

March 19, 2025

TPD# BLC.00157

Info@TPDinc.com

Odessa Townhomes

Transportation Impact Assessment

Phoenixville Borough, Chester County, PA

For Submission To:

Phoenixville Borough

ODDESSA TOWNHOMES TRANSPORTATION IMPACT ASSESSMENT

FOR SUBMISSION TO:

Phoenixville Borough, Chester County, PA

March 19, 2025
TPD #BLC.00157



Prepared By:

TPD

1025 Andrew Drive, Suite 110
West Chester, Pennsylvania 19380

Phone: (610) 326-3100

Fax: (610) 326-9410

E-mail: TPD@TPDinc.com

Website: www.TPDinc.com

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION.....	1
EXISTING TRAFFIC CONDITIONS.....	3
BASE (NO-BUILD) CONDITIONS.....	4
SCHEDULED ROADWAY IMPROVEMENTS.....	5
TRIP GENERATION	6
TRIP DISTRIBUTION.....	7
PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES.....	8
LEVELS OF SERVICE FOR AN INTERSECTION.....	8
CAPACITY ANALYSIS METHODOLOGY.....	8
LEVELS OF SERVICE IN THE STUDY AREA.....	9
95 TH PERCENTILE QUEUE ANALYSIS	11
AUXILIARY TURN LANE ANALYSIS	13
RECOMMENDATIONS & CONCLUSIONS	13

FIGURES 1 – 10

TECHNICAL APPENDICES

- Appendix A: Project Correspondence
- Appendix B: Study Area Photographs
- Appendix C: Manual Traffic Count Printouts & Speed Study
- Appendix D: Nearby Developments
- Appendix E: Volume Development Worksheets
- Appendix F: Capacity Analyses
- Appendix G: Auxiliary Turn Lane Warrant Analyses

EXECUTIVE SUMMARY

The purpose of this study is to examine the potential traffic impact associated with the proposed Odessa townhome development on the roadway network in Phoenixville Borough, Chester County, PA. Based on this evaluation, the following conclusions were reached:

1. The project scope and the extent of the study area were confirmed with Borough staff. The study area intersections included in this TIA are as follows:
 - » Township Line Road and Mowere Road;
 - » Township Line Road and Crossover Boulevard;
 - » Township Line Road and Gauge Street/Proposed Site Driveway;
 - » Filmore Street and Ashburn Road;
 - » Filmore Street and Bunning Road;
 - » Ashburn Road and Bunning Road.
 - » Township Line Road and Southern Proposed Site Driveway.
2. The project site is located along the eastern side of Township Line Road, in the area of Gauge Street and Crossover Boulevard. The proposed development is situated between the previously approved Odessa development and Township Line Road.
3. The site currently consist of six (6) existing houses that will be razed in conjunction with the proposed 38 townhomes.
4. Each of the existing six (6) homes on the subject property have their own driveway(s) to Township Line Road, with one property having two (2) driveway for a total of seven (7) existing driveways to Township Line Road. Some of these existing driveways appear to have limited sight distance.
5. With the proposed development the seven (7) existing driveways to Township Line Road will be consolidated to two (2) locations. Access to the proposed Odessa townhomes will be provided via a new access to Township Line Road opposite Gauge Street, as well as a modification to the previously approved original Odessa access to Township Line Road. This access is proposed between Crossover Boulevard and Gauge Street, generally consistent with the former location, but is currently proposed as enter-only. The site will also connect to the previously approved Odessa development roadways. The previously approved Odessa was planned to have access to Filmore Street, a connection to Ashburn Road and access to Township Line Road.
6. The measured sight distance at the proposed site driveways to Township Line Road exceed PennDOT's sight distance requirements.
7. The proposed development is expected to generate 18 new vehicle-trips during the weekday A.M. peak hour and 22 new vehicle-trips during the weekday P.M. peak hour. Please note, in order to provide a conservative trip generation evaluation, no credit/reduction was taken for the traffic currently being generated by the six (6) existing homes being razed in conjunction with the proposed development.
8. Under the 2029 projected conditions with the development of the proposed site, the study area intersections will operate at the same overall intersection level of service (ILOS) as under the 2029 base conditions during the weekday A.M. and weekday P.M. peak hours.

9. All levels of service at the study area intersection comply with the requirement outlined in PennDOT's TIS Guidelines.
10. 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
OVERALL INTERSECTION LEVEL OF SERVICE SUMMARY**

Intersection	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour			Meets LOS Requirements?
	Existing	2029 Conditions		Existing	2029 Conditions		
		Base	Projected		Base	Projected	
<i>Township Line Road & Mowere Road</i>	A (9.5)	B (10.5)	B (10.5)	B (10.4)	B (11.7)	B (11.8)	YES
<i>Ashburn Road & Bunning Road</i>	A (7.5)	A (7.7)	A (7.8)	A (7.3)	A (7.4)	A (7.4)	YES
<i>Filmore Street & Ashburn Road</i>	A (1.1)	A (2.0)	A (2.2)	A (0.2)	A (0.6)	A (0.7)	YES
<i>Filmore Street & Bunning Road</i>	B (14.6)	C (19.1)	C (19.3)	B (10.8)	B (12.0)	B (12.1)	YES
<i>Township Line Road & Crossover Boulevard</i>	A (2.5)	A (3.2)	A (3.2)	A (2.4)	A (2.8)	A (3.5)	YES
<i>Township Line Road & Gauge Street/Proposed Site Driveway</i>	A (0.3)	A (1.7)	A (1.9)	A (0.3)	A (1.6)	A (1.6)	YES
<i>Township Line Road & Southern Proposed Site Driveway</i>	--	--	A (0.0)	--	--	A (0.0)	YES

Base = No-Build; Projected = Build

11. TPD recommends the following in conjunction with the proposed development:
 - » Design the proposed site driveways in accordance with the applicable Borough requirements.
 - » Provide sidewalk along the Township Line Road site frontage, and along the proposed site driveways to connect to the planned sidewalk within the previously approved phase of Odessa.

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Assessment (TIA) for the proposed Odessa Townhome Development in Phoenixville Borough, Chester County, Pennsylvania. The project site is located along the eastern side of Township Line Road, in the area of Gauge Street and Crossover Boulevard, as shown in **Figure 1**. The proposed development is situated between the previously approved Odessa development and Township Line Road. As shown in **Figure 2**, the development is proposed to consist of 38 townhomes. The site currently consist of six (6) existing houses that will be razed in conjunction with the proposed townhomes.

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 February 2024. The project scope and the extent of the study area were confirmed with Borough staff. All relevant correspondence pertaining to this project has been included in **Appendix A**.

Site Access Locations

Each of the existing six (6) homes on the subject property have their own driveway(s) to Township Line Road, with one property having two (2) driveway for a total of seven (7) existing driveways to Township Line Road. Some of these existing driveways appear to have limited sight distance.

With the proposed development the seven (7) existing driveways to Township Line Road will be consolidated to two (2) locations. Access to the proposed Odessa townhomes will be provided via a new access to Township Line Road opposite Gauge Street, as well as a modification to the previously approved original Odessa access to Township Line Road. This access is proposed between Crossover Boulevard and Gauge Street, generally consistent with the former location, but is currently proposed as enter-only. The site will also connect to the previously approved Odessa development roadways. The previously approved Odessa was planned to have access to Filmore Street, a connection to Ashburn Road and access to Township Line Road.

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	Ownership	Functional Classification/ Roadway Type	Predominant Directional Orientation	Average Daily Traffic ¹	Posted Speed Limit
Township Line Road	Township	Major Collector	North-South	7,332	35 mph
Mowere Road	Township	Local Road	East-West	2,775	25 mph
Gauge Street	Township	Local Road	East-West	183	25 mph
Crossover Boulevard	Township	Local Road	East-West	1,850	30 mph
Filmore Street	Township	Local Road	North-South	6,100	25 mph
Ashburn Road	Township	Local Road	East-West	533	15 mph
Bunning Road	Township	Local Road	North-South	817	15 mph

¹Obtained from PennDOT TIRe or calculated using manual counts and a k-factor

Bicycle and Pedestrian Facilities

Based on observations during field visits at the study area intersections, sidewalks are not present on the study area roadways. The Schuylkill River Trail is located east of the proposed site, with a trail easement that connects to Township Line Road south of Crossover Boulevard. The proposed site will maintain the trail easement. In addition, sidewalk is proposed along the Township Line Road site frontage, and along the proposed site driveways to connect to the planned sidewalk within the previously approved phase of Odessa.

Mass Transit Facilities

Chester County and the Phoenixville Borough area are provided with public transportation by SEPTA. SEPTA Bus Route 139, which runs from Limerick to King of Prussia, has stops on Township Line Road, south of Mowere Road, and on Mowere Road, east of Township Line Road.

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 01/01/2019 and ending 12/31/2023. 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 REPORTABLE CRASH DATA**

Study Area Intersection	Number of Reportable Crashes				
	2019	2020	2021	2022	2023
Township Line Road & Mowere Road	1	0	0	1	0
Ashburn Road & Bunning Road	0	0	0	0	0
Filmore Street & Ashburn Road	0	0	0	0	0
Filmore Street & Bunning Road	0	0	0	0	0
Township Line Road & Crossover Boulevard	0	0	0	0	0
Township Line Road & Gauge Street/Proposed Site Driveway	0	0	0	0	0
Township Line Road & Southern Proposed Site Driveway	0	0	0	0	0

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

EXISTING TRAFFIC CONDITIONS

Traffic counts were conducted on 15-minute intervals during the weekday morning (7:00-9:00 A.M.) and weekday evening (4:00 to 6:00 P.M.) peak periods. The traffic data includes pedestrian and truck counts at each intersection. Peak hours and count dates for the study area intersections are identified in **Table 3**.

**TABLE 3
TRAFFIC COUNT INFORMATION**

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour ¹
<i>Township Line Road & Mowere Road</i>	Thursday, January 23, 2025	Weekday A.M.	7:15 to 8:15 A.M.
	Thursday, January 23, 2025	Weekday P.M.	4:30 to 5:30 P.M.
<i>Ashburn Road & Bunning Road</i>	Tuesday, December 17, 2024	Weekday A.M.	7:15 to 8:15 A.M.
	Tuesday, December 17, 2024	Weekday P.M.	5:00 to 6:00 P.M.
<i>Filmore Street & Ashburn Road</i>	Tuesday, December 17, 2024	Weekday A.M.	7:15 to 8:15 A.M.
	Tuesday, December 17, 2024	Weekday P.M.	4:30 to 5:30 P.M.
<i>Filmore Street & Bunning Road</i>	Tuesday, December 17, 2024	Weekday A.M.	7:15 to 8:15 A.M.
	Tuesday, December 17, 2024	Weekday P.M.	4:30 to 5:30 P.M.
<i>Township Line Road & Crossover Boulevard</i>	Tuesday, December 17, 2024	Weekday A.M.	7:30 to 8:30 A.M.
	Tuesday, December 17, 2024	Weekday P.M.	4:30 to 5:30 P.M.
<i>Township Line Road & Gauge Street</i>	Tuesday, December 17, 2024	Weekday A.M.	7:30 to 8:30 A.M.
	Tuesday, December 17, 2024	Weekday P.M.	4:30 to 5:30 P.M.

Peak Hour consists of the four consecutive 15-minute intervals where the highest traffic volumes occur.

Existing condition traffic volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figures 3 and 4**, respectively. Traffic count data sheets are provided in **Appendix C**.

BASE (NO-BUILD) CONDITIONS

Annual Background Growth

A background growth factor for the roadways in the study area was developed based on growth factors for August 2024 to July 2025 obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 0.44% per year in Chester County for urban non-interstate roadways. As such, the background growth factor was applied annually to yield overall growth percentages of 2.22% (0.44% per year, compounded over 5 years) for 2029 future conditions.

As a conservative measure, the volumes at the intersection of Township Line Road and Mowere Road were grown by 2.22% even though the count occurred in early 2025.

Nearby Proposed Developments

Base (no-build) traffic conditions were calculated to include traffic volumes from proposed developments, which, though not operating under existing conditions, may be operating by the future conditions. Based on coordination with Phoenixville Borough staff, the following nearby planned developments were specifically included in this study:

Odessa Residential is a proposed development consisting of 168 townhomes, 224 apartments, and 12,000 square feet of retail space. The site is located on the east side of Township Line Road, south of Fillmore Street. Access is proposed via one driveway to Fillmore Street and one driveway to Township Line Road. Trip distributions for this development were developed based on data provided by Bowman.

Trieste Residential is a proposed residential development consisting of 195 townhomes. The site is located on the north side of Fillmore Street, east of Township Line Road. Access is proposed via one driveway to Fillmore Street. Trip distributions for this development were developed based on data provided by Bowman.

Aldi Food Market and Bank with Drive-Through is a proposed development consisting of a 19,680 square-foot Aldi Food Market and a 3,475 square-foot bank with a drive thru. The site is located on the north side of Schuylkill Road, west of the Shoppes at Valley Forge/Kimberton Square. Access is proposed via one driveway to Schuylkill Road (SR 0023) and cross access to the adjacent Kimberton Square Driveway. Trip distributions for this development were developed based on data provided by Dynamic Traffic.

Hares Hill Road Elementary School is a proposed elementary school that will be attended by 700 students in grades 2 through 6. The site is located on the east side of Hares Hill Road between Schuylkill Road (SR 0023) and Ridge Road. Access is proposed via one driveway to Ridge Road and one driveway to Hares Hill Road. Trip distributions for this development were developed based on data provided by Bowman.

The additional traffic volumes due to background growth and background developments were added to the existing traffic data to produce the 2029 base (no-build) condition traffic volumes. The 2029 base condition volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figures 5 and 6**. Trip distributions for the background developments are provided in **Appendix D**.

SCHEDULED ROADWAY IMPROVEMENTS

Based on a review of the Pennsylvania Transportation Improvement Program (TIP) project #115423, involves safety improvements at 11 signalized intersections along Route 23, including the intersection of Township Line Road and Nutt Road. These improvements are expected to start in the Summer of 2025 and be complete in 2026. It is TPD's understanding that the improvements include replacing the existing signal heads and push buttons and installing new retroreflective backplates to the existing signal heads, which is not anticipated to impact roadway operations.

PROPOSED SITE ACCESS

As noted previously, with the proposed development the seven (7) existing driveways to Township Line Road will be consolidated to two (2) locations. Access to the proposed Odessa townhomes will be provided via a new access to Township Line Road opposite Gauge Street, as well as a modification to the previously approved original Odessa access to Township Line Road. This access is proposed between Crossover Boulevard and Gauge Street, generally consistent with the former location, but is currently proposed as enter-only. The site will also connect to the previously approved Odessa development roadways. The previously approved Odessa was planned to have access to Fillmore Street, a connection to Ashburn Road and access to Township Line Road.

Sight Distance Analysis

A sight distance analysis was prepared for the proposed site driveways to Township Line Road. 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 Operations Manual 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:

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

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 show 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
SITE DRIVEWAYS TO TOWNSHIP LINE ROAD

	Direction	Posted Speed (mph)	Sight Distances (feet)			
			Grade ¹ (%)	DES	SSSD	EXIST
Northern Site Access (Opposite Gauge Street)						
Exiting Movements	To the left	35 mph	+3%	440	239	500+
	To the right	35 mph	+3%	350	239	500+
Entering Left Turn Movements	Approaching Left Turn from Rear	35 mph	+3%	300	239	500+
	Approaching Left Turn from Ahead	35 mph	+3%	300	239	250+ ²
Southern Site Access						
Exiting Movements	To the left	35 mph	N/A			
	To the right	35 mph				
Entering Left Turn Movements	Approaching Left Turn from Rear	35 mph	-3%	300	260	400+
	Approaching Left Turn from Ahead	35 mph	1%	300	245	500+

DES = PennDOT Desirable Sight Distance

SSSD = PennDOT Acceptable Sight Distance

EXIST = Existing (measured) Sight Distance

¹ = Roadway Grade Approaching Driveway

² = Left turn positioned on the crest of the roadway

As shown in **Table 4** above, the measured sight distance at the site driveways exceed PennDOT's sight distance requirements. Please note, the northern driveway is proposed opposite Gauge Street and is located on the crest of Township Line Road. Given the crest of the roadway, TPD conducted a speed study for northbound Township Line Road traffic approaching the site driveway/Gauge Street. Based on the speed study, the 85th percentile speed for northbound Township Line Road approaching the northern site driveway/Gauge Street was determined to be 34 mph. As such, the 35 mph posted speed utilized in **Table 4** is slightly more than the measured travel speed. The speed study is included in **Appendix C**.

TRIP GENERATION

The trip generation rates for the proposed development were obtained from the *Trip Generation Manual*, Eleventh Edition, 2021, an Institute of Transportation Engineers (ITE) Informational Report. For the proposed development, Land Use Code 215 (Single Family Attached Housing) from *Trip Generation* was used to calculate the number of vehicular trips the development will generate during the following time periods: (1) average weekday; (2) weekday A.M. peak hour; and (3) weekday P.M. peak hour. **Table 5** shows summarizes the trip generation data for the analyzed time periods.

**TABLE 5
ITE TRIP GENERATION DATA**

Land Use	Time Period	Equations/Rates	Entering %	Exiting %
Single Family Attached Housing	Weekday A.M. Peak Hour	$T = 0.48*(X)$	25%	75%
	Weekday P.M. Peak Hour	$T = 0.57*(X)$	59%	41%
	Weekday (24-Hour Total)	$T = 7.20*(X)$	50%	50%

*T = number of site-generated vehicular trips
X = independent variable (ksf, thousand square feet of gross leasable area)*

The trip generation summary is provided in **Table 6**.

**TABLE 6
TRIP GENERATION SUMMARY**

Time Period	New Trips		
	Total	Enter	Exit
Weekday (24-hour period)	274	137	137
Weekday A.M. Peak Hour	18	5	13
Weekday P.M. Peak Hour	22	13	9

Based on the trip generation analysis summarized in **Table 6**, the proposed development is anticipated to generate approximately 18 new trips during the weekday A.M. peak hour and 22 new trips during the weekday P.M. peak hour. Please note, in order to provide a conservative trip generation evaluation, no credit/reduction was taken for the traffic currently being generated by the six (6) existing homes being razed in conjunction with the proposed development.

TRIP DISTRIBUTION

The distribution of trips generated by the proposed development was based on the local road network, the existing traffic patterns, the proposed use of the site, and the site driveway locations. 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**

Direction - To/From	Assignment (To/From)	Distribution Percentage
West	via Mowere Road	10%
	via Crossover Boulevard	25%
East	via Fillmore Street	50%
North	via Township Line Road	5%
South	via Township Line Road	10%

The assignment of site-generated trips for the proposed development during the weekday A.M. and weekday P.M. peak hours are shown in **Figures 7 and 8**, respectively.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed development were added to the 2029 base (no-build) condition traffic volumes to develop 2029 projected (build) condition traffic volumes. The 2029 projected condition traffic volumes for the weekday A.M. and weekday P.M. peak hours are shown in **Figures 9 and 10**, respectively. Traffic volume development worksheets are contained in **Appendix E**.

LEVELS OF SERVICE FOR AN INTERSECTION

For analysis of intersections, level of service is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS criteria is stated in terms of control delay per vehicle for a one-hour analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The criteria are shown in **Table 8**. 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 8
LEVEL OF SERVICE CRITERIA
UNSIGNALIZED AND SIGNALIZED INTERSECTIONS¹

Level of Service	Control Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	< 10	< 10
B	> 10 and < 20	> 10 and < 15
C	> 20 and < 35	> 15 and < 25
D	> 35 and < 55	> 25 and < 35
E	> 55 and < 80	> 35 and < 50
F	> 80 or v/c > 1.0	> 50 or v/c > 1.0

¹ Obtained from Exhibits 19-8 and 20-2 of the Transportation Research Board's Highway Capacity Manual 6th Edition

CAPACITY ANALYSIS METHODOLOGY

Capacity analyses were conducted for the weekday A.M. and weekday P.M. peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the *Highway Capacity Manual 6th Edition* (HCM) using *Synchro 11* software, a Trafficware product.

The following conditions were analyzed, as applicable:

- » Existing conditions;
- » 2029 Base conditions (Build-out year without development);
- » 2029 Projected conditions (Build-out year with development).

In addition, capacity analyses were conducted at the site driveway intersections under the 2029 projected conditions. The capacity analysis worksheets are included in **Appendix F**.

It should be noted that based on methodologies contained in Chapter 10 of PennDOT's Publication 46, TPD adjusted the following HCM default values in the *Synchro 11* 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 were based on Exhibit 10-10.

Please note that the HCM 6th edition can only analyze intersections where all approaches have speed limits between 25 and 55 mph. To use the HCM methodology for the study area intersections, any roadway speed limits below 25 mph were adjusted to 25 mph.

PennDOT's Transportation Impact Study Guidelines outlined in PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated February 2024 contain the following criteria regarding levels of service:

- » 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.
- » 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.
- » If signalization is the preferred alternative for mitigation, overall intersection LOS C in rural areas and LOS D in urban areas is acceptable.
- » 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 **Table 9** for the weekday A.M. and weekday P.M. peak hours.

**TABLE 9
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY**

Movement	Level of Service					
	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
	Existing	2029 Base	2029 Projected	Existing	2029 Base	2029 Projected
Township Line Road & Mowere Road						
EB LTR	A	A	A	B	B	B
WB LTR	A	B	B	B	B	B
NB LTR	A	A	A	B	B	B
SB LTR	A	B	B	B	B	B
ILOS	A (9.5)	B (10.5)	B (10.5)	B (10.4)	B (11.7)	B (11.8)
Bunning Road & Ashburn Road						
EB LTR	A	A	A	A	A	A
WB LTR	A	A	A	A	A	A
NB LT	A	A	A	A	A	A
NB R	A	A	A	A	A	A
SB LTR	A	A	A	A	A	A
ILOS	A (7.5)	A (7.7)	A (7.8)	A (7.3)	A (7.4)	A (7.4)
Fillmore Street & Ashburn Road						
EB R	B	C	C	A	B	B
ILOS	A (1.1)	A (2.0)	A (2.2)	A (0.2)	A (0.6)	A (0.7)
Fillmore Street & Bunning Road						
EB TR	C	C	C	B	B	B
WB LT	B	B	B	B	B	B
NB LR	A	B	B	A	A	A
ILOS	B (14.6)	C (19.1)	C (19.3)	B (10.8)	B (12.0)	B (12.1)
Township Line Road & Crossover Boulevard						
EB L	B	C	C	B	C	C
EB R	A	B	B	A	A	B
NB L	A	A	A	A	A	A
ILOS	A (2.5)	A (3.2)	A (3.2)	A (2.4)	A (2.8)	A (3.5)
Township Line Road & Gauge Street/Odesa Driveway						
EB LTR	B	B	B	B	B	B
WB LTR	--	C	C	--	C	C
NB L	A	A	A	A	A	A
SB L	--	A	A	--	A	A
ILOS	A (0.3)	A (1.7)	A (1.9)	A (0.3)	A (1.6)	A (1.6)
Township Line Road & Enter Only Site Driveway						
SB L	--	--	A	--	--	A
ILOS	--	--	A (0.0)	--	--	A (0.0)

Base = No-Build, Projected = Build

As shown in **Table 9**, under the 2029 projected conditions with the development of the proposed site, the study area intersections will operate at the same overall intersection level of service (ILOS) as under the 2029 base conditions during the weekday A.M. and P.M. peak hours. All levels of service at the study area intersection comply with the requirement outlined in PennDOT's TIS Guidelines.

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 during 5% of the time. As an example, this means that the 95th percentile queue length will be exceeded during 3 of the 60 minutes that occur during the peak hour. The queue analysis results are summarized in **Table 10** for the analyzed peak hours.

TABLE 10
95TH PERCENTILE QUEUE ANALYSIS

Movement	Available Storage	Level of Service					
		Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
		Existing	2029 Base	2029 Projected	Existing	2029 Base	2029 Projected
Township Line Road & Mowere Road							
EB LTR	500'+	<25'	<25'	<25'	<25'	30'	30'
WB LTR	500'+	25'	30'	30'	<25'	28'	28'
NB LTR	500'+	<25'	<25'	<25'	45'	63'	63'
SB LTR	500'+	33'	53'	53'	28'	40'	43'
Bunning Road & Ashburn Road							
EB LTR	180'	<25'	<25'	<25'	<25'	<25'	<25'
WB LTR	240'	<25'	<25'	<25'	<25'	<25'	<25'
NB LT	165'	<25'	<25'	<25'	<25'	<25'	<25'
NB R	40'	<25'	<25'	<25'	<25'	<25'	<25'
SB LTR	165'	<25'	<25'	<25'	<25'	<25'	<25'
Fillmore Street & Ashburn Road							
EB R	240'	<25'	33'	35'	<25'	<25'	<25'
Fillmore Street & Bunning Road							
EB TR	500'+	148'	220'	223'	53'	63'	65'
WB LT	275'	50'	65'	65'	65'	85'	88'
NB LR	165'	<25'	<25'	<25'	<25'	<25'	<25'
Township Line Road & Crossover Boulevard							
EB L	175'	<25'	35'	38'	<25'	<25'	40'
EB R	500'+	<25'	<25'	<25'	<25'	<25'	<25'
NB L	500'+	<25'	<25'	<25'	<25'	<25'	<25'
Township Line Road & Gauge Street/Odessa Driveway							
EB LTR	500'+	<25'	<25'	<25'	<25'	<25'	<25'
WB LTR	500'+	--	<25'	<25'	--	<25'	<25'
NB L	500'+	<25'	<25'	<25'	<25'	<25'	<25'
SB L	500'+	--	<25'	<25'	--	<25'	<25'
Township Line Road & Enter Only Site Driveway							
SB L	445' ¹	--	--	<25'	--	--	<25'

Base = No-Build, Projected = Build

¹*Distance to Gauge Street/Odessa Driveway*

As shown in **Table 10**, all projected condition queue lengths are within the available storage. Queue analysis worksheets are included with the capacity analysis worksheets provided in **Appendix F**.

AUXILIARY TURN LANE ANALYSIS

TPD evaluated auxiliary turn lane warrants at the proposed site driveways. The warrant analysis was conducted according to the methodologies contained in Chapter 11 of PennDOT's *Publication 46* and Strike-Off Letter 470-08-07. **Table 11** summarizes the results of the auxiliary turn lane analysis at the site access intersections.

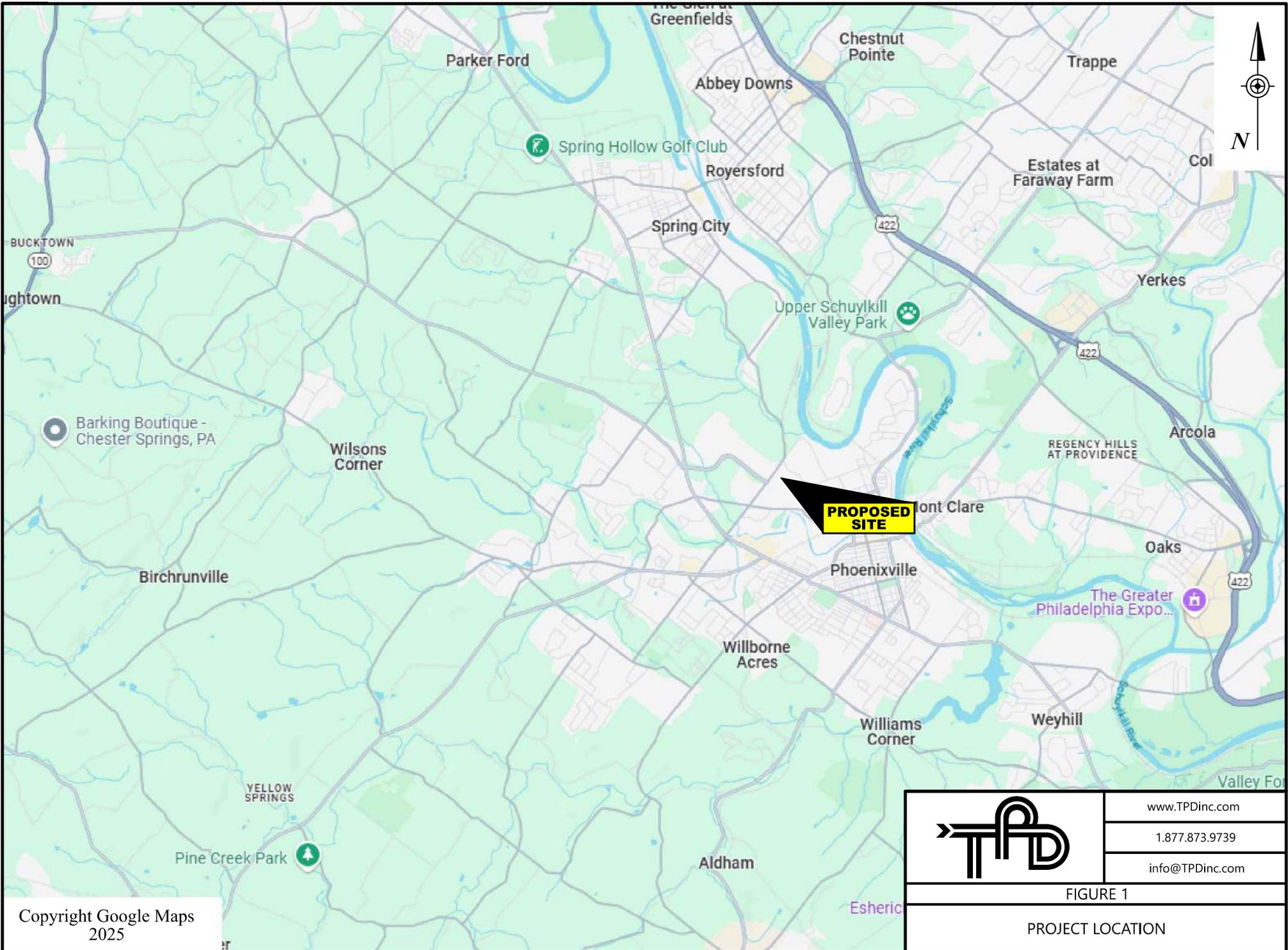
TABLE 11
AUXILIARY TURN LANE ANALYSIS SUMMARY

Intersection	Auxiliary Lane	Warrant Satisfied?	Required Lane Length	Proposed Lane Length
Township Line Road and Gauge Street/Full Access Site Driveway	SB Left-Turn Lane	No	--	--
	NB Right-Turn Lane	No	--	--
Township Line Road Enter Only Site Driveway	SB Left-Turn Lane	No	--	--
	NB Right-Turn Lane	No	--	--

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

RECOMMENDATIONS & CONCLUSIONS

The recommendations and conclusions are noted in the Executive Summary of this report.

