	100.0	99.6
Buses	0	0	0	0	0	-	0	0	0	1	0	0	-	1	0	0	0	0	0	-	0	0	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.6	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	8	0	0	0	-	8	0	3	0	0	0	-	3	0	0	1	0	0	-	1	0	0	0	0	0	-	0	12
% Trucks	0.0	0.6	0.0	0.0	-	-	0.6	0.0	0.2	0.0	0.0	-	-	0.2	0.0	0.0	1.4	0.0	-	-	0.8	0.0	0.0	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	-	4	-	-	-	-	-	-	2	-	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

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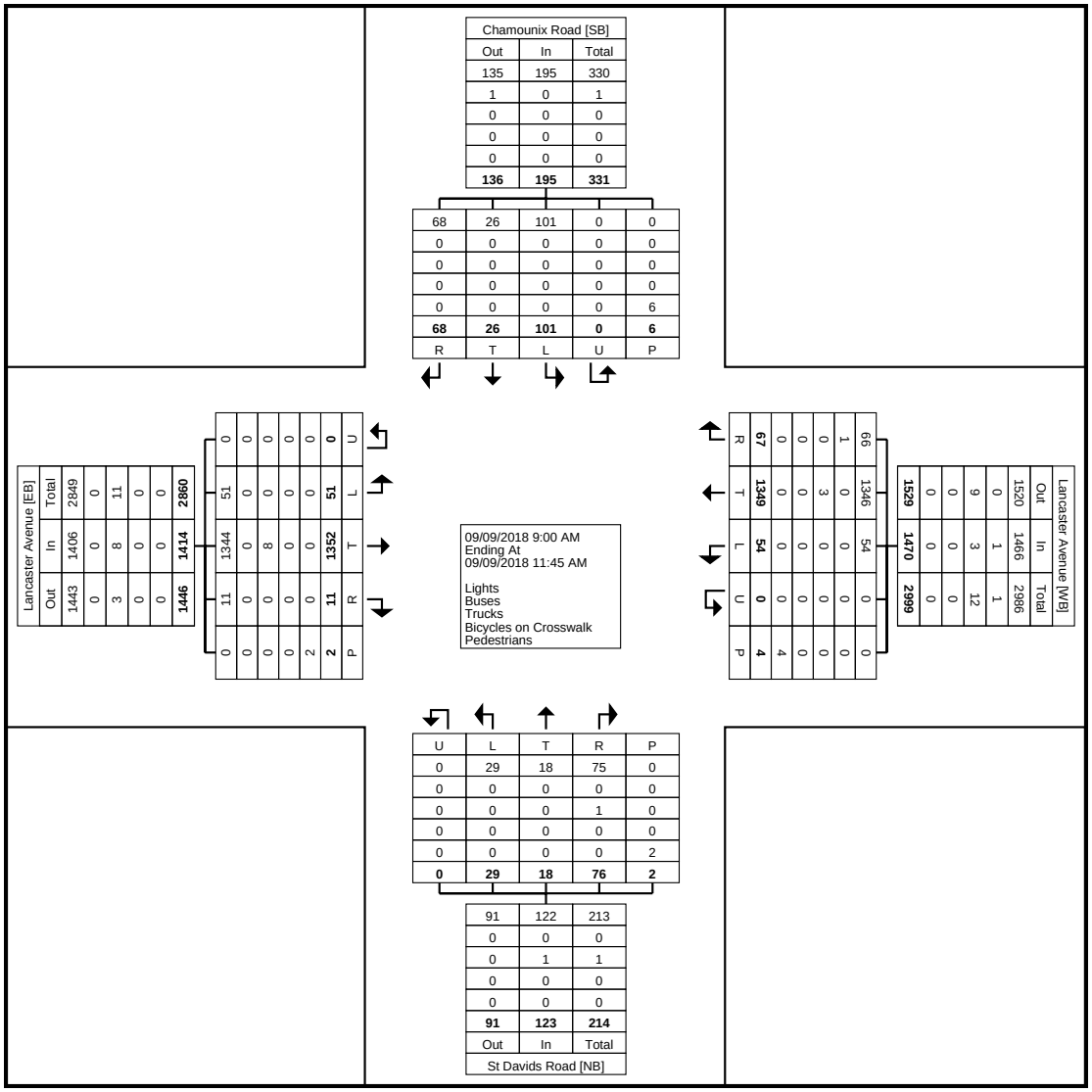
Radnor, PA
Lancaster Ave & St Davids St
Sunday, September 9, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids-Sun
Site Code:
Start Date: 09/09/2018
Page No: 2



Turning Movement Data Plot

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Radnor, PA
Lancaster Ave & St Davids St
Sunday, September 9, 2018
Location: 40.042926, -75.374171

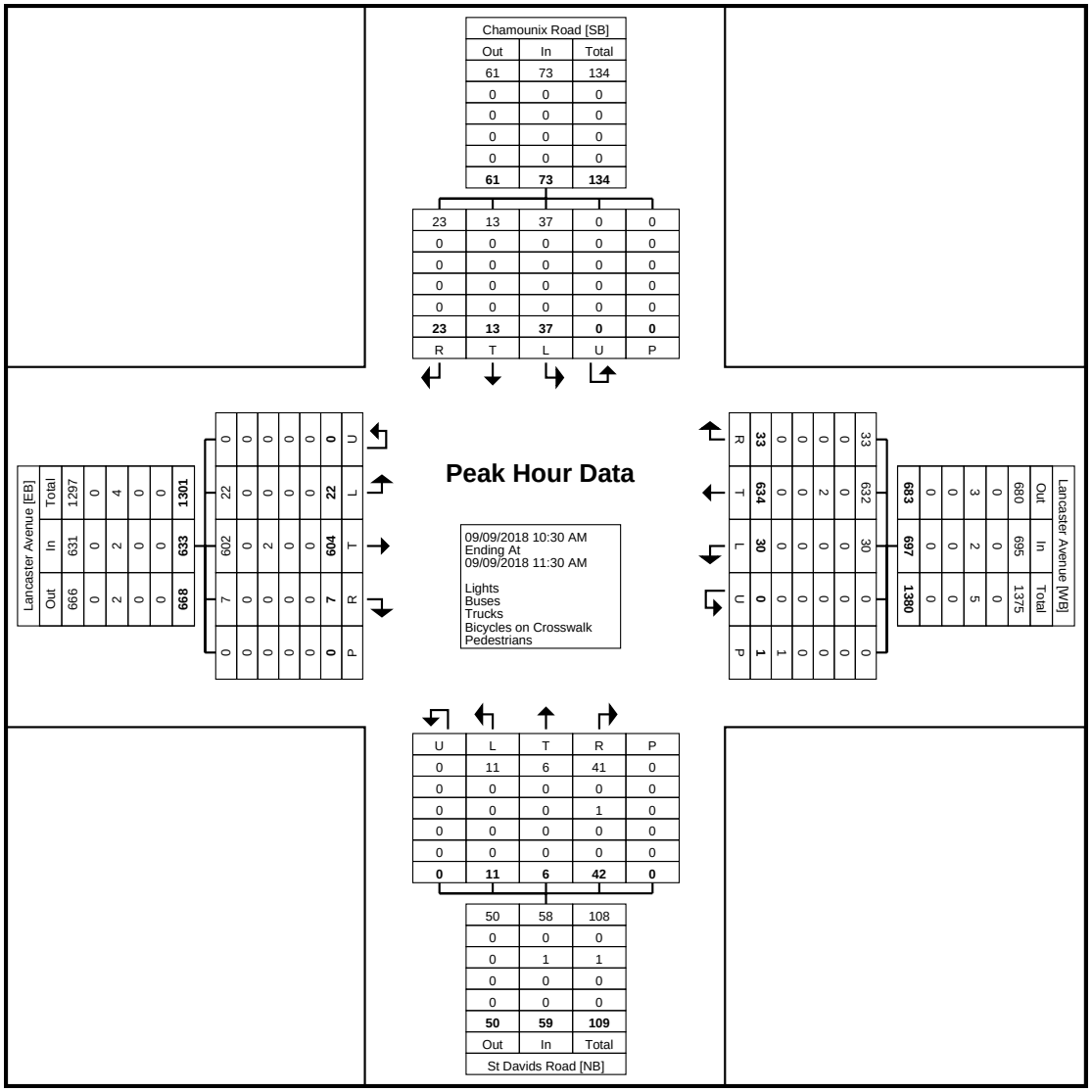
Count Name: Lancaster Ave/St Davids-Sun
Site Code:
Start Date: 09/09/2018
Page No: 3

Turning Movement Peak Hour Data (10:30 AM)

Start Time	Lancaster Avenue Eastbound							Lancaster Avenue Westbound							St Davids Road Northbound							Chamounix Road Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
10:30 AM	4	154	3	1	0	0	162	4	174	7	1	0	0	186	1	0	7	0	0	0	8	7	1	5	0	0	0	13	369
10:45 AM	5	142	0	0	0	0	147	6	144	9	0	0	0	159	6	2	15	0	0	0	23	8	3	2	3	0	0	16	345
11:00 AM	4	165	1	0	0	0	170	11	146	2	0	0	1	159	2	1	10	0	0	0	13	6	6	2	3	0	0	17	359
11:15 AM	9	143	2	0	0	0	154	9	170	13	1	0	0	193	2	3	10	0	0	0	15	16	3	8	0	0	0	27	389
Total	22	604	6	1	0	0	633	30	634	31	2	0	1	697	11	6	42	0	0	0	59	37	13	17	6	0	0	73	1462
Approach %	3.5	95.4	0.9	0.2	0.0	-	-	4.3	91.0	4.4	0.3	0.0	-	-	18.6	10.2	71.2	0.0	0.0	-	-	50.7	17.8	23.3	8.2	0.0	-	-	-
Total %	1.5	41.3	0.4	0.1	0.0	-	43.3	2.1	43.4	2.1	0.1	0.0	-	47.7	0.8	0.4	2.9	0.0	0.0	-	4.0	2.5	0.9	1.2	0.4	0.0	-	5.0	-
PHF	0.611	0.915	0.500	0.250	0.000	-	0.931	0.682	0.911	0.596	0.500	0.000	-	0.903	0.458	0.500	0.700	0.000	0.000	-	0.641	0.578	0.542	0.531	0.500	0.000	-	0.676	0.940
Lights	22	602	6	1	0	-	631	30	632	31	2	0	-	695	11	6	41	0	0	-	58	37	13	17	6	0	-	73	1457
% Lights	100.0	99.7	100.0	100.0	-	-	99.7	100.0	99.7	100.0	100.0	-	-	99.7	100.0	100.0	97.6	-	-	-	98.3	100.0	100.0	100.0	100.0	-	-	100.0	99.7
Buses	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	2	0	0	0	-	2	0	2	0	0	0	-	2	0	0	1	0	0	-	1	0	0	0	0	0	-	0	5
% Trucks	0.0	0.3	0.0	0.0	-	-	0.3	0.0	0.3	0.0	0.0	-	-	0.3	0.0	0.0	2.4	-	-	-	1.7	0.0	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Radnor, PA
Lancaster Ave & St Davids St
Sunday, September 9, 2018
Location: 40.042926, -75.374171

Count Name: Lancaster Ave/St Davids-Sun
Site Code:
Start Date: 09/09/2018
Page No: 4



Turning Movement Peak Hour Data Plot (10:30 AM)

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Radnor, PA
Midland Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018
Page No: 1

Turning Movement Data

Start Time	Midland Avenue Eastbound						Midland Avenue Westbound						Aberdeen Avenue Northbound						Aberdeen Avenue Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	2	5	1	0	0	8	1	1	1	0	0	3	0	23	1	0	0	24	2	15	3	0	2	20	55
7:15 AM	1	2	0	0	2	3	4	5	2	0	0	11	1	22	1	0	3	24	0	20	2	0	0	22	60
7:30 AM	1	3	2	0	2	6	1	11	1	0	0	13	4	28	3	0	1	35	0	21	6	0	5	27	81
7:45 AM	2	10	2	0	3	14	1	42	7	0	0	50	13	45	2	0	0	60	0	18	10	0	0	28	152
Hourly Total	6	20	5	0	7	31	7	59	11	0	0	77	18	118	7	0	4	143	2	74	21	0	7	97	348
8:00 AM	1	2	0	0	4	3	2	34	1	0	0	37	8	62	6	0	1	76	1	10	2	0	2	13	129
8:15 AM	1	2	2	0	1	5	1	5	3	0	0	9	3	37	0	0	1	40	2	12	1	0	0	15	69
8:30 AM	9	4	1	0	0	14	1	1	1	0	1	3	2	31	1	0	1	34	0	17	6	0	7	23	74
8:45 AM	1	0	3	0	0	4	1	6	4	0	1	11	3	33	2	0	0	38	2	11	3	0	0	16	69
Hourly Total	12	8	6	0	5	26	5	46	9	0	2	60	16	163	9	0	3	188	5	50	12	0	9	67	341
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	1	1	0	0	0	2	1	6	8	0	1	15	2	24	0	0	0	26	0	18	4	0	0	22	65
2:15 PM	3	2	0	0	0	5	1	5	5	0	0	11	2	22	1	0	0	25	3	17	4	0	1	24	65
2:30 PM	3	2	0	0	1	5	2	8	1	0	0	11	1	26	1	0	1	28	5	19	1	0	1	25	69
2:45 PM	4	2	2	0	0	8	2	23	3	0	0	28	4	20	1	0	0	25	2	25	2	0	3	29	90
Hourly Total	11	7	2	0	1	20	6	42	17	0	1	65	9	92	3	0	1	104	10	79	11	0	5	100	289
3:00 PM	5	3	1	0	4	9	2	33	4	0	4	39	1	44	2	0	7	47	3	15	2	0	4	20	115
3:15 PM	5	3	1	0	1	9	1	10	2	0	1	13	2	28	2	0	0	32	1	25	2	0	4	28	82
3:30 PM	1	1	1	0	2	3	2	4	2	0	0	8	2	27	1	0	0	30	0	34	8	0	4	42	83
3:45 PM	1	1	1	0	0	3	1	7	3	0	2	11	2	25	0	0	0	27	1	26	7	0	0	34	75
Hourly Total	12	8	4	0	7	24	6	54	11	0	7	71	7	124	5	0	7	136	5	100	19	0	12	124	355
4:00 PM	2	1	1	0	0	4	1	4	8	0	0	13	0	17	2	0	0	19	0	19	4	0	1	23	59
4:15 PM	0	2	1	0	0	3	1	11	4	0	2	16	4	25	0	0	0	29	3	25	8	0	4	36	84
4:30 PM	3	2	0	0	0	5	3	5	5	0	2	13	2	27	0	0	0	29	1	31	8	0	2	40	87
4:45 PM	4	2	0	0	1	6	2	4	8	0	0	14	7	28	2	0	1	37	1	38	8	0	1	47	104
Hourly Total	9	7	2	0	1	18	7	24	25	0	4	56	13	97	4	0	1	114	5	113	28	0	8	146	334
5:00 PM	3	2	4	0	0	9	2	5	3	0	0	10	2	29	0	0	0	31	2	32	7	0	3	41	91
5:15 PM	1	1	0	0	0	2	3	5	3	0	1	11	3	27	2	0	0	32	1	30	2	0	3	33	78
5:30 PM	1	1	0	0	0	2	1	5	2	0	0	8	3	23	0	0	3	26	4	32	2	0	2	38	74
5:45 PM	4	3	1	0	1	8	3	6	3	0	0	12	0	34	0	0	1	34	1	35	5	0	1	41	95
Hourly Total	9	7	5	0	1	21	9	21	11	0	1	41	8	113	2	0	4	123	8	129	16	0	9	153	338
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	59	57	24	0	22	140	40	246	84	0	15	370	71	707	30	0	20	808	35	545	107	0	50	687	2005
Approach %	42.1	40.7	17.1	0.0	-	-	10.8	66.5	22.7	0.0	-	-	8.8	87.5	3.7	0.0	-	-	5.1	79.3	15.6	0.0	-	-	-
Total %	2.9	2.8	1.2	0.0	-	7.0	2.0	12.3	4.2	0.0	-	18.5	3.5	35.3	1.5	0.0	-	40.3	1.7	27.2	5.3	0.0	-	34.3	-
Lights	57	55	20	0	-	132	40	239	83	0	-	362	64	677	30	0	-	771	35	534	102	0	-	671	1936
% Lights	96.6	96.5	83.3	-	-	94.3	100.0	97.2	98.8	-	-	97.8	90.1	95.8	100.0	-	-	95.4	100.0	98.0	95.3	-	-	97.7	96.6
Buses	2	2	3	0	-	7	0	5	1	0	-	6	6	16	0	0	-	22	0	3	2	0	-	5	40
% Buses	3.4	3.5	12.5	-	-	5.0	0.0	2.0	1.2	-	-	1.6	8.5	2.3	0.0	-	-	2.7	0.0	0.6	1.9	-	-	0.7	2.0
Trucks	0	0	1	0	-	1	0	2	0	0	-	2	1	14	0	0	-	15	0	8	3	0	-	11	29
% Trucks	0.0	0.0	4.2	-	-	0.7	0.0	0.8	0.0	-	-	0.5	1.4	2.0	0.0	-	-	1.9	0.0	1.5	2.8	-	-	1.6	1.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	5.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	22	-	-	-	-	-	15	-	-	-	-	-	19	-	-	-	-	-	50	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	95.0	-	-	-	-	-	100.0	-	-

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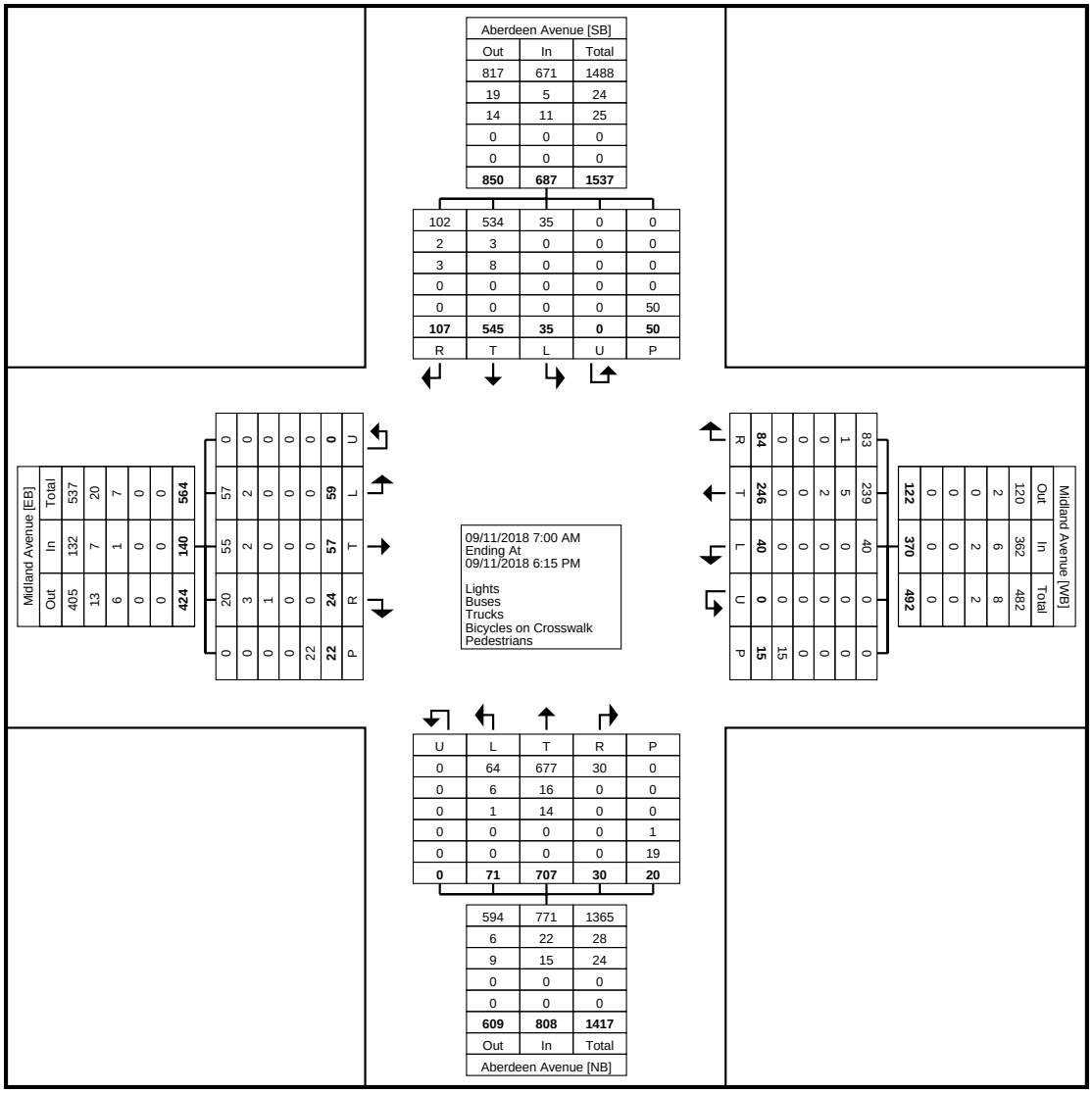
Radnor, PA
Midland Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018
Page No: 2



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Radnor, PA
Midland Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.042444, -75.381426

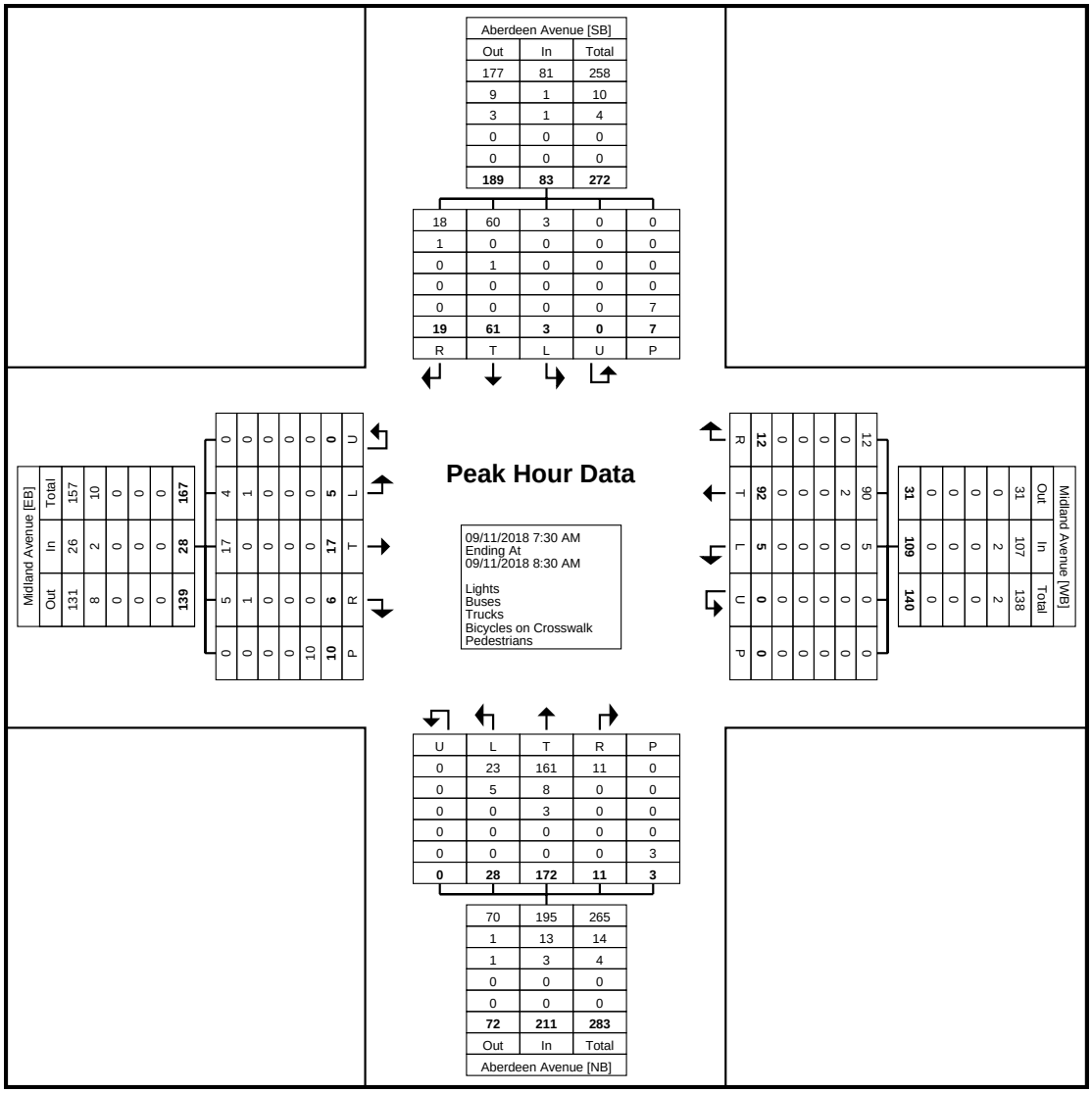
Count Name: Midland Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Midland Avenue Eastbound						Midland Avenue Westbound						Aberdeen Avenue Northbound						Aberdeen Avenue Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	1	3	2	0	2	6	1	11	1	0	0	13	4	28	3	0	1	35	0	21	6	0	5	27	81
7:45 AM	2	10	2	0	3	14	1	42	7	0	0	50	13	45	2	0	0	60	0	18	10	0	0	28	152
8:00 AM	1	2	0	0	4	3	2	34	1	0	0	37	8	62	6	0	1	76	1	10	2	0	2	13	129
8:15 AM	1	2	2	0	1	5	1	5	3	0	0	9	3	37	0	0	1	40	2	12	1	0	0	15	69
Total	5	17	6	0	10	28	5	92	12	0	0	109	28	172	11	0	3	211	3	61	19	0	7	83	431
Approach %	17.9	60.7	21.4	0.0	-	-	4.6	84.4	11.0	0.0	-	-	13.3	81.5	5.2	0.0	-	-	3.6	73.5	22.9	0.0	-	-	-
Total %	1.2	3.9	1.4	0.0	-	6.5	1.2	21.3	2.8	0.0	-	25.3	6.5	39.9	2.6	0.0	-	49.0	0.7	14.2	4.4	0.0	-	19.3	-
PHF	0.625	0.425	0.750	0.000	-	0.500	0.625	0.548	0.429	0.000	-	0.545	0.538	0.694	0.458	0.000	-	0.694	0.375	0.726	0.475	0.000	-	0.741	0.709
Lights	4	17	5	0	-	26	5	90	12	0	-	107	23	161	11	0	-	195	3	60	18	0	-	81	409
% Lights	80.0	100.0	83.3	-	-	92.9	100.0	97.8	100.0	-	-	98.2	82.1	93.6	100.0	-	-	92.4	100.0	98.4	94.7	-	-	97.6	94.9
Buses	1	0	1	0	-	2	0	2	0	0	-	2	5	8	0	0	-	13	0	0	1	0	-	1	18
% Buses	20.0	0.0	16.7	-	-	7.1	0.0	2.2	0.0	-	-	1.8	17.9	4.7	0.0	-	-	6.2	0.0	0.0	5.3	-	-	1.2	4.2
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	1	0	0	-	1	4
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.7	0.0	-	-	1.4	0.0	1.6	0.0	-	-	1.2	0.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	10	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Radnor, PA
Midland Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018
Page No: 4



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Radnor, PA
Midland Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.042444, -75.381426

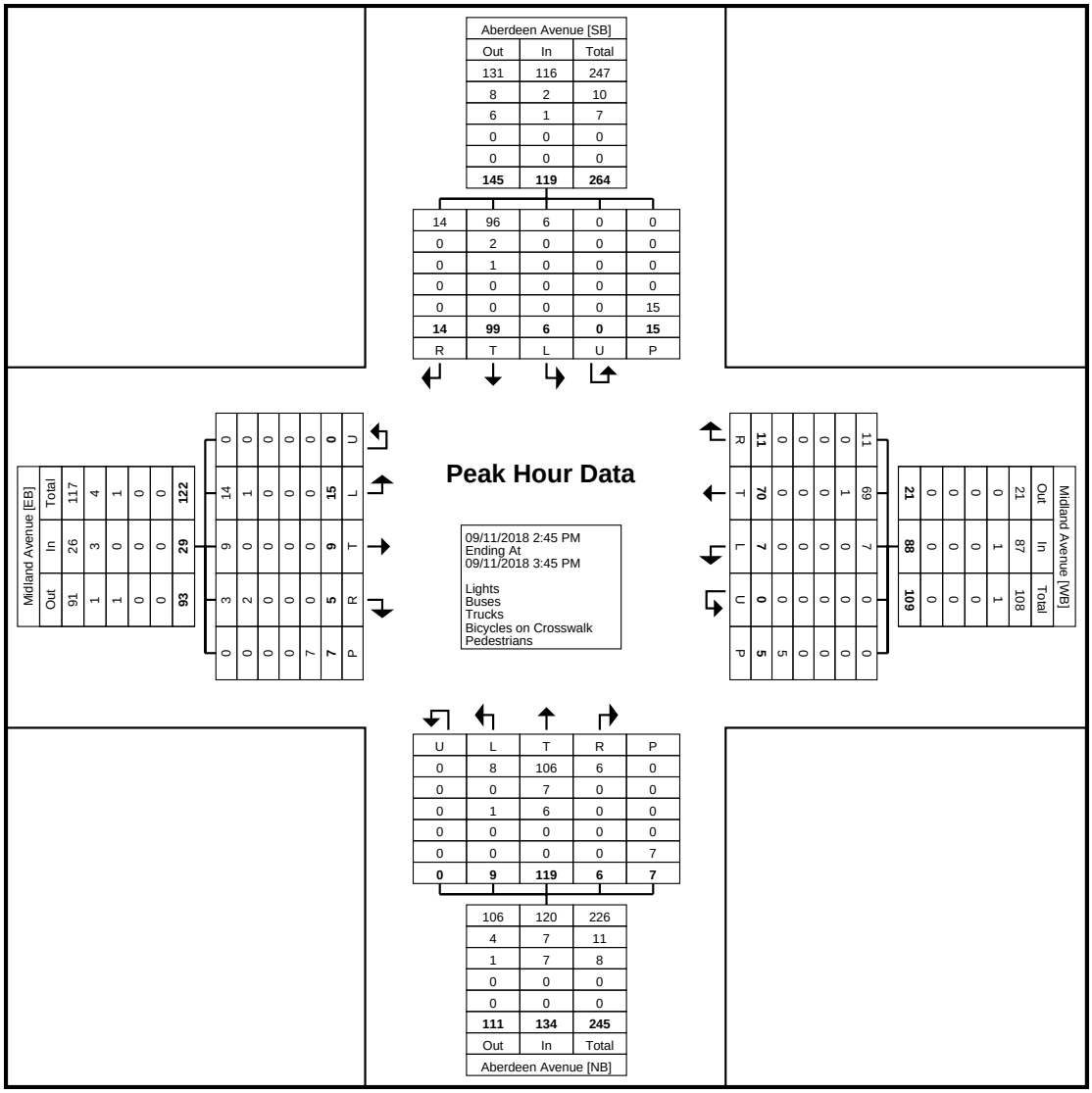
Count Name: Midland Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (2:45 PM)

Start Time	Midland Avenue Eastbound						Midland Avenue Westbound						Aberdeen Avenue Northbound						Aberdeen Avenue Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
2:45 PM	4	2	2	0	0	8	2	23	3	0	0	28	4	20	1	0	0	25	2	25	2	0	3	29	90
3:00 PM	5	3	1	0	4	9	2	33	4	0	4	39	1	44	2	0	7	47	3	15	2	0	4	20	115
3:15 PM	5	3	1	0	1	9	1	10	2	0	1	13	2	28	2	0	0	32	1	25	2	0	4	28	82
3:30 PM	1	1	1	0	2	3	2	4	2	0	0	8	2	27	1	0	0	30	0	34	8	0	4	42	83
Total	15	9	5	0	7	29	7	70	11	0	5	88	9	119	6	0	7	134	6	99	14	0	15	119	370
Approach %	51.7	31.0	17.2	0.0	-	-	8.0	79.5	12.5	0.0	-	-	6.7	88.8	4.5	0.0	-	-	5.0	83.2	11.8	0.0	-	-	-
Total %	4.1	2.4	1.4	0.0	-	7.8	1.9	18.9	3.0	0.0	-	23.8	2.4	32.2	1.6	0.0	-	36.2	1.6	26.8	3.8	0.0	-	32.2	-
PHF	0.750	0.750	0.625	0.000	-	0.806	0.875	0.530	0.688	0.000	-	0.564	0.563	0.676	0.750	0.000	-	0.713	0.500	0.728	0.438	0.000	-	0.708	0.804
Lights	14	9	3	0	-	26	7	69	11	0	-	87	8	106	6	0	-	120	6	96	14	0	-	116	349
% Lights	93.3	100.0	60.0	-	-	89.7	100.0	98.6	100.0	-	-	98.9	88.9	89.1	100.0	-	-	89.6	100.0	97.0	100.0	-	-	97.5	94.3
Buses	1	0	2	0	-	3	0	1	0	0	-	1	0	7	0	0	-	7	0	2	0	0	-	2	13
% Buses	6.7	0.0	40.0	-	-	10.3	0.0	1.4	0.0	-	-	1.1	0.0	5.9	0.0	-	-	5.2	0.0	2.0	0.0	-	-	1.7	3.5
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	1	6	0	0	-	7	0	1	0	0	-	1	8
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	11.1	5.0	0.0	-	-	5.2	0.0	1.0	0.0	-	-	0.8	2.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	5	-	-	-	-	-	7	-	-	-	-	-	15	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Radnor, PA
Midland Ave & Aberdeen Ave
Tuesday, September 11, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave
Site Code:
Start Date: 09/11/2018
Page No: 6



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Radnor, PA
Midland Ave & Aberdeen Ave
Saturday, September 8, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave-Sat
Site Code:
Start Date: 09/08/2018

Turning Movement Data

Start Time	Midland Avenue Eastbound						Midland Avenue Westbound						Aberdeen Avenue Northbound						Aberdeen Avenue Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
11:00 AM	1	2	0	0	2	3	0	6	4	0	1	10	1	23	3	0	2	27	3	18	5	0	1	26	66
11:15 AM	1	4	0	0	0	5	1	5	3	0	0	9	2	26	0	0	0	28	2	36	4	0	2	42	84
11:30 AM	4	5	1	0	0	10	1	10	4	0	2	15	0	21	4	0	4	25	0	17	3	0	1	20	70
11:45 AM	1	3	2	0	0	6	2	6	7	0	1	15	0	40	4	0	0	44	1	30	6	0	2	37	102
Hourly Total	7	14	3	0	2	24	4	27	18	0	4	49	3	110	11	0	6	124	6	101	18	0	6	125	322
12:00 PM	3	1	1	0	0	5	2	7	0	0	1	9	1	18	1	0	0	20	1	24	1	0	2	26	60
12:15 PM	4	4	0	0	0	8	2	15	5	0	0	22	1	25	0	0	2	26	3	15	7	0	0	25	81
12:30 PM	6	1	0	0	0	7	2	7	5	0	0	14	1	19	0	0	0	20	2	21	7	0	3	30	71
12:45 PM	1	2	0	0	0	3	1	2	6	0	1	9	0	24	2	0	4	26	2	21	7	0	5	30	68
Hourly Total	14	8	1	0	0	23	7	31	16	0	2	54	3	86	3	0	6	92	8	81	22	0	10	111	280
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	21	22	4	0	2	47	11	58	34	0	6	103	6	196	14	0	12	216	14	182	40	0	16	236	602
Approach %	44.7	46.8	8.5	0.0	-	-	10.7	56.3	33.0	0.0	-	-	2.8	90.7	6.5	0.0	-	-	5.9	77.1	16.9	0.0	-	-	-
Total %	3.5	3.7	0.7	0.0	-	7.8	1.8	9.6	5.6	0.0	-	17.1	1.0	32.6	2.3	0.0	-	35.9	2.3	30.2	6.6	0.0	-	39.2	-
Lights	20	22	4	0	-	46	11	58	33	0	-	102	6	196	14	0	-	216	14	181	37	0	-	232	596
% Lights	95.2	100.0	100.0	-	-	97.9	100.0	100.0	97.1	-	-	99.0	100.0	100.0	100.0	-	-	100.0	100.0	99.5	92.5	-	-	98.3	99.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	1	0	0	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	0	1	3	0	-	4	6
% Trucks	4.8	0.0	0.0	-	-	2.1	0.0	0.0	2.9	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	7.5	-	-	1.7	1.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	16.7	-	-	-	-	-	12.5	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	6	-	-	-	-	-	10	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	83.3	-	-	-	-	-	87.5	-	-

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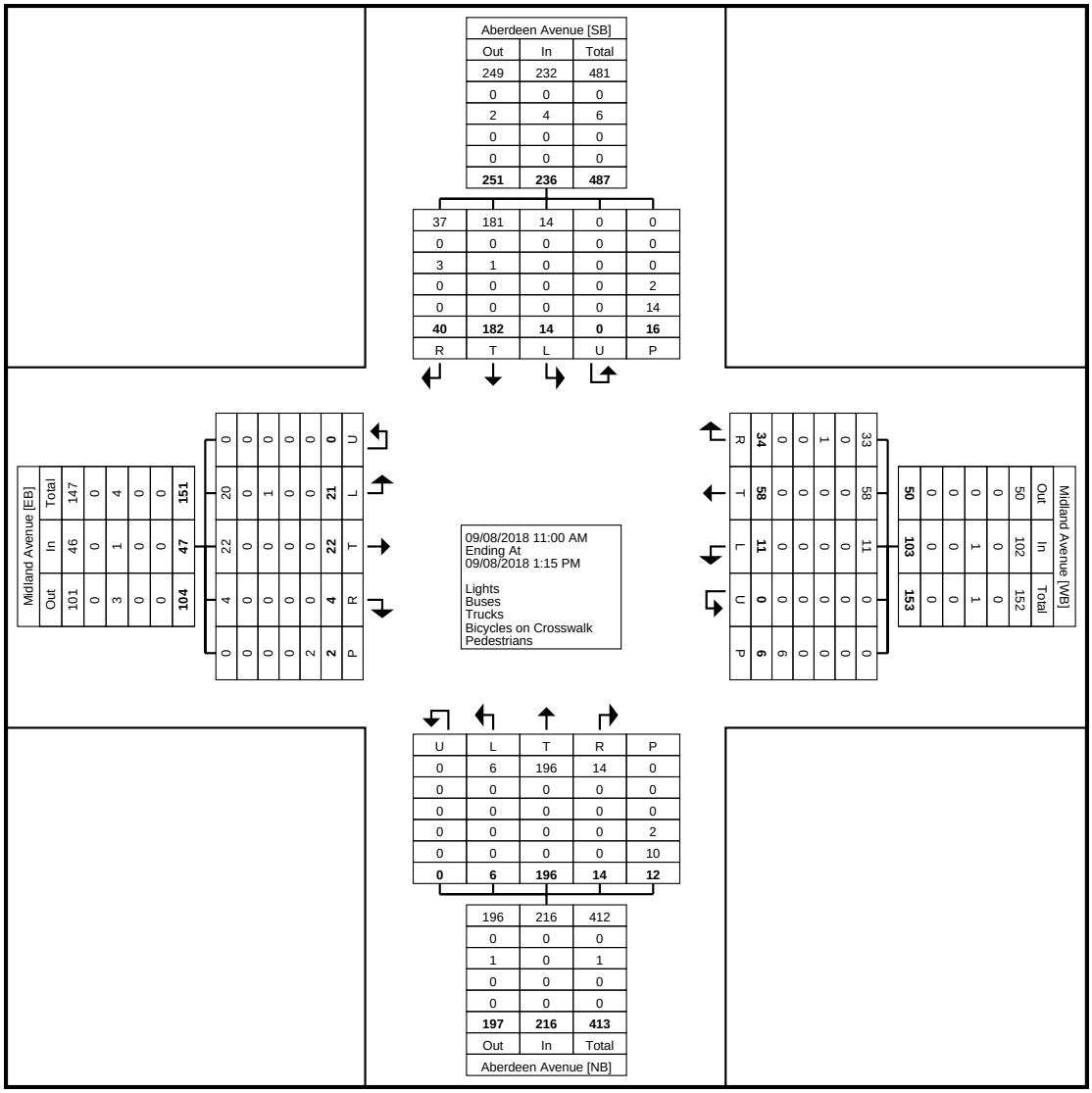
Midland Ave & Aberdeen Ave
Saturday, September 8, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave-Sat
Site Code:
Start Date: 09/08/2018
Page No: 2



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Radnor, PA
Midland Ave & Aberdeen Ave
Saturday, September 8, 2018
Location: 40.042444, -75.381426

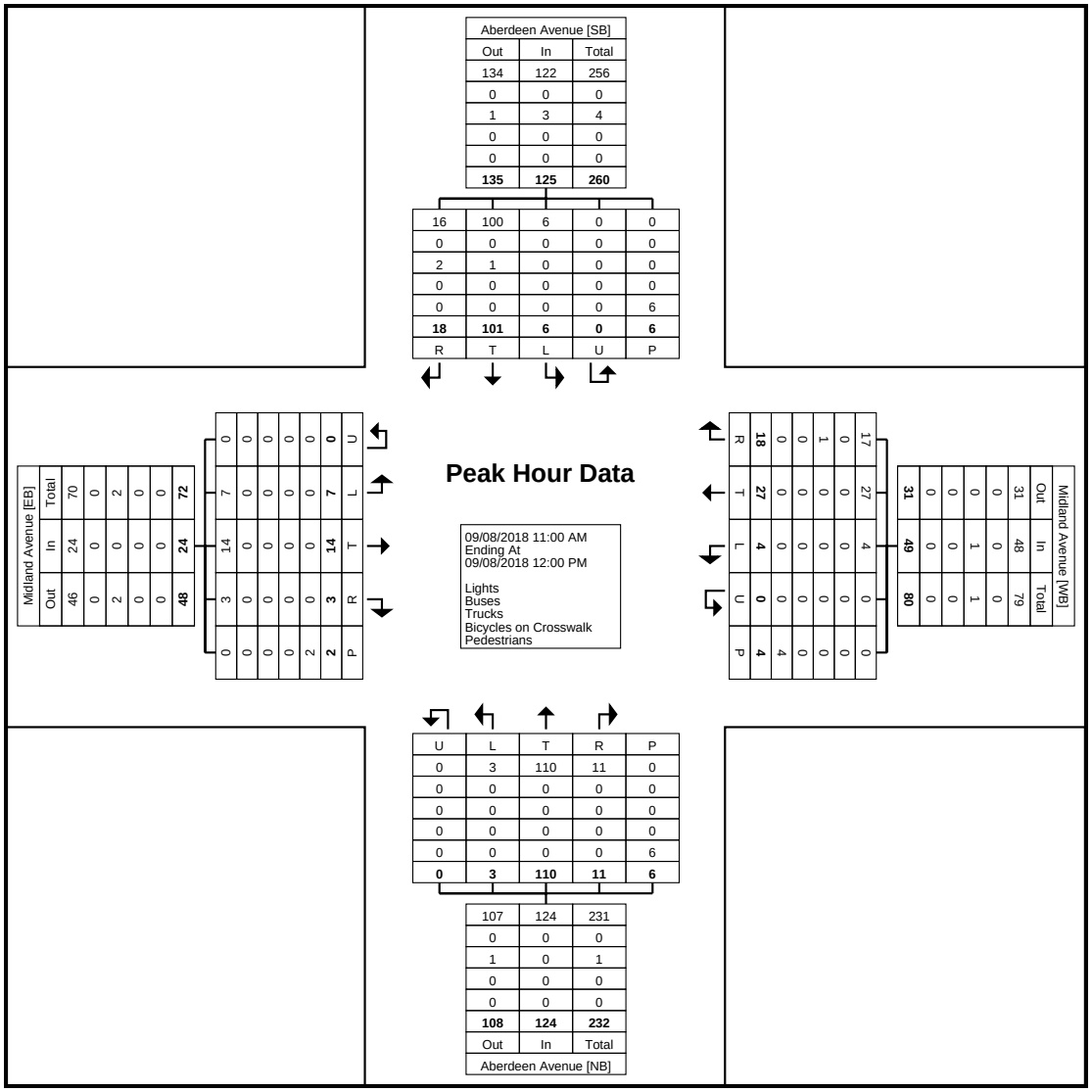
Count Name: Midland Ave/Aberdeen Ave-Sat
Site Code:
Start Date: 09/08/2018

Turning Movement Peak Hour Data (11:00 AM)

Start Time	Midland Avenue Eastbound						Midland Avenue Westbound						Aberdeen Avenue Northbound						Aberdeen Avenue Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
11:00 AM	1	2	0	0	2	3	0	6	4	0	1	10	1	23	3	0	2	27	3	18	5	0	1	26	66
11:15 AM	1	4	0	0	0	5	1	5	3	0	0	9	2	26	0	0	0	28	2	36	4	0	2	42	84
11:30 AM	4	5	1	0	0	10	1	10	4	0	2	15	0	21	4	0	4	25	0	17	3	0	1	20	70
11:45 AM	1	3	2	0	0	6	2	6	7	0	1	15	0	40	4	0	0	44	1	30	6	0	2	37	102
Total	7	14	3	0	2	24	4	27	18	0	4	49	3	110	11	0	6	124	6	101	18	0	6	125	322
Approach %	29.2	58.3	12.5	0.0	-	-	8.2	55.1	36.7	0.0	-	-	2.4	88.7	8.9	0.0	-	-	4.8	80.8	14.4	0.0	-	-	-
Total %	2.2	4.3	0.9	0.0	-	7.5	1.2	8.4	5.6	0.0	-	15.2	0.9	34.2	3.4	0.0	-	38.5	1.9	31.4	5.6	0.0	-	38.8	-
PHF	0.438	0.700	0.375	0.000	-	0.600	0.500	0.675	0.643	0.000	-	0.817	0.375	0.688	0.688	0.000	-	0.705	0.500	0.701	0.750	0.000	-	0.744	0.789
Lights	7	14	3	0	-	24	4	27	17	0	-	48	3	110	11	0	-	124	6	100	16	0	-	122	318
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	100.0	94.4	-	-	98.0	100.0	100.0	100.0	-	-	100.0	100.0	99.0	88.9	-	-	97.6	98.8
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	1	2	0	-	3	4
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	5.6	-	-	2.0	0.0	0.0	0.0	-	-	0.0	0.0	1.0	11.1	-	-	2.4	1.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	6	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Radnor, PA
Midland Ave & Aberdeen Ave
Saturday, September 8, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave-Sat
Site Code:
Start Date: 09/08/2018
Page No: 4



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

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Radnor, PA
Midland Ave & Aberdeen Ave
Saturday, September 9, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave-Sun
Site Code:
Start Date: 09/09/2018

Turning Movement Data

Start Time	Midland Avenue Eastbound						Midland Avenue Westbound						Aberdeen Avenue Northbound						Aberdeen Avenue Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	2	2	0	0	0	4	1	0	2	0	0	3	1	11	1	0	1	13	0	7	2	0	1	9	29
9:15 AM	2	1	0	0	1	3	0	2	9	0	2	11	6	32	2	0	0	40	0	9	7	1	2	17	71
9:30 AM	3	0	0	0	6	3	0	3	0	0	1	3	3	14	0	0	1	17	1	11	6	0	1	18	41
9:45 AM	0	1	0	0	2	1	0	1	0	0	0	1	1	19	0	0	0	20	0	11	1	0	2	12	34
Hourly Total	7	4	0	0	9	11	1	6	11	0	3	18	11	76	3	0	2	90	1	38	16	1	6	56	175
10:00 AM	0	2	2	0	3	4	0	1	3	0	1	4	0	21	0	0	1	21	1	6	2	0	0	9	38
10:15 AM	14	2	8	0	5	24	1	1	2	0	5	4	0	14	3	0	1	17	0	8	4	0	1	12	57
10:30 AM	10	1	1	0	0	12	1	0	0	0	3	1	0	17	0	0	0	17	0	13	6	0	1	19	49
10:45 AM	2	0	0	0	0	2	1	1	0	0	0	2	0	11	0	0	1	11	2	12	0	0	0	14	29
Hourly Total	26	5	11	0	8	42	3	3	5	0	9	11	0	63	3	0	3	66	3	39	12	0	2	54	173
11:00 AM	5	0	0	0	2	5	0	3	3	0	0	6	0	23	1	0	1	24	1	11	0	0	0	12	47
11:15 AM	7	1	1	0	4	9	1	6	6	0	0	13	5	21	1	0	0	27	1	7	6	2	0	16	65
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
Grand Total	45	10	12	0	23	67	5	18	25	0	12	48	16	184	8	0	6	208	6	95	34	3	8	138	461
Approach %	67.2	14.9	17.9	0.0	-	-	10.4	37.5	52.1	0.0	-	-	7.7	88.5	3.8	0.0	-	-	4.3	68.8	24.6	2.2	-	-	-
Total %	9.8	2.2	2.6	0.0	-	14.5	1.1	3.9	5.4	0.0	-	10.4	3.5	39.9	1.7	0.0	-	45.1	1.3	20.6	7.4	0.7	-	29.9	-
Lights	45	10	12	0	-	67	5	18	25	0	-	48	16	183	8	0	-	207	6	95	33	3	-	137	459
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	99.5	100.0	-	-	99.5	100.0	100.0	97.1	100.0	-	99.3	99.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	1	0	-	1	2
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.5	0.0	0.0	2.9	0.0	-	0.7	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	23	-	-	-	-	-	12	-	-	-	-	-	6	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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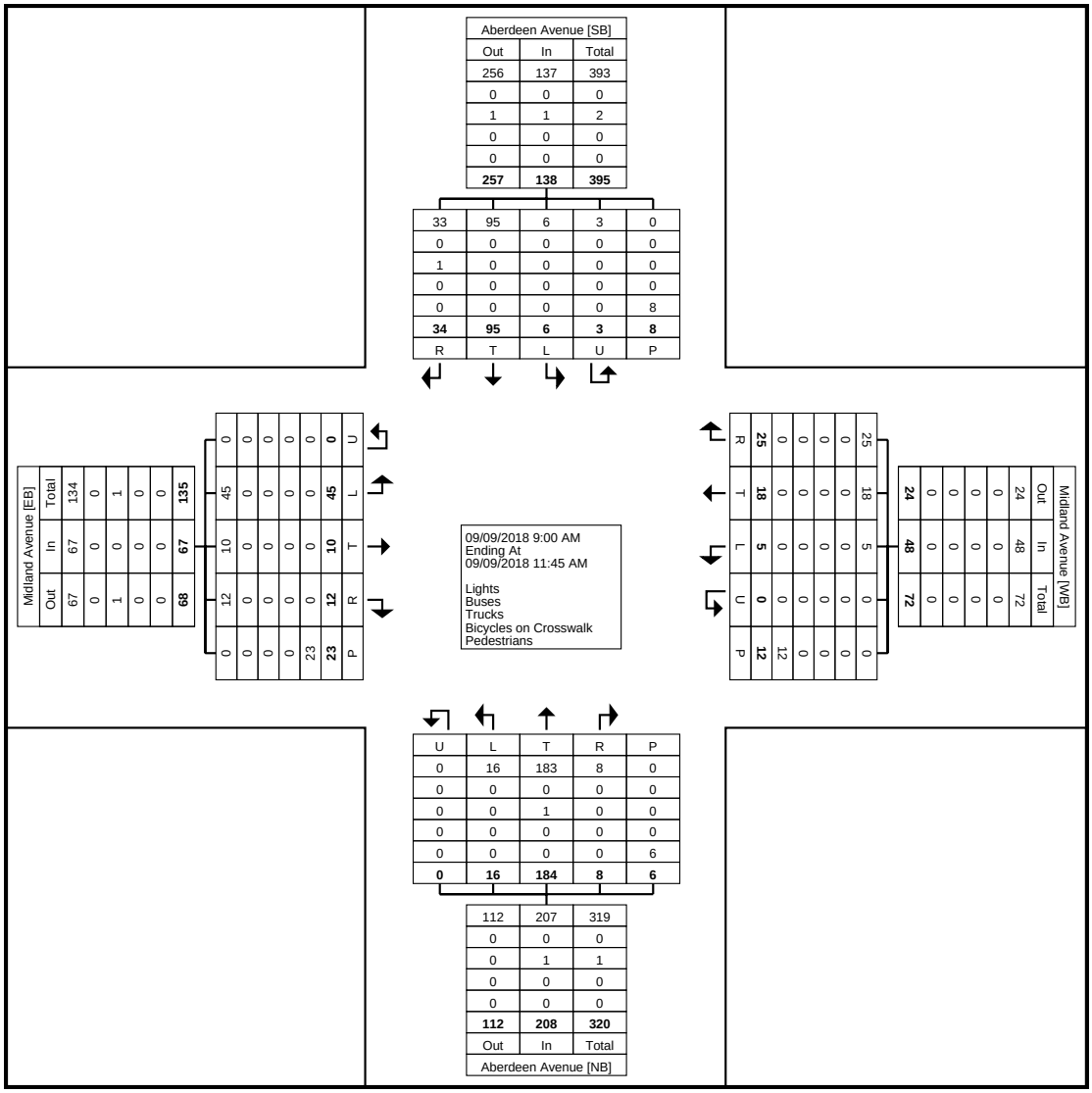
Radnor, PA
Midland Ave & Aberdeen Ave
Saturday, September 9, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 2



Turning Movement Data Plot

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Radnor, PA
Midland Ave & Aberdeen Ave
Saturday, September 9, 2018
Location: 40.042444, -75.381426

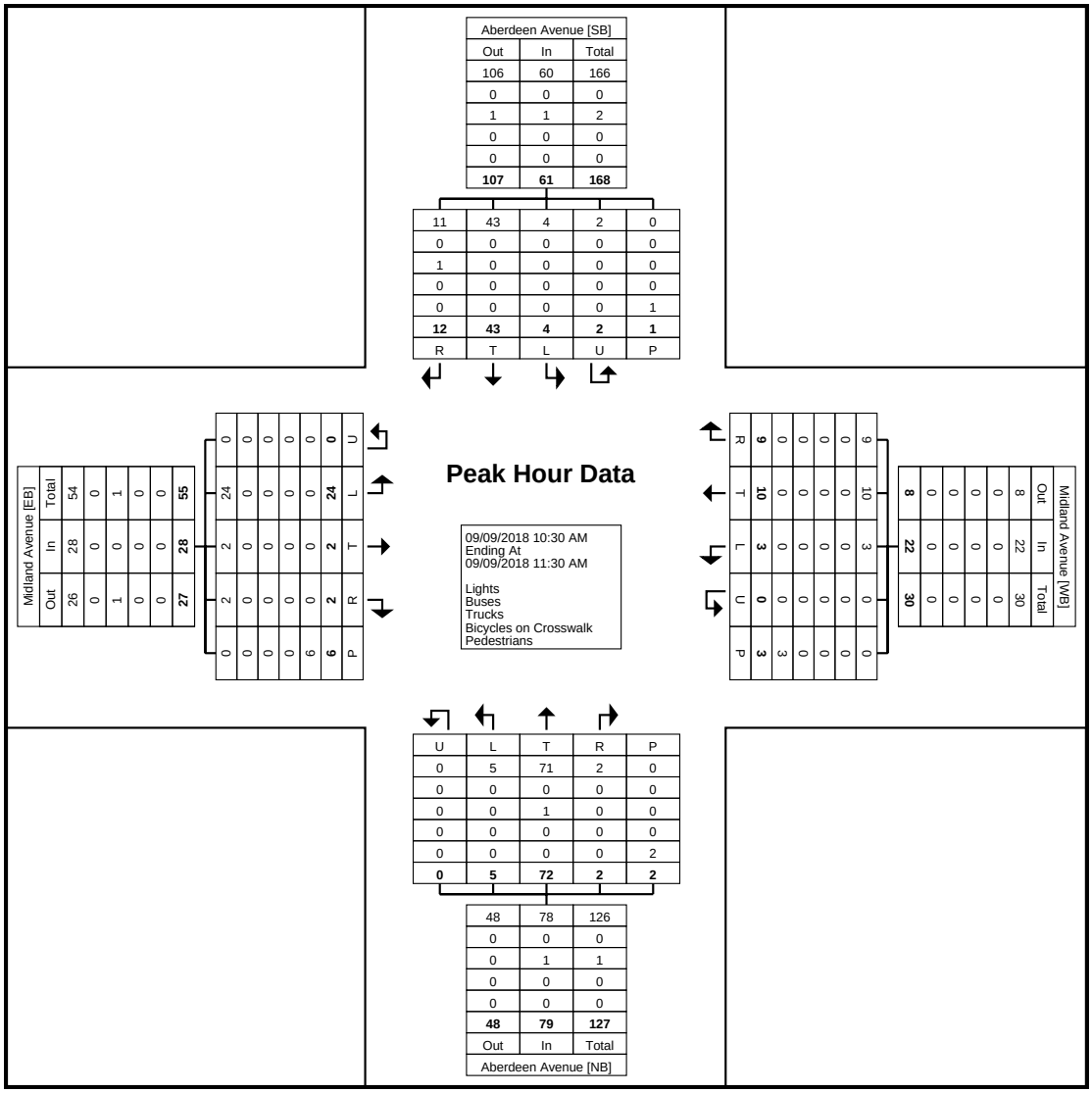
Count Name: Midland Ave/Aberdeen Ave-Sun
Site Code:
Start Date: 09/09/2018

Turning Movement Peak Hour Data (10:30 AM)

Start Time	Midland Avenue Eastbound						Midland Avenue Westbound						Aberdeen Avenue Northbound						Aberdeen Avenue Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
10:30 AM	10	1	1	0	0	12	1	0	0	0	3	1	0	17	0	0	0	17	0	13	6	0	1	19	49
10:45 AM	2	0	0	0	0	2	1	1	0	0	0	2	0	11	0	0	1	11	2	12	0	0	0	14	29
11:00 AM	5	0	0	0	2	5	0	3	3	0	0	6	0	23	1	0	1	24	1	11	0	0	0	12	47
11:15 AM	7	1	1	0	4	9	1	6	6	0	0	13	5	21	1	0	0	27	1	7	6	2	0	16	65
Total	24	2	2	0	6	28	3	10	9	0	3	22	5	72	2	0	2	79	4	43	12	2	1	61	190
Approach %	85.7	7.1	7.1	0.0	-	-	13.6	45.5	40.9	0.0	-	-	6.3	91.1	2.5	0.0	-	-	6.6	70.5	19.7	3.3	-	-	-
Total %	12.6	1.1	1.1	0.0	-	14.7	1.6	5.3	4.7	0.0	-	11.6	2.6	37.9	1.1	0.0	-	41.6	2.1	22.6	6.3	1.1	-	32.1	-
PHF	0.600	0.500	0.500	0.000	-	0.583	0.750	0.417	0.375	0.000	-	0.423	0.250	0.783	0.500	0.000	-	0.731	0.500	0.827	0.500	0.250	-	0.803	0.731
Lights	24	2	2	0	-	28	3	10	9	0	-	22	5	71	2	0	-	78	4	43	11	2	-	60	188
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	98.6	100.0	-	-	98.7	100.0	100.0	91.7	100.0	-	98.4	98.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	1	0	-	1	2
% Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.4	0.0	-	-	1.3	0.0	0.0	8.3	0.0	-	1.6	1.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Radnor, PA
Midland Ave & Aberdeen Ave
Saturday, September 9, 2018
Location: 40.042444, -75.381426

Count Name: Midland Ave/Aberdeen Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 4



Turning Movement Peak Hour Data Plot (10:30 AM)

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Radnor, PA
Midland Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Data

Start Time	Midland Ave Westbound					Louella Ave Northbound					Louella Ave Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	1	3	0	1	4	9	1	0	0	10	2	4	0	2	6	20
7:15 AM	0	6	0	1	6	9	2	0	0	11	5	8	0	1	13	30
7:30 AM	1	14	0	2	15	20	5	0	0	25	4	9	0	6	13	53
7:45 AM	3	6	0	4	9	41	20	0	0	61	7	21	0	6	28	98
Hourly Total	5	29	0	8	34	79	28	0	0	107	18	42	0	15	60	201
8:00 AM	1	3	0	0	4	18	4	0	0	22	1	4	0	1	5	31
8:15 AM	1	8	0	0	9	9	0	0	0	9	0	6	0	6	6	24
8:30 AM	1	12	0	0	13	13	1	0	0	14	4	7	0	2	11	38
8:45 AM	1	15	0	0	16	13	0	0	0	13	8	7	0	3	15	44
Hourly Total	4	38	0	0	42	53	5	0	0	58	13	24	0	12	37	137
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	11	0	1	11	14	1	0	0	15	4	5	0	0	9	35
2:15 PM	0	8	0	0	8	8	2	0	0	10	2	7	0	0	9	27
2:30 PM	0	11	0	0	11	10	0	0	0	10	6	11	0	0	17	38
2:45 PM	1	6	0	0	7	17	2	0	0	19	6	18	0	1	24	50
Hourly Total	1	36	0	1	37	49	5	0	0	54	18	41	0	1	59	150
3:00 PM	2	14	0	6	16	28	3	0	1	31	4	14	0	17	18	65
3:15 PM	1	15	0	4	16	22	2	0	0	24	5	12	0	4	17	57
3:30 PM	5	9	0	0	14	18	4	1	0	23	1	16	0	2	17	54
3:45 PM	2	10	0	0	12	9	2	0	0	11	1	16	0	0	17	40
Hourly Total	10	48	0	10	58	77	11	1	1	89	11	58	0	23	69	216
4:00 PM	1	8	0	1	9	14	1	0	0	15	4	8	0	1	12	36
4:15 PM	3	17	0	0	20	10	2	0	0	12	0	8	0	1	8	40
4:30 PM	4	8	0	1	12	10	0	0	1	10	3	13	0	0	16	38
4:45 PM	1	11	0	0	12	5	1	0	1	6	5	5	0	1	10	28
Hourly Total	9	44	0	2	53	39	4	0	2	43	12	34	0	3	46	142
5:00 PM	3	8	0	0	11	6	0	0	0	6	2	9	0	3	11	28
5:15 PM	2	7	0	0	9	3	0	0	1	3	3	11	0	0	14	26
5:30 PM	0	11	0	0	11	11	0	0	0	11	2	14	0	0	16	38
5:45 PM	2	12	0	3	14	6	0	0	0	6	1	4	0	0	5	25
Hourly Total	7	38	0	3	45	26	0	0	1	26	8	38	0	3	46	117
Grand Total	36	233	0	24	269	323	53	1	4	377	80	237	0	57	317	963
Approach %	13.4	86.6	0.0	-	-	85.7	14.1	0.3	-	-	25.2	74.8	0.0	-	-	-
Total %	3.7	24.2	0.0	-	27.9	33.5	5.5	0.1	-	39.1	8.3	24.6	0.0	-	32.9	-
Lights	35	229	0	-	264	316	40	1	-	357	68	230	0	-	298	919
% Lights	97.2	98.3	-	-	98.1	97.8	75.5	100.0	-	94.7	85.0	97.0	-	-	94.0	95.4
Buses	0	0	0	-	0	3	12	0	-	15	12	2	0	-	14	29
% Buses	0.0	0.0	-	-	0.0	0.9	22.6	0.0	-	4.0	15.0	0.8	-	-	4.4	3.0
Trucks	1	4	0	-	5	4	1	0	-	5	0	5	0	-	5	15
% Trucks	2.8	1.7	-	-	1.9	1.2	1.9	0.0	-	1.3	0.0	2.1	-	-	1.6	1.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	25.0	-	-	-	-	7.0	-	-
Pedestrians	-	-	-	24	-	-	-	-	3	-	-	-	-	53	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	75.0	-	-	-	-	93.0	-	-

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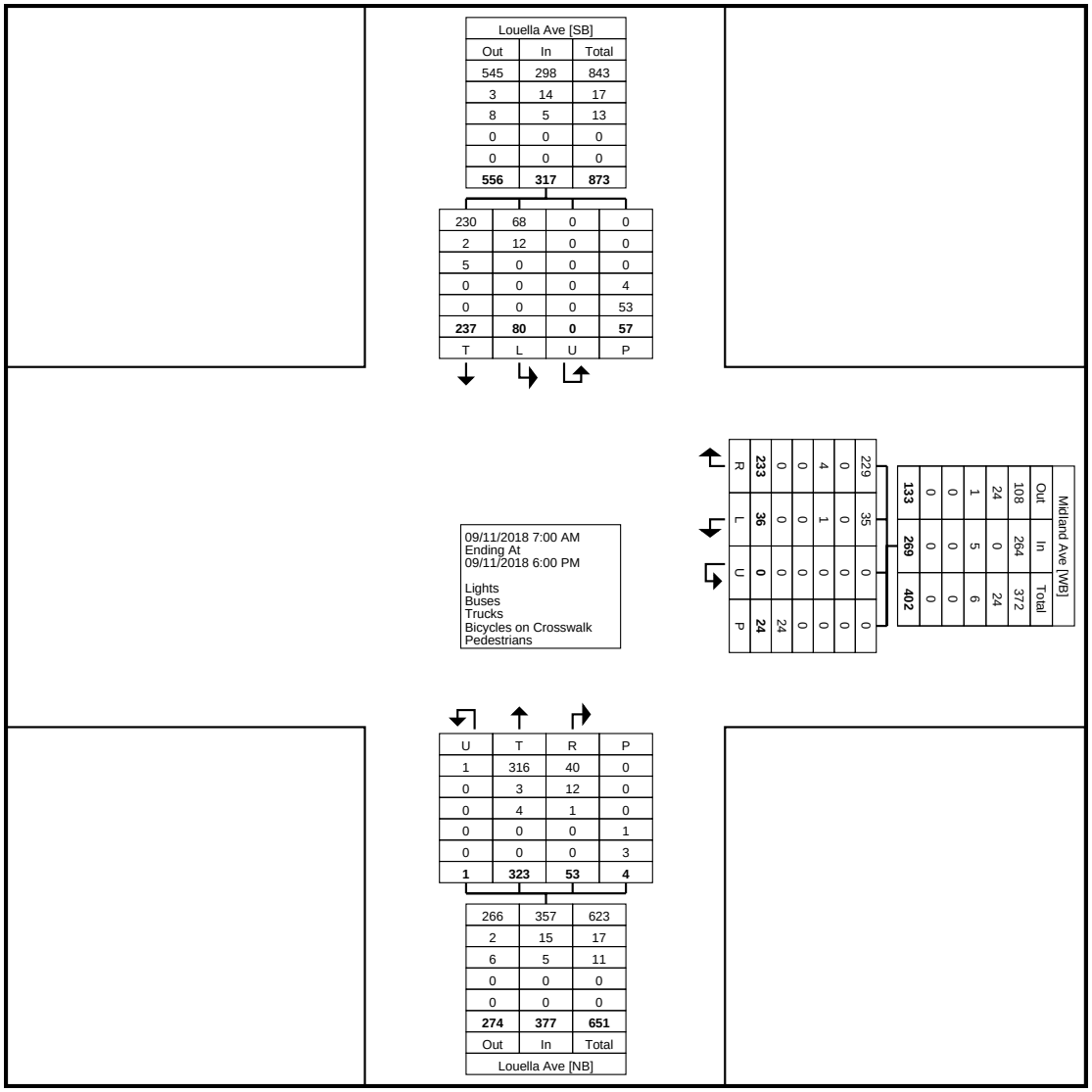
Radnor, PA
Midland Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave
Site Code:
Start Date: 09/11/2018
Page No: 2



Turning Movement Data Plot

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Radnor, PA
Midland Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.042589, -75.385454

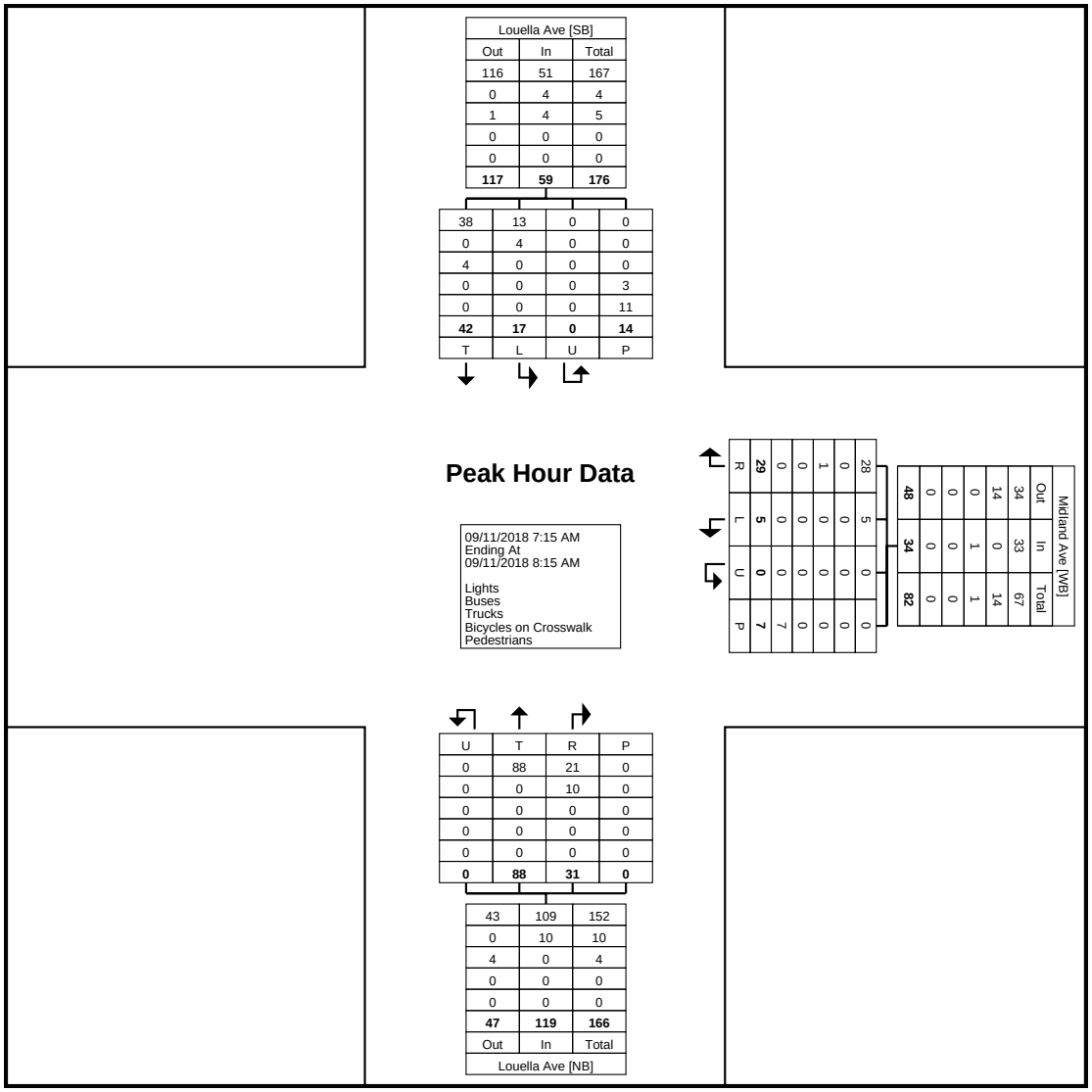
Count Name: Midland Ave/Louella Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Midland Ave Westbound					Louella Ave Northbound					Louella Ave Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:15 AM	0	6	0	1	6	9	2	0	0	11	5	8	0	1	13	30
7:30 AM	1	14	0	2	15	20	5	0	0	25	4	9	0	6	13	53
7:45 AM	3	6	0	4	9	41	20	0	0	61	7	21	0	6	28	98
8:00 AM	1	3	0	0	4	18	4	0	0	22	1	4	0	1	5	31
Total	5	29	0	7	34	88	31	0	0	119	17	42	0	14	59	212
Approach %	14.7	85.3	0.0	-	-	73.9	26.1	0.0	-	-	28.8	71.2	0.0	-	-	-
Total %	2.4	13.7	0.0	-	16.0	41.5	14.6	0.0	-	56.1	8.0	19.8	0.0	-	27.8	-
PHF	0.417	0.518	0.000	-	0.567	0.537	0.388	0.000	-	0.488	0.607	0.500	0.000	-	0.527	0.541
Lights	5	28	0	-	33	88	21	0	-	109	13	38	0	-	51	193
% Lights	100.0	96.6	-	-	97.1	100.0	67.7	-	-	91.6	76.5	90.5	-	-	86.4	91.0
Buses	0	0	0	-	0	0	10	0	-	10	4	0	0	-	4	14
% Buses	0.0	0.0	-	-	0.0	0.0	32.3	-	-	8.4	23.5	0.0	-	-	6.8	6.6
Trucks	0	1	0	-	1	0	0	0	-	0	0	4	0	-	4	5
% Trucks	0.0	3.4	-	-	2.9	0.0	0.0	-	-	0.0	0.0	9.5	-	-	6.8	2.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	21.4	-	-
Pedestrians	-	-	-	7	-	-	-	-	0	-	-	-	-	11	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	78.6	-	-

Radnor, PA
Midland Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave
Site Code:
Start Date: 09/11/2018
Page No: 4



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

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Radnor, PA
Midland Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.042589, -75.385454

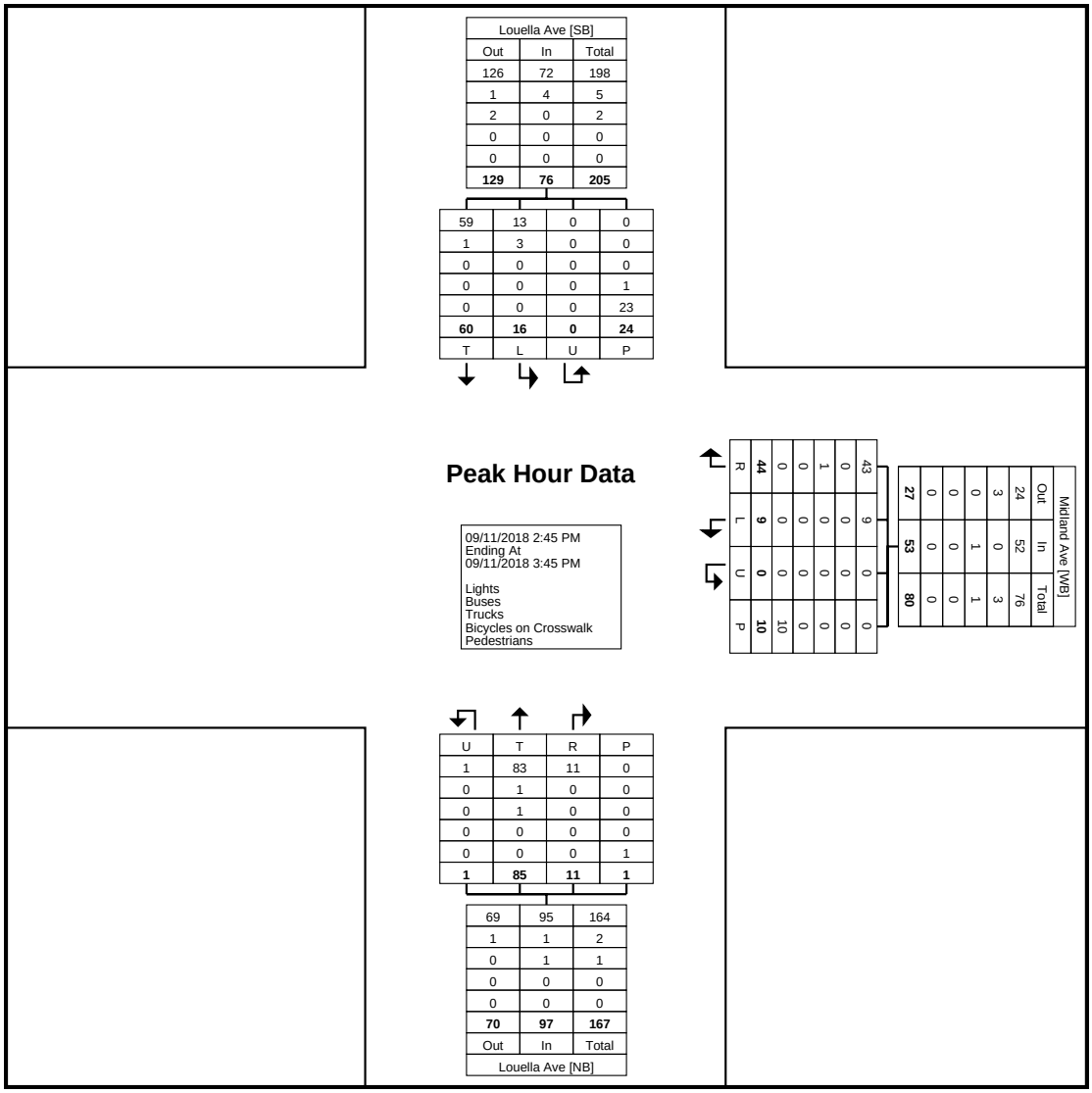
Count Name: Midland Ave/Louella Ave
Site Code:
Start Date: 09/11/2018

Turning Movement Peak Hour Data (2:45 PM)

Start Time	Midland Ave Westbound					Louella Ave Northbound					Louella Ave Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
2:45 PM	1	6	0	0	7	17	2	0	0	19	6	18	0	1	24	50
3:00 PM	2	14	0	6	16	28	3	0	1	31	4	14	0	17	18	65
3:15 PM	1	15	0	4	16	22	2	0	0	24	5	12	0	4	17	57
3:30 PM	5	9	0	0	14	18	4	1	0	23	1	16	0	2	17	54
Total	9	44	0	10	53	85	11	1	1	97	16	60	0	24	76	226
Approach %	17.0	83.0	0.0	-	-	87.6	11.3	1.0	-	-	21.1	78.9	0.0	-	-	-
Total %	4.0	19.5	0.0	-	23.5	37.6	4.9	0.4	-	42.9	7.1	26.5	0.0	-	33.6	-
PHF	0.450	0.733	0.000	-	0.828	0.759	0.688	0.250	-	0.782	0.667	0.833	0.000	-	0.792	0.869
Lights	9	43	0	-	52	83	11	1	-	95	13	59	0	-	72	219
% Lights	100.0	97.7	-	-	98.1	97.6	100.0	100.0	-	97.9	81.3	98.3	-	-	94.7	96.9
Buses	0	0	0	-	0	1	0	0	-	1	3	1	0	-	4	5
% Buses	0.0	0.0	-	-	0.0	1.2	0.0	0.0	-	1.0	18.8	1.7	-	-	5.3	2.2
Trucks	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Trucks	0.0	2.3	-	-	1.9	1.2	0.0	0.0	-	1.0	0.0	0.0	-	-	0.0	0.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	4.2	-	-
Pedestrians	-	-	-	10	-	-	-	-	1	-	-	-	-	23	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	95.8	-	-

Radnor, PA
Midland Ave & Louella Ave
Tuesday, September 11, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave
Site Code:
Start Date: 09/11/2018



Turning Movement Peak Hour Data Plot (2:45 PM)

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Radnor, PA
Midland Ave & Louella Ave
Saturday, September 8, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave-Sat
Site Code:
Start Date: 09/08/2018

Turning Movement Data

Start Time	Midland Avenue Westbound					Louella Avenue Northbound					Louella Avenue Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
11:00 AM	1	11	0	7	12	7	1	0	0	8	3	8	0	3	11	31
11:15 AM	2	14	0	2	16	11	3	0	0	14	2	12	0	3	14	44
11:30 AM	0	13	0	1	13	35	4	0	1	39	6	10	0	4	16	68
11:45 AM	2	10	0	3	12	16	1	0	0	17	4	6	0	4	10	39
Hourly Total	5	48	0	13	53	69	9	0	1	78	15	36	0	14	51	182
12:00 PM	1	11	0	1	12	11	0	0	0	11	1	9	1	2	11	34
12:15 PM	6	16	0	0	22	12	3	0	0	15	6	11	0	3	17	54
12:30 PM	4	11	0	0	15	16	1	0	1	17	6	14	0	0	20	52
12:45 PM	2	4	0	2	6	5	0	0	1	5	4	11	0	5	15	26
Hourly Total	13	42	0	3	55	44	4	0	2	48	17	45	1	10	63	166
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	18	90	0	16	108	113	13	0	3	126	32	81	1	24	114	348
Approach %	16.7	83.3	0.0	-	-	89.7	10.3	0.0	-	-	28.1	71.1	0.9	-	-	-
Total %	5.2	25.9	0.0	-	31.0	32.5	3.7	0.0	-	36.2	9.2	23.3	0.3	-	32.8	-
Lights	17	90	0	-	107	113	13	0	-	126	31	80	1	-	112	345
% Lights	94.4	100.0	-	-	99.1	100.0	100.0	-	-	100.0	96.9	98.8	100.0	-	98.2	99.1
Buses	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	3.1	0.0	0.0	-	0.9	0.3
Trucks	1	0	0	-	1	0	0	0	-	0	0	1	0	-	1	2
% Trucks	5.6	0.0	-	-	0.9	0.0	0.0	-	-	0.0	0.0	1.2	0.0	-	0.9	0.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	25.0	-	-
Pedestrians	-	-	-	16	-	-	-	-	3	-	-	-	-	18	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	75.0	-	-

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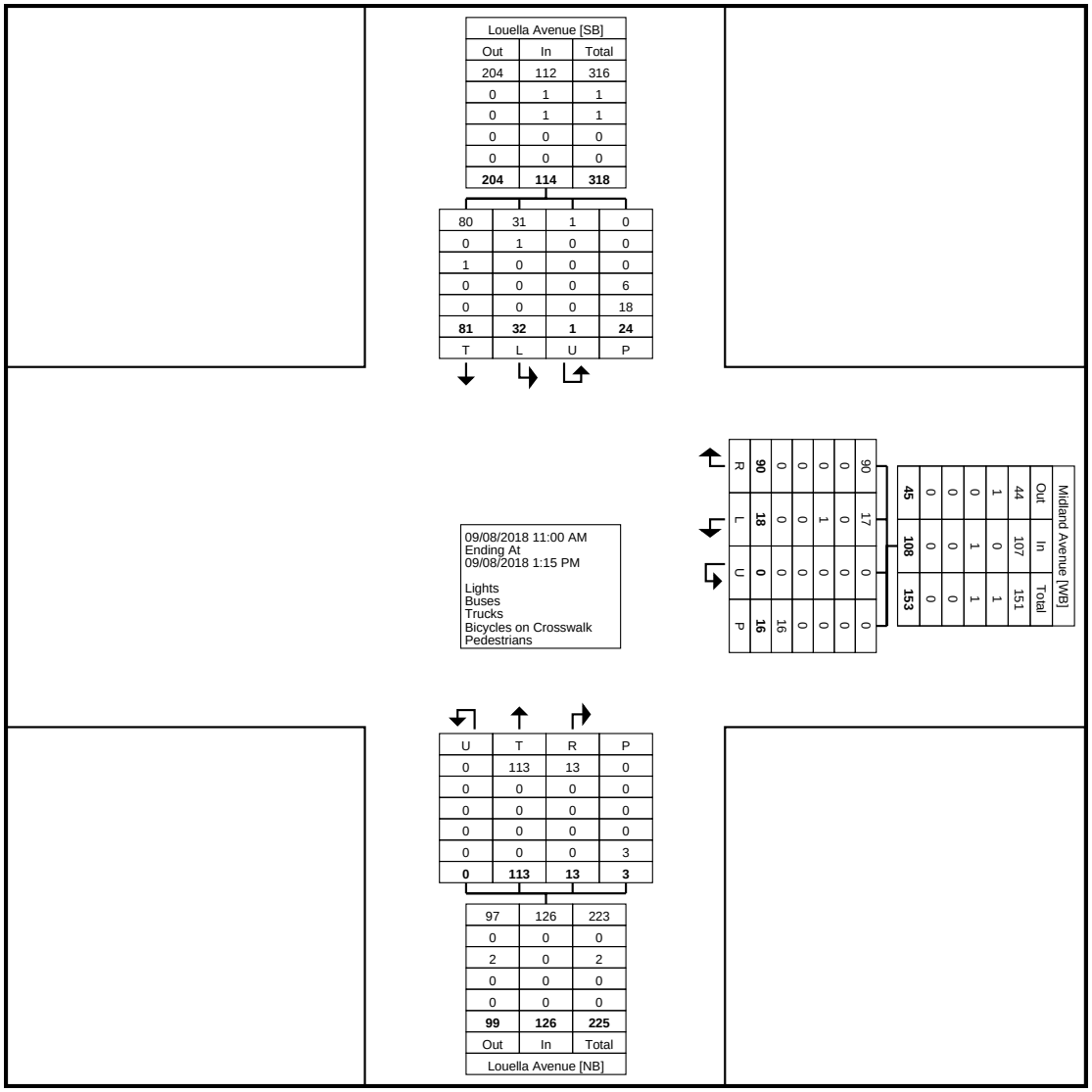
Radnor, PA
Midland Ave & Louella Ave
Saturday, September 8, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave-Sat
Site Code:
Start Date: 09/08/2018
Page No: 2



Turning Movement Data Plot

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Radnor, PA
Midland Ave & Louella Ave
Saturday, September 8, 2018
Location: 40.042589, -75.385454

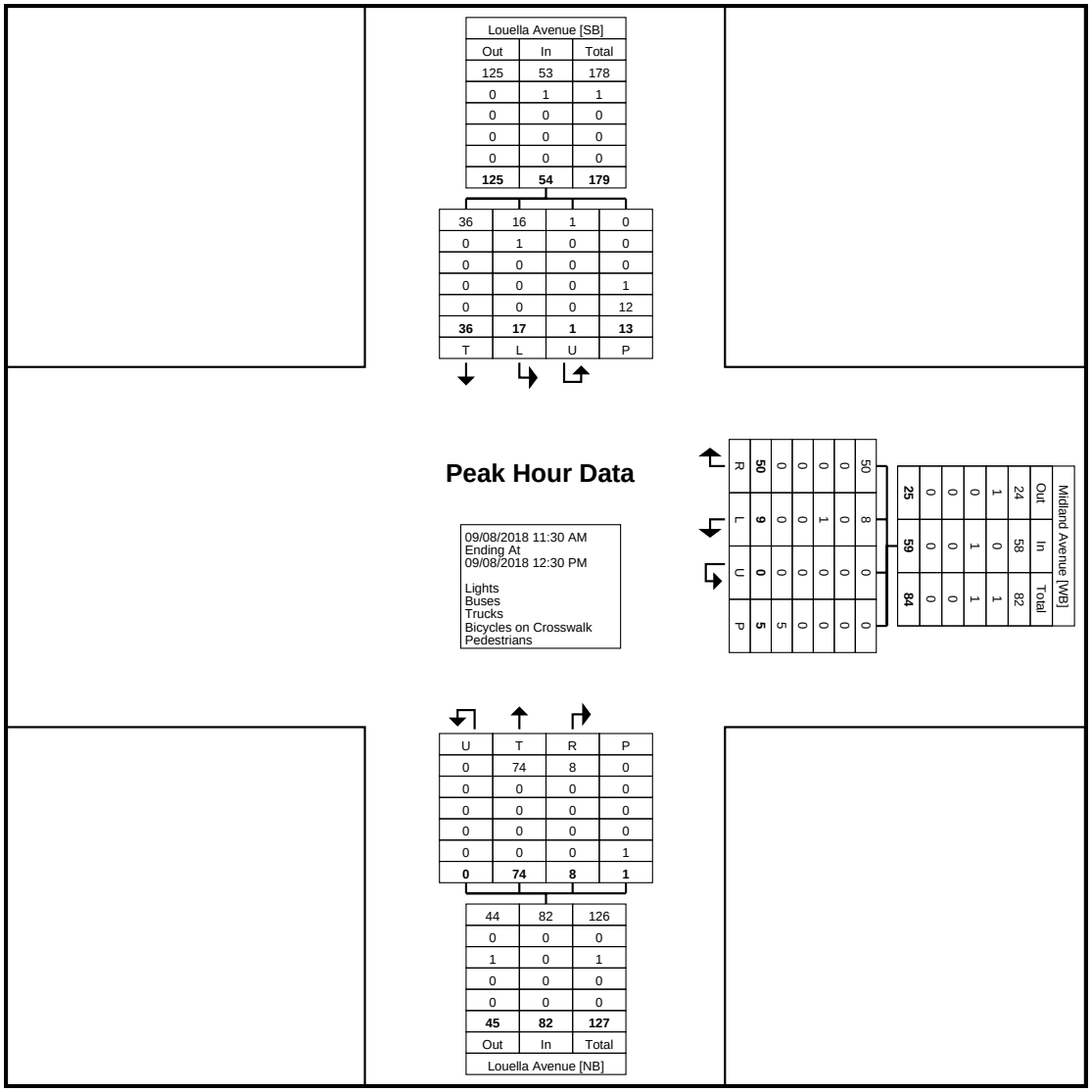
Count Name: Midland Ave/Louella Ave-Sat
Site Code:
Start Date: 09/08/2018

Turning Movement Peak Hour Data (11:30 AM)

Start Time	Midland Avenue Westbound					Louella Avenue Northbound					Louella Avenue Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
11:30 AM	0	13	0	1	13	35	4	0	1	39	6	10	0	4	16	68
11:45 AM	2	10	0	3	12	16	1	0	0	17	4	6	0	4	10	39
12:00 PM	1	11	0	1	12	11	0	0	0	11	1	9	1	2	11	34
12:15 PM	6	16	0	0	22	12	3	0	0	15	6	11	0	3	17	54
Total	9	50	0	5	59	74	8	0	1	82	17	36	1	13	54	195
Approach %	15.3	84.7	0.0	-	-	90.2	9.8	0.0	-	-	31.5	66.7	1.9	-	-	-
Total %	4.6	25.6	0.0	-	30.3	37.9	4.1	0.0	-	42.1	8.7	18.5	0.5	-	27.7	-
PHF	0.375	0.781	0.000	-	0.670	0.529	0.500	0.000	-	0.526	0.708	0.818	0.250	-	0.794	0.717
Lights	8	50	0	-	58	74	8	0	-	82	16	36	1	-	53	193
% Lights	88.9	100.0	-	-	98.3	100.0	100.0	-	-	100.0	94.1	100.0	100.0	-	98.1	99.0
Buses	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	5.9	0.0	0.0	-	1.9	0.5
Trucks	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Trucks	11.1	0.0	-	-	1.7	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	7.7	-	-
Pedestrians	-	-	-	5	-	-	-	-	1	-	-	-	-	12	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	92.3	-	-

Radnor, PA
Midland Ave & Louella Ave
Saturday, September 8, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave-Sat
Site Code:
Start Date: 09/08/2018
Page No: 4



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Radnor, PA
Midland Ave & Louella Ave
Sunday, September 8, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave-Sun
Site Code:
Start Date: 09/09/2018

Turning Movement Data

Start Time	Midland Avenue Westbound					Louella Avenue Northbound					Louella Avenue Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
9:00 AM	1	6	0	0	7	3	0	0	0	3	2	5	0	1	7	17
9:15 AM	1	2	0	1	3	6	7	0	0	13	1	5	0	0	6	22
9:30 AM	1	2	0	0	3	6	4	0	0	10	2	8	1	0	11	24
9:45 AM	0	1	0	3	1	11	0	0	0	11	2	7	0	4	9	21
Hourly Total	3	11	0	4	14	26	11	0	0	37	7	25	1	5	33	84
10:00 AM	1	5	0	1	6	4	2	0	0	6	0	7	0	0	7	19
10:15 AM	1	18	0	0	19	1	0	0	0	1	2	5	0	0	7	27
10:30 AM	2	12	0	0	14	4	1	0	0	5	6	10	0	1	16	35
10:45 AM	0	5	0	0	5	3	0	0	0	3	1	3	0	0	4	12
Hourly Total	4	40	0	1	44	12	3	0	0	15	9	25	0	1	34	93
11:00 AM	1	3	0	1	4	6	0	0	0	6	0	4	0	0	4	14
11:15 AM	0	8	0	0	8	6	2	0	0	8	4	13	0	0	17	33
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	8	62	0	6	70	50	16	0	0	66	20	67	1	6	88	224
Approach %	11.4	88.6	0.0	-	-	75.8	24.2	0.0	-	-	22.7	76.1	1.1	-	-	-
Total %	3.6	27.7	0.0	-	31.3	22.3	7.1	0.0	-	29.5	8.9	29.9	0.4	-	39.3	-
Lights	8	62	0	-	70	50	16	0	-	66	20	67	1	-	88	224
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	6	-	-	-	-	0	-	-	-	-	6	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

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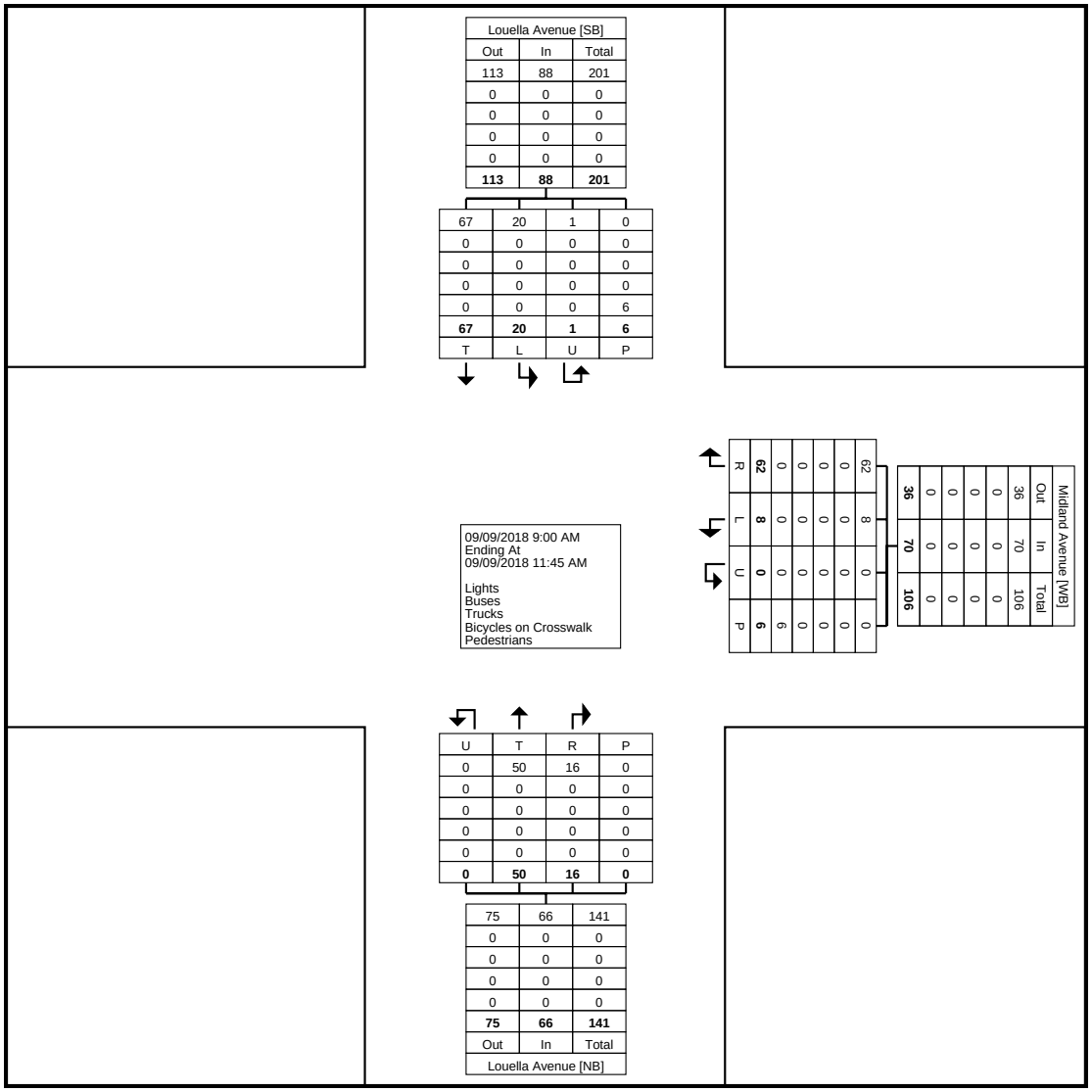
Midland Ave & Louella Ave
Sunday, September 8, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave-Sun
Site Code:
Start Date: 09/09/2018
Page No: 2



Turning Movement Data Plot

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Radnor, PA
Midland Ave & Louella Ave
Sunday, September 8, 2018
Location: 40.042589, -75.385454

Count Name: Midland Ave/Louella Ave-Sun
Site Code:
Start Date: 09/09/2018

Turning Movement Peak Hour Data (9:45 AM)

Start Time	Midland Avenue Westbound					Louella Avenue Northbound					Louella Avenue Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
9:45 AM	0	1	0	3	1	11	0	0	0	11	2	7	0	4	9	21
10:00 AM	1	5	0	1	6	4	2	0	0	6	0	7	0	0	7	19
10:15 AM	1	18	0	0	19	1	0	0	0	1	2	5	0	0	7	27
10:30 AM	2	12	0	0	14	4	1	0	0	5	6	10	0	1	16	35
Total	4	36	0	4	40	20	3	0	0	23	10	29	0	5	39	102
Approach %	10.0	90.0	0.0	-	-	87.0	13.0	0.0	-	-	25.6	74.4	0.0	-	-	-
Total %	3.9	35.3	0.0	-	39.2	19.6	2.9	0.0	-	22.5	9.8	28.4	0.0	-	38.2	-
PHF	0.500	0.500	0.000	-	0.526	0.455	0.375	0.000	-	0.523	0.417	0.725	0.000	-	0.609	0.729
Lights	4	36	0	-	40	20	3	0	-	23	10	29	0	-	39	102
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	4	-	-	-	-	0	-	-	-	-	5	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Radnor, PA
Midland Ave & Louella Ave
Sunday, September 8, 2018
Location: 40.042589, -75.385454

