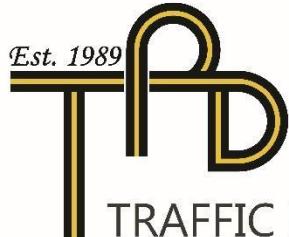


February 28, 2020
TPD# CHHN.00013



TRAFFIC PLANNING AND DESIGN, INC.



Transportation Impact Study

West Winding Residential Development

Upper Allen Township, Cumberland County, PA

For Submission To:

Upper Allen Township and PennDOT District 8-0

WEST WINDING RESIDENTIAL SUBDIVISION TRANSPORTATION IMPACT STUDY

FOR SUBMISSION TO:

Upper Allen Township, Cumberland County, PA

Prepared For:

Charter Homes and Neighborhoods

1190 Dillerville Road
Lancaster, PA 17601

February 28, 2020

TPD # CHHN.00013



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EXECUTIVE SUMMARY

The purpose of this study is to examine the potential traffic impact associated with the proposed West Winding Hill Residential Development on the roadway network in Upper Allen Township, Cumberland County, PA. Based on this evaluation, the following conclusions were reached:

1. The study area intersections included in this TIS are as follows:
 - » W. Winding Hill Road (SR 2010) [east leg] and S. York Street (SR 2013);
 - » W. Winding Hill Road (SR 2010) [west leg] and S. York Street (SR 2013);
 - » W. Winding Hill Road (SR 2010)/E. Winding Hill Road (Twp) and S. Market Street (SR 0114);
 - » W. Winding Hill Road (SR 2010) and Proposed Site Driveway;
 - » S. York Street (SR 2013) and Proposed Site Driveway.
2. The project site is located on the northeastern quadrant of the intersection of W. Winding Hill Road (SR 2010) and S. York Street (SR 2013). The proposed site will consist of 168 single-family detached dwelling units.
3. Access to the site is proposed via two full-access driveways: one (1) full-movement driveway to W. Winding Hill Road (SR 2010) and one (1) full-movement driveway to S. York Street (SR 2013).
4. All proposed driveway location sight distances will exceed the minimum Intersection and Safe Stopping Sight Distance (SSSD) criteria.
5. Upon full build-out, the proposed development is expected to generate 124 new vehicle-trips during the weekday A.M. peak hour and 167 new vehicle-trips during the weekday P.M. peak hour.
6. Under the 2028 and 2033 projected conditions, all approaches and turning movements at the site driveway intersections with the external roadway network will operate at LOS B or better during weekday A.M. and P.M. peak hours.
7. All overall intersection levels of service (ILOS) will operate at an acceptable ILOS B or better during the 2028 and 2033 projected condition scenarios. All levels of service at the study area intersection comply with the requirement outlined in PennDOT's TIS Guidelines and Upper Allen Township standards.
8. Traffic Planning and Design Inc. (TPD) recommends the following roadway improvements as outlined at the study area intersections:

W. Winding Hill Road (SR 2010) & Proposed Site Driveway

- » The proposed driveway will be designed and classified as a low-volume local roadway per PennDOT standards;
- » Provide a stop sign (PennDOT designation R1-1) to control exiting traffic.

S. York Street (SR 2013) & Proposed Site Driveway

- » The proposed driveway will be designed and classified as a low-volume local roadway per PennDOT standards;
- » Provide a stop sign (PennDOT designation R1-1) to control traffic.

As part of PennDOT's HOP process, the applicant will coordinate and fund the implementation of the recommended roadway improvements. The improvements will be designed and constructed in compliance with ADA requirements to the extent feasible where applicable, unless otherwise directed or approved by the Department. Preliminary construction costs have not been determined at this time.

9. 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	Peak Hour	Existing	Opening Year 2028			Design Year 2033			Meets LOS Requirements?
			Base	Projected	Projected ¹	Base	Projected	Projected ¹	
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – East Leg	AM	A (6.8)	A (7.0)	A (7.1)	--	A (7.2)	A (7.3)	--	Yes
	PM	A (6.5)	A (6.7)	A (6.7)	--	A (6.8)	A (6.8)	--	Yes
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – West Leg	AM	A (1.0)	A (1.1)	A (1.1)	--	A (1.1)	A (1.1)	--	Yes
	PM	A (1.3)	A (1.3)	A (1.4)	--	A (1.3)	A (1.4)	--	Yes
S. Market Street (SR 0114) & W. Winding Hill Road (SR 2010)/ E. Winding Hill Road (Twp)	AM	B (15.5)	B (15.7)	B (18.9)	--	B (16.3)	B (19.6)	--	Yes
	PM	B (13.3)	B (14.4)	B (17.3)	--	B (15.2)	B (17.3)	--	Yes
W. Winding Hill Road (SR 2010) & Proposed Site Driveway	AM	--	--	A (1.5)	--	--	A (1.5)	--	Yes
	PM	--	--	A (1.0)	--	--	A (1.0)	--	Yes
S. York Street (SR 2013) & Proposed Site Driveway	AM	--	--	A (0.6)	--	--	A (0.6)	--	Yes
	PM	--	--	A (0.7)	--	--	A (0.6)	--	Yes

Base = No-Build scenario

Projected = Build scenario

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

¹ = Projected conditions with implementation of recommended improvements

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Study (TIS) for the proposed West Winding Hill Residential Development in Upper Allen Township, Cumberland County, Pennsylvania. The project site is located on the northeastern quadrant of the intersection of W. Winding Hill Road (SR 2010) and S. York Street (SR 2013), as shown in **Figure 1**. The land use context of the site and surrounding area is defined as Suburban Neighborhood in PennDOT's Publication 10X (DM-1X), Appendix B. As shown in **Figure 2**, the proposed site will consist of 168 single-family detached dwelling units.

This report has been prepared in accordance with PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated July, 2017.

Site Access Locations

The proposed site will be served by two full-movement driveways: one (1) full movement driveway to W. Winding Hill Road (SR 2010) and one (1) full movement driveway to S. York Street (SR 2013).

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**. Study area photographs are provided in **Appendix A**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	Ownership	Functional Classification/Roadway Type	Predominant Directional Orientation	Average Daily Traffic ¹	Posted Speed Limit
W. Winding Hill Road	State (SR 2010)	Local Road	East/West	1,142	35/45 ² mph
E. Winding Hill Road	Township	Local Road	East/West	--	25 mph
S. York Street	State (SR 2013)	Local Road	North/South	4,811	35 mph
S. Market Street	State (SR 0114)	Minor Arterial	North/South	13,623	40 mph

¹Obtained from PennDOT TIRe website

²west of S. York Street (SR 2013)

Land Use Context

In PennDOT Publication 10X (DM-1X), Appendix B, there is guidance pertaining to defining the land use context(s) for a given area. Based upon review of this information, the land uses surrounding the proposed site best fits the Suburban Neighborhood designation, as described below:

Suburban Neighborhood, "predominately low density residential communities with houses typically arranged along a curvilinear system of streets with limited connectivity to regional road networks. Neighborhoods can include community facilities (schools, churches, recreation) and some small businesses or offices.

Roadway Type

In PennDOT Publication 10X (DM-1X), Appendix B, there is guidance pertaining to defining the transportation context(s) for a given area. Comparing the existing condition roadway characteristics to the various options presented in Publication 10X, the study area roadways best fit the following categories, as described below:

Community Arterial, traffic volumes of 5,000 to 25,000 vehicles per day, intersection spacing of 300 to 1,320 feet, a desired operating speed of 25-55 mph, and a description as follows: "*often classified as Minor Arterial in traditional classification but may include road segments classified as Principal Arterial.*"

- S. Market Street (SR 0114)

Neighborhood Collector, traffic volumes of <6,000 vehicles per day, intersection spacing of 300 to 660 feet, a desired operating speed of 25-35 mph, and a description as follows: "*similar in appearance to local roadways. Typically classified as Minor Collector.*"

- S. York Street (SR 2013);
- W. Winding Hill Road (SR 2010).

Local Road, traffic volumes of <3,000 vehicles per day, intersection spacing of 000 to 660 feet, a desired operating speed of 20-30 mph.

- E. Winding Hill Road.

Bicycle and Pedestrian Facilities

Based on observations during field visits at the study area intersections, paved shoulders currently accommodate pedestrian and bicycle traffic in the vicinity of the proposed development. The traffic signal at the intersection of W. Winding Hill Road (SR 2010)/E. Winding Hill Road and S. Market Street (SR 0114) is equipped with pedestrian crossing signals, pedestrian push buttons or pedestrian crosswalks on the south and east legs of the intersection. Pedestrians are currently restricted via signage on the north and west legs of the intersection. Pedestrian and Bicycle accommodations will be evaluated at the site driveway intersections during the design phase of this application. Sidewalks will be provided throughout the internal roadways on-site.

Mass Transit Facilities

Mass transit is not available in the vicinity of the proposed development.

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 01/01/2014 and ending 12/31/2018. 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 tabulation of the reportable crashes at the study area intersections are being provided under separate cover, as is required by PennDOT. Based on review of the crash data, no crash patterns were identified that are deemed correctable.

EXISTING TRAFFIC CONDITIONS

Manual Turning Movement Counts

Manual traffic counts were conducted on 15-minute intervals during the weekday morning (6:30 to 9:00 A.M.) and weekday evening (3:30 to 6:00 P.M.) peak periods. Data pertaining to heavy vehicles, pedestrians and transit vehicles were observed during the manual counts. Peak hours and count dates for the study area intersections are identified in **Table 2**.

TABLE 2
MANUAL TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour ¹
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – West Leg	Tuesday, October 16, 2018	Weekday A.M.	7:15 to 8:15 A.M.
		Weekday P.M.	4:30 to 5:30 P.M.
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – East Leg	Tuesday, October 16, 2018	Weekday A.M.	7:15 to 8:15 A.M.
		Weekday P.M.	4:30 to 5:30 P.M.
S. Market Street (SR 0114) & W. Winding Hill Road (SR 2010)/ E. Winding Hill Road (Twp)	Tuesday, February 4, 2020	Weekday A.M.	7:30 to 8:30 A.M.
		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 **Figure 3**. Manual traffic count data sheets are provided in **Appendix B**.

Average Daily Traffic

The existing Average Daily Traffic (ADT) volumes are based data obtained from PennDOT's Traffic Information Repository (TiRe) website. The traffic volume map contained on the PennDOT TiRe website was reviewed in February 2020 to determine the Average Daily Traffic (ADT) for a typical weekday along the State-maintained roadways in the vicinity of the proposed site.

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 2018 to July 2019 obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 0.80% per year in Cumberland County for urban non-interstate roadways. **It should be noted that the August 2018 to July 2019 rate was used in lieu of the most current rate (0.74%) since the initial TIS prepared for a Township submission assumed the higher (0.80%) per year rate.** As such, the background growth factor was applied annually to the existing volumes to determine the 2028 and 2033 base condition traffic volumes.

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 opening year (2028) and

design year (2033) of the proposed development. The following nearby planned developments were specifically included in this study:

1225 S. Market Street Development is a proposed warehouse development along S. Market St (SR 0114), north of Cumberland Parkway. As part of this development a traffic signal is being installed at the intersection of S. Market St (SR 0114)/W. Winding Hill Road (SR 2010). Trip distributions for this development were developed based on data provided in Grove Miller's *Traffic Impact Study for the 1225 S. Market Street Development*, last revised February 2017.

Legacy Park is a proposed mixed-use development along S. Market St (SR 0114), just south of Shepherdstown Road. Trip distributions for this development were developed based on data provided in the *Legacy Park Transportation Impact Study*, prepared by TPD and last revised February 2015.

S. Market Street office building is a proposed office development along S. Market Street at the intersection of S. Market Street (SR 0114)/Gettysburg Pike. Trip distributions for this development were developed based on data provided in the S Market Street Transportation Impact Study, prepared by TPD and last revised July 2019.

The additional traffic volumes due to background growth and background developments were added to the existing traffic data to produce 2028 and 2033 base (no-build) condition traffic volumes. Base condition volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figure 4** for the 2028 opening year conditions and **Figure 5** for the 2033 design year conditions. Trip distributions for the background developments are provided in **Appendix D**.

SCHEDULED ROADWAY IMPROVEMENTS

Programmed Improvements

Based on a review of the Pennsylvania Transportation Improvement Program (TIP) there are no programmed roadway improvements in the vicinity of the proposed site.

PROPOSED SITE ACCESS

The proposed site will be served by two full-movement driveways: one (1) full-movement driveway to W. Winding Hill Road (SR 2010) and one (1) full movement driveway to S. York Street (SR 2013).

Sight Distance Analysis

A sight distance analysis was prepared for the proposed site driveway intersections. In general, recommended safe sight distances depend upon the posted speed limit and roadway grades. AASHTO's intersection sight distance standard, which is identified Chapter 9.5 of the "A Policy on Geometric Design of Highways and Streets, 2011 6th Edition, was evaluated at the proposed local road intersections. In addition, measured sight distances 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

Tables 3 and 4 show the measured, intersection, acceptable (SSSD), and required sight distances at the site driveways for vehicles entering and exiting the site.

TABLE 3
SIGHT DISTANCE ANALYSIS
SITE DRIVEWAY TO W. WINDING HILL ROAD (SR 2010)

	Direction	Speed	Grade ¹	Sight Distances (feet)		
				ISD	SSSD	EXIST
Exiting Movements	To the left	35 mph	0%	386	249	500+
	To the right	35 mph	-1%	386	252	500+
Entering Left Turns	Approaching same direction	35 mph	-1%	--	252	500+
	Approaching opposite direction	35 mph	0%	285	249	500+

ISD = AASHTO Intersection Sight Distance

1 = Roadway Grade Approaching Driveway

SSSD = PennDOT Acceptable Sight Distance

EXIST = Existing (measured) Sight Distance

TABLE 4
SIGHT DISTANCE ANALYSIS
SITE DRIVEWAY TO S. YORK STREET (SR 2013)

	Direction	Speed	Grade ¹	Sight Distances (feet)		
				ISD	SSSD	EXIST
Exiting Movements	To the left	35 mph	-1%	386	252	500+
	To the right	35 mph	+1%	386	245	500+
Entering Left Turns	Approaching same direction	35 mph	+1%	--	245	500+
	Approaching opposite direction	35 mph	-1%	285	252	500+

ISD = AASHTO Intersection Sight Distance

1 = Roadway Grade Approaching Driveway

SSSD = PennDOT Acceptable Sight Distance

EXIST = Existing (measured) Sight Distance

As shown in **Tables 3 and 4** above, the measured sight distances at the site driveways exceed applicable ISD and SSSD criteria.

TRIP GENERATION

The trip generation rates for the proposed residential development were obtained from the manual *Trip Generation*, Tenth Edition, 2017, an Institute of Transportation Engineers (ITE) Informational Report. The statistics in *Trip Generation* are empirical data based on more than 4,800 trip generation studies. The data are

categorized by Land Use Codes, with total vehicular trips for a given land use estimated using an independent variable and statistically generated rates or equations.

For the proposed residential development, Land Use Code 210 (Single-Family Detached 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 the rates/equations and directional percentages for the analyzed time periods.

TABLE 5
ITE TRIP GENERATION DATA

Land Use	ITE #	Time Period	Equations/Rates	Entering %	Exiting %
Single-Family Detached Housing	210	Average Weekday	$\ln(T) = 0.92*\ln(X)+2.71$	50%	50%
		Weekday A.M. Peak Hour	$T = 0.71*(X)+4.80$	25%	75%
		Weekday P.M. Peak Hour	$\ln(T) = 0.96*\ln(X)+0.20$	63%	37%

T = number of site-generated vehicular trips

X = independent variable (dwelling units)

The calculated trip generation for the proposed development is shown in **Table 6**.

TABLE 6
TRIP GENERATION SUMMARY

Time Period	West Winding Hill Subdivision		
	Total	Enter	Exit
Average Weekday	1677	838	838
A.M. Peak Hour	124	31	93
P.M. Peak Hour	167	105	62

Based on the trip generation analysis summarized in **Table 6**, the proposed development will generate approximately 124 new trips during the weekday A.M. peak hour, and 167 new trips during the weekday P.M. peak hour at full build-out.

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 and a gravity model analysis based on where existing residents within the area work. The new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 7**.

Note, the trip distribution methodologies and calculations were approved by PennDOT (via email on 2/19/2020) and the Township during the TIS scoping process.

TABLE 7
TRIP DISTRIBUTION PERCENTAGES

Assignment (To/From)	via	Distribution Percentage
To/From East	E. Winding Hill Road (Twp)	40%
To/From West	W. Winding Hill Road (SR 2010)	5%
To/From North	S. York Street (SR 2013)	20%
	S. Market Street (SR 0114)	20%
To/From South	S. York Street (SR 2013)	10%
	S. Market Street (SR 0114)	5%

The assignment of site-generated trips for the proposed development during the weekday A.M. and P.M. peak hours are shown in **Figure 6**. The trip distribution and assignment percentage information is included in **Appendix C**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed development were added to the 2028 and 2033 base (no-build) condition traffic volumes to develop 2028 and 2033 projected (build) condition traffic volumes.

Projected condition traffic volumes for the opening year of 2028 for the weekday A.M. and P.M. peak hours are shown in **Figure 7**. Projected condition traffic volumes for the design year of 2033 for the weekday A.M. and P.M. peak hours are shown in **Figure 8**. Traffic volume development worksheets are contained in **Appendix C**.

DRIVEWAY CLASSIFICATION

Driveways intersecting state roads are classified in the Pennsylvania Code, Title 67, Chapter 441. Low volume driveways are used by 25 to 750 vehicles per day. A medium volume driveway is used by 750 to 1500 vehicles per day. High volume driveways are used by more than 1500 vehicles per day. Based on the anticipated site trip generation and the assignment of site traffic, the classifications of the site driveways intersecting state roads are listed in **Table 8**.

TABLE 8
DRIVEWAY CLASSIFICATIONS

State Road	Driveway	Weekday Trips	Weekday Vehicles	Driveway Type
S. York St. (SR 2013)	Full-Movement	503	251	Low Volume
W. Winding Hill Road (SR 2010)	Full-Movement	1,174	587	Low Volume

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

LEVELS OF SERVICE FOR AN INTERSECTION

For analysis of intersections, level of service is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS criteria is stated in terms of control delay per vehicle

for a one-hour analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The criteria are shown in **Table 9**. 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 9
LEVEL OF SERVICE CRITERIA
UN SIGNALIZED AND SIGNALIZED INTERSECTIONS¹

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

¹Obtained 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 P.M. peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the *Highway Capacity Manual* (HCM) 6th Edition using *Synchro 10* software, a Trafficware product.

The following conditions were analyzed, as applicable:

- » Existing conditions;
- » 2028 Base conditions (Build-out year without development);
- » 2028 Projected conditions (Build-out year with development);
- » 2033 Base conditions (Design year without development);
- » 2033 Projected conditions (Design year with development).

The following items should be noted with respect to the capacity analyses:

- » The Pennsylvania default values for the suburban land use context contained in Chapter 10 of PennDOT's Publication 46 were utilized for the base saturation flow rate, start-up lost time, extension of effective green time and number of left turn sneakers, at all signalized intersections.
- » The Pennsylvania default values for the suburban land use context contained in Chapter 10 of PennDOT's Publication 46 were utilized for the base critical headway and base follow-up headways at unsignalized intersections.

In addition, capacity analyses were conducted at the proposed site driveway intersections under the 2028 and 2033 projected conditions. The capacity analysis worksheets are included in **Appendix E**. The PennDOT-approved signal plans are included in **Appendix G**.

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 July, 2017 contain the following criteria regarding levels of service:

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

LEVELS OF SERVICE IN THE STUDY AREA

Level of service (LOS) matrices for the study area intersections are shown in **Tables 10 and 11** for the weekday A.M. and weekday P.M. peak hours. Per PennDOT standards, the signal timings at the signalized study area intersections have been optimized under base conditions and projected conditions.

TABLE 10
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	Existing Condition	Weekday A.M. Peak Hour					
			Opening Year 2028			Design Year 2033		
			Base	Projected	Projected ¹	Base	Projected	Projected ¹
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – East Leg	WB L/R	B	B	B	--	B	B	--
	SB L	A	A	A	--	A	A	--
	ILOS	A (6.8)	A (7.0)	A (7.1)	--	A (7.2)	A (7.3)	--
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – West Leg	EB L/R	B	B	B	--	B	B	--
	NB L	A	A	A	--	A	A	--
	ILOS	A (1.0)	A (1.1)	A (1.1)	--	A (1.1)	A (1.1)	--
S. Market Street (SR 0114) & W. Winding Hill Road (SR 2010)/ E. Winding Hill Road (Twp)	EB L/T/R	D	D	D	--	D	D	--
	WB L/T/R	D	C	C	--	C	C	--
	NB L	A	B	B	--	B	B	--
	NB T/R	A	A	A	--	A	B	--
	SB L	A	B	B	--	B	B	--
	SB T/R	A	A	A	--	A	B	--
	ILOS	B (15.5)	B (15.7)	B (18.9)	--	B (16.3)	B (19.6)	--
W. Winding Hill Road (SR 2010) & Proposed Site Driveway	EB L	--	--	A	--	--	A	--
	SB L/R	--	--	B	--	--	B	--
	ILOS	--	--	A (1.5)	--	--	A (1.5)	--
S. York Street (SR 2013) & Proposed Site Driveway	WB L/R	--	--	B	--	--	B	--
	SB L	--	--	A	--	--	A	--
	ILOS	--	--	A (0.6)	--	--	A (0.6)	--

Base = No-Build scenario; Projected = Build scenario

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

¹= Projected conditions with implementation of recommended improvements

TABLE 11
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	Existing Condition	Weekday P.M. Peak Hour					
			Opening Year 2028			Design Year 2033		
			Base	Projected	Projected ¹	Base	Projected	Projected ¹
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – East Leg	WB L/R	B	B	B	--	B	B	--
	SB L	A	A	A	--	A	A	--
	ILOS	A (6.5)	A (6.7)	A (6.7)	--	A (6.8)	A (6.8)	--
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – West Leg	EB L/R	B	B	B	--	B	B	--
	NB L	A	A	A	--	A	A	--
	ILOS	A (1.3)	A (1.3)	A (1.4)	--	A (1.3)	A (1.4)	--
S. Market Street (SR 0114) & W. Winding Hill Road (SR 2010)/ E. Winding Hill Road (Twp)	EB L/T/R	D	D	D	--	D	D	--
	WB L/T/R	C	C	C	--	C	C	--
	NB L	B	B	C	--	B	C	--
	NB T/R	A	A	A	--	A	A	--
	SB L	A	A	B	--	A	B	--
	SB T/R	A	A	B	--	B	B	--
	ILOS	B (13.3)	B(14.4)	B (17.3)	--	B (15.2)	B (17.3)	--
W. Winding Hill Road (SR 2010) & Proposed Site Driveway	EB L	--	--	A	--	--	A	--
	SB L/R	--	--	B	--	--	B	--
	ILOS	--	--	A (1.0)	--	--	A (1.0)	--
S. York Street (SR 2013) & Proposed Site Driveway	WB L/R	--	--	B	--	--	B	--
	SB L	--	--	A	--	--	A	--
	ILOS	--	--	A (0.7)	--	--	A (0.6)	--

Base = No-Build scenario; Projected = Build scenario

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

¹= Projected conditions with implementation of recommended improvements

As shown in **Tables 10 and 11** under 2028 and 2033 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 2028 and 2033 base conditions, during the weekday A.M. and P.M. peak hours.

All approaches and turning movements at the site driveway intersections will operate at **LOS B or better** under 2028 and 2033 Projected 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 and Upper Allen Township standards.

95TH PERCENTILE QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *Synchro 10* software. For this analysis, the 95th percentile queue is defined as the queue length that is exceeded in 5% of the signal cycles. As an example, for a signal with a 90-second cycle, this means that the 95th percentile queue length will be exceeded during 2 of the 40 signal cycles that occur during the peak hour. The queue analysis results are summarized in **Table 12** for the analyzed peak hours.

TABLE 12
95TH PERCENTILE QUEUE ANALYSIS
SYNCHRO/HCM 6TH EDITION

Intersection	Lane Group	2033 Base Conditions			2033 Projected Conditions ¹		
		Existing Storage Length	95th Percentile Queue Length (ft)		Proposed Storage Length	A.M.	P.M.
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – East Leg	WB L/R	500+	--/45	--/33	Same	--/50	--/35
	SB L	50	--/23	--/18	Same	--/23	--/18
S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) – West Leg	EB L/R	500+	--/10	--/5	Same	--/10	--/5
	NB L	50	--/3	--/8	Same	--/3	--/8
S. Market Street (SR 0114) & W. Winding Hill Road (SR 2010)/ E. Winding Hill Road (Twp)	EB L/T/R	500+	272/265	195/223	Same	373/335	276/245
	WB L/T/R	400	104/113	82/80	Same	116/120	122/118
	NB L	75	57/63	29/38	Same	60/75	30/43
	NB T/R	500+	349/263	215/175	Same	349/300	218/195
	SB L	150	29/28	30/28	Same	29/33	31/33
	SB T/R	500	235/203	410/320	Same	240/235	437/373
W. Winding Hill Road (SR 2010) & Proposed Site Driveway	EB L	500+	--/--	--/--	Same	--/0	--/0
	SB L/R	100+	--/--	--/--	Same	--/10	--/8
S. York Street (SR 2013) & Proposed Site Driveway	WB L/R	100+	--/--	--/--	Same	--/5	--/3
	SB L	500+	--/--	--/--	Same	--/0	--/3

As shown in **Table 12**, adequate queue storage will be provided for the turn lanes in 2033 with construction and full build-out of the proposed development. Queue analysis worksheets are included with the capacity analysis worksheets provided in **Appendix E**.

AUXILIARY TURN LANE ANALYSIS

Methodology

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

Findings

Table 13 summarizes the results of the auxiliary turn lane analysis at the site access intersections.

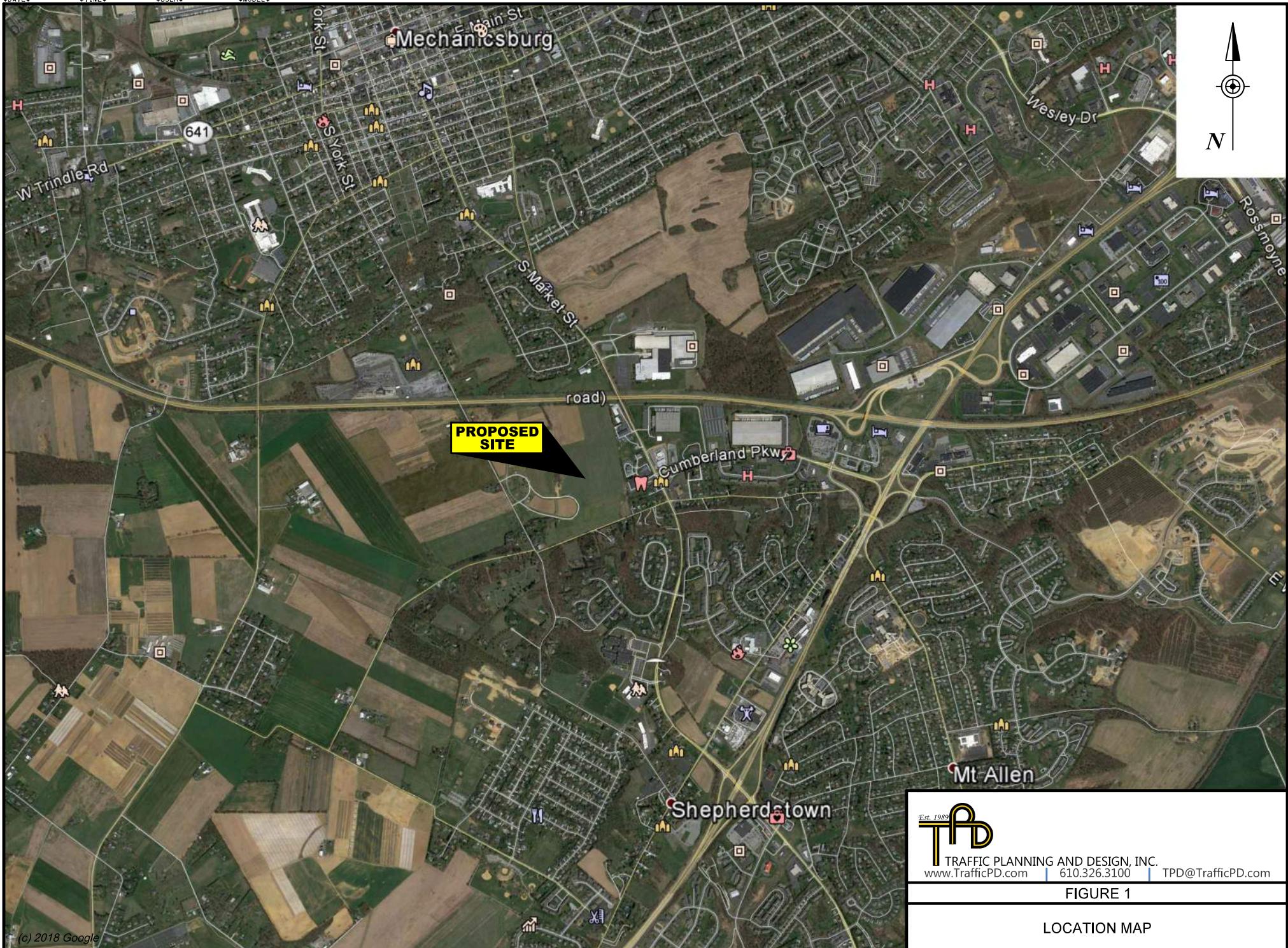
TABLE 13
AUXILIARY TURN LANE ANALYSIS SUMMARY

Intersection	Auxiliary Lane	Warrant Satisfied?	Required Lane Length	Proposed Lane Length
S. York Street (SR 2013) & Site Driveway	SB Left-Turn Lane	No	--	--
	NB Right-Turn Lane	No	--	--
W. Winding Hill Road (SR 2010) & Site Driveway	EB Left-Turn Lane	No	--	--
	WB Right-Turn Lane	No	--	--

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

RECOMMENDATIONS AND CONCLUSIONS

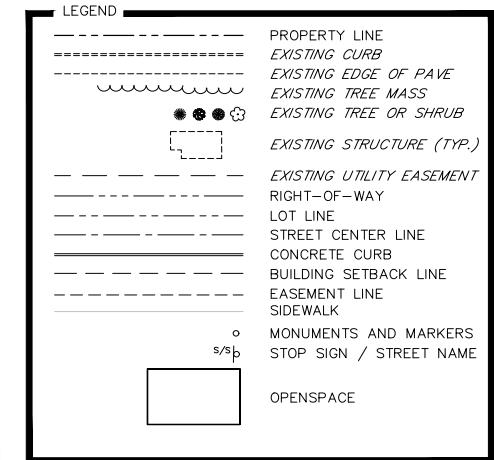
The recommendations and conclusions for this Transportation Impact Study are identified in the Executive Summary.



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www.TrafficPD.com | 610.326.3100 | TPD@TrafficPD.com

FIGURE 1

LOCATION MAP



OVERALL SUBDIVISION PLAN
PRELIMINARY SUBDIVISION AND LAND DEVELOPMENT PLAN
WEST WINDING

UPPER ALLEN TOWNSHIP, CUMBERLAND COUNTY, PENNSYLVANIA

PLANNING & ENGINEERING SURVEYING
116 LINCOLN RD., P.O. BOX 33
PEPPERELL, MA 01463-0033
PHONE 978-770-2400
FAX 978-770-2400
WWW.ALPHACE.COM

www.TrafficPD.com



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Providing transportation engineering and related services across the eastern United States

ALPHA CONSULTING ENGINEERS INC.

116 LINCOLN RD., P.O. BOX 33
PEPPERELL, MA 01463-0033
PHONE 978-770-2400
FAX 978-770-2400
WWW.ALPHACE.COM

W. Winding Hill Road
(SR 2010)

14 (6)
31 (19)

80 (113)
166 (174)

6 (17)
215 (268)

S. York Street
(SR 2013)

117 (73)
10 (6)

325 (230)

224 (214)
8 (17)

16 (57)

W. Winding Hill Road
(SR 2010)

Proposed Site

39 (102)
339 (487)

43 (58)

S. Market Street
(SR 0114)

17 (22)
76 (56)
9 (4)

100 (48)
505 (386)

11 (6)

E. Winding Hill Road
(Twp)

68 (34)
94 (73)
54 (74)

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FIGURE 3

EXISTING CONDITIONS
WEEKDAY PEAK HOURS
TRAFFIC VOLUMES

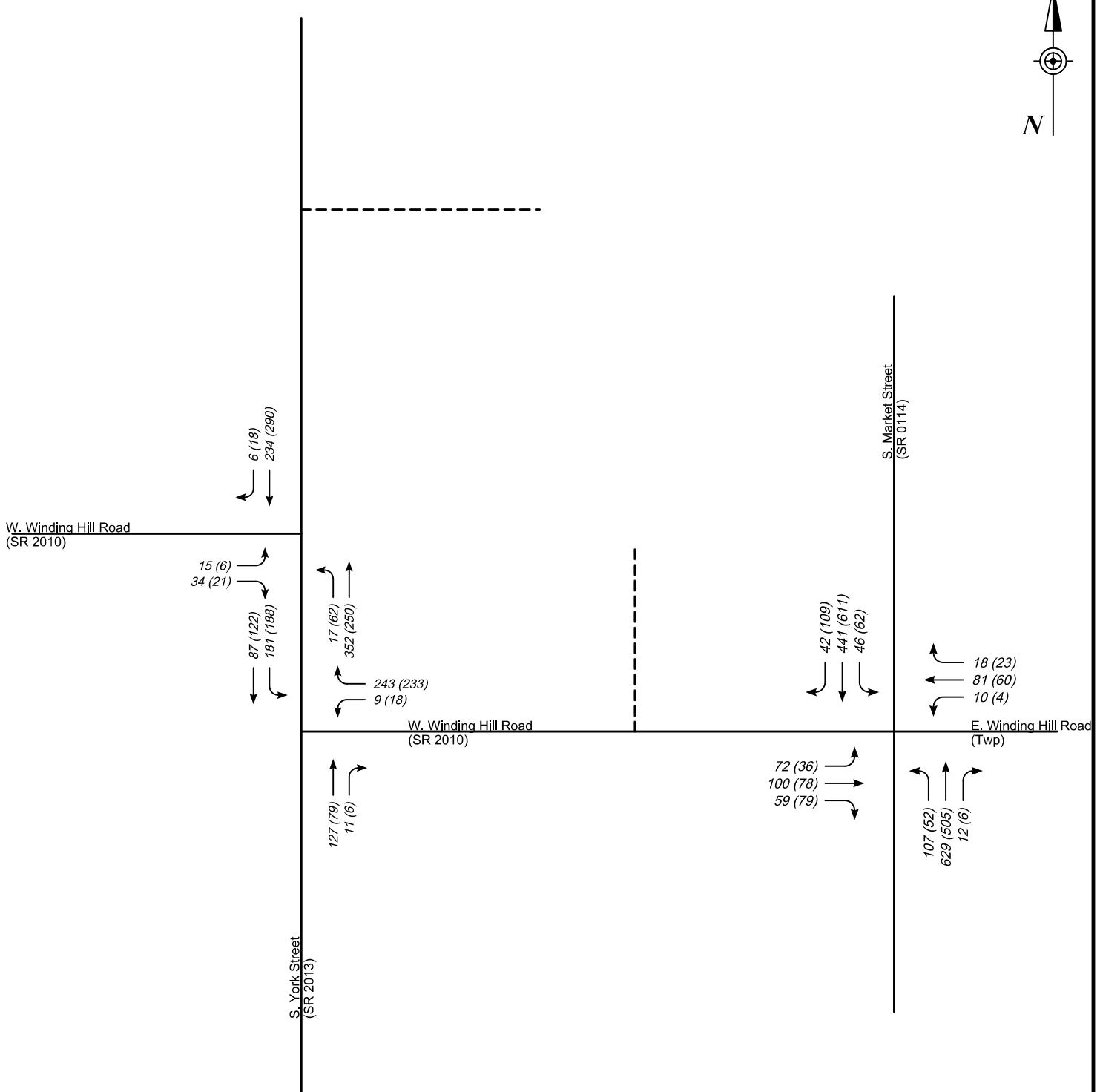
KEY:

X (Y) = A.M. (P.M.)

----- PROPOSED DRIVEWAY

SCHEMATIC DRAWING: NOT TO SCALE

N

KEY:

X (Y) = A.M. (P.M.)

----- PROPOSED DRIVEWAY

SCHEMATIC DRAWING: NOT TO SCALE



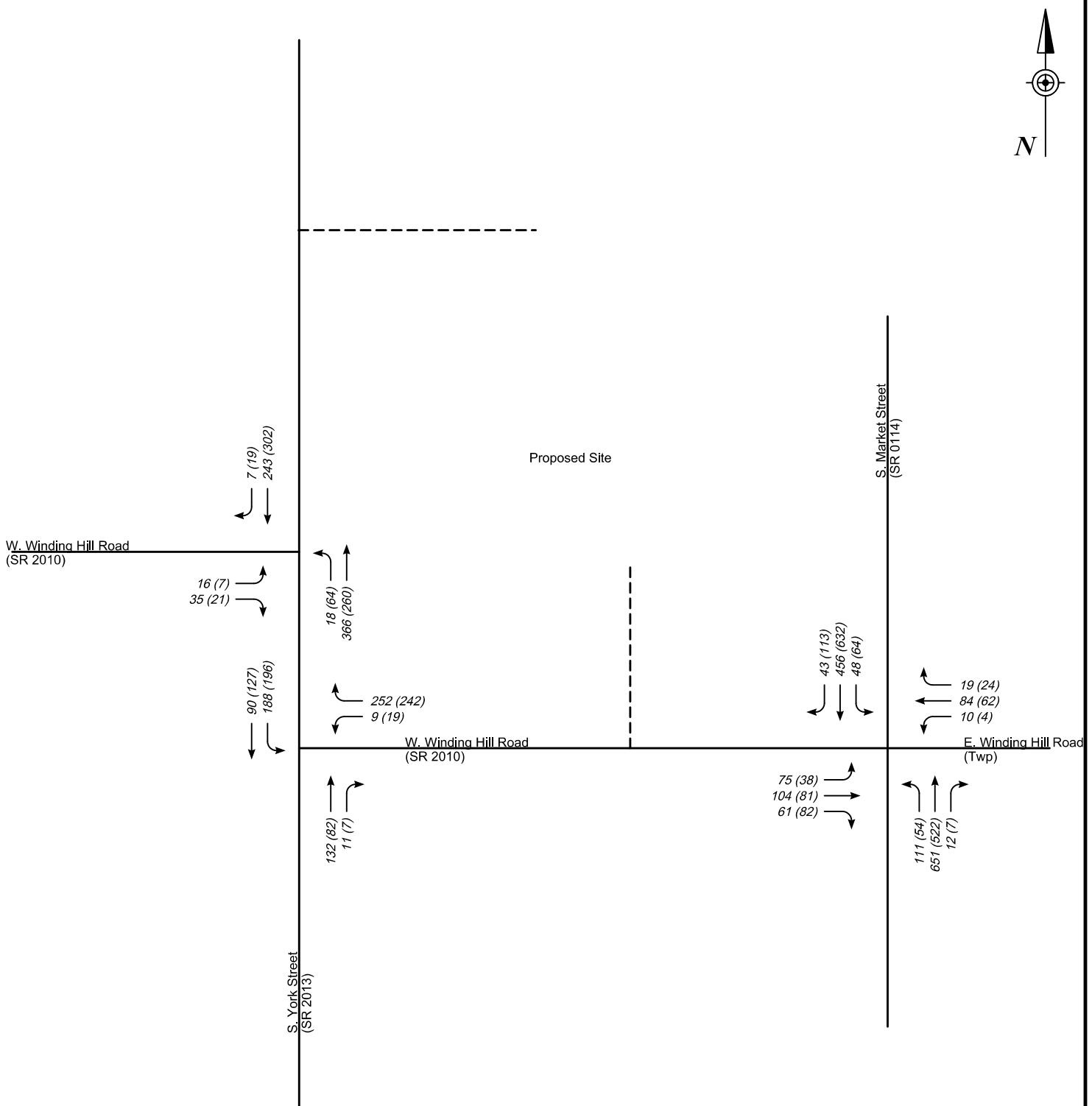
TRAFFIC PLANNING AND DESIGN, INC.
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FIGURE 4

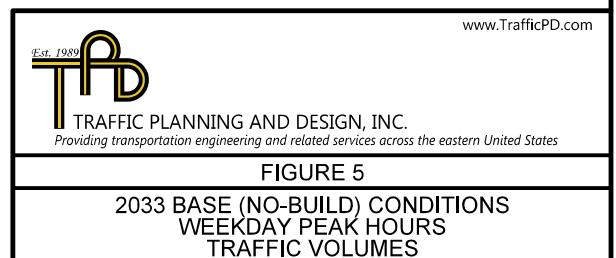
2028 BASE (NO-BUILD) CONDITIONS
WEEKDAY PEAK HOURS
TRAFFIC VOLUMES

N

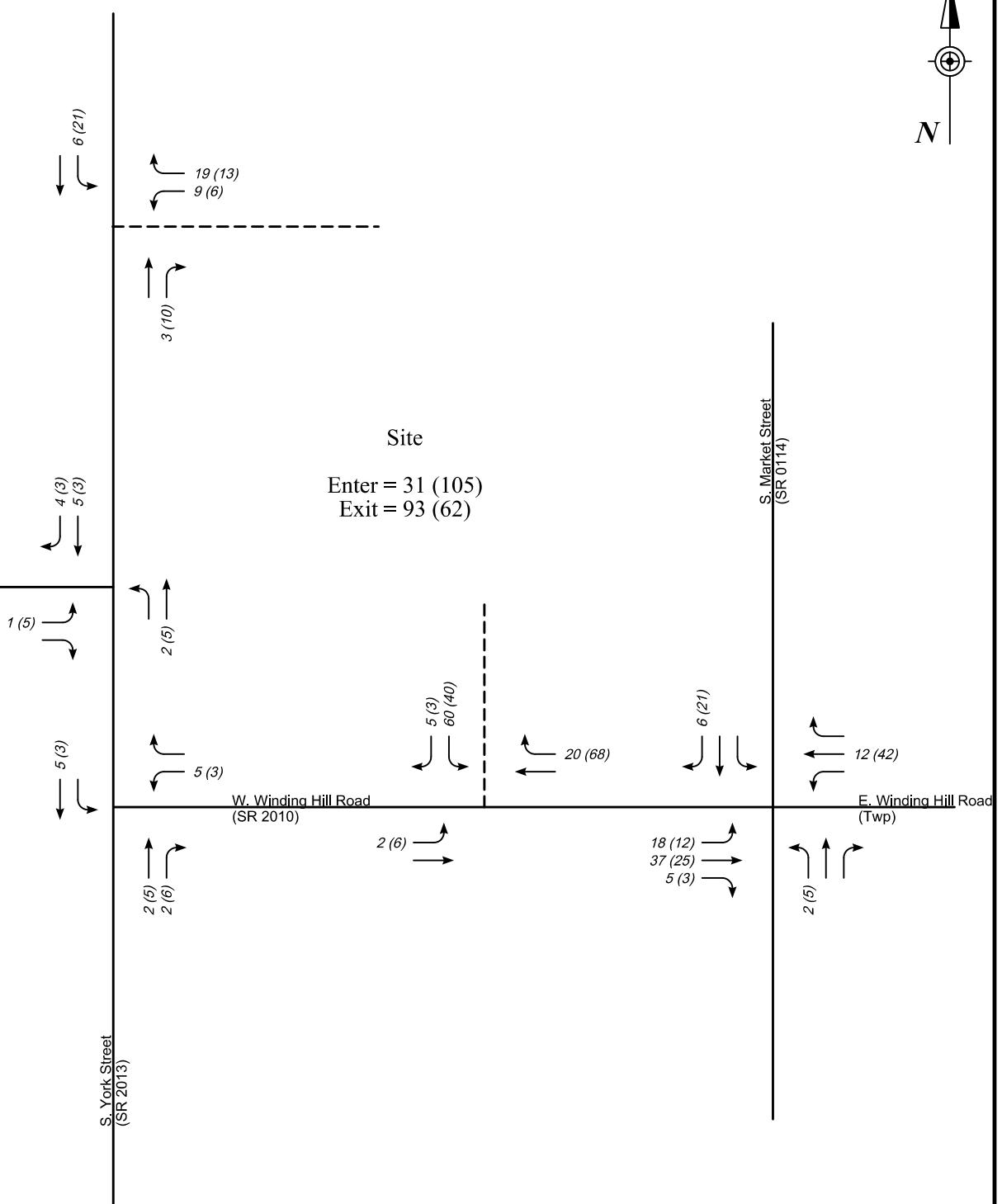



\$FILES\$ \$MODEL\$ \$TIME\$ \$USER\$

KEY:
X (Y) = A.M. (P.M.)
----- PROPOSED DRIVEWAY
SCHEMATIC DRAWING: NOT TO SCALE



W. Winding Hill Road
(SR 2010)



KEY:

X (Y) = A.M. (P.M.)

--- PROPOSED DRIVEWAY

SCHEMATIC DRAWING: NOT TO SCALE



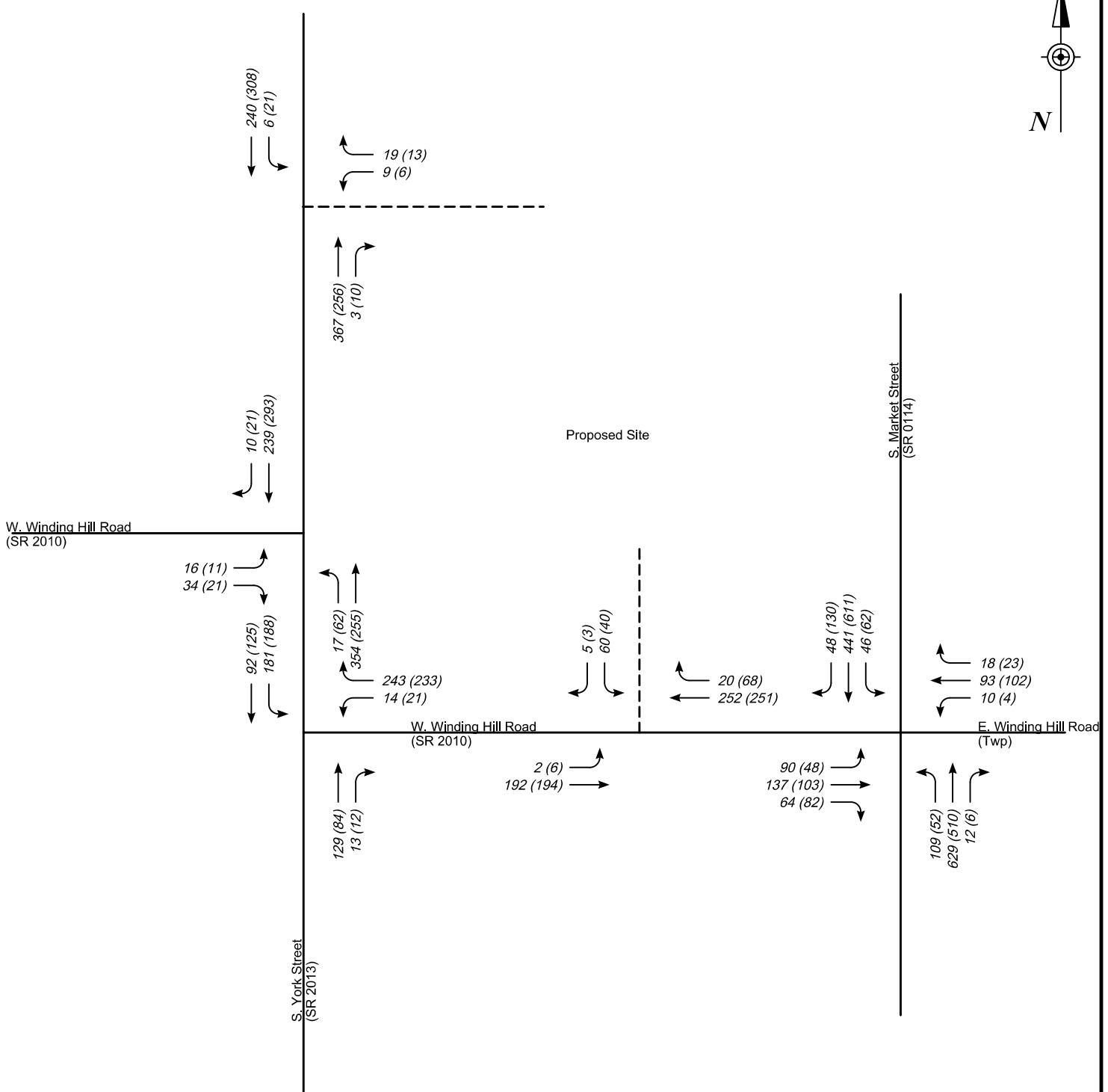
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FIGURE 6

TRIP DISTRIBUTION
TRAFFIC VOLUMES

N

KEY:

X (Y) = A.M. (P.M.)

----- PROPOSED DRIVEWAY

SCHEMATIC DRAWING: NOT TO SCALE



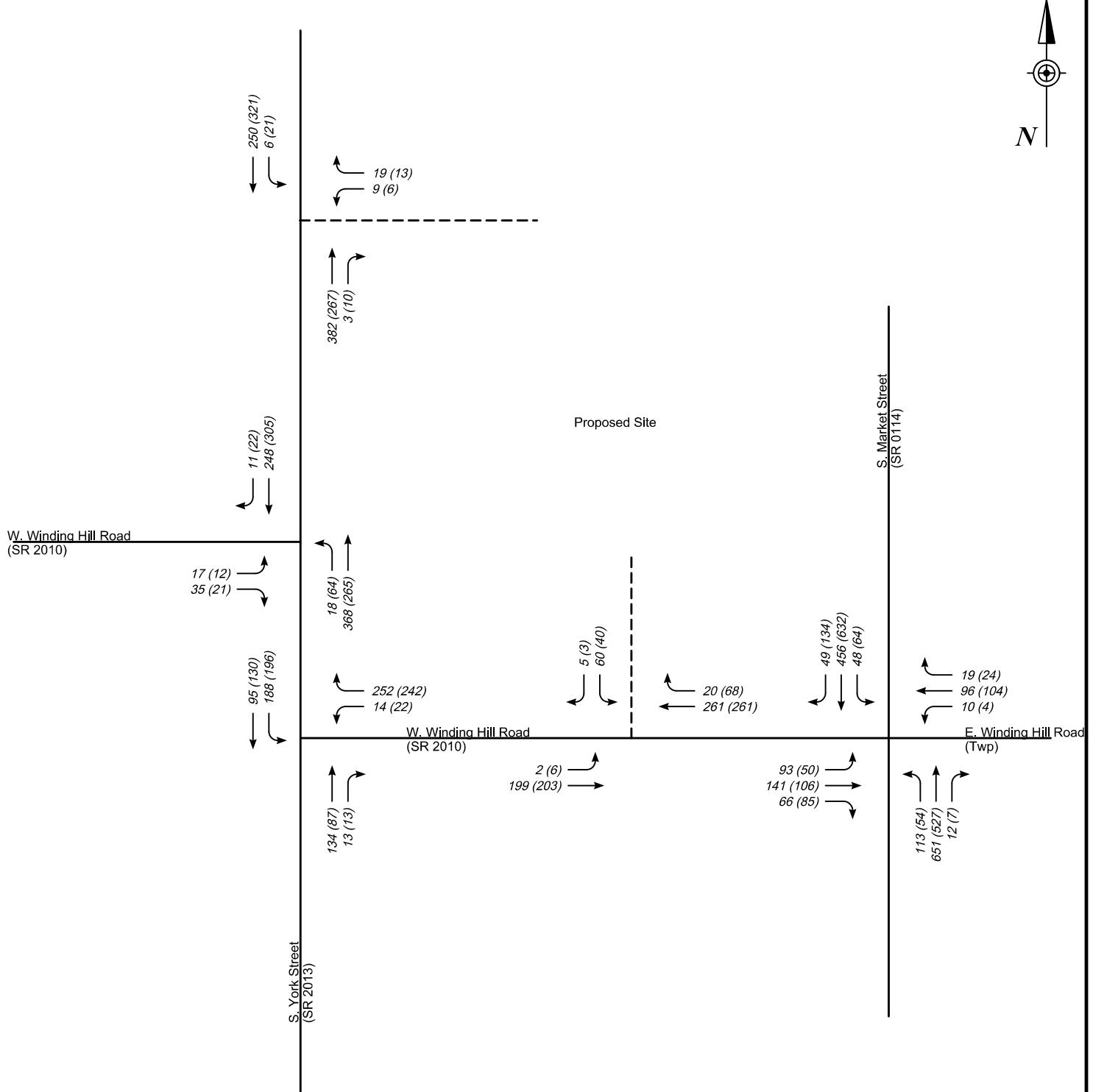
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FIGURE 7

2028 PROJECTED (BUILD) CONDITIONS
WEEKDAY PEAK HOURS
TRAFFIC VOLUMES

N

KEY:
X (Y) = A.M. (P.M.)
----- PROPOSED DRIVEWAY
SCHEMATIC DRAWING: NOT TO SCALE



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FIGURE 8
2033 PROJECTED (BUILD) CONDITIONS
WEEKDAY PEAK HOURS
TRAFFIC VOLUMES

APPENDIX A

STUDY AREA PHOTOGRAPHS & M-950S FORMS

Job #: CHHN.00013

Date Taken: May 2019

Intersection Of:

W. Winding Hill Road (SR 2010) &
S. York Street (SR 2013)



Direction / Road: Westbound E. Winding Hill Road
Approach / Departure: ~200 ft from S. York Street (SR 2013)



Direction / Road: Eastbound W. Winding Hill Road (SR 2010)
Approach / Departure: ~200 ft from S. York Street (SR 2013)



Direction / Road: Westbound E. Winding Hill Road
Approach / Departure: ~50 ft from S. York Street (SR 2013)



Direction / Road: Eastbound W. Winding Hill Road (SR 2010)
Approach / Departure: ~50 ft from S. York Street (SR 2013)

Job #: CHHN.00013

Date Taken: May 2019

Intersection Of:

W. Winding Hill Road (SR 2010) &
S. York Street (SR 2013)



Direction / Road: Northbound S. York Street (SR 2013)

Approach / Departure: ~200 ft from W. Winding Hill Road (SR 2010)



Direction / Road: Southbound S. York Street (SR 2013)

Approach / Departure: ~200 ft from W. Winding Hill Road (SR 2010)



Direction / Road: Northbound S. York Street (SR 2013)

Approach / Departure: ~50 ft from W. Winding Hill Road (SR 2010)



Direction / Road: Southbound S. York Street (SR 2013)

Approach / Departure: ~50 ft from W. Winding Hill Road (SR 2010)

Job #: CHHN.00013

Date Taken: February 2020

Intersection Of:

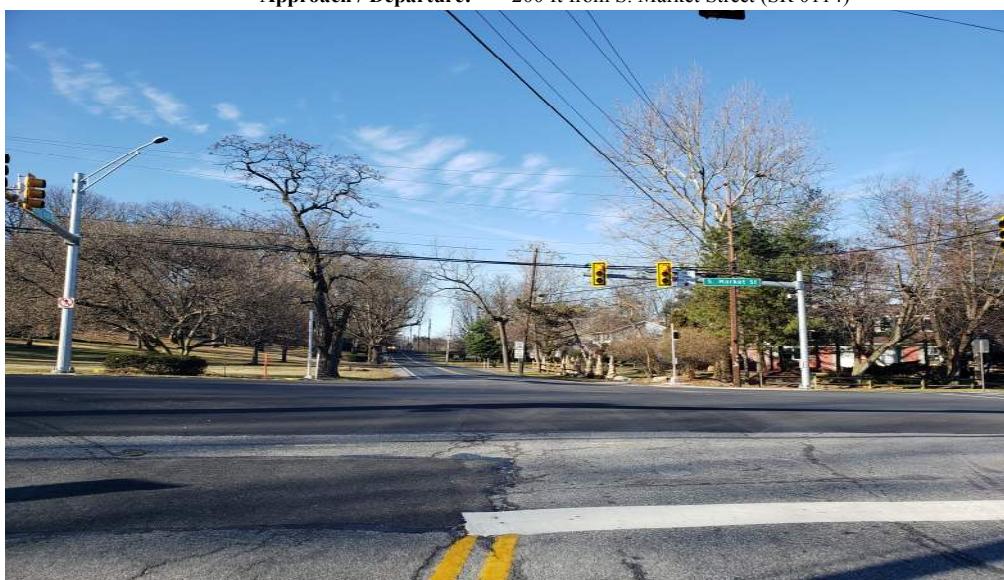
W. Winding Hill Road (SR 2010) &
S. Market Street (SR 0114)



Direction / Road: Westbound E. Winding Hill Road
Approach / Departure: ~200 ft from S. Market Street (SR 0114)



Direction / Road: Eastbound W. Winding Hill Road (SR 2010)
Approach / Departure: ~200 ft from S. Market Street (SR 0114)



Direction / Road: Westbound E. Winding Hill Road
Approach / Departure: ~50 ft from S. Market Street (SR 0114)



Direction / Road: Eastbound W. Winding Hill Road (SR 2010)
Approach / Departure: ~50 ft from S. Market Street (SR 0114)

Job #: CHHN.00013

Date Taken: February 2020

Intersection Of:

W. Winding Hill Road (SR 2010) &
S. Market Street (SR 0114)



Direction / Road: Northbound S. Market Street (SR 0114)
Approach / Departure: ~200 ft from Winding Hill Road (SR 2010)



Direction / Road: Southbound S. Market Street (SR 0114)
Approach / Departure: ~200 ft from Winding Hill Road (SR 2010)



Direction / Road: Northbound S. Market Street (SR 0114)
Approach / Departure: ~50 ft from Winding Hill Road (SR 2010)



Direction / Road: Southbound S. Market Street (SR 0114)
Approach / Departure: ~50 ft from Winding Hill Road (SR 2010)

INTERSECTION WORKSHEET

Traffic Planning and Design, Inc.

TPD Project # CHHN.00013

Date _____

Analyst _____

Signalized Un-signalized Two-Way Stop Control All-Way Stop Control Offset Other

Area Type (circle one): Urban Suburban Rural CBD

Streets: (N-S) S. York Street (SR 2013) (E-W) W. Winding Hill Road - East Leg

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes				0 > 0 < 0			1 < 0			0 > 1		
Lane Width				11'			11'			12'		
Storage Length				---			---			---		
Grade (approaching intersection) + uphill, - downhill				2%			6%			-6%		
Channelized Right?				---			---			---		
If so, is lane > 75'?				---			---			---		
Shoulder width				2'			5'			3'		
Pavement condition*	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor
Lane marking condition*	Good	Fair	Poor	None	Good	Fair	Poor	None	Good	Fair	Poor	None
Posted speed limit				35			35			35		
Driveways on approach?	Y N			Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N		
Bus Stops?	Y	N	Route #:	Y	<input checked="" type="radio"/> N	Route #:	Y	<input checked="" type="radio"/> N	Route #:	Y	<input checked="" type="radio"/> N	Route #:
Parking?	Y N			Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N		
Pedestrian Curb Ramps?	Y N / L R			Y <input checked="" type="radio"/> N / L R			Y <input checked="" type="radio"/> N / L R			Y <input checked="" type="radio"/> N / L R		
Sidewalk?	Y N / L R			Y <input checked="" type="radio"/> N / L R			Y <input checked="" type="radio"/> N / L R			Y <input checked="" type="radio"/> N / L R		
Crosswalks?	Y N			Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N			Y <input checked="" type="radio"/> N		

Unsignalized Intersections:

Sign Control (circle)	Stop	Yield	None									
Sight Distance*	Good	Fair	Poor									

Signalized Intersections:

No Turn on Red posted?	Y N			Y N			Y N			Y N		
Ped Button?	Y N			Y N			Y N			Y N		
Left Turn Phase	Y N / 3 4 5 head			Y N / 3 4 5 head			Y N / 3 4 5 head			Y N / 3 4 5 head		
Actuated Lanes	L T R			L T R			L T R			L T R		

Photos: All approaches (50' & 200'), departures, unusual characteristics, and corners/sidewalks (pedestrian facilities).

* Good, Fair or Poor. If sight distance is Poor, what is limiting the sight distance, and take a picture in that direction.

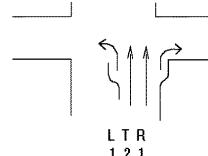
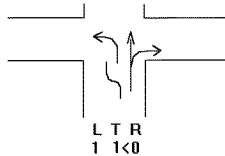
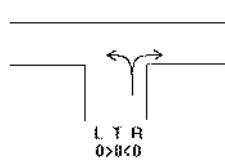
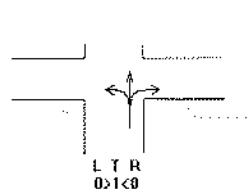
If pavement or lane markings are in Poor condition, take picture of Poor area(s).

*Pedestrian Accommodations

Comments (please be as specific as possible):

Please Note the location of any **inlets & utility poles** at the intersection. Make notes on next page (intersection diagram)

Please Note Land Uses (Residential, Retail, Commercial, etc.):



INTERSECTION WORKSHEET

Traffic Planning and Design, Inc.

TPD Project # CHHN.00013

Date _____

Analyst _____

Signalized Un-signalized Two-Way Stop Control All-Way Stop Control Offset Other

Area Type (circle one): Urban Suburban Rural CBD

Streets: (N-S) S. York Street (SR 2013) (E-W) W. Winding Hill Road - West Leg

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0 > 0 < 0						0 > 1			1 < 0		
Lane Width	11'						11'			12'		
Storage Length	---						---			---		
Grade (approaching intersection) + uphill, - downhill	-3%						4%			-4%		
Channelized Right?	---						---			---		
If so, is lane > 75'?	---						---			---		
Shoulder width	2'						5'			3'		
Pavement condition*	<input checked="" type="radio"/> Good	Fair	Poor	Good	Fair	Poor	<input checked="" type="radio"/> Good	Fair	Poor	<input checked="" type="radio"/> Good	Fair	Poor
Lane marking condition*	<input checked="" type="radio"/> Good	Fair	Poor	None	Good	Fair	Poor	None	<input checked="" type="radio"/> Good	Fair	Poor	None
Posted speed limit	45						35			35		
Driveways on approach?	Y (N)			Y N			Y (N)			Y (N)		
Bus Stops?	Y (N) Route #: _____			Y N Route #: _____			Y (N) Route #: _____			Y (N) Route #: _____		
Parking?	Y (N)			Y N			Y (N)			Y (N)		
Pedestrian Curb Ramps?	Y (N) / L R			Y N / L R			Y (N) / L R			Y (N) / L R		
Sidewalk?	Y (N) / L R			Y N / L R			Y (N) / L R			Y (N) / L R		
Crosswalks?	Y (N)			Y N			Y (N)			Y (N)		

Unsignalized Intersections:

Sign Control (circle)	<input checked="" type="radio"/> Stop	Yield	None	Stop	Yield	None	Stop	Yield	<input type="radio"/> None	Stop	Yield	<input type="radio"/> None
Sight Distance* (Stop-Controlled Approach)	<input checked="" type="radio"/> Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor

Signalized Intersections:

No Turn on Red posted?	Y N											
Ped Button?	Y N											
Left Turn Phase	Y N / 3 4 5 head			Y N / 3 4 5 head			Y N / 3 4 5 head			Y N / 3 4 5 head		
Actuated Lanes	L T R											

Photos: All approaches (50' & 200'), departures, unusual characteristics, and corners/sidewalks (pedestrian facilities).

* Good, Fair or Poor. If sight distance is Poor, what is limiting the sight distance, and take a picture in that direction.

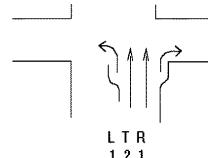
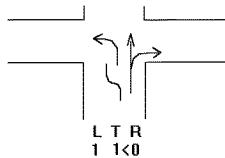
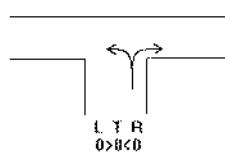
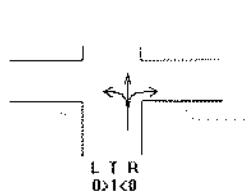
If pavement or lane markings are in Poor condition, take picture of Poor area(s).