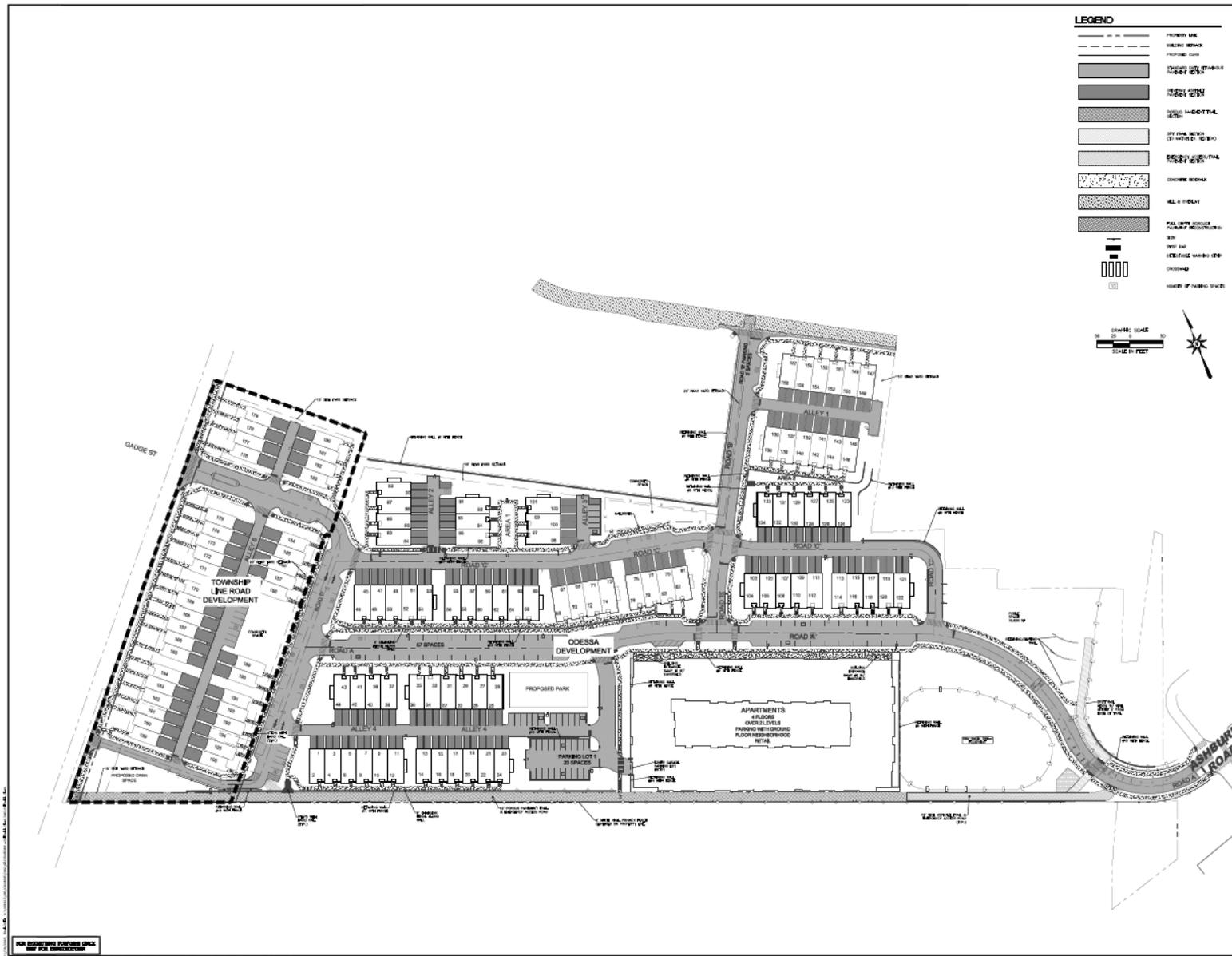


Copyright Google Maps
2025



www.TPDinc.com
1.877.873.9739
info@TPDinc.com

FIGURE 1
PROJECT LOCATION



1500 MARKET BLVD. SUITE 200
PHOENIXVILLE, PA 19380
TEL: 610-261-1100
WWW.BL-COMPANIES.COM

ODESSA DEVELOPMENT
BOROUGH OF PHOENIXVILLE
PHOENIXVILLE, CHESTER COUNTY, PENNSYLVANIA

DATE: 11/15/2011
SCALE: AS SHOWN
PROJECT NO.: 11-001
SHEET NO.: 1 OF 1
OVERALL SITE PLAN



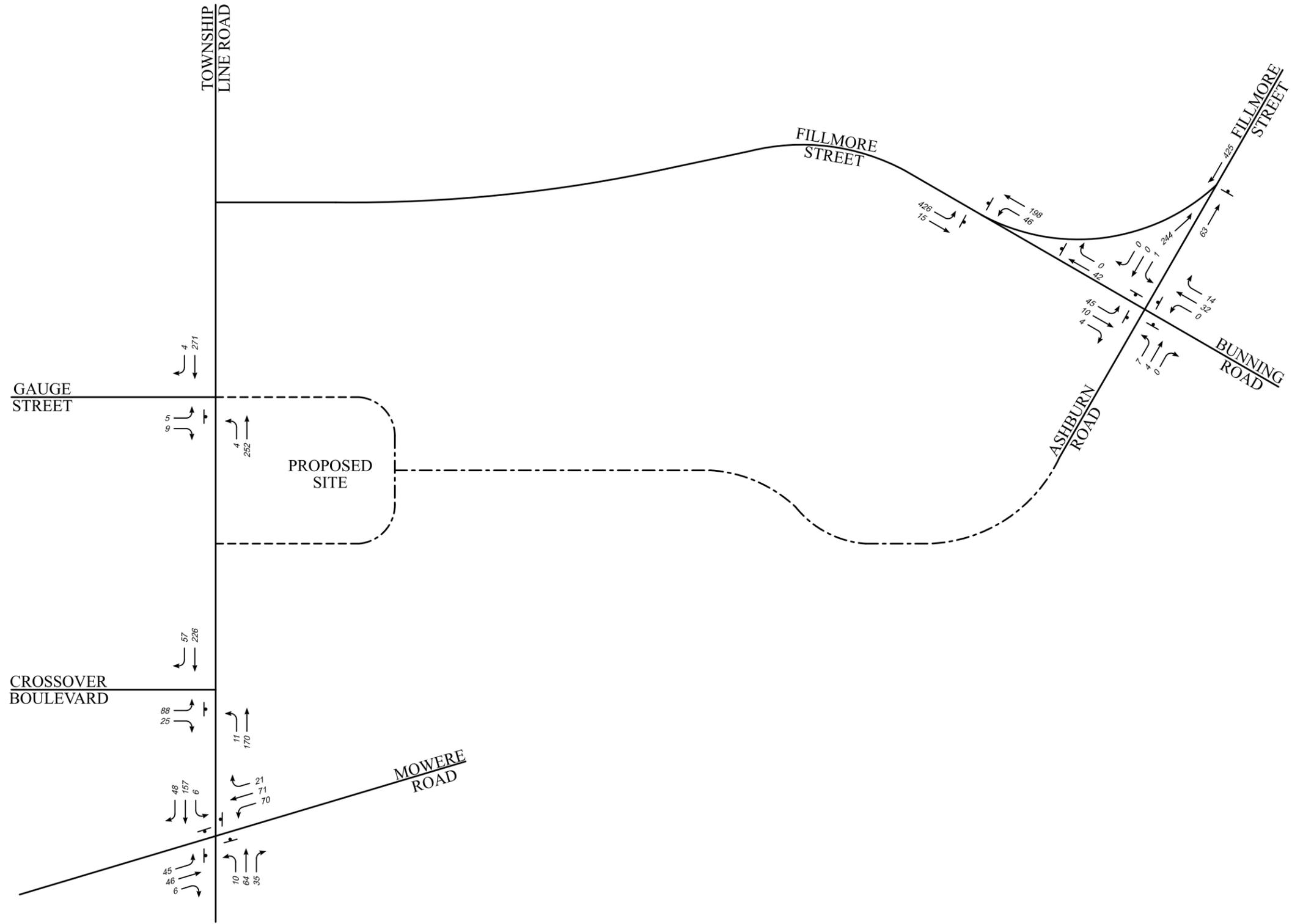
www.TPDinc.com

1.877.873.9739

info@TPDinc.com

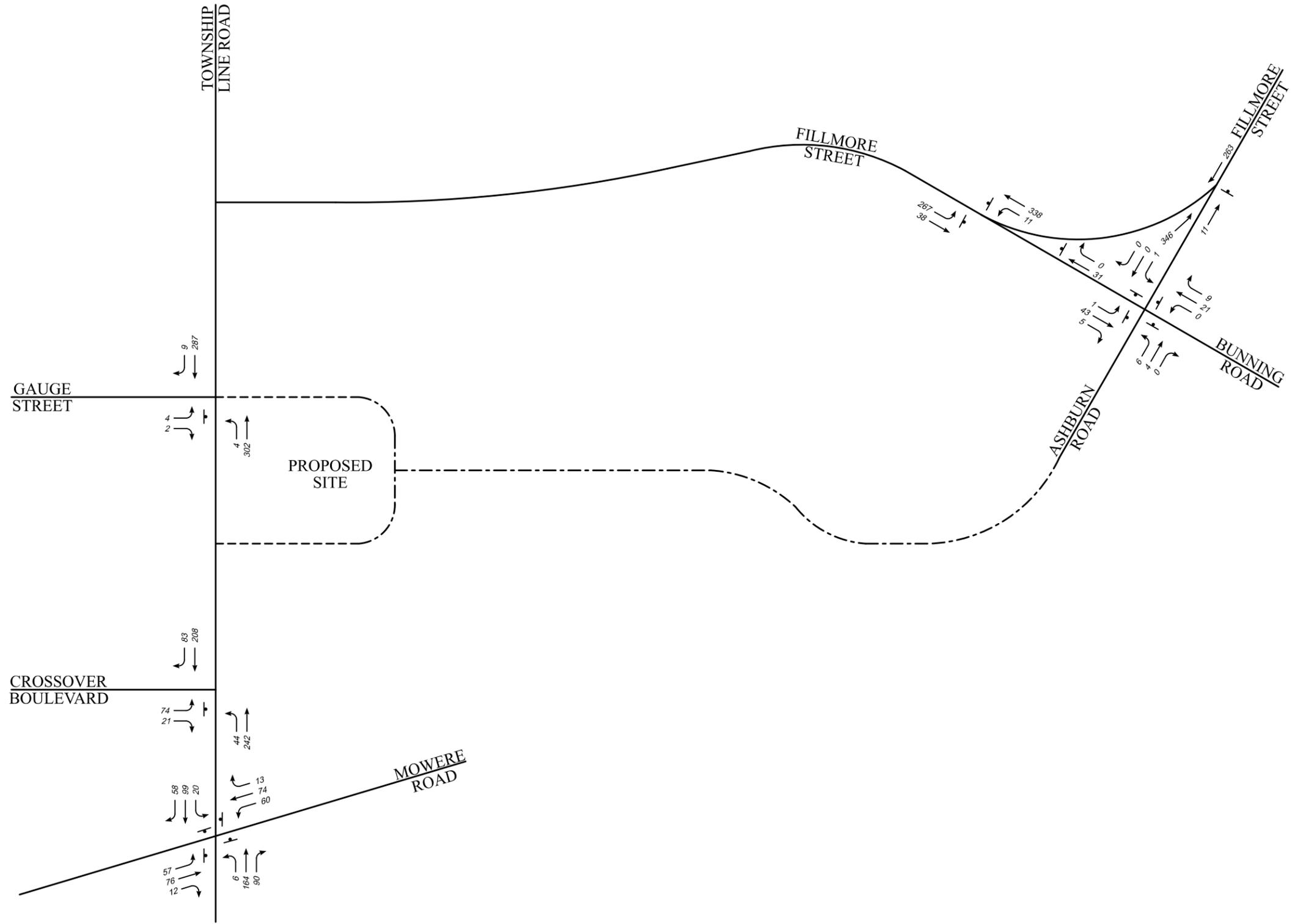
FIGURE 2

SITE PLAN



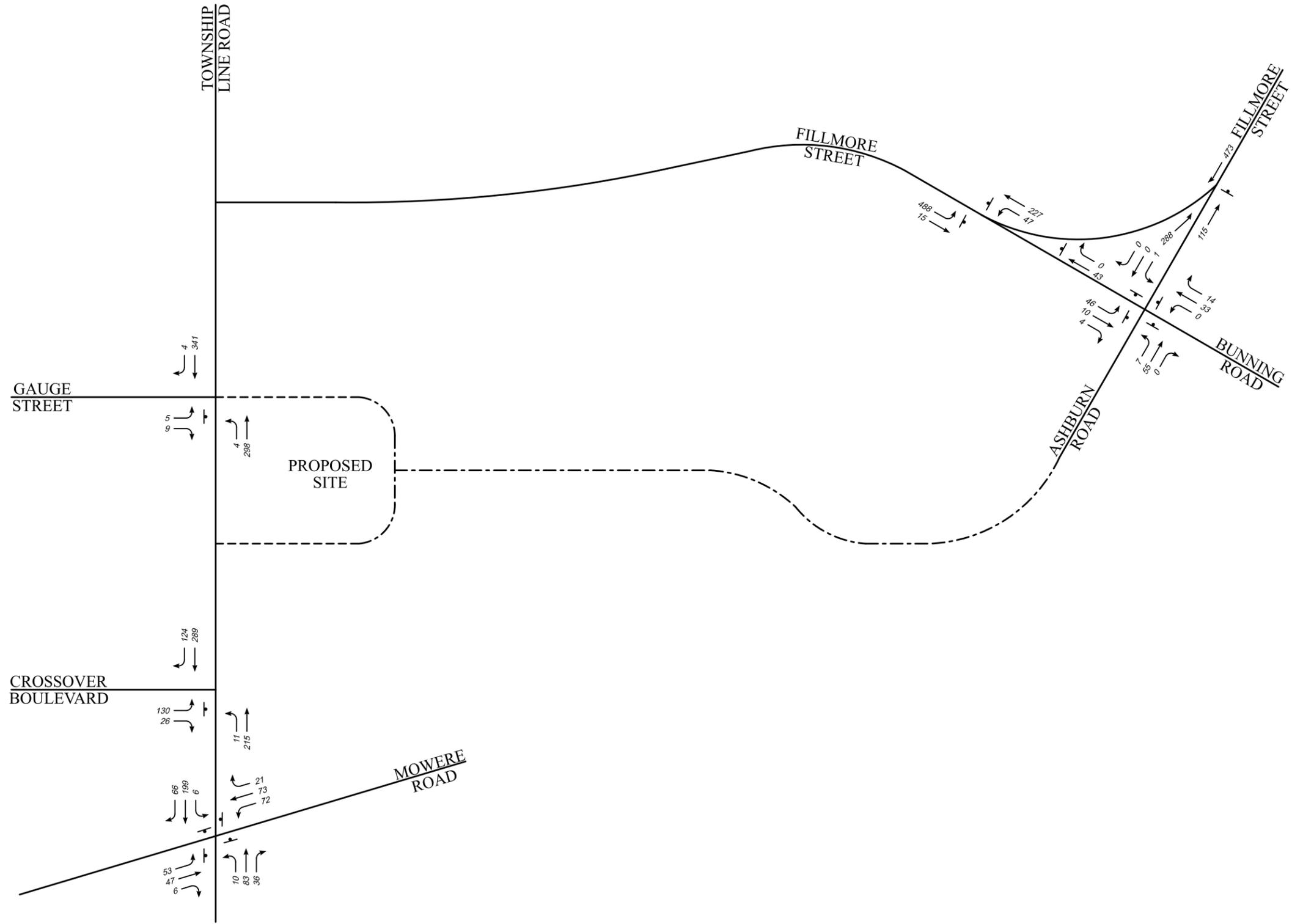
KEY:
 —+— STOP CONTROLLED
 - - - - - PROPOSED ROADWAY
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE

		www.TPDinc.com
		1.877.873.9739
		info@TPDinc.com
FIGURE 3 EXISTING CONDITION TRAFFIC VOLUMES WEEKDAY AM PEAK HOUR		

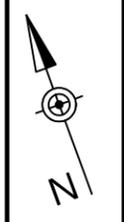


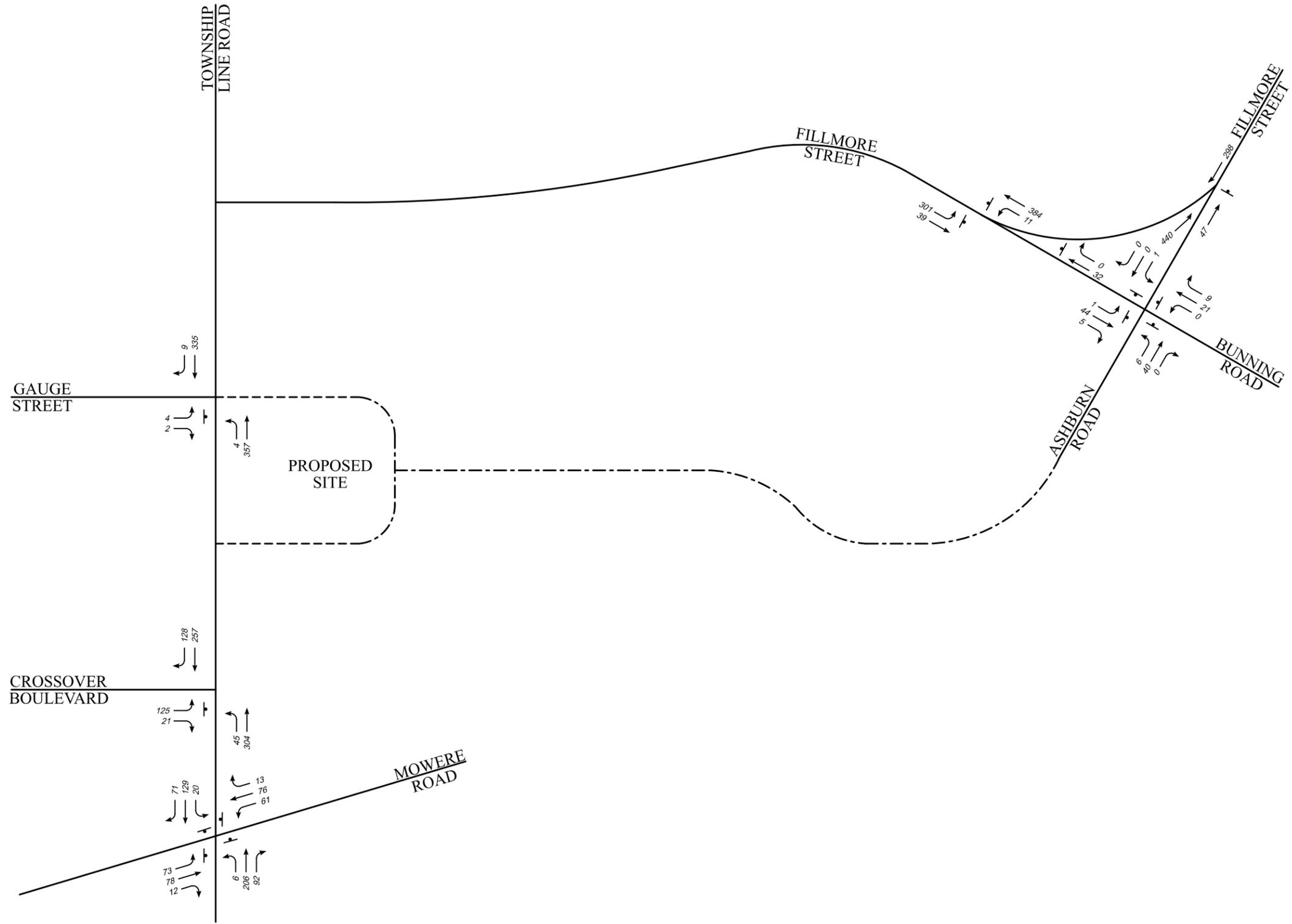
KEY:
 —+— STOP CONTROLLED
 - - - - - PROPOSED ROADWAY
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE

		www.TPDinc.com
		1.877.873.9739
		info@TPDinc.com
FIGURE 4 EXISTING CONDITION TRAFFIC VOLUMES WEEKDAY PM PEAK HOUR		



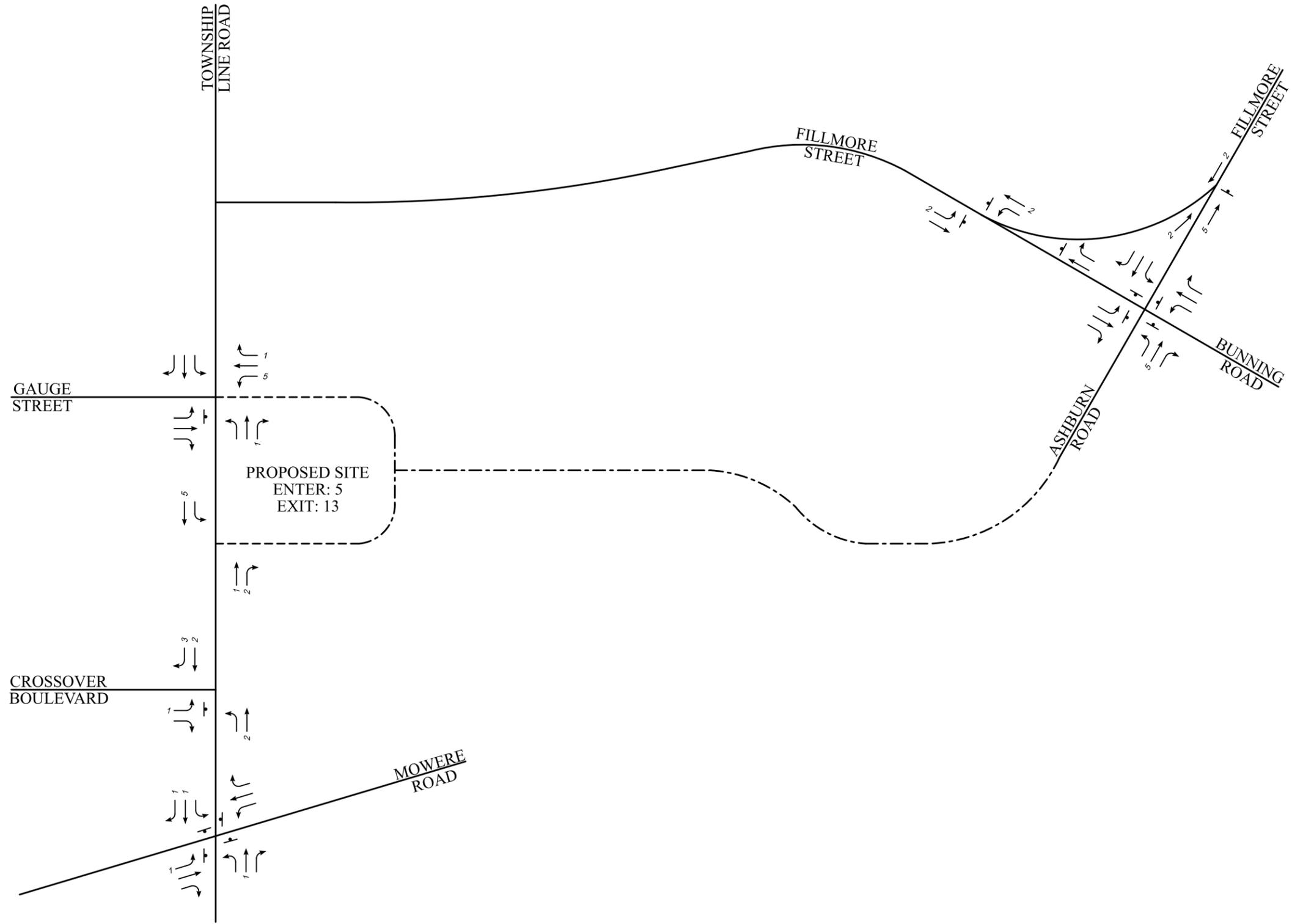
KEY:
 —+— STOP CONTROLLED
 - - - - - PROPOSED ROADWAY
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE

		www.TPDinc.com
		1.877.873.9739
		info@TPDinc.com
FIGURE 5 2029 BASE (NO-BUILD) CONDITION TRAFFIC VOLUMES WEEKDAY AM PEAK HOUR		



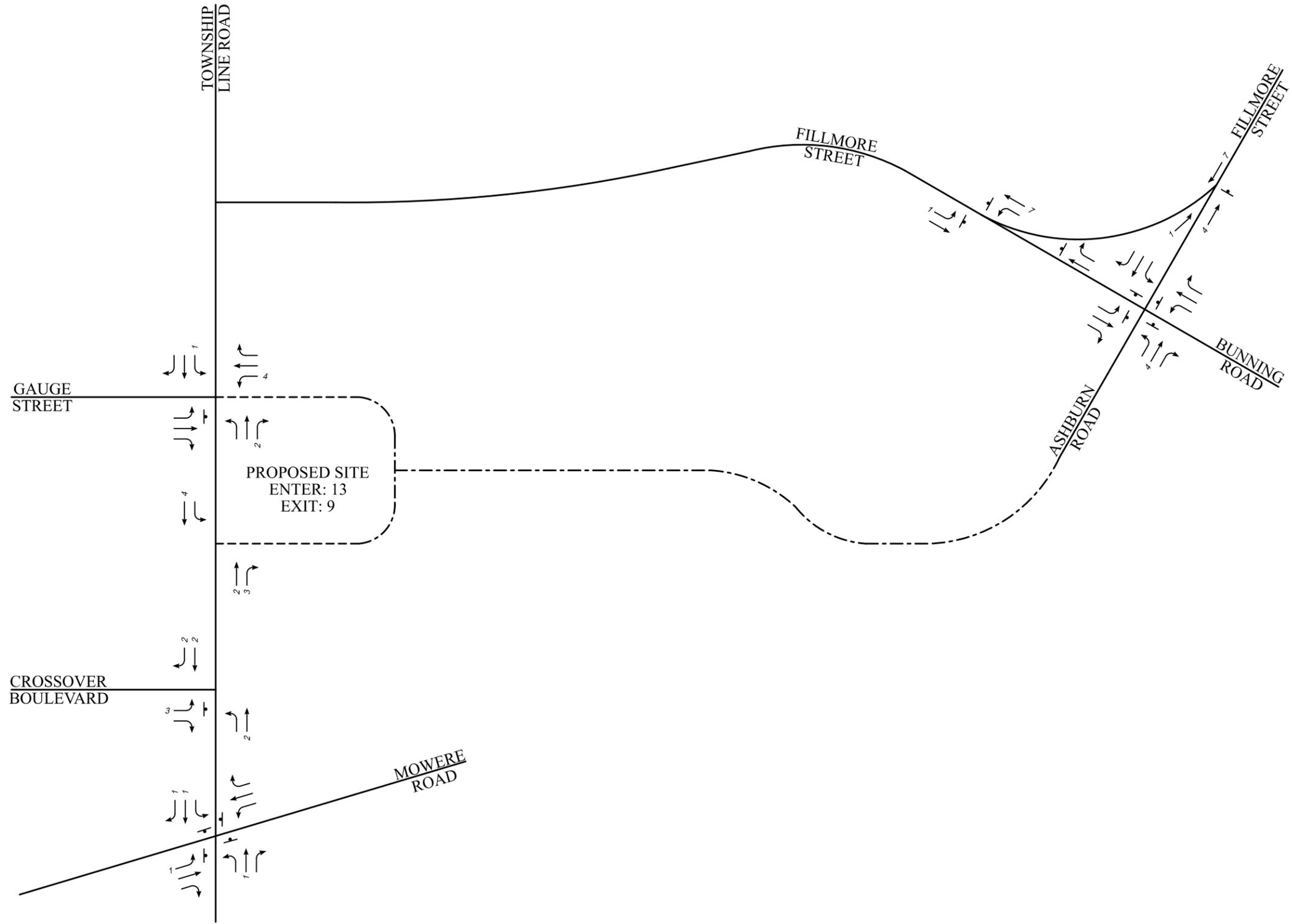
KEY:
 —+— STOP CONTROLLED
 - - - - PROPOSED ROADWAY
 - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE

		www.TPDinc.com
		1.877.873.9739
		info@TPDinc.com
FIGURE 6 2029 BASE (NO-BUILD) CONDITION TRAFFIC VOLUMES WEEKDAY PM PEAK HOUR		



KEY:
 —+— STOP CONTROLLED
 - - - - - PROPOSED ROADWAY
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE

		www.TPDinc.com
		1.877.873.9739
		info@TPDinc.com
FIGURE 7 TRIP DISTRIBUTION WEEKDAY AM PEAK HOUR		

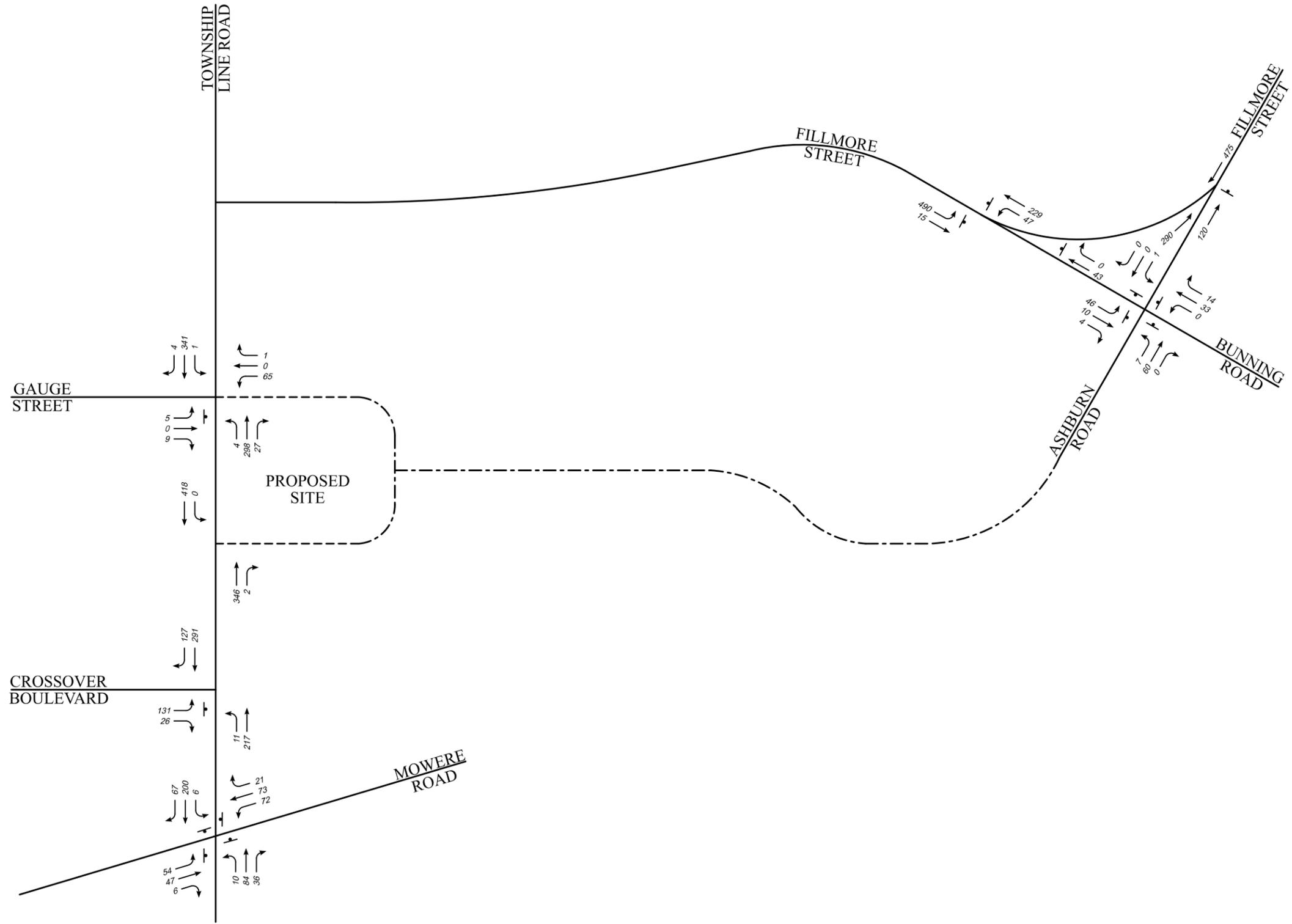


KEY:

- +— STOP CONTROLLED
- PROPOSED ROADWAY
- PROPOSED DRIVEWAY

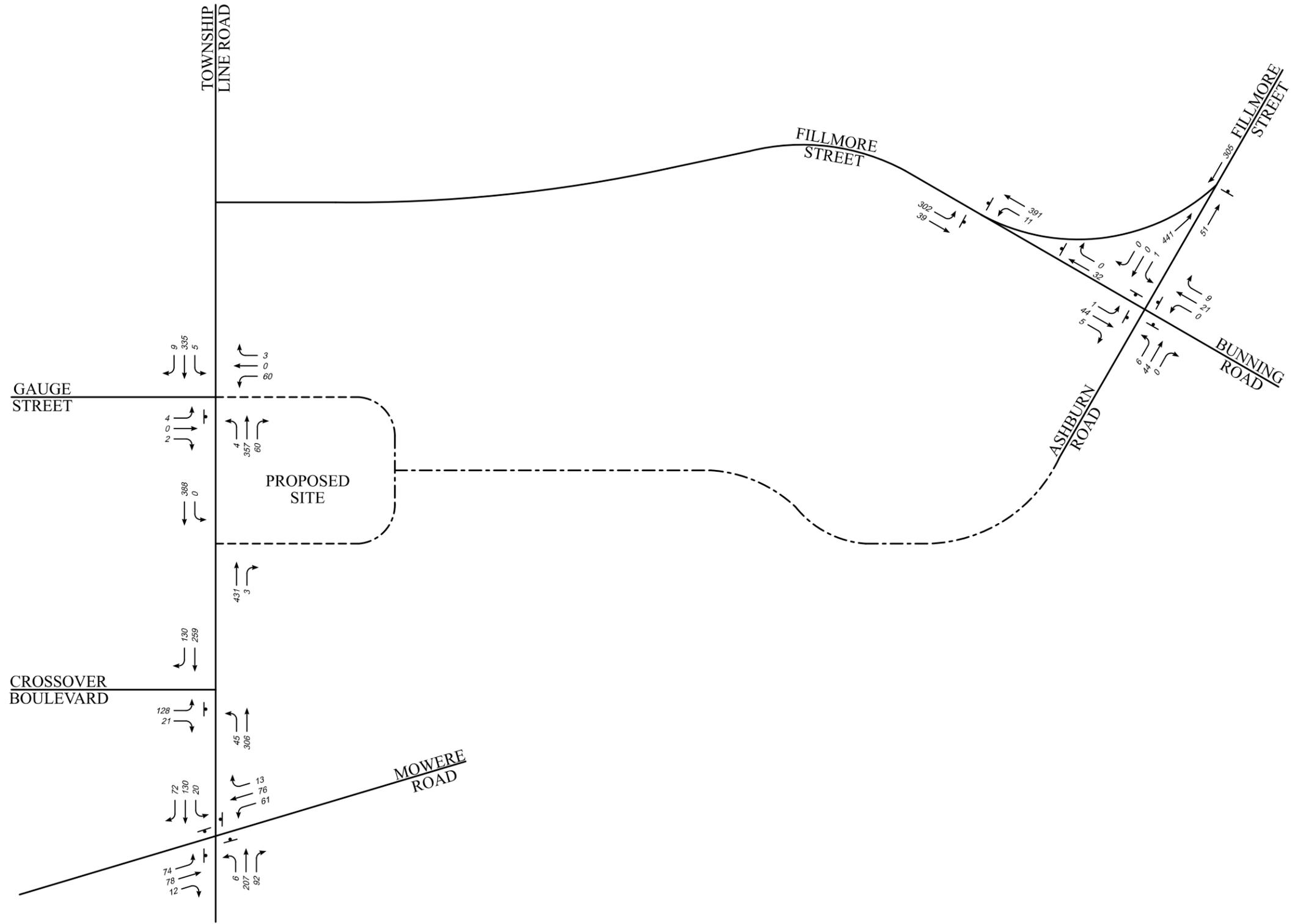
SCHEMATIC DRAWING: NOT TO SCALE

		www.TPDinc.com
		1.877.873.9739
		info@TPDinc.com
FIGURE 8 TRIP DISTRIBUTION WEEKDAY PM PEAK HOUR		



KEY:
 —+— STOP CONTROLLED
 - - - - - PROPOSED ROADWAY
 - - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE

		www.TPDinc.com
		1.877.873.9739
		info@TPDinc.com
FIGURE 9 2029 PROJECTED (BUILT) CONDITION TRAFFIC VOLUMES WEEKDAY AM PEAK HOUR		



KEY:
 —+— STOP CONTROLLED
 - - - - PROPOSED ROADWAY
 - - - - PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE

		www.TPDinc.com
		1.877.873.9739
		info@TPDinc.com
FIGURE 10 2029 PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES WEEKDAY PM PEAK HOUR		

APPENDIX A: Project Correspondence



TO: Jean Krack, Manager
David Boelker, CZO/BCO, Director of Planning and Code Enforcement
Guy DiMartino, PE, Traffic Planning and Design, Inc.

FROM: John J. Yurick, P.E., PTOE, PTP, Borough Traffic Engineer

SUBJECT: TLR Residential Townhouse Development
Transportation Impact Study Scoping Memorandum

DATE: December 16, 2024

Bowman has prepared this scoping memorandum for the proposed TLR townhouse development project along the east side of Township Line Road, between Crossover Boulevard and Gauge Street, in the Borough of Phoenixville. We preliminarily reviewed the following information provided by the applicant's traffic engineer with respect to developing a scope of study:

- Scoping Email, prepared by Traffic Planning and Design, Inc., dated December 2, 2024
- Site Plan (Sanitary Utility Easement Plan Sheet 16), prepared by BL Companies, last revised August 28, 2024

Based on our review of the above information, we offer the following recommended Transportation Impact Study Scope:

Study Intersections

- a. Township Line Road and Mowere Road
- b. Township Line Road and Crossover Boulevard
- c. Township Line Road and Gauge Street
- d. Fillmore Street and Ashburn Road
- e. Fillmore Street and Bunning Road
- f. Ashburn Road and Bunning Road

Study Peak Periods

- Weekday morning commuter peak period (7:00 AM to 9:00 AM)
- Weekday afternoon commuter peak period (4:00 PM to 6:00 PM)

Horizon Year

- **Design Year** – we request that the study horizon year provide a reasonable estimate of time to complete the permitting/approval process, construction build out, and other potential considerations such as roadway connections to be made as part of the adjacent approved (not yet constructed) residential development.
- **Project Phasing** – if the proposed development will be constructed in phases or as part of a future phase of the adjacent residential development, then evaluation of additional design

years will be required. This phasing would also apply to the construction of roadway connections if they are not provided upon completion of the proposed TLR project.

Other Development Traffic

- The buildout of the following projects in the study area should be considered in the future traffic forecasts. Although there are other development projects in the Borough, these projects are most likely to influence traffic volumes in the study area of the proposed project. Trip distribution figures from recent transportation impact studies are attached (as available) for use in the current study (please update assumptions, if appropriate).
 - Odessa Residential
 - Trieste Residential
 - Due to the location of the site, please contact East Pikeland Township and Charlestown Township to determine if there are any other significant projects to include.

Additional Considerations

- **Crash History** – Provide documentation of the crash histories over the last five-year period for the study intersections.
- **Township Line Road/Nutt Road** – based on the prior transportation impact studies prepared by our office for area developments, these projects generated traffic impacts requiring mitigation measures at this intersection. Due to the environmental constraints, additional capacity widening is limited. It is noted that PennDOT has recently evaluated the Route 23 Corridor to identify safety improvements that may also address capacity issues for this intersection. The transportation impact study shall provide an update as to the status of PennDOT project (TIP Project No. 115423). The study shall also identify if any additional improvement measures or planning have occurred by the three bordering municipalities and if there are opportunities to advance those improvements.
- **New Roadway Connections** – the transportation impact study must clearly identify the projected traffic volumes, impacts, and needed mitigation measures (if any), associated with the planned Ashburn Road connection as well as roadway connection to the adjacent residential development. In addition, the study must evaluate the site access locations and the need for auxiliary turn lanes, including but not limited to any potential conflicting turning movements with adjacent intersections (i.e., Crossover Boulevard and Gauge Street).
- **Additional Report Content** – the transportation impact study should provide a detailed evaluation of the proposed redevelopment traffic impacts and presented in a format consistent with standard practices and applicable PennDOT guidelines.

If you have any questions, please do not hesitate reach out to our office to discuss.

cc: Scott Denlinger, Esquire, Borough Solicitor

Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Tables 3A and 3B** presents the anticipated vehicular trip generation for the proposed development.

Table 3A. Trip Generation Methodology

Land Use	Land Use Code	Daily	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
			Method	Enter/Exit	Method	Enter/Exit
Townhomes	215	$T = 7.62(X) - 50.48$	$T = 0.52(X) - 5.70$	31%/69%	$T = 0.60(X) - 3.93$	57%/43%
Apartments	221	$T = 4.77(X) - 46.46$	$T = 0.44(X) - 11.61$	23%/77%	$T = 0.39(X) + 0.34$	61%/39%
Retail	822	$T = 42.20(Y) + 229.68$	$T = 2.36(Y)$	60%/40%	$\ln(T) = 0.71$ $\ln(Y) + 2.72$	50%/50%

X = Independent Variable (units) | Y = Independent Variable (uksf) | T = Trips

Table 3B. Vehicular Trip Generation

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Townhomes ⁽¹⁾	168 units	1,230	25	57	82	55	42	97
Internal Trips ⁽²⁾		<u>-42</u>	<u>-1</u>	<u>-0</u>	<u>-1</u>	<u>-6</u>	<u>-2</u>	<u>-8</u>
New External Trips		1,188	24	57	81	49	40	89
Apartments ⁽³⁾	224 units	1,022	20	67	87	53	35	88
Internal Trips ⁽²⁾		<u>-35</u>	<u>-0</u>	<u>-1</u>	<u>-1</u>	<u>-6</u>	<u>-2</u>	<u>-8</u>
New External Trips		987	20	66	86	47	33	80
Retail ⁽⁴⁾	12,000 s.f.	736	17	11	28	44	45	89
Internal Trips ⁽²⁾		<u>-77</u>	<u>-1</u>	<u>-1</u>	<u>-2</u>	<u>-4</u>	<u>-12</u>	<u>-16</u>
External Trips		659	16	10	26	40	33	73
Pass-By Trips ⁽⁵⁾		<u>-198</u>	<u>-5</u>	<u>-3</u>	<u>-8</u>	<u>-16</u>	<u>-13</u>	<u>-29</u>
New External Trips		461	11	7	18	24	20	44
Total Site Trips	392	2,988	62	135	197	152	122	274
Internal Trips	units	<u>-154</u>	<u>-2</u>	<u>-2</u>	<u>-4</u>	<u>-16</u>	<u>-16</u>	<u>-32</u>
External Trips	and	2,834	60	133	193	136	106	242
Pass-By Trips	12,000	<u>-198</u>	<u>-5</u>	<u>-3</u>	<u>-8</u>	<u>-16</u>	<u>-13</u>	<u>-29</u>
New External Site Trips	s.f.	2,636	55	130	185	120	93	213

- (1) (1) ITE Land Use Code 215 for Single Family Attached Housing.
- (2) Based on procedures outlined in the ITE Publication, *Trip Generation Handbook*, 3rd Edition.
- (3) ITE Land Use Code 221 for Multifamily Housing (Mid-Rise).
- (4) ITE Land Use Code 822 for Strip Retail Plaza (<40K).
- (5) Estimated to be 40 percent during the weekday afternoon peak hour based on information provided within the ITE publication, ITE Trip Generation, Eleventh Edition appendices for Shopping Plaza (Land Use Code 821). For analysis periods without data, the pass-by rate was assumed to be ten percent less than the weekday afternoon peak hour.

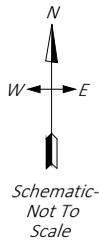
Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development’s site access. The distribution percentages for the anticipated directions of approach and departure and traffic assignment percentages are illustrated in **Figure 4A**. Application of the percentages illustrated in Figure 4A to the new peak hour trips contained in Table 3B, provides an estimate of site traffic to be added to the study area. The site-generated traffic is also shown in **Figure 4B** for the weekday morning and weekday afternoon peak hours.

The pass-by trip assignments for the retail portion of the site are illustrated in **Figure 4C** for the weekday morning and weekday afternoon peak hours.

Site Access Configuration and Traffic Control

Access to the site is proposed via one unsignalized driveway located along Fillmore Street, approximately 1,000 feet southeast of Township Line Road and one unsignalized driveway located along Township Line Road,



LEGEND	
5%	ENTER
(5%)	EXIT

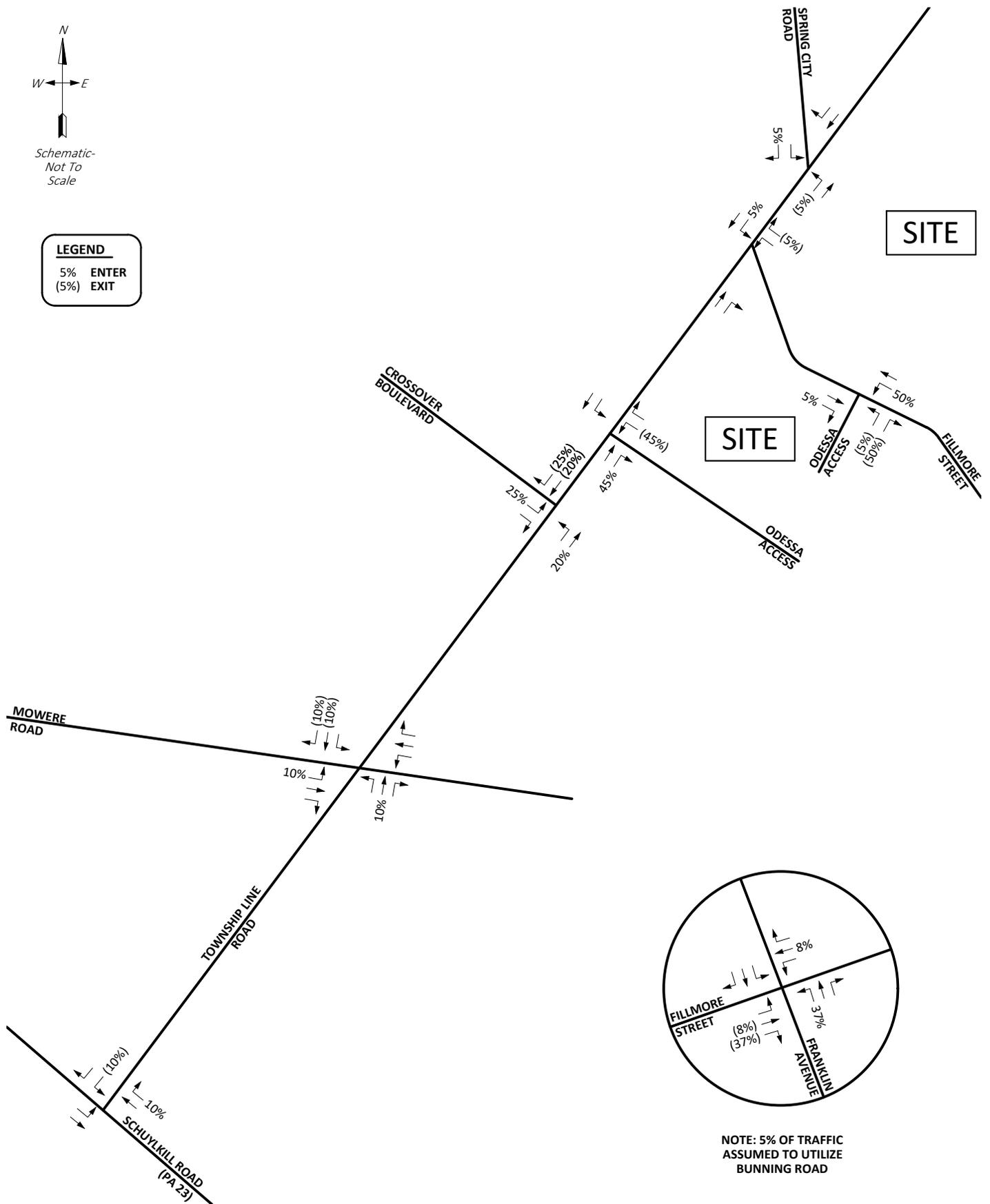
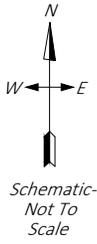


FIGURE 4A
New Site Trip Distribution

ODESSA
BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND	
5	WEEKDAY MORNING
(5)	WEEKDAY AFTERNOON

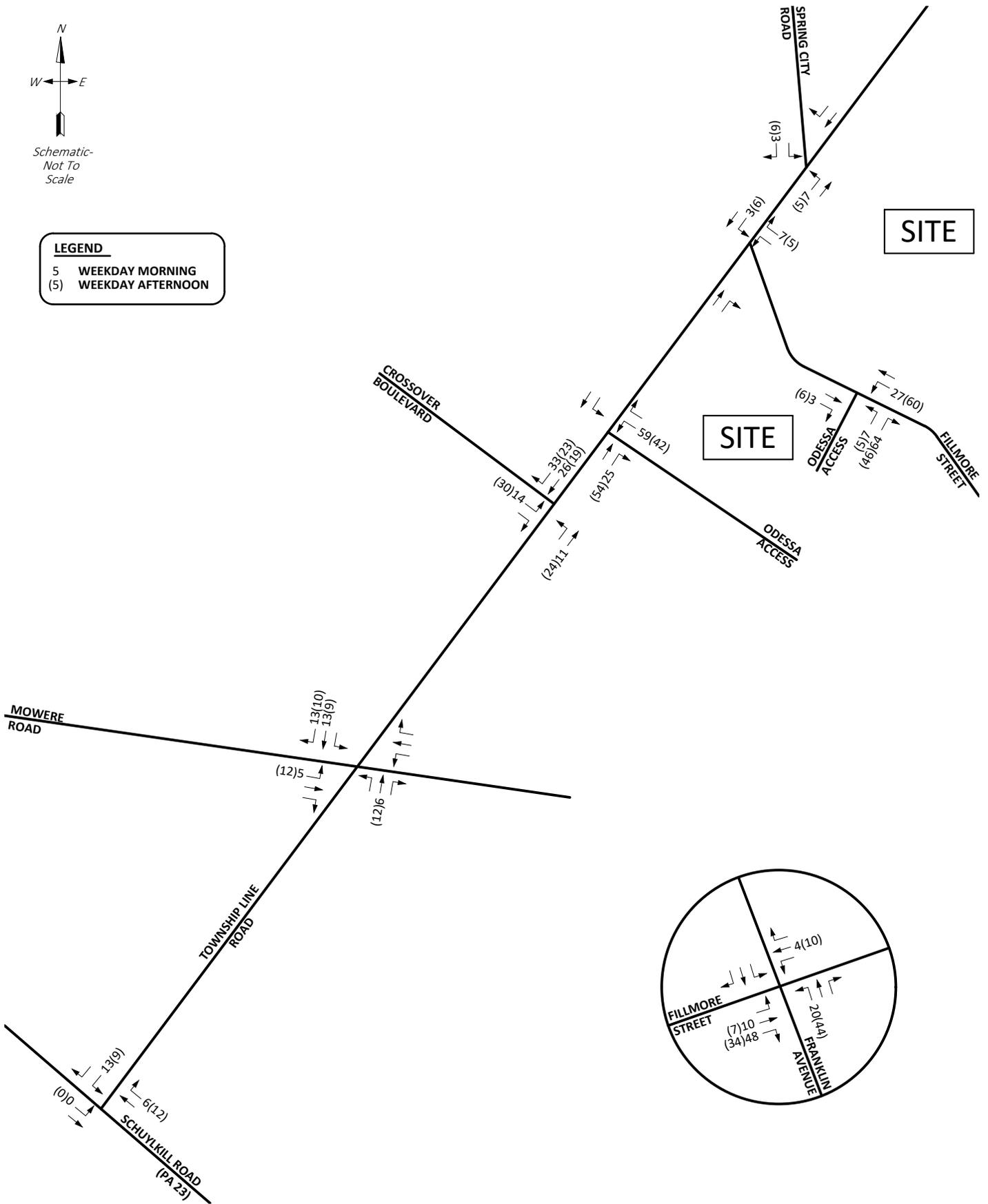


FIGURE 4B
 New Site Trip Assignment
ODESSA
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA



Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Tables 3A and 3B** presents the anticipated vehicular trip generation for the proposed development.