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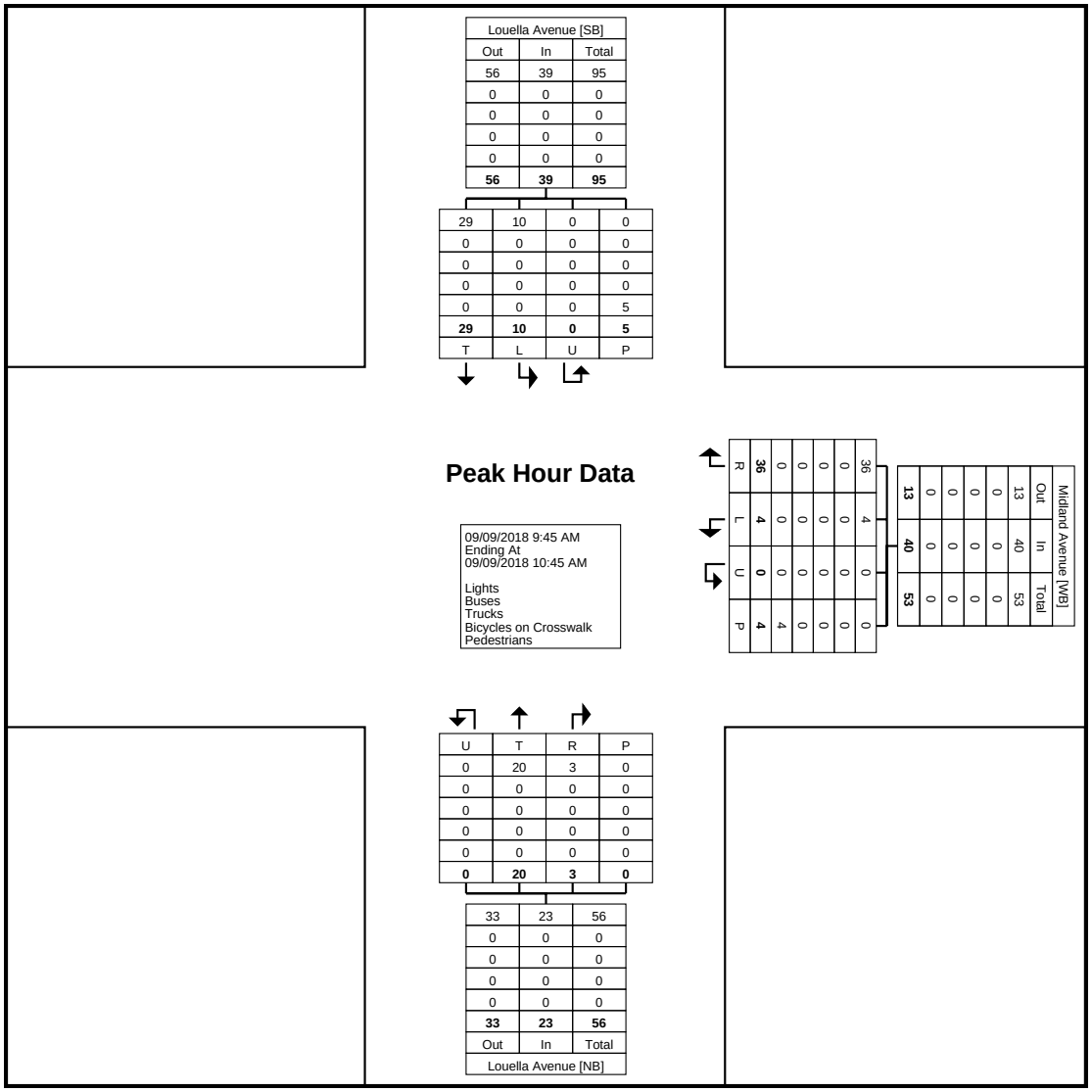


Turning Movement Peak Hour Data Plot (9:45 AM)

KARA.00010
Existing Sunoco/BP

May 31, 2018 & Tuesday, September 11, 2018

	Western Sunoco Driveway (Lancaster Avenue)				Eastern Sunoco Driveway (Lancaster Avenue)				Western BP Driveway (Lancaster Avenue)				Eastern BP Driveway (Lancaster Avenue)				Northern Sunoco Driveway (Aberdeen Avenue)				Southern Sunoco Driveway (Aberdeen Avenue)				TOTAL SITE			
TIME	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	ENTER	EXIT	TOTAL	PEAK
7:00	0	3	0	0	0	0	2	4	0	3	0	2	1	1	0	3	3	1	1	4	1	6	2	0	19	18	37	130
7:15	0	4	0	0	0	0	2	6	2	8	0	2	1	1	1	7	2	1	0	2	0	2	1	0	21	21	42	128
7:30	0	2	0	0	0	1	0	2	0	4	0	2	1	0	1	5	2	1	0	2	0	1	0	1	12	13	25	116
7:45	0	3	0	0	0	1	1	3	1	5	0	0	0	1	0	1	4	2	0	0	0	3	1	0	20	6	26	124
8:00	0	2	0	0	0	0	2	4	2	5	0	1	0	0	1	7	3	1	1	1	0	3	2	0	16	19	35	124
8:15	0	4	0	0	0	0	1	4	1	5	0	0	0	1	1	6	1	1	1	1	0	1	1	1	14	16	30	
8:30	0	1	0	1	1	2	1	3	1	5	0	1	0	0	0	5	2	1	1	2	1	3	1	1	17	16	33	
8:45	0	4	0	0	0	1	1	4	0	2	0	1	1	1	0	4	2	1	0	0	0	1	2	1	13	13	26	
PEAK HOUR	0	12	0	0	0	2	5	15	3	20	0	6	3	3	2	16	11	5	1	8	1	12	4	1	72	58	130	

	Western Sunoco Driveway (Lancaster Avenue)				Eastern Sunoco Driveway (Lancaster Avenue)				Western BP Driveway (Lancaster Avenue)				Eastern BP Driveway (Lancaster Avenue)				Northern Sunoco Driveway (Aberdeen Avenue)				Southern Sunoco Driveway (Aberdeen Avenue)				TOTAL SITE			
TIME	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	ENTER	EXIT	TOTAL	PEAK
2:00	0	2	0	0	0	3	0	3	1	5	0	3	2	0	1	4	1	3	1	2	2	1	0	0	20	14	34	164
2:15	0	2	0	0	0	6	0	2	2	8	1	0	2	0	3	6	2	0	1	0	0	1	2	0	23	15	38	163
2:30	1	1	0	1	1	3	1	3	2	5	2	1	3	1	3	9	0	1	2	2	0	1	0	0	19	24	43	182
2:45	0	6	0	1	1	6	0	4	1	13	0	1	0	0	3	7	0	2	0	2	1	0	1	0	30	19	49	202
3:00	0	2	0	1	1	3	0	5	2	4	0	0	0	0	1	5	2	3	0	1	1	2	0	0	20	13	33	186
3:15	1	8	0	0	0	9	2	8	0	11	0	0	1	0	0	7	0	4	2	0	1	2	0	1	37	20	57	185
3:30	1	2	0	1	1	6	0	4	2	8	0	2	3	1	3	9	0	3	6	1	4	1	1	4	32	31	63	163
3:45	0	3	0	0	1	4	0	3	0	4	2	2	1	0	0	7	1	2	1	1	1	0	0	0	17	16	33	153
4:00	0	8	0	1	0	0	0	2	2	7	0	0	0	0	0	2	2	2	1	1	0	2	2	0	23	9	32	141
4:15	0	8	0	1	0	0	2	5	0	3	0	0	0	0	1	5	1	0	1	2	0	3	3	0	15	20	35	155
4:30	0	1	0	1	0	1	1	5	3	10	1	3	3	2	3	9	3	1	0	2	0	1	2	1	25	28	53	163
4:45	0	1	0	0	0	0	0	3	1	5	0	1	1	1	1	4	1	0	0	0	0	1	1	0	11	10	21	154
5:00	0	4	0	0	0	2	0	2	2	7	0	3	3	0	2	6	2	1	1	4	0	3	3	1	24	22	46	181
5:15	0	9	0	0	0	2	2	5	1	5	0	1	0	1	2	6	1	0	2	4	0	1	1	0	20	23	43	
5:30	0	3	0	3	0	1	0	2	2	7	0	0	1	0	3	8	3	1	1	2	1	4	2	0	23	21	44	
5:45	0	6	0	2	1	2	0	3	2	8	0	2	1	0	3	8	3	1	1	2	0	0	3	0	24	24	48	
PEAK HOUR	2	18	0	3	3	24	2	21	5	36	0	3	4	1	7	28	2	12	8	4	7	5	2	5	119	83	202	

Saturday, June 1, 2018

	Western Sunoco Driveway (Lancaster Avenue)				Eastern Sunoco Driveway (Lancaster Avenue)				Western BP Driveway (Lancaster Avenue)				Eastern BP Driveway (Lancaster Avenue)				Northern Sunoco Driveway (Aberdeen Avenue)				Southern Sunoco Driveway (Aberdeen Avenue)				TOTAL SITE			
TIME	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	ENTER	EXIT	TOTAL	PEAK
11:00	0	5	0	1	0	1	0	6	3	13	0	0	1	1	1	13	0	1	1	2	0	2	1	0	27	25	52	209
11:15	0	3	0	0	0	0	0	2	2	13	0	1	2	2	1	15	0	1	2	3	0	3	0	1	26	25	51	204
11:30	0	3	0	0	0	0	0	4	2	11	1	1	0	1	1	14	1	7	3	3	0	1	1	0	26	28	54	203
11:45	0	6	0	1	0	0	1	10	1	10	1	2	1	0	0	12	1	1	0	2	0	2	0	1	22	30	52	198
12:00	0	7	0	1	0	1	0	6	2	11	1	2	1	1	0	11	1	1	0	1	0	0	0	0	25	22	47	205
12:15	0	6	0	0	0	0	1	9	1	9	1	1	0	0	0	11	2	4	0	1	0	4	0	0	26	24	50	
12:30	0	4	0	0	0	0	0	6	0	7	0	0	2	3	0	9	1	1	2	7	1	5	0	1	24	25	49	
12:45	0	7	0	0	0	1	0	6	4	16	0	1	1	0	2	18	0	0	0	1	0	1	1	0	30	29	59	
PEAK HOUR	0	17	0	2	0	1	1	22	8	47	2	4	4	4	3	54	2	10	6	10	0	8	2	2	101	108	209	

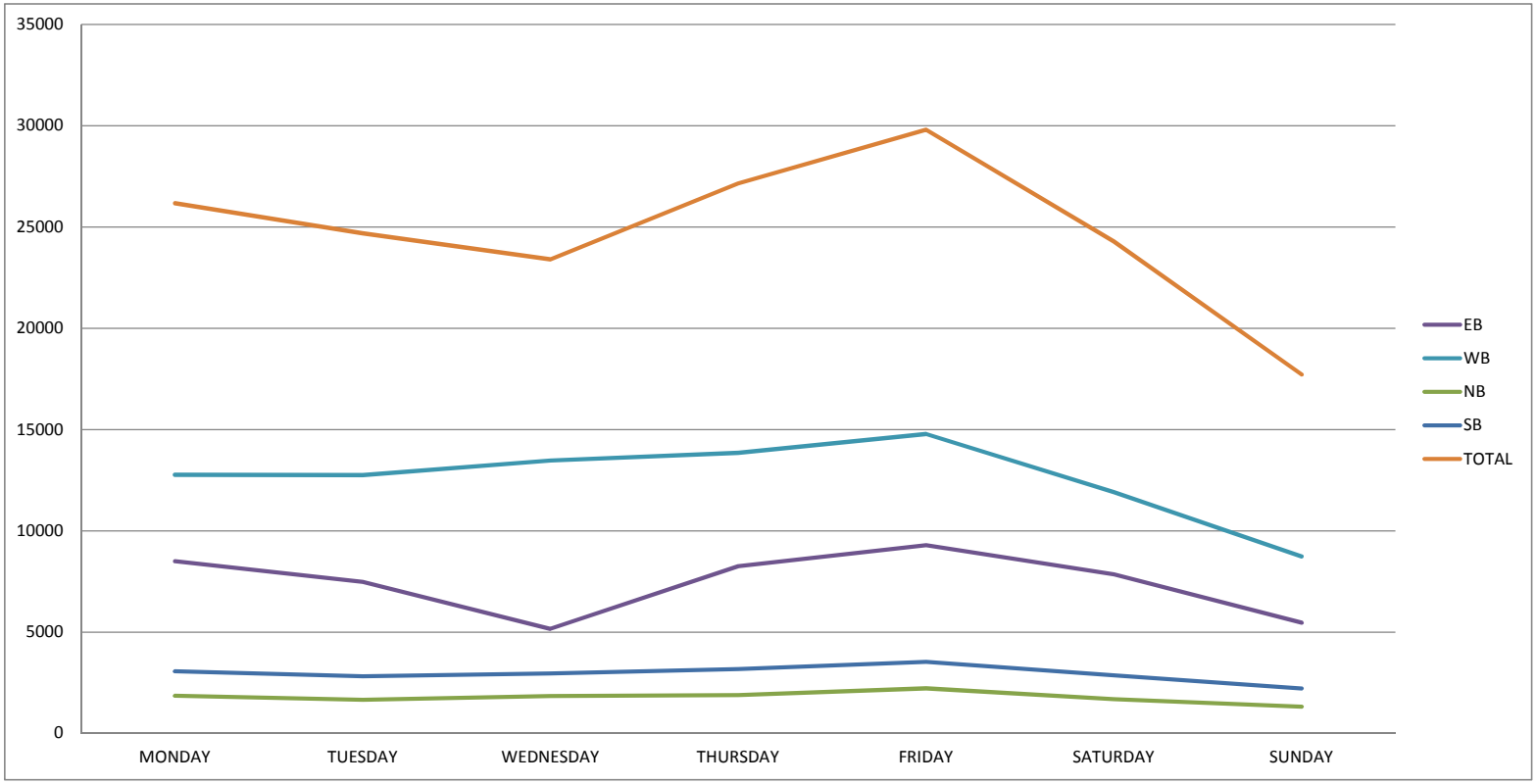
Sunday, September 9, 2018

	Western Sunoco Driveway				Eastern Sunoco Driveway				Western BP Driveway				Eastern BP Driveway				Northern Sunoco Driveway				Southern Sunoco Driveway				TOTAL SITE			
TIME	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	LI	RI	LO	RO	ENTER	EXIT	TOTAL	PEAK
9:00	0	4	0	0	0	0	0	3	1	5	1	1	0	0	1	2	1	0	1	0	0	1	2	0	12	11	23	97
9:15	0	3	0	1	0	1	1	3	1	6	0	0	0	0	1	7	1	0	0	0	0	4	0	1	16	14	30	95
9:30	0	3	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	4	0	4	0	1	1	0	10	9	19	97
9:45	3	2	0	1	0	0	1	3	0	3	0	1	0	1	0	4	2	1	1	1	0	1	0	0	13	12	25	105
10:00	0	2	0	0	0	0	0	2	0	3	0	0	1	0	1	2	1	1	2	1	0	3	1	1	11	10	21	108
10:15	0	2	0	2	1	0	2	4	0	5	0	1	2	0	2	0	1	2	1	2	0	2	1	2	15	17	32	124
10:30	1	3	0	0	0	0	0	2	1	5	1	0	0	0	3	5	1	1	1	0	0	0	1	2	12	15	27	119
10:45	0	2	0	0	1	1	1	3	2	3	0	0	2	0	2	3	1	0	1	2	0	3	1	0	15	13	28	
11:00	0	2	0	0	0	2	1	5	0	8	0	1	2	0	1	6	2	1	1	1	2	0	1	1	19	18	37	
11:15	0	5	0	1	0	0	0	2	2	2	0	1	1	0	1	6	2	0	2	0	0	2	0	0	14	13	27	
PEAK HOUR	1	9	0	2	2	3	4	14	3	21	1	2	6	0	8	14	5	4	4	5	2	5	4	5	61	63	124	

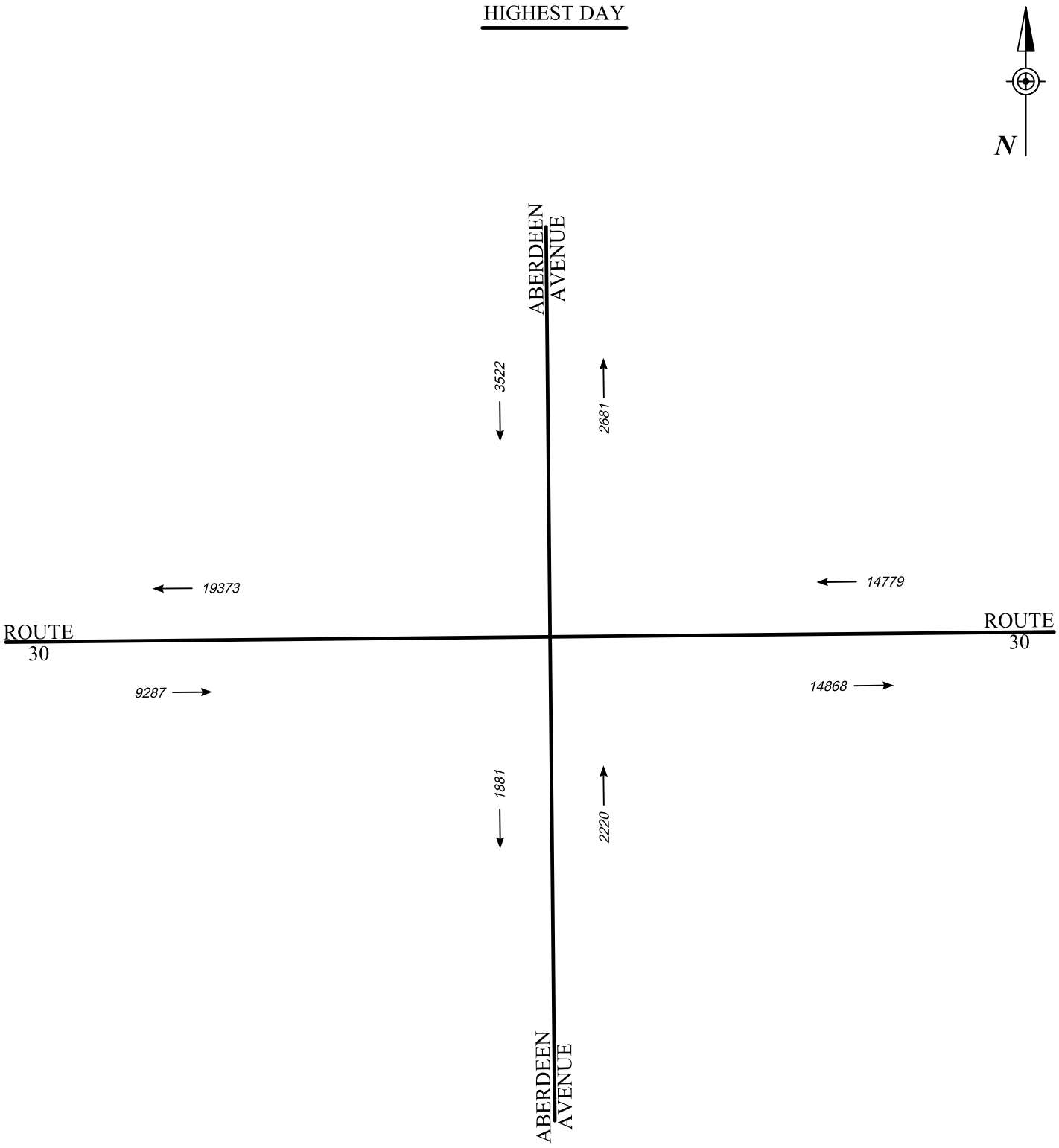
WAWA.A.00475
Route 30 & Aberdeen Avenue
Radnor Township, Delaware County
2016-11-29 to 2016-12-06

	Route 30				Aberdeen Avenue				
	EB Approach	EB Departure	WB Approach	WB Departure	NB Approach	NB Departure	SB Approach	SB Departure	TOTAL
MONDAY	8488	13133	12774	15530	1846	2326	3064	1592	**26172**
TUESDAY	7474	13149	12757	14481	1650	2130	2813	1413	**24694**
WEDNESDAY	5159	13502	13464	16209	1832	2184	2953	1554	**23408**
THURSDAY	8246	14323	13853	16641	1885	2309	3163	1619	**27147**
FRIDAY	9287	14868	14779	19373	2220	2681	3522	1881	**29808**
SATURDAY	7836	12380	11900	14712	1687	2108	2860	1392	**24283**
SUNDAY	5458	9075	8732	10571	1317	1669	2213	1144	**17720**
AVERAGE	**7421**	**12919**	**12608**	**15360**	**1777**	**2201**	**2941**	**1514**	**24747**

<--- Approach Total



HIGHEST DAY



KEY:

SCHEMATIC DRAWING:NOT TO SCALE

TRAFFIC PLANNING AND DESIGN, INC.

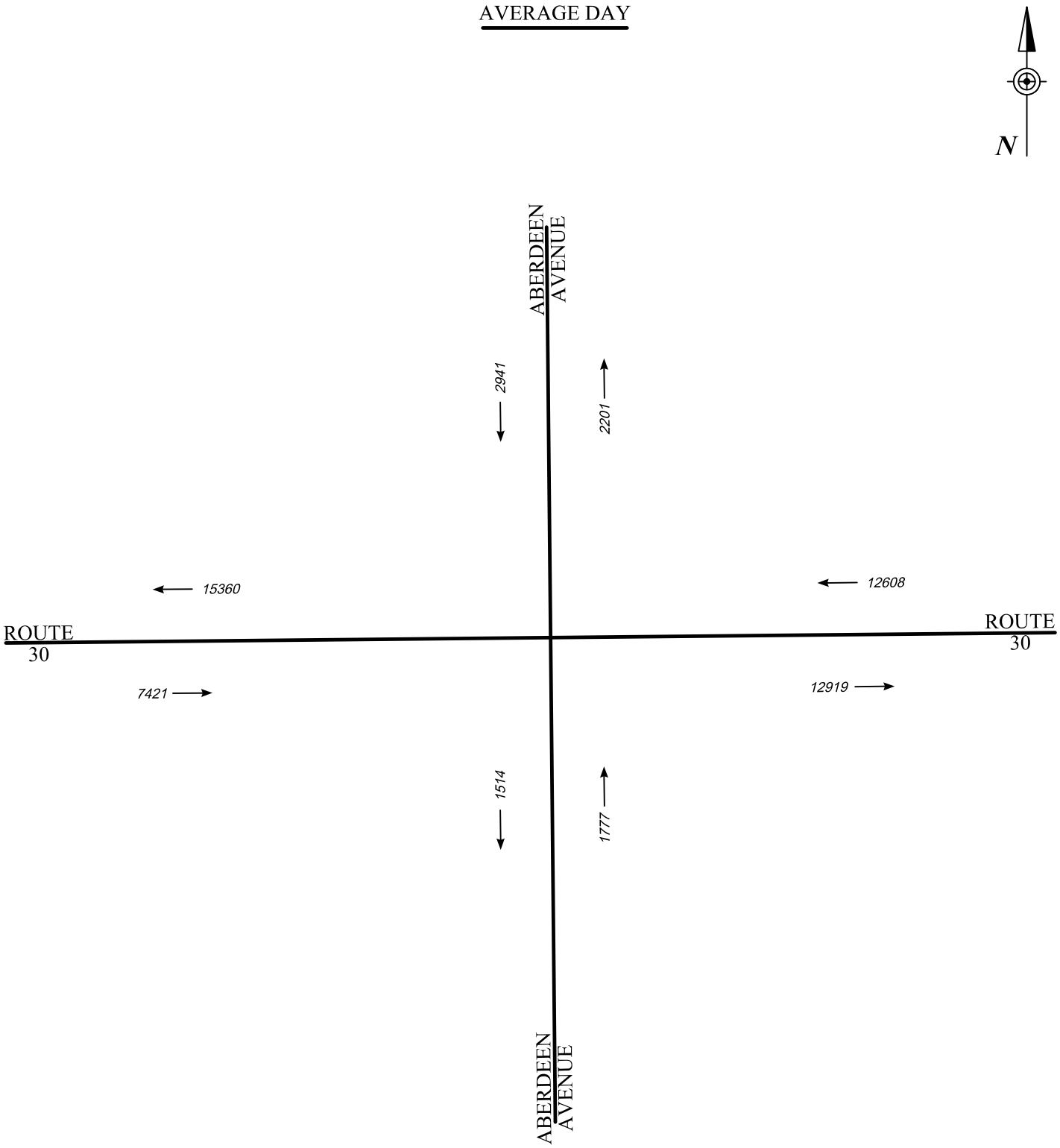
PITTSBURGH (412)765-3717
POTTSTOWN (610)326-3100
HARRISBURG (717)234-1430
LEHIGH VALLEY (610)625-4242
WWW.TRAFFICPD.COM
SOUTH JERSEY (856)966-4242

FIGURE 1

2016 EXISTING CONDITIONS
HIGHEST DAY (FRIDAY)
DAILY TRAFFIC VOLUMES

$FILE$ $DATE$ $TIME$ $USER$ $MODEL$

AVERAGE DAY



KEY:

SCHEMATIC DRAWING:NOT TO SCALE

TRAFFIC PLANNING AND DESIGN, INC.

PITTSBURGH (412)765-3717
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SOUTH JERSEY (856)966-4242

FIGURE 2

2016 EXISTING CONDITIONS
AVERAGE DAY
DAILY TRAFFIC VOLUMES

$FILE$ $DATE$ $TIME$ $USER$ $MODEL$

Road: US 30 EB
Segment: East of Aberdeen Ave
Counter: AP63

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: 00Rte. 30 EB
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start Time	Mon 11/28/2016	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	*	*	38	58	65	54	182	176	104
01:00	*	*	22	47	54	41	84	75	56
02:00	*	*	21	18	40	26	69	54	40
03:00	*	*	33	23	32	29	40	35	33
04:00	*	*	47	37	44	43	47	28	41
05:00	*	*	155	155	136	149	56	40	108
06:00	*	*	385	351	358	365	149	73	263
07:00	*	*	868	883	849	867	291	145	607
08:00	*	*	**934**	939	945	**939**	441	258	703
09:00	*	*	840	878	848	855	693	424	737
10:00	*	633	720	725	824	726	799	587	715
11:00	*	**795**	757	**949**	**947**	862	**1070**	**710**	**871**
12:00 PM	*	940	962	1049	1072	1006	**1080**	799	**984**
01:00	*	934	956	**1089**	**1135**	1028	948	**813**	979
02:00	*	904	922	974	1032	958	852	751	906
03:00	*	**982**	1011	1051	1072	**1029**	1013	770	983
04:00	*	914	**1016**	1072	1095	1024	945	754	966
05:00	*	918	1007	987	923	959	785	609	872
06:00	*	870	818	844	826	840	654	532	757
07:00	*	665	663	723	710	690	564	416	624
08:00	*	460	550	579	647	559	445	324	501
09:00	*	429	382	448	541	450	432	349	430
10:00	*	225	260	267	392	286	455	252	308
11:00	*	124	135	177	281	179	286	101	184
Total	0	9793	13502	14323	14868	13964	12380	9075	12772
% Avg. WkDay	0.0%	70.1%	96.7%	102.6%	106.5%	100.0%			
% Avg. Week	0.0%	76.7%	105.7%	112.1%	116.4%	109.3%	96.9%	71.1%	
AM Peak	-	11:00	08:00	11:00	11:00	- 08:00	- 11:00	11:00	- 11:00 - -
Vol.	-	795	934	949	947	- 939	- 1070	710	- 871 - -
PM Peak	-	15:00	16:00	13:00	13:00	- 15:00	- 12:00	13:00	- 12:00 - -
Vol.	-	982	1016	1089	1135	- 1029	- 1080	813	- 984 - -

Road: US 30 EB
Segment: East of Aberdeen Ave
Counter: AP63

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: 00Rte. 30 EB
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start Time	Mon 12/5/2016	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	39	56	*	*	*	48	*	*	48
01:00	39	31	*	*	*	35	*	*	35
02:00	34	29	*	*	*	32	*	*	32
03:00	23	24	*	*	*	24	*	*	24
04:00	28	46	*	*	*	37	*	*	37
05:00	160	149	*	*	*	154	*	*	154
06:00	357	395	*	*	*	376	*	*	376
07:00	819	873	*	*	*	846	*	*	846
08:00	**893**	868	*	*	*	**880**	*	*	**880**
09:00	798	**885**	*	*	*	842	*	*	842
10:00	720	627	*	*	*	674	*	*	674
11:00	810	0	*	*	*	405	*	*	405
12:00 PM	913	*	*	*	*	913	*	*	913
01:00	997	*	*	*	*	997	*	*	997
02:00	943	*	*	*	*	943	*	*	943
03:00	**1028**	*	*	*	*	**1028**	*	*	**1028**
04:00	966	*	*	*	*	966	*	*	966
05:00	1011	*	*	*	*	1011	*	*	1011
06:00	773	*	*	*	*	773	*	*	773
07:00	644	*	*	*	*	644	*	*	644
08:00	456	*	*	*	*	456	*	*	456
09:00	344	*	*	*	*	344	*	*	344
10:00	225	*	*	*	*	225	*	*	225
11:00	113	*	*	*	*	113	*	*	113
Total	13133	3983	0	0	0	12766	0	0	12766
% Avg. WkDay	102.9%	31.2%	0.0%	0.0%	0.0%	100.0%			
% Avg. Week	102.9%	31.2%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	08:00	09:00	-	-	-	08:00	-	-	-	08:00	-	-
Vol.	893	885	-	-	-	880	-	-	-	880	-	-
PM Peak	15:00	-	-	-	-	15:00	-	-	-	15:00	-	-
Vol.	1028	-	-	-	-	1028	-	-	-	1028	-	-
Total	13133	13776	13502	14323	14868	26730	12380	9075	25538			

ADT ADT 12,738 AADT 12,738

Road: US 30 EB
Segment: West of Aberdeen Ave
Counter: JT27

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: ster Ave. EB
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start Time	Mon 11/28/2016	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	*	*	3	19	30	17	61	65	36
01:00	*	*	3	20	10	11	35	21	18
02:00	*	*	2	3	8	4	19	19	10
03:00	*	*	1	8	13	7	11	9	8
04:00	*	*	7	13	12	11	17	6	11
05:00	*	*	30	61	52	48	26	18	37
06:00	*	*	89	203	212	168	100	47	130
07:00	*	*	278	575	476	443	176	116	324
08:00	*	*	**326**	581	477	461	320	195	380
09:00	*	*	302	516	602	473	511	284	443
10:00	*	*	141	437	543	374	622	370	423
11:00	*	**756**	298	**637**	**660**	**588**	**744**	**531**	**604**
12:00 PM	*	**906**	443	**800**	**807**	**739**	**777**	472	**701**
01:00	*	767	278	719	758	630	723	**494**	623
02:00	*	465	409	600	705	545	595	493	544
03:00	*	330	438	554	690	503	586	452	508
04:00	*	333	451	588	726	524	577	444	520
05:00	*	292	**465**	508	672	484	460	365	460
06:00	*	190	376	427	476	367	357	271	350
07:00	*	139	319	361	408	307	296	231	292
08:00	*	114	204	262	332	228	230	203	224
09:00	*	81	166	203	294	186	246	208	200
10:00	*	28	95	101	188	103	212	112	123
11:00	*	11	35	50	136	58	135	32	66
Total	0	4412	5159	8246	9287	7279	7836	5458	7035
% Avg. WkDay	0.0%	60.6%	70.9%	113.3%	127.6%	100.0%			
% Avg. Week	0.0%	62.7%	73.3%	117.2%	132.0%	103.5%	111.4%	77.6%	
AM Peak	-	11:00	08:00	11:00	11:00	- 11:00	- 11:00	11:00	- 11:00 - -
Vol.	-	756	326	637	660	- 588	- 744	531	- 604 - -
PM Peak	-	12:00	17:00	12:00	12:00	- 12:00	- 12:00	13:00	- 12:00 - -
Vol.	-	906	465	800	807	- 739	- 777	494	- 701 - -

Road: US 30 EB
Segment: West of Aberdeen Ave
Counter: JT27

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: ster Ave. EB
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start Time	Mon 12/5/2016	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	14	24	*	*	*	19	*	*	19
01:00	12	16	*	*	*	14	*	*	14
02:00	9	8	*	*	*	8	*	*	8
03:00	10	9	*	*	*	10	*	*	10
04:00	17	20	*	*	*	18	*	*	18
05:00	86	2	*	*	*	44	*	*	44
06:00	264	182	*	*	*	223	*	*	223
07:00	655	**713**	*	*	*	**684**	*	*	**684**
08:00	**666**	675	*	*	*	670	*	*	670
09:00	516	657	*	*	*	586	*	*	586
10:00	428	*	*	*	*	428	*	*	428
11:00	491	*	*	*	*	491	*	*	491
12:00 PM	616	*	*	*	*	616	*	*	616
01:00	633	*	*	*	*	633	*	*	633
02:00	641	*	*	*	*	641	*	*	641
03:00	**674**	*	*	*	*	**674**	*	*	**674**
04:00	646	*	*	*	*	646	*	*	646
05:00	642	*	*	*	*	642	*	*	642
06:00	485	*	*	*	*	485	*	*	485
07:00	358	*	*	*	*	358	*	*	358
08:00	271	*	*	*	*	271	*	*	271
09:00	204	*	*	*	*	204	*	*	204
10:00	110	*	*	*	*	110	*	*	110
11:00	40	*	*	*	*	40	*	*	40
Total	8488	2306	0	0	0	8515	0	0	8515
% Avg. WkDay	99.7%	27.1%	0.0%	0.0%	0.0%	100.0%			
% Avg. Week	99.7%	27.1%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	08:00	07:00	-	-	-	07:00	-	-	07:00
Vol.	666	713	-	-	-	684	-	-	684
PM Peak	15:00	-	-	-	-	15:00	-	-	15:00
Vol.	674	-	-	-	-	674	-	-	674
Total	8488	6718	5159	8246	9287	15794	7836	5458	15550

ADT ADT 7,352 AADT 7,352

Road: US 30 WB
Segment: East of Aberdeen Ave
Counter: AP61

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: 00000Rte. 30
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start Time	Mon 11/28/2016	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	*	*	41	53	74	56	127	123	84
01:00	*	*	41	31	54	42	86	72	57
02:00	*	*	22	27	23	24	56	70	40
03:00	*	*	29	26	38	31	49	36	36
04:00	*	*	48	57	54	53	36	36	46
05:00	*	*	168	154	170	164	75	44	122
06:00	*	*	478	522	526	509	222	113	372
07:00	*	*	1012	1019	1073	1035	431	175	742
08:00	*	*	**1028**	**1063**	**1116**	**1069**	653	322	836
09:00	*	*	921	945	996	954	801	534	839
10:00	*	864	807	865	903	860	**877**	658	829
11:00	*	**912**	916	869	961	914	877	**722**	**876**
12:00 PM	*	894	936	994	1015	960	926	**781**	**924**
01:00	*	806	870	885	908	867	**1059**	726	876
02:00	*	795	854	884	970	876	787	684	829
03:00	*	760	809	888	976	858	862	668	827
04:00	*	857	943	890	1044	934	779	639	859
05:00	*	**909**	**1044**	**1065**	**1096**	**1028**	727	576	903
06:00	*	803	799	803	823	807	673	597	750
07:00	*	636	622	614	584	614	549	395	567
08:00	*	333	431	479	433	419	336	316	388
09:00	*	291	323	371	398	346	347	217	324
10:00	*	225	214	240	338	254	309	146	245
11:00	*	109	108	109	206	133	256	82	145
Total	0	9194	13464	13853	14779	13807	11900	8732	12516
% Avg. WkDay	0.0%	66.6%	97.5%	100.3%	107.0%	100.0%			
% Avg. Week	0.0%	73.5%	107.6%	110.7%	118.1%	110.3%	95.1%	69.8%	
AM Peak	-	11:00	08:00	08:00	08:00	- 08:00	- 10:00	11:00	- 11:00 - -
Vol.	-	912	1028	1063	1116	- 1069	- 877	722	- 876 - -
PM Peak	-	17:00	17:00	17:00	17:00	- 17:00	- 13:00	12:00	- 12:00 - -
Vol.	-	909	1044	1065	1096	- 1028	- 1059	781	- 924 - -

Road: US 30 WB
Segment: East of Aberdeen Ave
Counter: AP61

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: 00000Rte. 30
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start Time	Mon 12/5/2016	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	36	34	*	*	*	35	*	*	35
01:00	25	38	*	*	*	32	*	*	32
02:00	30	22	*	*	*	26	*	*	26
03:00	36	29	*	*	*	32	*	*	32
04:00	46	53	*	*	*	50	*	*	50
05:00	142	156	*	*	*	149	*	*	149
06:00	452	516	*	*	*	484	*	*	484
07:00	928	1054	*	*	*	991	*	*	991
08:00	**1024**	**1059**	*	*	*	**1042**	*	*	**1042**
09:00	871	599	*	*	*	735	*	*	735
10:00	798	1	*	*	*	400	*	*	400
11:00	841	2	*	*	*	422	*	*	422
12:00 PM	882	*	*	*	*	882	*	*	882
01:00	811	*	*	*	*	811	*	*	811
02:00	865	*	*	*	*	865	*	*	865
03:00	821	*	*	*	*	821	*	*	821
04:00	875	*	*	*	*	875	*	*	875
05:00	**1029**	*	*	*	*	**1029**	*	*	**1029**
06:00	803	*	*	*	*	803	*	*	803
07:00	491	*	*	*	*	491	*	*	491
08:00	401	*	*	*	*	401	*	*	401
09:00	284	*	*	*	*	284	*	*	284
10:00	186	*	*	*	*	186	*	*	186
11:00	97	*	*	*	*	97	*	*	97
Total	12774	3563	0	0	0	11943	0	0	11943
% Avg. WkDay	107.0%	29.8%	0.0%	0.0%	0.0%	100.0%			
% Avg. Week	107.0%	29.8%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	08:00	08:00	-	-	-	08:00	-	-	08:00
Vol.	1024	1059	-	-	-	1042	-	-	1042
PM Peak	17:00	-	-	-	-	17:00	-	-	17:00
Vol.	1029	-	-	-	-	1029	-	-	1029
Total	12774	12757	13464	13853	14779	25750	11900	8732	24459

ADT ADT 12,365 AADT 12,365

Road: US 30 WB
Segment: West of Aberdeen Ave
Counter: JR64

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: ster Ave. WB
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start Time	Mon 11/28/2016	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	*	*	50	55	78	61	127	135	89
01:00	*	*	46	39	53	46	91	67	59
02:00	*	*	21	29	28	26	58	66	40
03:00	*	*	36	29	39	35	40	37	36
04:00	*	*	50	59	63	57	44	39	51
05:00	*	*	186	166	191	181	83	52	136
06:00	*	*	515	595	598	569	234	136	416
07:00	*	*	1193	1245	1332	1257	501	216	897
08:00	*	*	1160	**1261**	**1413**	**1278**	863	435	1026
09:00	*	*	**1311**	1090	1245	1215	997	614	1051
10:00	*	*	1006	1004	1189	1066	1102	**890**	1038
11:00	*	**1087**	1155	1114	1366	1180	**1210**	867	**1133**
12:00 PM	*	**1163**	1219	**1307**	**1568**	**1314**	1187	**991**	**1239**
01:00	*	961	1082	1072	1169	1071	**1269**	881	1072
02:00	*	963	1084	1119	1271	1109	992	814	1040
03:00	*	921	1004	1122	1318	1091	1202	793	1060
04:00	*	950	1106	1156	1398	1152	971	845	1071
05:00	*	954	**1229**	1253	1398	1208	889	705	1071
06:00	*	944	856	955	1143	974	852	740	915
07:00	*	692	688	696	908	746	658	423	678
08:00	*	349	512	499	547	477	381	380	445
09:00	*	319	369	422	485	399	378	210	364
10:00	*	223	232	237	364	264	325	156	256
11:00	*	100	99	117	209	131	258	79	144
Total	0	9626	16209	16641	19373	16907	14712	10571	15327
% Avg. WkDay	0.0%	56.9%	95.9%	98.4%	114.6%	100.0%			
% Avg. Week	0.0%	62.8%	105.8%	108.6%	126.4%	110.3%	96.0%	69.0%	
AM Peak	-	11:00	09:00	08:00	08:00	- 08:00	- 11:00	10:00	- 11:00 - -
Vol.	-	1087	1311	1261	1413	- 1278	- 1210	890	- 1133 - -
PM Peak	-	12:00	17:00	12:00	12:00	- 12:00	- 13:00	12:00	- 12:00 - -
Vol.	-	1163	1229	1307	1568	- 1314	- 1269	991	- 1239 - -

Road: US 30 WB
Segment: West of Aberdeen Ave
Counter: JR64

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: ster Ave. WB
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start Time	Mon 12/5/2016	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM	44	31	*	*	*	38	*	*	38
01:00	38	47	*	*	*	42	*	*	42
02:00	33	27	*	*	*	30	*	*	30
03:00	30	33	*	*	*	32	*	*	32
04:00	56	62	*	*	*	59	*	*	59
05:00	174	175	*	*	*	174	*	*	174
06:00	524	594	*	*	*	559	*	*	559
07:00	1204	1339	*	*	*	1272	*	*	1272
08:00	**1240**	**1353**	*	*	*	**1296**	*	*	**1296**
09:00	1063	1166	*	*	*	1114	*	*	1114
10:00	1000	15	*	*	*	508	*	*	508
11:00	1096	13	*	*	*	554	*	*	554
12:00 PM	1142	*	*	*	*	1142	*	*	1142
01:00	1017	*	*	*	*	1017	*	*	1017
02:00	1077	*	*	*	*	1077	*	*	1077
03:00	1106	*	*	*	*	1106	*	*	1106
04:00	1069	*	*	*	*	1069	*	*	1069
05:00	**1162**	*	*	*	*	**1162**	*	*	**1162**
06:00	911	*	*	*	*	911	*	*	911
07:00	518	*	*	*	*	518	*	*	518
08:00	450	*	*	*	*	450	*	*	450
09:00	298	*	*	*	*	298	*	*	298
10:00	178	*	*	*	*	178	*	*	178
11:00	100	*	*	*	*	100	*	*	100
Total	15530	4855	0	0	0	14706	0	0	14706
% Avg. WkDay	105.6%	33.0%	0.0%	0.0%	0.0%	100.0%			
% Avg. Week	105.6%	33.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	08:00	08:00	-	-	-	08:00	-	-	08:00
Vol.	1240	1353	-	-	-	1296	-	-	1296
PM Peak	17:00	-	-	-	-	17:00	-	-	17:00
Vol.	1162	-	-	-	-	1162	-	-	1162
Total	15530	14481	16209	16641	19373	31613	14712	10571	30033

ADT ADT 15,189 AADT 15,189

Road: Aberdeen Ave
Segment: North of US 30
Counter: CP30

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: berdeen Ave.
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start	11/28/2016		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	*	*	7	9	5	7	13	9	16	9	17	17	12	10
01:00	*	*	*	*	5	2	5	6	4	6	6	10	8	5	6	6
02:00	*	*	*	*	2	1	1	4	4	4	5	3	5	5	3	3
03:00	*	*	*	*	0	3	1	0	3	3	4	2	5	4	3	2
04:00	*	*	*	*	1	4	0	6	2	4	0	1	3	1	1	3
05:00	*	*	*	*	6	25	6	21	8	22	4	7	2	6	5	16
06:00	*	*	*	*	30	83	39	84	37	80	10	22	7	13	25	56
07:00	*	*	*	*	113	**232**	131	239	134	222	38	72	13	63	86	166
08:00	*	*	*	*	**166**	213	**171**	211	162	186	80	139	58	100	127	170
09:00	*	*	*	*	122	180	125	190	141	189	124	232	110	169	124	192
10:00	*	*	*	*	130	166	132	166	129	189	**195**	224	131	188	143	187
11:00	*	*	*	*	157	202	158	**249**	**174**	**272**	194	**307**	**166**	**204**	**170**	**247**
12:00 PM	*	*	169	207	174	222	180	**269**	177	261	197	**275**	**178**	**243**	179	246
01:00	*	*	150	180	148	216	177	236	195	248	**201**	237	171	200	174	220
02:00	*	*	144	202	149	217	147	225	169	284	197	221	149	196	159	224
03:00	*	*	163	194	200	215	191	236	226	231	172	246	147	222	**183**	224
04:00	*	*	174	**243**	183	282	**209**	249	**232**	**316**	175	259	109	169	180	**253**
05:00	*	*	**187**	221	**209**	**289**	184	226	227	263	125	161	104	141	173	217
06:00	*	*	132	228	148	158	132	240	165	206	101	127	84	97	127	176
07:00	*	*	111	104	105	90	107	120	192	259	77	93	73	51	111	120
08:00	*	*	59	68	60	61	88	91	107	119	61	72	51	47	71	76
09:00	*	*	52	41	35	43	67	53	94	84	48	77	57	45	59	57
10:00	*	*	24	16	15	26	37	24	52	38	43	45	12	21	30	28
11:00	*	*	19	10	19	14	16	11	34	27	35	19	9	6	22	14
Lane	0	0	1384	1714	2184	2953	2309	3163	2681	3522	2108	2860	1669	2213	2173	2913
Day	0		3098		5137		5472		6203		4968		3882		5086	
AM Peak	-	-	-	-	08:00	07:00	08:00	11:00	11:00	11:00	10:00	11:00	11:00	11:00	11:00	11:00
Vol.	-	-	-	-	166	232	171	249	174	272	195	307	166	204	170	247
PM Peak	-	-	17:00	16:00	17:00	17:00	16:00	12:00	16:00	16:00	13:00	12:00	12:00	12:00	15:00	16:00
Vol.	-	-	187	243	209	289	209	269	232	316	201	275	178	243	183	253

Road: Aberdeen Ave
Segment: North of US 30
Counter: CP30

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: berdeen Ave.
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start	12/5/2016		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	4	5	3	4	*	*	*	*	*	*	*	*	*	*	4	4
01:00	0	2	1	2	*	*	*	*	*	*	*	*	*	*	0	2
02:00	3	1	0	1	*	*	*	*	*	*	*	*	*	*	2	1
03:00	6	2	1	1	*	*	*	*	*	*	*	*	*	*	4	2
04:00	3	5	3	5	*	*	*	*	*	*	*	*	*	*	3	5
05:00	5	30	6	25	*	*	*	*	*	*	*	*	*	*	6	28
06:00	36	71	35	93	*	*	*	*	*	*	*	*	*	*	36	82
07:00	133	**249**	137	**249**	*	*	*	*	*	*	*	*	*	*	135	**249**
08:00	**170**	197	**183**	210	*	*	*	*	*	*	*	*	*	*	**176**	204
09:00	152	209	147	213	*	*	*	*	*	*	*	*	*	*	150	211
10:00	136	186	61	89	*	*	*	*	*	*	*	*	*	*	98	138
11:00	155	191	0	0	*	*	*	*	*	*	*	*	*	*	78	96
12:00 PM	170	209	*	*	*	*	*	*	*	*	*	*	*	*	170	209
01:00	158	223	*	*	*	*	*	*	*	*	*	*	*	*	158	223
02:00	170	248	*	*	*	*	*	*	*	*	*	*	*	*	170	248
03:00	**211**	233	*	*	*	*	*	*	*	*	*	*	*	*	**211**	233
04:00	205	255	*	*	*	*	*	*	*	*	*	*	*	*	205	255
05:00	203	**269**	*	*	*	*	*	*	*	*	*	*	*	*	203	**269**
06:00	147	197	*	*	*	*	*	*	*	*	*	*	*	*	147	197
07:00	96	126	*	*	*	*	*	*	*	*	*	*	*	*	96	126
08:00	63	70	*	*	*	*	*	*	*	*	*	*	*	*	63	70
09:00	61	51	*	*	*	*	*	*	*	*	*	*	*	*	61	51
10:00	24	26	*	*	*	*	*	*	*	*	*	*	*	*	24	26
11:00	15	9	*	*	*	*	*	*	*	*	*	*	*	*	15	9
Lane	2326	3064	577	892	0	0	0	0	0	0	0	0	0	0	2215	2938
Day	5390		1469		0		0		0		0		0		5153	
AM Peak	08:00	07:00	08:00	07:00	-	-	-	-	-	-	-	-	-	-	08:00	07:00
Vol.	170	249	183	249	-	-	-	-	-	-	-	-	-	-	176	249
PM Peak	15:00	17:00	-	-	-	-	-	-	-	-	-	-	-	-	15:00	17:00
Vol.	211	269	-	-	-	-	-	-	-	-	-	-	-	-	211	269

Comb. Total	5390	4567	5137	5472	6203	4968	3882	10239

ADT ADT 5,038 AADT 5,038

Road: Aberdeen Ave
Segment: South of US 30
Counter: JV41

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: berdeen Ave.
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start	11/28/2016		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	*	*	3	3	3	4	5	4	8	5	10	7	6	5
01:00	*	*	*	*	1	1	1	2	3	3	3	3	3	2	2	2
02:00	*	*	*	*	0	1	0	2	0	1	5	1	2	5	1	2
03:00	*	*	*	*	3	2	2	1	1	1	1	0	0	1	1	1
04:00	*	*	*	*	1	4	3	2	4	4	1	0	1	0	2	2
05:00	*	*	*	*	8	6	12	7	6	9	1	6	1	0	6	6
06:00	*	*	*	*	24	24	39	28	43	37	20	5	7	4	27	20
07:00	*	*	*	*	144	**97**	152	**110**	**154**	**120**	35	45	24	45	102	83
08:00	*	*	*	*	**161**	89	**161**	90	146	85	98	50	57	50	125	73
09:00	*	*	*	*	130	93	115	93	140	85	108	84	106	109	120	93
10:00	*	*	*	*	122	89	151	91	119	85	151	128	136	101	136	99
11:00	*	*	*	*	111	82	151	98	120	90	**155**	**130**	**155**	**117**	**138**	**103**
12:00 PM	*	*	119	69	123	97	142	125	134	96	165	134	**145**	**112**	138	106
01:00	*	*	101	90	126	91	132	123	141	102	158	**173**	118	88	129	111
02:00	*	*	116	106	138	123	128	117	169	130	**190**	96	103	97	141	112
03:00	*	*	136	117	167	129	**166**	107	186	170	134	110	105	96	**149**	122
04:00	*	*	**139**	**156**	171	193	124	137	**193**	213	122	141	75	83	137	**154**
05:00	*	*	88	150	**186**	**218**	122	**149**	163	**222**	100	88	98	68	126	149
06:00	*	*	100	131	81	94	92	126	167	141	93	53	61	47	99	99
07:00	*	*	92	64	51	46	80	94	126	114	38	33	50	56	73	68
08:00	*	*	35	35	33	26	49	64	73	63	31	38	35	35	43	44
09:00	*	*	35	28	30	24	35	31	74	62	28	34	18	11	37	32
10:00	*	*	3	7	11	16	16	12	38	32	24	25	4	8	16	17
11:00	*	*	2	2	7	6	9	6	15	12	18	10	3	2	9	6
Lane	0	0	966	955	1832	1554	1885	1619	2220	1881	1687	1392	1317	1144	1763	1509
Day	0		1921		3386		3504		4101		3079		2461		3272	
AM Peak	-	-	-	-	08:00	07:00	08:00	07:00	07:00	07:00	11:00	11:00	11:00	11:00	11:00	11:00
Vol.	-	-	-	-	161	97	161	110	154	120	155	130	155	117	138	103
PM Peak	-	-	16:00	16:00	17:00	17:00	15:00	17:00	16:00	17:00	14:00	13:00	12:00	12:00	15:00	16:00
Vol.	-	-	139	156	186	218	166	149	193	222	190	173	145	112	149	154

Road: Aberdeen Ave
Segment: South of US 30
Counter: JV41

Tri-State Traffic Data, Inc
(610) 466-1469
TSTData.com

Site Code: berdeen Ave.
Station ID: 000000000000

Latitude: 0' 0.0000 Undefined

Start	12/5/2016		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	1	0	0	2	*	*	*	*	*	*	*	*	*	*	0	1
01:00	1	0	2	3	*	*	*	*	*	*	*	*	*	*	2	2
02:00	2	0	0	0	*	*	*	*	*	*	*	*	*	*	1	0
03:00	1	0	1	0	*	*	*	*	*	*	*	*	*	*	1	0
04:00	1	1	3	1	*	*	*	*	*	*	*	*	*	*	2	1
05:00	17	7	11	9	*	*	*	*	*	*	*	*	*	*	14	8
06:00	41	27	41	28	*	*	*	*	*	*	*	*	*	*	41	28
07:00	149	**103**	140	**110**	*	*	*	*	*	*	*	*	*	*	144	**106**
08:00	**173**	90	**181**	93	*	*	*	*	*	*	*	*	*	*	**177**	92
09:00	127	99	145	103	*	*	*	*	*	*	*	*	*	*	136	101
10:00	100	95	41	40	*	*	*	*	*	*	*	*	*	*	70	68
11:00	143	98	0	0	*	*	*	*	*	*	*	*	*	*	72	49
12:00 PM	136	103	*	*	*	*	*	*	*	*	*	*	*	*	136	103
01:00	123	105	*	*	*	*	*	*	*	*	*	*	*	*	123	105
02:00	160	108	*	*	*	*	*	*	*	*	*	*	*	*	160	108
03:00	153	122	*	*	*	*	*	*	*	*	*	*	*	*	153	122
04:00	**165**	148	*	*	*	*	*	*	*	*	*	*	*	*	**165**	148
05:00	102	**164**	*	*	*	*	*	*	*	*	*	*	*	*	102	**164**
06:00	100	137	*	*	*	*	*	*	*	*	*	*	*	*	100	137
07:00	79	91	*	*	*	*	*	*	*	*	*	*	*	*	79	91
08:00	34	48	*	*	*	*	*	*	*	*	*	*	*	*	34	48
09:00	26	26	*	*	*	*	*	*	*	*	*	*	*	*	26	26
10:00	7	15	*	*	*	*	*	*	*	*	*	*	*	*	7	15
11:00	5	5	*	*	*	*	*	*	*	*	*	*	*	*	5	5
Lane	1846	1592	565	389	0	0	0	0	0	0	0	0	0	0	1750	1528
Day	3438		954		0		0		0		0		0		3278	
AM Peak	08:00	07:00	08:00	07:00	-	-	-	-	-	-	-	-	-	-	08:00	07:00
Vol.	173	103	181	110	-	-	-	-	-	-	-	-	-	-	177	106
PM Peak	16:00	17:00	-	-	-	-	-	-	-	-	-	-	-	-	16:00	17:00
Vol.	165	164	-	-	-	-	-	-	-	-	-	-	-	-	165	164

Comb. Total	3438	2875	3386	3504	4101	3079	2461	6550

ADT ADT 3,241 AADT 3,241

Speed Study Data Sheet

Job Number	KARA.00010	Road Name	Lancaster Ave
Start Time	10:20 AM	Stop Time	10:55am
Municipality	Radnor	County	Delaware
Date	8/17/2018	Weather	Clear
Direction	EB	Speed Limit	35
Location		Technician	J Hudak

#	Speed	Truck	#	Speed	Truck	#	Speed	Truck	#	Speed	Truck
1	35		**26**	26		**51**	32		**76**	43	
2	29		**27**	42		**52**	39		**77**	37	
3	31		**28**	31		**53**	37		**78**	29	
4	36		**29**	39		**54**	27		**79**	31	
5	33		**30**	38		**55**	30		**80**	28	T
6	31		**31**	28		**56**	25		**81**	29	
7	38		**32**	35		**57**	32		**82**	26	
8	28	T	**33**	33		**58**	31		**83**	31	
9	36		**34**	31		**59**	34		**84**	35	
10	35		**35**	37		**60**	27		**85**	31	
11	39		**36**	46		**61**	40		**86**	36	
12	36		**37**	48		**62**	34		**87**	29	
13	31		**38**	30	T	**63**	28		**88**	34	
14	33		**39**	29		**64**	31		**89**	32	
15	35		**40**	31		**65**	36		**90**	29	
16	39		**41**	29		**66**	41		**91**	47	
17	34		**42**	31		**67**	33		**92**	33	
18	36		**43**	27		**68**	31		**93**	35	
19	41		**44**	32		**69**	38		**94**	41	
20	37		**45**	28		**70**	29		**95**	26	
21	28		**46**	34		**71**	31		**96**	27	
22	27	T	**47**	29		**72**	35		**97**	26	
23	33		**48**	27		**73**	39		**98**	35	
24	26		**49**	33		**74**	28		**99**	40	
25	29		**50**	29		**75**	26		**100**	36	

Speed Study Data Sheet

Job Number	KARA.00010	Road Name	Lancaster Ave
Start Time	11:00am	Stop Time	11:30am
Municipality	Radnor	County	Delaware
Date	8/17/2018	Weather	Clear
Direction	WB	Speed Limit	35
Location		Technician	J Hudak

#	Speed	Truck	#	Speed	Truck	#	Speed	Truck	#	Speed	Truck
1	29		**26**	31		**51**	25		**76**	29	T
2	37		**27**	28		**52**	38		**77**	27	
3	35		**28**	29		**53**	41		**78**	35	
4	32		**29**	41		**54**	39		**79**	41	
5	44		**30**	29	T	**55**	34		**80**	34	
6	36		**31**	35		**56**	32		**81**	32	
7	34		**32**	31		**57**	33		**82**	39	
8	39		**33**	29		**58**	36		**83**	33	
9	36		**34**	28		**59**	30		**84**	37	
10	30		**35**	29		**60**	37		**85**	27	T
11	41		**36**	30		**61**	34		**86**	36	
12	37		**37**	36		**62**	39		**87**	46	
13	34		**38**	26		**63**	38		**88**	48	
14	31		**39**	43		**64**	34		**89**	33	
15	38		**40**	29		**65**	30		**90**	32	
16	36		**41**	34		**66**	32		**91**	29	
17	29		**42**	40		**67**	31		**92**	31	
18	35		**43**	31		**68**	37		**93**	28	
19	29	T	**44**	36		**69**	32	T	**94**	27	
20	47		**45**	25		**70**	33		**95**	34	
21	42		**46**	29		**71**	37		**96**	32	
22	32		**47**	34		**72**	28		**97**	36	
23	30		**48**	40		**73**	32		**98**	39	
24	28		**49**	34		**74**	44		**99**	34	
25	27		**50**	33		**75**	35		**100**	41	

Speed Study Data Sheet

Job Number	KARA.00010	Road Name	Aberdeen Ave
Start Time	11:45am	Stop Time	12:50pm
Municipality	Radnor	County	Delaware
Date	8/17/2018	Weather	Clear
Direction	NB	Speed Limit	25
Location		Technician	J Hudak

#	Speed	Truck	#	Speed	Truck	#	Speed	Truck	#	Speed	Truck
1	25		26	24		51	28		76		
2	26		27	29		52			77		
3	29		28	25		53	25		78		
4	25		29	25		54	26		79		
5	27		30	27		55	26		80		
6			31	24		56	25		81		
7			32			57			82		
8	24		33	25		58			83		
9	27		34	26		59	25		84		
10	24		35	25		60	26		85		
11	25		36	27		61			86		
12			37	26		62			87		
13	24		38	24		63			88		
14	27		39	25		64			89		
15	26		40	27		65			90		
16	25		41	26		66			91		
17			42	24		67			92		
18	25		43	29		68			93		
19	29		44	24		69			94		
20			45	27		70			95		
21	25		46	26		71			96		
22			47	24		72			97		
23	28		48	24		73			98		
24	24		49	28		74			99		
25	25		50	29		75			100		

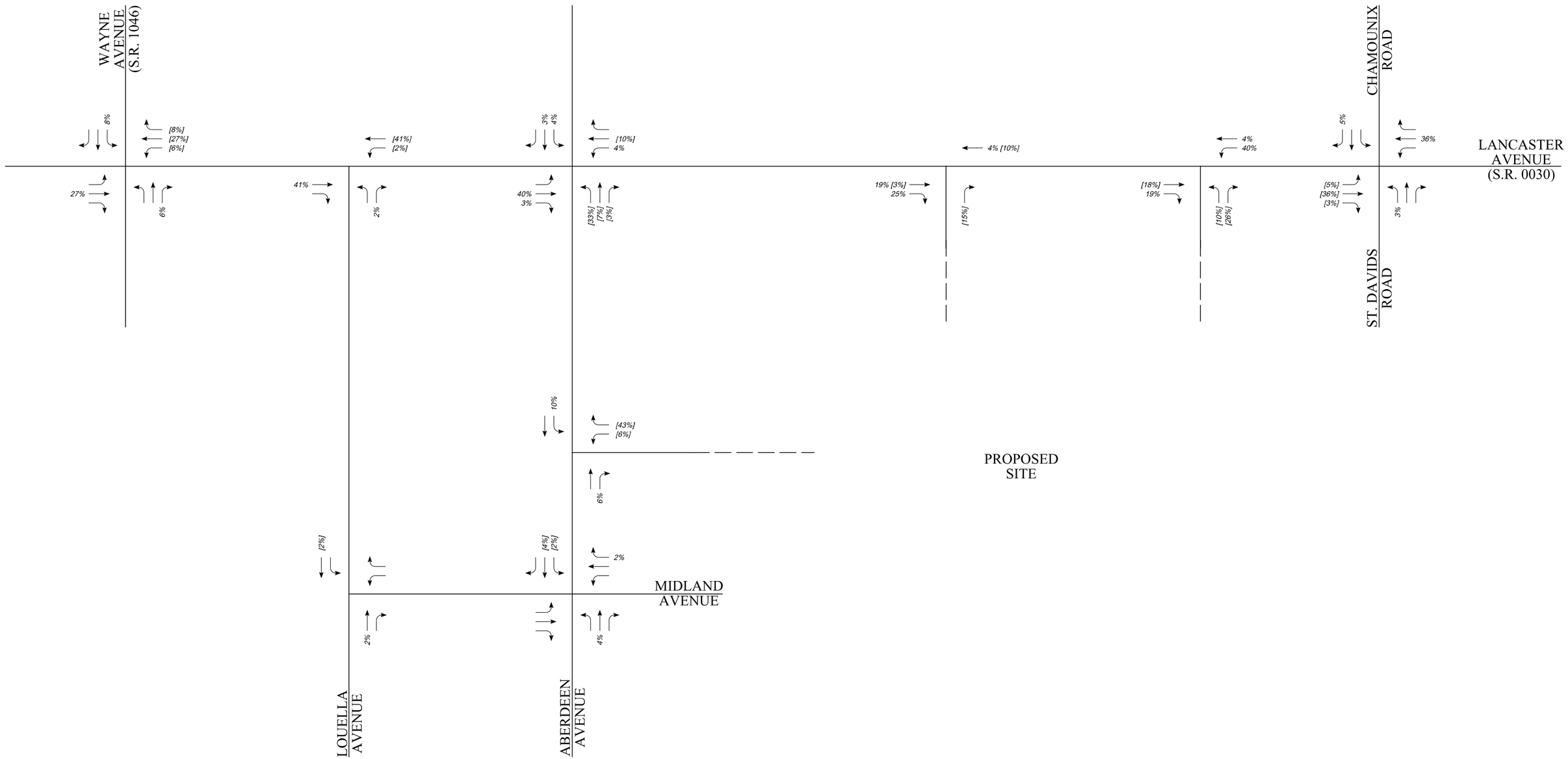
Speed Study Data Sheet

Job Number	KARA.00010	Road Name	Aberdeen Ave
Start Time	12:50pm	Stop Time	1:55pm
Municipality	Radnor	County	Delaware
Date	8/17/2018	Weather	Clear
Direction	SB	Speed Limit	25
Location		Technician	J Hudak

#	Speed	Truck	#	Speed	Truck	#	Speed	Truck	#	Speed	Truck
1	26		26			51			76		
2	32		27	27		52	28		77		
3	26		28	26		53	27		78		
4	28		29			54	26		79		
5	25		30	27		55			80		
6	30		31	25		56	27		81		
7	26		32	28		57	25		82		
8	28		33	26		58	27		83		
9			34	25		59	26		84		
10	27		35			60			85		
11			36	26		61			86		
12	29		37			62	25		87		
13			38	27		63	28		88		
14	27		39	26		64	27		89		
15	26		40	25		65	28		90		
16			41	29		66	26		91		
17			42	27		67			92		
18	27		43			68	27		93		
19	26		44	27		69			94		
20			45	25		70			95		
21	27		46			71			96		
22	25		47	27		72			97		
23			48	25		73			98		
24	27		49	26		74			99		
25	28		50	25		75			100		

APPENDIX D

TRIP ASSIGNMENT DATA



KEY:

– – – – – – PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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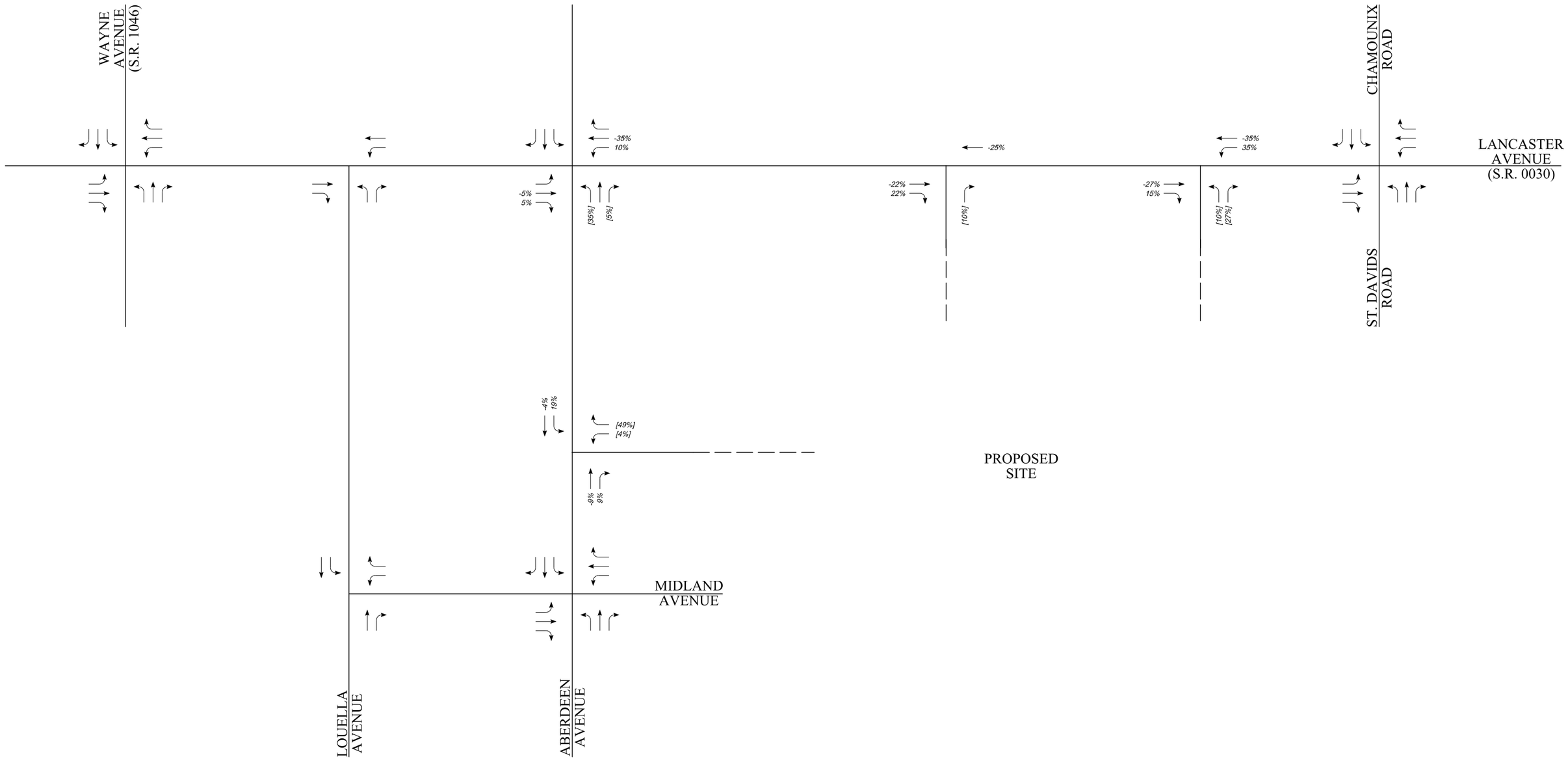
FIGURE D-1

TRIP ASSIGNMENT % - NEW TRIPS
ENTER% [EXIT%]

c:\pwworking\projectwise\pglassman\d0595682\2018-09-XX Figures.dgn
9/26/2018 12:30:14 PM pglassman $MODEL$



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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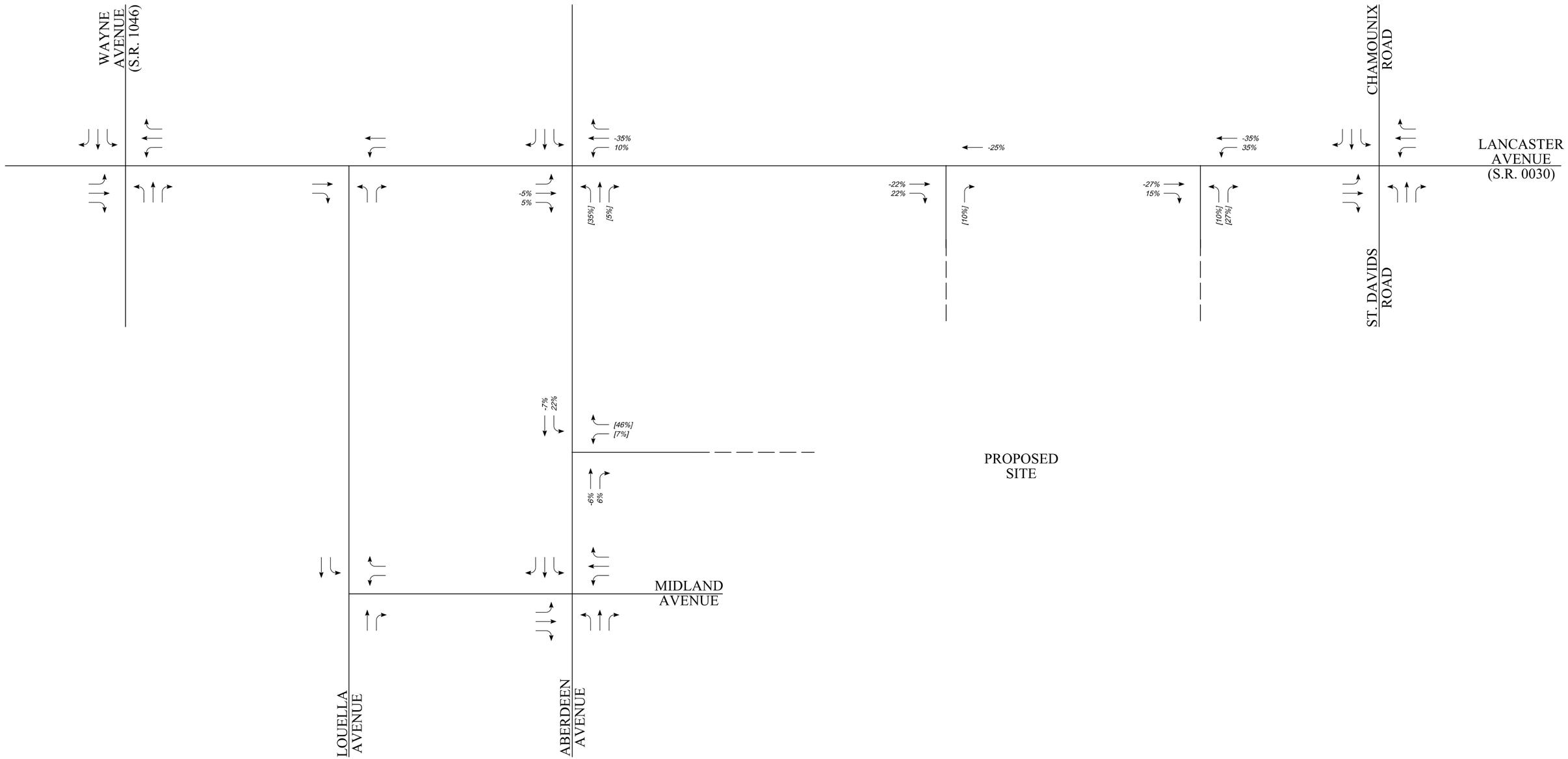
FIGURE D-2

TRIP ASSIGNMENT % - PASS-BY TRIPS
WEEKDAY AM PEAK HOUR
ENTER% [EXIT%]



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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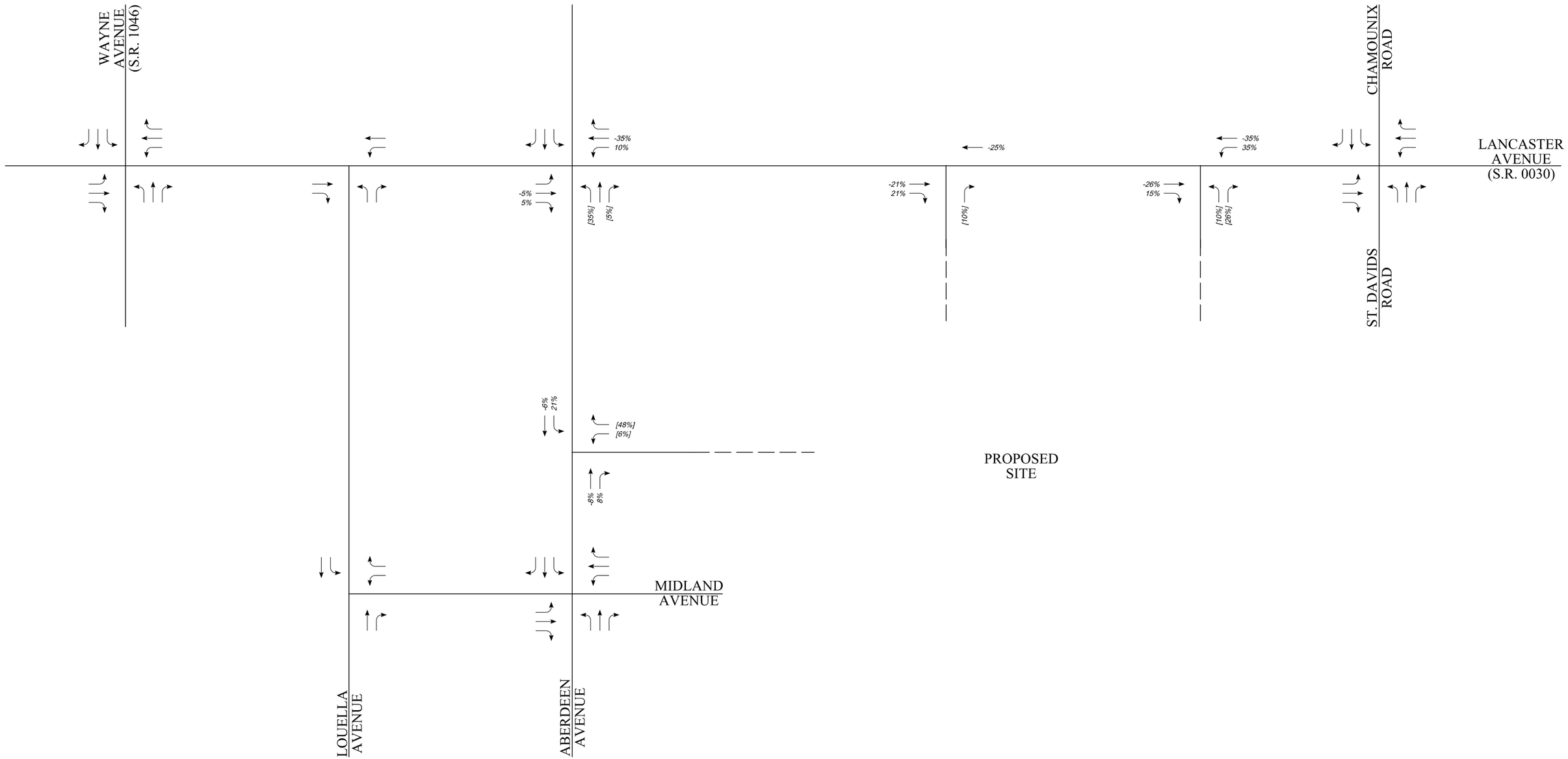
FIGURE D-3

TRIP ASSIGNMENT % - PASS-BY TRIPS
WEEKDAY PM PEAK HOUR
ENTER% [EXIT%]



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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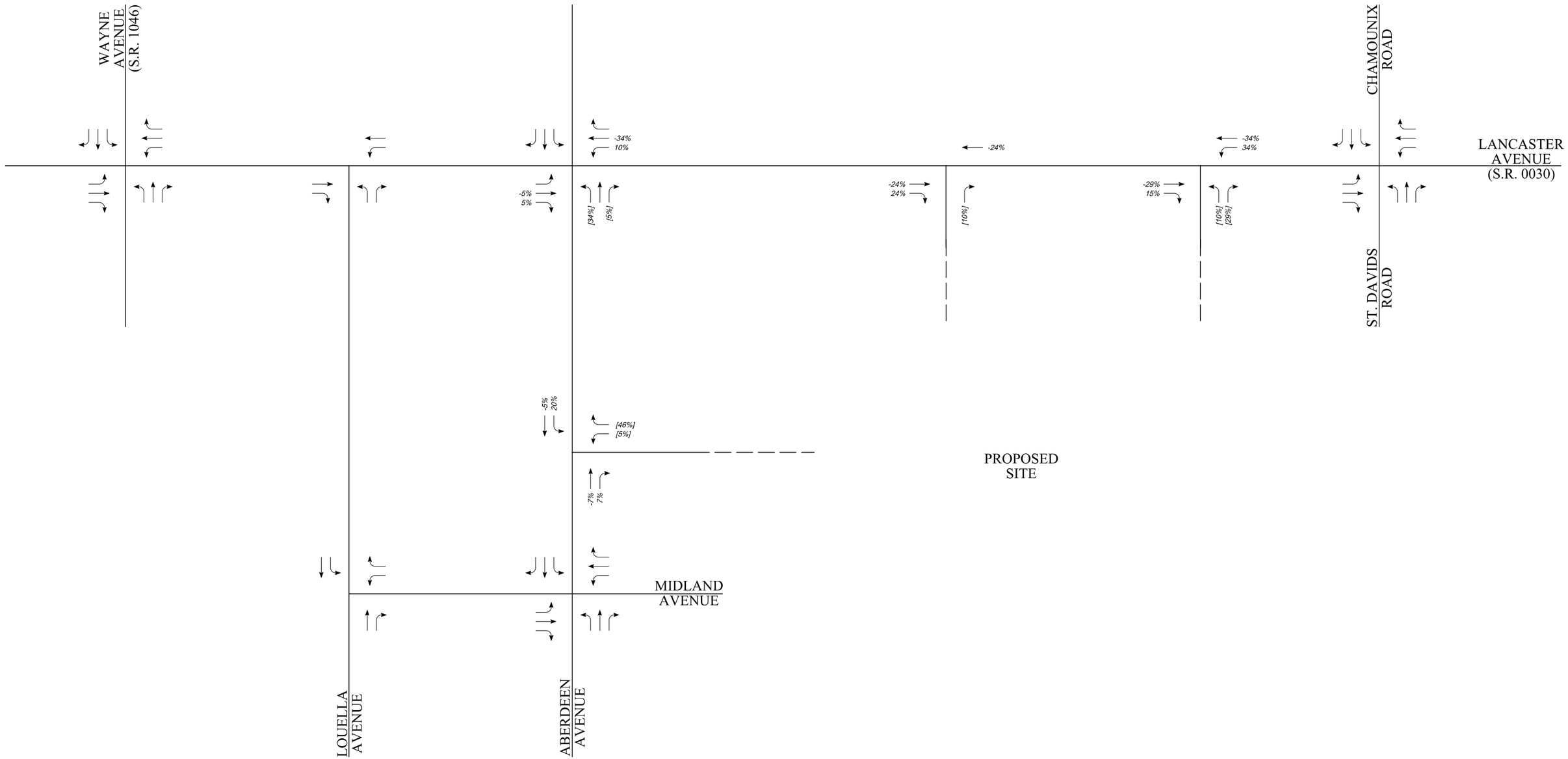
FIGURE D-4

TRIP ASSIGNMENT % - PASS-BY TRIPS
SATURDAY MIDDAY PEAK HOUR
ENTER% [EXIT%]



KEY:

- - - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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FIGURE D-5

TRIP ASSIGNMENT % - PASS-BY TRIPS
SUNDAY PEAK HOUR
ENTER% [EXIT%]