*Pedestrian Accommodations

Comments (please be as specific as possible):

Please Note the location of any **inlets & utility poles** at the intersection. Make notes on next page (intersection diagram)

Please Note Land Uses (Residential, Retail, Commercial, etc.):

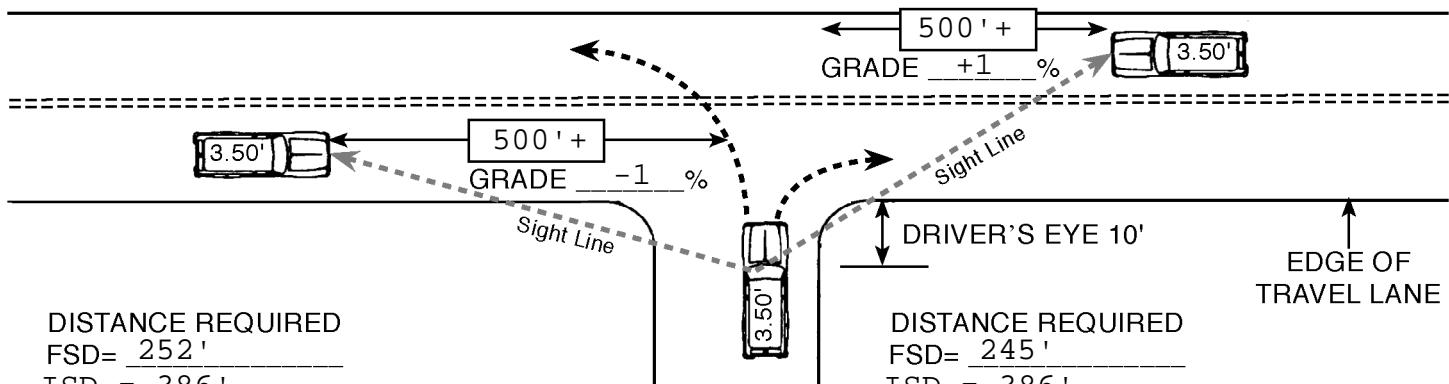


DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

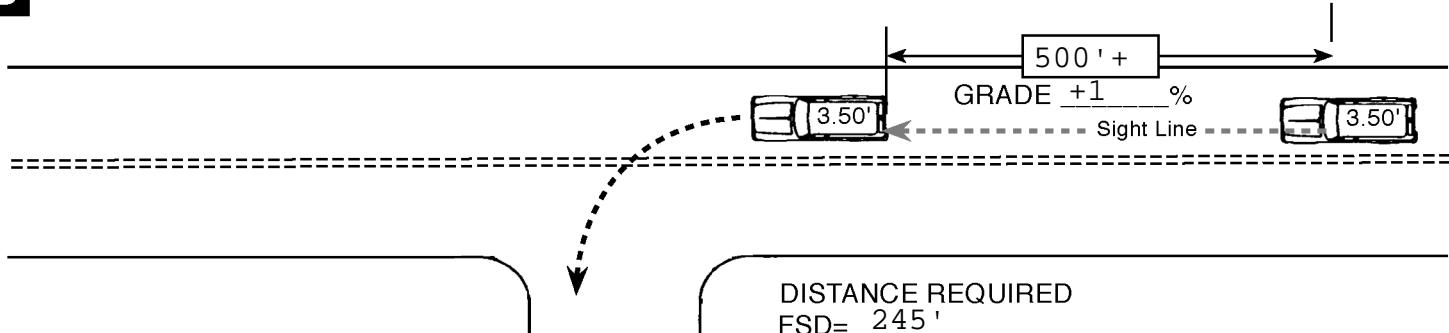
APPLICANT Anthony Faranda-Diedrich APPLICATION NO. _____
S.R. 2013 SEG. 0030 OFFSET 1429 LEGAL SPEED LIMIT 35 mph
MEASURED BY Traffic Planning & Design, Inc. DATE 2/27/2020
FOR DEPARTMENT USE ONLY: Safe-Running Speed _____ 85th Percentile Speed _____

A



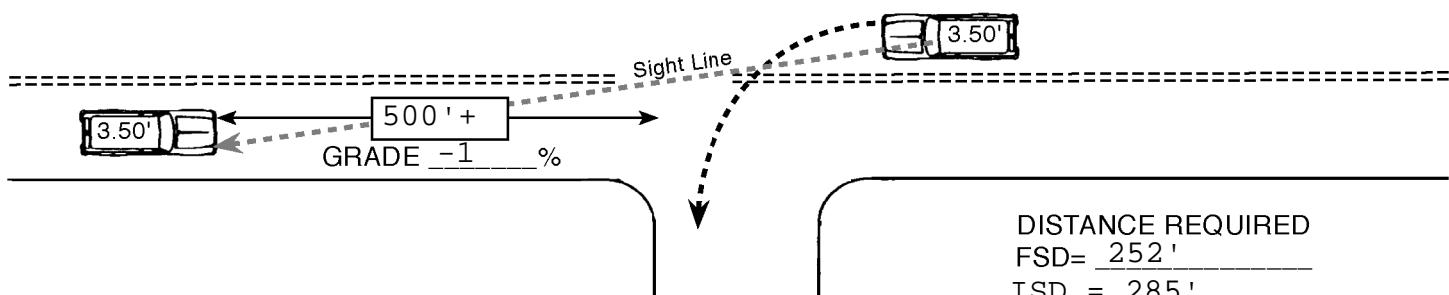
THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

B



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE THE REAR OF A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS POSITIONED TO MAKE A LEFT TURN INTO A DRIVEWAY.

C



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO A DRIVEWAY CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

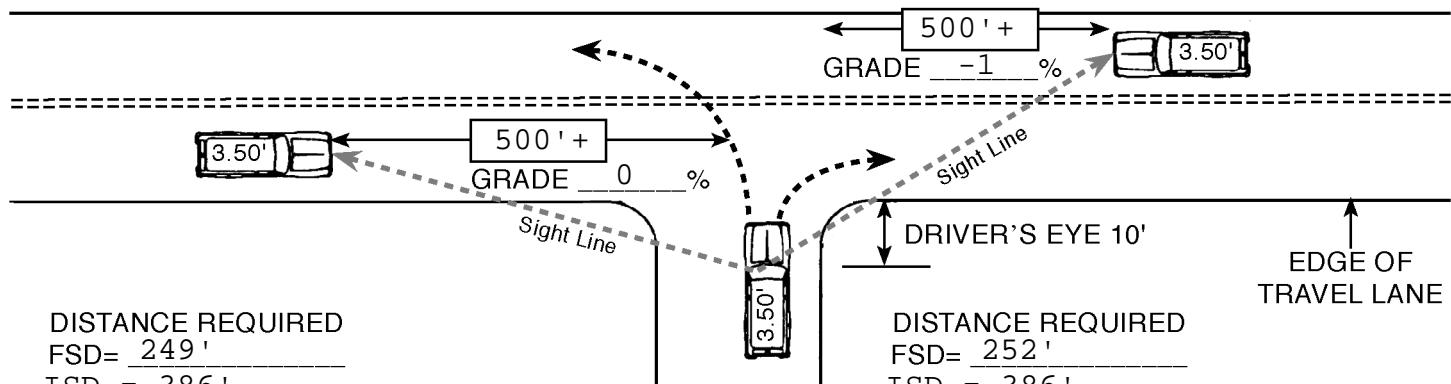
APPLICANT Anthony Faranda-Diedrich APPLICATION NO. _____

S.R. 2010 SEG. 0030 OFFSET 1357 LEGAL SPEED LIMIT 35 mph

MEASURED BY Traffic Planning & Design, Inc. DATE 2/27/2020

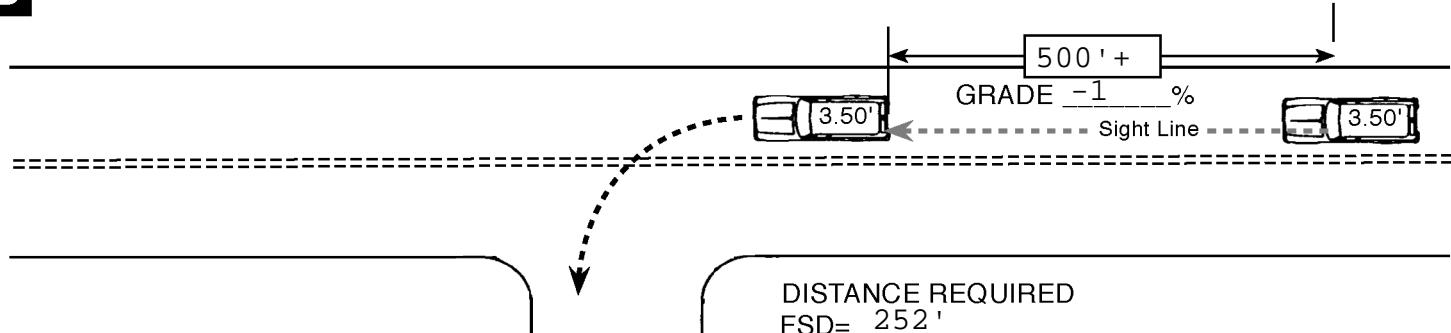
FOR DEPARTMENT USE ONLY: Safe-Running Speed _____ 85th Percentile Speed _____

A



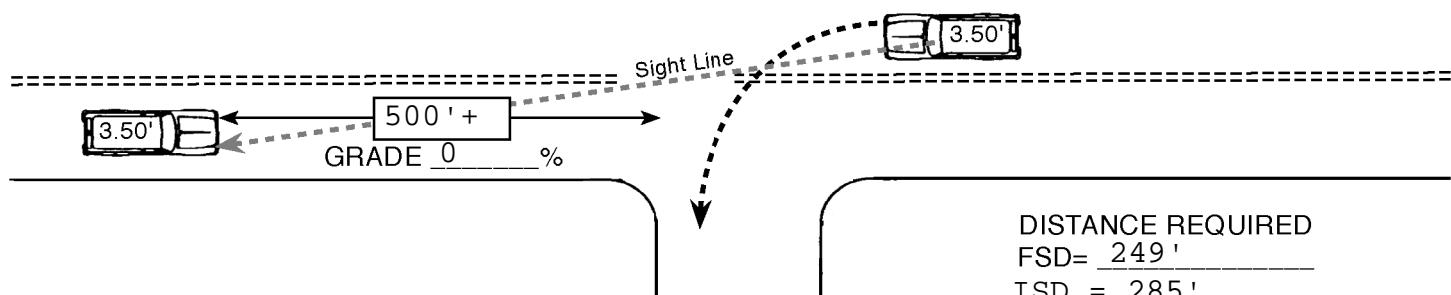
THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

B



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER ON THE ROADWAY CAN CONTINUOUSLY SEE THE REAR OF A VEHICLE WHICH IS LOCATED IN THE DRIVER'S TRAVEL LANE AND WHICH IS POSITIONED TO MAKE A LEFT TURN INTO A DRIVEWAY.

C



THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER OF A VEHICLE INTENDING TO MAKE A LEFT TURN INTO A DRIVEWAY CAN CONTINUOUSLY SEE A VEHICLE APPROACHING FROM THE OPPOSITE DIRECTION.

FORMULA SIGHT DISTANCE TABLE

Speed (V) (Miles Per Hour)	Average Grade (G) (Percent)											
	Use plus grades when approaching vehicle is travelling upgrade.											
	0.0	+1.0	+2.0	+3.0	+4.0	+5.0	+6.0	+7.0	+8.0	+9.0	+10.0	
25	147	145	144	143	142	140	139	138	137	136	135	
30	196	194	191	189	187	185	183	182	180	178	177	
35	249	245	242	239	236	233	231	228	226	224	221	
40	314	309	304	299	295	291	287	284	280	277	274	
45	383	376	370	364	358	353	348	343	339	334	330	
50	462	453	444	436	429	422	415	409	403	397	392	
55	538	527	517	508	499	490	482	475	468	461	454	
Use negative grades when approaching vehicle is travelling downgrade.												
	0.0	-1.0	-2.0	-3.0	-4.0	-5.0	-6.0	-7.0	-8.0	-9.0	-10.0	
25	147	148	150	151	153	155	157	159	161	164	166	
30	196	199	201	204	207	210	214	217	221	226	230	
35	249	252	256	260	265	269	275	280	286	292	299	
40	314	319	325	331	338	345	352	360	369	379	389	
45	383	390	398	406	415	425	435	447	459	472	487	
50	462	471	481	492	504	517	531	546	563	581	600	
55	538	550	562	576	590	606	622	641	661	682	706	

APPENDIX B

MANUAL COUNT PRINTOUTS



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

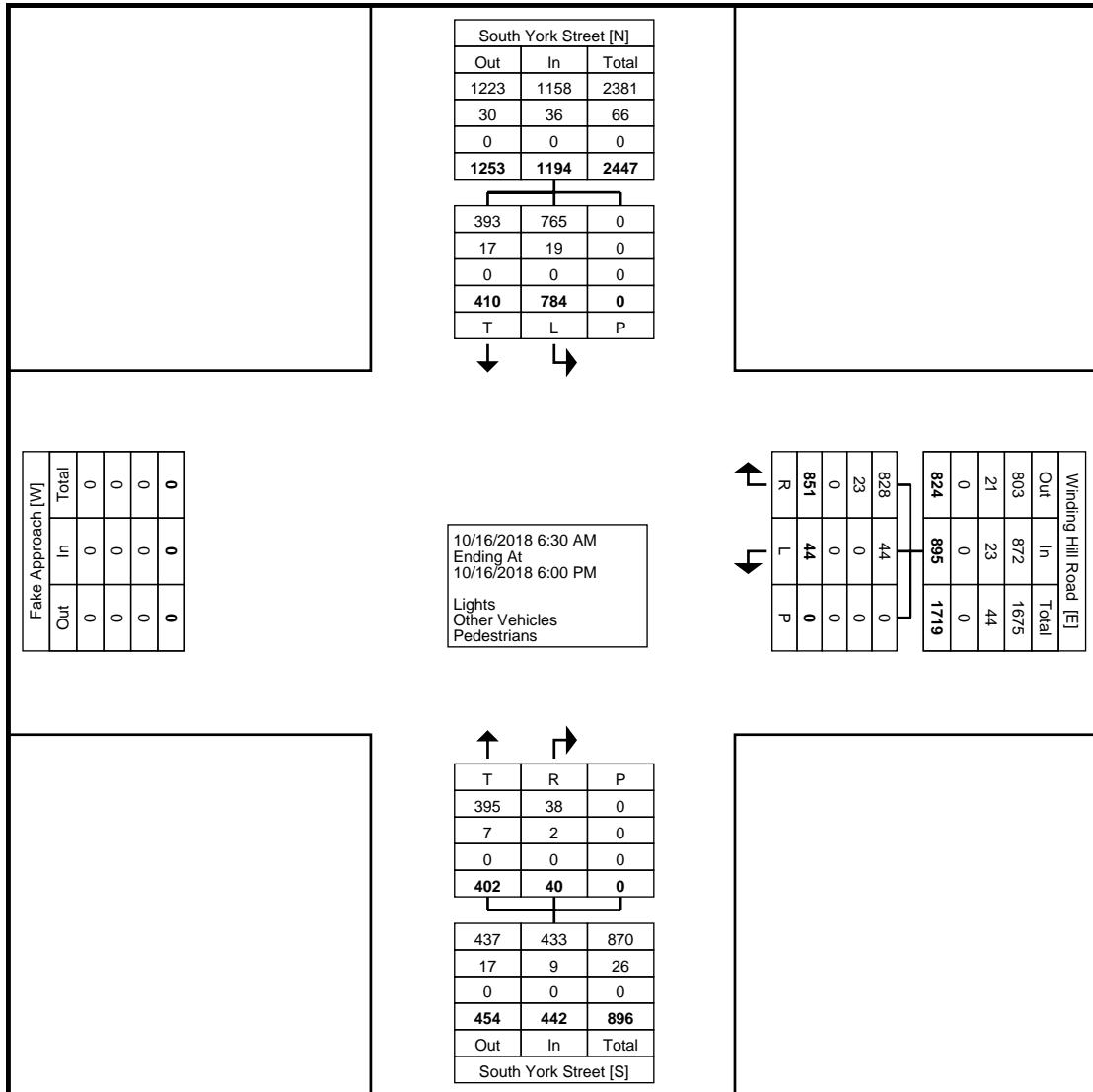
Count Name: AM PM South
York Street & Winding Hill Road
(East Leg)
Site Code: AM PM South York
Street & Winding Hill Road (East
Start Date: 10/16/2018
Page No: 1

Turning Movement Data



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

Count Name: AM PM South
 York Street & Winding Hill Road
 (East Leg)
 Site Code: AM PM South York
 Street & Winding Hill Road (East)
 Start Date: 10/16/2018
 Page No: 2



Turning Movement Data Plot



Traffic Planning and Design, Inc
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Pottstown, Pennsylvania, United States 19464
610.326.3100 mosmulski@trafficpd.com

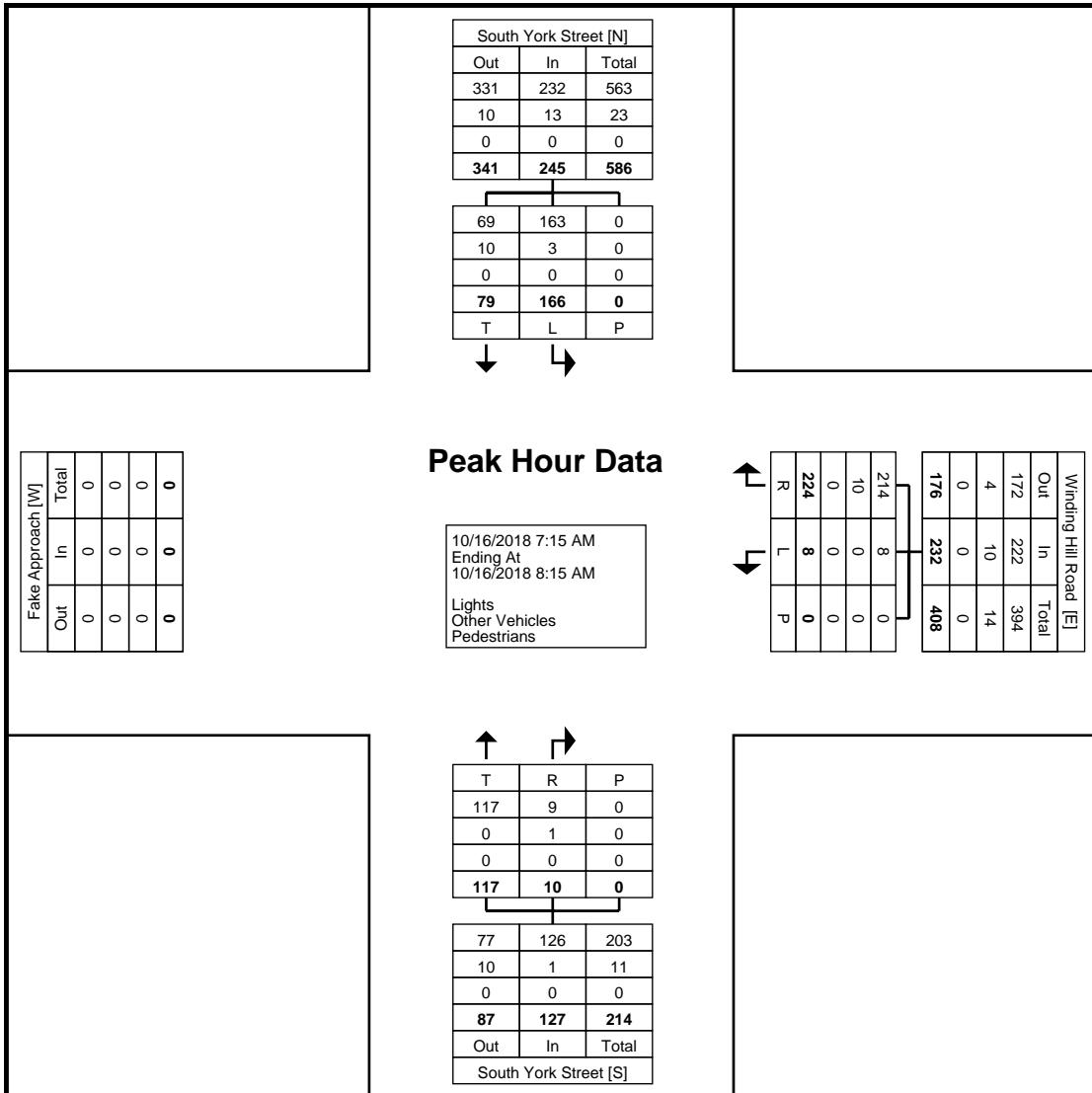
Count Name: AM PM South
York Street & Winding Hill Road
(East Leg)
Site Code: AM PM South York
Street & Winding Hill Road (East
Start Date: 10/16/2018
Page No: 3

Turning Movement Peak Hour Data (7:15 AM)



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

Count Name: AM PM South
 York Street & Winding Hill Road
 (East Leg)
 Site Code: AM PM South York
 Street & Winding Hill Road (East)
 Start Date: 10/16/2018
 Page No: 4



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 mosmulski@trafficpd.com

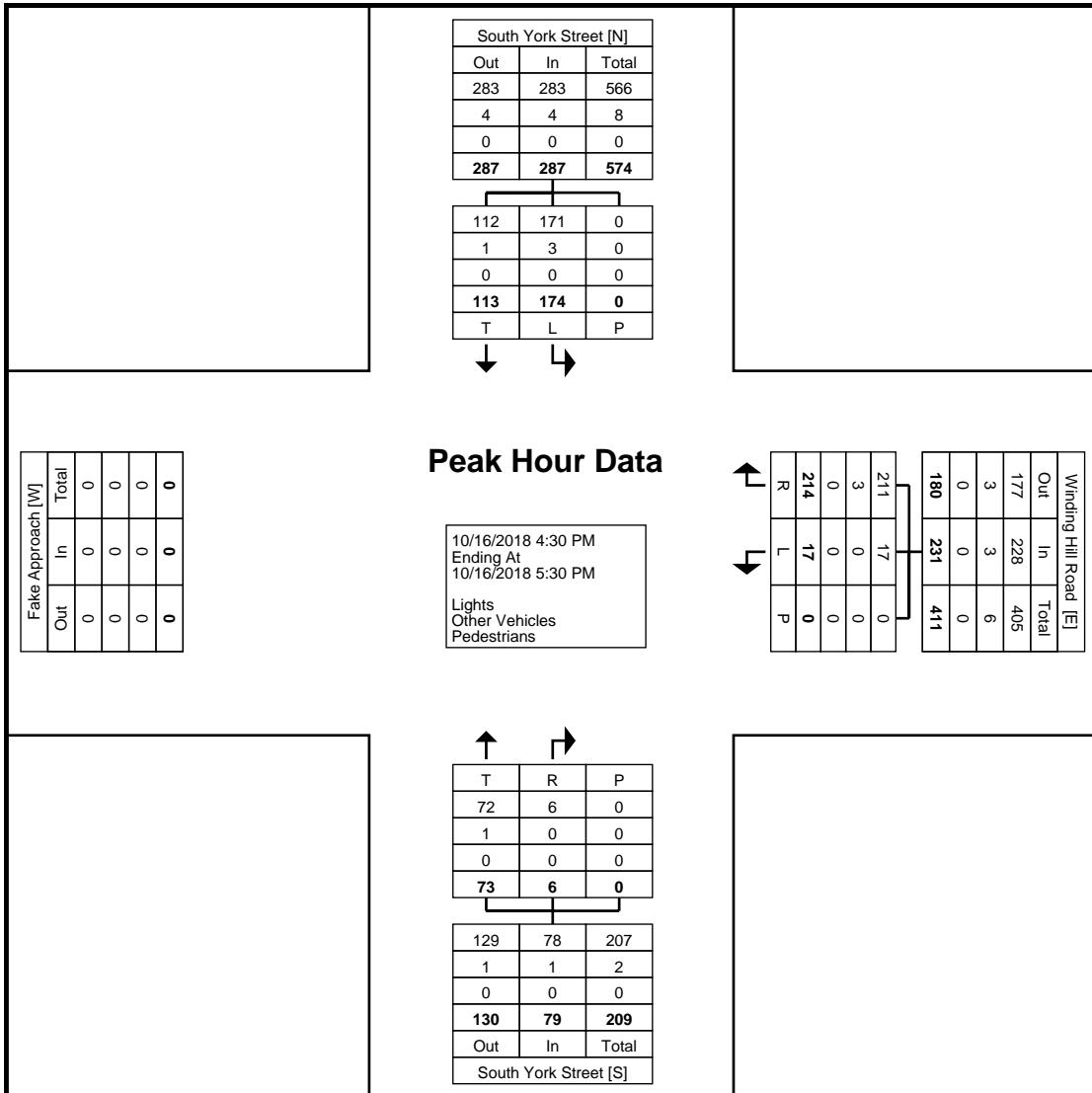
Count Name: AM PM South
York Street & Winding Hill Road
(East Leg)
Site Code: AM PM South York
Street & Winding Hill Road (East
Start Date: 10/16/2018
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)



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

Count Name: AM PM South
 York Street & Winding Hill Road
 (East Leg)
 Site Code: AM PM South York
 Street & Winding Hill Road (East)
 Start Date: 10/16/2018
 Page No: 6



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 jwheeler@trafficpd.com

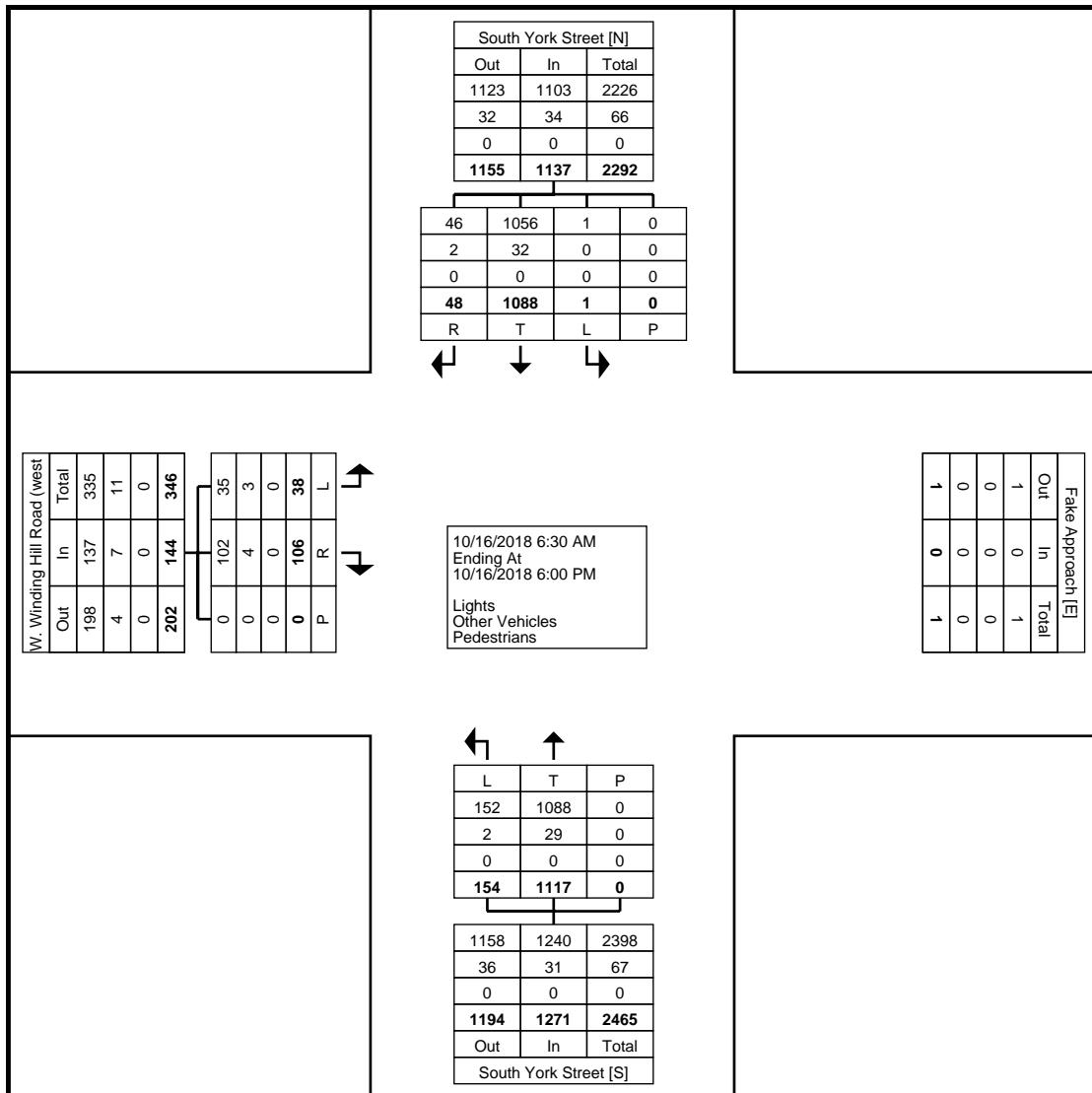
Count Name: AM_PM South
York Street & Winding Hill Road
(West Leg)
Site Code: AM_PM South York
Street & Winding Hill Road
(West)
Start Date: 10/16/2018
Page No: 1

Turning Movement Data



Traffic Planning and Design, Inc
 2500 East High Street
 Suite 650
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Count Name: AM_PM South
 York Street & Winding Hill Road
 (West Leg)
 Site Code: AM_PM South York
 Street & Winding Hill Road
 (West)
 Start Date: 10/16/2018
 Page No: 2



Turning Movement Data Plot



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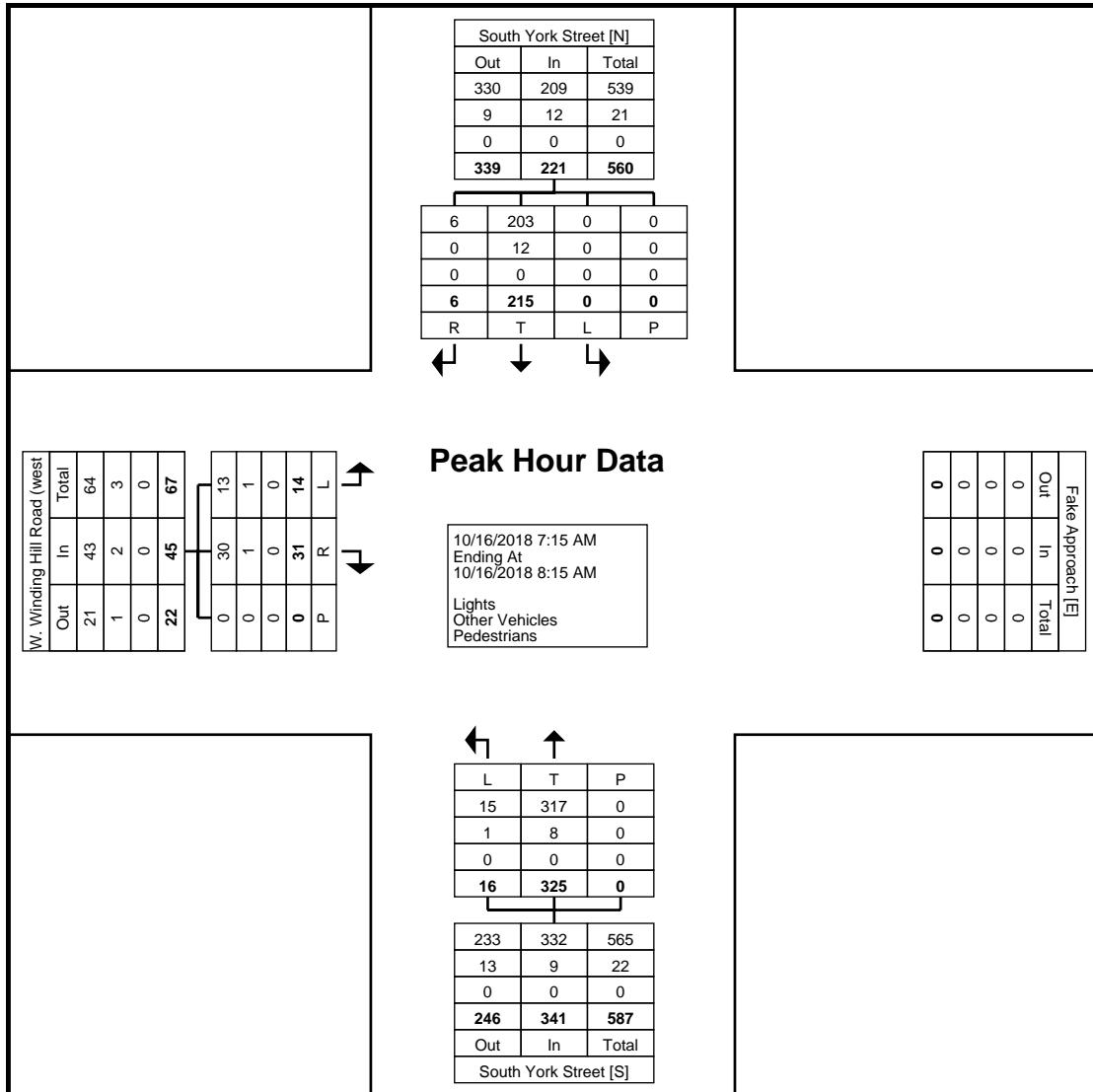
Count Name: AM_PM South
York Street & Winding Hill Road
(West Leg)
Site Code: AM_PM South York
Street & Winding Hill Road
(West
Start Date: 10/16/2018
Page No: 3

Turning Movement Peak Hour Data (7:15 AM)



Traffic Planning and Design, Inc
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 Suite 650
 Pottstown, Pennsylvania, United States 19464
 610.326.3100 jwheeler@trafficpd.com

Count Name: AM_PM South
 York Street & Winding Hill Road
 (West Leg)
 Site Code: AM_PM South York
 Street & Winding Hill Road
 (West)
 Start Date: 10/16/2018
 Page No: 4





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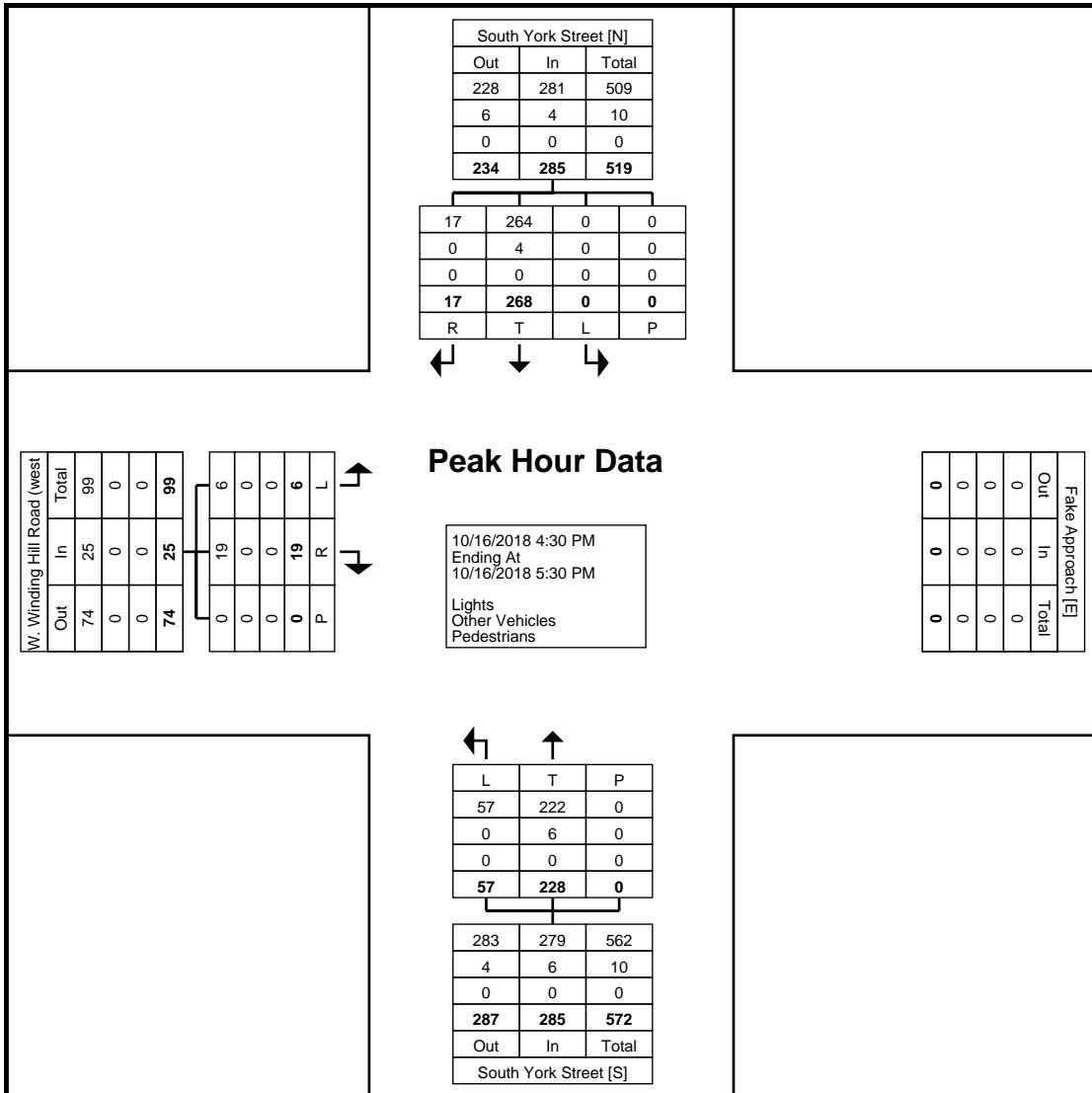
Count Name: AM_PM South
York Street & Winding Hill Road
(West Leg)
Site Code: AM_PM South York
Street & Winding Hill Road
(West)
Start Date: 10/16/2018
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)



Traffic Planning and Design, Inc
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Count Name: AM_PM South
 York Street & Winding Hill Road
 (West Leg)
 Site Code: AM_PM South York
 Street & Winding Hill Road
 (West)
 Start Date: 10/16/2018
 Page No: 6



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 mosmulski@trafficpd.com

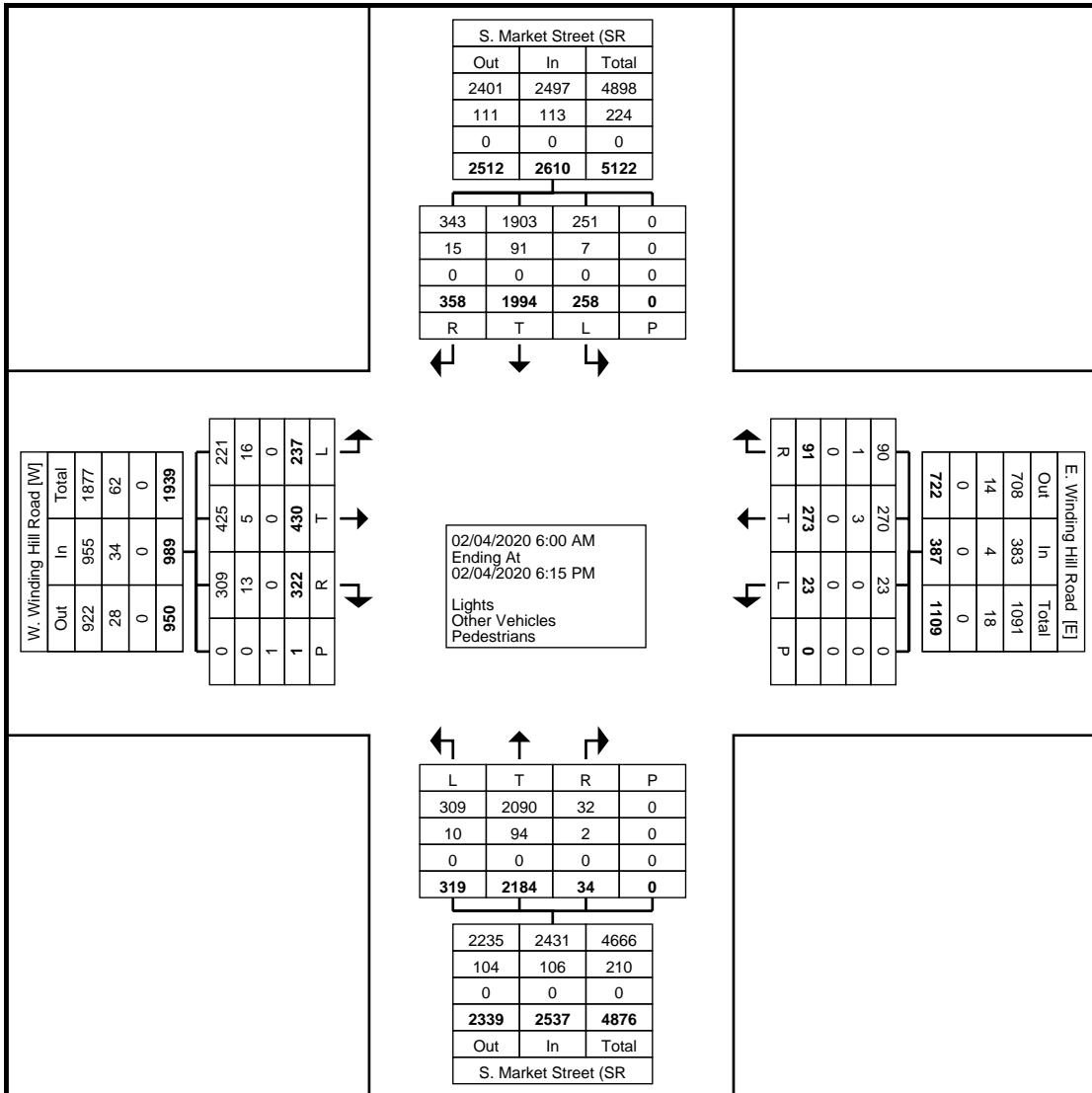
Count Name: AM_PM Winding Hill Road (SR 2010) & South Market Street (SR 0114)
Site Code: AM_PM Winding Hill Road (SR 2010) & South Market S
Start Date: 02/04/2020
Page No: 1

Turning Movement Data



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

Count Name: AM_PM Winding Hill Road (SR 2010) & South Market Street (SR 0114)
Site Code: AM_PM Winding Hill Road (SR 2010) & South Market S
Start Date: 02/04/2020
Page No: 2



Turning Movement Data Plot



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

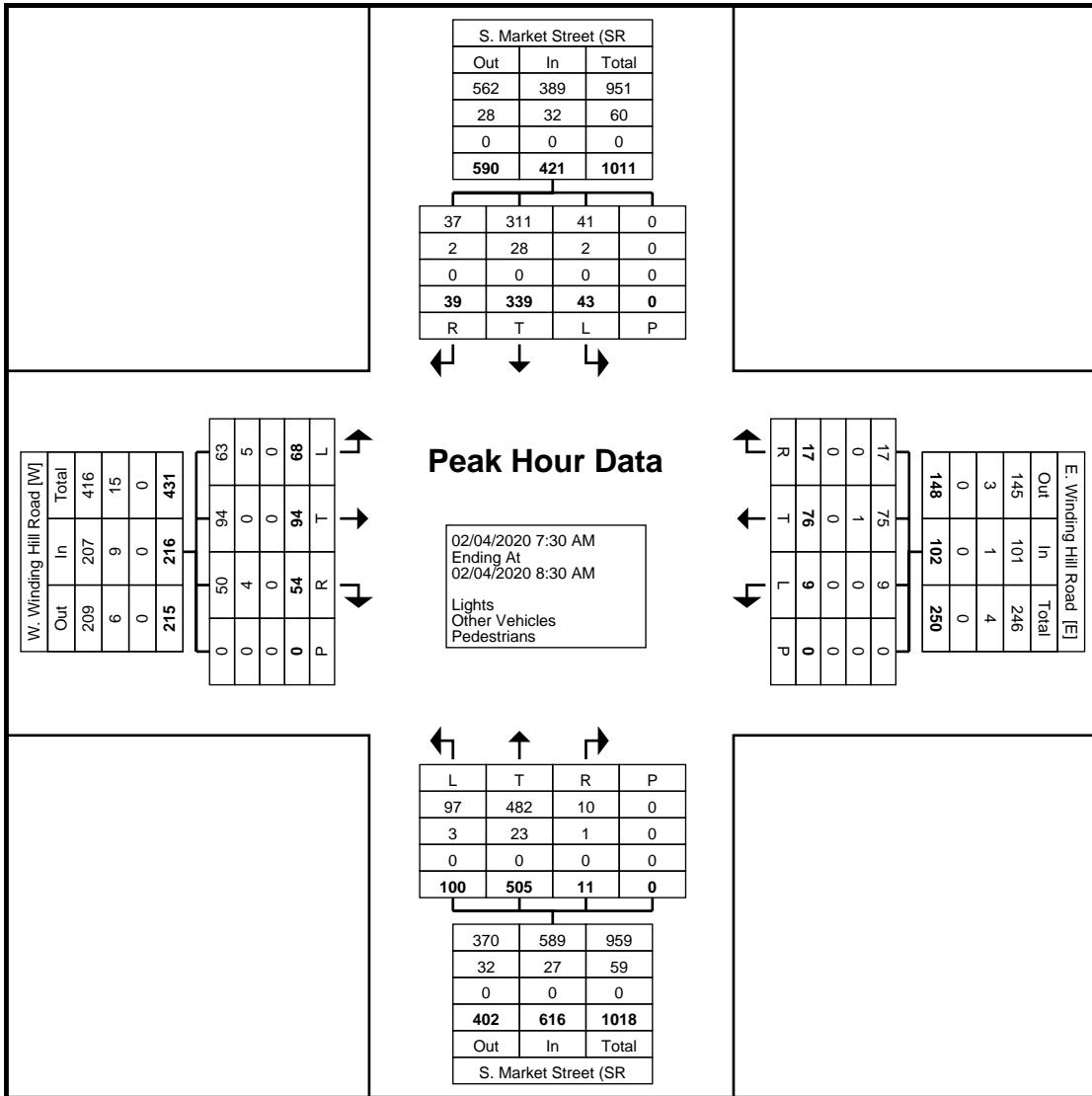
Count Name: AM_PM Winding Hill Road (SR 2010) & South Market Street (SR 0114)
Site Code: AM_PM Winding Hill Road (SR 2010) & South Market S
Start Date: 02/04/2020
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)



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

Count Name: AM_PM Winding Hill Road (SR 2010) & South Market Street (SR 0114)
Site Code: AM_PM Winding Hill Road (SR 2010) & South Market S
Start Date: 02/04/2020
Page No: 4



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



Traffic Planning and Design, Inc
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Suite 650
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610.326.3100 mosmulski@trafficpd.com

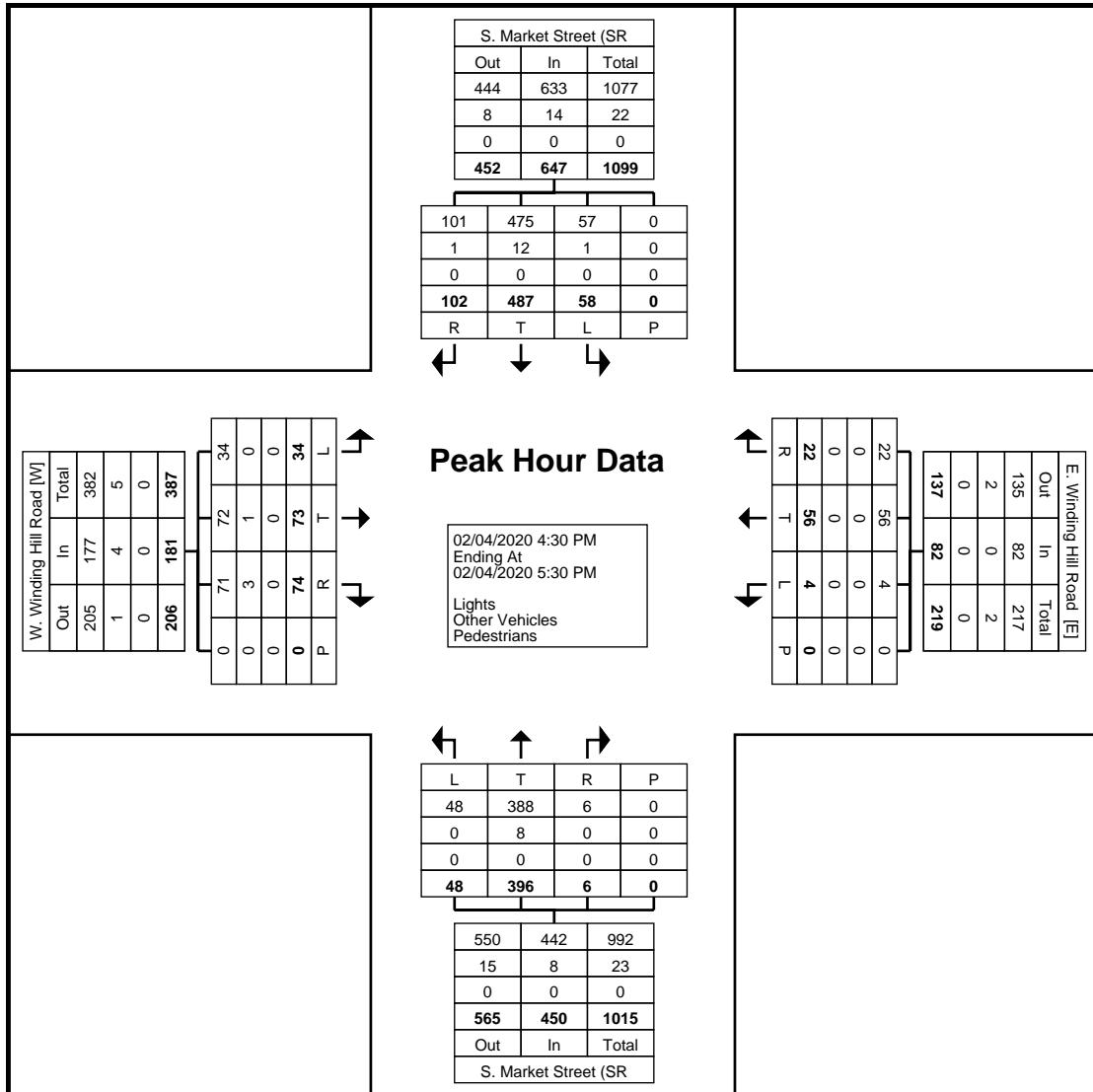
Count Name: AM_PM Winding Hill Road (SR 2010) & South Market Street (SR 0114)
Site Code: AM_PM Winding Hill Road (SR 2010) & South Market S
Start Date: 02/04/2020
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)



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

Count Name: AM_PM Winding Hill Road (SR 2010) & South Market Street (SR 0114)
Site Code: AM_PM Winding Hill Road (SR 2010) & South Market S
Start Date: 02/04/2020
Page No: 6



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

Traffic Information Repository (TiRe)

Change Area of Interest



Layers

Q

Enter search criteria

Tools

?



Traffic Information Repository (TIRE)

Change Area of Interest Layers Maps Tools Enter search criteria



Traffic Information Repository (TiRe)

Change Area of Interest Layers + Maps © 2014-2019 PA Department of Transportation



Layer Information:
Sort Type: Database Show All
AADT 10,001 - 20,000
Type: Line | Result: 1 of 1
Avg. Daily Truck Traffic: 437
County: 21 - CUMBERLAND
Avg. Daily Traffic: 13623
Direction: B - BOTH
Daily Truck Vehicle Miles Traveled: 371
Daily Vehicle Miles Traveled: 11580
Jurisdiction: 1 - STATE
Side Ind: 1 - RIGHT / PRIMARY / EVEN SIDE
Route: 014
Truck Percent: 3

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APPENDIX C

VOLUME DEVELOPMENT WORKSHEETS

TPD# CHHN.00013

2/27/2020

Traffic Volumes Worksheet

Intersection:

S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) - East Leg

Synchro Node:

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

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	8	0	224	0	117	10	166	79	0	604
Balancing											1		1
Existing Volumes (Balanced)	0	0	0	8	0	224	0	117	10	166	80	0	605
Base growth (0.80% compounded for 10 yrs)	0	0	0	1	0	19	0	10	1	14	7	0	52
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building											1		
2028 Base Volumes	0	0	0	9	0	243	0	127	11	181	87	0	657
New Trips					5				2	2	5		
Pass-By Trips													0
Total Trip Distribution	0	0	0	5	0	0	0	2	2	0	5	0	0
2028 Projected Volumes	0	0	0	14	0	243	0	129	13	181	92	0	672
Base growth (0.80% compounded for 15 yrs)	0	0	0	1	0	28	0	15	1	21	10	0	76
2033 Base Volumes	0	0	0	9	0	252	0	132	11	188	90	0	681
2033 Projected Volumes	0	0	0	14	0	252	0	134	13	188	95	0	696

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	17	0	214	0	73	6	174	113	0	597
Balancing													0
Existing Volumes (Balanced)	0	0	0	17	0	214	0	73	6	174	113	0	597
Base growth (0.80% compounded for 10 yrs)	0	0	0	1	0	18	0	6	0	14	9	0	48
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building						1							
2028 Base Volumes	0	0	0	18	0	233	0	79	6	188	122	0	645
New Trips					3				5	6	3		17
Pass-By Trips													0
Total Trip Distribution	0	0	0	3	0	0	0	5	6	0	3	0	17
2028 Projected Volumes	0	0	0	21	0	233	0	84	12	188	125	0	663
Base growth (0.80% compounded for 15 yrs)	0	0	0	2	0	27	0	9	1	22	14	0	75
2033 Base Volumes	0	0	0	19	0	242	0	82	7	196	127	0	672
2033 Projected Volumes	0	0	0	22	0	242	0	87	13	196	130	0	690

TPD# CHHN.00013

2/27/2020

Traffic Volumes Worksheet

Intersection:

S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) - West Leg

Synchro Node:

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

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	14	0	31	0	0	0	16	325	0	0	215	6	607
Balancing													0
Existing Volumes (Balanced)	14	0	31	0	0	0	16	325	0	0	215	6	607
Base growth (0.80% compounded for 10 yrs)	1	0	3	0	0	0	1	27	0	0	18	0	50
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building												1	
2028 Base Volumes	15	0	34	0	0	0	17	352	0	0	234	6	657
New Trips	1							2			5	4	
Pass-By Trips													0
Total Trip Distribution	1	0	0	0	0	0	0	2	0	0	5	4	0
2028 Projected Volumes	16	0	34	0	0	0	17	354	0	0	239	10	670
Base growth (0.80% compounded for 15 yrs)	2	0	4	0	0	0	2	41	0	0	27	1	77
2033 Base Volumes	16	0	35	0	0	0	18	366	0	0	243	7	684
2033 Projected Volumes	17	0	35	0	0	0	18	368	0	0	248	11	697

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	6	0	19	0	0	0	57	228	0	0	268	17	595
Balancing								2					2
Existing Volumes (Balanced)	6	0	19	0	0	0	57	230	0	0	268	17	597
Base growth (0.80% compounded for 10 yrs)	0	0	2	0	0	0	5	19	0	0	22	1	49
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building								1					
2028 Base Volumes	6	0	21	0	0	0	62	250	0	0	290	18	646
New Trips	5							5			3	3	16
Pass-By Trips													0
Total Trip Distribution	5	0	0	0	0	0	0	5	0	0	3	3	16
2028 Projected Volumes	11	0	21	0	0	0	62	255	0	0	293	21	663
Base growth (0.80% compounded for 15 yrs)	1	0	2	0	0	0	7	29	0	0	34	2	75
2033 Base Volumes	7	0	21	0	0	0	64	260	0	0	302	19	672
2033 Projected Volumes	12	0	21	0	0	0	64	265	0	0	305	22	689

TPD# CHHN.00013

2/27/2020

Traffic Volumes Worksheet

Intersection:

W. Winding Hill Rd (SR 2010)/E. Winding Hill Rd (Twp) & S. Market Street (SR 0114)

Synchro Node:

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

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2020 Existing Counts	68	94	54	9	76	17	100	505	11	43	339	39	1355
Balancing													0
Existing Volumes (Balanced)	68	94	54	9	76	17	100	505	11	43	339	39	1355
Base growth (0.80% compounded for 8 yrs)	4	6	4	1	5	1	7	33	1	3	22	3	90
1225 S. Market Street								73			28		101
Legacy Park								16			46		62
S. Market Street Office Building				1				2			6		
2028 Base Volumes	72	100	59	10	81	18	107	629	12	46	441	42	1608
New Trips	18	37	5		12		2				6		
Pass-By Trips													0
Total Trip Distribution	18	37	5	0	12	0	2	0	0	0	0	6	0
2028 Projected Volumes	90	137	64	10	93	18	109	629	12	46	441	48	1697
Base growth (0.80% compounded for 13 yrs)	7	10	6	1	8	2	11	55	1	5	37	4	147
2033 Base Volumes	75	104	61	10	84	19	111	651	12	48	456	43	1665
2033 Projected Volumes	93	141	66	10	96	19	113	651	12	48	456	49	1754

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2020 Existing Counts	34	73	74	4	56	22	48	396	6	58	487	102	1360
Balancing													0
Existing Volumes (Balanced)	34	73	74	4	56	22	48	396	6	58	487	102	1360
Base growth (0.80% compounded for 8 yrs)	2	5	5	0	4	1	3	26	0	4	32	7	89
1225 S. Market Street								26			59		85
Legacy Park								50			31		81
S. Market Street Office Building							1	7			2		
2028 Base Volumes	36	78	79	4	60	23	52	505	6	62	611	109	1615
New Trips	12	25	3		42			5				21	108
Pass-By Trips													0
Total Trip Distribution	12	25	3	0	42	0	0	5	0	0	0	21	108
2028 Projected Volumes	48	103	82	4	102	23	52	510	6	62	611	130	1733
Base growth (0.80% compounded for 13 yrs)	4	8	8	0	6	2	5	43	1	6	53	11	147
2033 Base Volumes	38	81	82	4	62	24	54	522	7	64	632	113	1673
2033 Projected Volumes	50	106	85	4	104	24	54	527	7	64	632	134	1791

TPD# CHHN.00013

2/27/2020

Traffic Volumes Worksheet

Intersection:

W. Winding Hill Road (SR 2010) & Proposed Driveway

Synchro Node:

4	Adjacent intersections:	West	0	East	0	North	0	South	0
---	-------------------------	------	---	------	---	-------	---	-------	---

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (0.80% compounded for 10 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building		1											
2028 Base Volumes	0	192	0	0	252	0	0	0	0	0	0	0	0
New Trips	2					20				60		5	
Pass-By Trips													0
Total Trip Distribution	2	0	0	0	0	20	0	0	0	60	0	5	0
2028 Projected Volumes	2	192	0	0	252	20	0	0	0	60	0	5	531
Base growth (0.80% compounded for 15 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2033 Base Volumes	0	199	0	0	261	0	0	0	0	0	0	0	0
2033 Projected Volumes	2	199	0	0	261	20	0	0	0	60	0	5	547

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (0.80% compounded for 10 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building					1								
2028 Base Volumes	0	194	0	0	251	0	0	0	0	0	0	0	0
New Trips	6					68				40		3	117
Pass-By Trips													0
Total Trip Distribution	6	0	0	0	0	68	0	0	0	40	0	3	117
2028 Projected Volumes	6	194	0	0	251	68	0	0	0	40	0	3	562
Base growth (0.80% compounded for 15 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2033 Base Volumes	0	203	0	0	261	0	0	0	0	0	0	0	0
2033 Projected Volumes	6	203	0	0	261	68	0	0	0	40	0	3	581

TPD# CHHN.00013

2/27/2020

Traffic Volumes Worksheet

Intersection:

S. York Street (SR 2013) & Proposed Driveway

Synchro Node:

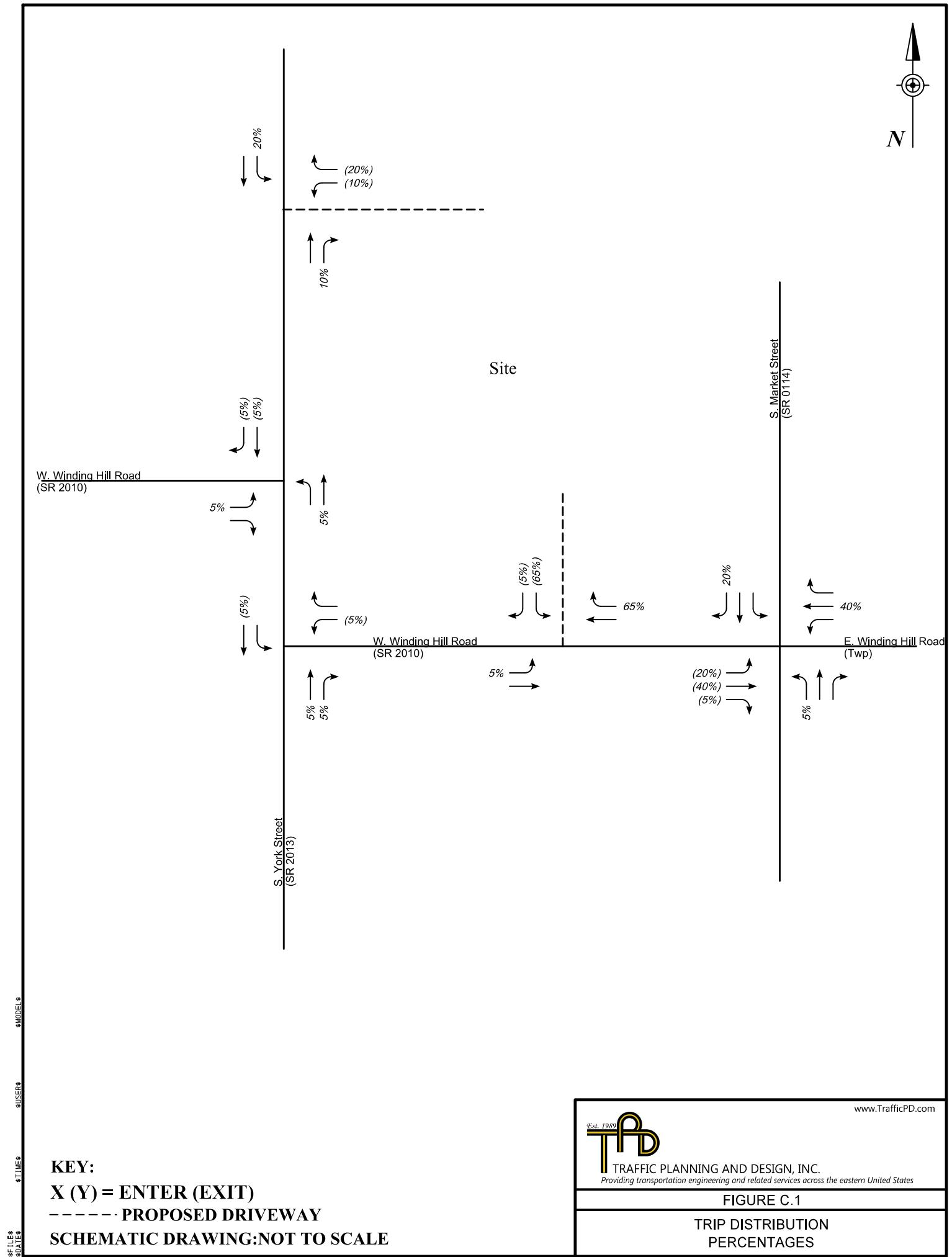
5	Adjacent intersections:	West	0	East	0	North	0	South	0
---	-------------------------	------	---	------	---	-------	---	-------	---

Time Period: Weekday A.M. Peak Hour

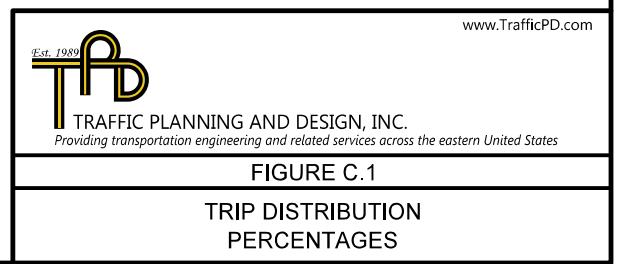
	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (0.80% compounded for 5 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building												1	
2023 Base Volumes	0	0	0	0	0	0	0	367	0	0	240	0	0
New Trips					9	19				3	6		
Pass-By Trips													0
Total Trip Distribution	0	0	0	9	0	19	0	0	3	6	0	0	0
2023 Projected Volumes	0	0	0	9	0	19	0	367	3	6	240	0	644
Base growth (0.80% compounded for 15 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2033 Base Volumes	0	0	0	0	0	0	0	382	0	0	250	0	0
2033 Projected Volumes	0	0	0	9	0	19	0	382	3	6	250	0	669

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	
2018 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (0.80% compounded for 5 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building									1				
2023 Base Volumes	0	0	0	0	0	0	0	256	0	0	308	0	0
New Trips					6	13				10	21		50
Pass-By Trips													0
Total Trip Distribution	0	0	0	6	0	13	0	0	10	21	0	0	50
2023 Projected Volumes	0	0	0	6	0	13	0	256	10	21	308	0	614
Base growth (0.80% compounded for 15 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2033 Base Volumes	0	0	0	0	0	0	0	267	0	0	321	0	0
2033 Projected Volumes	0	0	0	6	0	13	0	267	10	21	321	0	638



KEY:
X (Y) = ENTER (EXIT)
--- PROPOSED DRIVEWAY
SCHEMATIC DRAWING:NOT TO SCALE



Work Destination Report - Where Workers are Employed Who Live in the Selection Area - by ZIP Codes (ZCTA)

Total Primary Jobs

	2015	
	Count	Share
Total Primary Jobs	7,603	100.0%

Jobs Counts by ZIP Codes (ZCTA) Where Workers are Employed - Primary Jobs

	2015	
	Count	Share
17055	1,044	13.7%
17011	768	10.1%
17050	592	7.8%
17110	321	4.2%
17101	311	4.1%
17111	279	3.7%
17013	272	3.6%
17025	218	2.9%
17109	170	2.2%
17112	159	2.1%
17027	155	2.0%
17033	155	2.0%
17015	128	1.7%
17102	127	1.7%
17043	106	1.4%
17057	98	1.3%
17019	95	1.2%
17339	81	1.1%
17104	80	1.1%
17103	73	1.0%
17120	73	1.0%
17070	71	0.9%
17601	46	0.6%
17402	45	0.6%
17113	41	0.5%
All Other Locations	2,095	27.6%

Directional Split

	East	West	North	North	South	
	W. Winding Hill Rd	W. Winding Hill Rd	S. York St	S. Market Street	S. York St	S. Market Street
17055	10%	15%	30%	10%	15%	20%
17011	70%					
17050			100%			
17110				30%		
17101				30%		
17111				30%		
17013				50%		
17025				20%		
17109				50%		
17112				70%		
17027					100%	
17033						30%
17015						40%
17102						40%
17043						30%
17057						70%
17019						20%
17339						40%
17104						20%
17103						30%
17120						30%
17070						50%
17601						30%
17402						20%
17113						30%
All Other Locations						20%

Weighted Percent

	East	West	North	North	South	
	W. Winding Hill Rd	W. Winding Hill Rd	S. York St	S. Market Street	S. York St	S. Market Street
17055	1.37%	2.06%	4.12%	1.37%	2.06%	2.75%
17011	7.07%	0.00%	0.00%	3.03%	0.00%	0.00%
17050	0.07%	0.00%	7.79%	0.00%	0.00%	0.00%
17110	2.98%	0.00%	0.00%	1.27%	0.00%	0.00%
17101	2.88%	0.00%	0.00%	1.23%	0.00%	0.00%
17111	2.57%	0.00%	0.00%	1.10%	0.00%	0.00%
17013	1.43%	0.00%	1.79%	0.36%	0.00%	0.00%
17025	0.86%	0.00%	0.57%	1.43%	0.00%	0.00%
17109	1.57%	0.00%	0.00%	0.67%	0.00%	0.00%
17112	1.46%	0.00%	0.00%	0.63%	0.00%	0.00%
17027	0.00%	0.00%	0.00%	0.00%	2.04%	0.00%
17033	1.43%	0.00%	0.00%	0.61%	0.00%	0.00%
17015	0.00%	0.67%	0.67%	0.00%	0.34%	0.00%
17102	1.17%	0.00%	0.00%	0.50%	0.00%	0.00%
17043	0.98%	0.00%	0.00%	0.42%	0.00%	0.00%
17057	0.90%	0.00%	0.00%	0.39%	0.00%	0.00%
17019	0.25%	0.50%	0.00%	0.00%	0.37%	0.12%
17339	0.21%	0.00%	0.00%	0.00%	0.53%	0.32%
17104	0.74%	0.00%	0.00%	0.32%	0.00%	0.00%
17103	0.67%	0.29%	0.00%	0.00%	0.00%	0.00%
17120	0.67%	0.00%	0.00%	0.29%	0.00%	0.00%
17070	0.65%	0.00%	0.00%	0.28%	0.00%	0.00%
17601	0.42%	0.00%	0.00%	0.18%	0.00%	0.00%
17402	0.12%	0.00%	0.00%	0.00%	0.12%	0.36%
17113	0.38%	0.00%	0.00%	0.16%	0.00%	0.00%
All Other Locations						