Table 3A. Trip Generation Methodology

Land Use	Land Use Code	Daily	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
			Method	Enter/Exit	Method	Enter/Exit
Townhomes	215	$T = 7.62(X) - 50.48$	$T = 0.52(X) - 5.70$	31%/69%	$T = 0.60(X) - 3.93$	57%/43%

X = Independent Variable (units) | Y = Independent Variable (units) | T = Trips

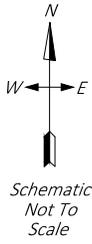
Table 3B. Vehicular Trip Generation

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Townhomes	195 units	1,435	30	66	96	64	49	113

(1) ITE Land Use Code 215 for Single-Family Attached Housing.

Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development's site access. The distribution percentages for the anticipated directions of approach and departure and traffic assignment percentages are illustrated in **Figure 4A**. Application of the percentages illustrated in Figure 4A to the new peak hour trips contained in Table 2B, provides an estimate of site traffic to be added to the study area. The site-generated traffic is also shown in **Figure 4B** for the weekday morning and weekday afternoon peak hours.



LEGEND	
5%	ENTER
(5%)	EXIT

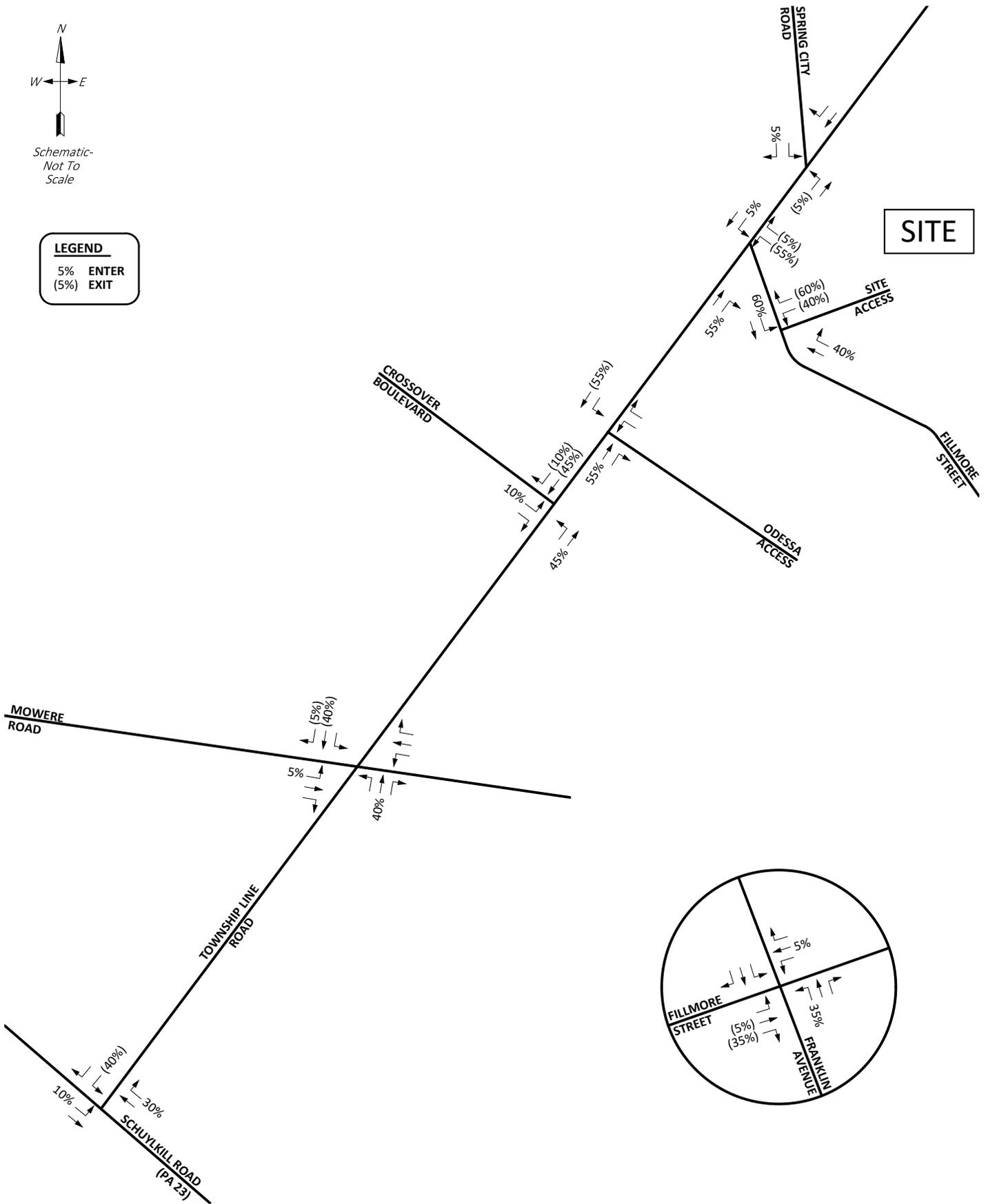


FIGURE 4A
 New Site Trip Distribution
TRIESTE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA



APPENDIX B:

Study Area Photographs





Direction / Road: Nb. Township Line Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Nb. Township Line Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Sb. Township Line Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Sb. Township Line Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Eb. Mowere Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Eb. Mowere Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Wb. Mowere Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Wb. Mowere Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Nb. Bunning Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Nb. Bunning Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Sb. Bunning Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Sb. Bunning Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Eb. Ashburn Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Eb. Ashburn Street
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Wb. Ashburn Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Wb. Ashburn Street
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Nb. Filmore Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Nb. Filmore Street
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Sb. Filmore Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Sb. Filmore Street
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Eb. Ashburn Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Eb. Ashburn Street
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Nb. Bunning Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Nb. Bunning Street
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Eb. Filmore Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Eb. Filmore Street
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Wb. Filmore Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Wb. Filmore Street
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Nb. Township Line Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Nb. Township Line Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Sb. Township Line Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Sb. Township Line Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Eb. Crossover Blvd
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Eb. Crossover Blvd
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Nb. Township Line Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Nb. Township Line Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Sb. Township Line Road
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Sb. Township Line Road
Approach / Departure: Approach
Distance: 200 Feet



Direction / Road: Eb. Gauge Street
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: Eb. Gauge Street
Approach / Departure: Approach
Distance: 200 Feet

APPENDIX C:

Manual Traffic Count Printouts & Speed Study





Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 1 Township Line
 Road & Mowere Road
 Site Code:
 Start Date: 01/23/2025
 Page No: 1

Counter: MIO:
 Set up By JH::

Turning Movement Data

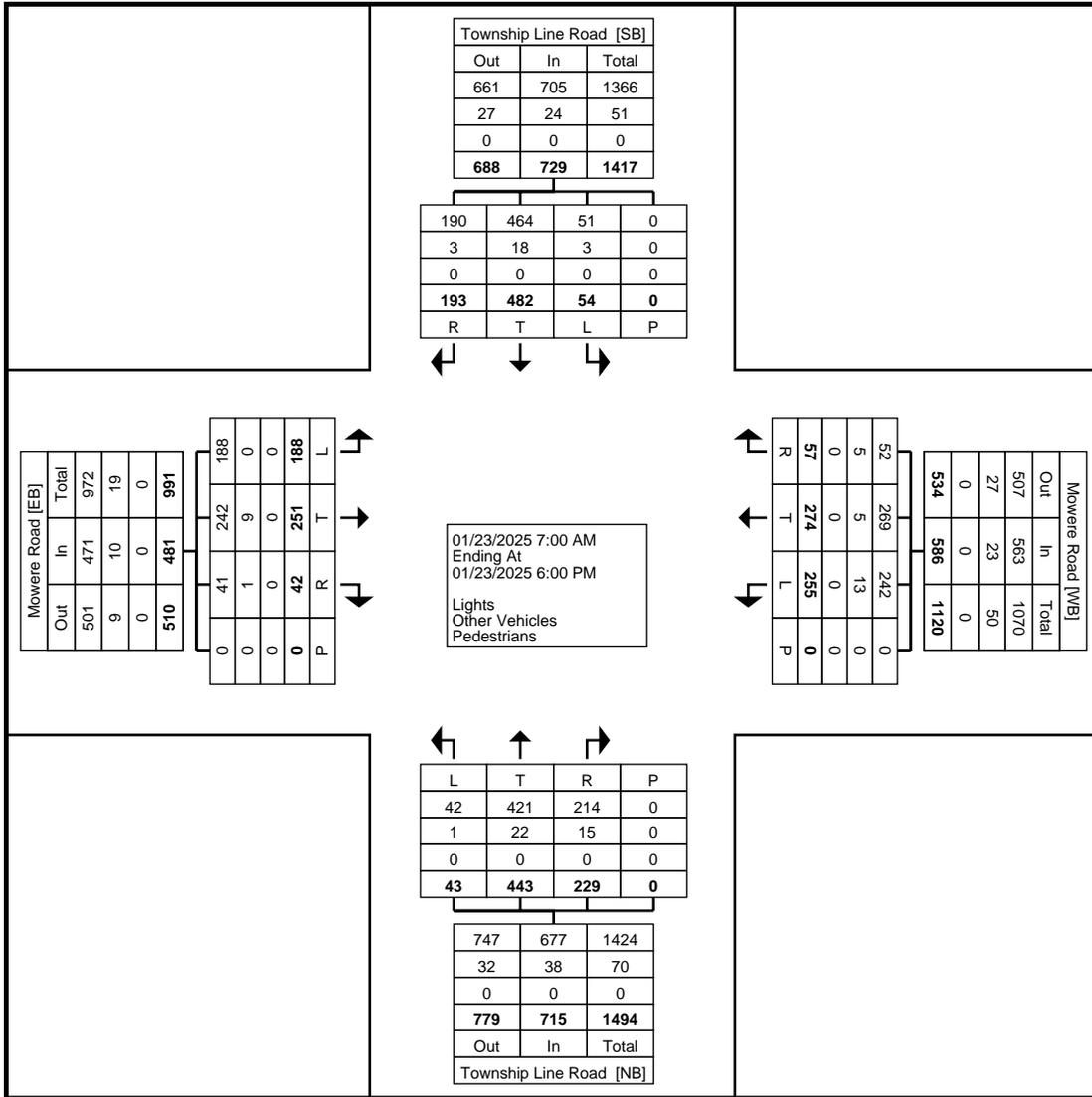
Start Time	Mowere Road Eastbound					Mowere Road Westbound					Township Line Road Northbound					Township Line Road Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
7:00 AM	9	8	2	0	19	14	8	3	0	25	3	15	7	0	25	2	29	10	0	41	110
7:15 AM	10	4	4	0	18	26	18	3	0	47	2	16	5	0	23	1	36	8	0	45	133
7:30 AM	17	17	0	0	34	14	20	4	0	38	2	17	7	0	26	1	33	13	0	47	145
7:45 AM	8	15	2	0	25	13	23	6	0	42	4	18	13	0	35	2	47	14	0	63	165
Hourly Total	44	44	8	0	96	67	69	16	0	152	11	66	32	0	109	6	145	45	0	196	553
8:00 AM	10	10	0	0	20	17	10	8	0	35	2	13	10	0	25	2	41	13	0	56	136
8:15 AM	9	11	2	0	22	11	11	4	0	26	0	20	8	0	28	2	36	12	0	50	126
8:30 AM	8	13	3	0	24	27	17	0	0	44	2	12	7	0	21	4	29	12	0	45	134
8:45 AM	2	23	2	0	27	16	5	0	0	21	5	14	8	0	27	6	40	9	0	55	130
Hourly Total	29	57	7	0	93	71	43	12	0	126	9	59	33	0	101	14	146	46	0	206	526
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	14	15	1	0	30	19	26	6	0	51	3	33	11	0	47	1	26	15	0	42	170
4:15 PM	13	18	2	0	33	14	22	3	0	39	2	41	20	0	63	7	19	8	0	34	169
4:30 PM	18	26	3	0	47	18	14	5	0	37	2	48	20	0	70	6	26	12	0	44	198
4:45 PM	13	14	3	0	30	10	18	3	0	31	2	33	19	0	54	7	33	14	0	54	169
Hourly Total	58	73	9	0	140	61	80	17	0	158	9	155	70	0	234	21	104	49	0	174	706
5:00 PM	15	18	3	0	36	14	17	4	0	35	1	41	34	0	76	6	13	11	0	30	177
5:15 PM	11	18	3	0	32	18	25	1	0	44	1	42	17	0	60	1	27	21	0	49	185
5:30 PM	19	20	7	0	46	16	24	3	0	43	7	39	22	0	68	5	28	6	0	39	196
5:45 PM	12	21	5	0	38	8	16	4	0	28	5	41	21	0	67	1	19	15	0	35	168
Hourly Total	57	77	18	0	152	56	82	12	0	150	14	163	94	0	271	13	87	53	0	153	726
Grand Total	188	251	42	0	481	255	274	57	0	586	43	443	229	0	715	54	482	193	0	729	2511
Approach %	39.1	52.2	8.7	-	-	43.5	46.8	9.7	-	-	6.0	62.0	32.0	-	-	7.4	66.1	26.5	-	-	-
Total %	7.5	10.0	1.7	-	19.2	10.2	10.9	2.3	-	23.3	1.7	17.6	9.1	-	28.5	2.2	19.2	7.7	-	29.0	-
Lights	188	242	41	-	471	242	269	52	-	563	42	421	214	-	677	51	464	190	-	705	2416
% Lights	100.0	96.4	97.6	-	97.9	94.9	98.2	91.2	-	96.1	97.7	95.0	93.4	-	94.7	94.4	96.3	98.4	-	96.7	96.2
Other Vehicles	0	9	1	-	10	13	5	5	-	23	1	22	15	-	38	3	18	3	-	24	95
% Other Vehicles	0.0	3.6	2.4	-	2.1	5.1	1.8	8.8	-	3.9	2.3	5.0	6.6	-	5.3	5.6	3.7	1.6	-	3.3	3.8
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 1 Township Line
 Road & Mowere Road
 Site Code:
 Start Date: 01/23/2025
 Page No: 2

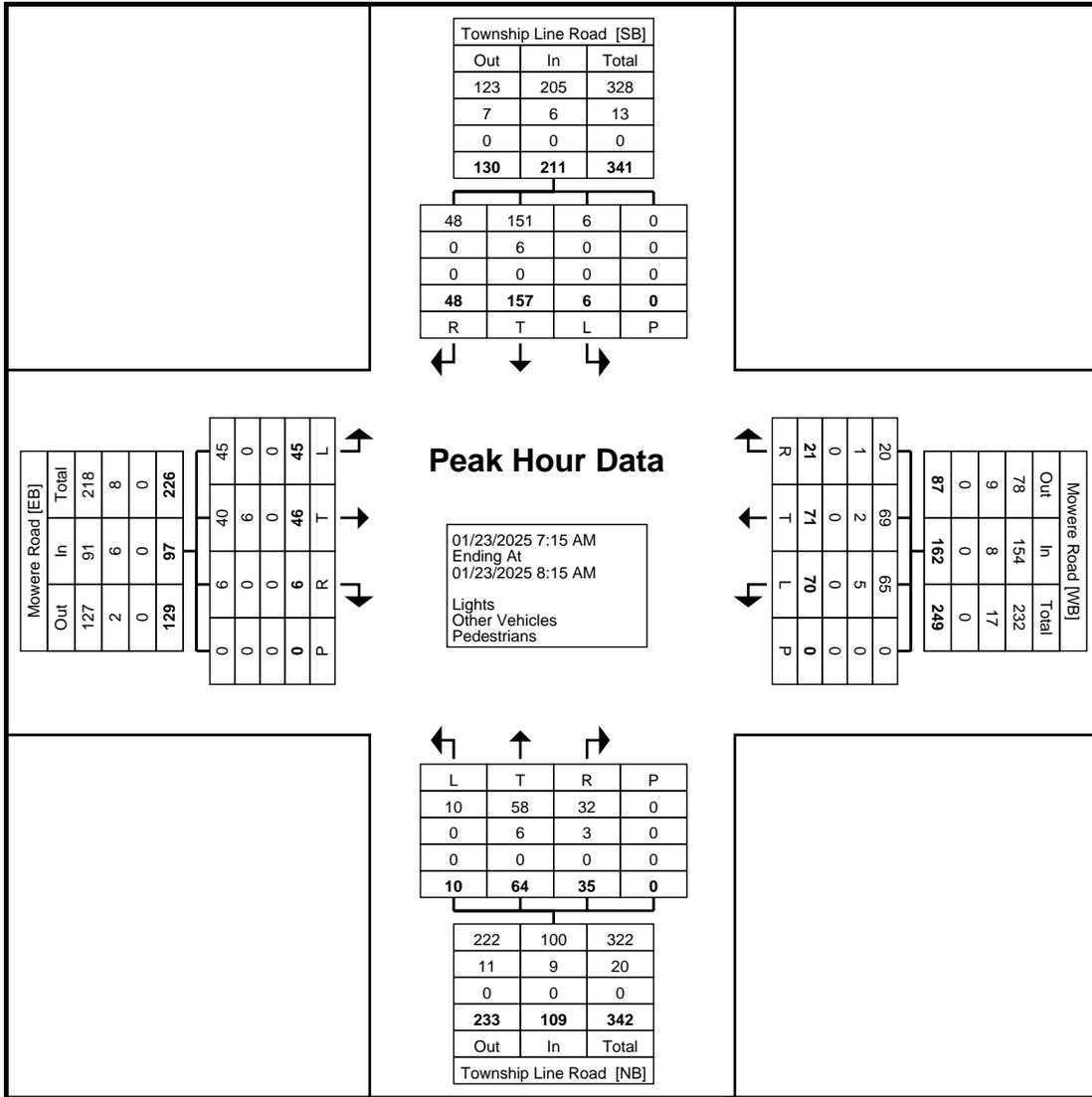
Counter: MIO:
 Set up By JH.:



Turning Movement Data Plot



Counter: MIO:
 Set up By JH.:



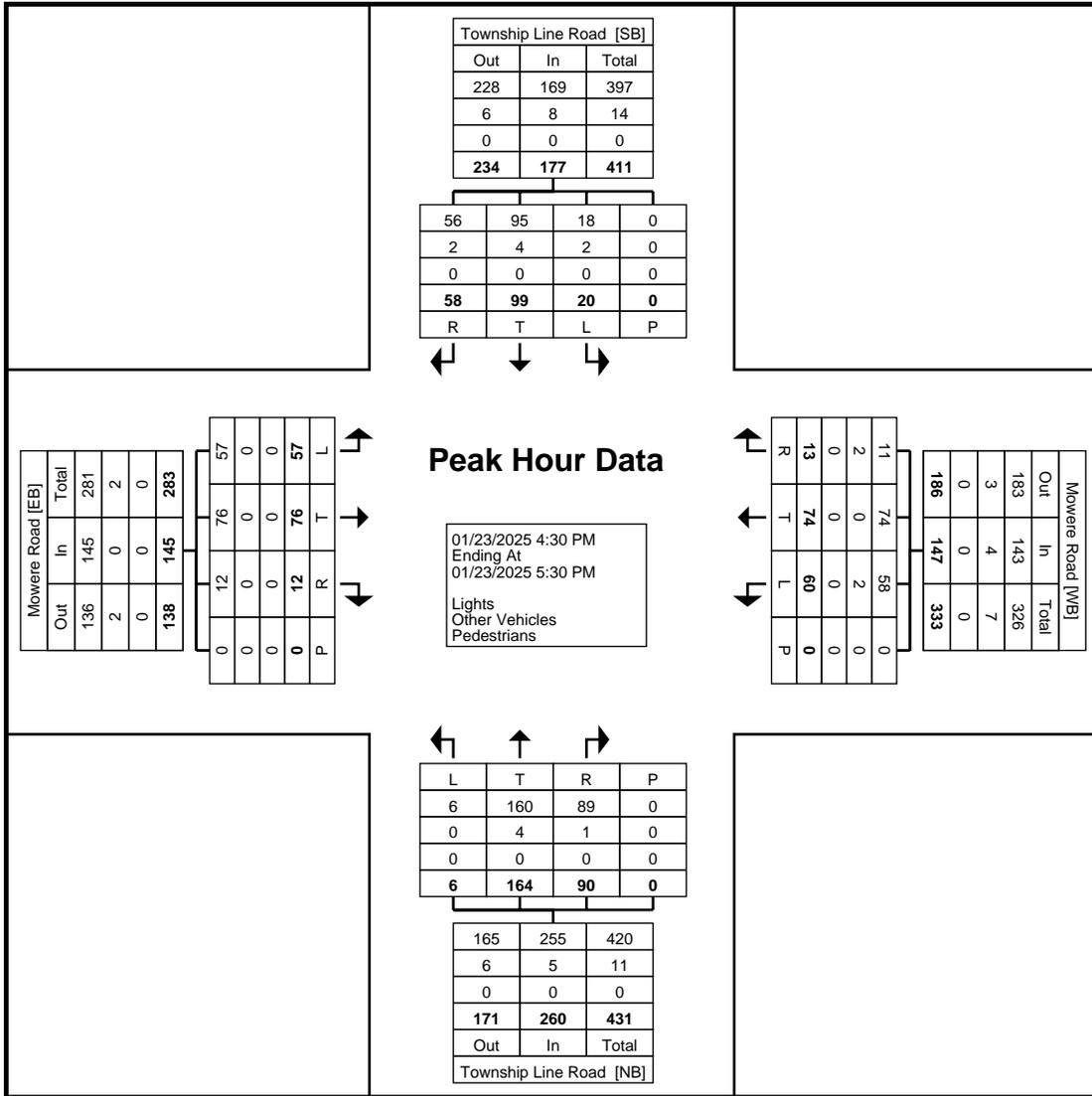
Turning Movement Peak Hour Data Plot (7:15 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 1 Township Line
 Road & Mowere Road
 Site Code:
 Start Date: 01/23/2025
 Page No: 6

Counter: MIO:
 Set up By JH.:



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



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2a (Tu) Bunning
 Road & Ashburn Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 1

Counter: MIO:
 Set up By JH::

Turning Movement Data

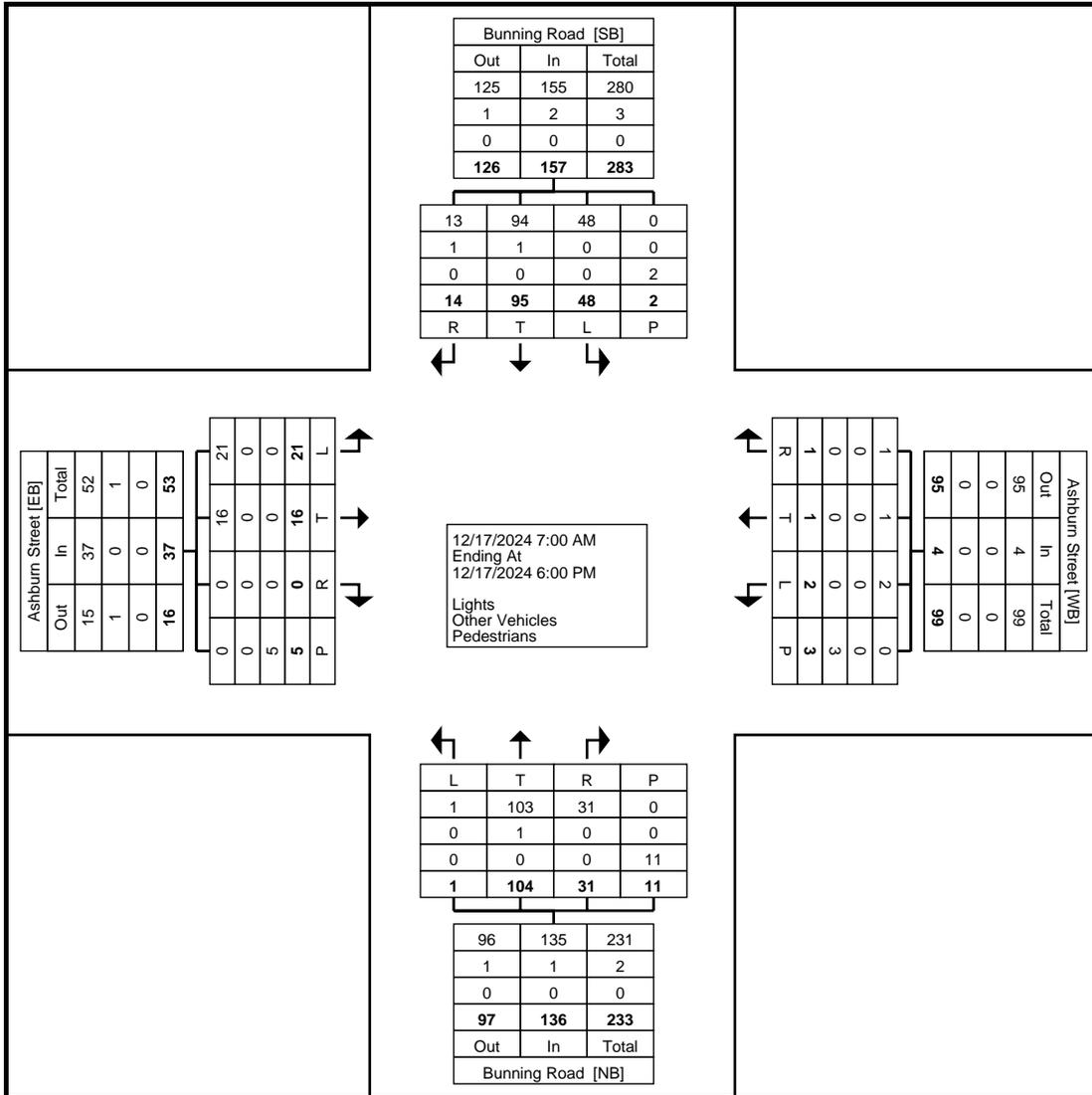
Start Time	Ashburn Street Eastbound					Ashburn Street Westbound					Bunning Road Northbound					Bunning Road Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
7:00 AM	6	1	0	0	7	0	0	0	0	0	0	6	0	0	6	0	4	0	0	4	17
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	5	3	0	8	0	1	2	0	3	11
7:30 AM	2	2	0	0	4	0	0	0	2	0	0	5	3	1	8	16	3	2	1	21	33
7:45 AM	2	1	0	0	3	0	0	0	1	0	0	6	4	0	10	24	3	0	1	27	40
Hourly Total	10	4	0	0	14	0	0	0	3	0	0	22	10	1	32	40	11	4	2	55	101
8:00 AM	3	1	0	0	4	1	0	0	0	1	0	16	4	0	20	5	3	0	0	8	33
8:15 AM	0	2	0	0	2	0	0	0	0	0	1	5	1	1	7	0	2	0	0	2	11
8:30 AM	1	1	0	0	2	0	0	0	0	0	0	6	1	0	7	0	7	0	0	7	16
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	5	2	1	7	0	3	1	0	4	11
Hourly Total	4	4	0	0	8	1	0	0	0	1	1	32	8	2	41	5	15	1	0	21	71
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	2	0	0	2	0	1	1	0	2	0	5	1	0	6	0	7	1	0	8	18
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	7	2	0	9	0	4	1	0	5	15
4:30 PM	1	1	0	1	2	0	0	0	0	0	0	8	1	3	9	1	11	2	0	14	25
4:45 PM	0	0	0	2	0	0	0	0	0	0	0	9	0	1	9	1	4	0	0	5	14
Hourly Total	1	4	0	3	5	0	1	1	0	2	0	29	4	4	33	2	26	4	0	32	72
5:00 PM	4	3	0	2	7	0	0	0	0	0	0	4	0	3	4	1	15	1	0	17	28
5:15 PM	2	0	0	0	2	1	0	0	0	1	0	3	3	1	6	0	10	1	0	11	20
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	10	6	0	16	0	7	1	0	8	25
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	11	2	0	13	17
Hourly Total	6	4	0	2	10	1	0	0	0	1	0	21	9	4	30	1	43	5	0	49	90
Grand Total	21	16	0	5	37	2	1	1	3	4	1	104	31	11	136	48	95	14	2	157	334
Approach %	56.8	43.2	0.0	-	-	50.0	25.0	25.0	-	-	0.7	76.5	22.8	-	-	30.6	60.5	8.9	-	-	-
Total %	6.3	4.8	0.0	-	11.1	0.6	0.3	0.3	-	1.2	0.3	31.1	9.3	-	40.7	14.4	28.4	4.2	-	47.0	-
Lights	21	16	0	-	37	2	1	1	-	4	1	103	31	-	135	48	94	13	-	155	331
% Lights	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	100.0	100.0	99.0	100.0	-	99.3	100.0	98.9	92.9	-	98.7	99.1
Other Vehicles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	0	1	1	-	2	3
% Other Vehicles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	1.0	0.0	-	0.7	0.0	1.1	7.1	-	1.3	0.9
Pedestrians	-	-	-	5	-	-	-	-	3	-	-	-	-	11	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2a (Tu) Bunning
 Road & Ashburn Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 2

Counter: MIO:
 Set up By JH.:



Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2a (Tu) Bunning
 Road & Ashburn Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 3

Counter: MIO:
 Set up By JH::

Turning Movement Peak Hour Data (7:15 AM)

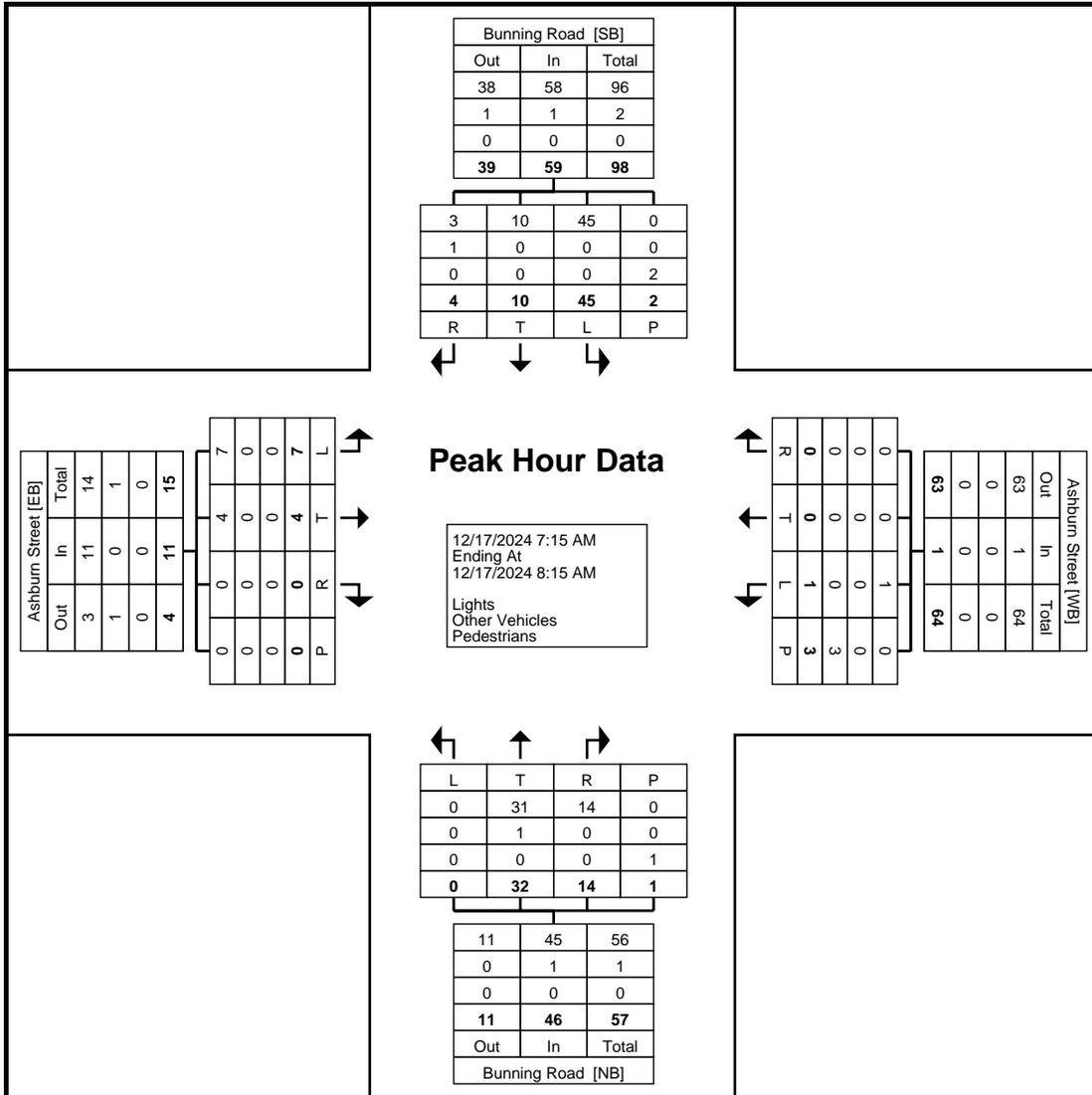
Start Time	Ashburn Street Eastbound					Ashburn Street Westbound					Bunning Road Northbound					Bunning Road Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	5	3	0	8	0	1	2	0	3	11
7:30 AM	2	2	0	0	4	0	0	0	2	0	0	5	3	1	8	16	3	2	1	21	33
7:45 AM	2	1	0	0	3	0	0	0	1	0	0	6	4	0	10	24	3	0	1	27	40
8:00 AM	3	1	0	0	4	1	0	0	0	1	0	16	4	0	20	5	3	0	0	8	33
Total	7	4	0	0	11	1	0	0	3	1	0	32	14	1	46	45	10	4	2	59	117
Approach %	63.6	36.4	0.0	-	-	100.0	0.0	0.0	-	-	0.0	69.6	30.4	-	-	76.3	16.9	6.8	-	-	-
Total %	6.0	3.4	0.0	-	9.4	0.9	0.0	0.0	-	0.9	0.0	27.4	12.0	-	39.3	38.5	8.5	3.4	-	50.4	-
PHF	0.583	0.500	0.000	-	0.688	0.250	0.000	0.000	-	0.250	0.000	0.500	0.875	-	0.575	0.469	0.833	0.500	-	0.546	0.731
Lights	7	4	0	-	11	1	0	0	-	1	0	31	14	-	45	45	10	3	-	58	115
% Lights	100.0	100.0	-	-	100.0	100.0	-	-	-	100.0	-	96.9	100.0	-	97.8	100.0	100.0	75.0	-	98.3	98.3
Other Vehicles	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	0	0	1	-	1	2
% Other Vehicles	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	-	3.1	0.0	-	2.2	0.0	0.0	25.0	-	1.7	1.7
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	1	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2a (Tu) Bunning
 Road & Ashburn Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 4

Counter: MIO:
 Set up By JH::



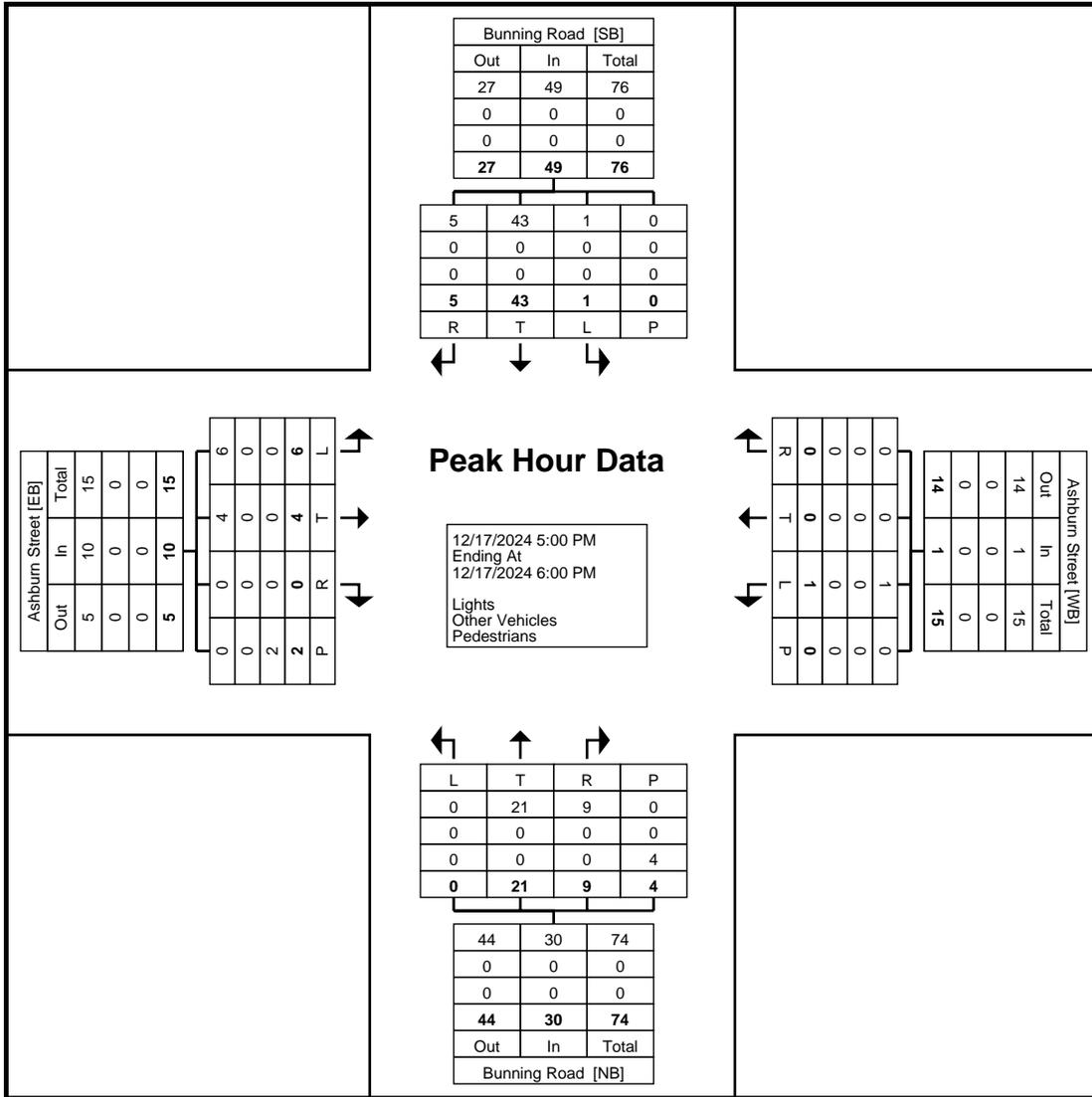
Turning Movement Peak Hour Data Plot (7:15 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2a (Tu) Bunning
 Road & Ashburn Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 6