APPENDIX E

VOLUME DEVELOPMENT SPREADSHEETS

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Lancaster Avenue (S.R. 0030) & Aberdeen Avenue**								
Synchro Node:	**1**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts	**35**	**785**	**34**	**11**	**956**	**43**	**72**	**108**	**33**	**140**	**85**	**68**	**2370**
Balancing													0
Existing Volumes (Balanced)	**35**	**785**	**34**	**11**	**956**	**43**	**72**	**108**	**33**	**140**	**85**	**68**	**2370**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	1	1	0	1	1	1	18
Base growth (0.38% compounded for 7 yrs)	1	21	1	0	26	1	2	3	1	4	2	2	64
2020 Base Volumes	**35**	**791**	**34**	**11**	**963**	**43**	**73**	**109**	**33**	**141**	**86**	**69**	**2388**
2025 Base Volumes	**36**	**806**	**35**	**11**	**982**	**44**	**74**	**111**	**34**	**144**	**87**	**70**	**2434**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter		40.0%	3.0%	4.0%						4.0%	3.0%		
Trip Assignment % - New Exit					10.0%		33.0%	7.0%	3.0%				
Trip Assignment % - Pass-by Enter		-5.0%	5.0%	10.0%	-35.0%								
Trip Assignment % - Pass-by Exit							35.0%		5.0%				
New Trips		21	2	2	5		17	4	2	2	2		**57**
Pass-by Trips		-8	8	17	-58		58		8				**25**
Base Re-Distribution		-13	-1		-3			-1		-2	-3		**-23**
2020 Projected Volumes	**35**	**791**	**43**	**30**	**907**	**43**	**148**	**112**	**43**	**141**	**85**	**69**	**2447**
2025 Projected Volumes	**36**	**806**	**44**	**30**	**926**	**44**	**149**	**114**	**44**	**144**	**86**	**70**	**2493**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**33**	**844**	**30**	**10**	**955**	**59**	**39**	**63**	**26**	**117**	**112**	**67**	**2355**
Balancing													0
Existing Volumes (Balanced)	**33**	**844**	**30**	**10**	**955**	**59**	**39**	**63**	**26**	**117**	**112**	**67**	**2355**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	1	1	1	16
Base growth (0.38% compounded for 7 yrs)	1	23	1	0	26	2	1	2	1	3	3	2	65
2020 Base Volumes	**33**	**850**	**30**	**10**	**962**	**59**	**39**	**63**	**26**	**118**	**113**	**68**	**2371**
2025 Base Volumes	**34**	**867**	**31**	**10**	**981**	**61**	**40**	**65**	**27**	**120**	**115**	**69**	**2420**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter		40.0%	3.0%	4.0%						4.0%	3.0%		
Trip Assignment % - New Exit					10.0%		33.0%	7.0%	3.0%				
Trip Assignment % - Pass-by Enter		-5.0%	5.0%	10.0%	-35.0%								
Trip Assignment % - Pass-by Exit							35.0%		5.0%				
New Trips		17	1	2	4		14	3	1	2	1		**45**
Pass-by Trips		-7	7	14	-47		47		7				**21**
Base Re-Distribution		-36	-2		-1		1				-2		**-40**
2020 Projected Volumes	**33**	**824**	**36**	**26**	**918**	**59**	**101**	**66**	**34**	**120**	**112**	**68**	**2397**
2025 Projected Volumes	**34**	**841**	**37**	**26**	**937**	**61**	**102**	**68**	**35**	**122**	**114**	**69**	**2446**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**39**	**688**	**42**	**14**	**850**	**50**	**39**	**93**	**36**	**116**	**70**	**64**	**2101**
Balancing													0
Existing Volumes (Balanced)	**39**	**688**	**42**	**14**	**850**	**50**	**39**	**93**	**36**	**116**	**70**	**64**	**2101**
Base growth (0.38% compounded for 2 yrs)	0	5	0	0	6	0	0	1	0	1	1	0	14
Base growth (0.38% compounded for 7 yrs)	1	19	1	0	23	1	1	3	1	3	2	2	57
2020 Base Volumes	**39**	**693**	**42**	**14**	**856**	**50**	**39**	**94**	**36**	**117**	**71**	**64**	**2115**
2025 Base Volumes	**40**	**707**	**43**	**14**	**873**	**51**	**40**	**96**	**37**	**119**	**72**	**66**	**2158**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		40.0%	3.0%	4.0%						4.0%	3.0%		
Trip Assignment % - New Exit					10.0%		33.0%	7.0%	3.0%				
Trip Assignment % - Pass-by Enter		-5.0%	5.0%	10.0%	-35.0%								
Trip Assignment % - Pass-by Exit							35.0%		5.0%				
New Trips		23	2	2	6		18	4	2	2	2		**61**
Pass-by Trips		-5	5	11	-38		38		5				**16**
Base Re-Distribution		-32					-1	-2		-5	-1		**-41**
2020 Projected Volumes	**39**	**679**	**49**	**27**	**824**	**50**	**94**	**96**	**43**	**114**	**72**	**64**	**2151**
2025 Projected Volumes	**40**	**693**	**50**	**27**	**841**	**51**	**95**	**98**	**44**	**116**	**73**	**66**	**2194**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**28**	**542**	**26**	**13**	**579**	**32**	**29**	**47**	**23**	**61**	**48**	**37**	**1465**
Balancing													0
Existing Volumes (Balanced)	**28**	**542**	**26**	**13**	**579**	**32**	**29**	**47**	**23**	**61**	**48**	**37**	**1465**
Base growth (0.38% compounded for 2 yrs)	0	5	0	0	6	0	0	1	0	1	1	0	14
Base growth (0.38% compounded for 7 yrs)	1	19	1	0	23	1	1	3	1	3	2	2	57
2020 Base Volumes	**28**	**547**	**26**	**13**	**585**	**32**	**29**	**48**	**23**	**62**	**49**	**37**	**1479**
2025 Base Volumes	**29**	**561**	**27**	**13**	**602**	**33**	**30**	**50**	**24**	**64**	**50**	**39**	**1522**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		40.0%	3.0%	4.0%						4.0%	3.0%		
Trip Assignment % - New Exit					10.0%		33.0%	7.0%	3.0%				
Trip Assignment % - Pass-by Enter		-5.0%	5.0%	10.0%	-34.0%								
Trip Assignment % - Pass-by Exit							34.0%		5.0%				
New Trips		23	2	2	6		18	4	2	2	2		**61**
Pass-by Trips		-5	5	11	-37		37		5				**16**
Base Re-Distribution		-18	-1		-8		-3	-3			-3		**-36**
2020 Projected Volumes	**28**	**547**	**32**	**26**	**546**	**32**	**81**	**49**	**30**	**64**	**48**	**37**	**1520**
2025 Projected Volumes	**29**	**561**	**33**	**26**	**563**	**33**	**82**	**51**	**31**	**66**	**49**	**39**	**1563**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Lancaster Avenue (S.R. 0030) & Western Sunoco Driveway**									
Synchro Node:	**2**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts			**12**	**0**			**0**		**0**				**12**
Balancing		946			1010								1956
Existing Volumes (Balanced)	**0**	**946**	**12**	**0**	**1010**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1968**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	0	0	0	0	0	0	0	15
Base growth (0.38% compounded for 7 yrs)	0	25	0	0	27	0	0	0	0	0	0	0	52
2020 Base Volumes	**0**	**953**	**12**	**0**	**1018**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1983**
2025 Base Volumes	**0**	**971**	**12**	**0**	**1037**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2020**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter		44.0%			4.0%								
Trip Assignment % - New Exit		3.0%			10.0%								
Trip Assignment % - Pass-by Enter					-25.0%								
Trip Assignment % - Pass-by Exit													
New Trips		25			7								**32**
Pass-by Trips					-42								**-42**
Base Re-Distribution		-3	-12		-3								**-18**
2020 Projected Volumes	**0**	**975**	**0**	**0**	**980**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1955**
2025 Projected Volumes	**0**	**993**	**0**	**0**	**999**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1992**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**18**	**2**			**0**		**3**				**23**
Balancing		969			1024								1993
Existing Volumes (Balanced)	**0**	**969**	**18**	**2**	**1024**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2016**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	0	0	0	0	0	0	0	15
Base growth (0.38% compounded for 7 yrs)	0	26	0	0	28	0	0	0	0	0	0	0	54
2020 Base Volumes	**0**	**976**	**18**	**2**	**1032**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2031**
2025 Base Volumes	**0**	**995**	**18**	**2**	**1052**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2070**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter		44.0%			4.0%								
Trip Assignment % - New Exit		3.0%			10.0%								
Trip Assignment % - Pass-by Enter					-25.0%								
Trip Assignment % - Pass-by Exit													
New Trips		20			6								**26**
Pass-by Trips					-34								**-34**
Base Re-Distribution		-18	-18	-2	-1				-3				**-42**
2020 Projected Volumes	**0**	**978**	**0**	**0**	**1003**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1981**
2025 Projected Volumes	**0**	**997**	**0**	**0**	**1023**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2020**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**17**	**0**			**0**		**2**				**19**
Balancing		823			914								1737
Existing Volumes (Balanced)	**0**	**823**	**17**	**0**	**914**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1756**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	22	0	0	25	0	0	0	0	0	0	0	47
2020 Base Volumes	**0**	**829**	**17**	**0**	**921**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1769**
2025 Base Volumes	**0**	**845**	**17**	**0**	**939**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1803**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		44.0%			4.0%								
Trip Assignment % - New Exit		3.0%			10.0%								
Trip Assignment % - Pass-by Enter					-25.0%								
Trip Assignment % - Pass-by Exit													
New Trips		27			8								**35**
Pass-by Trips					-27								**-27**
Base Re-Distribution		-20	-17						-2				**-39**
2020 Projected Volumes	**0**	**836**	**0**	**0**	**902**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1738**
2025 Projected Volumes	**0**	**852**	**0**	**0**	**920**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1772**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**9**	**1**			**0**		**2**				**12**
Balancing		617			624								1241
Existing Volumes (Balanced)	**0**	**617**	**9**	**1**	**624**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1253**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	22	0	0	25	0	0	0	0	0	0	0	47
2020 Base Volumes	**0**	**623**	**9**	**1**	**631**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1266**
2025 Base Volumes	**0**	**639**	**9**	**1**	**649**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1300**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		44.0%			4.0%								
Trip Assignment % - New Exit		3.0%			10.0%								
Trip Assignment % - Pass-by Enter					-24.0%								
Trip Assignment % - Pass-by Exit													
New Trips		27			8								**35**
Pass-by Trips					-26								**-26**
Base Re-Distribution		-9	-9	-1	-8				-2				**-29**
2020 Projected Volumes	**0**	**641**	**0**	**0**	**605**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1246**
2025 Projected Volumes	**0**	**657**	**0**	**0**	**623**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1280**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Lancaster Avenue (S.R. 0030) & Eastern Sunoco/Western Proposed Driveway**									
Synchro Node:	**3**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts			**2**	**0**			**5**		**15**				**22**
Balancing		944			1005								1949
Existing Volumes (Balanced)	**0**	**944**	**2**	**0**	**1005**	**0**	**5**	**0**	**15**	**0**	**0**	**0**	**1971**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	0	0	0	0	0	0	0	15
Base growth (0.38% compounded for 7 yrs)	0	25	0	0	27	0	0	0	0	0	0	0	52
2020 Base Volumes	**0**	**951**	**2**	**0**	**1013**	**0**	**5**	**0**	**15**	**0**	**0**	**0**	**1986**
2025 Base Volumes	**0**	**969**	**2**	**0**	**1032**	**0**	**5**	**0**	**15**	**0**	**0**	**0**	**2023**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter		19.0%	25.0%		4.0%								
Trip Assignment % - New Exit		3.0%			10.0%				15.0%				
Trip Assignment % - Pass-by Enter		-22.0%	22.0%		-25.0%								
Trip Assignment % - Pass-by Exit									10.0%				
New Trips		12	13		7				8				**40**
Pass-by Trips		-37	37		-42				17				**-25**
Base Re-Distribution		-1	-2		2		-5		-15				**-21**
2020 Projected Volumes	**0**	**925**	**50**	**0**	**980**	**0**	**0**	**0**	**25**	**0**	**0**	**0**	**1980**
2025 Projected Volumes	**0**	**943**	**50**	**0**	**999**	**0**	**0**	**0**	**25**	**0**	**0**	**0**	**2017**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**24**	**3**			**2**		**21**				**50**
Balancing		948			1024								1972
Existing Volumes (Balanced)	**0**	**948**	**24**	**3**	**1024**	**0**	**2**	**0**	**21**	**0**	**0**	**0**	**2022**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	0	0	0	0	0	0	0	15
Base growth (0.38% compounded for 7 yrs)	0	26	0	0	28	0	0	0	0	0	0	0	54
2020 Base Volumes	**0**	**955**	**24**	**3**	**1032**	**0**	**2**	**0**	**21**	**0**	**0**	**0**	**2037**
2025 Base Volumes	**0**	**974**	**24**	**3**	**1052**	**0**	**2**	**0**	**21**	**0**	**0**	**0**	**2076**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter		19.0%	25.0%		4.0%								
Trip Assignment % - New Exit		3.0%			10.0%				15.0%				
Trip Assignment % - Pass-by Enter		-22.0%	22.0%		-25.0%								
Trip Assignment % - Pass-by Exit									10.0%				
New Trips		9	11		6				6				**32**
Pass-by Trips		-30	30		-34				14				**-20**
Base Re-Distribution		3	-24	-3	-1		-2		-21				**-48**
2020 Projected Volumes	**0**	**937**	**41**	**0**	**1003**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**2001**
2025 Projected Volumes	**0**	**956**	**41**	**0**	**1023**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**2040**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**1**	**0**			**1**		**22**				**24**
Balancing		824			913								1737
Existing Volumes (Balanced)	**0**	**824**	**1**	**0**	**913**	**0**	**1**	**0**	**22**	**0**	**0**	**0**	**1761**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	22	0	0	25	0	0	0	0	0	0	0	47
2020 Base Volumes	**0**	**830**	**1**	**0**	**920**	**0**	**1**	**0**	**22**	**0**	**0**	**0**	**1774**
2025 Base Volumes	**0**	**846**	**1**	**0**	**938**	**0**	**1**	**0**	**22**	**0**	**0**	**0**	**1808**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		19.0%	25.0%		4.0%								
Trip Assignment % - New Exit		3.0%			10.0%				15.0%				
Trip Assignment % - Pass-by Enter		-21.0%	21.0%		-25.0%								
Trip Assignment % - Pass-by Exit									10.0%				
New Trips		13	14		8				8				**43**
Pass-by Trips		-23	23		-27				11				**-16**
Base Re-Distribution		-22	-1				-1		-22				**-46**
2020 Projected Volumes	**0**	**798**	**37**	**0**	**901**	**0**	**0**	**0**	**19**	**0**	**0**	**0**	**1755**
2025 Projected Volumes	**0**	**814**	**37**	**0**	**919**	**0**	**0**	**0**	**19**	**0**	**0**	**0**	**1789**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**3**	**2**			**4**		**14**				**23**
Balancing		616			621								1237
Existing Volumes (Balanced)	**0**	**616**	**3**	**2**	**621**	**0**	**4**	**0**	**14**	**0**	**0**	**0**	**1260**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	22	0	0	25	0	0	0	0	0	0	0	47
2020 Base Volumes	**0**	**622**	**3**	**2**	**628**	**0**	**4**	**0**	**14**	**0**	**0**	**0**	**1273**
2025 Base Volumes	**0**	**638**	**3**	**2**	**646**	**0**	**4**	**0**	**14**	**0**	**0**	**0**	**1307**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		19.0%	25.0%		4.0%								
Trip Assignment % - New Exit		3.0%			10.0%				15.0%				
Trip Assignment % - Pass-by Enter		-24.0%	24.0%		-24.0%								
Trip Assignment % - Pass-by Exit									10.0%				
New Trips		13	14		8				8				**43**
Pass-by Trips		-26	26		-26				11				**-15**
Base Re-Distribution		-8	-3	-2	-5		-4		-14				**-36**
2020 Projected Volumes	**0**	**601**	**40**	**0**	**605**	**0**	**0**	**0**	**19**	**0**	**0**	**0**	**1265**
2025 Projected Volumes	**0**	**617**	**40**	**0**	**623**	**0**	**0**	**0**	**19**	**0**	**0**	**0**	**1299**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Lancaster Avenue (S.R. 0030) & Western BP Driveway**									
Synchro Node:	**4**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts			**20**	**3**			**0**		**6**				**29**
Balancing		939			1005								1944
Existing Volumes (Balanced)	**0**	**939**	**20**	**3**	**1005**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**1973**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	0	0	0	0	0	0	0	15
Base growth (0.38% compounded for 7 yrs)	0	25	0	0	27	0	0	0	0	0	0	0	52
2020 Base Volumes	**0**	**946**	**20**	**3**	**1013**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**1988**
2025 Base Volumes	**0**	**964**	**20**	**3**	**1032**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2025**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter		19.0%			4.0%								
Trip Assignment % - New Exit		18.0%			10.0%								
Trip Assignment % - Pass-by Enter		-22.0%			-25.0%								
Trip Assignment % - Pass-by Exit		10.0%											
New Trips		19			7								**26**
Pass-by Trips		-20			-42								**-62**
Base Re-Distribution		4	-20	-3	2				-6				**-23**
2020 Projected Volumes	**0**	**949**	**0**	**0**	**980**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1929**
2025 Projected Volumes	**0**	**967**	**0**	**0**	**999**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1966**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**36**	**5**			**0**		**3**				**44**
Balancing		933			1027								1960
Existing Volumes (Balanced)	**0**	**933**	**36**	**5**	**1027**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2004**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	0	0	0	0	0	0	0	15
Base growth (0.38% compounded for 7 yrs)	0	25	0	0	28	0	0	0	0	0	0	0	53
2020 Base Volumes	**0**	**940**	**36**	**5**	**1035**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2019**
2025 Base Volumes	**0**	**958**	**36**	**5**	**1055**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**2057**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter		19.0%			4.0%								
Trip Assignment % - New Exit		18.0%			10.0%								
Trip Assignment % - Pass-by Enter		-22.0%			-25.0%								
Trip Assignment % - Pass-by Exit		10.0%											
New Trips		15			6								**21**
Pass-by Trips		-16			-34								**-50**
Base Re-Distribution		18	-36	-5	-4				-3				**-30**
2020 Projected Volumes	**0**	**957**	**0**	**0**	**1003**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1960**
2025 Projected Volumes	**0**	**975**	**0**	**0**	**1023**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1998**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**47**	**8**			**2**		**4**				**61**
Balancing		799			911								1710
Existing Volumes (Balanced)	**0**	**799**	**47**	**8**	**911**	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**1771**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	21	0	0	25	0	0	0	0	0	0	0	46
2020 Base Volumes	**0**	**805**	**47**	**8**	**918**	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**1784**
2025 Base Volumes	**0**	**820**	**47**	**8**	**936**	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**1817**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		19.0%			4.0%								
Trip Assignment % - New Exit		18.0%			10.0%								
Trip Assignment % - Pass-by Enter		-21.0%			-25.0%								
Trip Assignment % - Pass-by Exit		10.0%											
New Trips		21			8								**29**
Pass-by Trips		-12			-27								**-39**
Base Re-Distribution		3	-47	-8	3		-2		-4				**-55**
2020 Projected Volumes	**0**	**817**	**0**	**0**	**902**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1719**
2025 Projected Volumes	**0**	**832**	**0**	**0**	**920**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1752**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**21**	**3**			**1**		**2**				**27**
Balancing		609			622								1231
Existing Volumes (Balanced)	**0**	**609**	**21**	**3**	**622**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**1258**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	21	0	0	25	0	0	0	0	0	0	0	46
2020 Base Volumes	**0**	**615**	**21**	**3**	**629**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**1271**
2025 Base Volumes	**0**	**630**	**21**	**3**	**647**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**1304**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		19.0%			4.0%								
Trip Assignment % - New Exit		18.0%			10.0%								
Trip Assignment % - Pass-by Enter		-24.0%			-24.0%								
Trip Assignment % - Pass-by Exit		10.0%											
New Trips		21			8								**29**
Pass-by Trips		-15			-26								**-41**
Base Re-Distribution		-1	-21	-3	-6		-1		-2				**-34**
2020 Projected Volumes	**0**	**620**	**0**	**0**	**605**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1225**
2025 Projected Volumes	**0**	**635**	**0**	**0**	**623**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1258**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Lancaster Avenue (S.R. 0030) & Eastern BP/Eastern Proposed Driveway**									
Synchro Node:	**5**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts			**3**	**3**			**2**		**16**				**24**
Balancing		942			1006								1948
Existing Volumes (Balanced)	**0**	**942**	**3**	**3**	**1006**	**0**	**2**	**0**	**16**	**0**	**0**	**0**	**1972**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	0	0	0	0	0	0	0	15
Base growth (0.38% compounded for 7 yrs)	0	25	0	0	27	0	0	0	0	0	0	0	52
2020 Base Volumes	**0**	**949**	**3**	**3**	**1014**	**0**	**2**	**0**	**16**	**0**	**0**	**0**	**1987**
2025 Base Volumes	**0**	**967**	**3**	**3**	**1033**	**0**	**2**	**0**	**16**	**0**	**0**	**0**	**2024**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter			19.0%	40.0%	4.0%								
Trip Assignment % - New Exit		18.0%					10.0%		26.0%				
Trip Assignment % - Pass-by Enter		-27.0%	15.0%	35.0%	-35.0%								
Trip Assignment % - Pass-by Exit							10.0%		27.0%				
New Trips		9	10	21	2		5		14				**61**
Pass-by Trips		-45	25	58	-58		16		45				**41**
Base Re-Distribution		1	-3	-3	1		-2		-16				**-22**
2020 Projected Volumes	**0**	**914**	**35**	**79**	**959**	**0**	**21**	**0**	**59**	**0**	**0**	**0**	**2067**
2025 Projected Volumes	**0**	**932**	**35**	**79**	**978**	**0**	**21**	**0**	**59**	**0**	**0**	**0**	**2104**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**1**	**4**			**7**		**28**				**40**
Balancing		935			1025								1960
Existing Volumes (Balanced)	**0**	**935**	**1**	**4**	**1025**	**0**	**7**	**0**	**28**	**0**	**0**	**0**	**2000**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	0	0	0	0	0	0	0	15
Base growth (0.38% compounded for 7 yrs)	0	25	0	0	28	0	0	0	0	0	0	0	53
2020 Base Volumes	**0**	**942**	**1**	**4**	**1033**	**0**	**7**	**0**	**28**	**0**	**0**	**0**	**2015**
2025 Base Volumes	**0**	**960**	**1**	**4**	**1053**	**0**	**7**	**0**	**28**	**0**	**0**	**0**	**2053**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter			19.0%	40.0%	4.0%								
Trip Assignment % - New Exit		18.0%					10.0%		26.0%				
Trip Assignment % - Pass-by Enter		-27.0%	15.0%	35.0%	-35.0%								
Trip Assignment % - Pass-by Exit							10.0%		27.0%				
New Trips		7	8	16	2		4		11				**48**
Pass-by Trips		-36	20	47	-47		14		36				**34**
Base Re-Distribution		16	-1	-4	-2		-7		-28				**-26**
2020 Projected Volumes	**0**	**929**	**28**	**63**	**986**	**0**	**18**	**0**	**47**	**0**	**0**	**0**	**2071**
2025 Projected Volumes	**0**	**947**	**28**	**63**	**1006**	**0**	**18**	**0**	**47**	**0**	**0**	**0**	**2109**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**4**	**4**			**3**		**54**				**65**
Balancing		799			916								1715
Existing Volumes (Balanced)	**0**	**799**	**4**	**4**	**916**	**0**	**3**	**0**	**54**	**0**	**0**	**0**	**1780**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	21	0	0	25	0	0	0	0	0	0	0	46
2020 Base Volumes	**0**	**805**	**4**	**4**	**923**	**0**	**3**	**0**	**54**	**0**	**0**	**0**	**1793**
2025 Base Volumes	**0**	**820**	**4**	**4**	**941**	**0**	**3**	**0**	**54**	**0**	**0**	**0**	**1826**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter			19.0%	40.0%	4.0%								
Trip Assignment % - New Exit		18.0%					10.0%		26.0%				
Trip Assignment % - Pass-by Enter		-26.0%	15.0%	35.0%	-35.0%								
Trip Assignment % - Pass-by Exit							10.0%		26.0%				
New Trips		10	11	23	2		6		15				**67**
Pass-by Trips		-28	16	38	-38		11		28				**27**
Base Re-Distribution		3	-4	-4	-2		-3		-54				**-64**
2020 Projected Volumes	**0**	**790**	**27**	**61**	**885**	**0**	**17**	**0**	**43**	**0**	**0**	**0**	**1823**
2025 Projected Volumes	**0**	**805**	**27**	**61**	**903**	**0**	**17**	**0**	**43**	**0**	**0**	**0**	**1856**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts			**0**	**6**			**8**		**14**				**28**
Balancing		611			617								1228
Existing Volumes (Balanced)	**0**	**611**	**0**	**6**	**617**	**0**	**8**	**0**	**14**	**0**	**0**	**0**	**1256**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	21	0	0	25	0	0	0	0	0	0	0	46
2020 Base Volumes	**0**	**617**	**0**	**6**	**624**	**0**	**8**	**0**	**14**	**0**	**0**	**0**	**1269**
2025 Base Volumes	**0**	**632**	**0**	**6**	**642**	**0**	**8**	**0**	**14**	**0**	**0**	**0**	**1302**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter			19.0%	40.0%	4.0%								
Trip Assignment % - New Exit		18.0%					10.0%		26.0%				
Trip Assignment % - Pass-by Enter		-29.0%	15.0%	34.0%	-34.0%								
Trip Assignment % - Pass-by Exit							10.0%		29.0%				
New Trips		10	11	23	2		6		15				**67**
Pass-by Trips		-32	16	37	-37		11		32				**27**
Base Re-Distribution		-3		-6	-1		-8		-14				**-32**
2020 Projected Volumes	**0**	**592**	**27**	**60**	**588**	**0**	**17**	**0**	**47**	**0**	**0**	**0**	**1331**
2025 Projected Volumes	**0**	**607**	**27**	**60**	**606**	**0**	**17**	**0**	**47**	**0**	**0**	**0**	**1364**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Aberdeen Driveway & Northern Sunoco Driveway**									
Synchro Node:	**6**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts				**1**		**8**			**5**	**11**			**25**
Balancing								205			119		324
Existing Volumes (Balanced)	**0**	**0**	**0**	**1**	**0**	**8**	**0**	**205**	**5**	**11**	**119**	**0**	**349**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	2	0	0	1	0	3
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	0	0	6	0	0	3	0	9
2020 Base Volumes	**0**	**0**	**0**	**1**	**0**	**8**	**0**	**207**	**5**	**11**	**120**	**0**	**352**
2025 Base Volumes	**0**	**0**	**0**	**1**	**0**	**8**	**0**	**211**	**5**	**11**	**122**	**0**	**358**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter											10.0%		
Trip Assignment % - New Exit								43.0%					
Trip Assignment % - Pass-by Enter											15.0%		
Trip Assignment % - Pass-by Exit								40.0%					
New Trips								22			5		**27**
Pass-by Trips								67			25		**92**
Base Re-Distribution				-1		-8		7	-5	-11	7		**-11**
2020 Projected Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**303**	**0**	**0**	**157**	**0**	**460**
2025 Projected Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**307**	**0**	**0**	**159**	**0**	**466**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**8**		**4**			**12**	**2**			**26**
Balancing								124			150		274
Existing Volumes (Balanced)	**0**	**0**	**0**	**8**	**0**	**4**	**0**	**124**	**12**	**2**	**150**	**0**	**300**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	1	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	0	0	3	0	0	4	0	7
2020 Base Volumes	**0**	**0**	**0**	**8**	**0**	**4**	**0**	**125**	**12**	**2**	**151**	**0**	**302**
2025 Base Volumes	**0**	**0**	**0**	**8**	**0**	**4**	**0**	**127**	**12**	**2**	**154**	**0**	**307**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter											10.0%		
Trip Assignment % - New Exit								43.0%					
Trip Assignment % - Pass-by Enter											15.0%		
Trip Assignment % - Pass-by Exit								40.0%					
New Trips								18			4		**22**
Pass-by Trips								54			20		**74**
Base Re-Distribution				-8		-4		5	-12	-2	-2		**-23**
2020 Projected Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**202**	**0**	**0**	**173**	**0**	**375**
2025 Projected Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**204**	**0**	**0**	**176**	**0**	**380**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**6**		**10**			**10**	**2**			**28**
Balancing								158			124		282
Existing Volumes (Balanced)	**0**	**0**	**0**	**6**	**0**	**10**	**0**	**158**	**10**	**2**	**124**	**0**	**310**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	1	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	0	0	4	0	0	3	0	7
2020 Base Volumes	**0**	**0**	**0**	**6**	**0**	**10**	**0**	**159**	**10**	**2**	**125**	**0**	**312**
2025 Base Volumes	**0**	**0**	**0**	**6**	**0**	**10**	**0**	**162**	**10**	**2**	**127**	**0**	**317**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter											10.0%		
Trip Assignment % - New Exit								43.0%					
Trip Assignment % - Pass-by Enter											15.0%		
Trip Assignment % - Pass-by Exit								40.0%					
New Trips								24			6		**30**
Pass-by Trips								44			16		**60**
Base Re-Distribution				-6		-10		7	-10	-2	1		**-20**
2020 Projected Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**234**	**0**	**0**	**148**	**0**	**382**
2025 Projected Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**237**	**0**	**0**	**150**	**0**	**387**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**4**		**5**			**4**	**5**			**18**
Balancing								94			82		176
Existing Volumes (Balanced)	**0**	**0**	**0**	**4**	**0**	**5**	**0**	**94**	**4**	**5**	**82**	**0**	**194**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	1	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	0	0	4	0	0	3	0	7
2020 Base Volumes	**0**	**0**	**0**	**4**	**0**	**5**	**0**	**95**	**4**	**5**	**83**	**0**	**196**
2025 Base Volumes	**0**	**0**	**0**	**4**	**0**	**5**	**0**	**98**	**4**	**5**	**85**	**0**	**201**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter											10.0%		
Trip Assignment % - New Exit								43.0%					
Trip Assignment % - Pass-by Enter											15.0%		
Trip Assignment % - Pass-by Exit								39.0%					
New Trips								24			6		**30**
Pass-by Trips								43			16		**59**
Base Re-Distribution				-4		-5		-1	-4	-5	1		**-18**
2020 Projected Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**161**	**0**	**0**	**106**	**0**	**267**
2025 Projected Volumes	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**164**	**0**	**0**	**108**	**0**	**272**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Aberdeen Driveway & Southern Sunoco/Proposed Driveway**									
Synchro Node:	**7**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts				**4**		**1**			**12**	**1**			**18**
Balancing								209			119		328
Existing Volumes (Balanced)	**0**	**0**	**0**	**4**	**0**	**1**	**0**	**209**	**12**	**1**	**119**	**0**	**346**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	2	0	0	1	0	3
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	0	0	6	0	0	3	0	9
2020 Base Volumes	**0**	**0**	**0**	**4**	**0**	**1**	**0**	**211**	**12**	**1**	**120**	**0**	**349**
2025 Base Volumes	**0**	**0**	**0**	**4**	**0**	**1**	**0**	**215**	**12**	**1**	**122**	**0**	**355**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter									6.0%	10.0%			
Trip Assignment % - New Exit				6.0%		43.0%							
Trip Assignment % - Pass-by Enter								-9.0%	9.0%	19.0%	-4.0%		
Trip Assignment % - Pass-by Exit				4.0%		49.0%							
New Trips				3		22			3	5			**33**
Pass-by Trips				7		82		-15	15	32	-7		**114**
Base Re-Distribution				-4		-1		3	-12	-1	7		**-8**
2020 Projected Volumes	**0**	**0**	**0**	**10**	**0**	**104**	**0**	**199**	**18**	**37**	**120**	**0**	**488**
2025 Projected Volumes	**0**	**0**	**0**	**10**	**0**	**104**	**0**	**203**	**18**	**37**	**122**	**0**	**494**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**2**		**5**			**7**	**5**			**19**
Balancing								131			153		284
Existing Volumes (Balanced)	**0**	**0**	**0**	**2**	**0**	**5**	**0**	**131**	**7**	**5**	**153**	**0**	**303**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	1	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	0	0	4	0	0	4	0	8
2020 Base Volumes	**0**	**0**	**0**	**2**	**0**	**5**	**0**	**132**	**7**	**5**	**154**	**0**	**305**
2025 Base Volumes	**0**	**0**	**0**	**2**	**0**	**5**	**0**	**135**	**7**	**5**	**157**	**0**	**311**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter									6.0%	10.0%			
Trip Assignment % - New Exit				6.0%		43.0%							
Trip Assignment % - Pass-by Enter								-6.0%	6.0%	22.0%	-7.0%		
Trip Assignment % - Pass-by Exit				7.0%		46.0%							
New Trips				3		18			3	4			**28**
Pass-by Trips				9		62		-8	8	30	-9		**92**
Base Re-Distribution				-2		-5		-2	-5	-7	-3		**-24**
2020 Projected Volumes	**0**	**0**	**0**	**12**	**0**	**80**	**0**	**122**	**13**	**32**	**142**	**0**	**401**
2025 Projected Volumes	**0**	**0**	**0**	**12**	**0**	**80**	**0**	**125**	**13**	**32**	**145**	**0**	**407**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**2**		**2**			**8**	**0**			**12**
Balancing								166			130		296
Existing Volumes (Balanced)	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**166**	**8**	**0**	**130**	**0**	**308**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	1	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	0	0	4	0	0	3	0	7
2020 Base Volumes	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**167**	**8**	**0**	**131**	**0**	**310**
2025 Base Volumes	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**170**	**8**	**0**	**133**	**0**	**315**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter									6.0%	10.0%			
Trip Assignment % - New Exit				6.0%		43.0%							
Trip Assignment % - Pass-by Enter								-8.0%	8.0%	21.0%	-6.0%		
Trip Assignment % - Pass-by Exit				6.0%		48.0%							
New Trips				3		24			3	6			**36**
Pass-by Trips				7		52		-9	9	23	-7		**75**
Base Re-Distribution				-2		-2		-1	-8		-5		**-18**
2020 Projected Volumes	**0**	**0**	**0**	**10**	**0**	**76**	**0**	**157**	**12**	**29**	**119**	**0**	**403**
2025 Projected Volumes	**0**	**0**	**0**	**10**	**0**	**76**	**0**	**160**	**12**	**29**	**121**	**0**	**408**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**4**		**5**			**5**	**2**			**16**
Balancing								93			84		177
Existing Volumes (Balanced)	**0**	**0**	**0**	**4**	**0**	**5**	**0**	**93**	**5**	**2**	**84**	**0**	**193**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	1	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	0	0	4	0	0	3	0	7
2020 Base Volumes	**0**	**0**	**0**	**4**	**0**	**5**	**0**	**94**	**5**	**2**	**85**	**0**	**195**
2025 Base Volumes	**0**	**0**	**0**	**4**	**0**	**5**	**0**	**97**	**5**	**2**	**87**	**0**	**200**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter									6.0%	10.0%			
Trip Assignment % - New Exit				6.0%		43.0%							
Trip Assignment % - Pass-by Enter								-7.0%	7.0%	20.0%	-5.0%		
Trip Assignment % - Pass-by Exit				5.0%		46.0%							
New Trips				3		24			3	6			**36**
Pass-by Trips				5		50		-8	8	22	-5		**72**
Base Re-Distribution				-4		-4			-5	-2	-1		**-16**
2020 Projected Volumes	**0**	**0**	**0**	**8**	**0**	**75**	**0**	**86**	**11**	**28**	**79**	**0**	**287**
2025 Projected Volumes	**0**	**0**	**0**	**8**	**0**	**75**	**0**	**89**	**11**	**28**	**81**	**0**	**292**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Lancaster Avenue (S.R. 0030) & Wayne Avenue (S.R. 1046)**									
Synchro Node:	**8**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts	**29**	**650**	**25**	**33**	**787**	**112**	**40**	**98**	**43**	**93**	**91**	**35**	**2036**
Balancing													0
Existing Volumes (Balanced)	**29**	**650**	**25**	**33**	**787**	**112**	**40**	**98**	**43**	**93**	**91**	**35**	**2036**
Base growth (0.38% compounded for 2 yrs)	0	5	0	0	6	1	0	1	0	1	1	0	15
Base growth (0.38% compounded for 7 yrs)	1	17	1	1	21	3	1	3	1	3	2	1	55
2020 Base Volumes	**29**	**655**	**25**	**33**	**793**	**113**	**40**	**99**	**43**	**94**	**92**	**35**	**2051**
2025 Base Volumes	**30**	**667**	**26**	**34**	**808**	**115**	**41**	**101**	**44**	**96**	**93**	**36**	**2091**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter		27.0%							6.0%	8.0%			
Trip Assignment % - New Exit				6.0%	27.0%	8.0%							
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips		14		3	14	4			3	4			**42**
Pass-by Trips													**0**
Base Re-Distribution		-7			-2	-1			-3	-4			**-17**
2020 Projected Volumes	**29**	**662**	**25**	**36**	**805**	**116**	**40**	**99**	**43**	**94**	**92**	**35**	**2076**
2025 Projected Volumes	**30**	**674**	**26**	**37**	**820**	**118**	**41**	**101**	**44**	**96**	**93**	**36**	**2116**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**40**	**739**	**53**	**32**	**670**	**91**	**22**	**88**	**39**	**106**	**144**	**46**	**2070**
Balancing													0
Existing Volumes (Balanced)	**40**	**739**	**53**	**32**	**670**	**91**	**22**	**88**	**39**	**106**	**144**	**46**	**2070**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	5	1	0	1	0	1	1	0	15
Base growth (0.38% compounded for 7 yrs)	1	20	1	1	18	2	1	2	1	3	4	1	55
2020 Base Volumes	**40**	**745**	**53**	**32**	**675**	**92**	**22**	**89**	**39**	**107**	**145**	**46**	**2085**
2025 Base Volumes	**41**	**759**	**54**	**33**	**688**	**93**	**23**	**90**	**40**	**109**	**148**	**47**	**2125**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter		27.0%							6.0%	8.0%			
Trip Assignment % - New Exit				6.0%	27.0%	8.0%							
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips		11		3	11	3			3	3			**34**
Pass-by Trips													**0**
Base Re-Distribution		-27		-1	-3	-1			-5	-7			**-44**
2020 Projected Volumes	**40**	**729**	**53**	**34**	**683**	**94**	**22**	**89**	**37**	**103**	**145**	**46**	**2075**
2025 Projected Volumes	**41**	**743**	**54**	**35**	**696**	**95**	**23**	**90**	**38**	**105**	**148**	**47**	**2115**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**38**	**689**	**38**	**44**	**769**	**86**	**60**	**80**	**70**	**67**	**79**	**60**	**2080**
Balancing													0
Existing Volumes (Balanced)	**38**	**689**	**38**	**44**	**769**	**86**	**60**	**80**	**70**	**67**	**79**	**60**	**2080**
Base growth (0.38% compounded for 2 yrs)	0	5	0	0	6	1	0	1	1	1	1	0	16
Base growth (0.38% compounded for 7 yrs)	1	19	1	1	21	2	2	2	2	2	2	2	57
2020 Base Volumes	**38**	**694**	**38**	**44**	**775**	**87**	**60**	**81**	**71**	**68**	**80**	**60**	**2096**
2025 Base Volumes	**39**	**708**	**39**	**45**	**790**	**88**	**62**	**82**	**72**	**69**	**81**	**62**	**2137**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		27.0%							6.0%	8.0%			
Trip Assignment % - New Exit				6.0%	27.0%	8.0%							
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips		16		3	15	5			3	5			**47**
Pass-by Trips													**0**
Base Re-Distribution		-20			-1				-4	-6			**-31**
2020 Projected Volumes	**38**	**690**	**38**	**47**	**789**	**92**	**60**	**81**	**70**	**67**	**80**	**60**	**2112**
2025 Projected Volumes	**39**	**704**	**39**	**48**	**804**	**93**	**62**	**82**	**71**	**68**	**81**	**62**	**2153**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**57**	**486**	**27**	**40**	**482**	**95**	**29**	**52**	**58**	**71**	**66**	**53**	**1516**
Balancing													0
Existing Volumes (Balanced)	**57**	**486**	**27**	**40**	**482**	**95**	**29**	**52**	**58**	**71**	**66**	**53**	**1516**
Base growth (0.38% compounded for 2 yrs)	0	5	0	0	6	1	0	1	1	1	1	0	16
Base growth (0.38% compounded for 7 yrs)	1	19	1	1	21	2	2	2	2	2	2	2	57
2020 Base Volumes	**57**	**491**	**27**	**40**	**488**	**96**	**29**	**53**	**59**	**72**	**67**	**53**	**1532**
2025 Base Volumes	**58**	**505**	**28**	**41**	**503**	**97**	**31**	**54**	**60**	**73**	**68**	**55**	**1573**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		27.0%							6.0%	8.0%			
Trip Assignment % - New Exit				6.0%	27.0%	8.0%							
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips		16		3	15	5			3	5			**47**
Pass-by Trips													**0**
Base Re-Distribution		-13		-1	-7	-2			-2	-3			**-28**
2020 Projected Volumes	**57**	**494**	**27**	**42**	**496**	**99**	**29**	**53**	**60**	**74**	**67**	**53**	**1551**
2025 Projected Volumes	**58**	**508**	**28**	**43**	**511**	**100**	**31**	**54**	**61**	**75**	**68**	**55**	**1592**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Lancaster Avenue (S.R. 0030) & Louella Avenue**									
Synchro Node:	**9**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts		**773**	**50**	**94**	**945**		**31**		**44**				**1937**
Balancing													0
Existing Volumes (Balanced)	**0**	**773**	**50**	**94**	**945**	**0**	**31**	**0**	**44**	**0**	**0**	**0**	**1937**
Base growth (0.38% compounded for 2 yrs)	0	6	0	1	7	0	0	0	0	0	0	0	14
Base growth (0.38% compounded for 7 yrs)	0	21	1	3	25	0	1	0	1	0	0	0	52
2020 Base Volumes	**0**	**779**	**50**	**95**	**952**	**0**	**31**	**0**	**44**	**0**	**0**	**0**	**1951**
2025 Base Volumes	**0**	**794**	**51**	**97**	**970**	**0**	**32**	**0**	**45**	**0**	**0**	**0**	**1989**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter		41.0%							2.0%				
Trip Assignment % - New Exit				2.0%	41.0%								
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips		21		1	21				1				**44**
Pass-by Trips													**0**
Base Re-Distribution		-13			-3				-1				**-17**
2020 Projected Volumes	**0**	**787**	**50**	**96**	**970**	**0**	**31**	**0**	**44**	**0**	**0**	**0**	**1978**
2025 Projected Volumes	**0**	**802**	**51**	**98**	**988**	**0**	**32**	**0**	**45**	**0**	**0**	**0**	**2016**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts		**890**	**32**	**53**	**840**		**15**		**30**				**1860**
Balancing													0
Existing Volumes (Balanced)	**0**	**890**	**32**	**53**	**840**	**0**	**15**	**0**	**30**	**0**	**0**	**0**	**1860**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	6	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	24	1	1	23	0	0	0	1	0	0	0	50
2020 Base Volumes	**0**	**897**	**32**	**53**	**846**	**0**	**15**	**0**	**30**	**0**	**0**	**0**	**1873**
2025 Base Volumes	**0**	**914**	**33**	**54**	**863**	**0**	**15**	**0**	**31**	**0**	**0**	**0**	**1910**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter		41.0%							2.0%				
Trip Assignment % - New Exit				2.0%	41.0%								
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips		17		1	17				1				**36**
Pass-by Trips													**0**
Base Re-Distribution		-36		-1	-5				-2				**-44**
2020 Projected Volumes	**0**	**878**	**32**	**53**	**858**	**0**	**15**	**0**	**29**	**0**	**0**	**0**	**1865**
2025 Projected Volumes	**0**	**895**	**33**	**54**	**875**	**0**	**15**	**0**	**30**	**0**	**0**	**0**	**1902**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts		**782**	**57**	**48**	**910**		**41**		**65**				**1903**
Balancing													0
Existing Volumes (Balanced)	**0**	**782**	**57**	**48**	**910**	**0**	**41**	**0**	**65**	**0**	**0**	**0**	**1903**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	21	2	1	24	0	1	0	2	0	0	0	51
2020 Base Volumes	**0**	**788**	**57**	**48**	**917**	**0**	**41**	**0**	**65**	**0**	**0**	**0**	**1916**
2025 Base Volumes	**0**	**803**	**59**	**49**	**934**	**0**	**42**	**0**	**67**	**0**	**0**	**0**	**1954**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		41.0%							2.0%				
Trip Assignment % - New Exit				2.0%	41.0%								
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips		24		1	23				1				**49**
Pass-by Trips													**0**
Base Re-Distribution		-30			-1				-2				**-33**
2020 Projected Volumes	**0**	**782**	**57**	**49**	**939**	**0**	**41**	**0**	**64**	**0**	**0**	**0**	**1932**
2025 Projected Volumes	**0**	**797**	**59**	**50**	**956**	**0**	**42**	**0**	**66**	**0**	**0**	**0**	**1970**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts		**574**	**63**	**22**	**606**		**26**		**16**				**1307**
Balancing													0
Existing Volumes (Balanced)	**0**	**574**	**63**	**22**	**606**	**0**	**26**	**0**	**16**	**0**	**0**	**0**	**1307**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	7	0	0	0	0	0	0	0	13
Base growth (0.38% compounded for 7 yrs)	0	21	2	1	24	0	1	0	2	0	0	0	51
2020 Base Volumes	**0**	**580**	**63**	**22**	**613**	**0**	**26**	**0**	**16**	**0**	**0**	**0**	**1320**
2025 Base Volumes	**0**	**595**	**65**	**23**	**630**	**0**	**27**	**0**	**18**	**0**	**0**	**0**	**1358**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter		41.0%							2.0%				
Trip Assignment % - New Exit				2.0%	41.0%								
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips		24		1	23				1				**49**
Pass-by Trips													**0**
Base Re-Distribution		-18		-1	-10				-1				**-30**
2020 Projected Volumes	**0**	**586**	**63**	**22**	**626**	**0**	**26**	**0**	**16**	**0**	**0**	**0**	**1339**
2025 Projected Volumes	**0**	**601**	**65**	**23**	**643**	**0**	**27**	**0**	**18**	**0**	**0**	**0**	**1377**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Lancaster Avenue (S.R. 0030) & St. Davids Road/Chamounix Road**									
Synchro Node:	**10**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts	**14**	**855**	**9**	**13**	**1113**	**285**	**19**	**67**	**70**	**92**	**38**	**38**	**2613**
Balancing													0
Existing Volumes (Balanced)	**14**	**855**	**9**	**13**	**1113**	**285**	**19**	**67**	**70**	**92**	**38**	**38**	**2613**
Base growth (0.38% compounded for 2 yrs)	0	6	0	0	8	2	0	1	1	1	0	0	19
Base growth (0.38% compounded for 7 yrs)	0	23	0	0	30	8	1	2	2	2	1	1	70
2020 Base Volumes	**14**	**861**	**9**	**13**	**1121**	**287**	**19**	**68**	**71**	**93**	**38**	**38**	**2632**
2025 Base Volumes	**14**	**878**	**9**	**13**	**1143**	**293**	**20**	**69**	**72**	**94**	**39**	**39**	**2683**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter					36.0%		3.0%					5.0%	
Trip Assignment % - New Exit	5.0%	36.0%	3.0%										
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips	3	19	2		19		2					3	**48**
Pass-by Trips													**0**
Base Re-Distribution	-2	-12	-1		-2								**-17**
2020 Projected Volumes	**15**	**868**	**10**	**13**	**1138**	**287**	**21**	**68**	**71**	**93**	**38**	**41**	**2663**
2025 Projected Volumes	**15**	**885**	**10**	**13**	**1160**	**293**	**22**	**69**	**72**	**94**	**39**	**42**	**2714**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**35**	**954**	**17**	**39**	**1005**	**141**	**4**	**25**	**32**	**74**	**22**	**42**	**2390**
Balancing													0
Existing Volumes (Balanced)	**35**	**954**	**17**	**39**	**1005**	**141**	**4**	**25**	**32**	**74**	**22**	**42**	**2390**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	8	1	0	0	0	1	0	0	17
Base growth (0.38% compounded for 7 yrs)	1	26	0	1	27	4	0	1	1	2	1	1	65
2020 Base Volumes	**35**	**961**	**17**	**39**	**1013**	**142**	**4**	**25**	**32**	**75**	**22**	**42**	**2407**
2025 Base Volumes	**36**	**980**	**17**	**40**	**1032**	**145**	**4**	**26**	**33**	**76**	**23**	**43**	**2455**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter					36.0%		3.0%					5.0%	
Trip Assignment % - New Exit	5.0%	36.0%	3.0%										
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips	2	15	1		15		1					2	**36**
Pass-by Trips													**0**
Base Re-Distribution	-3	-7	-2		-4		-1					-1	**-18**
2020 Projected Volumes	**34**	**969**	**16**	**39**	**1024**	**142**	**4**	**25**	**32**	**75**	**22**	**43**	**2425**
2025 Projected Volumes	**35**	**988**	**16**	**40**	**1043**	**145**	**4**	**26**	**33**	**76**	**23**	**44**	**2473**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**30**	**880**	**18**	**36**	**984**	**63**	**13**	**17**	**41**	**55**	**17**	**38**	**2192**
Balancing													0
Existing Volumes (Balanced)	**30**	**880**	**18**	**36**	**984**	**63**	**13**	**17**	**41**	**55**	**17**	**38**	**2192**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	7	0	0	0	0	0	0	0	14
Base growth (0.38% compounded for 7 yrs)	1	24	0	1	26	2	0	0	1	1	0	1	57
2020 Base Volumes	**30**	**887**	**18**	**36**	**991**	**63**	**13**	**17**	**41**	**55**	**17**	**38**	**2206**
2025 Base Volumes	**31**	**904**	**18**	**37**	**1010**	**65**	**13**	**17**	**42**	**56**	**17**	**39**	**2249**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter					36.0%		3.0%					5.0%	
Trip Assignment % - New Exit	5.0%	36.0%	3.0%										
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips	3	20	2		21		1					3	**50**
Pass-by Trips													**0**
Base Re-Distribution	-6	-42	-3		-4		-1					-1	**-57**
2020 Projected Volumes	**27**	**865**	**17**	**36**	**1008**	**63**	**13**	**17**	**41**	**55**	**17**	**40**	**2199**
2025 Projected Volumes	**28**	**882**	**17**	**37**	**1027**	**65**	**13**	**17**	**42**	**56**	**17**	**41**	**2242**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**22**	**604**	**7**	**30**	**634**	**33**	**11**	**6**	**42**	**37**	**13**	**23**	**1462**
Balancing													0
Existing Volumes (Balanced)	**22**	**604**	**7**	**30**	**634**	**33**	**11**	**6**	**42**	**37**	**13**	**23**	**1462**
Base growth (0.38% compounded for 2 yrs)	0	7	0	0	7	0	0	0	0	0	0	0	14
Base growth (0.38% compounded for 7 yrs)	1	24	0	1	26	2	0	0	1	1	0	1	57
2020 Base Volumes	**22**	**611**	**7**	**30**	**641**	**33**	**11**	**6**	**42**	**37**	**13**	**23**	**1476**
2025 Base Volumes	**23**	**628**	**7**	**31**	**660**	**35**	**11**	**6**	**43**	**38**	**13**	**24**	**1519**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter					36.0%		3.0%					5.0%	
Trip Assignment % - New Exit	5.0%	36.0%	3.0%										
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips	3	20	2		21		1					3	**50**
Pass-by Trips													**0**
Base Re-Distribution	-4	-10	-3		-4		-1					-2	**-24**
2020 Projected Volumes	**21**	**621**	**6**	**30**	**658**	**33**	**11**	**6**	**42**	**37**	**13**	**24**	**1502**
2025 Projected Volumes	**22**	**638**	**6**	**31**	**677**	**35**	**11**	**6**	**43**	**38**	**13**	**25**	**1545**

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Traffic Volumes Worksheet

Intersection:	**Aberdeen Avenue & Midland Avenue**									
Synchro Node:	**11**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts	**5**	**17**	**6**	**5**	**92**	**12**	**28**	**172**	**11**	**3**	**61**	**19**	**431**
Balancing													0
Existing Volumes (Balanced)	**5**	**17**	**6**	**5**	**92**	**12**	**28**	**172**	**11**	**3**	**61**	**19**	**431**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	1	0	0	1	0	0	0	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	2	0	1	5	0	0	2	1	11
2020 Base Volumes	**5**	**17**	**6**	**5**	**93**	**12**	**28**	**173**	**11**	**3**	**61**	**19**	**433**
2025 Base Volumes	**5**	**17**	**6**	**5**	**94**	**12**	**29**	**177**	**11**	**3**	**63**	**20**	**442**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter						2.0%		4.0%					
Trip Assignment % - New Exit										2.0%	4.0%		
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips						1		2		1	2		**6**
Pass-by Trips													**0**
Base Re-Distribution						-3		-6		1	2		**-6**
2020 Projected Volumes	**5**	**17**	**6**	**5**	**93**	**10**	**28**	**169**	**11**	**5**	**65**	**19**	**433**
2025 Projected Volumes	**5**	**17**	**6**	**5**	**94**	**10**	**29**	**173**	**11**	**5**	**67**	**20**	**442**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**15**	**9**	**5**	**7**	**70**	**11**	**9**	**119**	**6**	**6**	**99**	**14**	**370**
Balancing													0
Existing Volumes (Balanced)	**15**	**9**	**5**	**7**	**70**	**11**	**9**	**119**	**6**	**6**	**99**	**14**	**370**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	1	0	0	1	0	0	1	0	3
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	2	0	0	3	0	0	3	0	8
2020 Base Volumes	**15**	**9**	**5**	**7**	**71**	**11**	**9**	**120**	**6**	**6**	**100**	**14**	**373**
2025 Base Volumes	**15**	**9**	**5**	**7**	**72**	**11**	**9**	**122**	**6**	**6**	**102**	**14**	**378**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter						2.0%		4.0%					
Trip Assignment % - New Exit										2.0%	4.0%		
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips						1		2		1	2		**6**
Pass-by Trips													**0**
Base Re-Distribution						-2		-5		-2	-3		**-12**
2020 Projected Volumes	**15**	**9**	**5**	**7**	**71**	**10**	**9**	**117**	**6**	**5**	**99**	**14**	**367**
2025 Projected Volumes	**15**	**9**	**5**	**7**	**72**	**10**	**9**	**119**	**6**	**5**	**101**	**14**	**372**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**7**	**14**	**3**	**4**	**27**	**18**	**3**	**110**	**11**	**6**	**101**	**18**	**322**
Balancing													0
Existing Volumes (Balanced)	**7**	**14**	**3**	**4**	**27**	**18**	**3**	**110**	**11**	**6**	**101**	**18**	**322**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	1	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	1	0	0	3	0	0	3	0	7
2020 Base Volumes	**7**	**14**	**3**	**4**	**27**	**18**	**3**	**111**	**11**	**6**	**102**	**18**	**324**
2025 Base Volumes	**7**	**14**	**3**	**4**	**28**	**18**	**3**	**113**	**11**	**6**	**104**	**18**	**329**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter						2.0%		4.0%					
Trip Assignment % - New Exit										2.0%	4.0%		
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips						1		2		1	2		**6**
Pass-by Trips													**0**
Base Re-Distribution						-3		-6		-2	-5		**-16**
2020 Projected Volumes	**7**	**14**	**3**	**4**	**27**	**16**	**3**	**107**	**11**	**5**	**99**	**18**	**314**
2025 Projected Volumes	**7**	**14**	**3**	**4**	**28**	**16**	**3**	**109**	**11**	**5**	**101**	**18**	**319**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts	**24**	**2**	**2**	**3**	**10**	**9**	**5**	**72**	**2**	**6**	**43**	**12**	**190**
Balancing													0
Existing Volumes (Balanced)	**24**	**2**	**2**	**3**	**10**	**9**	**5**	**72**	**2**	**6**	**43**	**12**	**190**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	1	0	2
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	1	0	0	3	0	0	3	0	7
2020 Base Volumes	**24**	**2**	**2**	**3**	**10**	**9**	**5**	**73**	**2**	**6**	**44**	**12**	**192**
2025 Base Volumes	**24**	**2**	**2**	**3**	**11**	**9**	**5**	**75**	**2**	**6**	**46**	**12**	**197**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter						2.0%		4.0%					
Trip Assignment % - New Exit										2.0%	4.0%		
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips						1		2		1	2		**6**
Pass-by Trips													**0**
Base Re-Distribution						-2		-3		-2	-3		**-10**
2020 Projected Volumes	**24**	**2**	**2**	**3**	**10**	**8**	**5**	**72**	**2**	**5**	**43**	**12**	**188**
2025 Projected Volumes	**24**	**2**	**2**	**3**	**11**	**8**	**5**	**74**	**2**	**5**	**45**	**12**	**193**

TPD# KARA.00010
9/26/2018
Traffic Volumes Worksheet

Intersection:	**Louella Avenue & Midland Avenue**									
Synchro Node:	**12**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**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
2018 Existing Counts				**5**		**29**		**88**	**31**	**17**	**42**		**212**
Balancing													0
Existing Volumes (Balanced)	**0**	**0**	**0**	**5**	**0**	**29**	**0**	**88**	**31**	**17**	**42**	**0**	**212**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	0	0	1
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	1	0	2	1	0	1	0	5
2020 Base Volumes	**0**	**0**	**0**	**5**	**0**	**29**	**0**	**89**	**31**	**17**	**42**	**0**	**213**
2025 Base Volumes	**0**	**0**	**0**	**5**	**0**	**30**	**0**	**90**	**32**	**17**	**43**	**0**	**217**

ENTER =	**52**	**(167)**
EXIT =	**52**	**(167)**

Trip Assignment % - New Enter								2.0%					
Trip Assignment % - New Exit											2.0%		
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips								1			1		**2**
Pass-by Trips													**0**
Base Re-Distribution								-1					**-1**
2020 Projected Volumes	**0**	**0**	**0**	**5**	**0**	**29**	**0**	**89**	**31**	**17**	**43**	**0**	**214**
2025 Projected Volumes	**0**	**0**	**0**	**5**	**0**	**30**	**0**	**90**	**32**	**17**	**44**	**0**	**218**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**9**		**44**		**85**	**11**	**16**	**60**		**225**
Balancing													0
Existing Volumes (Balanced)	**0**	**0**	**0**	**9**	**0**	**44**	**0**	**85**	**11**	**16**	**60**	**0**	**225**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	0	0	1
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	1	0	2	0	0	2	0	5
2020 Base Volumes	**0**	**0**	**0**	**9**	**0**	**44**	**0**	**86**	**11**	**16**	**60**	**0**	**226**
2025 Base Volumes	**0**	**0**	**0**	**9**	**0**	**45**	**0**	**87**	**11**	**16**	**62**	**0**	**230**

ENTER =	**42**	**(135)**
EXIT =	**42**	**(135)**

Trip Assignment % - New Enter								2.0%					
Trip Assignment % - New Exit											2.0%		
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips								1			1		**2**
Pass-by Trips													**0**
Base Re-Distribution								-2			-1		**-3**
2020 Projected Volumes	**0**	**0**	**0**	**9**	**0**	**44**	**0**	**85**	**11**	**16**	**60**	**0**	**225**
2025 Projected Volumes	**0**	**0**	**0**	**9**	**0**	**45**	**0**	**86**	**11**	**16**	**62**	**0**	**229**

Time Period: SAT Midday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**9**		**50**		**74**	**8**	**18**	**36**		**195**
Balancing													0
Existing Volumes (Balanced)	**0**	**0**	**0**	**9**	**0**	**50**	**0**	**74**	**8**	**18**	**36**	**0**	**195**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	0	0	1
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	1	0	2	0	0	1	0	4
2020 Base Volumes	**0**	**0**	**0**	**9**	**0**	**50**	**0**	**75**	**8**	**18**	**36**	**0**	**196**
2025 Base Volumes	**0**	**0**	**0**	**9**	**0**	**51**	**0**	**76**	**8**	**18**	**37**	**0**	**199**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter								2.0%					
Trip Assignment % - New Exit											2.0%		
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips								1			1		**2**
Pass-by Trips													**0**
Base Re-Distribution								-2					**-2**
2020 Projected Volumes	**0**	**0**	**0**	**9**	**0**	**50**	**0**	**74**	**8**	**18**	**37**	**0**	**196**
2025 Projected Volumes	**0**	**0**	**0**	**9**	**0**	**51**	**0**	**75**	**8**	**18**	**38**	**0**	**199**

Time Period: SUN Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2018 Existing Counts				**4**		**36**		**20**	**3**	**10**	**29**		**102**
Balancing													0
Existing Volumes (Balanced)	**0**	**0**	**0**	**4**	**0**	**36**	**0**	**20**	**3**	**10**	**29**	**0**	**102**
Base growth (0.38% compounded for 2 yrs)	0	0	0	0	0	0	0	1	0	0	0	0	1
Base growth (0.38% compounded for 7 yrs)	0	0	0	0	0	1	0	2	0	0	1	0	4
2020 Base Volumes	**0**	**0**	**0**	**4**	**0**	**36**	**0**	**21**	**3**	**10**	**29**	**0**	**103**
2025 Base Volumes	**0**	**0**	**0**	**4**	**0**	**37**	**0**	**22**	**3**	**10**	**30**	**0**	**106**

ENTER =	**57**	**(109)**
EXIT =	**56**	**(109)**

Trip Assignment % - New Enter								2.0%					
Trip Assignment % - New Exit											2.0%		
Trip Assignment % - Pass-by Enter													
Trip Assignment % - Pass-by Exit													
New Trips								1			1		**2**
Pass-by Trips													**0**
Base Re-Distribution								-1			-1		**-2**
2020 Projected Volumes	**0**	**0**	**0**	**4**	**0**	**36**	**0**	**21**	**3**	**10**	**29**	**0**	**103**
2025 Projected Volumes	**0**	**0**	**0**	**4**	**0**	**37**	**0**	**22**	**3**	**10**	**30**	**0**	**106**

APPENDIX F

CRITICAL/FOLLOW-UP GAP DATA

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{c,x} = t_{c,\,base} + t_{c,HV}{*}P_{HV} + t_{c,G}{*}G - t_{3,LT}$

where:

$t_{c,x}$ = critical headway for movement x (s)
$t_{c,base}$ = base crtitcal headway from Chapter 10 of PennDOT Publication 46
$t_{c,HV}$ = adjustment factor for heavy vehciles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)
$t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
G = percent grade (expressed as an integer; e.g., G= -2 for a 2% downhill grade)
$t_{c,base}$ = adjustment factor for intersction geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

LEFT TURN FROM MAJOR ROADWAY - FOUR LANES ($t_{c,\,base}$ = 3.9)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
1	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
2	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
7	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
8	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
10	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

LEFT TURN FROM MINOR ROADWAY - FOUR LANES - 4-LEG INTERSECTION ($t_{c,\,base}$ = 8.4)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	8.4	8.2	8.6	8.0	8.8	7.8	9.0	7.6	9.2	7.4	9.4	7.2	9.6	7.0	9.8	6.8	10.0	6.6	10.2	6.4	10.4
1	8.4	8.2	8.6	8.0	8.8	7.8	9.0	7.6	9.2	7.4	9.4	7.2	9.6	7.0	9.8	6.8	10.0	6.6	10.2	6.4	10.4
2	8.4	8.2	8.6	8.0	8.8	7.8	9.0	7.6	9.2	7.4	9.4	7.2	9.6	7.0	9.8	6.8	10.0	6.6	10.2	6.4	10.4
3	8.5	8.3	8.7	8.1	8.9	7.9	9.1	7.7	9.3	7.5	9.5	7.3	9.7	7.1	9.9	6.9	10.1	6.7	10.3	6.5	10.5
4	8.5	8.3	8.7	8.1	8.9	7.9	9.1	7.7	9.3	7.5	9.5	7.3	9.7	7.1	9.9	6.9	10.1	6.7	10.3	6.5	10.5
5	8.5	8.3	8.7	8.1	8.9	7.9	9.1	7.7	9.3	7.5	9.5	7.3	9.7	7.1	9.9	6.9	10.1	6.7	10.3	6.5	10.5
6	8.5	8.3	8.7	8.1	8.9	7.9	9.1	7.7	9.3	7.5	9.5	7.3	9.7	7.1	9.9	6.9	10.1	6.7	10.3	6.5	10.5
7	8.5	8.3	8.7	8.1	8.9	7.9	9.1	7.7	9.3	7.5	9.5	7.3	9.7	7.1	9.9	6.9	10.1	6.7	10.3	6.5	10.5
8	8.6	8.4	8.8	8.2	9.0	8.0	9.2	7.8	9.4	7.6	9.6	7.4	9.8	7.2	10.0	7.0	10.2	6.8	10.4	6.6	10.6
9	8.6	8.4	8.8	8.2	9.0	8.0	9.2	7.8	9.4	7.6	9.6	7.4	9.8	7.2	10.0	7.0	10.2	6.8	10.4	6.6	10.6
10	8.6	8.4	8.8	8.2	9.0	8.0	9.2	7.8	9.4	7.6	9.6	7.4	9.8	7.2	10.0	7.0	10.2	6.8	10.4	6.6	10.6

THROUGH TRAFFIC ON MINOR ROADWAY - FOUR LANES ($t_{c,\,base}$ = 6.5)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
1	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
2	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
3	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
4	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
5	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
6	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
7	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
8	6.7	6.5	6.9	6.3	7.1	6.1	7.3	5.9	7.5	5.7	7.7	5.5	7.9	5.3	8.1	5.1	8.3	4.9	8.5	4.7	8.7
9	6.7	6.5	6.9	6.3	7.1	6.1	7.3	5.9	7.5	5.7	7.7	5.5	7.9	5.3	8.1	5.1	8.3	4.9	8.5	4.7	8.7
10	6.7	6.5	6.9	6.3	7.1	6.1	7.3	5.9	7.5	5.7	7.7	5.5	7.9	5.3	8.1	5.1	8.3	4.9	8.5	4.7	8.7

RIGHT TURN FROM MINOR ROADWAY - FOUR LANES ($t_{c,\,base}$ = 7.2)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	7.2	7.1	7.3	7.0	7.4	6.9	7.5	6.8	7.6	6.7	7.7	6.6	7.8	6.5	7.9	6.4	8.0	6.3	8.1	6.2	8.2
1	7.2	7.1	7.3	7.0	7.4	6.9	7.5	6.8	7.6	6.7	7.7	6.6	7.8	6.5	7.9	6.4	8.0	6.3	8.1	6.2	8.2
2	7.2	7.1	7.3	7.0	7.4	6.9	7.5	6.8	7.6	6.7	7.7	6.6	7.8	6.5	7.9	6.4	8.0	6.3	8.1	6.2	8.2
3	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
4	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
5	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
6	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
7	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
8	7.4	7.3	7.5	7.2	7.6	7.1	7.7	7.0	7.8	6.9	7.9	6.8	8.0	6.7	8.1	6.6	8.2	6.5	8.3	6.4	8.4
9	7.4	7.3	7.5	7.2	7.6	7.1	7.7	7.0	7.8	6.9	7.9	6.8	8.0	6.7	8.1	6.6	8.2	6.5	8.3	6.4	8.4
10	7.4	7.3	7.5	7.2	7.6	7.1	7.7	7.0	7.8	6.9	7.9	6.8	8.0	6.7	8.1	6.6	8.2	6.5	8.3	6.4	8.4

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{c,x} = t_{c,\,base} + t_{c,HV}*P_{HV} + t_{c,G}*G - t_{3,LT}$

where:

$t_{c,x}$ = critical headway for movement x (s)
$t_{c,base}$ = base crtitcal headway from Chapter 10 of PennDOT Publication 46
$t_{c,HV}$ = adjustment factor for heavy vehciles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)
$t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
G = percent grade (expressed as an integer; e.g., G= -2 for a 2% downhill grade)
$t_{c,base}$ = adjustment factor for intersction geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

LEFT TURN FROM MAJOR ROADWAY - FOUR LANES ($t_{c,\,base}$ = 3.9)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
1	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
2	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
7	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
8	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
10	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

LEFT TURN FROM MINOR ROADWAY - FOUR LANES - 3-LEG INTERSECTION ($t_{c,\,base}$ = 8.4)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	7.7	7.5	7.9	7.3	8.1	7.1	8.3	6.9	8.5	6.7	8.7	6.5	8.9	6.3	9.1	6.1	9.3	5.9	9.5	5.7	9.7
1	7.7	7.5	7.9	7.3	8.1	7.1	8.3	6.9	8.5	6.7	8.7	6.5	8.9	6.3	9.1	6.1	9.3	5.9	9.5	5.7	9.7
2	7.7	7.5	7.9	7.3	8.1	7.1	8.3	6.9	8.5	6.7	8.7	6.5	8.9	6.3	9.1	6.1	9.3	5.9	9.5	5.7	9.7
3	7.8	7.6	8.0	7.4	8.2	7.2	8.4	7.0	8.6	6.8	8.8	6.6	9.0	6.4	9.2	6.2	9.4	6.0	9.6	5.8	9.8
4	7.8	7.6	8.0	7.4	8.2	7.2	8.4	7.0	8.6	6.8	8.8	6.6	9.0	6.4	9.2	6.2	9.4	6.0	9.6	5.8	9.8
5	7.8	7.6	8.0	7.4	8.2	7.2	8.4	7.0	8.6	6.8	8.8	6.6	9.0	6.4	9.2	6.2	9.4	6.0	9.6	5.8	9.8
6	7.8	7.6	8.0	7.4	8.2	7.2	8.4	7.0	8.6	6.8	8.8	6.6	9.0	6.4	9.2	6.2	9.4	6.0	9.6	5.8	9.8
7	7.8	7.6	8.0	7.4	8.2	7.2	8.4	7.0	8.6	6.8	8.8	6.6	9.0	6.4	9.2	6.2	9.4	6.0	9.6	5.8	9.8
8	7.9	7.7	8.1	7.5	8.3	7.3	8.5	7.1	8.7	6.9	8.9	6.7	9.1	6.5	9.3	6.3	9.5	6.1	9.7	5.9	9.9
9	7.9	7.7	8.1	7.5	8.3	7.3	8.5	7.1	8.7	6.9	8.9	6.7	9.1	6.5	9.3	6.3	9.5	6.1	9.7	5.9	9.9
10	7.9	7.7	8.1	7.5	8.3	7.3	8.5	7.1	8.7	6.9	8.9	6.7	9.1	6.5	9.3	6.3	9.5	6.1	9.7	5.9	9.9

RIGHT TURN FROM MINOR ROADWAY - FOUR LANES ($t_{c,\,base}$ = 7.2)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	7.2	7.1	7.3	7.0	7.4	6.9	7.5	6.8	7.6	6.7	7.7	6.6	7.8	6.5	7.9	6.4	8.0	6.3	8.1	6.2	8.2
1	7.2	7.1	7.3	7.0	7.4	6.9	7.5	6.8	7.6	6.7	7.7	6.6	7.8	6.5	7.9	6.4	8.0	6.3	8.1	6.2	8.2
2	7.2	7.1	7.3	7.0	7.4	6.9	7.5	6.8	7.6	6.7	7.7	6.6	7.8	6.5	7.9	6.4	8.0	6.3	8.1	6.2	8.2
3	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
4	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
5	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
6	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
7	7.3	7.2	7.4	7.1	7.5	7.0	7.6	6.9	7.7	6.8	7.8	6.7	7.9	6.6	8.0	6.5	8.1	6.4	8.2	6.3	8.3
8	7.4	7.3	7.5	7.2	7.6	7.1	7.7	7.0	7.8	6.9	7.9	6.8	8.0	6.7	8.1	6.6	8.2	6.5	8.3	6.4	8.4
9	7.4	7.3	7.5	7.2	7.6	7.1	7.7	7.0	7.8	6.9	7.9	6.8	8.0	6.7	8.1	6.6	8.2	6.5	8.3	6.4	8.4
10	7.4	7.3	7.5	7.2	7.6	7.1	7.7	7.0	7.8	6.9	7.9	6.8	8.0	6.7	8.1	6.6	8.2	6.5	8.3	6.4	8.4

FOLLOW-UP HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{f,x} = t_{f,\,base} + t_{f,HV} * P_{HV}$

where:

$t_{f,x}$ = follow-up headway for movement x (s)
$t_{f,base}$ = base follow-up headway from Chapter 10 of PennDOT Publication 46
$t_{f,HV}$ = adjustment factor for heavy vehciles (0.9 for major streets with one lane in each direction; 1.0 for major streets with two or three lanes in each direction) (s)
P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)

LEFT TURN FROM MAJOR ROADWAY - FOUR LANES ($t_{f,\,base}$ = 2.4)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
1	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
7	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
8	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
9	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
10	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

LEFT TURN FROM MINOR ROADWAY - FOUR LANES ($t_{f,\,base}$ = 2.8)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
1	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
2	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
3	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
10	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9

THROUGH TRAFFIC ON MINOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 4.0)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
6	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
7	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
8	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
10	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

RIGHT TURN FROM MINOR ROADWAY - FOUR LANES ($t_{f,\,base}$ = 2.9)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
2	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
4	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
6	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
8	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
10	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{c,x} = t_{c,\,base} + t_{c,HV}{*}P_{HV} + t_{c,G}{*}G - t_{3,LT}$

where:

$t_{c,x}$ = critical headway for movement x (s)
$t_{c,base}$ = base crtitcal headway from Chapter 10 of PennDOT Publication 46
$t_{c,HV}$ = adjustment factor for heavy vehciles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)
$t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
G = percent grade (expressed as an integer; e.g., G= -2 for a 2% downhill grade)
$t_{c,base}$ = adjustment factor for intersction geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 4.3)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4

LEFT TURN FROM MINOR ROADWAY - TWO LANES - 4-LEG INTERSECTION ($t_{c,\,base}$ = 7.1)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
1	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
2	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
3	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
4	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
5	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
6	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
7	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
8	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
9	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
10	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2

THROUGH TRAFFIC ON MINOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 6.5)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
1	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
2	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
3	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
4	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
5	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
6	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
7	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
8	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
9	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
10	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 6.2)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{c,x} = t_{c,\,base} + t_{c,HV}{*}P_{HV} + t_{c,G}{*}G - t_{3,LT}$

where:

$t_{c,x}$ = critical headway for movement x (s)

$t_{c,base}$ = base crtitcal headway from Chapter 10 of PennDOT Publication 46

$t_{c,HV}$ = adjustment factor for heavy vehciles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)

P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)

$t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)

G = percent grade (expressed as an integer; e.g., G= -2 for a 2% downhill grade)

$t_{c,base}$ = adjustment factor for intersction geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 4.3)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4

LEFT TURN FROM MINOR ROADWAY - TWO LANES - 3-LEG INTERSECTION ($t_{c,\,base}$ = 7.1)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
1	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
2	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
3	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
4	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
5	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
6	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
7	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
8	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
9	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
10	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 6.2)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

FOLLOW-UP HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{f,x} = t_{f,\,base} + t_{f,HV} * P_{HV}$

where:

$t_{f,x}$ = follow-up headway for movement x (s)
$t_{f,base}$ = base follow-up headway from Chapter 10 of PennDOT Publication 46
$t_{f,HV}$ = adjustment factor for heavy vehciles (0.9 for major streets with one lane in each direction; 1.0 for major streets with two or three lanes in each direction) (s)
P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)

LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 3.0)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
7	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
8	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
10	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1

LEFT TURN FROM MINOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 3.0)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
7	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
8	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
10	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1

THROUGH TRAFFIC ON MINOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 4.0)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
6	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
7	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
8	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
10	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 3.1)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
3	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
4	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
5	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
6	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
7	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
8	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
9	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
10	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

APPENDIX G

LANE UTILIZATION

TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com

JOB KARA.00010
SHEET NO. ____ OF ____
CALCULATED BY ____ DATE ____
CHECKED BY ____ DATE ____
SCALE Lane Utilization Lancaster / Aberdeen

Video Observations: 2018 Existing (3 cycles)

AM (Thrus):

EB1* - 28

EB2 - 51

PM:

WB1* - 38

WB2 - 47

* Includes left-turns

$$L_u = \frac{TOTAL}{2 \cdot Max}$$

$$EB = \frac{28+51}{2 \times 51} = \boxed{0.77}$$

$$WB = \frac{38+47}{2 \times 47} = \boxed{0.90}$$

TRAFFIC PLANNING AND DESIGN, INC.
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JOB KARA.00010
SHEET NO. ____ OF ____
CALCULATED BY ____ DATE ____
CHECKED BY ____ DATE ____
SCALE Lane Utilization Lancaster / Aberdeen

Video Observations: 2018 Existing (3 cycles)

PM: (Thrus)

EB1* - 24

EB2 - 36

WB1* - 18

WB2 - 30

* Includes left-thrus

$$L_u = \frac{\text{Total}}{2 \times \text{Max}}$$

$$EB = \frac{24+36}{2 \times 36} = \boxed{0.83}$$

$$WB = \frac{18+30}{2 \times 30} = \boxed{0.80}$$

TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com

JOB KARA.00010
SHEET NO. ____ OF ____
CALCULATED BY ____ DATE ____
CHECKED BY ____ DATE ____
SCALE Lane Utilization Lancaster / Aberdeen

Video Observations: 2018 Existing (3 cycles)

SAT: (Thrus)

EB1* - 30

EB2 - 34

WB1* - 21

WB2 - 28

* Includes left turns

$$L_u = \frac{TOTAL}{2 \times Max}$$

$$EB = \frac{30+34}{2 \times 34} = \boxed{0.94}$$

$$WB = \frac{21+28}{2 \times 28} = \boxed{0.88}$$

TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com

JOB KARA.10
SHEET NO. ____ OF ____
CALCULATED BY ____ DATE ____
CHECKED BY ____ DATE ____
SCALE Lane Utilization

Lancaster/Aberdeen

Video Observations: 2018 Existing (3 cycles)

Sun (Thrus)

EB1* - 23
EB2 - 29

WB1* - 26
WB2 - 31

* Includes left-turns

$$LU = \frac{TOTAL}{2 \cdot Max}$$

$$EB = \frac{(23+29)}{2 \times 29} = \boxed{0.90}$$

$$WB = \frac{(26+31)}{2 \times 31} = \boxed{0.92}$$

TRAFFIC PLANNING AND DESIGN, INC.
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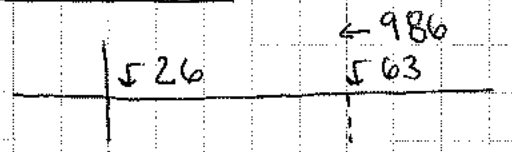
JOB KARA 10 Lane Utilization
SHEET NO. ____ OF ____
CALCULATED BY ____ DATE ____
CHECKED BY ____ DATE ____
SCALE ____

Lancaster / Driveway WBL

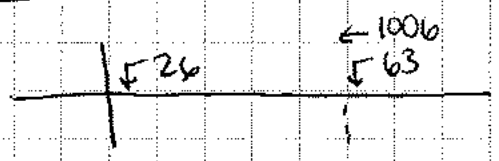
Assume only WBL @ Aberdeen & into Driveway use inside lane to be conservative

PM-2020



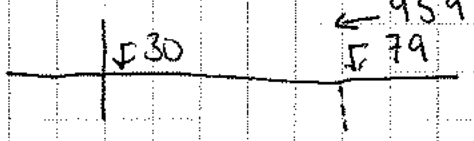
$$LU = \frac{986+63}{2(986-26)} = 0.54$$

PM-2025



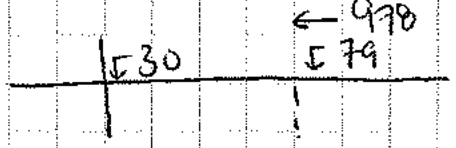
$$LU = \frac{1006+63}{2(1006-26)} = 0.54$$

AM-2020



$$LU = \frac{959+79}{2(959-30)} = 0.55$$

AM-2025



$$LU = \frac{978+79}{2(978-30)} = 0.55$$

TRAFFIC PLANNING AND DESIGN, INC.
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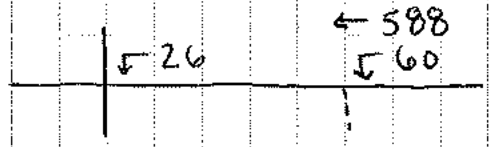
JOB KARA .10 Lane Utilization
SHEET NO. ____ OF ____
CALCULATED BY ____ DATE ____
CHECKED BY ____ DATE ____
SCALE ____

Lancaster / Driveway WBL

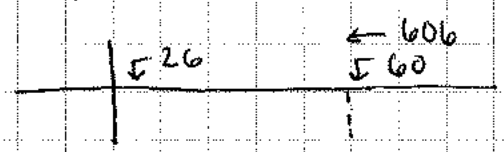
Assume only WBL @ Abercleen & into Driveway use inside lane to be conservative

SUN - 2020



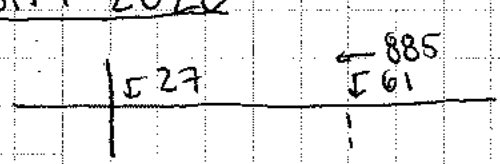
$$LU = \frac{588 + 60}{2(588-26)} = 0.57$$

SUN - 2025



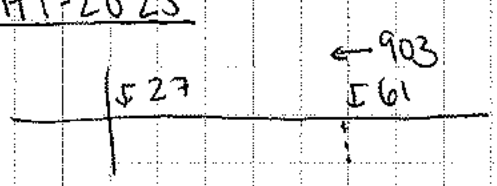
$$LU = \frac{606 + 60}{2(606-26)} = 0.57$$

SAT - 2020



$$LU = \frac{885 + 61}{2(885-27)} = 0.55$$

SAT - 2025



$$LU = \frac{903 + 61}{2(903-27)} = 0.55$$

APPENDIX H

CAPACITY ANALYSES

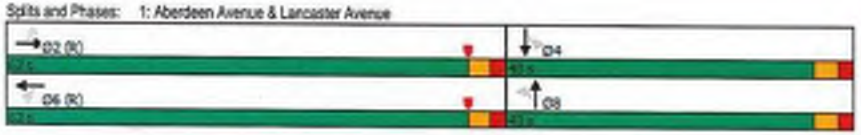
2018 EXISTING CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	785	34	11	956	43	72	108	33	140	85	68
Future Volume (vph)	35	785	34	11	956	43	72	108	33	140	85	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1152			98			130			464	
Travel Time (s)		31.4			1.9			3.5			12.7	
Confl. Peds. (#/hr)	21		21	4		4	4		4	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	3%	18%	4%	0%	8%	5%	9%	1%	2%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	62.0	62.0		62.0	62.0		43.0	43.0		43.0	43.0	
Total Split (%)	59.0%	59.0%		59.0%	59.0%		41.0%	41.0%		41.0%	41.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 6 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	785	34	11	956	43	72	108	33	140	85	68
Future Volume (veh/h)	35	785	34	11	956	43	72	108	33	140	85	68
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1800	1732	1800	1809	1740	1809	1782	1671	1782	1836	1877	1836
Adj Flow Rate, veh/h	38	853	37	12	1039	47	78	117	36	152	92	74
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	5	5	5	2	2	2
Cap, veh/h	90	1862	80	43	2015	91	148	205	57	215	115	85
Arrive On Green	0.04	0.65	0.04	0.04	0.65	0.04	0.27	0.28	0.27	0.27	0.28	0.27
Sat Flow, veh/h	81	2883	123	13	3121	140	365	738	204	591	413	304
Grp Volume(v), veh/h	462	0	466	576	0	522	231	0	0	318	0	0
Grp Sat Flow(s),veh/h/ln	1536	0	1552	1716	0	1558	1308	0	0	1308	0	0
Q Serve(g_s), s	0.0	0.0	16.0	0.0	0.0	18.8	0.0	0.0	0.0	9.1	0.0	0.0
Cycle Q Clear(g_c), s	13.6	0.0	16.0	18.5	0.0	18.8	16.1	0.0	0.0	25.2	0.0	0.0
Prop In Lane	0.08		0.08	0.02		0.09	0.34		0.16	0.48		0.23
Lane Grp Cap(c), veh/h	1014	0	1002	1127	0	1006	397	0	0	402	0	0
V/C Ratio(X)	0.46	0.00	0.46	0.51	0.00	0.52	0.58	0.00	0.00	0.79	0.00	0.00
Avail Cap(c_a), veh/h	1014	0	1002	1127	0	1006	529	0	0	542	0	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)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.0	0.0	9.4	9.9	0.0	9.9	33.0	0.0	0.0	37.4	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	1.4	1.7	0.0	1.9	1.4	0.0	0.0	5.6	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(95%),veh/ln	11.2	0.0	11.4	14.6	0.0	13.3	10.2	0.0	0.0	14.7	0.0	0.0
LnGrp Delay(d),s/veh	10.4	0.0	10.9	11.5	0.0	11.9	34.4	0.0	0.0	43.0	0.0	0.0
LnGrp LOS	B		B	B		B	C			D		
Approach Vol, veh/h		928			1098			231			318	
Approach Delay, s/veh		10.7			11.7			34.4			43.0	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.8		33.2		71.8		33.2
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		57.0		38.0		57.0		38.0
Max Q Clear Time (g_c+I1), s		18.0		27.2		20.8		18.1
Green Ext Time (p_c), s		4.6		1.0		4.9		0.8

Intersection Summary

HCM 2010 Ctrl Delay 17.2
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	946	12	0	1010	0	0
Future Volume (vph)	946	12	0	1010	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt	0.998					
Flt Protected						
Satd. Flow (prot)	2471	0	0	2922	1765	0
Flt Permitted						
Satd. Flow (perm)	2471	0	0	2922	1765	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	96			81	96	
Travel Time (s)	1.9			1.6	2.6	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1028	13	0	1098	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1041	0	0	1098	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 40.7% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	946	12	0	1010	0	0
Future Vol, veh/h	946	12	0	1010	0	0
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1028	13	0	1098	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1041	0	1566	525
Stage 1	-	-	-	-	1035	-
Stage 2	-	-	-	-	553	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	675	-	*75	*602
Stage 1	-	-	-	-	*621	-
Stage 2	-	-	-	-	*843	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	675	-	*75	*589
Mov Cap-2 Maneuver	-	-	-	-	*75	-
Stage 1	-	-	-	-	*621	-
Stage 2	-	-	-	-	*841	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	675	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %ile Q(veh)	-	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	944	2	0	1005	5	15
Future Volume (vph)	944	2	0	1005	5	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt					0.897	
Flt Protected					0.988	
Satd. Flow (prot)	2475	0	0	2922	1564	0
Flt Permitted					0.988	
Satd. Flow (perm)	2475	0	0	2922	1564	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1026	2	0	1092	5	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1028	0	0	1092	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 40.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	944	2	0	1005	5	15
Future Vol, veh/h	944	2	0	1005	5	15
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1026	2	0	1092	5	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1028	0	1577	518
Stage 1	-	-	-	-	1027	-
Stage 2	-	-	-	-	550	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*77	*795
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*843	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*77	*792
Mov Cap-2 Maneuver	-	-	-	-	*77	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*841	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	236	-	-	* 962	-
HCM Lane V/C Ratio	0.091	-	-	-	-
HCM Control Delay (s)	21.6	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %ile Q(veh)	0.3	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	939	20	3	1005	0	6
Future Volume (vph)	939	20	3	1005	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Flt Protected						
Satd. Flow (prot)	2469	0	0	2922	1526	0
Flt Permitted						
Satd. Flow (perm)	2469	0	0	2922	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	76	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1021	22	3	1092	0	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1043	0	0	1095	7	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 42.8%	ICU Level of Service A
Analysis Period (min) 15	

* User Entered Value

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	939	20	3	1005	0	6
Future Vol, veh/h	939	20	3	1005	0	6
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1021	22	3	1092	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1043	0	1588	526
Stage 1	-	-	-	-	1032	-
Stage 2	-	-	-	-	556	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.6	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*75	*795
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*843	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*74	*792
Mov Cap-2 Maneuver	-	-	-	-	*74	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*834	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	792	-	-	* 962	-
HCM Lane V/C Ratio	0.008	-	-	0.003	-
HCM Control Delay (s)	9.6	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	942	3	3	1006	2	16
Future Volume (vph)	942	3	3	1006	2	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt					0.879	
Flt Protected					0.995	
Satd. Flow (prot)	2475	0	0	2922	1543	0
Flt Permitted					0.995	
Satd. Flow (perm)	2475	0	0	2922	1543	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1639	89	
Travel Time (s)	1.7			31.9	2.4	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1024	3	3	1093	2	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1027	0	0	1096	19	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 42.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	942	3	3	1006	2	16
Future Vol, veh/h	942	3	3	1006	2	16
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1024	3	3	1093	2	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1027	0	1583	518
Stage 1	-	-	-	-	1026	-
Stage 2	-	-	-	-	557	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*76	*795
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*843	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*75	*792
Mov Cap-2 Maneuver	-	-	-	-	*75	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*834	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	364	-	-	* 962	-
HCM Lane V/C Ratio	0.051	-	-	0.003	-
HCM Control Delay (s)	14.9	-	-	8.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.2	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	8	205	5	11	119
Future Volume (vph)	1	8	205	5	11	119
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878		0.997			
Flt Protected	0.995					0.996
Satd. Flow (prot)	1542	0	1847	0	0	1775
Flt Permitted	0.995					0.996
Satd. Flow (perm)	1542	0	1847	0	0	1775
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Confl. Peds. (#/hr)	4	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	8%	2%	2%	2%
Adj. Flow (vph)	1	9	223	5	12	129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	228	0	0	141
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 27.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	8	205	5	11	119
Future Vol, veh/h	1	8	205	5	11	119
Conflicting Peds, #/hr	4	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	8	2	2	2
Mvmt Flow	1	9	223	5	12	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	383	239	0	0	228	0
Stage 1	226	-	-	-	-	-
Stage 2	157	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	753	860	-	-	1003	-
Stage 1	937	-	-	-	-	-
Stage 2	1067	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	740	857	-	-	1003	-
Mov Cap-2 Maneuver	740	-	-	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	1049	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 842	1003	-
HCM Lane V/C Ratio	-	- 0.012	0.012	-
HCM Control Delay (s)	-	- 9.3	8.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	1	209	12	1	119
Future Volume (vph)	4	1	209	12	1	119
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.973		0.993			
Flt Protected	0.982					
Satd. Flow (prot)	1652	0	1643	0	0	1782
Flt Permitted	0.982					
Satd. Flow (perm)	1652	0	1643	0	0	1782
Link Speed (mph)	25		25			25
Link Distance (ft)	74		311			69
Travel Time (s)	2.0		8.5			1.9
Confl. Peds. (#/hr)	4	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	8%	2%	2%	2%
Adj. Flow (vph)	4	1	227	13	1	129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	240	0	0	130
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 23.6% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	209	12	1	119
Future Vol, veh/h	4	1	209	12	1	119
Conflicting Peds, #/hr	4	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	8	2	2	2
Mvmt Flow	4	1	227	13	1	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	369	238	0	0	240	0
Stage 1	234	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	*770	851	-	-	994	-
Stage 1	*929	-	-	-	-	-
Stage 2	*1585	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*766	846	-	-	994	-
Mov Cap-2 Maneuver	*766	-	-	-	-	-
Stage 1	*929	-	-	-	-	-
Stage 2	*1080	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	781	994	-
HCM Lane V/C Ratio	-	-	0.007	0.001	-
HCM Control Delay (s)	-	-	9.6	8.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0	0	-

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	650	25	33	787	112	40	98	43	93	91	35
Future Volume (vph)	29	650	25	33	787	112	40	98	43	93	91	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3677	0	0	3089	1373	1422	1607	0	1501	1505	0
Flt Permitted		0.885			0.893		0.585			0.541		
Satd. Flow (perm)	0	2729	0	0	2764	1320	864	1607	0	835	1505	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		465			678			709			514	
Travel Time (s)		12.7			18.5			19.3			14.0	
Confl. Peds. (#/hr)	11		7	7		11	13		24	24		13
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
Heavy Vehicles (%)	3%	3%	0%	6%	3%	4%	10%	2%	7%	9%	10%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	773	0	0	901	123	44	155	0	102	136	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	13.0	49.0		36.0	36.0	36.0	30.0	30.0		30.0	30.0	
Total Split (%)	12.4%	46.7%		34.3%	34.3%	34.3%	28.6%	28.6%		28.6%	28.6%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff Green (s)		77.1			77.1	78.1	17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.73			0.73	0.72	0.17	0.17		0.17	0.17	
v/c Ratio		0.39			0.44	0.13	0.30	0.57		0.72	0.54	
Control Delay		6.5			6.0	5.9	41.2	47.1		67.2	46.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		6.5			6.0	5.9	41.2	47.1		67.2	46.5	
LOS		A			A	A	D	D		E	D	
Approach Delay		6.5			6.0			45.8			55.3	
Approach LOS		A			A			D			E	
Queue Length 50th (ft)		86			67	17	26	97		85	85	
Queue Length 95th (ft)		151			148	m51	56	151		117	137	

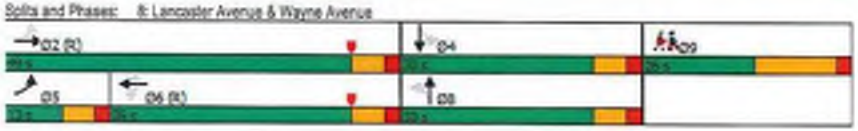
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	25%
Yellow Time (s)	19.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		385			598			629			434	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2004			2033	957	205	382		198	358	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.39			0.44	0.13	0.21	0.41		0.52	0.39	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 33 (31%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 15.0 Intersection LOS: B
Intersection Capacity Utilization 75.3% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	773	50	94	945	31	44
Future Volume (vph)	773	50	94	945	31	44
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	12
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3041	0	0	3069	1714	0
Flt Permitted				0.749	0.980	
Satd. Flow (perm)	3041	0	0	2307	1711	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	678			1152	490	
Travel Time (s)	18.5			31.4	13.4	
Confl. Peds. (#/hr)		6	6		4	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	10%	4%	3%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	915	0	0	1154	83	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	61.0		12.0	73.0	32.0	
Total Split (%)	58.1%		11.4%	69.5%	30.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	84.6			84.6	11.4	
Actuated g/C Ratio	0.81			0.81	0.11	
v/c Ratio	0.37			0.62	0.45	
Control Delay	2.6			3.2	50.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	2.6			3.2	50.6	
LOS	A			A	D	
Approach Delay	2.6			3.2	50.6	
Approach LOS	A			A	D	
Queue Length 50th (ft)	68			35	53	
Queue Length 95th (ft)	70			43	98	
Internal Link Dist (ft)	598			1072	410	
Turn Bay Length (ft)						
Base Capacity (vph)	2449			1858	440	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.37			0.62	0.19	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 48 (46%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 4.8 — Intersection LOS: A
Intersection Capacity Utilization 70.4% — ICU Level of Service C
Analysis Period (min) 15

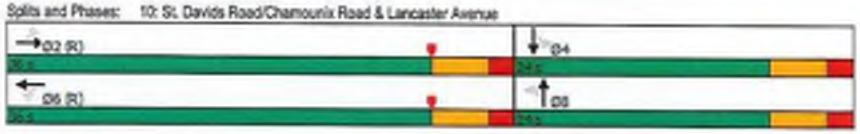
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	855	9	13	1113	285	19	67	70	92	38	38
Future Volume (vph)	14	855	9	13	1113	285	19	67	70	92	38	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1539			1078			276			429	
Travel Time (s)		31.9			21.0			7.5			11.7	
Confl. Peds. (#/hr)	6					6	4		5	5		4
Confl. Bikes (#/hr)												1
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
Heavy Vehicles (%)	5%	3%	0%	0%	4%	1%	0%	0%	4%	1%	5%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	36.0	36.0		36.0	36.0		24.0	24.0		24.0	24.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 20 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	855	9	13	1113	285	19	67	70	92	38	38
Future Volume (veh/h)	14	855	9	13	1113	285	19	67	70	92	38	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.98
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	1782	1731	1782	1845	1785	1845	1891	1857	1891	1881	1638	1881
Adj Flow Rate, veh/h	15	940	9	14	1223	292	21	74	74	101	42	42
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	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, %	3	3	3	4	4	4	0	0	0	5	5	5
Cap, veh/h	72	2113	20	67	1753	410	89	146	130	223	75	60
Arrive On Green	0.65	0.66	0.65	0.65	0.66	0.65	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	15	3192	30	9	2649	620	125	850	759	761	436	351
Grp Volume(v), veh/h	497	0	467	817	0	712	169	0	0	185	0	0
Grp Sat Flow(s),veh/h/ln	1668	0	1570	1766	0	1512	1734	0	0	1548	0	0
Q Serve(g_s), s	0.0	0.0	8.6	0.0	0.0	16.3	0.0	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	6.3	0.0	8.6	17.5	0.0	16.3	5.4	0.0	0.0	6.6	0.0	0.0
Prop In Lane	0.03		0.02	0.02		0.41	0.12		0.44	0.55		0.23
Lane Grp Cap(c), veh/h	1138	0	1039	1201	0	1001	336	0	0	332	0	0
V/C Ratio(X)	0.44	0.00	0.45	0.68	0.00	0.71	0.50	0.00	0.00	0.56	0.00	0.00
Avail Cap(c_a), veh/h	1138	0	1039	1201	0	1001	575	0	0	540	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.8	0.0	4.9	6.4	0.0	6.6	23.1	0.0	0.0	23.6	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.4	3.1	0.0	4.3	1.7	0.0	0.0	2.1	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(95%),veh/ln	7.9	0.0	7.5	14.9	0.0	13.4	5.1	0.0	0.0	5.7	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	6.3	9.5	0.0	10.9	24.8	0.0	0.0	25.7	0.0	0.0
LnGrp LOS	A		A	A		B	C			C		
Approach Vol, veh/h		964			1529			169			185	
Approach Delay, s/veh		6.2			10.2			24.8			25.7	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		44.7		15.3		44.7		15.3
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		32.0		18.0		30.0		18.0
Max Q Clear Time (g_c+I1), s		10.6		8.6		20.3		7.4
Green Ext Time (p_c), s		3.9		0.7		5.0		0.6

Intersection Summary

HCM 2010 Ctrl Delay 10.7
HCM 2010 LOS B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	17	6	5	92	12	28	172	11	3	61	19
Future Volume (vph)	5	17	6	5	92	12	28	172	11	3	61	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.972			0.985			0.993			0.969	
Flt Protected		0.991			0.998			0.993			0.998	
Satd. Flow (prot)	0	1619	0	0	1740	0	0	1638	0	0	1696	0
Flt Permitted		0.991			0.998			0.993			0.998	
Satd. Flow (perm)	0	1619	0	0	1740	0	0	1638	0	0	1696	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1128			434			186			311	
Travel Time (s)		30.8			11.8			5.1			8.5	
Confl. Peds. (#/hr)	7		3	3		7	10					10
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	20%	0%	17%	0%	2%	0%	18%	6%	0%	0%	2%	5%
Adj. Flow (vph)	7	24	8	7	130	17	39	242	15	4	86	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	154	0	0	296	0	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 33.3% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	17	6	5	92	12	28	172	11	3	61	19
Future Vol, veh/h	5	17	6	5	92	12	28	172	11	3	61	19
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	20	0	17	0	2	0	18	6	0	0	2	5
Mvmt Flow	7	24	8	7	130	17	39	242	15	4	86	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.6	9.2	11	8.5
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	16%	5%	4%
Vol Thru, %	82%	61%	84%	73%
Vol Right, %	5%	21%	11%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	28	109	83
LT Vol	28	5	5	3
Through Vol	172	17	92	61
RT Vol	11	6	12	19
Lane Flow Rate	297	39	154	117
Geometry Grp	1	1	1	1
Degree of Util (X)	0.398	0.059	0.209	0.16
Departure Headway (Hd)	4.82	5.355	4.892	4.615
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	746	665	731	773
Service Time	2.864	3.419	2.942	2.668
HCM Lane V/C Ratio	0.398	0.059	0.211	0.151
HCM Control Delay	11	8.6	9.2	8.5
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.9	0.2	0.8	0.5

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	29	88	31	17	42
Future Volume (vph)	5	29	88	31	17	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.884		0.965			
Flt Protected	0.993					0.988
Satd. Flow (prot)	1540	0	1804	0	0	1571
Flt Permitted	0.993					0.988
Satd. Flow (perm)	1540	0	1804	0	0	1571
Link Speed (mph)	25		25			25
Link Distance (ft)	1128		188			490
Travel Time (s)	30.8		5.1			13.4
Conf. Peds. (#/hr)		14		7	7	
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Heavy Vehicles (%)	0%	3%	0%	32%	23%	9%
Adj. Flow (vph)	9	54	163	57	31	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	220	0	0	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 23.6% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	29	88	31	17	42
Future Vol, veh/h	5	29	88	31	17	42
Conflicting Peds, #/hr	0	14	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	0	3	0	32	23	9
Mvmt Flow	9	54	163	57	31	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	339	213	0	0	227	0
Stage 1	199	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	754	879	-	-	1004	-
Stage 1	966	-	-	-	-	-
Stage 2	1031	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	725	861	-	-	997	-
Mov Cap-2 Maneuver	725	-	-	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	2.5
HCM LOS	A		

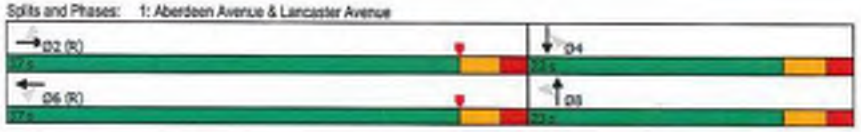
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 838	997	-
HCM Lane V/C Ratio	-	- 0.075	0.032	-
HCM Control Delay (s)	-	- 9.6	8.7	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	844	30	10	955	59	39	63	26	117	112	67
Future Volume (vph)	33	844	30	10	955	59	39	63	26	117	112	67
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1121			98			130			464	
Travel Time (s)		30.6			1.9			3.5			12.7	
Confl. Peds. (#/hr)	8		8	6		6	3		3	3		3
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	3%	0%	1%	3%	0%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 38 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	844	30	10	955	59	39	63	26	117	112	67
Future Volume (veh/h)	33	844	30	10	955	59	39	63	26	117	112	67
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
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	1800	1783	1800	1609	1789	1809	1782	1782	1782	1836	1887	1836
Adj Flow Rate, veh/h	34	870	31	10	985	61	40	65	27	121	115	69
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	98	1935	68	66	1984	122	154	228	78	219	166	88
Arrive On Green	0.61	0.63	0.61	0.61	0.63	0.61	0.22	0.24	0.22	0.22	0.24	0.22
Sat Flow, veh/h	54	3084	108	8	3152	194	318	945	325	566	696	369
Grp Volume(v), veh/h	475	0	460	556	0	530	132	0	0	305	0	0
Grp Sat Flow(s),veh/h/ln	1647	0	1600	1772	0	1593	1588	0	0	1630	0	0
Q Serve(g_s), s	0.0	0.0	4.7	0.0	0.0	10.3	0.0	0.0	0.0	6.7	0.0	0.0
Cycle Q Clear(g_c), s	4.2	0.0	4.7	10.2	0.0	10.3	3.9	0.0	0.0	10.5	0.0	0.0
Prop In Lane	0.07		0.07	0.02		0.12	0.30		0.20	0.40		0.23
Lane Grp Cap(c), veh/h	1070	0	1004	1143	0	999	432	0	0	447	0	0
V/C Ratio(X)	0.44	0.00	0.46	0.49	0.00	0.53	0.31	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	1070	0	1004	1143	0	999	546	0	0	567	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.00	0.90	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.2	0.0	2.3	6.1	0.0	6.1	19.0	0.0	0.0	21.5	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.4	1.5	0.0	1.8	0.4	0.0	0.0	2.4	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(95%),veh/ln	4.3	0.0	4.1	9.5	0.0	8.6	3.4	0.0	0.0	8.9	0.0	0.0
LnGrp Delay(d),s/veh	3.4	0.0	3.6	7.6	0.0	7.9	19.4	0.0	0.0	23.8	0.0	0.0
LnGrp LOS	A		A	A		A	B			C		
Approach Vol, veh/h		935			1056			132			305	
Approach Delay, s/veh		3.5			7.7			19.4			23.8	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.6		18.4		41.6		18.4
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		18.0		32.0		18.0
Max Q Clear Time (g_c+I1), s		6.7		12.5		12.3		5.9
Green Ext Time (p_c), s		4.3		0.6		4.2		0.3

Intersection Summary

HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	969	18	2	1024	0	3
Future Volume (vph)	969	18	2	1024	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Flt Protected						
Satd. Flow (prot)	2739	0	0	2675	1526	0
Flt Permitted						
Satd. Flow (perm)	2739	0	0	2675	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	96	
Travel Time (s)	1.9			1.6	2.6	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	999	19	2	1056	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1018	0	0	1058	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 42.3% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2018 Existing Conditions
2: Western Sunoco Driveway & Lancaster Avenue
Timing Plan: PM Peak

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	969	18	2	1024	0	3
Future Vol, veh/h	969	18	2	1024	0	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	999	19	2	1056	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1018	0	1544	512
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	535	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	882	-	*81	*905
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*601	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	882	-	*80	*903
Mov Cap-2 Maneuver	-	-	-	-	*80	-
Stage 1	-	-	-	-	*626	-
Stage 2	-	-	-	-	*795	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	903	-	-	882	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9	-	-	9.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	948	24	3	1024	2	21
Future Volume (vph)	948	24	3	1024	2	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.876	
Flt Protected					0.996	
Satd. Flow (prot)	2735	0	0	2675	1540	0
Flt Permitted					0.996	
Satd. Flow (perm)	2735	0	0	2675	1540	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	977	25	3	1056	2	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1002	0	0	1059	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.0% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	948	24	3	1024	2	21
Future Vol, veh/h	948	24	3	1024	2	21
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	977	25	3	1056	2	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1002	0	1527	504
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	537	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*984	-	*84	*614
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*801	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*984	-	*83	*612
Mov Cap-2 Maneuver	-	-	-	-	*83	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*793	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	460	-	-	* 984	-
HCM Lane V/C Ratio	0.052	-	-	0.003	-
HCM Control Delay (s)	13.3	-	-	8.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	933	36	5	1027	0	3
Future Volume (vph)	933	36	5	1027	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.865	
Flt Protected						
Satd. Flow (prot)	2730	0	0	2675	1526	0
Flt Permitted						
Satd. Flow (perm)	2730	0	0	2675	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	75	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	962	37	5	1059	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	999	0	0	1064	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.15	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2018 Existing Conditions
4: Western BP Driveway & Lancaster Avenue
Timing Plan: PM Peak

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	933	36	5	1027	0	3
Future Vol, veh/h	933	36	5	1027	0	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	962	37	5	1059	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	999	0	1524	503
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*984	-	*84	*814
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*801	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*984	-	*83	*812
Mov Cap-2 Maneuver	-	-	-	-	*83	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*789	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	812	-	-	* 984	-
HCM Lane V/C Ratio	0.004	-	-	0.005	-
HCM Control Delay (s)	9.5	-	-	8.7	0.1
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	935	1	4	1025	7	28
Future Volume (vph)	935	1	4	1025	7	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt					0.891	
Flt Protected					0.990	
Satd. Flow (prot)	2747	0	0	2675	1557	0
Flt Permitted					0.990	
Satd. Flow (perm)	2747	0	0	2675	1557	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1653	89	
Travel Time (s)	1.7			32.2	2.4	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	964	1	4	1057	7	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	965	0	0	1061	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	935	1	4	1025	7	28
Future Vol, veh/h	935	1	4	1025	7	28
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	964	1	4	1057	7	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	965	0	1505	486
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	540	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	3.8	3.9
Pot Cap-1 Maneuver	-	-	*984	-	*87	*614
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*601	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*984	-	*86	*612
Mov Cap-2 Maneuver	-	-	-	-	*86	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*791	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	-	-	* 984	-
HCM Lane V/C Ratio	0.119	-	-	0.004	-
HCM Control Delay (s)	18.5	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	0.4	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	4	124	12	2	150
Future Volume (vph)	8	4	124	12	2	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.955		0.988			
Flt Protected	0.968					0.999
Satd. Flow (prot)	1631	0	1758	0	0	1764
Flt Permitted	0.968					0.999
Satd. Flow (perm)	1631	0	1758	0	0	1764
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Confl. Peds. (#/hr)	6	6				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	0%	2%	2%	3%
Adj. Flow (vph)	8	4	128	12	2	155
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	140	0	0	157
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 21.8% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	4	124	12	2	150
Future Vol, veh/h	8	4	124	12	2	150
Conflicting Peds, #/hr	6	6	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	0	2	2	3
Mvmt Flow	8	4	128	12	2	155

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	299	143	0	0	140	0
Stage 1	134	-	-	-	-	-
Stage 2	165	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	*874	968	-	-	1076	-
Stage 1	*1037	-	-	-	-	-
Stage 2	*1000	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*867	962	-	-	1076	-
Mov Cap-2 Maneuver	*867	-	-	-	-	-
Stage 1	*1037	-	-	-	-	-
Stage 2	*1001	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 897	1076	-
HCM Lane V/C Ratio	-	- 0.014	0.002	-
HCM Control Delay (s)	-	- 9.1	8.4	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	131	7	5	153
Future Volume (vph)	2	5	131	7	5	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.904		0.993			
Flt Protected	0.986					0.996
Satd. Flow (prot)	1573	0	1768	0	0	1762
Flt Permitted	0.986					0.996
Satd. Flow (perm)	1573	0	1768	0	0	1762
Link Speed (mph)	25		25			25
Link Distance (ft)	74		279			69
Travel Time (s)	2.0		7.6			1.9
Confl. Peds. (#/hr)	6	6				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	0%	2%	2%	3%
Adj. Flow (vph)	2	5	135	7	5	158
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	142	0	0	163
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 24.6% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	5	131	7	5	153
Future Vol, veh/h	2	5	131	7	5	153
Conflicting Peds, #/hr	6	6	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	0	2	2	3
Mvmt Flow	2	5	135	7	5	158

Major/Minor	Minor1			Major1		Major2	
Conflicting Flow All	313	145		0	0	142	0
Stage 1	139	-		-	-	-	-
Stage 2	174	-		-	-	-	-
Critical Hdwy	6.42	6.22		-	-	4.3	-
Critical Hdwy Stg 1	5.42	-		-	-	-	-
Critical Hdwy Stg 2	5.42	-		-	-	-	-
Follow-up Hdwy	3	3.1		-	-	3	-
Pot Cap-1 Maneuver	*655	952		-	-	1374	-
Stage 1	*1031	-		-	-	-	-
Stage 2	*1060	-		-	-	-	-
Platoon blocked, %	1			-	-		-
Mov Cap-1 Maneuver	*645	937		-	-	1374	-
Mov Cap-2 Maneuver	*645	-		-	-	-	-
Stage 1	*1031	-		-	-	-	-
Stage 2	*1043	-		-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 922	1374	-
HCM Lane V/C Ratio	-	- 0.008	0.005	-
HCM Control Delay (s)	-	- 8.9	8.4	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	739	53	32	670	91	22	88	39	106	144	46
Future Volume (vph)	40	739	53	32	670	91	22	88	39	106	144	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3386	0	0	3151	1428	1564	1575	0	1604	1617	0
Flt Permitted		0.880			0.878		0.411			0.580		
Satd. Flow (perm)	0	2720	0	0	2771	1330	656	1575	0	948	1617	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		533			714			348			368	
Travel Time (s)		14.5			19.5			9.5			10.0	
Confl. Peds. (#/hr)	23		11	11		23	32		28	28		32
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	3%	1%	0%	0%	3%	10%	2%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	849	0	0	717	93	22	130	0	108	194	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	64.0		34.0	34.0	34.0	30.0	30.0		30.0	30.0	
Total Split (%)	25.0%	53.3%		28.3%	28.3%	28.3%	25.0%	25.0%		25.0%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		90.0			90.0	89.0	20.0	20.0		20.0	20.0	
Actuated g/C Ratio		0.75			0.75	0.74	0.17	0.17		0.17	0.17	
v/c Ratio		0.42			0.35	0.09	0.20	0.50		0.69	0.72	
Control Delay		6.6			3.1	3.2	45.7	51.1		68.2	62.1	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		6.6			3.1	3.2	45.7	51.1		68.2	62.1	
LOS		A			A	A	D	D		E	E	
Approach Delay		6.6			3.1			50.3			64.3	
Approach LOS		A			A			D			E	
Queue Length 50th (ft)		111			38	9	15	92		79	143	
Queue Length 95th (ft)		167			67	26	39	150		139	218	

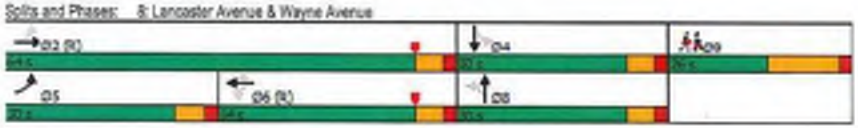
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		453			634			268			258	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2039			2077	986	126	328		197	336	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.42			0.35	0.09	0.16	0.40		0.55	0.58	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 16.7 Intersection LOS: B
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

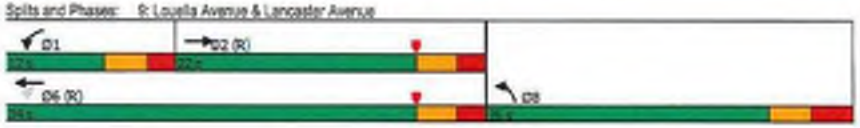
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	890	32	53	840	15	30
Future Volume (vph)	890	32	53	840	15	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3128	0	0	3130	1844	0
Flt Permitted				0.854	0.983	
Satd. Flow (perm)	3128	0	0	2681	1831	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	714			1121	430	
Travel Time (s)	19.5			30.6	11.7	
Confl. Peds. (#/hr)		7	7		29	8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	0%	4%	1%	7%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	960	0	0	930	47	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	22.0		12.0	34.0	26.0	
Total Split (%)	36.7%		20.0%	56.7%	43.3%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	42.7			42.7	8.3	
Actuated g/C Ratio	0.71			0.71	0.14	
v/c Ratio	0.43			0.49	0.21	
Control Delay	6.1			2.2	24.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.1			2.2	24.6	
LOS	A			A	C	
Approach Delay	6.1			2.2	24.6	
Approach LOS	A			A	C	
Queue Length 50th (ft)	145			21	15	
Queue Length 95th (ft)	194			35	39	
Internal Link Dist (ft)	634			1041	350	
Turn Bay Length (ft)						
Base Capacity (vph)	2228			1909	575	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.43			0.49	0.08	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 6 (10%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 4.7 — Intersection LOS: A
Intersection Capacity Utilization 57.4% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Louella Avenue & Lancaster Avenue

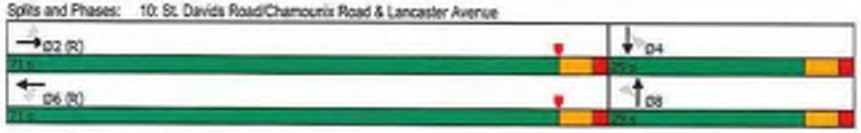


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	954	17	39	1005	141	4	25	32	74	22	42
Future Volume (vph)	35	954	17	39	1005	141	4	25	32	74	22	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1653			896			295			258	
Travel Time (s)		32.2			17.5			8.0			7.0	
Confl. Peds. (#/hr)	5		3	3		5			8	8		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	1%	25%	0%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	71.0	71.0		71.0	71.0		29.0	29.0		29.0	29.0	
Total Split (%)	71.0%	71.0%		71.0%	71.0%		29.0%	29.0%		29.0%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 66 (66%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	954	17	39	1005	141	4	25	32	74	22	42
Future Volume (veh/h)	35	954	17	39	1005	141	4	25	32	74	22	42
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.98	0.98		0.98
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	1782	1765	1782	1845	1827	1845	1891	1834	1891	1881	1870	1881
Adj Flow Rate, veh/h	37	1015	17	41	1069	144	4	27	34	79	23	45
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	92	2350	39	89	2187	291	43	95	110	152	39	60
Arrive On Green	0.76	0.77	0.76	0.76	0.77	0.76	0.12	0.13	0.12	0.12	0.13	0.12
Sat Flow, veh/h	69	3033	50	65	2823	376	39	761	876	772	311	478
Grp Volume(v), veh/h	528	0	541	643	0	611	65	0	0	147	0	0
Grp Sat Flow(s),veh/h/ln	1555	0	1597	1669	0	1595	1676	0	0	1590	0	0
Q Serve(g_s), s	0.0	0.0	11.5	0.0	0.0	14.1	0.0	0.0	0.0	5.4	0.0	0.0
Cycle Q Clear(g_c), s	9.7	0.0	11.5	12.3	0.0	14.1	3.6	0.0	0.0	9.0	0.0	0.0
Prop In Lane	0.07		0.03	0.06		0.24	0.06		0.52	0.54		0.31
Lane Grp Cap(c), veh/h	1228	0	1237	1315	0	1236	231	0	0	235	0	0
V/C Ratio(X)	0.43	0.00	0.44	0.49	0.00	0.49	0.28	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	1228	0	1237	1315	0	1236	417	0	0	402	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.6	0.0	3.8	3.9	0.0	4.2	40.1	0.0	0.0	42.4	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.1	1.3	0.0	1.4	0.9	0.0	0.0	3.8	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(95%),veh/ln	9.0	0.0	9.1	11.0	0.0	10.9	3.1	0.0	0.0	7.6	0.0	0.0
LnGrp Delay(d),s/veh	4.7	0.0	5.0	5.2	0.0	5.6	41.0	0.0	0.0	46.2	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1069			1254			65			147	
Approach Delay, s/veh		4.9			5.4			41.0			46.2	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		82.5		17.5		82.5		17.5
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		65.0		23.0		65.0		23.0
Max Q Clear Time (g_c+I1), s		13.5		11.0		16.1		5.6
Green Ext Time (p_c), s		5.2		0.6		6.6		0.2