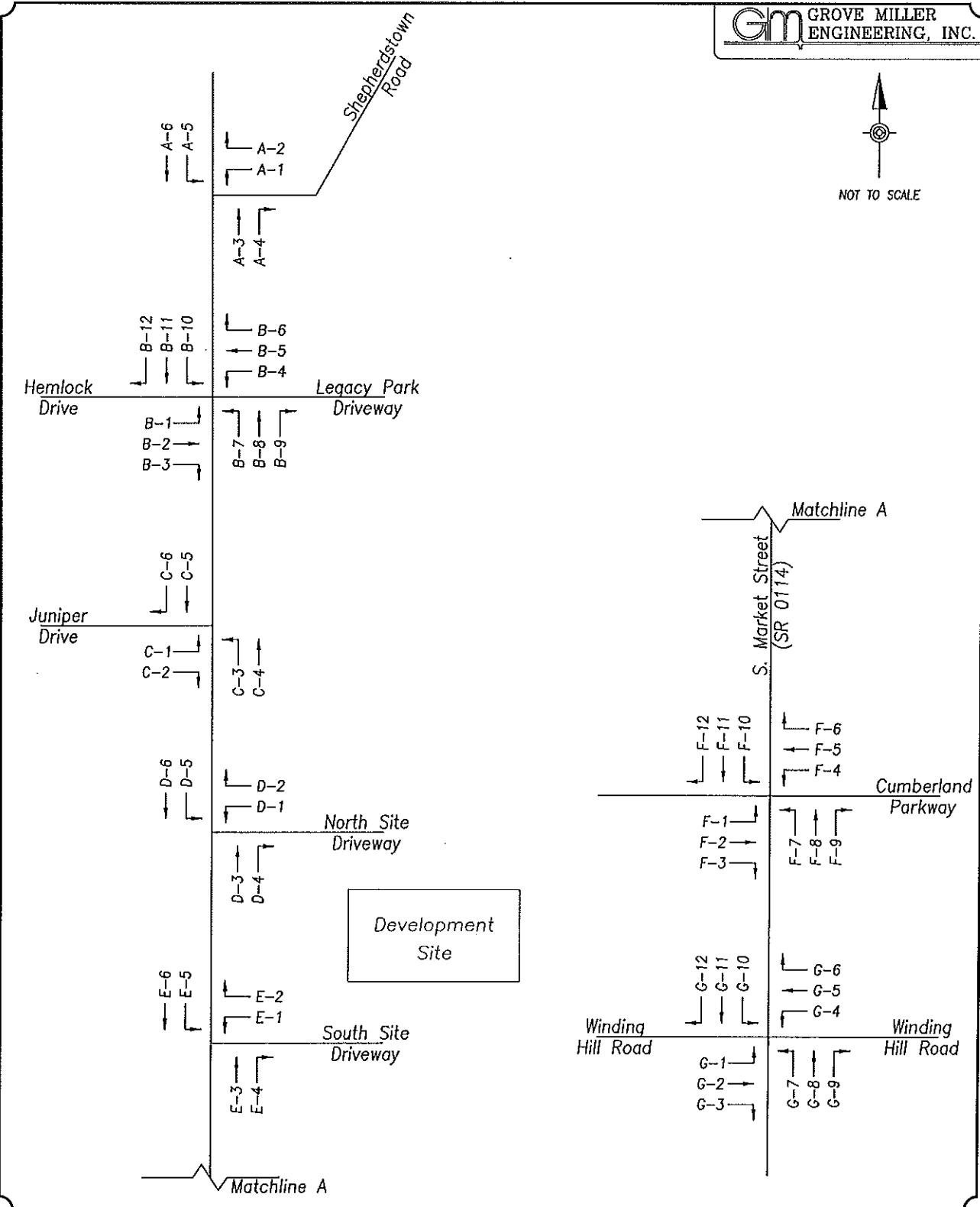
Driveway To/From:

East:	60%
West:	20%

APPENDIX D

NEARBY DEVELOPMENTS

NOT TO SCALE



TRANSPORTATION IMPACT STUDY

1225 SOUTH MARKET
STREET SITE

Upper Allen Twp., Cumberland County

INTERSECTION MOVEMENT KEY

PROJ: 384.76
 DATE: 10/19/2016
 REV: 2/8/2017
 BY: GEC

AM PEAK HOUR TRAFFIC VOLUMES

TRAFFIC IMPACT STUDY
 GROVE MILLER ENGINEERING INC.
 1225 SOUTH MARKET STREET SITE
 UPPER ALLEN TOWNSHIP, CUMBERLAND COUNTY

	EVENT	YEAR	% / YR	GROWTH FACTOR
COUNT		2016	1.25%	1.0000
BUILD		2018	1.25%	1.0252
HORIZON		2023	1.25%	1.0909

MVMT. NO.	AM 2016 COUN T	AM 2018 VOLUME	AM 2023 PROJ. VOLUME	CAR TRIPS			TRUCK TRIPS			MVMT. NO.	AM 2016 BUILD VOLUME	AM 2018 BUILD VOLUME	AM 2023 BUILD VOLUME	MVMT. NO.	EXISTING TRUCK %	NO BUILD TRUCK %	BUILD TRUCK %	
				NEW ENTRY VOLUME	NEW EXIT VOLUME	NEW ENTRY VOLUME	NEW EXIT VOLUME	NEW ENTRY VOLUME	NEW EXIT VOLUME									
				150	24	22	22	15	0									
A-1	163	167	178	A-1	15	0	0	0	0	A-1	153	178	189	A-1	193	204	A-1	3
A-2	8	8	9	A-2	0	0	0	0	0	A-2	8	8	9	A-2	8	9	A-2	0
A-3	398	408	434	A-3	0	7	0	0	1	A-3	398	454	480	A-3	462	488	A-3	4
A-4	409	419	446	A-4	0	3	0	0	0	A-4	35	409	454	A-4	457	484	A-4	4
A-5	2	2	2	A-5	0	0	0	0	0	A-5	2	2	2	A-5	2	2	A-5	0
A-6	452	453	493	A-6	45	0	1	0	0	A-6	16	452	479	A-6	525	555	A-6	7
B-1	3	3	3	B-1	0	0	0	0	0	B-1	3	3	3	B-1	3	3	B-1	0
B-2	0	0	0	B-2	0	0	0	0	0	B-2	0	0	0	B-2	0	0	B-2	2
B-3	1	1	1	B-3	0	0	0	0	0	B-3	1	1	1	B-3	1	1	B-3	0
B-4	0	0	0	B-4	0	0	0	0	0	B-4	95	0	95	B-4	95	95	B-4	2
B-5	0	0	0	B-5	0	0	0	0	0	B-5	0	0	0	B-5	0	0	B-5	2
B-6	0	0	0	B-6	0	0	0	0	0	B-6	81	0	81	B-6	81	81	B-6	2
B-7	3	3	3	B-7	0	0	0	0	0	B-7	3	3	3	B-7	3	3	B-7	0
B-8	803	823	876	B-8	0	10	0	1	1	B-8	803	823	876	B-8	834	887	B-8	4
B-9	0	0	0	B-9	0	0	0	0	0	B-9	32	0	32	B-9	32	32	B-9	2
B-10	0	0	0	B-10	0	0	0	0	0	B-10	30	0	30	B-10	30	30	B-10	2
B-11	614	629	670	B-11	60	0	1	0	0	B-11	-3	614	626	B-11	687	728	B-11	6
B-12	1	1	1	B-12	0	0	0	0	0	B-12	1	1	1	B-12	1	1	B-12	0
C-1	3	3	3	C-1	0	0	0	0	0	C-1	3	3	3	C-1	3	3	C-1	0
C-2	16	16	17	C-2	0	0	0	0	0	C-2	16	16	17	C-2	16	17	C-2	6
C-3	2	2	2	C-3	0	0	0	0	0	C-3	2	2	2	C-3	2	2	C-3	0
C-4	799	819	872	C-4	0	10	0	1	1	C-4	32	799	851	C-4	862	915	C-4	5
C-5	613	628	669	C-5	60	0	1	0	0	C-5	92	613	720	C-5	781	822	C-5	6
C-6	2	2	2	C-6	0	0	0	0	0	C-6	2	2	2	C-6	2	2	C-6	0
D-1	5	5	5	D-1	0	0	0	0	0	D-1	-5	5	5	D-1	0	0	D-1	80
D-2	1	1	1	D-2	0	10	0	1	1	D-2	1	1	12	D-2	12	12	D-2	0
D-3	801	821	874	D-3	0	0	0	0	0	D-3	32	801	853	D-3	853	906	D-3	5
D-4	7	7	8	D-4	0	0	0	0	0	D-4	7	7	8	D-4	7	8	D-4	71
D-5	2	2	2	D-5	0	0	0	0	0	D-5	-2	2	2	D-5	0	0	D-5	50
D-6	628	642	683	D-6	60	0	1	0	0	D-6	2	92	626	D-6	797	838	D-6	5
E-1	0	0	0	E-1	0	14	0	21	21	E-1	5	0	0	E-1	40	40	E-1	0
E-2	1	1	1	E-2	0	0	0	0	0	E-2	1	1	1	E-2	1	1	E-2	0
E-3	811	831	885	E-3	0	0	0	0	0	E-3	32	811	863	E-3	863	917	E-3	5
E-4	9	9	10	E-4	90	0	0	21	21	E-4	9	9	10	E-4	120	121	E-4	44
E-5	2	2	2	E-5	60	0	1	0	0	E-5	2	2	2	E-5	65	65	E-5	100
E-6	629	645	685	E-6	0	0	0	0	0	E-6	-5	92	629	E-6	732	773	E-6	6
F-1	6	6	7	F-1	0	0	0	0	0	F-1	6	6	7	F-1	6	7	F-1	0
F-2	4	4	4	F-2	0	0	0	0	0	F-2	4	4	4	F-2	4	4	F-2	0
F-3	5	5	5	F-3	0	0	0	0	0	F-3	5	5	5	F-3	5	5	F-3	0
F-4	109	112	119	F-4	0	0	0	0	0	F-4	109	112	119	F-4	112	119	F-4	8
F-5	24	25	26	F-5	0	0	0	0	0	F-5	24	25	26	F-5	25	25	F-5	0
F-6	246	252	268	F-6	37	0	1	0	0	F-6	16	246	258	F-6	306	322	F-6	7
F-7	14	14	15	F-7	0	0	0	0	0	F-7	14	14	15	F-7	14	15	F-7	0
F-8	554	568	604	F-8	53	0	20	0	0	F-8	16	554	584	F-8	657	693	F-8	6
F-9	65	57	71	F-9	0	0	0	0	0	F-9	65	67	71	F-9	67	71	F-9	5
F-10	261	268	285	F-10	0	6	0	1	1	F-10	46	261	314	F-10	321	338	F-10	6
F-11	353	362	385	F-11	0	8	0	20	20	F-11	46	353	408	F-11	436	459	F-11	7
F-12	18	18	20	F-12	0	0	0	0	0	F-12	18	18	20	F-12	18	20	F-12	0
G-1	25	25	27	G-1	0	0	0	0	0	G-1	25	26	27	G-1	26	27	G-1	0
G-2	59	60	64	G-2	0	0	0	0	0	G-2	59	60	64	G-2	60	64	G-2	0
G-3	73	75	80	G-3	0	0	0	0	0	G-3	73	75	80	G-3	75	80	G-3	3
G-4	2	2	2	G-4	0	0	0	0	0	G-4	2	2	2	G-4	2	2	G-4	0
G-5	32	33	35	G-5	0	0	0	0	0	G-5	32	33	35	G-5	33	35	G-5	0
G-6	26	27	28	G-6	0	0	0	0	0	G-6	26	27	28	G-6	27	28	G-6	0
G-7	103	106	112	G-7	0	0	0	0	0	G-7	103	106	112	G-7	106	112	G-7	3
G-8	609	624	664	G-8	53	0	20	0	0	G-8	16	609	640	G-8	713	753	G-8	5
G-9	7	7	8	G-9	0	0	0	0	0	G-9	7	7	8	G-9	7	8	G-9	0
G-10	46	47	50	G-10	0	0	0	0	0	G-10	46	47	50	G-10	47	50	G-10	9
G-11	378	388	412	G-11	0	8	0	0	0	G-11	46	378	434	G-11	458	486	G-11	8
G-12	44	45	48	G-12	0	0	0	0	0	G-12	44	45	48	G-12	45	48	G-12	2

3. Access to the site is proposed via one new full-movement local road to Market Street (SR 0114), located opposite Hemlock Drive, and a second full-movement local road to Allendale Road (T-608), south of Jenna Court. In addition, the development will be linked to the adjacent (existing) community roadway network via the extension of Norway Street and Despania Drive southward into the site.
4. Under the 2025 and 2030 projected conditions, with implementation of the site-related recommendations, all approaches and turning movements at the site driveway intersections with the external roadway network will operate at LOS C or better during the weekday A.M., weekday P.M., and Saturday midday peak hours.
5. All proposed driveway location sight distances will exceed PennDOT's Desirable and Safe Stopping Sight Distance (SSSD) criteria.
6. Upon full build-out, the proposed Legacy Park development is expected to generate 416 new vehicle-trips during the weekday A.M. peak hour, 543 new vehicle-trips during the weekday P.M. peak hour, and 516 new vehicle-trips during the Saturday midday peak hour.
7. Traffic Planning and Design Inc. (TPD) recommends the following roadway improvements as outlined at the study area intersections:

Elmwood Avenue and Despania Drive (Proposed Site Access)

- Erect a "Stop" sign on the existing Despania Drive approach to control exiting traffic.

Allendale Road and Proposed Site Access Road

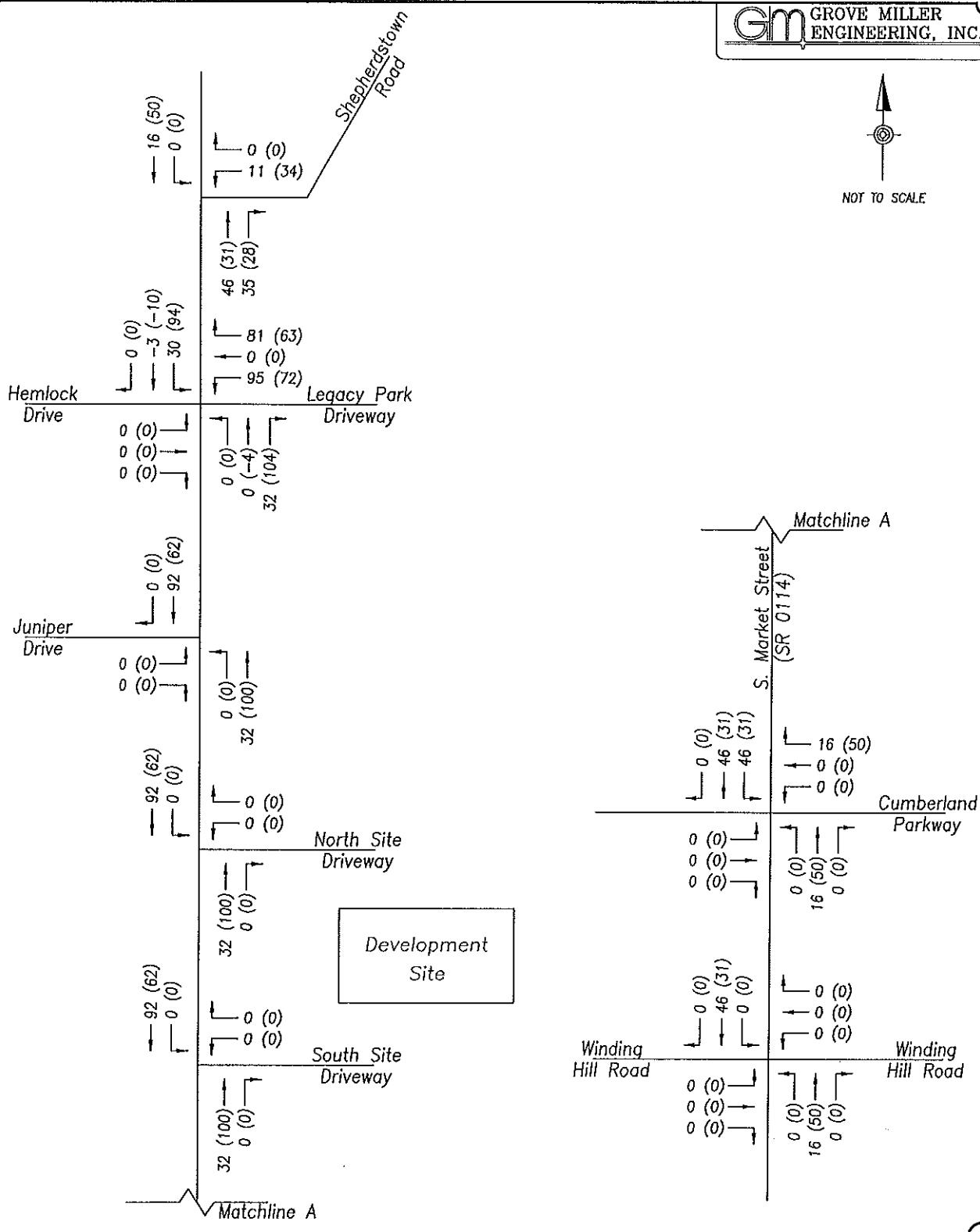
- Erect a "Stop" sign on the Site Access Road approach to control exiting traffic;
- It is proposed to realign Allendale Road along the site frontage to provide a smooth horizontal curve at the northeastern tip of the site, which will eliminate the sharp reverse curves that presently exist in this area. The Allendale Road realignment should be designed in a manner that provides adequate sight distances at the site access road intersection.

Market Street (SR 0114) and Hemlock Drive/Proposed Site Access Road

- Design the site access in accordance with PennDOT's local road standards and obtain a Highway Occupancy Permit (HOP).
- Construct a 150' dedicated left turn lane with a 75' taper on the southbound Market Street approach.
- Construct a 150' dedicated right turn lane with a 100' taper on the northbound Market Street approach.
- Construct a 75' dedicated left turn lane with a 75' taper on the northbound Market Street approach.
- Construct an additional thru lane with a 150' lane opening taper on the northbound Market Street approach to the intersection.
- Monitor signal warrants as development progresses on the site; at the time applicable signal warrants are met, install a fully-actuated traffic signal with permitted/protected advance left turn phasing on the southbound Market Street approach.



NOT TO SCALE

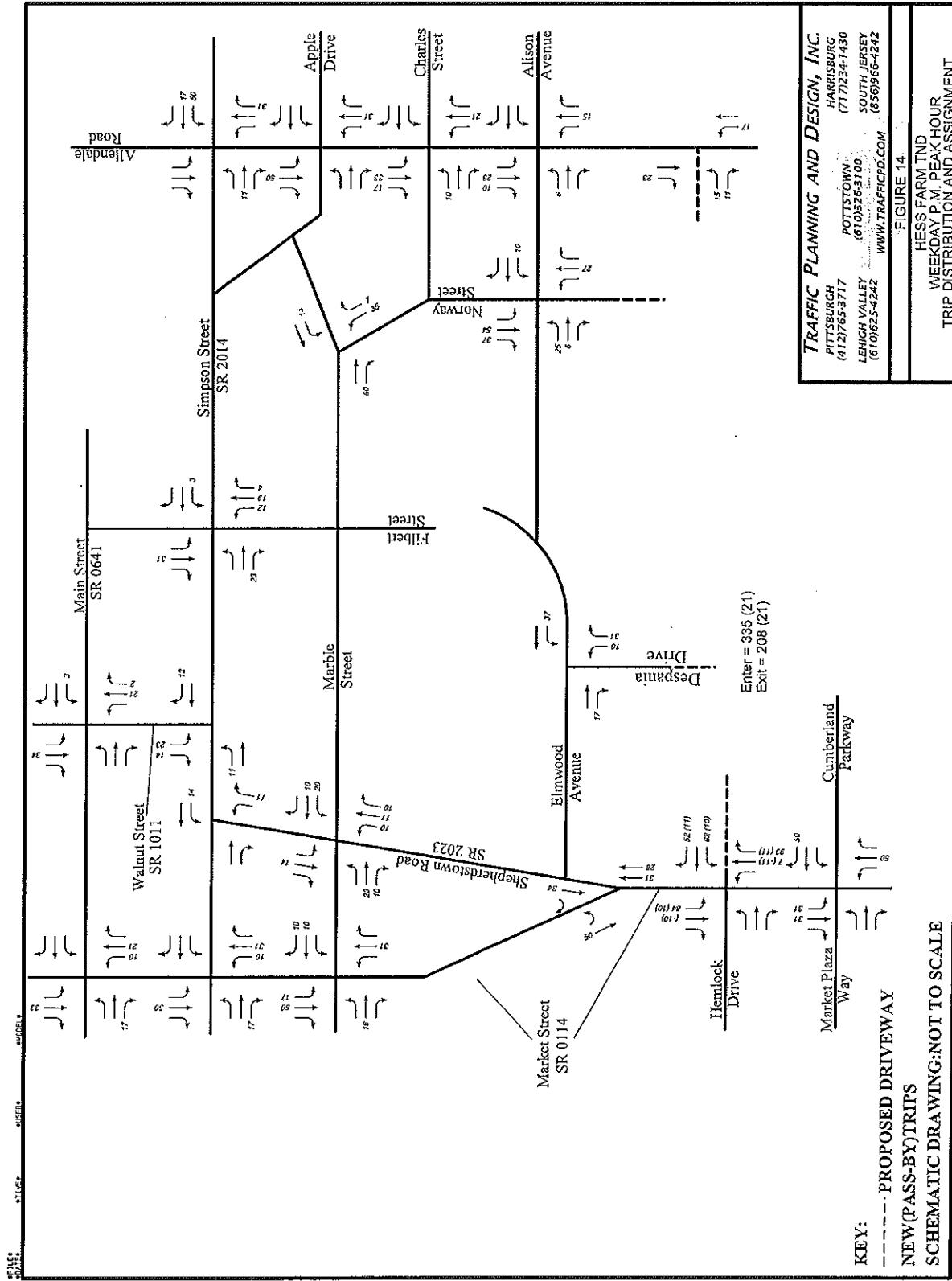


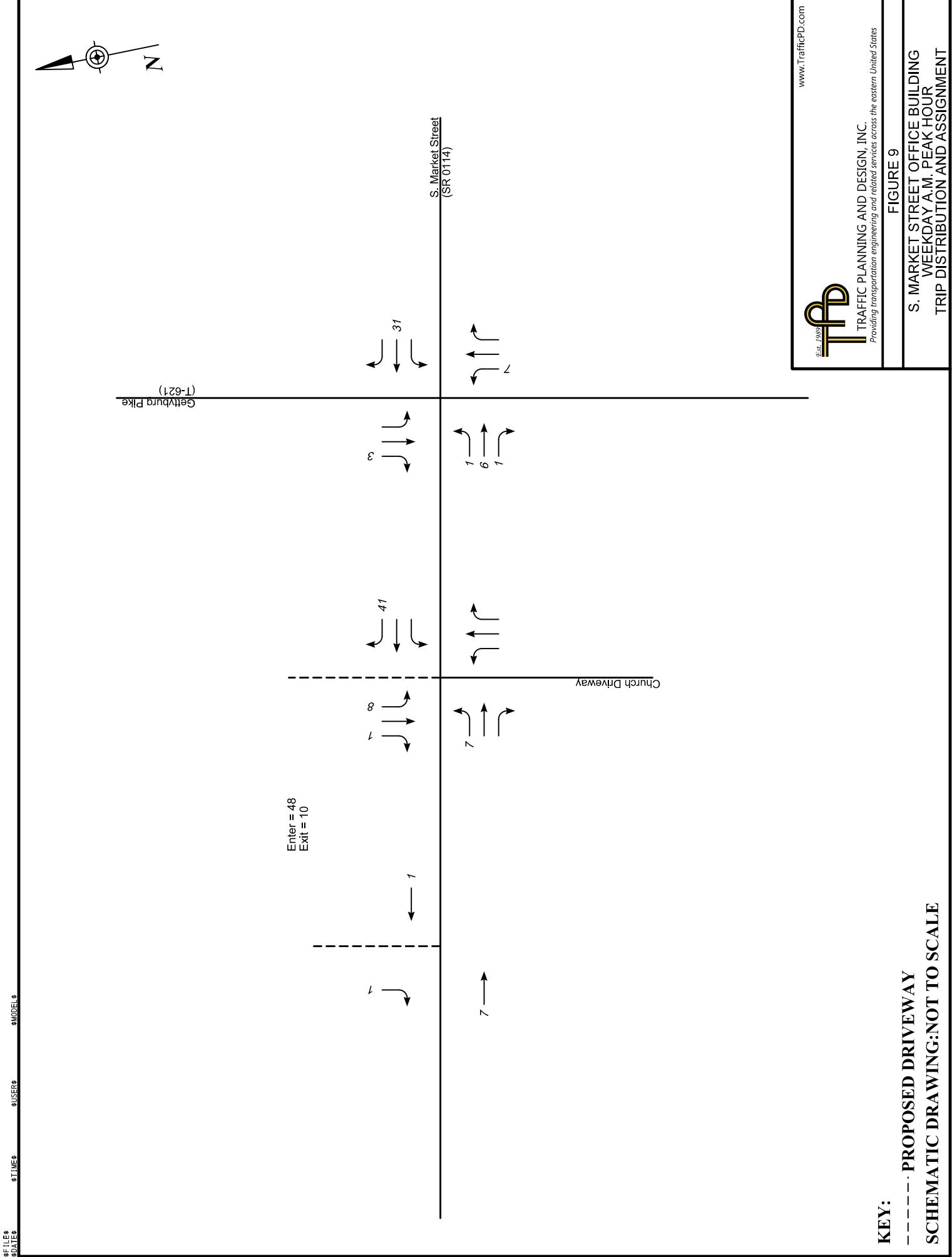
TIS SCOPING MEETING APPLICATION

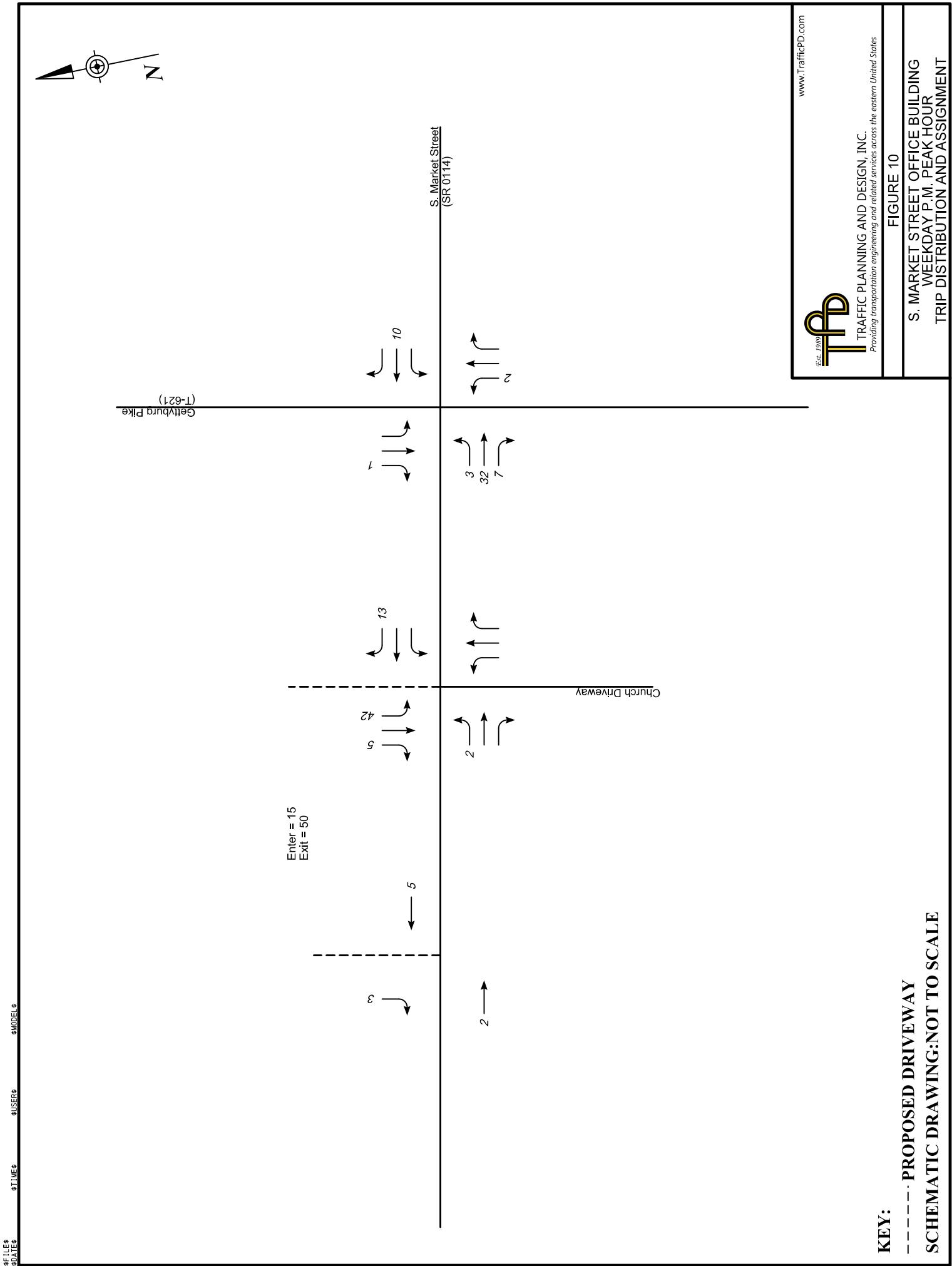
1225 SOUTH MARKET
STREET SITE

Upper Allen Twp., Cumberland County

LEGACY PARK PEAK HOUR TRIP DISTRIBUTIONS







APPENDIX E

CAPACITY ANALYSES

**CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46**

$$t_{c,x} = t_{c,\text{base}} + t_{c,HV} * P_{HV} + t_{c,G} * G - t_{3,LT}$$

where:

- $t_{c,x}$ = critical headway for movement x (s)
- $t_{c,\text{base}}$ = base critical headway from Chapter 10 of PennDOT Publication 46
- $t_{c,HV}$ = adjustment factor for heavy vehicles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
- P_{HV} = proportion of heavy vehicles for movement (expressed as a decimal; e.g., $P_{HV}=0.02$ for 2% heavy vehicles)
- $t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
- G = percent grade (expressed as an integer; e.g., $G= -2$ for a 2% downhill grade)
- $t_{c,\text{base}}$ = adjustment factor for intersection geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

GRADE	LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,\text{base}} = 4.3$)																				
	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	

GRADE	LEFT TURN FROM MINOR ROADWAY - TWO LANES - 4-LEG INTERSECTION ($t_{c,\text{base}} = 7.1$)																				
	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
1	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
2	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
3	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
4	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
5	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
6	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
7	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
8	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
9	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
10	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2

GRADE	THROUGH TRAFFIC ON MINOR ROADWAY - TWO LANES ($t_{c,\text{base}} = 6.5$)																				
	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
1	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
2	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
3	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
4	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
5	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
6	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
7	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
8	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
9	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
10	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6

GRADE	RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,\text{base}} = 6.2$)																				
	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6							

**CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46**

$$t_{c,x} = t_{c,\text{base}} + t_{c,HV} * P_{HV} + t_{c,G} * G - t_{3,LT}$$

where:

- $t_{c,x}$ = critical headway for movement x (s)
- $t_{c,\text{base}}$ = base critical headway from Chapter 10 of PennDOT Publication 46
- $t_{c,HV}$ = adjustment factor for heavy vehicles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
- P_{HV} = proportion of heavy vehicles for movement (expressed as a decimal; e.g., $P_{HV}=0.02$ for 2% heavy vehicles)
- $t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
- G = percent grade (expressed as an integer; e.g., $G= -2$ for a 2% downhill grade)
- $t_{c,\text{base}}$ = adjustment factor for intersection geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
	LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,\text{base}} = 4.3$)																				
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
	LEFT TURN FROM MINOR ROADWAY - TWO LANES - 3-LEG INTERSECTION ($t_{c,\text{base}} = 7.1$)																				
HV %																					
0	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
1	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
2	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
3	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
4	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
5	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
6	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
7	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
8	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
9	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
10	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
	RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,\text{base}} = 6.2$)																				
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

**FOLLOW-UP HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46**

$$t_{f,x} = t_{f,\text{base}} + t_{f,HV} * P_{HV}$$

where:

- | | |
|--------------|---|
| $t_{f,x}$ | = follow-up headway for movement x (s) |
| $t_{f,base}$ | = base follow-up headway from Chapter 10 of PennDOT Publication 46 |
| $t_{f,HV}$ | = adjustment factor for heavy vehicles (0.9 for major streets with one lane in each direction; 1.0 for major streets with two or three lanes in each direction) (s) |
| P_{HV} | = proportion of heavy vehicles for movement (expressed as a decimal; e.g., $P_{HV}=0.02$ for 2% heavy vehicles) |

Existing Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	B	B			R
Traffic Volume (vph)	8	224	117	10	166	80
Future Volume (vph)	8	224	117	10	166	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	294	0	161	0	0	311
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Existing Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	B			
Traffic Vol, veh/h	8	224	117	10	166	80
Future Vol, veh/h	8	224	117	10	166	80
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	10	284	148	13	210	101

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	676	155	0	0	161
Stage 1	155	-	-	-	-
Stage 2	521	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	438	940	-	-	1058
Stage 1	996	-	-	-	-
Stage 2	639	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	346	940	-	-	1058
Mov Cap-2 Maneuver	346	-	-	-	-
Stage 1	996	-	-	-	-
Stage 2	505	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	6.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	887	1058	-
HCM Lane V/C Ratio	-	-	0.331	0.199	-
HCM Control Delay (s)	-	-	11.1	9.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.7	-

Existing Conditions

Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	31	16	325	215	6
Future Volume (vph)	14	31	16	325	215	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	0	0	438	284	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Existing Conditions

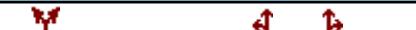
Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations 

Traffic Vol, veh/h 14 31 16 325 215 6

Future Vol, veh/h 14 31 16 325 215 6

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % -3 - - 4 -4 -

Peak Hour Factor 78 78 78 78 78 78

Heavy Vehicles, % 7 3 6 3 6 0

Mvmt Flow 18 40 21 417 276 8

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All 739 280 284 0 - 0

Stage 1 280 - - - - -

Stage 2 459 - - - - -

Critical Hdwy 5.87 5.93 4.4 - - -

Critical Hdwy Stg 1 4.87 - - - - -

Critical Hdwy Stg 2 4.87 - - - - -

Follow-up Hdwy 3.1 3.1 3.1 - - -

Pot Cap-1 Maneuver 470 824 925 - - -

Stage 1 895 - - - - -

Stage 2 756 - - - - -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 456 824 925 - - -

Mov Cap-2 Maneuver 456 - - - - -

Stage 1 868 - - - - -

Stage 2 756 - - - - -

Approach	EB	NB	SB
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HCM Control Delay, s 11 0.4 0

HCM LOS B

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h) 925 - 659 - -

HCM Lane V/C Ratio 0.022 - 0.088 - -

HCM Control Delay (s) 9 0 11 - -

HCM Lane LOS A A B - -

HCM 95th %tile Q(veh) 0.1 - 0.3 - -

Existing Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	94	54	9	76	17	100	505	11	43	339	39
Future Volume (vph)	68	94	54	9	76	17	100	505	11	43	339	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)												
Storage Length (ft)	0			0		0	75		0	150		0
Storage Lanes	0			0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red				Yes			Yes			Yes		Yes
Link Speed (mph)		35				25			40			40
Link Distance (ft)		2455				858			947			792
Travel Time (s)		47.8				23.4			16.1			13.5
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 (%)	7%	0%	7%	0%	1%	0%	3%	5%	9%	5%	8%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	232	0	0	110	0	108	555	0	46	407	0
Turn Type	Perm	NA										
Protected Phases		4				8			2			6
Permitted Phases	4				8			2			6	
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	24.0	24.0		24.0	24.0		71.0	71.0		71.0	71.0	
Total Split (%)	25.3%	25.3%		25.3%	25.3%		74.7%	74.7%		74.7%	74.7%	
Maximum Green (s)	17.7	17.7		17.7	17.7		63.6	63.6		63.6	63.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-1.0			-1.0			-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.90			0.34			0.18	0.46		0.10	0.36	
Control Delay	70.7			33.7			6.4	8.4		5.9	7.2	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	70.7			33.7			6.4	8.4		5.9	7.2	
Queue Length 50th (ft)	128			53			21	136		8	88	
Queue Length 95th (ft)	#263			102			42	203		21	137	
Internal Link Dist (ft)	2375			778			867			712		
Turn Bay Length (ft)							75			150		
Base Capacity (vph)	267			329			605	1213		456	1116	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.87			0.33			0.18	0.46		0.10	0.36	

Existing Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 35 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

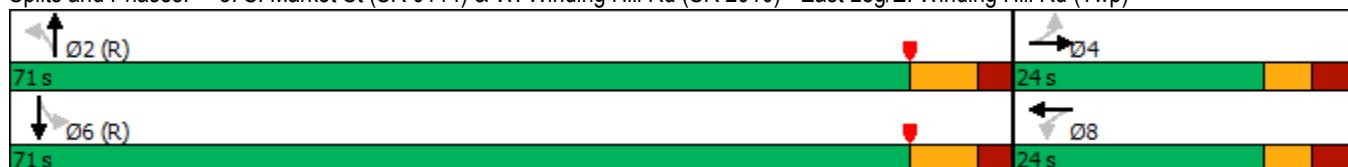
Natural Cycle: 40

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Existing Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	94	54	9	76	17	100	505	11	43	339	39
Future Volume (veh/h)	68	94	54	9	76	17	100	505	11	43	339	39
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1646	1646	1646	2018	1990	1990	1680	1637	1637
Adj Flow Rate, veh/h	73	101	58	10	82	18	108	543	12	46	365	36
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
Percent Heavy Veh, %	0	0	0	1	1	1	3	5	5	5	8	8
Cap, veh/h	123	134	69	53	229	47	713	1350	30	523	1021	101
Arrive On Green	0.17	0.18	0.17	0.17	0.18	0.17	0.70	0.70	0.69	0.70	0.70	0.69
Sat Flow, veh/h	402	740	381	62	1269	261	1062	1939	43	767	1467	145
Grp Volume(v), veh/h	232	0	0	110	0	0	108	0	555	46	0	401
Grp Sat Flow(s), veh/h/ln	1523	0	0	1592	0	0	1062	0	1982	767	0	1611
Q Serve(g_s), s	8.2	0.0	0.0	0.0	0.0	0.0	4.3	0.0	11.2	2.5	0.0	9.6
Cycle Q Clear(g_c), s	14.0	0.0	0.0	5.8	0.0	0.0	13.4	0.0	11.2	13.3	0.0	9.6
Prop In Lane	0.31			0.25	0.09		0.16	1.00		0.02	1.00	0.09
Lane Grp Cap(c), veh/h	309	0	0	312	0	0	713	0	1380	523	0	1122
V/C Ratio(X)	0.75	0.00	0.00	0.35	0.00	0.00	0.15	0.00	0.40	0.09	0.00	0.36
Avail Cap(c_a), veh/h	332	0	0	337	0	0	713	0	1380	523	0	1122
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.7	0.0	0.0	34.4	0.0	0.0	8.4	0.0	6.1	8.8	0.0	5.9
Incr Delay (d2), s/veh	8.6	0.0	0.0	0.7	0.0	0.0	0.4	0.0	0.9	0.3	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	9.9	0.0	0.0	4.2	0.0	0.0	1.7	0.0	7.1	0.8	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.3	0.0	0.0	35.0	0.0	0.0	8.9	0.0	7.0	9.1	0.0	6.8
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h	232				110			663			447	
Approach Delay, s/veh	46.3				35.0			7.3			7.0	
Approach LOS	D				D			A			A	
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	72.5			22.5			72.5			22.5		
Change Period (Y+Rc), s	7.4			* 6.3			7.4			* 6.3		
Max Green Setting (Gmax), s	63.6			* 18			63.6			* 18		
Max Q Clear Time (g_c+l1), s	15.9			16.0			15.8			7.8		
Green Ext Time (p_c), s	3.2			0.1			2.1			0.2		
Intersection Summary												
HCM 6th Ctrl Delay				15.5								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Existing Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	17	214	73	6	174	113
Future Volume (vph)	17	214	73	6	174	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	84	0	0	309
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Existing Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	17	214	73	6	174	113
Future Vol, veh/h	17	214	73	6	174	113
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, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	18	230	78	6	187	122

Major/Minor	Minor1	Major1	Major2
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Conflicting Flow All	577	81	0	0	84	0
Stage 1	81	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	508	1041	-	-	1124	-
Stage 1	1089	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	418	1041	-	-	1124	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	1089	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	10.2	0	5.4
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HCM LOS	B
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Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	938	1124	-
HCM Lane V/C Ratio	-	-	0.265	0.166	-
HCM Control Delay (s)	-	-	10.2	8.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.6	-

Existing Conditions

Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	19	57	230	268	17
Future Volume (vph)	6	19	57	230	268	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	0	316	314	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Existing Conditions

Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
Traffic Vol, veh/h	6	19	57	230	268	17
Future Vol, veh/h	6	19	57	230	268	17
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, %	-3	-	-	4	-4	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	7	21	63	253	295	19

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	684	305	314	0	-	0
Stage 1	305	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.3	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	523	801	937	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	482	801	937	-	-	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	834	-	-	-	-	-
Stage 2	844	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s	10.4	1.8	0
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HCM LOS	B
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Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	937	-	691	-	-
HCM Lane V/C Ratio	0.067	-	0.04	-	-
HCM Control Delay (s)	9.1	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-

Existing Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	73	74	4	56	22	48	396	6	58	487	102
Future Volume (vph)	34	73	74	4	56	22	48	396	6	58	487	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2455			858			947			792	
Travel Time (s)		47.8			23.4			16.1			13.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%	0%	2%	0%	2%	3%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	90	0	53	442	0	64	647	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	24.0	24.0		24.0	24.0		66.0	66.0		66.0	66.0	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Maximum Green (s)	17.7	17.7		17.7	17.7		58.6	58.6		58.6	58.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.72			0.30			0.12	0.35		0.11	0.55	
Control Delay	43.6			27.6			6.1	6.9		5.9	9.1	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	43.6			27.6			6.1	6.9		5.9	9.1	
Queue Length 50th (ft)	87			35			9	91		11	157	
Queue Length 95th (ft)	158			76			24	149		27	262	
Internal Link Dist (ft)	2375			778			867			712		
Turn Bay Length (ft)						75				150		
Base Capacity (vph)	322			361			450	1271		569	1179	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.61			0.25			0.12	0.35		0.11	0.55	

Existing Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 90

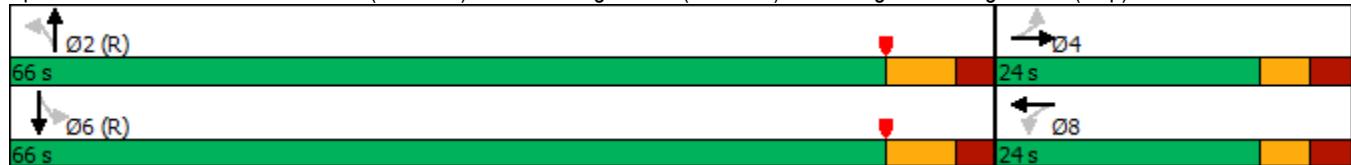
Actuated Cycle Length: 90

Offset: 15 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Existing Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	73	74	4	56	22	48	396	6	58	487	102
Future Volume (veh/h)	34	73	74	4	56	22	48	396	6	58	487	102
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1697	1697	1697	1660	1660	1660	2061	2032	2032	1722	1708	1708
Adj Flow Rate, veh/h	37	80	79	4	62	16	53	435	7	64	535	107
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	0	0	0	0	2	2	2	3	3
Cap, veh/h	79	114	99	46	206	51	538	1412	23	631	978	196
Arrive On Green	0.15	0.16	0.15	0.15	0.16	0.15	0.71	0.71	0.70	0.71	0.71	0.70
Sat Flow, veh/h	197	703	607	26	1267	313	868	1995	32	872	1382	276
Grp Volume(v), veh/h	196	0	0	82	0	0	53	0	442	64	0	642
Grp Sat Flow(s), veh/h/ln	1507	0	0	1606	0	0	868	0	2027	872	0	1658
Q Serve(g_s), s	7.3	0.0	0.0	0.0	0.0	0.0	2.8	0.0	7.3	2.6	0.0	16.7
Cycle Q Clear(g_c), s	11.4	0.0	0.0	4.1	0.0	0.0	19.0	0.0	7.3	9.5	0.0	16.7
Prop In Lane	0.19			0.40	0.05		0.20	1.00		0.02	1.00	0.17
Lane Grp Cap(c), veh/h	275	0	0	285	0	0	538	0	1434	631	0	1173
V/C Ratio(X)	0.71	0.00	0.00	0.29	0.00	0.00	0.10	0.00	0.31	0.10	0.00	0.55
Avail Cap(c_a), veh/h	342	0	0	356	0	0	538	0	1434	631	0	1173
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.5	0.0	0.0	33.4	0.0	0.0	10.7	0.0	4.9	6.6	0.0	6.3
Incr Delay (d2), s/veh	5.1	0.0	0.0	0.6	0.0	0.0	0.4	0.0	0.6	0.3	0.0	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	8.0	0.0	0.0	3.0	0.0	0.0	1.0	0.0	4.4	0.8	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	0.0	0.0	34.0	0.0	0.0	11.1	0.0	5.5	6.9	0.0	8.2
LnGrp LOS	D	A	A	C	A	A	B	A	A	A	A	A
Approach Vol, veh/h	196				82			495			706	
Approach Delay, s/veh	41.7				34.0			6.1			8.0	
Approach LOS	D				C			A			A	
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	70.1			19.9			70.1			19.9		
Change Period (Y+Rc), s	7.4			* 6.3			7.4			* 6.3		
Max Green Setting (Gmax), s	58.6			* 18			58.6			* 18		
Max Q Clear Time (g_c+l1), s	21.5			13.4			18.7			6.1		
Green Ext Time (p_c), s	2.3			0.3			3.7			0.2		
Intersection Summary												
HCM 6th Ctrl Delay				13.3								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2028 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	243	127	11	181	87
Future Volume (vph)	9	243	127	11	181	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	319	0	175	0	0	339
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B			A	
Traffic Vol, veh/h	9	243	127	11	181	87
Future Vol, veh/h	9	243	127	11	181	87
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	11	308	161	14	229	110

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	736	168	0	0	175
Stage 1	168	-	-	-	-
Stage 2	568	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	400	923	-	-	1046
Stage 1	981	-	-	-	-
Stage 2	603	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	307	923	-	-	1046
Mov Cap-2 Maneuver	307	-	-	-	-
Stage 1	981	-	-	-	-
Stage 2	463	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s 11.6 0 6.4

HCM LOS B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	861	1046	-
HCM Lane V/C Ratio	-	-	0.37	0.219	-
HCM Control Delay (s)	-	-	11.6	9.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.7	0.8	-

2028 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	34	17	352	234	6
Future Volume (vph)	15	34	17	352	234	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	0	473	308	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Base (No-Build) Conditions

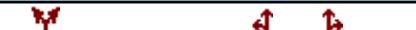
Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
----------	-----	-----	-----	-----	-----	-----

Lane Configurations 

Traffic Vol, veh/h 15 34 17 352 234 6

Future Vol, veh/h 15 34 17 352 234 6

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % -3 - - 4 -4 -

Peak Hour Factor 78 78 78 78 78 78

Heavy Vehicles, % 7 3 6 3 6 0

Mvmt Flow 19 44 22 451 300 8

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All 799 304 308 0 - 0

Stage 1 304 - - - - -

Stage 2 495 - - - - -

Critical Hdwy 5.87 5.93 4.4 - - -

Critical Hdwy Stg 1 4.87 - - - - -

Critical Hdwy Stg 2 4.87 - - - - -

Follow-up Hdwy 3.1 3.1 3.1 - - -

Pot Cap-1 Maneuver 437 800 907 - - -

Stage 1 875 - - - - -

Stage 2 730 - - - - -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver 423 800 907 - - -

Mov Cap-2 Maneuver 423 - - - - -

Stage 1 847 - - - - -

Stage 2 730 - - - - -

Approach	EB	NB	SB
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HCM Control Delay, s 11.4 0.4 0

HCM LOS B

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h) 907 - 629 - -

HCM Lane V/C Ratio 0.024 - 0.1 - -

HCM Control Delay (s) 9.1 0 11.4 - -

HCM Lane LOS A A B - -

HCM 95th %tile Q(veh) 0.1 - 0.3 - -

2028 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	100	59	10	81	18	107	629	12	46	441	42
Future Volume (vph)	72	100	59	10	81	18	107	629	12	46	441	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0	0	0	75		0	150		0	
Storage Lanes	0	0	0	0	0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2455			858			947			792	
Travel Time (s)		47.8			23.4			16.1			13.5	
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 (%)	7%	0%	7%	0%	1%	0%	3%	5%	9%	5%	8%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	248	0	0	117	0	115	689	0	49	519	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	28.0	28.0		28.0	28.0		67.0	67.0		67.0	67.0	
Total Split (%)	29.5%	29.5%		29.5%	29.5%		70.5%	70.5%		70.5%	70.5%	
Maximum Green (s)	21.7	21.7		21.7	21.7		59.6	59.6		59.6	59.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.84			0.32			0.24	0.59		0.14	0.48	
Control Delay	58.3			30.3			8.7	12.1		8.1	10.2	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	58.3			30.3			8.7	12.1		8.1	10.2	
Queue Length 50th (ft)	131			53			27	222		11	147	
Queue Length 95th (ft)	#252			102			55	330		27	224	
Internal Link Dist (ft)	2375			778			867			712		
Turn Bay Length (ft)							75			150		
Base Capacity (vph)	321			399			485	1165		338	1073	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.77			0.29			0.24	0.59		0.14	0.48	

2028 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 35 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

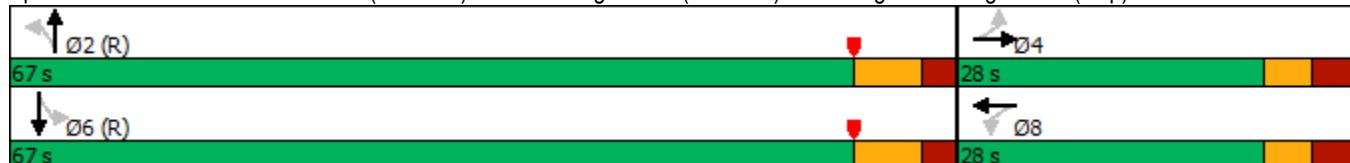
Natural Cycle: 55

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



2028 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	100	59	10	81	18	107	629	12	46	441	42
Future Volume (veh/h)	72	100	59	10	81	18	107	629	12	46	441	42
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1646	1646	1646	2018	1990	1990	1680	1637	1637
Adj Flow Rate, veh/h	77	108	63	11	87	19	115	676	13	49	474	39
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
Percent Heavy Veh, %	0	0	0	1	1	1	3	5	5	5	8	8
Cap, veh/h	127	142	75	54	244	50	594	1330	26	428	1020	84
Arrive On Green	0.18	0.19	0.18	0.18	0.19	0.18	0.68	0.68	0.67	0.68	0.68	0.67
Sat Flow, veh/h	398	736	386	65	1264	258	957	1946	37	677	1493	123
Grp Volume(v), veh/h	248	0	0	117	0	0	115	0	689	49	0	513
Grp Sat Flow(s), veh/h/ln	1520	0	0	1587	0	0	957	0	1983	677	0	1615
Q Serve(g_s), s	8.9	0.0	0.0	0.0	0.0	0.0	5.9	0.0	16.0	3.6	0.0	14.0
Cycle Q Clear(g_c), s	15.0	0.0	0.0	6.1	0.0	0.0	19.5	0.0	16.0	19.1	0.0	14.0
Prop In Lane	0.31			0.25	0.09		0.16	1.00		0.02	1.00	0.08
Lane Grp Cap(c), veh/h	327	0	0	332	0	0	594	0	1356	428	0	1104
V/C Ratio(X)	0.76	0.00	0.00	0.35	0.00	0.00	0.19	0.00	0.51	0.11	0.00	0.46
Avail Cap(c_a), veh/h	393	0	0	401	0	0	594	0	1356	428	0	1104
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.0	0.0	0.0	33.5	0.0	0.0	11.4	0.0	7.3	11.8	0.0	7.0
Incr Delay (d2), s/veh	6.8	0.0	0.0	0.6	0.0	0.0	0.7	0.0	1.4	0.5	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	10.2	0.0	0.0	4.4	0.0	0.0	2.3	0.0	9.7	1.0	0.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.8	0.0	0.0	34.1	0.0	0.0	12.1	0.0	8.7	12.3	0.0	8.4
LnGrp LOS	D	A	A	C	A	A	B	A	A	B	A	A
Approach Vol, veh/h	248			117			804			562		
Approach Delay, s/veh	43.8			34.1			9.1			8.7		
Approach LOS	D			C			A			A		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	71.3		23.7		71.3		23.7					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	59.6		* 22		59.6		* 22					
Max Q Clear Time (g_c+l1), s	22.0		17.0		21.6		8.1					
Green Ext Time (p_c), s	4.3		0.4		2.8		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			15.7									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2028 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	233	79	6	188	122
Future Volume (vph)	18	233	79	6	188	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	270	0	91	0	0	333
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	N			
Traffic Vol, veh/h	18	233	79	6	188	122
Future Vol, veh/h	18	233	79	6	188	122
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, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	19	251	85	6	202	131

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	623	88	0	0	91
Stage 1	88	-	-	-	-
Stage 2	535	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	474	1031	-	-	1118
Stage 1	1080	-	-	-	-
Stage 2	628	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	382	1031	-	-	1118
Mov Cap-2 Maneuver	382	-	-	-	-
Stage 1	1080	-	-	-	-
Stage 2	506	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s 10.5 0 5.4

HCM LOS B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	919	1118	-
HCM Lane V/C Ratio	-	-	0.294	0.181	-
HCM Control Delay (s)	-	-	10.5	8.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.7	-

2028 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	21	62	250	290	18
Future Volume (vph)	6	21	62	250	290	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	0	0	343	339	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
Traffic Vol, veh/h	6	21	62	250	290	18
Future Vol, veh/h	6	21	62	250	290	18
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, %	-3	-	-	4	-4	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	7	23	68	275	319	20

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	740	329	339	0	-	0
Stage 1	329	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.3	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	488	778	919	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	446	778	919	-	-	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	808	-	-	-	-	-
Stage 2	819	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s	10.6	1.8	0
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HCM LOS	B
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Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	919	-	668	-	-
HCM Lane V/C Ratio	0.074	-	0.044	-	-
HCM Control Delay (s)	9.2	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-

2028 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	78	79	4	60	23	52	505	6	62	611	109
Future Volume (vph)	36	78	79	4	60	23	52	505	6	62	611	109
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2455			858			947			792	
Travel Time (s)		47.8			23.4			16.1			13.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%	0%	2%	0%	2%	3%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	213	0	0	95	0	57	562	0	68	791	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	25.0	25.0		25.0	25.0		65.0	65.0		65.0	65.0	
Total Split (%)	27.8%	27.8%		27.8%	27.8%		72.2%	72.2%		72.2%	72.2%	
Maximum Green (s)	18.7	18.7		18.7	18.7		57.6	57.6		57.6	57.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.74			0.30			0.17	0.45		0.15	0.68	
Control Delay	44.2			27.0			7.4	8.3		6.7	12.6	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	44.2			27.0			7.4	8.3		6.7	12.6	
Queue Length 50th (ft)	94			37			11	133		12	237	
Queue Length 95th (ft)	169			78			29	214		31	398	
Internal Link Dist (ft)	2375			778			867			712		
Turn Bay Length (ft)							75			150		
Base Capacity (vph)	337			379			338	1252		468	1164	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.63			0.25			0.17	0.45		0.15	0.68	

2028 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 90

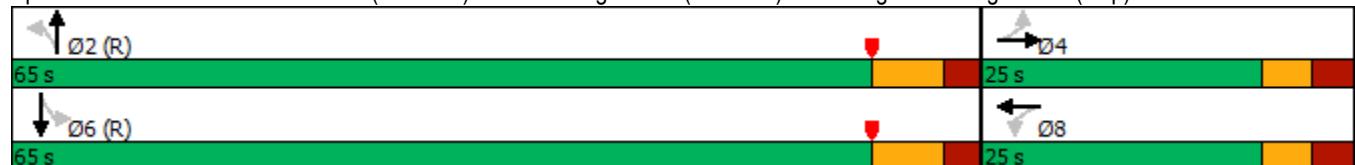
Actuated Cycle Length: 90

Offset: 15 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



2028 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	78	79	4	60	23	52	505	6	62	611	109
Future Volume (veh/h)	36	78	79	4	60	23	52	505	6	62	611	109
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1697	1697	1697	1660	1660	1660	2061	2032	2032	1722	1708	1708
Adj Flow Rate, veh/h	40	86	85	4	66	17	57	555	7	68	671	115
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	0	0	0	0	2	2	2	3	3
Cap, veh/h	82	121	105	46	219	54	407	1397	18	538	991	170
Arrive On Green	0.16	0.17	0.16	0.16	0.17	0.16	0.70	0.70	0.69	0.70	0.70	0.69
Sat Flow, veh/h	200	699	607	24	1269	314	759	2003	25	781	1420	243
Grp Volume(v), veh/h	211	0	0	87	0	0	57	0	562	68	0	786
Grp Sat Flow(s), veh/h/ln	1506	0	0	1607	0	0	759	0	2028	781	0	1664
Q Serve(g_s), s	7.9	0.0	0.0	0.0	0.0	0.0	4.2	0.0	10.4	3.5	0.0	24.4
Cycle Q Clear(g_c), s	12.2	0.0	0.0	4.3	0.0	0.0	28.1	0.0	10.4	13.5	0.0	24.4
Prop In Lane	0.19			0.40	0.05		0.20	1.00		0.01	1.00	0.15
Lane Grp Cap(c), veh/h	290	0	0	301	0	0	407	0	1415	538	0	1161
V/C Ratio(X)	0.73	0.00	0.00	0.29	0.00	0.00	0.14	0.00	0.40	0.13	0.00	0.68
Avail Cap(c_a), veh/h	359	0	0	374	0	0	407	0	1415	538	0	1161
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.1	0.0	0.0	32.7	0.0	0.0	15.7	0.0	5.7	8.4	0.0	7.9
Incr Delay (d2), s/veh	5.6	0.0	0.0	0.5	0.0	0.0	0.7	0.0	0.8	0.5	0.0	3.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	8.5	0.0	0.0	3.1	0.0	0.0	1.4	0.0	6.5	1.1	0.0	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.6	0.0	0.0	33.2	0.0	0.0	16.4	0.0	6.5	8.9	0.0	11.0
LnGrp LOS	D	A	A	C	A	A	B	A	A	A	A	B
Approach Vol, veh/h	211				87			619			854	
Approach Delay, s/veh	41.6				33.2			7.4			10.9	
Approach LOS	D				C			A			B	
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	69.2			20.8			69.2			20.8		
Change Period (Y+Rc), s	7.4			* 6.3			7.4			* 6.3		
Max Green Setting (Gmax), s	57.6			* 19			57.6			* 19		
Max Q Clear Time (g_c+l1), s	30.6			14.2			26.4			6.3		
Green Ext Time (p_c), s	3.0			0.3			4.8			0.2		
Intersection Summary												
HCM 6th Ctrl Delay				14.4								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	252	132	11	188	90
Future Volume (vph)	9	252	132	11	188	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	330	0	181	0	0	352
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B			A	
Traffic Vol, veh/h	9	252	132	11	188	90
Future Vol, veh/h	9	252	132	11	188	90
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	11	319	167	14	238	114

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	764	174	0	0	181
Stage 1	174	-	-	-	-
Stage 2	590	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	383	916	-	-	1041
Stage 1	974	-	-	-	-
Stage 2	587	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	290	916	-	-	1041
Mov Cap-2 Maneuver	290	-	-	-	-
Stage 1	974	-	-	-	-
Stage 2	444	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s 11.9 0 6.4

HCM LOS B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	853	1041	-
HCM Lane V/C Ratio	-	-	0.387	0.229	-
HCM Control Delay (s)	-	-	11.9	9.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.9	-

2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	35	18	366	243	7
Future Volume (vph)	16	35	18	366	243	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	0	492	321	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.1

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations



Traffic Vol, veh/h 16 35 18 366 243 7

Future Vol, veh/h 16 35 18 366 243 7

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % -3 - - 4 -4 -

Peak Hour Factor 78 78 78 78 78 78

Heavy Vehicles, % 7 3 6 3 6 0

Mvmt Flow 21 45 23 469 312 9

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 832 317 321 0 - 0

Stage 1 317 - - - - -

Stage 2 515 - - - - -

Critical Hdwy 5.87 5.93 4.4 - - -

Critical Hdwy Stg 1 4.87 - - - - -

Critical Hdwy Stg 2 4.87 - - - - -

Follow-up Hdwy 3.1 3.1 3.1 - - -

Pot Cap-1 Maneuver 419 787 898 - - -

Stage 1 864 - - - - -

Stage 2 716 - - - - -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 404 787 898 - - -

Mov Cap-2 Maneuver 404 - - - - -

Stage 1 834 - - - - -

Stage 2 716 - - - - -

Approach EB NB SB

HCM Control Delay, s 11.6 0.4 0

HCM LOS B

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 898 - 607 - -

HCM Lane V/C Ratio 0.026 - 0.108 - -

HCM Control Delay (s) 9.1 0 11.6 - -

HCM Lane LOS A A B - -

HCM 95th %tile Q(veh) 0.1 - 0.4 - -

2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	104	61	10	84	19	111	651	12	48	456	43
Future Volume (vph)	75	104	61	10	84	19	111	651	12	48	456	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2455			858			947			792	
Travel Time (s)		47.8			23.4			16.1			13.5	
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 (%)	7%	0%	7%	0%	1%	0%	3%	5%	9%	5%	8%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	259	0	0	121	0	119	713	0	52	536	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	28.0	28.0		28.0	28.0		67.0	67.0		67.0	67.0	
Total Split (%)	29.5%	29.5%		29.5%	29.5%		70.5%	70.5%		70.5%	70.5%	
Maximum Green (s)	21.7	21.7		21.7	21.7		59.6	59.6		59.6	59.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.87			0.32			0.26	0.62		0.16	0.50	
Control Delay	61.2			30.3			9.0	12.8		8.5	10.7	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	61.2			30.3			9.0	12.8		8.5	10.7	
Queue Length 50th (ft)	139			55			28	235		12	155	
Queue Length 95th (ft)	#272			104			57	349		29	235	
Internal Link Dist (ft)	2375			778			867			712		
Turn Bay Length (ft)							75			150		
Base Capacity (vph)	319			399			466	1156		318	1065	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.81			0.30			0.26	0.62		0.16	0.50	

2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 35 (37%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

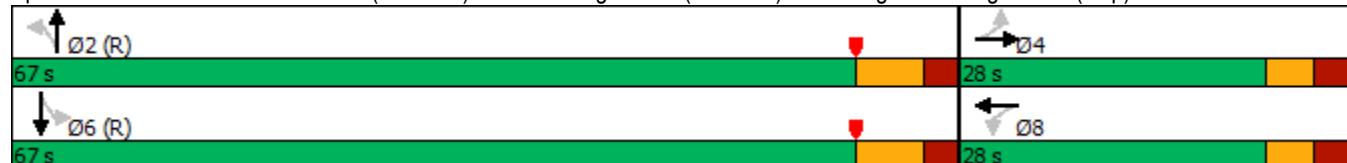
Natural Cycle: 60

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	104	61	10	84	19	111	651	12	48	456	43
Future Volume (veh/h)	75	104	61	10	84	19	111	651	12	48	456	43
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1711	1711	1646	1646	1646	2018	1990	1990	1680	1637	1637
Adj Flow Rate, veh/h	81	112	66	11	90	20	119	700	13	52	490	40
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
Percent Heavy Veh, %	0	0	0	1	1	1	3	5	5	5	8	8
Cap, veh/h	131	146	77	54	253	53	569	1317	24	407	1010	82
Arrive On Green	0.19	0.20	0.19	0.19	0.20	0.19	0.68	0.68	0.67	0.68	0.68	0.67
Sat Flow, veh/h	403	727	387	62	1262	262	943	1947	36	662	1494	122
Grp Volume(v), veh/h	259	0	0	121	0	0	119	0	713	52	0	530
Grp Sat Flow(s), veh/h/ln	1517	0	0	1586	0	0	943	0	1983	662	0	1616
Q Serve(g_s), s	9.4	0.0	0.0	0.0	0.0	0.0	6.5	0.0	17.3	4.0	0.0	15.0
Cycle Q Clear(g_c), s	15.7	0.0	0.0	6.3	0.0	0.0	21.1	0.0	17.3	20.8	0.0	15.0
Prop In Lane	0.31			0.25	0.09		0.17	1.00		0.02	1.00	0.08
Lane Grp Cap(c), veh/h	338	0	0	343	0	0	569	0	1341	407	0	1093
V/C Ratio(X)	0.77	0.00	0.00	0.35	0.00	0.00	0.21	0.00	0.53	0.13	0.00	0.49
Avail Cap(c_a), veh/h	393	0	0	401	0	0	569	0	1341	407	0	1093
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.7	0.0	0.0	33.0	0.0	0.0	12.3	0.0	7.8	12.9	0.0	7.4
Incr Delay (d2), s/veh	7.6	0.0	0.0	0.6	0.0	0.0	0.8	0.0	1.5	0.6	0.0	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	10.6	0.0	0.0	4.5	0.0	0.0	2.5	0.0	10.5	1.1	0.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.2	0.0	0.0	33.6	0.0	0.0	13.2	0.0	9.3	13.5	0.0	9.0
LnGrp LOS	D	A	A	C	A	A	B	A	A	B	A	A
Approach Vol, veh/h	259			121			832		582			
Approach Delay, s/veh	44.2			33.6			9.8		9.4			
Approach LOS	D			C			A		A			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	70.7		24.3		70.7		24.3					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	59.6		* 22		59.6		* 22					
Max Q Clear Time (g_c+l1), s	23.6		17.7		23.3		8.3					
Green Ext Time (p_c), s	4.5		0.4		3.0		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			16.3									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	19	242	82	7	196	127
Future Volume (vph)	19	242	82	7	196	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	280	0	96	0	0	348
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	19	242	82	7	196	127
Future Vol, veh/h	19	242	82	7	196	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	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	20	260	88	8	211	137