Counter: MIO:
 Set up By JH::



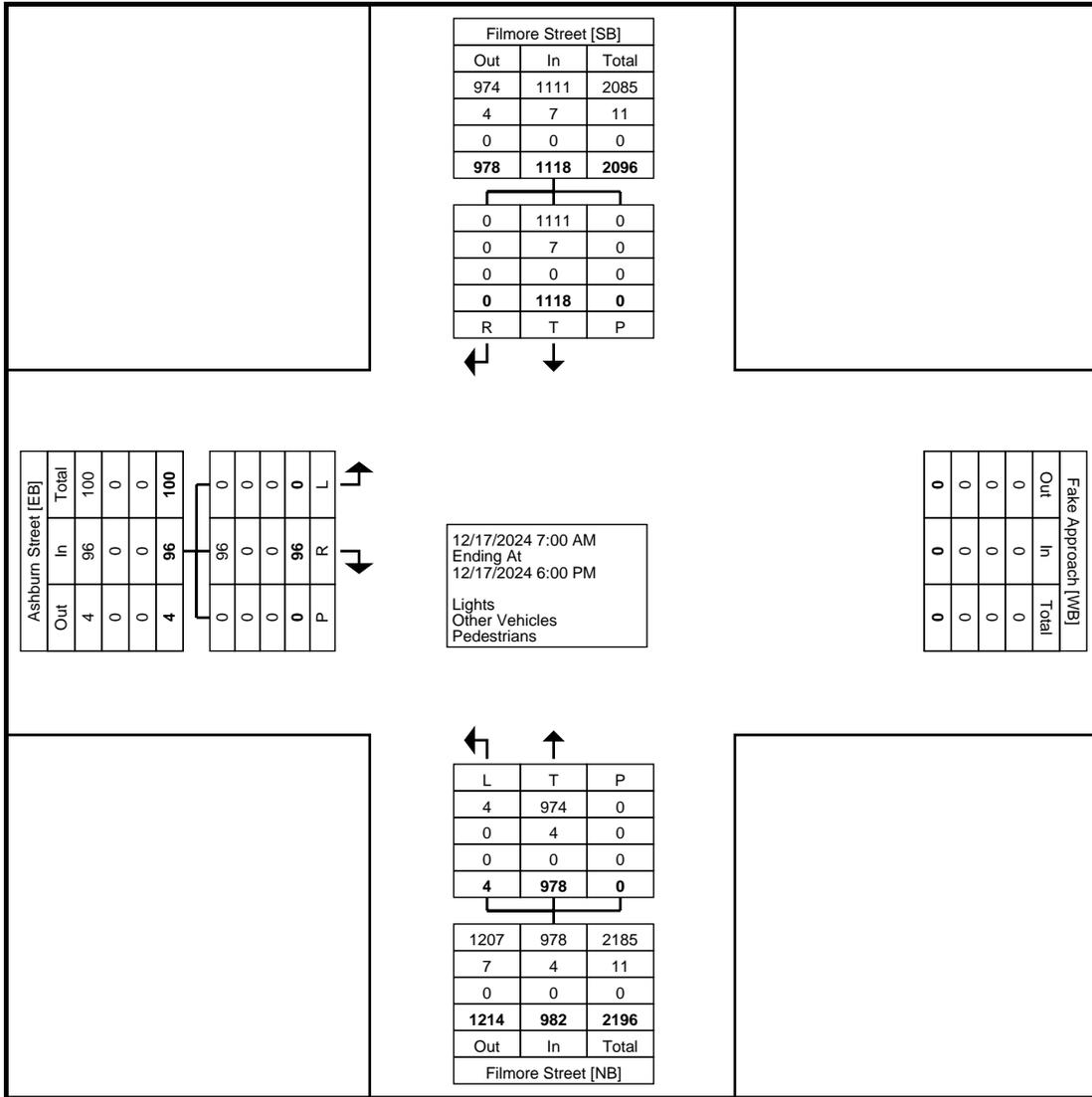
Turning Movement Peak Hour Data Plot (5:00 PM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2b (Tu) Filmore
 Street & Ashburn Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 2

Counter: MIO:
 Set up By JH.:



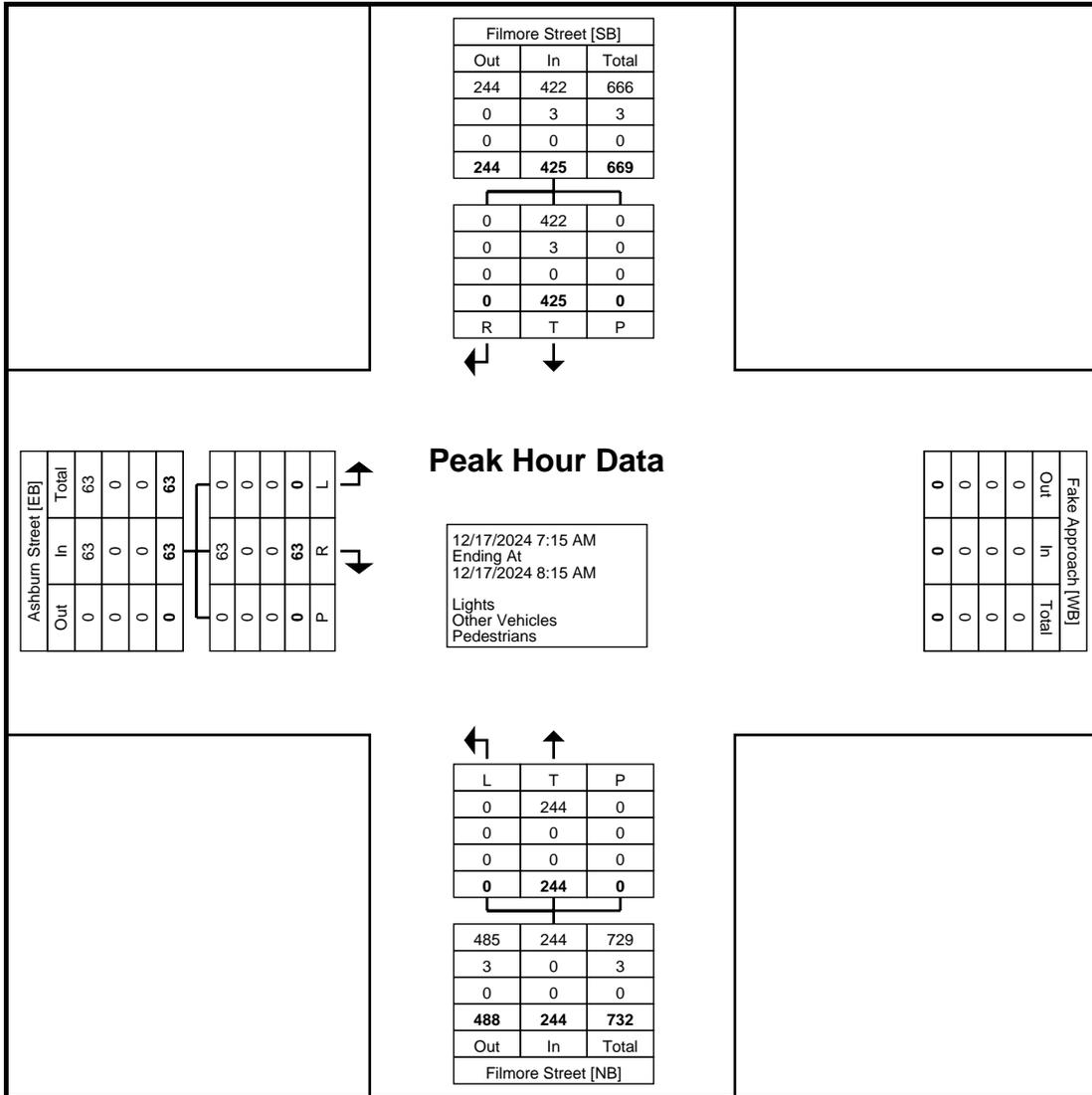
Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2b (Tu) Filmore
 Street & Ashburn Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 4

Counter: MIO:
 Set up By JH::



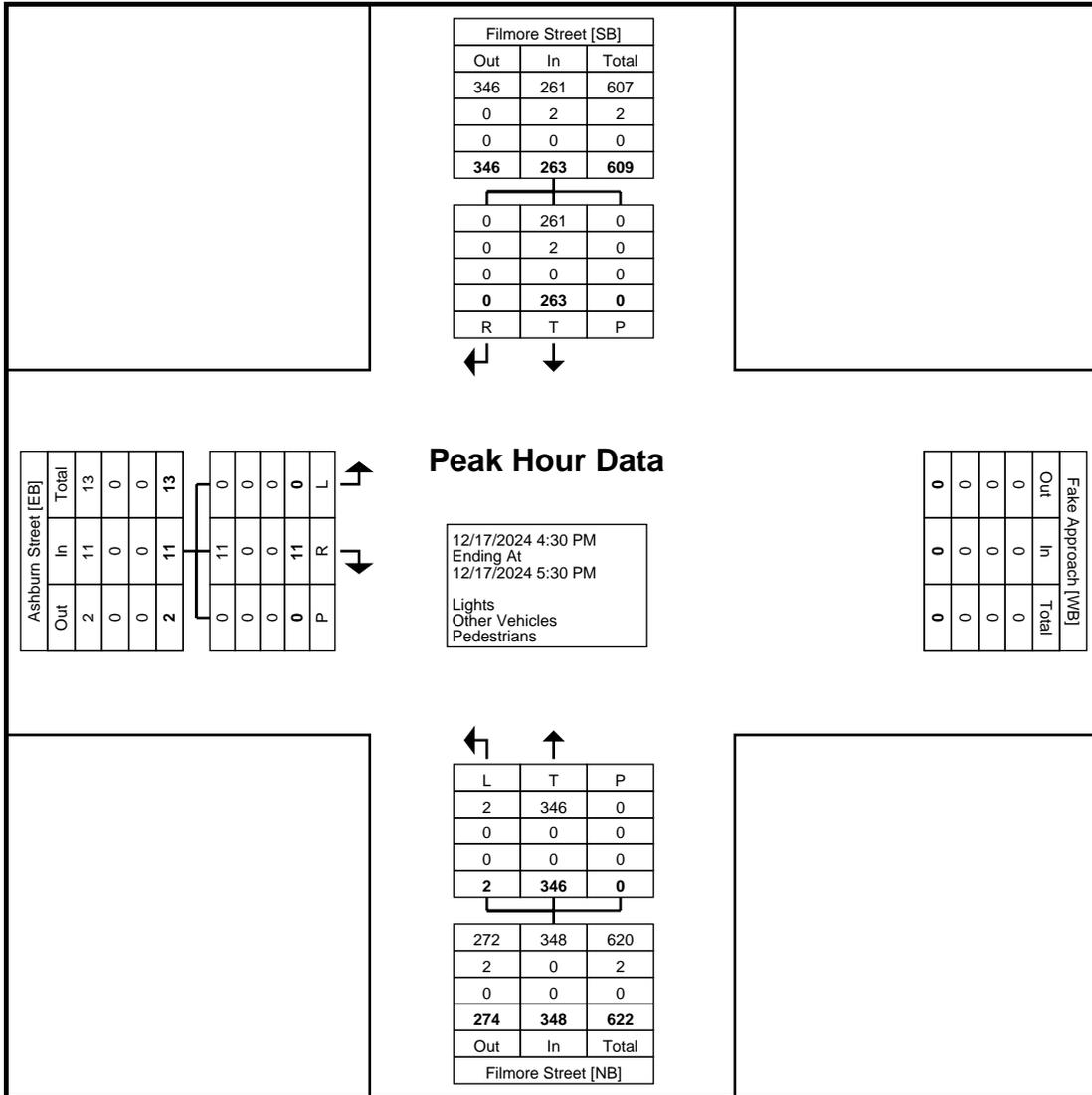
Turning Movement Peak Hour Data Plot (7:15 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2b (Tu) Filmore
 Street & Ashburn Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 6

Counter: MIO:
 Set up By JH.:



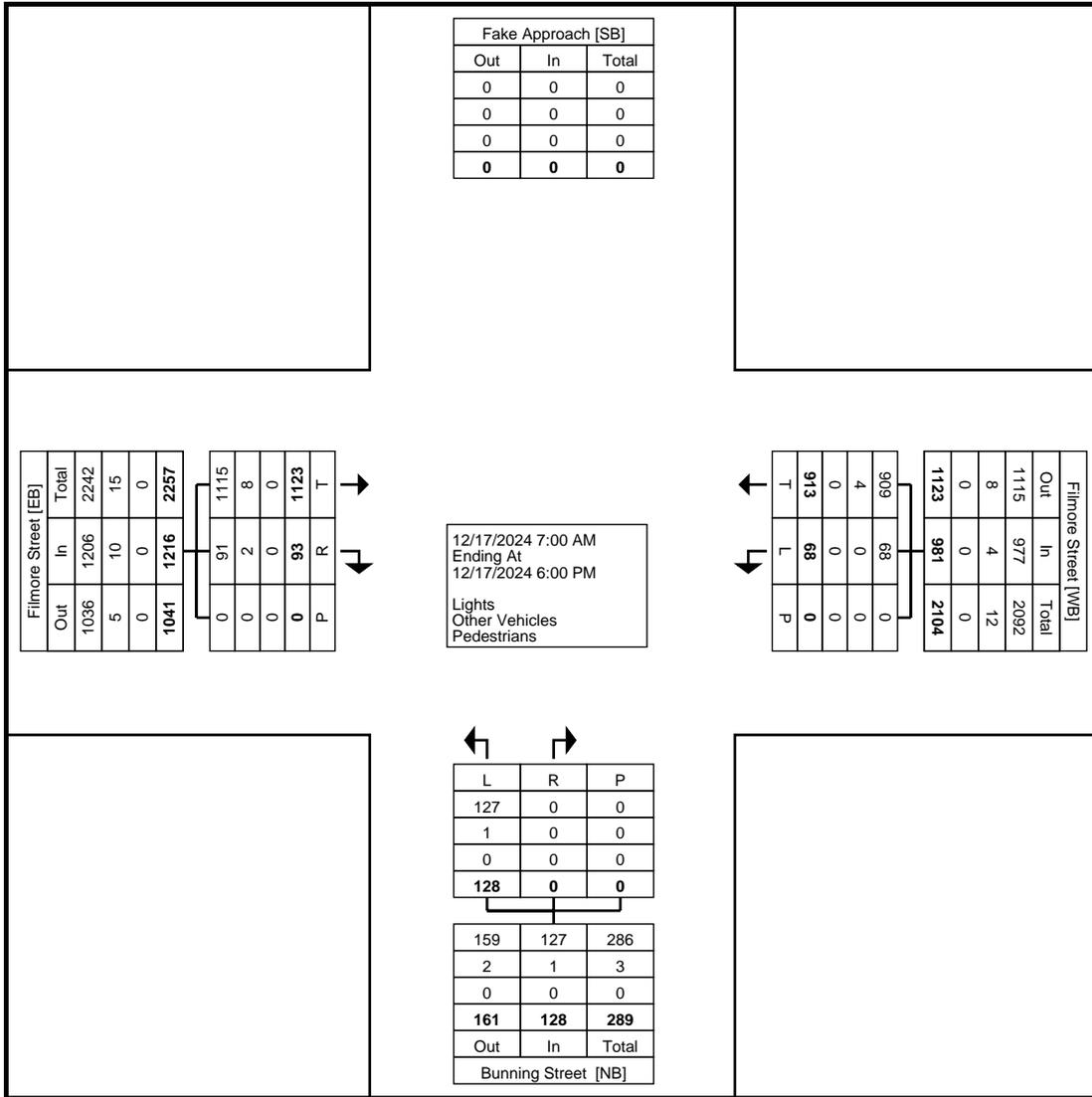
Turning Movement Peak Hour Data Plot (4:30 PM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2c (Tu) Bunning
 Street & Filmore Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 2

Counter: MIO:
 Set up By JH.:



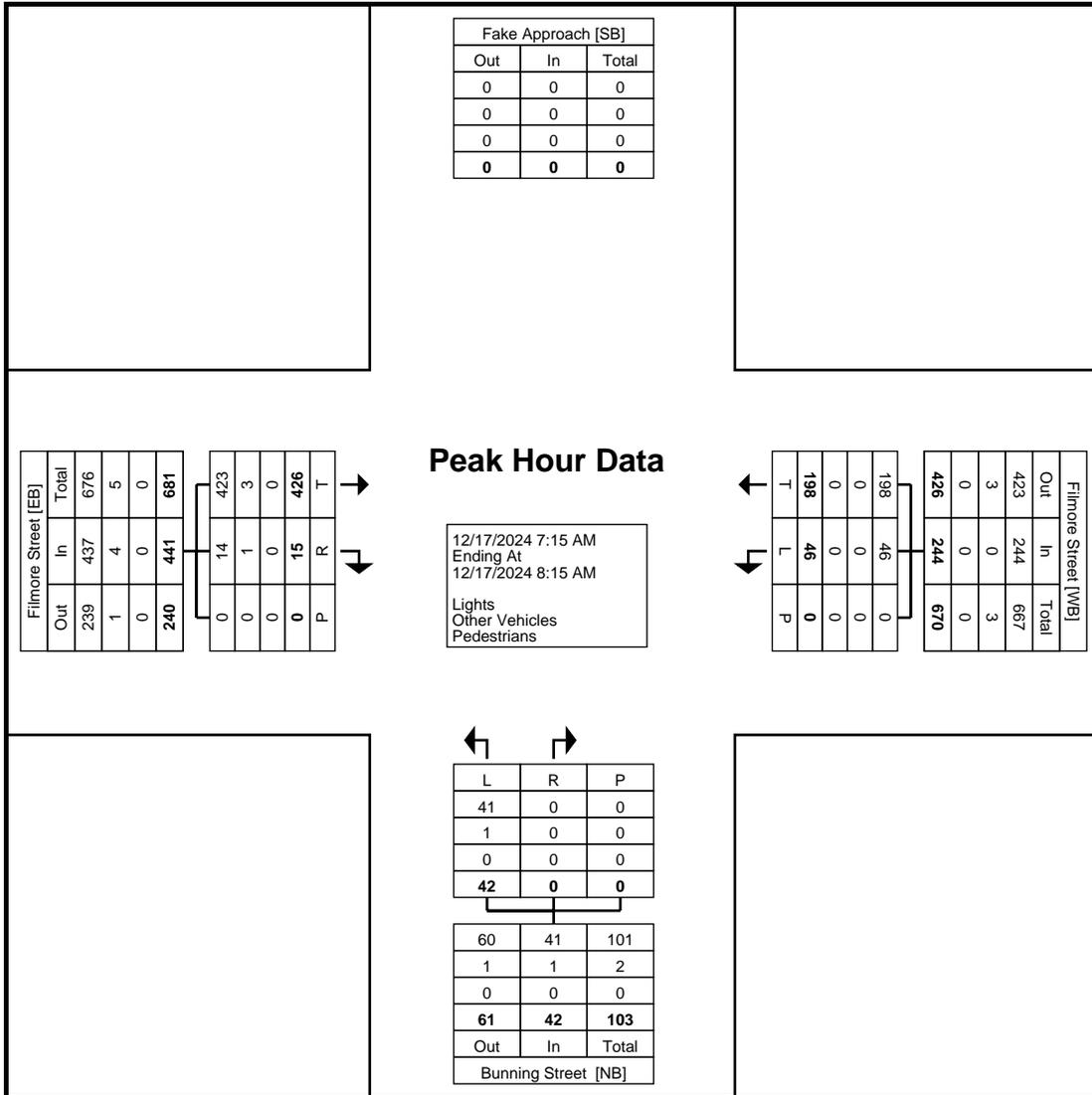
Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2c (Tu) Bunning
 Street & Filmore Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 4

Counter: MIO:
 Set up By JH.:



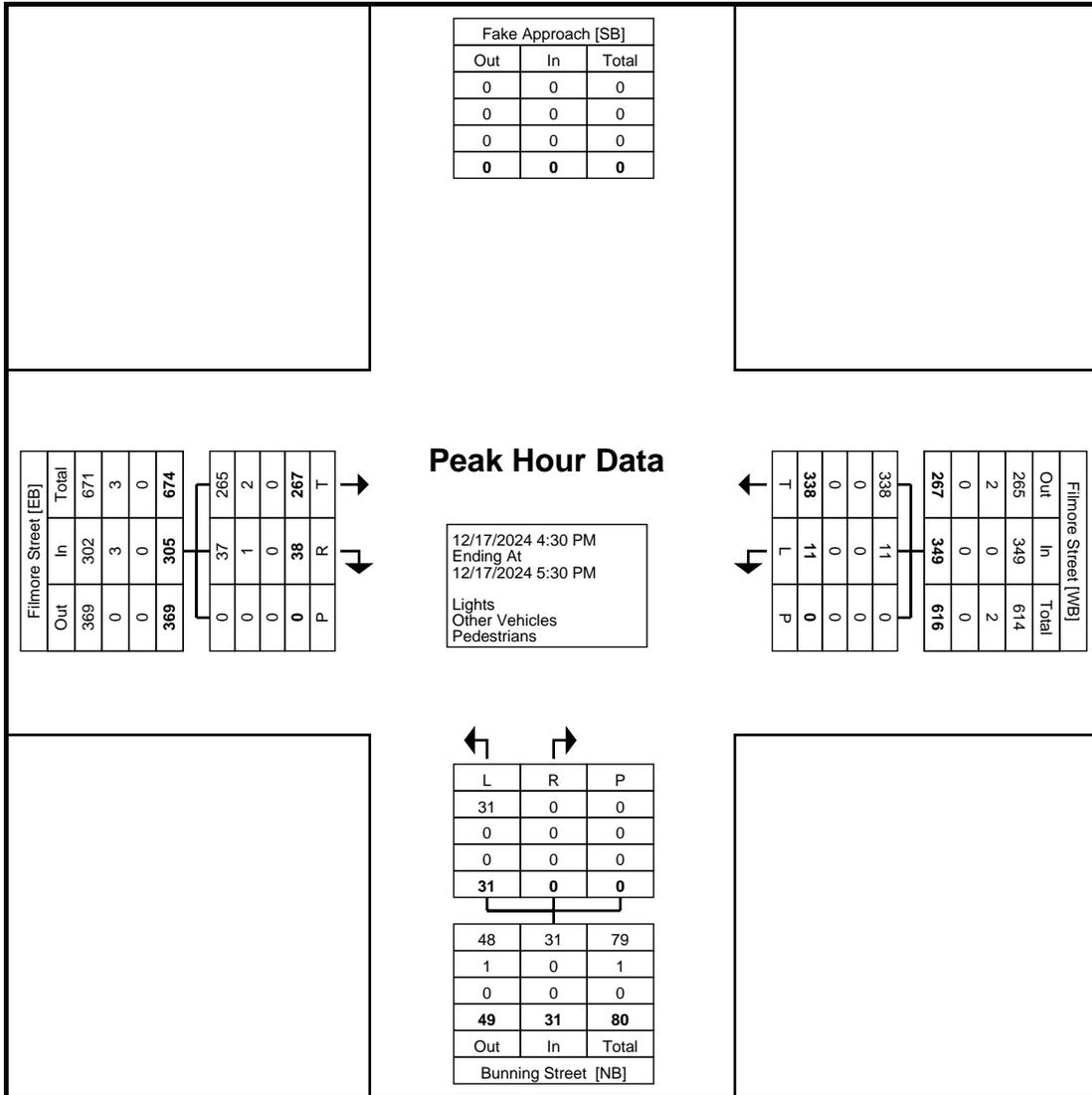
Turning Movement Peak Hour Data Plot (7:15 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 2c (Tu) Bunning
 Street & Filmore Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 6

Counter: MIO:
 Set up By JH::



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



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 3 (Tu) Township Line
 Road & Crossover Blvd
 Site Code:
 Start Date: 12/17/2024
 Page No: 1

Counter: MIO:
 Set up By JH::

Turning Movement Data

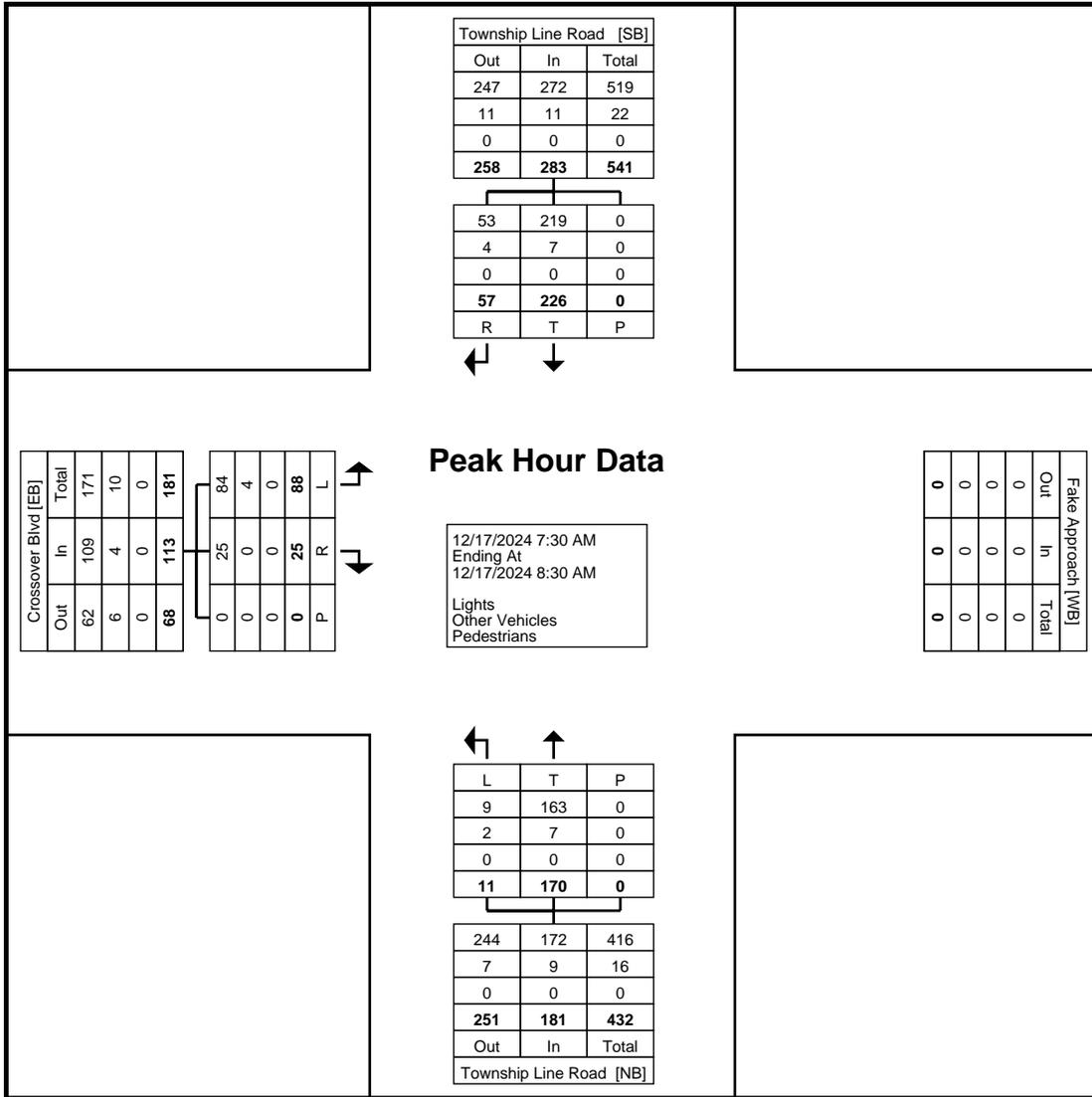
Start Time	Crossover Blvd Eastbound				Township Line Road Northbound				Township Line Road Southbound				Int. Total
	Left	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	
7:00 AM	9	3	0	12	1	36	0	37	48	10	0	58	107
7:15 AM	16	10	0	26	1	38	0	39	41	4	0	45	110
7:30 AM	32	9	0	41	3	54	0	57	47	5	0	52	150
7:45 AM	29	8	0	37	2	51	0	53	61	18	0	79	169
Hourly Total	86	30	0	116	7	179	0	186	197	37	0	234	536
8:00 AM	16	4	0	20	1	26	0	27	69	27	0	96	143
8:15 AM	11	4	0	15	5	39	0	44	49	7	0	56	115
8:30 AM	18	9	0	27	2	34	0	36	45	7	0	52	115
8:45 AM	15	9	0	24	3	29	0	32	34	13	0	47	103
Hourly Total	60	26	0	86	11	128	0	139	197	54	0	251	476
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	13	3	1	16	7	45	0	52	40	23	0	63	131
4:15 PM	12	5	0	17	6	50	0	56	38	13	0	51	124
4:30 PM	27	6	4	33	10	69	0	79	52	18	0	70	182
4:45 PM	14	4	1	18	7	42	1	49	53	21	0	74	141
Hourly Total	66	18	6	84	30	206	1	236	183	75	0	258	578
5:00 PM	18	4	0	22	10	58	0	68	53	24	0	77	167
5:15 PM	15	7	0	22	17	73	0	90	50	20	0	70	182
5:30 PM	15	3	2	18	9	56	0	65	46	25	0	71	154
5:45 PM	15	8	0	23	10	65	0	75	47	11	0	58	156
Hourly Total	63	22	2	85	46	252	0	298	196	80	0	276	659
Grand Total	275	96	8	371	94	765	1	859	773	246	0	1019	2249
Approach %	74.1	25.9	-	-	10.9	89.1	-	-	75.9	24.1	-	-	-
Total %	12.2	4.3	-	16.5	4.2	34.0	-	38.2	34.4	10.9	-	45.3	-
Lights	266	93	-	359	87	747	-	834	758	238	-	996	2189
% Lights	96.7	96.9	-	96.8	92.6	97.6	-	97.1	98.1	96.7	-	97.7	97.3
Other Vehicles	9	3	-	12	7	18	-	25	15	8	-	23	60
% Other Vehicles	3.3	3.1	-	3.2	7.4	2.4	-	2.9	1.9	3.3	-	2.3	2.7
Pedestrians	-	-	8	-	-	-	1	-	-	-	0	-	-
% Pedestrians	-	-	100.0	-	-	-	100.0	-	-	-	-	-	-



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 3 (Tu) Township Line
 Road & Crossover Blvd
 Site Code:
 Start Date: 12/17/2024
 Page No: 4

Counter: MIO:
 Set up By JH::



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



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 3 (Tu) Township Line
 Road & Crossover Blvd
 Site Code:
 Start Date: 12/17/2024
 Page No: 5

Counter: MIO:
 Set up By JH::

Turning Movement Peak Hour Data (4:30 PM)

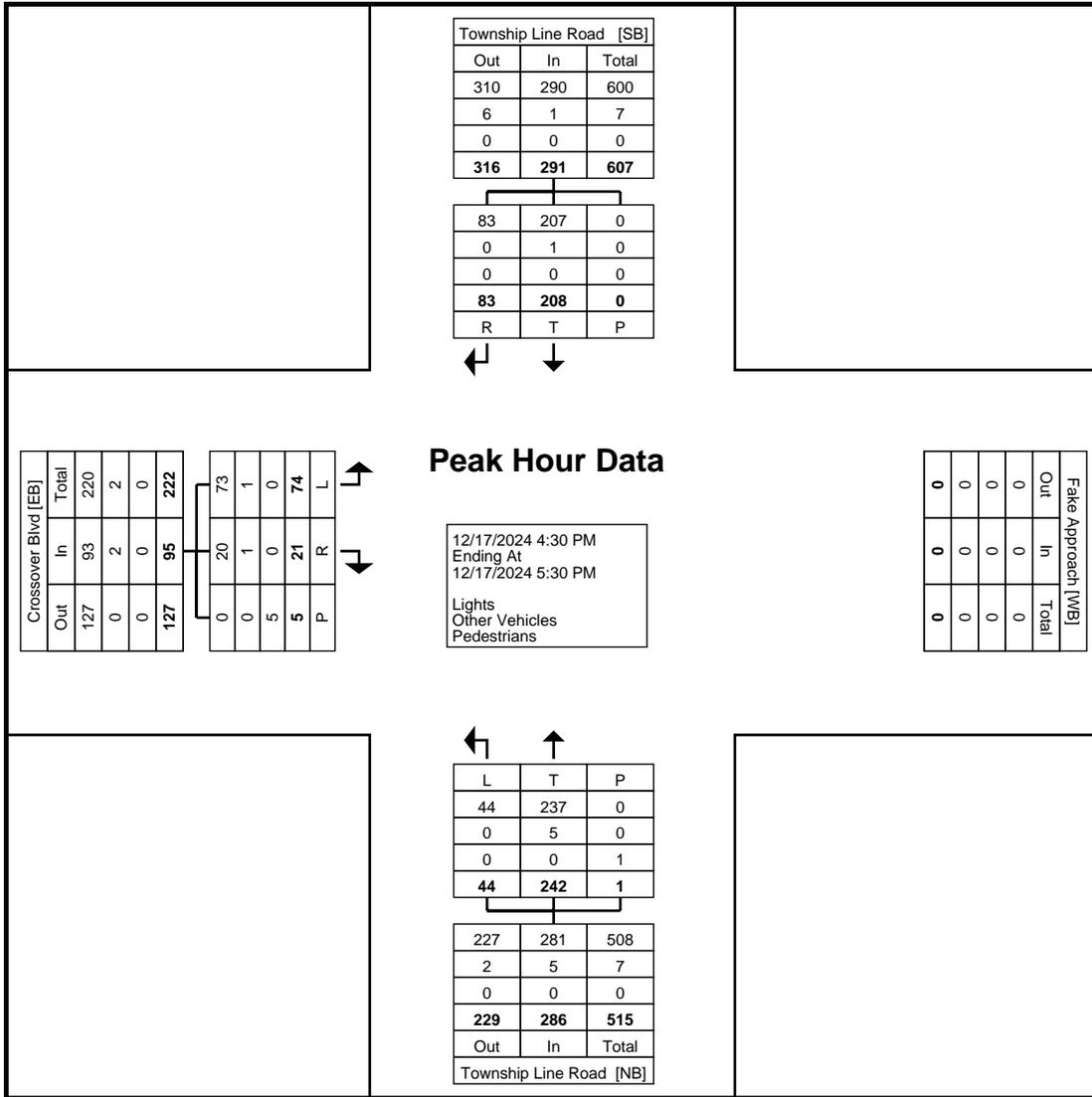
Start Time	Crossover Blvd Eastbound				Township Line Road Northbound				Township Line Road Southbound				Int. Total
	Left	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	
4:30 PM	27	6	4	33	10	69	0	79	52	18	0	70	182
4:45 PM	14	4	1	18	7	42	1	49	53	21	0	74	141
5:00 PM	18	4	0	22	10	58	0	68	53	24	0	77	167
5:15 PM	15	7	0	22	17	73	0	90	50	20	0	70	182
Total	74	21	5	95	44	242	1	286	208	83	0	291	672
Approach %	77.9	22.1	-	-	15.4	84.6	-	-	71.5	28.5	-	-	-
Total %	11.0	3.1	-	14.1	6.5	36.0	-	42.6	31.0	12.4	-	43.3	-
PHF	0.685	0.750	-	0.720	0.647	0.829	-	0.794	0.981	0.865	-	0.945	0.923
Lights	73	20	-	93	44	237	-	281	207	83	-	290	664
% Lights	98.6	95.2	-	97.9	100.0	97.9	-	98.3	99.5	100.0	-	99.7	98.8
Other Vehicles	1	1	-	2	0	5	-	5	1	0	-	1	8
% Other Vehicles	1.4	4.8	-	2.1	0.0	2.1	-	1.7	0.5	0.0	-	0.3	1.2
Pedestrians	-	-	5	-	-	-	1	-	-	-	0	-	-
% Pedestrians	-	-	100.0	-	-	-	100.0	-	-	-	-	-	-



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 3 (Tu) Township Line
 Road & Crossover Blvd
 Site Code:
 Start Date: 12/17/2024
 Page No: 6

Counter: MIO:
 Set up By JH::



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



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 4 (Tu) Township Line
 Road & Gauge Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 1

Counter: MIO:
 Set up By JH::