Intersection Summary

HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	9	5	7	70	11	9	119	6	6	99	14
Future Volume (vph)	15	9	5	7	70	11	9	119	6	6	99	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.977			0.983			0.994			0.984	
Flt Protected		0.974			0.996			0.997			0.997	
Satd. Flow (prot)	0	1552	0	0	1748	0	0	1599	0	0	1723	0
Flt Permitted		0.974			0.996			0.997			0.997	
Satd. Flow (perm)	0	1552	0	0	1748	0	0	1599	0	0	1723	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1097			652			218			279	
Travel Time (s)		29.9			17.8			5.9			7.6	
Confl. Peds. (#/hr)	15		7	7		15	7		5	5		7
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	7%	0%	40%	0%	1%	0%	11%	11%	0%	0%	3%	0%
Adj. Flow (vph)	19	11	6	9	88	14	11	149	8	8	124	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	111	0	0	168	0	0	160	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 25.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	9	5	7	70	11	9	119	6	6	99	14
Future Vol, veh/h	15	9	5	7	70	11	9	119	6	6	99	14
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	7	0	40	0	1	0	11	11	0	0	3	0
Mvmt Flow	19	11	6	9	88	14	11	149	8	8	124	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.4	8.9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	52%	8%	5%
Vol Thru, %	89%	31%	80%	83%
Vol Right, %	4%	17%	12%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	134	29	88	119
LT Vol	9	15	7	6
Through Vol	119	9	70	99
RT Vol	6	5	11	14
Lane Flow Rate	168	36	110	149
Geometry Grp	1	1	1	1
Degree of Util (X)	0.213	0.049	0.141	0.181
Departure Headway (Hd)	4.587	4.883	4.613	4.382
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	784	733	778	820
Service Time	2.609	2.912	2.637	2.403
HCM Lane V/C Ratio	0.214	0.049	0.141	0.182
HCM Control Delay	8.9	8.2	8.4	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.2	0.5	0.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	44	85	11	16	60
Future Volume (vph)	9	44	85	11	16	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.867		0.984			
Flt Protected	0.992					0.990
Satd. Flow (prot)	1558	0	1740	0	0	1889
Flt Permitted	0.992					0.990
Satd. Flow (perm)	1558	0	1740	0	0	1889
Link Speed (mph)	25		25			25
Link Distance (ft)	1097		281			430
Travel Time (s)	29.9		7.1			11.7
Confl. Peds. (#/hr)	1	24		10	10	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	2%	2%	0%	19%	2%
Adj. Flow (vph)	10	51	98	13	18	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	111	0	0	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 27.3% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	44	85	11	16	60
Future Vol, veh/h	9	44	85	11	16	60
Conflicting Peds, #/hr	1	24	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	19	2
Mvmt Flow	10	51	98	13	18	69

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	221	139	0	0	121	0
Stage 1	115	-	-	-	-	-
Stage 2	106	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.5	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3.2	-
Pot Cap-1 Maneuver	887	969	-	-	1020	-
Stage 1	1056	-	-	-	-	-
Stage 2	1069	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	866	938	-	-	1010	-
Mov Cap-2 Maneuver	866	-	-	-	-	-
Stage 1	1048	-	-	-	-	-
Stage 2	1048	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	1.6
HCM LOS	A		

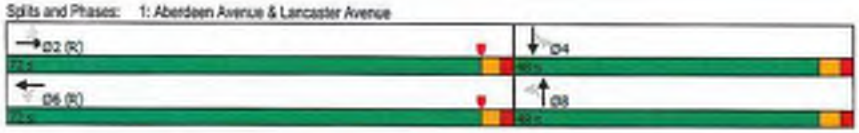
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 924	1010	-
HCM Lane V/C Ratio	-	- 0.066	0.018	-
HCM Control Delay (s)	-	- 9.2	8.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	688	42	14	850	50	39	93	36	116	70	64
Future Volume (vph)	39	688	42	14	850	50	39	93	36	116	70	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			98			130			464	
Travel Time (s)		31.1			1.9			3.5			12.7	
Confl. Peds. (#/hr)	15		7	7		15	12		9	9		12
Confl. Bikes (#/hr)			1			3			1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	2%	7%	2%	2%	0%	1%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	688	42	14	850	50	39	93	36	116	70	64
Future Volume (veh/h)	39	688	42	14	850	50	39	93	36	116	70	64
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.98
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	1800	1755	1600	1609	1772	1809	1782	1772	1782	1836	1891	1836
Adj Flow Rate, veh/h	40	709	43	14	876	52	40	96	37	120	72	66
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	0	0	0
Cap, veh/h	118	2002	120	46	2221	131	92	205	71	174	92	77
Arrive On Green	1.00	1.00	1.00	0.71	0.71	0.71	0.21	0.22	0.21	0.21	0.22	0.21
Sat Flow, veh/h	118	2802	168	21	3108	183	250	938	323	595	422	350
Grp Volume(v), veh/h	390	0	402	495	0	447	173	0	0	258	0	0
Grp Sat Flow(s),veh/h/ln	1517	0	1571	1738	0	1573	1512	0	0	1367	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	13.7	0.0	0.0	0.0	10.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.3	0.0	13.7	11.6	0.0	0.0	22.3	0.0	0.0
Prop In Lane	0.10		0.11	0.03		0.12	0.23		0.21	0.47		0.26
Lane Grp Cap(c), veh/h	1104	0	1123	1258	0	1124	355	0	0	332	0	0
V/C Ratio(X)	0.35	0.00	0.36	0.39	0.00	0.40	0.49	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	1104	0	1123	1258	0	1124	581	0	0	550	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.8	0.0	6.9	41.1	0.0	0.0	46.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.8	0.9	0.0	1.1	1.0	0.0	0.0	3.9	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(95%),veh/ln	0.5	0.0	0.5	11.3	0.0	10.3	9.0	0.0	0.0	13.7	0.0	0.0
LnGrp Delay(d),s/veh	0.8	0.0	0.8	7.7	0.0	7.9	42.2	0.0	0.0	49.9	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		792			942			173			258	
Approach Delay, s/veh		0.8			7.8			42.2			49.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.7		30.3		89.7		30.3
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		24.3		15.7		13.6
Green Ext Time (p_c), s		3.7		1.0		4.0		0.6

Intersection Summary

HCM 2010 Ctrl Delay 13.0
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	823	17	0	914	0	2
Future Volume (vph)	823	17	0	914	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Flt Protected						
Satd. Flow (prot)	3072	0	0	2913	1526	0
Flt Permitted						
Satd. Flow (perm)	3072	0	0	2913	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	98	
Travel Time (s)	1.9			1.6	2.6	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	848	18	0	942	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	866	0	0	942	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	823	17	0	914	0	2
Future Vol, veh/h	823	17	0	914	0	2
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	848	18	0	942	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	866	0	1335	440
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	478	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	994	-	*119	*935
Stage 1	-	-	-	-	*765	-
Stage 2	-	-	-	-	*845	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	994	-	*118	*930
Mov Cap-2 Maneuver	-	-	-	-	*118	-
Stage 1	-	-	-	-	*765	-
Stage 2	-	-	-	-	*839	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	930	-	-	994	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	824	1	0	913	1	22
Future Volume (vph)	824	1	0	913	1	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt					0.871	
Flt Protected					0.998	
Satd. Flow (prot)	3081	0	0	2913	1534	0
Flt Permitted					0.998	
Satd. Flow (perm)	3081	0	0	2913	1534	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	849	1	0	941	1	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	850	0	0	941	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.7% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	824	1	0	913	1	22
Future Vol, veh/h	824	1	0	913	1	22
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	849	1	0	941	1	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	850	0	1328	432
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	478	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1029	-	*120	*650
Stage 1	-	-	-	-	*881	-
Stage 2	-	-	-	-	*645	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1029	-	*119	*646
Mov Cap-2 Maneuver	-	-	-	-	*119	-
Stage 1	-	-	-	-	*881	-
Stage 2	-	-	-	-	*639	-

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)	668	-	-	* 1029	-
HCM Lane V/C Ratio	0.035	-	-	-	-
HCM Control Delay (s)	10.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	799	47	8	911	2	4
Future Volume (vph)	799	47	8	911	2	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.910	
Flt Protected					0.984	
Satd. Flow (prot)	3056	0	0	2913	1580	0
Flt Permitted					0.984	
Satd. Flow (perm)	3056	0	0	2913	1580	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	113			87	78	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	824	48	8	939	2	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	872	0	0	947	6	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	799	47	8	911	2	4
Future Vol, veh/h	799	47	8	911	2	4
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	824	48	8	939	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	872	0	1341	443
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	493	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	3.8	2.9
Pot Cap-1 Maneuver	-	-	1063	-	*116	*660
Stage 1	-	-	-	-	*312	-
Stage 2	-	-	-	-	*645	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1063	-	*115	*675
Mov Cap-2 Maneuver	-	-	-	-	*115	-
Stage 1	-	-	-	-	*312	-
Stage 2	-	-	-	-	*627	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	16.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	273	-	-	1063	-
HCM Lane V/C Ratio	0.023	-	-	0.008	-
HCM Control Delay (s)	16.5	-	-	8.4	0.1
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	799	4	4	916	3	54
Future Volume (vph)	799	4	4	916	3	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.999				0.872	
Flt Protected					0.997	
Satd. Flow (prot)	3078	0	0	2913	1534	0
Flt Permitted					0.997	
Satd. Flow (perm)	3078	0	0	2913	1534	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1547	89	
Travel Time (s)	1.7			32.1	2.4	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	824	4	4	944	3	56
Shared Lane Traffic (%)						
Lane Group Flow (vph)	828	0	0	948	59	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 42.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	799	4	4	916	3	54
Future Vol, veh/h	799	4	4	916	3	54
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	824	4	4	944	3	56

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	828	0	1313	421
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	487	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1064	-	*124	*660
Stage 1	-	-	-	-	*912	-
Stage 2	-	-	-	-	*845	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1064	-	*122	*675
Mov Cap-2 Maneuver	-	-	-	-	*122	-
Stage 1	-	-	-	-	*912	-
Stage 2	-	-	-	-	*833	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	660	-	-	* 1064	-
HCM Lane V/C Ratio	0.089	-	-	0.004	-
HCM Control Delay (s)	11	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	10	158	10	2	124
Future Volume (vph)	6	10	158	10	2	124
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.916		0.992			
Flt Protected	0.982					0.999
Satd. Flow (prot)	1587	0	1733	0	0	1798
Flt Permitted	0.982					0.999
Satd. Flow (perm)	1587	0	1733	0	0	1798
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Confl. Peds. (#/hr)	9	9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%
Adj. Flow (vph)	6	10	163	10	2	128
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	173	0	0	130
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.08	1.08
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 22.0% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	10	158	10	2	124
Future Vol, veh/h	6	10	158	10	2	124
Conflicting Peds, #/hr	9	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	1
Mvmt Flow	6	10	163	10	2	128

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	309	177	0	0	173	0
Stage 1	168	-	-	-	-	-
Stage 2	141	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	635	922	-	-	1046	-
Stage 1	999	-	-	-	-	-
Stage 2	1079	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	625	914	-	-	1046	-
Mov Cap-2 Maneuver	625	-	-	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	1067	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	878	1046	-
HCM Lane V/C Ratio	-	-	0.019	0.002	-
HCM Control Delay (s)	-	-	9.2	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.1	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	2	166	8	0	130
Future Volume (vph)	2	2	166	8	0	130
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932		0.994			
Flt Protected	0.976					
Satd. Flow (prot)	1685	0	1737	0	0	1800
Flt Permitted	0.976					
Satd. Flow (perm)	1685	0	1737	0	0	1800
Link Speed (mph)	25		25			25
Link Distance (ft)	74		298			69
Travel Time (s)	2.0		8.1			1.9
Confl. Peds. (#/hr)	9	9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%
Adj. Flow (vph)	2	2	171	8	0	134
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	179	0	0	134
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 22.3% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	166	8	0	130
Future Vol, veh/h	2	2	166	8	0	130
Conflicting Peds, #/hr	9	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	1
Mvmt Flow	2	2	171	8	0	134

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	318	184	0	0	179	0
Stage 1	175	-	-	-	-	-
Stage 2	143	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.5	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	824	914	-	-	1043	-
Stage 1	991	-	-	-	-	-
Stage 2	1077	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	816	906	-	-	1043	-
Mov Cap-2 Maneuver	816	-	-	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	1067	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 859	1043	-
HCM Lane V/C Ratio	-	- 0.005	-	-
HCM Control Delay (s)	-	- 9.2	0	-
HCM Lane LOS	-	- A	A	-
HCM 95th %ile Q(veh)	-	- 0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	689	38	44	769	86	60	80	70	67	79	60
Future Volume (vph)	38	689	38	44	769	86	60	80	70	67	79	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3125	0	0	3145	1428	1564	1602	0	1620	1561	0
Flt Permitted		0.867			0.861		0.523			0.490		
Satd. Flow (perm)	0	2714	0	0	2715	1330	831	1602	0	811	1561	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			488	
Travel Time (s)		30.9			19.1			14.5			13.3	
Confl. Peds. (#/hr)	23		47	47		23	32		27	27		32
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	2%	1%	0%	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	788	0	0	838	89	62	154	0	69	143	0
Turn Type	prot+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	64.0		34.0	34.0	34.0	30.0	30.0		30.0	30.0	
Total Split (%)	25.0%	53.3%		28.3%	28.3%	28.3%	25.0%	25.0%		25.0%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		92.2			92.2	91.2	17.8	17.8		17.8	17.8	
Actuated g/C Ratio		0.77			0.77	0.76	0.15	0.15		0.15	0.15	
v/c Ratio		0.38			0.40	0.09	0.51	0.65		0.57	0.62	
Control Delay		5.6			3.5	3.2	60.2	60.4		65.4	59.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		5.6			3.5	3.2	60.2	60.4		65.4	59.0	
LOS		A			A	A	E	E		E	E	
Approach Delay		5.6			3.5			60.4			61.1	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		88			52	10	45	114		50	105	

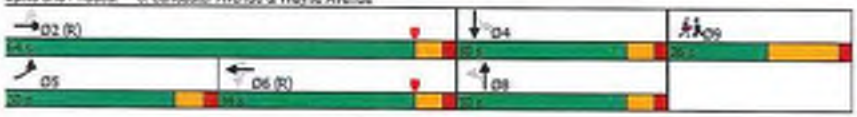
Lane Group	09
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		147			66	19	88	176		97	165	
Internal Link Dist (ft)		1052			622			452			438	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2066			2087	1010	173	333		168	325	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.38			0.40	0.09	0.36	0.46		0.41	0.44	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.7 Intersection LOS: B
Intersection Capacity Utilization 77.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	09
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	782	57	48	910	41	65
Future Volume (vph)	782	57	48	910	41	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3139	0	0	3137	1703	0
Flt Permitted				0.852	0.991	
Satd. Flow (perm)	3139	0	0	2677	1682	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		17	17		30	17
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	2%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	874	0	0	998	111	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	96.8			96.8	14.2	
Actuated g/C Ratio	0.81			0.81	0.12	
v/c Ratio	0.35			0.46	0.55	
Control Delay	3.0			2.0	59.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	3.0			2.0	59.6	
LOS	A			A	E	
Approach Delay	3.0			2.0	59.6	
Approach LOS	A			A	E	
Queue Length 50th (ft)	62			34	82	
Queue Length 95th (ft)	91			41	136	
Internal Link Dist (ft)	622			1052	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2532			2159	482	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.35			0.46	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 5.7 — Intersection LOS: A
Intersection Capacity Utilization 71.3% — ICU Level of Service C
Analysis Period (min) 15

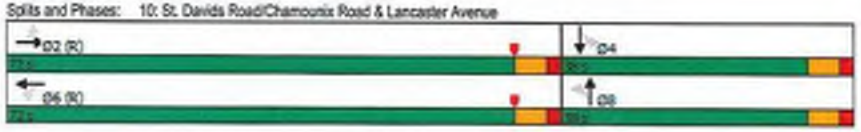
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	880	18	36	984	63	13	17	41	55	17	38
Future Volume (vph)	30	880	18	36	984	63	13	17	41	55	17	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1647			744			642			402	
Travel Time (s)		32.1			14.5			17.5			11.0	
Confl. Peds. (#/hr)	5		2	2		5			4	4		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	8%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	880	18	36	984	63	13	17	41	55	17	38
Future Volume (veh/h)	30	880	18	36	984	63	13	17	41	55	17	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.99
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	1782	1795	1782	1845	1828	1845	1891	1864	1891	1881	1863	1891
Adj Flow Rate, veh/h	31	898	17	37	1004	61	13	17	42	56	17	34
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	91	2495	47	95	2485	149	56	48	93	122	32	48
Arrive On Green	0.01	0.82	0.01	0.01	0.82	0.01	0.08	0.09	0.08	0.08	0.09	0.08
Sat Flow, veh/h	69	3060	57	74	3048	183	186	534	994	770	336	515
Grp Volume(v), veh/h	473	0	473	559	0	543	72	0	0	107	0	0
Grp Sat Flow(s),veh/h/ln	1591	0	1596	1675	0	1631	1704	0	0	1622	0	0
Q Serve(g_s), s	0.0	0.0	8.6	0.0	0.0	10.2	0.0	0.0	0.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	7.5	0.0	8.6	9.0	0.0	10.2	4.4	0.0	0.0	6.8	0.0	0.0
Prop In Lane	0.07		0.04	0.07		0.11	0.18		0.58	0.52		0.32
Lane Grp Cap(c), veh/h	1317	0	1301	1385	0	1329	183	0	0	187	0	0
V/C Ratio(X)	0.36	0.00	0.36	0.40	0.00	0.41	0.39	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	1317	0	1301	1385	0	1329	508	0	0	489	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.6	0.0	2.7	2.7	0.0	2.8	47.6	0.0	0.0	48.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.8	0.9	0.0	0.9	1.9	0.0	0.0	3.9	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(95%),veh/ln	7.2	0.0	7.1	8.7	0.0	8.5	4.0	0.0	0.0	6.1	0.0	0.0
LnGrp Delay(d),s/veh	3.3	0.0	3.5	3.6	0.0	3.8	49.5	0.0	0.0	52.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		946			1102			72			107	
Approach Delay, s/veh		3.4			3.7			49.5			52.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		94.7		15.3		94.7		15.3
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		10.6		8.8		12.2		6.4
Green Ext Time (p_c), s		4.3		0.5		5.3		0.3

Intersection Summary

HCM 2010 Ctrl Delay		7.4
HCM 2010 LOS		A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	14	3	4	27	18	3	110	11	6	101	18
Future Volume (vph)	7	14	3	4	27	18	3	110	11	6	101	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983			0.950			0.988			0.980	
Flt Protected		0.986			0.996			0.999			0.997	
Satd. Flow (prot)	0	1745	0	0	1666	0	0	1759	0	0	1718	0
Flt Permitted		0.986			0.996			0.999			0.997	
Satd. Flow (perm)	0	1745	0	0	1666	0	0	1759	0	0	1718	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1996			898			201			296	
Travel Time (s)		29.9			24.5			5.5			8.1	
Confl. Peds. (#/hr)	6		6	6		6	2		4	4		2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	1%	11%
Adj. Flow (vph)	9	18	4	5	34	23	4	139	14	8	128	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	62	0	0	157	0	0	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 21.9% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	14	3	4	27	18	3	110	11	6	101	18
Future Vol, veh/h	7	14	3	4	27	18	3	110	11	6	101	18
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	0	0	0	0	6	0	0	0	0	1	11
Mvmt Flow	9	18	4	5	34	23	4	139	14	8	128	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	7.8	8.2	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	29%	8%	5%
Vol Thru, %	89%	58%	55%	81%
Vol Right, %	9%	12%	37%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	24	49	125
LT Vol	3	7	4	6
Through Vol	110	14	27	101
RT Vol	11	3	18	18
Lane Flow Rate	157	30	62	158
Geometry Grp	1	1	1	1
Degree of Util (X)	0.16	0.039	0.076	0.185
Departure Headway (Hd)	4.239	4.641	4.417	4.208
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	852	774	814	858
Service Time	2.239	2.653	2.427	2.208
HCM Lane V/C Ratio	0.184	0.039	0.076	0.184
HCM Control Delay	8.2	7.8	7.8	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.2	0.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	50	74	8	18	36
Future Volume (vph)	9	50	74	8	18	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.886		0.987			
Flt Protected	0.992					0.984
Satd. Flow (prot)	1555	0	1777	0	0	1736
Flt Permitted	0.992					0.984
Satd. Flow (perm)	1555	0	1777	0	0	1736
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		593			450
Travel Time (s)	29.9		16.1			12.3
Conf. Peds. (#/hr)	1	13		5	5	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	11%	0%	0%	0%	6%	0%
Adj. Flow (vph)	13	69	103	11	25	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	114	0	0	75
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 24.2%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	50	74	8	18	36
Future Vol, veh/h	9	50	74	8	18	36
Conflicting Peds, #/hr	1	13	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	11	0	0	0	6	0
Mvmt Flow	13	69	103	11	25	50

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	215	127	0	0	119	0
Stage 1	114	-	-	-	-	-
Stage 2	101	-	-	-	-	-
Critical Hdwy	6.51	6.2	-	-	4.4	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	-	-	3.1	-
Pot Cap-1 Maneuver	862	985	-	-	1056	-
Stage 1	1024	-	-	-	-	-
Stage 2	1039	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	836	968	-	-	1051	-
Mov Cap-2 Maneuver	836	-	-	-	-	-
Stage 1	1019	-	-	-	-	-
Stage 2	1013	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	2.8
HCM LOS	A		

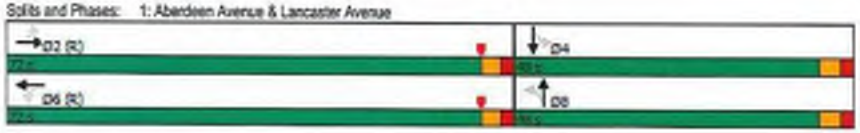
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 945	1051	-
HCM Lane V/C Ratio	-	- 0.087	0.024	-
HCM Control Delay (s)	-	- 9.2	8.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	542	26	13	579	32	29	47	23	61	48	37
Future Volume (vph)	28	542	26	13	579	32	29	47	23	61	48	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			98			130			464	
Travel Time (s)		31.1			1.9			3.5			12.7	
Confl. Peds. (#/hr)	1					1	22		6	6		22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	15%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	542	26	13	579	32	29	47	23	61	48	37
Future Volume (veh/h)	28	542	26	13	579	32	29	47	23	61	48	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.97		0.95	0.96		0.95
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	1800	1784	1800	1809	1787	1809	1782	1782	1782	1836	1909	1836
Adj Flow Rate, veh/h	29	553	26	13	591	31	30	48	22	62	49	34
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	128	2363	111	61	2499	130	84	124	48	124	88	52
Arrive On Green	1.00	1.00	1.00	0.79	0.80	0.79	0.13	0.14	0.13	0.13	0.14	0.13
Sat Flow, veh/h	119	2966	139	37	3137	163	332	905	349	591	644	378
Grp Volume(v), veh/h	338	0	300	331	0	304	100	0	0	145	0	0
Grp Sat Flow(s),veh/h/ln	1625	0	1599	1740	0	1597	1585	0	0	1613	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	3.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.6	0.0	5.8	6.7	0.0	0.0	10.0	0.0	0.0
Prop In Lane	0.09		0.09	0.04		0.10	0.30		0.22	0.43		0.23
Lane Grp Cap(c), veh/h	1314	0	1273	1403	0	1272	243	0	0	250	0	0
V/C Ratio(X)	0.23	0.00	0.24	0.24	0.00	0.24	0.41	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1314	0	1273	1403	0	1272	586	0	0	600	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.1	0.0	3.1	47.8	0.0	0.0	49.2	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.4	0.0	0.4	1.1	0.0	0.0	2.1	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(95%),veh/ln	0.3	0.0	0.3	5.4	0.0	4.9	5.7	0.0	0.0	8.4	0.0	0.0
LnGrp Delay(d),s/veh	0.4	0.0	0.4	3.5	0.0	3.5	48.9	0.0	0.0	51.3	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		638			635			100			145	
Approach Delay, s/veh		0.4			3.5			48.9			51.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		99.6		20.4		99.6		20.4
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		12.0		7.8		8.7
Green Ext Time (p_c), s		2.6		0.5		2.4		0.4

Intersection Summary

HCM 2010 Ctrl Delay 9.9
HCM 2010 LOS A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	617	9	1	624	0	2
Future Volume (vph)	617	9	1	624	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.998				0.865	
Flt Protected						
Satd. Flow (prot)	2974	0	0	3076	1557	0
Flt Permitted						
Satd. Flow (perm)	2974	0	0	3076	1557	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	96	
Travel Time (s)	1.9			1.6	2.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	630	9	1	637	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	639	0	0	638	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 28.9% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	617	9	1	624	0	2
Future Vol, veh/h	617	9	1	624	0	2
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	630	9	1	637	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	639	0	956	320
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	321	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	1110	-	*236	*1026
Stage 1	-	-	-	-	*860	-
Stage 2	-	-	-	-	*1010	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1110	-	*236	*1026
Mov Cap-2 Maneuver	-	-	-	-	*236	-
Stage 1	-	-	-	-	*860	-
Stage 2	-	-	-	-	*1009	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1026	-	-	1110	-
HCM Lane V/C Ratio	0.002	-	-	0.001	-
HCM Control Delay (s)	8.5	-	-	8.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	616	3	2	621	4	14
Future Volume (vph)	616	3	2	621	4	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Ftt	0.999				0.895	
Flt Protected					0.989	
Satd. Flow (prot)	2976	0	0	3076	1593	0
Flt Permitted					0.989	
Satd. Flow (perm)	2976	0	0	3076	1593	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	629	3	2	634	4	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	632	0	0	636	18	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 29.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	616	3	2	621	4	14
Future Vol, veh/h	616	3	2	621	4	14
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	629	3	2	634	4	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	632	0	952	316
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	321	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1171	-	*238	*968
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1010	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1171	-	*237	*968
Mov Cap-2 Maneuver	-	-	-	-	*237	-
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1007	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	574	-	-	* 1171	-
HCM Lane V/C Ratio	0.032	-	-	0.002	-
HCM Control Delay (s)	11.5	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	609	21	3	622	1	2
Future Volume (vph)	609	21	3	622	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.995				0.910	
Flt Protected					0.984	
Satd. Flow (prot)	2965	0	0	3076	1612	0
Flt Permitted					0.984	
Satd. Flow (perm)	2965	0	0	3076	1612	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	78	
Travel Time (s)	2.1			1.7	2.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	621	21	3	635	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	642	0	0	638	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 50.4% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	609	21	3	622	1	2
Future Vol, veh/h	609	21	3	622	1	2
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	621	21	3	635	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	642	0	956	321
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1171	-	*238	*668
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1010	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1171	-	*235	*668
Mov Cap-2 Maneuver	-	-	-	-	*235	-
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1006	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	475	-	-	* 1171	-
HCM Lane V/C Ratio	0.006	-	-	0.003	-
HCM Control Delay (s)	12.6	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	611	0	6	617	8	14
Future Volume (vph)	611	0	6	617	8	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Ftt					0.914	
Flt Protected					0.982	
Satd. Flow (prot)	2979	0	0	3076	1618	0
Flt Permitted					0.982	
Satd. Flow (perm)	2979	0	0	3076	1618	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1647	69	
Travel Time (s)	1.7			32.1	2.4	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	623	0	6	630	8	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	623	0	0	636	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 32.5% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	611	0	6	617	8	14
Future Vol, veh/h	611	0	6	617	8	14
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	623	0	6	630	8	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	623	0	950	312
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1171	-	*238	*968
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1010	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1171	-	*236	*968
Mov Cap-2 Maneuver	-	-	-	-	*236	-
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1002	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	455	-	-	* 1171	-
HCM Lane V/C Ratio	0.049	-	-	0.005	-
HCM Control Delay (s)	13.3	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.2	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	5	94	4	5	82
Future Volume (vph)	4	5	94	4	5	82
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.925		0.995			
Flt Protected	0.978					0.997
Satd. Flow (prot)	1628	0	1773	0	0	1779
Flt Permitted	0.978					0.997
Satd. Flow (perm)	1628	0	1773	0	0	1779
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Confl. Peds. (#/hr)				6	6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	4	5	96	4	5	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	100	0	0	89
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 18.9%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	5	94	4	5	82
Future Vol, veh/h	4	5	94	4	5	82
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	4	5	96	4	5	84

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	198	104	0	0	106	0
Stage 1	104	-	-	-	-	-
Stage 2	94	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	963	1015	-	-	1495	-
Stage 1	1072	-	-	-	-	-
Stage 2	1121	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	952	1009	-	-	1099	-
Mov Cap-2 Maneuver	952	-	-	-	-	-
Stage 1	1066	-	-	-	-	-
Stage 2	1115	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	963	1099	-
HCM Lane V/C Ratio	-	-	0.009	0.005	-
HCM Control Delay (s)	-	-	8.7	8.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	5	93	5	2	84
Future Volume (vph)	4	5	93	5	2	84
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.925		0.993			
Flt Protected	0.978					0.999
Satd. Flow (prot)	1638	0	1770	0	0	1781
Flt Permitted	0.978					0.999
Satd. Flow (perm)	1638	0	1770	0	0	1781
Link Speed (mph)	25		25			25
Link Distance (ft)	74		298			69
Travel Time (s)	2.0		8.1			1.9
Confl. Peds. (#/hr)				6	6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	4	5	95	5	2	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	100	0	0	88
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 16.9% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	5	93	5	2	84
Future Vol, veh/h	4	5	93	5	2	84
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	4	5	95	5	2	86

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	194	104	0	0	106	0
Stage 1	104	-	-	-	-	-
Stage 2	90	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	808	1015	-	-	1105	-
Stage 1	1072	-	-	-	-	-
Stage 2	1127	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	961	1009	-	-	1099	-
Mov Cap-2 Maneuver	961	-	-	-	-	-
Stage 1	1066	-	-	-	-	-
Stage 2	1124	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	987	1099	-
HCM Lane V/C Ratio	-	-	0.009	0.002	-
HCM Control Delay (s)	-	-	8.7	8.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	486	27	40	482	95	29	52	58	71	66	53
Future Volume (vph)	57	486	27	40	482	95	29	52	58	71	66	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		180	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3123	0	0	3150	1428	1564	1602	0	1620	1582	0
Flt Permitted		0.834			0.864		0.558			0.588		
Satd. Flow (perm)	0	2617	0	0	2731	1378	902	1602	0	991	1582	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			488	
Travel Time (s)		30.9			19.1			14.5			13.3	
Confl. Peds. (#/hr)	7		11	11		7	16		10	10		16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	600	0	0	549	100	31	116	0	75	125	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	64.0		34.0	34.0	34.0	30.0	30.0		30.0	30.0	
Total Split (%)	25.0%	53.3%		28.3%	28.3%	28.3%	25.0%	25.0%		25.0%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff Green (s)		94.2			94.2	93.2	15.8	15.8		15.8	15.8	
Actuated g/C Ratio		0.78			0.78	0.78	0.13	0.13		0.13	0.13	
v/c Ratio		0.29			0.26	0.09	0.26	0.55		0.58	0.60	
Control Delay		4.4			3.0	3.0	50.6	57.9		65.5	60.6	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		4.4			3.0	3.0	50.6	57.9		65.5	60.6	
LOS		A			A	A	D	E		E	E	
Approach Delay		4.4			3.0			56.4			62.4	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		56			36	11	22	85		55	93	
Queue Length 95th (ft)		96			46	22	51	140		103	149	

2018 Existing Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: SUN Peak

Lane Group	23
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
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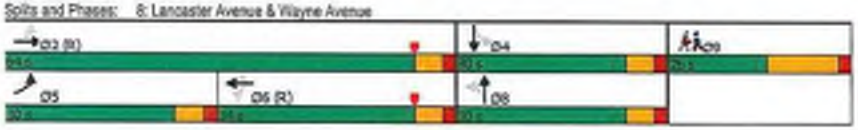
Synchro 10 Report

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1052			822			452			408	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2054			2144	1070	187	333		206	329	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.29			0.26	0.09	0.17	0.35		0.36	0.38	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 15.9 Intersection LOS: B
Intersection Capacity Utilization 55.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	574	63	22	606	26	16
Future Volume (vph)	574	63	22	606	26	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3125	0	0	3139	1733	0
Flt Permitted				0.914	0.970	
Satd. Flow (perm)	3125	0	0	2875	1713	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		3	3		18	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	1%	0%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	708	0	0	697	47	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	101.3			101.3	9.7	
Actuated g/C Ratio	0.84			0.84	0.08	
v/c Ratio	0.27			0.29	0.34	
Control Delay	1.8			1.8	57.9	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.8			1.8	57.9	
LOS	A			A	E	
Approach Delay	1.8			1.8	57.9	
Approach LOS	A			A	E	
Queue Length 50th (ft)	27			17	35	
Queue Length 95th (ft)	42			28	73	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2639			2427	491	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.27			0.29	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.34
Intersection Signal Delay: 3.6 — Intersection LOS: A
Intersection Capacity Utilization 45.4% — ICU Level of Service A
Analysis Period (min) 15

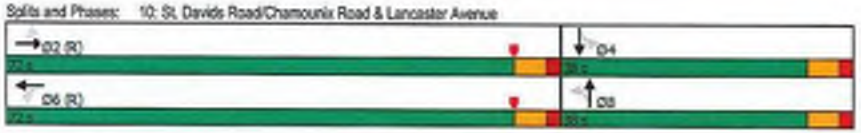
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	604	7	30	634	33	11	6	42	37	13	23
Future Volume (vph)	22	604	7	30	634	33	11	6	42	37	13	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1647			744			642			402	
Travel Time (s)		32.1			14.5			17.5			11.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



2018 Existing Conditions
10: St. Davids Road/Chamounix Road & Lancaster Avenue
Timing Plan: SUN Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	604	7	30	634	33	11	6	42	37	13	23
Future Volume (veh/h)	22	604	7	30	634	33	11	6	42	37	13	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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		0.99	1.00		0.99
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	1782	1765	1782	1845	1828	1845	1891	1864	1891	1881	1881	1881
Adj Flow Rate, veh/h	23	643	8	32	674	33	12	6	45	39	14	18
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	99	2645	25	126	2575	125	54	18	82	109	28	29
Arrive On Green	0.83	0.84	0.83	0.83	0.84	0.83	0.06	0.07	0.06	0.06	0.07	0.06
Sat Flow, veh/h	76	3145	29	107	3061	149	219	262	1202	857	406	429
Grp Volume(v), veh/h	342	0	330	375	0	364	63	0	0	71	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	1601	1679	0	1638	1682	0	0	1693	0	0
Q Serve(g_s), s	0.0	0.0	4.5	0.0	0.0	5.0	0.0	0.0	0.0	0.4	0.0	0.0
Cycle Q Clear(g_c), s	4.2	0.0	4.5	4.5	0.0	5.0	3.9	0.0	0.0	4.3	0.0	0.0
Prop In Lane	0.07		0.02	0.09		0.09	0.19		0.71	0.55		0.25
Lane Grp Cap(c), veh/h	1407	0	1347	1433	0	1378	138	0	0	158	0	0
V/C Ratio(X)	0.24	0.00	0.24	0.26	0.00	0.26	0.46	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	1407	0	1347	1433	0	1378	499	0	0	497	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.7	0.0	1.7	1.8	0.0	1.8	50.1	0.0	0.0	50.1	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.4	0.0	0.5	3.3	0.0	0.0	3.3	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(95%),veh/ln	4.1	0.0	3.8	4.7	0.0	4.3	3.6	0.0	0.0	4.1	0.0	0.0
LnGrp Delay(d),s/veh	2.1	0.0	2.2	2.2	0.0	2.3	53.4	0.0	0.0	53.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		672			739			63			71	
Approach Delay, s/veh		2.2			2.2			53.4			53.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.5		12.5		97.5		12.5
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		6.5		6.3		7.0		5.9
Green Ext Time (p_c), s		2.6		0.3		3.0		0.3

Intersection Summary

HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	2	2	3	10	9	5	72	2	6	43	12
Future Volume (vph)	24	2	2	3	10	9	5	72	2	6	43	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.990			0.948			0.996			0.974	
Flt Protected		0.959			0.993			0.997			0.995	
Satd. Flow (prot)	0	1709	0	0	1691	0	0	1754	0	0	1718	0
Flt Permitted		0.959			0.993			0.997			0.995	
Satd. Flow (perm)	0	1709	0	0	1691	0	0	1754	0	0	1718	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			898			201			296	
Travel Time (s)		29.9			24.5			5.5			8.1	
Confl. Peds. (#/hr)	1		2	2		1	6		3	3		6
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	8%
Adj. Flow (vph)	33	3	3	4	14	12	7	99	3	8	59	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	30	0	0	109	0	0	83	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 20.9%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	2	2	3	10	9	5	72	2	6	43	12
Future Vol, veh/h	24	2	2	3	10	9	5	72	2	6	43	12
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	8
Mvmt Flow	33	3	3	4	14	12	7	99	3	8	59	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.3	7.7	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	86%	14%	10%
Vol Thru, %	91%	7%	45%	70%
Vol Right, %	3%	7%	41%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	28	22	61
LT Vol	5	24	3	6
Through Vol	72	2	10	43
RT Vol	2	2	9	12
Lane Flow Rate	108	38	30	84
Geometry Grp	1	1	1	1
Degree of Util (X)	0.123	0.047	0.034	0.093
Departure Headway (Hd)	4.06	4.382	4.04	4.003
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	872	805	870	887
Service Time	2.136	2.476	2.14	2.066
HCM Lane V/C Ratio	0.124	0.047	0.034	0.095
HCM Control Delay	7.7	7.7	7.3	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.1	0.3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	36	20	3	10	29
Future Volume (vph)	4	36	20	3	10	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.877		0.983			
Flt Protected	0.995					0.987
Satd. Flow (prot)	1571	0	1769	0	0	1777
Flt Permitted	0.995					0.987
Satd. Flow (perm)	1571	0	1769	0	0	1777
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		590			450
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)		5		4	4	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	49	27	4	14	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	31	0	0	54
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 20.4% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	36	20	3	10	29
Future Vol, veh/h	4	36	20	3	10	29
Conflicting Peds, #/hr	0	5	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	49	27	4	14	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	101	38	0	0	35	0
Stage 1	33	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	1046	1106	-	-	1168	-
Stage 1	1158	-	-	-	-	-
Stage 2	1115	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1029	1097	-	-	1164	-
Mov Cap-2 Maneuver	1029	-	-	-	-	-
Stage 1	1153	-	-	-	-	-
Stage 2	1102	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1090	1164	-
HCM Lane V/C Ratio	-	- 0.05	0.012	-
HCM Control Delay (s)	-	- 8.5	8.1	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.2	0	-

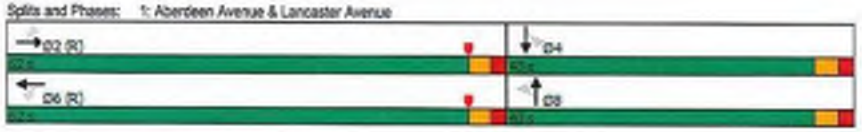
2020 BASE CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	791	34	11	963	43	73	109	33	141	86	69
Future Volume (vph)	35	791	34	11	963	43	73	109	33	141	86	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1152			98			130			464	
Travel Time (s)		31.4			1.9			3.5			12.7	
Confl. Peds. (#/hr)	21		21	4		4	4		4	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	3%	18%	4%	0%	8%	5%	9%	1%	2%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	62.0	62.0		62.0	62.0		43.0	43.0		43.0	43.0	
Total Split (%)	59.0%	59.0%		59.0%	59.0%		41.0%	41.0%		41.0%	41.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 6 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



2020 Base (No-Build) Conditions
1: Aberdeen Avenue & Lancaster Avenue
Timing Plan: AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	791	34	11	963	43	73	109	33	141	86	69
Future Volume (veh/h)	35	791	34	11	963	43	73	109	33	141	86	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1800	1732	1800	1809	1740	1809	1782	1671	1782	1836	1876	1836
Adj Flow Rate, veh/h	38	860	37	12	1047	47	79	118	36	153	93	75
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	5	5	5	2	2	2
Cap, veh/h	89	1856	79	43	2008	90	149	206	57	216	198	86
Arrive On Green	0.63	0.64	0.63	0.63	0.64	0.63	0.27	0.28	0.27	0.27	0.28	0.27
Sat Flow, veh/h	80	2886	122	13	3122	139	367	736	201	589	413	305
Grp Volume(v), veh/h	466	0	489	580	0	526	233	0	0	321	0	0
Grp Sat Flow(s),veh/h/ln	1536	0	1552	1716	0	1558	1304	0	0	1307	0	0
Q Serve(g_s), s	0.0	0.0	16.3	0.0	0.0	19.1	0.0	0.0	0.0	9.2	0.0	0.0
Cycle Q Clear(g_c), s	13.9	0.0	16.3	18.9	0.0	19.1	16.3	0.0	0.0	25.5	0.0	0.0
Prop In Lane	0.08		0.08	0.02		0.09	0.34		0.15	0.48		0.23
Lane Grp Cap(c), veh/h	1011	0	998	1122	0	1002	399	0	0	405	0	0
V/C Ratio(X)	0.46	0.00	0.47	0.52	0.00	0.53	0.58	0.00	0.00	0.79	0.00	0.00
Avail Cap(c_a), veh/h	1011	0	998	1122	0	1002	528	0	0	541	0	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)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.2	0.0	9.6	10.1	0.0	10.1	32.9	0.0	0.0	37.3	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	1.5	1.7	0.0	2.0	1.4	0.0	0.0	5.8	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(95%),veh/ln	11.4	0.0	11.6	14.9	0.0	13.6	10.2	0.0	0.0	15.0	0.0	0.0
LnGrp Delay(d),s/veh	10.6	0.0	11.1	11.8	0.0	12.1	34.2	0.0	0.0	43.0	0.0	0.0
LnGrp LOS	B		B	B		B	C			D		
Approach Vol, veh/h		935			1106			233			321	
Approach Delay, s/veh		10.8			11.9			34.2			43.0	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.5		33.5		71.5		33.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		57.0		38.0		57.0		38.0
Max Q Clear Time (g_c+I1), s		18.3		27.5		21.1		18.3
Green Ext Time (p_c), s		4.6		1.0		5.0		0.8

Intersection Summary

HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	953	12	0	1018	0	0
Future Volume (vph)	953	12	0	1018	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt	0.999					
Flt Protected						
Satd. Flow (prot)	2471	0	0	2922	1765	0
Flt Permitted						
Satd. Flow (perm)	2471	0	0	2922	1765	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	98	
Travel Time (s)	1.9			1.6	2.8	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1036	13	0	1107	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1049	0	0	1107	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 41.0% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	953	12	0	1018	0	0
Future Vol, veh/h	953	12	0	1018	0	0
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1036	13	0	1107	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1049	0	1601	529
Stage 1	-	-	-	-	1043	-
Stage 2	-	-	-	-	558	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	668	-	*73	*892
Stage 1	-	-	-	-	*611	-
Stage 2	-	-	-	-	*843	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	668	-	*73	*889
Mov Cap-2 Maneuver	-	-	-	-	*73	-
Stage 1	-	-	-	-	*611	-
Stage 2	-	-	-	-	*841	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	668	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %ile Q(veh)	-	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	951	2	0	1013	5	15
Future Volume (vph)	951	2	0	1013	5	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.92	*0.90	1.00	1.00
Ped Bike Factor						
Frt					0.897	
Flt Protected					0.988	
Satd. Flow (prot)	2475	0	0	2922	1564	0
Flt Permitted					0.988	
Satd. Flow (perm)	2475	0	0	2922	1564	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1034	2	0	1101	5	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1036	0	0	1101	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 40.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	951	2	0	1013	5	15
Future Vol, veh/h	951	2	0	1013	5	15
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1034	2	0	1101	5	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1036	0	1590	522
Stage 1	-	-	-	-	1035	-
Stage 2	-	-	-	-	555	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*75	*799
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*843	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*75	*792
Mov Cap-2 Maneuver	-	-	-	-	*75	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*841	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	*962	-
HCM Lane V/C Ratio	0.093	-	-	-	-
HCM Control Delay (s)	22	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %ile Q(veh)	0.3	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	946	20	3	1013	0	6
Future Volume (vph)	946	20	3	1013	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Flt Protected						
Satd. Flow (prot)	2469	0	0	2922	1526	0
Flt Permitted						
Satd. Flow (perm)	2469	0	0	2922	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	113			87	78	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1028	22	3	1101	0	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1050	0	0	1104	7	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.0% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	946	20	3	1013	0	6
Future Vol, veh/h	946	20	3	1013	0	6
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1028	22	3	1101	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1050	0	1600	529
Stage 1	-	-	-	-	1039	-
Stage 2	-	-	-	-	561	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*73	*795
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*843	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*72	*792
Mov Cap-2 Maneuver	-	-	-	-	*72	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*834	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	792	-	-	* 962	-
HCM Lane V/C Ratio	0.008	-	-	0.003	-
HCM Control Delay (s)	9.6	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	949	3	3	1014	2	16
Future Volume (vph)	949	3	3	1014	2	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt					0.879	
Flt Protected					0.995	
Satd. Flow (prot)	3475	0	0	2922	1543	0
Flt Permitted					0.995	
Satd. Flow (perm)	3475	0	0	2922	1543	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1639	89	
Travel Time (s)	1.7			31.9	2.4	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1032	3	3	1102	2	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1035	0	0	1105	19	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary		
Area Type:	Other	
Control Type: Unsignalized		
Intersection Capacity Utilization 43.0%		ICU Level of Service A
Analysis Period (min) 15		

* User Entered Value

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	949	3	3	1014	2	16
Future Vol, veh/h	949	3	3	1014	2	16
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1032	3	3	1102	2	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1035	0	1595	522
Stage 1	-	-	-	-	1034	-
Stage 2	-	-	-	-	561	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*74	*795
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*843	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*73	*792
Mov Cap-2 Maneuver	-	-	-	-	*73	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*834	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	378	-	-	* 962	-
HCM Lane V/C Ratio	0.052	-	-	0.003	-
HCM Control Delay (s)	15	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	0.2	-	-	0	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	8	207	5	11	120
Future Volume (vph)	1	8	207	5	11	120
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878		0.997			
Flt Protected	0.995					0.996
Satd. Flow (prot)	1542	0	1847	0	0	1775
Flt Permitted	0.995					0.996
Satd. Flow (perm)	1542	0	1847	0	0	1775
Link Speed (mph)	25		25			25
Link Distance (ft)	192		69			130
Travel Time (s)	2.8		1.9			3.5
Confl. Peds. (#/hr)	4	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	8%	2%	2%	2%
Adj. Flow (vph)	1	9	225	5	12	130
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	230	0	0	142
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 27.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	8	207	5	11	120
Future Vol, veh/h	1	8	207	5	11	120
Conflicting Peds, #/hr	4	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	8	2	2	2
Mvmt Flow	1	9	225	5	12	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	386	232	0	0	230	0
Stage 1	228	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	751	808	-	-	1002	-
Stage 1	935	-	-	-	-	-
Stage 2	1066	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	738	808	-	-	1002	-
Mov Cap-2 Maneuver	738	-	-	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	1047	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 840	1002	-
HCM Lane V/C Ratio	-	- 0.012	0.012	-
HCM Control Delay (s)	-	- 9.3	8.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	1	211	12	1	120
Future Volume (vph)	4	1	211	12	1	120
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.973		0.993			
Flt Protected	0.962					
Satd. Flow (prot)	1652	0	1643	0	0	1782
Flt Permitted	0.962					
Satd. Flow (perm)	1652	0	1643	0	0	1782
Link Speed (mph)	25		25			25
Link Distance (ft)	74		311			69
Travel Time (s)	2.0		8.5			1.9
Confl. Peds. (#/hr)	4	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	8%	2%	2%	2%
Adj. Flow (vph)	4	1	229	13	1	130
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	242	0	0	131
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 23.7% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	211	12	1	120
Future Vol, veh/h	4	1	211	12	1	120
Conflicting Peds, #/hr	4	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	8	2	2	2
Mvmt Flow	4	1	229	13	1	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	372	243	0	0	242	0
Stage 1	236	-	-	-	-	-
Stage 2	136	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	*706	849	-	-	992	-
Stage 1	*927	-	-	-	-	-
Stage 2	*1085	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*762	846	-	-	992	-
Mov Cap-2 Maneuver	*762	-	-	-	-	-
Stage 1	*927	-	-	-	-	-
Stage 2	*1080	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 777	992	-
HCM Lane V/C Ratio	-	- 0.007	0.001	-
HCM Control Delay (s)	-	- 9.7	8.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	655	25	33	793	113	40	99	43	94	92	35
Future Volume (vph)	29	655	25	33	793	113	40	99	43	94	92	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3077	0	0	3089	1373	1422	1608	0	1501	1505	0
Flt Permitted		0.884			0.693		0.584			0.540		
Satd. Flow (perm)	0	2726	0	0	2764	1319	863	1608	0	834	1505	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		485			678			709			514	
Travel Time (s)		12.7			18.5			19.3			14.0	
Confl. Peds. (#/hr)	11		7	7		11	13		24	24		13
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
Heavy Vehicles (%)	3%	3%	0%	6%	3%	4%	10%	2%	7%	9%	10%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	779	0	0	907	124	44	156	0	103	139	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	13.0	48.0		35.0	35.0	35.0	31.0	31.0		31.0	31.0	
Total Split (%)	12.4%	45.7%		33.3%	33.3%	33.3%	29.5%	29.5%		29.5%	29.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		76.9			76.9	75.9	18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.73			0.73	0.72	0.17	0.17		0.17	0.17	
v/c Ratio		0.39			0.45	0.13	0.30	0.56		0.72	0.54	
Control Delay		6.7			6.2	6.2	43.7	46.6		66.6	46.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		6.7			6.2	6.2	43.7	46.6		66.6	46.0	
LOS		A			A	A	D	D		E	D	
Approach Delay		6.7			6.2			45.3			54.8	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)		67			67	17	26	97		66	86	
Queue Length 95th (ft)		157			154	m52	55	149		117	136	

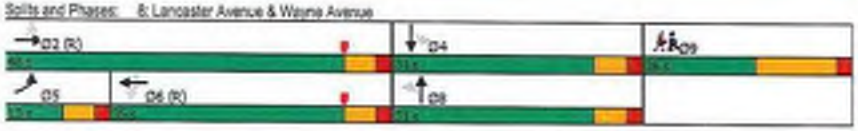
Lane Group	09
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	25%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		385			598			629			434	
Turn Bay Length (ft)						150						
Base Capacity (vph)		1997			2024	953	213	388		206	372	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.39			0.45	0.13	0.21	0.39		0.50	0.37	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 33 (31%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 15.1 Intersection LOS: B
Intersection Capacity Utilization 75.6% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



2020 Base (No-Build) Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: AM Peak

Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lanes, Volumes, Timings
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Synchro 10 Report

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	779	50	95	952	31	44
Future Volume (vph)	779	50	95	952	31	44
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	16	12
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3041	0	0	3065	1714	0
Flt Permitted				0.745	0.980	
Satd. Flow (perm)	3041	0	0	2296	1711	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	678			1152	490	
Travel Time (s)	18.5			31.4	13.4	
Confl. Peds. (#/hr)		6	6		4	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	10%	4%	3%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	922	0	0	1164	83	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	61.0		12.0	73.0	32.0	
Total Split (%)	58.1%		11.4%	69.5%	30.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	84.6			84.6	11.4	
Actuated g/C Ratio	0.81			0.81	0.11	
v/c Ratio	0.38			0.63	0.45	
Control Delay	2.6			3.4	50.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	2.6			3.4	50.6	
LOS	A			A	D	
Approach Delay	2.6			3.4	50.6	
Approach LOS	A			A	D	
Queue Length 50th (ft)	66			36	53	
Queue Length 95th (ft)	70			43	98	
Internal Link Dist (ft)	598			1072	410	
Turn Bay Length (ft)						
Base Capacity (vph)	2449			1848	440	

2020 Base (No-Build) Conditions
9: Louella Avenue & Lancaster Avenue
Timing Plan: AM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.38			0.63	0.19	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 48 (46%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 4.9 — Intersection LOS: A
Intersection Capacity Utilization 70.8% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lanes, Volumes, Timings
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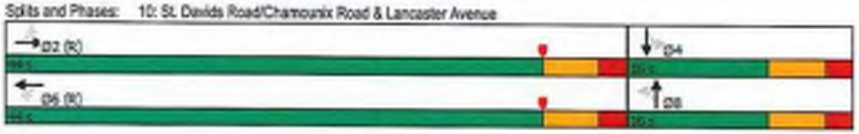
Synchro 10 Report

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	861	9	13	1121	287	19	68	71	93	38	38
Future Volume (vph)	14	861	9	13	1121	287	19	68	71	93	38	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1639			1078			276			428	
Travel Time (s)		31.9			21.0			7.5			11.7	
Confl. Peds. (#/hr)	6					6	4		5	5		4
Confl. Bikes (#/hr)												1
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
Heavy Vehicles (%)	0%	3%	0%	0%	4%	1%	0%	0%	4%	1%	5%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	15.0	15.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	44.0	44.0		44.0	44.0		16.0	16.0		16.0	16.0	
Total Split (%)	73.3%	73.3%		73.3%	73.3%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 20 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Charmounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	861	9	13	1121	287	19	68	71	93	38	38
Future Volume (veh/h)	14	861	9	13	1121	287	19	68	71	93	38	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.98
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	1782	1731	1782	1845	1785	1845	1851	1857	1891	1881	1838	1881
Adj Flow Rate, veh/h	15	946	9	14	1232	294	21	75	75	102	42	42
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	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, %	3	3	3	4	4	4	0	0	0	5	5	5
Cap, veh/h	72	2130	20	67	1767	413	88	142	127	220	70	57
Arrive On Green	0.65	0.67	0.65	0.65	0.67	0.65	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	15	3192	30	9	2649	619	126	854	765	764	421	346
Grp Volume(v), veh/h	500	0	470	822	0	718	171	0	0	186	0	0
Grp Sat Flow(s),veh/h/ln	1668	0	1570	1766	0	1512	1745	0	0	1530	0	0
Q Serve(g_s), s	0.0	0.0	8.5	0.0	0.0	18.3	0.0	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	8.5	17.5	0.0	18.3	5.5	0.0	0.0	6.9	0.0	0.0
Prop In Lane	0.03		0.02	0.02		0.41	0.12		0.44	0.55		0.23
Lane Grp Cap(c), veh/h	1146	0	1047	1210	0	1008	328	0	0	322	0	0
V/C Ratio(X)	0.44	0.00	0.45	0.68	0.00	0.71	0.52	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1146	0	1047	1210	0	1008	357	0	0	348	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.7	0.0	4.8	6.2	0.0	6.5	23.4	0.0	0.0	24.0	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.4	3.1	0.0	4.3	1.8	0.0	0.0	2.7	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(95%),veh/ln	7.9	0.0	7.3	15.0	0.0	13.4	5.2	0.0	0.0	5.9	0.0	0.0
LnGrp Delay(d),s/veh	5.9	0.0	6.1	9.3	0.0	10.8	25.3	0.0	0.0	26.7	0.0	0.0
LnGrp LOS	A		A	A		B	C			C		
Approach Vol, veh/h		970			1540			171			186	
Approach Delay, s/veh		6.0			10.0			25.3			26.7	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		45.0		15.0		45.0		15.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		38.0		10.0		38.0		10.0
Max Q Clear Time (g_c+I1), s		10.5		8.9		20.3		7.5
Green Ext Time (p_c), s		4.2		0.1		7.1		0.2

Intersection Summary

HCM 2010 Ctrl Delay 10.6
HCM 2010 LOS B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	17	6	5	93	12	28	173	11	3	61	19
Future Volume (vph)	5	17	6	5	93	12	28	173	11	3	61	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.972			0.985			0.993			0.969	
Flt Protected		0.991			0.998			0.993			0.998	
Satd. Flow (prot)	0	1619	0	0	1740	0	0	1638	0	0	1695	0
Flt Permitted		0.991			0.998			0.993			0.998	
Satd. Flow (perm)	0	1619	0	0	1740	0	0	1638	0	0	1695	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1128			434			188			311	
Travel Time (s)		30.8			11.8			5.1			8.5	
Confl. Peds. (#/hr)	7		3	3		7	10					10
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	20%	0%	17%	0%	2%	0%	18%	6%	0%	0%	2%	5%
Adj. Flow (vph)	7	24	8	7	131	17	39	244	15	4	86	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	155	0	0	298	0	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 33.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	17	6	5	93	12	28	173	11	3	61	19
Future Vol, veh/h	5	17	6	5	93	12	28	173	11	3	61	19
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	20	0	17	0	2	0	18	6	0	0	2	5
Mvmt Flow	7	24	8	7	131	17	39	244	15	4	86	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	9.3	11.1	8.5
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	18%	5%	4%
Vol Thru, %	82%	61%	85%	73%
Vol Right, %	5%	21%	11%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	212	28	110	83
LT Vol	28	5	5	3
Through Vol	173	17	93	61
RT Vol	11	6	12	19
Lane Flow Rate	299	39	155	117
Geometry Grp	1	1	1	1
Degree of Util (X)	0.4	0.059	0.211	0.15
Departure Headway (Hd)	4.824	5.361	4.895	4.821
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	743	664	730	772
Service Time	2.868	3.425	2.946	2.874
HCM Lane V/C Ratio	0.402	0.059	0.212	0.152
HCM Control Delay	11.1	8.8	9.3	8.5
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.9	0.2	0.8	0.5

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	29	89	31	17	42
Future Volume (vph)	5	29	89	31	17	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.884		0.965			
Flt Protected	0.993					0.986
Satd. Flow (prot)	1540	0	1605	0	0	1571
Flt Permitted	0.993					0.986
Satd. Flow (perm)	1540	0	1605	0	0	1571
Link Speed (mph)	25		25			25
Link Distance (ft)	1128		186			480
Travel Time (s)	30.8		5.1			13.4
Confl. Peds. (#/hr)		14		7	7	
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Heavy Vehicles (%)	0%	3%	0%	32%	23%	9%
Adj. Flow (vph)	9	54	165	57	31	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	222	0	0	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 23.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	29	89	31	17	42
Future Vol, veh/h	5	29	89	31	17	42
Conflicting Peds, #/hr	0	14	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	0	3	0	32	23	9
Mvmt Flow	9	54	165	57	31	78

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	341	215	0	0	229	0
Stage 1	201	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	752	877	-	-	1003	-
Stage 1	964	-	-	-	-	-
Stage 2	1031	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	722	860	-	-	996	-
Mov Cap-2 Maneuver	722	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	997	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	2.5
HCM LOS	A		

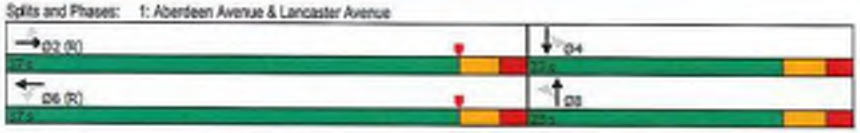
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 836	996	-
HCM Lane V/C Ratio	-	- 0.075	0.032	-
HCM Control Delay (s)	-	- 9.7	8.7	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	850	30	10	962	59	39	63	26	118	113	68
Future Volume (vph)	33	850	30	10	962	59	39	63	26	118	113	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1121			98			133			464	
Travel Time (s)		30.6			1.9			3.5			12.7	
Confl. Peds. (#/hr)	8		8	6		6	3		3	3		3
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	3%	0%	1%	3%	0%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	23.0	23.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 38 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	850	30	10	962	59	39	63	26	118	113	68
Future Volume (veh/h)	33	850	30	10	962	59	39	63	26	118	113	68
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
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	1800	1780	1800	1809	1789	1809	1782	1782	1782	1836	1887	1836
Adj Flow Rate, veh/h	34	876	31	10	992	61	40	65	27	122	116	70
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	98	1930	67	66	1979	121	155	227	78	220	167	89
Arrive On Green	0.61	0.63	0.61	0.61	0.63	0.61	0.22	0.24	0.22	0.22	0.24	0.22
Sat Flow, veh/h	54	3085	107	8	3164	193	316	942	324	565	694	370
Grp Volume(v), veh/h	478	0	453	560	0	503	132	0	0	308	0	0
Grp Sat Flow(s),veh/h/ln	1646	0	1600	1772	0	1593	1584	0	0	1630	0	0
Q Serve(g_s), s	0.0	0.0	9.2	0.0	0.0	10.4	0.0	0.0	0.0	6.8	0.0	0.0
Cycle Q Clear(g_c), s	8.4	0.0	9.2	10.4	0.0	10.4	3.6	0.0	0.0	10.7	0.0	0.0
Prop In Lane	0.07		0.07	0.02		0.12	0.30		0.20	0.40		0.23
Lane Grp Cap(c), veh/h	1067	0	1001	1140	0	997	434	0	0	449	0	0
V/C Ratio(X)	0.45	0.00	0.45	0.49	0.00	0.50	0.30	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	1067	0	1001	1140	0	997	545	0	0	567	0	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)	0.90	0.00	0.90	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	5.9	6.2	0.0	6.2	16.9	0.0	0.0	21.4	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.4	1.5	0.0	1.8	0.4	0.0	0.0	2.4	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(95%),veh/ln	7.8	0.0	7.6	9.6	0.0	8.7	3.4	0.0	0.0	9.0	0.0	0.0
LnGrp Delay(d),s/veh	7.0	0.0	7.3	7.7	0.0	8.0	19.3	0.0	0.0	23.9	0.0	0.0
LnGrp LOS	A		A	A		A	B			C		
Approach Vol, veh/h		941			1063			132			308	
Approach Delay, s/veh		7.2			7.6			19.3			23.9	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.5		18.5		41.5		18.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		18.0		32.0		18.0
Max Q Clear Time (g_c+I1), s		11.2		12.7		12.4		5.8
Green Ext Time (p_c), s		4.2		0.6		4.3		0.3

Intersection Summary

HCM 2010 Ctrl Delay 15.2
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	976	18	2	1032	0	3
Future Volume (vph)	976	18	2	1032	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Flt Protected						
Satd. Flow (prot)	2739	0	0	2675	1528	0
Flt Permitted						
Satd. Flow (perm)	2739	0	0	2675	1528	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	98	
Travel Time (s)	1.9			1.6	2.6	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	1006	19	2	1064	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1025	0	0	1066	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 42.5% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	976	18	2	1032	0	3
Future Vol, veh/h	976	18	2	1032	0	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	1006	19	2	1064	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1025	0	1555	516
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	539	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	676	-	*80	*905
Stage 1	-	-	-	-	*317	-
Stage 2	-	-	-	-	*601	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	676	-	*79	*903
Mov Cap-2 Maneuver	-	-	-	-	*79	-
Stage 1	-	-	-	-	*317	-
Stage 2	-	-	-	-	*754	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	903	-	-	676	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9	-	-	9.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	955	24	3	1032	2	21
Future Volume (vph)	955	24	3	1032	2	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.876	
Flt Protected					0.996	
Satd. Flow (prot)	2736	0	0	2675	1540	0
Flt Permitted					0.996	
Satd. Flow (perm)	2736	0	0	2675	1540	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	985	25	3	1064	2	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1010	0	0	1067	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.3% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	955	24	3	1032	2	21
Future Vol, veh/h	955	24	3	1032	2	21
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	985	25	3	1064	2	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1010	0	1539	508
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	541	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	3.8	3.9
Pot Cap-1 Maneuver	-	-	*984	-	*82	*614
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*801	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*984	-	*81	*612
Mov Cap-2 Maneuver	-	-	-	-	*81	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*793	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	455	-	-	* 984	-
HCM Lane V/C Ratio	0.052	-	-	0.003	-
HCM Control Delay (s)	13.3	-	-	8.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.2	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	940	36	5	1035	0	3
Future Volume (vph)	940	36	5	1035	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.865	
Flt Protected						
Satd. Flow (prot)	2730	0	0	2675	1526	0
Flt Permitted						
Satd. Flow (perm)	2730	0	0	2675	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	76	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	969	37	5	1067	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1006	0	0	1072	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	940	36	5	1035	0	3
Future Vol, veh/h	940	36	5	1035	0	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	969	37	5	1067	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1006	0	1535	506
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*984	-	*83	*614
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*601	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*984	-	*82	*612
Mov Cap-2 Maneuver	-	-	-	-	*82	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*769	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	612	-	-	*984	-
HCM Lane V/C Ratio	0.004	-	-	0.005	-
HCM Control Delay (s)	9.5	-	-	8.7	0.1
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	942	1	4	1033	7	28
Future Volume (vph)	942	1	4	1033	7	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt					0.891	
Flt Protected					0.990	
Satd. Flow (prot)	2747	0	0	2675	1557	0
Flt Permitted					0.990	
Satd. Flow (perm)	2747	0	0	2675	1557	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1653	89	
Travel Time (s)	1.7			32.2	2.4	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	971	1	4	1065	7	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	972	0	0	1069	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.0% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	942	1	4	1033	7	28
Future Vol, veh/h	942	1	4	1033	7	28
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	971	1	4	1065	7	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	972	0	1516	489
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	544	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*664	-	*86	*614
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*601	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*664	-	*85	*612
Mov Cap-2 Maneuver	-	-	-	-	*85	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*791	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	300	-	-	* 664	-
HCM Lane V/C Ratio	0.12	-	-	0.004	-
HCM Control Delay (s)	18.6	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	0.4	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	4	125	12	2	151
Future Volume (vph)	8	4	125	12	2	151
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.955		0.989			
Flt Protected	0.968					0.999
Satd. Flow (prot)	1631	0	1759	0	0	1764
Flt Permitted	0.968					0.999
Satd. Flow (perm)	1631	0	1759	0	0	1764
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Confl. Peds. (#/hr)	6	6				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	0%	2%	2%	3%
Adj. Flow (vph)	8	4	129	12	2	156
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	141	0	0	158
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 21.9% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	4	125	12	2	151
Future Vol, veh/h	8	4	125	12	2	151
Conflicting Peds, #/hr	6	6	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	0	2	2	3
Mvmt Flow	8	4	129	12	2	156

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	301	141	0	0	141	0
Stage 1	135	-	-	-	-	-
Stage 2	166	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	*871	967	-	-	1075	-
Stage 1	*1035	-	-	-	-	-
Stage 2	*1060	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*864	961	-	-	1075	-
Mov Cap-2 Maneuver	*864	-	-	-	-	-
Stage 1	*1035	-	-	-	-	-
Stage 2	*1051	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	894	1075	-
HCM Lane V/C Ratio	-	-	0.014	0.002	-
HCM Control Delay (s)	-	-	9.1	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	132	7	5	154
Future Volume (vph)	2	5	132	7	5	154
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Flt	0.904		0.993			
Flt Protected	0.986					0.998
Satd. Flow (prot)	1573	0	1768	0	0	1762
Flt Permitted	0.986					0.998
Satd. Flow (perm)	1573	0	1768	0	0	1762
Link Speed (mph)	25		25			25
Link Distance (ft)	74		279			69
Travel Time (s)	2.0		7.6			1.9
Confl. Peds. (#/hr)	6	6				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	0%	2%	2%	3%
Adj. Flow (vph)	2	5	136	7	5	159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	143	0	0	164
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 24.6% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	5	132	7	5	154
Future Vol, veh/h	2	5	132	7	5	154
Conflicting Peds, #/hr	6	6	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	0	2	2	3
Mvmt Flow	2	5	136	7	5	159

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	315	146	0	0	143	0
Stage 1	146	-	-	-	-	-
Stage 2	175	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	652	960	-	-	1073	-
Stage 1	1030	-	-	-	-	-
Stage 2	1060	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	643	955	-	-	1073	-
Mov Cap-2 Maneuver	643	-	-	-	-	-
Stage 1	1030	-	-	-	-	-
Stage 2	1048	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT
Capacity (veh/h)	-	-	920	1073	-
HCM Lane V/C Ratio	-	-	0.008	0.005	-
HCM Control Delay (s)	-	-	8.9	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	745	53	32	675	92	22	89	39	107	145	46
Future Volume (vph)	40	745	53	32	675	92	22	89	39	107	145	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3089	0	0	3151	1428	1564	1578	0	1604	1619	0
Flt Permitted		0.880			0.878		0.417			0.582		
Satd. Flow (perm)	0	2723	0	0	2771	1322	667	1578	0	954	1619	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		533			714			348			368	
Travel Time (s)		14.5			19.5			9.5			10.0	
Confl. Peds. (#/hr)	23		11	11		23	32		28	28		32
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	3%	1%	0%	0%	3%	10%	2%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	855	0	0	722	94	22	131	0	109	195	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	61.0		31.0	31.0	31.0	33.0	33.0		33.0	33.0	
Total Split (%)	25.0%	50.8%		25.8%	25.8%	25.8%	27.5%	27.5%		27.5%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		89.4			89.4	88.4	20.6	20.6		20.6	20.6	
Actuated g/C Ratio		0.74			0.74	0.74	0.17	0.17		0.17	0.17	
v/c Ratio		0.42			0.35	0.10	0.19	0.48		0.65	0.70	
Control Delay		7.0			3.4	3.4	44.1	49.8		65.1	59.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.0			3.4	3.4	44.1	49.8		65.1	59.7	
LOS		A			A	A	D	D		E	E	
Approach Delay		7.0			3.4			49.0			61.6	
Approach LOS		A			A			D			E	
Queue Length 50th (ft)		112			38	9	15	93		80	144	
Queue Length 95th (ft)		184			91	26	38	146		135	211	

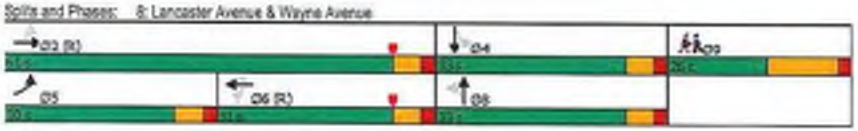
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		453			634			268			288	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2027			2063	973	155	368		222	377	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.42			0.35	0.10	0.14	0.36		0.49	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 16.4 Intersection LOS: B
Intersection Capacity Utilization 77.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



2020 Base (No-Build) Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: PM Peak

Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lanes, Volumes, Timings
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Synchro 10 Report

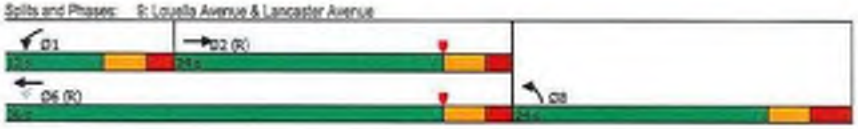
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	897	32	53	846	15	30
Future Volume (vph)	897	32	53	846	15	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3128	0	0	3130	1644	0
Flt Permitted				0.854	0.983	
Satd. Flow (perm)	3128	0	0	2681	1628	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	714			1121	430	
Travel Time (s)	19.5			30.6	11.7	
Confl. Peds. (#/hr)		7	7		29	8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	0%	4%	1%	7%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	967	0	0	936	47	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	24.0		12.0	36.0	24.0	
Total Split (%)	40.0%		20.0%	60.0%	40.0%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	42.7			42.7	8.3	
Actuated g/C Ratio	0.71			0.71	0.14	
v/c Ratio	0.43			0.49	0.21	
Control Delay	5.9			2.2	34.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	5.9			2.2	34.6	
LOS	A			A	C	
Approach Delay	5.9			2.2	34.6	
Approach LOS	A			A	C	
Queue Length 50th (ft)	147			21	15	
Queue Length 95th (ft)	136			35	39	
Internal Link Dist (ft)	634			1041	350	
Turn Bay Length (ft)						
Base Capacity (vph)	2228			1909	520	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.43			0.49	0.09	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 6 (10%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 4.5 — Intersection LOS: A
Intersection Capacity Utilization 67.8% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Louella Avenue & Lancaster Avenue

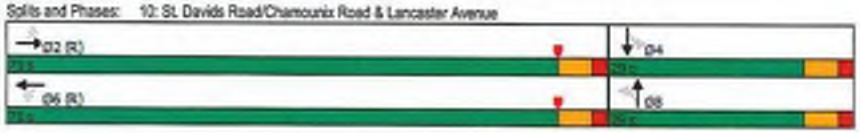


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	961	17	39	1013	142	4	25	32	75	22	42
Future Volume (vph)	35	961	17	39	1013	142	4	25	32	75	22	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1653			896			295			258	
Travel Time (s)		32.2			17.5			8.0			7.0	
Confl. Peds. (#/hr)	5		3	3		5			8	8		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	1%	25%	0%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	71.0	71.0		71.0	71.0		29.0	29.0		29.0	29.0	
Total Split (%)	71.0%	71.0%		71.0%	71.0%		29.0%	29.0%		29.0%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 65 (65%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	961	17	39	1013	142	4	25	32	75	22	42
Future Volume (veh/h)	35	961	17	39	1013	142	4	25	32	75	22	42
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.98	0.98		0.98
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	1782	1765	1782	1845	1827	1845	1891	1834	1891	1881	1870	1881
Adj Flow Rate, veh/h	37	1022	17	41	1078	145	4	27	34	80	23	45
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	91	2349	39	88	2186	291	43	96	110	153	39	60
Arrive On Green	0.76	0.77	0.76	0.76	0.77	0.76	0.12	0.13	0.12	0.12	0.13	0.12
Sat Flow, veh/h	68	3034	50	65	2824	376	38	751	877	777	308	474
Grp Volume(v), veh/h	532	0	544	648	0	616	65	0	0	148	0	0
Grp Sat Flow(s),veh/h/ln	1554	0	1597	1669	0	1595	1676	0	0	1559	0	0
Q Serve(g_s), s	0.0	0.0	11.7	0.0	0.0	14.3	0.0	0.0	0.0	5.5	0.0	0.0
Cycle Q Clear(g_c), s	9.8	0.0	11.7	12.5	0.0	14.3	3.6	0.0	0.0	9.1	0.0	0.0
Prop In Lane	0.07		0.03	0.06		0.24	0.06		0.52	0.54		0.30
Lane Grp Cap(c), veh/h	1226	0	1236	1313	0	1235	233	0	0	236	0	0
V/C Ratio(X)	0.43	0.00	0.44	0.49	0.00	0.50	0.28	0.00	0.00	0.63	0.00	0.00
Avail Cap(c_a), veh/h	1226	0	1236	1313	0	1235	417	0	0	402	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.7	0.0	3.9	4.0	0.0	4.2	40.0	0.0	0.0	42.3	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.1	1.3	0.0	1.4	0.9	0.0	0.0	3.8	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(95%),veh/ln	9.1	0.0	9.2	11.3	0.0	10.9	3.1	0.0	0.0	7.7	0.0	0.0
LnGrp Delay(d),s/veh	4.8	0.0	5.0	5.3	0.0	5.7	40.9	0.0	0.0	46.2	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1076			1264			65			148	
Approach Delay, s/veh		4.9			5.5			40.9			46.2	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		82.4		17.6		82.4		17.6
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		65.0		23.0		65.0		23.0
Max Q Clear Time (g_c+I1), s		13.7		11.1		16.3		5.6
Green Ext Time (p_c), s		5.2		0.6		6.7		0.2

Intersection Summary

HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	9	5	7	71	11	9	120	6	6	100	14
Future Volume (vph)	15	9	5	7	71	11	9	120	6	6	100	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.977			0.983			0.994			0.984	
Flt Protected		0.974			0.996			0.997			0.997	
Satd. Flow (prot)	0	1552	0	0	1748	0	0	1598	0	0	1723	0
Flt Permitted		0.974			0.996			0.997			0.997	
Satd. Flow (perm)	0	1552	0	0	1748	0	0	1598	0	0	1723	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1097			652			218			279	
Travel Time (s)		29.9			17.8			5.9			7.6	
Confl. Peds. (#/hr)	15		7	7		15	7		5	5		7
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	7%	0%	40%	0%	1%	0%	11%	11%	0%	0%	3%	0%
Adj. Flow (vph)	19	11	6	9	89	14	11	150	8	8	125	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	112	0	0	169	0	0	151	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 25.9% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	9	5	7	71	11	9	120	6	6	100	14
Future Vol, veh/h	15	9	5	7	71	11	9	120	6	6	100	14
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	7	0	40	0	1	0	11	11	0	0	3	0
Mvmt Flow	19	11	6	9	89	14	11	150	8	8	125	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.4	8.9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	52%	8%	5%
Vol Thru, %	89%	31%	80%	83%
Vol Right, %	4%	17%	12%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	135	29	89	120
LT Vol	9	15	7	6
Through Vol	120	9	71	100
RT Vol	6	5	11	14
Lane Flow Rate	169	36	111	150
Geometry Grp	1	1	1	1
Degree of Util (X)	0.215	0.049	0.143	0.183
Departure Headway (Hd)	4.59	4.89	4.519	4.366
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	783	732	777	819
Service Time	2.615	2.922	2.645	2.41
HCM Lane V/C Ratio	0.216	0.049	0.143	0.183
HCM Control Delay	8.9	8.2	8.4	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.2	0.5	0.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	44	86	11	16	60
Future Volume (vph)	9	44	86	11	16	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.887		0.984			
Flt Protected	0.932					0.990
Satd. Flow (prot)	1558	0	1740	0	0	1889
Flt Permitted	0.992					0.990
Satd. Flow (perm)	1558	0	1740	0	0	1889
Link Speed (mph)	25		25			25
Link Distance (ft)	1087		261			430
Travel Time (s)	29.9		7.1			11.7
Confl. Peds. (#/hr)	1	24		10	10	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	2%	2%	0%	19%	2%
Adj. Flow (vph)	10	51	99	13	18	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	112	0	0	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 27.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	44	86	11	16	60
Future Vol, veh/h	9	44	86	11	16	60
Conflicting Peds, #/hr	1	24	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	19	2
Mvmt Flow	10	51	99	13	18	69

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	222	140	0	0	122	0
Stage 1	116	-	-	-	-	-
Stage 2	106	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.5	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	2.2	-
Pot Cap-1 Maneuver	886	906	-	-	1019	-
Stage 1	1058	-	-	-	-	-
Stage 2	1069	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	859	937	-	-	1009	-
Mov Cap-2 Maneuver	859	-	-	-	-	-
Stage 1	1047	-	-	-	-	-
Stage 2	1048	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	1.8
HCM LOS	A		

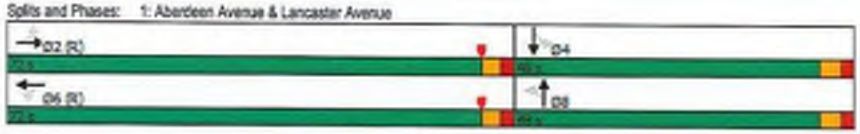
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	923	1009	-
HCM Lane V/C Ratio	-	-	0.066	0.018	-
HCM Control Delay (s)	-	-	9.2	8.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	693	42	14	856	50	39	94	36	117	71	64
Future Volume (vph)	39	693	42	14	856	50	39	94	36	117	71	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			98			130			464	
Travel Time (s)		31.1			1.9			3.5			12.7	
Confl. Peds. (#/hr)	15		7	7		15	12		9	9		12
Confl. Bikes (#/hr)			1			3			1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	2%	7%	2%	2%	0%	1%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	693	42	14	856	50	39	94	36	117	71	64
Future Volume (veh/h)	39	693	42	14	856	50	39	94	36	117	71	64
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.98
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	1800	1795	1800	1809	1772	1809	1792	1772	1782	1836	1891	1836
Adj Flow Rate, veh/h	40	714	43	14	882	52	40	97	37	121	73	66
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	0	0	0
Cap, veh/h	117	1999	119	45	2217	130	92	208	71	175	93	78
Arrive On Green	1.00	1.00	1.00	0.70	0.71	0.70	0.21	0.22	0.21	0.21	0.22	0.21
Sat Flow, veh/h	117	2805	167	20	3110	182	349	943	322	595	424	347
Grp Volume(v), veh/h	393	0	404	498	0	450	174	0	0	260	0	0
Grp Sat Flow(s),veh/h/ln	1518	0	1572	1739	0	1574	1513	0	0	1366	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	13.9	0.0	0.0	0.0	10.9	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.5	0.0	13.9	11.7	0.0	0.0	22.5	0.0	0.0
Prop In Lane	0.10		0.11	0.03		0.12	0.23		0.21	0.47		0.25
Lane Grp Cap(c), veh/h	1102	0	1120	1255	0	1122	358	0	0	334	0	0
V/C Ratio(X)	0.36	0.00	0.36	0.40	0.00	0.40	0.49	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	1102	0	1120	1255	0	1122	581	0	0	549	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.9	0.0	7.0	41.0	0.0	0.0	45.9	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.9	0.9	0.0	1.1	1.0	0.0	0.0	3.9	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(95%),veh/ln	0.5	0.0	0.5	11.5	0.0	10.3	9.0	0.0	0.0	13.8	0.0	0.0
LnGrp Delay(d),s/veh	0.9	0.0	0.9	7.8	0.0	8.0	42.0	0.0	0.0	49.9	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		797			948			174			260	
Approach Delay, s/veh		0.9			7.9			42.0			49.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.5		30.5		89.5		30.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		24.5		15.9		13.7
Green Ext Time (p_c), s		3.6		1.0		4.1		0.6

Intersection Summary

HCM 2010 Ctrl Delay 13.1
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	829	17	0	921	0	2
Future Volume (vph)	829	17	0	921	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Flt Protected						
Satd. Flow (prot)	3072	0	0	2913	1526	0
Flt Permitted						
Satd. Flow (perm)	3072	0	0	2913	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	98	
Travel Time (s)	1.9			1.6	2.6	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	855	18	0	949	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	873	0	0	949	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 39.0% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	829	17	0	921	0	2
Future Vol, veh/h	829	17	0	921	0	2
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	855	18	0	949	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	873	0	1346	444
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	482	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	987	-	*117	*335
Stage 1	-	-	-	-	*755	-
Stage 2	-	-	-	-	*845	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	987	-	*116	*330
Mov Cap-2 Maneuver	-	-	-	-	*116	-
Stage 1	-	-	-	-	*755	-
Stage 2	-	-	-	-	*839	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	330	-	-	987	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	830	1	0	920	1	22
Future Volume (vph)	830	1	0	920	1	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt					0.871	
Flt Protected					0.998	
Satd. Flow (prot)	3081	0	0	2913	1534	0
Flt Permitted					0.998	
Satd. Flow (perm)	3081	0	0	2913	1534	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	855	1	0	948	1	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	857	0	0	948	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.9% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2020 Base (No-Build) Conditions
3: Eastern Sunoco Driveway Driveway & Lancaster Avenue
Timing Plan: SAT Peak

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	830	1	0	920	1	22
Future Vol, veh/h	830	1	0	920	1	22
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	856	1	0	948	1	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	857	0	1338	436
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	481	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1029	-	*118	*650
Stage 1	-	-	-	-	*881	-
Stage 2	-	-	-	-	*645	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1029	-	*117	*646
Mov Cap-2 Maneuver	-	-	-	-	*117	-
Stage 1	-	-	-	-	*881	-
Stage 2	-	-	-	-	*639	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	666	-	-	* 1029	-
HCM Lane V/C Ratio	0.036	-	-	-	-
HCM Control Delay (s)	13.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %ile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	805	47	8	918	2	4
Future Volume (vph)	805	47	8	918	2	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.910	
Flt Protected					0.964	
Satd. Flow (prot)	3056	0	0	2913	1580	0
Flt Permitted					0.964	
Satd. Flow (perm)	3056	0	0	2913	1580	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	76	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	830	48	8	946	2	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	878	0	0	954	6	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	805	47	8	918	2	4
Future Vol, veh/h	805	47	8	918	2	4
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	830	48	8	946	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	878	0	1350	446
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	496	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	1056	-	*116	*680
Stage 1	-	-	-	-	*912	-
Stage 2	-	-	-	-	*645	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1056	-	*113	*675
Mov Cap-2 Maneuver	-	-	-	-	*113	-
Stage 1	-	-	-	-	*912	-
Stage 2	-	-	-	-	*627	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	269	-	-	1056	-
HCM Lane V/C Ratio	0.023	-	-	0.008	-
HCM Control Delay (s)	18.7	-	-	8.4	0.1
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	805	4	4	923	3	54
Future Volume (vph)	805	4	4	923	3	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.999				0.872	
Flt Protected					0.997	
Satd. Flow (prot)	3078	0	0	2913	1534	0
Flt Permitted					0.997	
Satd. Flow (perm)	3078	0	0	2913	1534	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1647	89	
Travel Time (s)	1.7			32.1	2.4	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	830	4	4	952	3	56
Shared Lane Traffic (%)						
Lane Group Flow (vph)	834	0	0	956	59	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 42.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	805	4	4	923	3	54
Future Vol, veh/h	805	4	4	923	3	54
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	830	4	4	952	3	56

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	0	0	834	0	1323	434	
Stage 1	-	-	-	-	832	-	
Stage 2	-	-	-	-	491	-	
Critical Hdwy	-	-	3.9	-	7.7	7.2	
Critical Hdwy Stg 1	-	-	-	-	6.7	-	
Critical Hdwy Stg 2	-	-	-	-	6.7	-	
Follow-up Hdwy	-	-	2.4	-	2.8	2.9	
Pot Cap-1 Maneuver	-	-	*1064	-	*122	*660	
Stage 1	-	-	-	-	*912	-	
Stage 2	-	-	-	-	*845	-	
Platoon blocked, %	-	-	1	-		1	
Mov Cap-1 Maneuver	-	-	*1064	-	*120	*875	
Mov Cap-2 Maneuver	-	-	-	-	*120	-	
Stage 1	-	-	-	-	*912	-	
Stage 2	-	-	-	-	*833	-	

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	657	-	-	* 1064	-
HCM Lane V/C Ratio	0.089	-	-	0.004	-
HCM Control Delay (s)	11	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.3	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	10	159	10	2	125
Future Volume (vph)	6	10	159	10	2	125
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.916		0.992			
Flt Protected	0.982					0.999
Satd. Flow (prot)	1587	0	1733	0	0	1798
Flt Permitted	0.982					0.999
Satd. Flow (perm)	1587	0	1733	0	0	1798
Link Speed (mph)	25		25			25
Link Distance (ft)	122		69			130
Travel Time (s)	2.8		1.9			3.5
Confl. Peds. (#/hr)	9	9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%
Adj. Flow (vph)	6	10	164	10	2	129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	174	0	0	131
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 22.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	10	159	10	2	125
Future Vol, veh/h	6	10	159	10	2	125
Conflicting Peds, #/hr	9	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	1
Mvmt Flow	6	10	164	10	2	129

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	311	178	0	0	174	0
Stage 1	169	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	832	921	-	-	1047	-
Stage 1	997	-	-	-	-	-
Stage 2	1076	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	823	913	-	-	1047	-
Mov Cap-2 Maneuver	823	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	1066	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	877	1047	-
HCM Lane V/C Ratio	-	-	0.019	0.002	-
HCM Control Delay (s)	-	-	9.2	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.1	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	2	167	8	0	131
Future Volume (vph)	2	2	167	8	0	131
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932		0.994			
Flt Protected	0.976					
Satd. Flow (prot)	1605	0	1737	0	0	1800
Flt Permitted	0.976					
Satd. Flow (perm)	1605	0	1737	0	0	1800
Link Speed (mph)	25		25			25
Link Distance (ft)	74		296			69
Travel Time (s)	2.0		8.1			1.9
Confl. Peds. (#/hr)	9	9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%
Adj. Flow (vph)	2	2	172	8	0	135
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	180	0	0	135
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 22.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	167	8	0	131
Future Vol, veh/h	2	2	167	8	0	131
Conflicting Peds, #/hr	9	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	1
Mvmt Flow	2	2	172	8	0	135

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	320	185	0	0	180	0
Stage 1	176	-	-	-	-	-
Stage 2	144	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	621	913	-	-	1042	-
Stage 1	930	-	-	-	-	-
Stage 2	1075	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	613	906	-	-	1042	-
Mov Cap-2 Maneuver	613	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	1065	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 857	1042	-
HCM Lane V/C Ratio	-	- 0.005	-	-
HCM Control Delay (s)	-	- 9.2	0	-
HCM Lane LOS	-	- A	A	-
HCM 95th %ile Q(veh)	-	- 0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	694	38	44	775	87	60	81	71	68	80	60
Future Volume (vph)	38	694	38	44	775	87	60	81	71	68	80	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3125	0	0	3149	1428	1564	1602	0	1620	1561	0
Flt Permitted		0.867			0.881		0.522			0.484		
Satd. Flow (perm)	0	2714	0	0	2715	1330	829	1602	0	802	1561	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			488	
Travel Time (s)		30.9			19.1			14.5			13.3	
Confl. Peds. (#/hr)	23		47	47		23	32		27	27		32
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	2%	1%	0%	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	793	0	0	844	90	62	157	0	70	144	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	64.0		34.0	34.0	34.0	30.0	30.0		30.0	30.0	
Total Split (%)	25.0%	53.3%		28.3%	28.3%	28.3%	25.0%	25.0%		25.0%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff. Green (s)		92.0			92.0	91.0	18.0	18.0		18.0	18.0	
Actuated g/C Ratio		0.77			0.77	0.76	0.15	0.15		0.15	0.15	
v/c Ratio		0.38			0.41	0.09	0.50	0.65		0.58	0.62	
Control Delay		5.7			3.6	3.3	56.5	60.4		65.9	58.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		5.7			3.6	3.3	56.5	60.4		65.9	58.5	
LOS		A			A	A	E	E		E	E	
Approach Delay		5.7			3.5			60.2			60.9	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		90			52	10	45	116		51	106	

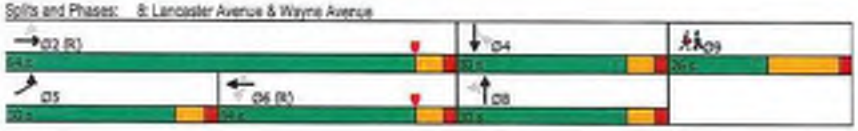
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff. Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		149			67	19	87	178		97	165	
Internal Link Dist (ft)		1052			622			452			438	
Turn Bay Length (ft)						150						
Base Capacity (vph)		2080			2081	1008	172	333		157	325	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.38			0.41	0.09	0.36	0.47		0.42	0.44	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.7 — Intersection LOS: B
Intersection Capacity Utilization 77.7% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



2020 Base (No-Build) Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: SAT Peak

Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lanes, Volumes, Timings
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Synchro 10 Report

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	788	57	48	917	41	65
Future Volume (vph)	788	57	48	917	41	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3139	0	0	3137	1703	0
Flt Permitted				0.852	0.981	
Satd. Flow (perm)	3139	0	0	2677	1682	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		17	17		30	17
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	2%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	880	0	0	1005	111	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	96.8			96.8	14.2	
Actuated g/C Ratio	0.81			0.81	0.12	
v/c Ratio	0.35			0.47	0.55	
Control Delay	3.0			2.0	59.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	3.0			2.0	59.6	
LOS	A			A	E	
Approach Delay	3.0			2.0	59.6	
Approach LOS	A			A	E	
Queue Length 50th (ft)	61			34	82	
Queue Length 95th (ft)	91			41	136	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2532			2159	482	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.35			0.47	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 5.7 — Intersection LOS: A
Intersection Capacity Utilization 71.7% — ICU Level of Service C
Analysis Period (min) 15

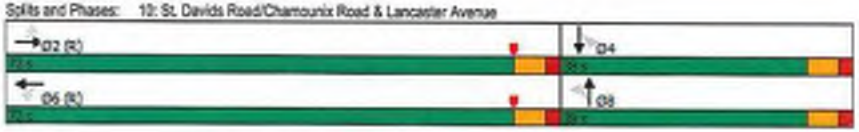
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	887	18	36	991	63	13	17	41	55	17	38
Future Volume (vph)	30	887	18	36	991	63	13	17	41	55	17	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-6%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1647			744			642			402	
Travel Time (s)		32.1			14.5			17.5			11.0	
Confl. Peds. (#/hr)	5		2	2		5			4	4		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	8%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



2020 Base (No-Build) Conditions
10: St. Davids Road/Chamounix Road & Lancaster Avenue
Timing Plan: SAT Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	887	18	36	991	63	13	17	41	55	17	38
Future Volume (veh/h)	30	887	18	36	991	63	13	17	41	55	17	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.99
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	1782	1765	1782	1845	1828	1845	1891	1864	1891	1881	1863	1881
Adj Flow Rate, veh/h	31	905	17	37	1011	61	13	17	42	56	17	34
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	90	2496	46	95	2487	148	56	49	93	122	32	48
Arrive On Green	0.81	0.82	0.81	0.81	0.82	0.81	0.08	0.09	0.08	0.06	0.09	0.08
Sat Flow, veh/h	68	3062	57	74	3050	182	186	534	994	770	336	515
Grp Volume(v), veh/h	476	0	477	563	0	546	72	0	0	107	0	0
Grp Sat Flow(s),veh/h/ln	1591	0	1596	1675	0	1531	1784	0	0	1622	0	0
Q Serve(g_s), s	0.0	0.0	8.7	0.0	0.0	10.3	0.0	0.0	0.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	7.6	0.0	8.7	9.1	0.0	10.3	4.4	0.0	0.0	6.8	0.0	0.0
Prop In Lane	0.07		0.04	0.07		0.11	0.18		0.58	0.52		0.32
Lane Grp Cap(c), veh/h	1317	0	1301	1385	0	1330	183	0	0	187	0	0
V/C Ratio(X)	0.36	0.00	0.37	0.41	0.00	0.41	0.39	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	1317	0	1301	1385	0	1330	508	0	0	489	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.6	0.0	2.7	2.7	0.0	2.8	47.8	0.0	0.0	48.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.8	0.9	0.0	0.9	1.9	0.0	0.0	3.9	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(95%),veh/ln	7.2	0.0	7.2	8.7	0.0	8.6	4.0	0.0	0.0	6.1	0.0	0.0
LnGrp Delay(d),s/veh	3.4	0.0	3.5	3.6	0.0	3.8	49.5	0.0	0.0	52.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		953			1109			72			107	
Approach Delay, s/veh		3.4			3.7			49.5			52.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		94.7		15.3		94.7		15.3
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		10.7		8.8		12.3		6.4
Green Ext Time (p_c), s		4.3		0.5		5.3		0.3

Intersection Summary

HCM 2010 Ctl Delay	7.4
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	14	3	4	27	18	3	111	11	6	102	18
Future Volume (vph)	7	14	3	4	27	18	3	111	11	6	102	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1900	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983			0.950			0.988			0.981	
Flt Protected		0.986			0.999			0.999			0.998	
Satd. Flow (prot)	0	1745	0	0	1688	0	0	1756	0	0	1721	0
Flt Permitted		0.986			0.999			0.999			0.998	
Satd. Flow (perm)	0	1745	0	0	1688	0	0	1756	0	0	1721	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			898			201			298	
Travel Time (s)		29.9			24.5			5.5			8.1	
Confl. Peds. (#/hr)	6		6	6		6	2		4	4		2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	1%	11%
Adj. Flow (vph)	9	18	4	5	34	23	4	141	14	8	129	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	62	0	0	159	0	0	160	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 22.0%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	14	3	4	27	18	3	111	11	6	102	18
Future Vol, veh/h	7	14	3	4	27	18	3	111	11	6	102	18
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	0	0	0	0	6	0	0	0	0	1	11
Mvmt Flow	9	18	4	5	34	23	4	141	14	8	129	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.9	7.8	8.2	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	29%	8%	5%
Vol Thru, %	89%	59%	55%	81%
Vol Right, %	9%	12%	37%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	125	24	49	126
LT Vol	3	7	4	6
Through Vol	111	14	27	102
RT Vol	11	3	18	18
Lane Flow Rate	158	30	62	159
Geometry Grp	1	1	1	1
Degree of Util (X)	0.186	0.039	0.076	0.186
Departure Headway (Hd)	4.236	4.546	4.424	4.308
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	851	772	812	836
Service Time	2.24	2.667	2.44	2.212
HCM Lane V/C Ratio	0.186	0.039	0.076	0.190
HCM Control Delay	8.2	7.9	7.8	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.2	0.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	50	75	8	18	36
Future Volume (vph)	9	50	75	8	18	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.886		0.987			
Flt Protected	0.992					0.984
Satd. Flow (prot)	1555	0	1777	0	0	1736
Flt Permitted	0.992					0.984
Satd. Flow (perm)	1555	0	1777	0	0	1736
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		890			450
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)	1	13		5	5	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	11%	0%	0%	0%	8%	0%
Adj. Flow (vph)	13	69	104	11	25	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	115	0	0	75
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 34.2% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	50	75	8	18	36
Future Vol, veh/h	9	50	75	8	18	36
Conflicting Peds, #/hr	1	13	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	11	0	0	0	8	0
Mvmt Flow	13	69	104	11	25	50

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	216	128	0	0	120	0
Stage 1	115	-	-	-	-	-
Stage 2	101	-	-	-	-	-
Critical Hdwy	6.51	6.2	-	-	4.4	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	-	-	3.1	-
Pot Cap-1 Maneuver	661	984	-	-	1056	-
Stage 1	1023	-	-	-	-	-
Stage 2	1039	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	635	987	-	-	1051	-
Mov Cap-2 Maneuver	635	-	-	-	-	-
Stage 1	1018	-	-	-	-	-
Stage 2	1013	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	2.8
HCM LOS	A		

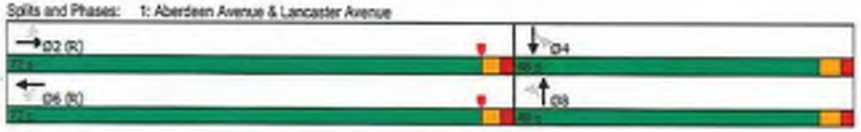
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 944	1051	-
HCM Lane V/C Ratio	-	- 0.087	0.024	-
HCM Control Delay (s)	-	- 9.2	8.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	547	26	13	585	32	29	48	23	62	49	37
Future Volume (vph)	28	547	26	13	585	32	29	48	23	62	49	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			98			130			464	
Travel Time (s)		31.1			1.9			3.5			12.7	
Confl. Peds. (#/hr)	1					1	22		6	6		22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	15%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	547	26	13	585	32	29	48	23	62	49	37
Future Volume (veh/h)	28	547	26	13	585	32	29	48	23	62	49	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.97		0.95	0.96		0.95
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	1800	1784	1800	1809	1787	1809	1782	1782	1782	1836	1909	1836
Adj Flow Rate, veh/h	29	558	26	13	597	31	30	49	22	63	50	34
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	126	2363	110	61	2499	129	84	126	47	124	89	51
Arrive On Green	1.00	1.00	1.00	0.79	0.80	0.79	0.13	0.14	0.13	0.13	0.14	0.13
Sat Flow, veh/h	118	2969	138	37	3140	162	327	912	345	593	644	372
Grp Volume(v), veh/h	311	0	302	335	0	398	101	0	0	147	0	0
Grp Sat Flow(s),veh/h/ln	1625	0	1599	1741	0	1588	1564	0	0	1609	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	5.8	6.0	0.0	0.0	3.4	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.7	0.0	5.8	6.8	0.0	0.0	10.2	0.0	0.0
Prop In Lane	0.09		0.09	0.04		0.10	0.30		0.22	0.43		0.23
Lane Grp Cap(c), veh/h	1313	0	1272	1402	0	1271	244	0	0	251	0	0
V/C Ratio(X)	0.24	0.00	0.24	0.24	0.00	0.24	0.41	0.00	0.00	0.59	0.00	0.00
Avail Cap(c_a), veh/h	1313	0	1272	1402	0	1271	586	0	0	600	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.1	0.0	3.1	47.7	0.0	0.0	49.2	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.4	0.0	0.4	1.1	0.0	0.0	2.2	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(95%),veh/ln	0.3	0.0	0.3	5.5	0.0	4.9	5.8	0.0	0.0	8.5	0.0	0.0
LnGrp Delay(d),s/veh	0.4	0.0	0.4	3.5	0.0	3.6	48.9	0.0	0.0	51.3	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		613			641			101			147	
Approach Delay, s/veh		0.4			3.5			48.9			51.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		99.5		20.5		99.5		20.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		12.2		7.8		8.8
Green Ext Time (p_c), s		2.6		0.6		2.5		0.4