Major/Minor	Minor1	Major1	Major2
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Conflicting Flow All	651	92	0	0	96	0
Stage 1	92	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	455	1025	-	-	1113	-
Stage 1	1075	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	362	1025	-	-	1113	-
Mov Cap-2 Maneuver	362	-	-	-	-	-
Stage 1	1075	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	10.8	0	5.5
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HCM LOS	B
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Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	904	1113	-
HCM Lane V/C Ratio	-	-	0.31	0.189	-
HCM Control Delay (s)	-	-	10.8	9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.7	-

2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	21	64	260	302	19
Future Volume (vph)	7	21	64	260	302	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	0	356	353	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Base (No-Build) Conditions

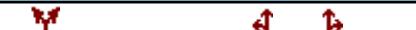
Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations 

Traffic Vol, veh/h	7	21	64	260	302	19
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Future Vol, veh/h	7	21	64	260	302	19
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Conflicting Peds, #/hr	0	0	0	0	0	0
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Sign Control	Stop	Stop	Free	Free	Free	Free
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RT Channelized	-	None	-	None	-	None
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Storage Length	0	-	-	-	-	-
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Veh in Median Storage, #	0	-	-	0	0	-
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Grade, %	-3	-	-	4	-4	-
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Peak Hour Factor	91	91	91	91	91	91
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Heavy Vehicles, %	0	0	0	3	2	0
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Mvmt Flow	8	23	70	286	332	21
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Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	769	343	353	0	-	0
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Stage 1	343	-	-	-	-	-
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Stage 2	426	-	-	-	-	-
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Critical Hdwy	5.8	5.9	4.3	-	-	-
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Critical Hdwy Stg 1	4.8	-	-	-	-	-
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Critical Hdwy Stg 2	4.8	-	-	-	-	-
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Follow-up Hdwy	3	3.1	3	-	-	-
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Pot Cap-1 Maneuver	471	764	909	-	-	-
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Stage 1	873	-	-	-	-	-
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Stage 2	808	-	-	-	-	-
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Platoon blocked, %	-	-	-	-	-	-
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Mov Cap-1 Maneuver	428	764	909	-	-	-
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Mov Cap-2 Maneuver	428	-	-	-	-	-
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Stage 1	793	-	-	-	-	-
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Stage 2	808	-	-	-	-	-
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Approach	EB	NB	SB
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HCM Control Delay, s	10.9	1.8	0
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HCM LOS	B
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Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	909	-	639	-	-
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HCM Lane V/C Ratio	0.077	-	0.048	-	-
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HCM Control Delay (s)	9.3	0	10.9	-	-
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HCM Lane LOS	A	A	B	-	-
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HCM 95th %tile Q(veh)	0.3	-	0.2	-	-
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2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	81	82	4	62	24	54	522	7	64	632	113
Future Volume (vph)	38	81	82	4	62	24	54	522	7	64	632	113
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0	0	0	75		0	150		0	
Storage Lanes	0	0	0	0	0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2455			858			947			792	
Travel Time (s)		47.8			23.4			16.1			13.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%	0%	2%	0%	2%	3%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	221	0	0	98	0	59	582	0	70	819	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	24.0	24.0		24.0	24.0		66.0	66.0		66.0	66.0	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Maximum Green (s)	17.7	17.7		17.7	17.7		58.6	58.6		58.6	58.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.77			0.31			0.19	0.47		0.15	0.70	
Control Delay	47.1			27.5			7.5	8.4		6.7	13.1	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	47.1			27.5			7.5	8.4		6.7	13.1	
Queue Length 50th (ft)	98			38			11	144		13	262	
Queue Length 95th (ft)	#195			82			29	215		30	410	
Internal Link Dist (ft)	2375			778			867			712		
Turn Bay Length (ft)						75			150			
Base Capacity (vph)	321			361			318	1251		454	1164	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.69			0.27			0.19	0.47		0.15	0.70	

2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 15 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

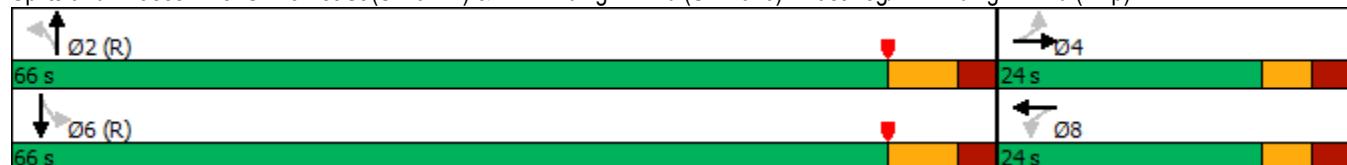
Natural Cycle: 60

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	81	82	4	62	24	54	522	7	64	632	113
Future Volume (veh/h)	38	81	82	4	62	24	54	522	7	64	632	113
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1697	1697	1697	1660	1660	1660	2061	2032	2032	1722	1708	1708
Adj Flow Rate, veh/h	42	89	88	4	68	18	59	574	8	70	695	119
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	0	0	0	0	2	2	2	3	3
Cap, veh/h	84	123	107	46	223	57	378	1386	19	521	985	169
Arrive On Green	0.17	0.18	0.17	0.17	0.18	0.17	0.69	0.69	0.68	0.69	0.69	0.68
Sat Flow, veh/h	204	696	605	23	1262	321	739	1999	28	766	1421	243
Grp Volume(v), veh/h	219	0	0	90	0	0	59	0	582	70	0	814
Grp Sat Flow(s), veh/h/ln	1505	0	0	1606	0	0	739	0	2027	766	0	1664
Q Serve(g_s), s	8.3	0.0	0.0	0.0	0.0	0.0	4.7	0.0	11.1	3.8	0.0	26.5
Cycle Q Clear(g_c), s	12.7	0.0	0.0	4.4	0.0	0.0	30.7	0.0	11.1	14.5	0.0	26.5
Prop In Lane	0.19			0.40	0.04		0.20	1.00		0.01	1.00	0.15
Lane Grp Cap(c), veh/h	297	0	0	308	0	0	378	0	1405	521	0	1153
V/C Ratio(X)	0.74	0.00	0.00	0.29	0.00	0.00	0.16	0.00	0.41	0.13	0.00	0.71
Avail Cap(c_a), veh/h	343	0	0	356	0	0	378	0	1405	521	0	1153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.9	0.0	0.0	32.4	0.0	0.0	17.4	0.0	6.0	8.9	0.0	8.4
Incr Delay (d2), s/veh	6.9	0.0	0.0	0.5	0.0	0.0	0.9	0.0	0.9	0.5	0.0	3.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	8.9	0.0	0.0	3.2	0.0	0.0	1.5	0.0	7.0	1.1	0.0	12.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.8	0.0	0.0	32.9	0.0	0.0	18.3	0.0	6.9	9.5	0.0	12.0
LnGrp LOS	D	A	A	C	A	A	B	A	A	A	A	B
Approach Vol, veh/h	219			90			641			884		
Approach Delay, s/veh	42.8			32.9			7.9			11.8		
Approach LOS	D			C			A			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	68.8		21.2		68.8		21.2					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	58.6		* 18		58.6		* 18					
Max Q Clear Time (g_c+l1), s	33.2		14.7		28.5		6.4					
Green Ext Time (p_c), s	3.1		0.2		5.1		0.2					
Intersection Summary												
HCM 6th Ctrl Delay			15.2									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	243	129	13	181	92
Future Volume (vph)	14	243	129	13	181	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	1265		749		68	
Travel Time (s)	24.6		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	0	179	0	0	345
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 7.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
----------	-----	-----	-----	-----	-----	-----

Lane Configurations						
Traffic Vol, veh/h	14	243	129	13	181	92
Future Vol, veh/h	14	243	129	13	181	92
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	18	308	163	16	229	116

Major/Minor	Minor1	Major1	Major2
-------------	--------	--------	--------

Conflicting Flow All	745	171	0	0	179	0
Stage 1	171	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	394	919	-	-	1043	-
Stage 1	977	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	301	919	-	-	1043	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	977	-	-	-	-	-
Stage 2	458	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	12.1	0	6.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	827	1043
HCM Lane V/C Ratio	-	-	0.393	0.22
HCM Control Delay (s)	-	-	12.1	9.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.9	0.8

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	34	17	354	239	10
Future Volume (vph)	16	34	17	354	239	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1469	
Travel Time (s)	16.8			1.3	28.6	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	476	319	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Projected (Build) Conditions

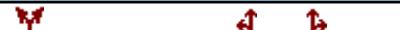
Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
----------	-----	-----	-----	-----	-----	-----

Lane Configurations 

Traffic Vol, veh/h 16 34 17 354 239 10

Future Vol, veh/h 16 34 17 354 239 10

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, % -3 - - 4 -4 -

Peak Hour Factor 78 78 78 78 78 78

Heavy Vehicles, % 7 3 6 3 6 0

Mvmt Flow 21 44 22 454 306 13

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All 811 313 319 0 - 0

Stage 1 313 - - - - -

Stage 2 498 - - - - -

Critical Hdwy 5.87 5.93 4.4 - - -

Critical Hdwy Stg 1 4.87 - - - - -

Critical Hdwy Stg 2 4.87 - - - - -

Follow-up Hdwy 3.1 3.1 3.1 - - -

Pot Cap-1 Maneuver 430 791 899 - - -

Stage 1 867 - - - - -

Stage 2 728 - - - - -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 416 791 899 - - -

Mov Cap-2 Maneuver 416 - - - - -

Stage 1 838 - - - - -

Stage 2 728 - - - - -

Approach	EB	NB	SB
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HCM Control Delay, s 11.5 0.4 0

HCM LOS B

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h) 899 - 614 - -

HCM Lane V/C Ratio 0.024 - 0.104 - -

HCM Control Delay (s) 9.1 0 11.5 - -

HCM Lane LOS A A B - -

HCM 95th %tile Q(veh) 0.1 - 0.3 - -

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	137	64	10	93	18	109	629	12	46	441	48
Future Volume (vph)	90	137	64	10	93	18	109	629	12	46	441	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0	0	0	75		0	150		0	
Storage Lanes	0	0	0	0	0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1190			858			947			792	
Travel Time (s)		23.2			23.4			16.1			13.5	
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 (%)	7%	0%	7%	0%	1%	0%	3%	5%	9%	5%	8%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	313	0	0	130	0	117	689	0	49	526	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	28.0	28.0		28.0	28.0		67.0	67.0		67.0	67.0	
Total Split (%)	29.5%	29.5%		29.5%	29.5%		70.5%	70.5%		70.5%	70.5%	
Maximum Green (s)	21.7	21.7		21.7	21.7		59.6	59.6		59.6	59.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.99			0.33			0.26	0.61		0.16	0.51	
Control Delay	84.0			30.4			9.3	13.1		8.4	11.1	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	84.0			30.4			9.3	13.1		8.4	11.1	
Queue Length 50th (ft)	181			60			28	222		11	150	
Queue Length 95th (ft)	#356			113			56	330		27	228	
Internal Link Dist (ft)	1110			778			867			712		
Turn Bay Length (ft)							75			150		
Base Capacity (vph)	317			398			454	1128		316	1038	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.99			0.33			0.26	0.61		0.16	0.51	

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 35 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

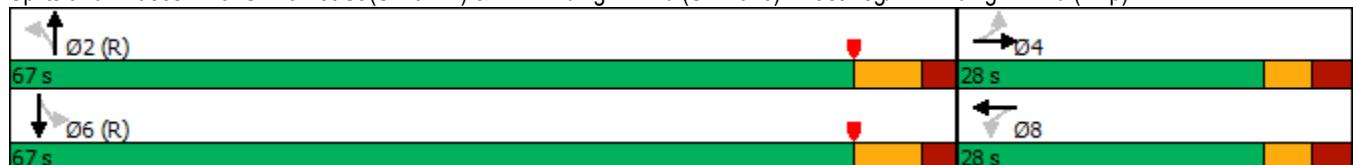
Natural Cycle: 55

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



2028 Projected (Build) Conditions

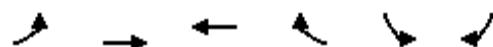
Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	137	64	10	93	18	109	629	12	46	441	48
Future Volume (veh/h)	90	137	64	10	93	18	109	629	12	46	441	48
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1646	1646	1646	2018	1990	1990	1680	1637	1637
Adj Flow Rate, veh/h	97	147	69	11	100	19	117	676	13	49	474	46
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
Percent Heavy Veh, %	0	0	0	1	1	1	3	5	5	5	8	8
Cap, veh/h	145	180	78	54	304	54	530	1250	24	385	944	92
Arrive On Green	0.22	0.23	0.22	0.22	0.23	0.22	0.64	0.64	0.63	0.64	0.64	0.63
Sat Flow, veh/h	407	768	332	55	1297	231	951	1946	37	677	1469	143
Grp Volume(v), veh/h	313	0	0	130	0	0	117	0	689	49	0	520
Grp Sat Flow(s), veh/h/ln	1508	0	0	1583	0	0	951	0	1983	677	0	1612
Q Serve(g_s), s	12.7	0.0	0.0	0.0	0.0	0.0	7.0	0.0	18.1	4.0	0.0	16.2
Cycle Q Clear(g_c), s	19.2	0.0	0.0	6.5	0.0	0.0	22.7	0.0	18.1	21.6	0.0	16.2
Prop In Lane	0.31			0.22	0.08		0.15	1.00		0.02	1.00	0.09
Lane Grp Cap(c), veh/h	387	0	0	395	0	0	530	0	1274	385	0	1036
V/C Ratio(X)	0.81	0.00	0.00	0.33	0.00	0.00	0.22	0.00	0.54	0.13	0.00	0.50
Avail Cap(c_a), veh/h	394	0	0	403	0	0	530	0	1274	385	0	1036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.2	0.0	0.0	30.4	0.0	0.0	14.8	0.0	9.3	15.1	0.0	9.0
Incr Delay (d2), s/veh	11.7	0.0	0.0	0.5	0.0	0.0	1.0	0.0	1.7	0.7	0.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	12.9	0.0	0.0	4.6	0.0	0.0	2.8	0.0	11.4	1.2	0.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.9	0.0	0.0	30.9	0.0	0.0	15.8	0.0	11.0	15.8	0.0	10.7
LnGrp LOS	D	A	A	C	A	A	B	A	B	B	A	B
Approach Vol, veh/h	313			130			806			569		
Approach Delay, s/veh	46.9			30.9			11.7			11.2		
Approach LOS	D			C			B			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	67.4		27.6		67.4		27.6					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	59.6		* 22		59.6		* 22					
Max Q Clear Time (g_c+l1), s	25.2		21.2		24.1		8.5					
Green Ext Time (p_c), s	4.2		0.1		2.9		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			18.9									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	192	252	20	60	5
Future Volume (vph)	2	192	252	20	60	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)		-1%	0%		0%	
Link Speed (mph)		35	35		25	
Link Distance (ft)		1265	1190		481	
Travel Time (s)		24.6	23.2		13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	215	302	0	73	0
Sign Control	Free	Free			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
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Lane Configurations						
Traffic Vol, veh/h	2	192	252	20	60	5
Future Vol, veh/h	2	192	252	20	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	2	213	280	22	67	6

Major/Minor	Major1	Major2	Minor2
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Conflicting Flow All	302	0	-	0	508	291
Stage 1	-	-	-	-	291	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	946	-	-	-	595	794
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	946	-	-	-	594	794
Mov Cap-2 Maneuver	-	-	-	-	594	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	946	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	946	-	-	-	606
HCM Lane V/C Ratio	0.002	-	-	-	0.119
HCM Control Delay (s)	8.8	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

5: S. York Street (SR 2013) & Proposed Site Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↑	↑	↔	↓	↔
Traffic Volume (vph)	9	19	367	3	6	240
Future Volume (vph)	9	19	367	3	6	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		35			35
Link Distance (ft)	602		1469			508
Travel Time (s)	16.4		28.6			9.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	2%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	411	0	0	274
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

5: S. York Street (SR 2013) & Proposed Site Driveway

Intersection

Int Delay, s/veh 0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	9	19	367	3	6	240
Future Vol, veh/h	9	19	367	3	6	240
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	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	5
Mvmt Flow	10	21	408	3	7	267

Major/Minor	Minor1	Major1	Major2
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Conflicting Flow All	691	410	0	0	411	0
Stage 1	410	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	460	679	-	-	867	-
Stage 1	764	-	-	-	-	-
Stage 2	882	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	456	679	-	-	867	-
Mov Cap-2 Maneuver	456	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	874	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	11.5	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	587	867	-
HCM Lane V/C Ratio	-	-	0.053	0.008	-
HCM Control Delay (s)	-	-	11.5	9.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	233	84	12	188	125
Future Volume (vph)	21	233	84	12	188	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	1243		749		68	
Travel Time (s)	24.2		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	274	0	103	0	0	336
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 6.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	N			
Traffic Vol, veh/h	21	233	84	12	188	125
Future Vol, veh/h	21	233	84	12	188	125
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, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	23	251	90	13	202	134

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	635	97	0	0	103
Stage 1	97	-	-	-	-
Stage 2	538	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	466	1018	-	-	1107
Stage 1	1068	-	-	-	-
Stage 2	626	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	374	1018	-	-	1107
Mov Cap-2 Maneuver	374	-	-	-	-
Stage 1	1068	-	-	-	-
Stage 2	503	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	5.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	891	1107	-
HCM Lane V/C Ratio	-	-	0.307	0.183	-
HCM Control Delay (s)	-	-	10.8	9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.3	0.7	-

2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	21	62	255	293	21
Future Volume (vph)	11	21	62	255	293	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1425	
Travel Time (s)	16.8			1.3	27.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	35	0	0	348	345	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Projected (Build) Conditions

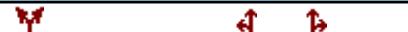
Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations 

Traffic Vol, veh/h	11	21	62	255	293	21
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Future Vol, veh/h	11	21	62	255	293	21
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Conflicting Peds, #/hr	0	0	0	0	0	0
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Sign Control	Stop	Stop	Free	Free	Free	Free
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RT Channelized	-	None	-	None	-	None
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Storage Length	0	-	-	-	-	-
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Veh in Median Storage, #	0	-	-	0	0	-
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Grade, %	-3	-	-	4	-4	-
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Peak Hour Factor	91	91	91	91	91	91
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Heavy Vehicles, %	0	0	0	3	2	0
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Mvmt Flow	12	23	68	280	322	23
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Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	750	334	345	0	-	0
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Stage 1	334	-	-	-	-	-
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Stage 2	416	-	-	-	-	-
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Critical Hdwy	5.8	5.9	4.3	-	-	-
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Critical Hdwy Stg 1	4.8	-	-	-	-	-
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Critical Hdwy Stg 2	4.8	-	-	-	-	-
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Follow-up Hdwy	3	3.1	3	-	-	-
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Pot Cap-1 Maneuver	482	773	914	-	-	-
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Stage 1	881	-	-	-	-	-
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Stage 2	815	-	-	-	-	-
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Platoon blocked, %	-	-	-	-	-	-
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Mov Cap-1 Maneuver	440	773	914	-	-	-
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Mov Cap-2 Maneuver	440	-	-	-	-	-
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Stage 1	803	-	-	-	-	-
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Stage 2	815	-	-	-	-	-
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Approach	EB	NB	SB
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HCM Control Delay, s	11.2	1.8	0
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HCM LOS	B		
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Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	914	-	613	-	-
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HCM Lane V/C Ratio	0.075	-	0.057	-	-
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HCM Control Delay (s)	9.3	0	11.2	-	-
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HCM Lane LOS	A	A	B	-	-
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HCM 95th %tile Q(veh)	0.2	-	0.2	-	-
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2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	103	82	4	102	23	52	510	6	62	611	130
Future Volume (vph)	48	103	82	4	102	23	52	510	6	62	611	130
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0	0	0	75		0	150		0	
Storage Lanes	0	0	0	0	0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1212			858			947			792	
Travel Time (s)		23.6			23.4			16.1			13.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%	0%	2%	0%	2%	3%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	256	0	0	141	0	57	567	0	68	814	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	25.0	25.0		25.0	25.0		65.0	65.0		65.0	65.0	
Total Split (%)	27.8%	27.8%		27.8%	27.8%		72.2%	72.2%		72.2%	72.2%	
Maximum Green (s)	18.7	18.7		18.7	18.7		57.6	57.6		57.6	57.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.85			0.40			0.19	0.47		0.15	0.72	
Control Delay	57.0			31.7			8.2	9.1		7.1	14.4	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	57.0			31.7			8.2	9.1		7.1	14.4	
Queue Length 50th (ft)	124			63			11	145		13	268	
Queue Length 95th (ft)	#251			118			30	217		31	423	
Internal Link Dist (ft)	1132			778			867			712		
Turn Bay Length (ft)						75			150			
Base Capacity (vph)	320			380			297	1214		442	1128	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.80			0.37			0.19	0.47		0.15	0.72	

2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 15 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

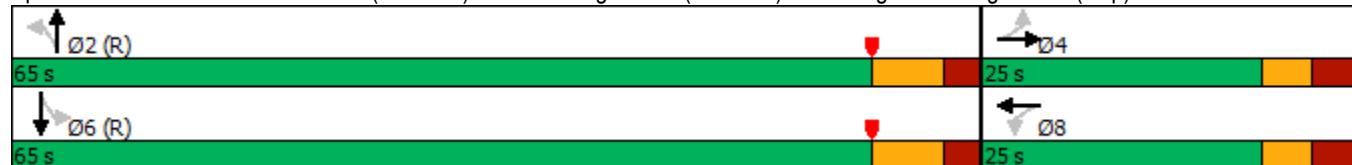
Natural Cycle: 55

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



2028 Projected (Build) Conditions

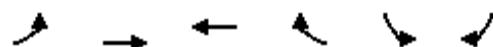
Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	103	82	4	102	23	52	510	6	62	611	130
Future Volume (veh/h)	48	103	82	4	102	23	52	510	6	62	611	130
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1697	1697	1697	1660	1660	1660	2061	2032	2032	1722	1708	1708
Adj Flow Rate, veh/h	53	113	88	4	112	17	57	560	7	68	671	138
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	0	0	0	0	2	2	2	3	3
Cap, veh/h	95	149	104	44	276	41	352	1348	17	509	925	190
Arrive On Green	0.19	0.20	0.19	0.19	0.20	0.19	0.67	0.67	0.66	0.67	0.67	0.66
Sat Flow, veh/h	239	758	528	15	1403	208	743	2003	25	777	1374	283
Grp Volume(v), veh/h	254	0	0	133	0	0	57	0	567	68	0	809
Grp Sat Flow(s), veh/h/ln	1525	0	0	1625	0	0	743	0	2028	777	0	1657
Q Serve(g_s), s	8.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	11.4	3.9	0.0	28.2
Cycle Q Clear(g_c), s	14.5	0.0	0.0	6.5	0.0	0.0	32.4	0.0	11.4	14.8	0.0	28.2
Prop In Lane	0.21			0.35	0.03		0.13	1.00		0.01	1.00	0.17
Lane Grp Cap(c), veh/h	332	0	0	343	0	0	352	0	1365	509	0	1115
V/C Ratio(X)	0.77	0.00	0.00	0.39	0.00	0.00	0.16	0.00	0.42	0.13	0.00	0.73
Avail Cap(c_a), veh/h	364	0	0	378	0	0	352	0	1365	509	0	1115
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	0.0	31.7	0.0	0.0	19.6	0.0	6.7	9.9	0.0	9.5
Incr Delay (d2), s/veh	8.6	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.9	0.5	0.0	4.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	10.1	0.0	0.0	4.7	0.0	0.0	1.6	0.0	7.5	1.2	0.0	13.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.6	0.0	0.0	32.4	0.0	0.0	20.6	0.0	7.6	10.5	0.0	13.6
LnGrp LOS	D	A	A	C	A	A	C	A	A	B	A	B
Approach Vol, veh/h	254			133			624			877		
Approach Delay, s/veh	43.6			32.4			8.8			13.4		
Approach LOS	D			C			A			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	67.0		23.0		67.0		23.0					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	57.6		* 19		57.6		* 19					
Max Q Clear Time (g_c+l1), s	34.9		16.5		30.2		8.5					
Green Ext Time (p_c), s	2.9		0.2		4.9		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			17.3									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	194	251	68	40	3
Future Volume (vph)	6	194	251	68	40	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-1%	0%	0%			
Link Speed (mph)	35	35		25		
Link Distance (ft)	1243	1212		451		
Travel Time (s)	24.2	23.6		12.3		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	223	355	0	47	0
Sign Control	Free	Free		Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway

Intersection

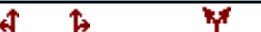
Int Delay, s/veh

1

Movement

	EBL	EBT	WBT	WBR	SBL	SBR
--	-----	-----	-----	-----	-----	-----

Lane Configurations



Traffic Vol, veh/h	6	194	251	68	40	3
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Future Vol, veh/h	6	194	251	68	40	3
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Conflicting Peds, #/hr	0	0	0	0	0	0
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Sign Control	Free	Free	Free	Free	Stop	Stop
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RT Channelized	-	None	-	None	-	None
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Storage Length	-	-	-	-	0	-
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Veh in Median Storage, #	-	0	0	-	0	-
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Grade, %	-	-1	0	-	0	-
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Peak Hour Factor	90	90	90	90	90	90
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Heavy Vehicles, %	2	2	1	2	2	2
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Mvmt Flow	7	216	279	76	44	3
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Major/Minor

Major1	Major2	Minor2
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Conflicting Flow All	355	0	-	0	547	317
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Stage 1	-	-	-	-	317	-
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Stage 2	-	-	-	-	230	-
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Critical Hdwy	4.3	-	-	-	6.42	6.22
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Critical Hdwy Stg 1	-	-	-	-	5.42	-
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Critical Hdwy Stg 2	-	-	-	-	5.42	-
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Follow-up Hdwy	3	-	-	-	3	3.1
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Pot Cap-1 Maneuver	907	-	-	-	563	767
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Stage 1	-	-	-	-	847	-
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Stage 2	-	-	-	-	933	-
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Platoon blocked, %	-	-	-	-	-	-
--------------------	---	---	---	---	---	---

Mov Cap-1 Maneuver	907	-	-	-	558	767
--------------------	-----	---	---	---	-----	-----

Mov Cap-2 Maneuver	-	-	-	-	558	-
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Stage 1	-	-	-	-	839	-
---------	---	---	---	---	-----	---

Stage 2	-	-	-	-	933	-
---------	---	---	---	---	-----	---

Approach

EB	WB	SB
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HCM Control Delay, s	0.3	0	11.9
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HCM LOS			B
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Minor Lane/Major Mvmt

EBL	EBT	WBT	WBR	SBLn1
-----	-----	-----	-----	-------

Capacity (veh/h)	907	-	-	-	569
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HCM Lane V/C Ratio	0.007	-	-	-	0.084
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HCM Control Delay (s)	9	0	-	-	11.9
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HCM Lane LOS	A	A	-	-	B
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HCM 95th %tile Q(veh)	0	-	-	-	0.3
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2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

5: S. York Street (SR 2013) & Proposed Site Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	13	256	10	21	308
Future Volume (vph)	6	13	256	10	21	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		35			35
Link Distance (ft)	439		1425			552
Travel Time (s)	12.0		27.8			10.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	295	0	0	365
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2028 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

5: S. York Street (SR 2013) & Proposed Site Driveway

Intersection

Int Delay, s/veh 0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	N			
Traffic Vol, veh/h	6	13	256	10	21	308
Future Vol, veh/h	6	13	256	10	21	308
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	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	1
Mvmt Flow	7	14	284	11	23	342

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	678	290	0	0	295
Stage 1	290	-	-	-	-
Stage 2	388	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	469	795	-	-	952
Stage 1	873	-	-	-	-
Stage 2	783	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	455	795	-	-	952
Mov Cap-2 Maneuver	455	-	-	-	-
Stage 1	873	-	-	-	-
Stage 2	760	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	643	952	-
HCM Lane V/C Ratio	-	-	0.033	0.025	-
HCM Control Delay (s)	-	-	10.8	8.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	252	134	13	188	95
Future Volume (vph)	14	252	134	13	188	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	1265		749		68	
Travel Time (s)	24.6		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	337	0	186	0	0	358
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 7.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	14	252	134	13	188	95
Future Vol, veh/h	14	252	134	13	188	95
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	18	319	170	16	238	120

Major/Minor	Minor1	Major1	Major2
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Conflicting Flow All	774	178	0	0	186	0
Stage 1	178	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	377	911	-	-	1037	-
Stage 1	969	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	284	911	-	-	1037	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	440	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	12.5	0	6.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	816	1037	-
HCM Lane V/C Ratio	-	-	0.413	0.229	-
HCM Control Delay (s)	-	-	12.5	9.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	2	0.9	-

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	35	18	368	248	11
Future Volume (vph)	17	35	18	368	248	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1469	
Travel Time (s)	16.8			1.3	28.6	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	0	495	332	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Projected (Build) Conditions

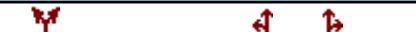
Timing Plan: A.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations 

Traffic Vol, veh/h 17 35 18 368 248 11

Future Vol, veh/h 17 35 18 368 248 11

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, % -3 - - 4 -4 -

Peak Hour Factor 78 78 78 78 78 78

Heavy Vehicles, % 7 3 6 3 6 0

Mvmt Flow 22 45 23 472 318 14

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All 843 325 332 0 - 0

Stage 1 325 - - - - -

Stage 2 518 - - - - -

Critical Hdwy 5.87 5.93 4.4 - - -

Critical Hdwy Stg 1 4.87 - - - - -

Critical Hdwy Stg 2 4.87 - - - - -

Follow-up Hdwy 3.1 3.1 3.1 - - -

Pot Cap-1 Maneuver 413 779 890 - - -

Stage 1 858 - - - - -

Stage 2 714 - - - - -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 399 779 890 - - -

Mov Cap-2 Maneuver 399 - - - - -

Stage 1 828 - - - - -

Stage 2 714 - - - - -

Approach	EB	NB	SB
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HCM Control Delay, s 11.8 0.4 0

HCM LOS B

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h) 890 - 594 - -

HCM Lane V/C Ratio 0.026 - 0.112 - -

HCM Control Delay (s) 9.2 0 11.8 - -

HCM Lane LOS A A B - -

HCM 95th %tile Q(veh) 0.1 - 0.4 - -

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	141	66	10	96	19	113	651	12	48	456	49
Future Volume (vph)	93	141	66	10	96	19	113	651	12	48	456	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1190			858			947			792	
Travel Time (s)		23.2			23.4			16.1			13.5	
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 (%)	7%	0%	7%	0%	1%	0%	3%	5%	9%	5%	8%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	323	0	0	134	0	122	713	0	52	543	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	28.0	28.0		28.0	28.0		67.0	67.0		67.0	67.0	
Total Split (%)	29.5%	29.5%		29.5%	29.5%		70.5%	70.5%		70.5%	70.5%	
Maximum Green (s)	21.7	21.7		21.7	21.7		59.6	59.6		59.6	59.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio		1.03			0.34		0.28	0.63		0.17	0.52	
Control Delay		93.6			30.7		9.6	13.6		8.8	11.4	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		93.6			30.7		9.6	13.6		8.8	11.4	
Queue Length 50th (ft)		~202			62		29	235		12	157	
Queue Length 95th (ft)		#373			116		60	349		29	240	
Internal Link Dist (ft)		1110			778			867			712	
Turn Bay Length (ft)							75			150		
Base Capacity (vph)		315			398		442	1128		301	1038	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		1.03			0.34		0.28	0.63		0.17	0.52	

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 35 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

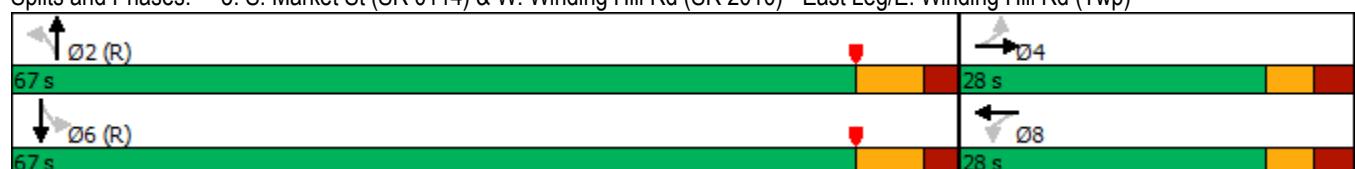
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



2033 Projected (Build) Conditions

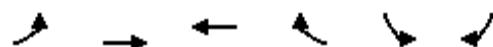
Timing Plan: A.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	141	66	10	96	19	113	651	12	48	456	49
Future Volume (veh/h)	93	141	66	10	96	19	113	651	12	48	456	49
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1711	1711	1646	1646	1646	2018	1990	1990	1680	1637	1637
Adj Flow Rate, veh/h	100	152	71	11	103	20	122	700	13	52	490	47
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
Percent Heavy Veh, %	0	0	0	1	1	1	3	5	5	5	8	8
Cap, veh/h	147	183	79	54	309	56	508	1242	23	367	938	90
Arrive On Green	0.23	0.24	0.23	0.23	0.24	0.23	0.64	0.64	0.63	0.64	0.64	0.63
Sat Flow, veh/h	407	764	330	53	1292	236	937	1947	36	662	1471	141
Grp Volume(v), veh/h	323	0	0	134	0	0	122	0	713	52	0	537
Grp Sat Flow(s), veh/h/ln	1502	0	0	1581	0	0	937	0	1983	662	0	1612
Q Serve(g_s), s	13.4	0.0	0.0	0.0	0.0	0.0	7.7	0.0	19.3	4.5	0.0	17.2
Cycle Q Clear(g_c), s	20.0	0.0	0.0	6.6	0.0	0.0	24.4	0.0	19.3	23.4	0.0	17.2
Prop In Lane	0.31			0.22	0.08		0.15	1.00		0.02	1.00	0.09
Lane Grp Cap(c), veh/h	393	0	0	402	0	0	508	0	1265	367	0	1028
V/C Ratio(X)	0.82	0.00	0.00	0.33	0.00	0.00	0.24	0.00	0.56	0.14	0.00	0.52
Avail Cap(c_a), veh/h	393	0	0	402	0	0	508	0	1265	367	0	1028
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.1	0.0	0.0	30.1	0.0	0.0	15.8	0.0	9.7	16.2	0.0	9.4
Incr Delay (d2), s/veh	13.2	0.0	0.0	0.5	0.0	0.0	1.1	0.0	1.8	0.8	0.0	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	13.4	0.0	0.0	4.8	0.0	0.0	3.0	0.0	12.0	1.3	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.3	0.0	0.0	30.6	0.0	0.0	16.9	0.0	11.6	17.0	0.0	11.3
LnGrp LOS	D	A	A	C	A	A	B	A	B	B	A	B
Approach Vol, veh/h	323			134			835			589		
Approach Delay, s/veh	48.3			30.6			12.3			11.8		
Approach LOS	D			C			B			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	67.0		28.0		67.0		28.0					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	59.6		* 22		59.6		* 22					
Max Q Clear Time (g_c+l1), s	26.9		22.0		25.9		8.6					
Green Ext Time (p_c), s	4.5		0.0		3.0		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			19.6									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	199	261	20	60	5
Future Volume (vph)	2	199	261	20	60	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	-1%	0%	0%			
Link Speed (mph)	35	35	25			
Link Distance (ft)	1265	1190	481			
Travel Time (s)	24.6	23.2	13.1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	223	312	0	73	0
Sign Control	Free	Free			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
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Lane Configurations						
Traffic Vol, veh/h	2	199	261	20	60	5
Future Vol, veh/h	2	199	261	20	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	2	221	290	22	67	6

Major/Minor	Major1	Major2	Minor2
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Conflicting Flow All	312	0	-	0	526	301
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	225	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	939	-	-	-	580	784
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	939	-	-	-	579	784
Mov Cap-2 Maneuver	-	-	-	-	579	-
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	938	-

Approach	EB	WB	SB
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HCM Control Delay, s	0.1	0	11.9
HCM LOS		B	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
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Capacity (veh/h)	939	-	-	-	591
HCM Lane V/C Ratio	0.002	-	-	-	0.122
HCM Control Delay (s)	8.8	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

5: S. York Street (SR 2013) & Proposed Site Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	19	382	3	6	250
Future Volume (vph)	9	19	382	3	6	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		35			35
Link Distance (ft)	602		1469			508
Travel Time (s)	16.4		28.6			9.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	2%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	427	0	0	285
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

5: S. York Street (SR 2013) & Proposed Site Driveway

Intersection

Int Delay, s/veh 0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	N			
Traffic Vol, veh/h	9	19	382	3	6	250
Future Vol, veh/h	9	19	382	3	6	250
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	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	5
Mvmt Flow	10	21	424	3	7	278

Major/Minor	Minor1	Major1	Major2	
Conflicting Flow All	718	426	0	0
Stage 1	426	-	-	-
Stage 2	292	-	-	-
Critical Hdwy	6.42	6.22	-	4.3
Critical Hdwy Stg 1	5.42	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3	3.1	-	3
Pot Cap-1 Maneuver	443	665	-	856
Stage 1	751	-	-	-
Stage 2	871	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	439	665	-	856
Mov Cap-2 Maneuver	439	-	-	-
Stage 1	751	-	-	-
Stage 2	862	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	856	-
HCM Lane V/C Ratio	-	-	0.054	0.008	-
HCM Control Delay (s)	-	-	11.7	9.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	242	87	13	196	130
Future Volume (vph)	22	242	87	13	196	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	1243		749		68	
Travel Time (s)	24.2		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	284	0	108	0	0	351
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg

Intersection

Int Delay, s/veh 6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	N			
Traffic Vol, veh/h	22	242	87	13	196	130
Future Vol, veh/h	22	242	87	13	196	130
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, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	24	260	94	14	211	140

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	663	101	0	0	108
Stage 1	101	-	-	-	-
Stage 2	562	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3
Pot Cap-1 Maneuver	446	1013	-	-	1103
Stage 1	1063	-	-	-	-
Stage 2	608	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	354	1013	-	-	1103
Mov Cap-2 Maneuver	354	-	-	-	-
Stage 1	1063	-	-	-	-
Stage 2	482	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s 11.1 0 5.4

HCM LOS B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	877	1103	-
HCM Lane V/C Ratio	-	-	0.324	0.191	-
HCM Control Delay (s)	-	-	11.1	9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.7	-

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	21	64	265	305	22
Future Volume (vph)	12	21	64	265	305	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1425	
Travel Time (s)	16.8			1.3	27.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	0	0	361	359	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations



Traffic Vol, veh/h	12	21	64	265	305	22
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Future Vol, veh/h	12	21	64	265	305	22
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Conflicting Peds, #/hr	0	0	0	0	0	0
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Sign Control	Stop	Stop	Free	Free	Free	Free
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RT Channelized	-	None	-	None	-	None
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Storage Length	0	-	-	-	-	-
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Veh in Median Storage, #	0	-	-	0	0	-
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Grade, %	-3	-	-	4	-4	-
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Peak Hour Factor	91	91	91	91	91	91
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Heavy Vehicles, %	0	0	0	3	2	0
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Mvmt Flow	13	23	70	291	335	24
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Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	778	347	359	0	-	0
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Stage 1	347	-	-	-	-	-
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Stage 2	431	-	-	-	-	-
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Critical Hdwy	5.8	5.9	4.3	-	-	-
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Critical Hdwy Stg 1	4.8	-	-	-	-	-
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Critical Hdwy Stg 2	4.8	-	-	-	-	-
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Follow-up Hdwy	3	3.1	3	-	-	-
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Pot Cap-1 Maneuver	466	761	904	-	-	-
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Stage 1	870	-	-	-	-	-
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Stage 2	804	-	-	-	-	-
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Platoon blocked, %	-	-	-	-	-	-
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Mov Cap-1 Maneuver	423	761	904	-	-	-
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Mov Cap-2 Maneuver	423	-	-	-	-	-
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Stage 1	790	-	-	-	-	-
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Stage 2	804	-	-	-	-	-
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Approach	EB	NB	SB
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HCM Control Delay, s	11.5	1.8	0
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HCM LOS	B		
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Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	904	-	590	-	-
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HCM Lane V/C Ratio	0.078	-	0.061	-	-
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HCM Control Delay (s)	9.3	0	11.5	-	-
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HCM Lane LOS	A	A	B	-	-
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HCM 95th %tile Q(veh)	0.3	-	0.2	-	-
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2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	106	85	4	104	24	54	527	7	64	632	134
Future Volume (vph)	50	106	85	4	104	24	54	527	7	64	632	134
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0	0	0	75		0	150		0	
Storage Lanes	0	0	0	0	0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1212			858			947			792	
Travel Time (s)		23.6			23.4			16.1			13.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	1%	4%	0%	0%	0%	0%	2%	0%	2%	3%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	264	0	0	144	0	59	587	0	70	842	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	24.0	24.0		24.0	24.0		66.0	66.0		66.0	66.0	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Maximum Green (s)	17.7	17.7		17.7	17.7		58.6	58.6		58.6	58.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.5	0.5		0.5	0.5	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
v/c Ratio	0.90			0.41			0.21	0.48		0.16	0.74	
Control Delay	66.3			32.6			8.2	9.0		6.9	14.9	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	66.3			32.6			8.2	9.0		6.9	14.9	
Queue Length 50th (ft)	132			66			12	146		13	276	
Queue Length 95th (ft)	#276			122			30	218		31	437	
Internal Link Dist (ft)	1132			778			867			712		
Turn Bay Length (ft)						75			150			
Base Capacity (vph)	300			361			283	1218		431	1132	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.88			0.40			0.21	0.48		0.16	0.74	

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 15 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

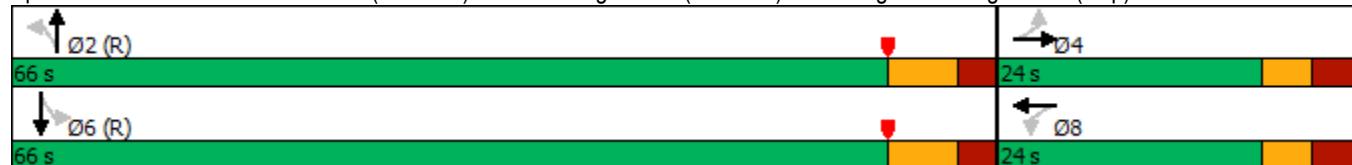
Natural Cycle: 65

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)

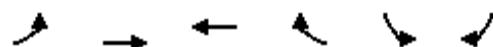


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	106	85	4	104	24	54	527	7	64	632	134
Future Volume (veh/h)	50	106	85	4	104	24	54	527	7	64	632	134
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1697	1697	1697	1660	1660	1660	2061	2032	2032	1722	1708	1708
Adj Flow Rate, veh/h	55	116	91	4	114	18	59	579	8	70	695	142
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	0	0	0	0	2	2	2	3	3
Cap, veh/h	98	146	104	45	274	42	328	1345	19	495	925	189
Arrive On Green	0.21	0.20	0.19	0.21	0.20	0.19	0.67	0.67	0.66	0.67	0.67	0.66
Sat Flow, veh/h	250	739	527	18	1388	215	723	2000	28	763	1376	281
Grp Volume(v), veh/h	262	0	0	136	0	0	59	0	587	70	0	837
Grp Sat Flow(s), veh/h/ln	1517	0	0	1621	0	0	723	0	2027	763	0	1657
Q Serve(g_s), s	8.1	0.0	0.0	0.0	0.0	0.0	5.3	0.0	12.0	4.1	0.0	30.2
Cycle Q Clear(g_c), s	14.7	0.0	0.0	6.6	0.0	0.0	34.9	0.0	12.0	15.7	0.0	30.2
Prop In Lane	0.21			0.35	0.03		0.13	1.00		0.01	1.00	0.17
Lane Grp Cap(c), veh/h	370	0	0	385	0	0	328	0	1363	495	0	1114
V/C Ratio(X)	0.71	0.00	0.00	0.35	0.00	0.00	0.18	0.00	0.43	0.14	0.00	0.75
Avail Cap(c_a), veh/h	385	0	0	401	0	0	328	0	1363	495	0	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.7	0.0	0.0	31.7	0.0	0.0	21.2	0.0	6.8	10.3	0.0	9.8
Incr Delay (d2), s/veh	5.7	0.0	0.0	0.6	0.0	0.0	1.2	0.0	1.0	0.6	0.0	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	9.8	0.0	0.0	4.7	0.0	0.0	1.7	0.0	7.8	1.3	0.0	14.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.4	0.0	0.0	32.2	0.0	0.0	22.4	0.0	7.8	10.9	0.0	14.5
LnGrp LOS	D	A	A	C	A	A	C	A	A	B	A	B
Approach Vol, veh/h	262			136			646			907		
Approach Delay, s/veh	40.4			32.2			9.1			14.2		
Approach LOS	D			C			A			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	66.9		23.1		66.9		23.1					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	58.6		* 18		58.6		* 18					
Max Q Clear Time (g_c+l1), s	37.4		16.7		32.2		8.6					
Green Ext Time (p_c), s	3.0		0.1		5.2		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			17.3									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	203	261	68	40	3
Future Volume (vph)	6	203	261	68	40	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-1%	0%	0%			
Link Speed (mph)	35	35		25		
Link Distance (ft)	1243	1212		451		
Travel Time (s)	24.2	23.6		12.3		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	233	366	0	47	0
Sign Control	Free	Free		Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway

Intersection

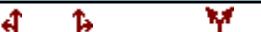
Int Delay, s/veh

1

Movement

	EBL	EBT	WBT	WBR	SBL	SBR
--	-----	-----	-----	-----	-----	-----

Lane Configurations



Traffic Vol, veh/h	6	203	261	68	40	3
--------------------	---	-----	-----	----	----	---

Future Vol, veh/h	6	203	261	68	40	3
-------------------	---	-----	-----	----	----	---

Conflicting Peds, #/hr	0	0	0	0	0	0
------------------------	---	---	---	---	---	---

Sign Control	Free	Free	Free	Free	Stop	Stop
--------------	------	------	------	------	------	------

RT Channelized	-	None	-	None	-	None
----------------	---	------	---	------	---	------

Storage Length	-	-	-	-	0	-
----------------	---	---	---	---	---	---

Veh in Median Storage, #	-	0	0	-	0	-
--------------------------	---	---	---	---	---	---

Grade, %	-	-1	0	-	0	-
----------	---	----	---	---	---	---

Peak Hour Factor	90	90	90	90	90	90
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Heavy Vehicles, %	2	2	1	2	2	2
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Mvmt Flow	7	226	290	76	44	3
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Major/Minor

Major1	Major2	Minor2
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Conflicting Flow All	366	0	-	0	568	328
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Stage 1	-	-	-	-	328	-
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Stage 2	-	-	-	-	240	-
---------	---	---	---	---	-----	---

Critical Hdwy	4.3	-	-	-	6.42	6.22
---------------	-----	---	---	---	------	------

Critical Hdwy Stg 1	-	-	-	-	5.42	-
---------------------	---	---	---	---	------	---

Critical Hdwy Stg 2	-	-	-	-	5.42	-
---------------------	---	---	---	---	------	---

Follow-up Hdwy	3	-	-	-	3	3.1
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Pot Cap-1 Maneuver	899	-	-	-	547	756
--------------------	-----	---	---	---	-----	-----

Stage 1	-	-	-	-	837	-
---------	---	---	---	---	-----	---

Stage 2	-	-	-	-	922	-
---------	---	---	---	---	-----	---

Platoon blocked, %	-	-	-	-	-	-
--------------------	---	---	---	---	---	---

Mov Cap-1 Maneuver	899	-	-	-	542	756
--------------------	-----	---	---	---	-----	-----

Mov Cap-2 Maneuver	-	-	-	-	542	-
--------------------	---	---	---	---	-----	---

Stage 1	-	-	-	-	829	-
---------	---	---	---	---	-----	---

Stage 2	-	-	-	-	922	-
---------	---	---	---	---	-----	---

Approach

EB	WB	SB
----	----	----

HCM Control Delay, s	0.3	0	12.1
----------------------	-----	---	------

HCM LOS		B	
---------	--	---	--

Minor Lane/Major Mvmt

EBL	EBT	WBT	WBR	SBLn1
-----	-----	-----	-----	-------

Capacity (veh/h)	899	-	-	-	553
------------------	-----	---	---	---	-----

HCM Lane V/C Ratio	0.007	-	-	-	0.086
--------------------	-------	---	---	---	-------

HCM Control Delay (s)	9	0	-	-	12.1
-----------------------	---	---	---	---	------

HCM Lane LOS	A	A	-	-	B
--------------	---	---	---	---	---

HCM 95th %tile Q(veh)	0	-	-	-	0.3
-----------------------	---	---	---	---	-----

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

5: S. York Street (SR 2013) & Proposed Site Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↗	↙	↓
Traffic Volume (vph)	6	13	267	10	21	321
Future Volume (vph)	6	13	267	10	21	321
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		35			35
Link Distance (ft)	439		1425			552
Travel Time (s)	12.0		27.8			10.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	308	0	0	380
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

5: S. York Street (SR 2013) & Proposed Site Driveway

Intersection

Int Delay, s/veh 0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	6	13	267	10	21	321
Future Vol, veh/h	6	13	267	10	21	321
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	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	1
Mvmt Flow	7	14	297	11	23	357

Major/Minor	Minor1	Major1	Major2
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Conflicting Flow All	706	303	0	0	308	0
Stage 1	303	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	451	782	-	-	942	-
Stage 1	860	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	437	782	-	-	942	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	747	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	11	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
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Capacity (veh/h)	-	-	626	942	-
HCM Lane V/C Ratio	-	-	0.034	0.025	-
HCM Control Delay (s)	-	-	11	8.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

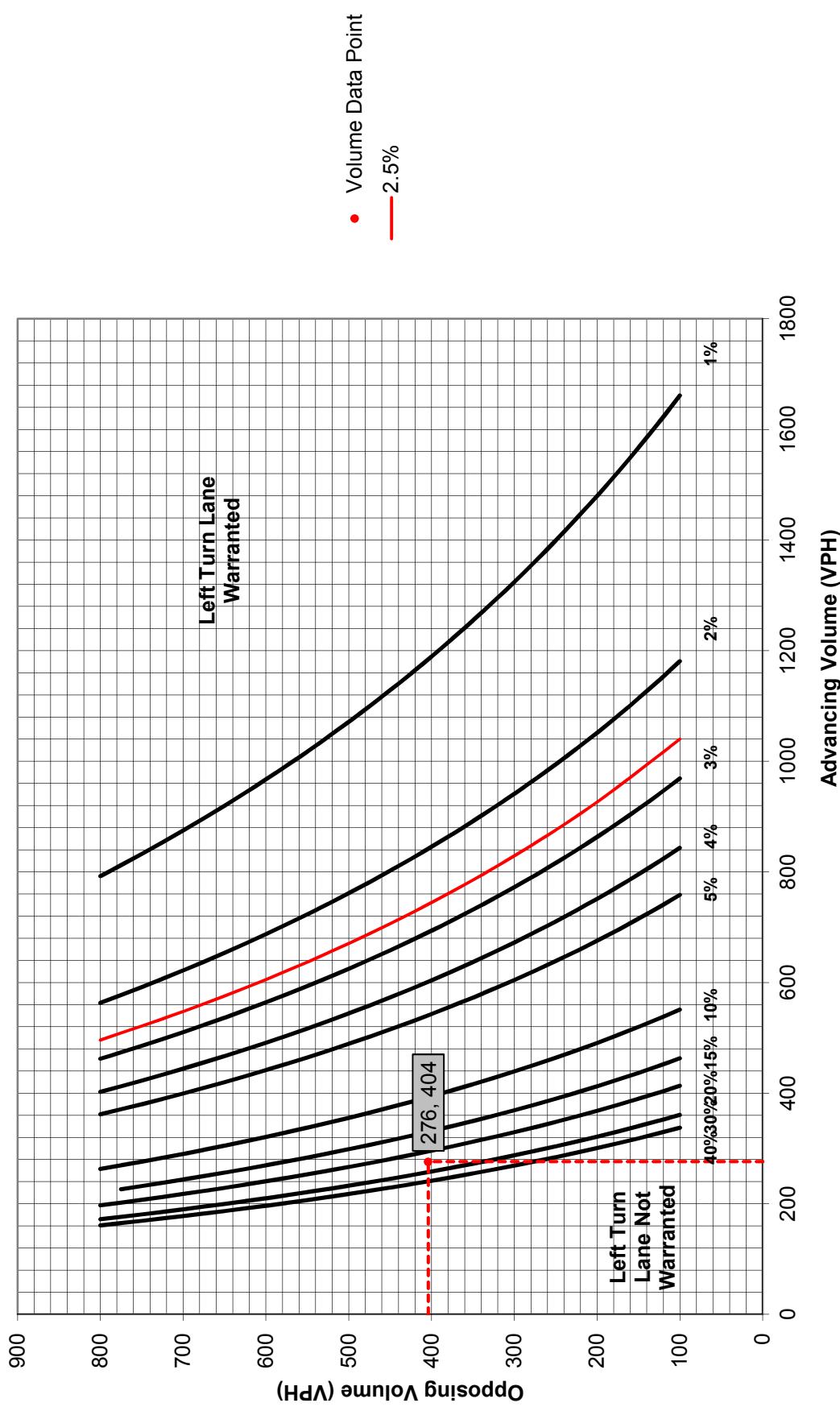
APPENDIX F

AUXILIARY TURN LANE WARRANTS

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION																																											
Municipality:	Upper Allen Twp		Analysis Date:	5/16/2019																																							
County:	Cumberland County		Conducted By:	TPD																																							
PennDOT Engineering District:	8		Checked By:																																								
			Agency/Company Name:	Traffic Planning and Design, Inc.																																							
Intersection & Approach Description:	S. York Street (SR 2013) & Proposed Site Driveway – SB Left																																										
Analysis Period:	2033 Projected (Build)		Number of Approach Lanes:	1																																							
Design Hour:	AM Peak Hour		Undivided or Divided Highway:	Undivided																																							
Intersection Control:	Unsignalized		Type of Analysis:																																								
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Left Turn Lane																																							
Type of Terrain:	Rolling																																										
VOLUME CALCULATIONS																																											
Left Turn Lane Volume Calculations																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Movement</th> <th>Include?</th> <th>Volume</th> <th>% Trucks</th> <th>PCEV</th> <th></th> </tr> </thead> <tbody> <tr> <td rowspan="3">Advancing</td> <td>Left</td> <td>Yes</td> <td>6</td> <td>2.0%</td> <td>7</td> </tr> <tr> <td>Through</td> <td>-</td> <td>250</td> <td>5.0%</td> <td>269</td> </tr> <tr> <td>Right</td> <td>Yes</td> <td>0</td> <td>0.0%</td> <td>0</td> </tr> <tr> <td rowspan="3">Opposing</td> <td>Left</td> <td>Yes</td> <td>0</td> <td>0.0%</td> <td>0</td> </tr> <tr> <td>Through</td> <td>-</td> <td>382</td> <td>3.0%</td> <td>400</td> </tr> <tr> <td>Right</td> <td>Yes</td> <td>3</td> <td>2.0%</td> <td>4</td> </tr> </tbody> </table>						Movement	Include?	Volume	% Trucks	PCEV		Advancing	Left	Yes	6	2.0%	7	Through	-	250	5.0%	269	Right	Yes	0	0.0%	0	Opposing	Left	Yes	0	0.0%	0	Through	-	382	3.0%	400	Right	Yes	3	2.0%	4
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Advancing	Left	Yes	6	2.0%	7																																						
	Through	-	250	5.0%	269																																						
	Right	Yes	0	0.0%	0																																						
Opposing	Left	Yes	0	0.0%	0																																						
	Through	-	382	3.0%	400																																						
	Right	Yes	3	2.0%	4																																						
Advancing Volume:	276		Opposing Volume:	404																																							
Left Turn Volume:	7																																										
% Left Turns in Advancing Volume: 2.54%																																											
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	Right	-	3	2.0%	N/A																																						
Advancing Volume:	N/A		Right Turn Volume:	N/A																																							
TURN LANE WARRANT FINDINGS																																											
Left Turn Lane Warrant Findings			Right Turn Lane Warrant Findings																																								
Applicable Warrant Figure:			Applicable Warrant Figure:																																								
Figure 1			N/A																																								
Warrant Met?:			Warrant Met?:																																								
No			N/A																																								
TURN LANE LENGTH CALCULATIONS																																											
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Type of Traffic Control	Speed (MPH)																																										
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	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																																					
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Additional Findings: N/A																																											
Additional Comments / Justifications:																																											
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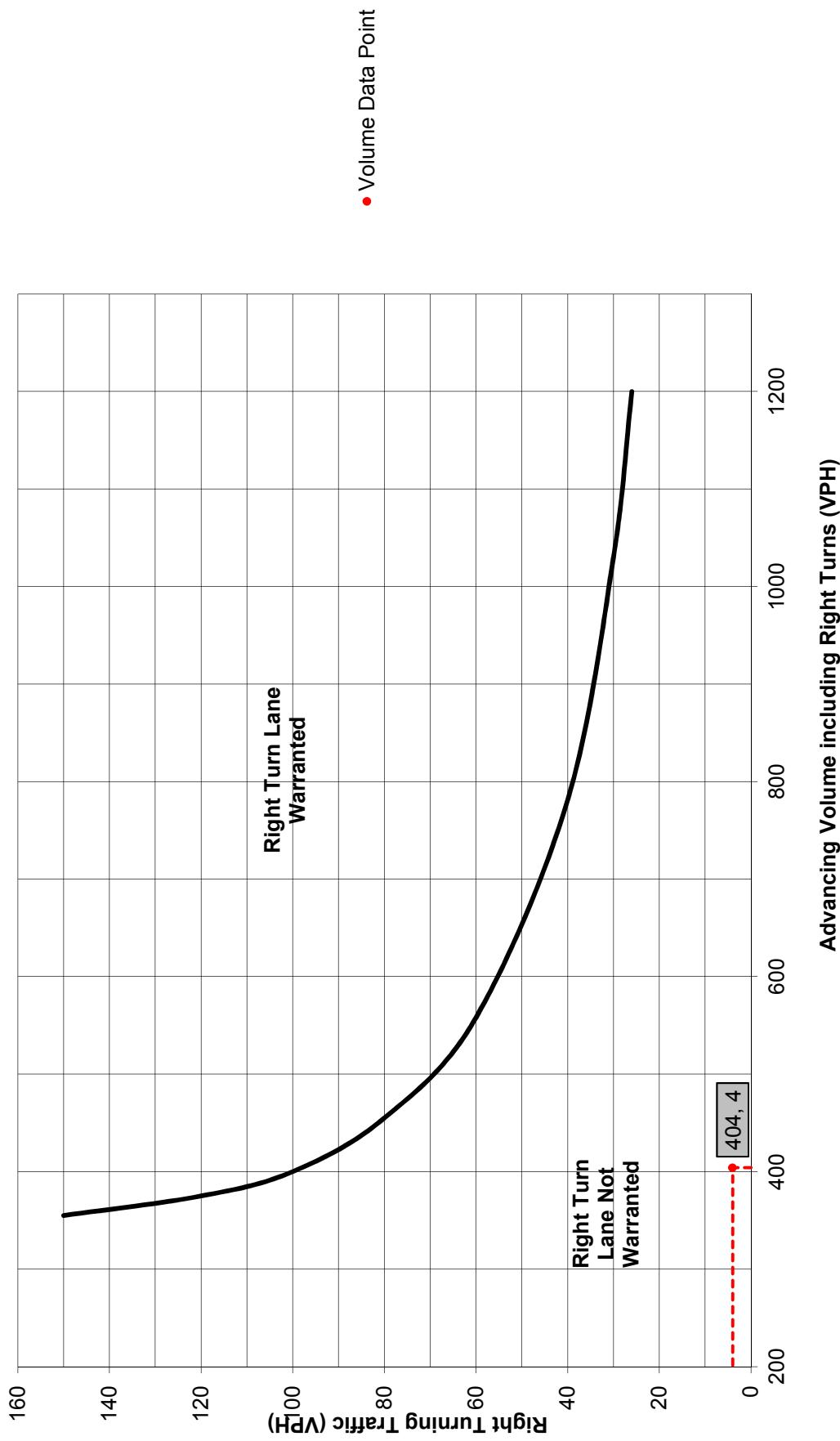
**Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

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Movement	Include?	Volume	% Trucks	PCEV																																							
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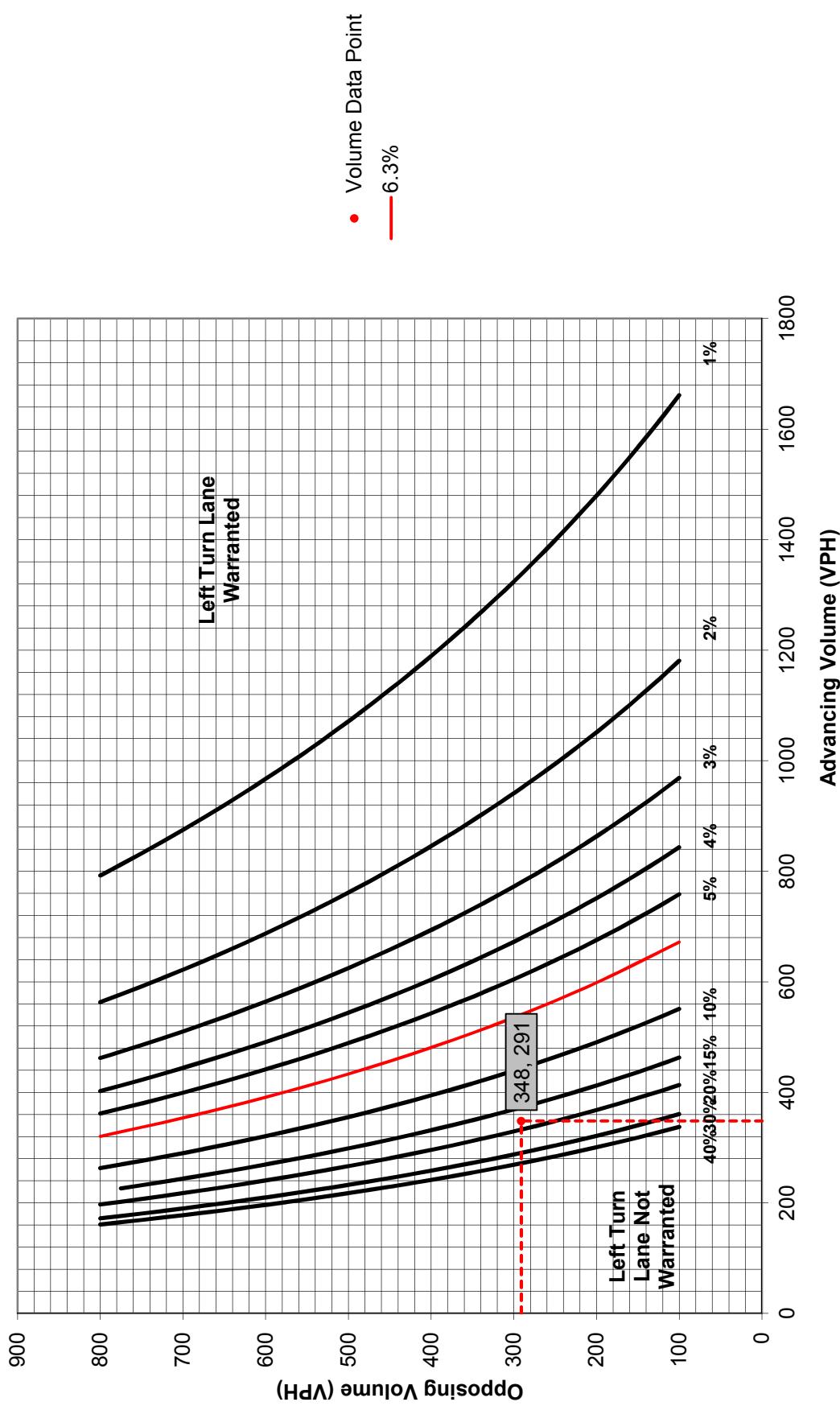
**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