Turning Movement Data

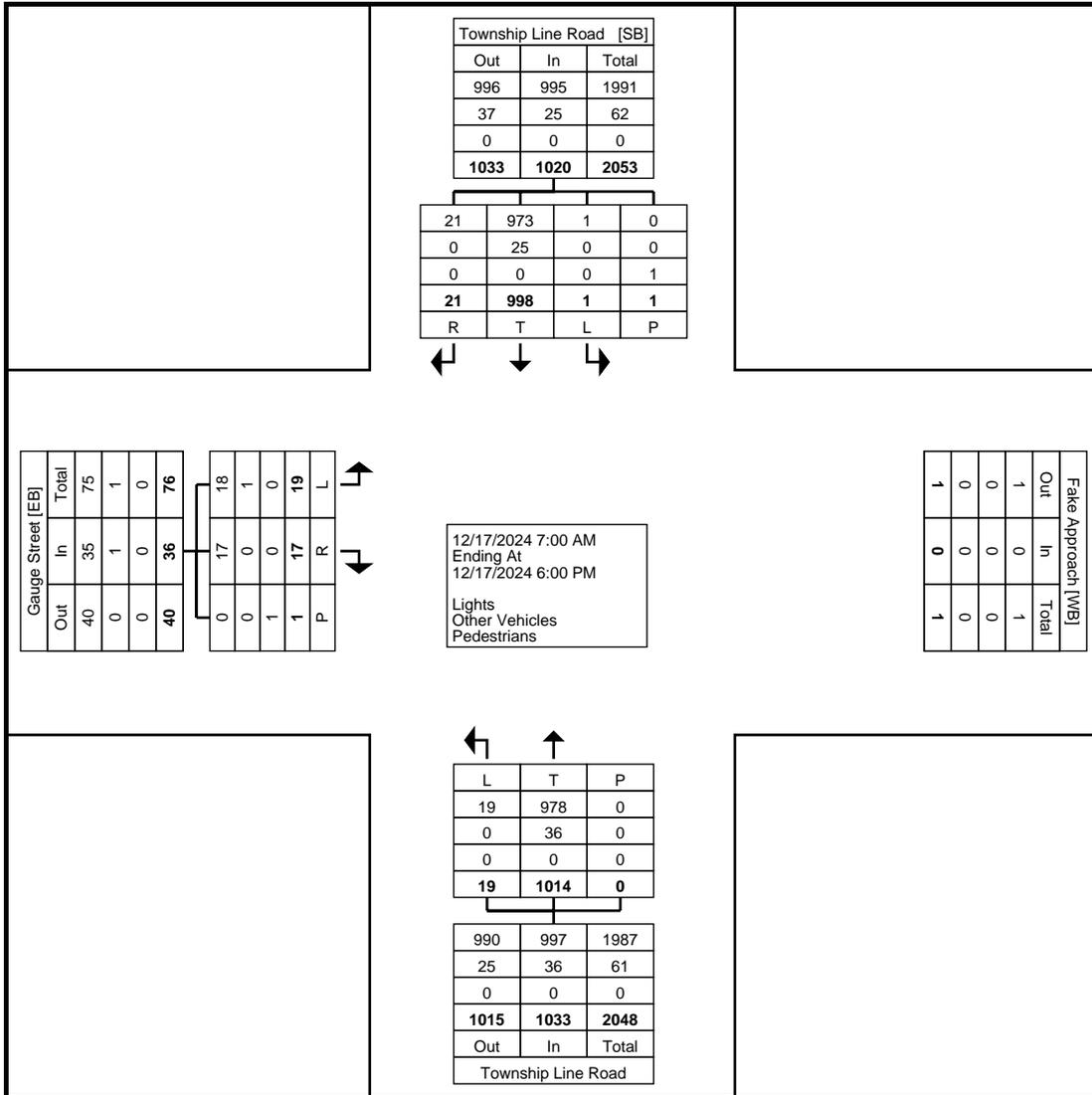
Start Time	Gauge Street Eastbound				Township Line Road Northbound				Township Line Road Southbound				Int. Total	
	Left	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Thru	Right	Peds		App. Total
	7:00 AM	0	1	0	1	1	45	0	46	0	58	0		0
7:15 AM	1	0	0	1	0	55	0	55	0	45	0	0	45	101
7:30 AM	1	0	0	1	0	89	0	89	1	53	0	0	54	144
7:45 AM	2	2	0	4	1	73	0	74	0	79	0	0	79	157
Hourly Total	4	3	0	7	2	262	0	264	1	235	0	0	236	507
8:00 AM	2	1	0	3	0	42	0	42	0	91	3	0	94	139
8:15 AM	0	6	0	6	3	48	0	51	0	48	1	0	49	106
8:30 AM	1	0	0	1	3	49	0	52	0	52	2	0	54	107
8:45 AM	1	3	0	4	2	37	0	39	0	44	0	0	44	87
Hourly Total	4	10	0	14	8	176	0	184	0	235	6	0	241	439
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	3	0	0	3	1	68	0	69	0	62	1	0	63	135
4:15 PM	1	0	1	1	1	64	0	65	0	55	3	1	58	124
4:30 PM	2	1	0	3	1	81	0	82	0	69	2	0	71	156
4:45 PM	0	0	0	0	1	64	0	65	0	72	2	0	74	139
Hourly Total	6	1	1	7	4	277	0	281	0	258	8	1	266	554
5:00 PM	0	0	0	0	0	71	0	71	0	76	3	0	79	150
5:15 PM	2	1	0	3	2	86	0	88	0	70	2	0	72	163
5:30 PM	3	1	0	4	2	65	0	67	0	65	1	0	66	137
5:45 PM	0	1	0	1	1	77	0	78	0	59	1	0	60	139
Hourly Total	5	3	0	8	5	299	0	304	0	270	7	0	277	589
Grand Total	19	17	1	36	19	1014	0	1033	1	998	21	1	1020	2089
Approach %	52.8	47.2	-	-	1.8	98.2	-	-	0.1	97.8	2.1	-	-	-
Total %	0.9	0.8	-	1.7	0.9	48.5	-	49.4	0.0	47.8	1.0	-	48.8	-
Lights	18	17	-	35	19	978	-	997	1	973	21	-	995	2027
% Lights	94.7	100.0	-	97.2	100.0	96.4	-	96.5	100.0	97.5	100.0	-	97.5	97.0
Other Vehicles	1	0	-	1	0	36	-	36	0	25	0	-	25	62
% Other Vehicles	5.3	0.0	-	2.8	0.0	3.6	-	3.5	0.0	2.5	0.0	-	2.5	3.0
Pedestrians	-	-	1	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	100.0	-	-



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 4 (Tu) Township Line
 Road & Gauge Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 2

Counter: MIO:
 Set up By JH.:



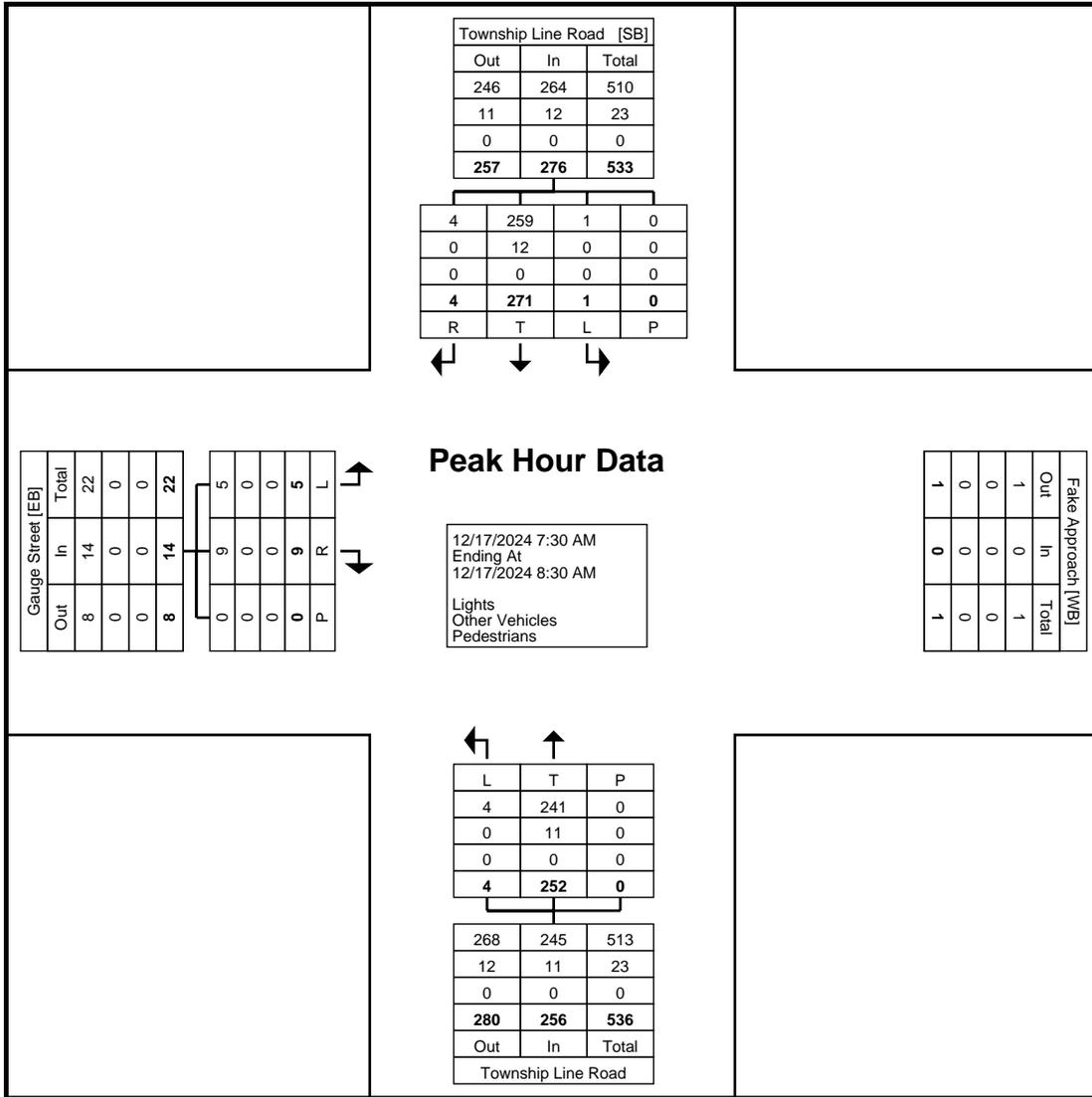
Turning Movement Data Plot



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 4 (Tu) Township Line
 Road & Gauge Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 4

Counter: MIO:
 Set up By JH.:



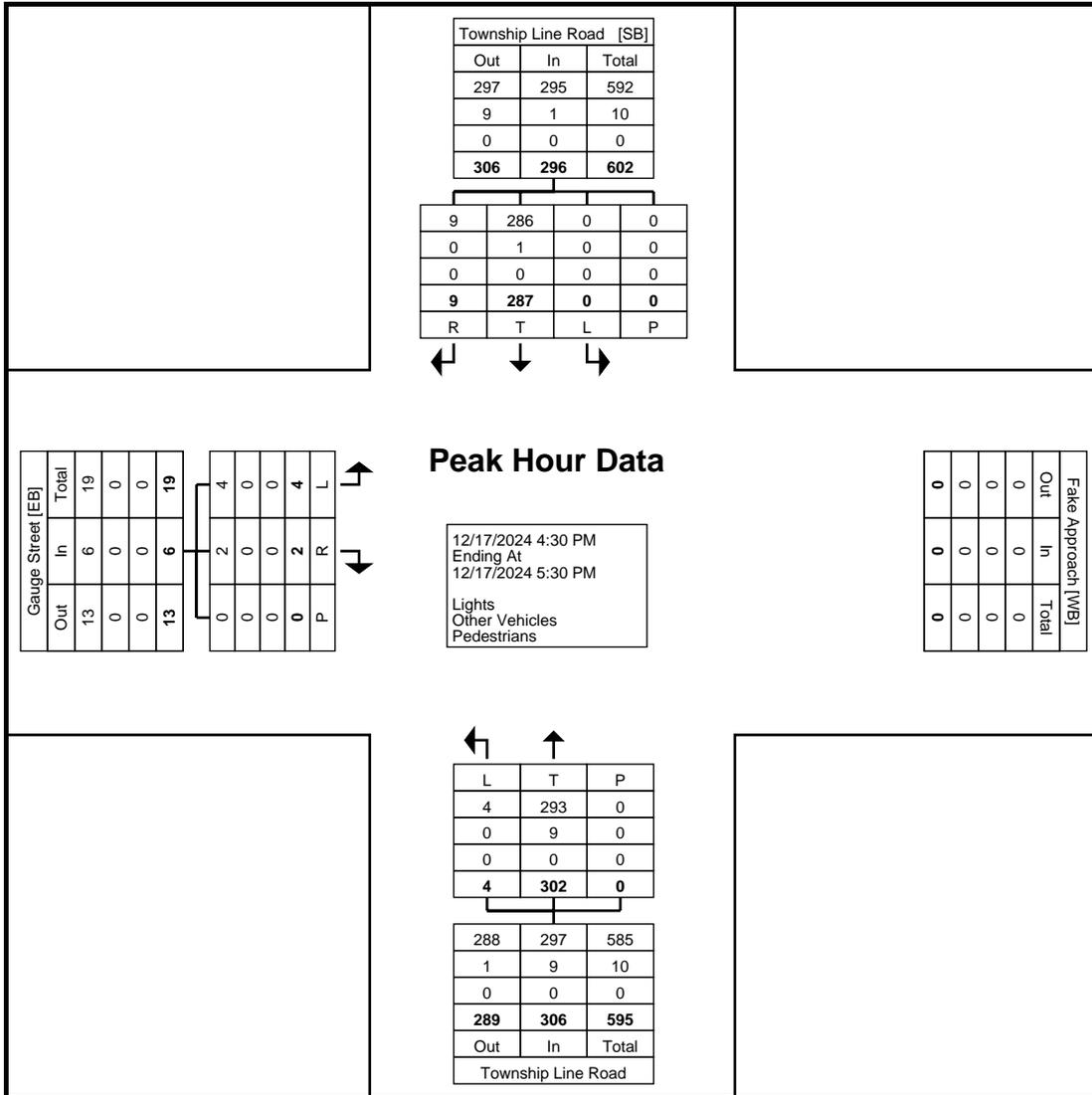
Turning Movement Peak Hour Data Plot (7:30 AM)



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100

Count Name: 4 (Tu) Township Line
 Road & Gauge Street
 Site Code:
 Start Date: 12/17/2024
 Page No: 6

Counter: MIO:
 Set up By JH.:



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

Speed Study Data Sheet

Job Number	BLC.00157	Road Name	Township Line Rd.
Start Time	1:45PM	Stop Time	3:15PM
Municipality	Phoenixville Boro	County	Chester County
Date	2/24/2025	Weather	Sunny 50F
Direction	NB	Speed Limit	35
Location	Township Line Rd. & Gauge St.	Technician	Tyler Price

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

APPENDIX D: Nearby Developments



Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Tables 3A and 3B** presents the anticipated vehicular trip generation for the proposed development.

Table 3A. Trip Generation Methodology

Land Use	Land Use Code	Daily	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
			Method	Enter/Exit	Method	Enter/Exit
Townhomes	215	$T = 7.62(X) - 50.48$	$T = 0.52(X) - 5.70$	31%/69%	$T = 0.60(X) - 3.93$	57%/43%
Apartments	221	$T = 4.77(X) - 46.46$	$T = 0.44(X) - 11.61$	23%/77%	$T = 0.39(X) + 0.34$	61%/39%
Retail	822	$T = 42.20(Y) + 229.68$	$T = 2.36(Y)$	60%/40%	$\ln(T) = 0.71$ $\ln(Y) + 2.72$	50%/50%

X = Independent Variable (units) | Y = Independent Variable (uksf) | T = Trips

Table 3B. Vehicular Trip Generation

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Townhomes ⁽¹⁾	168 units	1,230	25	57	82	55	42	97
Internal Trips ⁽²⁾		<u>-42</u>	<u>-1</u>	<u>-0</u>	<u>-1</u>	<u>-6</u>	<u>-2</u>	<u>-8</u>
New External Trips		1,188	24	57	81	49	40	89
Apartments ⁽³⁾	224 units	1,022	20	67	87	53	35	88
Internal Trips ⁽²⁾		<u>-35</u>	<u>-0</u>	<u>-1</u>	<u>-1</u>	<u>-6</u>	<u>-2</u>	<u>-8</u>
New External Trips		987	20	66	86	47	33	80
Retail ⁽⁴⁾	12,000 s.f.	736	17	11	28	44	45	89
Internal Trips ⁽²⁾		<u>-77</u>	<u>-1</u>	<u>-1</u>	<u>-2</u>	<u>-4</u>	<u>-12</u>	<u>-16</u>
External Trips		659	16	10	26	40	33	73
Pass-By Trips ⁽⁵⁾		<u>-198</u>	<u>-5</u>	<u>-3</u>	<u>-8</u>	<u>-16</u>	<u>-13</u>	<u>-29</u>
New External Trips		461	11	7	18	24	20	44
Total Site Trips	392	2,988	62	135	197	152	122	274
Internal Trips	units	<u>-154</u>	<u>-2</u>	<u>-2</u>	<u>-4</u>	<u>-16</u>	<u>-16</u>	<u>-32</u>
External Trips	and	2,834	60	133	193	136	106	242
Pass-By Trips	12,000	<u>-198</u>	<u>-5</u>	<u>-3</u>	<u>-8</u>	<u>-16</u>	<u>-13</u>	<u>-29</u>
New External Site Trips	s.f.	2,636	55	130	185	120	93	213

- (1) (1) ITE Land Use Code 215 for Single Family Attached Housing.
- (2) Based on procedures outlined in the ITE Publication, *Trip Generation Handbook*, 3rd Edition.
- (3) ITE Land Use Code 221 for Multifamily Housing (Mid-Rise).
- (4) ITE Land Use Code 822 for Strip Retail Plaza (<40K).
- (5) Estimated to be 40 percent during the weekday afternoon peak hour based on information provided within the ITE publication, ITE Trip Generation, Eleventh Edition appendices for Shopping Plaza (Land Use Code 821). For analysis periods without data, the pass-by rate was assumed to be ten percent less than the weekday afternoon peak hour.

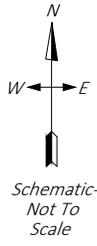
Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development’s site access. The distribution percentages for the anticipated directions of approach and departure and traffic assignment percentages are illustrated in **Figure 4A**. Application of the percentages illustrated in Figure 4A to the new peak hour trips contained in Table 3B, provides an estimate of site traffic to be added to the study area. The site-generated traffic is also shown in **Figure 4B** for the weekday morning and weekday afternoon peak hours.

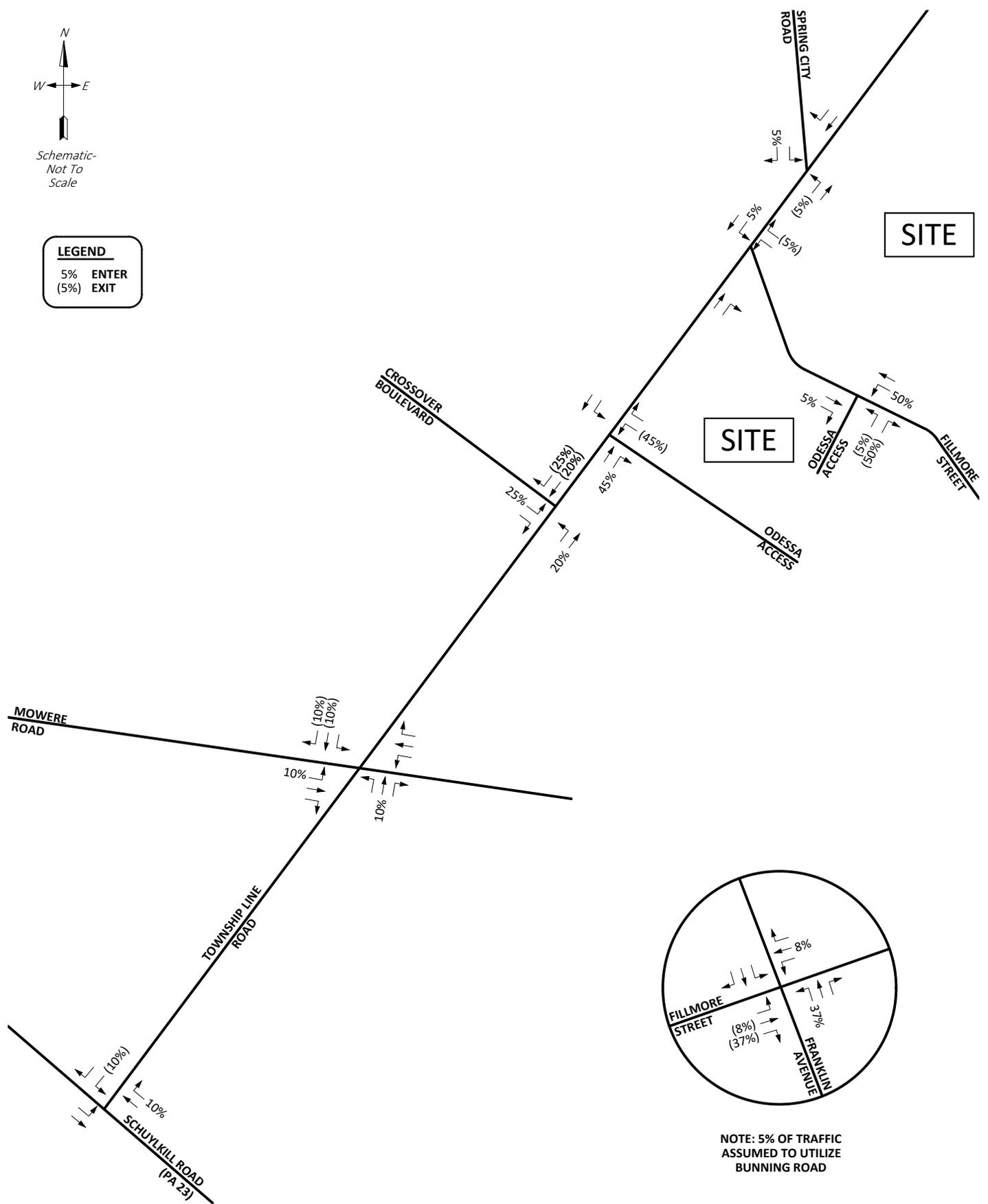
The pass-by trip assignments for the retail portion of the site are illustrated in **Figure 4C** for the weekday morning and weekday afternoon peak hours.

Site Access Configuration and Traffic Control

Access to the site is proposed via one unsignalized driveway located along Fillmore Street, approximately 1,000 feet southeast of Township Line Road and one unsignalized driveway located along Township Line Road,



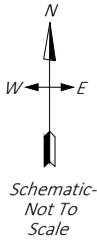
LEGEND	
5%	ENTER
(5%)	EXIT



NOTE: 5% OF TRAFFIC ASSUMED TO UTILIZE BUNNING ROAD

FIGURE 4A
 New Site Trip Distribution
ODESSA
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND	
5	WEEKDAY MORNING
(5)	WEEKDAY AFTERNOON

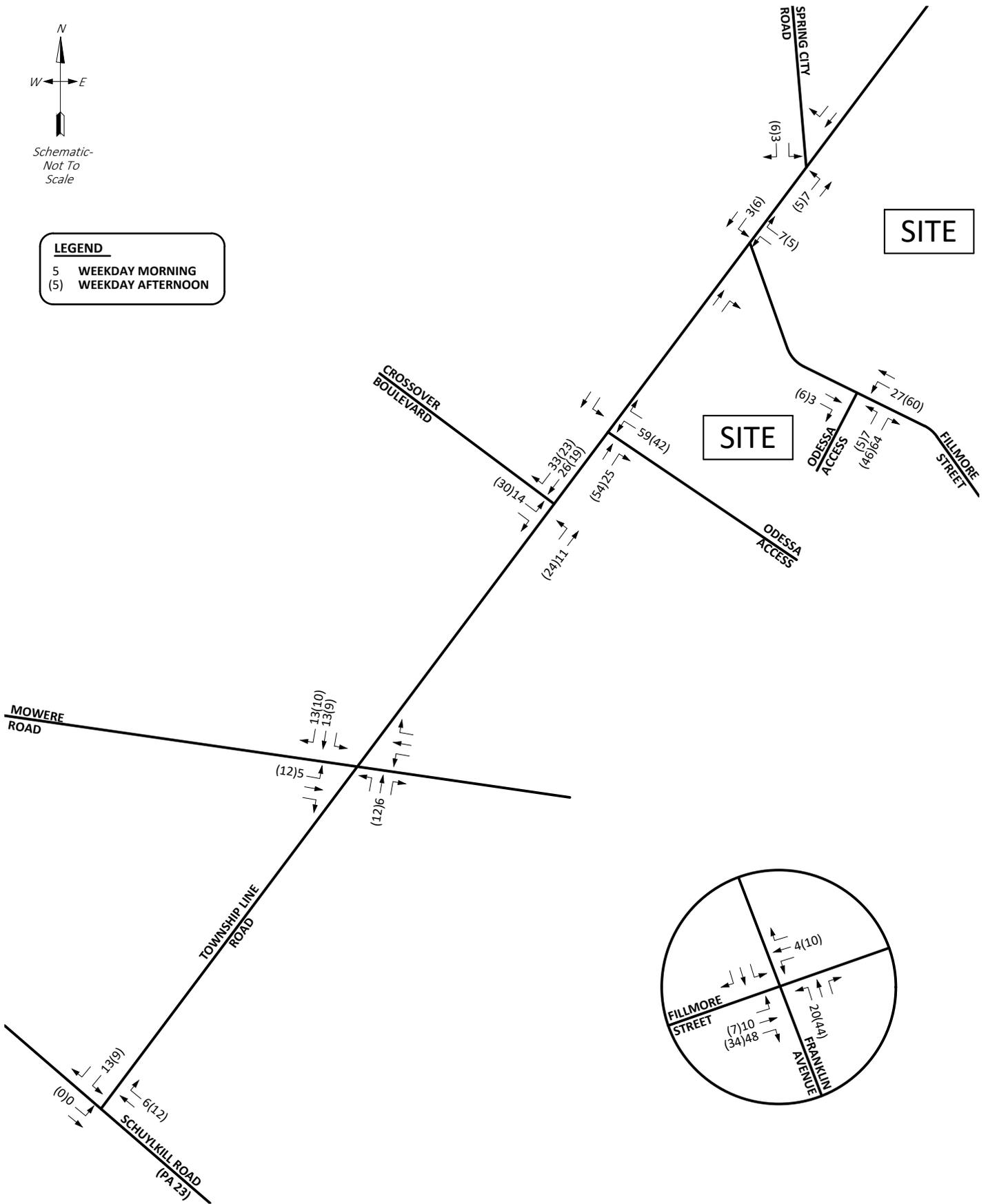


FIGURE 4B
 New Site Trip Assignment
ODESSA
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA



Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Tables 3A and 3B** presents the anticipated vehicular trip generation for the proposed development.

Table 3A. Trip Generation Methodology

Land Use	Land Use Code	Daily	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
			Method	Enter/Exit	Method	Enter/Exit
Townhomes	215	$T = 7.62(X) - 50.48$	$T = 0.52(X) - 5.70$	31%/69%	$T = 0.60(X) - 3.93$	57%/43%

X = Independent Variable (units) | Y = Independent Variable (units) | T = Trips

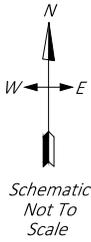
Table 3B. Vehicular Trip Generation

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Townhomes	195 units	1,435	30	66	96	64	49	113

(1) ITE Land Use Code 215 for Single-Family Attached Housing.

Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development's site access. The distribution percentages for the anticipated directions of approach and departure and traffic assignment percentages are illustrated in **Figure 4A**. Application of the percentages illustrated in Figure 4A to the new peak hour trips contained in Table 2B, provides an estimate of site traffic to be added to the study area. The site-generated traffic is also shown in **Figure 4B** for the weekday morning and weekday afternoon peak hours.



LEGEND	
5%	ENTER
(5%)	EXIT

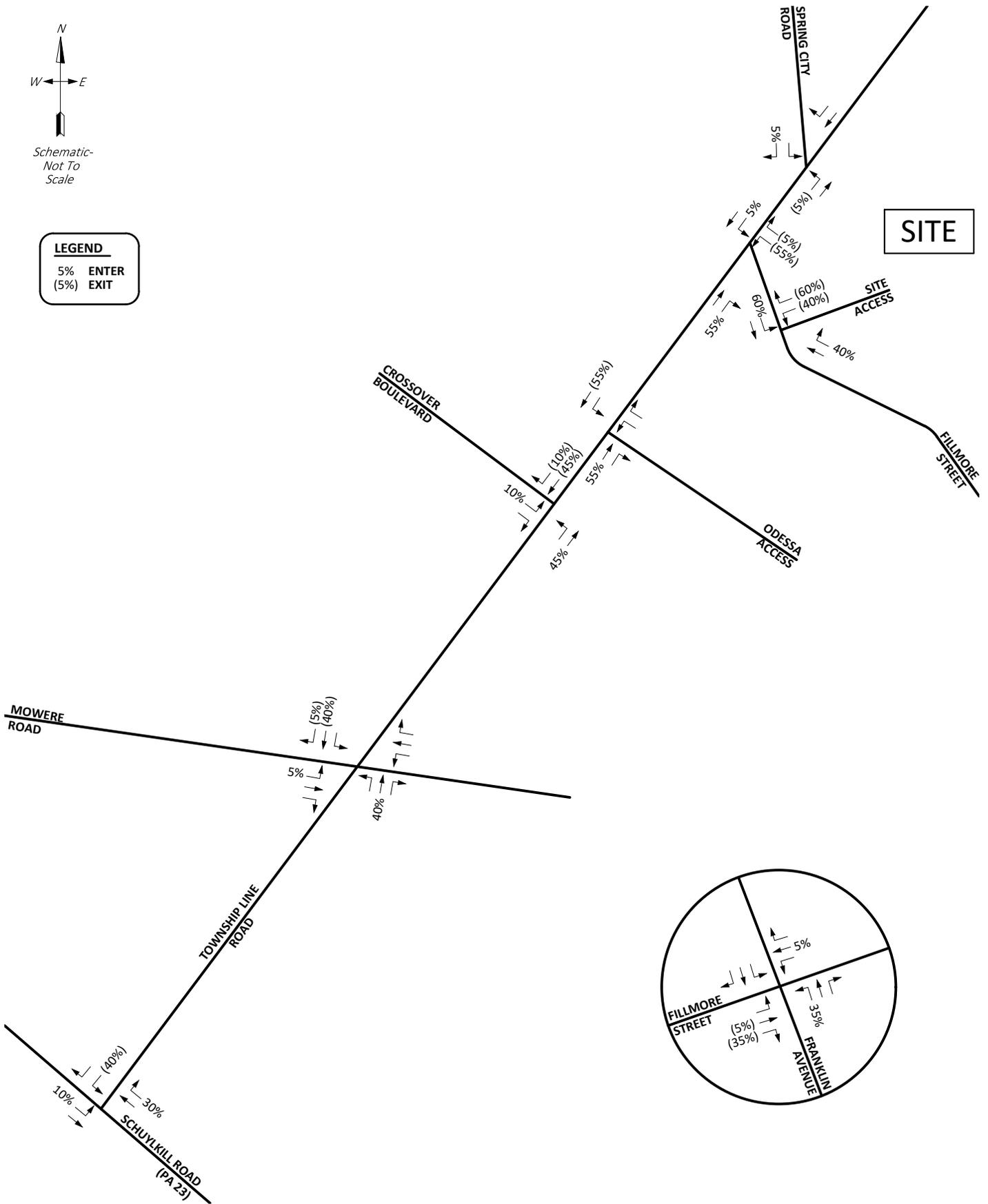
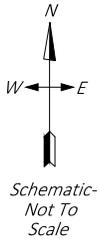


FIGURE 4A
 New Site Trip Distribution
TRIESTE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA





LEGEND	
5	WEEKDAY MORNING
(5)	WEEKDAY AFTERNOON

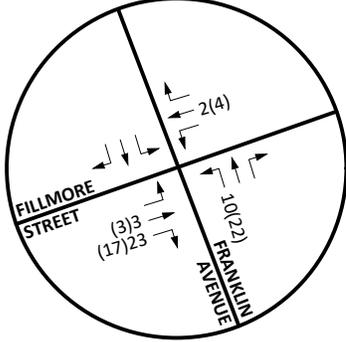
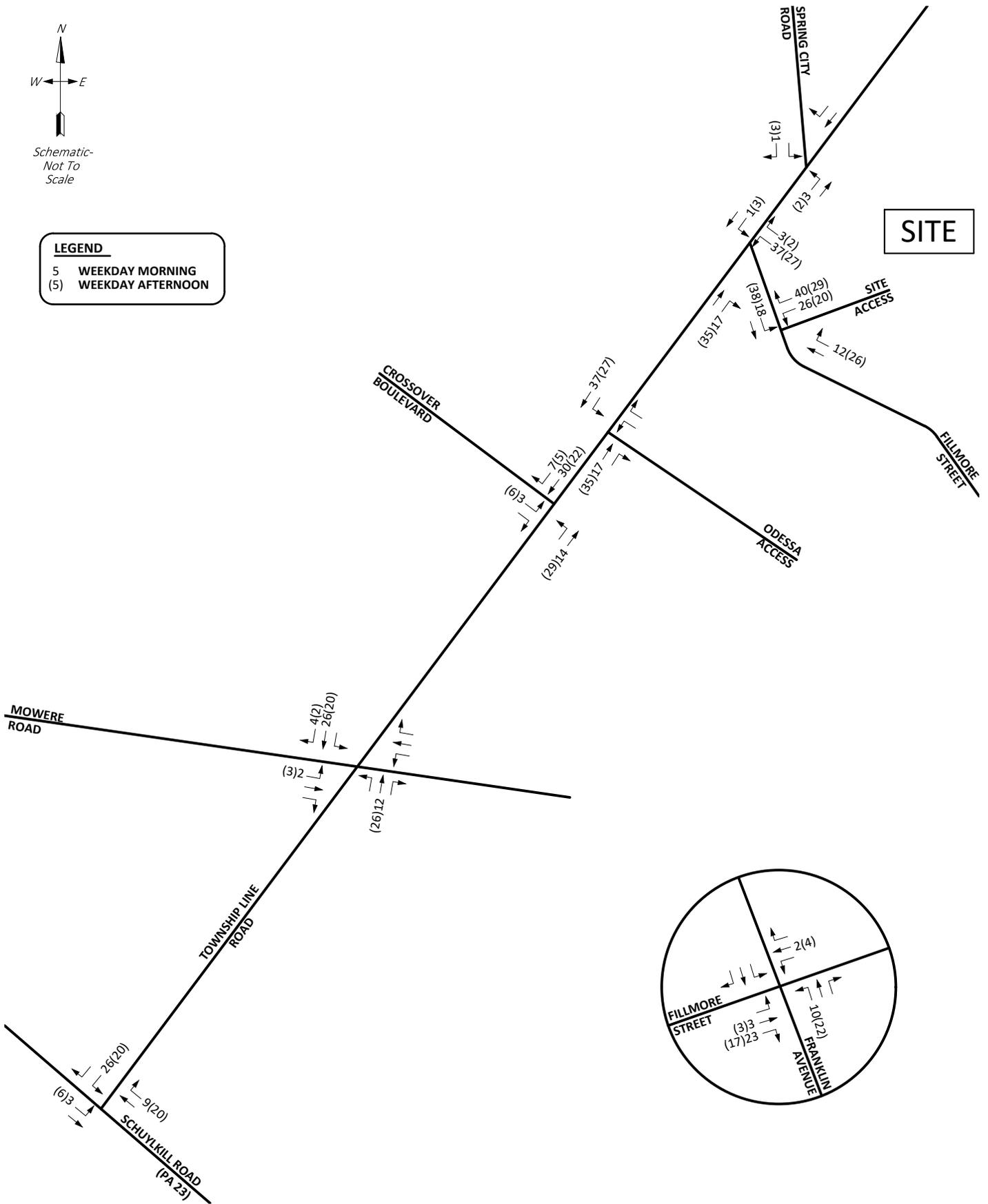


FIGURE 4B
 New Site Trip Assignment
TRIESTE
 BOROUGH OF PHOENIXVILLE, CHESTER COUNTY, PA



Saturday midday peak hours, respectively, to account for this effect. All internal capture calculation worksheets are contained in Appendix E.

According to studies conducted by ITE, traffic associated with LUC 850 and LUC 912 is not 100% newly generated. Rather, a portion of the traffic is diverted from the existing traffic stream on the adjacent roadway network. This is because the Aldi Food Market and Bank with Drive-Through are not exclusively destination land uses, instead patrons stop on their way to/from other locations such as home or work. ITE identifies a 24% passby traffic percentage during the weekday evening PSH and 19% passby traffic percentage during Saturday midday peak hours for LUC 850. There is no passby traffic percentage during the weekday morning.

Additionally, ITE identifies a 29% passby traffic percentage during the weekday morning PSH, a 35% passby traffic percentage during the weekday evening PSH, and a 38% passby traffic percentage during Saturday midday peak hour for LUC 912. Table IV below details the traffic volumes associated with the subject project taking into account internal capture and the passby credits.

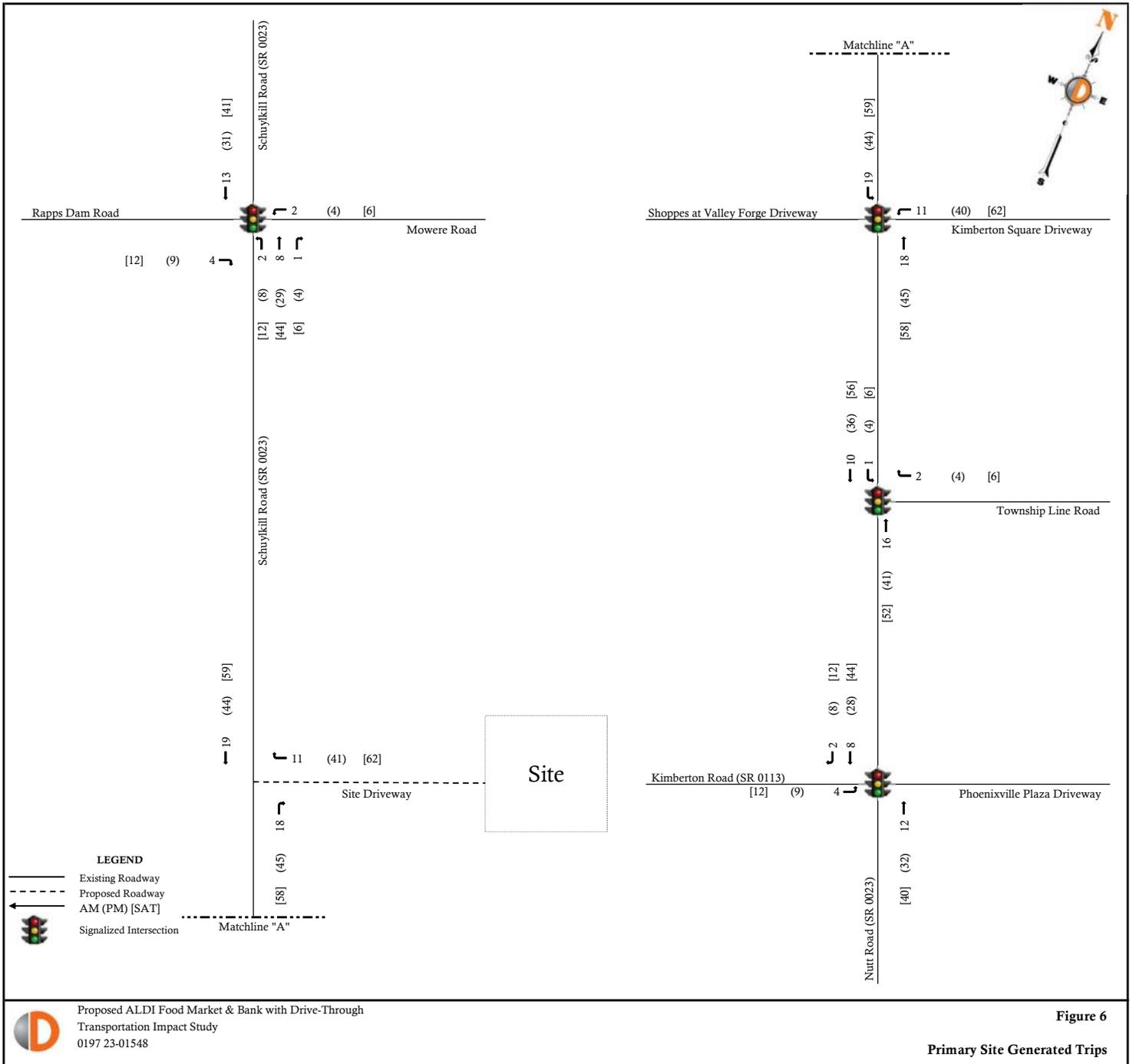
It is the firm’s understanding that the Kimberton Square Shopping Center is fully occupied, and that with the proposed cross access to the Project, internal trips will take place between the existing 26,182 SF retail strip and 6,118 SF restaurant. As the manual turning movement counts were taken at the intersection of the Schuylkill Road (SR 0023) and Kimberton Square/Shoppes at Valley Forge Driveway, the movements in and out of the Kimberton Square driveway are used for the generation of internal capture between the Project and the existing site uses.

Table IV
Trip Generation Considering Internal Capture and Passby Traffic

Trip Type		AM PSH			PM PSH			SAT PSH		
		In	Out	Total	In	Out	Total	In	Out	Total
32,300 SF Shopping Plaza (Existing)	Total	39	24	63	71	45	116	34	63	97
	Internal	9	6	15	20	10	30	12	20	32
19,680 Supermarket (Proposed)	Total	33	23	56	104	103	207	137	137	274
	Internal	9	6	15	16	16	32	23	15	38
	Passby	0	0	0	21	21	42	22	23	45
	New (Primary)	24	17	41	67	66	133	92	99	191
3,475 SF Bank with Drive Through (Proposed)	Total	19	16	35	37	36	73	47	45	92
	Internal	2	8	10	3	13	16	6	6	12
	Passby	4	3	7	12	8	20	16	14	30
	New (Primary)	13	5	18	22	15	37	25	25	50
Total (Proposed)	Total	52	39	91	141	139	280	184	182	366
	Internal (Existing)	9	6	15	20	10	30	12	20	32
	Internal (Proposed)	11	14	25	19	29	48	29	21	50
	Passby	4	3	7	33	29	62	38	37	75
	New (Primary)	37	22	59	89	81	170	117	124	241

Once the magnitude of traffic to be generated by the site is known, it is necessary to assign that traffic to the adjacent street system. The distribution of new traffic to the surrounding roadways is based on the location of primary arterial roadways, major signalized intersections and existing traffic patterns.

Located in Appendix B2, Figure 5 illustrates the primary site generated trip distribution, Figure 6 illustrates the primary site generated volumes, Figure 7 illustrates the passby site generated distribution, Figure 8 illustrates the passby site generated volumes, and Figure 9 illustrates the total



Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 11th Edition*. **Tables 3A and 3B** present the anticipated vehicular trip generation for the proposed development during the weekday morning commuter peak hour and the weekday afternoon school peak hour. During the weekday afternoon commuter peak hour, the school generates 112 new trips, which is the applicable peak hour for calculating the Act 209 Traffic Impact Fee for this development, which is to be used for off-site traffic improvements.

Table 3A. Trip Generation Methodology

Land Use	Land Use Code	Daily	Weekday Morning Peak Hour		Weekday Afternoon School Peak Hour	
			Method	Enter/Exit	Method	Enter/Exit
Elementary School	520	T = 2.27 (X)	T = 0.74 (X)	54%/46%	T = 0.45 (X)	46%/54%

X = Independent Variable (students) | T = Trips

Table 3B. Vehicular Trip Generation

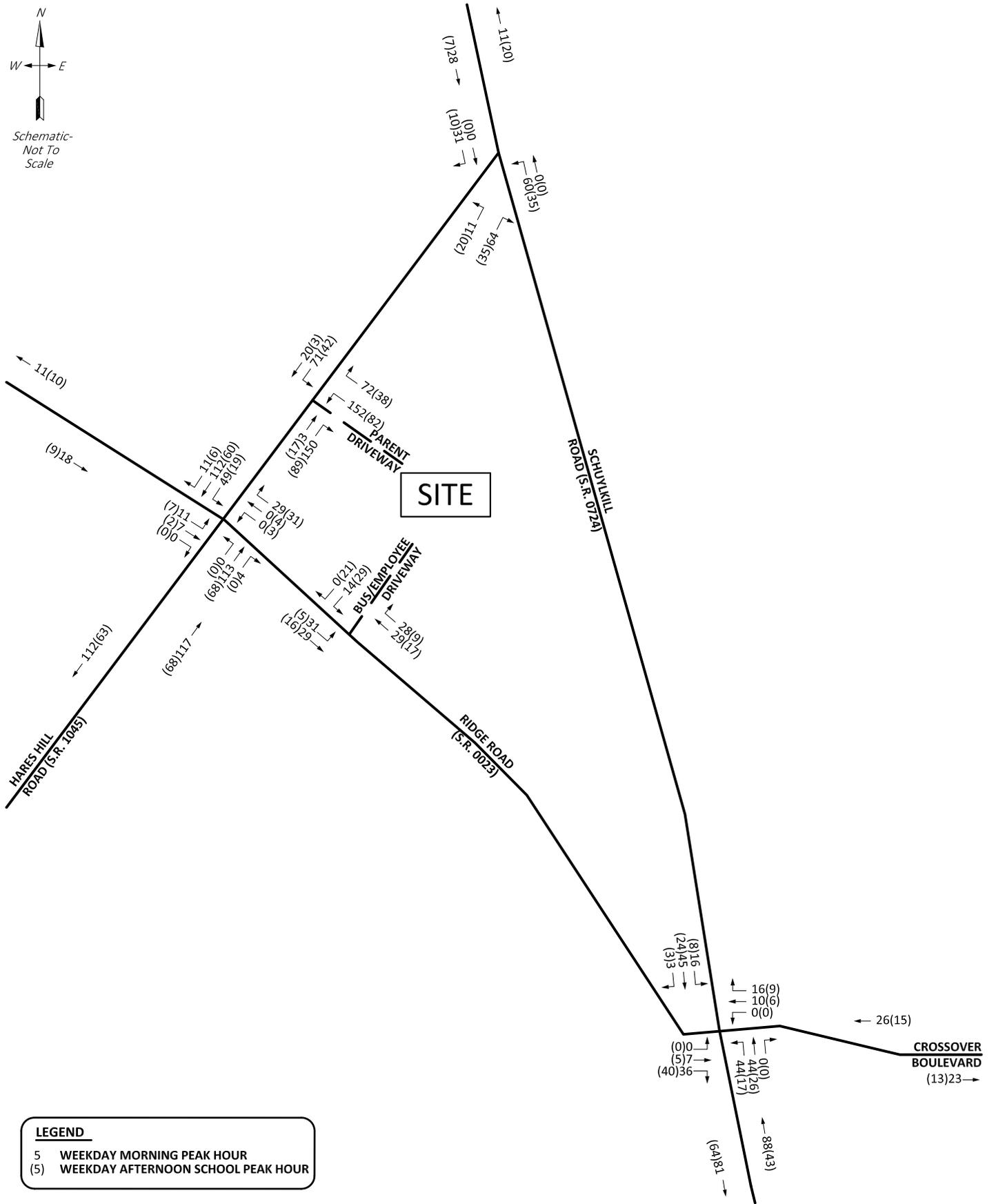
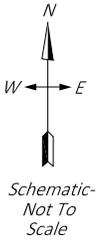
Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon School Peak Hour		
			In	Out	Total	In	Out	Total
Total Site Traffic ⁽¹⁾	700 Students	1590	280	238	518	145	170	315
Buses ⁽²⁾	14 Buses		14	14	28	14	14	28
Faculty/Staff ⁽³⁾	60 total faculty/staff		45	0	45	0	36	36
Parent Pick-Up/Drop-Off ⁽⁴⁾			221	224	445	131	120	251

(1) Based on the ITE publication *Trip Generation, 11th Edition*, Land Use Code 520, Elementary School.

(2) Based on information provided by the Phoenixville Area School District.

(3) Based on information provided by the Phoenixville Area School District. It is assumed that 75 percent of the faculty/staff enter the site during the weekday morning peak hour, and 60 percent of the faculty/staff exit the site during the weekday afternoon school peak hour

(4) The parent pick-up/drop-off traffic is calculated by reducing the bus and faculty/staff traffic from the total ITE trip generation.



LEGEND	
5	WEEKDAY MORNING PEAK HOUR
(5)	WEEKDAY AFTERNOON SCHOOL PEAK HOUR

FIGURE 4F
 New Trip Assignment
HARES HILL ROAD ELEMENTARY SCHOOL
 EAST PIKELAND TOWNSHIP, CHESTER COUNTY, PA



APPENDIX E:

Volume Development Worksheets



TPD# BLC.00157
 3/19/2025
 Traffic Volumes Worksheet

Intersection:

Township Line Road & Mowere Road

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 Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	45	46	6	70	71	21	10	64	35	6	157	48	579
Balancing													0
2024 Existing Volumes (Balanced)	45	46	6	70	71	21	10	64	35	6	157	48	579
Base growth (0.44% compounded for 5 yrs)	1	1	0	2	2	0	0	1	1	0	3	1	12
													0
Odessa	5							6			13	13	37
Trieste Residential	2							12			26	4	
Aldi													
Hares Hill Road Elementary													0
2029 Base (No-Build) Volumes	53	47	6	72	73	21	10	83	36	6	199	66	672

	New	P-By
ENTER =	5	
EXIT =	14	

New Trips	1	0	0	0	0	0	0	1	0	0	1	1	4
Total Trip Distribution	1	0	0	0	0	0	0	1	0	0	1	1	4
2029 Projected (Build) Volumes	54	47	6	72	73	21	10	84	36	6	200	67	676

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	57	76	12	60	74	13	6	164	90	20	99	58	729
Balancing													0
2024 Existing Volumes (Balanced)	57	76	12	60	74	13	6	164	90	20	99	58	729
Base growth (0.44% compounded for 5 yrs)	1	2	0	1	2	0	0	4	2	0	2	1	15
													0
Odessa	12							12			8	10	
Trieste Residential	3							26			20	2	
Aldi													0
Hares Hill Road Elementary													0
2029 Base (No-Build) Volumes	73	78	12	61	76	13	6	206	92	20	129	71	837

	New	P-By
ENTER =	13	
EXIT =	9	

New Trips	1	0	0	0	0	0	0	1	0	0	1	1	4
Total Trip Distribution	1	0	0	0	0	0	0	1	0	0	1	1	4
2029 Projected (Build) Volumes	74	78	12	61	76	13	6	207	92	20	130	72	841

TPD# BLC.00157
 3/19/2025
 Traffic Volumes Worksheet

Intersection:

Bunning Road & Ashburn Street

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 Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	7	4	0	1	0	0	0	32	14	45	10	4	117
Balancing													0
2024 Existing Volumes (Balanced)	7	4	0	1	0	0	0	32	14	45	10	4	117
Base growth (0.44% compounded for 5 yrs)	0	0	0	0	0	0	0	1	0	1	0	0	2
Odessa		51			0								51
Trieste Residential													
Aldi													
Hares Hill Road Elementary													0
2029 Base (No-Build) Volumes	7	55	0	1	0	0	0	33	14	46	10	4	170

	New	P-By
ENTER =	5	
EXIT =	14	

New Trips	0	5	0	0	0	0	0	0	0	0	0	0	0	5
Total Trip Distribution	0	5	0	0	0	0	0	0	0	0	0	0	0	5
2029 Projected (Build) Volumes	7	60	0	1	0	0	0	33	14	46	10	4	175	

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	6	4	0	1	0	0	0	21	9	1	43	5	90
Balancing													0
2024 Existing Volumes (Balanced)	6	4	0	1	0	0	0	21	9	1	43	5	90
Base growth (0.44% compounded for 5 yrs)	0	0	0	0	0	0	0	0	0	0	1	0	1
Odessa		36			0								0
Trieste Residential													
Aldi													0
Hares Hill Road Elementary													0
2029 Base (No-Build) Volumes	6	40	0	1	0	0	0	21	9	1	44	5	127

	New	P-By
ENTER =	13	
EXIT =	9	

New Trips	0	4	0	0	0	0	0	0	0	0	0	0	0	4
Total Trip Distribution	0	4	0	0	0	0	0	0	0	0	0	0	0	4
2029 Projected (Build) Volumes	6	44	0	1	0	0	0	21	9	1	44	5	131	

TPD# BLC.00157
 3/19/2025
 Traffic Volumes Worksheet

Intersection:
 Synchro Node:

Filmore Street & Ashburn Street

3 Adjacent intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	0	0	63	0	0	0	0	244	0	0	425	0	732
Balancing													0
2024 Existing Volumes (Balanced)	0	0	63	0	0	0	0	244	0	0	425	0	732
Base growth (0.44% compounded for 5 yrs)	0	0	1	0	0	0	0	5	0	0	9	0	15
													0
Odessa			51					27			13		91
Trieste Residential								12			26		
Aldi													
Hares Hill Road Elementary													0
2029 Base (No-Build) Volumes	0	0	115	0	0	0	0	288	0	0	473	0	876

	New	P-By
ENTER =	5	
EXIT =	14	

New Trips	0	0	5	0	0	0	0	2	0	0	2	0	9
Total Trip Distribution	0	0	5	0	0	0	0	2	0	0	2	0	9
2029 Projected (Build) Volumes	0	0	120	0	0	0	0	290	0	0	475	0	885

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	0	0	11	0	0	0	2	346	0	0	263	0	622
Balancing													0
2024 Existing Volumes (Balanced)	0	0	11	0	0	0	2	346	0	0	263	0	622
Base growth (0.44% compounded for 5 yrs)	0	0	0	0	0	0	0	8	0	0	6	0	14
													0
Odessa			36					60			9		
Trieste Residential								26			20		
Aldi													0
Hares Hill Road Elementary													0
2029 Base (No-Build) Volumes	0	0	47	0	0	0	2	440	0	0	298	0	787

	New	P-By
ENTER =	13	
EXIT =	9	

New Trips	0	0	4	0	0	0	0	1	0	0	7	0	12
Total Trip Distribution	0	0	4	0	0	0	0	1	0	0	7	0	12
2029 Projected (Build) Volumes	0	0	51	0	0	0	2	441	0	0	305	0	799

TPD# BLC.00157
 3/19/2025
 Traffic Volumes Worksheet

Intersection:

Synchro Node:

Bunning Street & Filmore Street									
4	Adjacent intersections:	West	0	East	0	North	0	South	0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	0	426	15	46	198	0	42	0	0	0	0	0	727
Balancing													0
2024 Existing Volumes (Balanced)	0	426	15	46	198	0	42	0	0	0	0	0	727
Base growth (0.44% compounded for 5 yrs)	0	9	0	1	4	0	1	0	0	0	0	0	15
													0
Odessa		27			13								40
Trieste Residential		26			12								
Aldi													
Hares Hill Road Elementary													0
2029 Base (No-Build) Volumes	0	488	15	47	227	0	43	0	0	0	0	0	820

	New	P-By
ENTER =	5	
EXIT =	14	

New Trips	0	2	0	0	2	0	0	0	0	0	0	0	4
Total Trip Distribution	0	2	0	0	2	0	0	0	0	0	0	0	4
2029 Projected (Build) Volumes	0	490	15	47	229	0	43	0	0	0	0	0	824

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	0	267	38	11	338	0	31	0	0	0	0	0	685
Balancing													0
2024 Existing Volumes (Balanced)	0	267	38	11	338	0	31	0	0	0	0	0	685
Base growth (0.44% compounded for 5 yrs)	0	6	1	0	8	0	1	0	0	0	0	0	16
													0
Odessa		8			12								
Trieste Residential		20			26								
Aldi													0
Hares Hill Road Elementary													0
2029 Base (No-Build) Volumes	0	301	39	11	384	0	32	0	0	0	0	0	767

	New	P-By
ENTER =	13	
EXIT =	9	

New Trips	0	1	0	0	7	0	0	0	0	0	0	0	8
Total Trip Distribution	0	1	0	0	7	0	0	0	0	0	0	0	8
2029 Projected (Build) Volumes	0	302	39	11	391	0	32	0	0	0	0	0	775

TPD# BLC.00157

3/19/2025

Traffic Volumes Worksheet

Intersection:

Synchro Node:

Township Line Road & Crossover Boulevard

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

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	88	0	25	0	0	0	11	170	0	0	226	57	577
Balancing													0
2024 Existing Volumes (Balanced)	88	0	25	0	0	0	11	170	0	0	226	57	577
Base growth (0.44% compounded for 5 yrs)	2	0	1	0	0	0	0	4	0	0	5	1	13
													0
Odessa	14							11			26	33	84
Trieste Residential	3							29			30	7	
Aldi								1			2		
Hares Hill Road Elementary	23											26	49
2029 Base (No-Build) Volumes	130	0	26	0	0	0	11	215	0	0	289	124	795

	New	P-By
ENTER =	5	
EXIT =	14	

New Trips	1	0	0	0	0	0	0	2	0	0	2	3	8
Total Trip Distribution	1	0	0	0	0	0	0	2	0	0	2	3	8
2029 Projected (Build) Volumes	131	0	26	0	0	0	11	217	0	0	291	127	803

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	74	0	21	0	0	0	44	242	0	0	208	83	672
Balancing													0
2024 Existing Volumes (Balanced)	74	0	21	0	0	0	44	242	0	0	208	83	672
Base growth (0.44% compounded for 5 yrs)	2	0	0	0	0	0	1	5	0	0	5	2	15
													0
Odessa	30							24			18	23	
Trieste Residential	6							29			22	5	
Aldi								4			4		8
Hares Hill Road Elementary	13											15	28
2029 Base (No-Build) Volumes	125	0	21	0	0	0	45	304	0	0	257	128	880

	New	P-By
ENTER =	13	
EXIT =	9	

New Trips	3	0	0	0	0	0	0	2	0	0	2	2	9
Total Trip Distribution	3	0	0	0	0	0	0	2	0	0	2	2	9
2029 Projected (Build) Volumes	128	0	21	0	0	0	45	306	0	0	259	130	889

TPD# BLC.00157
 3/19/2025
 Traffic Volumes Worksheet

Intersection:
 Synchro Node:

Township Line Road & Gauge Street												
6	Adjacent intersections:	West	0	East	0	North	0	South	0			

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	5	0	9	0	0	0	4	252	0	0	271	4	545
Balancing													0
2024 Existing Volumes (Balanced)	5	0	9	0	0	0	4	252	0	0	271	4	545
Base growth (0.44% compounded for 5 yrs)	0	0	0	0	0	0	0	6	0	0	6	0	12
													0
Odessa				60		0		-1	26	1	-1		85
Trieste Residential								17			37		
Aldi								1			2		
Hares Hill Road Elementary								23			26		49
2029 Base (No-Build) Volumes	5	0	9	60	0	0	4	298	26	1	341	4	748

	New	P-By
ENTER =	5	
EXIT =	14	

New Trips	0	0	0	5	0	1	0	0	1	0	0	0	7
Total Trip Distribution	0	0	0	5	0	1	0	0	1	0	0	0	7
2029 Projected (Build) Volumes	5	0	9	65	0	1	4	298	27	1	341	4	755

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	4	0	2	0	0	0	4	302	0	0	287	9	608
Balancing													0
2024 Existing Volumes (Balanced)	4	0	2	0	0	0	4	302	0	0	287	9	608
Base growth (0.44% compounded for 5 yrs)	0	0	0	0	0	0	0	7	0	0	6	0	13
													0
Odessa				56		3		-4	58	4	-4		
Trieste Residential								35			27		
Aldi								4			4		8
Hares Hill Road Elementary								13			15		28
2029 Base (No-Build) Volumes	4	0	2	56	0	3	4	357	58	4	335	9	832

	New	P-By
ENTER =	13	
EXIT =	9	

New Trips	0	0	0	4	0	0	0	0	2	1	0	0	7
Total Trip Distribution	0	0	0	4	0	0	0	0	2	1	0	0	7
2029 Projected (Build) Volumes	4	0	2	60	0	3	4	357	60	5	335	9	839

TPD# BLC.00157
 3/19/2025
 Traffic Volumes Worksheet

Intersection:
 Synchro Node:

Township Line Road & Enter Only Site Driveway									
5	Adjacent intersections:	West	0	East	0	North	0	South	0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing								258			283		541
2024 Existing Volumes (Balanced)	0	0	0	0	0	0	0	258	0	0	283	0	541
Base growth (0.44% compounded for 5 yrs)	0	0	0	0	0	0	0	6	0	0	6	0	12
Odessa													0
Trieste Residential								25			59		84
Aldi								32			37		
Hares Hill Road Elementary								1			2		
								23			26		49
2029 Base (No-Build) Volumes	0	0	0	0	0	0	0	345	0	0	413	0	758

	New	P-By
ENTER =	5	
EXIT =	14	

New Trips	0	0	0	0	0	0	0	0	1	2	0	5	0	8
Total Trip Distribution	0	0	0	0	0	0	0	0	1	2	0	5	0	8
2029 Projected (Build) Volumes	0	0	0	0	0	0	0	346	2	0	418	0	766	

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2024 Existing Counts													0
Balancing								316			291		607
2024 Existing Volumes (Balanced)	0	0	0	0	0	0	0	316	0	0	291	0	607
Base growth (0.44% compounded for 5 yrs)	0	0	0	0	0	0	0	7	0	0	6	0	13
Odessa													0
Trieste Residential								54			41		
Aldi								35			27		
Hares Hill Road Elementary								4			4		8
								13			15		28
2029 Base (No-Build) Volumes	0	0	0	0	0	0	0	429	0	0	384	0	813

	New	P-By
ENTER =	13	
EXIT =	9	

New Trips	0	0	0	0	0	0	0	0	2	3	0	4	0	9
Total Trip Distribution	0	0	0	0	0	0	0	0	2	3	0	4	0	9
2029 Projected (Build) Volumes	0	0	0	0	0	0	0	431	3	0	388	0	822	

APPENDIX F:

Capacity Analyses



Existing Conditions

Existing Conditions
1: Township Line Road & Mowere Road

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	46	6	70	71	21	10	64	35	6	157	48
Future Volume (vph)	45	46	6	70	71	21	10	64	35	6	157	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	14	14	14	11	11	11	11	11	11
Grade (%)		-2%			-1%			-2%			-1%	
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
Frt		0.991			0.982			0.956			0.969	
Flt Protected		0.977			0.979			0.996			0.999	
Satd. Flow (prot)	0	1692	0	0	1865	0	0	1632	0	0	1735	0
Flt Permitted		0.977			0.979			0.996			0.999	
Satd. Flow (perm)	0	1692	0	0	1865	0	0	1632	0	0	1735	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1797			2187			1953			1454	
Travel Time (s)		49.0			59.6			38.0			28.3	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	13%	0%	7%	3%	5%	0%	9%	9%	0%	4%	0%
Adj. Flow (vph)	51	52	7	80	81	24	11	73	40	7	178	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	185	0	0	124	0	0	240	0
Enter Blocked Intersection	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	1.03	1.03	1.03	0.91	0.91	0.91	1.03	1.03	1.03	1.04	1.04	1.04
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	30.2%						ICU Level of Service A					
Analysis Period (min)	15											

Existing Conditions
1: Township Line Road & Mowere Road

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	45	46	6	70	71	21	10	64	35	6	157	48
Future Vol, veh/h	45	46	6	70	71	21	10	64	35	6	157	48
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	13	0	7	3	5	0	9	9	0	4	0
Mvmt Flow	51	52	7	80	81	24	11	73	40	7	178	55
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	9.1	9.8	8.8	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	9%	46%	43%	3%
Vol Thru, %	59%	47%	44%	74%
Vol Right, %	32%	6%	13%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	97	162	211
LT Vol	10	45	70	6
Through Vol	64	46	71	157
RT Vol	35	6	21	48
Lane Flow Rate	124	110	184	240
Geometry Grp	1	1	1	1
Degree of Util (X)	0.164	0.155	0.257	0.311
Departure Headway (Hd)	4.763	5.056	5.023	4.662
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	747	703	709	767
Service Time	2.831	3.132	3.093	2.72
HCM Lane V/C Ratio	0.166	0.156	0.26	0.313
HCM Control Delay	8.8	9.1	9.8	9.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.5	1	1.3

Existing Conditions
2: Bunning Road & Ashburn Road

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	4	0	1	0	0	0	32	14	45	10	4
Future Volume (vph)	7	4	0	1	0	0	0	32	14	45	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	10	10	12	12	12
Grade (%)		2%			-1%			-3%			-5%	
Storage Length (ft)	0		0	0		0	0		40	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
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									0.850		0.992	
Flt Protected		0.968			0.950						0.963	
Satd. Flow (prot)	0	1821	0	0	1814	0	0	1748	1530	0	1832	0
Flt Permitted		0.968			0.950						0.963	
Satd. Flow (perm)	0	1821	0	0	1814	0	0	1748	1530	0	1832	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		239			298			193			209	
Travel Time (s)		6.5			8.1			5.3			5.7	
Confl. Peds. (#/hr)	2		1	1		2			3	3		
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%	3%	0%	0%	0%	25%
Adj. Flow (vph)	10	5	0	1	0	0	0	44	19	62	14	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	1	0	0	44	19	0	81	0
Enter Blocked Intersection	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	1.01	1.01	1.01	0.99	0.99	0.99	1.07	1.07	1.07	0.97	0.97	0.97
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											

Existing Conditions
2: Bunning Road & Ashburn Road

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	7	4	0	1	0	0	0	32	14	45	10	4
Future Vol, veh/h	7	4	0	1	0	0	0	32	14	45	10	4
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	3	0	0	0	25
Mvmt Flow	10	5	0	1	0	0	0	44	19	62	14	5
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.4	7.4	7.3	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	64%	100%	76%
Vol Thru, %	100%	0%	36%	0%	17%
Vol Right, %	0%	100%	0%	0%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	14	11	1	59
LT Vol	0	0	7	1	45
Through Vol	32	0	4	0	10
RT Vol	0	14	0	0	4
Lane Flow Rate	44	19	15	1	81
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.056	0.021	0.018	0.002	0.094
Departure Headway (Hd)	4.618	3.866	4.272	4.356	4.185
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	776	926	827	811	856
Service Time	2.342	1.591	2.353	2.441	2.214
HCM Lane V/C Ratio	0.057	0.021	0.018	0.001	0.095
HCM Control Delay	7.6	6.7	7.4	7.4	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0	0.3

Existing Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	63	0	244	425	0
Future Volume (vph)	0	63	0	244	425	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	1%			-2%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.865				
Fl _t Protected						
Satd. Flow (prot)	0	1581	0	1791	1756	0
Fl _t Permitted						
Satd. Flow (perm)	0	1581	0	1791	1756	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	298			625	371	
Travel Time (s)	8.1			17.0	10.1	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	85	0	330	574	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	85	0	330	574	0
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	1.05	1.05	1.08	1.08	1.09	1.09
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.9%			ICU Level of Service A		
Analysis Period (min)	15					

Existing Conditions
 3: Fillmore Street & Ashburn Road

Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	
Traffic Vol, veh/h	0	63	0	244	425	0
Future Vol, veh/h	0	63	0	244	425	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-2	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	85	0	330	574	0

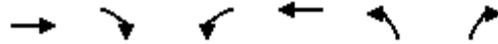
Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	574	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.3	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.1	-
Pot Cap-1 Maneuver	0	539	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	539	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 539	-
HCM Lane V/C Ratio	- 0.158	-
HCM Control Delay (s)	- 12.9	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.6	-

Existing Conditions
4: Bunning Road & Fillmore Street

Timing Plan: AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	426	15	46	198	42	0
Future Volume (vph)	426	15	46	198	42	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Grade (%)	-2%			2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.996					
Fl _t Protected				0.991	0.950	
Satd. Flow (prot)	1763	0	0	1740	1734	0
Fl _t Permitted				0.991	0.950	
Satd. Flow (perm)	1763	0	0	1740	1734	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	363			371	209	
Travel Time (s)	9.9			10.1	5.7	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	1%	7%	0%	0%	2%	0%
Adj. Flow (vph)	553	19	60	257	55	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	572	0	0	317	55	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	1.08	1.08	1.11	1.11	1.03	1.03
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.6%
ICU Level of Service	A
Analysis Period (min)	15

Existing Conditions
4: Bunning Road & Fillmore Street

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	14.6
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	426	15	46	198	42	0
Future Vol, veh/h	426	15	46	198	42	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	1	7	0	0	2	0
Mvmt Flow	553	19	60	257	55	0
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	17.1	11	9.7
HCM LOS	C	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	100%	0%	19%
Vol Thru, %	0%	97%	81%
Vol Right, %	0%	3%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	42	441	244
LT Vol	42	0	46
Through Vol	0	426	198
RT Vol	0	15	0
Lane Flow Rate	55	573	317
Geometry Grp	1	1	1
Degree of Util (X)	0.092	0.701	0.413
Departure Headway (Hd)	6.039	4.406	4.69
Convergence, Y/N	Yes	Yes	Yes
Cap	590	819	767
Service Time	4.116	2.438	2.73
HCM Lane V/C Ratio	0.093	0.7	0.413
HCM Control Delay	9.7	17.1	11
HCM Lane LOS	A	C	B
HCM 95th-tile Q	0.3	5.9	2

Existing Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	25	11	170	226	57
Future Volume (vph)	88	25	11	170	226	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	9	11	11
Grade (%)	-1%			0%	-1%	
Storage Length (ft)	175	0	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	65		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.973	
Flt Protected	0.950			0.997		
Satd. Flow (prot)	1728	1623	0	1626	1730	0
Flt Permitted	0.950			0.997		
Satd. Flow (perm)	1728	1623	0	1626	1730	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	1247			1454	711	
Travel Time (s)	28.3			28.3	13.9	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	0%	18%	4%	3%	7%
Adj. Flow (vph)	104	29	13	200	266	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	104	29	0	213	333	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	0.99	0.99	1.14	1.14	1.04	1.04
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.5%
ICU Level of Service	A
Analysis Period (min)	15

Existing Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	88	25	11	170	226	57
Future Vol, veh/h	88	25	11	170	226	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	175	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	0	-1	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	5	0	18	4	3	7
Mvmt Flow	104	29	13	200	266	67

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	526	300	333	0	-	0
Stage 1	300	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.25	6.1	4.5	-	-	-
Critical Hdwy Stg 1	5.25	-	-	-	-	-
Critical Hdwy Stg 2	5.25	-	-	-	-	-
Follow-up Hdwy	3	3.1	3.2	-	-	-
Pot Cap-1 Maneuver	595	793	857	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	585	793	857	-	-	-
Mov Cap-2 Maneuver	585	-	-	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	947	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	857	-	585	793	-	-
HCM Lane V/C Ratio	0.015	-	0.177	0.037	-	-
HCM Control Delay (s)	9.3	0	12.5	9.7	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.6	0.1	-	-

Existing Conditions
6: Township Line Road & Gauge Street

Timing Plan: AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	9	4	252	271	4
Future Volume (vph)	5	9	4	252	271	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	9	9	11	11
Grade (%)	1%			2%	3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.916				0.998	
Flt Protected	0.982			0.999		
Satd. Flow (prot)	1757	0	0	1627	1737	0
Flt Permitted	0.982			0.999		
Satd. Flow (perm)	1757	0	0	1627	1737	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	409			711	2105	
Travel Time (s)	11.2			13.9	41.0	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	4%	4%	0%
Adj. Flow (vph)	6	10	5	290	311	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	0	295	316	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.96	0.96	1.16	1.16	1.07	1.07
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.5%
ICU Level of Service	A
Analysis Period (min)	15

Existing Conditions
6: Township Line Road & Gauge Street

Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	9	4	252	271	4
Future Vol, veh/h	5	9	4	252	271	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	2	3	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	4	4	0
Mvmt Flow	6	10	5	290	311	5

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	614	314	316	0	-	0
Stage 1	314	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.6	6.3	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	497	765	936	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	494	765	936	-	-	-
Mov Cap-2 Maneuver	494	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	850	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	936	-	640	-	-
HCM Lane V/C Ratio	0.005	-	0.025	-	-
HCM Control Delay (s)	8.9	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Existing Conditions
1: Township Line Road & Mowere Road

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	76	12	60	74	13	6	164	90	20	99	58
Future Volume (vph)	57	76	12	60	74	13	6	164	90	20	99	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	14	14	14	11	11	11	11	11	11
Grade (%)		-2%			-1%			-2%			-1%	
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
Fr _t		0.989			0.988			0.953			0.956	
Fl _t Protected		0.981			0.980			0.999			0.994	
Satd. Flow (prot)	0	1800	0	0	1923	0	0	1738	0	0	1681	0
Fl _t Permitted		0.981			0.980			0.999			0.994	
Satd. Flow (perm)	0	1800	0	0	1923	0	0	1738	0	0	1681	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1797			2187			1953			1454	
Travel Time (s)		49.0			59.6			38.0			28.3	
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 (%)	0%	0%	0%	3%	0%	15%	0%	2%	1%	10%	4%	3%
Adj. Flow (vph)	62	83	13	65	80	14	7	178	98	22	108	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	158	0	0	159	0	0	283	0	0	193	0
Enter Blocked Intersection	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	1.03	1.03	1.03	0.91	0.91	0.91	1.03	1.03	1.03	1.04	1.04	1.04
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	36.8%						ICU Level of Service A					
Analysis Period (min)	15											

Existing Conditions
1: Township Line Road & Mowere Road

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	57	76	12	60	74	13	6	164	90	20	99	58
Future Vol, veh/h	57	76	12	60	74	13	6	164	90	20	99	58
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, %	0	0	0	3	0	15	0	2	1	10	4	3
Mvmt Flow	62	83	13	65	80	14	7	178	98	22	108	63
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	10.1	10.2	10.9	10.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	39%	41%	11%
Vol Thru, %	63%	52%	50%	56%
Vol Right, %	35%	8%	9%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	260	145	147	177
LT Vol	6	57	60	20
Through Vol	164	76	74	99
RT Vol	90	12	13	58
Lane Flow Rate	283	158	160	192
Geometry Grp	1	1	1	1
Degree of Util (X)	0.385	0.237	0.242	0.277
Departure Headway (Hd)	4.898	5.413	5.458	5.186
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	740	664	658	693
Service Time	2.898	3.449	3.495	3.217
HCM Lane V/C Ratio	0.382	0.238	0.243	0.277
HCM Control Delay	10.9	10.1	10.2	10.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.8	0.9	0.9	1.1

Existing Conditions
2: Bunning Road & Ashburn Road

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	4	0	1	0	0	0	21	9	1	43	5
Future Volume (vph)	6	4	0	1	0	0	0	21	9	1	43	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	10	10	12	12	12
Grade (%)		2%			-1%			-3%			-5%	
Storage Length (ft)	0		0	0		0	0		40	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
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									0.850		0.987	
Flt Protected		0.970			0.950						0.999	
Satd. Flow (prot)	0	1825	0	0	1814	0	0	1800	1530	0	1920	0
Flt Permitted		0.970			0.950						0.999	
Satd. Flow (perm)	0	1825	0	0	1814	0	0	1800	1530	0	1920	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		239			298			193			209	
Travel Time (s)		6.5			8.1			5.3			5.7	
Confl. Peds. (#/hr)			4	4			2					2
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	5	0	1	0	0	0	26	11	1	54	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	1	0	0	26	11	0	61	0
Enter Blocked Intersection	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	1.01	1.01	1.01	0.99	0.99	0.99	1.07	1.07	1.07	0.97	0.97	0.97
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											

Existing Conditions
2: Bunning Road & Ashburn Road

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	6	4	0	1	0	0	0	21	9	1	43	5
Future Vol, veh/h	6	4	0	1	0	0	0	21	9	1	43	5
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	8	5	0	1	0	0	0	26	11	1	54	6
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.3	7.3	7.2	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	60%	100%	2%
Vol Thru, %	100%	0%	40%	0%	88%
Vol Right, %	0%	100%	0%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	9	10	1	49
LT Vol	0	0	6	1	1
Through Vol	21	0	4	0	43
RT Vol	0	9	0	0	5
Lane Flow Rate	26	11	12	1	61
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.033	0.012	0.015	0.001	0.068
Departure Headway (Hd)	4.553	3.853	4.188	4.277	3.994
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	788	931	850	831	899
Service Time	2.269	1.568	2.237	2.33	2.011
HCM Lane V/C Ratio	0.033	0.012	0.014	0.001	0.068
HCM Control Delay	7.4	6.6	7.3	7.3	7.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0	0	0.2

Existing Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	11	0	346	263	0
Future Volume (vph)	0	11	0	346	263	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	1%			-2%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.865				
Fl _t Protected						
Satd. Flow (prot)	0	1581	0	1791	1756	0
Fl _t Permitted						
Satd. Flow (perm)	0	1581	0	1791	1756	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	298			625	371	
Travel Time (s)	8.1			17.0	10.1	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	13	0	402	306	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	13	0	402	306	0
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	1.05	1.05	1.08	1.08	1.09	1.09
Turning Speed (mph)	9	15	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					

Existing Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	
Traffic Vol, veh/h	0	11	0	346	263	0
Future Vol, veh/h	0	11	0	346	263	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-2	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	13	0	402	306	0

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	306	-	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.3	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.1	-	-	-
Pot Cap-1 Maneuver	0	773	0	-	0
Stage 1	0	-	0	-	0
Stage 2	0	-	0	-	0
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	773	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 773	-
HCM Lane V/C Ratio	- 0.017	-
HCM Control Delay (s)	- 9.7	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.1	-

Existing Conditions
4: Bunning Road & Fillmore Street

Timing Plan: PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	267	38	11	338	31	0
Future Volume (vph)	267	38	11	338	31	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Grade (%)	-2%			2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.983					
Fl _t Protected				0.998	0.950	
Satd. Flow (prot)	1739	0	0	1752	1769	0
Fl _t Permitted				0.998	0.950	
Satd. Flow (perm)	1739	0	0	1752	1769	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	363			371	209	
Travel Time (s)	9.9			10.1	5.7	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	1%	3%	0%	0%	0%	0%
Adj. Flow (vph)	303	43	13	384	35	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	346	0	0	397	35	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	1.08	1.08	1.11	1.11	1.03	1.03
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.7%
ICU Level of Service	A
Analysis Period (min)	15

Existing Conditions
4: Bunning Road & Fillmore Street

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	267	38	11	338	31	0
Future Vol, veh/h	267	38	11	338	31	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	3	0	0	0	0
Mvmt Flow	303	43	13	384	35	0
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	10.5	11.3	9.1
HCM LOS	B	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	100%	0%	3%
Vol Thru, %	0%	88%	97%
Vol Right, %	0%	12%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	31	305	349
LT Vol	31	0	11
Through Vol	0	267	338
RT Vol	0	38	0
Lane Flow Rate	35	347	397
Geometry Grp	1	1	1
Degree of Util (X)	0.056	0.418	0.48
Departure Headway (Hd)	5.675	4.343	4.355
Convergence, Y/N	Yes	Yes	Yes
Cap	630	832	829
Service Time	3.72	2.363	2.375
HCM Lane V/C Ratio	0.056	0.417	0.479
HCM Control Delay	9.1	10.5	11.3
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.2	2.1	2.6

Existing Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	74	21	44	242	208	83
Future Volume (vph)	74	21	44	242	208	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	9	11	11
Grade (%)	-1%			0%	-1%	
Storage Length (ft)	175	0	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	65		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t		0.850			0.962	
Fl _t Protected	0.950			0.992		
Satd. Flow (prot)	1796	1546	0	1668	1763	0
Fl _t Permitted	0.950			0.992		
Satd. Flow (perm)	1796	1546	0	1668	1763	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	1247			1454	711	
Travel Time (s)	28.3			28.3	13.9	
Confl. Peds. (#/hr)		1	5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	2%	1%	0%
Adj. Flow (vph)	80	23	48	263	226	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	23	0	311	316	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	0.99	0.99	1.14	1.14	1.04	1.04
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.7%
Analysis Period (min)	15
	ICU Level of Service A

Existing Conditions
 5: Township Line Road & Crossover Boulevard

Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	74	21	44	242	208	83
Future Vol, veh/h	74	21	44	242	208	83
Conflicting Peds, #/hr	0	1	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	175	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	0	-1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	5	0	2	1	0
Mvmt Flow	80	23	48	263	226	90

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	635	277	321	0	-	0
Stage 1	276	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Critical Hdwy	6.21	6.15	4.3	-	-	-
Critical Hdwy Stg 1	5.21	-	-	-	-	-
Critical Hdwy Stg 2	5.21	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	517	813	932	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	481	809	928	-	-	-
Mov Cap-2 Maneuver	481	-	-	-	-	-
Stage 1	842	-	-	-	-	-
Stage 2	822	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	928	-	481	809	-	-
HCM Lane V/C Ratio	0.052	-	0.167	0.028	-	-
HCM Control Delay (s)	9.1	0	14	9.6	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	0.1	-	-

Existing Conditions
6: Township Line Road & Gauge Street

Timing Plan: PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	4	2	4	302	287	9
Future Volume (vph)	4	2	4	302	287	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	9	9	11	11
Grade (%)	1%			2%	3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.955				0.996	
Flt Protected	0.968			0.999		
Satd. Flow (prot)	1806	0	0	1643	1785	0
Flt Permitted	0.968			0.999		
Satd. Flow (perm)	1806	0	0	1643	1785	0
Link Speed (mph)	25			35	35	
Link Distance (ft)	409			711	2105	
Travel Time (s)	11.2			13.9	41.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	3%	1%	0%
Adj. Flow (vph)	4	2	4	325	309	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	0	0	329	319	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.96	0.96	1.16	1.16	1.07	1.07
Turning Speed (mph)	15	9	15			9
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

Existing Conditions
6: Township Line Road & Gauge Street

Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	2	4	302	287	9
Future Vol, veh/h	4	2	4	302	287	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	2	3	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	3	1	0
Mvmt Flow	4	2	4	325	309	10

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	647	314	319	0	-	0
Stage 1	314	-	-	-	-	-
Stage 2	333	-	-	-	-	-
Critical Hdwy	6.6	6.3	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	474	765	934	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	472	765	934	-	-	-
Mov Cap-2 Maneuver	472	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	819	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	934	-	541	-	-
HCM Lane V/C Ratio	0.005	-	0.012	-	-
HCM Control Delay (s)	8.9	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Base (No-Build) Conditions

Base Conditions
1: Township Line Road & Mowere Road

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	47	6	72	73	21	10	83	36	6	199	66
Future Volume (vph)	53	47	6	72	73	21	10	83	36	6	199	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	14	14	14	11	11	11	11	11	11
Grade (%)		-2%			-1%			-2%			-1%	
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
Frt		0.992			0.983			0.962			0.967	
Flt Protected		0.976			0.979			0.996			0.999	
Satd. Flow (prot)	0	1699	0	0	1867	0	0	1641	0	0	1732	0
Flt Permitted		0.976			0.979			0.996			0.999	
Satd. Flow (perm)	0	1699	0	0	1867	0	0	1641	0	0	1732	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1797			2187			1953			1454	
Travel Time (s)		49.0			59.6			38.0			28.3	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	13%	0%	7%	3%	5%	0%	9%	9%	0%	4%	0%
Adj. Flow (vph)	60	53	7	82	83	24	11	94	41	7	226	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	120	0	0	189	0	0	146	0	0	308	0
Enter Blocked Intersection	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	1.03	1.03	1.03	0.91	0.91	0.91	1.03	1.03	1.03	1.04	1.04	1.04
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	33.5%						ICU Level of Service A					
Analysis Period (min)	15											

Base Conditions
1: Township Line Road & Mowere Road

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	53	47	6	72	73	21	10	83	36	6	199	66
Future Vol, veh/h	53	47	6	72	73	21	10	83	36	6	199	66
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	13	0	7	3	5	0	9	9	0	4	0
Mvmt Flow	60	53	7	82	83	24	11	94	41	7	226	75
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	9.7	10.5	9.4	11.3
HCM LOS	A	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	50%	43%	2%
Vol Thru, %	64%	44%	44%	73%
Vol Right, %	28%	6%	13%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	129	106	166	271
LT Vol	10	53	72	6
Through Vol	83	47	73	199
RT Vol	36	6	21	66
Lane Flow Rate	147	120	189	308
Geometry Grp	1	1	1	1
Degree of Util (X)	0.206	0.182	0.282	0.415
Departure Headway (Hd)	5.06	5.425	5.374	4.849
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	712	661	670	745
Service Time	3.07	3.459	3.405	2.854
HCM Lane V/C Ratio	0.206	0.182	0.282	0.413
HCM Control Delay	9.4	9.7	10.5	11.3
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.8	0.7	1.2	2.1

Base Conditions
2: Bunning Road & Ashburn Road

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	55	0	1	0	0	0	33	14	46	10	4
Future Volume (vph)	7	55	0	1	0	0	0	33	14	46	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	10	10	12	12	12
Grade (%)		2%			-1%			-3%			-5%	
Storage Length (ft)	0		0	0		0	0		40	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
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												
Fr _t									0.850		0.992	
Fl _t Protected		0.994			0.950						0.963	
Satd. Flow (prot)	0	1870	0	0	1814	0	0	1748	1530	0	1833	0
Fl _t Permitted		0.994			0.950						0.963	
Satd. Flow (perm)	0	1870	0	0	1814	0	0	1748	1530	0	1833	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		239			298			193			209	
Travel Time (s)		6.5			8.1			5.3			5.7	
Confl. Peds. (#/hr)	2		1	1		2			3	3		
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%	3%	0%	0%	0%	25%
Adj. Flow (vph)	10	75	0	1	0	0	0	45	19	63	14	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	85	0	0	1	0	0	45	19	0	82	0
Enter Blocked Intersection	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	1.01	1.01	1.01	0.99	0.99	0.99	1.07	1.07	1.07	0.97	0.97	0.97
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											

Base Conditions
2: Bunning Road & Ashburn Road

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	7	55	0	1	0	0	0	33	14	46	10	4
Future Vol, veh/h	7	55	0	1	0	0	0	33	14	46	10	4
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	3	0	0	0	25
Mvmt Flow	10	75	0	1	0	0	0	45	19	63	14	5
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.7	7.5	7.5	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	11%	100%	77%
Vol Thru, %	100%	0%	89%	0%	17%
Vol Right, %	0%	100%	0%	0%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	14	62	1	60
LT Vol	0	0	7	1	46
Through Vol	33	0	55	0	10
RT Vol	0	14	0	0	4
Lane Flow Rate	45	19	85	1	82
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.06	0.021	0.098	0.002	0.098
Departure Headway (Hd)	4.744	3.992	4.171	4.53	4.312
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	750	888	846	795	824
Service Time	2.508	1.755	2.263	2.53	2.38
HCM Lane V/C Ratio	0.06	0.021	0.1	0.001	0.1
HCM Control Delay	7.8	6.8	7.7	7.5	7.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.3	0	0.3

Base Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↑	
Traffic Volume (vph)	0	115	0	288	473	0
Future Volume (vph)	0	115	0	288	473	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	1%			-2%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.865				
Fl _t Protected						
Satd. Flow (prot)	0	1581	0	1791	1756	0
Fl _t Permitted						
Satd. Flow (perm)	0	1581	0	1791	1756	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	298			625	371	
Travel Time (s)	8.1			17.0	10.1	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	155	0	389	639	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	155	0	389	639	0
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	1.05	1.05	1.08	1.08	1.09	1.09
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.7%			ICU Level of Service A		
Analysis Period (min)	15					

Base Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	
Traffic Vol, veh/h	0	115	0	288	473	0
Future Vol, veh/h	0	115	0	288	473	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-2	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	155	0	389	639	0

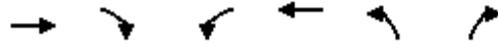
Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	639	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.3	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.1	-	-	-
Pot Cap-1 Maneuver	0	494	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	494	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 494	-
HCM Lane V/C Ratio	- 0.315	-
HCM Control Delay (s)	- 15.6	-
HCM Lane LOS	- C	-
HCM 95th %tile Q(veh)	- 1.3	-

Base Conditions
4: Bunning Road & Fillmore Street

Timing Plan: AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	488	15	47	227	43	0
Future Volume (vph)	488	15	47	227	43	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Grade (%)	-2%			2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.996					
Fl _t Protected				0.992	0.950	
Satd. Flow (prot)	1763	0	0	1742	1734	0
Fl _t Permitted				0.992	0.950	
Satd. Flow (perm)	1763	0	0	1742	1734	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	363			371	209	
Travel Time (s)	9.9			10.1	5.7	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	1%	7%	0%	0%	2%	0%
Adj. Flow (vph)	634	19	61	295	56	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	653	0	0	356	56	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	1.08	1.08	1.11	1.11	1.03	1.03
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.5%
ICU Level of Service	A
Analysis Period (min)	15

Base Conditions
4: Bunning Road & Fillmore Street

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	19.1
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	488	15	47	227	43	0
Future Vol, veh/h	488	15	47	227	43	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	1	7	0	0	2	0
Mvmt Flow	634	19	61	295	56	0
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	23.7	12.1	10.1
HCM LOS	C	B	B

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	100%	0%	17%
Vol Thru, %	0%	97%	83%
Vol Right, %	0%	3%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	43	503	274
LT Vol	43	0	47
Through Vol	0	488	227
RT Vol	0	15	0
Lane Flow Rate	56	653	356
Geometry Grp	1	1	1
Degree of Util (X)	0.098	0.81	0.473
Departure Headway (Hd)	6.288	4.465	4.784
Convergence, Y/N	Yes	Yes	Yes
Cap	565	810	751
Service Time	4.383	2.506	2.836
HCM Lane V/C Ratio	0.099	0.806	0.474
HCM Control Delay	10.1	23.7	12.1
HCM Lane LOS	B	C	B
HCM 95th-tile Q	0.3	8.8	2.6

Base Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	130	26	11	215	289	124
Future Volume (vph)	130	26	11	215	289	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	9	11	11
Grade (%)	-1%			0%	-1%	
Storage Length (ft)	175	0	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	65		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.850			0.959	
Fl _t Protected	0.950			0.998		
Satd. Flow (prot)	1728	1623	0	1630	1699	0
Fl _t Permitted	0.950			0.998		
Satd. Flow (perm)	1728	1623	0	1630	1699	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	1247			1454	711	
Travel Time (s)	28.3			28.3	13.9	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	0%	18%	4%	3%	7%
Adj. Flow (vph)	153	31	13	253	340	146
Shared Lane Traffic (%)						
Lane Group Flow (vph)	153	31	0	266	486	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	0.99	0.99	1.14	1.14	1.04	1.04
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.6%
Analysis Period (min)	15
	ICU Level of Service A

Base Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	26	11	215	289	124
Future Vol, veh/h	130	26	11	215	289	124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	175	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	0	-1	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	5	0	18	4	3	7
Mvmt Flow	153	31	13	253	340	146

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	692	413	486	0	-	0
Stage 1	413	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Critical Hdwy	6.25	6.1	4.5	-	-	-
Critical Hdwy Stg 1	5.25	-	-	-	-	-
Critical Hdwy Stg 2	5.25	-	-	-	-	-
Follow-up Hdwy	3	3.1	3.2	-	-	-
Pot Cap-1 Maneuver	475	685	755	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	895	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	466	685	755	-	-	-
Mov Cap-2 Maneuver	466	-	-	-	-	-
Stage 1	761	-	-	-	-	-
Stage 2	895	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	755	-	466	685	-	-
HCM Lane V/C Ratio	0.017	-	0.328	0.045	-	-
HCM Control Delay (s)	9.9	0	16.5	10.5	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.4	0.1	-	-

Base Conditions
6: Township Line Road & Gauge Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	9	60	0	0	4	298	26	1	341	4
Future Volume (vph)	5	0	9	60	0	0	4	298	26	1	341	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	13	12	12	12	9	9	12	12	11	11
Grade (%)		1%			0%			2%			3%	
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
Frt		0.916						0.989			0.998	
Flt Protected		0.982			0.950			0.999				
Satd. Flow (prot)	0	1701	0	0	1770	0	0	1612	0	0	1737	0
Flt Permitted		0.982			0.950			0.999				
Satd. Flow (perm)	0	1701	0	0	1770	0	0	1612	0	0	1737	0
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		409			494			711			2105	
Travel Time (s)		11.2			11.2			13.9			41.0	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	4%	2%	2%	4%	0%
Adj. Flow (vph)	6	0	10	69	0	0	5	343	30	1	392	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	0	69	0	0	378	0	0	398	0
Enter Blocked Intersection	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	0.96	1.01	0.96	1.00	1.00	1.00	1.16	1.16	1.01	1.02	1.07	1.07
Turning Speed (mph)	15		9	60		60	15		60	60		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.7%						ICU Level of Service A					
Analysis Period (min)	15											

Base Conditions
6: Township Line Road & Gauge Street

Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	9	60	0	0	4	298	26	1	341	4
Future Vol, veh/h	5	0	9	60	0	0	4	298	26	1	341	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	0	-	-	2	-	-	3	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	2	2	2	0	4	2	2	4	0
Mvmt Flow	6	0	10	69	0	0	5	343	30	1	392	5

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	765	780	395	770	767	358	397	0	0	373	0	0
Stage 1	397	397	-	368	368	-	-	-	-	-	-	-
Stage 2	368	383	-	402	399	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.72	6.3	7.12	6.52	6.22	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.3	5.72	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.72	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.1	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	344	313	686	355	332	727	877	-	-	894	-	-
Stage 1	704	590	-	745	621	-	-	-	-	-	-	-
Stage 2	732	599	-	713	602	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	342	310	686	348	329	727	877	-	-	894	-	-
Mov Cap-2 Maneuver	342	310	-	348	329	-	-	-	-	-	-	-
Stage 1	699	589	-	740	617	-	-	-	-	-	-	-
Stage 2	727	595	-	702	601	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		17.9		0.1		0	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	877	-	-	505	348	894	-	-
HCM Lane V/C Ratio	0.005	-	-	0.032	0.198	0.001	-	-
HCM Control Delay (s)	9.1	0	-	12.4	17.9	9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0	-	-

Base Conditions
1: Township Line Road & Mowere Road

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	78	12	61	76	13	6	206	92	20	129	71
Future Volume (vph)	73	78	12	61	76	13	6	206	92	20	129	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	14	14	14	11	11	11	11	11	11
Grade (%)		-2%			-1%			-2%			-1%	
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
Frt		0.990			0.988			0.959			0.957	
Flt Protected		0.978			0.980			0.999			0.995	
Satd. Flow (prot)	0	1796	0	0	1924	0	0	1748	0	0	1686	0
Flt Permitted		0.978			0.980			0.999			0.995	
Satd. Flow (perm)	0	1796	0	0	1924	0	0	1748	0	0	1686	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1797			2187			1953			1454	
Travel Time (s)		49.0			59.6			38.0			28.3	
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 (%)	0%	0%	0%	3%	0%	15%	0%	2%	1%	10%	4%	3%
Adj. Flow (vph)	79	85	13	66	83	14	7	224	100	22	140	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	177	0	0	163	0	0	331	0	0	239	0
Enter Blocked Intersection	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	1.03	1.03	1.03	0.91	0.91	0.91	1.03	1.03	1.03	1.04	1.04	1.04
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	40.9%						ICU Level of Service A					
Analysis Period (min)	15											

Base Conditions
1: Township Line Road & Mowere Road

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	73	78	12	61	76	13	6	206	92	20	129	71
Future Vol, veh/h	73	78	12	61	76	13	6	206	92	20	129	71
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, %	0	0	0	3	0	15	0	2	1	10	4	3
Mvmt Flow	79	85	13	66	83	14	7	224	100	22	140	77
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	11.1	11	12.6	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %		2%	45%	41%
Vol Thru, %		68%	48%	51%
Vol Right, %		30%	7%	9%
Sign Control		Stop	Stop	Stop
Traffic Vol by Lane		304	163	150
LT Vol		6	73	61
Through Vol		206	78	76
RT Vol		92	12	13
Lane Flow Rate		330	177	163
Geometry Grp		1	1	1
Degree of Util (X)		0.469	0.283	0.263
Departure Headway (Hd)		5.105	5.755	5.817
Convergence, Y/N		Yes	Yes	Yes
Cap		704	622	616
Service Time		3.149	3.809	3.872
HCM Lane V/C Ratio		0.469	0.285	0.265
HCM Control Delay		12.6	11.1	11
HCM Lane LOS		B	B	B
HCM 95th-tile Q		2.5	1.2	1.1

Base Conditions
2: Bunning Road & Ashburn Road

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	40	0	1	0	0	0	21	9	1	44	5
Future Volume (vph)	6	40	0	1	0	0	0	21	9	1	44	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	10	10	12	12	12
Grade (%)		2%			-1%			-3%			-5%	
Storage Length (ft)	0		0	0		0	0		40	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
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									0.850		0.987	
Flt Protected		0.993			0.950						0.999	
Satd. Flow (prot)	0	1868	0	0	1814	0	0	1800	1530	0	1920	0
Flt Permitted		0.993			0.950						0.999	
Satd. Flow (perm)	0	1868	0	0	1814	0	0	1800	1530	0	1920	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		239			298			193			209	
Travel Time (s)		6.5			8.1			5.3			5.7	
Confl. Peds. (#/hr)			4	4			2					2
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	50	0	1	0	0	0	26	11	1	55	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	0	0	1	0	0	26	11	0	62	0
Enter Blocked Intersection	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	1.01	1.01	1.01	0.99	0.99	0.99	1.07	1.07	1.07	0.97	0.97	0.97
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%
Analysis Period (min)	15
	ICU Level of Service A

Base Conditions
2: Bunning Road & Ashburn Road

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	6	40	0	1	0	0	0	21	9	1	44	5
Future Vol, veh/h	6	40	0	1	0	0	0	21	9	1	44	5
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	8	50	0	1	0	0	0	26	11	1	55	6
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.4	7.4	7.3	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	13%	100%	2%
Vol Thru, %	100%	0%	87%	0%	88%
Vol Right, %	0%	100%	0%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	9	46	1	50
LT Vol	0	0	6	1	1
Through Vol	21	0	40	0	44
RT Vol	0	9	0	0	5
Lane Flow Rate	26	11	58	1	62
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.034	0.012	0.065	0.001	0.071
Departure Headway (Hd)	4.635	3.934	4.098	4.316	4.074
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	771	907	868	822	876
Service Time	2.372	1.67	2.151	2.382	2.113
HCM Lane V/C Ratio	0.034	0.012	0.067	0.001	0.071
HCM Control Delay	7.5	6.7	7.4	7.4	7.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0.2	0	0.2

Base Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	47	0	440	298	0
Future Volume (vph)	0	47	0	440	298	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	1%			-2%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.865				
Fl _t Protected						
Satd. Flow (prot)	0	1581	0	1791	1756	0
Fl _t Permitted						
Satd. Flow (perm)	0	1581	0	1791	1756	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	298			625	371	
Travel Time (s)	8.1			17.0	10.1	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	55	0	512	347	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	55	0	512	347	0
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	1.05	1.05	1.08	1.08	1.09	1.09
Turning Speed (mph)	9	15	9			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.5%			ICU Level of Service A		
Analysis Period (min)	15					

Base Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	
Traffic Vol, veh/h	0	47	0	440	298	0
Future Vol, veh/h	0	47	0	440	298	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-2	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	55	0	512	347	0

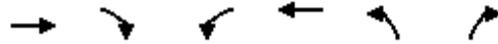
Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	347	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.3	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.1	-	-	-
Pot Cap-1 Maneuver	0	732	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	732	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 732	-
HCM Lane V/C Ratio	- 0.075	-
HCM Control Delay (s)	- 10.3	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.2	-

Base Conditions
4: Bunning Road & Fillmore Street

Timing Plan: PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	301	39	11	384	32	0
Future Volume (vph)	301	39	11	384	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Grade (%)	-2%			2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.985					
Fl _t Protected				0.999	0.950	
Satd. Flow (prot)	1743	0	0	1754	1769	0
Fl _t Permitted				0.999	0.950	
Satd. Flow (perm)	1743	0	0	1754	1769	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	363			371	209	
Travel Time (s)	9.9			10.1	5.7	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	1%	3%	0%	0%	0%	0%
Adj. Flow (vph)	342	44	13	436	36	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	386	0	0	449	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	1.08	1.08	1.11	1.11	1.03	1.03
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.1%
ICU Level of Service	A
Analysis Period (min)	15

Base Conditions
4: Bunning Road & Fillmore Street

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	301	39	11	384	32	0
Future Vol, veh/h	301	39	11	384	32	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	3	0	0	0	0
Mvmt Flow	342	44	13	436	36	0
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	11.4	12.7	9.3
HCM LOS	B	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	100%	0%	3%
Vol Thru, %	0%	89%	97%
Vol Right, %	0%	11%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	32	340	395
LT Vol	32	0	11
Through Vol	0	301	384
RT Vol	0	39	0
Lane Flow Rate	36	386	449
Geometry Grp	1	1	1
Degree of Util (X)	0.059	0.473	0.549
Departure Headway (Hd)	5.865	4.411	4.404
Convergence, Y/N	Yes	Yes	Yes
Cap	608	819	821
Service Time	3.922	2.435	2.428
HCM Lane V/C Ratio	0.059	0.471	0.547
HCM Control Delay	9.3	11.4	12.7
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.2	2.6	3.4

Base Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	95	21	45	280	238	105
Future Volume (vph)	95	21	45	280	238	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	9	11	11
Grade (%)	-1%			0%	-1%	
Storage Length (ft)	175	0	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	65		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t		0.850			0.959	
Fl _t Protected	0.950			0.993		
Satd. Flow (prot)	1796	1546	0	1669	1758	0
Fl _t Permitted	0.950			0.993		
Satd. Flow (perm)	1796	1546	0	1669	1758	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	1247			1454	711	
Travel Time (s)	28.3			28.3	13.9	
Confl. Peds. (#/hr)		1	5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	2%	1%	0%
Adj. Flow (vph)	103	23	49	304	259	114
Shared Lane Traffic (%)						
Lane Group Flow (vph)	103	23	0	353	373	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	0.99	0.99	1.14	1.14	1.04	1.04
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.8%
Analysis Period (min)	15
	ICU Level of Service A

Base Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	95	21	45	280	238	105
Future Vol, veh/h	95	21	45	280	238	105
Conflicting Peds, #/hr	0	1	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	175	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	0	-1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	5	0	2	1	0
Mvmt Flow	103	23	49	304	259	114

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	723	322	378	0	-	0
Stage 1	321	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Critical Hdwy	6.21	6.15	4.3	-	-	-
Critical Hdwy Stg 1	5.21	-	-	-	-	-
Critical Hdwy Stg 2	5.21	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	459	767	891	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	425	763	887	-	-	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	785	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.1	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	887	-	425	763	-	-
HCM Lane V/C Ratio	0.055	-	0.243	0.03	-	-
HCM Control Delay (s)	9.3	0	16.2	9.9	-	-
HCM Lane LOS	A	A	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	0.1	-	-

Base Conditions
6: Township Line Road & Gauge Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	2	56	0	3	4	357	58	4	335	9
Future Volume (vph)	4	0	2	56	0	3	4	357	58	4	335	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	13	12	12	12	9	9	12	12	11	11
Grade (%)		1%			0%			2%			3%	
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
Frt		0.955			0.994			0.981			0.996	
Flt Protected		0.968			0.955						0.999	
Satd. Flow (prot)	0	1748	0	0	1768	0	0	1615	0	0	1783	0
Flt Permitted		0.968			0.955						0.999	
Satd. Flow (perm)	0	1748	0	0	1768	0	0	1615	0	0	1783	0
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		409			494			711			2105	
Travel Time (s)		11.2			11.2			13.9			41.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	3%	2%	2%	1%	0%
Adj. Flow (vph)	4	0	2	60	0	3	4	384	62	4	360	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	0	0	63	0	0	450	0	0	374	0
Enter Blocked Intersection	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	0.96	1.01	0.96	1.00	1.00	1.00	1.16	1.16	1.01	1.02	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	35.8%						ICU Level of Service A					
Analysis Period (min)	15											

Base Conditions
6: Township Line Road & Gauge Street

Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	2	56	0	3	4	357	58	4	335	9
Future Vol, veh/h	4	0	2	56	0	3	4	357	58	4	335	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	0	-	-	2	-	-	3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	2	2	2	0	3	2	2	1	0
Mvmt Flow	4	0	2	60	0	3	4	384	62	4	360	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	798	827	365	797	801	415	370	0	0	446	0	0
Stage 1	373	373	-	423	423	-	-	-	-	-	-	-
Stage 2	425	454	-	374	378	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.72	6.3	7.12	6.52	6.22	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.3	5.72	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.72	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.1	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	326	293	714	340	318	674	896	-	-	843	-	-
Stage 1	727	606	-	694	588	-	-	-	-	-	-	-
Stage 2	677	555	-	740	615	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	321	289	714	336	314	674	896	-	-	843	-	-
Mov Cap-2 Maneuver	321	289	-	336	314	-	-	-	-	-	-	-
Stage 1	723	602	-	690	584	-	-	-	-	-	-	-
Stage 2	670	552	-	733	611	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.3		17.8		0.1		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	896	-	-	393	345	843	-	-
HCM Lane V/C Ratio	0.005	-	-	0.016	0.184	0.005	-	-
HCM Control Delay (s)	9	0	-	14.3	17.8	9.3	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0	-	-

Projected (Build) Conditions

Projected (Build) Conditions
1: Township Line Road & Mowere Road

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	47	6	72	73	21	10	84	36	6	200	67
Future Volume (vph)	54	47	6	72	73	21	10	84	36	6	200	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	14	14	14	11	11	11	11	11	11
Grade (%)		-2%			-1%			-2%			-1%	
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
Frt		0.992			0.983			0.962			0.967	
Flt Protected		0.975			0.979			0.996			0.999	
Satd. Flow (prot)	0	1698	0	0	1867	0	0	1641	0	0	1732	0
Flt Permitted		0.975			0.979			0.996			0.999	
Satd. Flow (perm)	0	1698	0	0	1867	0	0	1641	0	0	1732	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1797			2187			1953			1454	
Travel Time (s)		49.0			59.6			38.0			28.3	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	13%	0%	7%	3%	5%	0%	9%	9%	0%	4%	0%
Adj. Flow (vph)	61	53	7	82	83	24	11	95	41	7	227	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	0	0	189	0	0	147	0	0	310	0
Enter Blocked Intersection	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	1.03	1.03	1.03	0.91	0.91	0.91	1.03	1.03	1.03	1.04	1.04	1.04
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	33.6%						ICU Level of Service A					
Analysis Period (min)	15											

Projected (Build) Conditions
1: Township Line Road & Mowere Road

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	54	47	6	72	73	21	10	84	36	6	200	67
Future Vol, veh/h	54	47	6	72	73	21	10	84	36	6	200	67
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	0	13	0	7	3	5	0	9	9	0	4	0
Mvmt Flow	61	53	7	82	83	24	11	95	41	7	227	76
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	9.7	10.5	9.4	11.3
HCM LOS	A	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	50%	43%	2%
Vol Thru, %	65%	44%	44%	73%
Vol Right, %	28%	6%	13%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	107	166	273
LT Vol	10	54	72	6
Through Vol	84	47	73	200
RT Vol	36	6	21	67
Lane Flow Rate	148	122	189	310
Geometry Grp	1	1	1	1
Degree of Util (X)	0.207	0.184	0.282	0.419
Departure Headway (Hd)	5.051	5.439	5.388	4.858
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	711	660	668	745
Service Time	3.08	3.471	3.417	2.858
HCM Lane V/C Ratio	0.208	0.185	0.283	0.416
HCM Control Delay	9.4	9.7	10.5	11.3
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.8	0.7	1.2	2.1

Projected (Build) Conditions
2: Bunning Road & Ashburn Road

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	60	0	1	0	0	0	33	14	46	10	4
Future Volume (vph)	7	60	0	1	0	0	0	33	14	46	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	10	10	12	12	12
Grade (%)		2%			-1%			-3%			-5%	
Storage Length (ft)	0		0	0		0	0		40	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
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									0.850		0.992	
Flt Protected		0.995			0.950						0.963	
Satd. Flow (prot)	0	1872	0	0	1814	0	0	1748	1530	0	1833	0
Flt Permitted		0.995			0.950						0.963	
Satd. Flow (perm)	0	1872	0	0	1814	0	0	1748	1530	0	1833	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		239			298			193			209	
Travel Time (s)		6.5			8.1			5.3			5.7	
Confl. Peds. (#/hr)	2		1	1		2			3	3		
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%	3%	0%	0%	0%	25%
Adj. Flow (vph)	10	82	0	1	0	0	0	45	19	63	14	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	0	0	1	0	0	45	19	0	82	0
Enter Blocked Intersection	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	1.01	1.01	1.01	0.99	0.99	0.99	1.07	1.07	1.07	0.97	0.97	0.97
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											

Projected (Build) Conditions
2: Bunning Road & Ashburn Road

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	7	60	0	1	0	0	0	33	14	46	10	4
Future Vol, veh/h	7	60	0	1	0	0	0	33	14	46	10	4
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	3	0	0	0	25
Mvmt Flow	10	82	0	1	0	0	0	45	19	63	14	5
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.8	7.5	7.5	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	10%	100%	77%
Vol Thru, %	100%	0%	90%	0%	17%
Vol Right, %	0%	100%	0%	0%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	14	67	1	60
LT Vol	0	0	7	1	46
Through Vol	33	0	60	0	10
RT Vol	0	14	0	0	4
Lane Flow Rate	45	19	92	1	82
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.06	0.021	0.106	0.002	0.099
Departure Headway (Hd)	4.758	4.006	4.169	4.539	4.326
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	747	884	845	793	820
Service Time	2.525	1.772	2.264	2.539	2.396
HCM Lane V/C Ratio	0.06	0.021	0.109	0.001	0.1
HCM Control Delay	7.8	6.9	7.8	7.5	7.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.4	0	0.3

Projected (Build) Conditions
 3: Fillmore Street & Ashburn Road

Timing Plan: AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	120	0	290	475	0
Future Volume (vph)	0	120	0	290	475	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	1%			-2%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.865				
Fl _t Protected						
Satd. Flow (prot)	0	1581	0	1791	1756	0
Fl _t Permitted						
Satd. Flow (perm)	0	1581	0	1791	1756	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	298			625	371	
Travel Time (s)	8.1			17.0	10.1	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	162	0	392	642	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	162	0	392	642	0
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	1.05	1.05	1.08	1.08	1.09	1.09
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	39.1%			ICU Level of Service A		
Analysis Period (min)	15					

Projected (Build) Conditions
 3: Fillmore Street & Ashburn Road

Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	
Traffic Vol, veh/h	0	120	0	290	475	0
Future Vol, veh/h	0	120	0	290	475	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-2	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	162	0	392	642	0

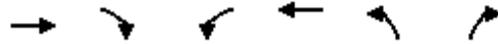
Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	642	-	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.3	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.1	-	-	-
Pot Cap-1 Maneuver	0	492	0	-	0
Stage 1	0	-	0	-	0
Stage 2	0	-	0	-	0
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	492	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 492	-
HCM Lane V/C Ratio	- 0.33	-
HCM Control Delay (s)	- 15.9	-
HCM Lane LOS	- C	-
HCM 95th %tile Q(veh)	- 1.4	-

Projected (Build) Conditions
4: Bunning Road & Fillmore Street

Timing Plan: AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	490	15	47	229	43	0
Future Volume (vph)	490	15	47	229	43	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Grade (%)	-2%			2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.996					
Fl _t Protected				0.992	0.950	
Satd. Flow (prot)	1763	0	0	1742	1734	0
Fl _t Permitted				0.992	0.950	
Satd. Flow (perm)	1763	0	0	1742	1734	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	363			371	209	
Travel Time (s)	9.9			10.1	5.7	
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles (%)	1%	7%	0%	0%	2%	0%
Adj. Flow (vph)	636	19	61	297	56	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	655	0	0	358	56	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	1.08	1.08	1.11	1.11	1.03	1.03
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	54.7%
ICU Level of Service	A
Analysis Period (min)	15

Projected (Build) Conditions
4: Bunning Road & Fillmore Street

Timing Plan: AM Peak Hour

Intersection	
Intersection Delay, s/veh	19.3
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	490	15	47	229	43	0
Future Vol, veh/h	490	15	47	229	43	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77
Heavy Vehicles, %	1	7	0	0	2	0
Mvmt Flow	636	19	61	297	56	0
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	24	12.2	10.1
HCM LOS	C	B	B

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	100%	0%	17%
Vol Thru, %	0%	97%	83%
Vol Right, %	0%	3%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	43	505	276
LT Vol	43	0	47
Through Vol	0	490	229
RT Vol	0	15	0
Lane Flow Rate	56	656	358
Geometry Grp	1	1	1
Degree of Util (X)	0.098	0.814	0.477
Departure Headway (Hd)	6.299	4.469	4.789
Convergence, Y/N	Yes	Yes	Yes
Cap	564	807	749
Service Time	4.395	2.509	2.839
HCM Lane V/C Ratio	0.099	0.813	0.478
HCM Control Delay	10.1	24	12.2
HCM Lane LOS	B	C	B
HCM 95th-tile Q	0.3	8.9	2.6

Projected (Build) Conditions
 5: Township Line Road & Crossover Boulevard

Timing Plan: AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	131	26	11	217	291	127
Future Volume (vph)	131	26	11	217	291	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	9	11	11
Grade (%)	-1%			0%	-1%	
Storage Length (ft)	175	0	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	65		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.959	
Flt Protected	0.950			0.998		
Satd. Flow (prot)	1728	1623	0	1630	1699	0
Flt Permitted	0.950			0.998		
Satd. Flow (perm)	1728	1623	0	1630	1699	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	1247			1454	342	
Travel Time (s)	28.3			28.3	6.7	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	5%	0%	18%	4%	3%	7%
Adj. Flow (vph)	154	31	13	255	342	149
Shared Lane Traffic (%)						
Lane Group Flow (vph)	154	31	0	268	491	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	0.99	0.99	1.14	1.14	1.04	1.04
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	37.0%
Analysis Period (min)	15
	ICU Level of Service A

Projected (Build) Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	131	26	11	217	291	127
Future Vol, veh/h	131	26	11	217	291	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	175	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	0	-1	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	5	0	18	4	3	7
Mvmt Flow	154	31	13	255	342	149

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	698	417	491	0	-	0
Stage 1	417	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Critical Hdwy	6.25	6.1	4.5	-	-	-
Critical Hdwy Stg 1	5.25	-	-	-	-	-
Critical Hdwy Stg 2	5.25	-	-	-	-	-
Follow-up Hdwy	3	3.1	3.2	-	-	-
Pot Cap-1 Maneuver	471	682	752	-	-	-
Stage 1	773	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	462	682	752	-	-	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	752	-	462	682	-	-
HCM Lane V/C Ratio	0.017	-	0.334	0.045	-	-
HCM Control Delay (s)	9.9	0	16.6	10.5	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.4	0.1	-	-

Projected (Build) Conditions
6: Township Line Road & Gauge Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	9	65	0	1	4	298	27	1	341	4
Future Volume (vph)	5	0	9	65	0	1	4	298	27	1	341	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	13	12	12	12	9	9	12	12	11	11
Grade (%)		1%			0%			2%			3%	
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
Frt		0.916			0.998			0.989			0.998	
Flt Protected		0.982			0.953			0.999				
Satd. Flow (prot)	0	1701	0	0	1772	0	0	1612	0	0	1737	0
Flt Permitted		0.982			0.953			0.999				
Satd. Flow (perm)	0	1701	0	0	1772	0	0	1612	0	0	1737	0
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		409			494			369			2105	
Travel Time (s)		11.2			11.2			7.2			41.0	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	4%	2%	2%	4%	0%
Adj. Flow (vph)	6	0	10	75	0	1	5	343	31	1	392	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	0	76	0	0	379	0	0	398	0
Enter Blocked Intersection	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	0.96	1.01	0.96	1.00	1.00	1.00	1.16	1.16	1.01	1.02	1.07	1.07
Turning Speed (mph)	15		9	60		60	15		60	60		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	35.5%						ICU Level of Service A					
Analysis Period (min)	15											

Projected (Build) Conditions
6: Township Line Road & Gauge Street

Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	9	65	0	1	4	298	27	1	341	4
Future Vol, veh/h	5	0	9	65	0	1	4	298	27	1	341	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	0	-	-	2	-	-	3	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	2	0	2	2	2	0	4	2	2	4	0
Mvmt Flow	6	0	10	75	0	1	5	343	31	1	392	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	766	781	395	771	768	359	397	0	0	374	0	0
Stage 1	397	397	-	369	369	-	-	-	-	-	-	-
Stage 2	369	384	-	402	399	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.72	6.3	7.12	6.52	6.22	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.3	5.72	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.72	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.1	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	343	312	686	354	332	726	877	-	-	893	-	-
Stage 1	704	590	-	744	621	-	-	-	-	-	-	-
Stage 2	731	598	-	713	602	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	340	310	686	347	329	726	877	-	-	893	-	-
Mov Cap-2 Maneuver	340	310	-	347	329	-	-	-	-	-	-	-
Stage 1	699	589	-	739	617	-	-	-	-	-	-	-
Stage 2	725	594	-	702	601	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		18.1		0.1		0	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	877	-	-	503	350	893	-	-
HCM Lane V/C Ratio	0.005	-	-	0.032	0.217	0.001	-	-
HCM Control Delay (s)	9.1	0	-	12.4	18.1	9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.8	0	-	-

Projected (Build) Conditions
 7: Township Line Road & Enter Only Site Driveway

Timing Plan: AM Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	346	2	0	418
Future Volume (vph)	0	0	346	2	0	418
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-3%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected						
Satd. Flow (prot)	1863	0	1816	0	0	1854
Flt Permitted						
Satd. Flow (perm)	1863	0	1816	0	0	1854
Link Speed (mph)	25		35			35
Link Distance (ft)	415		342			369
Travel Time (s)	11.3		6.7			7.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	2%	2%	4%
Adj. Flow (vph)	0	0	376	2	0	454
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	378	0	0	454
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	1.00	1.00	1.01	1.01	0.98	0.98
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.3%
Analysis Period (min)	15
	ICU Level of Service A

Projected (Build) Conditions
 7: Township Line Road & Enter Only Site Driveway

Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	346	2	0	418
Future Vol, veh/h	0	0	346	2	0	418
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	-3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	4	2	2	4
Mvmt Flow	0	0	376	2	0	454

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	831	377	0	0	378
Stage 1	377	-	-	-	-
Stage 2	454	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	3
Pot Cap-1 Maneuver	340	670	-	-	891
Stage 1	694	-	-	-	-
Stage 2	640	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	340	670	-	-	891
Mov Cap-2 Maneuver	340	-	-	-	-
Stage 1	694	-	-	-	-
Stage 2	640	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	891
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Projected (Build) Conditions
1: Township Line Road & Mowere Road

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	78	12	61	76	13	6	207	92	20	130	72
Future Volume (vph)	74	78	12	61	76	13	6	207	92	20	130	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	14	14	14	11	11	11	11	11	11
Grade (%)		-2%			-1%			-2%			-1%	
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
Frt		0.990			0.988			0.959			0.956	
Flt Protected		0.978			0.980			0.999			0.995	
Satd. Flow (prot)	0	1796	0	0	1924	0	0	1748	0	0	1685	0
Flt Permitted		0.978			0.980			0.999			0.995	
Satd. Flow (perm)	0	1796	0	0	1924	0	0	1748	0	0	1685	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1797			2187			1953			1454	
Travel Time (s)		49.0			59.6			38.0			28.3	
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 (%)	0%	0%	0%	3%	0%	15%	0%	2%	1%	10%	4%	3%
Adj. Flow (vph)	80	85	13	66	83	14	7	225	100	22	141	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	178	0	0	163	0	0	332	0	0	241	0
Enter Blocked Intersection	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	1.03	1.03	1.03	0.91	0.91	0.91	1.03	1.03	1.03	1.04	1.04	1.04
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	41.2%						ICU Level of Service A					
Analysis Period (min)	15											

Projected (Build) Conditions
1: Township Line Road & Mowere Road

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	74	78	12	61	76	13	6	207	92	20	130	72
Future Vol, veh/h	74	78	12	61	76	13	6	207	92	20	130	72
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, %	0	0	0	3	0	15	0	2	1	10	4	3
Mvmt Flow	80	85	13	66	83	14	7	225	100	22	141	78
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	11.1	11	12.7	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %		2%	45%	41%
Vol Thru, %		68%	48%	51%
Vol Right, %		30%	7%	9%
Sign Control		Stop	Stop	Stop
Traffic Vol by Lane		305	164	150
LT Vol		6	74	61
Through Vol		207	78	76
RT Vol		92	12	13
Lane Flow Rate		332	178	163
Geometry Grp		1	1	1
Degree of Util (X)		0.471	0.286	0.264
Departure Headway (Hd)		5.115	5.767	5.829
Convergence, Y/N		Yes	Yes	Yes
Cap		703	620	615
Service Time		3.161	3.821	3.886
HCM Lane V/C Ratio		0.472	0.287	0.265
HCM Control Delay		12.7	11.1	11
HCM Lane LOS		B	B	B
HCM 95th-tile Q		2.5	1.2	1.1

Projected (Build) Conditions
2: Bunning Road & Ashburn Road

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	44	0	1	0	0	0	21	9	1	44	5
Future Volume (vph)	6	44	0	1	0	0	0	21	9	1	44	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	10	10	12	12	12
Grade (%)		2%			-1%			-3%			-5%	
Storage Length (ft)	0		0	0		0	0		40	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
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									0.850		0.987	
Flt Protected		0.994			0.950						0.999	
Satd. Flow (prot)	0	1870	0	0	1814	0	0	1800	1530	0	1920	0
Flt Permitted		0.994			0.950						0.999	
Satd. Flow (perm)	0	1870	0	0	1814	0	0	1800	1530	0	1920	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		239			298			193			209	
Travel Time (s)		6.5			8.1			5.3			5.7	
Confl. Peds. (#/hr)			4	4			2					2
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 (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	8	55	0	1	0	0	0	26	11	1	55	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	1	0	0	26	11	0	62	0
Enter Blocked Intersection	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	1.01	1.01	1.01	0.99	0.99	0.99	1.07	1.07	1.07	0.97	0.97	0.97
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											

Projected (Build) Conditions
2: Bunning Road & Ashburn Road

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	6	44	0	1	0	0	0	21	9	1	44	5
Future Vol, veh/h	6	44	0	1	0	0	0	21	9	1	44	5
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	8	55	0	1	0	0	0	26	11	1	55	6
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.5	7.4	7.3	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	12%	100%	2%
Vol Thru, %	100%	0%	88%	0%	88%
Vol Right, %	0%	100%	0%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	9	50	1	50
LT Vol	0	0	6	1	1
Through Vol	21	0	44	0	44
RT Vol	0	9	0	0	5
Lane Flow Rate	26	11	62	1	62
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.034	0.012	0.071	0.002	0.071
Departure Headway (Hd)	4.645	3.944	4.095	4.32	4.084
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	769	904	869	821	873
Service Time	2.386	1.684	2.149	2.387	2.127
HCM Lane V/C Ratio	0.034	0.012	0.071	0.001	0.071
HCM Control Delay	7.6	6.7	7.5	7.4	7.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0.2	0	0.2

Projected (Build) Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	51	0	441	305	0
Future Volume (vph)	0	51	0	441	305	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	1%			-2%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.865				
Fl _t Protected						
Satd. Flow (prot)	0	1581	0	1791	1756	0
Fl _t Permitted						
Satd. Flow (perm)	0	1581	0	1791	1756	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	298			625	371	
Travel Time (s)	8.1			17.0	10.1	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	0	59	0	513	355	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	59	0	513	355	0
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	1.05	1.05	1.08	1.08	1.09	1.09
Turning Speed (mph)	9	15	9			15
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.5%			ICU Level of Service A		
Analysis Period (min)	15					

Projected (Build) Conditions
3: Fillmore Street & Ashburn Road

Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↖	
Traffic Vol, veh/h	0	51	0	441	305	0
Future Vol, veh/h	0	51	0	441	305	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-2	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	59	0	513	355	0

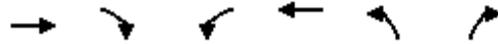
Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	355	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.3	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.1	-	-	-
Pot Cap-1 Maneuver	0	724	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	724	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 724	-
HCM Lane V/C Ratio	- 0.082	-
HCM Control Delay (s)	- 10.4	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.3	-

Projected (Build) Conditions
4: Bunning Road & Fillmore Street

Timing Plan: PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	302	39	11	391	32	0
Future Volume (vph)	302	39	11	391	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	12	12
Grade (%)	-2%			2%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.985					
Fl _t Protected				0.999	0.950	
Satd. Flow (prot)	1743	0	0	1754	1769	0
Fl _t Permitted				0.999	0.950	
Satd. Flow (perm)	1743	0	0	1754	1769	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	363			371	209	
Travel Time (s)	9.9			10.1	5.7	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	1%	3%	0%	0%	0%	0%
Adj. Flow (vph)	343	44	13	444	36	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	387	0	0	457	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	1.08	1.08	1.11	1.11	1.03	1.03
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.4%
ICU Level of Service	A
Analysis Period (min)	15

Projected (Build) Conditions
4: Bunning Road & Fillmore Street

Timing Plan: PM Peak Hour

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	302	39	11	391	32	0
Future Vol, veh/h	302	39	11	391	32	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	3	0	0	0	0
Mvmt Flow	343	44	13	444	36	0
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	11.4	12.9	9.3
HCM LOS	B	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	100%	0%	3%
Vol Thru, %	0%	89%	97%
Vol Right, %	0%	11%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	32	341	402
LT Vol	32	0	11
Through Vol	0	302	391
RT Vol	0	39	0
Lane Flow Rate	36	388	457
Geometry Grp	1	1	1
Degree of Util (X)	0.059	0.476	0.559
Departure Headway (Hd)	5.885	4.42	4.406
Convergence, Y/N	Yes	Yes	Yes
Cap	606	818	818
Service Time	3.943	2.444	2.43
HCM Lane V/C Ratio	0.059	0.474	0.559
HCM Control Delay	9.3	11.4	12.9
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.2	2.6	3.5

Projected (Build) Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: PM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	128	21	45	306	259	130
Future Volume (vph)	128	21	45	306	259	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	9	11	11
Grade (%)	-1%			0%	-1%	
Storage Length (ft)	175	0	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	65		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t		0.850			0.955	
Fl _t Protected	0.950			0.994		
Satd. Flow (prot)	1796	1546	0	1671	1751	0
Fl _t Permitted	0.950			0.994		
Satd. Flow (perm)	1796	1546	0	1671	1751	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	1247			1454	342	
Travel Time (s)	28.3			28.3	6.7	
Confl. Peds. (#/hr)		1	5			5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	2%	1%	0%
Adj. Flow (vph)	139	23	49	333	282	141
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	23	0	382	423	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	0.99	0.99	1.14	1.14	1.04	1.04
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.6%
Analysis Period (min)	15
	ICU Level of Service B

Projected (Build) Conditions
5: Township Line Road & Crossover Boulevard

Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	128	21	45	306	259	130
Future Vol, veh/h	128	21	45	306	259	130
Conflicting Peds, #/hr	0	1	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	175	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	0	-1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	5	0	2	1	0
Mvmt Flow	139	23	49	333	282	141

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	789	359	428	0	-	0
Stage 1	358	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Critical Hdwy	6.21	6.15	4.3	-	-	-
Critical Hdwy Stg 1	5.21	-	-	-	-	-
Critical Hdwy Stg 2	5.21	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	420	731	856	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	386	727	852	-	-	-
Mov Cap-2 Maneuver	386	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	762	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	1.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	852	-	386	727	-	-
HCM Lane V/C Ratio	0.057	-	0.36	0.031	-	-
HCM Control Delay (s)	9.5	0	19.5	10.1	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.6	0.1	-	-

Projected (Build) Conditions
6: Township Line Road & Gauge Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	2	60	0	3	4	357	60	5	335	9
Future Volume (vph)	4	0	2	60	0	3	4	357	60	5	335	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	13	12	12	12	9	9	12	12	11	11
Grade (%)		1%			0%			2%			3%	
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
Frt		0.955			0.994			0.981			0.996	
Flt Protected		0.968			0.954						0.999	
Satd. Flow (prot)	0	1748	0	0	1766	0	0	1615	0	0	1782	0
Flt Permitted		0.968			0.954						0.999	
Satd. Flow (perm)	0	1748	0	0	1766	0	0	1615	0	0	1782	0
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		409			494			369			2105	
Travel Time (s)		11.2			11.2			7.2			41.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	0%	3%	2%	2%	1%	0%
Adj. Flow (vph)	4	0	2	65	0	3	4	384	65	5	360	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	0	0	68	0	0	453	0	0	375	0
Enter Blocked Intersection	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	0.96	1.01	0.96	1.00	1.00	1.00	1.16	1.16	1.01	1.02	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	36.1%						ICU Level of Service A					
Analysis Period (min)	15											

Projected (Build) Conditions
6: Township Line Road & Gauge Street

Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	0	2	60	0	3	4	357	60	5	335	9
Future Vol, veh/h	4	0	2	60	0	3	4	357	60	5	335	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	0	-	-	2	-	-	3	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	0	2	2	2	0	3	2	2	1	0
Mvmt Flow	4	0	2	65	0	3	4	384	65	5	360	10

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	801	832	365	801	805	417	370	0	0	449	0	0
Stage 1	375	375	-	425	425	-	-	-	-	-	-	-
Stage 2	426	457	-	376	380	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.72	6.3	7.12	6.52	6.22	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	6.3	5.72	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.72	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3	4.018	3.1	3	4.018	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	324	291	714	337	316	672	896	-	-	841	-	-
Stage 1	725	604	-	692	586	-	-	-	-	-	-	-
Stage 2	676	553	-	738	614	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	319	287	714	333	312	672	896	-	-	841	-	-
Mov Cap-2 Maneuver	319	287	-	333	312	-	-	-	-	-	-	-
Stage 1	721	600	-	688	582	-	-	-	-	-	-	-
Stage 2	669	550	-	731	610	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.4		18.2		0.1		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	896	-	-	391	341	841	-	-
HCM Lane V/C Ratio	0.005	-	-	0.017	0.199	0.006	-	-
HCM Control Delay (s)	9	0	-	14.4	18.2	9.3	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0	-	-

Projected (Build) Conditions
 7: Township Line Road & Enter Only Site Driveway

Timing Plan: PM Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	431	3	0	388
Future Volume (vph)	0	0	431	3	0	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-3%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected						
Satd. Flow (prot)	1863	0	1834	0	0	1909
Flt Permitted						
Satd. Flow (perm)	1863	0	1834	0	0	1909
Link Speed (mph)	25		30			30
Link Distance (ft)	415		342			369
Travel Time (s)	11.3		7.8			8.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	3%	2%	2%	1%
Adj. Flow (vph)	0	0	468	3	0	422
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	471	0	0	422
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	1.00	1.00	1.01	1.01	0.98	0.98
Turning Speed (mph)	60	60		60	60	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.2%
Analysis Period (min)	15
	ICU Level of Service A

Projected (Build) Conditions
 7: Township Line Road & Enter Only Site Driveway

Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	0	0	431	3	0	388
Future Vol, veh/h	0	0	431	3	0	388
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	1	-	-	-3
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	2	2	1
Mvmt Flow	0	0	468	3	0	422

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	892	470	0	0	471	0
Stage 1	470	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	312	594	-	-	1091	-
Stage 1	629	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	312	594	-	-	1091	-
Mov Cap-2 Maneuver	312	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	662	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1091
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

APPENDIX G:

Auxiliary Turn Lane Warrant Analysis



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="3/19/2025"/> Conducted By: <input type="text" value="PG"/> Checked By: <input type="text"/> Agency/Company Name: <input type="text" value="TPD"/>
Intersection & Approach Description: <input type="text" value="Township Line Road and Full Access Site Driveway"/>	
Analysis Period: <input type="text" value="Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;"> Type of Analysis: <input type="text" value="Left Turn Lane"/> </div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	1	2.0%	2	Advancing Volume: <input type="text" value="354"/> Opposing Volume: <input type="text" value="336"/> Left Turn Volume: <input type="text" value="2"/>
	Through	-	341	4.0%	348	
	Right	Yes	4	0.0%	4	
Opposing	Left	Yes	4	0.0%	4	% Left Turns in Advancing Volume: <input type="text" value="0.56%"/>
	Through	-	298	4.0%	304	
	Right	Yes	27	2.0%	28	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	4	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	298	4.0%	N/A	
	Right	-	27	2.0%	N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="No"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="2"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		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
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: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																									

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="3/19/2025"/> Conducted By: <input type="text" value="PG"/> Checked By: <input type="text"/> Agency/Company Name: <input type="text" value="TPD"/>
Intersection & Approach Description: <input type="text" value="Township Line Road and Full Access Site Driveway"/>	
Analysis Period: <input type="text" value="Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	5	2.0%	6	Advancing Volume: <input type="text" value="352"/> Opposing Volume: <input type="text" value="428"/> Left Turn Volume: <input type="text" value="6"/>
	Through	-	335	1.0%	337	
	Right	Yes	9	0.0%	9	
Opposing	Left	Yes	4	0.0%	4	% Left Turns in Advancing Volume: <input type="text" value="1.70%"/>
	Through	-	357	3.0%	363	
	Right	Yes	60	2.0%	61	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	4	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	357	3.0%	N/A	
	Right	-	60	2.0%	N/A	

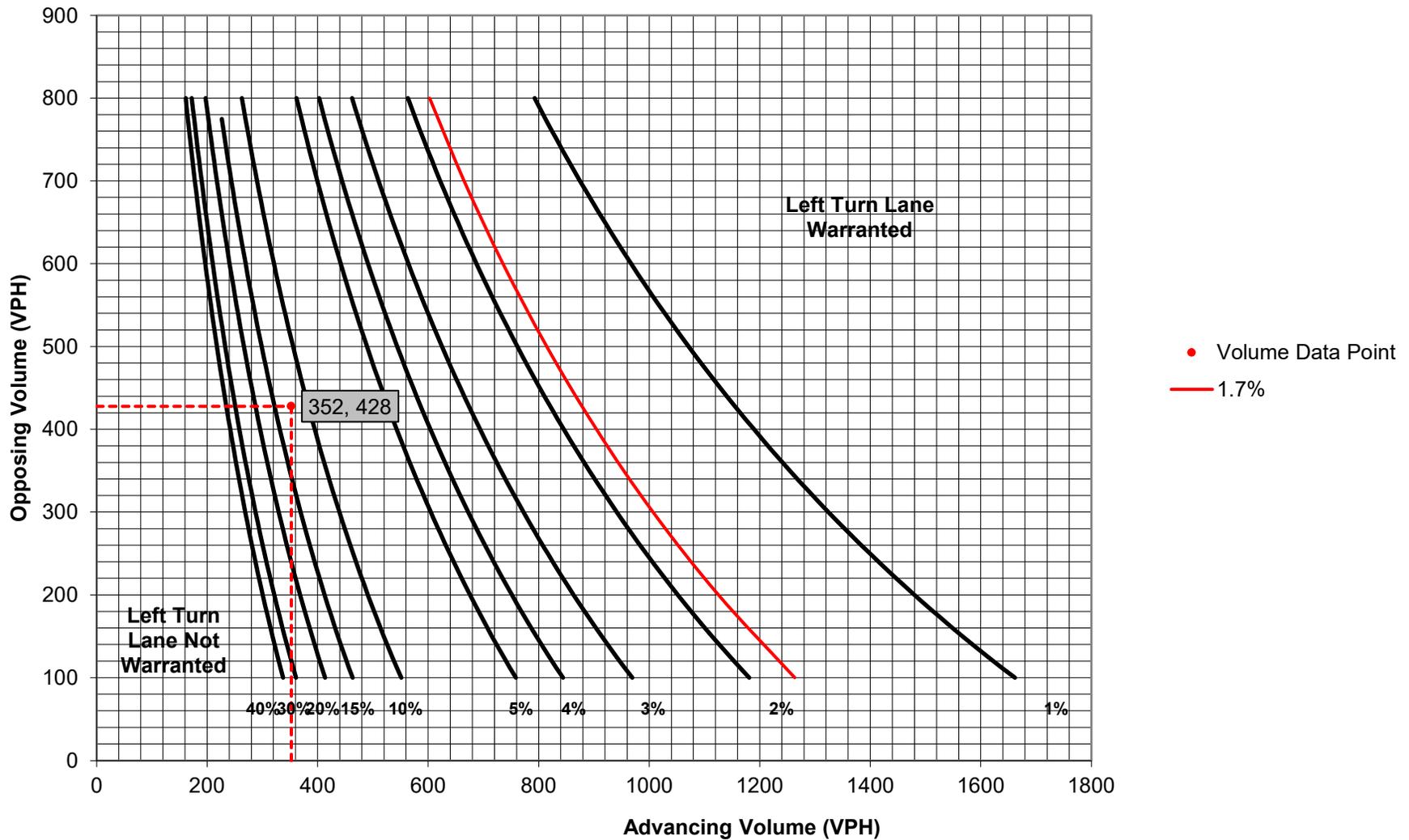
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="No"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="6"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																									
PennDOT Publication 46, Exhibit 11-6																																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="2" style="text-align: left;">Type of Traffic Control</th> <th colspan="6" style="text-align: center;">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2" style="text-align: center;">25-35</th> <th colspan="2" style="text-align: center;">40-45</th> <th colspan="2" style="text-align: center;">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="7" style="text-align: center;">Turn Demand Volume</th> </tr> <tr style="background-color: #FFDAB9;"> <th></th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </tbody> </table>		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
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: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																										
Additional Findings: <input type="text" value="N/A"/>																																										
Additional Comments / Justifications: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																										

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: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="3/19/2025"/> Conducted By: <input type="text" value="PG"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="TPD"/>
Intersection & Approach Description: <input type="text" value="Township Line Road and Full Access Site Driveway"/>	
Analysis Period: <input type="text" value="Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;"> Type of Analysis: <input type="text" value="Right Turn Lane"/> </div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	1	2.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	341	4.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	Yes	4	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	Yes	4	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	298	4.0%	N/A		
	Right	Yes	27	2.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	4	0.0%	4	Advancing Volume: <input type="text" value="336"/>	
	Through	-	298	4.0%	304		Right Turn Volume: <input type="text" value="28"/>
	Right	-	27	2.0%	28		

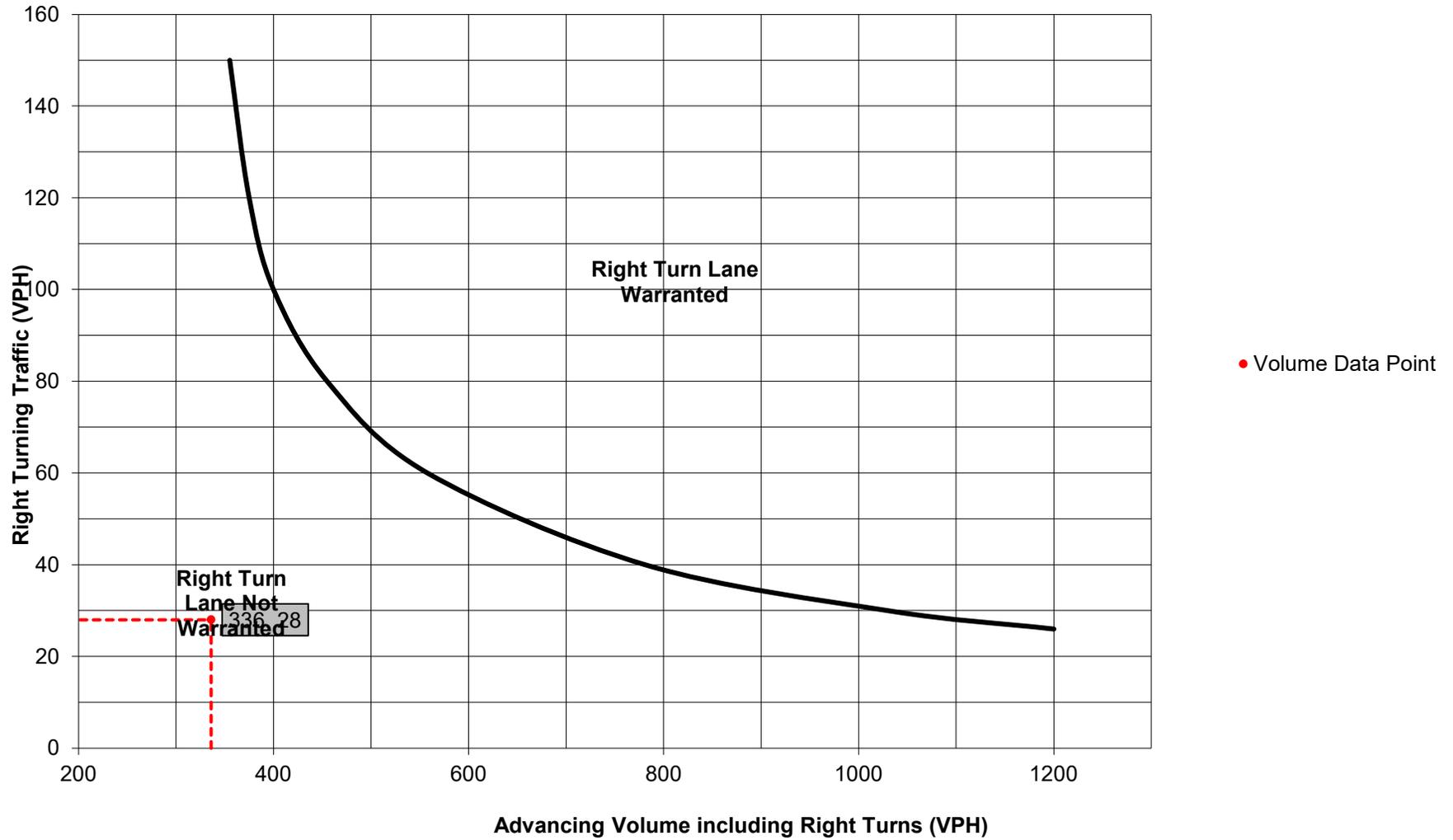
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="28"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text" value=""/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		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
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: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																									

**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: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="3/19/2025"/> Conducted By: <input type="text" value="PG"/> Checked By: <input type="text"/> Agency/Company Name: <input type="text" value="TPD"/>
Intersection & Approach Description: <input type="text" value="Township Line Road and Full Access Site Driveway"/>	
Analysis Period: <input type="text" value="Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;"> Type of Analysis: <input type="text" value="Right Turn Lane"/> </div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	5	2.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Opposing Volume: <input type="text" value="N/A"/> Left Turn Volume: <input type="text" value="N/A"/>
	Through	-	335	1.0%	N/A	
	Right	Yes	9	0.0%	N/A	
Opposing	Left	Yes	4	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>
	Through	-	357	3.0%	N/A	
	Right	Yes	60	2.0%	N/A	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	4	0.0%	4	Advancing Volume: <input type="text" value="428"/> Right Turn Volume: <input type="text" value="61"/>
	Through	-	357	3.0%	363	
	Right	-	60	2.0%	61	

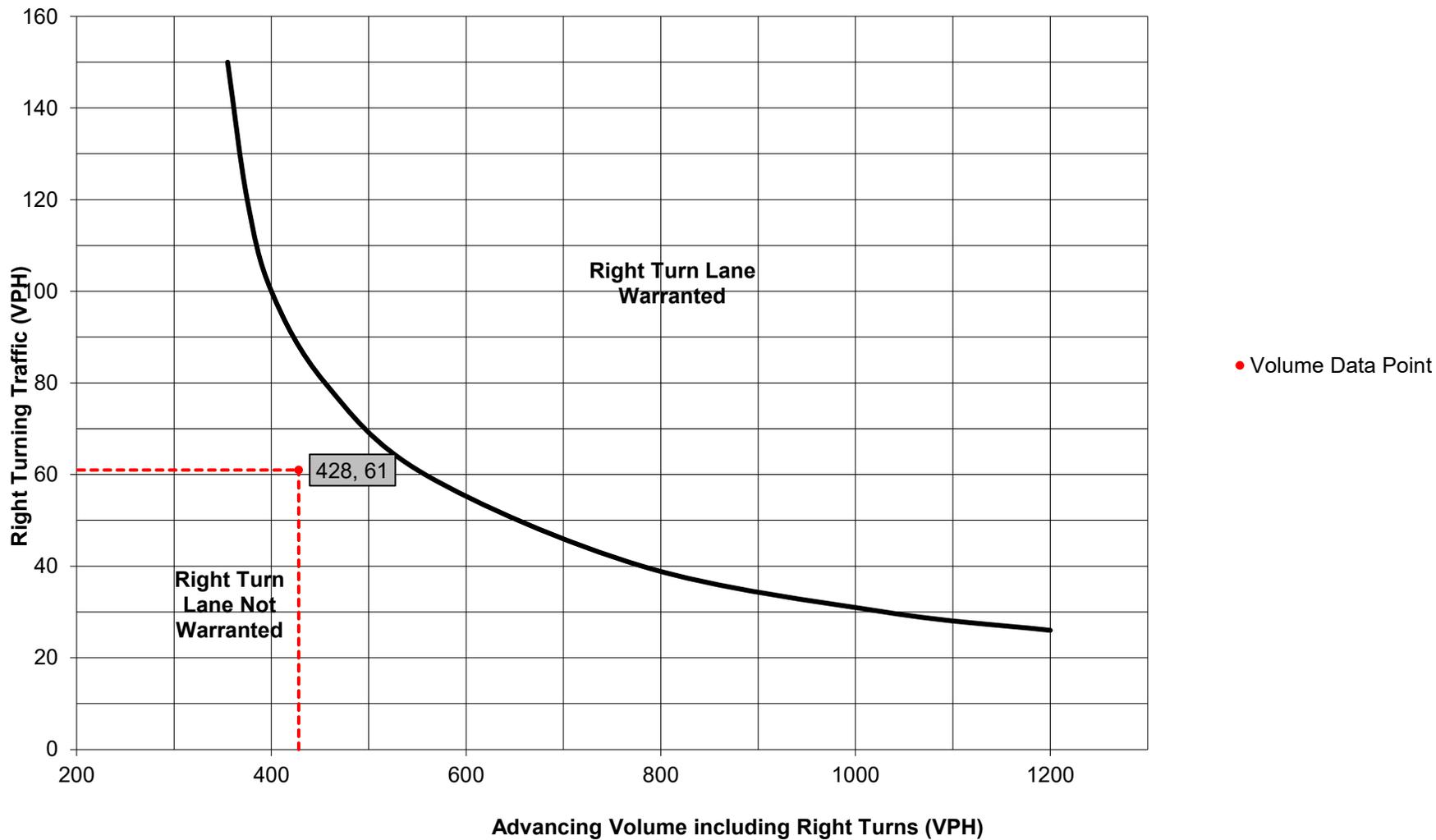
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/> Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="61"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		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
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: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																									

**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: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="3/19/2025"/> Conducted By: <input type="text" value="PG"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="TPD"/>
Intersection & Approach Description: <input type="text" value="Township Line Road and Enter Only Site Driveway"/>	
Analysis Period: <input type="text" value="Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;"> Type of Analysis: <input type="text" value="Left Turn Lane"/> </div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	2.0%	0	Advancing Volume: <input type="text" value="428"/> Opposing Volume: <input type="text" value="356"/> Left Turn Volume: <input type="text" value="0"/>
	Through	-	419	4.0%	428	
	Right	No	0	0.0%	N/A	
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="0.00%"/>
	Through	-	346	4.0%	353	
	Right	Yes	2	2.0%	3	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	346	4.0%	N/A	
	Right	-	2	2.0%	N/A	

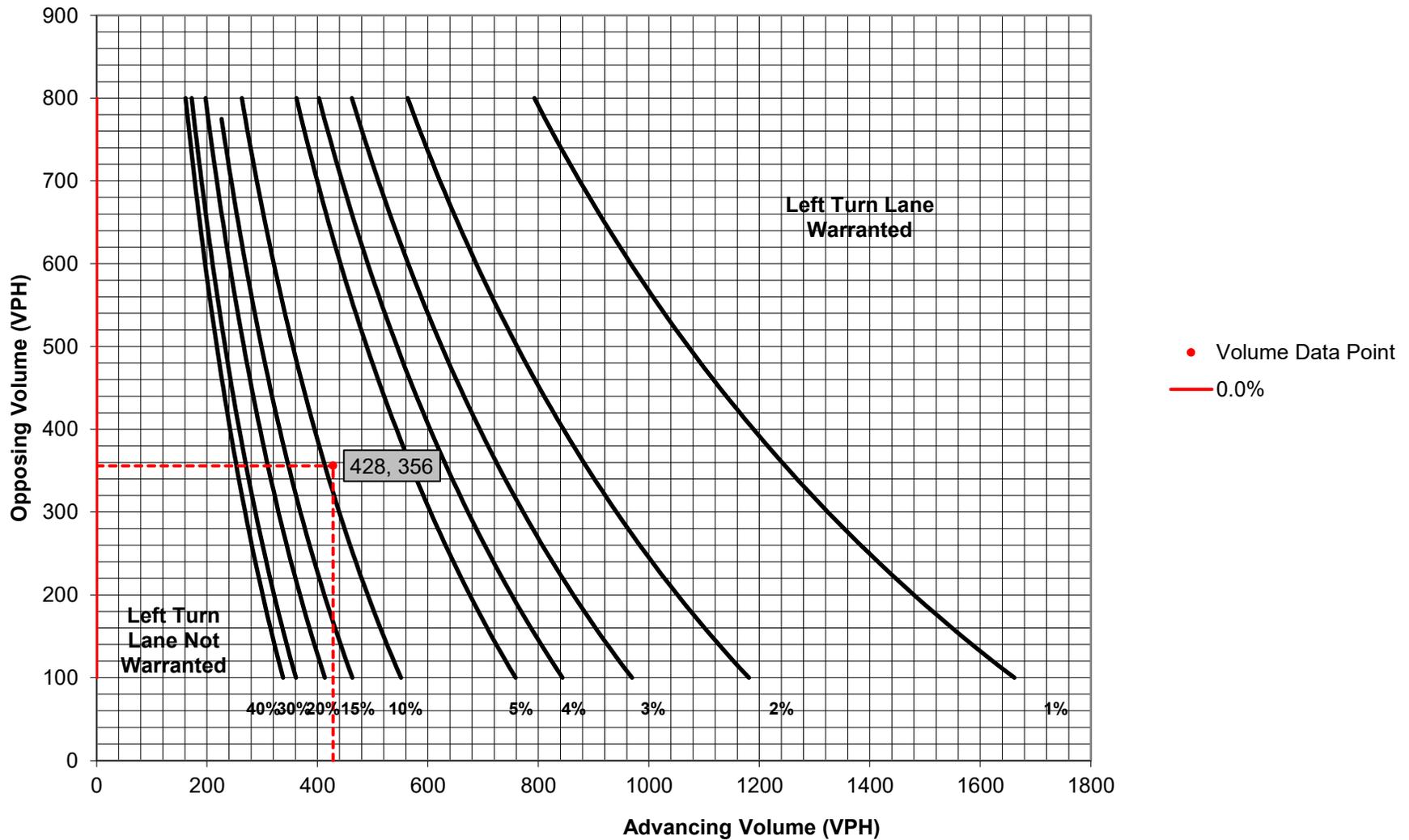
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="#DIV/0!"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="0"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text" value=""/>	Average # of Vehicles/Cycle: <input type="text" value="#DIV/0!"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		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
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: <input type="text" value="#DIV/0!"/> Feet Condition B: <input type="text" value="#DIV/0!"/> Feet Condition C: <input type="text" value="#DIV/0!"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="#DIV/0!"/> Feet																																									
Additional Findings: <input type="text" value="#DIV/0!"/>																																									
Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text"/>																																									

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: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="3/19/2025"/> Conducted By: <input type="text" value="PG"/> Checked By: <input type="text"/> Agency/Company Name: <input type="text" value="TPD"/>
Intersection & Approach Description: <input type="text" value="Township Line Road and Enter Only Site Driveway"/>	
Analysis Period: <input type="text" value="Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	2.0%	0	Advancing Volume: <input type="text" value="390"/> Opposing Volume: <input type="text" value="442"/> Left Turn Volume: <input type="text" value="0"/>
	Through	-	388	1.0%	390	
	Right	No	0	0.0%	N/A	
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="0.00%"/>
	Through	-	431	3.0%	438	
	Right	Yes	3	2.0%	4	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	431	3.0%	N/A	
	Right	-	3	2.0%	N/A	

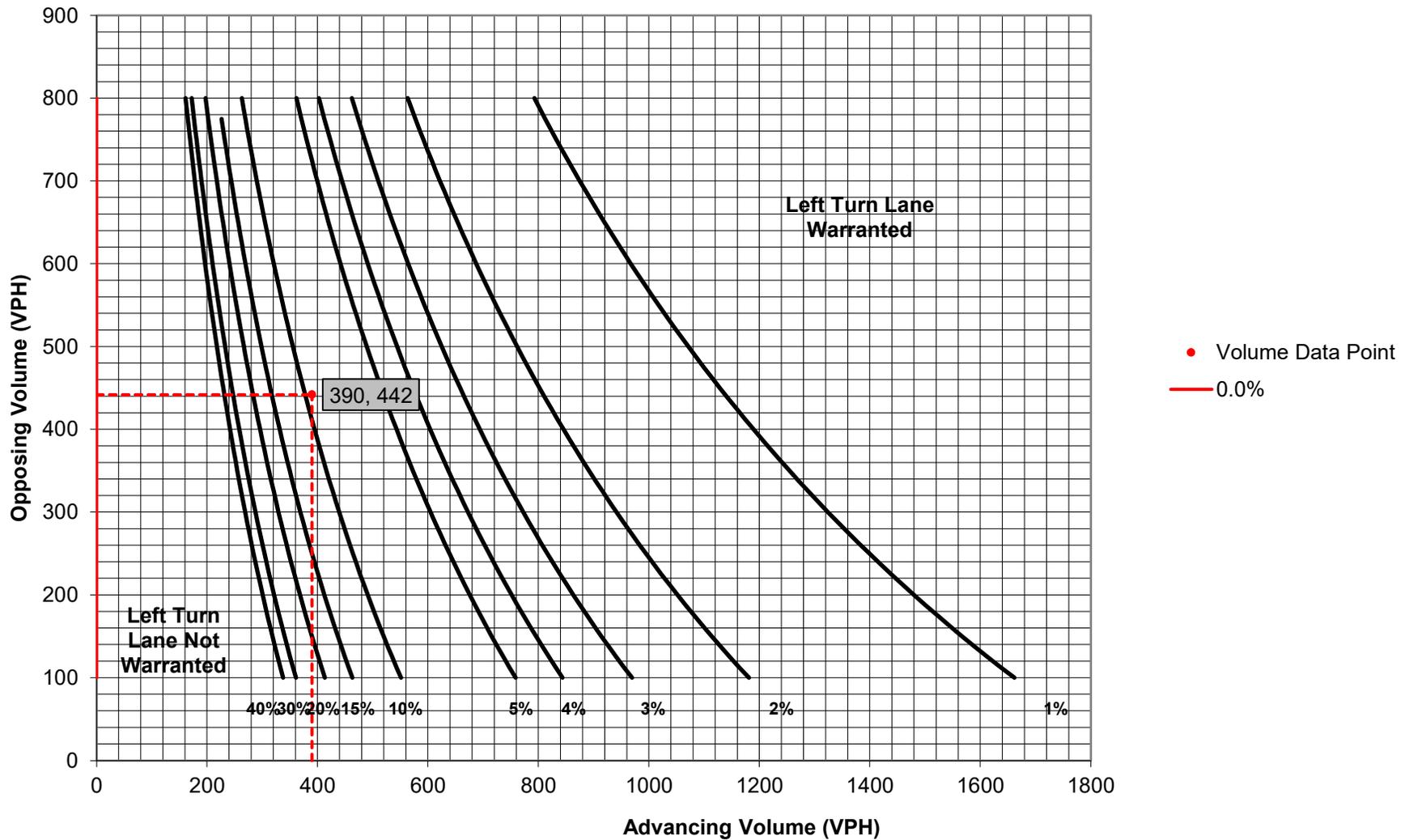
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="#DIV/0!"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="0"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="#DIV/0!"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		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
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: <input type="text" value="#DIV/0!"/> Feet Condition B: <input type="text" value="#DIV/0!"/> Feet Condition C: <input type="text" value="#DIV/0!"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="#DIV/0!"/> Feet																																									
Additional Findings: <input type="text" value="#DIV/0!"/>																																									
Additional Comments / Justifications: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																									

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: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="3/19/2025"/> Conducted By: <input type="text" value="PG"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="TPD"/>
Intersection & Approach Description: <input type="text" value="Township Line Road and Enter Only Site Driveway"/>	
Analysis Period: <input type="text" value="Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;"> Type of Analysis: <input type="text" value="Right Turn Lane"/> </div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	2.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	419	4.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	No	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	346	4.0%	N/A		
	Right	Yes	2	2.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="356"/>	
	Through	-	346	4.0%	353		Right Turn Volume: <input type="text" value="3"/>
	Right	-	2	2.0%	3		

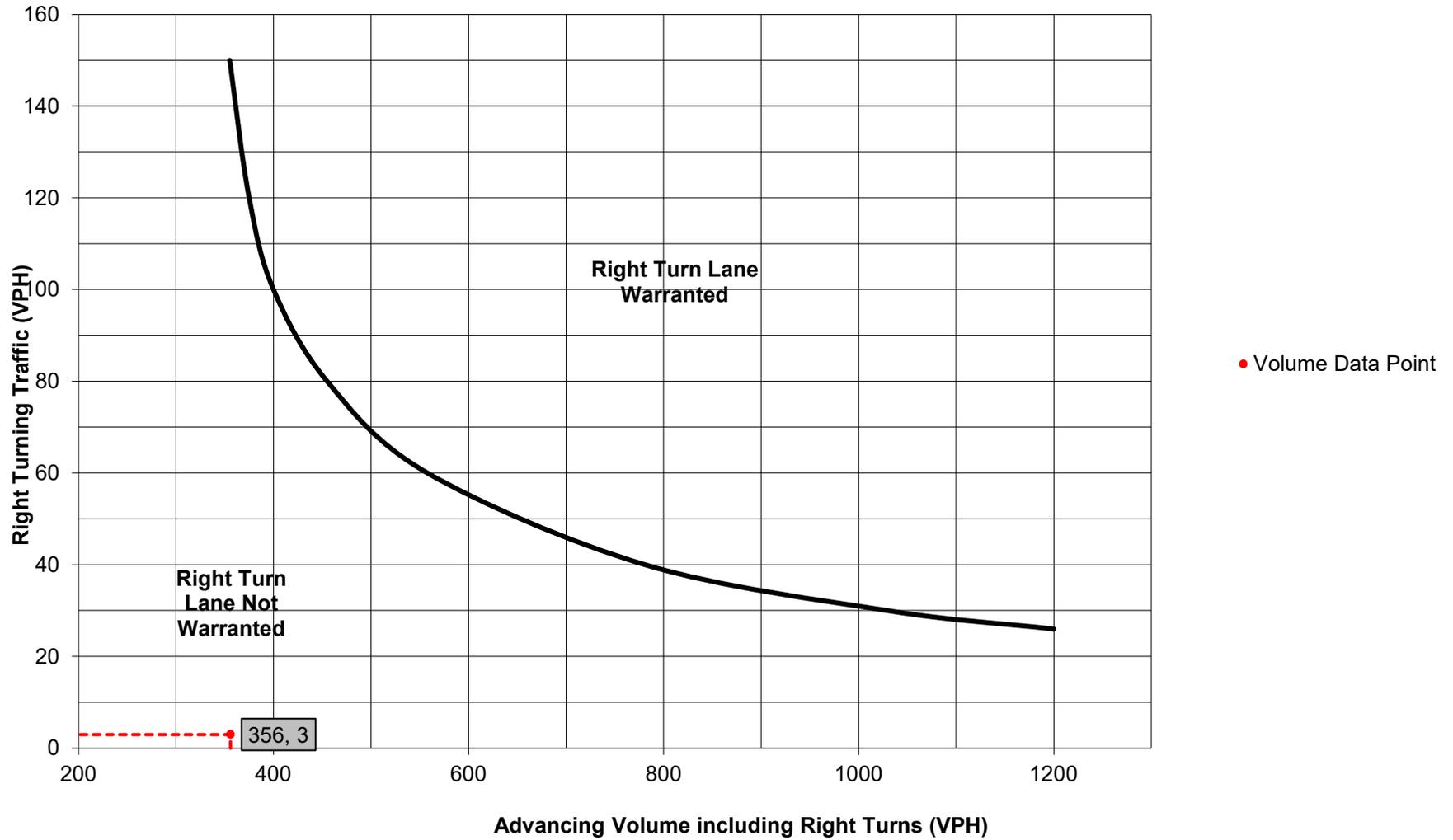
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="3"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text" value=""/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		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
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: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																									

**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: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="3/19/2025"/> Conducted By: <input type="text" value="PG"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="TPD"/>
Intersection & Approach Description: <input type="text" value="Township Line Road and Enter Only Site Driveway"/>	
Analysis Period: <input type="text" value="Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 2px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	2.0%	N/A	Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	388	1.0%	N/A		Opposing Volume: <input type="text" value="N/A"/>
	Right	No	0	0.0%	N/A		Left Turn Volume: <input type="text" value="N/A"/>
Opposing	Left	No	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	
	Through	-	431	3.0%	N/A		
	Right	Yes	3	2.0%	N/A		

Right Turn Lane Volume Calculations							
Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="442"/>	
	Through	-	431	3.0%	438		Right Turn Volume: <input type="text" value="4"/>
	Right	-	3	2.0%	4		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 9"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="4"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text" value=""/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="2">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th rowspan="2"></th> <th colspan="6">Turn Demand Volume</th> </tr> <tr style="background-color: #FFDAB9;"> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		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
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: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>																																									

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