Intersection Summary

HCM 2010 Ctrl Delay 10.0
HCM 2010 LOS A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	623	9	1	631	0	2
Future Volume (vph)	623	9	1	631	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.998				0.865	
Flt Protected						
Satd. Flow (prot)	2974	0	0	3076	1557	0
Flt Permitted						
Satd. Flow (perm)	2974	0	0	3076	1557	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	95	
Travel Time (s)	1.9			1.6	2.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	636	9	1	644	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	645	0	0	645	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 28.1% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	623	9	1	631	0	2
Future Vol, veh/h	623	9	1	631	0	2
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	636	9	1	644	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	645	0	965	323
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	1104	-	*232	*1026
Stage 1	-	-	-	-	*651	-
Stage 2	-	-	-	-	*977	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1104	-	*232	*1026
Mov Cap-2 Maneuver	-	-	-	-	*232	-
Stage 1	-	-	-	-	*651	-
Stage 2	-	-	-	-	*976	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1026	-	-	1104	-
HCM Lane V/C Ratio	0.002	-	-	0.001	-
HCM Control Delay (s)	8.5	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	622	3	2	628	4	14
Future Volume (vph)	622	3	2	628	4	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.999				0.895	
Flt Protected					0.989	
Satd. Flow (prot)	2976	0	0	3076	1593	0
Flt Permitted					0.989	
Satd. Flow (perm)	2976	0	0	3076	1593	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	635	3	2	641	4	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	638	0	0	643	18	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 29.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2020 Base (No-Build) Conditions
3: Eastern Sunoco Driveway Driveway & Lancaster Avenue
Timing Plan: SUN Peak

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	622	3	2	628	4	14
Future Vol, veh/h	622	3	2	628	4	14
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	635	3	2	641	4	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	638	0	952	319
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	325	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1171	-	*233	*968
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*977	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1171	-	*232	*968
Mov Cap-2 Maneuver	-	-	-	-	*232	-
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*974	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	968	-	-	*1171	-
HCM Lane V/C Ratio	0.032	-	-	0.002	-
HCM Control Delay (s)	11.6	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	615	21	3	629	1	2
Future Volume (vph)	615	21	3	629	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.995				0.912	
Flt Protected					0.964	
Satd. Flow (prot)	2965	0	0	3075	1612	0
Flt Permitted					0.964	
Satd. Flow (perm)	2965	0	0	3075	1612	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	76	
Travel Time (s)	2.1			1.7	2.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	628	21	3	642	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	649	0	0	645	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 30.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	615	21	3	629	1	2
Future Vol, veh/h	615	21	3	629	1	2
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	628	21	3	642	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	649	0	966	325
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1171	-	*232	*668
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*977	-
Platoon Blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1171	-	*231	*668
Mov Cap-2 Maneuver	-	-	-	-	*231	-
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	469	-	-	* 1171	-
HCM Lane V/C Ratio	0.007	-	-	0.003	-
HCM Control Delay (s)	12.7	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	617	0	6	624	8	14
Future Volume (vph)	617	0	6	624	8	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Ft					0.914	
Flt Protected					0.982	
Satd. Flow (prot)	2979	0	0	3076	1616	0
Flt Permitted					0.982	
Satd. Flow (perm)	2979	0	0	3076	1616	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1647	89	
Travel Time (s)	1.7			32.1	2.4	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	630	0	6	637	8	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	630	0	0	643	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.06	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 32.7% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2020 Base (No-Build) Conditions
5: Eastern BP Driveway & Lancaster Avenue
Timing Plan: SUN Peak

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	617	0	6	624	8	14
Future Vol, veh/h	617	0	6	624	8	14
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	630	0	6	637	8	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	630	0	961	315
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	331	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1171	-	*234	*968
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1010	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1171	-	*232	*968
Mov Cap-2 Maneuver	-	-	-	-	*232	-
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1002	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	449	-	-	*1171	-
HCM Lane V/C Ratio	0.05	-	-	0.005	-
HCM Control Delay (s)	13.4	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.2	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	5	95	4	5	83
Future Volume (vph)	4	5	95	4	5	83
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.925		0.995			
Flt Protected	0.976					0.997
Satd. Flow (prot)	1626	0	1773	0	0	1779
Flt Permitted	0.976					0.997
Satd. Flow (perm)	1626	0	1773	0	0	1779
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Confl. Peds. (#/hr)				6	6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	4	5	97	4	5	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	101	0	0	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 18.9%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	5	95	4	5	83
Future Vol, veh/h	4	5	95	4	5	83
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	4	5	97	4	5	85

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	200	105	0	0	107	0
Stage 1	105	-	-	-	-	-
Stage 2	95	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	960	1014	-	-	1104	-
Stage 1	1071	-	-	-	-	-
Stage 2	1139	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	949	1003	-	-	1098	-
Mov Cap-2 Maneuver	949	-	-	-	-	-
Stage 1	1065	-	-	-	-	-
Stage 2	1114	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 981	1098	-
HCM Lane V/C Ratio	-	- 0.009	0.005	-
HCM Control Delay (s)	-	- 8.7	8.3	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	5	94	5	2	85
Future Volume (vph)	4	5	94	5	2	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.925		0.993			
Flt Protected	0.978					0.999
Satd. Flow (prot)	1638	0	1770	0	0	1781
Flt Permitted	0.978					0.999
Satd. Flow (perm)	1638	0	1770	0	0	1781
Link Speed (mph)	25		25			25
Link Distance (ft)	74		296			69
Travel Time (s)	2.0		8.1			1.9
Confl. Peds. (#/hr)				6	6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	4	5	96	5	2	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	101	0	0	89
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 17.0%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	5	94	5	2	85
Future Vol, veh/h	4	5	94	5	2	85
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	4	5	96	5	2	87

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	196	105	0	0	107	0
Stage 1	105	-	-	-	-	-
Stage 2	91	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	866	1014	-	-	1104	-
Stage 1	1071	-	-	-	-	-
Stage 2	1125	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	958	1008	-	-	1098	-
Mov Cap-2 Maneuver	958	-	-	-	-	-
Stage 1	1065	-	-	-	-	-
Stage 2	1122	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBL-1	SBL	SBT
Capacity (veh/h)	-	- 985	1098	-
HCM Lane V/C Ratio	-	- 0.009	0.002	-
HCM Control Delay (s)	-	- 8.7	8.3	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	491	27	40	488	96	29	53	59	72	67	53
Future Volume (vph)	57	491	27	40	488	96	29	53	59	72	67	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-3%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3123	0	0	3150	1428	1564	1604	0	1620	1586	0
Flt Permitted		0.834			0.664		0.552			0.582		
Satd. Flow (perm)	0	2617	0	0	2730	1376	894	1604	0	982	1586	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			468	
Travel Time (s)		30.9			19.1			14.5			12.3	
Confl. Peds. (#/hr)	7		11	11		7	16		10	10		16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	605	0	0	556	101	31	118	0	76	127	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	61.0		31.0	31.0	31.0	33.0	33.0		33.0	33.0	
Total Split (%)	25.0%	50.8%		25.8%	25.8%	25.8%	27.5%	27.5%		27.5%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff Green (s)		94.1			94.1	93.1	15.9	15.9		15.9	15.9	
Actuated g/C Ratio		0.78			0.78	0.78	0.13	0.13		0.13	0.13	
v/c Ratio		0.29			0.26	0.09	0.26	0.56		0.58	0.60	
Control Delay		4.4			3.0	3.1	50.5	58.0		66.0	60.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		4.4			3.0	3.1	50.5	58.0		66.0	60.5	
LOS		A			A	A	D	E		E	E	
Approach Delay		4.4			3.0			56.4			62.6	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		37			36	11	22	87		56	94	
Queue Length 95th (ft)		97			47	22	51	141		105	152	

2020 Base (No-Build) Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: SUN Peak

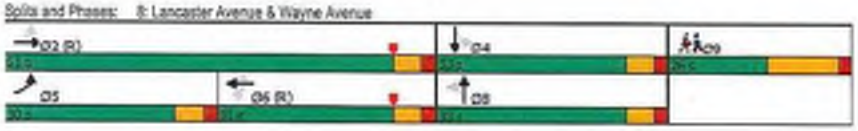
Lane Group	09
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1052			622			452			408	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2052			2142	1067	208	374		229	370	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.29			0.28	0.09	0.15	0.32		0.33	0.34	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 16.0 Intersection LOS: B
Intersection Capacity Utilization 55.9% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	580	63	22	613	26	16
Future Volume (vph)	580	63	22	613	26	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3125	0	0	3139	1733	0
Flt Permitted				0.914	0.970	
Satd. Flow (perm)	3125	0	0	2875	1713	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		3	3		18	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	1%	0%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	714	0	0	705	47	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	101.3			101.3	9.7	
Actuated g/C Ratio	0.84			0.84	0.08	
v/c Ratio	0.27			0.29	0.34	
Control Delay	1.8			1.8	57.9	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.8			1.8	57.9	
LOS	A			A	E	
Approach Delay	1.8			1.8	57.9	
Approach LOS	A			A	E	
Queue Length 50th (ft)	27			17	35	
Queue Length 95th (ft)	42			28	73	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2639			2427	491	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.27			0.29	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.34
Intersection Signal Delay: 3.6 — Intersection LOS: A
Intersection Capacity Utilization 45.6% — ICU Level of Service A
Analysis Period (min) 15

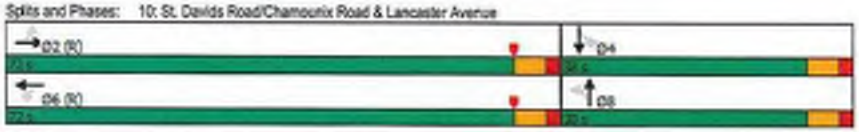
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	611	7	30	641	33	11	6	42	37	13	23
Future Volume (vph)	22	611	7	30	641	33	11	6	42	37	13	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1847			744			642			402	
Travel Time (s)		32.1			14.5			17.5			11.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	611	7	30	641	33	11	6	42	37	13	23
Future Volume (veh/h)	22	611	7	30	641	33	11	6	42	37	13	23
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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		0.99	1.00		0.99
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	1782	1765	1782	1845	1828	1845	1891	1864	1851	1881	1881	1881
Adj Flow Rate, veh/h	23	650	8	32	682	35	12	6	45	39	14	18
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	98	2647	24	124	2578	124	54	18	82	109	28	29
Arrive On Green	0.83	0.84	0.83	0.83	0.84	0.83	0.06	0.07	0.06	0.06	0.07	0.06
Sat Flow, veh/h	75	3146	29	106	3065	147	219	262	1202	557	406	429
Grp Volume(v), veh/h	346	0	333	379	0	368	63	0	0	71	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	1601	1680	0	1638	1682	0	0	1593	0	0
Q Serve(g_s), s	0.0	0.0	4.6	0.0	0.0	5.1	0.0	0.0	0.0	0.4	0.0	0.0
Cycle Q Clear(g_c), s	4.3	0.0	4.6	4.6	0.0	5.1	3.9	0.0	0.0	4.3	0.0	0.0
Prop In Lane	0.07		0.02	0.08		0.09	0.19		0.71	0.55		0.25
Lane Grp Cap(c), veh/h	1407	0	1347	1433	0	1378	138	0	0	150	0	0
V/C Ratio(X)	0.25	0.00	0.25	0.26	0.00	0.27	0.46	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	1407	0	1347	1433	0	1378	499	0	0	497	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.7	0.0	1.8	1.8	0.0	1.8	50.1	0.0	0.0	50.1	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.5	0.0	0.5	3.3	0.0	0.0	3.3	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(95%),veh/ln	4.1	0.0	3.8	4.7	0.0	4.4	3.6	0.0	0.0	4.1	0.0	0.0
LnGrp Delay(d),s/veh	2.1	0.0	2.2	2.2	0.0	2.3	53.4	0.0	0.0	53.4	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		679			747			63			71	
Approach Delay, s/veh		2.2			2.2			53.4			53.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.5		12.5		97.5		12.5
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		6.6		6.3		7.1		5.9
Green Ext Time (p_c), s		2.7		0.3		3.1		0.3

Intersection Summary

HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	2	2	3	10	9	5	73	2	6	44	12
Future Volume (vph)	24	2	2	3	10	9	5	73	2	6	44	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.990			0.946			0.996			0.974	
Flt Protected		0.959			0.993			0.997			0.995	
Satd. Flow (prot)	0	1709	0	0	1691	0	0	1754	0	0	1718	0
Flt Permitted		0.959			0.993			0.997			0.995	
Satd. Flow (perm)	0	1709	0	0	1691	0	0	1754	0	0	1718	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			898			201			295	
Travel Time (s)		29.9			24.5			5.5			8.1	
Confl. Peds. (#/hr)	1		2	2		1	6		3	3		6
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	8%
Adj. Flow (vph)	33	3	3	4	14	12	7	100	3	8	60	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	30	0	0	110	0	0	84	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.0%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	2	2	3	10	9	5	73	2	6	44	12
Future Vol, veh/h	24	2	2	3	10	9	5	73	2	6	44	12
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	8
Mvmt Flow	33	3	3	4	14	12	7	100	3	8	60	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.3	7.7	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	86%	14%	15%
Vol Thru, %	91%	7%	45%	71%
Vol Right, %	3%	7%	41%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	28	22	62
LT Vol	5	24	3	6
Through Vol	73	2	10	44
RT Vol	2	2	9	12
Lane Flow Rate	110	38	30	85
Geometry Grp	1	1	1	1
Degree of Util (X)	0.124	0.047	0.035	0.094
Departure Headway (Hd)	4.061	4.386	4.144	4.905
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	871	804	859	696
Service Time	2.139	2.481	2.144	2.07
HCM Lane V/C Ratio	0.126	0.047	0.035	0.096
HCM Control Delay	7.7	7.7	7.3	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.1	0.3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	36	21	3	10	29
Future Volume (vph)	4	36	21	3	10	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.877		0.984			
Flt Protected	0.995					0.987
Satd. Flow (prot)	1571	0	1771	0	0	1777
Flt Permitted	0.995					0.987
Satd. Flow (perm)	1571	0	1771	0	0	1777
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		590			450
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)		5		4	4	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	49	29	4	14	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	33	0	0	54
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 20.4% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	36	21	3	10	29
Future Vol, veh/h	4	36	21	3	10	29
Conflicting Peds, #/hr	0	5	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	49	29	4	14	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	103	40	0	0	37	0
Stage 1	35	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	1043	1103	-	-	1166	-
Stage 1	1155	-	-	-	-	-
Stage 2	1115	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1026	1094	-	-	1162	-
Mov Cap-2 Maneuver	1026	-	-	-	-	-
Stage 1	1150	-	-	-	-	-
Stage 2	1132	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1087	1162	-
HCM Lane V/C Ratio	-	- 0.05	0.012	-
HCM Control Delay (s)	-	- 8.5	8.1	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0.2	0	-

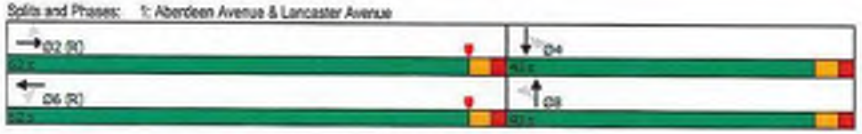
2020 PROJECTED CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	791	43	30	907	43	148	112	43	141	85	69
Future Volume (vph)	35	791	43	30	907	43	148	112	43	141	85	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1152			179			199			484	
Travel Time (s)		31.4			3.5			5.4			12.7	
Confl. Peds. (#/hr)	21		21	4		4	4		4	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	3%	18%	4%	0%	8%	5%	9%	1%	2%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	62.0	62.0		62.0	62.0		43.0	43.0		43.0	43.0	
Total Split (%)	59.0%	59.0%		59.0%	59.0%		41.0%	41.0%		41.0%	41.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 6 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	791	43	30	907	43	148	112	43	141	85	69
Future Volume (veh/h)	35	791	43	30	907	43	148	112	43	141	85	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1800	1732	1800	1809	1735	1809	1782	1865	1782	1836	1876	1836
Adj Flow Rate, veh/h	38	860	47	33	986	47	161	122	47	153	92	75
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	5	5	5	2	2	2
Cap, veh/h	85	1755	94	71	1823	86	221	146	52	232	130	95
Arrive On Green	0.40	0.41	0.40	0.60	0.61	0.60	0.30	0.31	0.30	0.30	0.31	0.30
Sat Flow, veh/h	78	2871	155	57	2983	140	542	486	168	561	415	305
Grp Volume(v), veh/h	475	0	470	546	0	520	330	0	0	320	0	0
Grp Sat Flow(s),veh/h/ln	1559	0	1546	1627	0	1554	1176	0	0	1301	0	0
Q Serve(g_s), s	0.0	0.0	23.7	0.0	0.0	20.6	4.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.9	0.0	23.7	18.9	0.0	20.6	29.0	0.0	0.0	24.1	0.0	0.0
Prop In Lane	0.08		0.10	0.06		0.09	0.49		0.14	0.48		0.23
Lane Grp Cap(c), veh/h	974	0	945	1015	0	949	408	0	0	445	0	0
V/C Ratio(X)	0.49	0.00	0.50	0.54	0.00	0.55	0.81	0.00	0.00	0.72	0.00	0.00
Avail Cap(c_a), veh/h	974	0	945	1015	0	949	486	0	0	533	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.3	0.0	18.1	11.6	0.0	12.0	35.2	0.0	0.0	33.1	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	1.7	2.0	0.0	2.3	8.5	0.0	0.0	3.8	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(95%),veh/ln	13.9	0.0	15.7	14.8	0.0	14.5	15.7	0.0	0.0	14.1	0.0	0.0
LnGrp Delay(d),s/veh	19.9	0.0	20.8	13.7	0.0	14.2	43.7	0.0	0.0	36.9	0.0	0.0
LnGrp LOS	B		C	B		B	D			D		
Approach Vol, veh/h		945			1066			330			320	
Approach Delay, s/veh		20.3			14.0			43.7			36.9	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		68.2		36.8		68.2		36.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		57.0		38.0		57.0		38.0
Max Q Clear Time (g_c+I1), s		25.7		26.1		22.6		31.0
Green Ext Time (p_c), s		4.6		1.1		4.9		0.8

Intersection Summary

HCM 2010 Ctrl Delay 22.7
HCM 2010 LOS C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	925	50	0	980	0	25
Future Volume (vph)	925	50	0	980	0	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt	0.992					0.865
Flt Protected						
Satd. Flow (prot)	3458	0	0	2922	0	1542
Flt Permitted						
Satd. Flow (perm)	3458	0	0	2922	0	1542
Link Speed (mph)	35			35	25	
Link Distance (ft)	179			197	94	
Travel Time (s)	3.5			3.8	2.6	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1005	54	0	1065	0	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1059	0	0	1065	0	27
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 39.9% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	925	50	0	980	0	25
Future Vol, veh/h	925	50	0	980	0	25
Conflicting Peds, #/hr	0	0	0	0	4	4
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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1005	54	0	1065	0	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	534
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	2.9
Pot Cap-1 Maneuver	-	-	0	-	0	*795
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*792
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	792	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-
HCM Control Delay (s)	9.7	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	914	35	79	959	21	59
Future Volume (vph)	914	35	79	959	21	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.77	*0.77	*0.55	*0.55	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.901	
Flt Protected				0.996	0.987	
Satd. Flow (prot)	2482	0	0	1781	1585	0
Flt Permitted				0.996	0.987	
Satd. Flow (perm)	2482	0	0	1781	1585	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	197			546	89	
Travel Time (s)	3.8			10.6	2.4	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	993	38	86	1042	23	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1031	0	0	1128	87	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 74.6% ICU Level of Service D
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	914	35	79	959	21	59
Future Vol, veh/h	914	35	79	959	21	59
Conflicting Peds, #/hr	0	0	0	0	4	4
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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	993	38	86	1042	23	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1031	0	1709	520
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	697	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	663	-	128	*828
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	455	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	963	-	101	*826
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	357	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	23
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	286	-	-	963	-
HCM Lane V/C Ratio	0.304	-	-	0.089	-
HCM Control Delay (s)	23	-	-	9.1	0.8
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	1.2	-	-	0.3	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	104	199	18	37	120
Future Volume (vph)	10	104	199	18	37	120
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	-2%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.877		0.989			
Flt Protected	0.996					0.988
Satd. Flow (prot)	1557	0	1640	0	0	1761
Flt Permitted	0.996					0.988
Satd. Flow (perm)	1557	0	1640	0	0	1761
Link Speed (mph)	25		25			25
Link Distance (ft)	74		311			199
Travel Time (s)	2.0		8.5			5.4
Confl. Peds. (#/hr)	4	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	8%	2%	2%	2%
Adj. Flow (vph)	11	113	216	20	40	130
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	236	0	0	170
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 39.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	104	199	18	37	120
Future Vol, veh/h	10	104	199	18	37	120
Conflicting Peds, #/hr	4	4	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, %	-2	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	8	2	2	2
Mvmt Flow	11	113	216	20	40	130

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	440	230	0	0	236	0
Stage 1	226	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.3	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	715	871	-	-	997	-
Stage 1	961	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	682	868	-	-	997	-
Mov Cap-2 Maneuver	682	-	-	-	-	-
Stage 1	961	-	-	-	-	-
Stage 2	958	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 846	997	-
HCM Lane V/C Ratio	-	- 0.146	0.04	-
HCM Control Delay (s)	-	- 10	8.8	0
HCM Lane LOS	-	- B	A	A
HCM 95th %ile Q(veh)	-	- 0.5	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	662	25	36	805	116	40	99	43	94	92	35
Future Volume (vph)	29	662	25	36	805	116	40	99	43	94	92	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-6%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3077	0	0	3089	1373	1422	1608	0	1501	1505	0
Flt Permitted		0.883			0.884		0.584			0.540		
Satd. Flow (perm)	0	2723	0	0	2739	1320	863	1608	0	834	1505	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		465			679			709			514	
Travel Time (s)		12.7			18.5			19.3			14.0	
Confl. Peds. (#/hr)	11		7	7		11	13		24	24		13
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
Heavy Vehicles (%)	3%	3%	0%	6%	3%	4%	10%	2%	7%	9%	10%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	786	0	0	925	127	44	156	0	103	139	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	13.0	48.0		35.0	35.0	35.0	31.0	31.0		31.0	31.0	
Total Split (%)	12.4%	45.7%		33.3%	33.3%	33.3%	29.5%	29.5%		29.5%	29.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		76.9			76.9	76.9	18.1	18.1		18.1	18.1	
Actuated g/C Ratio		0.73			0.73	0.73	0.17	0.17		0.17	0.17	
v/c Ratio		0.39			0.46	0.13	0.30	0.56		0.72	0.54	
Control Delay		6.7			5.8	5.3	40.7	46.6		66.6	46.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		6.7			5.8	5.3	40.7	46.6		66.6	46.0	
LOS		A			A	A	D	D		E	D	
Approach Delay		6.7			5.8			45.3			54.8	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)		86			84	16	26	97		66	86	
Queue Length 95th (ft)		160			138	m44	55	149		117	136	

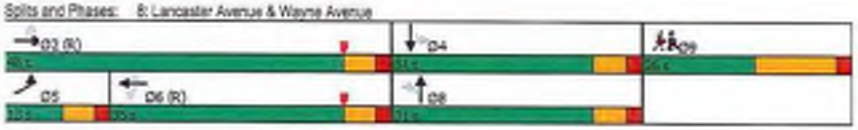
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	25%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		385			598			629			434	
Turn Bay Length (ft)						160						
Base Capacity (vph)		1994			2004	987	213	398		206	372	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.39			0.46	0.13	0.21	0.39		0.50	0.37	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 33 (31%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 14.8 Intersection LOS: B
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	787	50	96	970	31	44
Future Volume (vph)	787	50	96	970	31	44
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	12
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3042	0	0	3069	1714	0
Flt Permitted				0.744	0.960	
Satd. Flow (perm)	3042	0	0	2292	1711	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	678			1152	490	
Travel Time (s)	18.5			31.4	13.4	
Confl. Peds. (#/hr)		6	6		4	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	10%	4%	3%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	930	0	0	1185	83	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	61.0		12.0	73.0	32.0	
Total Split (%)	58.1%		11.4%	69.5%	30.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	84.6			84.6	11.4	
Actuated g/C Ratio	0.81			0.81	0.11	
v/c Ratio	0.38			0.64	0.45	
Control Delay	2.6			3.1	50.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	2.6			3.1	50.6	
LOS	A			A	D	
Approach Delay	2.6			3.1	50.6	
Approach LOS	A			A	D	
Queue Length 50th (ft)	67			59	53	
Queue Length 95th (ft)	70			71	98	
Internal Link Dist (ft)	598			1072	410	
Turn Bay Length (ft)						
Base Capacity (vph)	2450			1846	440	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.38			0.64	0.19	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 48 (46%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 4.7 — Intersection LOS: A
Intersection Capacity Utilization 71.6% — ICU Level of Service C
Analysis Period (min) 15

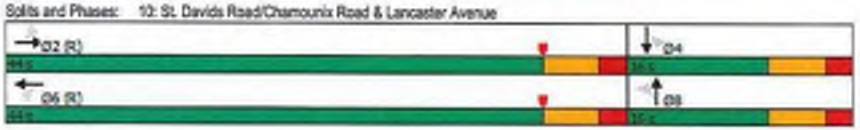
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	868	10	13	1138	287	21	68	71	93	38	41
Future Volume (vph)	15	868	10	13	1138	287	21	68	71	93	38	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		412			578			276			428	
Travel Time (s)		8.0			11.3			7.5			11.7	
Confl. Peds. (#/hr)	6					6	4		5	5		4
Confl. Bikes (#/hr)												1
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
Heavy Vehicles (%)	0%	3%	0%	0%	4%	1%	0%	0%	4%	1%	5%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	44.0	44.0		44.0	44.0		16.0	16.0		16.0	16.0	
Total Split (%)	73.3%	73.3%		73.3%	73.3%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 20 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	868	10	13	1138	287	21	68	71	93	38	41
Future Volume (veh/h)	15	868	10	13	1138	287	21	68	71	93	38	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.98
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	1782	1731	1782	1845	1785	1845	1891	1858	1891	1881	1838	1881
Adj Flow Rate, veh/h	16	954	10	14	1251	294	23	75	75	102	42	45
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	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, %	3	3	3	4	4	4	0	0	0	5	5	5
Cap, veh/h	73	2117	22	67	1769	407	91	143	127	218	70	61
Arrive On Green	0.65	0.67	0.65	0.65	0.67	0.65	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	16	3181	33	9	2658	612	140	850	758	751	417	365
Grp Volume(v), veh/h	504	0	476	832	0	727	173	0	0	189	0	0
Grp Sat Flow(s),veh/h/ln	1661	0	1570	1766	0	1513	1747	0	0	1532	0	0
Q Serve(g_s), s	0.0	0.0	8.7	0.0	0.0	18.8	0.0	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	8.3	0.0	8.7	17.9	0.0	18.8	5.5	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.03		0.02	0.02		0.40	0.13		0.43	0.54		0.24
Lane Grp Cap(c), veh/h	1139	0	1044	1207	0	1007	332	0	0	324	0	0
V/C Ratio(X)	0.44	0.00	0.46	0.69	0.00	0.72	0.52	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1139	0	1044	1207	0	1007	358	0	0	346	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.8	0.0	4.8	6.4	0.0	6.6	23.4	0.0	0.0	24.0	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.4	3.2	0.0	4.5	1.8	0.0	0.0	2.6	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(95%),veh/ln	8.0	0.0	7.4	15.4	0.0	13.6	5.2	0.0	0.0	6.0	0.0	0.0
LnGrp Delay(d),s/veh	6.0	0.0	6.3	9.6	0.0	11.1	25.2	0.0	0.0	26.8	0.0	0.0
LnGrp LOS	A		A	A		B	C			C		
Approach Vol, veh/h		980			1559			173			189	
Approach Delay, s/veh		6.1			10.3			25.2			26.8	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		44.9		15.1		44.9		15.1
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		38.0		10.0		38.0		10.0
Max Q Clear Time (g_c+I1), s		10.7		9.0		20.8		7.5
Green Ext Time (p_c), s		4.3		0.1		7.1		0.2

Intersection Summary

HCM 2010 Ctrl Delay 10.9
HCM 2010 LOS B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	17	6	5	93	10	28	169	11	5	65	19
Future Volume (vph)	5	17	6	5	93	10	28	169	11	5	65	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.972			0.988			0.993			0.971	
Flt Protected		0.991			0.998			0.993			0.997	
Satd. Flow (prot)	0	1619	0	0	1745	0	0	1838	0	0	1700	0
Flt Permitted		0.991			0.998			0.993			0.997	
Satd. Flow (perm)	0	1619	0	0	1745	0	0	1838	0	0	1700	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1128			434			188			311	
Travel Time (s)		30.8			11.8			5.1			8.5	
Confl. Peds. (#/hr)	7		3	3		7	10					10
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	20%	0%	17%	0%	2%	0%	18%	6%	0%	0%	2%	5%
Adj. Flow (vph)	7	24	8	7	131	14	39	238	15	7	92	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	152	0	0	292	0	0	126	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 33.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	17	6	5	93	10	28	169	11	5	65	19
Future Vol, veh/h	5	17	6	5	93	10	28	169	11	5	65	19
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	20	0	17	0	2	0	18	6	0	0	2	5
Mvmt Flow	7	24	8	7	131	14	39	238	15	7	92	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	9.3	11	8.6
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	18%	5%	6%
Vol Thru, %	81%	61%	86%	73%
Vol Right, %	5%	21%	9%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	208	28	108	89
LT Vol	28	5	5	5
Through Vol	169	17	93	65
RT Vol	11	6	10	19
Lane Flow Rate	293	39	152	125
Geometry Grp	1	1	1	1
Degree of Util (X)	0.393	0.059	0.207	0.161
Departure Headway (Hd)	4.827	5.362	4.91	4.622
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	664	727	772
Service Time	2.871	3.427	2.962	2.672
HCM Lane V/C Ratio	0.394	0.059	0.209	0.162
HCM Control Delay	11	8.8	9.3	8.6
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	1.9	0.2	0.8	0.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	29	89	31	17	43
Future Volume (vph)	5	29	89	31	17	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.884		0.965			
Flt Protected	0.993					0.986
Satd. Flow (prot)	1540	0	1605	0	0	1572
Flt Permitted	0.993					0.986
Satd. Flow (perm)	1540	0	1605	0	0	1572
Link Speed (mph)	25		25			25
Link Distance (ft)	1125		188			490
Travel Time (s)	30.8		5.1			13.4
Confl. Peds. (#/hr)		14		7	7	
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Heavy Vehicles (%)	0%	3%	0%	32%	23%	9%
Adj. Flow (vph)	9	54	165	57	31	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	222	0	0	111
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 23.8% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	29	89	31	17	43
Future Vol, veh/h	5	29	89	31	17	43
Conflicting Peds, #/hr	0	14	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	0	3	0	32	23	9
Mvmt Flow	9	54	165	57	31	80

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	343	215	0	0	229	0
Stage 1	201	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	750	877	-	-	1003	-
Stage 1	964	-	-	-	-	-
Stage 2	1028	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	720	860	-	-	996	-
Mov Cap-2 Maneuver	720	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	994	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	2.5
HCM LOS	A		

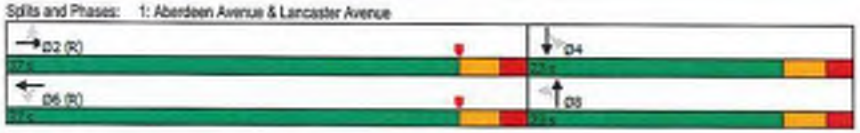
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	836	996	-
HCM Lane V/C Ratio	-	-	0.075	0.032	-
HCM Control Delay (s)	-	-	9.7	8.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	824	36	26	918	59	101	66	34	120	112	68
Future Volume (vph)	33	824	36	26	918	59	101	66	34	120	112	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1121			179			199			464	
Travel Time (s)		30.6			3.5			5.4			12.7	
Confl. Peds. (#/hr)	5		5	6		6	3		3	3		3
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	3%	0%	1%	3%	0%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	23.0	23.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 38 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



2020 Projected (Build) Conditions
1: Aberdeen Avenue & Lancaster Avenue
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	824	36	26	918	59	101	66	34	120	112	68
Future Volume (veh/h)	33	824	36	26	918	59	101	66	34	120	112	68
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
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	1800	1779	1800	1809	1789	1809	1782	1782	1782	1836	1887	1836
Adj Flow Rate, veh/h	34	849	37	27	946	61	104	68	35	124	115	70
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	99	1901	81	86	1912	122	226	140	56	222	196	89
Arrive On Green	0.60	0.62	0.60	0.60	0.62	0.60	0.23	0.25	0.23	0.23	0.25	0.23
Sat Flow, veh/h	55	3060	131	37	3078	196	556	569	229	561	678	382
Grp Volume(v), veh/h	468	0	451	537	0	497	207	0	0	309	0	0
Grp Sat Flow(s),veh/h/ln	1650	0	1595	1717	0	1593	1354	0	0	1600	0	0
Q Serve(g_s), s	0.0	0.0	9.0	0.0	0.0	10.3	0.0	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	9.0	9.9	0.0	10.3	8.1	0.0	0.0	10.9	0.0	0.0
Prop In Lane	0.07		0.08	0.05		0.12	0.50		0.17	0.40		0.23
Lane Grp Cap(c), veh/h	1053	0	991	1101	0	990	400	0	0	450	0	0
V/C Ratio(X)	0.44	0.00	0.46	0.49	0.00	0.50	0.52	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	1053	0	991	1101	0	990	496	0	0	560	0	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)	0.91	0.00	0.91	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	0.0	6.0	6.2	0.0	6.3	20.2	0.0	0.0	21.4	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.4	1.5	0.0	1.6	1.0	0.0	0.0	2.6	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(95%),veh/ln	7.9	0.0	7.5	9.3	0.0	8.6	5.9	0.0	0.0	9.1	0.0	0.0
LnGrp Delay(d),s/veh	7.1	0.0	7.4	7.7	0.0	8.1	21.3	0.0	0.0	24.0	0.0	0.0
LnGrp LOS	A		A	A		A	C			C		
Approach Vol, veh/h		920			1034			207			309	
Approach Delay, s/veh		7.2			7.9			21.3			24.0	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.3		18.7		41.3		18.7
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		18.0		32.0		18.0
Max Q Clear Time (g_c+I1), s		11.0		12.9		12.3		10.1
Green Ext Time (p_c), s		4.1		0.6		4.2		0.5

Intersection Summary

HCM 2010 Ctrl Delay 12.8
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	937	41	0	1003	0	20
Future Volume (vph)	937	41	0	1003	0	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.994					0.865
Flt Protected						
Satd. Flow (prot)	2730	0	0	2675	0	1542
Flt Permitted						
Satd. Flow (perm)	2730	0	0	2675	0	1542
Link Speed (mph)	35			35	25	
Link Distance (ft)	179			197	94	
Travel Time (s)	3.5			3.8	2.6	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	966	42	0	1034	0	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1008	0	0	1034	0	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.08	1.08
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 40.2% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	937	41	0	1003	0	20
Future Vol, veh/h	937	41	0	1003	0	20
Conflicting Peds, #/hr	0	0	0	0	3	3
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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	966	42	0	1034	0	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	507
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	2.9
Pot Cap-1 Maneuver	-	-	0	-	0	*814
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*812
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	812	-	-	-
HCM Lane V/C Ratio	0.025	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	929	28	63	986	18	47
Future Volume (vph)	929	28	63	986	18	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.83	*0.83	*0.54	*0.54	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.903	
Flt Protected				0.997	0.986	
Satd. Flow (prot)	2736	0	0	1799	1587	0
Flt Permitted				0.997	0.986	
Satd. Flow (perm)	2736	0	0	1799	1587	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	197			542	89	
Travel Time (s)	3.8			10.6	2.4	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	958	29	65	1016	19	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	987	0	0	1081	67	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 73.9% ICU Level of Service D
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	929	28	63	986	18	47
Future Vol, veh/h	929	28	63	986	18	47
Conflicting Peds, #/hr	0	0	0	0	3	3
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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	958	29	65	1016	19	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	987	0	1614	487
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	641	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	3.8	3.9
Pot Cap-1 Maneuver	-	-	*984	-	*175	*614
Stage 1	-	-	-	-	*343	-
Stage 2	-	-	-	-	*495	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*984	-	*148	*612
Mov Cap-2 Maneuver	-	-	-	-	*148	-
Stage 1	-	-	-	-	*343	-
Stage 2	-	-	-	-	*419	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	17.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	362	-	-	*984	-
HCM Lane V/C Ratio	0.185	-	-	0.066	-
HCM Control Delay (s)	17.2	-	-	8.9	0.6
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	0.7	-	-	0.2	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	12	80	122	13	32	142
Future Volume (vph)	12	80	122	13	32	142
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	-2%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.862		0.987			
Flt Protected	0.994					0.991
Satd. Flow (prot)	1563	0	1756	0	0	1752
Flt Permitted	0.994					0.991
Satd. Flow (perm)	1563	0	1756	0	0	1752
Link Speed (mph)	25		25			25
Link Distance (ft)	74		279			199
Travel Time (s)	2.0		7.6			5.4
Confl. Peds. (#/hr)	6	6				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	0%	2%	2%	3%
Adj. Flow (vph)	12	82	126	13	33	146
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	0	139	0	0	179
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 35.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	80	122	13	32	142
Future Vol, veh/h	12	80	122	13	32	142
Conflicting Peds, #/hr	6	6	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, %	-2	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	0	2	2	3
Mvmt Flow	12	82	126	13	33	146

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	351	139	0	0	139	0
Stage 1	133	-	-	-	-	-
Stage 2	218	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.3	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	797	977	-	-	1076	-
Stage 1	1053	-	-	-	-	-
Stage 2	989	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	786	971	-	-	1076	-
Mov Cap-2 Maneuver	786	-	-	-	-	-
Stage 1	1053	-	-	-	-	-
Stage 2	950	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 936	1076	-
HCM Lane V/C Ratio	-	- 0.101	0.031	-
HCM Control Delay (s)	-	- 9.3	8.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	729	53	34	683	94	22	89	37	103	145	46
Future Volume (vph)	40	729	53	34	683	94	22	89	37	103	145	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3066	0	0	3151	1428	1564	1583	0	1604	1619	0
Flt Permitted		0.877			0.874		0.417			0.587		
Satd. Flow (perm)	0	2711	0	0	2759	1322	687	1583	0	962	1619	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		533			714			348			388	
Travel Time (s)		14.5			19.5			9.5			10.0	
Confl. Peds. (#/hr)	23		11	11		23	32		28	28		32
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	3%	1%	0%	0%	3%	10%	2%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	839	0	0	732	96	22	129	0	105	195	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	61.0		31.0	31.0	31.0	33.0	33.0		33.0	33.0	
Total Split (%)	25.0%	50.8%		25.8%	25.8%	25.8%	27.5%	27.5%		27.5%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		89.4			89.4	88.4	20.6	20.6		20.6	20.6	
Actuated g/C Ratio		0.74			0.74	0.74	0.17	0.17		0.17	0.17	
v/c Ratio		0.42			0.36	0.10	0.19	0.47		0.64	0.70	
Control Delay		7.0			3.6	3.5	44.1	49.5		62.6	59.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.0			3.6	3.5	44.1	49.5		62.6	59.7	
LOS		A			A	A	D	D		E	E	
Approach Delay		7.0			3.5			48.7			60.7	
Approach LOS		A			A			D			E	
Queue Length 50th (ft)		110			46	9	15	91		76	144	
Queue Length 95th (ft)		180			106	29	38	144		130	211	

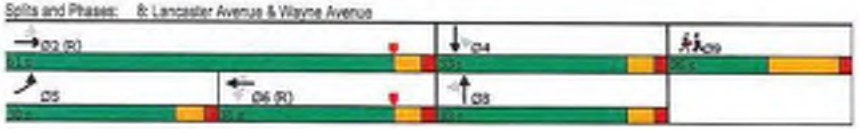
Lane Group	09
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		453			634			268			288	
Turn Bay Length (ft)						190						
Base Capacity (vph)		2018			2054	973	155	369		224	377	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.42			0.36	0.10	0.14	0.35		0.47	0.52	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 16.2 Intersection LOS: B
Intersection Capacity Utilization 77.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

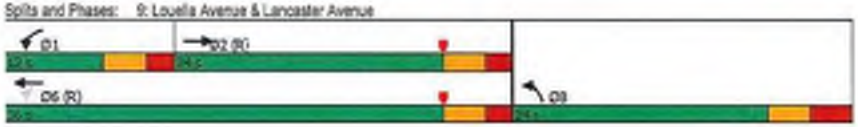
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	878	32	53	858	15	29
Future Volume (vph)	878	32	53	858	15	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3128	0	0	3130	1645	0
Flt Permitted				0.857	0.983	
Satd. Flow (perm)	3128	0	0	2690	1630	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	714			1121	430	
Travel Time (s)	19.5			30.6	11.7	
Confl. Peds. (#/hr)		7	7		29	8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	0%	4%	1%	7%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	948	0	0	949	46	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	24.0		12.0	36.0	24.0	
Total Split (%)	40.0%		20.0%	60.0%	40.0%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	42.8			42.8	8.2	
Actuated g/C Ratio	0.71			0.71	0.14	
v/c Ratio	0.43			0.49	0.20	
Control Delay	5.8			2.5	24.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	5.8			2.5	24.5	
LOS	A			A	C	
Approach Delay	5.8			2.5	24.5	
Approach LOS	A			A	C	
Queue Length 50th (ft)	144			28	15	
Queue Length 95th (ft)	133			42	39	
Internal Link Dist (ft)	634			1041	350	
Turn Bay Length (ft)						
Base Capacity (vph)	2230			1918	520	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.43			0.49	0.09	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 50
Offset: 6 (10%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 4.6 — Intersection LOS: A
Intersection Capacity Utilization 67.5% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Louella Avenue & Lancaster Avenue

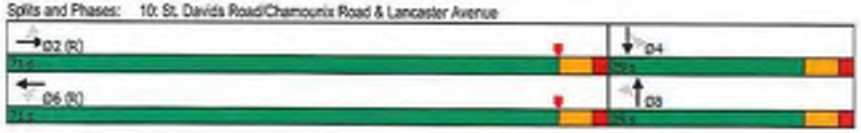


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	969	16	39	1024	142	4	25	32	75	22	43
Future Volume (vph)	34	969	16	39	1024	142	4	25	32	75	22	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		444			516			295			258	
Travel Time (s)		8.6			10.1			8.0			7.0	
Confl. Peds. (#/hr)	5		3	3		5			8	8		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	1%	25%	0%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	71.0	71.0		71.0	71.0		29.0	29.0		29.0	29.0	
Total Split (%)	71.0%	71.0%		71.0%	71.0%		29.0%	29.0%		29.0%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 66 (66%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	969	16	39	1024	142	4	25	32	75	22	43
Future Volume (veh/h)	34	969	16	39	1024	142	4	25	32	75	22	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.98	0.98		0.98
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	1782	1765	1782	1845	1827	1845	1891	1834	1891	1881	1870	1881
Adj Flow Rate, veh/h	36	1031	16	41	1089	145	4	27	34	80	23	46
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	88	2357	36	88	2187	288	43	95	111	153	39	61
Arrive On Green	0.76	0.77	0.76	0.76	0.77	0.76	0.12	0.13	0.12	0.12	0.13	0.12
Sat Flow, veh/h	65	3046	47	64	2828	372	38	761	877	771	307	481
Grp Volume(v), veh/h	536	0	547	654	0	621	65	0	0	149	0	0
Grp Sat Flow(s),veh/h/ln	1562	0	1598	1669	0	1598	1676	0	0	1559	0	0
Q Serve(g_s), s	0.0	0.0	11.8	0.0	0.0	14.6	0.0	0.0	0.0	5.6	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	11.8	12.7	0.0	14.6	3.6	0.0	0.0	9.1	0.0	0.0
Prop In Lane	0.07		0.03	0.06		0.23	0.06		0.52	0.54		0.31
Lane Grp Cap(c), veh/h	1230	0	1236	1312	0	1234	234	0	0	237	0	0
V/C Ratio(X)	0.44	0.00	0.44	0.50	0.00	0.50	0.28	0.00	0.00	0.63	0.00	0.00
Avail Cap(c_a), veh/h	1230	0	1236	1312	0	1234	417	0	0	402	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.7	0.0	3.9	4.0	0.0	4.3	40.0	0.0	0.0	42.3	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.2	1.4	0.0	1.5	0.9	0.0	0.0	3.9	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(95%),veh/ln	9.1	0.0	9.4	11.4	0.0	11.0	3.1	0.0	0.0	7.7	0.0	0.0
LnGrp Delay(d),s/veh	4.8	0.0	5.1	5.4	0.0	5.7	40.9	0.0	0.0	46.2	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1083			1275			65			149	
Approach Delay, s/veh		5.0			5.6			40.9			46.2	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		82.3		17.7		82.3		17.7
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		65.0		23.0		65.0		23.0
Max Q Clear Time (g_c+I1), s		13.8		11.1		16.6		5.6
Green Ext Time (p_c), s		5.3		0.6		6.8		0.2

Intersection Summary

HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	9	5	7	71	10	9	117	6	5	99	14
Future Volume (vph)	15	9	5	7	71	10	9	117	6	5	99	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.977			0.984			0.993			0.984	
Flt Protected		0.974			0.996			0.997			0.996	
Satd. Flow (prot)	0	1552	0	0	1750	0	0	1597	0	0	1724	0
Flt Permitted		0.974			0.996			0.997			0.996	
Satd. Flow (perm)	0	1552	0	0	1750	0	0	1597	0	0	1724	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1097			652			218			279	
Travel Time (s)		29.9			17.8			5.9			7.6	
Confl. Peds. (#/hr)	15		7	7		15	7		5	5		7
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	7%	0%	40%	0%	1%	0%	11%	11%	0%	0%	3%	0%
Adj. Flow (vph)	19	11	6	9	89	13	11	146	8	6	124	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	111	0	0	165	0	0	148	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 26.0% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	9	5	7	71	10	9	117	6	5	99	14
Future Vol, veh/h	15	9	5	7	71	10	9	117	6	5	99	14
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	7	0	40	0	1	0	11	11	0	0	3	0
Mvmt Flow	19	11	6	9	89	13	11	146	8	6	124	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.4	8.8	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	52%	8%	4%
Vol Thru, %	89%	31%	81%	84%
Vol Right, %	5%	17%	11%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	132	29	88	118
LT Vol	9	15	7	5
Through Vol	117	9	71	99
RT Vol	6	5	10	14
Lane Flow Rate	165	36	110	148
Geometry Grp	1	1	1	1
Degree of Util (X)	0.21	0.049	0.141	0.179
Departure Headway (Hd)	4.585	4.874	4.61	4.377
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	784	735	779	820
Service Time	2.607	2.903	2.635	2.398
HCM Lane V/C Ratio	0.21	0.049	0.141	0.18
HCM Control Delay	8.8	8.2	8.4	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.2	0.5	0.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	44	85	11	16	60
Future Volume (vph)	9	44	85	11	16	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.867		0.984			
Flt Protected	0.992					0.990
Satd. Flow (prot)	1556	0	1740	0	0	1669
Flt Permitted	0.992					0.990
Satd. Flow (perm)	1556	0	1740	0	0	1669
Link Speed (mph)	25		25			25
Link Distance (ft)	1097		261			430
Travel Time (s)	29.9		7.1			11.7
Confl. Peds. (#/hr)	1	24		10	10	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	2%	2%	0%	19%	2%
Adj. Flow (vph)	10	51	98	13	18	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	111	0	0	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 27.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	44	85	11	16	60
Future Vol, veh/h	9	44	85	11	16	60
Conflicting Peds, #/hr	1	24	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	19	2
Mvmt Flow	10	51	98	13	18	69

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	221	139	0	0	121	0
Stage 1	115	-	-	-	-	-
Stage 2	106	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.5	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3.2	-
Pot Cap-1 Maneuver	887	969	-	-	1020	-
Stage 1	1069	-	-	-	-	-
Stage 2	1069	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	860	938	-	-	1010	-
Mov Cap-2 Maneuver	860	-	-	-	-	-
Stage 1	1048	-	-	-	-	-
Stage 2	1048	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	1.8
HCM LOS	A		

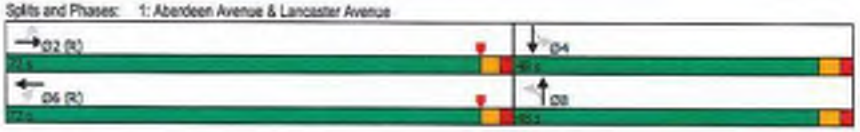
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 924	1010	-
HCM Lane V/C Ratio	-	- 0.066	0.018	-
HCM Control Delay (s)	-	- 9.2	8.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	679	49	27	824	50	94	96	43	114	72	64
Future Volume (vph)	39	679	49	27	824	50	94	96	43	114	72	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			179			199			464	
Travel Time (s)		31.1			3.5			5.4			12.7	
Confl. Peds. (#/hr)	15		7	7		15	12		9	9		12
Confl. Bikes (#/hr)			1			3			1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	2%	7%	2%	2%	0%	1%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	679	49	27	824	50	94	96	43	114	72	64
Future Volume (veh/h)	39	679	49	27	824	50	94	96	43	114	72	64
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
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	1800	1786	1800	1809	1771	1809	1782	1775	1782	1836	1891	1836
Adj Flow Rate, veh/h	40	700	51	28	849	52	97	99	44	118	74	66
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	0	0	0
Cap, veh/h	116	1939	140	74	2098	127	149	139	55	169	97	76
Arrive On Green	1.00	1.00	1.00	0.69	0.70	0.69	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	118	2774	200	61	3001	182	456	594	238	535	412	326
Grp Volume(v), veh/h	392	0	399	479	0	450	240	0	0	258	0	0
Grp Sat Flow(s),veh/h/ln	1528	0	1565	1671	0	1572	1286	0	0	1273	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	14.5	0.0	0.0	0.0	2.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.5	0.0	14.5	21.5	0.0	0.0	24.2	0.0	0.0
Prop In Lane	0.10		0.13	0.06		0.12	0.40		0.18	0.46		0.26
Lane Grp Cap(c), veh/h	1088	0	1094	1186	0	1099	333	0	0	331	0	0
V/C Ratio(X)	0.36	0.00	0.36	0.40	0.00	0.41	0.72	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	1088	0	1094	1186	0	1099	522	0	0	527	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	7.5	0.0	7.6	43.3	0.0	0.0	44.7	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.9	1.0	0.0	1.1	3.0	0.0	0.0	4.0	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(95%),veh/ln	0.5	0.0	0.5	11.4	0.0	10.8	12.6	0.0	0.0	13.7	0.0	0.0
LnGrp Delay(d),s/veh	0.9	0.0	0.9	8.5	0.0	8.8	46.2	0.0	0.0	48.7	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		791			929			240			258	
Approach Delay, s/veh		0.9			8.6			46.2			48.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		87.9		32.1		87.9		32.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		26.2		16.5		23.5
Green Ext Time (p_c), s		3.7		0.9		4.0		0.9

Intersection Summary

HCM 2010 Ctrl Delay 14.6
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	798	37	0	901	0	19
Future Volume (vph)	798	37	0	901	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.993					0.865
Flt Protected						
Satd. Flow (prot)	3059	0	0	2913	0	1542
Flt Permitted						
Satd. Flow (perm)	3059	0	0	2913	0	1542
Link Speed (mph)	35			35	25	
Link Distance (ft)	179			197	84	
Travel Time (s)	3.5			3.8	2.3	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	823	38	0	929	0	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	861	0	0	929	0	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.4% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2020 Projected (Build) Conditions
3: Proposed RIRO Driveway & Lancaster Avenue
Timing Plan: SAT Peak

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	798	37	0	901	0	19
Future Vol, veh/h	798	37	0	901	0	19
Conflicting Peds, #/hr	0	0	0	0	7	7
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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	823	38	0	929	0	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	438
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	2.9
Pot Cap-1 Maneuver	-	-	0	-	0	*880
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*875
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	875	-	-	-
HCM Lane V/C Ratio	0.022	-	-	-
HCM Control Delay (s)	9.2	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	790	27	61	885	17	43
Future Volume (vph)	790	27	61	885	17	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.94	*0.94	*0.55	*0.55	1.00	1.00
Ped Bike Factor						
Frt	0.995				0.904	
Flt Protected				0.997	0.986	
Satd. Flow (prot)	3066	0	0	1815	1589	0
Flt Permitted				0.997	0.986	
Satd. Flow (perm)	3066	0	0	1815	1589	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	197			545	89	
Travel Time (s)	3.8			10.6	2.4	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	814	28	63	912	18	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	842	0	0	975	62	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.08	1.08
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 67.8% ICU Level of Service C
Analysis Period (min) 15
* User Entered Value

2020 Projected (Build) Conditions
5: Proposed Full-Access Driveway & Lancaster Avenue
Timing Plan: SAT Peak

Intersection

Int Delay, s/veh 1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	790	27	61	885	17	43
Future Vol, veh/h	790	27	61	885	17	43
Conflicting Peds, #/hr	0	0	0	0	7	7
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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	814	28	63	912	18	44

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	842	0	1417	428
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	589	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1064	-	*234	*680
Stage 1	-	-	-	-	*412	-
Stage 2	-	-	-	-	*536	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1064	-	*204	*675
Mov Cap-2 Maneuver	-	-	-	-	*204	-
Stage 1	-	-	-	-	*412	-
Stage 2	-	-	-	-	*469	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	453	-	-	*1064	-
HCM Lane V/C Ratio	0.137	-	-	0.059	-
HCM Control Delay (s)	14.2	-	-	8.6	0.5
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.5	-	-	0.2	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	76	157	12	29	119
Future Volume (vph)	10	76	157	12	29	119
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	-2%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.880		0.991			
Flt Protected	0.994					0.990
Satd. Flow (prot)	1559	0	1731	0	0	1779
Flt Permitted	0.994					0.990
Satd. Flow (perm)	1559	0	1731	0	0	1779
Link Speed (mph)	25		25			25
Link Distance (ft)	74		296			199
Travel Time (s)	2.0		8.1			5.4
Conf. Peds. (#/hr)	9	9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%
Adj. Flow (vph)	10	78	162	12	30	123
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	174	0	0	153
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 36.0% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	76	157	12	29	119
Future Vol, veh/h	10	76	157	12	29	119
Conflicting Peds, #/hr	9	9	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, %	-2	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	1
Mvmt Flow	10	78	162	12	30	123

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	360	177	0	0	174	0
Stage 1	168	-	-	-	-	-
Stage 2	192	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.3	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	795	931	-	-	1047	-
Stage 1	1017	-	-	-	-	-
Stage 2	1024	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	783	923	-	-	1047	-
Mov Cap-2 Maneuver	783	-	-	-	-	-
Stage 1	1017	-	-	-	-	-
Stage 2	984	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	1.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	901	1047	-
HCM Lane V/C Ratio	-	-	0.098	0.029	-
HCM Control Delay (s)	-	-	9.4	8.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	690	38	47	789	92	60	81	70	67	80	60
Future Volume (vph)	38	690	38	47	789	92	60	81	70	67	80	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3125	0	0	3149	1428	1564	1604	0	1620	1561	0
Flt Permitted		0.865			0.855		0.521			0.486		
Satd. Flow (perm)	0	2708	0	0	2696	1330	828	1604	0	805	1561	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			488	
Travel Time (s)		30.9			19.1			14.5			13.3	
Confl. Peds. (#/hr)	23		47	47		23	32		27	27		32
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	2%	1%	0%	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	789	0	0	861	95	62	156	0	69	144	0
Turn Type	prot	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	64.0		34.0	34.0	34.0	30.0	30.0		30.0	30.0	
Total Split (%)	25.0%	53.3%		28.3%	28.3%	28.3%	25.0%	25.0%		25.0%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		92.1			92.1	91.1	17.9	17.9		17.9	17.9	
Actuated g/C Ratio		0.77			0.77	0.76	0.15	0.15		0.15	0.15	
v/c Ratio		0.38			0.42	0.09	0.50	0.65		0.57	0.62	
Control Delay		5.6			3.5	3.1	59.9	60.4		65.2	58.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		5.6			3.5	3.1	59.9	60.4		65.2	58.8	
LOS		A			A	A	E	E		E	E	
Approach Delay		5.6			3.4			60.2			60.8	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		89			53	11	45	115		50	106	

2020 Projected (Build) Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: SAT Peak

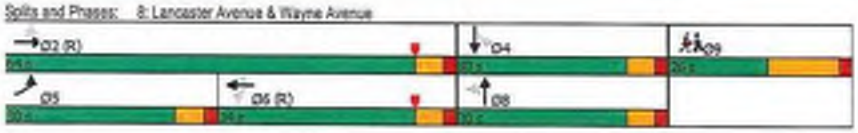
Lane Group	09
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	19.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		148			67	20	87	178		97	165	
Internal Link Dist (ft)		1052			622			452			408	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2078			2069	1009	172	334		167	335	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.38			0.42	0.09	0.38	0.47		0.41	0.44	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.5 Intersection LOS: B
Intersection Capacity Utilization 78.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



2020 Projected (Build) Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: SAT Peak

Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lanes, Volumes, Timings
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Synchro 10 Report

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	782	57	49	939	41	64
Future Volume (vph)	782	57	49	939	41	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3139	0	0	3137	1706	0
Flt Permitted				0.852	0.981	
Satd. Flow (perm)	3139	0	0	2677	1684	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		17	17		30	17
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	2%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	874	0	0	1029	110	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Eff Green (s)	96.9			96.9	14.1	
Actuated g/C Ratio	0.81			0.81	0.12	
v/c Ratio	0.34			0.48	0.55	
Control Delay	3.0			2.9	59.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	3.0			2.9	59.6	
LOS	A			A	E	
Approach Delay	3.0			2.9	59.6	
Approach LOS	A			A	E	
Queue Length 50th (ft)	61			56	82	
Queue Length 95th (ft)	90			69	136	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2534			2161	463	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.34			0.48	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 8.0 — Intersection LOS: A
Intersection Capacity Utilization 72.1% — ICU Level of Service C
Analysis Period (min) 15

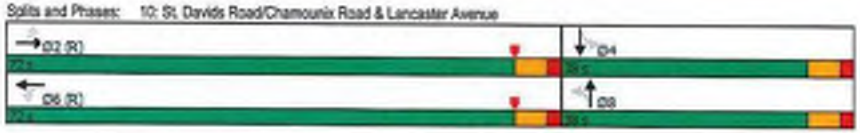
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	865	17	36	1008	63	13	17	41	55	17	40
Future Volume (vph)	27	865	17	36	1008	63	13	17	41	55	17	40
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-9%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		473			513			642			402	
Travel Time (s)		9.2			10.0			17.5			11.0	
Conf. Peds. (#/hr)	5		2	2		5			4	4		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	8%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	865	17	36	1008	63	13	17	41	55	17	40
Future Volume (veh/h)	27	865	17	36	1008	63	13	17	41	55	17	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.99
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	1782	1765	1782	1845	1828	1845	1891	1864	1891	1881	1863	1891
Adj Flow Rate, veh/h	28	883	16	37	1029	61	13	17	42	56	17	35
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	85	2510	45	93	2492	146	58	50	95	121	32	51
Arrive On Green	0.80	0.81	0.80	0.80	0.81	0.80	0.09	0.10	0.09	0.09	0.10	0.09
Sat Flow, veh/h	62	3064	55	72	3063	180	185	526	994	753	332	535
Grp Volume(v), veh/h	465	0	462	573	0	554	72	0	0	109	0	0
Grp Sat Flow(s),veh/h/ln	1604	0	1596	1683	0	1631	1704	0	0	1820	0	0
Q Serve(g_s), s	0.0	0.0	8.4	0.0	0.0	10.6	0.0	0.0	0.0	2.5	0.0	0.0
Cycle Q Clear(g_c), s	7.4	0.0	8.4	9.4	0.0	10.6	4.4	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.06		0.03	0.06		0.11	0.18		0.58	0.51		0.33
Lane Grp Cap(c), veh/h	1326	0	1299	1389	0	1328	166	0	0	189	0	0
V/C Ratio(X)	0.35	0.00	0.36	0.41	0.00	0.42	0.39	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1326	0	1299	1389	0	1328	506	0	0	489	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.6	0.0	2.7	2.8	0.0	2.9	47.4	0.0	0.0	48.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.8	0.9	0.0	1.0	1.9	0.0	0.0	3.9	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(95%),veh/ln	7.0	0.0	7.0	8.9	0.0	8.7	4.0	0.0	0.0	6.3	0.0	0.0
LnGrp Delay(d),s/veh	3.3	0.0	3.5	3.7	0.0	3.9	49.3	0.0	0.0	52.3	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		927			1127			72			109	
Approach Delay, s/veh		3.4			3.8			49.3			52.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		94.5		15.5		94.5		15.5
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		12.4		9.0		12.6		6.4
Green Ext Time (p_c), s		4.1		0.5		5.4		0.3

Intersection Summary

HCM 2010 Ctrl Delay 7.5
HCM 2010 LOS A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	14	3	4	27	16	3	107	11	5	99	18
Future Volume (vph)	7	14	3	4	27	16	3	107	11	5	99	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983			0.954			0.988			0.980	
Flt Protected		0.986			0.996			0.999			0.998	
Satd. Flow (prot)	0	1745	0	0	1676	0	0	1759	0	0	1718	0
Flt Permitted		0.986			0.996			0.999			0.998	
Satd. Flow (perm)	0	1745	0	0	1676	0	0	1759	0	0	1718	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			896			221			296	
Travel Time (s)		29.9			24.5			6.5			8.1	
Confl. Peds. (#/hr)	6		6	6		6	2		4	4		2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	1%	11%
Adj. Flow (vph)	9	18	4	5	34	20	4	135	14	6	125	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	59	0	0	153	0	0	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	14	3	4	27	16	3	107	11	5	99	18
Future Vol, veh/h	7	14	3	4	27	16	3	107	11	5	99	18
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	0	0	0	0	6	0	0	0	0	1	11
Mvmt Flow	9	18	4	5	34	20	4	135	14	6	125	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	7.8	8.1	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	29%	9%	4%
Vol Thru, %	88%	58%	57%	81%
Vol Right, %	9%	12%	34%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	121	24	47	122
LT Vol	3	7	4	5
Through Vol	107	14	27	99
RT Vol	11	3	16	18
Lane Flow Rate	153	30	59	154
Geometry Grp	1	1	1	1
Degree of Util (X)	0.176	0.039	0.073	0.176
Departure Headway (Hd)	4.125	4.523	4.419	4.093
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	855	779	815	860
Service Time	2.223	2.628	2.42	2.193
HCM Lane V/C Ratio	0.179	0.039	0.072	0.179
HCM Control Delay	8.1	7.8	7.8	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0.2	0.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	50	74	8	18	37
Future Volume (vph)	9	50	74	8	18	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.886		0.987			
Flt Protected	0.992					0.984
Satd. Flow (prot)	1555	0	1777	0	0	1737
Flt Permitted	0.992					0.984
Satd. Flow (perm)	1555	0	1777	0	0	1737
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		590			450
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)	1	13		5	5	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	11%	0%	0%	0%	6%	0%
Adj. Flow (vph)	13	69	103	11	25	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	114	0	0	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 24.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	50	74	8	18	37
Future Vol, veh/h	9	50	74	8	18	37
Conflicting Peds, #/hr	1	13	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	11	0	0	0	6	0
Mvmt Flow	13	69	103	11	25	51

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	216	127	0	0	119	0
Stage 1	114	-	-	-	-	-
Stage 2	102	-	-	-	-	-
Critical Hdwy	6.51	6.2	-	-	4.4	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	-	-	3.1	-
Pot Cap-1 Maneuver	861	985	-	-	1056	-
Stage 1	1024	-	-	-	-	-
Stage 2	1038	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	835	968	-	-	1051	-
Mov Cap-2 Maneuver	835	-	-	-	-	-
Stage 1	1019	-	-	-	-	-
Stage 2	1012	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	2.8
HCM LOS	A		

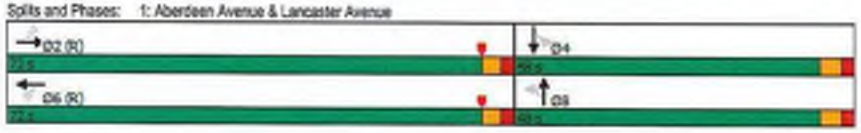
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 945	1051	-
HCM Lane V/C Ratio	-	- 0.087	0.024	-
HCM Control Delay (s)	-	- 9.2	8.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	547	32	26	546	32	81	49	30	64	48	37
Future Volume (vph)	28	547	32	26	546	32	81	49	30	64	48	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			179			199			454	
Travel Time (s)		31.1			3.5			5.4			12.7	
Conf. Peds. (#/hr)	1					1	22		6	6		22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	15%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	547	32	26	546	32	81	49	30	64	48	37
Future Volume (veh/h)	28	547	32	26	546	32	81	49	30	64	48	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.97		0.95	0.98		0.95
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	1800	1784	1800	1809	1781	1805	1782	1782	1782	1836	1909	1838
Adj Flow Rate, veh/h	29	558	32	27	557	31	83	50	30	65	49	34
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	123	2295	131	116	2311	128	139	74	38	127	92	52
Arrive On Green	1.00	1.00	1.00	0.77	0.78	0.77	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	116	2948	168	107	2967	164	607	480	245	543	595	339
Grp Volume(v), veh/h	315	0	304	314	0	301	163	0	0	148	0	0
Grp Sat Flow(s),veh/h/ln	1638	0	1594	1646	0	1592	1332	0	0	1477	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	6.2	3.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.7	0.0	6.2	14.4	0.0	0.0	11.3	0.0	0.0
Prop In Lane	0.09		0.11	0.09		0.10	0.51		0.18	0.44		0.23
Lane Grp Cap(c), veh/h	1295	0	1241	1301	0	1240	240	0	0	259	0	0
V/C Ratio(X)	0.24	0.00	0.24	0.24	0.00	0.24	0.68	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	1295	0	1241	1301	0	1240	536	0	0	583	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.6	0.0	3.6	49.2	0.0	0.0	47.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.4	0.0	0.5	3.3	0.0	0.0	2.0	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(95%),veh/ln	0.3	0.0	0.3	5.5	0.0	5.1	9.4	0.0	0.0	8.4	0.0	0.0
LnGrp Delay(d),s/veh	0.4	0.0	0.5	4.0	0.0	4.1	52.5	0.0	0.0	49.7	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		619			615			163			148	
Approach Delay, s/veh		0.4			4.1			52.6			49.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.5		22.5		97.5		22.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		13.3		8.2		16.4
Green Ext Time (p_c), s		2.6		0.6		2.4		0.6

Intersection Summary

HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	601	40	0	605	0	19
Future Volume (vph)	601	40	0	605	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.991					0.865
Flt Protected						
Satd. Flow (prot)	2954	0	0	3076	0	1573
Flt Permitted						
Satd. Flow (perm)	2954	0	0	3076	0	1573
Link Speed (mph)	35			35	25	
Link Distance (ft)	179			197	94	
Travel Time (s)	3.5			3.8	2.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	613	41	0	617	0	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	654	0	0	617	0	19
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 28.9% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	601	40	0	605	0	19
Future Vol, veh/h	601	40	0	605	0	19
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	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	613	41	0	617	0	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	327
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	2.9
Pot Cap-1 Maneuver	-	-	0	-	0	*968
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*968
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	968	-	-	-
HCM Lane V/C Ratio	0.02	-	-	-
HCM Control Delay (s)	8.8	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %ile Q(veh)	0.1	-	-	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	592	27	60	588	17	47
Future Volume (vph)	592	27	60	588	17	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.90	*0.90	*0.57	*0.57	1.00	1.00
Frt	0.993				0.900	
Flt Protected				0.995	0.987	
Satd. Flow (prot)	2960	0	0	1898	1615	0
Flt Permitted				0.995	0.987	
Satd. Flow (perm)	2960	0	0	1898	1615	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	197			1647	89	
Travel Time (s)	3.8			32.1	2.4	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	604	28	61	600	17	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	632	0	0	661	65	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 51.2% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	592	27	60	588	17	47
Future Vol, veh/h	592	27	60	588	17	47
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	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	604	28	61	600	17	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	632	0	1040	316
Stage 1	-	-	-	-	618	-
Stage 2	-	-	-	-	422	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	3.8	3.9
Pot Cap-1 Maneuver	-	-	*1171	-	*203	*668
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1010	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1171	-	*187	*668
Mov Cap-2 Maneuver	-	-	-	-	*187	-
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*932	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	459	-	-	* 1171	-
HCM Lane V/C Ratio	0.142	-	-	0.052	-
HCM Control Delay (s)	14.1	-	-	8.2	0.3
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.5	-	-	0.2	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	75	86	11	28	79
Future Volume (vph)	8	75	86	11	28	79
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	-2%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878		0.985			
Flt Protected	0.995					0.987
Satd. Flow (prot)	1588	0	1755	0	0	1768
Flt Permitted	0.995					0.987
Satd. Flow (perm)	1588	0	1755	0	0	1768
Link Speed (mph)	25		25			25
Link Distance (ft)	74		296			159
Travel Time (s)	2.0		8.1			5.4
Conf. Peds. (#/hr)				6	6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	8	77	88	11	29	81
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	0	99	0	0	110
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 24.7% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	75	86	11	28	79
Future Vol, veh/h	8	75	86	11	28	79
Conflicting Peds, #/hr	0	0	0	6	6	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, %	-2	-	2	-	-	-2
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	8	77	88	11	29	81

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	239	100	0	0	105	0
Stage 1	100	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Critical Hdwy	6	6	-	-	4.3	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	923	1000	-	-	1106	-
Stage 1	1069	-	-	-	-	-
Stage 2	1071	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	892	1000	-	-	1106	-
Mov Cap-2 Maneuver	892	-	-	-	-	-
Stage 1	1062	-	-	-	-	-
Stage 2	1041	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	2.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1006	1100	-
HCM Lane V/C Ratio	-	-	0.084	0.026	-
HCM Control Delay (s)	-	-	8.9	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	494	27	42	498	99	29	53	60	74	67	53
Future Volume (vph)	57	494	27	42	498	99	29	53	60	74	67	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3123	0	0	3150	1428	1564	1603	0	1620	1586	0
Flt Permitted		0.833			0.860		0.552			0.579		
Satd. Flow (perm)	0	2613	0	0	2718	1376	894	1603	0	977	1586	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			488	
Travel Time (s)		30.9			19.1			14.5			13.3	
Confl. Peds. (#/hr)	7		11	11		7	16		10	10		16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	608	0	0	566	104	31	119	0	78	127	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	51.0		31.0	31.0	31.0	33.0	33.0		33.0	33.0	
Total Split (%)	25.0%	50.8%		25.8%	25.8%	25.8%	27.5%	27.5%		27.5%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eflct Green (s)		94.1			94.1	93.1	15.9	15.9		15.9	15.9	
Actuated g/C Ratio		0.78			0.78	0.78	0.13	0.13		0.13	0.13	
v/c Ratio		0.30			0.27	0.10	0.26	0.56		0.60	0.60	
Control Delay		4.4			2.9	2.9	50.5	58.2		67.6	60.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		4.4			2.9	2.9	50.5	58.2		67.6	60.5	
LOS		A			A	A	D	E		E	E	
Approach Delay		4.4			2.9			56.6			63.2	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		57			36	11	22	88		58	94	
Queue Length 95th (ft)		98			47	22	51	142		106	152	

2020 Projected (Build) Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: SUN Peak

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	19.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eflct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lanes, Volumes, Timings
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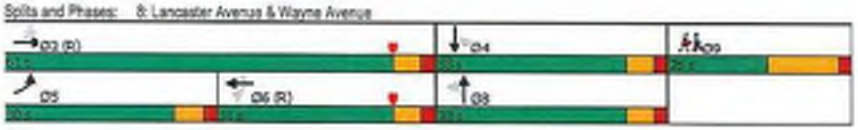
Synchro 10 Report

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1052			622			452			408	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2049			2131	1087	208	374		227	370	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.38			0.27	0.10	0.15	0.32		0.34	0.34	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 16.0 Intersection LOS: B
Intersection Capacity Utilization 56.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	586	63	22	626	26	16
Future Volume (vph)	586	63	22	626	26	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3125	0	0	3139	1733	0
Flt Permitted				0.915	0.970	
Satd. Flow (perm)	3125	0	0	2878	1713	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		3	3		18	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	1%	0%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	721	0	0	720	47	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	101.3			101.3	9.7	
Actuated g/C Ratio	0.84			0.84	0.08	
v/c Ratio	0.27			0.30	0.34	
Control Delay	1.8			2.4	57.9	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.8			2.4	57.9	
LOS	A			A	E	
Approach Delay	1.8			2.4	57.9	
Approach LOS	A			A	E	
Queue Length 50th (ft)	28			38	35	
Queue Length 95th (ft)	42			52	73	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2639			2430	491	

2020 Projected (Build) Conditions
9: Louella Avenue & Lancaster Avenue
Timing Plan: SUN Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.27			0.30	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.34
Intersection Signal Delay: 3.8 — Intersection LOS: A
Intersection Capacity Utilization 46.0% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lanes, Volumes, Timings
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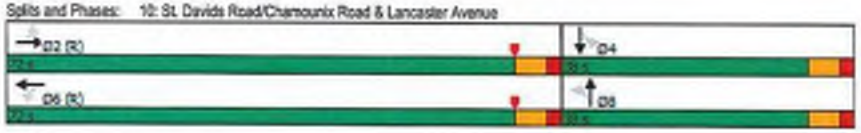
Synchro 10 Report

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	621	6	30	658	33	11	6	42	37	13	24
Future Volume (vph)	21	621	6	30	658	33	11	6	42	37	13	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1847			744			642			402	
Travel Time (s)		32.1			14.5			17.5			11.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	621	6	30	658	33	11	6	42	37	13	24
Future Volume (veh/h)	21	621	6	30	658	33	11	6	42	37	13	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	1782	1785	1782	1845	1828	1845	1891	1864	1891	1881	1881	1881
Adj Flow Rate, veh/h	22	661	5	32	700	33	12	6	45	39	14	20
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	93	2657	20	122	2582	121	54	18	83	107	28	32
Arrive On Green	0.83	0.84	0.83	0.83	0.84	0.83	0.06	0.07	0.06	0.06	0.07	0.06
Sat Flow, veh/h	69	3164	24	103	3074	144	217	264	1202	825	421	463
Grp Volume(v), veh/h	351	0	337	388	0	377	63	0	0	73	0	0
Grp Sat Flow(s),veh/h/ln	1655	0	1602	1682	0	1638	1683	0	0	1689	0	0
Q Serve(g_s), s	0.0	0.0	4.7	0.0	0.0	5.3	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	4.4	0.0	4.7	4.8	0.0	5.3	3.9	0.0	0.0	4.4	0.0	0.0
Prop In Lane	0.06		0.01	0.08		0.09	0.19		0.71	0.53		0.27
Lane Grp Cap(c), veh/h	1410	0	1345	1432	0	1378	140	0	0	152	0	0
V/C Ratio(X)	0.25	0.00	0.25	0.27	0.00	0.27	0.45	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	1410	0	1345	1432	0	1378	469	0	0	497	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.8	0.0	1.8	1.8	0.0	1.8	49.9	0.0	0.0	50.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.5	0.0	0.5	3.2	0.0	0.0	3.3	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(95%),veh/ln	4.4	0.0	4.0	4.8	0.0	4.5	3.6	0.0	0.0	4.2	0.0	0.0
Ln/Grp Delay(d),s/veh	2.2	0.0	2.2	2.3	0.0	2.3	53.1	0.0	0.0	53.4	0.0	0.0
Ln/Grp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		688			765			63			73	
Approach Delay, s/veh		2.2			2.3			53.1			53.4	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.4		12.6		97.4		12.6
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		6.7		6.4		7.3		5.9
Green Ext Time (p_c), s		2.7		0.3		3.1		0.3

Intersection Summary

HCM 2010 Ctrl Delay 6.6
HCM 2010 LOS A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	2	2	3	10	8	5	72	2	5	43	12
Future Volume (vph)	24	2	2	3	10	8	5	72	2	5	43	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.980			0.949			0.996			0.974	
Flt Protected		0.999			0.993			0.997			0.996	
Satd. Flow (prot)	0	1709	0	0	1696	0	0	1754	0	0	1719	0
Flt Permitted		0.999			0.993			0.997			0.996	
Satd. Flow (perm)	0	1709	0	0	1696	0	0	1754	0	0	1719	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			898			301			296	
Travel Time (s)		29.9			24.5			8.5			8.1	
Confl. Peds. (#/hr)	1		2	2		1	6		3	3		6
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	8%
Adj. Flow (vph)	33	3	3	4	14	11	7	99	3	7	59	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	29	0	0	109	0	0	82	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 20.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	2	2	3	10	8	5	72	2	5	43	12
Future Vol, veh/h	24	2	2	3	10	8	5	72	2	5	43	12
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	8
Mvmt Flow	33	3	3	4	14	11	7	99	3	7	59	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.3	7.7	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	86%	14%	8%
Vol Thru, %	91%	7%	48%	72%
Vol Right, %	3%	7%	38%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	28	21	60
LT Vol	5	24	3	5
Through Vol	72	2	10	43
RT Vol	2	2	8	12
Lane Flow Rate	108	38	29	82
Geometry Grp	1	1	1	1
Degree of Util (X)	0.123	0.047	0.032	0.091
Departure Headway (Hd)	4.077	4.379	4.057	3.996
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	873	806	887	888
Service Time	2.13	2.471	2.155	2.057
HCM Lane V/C Ratio	0.124	0.047	0.033	0.092
HCM Control Delay	7.7	7.7	7.3	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.1	0.3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	36	21	3	10	29
Future Volume (vph)	4	36	21	3	10	29
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.877		0.984			
Flt Protected	0.995					0.987
Satd. Flow (prot)	1571	0	1771	0	0	1777
Flt Permitted	0.995					0.987
Satd. Flow (perm)	1571	0	1771	0	0	1777
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		590			450
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)		5		4	4	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	49	29	4	14	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	33	0	0	54
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 20.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	36	21	3	10	29
Future Vol, veh/h	4	36	21	3	10	29
Conflicting Peds, #/hr	0	5	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	49	29	4	14	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	103	40	0	0	37	0
Stage 1	35	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	1043	1103	-	-	1166	-
Stage 1	1155	-	-	-	-	-
Stage 2	1115	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1026	1094	-	-	1162	-
Mov Cap-2 Maneuver	1026	-	-	-	-	-
Stage 1	1150	-	-	-	-	-
Stage 2	1102	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1087	1162	-
HCM Lane V/C Ratio	-	- 0.05	0.012	-
HCM Control Delay (s)	-	- 8.5	8.1	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0.2	0	-

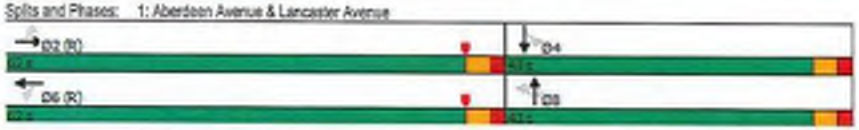
2020 PROJECTED CONDITIONS WITH PENNDOT-REQUESTED IMPROVEMENTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	791	43	30	907	43	148	112	43	141	85	69
Future Volume (vph)	35	791	43	30	907	43	148	112	43	141	85	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Storage Length (ft)	0		0	0		0	0		75	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1152			179			198			464	
Travel Time (s)		31.4			3.5			5.4			12.7	
Confl. Peds. (#/hr)	21		21	4		4	4		4	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	3%	18%	4%	0%	8%	5%	9%	1%	2%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	62.0	62.0		62.0	62.0		43.0	43.0	43.0	43.0	43.0	
Total Split (%)	59.0%	59.0%		59.0%	59.0%		41.0%	41.0%	41.0%	41.0%	41.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0	0.0		-1.0	
Total Lost Time (s)		4.0			4.0			4.0	5.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 6 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	791	43	30	907	43	148	112	43	141	85	69
Future Volume (veh/h)	35	791	43	30	907	43	148	112	43	141	85	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1800	1732	1800	1809	1735	1809	1782	1670	1635	1836	1876	1838
Adj Flow Rate, veh/h	38	860	47	33	986	47	161	122	47	153	92	75
Adj No. of Lanes	0	2	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	5	5	9	2	2	2
Cap, veh/h	75	1541	86	65	1604	78	268	173	501	143	85	54
Arrive On Green	0.36	0.37	0.36	0.54	0.55	0.54	0.36	0.37	0.36	0.36	0.37	0.36
Sat Flow, veh/h	69	2790	155	52	2904	140	577	465	1385	248	228	146
Grp Volume(v), veh/h	476	0	489	546	0	520	283	0	47	320	0	0
Grp Sat Flow(s),veh/h/ln	1468	0	1545	1543	0	1554	1042	0	1385	622	0	0
Q Serve(g_s), s	3.9	0.0	25.2	1.7	0.0	23.7	0.0	0.0	2.4	13.2	0.0	0.0
Cycle Q Clear(g_c), s	27.5	0.0	25.2	26.9	0.0	23.7	24.8	0.0	2.4	38.0	0.0	0.0
Prop In Lane	0.08		0.10	0.06		0.09	0.57		1.00	0.48		0.23
Lane Grp Cap(c), veh/h	834	0	854	874	0	858	431	0	501	278	0	0
V/C Ratio(X)	0.57	0.00	0.55	0.62	0.00	0.61	0.66	0.00	0.09	1.15	0.00	0.00
Avail Cap(c_a), veh/h	834	0	854	874	0	858	431	0	501	278	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.2	0.0	22.8	15.5	0.0	15.8	28.6	0.0	22.1	42.5	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	2.4	3.4	0.0	3.2	3.8	0.0	0.1	104.5	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(95%),veh/ln	17.5	0.0	16.8	16.9	0.0	16.3	12.2	0.0	1.6	28.9	0.0	0.0
LnGrp Delay(d),s/veh	24.9	0.0	25.1	18.8	0.0	19.0	32.2	0.0	22.2	147.0	0.0	0.0
LnGrp LOS	C		C	B		B	C		C	F		
Approach Vol, veh/h		945			1066			330			320	
Approach Delay, s/veh		25.0			18.9			30.8			147.0	
Approach LOS		C			B			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.0		43.0		62.0		43.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		57.0		38.0		57.0		38.0
Max Q Clear Time (g_c+I1), s		29.5		40.0		28.9		26.8
Green Ext Time (p_c), s		4.5		0.0		4.8		1.0

Intersection Summary

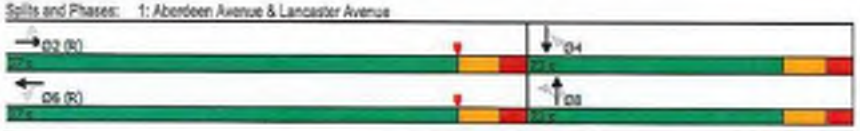
HCM 2010 Ctrl Delay 38.0
HCM 2010 LOS D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	824	36	26	918	59	101	66	34	120	112	68
Future Volume (vph)	33	824	36	26	918	59	101	66	34	120	112	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Storage Length (ft)	0		0	0		0	0		75	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1121			179			199			464	
Travel Time (s)		30.6			3.5			5.4			12.7	
Confl. Peds. (#/hr)	8		8	6		6	3		3	3		3
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	3%	0%	1%	3%	0%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0	23.0	23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%	38.3%	38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0	0.0		-1.0	
Total Lost Time (s)		4.0			4.0			4.0	5.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 38 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	824	36	26	918	59	101	66	34	120	112	68
Future Volume (veh/h)	33	824	36	26	918	59	101	66	34	120	112	68
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
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	1800	1779	1800	1809	1789	1809	1782	1782	1782	1836	1887	1839
Adj Flow Rate, veh/h	34	849	37	27	946	61	104	68	35	124	115	70
Adj No. of Lanes	0	2	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	95	1691	72	84	1701	108	285	165	448	200	171	84
Arrive On Green	0.54	0.55	0.54	0.54	0.55	0.54	0.30	0.31	0.30	0.30	0.31	0.30
Sat Flow, veh/h	56	3057	131	37	3076	196	603	525	1510	369	544	267
Grp Volume(v), veh/h	469	0	451	537	0	497	172	0	35	309	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	1595	1716	0	1593	1128	0	1510	1180	0	0
Q Serve(g_s), s	0.0	0.0	10.6	0.0	0.0	12.2	0.0	0.0	1.0	8.6	0.0	0.0
Cycle Q Clear(g_c), s	9.7	0.0	10.6	11.7	0.0	12.2	7.2	0.0	1.0	15.8	0.0	0.0
Prop In Lane	0.07		0.08	0.05		0.12	0.60		1.00	0.40		0.23
Lane Grp Cap(c), veh/h	949	0	882	983	0	881	431	0	448	435	0	0
V/C Ratio(X)	0.49	0.00	0.51	0.55	0.00	0.56	0.40	0.00	0.08	0.71	0.00	0.00
Avail Cap(c_a), veh/h	949	0	882	983	0	881	435	0	453	439	0	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)	0.91	0.00	0.91	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	0.0	8.4	8.8	0.0	8.8	16.6	0.0	15.2	20.7	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	1.9	2.2	0.0	2.6	0.6	0.0	0.1	5.2	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(95%),veh/ln	8.9	0.0	8.8	10.6	0.0	9.9	4.4	0.0	0.8	9.5	0.0	0.0
LnGrp Delay(d),s/veh	9.9	0.0	10.3	10.8	0.0	11.4	17.2	0.0	15.3	26.0	0.0	0.0
LnGrp LOS	A		B	B		B	B		B	C		
Approach Vol, veh/h		920			1034			207			309	
Approach Delay, s/veh		10.1			11.1			16.8			26.0	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.2		22.8		37.2		22.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		18.0		32.0		18.0
Max Q Clear Time (g_c+I1), s		12.6		17.8		14.2		9.2
Green Ext Time (p_c), s		4.0		0.0		4.1		0.5

Intersection Summary

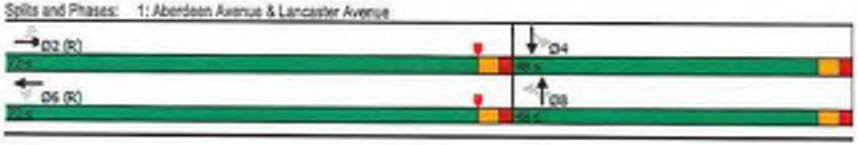
HCM 2010 Ctrl Delay 13.1
HCM 2010 LOS B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	679	49	27	824	50	94	96	43	114	72	64
Future Volume (vph)	39	679	49	27	824	50	94	96	43	114	72	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Storage Length (ft)	0		0	0		0	0		75	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			179			199			464	
Travel Time (s)		31.1			3.5			5.4			12.7	
Confl. Peds. (#/hr)	15		7	7		15	12		9	9		12
Confl. Bikes (#/hr)			1			3			1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	2%	7%	2%	2%	0%	1%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0	48.0	48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%	40.0%	40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0	0.0		-1.0	
Total Lost Time (s)		4.0			4.0			4.0	5.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	679	49	27	824	50	94	96	43	114	72	64
Future Volume (veh/h)	39	679	49	27	824	50	94	96	43	114	72	64
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.99
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	1800	1766	1900	1809	1771	1809	1782	1773	1782	1836	1891	1836
Adj Flow Rate, veh/h	40	700	51	28	849	52	97	99	44	118	74	66
Adj No. of Lanes	0	2	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	0	0	0	0
Cap, veh/h	103	1722	125	67	1871	113	211	201	448	161	101	75
Arrive On Green	1.00	1.00	1.00	0.61	0.62	0.61	0.30	0.31	0.30	0.30	0.31	0.30
Sat Flow, veh/h	112	2770	201	57	3009	182	534	645	1478	375	323	240
Grp Volume(v), veh/h	393	0	398	480	0	449	196	0	44	258	0	0
Grp Sat Flow(s),veh/h/ln	1518	0	1564	1677	0	1572	1179	0	1478	937	0	0
Q Serve(g_s), s	8.7	0.0	0.0	0.0	0.0	18.2	0.0	0.0	2.6	17.6	0.0	0.0
Cycle Q Clear(g_c), s	18.9	0.0	0.0	17.0	0.0	18.2	16.2	0.0	2.6	33.8	0.0	0.0
Prop In Lane	0.10		0.13	0.06		0.12	0.49		1.00	0.46		0.26
Lane Grp Cap(c), veh/h	964	0	972	1060	0	977	402	0	448	328	0	0
V/C Ratio(X)	0.41	0.00	0.41	0.45	0.00	0.46	0.49	0.00	0.10	0.79	0.00	0.00
Avail Cap(c_a), veh/h	964	0	972	1060	0	977	481	0	530	409	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	11.8	0.0	12.1	33.8	0.0	30.0	45.1	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.2	1.4	0.0	1.6	0.9	0.0	0.1	7.9	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(95%),veh/ln	0.6	0.0	0.6	13.7	0.0	13.0	9.4	0.0	1.9	14.1	0.0	0.0
LnGrp Delay(d),s/veh	1.2	0.0	1.2	13.2	0.0	13.8	34.7	0.0	30.1	52.9	0.0	0.0
LnGrp LOS	A		A	B		B	C		C	D		
Approach Vol, veh/h		791			929			240			258	
Approach Delay, s/veh		1.2			13.4			33.9			52.9	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		78.6		41.4		78.6		41.4
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		20.9		35.8		20.2		18.2
Green Ext Time (p_c), s		3.7		0.6		4.0		0.9

Intersection Summary

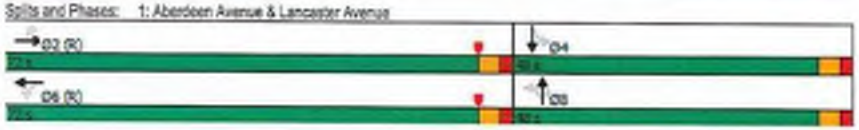
HCM 2010 Ctrl Delay 15.9
HCM 2010 LOS B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	547	32	26	546	32	81	49	30	64	48	37
Future Volume (vph)	28	547	32	26	546	32	81	49	30	64	48	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Storage Length (ft)	0		0	0		0	0		75	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			179			199			464	
Travel Time (s)		31.1			3.5			5.4			12.7	
Conf. Peds. (#/hr)	1					1	22		6	6		22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	15%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0	48.0	48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%	40.0%	40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0	0.0		-1.0	
Total Lost Time (s)		4.0			4.0			4.0	5.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	547	32	26	546	32	81	49	30	64	48	37
Future Volume (veh/h)	28	547	32	26	546	32	81	49	30	64	48	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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		0.97	0.99		0.97
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	1800	1784	1800	1809	1781	1809	1782	1782	1782	1836	1909	1836
Adj Flow Rate, veh/h	29	558	32	27	557	31	83	50	30	65	49	34
Adj No. of Lanes	0	2	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	115	2139	122	108	2154	119	160	98	294	136	79	42
Arrive On Green	1.00	1.00	1.00	0.72	0.72	0.72	0.20	0.21	0.20	0.20	0.21	0.20
Sat Flow, veh/h	114	2953	168	105	2972	164	631	469	1485	302	377	202
Grp Volume(v), veh/h	316	0	303	314	0	301	133	0	30	148	0	0
Grp Sat Flow(s),veh/h/ln	1641	0	1594	1649	0	1592	1100	0	1485	881	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	2.0	8.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	7.1	0.0	7.7	13.3	0.0	2.0	21.6	0.0	0.0
Prop In Lane	0.09		0.11	0.09		0.10	0.62		1.00	0.44		0.23
Lane Grp Cap(c), veh/h	1208	0	1155	1214	0	1153	269	0	294	229	0	0
V/C Ratio(X)	0.26	0.00	0.26	0.26	0.00	0.26	0.49	0.00	0.10	0.67	0.00	0.00
Avail Cap(c_a), veh/h	1208	0	1155	1214	0	1153	492	0	525	463	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	5.5	0.0	5.6	42.8	0.0	39.2	48.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.5	0.0	0.5	1.4	0.0	0.2	3.6	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(95%),veh/ln	0.3	0.0	0.3	0.8	0.0	0.3	7.5	0.0	1.5	8.8	0.0	0.0
LnGrp Delay(d),s/veh	0.5	0.0	0.5	6.1	0.0	6.2	44.2	0.0	39.3	52.3	0.0	0.0
LnGrp LOS	A		A	A		A	D		D	D		
Approach Vol, veh/h		619			615			163			148	
Approach Delay, s/veh		0.5			6.1			43.3			52.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		91.0		29.0		91.0		29.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		23.6		9.7		15.3
Green Ext Time (p_c), s		2.6		0.5		2.4		0.8

Intersection Summary

HCM 2010 Ctrl Delay 12.2
HCM 2010 LOS B

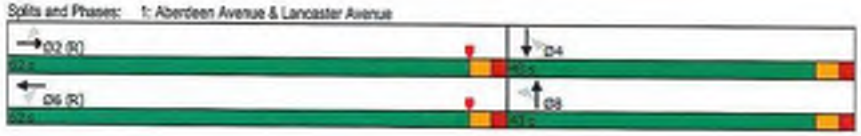
2025 BASE CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	806	35	11	982	44	74	111	34	144	87	70
Future Volume (vph)	36	806	35	11	982	44	74	111	34	144	87	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1152			98			130			464	
Travel Time (s)		31.4			1.9			3.5			12.7	
Confl. Peds. (#/hr)	21		21	4		4	4		4	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	3%	18%	4%	0%	8%	5%	9%	1%	2%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	62.0	62.0		62.0	62.0		43.0	43.0		43.0	43.0	
Total Split (%)	59.0%	59.0%		59.0%	59.0%		41.0%	41.0%		41.0%	41.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 6 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	806	35	11	982	44	74	111	34	144	87	70
Future Volume (veh/h)	36	806	35	11	982	44	74	111	34	144	87	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1800	1732	1800	1809	1740	1809	1792	1671	1792	1836	1877	1836
Adj Flow Rate, veh/h	39	876	38	12	1067	48	80	121	37	157	95	76
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	5	5	5	2	2	2
Cap, veh/h	88	1833	78	43	1988	89	151	212	58	220	118	87
Arrive On Green	0.03	0.64	0.03	0.03	0.64	0.03	0.28	0.29	0.28	0.28	0.29	0.28
Sat Flow, veh/h	81	2879	123	13	3122	139	365	738	203	590	409	301
Grp Volume(v), veh/h	474	0	479	591	0	536	238	0	0	328	0	0
Grp Sat Flow(s),veh/h/ln	1530	0	1552	1716	0	1558	1306	0	0	1301	0	0
Q Serve(g_s), s	0.0	0.0	17.1	0.0	0.0	20.0	0.0	0.0	0.0	9.6	0.0	0.0
Cycle Q Clear(g_c), s	14.5	0.0	17.1	19.8	0.0	20.0	16.5	0.0	0.0	26.2	0.0	0.0
Prop In Lane	0.08		0.08	0.02		0.09	0.34		0.16	0.48		0.23
Lane Grp Cap(c), veh/h	997	0	988	1111	0	992	406	0	0	412	0	0
V/C Ratio(X)	0.48	0.00	0.48	0.53	0.00	0.54	0.58	0.00	0.00	0.80	0.00	0.00
Avail Cap(c_a), veh/h	997	0	988	1111	0	992	527	0	0	538	0	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)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.6	0.0	10.0	10.5	0.0	10.6	32.4	0.0	0.0	37.0	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	1.6	1.8	0.0	2.1	1.3	0.0	0.0	6.2	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(95%),veh/ln	11.7	0.0	12.0	15.4	0.0	14.0	10.4	0.0	0.0	15.3	0.0	0.0
LnGrp Delay(d),s/veh	11.1	0.0	11.6	12.3	0.0	12.7	33.7	0.0	0.0	43.2	0.0	0.0
LnGrp LOS	B		B	B		B	C			D		
Approach Vol, veh/h		953			1127			238			328	
Approach Delay, s/veh		11.4			12.5			33.7			43.2	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		78.9		34.1		70.9		34.1
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		57.0		38.0		57.0		38.0
Max Q Clear Time (g_c+I1), s		19.1		28.2		22.0		18.5
Green Ext Time (p_c), s		4.6		1.0		5.1		0.9

Intersection Summary

HCM 2010 Ctrl Delay 17.8
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	971	12	0	1037	0	0
Future Volume (vph)	971	12	0	1037	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt	0.998					
Flt Protected						
Satd. Flow (prot)	2471	0	0	2922	1765	0
Flt Permitted						
Satd. Flow (perm)	2471	0	0	2922	1765	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	98	
Travel Time (s)	1.9			1.6	2.6	
Conf. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1055	13	0	1127	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1068	0	0	1127	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 41.5%	ICU Level of Service A
Analysis Period (min) 15	

* User Entered Value

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	971	12	0	1037	0	0
Future Vol, veh/h	971	12	0	1037	0	0
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1055	13	0	1127	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1068	0	1630	538
Stage 1	-	-	-	-	1062	-
Stage 2	-	-	-	-	568	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	651	-	*69	*492
Stage 1	-	-	-	-	*587	-
Stage 2	-	-	-	-	*782	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	651	-	*69	*489
Mov Cap-2 Maneuver	-	-	-	-	*69	-
Stage 1	-	-	-	-	*587	-
Stage 2	-	-	-	-	*782	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	651	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	969	2	0	1032	5	15
Future Volume (vph)	969	2	0	1032	5	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt					0.897	
Flt Protected					0.988	
Satd. Flow (prot)	2475	0	0	2922	1564	0
Flt Permitted					0.988	
Satd. Flow (perm)	2475	0	0	2922	1564	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1053	2	0	1122	5	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1055	0	0	1122	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 41.4% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	969	2	0	1032	5	15
Future Vol, veh/h	969	2	0	1032	5	15
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1053	2	0	1122	5	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1055	0	1619	532
Stage 1	-	-	-	-	1054	-
Stage 2	-	-	-	-	565	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*71	*795
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*782	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*71	*792
Mov Cap-2 Maneuver	-	-	-	-	*71	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*780	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	224	-	-	* 962	-
HCM Lane V/C Ratio	0.097	-	-	-	-
HCM Control Delay (s)	22.8	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	964	20	3	1032	0	6
Future Volume (vph)	964	20	3	1032	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Flt Protected						
Satd. Flow (prot)	2469	0	0	2922	1526	0
Flt Permitted						
Satd. Flow (perm)	2469	0	0	2922	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	78	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1048	22	3	1122	0	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1070	0	0	1125	7	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2025 Base (No-Build) Conditions
4: Western BP Driveway & Lancaster Avenue
Timing Plan: AM Peak