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Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Left Turn Lane																																								
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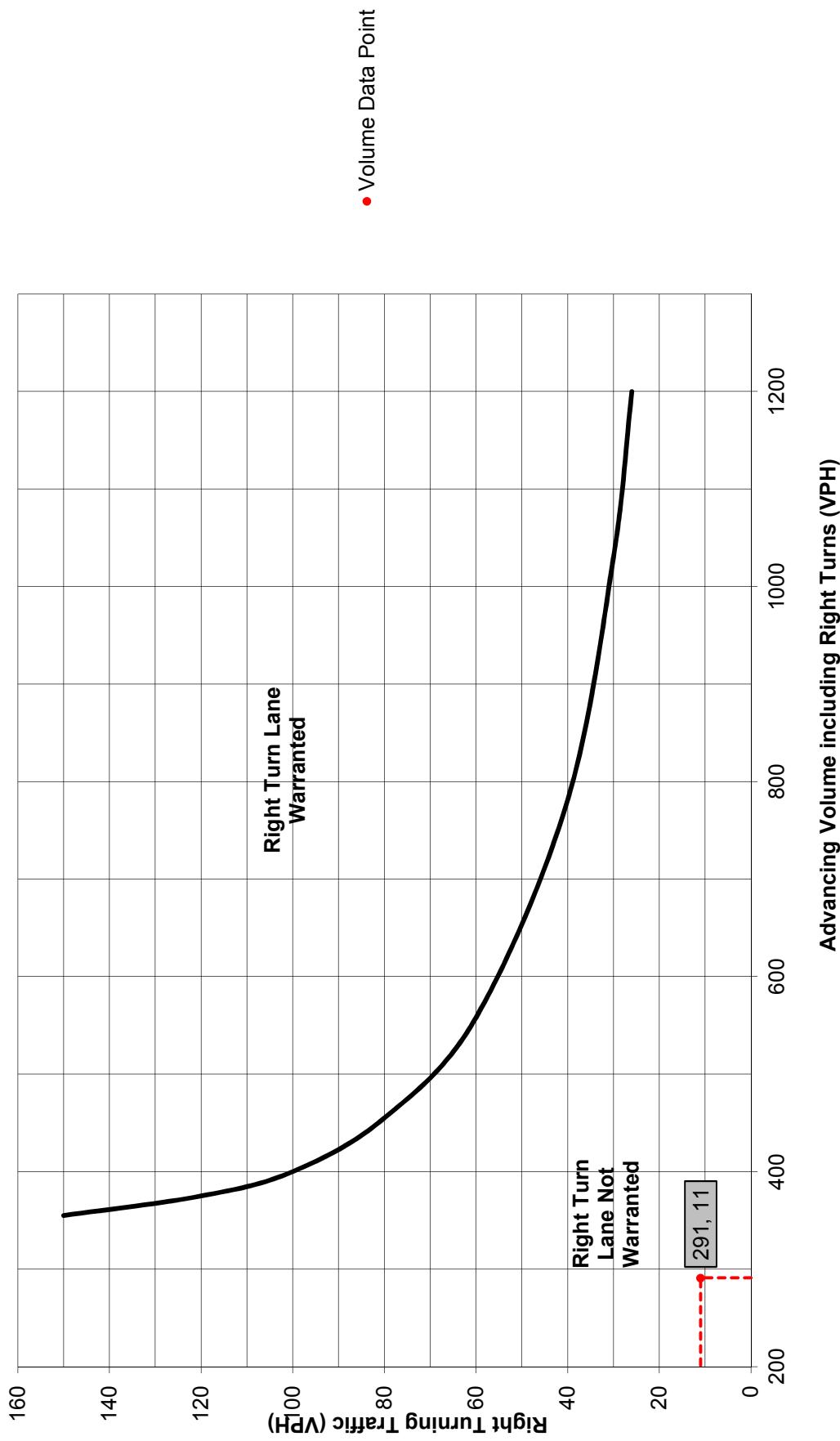
**Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)**
($L = \%$ Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

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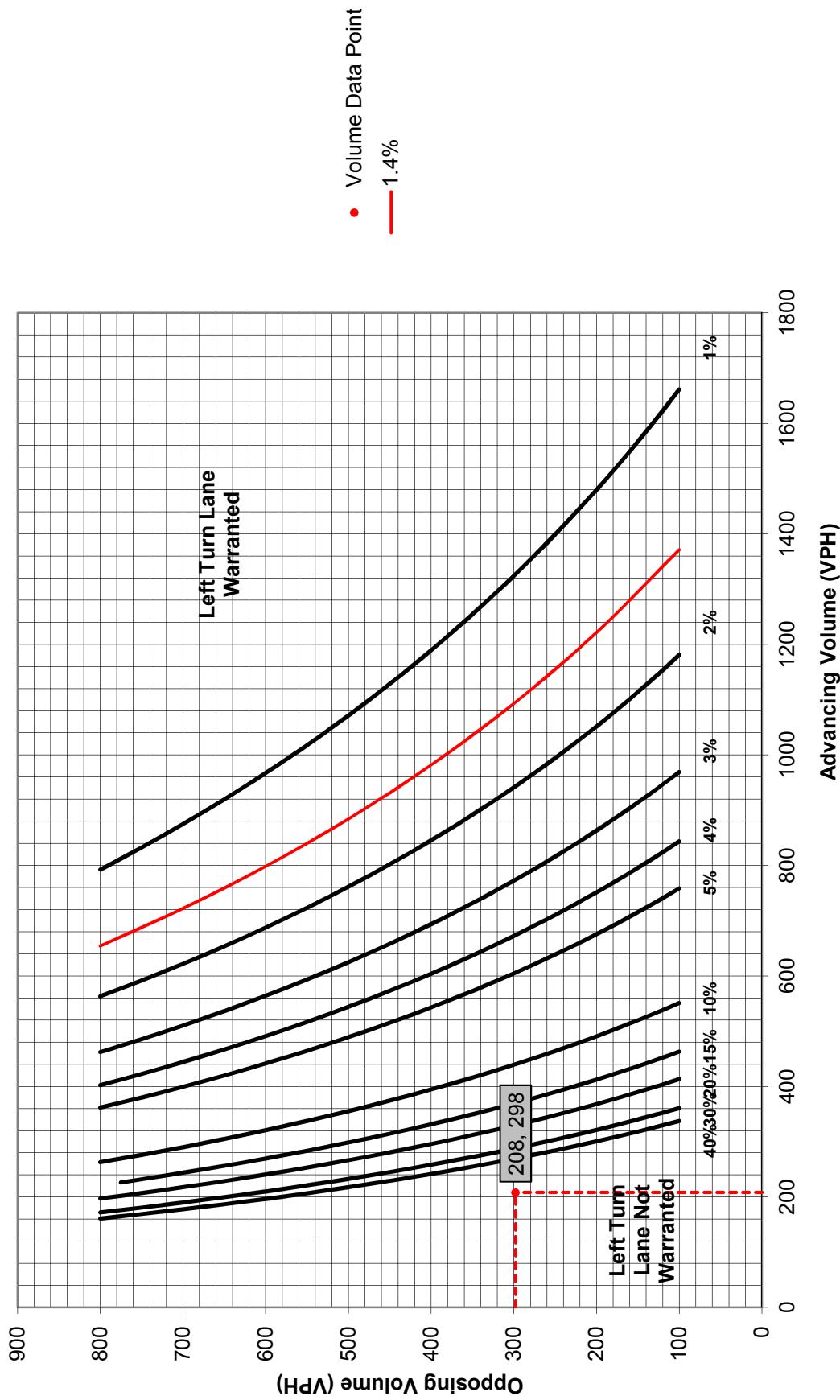
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Analysis Period:	2033 Projected (Build)		Number of Approach Lanes:	1																																							
Design Hour:	AM Peak Hour		Undivided or Divided Highway:	Undivided																																							
Intersection Control:	Unsignalized		Type of Analysis:																																								
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Left Turn Lane																																							
Type of Terrain:	Rolling																																										
VOLUME CALCULATIONS																																											
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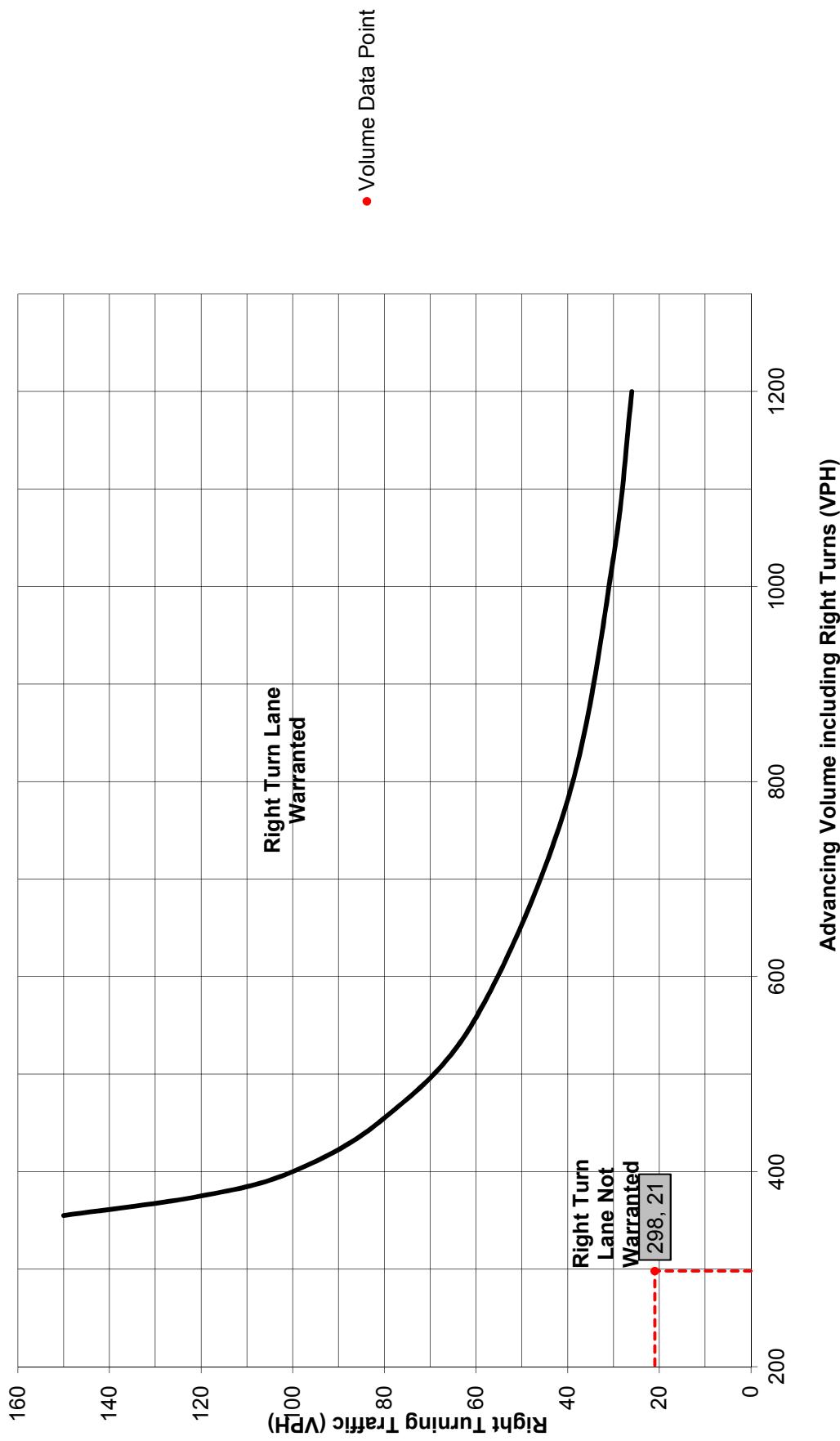
**Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

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PennDOT Engineering District:	8		Checked By:																																									
			Agency/Company Name:	Traffic Planning and Design, Inc.																																								
Intersection & Approach Description: W. Winding Hill Road (SR 2010) & Proposed Site Driveway – WB Right																																												
Analysis Period: 2033 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 35 Type of Terrain: Rolling			Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane																																									
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Warrant Met?: N/A			Warrant Met?: No																																									
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Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 21 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known):																																												
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Additional Findings: N/A																																												
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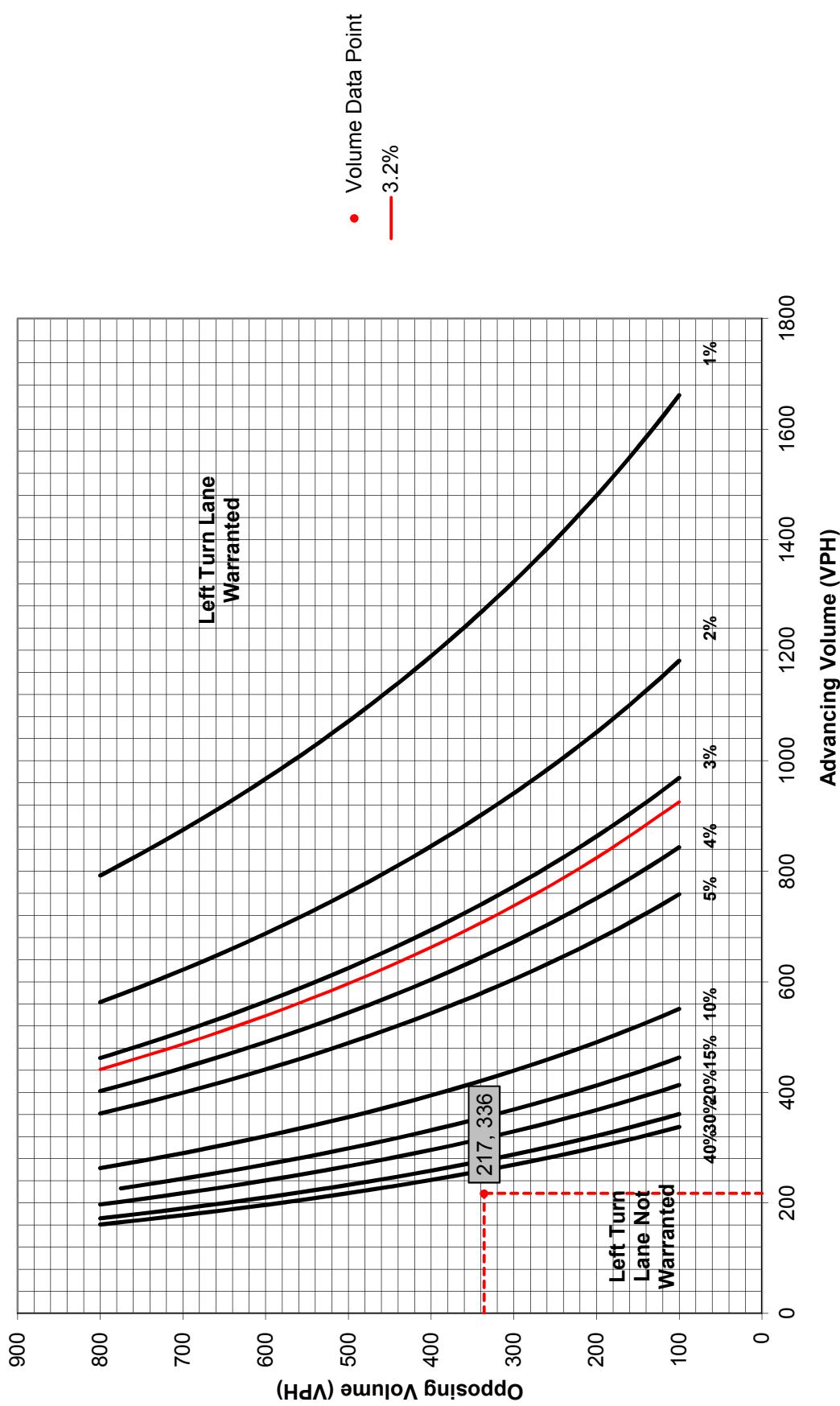
**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

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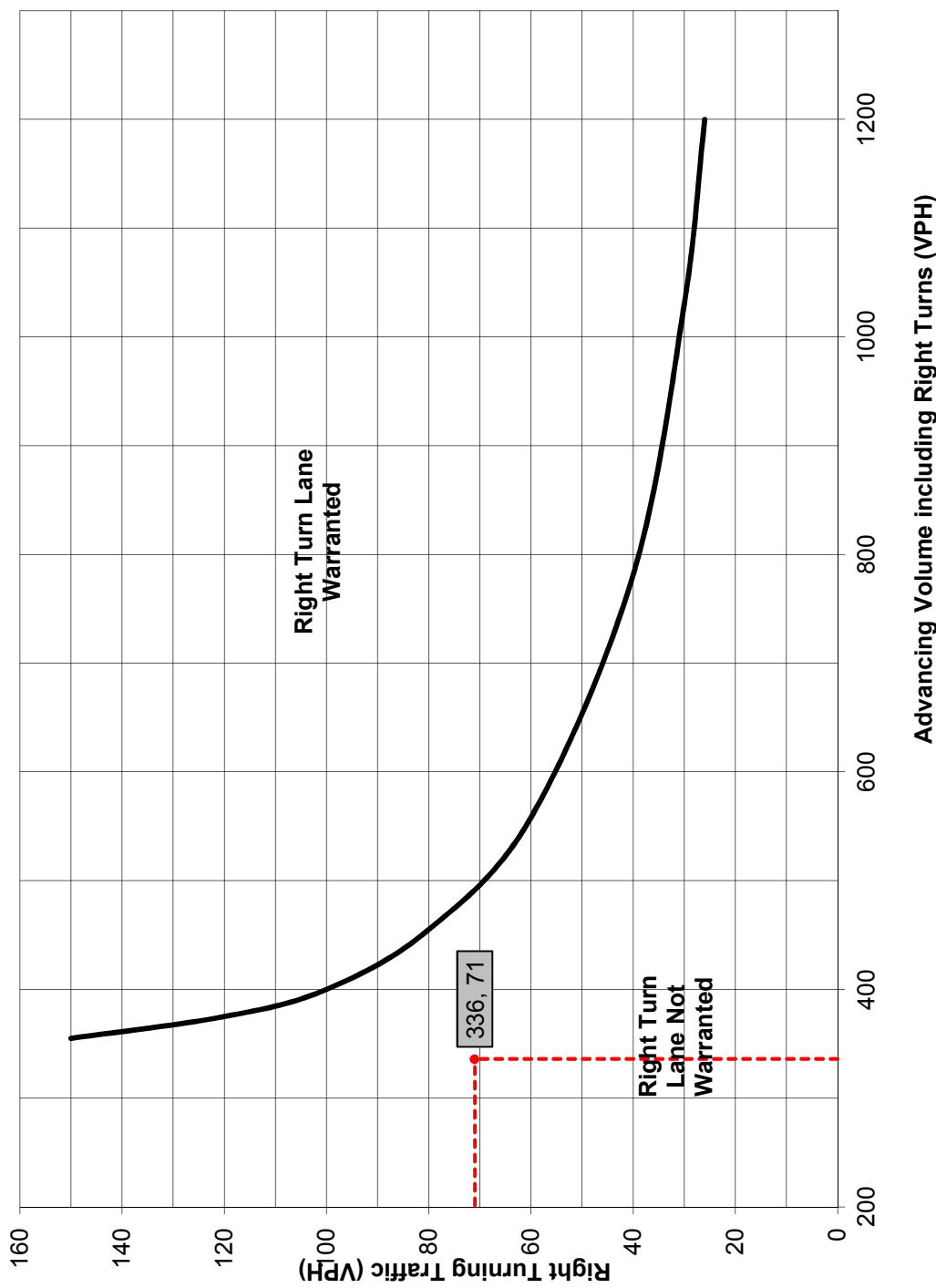
**Figure 1. Warrant for left turn lanes on two-lane roadways
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(L = % Left Turns in Advancing Volume)



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Movement	Include?	Volume	% Trucks	PCEV																																								
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Advancing Volume: 336 Right Turn Volume: 71																																												
TURN LANE WARRANT FINDINGS																																												
Left Turn Lane Warrant Findings			Right Turn Lane Warrant Findings																																									
Applicable Warrant Figure: N/A			Applicable Warrant Figure: Figure 9																																									
Warrant Met?: N/A			Warrant Met?: No																																									
TURN LANE LENGTH CALCULATIONS																																												
Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 71 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known):																																												
Average # of Vehicles/Cycle: N/A																																												
PennDOT Publication 46, Exhibit 11-6																																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3" style="width: 25%;">Type of Traffic Control</th> <th colspan="6" style="background-color: #f2e0d2; text-align: center;">Speed (MPH)</th> </tr> <tr> <th colspan="2" style="background-color: #f2e0d2; text-align: center;">25-35</th> <th colspan="2" style="background-color: #f2e0d2; text-align: center;">40-45</th> <th colspan="2" style="background-color: #f2e0d2; text-align: center;">50-60</th> </tr> <tr> <th colspan="6" style="background-color: #f2e0d2; text-align: center;">Turn Demand Volume</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Signalized</td> <td style="text-align: center;">High</td> <td style="text-align: center;">Low</td> <td style="text-align: center;">High</td> <td style="text-align: center;">Low</td> <td style="text-align: center;">High</td> <td style="text-align: center;">Low</td> </tr> <tr> <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>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						Signalized	High	Low	High	Low	High	Low	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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	A	A	B or C	B or C	B or C	B or C																																						
Unsignalized	A	A	C	B	B or C	B																																						
Right Turn Lane Storage Length, Condition A: N/A Condition B: N/A Condition C: N/A Required Right Turn Lane Storage Length: N/A																																												
Additional Findings: N/A																																												
Additional Comments / Justifications:																																												

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



APPENDIX G

TRAFFIC SIGNAL PERMIT PLANS

SYSTEM NOTES

- PROGRAMS TO BE SELECTED BY CLOSED LOOP SYSTEM MASTER OR TIME BASED COORDINATION BACK-UP.
- OFFSETS REFERENCED TO BEGINNING OF YELLOW INTERVAL FOR PHASE 2+6.
- MASTER CONTROLLER LOCATION: SR 0114 (S. MARKET STREET) AT ALLEN DISTRIBUTION DRIVEWAY.
- INTERCONNECTION BY CELLULAR COMMUNICATIONS.



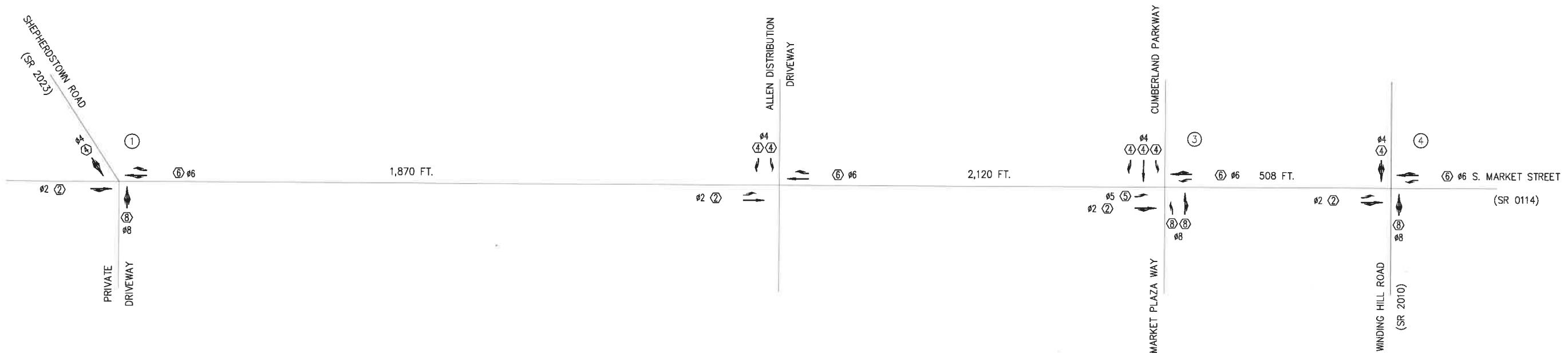
NOT TO SCALE

COORDINATION PLAN

PLAN NO.	DAY OF WEEK						TIME	CYCLE	OFFSET	SPLIT	REMARKS
	M	T	W	T	F	S					
1	x	x	x	x	x	x	00:00	-	-	-	FREE
2	x	x	x	x	x	x	06:00	1	1	1	AM PEAK
3	x	x	x	x	x	x	09:00	-	-	-	FREE
4	x	x	x	x	x	x	14:00	2	1	1	PM PEAK
5	x	x	x	x	x	x	18:00	-	-	-	FREE
6					x		10:00	1	1	1	SAT PEAK
7					x		16:00	-	-	-	FREE
8											
9											
10											
11											
12											

PERMIT NO. I-0057 SHEET 1 OF 1

DATE ISSUED _____ DATE REVISED _____



LEGEND

- (1) - SYSTEM INTERSECTION NUMBER
- (1) - INTERSECTION DETECTOR NUMBER
- ⑥ - INTERSECTION PHASE NUMBER
- LANE DESIGNATION

PROGRAM 1 - AM PEAK / SAT PEAK		PERMIT NUMBER	PHASE								CYCLE LENGTH	OFFSET 1	OFFSET 2	OFFSET 3
INTERSECTION			1	2	3	4	5	6	7	8				
1	S. MARKET STREET/SHEPHERDSTOWN ROAD (SR 2023)	010980	-	55	-	30	-	55	-	10	95	94	-	-
2	S. MARKET STREET/ALLEN DISTRIBUTION DRIVEWAY	015534	-	73	-	22	-	73	-	-	95	0	-	-
3	S. MARKET STREET/CUMBERLAND PARKWAY	001908	-	71	-	24	23	48	-	24	95	31	-	-
4	S. MARKET STREET/WINDING HILL ROAD (SR 2010)	015535	-	71	-	24	-	71	-	24	95	35	-	-
5														

PROGRAM 2 - PM PEAK		PERMIT NUMBER	PHASE								CYCLE LENGTH	OFFSET 1	OFFSET 2	OFFSET 3
INTERSECTION			1	2	3	4	5	6	7	8				
1	S. MARKET STREET/SHEPHERDSTOWN ROAD (SR 2023)	010980	-	51	-	29	-	51	-	10	90	0	-	-
2	S. MARKET STREET/ALLEN DISTRIBUTION DRIVEWAY	015534	-	68	-	22	-	68	-	-	90	0	-	-
3	S. MARKET STREET/CUMBERLAND PARKWAY	001908	-	64	-	26	21	43	-	26	90	18	-	-
4	S. MARKET STREET/WINDING HILL ROAD (SR 2010)	015535	-	66	-	24	-	66	-	24	90	15	-	-
5														

County: CUMBERLAND

Municipality: UPPER ALLEN TOWNSHIP
MECHANICSBURG BOROUGH

Corridor: S. MARKET STREET (SR 0114)

Approved By: *Jeanne M. Bent* 11/15/17
Municipal Official Date

Approved By: *Tommy Bent* 11/15/17
Municipal Official Date

Recommended: *Jeanne M. Bent* 12/14/17
District Traffic Engineer Date

TRAFFIC SIGNAL PERMIT

 Permit No. 015535
 Sheet 1 of 3

In accordance with the Vehicle Code, the Secretary of Transportation hereby approves the installation and operation of a traffic signal at the intersection of South Market Street (SR 0114) & Winding Hill Road in the Township of Upper Allen, County of Cumberland.

This permit is issued to, and accepted by the Township of Upper Allen hereinafter known as the Permittee, as follows:

This installation shall be in accordance with the Vehicle Code and the Regulations for traffic signs, signals, and markings of the Department of Transportation, and shall conform to the following requirements and those contained on the attached sheets.

Type of Controller

Fully Actuated

Type of Signal Mounting

Post Mounted & Overhead

Hours of Operation as "Stop" and "Go"

Continuously

Hours of Operation as "FLASHING"

Equipped for Emergency Flash

Controller Operation

Controller to provide the phasing, timing, and signal display as indicated on the attached diagram. Controller to be interconnected with adjacent signal controllers along S. Market St. (SR 0114) to provide a progressive movement of traffic. Supervised by master controller at S. Market St. (SR 0114) & Allen Distribution Driveway.

All work performed by the Permittee in the erection of the traffic signal shall be under and subject to the direction of the Secretary of Transportation or his authorized representatives. The said Permittee shall use due diligence in the execution of the work authorized under this permit and shall not obstruct or endanger travel along the said road. All operations must be conducted so as to permit safe and reasonable free travel at all times over the road within the limits of the work herein permitted.

The Permittee covenants and agrees to fully indemnify and save harmless the Department of Transportation and assume all liability for damages or injury, occurring to any person, persons or property through or in consequence of any act or omission of anyone working on the construction, or from faulty maintenance or operation of such traffic signal.

The Secretary of Transportation, by law, reserves the right to revoke and annul this permit if the Permittee shall at any time willfully or negligently fail to comply with the conditions contained in this permit, or, upon changes in traffic conditions, fail to make any changes in the construction or operation of this signal, or to remove it, when so ordered by the Secretary of Transportation; or if this installation is not in operation within twenty-four (24) months of the receipt of this permit. The Permittee shall maintain the signal in a safe condition at all times. The Permittee shall not make any change in the construction or operation of this traffic signal without prior written approval of the Secretary of Transportation.

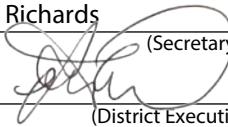
This permit cancels and supersedes all previous permits issued for this location upon completion of the installation specified herein.

INITIAL DATE 12/14/2017

APPROVED Leslie S. Richards

(Secretary of Transportation)

REVISION DATE _____

BY for: 

(District Executive or approved designee)

GENERAL NOTES

INSTALLATION, OPERATION AND MAINTENANCE OF THIS TRAFFIC SIGNAL SHALL BE IN ACCORDANCE WITH PENNSYLVANIA DEPARTMENT OF TRANSPORTATION REGULATIONS ON OFFICIAL TRAFFIC CONTROL DEVICES.

NO MODIFICATION OF THIS INSTALLATION IS PERMITTED
UNLESS PRIOR APPROVAL IS GRANTED, IN WRITING, BY THE
DEPARTMENT

ALL MAINTENANCE NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS, INCLUDING TRIMMING TREES, IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED BY THE PERMITTEE, UNLESS OTHERWISE INDICATED, EXCEPT THE LONGITUDINAL PAVEMENT MARKINGS ON STATE HIGHWAYS, WHICH WILL BE MAINTAINED BY THE DEPARTMENT.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF THE CURB OR EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM HORIZONTAL CLEARANCE OF 2 FEET.

THE BOTTOM OF SIGNAL HEADS AND SIGNS ERECTED OVER THE ROADWAY SHALL NOT BE LESS THAN 15 FEET NOR MORE THAN 19 FEET ABOVE THE ROADWAY. THE BOTTOM OF POST MOUNTED SIGNAL HEADS SHALL NOT BE LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNAL HEADS, MEASURED AT RIGHT ANGLES TO THE APPROACH, SHALL BE 8 FEET.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR EMBANKMENT REMOVAL, CURBING AND/OR SIDEWALK, DRAINAGE STRUCTURES, CHANGES IN HIGHWAY GEOMETRY, PAVEMENT WIDENING, OR INSTALLATION OF ADDITIONAL LANES.

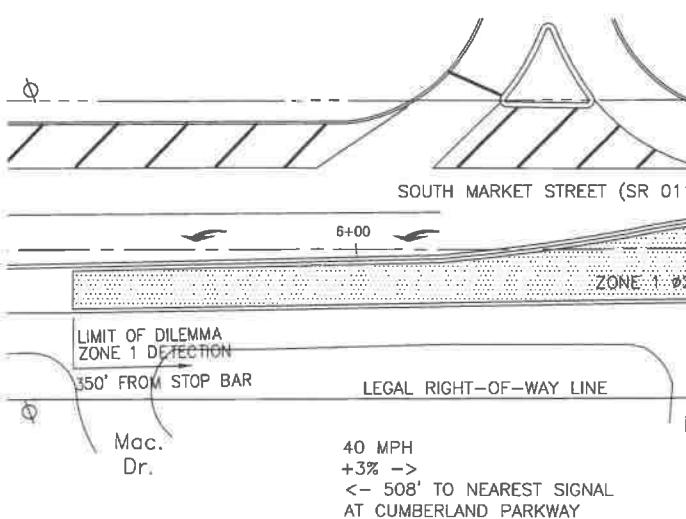
CONDUIT INSTALLED IN ASPHALT ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, CONSULT WITH UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

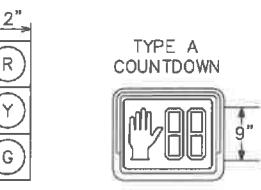
PAVEMENT MARKINGS SHALL BE PLACED IN ACCORDANCE WITH THE DEPARTMENT OF TRANSPORTATION PAVEMENT MARKING HANDBOOK.

PERMITTEE IS RESPONSIBLE FOR OBTAINING APPROVAL
FOR INSTALLATION OF TRAFFIC SIGNAL DEVICES LOCATED
OUTSIDE HIGHWAY RIGHT-OF-WAY

TRAFFIC SIGNALS INSTALLED USING LIQUID FUELS TAX FUNDS
MUST CONFORM TO DEPARTMENT SPECIFICATIONS AS SET FORTH
IN CURRENT PUBLICATION 408, SUPPLEMENTS AND STANDARD
DRAWINGS.

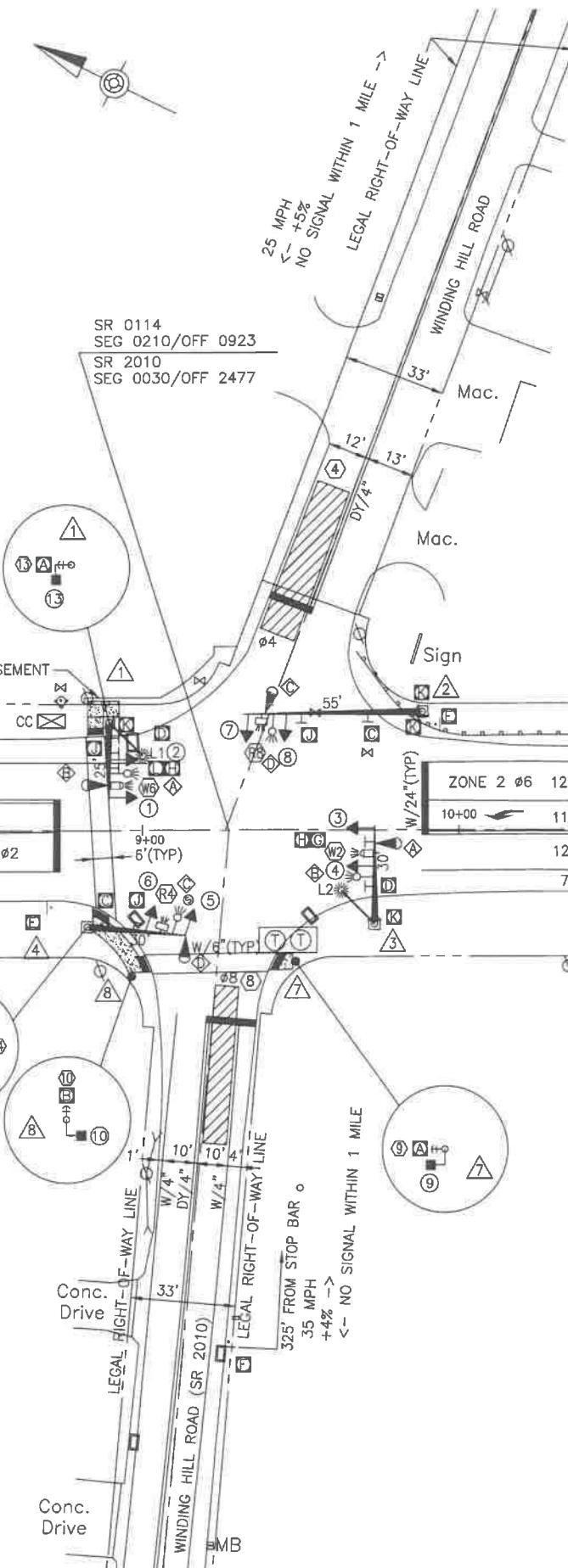


SIGNS



ALL OVERHEAD SIGNALS TO BE EQUIPPED
WITH TUNNEL VISORS

ALL OVERHEAD SIGNALS TO BE EQUIPPED
WITH NON-REFLECTIVE BLACK BACKPLATES
WITH 2" MIN. FLOURESCENT YELLOW
REFROEFLCTIVE BORDER



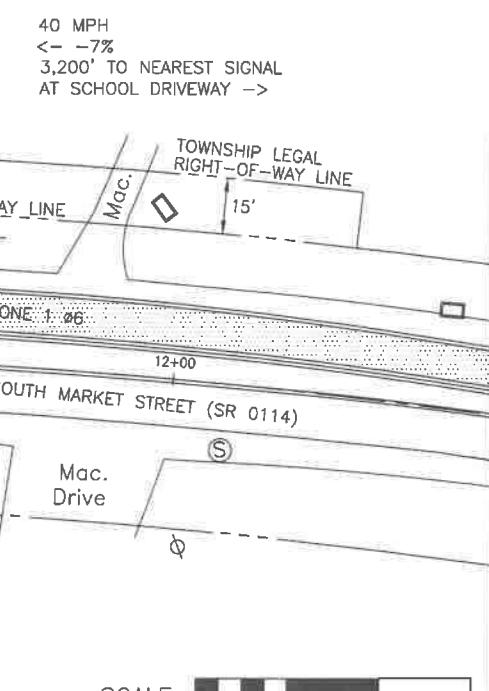
DETECTOR NOTES

DETECTOR ZONE 4 CALLS AND EXTENDS PHASE 4, PRESENCE, RADAR DETECTOR 4
DETECTOR ZONE 8 CALLS AND EXTENDS PHASE 8, PRESENCE, RADAR DETECTOR 8
DETECTORS 9 AND 10 CALL PEDESTRIAN PHASE 2, PUSHBUTTON
DETECTORS 11 AND 12 CALL PEDESTRIAN PHASE 6, PUSHBUTTON
DETECTORS 13 AND 14 CALL PEDESTRIAN PHASE 4, PUSHBUTTON

ADVANCE DILEMMA ZONE NOTES (ZONE 1)

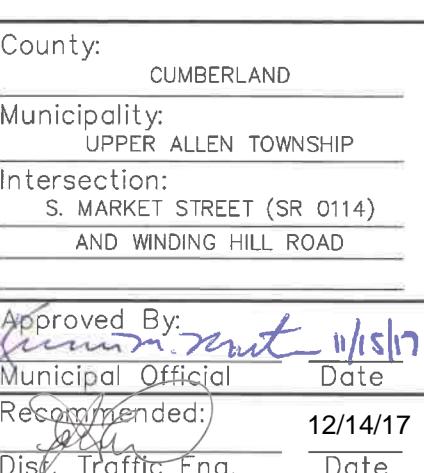
DENSITY ZONE NOTES (ZONE 2)

RANGE OF DETECTION: MINIMUM 0 FEET FROM STOP BAR
MAXIMUM 100 FEET FROM STOP BAR
MINIMUM SPEED BOUNDARY - 1 MPH
ZONE MAY BE ADJUSTED IN FIELD

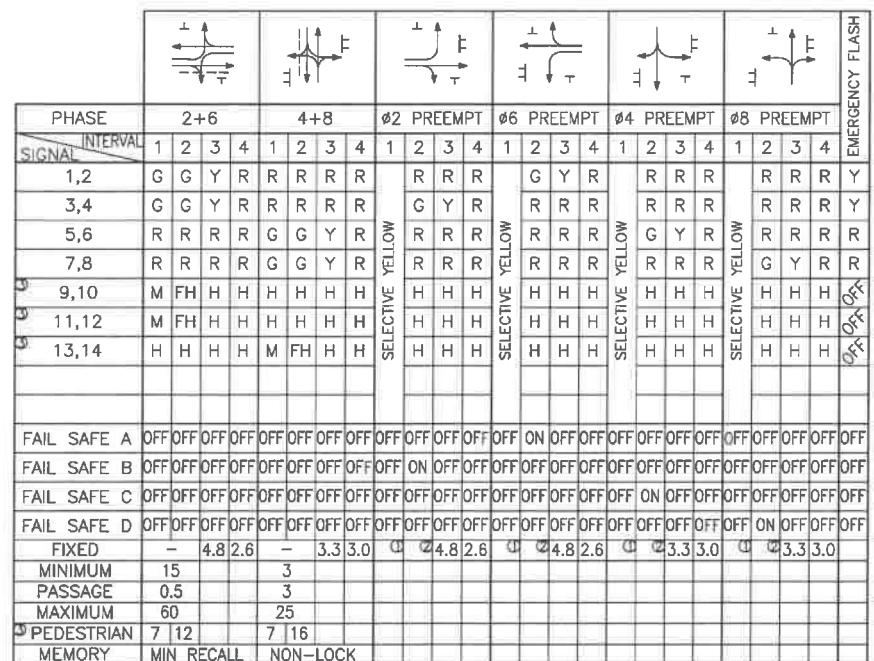


LEGEND

- MAST ARM
 - — PEDESTAL POLE
 - — VEHICULAR SIGNAL HEAD
 - — PEDESTRIAN SIGNAL HEAD
 - — POST MOUNTED SIGN
 - — STRUCTURE MOUNTED SIGN
 - + — PEDESTRIAN PUSHBUTTON/SIGN
 - — DILEMMA ZONE DETECTOR
 -  — DILEMMA DETECTION ZONE
 -  — RADAR PRESENCE DETECTOR
 -  — PRESENCE RADAR DETECTION ZONE
 -  — CONTROLLER ASSEMBLY
 -  L1 — LUMINAIRE
 -  — PREEMPTION SENSOR
 -  — PREEMPTION FAIL-SAFE LAMP
 - W/6" — SOLID WHITE LINE/WIDTH
 - DY/4" — DOUBLE YELLOW LINE/WIDTH
 -  — DETACHABLE WARNING SURFACE



MOVEMENT, PHASING AND SEQUENCE CHART



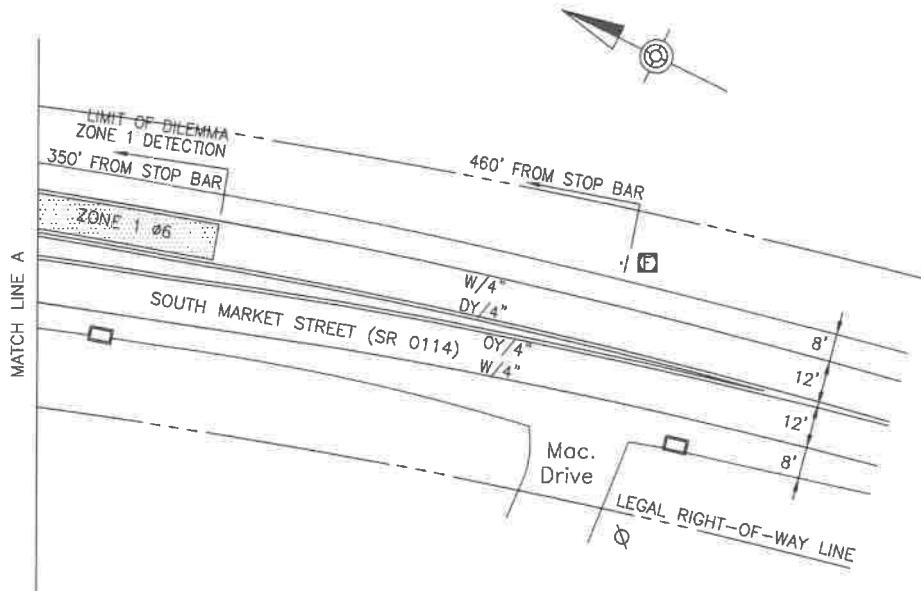
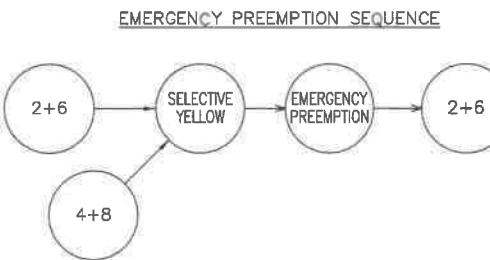
SEQUENCE NOTES

1. SELECTIVE YELLOW INTERVAL INCLUDES THE NORMAL ALL RED INTERVAL.
2. FOR DURATION OF EMERGENCY PREEMPTION.
3. UPON PEDESTRIAN ACTUATION ONLY,
OTHERWISE DONT WALK (HAND) AT ALL TIMES.

M - MAN SYMBOL (WALK)
FH - FLASHING HAND SYMBOL (PED CLEAR)
H - HAND SYMBOL (DONT WALK)

EMERGENCY PREEMPTION NOTES

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PREEMPTION FOR ALL INTERSECTION APPROACHES.
- THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- LOCATION OF THE EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS, EXCEPT THE GREEN INDICATIONS FOR THE PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PREEMPTION OCCURS. THE "GREEN" INDICATIONS FOR THE PREEMPTED PHASE SHALL REMAIN "GREEN" FOR THE DURATION OF SIGNAL PREEMPTION AND "RED" INDICATIONS DISPLAYED FOR ALL OTHER PHASES.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PREEMPTION PHASE COVERED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSHBUTTON, AND THE SIGNAL IS PREEMPTED DURING THE "MAN" INTERVAL, THE "MAN" INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "FLASHING HAND" INTERVAL IN ITS ENTIRETY, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PREEMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.
- UPON COMPLETION OF PREEMPTION PHASES IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
- IN EMERGENCY PREEMPTION, NO PRIORITY SHALL BE ESTABLISHED, PREEMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- IF ADDITIONAL PREEMPTION PHASES ARE ACTUATED WHILE IN PREEMPTION, THE ORIGINAL PREEMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PREEMPTION PHASE.



SCALE 0 25 50 75

LEGEND

- MAST ARM
- — PEDESTAL POLE
- — VEHICULAR SIGNAL HEAD
- — PEDESTRIAN SIGNAL HEAD
- — POST MOUNTED SIGN
- — STRUCTURE MOUNTED SIGN
- — PEDESTRIAN PUSHBUTTON/SIGN
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- — DILEMMA DETECTION ZONE
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- — PRESENCE RADAR DETECTION ZONE
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- — PREEMPTION FAIL-SAFE LAMP
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- — DETECTABLE WARNING SURFACE

County: CUMBERLAND

Municipality: UPPER ALLEN TOWNSHIP

Intersection: S. MARKET STREET (SR 0114)
AND WINDING HILL ROAD

Approved By: *[Signature]* Date: *11/15/17*

Municipal Official: *[Signature]* Date:

Recommended: *[Signature]* Date: *12/14/17*

Dist. Traffic Eng.: *[Signature]* Date:

APPENDIX H

PROJECT CORRESPONDENCE

Wheeler, Jason

From: PD, District 8-0 Signals <RA-pdDist80Signals@pa.gov>
Sent: Wednesday, February 19, 2020 3:52 PM
To: Neal, Jarred
Cc: John Murphy; Anthony Faranda-Diedrich; Mark Allen; Kinard, Eric W; shoffman@ccpa.net; Jennifer Boyer; jtoner@uatwp.org; Malik, Mazhar; PD, District 8-0 HOP; Centi, Michael
Subject: RE: Scope App - Charter Homes at West Winding - Upper Allen Twp, Cumberland Co

Jarred,

The revised Scope Application and is acceptable to us. After you hear back from everyone please send it back out as a final version. Then you may prepare the TIS accordingly. Additionally, we concur with the revised growth rate.

If you have any questions or concerns please feel free to email or call.
Thanks.

Dean Noles | Traffic Control Specialist
PA Department of Transportation| PennDOT Engineering District 8-0
2140 Herr Street | Harrisburg PA 17103-1699
Phone: 717.772.0976 | Fax: 717.705.0375
www.penndot.gov

From: Neal, Jarred <jneal@trafficpd.com>
Sent: Wednesday, February 19, 2020 10:35 AM
To: PD, District 8-0 Signals <RA-pdDist80Signals@pa.gov>; Kinard, Eric W <ekinard@pa.gov>; Noles, Dean T <dnoles@pa.gov>; shoffman@ccpa.net; Jennifer Boyer <jboyer@uatwp.org>; jtoner@uatwp.org
Cc: John Murphy <jmurphy@alphacei.com>; Anthony Faranda-Diedrich <afd@charterhomes.com>; Mark Allen <mallen@alphacei.com>
Subject: [External] RE: Charter Homes at West Winding, Inc. - PennDOT Scoping Application Submission

ATTENTION: This email message is from an external sender. Do not open links or attachments from unknown sources. To report suspicious email, forward the message as an attachment to CWOPA_SPAM@pa.gov.

Based on conversations with PennDOT, the previously conducted Traffic Impact Study and Scoping Application was completed with a growth rate that has changed since our initial submission. The growth rate in the TIS and Scoping Application was noted as 0.8% per year. However, the new growth rates from PennDOT Bureau of Planning and Research (BPR) indicates a rate of 0.74% per year. Given the growth rate has decreased and the analysis is conservative, TPD respectfully requests PennDOT allow the more conservative analysis rather than updating the Scoping Application and completed Traffic Impact Study.

Please call with any questions.

-Jarred

Jarred L. Neal, P.E.

Project Manager

From: Neal, Jarred <jneal@trafficpd.com>

Sent: Wednesday, February 05, 2020 7:32 AM

To: PennDOT 8-0 (RA-pddist80signals@pa.gov) <RA-pddist80signals@pa.gov>; Kinard, Eric W <ekinard@pa.gov>; Dean Noles (dnoles@pa.gov) <dnoles@pa.gov>; shoffman@ccpa.net; Jennifer Boyer <jboyer@uatwp.org>; jtoner@uatwp.org

Cc: John Murphy <jmurphy@alphacei.com>; Anthony Faranda-Diedrich <afd@charterhomes.com>; Mark Allen <mallen@alphacei.com>

Subject: RE: Charter Homes at West Winding, Inc. - PennDOT Scoping Application Submission

Attached please find the revised PennDOT Scoping Application and Meeting Minutes with comment responses for the West Winding development project. A full site plan is also being provided as requested. Please review and let me know if you have any questions or comments.

Thank you

-Jarred

Jarred L. Neal, P.E.

Project Manager

From: Neal, Jarred <jneal@trafficpd.com>

Sent: Monday, December 02, 2019 5:11 PM

To: PennDOT 8-0 (RA-pddist80signals@pa.gov) <RA-pddist80signals@pa.gov>; Kinard, Eric W <ekinard@pa.gov>; Dean Noles (dnoles@pa.gov) <dnoles@pa.gov>; shoffman@ccpa.net; Jennifer Boyer <jboyer@uatwp.org>

Cc: John Murphy <jmurphy@alphacei.com>; Anthony Faranda-Diedrich <afd@charterhomes.com>

Subject: Charter Homes at West Winding, Inc. - PennDOT Scoping Application Submission

On behalf of Charter Homes at West Winding, Inc., Traffic Planning and Design (TPD) has prepared the attached PennDOT TIS Scoping Application for the West Winding development project. The project is located in Upper Allen Township, Cumberland County, along W. Winding Hill Road (SR 2010). Please note the scoping application contains a significant amount of the analysis that was conducted and previously submitted to the Township as part of the Land Development process. Below is an excerpt from the review letter dated 10/18/2019 from the Township's Traffic Engineer regarding the submitted TIS:

TRAFFIC COMMENTS

CS Davidson has reviewed the Traffic Impact Study and finds that the document is standing. The proposed street intersections operate at a level of service "A" as we intersection of S. York Street and W. Winding Hill Road in the year 2033. A level of serv projected for the year 2033 at the intersection of S. Market Street and W. Winding Hill I

Please review and let us know if you have any questions or comments.

Thank you.

-Jarred

December 2, 2019

Updated: February 5, 2020

TPD# CHHN.00013



TRAFFIC PLANNING AND DESIGN, INC.



Transportation Impact Study
Scoping Meeting Application
West Winding Residential Development

Upper Allen Township, Cumberland County, PA

For Submission To:

Upper Allen Township and PennDOT District 8-0

**Transportation Impact Study (TIS)
Scoping Meeting Application**

Scoping Meeting Date: Tuesday, January 21, 2020

Applicant: Charter Homes at West Winding, Inc.

Applicant's Consultant: Traffic Planning and Design, Inc.

Applicant's Primary Contact: Jarred L. Neal, P.E. (Jneal@trafficpd.com)

1. LOCATION OF PROPOSED DEVELOPMENT:

PennDOT Engineering Dist: 8 - 0 County: Cumberland

Municipality: Upper Allen Township

State Road(s) (SR): W. Winding Hill Road (SR 2010)

Segment(s): 0020 Offset(s): 1875

S. York Street (SR 2013)

Segment(s): 0030 Offset(s): 0520

2. DESCRIPTION OF PROPOSED DEVELOPMENT: (Attach site plan if available)

Existing Conditions: The existing site is vacant.

Proposed Site Access: One full-movement driveway to W. Winding Hill Road (SR 2010) and one full-movement driveway to S. York Street (SR 2013).

Proposed Land Use(s): The proposed development will consist of 168 single family homes.

Community Linkages (access to neighboring properties, cross easements, pedestrian and transit accommodations): N/A

3. DEVELOPMENT SCHEDULE AND STAGING:

Anticipated Opening Date: 2023

Full Build-out Date: 2028

Describe Proposed Development Schedule/Staging: N/A

4. TRIP GENERATION: (Use the most recent edition of "Institute of Transportation Engineers (ITE) Trip Generation," unless the Department approves another source. Non-ITE methods must be fully justified on surveys of multiple sites of the same land use type and size.)

The trip generation rates for the proposed development were obtained from the Trip Generation Manual, Tenth Edition, 2017, an Institute of Transportation Engineers (ITE) Informational Report. The statistics in the Trip Generation Manual are empirical data based on more than 6,500 trip generation studies. The

data are categorized by Land Use Codes, with total vehicular trips for a given land use estimated using an independent variable and statistically generated rates or equations.

For the proposed residential development, Land Use Code 210 (Single-Family Detached 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 1** shows the rates/equations and directional percentages for the analyzed time periods.

TABLE 1
ITE TRIP GENERATION RATES

Land Use	ITE #	Time Period	Equations/Rates	Entering %	Exiting %
Single-Family Detached Housing	210	Average Weekday	$\ln(T) = 0.92*\ln(X)+2.71$	50%	50%
		Weekday A.M. Peak Hour	$T = 0.71*(X)+4.80$	25%	75%
		Weekday P.M. Peak Hour	$\ln(T) = 0.96*\ln(X)+0.20$	63%	37%

T = number of site-generated vehicular trips

X = independent variable (dwelling units)

The calculated trip generation is shown in **Table 2**.

TABLE 2
SITE TRIP GENERATION

Time Period	West Winding Subdivision New Trips		
	Total	Enter	Exit
Average Weekday	1677	838	838
A.M. Peak Hour	124	31	93
P.M. Peak Hour	167	105	62

5. ESTIMATED AVERAGE WEEKDAY TRIP GENERATION/DRIVEWAY CLASSIFICATION:

- a. Estimated Weekday Trip Generation of Proposed Development (Assuming Two Access Points): 1,677 trips/day or 838 vehicles/day

- b. Driveway Classification Based on Site Trips and Two Access Points:

- | | |
|--------------------------------------|---|
| <input type="checkbox"/> Minimum Use | <input checked="" type="checkbox"/> Medium Volume |
| <input type="checkbox"/> Low Volume | <input type="checkbox"/> High Volume |

6. TRANSPORTATION IMPACT STUDY REQUIRED?

- | | |
|--|--|
| <input type="checkbox"/> No | |
| <input checked="" type="checkbox"/> Yes, based on: | |
| <input type="checkbox"/> 3,000 or more vehicle trips/day generated | |
| <input checked="" type="checkbox"/> During any one-hour time period, 100 or more new (added) vehicle trips generated entering or 100 or more new (added) vehicle trips generated exiting development | |
| <input type="checkbox"/> Other considerations as described below: | |

7. TRAFFIC IMPACT ASSESSMENT REQUIRED? No Yes

8. TIS STUDY AREA: (Describe; attach map and/or diagram)

Roadway and Study Intersections:

- » W. Winding Hill Road (SR 2010) [east leg] and S. York Street;
- » W. Winding Hill Road (SR 2010) [west leg] and S. York Street;
- » W. Winding Hill Road (SR 2010)/E. Winding Hill Road (Twp) and S. Market Street (SR 0114).¹

¹New traffic counts will be conducted for this intersection and indicated in the TIS

Land Use Context: (Refer to Smart Transportation Handbook)

- » In PennDOT's Design Manual, Part 1X, Appendix B, there is guidance pertaining to defining the land use context(s) for a given area. Based upon review of this information, the land uses surrounding the proposed site best fits the Suburban Neighborhood designation, as described below:

Suburban Neighborhood, "predominately low density residential communities with houses typically arranged along a curvilinear system of streets with limited connectivity to regional road networks. Neighborhoods can include community facilities (schools, churches, recreation) and some small businesses or offices."

Known Congestion Areas:

- » None

Known Safety Concerns:

- » None

Known Environmental Constraints:

- » None

Pedestrian/Bike Review (Community Centers, Parks, Schools, etc):

- » Travel lanes and/or paved shoulders currently accommodate pedestrian and bicycle traffic in the vicinity of the project.

Transit Review (Current Routes/Stops):

- » Mass Transit accommodations are not available in the vicinity of the proposed development.

9. STUDY AREA TYPE: Urban Rural

Per PennDOT's Functional Classification Map, W. Winding Hill Road (SR 2010) and S. York Street (SR 2013) are defined as a Local Roadways.

10. TIS ANALYSIS PERIOD AND TIMES:

Peak Hours evaluated:

- » AM Peak Hour (peak hour within the 6:00 A.M. – 9:00 A.M. period);

- » PM Peak Hour (peak hour within the 3:00 P.M. – 6:00 P.M. period);

Study Years evaluated:

- » 2023 (Build year) Projected Condition
- » 2033 (Design year) Projected Condition

11. TRAFFIC ADJUSTMENT FACTORS:

- a. Seasonal Adjustment: (Identify counts requiring adjustment and methodology) N/A
- b. Annual Base Traffic Growth: 0.80%, per PennDOT BPR for Cumberland County for urban non-interstate roadways
- c. Pass-By Trips: (Attach Justification where required) N/A
- d. Captured Trips for Multi-Use Sites: N/A
- e. Modal Split Reductions: N/A
- f. Other Reduction: N/A

12. OTHER PROJECTS WITHIN STUDY AREA TO BE ADDED TO BASE TRAFFIC:

- » N/A

13. TRIP DISTRIBUTION AND ASSIGNMENT:

- » To/from East via E. Winding Hill Road: 40%
- » To/from West via W. Winding Hill Road (SR 2010): 5%
- » To/from North via S. York Street (SR 2013): 20%
- » To/from North via S. Market Street (SR 0114): 20%
- » To/from South via S. York Street (SR 2013): 10%
- » To/from South via S. Market Street (SR 0114): 5%

14. APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:

- » Manual traffic counts were conducted at the study area intersections listed in #8 at the times listed in October 2018 (S. York Street and W. Winding Hill Road East/West Legs) and (S. Market Street and W. Winding Hill Road/E. Winding Hill Road) will be counted upon acceptance of this application.

15. CAPACITY/LOS ANALYSIS:

- » The capacity analyses were conducted according to the methodologies contained in the Highway Capacity Manual 6th Edition (HCM) using Synchro 10 software using Pennsylvania default values. Electronic synchro files will be provided with the TIS submission.

16. ROADWAY IMPROVEMENTS/MODIFICATIONS BY OTHERS TO BE INCLUDED:

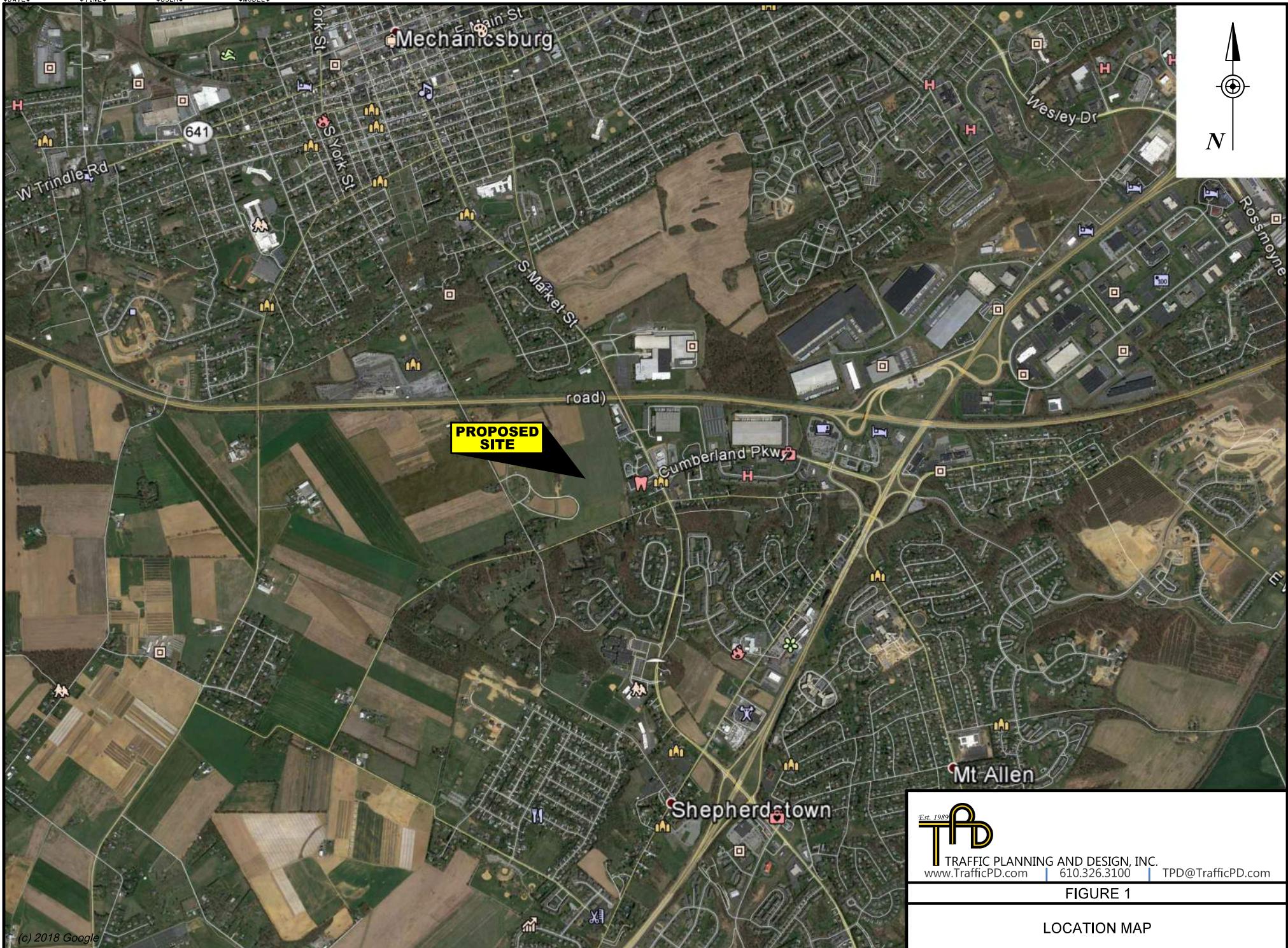
- » N/A

17. OTHER NEEDED ANALYSES:

- a. Sight Distance Analysis: A sight distance analysis will be performed at the proposed site driveway locations for passenger vehicles, as applicable.
- b. Signal Warrant Analysis: If necessary, TPD will complete signal warrant analyses at the unsignalized study area intersections and/or proposed site driveway locations.
- c. Required Signal Phasing/Timing Modifications: If necessary, TPD will make recommendations for traffic signal timing and/or phasing modifications based on the results of the analysis.
- d. Traffic Signal Corridor/Network Analysis: If necessary, TPD will make recommendations for traffic signal corridor improvements.
- e. Analysis of the Need for Turning Lanes: TPD will analyze auxiliary turn lane warrants at the proposed site driveway locations and the study area intersections (as applicable) during the full build-out condition. The warrant analysis methodology contained within Chapter 11 of PennDOT's Publication 46 will be utilized for this analysis.
- f. Turning Lane Lengths: TPD will analyze auxiliary turn lane lengths at the proposed site driveway locations and the study area intersections as necessary during full build-out condition. The analysis methodology contained within Chapter 11 of PennDOT's Publication 46, as well as 95th percentile queue lengths will also be considered for evaluation of turning lane lengths.
- g. Left Turn Signal Phasing Analysis: TPD will analyze left turn signal phasing only where signal phasing changes are proposed (please see 17.c. – Required Signal Phasing/Timing Modifications for more information).
- h. Queuing Analysis: TPD will provide 50th percentile (Synchro only) and 95th percentile (Synchro and HCM) queue lengths for all approaches of the proposed site driveways and study area intersections during all time periods analyzed (as applicable). This analysis will be completed using the Synchro 10 software which is based on the methodologies contained in the Highway Capacity Manual, 6th Edition (HCM). Both HCM and Synchro queue results will be summarized in tabular format.
- i. Gap Studies: The need for a gap study is not anticipated at this time.
- j. Crash Analysis: TPD will conduct and submit a crash data analysis under separate cover that will contain an analysis of reportable crashes for the study area intersections and key corridors for the most recent five years, summarizing any trends in crash data. Including mitigation options if crash trends are present at an intersection or along a corridor.
- k. Weaving Analysis: N/A.
- l. Other Required Studies: N/A.

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

- » A TIS was submitted to Upper Allen Township in September 2019. All relevant submission materials are attached.