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	964	20	3	1032	0	6
Future Vol, veh/h	964	20	3	1032	0	6
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1048	22	3	1122	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1070	0	1630	539
Stage 1	-	-	-	-	1059	-
Stage 2	-	-	-	-	571	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*99	*795
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*782	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*98	*792
Mov Cap-2 Maneuver	-	-	-	-	*58	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*774	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	792	-	-	* 962	-
HCM Lane V/C Ratio	0.008	-	-	0.003	-
HCM Control Delay (s)	9.6	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	967	3	3	1033	2	16
Future Volume (vph)	967	3	3	1033	2	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt					0.879	
Flt Protected					0.995	
Satd. Flow (prot)	2475	0	0	2922	1543	0
Flt Permitted					0.995	
Satd. Flow (perm)	2475	0	0	2922	1543	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1639	89	
Travel Time (s)	1.7			31.9	2.4	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1051	3	3	1123	2	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1054	0	0	1126	19	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	967	3	3	1033	2	16
Future Vol, veh/h	967	3	3	1033	2	16
Conflicting Peds, #/hr	0	0	0	0	4	4
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	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1051	3	3	1123	2	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1054	0	1625	531
Stage 1	-	-	-	-	1053	-
Stage 2	-	-	-	-	572	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*70	*795
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*782	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*962	-	*69	*792
Mov Cap-2 Maneuver	-	-	-	-	*69	-
Stage 1	-	-	-	-	*824	-
Stage 2	-	-	-	-	*774	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	386	-	-	* 962	-
HCM Lane V/C Ratio	0.053	-	-	0.003	-
HCM Control Delay (s)	15.4	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	0.2	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	8	211	5	11	122
Future Volume (vph)	1	8	211	5	11	122
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878		0.997			
Flt Protected	0.995					0.996
Satd. Flow (prot)	1542	0	1847	0	0	1775
Flt Permitted	0.995					0.996
Satd. Flow (perm)	1542	0	1847	0	0	1775
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Conf. Peds. (#/hr)	4	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	8%	2%	2%	2%
Adj. Flow (vph)	1	9	229	5	12	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	234	0	0	145
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 27.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	8	211	5	11	122
Future Vol, veh/h	1	8	211	5	11	122
Conflicting Peds, #/hr	4	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	8	2	2	2
Mvmt Flow	1	9	229	5	12	133

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	393	236	0	0	234	0
Stage 1	232	-	-	-	-	-
Stage 2	161	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	742	854	-	-	999	-
Stage 1	931	-	-	-	-	-
Stage 2	1062	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	739	851	-	-	999	-
Mov Cap-2 Maneuver	739	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	1044	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 836	999	-
HCM Lane V/C Ratio	-	- 0.012	0.012	-
HCM Control Delay (s)	-	- 9.4	8.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	1	215	12	1	122
Future Volume (vph)	4	1	215	12	1	122
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.973		0.993			
Flt Protected	0.952					
Satd. Flow (prot)	1652	0	1643	0	0	1782
Flt Permitted	0.952					
Satd. Flow (perm)	1652	0	1643	0	0	1782
Link Speed (mph)	25		25			25
Link Distance (ft)	74		311			69
Travel Time (s)	2.0		8.5			1.9
Conf. Peds. (#/hr)	4	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	8%	2%	2%	2%
Adj. Flow (vph)	4	1	234	13	1	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	247	0	0	134
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 24.0% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	215	12	1	122
Future Vol, veh/h	4	1	215	12	1	122
Conflicting Peds, #/hr	4	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	8	2	2	2
Mvmt Flow	4	1	234	13	1	133

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	380	245	0	0	247	0
Stage 1	241	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	*757	844	-	-	989	-
Stage 1	*921	-	-	-	-	-
Stage 2	*1085	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*753	841	-	-	989	-
Mov Cap-2 Maneuver	*753	-	-	-	-	-
Stage 1	*921	-	-	-	-	-
Stage 2	*1080	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 769	989	-
HCM Lane V/C Ratio	-	- 0.007	0.001	-
HCM Control Delay (s)	-	- 9.7	8.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	667	25	34	808	115	41	101	44	96	93	36
Future Volume (vph)	30	667	25	34	808	115	41	101	44	96	93	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3077	0	0	3089	1373	1422	1608	0	1501	1504	0
Flt Permitted		0.881			0.890		0.578			0.534		
Satd. Flow (perm)	0	2716	0	0	2754	1319	854	1608	0	825	1504	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		465			678			709			514	
Travel Time (s)		12.7			18.5			19.3			14.0	
Confl. Peds. (#/hr)	11		7	7		11	13		24	24		13
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
Heavy Vehicles (%)	3%	3%	0%	6%	3%	4%	10%	2%	7%	9%	10%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	795	0	0	925	126	45	159	0	105	142	0
Turn Type	prot+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	13.0	48.0		35.0	35.0	35.0	31.0	31.0		31.0	31.0	
Total Split (%)	12.4%	45.7%		33.3%	33.3%	33.3%	29.5%	29.5%		29.5%	29.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff Green (s)		76.7			76.7	75.7	18.3	18.3		18.3	18.3	
Actuated g/C Ratio		0.73			0.73	0.72	0.17	0.17		0.17	0.17	
v/c Ratio		0.40			0.46	0.13	0.30	0.57		0.73	0.54	
Control Delay		6.8			6.6	5.5	46.6	46.6		67.8	46.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		6.8			6.6	5.5	46.6	46.6		67.8	46.0	
LOS		A			A	A	D	D		E	D	
Approach Delay		6.8			6.6			45.3			55.3	
Approach LOS		A			A			D			E	
Queue Length 50th (ft)		92			70	18	27	99		67	88	
Queue Length 95th (ft)		163			163	m53	57	152		120	138	

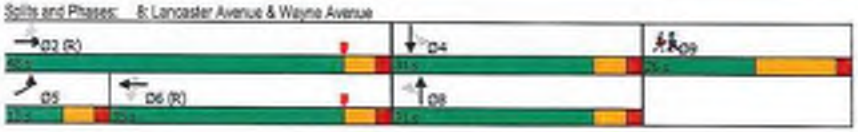
Lane Group	89
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	23%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		385			598			823			434	
Turn Bay Length (ft)						160						
Base Capacity (vph)		1983			2011	950	211	398		204	372	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.40			0.46	0.13	0.21	0.40		0.51	0.38	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 33 (31%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 15.4 Intersection LOS: B
Intersection Capacity Utilization 77.1% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	794	51	97	970	32	45
Future Volume (vph)	794	51	97	970	32	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	12
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3041	0	0	3065	1717	0
Flt Permitted				0.743	0.979	
Satd. Flow (perm)	3041	0	0	2280	1714	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	678			1152	490	
Travel Time (s)	18.5			31.4	13.4	
Confl. Peds. (#/hr)		6	6		4	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	10%	4%	3%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	939	0	0	1186	88	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	61.0		12.0	73.0	32.0	
Total Split (%)	58.1%		11.4%	69.5%	30.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Eff't Green (s)	84.4			84.4	11.6	
Actuated g/C Ratio	0.80			0.80	0.11	
v/c Ratio	0.38			0.65	0.45	
Control Delay	2.7			3.6	50.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	2.7			3.6	50.5	
LOS	A			A	D	
Approach Delay	2.7			3.6	50.5	
Approach LOS	A			A	D	
Queue Length 50th (ft)	67			37	55	
Queue Length 95th (ft)	71			44	101	
Internal Link Dist (ft)	598			1072	410	
Turn Bay Length (ft)						
Base Capacity (vph)	2443			1832	441	

2025 Base (No-Build) Conditions
9: Louella Avenue & Lancaster Avenue
Timing Plan: AM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.38			0.65	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 48 (46%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 5.1 — Intersection LOS: A
Intersection Capacity Utilization 71.8% — ICU Level of Service C
Analysis Period (min) 15

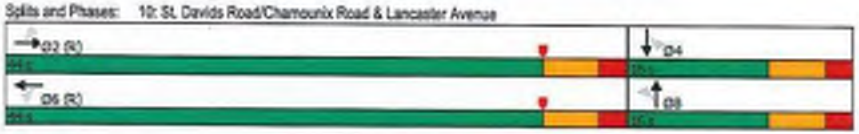
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	878	9	13	1143	293	20	69	72	94	39	39
Future Volume (vph)	14	878	9	13	1143	293	20	69	72	94	39	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-6%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1639			1078			278			428	
Travel Time (s)		31.9			21.0			7.5			11.7	
Confl. Peds. (#/hr)	6					6	4		5	5		4
Confl. Bikes (#/hr)												1
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
Heavy Vehicles (%)	0%	3%	0%	0%	4%	1%	0%	0%	4%	1%	5%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	44.0	44.0		44.0	44.0		16.0	16.0		16.0	16.0	
Total Split (%)	73.3%	73.3%		73.3%	73.3%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 20 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	878	9	13	1143	293	20	69	72	94	39	39
Future Volume (veh/h)	14	878	9	13	1143	293	20	69	72	94	39	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.98
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	1782	1731	1782	1845	1785	1845	1891	1858	1891	1881	1838	1881
Adj Flow Rate, veh/h	15	965	9	14	1256	301	22	76	76	103	43	43
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	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, %	3	3	3	4	4	4	0	0	0	5	5	5
Cap, veh/h	72	2122	20	67	1760	413	90	144	129	220	71	58
Arrive On Green	0.65	0.66	0.65	0.65	0.66	0.65	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	15	3192	29	9	2648	621	131	853	783	755	423	347
Grp Volume(v), veh/h	510	0	479	838	0	733	174	0	0	189	0	0
Grp Sat Flow(s),veh/h/ln	1667	0	1570	1766	0	1511	1747	0	0	1525	0	0
Q Serve(g_s), s	0.0	0.0	8.8	0.0	0.0	18.1	0.0	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	8.5	0.0	8.8	18.2	0.0	18.1	5.6	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.03		0.02	0.02		0.41	0.13		0.44	0.54		0.23
Lane Grp Cap(c), veh/h	1142	0	1044	1206	0	1005	333	0	0	324	0	0
V/C Ratio(X)	0.45	0.00	0.46	0.70	0.00	0.73	0.52	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1142	0	1044	1206	0	1005	357	0	0	345	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.8	0.0	4.9	6.4	0.0	8.7	23.4	0.0	0.0	23.9	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	1.5	3.3	0.0	4.7	1.8	0.0	0.0	2.8	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(95%),veh/ln	8.0	0.0	7.5	15.6	0.0	14.0	5.2	0.0	0.0	5.9	0.0	0.0
LnGrp Delay(d),s/veh	6.1	0.0	6.3	9.8	0.0	11.4	25.2	0.0	0.0	26.8	0.0	0.0
LnGrp LOS	A		A	A		B	C			C		
Approach Vol, veh/h		989			1571			174			189	
Approach Delay, s/veh		6.2			12.5			25.2			26.8	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		44.9		15.1		44.9		15.1
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		38.0		10.0		38.0		10.0
Max Q Clear Time (g_c+I1), s		10.8		9.0		21.1		7.6
Green Ext Time (p_c), s		4.3		0.1		7.1		0.2

Intersection Summary

HCM 2010 Ctrl Delay 11.0
HCM 2010 LOS B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	17	6	5	94	12	29	177	11	3	63	20
Future Volume (vph)	5	17	6	5	94	12	29	177	11	3	63	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.972			0.985			0.993			0.969	
Flt Protected		0.991			0.998			0.993			0.998	
Satd. Flow (prot)	0	1619	0	0	1740	0	0	1637	0	0	1696	0
Flt Permitted		0.991			0.998			0.993			0.998	
Satd. Flow (perm)	0	1619	0	0	1740	0	0	1637	0	0	1696	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1128			434			166			311	
Travel Time (s)		30.8			11.8			5.1			8.5	
Conf. Peds. (#/hr)	7		3	3		7	10					10
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	20%	0%	17%	0%	2%	0%	18%	6%	0%	0%	2%	5%
Adj. Flow (vph)	7	24	8	7	132	17	41	249	15	4	89	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	156	0	0	305	0	0	121	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 33.7%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	17	6	5	94	12	29	177	11	3	63	20
Future Vol, veh/h	5	17	6	5	94	12	29	177	11	3	63	20
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	20	0	17	0	2	0	18	6	0	0	2	5
Mvmt Flow	7	24	8	7	132	17	41	249	15	4	89	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	9.3	11.2	8.6
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	16%	5%	3%
Vol Thru, %	82%	61%	85%	73%
Vol Right, %	5%	21%	11%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	217	28	111	86
LT Vol	29	5	5	3
Through Vol	177	17	94	63
RT Vol	11	6	12	20
Lane Flow Rate	306	39	156	121
Geometry Grp	1	1	1	1
Degree of Util (X)	0.411	0.059	0.214	0.156
Departure Headway (Hd)	4.835	5.353	4.924	4.635
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	743	660	725	769
Service Time	2.881	3.462	2.978	2.689
HCM Lane V/C Ratio	0.412	0.059	0.215	0.157
HCM Control Delay	11.2	8.8	9.3	8.6
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	2	0.2	0.8	0.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	30	90	32	17	43
Future Volume (vph)	5	30	90	32	17	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.884		0.965			
Flt Protected	0.993					0.986
Satd. Flow (prot)	1540	0	1803	0	0	1572
Flt Permitted	0.993					0.986
Satd. Flow (perm)	1540	0	1803	0	0	1572
Link Speed (mph)	25		25			25
Link Distance (ft)	1128		180			490
Travel Time (s)	30.8		5.1			13.4
Confl. Peds. (#/hr)		14		7	7	
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Heavy Vehicles (%)	0%	3%	0%	32%	23%	9%
Adj. Flow (vph)	9	56	167	59	31	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	226	0	0	111
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 29.0%	ICU Level of Service A
Analysis Period (min) 15	

2025 Base (No-Build) Conditions
12: Louella Avenue & Midland Avenue
Timing Plan: AM Peak

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	30	90	32	17	43
Future Vol, veh/h	5	30	90	32	17	43
Conflicting Peds, #/hr	0	14	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	0	3	0	32	23	9
Mvmt Flow	9	56	167	59	31	80

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	346	218	0	0	233	0
Stage 1	204	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	747	873	-	-	1300	-
Stage 1	861	-	-	-	-	-
Stage 2	1028	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	717	856	-	-	993	-
Mov Cap-2 Maneuver	717	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	994	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	2.5
HCM LOS	A		

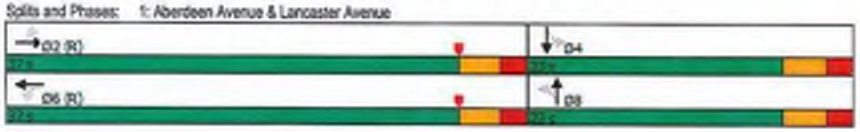
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	633	993	-
HCM Lane V/C Ratio	-	-	0.078	0.032	-
HCM Control Delay (s)	-	-	9.7	8.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	867	31	10	981	61	40	65	27	120	115	69
Future Volume (vph)	34	867	31	10	981	61	40	65	27	120	115	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1121			98			133			464	
Travel Time (s)		30.6			1.9			3.5			12.7	
Confl. Peds. (#/hr)	8		8	6		6	3		3	3		3
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	3%	0%	1%	3%	0%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 38 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	867	31	10	981	61	40	65	27	120	115	69
Future Volume (veh/h)	34	867	31	10	981	61	40	65	27	120	115	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
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	1800	1760	1800	1809	1789	1809	1782	1782	1782	1836	1887	1838
Adj Flow Rate, veh/h	35	894	32	10	1011	63	41	67	28	124	119	71
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	99	1920	67	67	1974	122	156	225	79	221	166	89
Arrive On Green	0.62	0.62	0.61	0.62	0.62	0.61	0.24	0.24	0.23	0.24	0.24	0.23
Sat Flow, veh/h	56	3072	108	9	3159	196	323	931	325	569	688	367
Grp Volume(v), veh/h	487	0	474	571	0	513	136	0	0	314	0	0
Grp Sat Flow(s),veh/h/ln	1636	0	1800	1771	0	1593	1579	0	0	1625	0	0
Q Serve(g_s), s	0.0	0.0	9.5	0.0	0.0	18.7	0.0	0.0	0.0	6.8	0.0	0.0
Cycle Q Clear(g_c), s	8.5	0.0	9.5	10.5	0.0	18.7	3.9	0.0	0.0	10.7	0.0	0.0
Prop In Lane	0.07		0.07	0.02		0.12	0.30		0.21	0.39		0.23
Lane Grp Cap(c), veh/h	1087	0	1000	1168	0	995	460	0	0	477	0	0
V/C Ratio(X)	0.45	0.00	0.47	0.49	0.00	0.52	0.30	0.00	0.00	0.66	0.00	0.00
Avail Cap(c_a), veh/h	1087	0	1000	1168	0	995	570	0	0	593	0	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)	0.90	0.00	0.90	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	6.0	6.2	0.0	6.3	18.8	0.0	0.0	21.2	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.4	1.5	0.0	1.9	0.4	0.0	0.0	1.9	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(95%),veh/ln	7.7	0.0	7.8	9.4	0.0	8.8	3.4	0.0	0.0	8.7	0.0	0.0
LnGrp Delay(d),s/veh	7.0	0.0	7.5	7.7	0.0	8.2	19.2	0.0	0.0	23.1	0.0	0.0
LnGrp LOS	A		A	A		A	B			C		
Approach Vol, veh/h		961			1084			135			314	
Approach Delay, s/veh		7.2			7.9			19.2			23.1	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.5		18.5		41.5		18.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		18.0		32.0		18.0
Max Q Clear Time (g_c+I1), s		11.5		12.7		12.7		5.9
Green Ext Time (p_c), s		4.3		0.6		4.3		0.3

Intersection Summary

HCM 2010 Ctrl Delay 10.2
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	995	18	2	1052	0	3
Future Volume (vph)	995	18	2	1052	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Rt Protected						
Satd. Flow (prot)	2739	0	0	2675	1526	0
Rt Permitted						
Satd. Flow (perm)	2739	0	0	2675	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	96	
Travel Time (s)	1.9			1.6	2.6	
Conf. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	1026	19	2	1085	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1045	0	0	1087	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.1% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2025 Base (No-Build) Conditions
2: Western Sunoco Driveway & Lancaster Avenue
Timing Plan: PM Peak

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	995	18	2	1052	0	3
Future Vol, veh/h	995	18	2	1052	0	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	1026	19	2	1085	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1045	0	1566	526
Stage 1	-	-	-	-	1038	-
Stage 2	-	-	-	-	550	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	658	-	*75	*905
Stage 1	-	-	-	-	*392	-
Stage 2	-	-	-	-	*764	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	658	-	*74	*903
Mov Cap-2 Maneuver	-	-	-	-	*74	-
Stage 1	-	-	-	-	*392	-
Stage 2	-	-	-	-	*756	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	903	-	-	658	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9	-	-	9.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	974	24	3	1052	2	21
Future Volume (vph)	974	24	3	1052	2	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.876	
Flt Protected					0.996	
Satd. Flow (prot)	2736	0	0	2875	1540	0
Flt Permitted					0.996	
Satd. Flow (perm)	2736	0	0	2875	1540	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.8	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	1004	25	3	1085	2	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1029	0	0	1088	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	974	24	3	1052	2	21
Future Vol, veh/h	974	24	3	1052	2	21
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	1004	25	3	1085	2	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1029	0	1569	516
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	552	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*984	-	*78	*614
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*764	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*984	-	*77	*612
Mov Cap-2 Maneuver	-	-	-	-	*77	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*756	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	444	-	-	* 984	-
HCM Lane V/C Ratio	0.053	-	-	0.003	-
HCM Control Delay (s)	13.6	-	-	8.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	958	36	5	1055	0	3
Future Volume (vph)	958	36	5	1055	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.995				0.865	
Flt Protected						
Satd. Flow (prot)	2733	0	0	2675	1526	0
Flt Permitted						
Satd. Flow (perm)	2733	0	0	2675	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	76	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	988	37	5	1088	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1025	0	0	1093	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 45.4% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	958	36	5	1055	0	3
Future Vol, veh/h	958	36	5	1055	0	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	988	37	5	1088	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1025	0	1564	518
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	557	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*984	-	*78	*814
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*764	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*984	-	*77	*812
Mov Cap-2 Maneuver	-	-	-	-	*77	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*753	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	812	-	-	* 984	-
HCM Lane V/C Ratio	0.004	-	-	0.005	-
HCM Control Delay (s)	9.5	-	-	8.7	0.1
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	960	1	4	1053	7	28
Future Volume (vph)	960	1	4	1053	7	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt					0.891	
Flt Protected					0.990	
Satd. Flow (prot)	2747	0	0	2675	1557	0
Flt Permitted					0.990	
Satd. Flow (perm)	2747	0	0	2675	1557	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1653	69	
Travel Time (s)	1.7			32.2	2.4	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	990	1	4	1086	7	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	991	0	0	1090	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 44.6% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	960	1	4	1053	7	28
Future Vol, veh/h	960	1	4	1053	7	28
Conflicting Peds, #/hr	0	0	0	0	3	3
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	990	1	4	1086	7	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	991	0	1545	499
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	3.8	3.9
Pot Cap-1 Maneuver	-	-	*664	-	*81	*614
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*764	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*664	-	*80	*612
Mov Cap-2 Maneuver	-	-	-	-	*80	-
Stage 1	-	-	-	-	*843	-
Stage 2	-	-	-	-	*755	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	267	-	-	* 664	-
HCM Lane V/C Ratio	0.126	-	-	0.004	-
HCM Control Delay (s)	19.3	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	4	127	12	2	154
Future Volume (vph)	8	4	127	12	2	154
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.955		0.989			
Flt Protected	0.988					0.999
Satd. Flow (prot)	1631	0	1756	0	0	1763
Flt Permitted	0.988					0.999
Satd. Flow (perm)	1631	0	1756	0	0	1763
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Conf. Peds. (#/hr)	6	6				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	0%	2%	2%	3%
Adj. Flow (vph)	8	4	131	12	2	159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	143	0	0	161
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 22.1% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	4	127	12	2	154
Future Vol, veh/h	8	4	127	12	2	154
Conflicting Peds, #/hr	6	6	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	0	2	2	3
Mvmt Flow	8	4	131	12	2	159

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	306	143	0	0	143	0
Stage 1	137	-	-	-	-	-
Stage 2	169	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	*865	964	-	-	1073	-
Stage 1	*1033	-	-	-	-	-
Stage 2	*1060	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*858	958	-	-	1073	-
Mov Cap-2 Maneuver	*858	-	-	-	-	-
Stage 1	*1033	-	-	-	-	-
Stage 2	*1051	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	889	1073	-
HCM Lane V/C Ratio	-	-	0.014	0.002	-
HCM Control Delay (s)	-	-	9.1	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	135	7	5	157
Future Volume (vph)	2	5	135	7	5	157
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.904		0.994			
Flt Protected	0.986					0.999
Satd. Flow (prot)	1573	0	1770	0	0	1764
Flt Permitted	0.986					0.999
Satd. Flow (perm)	1573	0	1770	0	0	1764
Link Speed (mph)	25		25			25
Link Distance (ft)	74		279			69
Travel Time (s)	2.0		7.6			1.9
Conf. Peds. (#/hr)	6	6				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	0%	2%	2%	3%
Adj. Flow (vph)	2	5	139	7	5	162
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	146	0	0	167
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 24.8% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	5	135	7	5	157
Future Vol, veh/h	2	5	135	7	5	157
Conflicting Peds, #/hr	6	6	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	0	2	2	3
Mvmt Flow	2	5	139	7	5	162

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	321	149	0	0	146	0
Stage 1	143	-	-	-	-	-
Stage 2	178	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	644	957	-	-	1071	-
Stage 1	1026	-	-	-	-	-
Stage 2	1055	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	635	952	-	-	1071	-
Mov Cap-2 Maneuver	635	-	-	-	-	-
Stage 1	1026	-	-	-	-	-
Stage 2	1044	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 915	1071	-
HCM Lane V/C Ratio	-	- 0.008	0.005	-
HCM Control Delay (s)	-	- 9	8.4	0
HCM Lane LOS	-	- A	A	A
HCM 95th %tile Q(veh)	-	- 0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	759	54	33	688	93	23	90	40	109	148	47
Future Volume (vph)	41	759	54	33	688	93	23	90	40	109	148	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3089	0	0	3151	1428	1564	1577	0	1604	1619	0
Flt Permitted		0.877			0.874		0.411			0.578		
Satd. Flow (perm)	0	2713	0	0	2759	1328	656	1577	0	948	1619	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		533			714			348			368	
Travel Time (s)		14.5			19.5			9.5			10.0	
Confl. Peds. (#/hr)	23		11	11		23	32		28	28		32
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	3%	1%	0%	0%	3%	10%	2%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	871	0	0	736	95	23	133	0	111	199	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	61.0		31.0	31.0	31.0	33.0	33.0		33.0	33.0	
Total Split (%)	25.0%	50.8%		25.8%	25.8%	25.8%	27.5%	27.5%		27.5%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	-2.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	4.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff Green (s)		89.1			89.1	90.1	20.9	20.9		20.9	20.9	
Actuated g/C Ratio		0.74			0.74	0.75	0.17	0.17		0.17	0.17	
v/c Ratio		0.43			0.36	0.10	0.20	0.49		0.67	0.71	
Control Delay		7.2			3.5	2.7	44.2	49.6		65.4	59.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.2			3.5	2.7	44.2	49.6		65.4	59.7	
LOS		A			A	A	D	D		E	E	
Approach Delay		7.2			3.4			48.8			61.8	
Approach LOS		A			A			D			E	
Queue Length 50th (ft)		117			40	8	15	94		81	147	
Queue Length 95th (ft)		192			98	23	39	147		137	214	

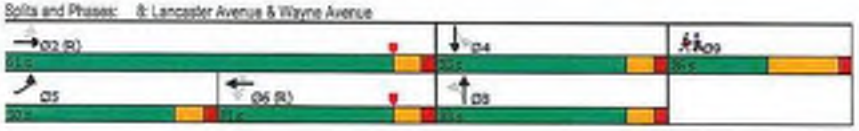
Lane Group	89
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		453			634			266			288	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2013			2048	996	153	367		221	377	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.43			0.36	0.10	0.15	0.36		0.50	0.53	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 16.6 — Intersection LOS: B
Intersection Capacity Utilization 78.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



2025 Base (No-Build) Conditions
8: Lancaster Avenue & Wayne Avenue
Timing Plan: PM Peak

Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lanes, Volumes, Timings
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Synchro 10 Report

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	914	33	54	863	15	31
Future Volume (vph)	914	33	54	863	15	31
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3128	0	0	3130	1644	0
Flt Permitted				0.851	0.984	
Satd. Flow (perm)	3128	0	0	2671	1629	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	714			1121	430	
Travel Time (s)	19.5			30.6	11.7	
Confl. Peds. (#/hr)		7	7		29	8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	0%	4%	1%	7%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	986	0	0	955	48	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	28.0		8.0	36.0	24.0	
Total Split (%)	46.7%		13.3%	60.0%	40.0%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Eff'ct Green (s)	42.7			42.7	8.3	
Actuated g/C Ratio	0.71			0.71	0.14	
v/c Ratio	0.44			0.50	0.21	
Control Delay	5.8			2.2	24.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	5.8			2.2	24.6	
LOS	A			A	C	
Approach Delay	5.8			2.2	24.6	
Approach LOS	A			A	C	
Queue Length 50th (ft)	151			21	16	
Queue Length 95th (ft)	129			36	40	
Internal Link Dist (ft)	634			1041	350	
Turn Bay Length (ft)						
Base Capacity (vph)	2227			1901	520	

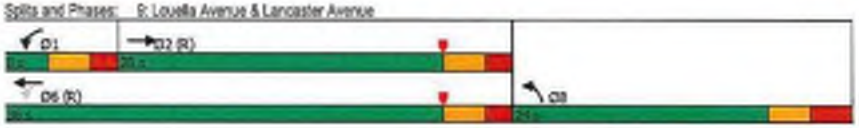
2025 Base (No-Build) Conditions
9: Louella Avenue & Lancaster Avenue
Timing Plan: PM Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.44			0.50	0.09	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 6 (10%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 4.5 — Intersection LOS: A
Intersection Capacity Utilization 68.9% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Louella Avenue & Lancaster Avenue

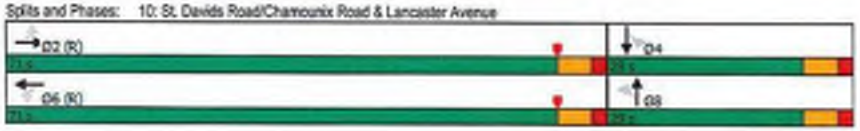


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	980	17	40	1032	145	4	26	33	76	23	43
Future Volume (vph)	36	980	17	40	1032	145	4	26	33	76	23	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1653			696			295			258	
Travel Time (s)		32.2			17.5			8.0			7.0	
Confl. Peds. (#/hr)	5		3	3		5			8	8		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	1%	25%	0%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	71.0	71.0		71.0	71.0		29.0	29.0		29.0	29.0	
Total Split (%)	71.0%	71.0%		71.0%	71.0%		29.0%	29.0%		29.0%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 66 (66%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Charmounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	980	17	40	1032	145	4	26	33	76	23	43
Future Volume (veh/h)	36	980	17	40	1032	145	4	26	33	76	23	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.98	0.99		0.98
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	1782	1765	1782	1845	1827	1845	1891	1835	1891	1881	1870	1881
Adj Flow Rate, veh/h	38	1043	17	43	1098	148	4	28	35	81	24	46
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	92	2341	38	91	2173	293	44	96	110	153	38	59
Arrive On Green	0.78	0.77	0.76	0.78	0.77	0.75	0.14	0.13	0.12	0.14	0.13	0.12
Sat Flow, veh/h	69	3024	49	68	2808	375	46	751	872	777	300	472
Grp Volume(v), veh/h	541	0	557	659	0	630	67	0	0	151	0	0
Grp Sat Flow(s),veh/h/ln	1545	0	1598	1855	0	1595	1669	0	0	1548	0	0
Q Serve(g_s), s	0.0	0.0	12.1	0.0	0.0	14.9	0.0	0.0	0.0	5.4	0.0	0.0
Cycle Q Clear(g_c), s	9.9	0.0	12.1	12.6	0.0	14.9	3.7	0.0	0.0	9.1	0.0	0.0
Prop In Lane	0.07		0.03	0.07		0.23	0.06		0.52	0.54		0.30
Lane Grp Cap(c), veh/h	1249	0	1236	1336	0	1235	265	0	0	256	0	0
V/C Ratio(X)	0.43	0.00	0.45	0.49	0.00	0.51	0.25	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	1249	0	1236	1336	0	1235	450	0	0	432	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.7	0.0	3.9	4.0	0.0	4.3	40.0	0.0	0.0	41.8	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.2	1.3	0.0	1.5	0.7	0.0	0.0	2.7	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(95%),veh/ln	8.5	0.0	9.6	10.7	0.0	11.4	3.1	0.0	0.0	7.5	0.0	0.0
LnGrp Delay(d),s/veh	4.8	0.0	5.1	5.3	0.0	5.8	40.7	0.0	0.0	44.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1098			1289			67			151	
Approach Delay, s/veh		4.9			5.5			40.7			44.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		82.4		17.6		82.4		17.6
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		65.0		23.0		65.0		23.0
Max Q Clear Time (g_c+I1), s		14.1		11.1		16.9		5.7
Green Ext Time (p_c), s		5.4		0.6		6.9		0.2

Intersection Summary

HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	9	5	7	72	11	9	122	6	6	102	14
Future Volume (vph)	15	9	5	7	72	11	9	122	6	6	102	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.977			0.983			0.994			0.984	
Flt Protected		0.974			0.996			0.997			0.997	
Satd. Flow (prot)	0	1552	0	0	1748	0	0	1598	0	0	1723	0
Flt Permitted		0.974			0.996			0.997			0.997	
Satd. Flow (perm)	0	1552	0	0	1748	0	0	1598	0	0	1723	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1097			652			218			279	
Travel Time (s)		29.9			17.8			5.9			7.6	
Confl. Peds. (#/hr)	15		7	7		15	7		5	5		7
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	7%	0%	40%	0%	1%	0%	11%	11%	0%	0%	3%	0%
Adj. Flow (vph)	19	11	6	9	90	14	11	153	8	8	128	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	113	0	0	172	0	0	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 26.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	9	5	7	72	11	9	122	6	6	102	14
Future Vol, veh/h	15	9	5	7	72	11	9	122	6	6	102	14
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	7	0	40	0	1	0	11	11	0	0	3	0
Mvmt Flow	19	11	6	9	90	14	11	153	8	8	128	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.4	8.9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	52%	8%	5%
Vol Thru, %	89%	31%	80%	84%
Vol Right, %	4%	17%	12%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	137	29	80	122
LT Vol	9	15	7	6
Through Vol	122	9	72	102
RT Vol	6	5	11	14
Lane Flow Rate	171	36	112	152
Geometry Grp	1	1	1	1
Degree of Util (X)	0.219	0.049	0.145	0.186
Departure Headway (Hd)	4.597	4.904	4.631	4.384
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	781	730	774	817
Service Time	2.622	2.938	2.659	2.418
HCM Lane V/C Ratio	0.219	0.049	0.145	0.186
HCM Control Delay	8.9	8.2	8.4	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.2	0.5	0.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	45	87	11	16	62
Future Volume (vph)	9	45	87	11	16	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.887		0.984			
Flt Protected	0.992					0.990
Satd. Flow (prot)	1558	0	1740	0	0	1690
Flt Permitted	0.992					0.990
Satd. Flow (perm)	1558	0	1740	0	0	1690
Link Speed (mph)	25		25			25
Link Distance (ft)	1097		261			430
Travel Time (s)	29.9		7.1			11.7
Confl. Peds. (#/hr)	1	24		10	10	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	2%	2%	0%	19%	2%
Adj. Flow (vph)	10	52	100	13	18	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	0	113	0	0	89
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 27.5%	ICU Level of Service A
Analysis Period (min) 15	

2025 Base (No-Build) Conditions
12: Louella Avenue & Midland Avenue
Timing Plan: PM Peak

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	45	87	11	16	62
Future Vol, veh/h	9	45	87	11	16	62
Conflicting Peds, #/hr	1	24	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	19	2
Mvmt Flow	10	52	100	13	18	71

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	225	141	0	0	123	0
Stage 1	117	-	-	-	-	-
Stage 2	108	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.5	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3.2	-
Pot Cap-1 Maneuver	682	967	-	-	1018	-
Stage 1	1067	-	-	-	-	-
Stage 2	1067	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	656	936	-	-	1008	-
Mov Cap-2 Maneuver	656	-	-	-	-	-
Stage 1	1045	-	-	-	-	-
Stage 2	1046	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	1.8
HCM LOS	A		

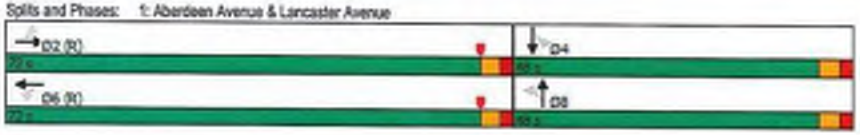
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	922	1008	-
HCM Lane V/C Ratio	-	-	0.067	0.018	-
HCM Control Delay (s)	-	-	9.2	8.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	707	43	14	873	51	40	96	37	119	72	66
Future Volume (vph)	40	707	43	14	873	51	40	96	37	119	72	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			98			130			464	
Travel Time (s)		31.1			1.9			3.5			12.7	
Confl. Peds. (#/hr)	15		7	7		15	12		9	9		12
Confl. Bikes (#/hr)			1			3			1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	2%	7%	2%	2%	0%	1%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	707	43	14	873	51	40	96	37	119	72	66
Future Volume (veh/h)	40	707	43	14	873	51	40	96	37	119	72	66
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.98
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	1800	1786	1800	1809	1772	1809	1782	1772	1782	1836	1891	1836
Adj Flow Rate, veh/h	41	729	44	14	900	53	41	99	38	123	74	68
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	0	0	0
Cap, veh/h	116	1961	118	45	2203	129	93	211	73	177	94	79
Arrive On Green	1.00	1.00	1.00	0.70	0.71	0.70	0.22	0.22	0.22	0.22	0.23	0.22
Sat Flow, veh/h	117	2798	167	20	3111	182	259	936	322	591	419	349
Grp Volume(v), veh/h	400	0	414	508	0	459	178	0	0	265	0	0
Grp Sat Flow(s),veh/h/ln	1511	0	1572	1739	0	1574	1508	0	0	1359	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	14.5	0.0	0.0	0.0	11.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	14.1	0.0	14.5	11.9	0.0	0.0	23.1	0.0	0.0
Prop In Lane	0.10		0.11	0.03		0.12	0.23		0.21	0.46		0.26
Lane Grp Cap(c), veh/h	1090	0	1113	1247	0	1114	364	0	0	339	0	0
V/C Ratio(X)	0.37	0.00	0.37	0.41	0.00	0.41	0.49	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	1090	0	1113	1247	0	1114	580	0	0	547	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.00	0.94	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	7.2	0.0	7.3	40.6	0.0	0.0	45.7	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.9	1.0	0.0	1.1	1.0	0.0	0.0	4.0	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(95%),veh/ln	0.5	0.0	0.5	11.9	0.0	10.8	9.1	0.0	0.0	14.0	0.0	0.0
LnGrp Delay(d),s/veh	0.9	0.0	0.9	8.2	0.0	8.4	41.6	0.0	0.0	49.6	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		814			967			178			265	
Approach Delay, s/veh		0.9			8.3			41.6			49.6	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.0		31.0		89.0		31.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		25.1		16.5		13.9
Green Ext Time (p_c), s		3.9		1.0		4.2		0.7

Intersection Summary

HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	845	17	0	939	0	2
Future Volume (vph)	845	17	0	939	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.865	
Flt Protected						
Satd. Flow (prot)	3072	0	0	2913	1526	0
Flt Permitted						
Satd. Flow (perm)	3072	0	0	2913	1526	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	96	
Travel Time (s)	1.9			1.6	2.6	
Conf. Peds. (#/hr)					7	7
Conf. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	871	18	0	968	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	889	0	0	968	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 39.5% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	845	17	0	939	0	2
Future Vol, veh/h	845	17	0	939	0	2
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	871	18	0	968	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	889	0	1271	452
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	491	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	3.8	3.9
Pot Cap-1 Maneuver	-	-	971	-	*111	*935
Stage 1	-	-	-	-	*732	-
Stage 2	-	-	-	-	*845	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	971	-	*110	*930
Mov Cap-2 Maneuver	-	-	-	-	*110	-
Stage 1	-	-	-	-	*732	-
Stage 2	-	-	-	-	*839	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	930	-	-	971	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	846	1	0	938	1	22
Future Volume (vph)	846	1	0	938	1	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt					0.871	
Flt Protected					0.998	
Satd. Flow (prot)	3081	0	0	2913	1534	0
Flt Permitted					0.998	
Satd. Flow (perm)	3081	0	0	2913	1534	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	872	1	0	967	1	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	873	0	0	967	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 39.5% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2025 Base (No-Build) Conditions
3: Eastern Sunoco Driveway Driveway & Lancaster Avenue
Timing Plan: SAT Peak

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	846	1	0	938	1	22
Future Vol, veh/h	846	1	0	938	1	22
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	872	1	0	967	1	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	873	0	1364	444
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	491	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	3.8	3.9
Pot Cap-1 Maneuver	-	-	*1029	-	*113	*650
Stage 1	-	-	-	-	*381	-
Stage 2	-	-	-	-	*645	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1029	-	*112	*646
Mov Cap-2 Maneuver	-	-	-	-	*112	-
Stage 1	-	-	-	-	*381	-
Stage 2	-	-	-	-	*639	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	656	-	-	* 1029	-
HCM Lane V/C Ratio	0.036	-	-	-	-
HCM Control Delay (s)	10.7	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	820	47	8	936	2	4
Future Volume (vph)	820	47	8	936	2	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.910	
Flt Protected					0.984	
Satd. Flow (prot)	3056	0	0	2913	1580	0
Flt Permitted					0.984	
Satd. Flow (perm)	3056	0	0	2913	1580	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	78	
Travel Time (s)	2.1			1.7	2.1	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	845	48	8	965	2	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	893	0	0	973	6	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 45.3% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	820	47	8	936	2	4
Future Vol, veh/h	820	47	8	936	2	4
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	845	48	8	965	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	893	0	1375	454
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	506	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1029	-	*111	*850
Stage 1	-	-	-	-	*881	-
Stage 2	-	-	-	-	*645	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1029	-	*108	*846
Mov Cap-2 Maneuver	-	-	-	-	*108	-
Stage 1	-	-	-	-	*881	-
Stage 2	-	-	-	-	*628	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	19.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	258	-	-	*1029	-
HCM Lane V/C Ratio	0.024	-	-	0.008	-
HCM Control Delay (s)	19.3	-	-	8.5	0.1
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	820	4	4	941	3	54
Future Volume (vph)	820	4	4	941	3	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.999				0.872	
Flt Protected					0.997	
Satd. Flow (prot)	3078	0	0	2913	1534	0
Flt Permitted					0.997	
Satd. Flow (perm)	3078	0	0	2913	1534	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1647	89	
Travel Time (s)	1.7			32.1	2.4	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	845	4	4	970	3	56
Shared Lane Traffic (%)						
Lane Group Flow (vph)	849	0	0	974	59	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 43.3% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	820	4	4	941	3	54
Future Vol, veh/h	820	4	4	941	3	54
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	845	4	4	970	3	56

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	849	0	1347	432
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	500	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1029	-	*116	*650
Stage 1	-	-	-	-	*661	-
Stage 2	-	-	-	-	*645	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1029	-	*114	*646
Mov Cap-2 Maneuver	-	-	-	-	*114	-
Stage 1	-	-	-	-	*661	-
Stage 2	-	-	-	-	*633	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	632	-	-	* 1029	-
HCM Lane V/C Ratio	0.093	-	-	0.004	-
HCM Control Delay (s)	11.3	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	10	162	10	2	127
Future Volume (vph)	6	10	162	10	2	127
Ideal Flow (vphpl)	1800	1800	1900	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.916		0.992			
Flt Protected	0.982					0.999
Satd. Flow (prot)	1587	0	1733	0	0	1798
Flt Permitted	0.982					0.999
Satd. Flow (perm)	1587	0	1733	0	0	1798
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Conf. Peds. (#/hr)	9	9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%
Adj. Flow (vph)	6	10	167	10	2	131
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	177	0	0	133
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 22.2% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	10	162	10	2	127
Future Vol, veh/h	6	10	162	10	2	127
Conflicting Peds, #/hr	9	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	1
Mvmt Flow	6	10	167	10	2	131

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	316	181	0	0	177	0
Stage 1	172	-	-	-	-	-
Stage 2	144	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	626	917	-	-	1045	-
Stage 1	994	-	-	-	-	-
Stage 2	1075	-	-	-	-	-
Platoon Blocked, %	1		-	-		-
Mov Cap-1 Maneuver	617	909	-	-	1045	-
Mov Cap-2 Maneuver	617	-	-	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	1063	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 872	1045	-
HCM Lane V/C Ratio	-	- 0.019	0.002	-
HCM Control Delay (s)	-	- 9.2	8.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.1	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	2	170	8	0	133
Future Volume (vph)	2	2	170	8	0	133
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932		0.994			
Flt Protected	0.976					
Satd. Flow (prot)	1685	0	1737	0	0	1800
Flt Permitted	0.976					
Satd. Flow (perm)	1685	0	1737	0	0	1800
Link Speed (mph)	25		25			25
Link Distance (ft)	74		296			69
Travel Time (s)	2.0		8.1			1.9
Confl. Peds. (#/hr)	9	9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%
Adj. Flow (vph)	2	2	175	8	0	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	183	0	0	137
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 22.5% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	170	8	0	133
Future Vol, veh/h	2	2	170	8	0	133
Conflicting Peds, #/hr	9	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	1
Mvmt Flow	2	2	175	8	0	137

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	325	188	0	0	183	0
Stage 1	179	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	615	909	-	-	1040	-
Stage 1	987	-	-	-	-	-
Stage 2	1072	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	608	901	-	-	1040	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	1063	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	852	1040	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	9.2	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %ile Q(veh)	-	-	0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	708	39	45	790	88	62	82	72	69	81	62
Future Volume (vph)	39	708	39	45	790	88	62	82	72	69	81	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3125	0	0	3149	1428	1564	1602	0	1620	1561	0
Flt Permitted		0.864			0.857		0.512			0.480		
Satd. Flow (perm)	0	2704	0	0	2702	1330	814	1602	0	795	1561	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			488	
Travel Time (s)		30.9			19.1			14.5			13.3	
Confl. Peds. (#/hr)	23		47	47		23	32		27	27		32
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	2%	1%	0%	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	810	0	0	860	91	64	159	0	71	148	0
Turn Type	prot+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	64.0		34.0	34.0	34.0	30.0	30.0		30.0	30.0	
Total Split (%)	25.0%	53.3%		28.3%	28.3%	28.3%	25.0%	25.0%		25.0%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff Green (s)		91.9			91.9	90.9	16.1	16.1		18.1	18.1	
Actuated g/C Ratio		0.77			0.77	0.76	0.13	0.13		0.15	0.15	
v/c Ratio		0.39			0.42	0.09	0.52	0.66		0.60	0.63	
Control Delay		5.8			3.6	3.3	60.9	60.4		56.5	58.9	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		5.8			3.6	3.3	60.9	60.4		56.5	58.9	
LOS		A			A	A	E	E		E	E	
Approach Delay		5.8			3.6			60.5			61.4	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		94			53	11	46	117		52	109	

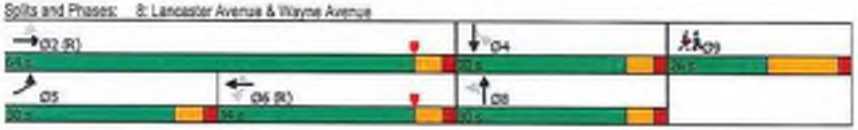
Lane Group	ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		155			68	19	89	181		98	169	
Internal Link Dist (ft)		1052			622			452			408	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2069			2068	1007	169	333		185	325	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.39			0.42	0.09	0.38	0.48		0.43	0.48	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 15.9 — Intersection LOS: B
Intersection Capacity Utilization 78.8% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	803	59	49	934	42	67
Future Volume (vph)	803	59	49	934	42	67
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3139	0	0	3137	1703	0
Flt Permitted				0.848	0.981	
Satd. Flow (perm)	3139	0	0	2665	1682	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		17	17		30	17
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	2%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	897	0	0	1024	114	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	96.6			96.6	14.4	
Actuated g/C Ratio	0.80			0.80	0.12	
v/c Ratio	0.36			0.48	0.56	
Control Delay	3.1			2.0	59.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	3.1			2.0	59.6	
LOS	A			A	E	
Approach Delay	3.1			2.0	59.6	
Approach LOS	A			A	E	
Queue Length 50th (ft)	65			35	85	
Queue Length 95th (ft)	93			41	139	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2526			2145	482	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.36			0.48	0.24	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 5.7 — Intersection LOS: A
Intersection Capacity Utilization 72.9% — ICU Level of Service C
Analysis Period (min) 15

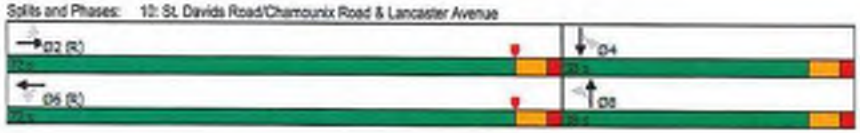
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	904	18	37	1010	65	13	17	42	56	17	39
Future Volume (vph)	31	904	18	37	1010	65	13	17	42	56	17	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1647			744			642			402	
Travel Time (s)		32.1			14.5			17.5			11.0	
Confl. Peds. (#/hr)	5		2	2		5			4	4		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	6%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	904	18	37	1010	65	13	17	42	56	17	39
Future Volume (veh/h)	31	904	18	37	1010	65	13	17	42	56	17	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.99
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	1782	1765	1782	1845	1828	1845	1891	1864	1891	1881	1863	1881
Adj Flow Rate, veh/h	32	922	17	38	1031	63	13	17	43	57	17	35
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	91	2486	45	95	2477	156	56	49	96	123	31	50
Arrive On Green	0.80	0.81	0.80	0.80	0.81	0.80	0.09	0.10	0.09	0.09	0.10	0.09
Sat Flow, veh/h	69	3054	56	74	3043	184	182	516	1004	770	330	520
Grp Volume(v), veh/h	484	0	487	574	0	558	73	0	0	109	0	0
Grp Sat Flow(s),veh/h/ln	1583	0	1598	1870	0	1631	1704	0	0	1621	0	0
Q Serve(g_s), s	0.0	0.0	9.0	0.0	0.0	10.7	0.0	0.0	0.0	2.5	0.0	0.0
Cycle Q Clear(g_c), s	7.8	0.0	9.0	9.4	0.0	10.7	4.5	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.07		0.03	0.07		0.11	0.18		0.59	0.52		0.32
Lane Grp Cap(c), veh/h	1309	0	1299	1379	0	1327	185	0	0	189	0	0
V/C Ratio(X)	0.37	0.00	0.37	0.42	0.00	0.42	0.39	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1309	0	1299	1379	0	1327	508	0	0	489	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.6	0.0	2.7	2.8	0.0	2.9	47.5	0.0	0.0	48.4	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.8	0.9	0.0	1.0	1.9	0.0	0.0	3.9	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(95%),veh/ln	7.6	0.0	7.6	8.9	0.0	8.7	4.0	0.0	0.0	6.3	0.0	0.0
LnGrp Delay(d),s/veh	3.4	0.0	3.6	3.7	0.0	3.9	49.4	0.0	0.0	52.3	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		971			1132			73			109	
Approach Delay, s/veh		3.5			3.8			49.4			52.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		94.5		15.5		94.5		15.5
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		11.0		9.0		12.7		6.5
Green Ext Time (p_c), s		4.4		0.5		5.5		0.3

Intersection Summary

HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	14	3	4	28	18	3	113	11	6	104	18
Future Volume (vph)	7	14	3	4	28	18	3	113	11	6	104	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983			0.951			0.988			0.981	
Flt Protected		0.986			0.996			0.999			0.998	
Satd. Flow (prot)	0	1745	0	0	1668	0	0	1759	0	0	1722	0
Flt Permitted		0.986			0.996			0.999			0.998	
Satd. Flow (perm)	0	1745	0	0	1668	0	0	1759	0	0	1722	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			896			201			296	
Travel Time (s)		29.9			24.5			5.5			8.1	
Confl. Peds. (#/hr)	6		6	6		6	2		4	4		2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	1%	11%
Adj. Flow (vph)	9	18	4	5	35	23	4	143	14	8	132	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	63	0	0	161	0	0	163	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 22.2%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	14	3	4	28	18	3	113	11	6	104	18
Future Vol, veh/h	7	14	3	4	28	18	3	113	11	6	104	18
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	0	0	0	0	6	0	0	0	0	1	11
Mvmt Flow	9	18	4	5	35	23	4	143	14	8	132	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.9	7.8	8.2	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	29%	8%	5%
Vol Thru, %	89%	58%	56%	81%
Vol Right, %	9%	12%	36%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	127	24	50	128
LT Vol	3	7	4	6
Through Vol	113	14	28	104
RT Vol	11	3	18	18
Lane Flow Rate	161	30	63	162
Geometry Grp	1	1	1	1
Degree of Util (X)	0.19	0.039	0.078	0.19
Departure Headway (Hd)	4.244	4.662	4.439	4.215
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	850	769	808	855
Service Time	2.248	2.684	2.459	2.22
HCM Lane V/C Ratio	0.189	0.039	0.078	0.189
HCM Control Delay	8.2	7.9	7.8	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.3	0.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	51	76	8	18	37
Future Volume (vph)	9	51	76	8	18	37
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.886		0.987			
Flt Protected	0.992					0.984
Satd. Flow (prot)	1556	0	1777	0	0	1737
Flt Permitted	0.992					0.984
Satd. Flow (perm)	1556	0	1777	0	0	1737
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		590			490
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)	1	13		5	5	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	11%	0%	0%	0%	6%	0%
Adj. Flow (vph)	13	71	106	11	25	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	84	0	117	0	0	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 24.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	51	76	8	18	37
Future Vol, veh/h	9	51	76	8	18	37
Conflicting Peds, #/hr	1	13	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	11	0	0	0	6	0
Mvmt Flow	13	71	106	11	25	51

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	219	130	0	0	122	0
Stage 1	117	-	-	-	-	-
Stage 2	102	-	-	-	-	-
Critical Hdwy	6.51	6.2	-	-	4.16	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.599	3.3	-	-	2.254	-
Pot Cap-1 Maneuver	750	925	-	-	1441	-
Stage 1	886	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	732	909	-	-	1434	-
Mov Cap-2 Maneuver	732	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	883	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	2.5
HCM LOS	A		

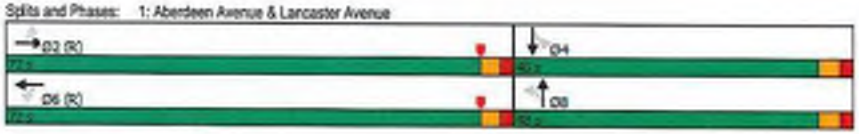
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	877	1434	-
HCM Lane V/C Ratio	-	-	0.095	0.017	-
HCM Control Delay (s)	-	-	9.5	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	561	27	13	602	33	30	50	24	64	50	39
Future Volume (vph)	29	561	27	13	602	33	30	50	24	64	50	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			98			130			464	
Travel Time (s)		31.1			1.9			3.5			12.7	
Confl. Peds. (#/hr)	1					1	22		6	6		22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	15%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	561	27	13	602	33	30	50	24	64	50	39
Future Volume (veh/h)	29	561	27	13	602	33	30	50	24	64	50	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.97		0.95	0.96		0.95
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	1800	1784	1800	1800	1787	1809	1782	1782	1782	1836	1909	1836
Adj Flow Rate, veh/h	30	572	27	13	614	32	31	51	23	65	51	36
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	127	2349	110	89	2493	129	84	127	48	125	88	53
Arrive On Green	1.00	1.00	1.00	0.79	0.79	0.79	0.13	0.14	0.13	0.13	0.14	0.13
Sat Flow, veh/h	119	2961	139	35	3142	162	323	907	345	589	628	377
Grp Volume(v), veh/h	318	0	311	344	0	315	105	0	0	152	0	0
Grp Sat Flow(s),veh/h/ln	1620	0	1599	1742	0	1598	1575	0	0	1594	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.9	0.0	6.1	7.1	0.0	0.0	10.7	0.0	0.0
Prop In Lane	0.09		0.09	0.04		0.10	0.30		0.22	0.43		0.24
Lane Grp Cap(c), veh/h	1305	0	1269	1399	0	1268	246	0	0	252	0	0
V/C Ratio(X)	0.24	0.00	0.24	0.25	0.00	0.25	0.43	0.00	0.00	0.60	0.00	0.00
Avail Cap(c_a), veh/h	1305	0	1269	1399	0	1268	585	0	0	598	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.2	0.0	3.2	47.6	0.0	0.0	49.2	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.4	0.4	0.0	0.5	1.2	0.0	0.0	2.3	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(95%),veh/ln	0.3	0.0	0.3	5.6	0.0	5.0	6.0	0.0	0.0	8.7	0.0	0.0
LnGrp Delay(d),s/veh	0.4	0.0	0.4	3.6	0.0	3.7	48.8	0.0	0.0	51.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		629			659			105			152	
Approach Delay, s/veh		0.4			3.6			48.8			51.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		99.2		20.8		99.2		20.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		12.7		8.1		9.1
Green Ext Time (p_c), s		2.7		0.6		2.5		0.4

Intersection Summary

HCM 2010 Ctrl Delay 10.1
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	639	9	1	649	0	2
Future Volume (vph)	639	9	1	649	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.998				0.865	
Flt Protected						
Satd. Flow (prot)	2974	0	0	3076	1557	0
Flt Permitted						
Satd. Flow (perm)	2974	0	0	3076	1557	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	98			81	96	
Travel Time (s)	1.9			1.6	2.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	652	9	1	662	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	661	0	0	663	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 29.7% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	639	9	1	649	0	2
Future Vol, veh/h	639	9	1	649	0	2
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	652	9	1	662	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	661	0	990	331
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	1117	-	*222	*1004
Stage 1	-	-	-	-	*889	-
Stage 2	-	-	-	-	*977	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1117	-	*222	*1004
Mov Cap-2 Maneuver	-	-	-	-	*222	-
Stage 1	-	-	-	-	*889	-
Stage 2	-	-	-	-	*976	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1004	-	-	1117	-
HCM Lane V/C Ratio	0.002	-	-	0.001	-
HCM Control Delay (s)	8.6	-	-	8.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	638	3	2	646	4	14
Future Volume (vph)	638	3	2	646	4	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.999				0.895	
Flt Protected					0.989	
Satd. Flow (prot)	2976	0	0	3076	1593	0
Flt Permitted					0.989	
Satd. Flow (perm)	2976	0	0	3076	1593	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	81			110	94	
Travel Time (s)	1.6			2.1	2.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	651	3	2	659	4	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	654	0	0	661	18	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 30.3% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	638	3	2	646	4	14
Future Vol, veh/h	638	3	2	646	4	14
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	651	3	2	659	4	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	654	0	987	327
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.6	2.9
Pot Cap-1 Maneuver	-	-	*1135	-	*223	*938
Stage 1	-	-	-	-	*972	-
Stage 2	-	-	-	-	*977	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1135	-	*222	*938
Mov Cap-2 Maneuver	-	-	-	-	*222	-
Stage 1	-	-	-	-	*972	-
Stage 2	-	-	-	-	*974	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	546	-	-	* 1135	-
HCM Lane V/C Ratio	0.034	-	-	0.002	-
HCM Control Delay (s)	11.8	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.1	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	630	21	3	647	1	2
Future Volume (vph)	630	21	3	647	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.995				0.910	
Flt Protected					0.984	
Satd. Flow (prot)	2965	0	0	3076	1612	0
Flt Permitted					0.984	
Satd. Flow (perm)	2965	0	0	3076	1612	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	110			87	78	
Travel Time (s)	2.1			1.7	2.1	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	643	21	3	660	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	664	0	0	663	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 31.1% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	630	21	3	647	1	2
Future Vol, veh/h	630	21	3	647	1	2
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	643	21	3	660	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	664	0	990	332
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	336	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1135	-	*222	*938
Stage 1	-	-	-	-	*972	-
Stage 2	-	-	-	-	*977	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1135	-	*221	*938
Mov Cap-2 Maneuver	-	-	-	-	*221	-
Stage 1	-	-	-	-	*972	-
Stage 2	-	-	-	-	*973	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	451	-	-	*1135	-
HCM Lane V/C Ratio	0.007	-	-	0.003	-
HCM Control Delay (s)	13	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0	-	-	0	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	632	0	6	642	8	14
Future Volume (vph)	632	0	6	642	8	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt					0.914	
Flt Protected					0.982	
Satd. Flow (prot)	2979	0	0	3076	1616	0
Flt Permitted					0.982	
Satd. Flow (perm)	2979	0	0	3076	1616	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	87			1647	89	
Travel Time (s)	1.7			32.1	2.4	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	645	0	6	655	8	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	645	0	0	661	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 33.2% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	632	0	6	642	8	14
Future Vol, veh/h	632	0	6	642	8	14
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	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	645	0	6	655	8	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	645	0	985	323
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	340	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1135	-	*224	*938
Stage 1	-	-	-	-	*972	-
Stage 2	-	-	-	-	*977	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1135	-	*222	*938
Mov Cap-2 Maneuver	-	-	-	-	*222	-
Stage 1	-	-	-	-	*972	-
Stage 2	-	-	-	-	*969	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	432	-	-	* 1135	-
HCM Lane V/C Ratio	0.052	-	-	0.005	-
HCM Control Delay (s)	13.8	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.2	-	-	0	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	5	98	4	5	85
Future Volume (vph)	4	5	98	4	5	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.925		0.995			
Flt Protected	0.978					0.997
Satd. Flow (prot)	1628	0	1773	0	0	1779
Flt Permitted	0.978					0.997
Satd. Flow (perm)	1628	0	1773	0	0	1779
Link Speed (mph)	25		25			25
Link Distance (ft)	102		69			130
Travel Time (s)	2.8		1.9			3.5
Conf. Peds. (#/hr)				6	6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	4	5	100	4	5	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	104	0	0	92
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 13.0%	ICU Level of Service A
Analysis Period (min) 15	

2025 Base (No-Build) Conditions
6: Aberdeen Avenue & Northern Sunoco Driveway
Timing Plan: SUN Peak

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	5	98	4	5	85
Future Vol, veh/h	4	5	98	4	5	85
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	4	5	100	4	5	87

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	205	108	0	0	110	0
Stage 1	108	-	-	-	-	-
Stage 2	97	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	952	1010	-	-	1101	-
Stage 1	1007	-	-	-	-	-
Stage 2	1117	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	942	1004	-	-	1095	-
Mov Cap-2 Maneuver	942	-	-	-	-	-
Stage 1	1001	-	-	-	-	-
Stage 2	1112	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1095	-
HCM Lane V/C Ratio	-	-	0.009	0.005	-
HCM Control Delay (s)	-	-	8.7	8.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	5	97	5	2	87
Future Volume (vph)	4	5	97	5	2	87
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.925		0.994			
Flt Protected	0.978					0.999
Satd. Flow (prot)	1628	0	1771	0	0	1781
Flt Permitted	0.978					0.999
Satd. Flow (perm)	1628	0	1771	0	0	1781
Link Speed (mph)	25		25			25
Link Distance (ft)	74		296			69
Travel Time (s)	2.0		8.1			1.9
Conf. Peds. (#/hr)				6	6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	4	5	99	5	2	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	104	0	0	91
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 17.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	5	97	5	2	87
Future Vol, veh/h	4	5	97	5	2	87
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	4	5	99	5	2	89

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	201	108	0	0	110	0
Stage 1	106	-	-	-	-	-
Stage 2	93	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	958	1010	-	-	1101	-
Stage 1	1067	-	-	-	-	-
Stage 2	1123	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	950	1004	-	-	1095	-
Mov Cap-2 Maneuver	950	-	-	-	-	-
Stage 1	1061	-	-	-	-	-
Stage 2	1121	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 979	1095	-
HCM Lane V/C Ratio	-	- 0.009	0.002	-
HCM Control Delay (s)	-	- 8.7	8.3	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	505	28	41	503	97	31	54	60	73	68	55
Future Volume (vph)	58	505	28	41	503	97	31	54	60	73	68	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3122	0	0	3150	1428	1564	1604	0	1620	1584	0
Flt Permitted		0.831			0.861		0.546			0.579		
Satd. Flow (perm)	0	2607	0	0	2721	1376	894	1604	0	977	1584	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			466	
Travel Time (s)		30.9			19.1			14.5			13.3	
Conf. Peds. (#/hr)	7		11	11		7	16		10	10		16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	622	0	0	572	102	33	120	0	77	130	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	61.0		31.0	31.0	31.0	33.0	33.0		33.0	33.0	
Total Split (%)	25.0%	50.8%		25.8%	25.8%	25.8%	27.5%	27.5%		27.5%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		93.8			93.8	92.8	16.2	16.2		16.2	16.2	
Actuated g/C Ratio		0.78			0.78	0.77	0.14	0.14		0.14	0.14	
v/c Ratio		0.31			0.27	0.10	0.28	0.56		0.59	0.61	
Control Delay		4.6			3.1	3.1	50.8	57.6		65.8	60.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		4.6			3.1	3.1	50.8	57.6		65.8	60.5	
LOS		A			A	A	D	E		E	E	
Approach Delay		4.6			3.1			56.1			62.5	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		60			38	12	23	88		57	96	
Queue Length 95th (ft)		103			49	22	54	144		104	155	

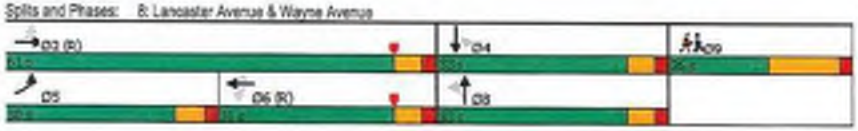
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Conf. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1052			822			452			408	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2038			2127	1064	206	374		227	369	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.31			0.27	0.13	0.16	0.32		0.34	0.35	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 16.0 Intersection LOS: B
Intersection Capacity Utilization 61.8% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	595	65	23	630	27	18
Future Volume (vph)	595	65	23	630	27	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3125	0	0	3139	1729	0
Flt Permitted				0.909	0.971	
Satd. Flow (perm)	3125	0	0	2859	1710	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		3	3		18	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	1%	0%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	733	0	0	726	50	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	101.1			101.1	9.9	
Actuated g/C Ratio	0.84			0.84	0.08	
v/c Ratio	0.28			0.30	0.35	
Control Delay	1.9			1.9	58.0	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.9			1.9	58.0	
LOS	A			A	E	
Approach Delay	1.9			1.9	58.0	
Approach LOS	A			A	E	
Queue Length 50th (ft)	28			19	37	
Queue Length 95th (ft)	46			30	77	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2633			2409	489	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.28			0.30	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 3.7 — Intersection LOS: A
Intersection Capacity Utilization 46.9% — ICU Level of Service A
Analysis Period (min) 15

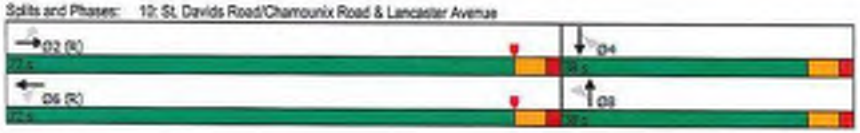
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	628	7	31	660	35	11	6	43	38	13	24
Future Volume (vph)	23	628	7	31	660	35	11	6	43	38	13	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1647			744			642			402	
Travel Time (s)		32.1			14.5			17.5			11.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	628	7	31	660	35	11	6	43	38	13	24
Future Volume (veh/h)	23	628	7	31	660	35	11	6	43	38	13	24
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	1782	1765	1782	1845	1828	1845	1881	1864	1881	1881	1881	1881
Adj Flow Rate, veh/h	24	668	8	33	702	37	12	6	46	40	14	26
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	99	2835	23	124	2565	127	54	18	85	109	28	32
Arrive On Green	0.83	0.84	0.83	0.83	0.84	0.83	0.06	0.07	0.06	0.06	0.07	0.06
Sat Flow, veh/h	77	3140	28	108	3056	151	212	261	1209	837	395	457
Grp Volume(v), veh/h	355	0	343	330	0	380	64	0	0	74	0	0
Grp Sat Flow(s),veh/h/ln	1643	0	1601	1676	0	1637	1682	0	0	1689	0	0
Q Serve(g_s), s	0.0	0.0	4.8	0.0	0.0	5.4	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	4.8	4.8	0.0	5.4	4.0	0.0	0.0	4.5	0.0	0.0
Prop In Lane	0.07		0.02	0.08		0.09	0.19		0.72	0.54		0.27
Lane Grp Cap(c), veh/h	1399	0	1344	1426	0	1374	141	0	0	153	0	0
V/C Ratio(X)	0.25	0.00	0.26	0.27	0.00	0.28	0.45	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	1399	0	1344	1426	0	1374	499	0	0	497	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.8	0.0	1.8	1.8	0.0	1.9	49.9	0.0	0.0	50.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.5	0.0	0.5	3.2	0.0	0.0	3.3	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(95%),veh/ln	4.4	0.0	4.1	4.5	0.0	4.5	3.7	0.0	0.0	4.2	0.0	0.0
LnGrp Delay(d),s/veh	2.2	0.0	2.3	2.3	0.0	2.4	53.1	0.0	0.0	53.3	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		698			770			64			74	
Approach Delay, s/veh		2.2			2.3			53.1			53.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.3		12.7		97.3		12.7
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		6.8		6.5		7.4		6.0
Green Ext Time (p_c), s		2.8		0.3		3.2		0.3

Intersection Summary

HCM 2010 Ctrl Delay 8.7
HCM 2010 LOS A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	2	2	3	11	9	5	75	2	6	46	12
Future Volume (vph)	24	2	2	3	11	9	5	75	2	6	46	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.990			0.948			0.996			0.975	
Flt Protected		0.959			0.994			0.997			0.995	
Satd. Flow (prot)	0	1709	0	0	1696	0	0	1754	0	0	1721	0
Flt Permitted		0.959			0.994			0.997			0.995	
Satd. Flow (perm)	0	1709	0	0	1696	0	0	1754	0	0	1721	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			898			201			296	
Travel Time (s)		29.9			24.5			5.5			8.1	
Confl. Peds. (#/hr)	1		2	2		1	6		3	3		6
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	8%
Adj. Flow (vph)	33	3	3	4	15	12	7	103	3	8	63	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	31	0	0	113	0	0	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	2	2	3	11	9	5	75	2	6	46	12
Future Vol, veh/h	24	2	2	3	11	9	5	75	2	6	46	12
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	8
Mvmt Flow	33	3	3	4	15	12	7	103	3	8	63	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.3	7.7	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	86%	13%	9%
Vol Thru, %	91%	7%	48%	72%
Vol Right, %	2%	7%	39%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	82	28	23	64
LT Vol	5	24	3	6
Through Vol	75	2	11	46
RT Vol	2	2	9	12
Lane Flow Rate	112	38	32	88
Geometry Grp	1	1	1	1
Degree of Util (X)	0.127	0.047	0.036	0.098
Departure Headway (Hd)	4.088	4.596	4.167	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	871	802	865	884
Service Time	2.144	2.495	2.167	2.078
HCM Lane V/C Ratio	0.129	0.047	0.037	0.1
HCM Control Delay	7.7	7.7	7.3	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.1	0.3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	37	22	3	10	30
Future Volume (vph)	4	37	22	3	10	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.877		0.984			
Flt Protected	0.996					0.987
Satd. Flow (prot)	1572	0	1771	0	0	1777
Flt Permitted	0.996					0.987
Satd. Flow (perm)	1572	0	1771	0	0	1777
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		590			450
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)		5		4	4	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	51	30	4	14	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	34	0	0	55
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 20.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	37	22	3	10	30
Future Vol, veh/h	4	37	22	3	10	30
Conflicting Peds, #/hr	0	5	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	51	30	4	14	41

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	105	41	0	0	38	0
Stage 1	36	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	1040	1101	-	-	1165	-
Stage 1	1154	-	-	-	-	-
Stage 2	1113	-	-	-	-	-
Platoon Blocked, %			-	-		-
Mov Cap-1 Maneuver	1023	1092	-	-	1161	-
Mov Cap-2 Maneuver	1023	-	-	-	-	-
Stage 1	1149	-	-	-	-	-
Stage 2	1100	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 1085	1161	-
HCM Lane V/C Ratio	-	- 0.052	0.012	-
HCM Control Delay (s)	-	- 8.5	8.1	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.2	0	-

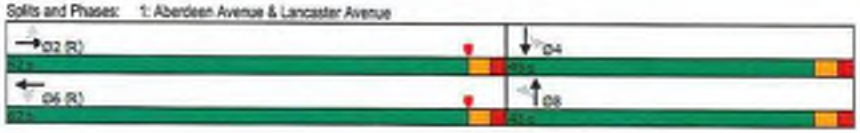
2025 PROJECTED CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	806	44	30	926	44	149	114	44	144	86	70
Future Volume (vph)	36	806	44	30	926	44	149	114	44	144	86	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1152			179			199			464	
Travel Time (s)		31.4			3.5			5.4			12.7	
Confl. Peds. (#/hr)	21		21	4		4	4		4	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	3%	18%	4%	0%	8%	5%	9%	1%	2%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	62.0	62.0		62.0	62.0		43.0	43.0		43.0	43.0	
Total Split (%)	59.0%	59.0%		59.0%	59.0%		41.0%	41.0%		41.0%	41.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 6 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	806	44	30	926	44	149	114	44	144	86	70
Future Volume (veh/h)	36	806	44	30	926	44	149	114	44	144	86	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1800	1732	1800	1809	1735	1809	1782	1665	1782	1836	1877	1836
Adj Flow Rate, veh/h	39	876	48	33	1007	48	162	124	48	157	93	76
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	5	5	5	2	2	2
Cap, veh/h	84	1738	94	70	1814	85	221	148	53	235	129	95
Arrive On Green	0.49	0.41	0.40	0.60	0.61	0.60	0.31	0.32	0.31	0.31	0.32	0.31
Sat Flow, veh/h	78	2660	155	56	2984	141	539	468	169	584	407	301
Grp Volume(v), veh/h	483	0	480	557	0	531	334	0	0	326	0	0
Grp Sat Flow(s),veh/h/ln	1546	0	1546	1627	0	1554	1178	0	0	1292	0	0
Q Serve(g_s), s	0.4	0.0	24.4	0.0	0.0	21.4	4.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	21.8	0.0	24.4	19.6	0.0	21.4	29.4	0.0	0.0	24.9	0.0	0.0
Prop In Lane	0.08		0.10	0.06		0.09	0.49		0.14	0.46		0.23
Lane Grp Cap(c), veh/h	962	0	940	1010	0	945	411	0	0	447	0	0
V/C Ratio(X)	0.50	0.00	0.51	0.55	0.00	0.56	0.81	0.00	0.00	0.73	0.00	0.00
Avail Cap(c_a), veh/h	962	0	940	1010	0	945	485	0	0	529	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.6	0.0	19.5	11.9	0.0	12.3	35.0	0.0	0.0	33.2	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	1.8	2.2	0.0	2.4	8.8	0.0	0.0	4.2	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(95%),veh/ln	16.3	0.0	16.1	15.3	0.0	14.9	15.9	0.0	0.0	14.4	0.0	0.0
LnGrp Delay(d),s/veh	20.3	0.0	21.3	14.1	0.0	14.7	43.8	0.0	0.0	37.3	0.0	0.0
LnGrp LOS	C		C	B		B	D			D		
Approach Vol, veh/h		963			1088			334			326	
Approach Delay, s/veh		20.8			14.4			43.8			37.3	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		67.8		37.2		67.8		37.2
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		57.0		38.0		57.0		38.0
Max Q Clear Time (g_c+I1), s		26.4		26.9		23.4		31.4
Green Ext Time (p_c), s		4.7		1.0		5.0		0.8

Intersection Summary

HCM 2010 Ctrl Delay 23.1
HCM 2010 LOS C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	943	50	0	999	0	25
Future Volume (vph)	943	50	0	999	0	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.77	*0.77	*0.90	*0.90	1.00	1.00
Ped Bike Factor						
Frt	0.992					0.865
Flt Protected						
Satd. Flow (prot)	2458	0	0	2922	0	1542
Flt Permitted						
Satd. Flow (perm)	2458	0	0	2922	0	1542
Link Speed (mph)	35			35	25	
Link Distance (ft)	179			197	94	
Travel Time (s)	3.5			3.8	2.6	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1025	54	0	1086	0	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1079	0	0	1086	0	27
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 42.4% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	943	50	0	999	0	25
Future Vol, veh/h	943	50	0	999	0	25
Conflicting Peds, #/hr	0	0	0	0	4	4
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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1025	54	0	1086	0	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	544
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	2.9
Pot Cap-1 Maneuver	-	-	0	-	0	*795
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*792
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	792	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-
HCM Control Delay (s)	9.7	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	932	35	79	978	21	59
Future Volume (vph)	932	35	79	978	21	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.77	*0.77	*0.55	*0.55	1.00	1.00
Ped Bike Factor						
Frt	0.996				0.901	
Flt Protected				0.995	0.987	
Satd. Flow (prot)	2465	0	0	1791	1585	0
Flt Permitted				0.995	0.987	
Satd. Flow (perm)	2465	0	0	1791	1585	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	197			498	89	
Travel Time (s)	3.8			9.7	2.4	
Confl. Peds. (#/hr)					4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	2%	2%	4%	2%	2%
Adj. Flow (vph)	1013	38	86	1063	23	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1051	0	0	1149	87	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 75.7% ICU Level of Service D
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	932	35	79	978	21	59
Future Vol, veh/h	932	35	79	978	21	59
Conflicting Peds, #/hr	0	0	0	0	4	4
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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	2	2	4	2	2
Mvmt Flow	1013	38	86	1063	23	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1051	0	1740	530
Stage 1	-	-	-	-	1032	-
Stage 2	-	-	-	-	708	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*962	-	*131	*795
Stage 1	-	-	-	-	*834	-
Stage 2	-	-	-	-	*448	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*962	-	*102	*792
Mov Cap-2 Maneuver	-	-	-	-	*102	-
Stage 1	-	-	-	-	*834	-
Stage 2	-	-	-	-	*349	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	23.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	285	-	-	*962	-
HCM Lane V/C Ratio	0.305	-	-	0.089	-
HCM Control Delay (s)	23.1	-	-	9.1	0.9
HCM Lane LOS	C	-	-	A	A
HCM 95th %ile Q(veh)	1.3	-	-	0.3	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	104	203	18	37	122
Future Volume (vph)	10	104	203	18	37	122
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	-2%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.877		0.989			
Flt Protected	0.998					0.989
Satd. Flow (prot)	1557	0	1839	0	0	1763
Flt Permitted	0.998					0.989
Satd. Flow (perm)	1557	0	1839	0	0	1763
Link Speed (mph)	25		25			25
Link Distance (ft)	74		311			199
Travel Time (s)	2.0		8.5			5.4
Conf. Peds. (#/hr)	4	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	6%	2%	2%	2%
Adj. Flow (vph)	11	113	221	20	40	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	241	0	0	173
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 39.8% ICU Level of Service A
Analysis Period (min) 15

Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	104	203	18	37	122
Future Vol, veh/h	10	104	203	18	37	122
Conflicting Peds, #/hr	4	4	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, %	-2	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	2	2	2
Mvmt Flow	11	113	221	20	40	133

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	448	235	0	0	241	0
Stage 1	231	-	-	-	-	-
Stage 2	217	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.3	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	706	866	-	-	993	-
Stage 1	956	-	-	-	-	-
Stage 2	1001	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	675	863	-	-	993	-
Mov Cap-2 Maneuver	675	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	954	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	842	993	-
HCM Lane V/C Ratio	-	-	0.147	0.041	-
HCM Control Delay (s)	-	-	10	8.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	674	26	37	820	118	41	101	44	96	93	35
Future Volume (vph)	30	674	26	37	820	118	41	101	44	96	93	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3077	0	0	3085	1375	1422	1608	0	1501	1504	0
Flt Permitted		0.880			0.881		0.578			0.534		
Satd. Flow (perm)	0	2713	0	0	2726	1319	854	1608	0	825	1504	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		465			678			709			514	
Travel Time (s)		12.7			18.5			19.3			14.0	
Confl. Peds. (#/hr)	11		7	7		11	13		24	24		13
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
Heavy Vehicles (%)	3%	3%	0%	6%	3%	4%	10%	2%	7%	9%	10%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	803	0	0	942	130	45	159	0	105	142	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	13.0	48.0		35.0	35.0	35.0	31.0	31.0		31.0	31.0	
Total Split (%)	12.4%	45.7%		33.3%	33.3%	33.3%	29.5%	29.5%		29.5%	29.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff Green (s)		76.7			76.7	75.7	18.3	18.3		18.3	18.3	
Actuated g/C Ratio		0.73			0.73	0.72	0.17	0.17		0.17	0.17	
v/c Ratio		0.41			0.47	0.14	0.30	0.57		0.73	0.54	
Control Delay		6.9			6.1	6.0	40.8	46.6		67.8	46.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		6.9			6.1	6.0	40.8	46.6		67.8	46.0	
LOS		A			A	A	D	D		E	D	
Approach Delay		6.9			6.1			45.3			55.3	
Approach LOS		A			A			D			E	
Queue Length 50th (ft)		93			86	18	27	99		67	88	
Queue Length 95th (ft)		165			146	m48	57	152		120	138	

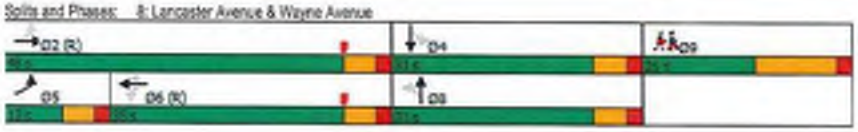
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	25%
Yellow Time (s)	19.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		385			588			629			434	
Turn Bay Length (ft)						160						
Base Capacity (vph)		1981			1991	950	211	398		204	372	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.41			0.47	0.14	0.21	0.40		0.51	0.38	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 33 (31%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 15.0 Intersection LOS: B
Intersection Capacity Utilization 77.9% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	802	51	98	988	32	45
Future Volume (vph)	802	51	98	988	32	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	12
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3042	0	0	3069	1717	0
Flt Permitted				0.739	0.973	
Satd. Flow (perm)	3042	0	0	2277	1714	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	678			1152	490	
Travel Time (s)	18.5			31.4	13.4	
Confl. Peds. (#/hr)		6	6		4	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	10%	4%	3%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	948	0	0	1207	86	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	61.0		12.0	73.0	32.0	
Total Split (%)	58.1%		11.4%	69.5%	30.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	84.4			84.4	11.6	
Actuated g/C Ratio	0.80			0.80	0.11	
v/c Ratio	0.39			0.66	0.45	
Control Delay	2.7			3.1	50.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	2.7			3.1	50.5	
LOS	A			A	D	
Approach Delay	2.7			3.1	50.5	
Approach LOS	A			A	D	
Queue Length 50th (ft)	68			60	55	
Queue Length 95th (ft)	71			72	101	
Internal Link Dist (ft)	598			1072	410	
Turn Bay Length (ft)						
Base Capacity (vph)	2444			1830	441	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stamation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.39			0.66	0.20	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 48 (46%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 4.8 — Intersection LOS: A
Intersection Capacity Utilization 72.7% — ICU Level of Service C
Analysis Period (min) 15

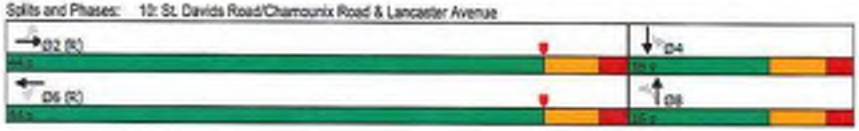
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	885	10	13	1160	293	22	69	72	94	39	42
Future Volume (vph)	15	885	10	13	1160	293	22	69	72	94	39	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		420			540			278			428	
Travel Time (s)		8.2			10.5			7.6			11.7	
Confl. Peds. (#/hr)	6					6	4		5	5		4
Confl. Bikes (#/hr)												1
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
Heavy Vehicles (%)	0%	3%	0%	0%	4%	1%	0%	0%	4%	1%	5%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	44.0	44.0		44.0	44.0		16.0	16.0		16.0	16.0	
Total Split (%)	73.3%	73.3%		73.3%	73.3%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 20 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	885	10	13	1160	293	22	69	72	94	39	42
Future Volume (veh/h)	15	885	10	13	1160	293	22	69	72	94	39	42
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.98
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	1782	1731	1782	1845	1785	1845	1891	1858	1891	1881	1838	1881
Adj Flow Rate, veh/h	16	973	10	14	1275	301	24	76	76	103	43	46
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	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, %	3	3	3	4	4	4	0	0	0	5	5	5
Cap, veh/h	73	2109	21	67	1762	427	93	144	129	219	71	62
Arrive On Green	0.65	0.66	0.65	0.65	0.66	0.65	0.15	0.17	0.15	0.15	0.17	0.15
Sat Flow, veh/h	16	3181	32	9	2656	613	145	849	755	742	419	366
Grp Volume(v), veh/h	514	0	485	847	0	743	176	0	0	192	0	0
Grp Sat Flow(s),veh/h/ln	1660	0	1570	1768	0	1513	1749	0	0	1527	0	0
Q Serve(g_s), s	0.0	0.0	9.0	0.0	0.0	19.7	0.0	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	8.6	0.0	9.0	18.7	0.0	19.7	5.6	0.0	0.0	7.1	0.0	0.0
Prop In Lane	0.03		0.02	0.02		0.41	0.14		0.43	0.54		0.24
Lane Grp Cap(c), veh/h	1135	0	1041	1203	0	1003	337	0	0	327	0	0
V/C Ratio(X)	0.45	0.00	0.47	0.70	0.00	0.74	0.52	0.00	0.00	0.59	0.00	0.00
Avail Cap(c_a), veh/h	1135	0	1041	1203	0	1003	358	0	0	345	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.9	0.0	4.9	6.6	0.0	6.9	23.3	0.0	0.0	23.9	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	1.5	3.5	0.0	4.9	1.8	0.0	0.0	3.0	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(95%),veh/ln	8.1	0.0	7.6	16.1	0.0	14.5	5.3	0.0	0.0	6.0	0.0	0.0
LnGrp Delay(d),s/veh	6.2	0.0	6.4	10.0	0.0	11.8	25.1	0.0	0.0	26.9	0.0	0.0
LnGrp LOS	A		A	B		B	C			C		
Approach Vol, veh/h		999			1590			176			192	
Approach Delay, s/veh		6.3			10.8			25.1			26.9	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		44.8		15.2		44.8		15.2
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		38.0		10.0		38.0		10.0
Max Q Clear Time (g_c+I1), s		11.0		9.1		21.7		7.6
Green Ext Time (p_c), s		4.4		0.1		7.1		0.2

Intersection Summary

HCM 2010 Ctrl Delay 11.2
HCM 2010 LOS B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	17	6	5	94	10	29	173	11	5	67	20
Future Volume (vph)	5	17	6	5	94	10	29	173	11	5	67	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.972			0.988			0.993			0.971	
Flt Protected		0.991			0.998			0.993			0.997	
Satd. Flow (prot)	0	1619	0	0	1745	0	0	1637	0	0	1699	0
Flt Permitted		0.991			0.998			0.993			0.997	
Satd. Flow (perm)	0	1619	0	0	1745	0	0	1637	0	0	1699	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1128			434			186			311	
Travel Time (s)		30.8			11.8			5.1			8.5	
Confl. Peds. (#/hr)	7		3	3		7	19					10
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	20%	0%	17%	0%	2%	0%	18%	6%	0%	0%	2%	5%
Adj. Flow (vph)	7	24	8	7	132	14	41	244	15	7	94	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	153	0	0	300	0	0	129	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 33.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	17	6	5	94	10	29	173	11	5	67	20
Future Vol, veh/h	5	17	6	5	94	10	29	173	11	5	67	20
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles, %	20	0	17	0	2	0	18	6	0	0	2	5
Mvmt Flow	7	24	8	7	132	14	41	244	15	7	94	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	9.3	11.1	8.6
HCM LOS	A	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	18%	5%	5%
Vol Thru, %	81%	61%	86%	73%
Vol Right, %	5%	21%	9%	22%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	213	28	109	92
LT Vol	29	5	5	5
Through Vol	173	17	94	67
RT Vol	11	6	10	20
Lane Flow Rate	300	39	154	130
Geometry Grp	1	1	1	1
Degree of Util (X)	0.403	0.059	0.211	0.167
Departure Headway (Hd)	4.84	5.397	4.94	4.535
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	741	659	723	770
Service Time	2.885	3.463	2.992	2.588
HCM Lane V/C Ratio	0.405	0.059	0.213	0.169
HCM Control Delay	11.1	8.8	9.3	8.6
HCM Lane LOS	B	A	A	A
HCM 95th-tile Q	2	0.2	0.8	0.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	30	90	32	17	44
Future Volume (vph)	5	30	90	32	17	44
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.884		0.965			
Flt Protected	0.993					0.986
Satd. Flow (prot)	1540	0	1603	0	0	1572
Flt Permitted	0.993					0.986
Satd. Flow (perm)	1540	0	1603	0	0	1572
Link Speed (mph)	25		25			25
Link Distance (ft)	1128		166			490
Travel Time (s)	30.8		5.1			13.4
Confl. Peds. (#/hr)		14		7	7	
Peak Hour Factor	0.54	0.54	0.54	0.54	0.54	0.54
Heavy Vehicles (%)	0%	3%	0%	32%	23%	9%
Adj. Flow (vph)	9	56	167	59	31	81
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	226	0	0	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 29.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	30	90	32	17	44
Future Vol, veh/h	5	30	90	32	17	44
Conflicting Peds, #/hr	0	14	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	54	54	54	54	54	54
Heavy Vehicles, %	0	3	0	32	23	9
Mvmt Flow	9	56	167	59	31	81

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	347	218	0	0	233	0
Stage 1	204	-	-	-	-	-
Stage 2	143	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	746	873	-	-	1000	-
Stage 1	961	-	-	-	-	-
Stage 2	1027	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	716	856	-	-	993	-
Mov Cap-2 Maneuver	716	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	993	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	2.4
HCM LOS	A		

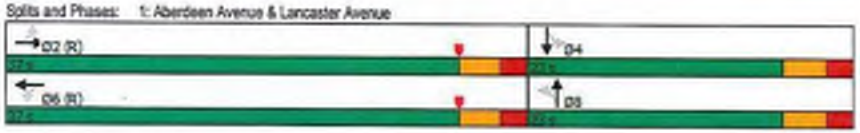
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	833	993	-
HCM Lane V/C Ratio	-	-	0.078	0.032	-
HCM Control Delay (s)	-	-	9.7	8.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	841	37	26	937	61	102	68	35	122	114	69
Future Volume (vph)	34	841	37	26	937	61	102	68	35	122	114	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1121			179			199			464	
Travel Time (s)		30.6			3.5			5.4			12.7	
Confl. Peds. (#/hr)	8		8	6		6	3		3	3		3
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	3%	0%	1%	3%	0%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 38 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	841	37	26	937	61	102	68	35	122	114	69
Future Volume (veh/h)	34	841	37	26	937	61	102	68	35	122	114	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
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	1800	1779	1800	1809	1789	1809	1782	1782	1782	1836	1867	1836
Adj Flow Rate, veh/h	35	867	38	27	966	63	105	70	36	126	118	71
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	100	1590	81	86	1905	123	227	143	57	223	165	88
Arrive On Green	0.62	0.62	0.60	0.62	0.62	0.60	0.25	0.25	0.23	0.25	0.25	0.23
Sat Flow, veh/h	58	3347	131	37	3072	198	558	567	231	564	670	359
Grp Volume(v), veh/h	478	0	462	546	0	508	211	0	0	315	0	0
Grp Sat Flow(s),veh/h/ln	1641	0	1595	1714	0	1592	1356	0	0	1593	0	0
Q Serve(g_s), s	0.0	0.0	9.3	0.0	0.0	10.7	0.0	0.0	0.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	8.4	0.0	9.3	10.1	0.0	10.7	8.1	0.0	0.0	11.0	0.0	0.0
Prop In Lane	0.07		0.08	0.05		0.12	0.50		0.17	0.40		0.23
Lane Grp Cap(c), veh/h	1082	0	989	1126	0	988	424	0	0	477	0	0
V/C Ratio(X)	0.44	0.00	0.47	0.49	0.00	0.51	0.50	0.00	0.00	0.66	0.00	0.00
Avail Cap(c_a), veh/h	1082	0	989	1126	0	988	519	0	0	585	0	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)	0.90	0.00	0.90	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.9	0.0	6.1	6.2	0.0	6.4	20.0	0.0	0.0	21.2	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.4	1.5	0.0	1.9	0.9	0.0	0.0	2.0	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(95%),veh/ln	7.6	0.0	7.6	9.1	0.0	8.9	5.8	0.0	0.0	8.9	0.0	0.0
LnGrp Delay(d),s/veh	7.1	0.0	7.6	7.7	0.0	8.3	20.9	0.0	0.0	23.2	0.0	0.0
LnGrp LOS	A		A	A		A	C			C		
Approach Vol, veh/h		940			1056			211			315	
Approach Delay, s/veh		7.3			8.0			20.9			23.2	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.2		18.8		41.2		18.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		18.0		32.0		18.0
Max Q Clear Time (g_c+I1), s		11.3		13.0		12.7		10.1
Green Ext Time (p_c), s		4.2		0.6		4.3		0.5

Intersection Summary

HCM 2010 Ctrl Delay 10.7
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	956	41	0	1023	0	20
Future Volume (vph)	956	41	0	1023	0	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.83	*0.83	*0.80	*0.80	1.00	1.00
Ped Bike Factor						
Frt	0.994					0.865
Rt Protected						
Satd. Flow (prot)	2730	0	0	2675	0	1542
Rt Permitted						
Satd. Flow (perm)	2730	0	0	2675	0	1542
Link Speed (mph)	35			35	25	
Link Distance (ft)	179			197	94	
Travel Time (s)	3.5			3.8	2.6	
Conf. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	986	42	0	1055	0	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1028	0	0	1055	0	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.06	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 40.8% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2025 Projected (Build) Conditions
3: Proposed RIRO Driveway & Lancaster Avenue
Timing Plan: PM Peak

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	956	41	0	1023	0	20
Future Vol, veh/h	956	41	0	1023	0	20
Conflicting Peds, #/hr	0	0	0	0	3	3
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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	986	42	0	1055	0	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	517
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	2.9
Pot Cap-1 Maneuver	-	-	0	-	0	*814
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*812
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	812	-	-	-
HCM Lane V/C Ratio	0.026	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %ile Q(veh)	0.1	-	-	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	947	28	63	1006	18	47
Future Volume (vph)	947	28	63	1006	18	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.83	*0.83	*0.54	*0.54	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.903	
Flt Protected				0.997	0.986	
Satd. Flow (prot)	2736	0	0	1799	1587	0
Flt Permitted				0.997	0.986	
Satd. Flow (perm)	2736	0	0	1799	1587	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	197			520	69	
Travel Time (s)	3.8			10.1	2.4	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	2%	2%	1%	2%	2%
Adj. Flow (vph)	976	29	65	1037	19	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1005	0	0	1102	67	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 75.1% ICU Level of Service D
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	947	28	63	1006	18	47
Future Vol, veh/h	947	28	63	1006	18	47
Conflicting Peds, #/hr	0	0	0	0	3	3
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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	976	29	65	1037	19	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1005	0	1643	505
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	652	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*984	-	*102	*514
Stage 1	-	-	-	-	*343	-
Stage 2	-	-	-	-	*487	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*984	-	*136	*512
Mov Cap-2 Maneuver	-	-	-	-	*136	-
Stage 1	-	-	-	-	*343	-
Stage 2	-	-	-	-	*410	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	342	-	-	* 984	-
HCM Lane V/C Ratio	0.196	-	-	0.066	-
HCM Control Delay (s)	18.1	-	-	8.9	0.6
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	12	80	125	13	32	145
Future Volume (vph)	12	80	125	13	32	145
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	-2%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.882		0.988			
Flt Protected	0.994					0.991
Satd. Flow (prot)	1563	0	1757	0	0	1752
Flt Permitted	0.994					0.991
Satd. Flow (perm)	1563	0	1757	0	0	1752
Link Speed (mph)	25		25			25
Link Distance (ft)	74		279			199
Travel Time (s)	2.0		7.6			5.4
Conf. Peds. (#/hr)	6	6				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	0%	2%	2%	3%
Adj. Flow (vph)	12	82	129	13	33	149
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	0	142	0	0	182
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 35.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	80	125	13	32	145
Future Vol, veh/h	12	80	125	13	32	145
Conflicting Peds, #/hr	6	6	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, %	-2	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	0	2	2	3
Mvmt Flow	12	82	129	13	33	149

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	357	142	0	0	142	0
Stage 1	135	-	-	-	-	-
Stage 2	221	-	-	-	-	-
Critical Hdwy	6.02	6.02	-	-	4.3	-
Critical Hdwy Stg 1	5.02	-	-	-	-	-
Critical Hdwy Stg 2	5.02	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	791	973	-	-	1074	-
Stage 1	1060	-	-	-	-	-
Stage 2	966	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	759	967	-	-	1074	-
Mov Cap-2 Maneuver	759	-	-	-	-	-
Stage 1	1050	-	-	-	-	-
Stage 2	947	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	1.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 934	1074	-
HCM Lane V/C Ratio	-	- 0.102	0.031	-
HCM Control Delay (s)	-	- 9.3	8.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	743	54	35	696	95	23	90	38	105	148	47
Future Volume (vph)	41	743	54	35	696	95	23	90	38	105	148	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3086	0	0	3151	1428	1564	1581	0	1604	1619	0
Flt Permitted		0.875			0.870		0.411			0.584		
Satd. Flow (perm)	0	2704	0	0	2746	1328	658	1581	0	958	1619	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		533			714			348			368	
Travel Time (s)		14.5			19.5			9.5			10.0	
Confl. Peds. (#/hr)	23		11	11		23	32		28	28		32
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	3%	1%	0%	0%	3%	10%	2%	1%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	855	0	0	746	97	23	131	0	107	199	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	61.0		31.0	31.0	31.0	33.0	33.0		33.0	33.0	
Total Split (%)	25.0%	50.8%		25.8%	25.8%	25.8%	27.5%	27.5%		27.5%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	-2.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	4.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eflct Green (s)		89.1			89.1	90.1	20.9	20.9		20.9	20.9	
Actuated g/C Ratio		0.74			0.74	0.75	0.17	0.17		0.17	0.17	
v/c Ratio		0.43			0.37	0.10	0.20	0.48		0.64	0.71	
Control Delay		7.2			3.7	2.8	44.2	49.3		62.7	59.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		7.2			3.7	2.8	44.2	49.3		62.7	59.7	
LOS		A			A	A	D	D		E	E	
Approach Delay		7.2			3.6			48.5			60.8	
Approach LOS		A			A			D			E	
Queue Length 50th (ft)		114			46	8	15	92		78	147	
Queue Length 95th (ft)		187			113	26	39	145		132	214	

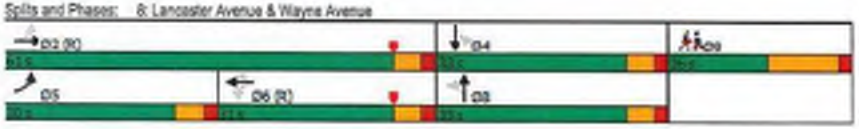
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eflct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		453			634			268			288	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2007			2038	996	153	366		223	377	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.43			0.37	0.10	0.15	0.36		0.48	0.53	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 19 (16%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 16.3 Intersection LOS: B
Intersection Capacity Utilization 78.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

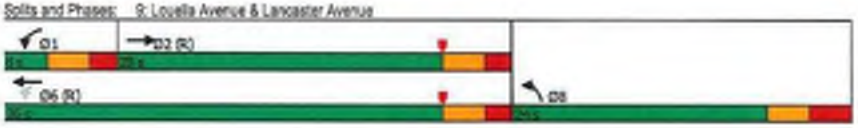
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	895	33	54	875	15	30
Future Volume (vph)	895	33	54	875	15	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3128	0	0	3130	1644	0
Flt Permitted				0.854	0.983	
Satd. Flow (perm)	3128	0	0	2681	1628	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	714			1121	430	
Travel Time (s)	19.5			30.6	11.7	
Confl. Peds. (#/hr)		7	7		29	8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	2%	0%	4%	1%	7%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	966	0	0	967	47	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	28.0		8.0	36.0	24.0	
Total Split (%)	46.7%		13.3%	60.0%	40.0%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	42.7			42.7	8.3	
Actuated g/C Ratio	0.71			0.71	0.14	
v/c Ratio	0.43			0.51	0.21	
Control Delay	5.8			2.5	24.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	5.8			2.5	24.6	
LOS	A			A	C	
Approach Delay	5.8			2.5	24.6	
Approach LOS	A			A	C	
Queue Length 50th (ft)	148			28	15	
Queue Length 95th (ft)	123			43	39	
Internal Link Dist (ft)	634			1041	350	
Turn Bay Length (ft)						
Base Capacity (vph)	2229			1909	520	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.43			0.51	0.09	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 6 (10%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 4.6 — Intersection LOS: A
Intersection Capacity Utilization 58.7% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: Louella Avenue & Lancaster Avenue

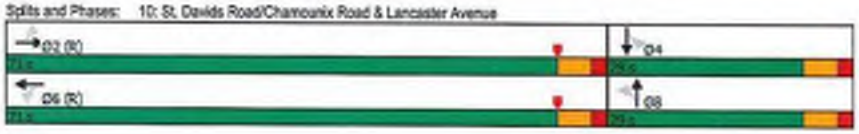


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	988	16	40	1043	145	4	26	33	76	23	44
Future Volume (vph)	35	988	16	40	1043	145	4	26	33	76	23	44
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			No
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		486			565			295			258	
Travel Time (s)		9.5			11.0			8.0			7.0	
Confl. Peds. (#/hr)	5		3	3		5			8	8		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	1%	25%	0%	3%	0%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	71.0	71.0		71.0	71.0		29.0	29.0		29.0	29.0	
Total Split (%)	71.0%	71.0%		71.0%	71.0%		29.0%	29.0%		29.0%	29.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 68 (68%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	988	16	40	1043	145	4	26	33	76	23	44
Future Volume (veh/h)	35	988	16	40	1043	145	4	26	33	76	23	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.98	0.99		0.98
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	1782	1765	1782	1845	1827	1845	1891	1835	1891	1881	1870	1881
Adj Flow Rate, veh/h	37	1051	16	43	1110	148	4	28	35	81	24	47
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	89	2349	35	91	2174	287	44	95	111	153	38	61
Arrive On Green	0.78	0.77	0.76	0.78	0.77	0.76	0.14	0.13	0.12	0.14	0.13	0.12
Sat Flow, veh/h	66	3038	45	68	2812	371	46	751	872	771	298	479
Grp Volume(v), veh/h	545	0	559	665	0	636	67	0	0	152	0	0
Grp Sat Flow(s),veh/h/ln	1551	0	1598	1655	0	1596	1669	0	0	1548	0	0
Q Serve(g_s), s	0.0	0.0	12.2	0.0	0.0	15.2	0.0	0.0	0.0	5.5	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	12.2	12.8	0.0	15.2	3.7	0.0	0.0	9.1	0.0	0.0
Prop In Lane	0.07		0.03	0.06		0.23	0.06		0.52	0.53		0.31
Lane Grp Cap(c), veh/h	1253	0	1235	1335	0	1234	266	0	0	267	0	0
V/C Ratio(X)	0.43	0.00	0.45	0.50	0.00	0.52	0.25	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	1253	0	1235	1335	0	1234	450	0	0	432	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.7	0.0	4.0	4.0	0.0	4.3	39.9	0.0	0.0	41.8	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.2	1.3	0.0	1.5	0.7	0.0	0.0	2.7	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(95%),veh/ln	8.5	0.0	9.6	10.7	0.0	11.5	3.1	0.0	0.0	7.5	0.0	0.0
LnGrp Delay(d),s/veh	4.8	0.0	5.2	5.3	0.0	5.9	40.6	0.0	0.0	44.5	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		1104			1301			67			152	
Approach Delay, s/veh		5.0			5.6			40.6			44.5	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		82.3		17.7		82.3		17.7
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		65.0		23.0		65.0		23.0
Max Q Clear Time (g_c+I1), s		14.2		11.1		17.2		5.7
Green Ext Time (p_c), s		5.5		0.6		7.0		0.2

Intersection Summary

HCM 2010 Ctrl Delay 9.5
HCM 2010 LOS A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	9	5	7	72	10	9	119	6	5	101	14
Future Volume (vph)	15	9	5	7	72	10	9	119	6	5	101	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.977			0.984			0.994			0.984	
Flt Protected		0.974			0.998			0.997			0.998	
Satd. Flow (prot)	0	1552	0	0	1750	0	0	1596	0	0	1724	0
Flt Permitted		0.974			0.998			0.997			0.998	
Satd. Flow (perm)	0	1552	0	0	1750	0	0	1596	0	0	1724	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1097			652			218			279	
Travel Time (s)		29.9			17.8			5.9			7.6	
Confl. Peds. (#/hr)	15		7	7		15	7		5	5		7
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	7%	0%	40%	0%	1%	0%	11%	11%	0%	0%	3%	0%
Adj. Flow (vph)	19	11	6	9	90	13	11	149	8	6	126	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	112	0	0	168	0	0	150	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 28.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	9	5	7	72	10	9	119	6	5	101	14
Future Vol, veh/h	15	9	5	7	72	10	9	119	6	5	101	14
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	7	0	40	0	1	0	11	11	0	0	3	0
Mvmt Flow	19	11	6	9	90	13	11	149	8	6	126	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.4	8.9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	52%	8%	4%
Vol Thru, %	89%	31%	81%	84%
Vol Right, %	4%	17%	11%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	134	29	89	120
LT Vol	9	15	7	5
Through Vol	119	9	72	101
RT Vol	6	5	10	14
Lane Flow Rate	168	36	111	150
Geometry Grp	1	1	1	1
Degree of Util (X)	0.214	0.049	0.143	0.183
Departure Headway (Hd)	4.582	4.887	4.622	4.364
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	782	732	775	819
Service Time	2.615	2.92	2.65	2.407
HCM Lane V/C Ratio	0.215	0.049	0.143	0.183
HCM Control Delay	8.9	8.2	8.4	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.2	0.5	0.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	45	86	11	16	62
Future Volume (vph)	9	45	86	11	16	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.887		0.984			
Flt Protected	0.992					0.990
Satd. Flow (prot)	1558	0	1740	0	0	1690
Flt Permitted	0.992					0.990
Satd. Flow (perm)	1558	0	1740	0	0	1690
Link Speed (mph)	25		25			25
Link Distance (ft)	1097		261			430
Travel Time (s)	29.9		7.1			11.7
Confl. Peds. (#/hr)	1	24		10	10	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	2%	2%	0%	19%	2%
Adj. Flow (vph)	10	52	99	13	18	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	0	112	0	0	89
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 27.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	45	86	11	16	62
Future Vol, veh/h	9	45	86	11	16	62
Conflicting Peds, #/hr	1	24	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	2	2	0	19	2
Mvmt Flow	10	52	99	13	18	71

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	224	140	0	0	122	0
Stage 1	116	-	-	-	-	-
Stage 2	108	-	-	-	-	-
Critical Hdwy	6.4	6.22	-	-	4.5	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3.2	-
Pot Cap-1 Maneuver	883	968	-	-	1019	-
Stage 1	1058	-	-	-	-	-
Stage 2	1067	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	857	937	-	-	1009	-
Mov Cap-2 Maneuver	857	-	-	-	-	-
Stage 1	1047	-	-	-	-	-
Stage 2	1046	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	1.8
HCM LOS	A		

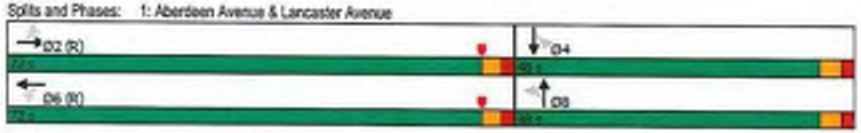
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 923	1009	-
HCM Lane V/C Ratio	-	- 0.067	0.018	-
HCM Control Delay (s)	-	- 9.2	8.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.2	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	693	50	27	841	51	95	98	44	116	73	66
Future Volume (vph)	40	693	50	27	841	51	95	98	44	116	73	66
Ideal Flow (vphpl)	1800	1900	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			179			199			464	
Travel Time (s)		31.1			3.5			5.4			12.7	
Confl. Peds. (#/hr)	15		7	7		15	12		9	9		12
Confl. Bikes (#/hr)			1			3			1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	2%	7%	2%	2%	0%	1%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	693	50	27	841	51	95	98	44	116	73	66
Future Volume (veh/h)	40	693	50	27	841	51	95	98	44	116	73	66
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
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	1800	1766	1800	1809	1771	1809	1782	1775	1782	1836	1891	1836
Adj Flow Rate, veh/h	41	714	52	28	867	53	98	101	45	120	75	68
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	0	0	0
Cap, veh/h	116	1926	139	73	2091	126	151	141	56	172	97	78
Arrive On Green	1.00	1.00	1.00	0.70	0.70	0.09	0.24	0.24	0.23	0.24	0.24	0.23
Sat Flow, veh/h	119	2766	199	59	3004	182	458	584	238	539	408	330
Grp Volume(v), veh/h	393	0	408	489	0	459	244	0	0	263	0	0
Grp Sat Flow(s),veh/h/ln	1520	0	1565	1672	0	1572	1290	0	0	1276	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	15.1	0.0	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.9	0.0	15.1	21.7	0.0	0.0	24.5	0.0	0.0
Prop In Lane	0.10		0.13	0.06		0.12	0.40		0.18	0.46		0.26
Lane Grp Cap(c), veh/h	1091	0	1089	1195	0	1095	348	0	0	347	0	0
V/C Ratio(X)	0.37	0.00	0.37	0.41	0.00	0.42	0.70	0.00	0.00	0.76	0.00	0.00
Avail Cap(c_a), veh/h	1091	0	1089	1195	0	1095	533	0	0	538	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.00	0.94	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	7.7	0.0	7.9	42.9	0.0	0.0	44.3	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.9	1.0	0.0	1.2	2.6	0.0	0.0	3.4	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(95%),veh/ln	0.5	0.0	0.5	11.5	0.0	11.2	12.5	0.0	0.0	13.6	0.0	0.0
LnGrp Delay(d),s/veh	0.9	0.0	0.9	8.7	0.0	9.0	45.4	0.0	0.0	47.8	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		807			948			244			263	
Approach Delay, s/veh		0.9			8.9			45.4			47.8	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		87.5		32.5		87.5		32.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		26.5		17.1		23.7
Green Ext Time (p_c), s		3.8		0.9		4.2		0.9

Intersection Summary

HCM 2010 Ctrl Delay 14.6
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	814	37	0	919	0	19
Future Volume (vph)	814	37	0	919	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	0%	
Lane Util. Factor	*0.94	*0.94	*0.88	*0.88	1.00	1.00
Ped Bike Factor						
Frt	0.994					0.865
Flt Protected						
Satd. Flow (prot)	3063	0	0	2913	0	1526
Flt Permitted						
Satd. Flow (perm)	3063	0	0	2913	0	1526
Link Speed (mph)	35			35	25	
Link Distance (ft)	179			197	94	
Travel Time (s)	3.5			3.8	2.6	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	839	38	0	947	0	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	877	0	0	947	0	20
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.16	1.07	1.07
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 38.9% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

2025 Projected (Build) Conditions
3: Proposed RIRO Driveway & Lancaster Avenue
Timing Plan: SAT Peak

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	814	37	0	919	0	19
Future Vol, veh/h	814	37	0	919	0	19
Conflicting Peds, #/hr	0	0	0	0	7	7
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	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	839	38	0	947	0	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	446
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	2.9
Pot Cap-1 Maneuver	-	-	0	-	0	*850
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*846
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	846	-	-	-
HCM Lane V/C Ratio	0.023	-	-	-
HCM Control Delay (s)	9.4	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	805	27	61	903	17	43
Future Volume (vph)	805	27	61	903	17	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.94	*0.94	*0.55	*0.55	1.00	1.00
Ped Bike Factor						
Frt	0.995				0.904	
Flt Protected				0.997	0.988	
Satd. Flow (prot)	3066	0	0	1815	1589	0
Flt Permitted				0.997	0.988	
Satd. Flow (perm)	3066	0	0	1815	1589	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	127			515	89	
Travel Time (s)	3.8			10.0	2.4	
Confl. Peds. (#/hr)					7	7
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	830	28	63	931	18	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	858	0	0	994	62	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.08	1.07	1.18	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 68.8% ICU Level of Service C
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	805	27	61	903	17	43
Future Vol, veh/h	805	27	61	903	17	43
Conflicting Peds, #/hr	0	0	0	0	7	7
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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	830	28	63	931	18	44

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	858	0	1443	436
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	599	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1064	-	*219	*880
Stage 1	-	-	-	-	*912	-
Stage 2	-	-	-	-	*528	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*1064	-	*151	*875
Mov Cap-2 Maneuver	-	-	-	-	*151	-
Stage 1	-	-	-	-	*912	-
Stage 2	-	-	-	-	*460	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	434	-	-	* 1064	-
HCM Lane V/C Ratio	0.143	-	-	0.059	-
HCM Control Delay (s)	14.7	-	-	8.6	0.5
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.5	-	-	0.2	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	76	160	12	29	121
Future Volume (vph)	10	76	160	12	29	121
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	0%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.880		0.991			
Flt Protected	0.994					0.990
Satd. Flow (prot)	1544	0	1731	0	0	1779
Flt Permitted	0.994					0.990
Satd. Flow (perm)	1544	0	1731	0	0	1779
Link Speed (mph)	25		25			25
Link Distance (ft)	74		296			199
Travel Time (s)	2.0		8.1			5.4
Conf. Peds. (#/hr)	9	9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%
Adj. Flow (vph)	10	78	165	12	30	125
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	177	0	0	155
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.09	1.06	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 36.2%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	76	160	12	29	121
Future Vol, veh/h	10	76	160	12	29	121
Conflicting Peds, #/hr	9	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	1
Mvmt Flow	10	78	165	12	30	125

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	365	180	0	0	177	0
Stage 1	171	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	766	919	-	-	1045	-
Stage 1	995	-	-	-	-	-
Stage 2	1013	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	737	911	-	-	1045	-
Mov Cap-2 Maneuver	737	-	-	-	-	-
Stage 1	995	-	-	-	-	-
Stage 2	973	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 887	1045	-
HCM Lane V/C Ratio	-	- 0.1	0.029	-
HCM Control Delay (s)	-	- 9.5	8.5	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.3	0.1	-

2025 Projected (Build) Conditions
8: Lancaster Avenue & Wayne Avenue

Timing Plan: SAT Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	704	39	48	804	93	62	82	71	68	81	62
Future Volume (vph)	39	704	39	48	804	93	62	82	71	68	81	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		0%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3125	0	0	3149	1428	1564	1604	0	1820	1561	0
Flt Permitted		0.861			0.851		0.510			0.481		
Satd. Flow (perm)	0	2695	0	0	2683	1335	816	1604	0	797	1561	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			702			532			488	
Travel Time (s)		30.9			19.1			14.5			13.3	
Confl. Peds. (#/hr)	23		47	47		23	32		27	27		32
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	1%	0%	2%	1%	0%	0%	0%	0%	1%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	806	0	0	878	96	64	158	0	70	148	0
Turn Type	prot+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	64.0		34.0	34.0	34.0	30.0	30.0		30.0	30.0	
Total Split (%)	25.0%	53.3%		28.3%	28.3%	28.3%	25.0%	25.0%		25.0%	25.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	-2.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	4.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		92.0			92.0	93.0	18.0	18.0		18.0	18.0	
Actuated g/C Ratio		0.77			0.77	0.78	0.15	0.15		0.15	0.15	
v/c Ratio		0.39			0.43	0.09	0.53	0.66		0.58	0.63	
Control Delay		5.8			3.5	2.7	61.5	60.4		65.9	59.3	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		5.8			3.5	2.7	61.5	60.4		65.9	59.3	
LOS		A			A	A	E	E		E	E	
Approach Delay		5.8			3.4			60.7			61.4	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		93			54	10	46	117		51	109	

2025 Projected (Build) Conditions
8: Lancaster Avenue & Wayne Avenue

Timing Plan: SAT Peak

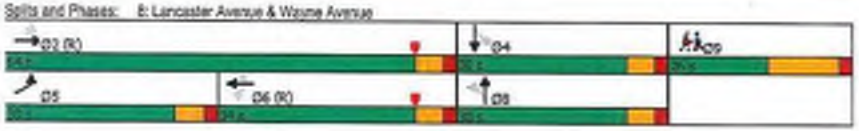
Lane Group	0S
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		153			68	18	89	179		98	170	
Internal Link Dist (ft)		1052			822			452			408	
Turn Bay Length (ft)						150						
Base Capacity (vph)		2065			2056	1034	188	334		166	325	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.39			0.43	0.09	0.38	0.47		0.42	0.46	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 15.7 Intersection LOS: B
Intersection Capacity Utilization 79.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	797	59	50	956	42	66
Future Volume (vph)	797	59	50	956	42	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3139	0	0	3137	1705	0
Flt Permitted				0.848	0.981	
Satd. Flow (perm)	3139	0	0	2665	1684	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		17	17		30	17
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	2%	1%	0%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	891	0	0	1048	113	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	96.7			96.7	14.3	
Actuated g/C Ratio	0.81			0.81	0.12	
v/c Ratio	0.35			0.49	0.56	
Control Delay	3.1			2.9	59.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	3.1			2.9	59.6	
LOS	A			A	E	
Approach Delay	3.1			2.9	59.6	
Approach LOS	A			A	E	
Queue Length 50th (ft)	63			57	84	
Queue Length 95th (ft)	93			70	139	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2528			2147	483	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.35			0.49	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 6.1 — Intersection LOS: A
Intersection Capacity Utilization 73.4% — ICU Level of Service D
Analysis Period (min) 15

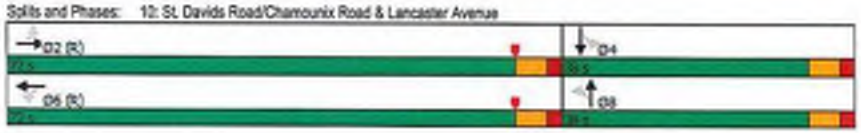
Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	882	17	37	1027	65	13	17	42	56	17	41
Future Volume (vph)	28	882	17	37	1027	65	13	17	42	56	17	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		457			496			642			482	
Travel Time (s)		8.9			9.7			17.5			11.0	
Confl. Peds. (#/hr)	5		2	2		5			4	4		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	8%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



2025 Projected (Build) Conditions
10: St. Davids Road/Chamounix Road & Lancaster Avenue
Timing Plan: SAT Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	882	17	37	1027	65	13	17	42	56	17	41
Future Volume (veh/h)	28	882	17	37	1027	65	13	17	42	56	17	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.99		0.99	0.99		0.99
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	1782	1765	1782	1845	1828	1845	1891	1864	1891	1881	1863	1881
Adj Flow Rate, veh/h	29	900	18	38	1048	63	13	17	43	57	17	37
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	86	2501	44	94	2484	148	58	47	95	122	29	51
Arrive On Green	0.82	0.81	0.80	0.82	0.81	0.80	0.10	0.10	0.09	0.10	0.10	0.09
Sat Flow, veh/h	63	3074	54	73	3053	182	199	492	990	755	307	531
Grp Volume(v), veh/h	473	0	472	583	0	566	73	0	0	111	0	0
Grp Sat Flow(s),veh/h/ln	1595	0	1597	1677	0	1831	1681	0	0	1594	0	0
Q Serve(g_s), s	0.0	0.0	8.6	0.0	0.0	10.9	0.0	0.0	0.0	2.5	0.0	0.0
Cycle Q Clear(g_c), s	7.5	0.0	8.6	9.5	0.0	10.9	4.5	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.06		0.03	0.07		0.11	0.18		0.39	0.51		0.33
Lane Grp Cap(c), veh/h	1347	0	1299	1414	0	1327	215	0	0	216	0	0
V/C Ratio(X)	0.35	0.00	0.36	0.41	0.00	0.43	0.34	0.00	0.00	0.51	0.00	0.00
Avail Cap(c_a), veh/h	1347	0	1299	1414	0	1327	536	0	0	516	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.6	0.0	2.7	2.8	0.0	2.9	47.2	0.0	0.0	47.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.8	0.9	0.0	1.0	1.3	0.0	0.0	2.7	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(95%),veh/ln	6.6	0.0	7.1	8.5	0.0	9.0	3.9	0.0	0.0	6.1	0.0	0.0
LnGrp Delay(d),s/veh	3.3	0.0	3.5	3.7	0.0	4.0	48.6	0.0	0.0	50.6	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		945			1149			73			111	
Approach Delay, s/veh		3.4			3.8			48.6			50.6	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		94.5		15.5		94.5		15.5
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		10.6		9.0		12.9		6.5
Green Ext Time (p_c), s		4.2		0.5		5.6		0.3

Intersection Summary

HCM 2010 Ctrl Delay 7.4
HCM 2010 LOS A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	14	3	4	28	16	3	109	11	5	101	18
Future Volume (vph)	7	14	3	4	28	16	3	109	11	5	101	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983			0.965			0.988			0.980	
Flt Protected		0.986			0.996			0.999			0.998	
Satd. Flow (prot)	0	1745	0	0	1679	0	0	1759	0	0	1719	0
Flt Permitted		0.986			0.996			0.999			0.998	
Satd. Flow (perm)	0	1745	0	0	1679	0	0	1759	0	0	1719	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			898			201			296	
Travel Time (s)		29.9			24.5			5.5			8.1	
Confl. Peds. (#/hr)	6		6	6		6	2		4	4		2
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	1%	11%
Adj. Flow (vph)	9	18	4	5	35	20	4	138	14	6	128	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	60	0	0	156	0	0	157	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	14	3	4	28	16	3	109	11	5	101	18
Future Vol, veh/h	7	14	3	4	28	16	3	109	11	5	101	18
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	0	0	0	0	6	0	0	0	0	1	11
Mvmt Flow	9	18	4	5	35	20	4	138	14	6	128	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	7.8	8.2	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	29%	8%	4%
Vol Thru, %	89%	58%	58%	81%
Vol Right, %	9%	12%	33%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	24	48	124
LT Vol	3	7	4	5
Through Vol	109	14	28	101
RT Vol	11	3	16	18
Lane Flow Rate	156	30	61	157
Geometry Grp	1	1	1	1
Degree of Util (X)	0.179	0.039	0.075	0.183
Departure Headway (Hd)	4.234	4.636	4.434	4.231
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	853	775	811	853
Service Time	2.234	2.647	2.442	2.231
HCM Lane V/C Ratio	0.183	0.039	0.075	0.183
HCM Control Delay	8.2	7.8	7.8	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0.2	0.7

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	51	75	8	18	38
Future Volume (vph)	9	51	75	8	18	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.886		0.987			
Flt Protected	0.992					0.984
Satd. Flow (prot)	1556	0	1777	0	0	1738
Flt Permitted	0.992					0.984
Satd. Flow (perm)	1556	0	1777	0	0	1738
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		590			450
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)	1	13		5	5	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles (%)	11%	0%	0%	0%	6%	0%
Adj. Flow (vph)	13	71	104	11	25	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	84	0	115	0	0	78
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 24.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	51	75	8	18	38
Future Vol, veh/h	9	51	75	8	18	38
Conflicting Peds, #/hr	1	13	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	11	0	0	0	6	0
Mvmt Flow	13	71	104	11	25	53

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	219	128	0	0	120	0
Stage 1	115	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.51	6.2	-	-	4.16	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.599	3.3	-	-	2.254	-
Pot Cap-1 Maneuver	750	927	-	-	1443	-
Stage 1	888	-	-	-	-	-
Stage 2	898	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	732	911	-	-	1436	-
Mov Cap-2 Maneuver	732	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	881	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	2.4
HCM LOS	A		

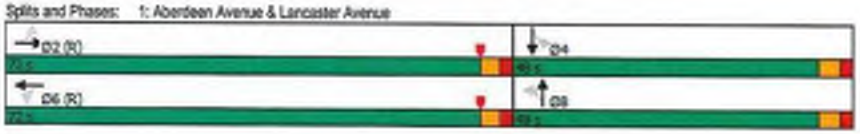
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 879	1436	-
HCM Lane V/C Ratio	-	- 0.095	0.017	-
HCM Control Delay (s)	-	- 9.5	7.6	0
HCM Lane LOS	-	- A	A	A
HCM 95th %ile Q(veh)	-	- 0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	561	33	26	563	33	82	51	31	66	49	39
Future Volume (vph)	29	561	33	26	563	33	82	51	31	66	49	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			179			199			454	
Travel Time (s)		31.1			3.5			5.4			12.7	
Confl. Peds. (#/hr)	1					1	22		6	6		22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	15%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0		23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	561	33	26	563	33	82	51	31	66	49	39
Future Volume (veh/h)	29	561	33	26	563	33	82	51	31	66	49	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	0.97		0.96	0.98		0.96
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	1800	1784	1800	1809	1782	1809	1782	1782	1782	1836	1909	1836
Adj Flow Rate, veh/h	30	572	33	27	574	32	84	52	31	67	50	36
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	124	2284	131	112	2309	128	138	75	38	128	91	54
Arrive On Green	1.00	1.00	1.00	0.77	0.78	0.77	0.15	0.16	0.15	0.15	0.16	0.15
Sat Flow, veh/h	117	2940	169	103	2973	165	595	481	245	539	579	344
Grp Volume(v), veh/h	323	0	312	323	0	310	167	0	0	153	0	0
Grp Sat Flow(s),veh/h/ln	1532	0	1594	1648	0	1592	1321	0	0	1462	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	6.5	3.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	8.0	0.0	6.5	15.0	0.0	0.0	11.9	0.0	0.0
Prop In Lane	0.09		0.11	0.08		0.10	0.50		0.19	0.44		0.24
Lane Grp Cap(c), veh/h	1287	0	1238	1299	0	1236	241	0	0	260	0	0
V/C Ratio(X)	0.25	0.00	0.25	0.25	0.00	0.25	0.69	0.00	0.00	0.59	0.00	0.00
Avail Cap(c_a), veh/h	1287	0	1238	1299	0	1236	534	0	0	580	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.7	0.0	3.7	49.2	0.0	0.0	47.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.5	0.5	0.0	0.5	3.5	0.0	0.0	2.1	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(95%),veh/ln	0.3	0.0	0.3	5.7	0.0	5.4	9.6	0.0	0.0	8.7	0.0	0.0
LnGrp Delay(d),s/veh	0.5	0.0	0.5	4.1	0.0	4.2	52.8	0.0	0.0	49.9	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		635			633			167			153	
Approach Delay, s/veh		0.5			4.2			52.6			49.9	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.2		22.8		97.2		22.8
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		13.9		8.5		17.0
Green Ext Time (p_c), s		2.7		0.6		2.5		0.6

Intersection Summary

HCM 2010 Ctrl Delay 12.2
HCM 2010 LOS B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	617	40	0	623	0	19
Future Volume (vph)	617	40	0	623	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.90	*0.90	*0.92	*0.92	1.00	1.00
Frt	0.991					0.865
Flt Protected						
Satd. Flow (prot)	2954	0	0	3076	0	1573
Flt Permitted						
Satd. Flow (perm)	2954	0	0	3076	0	1573
Link Speed (mph)	35			35	25	
Link Distance (ft)	179			197	94	
Travel Time (s)	3.5			3.8	2.6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	630	41	0	636	0	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	671	0	0	636	0	19
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.06	1.07	1.16	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 29.3% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	617	40	0	623	0	19
Future Vol, veh/h	617	40	0	623	0	19
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	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	630	41	0	636	0	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	336
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	2.9
Pot Cap-1 Maneuver	-	-	0	-	0	*968
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*968
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	968	-	-	-
HCM Lane V/C Ratio	0.02	-	-	-
HCM Control Delay (s)	8.8	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes

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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	607	27	60	606	17	47
Future Volume (vph)	607	27	60	606	17	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	12	12
Grade (%)	1%			-1%	-2%	
Lane Util. Factor	*0.90	*0.90	*0.57	*0.57	1.00	1.00
Frt	0.994				0.900	
Flt Protected				0.998	0.987	
Satd. Flow (prot)	2982	0	0	1900	1615	0
Flt Permitted				0.996	0.987	
Satd. Flow (perm)	2982	0	0	1900	1615	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	197			1647	89	
Travel Time (s)	3.8			32.1	2.4	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	619	28	61	618	17	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	647	0	0	679	65	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.18	1.06	1.07	1.18	1.06	1.06
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 52.2% ICU Level of Service A
Analysis Period (min) 15
* User Entered Value

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	607	27	60	606	17	47
Future Vol, veh/h	607	27	60	606	17	47
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	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	619	28	61	618	17	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	647	0	1364	324
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	431	-
Critical Hdwy	-	-	3.9	-	7.7	7.2
Critical Hdwy Stg 1	-	-	-	-	6.7	-
Critical Hdwy Stg 2	-	-	-	-	6.7	-
Follow-up Hdwy	-	-	2.4	-	2.8	2.9
Pot Cap-1 Maneuver	-	-	*1171	-	*154	*968
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*1010	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	*1171	-	*179	*968
Mov Cap-2 Maneuver	-	-	-	-	*179	-
Stage 1	-	-	-	-	*1003	-
Stage 2	-	-	-	-	*931	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	446	-	-	*1171	-
HCM Lane V/C Ratio	0.146	-	-	0.052	-
HCM Control Delay (s)	14.5	-	-	8.2	0.3
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.5	-	-	0.2	-

Notes

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	75	89	11	28	81
Future Volume (vph)	8	75	89	11	28	81
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	-2%		2%			-2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.878		0.985			
Flt Protected	0.995					0.987
Satd. Flow (prot)	1568	0	1755	0	0	1768
Flt Permitted	0.995					0.987
Satd. Flow (perm)	1568	0	1755	0	0	1768
Link Speed (mph)	25		25			25
Link Distance (ft)	74		296			189
Travel Time (s)	2.0		8.1			5.4
Conf. Peds. (#/hr)				6	6	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%
Adj. Flow (vph)	8	77	91	11	29	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	0	102	0	0	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.09	1.09	1.06	1.06
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 24.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	75	89	11	28	81
Future Vol, veh/h	8	75	89	11	28	81
Conflicting Peds, #/hr	0	0	0	6	6	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, %	-2	-	2	-	-	-2
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	2
Mvmt Flow	8	77	91	11	29	83

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	244	103	0	0	106	0
Stage 1	103	-	-	-	-	-
Stage 2	141	-	-	-	-	-
Critical Hdwy	6	6	-	-	4.3	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	918	1022	-	-	1103	-
Stage 1	1085	-	-	-	-	-
Stage 2	1059	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	886	1016	-	-	1097	-
Mov Cap-2 Maneuver	886	-	-	-	-	-
Stage 1	1078	-	-	-	-	-
Stage 2	1039	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	2.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1002	1097	-
HCM Lane V/C Ratio	-	-	0.085	0.026	-
HCM Control Delay (s)	-	-	8.9	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.3	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	508	28	43	511	100	31	54	61	75	68	55
Future Volume (vph)	58	508	28	43	511	100	31	54	61	75	68	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	10	10	10
Grade (%)		6%			0%			4%			-5%	
Storage Length (ft)	0		0	0		160	0		0	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3122	0	0	3150	1428	1564	1604	0	1620	1584	0
Flt Permitted		0.830			0.857		0.546			0.575		
Satd. Flow (perm)	0	2604	0	0	2708	1376	894	1604	0	970	1584	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1132			762			532			488	
Travel Time (s)		30.9			19.1			14.5			13.3	
Confl. Peds. (#/hr)	7		11	11		7	16		10	10		16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	625	0	0	583	105	33	121	0	79	130	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	10.0		10.0	10.0	10.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	16.0		16.0	16.0	16.0	9.0	9.0		9.0	9.0	
Total Split (s)	30.0	61.0		31.0	31.0	31.0	33.0	33.0		33.0	33.0	
Total Split (%)	25.0%	50.8%		25.8%	25.8%	25.8%	27.5%	27.5%		27.5%	27.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0	0.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.0			5.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Eff Green (s)		93.8			93.8	92.8	16.2	16.2		16.2	16.2	
Actuated g/C Ratio		0.78			0.78	0.77	0.14	0.14		0.14	0.14	
v/c Ratio		0.31			0.28	0.10	0.28	0.56		0.61	0.61	
Control Delay		4.6			3.0	3.0	50.8	57.8		67.4	60.5	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		4.6			3.0	3.0	50.8	57.8		67.4	60.5	
LOS		A			A	A	D	E		E	E	
Approach Delay		4.6			3.0			56.3			63.1	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)		61			39	11	23	89		59	96	
Queue Length 95th (ft)		133			49	22	54	144		107	155	

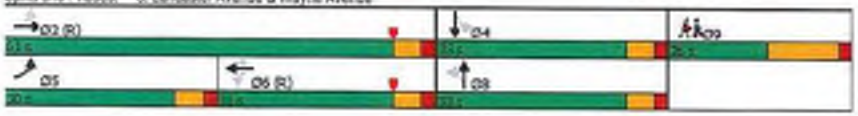
Lane Group	89
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	9.0
Minimum Split (s)	21.0
Total Split (s)	26.0
Total Split (%)	22%
Yellow Time (s)	10.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Eff Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1052			622			452			408	
Turn Bay Length (ft)						160						
Base Capacity (vph)		2036			2117	1064	206	374		226	369	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.31			0.28	0.10	0.16	0.32		0.35	0.35	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 16.0 Intersection LOS: B
Intersection Capacity Utilization 82.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 8: Lancaster Avenue & Wayne Avenue



Lane Group	Ø9
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	601	65	23	643	27	18
Future Volume (vph)	601	65	23	643	27	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	15	15
Grade (%)	-1%			1%	4%	
Satd. Flow (prot)	3125	0	0	3139	1729	0
Flt Permitted				0.910	0.971	
Satd. Flow (perm)	3125	0	0	2863	1710	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	25			25	25	
Link Distance (ft)	702			1142	450	
Travel Time (s)	19.1			31.1	12.3	
Confl. Peds. (#/hr)		3	3		18	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	1%	0%	6%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	740	0	0	740	50	0
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	10.0		3.0	10.0	3.0	
Minimum Split (s)	15.0		8.0	15.0	9.0	
Total Split (s)	69.0		12.0	81.0	39.0	
Total Split (%)	57.5%		10.0%	67.5%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	3.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None	C-Max	Min	
Act Effct Green (s)	101.1			101.1	9.9	
Actuated g/C Ratio	0.84			0.84	0.08	
v/c Ratio	0.28			0.31	0.35	
Control Delay	1.9			2.4	56.0	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.9			2.4	56.0	
LOS	A			A	E	
Approach Delay	1.9			2.4	56.0	
Approach LOS	A			A	E	
Queue Length 50th (ft)	29			40	37	
Queue Length 95th (ft)	47			54	77	
Internal Link Dist (ft)	622			1062	370	
Turn Bay Length (ft)						
Base Capacity (vph)	2633			2412	489	

2025 Projected (Build) Conditions
9: Louella Avenue & Lancaster Avenue
Timing Plan: SUN Peak

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stanvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.28			0.31	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 4.0 — Intersection LOS: A
Intersection Capacity Utilization 47.3% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 9: Louella Avenue & Lancaster Avenue

Lanes, Volumes, Timings
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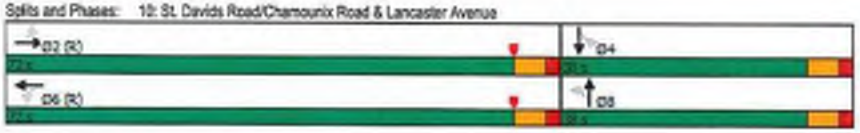
Synchro 10 Report

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	638	6	31	677	35	11	6	43	38	13	25
Future Volume (vph)	22	638	6	31	677	35	11	6	43	38	13	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	13	13	13	15	15	15
Grade (%)		2%			-5%			-2%			-1%	
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1647			744			642			402	
Travel Time (s)		32.1			14.5			17.5			11.0	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		10.0	10.0		10.0	10.0	
Total Split (s)	72.0	72.0		72.0	72.0		38.0	38.0		38.0	38.0	
Total Split (%)	65.5%	65.5%		65.5%	65.5%		34.5%	34.5%		34.5%	34.5%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 15 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 10: St. Davids Road/Chamounix Road & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	638	6	31	677	35	11	6	43	38	13	25
Future Volume (veh/h)	22	638	6	31	677	35	11	6	43	38	13	25
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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	1782	1765	1782	1845	1828	1845	1891	1864	1891	1881	1881	1881
Adj Flow Rate, veh/h	23	679	5	33	720	35	12	6	46	40	14	21
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	94	2647	19	121	2570	124	54	19	85	106	28	33
Arrive On Green	0.83	0.84	0.83	0.83	0.84	0.83	0.06	0.07	0.06	0.06	0.07	0.06
Sat Flow, veh/h	71	3157	23	102	3065	148	211	262	1209	822	393	473
Grp Volume(v), veh/h	360	0	347	400	0	388	64	0	0	75	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	1602	1676	0	1638	1682	0	0	1688	0	0
Q Serve(g_s), s	0.0	0.0	4.9	0.0	0.0	5.6	0.0	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	4.6	0.0	4.9	5.0	0.0	5.6	4.0	0.0	0.0	4.5	0.0	0.0
Prop In Lane	0.06		0.01	0.08		0.09	0.19		0.72	0.53		0.28
Lane Grp Cap(c), veh/h	1402	0	1343	1427	0	1373	142	0	0	154	0	0
V/C Ratio(X)	0.26	0.00	0.26	0.28	0.00	0.28	0.45	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	1402	0	1343	1427	0	1373	499	0	0	497	0	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)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.8	0.0	1.8	1.8	0.0	1.9	49.8	0.0	0.0	50.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.5	0.0	0.5	3.1	0.0	0.0	3.4	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(95%),veh/ln	4.5	0.0	4.1	5.0	0.0	4.8	3.7	0.0	0.0	4.3	0.0	0.0
LnGrp Delay(d),s/veh	2.3	0.0	2.3	2.3	0.0	2.4	53.0	0.0	0.0	53.3	0.0	0.0
LnGrp LOS	A		A	A		A	D			D		
Approach Vol, veh/h		707			788			64			75	
Approach Delay, s/veh		2.3			2.4			53.0			53.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		97.2		12.8		97.2		12.8
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		66.0		32.0		66.0		32.0
Max Q Clear Time (g_c+I1), s		6.9		6.5		7.6		6.0
Green Ext Time (p_c), s		2.8		0.3		3.3		0.3

Intersection Summary

HCM 2010 Ctrl Delay 6.7
HCM 2010 LOS A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	2	2	3	11	8	5	74	2	5	45	12
Future Volume (vph)	24	2	2	3	11	8	5	74	2	5	45	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		0%			0%			2%			0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.990			0.950			0.998			0.975	
Flt Protected		0.959			0.993			0.997			0.996	
Satd. Flow (prot)	0	1709	0	0	1698	0	0	1754	0	0	1722	0
Flt Permitted		0.959			0.993			0.997			0.996	
Satd. Flow (perm)	0	1709	0	0	1698	0	0	1754	0	0	1722	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1096			698			201			298	
Travel Time (s)		29.9			24.5			5.5			8.1	
Confl. Peds. (#/hr)	1		2	2		1	6		3	3		6
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	8%
Adj. Flow (vph)	33	3	3	4	15	11	7	101	3	7	62	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	30	0	0	111	0	0	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.09	1.09	1.09	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 20.7% ICU Level of Service A
Analysis Period (min) 15

Intersection

Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	2	2	3	11	8	5	74	2	5	45	12
Future Vol, veh/h	24	2	2	3	11	8	5	74	2	5	45	12
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	8
Mvmt Flow	33	3	3	4	15	11	7	101	3	7	62	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.3	7.7	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	86%	14%	8%
Vol Thru, %	91%	7%	50%	73%
Vol Right, %	2%	7%	36%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	28	22	62
LT Vol	5	24	3	5
Through Vol	74	2	11	45
RT Vol	2	2	8	12
Lane Flow Rate	111	38	30	85
Geometry Grp	1	1	1	1
Degree of Util (X)	0.126	0.047	0.034	0.094
Departure Headway (Hd)	4.081	4.39	4.075	4.004
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	872	804	863	887
Service Time	2.137	2.484	2.175	2.067
HCM Lane V/C Ratio	0.127	0.047	0.035	0.096
HCM Control Delay	7.7	7.7	7.3	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.1	0.3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	37	22	3	10	30
Future Volume (vph)	4	37	22	3	10	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.877		0.984			
Flt Protected	0.996					0.987
Satd. Flow (prot)	1572	0	1771	0	0	1777
Flt Permitted	0.996					0.987
Satd. Flow (perm)	1572	0	1771	0	0	1777
Link Speed (mph)	25		25			25
Link Distance (ft)	1096		590			450
Travel Time (s)	29.9		16.1			12.3
Confl. Peds. (#/hr)		5		4	4	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	51	30	4	14	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	34	0	0	55
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 20.5% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	37	22	3	10	30
Future Vol, veh/h	4	37	22	3	10	30
Conflicting Peds, #/hr	0	5	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	51	30	4	14	41

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	105	41	0	0	38	0
Stage 1	36	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.3	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	1040	1101	-	-	1165	-
Stage 1	1154	-	-	-	-	-
Stage 2	1113	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1023	1092	-	-	1161	-
Mov Cap-2 Maneuver	1023	-	-	-	-	-
Stage 1	1149	-	-	-	-	-
Stage 2	1100	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1085	1161	-
HCM Lane V/C Ratio	-	-	0.052	0.012	-
HCM Control Delay (s)	-	-	8.5	8.1	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %ile Q(veh)	-	-	0.2	0	-

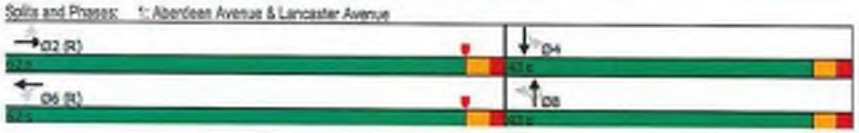
2025 PROJECTED CONDITIONS WITH PENNDOT-REQUESTED IMPROVEMENTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	806	44	30	926	44	149	114	44	144	86	70
Future Volume (vph)	36	806	44	30	926	44	149	114	44	144	86	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Storage Length (ft)	0		0	0		0	0		75	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1152			179			199			464	
Travel Time (s)		31.4			3.5			5.4			12.7	
Confl. Peds. (#/hr)	21		21	4		4	4		4	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	3%	18%	4%	0%	8%	5%	9%	1%	2%	3%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	62.0	62.0		62.0	62.0		43.0	43.0	43.0	43.0	43.0	
Total Split (%)	59.0%	59.0%		59.0%	59.0%		41.0%	41.0%	41.0%	41.0%	41.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0	0.0		-1.0	
Total Lost Time (s)		4.0			4.0			4.0	5.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 6 (6%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	806	44	30	926	44	149	114	44	144	86	70
Future Volume (veh/h)	36	806	44	30	926	44	149	114	44	144	86	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	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	1800	1732	1800	1809	1735	1809	1782	1670	1635	1836	1877	1836
Adj Flow Rate, veh/h	39	876	48	33	1007	48	162	124	48	157	93	76
Adj No. of Lanes	0	2	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	5	5	9	2	2	2
Cap, veh/h	74	1522	85	64	1585	78	269	174	501	142	82	53
Arrive On Green	0.36	0.37	0.36	0.54	0.55	0.54	0.36	0.37	0.36	0.36	0.37	0.36
Sat Flow, veh/h	67	2755	155	50	2867	143	579	469	1385	245	220	142
Grp Volume(v), veh/h	484	0	479	557	0	531	286	0	48	326	0	0
Grp Sat Flow(s),veh/h/ln	1432	0	1545	1524	0	1554	1046	0	1385	608	0	0
Q Serve(g_s), s	5.3	0.0	25.9	2.4	0.0	24.4	0.0	0.0	2.4	13.1	0.0	0.0
Cycle Q Clear(g_c), s	29.7	0.0	25.9	26.4	0.0	24.4	24.9	0.0	2.4	38.0	0.0	0.0
Prop In Lane	0.08		0.10	0.06		0.09	0.57		1.00	0.48		0.23
Lane Grp Cap(c), veh/h	814	0	854	864	0	868	433	0	501	271	0	0
V/C Ratio(X)	0.59	0.00	0.56	0.64	0.00	0.62	0.66	0.00	0.10	1.20	0.00	0.00
Avail Cap(c_a), veh/h	814	0	854	864	0	868	433	0	501	271	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.00	0.93	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.7	0.0	23.0	15.7	0.0	16.0	28.7	0.0	22.1	42.8	0.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	2.5	3.7	0.0	3.3	3.7	0.0	0.1	121.1	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(95%),veh/ln	18.1	0.0	17.0	18.6	0.0	16.8	12.3	0.0	1.7	30.6	0.0	0.0
LnGrp Delay(d),s/veh	25.6	0.0	25.5	19.4	0.0	19.4	32.4	0.0	22.2	163.8	0.0	0.0
LnGrp LOS	C		C	B		B	C		C	F		
Approach Vol, veh/h		963			1088			334			326	
Approach Delay, s/veh		25.5			19.4			30.9			163.8	
Approach LOS		C			B			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.0		43.0		62.0		43.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		57.0		38.0		57.0		38.0
Max Q Clear Time (g_c+I1), s		31.7		40.0		30.4		26.9
Green Ext Time (p_c), s		4.6		0.0		4.9		1.0

Intersection Summary

HCM 2010 Ctrl Delay 40.4
HCM 2010 LOS D

2025 Projected (Build) Conditions - w/ Improvements
1: Aberdeen Avenue & Lancaster Avenue

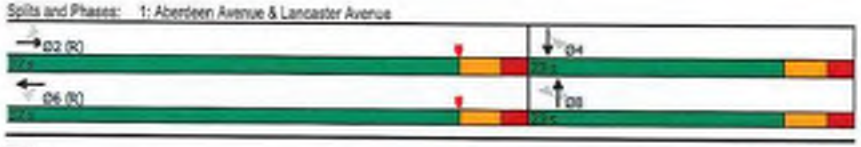
Timing Plan: PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	841	37	26	937	61	102	68	35	122	114	69
Future Volume (vph)	34	841	37	26	937	61	102	68	35	122	114	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Storage Length (ft)	0		0	0		0	0		75	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1121			179			199			464	
Travel Time (s)		30.6			3.5			5.4			12.7	
Conf. Peds. (#/hr)	8		8	6		6	3		3	3		3
Conf. Bikes (#/hr)												1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	1%	3%	0%	1%	3%	0%	0%	0%	3%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0	23.0	23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%	38.3%	38.3%	38.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0	0.0		-1.0	
Total Lost Time (s)		4.0			4.0			4.0	5.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 38 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



2025 Projected (Build) Conditions - w/ Improvements
1: Aberdeen Avenue & Lancaster Avenue

Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	841	37	26	937	61	102	68	35	122	114	69
Future Volume (veh/h)	34	841	37	26	937	61	102	68	35	122	114	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
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	1800	1779	1800	1809	1789	1809	1782	1782	1782	1836	1887	1836
Adj Flow Rate, veh/h	35	867	38	27	966	63	105	70	36	126	118	71
Adj No. of Lanes	0	2	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	97	1680	72	84	1695	109	288	167	450	204	172	85
Arrive On Green	0.55	0.55	0.54	0.55	0.55	0.54	0.31	0.31	0.30	0.31	0.31	0.30
Sat Flow, veh/h	58	3044	131	36	3070	198	609	532	1510	382	546	270
Grp Volume(v), veh/h	478	0	462	548	0	508	175	0	36	315	0	0
Grp Sat Flow(s),veh/h/ln	1638	0	1595	1713	0	1592	1140	0	1510	1198	0	0
Q Serve(g_s), s	0.0	0.0	11.0	0.0	0.0	12.6	0.0	0.0	1.0	8.7	0.0	0.0
Cycle Q Clear(g_c), s	9.9	0.0	11.0	11.9	0.0	12.6	7.2	0.0	1.0	15.9	0.0	0.0
Prop In Lane	0.07		0.08	0.05		0.12	0.60		1.00	0.40		0.23
Lane Grp Cap(c), veh/h	969	0	880	1008	0	879	455	0	450	461	0	0
V/C Ratio(X)	0.49	0.00	0.53	0.54	0.00	0.58	0.38	0.00	0.08	0.68	0.00	0.00
Avail Cap(c_a), veh/h	969	0	880	1008	0	879	457	0	453	464	0	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)	0.90	0.00	0.90	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.2	0.0	8.5	8.7	0.0	8.9	16.3	0.0	15.1	20.6	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	2.0	2.1	0.0	2.8	0.5	0.0	0.1	4.1	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(95%),veh/ln	8.8	0.0	8.8	10.5	0.0	10.3	4.3	0.0	0.8	9.2	0.0	0.0
LnGrp Delay(d),s/veh	9.8	0.0	10.5	10.8	0.0	11.7	16.8	0.0	15.2	24.6	0.0	0.0
LnGrp LOS	A		B	B		B	B		B	C		
Approach Vol, veh/h		940			1056			211			315	
Approach Delay, s/veh		10.2			11.2			16.5			24.6	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.1		22.9		37.1		22.9
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		32.0		18.0		32.0		18.0
Max Q Clear Time (g_c+I1), s		13.0		17.9		14.6		9.2
Green Ext Time (p_c), s		4.1		0.0		4.2		0.5

Intersection Summary

HCM 2010 Ctrl Delay 12.9
HCM 2010 LOS B

2025 Projected (Build) Conditions - w/ Improvements
1: Aberdeen Avenue & Lancaster Avenue

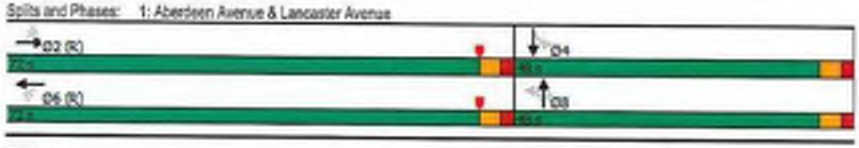
Timing Plan: SAT Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	693	50	27	841	51	95	98	44	116	73	66
Future Volume (vph)	40	693	50	27	841	51	95	98	44	116	73	66
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Storage Length (ft)	0		0	0		0	0		75	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			179			199			464	
Travel Time (s)		31.1			3.5			5.4			12.7	
Confl. Peds. (#/hr)	15		7	7		15	12		9	9		12
Confl. Bikes (#/hr)			1			3			1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	2%	2%	7%	2%	2%	0%	1%	0%	1%	0%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0	48.0	48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%	40.0%	40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0	0.0		-1.0	
Total Lost Time (s)		4.0			4.0			4.0	5.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



2025 Projected (Build) Conditions - w/ Improvements
1: Aberdeen Avenue & Lancaster Avenue

Timing Plan: SAT Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	693	50	27	841	51	95	98	44	116	73	66
Future Volume (veh/h)	40	693	50	27	841	51	95	98	44	116	73	66
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.96	1.00		0.99
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	1800	1786	1800	1809	1771	1809	1782	1773	1762	1836	1891	1836
Adj Flow Rate, veh/h	41	714	52	28	867	53	98	101	45	120	75	68
Adj No. of Lanes	0	2	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	0	0	0	0
Cap, veh/h	102	1701	124	66	1864	113	213	204	452	164	102	77
Arrive On Green	1.00	1.00	1.00	0.62	0.62	0.61	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	111	2749	200	56	3011	182	538	649	1478	382	323	246
Grp Volume(v), veh/h	400	0	407	490	0	458	199	0	45	263	0	0
Grp Sat Flow(s),veh/h/ln	1498	0	1564	1577	0	1572	1185	0	1478	952	0	0
Q Serve(g_s), s	1.3	0.0	0.0	0.0	0.0	16.8	0.0	0.0	2.6	17.8	0.0	0.0
Cycle Q Clear(g_c), s	20.2	0.0	0.0	17.5	0.0	16.8	16.3	0.0	2.6	34.1	0.0	0.0
Prop In Lane	0.10		0.13	0.06		0.12	0.49		1.00	0.46		0.26
Lane Grp Cap(c), veh/h	959	0	968	1070	0	973	417	0	452	343	0	0
V/C Ratio(X)	0.42	0.00	0.42	0.46	0.00	0.47	0.48	0.00	0.10	0.77	0.00	0.00
Avail Cap(c_a), veh/h	959	0	968	1070	0	973	492	0	530	420	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.00	0.94	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	12.0	0.0	12.3	33.4	0.0	29.8	44.7	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	1.3	1.4	0.0	1.6	0.8	0.0	0.1	6.7	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(95%),veh/ln	1.3	0.0	0.6	13.7	0.0	13.4	9.4	0.0	1.9	14.1	0.0	0.0
LnGrp Delay(d),s/veh	1.3	0.0	1.3	13.4	0.0	14.0	34.2	0.0	29.9	51.4	0.0	0.0
LnGrp LOS	A		A	B		B	C		C	D		
Approach Vol, veh/h		807			948			244			263	
Approach Delay, s/veh		1.3			13.7			33.4			51.4	
Approach LOS		A			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		78.3		41.7		78.3		41.7
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		22.2		36.1		20.8		18.3
Green Ext Time (p_c), s		3.8		0.6		4.2		0.9

Intersection Summary

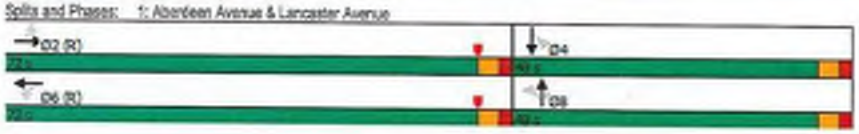
HCM 2010 Ctrl Delay 15.8
HCM 2010 LOS B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	561	33	26	563	33	82	51	31	66	49	39
Future Volume (vph)	29	561	33	26	563	33	82	51	31	66	49	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	10	12	12	10	12	12	12	12	12	14	12
Grade (%)		0%			-1%			2%			-4%	
Storage Length (ft)	0		0	0		0	0		75	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			35			25			25	
Link Distance (ft)		1142			179			199			484	
Travel Time (s)		31.1			3.5			5.4			12.7	
Confl. Peds. (#/hr)	1					1	22		6	6		22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	15%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		23.0	23.0	23.0	23.0	23.0	
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0	48.0	48.0	48.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%	40.0%	40.0%	40.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0	0.0		-1.0	
Total Lost Time (s)		4.0			4.0			4.0	5.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated

Splits and Phases: 1: Aberdeen Avenue & Lancaster Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	561	33	26	563	33	82	51	31	66	49	39
Future Volume (veh/h)	29	561	33	26	563	33	82	51	31	66	49	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), 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		0.97	0.99		0.97
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	1800	1784	1800	1809	1782	1809	1782	1782	1782	1838	1909	1838
Adj Flow Rate, veh/h	30	572	33	27	574	33	84	52	31	67	50	36
Adj No. of Lanes	0	2	0	0	2	0	0	1	1	0	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	115	2119	121	105	2142	118	182	102	302	108	79	44
Arrive On Green	1.00	1.00	1.00	0.71	0.72	0.71	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	114	2946	169	103	2978	165	624	476	1466	304	371	206
Grp Volume(v), veh/h	323	0	312	324	0	309	136	0	31	153	0	0
Grp Sat Flow(s),veh/h/ln	1635	0	1593	1651	0	1592	1099	0	1466	883	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	8.1	6.0	0.0	2.1	8.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	7.5	0.0	8.1	13.5	0.0	2.1	22.2	0.0	0.0
Prop In Lane	0.09		0.11	0.08		0.10	0.62		1.00	0.44		0.24
Lane Grp Cap(c), veh/h	1196	0	1146	1207	0	1145	275	0	302	225	0	0
V/C Ratio(X)	0.27	0.00	0.27	0.27	0.00	0.27	0.50	0.00	0.10	0.68	0.00	0.00
Avail Cap(c_a), veh/h	1196	0	1146	1207	0	1145	490	0	525	459	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	5.8	0.0	5.9	42.3	0.0	38.7	48.5	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.6	0.5	0.0	0.6	1.4	0.0	0.1	3.6	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(95%),veh/ln	0.3	0.0	0.3	7.2	0.0	8.7	7.6	0.0	1.5	9.0	0.0	0.0
LnGrp Delay(d),s/veh	0.5	0.0	0.6	6.3	0.0	6.5	43.7	0.0	38.8	52.1	0.0	0.0
LnGrp LOS	A		A	A		A	D		D	D		
Approach Vol, veh/h		635			633			167			153	
Approach Delay, s/veh		0.6			6.4			42.8			52.1	
Approach LOS		A			A			D			D	

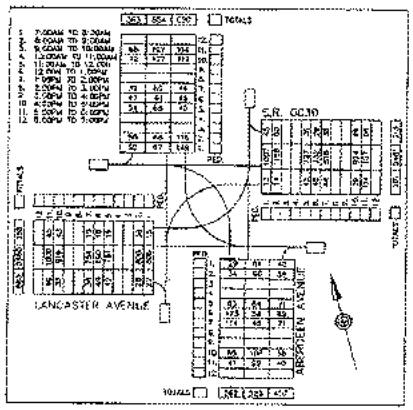
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		90.3		29.7		90.3		29.7
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		67.0		43.0		67.0		43.0
Max Q Clear Time (g_c+I1), s		2.5		24.2		10.1		15.5
Green Ext Time (p_c), s		2.7		0.5		2.5		0.6

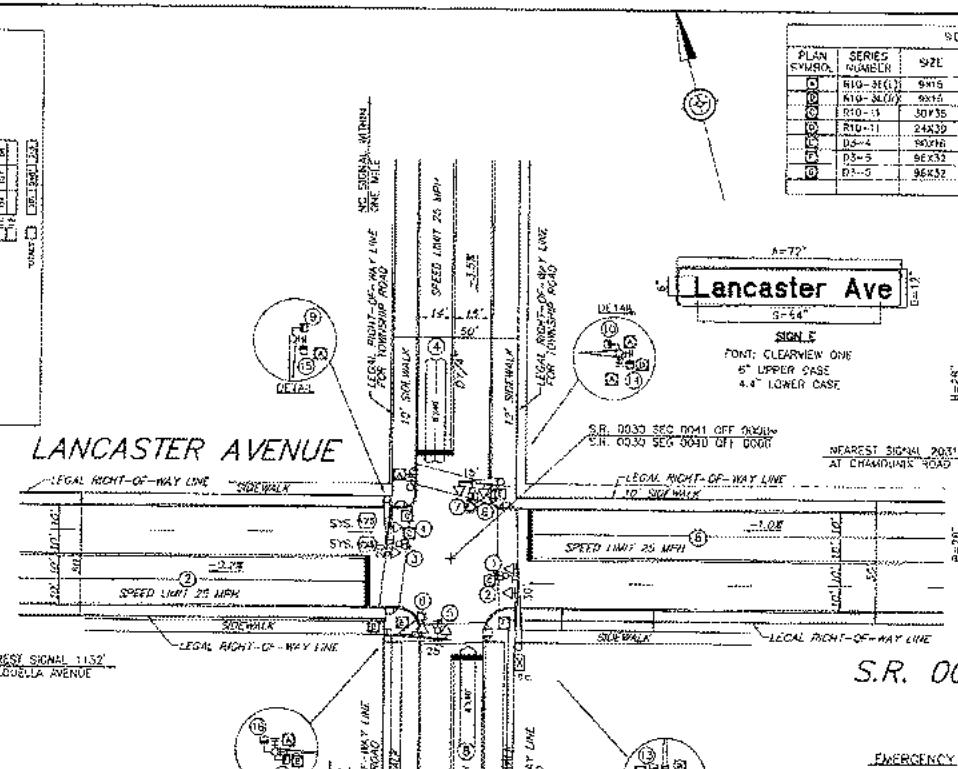
Intersection Summary

HCM 2010 Ctrl Delay 12.3
HCM 2010 LOS B

APPENDIX I

PENNDOT SIGNAL DIAGRAMS

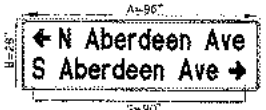




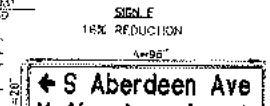
SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
	R10-3E(L)	9X15	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
	R10-3E(R)	9X15	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
	R10-15	30X35	NO TURN ON RED
	R10-11	24X30	NO TURN ON RED
	D3-4	90X18	OVERHEAD STREET NAME SIGN (SEE DETAIL)
	D3-5	96X32	OVERHEAD STREET NAME SIGN (SEE DETAIL)
	D3-6	96X32	OVERHEAD STREET NAME SIGN (SEE DETAIL)

SIGN E
FONT: CLEARVIEW ONE
6" UPPER CASE
4.4" LOWER CASE

SIGN DETAILS
NOT TO SCALE
FONT: CLEARVIEW ONE
8" UPPER CASE
6" LOWER CASE



SIGN F
16% REDUCTION



SIGN G
16% REDUCTION

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH DRAWING, SIGNAL STANDARDS TC-8600 SERIES.

SYSTEM PERMIT #-0013

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 5-0

COUNTY: DELAWARE
MUNICIPALITY: RADNOR TOWNSHIP
INTERSECTION: LANCASTER AVENUE (S.R. 0030) AND ABERDEEN AVENUE

REVIEWED:
MUNICIPAL OFFICIAL — DATE

RECOMMENDED:
PAUL M. LUTZ — 11/24/08
LOUIS R. BELMONTE, P.E. — 11/24/08
DISTRICT TRAFFIC ENGINEER — DATE

NO.	REVISION	DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
1	25 BUILT DRAWING						
2							
3							
4							
5							
6							
7							
8							

SHEET 2 OF 2 | PERMIT # 63-0879 | FILE # 0879

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+6				4+8				FLASH
INTERVAL / SIGNALS	1	2	3	4	5	6	7	8	
1,2	G	G	Y	R	R	R	R	R	Y
3,4	G	G	Y	R	R	R	R	R	Y
5,6	R	R	R	G	G	G	Y	R	Y
7,8	R	R	R	R	G	G	Y	R	Y
9,10,11,12*	M	FH	M	H	R	H	M	H	OFF
13,14,15,16*	H	H	M	H	M	FH	H	H	OFF

FIXED	1	3	2		3	2
MINIMUM PASSAGE	10				3	
MAXIMUM 1	39				48	
MAXIMUM 2	77				48	
PEDESTRIAN*	7	8			7	11
MEMORY	NM				NL	

*MAN SYMBOL UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES

- REFER TO SYSTEM PERMIT #-0013 FOR PROGRAM TIMES AND TIME-OF-DAY OPERATION

EMERGENCY PRE-EMPTION PHASING
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	7				4				8				9			
INTERVAL / SIGNALS	10	11	12		13	14	15		16	17	18		19	20	21	
1,2	G	G	G		R	R	R		R	R	R		R	R	R	
3,4	R	R	R		R	R	R		G	G	G		R	R	R	
5,6	R	R	R		G	Y	R		R	R	R		R	R	R	
7,8	R	R	R		R	R	R		R	R	R		G	Y	R	
9,10,11,12	H	H	H		H	H	H		M	H	H		H	H	H	
13,14,15,16	H	H	H		M	H	H		H	M	H		H	H	H	
PHASE	1	2	3	4	5	6	7	8								

** FOR DURATION OF PRE-EMPTION

NOTE:
IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE EMERGENCY VEHICLES THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

(G) WHEN RETURNING TO NORMAL OPERATION

OPERATION NOTES:

- AUDIBLE PEDESTRIAN SIGNAL HEADS SHALL EMIT DIFFERENT TONES TO DIFFERENTIATE DIRECTION OF CROSSING.
- PED RECYCLE FOR PHASE 2+6

SIGNAL INDICATIONS

12" LENS — 1, 2, 3, 4, 5, 6, 7, 8

11" SYMBOLS — 9, 10, 11, 12, 13, 14, 15, 16

*AUDIBLE PEDESTRIAN SIGNAL HEADS

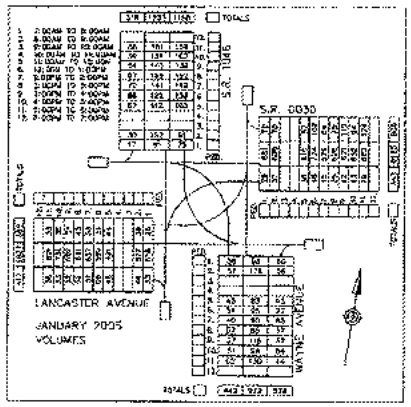
EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND & SOUTHBOUND APPROACHES OF ABERDEEN AVENUE AND THE EASTBOUND & WESTBOUND APPROACHES OF LANCASTER AVENUE WITH A CYC. BASE DRIVE FOR EACH DIRECTION OF OPERATION.
  THE EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE STROBE LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY, THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.
- PRE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ARE YELLOW AND RED INDICATIONS FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE DESIGNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNAL HAS BEEN ACTUATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN "PED WALK" AND "PED HAND". THE "PED WALK" INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "PED HAND" INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SIGNAL CLEARANCE BEFORE GOING INTO EMERGENCY PRE-EMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE DOWNING PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE, 5,6,8 GO 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

LEGEND

- MAST ARM/ IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD/ BACKPLATE/ ARROWS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/ SIGN
- SIGN/IDENTIFYING LETTER
- LUMINAIRE
- LOOP SENSOR/NEF
- MICROWAVE PRESENCE DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- EMERGENCY PRE-EMPTION DEVICE
- CURB RAMP
- UTILITY POLE
- PHASE NUMBER
- INLET

SCALE: 25 0 25



EMERGENCY PRE-EMPTION PHASING
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

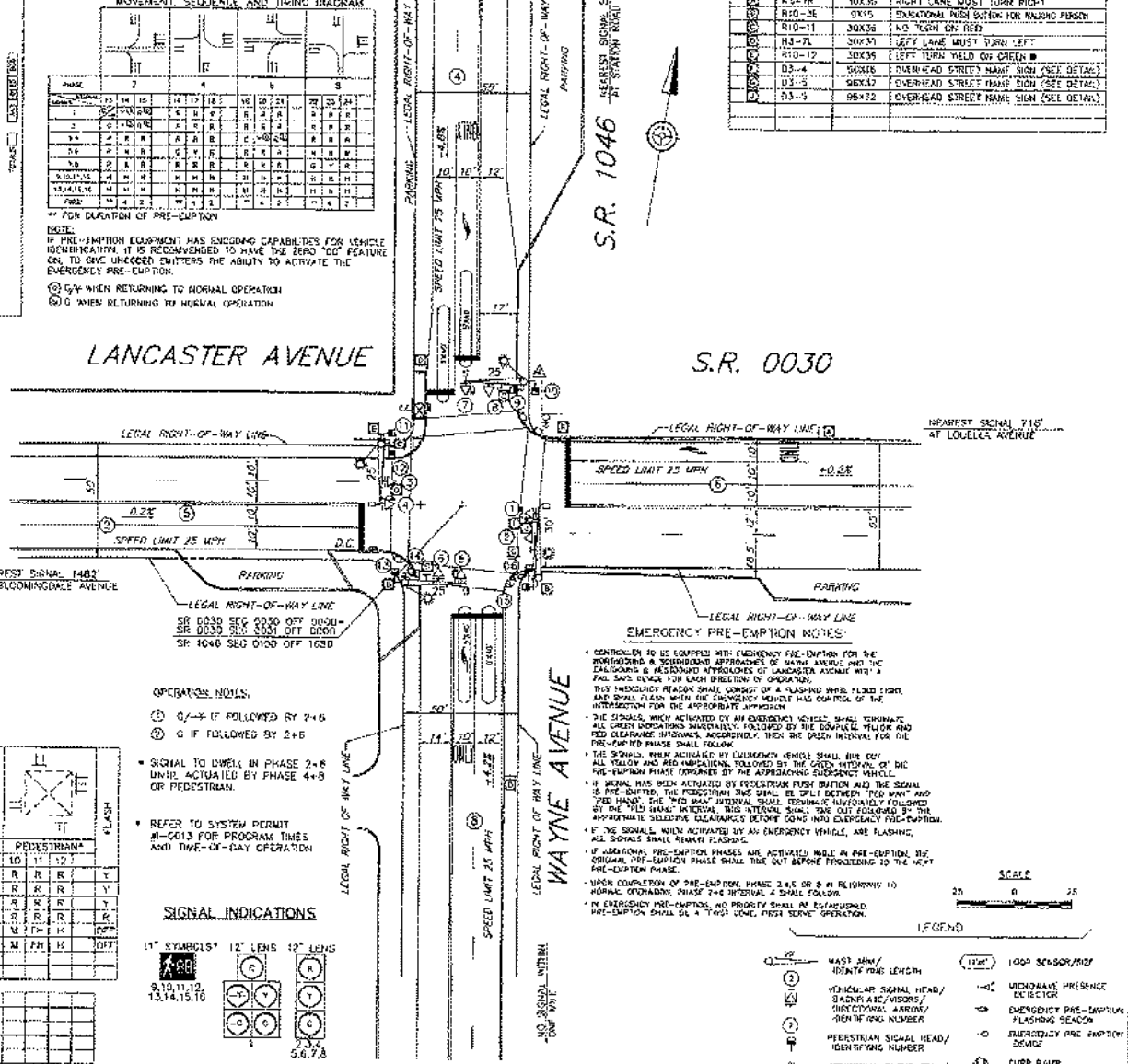
** FOR DURATION OF PRE-EMPTION

NOTE:
IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

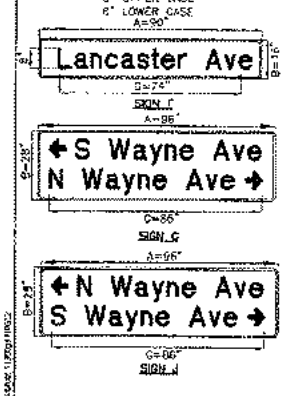
(6) G/Y WHEN RETURNING TO NORMAL OPERATION
(8) G WHEN RETURNING TO NORMAL OPERATION

SIGN TABULATION

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
	R3-7R	30X36	RIGHT LANE MUST TURN RIGHT
	R10-3E	9X15	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
	R10-11	30X36	NO TURN ON RED
	R3-7L	30X36	LEFT LANE MUST TURN LEFT
	R10-12	30X36	LEFT TURN YIELD ON GREEN
	D3-4	96X18	OVERHEAD STREET NAME SIGN (SEE DETAIL)
	D3-5	96X30	OVERHEAD STREET NAME SIGN (SEE DETAIL)
	D3-6	96X32	OVERHEAD STREET NAME SIGN (SEE DETAIL)



SIGN DETAILS
NOT TO SCALE
FONT: CLEARVIEW CHT
8" UPPER CASE
6" LOWER CASE
A=90°

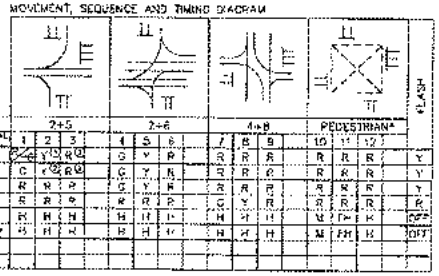


OPERATION NOTES:

(1) G/→ IF FOLLOWED BY 2+6
(2) G IF FOLLOWED BY 2+6

- SIGNAL TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8 OR PEDESTRIAN.
- REFER TO SYSTEM PERMIT #I-0013 FOR PROGRAM TIMES AND TIME-OF-DAY OPERATION

MOVEMENT, SEQUENCE AND TIMING DIAGRAM



PHASE	2+5			2+6			4+8			PEDESTRIAN*			FLASH
INTERVAL / DRIVER	1	2	3	4	5	6	7	8	9	10	11	12	
1	G/→	Y/(1)	R/(2)	G	Y	R	R	R	R	R	R	R	Y
2	G	G/→	R/(2)	G	Y	R	R	R	R	R	R	R	Y
3,4	R	R	R	G	Y	R	R	R	R	R	R	R	Y
5,6,7,8	R	R	R	R	R	R	G	Y	R	R	R	R	R
9,10,11,12*	R	R	H	H	H	H	H	H	H	W	FH	H	OFF
13,14,15,16*	H	H	H	H	H	H	H	H	H	W	FH	H	OFF

FIXED		4	2			4	2			4	2		
MINIMUM	3				10			3					
PASSAGE	3							3					
MAXIMUM 1	8				20			30					
MAXIMUM 2	15				34			37					
PEDESTRIAN*										9	15	2	
MEMORY	NL				MN			NC		NL			

* MAN SYMBOL UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES

SIGNAL INDICATIONS

*ALL PEDESTRIAN SIGNAL HEADS TO BE AUDIBLE

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE WORKBOUND & SOUTHBOUND APPROACHES OF WAYNE AVENUE AND THE EASTBOUND & WESTBOUND APPROACHES OF LANCASTER AVENUE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.
  THE EMERGENCY PREEMPTION SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHICH ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED IMPERATIVES, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE DEMANDED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNAL HAS BEEN ACTUATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN "PED WAIT" AND "PED HAND". THE "PED WAIT" INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "PED HAND" INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.
- IF THE SIGNALS, WHICH ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION, PHASE 2+6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

SCALE
25 0 25

LEGEND

- MAST ARM/ IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/ SIGN
- SIGN/IDENTIFYING LETTER
- LUMINAIRE
- LOOP SENSOR/PIGS
- VIDEO/WAVE PRESENCE DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- EMERGENCY PRE-EMPTION DEVICE
- CURB RAMP
- UTILITY POLE
- PHASE NUMBER
- INLET

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF MUNICIPALITY.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287 PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN DOUBLE FUSES MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

SYSTEM PERMIT #I-0013

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

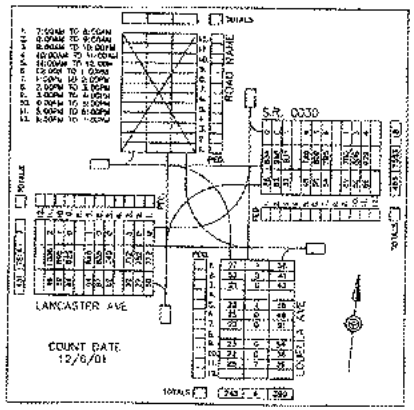
COUNTY: DELAWARE
MUNICIPALITY: RADNOR TOWNSHIP
INTERSECTION: LANCASTER AVENUE (S.R. 0030) AND WAYNE AVENUE (S.R. 1046)

REVIEWED: _____ DATE
REGIONAL OFFICIAL _____ DATE

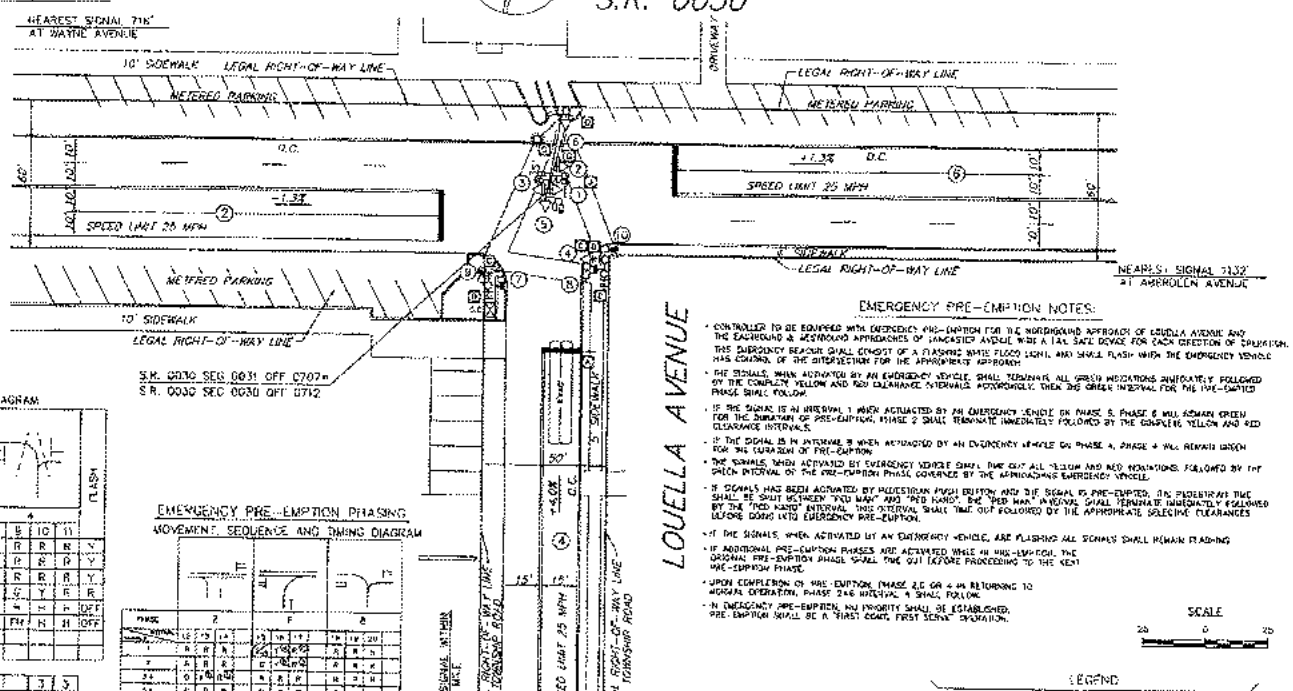
RECOMMENDED:
PAUL M. LUTZ 11/24/08
LOUIS R. BELMONTE, P.E. 11/24/08
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DFT'D BY	DATE	CHK'D BY	DATE	REC'MD BY	DATE	APP'D BY	DATE
1	AS-BUILT DRAWING	MKD	01/31/11	JLK	01/31/11	MKD	01/31/11	MKD	01/31/11
2									
3									
4									
5									
6									
7									
8									

SHEET 2 OF 2 | PERMIT # 83-0880 | FILE # 0880



LANCASTER AVENUE S.R. 0030



OPERATION NOTES:

① G/A-W-B FOLLOWED BY 2+6

② G IF FOLLOWED BY 2+6

- AUDIBLE PEDESTRIAN SIGNAL HEADS SHALL EMIT DIFFERENT TONES TO DIFFERENTIATE DIRECTION OF CROSSING
- PED RECYCLE FOR PHASE 2+6

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	1+6			2+6			4							FLASH
SIGNAL HEAD	1	2	3	4	5	6	7	8	9	10	11			
1	A/G	Y/G	R/G	G	G	Y	R	R	R	R	R	R	Y	
2	G	Y/G	R/G	G	G	Y	R	R	R	R	R	R	Y	
3,4	R	R	R	G	G	Y	R	R	R	R	R	R	Y	
5,6	R	R	R	R	R	R	R	G	G	Y	R	R		
7,8*	H	H	H	M	FH	H	H	H	H	H	H	H	OFF	
9,10,11,12*	H	H	H	H	H	H	H	H	M	FH	H	H	OFF	

FIXED	3	2			3	2			3	3		
MINIMUM	3			10				3				
PASSAGE	3							3				
MAXIMUM 1	7			32				21				
MAXIMUM 2	12			69				39				
PEDESTRIAN				7	10			7	14			
MEMORY	MN			MN				L				

* MAN SYMBOL UPON PEDESTRIAN ACTUATION ONLY. OTHERWISE HAND SYMBOL AT ALL TIMES.

- REFER TO SYSTEM PERMIT #-0013 FOR PROGRAM TIMES AND TIME-OF-DAY OPERATION

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2			F			8							
SIGNAL HEAD	1,2	3,4	5,6	1,2	3,4	5,6	1,2	3,4	5,6	7,8	9,10,11,12			
1	A	R	R				A	R	R					
2	G	A/G	R/G				G	A/G	R/G					
3,4	A	R	R				G	G	Y	R				
5,6	G	A/G	R/G				R	R	R	G				
7,8	H	H	H				H	H	H	H				
9,10,11,12	H	H	H				H	H	H	H				
FLASH														
TIME**	1	3	2	1	3	2	1	3	2					

** FOR DURATION OF PRE-EMPTION

NOTE:
IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

Ⓐ G/A WHEN RETURNING TO NORMAL OPERATION

Ⓑ G WHEN RETURNING TO NORMAL OPERATION

SIGN TABULATION

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
Ⓐ	R10-6I	24X30	STOP HERE ON RED
Ⓑ	R10-3E(R)	9X15	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
Ⓒ	R10-3E(L)	9X15	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
Ⓓ	R10-11	30X36	NO TURN ON RED ●
Ⓔ	D3-4	90X18	OVERHEAD STREET NAME SIGN (SEE DETAIL)
Ⓕ	D3-4	72X18	OVERHEAD STREET NAME SIGN (SEE DETAIL)
Ⓖ	R10-12	30X36	LEFT TURN RED ON RED ●

SIGN DETAILS

NOT TO SCALE
POINT CLEARVIEW ONE

SIGN F
8" UPPER CASE
6" LOWER CASE

SIGN G
8" UPPER CASE
6" LOWER CASE

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF LOUELLA AVENUE AND THE EASTBOUND & WESTBOUND APPROACHES OF LANCASTER AVENUE WITH A 1 SEC. SAFE DEVICE FOR EACH DIRECTION OF OPERATION.
- THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CLEARED OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS. THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.
- IF THE SIGNAL IS IN INTERVAL 1 WHEN ACTIVATED BY AN EMERGENCY VEHICLE ON PHASE 5, PHASE 6 WILL REMAIN GREEN FOR THE DURATION OF PRE-EMPTION, PHASE 2 SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS.
- IF THE SIGNAL IS IN INTERVAL 8 WHEN ACTIVATED BY AN EMERGENCY VEHICLE ON PHASE 4, PHASE 4 WILL REMAIN GREEN FOR THE DURATION OF PRE-EMPTION.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE COVERED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNALS HAS BEEN ACTIVATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SKIP BETWEEN "PED WALK" AND "PED HAND". THE "PED WALK" INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "PED HAND" INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION, PHASE 2,6 OR 4 AN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

SCALE
20 0 20

SIGNAL INDICATIONS

11" SYMBOLS*
7,8,9, 10,11,12

12" LENS

12" LENS
4,5,6

*ALL PEDESTRIAN SIGNAL HEADS TO BE AUDIBLE

LEGEND

- 30' MAST ARM/ IDENTIFYING LENGTH
- ② VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- ③ PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/ SIGN
- SIGN/IDENTIFYING LETTER
- LUMINAIRE
- (12"x6") LOOP SENSOR/SIZE
- VIDEOWAVE PRESENCE DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- EMERGENCY PRE-EMPTION DEVICE
- CURB RAMP
- UTILITY POLE
- ② PHASE NUMBER
- INLET

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 18 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS O.D. OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS 70-5800 SERIES.

SYSTEM PERMIT #-0013

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

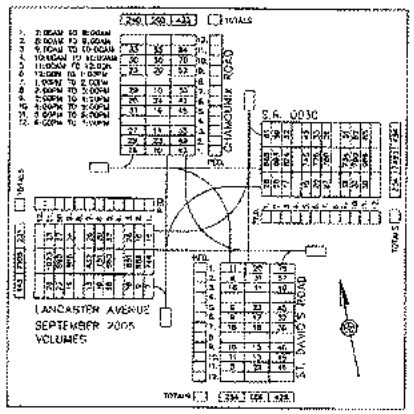
COUNTY: DELAWARE
MUNICIPALITY: RADNOR TOWNSHIP
INTERSECTION: LANCASTER AVENUE (S.R. 0030) AND LOUELLA AVENUE

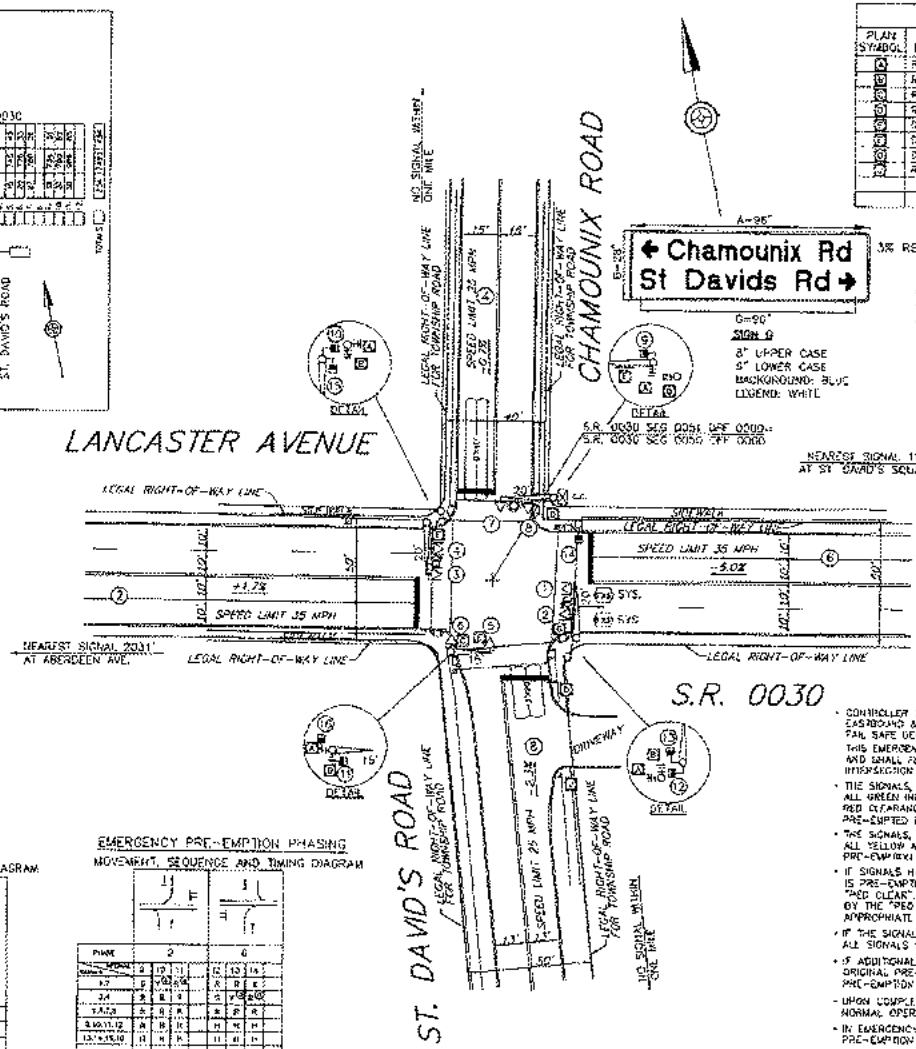
REVIEWED:
MUNICIPAL OFFICIAL — DATE

RECOMMENDED:
WERNER J. EICHORN — 6/3/03
DISTRICT TRAFFIC ENGINEER — DATE
STEPHEN B. LESTER — 6/7/03
DISTRICT TRAFFIC ENGINEER — DATE

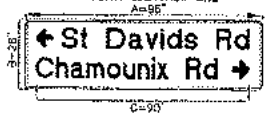
NO.	REVISION	MAS'T DRAW	DATE	REVIEW	DATE	REVISION	DATE
1	AS-BUILT DRAWING	MAW	2/5/02	JWT	2/11/02	JWT	2/12/02
2							
3							
4							
5							
6							
7							
8							

SHEET 2 OF 2 | PERMIT # 03-0047 | FILE # 0047

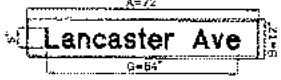




SIGN G
8" UPPER CASE
5" LOWER CASE
BACKGROUND: BLUE
LEGEND: WHITE



SIGN F
8" UPPER CASE
6" LOWER CASE
BACKGROUND: BLUE
LEGEND: WHITE



SIGN E
8" UPPER CASE
4.4" LOWER CASE

SIGN TABULATION

PLAN SYMBOL	SIGN'S NUMBER	SIZE	REMARKS
A	R10-3B(L)	9X15	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
B	R10-3B(R)	9X15	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON
C	R10-11C	30X36	NO TURN ON RED TIME TO WALK NOW TO 8PM
D	R10-11	24X30	NO TURN ON RED
E	D3-4	90X48	OVERHEAD STREET NAME SIGN (SEE DETAIL)
F	D3-6	96X28	OVERHEAD STREET NAME SIGN (SEE DETAIL)
G	D3-5	96X28	OVERHEAD STREET NAME SIGN (SEE DETAIL)
H	R10-7	24X36	DO NOT BLOCK DRIVEWAY

SIGN DETAILS

NOT TO SCALE
FONT: CLEARVIEW ONE

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 18 FT ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TS-0800 SERIES.

SYSTEM PERMIT #-0071

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE
MUNICIPALITY: RADNOR TOWNSHIP
INTERSECTION: LANCASTER AVENUE (S.R. 0030) & CHAMOUNIX ROAD/ST. DAVID'S ROAD

REVIEWED: _____ DATE
TRAFFIC OFFICE _____ DATE
RECOMMENDED:
PAUL M. LUTZ 11/24/08
LOUIS R. BELMONTE, P.E. 11/24/08
DISTRICT TRAFFIC ENGINEER DATE

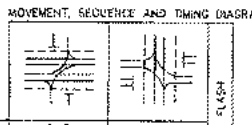
NO.	REASON	NEW	DATE	NEW	DATE	NEW	DATE
1	AS-BUILT DRAWING	NEW	3/3/14	LB	3/14/14	JBS	7/16/14
2							
3							
4							
5							
6							
7							
8							

SHEET 2 OF 2 PERMIT # 63-0881 FILE # 0881

OPERATION NOTES:

- PED RECYCLE FOR PHASE 2+6

MOVEMENT, SEQUENCE AND TIMING DIAGRAM



PHASE	2+3				4+8				FLASH
INTERVAL / SIGNALS	1	2	3	4	5	6	7	8	
1,2	G	G	Y	R	R	R	R	R	Y
3,4	G	G	Y	R	R	R	R	R	Y
5,6	R	R	R	R	G	G	Y	R	R
7,8	R	R	R	R	G	G	Y	R	R
9,10,11,12*	W	FW	W	W	W	W	W	W	OFF
13,14,15,16*	W	W	W	W	W	FW	W	W	OFF

FIXED	1	4	2	3	4	2
MINIMUM	10			4		
PASSAGE				4		
MAXIMUM 1	23			20		
MAXIMUM 2	72			48		
PEDESTRIAN*	7	11		7	12	
MEMORY	NM			NL		

*MAN SYMBOL UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES.

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2			6		
INTERVAL / SIGNALS	1	2	3	4	5	6
1,2	G	G	Y	R	R	R
3,4	R	R	R	G	G	Y
5,6	R	R	R	R	R	R
7,8	R	R	R	R	R	R
9,10,11,12	R	R	R	R	R	R
13,14,15,16	R	R	R	R	R	R
FIXED	*	4	2	*	4	2

* FOR DURATION OF PRE-EMPTION

NOTE:
IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

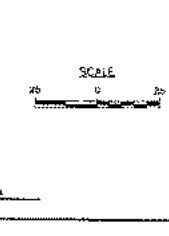
(5) 0 WHEN RETURNING TO NORMAL OPERATION

- REFER TO SYSTEM PERMIT #-0071 FOR PROGRAM TIMES AND TIME-OF-DAY OPERATION

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND & WESTBOUND APPROACHES OF LANCASTER AVENUE WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.
  THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY, THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTED PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNALS HAVE BEEN ACTIVATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN "PED WALK" AND "PED CLEAR". THE "PED WALK" INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "PED CLEAR" INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION, PHASE 2 OR 6 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

SIGNAL INDICATIONS



SCALE

LEGEND

- MAST ARM/ IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD/ BACKPLATE/MOUNTS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/ SIGN
- SIGN/IDENTIFYING LETTER
- LUMINAIRE
- LOOP SENSOR/SIZE
- MICROWAVE PRESENCE DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- EMERGENCY PRE-EMPTION DEVICE
- CURB RAMP
- UTILITY POLE
- PHASE NUMBER
- INLET

SIGNALS TO BE EQUIPPED WITH TURNING VISORS 1,2,3,4

TRAFFIC SIGNAL SYSTEM PERMIT PLAN

WEEKLY PROGRAM CHART						
EVENT	DAY	TIME	CYCLE	OFFSET	PROGRAM	REMARKS
1	1–7	20:00	–	–	MAX. 1	FREE
2	1–5	06:00	VARIES	VARIES	1	AM PEAK
3	1–5	10:00	VARIES	VARIES	2	OFF PEAK
4	1–5	15:00	VARIES	VARIES	3	PM PEAK
5	6,7	08:00	VARIES	VARIES	2	OFF PEAK

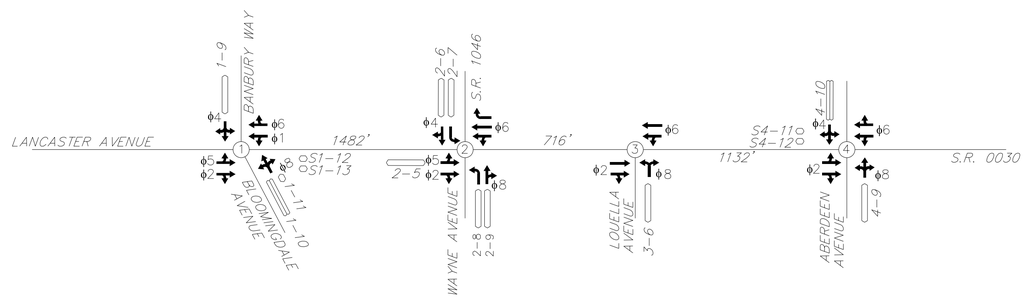
MONDAY = DAY 1
OFFSET IN SECONDS

OFFSET REFERENCED TO START OF YELLOW ON LANCASTER AVE.

NOTES: – ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
– REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2, CLEARANCE AND PED TIMES.

SYSTEM NOTES

1. PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
2. OFFSETS ARE REFERENCED TO THE BEGINNING OF YELLOW ON LANCASTER AVENUE.
3. SYSTEM LIMITS : LANCASTER AVENUE (2 INTERSECTIONS) FROM BLOOMINGDALE AVE TO ABERDEEN AVE.
   MASTER: RADNOR MAINTENANCE BUILDING
4. PRIMARY COORDINATION: FIBER OPTIC CABLE.
   SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC).



CYCLE/SPLIT/OFFSET

Program 1 =				Phase									Cycle	Offset
	Intersections	File #	Master	1	2	3	4	5	6	7	8	9		
1	LANCASTER AVE & BLOOMINGDALE AVE/BANBURY WAY	0884			59		46		59		46		105	96
2	LANCASTER AVE & WAYNE AVE	0880			49		30	13 (LEAD)	36		30	26	105	33
3	LANCASTER AVE & LOUELLA AVE	0047			73				73		32		105	48
3	LANCASTER AVE & ABERDEEN AVE	0879			62		43		62		43		105	6

CYCLE/SPLIT/OFFSET

Program 2 =				Phase									Cycle	Offset
	Intersections	File #	Master	1	2	3	4	5	6	7	8	9		
1	LANCASTER AVE & BLOOMINGDALE AVE/BANBURY WAY	0884			65		55		65		55		120	119
2	LANCASTER AVE & WAYNE AVE	0880			64		30	30 (LEAD)	34		30	26	120	48
3	LANCASTER AVE & LOUELLA AVE	0047			81				81		39		120	54
3	LANCASTER AVE & ABERDEEN AVE	0879			72		48		72		48		120	14

CYCLE/SPLIT/OFFSET

Program 3 =				Phase									Cycle	Offset
	Intersections	File #	Master	1	2	3	4	5	6	7	8	9		
1	LANCASTER AVE & BLOOMINGDALE AVE/BANBURY WAY	0884			32		28		32		28		60	52
2	LANCASTER AVE & WAYNE AVE	0880			64		30	30 (LEAD)	34		30	26	120	19
3	LANCASTER AVE & LOUELLA AVE	0047			34				34		26		60	6
3	LANCASTER AVE & ABERDEEN AVE	0879			37		23		37		23		60	38

LEGEND

SYSTEM DETECTOR, INTERSECTION X – LOOP NO. Y

DETECTOR, INTERSECTION X – LOOP NO. Y

ϕ PHASE

SCALE: NOT TO SCALE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MATTHEW M. KOZSUCH
ENGINEER
54396-E

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6–0	DELAWARE	0030	CLR–T	2 OF 4
RADNOR TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6–0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 181, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES EFFECTIVE DATE MARCH 29, 2007.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC–7800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6–0

COUNTY: DELAWARE
MUNICIPALITY: RADNOR TOWNSHIP
INTERSECTION: TRAFFIC SIGNAL SYSTEM

REVIEWED:

DATE

MUNICIPAL OFFICIAL DATE

RECOMMENDED:

PAUL M. LUTZ 11/24/08

LOUIS R. BELMONTE, P.E. 11/24/08
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./ REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	AS–BUILT DRAWING	McM	3/5/12				
2							
3							
4							
5							
6							
7							
8							

INTERCONNECT PERMIT #I–0013 SHEET 1 OF 1

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	DELAWARE	0030	CLR-T	3 OF 4
RADNOR TOWNSHIP				

REVISION NUMBER	REVISIONS	DATE	BY

TRAFFIC SIGNAL SYSTEM PERMIT PLAN

WEEKLY PROGRAM CHART

EVENT	DAY	TIME	CYCLE	OFFSET	PROGRAM	REMARKS
1	1-7	20:00	-	-	MAX. 1	FREE
2	1-5	06:00	VARIES	VARIES	1	AM PEAK
3	1-5	10:00	VARIES	VARIES	2	OFF PEAK
4	1-5	15:00	VARIES	VARIES	3	PM PEAK
5	6,7	08:00	VARIES	VARIES	2	OFF PEAK

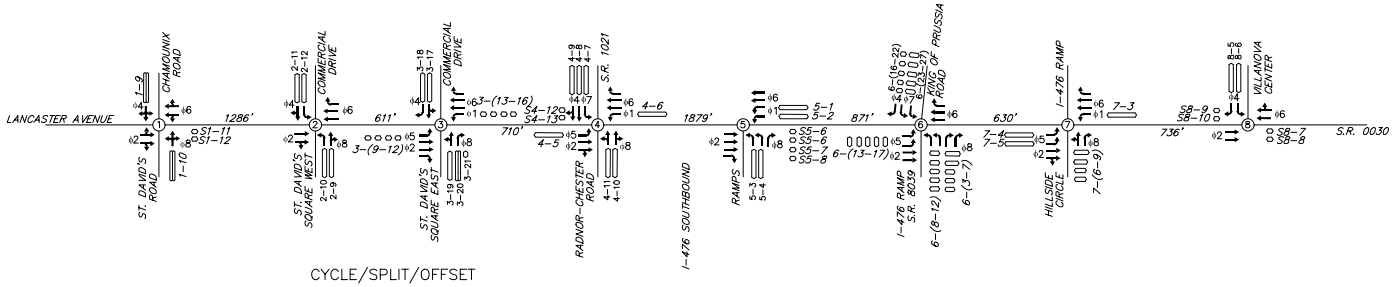
MONDAY = DAY 1
OFFSET IN SECONDS

OFFSET REFERENCED TO START OF YELLOW ON LANCASTER AVE.

NOTES: – ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
– REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2, CLEARANCE AND PED TIMES.

SYSTEM NOTES

1. PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
2. OFFSETS ARE REFERENCED TO THE BEGINNING OF YELLOW ON LANCASTER AVENUE.
3. SYSTEM LIMITS : LANCASTER AVENUE (8 INTERSECTIONS) FROM ST. DAVID'S RD TO VILLANOVA CENTER.
   MASTER: RADNOR MAINTENANCE BUILDING
4. PRIMARY COORDINATION: FIBER OPTIC CABLE.
   SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC).