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www.TrafficPD.com | 610.326.3100 | TPD@TrafficPD.com

FIGURE 1

LOCATION MAP



PLANNING • ENGINEERING • SURVEYING
115 LINCOLN RD, P.O. BOX 'G'
NEW CUMBERLAND, PA 17070
PHONE: (717) 770 - 2500
FAX: (717) 770 - 2400
WWW.ALPHACEI.COM



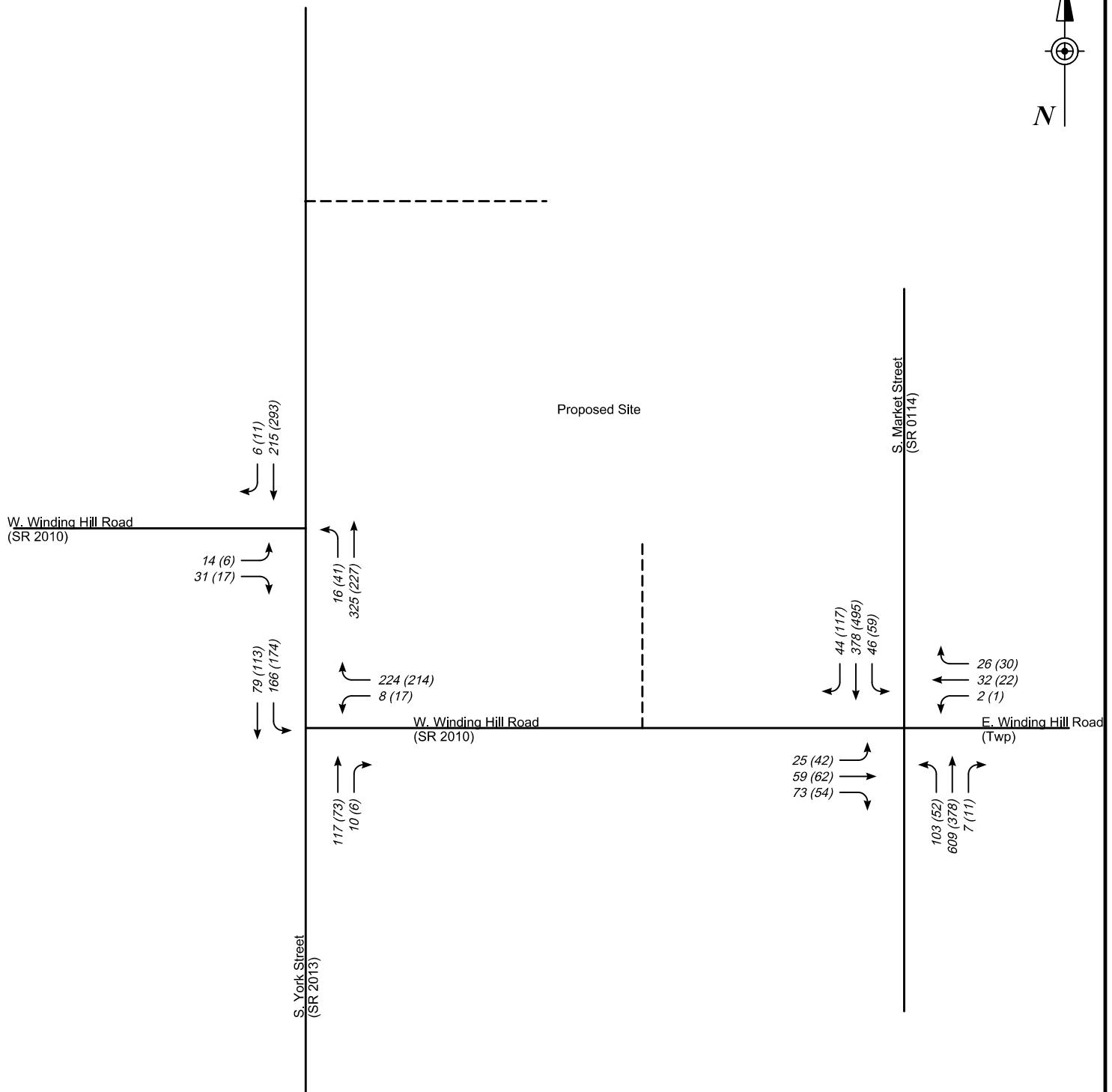
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FIGURE 2

SITE PLAN

N

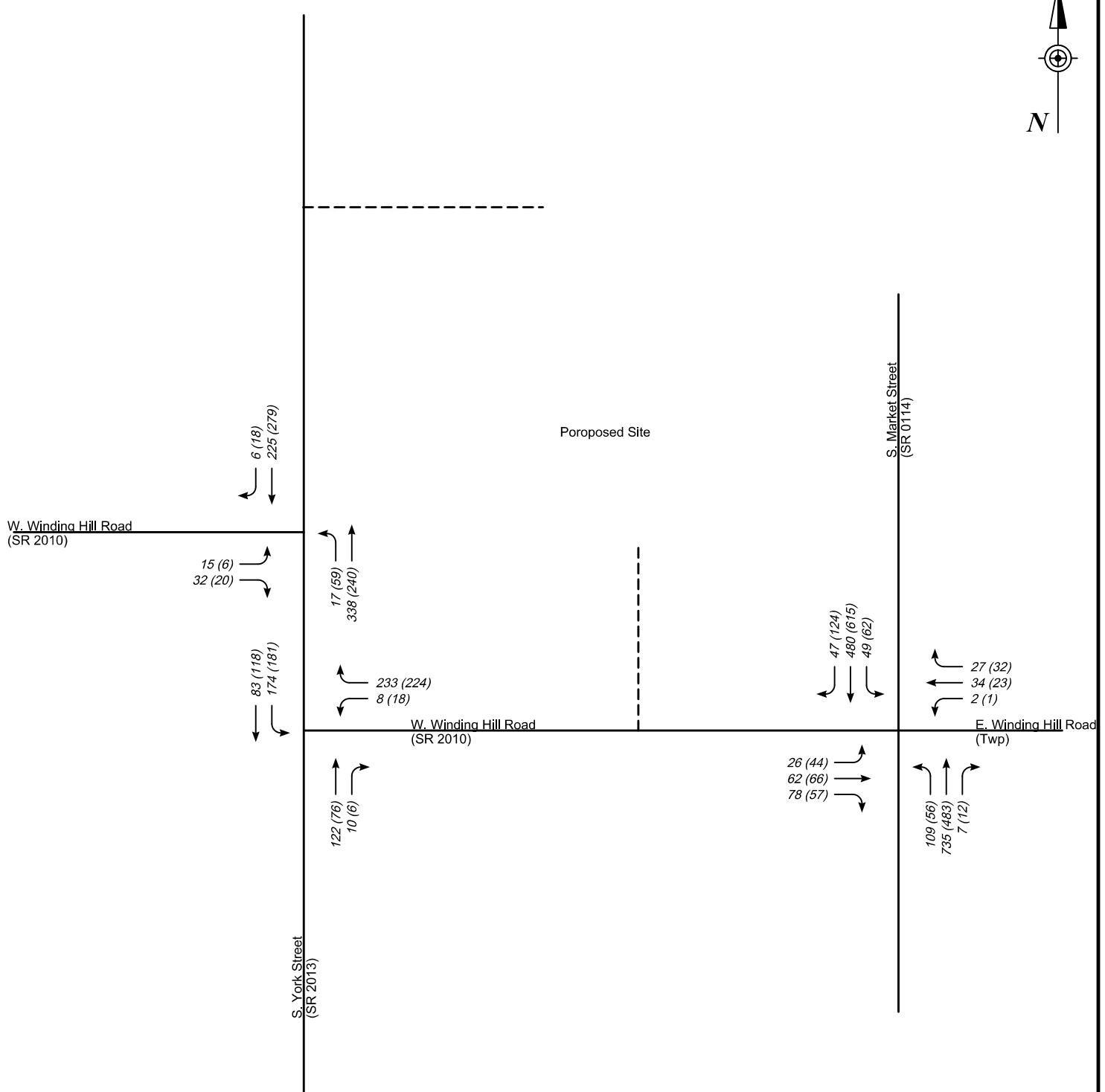
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FIGURE 3

EXISTING CONDITIONS
WEEKDAY PEAK HOURS
TRAFFIC VOLUMES

N

KEY:

----- PROPOSED DRIVEWAY

SCHEMATIC DRAWING: NOT TO SCALE

AM (PM) VOLUMES

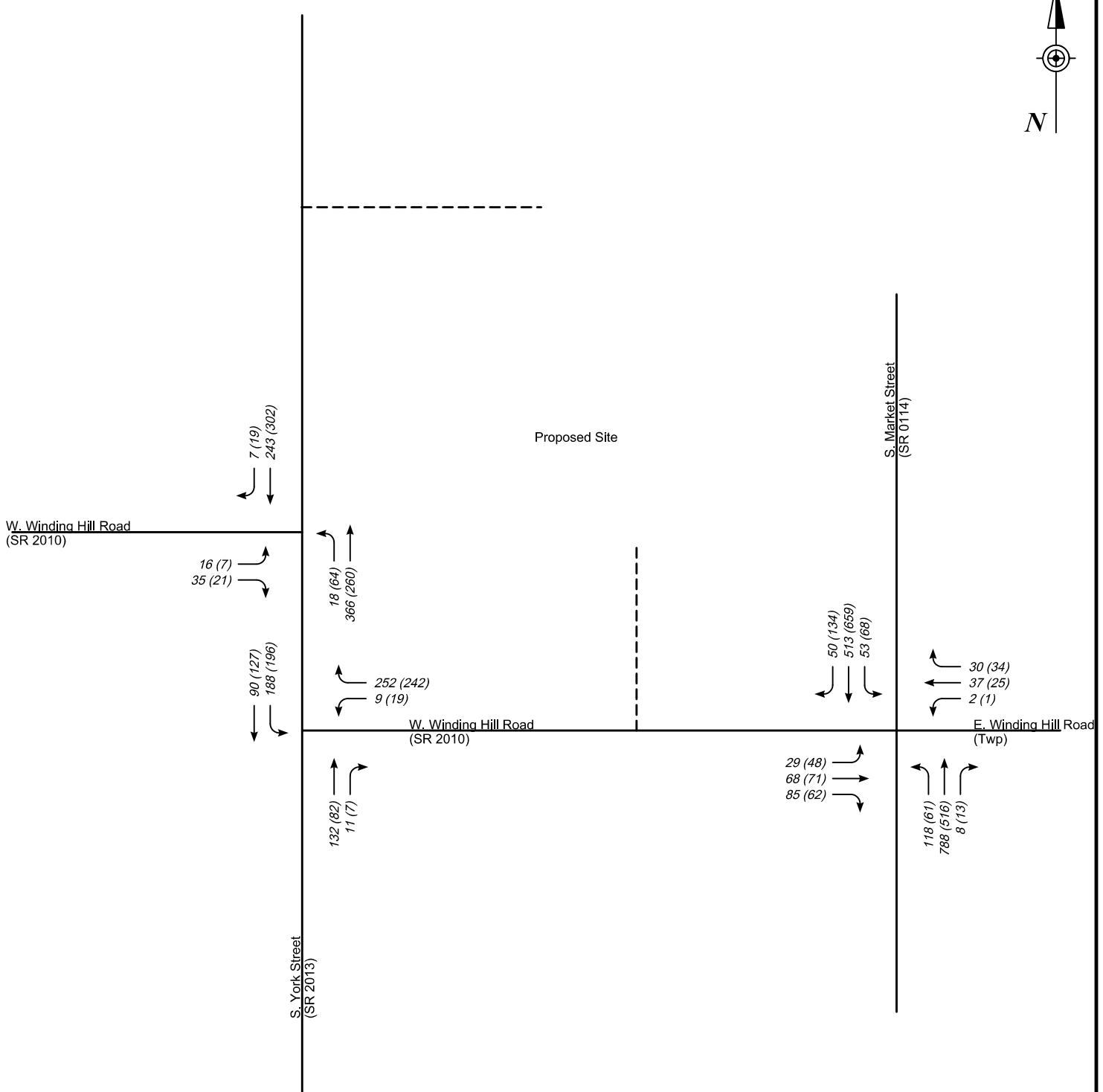


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FIGURE 4

2023 BASE CONDITIONS
WEEKDAY PEAK HOURS
TRAFFIC VOLUMES



KEY:

----- PROPOSED DRIVEWAY
 SCHEMATIC DRAWING: NOT TO SCALE
 AM (PM) VOLUMES

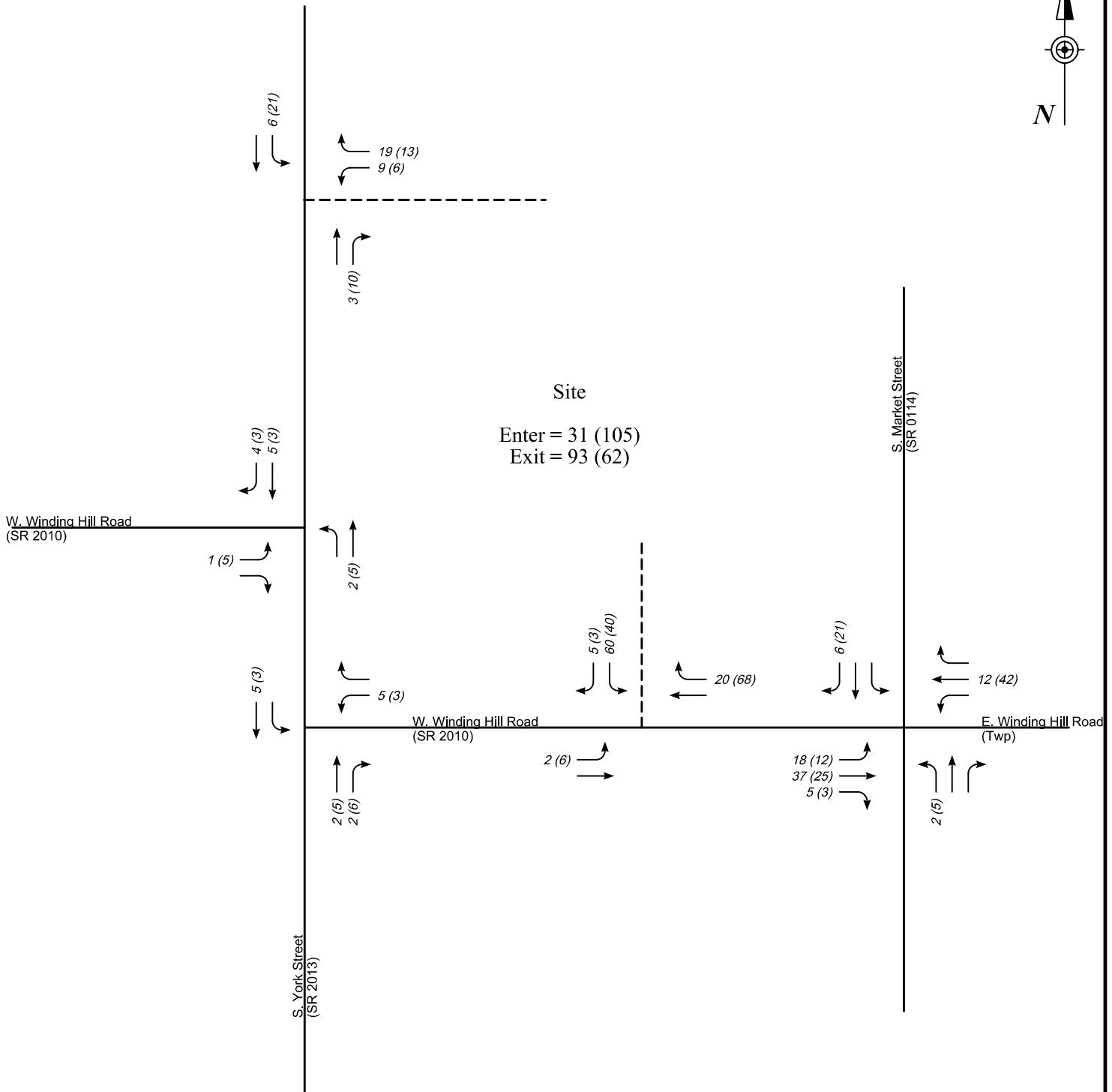


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FIGURE 5

2033 BASE CONDITIONS
 WEEKDAY PEAK HOURS
 TRAFFIC VOLUMES



KEY:

----- PROPOSED DRIVEWAY

SCHEMATIC DRAWING: NOT TO SCALE

AM (PM) VOLUMES



Est. 1989

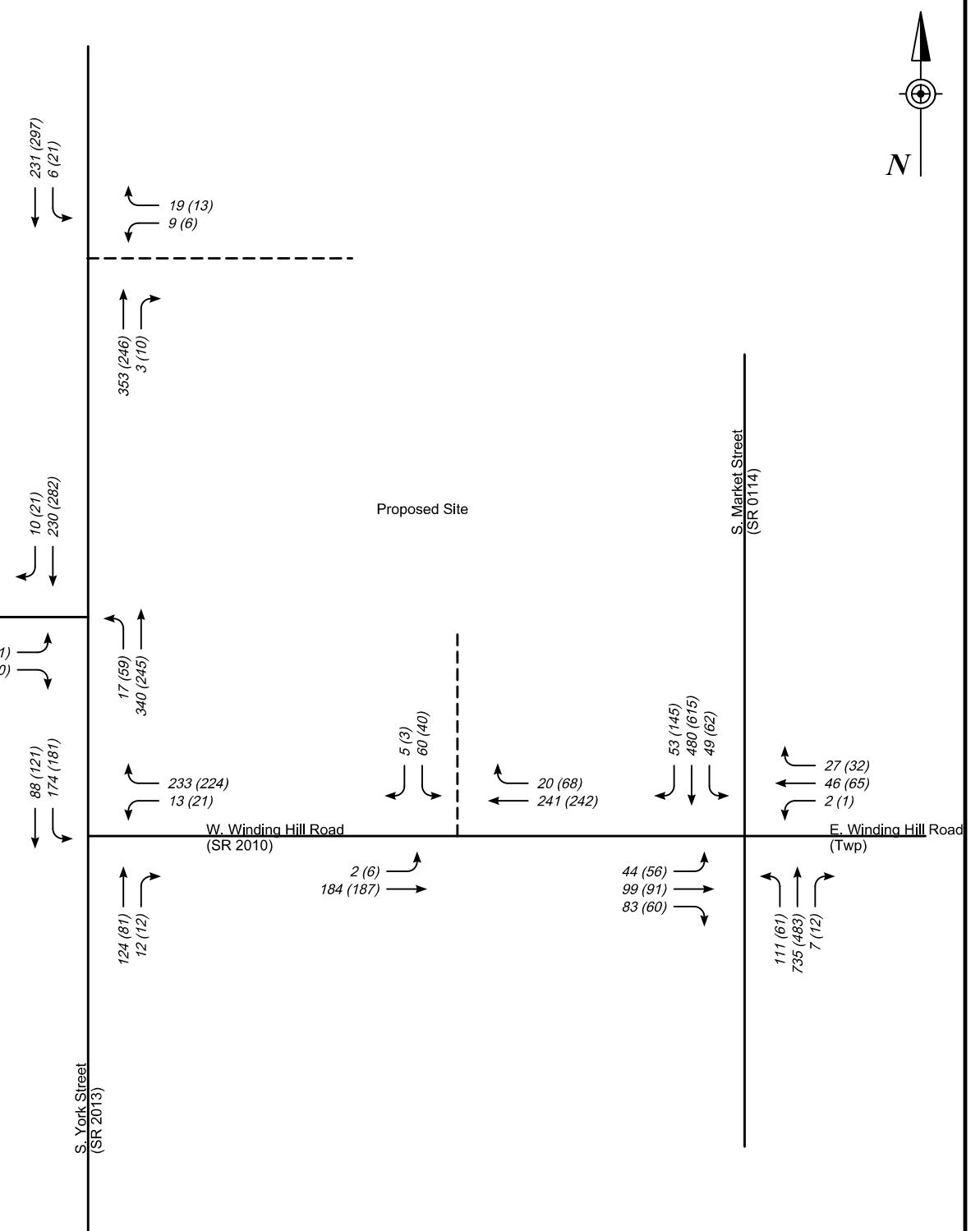
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FIGURE 6

TRIP DISTRIBUTION
TRAFFIC VOLUMES



KEY:

----- PROPOSED DRIVEWAY

SCHEMATIC DRAWING: NOT TO SCALE

AM (PM) VOLUMES



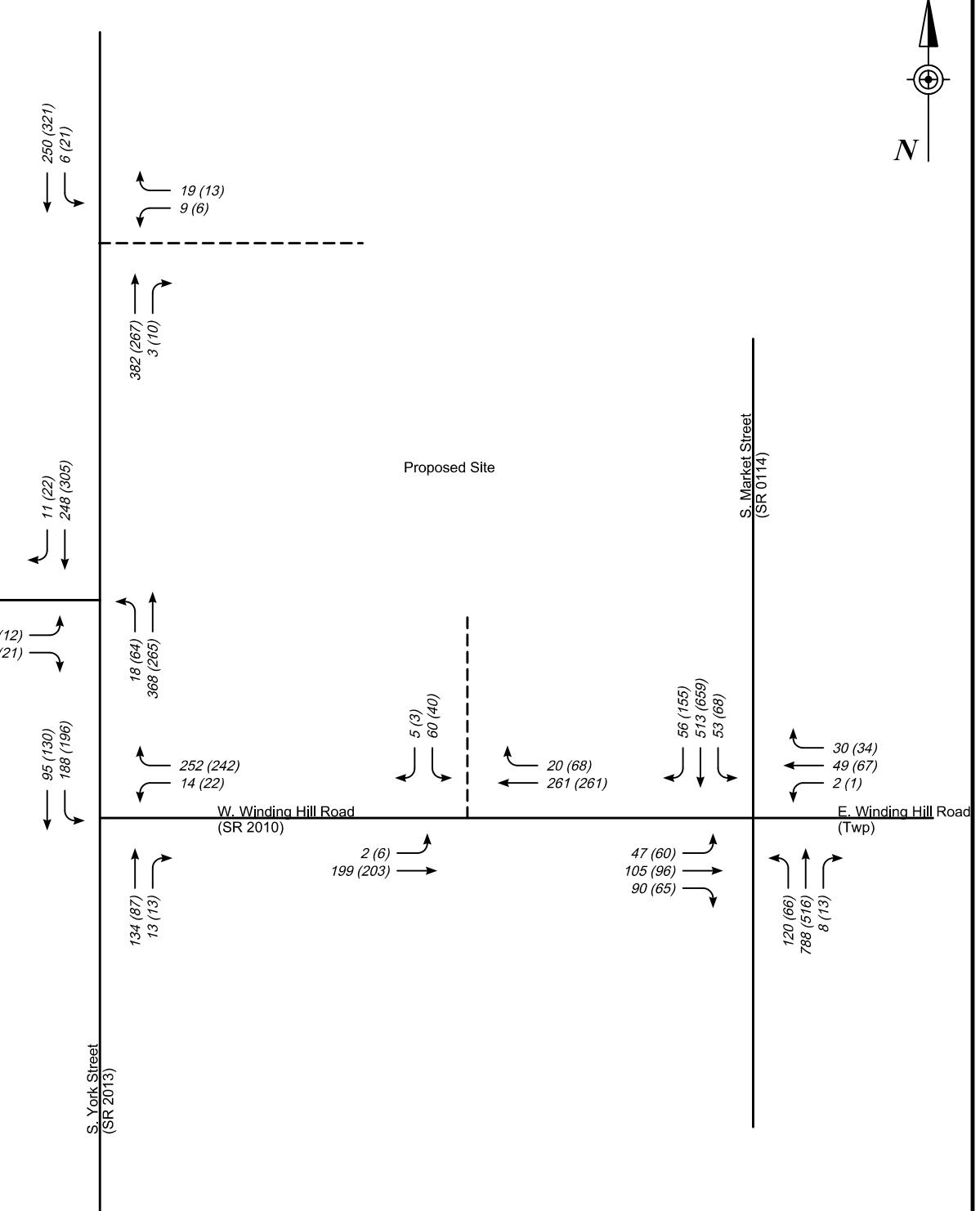
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FIGURE 7

2023 PROJECTED (BUILD) CONDITIONS
WEEKDAY PEAK HOURS
TRAFFIC VOLUMES



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FIGURE 8

2033 PROJECTED (BUILD) CONDITIONS
 WEEKDAY PEAK HOURS
 TRAFFIC VOLUMES



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

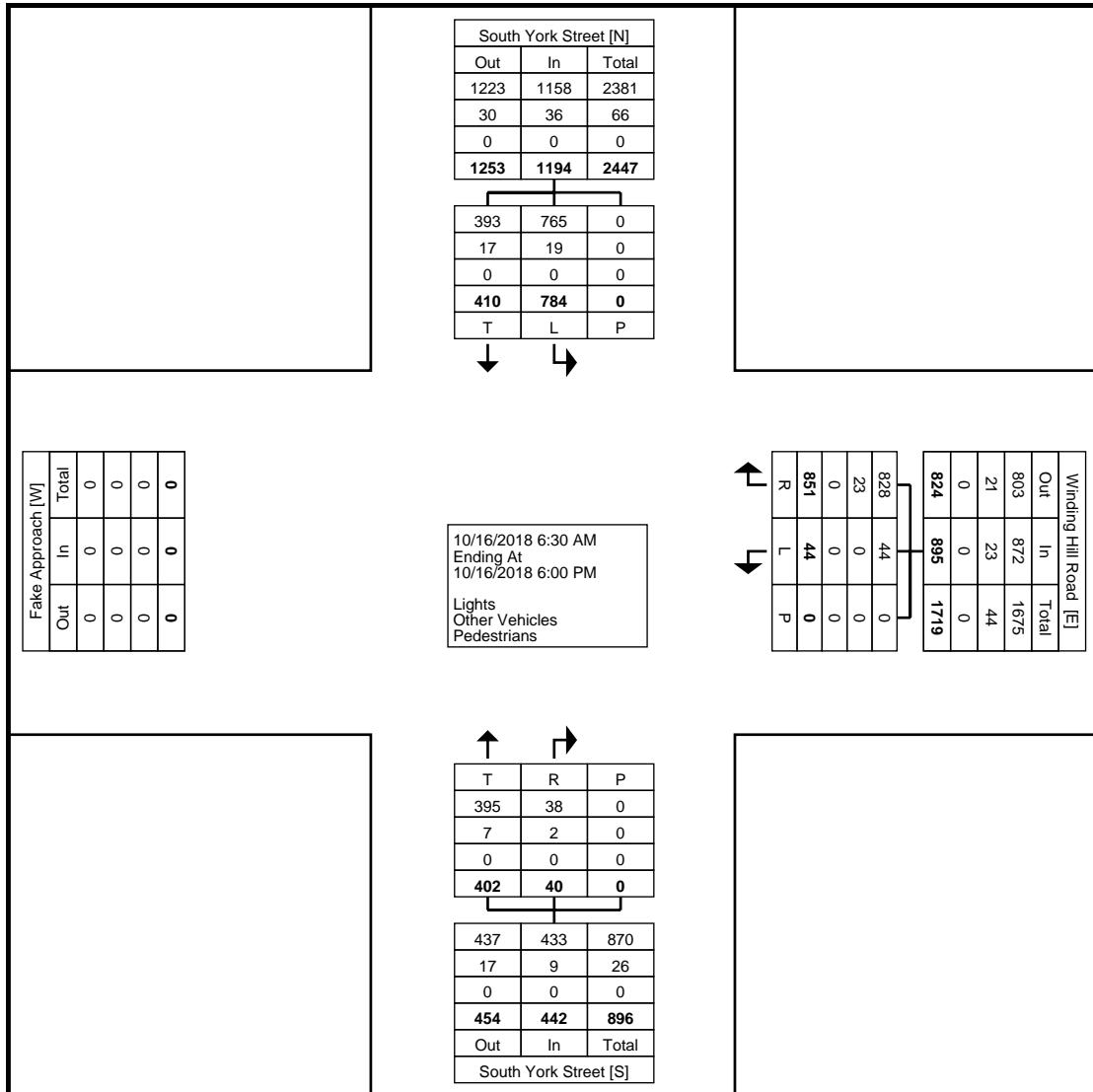
Count Name: AM PM South
York Street & Winding Hill Road
(East Leg)
Site Code: AM PM South York
Street & Winding Hill Road (East
Start Date: 10/16/2018
Page No: 1

Turning Movement Data



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

Count Name: AM PM South
 York Street & Winding Hill Road
 (East Leg)
 Site Code: AM PM South York
 Street & Winding Hill Road (East)
 Start Date: 10/16/2018
 Page No: 2





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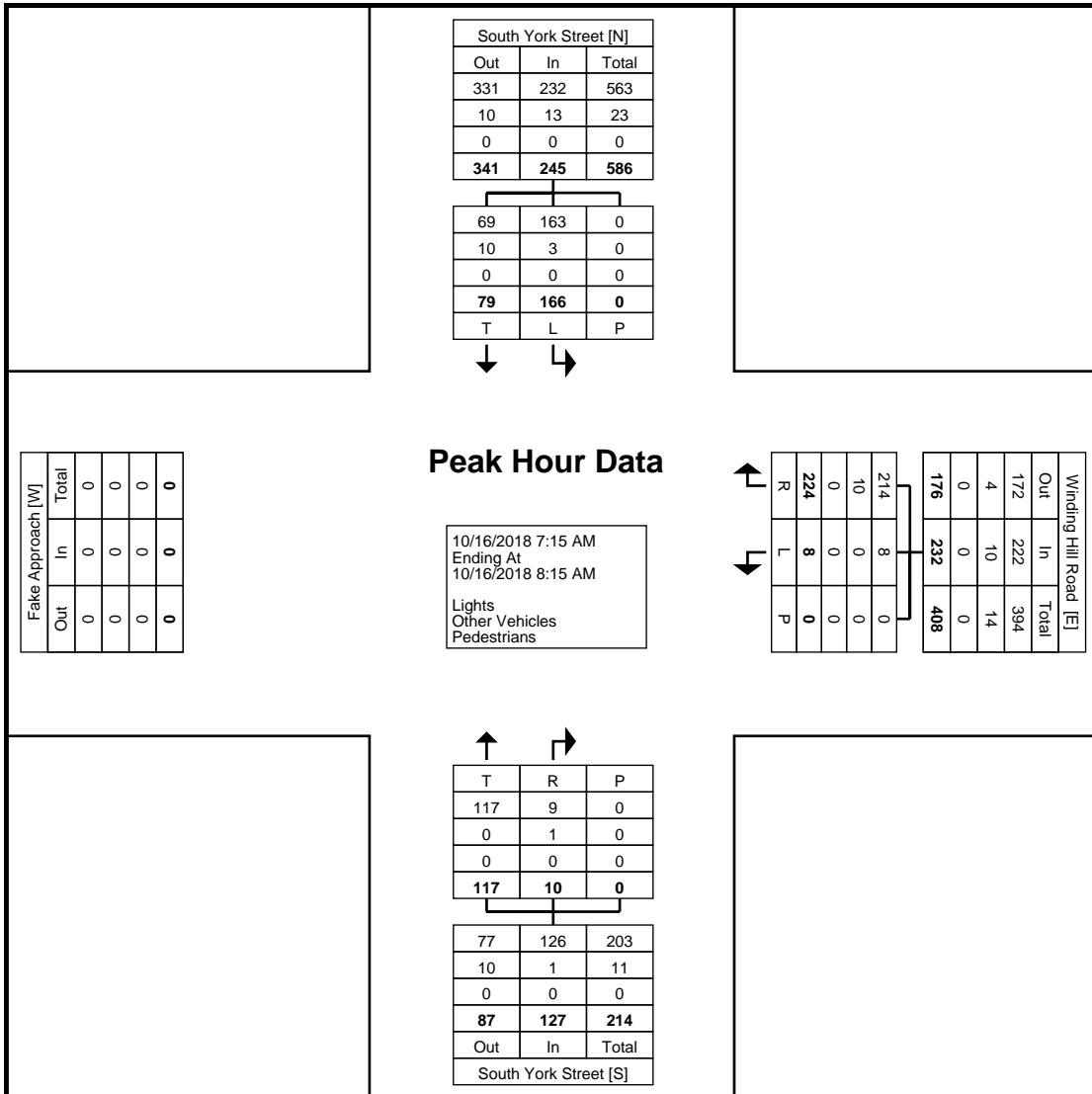
Count Name: AM PM South
York Street & Winding Hill Road
(East Leg)
Site Code: AM PM South York
Street & Winding Hill Road (East
Start Date: 10/16/2018
Page No: 3

Turning Movement Peak Hour Data (7:15 AM)



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

Count Name: AM PM South
 York Street & Winding Hill Road
 (East Leg)
 Site Code: AM PM South York
 Street & Winding Hill Road (East)
 Start Date: 10/16/2018
 Page No: 4



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



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Suite 650
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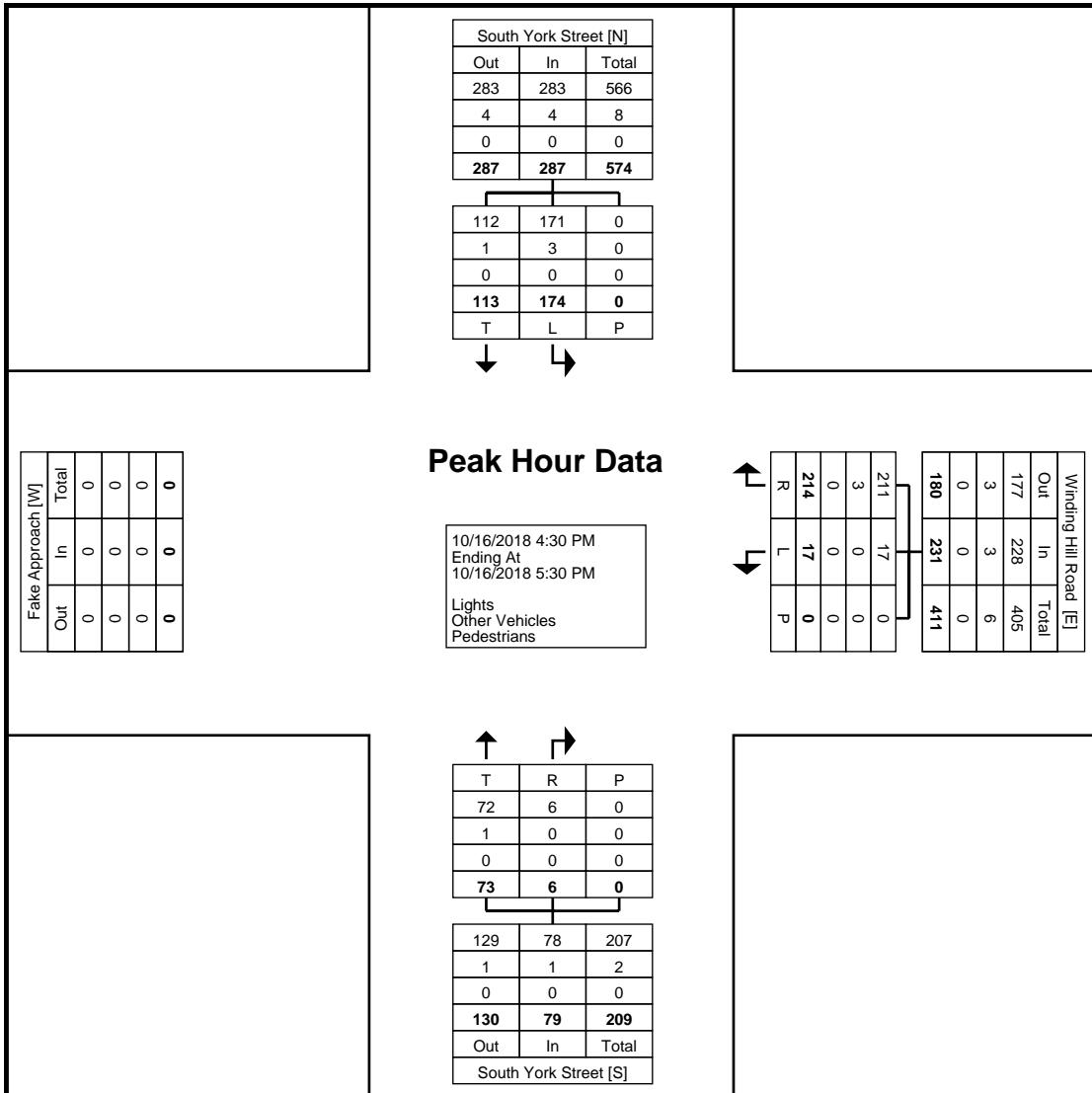
Count Name: AM PM South
York Street & Winding Hill Road
(East Leg)
Site Code: AM PM South York
Street & Winding Hill Road (East
Start Date: 10/16/2018
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)



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

Count Name: AM PM South
 York Street & Winding Hill Road
 (East Leg)
 Site Code: AM PM South York
 Street & Winding Hill Road (East)
 Start Date: 10/16/2018
 Page No: 6



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 jwheeler@trafficpd.com

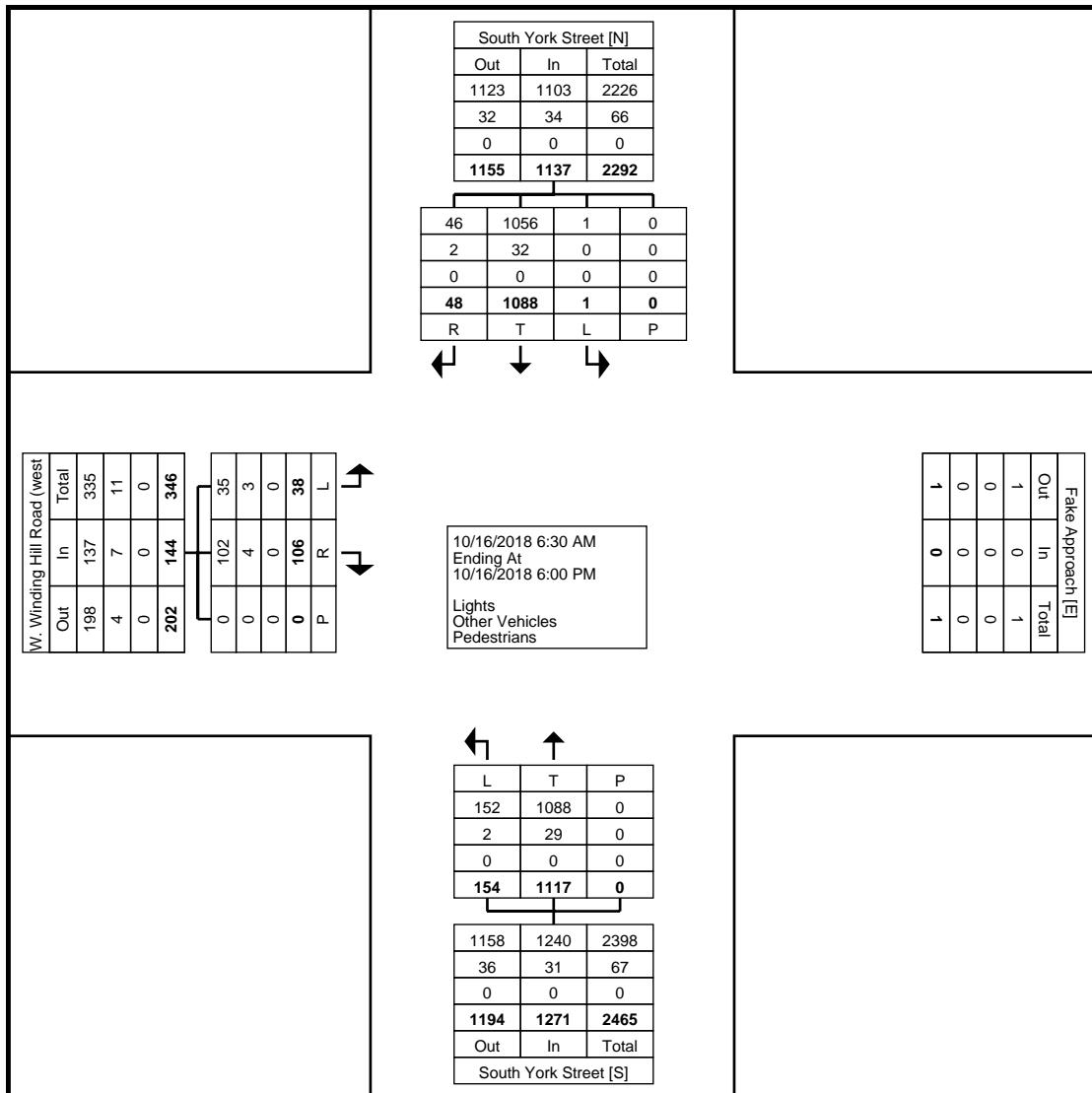
Count Name: AM_PM South
York Street & Winding Hill Road
(West Leg)
Site Code: AM_PM South York
Street & Winding Hill Road
(West)
Start Date: 10/16/2018
Page No: 1

Turning Movement Data



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

Count Name: AM_PM South
 York Street & Winding Hill Road
 (West Leg)
 Site Code: AM_PM South York
 Street & Winding Hill Road
 (West)
 Start Date: 10/16/2018
 Page No: 2



Turning Movement Data Plot



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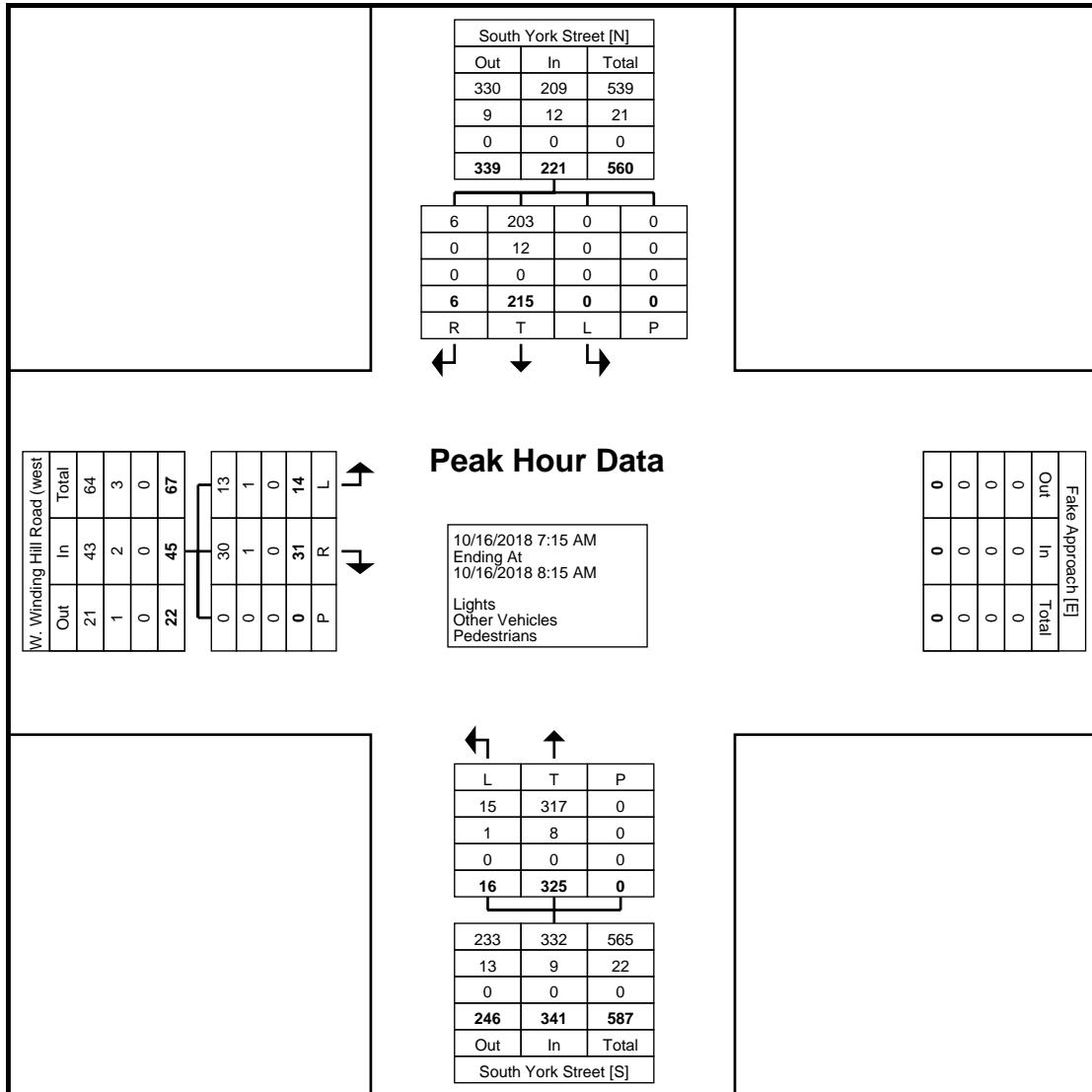
Count Name: AM_PM South
York Street & Winding Hill Road
(West Leg)
Site Code: AM_PM South York
Street & Winding Hill Road
(West
Start Date: 10/16/2018
Page No: 3

Turning Movement Peak Hour Data (7:15 AM)



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

Count Name: AM_PM South
York Street & Winding Hill Road
(West Leg)
Site Code: AM_PM South York
Street & Winding Hill Road
(West)
Start Date: 10/16/2018
Page No: 4





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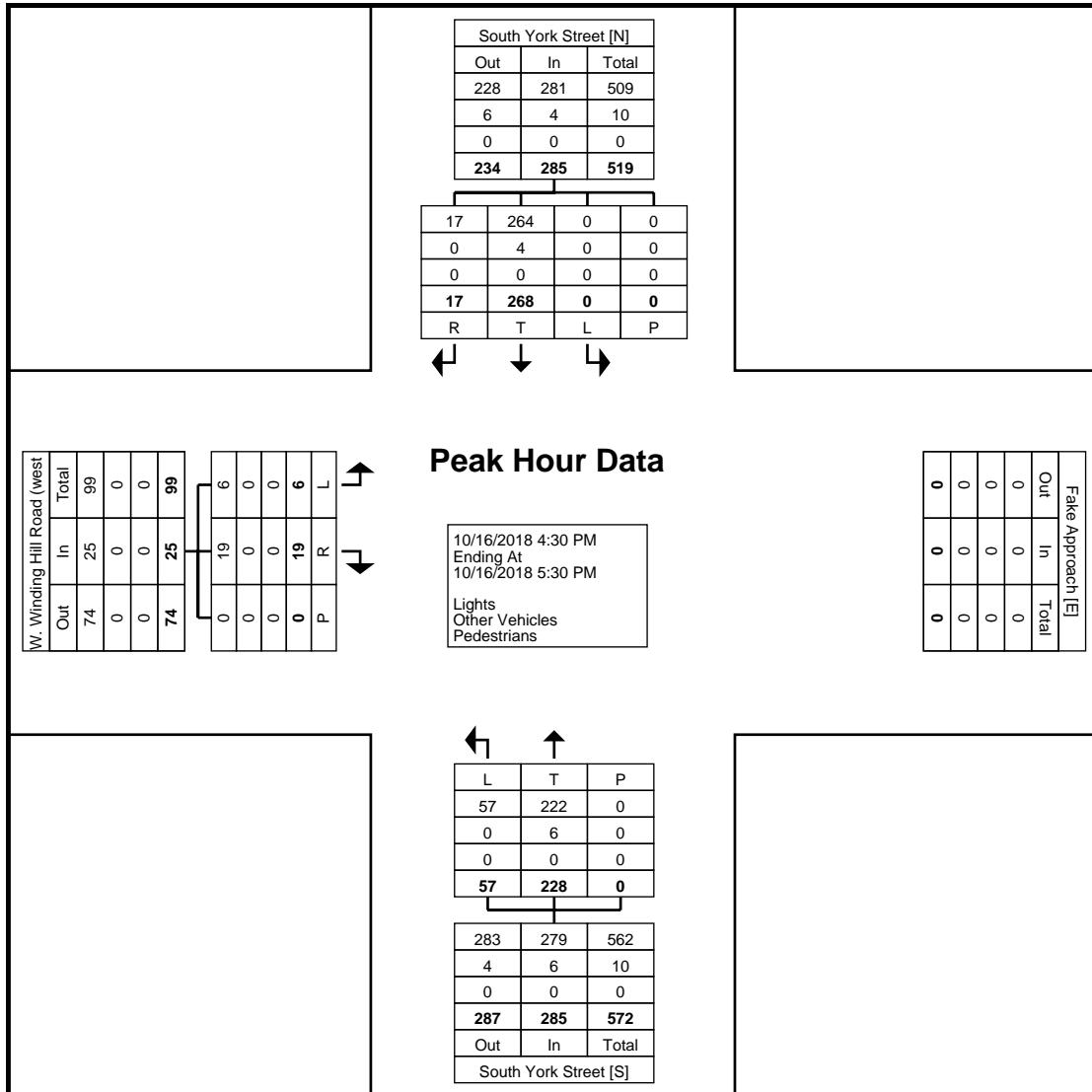
Count Name: AM_PM South
York Street & Winding Hill Road
(West Leg)
Site Code: AM_PM South York
Street & Winding Hill Road
(West)
Start Date: 10/16/2018
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)



Traffic Planning and Design, Inc
2500 East High Street
Suite 650
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610.326.3100 jwheeler@trafficpd.com

Count Name: AM_PM South
York Street & Winding Hill Road
(West Leg)
Site Code: AM_PM South York
Street & Winding Hill Road
(West)
Start Date: 10/16/2018
Page No: 6



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

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TRAFFIC DATA

www.TSTData.com
184 Baker Rd

Upper Allen Twp, PA
Rt 114/Winding Hill Rd
Wednesday, October 12, 2016
Location: 40.191848, -76.99149

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rt 114-Winding Hill
Site Code:
Start Date: 10/12/2016
Page No: 1

Turning Movement Data

Start Time	Route 114 Southbound						Winding Hill Rd Westbound						Route 114 Northbound						Winding Hill Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	1	28	3	0	0	32	0	1	0	0	0	1	0	40	5	0	0	45	3	4	1	0	0	8	86
6:15 AM	2	26	2	0	0	30	1	3	0	0	0	4	0	66	7	0	0	73	3	10	4	0	0	17	124
6:30 AM	6	37	9	0	0	52	0	0	0	0	0	0	0	84	6	0	0	90	8	11	7	0	0	24	166
6:45 AM	6	46	10	0	0	62	6	8	1	0	0	13	0	98	13	0	0	111	6	9	11	0	0	26	212
Hourly Total	15	137	24	0	0	176	7	10	1	0	0	18	0	288	31	0	0	319	18	34	23	0	0	75	588
7:00 AM	9	50	12	0	0	71	5	8	0	0	0	13	0	95	18	0	0	113	12	17	8	0	0	37	234
7:15 AM	9	62	13	0	0	104	7	14	1	0	0	22	0	144	33	0	0	177	11	18	6	0	0	35	338
7:30 AM	18	109	9	0	0	136	9	13	0	0	0	22	2	170	42	0	0	214	24	9	3	0	0	36	408
7:45 AM	8	116	13	0	0	137	3	3	1	0	0	7	3	173	16	0	0	192	31	20	7	0	0	58	394
Hourly Total	44	357	47	0	0	448	24	38	2	0	0	64	5	582	109	0	0	696	78	64	24	0	0	166	1374
8:00 AM	9	71	11	0	0	91	7	2	0	0	0	9	2	122	12	0	0	136	7	12	9	0	0	28	284
8:15 AM	10	59	8	0	0	77	6	7	1	0	0	14	1	95	13	0	0	110	11	9	5	0	0	25	226
8:30 AM	11	59	6	0	0	76	3	9	2	0	0	14	0	101	14	0	0	115	7	9	6	0	0	22	227
8:45 AM	10	60	8	0	0	78	4	1	0	0	0	5	1	104	14	0	0	119	13	9	9	0	0	31	233
Hourly Total	40	249	33	0	0	322	20	19	3	0	0	42	4	423	53	0	0	480	38	39	29	0	0	106	950
9:00 AM	14	62	10	0	0	86	5	6	2	0	0	13	2	91	7	0	0	100	11	3	8	0	0	22	221
9:15 AM	17	67	5	0	0	89	6	3	1	0	0	10	1	71	3	0	2	75	7	9	7	0	0	23	197
9:30 AM	11	55	8	0	0	74	2	2	1	0	0	5	1	72	7	0	0	80	5	10	11	0	0	26	185
9:45 AM	8	62	4	0	0	74	4	2	0	0	0	6	0	66	11	0	0	77	10	6	11	0	0	27	184
Hourly Total	50	248	27	0	0	323	17	13	4	0	0	34	4	300	28	0	2	332	33	28	37	0	0	98	787
10:00 AM	17	49	5	0	0	71	1	6	0	0	0	7	0	70	19	0	0	89	6	2	8	0	0	16	183
10:15 AM	8	47	7	0	0	62	2	3	0	0	0	5	2	66	2	0	0	70	10	6	11	0	0	27	164
10:30 AM	16	64	5	0	0	85	2	2	0	0	0	4	0	76	8	0	0	84	5	6	10	0	0	21	194
10:45 AM	12	68	4	0	0	84	5	6	1	0	0	12	0	89	9	0	0	98	12	8	15	0	0	35	229
Hourly Total	53	228	21	0	0	302	10	17	1	0	0	28	2	301	38	0	0	341	33	22	44	0	0	99	770
11:00 AM	14	59	8	0	0	81	5	5	1	0	0	11	1	65	1	0	0	67	5	4	9	0	0	18	177
11:15 AM	19	80	5	0	0	104	3	5	0	0	0	8	1	83	6	0	0	90	4	8	5	0	0	17	219
11:30 AM	20	72	6	0	0	100	4	3	1	0	0	8	0	70	7	0	0	77	8	9	16	0	0	33	218
11:45 AM	20	91	8	0	0	119	4	5	1	0	0	10	0	81	7	0	0	88	11	7	17	0	0	35	252
Hourly Total	73	302	29	0	0	404	16	18	3	0	0	37	2	299	21	0	0	322	28	28	47	0	0	103	866
12:00 PM	19	81	6	0	0	106	2	9	1	0	0	12	1	80	7	0	0	88	12	12	14	0	0	38	244
12:15 PM	28	92	9	0	0	129	4	4	0	0	0	8	2	87	10	0	0	99	15	7	15	0	0	37	273
12:30 PM	22	73	8	0	0	103	6	7	2	0	0	15	1	90	8	0	0	97	11	7	13	0	0	31	246
12:45 PM	24	80	9	0	0	113	4	4	1	0	0	9	0	73	5	0	0	78	11	6	11	0	0	28	228
Hourly Total	93	326	32	0	0	451	16	24	4	0	0	44	4	330	28	0	0	362	49	32	53	0	0	134	891
1:00 PM	18	67	6	0	0	91	4	3	0	0	0	7	0	69	15	0	0	84	10	13	12	0	0	35	217
1:15 PM	19	81	7	0	0	107	4	3	1	0	0	8	0	82	6	0	0	88	10	11	17	0	0	38	241
1:30 PM	21	75	7	0	0	103	5	3	0	0	0	8	1	94	7	0	0	102	10	9	7	0	0	26	239
1:45 PM	19	77	8	0	0	104	4	1	1	0	0	6	0	78	4	0	0	82	10	10	5	0	0	25	217
Hourly Total	77	300	28	0	0	405	17	10	2	0	0	29	1	323	32	0	0	356	40	43	41	0	0	124	914
2:00 PM	32	102	8	0	0	142	5	3	0	0	0	8	2	74	10	0	0	86	17	13	12	0	0	42	278
2:15 PM	20	109	9	0	0	138	7	2	0	0	0	9	0	69	7	0	0	76	17	7	22	0	0	46	269
2:30 PM	29	91	10	0	0	130	3	4	1	0	0	8	1	90	13	0	0	104	16	14	10	0	0	40	282
2:45 PM	30	89	7	0	0	126	9	10	1	0	0	20	0	65	13	0	0	78	9	9	11	0	0	29	253
Hourly Total	111	391	34	0	0	536	24	19	2	0	0	45	3	298	43	0	0	344	59	43	55	0	0	157	1082
3:00 PM	10	133	13	0	0	156	4	2	1	0	0	7	1	76	11	0	0	88	32	19	18	0	0	69	320
3:15 PM	31	111	9	0	0	151	5	3	2	0	0	10	2	101	12	0	0	115	16	14	8	0	0	38	314
3:30 PM	20	89	3	0	0	112	5	5	1	0	1	11	2	106	7	0	0	115	11	9	15	0	0	35	273
3:45 PM	34	104	15	1	0	154	3	3	0	0	0	6	3	94	12	0	0	109	11	13	7	0	0	31	300
Hourly Total	95	437	40	1	0	573	17	13	4	0	1	34	8	377	42	0	0	427	70	55	48	0	0	173	1207
4:00 PM	29	125	10	0	0	164	3	4	0	0	0	7	0	77	7	0	0	84	20	14	11	0	0	45	300
4:15 PM	23	132	10	0	0	165	3	3	1	0	0	7	1	65	11	0	0	77	13	13	6	0	0	32	281
4:30 PM	31	112	12	0	0	155	7	8	0	0	0	15	4	121	14	0	0	139	17	17	9	0	0	43	352
4:45 PM	37	123	13	0	0	173	9	6	1	0	0	16	2	91	15	0	0	108	12	15	11	0	0	38	335
Hourly Total	120	492	45	0	0	657	22	21	2	0	0	45	7	354	47	0	0	408	62	59	37	0	0	158	1268
5:00 PM	20	135	19	0	0	174	4	6	0	0	0	10	4	90	12	0	0	106	15	17	14	0	0	46	336
5:15 PM	29	125	15	0	0	169	10	2	0	0	0	12	1	76	11										

Approach %	16.6	75.4	7.9	0.0	-	-	46.2	47.5	6.3	0.0	-	-	0.9	88.3	10.8	0.0	-	-	36.6	32.5	30.9	0.0	-	-	-
Total %	7.2	32.7	3.4	0.0	-	43.3	1.8	1.9	0.2	0.0	-	4.0	0.4	35.2	4.3	0.0	-	39.9	4.7	4.2	4.0	0.0	-	12.8	-
Lights	844	3761	399	1	-	5005	215	222	29	0	-	466	44	4066	492	0	-	4602	541	495	468	0	-	1504	11677
% Lights	97.1	95.3	96.1	100.0	-	95.7	97.3	97.8	96.7	-	-	97.5	97.8	95.5	94.8	-	-	95.4	95.6	98.4	97.7	-	-	97.2	95.8
Buses	1	46	7	0	-	54	0	0	1	0	-	1	1	45	16	0	-	62	5	1	0	0	-	6	123
% Buses	0.1	1.2	1.7	0.0	-	1.0	0.0	0.0	3.3	-	-	0.2	2.2	1.1	3.1	-	-	1.3	0.9	0.2	0.0	-	-	0.4	1.0
Trucks	24	140	9	0	-	173	6	5	0	0	-	11	0	147	11	0	-	158	20	7	11	0	-	38	380
% Trucks	2.8	3.5	2.2	0.0	-	3.3	2.7	2.2	0.0	-	-	2.3	0.0	3.5	2.1	-	-	3.3	3.5	1.4	2.3	-	-	2.5	3.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-



www.TSTData.com
184 Baker Rd

Upper Allen Twp, PA
Rt 114/Winding Hill Rd
Wednesday, October 12, 2016
Location: 40.191848, -76.99149

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rt 114-Winding Hill
Site Code:
Start Date: 10/12/2016
Page No: 4

Turning Movement Peak Hour Data (7:15 AM)



www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Upper Allen Twp, PA
Rt 114/Winding Hill Rd
Wednesday, October 12, 2016
Location: 40.191848, -76.99149

Count Name: Rt 114-Winding Hill
Site Code:
Start Date: 10/12/2016
Page No: 8

Turning Movement Peak Hour Data (4:30 PM)

TPD# CHHN.00013

9/26/2019

Traffic Volumes Worksheet

Intersection:

S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) - East Leg

Synchro Node:

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

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	8	0	224	0	117	10	166	79	0	604
Balancing											1		1
Existing Volumes (Balanced)	0	0	0	8	0	224	0	117	10	166	80	0	605
Base growth (0.80% compounded for 5 yrs)	0	0	0	0	0	9	0	5	0	7	3	0	24
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building											1		
2023 Base Volumes	0	0	0	8	0	233	0	122	10	174	83	0	629
New Trips					5			2	2		5		
Pass-By Trips													0
Total Trip Distribution	0	0	0	5	0	0	0	2	2	0	5	0	0
2023 Projected Volumes	0	0	0	13	0	233	0	124	12	174	88	0	644
Base growth (0.80% compounded for 15 yrs)	0	0	0	1	0	28	0	15	1	21	10	0	76
2033 Base Volumes	0	0	0	9	0	252	0	132	11	188	90	0	681
2033 Projected Volumes	0	0	0	14	0	252	0	134	13	188	95	0	696

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	17	0	214	0	73	6	174	113	0	597
Balancing													0
Existing Volumes (Balanced)	0	0	0	17	0	214	0	73	6	174	113	0	597
Base growth (0.80% compounded for 5 yrs)	0	0	0	1	0	9	0	3	0	7	5	0	25
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building						1							
2023 Base Volumes	0	0	0	18	0	224	0	76	6	181	118	0	622
New Trips					3			5	6		3		17
Pass-By Trips													0
Total Trip Distribution	0	0	0	3	0	0	0	5	6	0	3	0	17
2023 Projected Volumes	0	0	0	21	0	224	0	81	12	181	121	0	640
Base growth (0.80% compounded for 15 yrs)	0	0	0	2	0	27	0	9	1	22	14	0	75
2033 Base Volumes	0	0	0	19	0	242	0	82	7	196	127	0	672
2033 Projected Volumes	0	0	0	22	0	242	0	87	13	196	130	0	690

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9/26/2019

Traffic Volumes Worksheet

Intersection:

S. York Street (SR 2013) & W. Winding Hill Road (SR 2010) - West Leg

Synchro Node:

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

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	14	0	31	0	0	0	16	325	0	0	215	6	607
Balancing													0
Existing Volumes (Balanced)	14	0	31	0	0	0	16	325	0	0	215	6	607
Base growth (0.80% compounded for 5 yrs)	1	0	1	0	0	0	1	13	0	0	9	0	25
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building												1	
2023 Base Volumes	15	0	32	0	0	0	17	338	0	0	225	6	632
New Trips	1							2			5	4	
Pass-By Trips													0
Total Trip Distribution	1	0	0	0	0	0	0	2	0	0	5	4	0
2023 Projected Volumes	16	0	32	0	0	0	17	340	0	0	230	10	645
Base growth (0.80% compounded for 15 yrs)	2	0	4	0	0	0	2	41	0	0	27	1	77
2033 Base Volumes	16	0	35	0	0	0	18	366	0	0	243	7	684
2033 Projected Volumes	17	0	35	0	0	0	18	368	0	0	248	11	697

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	6	0	19	0	0	0	57	228	0	0	268	17	595
Balancing								2					2
Existing Volumes (Balanced)	6	0	19	0	0	0	57	230	0	0	268	17	597
Base growth (0.80% compounded for 5 yrs)	0	0	1	0	0	0	2	9	0	0	11	1	24
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building								1					
2023 Base Volumes	6	0	20	0	0	0	59	240	0	0	279	18	621
New Trips	5							5			3	3	16
Pass-By Trips													0
Total Trip Distribution	5	0	0	0	0	0	0	5	0	0	3	3	16
2023 Projected Volumes	11	0	20	0	0	0	59	245	0	0	282	21	638
Base growth (0.80% compounded for 15 yrs)	1	0	2	0	0	0	7	29	0	0	34	2	75
2033 Base Volumes	7	0	21	0	0	0	64	260	0	0	302	19	672
2033 Projected Volumes	12	0	21	0	0	0	64	265	0	0	305	22	689

TPD# CHHN.00013

9/26/2019

Traffic Volumes Worksheet

Intersection:

W. Winding Hill Rd (SR 2010)/E. Winding Hill Rd (Twp) & S. Market Street (SR 0114)

Synchro Node:

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

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2016 Existing Counts	25	59	73	2	32	26	103	609	7	46	378	44	1404
Balancing													0
Existing Volumes (Balanced)	25	59	73	2	32	26	103	609	7	46	378	44	1404
Base growth (0.80% compounded for 7 yrs)	1	3	4	0	2	1	6	35	0	3	22	3	80
1225 S. Market Street								73			28		101
Legacy Park								16			46		62
S. Market Street Office Building				1				2			6		
2023 Base Volumes	26	62	78	2	34	27	109	735	7	49	480	47	1647
New Trips	18	37	5		12		2					6	
Pass-By Trips												0	
Total Trip Distribution	18	37	5	0	12	0	2	0	0	0	0	6	0
2023 Projected Volumes	44	99	83	2	46	27	111	735	7	49	480	53	1736
Base growth (0.80% compounded for 17 yrs)	4	9	11	0	5	4	15	88	1	7	55	6	205
2033 Base Volumes	29	68	85	2	37	30	118	788	8	53	513	50	1772
2033 Projected Volumes	47	105	90	2	49	30	120	788	8	53	513	56	1861

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2016 Existing Counts	42	62	54	1	22	30	52	378	11	59	495	117	1323
Balancing													0
Existing Volumes (Balanced)	42	62	54	1	22	30	52	378	11	59	495	117	1323
Base growth (0.80% compounded for 7 yrs)	2	4	3	0	1	2	3	22	1	3	28	7	76
1225 S. Market Street								26			59		85
Legacy Park								50			31		81
S. Market Street Office Building							1	7			2		
2023 Base Volumes	44	66	57	1	23	32	56	483	12	62	615	124	1565
New Trips	12	25	3		42		5					21	108
Pass-By Trips												0	
Total Trip Distribution	12	25	3	0	42	0	5	0	0	0	0	21	108
2023 Projected Volumes	56	91	60	1	65	32	61	483	12	62	615	145	1683
Base growth (0.80% compounded for 17 yrs)	6	9	8	0	3	4	8	55	2	9	72	17	193
2033 Base Volumes	48	71	62	1	25	34	61	516	13	68	659	134	1682
2033 Projected Volumes	60	96	65	1	67	34	66	516	13	68	659	155	1800

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Traffic Volumes Worksheet

Intersection:

W. Winding Hill Road (SR 2010) & Proposed Driveway

Synchro Node:

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

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (0.80% compounded for 5 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building		1											
2023 Base Volumes	0	184	0	0	241	0	0	0	0	0	0	0	0
New Trips	2					20				60		5	
Pass-By Trips													0
Total Trip Distribution	2	0	0	0	0	20	0	0	0	60	0	5	0
2023 Projected Volumes	2	184	0	0	241	20	0	0	0	60	0	5	512
Base growth (0.80% compounded for 15 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2033 Base Volumes	0	199	0	0	261	0	0	0	0	0	0	0	0
2033 Projected Volumes	2	199	0	0	261	20	0	0	0	60	0	5	547

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	
2018 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (0.80% compounded for 5 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building					1								
2023 Base Volumes	0	187	0	0	242	0	0	0	0	0	0	0	0
New Trips	6					68				40		3	117
Pass-By Trips													0
Total Trip Distribution	6	0	0	0	0	68	0	0	0	40	0	3	117
2023 Projected Volumes	6	187	0	0	242	68	0	0	0	40	0	3	546
Base growth (0.80% compounded for 15 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2033 Base Volumes	0	203	0	0	261	0	0	0	0	0	0	0	0
2033 Projected Volumes	6	203	0	0	261	68	0	0	0	40	0	3	581

TPD# CHHN.00013

9/26/2019

Traffic Volumes Worksheet

Intersection:

S. York Street (SR 2013) & Proposed Driveway

Synchro Node:

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

	Eastbound			Westbound			Northbound			Southbound			Intersection Volume
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
2018 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (0.80% compounded for 5 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building												1	
2023 Base Volumes	0	0	0	0	0	0	0	353	0	0	231	0	0
New Trips					9	19				3	6		
Pass-By Trips													0
Total Trip Distribution	0	0	0	9	0	19	0	0	3	6	0	0	0
2023 Projected Volumes	0	0	0	9	0	19	0	353	3	6	231	0	621
Base growth (0.80% compounded for 15 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2033 Base Volumes	0	0	0	0	0	0	0	382	0	0	250	0	0
2033 Projected Volumes	0	0	0	9	0	19	0	382	3	6	250	0	669

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	
2018 Existing Counts	0	0	0	0	0	0	0	0	0	0	0	0	0
Balancing													0
Existing Volumes (Balanced)	0	0	0	0	0	0	0	0	0	0	0	0	0
Base growth (0.80% compounded for 5 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
1225 S. Market Street													0
Legacy Park													0
S. Market Street Office Building									1				
2023 Base Volumes	0	0	0	0	0	0	0	246	0	0	297	0	0
New Trips					6	13				10	21		50
Pass-By Trips													0
Total Trip Distribution	0	0	0	6	0	13	0	0	10	21	0	0	50
2023 Projected Volumes	0	0	0	6	0	13	0	246	10	21	297	0	593
Base growth (0.80% compounded for 15 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
2033 Base Volumes	0	0	0	0	0	0	0	267	0	0	321	0	0
2033 Projected Volumes	0	0	0	6	0	13	0	267	10	21	321	0	638

CAPACITY ANALYSES

EXISTING CONDITIONS

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 Existing Conditions

Timing Plan: A.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	Y	Y	Y	Y	Y
Traffic Volume (vph)	8	224	117	10	166	80
Future Volume (vph)	8	224	117	10	166	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 Existing Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	6.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B			A	
Traffic Vol, veh/h	8	224	117	10	166	80
Future Vol, veh/h	8	224	117	10	166	80
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	10	284	148	13	210	101
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	676	155	0	0	161	0
Stage 1	155	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	438	940	-	-	1058	-
Stage 1	996	-	-	-	-	-
Stage 2	639	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	346	940	-	-	1058	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	996	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.1	0		6.2		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	887	1058	-	
HCM Lane V/C Ratio	-	-	0.331	0.199	-	
HCM Control Delay (s)	-	-	11.1	9.2	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.5	0.7	-	

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 Existing Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	31	16	325	215	6
Future Volume (vph)	14	31	16	325	215	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 Existing Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	14	31	16	325	215	6
Future Vol, veh/h	14	31	16	325	215	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	4	-4	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	7	3	6	3	6	0
Mvmt Flow	18	40	21	417	276	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	739	280	284	0	-	0
Stage 1	280	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Critical Hdwy	5.87	5.93	4.4	-	-	-
Critical Hdwy Stg 1	4.87	-	-	-	-	-
Critical Hdwy Stg 2	4.87	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3.1	-	-	-
Pot Cap-1 Maneuver	470	824	925	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	456	824	925	-	-	-
Mov Cap-2 Maneuver	456	-	-	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	925	-	659	-	-	
HCM Lane V/C Ratio	0.022	-	0.088	-	-	
HCM Control Delay (s)	9	0	11	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 Existing Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	59	73	2	32	26	103	609	7	46	378	44
Future Volume (vph)	25	59	73	2	32	26	103	609	7	46	378	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	11	11	11	11	11	11
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0		0	0		0	125		0	75		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2455			858			947			792	
Travel Time (s)		47.8			23.4			16.1			13.5	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	3%	5%	0%	9%	8%	2%

Shared Lane Traffic (%)

Sign Control	Stop	Stop	Free	Free
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Intersection Summary

Area Type: Other

Control Type: Unsignalized

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 Existing Conditions

Timing Plan: A.M. Peak Hour

Intersection												
Int Delay, s/veh	77.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	25	59	73	2	32	26	103	609	7	46	378	44
Future Vol, veh/h	25	59	73	2	32	26	103	609	7	46	378	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	5	-	-	-7	-	-	3	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	3	0	0	0	3	5	0	9	8	2
Mvmt Flow	29	69	85	2	37	30	120	708	8	53	440	51
Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1558	1528	466	1601	1549	712	491	0	0	716	0	0
Stage 1	572	572	-	952	952	-	-	-	-	-	-	-
Stage 2	986	956	-	649	597	-	-	-	-	-	-	-
Critical Hdwy	7.9	7.3	6.63	8.1	7.5	6.7	4.3	-	-	4.4	-	-
Critical Hdwy Stg 1	6.9	6.3	-	7.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.9	6.3	-	7.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3.1	-	-
Pot Cap-1 Maneuver	70	84	598	59	75	413	813	-	-	649	-	-
Stage 1	504	447	-	266	261	-	-	-	-	-	-	-
Stage 2	266	274	-	432	419	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	~ 27	~ 66	598	-	59	413	813	-	-	649	-	-
Mov Cap-2 Maneuver	~ 27	~ 66	-	-	59	-	-	-	-	-	-	-
Stage 1	429	410	-	227	222	-	-	-	-	-	-	-
Stage 2	175	233	-	283	385	-	-	-	-	-	-	-
Approach	EB	WB			NB			SB				
HCM Control Delay, s\$	684.6				1.5			1.1				
HCM LOS	F											
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	813	-	-	81	-	649	-	-				
HCM Lane V/C Ratio	0.147	-	-	2.254	-	0.082	-	-				
HCM Control Delay (s)	10.2	-	-	\$ 684.6	-	11	-	-				
HCM Lane LOS	B	-	-	F	-	B	-	-				
HCM 95th %tile Q(veh)	0.5	-	-	16.8	-	0.3	-	-				
Notes												
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*	*: All major volume in platoon								

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 Existing Conditions

Timing Plan: P.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	17	214	73	6	174	113
Future Volume (vph)	17	214	73	6	174	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 Existing Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	6.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	B		A	
Traffic Vol, veh/h	17	214	73	6	174	113
Future Vol, veh/h	17	214	73	6	174	113
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, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	18	230	78	6	187	122
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	577	81	0	0	84	0
Stage 1	81	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	508	1041	-	-	1124	-
Stage 1	1089	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	418	1041	-	-	1124	-
Mov Cap-2 Maneuver	418	-	-	-	-	-
Stage 1	1089	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.2	0		5.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	938	1124	-	
HCM Lane V/C Ratio	-	-	0.265	0.166	-	
HCM Control Delay (s)	-	-	10.2	8.8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.1	0.6	-	

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 Existing Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	19	57	230	268	17
Future Volume (vph)	6	19	57	230	268	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 Existing Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	6	19	57	230	268	17
Future Vol, veh/h	6	19	57	230	268	17
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, %	-3	-	-	4	-4	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	7	21	63	253	295	19
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	684	305	314	0	-	0
Stage 1	305	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.3	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	523	801	937	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	482	801	937	-	-	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	834	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.4	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	937	-	691	-	-	
HCM Lane V/C Ratio	0.067	-	0.04	-	-	
HCM Control Delay (s)	9.1	0	10.4	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-	

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 Existing Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	62	54	1	22	30	52	378	11	59	495	117
Future Volume (vph)	42	62	54	1	22	30	52	378	11	59	495	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	11	11	11	11	11	11
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0		0	0		0	125		0	75		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2455			858			947			792	
Travel Time (s)		47.8			23.4			16.1			13.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	2%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 Existing Conditions

Timing Plan: P.M. Peak Hour

Intersection													
Int Delay, s/veh	27.2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔	↔	↔	↔	↔	↑	↑	↑	↑	↑	↑	
Traffic Vol, veh/h	42	62	54	1	22	30	52	378	11	59	495	117	
Future Vol, veh/h	42	62	54	1	22	30	52	378	11	59	495	117	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	125	-	-	75	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	4	-	-	5	-	-	-7	-	-	3	-	
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	
Heavy Vehicles, %	0	0	4	0	0	0	4	2	0	0	1	1	
Mvmt Flow	45	66	57	1	23	32	55	402	12	63	527	124	
Major/Minor													
Minor2		Minor1			Major1			Major2					
Conflicting Flow All	1261	1239	589	1295	1295	408	651	0	0	414	0	0	
Stage 1	715	715	-	518	518	-	-	-	-	-	-	-	
Stage 2	546	524	-	777	777	-	-	-	-	-	-	-	
Critical Hdwy	7.9	7.3	6.64	8.1	7.5	6.7	4.3	-	-	4.3	-	-	
Critical Hdwy Stg 1	6.9	6.3	-	7.1	6.5	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	6.9	6.3	-	7.1	6.5	-	-	-	-	-	-	-	
Follow-up Hdwy	3	4	3.1	3	4	3.1	3	-	-	3	-	-	
Pot Cap-1 Maneuver	122	134	500	106	114	645	714	-	-	865	-	-	
Stage 1	405	373	-	532	465	-	-	-	-	-	-	-	
Stage 2	525	475	-	352	330	-	-	-	-	-	-	-	
Platoon blocked, %								-	-	-	-	-	
Mov Cap-1 Maneuver	85	115	500	46	98	645	714	-	-	865	-	-	
Mov Cap-2 Maneuver	85	115	-	46	98	-	-	-	-	-	-	-	
Stage 1	374	346	-	491	429	-	-	-	-	-	-	-	
Stage 2	435	438	-	234	306	-	-	-	-	-	-	-	
Approach													
EB			WB			NB			SB				
HCM Control Delay, s	209.4		33.6			1.2			0.8				
HCM LOS	F		D										
Minor Lane/Major Mvmt		NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	714		-	-	138	181	865	-	-				
HCM Lane V/C Ratio	0.077		-	-	1.218	0.312	0.073	-	-				
HCM Control Delay (s)	10.5		-	-	209.4	33.6	9.5	-	-				
HCM Lane LOS	B		-	-	F	D	A	-	-				
HCM 95th %tile Q(veh)	0.3		-	-	10	1.3	0.2	-	-				

2023 BASE CONDITIONS

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2023 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	233	122	10	174	83
Future Volume (vph)	8	233	122	10	174	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2023 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	6.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	B		A	
Traffic Vol, veh/h	8	233	122	10	174	83
Future Vol, veh/h	8	233	122	10	174	83
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	10	295	154	13	220	105
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	706	161	0	0	167	0
Stage 1	161	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	418	932	-	-	1053	-
Stage 1	989	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	325	932	-	-	1053	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.3	0		6.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	878	1053	-	
HCM Lane V/C Ratio	-	-	0.347	0.209	-	
HCM Control Delay (s)	-	-	11.3	9.3	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.6	0.8	-	

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2023 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	32	17	338	225	6
Future Volume (vph)	15	32	17	338	225	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2023 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	15	32	17	338	225	6
Future Vol, veh/h	15	32	17	338	225	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	4	-4	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	7	3	6	3	6	0
Mvmt Flow	19	41	22	433	288	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	769	292	296	0	-	0
Stage 1	292	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Critical Hdwy	5.87	5.93	4.4	-	-	-
Critical Hdwy Stg 1	4.87	-	-	-	-	-
Critical Hdwy Stg 2	4.87	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3.1	-	-	-
Pot Cap-1 Maneuver	453	812	916	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	743	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	439	812	916	-	-	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	743	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.2	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	916	-	639	-	-	
HCM Lane V/C Ratio	0.024	-	0.094	-	-	
HCM Control Delay (s)	9	0	11.2	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	62	78	2	34	27	109	735	7	49	480	47
Future Volume (vph)	26	62	78	2	34	27	109	735	7	49	480	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)												
Storage Length (ft)	0			0		0	75		0	150		0
Storage Lanes	0			0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red				Yes			Yes			Yes		Yes
Link Speed (mph)		35				25			40			40
Link Distance (ft)		2455				858			947			792
Travel Time (s)		47.8				23.4			16.1			13.5
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	3%	5%	0%	9%	8%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA										
Protected Phases		4				8			2			6
Permitted Phases	4				8			2			6	
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	31.3	31.3		31.3	31.3		67.4	67.4		67.4	67.4	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other

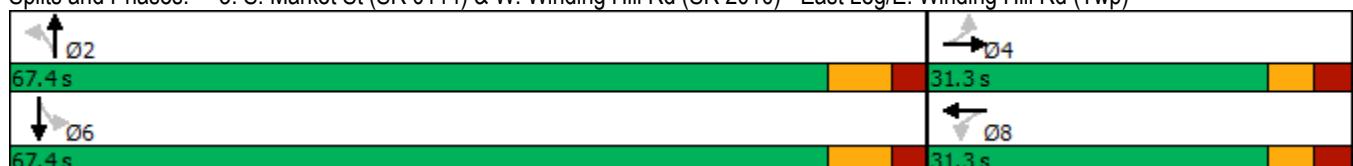
Cycle Length: 98.7

Actuated Cycle Length: 62.9

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	62	78	2	34	27	109	735	7	49	480	47
Future Volume (veh/h)	26	62	78	2	34	27	109	735	7	49	480	47
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2018	1990	1990	1623	1637	1637
Adj Flow Rate, veh/h	30	72	91	2	40	31	127	855	8	57	558	55
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	3	5	5	9	8	8
Cap, veh/h	114	125	136	79	165	124	423	1120	10	287	835	82
Arrive On Green	0.17	0.19	0.17	0.17	0.19	0.17	0.57	0.57	0.55	0.57	0.57	0.55
Sat Flow, veh/h	146	659	718	14	873	654	873	1968	18	556	1467	145
Grp Volume(v), veh/h	193	0	0	73	0	0	127	0	863	57	0	613
Grp Sat Flow(s), veh/h/ln	1522	0	0	1541	0	0	873	0	1986	556	0	1611
Q Serve(g_s), s	2.8	0.0	0.0	0.0	0.0	0.0	5.6	0.0	16.0	4.2	0.0	12.8
Cycle Q Clear(g_c), s	5.8	0.0	0.0	2.0	0.0	0.0	18.0	0.0	16.0	19.7	0.0	12.8
Prop In Lane	0.16			0.47	0.03		0.42	1.00		0.01	1.00	0.09
Lane Grp Cap(c), veh/h	342	0	0	336	0	0	423	0	1130	287	0	917
V/C Ratio(X)	0.56	0.00	0.00	0.22	0.00	0.00	0.30	0.00	0.76	0.20	0.00	0.67
Avail Cap(c_a), veh/h	862	0	0	866	0	0	1027	0	2506	672	0	2033
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	0.0	16.9	0.0	0.0	13.3	0.0	7.9	15.2	0.0	7.3
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.4	0.1	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	3.5	0.0	0.0	1.2	0.0	0.0	1.6	0.0	7.0	0.8	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.9	0.0	0.0	17.2	0.0	0.0	13.5	0.0	8.4	15.4	0.0	7.6
LnGrp LOS	B	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h	193				73			990			670	
Approach Delay, s/veh	19.9				17.2			9.0			8.3	
Approach LOS	B				B			A			A	
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	33.9			14.4			33.9			14.4		
Change Period (Y+Rc), s	7.4			* 6.3			7.4			* 6.3		
Max Green Setting (Gmax), s	60.0			* 25			60.0			* 25		
Max Q Clear Time (g_c+l1), s	20.5			7.8			22.2			4.0		
Green Ext Time (p_c), s	6.0			0.6			3.7			0.2		
Intersection Summary												
HCM 6th Ctrl Delay				10.2								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2023 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	224	76	6	181	118
Future Volume (vph)	18	224	76	6	181	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2023 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection

Int Delay, s/veh 6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	18	224	76	6	181	118
Future Vol, veh/h	18	224	76	6	181	118
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, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	19	241	82	6	195	127

Major/Minor	Minor1	Major1	Major2	
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Conflicting Flow All	602	85	0	0	88	0
Stage 1	85	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	489	1035	-	-	1120	-
Stage 1	1084	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	398	1035	-	-	1120	-
Mov Cap-2 Maneuver	398	-	-	-	-	-
Stage 1	1084	-	-	-	-	-
Stage 2	522	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	10.4	0	5.4
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HCM LOS	B
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Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	925	1120	-
HCM Lane V/C Ratio	-	-	0.281	0.174	-
HCM Control Delay (s)	-	-	10.4	8.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2023 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	6	20	59	240	279	18
Future Volume (vph)	6	20	59	240	279	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2023 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	6	20	59	240	279	18
Future Vol, veh/h	6	20	59	240	279	18
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, %	-3	-	-	4	-4	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	7	22	65	264	307	20
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	711	317	327	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.3	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	506	789	928	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	465	789	928	-	-	-
Mov Cap-2 Maneuver	465	-	-	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.5	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	928	-	680	-	-	
HCM Lane V/C Ratio	0.07	-	0.042	-	-	
HCM Control Delay (s)	9.2	0	10.5	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-	

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	66	57	1	23	32	56	483	12	62	615	124
Future Volume (vph)	44	66	57	1	23	32	56	483	12	62	615	124
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)												
Storage Length (ft)	0			0		0	75		0	150		0
Storage Lanes	0			0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red				Yes			Yes			Yes		Yes
Link Speed (mph)		35				25			40			40
Link Distance (ft)		2455				858			947			792
Travel Time (s)		47.8				23.4			16.1			13.5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	2%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA										
Protected Phases		4				8			2			6
Permitted Phases	4				8			2			6	
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	31.3	31.3		31.3	31.3		67.4	67.4		67.4	67.4	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other

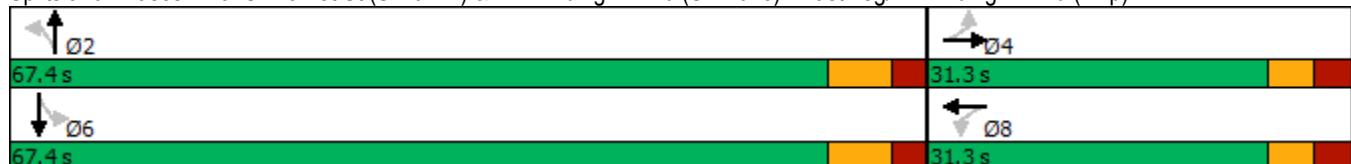
Cycle Length: 98.7

Actuated Cycle Length: 61.2

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	66	57	1	23	32	56	483	12	62	615	124
Future Volume (veh/h)	44	66	57	1	23	32	56	483	12	62	615	124
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2004	2032	2032	1750	1736	1736
Adj Flow Rate, veh/h	47	70	61	1	24	34	60	514	13	66	654	132
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	4	2	2	0	1	1
Cap, veh/h	148	126	93	79	113	156	306	1128	29	507	801	162
Arrive On Green	0.16	0.18	0.16	0.16	0.18	0.16	0.57	0.57	0.55	0.57	0.57	0.55
Sat Flow, veh/h	286	704	516	8	630	868	738	1973	50	820	1402	283
Grp Volume(v), veh/h	178	0	0	59	0	0	60	0	527	66	0	786
Grp Sat Flow(s), veh/h/ln	1506	0	0	1505	0	0	738	0	2023	820	0	1685
Q Serve(g_s), s	3.3	0.0	0.0	0.0	0.0	0.0	3.3	0.0	7.1	2.3	0.0	17.6
Cycle Q Clear(g_c), s	5.2	0.0	0.0	1.6	0.0	0.0	20.4	0.0	7.1	8.9	0.0	17.6
Prop In Lane	0.26			0.34	0.02		0.58	1.00		0.02	1.00	0.17
Lane Grp Cap(c), veh/h	335	0	0	316	0	0	306	0	1157	507	0	963
V/C Ratio(X)	0.53	0.00	0.00	0.19	0.00	0.00	0.20	0.00	0.46	0.13	0.00	0.82
Avail Cap(c_a), veh/h	884	0	0	875	0	0	842	0	2628	1102	0	2188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	0.0	16.7	0.0	0.0	16.1	0.0	5.8	8.3	0.0	8.2
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	3.1	0.0	0.0	1.0	0.0	0.0	0.8	0.0	3.0	0.5	0.0	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.5	0.0	0.0	17.0	0.0	0.0	16.2	0.0	5.9	8.3	0.0	8.8
LnGrp LOS	B	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h	178			59			587		852			
Approach Delay, s/veh	19.5			17.0			7.0		8.8			
Approach LOS	B			B			A		A			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	33.2		13.7		33.2		13.7					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	60.0		* 25		60.0		* 25					
Max Q Clear Time (g_c+l1), s	22.9		7.2		19.6		3.6					
Green Ext Time (p_c), s	2.9		0.6		4.9		0.2					
Intersection Summary												
HCM 6th Ctrl Delay			9.6									
HCM 6th LOS			A									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2023 PROJECTED CONDITIONS

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	233	124	12	174	88
Future Volume (vph)	13	233	124	12	174	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	1265		749		68	
Travel Time (s)	24.6		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B		A		
Traffic Vol, veh/h	13	233	124	12	174	88
Future Vol, veh/h	13	233	124	12	174	88
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	16	295	157	15	220	111
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	716	165	0	0	172	0
Stage 1	165	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	412	927	-	-	1049	-
Stage 1	985	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	320	927	-	-	1049	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.8	0	6.2			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	843	1049	-	
HCM Lane V/C Ratio	-	-	0.369	0.21	-	
HCM Control Delay (s)	-	-	11.8	9.3	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.7	0.8	-	

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	32	17	340	230	10
Future Volume (vph)	16	32	17	340	230	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1469	
Travel Time (s)	16.8			1.3	28.6	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	16	32	17	340	230	10
Future Vol, veh/h	16	32	17	340	230	10
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, %	-3	-	-	4	-4	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	7	3	6	3	6	0
Mvmt Flow	21	41	22	436	295	13
Major/Minor						
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	782	302	308	0	-	0
Stage 1	302	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Critical Hdwy	5.87	5.93	4.4	-	-	-
Critical Hdwy Stg 1	4.87	-	-	-	-	-
Critical Hdwy Stg 2	4.87	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3.1	-	-	-
Pot Cap-1 Maneuver	446	802	907	-	-	-
Stage 1	877	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	432	802	907	-	-	-
Mov Cap-2 Maneuver	432	-	-	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Approach						
Approach	EB	NB		SB		
HCM Control Delay, s	11.4	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt		NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)		907	-	624	-	-
HCM Lane V/C Ratio		0.024	-	0.099	-	-
HCM Control Delay (s)		9.1	0	11.4	-	-
HCM Lane LOS		A	A	B	-	-
HCM 95th %tile Q(veh)		0.1	-	0.3	-	-

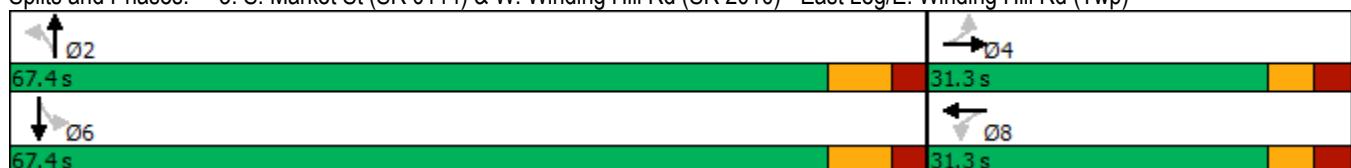
3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	99	83	2	46	27	111	735	7	49	480	53
Future Volume (vph)	44	99	83	2	46	27	111	735	7	49	480	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0	0	0	75	0	0	150	0	0	0
Storage Lanes	0	0	0	0	0	1	0	0	1	0	1	0
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1190			858			947			792	
Travel Time (s)		23.2			23.4			16.1			13.5	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	3%	5%	0%	9%	8%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	31.3	31.3		31.3	31.3		67.4	67.4		67.4	67.4	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Intersection Summary												
Area Type:	Other											
Cycle Length:	98.7											
Actuated Cycle Length:	69.8											
Natural Cycle:	60											
Control Type:	Actuated-Uncoordinated											

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



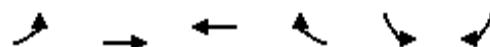
3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	99	83	2	46	27	111	735	7	49	480	53
Future Volume (veh/h)	44	99	83	2	46	27	111	735	7	49	480	53
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2018	1990	1990	1623	1637	1637
Adj Flow Rate, veh/h	51	115	97	2	53	31	129	855	8	57	558	62
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	3	5	5	9	8	8
Cap, veh/h	123	175	129	68	227	129	383	1103	10	258	812	90
Arrive On Green	0.21	0.23	0.21	0.21	0.23	0.21	0.56	0.56	0.54	0.56	0.56	0.54
Sat Flow, veh/h	200	762	562	9	987	561	867	1968	18	556	1448	161
Grp Volume(v), veh/h	263	0	0	86	0	0	129	0	863	57	0	620
Grp Sat Flow(s), veh/h/ln	1525	0	0	1557	0	0	867	0	1986	556	0	1609
Q Serve(g_s), s	5.4	0.0	0.0	0.0	0.0	0.0	6.9	0.0	18.9	4.9	0.0	15.4
Cycle Q Clear(g_c), s	9.1	0.0	0.0	2.5	0.0	0.0	21.8	0.0	18.9	23.3	0.0	15.4
Prop In Lane	0.19			0.37	0.02		0.36	1.00		0.01	1.00	0.10
Lane Grp Cap(c), veh/h	400	0	0	396	0	0	383	0	1114	258	0	902
V/C Ratio(X)	0.66	0.00	0.00	0.22	0.00	0.00	0.34	0.00	0.77	0.22	0.00	0.69
Avail Cap(c_a), veh/h	751	0	0	758	0	0	844	0	2169	553	0	1756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.2	0.0	0.0	17.7	0.0	0.0	16.4	0.0	9.5	18.4	0.0	8.8
Incr Delay (d2), s/veh	1.8	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.4	0.2	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	5.6	0.0	0.0	1.6	0.0	0.0	2.1	0.0	9.3	1.0	0.0	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.1	0.0	0.0	18.0	0.0	0.0	16.6	0.0	10.0	18.5	0.0	9.2
LnGrp LOS	C	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h	263				86			992			677	
Approach Delay, s/veh	22.1				18.0			10.8			10.0	
Approach LOS	C				B			B			A	
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	37.7			18.1			37.7			18.1		
Change Period (Y+Rc), s	7.4			* 6.3			7.4			* 6.3		
Max Green Setting (Gmax), s	60.0			* 25			60.0			* 25		
Max Q Clear Time (g_c+l1), s	24.3			11.1			25.8			4.5		
Green Ext Time (p_c), s	6.0			0.8			3.7			0.2		
Intersection Summary												
HCM 6th Ctrl Delay				12.3								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	184	241	20	60	5
Future Volume (vph)	2	184	241	20	60	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)		-1%	0%		0%	
Link Speed (mph)		35	35		25	
Link Distance (ft)		1265	1190		481	
Travel Time (s)		24.6	23.2		13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free	Free		Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway
2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	184	241	20	60	5
Future Vol, veh/h	2	184	241	20	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	2	204	268	22	67	6
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	290	0	-	0	487	279
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	955	-	-	-	613	807
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	956	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	955	-	-	-	612	807
Mov Cap-2 Maneuver	-	-	-	-	612	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	956	-
Approach	EB	WB	SB			
HCM Control Delay, s	0.1	0	11.5			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	955	-	-	-	624	
HCM Lane V/C Ratio	0.002	-	-	-	0.116	
HCM Control Delay (s)	8.8	0	-	-	11.5	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

5: S. York Street (SR 2013) & Proposed Site Driveway
2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	Y	Y	Y	Y	Y
Traffic Volume (vph)	9	19	353	3	6	231
Future Volume (vph)	9	19	353	3	6	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		35			35
Link Distance (ft)	602		1469			508
Travel Time (s)	16.4		28.6			9.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	2%	5%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

5: S. York Street (SR 2013) & Proposed Site Driveway
2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B		A		
Traffic Vol, veh/h	9	19	353	3	6	231
Future Vol, veh/h	9	19	353	3	6	231
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	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	5
Mvmt Flow	10	21	392	3	7	257
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	665	394	0	0	395	0
Stage 1	394	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	477	693	-	-	879	-
Stage 1	778	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	473	693	-	-	879	-
Mov Cap-2 Maneuver	473	-	-	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.3	0	0.2			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	603	879	-	
HCM Lane V/C Ratio	-	-	0.052	0.008	-	
HCM Control Delay (s)	-	-	11.3	9.1	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	224	81	12	181	121
Future Volume (vph)	21	224	81	12	181	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	1243		749		68	
Travel Time (s)	24.2		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection

Int Delay, s/veh 6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	21	224	81	12	181	121
Future Vol, veh/h	21	224	81	12	181	121
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, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	23	241	87	13	195	130

Major/Minor	Minor1	Major1	Major2
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Conflicting Flow All	614	94	0	0	100	0
Stage 1	94	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	481	1022	-	-	1110	-
Stage 1	1072	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	390	1022	-	-	1110	-
Mov Cap-2 Maneuver	390	-	-	-	-	-
Stage 1	1072	-	-	-	-	-
Stage 2	519	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	10.7	0	5.4
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HCM LOS	B
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Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	897	1110	-
HCM Lane V/C Ratio	-	-	0.294	0.175	-
HCM Control Delay (s)	-	-	10.7	8.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	-

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	20	59	245	282	21
Future Volume (vph)	11	20	59	245	282	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1425	
Travel Time (s)	16.8			1.3	27.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	11	20	59	245	282	21
Future Vol, veh/h	11	20	59	245	282	21
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, %	-3	-	-	4	-4	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	12	22	65	269	310	23
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	721	322	333	0	-	0
Stage 1	322	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.3	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	500	784	923	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	459	784	923	-	-	-
Mov Cap-2 Maneuver	459	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.1	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	923	-	627	-	-	
HCM Lane V/C Ratio	0.07	-	0.054	-	-	
HCM Control Delay (s)	9.2	0	11.1	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-	

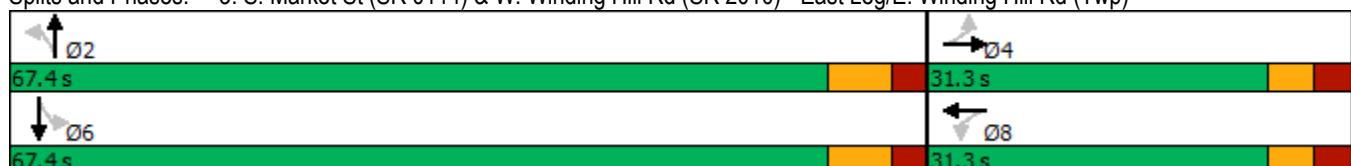
3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	91	60	1	65	32	61	483	12	62	615	145
Future Volume (vph)	56	91	60	1	65	32	61	483	12	62	615	145
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1212			858			947			792	
Travel Time (s)		23.6			23.4			16.1			13.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	2%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	31.3	31.3		31.3	31.3		67.4	67.4		67.4	67.4	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Intersection Summary												
Area Type:	Other											
Cycle Length:	98.7											
Actuated Cycle Length:	65.1											
Natural Cycle:	60											
Control Type:	Actuated-Uncoordinated											

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



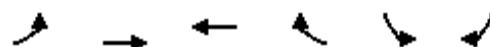
3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	91	60	1	65	32	61	483	12	62	615	145
Future Volume (veh/h)	56	91	60	1	65	32	61	483	12	62	615	145
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2004	2032	2032	1750	1736	1736
Adj Flow Rate, veh/h	60	97	64	1	69	34	65	514	13	66	654	154
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	4	2	2	0	1	1
Cap, veh/h	146	158	89	68	214	104	276	1145	29	495	788	186
Arrive On Green	0.19	0.20	0.19	0.19	0.20	0.19	0.58	0.58	0.56	0.58	0.58	0.56
Sat Flow, veh/h	302	773	438	4	1050	512	723	1973	50	820	1358	320
Grp Volume(v), veh/h	221	0	0	104	0	0	65	0	527	66	0	808
Grp Sat Flow(s), veh/h/ln	1513	0	0	1566	0	0	723	0	2023	820	0	1678
Q Serve(g_s), s	4.3	0.0	0.0	0.0	0.0	0.0	4.3	0.0	8.0	2.6	0.0	21.2
Cycle Q Clear(g_c), s	7.4	0.0	0.0	3.1	0.0	0.0	24.9	0.0	8.0	10.2	0.0	21.2
Prop In Lane	0.27			0.29	0.01		0.33	1.00		0.02	1.00	0.19
Lane Grp Cap(c), veh/h	365	0	0	357	0	0	276	0	1174	495	0	973
V/C Ratio(X)	0.61	0.00	0.00	0.29	0.00	0.00	0.24	0.00	0.45	0.13	0.00	0.83
Avail Cap(c_a), veh/h	768	0	0	789	0	0	672	0	2281	943	0	1892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	0.0	18.5	0.0	0.0	19.1	0.0	6.5	9.2	0.0	9.3
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	4.6	0.0	0.0	2.0	0.0	0.0	1.1	0.0	3.9	0.7	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.9	0.0	0.0	19.0	0.0	0.0	19.3	0.0	6.6	9.2	0.0	10.0
LnGrp LOS	C	A	A	B	A	A	B	A	A	A	A	B
Approach Vol, veh/h	221			104			592		874			
Approach Delay, s/veh	21.9			19.0			8.0		9.9			
Approach LOS	C			B			A		A			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	37.8		16.3		37.8		16.3					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	60.0		* 25		60.0		* 25					
Max Q Clear Time (g_c+l1), s	27.4		9.4		23.2		5.1					
Green Ext Time (p_c), s	2.9		0.7		5.1		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			11.3									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway
2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	187	242	68	40	3
Future Volume (vph)	6	187	242	68	40	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-1%	0%	0%			
Link Speed (mph)	35	35	25			
Link Distance (ft)	1243	1212	451			
Travel Time (s)	24.2	23.6	12.3			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Free	Free		Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	187	242	68	40	3
Future Vol, veh/h	6	187	242	68	40	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	1	2	2	2
Mvmt Flow	7	208	269	76	44	3
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	345	0	-	0	529	307
Stage 1	-	-	-	-	307	-
Stage 2	-	-	-	-	222	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	914	-	-	-	578	778
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	941	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	914	-	-	-	573	778
Mov Cap-2 Maneuver	-	-	-	-	573	-
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	941	-
Approach	EB	WB	SB			
HCM Control Delay, s	0.3	0	11.7			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	914	-	-	-	584	
HCM Lane V/C Ratio	0.007	-	-	-	0.082	
HCM Control Delay (s)	9	0	-	-	11.7	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

5: S. York Street (SR 2013) & Proposed Site Driveway
2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	Y	Y	Y	Y	Y
Traffic Volume (vph)	6	13	246	10	21	297
Future Volume (vph)	6	13	246	10	21	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		35			35
Link Distance (ft)	439		1425			552
Travel Time (s)	12.0		27.8			10.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	2%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

5: S. York Street (SR 2013) & Proposed Site Driveway
2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B	B		A	
Traffic Vol, veh/h	6	13	246	10	21	297
Future Vol, veh/h	6	13	246	10	21	297
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	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	1
Mvmt Flow	7	14	273	11	23	330
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	655	279	0	0	284	0
Stage 1	279	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	484	807	-	-	960	-
Stage 1	884	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	470	807	-	-	960	-
Mov Cap-2 Maneuver	470	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.7	0	0.6			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	658	960	-	
HCM Lane V/C Ratio	-	-	0.032	0.024	-	
HCM Control Delay (s)	-	-	10.7	8.8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-	

**2023 PROJECTED CONDITIONS
WITH IMPROVEMENTS**

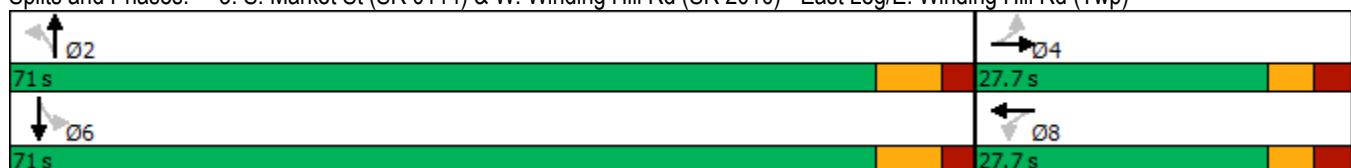
3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	99	83	2	46	27	111	735	7	49	480	53
Future Volume (vph)	44	99	83	2	46	27	111	735	7	49	480	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1190			858			947			792	
Travel Time (s)		23.2			23.4			16.1			13.5	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	3%	5%	0%	9%	8%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	27.7	27.7		27.7	27.7		71.0	71.0		71.0	71.0	
Total Split (%)	28.1%	28.1%		28.1%	28.1%		71.9%	71.9%		71.9%	71.9%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Intersection Summary												
Area Type:	Other											
Cycle Length:	98.7											
Actuated Cycle Length:	69.5											
Natural Cycle:	60											
Control Type:	Actuated-Uncoordinated											

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	99	83	2	46	27	111	735	7	49	480	53
Future Volume (veh/h)	44	99	83	2	46	27	111	735	7	49	480	53
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2018	1990	1990	1623	1637	1637
Adj Flow Rate, veh/h	51	115	97	2	53	31	129	855	8	57	558	62
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	3	5	5	9	8	8
Cap, veh/h	123	174	128	68	226	128	385	1105	10	259	813	90
Arrive On Green	0.21	0.23	0.21	0.21	0.23	0.21	0.56	0.56	0.54	0.56	0.56	0.54
Sat Flow, veh/h	200	762	562	10	987	562	867	1968	18	556	1448	161
Grp Volume(v), veh/h	263	0	0	86	0	0	129	0	863	57	0	620
Grp Sat Flow(s), veh/h/ln	1525	0	0	1558	0	0	867	0	1986	556	0	1609
Q Serve(g_s), s	5.5	0.0	0.0	0.0	0.0	0.0	6.9	0.0	18.8	4.9	0.0	15.4
Cycle Q Clear(g_c), s	9.1	0.0	0.0	2.5	0.0	0.0	21.7	0.0	18.8	23.1	0.0	15.4
Prop In Lane	0.19			0.37	0.02		0.36	1.00		0.01	1.00	0.10
Lane Grp Cap(c), veh/h	398	0	0	394	0	0	385	0	1115	259	0	903
V/C Ratio(X)	0.66	0.00	0.00	0.22	0.00	0.00	0.34	0.00	0.77	0.22	0.00	0.69
Avail Cap(c_a), veh/h	657	0	0	661	0	0	904	0	2303	592	0	1865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	0.0	17.7	0.0	0.0	16.3	0.0	9.5	18.2	0.0	8.8
Incr Delay (d2), s/veh	1.9	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.4	0.2	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	5.6	0.0	0.0	1.6	0.0	0.0	2.1	0.0	9.2	1.0	0.0	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.1	0.0	0.0	18.0	0.0	0.0	16.5	0.0	9.9	18.4	0.0	9.1
LnGrp LOS	C	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h	263				86			992			677	
Approach Delay, s/veh	22.1				18.0			10.8			9.9	
Approach LOS	C				B			B			A	
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	37.7			18.0			37.7			18.0		
Change Period (Y+Rc), s	7.4			* 6.3			7.4			* 6.3		
Max Green Setting (Gmax), s	63.6			* 21			63.6			* 21		
Max Q Clear Time (g_c+l1), s	24.2			11.1			25.6			4.5		
Green Ext Time (p_c), s	6.1			0.7			3.8			0.2		
Intersection Summary												
HCM 6th Ctrl Delay				12.3								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

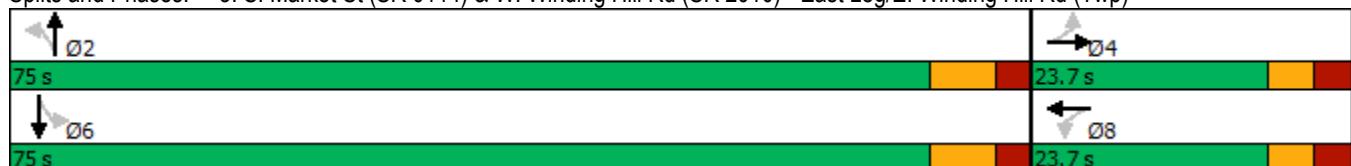
3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	91	60	1	65	32	61	483	12	62	615	145
Future Volume (vph)	56	91	60	1	65	32	61	483	12	62	615	145
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1212			858			947			792	
Travel Time (s)		23.6			23.4			16.1			13.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	2%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	23.7	23.7		23.7	23.7		75.0	75.0		75.0	75.0	
Total Split (%)	24.0%	24.0%		24.0%	24.0%		76.0%	76.0%		76.0%	76.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Intersection Summary												
Area Type:	Other											
Cycle Length:	98.7											
Actuated Cycle Length:	61.7											
Natural Cycle:	60											
Control Type:	Actuated-Uncoordinated											

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2023 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	91	60	1	65	32	61	483	12	62	615	145
Future Volume (veh/h)	56	91	60	1	65	32	61	483	12	62	615	145
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2004	2032	2032	1750	1736	1736
Adj Flow Rate, veh/h	60	97	64	1	69	34	65	514	13	66	654	154
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	4	2	2	0	1	1
Cap, veh/h	146	155	88	69	211	103	279	1146	29	497	789	186
Arrive On Green	0.18	0.20	0.18	0.18	0.20	0.18	0.58	0.58	0.56	0.58	0.58	0.56
Sat Flow, veh/h	304	773	439	4	1051	513	723	1973	50	820	1358	320
Grp Volume(v), veh/h	221	0	0	104	0	0	65	0	527	66	0	808
Grp Sat Flow(s), veh/h/ln	1515	0	0	1568	0	0	723	0	2023	820	0	1678
Q Serve(g_s), s	4.3	0.0	0.0	0.0	0.0	0.0	4.2	0.0	7.9	2.6	0.0	20.9
Cycle Q Clear(g_c), s	7.4	0.0	0.0	3.1	0.0	0.0	24.7	0.0	7.9	10.0	0.0	20.9
Prop In Lane	0.27			0.29	0.01		0.33	1.00		0.02	1.00	0.19
Lane Grp Cap(c), veh/h	361	0	0	353	0	0	279	0	1175	497	0	975
V/C Ratio(X)	0.61	0.00	0.00	0.29	0.00	0.00	0.23	0.00	0.45	0.13	0.00	0.83
Avail Cap(c_a), veh/h	569	0	0	576	0	0	784	0	2590	1070	0	2148
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.2	0.0	0.0	18.5	0.0	0.0	18.8	0.0	6.4	9.1	0.0	9.2
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	4.6	0.0	0.0	2.0	0.0	0.0	1.1	0.0	3.8	0.7	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.9	0.0	0.0	18.9	0.0	0.0	19.0	0.0	6.5	9.1	0.0	9.9
LnGrp LOS	C	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h	221			104			592		874			
Approach Delay, s/veh	21.9			18.9			7.8		9.8			
Approach LOS	C			B			A		A			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	37.5		16.1		37.5		16.1					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	67.6		* 17		67.6		* 17					
Max Q Clear Time (g_c+l1), s	27.2		9.4		22.9		5.1					
Green Ext Time (p_c), s	3.0		0.5		5.1		0.2					
Intersection Summary												
HCM 6th Ctrl Delay			11.2									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2033 BASE CONDITIONS

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	252	132	11	188	90
Future Volume (vph)	9	252	132	11	188	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	330	0	181	0	0	352
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	7.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B			A	
Traffic Vol, veh/h	9	252	132	11	188	90
Future Vol, veh/h	9	252	132	11	188	90
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	11	319	167	14	238	114
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	764	174	0	0	181	0
Stage 1	174	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	383	916	-	-	1041	-
Stage 1	974	-	-	-	-	-
Stage 2	587	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	290	916	-	-	1041	-
Mov Cap-2 Maneuver	290	-	-	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.9	0		6.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	853	1041	-	
HCM Lane V/C Ratio	-	-	0.387	0.229	-	
HCM Control Delay (s)	-	-	11.9	9.5	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.8	0.9	-	

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	35	18	366	243	7
Future Volume (vph)	16	35	18	366	243	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	0	492	321	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	16	35	18	366	243	7
Future Vol, veh/h	16	35	18	366	243	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	4	-4	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	7	3	6	3	6	0
Mvmt Flow	21	45	23	469	312	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	832	317	321	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Critical Hdwy	5.87	5.93	4.4	-	-	-
Critical Hdwy Stg 1	4.87	-	-	-	-	-
Critical Hdwy Stg 2	4.87	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3.1	-	-	-
Pot Cap-1 Maneuver	419	787	898	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	404	787	898	-	-	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	834	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.6	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	898	-	607	-	-	
HCM Lane V/C Ratio	0.026	-	0.108	-	-	
HCM Control Delay (s)	9.1	0	11.6	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

	↑	→	↓	↗	↖	↙	↔	↖	↗	↑	↙	↘	↓	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	29	68	85	2	37	30	118	788	8	53	513	50		
Future Volume (vph)	29	68	85	2	37	30	118	788	8	53	513	50		
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800		
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12		
Grade (%)							5%						-7%	
Storage Length (ft)	0			0			0	75		0	150		0	
Storage Lanes	0			0			0	1		0	1		0	
Taper Length (ft)	25				25			25			25			
Right Turn on Red				Yes			Yes			Yes			Yes	
Link Speed (mph)		35				25			40			40		
Link Distance (ft)		2455				858			947			792		
Travel Time (s)		47.8				23.4			16.1			13.5		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86		
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	3%	5%	0%	9%	8%	2%		
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	212	0	0	80	0	137	925	0	62	655	0		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4				8			2			6		
Permitted Phases	4				8			2			6			
Detector Phase	4	4			8	8		2	2		6	6		
Switch Phase														
Minimum Initial (s)	3.0	3.0			3.0	3.0		15.0	15.0		15.0	15.0		
Minimum Split (s)	9.3	9.3			9.3	9.3		22.4	22.4		22.4	22.4		
Total Split (s)	31.3	31.3			31.3	31.3		67.4	67.4		67.4	67.4		
Total Split (%)	31.7%	31.7%			31.7%	31.7%		68.3%	68.3%		68.3%	68.3%		
Yellow Time (s)	3.3	3.3			3.3	3.3		4.8	4.8		4.8	4.8		
All-Red Time (s)	3.0	3.0			3.0	3.0		2.6	2.6		2.6	2.6		
Lost Time Adjust (s)		-1.0				-1.0		-1.0	-1.0		-1.0	-1.0		
Total Lost Time (s)		5.3				5.3		6.4	6.4		6.4	6.4		
Lead/Lag														
Lead-Lag Optimize?														
Recall Mode	None	None		None	None		Min	Min		Min	Min			
v/c Ratio	0.58			0.20			0.42	0.89		0.48	0.69			
Control Delay	28.9			17.7			13.2	25.5		23.9	14.5			
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0			
Total Delay	28.9			17.7			13.2	25.5		23.9	14.5			
Queue Length 50th (ft)	62			15			27	286		13	160			
Queue Length 95th (ft)	154			55			79	572		57	326			
Internal Link Dist (ft)	2375			778				867			712			
Turn Bay Length (ft)							75			150				
Base Capacity (vph)	612			694			471	1496		187	1375			
Starvation Cap Reductn	0			0			0	0		0	0			
Spillback Cap Reductn	0			0			0	0		0	0			
Storage Cap Reductn	0			0			0	0		0	0			
Reduced v/c Ratio	0.35			0.12			0.29	0.62		0.33	0.48			
Intersection Summary														
Area Type:	Other													

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

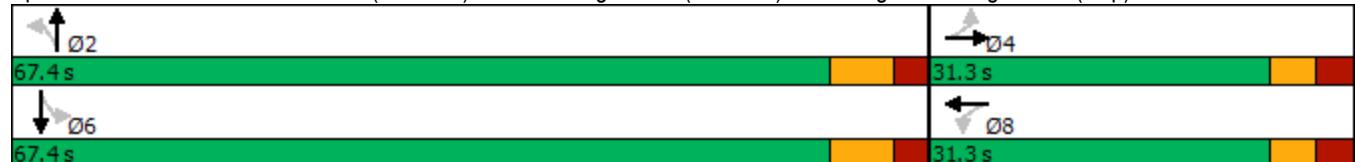
Cycle Length: 98.7

Actuated Cycle Length: 69.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Base (No-Build) Conditions

Timing Plan: A.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	68	85	2	37	30	118	788	8	53	513	50
Future Volume (veh/h)	29	68	85	2	37	30	118	788	8	53	513	50
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2018	1990	1990	1623	1637	1637
Adj Flow Rate, veh/h	34	79	99	2	43	35	137	916	9	62	597	58
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	3	5	5	9	8	8
Cap, veh/h	106	129	139	69	168	132	399	1163	11	259	868	84
Arrive On Green	0.18	0.20	0.18	0.18	0.20	0.18	0.59	0.59	0.57	0.59	0.59	0.57
Sat Flow, veh/h	152	658	710	11	854	673	839	1967	19	525	1469	143
Grp Volume(v), veh/h	212	0	0	80	0	0	137	0	925	62	0	655
Grp Sat Flow(s), veh/h/ln	1520	0	0	1538	0	0	839	0	1986	525	0	1612
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	0.0	7.3	0.0	19.6	5.6	0.0	15.4
Cycle Q Clear(g_c), s	7.3	0.0	0.0	2.5	0.0	0.0	22.2	0.0	19.6	24.7	0.0	15.4
Prop In Lane	0.16			0.47	0.02		0.44	1.00		0.01	1.00	0.09
Lane Grp Cap(c), veh/h	347	0	0	341	0	0	399	0	1174	259	0	953
V/C Ratio(X)	0.61	0.00	0.00	0.23	0.00	0.00	0.34	0.00	0.79	0.24	0.00	0.69
Avail Cap(c_a), veh/h	757	0	0	761	0	0	833	0	2201	530	0	1786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	0.0	19.0	0.0	0.0	15.2	0.0	8.6	17.8	0.0	7.8
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.5	0.2	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	4.6	0.0	0.0	1.6	0.0	0.0	2.1	0.0	9.0	1.1	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.7	0.0	0.0	19.3	0.0	0.0	15.4	0.0	9.1	18.0	0.0	8.1
LnGrp LOS	C	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h	212				80			1062			717	
Approach Delay, s/veh	22.7				19.3			9.9			9.0	
Approach LOS	C				B			A			A	
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	38.9			16.1			38.9			16.1		
Change Period (Y+Rc), s	7.4			* 6.3			7.4			* 6.3		
Max Green Setting (Gmax), s	60.0			* 25			60.0			* 25		
Max Q Clear Time (g_c+l1), s	24.7			9.3			27.2			4.5		
Green Ext Time (p_c), s	6.8			0.7			4.1			0.2		
Intersection Summary												
HCM 6th Ctrl Delay				11.2								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	19	242	82	7	196	127
Future Volume (vph)	19	242	82	7	196	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	2455		749		68	
Travel Time (s)	47.8		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	280	0	96	0	0	348
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	6.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B		A		
Traffic Vol, veh/h	19	242	82	7	196	127
Future Vol, veh/h	19	242	82	7	196	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	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	20	260	88	8	211	137
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	651	92	0	0	96	0
Stage 1	92	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	455	1025	-	-	1113	-
Stage 1	1075	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	362	1025	-	-	1113	-
Mov Cap-2 Maneuver	362	-	-	-	-	-
Stage 1	1075	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.8	0		5.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	904	1113	-	
HCM Lane V/C Ratio	-	-	0.31	0.189	-	
HCM Control Delay (s)	-	-	10.8	9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.3	0.7	-	

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	7	21	64	260	302	19
Future Volume (vph)	7	21	64	260	302	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1978	
Travel Time (s)	16.8			1.3	38.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	0	356	353	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	7	21	64	260	302	19
Future Vol, veh/h	7	21	64	260	302	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	4	-4	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	8	23	70	286	332	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	769	343	353	0	-	0
Stage 1	343	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.3	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	471	764	909	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	428	764	909	-	-	-
Mov Cap-2 Maneuver	428	-	-	-	-	-
Stage 1	793	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.9	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	909	-	639	-	-	
HCM Lane V/C Ratio	0.077	-	0.048	-	-	
HCM Control Delay (s)	9.3	0	10.9	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.2	-	-	

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	71	62	1	25	34	61	516	13	68	659	134
Future Volume (vph)	48	71	62	1	25	34	61	516	13	68	659	134
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		2455			858			947			792	
Travel Time (s)		47.8			23.4			16.1			13.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	2%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	193	0	0	64	0	65	563	0	72	844	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	31.3	31.3		31.3	31.3		67.4	67.4		67.4	67.4	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
v/c Ratio	0.55			0.16			0.36	0.54		0.19	0.86	
Control Delay	28.3			14.8			14.9	11.2		8.8	22.2	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	28.3			14.8			14.9	11.2		8.8	22.2	
Queue Length 50th (ft)	53			8			12	114		11	228	
Queue Length 95th (ft)	159			46			48	257		39	537	
Internal Link Dist (ft)	2375			778			867			712		
Turn Bay Length (ft)						75				150		
Base Capacity (vph)	615			717			282	1610		578	1516	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.31			0.09			0.23	0.35		0.12	0.56	
Intersection Summary												
Area Type:	Other											

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

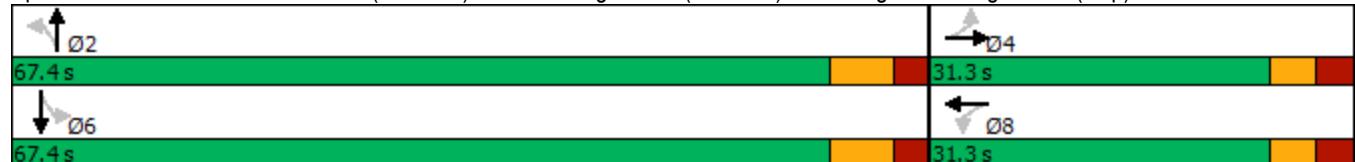
Cycle Length: 98.7

Actuated Cycle Length: 65.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Base (No-Build) Conditions

Timing Plan: P.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	71	62	1	25	34	61	516	13	68	659	134
Future Volume (veh/h)	48	71	62	1	25	34	61	516	13	68	659	134
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2004	2032	2032	1750	1736	1736
Adj Flow Rate, veh/h	51	76	66	1	27	36	65	549	14	72	701	143
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	4	2	2	0	1	1
Cap, veh/h	137	129	95	69	120	156	277	1182	30	493	838	171
Arrive On Green	0.17	0.18	0.17	0.17	0.18	0.17	0.60	0.60	0.58	0.60	0.60	0.58
Sat Flow, veh/h	287	703	514	7	653	848	699	1973	50	793	1399	285
Grp Volume(v), veh/h	193	0	0	64	0	0	65	0	563	72	0	844
Grp Sat Flow(s), veh/h/ln	1504	0	0	1507	0	0	699	0	2023	793	0	1684
Q Serve(g_s), s	4.2	0.0	0.0	0.0	0.0	0.0	4.4	0.0	8.4	2.9	0.0	21.8
Cycle Q Clear(g_c), s	6.5	0.0	0.0	2.0	0.0	0.0	25.7	0.0	8.4	10.8	0.0	21.8
Prop In Lane	0.26			0.34	0.02		0.56	1.00		0.02	1.00	0.17
Lane Grp Cap(c), veh/h	333	0	0	317	0	0	277	0	1213	493	0	1009
V/C Ratio(X)	0.58	0.00	0.00	0.20	0.00	0.00	0.24	0.00	0.46	0.15	0.00	0.84
Avail Cap(c_a), veh/h	769	0	0	762	0	0	647	0	2284	913	0	1902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	0.0	19.0	0.0	0.0	18.8	0.0	6.0	8.9	0.0	8.8
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	4.1	0.0	0.0	1.2	0.0	0.0	1.1	0.0	3.8	0.7	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.5	0.0	0.0	19.3	0.0	0.0	19.0	0.0	6.1	8.9	0.0	9.5
LnGrp LOS	C	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h	193				64			628			916	
Approach Delay, s/veh	22.5				19.3			7.5			9.4	
Approach LOS	C				B			A			A	
Timer - Assigned Phs	2			4			6		8			
Phs Duration (G+Y+Rc), s	38.8			15.3			38.8		15.3			
Change Period (Y+Rc), s	7.4			* 6.3			7.4		* 6.3			
Max Green Setting (Gmax), s	60.0			* 25			60.0		* 25			
Max Q Clear Time (g_c+l1), s	28.2			8.5			23.8		4.0			
Green Ext Time (p_c), s	3.2			0.6			5.5		0.2			
Intersection Summary												
HCM 6th Ctrl Delay				10.5								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

2033 PROJECTED CONDITIONS

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	252	134	13	188	95
Future Volume (vph)	14	252	134	13	188	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	1265		749		68	
Travel Time (s)	24.6		14.6		1.3	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	0%	5%	0%	10%	2%	13%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	337	0	186	0	0	358
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	7.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B			A	
Traffic Vol, veh/h	14	252	134	13	188	95
Future Vol, veh/h	14	252	134	13	188	95
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, %	2	-	6	-	-	-6
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	5	0	10	2	13
Mvmt Flow	18	319	170	16	238	120
Major/Minor						
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	774	178	0	0	186	0
Stage 1	178	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Critical Hdwy	6.8	6.45	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	377	911	-	-	1037	-
Stage 1	969	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	284	911	-	-	1037	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	440	-	-	-	-	-
Approach						
Approach	WB	NB	SB			
HCM Control Delay, s	12.5	0	6.3			
HCM LOS	B					
Minor Lane/Major Mvmt						
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	816	1037	-	
HCM Lane V/C Ratio	-	-	0.413	0.229	-	
HCM Control Delay (s)	-	-	12.5	9.5	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	2	0.9	-	

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	35	18	368	248	11
Future Volume (vph)	17	35	18	368	248	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1469	
Travel Time (s)	16.8			1.3	28.6	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	7%	3%	6%	3%	6%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	0	495	332	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	17	35	18	368	248	11
Future Vol, veh/h	17	35	18	368	248	11
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, %	-3	-	-	4	-4	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	7	3	6	3	6	0
Mvmt Flow	22	45	23	472	318	14
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	843	325	332	0	-	0
Stage 1	325	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Critical Hdwy	5.87	5.93	4.4	-	-	-
Critical Hdwy Stg 1	4.87	-	-	-	-	-
Critical Hdwy Stg 2	4.87	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3.1	-	-	-
Pot Cap-1 Maneuver	413	779	890	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	399	779	890	-	-	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	828	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.8	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	890	-	594	-	-	
HCM Lane V/C Ratio	0.026	-	0.112	-	-	
HCM Control Delay (s)	9.2	0	11.8	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	105	90	2	49	30	120	788	8	53	513	56
Future Volume (vph)	47	105	90	2	49	30	120	788	8	53	513	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1190			858			947			792	
Travel Time (s)		23.2			23.4			16.1			13.5	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	3%	5%	0%	9%	8%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	282	0	0	94	0	140	925	0	62	662	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	31.3	31.3		31.3	31.3		67.4	67.4		67.4	67.4	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
v/c Ratio	0.73			0.21			0.46	0.90		0.53	0.70	
Control Delay	38.5			20.9			15.6	27.9		30.5	16.2	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	38.5			20.9			15.6	27.9		30.5	16.2	
Queue Length 50th (ft)	116			25			36	364		17	207	
Queue Length 95th (ft)	226			68			84	574		66	332	
Internal Link Dist (ft)	1110			778			867			712		
Turn Bay Length (ft)						75			150			
Base Capacity (vph)	532			618			417	1400		158	1285	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.53			0.15			0.34	0.66		0.39	0.52	
Intersection Summary												
Area Type:	Other											

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

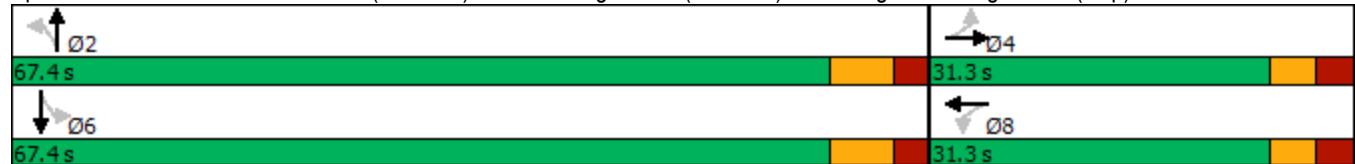
Cycle Length: 98.7

Actuated Cycle Length: 77.7

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



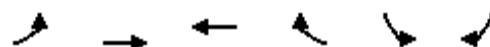
3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	105	90	2	49	30	120	788	8	53	513	56
Future Volume (veh/h)	47	105	90	2	49	30	120	788	8	53	513	56
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2018	1990	1990	1623	1637	1637
Adj Flow Rate, veh/h	55	122	105	2	57	35	140	916	9	62	597	65
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	3	5	5	9	8	8
Cap, veh/h	115	176	133	59	228	136	361	1147	11	231	846	92
Arrive On Green	0.22	0.24	0.22	0.22	0.24	0.22	0.58	0.58	0.57	0.58	0.58	0.57
Sat Flow, veh/h	207	746	566	8	969	580	834	1967	19	525	1451	158
Grp Volume(v), veh/h	282	0	0	94	0	0	140	0	925	62	0	662
Grp Sat Flow(s), veh/h/ln	1519	0	0	1557	0	0	834	0	1986	525	0	1609
Q Serve(g_s), s	7.3	0.0	0.0	0.0	0.0	0.0	9.1	0.0	23.4	6.7	0.0	18.8
Cycle Q Clear(g_c), s	11.4	0.0	0.0	3.2	0.0	0.0	27.4	0.0	23.4	29.6	0.0	18.8
Prop In Lane	0.20			0.37	0.02		0.37	1.00		0.01	1.00	0.10
Lane Grp Cap(c), veh/h	401	0	0	399	0	0	361	0	1158	231	0	938
V/C Ratio(X)	0.70	0.00	0.00	0.24	0.00	0.00	0.39	0.00	0.80	0.27	0.00	0.71
Avail Cap(c_a), veh/h	650	0	0	657	0	0	664	0	1879	421	0	1522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	0.0	20.2	0.0	0.0	19.0	0.0	10.5	21.8	0.0	9.6
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.5	0.2	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	7.3	0.0	0.0	2.1	0.0	0.0	2.8	0.0	11.7	1.4	0.0	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.6	0.0	0.0	20.5	0.0	0.0	19.3	0.0	11.0	22.0	0.0	9.9
LnGrp LOS	C	A	A	C	A	A	B	A	B	C	A	A
Approach Vol, veh/h	282			94			1065		724			
Approach Delay, s/veh	25.6			20.5			12.1		11.0			
Approach LOS	C			C			B		B			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	44.0		20.5		44.0		20.5					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	60.0		* 25		60.0		* 25					
Max Q Clear Time (g_c+l1), s	29.9		13.4		32.1		5.2					
Green Ext Time (p_c), s	6.7		0.8		4.1		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			13.8									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	199	261	20	60	5
Future Volume (vph)	2	199	261	20	60	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)		-1%	0%		0%	
Link Speed (mph)		35	35		25	
Link Distance (ft)		1265	1190		481	
Travel Time (s)		24.6	23.2		13.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	223	312	0	73	0
Sign Control	Free	Free			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway
2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	199	261	20	60	5
Future Vol, veh/h	2	199	261	20	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	2	221	290	22	67	6
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	312	0	-	0	526	301
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	225	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	939	-	-	-	580	784
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	939	-	-	-	579	784
Mov Cap-2 Maneuver	-	-	-	-	579	-
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	938	-
Approach	EB	WB	SB			
HCM Control Delay, s	0.1	0	11.9			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	939	-	-	-	591	
HCM Lane V/C Ratio	0.002	-	-	-	0.122	
HCM Control Delay (s)	8.8	0	-	-	11.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

5: S. York Street (SR 2013) & Proposed Site Driveway
2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	X	Y	X	Y	X
Traffic Volume (vph)	9	19	382	3	6	250
Future Volume (vph)	9	19	382	3	6	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		35			35
Link Distance (ft)	602		1469			508
Travel Time (s)	16.4		28.6			9.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	2%	5%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	427	0	0	285
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

5: S. York Street (SR 2013) & Proposed Site Driveway
2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Intersection

Int Delay, s/veh 0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	9	19	382	3	6	250
Future Vol, veh/h	9	19	382	3	6	250
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	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	5
Mvmt Flow	10	21	424	3	7	278

Major/Minor	Minor1	Major1	Major2
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Conflicting Flow All	718	426	0	0	427	0
Stage 1	426	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	443	665	-	-	856	-
Stage 1	751	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	439	665	-	-	856	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	751	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	11.7	0	0.2
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HCM LOS	B
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Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	856	-
HCM Lane V/C Ratio	-	-	0.054	0.008	-
HCM Control Delay (s)	-	-	11.7	9.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	242	87	13	196	130
Future Volume (vph)	22	242	87	13	196	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	2%		6%		-6%	
Link Speed (mph)	35		35		35	
Link Distance (ft)	1243		749		68	
Travel Time (s)	24.2		14.6		1.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	2%	1%	0%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	284	0	108	0	0	351
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

1: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - East Leg
 2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection

Int Delay, s/veh 6.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
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Lane Configurations						
Traffic Vol, veh/h	22	242	87	13	196	130
Future Vol, veh/h	22	242	87	13	196	130
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, %	2	-	6	-	-	-6
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	0	2	1
Mvmt Flow	24	260	94	14	211	140

Major/Minor	Minor1	Major1	Major2
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Conflicting Flow All	663	101	0	0	108	0
Stage 1	101	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.8	6.42	-	-	4.3	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	446	1013	-	-	1103	-
Stage 1	1063	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	354	1013	-	-	1103	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	1063	-	-	-	-	-
Stage 2	482	-	-	-	-	-

Approach	WB	NB	SB
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HCM Control Delay, s	11.1	0	5.4
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HCM LOS	B
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Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	877	1103	-
HCM Lane V/C Ratio	-	-	0.324	0.191	-
HCM Control Delay (s)	-	-	11.1	9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.7	-

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	21	64	265	305	22
Future Volume (vph)	12	21	64	265	305	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%			4%	-4%	
Link Speed (mph)	45			35	35	
Link Distance (ft)	1109			68	1425	
Travel Time (s)	16.8			1.3	27.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	2%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	0	0	361	359	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

2: S. York Street (SR 2013) & W. Winding Hill Rd (SR 2010) - West Leg
 2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		A	B		
Traffic Vol, veh/h	12	21	64	265	305	22
Future Vol, veh/h	12	21	64	265	305	22
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, %	-3	-	-	4	-4	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	13	23	70	291	335	24
Major/Minor						
Conflicting Flow All	Minor2	Major1		Major2		
	778	347	359	0	-	0
Stage 1	347	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.3	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	466	761	904	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	804	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	423	761	904	-	-	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	804	-	-	-	-	-
Approach						
HCM Control Delay, s	EB	NB		SB		
	11.5	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt		NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)		904	-	590	-	-
HCM Lane V/C Ratio		0.078	-	0.061	-	-
HCM Control Delay (s)		9.3	0	11.5	-	-
HCM Lane LOS		A	A	B	-	-
HCM 95th %tile Q(veh)		0.3	-	0.2	-	-

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	96	65	1	67	34	66	516	13	68	659	155
Future Volume (vph)	60	96	65	1	67	34	66	516	13	68	659	155
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1212			858			947			792	
Travel Time (s)		23.6			23.4			16.1			13.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	2%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	235	0	0	108	0	70	563	0	72	866	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	31.3	31.3		31.3	31.3		67.4	67.4		67.4	67.4	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
v/c Ratio	0.65			0.24			0.44	0.55		0.20	0.89	
Control Delay	34.0			21.7			19.6	11.9		9.4	26.0	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	34.0			21.7			19.6	11.9		9.4	26.0	
Queue Length 50th (ft)	82			28			15	132		13	278	
Queue Length 95th (ft)	202			85			60	261		40	576	
Internal Link Dist (ft)	1132			778			867			712		
Turn Bay Length (ft)						75				150		
Base Capacity (vph)	568			690			235	1519		533	1426	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.41			0.16			0.30	0.37		0.14	0.61	
Intersection Summary												
Area Type:	Other											

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

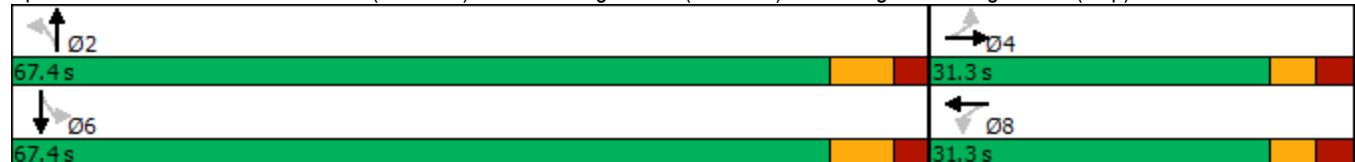
Cycle Length: 98.7

Actuated Cycle Length: 71

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



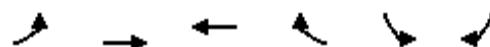
3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	96	65	1	67	34	66	516	13	68	659	155
Future Volume (veh/h)	60	96	65	1	67	34	66	516	13	68	659	155
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2004	2032	2032	1750	1736	1736
Adj Flow Rate, veh/h	64	102	69	1	71	36	70	549	14	72	701	165
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	4	2	2	0	1	1
Cap, veh/h	137	156	91	59	214	107	250	1200	31	483	826	194
Arrive On Green	0.19	0.21	0.19	0.19	0.21	0.19	0.61	0.61	0.59	0.61	0.61	0.59
Sat Flow, veh/h	310	758	444	3	1040	522	685	1973	50	793	1358	320
Grp Volume(v), veh/h	235	0	0	108	0	0	70	0	563	72	0	866
Grp Sat Flow(s), veh/h/ln	1513	0	0	1566	0	0	685	0	2023	793	0	1678
Q Serve(g_s), s	5.5	0.0	0.0	0.0	0.0	0.0	5.7	0.0	9.5	3.4	0.0	26.3
Cycle Q Clear(g_c), s	9.2	0.0	0.0	3.7	0.0	0.0	31.5	0.0	9.5	12.3	0.0	26.3
Prop In Lane	0.27			0.29	0.01		0.33	1.00		0.02	1.00	0.19
Lane Grp Cap(c), veh/h	360	0	0	354	0	0	250	0	1231	483	0	1021
V/C Ratio(X)	0.65	0.00	0.00	0.30	0.00	0.00	0.28	0.00	0.46	0.15	0.00	0.85
Avail Cap(c_a), veh/h	663	0	0	680	0	0	499	0	1966	771	0	1631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	0.0	21.4	0.0	0.0	22.5	0.0	6.7	9.9	0.0	10.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.1	0.1	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	5.9	0.0	0.0	2.5	0.0	0.0	1.5	0.0	5.0	0.9	0.0	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.6	0.0	0.0	21.9	0.0	0.0	22.7	0.0	6.8	9.9	0.0	11.4
LnGrp LOS	C	A	A	C	A	A	C	A	A	A	A	B
Approach Vol, veh/h	235			108			633		938			
Approach Delay, s/veh	25.6			21.9			8.5		11.3			
Approach LOS	C			C			A		B			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	44.6		18.2		44.6		18.2					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	60.0		* 25		60.0		* 25					
Max Q Clear Time (g_c+l1), s	34.0		11.2		28.3		5.7					
Green Ext Time (p_c), s	3.2		0.7		5.6		0.3					
Intersection Summary												
HCM 6th Ctrl Delay			12.7									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway
 2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	203	261	68	40	3
Future Volume (vph)	6	203	261	68	40	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-1%	0%	0%			
Link Speed (mph)	35	35		25		
Link Distance (ft)	1243	1212		451		
Travel Time (s)	24.2	23.6		12.3		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	233	366	0	47	0
Sign Control	Free	Free		Stop		

Intersection Summary

Area Type: Other

Control Type: Unsignalized

4: W. Winding Hill Rd (SR 2010) - East Leg & Proposed Site Driveway
2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	203	261	68	40	3
Future Vol, veh/h	6	203	261	68	40	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	1	2	2	2
Mvmt Flow	7	226	290	76	44	3
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	366	0	-	0	568	328
Stage 1	-	-	-	-	328	-
Stage 2	-	-	-	-	240	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	899	-	-	-	547	756
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	922	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	899	-	-	-	542	756
Mov Cap-2 Maneuver	-	-	-	-	542	-
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	922	-
Approach	EB	WB	SB			
HCM Control Delay, s	0.3	0	12.1			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	899	-	-	-	553	
HCM Lane V/C Ratio	0.007	-	-	-	0.086	
HCM Control Delay (s)	9	0	-	-	12.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

5: S. York Street (SR 2013) & Proposed Site Driveway
2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	Y	Y	Y	Y	Y
Traffic Volume (vph)	6	13	267	10	21	321
Future Volume (vph)	6	13	267	10	21	321
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		35			35
Link Distance (ft)	439		1425			552
Travel Time (s)	12.0		27.8			10.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	2%	1%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	308	0	0	380
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

5: S. York Street (SR 2013) & Proposed Site Driveway
2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	B			A	
Traffic Vol, veh/h	6	13	267	10	21	321
Future Vol, veh/h	6	13	267	10	21	321
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	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	3	2	2	1
Mvmt Flow	7	14	297	11	23	357
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	706	303	0	0	308	0
Stage 1	303	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.3	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	451	782	-	-	942	-
Stage 1	860	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	437	782	-	-	942	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11	0		0.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	626	942	-	
HCM Lane V/C Ratio	-	-	0.034	0.025	-	
HCM Control Delay (s)	-	-	11	8.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-	

**2033 PROJECTED CONDITIONS
WITH IMPROVEMENTS**

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	105	90	2	49	30	120	788	8	53	513	56
Future Volume (vph)	47	105	90	2	49	30	120	788	8	53	513	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1190			858			947			792	
Travel Time (s)		23.2			23.4			16.1			13.5	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	3%	5%	0%	9%	8%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	282	0	0	94	0	140	925	0	62	662	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	27.7	27.7		27.7	27.7		71.0	71.0		71.0	71.0	
Total Split (%)	28.1%	28.1%		28.1%	28.1%		71.9%	71.9%		71.9%	71.9%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
v/c Ratio	0.74			0.21			0.46	0.90		0.53	0.70	
Control Delay	39.7			21.5			14.4	26.8		28.4	15.3	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	39.7			21.5			14.4	26.8		28.4	15.3	
Queue Length 50th (ft)	109			24			36	364		17	206	
Queue Length 95th (ft)	#268			72			75	509		57	294	
Internal Link Dist (ft)	1110			778			867			712		
Turn Bay Length (ft)						75			150			
Base Capacity (vph)	470			546			448	1493		171	1371	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.60			0.17			0.31	0.62		0.36	0.48	
Intersection Summary												
Area Type:	Other											

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Cycle Length: 98.7

Actuated Cycle Length: 75.3

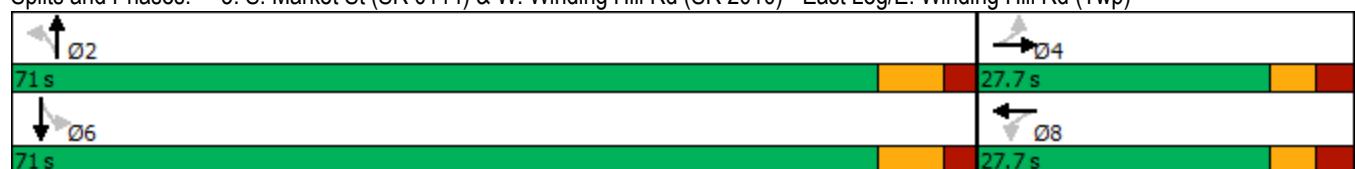
Natural Cycle: 70

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Projected (Build) Conditions

Timing Plan: A.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	105	90	2	49	30	120	788	8	53	513	56
Future Volume (veh/h)	47	105	90	2	49	30	120	788	8	53	513	56
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2018	1990	1990	1623	1637	1637
Adj Flow Rate, veh/h	55	122	105	2	57	35	140	916	9	62	597	65
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	3	5	5	9	8	8
Cap, veh/h	115	174	132	59	227	136	363	1150	11	233	848	92
Arrive On Green	0.22	0.23	0.22	0.22	0.23	0.22	0.58	0.58	0.57	0.58	0.58	0.57
Sat Flow, veh/h	207	746	566	8	970	580	834	1967	19	525	1451	158
Grp Volume(v), veh/h	282	0	0	94	0	0	140	0	925	62	0	662
Grp Sat Flow(s), veh/h/ln	1519	0	0	1558	0	0	834	0	1986	525	0	1609
Q Serve(g_s), s	7.4	0.0	0.0	0.0	0.0	0.0	9.1	0.0	23.3	6.6	0.0	18.7
Cycle Q Clear(g_c), s	11.4	0.0	0.0	3.2	0.0	0.0	27.3	0.0	23.3	29.4	0.0	18.7
Prop In Lane	0.20			0.37	0.02		0.37	1.00		0.01	1.00	0.10
Lane Grp Cap(c), veh/h	398	0	0	397	0	0	363	0	1161	233	0	940
V/C Ratio(X)	0.71	0.00	0.00	0.24	0.00	0.00	0.39	0.00	0.80	0.27	0.00	0.70
Avail Cap(c_a), veh/h	569	0	0	573	0	0	714	0	1996	453	0	1617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	0.0	20.3	0.0	0.0	18.9	0.0	10.4	21.6	0.0	9.5
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.5	0.2	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	7.3	0.0	0.0	2.1	0.0	0.0	2.8	0.0	11.7	1.3	0.0	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.7	0.0	0.0	20.6	0.0	0.0	19.1	0.0	10.9	21.8	0.0	9.8
LnGrp LOS	C	A	A	C	A	A	B	A	B	C	A	A
Approach Vol, veh/h	282			94			1065		724			
Approach Delay, s/veh	25.7			20.6			12.0		10.9			
Approach LOS	C			C			B		B			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	44.0		20.3		44.0		20.3					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	63.6		* 21		63.6		* 21					
Max Q Clear Time (g_c+l1), s	29.8		13.4		31.9		5.2					
Green Ext Time (p_c), s	6.8		0.7		4.1		0.2					
Intersection Summary												
HCM 6th Ctrl Delay			13.8									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	96	65	1	67	34	66	516	13	68	659	155
Future Volume (vph)	60	96	65	1	67	34	66	516	13	68	659	155
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	11	12	12	11	12	12
Grade (%)		4%			5%			-7%			3%	
Storage Length (ft)	0	0	0		0	75		0	150		0	
Storage Lanes	0	0	0		0	1		0	1		0	
Taper Length (ft)	25			25			25			25		
Right Turn on Red		Yes			Yes			Yes			Yes	
Link Speed (mph)		35			25			40			40	
Link Distance (ft)		1212			858			947			792	
Travel Time (s)		23.6			23.4			16.1			13.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	4%	2%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	235	0	0	108	0	70	563	0	72	866	0
Turn Type	Perm	NA										
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	9.3	9.3		9.3	9.3		22.4	22.4		22.4	22.4	
Total Split (s)	23.7	23.7		23.7	23.7		75.0	75.0		75.0	75.0	
Total Split (%)	24.0%	24.0%		24.0%	24.0%		76.0%	76.0%		76.0%	76.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.8	4.8		4.8	4.8	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)		5.3			5.3		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
v/c Ratio	0.65			0.24			0.45	0.55		0.20	0.89	
Control Delay	34.7			22.5			18.8	11.0		8.1	24.6	
Queue Delay	0.0			0.0			0.0	0.0		0.0	0.0	
Total Delay	34.7			22.5			18.8	11.0		8.1	24.6	
Queue Length 50th (ft)	76			27			16	136		14	283	
Queue Length 95th (ft)	#252			91			48	201		31	443	
Internal Link Dist (ft)	1132			778			867			712		
Turn Bay Length (ft)						75			150			
Base Capacity (vph)	406			494			254	1691		593	1586	
Starvation Cap Reductn	0			0			0	0		0	0	
Spillback Cap Reductn	0			0			0	0		0	0	
Storage Cap Reductn	0			0			0	0		0	0	
Reduced v/c Ratio	0.58			0.22			0.28	0.33		0.12	0.55	
Intersection Summary												
Area Type:	Other											

3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
2033 Projected (Build) Conditions

Timing Plan: P.M. Peak Hour

Cycle Length: 98.7

Actuated Cycle Length: 67.9

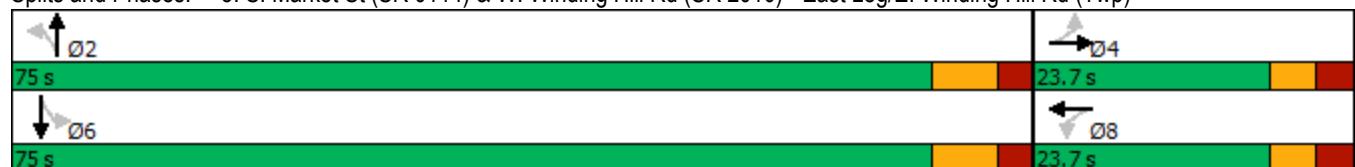
Natural Cycle: 60

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)



3: S. Market St (SR 0114) & W. Winding Hill Rd (SR 2010) - East Leg/E. Winding Hill Rd (Twp)
 2033 Projected (Build) Conditions

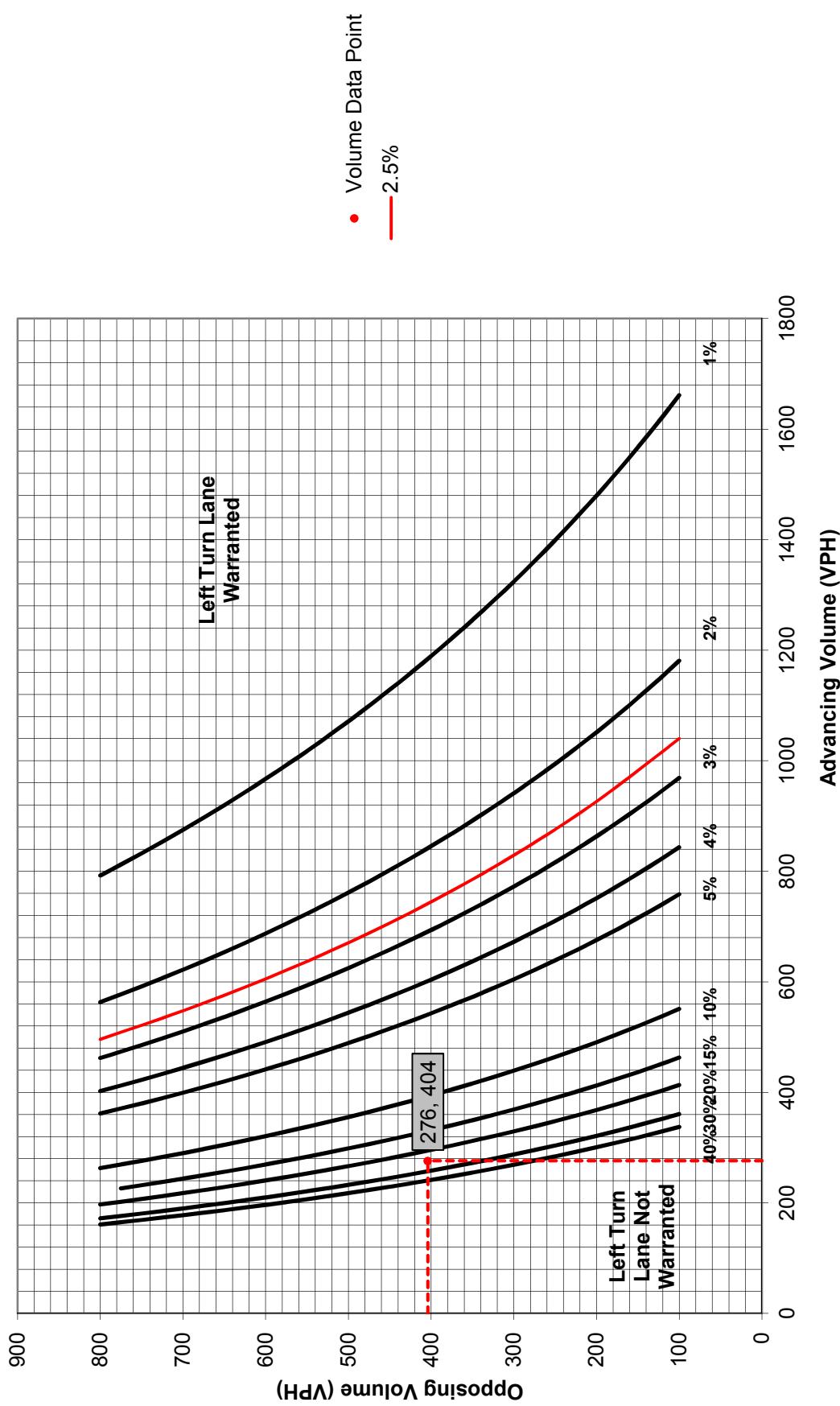
Timing Plan: P.M. Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	96	65	1	67	34	66	516	13	68	659	155
Future Volume (veh/h)	60	96	65	1	67	34	66	516	13	68	659	155
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1711	1711	1711	1660	1660	1660	2004	2032	2032	1750	1736	1736
Adj Flow Rate, veh/h	64	102	69	1	71	36	70	549	14	72	701	165
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	4	2	2	0	1	1
Cap, veh/h	137	153	90	59	211	106	253	1202	31	486	828	195
Arrive On Green	0.19	0.20	0.19	0.19	0.20	0.19	0.61	0.61	0.59	0.61	0.61	0.59
Sat Flow, veh/h	312	758	445	3	1042	523	685	1973	50	793	1358	320
Grp Volume(v), veh/h	235	0	0	108	0	0	70	0	563	72	0	866
Grp Sat Flow(s), veh/h/ln	1515	0	0	1568	0	0	685	0	2023	793	0	1678
Q Serve(g_s), s	5.4	0.0	0.0	0.0	0.0	0.0	5.7	0.0	9.4	3.3	0.0	25.9
Cycle Q Clear(g_c), s	9.2	0.0	0.0	3.7	0.0	0.0	31.1	0.0	9.4	12.2	0.0	25.9
Prop In Lane	0.27			0.29	0.01		0.33	1.00		0.02	1.00	0.19
Lane Grp Cap(c), veh/h	356	0	0	350	0	0	253	0	1233	486	0	1023
V/C Ratio(X)	0.66	0.00	0.00	0.31	0.00	0.00	0.28	0.00	0.46	0.15	0.00	0.85
Avail Cap(c_a), veh/h	492	0	0	497	0	0	592	0	2235	878	0	1853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	0.0	21.4	0.0	0.0	22.1	0.0	6.6	9.7	0.0	9.9
Incr Delay (d2), s/veh	2.1	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	5.9	0.0	0.0	2.5	0.0	0.0	1.5	0.0	4.8	0.8	0.0	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.7	0.0	0.0	21.9	0.0	0.0	22.4	0.0	6.7	9.8	0.0	10.6
LnGrp LOS	C	A	A	C	A	A	C	A	A	A	A	B
Approach Vol, veh/h	235			108			633		938			
Approach Delay, s/veh	25.7			21.9			8.4		10.6			
Approach LOS	C			C			A		B			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	44.3		17.9		44.3		17.9					
Change Period (Y+Rc), s	7.4		* 6.3		7.4		* 6.3					
Max Green Setting (Gmax), s	67.6		* 17		67.6		* 17					
Max Q Clear Time (g_c+l1), s	33.6		11.2		27.9		5.7					
Green Ext Time (p_c), s	3.3		0.4		5.8		0.2					
Intersection Summary												
HCM 6th Ctrl Delay			12.4									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Turn Lane Warrant and Length Analysis Workbook

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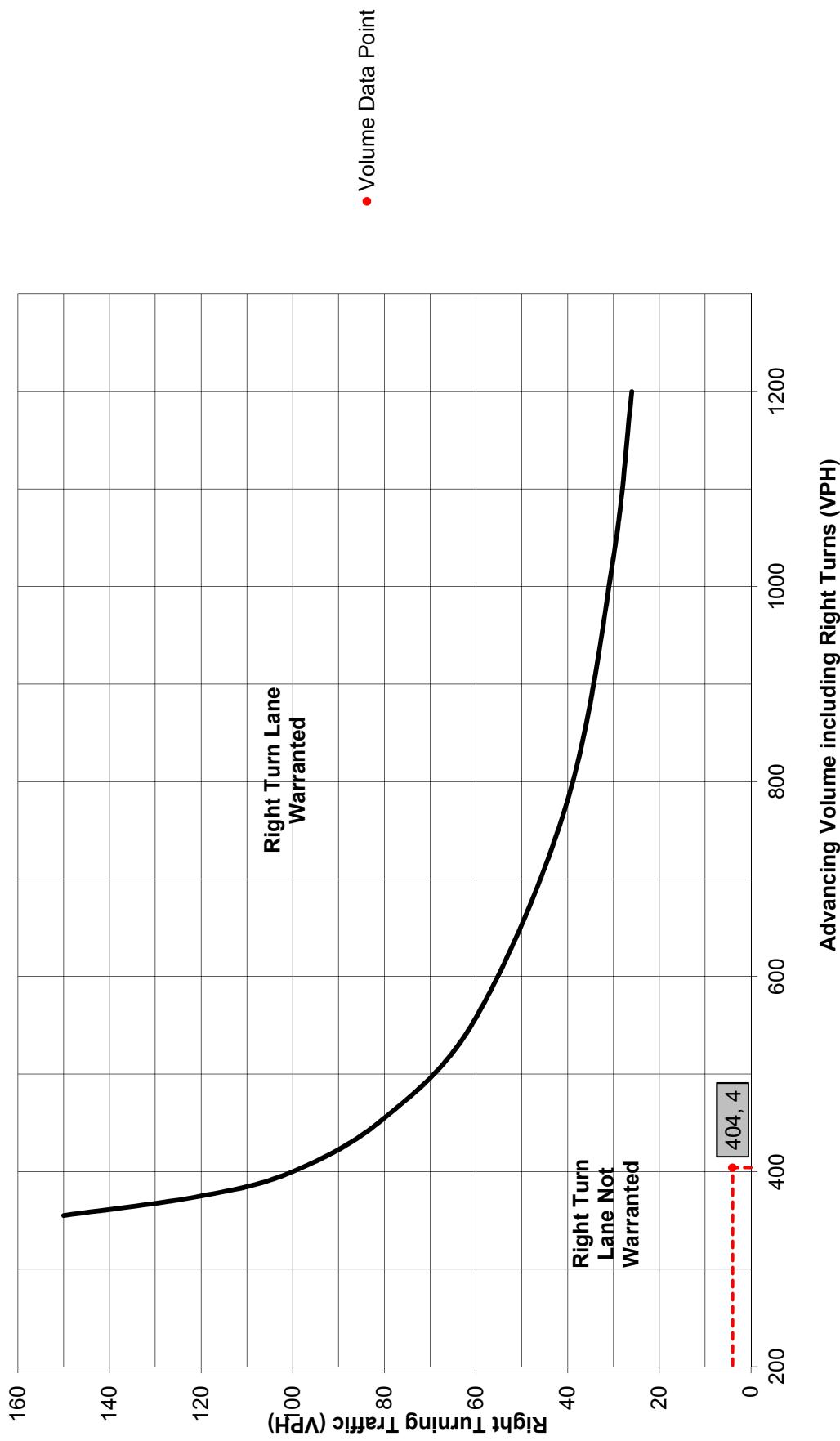
**Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

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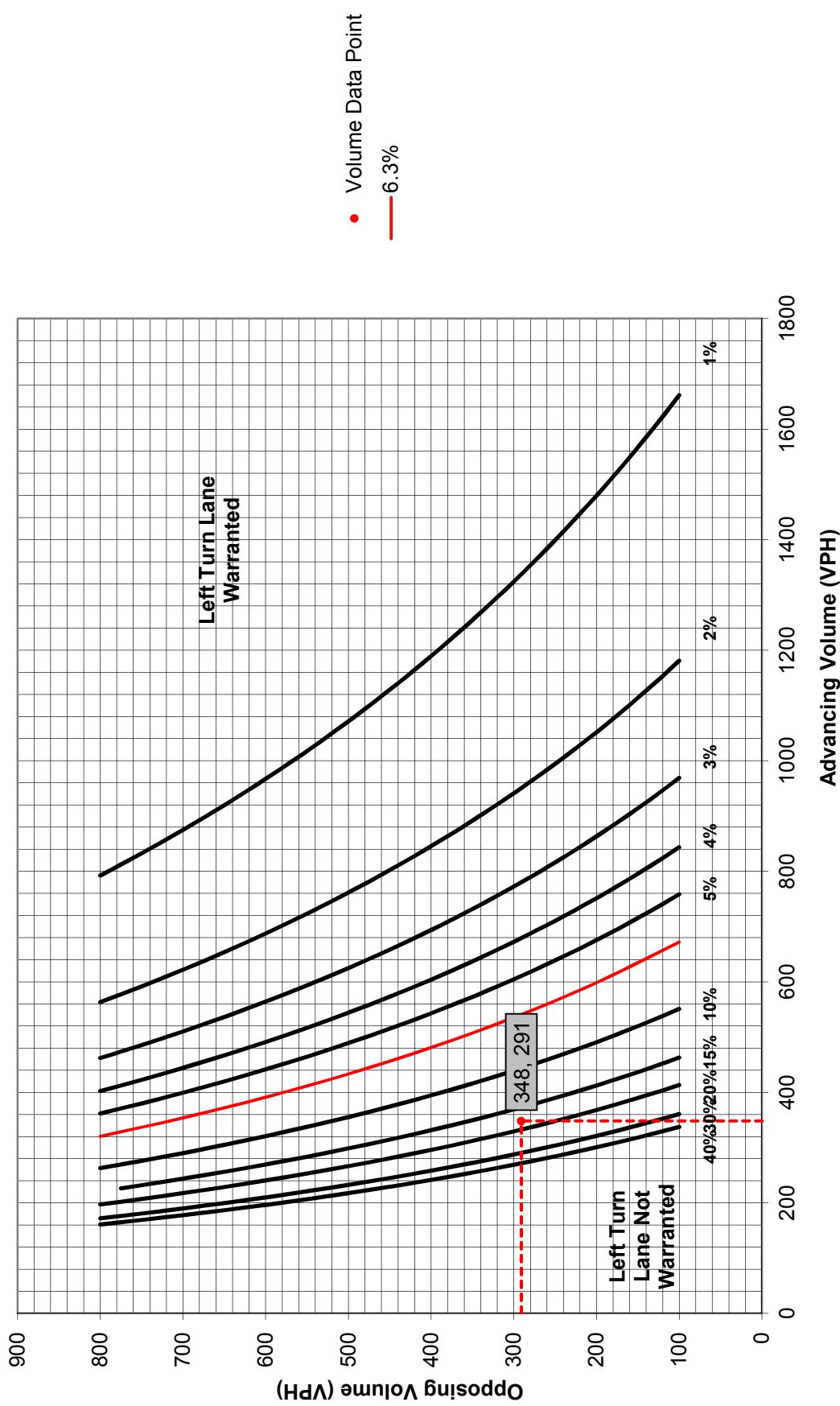
**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

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Movement	Include?	Volume	% Trucks	PCEV																																							
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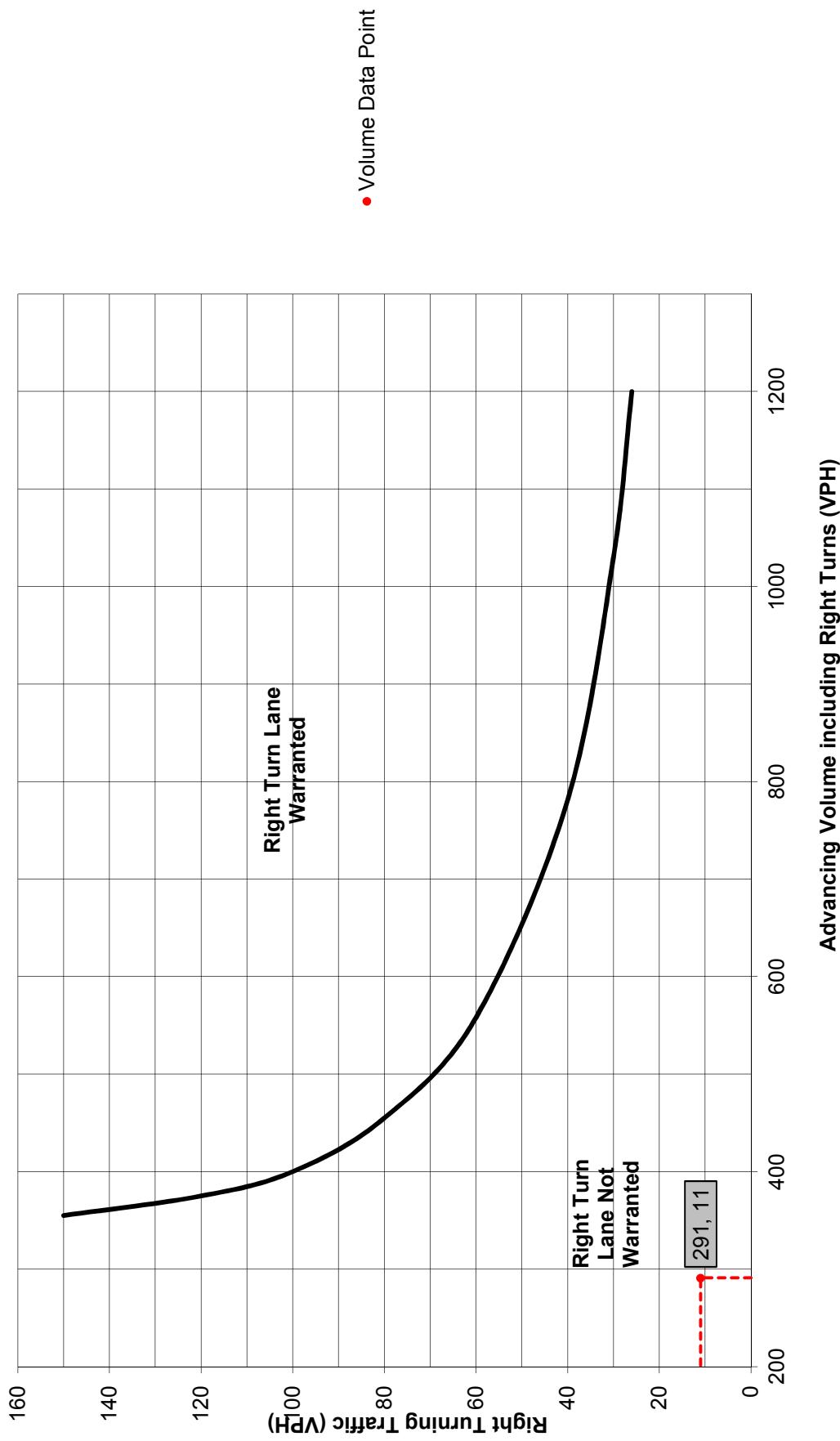
**Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)**
($L = \%$ Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION																																												
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County:	Cumberland County		Conducted By:	TPD																																								
PennDOT Engineering District:	8		Checked By:																																									
			Agency/Company Name:	Traffic Planning and Design, Inc.																																								
Intersection & Approach Description:	S. York Street (SR 2013) & Proposed Site Driveway																																											
Analysis Period:	2033 Projected (Build)		Number of Approach Lanes:	1																																								
Design Hour:	PM Peak Hour		Undivided or Divided Highway:	Undivided																																								
Intersection Control:	Unsignalized		Type of Analysis:																																									
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Right Turn Lane																																								
Type of Terrain:	Rolling																																											
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Warrant Met?: N/A			Warrant Met?: No																																									
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Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 11 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 			Average # of Vehicles/Cycle: N/A																																									
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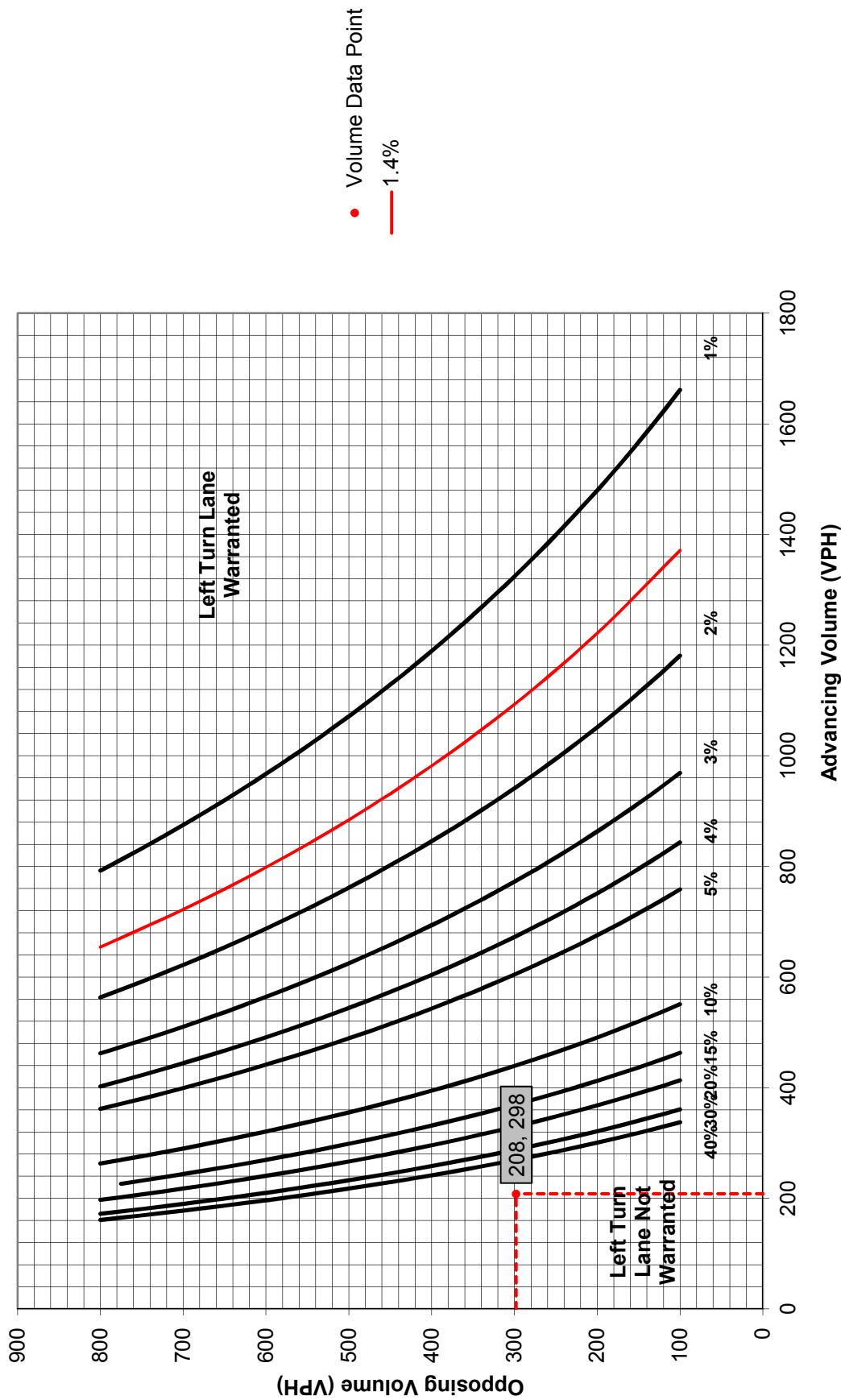
**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

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Municipality:	Upper Allen Twp		Analysis Date:	5/16/2019																																							
County:	Cumberland County		Conducted By:	TPD																																							
PennDOT Engineering District:	8		Checked By:																																								
			Agency/Company Name:	Traffic Planning and Design, Inc.																																							
Intersection & Approach Description:	W. Winding Hill Road (SR 2010) & Proposed Site Driveway																																										
Analysis Period:	2033 Projected (Build)		Number of Approach Lanes:	1																																							
Design Hour:	AM Peak Hour		Undivided or Divided Highway:	Undivided																																							
Intersection Control:	Unsignalized		Type of Analysis:																																								
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Left Turn Lane																																							
Type of Terrain:	Rolling																																										
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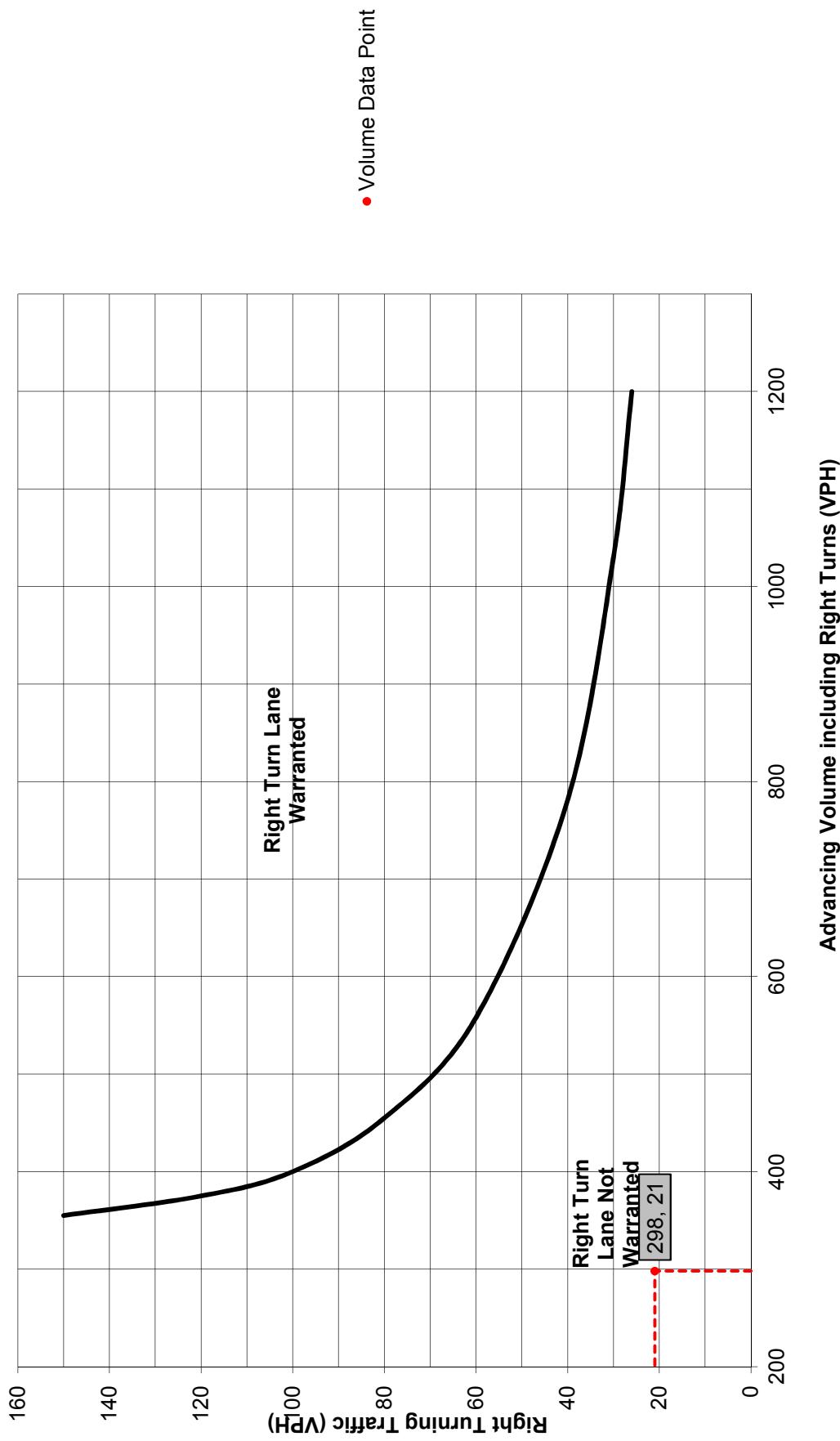
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Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION																																											
Municipality:	Upper Allen Twp		Analysis Date:	5/16/2019																																							
County:	Cumberland County		Conducted By:	TPD																																							
PennDOT Engineering District:	8		Checked By:																																								
			Agency/Company Name:	Traffic Planning and Design, Inc.																																							
Intersection & Approach Description: W. Winding Hill Road (SR 2010) & Proposed Site Driveway																																											
Analysis Period: 2033 Projected (Build)			Number of Approach Lanes: 1																																								
Design Hour: AM Peak Hour			Undivided or Divided Highway: Undivided																																								
Intersection Control: Unsignalized																																											
Posted Speed Limit (MPH): 35																																											
Type of Terrain: Rolling			Type of Analysis																																								
Left or Right-Turn Lane Analysis?: Right Turn Lane																																											
VOLUME CALCULATIONS																																											
Left Turn Lane Volume Calculations																																											
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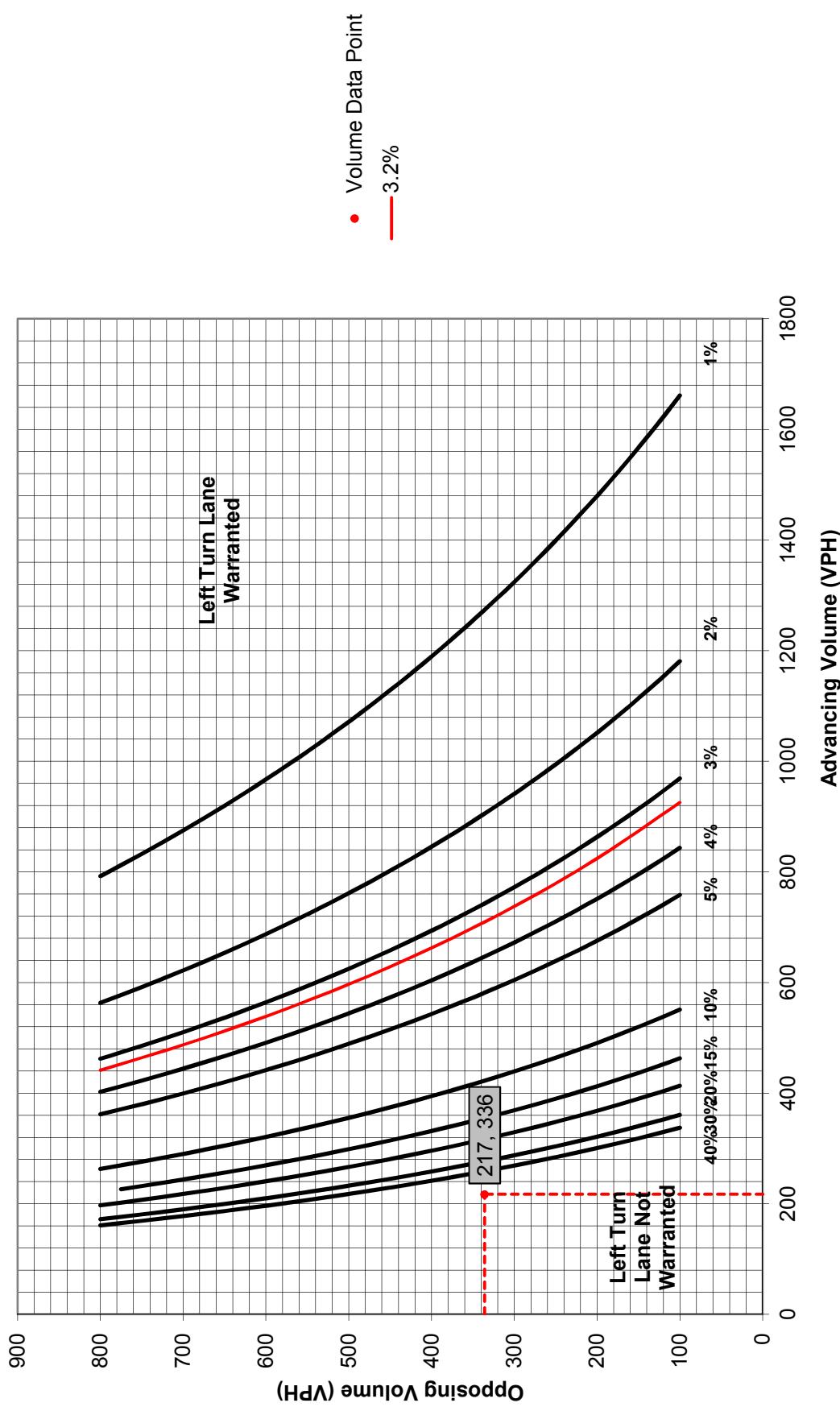
**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



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Design Hour:	PM Peak Hour		Undivided or Divided Highway:	Undivided																																							
Intersection Control:	Unsignalized		Type of Analysis:																																								
Posted Speed Limit (MPH):	35		Left or Right-Turn Lane Analysis?:	Left Turn Lane																																							
Type of Terrain:	Rolling																																										
VOLUME CALCULATIONS																																											
Left Turn Lane Volume Calculations																																											
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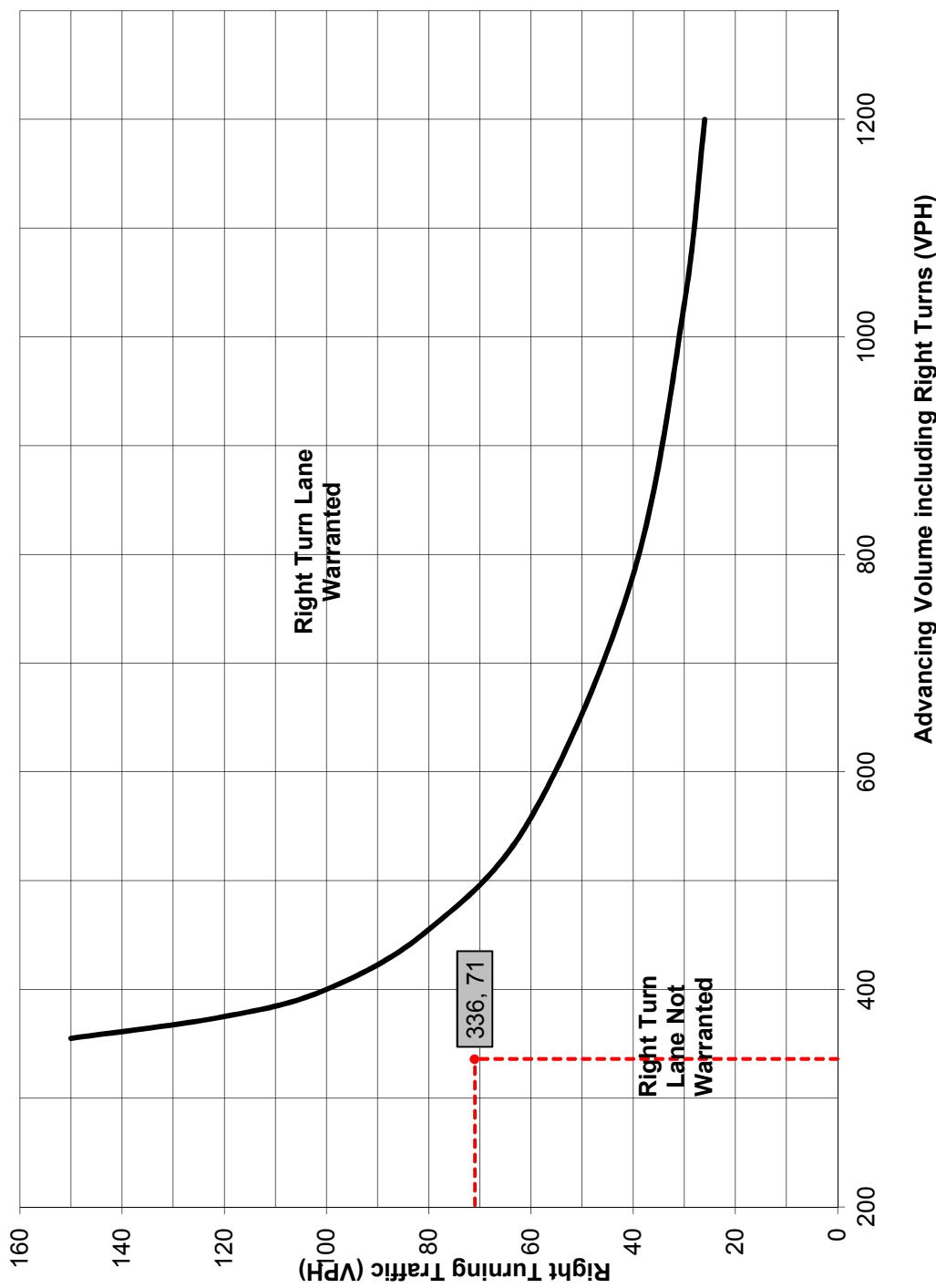
**Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



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Right Turn Lane Storage Length, Condition A:	N/A	Feet																																									
Condition B:	N/A	Feet																																									
Condition C:	N/A	Feet																																									
Required Right Turn Lane Storage Length:	N/A	Feet																																									
Additional Findings: N/A																																											
Additional Comments / Justifications:																																											

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





TRAFFIC PLANNING AND DESIGN, INC.

WWW.TRAFFICPD.COM

MEETING SUMMARY

Project: West Winding Residential Development
Upper Allen Township, Cumberland County, PA

Date: Tuesday, January 21, 2020 (1:30 PM)

Subject: Transportation Impact Study (TIS) Scoping Application Meeting

Place: PennDOT Engineering District 8-0, Franklin Room
2140 Herr Street Harrisburg, PA 17103

Attendees: See Attached Sign-in Sheet

TPD Job #: CHHN.00013

Preparer: Jarred L. Neal, P.E.

INTRODUCTIONS AND HANDOUTS

1. A sign-in sheet was passed around and introductions were made. The sign-in sheet is attached.
2. Draft comments regarding TPD's TIS Scoping Meeting Application were distributed by the Department. The comments are attached.

PROJECT OVERVIEW

3. Jarred provided the following project overview:
 - a. The project site is located on the northeastern corner of the intersection of E. Winding Hill Road and S. York Street.
 - b. The proposed site will consist of 168 single-family dwelling units.
 - c. Access to the site is proposed via two full-access driveways: one (1) full-movement driveway to W. Winding Hill Road (SR 2010) and one (1) full-movement driveway to S. York Street (SR 2013):
4. Jarred provided additional information regarding the project:
 - a. Upon full build-out, the proposed development is expected to generate 124 new vehicle-trips during the weekday A.M. peak hour, and 167 new vehicle-trips during the weekday P.M. peak.
 - b. As indicated in the Scoping Application it is proposed to submit a complete TIS with 2023 as the opening year and 2033 as the design year.

5. Jarred noted a TIS was previously completed for purposes of the Township Land Development submission. The Township reviewed the traffic study found no issues with the TIS as submitted.
6. PennDOT Comments:

Eric indicated there were only a few comments he felt needed to be discussed in detail: (1) the first dealt with the full build-out year and opening year and (2) dealt with the traffic counts provided in the supporting analysis. Eric indicated all other comments were just clean up items:

 - a. Eric indicated the full build out year and opening year should more align with the PennDOT standards (i.e. design year being 5 years after full buildout). Eric suggested TPD discuss with the project team and determine if a full buildout year of 2028 seemed reasonable. If so, the design year would then be 2033 and align with the previously completed analysis.
 - b. Eric also indicated the traffic counts provided with the PennDOT Scoping Application appeared to be from another project and were conducted over three years ago. Per PennDOT requirements these counts should be updated. It was also discussed a traffic signal was installed at this intersection after the counts were done and traffic patterns could have changed as a result. Jarred indicated new traffic counts will be conducted at this intersection. Jarred and Eric both agreed no other traffic counts would need to be updated.
 - c. Jen suggested the traffic signal at this intersection, W Winding Hill Road and S Market Street (SR 0114), be reviewed for signal timing adjustments. Jen indicated that during the morning peak there appears to be a backup on the minor street. Jarred indicated signal timings will be evaluated as part of the submitted PennDOT TIS.
7. Limited Discussion on remaining comments:
 - a. At the close of the meeting a quick discussion ensued regarding the phasing of the development and the ability to provide two access points to South York Street (SR 2013). Essentially the proposed cul-de-sac would be converted to an additional access point. Eric indicated because two driveways were already being proposed for this development, a third would not be permitted, especially due to the close proximity of the other proposed full movement driveway.

REVIEW AND DISCUSSION OF PENNDOT'S DRAFT SCOPE APPLICATION COMMENTS

PennDOT's TIS Scope Application Comment Sheet was discussed at length. For the discussion below, the PennDOT comments are shown in *italics*, with meeting discussion/action items shown in **bold**.

Scope Application Comments

(1) LOCATION OF PROPOSED DEVELOPMENT: No comment.

(2) DESCRIPTION OF PROPOSED DEVELOPMENT:

1. *The study should address community linkages (i.e. proposed pedestrian accommodations on the site).*

The study will include a discussion on community linkage proposed pedestrian improvements.

2. *The site plan shows an area of the property as undeveloped, and therefore additional details should be provided on the potential future development of the remainder of the property.*

A more detailed site plan is being provided with the traffic study. Furthermore, a section discussing the limits of the project will be provided in the TIS.

3. *Proposed access alignment with an opposing access must be considered. The site plan should indicate the location of opposing accesses for clarification regarding the proposed location of the site access in relation to these.*

The site plan will be revised to show the locations of the driveway on the opposite side of the street. It will also show how the proposed driveways are not in conflict with these driveways.

4. An access covenant will be required for all lots with frontage along the State Route, as all lots must provide access to the site internal roadways and not directly to the State Route.

Noted.

(3) DEVELOPMENT SCHEDULE AND STAGING:

5. The applicant notes an anticipated opening date of 2023 and a full build out date of 2023, which may not be realistic to construct 168 homes in a single year. Please verify and revise, as applicable.

Based on discussions with the project team, the full build-out year will be revised to be 2028 and the design year will remain 2033.

(4) TRIP GENERATION: No Comments

(5) ESTIMATED DAILY TRIP GENERATION / DRIVEWAY CLASSIFICATION:

- a) Estimated Daily Trip Generation of Proposed Development: No Comments
- b) Driveway Classification Based on trip Generation and One Access Point: No Comments

(6) TRANSPORTATION IMPACT STUDY REQUIREMENT: No Comments

(7) TRAFFIC IMPACT ASSESSMENT REQUIREMENT: No Comments

(8) TIS STUDY AREA:

6. Per the TIS guidelines in Pub. 282, Appendix A, Land Use Context in the TIS should reference Publication I0X (Design Manual Part IX), Appendix B. The Smart Transportation Guidebook should no longer be referenced for these designations.

The scoping application has been revised as requested.

(9) STUDY AREA TYPE: No Comments

(10) TIS ANALYSIS PERIOD AND TIMES:

7. The peak periods for data collection should be expanded to include 6-9 AM and 3-6 PM.

The count data will be expanded as requested.

8. Please clarify why the design year was selected as 2033 instead of 5 years beyond full build-out.

The scoping application has been revised to indicate full build-out year as 2028 with the design year to remaining as 2033.

(11) TRAFFIC ADJUSTMENT FACTORS:

9. The background growth rate factors were updated by PennDOT for August 2019 to July 2020, and should be applied for all new traffic studies.

Based on discussions with the project team, the full build-out year will be revised to be 2028 and the design year will remain 2033.

(12) OTHER ADJACENT PROJECTS WITHIN THE STUDY AREA TO BE ADDED TO BASE TRAFFIC:

10. Review documentation and acceptance from Upper Allen Township and the MPO, as necessary, for the scope should be provided. Confirm with the municipality if there are any adjacent developments within the study area that should be added to the base traffic. Include documentation of correspondence within the study.

The Township has indicated no adjacent developments beyond what was previously included in the study. All correspondence will be provided in the TIS.

(13) **TRIP DISTRIBUTION AND ASSIGNMENT:** No Comments

(14) **APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:**

11. *Some of the data for the intersection traffic counts are greater than three years old, and also considering recent signalization in this area that may impact traffic patterns, the traffic counts must be updated.*

New traffic counts will be conducted at W Winding Hill Road and S Market Street (SR 0114).

(15) **CAPACITY / LOS ANALYSIS:**

12. *Provide calibrated analyses (in electronic format) with each submission.*

Will provide as requested.

(16) **ROADWAY IMPROVEMENTS / MODIFICATIONS PLANNED BY OTHERS TO BE INCLUDED:** No Comments

(17) **OTHER NEEDED ANALYSES:**

13. *Please revise the following items from N/A to as applicable: signal warrant analysis, required signal phasing/timing modifications, traffic signal corridor/network analysis, left-turn signal phasing analysis and gap studies*

Revised as requested.

14. *Please add the 50th percentile queues from Synchro for the signalized intersection queue analyses, in addition to the 95th percentile queues from both Synchro and HCM 6th methodology results.*

Will provide as requested.

15. *If signalized intersections timing modifications are being proposed at signals located within a coordinated traffic signal system, the study should address the need to retime the entire system if deemed necessary.*

Noted.

16. *Provide traffic crash data and analyses for the study area intersections and key corridors for the most recent five years, summarizing any trends in the crash data. Include mitigation options if crash trends are present at an intersection or along a corridor. Note that the crash history provided by the Department is confidential under 75 PA Code Section 3754. This material is only provided to official agencies that have responsibility in the highway transportation system and can only be used by those agencies for traffic safety-related planning or research. Publication, reproduction, release or discussion of these materials, as well as the use of or reliance upon these materials for any purpose other than stated above, is expressly prohibited without the specific written consent of the Pennsylvania Department of Transportation. Do not include copies of crash data in the TIS. Provide copies of the crash data reports and analysis in a separately bound appendix, under separate cover*

Will provide as requested.

17. *Please note that the capacity/turn lane warrant analyses attached to the TIS Scope was not reviewed in detail at this time. This will be reviewed when a complete TIS is submitted following the above TIS Scope comments being addressed*

Noted.

These comments reflect our understanding of the issues discussed at the meeting. If any attendee does not agree with these minutes or would like to add to them, please respond within five (5) working days of the transmittal date. Otherwise, this summary will be considered final as written.

Distribution: Meeting Attendees

Attachments: Meeting Sign-In Sheet
Draft Scope Application Comment Sheet



pennsylvania

DEPARTMENT OF TRANSPORTATION

Highway Occupancy Permits Meeting

Date: 1/21/2020

Time: 1:30 pm

Meeting Location: Franklin Room

SR: 2010 Segment: Nearest Intersection:

Township/Borough: Upper Allen Twp

County: Cumberland

Meeting Reason: TIS Scoping Meeting

Development

Name: Charter Homes at West Winding Hills

Meeting Requested By: Jarred L. Neal, P.E.

Phone: 717.234.1430

Township/Borough Invited: Yes No

Attorney Invited? Yes No

Name/ Phone#/ Email Address:

Organization:

Job Title:

- | | | |
|--|---------------------------|----------------------------------|
| ✓ Mazhar Malik/ 717-787-8789/mmalik@pa.gov | PennDOT Dist. 8-0 Permits | District Permit Manager |
| ✓ Rich Alandar/ 717-787-5179/ralandar@pa.gov | PennDOT Dist. 8-0 Permits | Assistant Permit Manager |
| ✓ Eric Kinard/ 717-787-9237/ekinard@pa.gov | PennDOT Dist. 8-0 Traffic | Signal&Congestion Mgt Supervisor |
| ✓ Deen Noles/717-772-0976/dnoles@pa.gov | PennDOT Dist. 8-0 Traffic | Traffic Control Specialist |

Jen Boyer 717-706-0756 jboyer@vuptwp.org	Upper Allen Twp - Comm. Dev. Director
John Toner 717-706-0756 jtoner@vuptwp.org	Upper Allen Twp Planning Technician
JARRED NEAL 717-234-1430 jneal@vuptwp.org	TPD Traffic Planning Engineer
Upper Allen 717-770-2800 mallen@pa.gov	CIMMEN's Representative ALERTA Consultant

- Minutes of meeting will be prepared by the person requesting the meeting.
- A copy of this sign-in sheet will be distributed after the meeting.
- Department cannot accept any changes to the forms already approved by the Department.
- Department will not issue HOP until signal permit is issued and Right-of-way (ROW) plan is recorded in the County Courthouse.
- Engineer shall consider designing a roundabout which will reduce the maintenance cost for signal and will help lower taxes.
- Please submit a cross section of existing roadway where main driveway will be constructed.
- Please ensure that the width of existing shoulder is not reduced and bicyclist is accommodated.
- For E-Permitting and billing of inspection costs, please ensure that the Permittee is registered as a Business Partner in ECMS.
- All applications shall be submitted through the E-Permitting system website. Contact the County HOP where the work is being done with any questions.
- All future HOP correspondence shall be submitted to the HOP resource account at

RA-PDDistrict80HOP@pa.gov.

Thank You...

Draft Scope Application Comment Sheet

COUNTY:	Cumberland	MUNICIPALITY:	Upper Allen Township
JOB NAME:	West Winding Hills Res Dev	PREPARED BY:	TPD, Inc.
APPLICANT:	Charter Home at West Winding, Inc.	REVIEW BY:	PennDOT/McM

Please incorporate these comments into the revised Scope Application and resubmit:

Scope Application Comments:

- (1) LOCATION OF PROPOSED DEVELOPMENT:** No comment.
- (2) DESCRIPTION OF PROPOSED DEVELOPMENT:**
 1. The study should address community linkages (i.e. proposed pedestrian accommodations on the site).
 2. The site plan shows an area of the property as undeveloped, and therefore additional details should be provided on the potential future development of the remainder of the property.
 3. Proposed access alignment with an opposing access must be considered. The site plan should indicate the location of opposing accesses for clarification regarding the proposed location of the site access in relation to these.
 4. An access covenant will be required for all lots with frontage along the State Route, as all lots must provide access to the site internal roadways and not directly to the State Route.
- (3) DEVELOPMENT SCHEDULE AND STAGING:**
 5. The applicant notes an anticipated opening date of 2023 and a full build out date of 2023, which may not be realistic to construct 168 homes in a single year. Please verify and revise, as applicable.
- (4) TRIP GENERATION:** No comment.
- (5) ESTIMATED DAILY TRIP GENERATION/DRIVEWAY CLASSIFICATION:** No comment.
- (6) TRANSPORTATION IMPACT STUDY REQUIRED?** No comment.
- (7) TRAFFIC IMPACT ASSESSMENT REQUIRED?** No comment.
- (8) TIS STUDY AREA:**
 6. Per the TIS guidelines in Pub. 282, Appendix A, Land Use Context in the TIS should reference Publication 10X (Design Manual Part 1X), Appendix B. The Smart Transportation Guidebook should no longer be referenced for these designations.
- (9) STUDY AREA TYPE:** No comment.
- (10) TIS ANALYSIS PERIODS AND TIMES:**
 7. The peak periods for data collection should be expanded to include 6-9 AM and 3-6 PM.
 8. Please clarify why the design year was selected as 2033 instead of 5 years beyond full build-out.
- (11) TRAFFIC ADJUSTMENT FACTORS:**
 9. The background growth rate factors were updated by PennDOT for August 2019 to July 2020, and should be applied for all new traffic studies.
- (12) OTHER PROJECTS WITHIN STUDY AREA TO BE ADDED TO BASE TRAFFIC:**
 10. Review documentation and acceptance from Upper Allen Township and the MPO, as necessary, for the scope should be provided. Confirm with the municipality if there are any adjacent developments within the study area that should be added to the base traffic. Include documentation of correspondence within the study.
- (13) TRIP DISTRIBUTION AND ASSIGNMENT:** No comment.
- (14) APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:** No comment.

11. Some of the data for the intersection traffic counts are greater than three years old, and also considering recent signalization in this area that may impact traffic patterns, the traffic counts must be updated. Considering the proximity to the nearby schools, the traffic counts should be conducted when school is in session.

(15) CAPACITY/LOS ANALYSIS:

12. Provide calibrated analyses (in electronic format) with each submission.

(16) ROADWAY IMPROVEMENTS/MODIFICATIONS BY OTHERS TO BE INCLUDED: No comment.

(17) OTHER NEEDED ANALYSES:

13. Please revise the following items from *N/A* to *as applicable*: signal warrant analysis, required signal phasing/timing modifications, traffic signal corridor/network analysis, left-turn signal phasing analysis and gap studies.
14. Please add the 50th percentile queues from Synchro for the signalized intersection queue analyses, in addition to the 95th percentile queues from both Synchro and HCM 6th methodology results.
15. If signalized intersections timing modifications are being proposed at signals located within a coordinated traffic signal system, the study should address the need to retime the entire system if deemed necessary.
16. Provide traffic crash data and analyses for the study area intersections **and key corridors** for the most recent five years, summarizing any trends in the crash data. Include mitigation options if crash trends are present at an intersection or along a corridor. Note that the crash history provided by the Department is confidential under 75 PA Code Section 3754. This material is only provided to official agencies that have responsibility in the highway transportation system and can only be used by those agencies for traffic safety-related planning or research. Publication, reproduction, release or discussion of these materials, as well as the use of or reliance upon these materials for any purpose other than stated above, is expressly prohibited without the specific written consent of the Pennsylvania Department of Transportation. Do not include copies of crash data in the TIS. Provide copies of the crash data reports and analysis in a separately bound appendix, under separate cover.
17. Please note that the capacity/turn lane warrant analyses attached to the TIS Scope was not reviewed in detail at this time. This will be reviewed when a complete TIS is submitted following the above TIS Scope comments being addressed.