CYCLE/SPLIT/OFFSET

Program 1 =				Phase								Cycle	Offset
	Intersections	File #	Master	1	2	3	4	5	6	7	8		
1	LANCASTER AVE & ST. DAVID'S/CHAMOUNIX RD	0881			36		24		36		24	60	20
2	LANCASTER AVE & ST. DAVID'S SQUARE WEST	0082			82		38		82		38	120	43
3	LANCASTER AVE & ST. DAVID'S SQUARE EAST	0062		13 (LEAD)	68		39	16 (LEAD)	65		39	120	34
4	LANCASTER AVE & RADNOR-CHESTER RD	0063		14 (LEAD)	54		52	14 (LEAD)	54	13 (LEAD)	39	120	22
5	LANCASTER AVE & I-476 SOUTHBOUND RAMPS	2532		12 (LEAD)	24				36		24	60	36
6	LANCASTER AVE & I-476/KING OF PRUSSIA RD	2530			56	50 (LEAD)	14	20 (LEAD)	36	12 (LEAD)	52	120	19
7	LANCASTER AVE & I-476 RAMP/HILLSIDE CIRCLE	2531		14 (LEAD)	70			32 (LEAD)	52		36	120	21
8	LANCASTER AVE & VILLANOVA CENTER	3416			35		25		35			60	51

CYCLE/SPLIT/OFFSET

Program 2 =				Phase								Cycle	Offset
	Intersections	File #	Master	1	2	3	4	5	6	7	8		
1	LANCASTER AVE & ST. DAVID'S/CHAMOUNIX RD	0881			72		38		72		38	110	15
2	LANCASTER AVE & ST. DAVID'S SQUARE WEST	0082			67		43		67		43	110	12
3	LANCASTER AVE & ST. DAVID'S SQUARE EAST	0062		25 (LEAD)	46		39	13 (LEAD)	58		39	110	5
4	LANCASTER AVE & RADNOR-CHESTER RD	0063		13 (LEAD)	45		52	23 (LEAD)	35	13 (LEAD)	39	110	0
5	LANCASTER AVE & I-476 SOUTHBOUND RAMPS	2532		27 (LEAD)	33				60		30	90	49
6	LANCASTER AVE & I-476/KING OF PRUSSIA RD	2530			51	13 (LEAD)	26	12 (LEAD)	39	20 (LEAD)	19	90	0
7	LANCASTER AVE & I-476 RAMP/HILLSIDE CIRCLE	2531		12 (LEAD)	44			15 (LEAD)	41		34	90	85
8	LANCASTER AVE & VILLANOVA CENTER	3416			56		34		56			90	1

CYCLE/SPLIT/OFFSET

Program 3 =				Phase								Cycle	Offset
	Intersections	File #	Master	1	2	3	4	5	6	7	8		
1	LANCASTER AVE & ST. DAVID'S/CHAMOUNIX RD	0881			71		29		71		29	100	66
2	LANCASTER AVE & ST. DAVID'S SQUARE WEST	0082			67		33		67		33	100	14
3	LANCASTER AVE & ST. DAVID'S SQUARE EAST	0062		16 (LEAD)	45		39	13 (LEAD)	48		39	100	12
4	LANCASTER AVE & RADNOR-CHESTER RD	0063		13 (LEAD)	35		52	14 (LEAD)	34	13 (LEAD)	39	100	0
5	LANCASTER AVE & I-476 SOUTHBOUND RAMPS	2532		26 (LEAD)	34				60		30	90	51
6	LANCASTER AVE & I-476/KING OF PRUSSIA RD	2530			47	18 (LEAD)	25	12 (LEAD)	35	24 (LEAD)	19	90	81
7	LANCASTER AVE & I-476 RAMP/HILLSIDE CIRCLE	2531		12 (LEAD)	44			15 (LEAD)	41		34	90	88
8	LANCASTER AVE & VILLANOVA CENTER	3416			65		25		65			90	12

LEGEND

- SYSTEM DETECTOR, INTERSECTION X – LOOP NO. Y
- DETECTOR, INTERSECTION X – LOOP NO. Y
- PHASE

SCALE: NOT TO SCALE

GENERAL NOTES

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: DELAWARE
MUNICIPALITY: RADNOR TOWNSHIP
INTERSECTION: TRAFFIC SIGNAL SYSTEM

REVIEWED:

DATE

MUNICIPAL OFFICIAL DATE

RECOMMENDED:

PAUL M. LUTZ 11/24/08

LOUIS R. BELMONTE, P.E. 11/24/08
DISTRICT TRAFFIC ENGINEER DATE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MATTHEW M. KOZSUCH
ENGINEER
044916-E

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	AS-BUILT DRAWING	MeM	3/5/12				
2							
3							
4							
5							
6							
7							
8							

INTERCONNECT PERMIT #I-0071 | SHEET 1 OF 1

APPENDIX J

AUXILIARY LANE WARRANT ANALYSIS

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed RIRO Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	AM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	2.0%	0
	Through	-	943	4.0%	962
	Right	-	50	2.0%	51

Advancing Volume:	1013
Right Turn Volume:	51

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 11**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	51
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

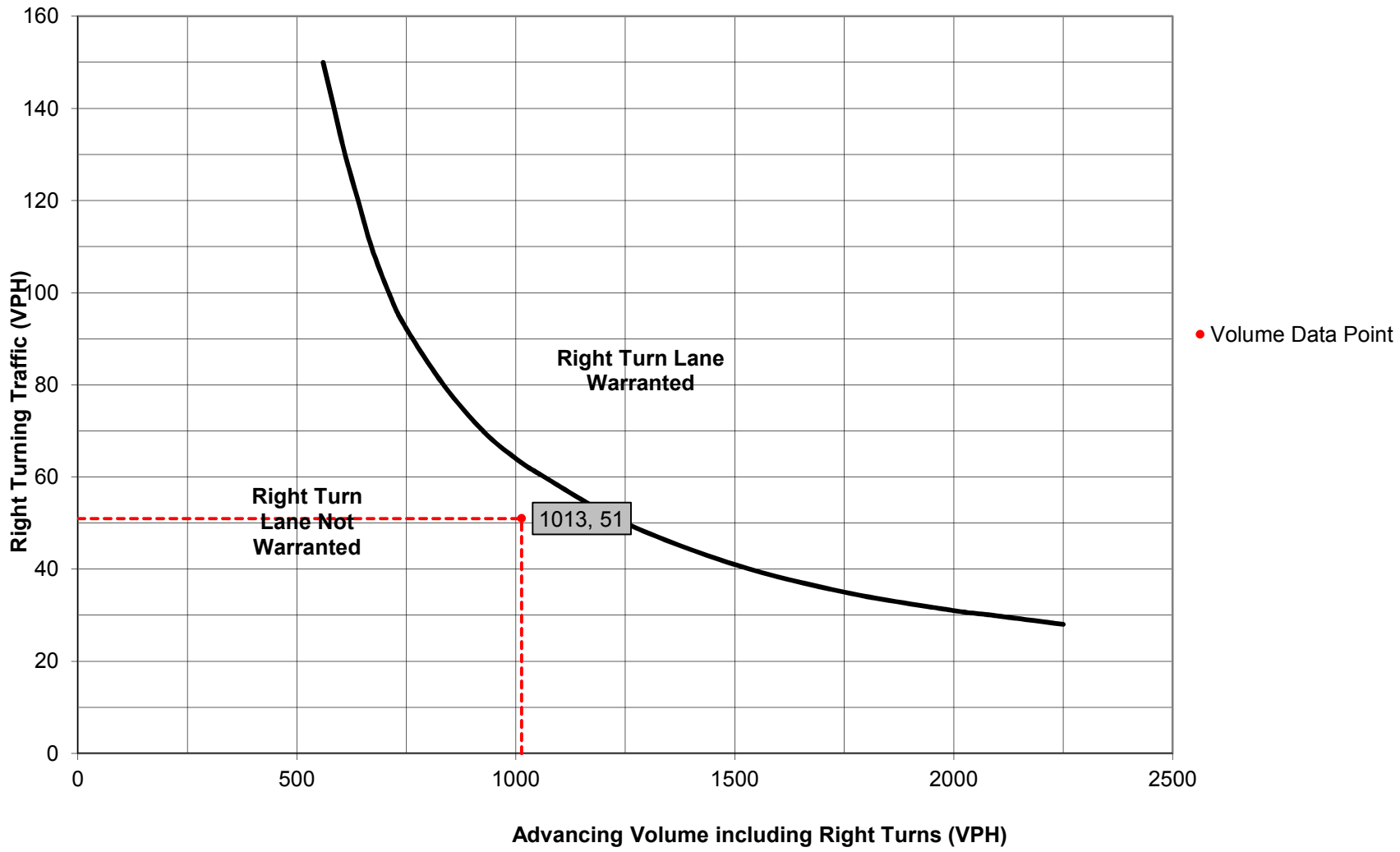
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	MB
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & RIRO Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	PM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	957	1.0%	962
	Right	-	41	2.0%	42

Advancing Volume:	1004
Right Turn Volume:	42

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 11**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	42
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

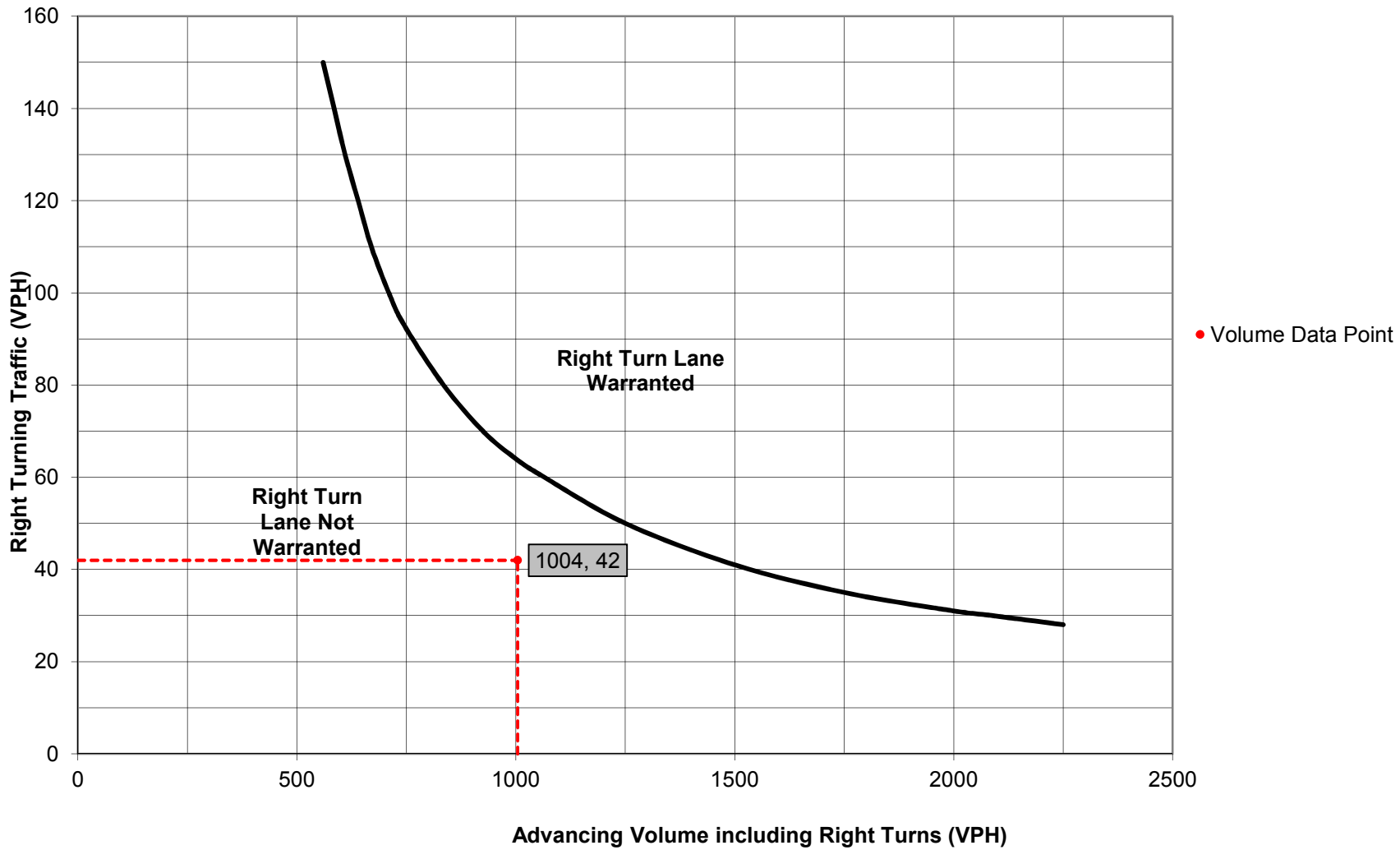
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & RIRO Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	SAT Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	814	2.0%	823
	Right	-	37	2.0%	38

Advancing Volume:	861
Right Turn Volume:	38

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 11**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	38
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

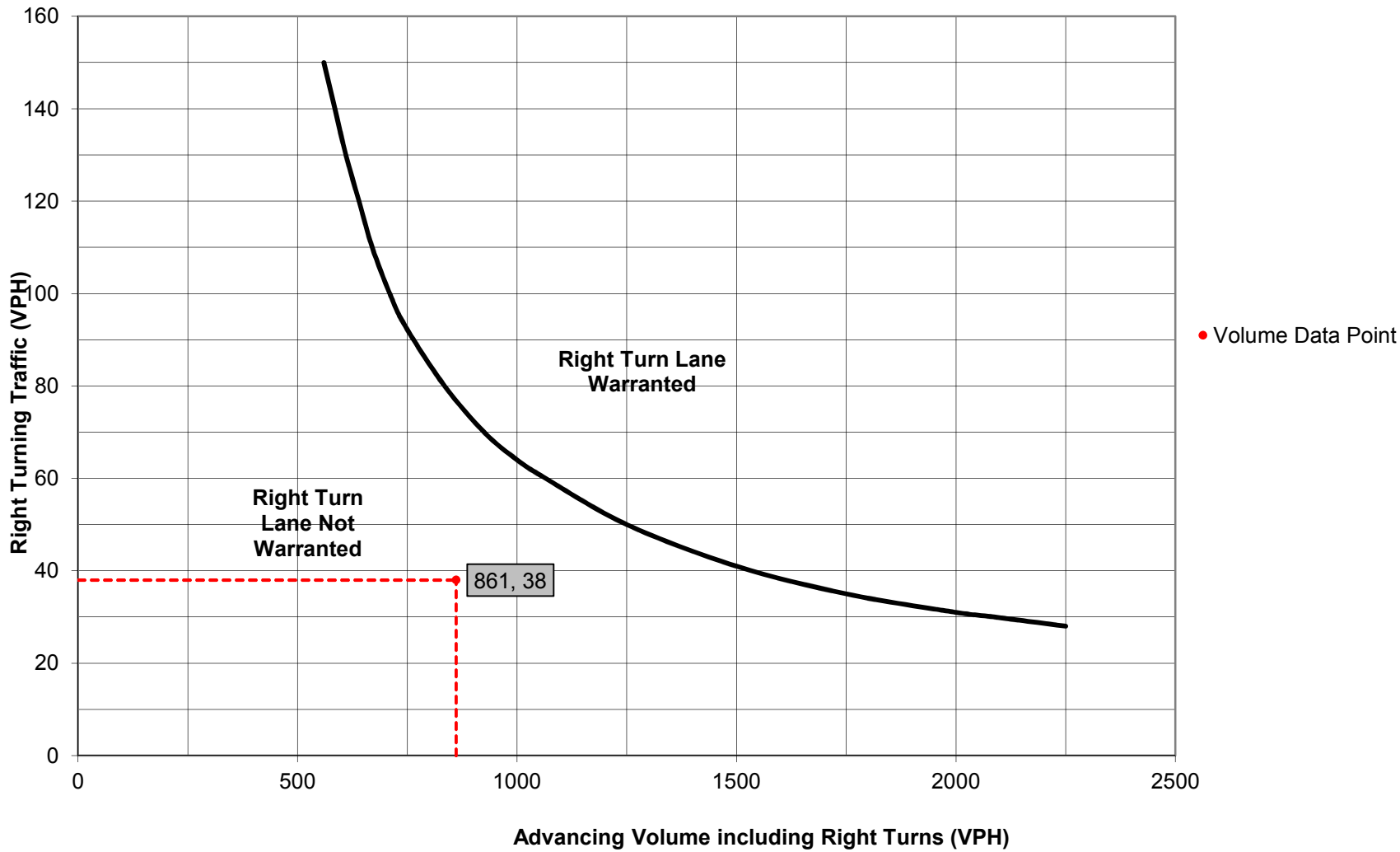
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & RIRO Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	SUN Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	617	1.0%	621
	Right	-	40	2.0%	41

Advancing Volume:	662
Right Turn Volume:	41

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 11**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	41
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

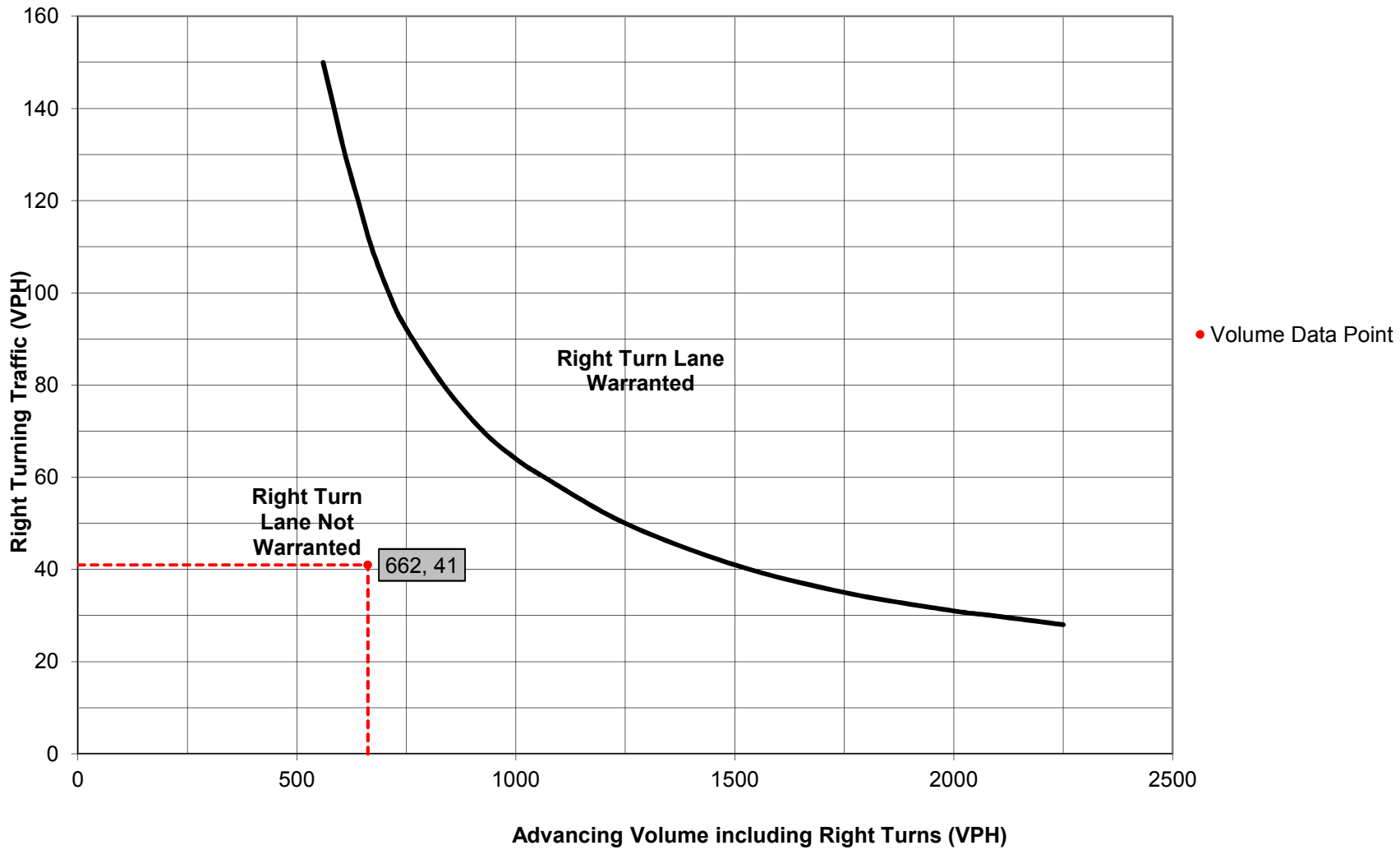
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed Full Access Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	AM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	79	2.0%	80
	Through	-	978	4.0%	998
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	932	4.0%	951
	Right	Yes	35	2.0%	36

Advancing Volume:	1078
Opposing Volume:	987
Left Turn Volume:	80
% Left Turns in Advancing Volume:	7.42%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	932	4.0%	N/A
	Right	-	35	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 7**

Warrant Met?: **Yes**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	80
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	1.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

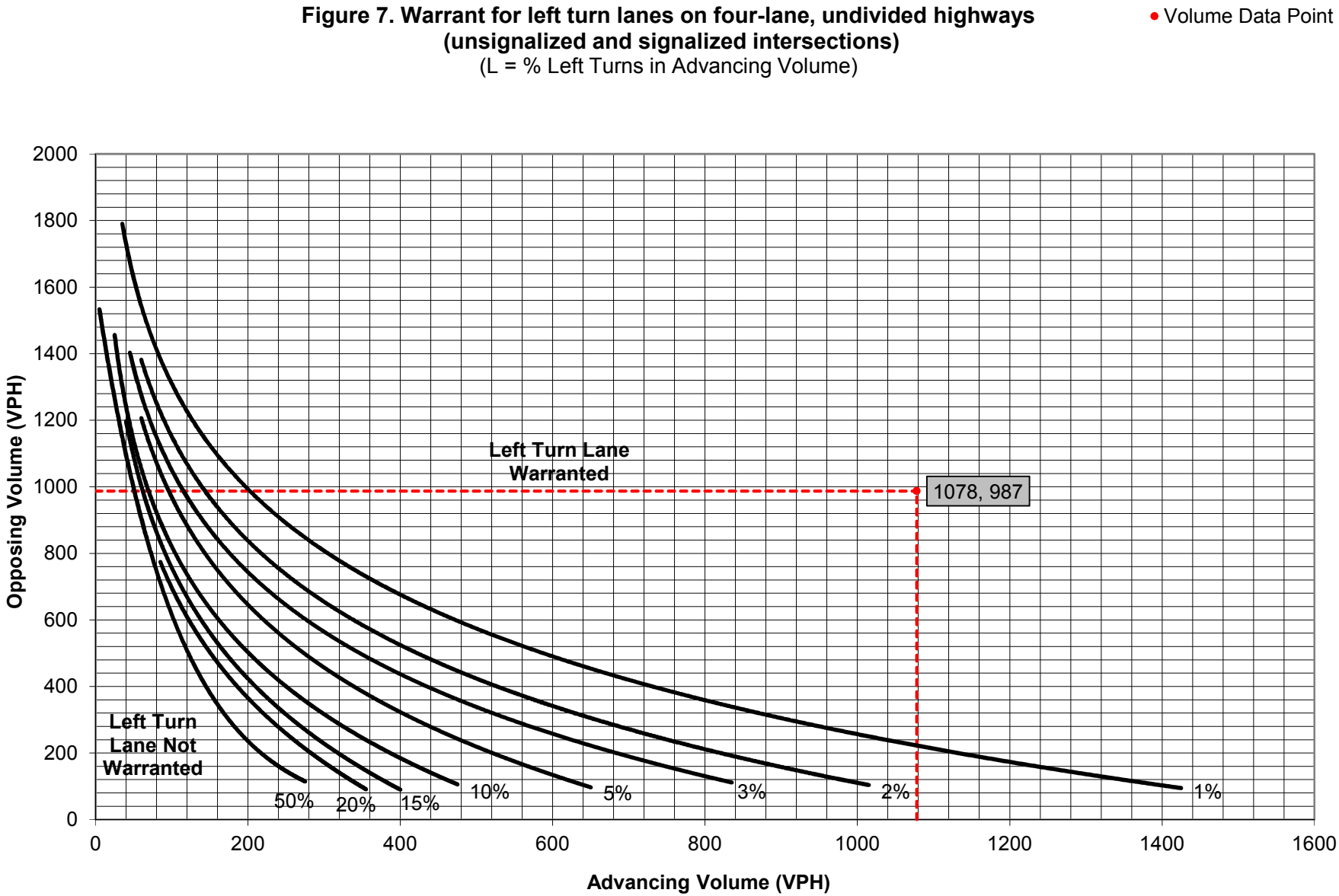
Left Turn Lane Storage Length, Condition A:	75	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	75	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 7. Warrant for left turn lanes on four-lane, undivided highways (unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed Full Access Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	AM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	79	2.0%	N/A
	Through	-	978	4.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	932	4.0%	N/A
	Right	Yes	35	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	932	4.0%	951
	Right	-	35	2.0%	36

Advancing Volume:	987
Right Turn Volume:	36

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 11**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	36
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

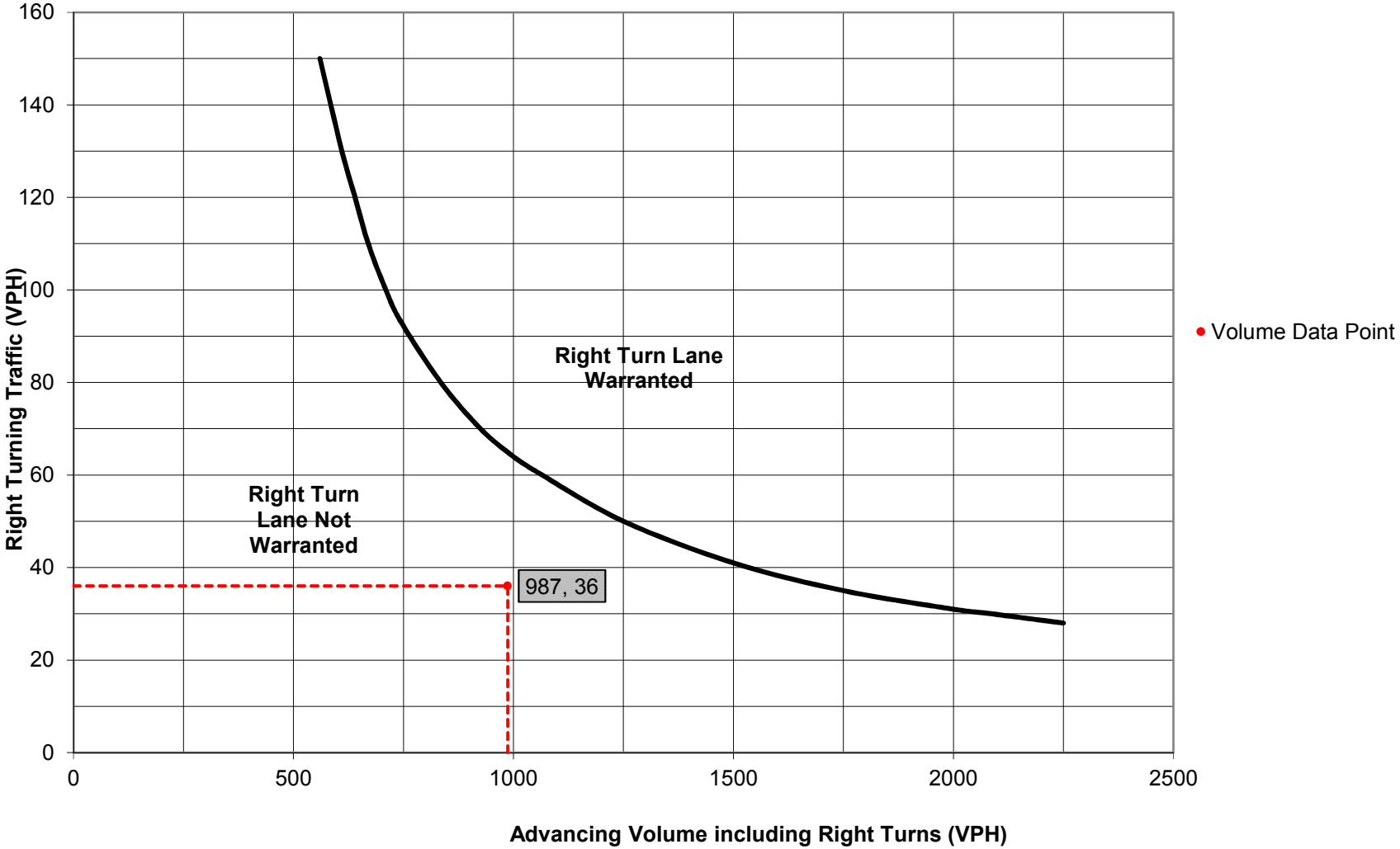
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed Full Access Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	PM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	63	2.0%	64
	Through	-	1006	1.0%	1012
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	947	1.0%	952
	Right	Yes	28	2.0%	29

Advancing Volume:	1076
Opposing Volume:	981
Left Turn Volume:	64
% Left Turns in Advancing Volume:	5.95%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	947	1.0%	N/A
	Right	-	28	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 7**

Warrant Met?: **Yes**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	64
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: 1.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

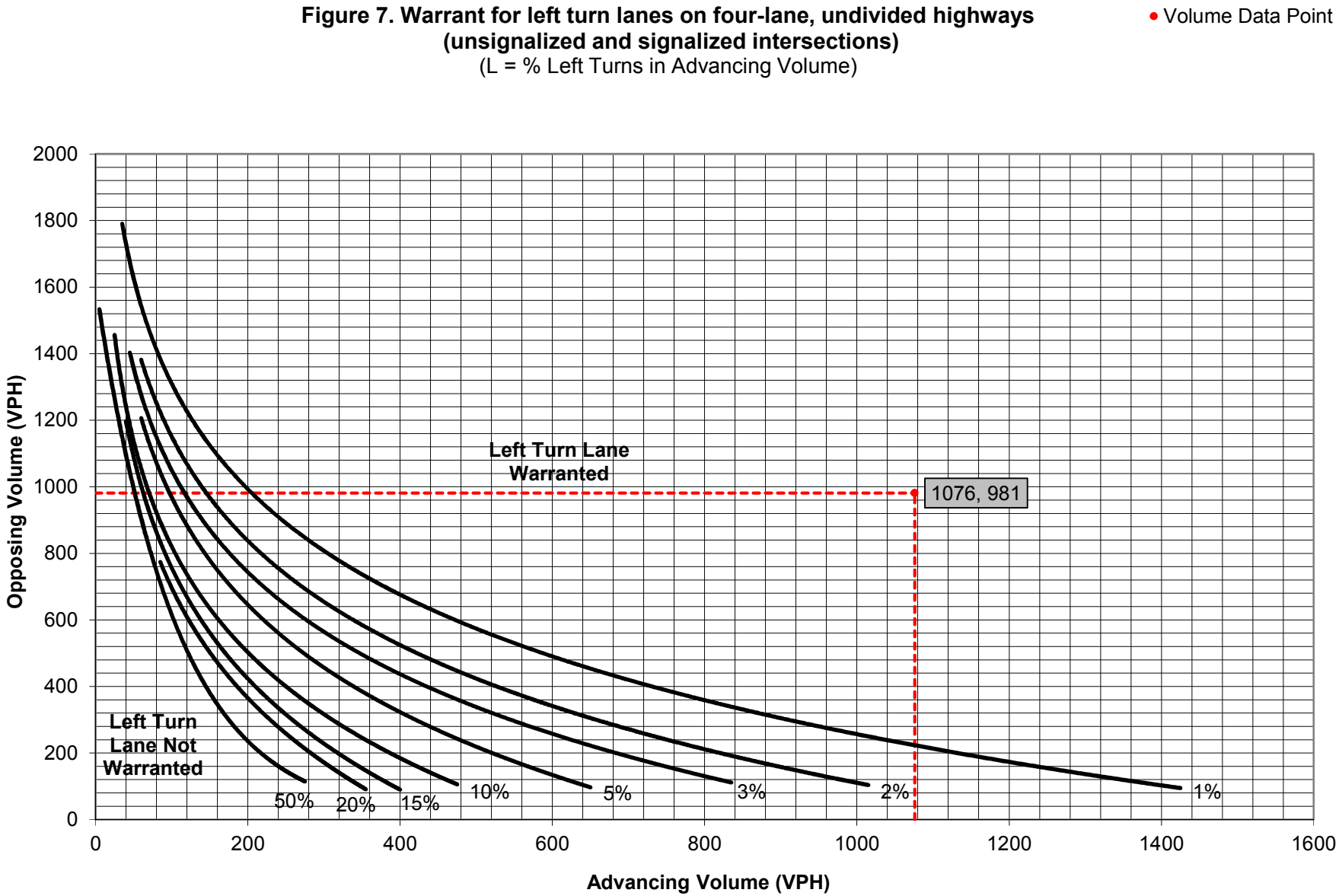
Left Turn Lane Storage Length, Condition A:	75	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	75	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 7. Warrant for left turn lanes on four-lane, undivided highways (unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed Full Access Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	PM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	63	2.0%	N/A
	Through	-	1006	1.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	947	1.0%	N/A
	Right	Yes	28	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	947	1.0%	952
	Right	-	28	2.0%	29

Advancing Volume:	981
Right Turn Volume:	29

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 11**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	29
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

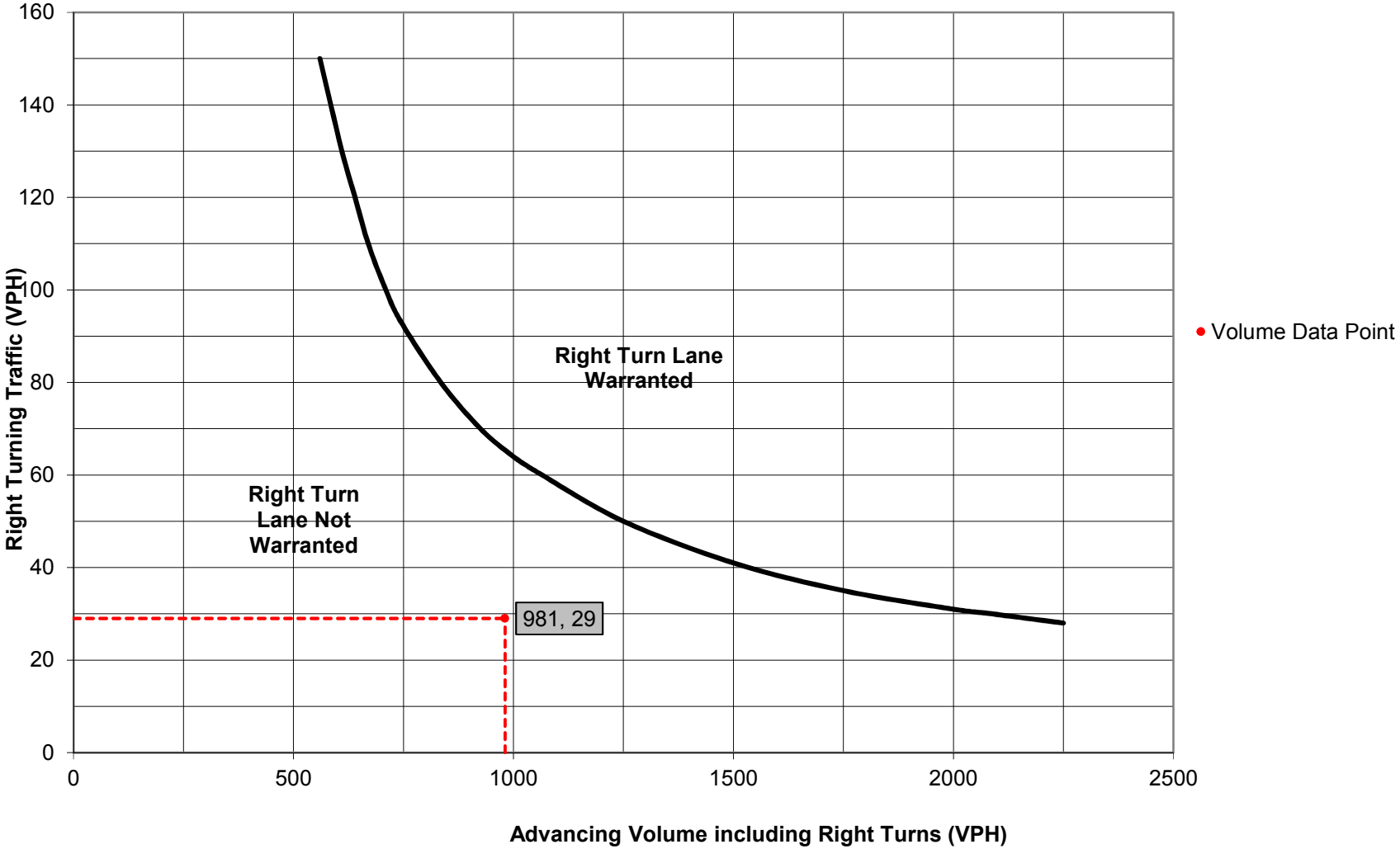
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed Full Access Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	SAT Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	61	2.0%	62
	Through	-	903	2.0%	913
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	805	2.0%	814
	Right	Yes	27	2.0%	28

Advancing Volume:	975
Opposing Volume:	842
Left Turn Volume:	62
% Left Turns in Advancing Volume:	6.36%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	805	2.0%	N/A
	Right	-	27	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 7**

Warrant Met?: **Yes**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	62
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: 1.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

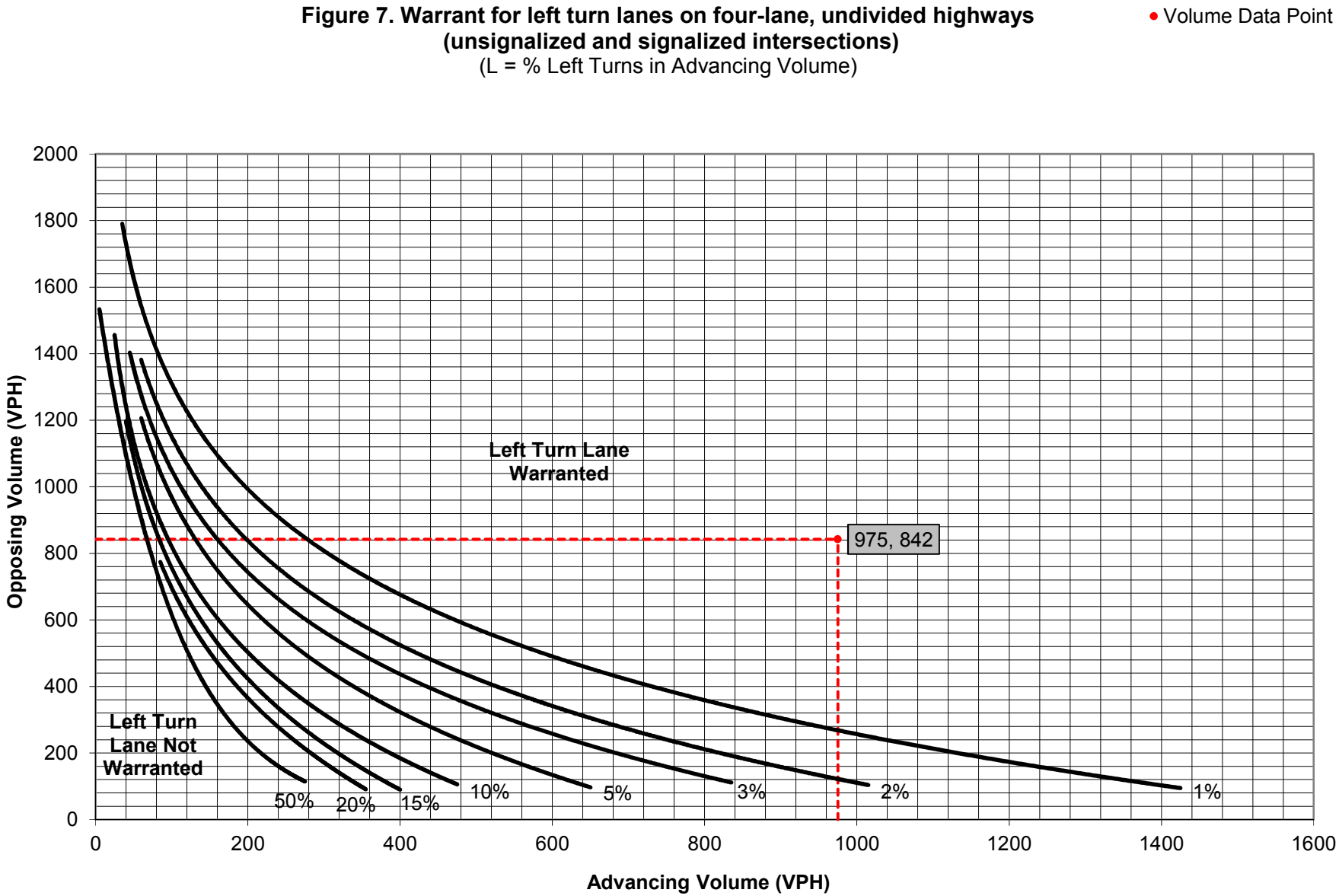
Left Turn Lane Storage Length, Condition A:	75	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	75	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 7. Warrant for left turn lanes on four-lane, undivided highways (unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed Full Access Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	SAT Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	61	2.0%	N/A
	Through	-	903	2.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	805	2.0%	N/A
	Right	Yes	27	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	805	2.0%	814
	Right	-	27	2.0%	28

Advancing Volume:	842
Right Turn Volume:	28

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 11**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	28
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

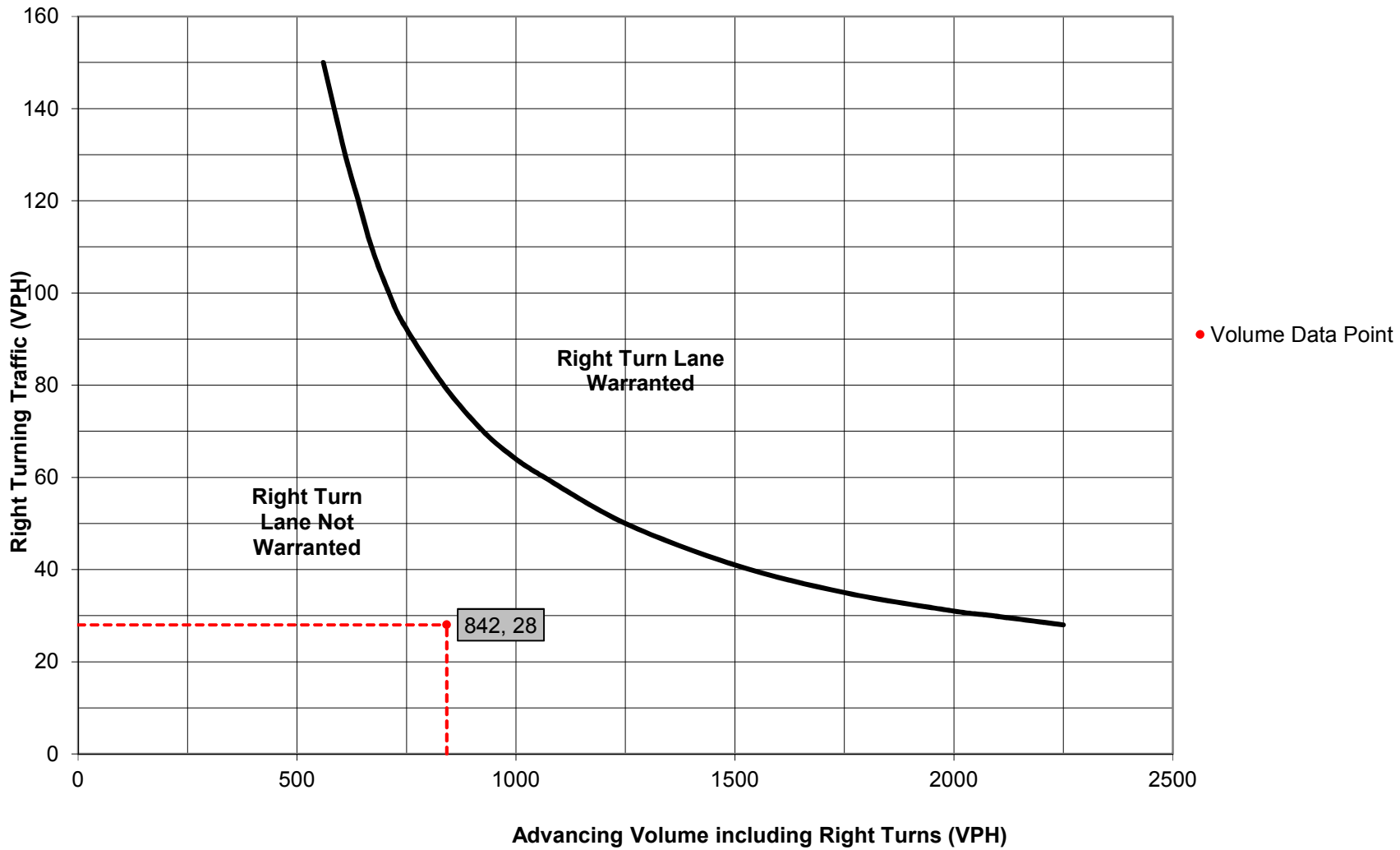
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed Full Access Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	SUN Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	60	2.0%	61
	Through	-	606	1.0%	610
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	607	1.0%	611
	Right	Yes	27	2.0%	28

Advancing Volume:	671
Opposing Volume:	639
Left Turn Volume:	61
% Left Turns in Advancing Volume:	9.09%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	607	1.0%	N/A
	Right	-	27	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 7**

Warrant Met?: **Yes**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	61
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: 1.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

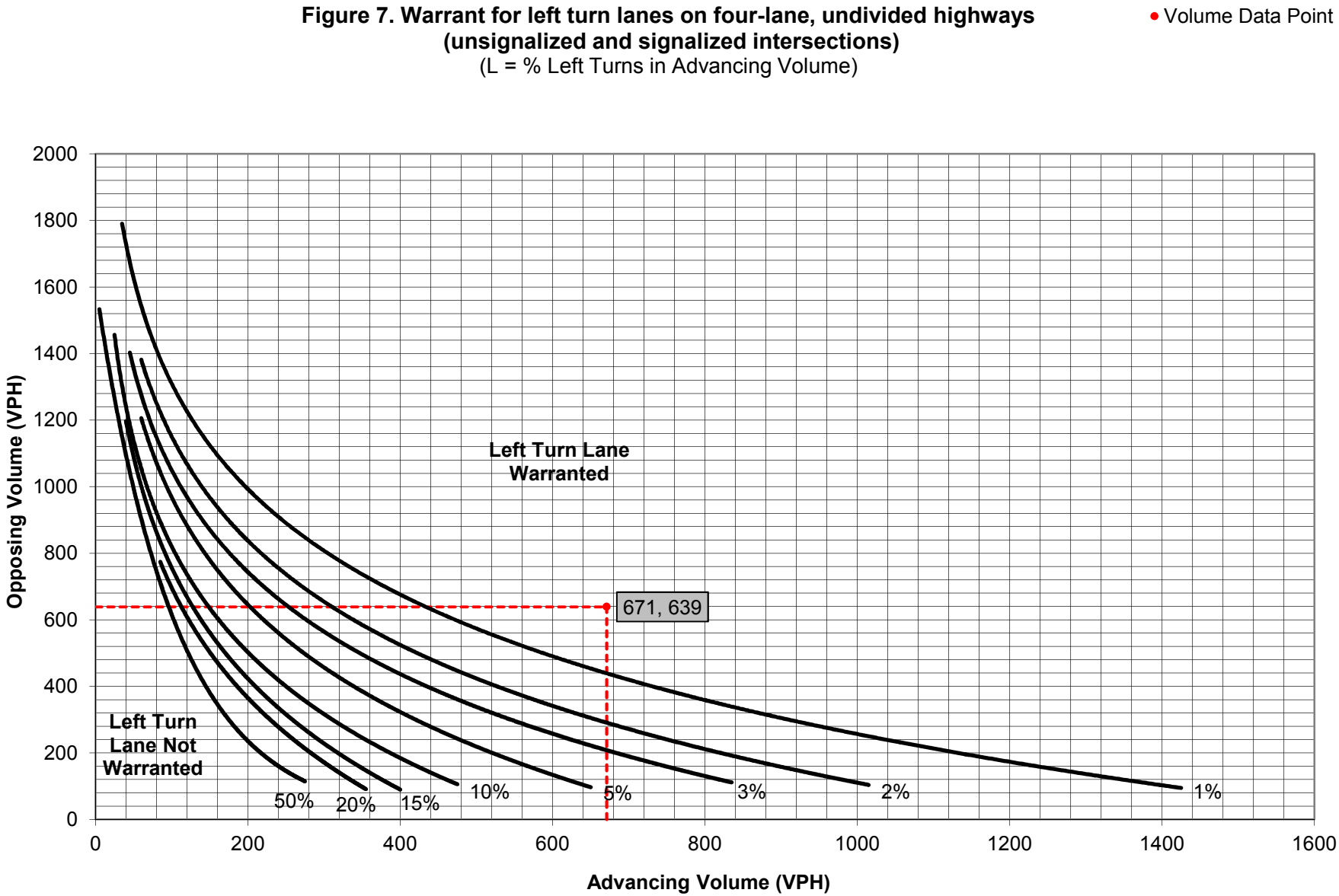
Left Turn Lane Storage Length, Condition A:	75	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	75	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 7. Warrant for left turn lanes on four-lane, undivided highways (unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Lancaster Avenue & Proposed Full Access Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	2
Design Hour:	SUN Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	60	2.0%	N/A
	Through	-	606	1.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	607	1.0%	N/A
	Right	Yes	27	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	607	1.0%	611
	Right	-	27	2.0%	28

Advancing Volume:	639
Right Turn Volume:	28

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 11**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	28
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

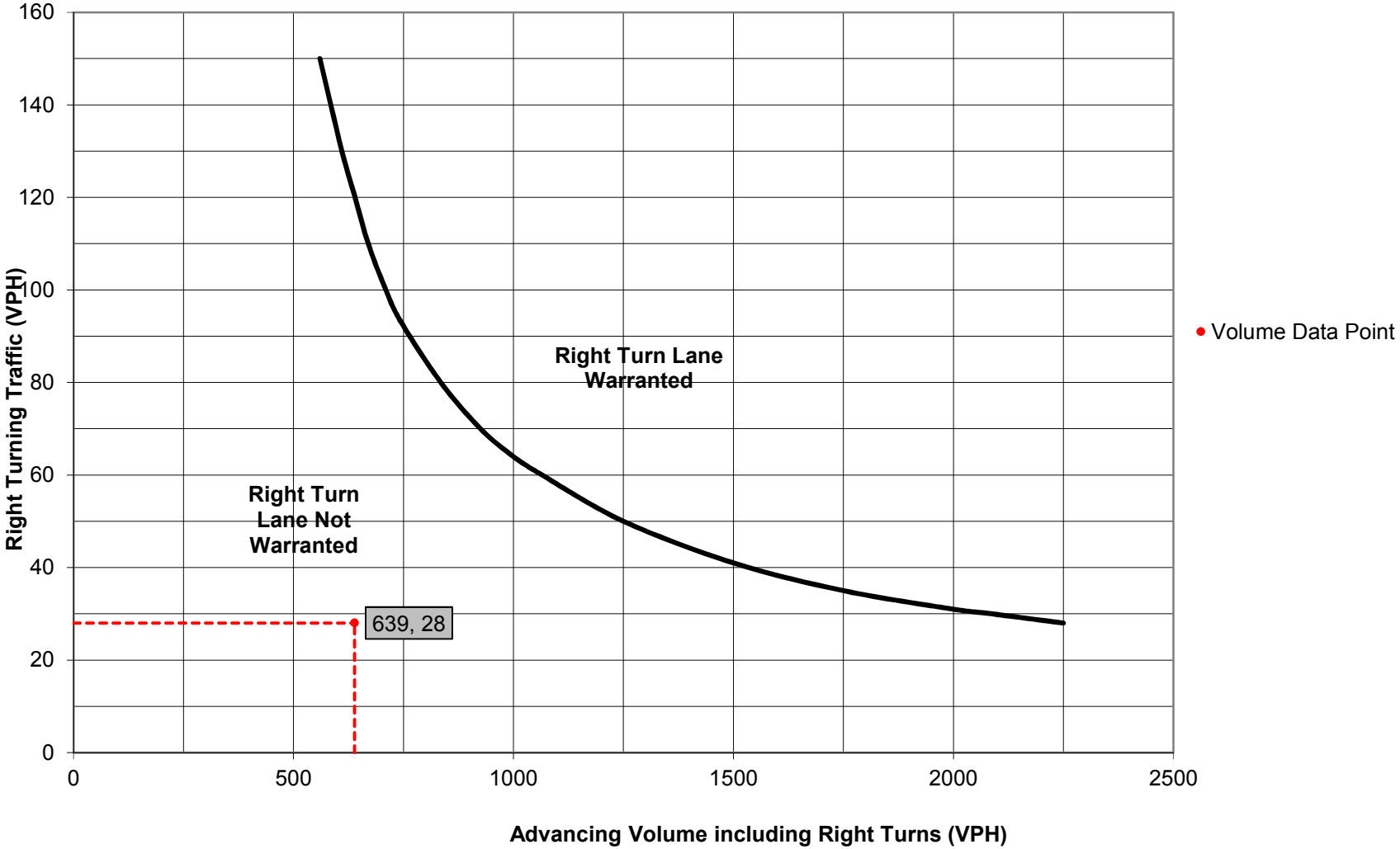
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Aberdeen Avenue & Proposed Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	AM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	37	2.0%	38
	Through	-	122	2.0%	124
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	203	8.0%	212
	Right	Yes	18	2.0%	19

Advancing Volume:	162
Opposing Volume:	231
Left Turn Volume:	38
% Left Turns in Advancing Volume:	23.46%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	203	8.0%	N/A
	Right	-	18	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	38
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

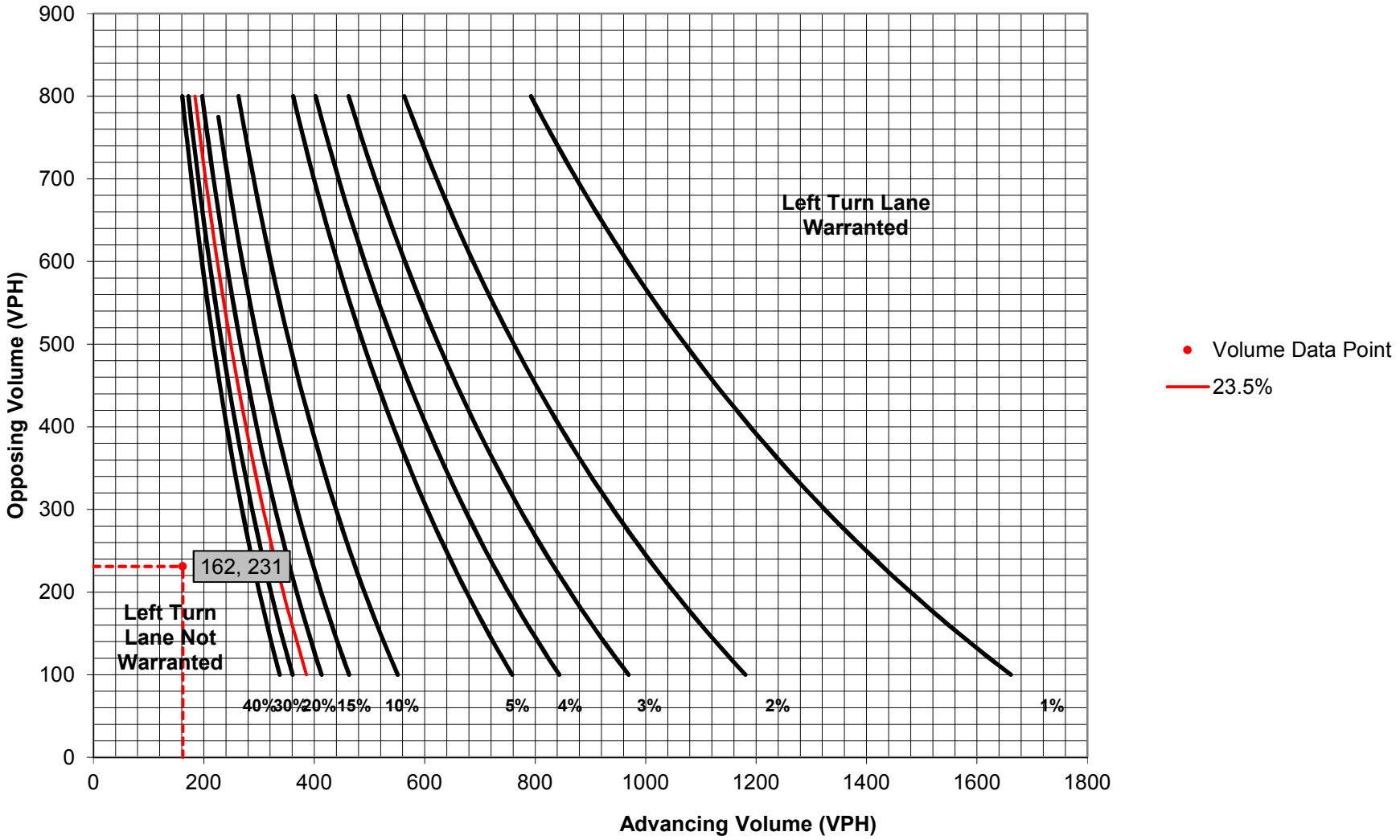
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Aberdeen Avenue & Proposed Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	AM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	37	2.0%	N/A
	Through	-	122	2.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	203	8.0%	N/A
	Right	Yes	18	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	203	8.0%	212
	Right	-	18	2.0%	19

Advancing Volume:	231
Right Turn Volume:	19

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	19
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

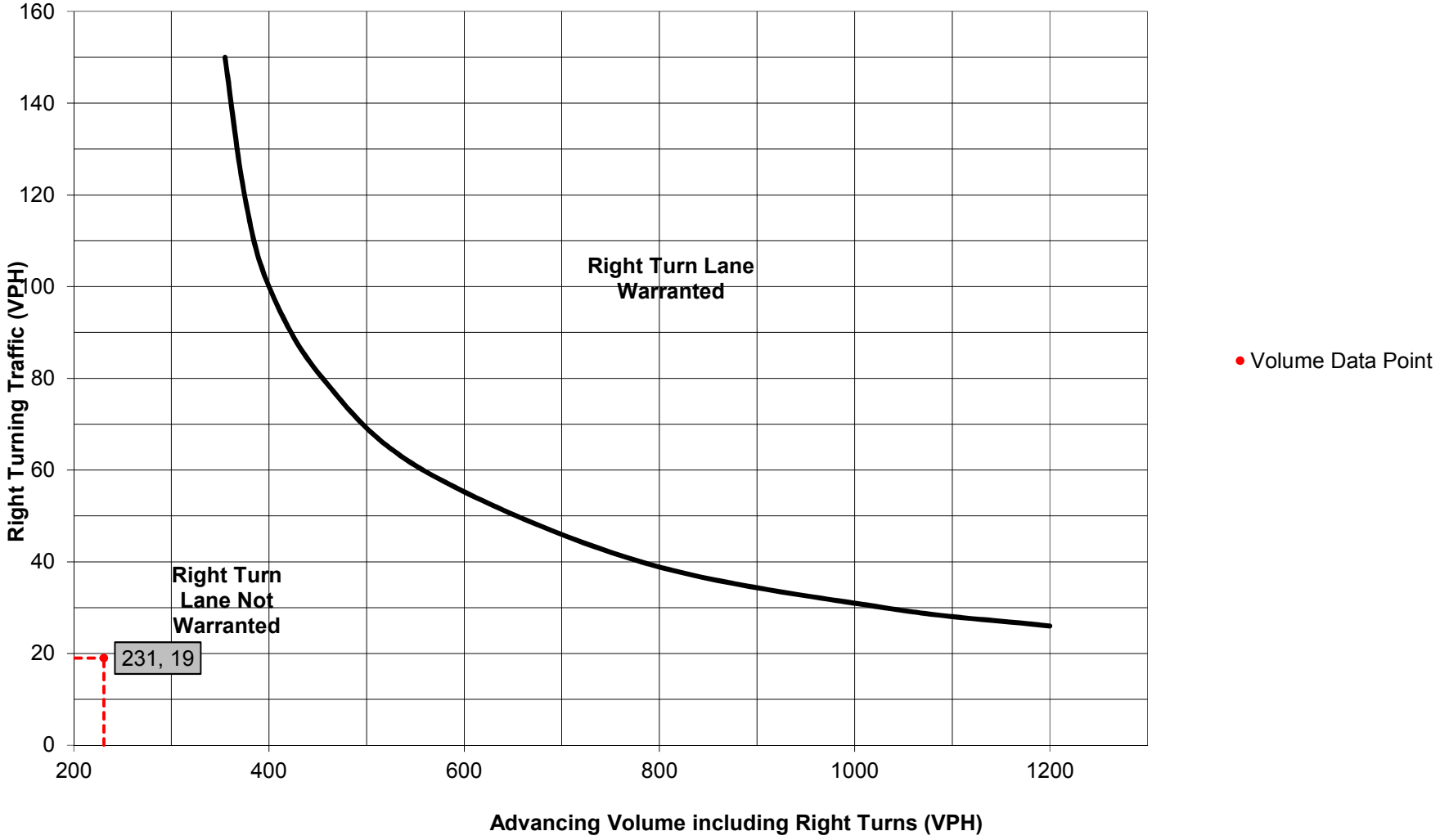
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Aberdeen Avenue & Proposed Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	PM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	32	2.0%	33
	Through	-	145	3.0%	148
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	125	0.0%	125
	Right	Yes	13	2.0%	14

Advancing Volume:	181
Opposing Volume:	139
Left Turn Volume:	33
% Left Turns in Advancing Volume:	18.23%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	125	0.0%	N/A
	Right	-	13	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	33
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

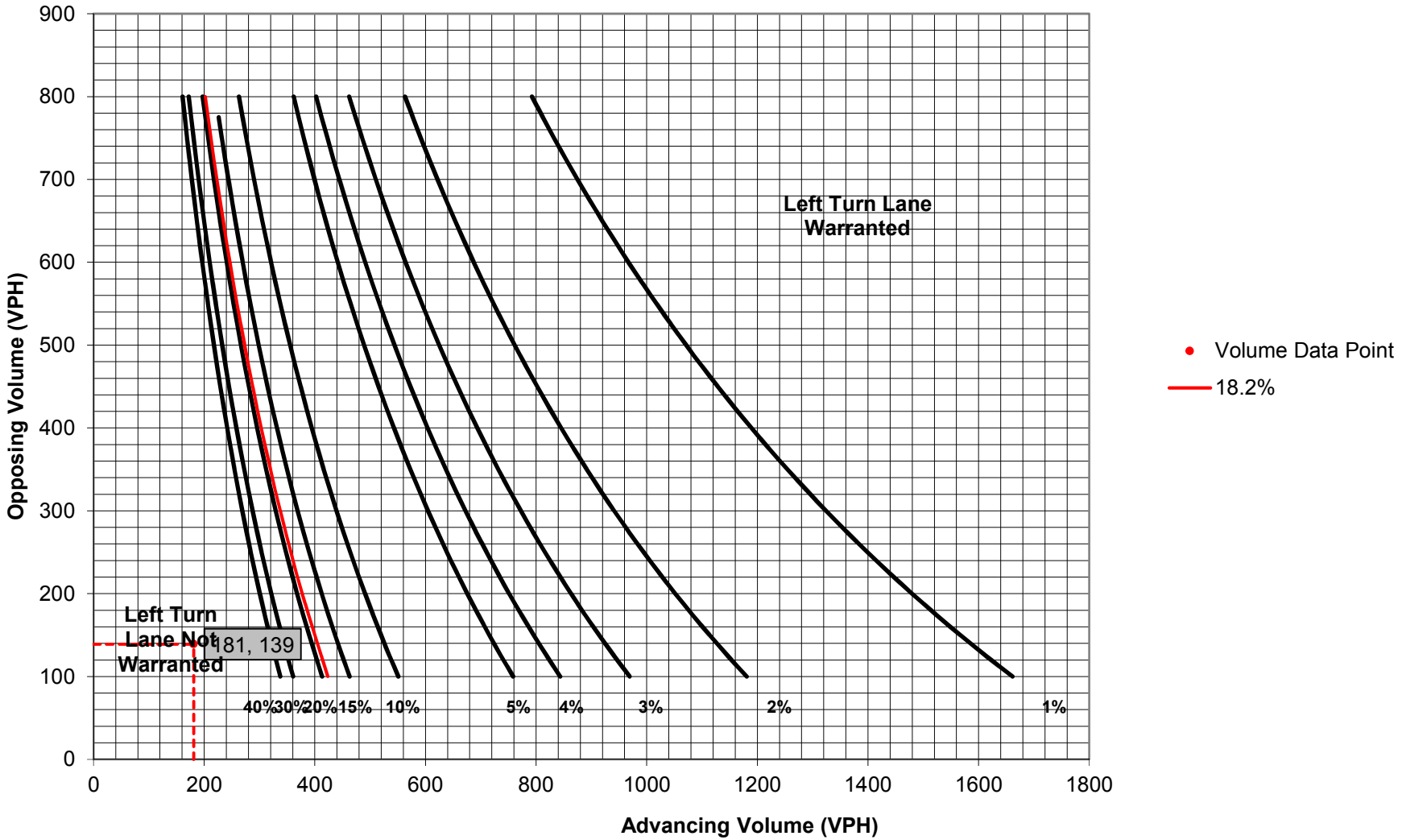
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Aberdeen Avenue & Proposed Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	PM Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	32	2.0%	N/A
	Through	-	145	3.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	125	0.0%	N/A
	Right	Yes	13	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	125	0.0%	125
	Right	-	13	2.0%	14

Advancing Volume:	139
Right Turn Volume:	14

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	14
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

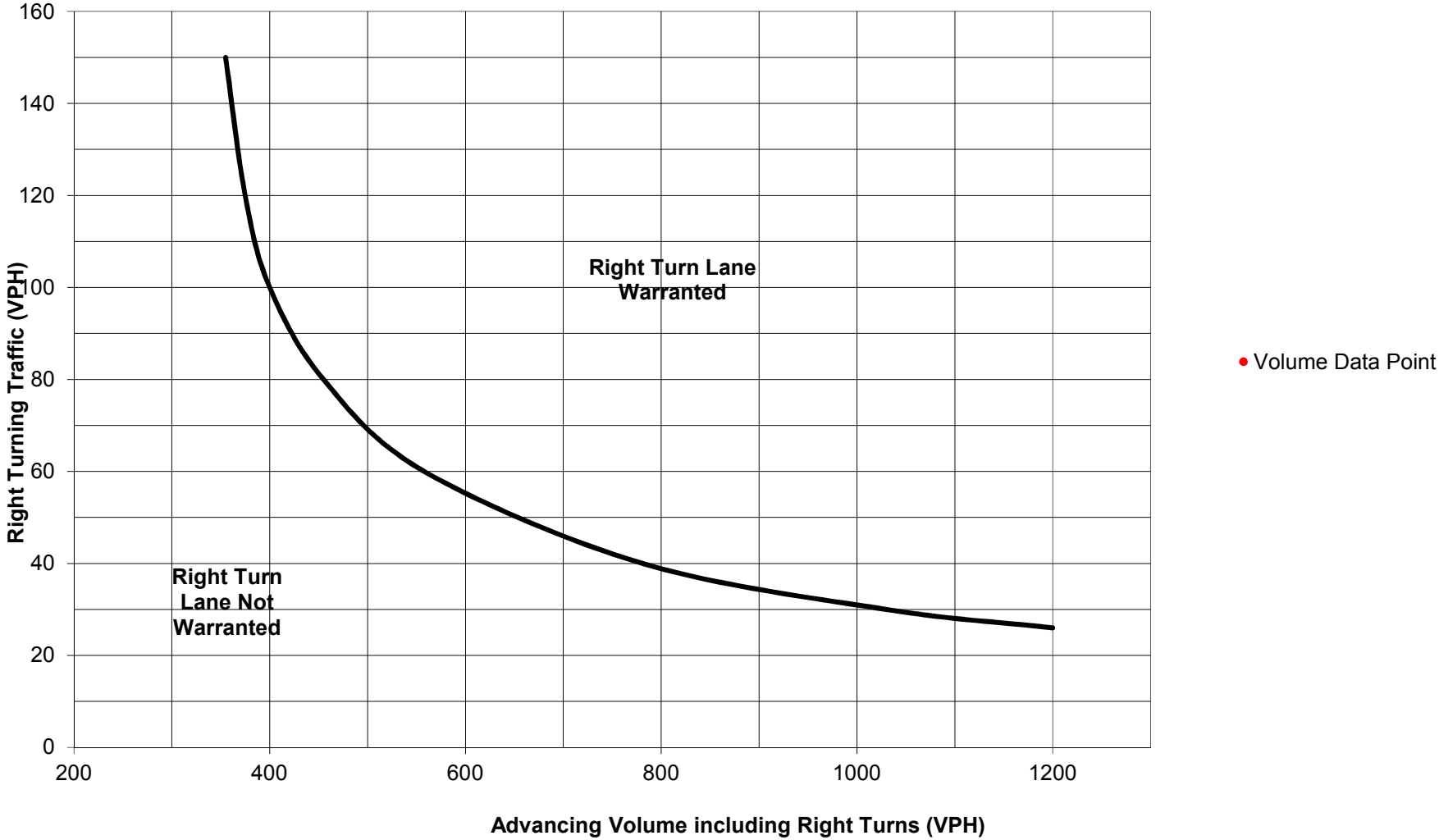
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Aberdeen Avenue & Proposed Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	SAT Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	29	2.0%	30
	Through	-	121	1.0%	122
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	160	2.0%	162
	Right	Yes	12	2.0%	13

Advancing Volume:	152
Opposing Volume:	175
Left Turn Volume:	30
% Left Turns in Advancing Volume:	19.74%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	160	2.0%	N/A
	Right	-	12	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	30
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

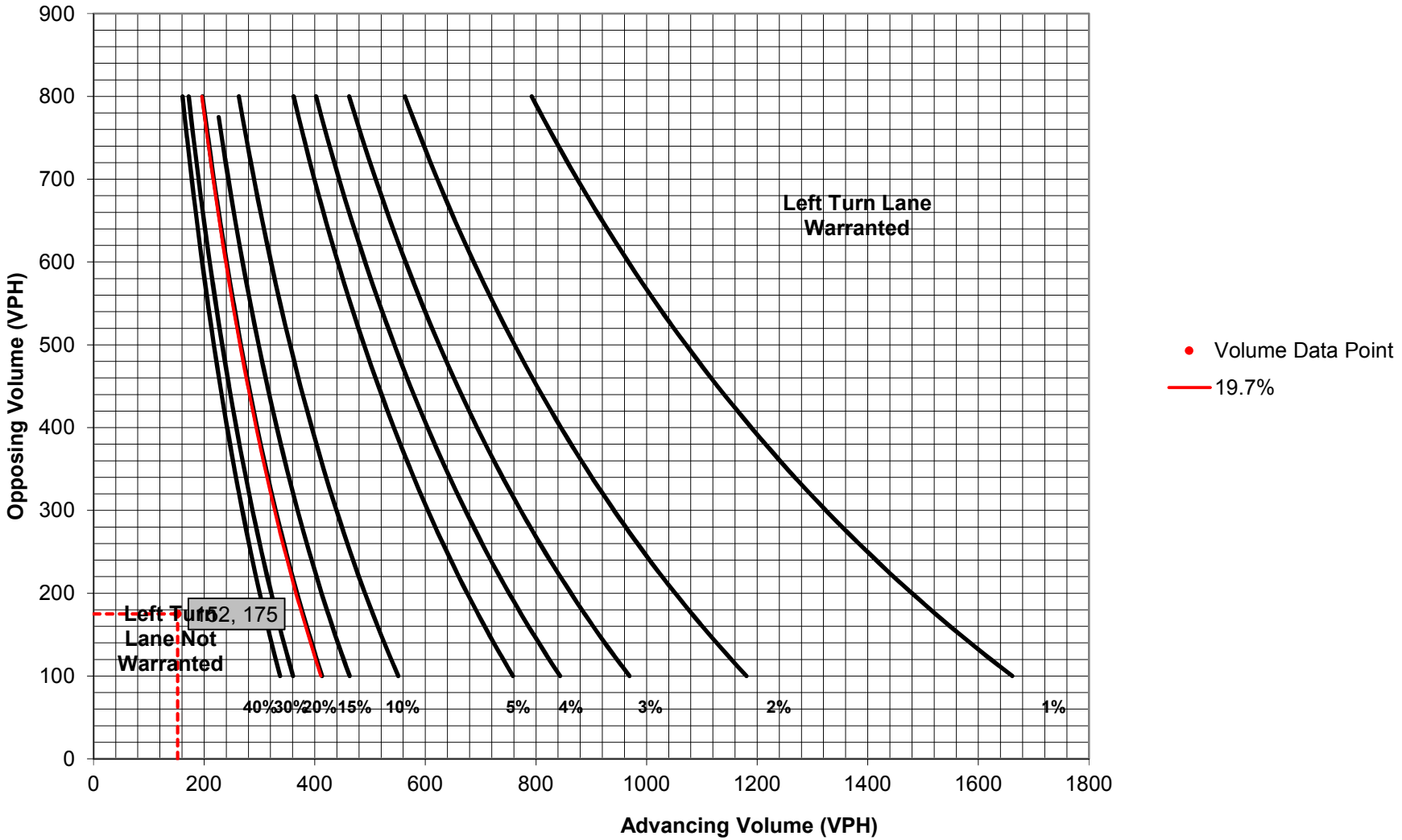
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Aberdeen Avenue & Proposed Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	SAT Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	29	2.0%	N/A
	Through	-	121	1.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	160	2.0%	N/A
	Right	Yes	12	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	160	2.0%	162
	Right	-	12	2.0%	13

Advancing Volume:	175
Right Turn Volume:	13

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	13
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

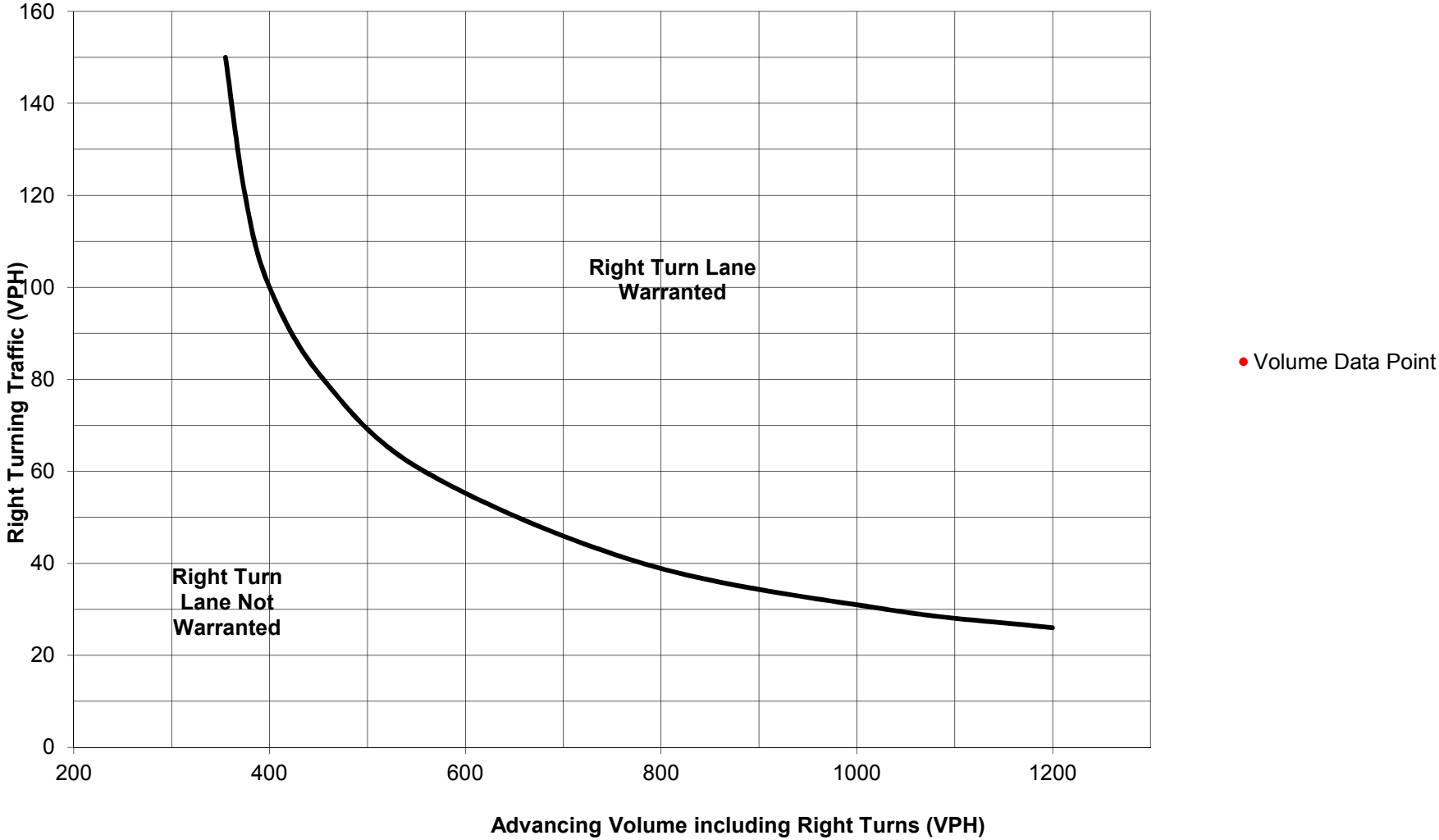
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Aberdeen Avenue & Proposed Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	SUN Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	28	2.0%	29
	Through	-	81	2.0%	82
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	89	2.0%	90
	Right	Yes	11	2.0%	12

Advancing Volume:	111
Opposing Volume:	102
Left Turn Volume:	29
% Left Turns in Advancing Volume:	26.13%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-	89	2.0%	N/A
	Right	-	11	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	29
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

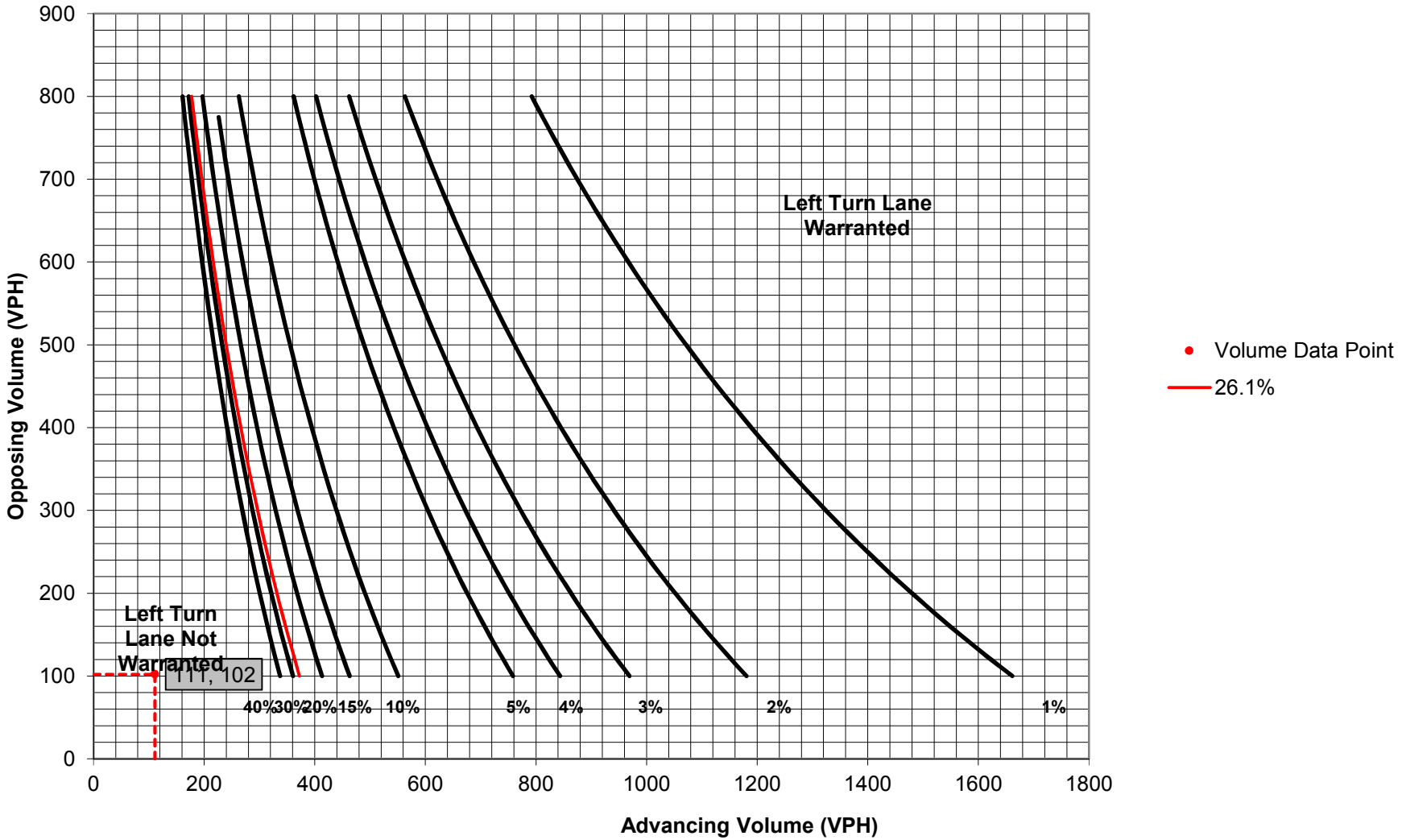
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Radnor Township	Analysis Date:	9/26/2018
County:	Delaware County	Conducted By:	PG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	TPD

Intersection & Approach Description: Aberdeen Avenue & Proposed Driveway

Analysis Period:	2025 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	SUN Peak	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	28	2.0%	N/A
	Through	-	81	2.0%	N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-	89	2.0%	N/A
	Right	Yes	11	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			0
	Through	-	89	2.0%	90
	Right	-	11	2.0%	12

Advancing Volume:	102
Right Turn Volume:	12

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	12
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

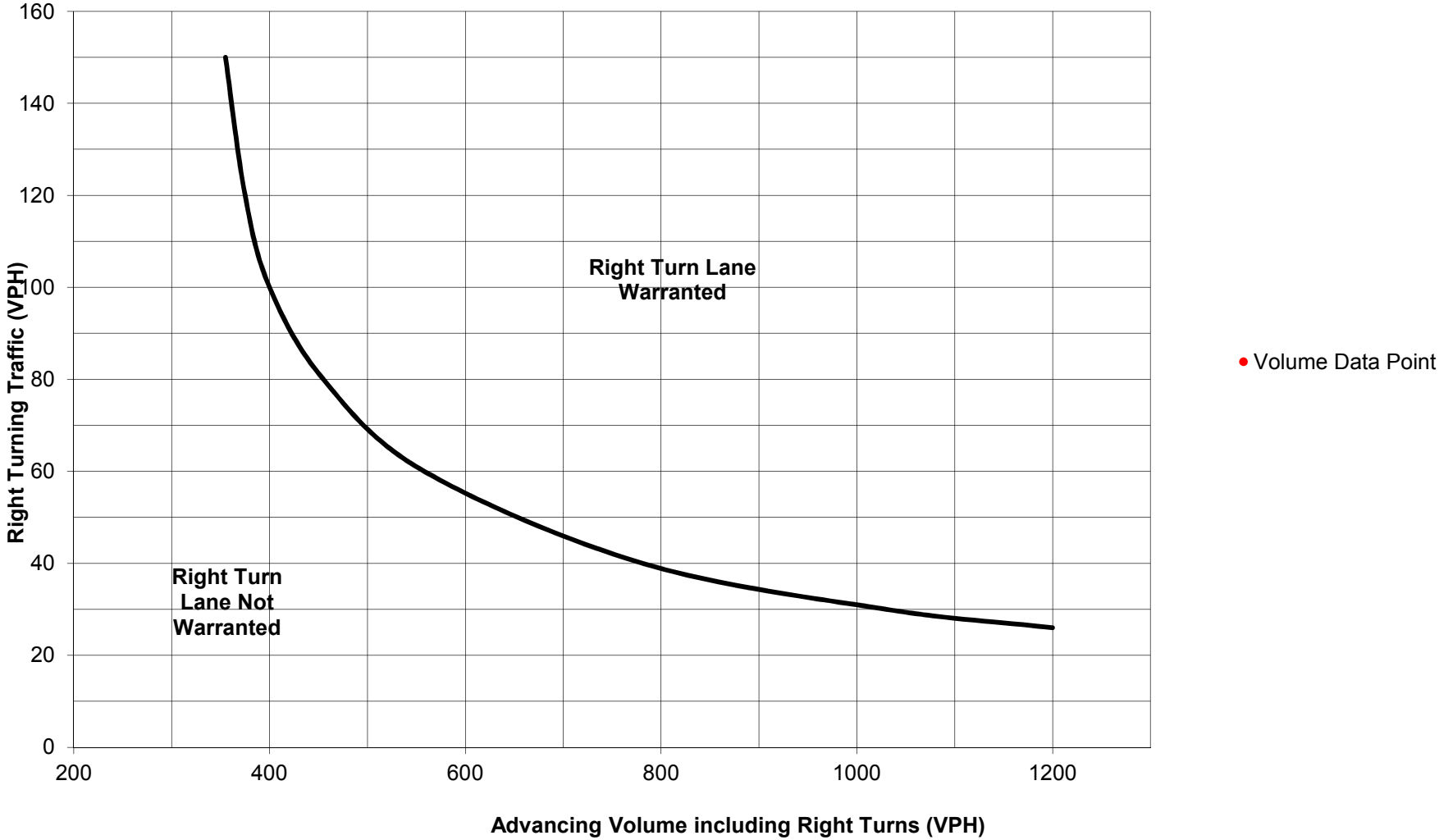
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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



APPENDIX K

GAP ANALYSIS

Study Name GAP - Lancaster Avenue - AM/PM/SAT
Dates 05/31/2018 & 06/02/2018

Left from Minor

	7.7-10.5	10.5-13.3	13.3-16.1	16.1-18.9	18.9-21.7	21.7-24.5	24.5-27.3	27.3+
7:45	3	5	0	0	0	0	0	1
8:00	6	1	1	0	0	0	0	0
8:15	8	3	2	2	0	0	0	0
8:30	6	3	0	0	0	0	0	0
TOTAL	**23**	**12**	**3**	**2**	**0**	**0**	**0**	**1**

	7.7-10.5	10.5-13.3	13.3-16.1	16.1-18.9	18.9-21.7	21.7-24.5	24.5-27.3	27.3+
16:45	7	2	3	0	1	0	1	0
17:00	5	1	0	1	0	1	0	0
17:15	5	4	0	0	0	0	0	0
17:30	4	3	1	0	0	0	0	0
TOTAL	**21**	**10**	**4**	**1**	**1**	**1**	**1**	**0**

	7.7-10.5	10.5-13.3	13.3-16.1	16.1-18.9	18.9-21.7	21.7-24.5	24.5-27.3	27.3+
11:15	6	1	3	1	0	1	0	0
11:30	5	2	2	1	0	0	0	0
11:45	8	3	2	1	0	0	0	2
12:00	3	5	1	0	0	0	0	0
TOTAL	**22**	**11**	**8**	**3**	**0**	**1**	**0**	**2**

Gap Calculation for Unsignalized Intersection
Left Turn from Two-Lane Minor Road to Four-Lane Major Road

Intersection: **Major St.** **Lancaster Avenue (S.R. 0030)**
Minor St. **Proposed Full-Access Driveway**

Time Studied: **Weekday A.M. Peak Hour, 7:45-8:45 AM**
Date of Study: **Thursday, May 31, 2018**

Critical Gaps (2010 HCM Methodology w/PennDOT Pub. 46 values and PA Defaults)

Critical Gap =	7.7	seconds
Follow-up Gap =	2.8	seconds

Vehicles Served	Required Gap	
1	7.7	seconds
2	10.5	seconds
3	13.3	seconds
4	16.1	seconds
5	18.9	seconds
6	21.7	seconds
7	24.5	seconds
8	27.3	seconds

Turn Capacity Calculation

Gap Duration (sec)	7.7-10.5	10.5-13.3	13.3-16.1	16.1-18.9	18.9-21.7	21.7-24.5	24.5-27.3	27.3+
# of counted gaps	23	12	3	2	0	0	0	1
multiplier*	1	2	3	4	5	6	7	8
total	23	24	9	8	0	0	0	8

* multiplier = number of turns that can be made given the gap range (in seconds)
Note: The multipliers are based on the critical gap time and the follow-up time above.

Total Available Turn Capacity:	**72**	left turns
Left-Turn Egress Volume:	**26**	vehicles
Reserve Capacity for Turns	**46**	

Gap Calculation for Unsignalized Intersection
Left Turn from Two-Lane Minor Road to Four-Lane Major Road

Intersection: **Major St.** **Lancaster Avenue (S.R. 0030)**
Minor St. **Proposed Full-Access Driveway**

Time Studied: **Weekday P.M. Peak Hour, 4:45-5:45 PM**
Date of Study: **Thursday, May 31, 2018**

Critical Gaps (2010 HCM Methodology w/PennDOT Pub. 46 values and PA Defaults)

Critical Gap =	7.7	seconds
Follow-up Gap =	2.8	seconds

Vehicles Served	Required Gap	
1	7.7	seconds
2	10.5	seconds
3	13.3	seconds
4	16.1	seconds
5	18.9	seconds
6	21.7	seconds
7	24.5	seconds
8	27.3	seconds

Turn Capacity Calculation

Gap Duration (sec)	7.7-10.5	10.5-13.3	13.3-16.1	16.1-18.9	18.9-21.7	21.7-24.5	24.5-27.3	27.3+
# of counted gaps	21	10	4	1	1	1	1	0
multiplier*	1	2	3	4	5	6	7	8
total	21	20	12	4	5	6	7	0

* multiplier = number of turns that can be made given the gap range (in seconds)
Note: The multipliers are based on the critical gap time and the follow-up time above.

Total Available Turn Capacity:	**75**	left turns
Left-Turn Egress Volume:	**21**	vehicles
Reserve Capacity for Turns	**54**	

Gap Calculation for Unsignalized Intersection
Left Turn from Two-Lane Minor Road to Four-Lane Major Road

Intersection: **Major St.** **Lancaster Avenue (S.R. 0030)**
Minor St. **Proposed Full-Access Driveway**

Time Studied: **SAT Midday Peak Hour, 11:15 AM-12:15 PM**
Date of Study: **Saturday, June 2, 2018**

Critical Gaps (2010 HCM Methodology w/PennDOT Pub. 46 values and PA Defaults)

Critical Gap =	7.7	seconds
Follow-up Gap =	2.8	seconds

Vehicles Served	Required Gap	
1	7.7	seconds
2	10.5	seconds
3	13.3	seconds
4	16.1	seconds
5	18.9	seconds
6	21.7	seconds
7	24.5	seconds
8	27.3	seconds

Turn Capacity Calculation

Gap Duration (sec)	7.7-10.5	10.5-13.3	13.3-16.1	16.1-18.9	18.9-21.7	21.7-24.5	24.5-27.3	27.3+
# of counted gaps	22	11	8	3	0	1	0	2
multiplier*	1	2	3	4	5	6	7	8
total	22	22	24	12	0	6	0	16

* multiplier = number of turns that can be made given the gap range (in seconds)
Note: The multipliers are based on the critical gap time and the follow-up time above.

Total Available Turn Capacity:	**102**	left turns
Left-Turn Egress Volume:	**21**	vehicles
Reserve Capacity for Turns	**81**	

Study Name GAP - Aberdeen Ave - AM/PM/SAT
Dates 05/31/2018 & 06/02/2018

Left from Minor

	6.4-9.4	9.4-12.4	12.4-15.4	15.4-18.4	18.4-21.4	21.4-24.4	24.4-27.4	27.4+
7:45	7	6	1	4	1	1	0	2
8:00	6	6	2	2	8	0	3	4
8:15	6	4	4	1	0	1	3	12
8:30	7	7	5	1	2	1	2	9
TOTAL	**26**	**23**	**12**	**8**	**11**	**3**	**8**	**27**

	6.4-9.4	9.4-12.4	12.4-15.4	15.4-18.4	18.4-21.4	21.4-24.4	24.4-27.4	27.4+
16:45	5	6	6	5	2	2	4	5
17:00	4	12	3	4	2	2	2	9
17:15	1	4	5	4	4	3	2	9
17:30	6	3	2	6	4	3	2	9
TOTAL	**16**	**25**	**16**	**19**	**12**	**10**	**10**	**32**

	6.4-9.4	9.4-12.4	12.4-15.4	15.4-18.4	18.4-21.4	21.4-24.4	24.4-27.4	27.4+
11:15	4	6	7	3	2	1	1	10
11:30	6	3	3	0	1	4	3	7
11:45	8	3	3	3	2	2	0	4
12:00	5	3	9	2	3	1	0	7
TOTAL	**23**	**15**	**22**	**8**	**8**	**8**	**4**	**28**

Gap Calculation for Unsignalized Intersection
Left Turn from Two-Lane Minor Road to Two-Lane Major Road

Intersection: **Major St.** **Lancaster Avenue (S.R. 0030)**
Minor St. **Proposed Full-Access Driveway**

Time Studied: **Weekday A.M. Peak Hour, 7:45-8:45 AM**
Date of Study: **Thursday, May 31, 2018**

Critical Gaps (2010 HCM Methodology w/PennDOT Pub. 46 values and PA Defaults)

Critical Gap =	6.4	seconds
Follow-up Gap =	3.0	seconds

Vehicles Served	Required Gap	
1	6.4	seconds
2	9.4	seconds
3	12.4	seconds
4	15.4	seconds
5	18.4	seconds
6	21.4	seconds
7	24.4	seconds
8	27.4	seconds

Turn Capacity Calculation

Gap Duration (sec)	6.4-9.4	9.4-12.4	12.4-15.4	15.4-18.4	18.4-21.4	21.4-24.4	24.4-27.4	27.4+
# of counted gaps	23	23	12	8	11	3	8	27
multiplier*	1	2	3	4	5	6	7	8
total	23	46	36	32	55	18	56	216

* multiplier = number of turns that can be made given the gap range (in seconds)
Note: The multipliers are based on the critical gap time and the follow-up time above.

Total Available Turn Capacity:	**482**	left turns
Left-Turn Egress Volume:	**12**	vehicles
Reserve Capacity for Turns	**470**	

Gap Calculation for Unsignalized Intersection
Left Turn from Two-Lane Minor Road to Two-Lane Major Road

Intersection: **Major St.** **Lancaster Avenue (S.R. 0030)**
Minor St. **Proposed Full-Access Driveway**

Time Studied: **Weekday P.M. Peak Hour, 4:45-5:45 PM**
Date of Study: **Thursday, May 31, 2018**

Critical Gaps (2010 HCM Methodology w/PennDOT Pub. 46 values and PA Defaults)

Critical Gap =	6.4	seconds
Follow-up Gap =	3.0	seconds

Vehicles Served	Required Gap	
1	6.4	seconds
2	9.4	seconds
3	12.4	seconds
4	15.4	seconds
5	18.4	seconds
6	21.4	seconds
7	24.4	seconds
8	27.4	seconds

Turn Capacity Calculation

Gap Duration (sec)	6.4-9.4	9.4-12.4	12.4-15.4	15.4-18.4	18.4-21.4	21.4-24.4	24.4-27.4	27.4+
# of counted gaps	16	25	16	19	12	10	10	32
multiplier*	1	2	3	4	5	6	7	8
total	16	50	48	76	60	60	70	256

* multiplier = number of turns that can be made given the gap range (in seconds)
Note: The multipliers are based on the critical gap time and the follow-up time above.

Total Available Turn Capacity:	**636**	left turns
Left-Turn Egress Volume:	**12**	vehicles
Reserve Capacity for Turns	**624**	

Gap Calculation for Unsignalized Intersection
Left Turn from Two-Lane Minor Road to Two-Lane Major Road

Intersection: **Major St.** **Lancaster Avenue (S.R. 0030)**
Minor St. **Proposed Full-Access Driveway**

Time Studied: **SAT Midday Peak Hour, 11:15 AM-12:15 PM**
Date of Study: **Saturday, June 2, 2018**

Critical Gaps (2010 HCM Methodology w/PennDOT Pub. 46 values and PA Defaults)

Critical Gap = 6.4 seconds
Follow-up Gap = 3.0 seconds

Vehicles Served	Required Gap	
1	6.4	seconds
2	9.4	seconds
3	12.4	seconds
4	15.4	seconds
5	18.4	seconds
6	21.4	seconds
7	24.4	seconds
8	27.4	seconds

Turn Capacity Calculation

Gap Duration (sec)	6.4-9.4	9.4-12.4	12.4-15.4	15.4-18.4	18.4-21.4	21.4-24.4	24.4-27.4	27.4+
# of counted gaps	23	15	22	8	8	8	4	28
multiplier*	1	2	3	4	5	6	7	8
total	23	30	66	32	40	48	28	224

* multiplier = number of turns that can be made given the gap range (in seconds)
Note: The multipliers are based on the critical gap time and the follow-up time above.

Total Available Turn Capacity: **491** left turns

Left-Turn Egress Volume: **10** vehicles

Reserve Capacity for Turns **481**

APPENDIX L

CONFLICT FACTOR CALCULATIONS

LEFT TURN SIGNALIZATION DOCUMENTATION

COUNTY: **DELAWARE**
MUNICIPALITY: **RADNOR TOWNSHIP**
INTERSECTION: **LANCASTER AVENUE (S.R. 0030) & ABERDEEN AVENUE**
DIRECTION: **(E/W)** **(N/S)**

Time	Left Turn				Opposing		Calculated	Required
	Direction	Exclusive Lane	Per Cycle	Volume	Through Volume	# of Lanes	Conflict Factor	Conflict Factor
AM PEAK	EB	N	1.05	36	926	2	33,336	45,000
	WB	N	0.88	30	806	2	24,180	45,000
	NB	N	4.35	149	86	1	12,814	35,000
	SB	N	4.20	144	114	1	16,416	35,000
PM PEAK	EB	N	0.57	34	937	2	31,858	45,000
	WB	N	0.43	26	841	2	21,866	45,000
	NB	N	1.70	102	114	1	11,628	35,000
	SB	N	2.03	122	68	1	8,296	35,000
SAT PEAK	EB	N	1.33	40	841	2	33,640	45,000
	WB	N	0.90	27	693	2	18,711	45,000
	NB	N	3.17	95	73	1	6,935	35,000
	SB	N	3.87	116	98	1	11,368	35,000
SUN PEAK	EB	N	0.97	29	563	2	16,327	45,000
	WB	N	0.87	26	561	2	14,586	45,000
	NB	N	2.73	82	49	1	4,018	35,000
	SB	N	2.20	66	51	1	3,366	35,000

*Volumes based upon 2025 Projected Conditions
AM Cycle Length (Seconds) - 105
PM Cycle Length (Seconds) - 60
SAT Cycle Length (Seconds) - 120
SUN Cycle Length (Seconds) - 120

DIRECTION	LEFT TURN PHASES	
	Warrant Satified	Proposed
Eastbound	NO	NO
Westbound	NO	NO
Northbound	NO	NO
Southbound	NO	NO

COMMENTS: Match Existing Phasing

Protected/Permitted

No Turn Lane	**>35,000 one lane**	**>45,000 two lane**
Turn Lane	**>50,000 one lane**	**>65,000 two lane**

Protected/Prohibited

Turn Lane	**>67,500 one lane**	**>90,000 two lane**

Compiled by: PG
Date: 9/25/2018
Checked by:
Date: