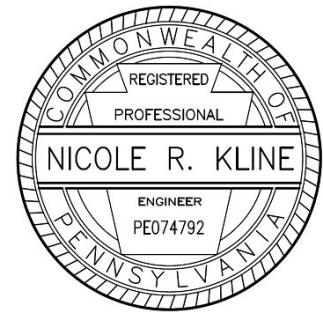


Transportation Impact Study for the Robinson Tract Westtown Township, Chester County, PA



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Prepared for
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Revised May 15, 2020
Revised December 2, 2019
August 13, 2019
McMahon Project Number 816451.11

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Executive Summary

Toll Brothers, Inc. proposes a residential development on the Robinson Tract, located along the west side of U.S. Route 202 (Wilmington Pike), between West Pleasant Grove Road and Street Road (S.R. 0926), in Westtown Township, Chester County, Pennsylvania (**Figure 1**). The residential development consists of 319 total dwelling units, including 182 detached homes, 135 attached homes, and preservation of two existing homes on the property. With the development, a Collector Road will be constructed through the property between Street Road (S.R. 0926) and West Pleasant Grove Road. Access to the site will be provided via the Collector Road, as well as two accesses along West Pleasant Grove Road. A site plan prepared by ESE Consultants, Inc., last revised November 22, 2019, is provided in **Figure 2**.

A Scoping Meeting Application was submitted to PennDOT and Westtown Township on November 7, 2016. A scoping meeting was held at the PennDOT Engineering District's offices on December 2, 2016. PennDOT provided scoping comments in a letter dated December 6, 2016. The scope of this transportation impact study is based on those comments, PennDOT's guidelines, per the Department's publication *Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits*, dated July 2017, and the requirements of the Township ordinances. Correspondence is contained in **Appendix A**.

The purpose of this transportation impact study is to evaluate the traffic impacts of the proposed development. The scope of this study includes an evaluation of the existing weekday morning and weekday afternoon peak hours, as well as the future 2025 build-out year and 2030 design year, five years beyond the anticipated build-out year, both without and with the development at the following study intersections:

- U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)
- U.S. Route 202 (Wilmington Pike) and Pleasant Grove Road
- U.S. Route 202 (Wilmington Pike) and Skiles Boulevard/Stetson School
- Street Road (S.R. 0926) and Bridlewood Boulevard/Proposed Collector Road
- Street Road (S.R. 0926) and New Street
- New Street and West Pleasant Grove Road
- West Pleasant Grove Road and Proposed Access (Road K)
- West Pleasant Grove Road and Proposed Access (Road M)
- West Pleasant Grove Road and Proposed Collector Road

Based on trip generation data compiled for Multifamily Housing – Low Rise (ITE Land Use Code 220) and Single Family Detached Housing (ITE Land Use Code 210) contained in the Institute of Transportation Engineers (ITE) publication entitled, *Trip Generation Manual, 10th Edition*, the proposed development will generate a total of approximately 198 “new” trips during the weekday morning peak hour and 259 “new” trips during the weekday afternoon peak hour.

Committed Improvements

Per the traffic evaluation, the following on-site and off-site traffic improvements are committed by the applicant to mitigate the proposed development traffic impacts, pending further coordination and approvals from the Township and PennDOT. Since some of these improvements are within the state's right-of-way, or located at traffic signals under the jurisdiction of PennDOT, coordination with PennDOT will be required to implement these improvements. All improvements will be constructed to accommodate non-motorized access/circulation and be ADA-compliant unless otherwise approved by the Department. The Township will be included in all correspondence with PennDOT.

Site Accesses and On-Site Improvements

Street Road (S.R. 0926) and Bridlewood Boulevard/Proposed Collector Road

- Collector Road is classified as a local road per PennDOT criteria.
- Provide one ingress lane for the Collector Road.
- Provide two egress lanes for the Collector Road, including a dedicated left-turn lane and a shared through/right-turn lane.
- Restripe the Bridlewood Boulevard egress approach to modify the existing right-turn lane to a shared through/right-turn lane.
- Provide a 150-foot left-turn lane along eastbound Street Road (S.R. 0926). Note that a 120-foot left-turn lane exists along westbound Street Road (S.R. 0926).
- Provide a 150-foot right-turn deceleration lane along westbound Street Road (S.R. 0926).
- Install a traffic signal.

West Pleasant Grove Road and Proposed Access (Road K)

- Access is classified as a low volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the site access.
- Provide stop-control on the site access egress approach.

West Pleasant Grove Road and Proposed Access (Road M)

- Access is classified as a low volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the site access.
- Provide stop-control on the site access egress approach.

West Pleasant Grove Road and Collector Road

- Collector Road is classified as a medium volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the Collector Road.
- Provide stop-control on the Collector Road egress approach.

Collector Road

- The applicant will construct the Collector Road through the property between Street Road (S.R. 0926) and West Pleasant Grove Road, which will alleviate traffic at the congested U.S. Route 202 (Wilmington Pike)/Street Road (S.R. 0926) intersection, and reroute traffic currently using West Pleasant Grove Road and New Street as an alternate

route to avoid that delay. The overall delays at several study intersections decrease in the with-development conditions versus without-development conditions, due to the diversion of traffic to the Collector Road. Additionally, the Collector Road will provide access to the proposed residential development within the Robinson Tract.

- Based on the estimated Collector Road weekday peak hour traffic volumes in this report, diverted traffic constitutes approximately 70 to 80 percent of the total, while approximately 20 to 30 percent is site traffic from the Robinson Tract.

Off-Site Traffic Improvements

Street Road (S.R. 0926) and New Street

- The applicant will complete traffic signal retiming optimization and provide equipment in order to coordinate with the proposed signal to the east.
- Although not necessary to mitigate traffic impact, the applicant will provide a dedicated right-turn lane along westbound Street Road (S.R. 0926) along the Robinson Tract property frontage.
- It is noted that left turn lanes are warranted based on existing traffic volumes. Left-turn lanes along Street Road (S.R. 0926) cannot be provided within the existing right-of-way or with additional right-of-way from the Robinson Tract alone.

U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road

- The applicant will provide a dedicated right-turn lane along southbound Wilmington Pike (U.S. Route 202).

U.S. Route 202 (Wilmington Pike) and Skiles Boulevard / Stetson School

- To mitigate the Township's Collector Road traffic impact along Stetson School, the applicant will restripe the eastbound approach to provide dual left-turn lanes and a shared through/right-turn lane and complete the necessary traffic signal phasing modifications.
- Additionally, the applicant will widen westbound Skiles Boulevard to provide a dedicated right-turn lane, subject to the ability to acquire any necessary additional right-of-way.

The traffic analyses contained herein reveal that efficient access to and from the proposed development can be provided, and furthermore, site-generated traffic is mitigated at the study area intersections with the committed improvements. Detailed results of the level-of-service and queueing analysis are contained in the matrices provided in **Tables 8 and 9**.

Existing Transportation Settings and Conditions

Toll Brothers, Inc. proposes a residential development on the Robinson Tract, located along the west side of U.S. Route 202 (Wilmington Pike), between West Pleasant Grove Road and Street Road (S.R. 0926), in Westtown Township, Chester County, Pennsylvania (**Figure 1**). The existing roadways and intersections in the vicinity of the site, which comprise the study area roadway network, are described in this section.

Roadway Characteristics

The study area roadway network and characteristics are summarized below in **Table 1**.

Table 1 - Existing Roadway Characteristics

Roadway Name (Jurisdiction)	Average Daily Traffic Volumes (vehicles per day)	Roadway Classification		Travel Lanes (per direction)	Posted Speed Limit (mph)
		Smart Transportation ⁽¹⁾	PennDOT/ Township ⁽²⁾		
U.S. Route 202 (Wilmington Pike)	47,301 ⁽³⁾	Regional Arterial	Urban – Principal Arterial	2	45
Street Road (S.R. 0926 – PA)	12,952 ⁽³⁾	Community Arterial	Urban – Minor Arterial	1	45
New Street (Local)	5,056 ⁽³⁾	Neighborhood Collector	Urban – Minor Collector	1	35
West Pleasant Grove Road (Local)	n/a	Local Road	Minor Street ⁽⁴⁾	1	35
Bridlewood Boulevard (Local)	n/a	Local Road	Local Road	1	25

(1) Based on Table 5.1 – Roadway Categories in the PennDOT publication, *Smart Transportation Guidebook*.

(2) Based on the roadway classifications provided on PennDOT’s Traffic Information Repository (TIRe) website and the Westtown Township Comprehensive Plan Update, dated 2019

(3) Based on traffic data from PennDOT’s Traffic Information Repository (TIRe) website.

(4) The applicant has committed to half-width widening West Pleasant Grove Road to meet the Township’s Collector Road standards along the applicants site frontage.

The following key intersections in the vicinity of the site comprise the study area:

- U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)
- U.S. Route 202 (Wilmington Pike) and Pleasant Grove Road
- U.S. Route 202 (Wilmington Pike) and Skiles Boulevard/Stetson School
- Street Road (S.R. 0926) and Bridlewood Boulevard/Proposed Collector Road
- Street Road (S.R. 0926) and New Street
- New Street and West Pleasant Grove Road
- West Pleasant Grove Road and Proposed Access (Road K)
- West Pleasant Grove Road and Proposed Access (Road M)

- West Pleasant Grove Road and Proposed Collector Road

The existing characteristics of the study intersections, including field sketches, and signal permit plans are provided in **Appendix B**.

Crash Summary

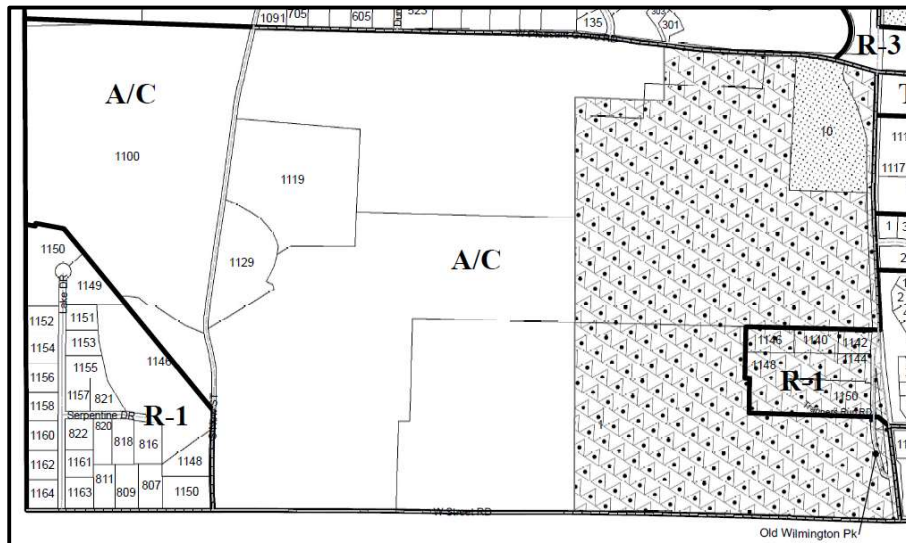
Reportable crash data was provided by the Pennsylvania Department of Transportation's Bureau of Highway Safety and Traffic Engineering for the five-year period from January 1, 2013 to December 31, 2017 throughout the study area. Reportable crashes are defined as crashes in which personal injuries occur or the vehicle must be towed from the scene. Tables summarizing the crash data by location, crashes per year, and type of crash are provided in Appendix B.

Based on the crash data, a total of 65 reportable crashes occurred at the study area intersections. The majority of the study area intersection crashes were rear-end incidents (45 crashes or 69 percent) and angle incidents (12 crashes or 17 percent). The signalized intersection of U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926) experienced twenty-six (26) crashes, with the majority of these crashes being rear-end incidents (18 crashes) occurring along both northbound (10 crashes) and southbound (8 crashes) U.S. Route 202 (Wilmington Pike). The signalized intersection of U.S. Route 202 (Wilmington Pike) and Stetson School Drive / Skiles Boulevard experienced fifteen (15) crashes, with the majority of these crashes being rear-end incidents (14 crashes) occurring along both southbound (9 crashes) and northbound (5 crashes) U.S. Route 202 (Wilmington Pike). The remaining crash was an angle incident which occurred along the eastbound approach. The unsignalized intersection of U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road experienced sixteen (16) crashes, with the majority of these crashes being rear-end incidents (10 crashes). Six (6) of the rear-end incidents occurred along southbound U.S. Route 202 (Wilmington Pike) with the remainder occurring along the eastbound Pleasant Grove Road approach.

Based on the crash data, a total of 56 reportable crashes occurred at midblock locations within the study area. The majority of the midblock crashes along U.S. Route 202 (Wilmington Pike) were rear-end incidents (25 crashes) and hit-fixed object incidents (9 crashes). Twenty-one (21) of the rear-end incidents occurred along southbound U.S. Route 202 (Wilmington Pike), which is likely associated with the congestion experienced at the signalized intersection of U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926). Seven (7) of the hit-fixed object incidents occurred along southbound U.S. Route 202 (Wilmington Pike), with vehicles striking guiderails, curbs, embankments, roadway obstructions, and utility poles. The majority of the midblock crashes along Street Road (S.R. 0926) between U.S. Route 202 (Wilmington Pike) and Bridlewood Boulevard were rear-end incidents (3 crashes) and angle incidents (2 crashes). Both of the angle incidents occurred at the existing CVS driveway along Street Road (S.R. 0926) with vehicles entering via left-turn, which is a prohibited movement. All three (3) of the rear-end incidents occurred along eastbound Street Road (S.R. 0926), which is likely associated with the congestion experienced at the signalized intersection of U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926).

Land Use Context

The proposed development is located in Westtown Township within the A/C – Agriculture/Cluster Residential District, as well as the R-1 – Rural/Suburban Residential District. The development is located along the west side of U.S. Route 202 (Wilmington Pike), between West Pleasant Grove Road and Street Road (S.R. 0926), as shown below on a portion of the Westtown Township Zoning Map. Per Westtown Township’s Zoning Ordinance, the proposed residential development is permitted through conditional use within the A/C – Agriculture/Cluster Residential District in accordance with Article V and Article IX.



Source: Westtown Township Zoning Map

Area Transit Services

Transit services are currently not provided within the study area. The nearest SEPTA bus stop (SEPTA Bus Route 92) is located just north of the S.R. 0322 (High Street) and U.S. Route 202 intersection, approximately a mile and a half north of the site.

Pedestrian-Bicycle Facilities

Currently, there are no sidewalks along U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926). The signalized intersection of U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926) has limited pedestrian crossing amenities. There are pedestrian crosswalks, signals, and pushbuttons provided to cross the eastern leg of Street Road (S.R. 0926) and the southern leg of U.S. Route 202.

Sidewalk is currently provided along the north side of Hidden Pond Way within the Arborview neighborhood and on the west side of Bridlewood Boulevard within the Bridlewood neighborhood. Pedestrian facilities are also provided on the west side of Orvis Way, which was recently completed.

Traffic Count Data

Daily traffic counts were obtained from PennDOT's Traffic Information Repository (TIRe) website. The traffic count data is provided in **Appendix C**. Manual turning movement traffic counts were conducted in accordance with Westtown Township's Ordinance Chapter 149-804.A(3)(g). The majority of the traffic counts were collected in October 2019, with the two church accesses and Dunvegan intersection along West Pleasant Grove Road being collected in August 2019. The results of these traffic counts are tabulated by 15-minute intervals in **Appendix D**. The four highest consecutive 15-minute peak intervals during these traffic count periods constitute the peak hours that are the basis of this traffic analysis

The resultant peak hour traffic volumes are depicted in **Figure 3A** for the weekday morning and weekday afternoon peak hours. The traffic volumes in Figure 3A were then analyzed to determine the existing operating conditions, and the results of this analysis are shown in **Figure 3B**. Specific details regarding the analysis results and traffic operations are provided later in this report.

Existing Queue Observations

At the intersection of U.S. Route 202 (Wilmington Pike) and PA Route 926 (Street Road) under existing conditions during the weekday morning and weekday afternoon commuter peak periods, oversaturation occurs on some movements. In accordance with the methodology contained in the *Highway Capacity Manual, 6th Edition*, queue observations were completed at the beginning of the weekday morning and weekday afternoon peak hours in order to account for these initial queues. The initial queues have been included in the detailed capacity/level-of-service analyses. Documentation of the queue observations is provided in **Appendix E**.

Site Characteristics

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

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 10th Edition*. **Table 2** presents the anticipated vehicular trip generation, and the detailed trip generation calculations are contained in **Appendix F**.

Table 2. Vehicular Trip Generation

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Robinson Tract Residential Development ⁽¹⁾	319 units	2,802	47	151	198	163	96	259

(1) Consisting of 182 detached homes, 135 attached homes, and preserving 2 existing homes on the property.

Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development's site accesses. The location of the dwelling units, the presence of the Collector Road, and the roadway connections throughout the proposed development were also considered within the site trip distributions. The distribution percentages for the anticipated directions of approach and departure, as well as the traffic assignment percentages at each intersection are illustrated in **Figure 4A**. Application of the percentages illustrated in **Figure 4A** to the new peak hour trips contained in Table 2, provides an estimate of site traffic to be added to the study area. The site-generated trips assignments are provided in **Figure 4B** for the weekday morning and weekday afternoon peak hours.

Site Access Configuration and Traffic Control

With the development, a Collector Road will be constructed through the property between Street Road (S.R. 0926) and West Pleasant Grove Road. The Collector Road will intersect Street Road (S.R. 0926) opposite Bridlewood Boulevard, as required by PennDOT, with installation of a traffic signal. The

Collector Road will intersect West Pleasant Grove Road near the eastern boundary of the Robinson Tract as an unsignalized intersection. Access to the site will be provided via the Collector Road, as well as two unsignalized accesses along West Pleasant Grove Road, with one located opposite Dunvegan Drive and one located approximately 625 feet west of Hidden Pond Way.

The recommendations for the proposed access designs, including auxiliary turn lanes, traffic control, and geometric design, were based on industry accepted criteria and guidelines. Specifically, the need for left- and right-turn deceleration lanes was based on the current PennDOT guidelines in accordance with *Publication 46, Chapter 11 – Traffic Studies*. In addition, a preliminary traffic signal warrant analysis was conducted in accordance with PennDOT criteria contained in the Department’s *Publication 212, Official Traffic Control Devices*, for the Four-Hour Volume Warrants, which is based on the guidelines contained in the Federal Highway Administration’s, *Manual on Uniform Traffic Control Devices (MUTCD)*. The various warrant/guideline analysis worksheets are contained in **Appendix G**.

Tables 2 and 3 below provide a summary of the traffic signal and turn lane warrant analyses.

**Table 2. Traffic Signal Warrant Analysis Summary
Street Road (S.R. 0926) and Bridlewood Boulevard / Collector Road**

Scenario	Warrant Evaluated	Warrant Met?
2025 with Collector Road Diversions Only	Four-Hour Vehicular Volume	YES (4 Hours Satisfied)
2025 with Collector Road Diversions and Site Traffic	Four-Hour Vehicular Volume	YES (4 Hours Satisfied)

Table 3. Site Access Turn Lane Warrant Analysis Summary

Intersection	Lane Evaluated	Warranted Length (ft)
W. Pleasant Grove Road and Dunvegan Road / Road K	WBL	Not Warranted
	EBR	Not Warranted
W. Pleasant Grove Road and Road M	WBL	Not Warranted
	EBR	Not Warranted
W. Pleasant Grove Road and Collector Road	WBL	Not Warranted
	EBR	Not Warranted
Street Road (S.R. 0926) and Collector Road / Bridlewood Boulevard	EBL	250
	WBR	150

Additionally, the geometric design of the proposed site accesses were preliminarily evaluated based on guidelines contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads*, as well as local PennDOT District policies.

Based on the results of this evaluation, the following access configurations and traffic controls are recommended, subject to the detailed engineering of the site accesses:

Street Road (S.R. 0926) and Bridlewood Boulevard/Proposed Collector Road

- The Average Daily Traffic for the Collector Road (site traffic and traffic diversions) is estimated as 1,432 vehicles per day, and therefore is classified as a local road per PennDOT criteria.
- Provide one ingress lane for the Collector Road.
- Provide two egress lanes for the Collector Road, including a dedicated left-turn lane and a shared through/right-turn lane.
- Restripe the Bridlewood Boulevard egress approach to modify the existing right-turn lane to a shared through/right-turn lane.
- A left-turn lane is warranted along eastbound Street Road (S.R. 0926) based on PennDOT guidelines, and therefore, provide a 150-foot long left-turn lane.
- A right-turn deceleration lane is warranted along westbound Street Road (S.R. 0926) based on PennDOT guidelines, and therefore, provide a 150-foot right-turn deceleration lane.
- Install a traffic signal, which is preliminarily warranted in the build-out year based on the criteria for Warrant 2 (Four-Hour Vehicular Volume).

West Pleasant Grove Road and Proposed Access (Road K)

- The Average Daily Traffic for the site access (Road K) is 196 vehicles per day, and therefore is classified as a low volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the site access.
- Provide stop-control on the site access egress approach.
- A left-turn lane is not warranted based on PennDOT guidelines.
- A right-turn deceleration lane is not warranted based on PennDOT guidelines.

West Pleasant Grove Road and Proposed Access (Road M)

- The Average Daily Traffic for the site access (Road M) is 140 vehicles per day, and therefore is classified as a low volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the site access.
- Provide stop-control on the site access egress approach.
- A left-turn lane is not warranted based on PennDOT guidelines.
- A right-turn deceleration lane is not warranted based on PennDOT guidelines.

West Pleasant Grove Road and Proposed Collector Road

- The Average Daily Traffic for the Collector Road is estimated as 1,152 vehicles per day, and therefore, is classified as a medium volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the Collector Road.
- Provide stop-control on the site access egress approach.
- A left-turn lane is not warranted based on PennDOT guidelines.
- A right-turn deceleration lane is not warranted based on PennDOT guidelines.

Sight Distance

Sight distance field measurements and an evaluation were performed at each of the proposed site accesses. Generally, the prevailing (85th percentile) travel speed, roadway grades and profiles, and the number of travel lanes play a role in determining if safe sight distances are available for egress and ingress at the proposed accesses. The existing sight distances at the proposed accesses were measured and compared to PennDOT’s sight distance requirements. These sight distance requirements are contained in *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads*. **Table 4** summarizes the available sight distance measurements, as well as PennDOT’s sight distance requirements at the proposed access locations.

**Table 4. Sight Distance Evaluation
Street Road (S.R. 0926) and Collector Road opposite Bridlewood Boulevard (proposed signal)**

Movement	Direction	Posted Speed (mph)	Approximate Grade	PennDOT Requirements (feet)		Available Sight Distance (feet)
				Desirable ¹	Acceptable ²	
Exiting	Looking Left	45	-8.0%	635'	45 mph=472'	466' with vegetation clearing
	Looking Right	45	+8.6%	570'	N/A	700'+ with vegetation clearing
Left turn Entering	Looking Ahead	45	-8.0%	445'	N/A	430' with vegetation clearing
	From the Rear	45	+8.6%	N/A	Meets over 70 mph=680'	700'+

West Pleasant Grove Road and Proposed Access (Road K)

Movement	Direction	Posted Speed (mph)	Approximate Grade	PennDOT Requirements (feet)		Township Requirements (feet) ⁽³⁾	Available Sight Distance (feet)
				Desirable ¹	Acceptable ²		
Exiting	Looking Left	35	+2.6%	440'	N/A	440'	630'
	Looking Right	35	-2.2%	350'	N/A	440'	1,000'+
Left turn Entering	Looking Ahead	35	+2.6%	300'	N/A	N/A	665'
	From the Rear	35	-2.2%	N/A	Meets over 75 mph=950'	N/A	1,000'+

West Pleasant Grove Road and Proposed Access (Road M)

Movement	Direction	Posted Speed (mph)	Approximate Grade	PennDOT Requirements (feet)		Township Requirements (feet) ⁽³⁾	Available Sight Distance (feet)
				Desirable ¹	Acceptable ²		
Exiting	Looking Left	35	+6.4%	440'	N/A	440'	800'+
	Looking Right	35	-3.0%	350'	N/A	440'	440'
Left turn Entering	Looking Ahead	35	+6.4%	300'	N/A	N/A	800'+
	From the Rear	35	-3.0%	N/A	Meets to 45 mph=415'	N/A	415'

West Pleasant Grove Road and Proposed Collector Road

Movement	Direction	Posted Speed (mph)	Approximate Grade	PennDOT Requirements (feet)		Township Requirements (feet) ⁽³⁾	Available Sight Distance (feet)
				Desirable ¹	Acceptable ²		
Exiting	Looking Left	35	+2.1%	440'	N/A	440'	440'
	Looking Right	35	0.0%	350'	N/A	440'	495'
Left turn Entering	Looking Ahead	35	+2.1%	300'	N/A	N/A	415'
	From the Rear	35	0.0%	N/A	Meets to 60 mph=620'	N/A	650'

- (1) Based on the desirable sight distance requirements contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads* and the posted speed limit, unless otherwise noted.
- (2) Based on the safe stopping sight distance requirements contained in the *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads* and posted or travel speeds as noted.
- (3) Based on the clear sight triangle requirements per Westtown Township Code Chapter 149 Article IX Section 149 -915, and the posted speed limit.

As shown in **Table 4**, the existing available sight distances at the proposed Collector Road and site access intersections along West Pleasant Grove Road, which is a Township roadway, meet PennDOT and Township requirements for all movements. For the intersection of the Collector Road and Street Road (S.R. 0926) opposite Bridlewood Boulevard with clearing of vegetation along the Robinson Tract property frontage, the existing available sight distances for exiting looking left and left-turn looking ahead are less than PennDOT desirable criteria; however, the intersection is proposed to be signalized.

Proper landscaping must be maintained along the site frontage along Street Road (S.R. 0926) and West Pleasant Grove Road for provision of adequate sight distance according to the above tables. The actual available sight distances should be verified during detailed engineering of the site access. The PennDOT M-950S forms are completed and provided in **Appendix H** for the State road Collector Road intersection.

Off-Site Intersection Turn Lane Warrants

Turn lane warrants were completed based on existing and future with-development peak hour traffic volumes at three off-site study intersections in accordance with PennDOT guidelines. The various warrant/guideline analysis worksheets are contained in **Appendix I**.

The following turn lanes are warranted under existing conditions:

- Street Road (S.R. 0926) and New Street
 - Eastbound Street Road (S.R. 0926) left-turn lane
 - Westbound Street Road (S.R. 0926) left- and right-turn lanes
 - Southbound New Street right-turn lane
 - Legal right-of-way does not currently exist to provide the above warranted lanes along Street Road (S.R. 0926) or New Street. Additional property from the Robinson Tract alone will not accommodate dedicated left-turn lanes or the southbound New Street right-turn lane. Although not necessary to mitigate traffic impact, as demonstrated later in this report, the applicant will provide a dedicated right-turn lane along westbound Street Road (S.R. 0926) along the Robinson Tract property frontage.

- New Street and West Pleasant Grove Road
 - No turn lanes are warranted

- U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road
 - Southbound U.S. Route 202 (Wilmington Pike) right-turn lane

No additional turn lanes are warranted in the future 2030 conditions with the proposed development. A preliminary aerial exhibit and signal permit plan markup illustrating the conditions at the intersection of Street Road (S.R. 0926) and New Street is provided in Appendix I.

Table 5. Off-Site Intersection Turn Lane Warrant Analysis Summary

Intersection	Lane Evaluated	Warranted Length (ft)	
		Exiting	2030 Future with Development
W. Pleasant Grove Road and Orvis Way	EBL	-	Not Warranted
Wilmington Pike (U.S. Route 202) and W. Pleasant Grove Road	SBR	225'	325'
New Street and W. Pleasant Grove Road	NBR	Not Warranted	Not Warranted
	SBL	Not Warranted	Not Warranted
	WBR	Not Warranted	Not Warranted
Street Road (S.R. 0926) and New Street	EBL	150'	175'
	EBR	Not Warranted	Not Warranted
	WBL	150'	150'
	WBR	Not Warranted	150'
	NBR	Not Warranted	Not Warranted
	NBL	Not Warranted	Not Warranted
	SBR	175'	Not Warranted (Due to Diversions)
	SBL	Not Warranted	Not Warranted

Future Traffic Conditions

With an estimated opening in 2020, a five-year build out was assumed based on the proposed development, the residential market, and past projects. This assumption equates to an average delivery of five units per month. Therefore, the traffic analysis was completed for a future build-out year of 2025 and a future design year of 2030, or five years beyond the anticipated build-out year, both without and with the proposed development. The future 2025 build-out year and 2030 design year without-development traffic volumes were estimated by increasing the existing traffic volumes to account for regional growth, as described below. The incremental increase due to the anticipated trip generation for the site was then added, resulting in the future 2025 build-out year and 2030 design year with-development traffic volumes.

Regional Traffic Growth

To account for regional traffic growth, the existing traffic volumes were increased by an annual traffic growth rate of 0.52 percent per year compounded for six (6) years to 2025 and 11 years to 2030, or 3.16 percent total to 2025 and 5.87 percent total to 2030. This growth rate is consistent with the traffic growth rate recommended by the PennDOT Bureau of Planning and Research *Growth Factors for August 2019 to July 2020* for similar, non-interstate urban roadways in Westtown Township.

Local Traffic Growth

To account for local traffic growth, the municipality was contacted to identify any other nearby future developments. Based upon coordination with Westtown Township, the existing traffic volumes were also increased by nearby approved developments in the vicinity of the proposed development. Specifically, the following developments were included and further information is provided in **Appendix J**:

- **The Malvern School**: 5,375 square-foot daycare/early learning center located on the northeast corner of the intersection of U.S. 202 (Wilmington Pike) and Pleasant Grove Road.
- **Arborview (Fair Share Properties)**: 16,800 square feet of office space and 10,986 square-foot daycare center located on the west side of U.S. Route 202 (Wilmington Pike) between Skiles Boulevard and Pleasant Grove Road. As part of the development, a Collector road named Orvis Way between West Pleasant Grove Road and Stetson School will be provided, which is currently under construction.
- **Condominium Development**: 39 condominiums in two buildings remain to be occupied/constructed on the west side of Gilpin Drive just north of Skiles Boulevard.

Planned Roadway Improvements

Orvis Way: West Pleasant Grove Road to Stetson School Collector Road

In conjunction with the Arborview (Fair Share Properties) development, Orvis Way is currently being constructed to connect West Pleasant Grove Road to Stetson School. In accordance with the Township approved *Arborview Transportation Impact Assessment*, prepared by Traffic Planning & Design and dated January 26, 2015, traffic in the area is anticipated to divert to utilize Orvis Way as follows:

Orvis Way Traffic Diversions

- Diversion A: 5 percent of the eastbound left-turns from Street Road (S.R. 0926) to northbound U.S. Route 202 (Wilmington Pike) will divert via New Street and West Pleasant Grove Road to Orvis Way, per the Arborview study.
- Diversion B: 10 percent of the northbound U.S. Route 202 (Wilmington Pike) jughandle volume onto Stetson School will divert via West Pleasant Grove Road to Orvis Way, per the Arborview study.
- Diversion C: 25 percent of the eastbound right-turns exiting Stetson School to southbound U.S. Route 202 (Wilmington Pike) to eastbound Street Road (S.R. 0926) will divert to Orvis Way and utilize West Pleasant Grove Road to New Street to eastbound Street Road (S.R. 0926). This diversion was conservatively decreased from the approved Arborview study as the majority of traffic currently making this movement during the peak hours is generated by Stetson Middle School, and the school service area ends just to the west of New Street

The roadway improvements and associated traffic diversions for the Arborview (Fair Share Properties) development have been incorporated into the future without- and with-development conditions within this study. Details, including a separate letter detailing the traffic diversions which was sent to the Township on February 21, 2020, are provided in **Appendix K**.

Robinson Tract: Street Road (S.R. 0926) to West Pleasant Grove Road Collector Road

With the development of the Robinson Tract, a Collector Road will be constructed through the property between Street Road (S.R. 0926) and West Pleasant Grove Road. Access to the site will be provided via the Collector Road. Additionally, as envisioned by Westtown Township for many years, the Collector Road will alleviate traffic at the congested U.S. Route 202 (Wilmington Pike)/Street Road (S.R. 0926) intersection, and reroute traffic currently using West Pleasant Grove Road and New Street as an alternate route to avoid that delay. With Orvis Way, currently under construction, this will provide a full connected roadway network on the west side of U.S. Route 202 (Wilmington Pike from Street Road S.R. 0926) to Stetson School, which will provide drivers with access to and from U.S. Route 202 via two signalized intersections.

In this analysis, traffic diversions with the Collector Road have been included in this study based on previous studies completed and accepted by the Township, as summarized below. The traffic diversions, including a separate letter detailing the traffic diversions which was sent to the Township on February 21, 2020, are provided in **Appendix K**.

Collector Road Traffic Diversions

- Diversion D: This diversion further increases Diversion A (above under Orvis Way discussion), by diverting an additional 5 percent of the weekday morning and 25 percent of the weekday afternoon eastbound left-turns from Street Road (S.R. 0926) to northbound U.S. Route 202 (Wilmington Pike) will divert via the Collector Road to West Pleasant Grove Road to Orvis Way.
- Diversion E: 25 percent of the southbound U.S. Route 202 (Wilmington Pike) right-turns to West Pleasant Grove Road will divert to Orvis Way and utilize West Pleasant Grove Road to the Collector Road.
- Diversion F: 66 percent (two-thirds) of the northbound Bridlewood Boulevard right-turns will divert to the Collector Road to West Pleasant Grove to Orvis Way to northbound U.S. Route 202 (Wilmington Pike).
- Diversion G: 505 percent of the southbound U.S. Route 202 (Wilmington Pike) right-turns to westbound Street Road (S.R. 0926) will divert to Orvis Way and utilize West Pleasant Grove Road to the Collector Road to eastbound Street Road (S.R. 0926).
- Diversion H: 250 vehicles (approximately 16 percent) of the southbound U.S. Route 202 (Wilmington Pike) through traffic was diverted to West Pleasant Grove Road to the Collector Road to Bridlewood Boulevard back to U.S. Route 202 (Wilmington Pike) southbound. Based on a travel time comparison (without implementation of PennDOT's US 202/PA 926 intersection improvements), during the weekday afternoon peak hour in the southbound direction when U.S. Route 202 (Wilmington Pike) congestion is highest, the travel time along the Collector Road system may be shorter than staying on U.S. Route 202 (Wilmington Road).

PennDOT U.S. Route 202, Section 100

Within this section of U.S. Route 202 (Wilmington Pike), designated as Section 100, several studies completed through PennDOT and the Delaware Valley Regional Planning Commission have identified the need for additional roadway capacity. At this time, PennDOT is underway with preliminary engineering for improvements at the U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926) intersection. Based on the current State Transportation Improvement Program (TIP) and the Conceptual Intersection Layout prepared by Urban Engineers and dated June 5, 2014, the project will include improvements that will help reduce traffic congestion and increase safety at the intersection through lane reconfigurations, striping, upgrades to the traffic signal, signal timing, and bicycle and

pedestrian improvements. It is our understanding that the following roadway improvements are to be included:

- Southbound 130-foot right-turn deceleration lane on U.S. Route 202.
- Additional eastbound left-turn lane on PA Route 926, creating a double left-turn lane configuration with 380 feet of storage for each lane.
- Pedestrian and bicycle intersection improvements, including high-visibility crosswalks, ADA ramps, and sidewalk extension from the intersection east to Dalmally Drive.
- Traffic signal equipment upgrades, including pedestrian push buttons, countdown signal heads, and lighting.

Based on the TIP, the current project schedule indicates an estimated construction start date in September 2021, with a construction completion date by the end of 2022. However, this schedule is dependent on moving through the project development process, with activities such as evaluation of project effect on the Westtown Inn (eligible for the historic register), Consulting Parties consultations, approval of overall environmental document, preliminary plan approvals, utility coordination, property acquisitions, and preparation of design plans and construction bid package.

S.R. 0926 Bridge Replacement over Radley Run

Through coordination with PennDOT, the Street Road (S.R. 0926) bridge located approximately 700 feet west of Bridlewood Boulevard is scheduled to be replaced. Design activity has been completed, which is being combined with other locations in Bridge Group M (MPMS 102318). The bid was awarded in January 2019, and the entire bridge group is scheduled for estimated completion in November 2020. As with other bridge groups, there is some flexibility in scheduling any one particular bridge within the overall construction duration.

Future Traffic Conditions

The total background growth, nearby development traffic volumes, and Orvis Way traffic diversions were then added to the existing traffic volumes, resulting in the future 2025 and 2030 without-development traffic volumes. Next, the site generated traffic volumes, as shown in **Figure 4B** and the Collector Road traffic diversions were added to the future 2025 and 2030 without-development traffic volumes, resulting in the future 2025 and 2030 with-development traffic volumes.

The resultant future 2025 build-out year peak hour traffic volumes without-development are illustrated in **Figure 5A**, and the future 2025 build-out year with-development peak hour traffic volumes are illustrated in **Figure 5B**. These traffic volumes were then analyzed to determine the future 2025 without- and with-development operating conditions, and the results of this analysis are shown in **Figures 5C and 5D**. Detailed spreadsheets summarizing the 2025 traffic projections, including regional growth, other development trip assignments, site trip assignments, and diversions for each intersection, are provided in **Appendix L**.

The resultant future 2030 design year peak hour traffic volumes without-development are illustrated in **Figure 6A**, and the future 2030 design year with-development peak hour traffic volumes are illustrated in **Figure 6B**. These traffic volumes were then analyzed to determine the future 2030 without- and with-development operating conditions, and the results of this analysis are shown in **Figures 6C and 6D**. Detailed spreadsheets summarizing the 2030 traffic projections, including regional growth, other development trip assignments, site trip assignments, and traffic diversions for each intersection, are provided in **Appendix M**.

Capacity/Level-of-Service Results

The peak hour traffic volumes were analyzed to determine the existing and future operating conditions, both without and with the proposed development, in accordance with the standard techniques contained in the current *Highway Capacity Manual, 6th Edition* for both signalized and unsignalized intersections. The HCM 6th Edition Methodology within Synchro 10.3 (build 122, rev. 0) traffic analysis software was utilized in the traffic analyses.

These standard capacity/level-of-service analysis techniques, which calculate total control delay, are described in **Appendix N** for both signalized and unsignalized intersections, as well as the correlation between average total control delay and the respective level-of-service (LOS) criteria for each intersection type.

According to PennDOT's *Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permit Plans*, the following procedures and assumptions were utilized:

- For signalized intersections, the Pennsylvania base saturation flow rate (Exhibit 10-9) and Pennsylvania traffic signal control calibration parameters (Exhibit 10-10) outlined in PennDOT's *Publication 46, Traffic Engineering Manual*, were used.
- For unsignalized intersections, the base critical headways at TWSC intersections (Exhibit 10-11) and base follow-up headways at TWSC intersections (Exhibit 10-12) outlined in PennDOT's *Publication 46, Traffic Engineering Manual*, were used.
- All traffic signal timings at signalized intersections were optimized in without-development conditions.
- If the evaluation of without-development to with-development indicates the overall intersection level of service has dropped, the applicant will be required to mitigate the level of service if the increase 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.

The existing, future build-out year (2025) and design year (2030) traffic conditions, both without and with the proposed development, are summarized in **Figures 3B, 5C, 5D, 6C and 6D** while the detailed capacity/level-of-service analysis worksheets are provided in **Appendices O through S**.

The proposed development has no traffic impact at the study area intersections. With the Collector Road and resulting traffic diversions, vehicle delays are decreased at several study intersections. **Tables 6 and 7** below summarize the overall intersection results of the level-of-service analyses for the off-site study intersections for both peak hours. Detailed results of the level-of-service and queueing analysis are contained in the matrices provided in **Tables 8 and 9**.

**Table 6. Overall Intersection Level-of-Service
Weekday Morning Peak Hour**

Intersection	Existing	Future 2030 Without Development (optimized)	Future 2030 With Development	Requires Mitigation?
U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)	F 87.4	F 113.6	F 106.8	NO
U.S. Route 202 (Wilmington Pike) and Pleasant Grove Road	A 0.3	A 0.7	A 0.8	NO
U.S. Route 202 (Wilmington Pike) and Skiles Boulevard/Stetson School	C 28.4	D 37.4	D 45.2	NO
Street Road (S.R. 0926) and New Street	C 30.8	D 36.4	C 22.8	NO
Street Road (S.R. 0926) and Bridlewood Boulevard/Collector Road	A 1.0	A 1.1	B 12.1	NO
New Street and West Pleasant Grove Road	A 5.4	A 5.7	A 4.9	NO
West Pleasant Grove Road and Dunvegan Drive	A 0.3	A 0.2	A 1.0	NO
West Pleasant Grove Road and Orvis Way	-	A 2.2	A 3.9	NO

**Table 7. Overall Intersection Level-of-Service
Weekday Afternoon Peak Hour**

Intersection	Existing	Future 2030 Without Development (optimized)	Future 2030 With Development	Requires Mitigation?
U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)	F 200.4	F 223.7	F 179.9	NO
U.S. Route 202 (Wilmington Pike) and Pleasant Grove Road	A 0.8	A 1.2	A 1.0	NO
U.S. Route 202 (Wilmington Pike) and Skiles Boulevard/Stetson School	B 16.8	C 23.4	C 30.9	NO
Street Road (S.R. 0926) and New Street	C 21.6	C 21.6	B 17.7	NO
Street Road (S.R. 0926) and Bridlewood Boulevard/Collector Road	A 0.9	A 0.9	B 19.0	NO
New Street and West Pleasant Grove Road	A 5.7	A 6.1	A 5.2	NO
West Pleasant Grove Road and Dunvegan Drive	A 0.2	A 0.2	A 0.8	NO
West Pleasant Grove Road and Orvis Way	-	A 2.0	A 7.3	NO

As shown in Tables 6 and 7 above, the proposed development does not have an overall level-of-service impact at any of the study intersections per PennDOT criteria. However, the applicant is committed to providing the following off-site intersection improvements:

Street Road (S.R. 0926) and New Street

- The applicant will complete traffic signal retiming optimization and provide equipment in order to coordinate with the proposed signal to the east.
- Although not necessary to mitigate traffic impact, the applicant will provide a dedicated right-turn lane along westbound Street Road (S.R. 0926) along the Robinson Tract property frontage.
- It is noted that left turn lanes are warranted based on existing traffic volumes. Left-turn lanes along Street Road (S.R. 0926) cannot be provided within the existing right-of-way or with additional right-of-way from the Robinson Tract alone.

U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road

- The applicant will provide a dedicated right-turn lane along southbound Wilmington Pike (U.S. Route 202).

U.S. Route 202 (Wilmington Pike) and Skiles Boulevard / Stetson School

- To mitigate the Township's Collector Road traffic impact along Stetson School, the applicant will restripe the eastbound approach to provide dual left-turn lanes and a shared through/right-turn lane and complete the necessary traffic signal phasing modifications.
- Additionally, the applicant will widen westbound Skiles Boulevard to provide a dedicated right-turn lane, subject to the ability to acquire any necessary additional right-of-way.

Collector Road Access Analysis

Traffic analysis was completed at the proposed access intersections along the Collector Road through the Robinson Tract for the future 2030 with-development conditions. As shown in **Figure 7**, all of the proposed access intersections along the Collector Road will operate at highly acceptable LOS A overall and LOS B or better for all movements during both peak hours. The detailed traffic volume projections and traffic analysis worksheets are provided in **Appendix T**.

Queuing Analysis

A queuing analysis was completed at the study intersections based on the HCM 6th Edition methodology. The detailed results of the queuing analysis are provided in **Table 7** at the end of this report. Based on the results of the queuing analysis and with the recommended site access designs, as outlined previously in this report, the queues at the site access and Collector Road intersections with Street Road (S.R. 0926) and West Pleasant Grove Road are accommodated. Additionally, the queues

are accommodated within the available lane storages at the majority of the off-site study intersections. Significant queues occur at the U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926) intersection during both peak hours. With the traffic diversions resulting from the construction of the Collector Road through the Robinson Tract as committed by the applicant, the queues are decreased at this intersection from without- to with-development conditions.

Significant queues occur along Stetson School drive at U.S. Route 202 (Wilmington Pike) due to the Collector Road traffic. These queues are accommodated with the intersection improvements the applicant is committed to providing to mitigate the Township's Collector Road traffic impact, subject to the ability to acquire any necessary additional right-of-way. A graphic illustration of the queues with the improvements is provided in **Appendix U**.

PennDOT U.S. Route 202, Section 100 Intersection Improvement Project

For informational purposes, traffic analysis has also been completed with construction of the PennDOT improvement project in preliminary engineering for the intersection of U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926). In future 2030 with-development conditions and with implementation of PennDOT's project, the intersection is anticipated to operate at overall level of service E (62.2 seconds average overall delay) during the weekday morning peak hour and overall level of service F (137.4 seconds overall delay) during the weekday afternoon peak hour. Based on this analysis, PennDOT's project will further decrease overall intersection delay by approximately 20 to 40 percent during the peak hours. The detailed capacity/level-of-service worksheets are provided in **Appendix V**.

Conclusions and Recommendations

Based on trip generation data compiled for Multifamily Housing – Low Rise (ITE Land Use Code 220) and Single Family Detached Housing (ITE Land Use Code 210) contained in the Institute of Transportation Engineers (ITE) publication entitled, *Trip Generation Manual, 10th Edition*, the proposed development will generate a total of approximately 198 “new” trips during the weekday morning peak hour and 259 “new” trips during the weekday afternoon peak hour.

Committed Improvements

Per the traffic evaluation, the following on-site and off-site traffic improvements are committed by the applicant to mitigate the proposed development traffic impacts, pending further coordination and approvals from the Township and PennDOT. Since some of these improvements are within the state’s right-of-way, or located at traffic signals under the jurisdiction of PennDOT, coordination with PennDOT will be required to implement these improvements for issuance of a Highway Occupancy Permit. The Township will be included in all correspondence with PennDOT.

Site Accesses and On-Site Improvements

Street Road (S.R. 0926) and Bridlewood Boulevard/Proposed Collector Road

- Collector Road is classified as a local road per PennDOT criteria.
- Provide one ingress lane for the Collector Road.
- Provide two egress lanes for the Collector Road, including a dedicated left-turn lane and a shared through/right-turn lane.
- Restripe the Bridlewood Boulevard egress approach to modify the existing right-turn lane to a shared through/right-turn lane.
- Provide a 150-foot left-turn lane along eastbound Street Road (S.R. 0926). Note that a 120-foot left-turn lane exists along westbound Street Road (S.R. 0926).
- Provide a 150-foot right-turn deceleration lane along westbound Street Road (S.R. 0926).
- Install a traffic signal.

West Pleasant Grove Road and Proposed Access (Road K)

- Access is classified as a low volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the site access.
- Provide stop-control on the site access egress approach.

West Pleasant Grove Road and Proposed Access (Road M)

- Access is classified as a low volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the site access.
- Provide stop-control on the site access egress approach.

West Pleasant Grove Road and Collector Road

- Collector Road is classified as a medium volume driveway per PennDOT criteria.
- Provide one ingress lane and one egress lane for the Collector Road.

- Provide stop-control on the Collector Road egress approach.

Collector Road

- The applicant will construct the Collector Road through the property between Street Road (S.R. 0926) and West Pleasant Grove Road, which will alleviate traffic at the congested U.S. Route 202 (Wilmington Pike)/Street Road (S.R. 0926) intersection, and reroute traffic currently using West Pleasant Grove Road and New Street as an alternate route to avoid that delay. The overall delays at several study intersections decrease in the with-development conditions versus without-development conditions, due to the diversion of traffic to the Collector Road. Additionally, the Collector Road will provide access to the proposed residential development within the Robinson Tract.
- Based on the estimated Collector Road weekday peak hour traffic volumes in this report, diverted traffic constitutes approximately 70 to 80 percent of the total, while approximately 20 to 30 percent is site traffic from the Robinson Tract.

Off-Site Traffic Improvements

Street Road (S.R. 0926) and New Street

- The applicant will complete traffic signal retiming optimization and provide equipment in order to coordinate with the proposed signal to the east.
- Although not necessary to mitigate traffic impact, the applicant will provide a dedicated right-turn lane along westbound Street Road (S.R. 0926) along the Robinson Tract property frontage.
- It is noted that left turn lanes are warranted based on existing traffic volumes. Left-turn lanes along Street Road (S.R. 0926) cannot be provided within the existing right-of-way or with additional right-of-way from the Robinson Tract alone.

U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road

- The applicant will provide a dedicated right-turn lane along southbound Wilmington Pike (U.S. Route 202).

U.S. Route 202 (Wilmington Pike) and Skiles Boulevard / Stetson School

- To mitigate the Township's Collector Road traffic impact along Stetson School, the applicant will restripe the eastbound approach to provide dual left-turn lanes and a shared through/right-turn lane and complete the necessary traffic signal phasing modifications.
- Additionally, the applicant will widen westbound Skiles Boulevard to provide a dedicated right-turn lane, subject to the ability to acquire any necessary additional right-of-way.

The traffic analyses contained herein reveal that efficient access to and from the proposed development can be provided, and furthermore, site-generated traffic is mitigated at the study area intersections with the committed improvements.

Table 8 - Level of Service Matrices
Street Road (S.R. 0926) and New Street

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour				
Design Year		2030 Design Year				2030 Design Year				
Development Condition		Existing	w/o Dev Base	w/ Dev	w/ Dev w/ Impvts ⁽²⁾	Existing	w/o Dev Base	w/o Dev ⁽¹⁾ Optimized	w/ Dev	w/ Dev w/ Impvts ⁽²⁾
Street Road (S.R. 0926)	Left EB Thru Right	A 8.1	A 9.0	A 9.2	A 9.2	B 12.3	B 13.4	B 15.0	B 12.8	B 12.8
	Left WB Thru Right	A 5.5	A 5.6	A 1.7	A 1.5 A 1.0	A 8.7	A 8.9	A 9.9	A 1.0	A 0.9 A 0.1
	Left NB Thru Right	C 34.4	C 34.7	C 34.8	C 34.8	C 32.5	C 32.7	C 29.8	C 32.4	C 32.4
	Left SB Thru Right	F 106.9	F 130.7	F 82.2	F 82.2	D 48.9	D 55.0	D 43.4	D 44.3	D 44.3
Overall		C 30.8	D 36.4	C 22.8	C 22.7	C 21.6	C 23.7	C 21.6	B 17.7	B 17.6

(1) Future traffic signal timings have been optimized.

(2) Improvements include the provision of a dedicated westbound right-turn lane.

Table 8 - Level of Service Matrices

Street Road (S.R. 0926) and Bridlewood Boulevard / Collector Road

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year		2030 Design Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
Street Road (S.R. 0926)	Left	-	-	A 0.2	-	-	A 6.1
	EB Thru	(1)	(1)	A 1.8	(1)	(1)	A 7.0
	Right	(1)	(1)	A 0.0	(1)	(1)	A 3.4
	Left	B 10.5	B 10.6	A 3.3	B 10.7	B 10.8	B 16.6
	WB Thru	(1)	(1)	A 3.8	(1)	(1)	A 8.6
	Right	-	-	A 3.2	-	-	A 7.4
Bridlewood Boulevard	Left	C 18.9	C 19.9	D 42.7	C 20.1	C 21.3	D 46.2
	NB Thru	-	-	C	-	-	C
	Right	B 13.4	B 13.7	33.4	B 13.7	B 14.0	27.0
Collector Road	Left			C 35.0			C 28.1
	SB Thru	-	-	D	-	-	D
	Right			52.1			49.9
Overall		A 1.0	A 1.1	B 12.1	A 0.9	A 0.9	B 19.0

(1) Movement operates at free-flow conditions.

Table 8 - Level of Service Matrices

U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			
Design Year		2030 Design Year			2030 Design Year			
Development Condition		Existing	w/o Dev ⁽¹⁾	w/ Dev	Existing	w/o Dev ⁽¹⁾	w/ Dev	
Street Road (S.R. 0926)	EB	Left	F	F	F	F	F	
		187.3	195.4	187.2	121.6	194.2	167.0	
		Thru	F	F	F	F	F	F
	WB	Right	196.8	206.9	187.3	142.9	211.2	162.5
		Left	E	F	F	E	F	E
		68.3	85.0	85.0	69.5	94.6	79.6	
U.S. Route 202 (Wilmington Pike)	NB	Thru	E	F	F	E	F	
		69.5	94.3	99.5	72.9	109.3	109.0	
		Right	E	D	D	E	D	D
	SB	Left	61.0	51.8	51.8	59.5	48.8	47.8
		Thru	F	E	E	F	E	E
		84.7	67.8	66.8	82.5	63.7	60.9	
Overall	Thru	Right	D	F	F	E	F	
		50.2	82.0	88.6	56.7	79.2	79.2	
		(v/c > 1.0)	(v/c > 1.0)	(v/c > 1.0)	25.2	20.8	20.8	
	Right	Left	C	C	C	C	C	C
		23.2	20.9	21.4	142.8	74.3	68.4	
		Thru	F	E	E	F	F	F
Right	Left	86.1	64.3	67.2	438.2	445.0	379.4	
	Thru	F	F	F	F	F	F	
	76.8	111.6	98.3	422.9	432.3	359.3		
Overall	Thru	F	F	F	F	F	F	
	83.3	125.0	103.1	200.4	223.7	179.9		
	Right	F	F	F	F	F	F	
Overall		87.4	113.6	106.8	200.4	223.7	179.9	

(1) Intersection to be equipped with traffic adaptive signal equipment which dynamically adjusts traffic signal timings and phasings based on real-time traffic demand, and therefore, traffic signal timings were optimized in each future scenario. This project is currently under construction by PennDOT.

Table 8 - Level of Service Matrices
U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2030 Design Year				2030 Design Year			
Development Condition		Existing	w/o Dev	w/ Dev	w/ Dev w/ Impvts ⁽²⁾	Existing	w/o Dev	w/ Dev	w/ Dev w/ Impvts ⁽²⁾
Pleasant Grove Road	EB Right	C 20.3	C 16.0	C 15.6	C 15.6	C 20.0	C 15.6	B 12.6	B 12.6
	WB Right	C 24.8	D 27.2	D 27.2	D 27.2	C 22.1	C 24.1	C 19.7	C 19.7
U.S. Route 202 (Wilmington Pike)	Left NB Thru Thru/Right	C 18.5	B 14.5	C 15.4	C 15.4	C 17.3	B 13.7	B 14.1	B 14.1
		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	Left SB Thru Thru/Right	C 22.6	C 23.1	C 23.1	C 23.1	C 23.2	C 24.9	C 19.4	C 19.4
		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Overall		A 0.3	A 0.7	A 0.8	A 0.8	A 0.8	A 1.2	A 1.0	A 1.0

(1) Movement operates at free-flow conditions.

(2) Improvements include the provision of a dedicated southbound right-turn lane.

Table 8 - Level of Service Matrices
West Pleasant Grove Road and Church Full-Movement Access

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year		2030 Design Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
West Pleasant Grove Road	Thru EB Right	(1)	(1)	(1)	(1)	(1)	(1)
	Left WB Thru	A 8.1	A 8.1	A 8.2	A 8.1	A 8.1	A 8.2
Church Full-Movement Access	Left NB	A 9.4	A 9.9	B 11.4	B 10.1	B 10.5	B 12.9
	Right	A 0.0	A 0.0	A 0.0	A 8.2	A 8.4	A 8.4
Overall		A 0.4	A 0.3	A 0.2	A 0.3	A 0.3	A 0.2

(1) Movement operates at free-flow conditions.

Table 8 - Level of Service Matrices
West Pleasant Grove Road and Orvis Way (By Others)

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Design Year		2030 Design Year		2030 Design Year	
Development Condition		w/o Dev	w/ Dev	w/o Dev	w/ Dev
West Pleasant Grove Road	Left EB Thru	A 8.9	B 10.3	A 9.0	B 10.9
	Thru WB Right	(1)	(1)	(1)	(1)
Orvis Way (By Others)	Left SB Right	B 10.0	B 14.0	B 10.6	C 17.6
Overall		A 2.2	A 3.9	A 2.0	A 7.3

(1) Movement operates at free-flow conditions.

Table 8 - Level of Service Matrices
West Pleasant Grove Road and Church Egress Only Access

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year		2030 Design Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
West Pleasant Grove Road	EB Thru	(1)	(1)	(1)	(1)	(1)	(1)
	WB Thru	(1)	(1)	(1)	(1)	(1)	(1)
Church Egress Only Access	Left	A	A	A	A	A	A
	NB Right	0.0	0.0	0.0	0.0	0.0	0.0
Overall		A	A	A	A	A	A
		0.0	0.0	0.0	0.0	0.0	0.0

(1) Movement operates at free-flow conditions.

Table 8 - Level of Service Matrices
West Pleasant Grove Road and Collector Road

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Design Year		2030 Design Year	2030 Design Year
Development Condition		w/ Dev	w/ Dev
West Pleasant Grove Road	EB Thru/ Right	(1)	(1)
	WB Left/ Thru	A 9.1	B 11.3
Collector Road	Left NB Right	A 9.5	B 11.2
Overall		A 5.4	A 7.5

(1) Movement operates at free-flow conditions.

Table 8 - Level of Service Matrices
West Pleasant Grove Road and Road M

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Design Year		2030 Design Year	2030 Design Year
Development Condition		w/ Dev	w/ Dev
West Pleasant Grove Road	EB Thru/ Right	(1)	(1)
	WB Left/ Thru	A 8.3	A 7.5
Road M	Left NB Right	A 8.7	A 9.1
Overall		A 0.6	A 0.6

(1) Movement operates at free-flow conditions.

Table 8 - Level of Service Matrices
West Pleasant Grove Road and Dunvegan Road / Road K

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year		2030 Design Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
West Pleasant Grove Road	Left	A	A	A	A	A	A
	EB Thru	0.0	0.0	0.0	8.9	9.0	8.8
	Right	-	-		-	-	
	Left	-	-	A	-	-	A
WB Thru	(1)	(1)	8.2	(1)	(1)	8.3	
Road K	Left			A			B
	NB Thru	-	-	9.7	-	-	10.0
Dunvegan Road	Left	B	B	B	B	B	B
	SB Thru	10.0	10.5	10.4	10.0	10.3	10.1
Overall		A	A	A	A	A	A
		0.3	0.2	1.0	0.2	0.2	0.8

(1) Movement operates at free-flow conditions.

Table 8 - Level of Service Matrices

New Street and West Pleasant Grove Road

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year		2030 Design Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
West Pleasant Grove Road	Left	B	B	B	B	B	B
	Right	12.7	13.9	13.0	13.2	14.5	13.8
New Street	Thru	(1)	(1)	(1)	(1)	(1)	(1)
	Right	A	A	A	A	A	A
New Street	Left	8.7	8.9	8.9	8.5	8.6	8.7
	Thru	A	A	A	A	A	A
Overall		5.4	5.7	4.9	5.7	6.1	5.2

(1) Movement operates at free-flow conditions.

Table 8 - Level of Service Matrices

U.S. Route 202 (Wilmington Pike) and Skiles Boulevard / Stetson School Drive

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2030 Design Year				2030 Design Year			
Development Condition		Existing	w/o Dev ⁽¹⁾	w/ Dev ⁽¹⁾	w/ Dev w/ Impvts ⁽²⁾	Existing	w/o Dev ⁽¹⁾	w/ Dev ⁽¹⁾	w/ Dev w/ Impvts ⁽²⁾
Stetson School Drive	Left	D	E	F	E	D	D	F	D
	EB Thru	43.5	68.9	158.4	78.5	38.2	55.0	87.4	53.9
	Right	C	D	D	D	C	D	C	D
Skiles Boulevard	Left	C	D	D		C	D	C	
	WB Thru	33.8	39.8	38.0		32.6	40.2	34.3	
	Right	C	D	D	39.6	C	D	C	36.7
U.S. Route 202 (Wilmington Pike)	Left	D	D	D	D	D	D	D	D
	WB Thru	38.2	47.6	45.4	53.1	35.4	45.8	39.1	52.6
	Right	D	D	D	E	C	D	C	D
Overall	Right	36.6	44.0	41.4	51.8	33.4	40.8	34.9	58.2
	Thru (2)	F	F	F	F	B	C	C	C
	Right	37.9 (v/c > 1.0)	50.3 (v/c > 1.0)	54.0 (v/c > 1.0)	52.2 (v/c > 1.0)	18.1	25.5	33.5	30.6
Overall	Right	A	A	A	A	A	A	A	A
	Thru (2)	6.0	7.0	7.8	7.6	4.5	5.8	8.3	7.9
	Right	B	C	C	C	B	B	C	C
Overall	Right	19.1	25.1	30.0	29.2	12.7	17.2	21.7	20.5
	Right	A	A	A	A	A	A	B	B
	Right	7.6	9.0	10.0	9.9	4.9	6.3	11.1	10.6
Overall	Right	C	D	D	D	B	C	C	C
	Right	28.4	37.4	45.2	41.5	16.8	23.4	30.9	27.7

(1) Intersection to be equipped with traffic adaptive signal equipment which dynamically adjusts traffic signal timings and phasings based on real-time traffic demand, and therefore, traffic signal timings were optimized in each future scenario. This project is currently under construction by PennDOT.

(2) Improvements include restriping the eastbound approach to provide dual left-turn lanes and a through/right-turn lane, widening the westbound approach to provided a dedicated right-turn lane, and modifying the traffic signal phasing.

Table 9. 95th Percentile Queue Matrices
Street Road (S.R. 0926) and New Street

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽¹⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour				
Design Year				2030 Design Year				2030 Design Year				
Development Condition				Existing	w/o Dev Base	w/ Dev	w/ Dev w/ Impvts ⁽²⁾	Existing	w/o Dev Base	w/o Dev ⁽²⁾ Optimized	w/ Dev	w/ Dev w/ Impvts ⁽²⁾
Street Road (S.R. 0926)	Left	2,200'	2,200'	230	253	258	258	320	353	370	333	333
	EB Thru											
	Right	4,700'	2,350'	93	100	30	25	140	153	160	25	25
	WB Thru											
Right	150'	140	150	153	153	125	135	125	138	138		
NB Thru												
New Street	Left	-	-	480	563	398	398	383	430	378	338	338
	SB Thru											
	Right	-	-	-	-	-	-	-	-	-	-	

(1) Distance to adjacent signalized intersections shown in italics.

(2) Improvements include the provision of a dedicated westbound right-turn lane.

Table 9. 95th Percentile Queue Matrices
Street Road (S.R. 0926) and Bridlewood Boulevard / Collector Road

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽¹⁾	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year				2030 Design Year			2030 Design Year		
Development Condition				Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
Street Road (S.R. 0926)	Left	-	150'	-	-	0	-	-	30
	EB Thru	<i>2,400'</i>	<i>2,400'</i>	-	-	25	-	-	120
	Right	350'	350'	-	-	0	-	-	25
	Left	120'	120'	25	25	25	25	25	25
	WB Thru	<i>2,300'</i>	<i>2,300'</i>	-	-	43	-	-	95
	Right	-	150'	-	-	25	-	-	25
Bridlewood Boulevard	Left	-	-	25	25	28	25	25	25
	NB Thru	-	-	-	-	40	-	-	45
	Right	-	-	25	25	-	25	25	-
Collector Road	Left	-	-	-	-	43	-	-	25
	SB Thru	-	-	-	-	210	-	-	415
	Right	-	-	-	-	-	-	-	-

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage shown if different from existing conditions.

Table 9. 95th Percentile Queue Matrices

U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			
Design Year				2030 Design Year			2030 Design Year			
Development Condition				Existing	w/o Dev ⁽³⁾	w/ Dev ⁽³⁾	Existing	w/o Dev ⁽³⁾	w/ Dev ⁽³⁾	
Street Road (S.R. 0926)	Left	450'	450'	885	850	805	673	758	588	
	EB	Left	4700'	2,200'	1018	983	880	800	875	608
		Thru								
		Right								
	WB	Left	200'	200'	235	253	253	320	350	323
		Thru	680'	680'	258	288	300	358	408	430
Right		215'	215'	73	78	78	93	85	85	
U.S. Route 202 (Wilmington Pike)	NB	Left	305'	305'	25	25	38	58	48	93
		Thru	2,800'	2,800'	960	1103	1140	1035	1080	1080
		Right	170'	170'	148	128	130	125	103	103
	SB	Left	375'	375'	98	88	103	213	155	158
		Thru	4,400'	4,400'	1195	1335	1193	3165	3133	2588
		Right	4,400'	4,400'	1273	1470	1270	3193	3178	2588

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage shown if different from existing conditions.

(3) Intersection to be equipped with traffic adaptive signal equipment which dynamically adjusts traffic signal timings and phasings based on real-time traffic demand, and therefore, traffic signal timings were optimized in each future scenario. This project is currently under construction by PennDOT.

Table 9. 95th Percentile Queue Matrices
U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road

Time Period		Current Storage ⁽¹⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year			2030 Design Year				2030 Design Year			
Development Condition			Existing	w/o Dev	w/ Dev	w/ Dev w/ Impvts ⁽²⁾	Existing	w/o Dev	w/ Dev	w/ Dev w/ Impvts ⁽²⁾
West Pleasant Grove Road	EB Right	-	25	25	25	25	25	25	25	25
	WB Right	-	25	25	25	25	25	25	25	25
U.S. Route 202 (Wilmington Pike)	Left	350'	25	25	25	25	25	25	25	25
	NB Thru	<i>3,100'</i>	-	-	-	-	-	-	-	-
	Thru/Right	<i>3,100'</i>	-	-	-	-	-	-	-	-
	Left	380'	25	25	25	25	33	43	33	33
	SB Thru	<i>1,200'</i>	-	-	-	-	-	-	-	-
	Thru/Right	<i>1,200'</i>	-	-	-	-	-	-	-	-

(1) Distance to adjacent signalized intersections shown in italics.

(2) Improvements include the provision of a dedicated southbound right-turn lane.

Table 9. 95th Percentile Queue Matrices
West Pleasant Grove Road and Church Full-Movement Access

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year		2030 Design Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
West Pleasant Grove Road	Thru EB Right	-	-	-	-	-	-
	Left WB Thru	0	0	0	0	0	0
Church Full-Movement Access	Left NB	0	0	0	0	0	0
	Right	0	0	0	0	0	0

Table 9. 95th Percentile Queue Matrices
West Pleasant Grove Road and Orvis Way (By Others)

Time Period		Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
Design Year		2030 Design Year		2030 Design Year	
Development Condition		w/o Dev	w/ Dev	w/o Dev	w/ Dev
West Pleasant Grove Road	Left EB Thru	25	25	25	0
	Thru WB Right	-	-	-	-
Orvis Way (By Others)	Left SB Right	25	25	25	70

Table 9. 95th Percentile Queue Matrices
West Pleasant Grove Road and Church Egress Only Access

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year		2030 Design Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
West Pleasant Grove Road	EB Thru	-	-	-	-	-	-
	WB Thru	-	-	-	-	-	-
Church Egress Only Access	Left NB Right	0	0	0	0	0	0

**Table 9. 95th Percentile Queue Matrices
West Pleasant Grove Road and Collector Road**

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Design Year		2030 Design Year	2030 Design Year
Development Condition		w/ Dev	w/ Dev
West Pleasant Grove Road	EB Thru/Right	-	-
	WB Left/Thru	25	28
Collector Road	NB Left/Right	25	70

Table 9. 95th Percentile Queue Matrices

West Pleasant Grove Road and Road M

Time Period		Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Design Year		2030 Design Year	2030 Design Year
Development Condition		w/ Dev	w/ Dev
West Pleasant Grove Road	EB Thru/ Right	-	-
	WB Left/ Thru	0	0
Road M	NB Left Right	25	0

Table 9. 95th Percentile Queue Matrices
West Pleasant Grove Road and Dunvegan Road / Road K

Time Period		Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year		2030 Design Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
West Pleasant Grove Road	Left	0	0	0	0	0	0
	EB Thru						
	Right	-	-		-	-	
	Left	-	-		-	-	
WB Thru				0			0
	Right	-	-		-	-	
Road K	Left	-	-	25	-	-	25
	NB Thru						
	Right						
Dunvegan Road	Left	0	0	0	0	0	0
	SB Thru						
	Right						

Table 9. 95th Percentile Queue Matrices

New Street and West Pleasant Grove Road

Time Period		Current Storage ⁽¹⁾	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Design Year			2030 Design Year			2030 Design Year		
Development Condition			Existing	w/o Dev	w/ Dev	Existing	w/o Dev	w/ Dev
West Pleasant Grove Road	Left WB	-	40	48	38	45	58	45
	Right	-						
New Street	Thru NB	<i>3,350'</i>	-	-	-	-	-	-
	Left SB	-	0	25	25	25	25	25
	Thru							

(1) Distance to adjacent signalized intersections shown in italics.

Table 9. 95th Percentile Queue Matrices

U.S. Route 202 (Wilmington Pike) and Skiles Boulevard / Stetson School Drive

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2030 Design Year				2030 Design Year			
Development Condition				Existing	w/o Dev ⁽³⁾	w/ Dev ⁽³⁾	w/ Dev w/ Impvts ⁽⁴⁾	Existing	w/o Dev ⁽³⁾	w/ Dev ⁽³⁾	w/ Dev w/ Impvts ⁽⁴⁾
Stetson School Drive	Left	200'	200' (2 Lanes)								
	EB Thru	-									
	Right	200'									
Skiles Boulevard	Left	350'	350'								
	WB Thru	-									
	Right		150'								
U.S. Route 202 (Wilmington Pike)	NB Thru (2)	4,400'	4,400'								
	Right	220'	220'								
	SB Thru (2)	4,600'	4,600'								
	Right	200'	200'								
				93	233	518	210	123	258	545	238
				140	185	180	220	118	175	160	228
				30	40	40		53	73	65	
				53	118	115	125	25	78	70	83
				198	250	243	225	95	135	123	60
							88				98
				818	1115	1135	1120	505	788	868	830
				25	25	25	25	25	25	33	33
				545	775	853	843	403	628	678	655
				93	145	163	178	33	60	203	215

(1) Distance to adjacent signalized intersections shown in italics.

(2) Future storage shown if different from existing conditions.

(3) Intersection to be equipped with traffic adaptive signal equipment which dynamically adjusts traffic signal timings and phasings based on real-time traffic demand, and therefore, traffic signal timings were optimized in each future scenario. This project is currently under construction by PennDOT.

(4) Improvements include restriping the eastbound approach to provide dual left-turn lanes and a through/right-turn lane, widening the westbound approach to provided a dedicated right-turn lane, and modifying the traffic signal phasing.

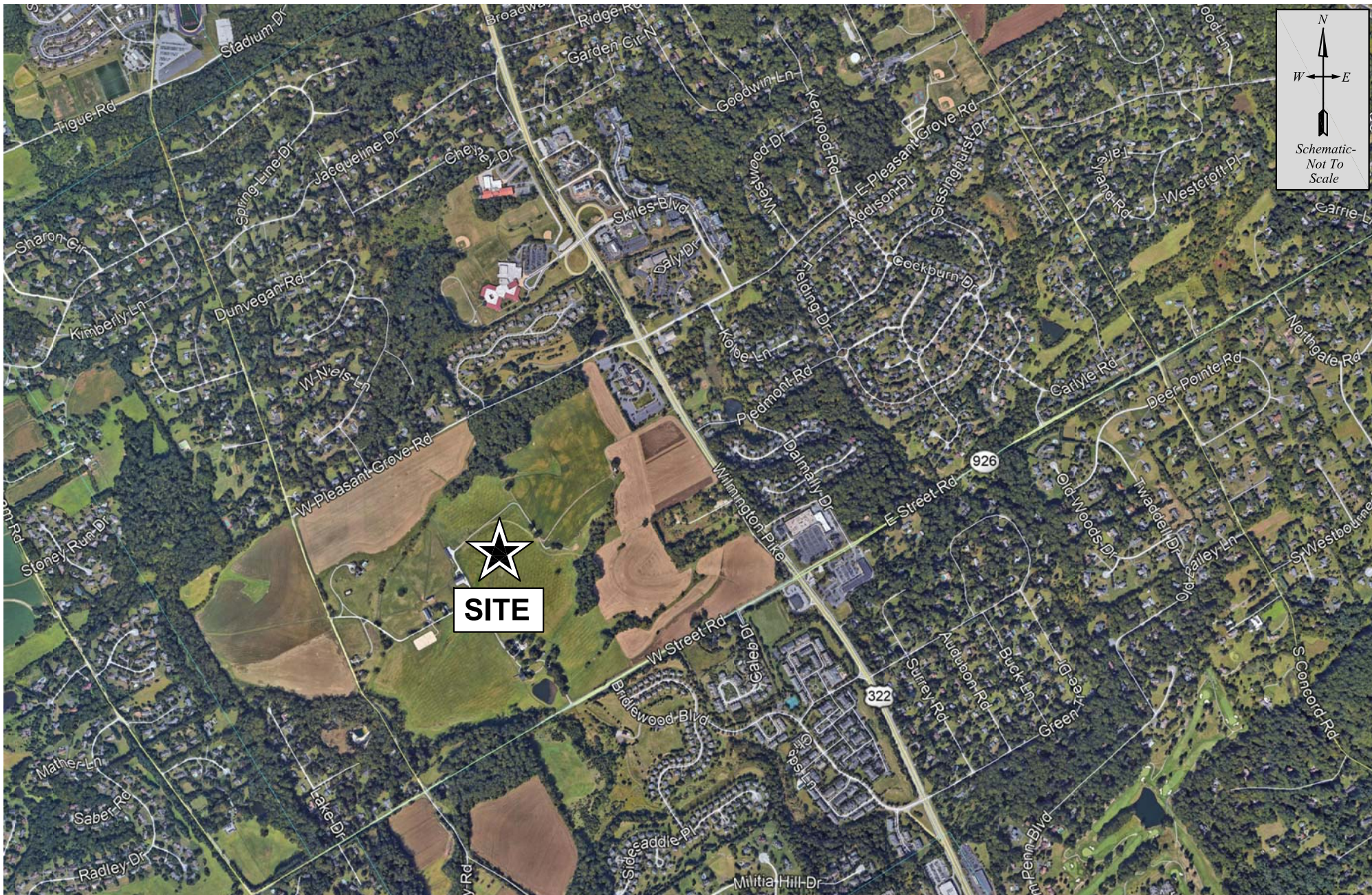


FIGURE 1
 Site Location Map
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

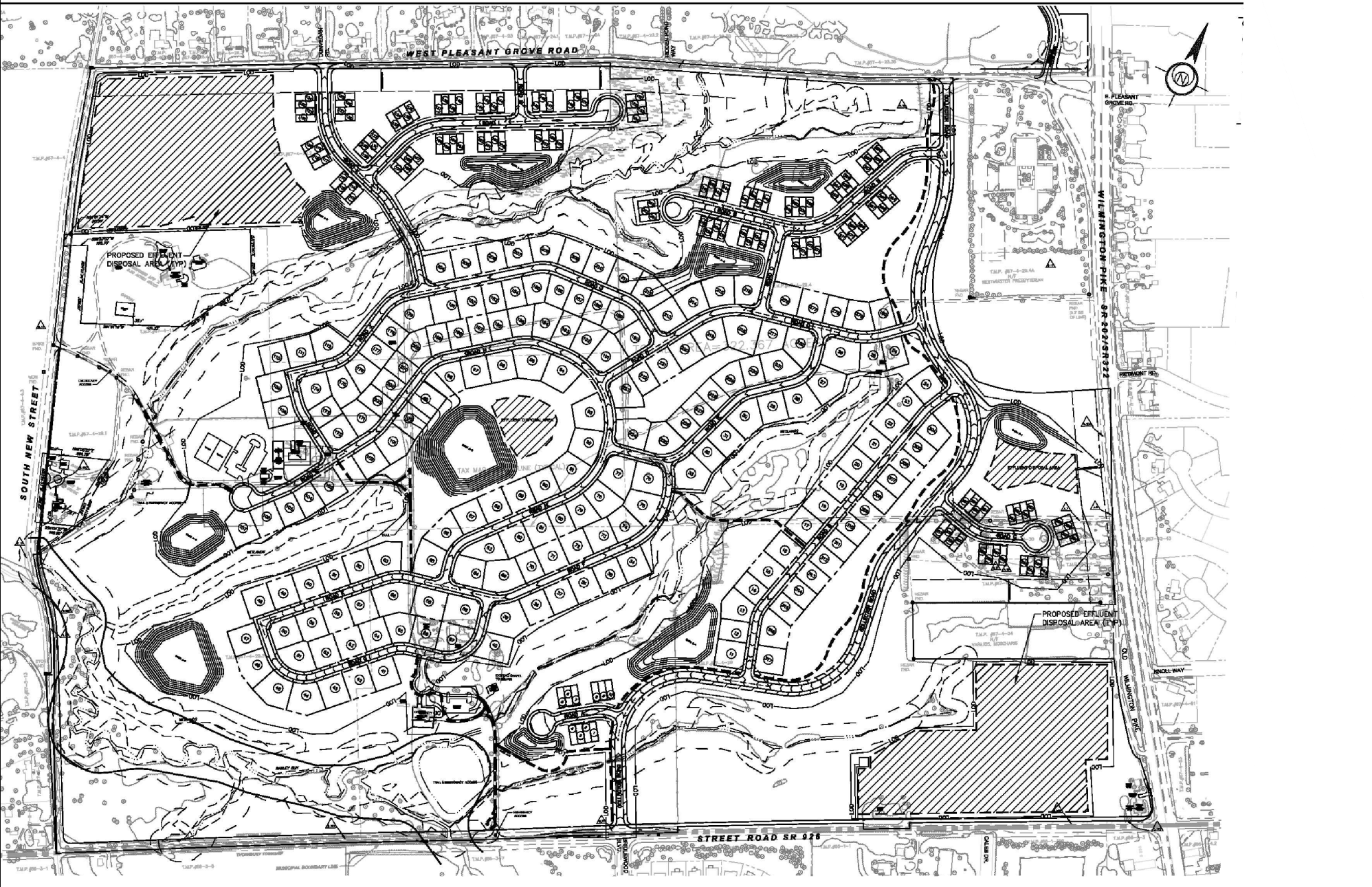


FIGURE 2
 Site Plan
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

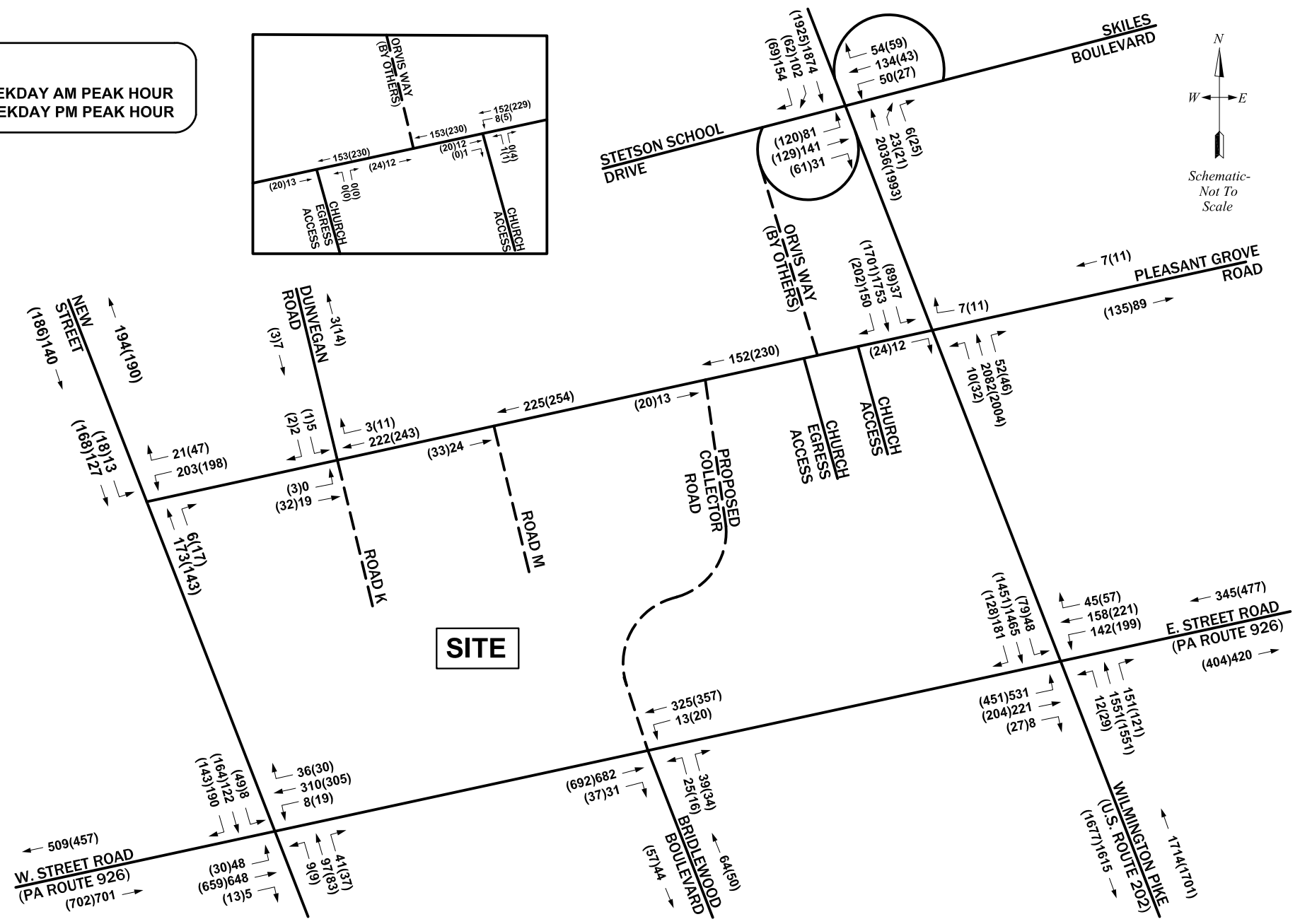
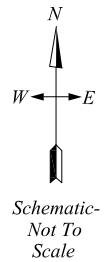
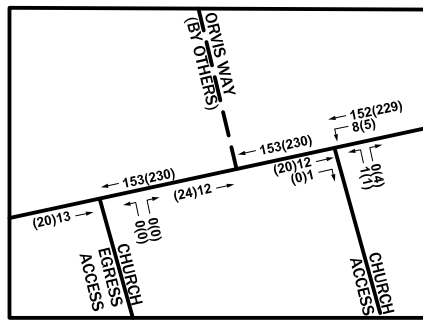


FIGURE 3A
 Existing Peak Hour Traffic Volumes
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

- LEGEND:**
- A WEEKDAY MORNING PEAK HOUR
 - (A) WEEKDAY AFTERNOON PEAK HOUR
 - EXISTING LANE/MOVEMENT
 - EXISTING TRAFFIC SIGNAL
 - EXISTING STOP CONTROL
 - * V/C RATIO > 1.0

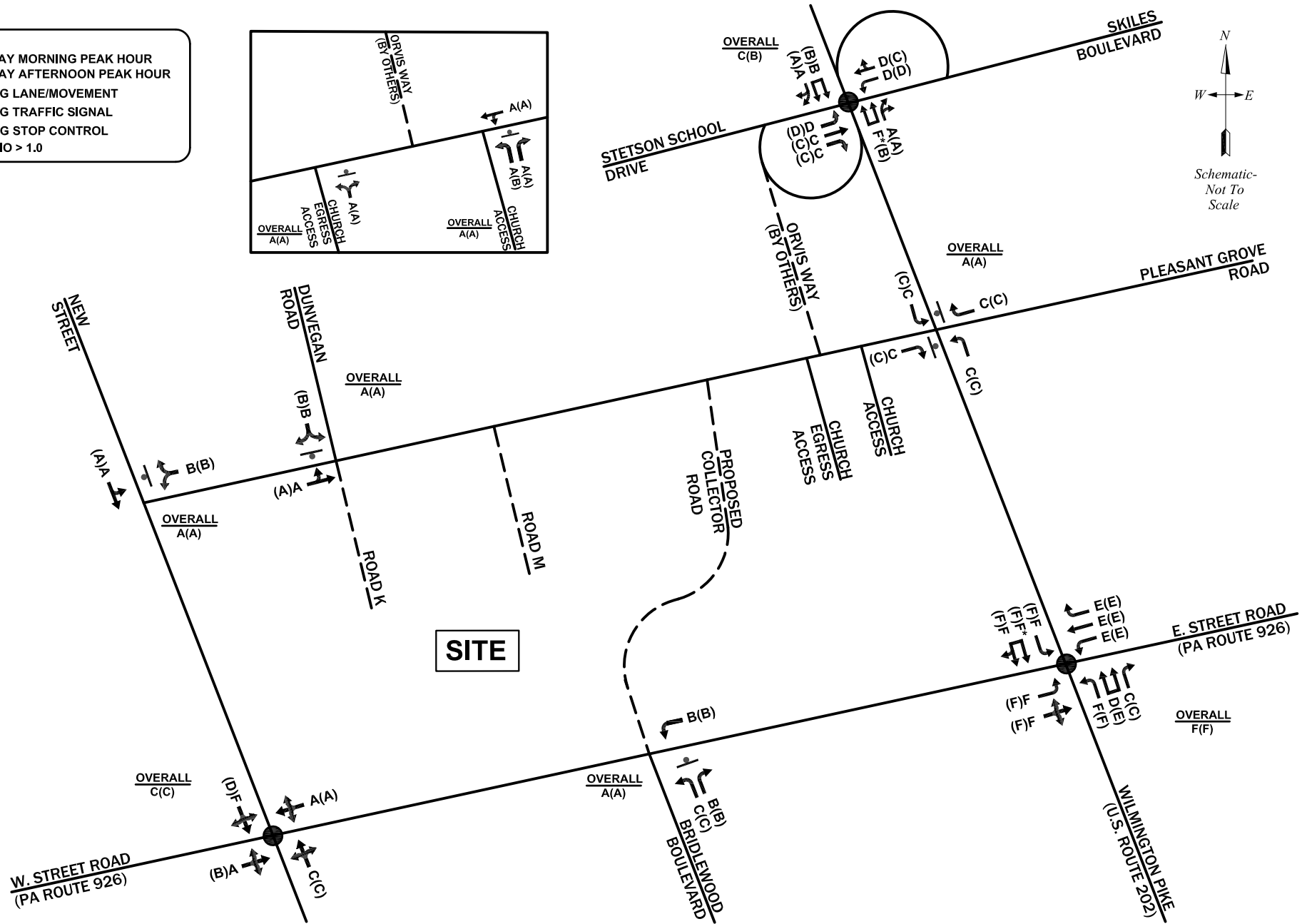


FIGURE 3B
 Existing Peak Hour Levels-of-Service
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:
 10% ENTERING
 (10%) EXITING

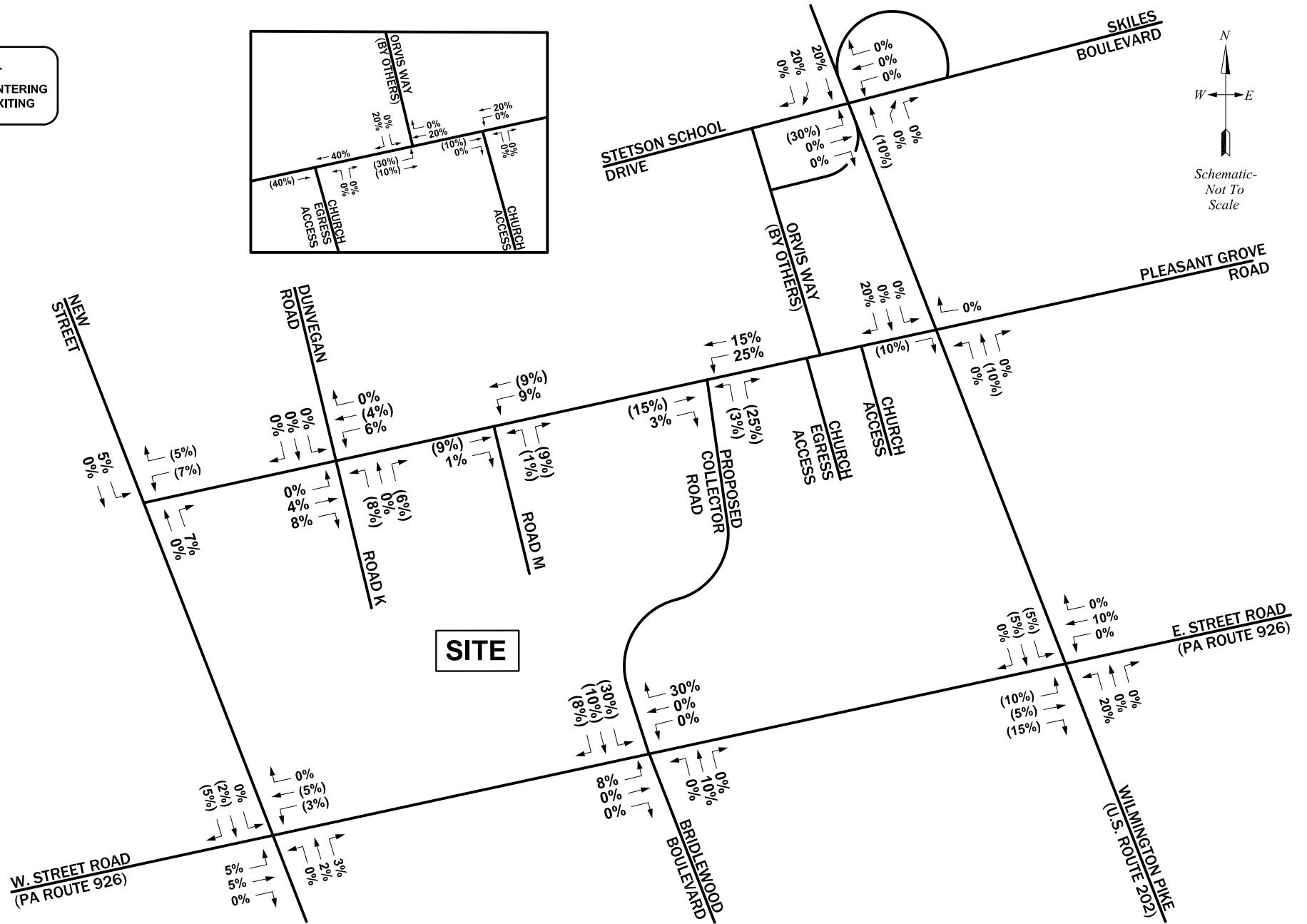


FIGURE 4A
 New Site Trip Distributions
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR

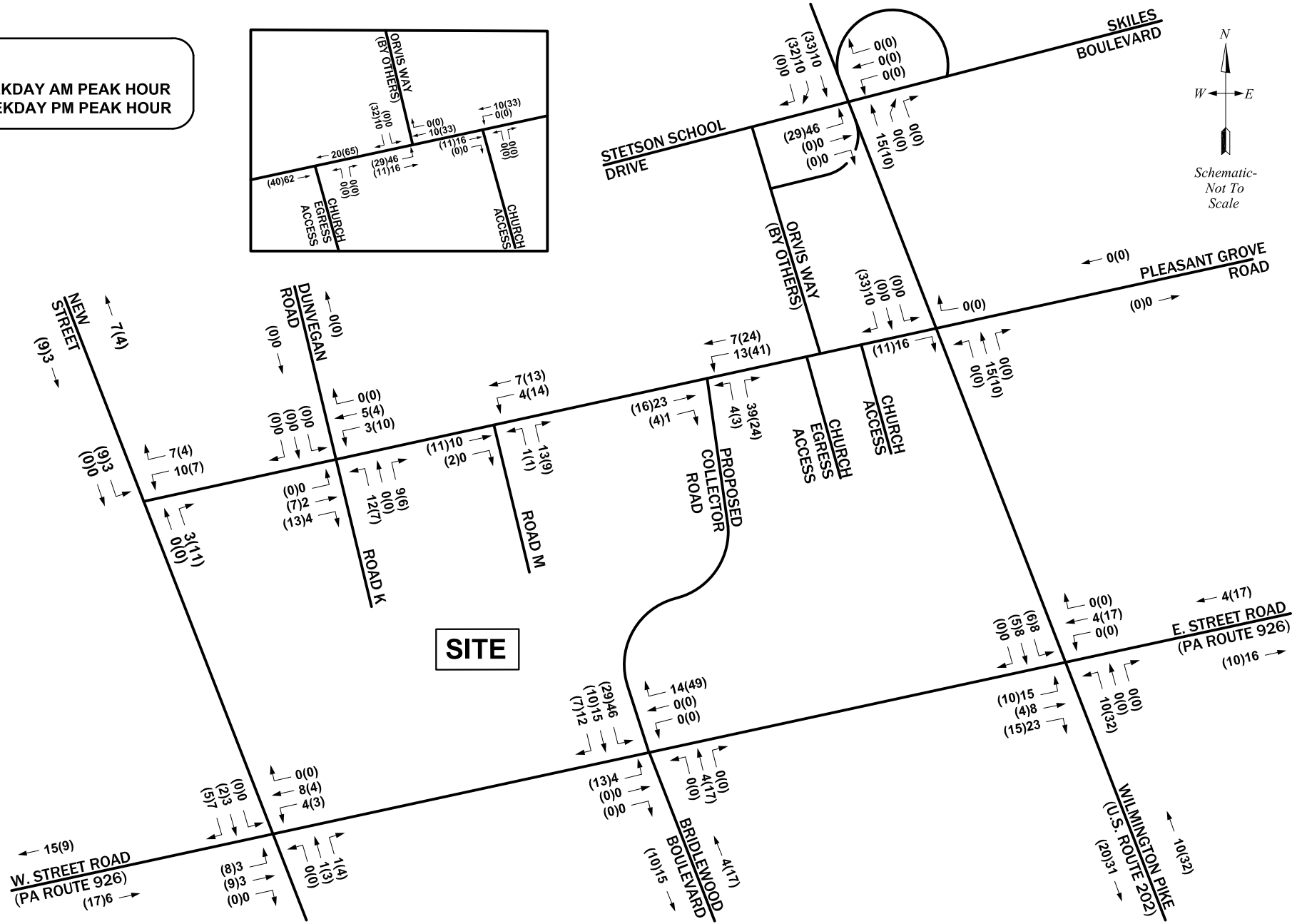


FIGURE 4B
 New Site Trip Assignments
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

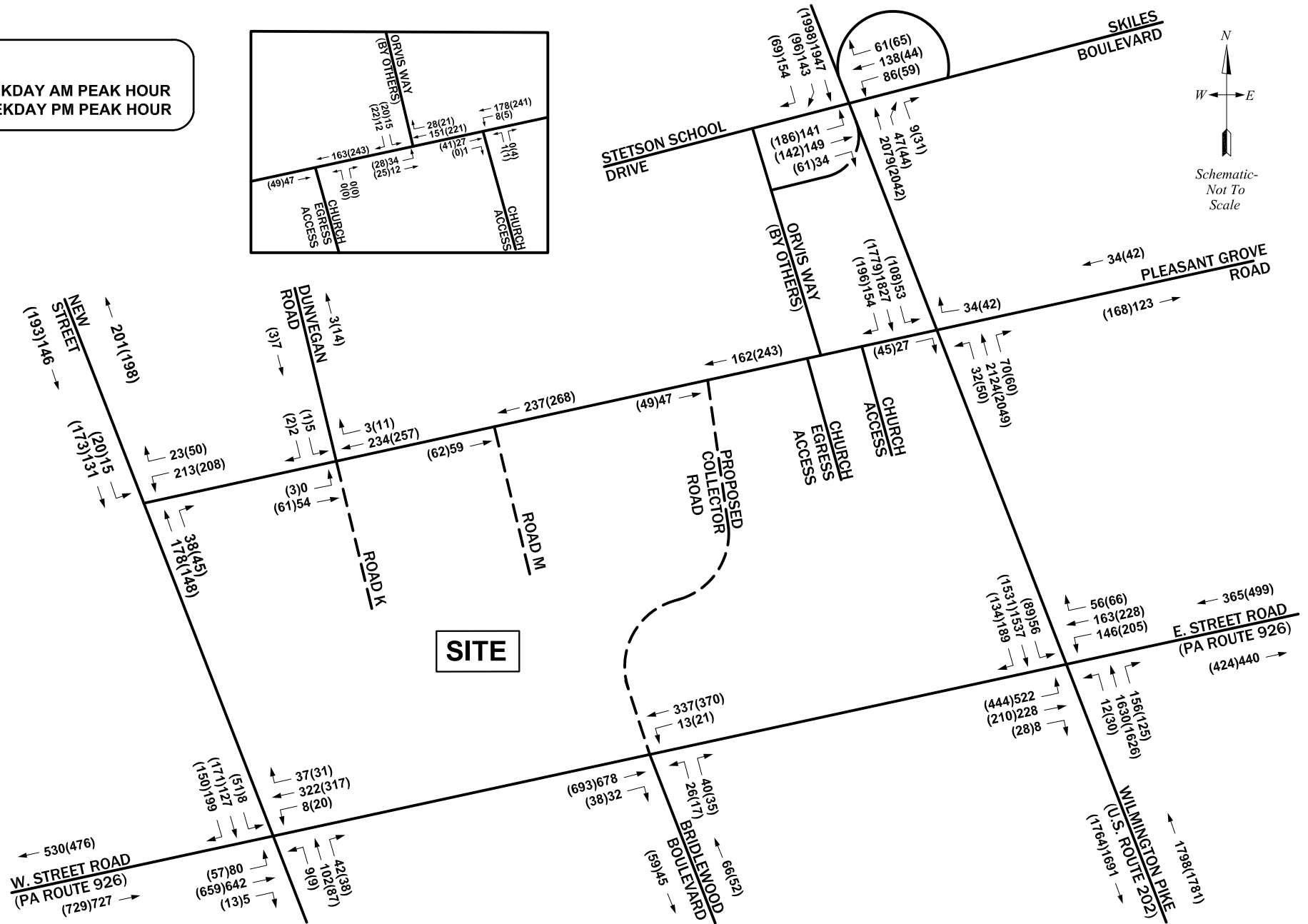
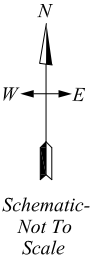
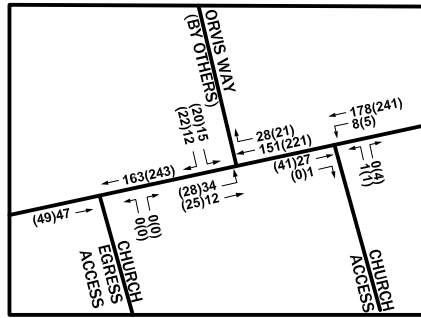


FIGURE 5A
 2025 Build-Out Year without Development Peak Hour Traffic Volumes
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

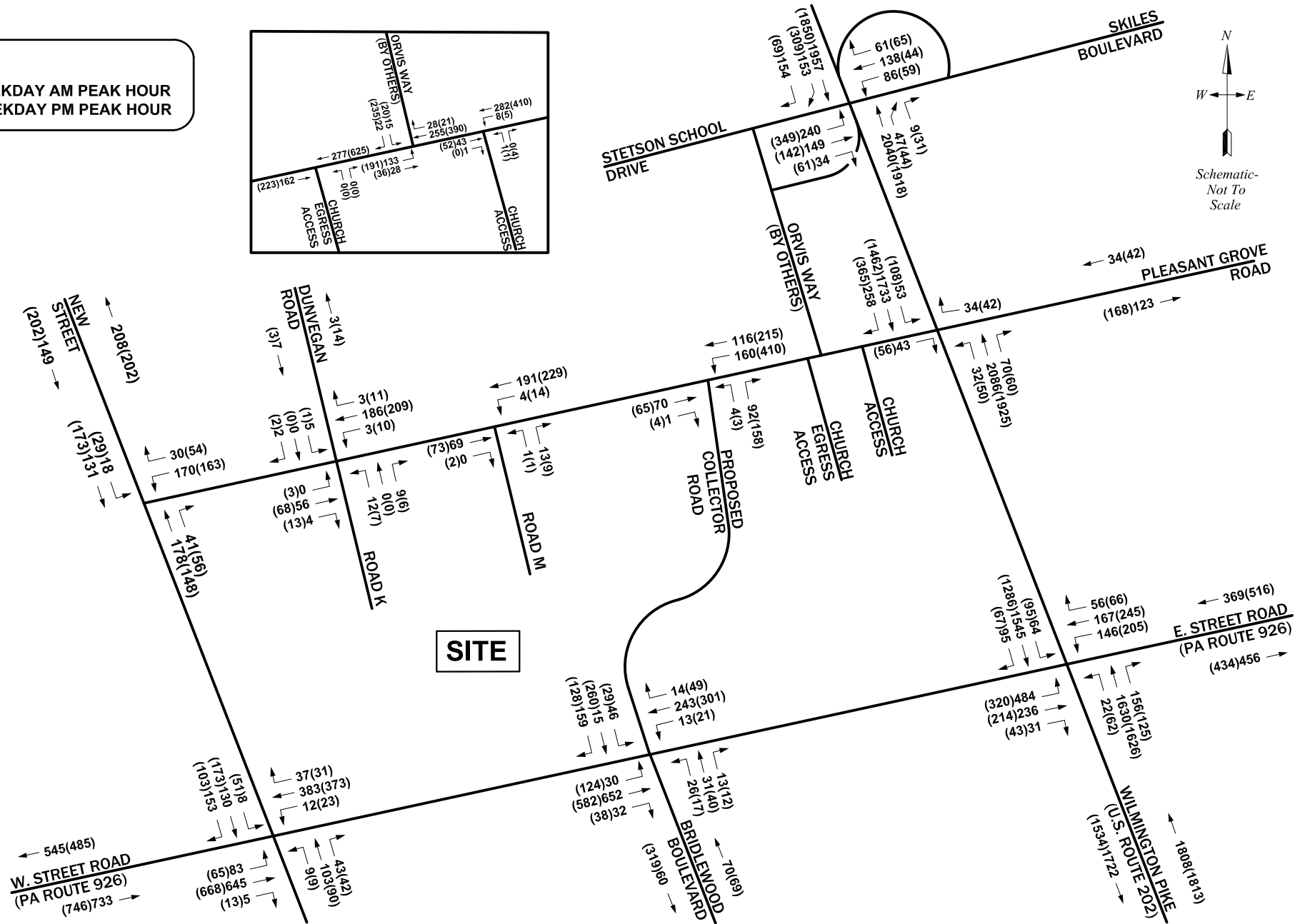
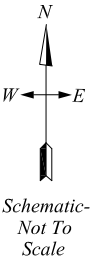
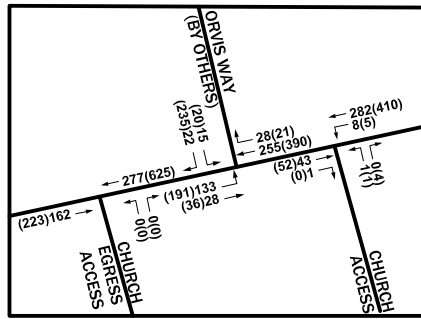


FIGURE 5B
 2025 Build-Out Year with Development Peak Hour Traffic Volumes
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:

A	WEEKDAY MORNING PEAK HOUR
(A)	WEEKDAY AFTERNOON PEAK HOUR
↔	EXISTING LANE/MOVEMENT
●	EXISTING TRAFFIC SIGNAL
⊥	EXISTING STOP CONTROL
*	V/C RATIO > 1.0
↔	PROPOSED LANE/MOVEMENT BY OTHERS
⊥	PROPOSED STOP CONTROL BY OTHERS

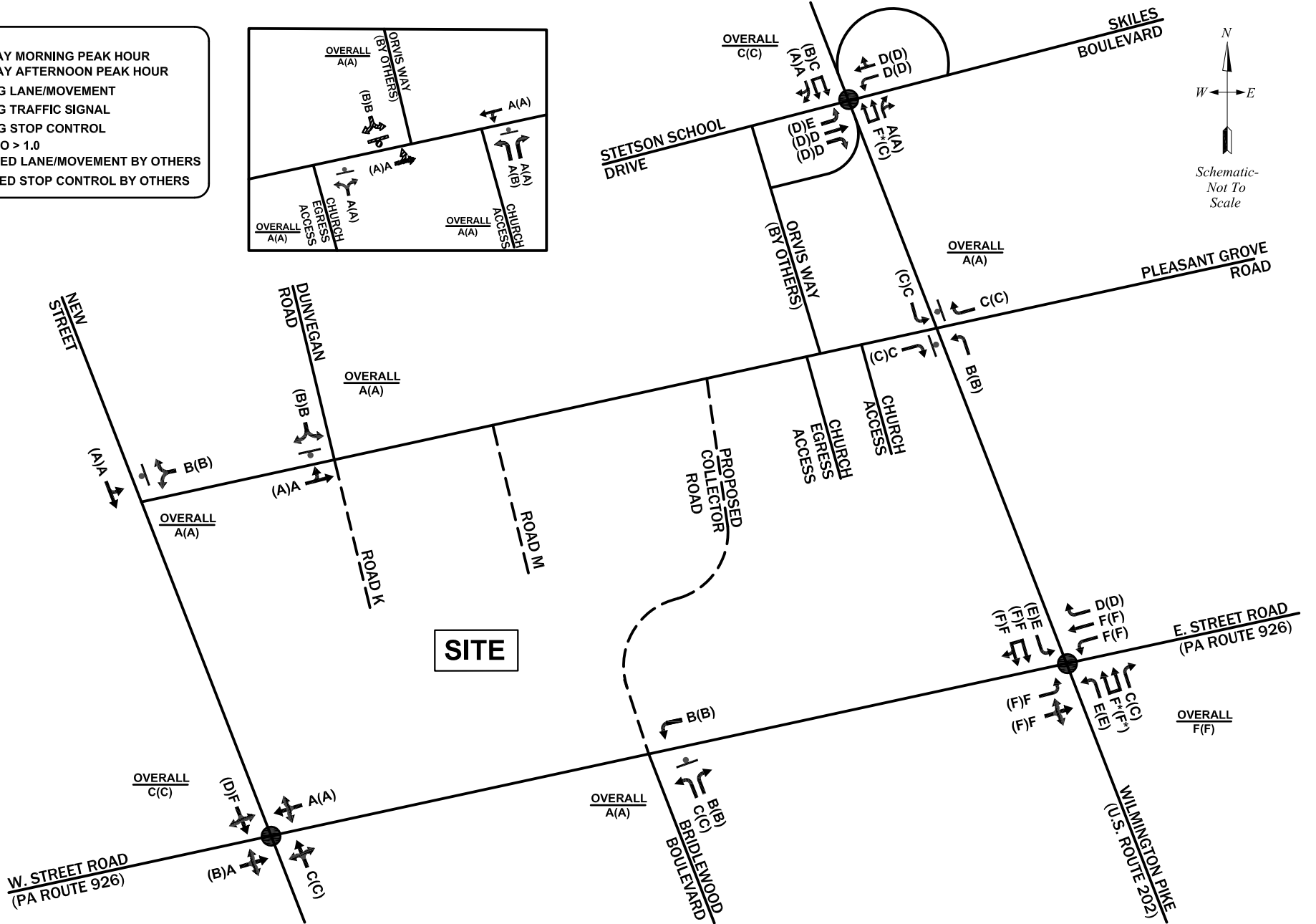
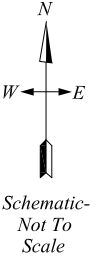
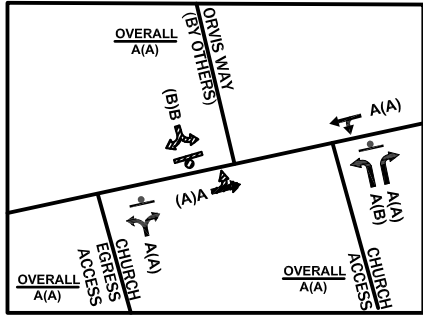


FIGURE 5C
2025 Build-Out Year without Development Peak Hour Levels-of-Service
ROBINSON TRACT
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

(2020-05-15) I:\eng\816451 - Crebilly Farm\dwg\2020-05 Robinson Tract Revised TIS\Figure 5C.dwg

LEGEND:

- A WEEKDAY MORNING PEAK HOUR
- (A) WEEKDAY AFTERNOON PEAK HOUR
- EXISTING LANE/MOVEMENT
- EXISTING TRAFFIC SIGNAL
- EXISTING STOP CONTROL
- * V/C RATIO > 1.0
- PROPOSED LANE/MOVEMENT BY OTHERS
- PROPOSED STOP CONTROL BY OTHERS
- PROPOSED LANE/MOVEMENT
- PROPOSED TRAFFIC SIGNAL
- PROPOSED STOP CONTROL

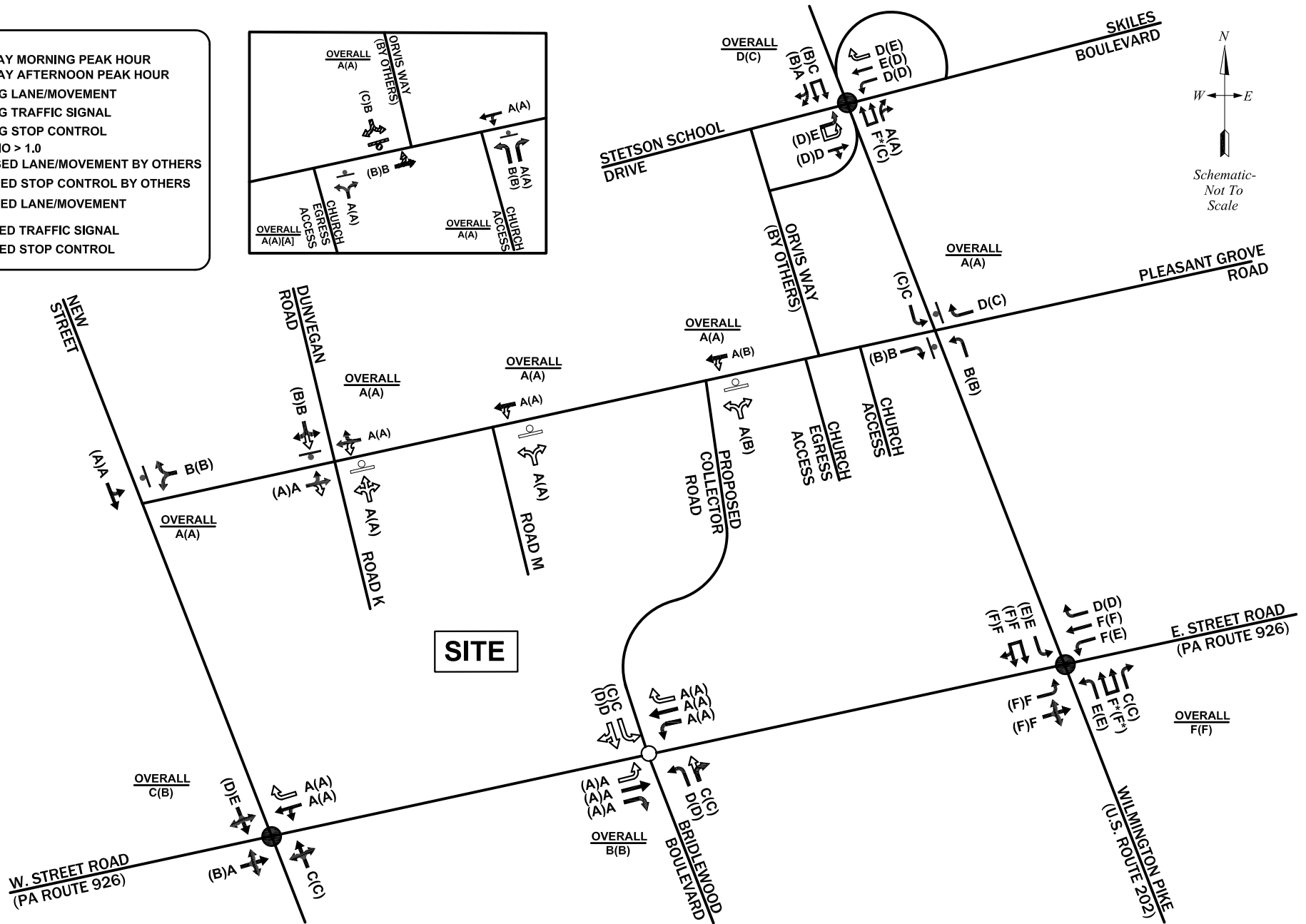


FIGURE 5D
 2025 Build-Out Year with Development Peak Hour Levels-of-Service
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

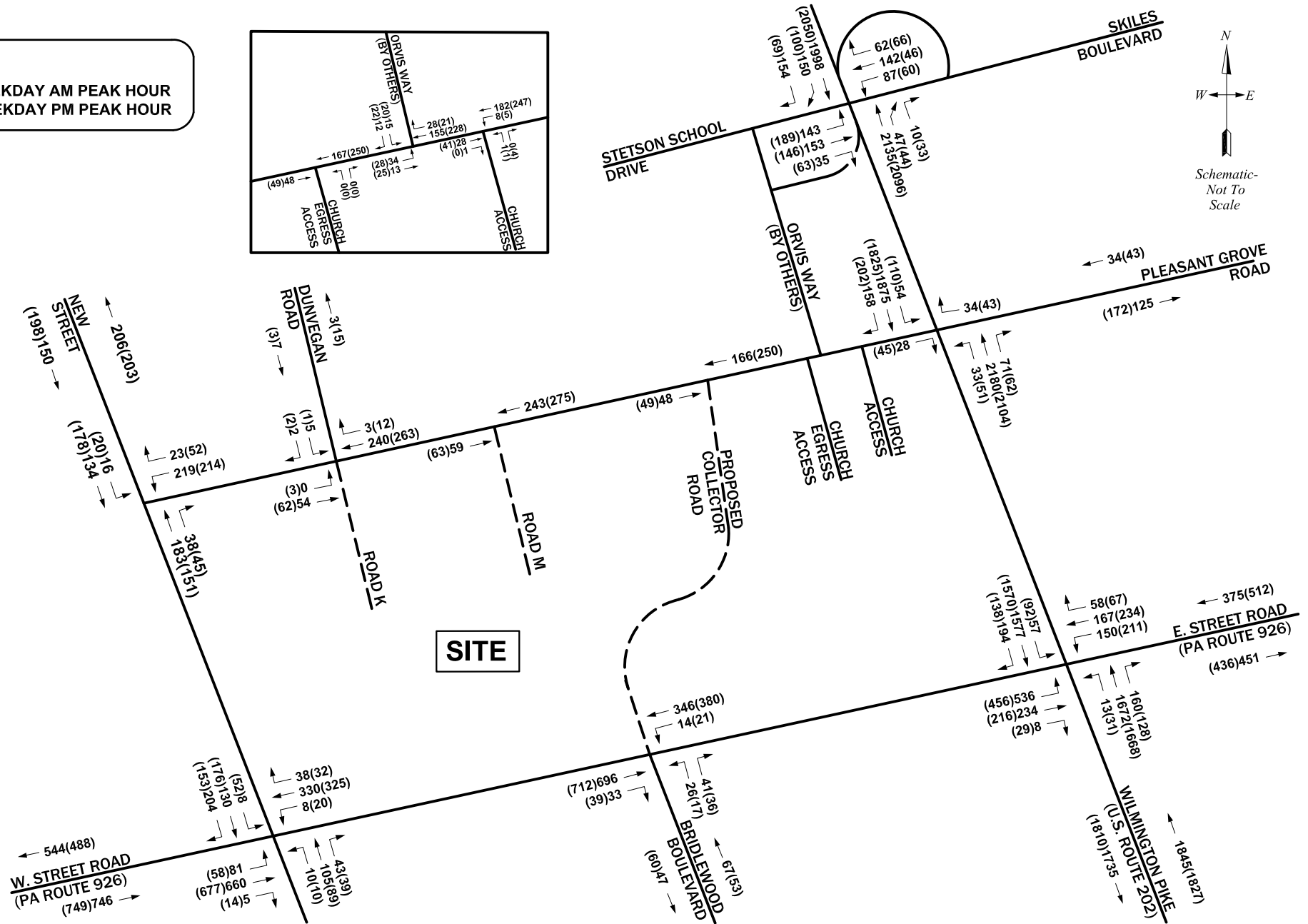
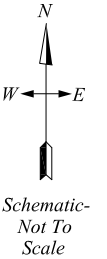
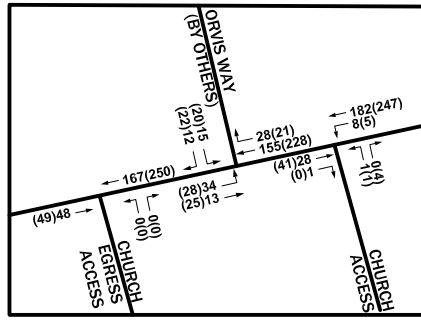


FIGURE 6A
 2030 Design Year without Development Peak Hour Traffic Volumes
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

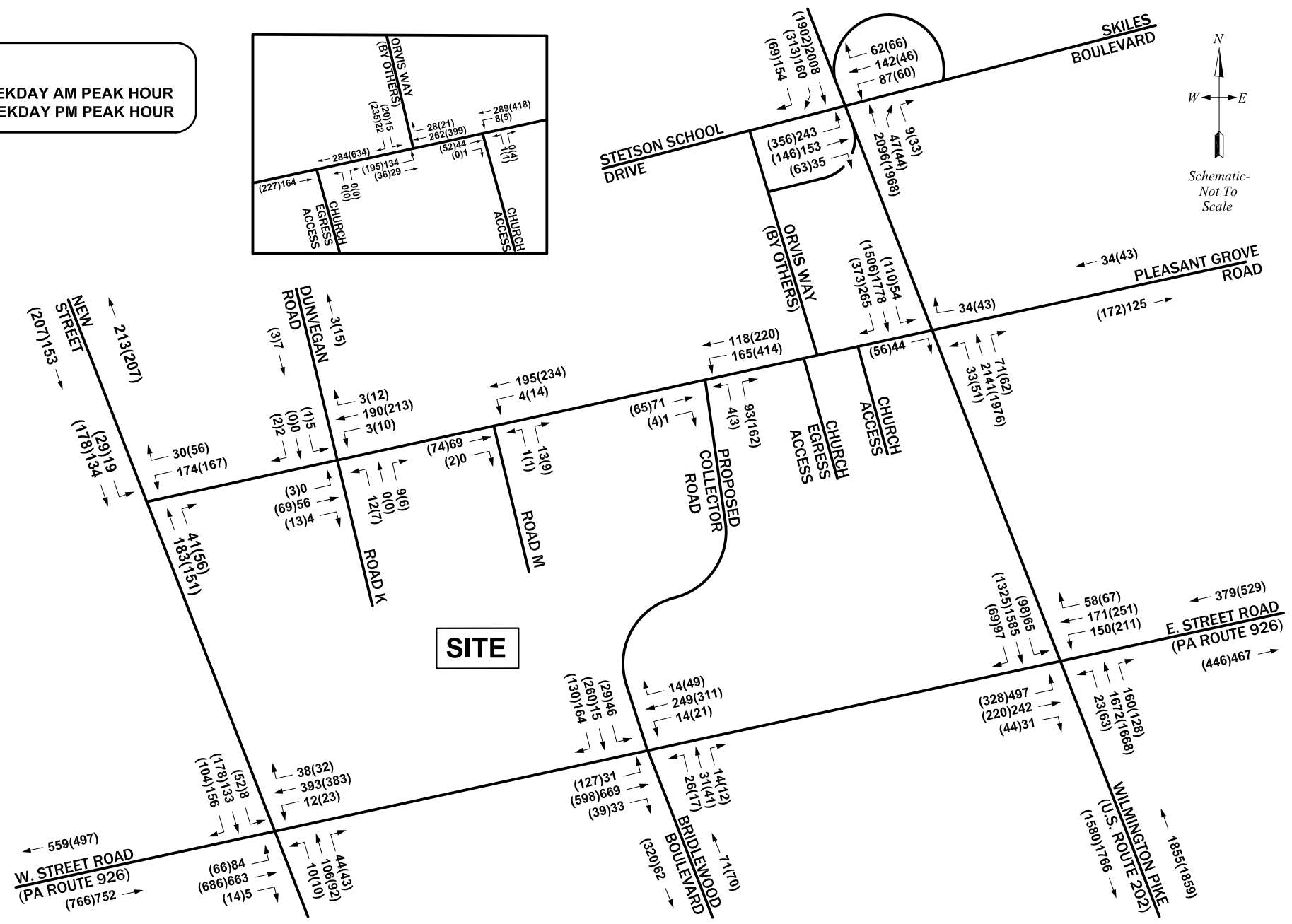
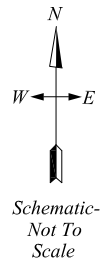
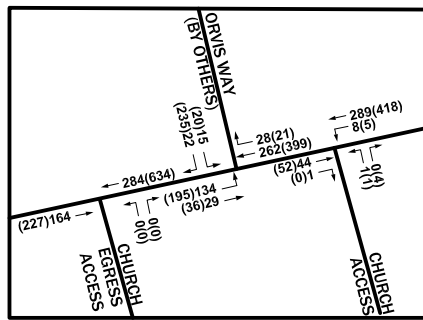


FIGURE 6B
 2030 Design Year with Development Peak Hour Traffic Volumes
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



- LEGEND:**
- A WEEKDAY MORNING PEAK HOUR
 - (A) WEEKDAY AFTERNOON PEAK HOUR
 - EXISTING LANE/MOVEMENT
 - EXISTING TRAFFIC SIGNAL
 - EXISTING STOP CONTROL
 - PROPOSED LANE/MOVEMENT BY OTHERS
 - PROPOSED STOP CONTROL BY OTHERS

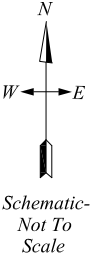
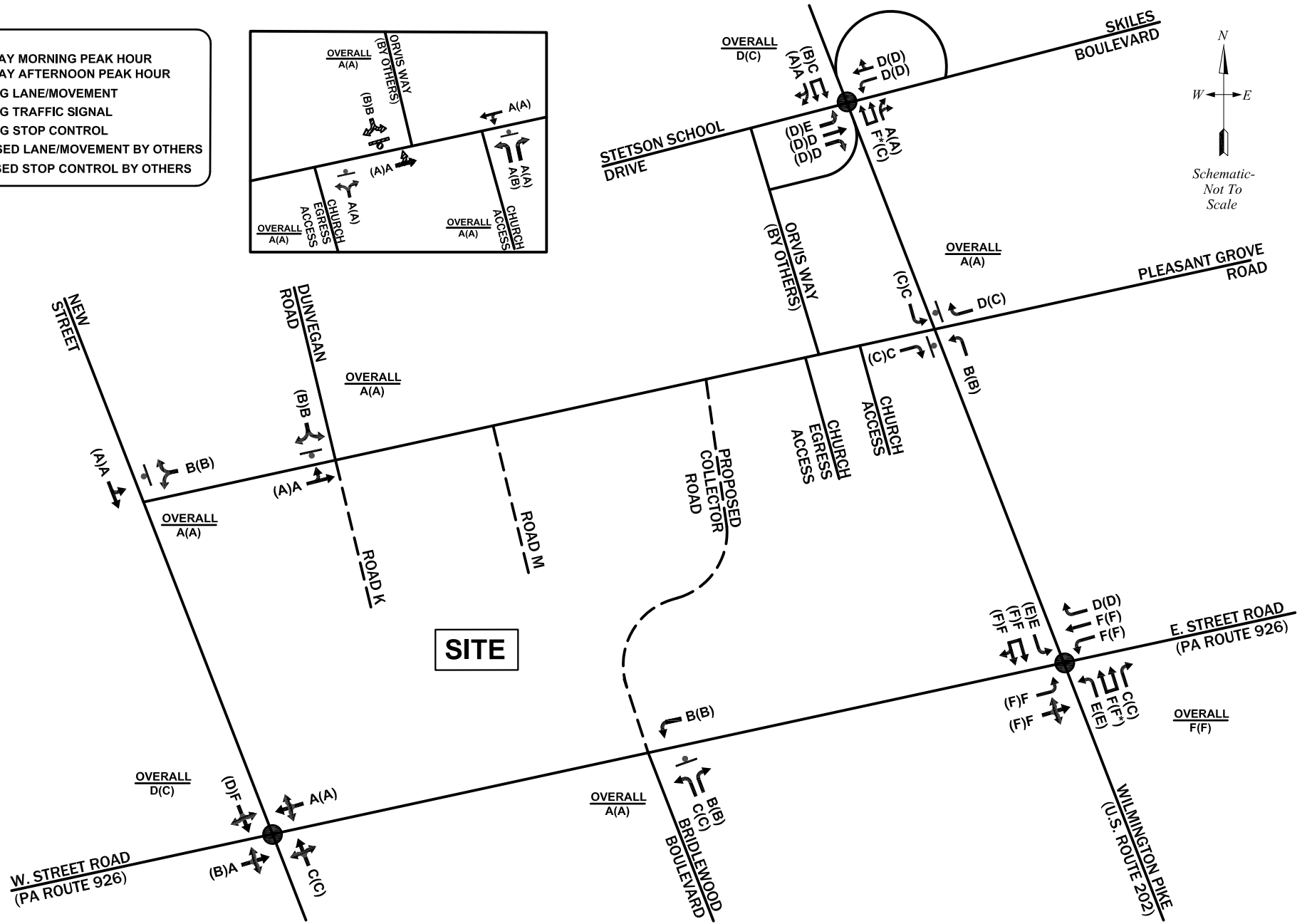


FIGURE 6C
 2030 Design Year without Development Peak Hour Levels-of-Service
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:

- A WEEKDAY MORNING PEAK HOUR
- (A) WEEKDAY AFTERNOON PEAK HOUR
- EXISTING LANE/MOVEMENT
- EXISTING TRAFFIC SIGNAL
- EXISTING STOP CONTROL
- * V/C RATIO > 1.0
- PROPOSED LANE/MOVEMENT BY OTHERS
- PROPOSED STOP CONTROL BY OTHERS
- PROPOSED LANE/MOVEMENT
- PROPOSED TRAFFIC SIGNAL
- PROPOSED STOP CONTROL

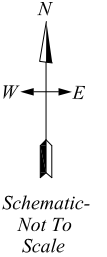
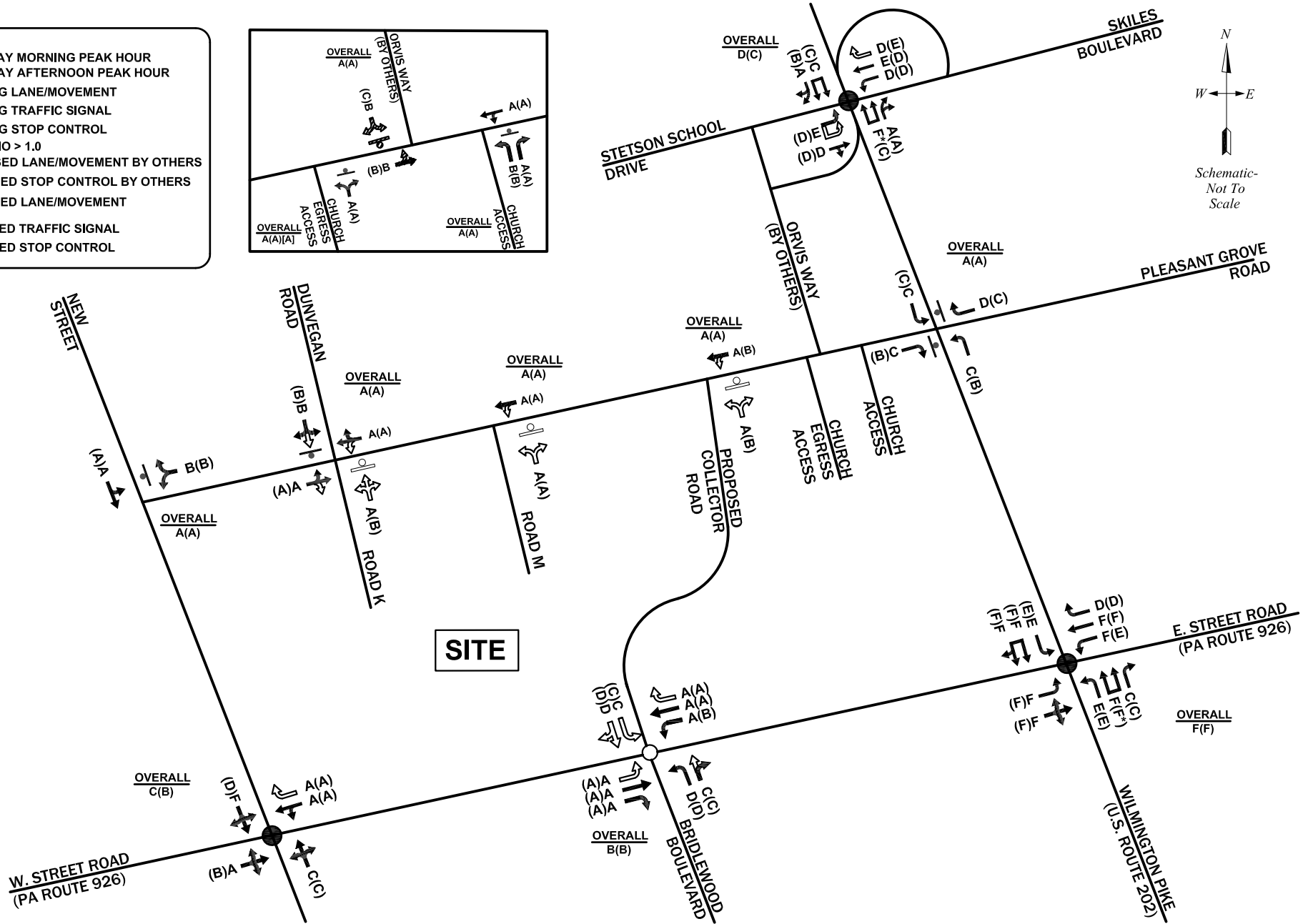
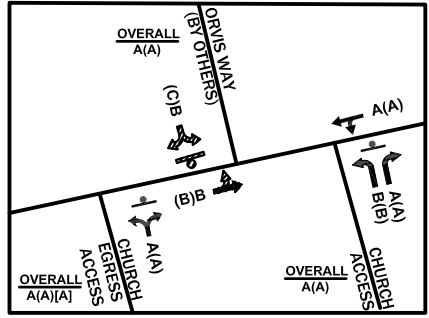


FIGURE 6D
 2030 Design Year with Development Peak Hour Levels-of-Service
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

W. PLEASANT GROVE ROAD

LEGEND:

- A WEEKDAY MORNING PEAK HOUR
- (A) WEEKDAY AFTERNOON PEAK HOUR
- ← EXISTING LANE/MOVEMENT
- ⊥ EXISTING STOP CONTROL
- ↙ PROPOSED LANE/MOVEMENT
- PROPOSED TRAFFIC SIGNAL
- ⊥ PROPOSED STOP CONTROL

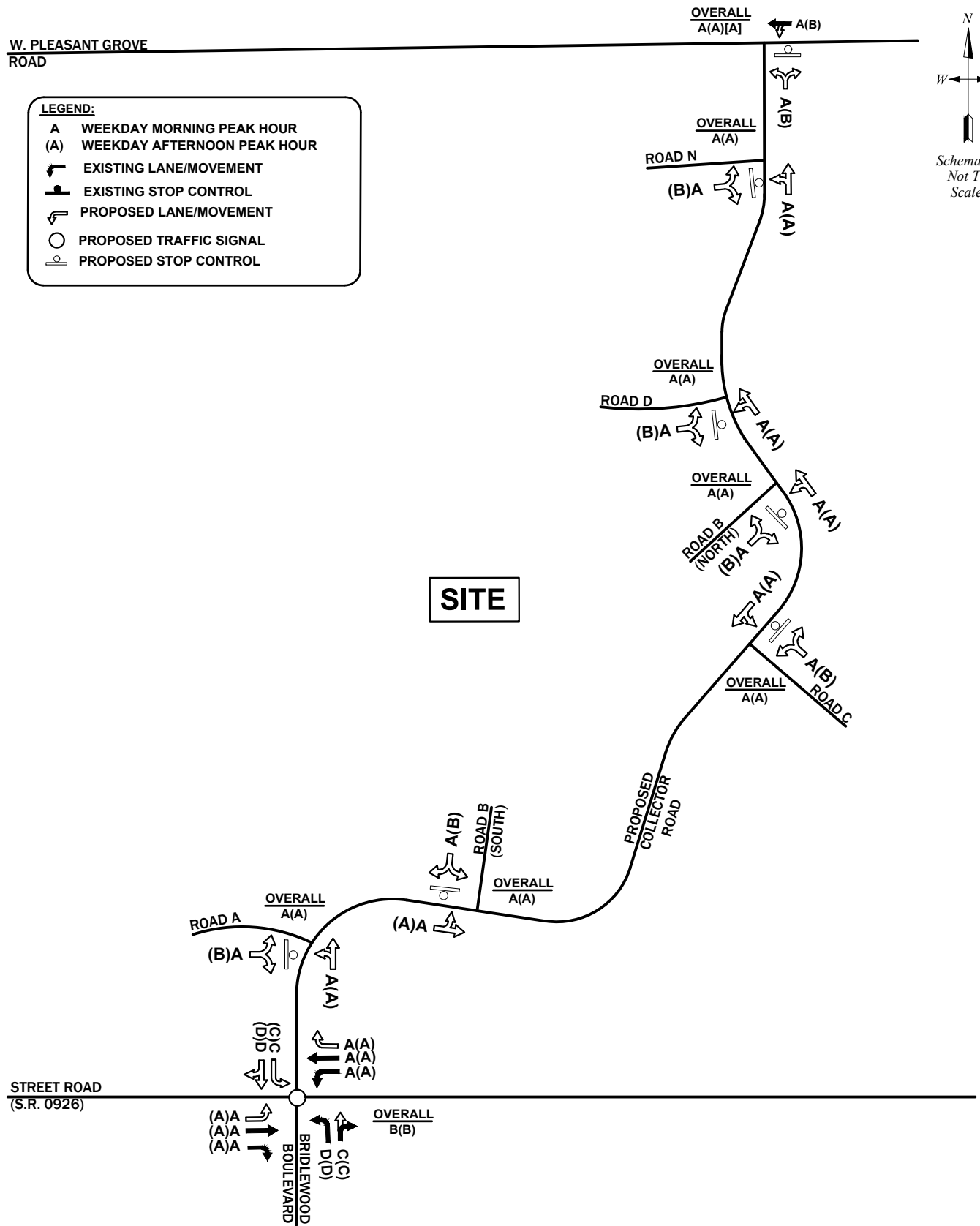
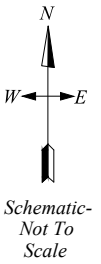


FIGURE 7

2030 Connector Road with Development Peak Hour Levels-of-Service

ROBINSON TRACT

WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



Appendix A

Correspondence



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Exton, PA 19341
p 610-594-9995 | f 610-594-9565

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FOUNDER

Joseph W. McMahon, P.E.

May 15, 2020

Mr. Russell Hatton, Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

RE: **Robinson Tract Residential Development
Westtown Township, Chester County, PA
McMahon Project No. 816451.11**

Dear Mr. Russell:

McMahon Associates, Inc. is in receipt of the letter prepared by Albert Federico Consulting, LLC in their capacity as the Township traffic engineer, dated May 13, 2020, in regards to the Robinson Tract residential development conditional use application traffic review. The development is proposed to be located on the Crebilly Farm property along the west side of U.S. Route 202 (Wilmington Pike), between West Pleasant Grove Road and Street Road (S.R. 0926), in Westtown Township, Chester County, Pennsylvania.

The *Transportation Impact Study (TIS) for the Robinson Tract*, prepared by our office and dated most recently revised May 15, 2020 (original date of August 13, 2019), is part of the conditional use application as submitted by the applicant. On behalf of the applicant, below is a summary of the comments in italics, with our responses following each comment.

To date the Applicant has not demonstrated compliance with the conditional use criteria in §170-2009.D(1)(h): In consideration of conditional use approval, the Township may require the applicant to submit a development impact study which considers the impact of the proposed flexible development on traffic volume and safety. Most notably:

- *Traffic analyses which provide the basis for determining project impacts have not been updated to address the outstanding technical aspects associated with the:*
 - *Assumed traffic diversions*
Response: As documented in the TIS within the conditional use application, based on a conference call conducted on May 14, 2020, PennDOT's consultant reviewer and the Township's Traffic Engineer indicated there are no further comments to address regarding the traffic diversions in the applicant's studies.
 - *Signal operations at PA 926 and New Street*
Response: As documented in the TIS within the conditional use application, the development has no traffic impact at this intersection, based on

PennDOT overall intersection mitigation criteria. Based on a meeting February 11, 2020, PennDOT required the applicant to revise the signal timings at PA 926 and New Street to provide a minimum of 63 seconds of green time along PA 926. This revision is included in the revised TIS, and results in no changes to the mitigation requirements or recommendations. PennDOT is requiring the applicant to evaluate the ability to provide dedicated left-turn lanes along PA 926. These lanes are needed based on existing conditions, and require right-of-way not controlled by the applicant to implement. The applicant has submitted conceptual plans to PennDOT, Westtown Township, and Thornbury Township for review, and will coordinate with the impacted property owners regarding the acquisition of right-of-way needed to complete the improvements. The current concept plan is attached.

- *An implementation strategy for necessary improvements has not been provided*
 - Response: The applicant will provide an implementation strategy upon final land development approval and the HOP process. The transportation improvements will be completed prior to occupancy, as required.

- *The submitted Conditional Use plans do not:*
 - *Illustrate the scope of improvements required to provide compliant sight distance at several accesses*
 - Response: As documented on page 11 of the transportation impact study, dated revised May 15, 2020, the existing available sight distances at the site accesses meet or exceed the Township and PennDOT requirements.

 - *Adequately address access to West Pleasant Grove Road*
 - Response: As documented in the transportation impact study, dated May 15, 2020, access is adequately addressed to West Pleasant Grove Road, as industry standard PennDOT traffic operations criteria are satisfied.

 - *Include compliant horizontal alignments of internal roadways*
 - Response: Detailed horizontal and vertical profiles are not required during conditional use. Full engineering occurs during the land development process. The application satisfies the conditional use requirements including road profiles to determine preliminary compliance with Township natural feature, site analysis, conservation design process and density requirements. As documented in the conditional use application, the internal roadways are compliant with Township criteria.

While there has been limited recent coordination with the Applicant's Traffic Engineer and PennDOT these items and the other issues identified in the March 13, 2020 Traffic Review remain outstanding.

The following list of recommended transportation related improvements is also provided for the Planning Commission's consideration in the review of this Application.

- Comment #1: Connector Road, construct:*
- a) Dimensionally compliant with Township standards for a Collector Road*
 - b) With a sufficient pavement structure, as determined by the Township Engineer, to accommodate heavy equipment and truck traffic.*
 - c) Reasonable traffic calming measures to maintain a consistent, appropriate travel speed.*
 - d) Facilities accommodating:*
 - i) Non-vehicular travel*
 - ii) Personal vehicles waiting for school busses.*

- Response:*
- a. This information is not required for conditional use. However, the applicant is providing a Connector Road design that is consistent with the Township standards, with a 28-foot cartway width and a 60-foot right-of-way, as documented in the conditional use application.
 - b. This information is not required for conditional use. However, the applicant has committed within the conditional use application to provide a pavement design in compliance with the Township's standards.
 - c. This information is not required for conditional use. The applicant is providing the Connector Road, as envisioned and as requested by the Township, as documented in the conditional use application. The applicant's original conditional use plan included a roadway design appropriate for a residential street. Traffic calming is inconsistent with the Township's requested Connector Road purpose and design.
 - d.i. This information is not required for conditional use. However, the applicant is providing facilities for non-vehicular traffic along the Connector Road, as documented in the conditional use application.
 - d.ii. This information is not required for conditional use, and school bus stops are not required pursuant to Township code. However, the applicant is providing designated school bus areas within the development, as documented in the conditional use application on the alternate plan.

- Comment #2: West Pleasant Grove Road, modify:*
- a) Along the site frontage in a manner compliant with Township standards for a Collector Road*
 - b) At the proposed local road site access(es) to control turning movements in a manner that enhances safety and aesthetics, preferably with roundabout(s)*

c) At the Collector Road site access to control turning movements and connectivity with Orvis Way in a manner that enhances safety and aesthetics, preferably with a roundabout

Response:

a. This information is not required for conditional use. However, the applicant is providing right-of-way and roadway widening along the West Pleasant Grove Road property frontage consistent with the Township standards for a Collector Road, as documented in the attached exhibit.

b. This information is not required for conditional use. The transportation impact study demonstrates that the site accesses satisfy industry standard PennDOT traffic operations criteria and safety with stop-control on the site access approach, as proposed by the applicant within the conditional use application. Aesthetics are not required by code.

c. This information is not required for conditional use. The transportation impact study demonstrates that the Collector Road intersection satisfies industry standard PennDOT traffic operations criteria and safety with stop-control on Collector Road approach. Aesthetics are not required by code. However, the applicant offers to install a mini roundabout at the Collector Road/West Pleasant Grove Road intersection as documented on the attached exhibit, provided the Township acquires any necessary right-of-way to install.

Comment #3

PA 926 (Street Road), modify as determined appropriate in coordination with PennDOT and Thornbury Township:

a) At the Connector Road site access to install a traffic signal and turn lanes

b) At New Street to:

i) Mitigate project impacts (as determined based on the review of revised analyses, submission pending) and to address PennDOT comments (currently by constructing eastbound and westbound left turn lanes)

ii) Provide appropriate non-vehicular connectivity

iii) Provide equipment for emergency pre-emption

Response:

a. Page 2 of the executive summary of the transportation impact study dated revised May 15, 2020 within the conditional use application demonstrates the applicant will provide a traffic signal and turn lanes in accordance with PennDOT criteria at the PA 926/Connector Road intersection.

b.i. This information is not required for conditional use. As documented in the conditional use application, the development has no traffic impact at this intersection, based on PennDOT overall intersection mitigation criteria. PennDOT is requiring the applicant to evaluate the ability to provide dedicated left-turn lanes along PA 926. These lanes are needed based on existing conditions, and require right-of-way not controlled by the applicant to implement. The applicant has submitted conceptual plans to PennDOT, Westtown Township, and Thornbury Township for review, and will

coordinate with the impacted property owners regarding the acquisition of right-of-way needed to complete the improvements.

b.ii. This information is not required for conditional use. In conjunction with the improvements PennDOT has requested the applicant to evaluate pedestrian facilities cross the southern leg of New Street and the eastern leg of PA 926, as documented in the attached concept plan. There will not be connectivity beyond the intersection since it crosses environmentally sensitive areas.

b.iii. This information is not required for conditional use. Emergency pre-emption exists at the intersection currently, and PennDOT requires it to be maintained.

Comment #4

US Route 202, modify as determined appropriate in coordination with PennDOT

a) At West Pleasant Grove Road to provide a southbound right turn lane as determined appropriate in coordination with PennDOT

b) At 926 to:

i) Mitigate project impacts (as determined based on the review of revised analyses, submission pending) and address PennDOT comments

ii) Provide equipment for emergency pre-emption.

Response:

a. The applicant has committed to provide this improvement on page 3 of the executive summary transportation impact study, dated revised May 15, 2020, within the conditional use application in coordination with PennDOT.

b.i. The development does not have a traffic impact at the intersection of US 202/PA 926 with provision of the Connector Road, as documented within the conditional use application.

b.ii. Emergency pre-emption exists at the intersection currently, and PennDOT requires it to be maintained.

Comment #5:

Non-vehicular elements, construct facilities connecting to existing and/or planned nonvehicular facilities, including:

i) Arborview

ii) Orvis Way

iii) Bridlewood Boulevard

iv) Signalized intersection of US Route 202 and PA 926

Response:

i. As documented in the conditional use application, the applicant is providing non-vehicular facilities from the development to the edge of the right-of-way at the Arborview property boundary. Connection to the Arborview trail is an offsite improvement that is not required.

ii. A non-vehicular connection is not required for conditional use, as this is an offsite improvement.

iii. As required by PennDOT, non-vehicular facilities will be provided in conjunction with the PA 926 Connector Road/Bridlewood Boulevard signalized intersection within the right-of-way.

iv. As documented in the alternate plan dated February 13, 2020, the applicant is provided non-vehicular facilities to connect the development to US 202/PA 926.

Comment #6: Westminster Presbyterian Church, as determined appropriate by the Township and in coordination with the Church:
a) Remove the existing westernmost driveway adjacent to the Connector Road
b) Provide for future access from the Westminster Presbyterian Church to the Collector Road at a mutually agreed upon location

Response:
a. The applicant will not remove the church driveway. The church can close the driveway at their discretion.
b. As documented in the conditional use application plans, the applicant is providing an easement for the church to connect an access along the Connector Road.

If there are any questions or if additional information is needed, please feel free to contact me at nkline@mcmahonassociates.com or (610) 594-9995.

Sincerely,



Nicole R. Kline-Elsier, P.E., PTOE
Regional Service Leader - Traffic

NRKE

cc: Robert Pingar, P.E., Westtown Township
Will Ethridge, Westtown Township
Andrew Semon, Toll Brothers
Michael Downs, P.E., Toll Brothers
Gregg Adelman, Esq., Kaplin Stewart



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Christopher K. Bauer, P.E., PTOE

FOUNDER

Joseph W. McMahon, P.E.

May 15, 2020

Mr. Russell Hatton, Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

**RE: Robinson Tract Residential Development
Westtown Township, Chester County, PA
McMahon Project No. 816451.11**

Dear Mr. Russell:

McMahon Associates, Inc. is in receipt of the Township’s comment letter, prepared by Albert Federico Consulting, LLC in their capacity as the Township traffic engineer, dated March 13, 2020, in regards to the *Transportation Impact Study for the Robinson Tract*, prepared by our office and last revised December 2, 2019. It is noted that the applicant was not sent a copy of this letter for review. The development is proposed to be located on the Crebilly Farm property along the west side of U.S. Route 202 (Wilmington Pike), between West Pleasant Grove Road and Street Road (S.R. 0926), in Westtown Township, Chester County, Pennsylvania. On behalf of the applicant, below is a summary of the comments in italics, with our responses following each comment.

Comment #1ai: As previously noted, Table 1 should be updated to identify West Pleasant Grove Road as a Township Collector Roadway. {Westtown Township Comprehensive Plan Update, page 9-7}.

Status: In consideration of the ongoing coordination the Applicant has yet to submit a revised TIS. The submitted correspondence does not commit to this revision.

Response: West Pleasant Grove Road does not meet the Collector Road standards under the Township’s road specifications. The applicant has agreed to widen along the property frontage to meet the Township’s Collector Road half-width requirement of 14 feet. Table 1 has been revised to note that the applicant will widen West Pleasant Grove Road along the property frontage to meet the Township’s half-width requirement for Collector Roads.

Comment #1aai: The sections of the TIS discussing improvements should note that the internal Collector Road provides access to the property.

Status: In consideration of the ongoing coordination the Applicant has yet to submit a revised TIS. The submitted correspondence does not commit to this revision.

Response: Complies. The Collector Road is not necessary for access to the site, but does provide secondary access locations. Page 3 of the TIS has been revised accordingly.

Comment #1aiii: *As previously noted, the Crash Summary only includes data for State "Reportable" collisions. In order to provide a more complete assessment of transportation safety within the study area "Nonreportable" collisions should be included. Note that the Traffic Safety Office is unaware of an outstanding request for "more detailed information". The applicant should resubmit the request to the Traffic Safety Office and Township Traffic Engineer, including the specific details being requested.*

Status: Supplemental information has been provided to the applicant. Based on coordination with the Applicant it is anticipated that this information will be considered in the revised TIS.

Response: The Westtown-East Goshen Township Regional Police Department provided additional non-reportable crash data. This data was summarized and provided to the Township Traffic Engineer.

Comment #1aiv: *As previously noted, the scope of physical improvements required to provide acceptable sight distance to public roads should be clearly indicated on the plans.*

Status: The submitted correspondence requests deferring this item until "detailed engineering" is completed.

Response: As documented on page 11 of the transportation impact study, dated revised May 15, 2020, the existing available sight distances at the site accesses meet or exceed the Township and PennDOT requirements.

Comment #1v: *As previously noted, confirm that the sight distance measurements consider the widening (approximately seven feet) of West Pleasant Grove Road required to meet Code. {§149-903.A(2)}*

Status: The submitted correspondence indicates that the measurements are based on the existing roadway.

Response: No further response required.

Comment #1vi: *Provide calculations supporting the assumed diversions associated with Orvis Way and the proposed Collector Road. Additionally, cross reference the Collector Road diversions within the body of the study with the figures in Appendix K.*

Status: Supplemental materials have been submitted in response to this comment. Coordination is on-going.

Response: As documented in the TIS within the conditional use application, based on a conference call conducted on May 14, 2020, PennDOT's consultant reviewer and the Township's Traffic Engineer indicated there are no further comments to address regarding the traffic diversions in the applicant's studies.

Comment #1vii: *The Travel Time Comparisons presented in Appendix K should be revised to address the following:*

- (1) Verify the assumed route lengths. The Diversion Routes generally appear to be shorter than the Base conditions.*
- (2) Ensure that the impacts of the regular queueing along US Route 202 North during the morning peak, extending from the interchange into the study area, is included.*
- (3) The evaluation of diversions should include an alternate that considerations operations following the completion of the PennDOT improvements planned for US Route 202 and PA Route 926.*
- (4) The traffic calming anticipated to be installed along Bridlewood Boulevard should be considered.*

Status: Supplemental materials have been submitted which address these comments.

Response: No further response is needed.

Comment #viii: *As previously noted, the anticipated increase in larger vehicles traveling along West Pleasant Grove Road and turning to/from New Street increases the possibility of vehicular conflicts. It is noted that*

- (1) The applicant has indicated a willingness to widen the roadway along the property frontage, but additional clarification regarding the specific scope of work is warranted.*
- (2) West Pleasant Grove Road is designated as a Collector Road and the total Right-of-way shall be 60 feet and cartway width shall be 28 feet. {§149-903.A(2)}*

Status: The submitted correspondences indicates that the Applicant will widen West Pleasant Grove Road along the frontage to Collector Road standards.

Response: No further response needed.

Comment #ix: *As previously noted, the future operations presented for PA Route 926 and New Street rely primarily on "optimized" traffic signal timings that appear unlikely to be approved by PennDOT. Written confirmation from PennDOT should be provided that the assumed "optimized" timings can be implemented. If confirmation cannot be provided an alternative analysis utilizing a timing approved by the Township should be provided.*

Status: Based on direction from PennDOT, it is anticipated that this analysis will be modified in the revised TIS.

Response: Based on a meeting February 11, 2020, PennDOT required the applicant to revise the signal timings at PA 926 and New Street to provide a minimum of 63 seconds of green time along PA 926. This revision is included in the revised TIS, and results in no changes to the mitigation requirements or recommendations.

Comment #x: *As previously noted, the Cross-Section Assumptions Exhibit for PA Route 926 and New Street in Appendix I is based on a traditional widening. Alternative alignments that minimize the number of properties from which right-of-way would be needed should be considered. Additionally, the Applicant is not precluded from coordinating with property owners to determine if the right-of-way could be reasonably obtained.*

Status: The Applicant committed to PennDOT (and represented to the Planning Commission) that revised improvement concept(s) would be prepared for PennDOT and Township review and would be used to coordinate with the potentially affected property owners.

Response: The applicant has submitted a conceptual plan and is continuing to coordinate with PennDOT, Westtown Township, and Thornbury Township regarding improvements at the intersection of Street Road (S.R. 0926) and New Street. Traffic analysis worksheets documenting the results with the additional intersection improvements illustrated in the conceptual plans are attached.

Comment #xi: *As previously noted, Cost Estimates for necessary improvements to accommodate future traffic should be provided. {§149-804.A(10)}*

Status: The submitted correspondences indicates that the Applicant will provide this information once there is "concurrence" regarding the scope of improvements.

Response: No further response needed.

Comment #xii: *As previously noted, an Implementation Strategy for necessary improvements to accommodate future traffic should be provided. {§149-804.A(11)}*

Status: The submitted correspondences indicates that the Applicant will provide this information once there is "concurrence" regarding the scope of improvements.

Response: The applicant will provide an implementation strategy upon final land development approval and the HOP process. The transportation improvements will be completed prior to occupancy, as required.

*Comment #2a: The conclusion that the project does not adversely impact the intersection of US Route 202 and PA Route 926 continues to be based in large part on assumed diversions. As noted above, additional supporting information and analyses should be provided.
Status: Supplemental materials have been submitted and coordination is on-going. The Applicant has yet to submit a revised TIS.*

Response: As documented in the revised TIS, based on a conference call conducted on May 14, 2020, PennDOT's consultant reviewer and the Township's Traffic Engineer indicated there are no further comments to address regarding the traffic diversions in the applicant's studies.

*Comment #2b: The Applicant has indicated that turn lanes will be provided to accommodate post development volumes at the following intersections, but these improvements are not reflected on the plans:
i. US Route 202 at Pleasant Grove Road – Southbound Right Turn
Status: The submitted correspondences indicates that the Applicant will make this improvement and that plans will be provided there is "concurrence" regarding the scope of improvements.
ii. PA Route 926 at New Street – Eastbound Left Turn
Status: The submitted correspondence offers an opinion that this improvement is unwarranted. Based on direction from PennDOT it is anticipated that the analysis will be modified in the revised TIS.*

*Response: i. No further response is required.
ii. As documented in the TIS, the development has no traffic impact at this intersection, based on PennDOT overall intersection mitigation criteria. PennDOT is requiring the applicant to evaluate the ability to provide dedicated left-turn lanes along PA 926. These lanes are needed based on existing conditions, and require right-of-way not controlled by the applicant to implement. The applicant has submitted conceptual plans to PennDOT, Westtown Township, and Thornbury Township for review, and will coordinate with the impacted property owners regarding the acquisition of right-of-way needed to complete the improvements.*

Comment #2ci: Additional grading and/or traffic management measures appear warranted to enhance safety at the three accesses proposed to have insufficient sight distance or the exact minimum distance (with no margin for error):

- (1) Collector Road at PA Route 926 (grading)*
- (2) Road M at West Pleasant Grove Road (grading and/or roundabout)*
- (3) Collector Road at West Pleasant Grove Road (grading and/or roundabout)*

Status: The submitted correspondences requests deferring addressing these items until "detailed engineering" is completed.

Response: As documented on page 11 of the transportation impact study, dated revised May 15, 2020, the existing available sight distances at the site accesses meet or exceed the Township and PennDOT requirements. For the intersection of West Pleasant Grove Road and the Connector Road, the transportation impact study demonstrates that this intersection satisfies industry standard PennDOT traffic operations criteria and safety with stop-control on Collector Road approach. Aesthetics are not required by code. However, the applicant offers to install a mini roundabout at the Collector Road/West Pleasant Grove Road intersection, provided the Township acquires any necessary right-of-way to install. Traffic analysis worksheets for a mini roundabout at this location are attached.

Comment #2cii: *In order to minimize external conflict points, promote internal connectivity, reduce the number of cul-de-sacs and enhance overall safety along West Pleasant Grove Road:*
(1) Road M should be removed
(2) Roads L and N should be extended to form a single road

Status: The submitted "Alternate" plan removed the external access without connecting the internal roadways. It has been conveyed to the Applicant on several occasions that these items are intended to be addressed together: connect the internal roads (to remove the cul-de-sacs) and remove the external access.

Response: There is no requirement under the ordinance for these two items to be addressed together. The proposed internal roadway design is safe and has sufficient internal connectivity. Removing Road M and extending roads L and N does not create any additional internal connectivity or enhance safety, rather it unnecessarily adversely impacts the environmentally sensitive areas in the northern portion of the property. This comment violates Section 170-1617.C.(2) of the Zoning Ordinance which provides that "potential development areas also shall be delineated so as to minimize intrusion into secondary conversation areas.

Comment #2ciii: *The design of the internal Collector Road should incorporate suitable traffic calming measures to maintain a 35 mile per hour average travel speed.*

Status: The submitted correspondences requests deferring this item until Land Development.

Response: No further response required.

Comment #2iv: *The submitted plans should be revised to ensure they accurately reflect existing driveways in the immediate vicinity of the site, in particular the exit-only driveway from the Westminster Presbyterian Church.*

Status: The driveway is reflected on the plan but is difficult to discern due to drafting. It appears the proposed site access to West Pleasant Grove Road (via the Collector Road) will impact the

Church Driveway. Provisions should be made for future access from the Westminster Presbyterian Church to the internal Collector Road at a mutually agreed upon location.

Response: As documented in the alternate plan dated February 13, 2020, the applicant is providing an easement for the church to connect an access along the Connector Road.

Comment #2v: *The plans should identify the anticipated limits of required right-of-way and/or easements to accommodate the physical improvements associated with the PennDOT project at US Route 202 and PA Route 926.*

Status: The submitted correspondences indicates that right-of-way is being offered. The Applicant does correctly note that the PennDOT project is not fully engineered. The plans should include a note indicating that other reasonable right-of-way and/or easement required for the improvements will be provided to PennDOT as needed.

Response: No further response needed.

Comment #2vi: *The following internal roadways should be reconfigured to remove geometric irregularities:*
(1) Road E and Road F (provide a curve)
(2) Road F and Road G (provide a curve)
(3) Road I and Road J (remove the jog within the intersection)

Status: The submitted materials do not adequately address these comments. The Applicant has represented to the Planning Commission that Stop signs will be used to compensate for these irregular designs. To date no information has been provided documenting that the signs would meet accepted warrants.

Response: The internal intersection design complies with section 149-907.A of the Township SALDO, which does not apply during the conditional use process.

Comment #vii: *Additional facilities should be provided to address non-vehicular connectivity, including:*
(1) A perimeter trail around the portion of the site west of the internal Collector Road. {Westtown Township Comprehensive Plan Update, page 9-15}
(2) Connections to existing and planned facilities along Dunvegan Road and within the Arborview neighborhood. {Westtown Township Comprehensive Plan Update, page 9-15}
(3) Sidewalks along proposed roads, including accessible crossings. {§149-916}
(4) Connectivity to pedestrian attractors, including Stetson Middle School, Westminster Presbyterian Church, and the existing retail uses at US Route 202 and PA Route 926. {§149-916}

Status: The submitted materials do not adequately address these comments. It is noted that a supplemental plan was presented to the Planning Commission which included a partial connection to Arborview and a trail from an internal roadway to the intersection of US Route 202 and PA Route 926.

Response: As documented in the conditional use application, the applicant is providing non-vehicular facilities from the development to the edge of the right-of-way at the Arborview property boundary. Connection to the Arborview trail is an offsite improvement that is not required. As required by PennDOT, non-vehicular facilities will be provided in conjunction with the PA 926 Connector Road/Bridlewood Boulevard signalized intersection within the right-of-way. As documented in the alternate plan, the applicant is provided non-vehicular facilities to connect the development to US 202/PA 926.

Comment #viii: *Provisions should be made for future access from the Westminster Presbyterian Church to the internal Collector Road.
Status: The Alternate Plan does indicate a location for potential access. To date there is no information indicating that this location has been reviewed with the Church. Based on initial coordination with the Church a location further south along the Collector Road may be preferred.*

Response: As documented in the conditional use application plans, the applicant is providing an easement for the church to connect an access along the Connector Road.

Comment #ix: *Provisions should be made for School Bus Stops, including short-term parking for drop-off and pick-up.
Status: The submitted correspondences requests deferring this item until Land Development.*

Response: School Bus Stops are not required pursuant to Township code. However, the applicant is providing designated school bus areas within the development, as documented in the conditional use application on the alternate plan.

If there are any questions or if additional information is needed, please feel free to contact me at nkline@mcmahonassociates.com or (610) 594-9995.

Sincerely,



Nicole R. Kline-Elsier, P.E., PTOE
Regional Service Leader - Traffic

NRKE

cc: Robert Pingar, P.E., Westtown Township
Will Ethridge, Westtown Township
Andrew Semon, Toll Brothers
Michael Downs, P.E., Toll Brothers
Gregg Adelman, Esq., Kaplin Stewart

ATTACHMENTS

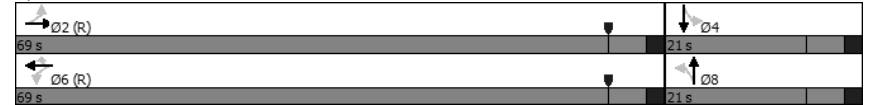
Street Road (S.R. 0926) and New Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	84	663	5	12	393	38	10	106	44	8	133	156
Future Volume (vph)	84	663	5	12	393	38	10	106	44	8	133	156
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%		1%			-2%		1%		1%		
Storage Length (ft)	175		0	150		150	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		0
Taper Length (ft)	75			75		75			75			75
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999		0.850			0.963		0.929		0.999		
Flt Protected	0.950			0.950		0.997			0.999			0.999
Satd. Flow (prot)	1580	1630	0	1588	1562	1379	0	1586	0	0	1530	0
Flt Permitted	0.503			0.332		0.910			0.991			0.991
Satd. Flow (perm)	837	1630	0	555	1562	1379	0	1448	0	0	1518	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	1		39			0		0		0		
Link Speed (mph)	45		45			25		35		35		
Link Distance (ft)	819		2436			714		826		826		
Travel Time (s)	12.4		36.9			19.5		16.1		16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	87	684	5	12	405	39	10	109	45	8	137	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	689	0	12	405	39	0	164	0	0	306	0
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template	Left		Left			Right		Left Thru		Left Thru		
Leading Detector (ft)	30	6		30	6	30	30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0	-10	-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0	-10	-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2		6			6		8		4		
Permitted Phases	2		6			8		8		4		
Detector Phase	2		6			8		8		4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0	69.0	21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%	76.7%	23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0	63.0	15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0	-1.0	-1.0		-1.0	-1.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0		6.0	5.0	6.0		5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0	42.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0	21.0	0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	50 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	55
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↗	↖	↗	↖	↗	↖
Traffic Volume (veh/h)	84	663	5	12	393	38	10	106	44	8	133	156
Future Volume (veh/h)	84	663	5	12	393	38	10	106	44	8	133	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1846	1818	1818	1794	1696	1752	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	87	684	5	12	405	39	10	109	45	8	137	161
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	4	4	0	7	3	1	1	1	0	0	0
Cap, veh/h	746	1281	9	479	1206	1040	51	220	87	44	134	153
Arrive On Green	0.70	0.71	0.70	0.93	0.95	0.93	0.17	0.18	0.17	0.17	0.18	0.17
Sat Flow, veh/h	985	1802	13	763	1696	1485	47	1240	487	17	756	859
Grp Volume(v), veh/h	87	0	689	12	405	39	164	0	0	306	0	0
Grp Sat Flow(s),veh/h/ln	985	0	1815	763	1696	1485	1773	0	0	1632	0	0
Q Serve(g_s), s	2.8	0.0	15.9	0.4	1.7	0.2	0.0	0.0	0.0	6.0	0.0	0.0
Cycle Q Clear(g_c), s	5.0	0.0	15.9	16.3	1.7	0.2	7.6	0.0	0.0	15.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		1.00	0.06		0.27	0.03		0.53
Lane Grp Cap(c), veh/h	746	0	1291	479	1206	1040	338	0	0	313	0	0
V/C Ratio(X)	0.12	0.00	0.53	0.03	0.34	0.04	0.49	0.00	0.00	0.98	0.00	0.00
Avail Cap(c_a), veh/h	746	0	1291	479	1206	1040	338	0	0	313	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.99	0.99	0.99	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.2	0.0	6.1	4.0	0.8	0.9	33.7	0.0	0.0	37.7	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.6	0.1	0.7	0.1	1.1	0.0	0.0	44.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	0.0	8.1	0.1	1.0	0.1	6.1	0.0	0.0	15.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.5	0.0	7.6	4.1	1.5	1.0	34.8	0.0	0.0	82.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	F	A	A
Approach Vol, veh/h		776			456			164				306
Approach Delay, s/veh		7.4			1.5			34.8				82.2
Approach LOS		A			A			C				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		69.0		21.0		69.0		21.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		63.0		15.0		63.0		15.0				
Max Q Clear Time (g_c+1), s		17.9		17.0		18.3		9.6				
Green Ext Time (p_c), s		7.4		0.0		3.5		0.2				

Intersection Summary

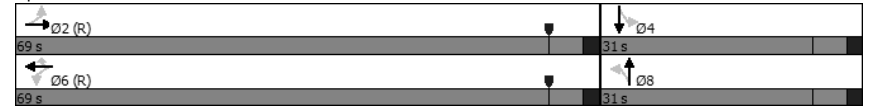
HCM 6th Ctrl Delay	21.9
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	66	686	14	23	383	32	10	92	43	52	178	104
Future Volume (vph)	66	686	14	23	383	32	10	92	43	52	178	104
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%		1%			-2%		1%				
Storage Length (ft)	175		0	150		150	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		0
Taper Length (ft)	75			75		25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997		0.850			0.960		0.958				
Flt Protected	0.950			0.950				0.997				0.992
Satd. Flow (prot)	1580	1628	0	1588	1562	1379	0	1579	0	0	1547	0
Flt Permitted	0.488			0.279				0.970				0.928
Satd. Flow (perm)	812	1628	0	466	1562	1379	0	1536	0	0	1448	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	2		33									
Link Speed (mph)	45		45			25		35				
Link Distance (ft)	819		2436			714		826				
Travel Time (s)	12.4		36.9			19.5		16.1				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	68	707	14	24	395	33	10	95	44	54	184	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	721	0	24	395	33	0	149	0	0	345	0
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template	Left		Left			Left Thru		Left Thru				
Leading Detector (ft)	30	6		30	6	6	30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0	0	-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0	0	-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6	6	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2		6			8		4		4		
Permitted Phases	2		6			8		8		4		
Detector Phase	2		6			8		8		4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0	69.0	31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0	63.0	25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-1.0		-2.0	-1.0	0.0	-1.0	-1.0		-1.0	-1.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	4.0	5.0		4.0	5.0	6.0		5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0	42.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0	21.0	0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↗	↖	↗	↖	↗	↖
Traffic Volume (veh/h)	66	686	14	23	383	32	10	92	43	52	178	104
Future Volume (veh/h)	66	686	14	23	383	32	10	92	43	52	178	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1846	1818	1818	1794	1696	1752	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	68	707	14	24	395	33	10	95	44	54	184	107
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	4	4	0	7	3	1	1	1	0	0	0
Cap, veh/h	742	1181	23	408	1128	972	51	278	122	88	219	119
Arrive On Green	0.67	0.66	0.65	1.00	1.00	1.00	0.25	0.24	0.23	0.25	0.24	0.23
Sat Flow, veh/h	1000	1776	35	741	1696	1485	53	1184	518	197	930	507
Grp Volume(v), veh/h	68	0	721	24	395	33	149	0	0	345	0	0
Grp Sat Flow(s),veh/h/ln	1000	0	1811	741	1696	1485	1755	0	0	1634	0	0
Q Serve(g_s), s	2.4	0.0	22.2	1.1	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0
Cycle Q Clear(g_c), s	2.9	0.0	22.2	23.3	0.0	0.0	7.0	0.0	0.0	20.1	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	0.07		0.30	0.16		0.31
Lane Grp Cap(c), veh/h	742	0	1204	408	1128	972	469	0	0	442	0	0
V/C Ratio(X)	0.09	0.00	0.60	0.06	0.35	0.03	0.32	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	742	0	1204	408	1128	972	511	0	0	482	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.97	0.97	0.97	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	9.3	3.8	0.0	0.0	32.0	0.0	0.0	36.9	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	2.2	0.3	0.8	0.1	0.4	0.0	0.0	7.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	12.2	0.2	0.5	0.0	5.5	0.0	0.0	13.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	0.0	11.5	4.1	0.8	0.1	32.4	0.0	0.0	44.3	0.0	0.0
LnGrp LOS	A	A	B	A	A	A	C	A	A	D	A	A
Approach Vol, veh/h		789			452			149			345	
Approach Delay, s/veh		11.1			0.9			32.4			44.3	
Approach LOS		B			A			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.5		28.5		71.5		28.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		63.0		25.0		63.0		25.0				
Max Q Clear Time (g_c+1), s		24.2		22.1		25.3		9.0				
Green Ext Time (p_c), s		7.4		0.4		3.5		0.4				
Intersection Summary												
HCM 6th Ctrl Delay			16.9									
HCM 6th LOS			B									

West Pleasant Grove Road and Collector Road
Mini Roundabout



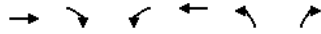
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	71	1	165	118	4	93
Future Volume (vph)	71	1	165	118	4	93
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	3%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.871		
Flt Protected				0.972	0.998	
Satd. Flow (prot)	1712	0	0	1676	1534	0
Flt Permitted				0.972	0.998	
Satd. Flow (perm)	1712	0	0	1676	1534	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1878			318	459	
Travel Time (s)	36.6			6.2	8.9	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	2%	2%	3%	2%	2%
Adj. Flow (vph)	101	1	236	169	6	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	0	0	405	139	0
Sign Control	Yield			Yield	Yield	

Intersection Summary

Area Type: Other
Control Type: Roundabout

Intersection			
Intersection Delay, s/veh	4.9		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	102	405	139
Demand Flow Rate, veh/h	102	415	142
Vehicles Circulating, veh/h	241	6	101
Vehicles Exiting, veh/h	180	237	242
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.2	5.4	3.9
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	102	415	142
Cap Entry Lane, veh/h	1079	1371	1245
Entry HV Adj Factor	1.000	0.976	0.979
Flow Entry, veh/h	102	405	139
Cap Entry, veh/h	1079	1338	1218
V/C Ratio	0.095	0.303	0.114
Control Delay, s/veh	4.2	5.4	3.9
LOS	A	A	A
95th %tile Queue, veh	0	1	0



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (vph)	65	4	414	220	3	162
Future Volume (vph)	65	4	414	220	3	162
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	3%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993			0.867		
Flt Protected				0.968	0.999	
Satd. Flow (prot)	1700	0	0	1682	1528	0
Flt Permitted				0.968	0.999	
Satd. Flow (perm)	1700	0	0	1682	1528	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1811			228	439	
Travel Time (s)	35.3			4.4	8.6	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	2%	2%	1%	2%	2%
Adj. Flow (vph)	87	5	552	293	4	216
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	0	845	220	0
Sign Control	Yield			Yield	Yield	

Intersection Summary

Area Type: Other
Control Type: Roundabout

Intersection

Intersection Delay, s/veh 8.7
Intersection LOS A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	92	845	220
Demand Flow Rate, veh/h	92	859	224
Vehicles Circulating, veh/h	563	4	87
Vehicles Exiting, veh/h	300	307	568
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.8	10.1	4.4
Approach LOS	A	B	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	92	859	224
Cap Entry Lane, veh/h	777	1374	1263
Entry HV Adj Factor	1.000	0.984	0.982
Flow Entry, veh/h	92	845	220
Cap Entry, veh/h	777	1352	1240
V/C Ratio	0.118	0.625	0.177
Control Delay, s/veh	5.8	10.1	4.4
LOS	A	B	A
95th %tile Queue, veh	0	5	1

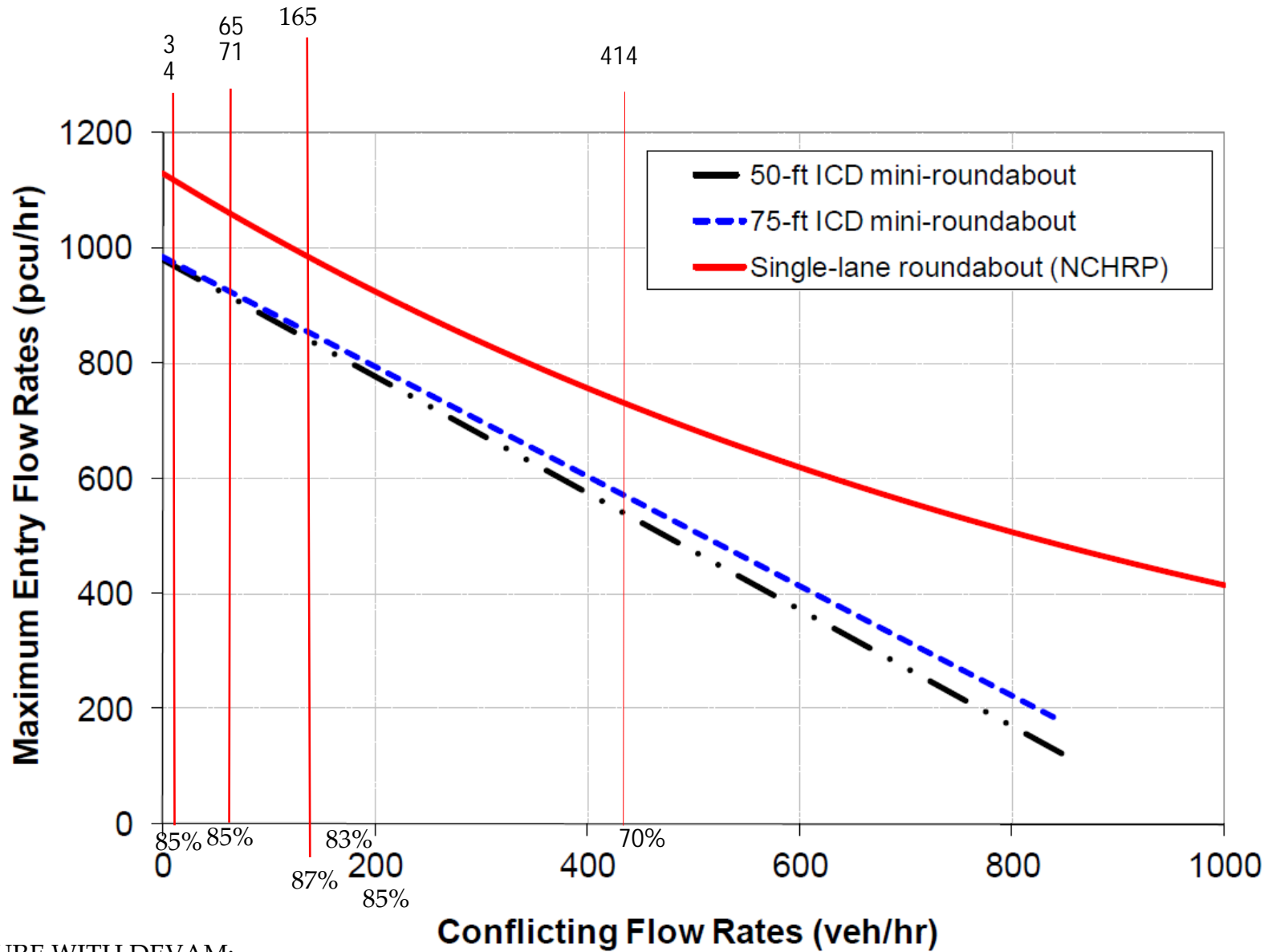
Table 1. Mini Roundabout Delay Calculation - 2030 Future with Development

	Weekday AM			Weekday PM		
	Northbound	Eastbound	Westbound	Northbound	Eastbound	Westbound
Single Lane Roundabout Delay ⁽¹⁾	3.9	4.2	5.4	4.4	5.8	10.1
Capacity Compared to Single Lane ⁽²⁾	85%	87%	85%	85%	70%	85%
Mini Roundabout Approach Delay	4.5	4.7	6.2	5.1	7.5	11.6
Approach Volume	97	72	283	165	69	634
Mini Roundabout Overall Delay & LOS	5.6			10.0		
	A			B		

(1) Based on HCM 6th Edition Methodology for a traditional roundabout.

(2) See Figure 1.

FIGURE A



2030 FUTURE WITH DEVAM:
 NB = 97 entering, 71 conflicting
 EB = 72 entering, 165 conflicting
 WB = 283 entering, 4 conflicting

2030 FUTURE WITH DEVPM:
 NB = 165 entering, 65 conflicting
 EB = 69 entering, 414 conflicting
 WB = 634 entering, 3 conflicting



ALBERT FEDERICO CONSULTING, LLC

Traffic Engineering and Mobility Solutions

133 Rutgers Avenue
Swarthmore, PA 19081

May 13, 2020

via email only

Russell Hatton, Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

Re: Conditional Use - Traffic Review
Robinson Tract (aka Crebilly Farms) Development
Westtown Township, Chester County

Mr. Hatton:

As requested, the following has been prepared in anticipation of the Planning Commission's May 20, 2020 meeting.

To date the Applicant has not demonstrated compliance with the condition use criteria in §170-2009.D(1)(h): *In consideration of conditional use approval, the Township may require the applicant to submit a development impact study which considers the impact of the proposed flexible development on traffic volume and safety.* Most notably:

- Traffic analyses which provide the basis for determining project impacts have not been updated to address the outstanding technical aspects associated with the:
 - Assumed traffic diversions
 - Signal operations at PA 926 and New Street
- An implementation strategy for necessary improvements has not been provided
- The submitted Conditional Use plans do not:
 - Illustrate the scope of improvements required to provide compliant sight distance at several accesses
 - Adequately address access to West Pleasant Grove Road
 - Include compliant horizontal alignments of internal roadways

While there has been limited recent coordination with the Applicant's Traffic Engineer and PennDOT these items and the other issues identified in the March 13, 2020 Traffic Review remain outstanding.

The following list of recommended transportation related improvements is also provided for the Planning Commission's consideration in the review of this Application.

- 1) Connector Road, construct:
 - a) Dimensionally compliant with Township standards for a Collector Road
 - b) With a sufficient pavement structure, as determined by the Township Engineer, to accommodate heavy equipment and truck traffic
 - c) Reasonable traffic calming measures to maintain a consistent, appropriate travel speed



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- d) Facilities accommodating:
 - i) Non-vehicular travel
 - ii) Personal vehicles waiting for school buses
- 2) West Pleasant Grove Road, modify:
 - a) Along the site frontage in a manner compliant with Township standards for a Collector Road
 - b) At the proposed local road site access(es) to control turning movements in a manner that enhances safety and aesthetics, preferably with a roundabout(s)
 - c) At the Connector Road site access to control turning movements and connectivity with Orvis Way in a manner that enhances safety and aesthetics, preferably with a roundabout
- 3) PA 926 (Street Road), modify as determined appropriate in coordination with PennDOT and Thornbury Township:
 - a) At the Connector Road site access to install a traffic signal and turn lanes
 - b) At New Street to:
 - i) Mitigate project impacts (as determined based on the review of revised analyses, submission pending) and to address PennDOT comments (currently by constructing eastbound and westbound left turn lanes)
 - ii) Provide appropriate non-vehicular connectivity
 - iii) Provide equipment for emergency pre-emption
- 4) US Route 202, modify as determined appropriate in coordination with PennDOT:
 - a) At West Pleasant Grove Road to provide a southbound right turn lane as determined appropriate in coordination with PennDOT
 - b) At PA 926 to:
 - i) Mitigate project impacts (as determined based on the review of revised analyses, submission pending) and address PennDOT comments
 - ii) Provide equipment for emergency pre-emption
- 5) Non-vehicular elements, construct facilities connecting to existing and/or planned non-vehicular facilities, including:
 - i) Arborview
 - ii) Orvis Way
 - iii) Bridlewood Boulevard
 - iv) Signalized intersection of US Route 202 and PA 926
- 6) Westminster Presbyterian Church, as determined appropriate by the Township and in coordination with the Church:
 - a) Remove the existing westernmost driveway adjacent to the Connector Road
 - b) Provide for future access from the Westminster Presbyterian Church to the Collector Road at a mutually agreed upon location

As discussed at previous meetings and noted above, several of these items are within the purview of PennDOT and/or require coordination with Thornbury Township. Therefore, it is recommended that the Township remain engaged in the on-going discussions to ensure that if approved the scope of improvements associated with the Application is consistent with the Township's objectives to the maximum extent feasible.



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Please do not hesitate to contact me at 610.608.4336 or albert@federico-consulting.com should you have any questions or require additional information.

Sincerely,

Albert Federico, P.E., PTOE



ALBERT FEDERICO CONSULTING, LLC

Traffic Engineering and Mobility Solutions

133 Rutgers Avenue
Swarthmore, PA 19081

March 13, 2020

via email only

Russell Hatton, Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

Re: Conditional Use - Traffic Review
Robinson Tract (aka Crebilly Farms) Development
Westtown Township, Chester County

Mr. Hatton:

Subsequent to the previous Traffic Review (January 29, 2020) there has been additional coordination with the Applicant, including:

- Correspondence to Mr. Russell Hatton (prepared by McMahon Associates, dated February 4, 2020) providing responses to the January 29 Traffic Engineering Review
- Meeting with PennDOT and Thornbury Township on February 11, 2020, and the distribution of Draft Meeting Minutes (prepared by McMahon Associates, distributed February 25, 2020)
- Correspondence (prepared by McMahon Associates, dated February 21, 2020 and supplemental emails) providing additional information regarding the traffic diversions assumed for the traffic analyses

Please note that this review should be considered preliminary and subject to change based on the submission of revised materials to address the comments presented herein.

In recognition of these activities the following update to the January 29 review is offered for the Township's consideration:

1. *In consideration of conditional use approval, the Township may require the applicant to submit a development impact study which considers the impact of the proposed flexible development on traffic volume and safety. {§170-906.D(2)}*
 - a. To allow for consideration of the impact of the proposed development the Transportation Impact Study (TIS) should be revised to address the following:
 - i. As previously noted, Table 1 should be updated to identify West Pleasant Grove Road as a Township Collector Roadway. *{Westtown Township Comprehensive Plan Update, page 9-7}*.

Status: In consideration of the ongoing coordination the Applicant has yet to submit a revised TIS. The submitted correspondence does not commit to this revision.



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- ii. The sections of the TIS discussing improvements should note that the internal Collector Road provides access to the property.

Status: In consideration of the ongoing coordination the Applicant has yet to submit a revised TIS. The submitted correspondence does not commit to this revision.

- iii. As previously noted, the Crash Summary only includes data for State "Reportable" collisions. In order to provide a more complete assessment of transportation safety within the study area "Non-reportable" collisions should be included. Note that the Traffic Safety Office is unaware of an outstanding request for "more detailed information". The applicant should resubmit the request to the Traffic Safety Office and Township Traffic Engineer, including the specific details being requested.

Status: Supplemental information has been provided to the Applicant. Based on coordination with the Applicant it is anticipated that this information will be considered in the revised TIS.

- iv. As previously noted, the scope of physical improvements required to provide acceptable sight distance to public roads should be clearly indicated on the plans.

Status: The submitted correspondences requests deferring this item until "detailed engineering" is completed.

- v. As previously noted, confirm that the sight distance measurements consider the widening (approximately seven feet) of West Pleasant Grove Road required to meet Code. $\{\S 149-903.A(2)\}$

Status: The submitted correspondences indicates that the measurements are based on the existing roadway.

- vi. Provide calculations supporting the assumed diversions associated with Orvis Way and the proposed Collector Road. Additionally, cross-reference the Collector Road diversions within the body of the study with the figures in Appendix K.

Status: Supplemental materials have been submitted in response to this comment. Coordination is on-going.

- vii. The Travel Time Comparisons presented in Appendix K should be revised to address the following:
 - (1) Verify the assumed route lengths. The Diversion Routes generally appear to be shorter than the Base conditions.
 - (2) Ensure that the impacts of the regular queuing along US Route 202 North during the morning peak, extending from the interchange into the study area, is included.
 - (3) The evaluation of diversions should include an alternative that considers operations following the completion of the PennDOT improvements planned for US Route 202 and PA Route 926.



(4) The traffic calming anticipated to be installed along Bridlewood Boulevard should be considered.

Status: Supplemental materials have been submitted which address these comments.

viii. As previously noted, the anticipated increase in larger vehicles traveling along West Pleasant Grove Road and turning to/from New Street increases the possibility of potential vehicular conflicts. It is noted that:

(1) The Applicant has indicated a willingness to widen the roadway along the property frontage, but additional clarification regarding the specific scope of work is warranted.

(2) West Pleasant Grove Road is designated as a Collector Road and the total Right-of-way shall be 60 feet and cartway width shall be 28 feet. {§149-903.A(2)}

Status: The submitted correspondences indicates that the Applicant will widen West Pleasant Grove Road along the frontage to Collector Road standards.

ix. As previously noted, the future operations presented for PA Route 926 and New Street rely primarily on "optimized" traffic signal timings that appear unlikely to be approved by PennDOT. Written confirmation from PennDOT should be provided that the assumed "optimized" timings can be implemented. If confirmation cannot be provided an alternative analysis utilizing a timing approved by the Township should be provided.

Status: Based on direction from PennDOT it is anticipated that this analysis will be modified in the revised TIS.

x. As previously noted, the Cross Section Assumptions Exhibit for PA Route 926 and New Street in Appendix I is based on a traditional widening. Alternative alignments that minimize the number of properties from which right-of-way would be needed should be considered. Additionally, the Applicant is not precluded from coordinating with property owners to determine if the right-of-way could be reasonably obtained.

Status: The Applicant committed to PennDOT (and represented to the Planning Commission) that revised improvement concept(s) would be prepared for PennDOT and Township review and would be used to coordinate with the potentially affected property owners.

xi. As previously noted, Cost Estimates for necessary improvements to accommodate future traffic should be provided. {§149-804.A(10)}

Status: The submitted correspondences indicates that the Applicant will provide this information once there is "concurrence" regarding the scope of improvements.



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- xii. As previously noted, an Implementation Strategy for necessary improvements to accommodate future traffic should be provided. {§149-804.A(11)}

Status: The submitted correspondences indicates that the Applicant will provide this information once there is "concurrence" regarding the scope of improvements.

2. *The burden of proof shall be upon the applicant to prove to the satisfaction of the Board of Supervisors, by credible evidence, that the use will not result in or substantially add to a significant traffic hazard or significant traffic congestion. The peak traffic generated by the development shall be accommodated in a safe and efficient manner. Such analysis shall consider any improvements to streets that the applicant is committed to complete or fund. {§170-2009.D(1)(h)}*

- a. The conclusion that the project does not adversely impact the intersection of US Route 202 and PA Route 926 continues to be based in large part on assumed diversions. As noted above, additional supporting information and analyses should be provided.

Status: Supplemental materials have been submitted and coordination is on-going. The Applicant has yet to submit a revised TIS.

- b. The Applicant has indicated that turn lanes will be provided to accommodate post development volumes at the following intersections, but these improvements are not reflected on the plans:

- i. US Route 202 at Pleasant Grove Road – Southbound Right Turn

Status: The submitted correspondences indicates that the Applicant will make this improvement and that plans will be provided there is "concurrence" regarding the scope of improvements.

- ii. PA Route 926 at New Street – Eastbound Left Turn

Status: The submitted correspondence offers an opinion that this improvement is unwarranted. Based on direction from PennDOT it is anticipated that the analysis will be modified in the revised TIS.

- c. As previously noted:

- i. Additional grading and/or traffic management measures appear warranted to enhance safety at the three accesses proposed to have insufficient sight distance or the exact minimum distance (with no margin for error):

(1) Collector Road at PA Route 926 (grading)

(2) Road M at West Pleasant Grove Road (grading and/or roundabout)

(3) Collector Road at West Pleasant Grove Road (grading and/or roundabout)

Status: The submitted correspondences requests deferring addressing these items until "detailed engineering" is completed.



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- ii. In order to minimize external conflict points, promote internal connectivity, reduce the number of cul-de-sacs and enhance overall safety along West Pleasant Grove Road:
 - (1) Road M should be removed
 - (2) Roads L and N should be extended to form a single road

Status: The submitted "Alternate" plan removed the external access without connecting the internal roadways. It has been conveyed to the Applicant on several occasions that these items are intended to be addressed together: connect the internal roads (to remove the cul-de-sacs) and remove the external access.

- iii. The design of the internal Collector Road should incorporate suitable traffic calming measures to maintain a 35 mile per hour average travel speed.

Status: The submitted correspondences requests deferring this item until Land Development.

- iv. The submitted plans should be revised to ensure they accurately reflect existing driveways in the immediate vicinity of the site, in particular the exit-only driveway from the Westminster Presbyterian Church.

Status: The driveway is reflected on the plan but is difficult to discern due to drafting. It appears the proposed site access to West Pleasant Grove Road (via the Collector Road) will impact the Church Driveway. Provisions should be made for future access from the Westminster Presbyterian Church to the internal Collector Road at a mutually agreed upon location.

- v. The plans should identify the anticipated limits of required right-of-way and/or easements to accommodate the physical improvements associated with the PennDOT project at US Route 202 and PA Route 926.

Status: The submitted correspondences indicates that right-of-way is being offered. The Applicant does correctly note that the PennDOT project is not fully engineered. The plans should include a note indicating that other reasonable right-of-way and/or easement required for the improvements will be provided to PennDOT as needed.

- vi. The following internal roadways should be reconfigured to remove geometric irregularities:
 - (1) Road E and Road F (provide a curve)
 - (2) Road F and Road G (provide a curve)
 - (3) Road I and Road J (remove the jog within the intersection)

Status: The submitted materials do not adequately address these comments. The Applicant has represented to the Planning Commission that Stop signs will be used to compensate for these irregular designs. To date no information has been provided documenting that the signs would meet accepted warrants.



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- vii. Additional facilities should be provided to address non-vehicular connectivity, including:
- (1) A perimeter trail around the portion of the site west of the internal Collector Road. *{Westtown Township Comprehensive Plan Update, page 9-15}*
 - (2) Connections to existing and planned facilities along Dunvegan Road and within the Arborview neighborhood. *{Westtown Township Comprehensive Plan Update, page 9-15}*
 - (3) Sidewalks along proposed roads, including accessible crossings. *{§149-916}*
 - (4) Connectivity to pedestrian attractors, including Stetson Middle School, Westminster Presbyterian Church, and the existing retail uses at US Route 202 and PA Route 926. *{§149-916}*

Status: The submitted materials do not adequately address these comments. It is noted that a supplemental plan was presented to the Planning Commission which included a partial connection to Arborview and a trail from an internal roadway to the intersection of US Route 202 and PA Route 926.

- viii. Provisions should be made for future access from the Westminster Presbyterian Church to the internal Collector Road.

Status: The Alternate Plan does indicate a location for potential access. To date there is no information indicating that this location has been reviewed with the Church. Based on initial coordination with the Church a location further south along the Collector Road may be preferred.

- ix. Provisions should be made for School Bus Stops, including short-term parking for drop-off and pick-up.

Status: The submitted correspondences requests deferring this item until Land Development.

Please do not hesitate to contact me at 610.608.4336 or albert@federico-consulting.com should you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Federico', written over the typed name.

Albert Federico, P.E., PTOE



pennsylvania
DEPARTMENT OF TRANSPORTATION

Date: 10/11/2019
Subject: Highway Occupancy Permit Application No. 196830, Cycle No.1 - Returned For Revisions
To: Toll PA XVIII, L.P.
250 Gibraltar Road
Horsham, PA 19044
From: PennDOT Engineering District 6-0
7000 Geerdes Boulevard
King of Prussia, PA 19406

Dear Applicant,

PennDOT has reviewed your application for completeness, consistency and compliance with applicable Department Regulations. This review has identified issues that must be addressed in order for our review to continue.

The Department's review comments are attached.

Once the comments have been addressed, please resubmit the application and associated material for further review.

Upon resubmission, the applicant's engineer should put together a letter that describes how each comment has been addressed and where each can be found. This will help expedite the review. For guidance on HOP applications refer to 67 PA Code, Chapter 441, Chapter 459 and PennDOT Publication 282, "Highway Occupancy Permit Guidelines". Additional comments may follow upon review of the resubmitted application.

If you have any questions regarding this matter, you may contact Drew Sirianni, at (215) 254-7893.

Response Comments

Date: 10/11/2019

Application Number: 196830, Cycle No.1

Form Letter Notes

(1) * Upon resubmission, the applicant's engineer must prepare a letter that describes how each comment has been addressed and where each can be found in the plan set.

* Additional comments may follow upon review of the resubmitted application. If you have any questions pertaining to the technical aspects of this review, please contact the Department's representative, Drew E. Sirianni, PE, PTOE of Pennoni at 215.254.7893 or DSirianni@Pennoni.com.

* For guidance on Highway Occupancy Permit applications refer to PA Code Title 67, Chapter 441, Chapter 459 and PennDOT Publication 282. This will help expedite the review.

General

- (1) This project must be coordinated with the Department project for improvements to the intersection of SR 0202 and SR 0926 (MPMS No. 95430). Contact the Department's consultant project manager, Paul Valliere, for coordination.
- (2) PLEASE SUBMIT A CHECK FOR \$100.00 MADE PAYABLE TO PENNDOT-ATTN: MARY ELLEN CULHANE, PERMITS SUPERVISOR, 7000 GEERDES BLVD. KING OF PRUSSIA, PA. 19406. PLEASE INCLUDE THE APPLICATION NUMBER ON THE CHECK FOR OUR REFERENCE.
- (3) PennDOT Form M-950MPC, Land Use Questionnaire, must be completed and submitted with all Highway Occupancy Permit applications. (Sections 619.2 and 1105 of the Municipal Planning Code and PennDOT Publication 282, Chapter 3.3)

Application

- (1) The application must be submitted in the name of the person who holds fee title to the land or a person who holds an estate or other legal interest in property, such as an easement, a lease, a license, subsurface rights, or an equitable interest under a sales agreement or option to purchase. Submit the supporting documentation with the next submission. (Pa Code Title 67, Chapter 441.3(b) and 441.5(b))
- (2) The proposed access must be revised from a driveway to a local road classification on the

ePermitting application. Please contact Mary Ellen Culhane, District 6 Permits Supervisor, at (610) 205-6825 to have the application modified.

(3) Please note that consistent with current Department Policy, applicants for Highway Occupancy Permits must apply for an EPS Business Partner ID (BPID). The EPS BPID is to be used in the establishment of a billing account for the invoicing of inspection costs. After an EPS BPID is obtained and activated by the applicant's system administrator, a user ID will then need to be created in order to ensure that the EPS BPID is integrated into EPS and searchable through the "looking glass" feature. Once this has been established, please provide the following information in the applicant contact information tab under "Applicant Team":

- BPID

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

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

For information on obtaining an EPS BPID, you may visit:

<https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp> (follow the instructions that are in the pink shaded row) or contact the ECMS Help Desk. Please be aware that having an ECMS BPID does not guarantee the establishment of an EPS BPID as they are not reciprocal to one another.

Free online tutorials are also available detailing BPID registration at:

<http://www.dot14.state.pa.us/epsTraining/BPID%20Registration%20for%20Municipalities%20and%20Planning%20Commissions.html>

Please note that there are two applicable tutorials on the webpage (tabs on the left side bar), one providing info on ECMS registration and one providing info on creating an EPS user.

Transportation Impact Study/Transportation Impact Assessment

(1) MITIGATION

a. The intersection of Wilmington Pike (SR 0202) and Skiles Boulevard/Stetson School Drive is projected to have an increase in delay due to diverted traffic in conjunction with the new connector road required for this development. Provide mitigation.

b. Concept plans of full mitigation must be prepared with sufficient detail to describe their feasibility. The plans must also show right-of-way lines. The plan scale should be 50-scale unless otherwise agreed to at the scoping meeting. Ensure that the travel lane and shoulder widths are in accordance with PennDOT's Resurfacing, Restoration and Rehabilitation (3-R) Design Criteria

found in PennDOT Publication 13M, Design Manual Part 2. Please note that the concept plan will be reviewed to determine if the recommended improvements are feasible. A full review of the plans will be completed upon submission of the Highway Occupancy Permit (HOP) package.

(2) INTERSECTION CONTROL EVALUATION (ICE) POLICY

a. This HOP application is expected to include the creation of a medium volume or high volume local road, the addition of a leg to an existing intersection (SR 0926 and Bridlewood Blvd), the addition of a turning lane at an existing intersection (SR 0926 and Bridlewood Blvd), and modification of control at an existing intersection (SR 0926 and Bridlewood Blvd). As such, the applicant shall comply with PennDOT's Intersection Control Evaluation (ICE) Policy. Please refer to Appendix AI of Publication 10X (DM-1X) and the ICE portion of PennDOT's Traffic Signal Portal for additional information, guidance, and standard forms.

(3) TURN LANE WARRANTS

a. Based on the submitted turn lane warrant analysis, left turn lanes are needed on all 4 approaches at the intersection of Street Road (SR 0926) and New Street. Revise the TIS to provide this improvement and include a conceptual plan to show how it will be constructed.

b. Based on the turn lane warrant analysis, a right turn deceleration lane is needed on the southbound approach of Wilmington Pike (SR 0202) at W Pleasant Grove Rd. Please update the "Committed Improvements" section of the TIS to identify that the lane will be constructed by the applicant.

c. The report should include a traffic signal warrant analysis and turn lane warrant analysis section along with summary of results.

d. Please include the input page of the traffic signal warrant analysis in the appendices.

(4) Side-by-side eastbound and westbound left turn lanes must be provided on W Pleasant Grove Road between Collector Road and Orvis Road.

(5) A dedicated right-turn lane along westbound Street Road (SR 0926) along the Robinson Tract property frontage is proposed but not shown on the Synchro files. Please verify and revise.

(6) TRAFFIC SIGNAL WARRANTS

a. The report indicates that a signal is warranted at the site driveway access with Street Road, however all Traffic Signal Warrant analyses in Appendix G (all Alternatives) do not indicate whether volumes utilized are for the 2030 Design Year or 2025 Build-Out Year. Please clarify.

b. If signalization is the chosen alternative for the intersection of Street Road (SR 0926) and Bridlewood Boulevard/ Site Access, it is likely that signalization won't meet warrants for several years while the site is built out. As such, traffic volumes must be monitored during development to determine when a traffic signal is warranted. An intersection monitoring condition statement will

be required.

(7) MUNICIPAL COORDINATION

- a. Provide documentation from Westtown Township indicating their review/acceptance of the study.
- b. Provide documentation from Thornbury Township indicating their review/acceptance of the study showing a signalized access along Street Rd (SR 0926) opposite Bridlewood Blvd.

(8) TRIP DIVERSIONS

- a. 50 percent of southbound Wilmington Pike (SR 0202) right turns to eastbound Street Road (SR 0926) were diverted to Orvis Way. Provide justification for such a substantial amount of trips.

(9) MULTI-MODAL

- a. In the Executive Summary and study recommendations, indicate that all improvements will be constructed to accommodate non-motorized access/circulation and be ADA-compliant unless otherwise approved by the Department. Describe how these connections connect to existing non-motorized facilities (e.g., Township Trails Plan). If pedestrian accommodations are not proposed, engineering justification must be provided in accordance with PennDOT Publications 236, 46, and 149. Walking school children and school bus stops shall also be noted.
- b. The study must describe how the proposed development was designed to accommodate pedestrians, bicycles and transit operations.

(10) Provide an updated site plan and/or conceptual improvement plan that reflects all the latest findings of the study and developer commitments.

(11) Provide photographs at all study intersections, including the proposed access driveways. Photos must be in color, 4"X6" in size, and two views of each approach must be provided (approximately 200 feet from the intersection and approximately 50 feet from the intersection showing the opposite approach).

(12) CRASH DATA AND ANALYSIS

- a. Contact the municipality to obtain non-reportable crash data for the study area intersections. Include this crash data in the analysis if it is available.
- b. The traffic crash data analyses for several of the study area intersections/corridors indicate that crash trends exist, particularly at signalized intersections within the study area. Discuss how traffic generated from the development may impact these locations, and if any improvements would be beneficial in mitigating these trends.

(13) QUEUE ANALYSIS

- a. The available storage for eastbound left turns at Wilmington Pike (SR 0202) and Skiles Boulevard/Stetson School Drive is 200 feet. The future queue with development is 478 feet. This

will block the through and right turn movements. Please revise the analysis and recommendations to address this queue.

b. The available storage for southbound right turns at Wilmington Pike (SR 0202) and Skiles Boulevard/Stetson School Drive is 200 feet. The future queue with development of southbound traffic is 700 feet. This will block the right turn movements. Please revise the analysis and recommendations to address this queue.

c. The available storage for southbound left turns at Street Road (SR 0926) and Bridlewood Boulevard/Collector Road is 150 feet. The future queue with development of southbound through/right traffic is 360 feet. This will block the left turn movements. Please revise the analysis and recommendations to address this queue.

Sight Distance- Driveways/Local Roads

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

Signal Section (Publication 46, 148 And 149)

- (1) a. The Peak Hour warrant would not apply for this location.
 - b. Provide signal plans for review.
 - c. Provide a TE-160 form and resolution.
 - d. Provide a Traffic Signal Design Report.
 - e. Interconnect proposed signal at Street/Bridlewood and Street/New signal, and provide communications back to the District Office.
 - f. The intersection of SR 0202 and SR 0926 is scheduled to be adaptive under an active state project. The 165-second cycle being proposed is not realistic, even for an adaptive system. This intersection has capacity concerns.
 - g. Refer to the TIS comments regarding the left turn warrants at the intersection of Street Road (SR 0926) and New Street.

Drainage

- (1) Please be aware that the installation of drainage facilities within the Legal Right-of-Way may

necessitate additional permitting requirements, including, but not limited to, a separate Highway Occupancy Permit from the Municipality for the future maintenance of the new drainage facilities. Specific information relating to five potential drainage scenarios, as well each scenario's submission requirements, is presented in Publication 282.



ALBERT FEDERICO CONSULTING, LLC

Traffic Engineering and Mobility Solutions

133 Rutgers Avenue
Swarthmore, PA 19081

October 15, 2019

via email only

Richard Pomerantz, Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

Re: Conditional Use - Traffic Review
Robinson Tract (aka Crebilly Farms) Development
Westtown Township, Chester County

Mr. Pomerantz:

As requested, a technical review of the following materials has been completed relative to the Westtown Township Zoning Ordinance as well as reasonable and customary standards of Traffic Engineering practice:

- Transportation Impact Study for the Robinson Tract (prepared by McMahon Associates, dated August 13, 2019)
- Conditional Use Subdivision Plan for the Robinson Tract, sheets 10 and 12 of 71 (prepared by ESE Consultants, dated August 9, 2019)

Please note that this review should be considered preliminary and subject to change based on the submission of revised materials to address the comments presented herein.

The site is located on the Crebilly Farm property along the west side of US Route 202, between West Pleasant Grove Road and PA Route 926 (Street Road). The applicant proposes to develop 317 new dwelling units. Vehicular access to the Crebilly Farms property is proposed via connections to PA Route 926 and West Pleasant Grove Road. Onsite vehicular circulation is proposed via a central Collector Road and supporting local roads, including several cul-de-sacs. Limited non-vehicular facilities are also proposed.

The following comments are offered for the Township's consideration:

1. *In consideration of conditional use approval, the Township may require the applicant to submit a development impact study which considers the impact of the proposed flexible development on traffic volume and safety. {§170-906.D(2)}*
 - a. In order to allow for consideration of the impact of the proposed development the Transportation Impact Study (TIS) should be revised to address the following:
 - i. Table 1 identifies West Pleasant Grove Road as a "Local" roadway. Table 1 should be updated to identify West Pleasant Grove Road as a Township Collector Roadway. {*Westtown Township Comprehensive Plan Update, page 9-7*}.



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- ii. The TIS identifies the internal Collector Road as an off-site improvement (page 23). The section of the Collector Road proposed as part of the development traverses the property from West Pleasant Grove Road to PA Route 926 providing access to the property. As such it should be identified as an on-site improvement.
- iii. The TIS does not identify any existing pedestrian facilities within the study area (page 6). The following should be noted:
 - (1) Facilities within the adjacent Arborview neighborhood
 - (2) Facilities within the adjacent Bridlewood neighborhood
 - (3) Recently completed facilities along Orvis Way
- iv. The traffic data used as the foundation for the capacity analysis was collected a number of different years, from 2015 to 2019. Traffic calming measures were installed along Jacqueline Drive in 2017 to address cut-through traffic. As West Pleasant Grove Road is the next east-west roadway south of Jacqueline Drive new counts are warranted.
- v. The Crash Summary (page 5) only includes data for State "Reportable" collisions¹. In order to provide a more complete assessment of transportation safety within the study area "Non-reportable" collisions should be included.
- vi. The proposed sight distance looking left from the proposed internal Collector Road along PA Route 926 is reported as 466 feet (Table 3). The Table should be updated to include the Township requirements (635 feet per the posted speed limit) and the scope of physical improvements required to provide acceptable sight distance reflected on the plans. *{§149-915.K(5)}*
- vii. The proposed sight distance looking left from the proposed internal Collector Road along West Pleasant Grove Road is reported as 440 feet (Table 3), the minimum required by Township Code. Confirm that this measurement considered the widening (approximately seven feet) of West Pleasant Grove Road required to meet Code. *{§149-903.A(2)}*
- viii. The study (*Arborview Transportation Impact Assessment, prepared by Traffic Planning and Design, dated January 2015*) referenced as the basis for the majority of assumed diversions (page 14) is not the most current version of the study. Further, this study relied on data dating as far back as 2012. These volumes are considered substantially outdated. New traffic counts should be completed, and the analysis updated.
- ix. There is insufficient information provided to evaluate validity of the "supplemental diversion" of US Route 202 traffic to the Collector Road (page 15). Additional analysis and modeling based on current traffic count data is warranted to support the supplemental diversions.

¹ "Reportable" collisions involve significant property damage, injuries and/or fatalities, and are required to be reported to the State. Collisions not meeting these criteria are not included in PennDOT records.



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- x. The anticipated increase in larger vehicles traveling along West Pleasant Grove Road and turning to/from New Street increases the possibility of potential vehicular conflicts. The impact of these increased volumes on the roadway structure of West Pleasant Grove Road, as well as the turning paths at the intersection with New Street should be evaluated.
 - xi. PennDOT classifies PA Route 926 as a "Critical Corridor". The "optimized" traffic signal timings assumed for the future conditions analyses (page 16) reduces delays by shifting a significant portion of green time from PA Route 926 to serve New Street. This will have an appreciable impact on regional mobility, degrading the peak hour level of service for the PA Route 926 approaches. Provide written confirmation from PennDOT that if the project is approved the assumed "optimized" timings can be implemented.
 - xii. The Cross Section Assumptions exhibit in Appendix I is based on a traditional widening. Alternative alignments that minimize the number of properties from which right-of-way would be needed should be considered. Additionally, the Applicant is not precluded from coordinating with property owners to determine if the right-of-way could be reasonably obtained.
 - xiii. Provide Cost Estimates for necessary improvements to accommodate future traffic. *{§149-804.A(10)}*
 - xiv. Provide an Implementation Strategy for necessary improvements to accommodate future traffic. *{§149-804.A(11)}*
2. *The burden of proof shall be upon the applicant to prove to the satisfaction of the Board of Supervisors, by credible evidence, that the use will not result in or substantially add to a significant traffic hazard or significant traffic congestion. The peak traffic generated by the development shall be accommodated in a safe and efficient manner. Such analysis shall consider any improvements to streets that the applicant is committed to complete or fund. {§170-2009.D(1)(h)}*
- a. The conclusion that the project does not adversely impact the intersection of US Route 202 and PA Route 926 appears to be based in large part on assumed diversions of traffic to Orvis Way and the proposed internal Collector Road. As noted above additional information and analyses should be provided to support the assumed diversions.
 - b. As presented the project will impact the following intersections increasing the length of required turn lanes:
 - i. US Route 202 at Pleasant Grove Road – Southbound Right Turn (+100 feet post-development over existing)
 - ii. PA Route 926 at New Street – Eastbound Left Turn (+50 feet post-development over existing)



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- c. Additional grading and/or traffic management measures appear warranted to enhance safety at the three accesses proposed to have insufficient sight distance or the exact minimum distance (with no margin for error):
 - i. Collector Road at PA Route 926 (grading)
 - ii. Road M at West Pleasant Grove Road (grading and/or roundabout)
 - iii. Collector Road at West Pleasant Grove Road (grading and/or roundabout)
- d. In order to minimize external conflict points, promote internal connectivity, reduce the number of cul-de-sacs and enhance overall safety along West Pleasant Grove Road:
 - i. Road M should be removed
 - ii. Roads L and N should be extended to form a single road
- e. The design of the internal Collector Road should incorporate suitable traffic calming measures to maintain a 35 mile per hour average travel speed.
- f. The submitted plans should be revised to ensure they accurately reflect existing driveways in the immediate vicinity of the site, including the exit-only driveway from the Westminster Presbyterian Church and new residential driveways along the north side of West Pleasant Grove Road, west of Hidden Pond Way.
- g. The plans should identify the anticipated limits of required right-of-way and/or easements to accommodate the physical improvements associated with the PennDOT project at US Route 202 and PA Route 926.
- h. The following internal intersections should be reconfigured to remove geometric irregularities:
 - i. Road E and Road F
 - ii. Road F and Road G
 - iii. Road I and Road J
- i. Additional facilities should be provided to address non-vehicular connectivity, including:
 - i. A perimeter trail around the portion of the site west of the internal Collector Road. {*Westtown Township Comprehensive Plan Update, page 9-15*}
 - ii. Connections to existing and planned facilities within along Dunvegan Road and the Arborview neighborhood. {*Westtown Township Comprehensive Plan Update, page 9-15*}
 - iii. Sidewalks along proposed roads, including accessible crossings. {*§149-916*}
 - iv. Connectivity to pedestrian attractors, including Stetson Middle School, Westminster Presbyterian Church, and the existing retail uses at US Route 202 and PA Route 926. {*§149-916*}
- j. Provisions should be made for future access from the Westminster Presbyterian Church to the internal Collector Road.

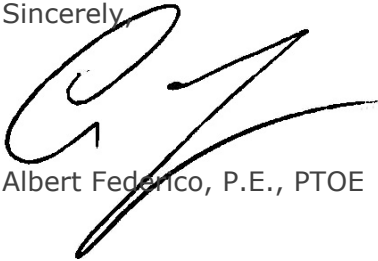


ALBERT FEDERICO CONSULTING, LLC

- k. Provisions should be made for School Bus Stops, including short-term parking for drop-off and pick-up.

Please do not hesitate to contact me at 610.608.4336 or albert@federico-consulting.com should you have any questions or require additional information.

Sincerely,



Albert Federico, P.E., PTOE

PRINCIPALS

Joseph W. McMahon, P.E.
Joseph J. DeSantis, P.E., PTOE
John S. DePalma
William T. Steffens
Casey A. Moore, P.E.
Gary R. McNaughton, P.E., PTOE

ASSOCIATES

John J. Mitchell, P.E.
Christopher J. Williams, P.E.
R. Trent Ebersole, P.E.
Matthew M. Kozsuch, P.E.
Maureen Chlebek, P.E., PTOE
Dean A. Carr, P.E.

January 20, 2017

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

RE: **Crebilly Farm Residential Development**
Traffic Log No.: C16-010XP
Westtown Township, Chester County, PA
McMahon Project No. 816451.11

Dear Mr. Hanney:

McMahon Associates, Inc. is in receipt of the Department's comment letter, dated December 6, 2016, in regards to the Transportation Impact Study Scoping Meeting Application for the Crebilly Farm Residential Development. The development is proposed to be located on the Crebilly Farm property along the west side of U.S. Route 202 (Wilmington Pike), between West Pleasant Grove Road and Street Road (S.R. 0926), in Westtown Township, Chester County, Pennsylvania. On behalf of the applicant, below is a summary of the comments in italics, with our responses following each comment.

Preliminary Comments

Comment #1: The following scoping application elements appear to be acceptable:

- a. Trip Generation: Residential Condominium/Townhouse (230), Single Family Detached Housing (210)*
- b. Study Type: Transportation Impact Study (TIS)*
- c. Study Area Type: Urban*
- d. Growth rate factor 1.71%/year*
- e. Pass-by Trups: None*

Response: No response needed.

Comment #2: As a regional roadway network improvement, the Department has interest in the provision of a connector road through the subject parcel to be constructed as part of this development. The road should provide a direct connection between SR 0926 (Street Road) and West Pleasant Grove

Road. The Department strongly encourages the Development and the Township to work toward this goal.

Response: The applicant will continue to coordinate with the Township and PennDOT regarding a connector road through the site between Street Road (S.R. 0926) and West Pleasant Grove Road.

Comment #3: *The site access road to SR 0926 (Street Road) should be aligned with Bridlewood Boulevard for improved intersection spacing along SR 0926, and to eliminate unnecessary left turn movements for traffic traveling to/from Bridlewood Boulevard and the site. Also, there is excessive queuing on the eastbound approach of SR 0926 to SR 0202, therefore the distance between the site access and SR 020 should be increased. Locating the site access to align with Bridlewood Boulevard increased the distance from SR 020.*

Response: The applicant is willing to relocated signalized access along Street Road (S.R. 0926) opposite Bridlewood Boulevard, pending further coordination with Westtown Township, Thornbury Township, and PennDOT. The applicant cannot align opposite the location of the proposed Arborview access along West Pleasant Grove Road since they do not own the property.

Comment #4: *The Traffic Impact Study must analyze both the "With PennDOT Improvements" and the "Without PennDOT Improvements" scenarios.*

Response: Will comply.

Comment #5: *Since the trips between the site and the Borough of West Chester will likely utilize the intersection of New Street and West Pleasant Grove Road, the TIS Study Area should be revised to include this intersection.*

Response: Will comply.

Comment #6: *The TIS must include a Crash Analysis for the study area.*

Response: Will comply.

Comment #7: *Please be aware that the installation of drainage facilities within the Legal Right-of-Way may necessitate additional permitting requirements, including, but not limited to, a separate Highway Occupancy Permit from the Municipality for the future maintenance of the new drainage facilities. Specific information relating to five potential drainage scenarios, as well each scenario's submission requirements, is presented in PennDOT Strike-Off Letter 470-10-03. PennDOT is legally bound by Section 421 of the State Highway Law (36 P.S. § 670-421 to enforce this maintenance responsibility for stormwater facilities relating to HOP projects. Please be guided accordingly.*


Response: No response needed.

Comment #8: *Please be advised that pursuant to and in accordance with Title 67, Chapter 441.8(h)(2)(iv) of the code, the Safe Stopping Sight Distance is the absolute minimum acceptable sight distance for any driveway. It is the designer's responsibility to ensure that this minimum requirement is satisfied. Furthermore, it should also be understood that any comments made (or guidance given) in this correspondence are preliminary in nature and the Department reserves the right to change, alter, withdraw, or amend them as it deems necessary in the future.*

Response: No response needed.

If there are any questions or if additional information is needed, please feel free to contact me at nkline@mcmahonassociates.com or (610) 594-9995.

Sincerely,



Nicole R. Kline, P.E., PTOE
Senior Project Manager

NRK

cc: Robert Pingar, P.E., Westtown Township
Chris Patriarca, AICP, Westtown Township
Andrew Semon, Toll Brothers
Michael Downs, P.E., Toll Brothers
Gregg Adelman, Esq., Kaplin Stewart



December 6, 2016

CHESTER COUNTY, WESTTOWN TOWNSHIP
SR 0202 (WILMINGTON PIKE) SEG. 0051 OFF. 0000 TO SEG. 0061 OFF. 0000
SR 0926 (STREET ROAD) SEG. 0390 OFF. 0000 TO SEG. 0400 OFF. 0679
HIGHWAY OCCUPANCY PERMIT APPLICATION NO. PRE1354
CREBILLY FARM – MIXED RESIDENTIAL LAND USE
TRAFFIC LOG NO.: C16-010XP
PRELIMINARY REVIEW

Nicole Kline, PE, PTOE
McMahon Associates, Inc.
840 Springdale Drive
Exton, PA 19341

Dear Ms. Kline:

The Department has reviewed the preliminary scoping application submission for compliance with applicable Department Regulations. This preliminary review has identified deficiencies that must be addressed in order for your application submission to be processed as efficiently as possible.

The Department understands that the provided traffic impact analysis is preliminary in nature. As such, the Department reserves the right to make future additional comments based on a formal submission with a complete Transportation Impact Study.

Our comments on your preliminary submission are as follows:

PRELIMINARY COMMENTS

1. The following scoping application elements appear to be acceptable:
 - a. Trip Generation: Residential Condominium/Townhouse (230), Single Family Detached Housing (210)
 - b. Study Type: Transportation Impact Study (TIS)
 - c. Study Area Type: Urban
 - d. Growth rate factor: 1.71%/year
 - e. Pass-by Trips: None

2. As a regional roadway network improvement, the Department has interest in the provision of a connector road through the subject parcel to be constructed as part of this development. The road should provide a direct connection between SR 0926 (Street Road) and West Pleasant Grove Road. The Department strongly encourages the Developer and the Township to work toward this goal.

3. The site access road to SR 0926 (Street Road) should be aligned with Bridlewood Boulevard for improved intersection spacing along SR 0926, and to eliminate unnecessary left turn movements for traffic travelling to/from Bridlewood Boulevard and the site. Also, there is excessive queuing on the eastbound approach of SR 0926 to SR 0202, therefore the distance between the site access and SR 0202 should be increased. Locating the site access to align with Bridlewood Boulevard increases the distance from SR 0202.
4. The Traffic Impact Study must analyze both the “With PennDOT Improvements” and the “Without PennDOT Improvements” scenarios at the intersection of SR 0202 and SR 0926.
5. Since trips between the site and the Borough of West Chester will likely utilize the intersection of New Street and West Pleasant Grove Road, the TIS Study Area should be revised to include this intersection.
6. The TIS must include a Crash Analysis for the study area.
7. Please be aware that the installation of drainage facilities within the Legal Right-of-Way may necessitate additional permitting requirements, including, but not limited to, a separate Highway Occupancy Permit from the Municipality for the future maintenance of the new drainage facilities. Specific information relating to five potential drainage scenarios, as well as each scenario’s submission requirements, is presented in PennDOT Strike-Off Letter 470-10-03. PennDOT is legally bound by Section 421 of the State Highway Law (36 P.S. § 670-421) to enforce this maintenance responsibility for stormwater facilities relating to HOP projects. Please be guided accordingly.
8. Please be advised that pursuant to and in accordance with Title 67, Chapter 441.8(h)(2)(iv) of the code, the Safe Stopping Sight Distance is the absolute minimum acceptable sight distance for any driveway. It is the designer’s responsibility to ensure that this minimum requirement is satisfied. Furthermore, it should also be understood that any comments made (or guidance given) in this correspondence are preliminary in nature and the Department reserves the right to change, alter, withdraw, or amend them as it deems necessary in the future.
9. Please be aware that the Department’s policy is that TISs are to be submitted via the ePermitting System. The PennDOT project number, C16-010XP, for this preliminary review must be referenced in the ePermitting System when the application is submitted.

The Department has performed this preliminary review based only on the limited information provided. We reserve the right to make future, additional, detailed comments based on the formal submission and application for a Highway Occupancy Permit. If you have any questions pertaining to the technical aspects of this review, please contact Drew E. Sirianni, PE, PTOE of Pennoni at (215) 254-7893 or DSirianni@pennoni.com.

Respectfully,



Francis J. Hanney
District Traffic Services Manager
Engineering District 6-0

cc: Matthew Miele, PE
Ashwin Patel, PE
Traffic Services File
Westtown Township
Thornbury Township
Chester County Planning Commission

PRINCIPALS

Joseph W. McMahon, P.E.
Joseph J. DeSantis, P.E., PTOE
John S. DePalma
William T. Steffens
Casey A. Moore, P.E.
Gary R. McNaughton, P.E., PTOE

ASSOCIATES

John J. Mitchell, P.E.
Christopher J. Williams, P.E.
R. Trent Ebersole, P.E.
Matthew M. Kozsuch, P.E.
Maureen Chlebek, P.E., PTOE
Dean A. Carr, P.E.

November 7, 2016

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

RE: **Transportation Impact Study Scoping Meeting Application
Crebilly Farm Residential Development**
Westtown Township, Chester County, PA
McMahon Project No. 816451.11

Dear Mr. Hanney:

McMahon Associates, Inc. (McMahon) is pleased to submit the following Transportation Impact Study (TIS) Scoping Meeting Application, per the *Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits*, Revised October 21, 2013 (Strike-off Letter 494-13-13) for the proposed development, located on the Crebilly Farm property along the west side of U.S. Route 202 (Wilmington Pike), between West Pleasant Grove Road and Street Road (S.R. 0926), in Westtown Township, Chester County, Pennsylvania. Three potential alternatives are proposed for the development, as follows:

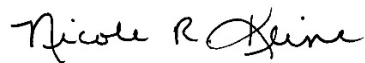
- **Alternative A (Plan A – Proposed Development):** The plan includes 317 new dwelling units and 2 existing dwelling units. Access is provided via two full-movement accesses along West Pleasant Grove Road, a right-in/right-out access along U.S. Route 202 (Wilmington Pike), and a full-movement access along Street Road (S.R. 0926). This development alternative does not provide a public connector road.
- **Alternative B (Plan B – Proposed Density Bonus Development):** The plan includes 395 new dwelling units and 2 existing dwelling units. Access is identical to Alternative A. This development alternative does not provide a public connector road.
- **Alternative C (Plan B – Proposed Density Bonus Development with Connector Road):** The plan includes 395 new dwelling units and 2 existing dwelling units. Access is identical to Alternatives A and B, with the addition of a third full-movement access along West Pleasant Grove Road, which will serve as a connector road provided for public use between U.S. Route 202 (Wilmington Pike), Street Road (S.R. 0926), and West Pleasant Grove Road.

Based on the anticipated trip generation, the site requires a Transportation Impact Study. A Transportation Impact Study has been prepared and submitted to Westtown Township, generally in accordance with the scope outlined in this application.

The applicant would like to request a meeting with the Department to discuss this project. During the Department's review of this scoping application, the applicant respectfully requests available dates and times for a meeting. A preliminary list of meeting attendees is included with this scoping submission, including Westtown Township.

If you have any questions or need additional information, please feel free to contact me.

Sincerely,



Nicole R. Kline, P.E., PTOE
Senior Project Manager

NRK
Attachment

cc: John Otten, PennDOT
Robert Pingar, P.E., Westtown Township
Chris Patriarca, AICP, Westtown Township
Andrew Semon, Toll Brothers
Michael Downs, P.E., Toll Brothers

**Crebilly Farm Residential Development
Scoping Meeting Attendees**

<u>Name</u>	<u>Company</u>	<u>Phone</u>	<u>Email</u>
APPLICANT:			
Nicole Kline, P.E., PTOE	McMahon Associates, Inc.	610-594-9995	nkline@mcmahonassociates.com
Michael Downs, P.E.	Toll Brothers	610-358-3611	asemon@tollbrothersinc.com
Andrew Semon	Toll Brothers	215-293-5448	mdowns@tollbrothersinc.com
PRELIMINARY MUNICIPAL INVITEES:			
Robert Pingar, P.E.	Westtown Township	610-692-1930	rpingar@westtown.org
Chris Patriarca, AICP	Westtown Township	610-692-1930	cpatriarca@westtown.org

The municipality can include additional attendees, as desired.

TRANSPORTATION IMPACT STUDY (TIS) SCOPING MEETING APPLICATION

Scoping Meeting Date: TBD

Applicant: Toll Brothers, Inc.

Applicant's Consultant: McMahon Associates, Inc.

Applicant's Primary Contact: Nicole Kline, P.E., PTOE

(Attach a list of meeting attendees along with phone numbers and email addresses)

(1) LOCATION OF PROPOSED DEVELOPMENT: (Attach location map if available)

PennDOT Engineering Dist.: 6-0 County: Chester County

Municipality: Westtown Township

State Route(s) (SR): U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)

Segment(s)/Offset(s):	S.R. 0202:	0051/0000 to 0061/0000
	S.R. 0926:	0390/0000 to 0400/0679

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

There are currently three proposed alternatives for the development. Conceptual site plans for all alternatives, prepared by ESE Consultants and last revised October 7, 2016, are provided with this scoping submission.

Proposed site access: Access is provided via two full-movement accesses along West Pleasant Grove Road, a right-in/right-out access along U.S. Route 202 (Wilmington Pike), and a full-movement access along Street Road (S.R. 0926) for all three alternatives. Alternative C includes a third full-movement access along West Pleasant Grove Road, which will serve as a connector road provided for public use between U.S. Route 202 (Wilmington Pike), Street Road (S.R. 0926), and West Pleasant Grove Road.

Proposed land uses:

- *Alternative A (Plan A – Proposed Development):* 319 residential units (2 existing and 200 new single-family homes and 117 new carriage homes).
- *Alternatives B and C (Plan B – Proposed Density Bonus Development):* 397 residential units (2 existing and 152 new single-family homes and 243 new carriage homes).

Community linkages (*access to neighboring properties, cross easements, pedestrian and transit accommodations*):

Transit services are currently not provided within the study area. The nearest SEPTA bus stop (SEPTA Bus Route 92) is located just north of the S.R. 0322 (High Street) and U.S. Route 202 intersection, approximately a mile and a half north of the site.

Currently, there are no sidewalks along U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926). The signalized intersection of U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926) has limited pedestrian crossing amenities. There are pedestrian crosswalks, signals, and pushbuttons provided to cross the eastern leg of Street Road (S.R. 0926) and the southern leg of U.S. Route 202 (Wilmington Pike).

(3) DEVELOPMENT SCHEDULE AND STAGING:

Anticipated Opening Date: 2018

Full Build-Out Date: 2023

Describe Proposed Development Schedule/Staging: No staging is proposed with the development.

(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 based on surveys of multiple sites of the same land use type and size.)

Trip generation for the proposed development will be based on:

 X ITE Trip Generation Manual.
(List proposed development land uses and associated ITE Land Use Codes)

 Other independent surveys.
(Attach justification for non-ITE methods)

List land development and trip generation information, as appropriate. If necessary, attach additional sheets to indicate additional land uses or development phases.

Table 1 provides the total trips anticipated to be generated by the development. Details regarding the trip generation for each of the alternatives are provided in **Attachment 1**.

Table 1. Trip Generation – Crebilly Residential Development

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Alternative A ⁽¹⁾	319 units	2,742	48	162	210	171	95	266
Alternatives B & C ⁽²⁾	397 units	2,955	48	175	223	182	98	280

(1) Consisting of 2 existing and 200 new single-family dwelling units and 117 new carriage homes.

(2) Consisting of 2 existing and 152 new single-family dwelling units and 243 new carriage homes.

(5) ESTIMATED DAILY TRIP GENERATION/DRIVEWAY CLASSIFICATION:

(a) Estimated Daily Trip Generation of Proposed Development – Assuming One Access Point and Full Build out/Occupancy of Entire Tract: 2,742 trips/day for Alternative A or 2,955 trips/day for Alternatives B and C.

(b) Driveway Classification Based on Trip Generation and One Access Point:

Medium Volume: X

High Volume: _____

(6) TRANSPORTATION IMPACT STUDY REQUIRED?

_____ No

X Yes, based on: _____ 3,000 or more vehicle trips/day generated

X During any one-hour time period, 100 or more new (added) vehicle trips generated entering or 100 or more new (added) vehicle trips generated exiting development

_____ Other considerations as described below:

(7) TRAFFIC IMPACT ASSESSMENT REQUIRED? X No _____ Yes

(If a TIS is required, the following sections of this checklist will be discussed at the TIS Scoping Meeting. The applicant may provide preliminary information.)

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

Roadway and Study Intersections

- U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926) (signalized)
- U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road (unsignalized)
- Street Road (S.R. 0926) and Bridlewood Boulevard (unsignalized)
- Street Road (S.R. 0926) and New Street (signalized)

A location map is provided, see **Figure 1**.

Land use context (Refer to Smart Transportation Handbook)

Land Use Context – Suburban Corridor

Transportation Context:

- Wilmington Pike (S.R. 0202) – Regional Arterial
- Street Road (S.R. 0926) – Community Arterial
- New Street – Neighborhood Collector
- West Pleasant Grove Road – Local Road
- Bridlewood Boulevard – Local Road

Known Congestion Areas

The U.S. Route 202 (Wilmington Pike) corridor within the vicinity of the site is a known congestion area. It is our understanding that PennDOT currently has a design project providing improvements to the U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926) intersection.

Known Safety Concerns

Not known at this time.

Known Environmental Constraints

Not known at this time.

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

Stetson Middle School and Sarah W. Starkweather Elementary School are located along Wilmington Pike (S.R. 0202), approximately 0.5 miles north of the site.

Transit Review (Current routes/stops)

The nearest SEPTA bus stop (SEPTA Bus Route 139) is located at the intersection of Schuylkill Road (S.R. 0724) and Park Road/Cypress Avenue, approximately 0.75 miles south of the site. This bus route continues along New Street (S.R. 1043) and services Limerick, Royersford, Spring City, Phoenixville, and King of Prussia.

(9) STUDY AREA TYPE: Urban X Rural _____

(10) TIS ANALYSIS PERIODS AND TIMES:

(List periods and times. Normal analysis periods are existing conditions, 5 years in the future without development, and 5 years in the future with development. Normal analysis times for each period are the AM peak hour, the PM peak hour, and the peak hour of site-generated traffic).

Study Analysis Periods:

- Existing Conditions
- 2023 Future Build-Out Year Conditions (both without and with the proposed development)
- 2028 Future Design Year Conditions (both without and with the proposed development)

Study Time Periods:

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

(11) TRAFFIC ADJUSTMENT FACTORS:

(a) Seasonal Adjustment: (Identify counts requiring adjustment and methodology)

The traffic counts were completed on September 8, 2016 while school was in session, and therefore, the use of any seasonal adjustment factors is not required.

(b) Annual Base Traffic Growth: 1.71 %/yr.

Source: Bureau of Planning and Research for similar roadways in Chester County

If there are other developments within the study area that must be included as part of the background traffic growth and which have a significant effect on future traffic volumes, then it may be proposed to use a lower annual base traffic growth rate.

(c) Pass-By Trips: (Attach justification where required)

(d) Captured Trips for Multi-Use Sites:

(List % and manner of application. Attach justification where required.)

(e) Modal Split Reductions

No reduction proposed.

(f) Other Reductions

No other reductions proposed.

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

(Identify proposed developments with issues permits that need to be included.)

Please provide information regarding any proposed developments that will have an effect on traffic operations within the study area and should be included in the Transportation Impact Study.

- *Police Station Redevelopment*: 30,000 square feet of office space located on the northeast corner of the intersection of U.S. 202 (Wilmington Pike) and Pleasant Grove Road.

- *Arborview*: 16,800 square feet of office space and an 8,665 square-foot daycare center located on the west side of U.S. Route 202 (Wilmington Pike) between Skiles Boulevard and Pleasant Grove Road.

- *Condominium Development*: 39 condominiums in two buildings remain to be occupied/constructed on the west side of Gilpin Drive just north of Skiles Boulevard.

(13) TRIP DISTRIBUTION AND ASSIGNMENT:
(Describe; explain/justify; attach diagram and related information.)

Trip distributions and assignments have been prepared based on existing traffic patterns and the location of the site accesses upon completion of the data collection efforts. Site distribution and assignment figures are provided in **Attachment 2**.

(14) APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:

<u>Location</u>	<u>Period</u>	<u>Type</u>
U.S. Route 202 and Street Road (S.R. 0926)	Weekday 7-9 AM and 4-6 PM	MTM
U.S. Route 202 and West Pleasant Grove Road		
Street Road (S.R. 0926) and New Street		
Street Road (S.R. 0926) and Bridlewood Boulevard		

Traffic counts were conducted on September 8, 2016, while school was in session and are provided in **Attachment 3**. Existing peak hour traffic volume figures are also provided in **Attachment 3**.

(15) CAPACITY/LOS ANALYSIS:

<u>Location</u>	<u>Period</u>	<u>Type</u>
U.S. Route 202 and Street Road (S.R. 0926)	Weekday 7-9 AM and 4-6 PM	HCM 2010
U.S. Route 202 and West Pleasant Grove Road		utilizing
Street Road (S.R. 0926) and New Street		Synchro 8
Street Road (S.R. 0926) and Bridlewood Boulevard		
All proposed site accesses		

(16) ROADWAY IMPROVEMENTS/MODIFICATIONS BY OTHERS TO BE INCLUDED:
(Projects programmed for construction of other developments with issued permits.)

It is our understanding that a PennDOT project to improve the intersection of U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926). Based on the current State Transportation Improvement Program (TIP) and the Conceptual Intersection Layout prepared by Urban Engineers and dated June 5, 2014, the project will include improvements that will help reduce traffic congestion and increase safety at the intersection through lane reconfigurations, striping, upgrades to the traffic signal, signal timing, and bicycle and pedestrian improvements. It is our understanding that the following roadway improvements are to be included:

- Southbound 130-foot right-turn deceleration lane on U.S. Route 202.
- Additional eastbound left-turn lane on PA Route 926, creating a double left-turn lane configuration with 380 feet of storage for each lane.

- Pedestrian and bicycle intersection improvements, including high-visibility crosswalks, ADA ramps, and sidewalk extension from the intersection east to Dalmally Drive.
- Traffic signal equipment upgrades, including pedestrian push buttons, countdown signal heads, and lighting.

Based on the TIP, the current project schedule indicates an estimated let date of July 2018; however, in light of the favorable state transportation funding situation, and the high priority for this project within Chester County, we understand this project may be accelerated to be completed more quickly.

(17) OTHER NEEDED ANALYSES:

- (a) Sight Distance Analysis:
(Required for all site access driveways; identify other locations)

Will be completed for all site accesses.

- (b) Signal Warrant Analysis:
(Identify locations)

Will be completed for the proposed traffic signal at Street Road (S.R. 0926) and Site Access.

- (c) Required Signal Phasing/Timing Modifications:
(Determine for all signalized intersections; specify methodology)

Any recommendations regarding proposed traffic signal phasing/timing modifications will be completed based on the results of the traffic analyses completed in Synchro, and based on the calculation of conflict factors, in accordance with PennDOT warrants and guidelines.

- (d) Traffic Signal Corridor/Network Analysis:
(Identify locations/methodology)

Traffic signal coordination will be included within the traffic analyses in Synchro, as needed.

- (e) Analysis of the Need for Turning Lanes:
(Identify locations/methodology)

The need for auxiliary turning lanes will be evaluated based on PennDOT guidelines, as contained in PennDOT's *Publication 46, Chapter 11*, for the proposed site accesses.

- (f) Turning Lane Lengths:
(Identify methodology to be used)

Turning lane lengths will be evaluated based on PennDOT guidelines, as contained in PennDOT's *Publication 46, Chapter 11*, including the 95th percentile queues from the Synchro analyses.

- (g) Left Turn Signal Phasing Analysis:
(Identify locations/methodology)

Will be completed at the proposed Street Road (S.R. 0926) Site Access.

- (h) Queuing Analysis:
(Identify locations/methodology)

Will be completed at all study intersections and proposed site accesses utilizing Synchro 8.

- (i) Gap Studies:
(Identify locations/methodology)

Not proposed at this time.

- (j) Crash Analysis:
(Identify locations)

Crash data will be reviewed, upon request.

- (k) Weaving Analysis:
(Identify locations)

N/A

- (l) Other Required Studies:
(Specify locations/methodology)

None proposed at this time.

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

_____	Date: _____
Signature of Applicant's Engineer	
_____	Date: _____
Signature of District Traffic PennDOT Representative	
_____	Date: _____
Signature of District Permit PennDOT Representative (if present)	
_____	Date: _____
Signature of Municipal Traffic Representative	

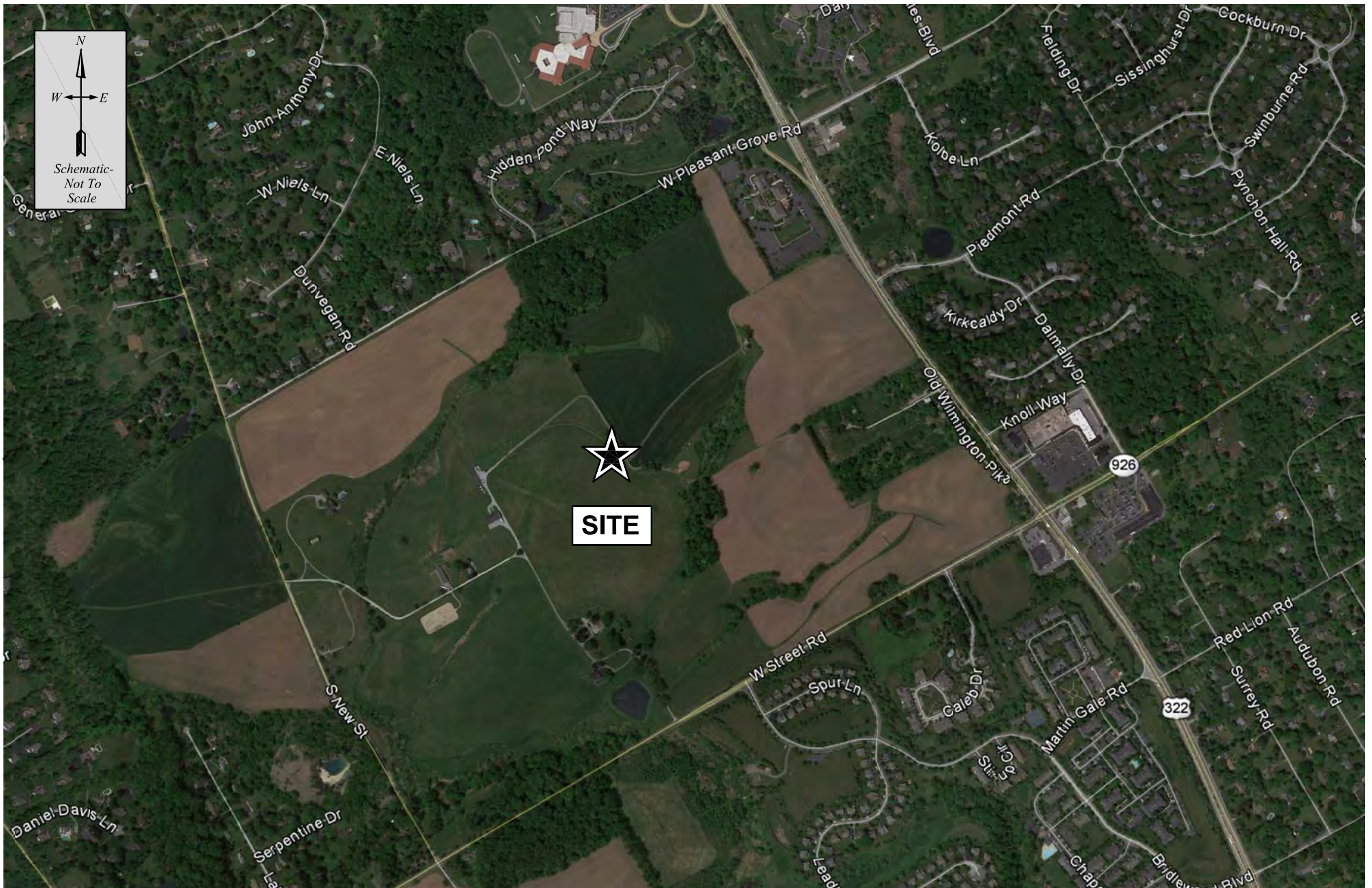


FIGURE 1
Site Location Map

CREBILLY FARM RESIDENTIAL DEVELOPMENT



WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

Project Information	
Project Name:	Crebily Farm Residential Development - Alternative A
McMahon Project No:	816451
Date:	10/3/2016
City/Municipality:	Westtown Township
State:	Pennsylvania
Client Name:	Toll Brothers, Inc.
Analyst's Name:	BGG
ITE Edition:	ITE-TGM 9th Edition

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
		Total	In	Out	Total	In	Out	Total
230 - Residential Condominium / Townhouse	117 dwelling units	737	10	49	59	46	22	68
210 - Single Family Detached Housing	202 dwelling units	2,005	38	113	151	125	73	198
Total Trips		2,742	48	162	210	171	95	266

Project Information	
Project Name:	Crebily Farm Residential Development - Alternatives B and C
McMahon Project No:	816451
Date:	10/10/2016
City/Municipality:	Westtown Township
State:	Pennsylvania
Client Name:	Toll Brothers, Inc.
Analyst's Name:	BGG
ITE Edition:	ITE-TGM 9th Edition

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
		Total	In	Out	Total	In	Out	Total
230 - Residential Condominium / Townhouse	243 dwelling units	1,393	18	87	105	84	41	125
210 - Single Family Detached Housing	154 dwelling units	1,562	30	88	118	98	57	155
Total Trips		2,955	48	175	223	182	98	280

ATTACHMENT 2

LEGEND:
 10% ENTERING
 (10%) EXITING

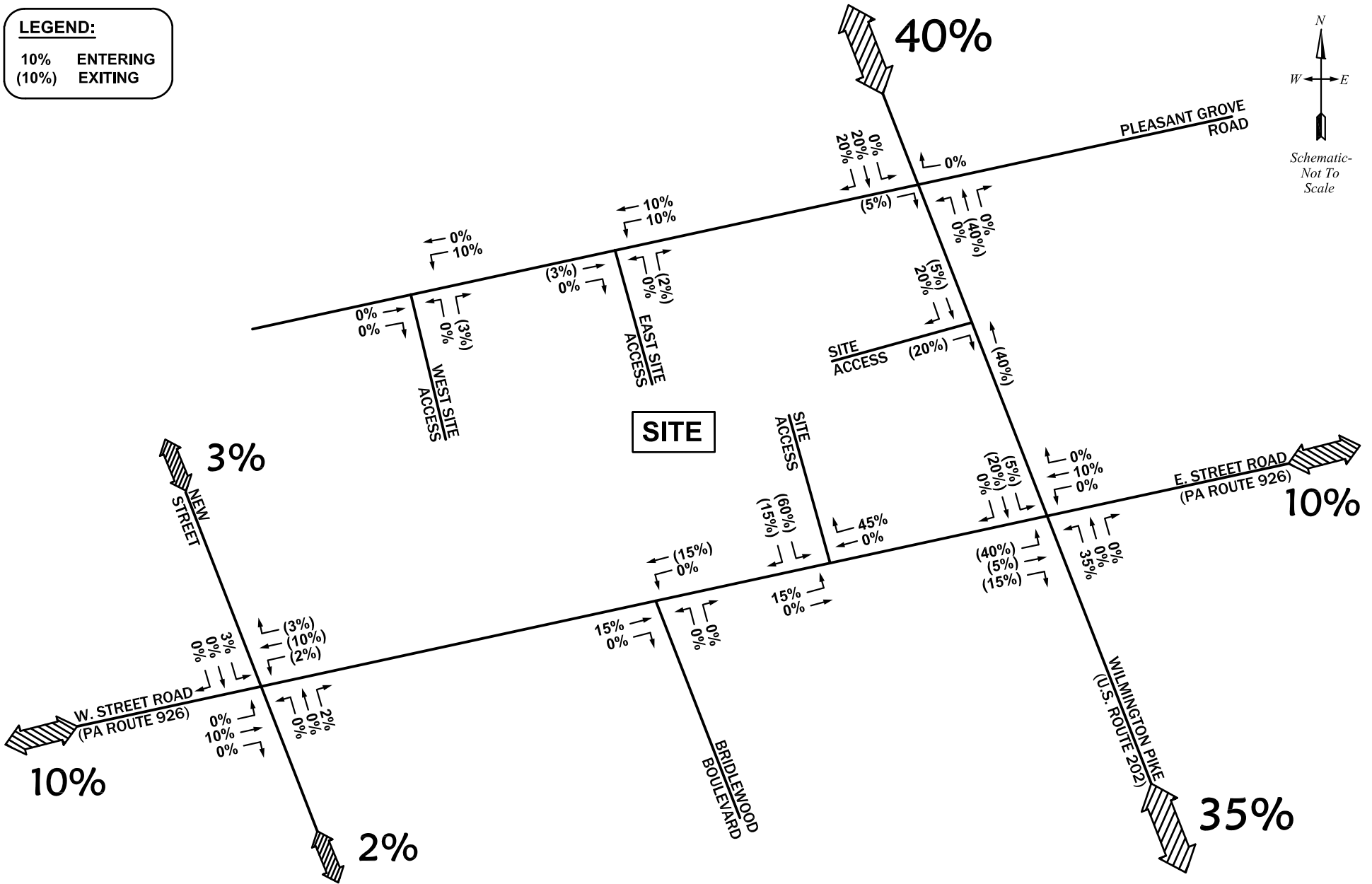
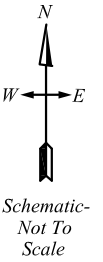


FIGURE 4A
 Site Trip Distribution
 Alternatives A and B

LEGEND:

10% ENTERING
(10%) EXITING

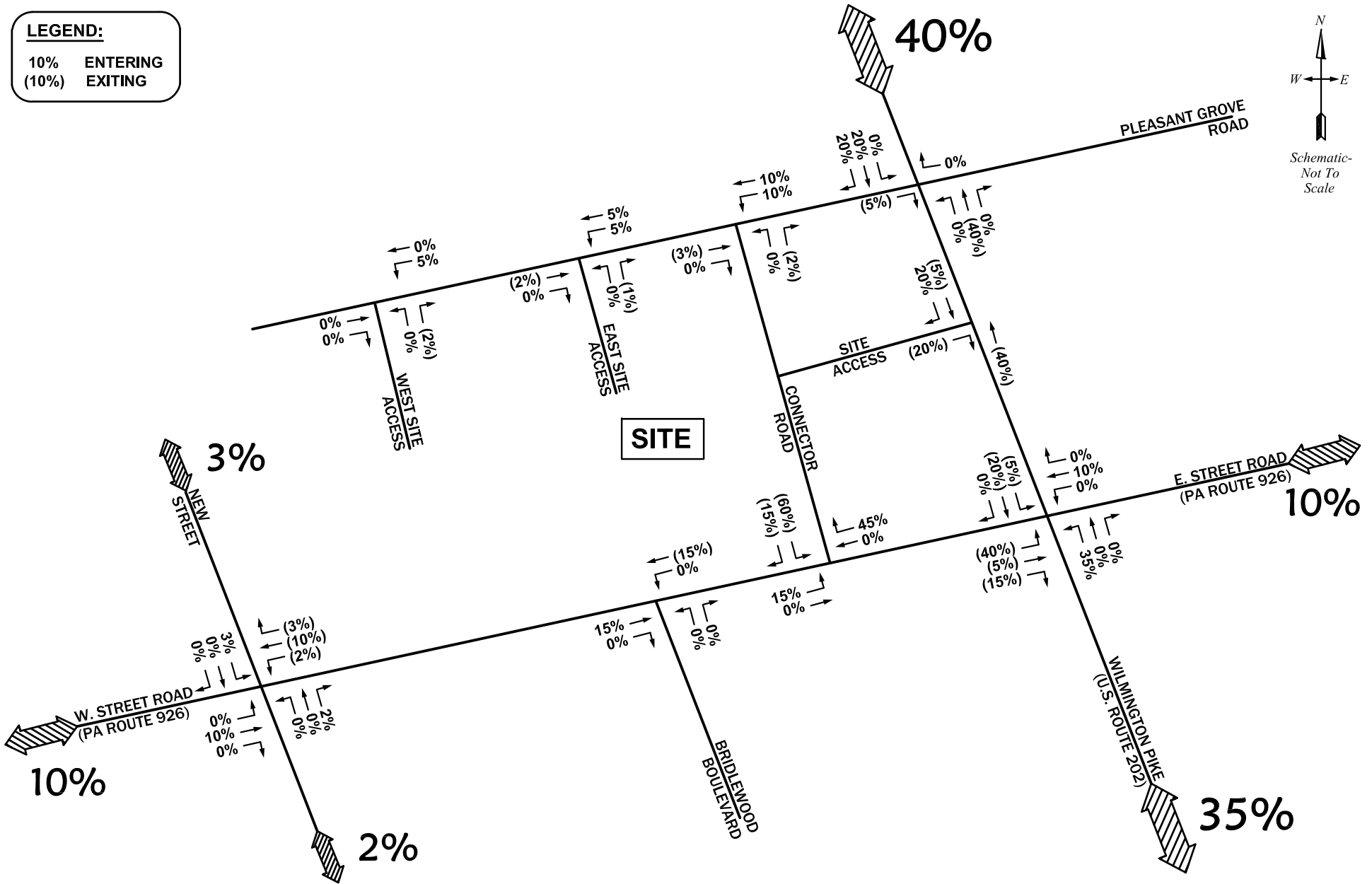
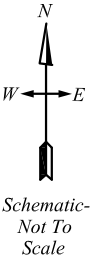


FIGURE 4B
Site Trip Distribution
Alternative C

LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

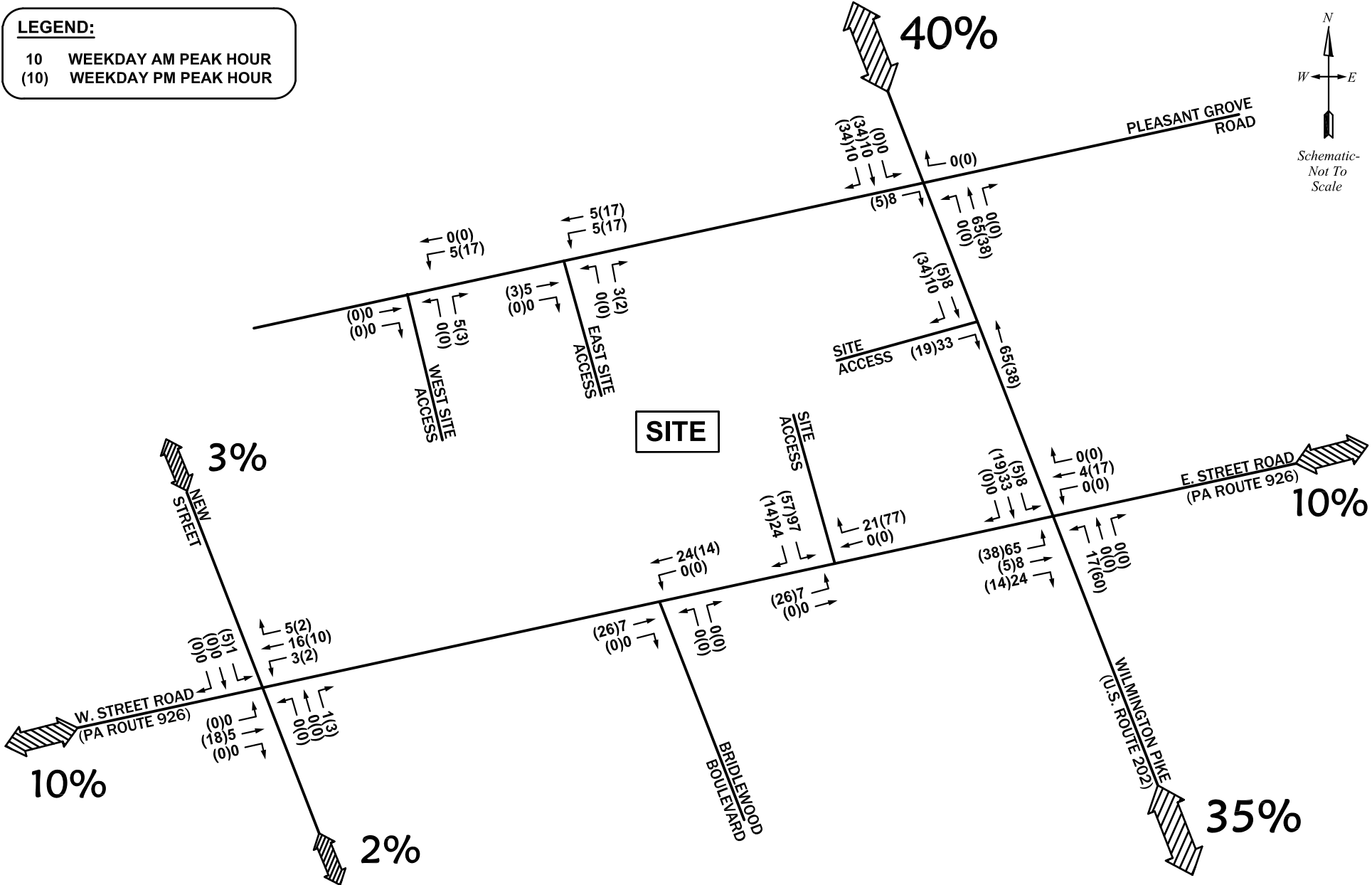
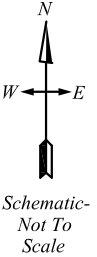


FIGURE 4C
 Site Trip Assignment
 Alternative A

LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

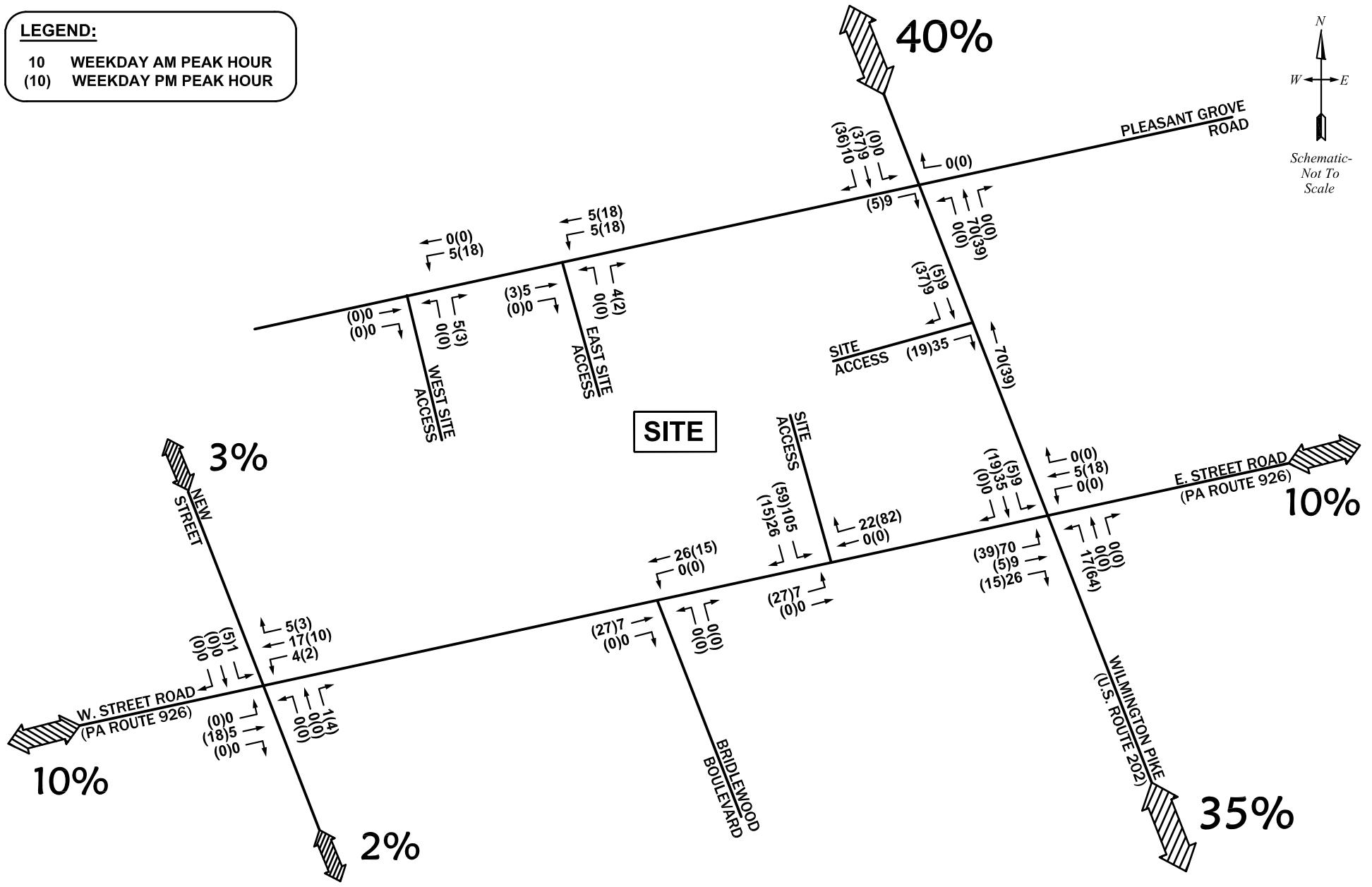
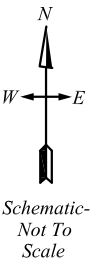


FIGURE 4D
 Site Trip Assignment
 Alternative B

CREBILLY FARM RESIDENTIAL DEVELOPMENT



WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR

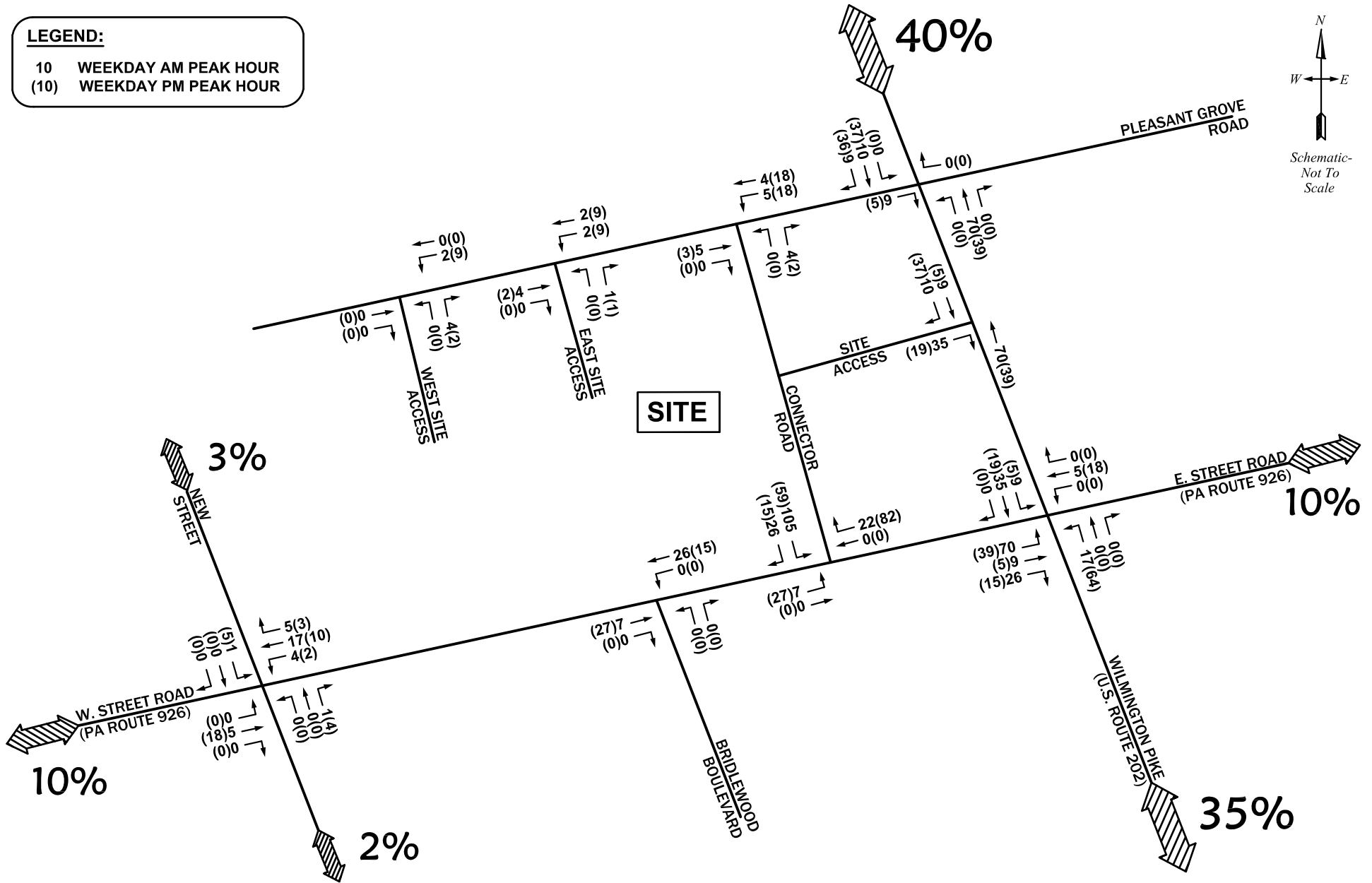


FIGURE 4E
Site Trip Assignment
Alternative C

ATTACHMENT 3

LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

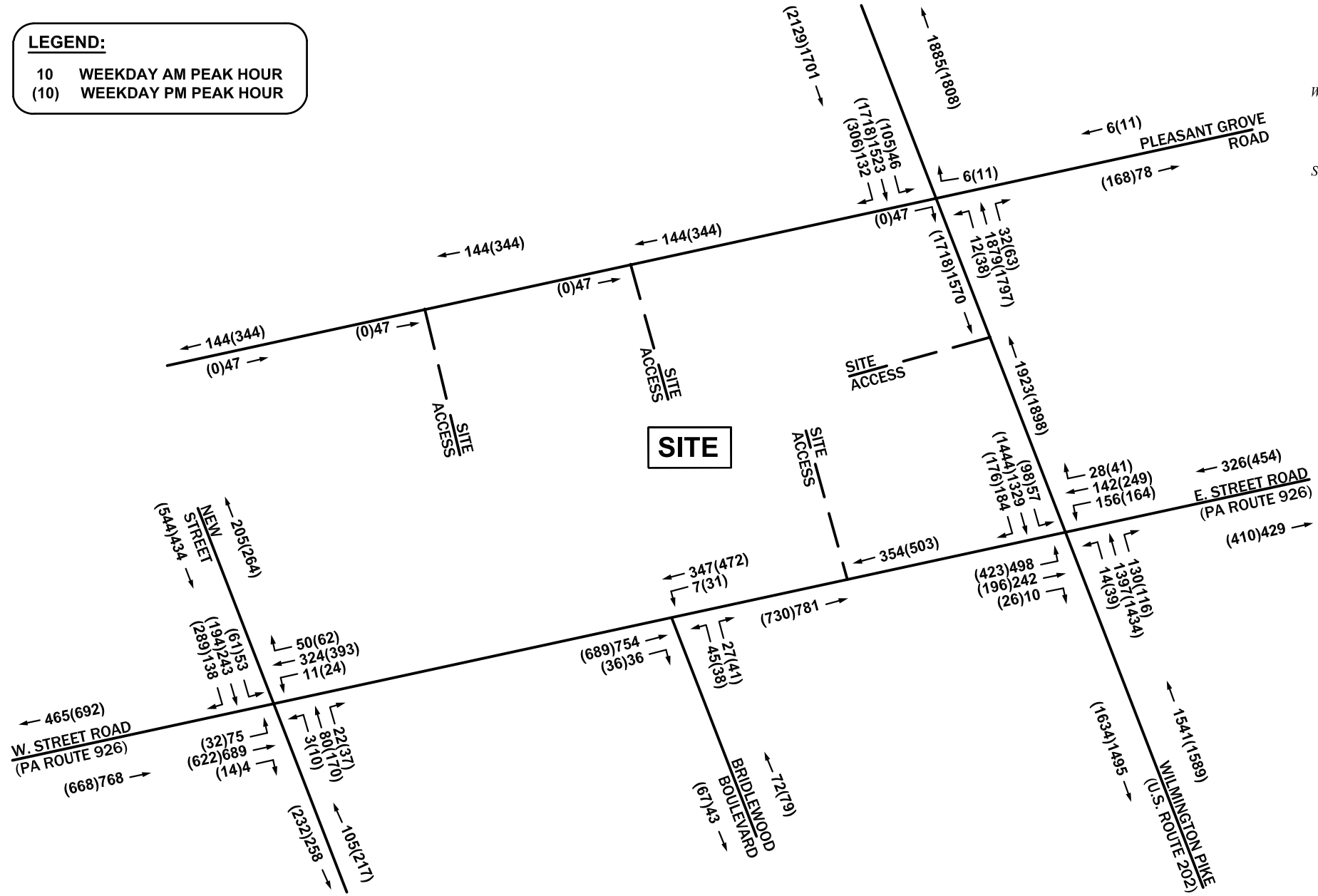
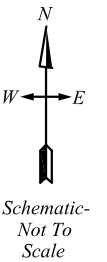


FIGURE 3A
 2016 Existing Peak Hour Traffic Volumes

CREBILLY FARM RESIDENTIAL DEVELOPMENT **MCMMAHON**

WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: New Street &
Street Road (Route 926)
Counter/Board #: HR

File Name : westtown01w
Site Code : 81645101
Start Date : 9/8/2016
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	New Street Southbound				Street Rd (Rt 926) Westbound				New Street Northbound				Street Rd (Rt 926) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	14	44	0	12	3	79	2	3	6	7	1	9	9	206	0	0	395
07:15	10	50	0	20	4	85	3	4	3	21	0	5	26	173	0	0	404
07:30	6	46	0	29	2	82	2	14	2	27	0	4	16	167	0	6	403
07:45	15	61	0	28	4	86	1	19	0	23	0	7	25	173	0	1	443
Total	45	201	0	89	13	332	8	40	11	78	1	25	76	719	0	7	1645
08:00	4	66	0	41	0	82	0	11	0	22	0	5	22	172	1	1	427
08:15	14	63	0	37	7	83	0	8	1	17	0	3	16	154	0	0	403
08:30	20	53	0	32	0	73	2	9	2	18	0	7	12	190	0	1	419
08:45	10	40	0	41	1	66	0	12	0	18	0	9	11	155	0	0	363
Total	48	222	0	151	8	304	2	40	3	75	0	24	61	671	1	2	1612
16:00	21	39	0	67	2	107	0	19	5	23	0	3	6	130	0	2	424
16:15	22	46	0	77	2	117	1	14	5	32	0	3	7	120	0	4	450
16:30	14	37	0	86	1	102	1	19	2	23	0	5	5	149	0	1	445
16:45	16	57	0	72	1	104	1	18	2	32	0	4	5	139	0	1	452
Total	73	179	0	302	6	430	3	70	14	110	0	15	23	538	0	8	1771
17:00	15	52	0	75	2	96	2	16	4	62	1	8	6	138	1	3	481
17:15	20	52	0	64	4	86	2	13	2	43	0	10	7	160	0	3	466
17:30	17	34	0	80	5	124	2	11	3	28	0	11	8	160	0	3	486
17:45	9	56	0	70	13	87	1	15	1	37	0	7	11	164	0	4	475
Total	61	194	0	289	24	393	7	55	10	170	1	36	32	622	1	13	1908
Grand Total	227	796	0	831	51	1459	20	205	38	433	2	100	192	2550	2	30	6936
Apprch %	12.2	42.9	0	44.8	2.9	84.1	1.2	11.8	6.6	75.6	0.3	17.5	6.9	91.9	0.1	1.1	
Total %	3.3	11.5	0	12	0.7	21	0.3	3	0.5	6.2	0	1.4	2.8	36.8	0	0.4	
Passenger Vehicles	221	792	0	814	46	1398	20	201	34	425	2	96	189	2473	2	30	6743
% Passenger Vehicles	97.4	99.5	0	98	90.2	95.8	100	98	89.5	98.2	100	96	98.4	97	100	100	97.2
Heavy Vehicles	6	4	0	17	5	61	0	4	4	8	0	4	3	77	0	0	193
% Heavy Vehicles	2.6	0.5	0	2	9.8	4.2	0	2	10.5	1.8	0	4	1.6	3	0	0	2.8

Zero Pedestrians were observed during this study.

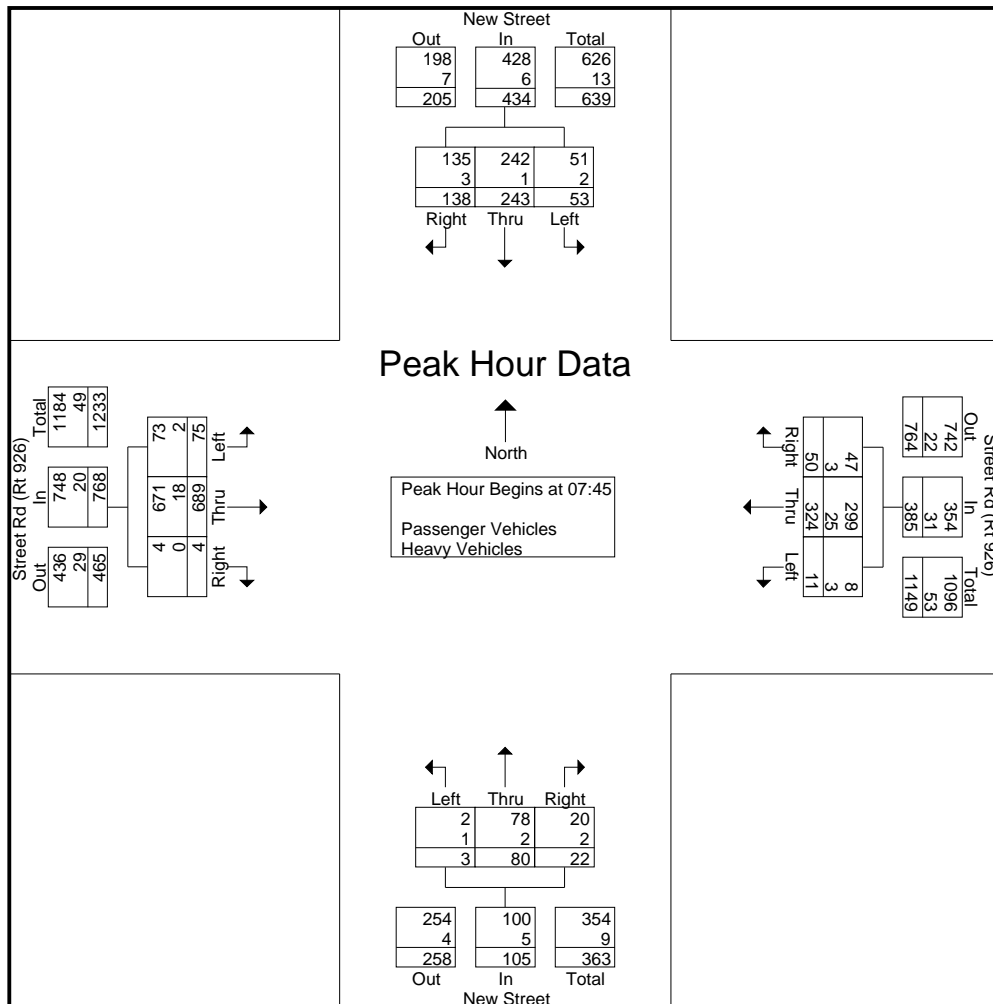
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: New Street &
Street Road (Route 926)
Counter/Board #: HR

File Name : westtown01w
Site Code : 81645101
Start Date : 9/8/2016
Page No : 2

Start Time	New Street Southbound					Street Rd (Rt 926) Westbound					New Street Northbound					Street Rd (Rt 926) Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	RO	Rig	App. Total	Left	Thru	RO	Rig	App. Total	Left	Thru	RO	Rig	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45																					
07:45	15	61	0	28	104	4	86	1	19	110	0	23	0	7	30	25	173	0	1	199	443
08:00	4	66	0	41	111	0	82	0	11	93	0	22	0	5	27	22	172	1	1	196	427
08:15	14	63	0	37	114	7	83	0	8	98	1	17	0	3	21	16	154	0	0	170	403
08:30	20	53	0	32	105	0	73	2	9	84	2	18	0	7	27	12	190	0	1	203	419
Total Volume	53	243	0	138	434	11	324	3	47	385	3	80	0	22	105	75	689	1	3	768	1692
% App. Total	12.2	56	0	31.8		2.9	84.2	0.8	12.2		2.9	76.2	0	21		9.8	89.7	0.1	0.4		
PHF	.663	.920	.000	.841	.952	.393	.942	.375	.618	.875	.375	.870	.000	.786	.875	.750	.907	.250	.750	.946	.955
Passenger Vehicles																					
% Passenger Vehicles	96.2	99.6	0	97.8	98.6	72.7	92.3	100	93.6	91.9	66.7	97.5	0	90.9	95.2	97.3	97.4	100	100	97.4	96.3
Heavy Vehicles																					
% Heavy Vehicles	3.8	0.4	0	2.2	1.4	27.3	7.7	0	6.4	8.1	33.3	2.5	0	9.1	4.8	2.7	2.6	0	0	2.6	3.7



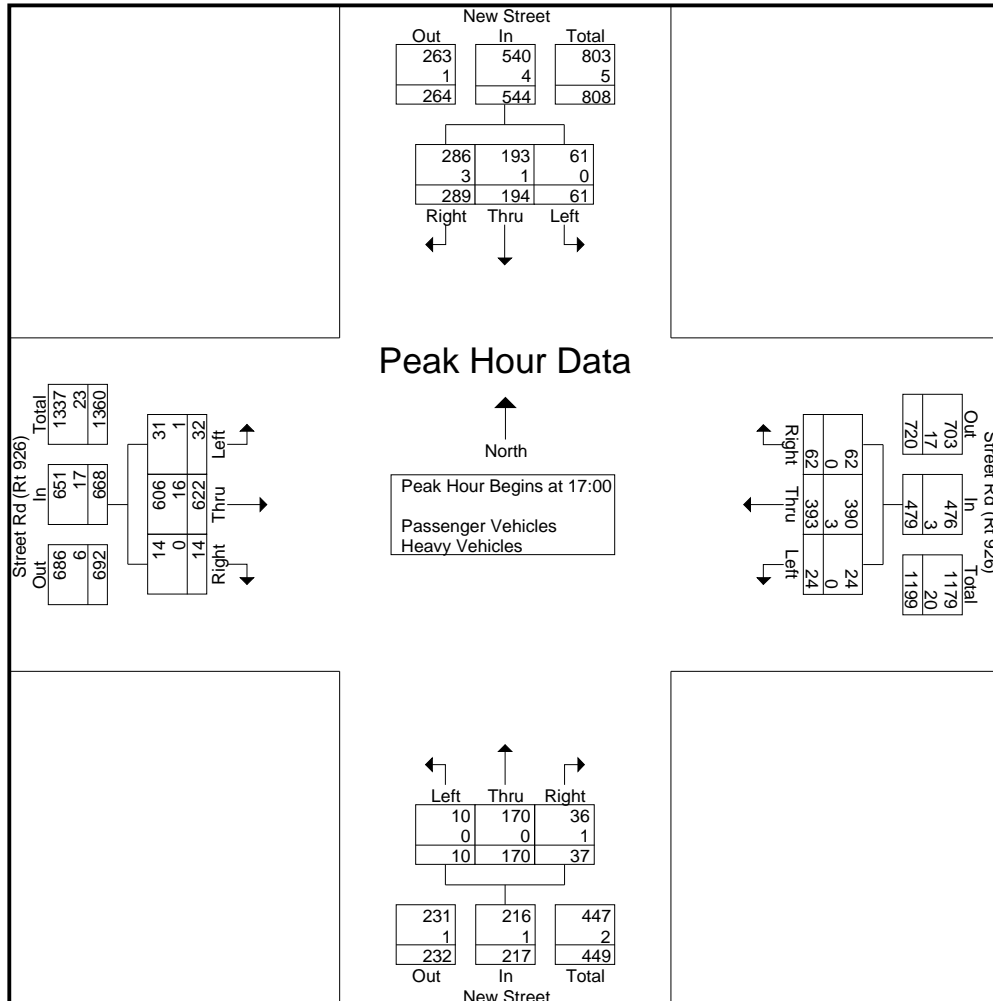
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: New Street &
Street Road (Route 926)
Counter/Board #: HR

File Name : westtown01w
Site Code : 81645101
Start Date : 9/8/2016
Page No : 3

Start Time	New Street Southbound					Street Rd (Rt 926) Westbound					New Street Northbound					Street Rd (Rt 926) Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	15	52	0	75	142	2	96	2	16	116	4	62	1	8	75	6	138	1	3	148	481
17:15	20	52	0	64	136	4	86	2	13	105	2	43	0	10	55	7	160	0	3	170	466
17:30	17	34	0	80	131	5	124	2	11	142	3	28	0	11	42	8	160	0	3	171	486
17:45	9	56	0	70	135	13	87	1	15	116	1	37	0	7	45	11	164	0	4	179	475
Total Volume	61	194	0	289	544	24	393	7	55	479	10	170	1	36	217	32	622	1	13	668	1908
% App. Total	11.2	35.7	0	53.1		5	82	1.5	11.5		4.6	78.3	0.5	16.6		4.8	93.1	0.1	1.9		
PHF	.763	.866	.000	.903	.958	.462	.792	.875	.859	.843	.625	.685	.250	.818	.723	.727	.948	.250	.813	.933	.981
Passenger Vehicles																					
% Passenger Vehicles	100	99.5	0	99.0	99.3	100	99.2	100	100	99.4	100	100	100	97.2	99.5	96.9	97.4	100	100	97.5	98.7
Heavy Vehicles																					
% Heavy Vehicles	0	0.5	0	1.0	0.7	0	0.8	0	0	0.6	0	0	0	2.8	0.5	3.1	2.6	0	0	2.5	1.3



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: New Street &
Street Road (Route 926)
Counter/Board #: HR

File Name : westtown01w
Site Code : 81645101
Start Date : 9/8/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	New Street Southbound				Street Rd (Rt 926) Westbound				New Street Northbound				Street Rd (Rt 926) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	1	0	0	0	1	6	0	0	0	0	0	0	0	3	0	0	11
07:15	0	0	0	0	1	5	0	1	1	0	0	1	0	2	0	0	11
07:30	2	0	0	1	0	6	0	0	0	1	0	0	0	10	0	0	20
07:45	0	0	0	0	0	5	0	2	0	1	0	0	0	4	0	0	12
Total	3	0	0	1	2	22	0	3	1	2	0	1	0	19	0	0	54
08:00	0	0	0	1	0	9	0	0	0	0	0	0	0	10	0	0	20
08:15	0	0	0	1	3	4	0	1	0	0	0	0	2	1	0	0	12
08:30	2	1	0	1	0	7	0	0	1	1	0	2	0	3	0	0	18
08:45	0	0	0	3	0	4	0	0	0	1	0	0	0	6	0	0	14
Total	2	1	0	6	3	24	0	1	1	2	0	2	2	20	0	0	64
16:00	1	1	0	1	0	4	0	0	1	2	0	0	0	7	0	0	17
16:15	0	0	0	2	0	4	0	0	1	1	0	0	0	7	0	0	15
16:30	0	1	0	3	0	1	0	0	0	1	0	0	0	4	0	0	10
16:45	0	0	0	1	0	3	0	0	0	0	0	0	0	4	0	0	8
Total	1	2	0	7	0	12	0	0	2	4	0	0	0	22	0	0	50
17:00	0	0	0	2	0	2	0	0	0	0	0	1	0	5	0	0	10
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
17:30	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3
17:45	0	0	0	1	0	1	0	0	0	0	0	0	1	5	0	0	8
Total	0	1	0	3	0	3	0	0	0	0	0	1	1	16	0	0	25
Grand Total	6	4	0	17	5	61	0	4	4	8	0	4	3	77	0	0	193
Approch %	22.2	14.8	0	63	7.1	87.1	0	5.7	25	50	0	25	3.8	96.2	0	0	
Total %	3.1	2.1	0	8.8	2.6	31.6	0	2.1	2.1	4.1	0	2.1	1.6	39.9	0	0	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: New Street &
Street Road (Route 926)
Counter/Board #: HR

File Name : westtown01w
Site Code : 81645101
Start Date : 9/8/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	New Street Southbound				Street Rd (Rt 926) Westbound				New Street Northbound				Street Rd (Rt 926) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	13	44	0	12	2	73	2	3	6	7	1	9	9	203	0	0	384
07:15	10	50	0	20	3	80	3	3	2	21	0	4	26	171	0	0	393
07:30	4	46	0	28	2	76	2	14	2	26	0	4	16	157	0	6	383
07:45	15	61	0	28	4	81	1	17	0	22	0	7	25	169	0	1	431
Total	42	201	0	88	11	310	8	37	10	76	1	24	76	700	0	7	1591
08:00	4	66	0	40	0	73	0	11	0	22	0	5	22	162	1	1	407
08:15	14	63	0	36	4	79	0	7	1	17	0	3	14	153	0	0	391
08:30	18	52	0	31	0	66	2	9	1	17	0	5	12	187	0	1	401
08:45	10	40	0	38	1	62	0	12	0	17	0	9	11	149	0	0	349
Total	46	221	0	145	5	280	2	39	2	73	0	22	59	651	1	2	1548
16:00	20	38	0	66	2	103	0	19	4	21	0	3	6	123	0	2	407
16:15	22	46	0	75	2	113	1	14	4	31	0	3	7	113	0	4	435
16:30	14	36	0	83	1	101	1	19	2	22	0	5	5	145	0	1	435
16:45	16	57	0	71	1	101	1	18	2	32	0	4	5	135	0	1	444
Total	72	177	0	295	6	418	3	70	12	106	0	15	23	516	0	8	1721
17:00	15	52	0	73	2	94	2	16	4	62	1	7	6	133	1	3	471
17:15	20	52	0	64	4	86	2	13	2	43	0	10	7	156	0	3	462
17:30	17	33	0	80	5	124	2	11	3	28	0	11	8	158	0	3	483
17:45	9	56	0	69	13	86	1	15	1	37	0	7	10	159	0	4	467
Total	61	193	0	286	24	390	7	55	10	170	1	35	31	606	1	13	1883
Grand Total	221	792	0	814	46	1398	20	201	34	425	2	96	189	2473	2	30	6743
Apprch %	12.1	43.3	0	44.6	2.8	84	1.2	12.1	6.1	76.3	0.4	17.2	7	91.8	0.1	1.1	
Total %	3.3	11.7	0	12.1	0.7	20.7	0.3	3	0.5	6.3	0	1.4	2.8	36.7	0	0.4	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Street Road (Route 926) &
Bridlewood Boulevard
Counter/Board #: RR

File Name : westtown02w
Site Code : 00000000
Start Date : 9/8/2016
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Street Rd (Rt 926) Westbound		Bridlewood Blvd Northbound		Street Rd (Rt 926) Eastbound		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00	5	82	5	10	192	4	298
07:15	2	94	6	11	191	12	316
07:30	5	92	6	6	165	7	281
07:45	4	94	11	5	189	10	313
Total	16	362	28	32	737	33	1208
08:00	0	90	9	6	184	2	291
08:15	3	86	13	3	178	7	290
08:30	0	77	12	13	203	17	322
08:45	0	75	10	8	183	11	287
Total	3	328	44	30	748	37	1190
16:00	3	128	4	3	140	14	292
16:15	2	112	4	4	143	3	268
16:30	5	129	5	5	163	8	315
16:45	6	110	6	7	142	6	277
Total	16	479	19	19	588	31	1152
17:00	5	115	10	9	158	11	308
17:15	6	110	14	11	186	7	334
17:30	8	134	7	12	164	9	334
17:45	12	113	7	9	181	9	331
Total	31	472	38	41	689	36	1307
Grand Total	66	1641	129	122	2762	137	4857
Apprch %	3.9	96.1	51.4	48.6	95.3	4.7	
Total %	1.4	33.8	2.7	2.5	56.9	2.8	
Passenger Vehicles	66	1558	129	122	2649	136	4660
% Passenger Vehicles	100	94.9	100	100	95.9	99.3	95.9
Heavy Vehicles	0	83	0	0	113	1	197
% Heavy Vehicles	0	5.1	0	0	4.1	0.7	4.1

Zero Pedestrians were observed during this study.

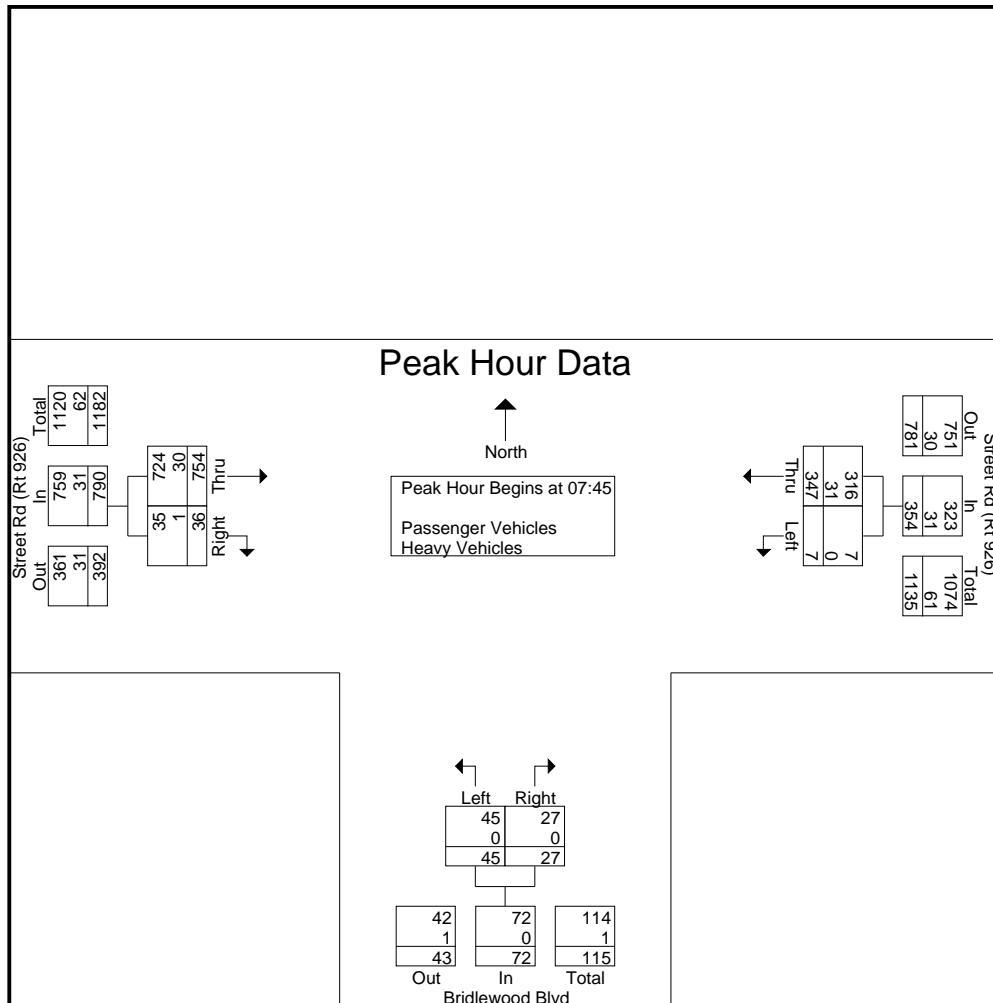
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Street Road (Route 926) &
Bridlewood Boulevard
Counter/Board #: RR

File Name : westtown02w
Site Code : 00000000
Start Date : 9/8/2016
Page No : 2

Start Time	Street Rd (Rt 926) Westbound			Bridlewood Blvd Northbound			Street Rd (Rt 926) Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45										
07:45	4	94	98	11	5	16	189	10	199	313
08:00	0	90	90	9	6	15	184	2	186	291
08:15	3	86	89	13	3	16	178	7	185	290
08:30	0	77	77	12	13	25	203	17	220	322
Total Volume	7	347	354	45	27	72	754	36	790	1216
% App. Total	2	98		62.5	37.5		95.4	4.6		
PHF	.438	.923	.903	.865	.519	.720	.929	.529	.898	.944
Passenger Vehicles	7	316	323	45	27	72	724	35	759	1154
% Passenger Vehicles	100	91.1	91.2	100	100	100	96.0	97.2	96.1	94.9
Heavy Vehicles	0	31	31	0	0	0	30	1	31	62
% Heavy Vehicles	0	8.9	8.8	0	0	0	4.0	2.8	3.9	5.1



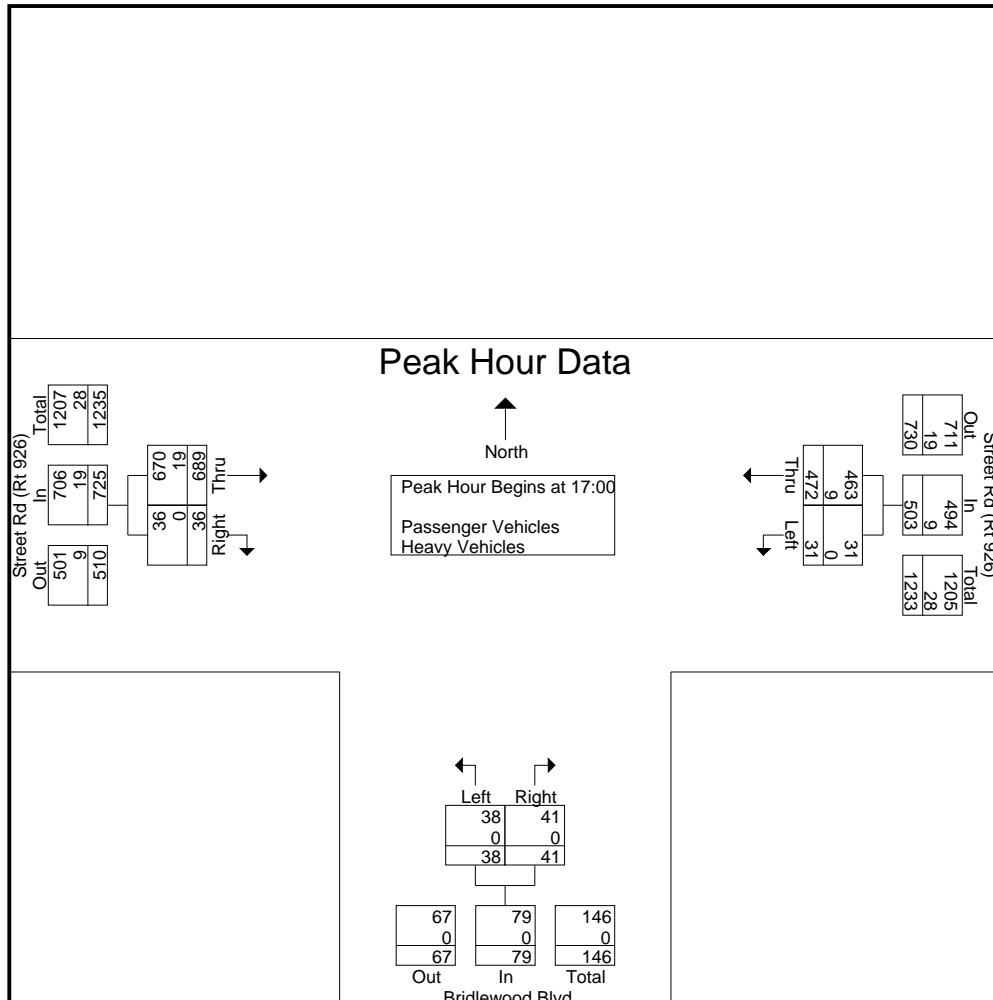
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Street Road (Route 926) &
Bridlewood Boulevard
Counter/Board #: RR

File Name : westtown02w
Site Code : 00000000
Start Date : 9/8/2016
Page No : 3

Start Time	Street Rd (Rt 926) Westbound			Bridlewood Blvd Northbound			Street Rd (Rt 926) Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	5	115	120	10	9	19	158	11	169	308
17:15	6	110	116	14	11	25	186	7	193	334
17:30	8	134	142	7	12	19	164	9	173	334
17:45	12	113	125	7	9	16	181	9	190	331
Total Volume	31	472	503	38	41	79	689	36	725	1307
% App. Total	6.2	93.8		48.1	51.9		95	5		
PHF	.646	.881	.886	.679	.854	.790	.926	.818	.939	.978
Passenger Vehicles	31	463	494	38	41	79	670	36	706	1279
% Passenger Vehicles	100	98.1	98.2	100	100	100	97.2	100	97.4	97.9
Heavy Vehicles	0	9	9	0	0	0	19	0	19	28
% Heavy Vehicles	0	1.9	1.8	0	0	0	2.8	0	2.6	2.1



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Street Road (Route 926) &
Bridlewood Boulevard
Counter/Board #: RR

File Name : westtown02w
Site Code : 00000000
Start Date : 9/8/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Street Rd (Rt 926) Westbound		Bridlewood Blvd Northbound		Street Rd (Rt 926) Eastbound		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00	0	6	0	0	6	0	12
07:15	0	9	0	0	6	0	15
07:30	0	6	0	0	12	0	18
07:45	0	6	0	0	6	0	12
Total	0	27	0	0	30	0	57
08:00	0	10	0	0	14	0	24
08:15	0	7	0	0	3	0	10
08:30	0	8	0	0	7	1	16
08:45	0	6	0	0	10	0	16
Total	0	31	0	0	34	1	66
16:00	0	4	0	0	11	0	15
16:15	0	5	0	0	9	0	14
16:30	0	4	0	0	6	0	10
16:45	0	3	0	0	4	0	7
Total	0	16	0	0	30	0	46
17:00	0	3	0	0	6	0	9
17:15	0	1	0	0	6	0	7
17:30	0	2	0	0	2	0	4
17:45	0	3	0	0	5	0	8
Total	0	9	0	0	19	0	28
Grand Total	0	83	0	0	113	1	197
Apprch %	0	100	0	0	99.1	0.9	
Total %	0	42.1	0	0	57.4	0.5	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Street Road (Route 926) &
Bridlewood Boulevard
Counter/Board #: RR

File Name : westtown02w
Site Code : 00000000
Start Date : 9/8/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Street Rd (Rt 926) Westbound		Bridlewood Blvd Northbound		Street Rd (Rt 926) Eastbound		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00	5	76	5	10	186	4	286
07:15	2	85	6	11	185	12	301
07:30	5	86	6	6	153	7	263
07:45	4	88	11	5	183	10	301
Total	16	335	28	32	707	33	1151
08:00	0	80	9	6	170	2	267
08:15	3	79	13	3	175	7	280
08:30	0	69	12	13	196	16	306
08:45	0	69	10	8	173	11	271
Total	3	297	44	30	714	36	1124
16:00	3	124	4	3	129	14	277
16:15	2	107	4	4	134	3	254
16:30	5	125	5	5	157	8	305
16:45	6	107	6	7	138	6	270
Total	16	463	19	19	558	31	1106
17:00	5	112	10	9	152	11	299
17:15	6	109	14	11	180	7	327
17:30	8	132	7	12	162	9	330
17:45	12	110	7	9	176	9	323
Total	31	463	38	41	670	36	1279
Grand Total	66	1558	129	122	2649	136	4660
Apprch %	4.1	95.9	51.4	48.6	95.1	4.9	
Total %	1.4	33.4	2.8	2.6	56.8	2.9	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 202 &
Street Road (Route 926)
Counter/Board #: HP+KB

File Name : westtown03w
Site Code : 81645103
Start Date : 9/8/2016
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Route 202 Southbound				Street Rd (Rt 926) Westbound				Route 202 Northbound				Street Rd (Rt 926) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	25	278	2	41	32	26	1	1	2	261	5	33	131	68	0	4	910
07:15	10	321	5	45	49	37	0	11	1	319	6	32	114	54	0	2	1006
07:30	9	283	6	37	28	37	0	6	5	309	2	21	128	63	0	1	935
07:45	13	267	5	43	47	42	2	7	6	264	5	26	125	57	0	3	912
Total	57	1149	18	166	156	142	3	25	14	1153	18	112	498	242	0	10	3763
08:00	14	306	1	25	24	40	1	9	4	274	4	27	92	56	0	0	877
08:15	13	267	5	30	41	43	0	6	6	230	5	30	131	57	0	2	866
08:30	10	279	1	34	40	31	0	8	3	238	1	30	118	55	0	3	851
08:45	13	275	4	48	42	17	1	9	3	247	4	28	111	50	0	5	857
Total	50	1127	11	137	147	131	2	32	16	989	14	115	452	218	0	10	3451
16:00	28	312	15	31	29	58	0	9	16	355	1	26	105	49	0	6	1040
16:15	13	343	7	40	44	62	3	11	5	384	9	22	87	41	0	4	1075
16:30	22	287	13	30	43	67	5	3	12	338	10	14	130	62	0	8	1044
16:45	35	358	11	29	48	62	6	4	6	357	14	20	101	44	0	8	1103
Total	98	1300	46	130	164	249	14	27	39	1434	34	82	423	196	0	26	4262
17:00	21	303	10	25	38	57	1	5	7	312	13	17	77	35	0	7	928
17:15	33	318	13	35	37	47	1	6	7	335	10	18	113	69	0	4	1046
17:30	22	336	9	37	41	63	3	0	9	356	7	18	102	33	0	7	1043
17:45	12	319	13	33	62	73	1	2	11	364	7	19	113	41	0	3	1073
Total	88	1276	45	130	178	240	6	13	34	1367	37	72	405	178	0	21	4090
Grand Total	293	4852	120	563	645	762	25	97	103	4943	103	381	1778	834	0	67	15566
Apprch %	5	83.3	2.1	9.7	42.2	49.8	1.6	6.3	1.9	89.4	1.9	6.9	66.4	31.1	0	2.5	
Total %	1.9	31.2	0.8	3.6	4.1	4.9	0.2	0.6	0.7	31.8	0.7	2.4	11.4	5.4	0	0.4	
Passenger Vehicles	280	4505	120	520	622	747	25	82	98	4640	103	351	1743	797	0	64	14697
% Passenger Vehicles	95.6	92.8	100	92.4	96.4	98	100	84.5	95.1	93.9	100	92.1	98	95.6	0	95.5	94.4
Heavy Vehicles	13	347	0	43	23	15	0	15	5	303	0	30	35	37	0	3	869
% Heavy Vehicles	4.4	7.2	0	7.6	3.6	2	0	15.5	4.9	6.1	0	7.9	2	4.4	0	4.5	5.6

Zero Pedestrians were observed during this study.

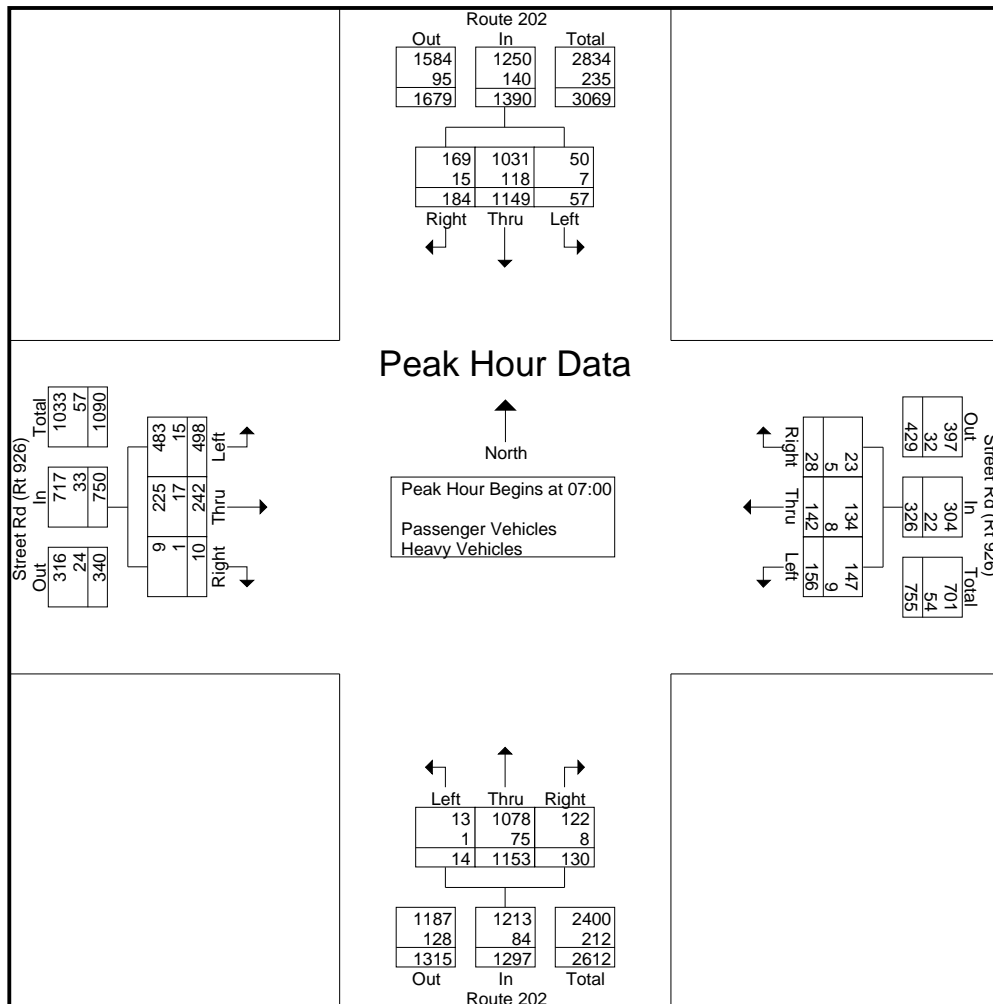
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 202 &
Street Road (Route 926)
Counter/Board #: HP+KB

File Name : westtown03w
Site Code : 81645103
Start Date : 9/8/2016
Page No : 2

Start Time	Route 202 Southbound					Street Rd (Rt 926) Westbound					Route 202 Northbound					Street Rd (Rt 926) Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	RO R	Rig ht	App. Total	Left	Thru	RO R	Rig ht	App. Total	Left	Thru	RO R	Rig ht	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	25	278	2	41	346	32	26	1	1	60	2	261	5	33	301	131	68	0	4	203	910
07:15	10	321	5	45	381	49	37	0	11	97	1	319	6	32	358	114	54	0	2	170	1006
07:30	9	283	6	37	335	28	37	0	6	71	5	309	2	21	337	128	63	0	1	192	935
07:45	13	267	5	43	328	47	42	2	7	98	6	264	5	26	301	125	57	0	3	185	912
Total Volume	57	1149	18	166	1390	156	142	3	25	326	14	1153	18	112	1297	498	242	0	10	750	3763
% App. Total	4.1	82.7	1.3	11.9		47.9	43.6	0.9	7.7		1.1	88.9	1.4	8.6		66.4	32.3	0	1.3		
PHF	.570	.895	.750	.922	.912	.796	.845	.375	.568	.832	.583	.904	.750	.848	.906	.950	.890	.000	.625	.924	.935
Passenger Vehicles	1031					1078															
% Passenger Vehicles	87.7	89.7	100	91.0	89.9	94.2	94.4	100	80.0	93.3	92.9	93.5	100	92.9	93.5	97.0	93.0	0	90.0	95.6	92.6
Heavy Vehicles	12.3					7.1					6.5					7.4					
% Heavy Vehicles	12.3	10.3	0	9.0	10.1	5.8	5.6	0	20.0	6.7	7.1	6.5	0	7.1	6.5	3.0	7.0	0	10.0	4.4	7.4



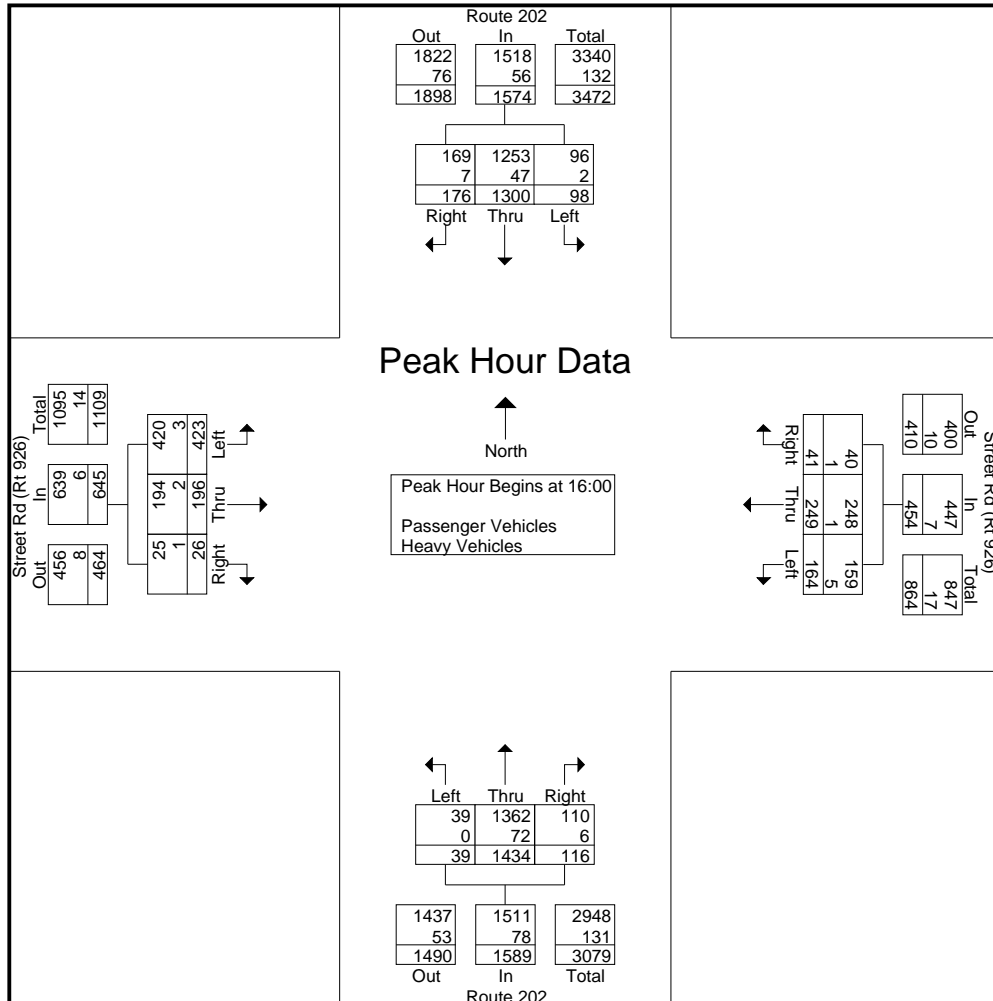
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 202 &
Street Road (Route 926)
Counter/Board #: HP+KB

File Name : westtown03w
Site Code : 81645103
Start Date : 9/8/2016
Page No : 3

Start Time	Route 202 Southbound					Street Rd (Rt 926) Westbound					Route 202 Northbound					Street Rd (Rt 926) Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	28	312	15	31	386	29	58	0	9	96	16	355	1	26	398	105	49	0	6	160	1040
16:15	13	343	7	40	403	44	62	3	11	120	5	384	9	22	420	87	41	0	4	132	1075
16:30	22	287	13	30	352	43	67	5	3	118	12	338	10	14	374	130	62	0	8	200	1044
16:45	35	358	11	29	433	48	62	6	4	120	6	357	14	20	397	101	44	0	8	153	1103
Total Volume	98	1300	46	130	1574	164	249	14	27	454	39	1434	34	82	1589	423	196	0	26	645	4262
% App. Total	6.2	82.6	2.9	8.3		36.1	54.8	3.1	5.9		2.5	90.2	2.1	5.2		65.6	30.4	0	4		
PHF	.700	.908	.767	.813	.909	.854	.929	.583	.614	.946	.609	.934	.607	.788	.946	.813	.790	.000	.813	.806	.966
Passenger Vehicles	1253					1362															
% Passenger Vehicles	98.0	96.4	100	94.6	96.4	97.0	99.6	100	96.3	98.5	100	95.0	100	92.7	95.1	99.3	99.0	0	96.2	99.1	96.6
Heavy Vehicles																					
% Heavy Vehicles	2.0	3.6	0	5.4	3.6	3.0	0.4	0	3.7	1.5	0	5.0	0	7.3	4.9	0.7	1.0	0	3.8	0.9	3.4



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 202 &
Street Road (Route 926)
Counter/Board #: HP+KB

File Name : westtown03w
Site Code : 81645103
Start Date : 9/8/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Route 202 Southbound				Street Rd (Rt 926) Westbound				Route 202 Northbound				Street Rd (Rt 926) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	3	31	0	4	2	1	0	1	1	17	0	3	1	5	0	0	69
07:15	0	36	0	6	3	4	0	3	0	12	0	2	1	4	0	0	71
07:30	2	26	0	2	2	1	0	1	0	21	0	0	5	2	0	0	62
07:45	2	25	0	3	2	2	0	0	0	25	0	3	8	6	0	1	77
Total	7	118	0	15	9	8	0	5	1	75	0	8	15	17	0	1	279
08:00	2	38	0	4	1	3	0	1	2	28	0	3	4	3	0	0	89
08:15	0	25	0	6	1	2	0	0	1	25	0	4	3	7	0	0	74
08:30	0	32	0	6	2	1	0	0	1	26	0	3	3	2	0	0	76
08:45	1	34	0	4	2	0	0	1	0	21	0	2	2	6	0	1	74
Total	3	129	0	20	6	6	0	2	4	100	0	12	12	18	0	1	313
16:00	1	12	0	2	1	1	0	1	0	23	0	3	0	0	0	1	45
16:15	0	14	0	4	1	0	0	0	0	22	0	2	2	2	0	0	47
16:30	1	11	0	1	3	0	0	0	0	13	0	1	1	0	0	0	31
16:45	0	10	0	0	0	0	0	0	0	14	0	0	0	0	0	0	24
Total	2	47	0	7	5	1	0	1	0	72	0	6	3	2	0	1	147
17:00	0	17	0	1	0	0	0	2	0	11	0	0	2	0	0	0	33
17:15	1	12	0	0	2	0	0	5	0	16	0	3	1	0	0	0	40
17:30	0	11	0	0	1	0	0	0	0	15	0	0	1	0	0	0	28
17:45	0	13	0	0	0	0	0	0	0	14	0	1	1	0	0	0	29
Total	1	53	0	1	3	0	0	7	0	56	0	4	5	0	0	0	130
Grand Total	13	347	0	43	23	15	0	15	5	303	0	30	35	37	0	3	869
Apprch %	3.2	86.1	0	10.7	43.4	28.3	0	28.3	1.5	89.6	0	8.9	46.7	49.3	0	4	
Total %	1.5	39.9	0	4.9	2.6	1.7	0	1.7	0.6	34.9	0	3.5	4	4.3	0	0.3	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 202 &
Street Road (Route 926)
Counter/Board #: HP+KB

File Name : westtown03w
Site Code : 81645103
Start Date : 9/8/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Route 202 Southbound				Street Rd (Rt 926) Westbound				Route 202 Northbound				Street Rd (Rt 926) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	22	247	2	37	30	25	1	0	1	244	5	30	130	63	0	4	841
07:15	10	285	5	39	46	33	0	8	1	307	6	30	113	50	0	2	935
07:30	7	257	6	35	26	36	0	5	5	288	2	21	123	61	0	1	873
07:45	11	242	5	40	45	40	2	7	6	239	5	23	117	51	0	2	835
Total	50	1031	18	151	147	134	3	20	13	1078	18	104	483	225	0	9	3484
08:00	12	268	1	21	23	37	1	8	2	246	4	24	88	53	0	0	788
08:15	13	242	5	24	40	41	0	6	5	205	5	26	128	50	0	2	792
08:30	10	247	1	28	38	30	0	8	2	212	1	27	115	53	0	3	775
08:45	12	241	4	44	40	17	1	8	3	226	4	26	109	44	0	4	783
Total	47	998	11	117	141	125	2	30	12	889	14	103	440	200	0	9	3138
16:00	27	300	15	29	28	57	0	8	16	332	1	23	105	49	0	5	995
16:15	13	329	7	36	43	62	3	11	5	362	9	20	85	39	0	4	1028
16:30	21	276	13	29	40	67	5	3	12	325	10	13	129	62	0	8	1013
16:45	35	348	11	29	48	62	6	4	6	343	14	20	101	44	0	8	1079
Total	96	1253	46	123	159	248	14	26	39	1362	34	76	420	194	0	25	4115
17:00	21	286	10	24	38	57	1	3	7	301	13	17	75	35	0	7	895
17:15	32	306	13	35	35	47	1	1	7	319	10	15	112	69	0	4	1006
17:30	22	325	9	37	40	63	3	0	9	341	7	18	101	33	0	7	1015
17:45	12	306	13	33	62	73	1	2	11	350	7	18	112	41	0	3	1044
Total	87	1223	45	129	175	240	6	6	34	1311	37	68	400	178	0	21	3960
Grand Total	280	4505	120	520	622	747	25	82	98	4640	103	351	1743	797	0	64	14697
Apprch %	5.2	83	2.2	9.6	42.1	50.6	1.7	5.6	1.9	89.4	2	6.8	66.9	30.6	0	2.5	
Total %	1.9	30.7	0.8	3.5	4.2	5.1	0.2	0.6	0.7	31.6	0.7	2.4	11.9	5.4	0	0.4	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 20 &
Pleasant Grove Road
Counter/Board #: LB+JB

File Name : westtown04w
Site Code : 81645104
Start Date : 9/8/2016
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Route 202 Southbound			Pleasant Grove Rd Westbound			Route 202 Northbound			Pleasant Grove Rd Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	19	370	14	0	0	2	2	455	5	0	0	14	881
07:15	9	433	31	0	0	2	2	545	6	0	0	13	1041
07:30	5	397	37	0	0	0	2	522	4	0	0	10	977
07:45	13	323	50	0	0	2	6	357	17	0	0	10	778
Total	46	1523	132	0	0	6	12	1879	32	0	0	47	3677
08:00	13	367	50	0	0	2	4	407	4	0	1	4	852
08:15	9	252	37	0	0	0	3	290	5	1	0	6	603
08:30	19	275	37	0	0	0	1	231	0	0	0	10	573
08:45	13	332	57	0	0	2	17	304	5	0	0	8	738
Total	54	1226	181	0	0	4	25	1232	14	1	1	28	2766
16:00	22	430	79	0	0	4	15	469	8	0	0	0	1027
16:15	18	424	71	0	0	2	8	518	7	0	0	0	1048
16:30	23	401	91	0	0	0	9	490	4	0	0	0	1018
16:45	19	452	67	0	0	2	7	503	6	0	0	0	1056
Total	82	1707	308	0	0	8	39	1980	25	0	0	0	4149
17:00	32	412	67	0	0	2	5	523	13	0	0	0	1054
17:15	25	461	72	0	0	2	13	545	8	0	0	0	1126
17:30	29	531	90	0	0	0	8	534	14	0	0	0	1206
17:45	19	428	77	0	0	7	12	522	28	0	0	0	1093
Total	105	1832	306	0	0	11	38	2124	63	0	0	0	4479
Grand Total	287	6288	927	0	0	29	114	7215	134	1	1	75	15071
Apprch %	3.8	83.8	12.4	0	0	100	1.5	96.7	1.8	1.3	1.3	97.4	
Total %	1.9	41.7	6.2	0	0	0.2	0.8	47.9	0.9	0	0	0.5	
Passenger Vehicles	281	5903	908	0	0	26	109	6869	130	1	1	75	14303
% Passenger Vehicles	97.9	93.9	98	0	0	89.7	95.6	95.2	97	100	100	100	94.9
Heavy Vehicles	6	385	19	0	0	3	5	346	4	0	0	0	768
% Heavy Vehicles	2.1	6.1	2	0	0	10.3	4.4	4.8	3	0	0	0	5.1

Zero Pedestrians were observed during this study.

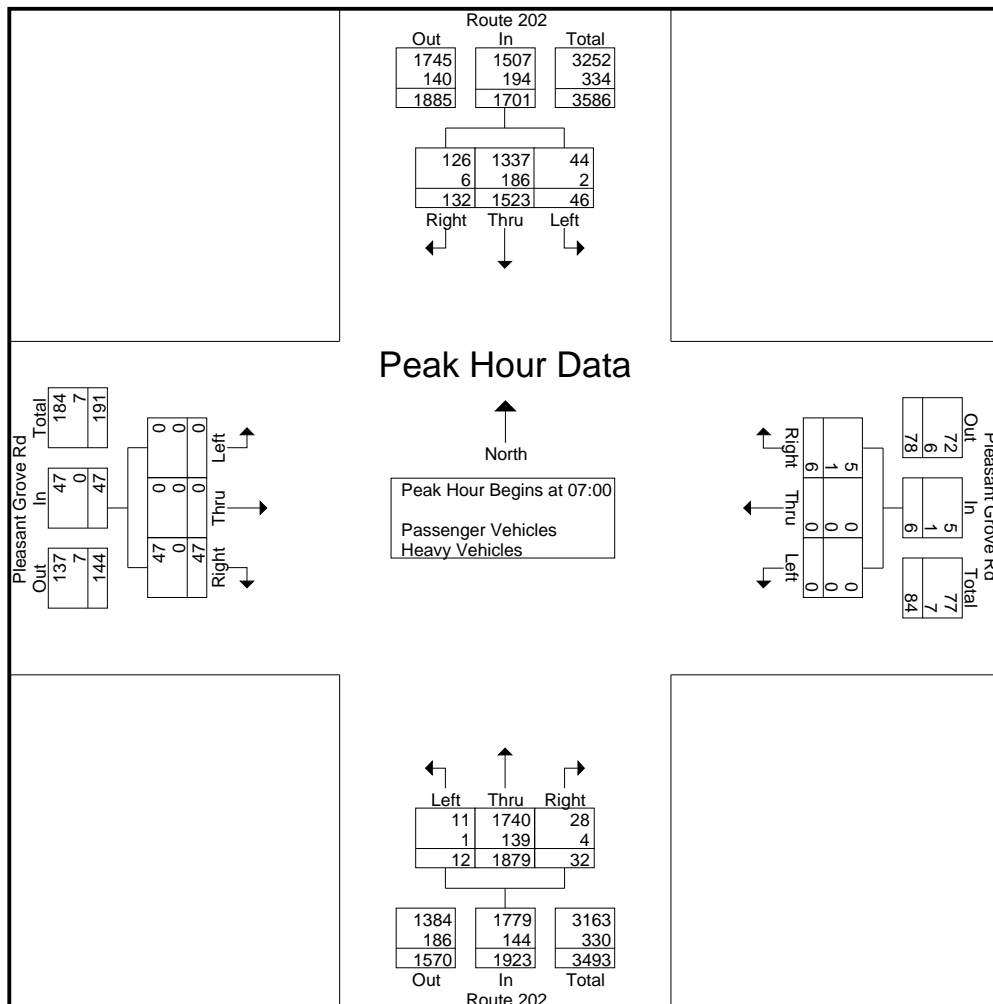
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 20 &
Pleasant Grove Road
Counter/Board #: LB+JB

File Name : westtown04w
Site Code : 81645104
Start Date : 9/8/2016
Page No : 2

Start Time	Route 202 Southbound				Pleasant Grove Rd Westbound				Route 202 Northbound				Pleasant Grove Rd Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	19	370	14	403	0	0	2	2	2	455	5	462	0	0	14	14	881
07:15	9	433	31	473	0	0	2	2	2	545	6	553	0	0	13	13	1041
07:30	5	397	37	439	0	0	0	0	2	522	4	528	0	0	10	10	977
07:45	13	323	50	386	0	0	2	2	6	357	17	380	0	0	10	10	778
Total Volume	46	1523	132	1701	0	0	6	6	12	1879	32	1923	0	0	47	47	3677
% App. Total	2.7	89.5	7.8		0	0	100		0.6	97.7	1.7		0	0	100		
PHF	.605	.879	.660	.899	.000	.000	.750	.750	.500	.862	.471	.869	.000	.000	.839	.839	.883
Passenger Vehicles	44	1337	126	1507	0	0	5	5	11	1740	28	1779	0	0	47	47	3338
% Passenger Vehicles	95.7	87.8	95.5	88.6	0	0	83.3	83.3	91.7	92.6	87.5	92.5	0	0	100	100	90.8
Heavy Vehicles	2	186	6	194	0	0	1	1	1	139	4	144	0	0	0	0	339
% Heavy Vehicles	4.3	12.2	4.5	11.4	0	0	16.7	16.7	8.3	7.4	12.5	7.5	0	0	0	0	9.2



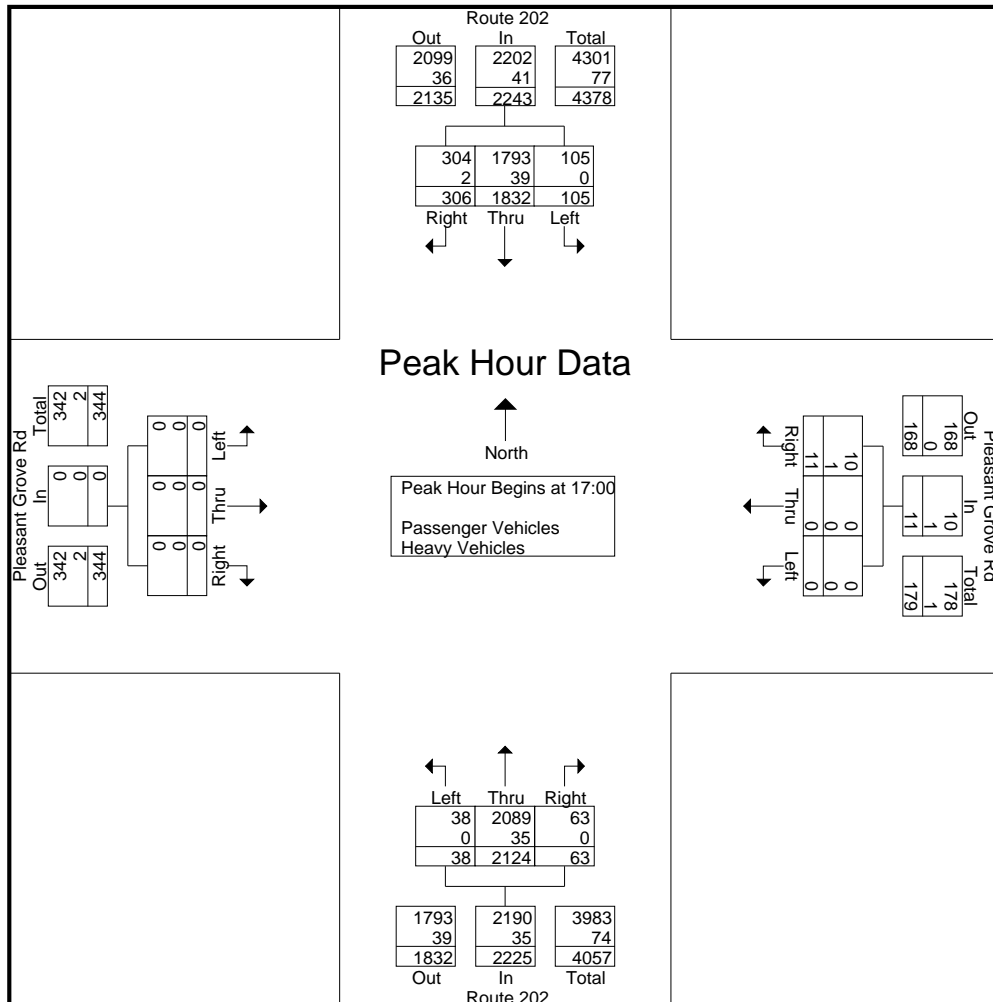
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 20 &
Pleasant Grove Road
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File Name : westtown04w
Site Code : 81645104
Start Date : 9/8/2016
Page No : 3

Start Time	Route 202 Southbound				Pleasant Grove Rd Westbound				Route 202 Northbound				Pleasant Grove Rd Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	32	412	67	511	0	0	2	2	5	523	13	541	0	0	0	0	1054
17:15	25	461	72	558	0	0	2	2	13	545	8	566	0	0	0	0	1126
17:30	29	531	90	650	0	0	0	0	8	534	14	556	0	0	0	0	1206
17:45	19	428	77	524	0	0	7	7	12	522	28	562	0	0	0	0	1093
Total Volume	105	1832	306	2243	0	0	11	11	38	2124	63	2225	0	0	0	0	4479
% App. Total	4.7	81.7	13.6		0	0	100		1.7	95.5	2.8		0	0	0		
PHF	.820	.863	.850	.863	.000	.000	.393	.393	.731	.974	.563	.983	.000	.000	.000	.000	.928
Passenger Vehicles	105	1793	304	2202	0	0	10	10	38	2089	63	2190	0	0	0	0	4402
% Passenger Vehicles	100	97.9	99.3	98.2	0	0	90.9	90.9	100	98.4	100	98.4	0	0	0	0	98.3
Heavy Vehicles	0	39	2	41	0	0	1	1	0	35	0	35	0	0	0	0	77
% Heavy Vehicles	0	2.1	0.7	1.8	0	0	9.1	9.1	0	1.6	0	1.6	0	0	0	0	1.7



McMahon Associates, Inc.

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File Name : westtown04w
Site Code : 81645104
Start Date : 9/8/2016
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Route 202 Southbound			Pleasant Grove Rd Westbound			Route 202 Northbound			Pleasant Grove Rd Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	31	2	0	0	0	0	27	3	0	0	0	63
07:15	0	53	2	0	0	0	1	20	0	0	0	0	76
07:30	0	42	1	0	0	0	0	31	0	0	0	0	74
07:45	2	60	1	0	0	1	0	61	1	0	0	0	126
Total	2	186	6	0	0	1	1	139	4	0	0	0	339
08:00	2	43	2	0	0	0	0	42	0	0	0	0	89
08:15	0	21	1	0	0	0	1	41	0	0	0	0	64
08:30	1	33	2	0	0	0	0	23	0	0	0	0	59
08:45	0	28	1	0	0	0	1	21	0	0	0	0	51
Total	3	125	6	0	0	0	2	127	0	0	0	0	263
16:00	1	10	1	0	0	1	1	12	0	0	0	0	26
16:15	0	2	1	0	0	0	1	9	0	0	0	0	13
16:30	0	12	2	0	0	0	0	10	0	0	0	0	24
16:45	0	11	1	0	0	0	0	14	0	0	0	0	26
Total	1	35	5	0	0	1	2	45	0	0	0	0	89
17:00	0	13	1	0	0	0	0	13	0	0	0	0	27
17:15	0	8	0	0	0	1	0	9	0	0	0	0	18
17:30	0	9	0	0	0	0	0	10	0	0	0	0	19
17:45	0	9	1	0	0	0	0	3	0	0	0	0	13
Total	0	39	2	0	0	1	0	35	0	0	0	0	77
Grand Total	6	385	19	0	0	3	5	346	4	0	0	0	768
Apprch %	1.5	93.9	4.6	0	0	100	1.4	97.5	1.1	0	0	0	
Total %	0.8	50.1	2.5	0	0	0.4	0.7	45.1	0.5	0	0	0	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Westtown Township
Location: Route 20 &
Pleasant Grove Road
Counter/Board #: LB+JB

File Name : westtown04w
Site Code : 81645104
Start Date : 9/8/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Route 202 Southbound			Pleasant Grove Rd Westbound			Route 202 Northbound			Pleasant Grove Rd Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	19	339	12	0	0	2	2	428	2	0	0	14	818
07:15	9	380	29	0	0	2	1	525	6	0	0	13	965
07:30	5	355	36	0	0	0	2	491	4	0	0	10	903
07:45	11	263	49	0	0	1	6	296	16	0	0	10	652
Total	44	1337	126	0	0	5	11	1740	28	0	0	47	3338
08:00	11	324	48	0	0	2	4	365	4	0	1	4	763
08:15	9	231	36	0	0	0	2	249	5	1	0	6	539
08:30	18	242	35	0	0	0	1	208	0	0	0	10	514
08:45	13	304	56	0	0	2	16	283	5	0	0	8	687
Total	51	1101	175	0	0	4	23	1105	14	1	1	28	2503
16:00	21	420	78	0	0	3	14	457	8	0	0	0	1001
16:15	18	422	70	0	0	2	7	509	7	0	0	0	1035
16:30	23	389	89	0	0	0	9	480	4	0	0	0	994
16:45	19	441	66	0	0	2	7	489	6	0	0	0	1030
Total	81	1672	303	0	0	7	37	1935	25	0	0	0	4060
17:00	32	399	66	0	0	2	5	510	13	0	0	0	1027
17:15	25	453	72	0	0	1	13	536	8	0	0	0	1108
17:30	29	522	90	0	0	0	8	524	14	0	0	0	1187
17:45	19	419	76	0	0	7	12	519	28	0	0	0	1080
Total	105	1793	304	0	0	10	38	2089	63	0	0	0	4402
Grand Total	281	5903	908	0	0	26	109	6869	130	1	1	75	14303
Apprch %	4	83.2	12.8	0	0	100	1.5	96.6	1.8	1.3	1.3	97.4	
Total %	2	41.3	6.3	0	0	0.2	0.8	48	0.9	0	0	0.5	

Appendix B

Traffic Signal Permit Plans, Intersection Sketches, and Existing Crash Data

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R9-3	18"x18"	NO PEDESTRIAN CROSSING
B	W3-3	36"x36"	SIGNAL AHEAD
C	R10-11	24"x30"	NO TURN ON RED
D	R10-11	30"x36"	NO TURN ON RED
E	D3-4	72"x16"	SINGLE LINE OVERHEAD STREET NAME
F	D3-4	96"x16"	SINGLE LINE OVERHEAD STREET NAME
G	R10-6L	24"x30"	STOP HERE ON RED

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

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

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

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

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

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

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

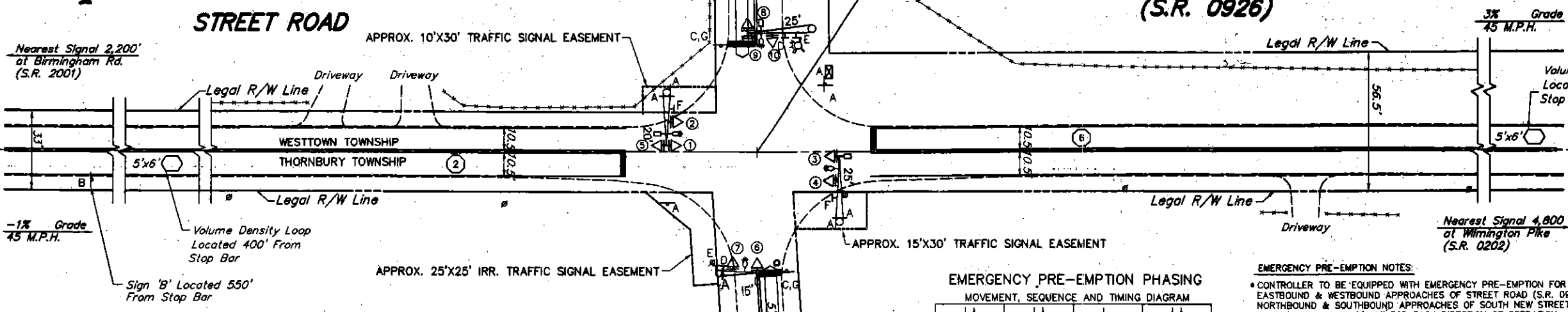
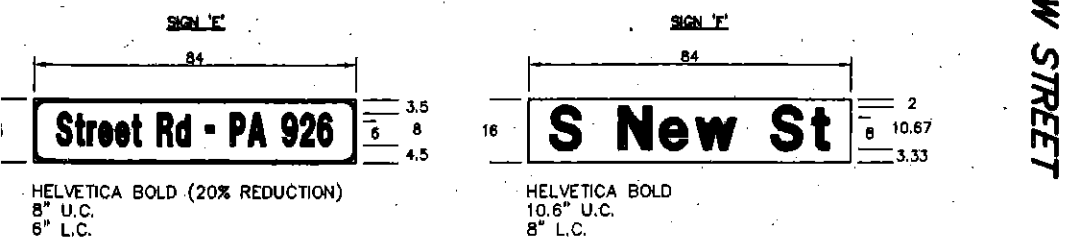
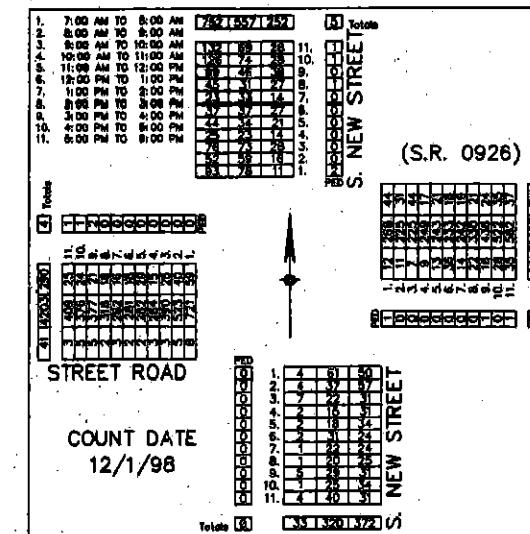
PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 19, 1996.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY, INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.



EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
SELECTIVE CLEARANCES																						
FIXED TIME	* 4	2					* 4	2				* 4	2				* 4	2				

FOR DURATION OF PRE-EMPTION

- EMERGENCY PRE-EMPTION NOTES:**
- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND & WESTBOUND APPROACHES OF STREET ROAD (S.R. 0926), AND THE NORTHBOUND & SOUTHBOUND APPROACHES OF SOUTH NEW STREET ROAD, WITH A FLASHING FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.
 - THE SIGNALS SHALL TERMINATE ALL GREEN INDICATIONS WHEN ACTIVATED BY AN EMERGENCY VEHICLE EXCEPT THE GREEN INDICATIONS FOR THE PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS. THE GREEN INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN GREEN FOR THE DURATION OF SIGNAL PRE-EMPTION AND RED INDICATIONS DISPLAYED FOR ALL OTHER PHASES.
 - THE SIGNALS SHALL TIME OUT ALL YELLOW AND RED INDICATIONS WHEN ACTIVATED BY AN EMERGENCY VEHICLE FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE ACTUATION OF THE APPROACHING EMERGENCY VEHICLE.
 - IF THE SIGNALS ARE FLASHING WHEN ACTIVATED BY AN EMERGENCY VEHICLE ALL SIGNALS SHALL REMAIN FLASHING.
 - IN RETURNING TO NORMAL OPERATION UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6, 8 OR 10 OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
 - IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- Ⓞ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

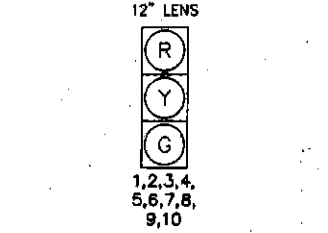
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+6			4+8			EMERGENCY FLASHING
	1	2	3	4	5	6	
1,2	G	Y	R	R	R	R	Y
3,4,5	G	Y	R	R	R	R	Y
6,7,8	R	R	R	G	Y	R	R
9,10	R	R	R	G	Y	R	R

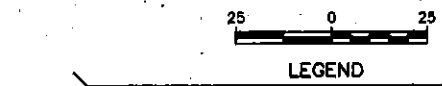
FIXED		4	2		4	2
MINIMUM		22		3		
SEC./ACT.		2				
MAX. INIT.		42				
PASSAGE		5		3		
TBR		42				
TTR		21				
MIN. GAP		2				
MAXIMUM 1		63		15		
MAXIMUM 2		68		25		
PEDESTRIAN MEMORY	MR			L		

- OPERATION NOTES:**
- SIGNAL TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8.
 - MAXIMUM 2 TO OPERATE FROM 1500 TO 1900 MONDAY THROUGH FRIDAY. MAXIMUM 1 TO OPERATE ALL OTHER TIMES.
 - VOLUME DENSITY DETECTOR AMPLIFIER TO BE SET ON PRESENCE MODE.

SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH RED LED LENSES _____ 1-10
 SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS _____
 SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS _____



PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

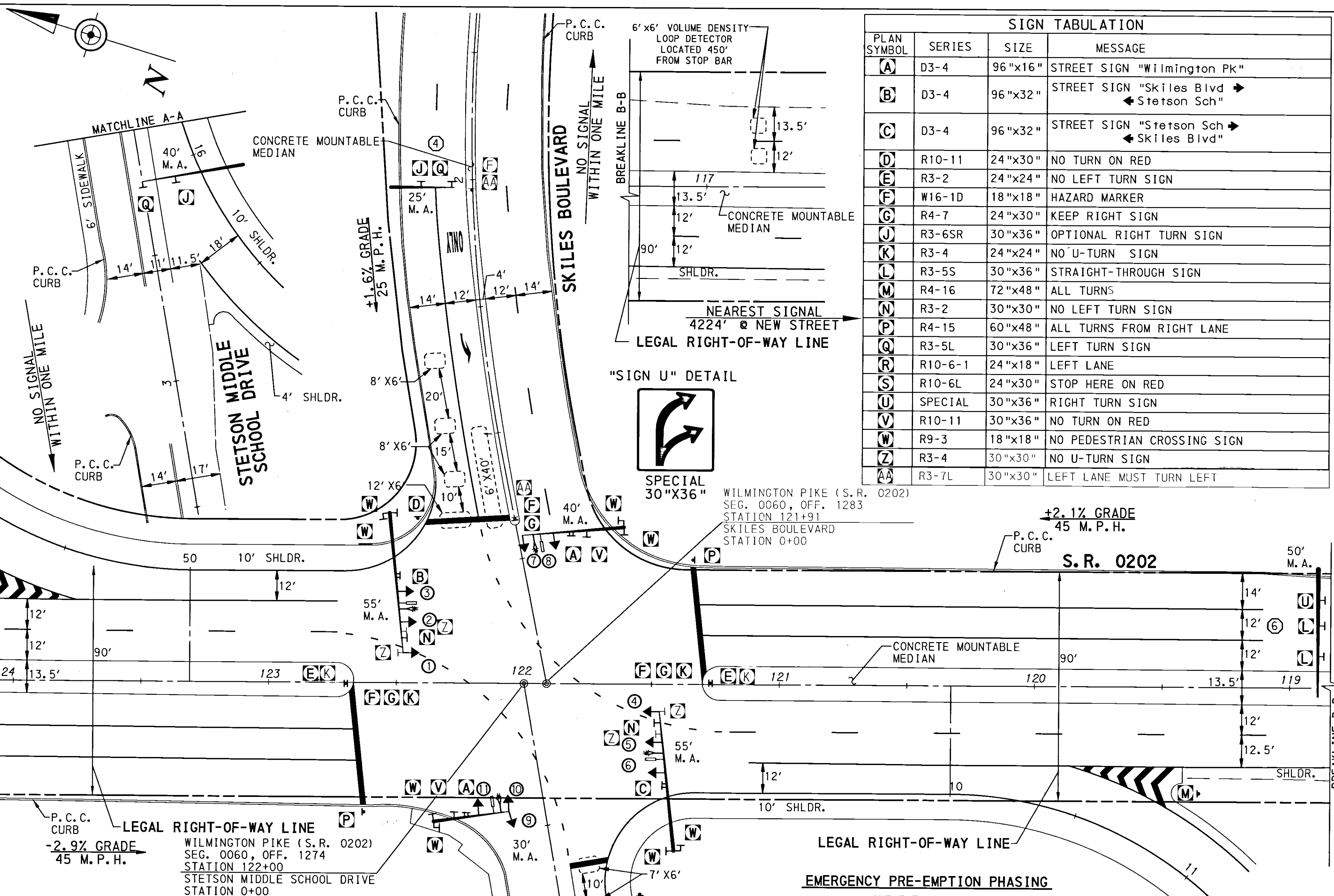
COUNTY: CHESTER COUNTY
 MUNICIPALITY: WESTTOWN & THORNBURY TOWNSHIP
 INTERSECTION: STREET ROAD (S.R. 0926) AND SOUTH NEW STREET

REVIEWED: _____ DATE _____
 MUNICIPAL OFFICIAL: _____ DATE _____
 RECOMMENDED: MARK L KRAY 5/6/99
DOUGLAS MAY 5/7/99
 DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES./REV.	DATE	BY	DATE	RECORD	DATE
1	Revise CSN Signs	PAI	5/4/99	PAI	6/11/99		
2	Shorten MA	HJK	4/1/99	HJK	4/1/99		
3	MINIMUM TIME REVISED	SM	7/9/03	SM	7/9/03		
4							
5							
6							
7							
8							

Time	Wilmington Pike	Stetson Middle School Drive	Totals
1. 7 AM TO 8 AM			
2. 8 AM TO 9 AM			
3. 9 AM TO 10 AM			
4. 10 AM TO 11 AM			
5. 11 AM TO 12 N			
6. 12 N TO 1 PM			
7. 1 PM TO 2 PM			
8. 2 PM TO 3 PM			
9. 3 PM TO 4 PM			
10. 4 PM TO 5 PM			
11. 5 PM TO 6 PM			
12. 6 PM TO 7 PM			

Time	Wilmington Pike	Stetson Middle School Drive	Totals
7-9 A.M. (11-12-97)			
11 A.M. - 1 P.M. (11-10-98)			
4-6 P.M. (11-12-97)			



PLAN SYMBOL	SERIES	SIZE	MESSAGE
A	D3-4	96"x16"	STREET SIGN "Wilmington Pk"
B	D3-4	96"x32"	STREET SIGN "Skiles Blvd" (pointing right)
C	D3-4	96"x32"	STREET SIGN "Stetson Sch" (pointing left)
D	R10-11	24"x30"	NO TURN ON RED
E	R3-2	24"x24"	NO LEFT TURN SIGN
F	W16-1D	18"x18"	HAZARD MARKER
G	R4-7	24"x30"	KEEP RIGHT SIGN
H	R3-6SR	30"x36"	OPTIONAL RIGHT TURN SIGN
J	R3-4	24"x24"	NO U-TURN SIGN
K	R3-5S	30"x36"	STRAIGHT-THROUGH SIGN
L	R4-16	72"x48"	ALL TURNS
M	R3-2	30"x30"	NO LEFT TURN SIGN
N	R4-15	60"x48"	ALL TURNS FROM RIGHT LANE
O	R3-5L	30"x36"	LEFT TURN SIGN
P	R10-6-1	24"x18"	LEFT LANE
Q	R10-6L	24"x30"	STOP HERE ON RED
R	SPECIAL	30"x36"	RIGHT TURN SIGN
S	R10-11	30"x36"	NO TURN ON RED
T	R9-3	18"x18"	NO PEDESTRIAN CROSSING SIGN
V	R3-4	30"x30"	NO U-TURN SIGN
W	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT

GENERAL NOTES

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

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUB. NO. 68.

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

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FEET ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FEET ABOVE THE SIDEWALK OR PAVEMENT GRADE.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

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

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY THE MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FROM PUB. 408, 1994.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DEC. 19, 1996.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO PUB. 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	2+6	4+8	EMERGENCY FLASHING
SIGNAL INTERVAL	1 2 3 4	5 6 7 8	
1,2,3,4,5,6	G G Y R R R R R	R R R R	Y
7,8,9,10,11	R R R R	G G Y R R	R

FIXED	5	2	4	4
MINIMUM	15		3	
SEC / ACT	1.5			
MAXIMUM INITIAL PASSAGE	45			
TIME BEFORE REDUCTION	48			
TIME TO REDUCTION	24			
MINIMUM GAP	3			
MAXIMUM 1	6.4		3.1	
MAXIMUM 2	6.3		2.2	
MAXIMUM 3	5.7		2.9	
MEMORY	MR		NL	

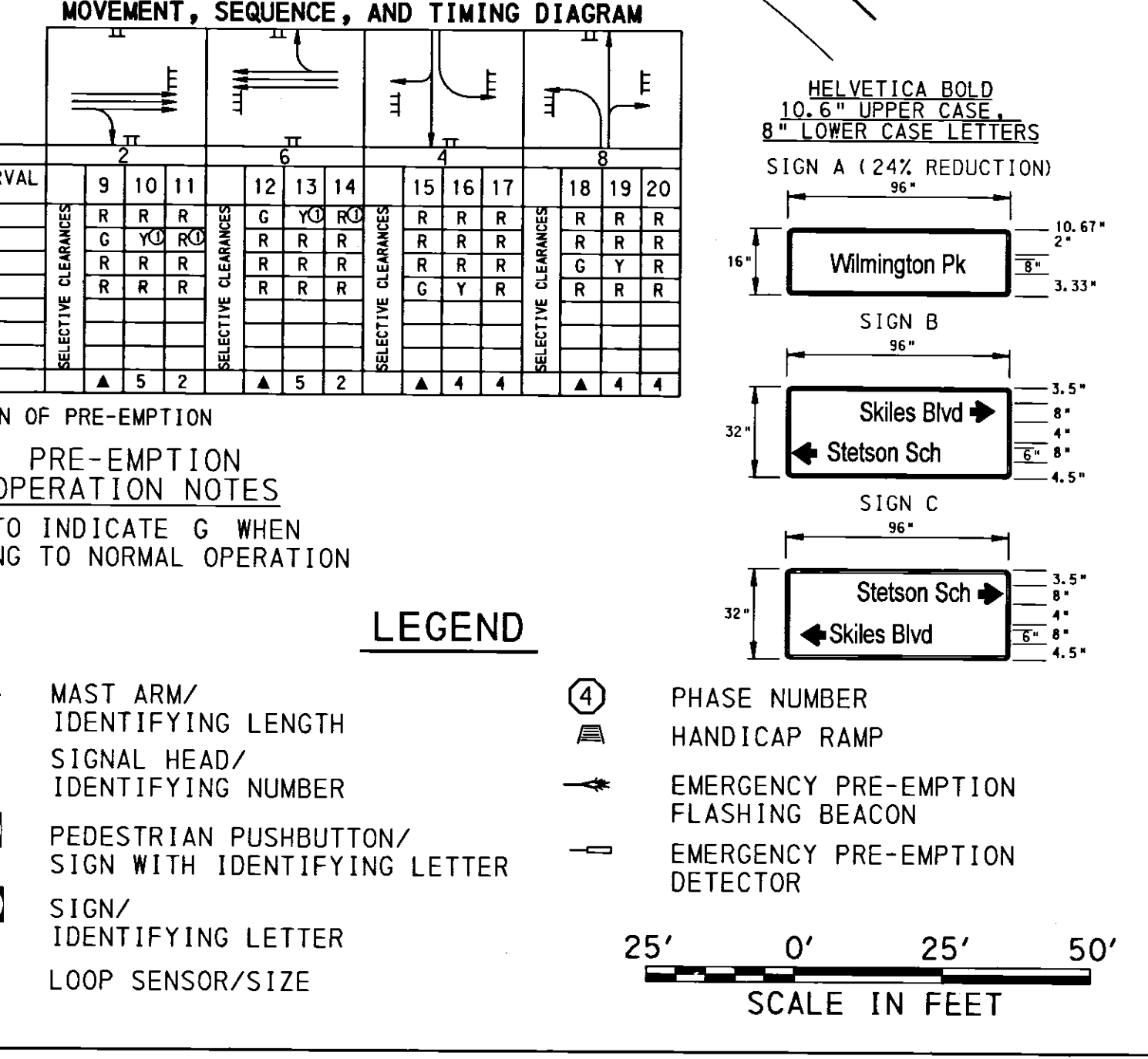
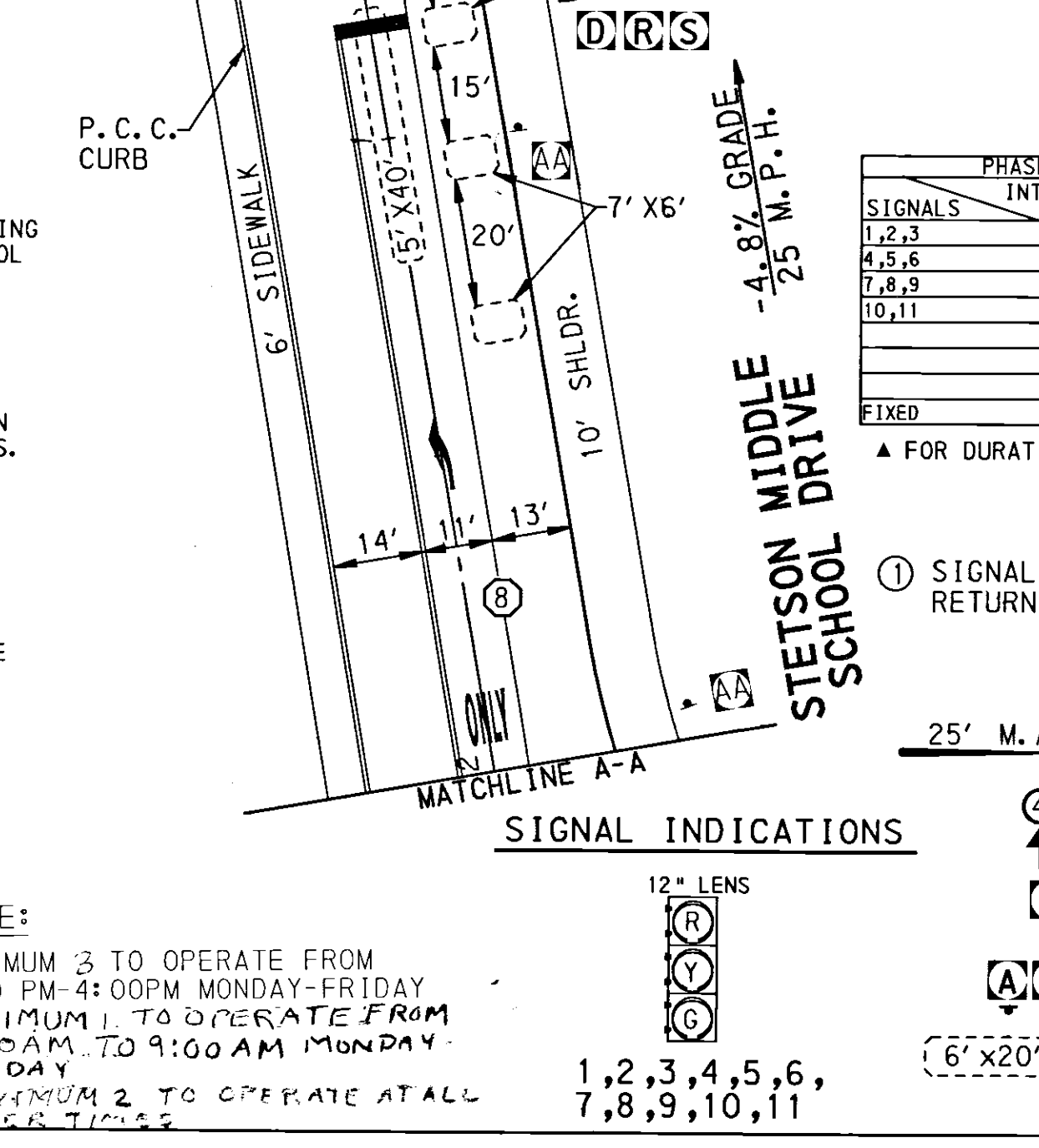
OPERATION NOTES

① UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE HAND SYMBOL AT ALL TIMES

• CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND AND SOUTHBOUND APPROACHES OF WILMINGTON PIKE (S.R. 0202), WESTBOUND APPROACH OF SKILES BOULEVARD, AND THE EASTBOUND APPROACH OF STETSON MIDDLE SCHOOL DR, WITH A FLASHING FAIL-SAFE DEVICE FOR EACH DIRECTION OF OPERATION. 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.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLES, SHALL TERMINATE ALL 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 PRE-EMPTION OCCURS. THE GREEN INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN GREEN FOR THE DURATION OF SIGNAL PRE-EMPTION AND RED INDICATIONS DISPLAYED FOR ALL OTHER PHASES.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE 2,4,6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.



PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: WESTTOWN TOWNSHIP
INTERSECTION: WILMINGTON PIKE (S.R. 0202) & SKILES BLVD. / STETSON MIDDLE SCHOOL DRIVE

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED:
MARK L. KRAY 10-10-96
DOUGLAS MAY 10-10-96
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	ADDING SIG. HEADS ON SKILES BLVD	NV	5/17/99	MLK	5/19/99	MLK	5/19/99
2	CHANGED MAST ARM TIMES ADDED SIG. "AA"	BRB	7-28-00	MLK	7/31/00	MLK	8/1/00
3	TIMING CHANGE	SHG	1/12/04	MLK	1/24/04	MLK	1/26/04

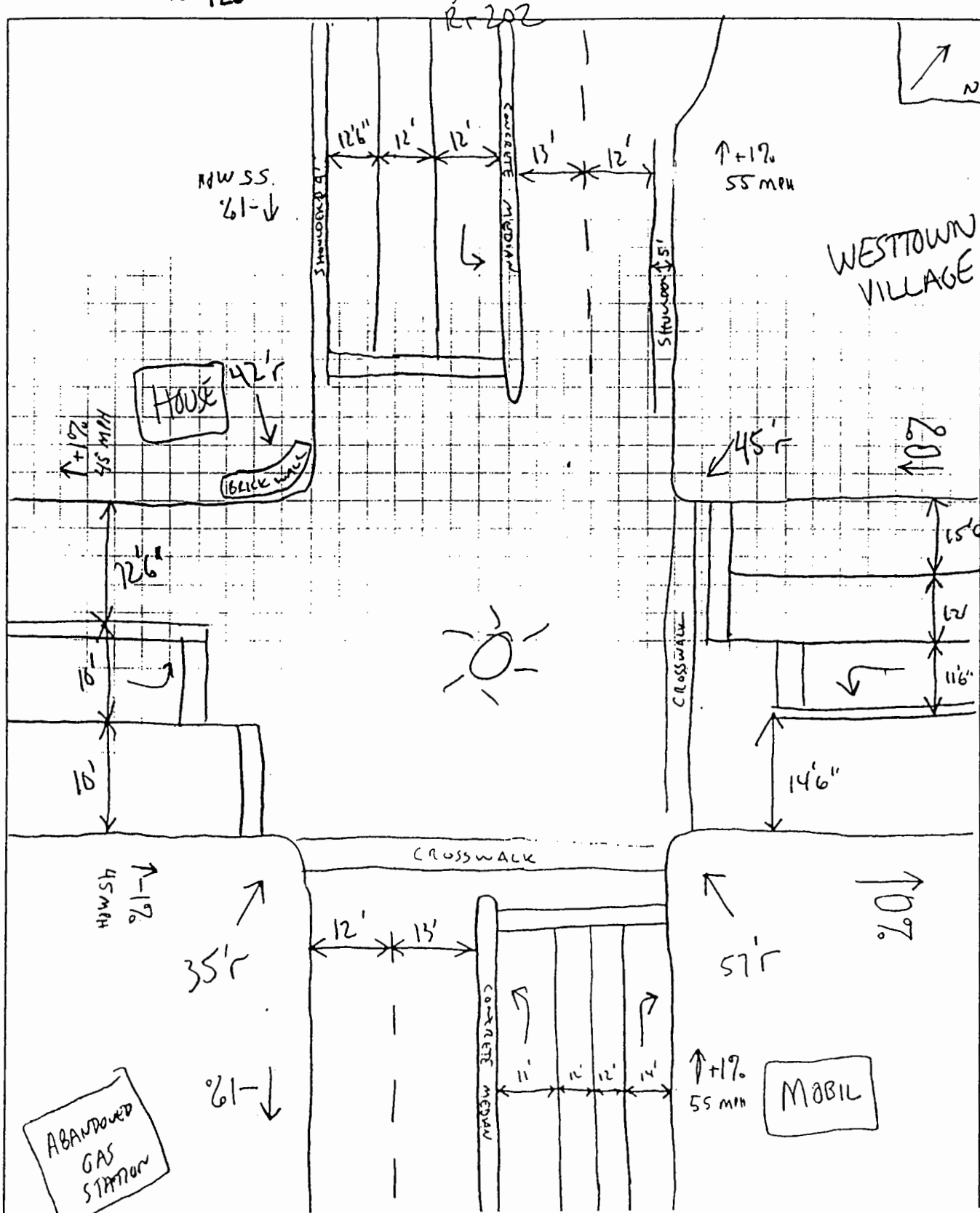
SHEET 2 OF 2 PERMIT # 62-1728 FILE # 1728

RESPONSIVE
TRANSPORTATION
SOLUTIONS

Job WESTOWN TWP
Description RT 202 +
RT 892 926

McM Project No. 803002.00
Designed By NDS
Checked By CSM

Sheet 01 of 05
Date 1/10/03
Date



RT 926
RT 1176

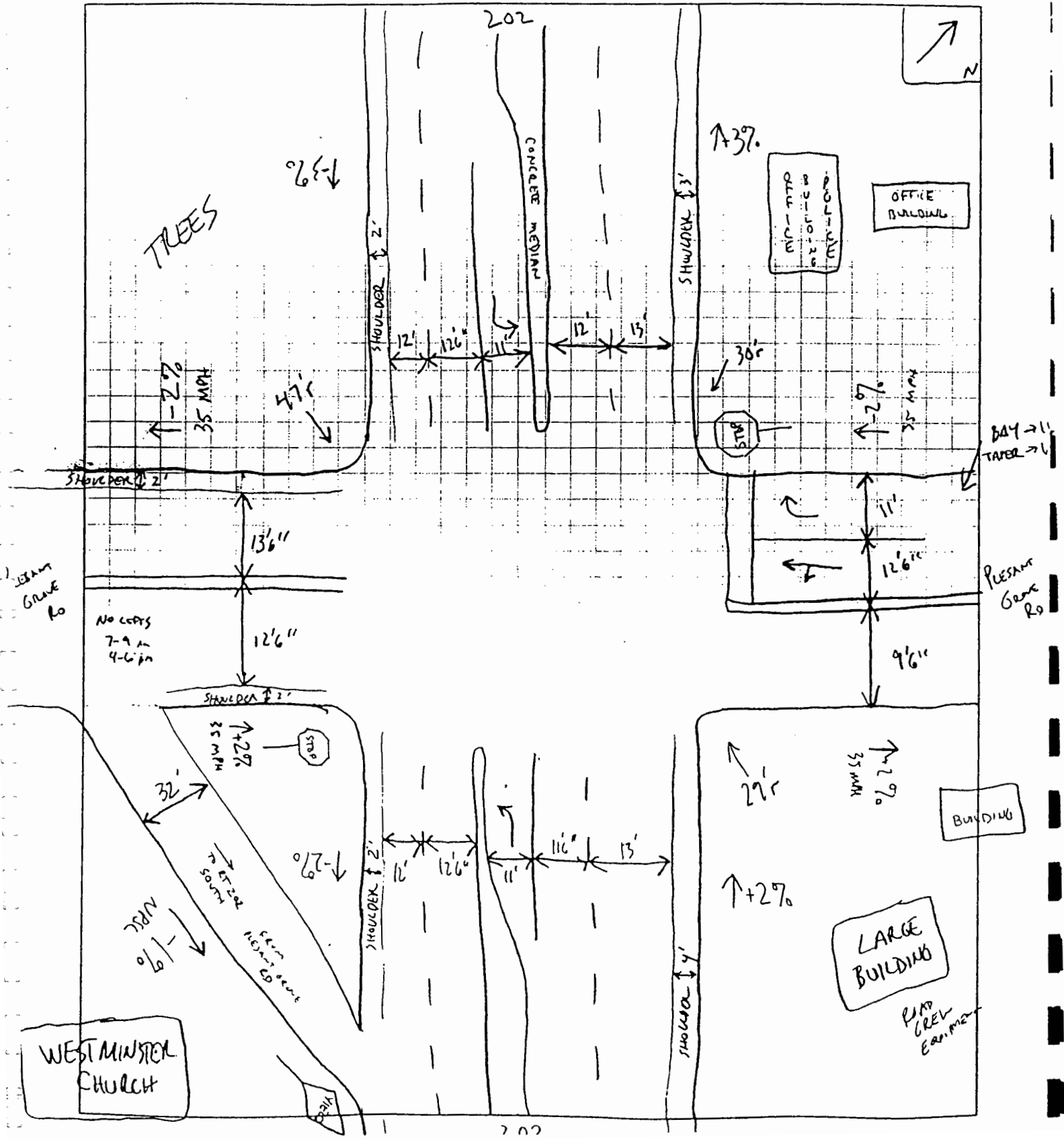
RT 926
SHEET
R5

RESPONSIVE
TRANSPORTATION
SOLUTIONS

Job WESTTOWN TWP
Description PLEASANT GROVE RD +
NEW STREET 202

McM Project No. 803002.00
Designed By NDB
Checked By CSN

Sheet 02 of 05
Date 1/10/03
Date

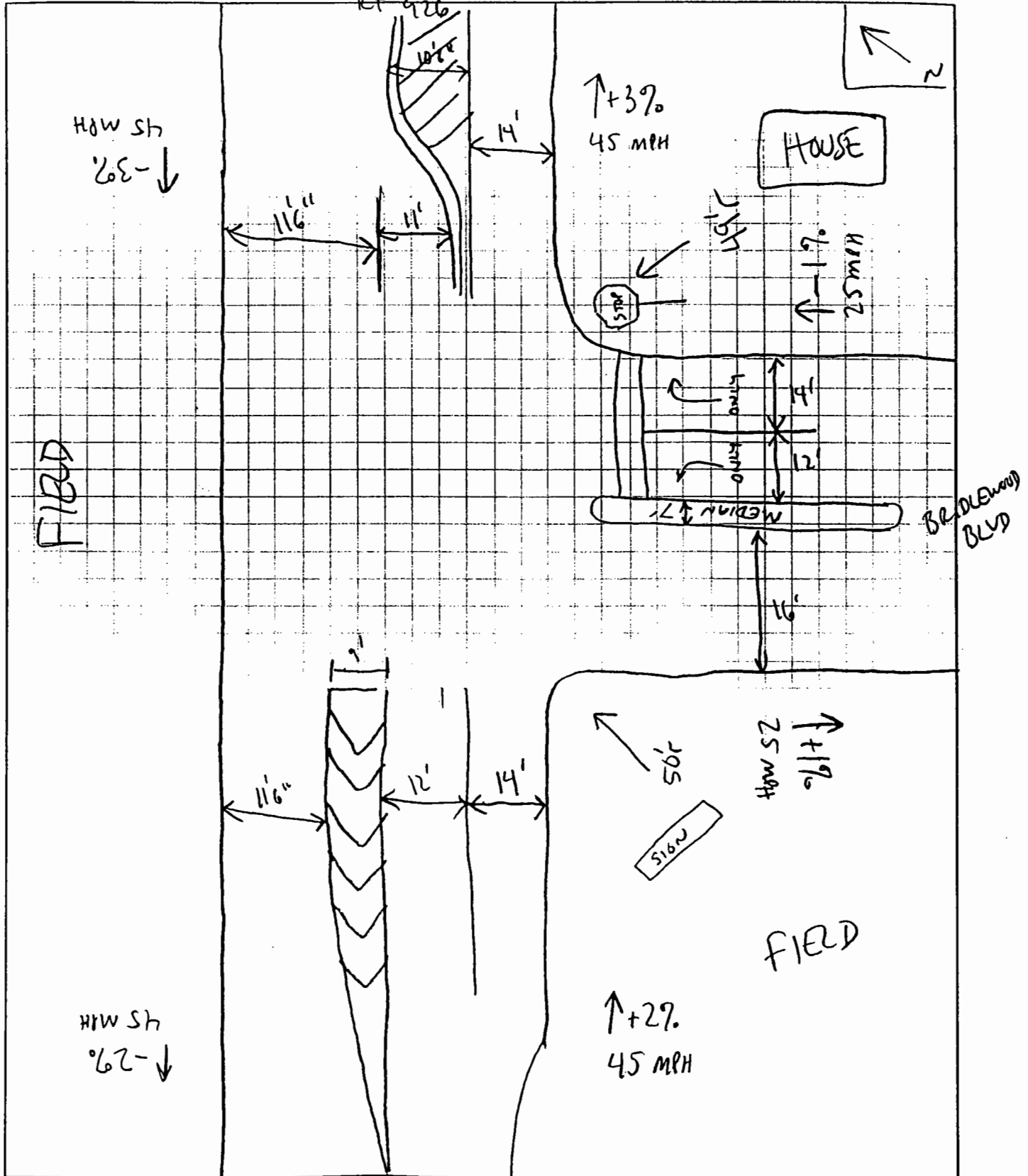


RESPONSIVE
 TRANSPORTATION
 SOLUTIONS

Job WESTTOWN TWP
 Description RT 926 +
 BRIDLEWOOD BLVD

McM Project No. 803002.00
 Designed By NDB
 Checked By ASM

Sheet 04 of 05
 Date 1/10/07
 Date

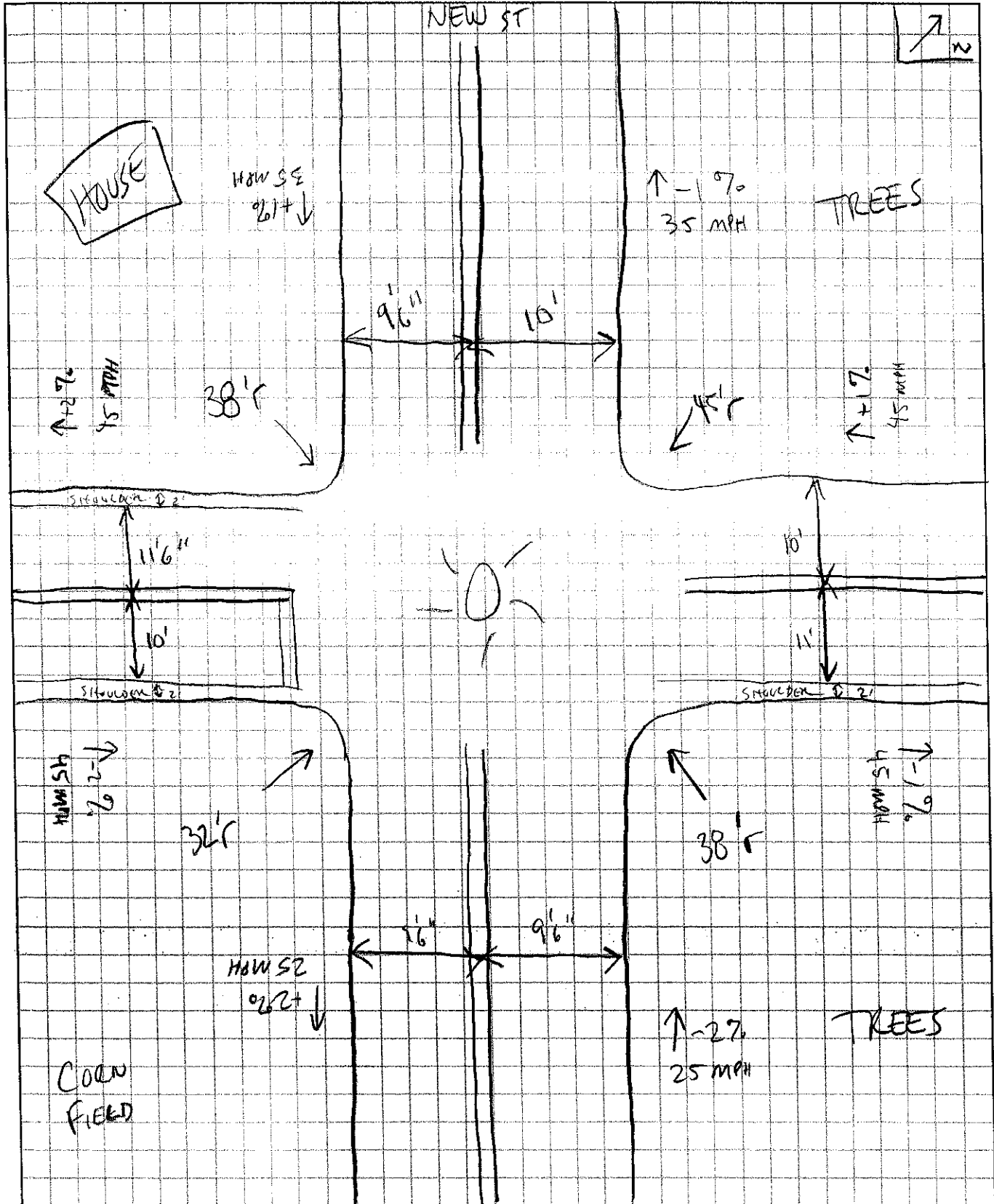


RESPONSIVE
TRANSPORTATION
SOLUTIONS

Job WESTTOWN FWP
Description RT 926 +
NEW ST

McM Project No. 803002.00
Designed By NDB
Checked By CSM

Sheet 03 of 05
Date 1/10/08
Date _____



NEW ST

New Street and West Pleasant Grove Road
Northbound New Street Approach – 50 feet



Northbound New Street Approach – 200 feet



New Street and West Pleasant Grove Road
Southbound New Street Approach – 50 feet



Southbound New Street Approach – 200 feet



New Street and West Pleasant Grove Road
Westbound West Pleasant Grove Road Approach – 50 feet



Westbound West Pleasant Grove Road Approach – 200 feet



Street Road (S.R. 0926) and Bridlewood Boulevard
Eastbound Street Road (S.R. 0926) Approach – 50 feet



Eastbound Street Road (S.R. 0926) Approach – 200 feet



Street Road (S.R. 0926) and Bridlewood Boulevard
Westbound Street Road (S.R. 0926) Approach – 50 feet



Westbound Street Road (S.R. 0926) Approach – 200 feet



Street Road (S.R. 0926) and Bridlewood Boulevard
Northbound Bridlewood Boulevard Approach – 50 feet



Northbound Bridlewood Boulevard Approach – 200 feet



Street Road (S.R. 0926) and New Street
Northbound New Street Approach - 50 feet



Northbound New Street Approach - 200 feet



Street Road (S.R. 0926) and New Street
Southbound New Street Approach - 50 feet



Southbound New Street Approach - 200 feet



Street Road (S.R. 0926) and New Street
Eastbound Street Road (S.R. 0926) Approach – 50 feet



Eastbound Street Road (S.R. 0926) Approach – 200 feet



Street Road (S.R. 0926) and New Street
Westbound Street Road (S.R. 0926) Approach – 50 feet



Westbound Street Road (S.R. 0926) Approach – 200 feet



West Pleasant Grove Road and Road M (Site Access)
Westbound West Pleasant Grove Road Approach – 50 feet



Westbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Road M (Site Access)
Eastbound West Pleasant Grove Road Approach – 50 feet



Eastbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Church Access
Westbound West Pleasant Grove Road Approach – 50 feet



Westbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Church Access
Eastbound West Pleasant Grove Road Approach – 50 feet



Eastbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Church Access

Northbound Church Access – 50 feet



Northbound Church Access – 200 feet



West Pleasant Grove Road and Church Egress Access
Westbound West Pleasant Grove Road Approach – 50 feet



Westbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Church Egress Access
Eastbound West Pleasant Grove Road Approach – 50 feet



Eastbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Church Egress Access
Northbound Church Access – 50 feet



Northbound Church Access – 200 feet



West Pleasant Grove Road and Dunvegan Road
Westbound West Pleasant Grove Road Approach – 50 feet



Westbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Dunvegan Road
Eastbound West Pleasant Grove Road Approach – 50 feet



Eastbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Dunvegan Road
Southbound Dunvegan Road Access – 50 feet



Southbound Dunvegan Road Access – 200 feet



West Pleasant Grove Road and Orvis Way
Westbound West Pleasant Grove Road Approach – 50 feet



Westbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Orvis Way
Eastbound West Pleasant Grove Road Approach – 50 feet



Eastbound West Pleasant Grove Road Approach – 200 feet



West Pleasant Grove Road and Orvis Way
Southbound Orvis Way – 50 feet



Southbound Orvis Way – 200 feet



Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
Wilmington Pike (U.S. Route 202) Northbound Approach – 50 feet



Wilmington Pike (U.S. Route 202) Northbound Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
Wilmington Pike (U.S. Route 202) Southbound Approach – 50 feet



Wilmington Pike (U.S. Route 202) Southbound Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
Eastbound Street Road (S.R. 0926) Approach – 50 feet



Eastbound Street Road (S.R. 0926) Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
Westbound Street Road (S.R. 0926) Approach – 50 feet



Westbound Street Road (S.R. 0926) Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
Wilmington Pike (U.S. Route 202) Northbound Approach – 50 feet



Wilmington Pike (U.S. Route 202) Northbound Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
Wilmington Pike (U.S. Route 202) Southbound Approach – 50 feet



Wilmington Pike (U.S. Route 202) Southbound Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
Eastbound West Pleasant Grove Road Approach – 50 feet



Eastbound West Pleasant Grove Road Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
Westbound East Pleasant Grove Road Approach – 50 feet



Westbound East Pleasant Grove Road Approach –200 feet



Wilmington Pike (U.S. Route 202) and Skiles Boulevard
Wilmington Pike (U.S. Route 202) Northbound Approach – 50 feet



Wilmington Pike (U.S. Route 202) Northbound Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Skiles Boulevard
Wilmington Pike (U.S. Route 202) Southbound Approach – 50 feet



Wilmington Pike (U.S. Route 202) Southbound Approach – 200 feet



Wilmington Pike (U.S. Route 202) and Skiles Boulevard
Eastbound Skiles Boulevard Approach – 50 feet



Eastbound Skiles Boulevard Approach –200 feet



Wilmington Pike (U.S. Route 202) and Skiles Boulevard
Westbound Skiles Boulevard Approach – 50 feet



Westbound Skiles Boulevard Approach – 200 feet



Crash Summary Tables

**Table 1. Reportable Crash Frequency
Study Area Intersections**

Location	Traffic Control	Frequency of Crashes (Number per Year)						Average Per Year
		2013	2014	2015	2016	2017	Total	
U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)	Signal	6	4	8	6	2	26	5.2
U.S. Route 202 (Wilmington Pike) and Stetson School Drive / Skiles Boulevard	Signal	2	3	4	4	2	15	3.0
Street Road (S.R. 0926) and New Street	Signal	0	1	3	0	1	5	1.0
U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road	TWSC	3	3	4	4	2	16	3.2
Street Road (S.R. 0926) and Bridlewood Boulevard	TWSC	0	0	1	0	0	1	0.2
New Street and West Pleasant Grove Road	TWSC	0	0	1	0	1	2	0.4
West Pleasant Grove Road and Dunvegan Road	TWSC	0	0	0	0	0	0	0.0
West Pleasant Grove Road and Westminster Presbyterian Church Accesses	TWSC	0	0	0	0	0	0	0.0
Total		11	11	21	14	8	65	13.0

**Table 2. Reportable Crash Types
Study Area Intersections**

Intersection/ Type of Crash	Traffic Control	Rear-End	Head-On	Angle	Same Direction Sideswipe	Hit Fixed Object	Total
U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)	Signal	18	1	3	1	3	26
U.S. Route 202 (Wilmington Pike) and Stetson School Drive / Skiles Boulevard	Signal	14	0	1	0	0	15
Street Road (S.R. 0926) and New Street	Signal	2	0	3	0	0	5
U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road	TWSC	10	0	4	1	1	16
Street Road (S.R. 0926) and Bridlewood Boulevard	TWSC	1	0	0	0	0	1
New Street and West Pleasant Grove Road	TWSC	0	0	1	0	1	2
West Pleasant Grove Road and Dunvegan Road	TWSC	0	0	0	0	0	0
West Pleasant Grove Road and Westminster Presbyterian Church Accesses	TWSC	0	0	0	0	0	0
Total		45	1	12	2	5	65

**Table 3. Reportable Crash Severities
Study Area Intersections**

Intersection/ Type of Crash	Traffic Control	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	Property Damage Only	Unknown Severity	Unknown if Injured	Total
U.S. Route 202 (Wilmington Pike) and Street Road (S.R. 0926)	Signal	2	1	3	14	5	1	26
U.S. Route 202 (Wilmington Pike) and Stetson School Drive / Skiles Boulevard	Signal	0	2	2	10	1	0	15
Street Road (S.R. 0926) and New Street	Signal	0	0	1	3	1	0	5
U.S. Route 202 (Wilmington Pike) and West Pleasant Grove Road	TWSC	0	1	3	10	2	0	16
Street Road (S.R. 0926) and Bridlewood Boulevard	TWSC	0	0	0	1	0	0	1
New Street and West Pleasant Grove Road	TWSC	0	0	1	1	0	0	2
West Pleasant Grove Road and Dunvegan Road	TWSC	0	0	0	0	0	0	0
West Pleasant Grove Road and Westminster Presbyterian Church Accesses	TWSC	0	0	0	0	0	0	0
Total		2	4	10	39	9	1	65

**Table 4. Reportable Crash Frequency
Midblock Locations**

Midblock Location	Frequency of Crashes (Number per Year)						Average Per Year
	2013	2014	2015	2016	2017	Total	
U.S. Route 202 (Wilmington Pike) between Street Road (S.R. 0926) and West Pleasant Grove Road	6	5	3	10	5	29	5.8
U.S. Route 202 (Wilmington Pike) between West Pleasant Grove Road Stetson School Drive / Skiles Boulevard	2	2	1	3	6	14	2.8
Street Road (S.R. 0926) between U.S. Route 202 (Wilmington Pike) and Bridlewood Boulevard	0	0	1	2	1	4	0.8
Street Road (S.R. 0926) between Bridlewood Boulevard and New Street	0	2	1	1	0	4	0.8
New Street between Street Road (S.R. 0926) and West Pleasant Grove Road	0	0	1	1	2	4	0.8
West Pleasant Grove Road between New Street and Dunvegan Road	0	1	0	0	0	1	0.2
West Pleasant Grove Road between Dunvegan Road and Westminster Presbyterian Accesses	0	0	0	0	0	0	0.0
West Pleasant Grove Road between Westminster Presbyterian Accesses and U.S .Route 202 (Wilmington Pike)	0	0	0	0	0	0	0.0
Total	8	10	7	17	14	56	11.2

**Table 5. Reportable Crash Types
Midblock Locations**

Midblock Location/ Type of Crash	Head On	Angle	Rear End	Same Direction Sideswipe	Opposite Direction Sideswipe	Hit Fixed Object	Hit Deer	Non- Collision	Total
U.S. Route 202 (Wilmington Pike) between Street Road (S.R. 0926) and West Pleasant Grove Road	0	0	14	2	1	7	4	1	29
U.S. Route 202 (Wilmington Pike) between West Pleasant Grove Road Stetson School Drive / Skiles Boulevard	0	1	9	0	0	2	2	0	14
Street Road (S.R. 0926) between U.S. Route 202 (Wilmington Pike) and Bridlewood Boulevard	0	2	2	0	0	0	0	0	4
Street Road (S.R. 0926) between Bridlewood Boulevard and New Street	1	0	1	0	0	1	1	0	4
New Street between Street Road (S.R. 0926) and West Pleasant Grove Road	1	0	0	0	1	2	0	0	4
West Pleasant Grove Road between New Street and Dunvegan Road	0	0	0	0	0	1	0	0	1
West Pleasant Grove Road between Dunvegan Road and Westminster Presbyterian Accesses	0	0	0	0	0	0	0	0	0
West Pleasant Grove Road between Westminster Presbyterian Accesses and U.S. Route 202 (Wilmington Pike)	0	0	0	0	0	0	0	0	0
Total	1	3	26	2	2	13	7	2	56

**Table 6. Reportable Crash Severities
Midblock Locations**

Midblock Location/ Type of Crash	Fatal	Suspected Minor Injury	Possible Injury	Property Damage Only	Unknown Severity	Total
U.S. Route 202 (Wilmington Pike) between Street Road (S.R. 0926) and West Pleasant Grove Road	1	0	4	21	3	29
U.S. Route 202 (Wilmington Pike) between West Pleasant Grove Road Stetson School Drive / Skiles Boulevard	0	0	0	9	5	14
Street Road (S.R. 0926) between U.S. Route 202 (Wilmington Pike) and Bridlewood Boulevard	0	1	1	2	0	4
Street Road (S.R. 0926) between Bridlewood Boulevard and New Street	0	1	1	1	1	4
New Street between Street Road (S.R. 0926) and West Pleasant Grove Road	0	0	1	2	1	4
West Pleasant Grove Road between New Street and Dunvegan Road	0	0	0	1	0	1
West Pleasant Grove Road between Dunvegan Road and Westminster Presbyterian Accesses	0	0	0	0	0	0
West Pleasant Grove Road between Westminster Presbyterian Accesses and U.S. Route 202 (Wilmington Pike)	0	0	0	0	0	0
Total	1	2	7	36	10	56

Appendix C

PennDOT TIRe Data

US Route 202 Northbound

Avg. Daily Truck Traffic: 1905

County: 15 - CHESTER

Avg. Daily Traffic: 23814

Direction: N - NORTH

District: 06

Daily Truck Vehicle Miles Traveled: 1600

Daily Vehicle Miles Traveled: 20004

Count Duration: 24

D Factor: 55

Jurisdiction: 1 - STATE

K Factor: 9

Offset Begin: 0

Offset End: 1279

Segment Begin: 0050

Segment End: 0060

Side Ind: 1 - RIGHT / PRIMARY / EVEN SIDE

Route: 0202

Traffic Pattern Group: 03 - URBAN - OTHER
PRINCIPAL ARTERIALS

Truck Percent: 8

Type of Count: 3 - VOLUME TRAFFIC COUNT

T Factor: 3

Count Date: 20120829

Traffic Count Key: 15020200600958**US Route 202 Southbound**

Avg. Daily Truck Traffic: 940

County: 15 - CHESTER

Avg. Daily Traffic: 23487

Direction: S - SOUTH

District: 06

Daily Truck Vehicle Miles Traveled: 790

Daily Vehicle Miles Traveled: 19729

Count Duration: 24

D Factor: 55

Jurisdiction: 1 - STATE

K Factor: 9

Offset Begin: 0

Offset End: 1260

Segment Begin: 0051

Segment End: 0061

Side Ind: 2 - LEFT / SECONDARY / ODD SIDE

Route: 0202

Traffic Pattern Group: 03 - URBAN - OTHER
PRINCIPAL ARTERIALS

Truck Percent: 4

Type of Count: 3 - VOLUME TRAFFIC COUNT

T Factor: 3

Count Date: 20120829

Traffic Count Key: 15020200610608**Street Road SR 0926**

Avg. Daily Truck Traffic: 648

County: 15 - CHESTER

Avg. Daily Traffic: 12952

Direction: B - BOTH

District: 06

Daily Truck Vehicle Miles Traveled: 865

Daily Vehicle Miles Traveled: 17291

Count Duration: 24

D Factor: 55

Jurisdiction: 1 - STATE

K Factor: 11

Offset Begin: 0

Offset End: 0

Segment Begin: 0370

Segment End: 0400

Side Ind: 1 - RIGHT / PRIMARY / EVEN SIDE

Route: 0926

Traffic Pattern Group: 05 - URBAN - MINOR
ARTERIALS, COLLECTORS, LOCAL ROADS

Truck Percent: 5

Type of Count: 3 - VOLUME TRAFFIC COUNT

T Factor: 3

Count Date: 20140716

Traffic Count Key: 15092603900000

New Street

Avg. Daily Truck Traffic: 48

County: 15 - CHESTER

Avg. Daily Traffic: 5058

Direction: B - BOTH

District: 08

Daily Truck Vehicle Miles Traveled: 185

Daily Vehicle Miles Traveled: 19511

Count Duration: 24

D Factor: 53

Jurisdiction: 5 - NON-STATE FEDERAL AID
ROADS

K Factor: 10

Offset Begin: 0

Offset End: 686

Segment Begin: 0020

Segment End: 0080

Side Ind: 1 - RIGHT / PRIMARY / EVEN SIDE

Route: G391

Traffic Pattern Group: 05 - URBAN - MINOR
ARTERIALS, COLLECTORS, LOCAL ROADS

Truck Percent: 1

Type of Count: 2 - MACHINE TRAFFIC
CLASSIFICATION COUNT

T Factor: 1

Count Date: 20170920

Traffic Count Key: 15G39100500001

Appendix D

Manual Turning Movement Counts

McMahon Associates, Inc.

Transportation Engineers and Planners

425 Commerce Drive, Suite 200

Fort Washington, PA 19034

Municipality: Westtown Township
 Location: West Pleasant Grove Road &
 Dunvegan Road
 Counter RR

File Name : dunvegan01w
 Site Code : 81645101
 Start Date : 8/6/2019
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Dunvegan Rd Southbound		West Pleasant Grove Rd Westbound		West Pleasant Grove Rd Eastbound		Int. Total
	Left	Right	Thru	Right	Left	Thru	
07:00	2	0	0	0	0	0	2
07:15	1	0	0	1	0	0	2
07:30	1	1	0	1	0	0	3
07:45	1	1	0	1	0	0	3
Total	5	2	0	3	0	0	10
08:00	2	2	0	0	0	0	4
08:15	2	0	0	0	1	0	3
08:30	0	4	0	2	0	0	6
08:45	0	1	0	0	0	0	1
Total	4	7	0	2	1	0	14
*** BREAK ***							
16:00	0	1	0	4	0	0	5
16:15	0	1	0	2	2	0	5
16:30	1	0	0	2	0	0	3
16:45	0	0	0	3	1	0	4
Total	1	2	0	11	3	0	17
17:00	2	0	0	4	2	0	8
17:15	1	0	0	1	2	0	4
17:30	1	0	0	3	0	0	4
17:45	0	2	0	0	0	0	2
Total	4	2	0	8	4	0	18
Grand Total	14	13	0	24	8	0	59
Apprch %	51.9	48.1	0	100	100	0	
Total %	23.7	22	0	40.7	13.6	0	
Passenger Vehicles	12	13	0	18	8	0	51
% Passenger Vehicles	85.7	100	0	75	100	0	86.4
Heavy Vehicles	2	0	0	6	0	0	8
% Heavy Vehicles	14.3	0	0	25	0	0	13.6

McMahon Associates, Inc.

Transportation Engineers and Planners

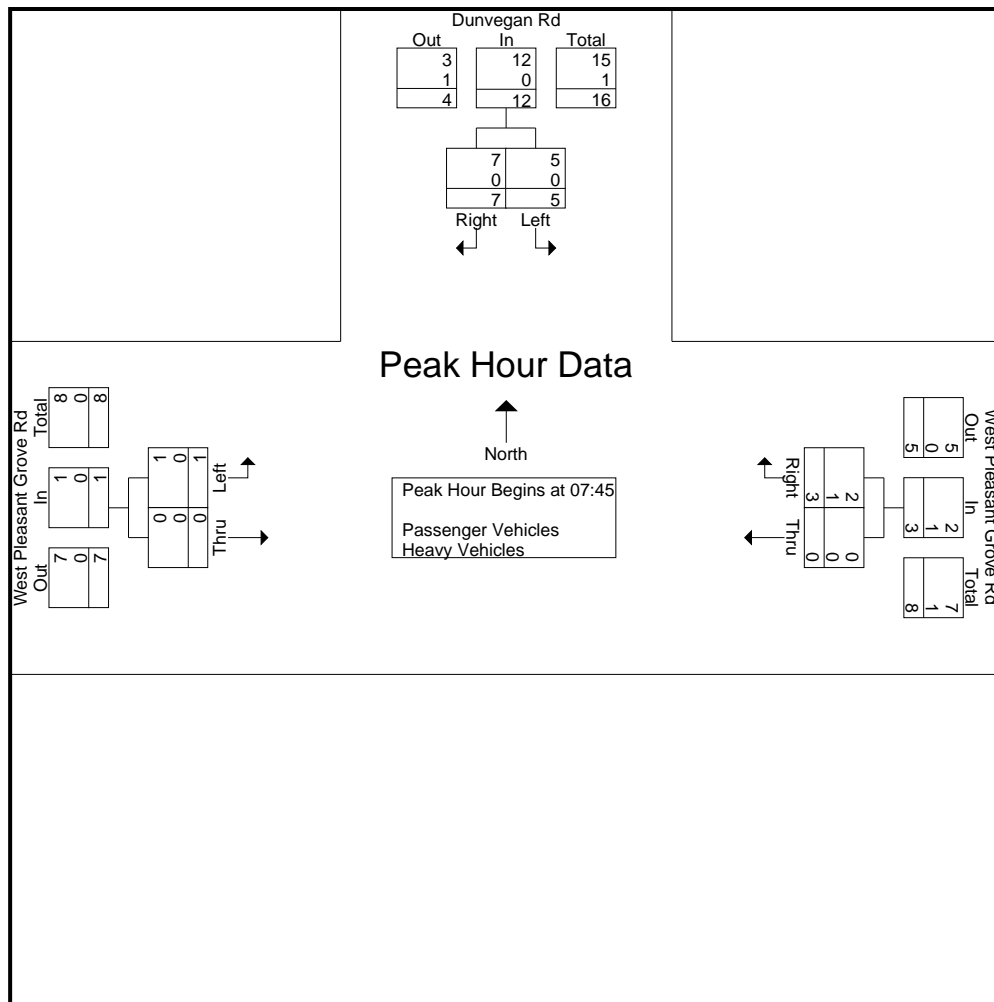
425 Commerce Drive, Suite 200

Fort Washington, PA 19034

Municipality: Westtown Township
 Location: West Pleasant Grove Road &
 Dunvegan Road
 Counter RR

File Name : dunvegan01w
 Site Code : 81645101
 Start Date : 8/6/2019
 Page No : 2

Start Time	Dunvegan Rd Southbound			West Pleasant Grove Rd Westbound			West Pleasant Grove Rd Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45										
07:45	1	1	2	0	1	1	0	0	0	3
08:00	2	2	4	0	0	0	0	0	0	4
08:15	2	0	2	0	0	0	1	0	1	3
08:30	0	4	4	0	2	2	0	0	0	6
Total Volume	5	7	12	0	3	3	1	0	1	16
% App. Total	41.7	58.3		0	100		100	0		
PHF	.625	.438	.750	.000	.375	.375	.250	.000	.250	.667
Passenger Vehicles	5	7	12	0	2	2	1	0	1	15
% Passenger Vehicles	100	100	100	0	66.7	66.7	100	0	100	93.8
Heavy Vehicles	0	0	0	0	1	1	0	0	0	1
% Heavy Vehicles	0	0	0	0	33.3	33.3	0	0	0	6.3



McMahon Associates, Inc.

Transportation Engineers and Planners

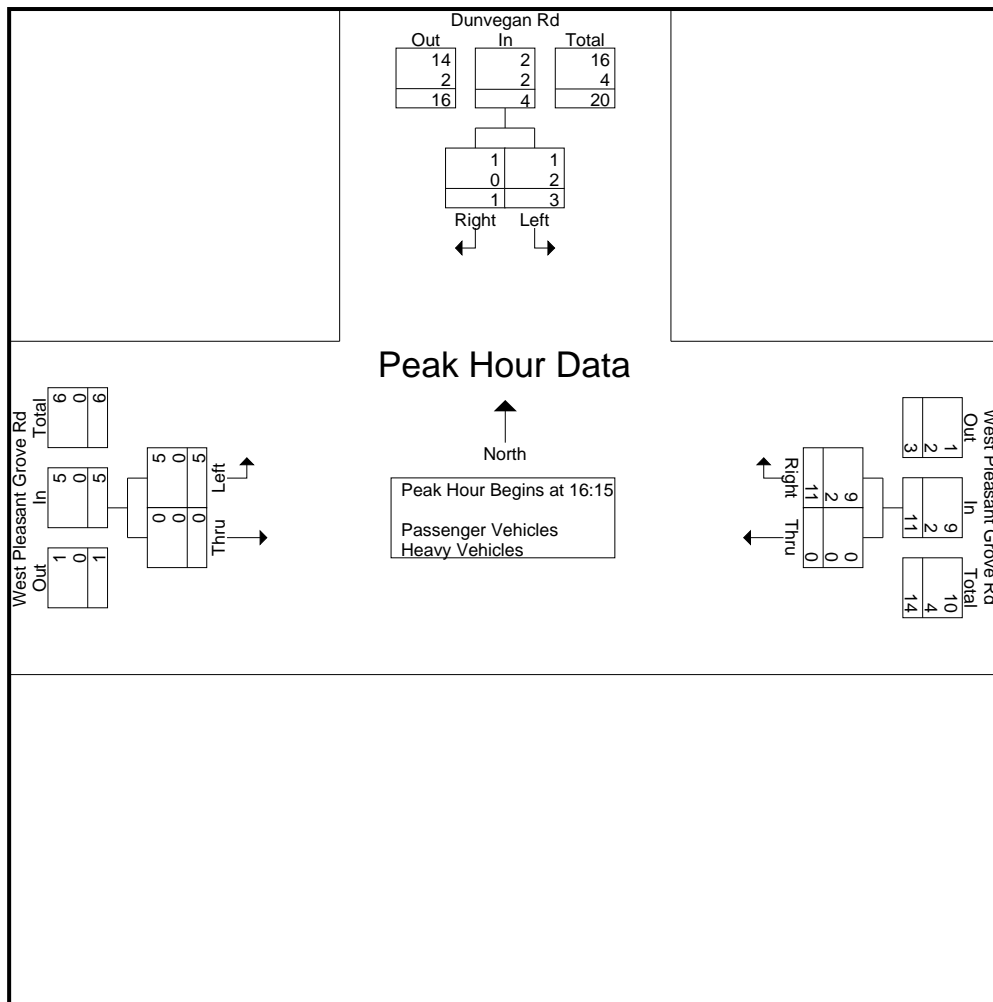
425 Commerce Drive, Suite 200

Fort Washington, PA 19034

Municipality: Westtown Township
 Location: West Pleasant Grove Road &
 Dunvegan Road
 Counter RR

File Name : dunvegan01w
 Site Code : 81645101
 Start Date : 8/6/2019
 Page No : 3

Start Time	Dunvegan Rd Southbound			West Pleasant Grove Rd Westbound			West Pleasant Grove Rd Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:15										
16:15	0	1	1	0	2	2	2	0	2	5
16:30	1	0	1	0	2	2	0	0	0	3
16:45	0	0	0	0	3	3	1	0	1	4
17:00	2	0	2	0	4	4	2	0	2	8
Total Volume	3	1	4	0	11	11	5	0	5	20
% App. Total	75	25	50.0	0	100	81.8	100	0	100	80.0
PHF	.375	.250	.500	.000	.688	.688	.625	.000	.625	.625
Passenger Vehicles	1	1	2	0	9	9	5	0	5	16
% Passenger Vehicles	33.3	100	50.0	0	81.8	81.8	100	0	100	80.0
Heavy Vehicles	2	0	2	0	2	2	0	0	0	4
% Heavy Vehicles	66.7	0	50.0	0	18.2	18.2	0	0	0	20.0



West Pleasant Grove Road & Westminster Presbyterian Church Accesses									
Tuesday, August 6, 2019 7-9am and 4-6pm									
Counter: LB									
<u>Eastern Driveway</u>					<u>Western Driveway</u>				
	<u>Left In</u>	<u>Left Out</u>	<u>Right In</u>	<u>Right Out</u>		<u>Left In</u>	<u>Left Out</u>	<u>Right In</u>	<u>Right Out</u>
7:00	1	0	0	0	7:00	0	0	0	0
7:15	1	0	0	0	7:15	0	0	0	0
7:30	2	0	1	0	7:30	1	0	0	0
7:45	3	1	0	0	7:45	0	0	0	0
8:00	1	0	1	1	8:00	0	0	0	0
8:15	1	0	2	2	8:15	0	0	0	0
8:30	1	0	2	1	8:30	0	0	0	0
8:45	2	2	2	1	8:45	0	0	1	0
4:00	1	0	0	0	4:00	0	0	0	0
4:15	0	1	0	0	4:15	0	0	0	0
4:30	2	0	0	1	4:30	0	0	0	0
4:45	2	0	0	3	4:45	0	0	0	0
5:00	2	0	1	2	5:00	0	0	0	0
5:15	0	2	0	0	5:15	0	0	0	0
5:30	1	2	0	2	5:30	0	0	0	0
5:45	0	0	0	0	5:45	0	0	0	0

McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
Location: Route 202 &
Skiles Boulevard
Counter: M

File Name : westtown01w
Site Code :
Start Date : 10/10/2019
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Route 202 Southbound			Skiles Boulevard Westbound			Route 202 Northbound			Skiles Boulevard Eastbound			Int. Total
	To Jughandle	Thru	Right	Left	Thru	Right	To Jughandle	Thru	Right	Left	Thru	Right	
07:00	17	495	25	9	14	13	7	542	1	9	12	3	1147
07:15	15	493	44	11	13	11	3	557	0	10	16	2	1175
07:30	42	441	35	12	41	15	4	471	1	29	33	7	1131
07:45	28	445	50	18	66	15	9	466	4	33	80	19	1233
Total	102	1874	154	50	134	54	23	2036	6	81	141	31	4686
08:00	0	493	23	15	34	17	0	460	4	34	42	16	1138
08:15	0	480	28	13	9	16	0	465	3	18	12	3	1047
08:30	0	452	22	8	21	17	0	486	6	29	27	10	1078
08:45	0	460	31	13	24	14	0	481	8	45	21	18	1115
Total	0	1885	104	49	88	64	0	1892	21	126	102	47	4378
16:00	0	400	16	11	16	11	0	464	11	20	23	7	979
16:15	0	494	18	8	20	9	0	484	9	17	34	13	1106
16:30	0	431	23	5	30	5	0	492	3	34	38	9	1070
16:45	0	461	18	10	29	7	0	465	3	42	45	14	1094
Total	0	1786	75	34	95	32	0	1905	26	113	140	43	4249
17:00	17	521	12	4	11	16	6	502	3	18	47	17	1174
17:15	13	490	21	9	4	12	3	497	9	21	21	4	1104
17:30	17	479	20	7	20	14	5	500	6	26	32	20	1146
17:45	15	435	16	7	8	17	7	494	7	55	29	20	1110
Total	62	1925	69	27	43	59	21	1993	25	120	129	61	4534
Grand Total	164	7470	402	160	360	209	44	7826	78	440	512	182	17847
Apprch %	2	93	5	21.9	49.4	28.7	0.6	98.5	1	38.8	45.1	16	
Total %	0.9	41.9	2.3	0.9	2	1.2	0.2	43.9	0.4	2.5	2.9	1	
Passenger Vehicles	164	7003	387	153	344	204	44	7391	75	421	494	174	16854
% Passenger Vehicles	100	93.7	96.3	95.6	95.6	97.6	100	94.4	96.2	95.7	96.5	95.6	94.4
Heavy Vehicles	0	467	15	7	16	5	0	435	3	19	18	8	993
% Heavy Vehicles	0	6.3	3.7	4.4	4.4	2.4	0	5.6	3.8	4.3	3.5	4.4	5.6

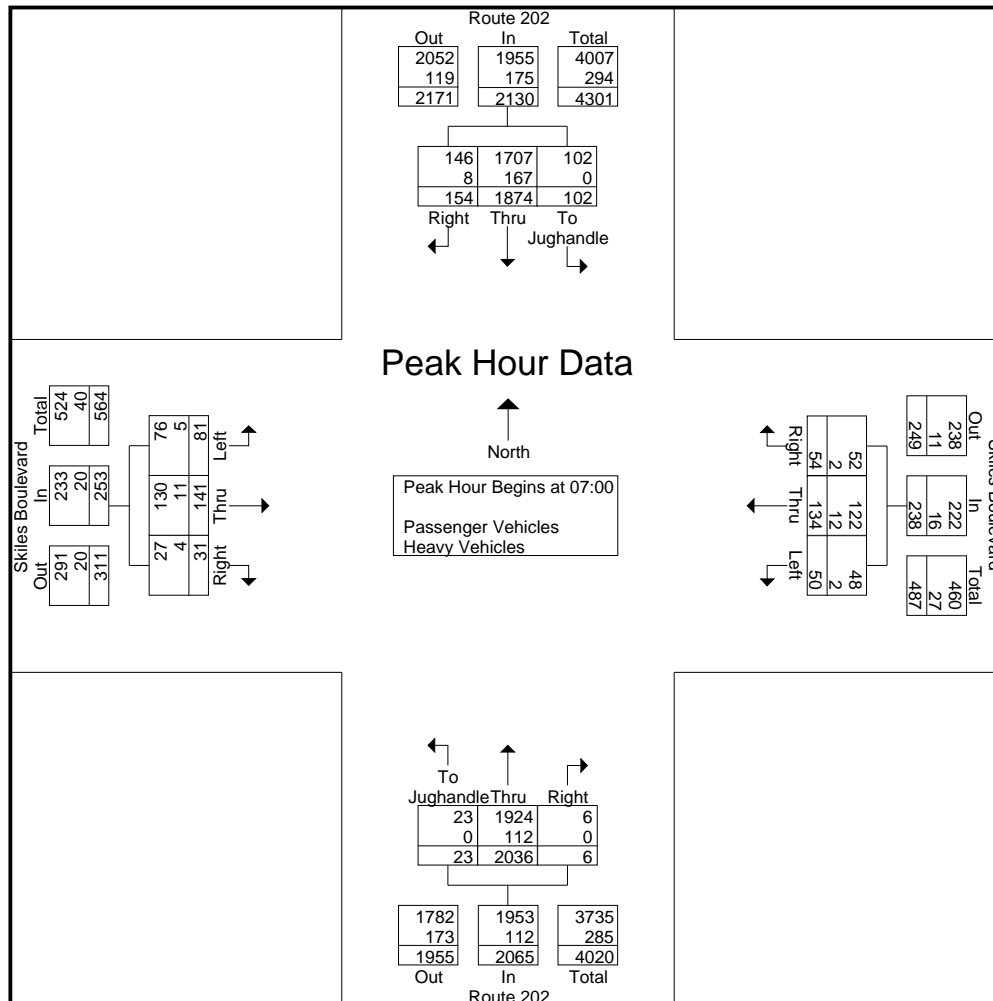
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
Location: Route 202 &
Skiles Boulevard
Counter: M

File Name : westtown01w
Site Code :
Start Date : 10/10/2019
Page No : 2

Start Time	Route 202 Southbound				Skiles Boulevard Westbound				Route 202 Northbound				Skiles Boulevard Eastbound				Int. Total
	To Jughandle	Thru	Right	App. Total	Left	Thru	Right	App. Total	To Jughandle	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	17	495	25	537	9	14	13	36	7	542	1	550	9	12	3	24	1147
07:15	15	493	44	552	11	13	11	35	3	557	0	560	10	16	2	28	1175
07:30	42	441	35	518	12	41	15	68	4	471	1	476	29	33	7	69	1131
07:45	28	445	50	523	18	66	15	99	9	466	4	479	33	80	19	132	1233
Total Volume	102	1874	154	2130	50	134	54	238	23	2036	6	2065	81	141	31	253	4686
% App. Total	4.8	88	7.2		21	56.3	22.7		1.1	98.6	0.3		32	55.7	12.3		
PHF	.607	.946	.770	.965	.694	.508	.900	.601	.639	.914	.375	.922	.614	.441	.408	.479	.950
Passenger Vehicles	102	1707	146	1955	48	122	52	222	23	1924	6	1953	76	130	27	233	4363
% Passenger Vehicles	100	91.1	94.8	91.8	96.0	91.0	96.3	93.3	100	94.5	100	94.6	93.8	92.2	87.1	92.1	93.1
Heavy Vehicles	0	167	8	175	2	12	2	16	0	112	0	112	5	11	4	20	323
% Heavy Vehicles	0	8.9	5.2	8.2	4.0	9.0	3.7	6.7	0	5.5	0	5.4	6.2	7.8	12.9	7.9	6.9



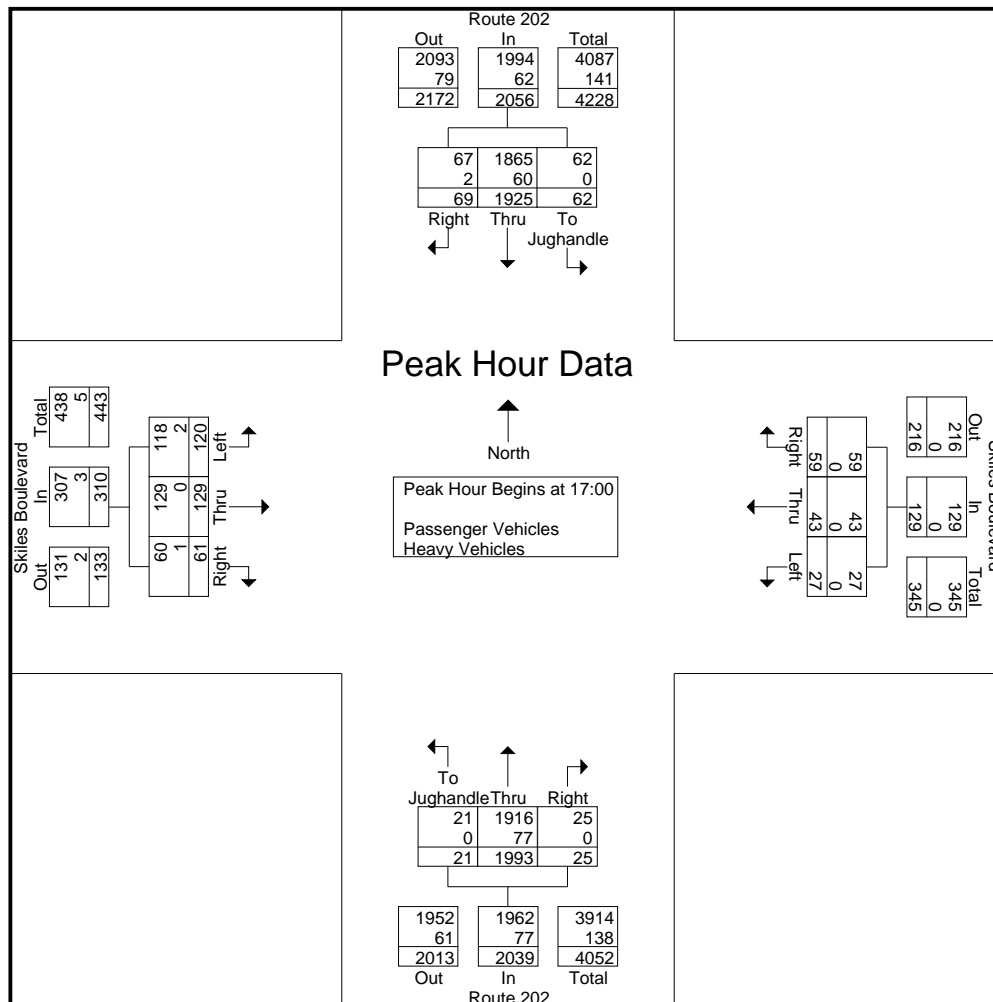
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
Location: Route 202 &
Skiles Boulevard
Counter: M

File Name : westtown01w
Site Code :
Start Date : 10/10/2019
Page No : 3

Start Time	Route 202 Southbound				Skiles Boulevard Westbound				Route 202 Northbound				Skiles Boulevard Eastbound				Int. Total
	To Jughandle	Thru	Right	App. Total	Left	Thru	Right	App. Total	To Jughandle	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	17	521	12	550	4	11	16	31	6	502	3	511	18	47	17	82	1174
17:15	13	490	21	524	9	4	12	25	3	497	9	509	21	21	4	46	1104
17:30	17	479	20	516	7	20	14	41	5	500	6	511	26	32	20	78	1146
17:45	15	435	16	466	7	8	17	32	7	494	7	508	55	29	20	104	1110
Total Volume	62	1925	69	2056	27	43	59	129	21	1993	25	2039	120	129	61	310	4534
% App. Total	3	93.6	3.4		20.9	33.3	45.7		1	97.7	1.2		38.7	41.6	19.7		
PHF	.912	.924	.821	.935	.750	.538	.868	.787	.750	.993	.694	.998	.545	.686	.763	.745	.966
Passenger Vehicles	62	1865	67	1994	27	43	59	129	21	1916	25	1962	118	129	60	307	4392
% Passenger Vehicles	100	96.9	97.1	97.0	100	100	100	100	100	96.1	100	96.2	98.3	100	98.4	99.0	96.9
Heavy Vehicles	0	60	2	62	0	0	0	0	0	77	0	77	2	0	1	3	142
% Heavy Vehicles	0	3.1	2.9	3.0	0	0	0	0	0	3.9	0	3.8	1.7	0	1.6	1.0	3.1



McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
Location: Route 202 &
Pleasant Grove Road
Counter: M

File Name : westtown02w
Site Code :
Start Date : 10/10/2019
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Route 202 Southbound			Pleasant Grove Rd Westbound			Route 202 Northbound			Pleasant Grove Rd Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	8	470	14	0	0	2	1	560	6	0	0	3	1064
07:15	6	463	37	0	0	3	5	546	11	0	0	3	1074
07:30	8	419	56	0	0	0	1	502	12	0	0	4	1002
07:45	15	401	43	0	0	2	3	474	23	0	0	2	963
Total	37	1753	150	0	0	7	10	2082	52	0	0	12	4103
08:00	13	438	61	0	0	5	1	454	11	0	0	4	987
08:15	9	414	66	0	0	2	2	480	8	0	0	2	983
08:30	6	412	40	0	0	1	6	474	8	0	0	1	948
08:45	4	415	46	0	0	2	15	479	6	0	0	5	972
Total	32	1679	213	0	0	10	24	1887	33	0	0	12	3890
16:00	12	352	36	0	0	2	4	507	8	0	0	3	924
16:15	19	412	56	0	0	2	8	469	7	0	0	5	978
16:30	22	383	46	0	0	3	4	529	9	0	0	3	999
16:45	20	410	39	0	0	5	10	489	5	0	0	2	980
Total	73	1557	177	0	0	12	26	1994	29	0	0	13	3881
17:00	25	453	43	0	0	1	9	471	7	0	0	6	1015
17:15	18	444	43	0	0	3	7	514	13	0	0	6	1048
17:30	26	419	59	0	0	1	9	499	13	0	0	7	1033
17:45	20	385	57	0	0	6	7	520	13	0	0	5	1013
Total	89	1701	202	0	0	11	32	2004	46	0	0	24	4109
Grand Total	231	6690	742	0	0	40	92	7967	160	0	0	61	15983
Apprch %	3	87.3	9.7	0	0	100	1.1	96.9	1.9	0	0	100	
Total %	1.4	41.9	4.6	0	0	0.3	0.6	49.8	1	0	0	0.4	
Passenger Vehicles	229	6234	726	0	0	38	89	7527	152	0	0	61	15056
% Passenger Vehicles	99.1	93.2	97.8	0	0	95	96.7	94.5	95	0	0	100	94.2
Heavy Vehicles	2	456	16	0	0	2	3	440	8	0	0	0	927
% Heavy Vehicles	0.9	6.8	2.2	0	0	5	3.3	5.5	5	0	0	0	5.8

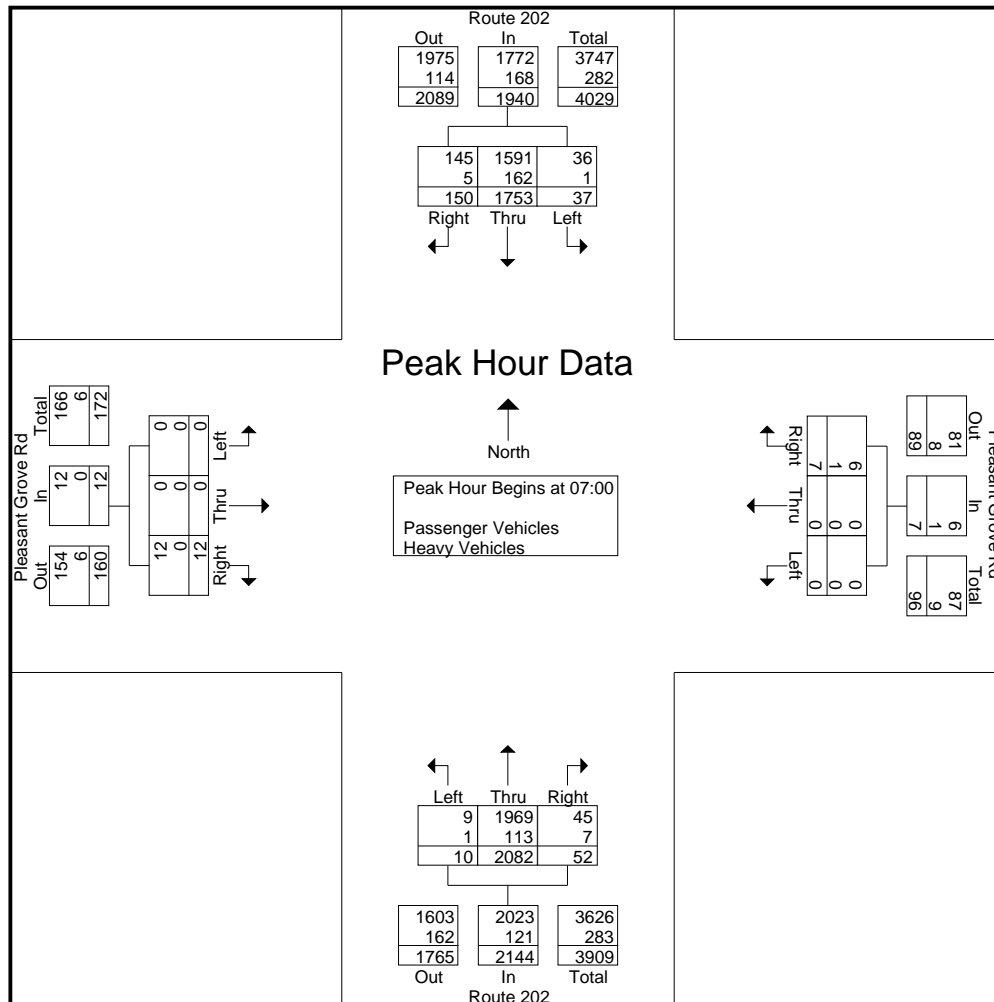
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
Location: Route 202 &
Pleasant Grove Road
Counter: M

File Name : westtown02w
Site Code :
Start Date : 10/10/2019
Page No : 2

Start Time	Route 202 Southbound				Pleasant Grove Rd Westbound				Route 202 Northbound				Pleasant Grove Rd Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	8	470	14	492	0	0	2	2	1	560	6	567	0	0	3	3	1064
07:15	6	463	37	506	0	0	3	3	5	546	11	562	0	0	3	3	1074
07:30	8	419	56	483	0	0	0	0	1	502	12	515	0	0	4	4	1002
07:45	15	401	43	459	0	0	2	2	3	474	23	500	0	0	2	2	963
Total Volume	37	1753	150	1940	0	0	7	7	10	2082	52	2144	0	0	12	12	4103
% App. Total	1.9	90.4	7.7		0	0	100		0.5	97.1	2.4		0	0	100		
PHF	.617	.932	.670	.958	.000	.000	.583	.583	.500	.929	.565	.945	.000	.000	.750	.750	.955
Passenger Vehicles	36	1591	145	1772	0	0	6	6	9	1969	45	2023	0	0	12	12	3813
% Passenger Vehicles	97.3	90.8	96.7	91.3	0	0	85.7	85.7	90.0	94.6	86.5	94.4	0	0	100	100	92.9
Heavy Vehicles	1	162	5	168	0	0	1	1	1	113	7	121	0	0	0	0	290
% Heavy Vehicles	2.7	9.2	3.3	8.7	0	0	14.3	14.3	10.0	5.4	13.5	5.6	0	0	0	0	7.1



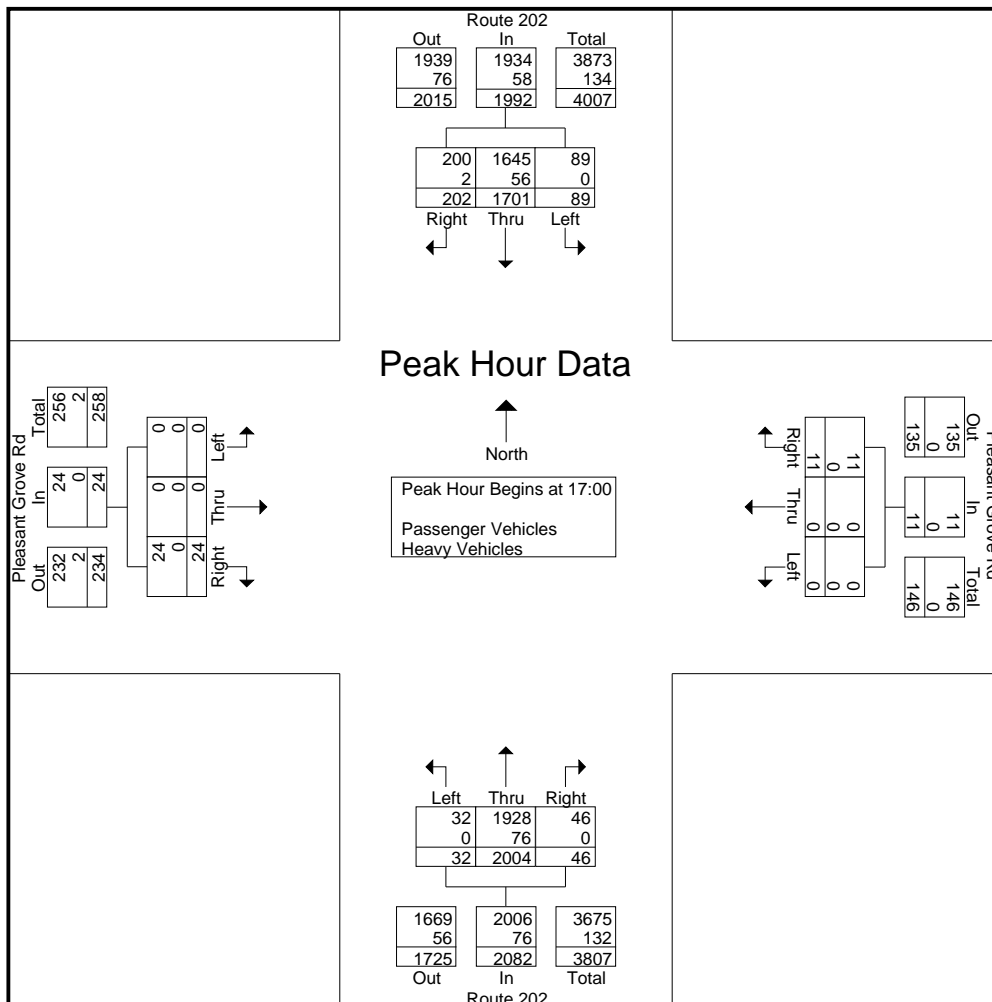
McMahon Associates, Inc.

Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

Municipality: Westtown Township
 Location: Route 202 &
 Pleasant Grove Road
 Counter: M

File Name : westtown02w
 Site Code :
 Start Date : 10/10/2019
 Page No : 3

Start Time	Route 202 Southbound				Pleasant Grove Rd Westbound				Route 202 Northbound				Pleasant Grove Rd Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	25	453	43	521	0	0	1	1	9	471	7	487	0	0	6	6	1015
17:15	18	444	43	505	0	0	3	3	7	514	13	534	0	0	6	6	1048
17:30	26	419	59	504	0	0	1	1	9	499	13	521	0	0	7	7	1033
17:45	20	385	57	462	0	0	6	6	7	520	13	540	0	0	5	5	1013
Total Volume	89	1701	202	1992	0	0	11	11	32	2004	46	2082	0	0	24	24	4109
% App. Total	4.5	85.4	10.1		0	0	100		1.5	96.3	2.2		0	0	100		
PHF	.856	.939	.856	.956	.000	.000	.458	.458	.889	.963	.885	.964	.000	.000	.857	.857	.980
Passenger Vehicles	89	1645	200	1934	0	0	11	11	32	1928	46	2006	0	0	24	24	3975
% Passenger Vehicles	100	96.7	99.0	97.1	0	0	100	100	100	96.2	100	96.3	0	0	100	100	96.7
Heavy Vehicles	0	56	2	58	0	0	0	0	0	76	0	76	0	0	0	0	134
% Heavy Vehicles	0	3.3	1.0	2.9	0	0	0	0	0	3.8	0	3.7	0	0	0	0	3.3



McMahon Associates, Inc.

Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
 Location: New Street &
 Pleasant Grove Road
 Counter: M

File Name : westtown03w
 Site Code :
 Start Date : 10/17/2019
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	New St Southbound		Plesant Grove Rd Westbound		New St Northbound		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00	3	18	15	2	17	0	55
07:15	1	25	38	6	27	0	97
07:30	3	28	44	5	55	2	137
07:45	3	21	52	6	61	0	143
Total	10	92	149	19	160	2	432
08:00	4	49	58	7	34	1	153
08:15	3	29	49	3	23	3	110
08:30	1	28	44	8	34	0	115
08:45	9	19	41	10	34	19	132
Total	17	125	192	28	125	23	510
16:00	7	49	37	9	23	4	129
16:15	3	38	48	13	25	1	128
16:30	10	46	66	9	27	3	161
16:45	2	28	48	8	23	2	111
Total	22	161	199	39	98	10	529
17:00	3	37	44	14	35	2	135
17:15	6	68	40	11	37	4	166
17:30	3	27	57	10	35	5	137
17:45	6	36	57	12	36	6	153
Total	18	168	198	47	143	17	591
Grand Total	67	546	738	133	526	52	2062
Apprch %	10.9	89.1	84.7	15.3	91	9	
Total %	3.2	26.5	35.8	6.5	25.5	2.5	
Passenger Vehicles	65	533	731	126	510	51	2016
% Passenger Vehicles	97	97.6	99.1	94.7	97	98.1	97.8
Heavy Vehicles	2	13	7	7	16	1	46
% Heavy Vehicles	3	2.4	0.9	5.3	3	1.9	2.2

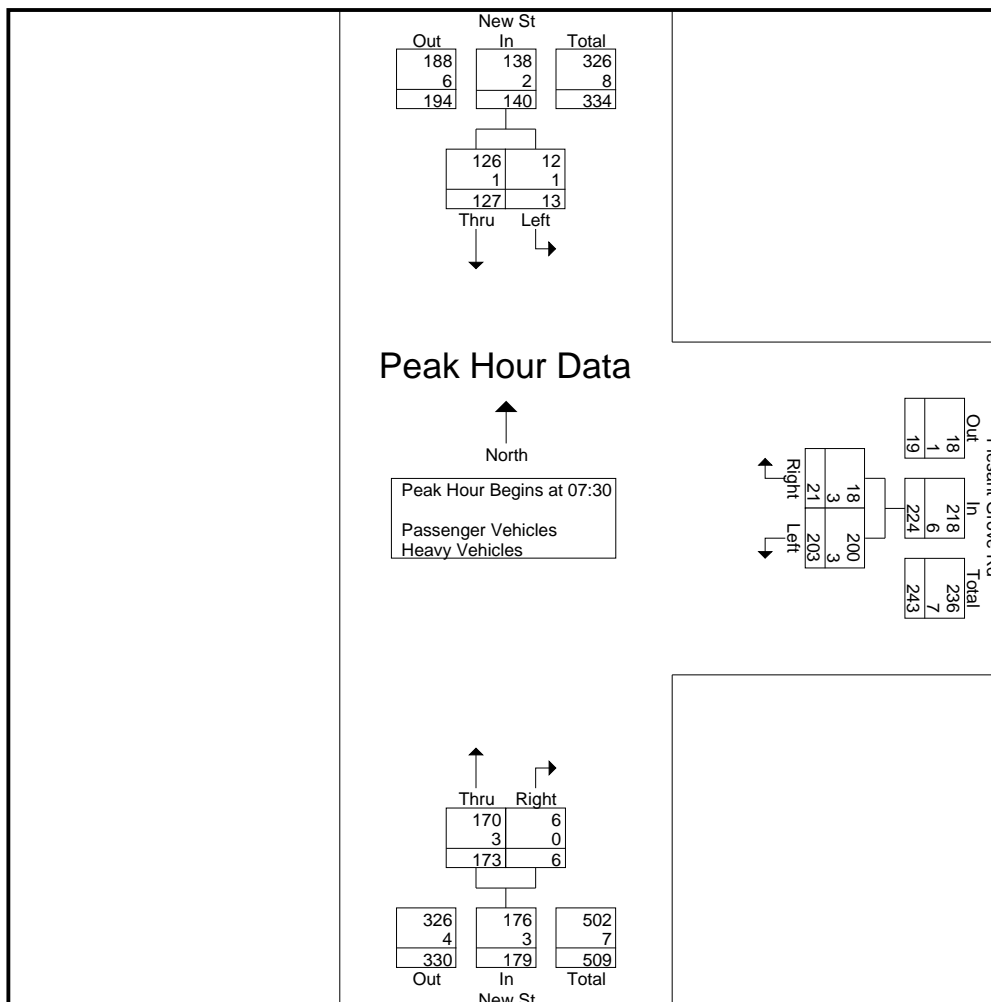
Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

File Name : westtown03w
 Site Code :
 Start Date : 10/17/2019
 Page No : 2

Start Time	New St Southbound			Plesant Grove Rd Westbound			New St Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30										
07:30	3	28	31	44	5	49	55	2	57	137
07:45	3	21	24	52	6	58	61	0	61	143
08:00	4	49	53	58	7	65	34	1	35	153
08:15	3	29	32	49	3	52	23	3	26	110
Total Volume	13	127	140	203	21	224	173	6	179	543
% App. Total	9.3	90.7		90.6	9.4		96.6	3.4		
PHF	.813	.648	.660	.875	.750	.862	.709	.500	.734	.887
Passenger Vehicles	12	126	138	200	18	218	170	6	176	532
% Passenger Vehicles	92.3	99.2	98.6	98.5	85.7	97.3	98.3	100	98.3	98.0
Heavy Vehicles	1	1	2	3	3	6	3	0	3	11
% Heavy Vehicles	7.7	0.8	1.4	1.5	14.3	2.7	1.7	0	1.7	2.0

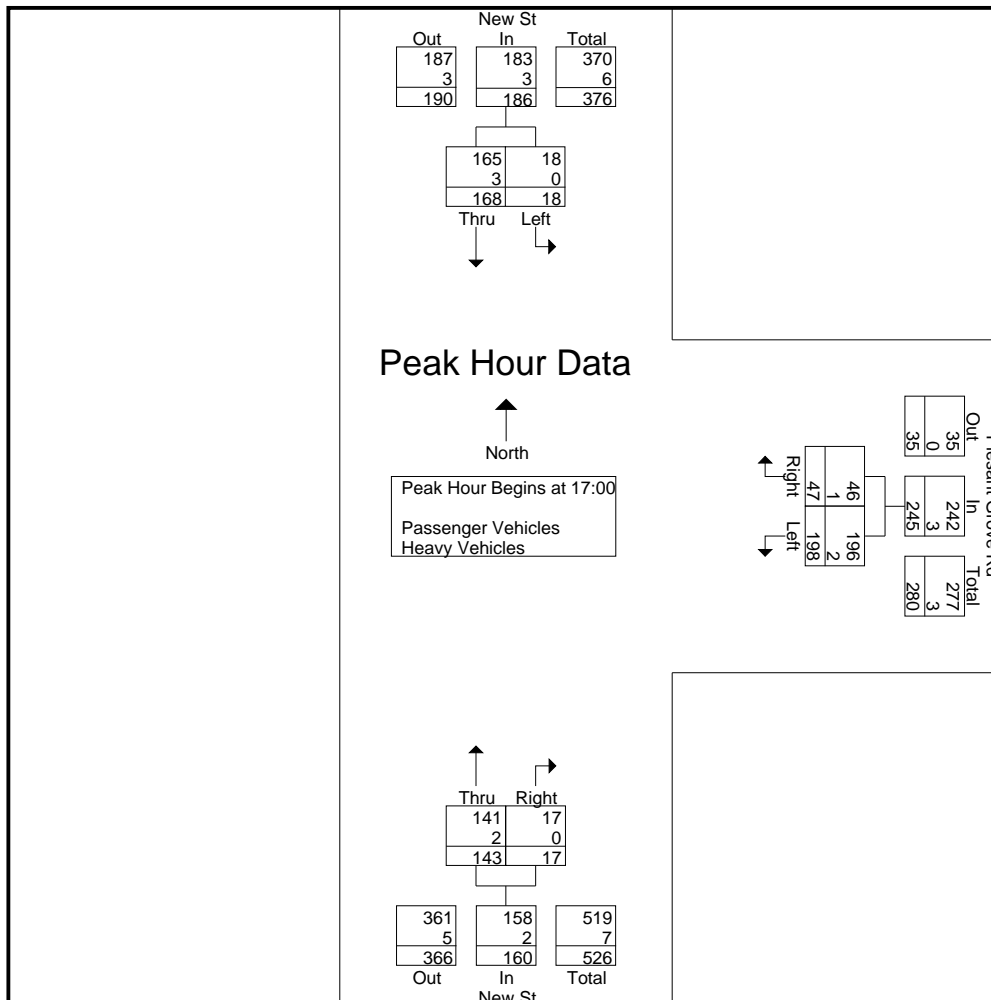


McMahon Associates, Inc.

Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

File Name : westtown03w
 Site Code :
 Start Date : 10/17/2019
 Page No : 3

Start Time	New St Southbound			Plesant Grove Rd Westbound			New St Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	3	37	40	44	14	58	35	2	37	135
17:15	6	68	74	40	11	51	37	4	41	166
17:30	3	27	30	57	10	67	35	5	40	137
17:45	6	36	42	57	12	69	36	6	42	153
Total Volume	18	168	186	198	47	245	143	17	160	591
% App. Total	9.7	90.3		80.8	19.2		89.4	10.6		
PHF	.750	.618	.628	.868	.839	.888	.966	.708	.952	.890
Passenger Vehicles	18	165	183	196	46	242	141	17	158	583
% Passenger Vehicles	100	98.2	98.4	99.0	97.9	98.8	98.6	100	98.8	98.6
Heavy Vehicles	0	3	3	2	1	3	2	0	2	8
% Heavy Vehicles	0	1.8	1.6	1.0	2.1	1.2	1.4	0	1.3	1.4



McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
Location: Route 926 &
Bridlewood Boulevard
Counter: M

File Name : westtown04w
Site Code :
Start Date : 10/17/2019
Page No : 1

Groups Printed- Passenger Vehicles - Other Vehicles

Start Time	Route 926 Westbound		Bridlewood Blvd Northbound		Route 926 Eastbound		Int. Total
	Left	Thru	Left	Right	Thru	Right	
07:00	0	76	5	14	186	1	282
07:15	2	98	6	13	160	4	283
07:30	7	79	1	11	163	2	263
07:45	3	88	6	11	157	5	270
Total	12	341	18	49	666	12	1098
08:00	4	85	8	12	172	7	288
08:15	3	74	7	9	181	6	280
08:30	3	78	4	7	172	13	277
08:45	2	56	7	8	154	10	237
Total	12	293	26	36	679	36	1082
16:00	8	105	0	8	154	11	286
16:15	5	104	8	6	163	9	295
16:30	4	103	5	10	152	7	281
16:45	6	88	0	9	180	9	292
Total	23	400	13	33	649	36	1154
17:00	6	81	5	9	170	12	283
17:15	4	85	6	6	190	9	300
17:30	7	75	7	10	162	13	274
17:45	8	106	5	12	145	3	279
Total	25	347	23	37	667	37	1136
Grand Total	72	1381	80	155	2661	121	4470
Apprch %	5	95	34	66	95.7	4.3	
Total %	1.6	30.9	1.8	3.5	59.5	2.7	
Passenger Vehicles	69	1305	79	150	2564	117	4284
% Passenger Vehicles	95.8	94.5	98.8	96.8	96.4	96.7	95.8
Other Vehicles	3	76	1	5	97	4	186
% Other Vehicles	4.2	5.5	1.2	3.2	3.6	3.3	4.2

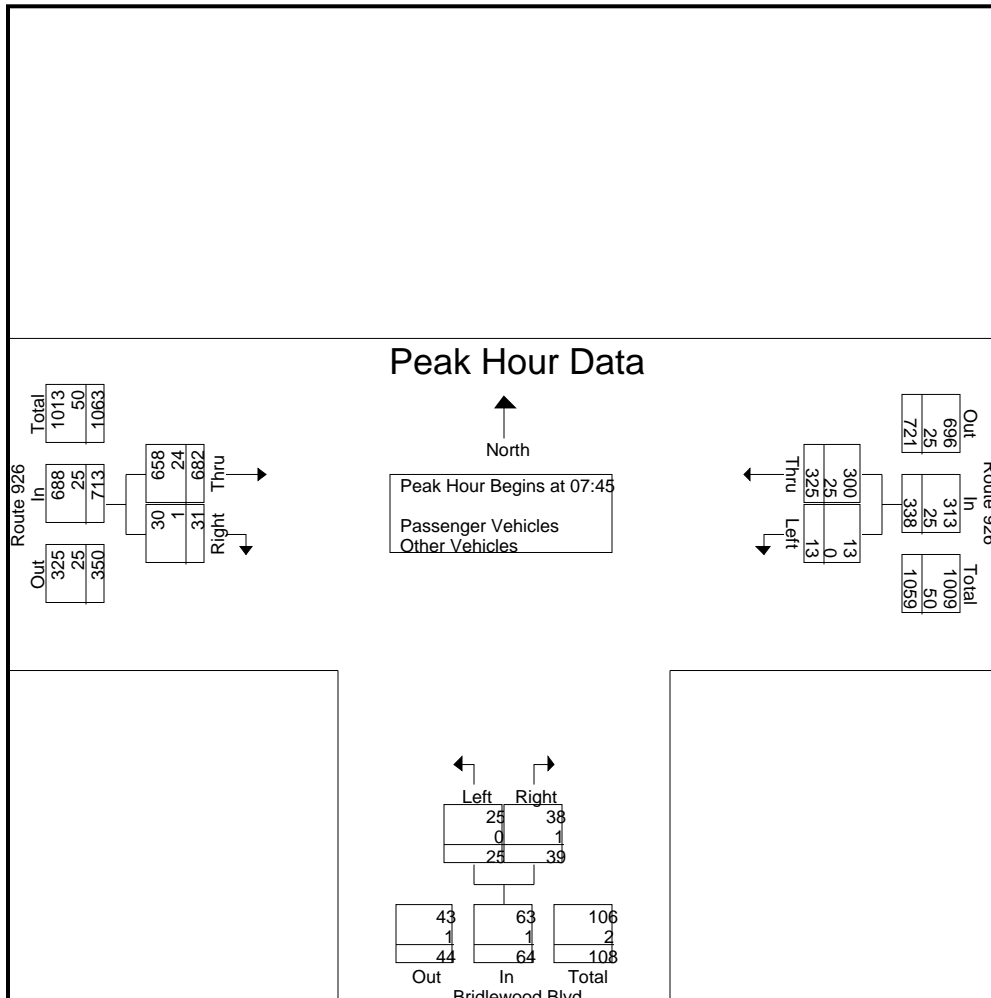
Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

File Name : westtown04w
 Site Code :
 Start Date : 10/17/2019
 Page No : 2

Start Time	Route 926 Westbound			Bridlewood Blvd Northbound			Route 926 Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45										
07:45	3	88	91	6	11	17	157	5	162	270
08:00	4	85	89	8	12	20	172	7	179	288
08:15	3	74	77	7	9	16	181	6	187	280
08:30	3	78	81	4	7	11	172	13	185	277
Total Volume	13	325	338	25	39	64	682	31	713	1115
% App. Total	3.8	96.2		39.1	60.9		95.7	4.3		
PHF	.813	.923	.929	.781	.813	.800	.942	.596	.953	.968
Passenger Vehicles	13	300	313	25	38	63	658	30	688	1064
% Passenger Vehicles	100	92.3	92.6	100	97.4	98.4	96.5	96.8	96.5	95.4
Other Vehicles	0	25	25	0	1	1	24	1	25	51
% Other Vehicles	0	7.7	7.4	0	2.6	1.6	3.5	3.2	3.5	4.6

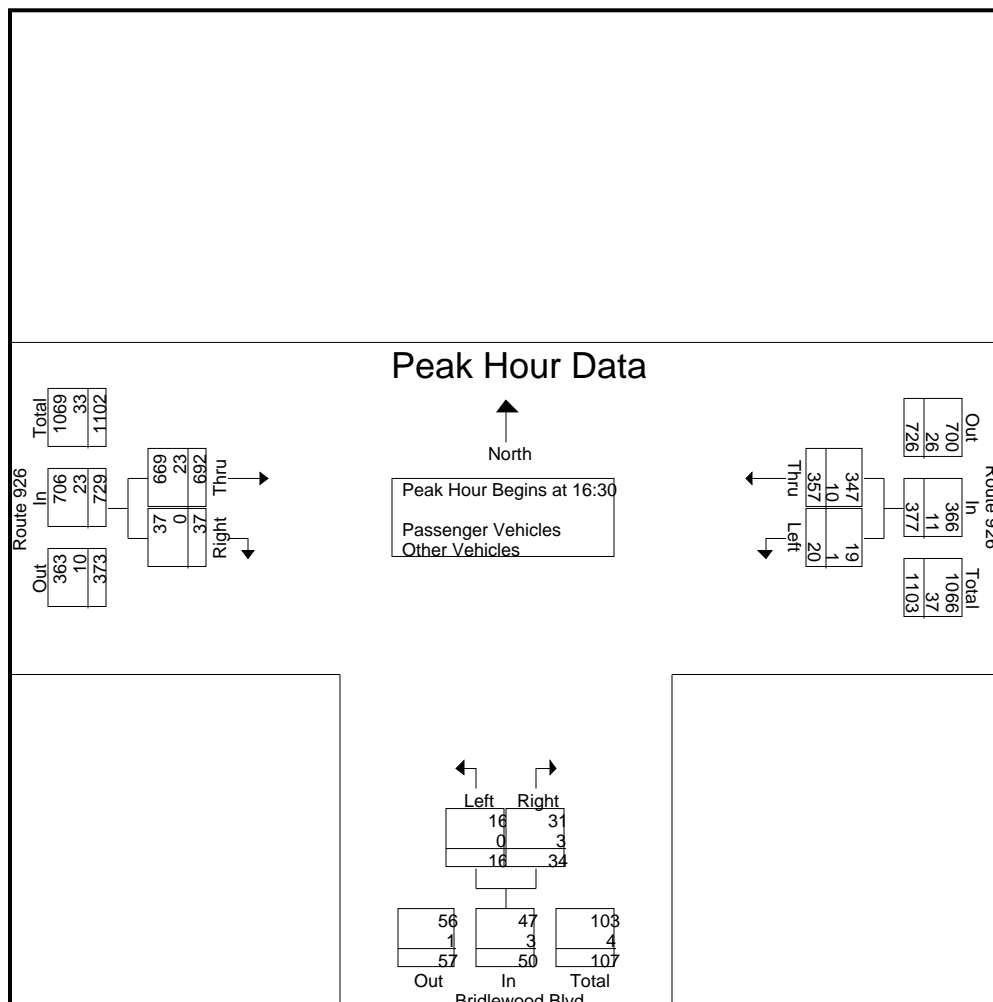


McMahon Associates, Inc.

Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

File Name : westtown04w
 Site Code :
 Start Date : 10/17/2019
 Page No : 3

Start Time	Route 926 Westbound			Bridlewood Blvd Northbound			Route 926 Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:30										
16:30	4	103	107	5	10	15	152	7	159	281
16:45	6	88	94	0	9	9	180	9	189	292
17:00	6	81	87	5	9	14	170	12	182	283
17:15	4	85	89	6	6	12	190	9	199	300
Total Volume	20	357	377	16	34	50	692	37	729	1156
% App. Total	5.3	94.7		32	68		94.9	5.1		
PHF	.833	.867	.881	.667	.850	.833	.911	.771	.916	.963
Passenger Vehicles	19	347	366	16	31	47	669	37	706	1119
% Passenger Vehicles	95.0	97.2	97.1	100	91.2	94.0	96.7	100	96.8	96.8
Other Vehicles	1	10	11	0	3	3	23	0	23	37
% Other Vehicles	5.0	2.8	2.9	0	8.8	6.0	3.3	0	3.2	3.2



McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township

Location: Route 926 & Route 202

Counter: M

File Name : westtown05w

Site Code :

Start Date : 10/17/2019

Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Route 202 Southbound			Route 926 Westbound			Route 202 Northbound			Route 926 Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	21	365	48	26	26	7	1	381	45	148	67	1	1136
07:15	9	372	53	33	50	15	4	406	34	124	54	1	1155
07:30	6	397	40	36	37	11	3	414	39	123	49	3	1158
07:45	12	331	40	47	45	12	4	350	33	136	51	3	1064
Total	48	1465	181	142	158	45	12	1551	151	531	221	8	4513
08:00	12	375	61	42	34	11	1	391	41	117	37	2	1124
08:15	10	374	35	42	35	7	1	378	31	104	71	5	1093
08:30	12	335	36	37	39	12	3	354	30	130	65	6	1059
08:45	22	380	33	34	26	15	5	386	31	118	42	3	1095
Total	56	1464	165	155	134	45	10	1509	133	469	215	16	4371
16:00	37	320	39	53	58	6	7	339	22	123	46	8	1058
16:15	13	363	50	34	57	14	6	419	40	107	35	4	1142
16:30	14	315	33	55	70	17	8	321	38	119	60	3	1053
16:45	16	379	37	44	55	15	8	412	37	103	54	6	1166
Total	80	1377	159	186	240	52	29	1491	137	452	195	21	4419
17:00	22	338	30	57	59	11	9	354	22	117	54	8	1081
17:15	30	365	24	47	49	18	5	394	25	131	51	8	1147
17:30	11	369	37	51	58	13	7	391	37	100	45	5	1124
17:45	21	361	38	52	60	10	3	371	26	127	46	13	1128
Total	84	1433	129	207	226	52	24	1510	110	475	196	34	4480
Grand Total	268	5739	634	690	758	194	75	6061	531	1927	827	79	17783
Apprch %	4	86.4	9.5	42	46.2	11.8	1.1	90.9	8	68	29.2	2.8	
Total %	1.5	32.3	3.6	3.9	4.3	1.1	0.4	34.1	3	10.8	4.7	0.4	
Passenger Vehicles	257	5349	572	672	742	184	71	5727	511	1852	801	73	16811
% Passenger Vehicles	95.9	93.2	90.2	97.4	97.9	94.8	94.7	94.5	96.2	96.1	96.9	92.4	94.5
Heavy Vehicles	11	390	62	18	16	10	4	334	20	75	26	6	972
% Heavy Vehicles	4.1	6.8	9.8	2.6	2.1	5.2	5.3	5.5	3.8	3.9	3.1	7.6	5.5

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township

Location: Route 926 & Route 202

Counter: M

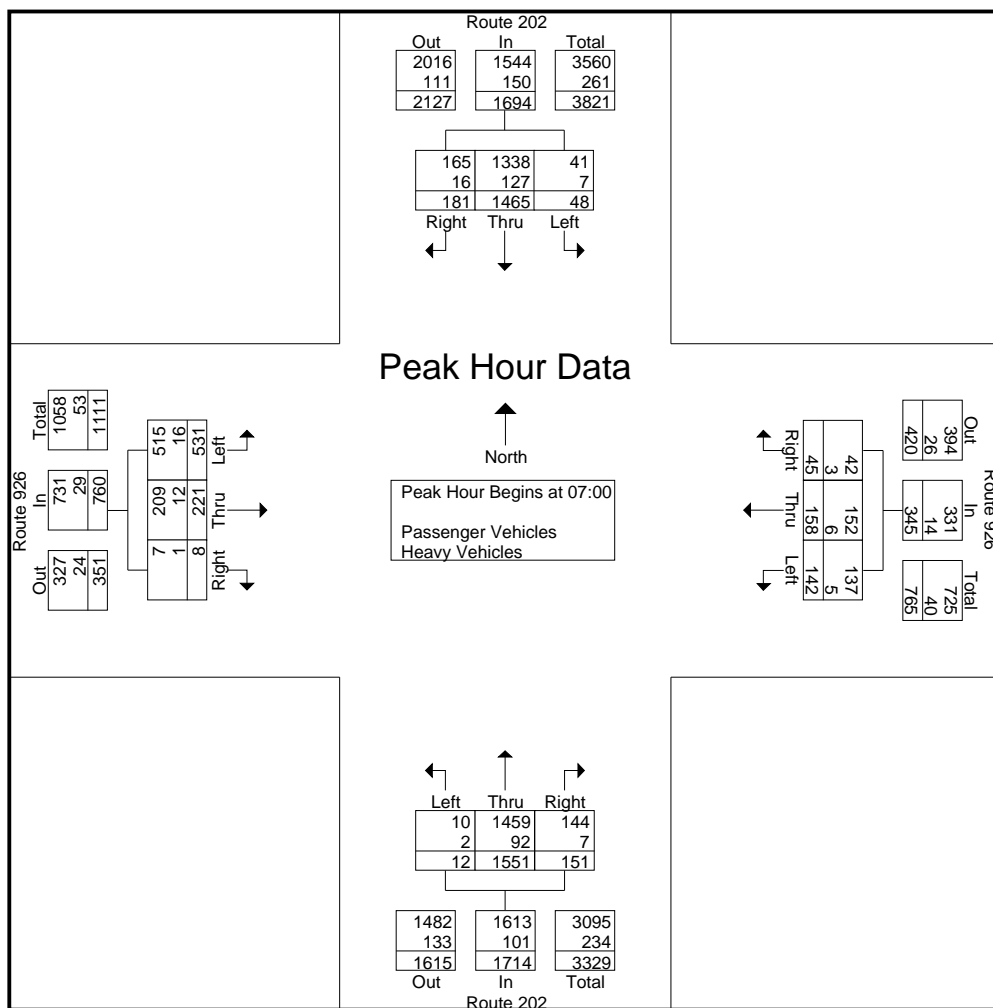
File Name : westtown05w

Site Code :

Start Date : 10/17/2019

Page No : 2

Start Time	Route 202 Southbound				Route 926 Westbound				Route 202 Northbound				Route 926 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	21	365	48	434	26	26	7	59	1	381	45	427	148	67	1	216	1136
07:15	9	372	53	434	33	50	15	98	4	406	34	444	124	54	1	179	1155
07:30	6	397	40	443	36	37	11	84	3	414	39	456	123	49	3	175	1158
07:45	12	331	40	383	47	45	12	104	4	350	33	387	136	51	3	190	1064
Total Volume	48	1465	181	1694	142	158	45	345	12	1551	151	1714	531	221	8	760	4513
% App. Total	2.8	86.5	10.7		41.2	45.8	13		0.7	90.5	8.8		69.9	29.1	1.1		
PHF	.571	.923	.854	.956	.755	.790	.750	.829	.750	.937	.839	.940	.897	.825	.667	.880	.974
Passenger Vehicles	41	1338	165	1544	137	152	42	331	10	1459	144	1613	515	209	7	731	4219
% Passenger Vehicles	85.4	91.3	91.2	91.1	96.5	96.2	93.3	95.9	83.3	94.1	95.4	94.1	97.0	94.6	87.5	96.2	93.5
Heavy Vehicles	7	127	16	150	5	6	3	14	2	92	7	101	16	12	1	29	294
% Heavy Vehicles	14.6	8.7	8.8	8.9	3.5	3.8	6.7	4.1	16.7	5.9	4.6	5.9	3.0	5.4	12.5	3.8	6.5



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Fort Washington, PA 19034

Municipality: Westtown Township

Location: Route 926 & Route 202

Counter: M

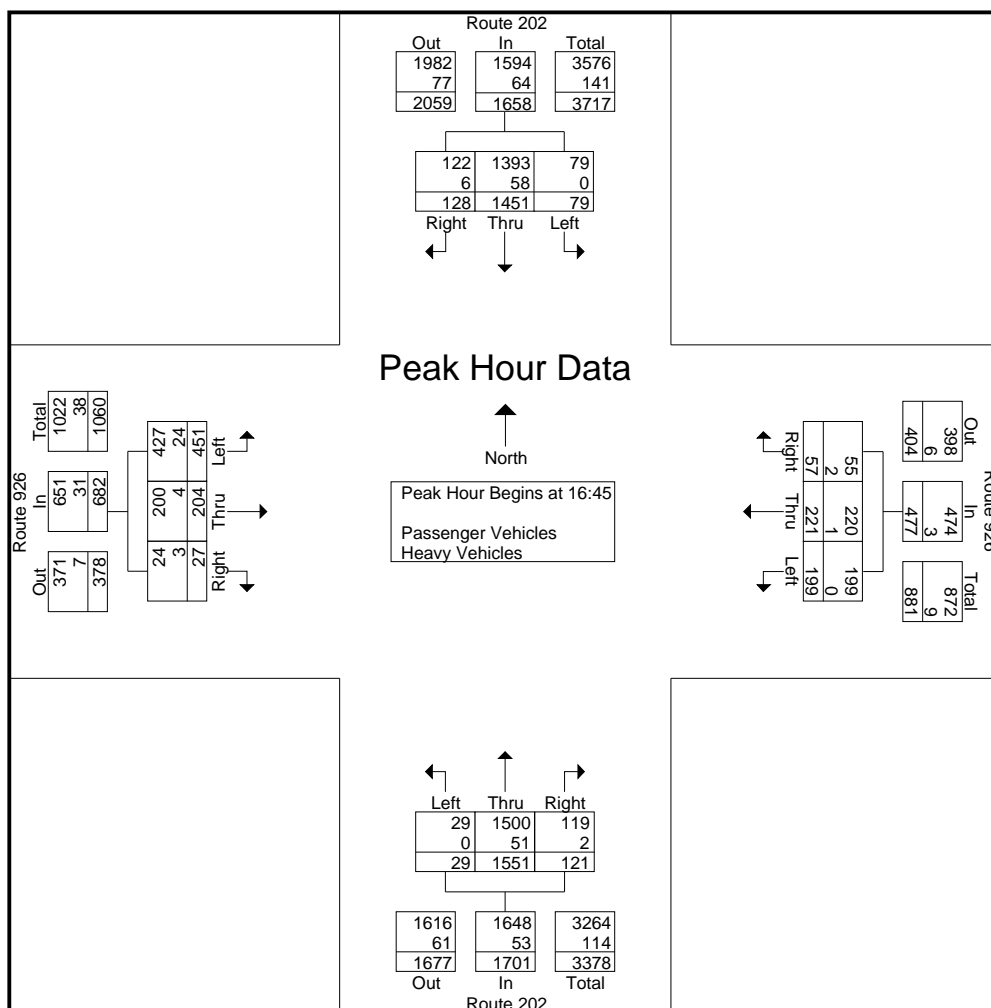
File Name : westtown05w

Site Code :

Start Date : 10/17/2019

Page No : 3

Start Time	Route 202 Southbound				Route 926 Westbound				Route 202 Northbound				Route 926 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	16	379	37	432	44	55	15	114	8	412	37	457	103	54	6	163	1166
17:00	22	338	30	390	57	59	11	127	9	354	22	385	117	54	8	179	1081
17:15	30	365	24	419	47	49	18	114	5	394	25	424	131	51	8	190	1147
17:30	11	369	37	417	51	58	13	122	7	391	37	435	100	45	5	150	1124
Total Volume	79	1451	128	1658	199	221	57	477	29	1551	121	1701	451	204	27	682	4518
% App. Total	4.8	87.5	7.7		41.7	46.3	11.9		1.7	91.2	7.1		66.1	29.9	4		
PHF	.658	.957	.865	.959	.873	.936	.792	.939	.806	.941	.818	.931	.861	.944	.844	.897	.969
Passenger Vehicles	79	1393	122	1594	199	220	55	474	29	1500	119	1648	427	200	24	651	4367
% Passenger Vehicles	100	96.0	95.3	96.1	100	99.5	96.5	99.4	100	96.7	98.3	96.9	94.7	98.0	88.9	95.5	96.7
Heavy Vehicles	0	58	6	64	0	1	2	3	0	51	2	53	24	4	3	31	151
% Heavy Vehicles	0	4.0	4.7	3.9	0	0.5	3.5	0.6	0	3.3	1.7	3.1	5.3	2.0	11.1	4.5	3.3



McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
Location: New Street &
Route 926
Counter: M

File Name : westtown06w
Site Code :
Start Date : 10/17/2019
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	New St Southbound			Route 926 Westbound			New St Northbound			Route 926 Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	1	13	16	0	78	4	1	10	9	4	178	5	319
07:15	0	21	39	4	84	7	2	9	9	11	151	1	338
07:30	2	23	44	3	73	13	6	34	12	14	165	4	393
07:45	1	29	39	0	79	12	1	37	7	14	150	0	369
Total	4	86	138	7	314	36	10	90	37	43	644	10	1419
08:00	4	33	49	3	81	5	2	17	12	10	157	0	373
08:15	1	37	58	2	77	6	0	9	10	10	176	1	387
08:30	6	26	43	1	60	9	2	16	6	11	171	2	353
08:45	1	34	31	1	59	11	0	24	8	19	157	3	348
Total	12	130	181	7	277	31	4	66	36	50	661	6	1461
16:00	15	33	47	6	81	4	2	15	3	10	135	3	354
16:15	11	33	46	5	108	9	1	12	4	4	160	2	395
16:30	19	32	50	5	90	4	0	13	7	10	131	0	361
16:45	14	47	36	6	78	10	1	11	13	4	168	3	391
Total	59	145	179	22	357	27	4	51	27	28	594	8	1501
17:00	16	31	40	8	71	3	4	25	9	8	155	5	375
17:15	10	47	29	1	79	10	0	23	11	12	172	4	398
17:30	9	39	38	4	77	7	4	24	4	6	164	1	377
17:45	7	43	51	4	89	8	1	22	6	13	134	1	379
Total	42	160	158	17	316	28	9	94	30	39	625	11	1529
Grand Total	117	521	656	53	1264	122	27	301	130	160	2524	35	5910
Apprch %	9	40.3	50.7	3.7	87.8	8.5	5.9	65.7	28.4	5.9	92.8	1.3	
Total %	2	8.8	11.1	0.9	21.4	2.1	0.5	5.1	2.2	2.7	42.7	0.6	
Passenger Vehicles	112	519	645	50	1193	119	23	295	125	153	2432	30	5696
% Passenger Vehicles	95.7	99.6	98.3	94.3	94.4	97.5	85.2	98	96.2	95.6	96.4	85.7	96.4
Heavy Vehicles	5	2	11	3	71	3	4	6	5	7	92	5	214
% Heavy Vehicles	4.3	0.4	1.7	5.7	5.6	2.5	14.8	2	3.8	4.4	3.6	14.3	3.6

Zero Pedestrians were observed during this study.

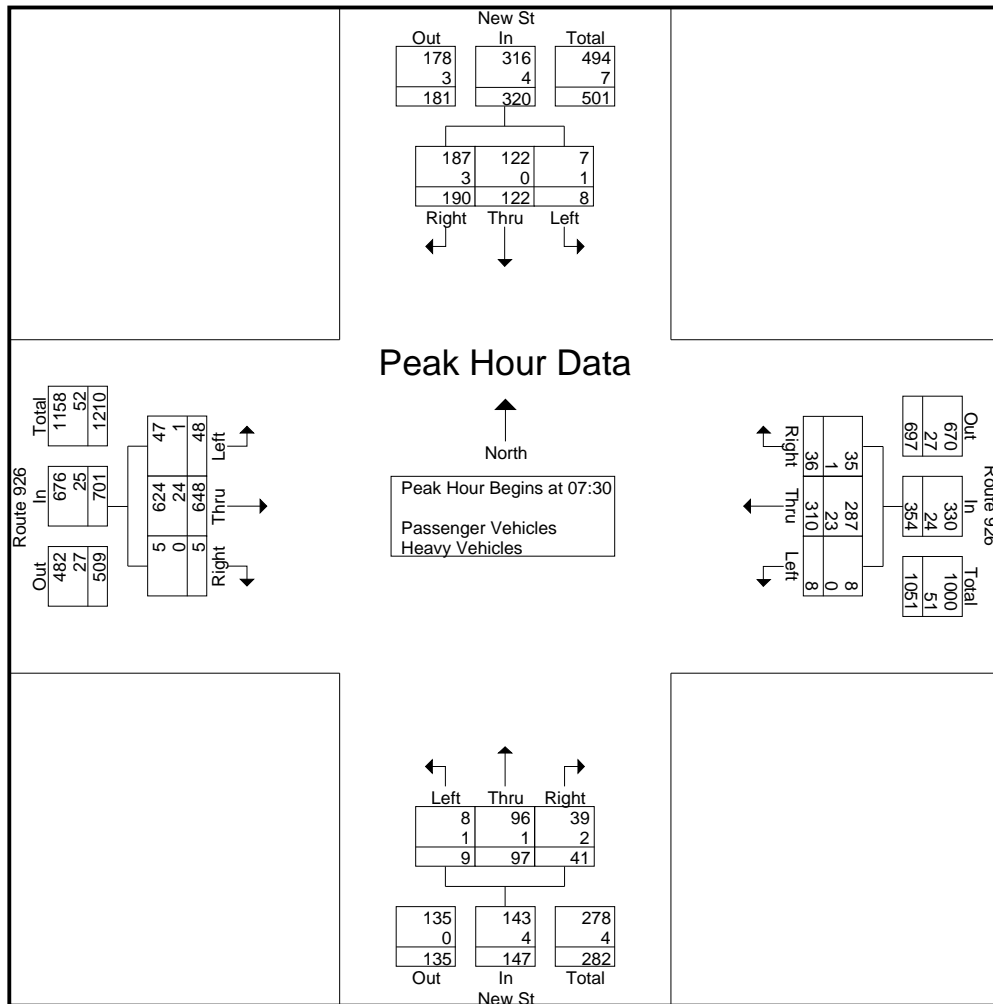
McMahon Associates, Inc.

Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

Municipality: Westtown Township
 Location: New Street &
 Route 926
 Counter: M

File Name : westtown06w
 Site Code :
 Start Date : 10/17/2019
 Page No : 2

Start Time	New St Southbound				Route 926 Westbound				New St Northbound				Route 926 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	2	23	44	69	3	73	13	89	6	34	12	52	14	165	4	183	393
07:45	1	29	39	69	0	79	12	91	1	37	7	45	14	150	0	164	369
08:00	4	33	49	86	3	81	5	89	2	17	12	31	10	157	0	167	373
08:15	1	37	58	96	2	77	6	85	0	9	10	19	10	176	1	187	387
Total Volume	8	122	190	320	8	310	36	354	9	97	41	147	48	648	5	701	1522
% App. Total	2.5	38.1	59.4		2.3	87.6	10.2		6.1	66	27.9		6.8	92.4	0.7		
PHF	.500	.824	.819	.833	.667	.957	.692	.973	.375	.655	.854	.707	.857	.920	.313	.937	.968
Passenger Vehicles	7	122	187	316	8	287	35	330	8	96	39	143	47	624	5	676	1465
% Passenger Vehicles	87.5	100	98.4	98.8	100	92.6	97.2	93.2	88.9	99.0	95.1	97.3	97.9	96.3	100	96.4	96.3
Heavy Vehicles	1	0	3	4	0	23	1	24	1	1	2	4	1	24	0	25	57
% Heavy Vehicles	12.5	0	1.6	1.3	0	7.4	2.8	6.8	11.1	1.0	4.9	2.7	2.1	3.7	0	3.6	3.7



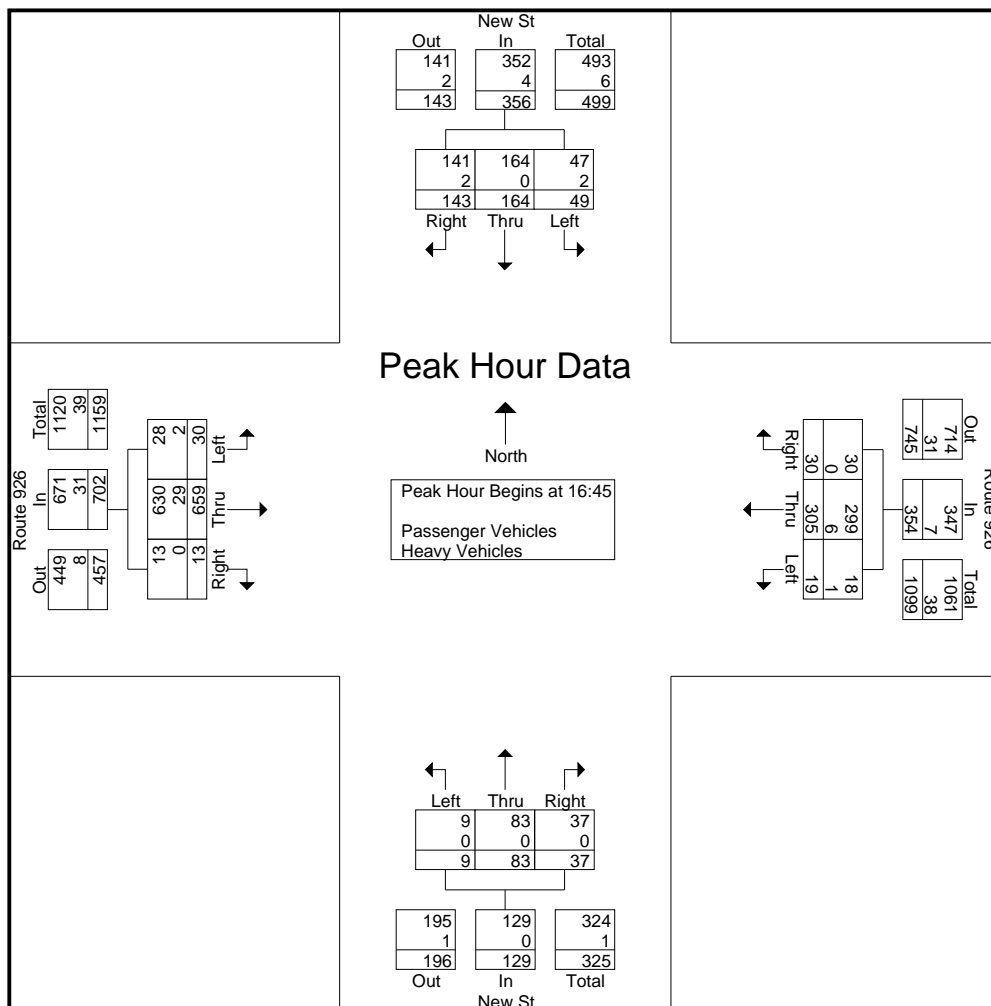
McMahon Associates, Inc.

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425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Westtown Township
Location: New Street &
Route 926
Counter: M

File Name : westtown06w
Site Code :
Start Date : 10/17/2019
Page No : 3

Start Time	New St Southbound				Route 926 Westbound				New St Northbound				Route 926 Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	14	47	36	97	6	78	10	94	1	11	13	25	4	168	3	175	391
17:00	16	31	40	87	8	71	3	82	4	25	9	38	8	155	5	168	375
17:15	10	47	29	86	1	79	10	90	0	23	11	34	12	172	4	188	398
17:30	9	39	38	86	4	77	7	88	4	24	4	32	6	164	1	171	377
Total Volume	49	164	143	356	19	305	30	354	9	83	37	129	30	659	13	702	1541
% App. Total	13.8	46.1	40.2		5.4	86.2	8.5		7	64.3	28.7		4.3	93.9	1.9		
PHF	.766	.872	.894	.918	.594	.965	.750	.941	.563	.830	.712	.849	.625	.958	.650	.934	.968
Passenger Vehicles	47	164	141	352	18	299	30	347	9	83	37	129	28	630	13	671	1499
% Passenger Vehicles	95.9	100	98.6	98.9	94.7	98.0	100	98.0	100	100	100	100	93.3	95.6	100	95.6	97.3
Heavy Vehicles	2	0	2	4	1	6	0	7	0	0	0	0	2	29	0	31	42
% Heavy Vehicles	4.1	0	1.4	1.1	5.3	2.0	0	2.0	0	0	0	0	6.7	4.4	0	4.4	2.7



Appendix E

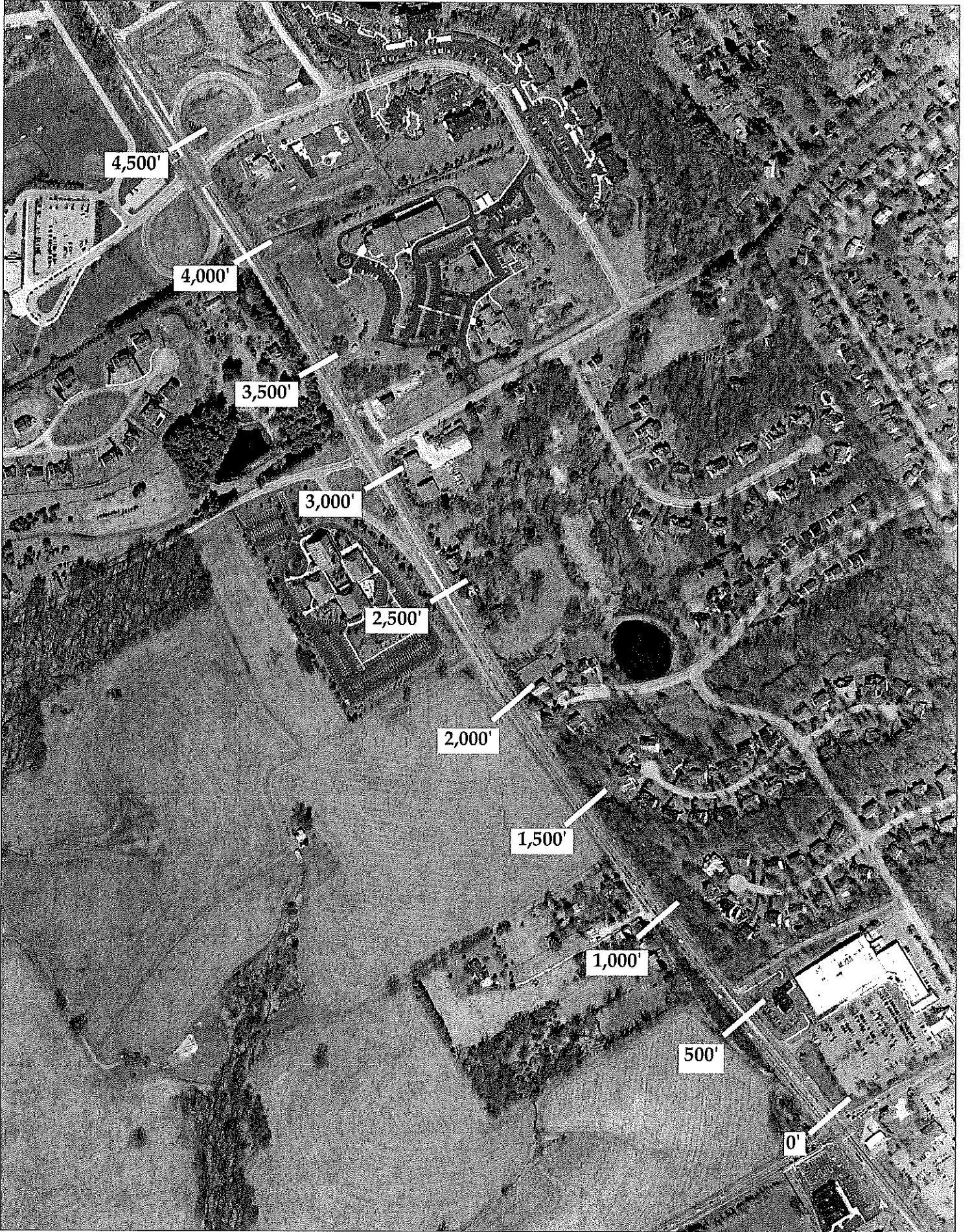
Initial Queue Observations

- 1 Light Timing on 926 30 sec
- 2 " " " 202 130 sec.
- 3 Vehicle heading south on 202 per light 75
- 4 My location Pleasant Grove 202
- 5 Only could see as far as 926 amount of vehicle is 1197 car in 3000 feet
- 6 Traffic back up passed my location
Vehicle wait 3 To 4 light for green
- 7 When traffic move 67 cars go thru my intersection
4:00 3000 Spot check + count done even 15 min no change
4:05 3000
4:10 3000
4:15 3000
4:20 " "
4:25 " "
4:30 " "
4:35 " "
4:40 " "
4:45 " "
4:50 " "
4:55 " "
5:00 " " No change in traffic
5:05 " "
5:10 " "
5:15 " "
5:20 " "
5:25 " "
5:30 " "
5:35 " "
5:40 " "
5:45 " "
5:50 " "
5:55 " "
6:00 " "

8 A Full cycle of south bound light take 3 1/2 min.

A consistent queue of 3,000 to 3,500 feet was observed throughout the peak period

AFTER 5:45 only back up to my location



4,500'

4,000'

3,500'

3,000'

2,500'

2,000'

1,500'

1,000'

500'

0'

Appendix F

Site Trip Generation

Project Information	
Project Name:	Robinson Tract
McMahon Project No:	816451
Date:	8/5/2019
City/Municipality:	Westtown Township
State:	Pennsylvania
Client Name:	Toll Brothers, Inc.
Analyst's Name:	BGG
ITE Edition:	ITE-TGM 10th Edition

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
		Total	In	Out	Total	In	Out	Total
220 - Multifamily Housing (Low-Rise)	135 dwelling units	980	14	49	63	48	29	77
210 - Single Family Detached Housing	184 dwelling units	1,822	33	102	135	115	67	182
Total Trips		2,802	47	151	198	163	96	259

Appendix G

Collector Road and Site Access Traffic Signal and Turning Lane Warrant Analysis Worksheets

*Signal Warrant Analysis
Collector Road Diversions Only*

2025 BUILD-OUT YEAR SIGNAL WARRANT VOLUME DEVELOPMENT (COLLECTOR ROAD DIVERSIONS ONLY)

	STREET ROAD (S.R. 0926)			COLLECTOR ROAD			BRIDLWOOD BOULEVARD						
	Eastbound		Westbound	Southbound			Northbound						
	Left	Through	Right	Left	Through	Right	Left	Through	Right				
8:00 AM - 9:00 AM (see Figure 5B)	26	652	32	13	243	0	0	15	147	26	27	13	
7:00 AM - 8:00 AM	No adjustment for base existing counts since traffic volumes are 99% of the peak hour												
	No adjustment to background developments since there are very few trips generated												
	26	652	32	13	243	0	0	15	147	26	27	13	
5:00 PM - 6:00 PM(see Figure 5B)	111	582	38	21	301	0	0	250	121	17	23	12	
4:00 PM - 5:00 PM w/o dev diversions	Adjust without development and diversion volumes to 88 percent of peak hour based on existing counts												
		-70	-5	-3	-36					-2			-1
		-14	14	0	0	8	0	0	0	-15	0	-3	3
	97	526	33	18	273	0	0	250	106	15	20	14	

STUDY AND ANALYSIS INFORMATION

Municipality: Westtown Township
 County: Chester County
 PennDOT Engineering District: 6

Analysis Date: 11/14/2019
 Conducted By: BGG
 Agency/Company Name: McMahon

Analysis Information

Data Collection Date: 10/10/2019
 Day of the Week: Thursday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number: PA Route 926
 Major Street Approach #1 Direction: E-Bound
 Major Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 1 LANE(S)
 Speed Limit or 85th Percentile Speed on the Major Street: 45 MPH

Minor Street Information

Minor Street Name and Route Number: Bridlewood/ Collector Road
 Minor Street Approach #1 Direction: S-Bound
 Minor Street Approach #2 Direction: N-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 2 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes
Warrant 3, Peak Hour	No	N/A
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A
Warrant PA-1, ADT Volume Warrant	No	N/A
Warrant PA-2, Midblock and Trail Crossings	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (E-Bound)	Major Street Approach #2 (W-Bound)	Major Street Combined	Minor Street Approach #1 (S-Bound)	Minor Street Approach #2 (N-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM			0		
6:15 AM	6:29 AM			0		
6:30 AM	6:44 AM			0		
6:45 AM	6:59 AM			0		
7:00 AM	7:14 AM	710	256	966	162	66
7:15 AM	7:29 AM			0		
7:30 AM	7:44 AM			0		
7:45 AM	7:59 AM			0		
8:00 AM	8:14 AM	710	256	966	162	66
8:15 AM	8:29 AM			0		
8:30 AM	8:44 AM			0		
8:45 AM	8:59 AM			0		
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

Traffic Signal Warrant Analysis Workbook

11/15/2019

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (E-Bound)	Major Street Approach #2 (W-Bound)	Major Street Combined	Minor Street Approach #1 (S-Bound)	Minor Street Approach #2 (N-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM			0		
3:15 PM	3:29 PM			0		
3:30 PM	3:44 PM			0		
3:45 PM	3:59 PM			0		
4:00 PM	4:14 PM	656	291	947	356	49
4:15 PM	4:29 PM			0		
4:30 PM	4:44 PM			0		
4:45 PM	4:59 PM			0		
5:00 PM	5:14 PM	731	322	1053	371	52
5:15 PM	5:29 PM			0		
5:30 PM	5:44 PM			0		
5:45 PM	5:59 PM			0		
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		2807	1125	3932	1051	233

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	2 or More Lanes

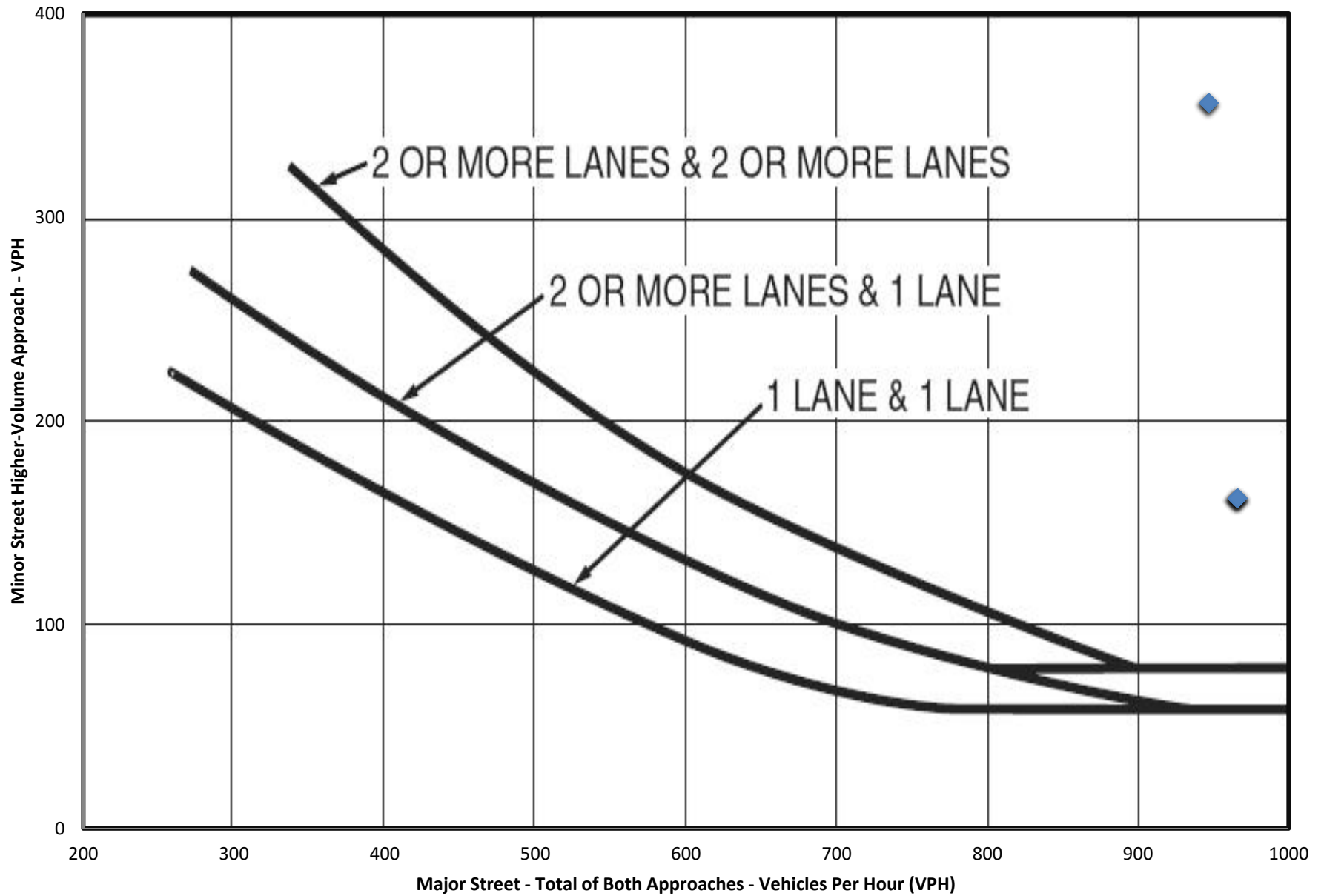
Total Number of Unique Hours Met On Figure 4C-2
4

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	966	162	Met
6:30 AM	966	162	Met
6:45 AM	966	162	Met
7:00 AM	966	162	Met
7:15 AM	966	162	Met
7:30 AM	966	162	Met
7:45 AM	966	162	Met
8:00 AM	966	162	Met
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	947	356	Met
3:30 PM	947	356	Met
3:45 PM	947	356	Met
4:00 PM	947	356	Met
4:15 PM	1053	371	Met
4:30 PM	1053	371	Met
4:45 PM	1053	371	Met
5:00 PM	1053	371	Met
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



NOTE: The point (1053,371) is beyond the viewport of the graph.

*Signal Warrant Analysis
Collector Road Diversions and Site Traffic*

2025 BUILD-OUT YEAR SIGNAL WARRANT VOLUME DEVELOPMENT (COLLECTOR ROAD DIVERSIONS AND SITE TRAFFIC)

	STREET ROAD (S.R. 0926)			COLLECTOR ROAD			BRIDLWOOD BOULEVARD						
	Eastbound		Westbound	Southbound			Northbound						
	Left	Through	Right	Left	Through	Right	Left	Through	Right				
<i>8:00 AM - 9:00 AM (see Figure 5B)</i>	30	652	32	13	243	14	46	15	159	26	31	13	
<i>7:00 AM - 8:00 AM</i>	No adjustment for base existing counts since traffic volumes are 99% of the peak hour												
	No adjustment to background developments since there are very few trips generated												
	Adjust site trip gen to 79% of peak hour (Single family trip gen = 79% of peak hour; Multifamily low rise trip gen = 79% of peak hour)												
Site Trip	<u>-1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-3</u>	<u>-10</u>	<u>-3</u>	<u>-3</u>	<u>0</u>	<u>-1</u>	<u>0</u>	
	29	652	32	13	243	11	36	12	156	26	30	13	
<i>5:00 PM - 6:00 PM(see Figure 5B)</i>	124	582	38	21	301	49	29	260	128	17	40	12	
<i>4:00 PM - 5:00 PM</i>	Adjust without development and diversion volumes to 88 percent of peak hour based on existing counts												
	Adjust site trip gen to 94% of the peak hour (Single family trip gen = 94% of peak hour; Multifamily low rise trip gen = 95% of peak hour)												
	w/o dev		-70	-5	-3	-36					-2		-1
	diversions	-14	14	0	0	8	0	0	0	-15	0	-3	3
site trips	<u>-1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-3</u>	<u>-2</u>	<u>-1</u>	<u>0</u>	<u>0</u>	<u>-1</u>	<u>0</u>	
	109	526	33	18	273	46	27	259	113	15	36	14	

STUDY AND ANALYSIS INFORMATION

Municipality: Westtown Township
 County: Chester County
 PennDOT Engineering District: 6

Analysis Date: 11/6/2019
 Conducted By: BGG
 Agency/Company Name: McMahon

Analysis Information

Data Collection Date: 10/10/2019
 Day of the Week: Thursday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number: PA Route 926
 Major Street Approach #1 Direction: E-Bound
 Major Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 1 LANE(S)
 Speed Limit or 85th Percentile Speed on the Major Street: 45 MPH

Minor Street Information

Minor Street Name and Route Number: Bridlewood/ Collector Road
 Minor Street Approach #1 Direction: S-Bound
 Minor Street Approach #2 Direction: N-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 2 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes
Warrant 3, Peak Hour	No	N/A
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A
Warrant PA-1, ADT Volume Warrant	No	N/A
Warrant PA-2, Midblock and Trail Crossings	No	N/A

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	2 or More Lanes

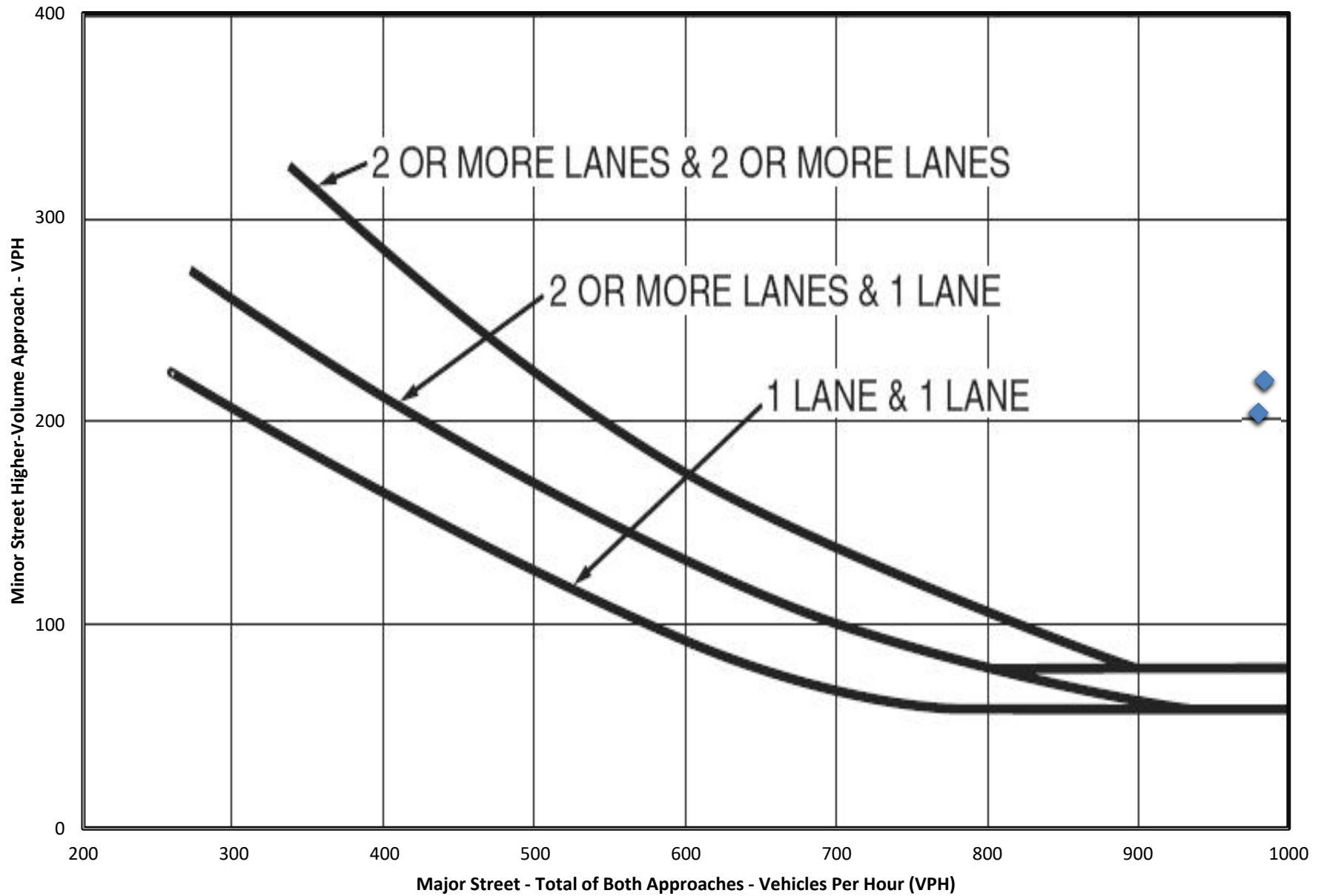
Total Number of Unique Hours Met On Figure 4C-2
4

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes
---	-----

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	980	204	Met
6:30 AM	980	204	Met
6:45 AM	980	204	Met
7:00 AM	980	204	Met
7:15 AM	984	220	Met
7:30 AM	984	220	Met
7:45 AM	984	220	Met
8:00 AM	984	220	Met
8:15 AM	0	0	
8:30 AM	0	0	
8:45 AM	0	0	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	1005	399	Met
3:30 PM	1005	399	Met
3:45 PM	1005	399	Met
4:00 PM	1005	399	Met
4:15 PM	1115	417	Met
4:30 PM	1115	417	Met
4:45 PM	1115	417	Met
5:00 PM	1115	417	Met
5:15 PM	0	0	
5:30 PM	0	0	
5:45 PM	0	0	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



NOTE: The points (1005,399) and (1115, 417) are beyond the viewport of the graph

Left Turn Conflict Worksheet



Intersection: Street Rd (SR 926) and Bridlewood/Connector

County: Chester **Municipality:** Westtown Township

Count Date: 10/17/2019

File Number: 816451.11

NB Approach: **Bridlewood Blvd**

Exclusive Left-Turn Lane	Y
Number of Opposing Lanes	1
Include Right Turns	Y
Required C.F. (Protected/Permitted)	50000
Required C.F. (Protected/Prohibited)	67500

SB Approach: **Collector Road**

Exclusive Lane	Y
Number of Opposing Lanes	1
Include Right Turns	Y
Required C.F. (Protected/Permitted)	50000
Required C.F. (Protected/Prohibited)	67500

Hour	NB Left	SB Through	Cycle Length	Turns Per Cycle	NB Conflict Factor	L.T.P. Justified
AM Peak	26	174	90	0.65	4524	No
PM Peak	17	388	100	0.4722	6596	No

Hour	SB Left	NB Through	Cycle Length	Turns Per Cycle	SB Conflict Factor	L.T.P. Justified
AM Peak	46	44	90	1.15	2024	No
PM Peak	29	52	100	0.8056	1508	No

EB Approach: **Street Road (S.R. 0926)**

Exclusive Lane	Y
Number of Opposing Lanes	1
Include Right Turns	Y
Required C.F. (Protected/Permitted)	50000
Required C.F. (Protected/Prohibited)	67500

WB Approach: **Street Road (S.R. 0926)**

Exclusive Lane	Y
Number of Opposing Lanes	1
Include Right Turns	Y
Required C.F. (Protected/Permitted)	50000
Required C.F. (Protected/Prohibited)	67500

Hour	EB Left	WB Through	Cycle Length	Turns Per Cycle	EB Conflict Factor	L.T.P. Justified
AM Peak	30	257	90	0.75	7710	No
PM Peak	124	350	100	3.4444	43400	No

Hour	WB Left	EB Through	Cycle Length	Turns Per Cycle	WB Conflict Factor	L.T.P. Justified
AM Peak	13	684	90	0.325	8892	No
PM Peak	21	620	100	0.5833	13020	No

Remarks: 2025 with Development Volumes

Compiled By: BGG

Checked By: JDG

Date: November 6, 2019

Traffic Count Entry

Traffic Count Insert

Street name	Bridlewood Blvd			Collector Road			Street Road (S.R. 0926)			Street Road (S.R. 0926)			Cycle Length
Hour	North Bound Approach			South Bound Approach			East Bound Approach			West Bound Approach			All Approaches
	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	Left	Straight	Right	
AM Peak	26	31	13	46	15	159	30	652	32	13	243	14	90
PM Peak	17	40	12	29	260	128	124	582	38	21	301	49	100

*Street Road (S.R. 0926) and
Collector Road / Bridlewood Boulevard*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Street Road (S.R. 0926) and Connector Road Eastbound Street Road (S.R. 0926) Left-Turn Lane			
Analysis Period:	2030 Design Year	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Signalized	Type of Analysis	
Posted Speed Limit (MPH):	45		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	31	2.0%	32
	Through	-	669	4.0%	710
	Right	Yes	33	3.0%	35
Opposing	Left	Yes	14	0.0%	14
	Through	-	249	8.0%	279
	Right	Yes	14	2.0%	15

Advancing Volume:	777
Opposing Volume:	308
Left Turn Volume:	32
% Left Turns in Advancing Volume: 4.12%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	-			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: Figure 3	Applicable Warrant Figure: N/A
Warrant Met?: Yes	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized	Average # of Vehicles/Cycle:	1.0
Design Hour Volume of Turning Lane:	32		
Cycles Per Hour (Assumed):	Known		
Cycles Per Hour (If Known):	40		

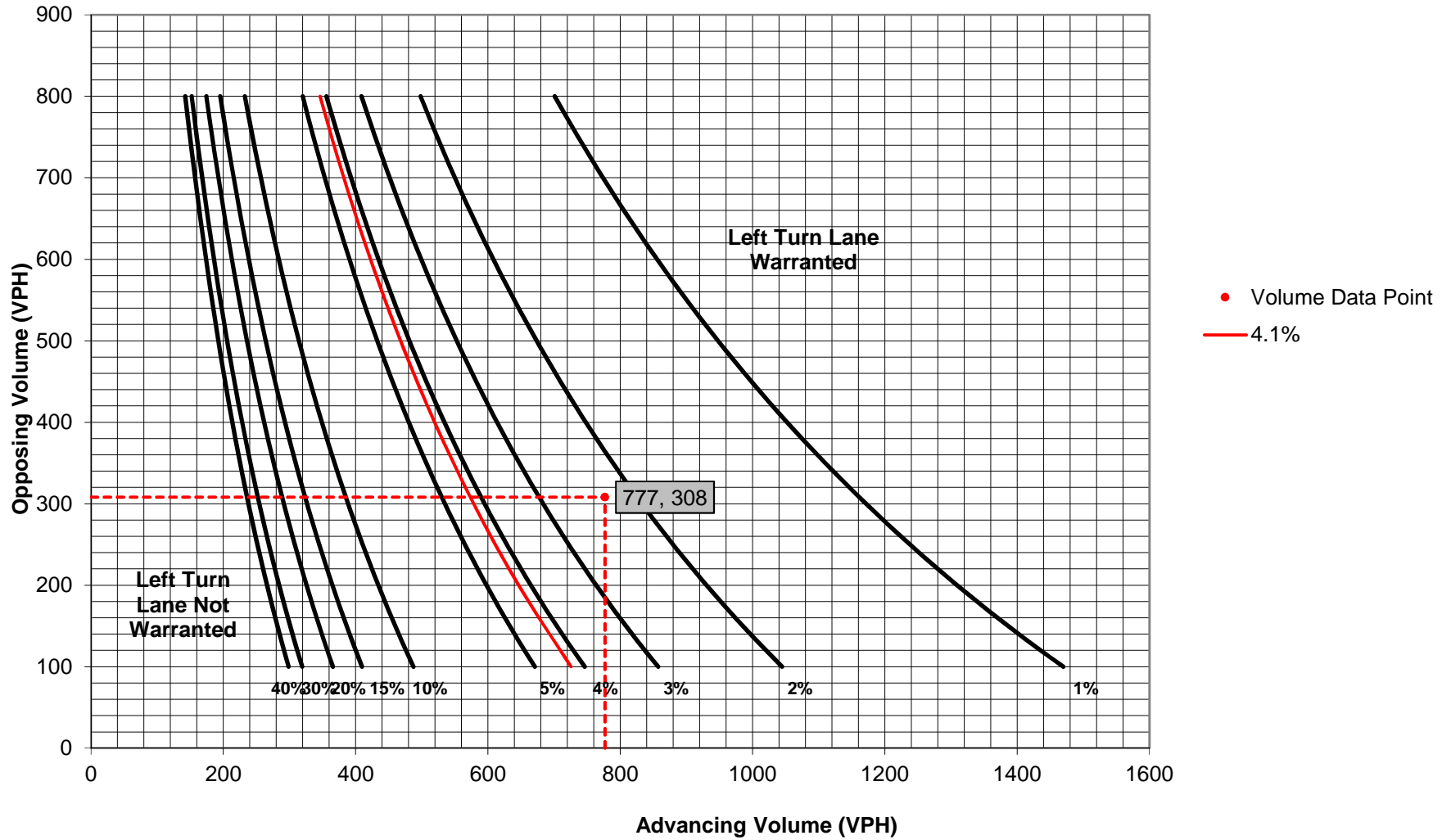
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	125	Feet
Condition C:	150	Feet
Required Left Turn Lane Storage Length:	150	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Street Road (S.R. 0926) and Connector Road Eastbound Street Road (S.R. 0926) Left-Turn Lane			
Analysis Period:	2030 Design Year	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Signalized	Type of Analysis	
Posted Speed Limit (MPH):	45		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	127	2.0%	131
	Through	-	598	3.0%	625
	Right	Yes	39	0.0%	39
Opposing	Left	Yes	21	5.0%	23
	Through	-	311	3.0%	325
	Right	Yes	49	2.0%	51

Advancing Volume:	795
Opposing Volume:	399
Left Turn Volume:	131

% Left Turns in Advancing Volume:	16.48%
-----------------------------------	--------

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	-			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: Figure 3	Applicable Warrant Figure: N/A
Warrant Met?: Yes	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized	Average # of Vehicles/Cycle:	4.0
Design Hour Volume of Turning Lane:	131		
Cycles Per Hour (Assumed):	Known		
Cycles Per Hour (If Known):	36		

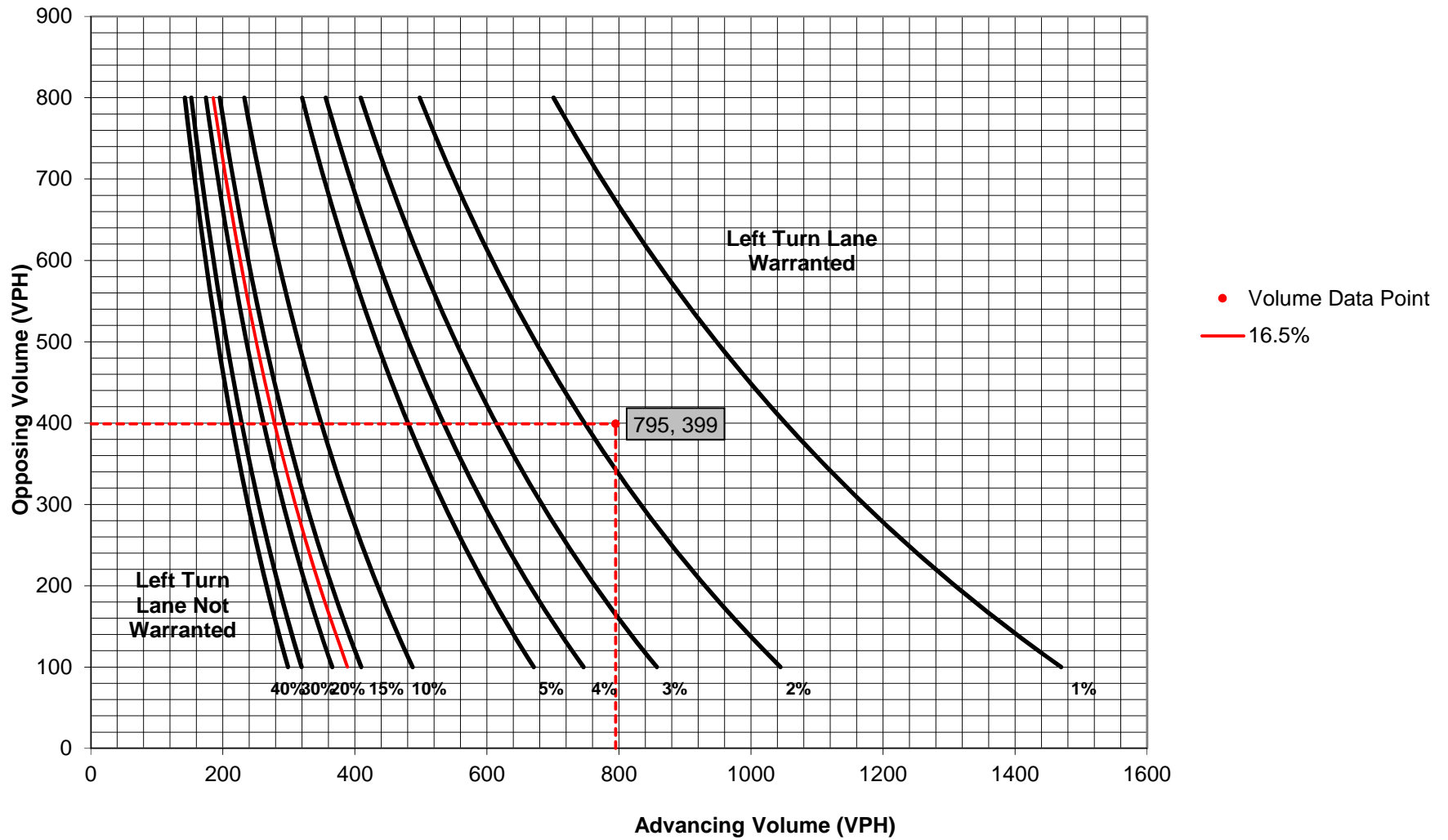
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	125	Feet
Condition C:	250	Feet
Required Left Turn Lane Storage Length:	250	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Street Road (S.R. 0926) and Connector Road Westbound Street Road (S.R. 0926) Right-Turn Lane			
Analysis Period:	2030 Design Year	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Signalized	Type of Analysis	
Posted Speed Limit (MPH):	45		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	
	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	14	0.0%	N/A
	Through	-	249	8.0%	279
	Right	-	14	2.0%	15

Advancing Volume:	294
Right Turn Volume:	15

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings								
<table style="width: 100%;"> <tr> <td>Applicable Warrant Figure:</td> <td style="border: 1px solid black; text-align: center;">N/A</td> </tr> <tr> <td>Warrant Met?:</td> <td style="border: 1px solid black; text-align: center;">N/A</td> </tr> </table>	Applicable Warrant Figure:	N/A	Warrant Met?:	N/A	<table style="width: 100%;"> <tr> <td>Applicable Warrant Figure:</td> <td style="border: 1px solid black; text-align: center;">Figure 10</td> </tr> <tr> <td>Warrant Met?:</td> <td style="border: 1px solid black; text-align: center;">No</td> </tr> </table>	Applicable Warrant Figure:	Figure 10	Warrant Met?:	No
Applicable Warrant Figure:	N/A								
Warrant Met?:	N/A								
Applicable Warrant Figure:	Figure 10								
Warrant Met?:	No								

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized		
Design Hour Volume of Turning Lane:	15		
Cycles Per Hour (Assumed):	Known		
Cycles Per Hour (If Known):	40	Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

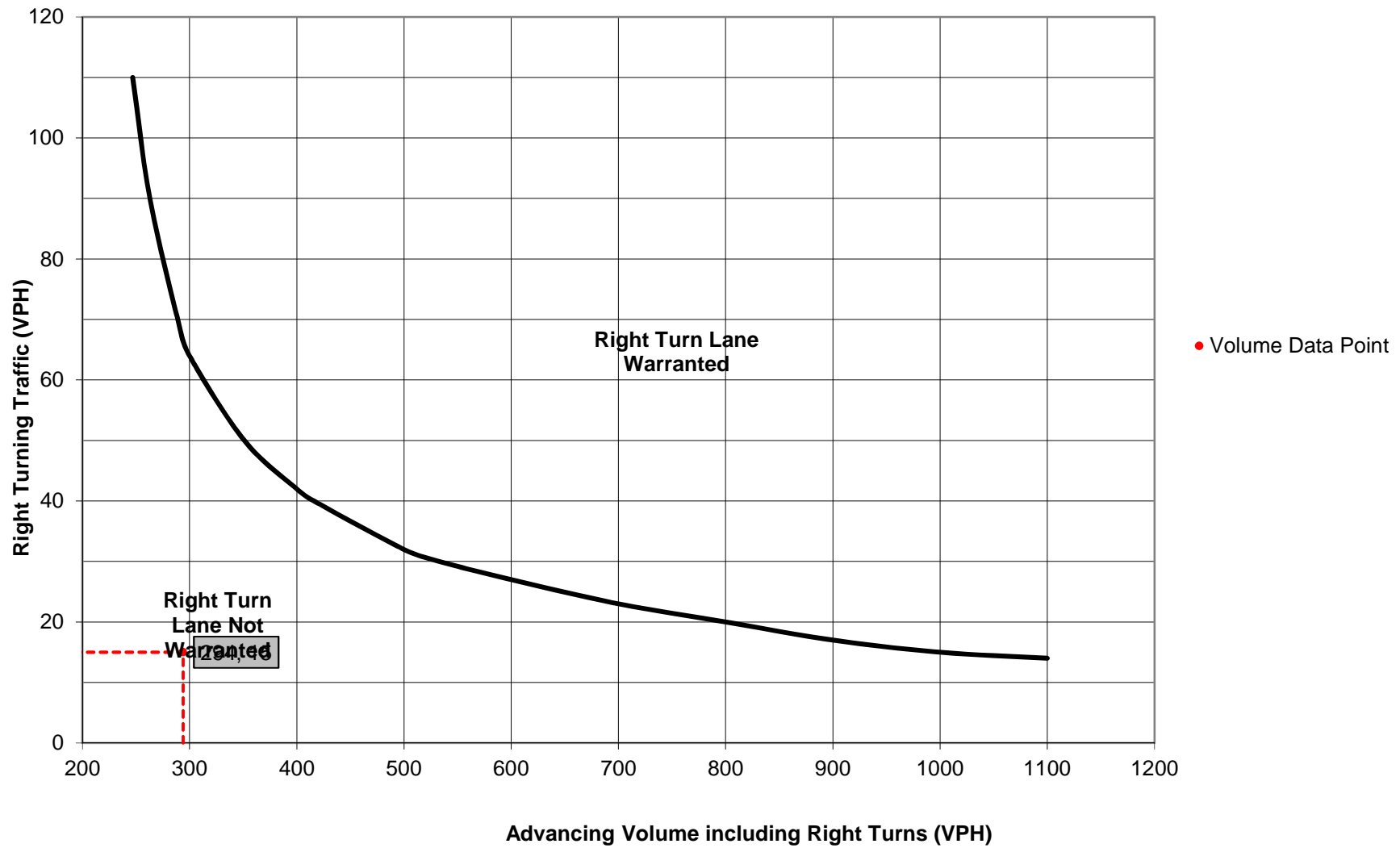
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: Street Road (S.R. 0926) and Connector Road Westbound Street Road (S.R. 0926) Right-Turn Lane			
Analysis Period:	2030 Design Year	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Signalized	Type of Analysis	
Posted Speed Limit (MPH):	45		
Type of Terrain:	Rolling		
		Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:
 Opposing Volume:
 Left Turn Volume:
 % Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	21	5.0%	N/A
	Through	-	311	3.0%	325
	Right	-	49	2.0%	51

Advancing Volume:
 Right Turn Volume:

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/>
Warrant Met?: <input type="text" value="N/A"/>	Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	51
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40
Average # of Vehicles/Cycle:	1.0

PennDOT Publication 46, Exhibit 11-6

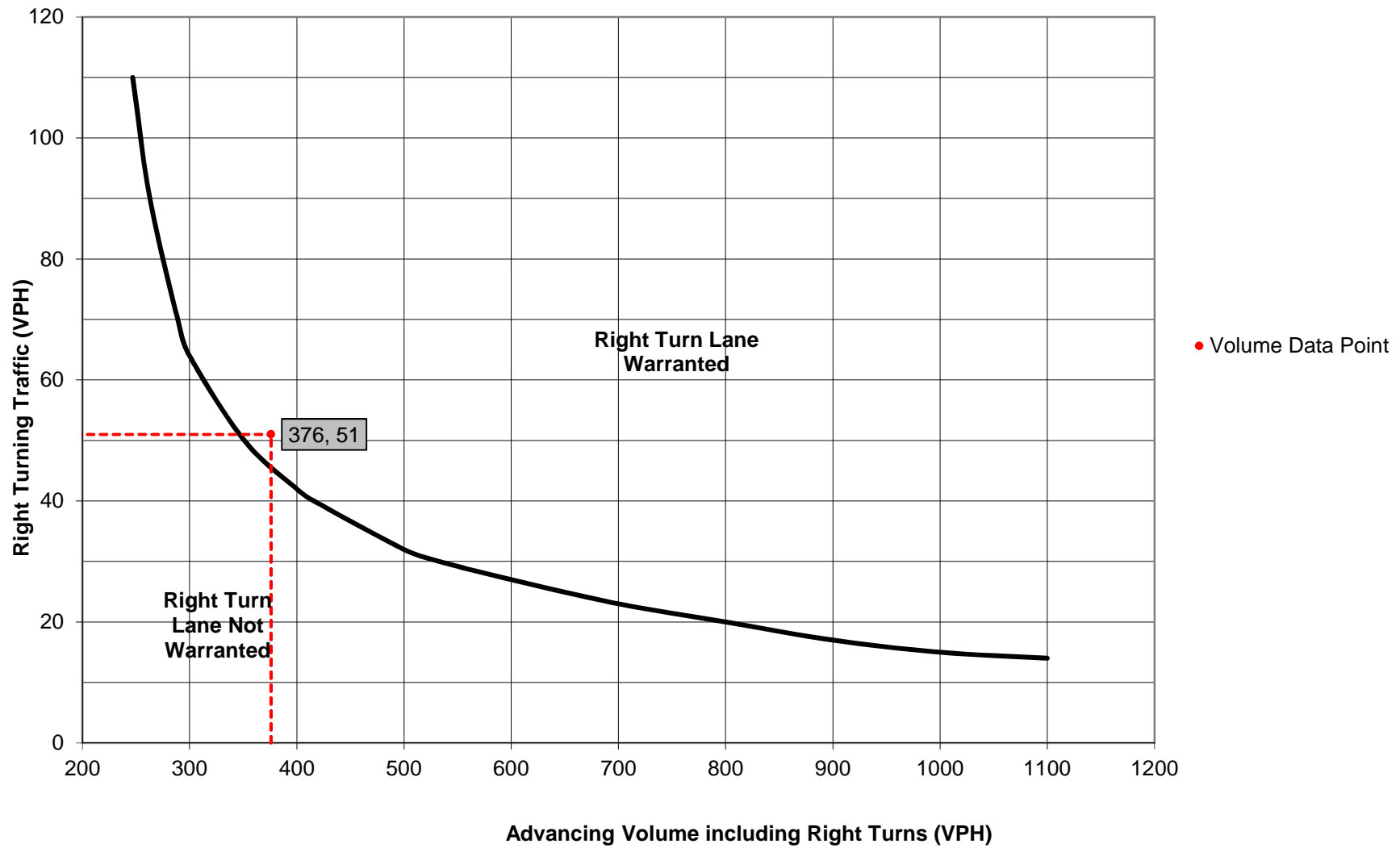
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: Feet
 Condition B: Feet
 Condition C: Feet
 Required Right Turn Lane Storage Length: Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



*W. Pleasant Grove Road
and Collector Road*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Connector Road Eastbound W. Pleasant Grove Road Right-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A	
Opposing Volume:	N/A	
Left Turn Volume:	N/A	
% Left Turns in Advancing Volume:		N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	71	0.0%	71
	Right	-	1	2.0%	2

Advancing Volume:	73
Right Turn Volume:	2

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:	2	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

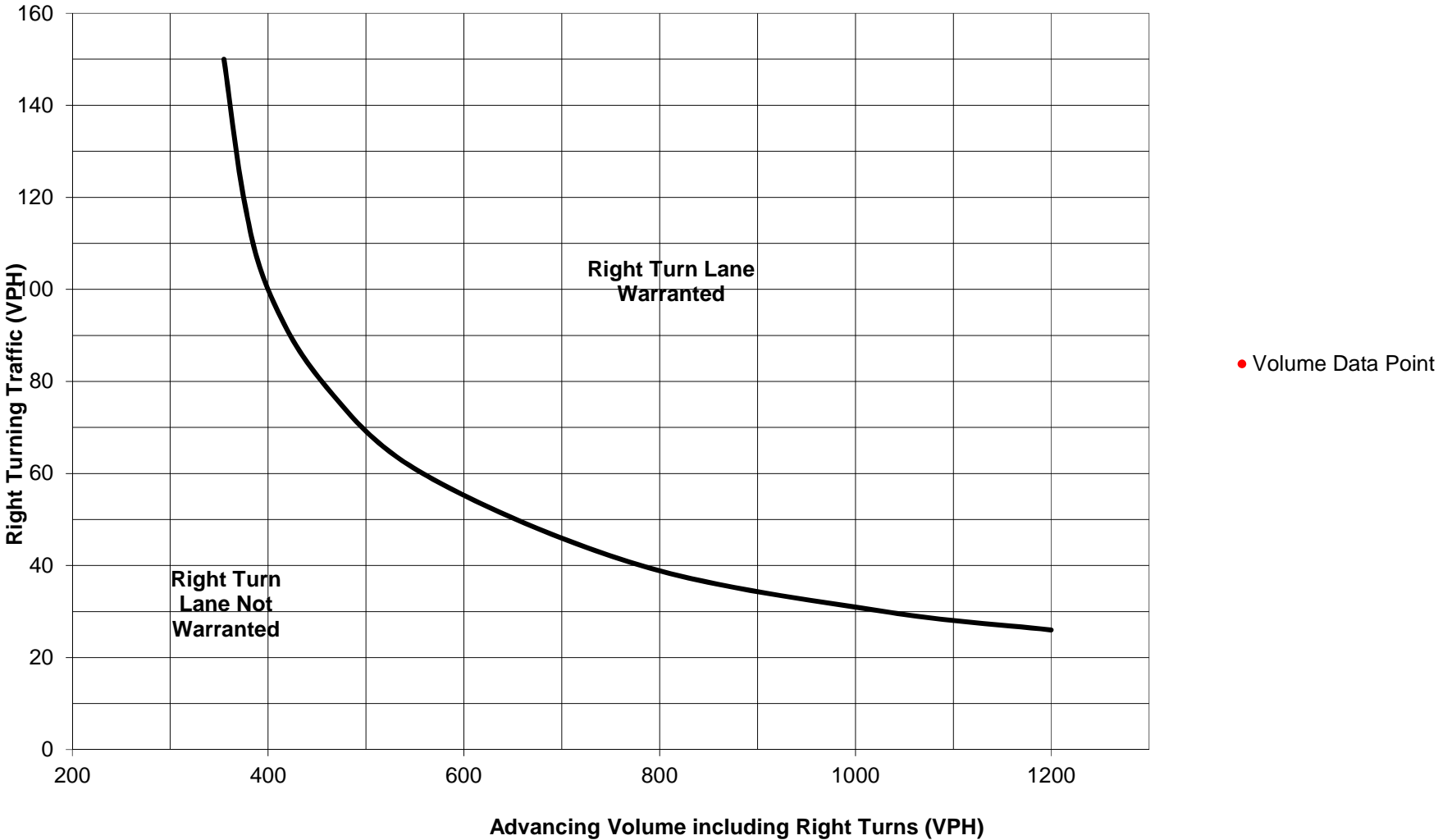
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



NOTE: The point (73,2) is below the viewport of the graph.

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Connector Road Eastbound W. Pleasant Grove Road Right-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:
 Opposing Volume:
 Left Turn Volume:
 % Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	65	0.0%	65
	Right	-	4	2.0%	5

Advancing Volume:
 Right Turn Volume:

TURN LANE WARRANT FINDINGS

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

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	5
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

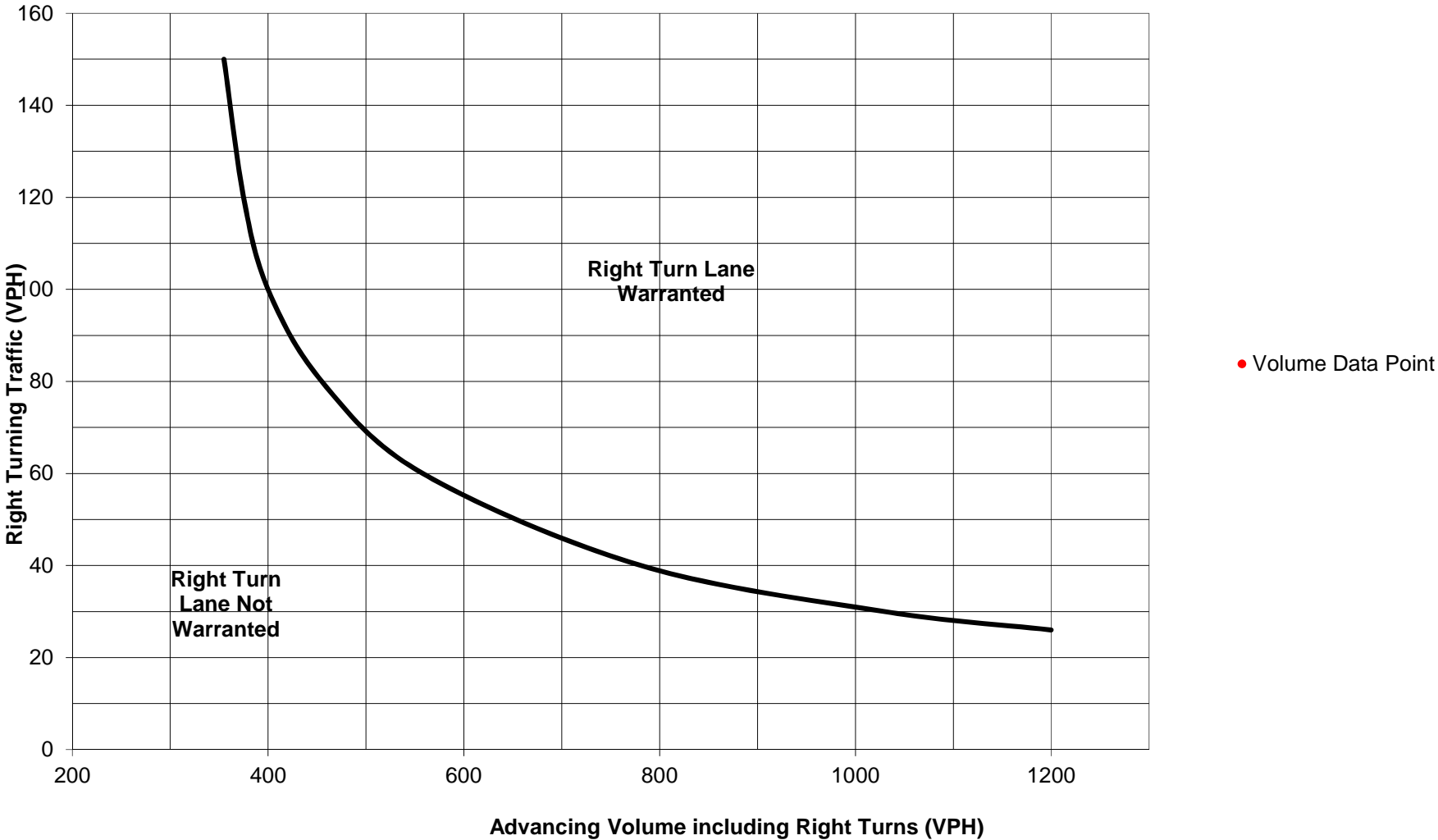
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: Feet
 Condition B: Feet
 Condition C: Feet
 Required Right Turn Lane Storage Length: Feet

Additional Findings:

Additional Comments / Justifications:

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



NOTE: The point (70,5) is below the viewport of the graph.

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Connector Road Westbound W. Pleasant Grove Road Left-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	165	2.0%	170
	Through	-	118	3.0%	124
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	71	0.0%	71
	Right	Yes	1	2.0%	2

Advancing Volume:	294
Opposing Volume:	73
Left Turn Volume:	170
% Left Turns in Advancing Volume: 57.82%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			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: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	170	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

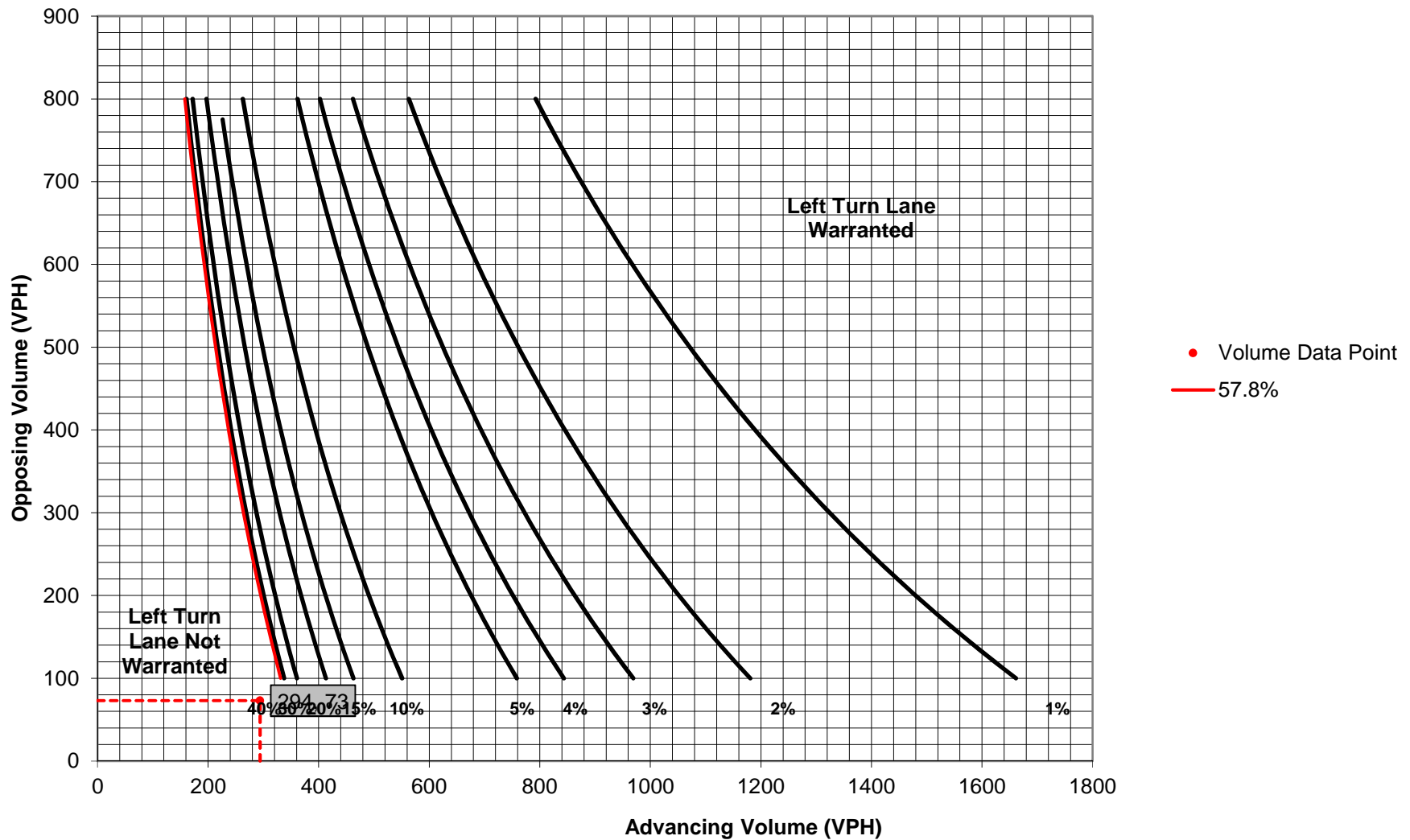
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Connector Road Westbound W. Pleasant Grove Road Left-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	414	2.0%	427
	Through	-	220	1.0%	224
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	65	0.0%	65
	Right	Yes	4	2.0%	5

Advancing Volume:	651
Opposing Volume:	70
Left Turn Volume:	427
% Left Turns in Advancing Volume: 65.59%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			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: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	427	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

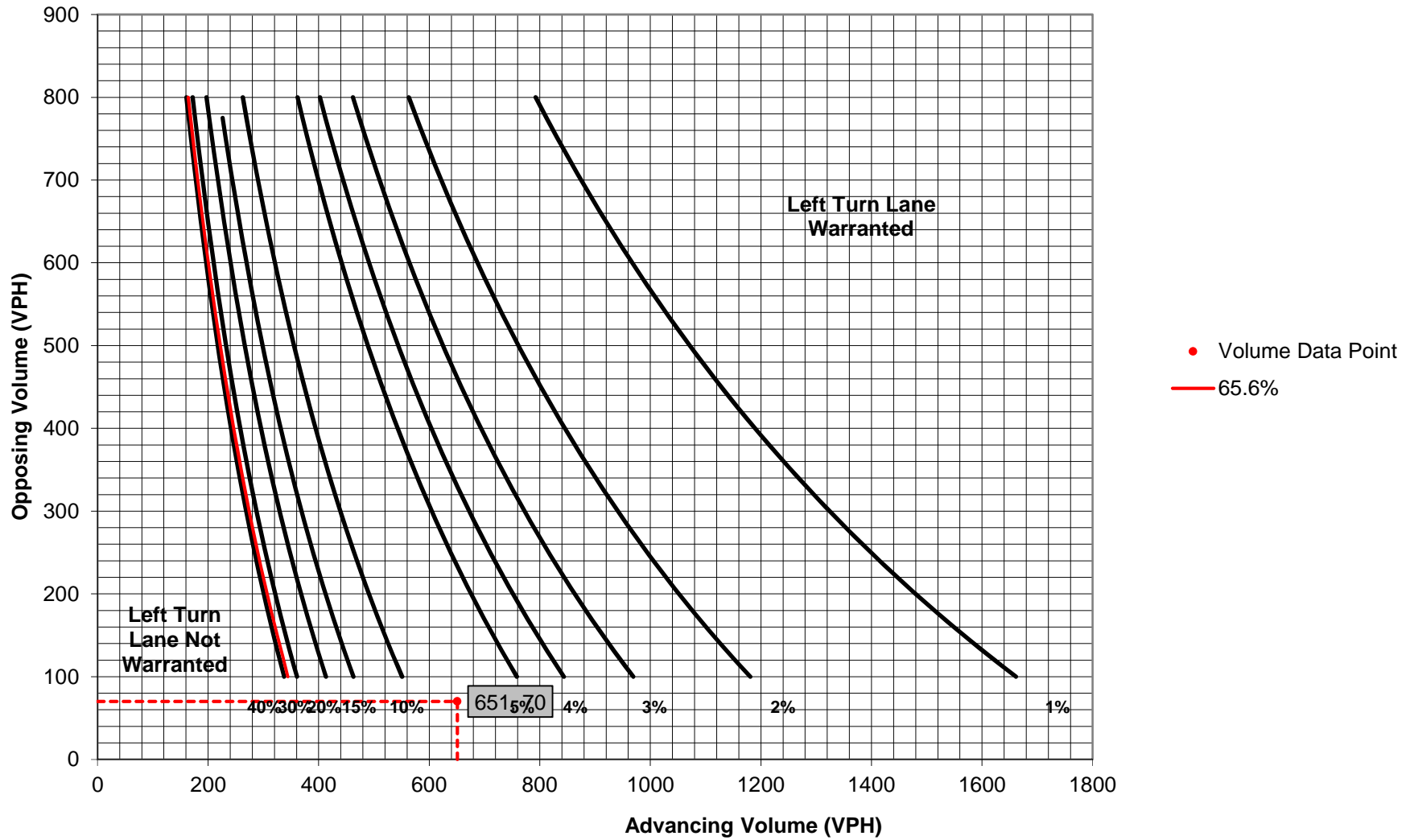
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



*W. Pleasant Grove Road and
Road K / Dunvegan Road*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Road K / Dunvegan Road Eastbound W. Pleasant Grove Road Right-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A	
Opposing Volume:	N/A	
Left Turn Volume:	N/A	
% Left Turns in Advancing Volume:		N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0		0
	Through	-	56	5.0%	61
	Right	-	4	2.0%	5

Advancing Volume:	66
Right Turn Volume:	5

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:	5		
Cycles Per Hour (Assumed):	60		
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

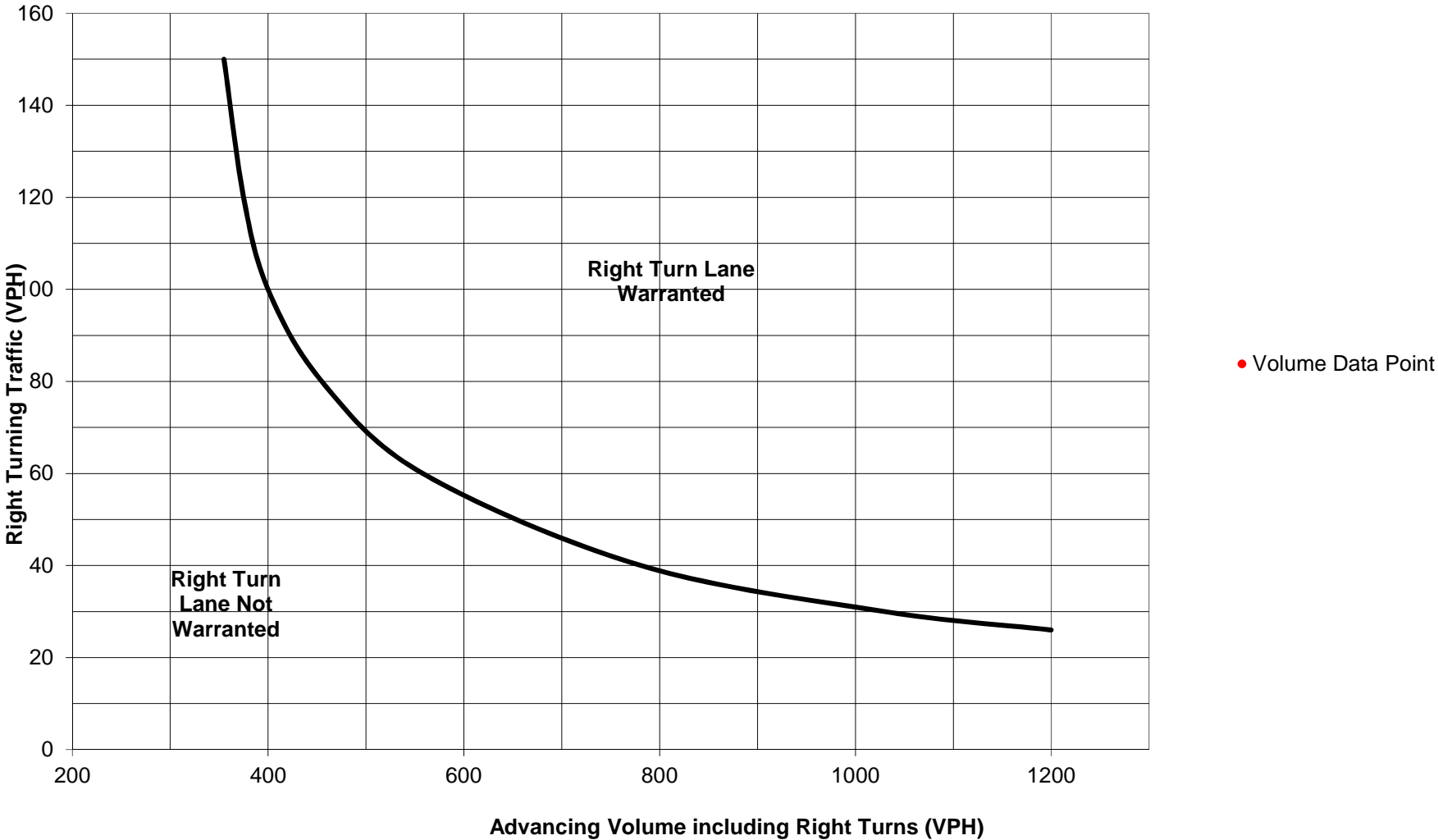
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



The point (66,5) is below the viewport of the graph.

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Road K / Dunvegan Road Eastbound W. Pleasant Grove Road Right-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:
 Opposing Volume:
 Left Turn Volume:
 % Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	3	0.0%	3
	Through	-	69	0.0%	69
	Right	-	13	2.0%	14

Advancing Volume:
 Right Turn Volume:

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 50px;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 50px;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 50px;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 50px;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	14
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	<input style="width: 50px;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

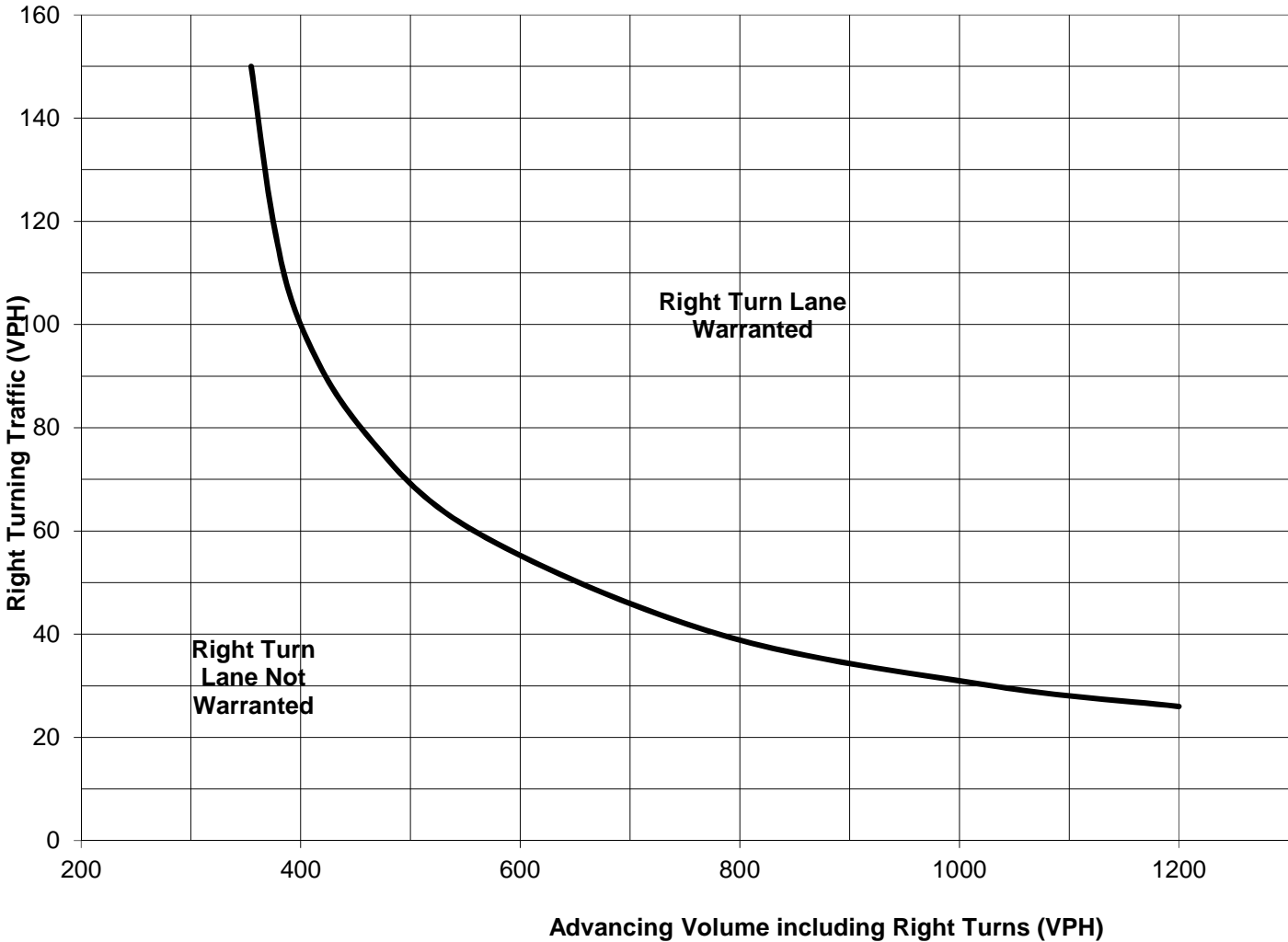
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: Feet
 Condition B: Feet
 Condition C: Feet
 Required Right Turn Lane Storage Length: Feet

Additional Findings:

Additional Comments / Justifications:

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



• Volume Data Point

The point (86,14) is below the viewport of the graph.

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Road K / Dunvegan Road Westbound W. Pleasant Grove Road Left-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	3	2.0%	4
	Through	-	190	3.0%	199
	Right	Yes	3	50.0%	6
Opposing	Left	Yes	0	0.0%	0
	Through	-	56	5.0%	61
	Right	Yes	4	2.0%	5

Advancing Volume:	209
Opposing Volume:	66
Left Turn Volume:	4

% Left Turns in Advancing Volume: 1.91%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			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: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	4	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

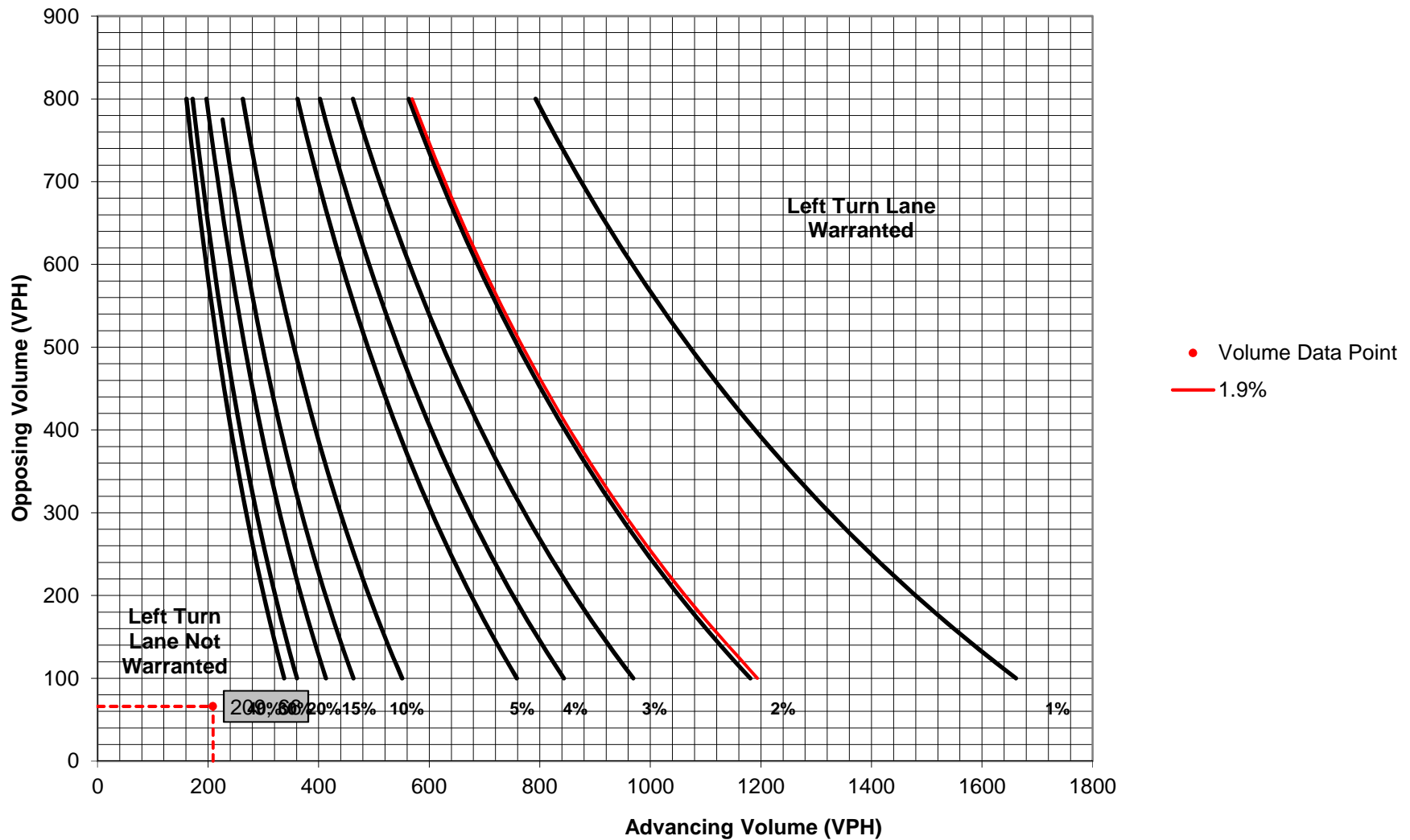
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Road K / Dunvegan Road Westbound W. Pleasant Grove Road Left-Turn Lane			
Analysis Period:	2030 Design Year	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35	Type of Analysis:	Left Turn Lane
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	2.0%	11
	Through	-	213	1.0%	217
	Right	Yes	12	0.0%	12
Opposing	Left	Yes	3	0.0%	3
	Through	-	69	0.0%	69
	Right	Yes	13	2.0%	14

Advancing Volume:	240
Opposing Volume:	86
Left Turn Volume:	11
% Left Turns in Advancing Volume: 4.58%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			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
<p>Applicable Warrant Figure: Figure 1</p> <p>Warrant Met?: No</p>	<p>Applicable Warrant Figure: N/A</p> <p>Warrant Met?: N/A</p>

TURN LANE LENGTH CALCULATIONS

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

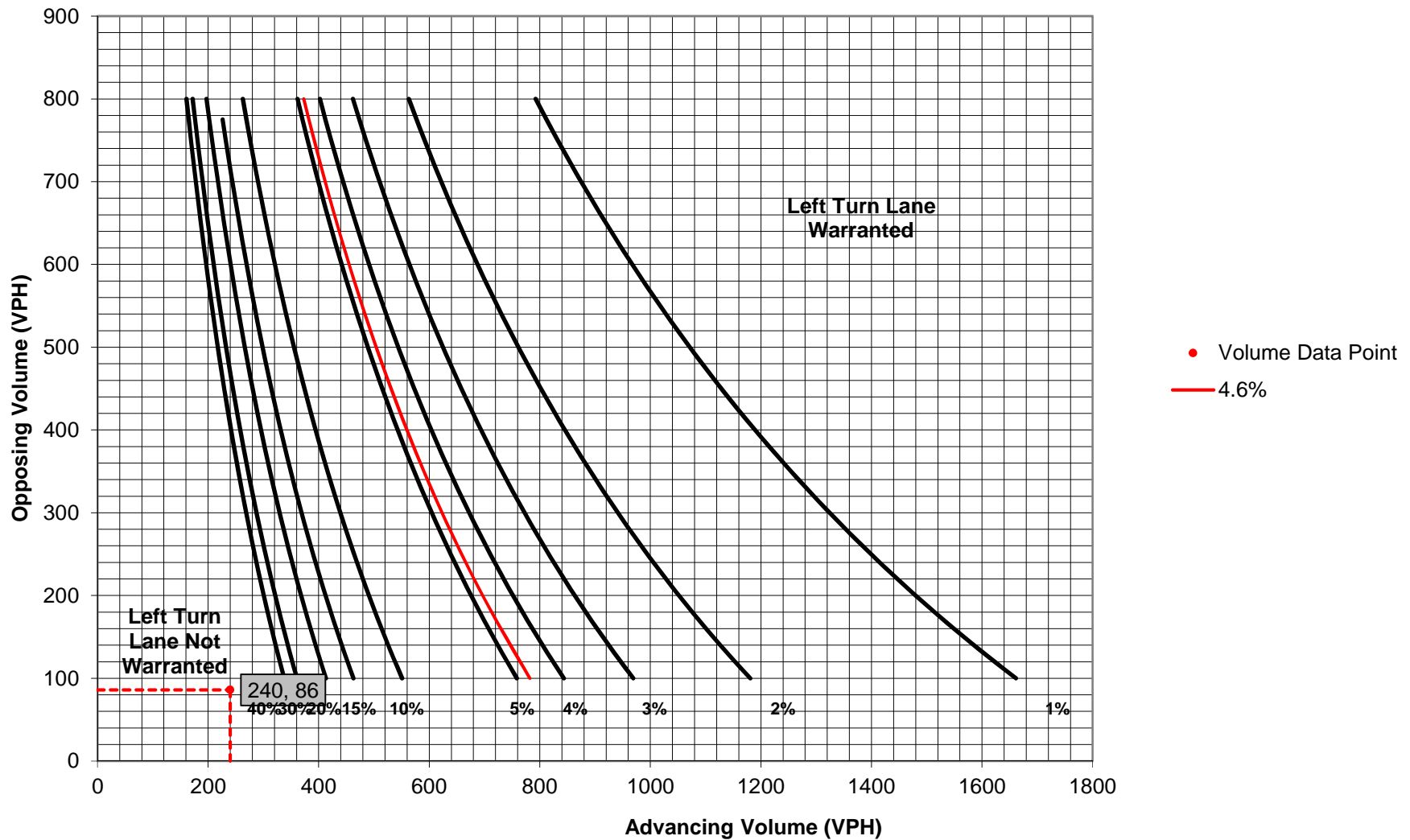
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



*W. Pleasant Grove Road and
Road M*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="11/5/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="W. Pleasant Grove Road and Road M
Eastbound W. Pleasant Grove Road Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 Design Year"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: <input type="text" value="Right Turn Lane"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>
% Left Turns in Advancing Volume: <input type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	69	5.0%	75
	Right	-	0	2.0%	0

Advancing Volume:	<input type="text" value="75"/>
Right Turn Volume:	<input type="text" value="0"/>

TURN LANE WARRANT FINDINGS

<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center; background-color: #cccccc;">Left Turn Lane Warrant Findings</th> </tr> </thead> <tbody> <tr> <td style="width: 60%;">Applicable Warrant Figure:</td> <td style="text-align: center;"><input type="text" value="N/A"/></td> </tr> <tr> <td>Warrant Met?:</td> <td style="text-align: center;"><input type="text" value="N/A"/></td> </tr> </tbody> </table>	Left Turn Lane Warrant Findings		Applicable Warrant Figure:	<input type="text" value="N/A"/>	Warrant Met?:	<input type="text" value="N/A"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center; background-color: #cccccc;">Right Turn Lane Warrant Findings</th> </tr> </thead> <tbody> <tr> <td style="width: 60%;">Applicable Warrant Figure:</td> <td style="text-align: center;"><input type="text" value="Figure 9"/></td> </tr> <tr> <td>Warrant Met?:</td> <td style="text-align: center;"><input type="text" value="No"/></td> </tr> </tbody> </table>	Right Turn Lane Warrant Findings		Applicable Warrant Figure:	<input type="text" value="Figure 9"/>	Warrant Met?:	<input type="text" value="No"/>
Left Turn Lane Warrant Findings													
Applicable Warrant Figure:	<input type="text" value="N/A"/>												
Warrant Met?:	<input type="text" value="N/A"/>												
Right Turn Lane Warrant Findings													
Applicable Warrant Figure:	<input type="text" value="Figure 9"/>												
Warrant Met?:	<input type="text" value="No"/>												

TURN LANE LENGTH CALCULATIONS

Intersection Control:	<input type="text" value="Unsignalized"/>
Design Hour Volume of Turning Lane:	<input type="text" value="0"/>
Cycles Per Hour (Assumed):	<input type="text" value="60"/>
Cycles Per Hour (If Known):	<input type="text" value=""/>
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

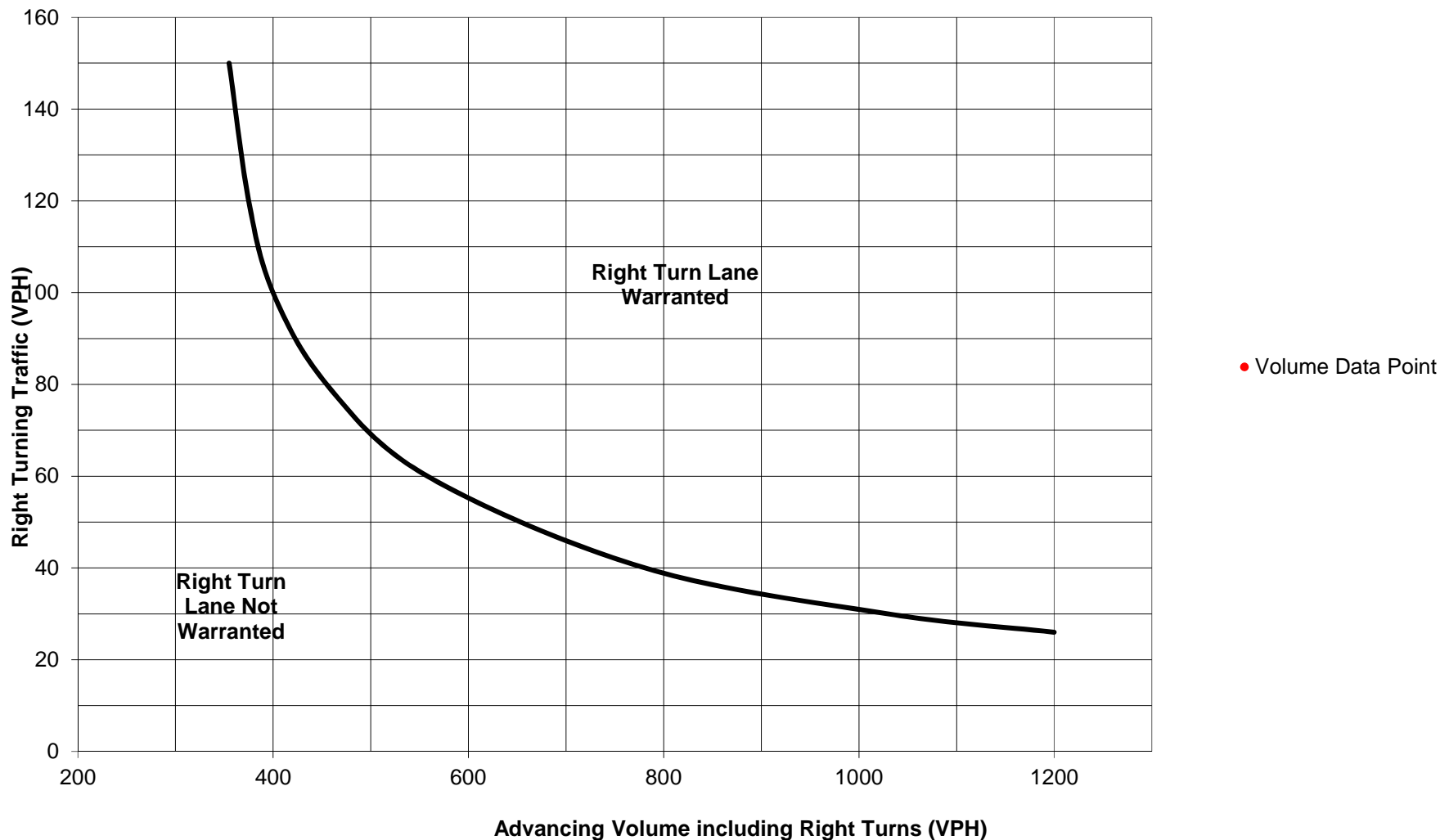
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



NOTE: The point (75,0) is below the viewport of the graph

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Road M Eastbound W. Pleasant Grove Road Right-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	
	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	74	0.0%	74
	Right	-	2	2.0%	3

Advancing Volume:	77
Right Turn Volume:	3

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:	3		
Cycles Per Hour (Assumed):	60		
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

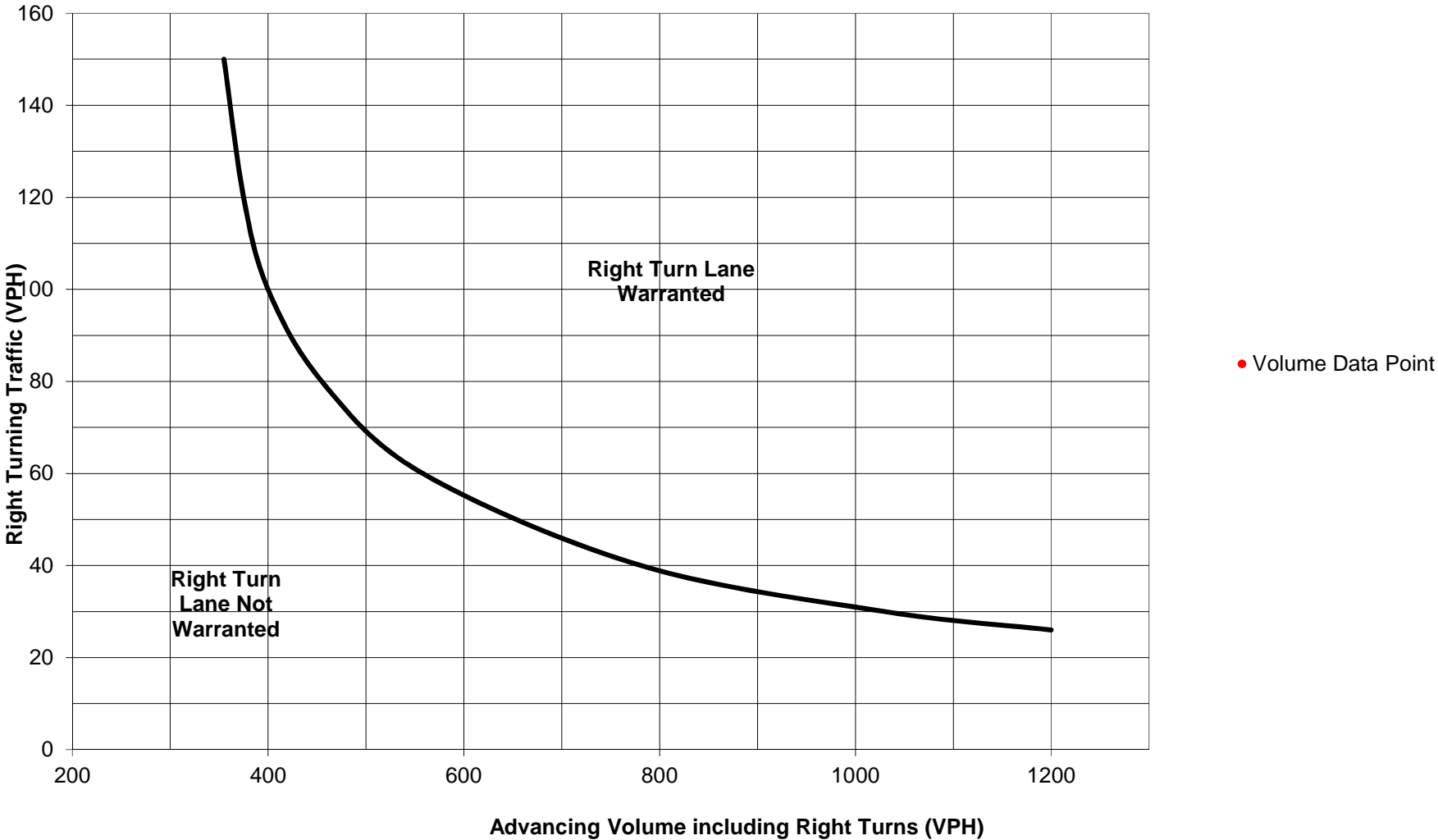
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



NOTE: The point (77,3) is below the viewport of the graph

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Road M Westbound W. Pleasant Grove Road Left-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	4	2.0%	5
	Through	-	195	3.0%	204
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	69	5.0%	75
	Right	Yes	0	2.0%	0

Advancing Volume:	209
Opposing Volume:	75
Left Turn Volume:	5

% Left Turns in Advancing Volume: 2.39%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			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: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	5	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

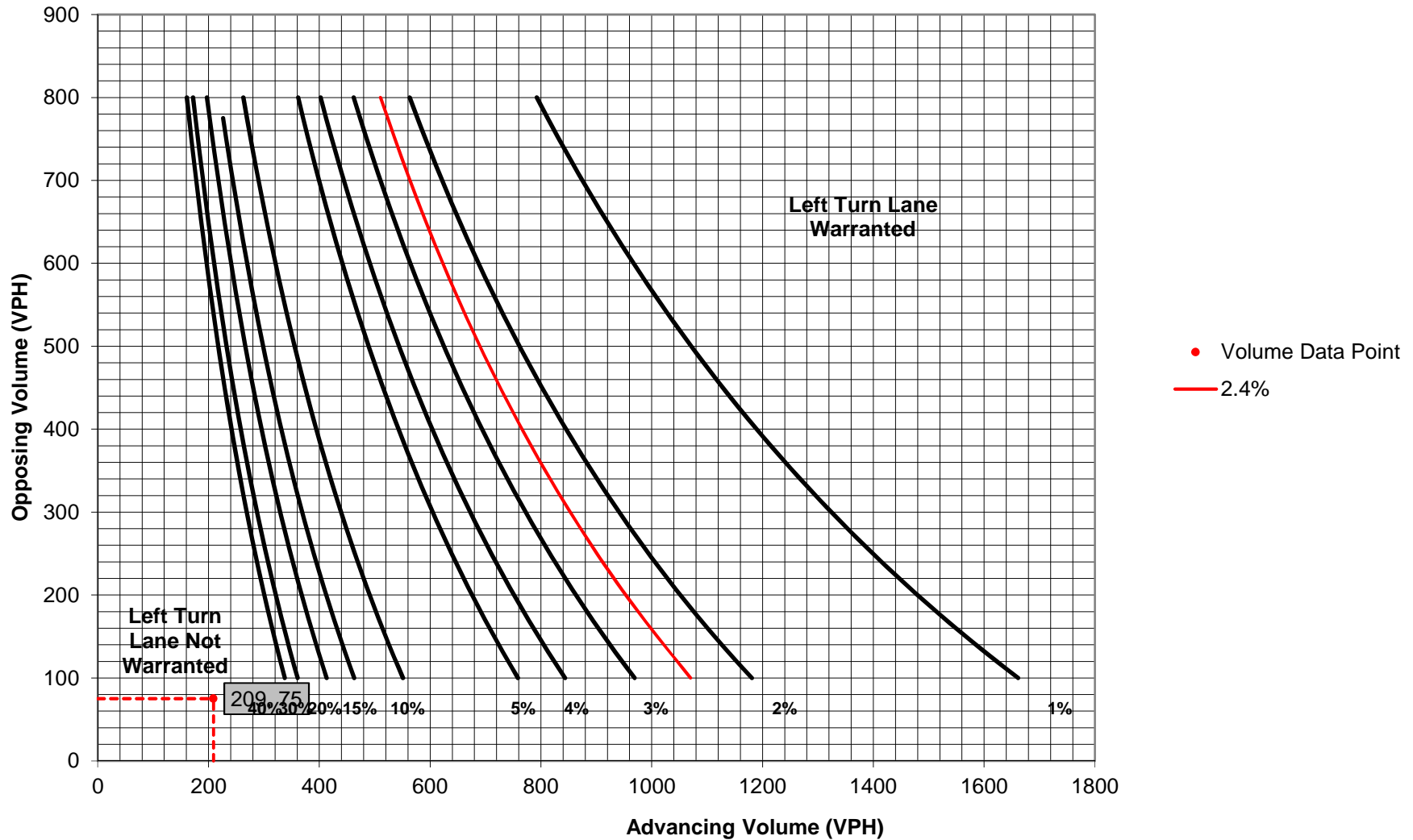
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	11/5/2019
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: W. Pleasant Grove Road and Road M Westbound W. Pleasant Grove Road Left-Turn Lane			
Analysis Period:	2030 Design Year	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		
Type of Terrain:	Rolling	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	2.0%	15
	Through	-	234	1.0%	238
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	74	0.0%	74
	Right	Yes	2	2.0%	3

Advancing Volume:	253
Opposing Volume:	77
Left Turn Volume:	15

% Left Turns in Advancing Volume: 5.93%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			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: Figure 1	Applicable Warrant Figure: N/A
Warrant Met?: No	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	15	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

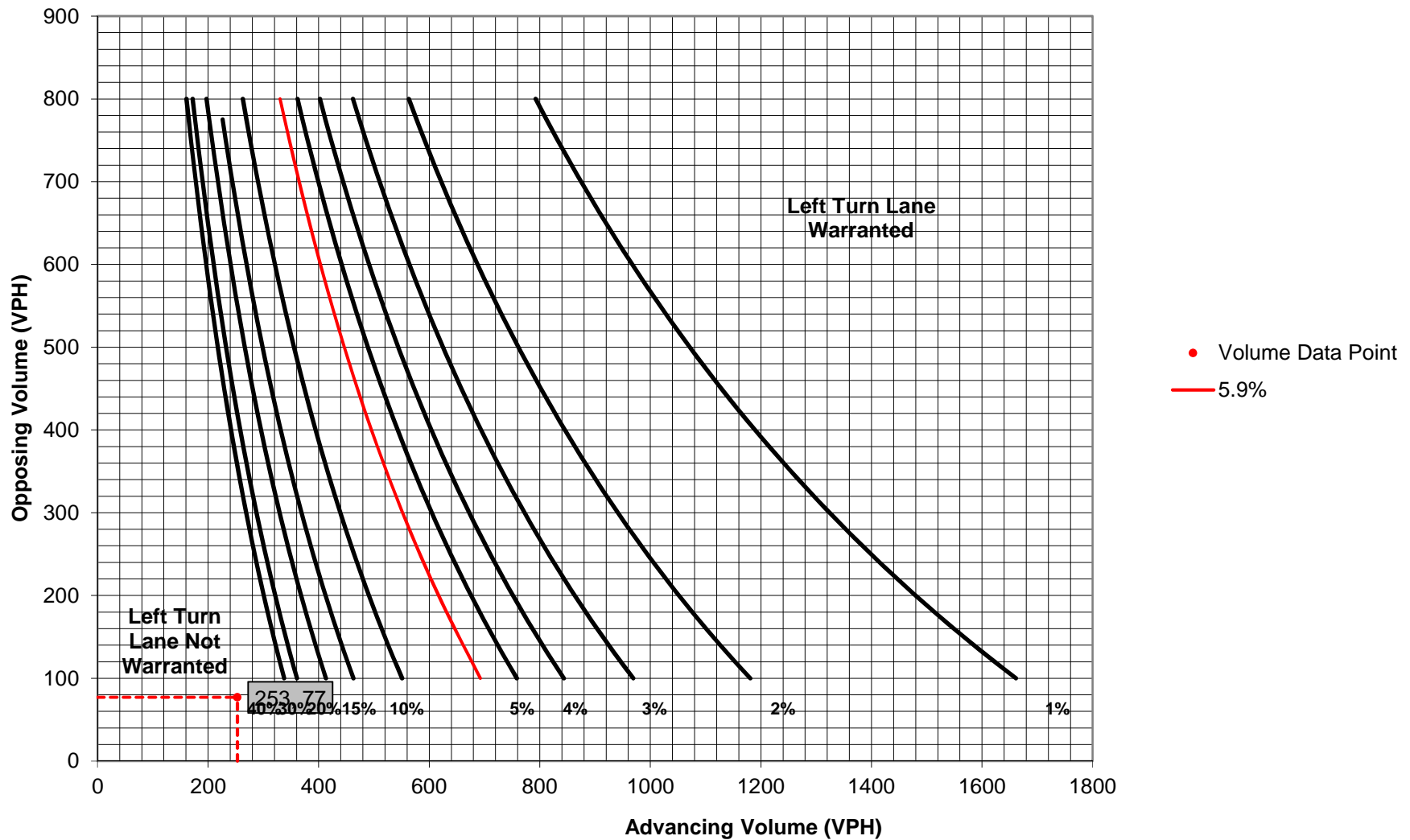
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



Appendix H

PennDOT M-950S

DRIVEWAY SIGHT DISTANCE MEASUREMENTS

(FOR LOCAL ROADS, USE PENNDOT PUB 70)

APPLICANT Toll Brothers, Inc. APPLICATION NO. _____

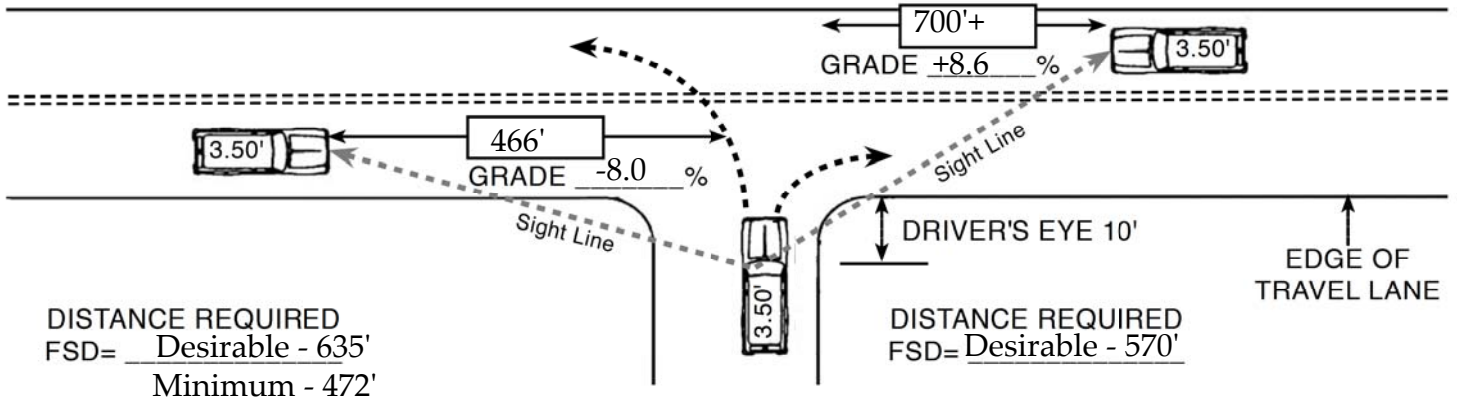
S.R. 0926 SEG. 0390 OFFSET 0757 LEGAL SPEED LIMIT 45 MPH

MEASURED BY BGG DATE 8/8/2019

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

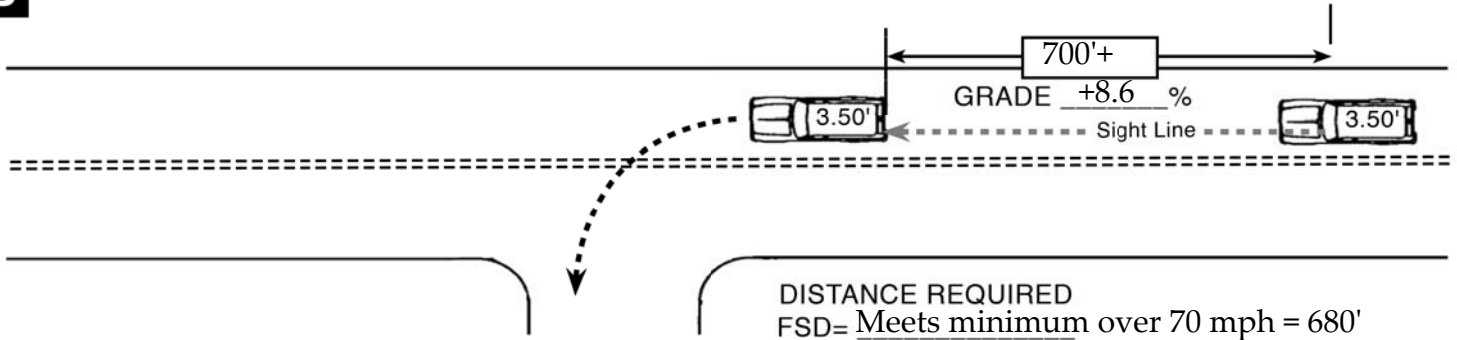
S.R. 0926 & Connector Road (opposite Bridlewood Boulevard) - Signal proposed

A



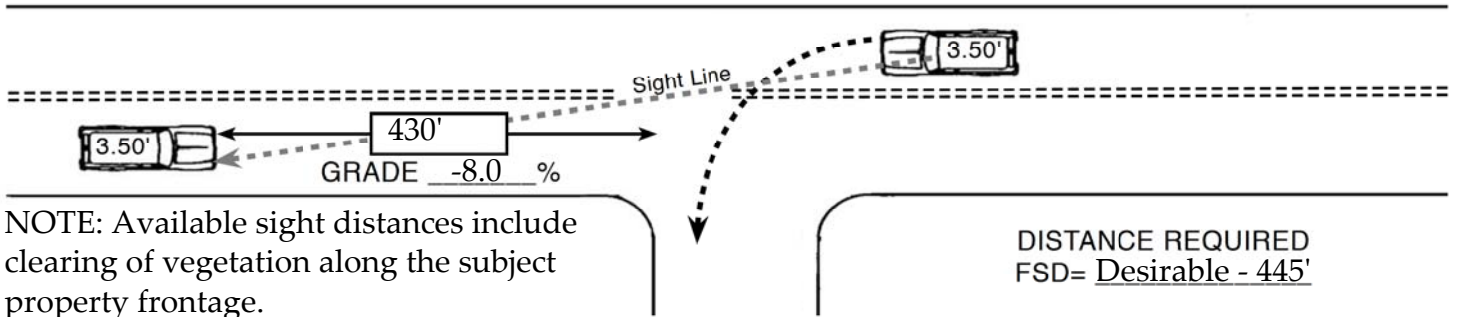
THE MAXIMUM LENGTH OF ROADWAY ALONG WHICH A DRIVER AT A DRIVEWAY LOCATION CAN CONTINUOUSLY SEE ANOTHER VEHICLE APPROACHING ON THE ROADWAY.

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



NOTE: Available sight distances include clearing of vegetation along the subject property frontage.

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.

Appendix I

Off-Site Intersection Turn Lane Warrants

Existing

*Street Road (S.R. 0926) and
New Street*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Eastbound Street Road (S.R. 0926) Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	48	2.0%	50
	Through	-	648	4.0%	687
	Right	Yes	5	0.0%	5
Opposing	Left	Yes	8	0.0%	8
	Through	-	310	7.0%	343
	Right	Yes	36	3.0%	38

Advancing Volume:	<input type="text" value="742"/>
Opposing Volume:	<input type="text" value="389"/>
Left Turn Volume:	<input type="text" value="50"/>
% Left Turns in Advancing Volume: <input type="text" value="6.74%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 3"/>	Applicable Warrant Figure: <input type="text" value="N/A"/>
Warrant Met?: <input type="text" value="Yes"/>	Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="50"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="40"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

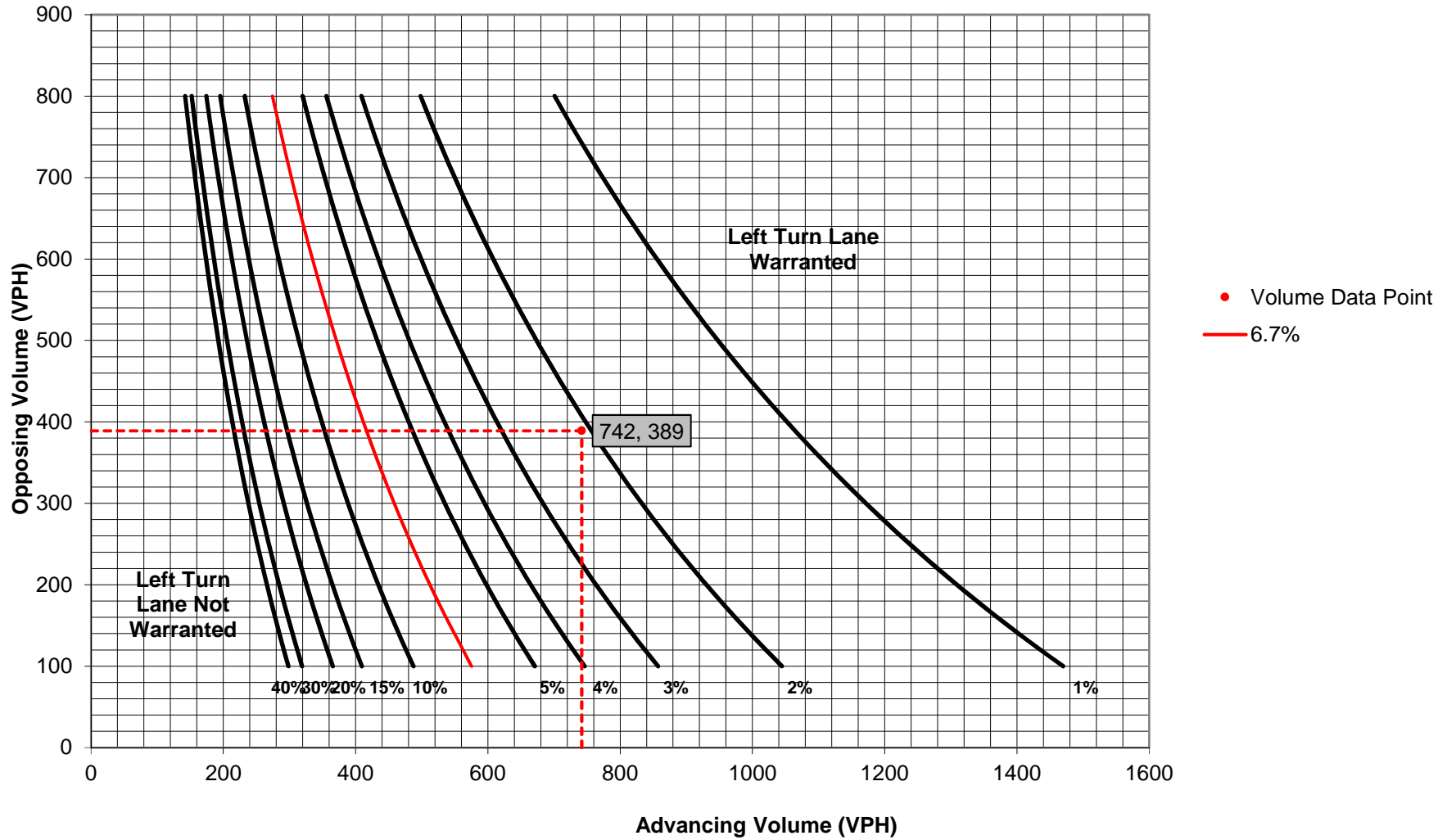
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="125"/>	Feet
Condition C:	<input type="text" value="150"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Eastbound Street Road (S.R. 0926) Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	30	2.0%	31
	Through	-	659	4.0%	699
	Right	Yes	13	0.0%	13
Opposing	Left	Yes	19	0.0%	19
	Through	-	305	7.0%	338
	Right	Yes	30	3.0%	32

Advancing Volume:	743
Opposing Volume:	389
Left Turn Volume:	31

% Left Turns in Advancing Volume:	4.17%
-----------------------------------	-------

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 3
Warrant Met?:	Yes

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	<input type="text" value="Signalized"/>
Design Hour Volume of Turning Lane:	<input type="text" value="31"/>
Cycles Per Hour (Assumed):	<input type="text" value="Known"/>
Cycles Per Hour (If Known):	<input type="text" value="34"/>
Average # of Vehicles/Cycle:	<input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

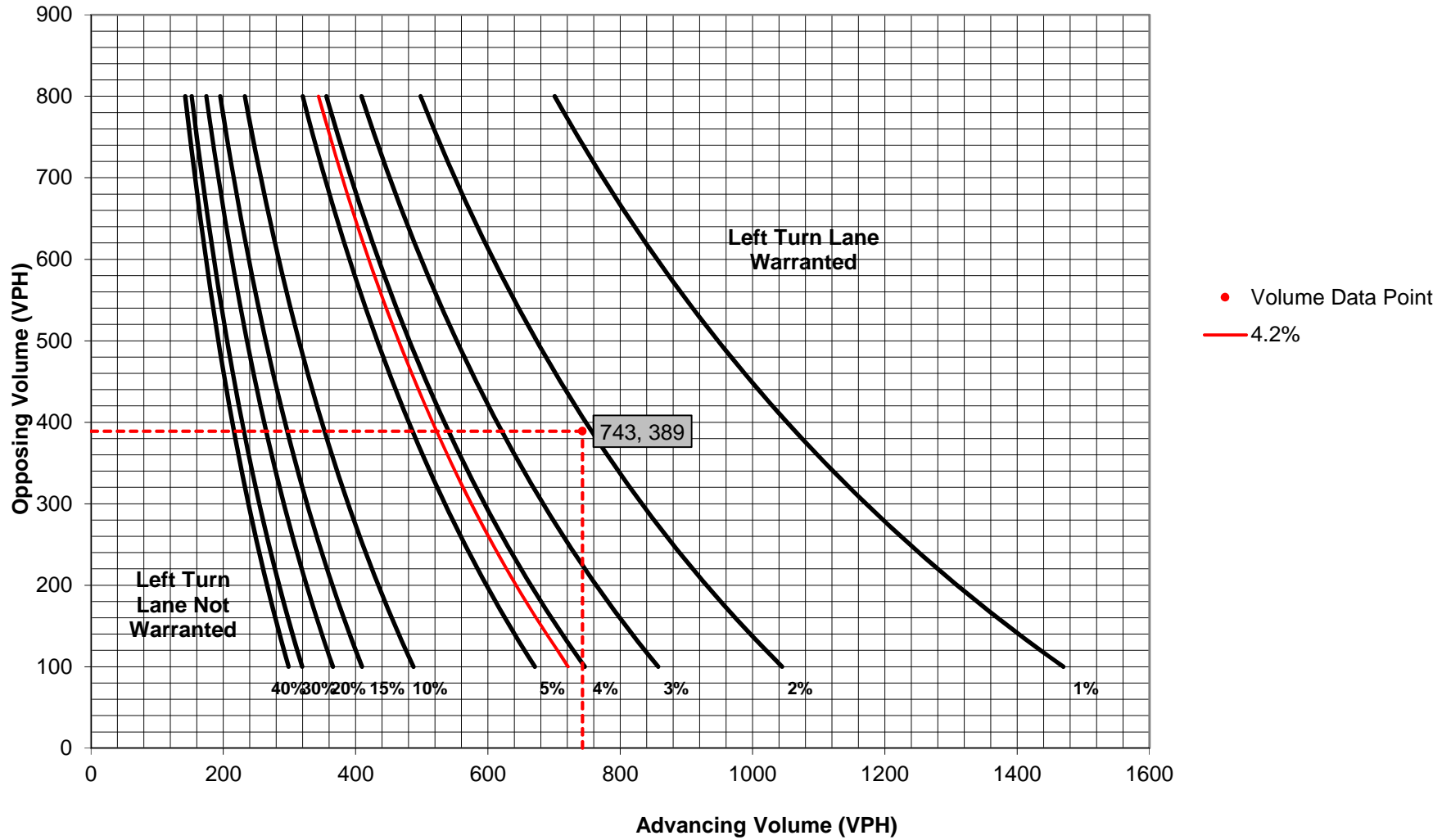
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	125	Feet
Condition C:	150	Feet
Required Left Turn Lane Storage Length:	150	Feet

Additional Findings:	N/A
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Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Eastbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>

% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>
-----------------------------------	----------------------------------

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	48	2.0%	50
	Through	-	648	4.0%	687
	Right	-	5	0.0%	5

Advancing Volume:	<input type="text" value="742"/>
Right Turn Volume:	<input type="text" value="5"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="N/A"/>
Warrant Met?:	<input type="text" value="N/A"/>

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="Figure 10"/>
Warrant Met?:	<input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	<input type="text" value="Signalized"/>
Design Hour Volume of Turning Lane:	<input type="text" value="5"/>
Cycles Per Hour (Assumed):	<input type="text" value="Known"/>
Cycles Per Hour (If Known):	<input type="text" value="40"/>
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

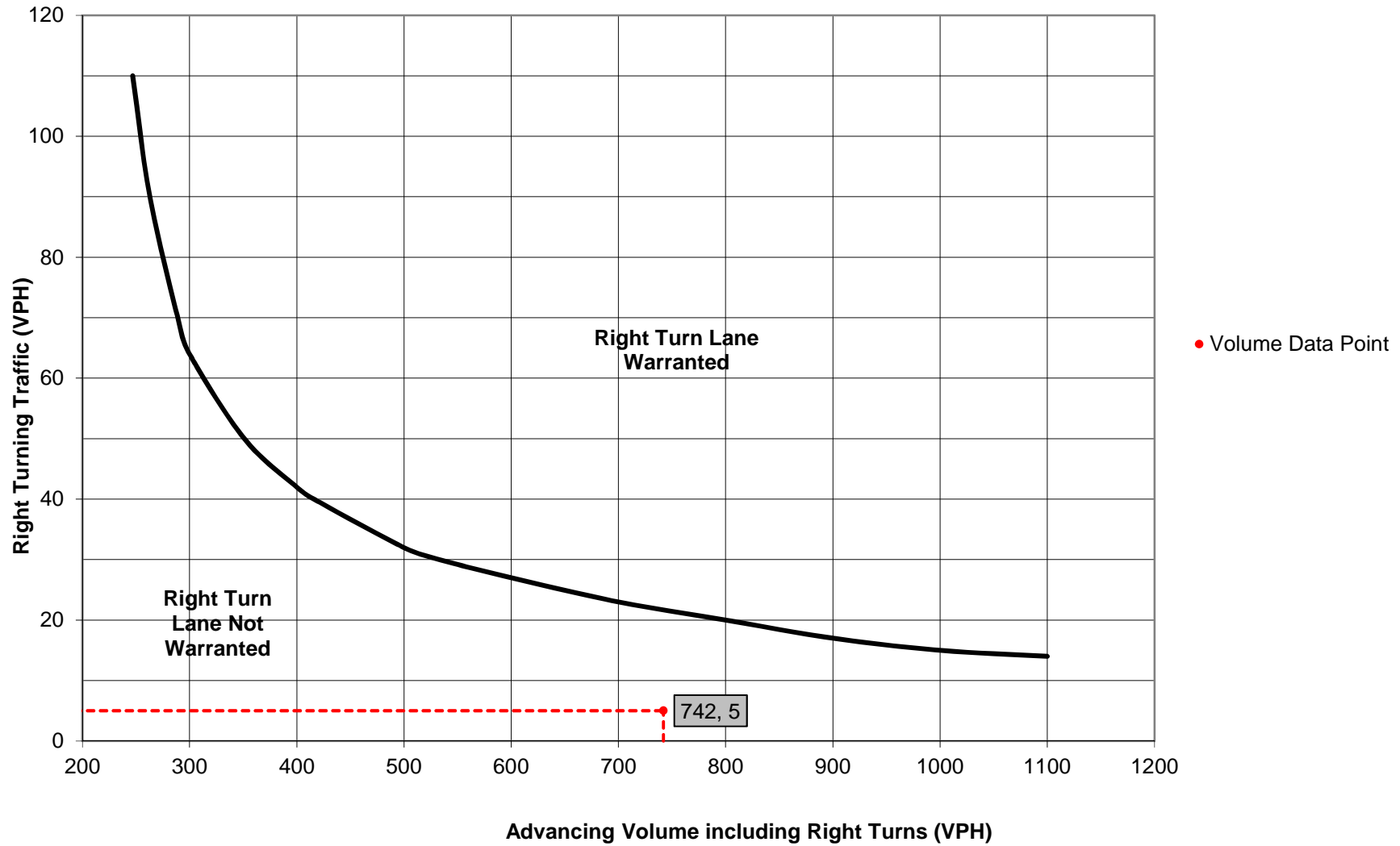
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:	<input type="text" value="N/A"/>
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Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Eastbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations				
Movement	Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes		N/A
	Through	-		N/A
	Right	Yes		N/A
Opposing	Left	Yes		N/A
	Through	-		N/A
	Right	Yes		N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	Yes	30	2.0%	31
	Through	-	659	4.0%	699
	Right	-	13	0.0%	13

Advancing Volume:	743
Right Turn Volume:	13

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 80%;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 80%;" type="text" value="Figure 10"/>
Warrant Met?: <input style="width: 80%;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 80%;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="13"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="34"/>	Average # of Vehicles/Cycle: <input style="width: 80%;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

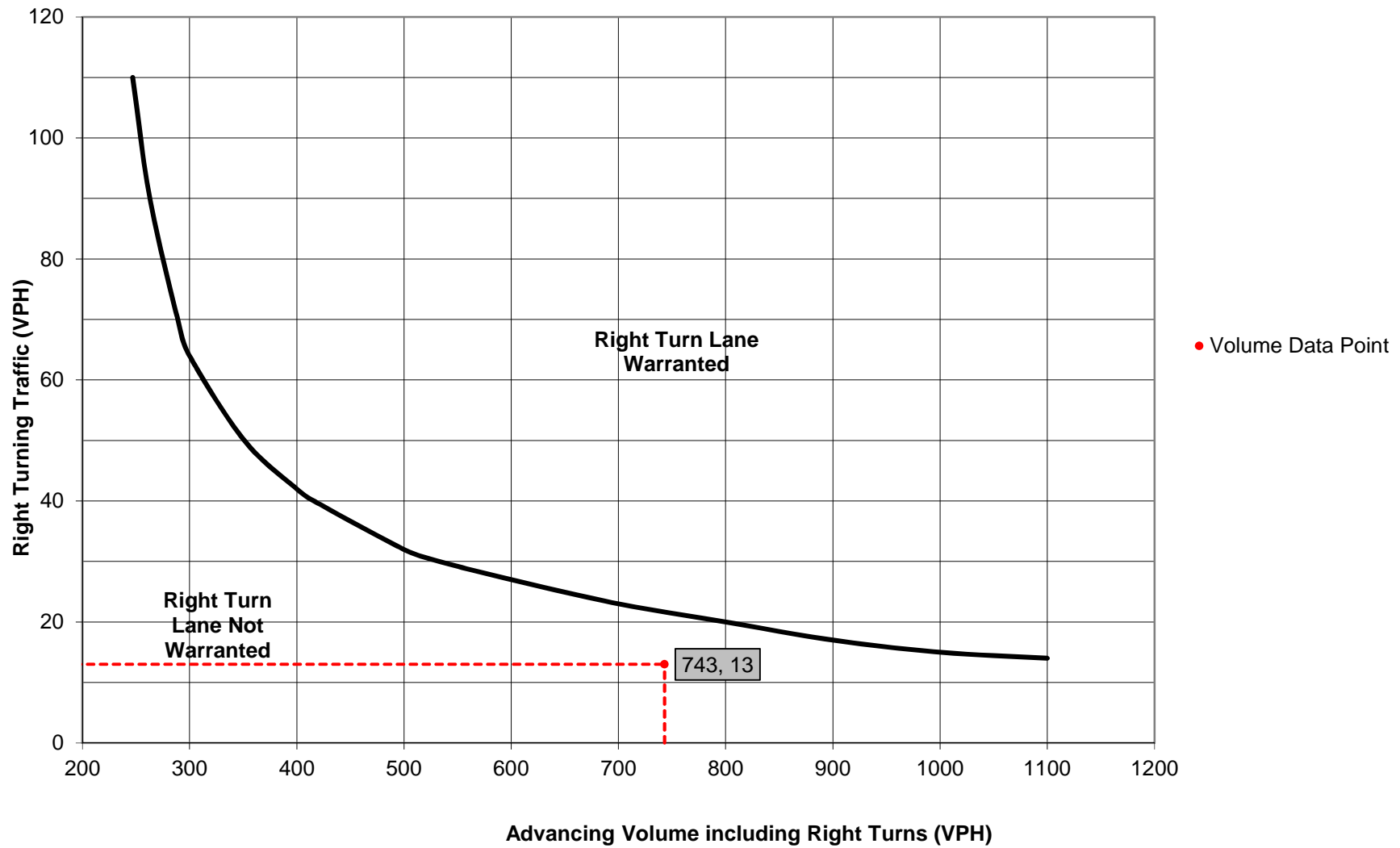
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/21/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Northbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	9	11.0%	11
	Through	-	97	1.0%	99
	Right	Yes	41	5.0%	45
Opposing	Left	Yes	8	13.0%	10
	Through	-	122	0.0%	122
	Right	Yes	190	2.0%	196

Advancing Volume:	155
Opposing Volume:	328
Left Turn Volume:	11
% Left Turns in Advancing Volume: <input style="width: 100px;" type="text" value="7.10%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 1"/> Warrant Met?: <input style="width: 100px;" type="text" value="No"/>	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/> Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/>
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="11"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

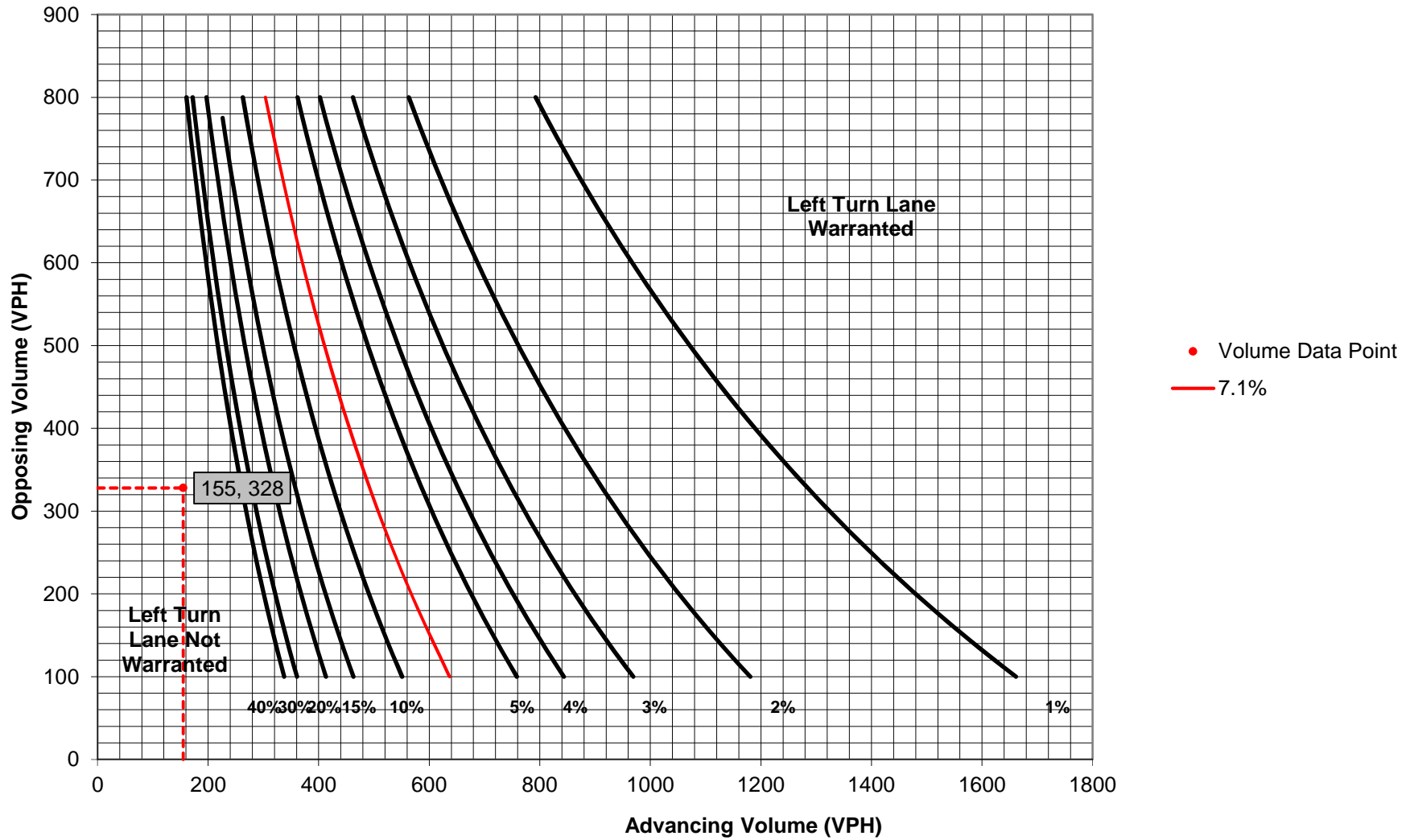
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Northbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="25"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	9	11.0%	11
	Through	-	83	1.0%	85
	Right	Yes	37	5.0%	40
Opposing	Left	Yes	49	13.0%	59
	Through	-	164	0.0%	164
	Right	Yes	143	2.0%	148

Advancing Volume:	136
Opposing Volume:	371
Left Turn Volume:	11

% Left Turns in Advancing Volume:	8.09%
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Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 1
Warrant Met?:	No

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	11
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	34
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

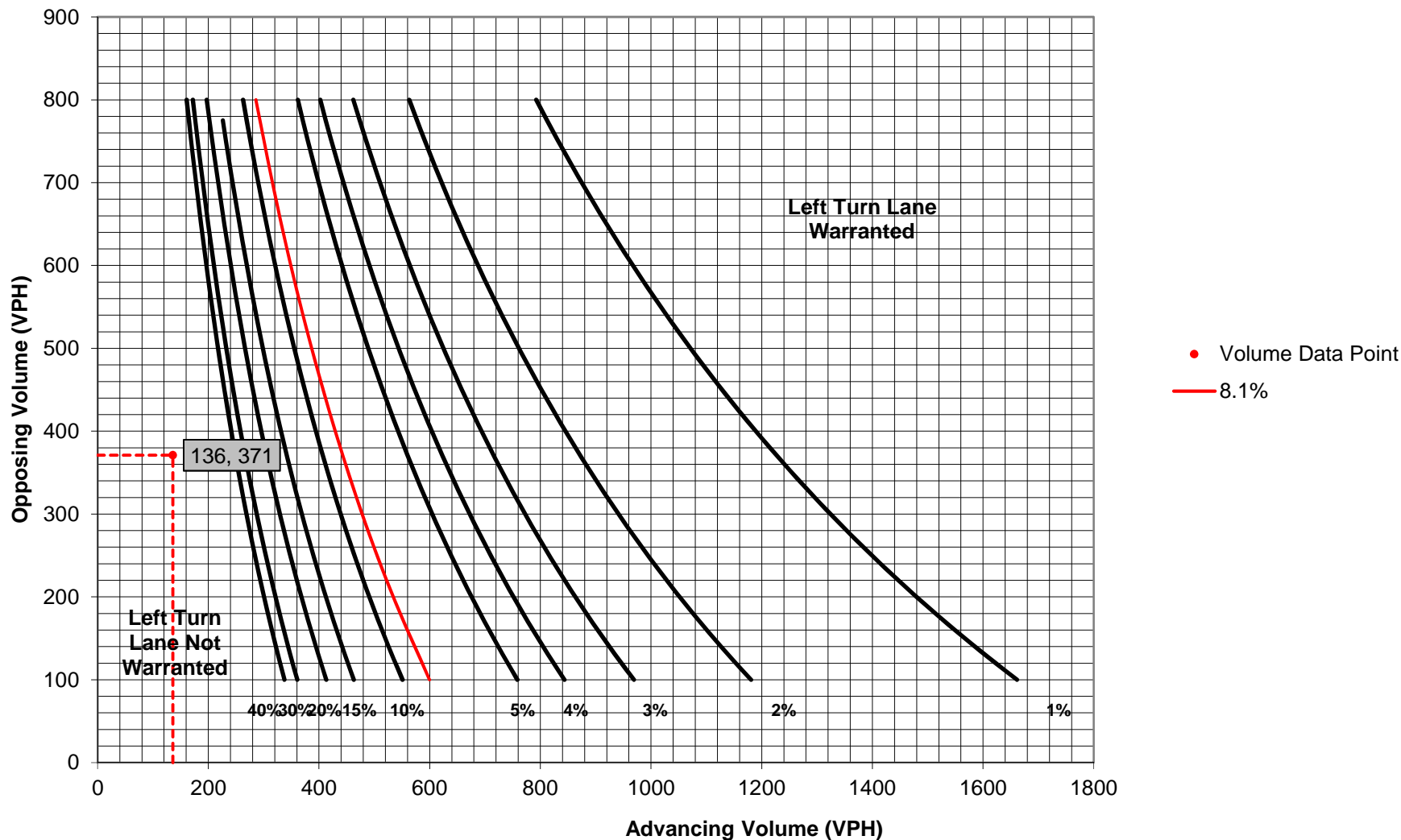
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:	N/A
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Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Northbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="25"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>

% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>
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Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	9	11.0%	11
	Through	-	97	1.0%	99
	Right	-	41	5.0%	45

Advancing Volume:	<input type="text" value="155"/>
Right Turn Volume:	<input type="text" value="45"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="N/A"/>
Warrant Met?:	<input type="text" value="N/A"/>

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="Figure 9"/>
Warrant Met?:	<input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	<input type="text" value="Signalized"/>
Design Hour Volume of Turning Lane:	<input type="text" value="45"/>
Cycles Per Hour (Assumed):	<input type="text" value="Known"/>
Cycles Per Hour (If Known):	<input type="text" value="40"/>
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

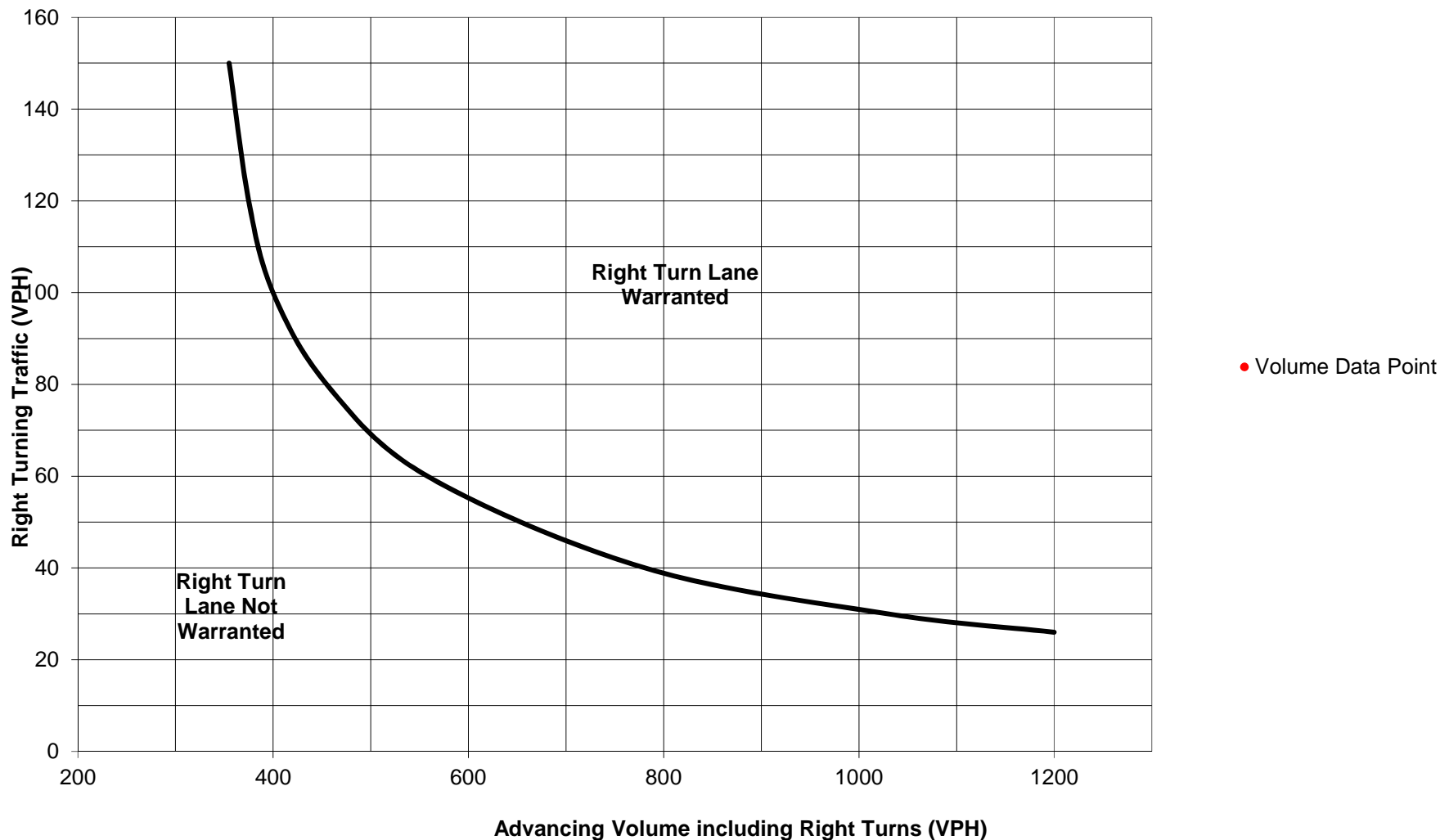
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:	<input type="text" value="N/A"/>
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Additional Comments / Justifications:

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



NOTE: The point (155,45) is below the viewport of the graph

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/21/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Northbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	9	11.0%	11
	Through	-	83	1.0%	85
	Right	-	37	5.0%	40

Advancing Volume:	136
Right Turn Volume:	40

TURN LANE WARRANT FINDINGS

<h4 style="text-align: center; margin: 0;">Left Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: N/A</p> <p>Warrant Met?: N/A</p>	<h4 style="text-align: center; margin: 0;">Right Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: Figure 9</p> <p>Warrant Met?: No</p>
--	---

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="40"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="34"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

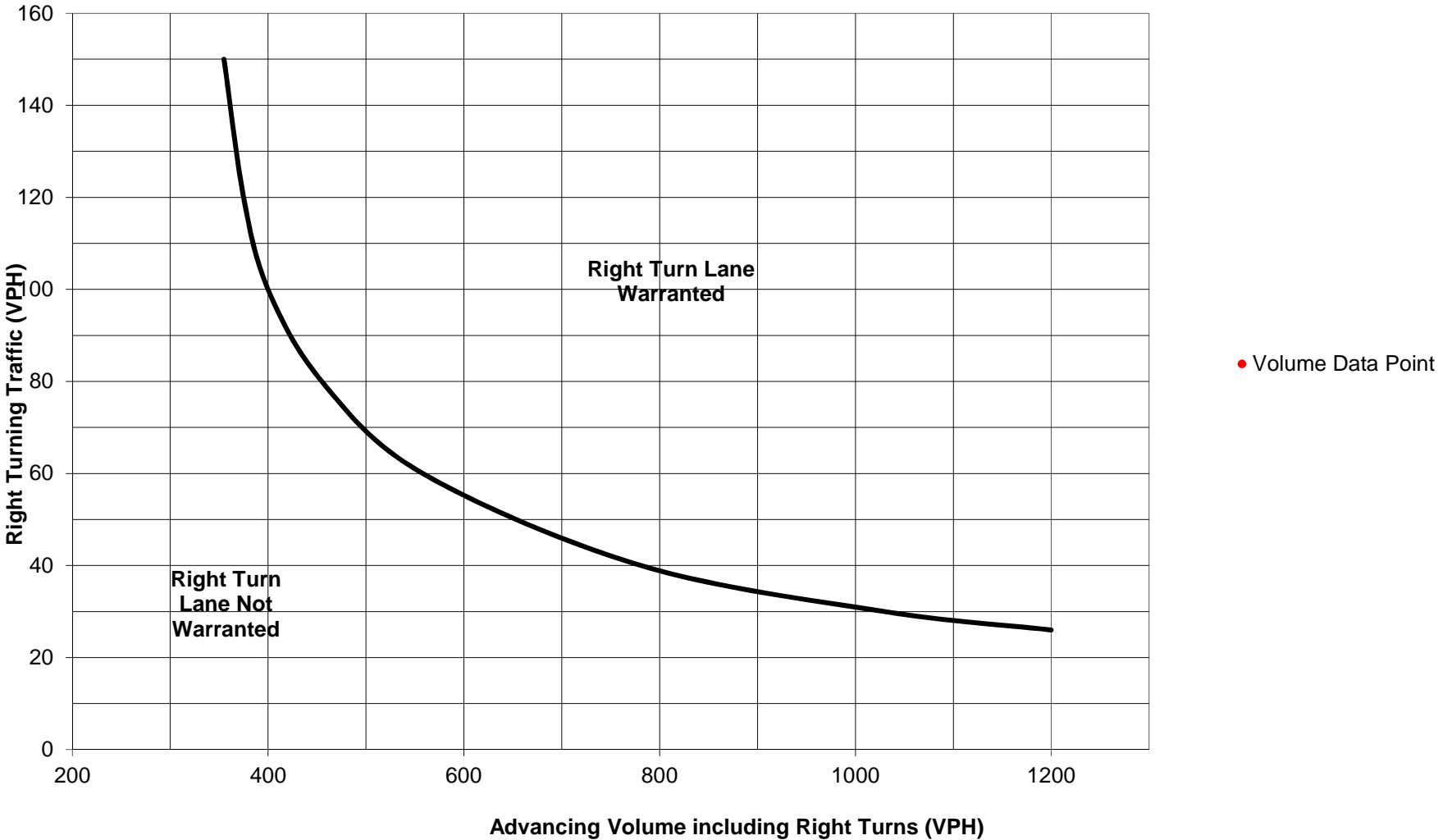
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



NOTE: The point (136,40) is below the viewport of the graph

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Southbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="35"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	8	13.0%	10
	Through	-	122	0.0%	122
	Right	Yes	190	2.0%	196
Opposing	Left	Yes	9	11.0%	11
	Through	-	97	1.0%	99
	Right	Yes	41	5.0%	45

Advancing Volume:	<input type="text" value="328"/>
Opposing Volume:	<input type="text" value="155"/>
Left Turn Volume:	<input type="text" value="10"/>
% Left Turns in Advancing Volume: <input type="text" value="3.05%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

TURN LANE WARRANT FINDINGS

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

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="10"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="40"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

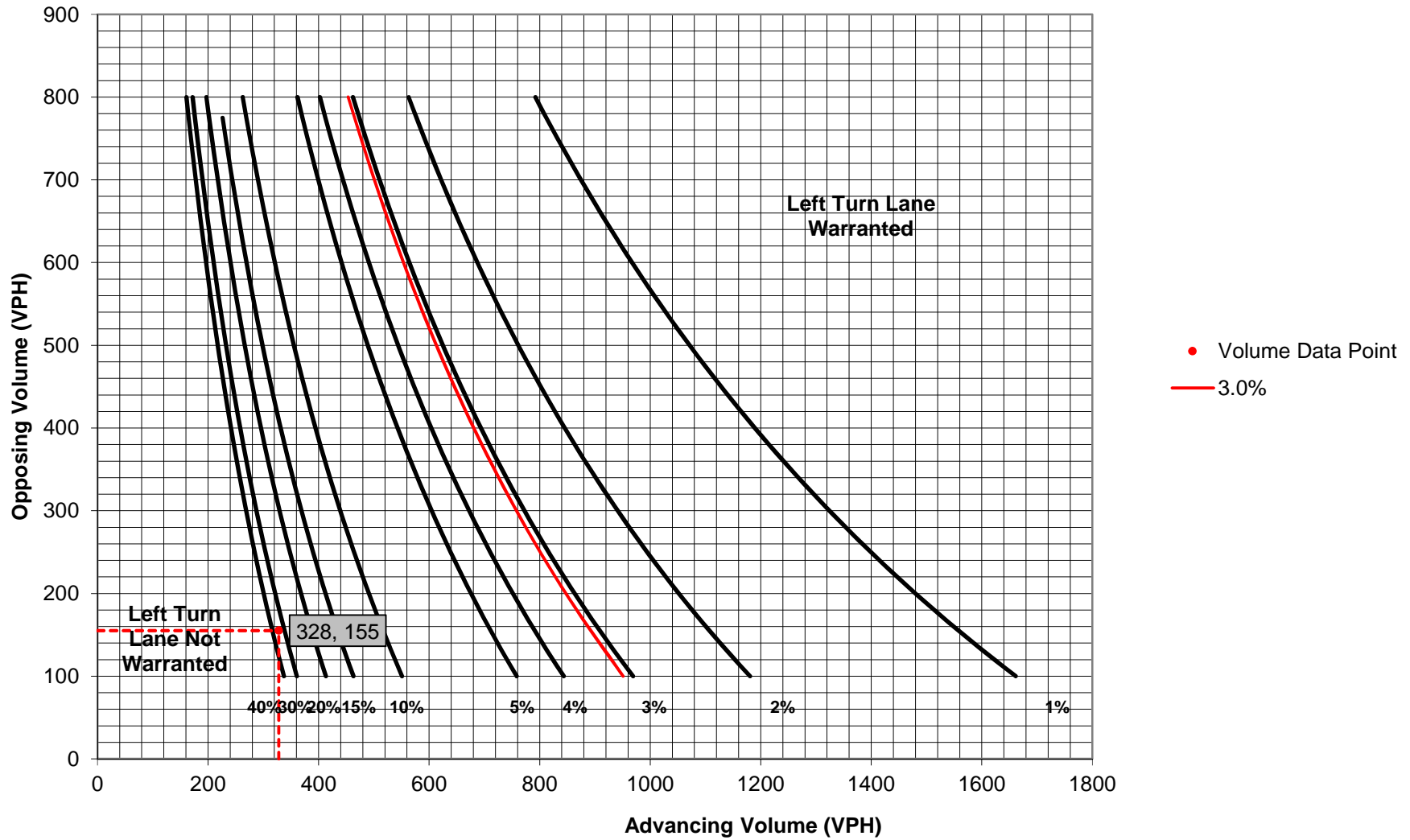
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Southbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="35"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	49	13.0%	59
	Through	-	164	0.0%	164
	Right	Yes	143	2.0%	148
Opposing	Left	Yes	9	11.0%	11
	Through	-	83	1.0%	85
	Right	Yes	37	5.0%	40

Advancing Volume:	<input type="text" value="371"/>
Opposing Volume:	<input type="text" value="136"/>
Left Turn Volume:	<input type="text" value="59"/>
% Left Turns in Advancing Volume: <input type="text" value="15.90%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

TURN LANE WARRANT FINDINGS

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

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="59"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="34"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

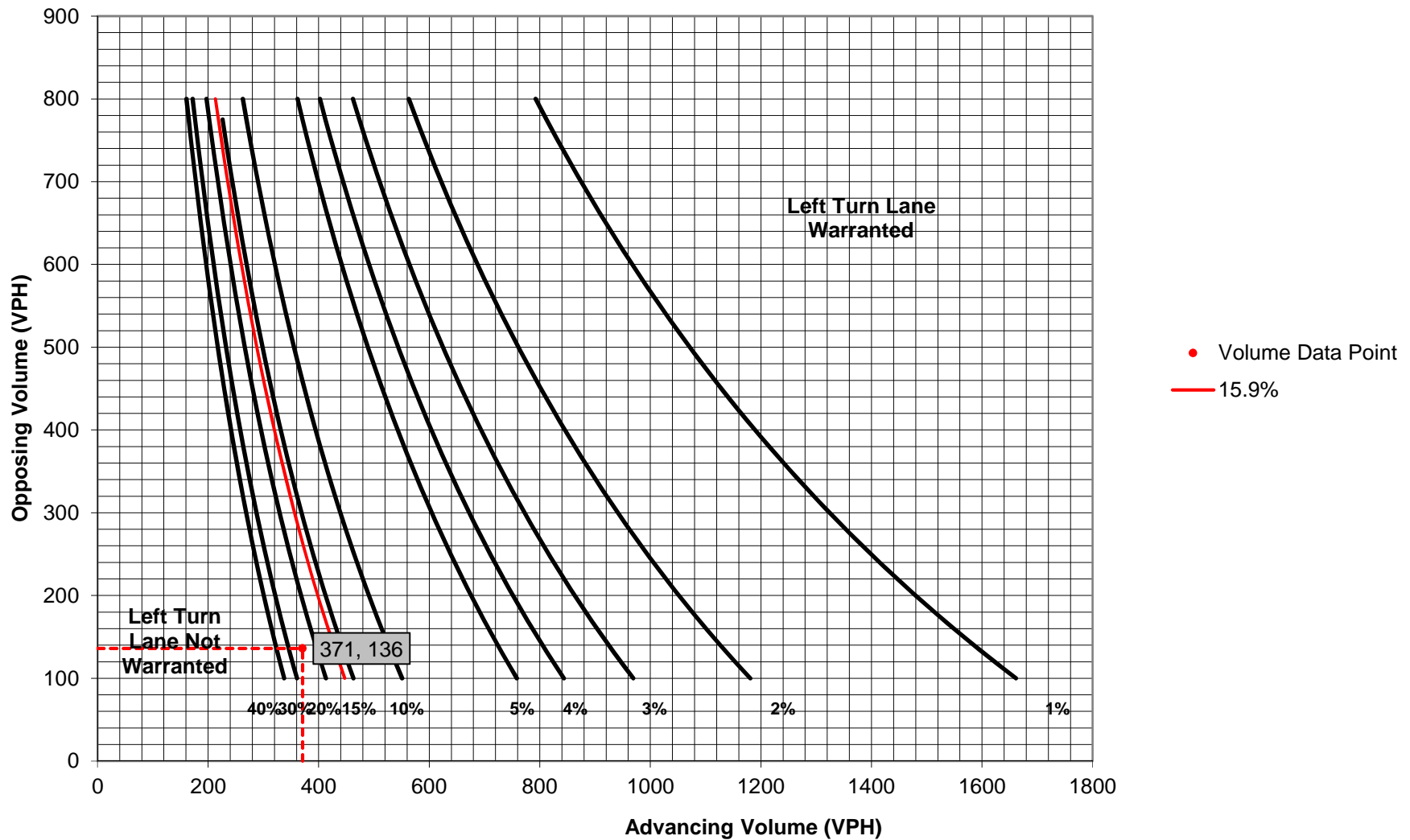
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Southbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="35"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	8	13.0%	10
	Through	-	122	0.0%	122
	Right	-	190	2.0%	196

Advancing Volume:	328
Right Turn Volume:	196

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 80%;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 80%;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 80%;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 80%;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="196"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="40"/>	Average # of Vehicles/Cycle: <input style="width: 80%;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

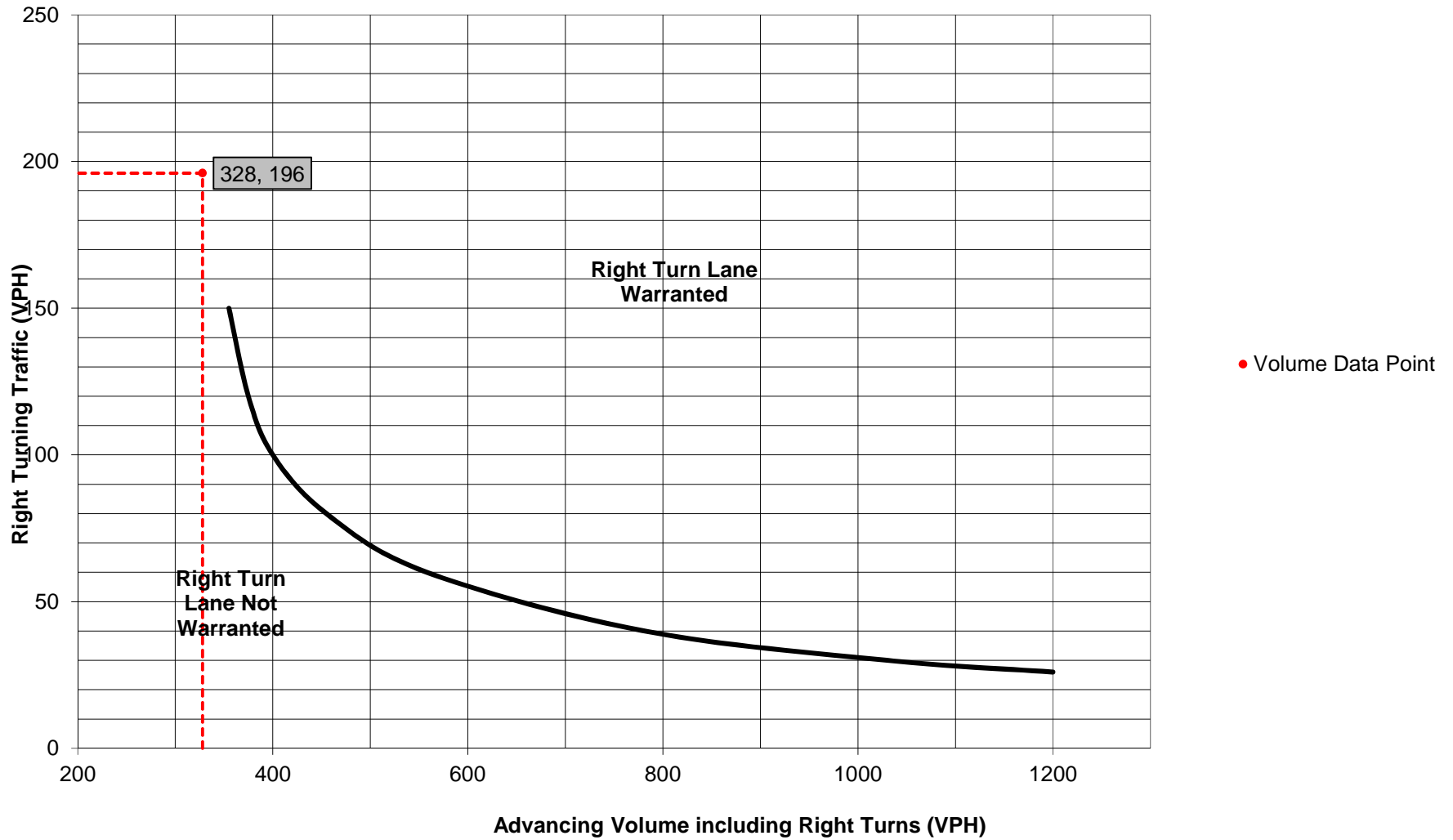
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/21/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Southbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	49	13.0%	59
	Through	-	164	0.0%	164
	Right	-	143	2.0%	148

Advancing Volume:	371
Right Turn Volume:	148

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 80%;" type="text" value="N/A"/> Warrant Met?: <input style="width: 80%;" type="text" value="N/A"/>		<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 80%;" type="text" value="Figure 9"/> Warrant Met?: <input style="width: 80%;" type="text" value="Yes"/>
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="148"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="34"/>	Average # of Vehicles/Cycle: <input style="width: 80%;" type="text" value="4.0"/>
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PennDOT Publication 46, Exhibit 11-6

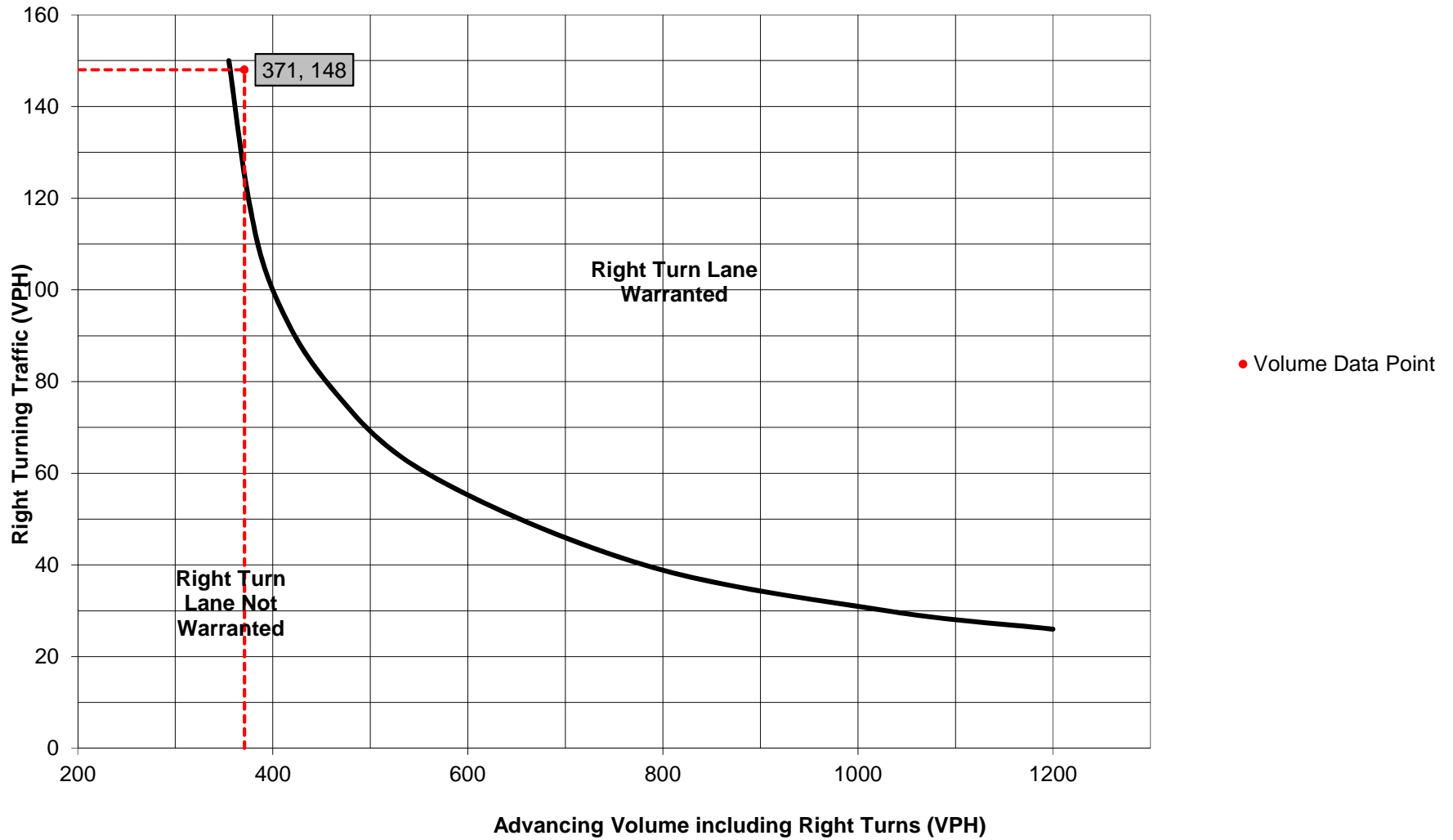
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	175	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	175	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Westbound Street Road (S.R. 0926) Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	8	0.0%	8	Advancing Volume: <input type="text" value="389"/> Opposing Volume: <input type="text" value="742"/> Left Turn Volume: <input type="text" value="8"/>
	Through	-	310	7.0%	343	
	Right	Yes	36	3.0%	38	
Opposing	Left	Yes	48	2.0%	50	% Left Turns in Advancing Volume: <input type="text" value="2.06%"/>
	Through	-	648	4.0%	687	
	Right	Yes	5	0.0%	5	

Right Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No			N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-			N/A	
	Right	-			N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:

Warrant Met?:

Right Turn Lane Warrant Findings

Applicable Warrant Figure:

Warrant Met?:

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="8"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="40"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: Feet

Condition B: Feet

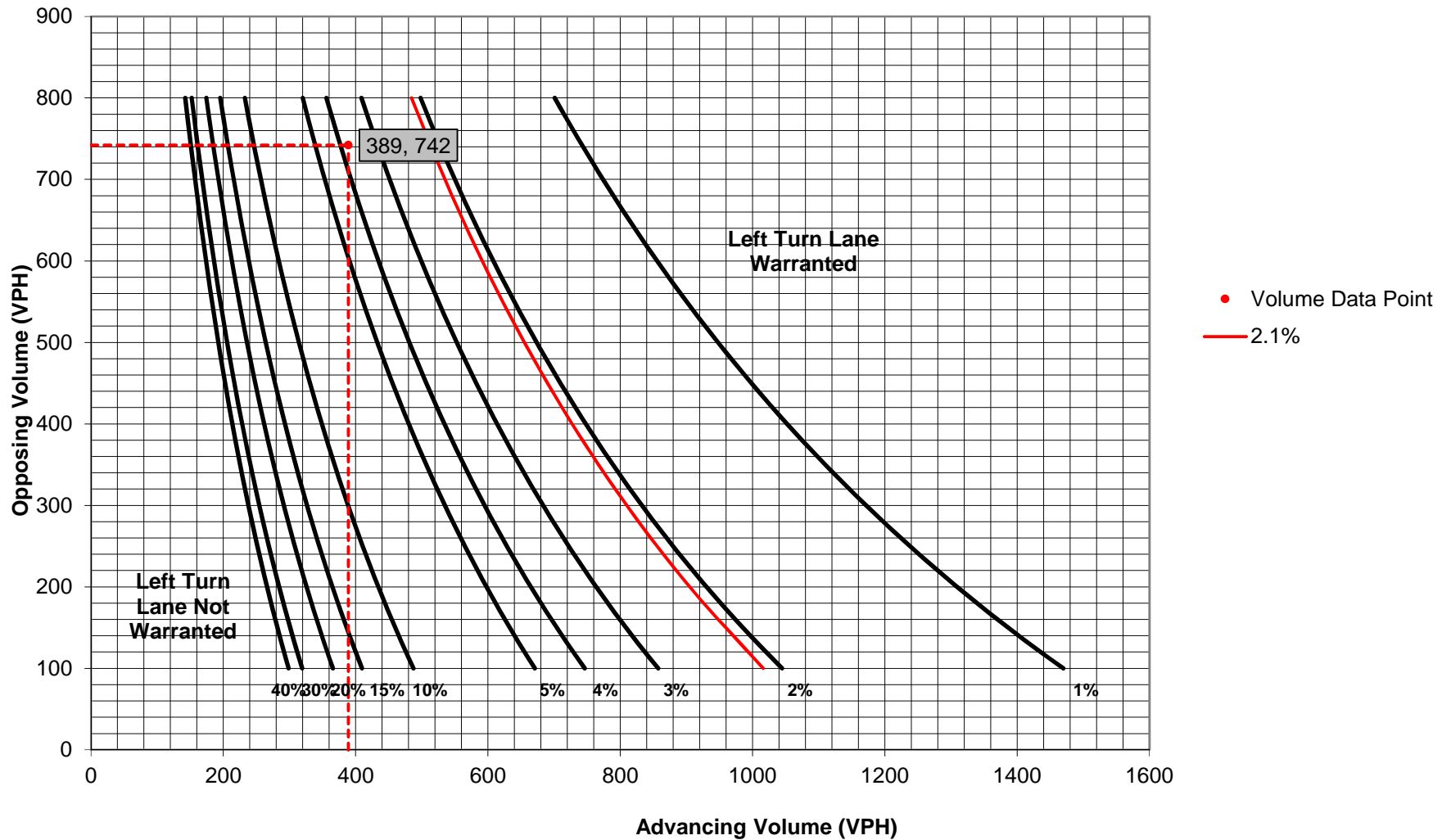
Condition C: Feet

Required Left Turn Lane Storage Length: Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/21/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Westbound Street Road (S.R. 0926) Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	19	0.0%	19
	Through	-	305	7.0%	338
	Right	Yes	30	3.0%	32
Opposing	Left	Yes	30	2.0%	31
	Through	-	659	4.0%	699
	Right	Yes	13	0.0%	13

Advancing Volume:	<input type="text" value="389"/>
Opposing Volume:	<input type="text" value="743"/>
Left Turn Volume:	<input type="text" value="19"/>
% Left Turns in Advancing Volume: <input type="text" value="4.88%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

TURN LANE WARRANT FINDINGS

<div style="background-color: #cccccc; text-align: center; padding: 2px; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 80%;" type="text" value="Figure 3"/> Warrant Met?: <input style="width: 80%;" type="text" value="Yes"/>	<div style="background-color: #cccccc; text-align: center; padding: 2px; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 80%;" type="text" value="N/A"/> Warrant Met?: <input style="width: 80%;" type="text" value="N/A"/>
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="19"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="34"/>	Average # of Vehicles/Cycle: <input style="width: 80%;" type="text" value="1.0"/>
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PennDOT Publication 46, Exhibit 11-6

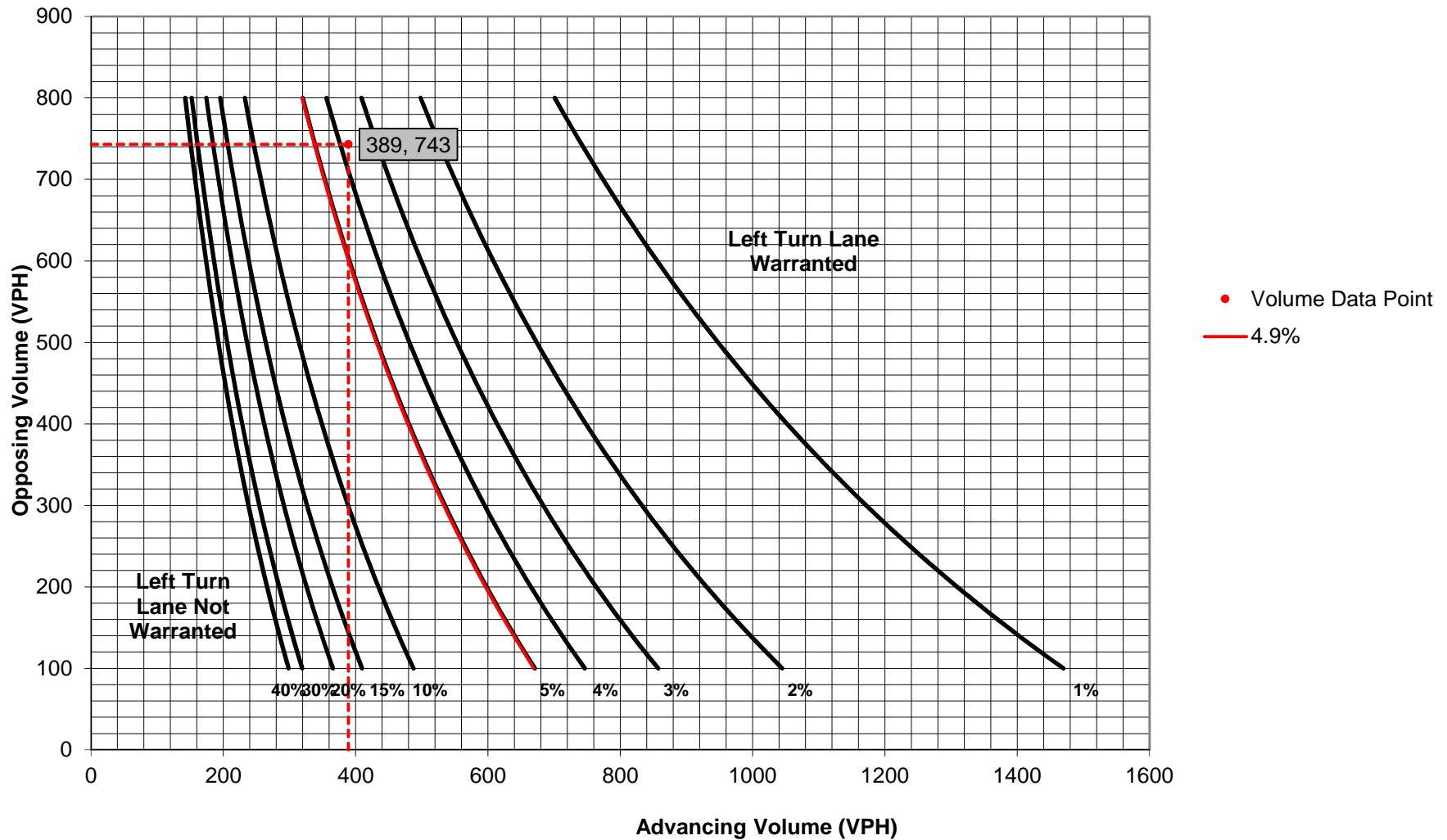
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input style="width: 80%;" type="text" value="N/A"/>	Feet
Condition B:	<input style="width: 80%;" type="text" value="125"/>	Feet
Condition C:	<input style="width: 80%;" type="text" value="150"/>	Feet
Required Left Turn Lane Storage Length:	<input style="width: 80%;" type="text" value="150"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Westbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>

% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>
-----------------------------------	----------------------------------

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	8	0.0%	8
	Through	-	310	7.0%	343
	Right	-	36	3.0%	38

Advancing Volume:	<input type="text" value="389"/>
Right Turn Volume:	<input type="text" value="38"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="N/A"/>
Warrant Met?:	<input type="text" value="N/A"/>

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="Figure 10"/>
Warrant Met?:	<input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	<input type="text" value="Signalized"/>
Design Hour Volume of Turning Lane:	<input type="text" value="38"/>
Cycles Per Hour (Assumed):	<input type="text" value="Known"/>
Cycles Per Hour (If Known):	<input type="text" value="40"/>
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

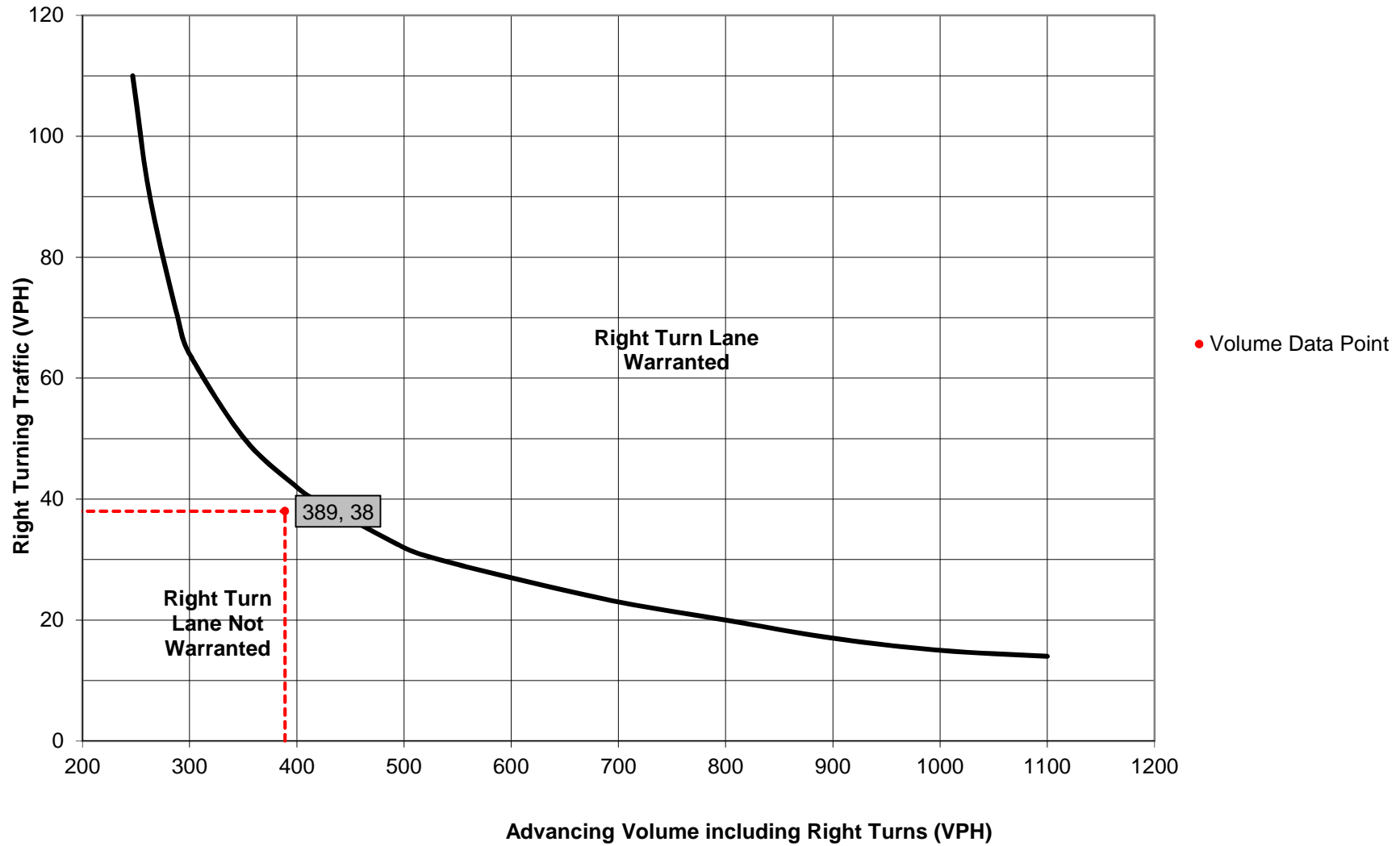
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:	<input type="text" value="N/A"/>
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Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/21/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Westbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>

% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>
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Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	19	0.0%	19
	Through	-	305	7.0%	338
	Right	-	30	3.0%	32

Advancing Volume:	<input type="text" value="389"/>
Right Turn Volume:	<input type="text" value="32"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="N/A"/>
Warrant Met?:	<input type="text" value="N/A"/>

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="Figure 10"/>
Warrant Met?:	<input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	<input type="text" value="Signalized"/>
Design Hour Volume of Turning Lane:	<input type="text" value="32"/>
Cycles Per Hour (Assumed):	<input type="text" value="Known"/>
Cycles Per Hour (If Known):	<input type="text" value="34"/>
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

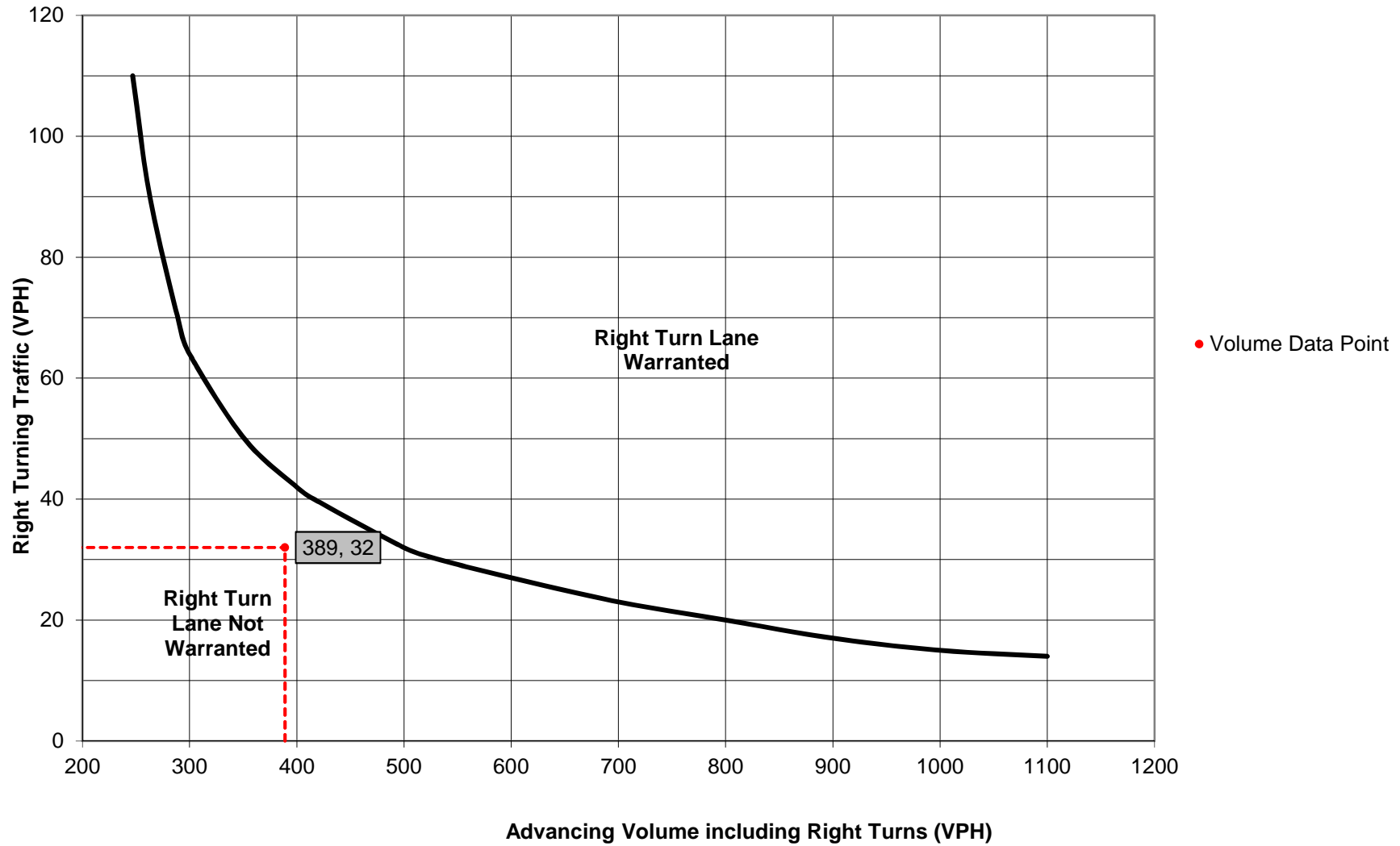
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:	<input type="text" value="N/A"/>
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Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



*New Street and
W. Pleasant Grove Road*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/21/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road
Northbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	173	2.0%	179
	Right	-	6	0.0%	6

Advancing Volume:	185
Right Turn Volume:	6

TURN LANE WARRANT FINDINGS

<h4 style="text-align: center; margin: 0;">Left Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: N/A</p> <p>Warrant Met?: N/A</p>		<h4 style="text-align: center; margin: 0;">Right Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: Figure 9</p> <p>Warrant Met?: No</p>
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TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	6
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

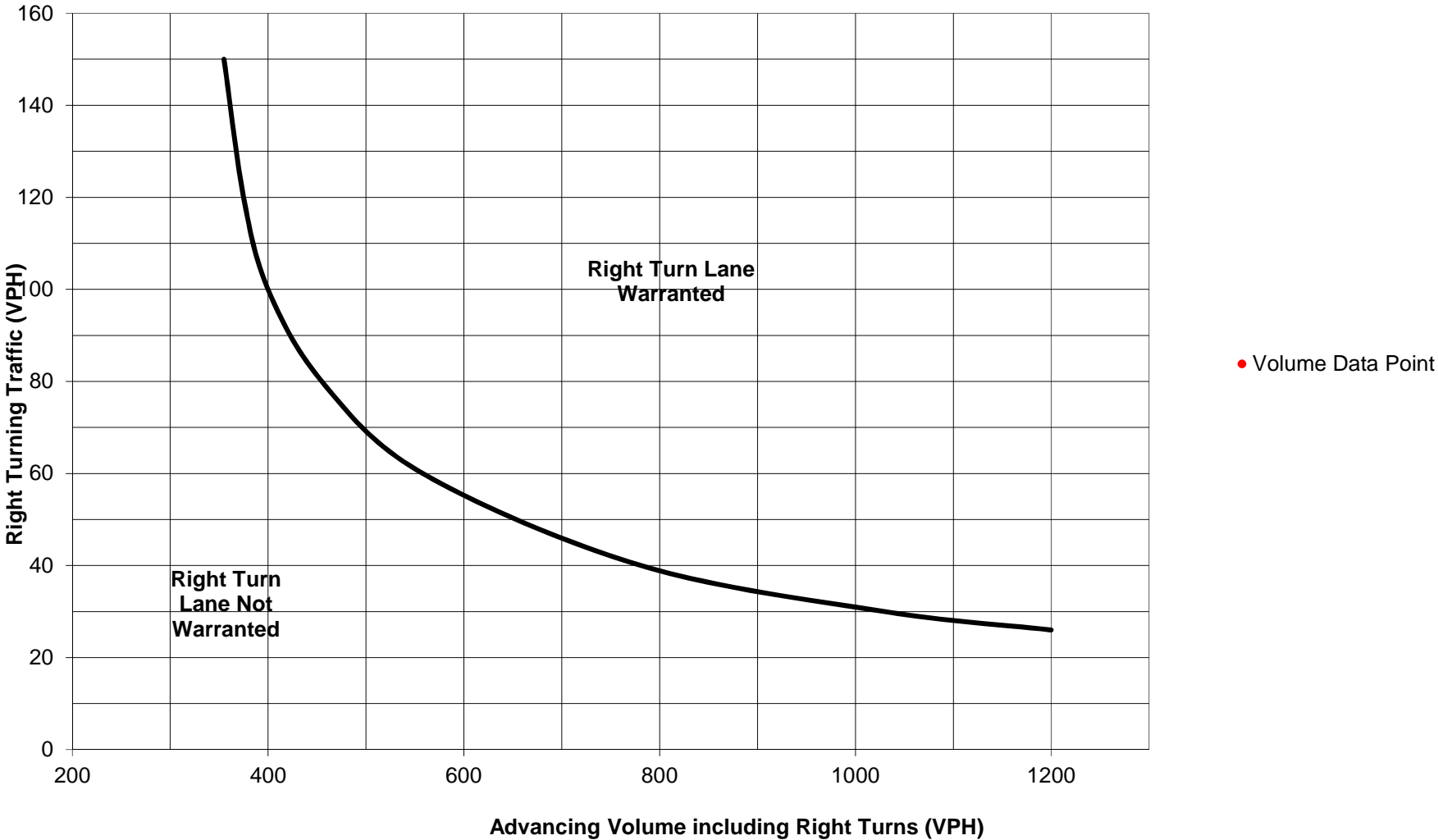
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



NOTE: The point (185,6) is below the viewport of the graph.

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 10/21/2019
County: Chester County	Conducted By: BGG
PennDOT Engineering District: 6	Checked By: JDG
	Agency/Company Name: McMahan Associates, Inc.
Intersection & Approach Description: New Street and West Pleasant Grove Road Northbound New Street Right-Turn Lane	
Analysis Period: 2019 Existing	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	
Type of Terrain: Rolling	Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: N/A	
	Through	-	0	0.0%	N/A		Opposing Volume: N/A
	Right	Yes	0	0.0%	N/A		Left Turn Volume: N/A
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: N/A	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		

Right Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	0	Advancing Volume: 163	
	Through	-	143	1.0%	146		Right Turn Volume: 17
	Right	-	17	0.0%	17		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	Average # of Vehicles/Cycle: N/A
Design Hour Volume of Turning Lane: 17	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: **N/A** Feet

Condition B: **N/A** Feet

Condition C: **N/A** Feet

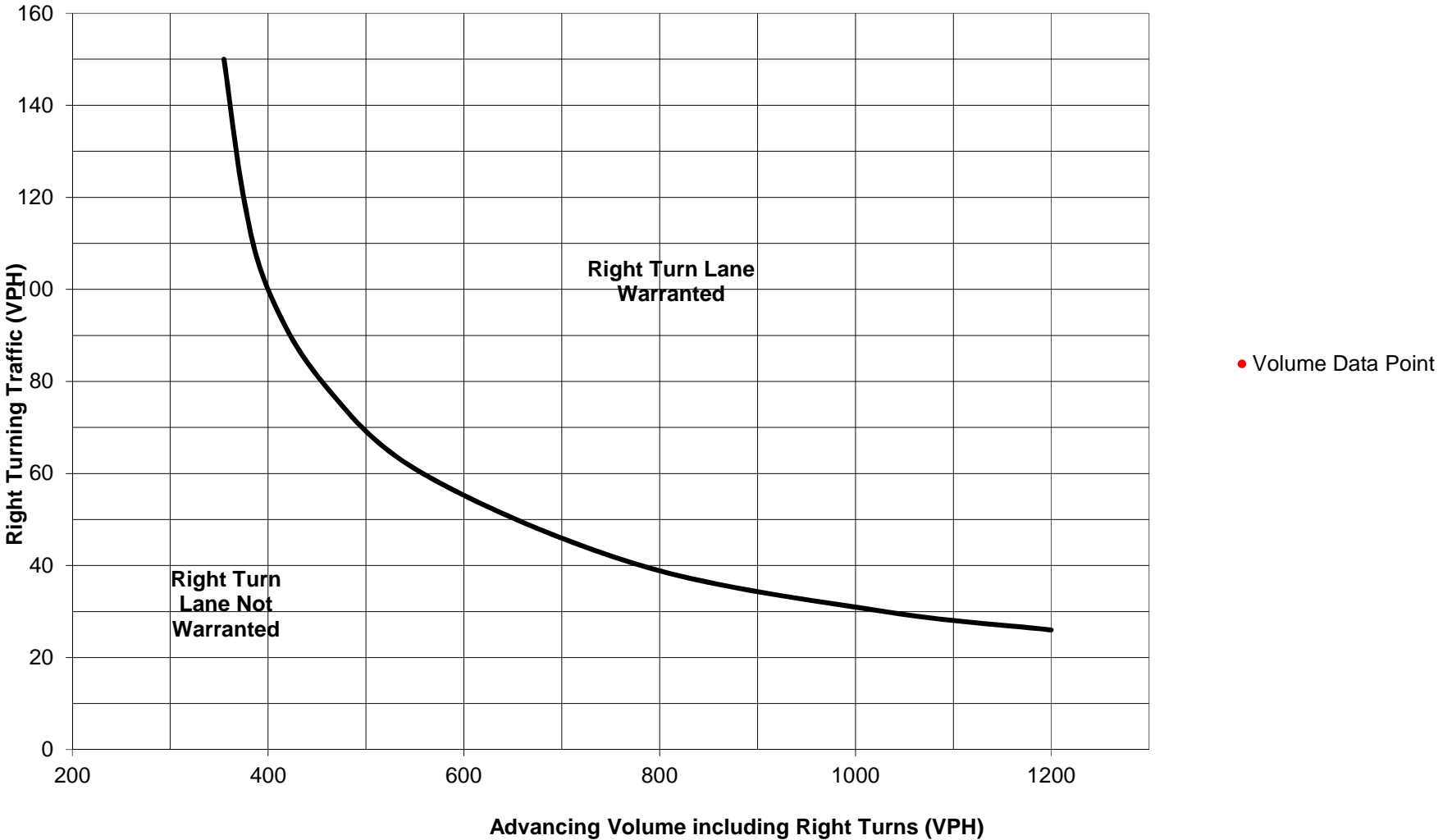
Required Right Turn Lane Storage Length: **N/A** Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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



NOTE: The point (163,17) is below the viewport of the graph.

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road
Southbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="35"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	Yes	13	8.0%	15
	Through	-	127	1.0%	129
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	0	0.0%	0
	Through	-	173	2.0%	179
	Right	Yes	6	0.0%	6

Advancing Volume:	144
Opposing Volume:	185
Left Turn Volume:	15

% Left Turns in Advancing Volume:	10.42%
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Right Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	No	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	-	0	0.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 1
Warrant Met?:	No

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	<input type="text" value="Unsignalized"/>
Design Hour Volume of Turning Lane:	<input type="text" value="15"/>
Cycles Per Hour (Assumed):	<input type="text" value="60"/>
Cycles Per Hour (If Known):	<input type="text" value=""/>
Average # of Vehicles/Cycle:	<input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

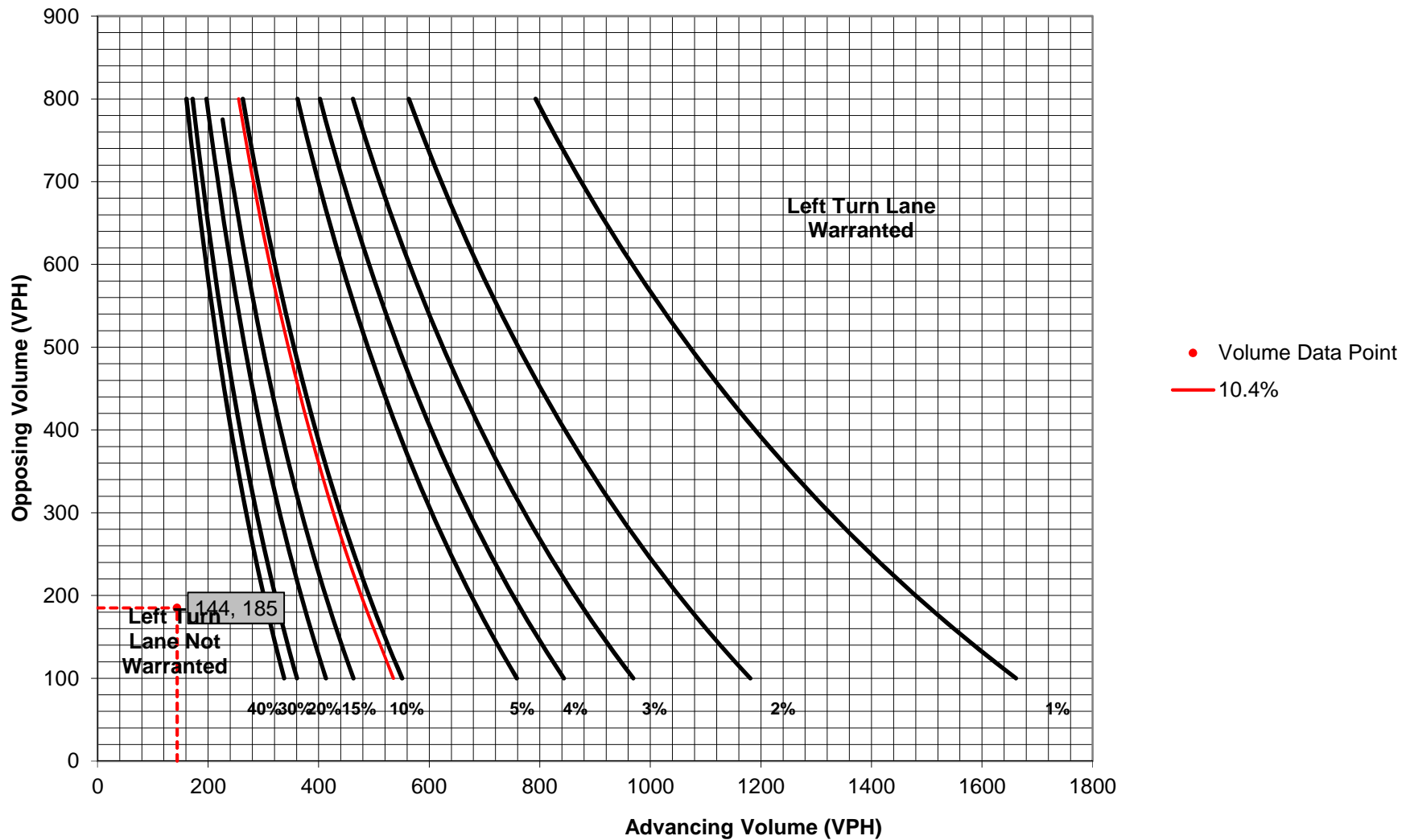
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:	<input type="text" value="N/A"/>
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Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input style="width: 100%;" type="text" value="Westtown Township"/> County: <input style="width: 100%;" type="text" value="Chester County"/> PennDOT Engineering District: <input style="width: 100%;" type="text" value="6"/>	Analysis Date: <input style="width: 100%;" type="text" value="10/21/2019"/> Conducted By: <input style="width: 100%;" type="text" value="BGG"/> Checked By: <input style="width: 100%;" type="text" value="JDG"/> Agency/Company Name: <input style="width: 100%;" type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input style="width: 100%;" type="text" value="New Street and West Pleasant Grove Road
Southbound New Street Left-Turn Lane"/>	
Analysis Period: <input style="width: 100%;" type="text" value="2019 Existing"/> Design Hour: <input style="width: 100%;" type="text" value="PM Peak Hour"/> Intersection Control: <input style="width: 100%;" type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input style="width: 100%;" type="text" value="35"/> Type of Terrain: <input style="width: 100%;" type="text" value="Rolling"/>	Number of Approach Lanes: <input style="width: 100%;" type="text" value="1"/> Undivided or Divided Highway: <input style="width: 100%;" type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input style="width: 100%;" type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	Yes	18	0.0%	18
	Through	-	168	2.0%	174
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	0	0.0%	0
	Through	-	143	1.0%	146
	Right	Yes	17	0.0%	17
					Advancing Volume: <input style="width: 100%;" type="text" value="192"/> Opposing Volume: <input style="width: 100%;" type="text" value="163"/> Left Turn Volume: <input style="width: 100%;" type="text" value="18"/>
					% Left Turns in Advancing Volume: <input style="width: 100%;" type="text" value="9.38%"/>

Right Turn Lane Volume Calculations					
Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	No	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	-	0	0.0%	N/A
					Advancing Volume: <input style="width: 100%;" type="text" value="N/A"/> Right Turn Volume: <input style="width: 100%;" type="text" value="N/A"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 100%;" type="text" value="Figure 1"/> Warrant Met?: <input style="width: 100%;" type="text" value="No"/>	Applicable Warrant Figure: <input style="width: 100%;" type="text" value="N/A"/> Warrant Met?: <input style="width: 100%;" type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input style="width: 100%;" type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input style="width: 100%;" type="text" value="18"/> Cycles Per Hour (Assumed): <input style="width: 100%;" type="text" value="60"/> Cycles Per Hour (If Known): <input style="width: 100%;" type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100%;" type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

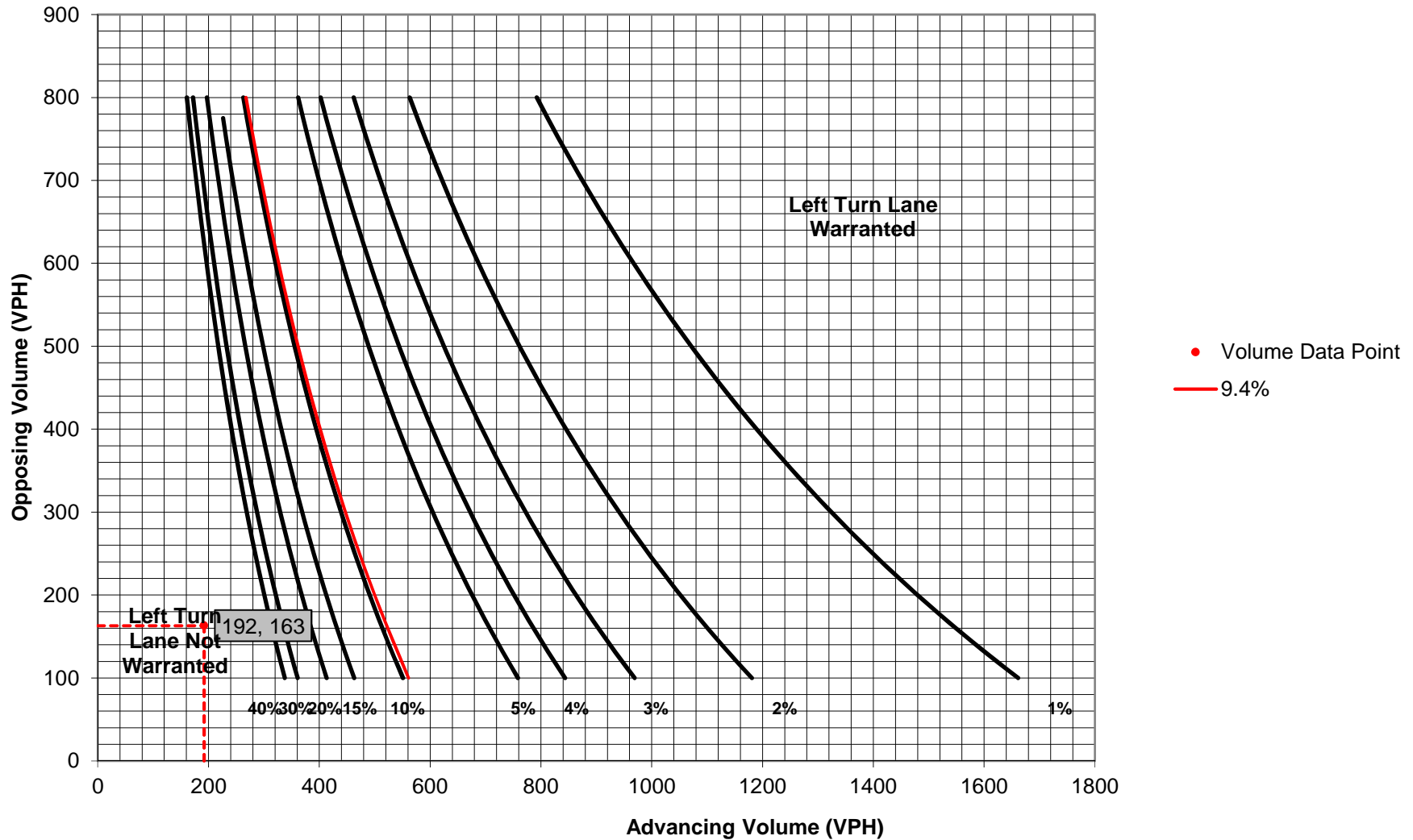
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input style="width: 100%;" type="text" value="N/A"/>	Feet
Condition B:	<input style="width: 100%;" type="text" value="N/A"/>	Feet
Condition C:	<input style="width: 100%;" type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input style="width: 100%;" type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/21/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road
Westbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="35"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A

% Left Turns in Advancing Volume:	N/A
-----------------------------------	-----

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	203	2.0%	210
	Through	-	0	0.0%	0
	Right	-	21	12.0%	25

Advancing Volume:	235
Right Turn Volume:	25

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 9
Warrant Met?:	No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	25
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

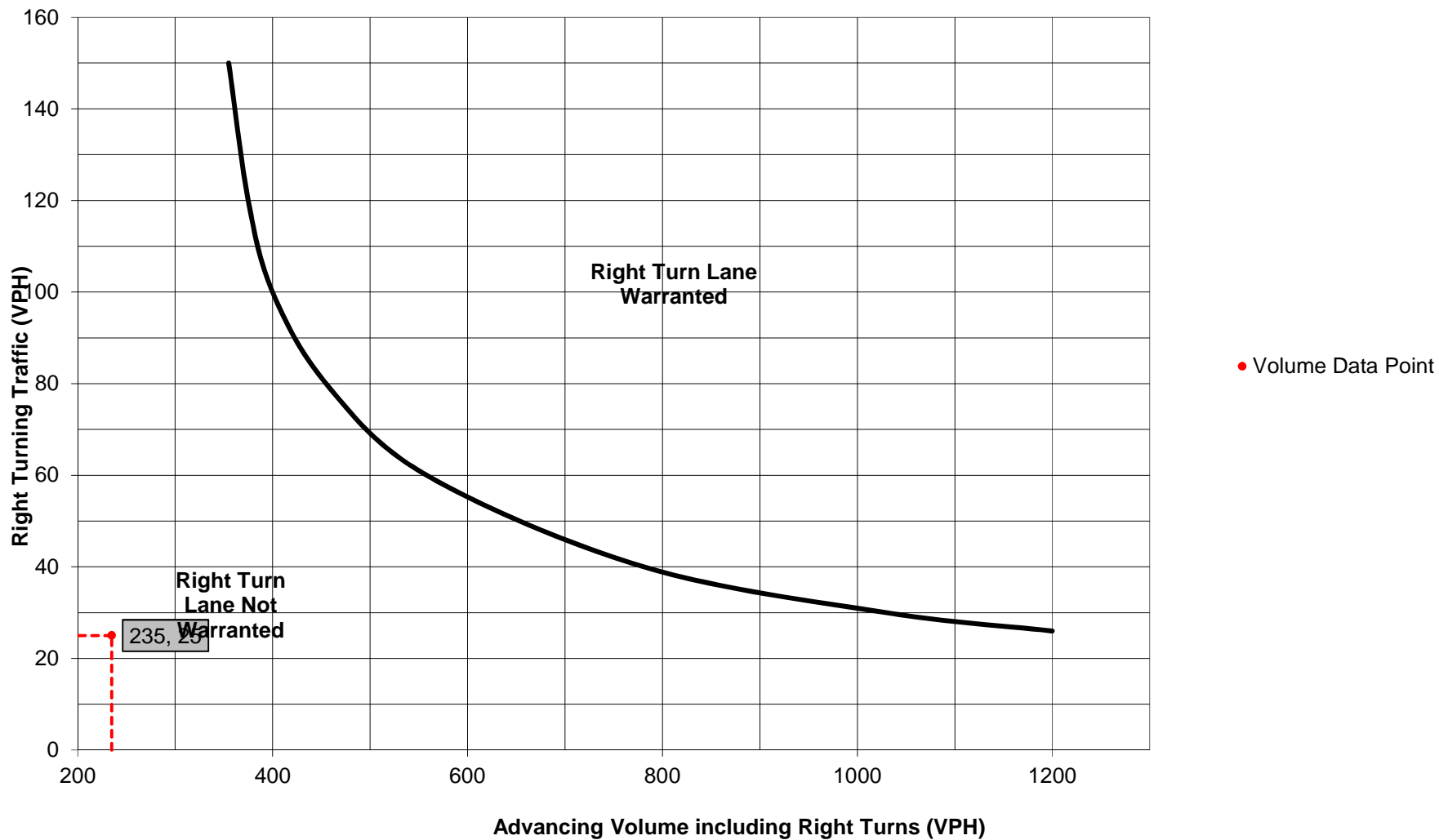
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:	N/A
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Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/21/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road
Westbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	
N/A	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	198	1.0%	201
	Through	-	0	0.0%	0
	Right	-	47	2.0%	49

Advancing Volume:	250
Right Turn Volume:	49

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: N/A Warrant Met?: N/A	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: Figure 9 Warrant Met?: No
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="49"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

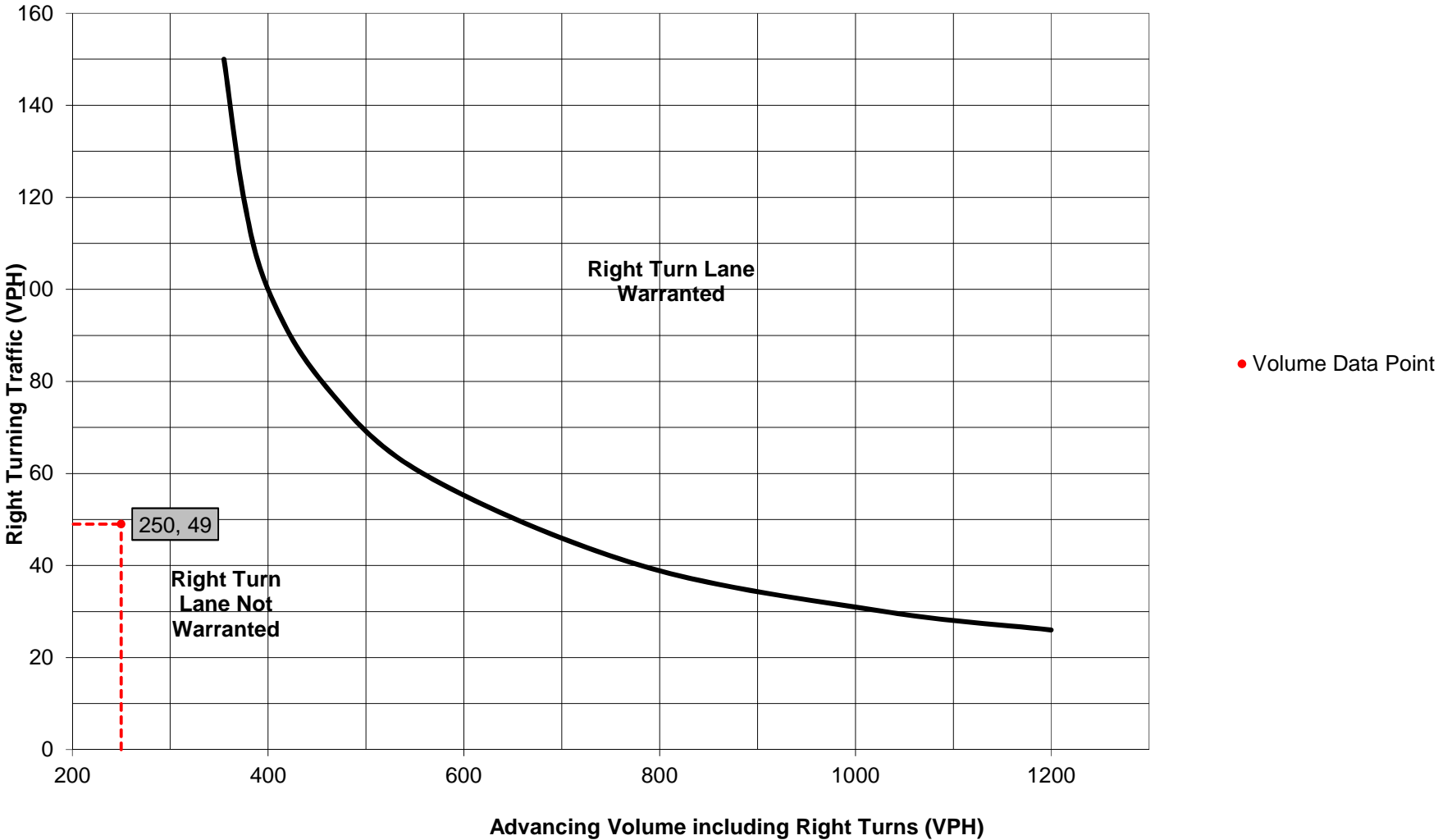
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



*U.S. Route 202 (Wilmington Pike) and
W. Pleasant Grove Road*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/21/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="U.S. Route 202 and West Pleasant Grove Road
Southbound U.S. Route 202 Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="2"/> Undivided or Divided Highway: <input type="text" value="Divided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume: <input style="width: 100px;" type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	37	3.0%	N/A
	Through	-	1753	9.0%	1990
	Right	-	150	3.0%	157

Advancing Volume:	2147
Right Turn Volume:	157

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/> Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/>		<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 12"/> Warrant Met?: <input style="width: 100px;" type="text" value="Yes"/>
---	--	--

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	157
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	3.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

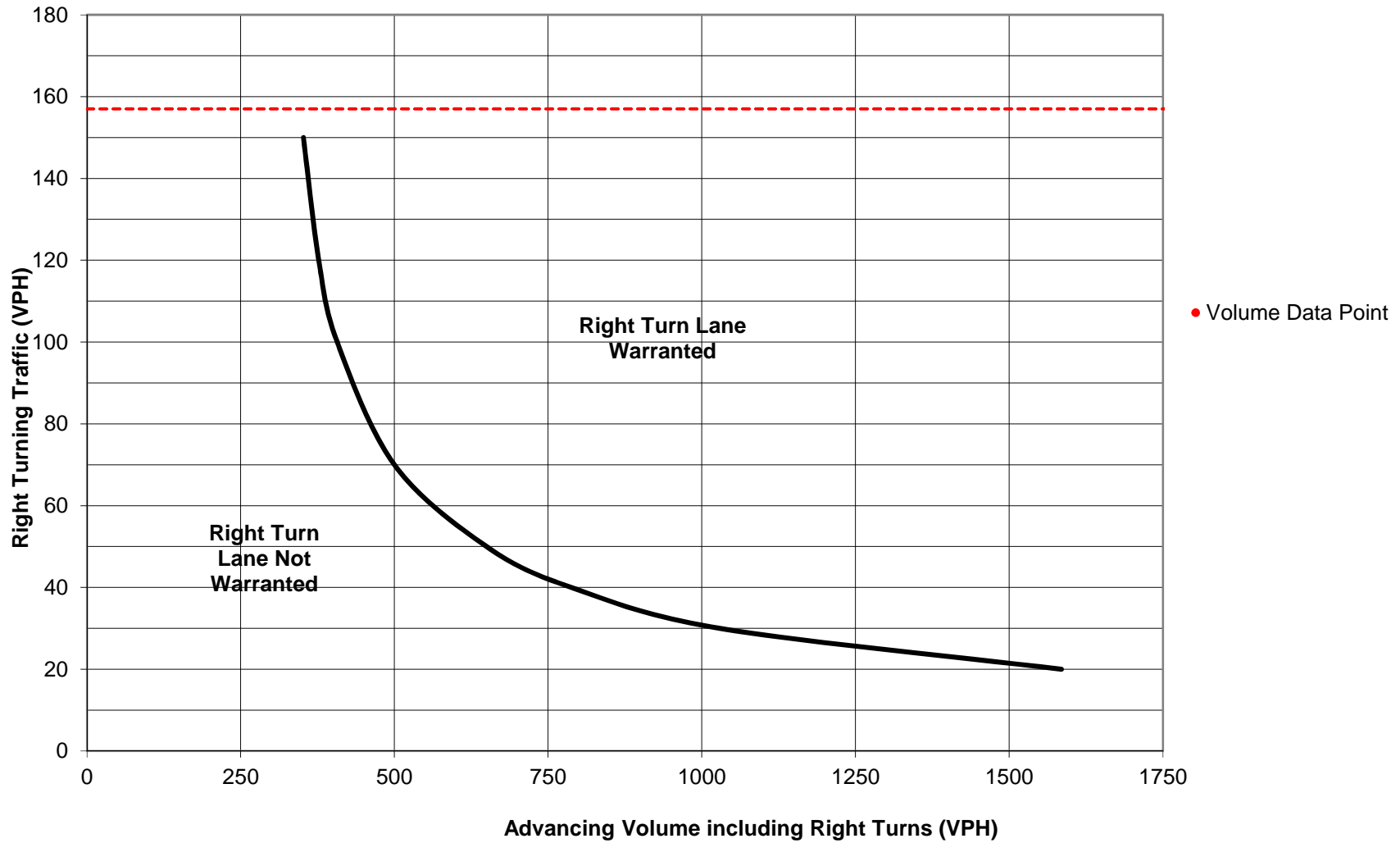
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	225	Feet
Required Right Turn Lane Storage Length:	225	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

**Figure 12. Warrant for right turn lanes on four-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 10/21/2019
County: Chester County	Conducted By: BGG
PennDOT Engineering District: 6	Checked By: JDG
	Agency/Company Name: McMahan Associates, Inc.
Intersection & Approach Description: U.S. Route 202 and West Pleasant Grove Road Southbound U.S. Route 202 Right-Turn Lane	
Analysis Period: 2019 Existing	Number of Approach Lanes: 2
Design Hour: PM Peak Hour	Undivided or Divided Highway: Divided
Intersection Control: Unsignalized	Type of Analysis
Posted Speed Limit (MPH): 45	
Type of Terrain: Rolling	

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A

% Left Turns in Advancing Volume:	N/A
-----------------------------------	-----

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	89	0.0%	N/A
	Through	-	1701	3.0%	1778
	Right	-	202	1.0%	206

Advancing Volume:	1984
Right Turn Volume:	206

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 12
Warrant Met?:	Yes

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	206
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	3.0

PennDOT Publication 46, Exhibit 11-6

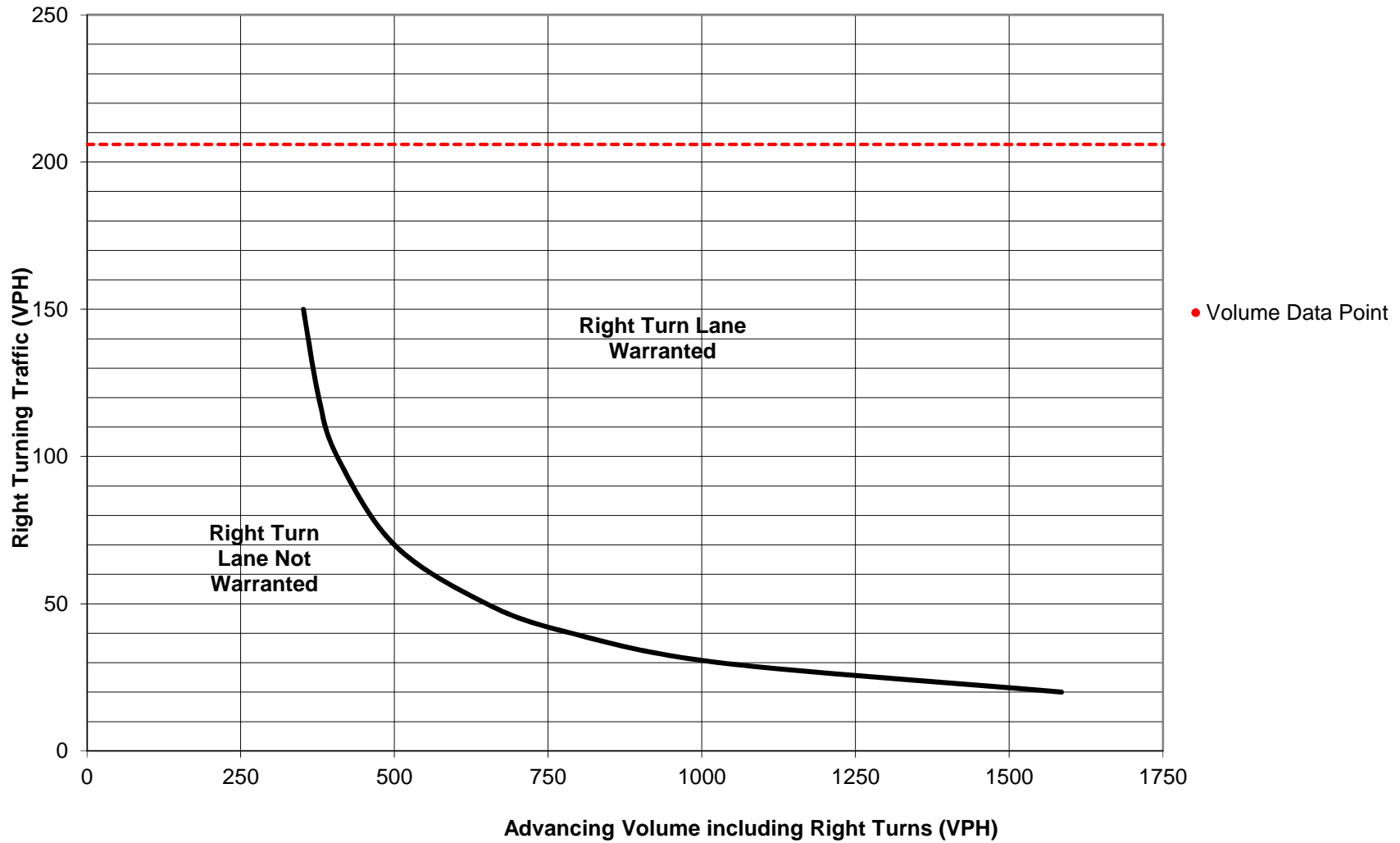
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	225	Feet
Required Right Turn Lane Storage Length:	225	Feet

Additional Findings:	N/A
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Additional Comments / Justifications:

**Figure 12. Warrant for right turn lanes on four-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



2030 with Development

West Pleasant Grove Road and Orois Way

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	1/9/2020
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: West Pleasant Grove Road and Orvis Way Eastbound West Pleasant Grove Left-Turn Lane			
Analysis Period:	2030 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 Analysis:	Left Turn Lane
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	134	2.0%	136
	Through	-	29	0.0%	29
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	262	3.0%	266
	Right	Yes	28	2.0%	29

Advancing Volume:	165
Opposing Volume:	295
Left Turn Volume:	136

% Left Turns in Advancing Volume: 82.42%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	-			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: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	136	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

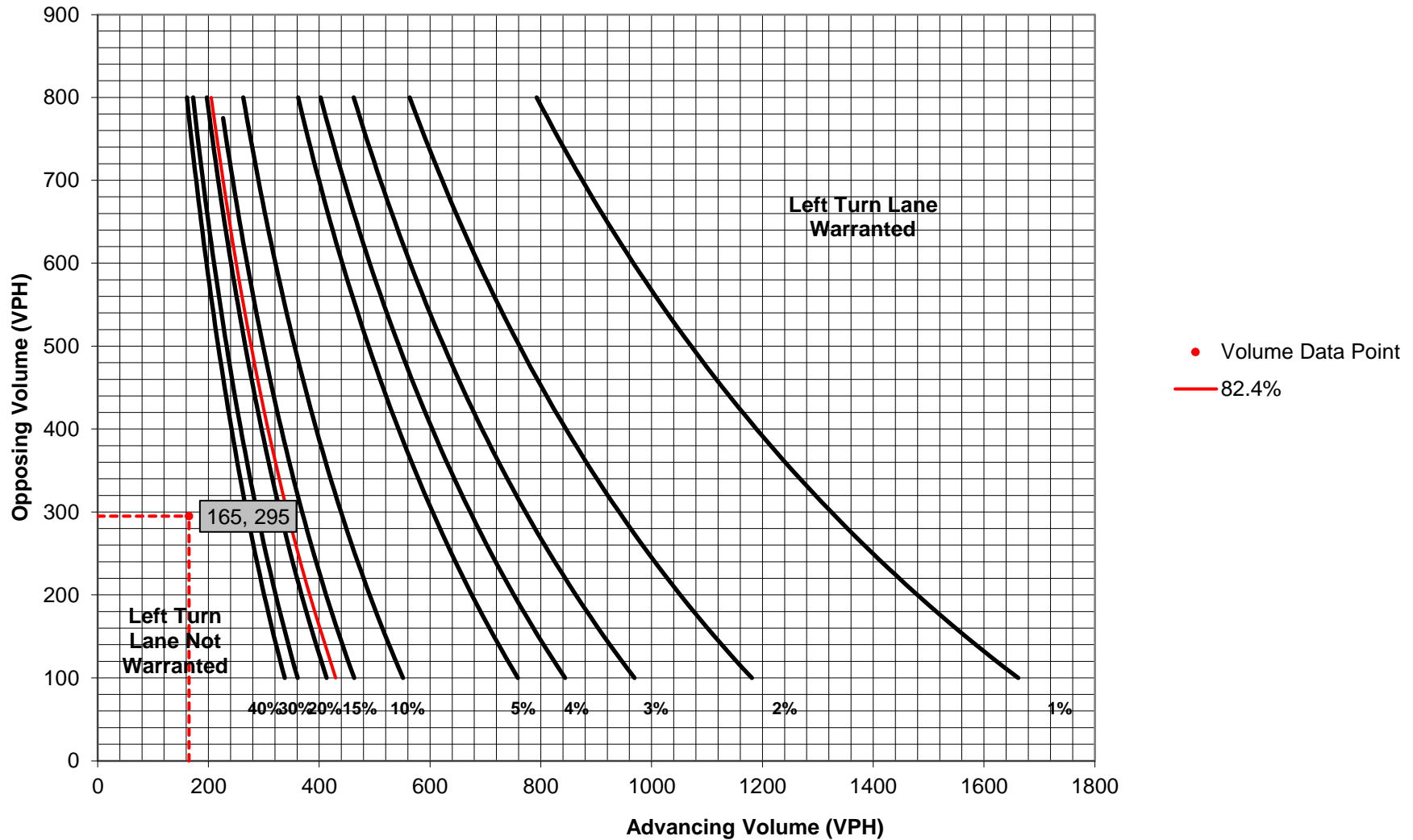
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Westtown Township	Analysis Date:	1/9/2020
County:	Chester County	Conducted By:	BGG
PennDOT Engineering District:	6	Checked By:	JDG
		Agency/Company Name:	McMahon Associates, Inc.
Intersection & Approach Description: West Pleasant Grove Road and Orvis Way Eastbound West Pleasant Grove Left-Turn Lane			
Analysis Period:	2030 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 Analysis:	Left Turn Lane
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	195	2.0%	197
	Through	-	36	0.0%	36
	Right	Yes			0
Opposing	Left	Yes			0
	Through	-	399	1.0%	401
	Right	Yes	21	2.0%	22

Advancing Volume:	233
Opposing Volume:	423
Left Turn Volume:	197
% Left Turns in Advancing Volume: 84.55%	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	-			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: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	197	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

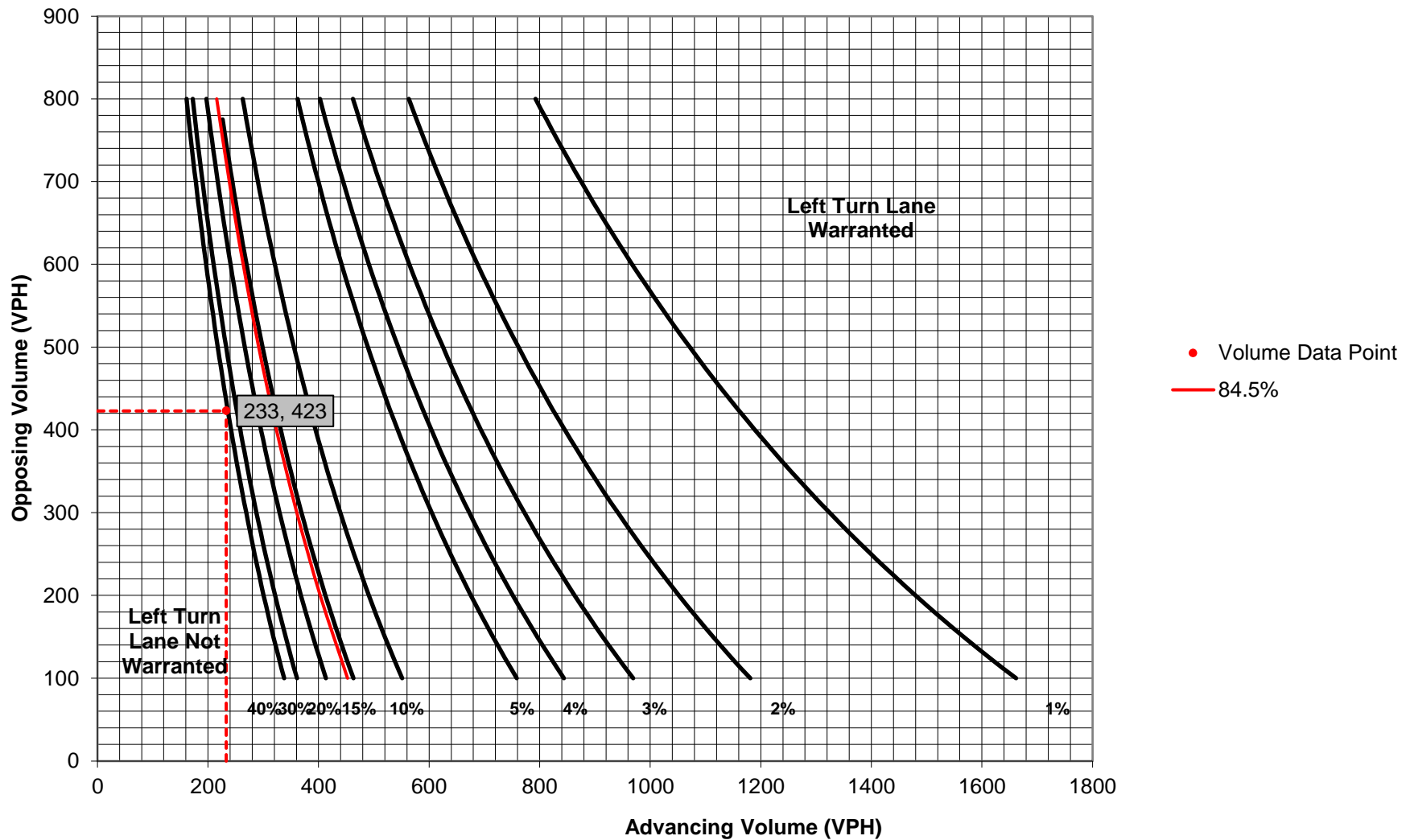
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



*New Street and
W. Pleasant Grove Road*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/23/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road
Northbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="35"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	183	2.0%	189
	Right	-	41	0.0%	41

Advancing Volume:	230
Right Turn Volume:	41

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 80px;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 80px;" type="text" value="Figure 9"/>
Warrant Met?: <input style="width: 80px;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 80px;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="41"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

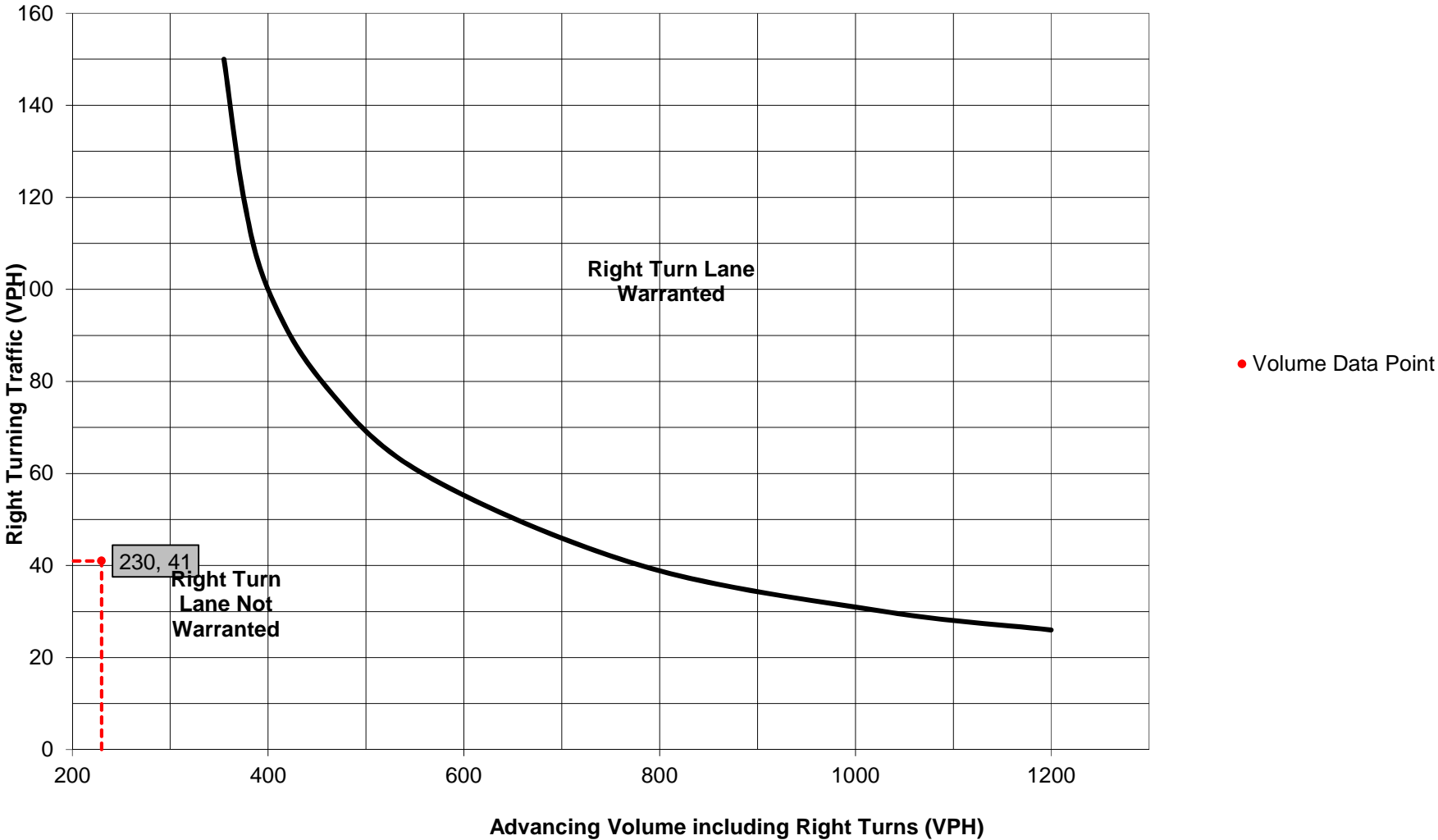
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road
Northbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	151	1.0%	154
	Right	-	56	0.0%	56

Advancing Volume:	210
Right Turn Volume:	56

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: N/A Warrant Met?: N/A	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: Figure 9 Warrant Met?: No
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="56"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

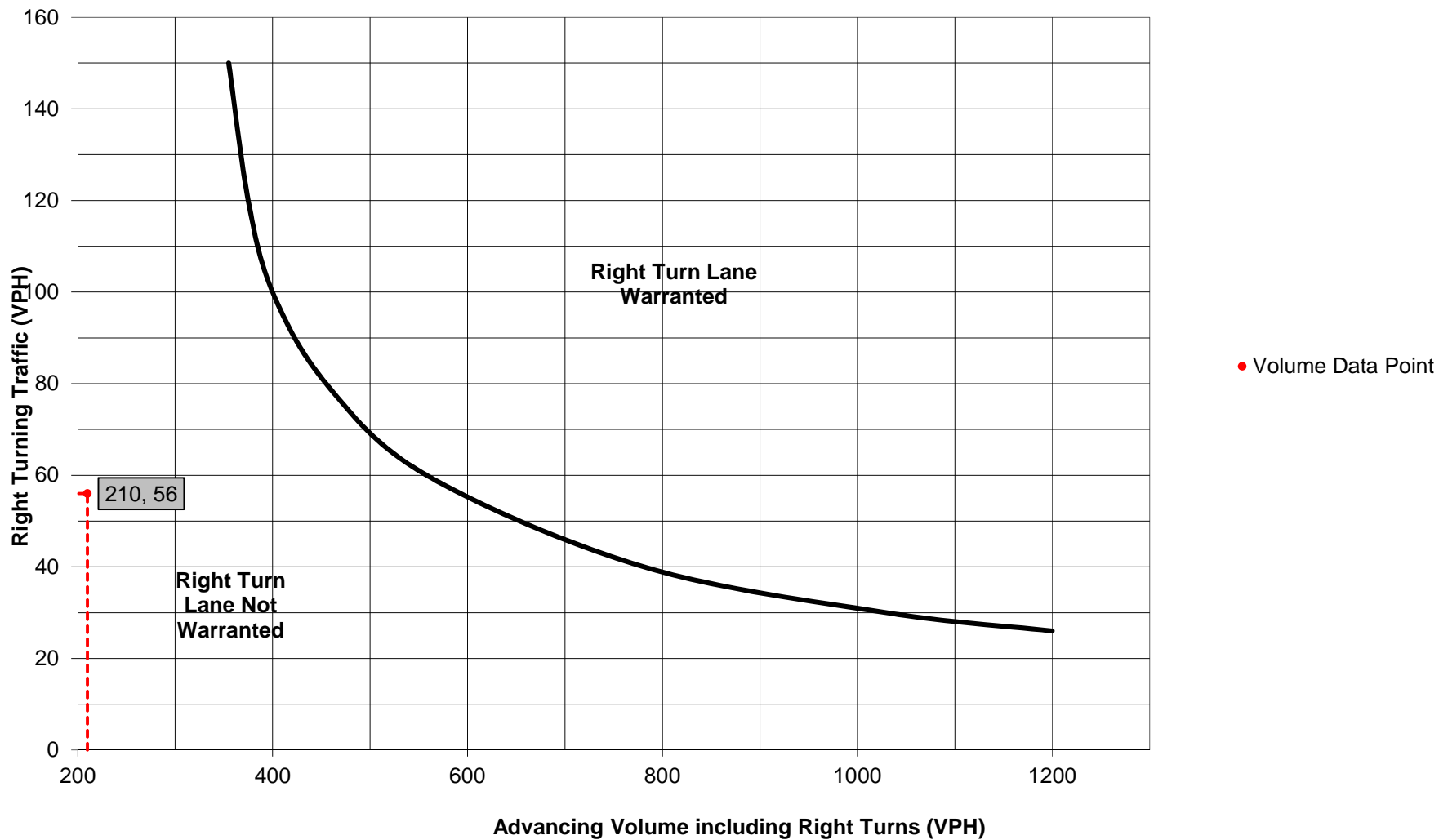
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 10/23/2019
County: Chester County	Conducted By: BGG
PennDOT Engineering District: 6	Checked By: JDG
	Agency/Company Name: McMahan Associates, Inc.
Intersection & Approach Description: New Street and West Pleasant Grove Road Southbound New Street Left-Turn Lane	
Analysis Period: 2030 with Dev	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	
Type of Terrain: Rolling	Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	19	8.0%	22	Advancing Volume: 159 Opposing Volume: 230 Left Turn Volume: 22
	Through	-	134	1.0%	137	
	Right	Yes	0	0.0%	0	
Opposing	Left	Yes	0	0.0%	0	% Left Turns in Advancing Volume: 13.84%
	Through	-	183	2.0%	189	
	Right	Yes	41	0.0%	41	

Right Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: N/A Right Turn Volume: N/A
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1	Applicable Warrant Figure: N/A
Warrant Met?: No	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	
Design Hour Volume of Turning Lane: 22	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

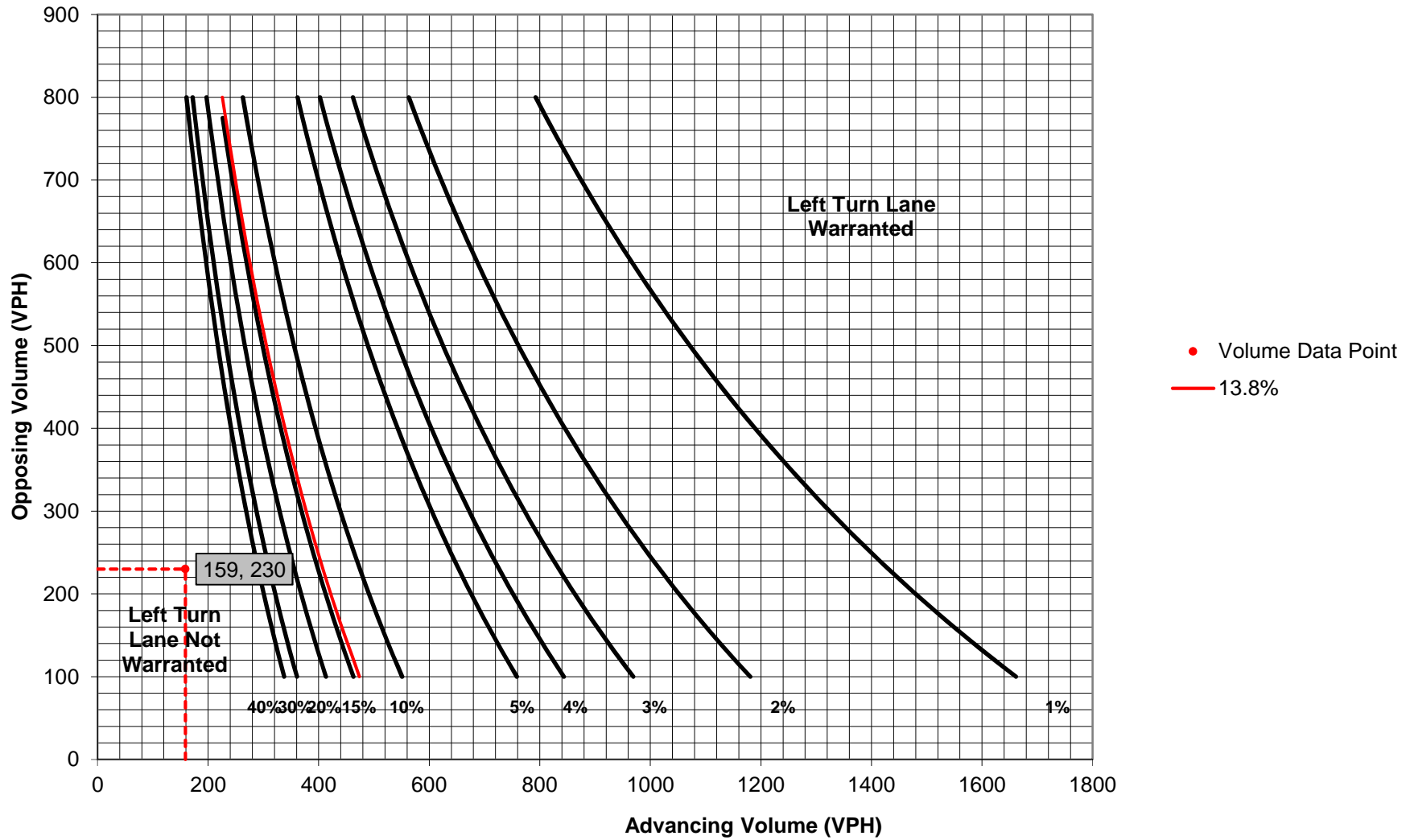
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road
Southbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	29	0.0%	29
	Through	-	178	2.0%	184
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	0	0.0%	0
	Through	-	151	1.0%	154
	Right	Yes	56	0.0%	56

Advancing Volume:	213
Opposing Volume:	210
Left Turn Volume:	29
% Left Turns in Advancing Volume: <input style="width: 100px;" type="text" value="13.62%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	-	0	0.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 1"/> Warrant Met?: <input style="width: 100px;" type="text" value="No"/>	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/> Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/>
---	--

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="29"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

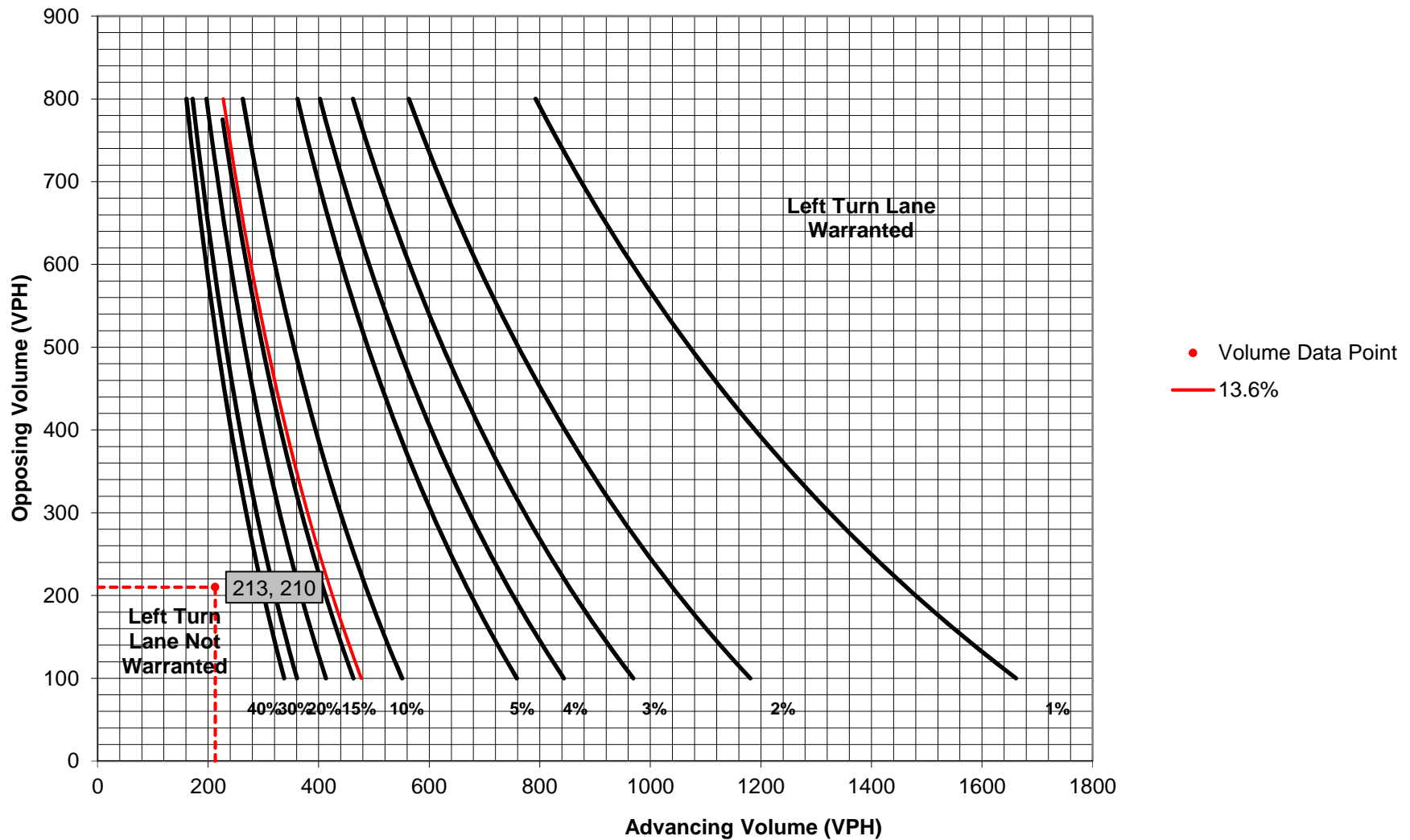
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road Westbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 ith Dev"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume: <input style="width: 100px;" type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	174	2.0%	180
	Through	-	0	0.0%	0
	Right	-	30	12.0%	36

Advancing Volume:	216
Right Turn Volume:	36

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/> Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/>		<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 9"/> Warrant Met?: <input style="width: 100px;" type="text" value="No"/>
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="36"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/>
--	---

PennDOT Publication 46, Exhibit 11-6

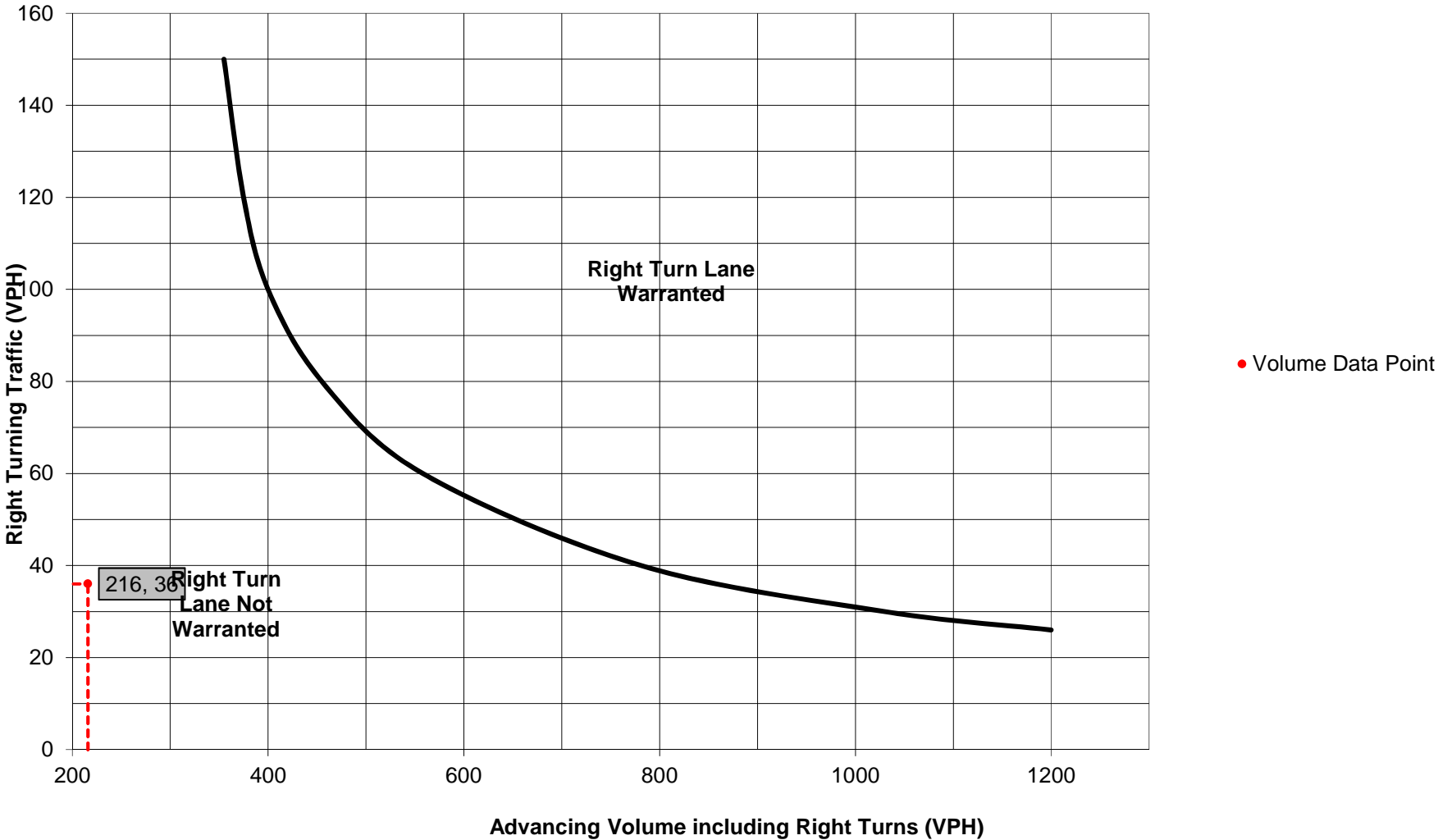
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="New Street and West Pleasant Grove Road
Westbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	167	1.0%	170
	Through	-	0	0.0%	0
	Right	-	56	2.0%	58

Advancing Volume:	228
Right Turn Volume:	58

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: N/A Warrant Met?: N/A	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: Figure 9 Warrant Met?: No
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="58"/> Cycles Per Hour (Assumed): <input type="text" value="60"/> Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

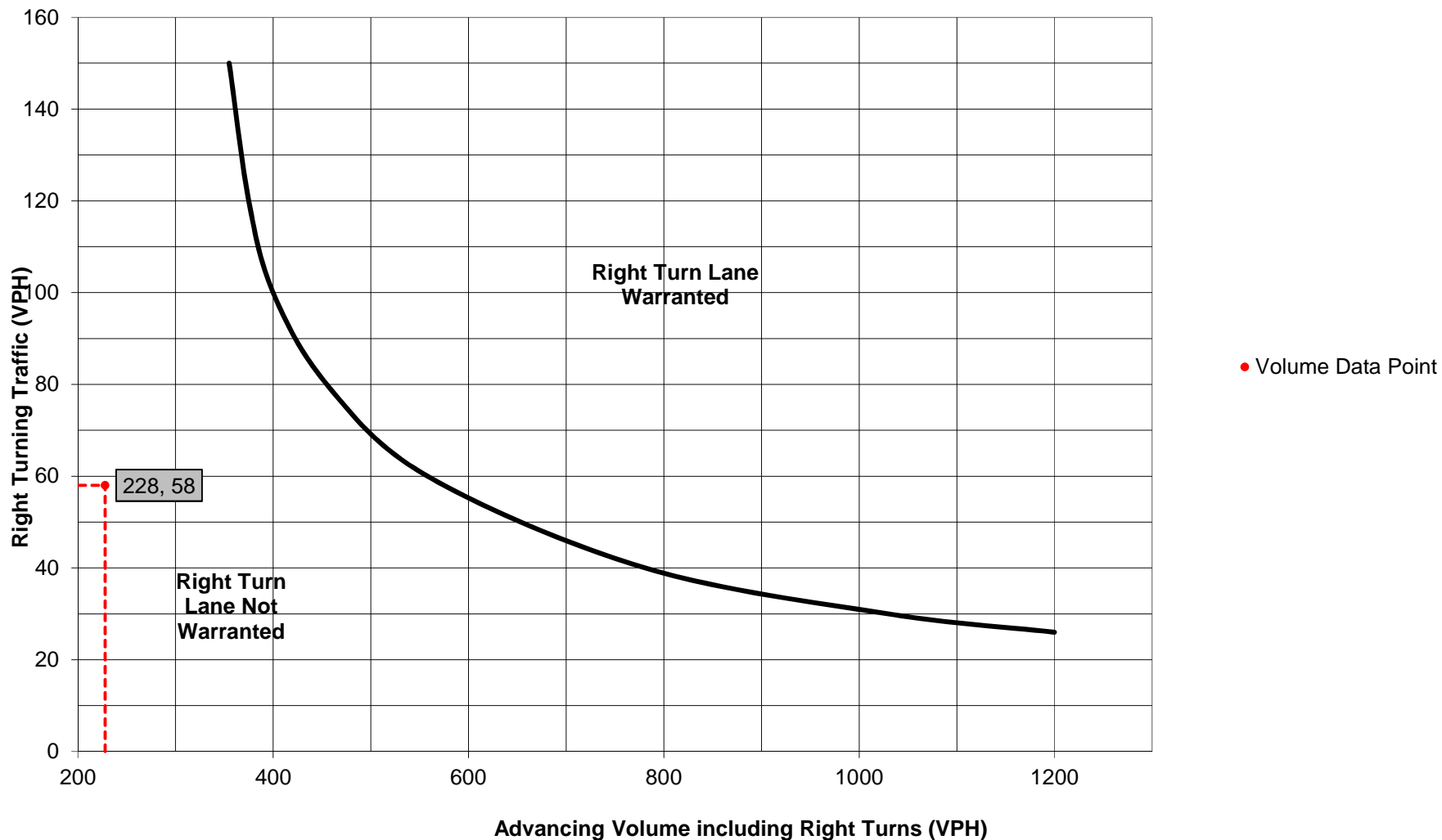
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



*U.S. Route 202 (Wilmington Pike) and
W. Pleasant Grove Road*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Westtown Township	Analysis Date: 11/5/2019
County: Chester County	Conducted By: BGG
PennDOT Engineering District: 6	Checked By: JDG
	Agency/Company Name: McMahan Associates, Inc.
Intersection & Approach Description: U.S. Route 202 and West Pleasant Grove Road Southbound U.S. Route 202 Right-Turn Lane	
Analysis Period: 2030 with Dev	Number of Approach Lanes: 2
Design Hour: AM Peak Hour	Undivided or Divided Highway: Divided
Intersection Control: Unsignalized	Type of Analysis
Posted Speed Limit (MPH): 45	
Type of Terrain: Rolling	Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: N/A	
	Through	-	0	0.0%	N/A		Opposing Volume: N/A
	Right	Yes	0	0.0%	N/A		Left Turn Volume: N/A
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: N/A	
	Through	-	0	0.0%	N/A		
	Right	Yes	0	0.0%	N/A		

Right Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV			
Advancing	Left	No	54	3.0%	N/A	Advancing Volume: 2296	
	Through	-	1778	9.0%	2019		Right Turn Volume: 277
	Right	-	265	3.0%	277		

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: Figure 12
Warrant Met?: N/A	Warrant Met?: Yes

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	Average # of Vehicles/Cycle: 5.0
Design Hour Volume of Turning Lane: 277	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

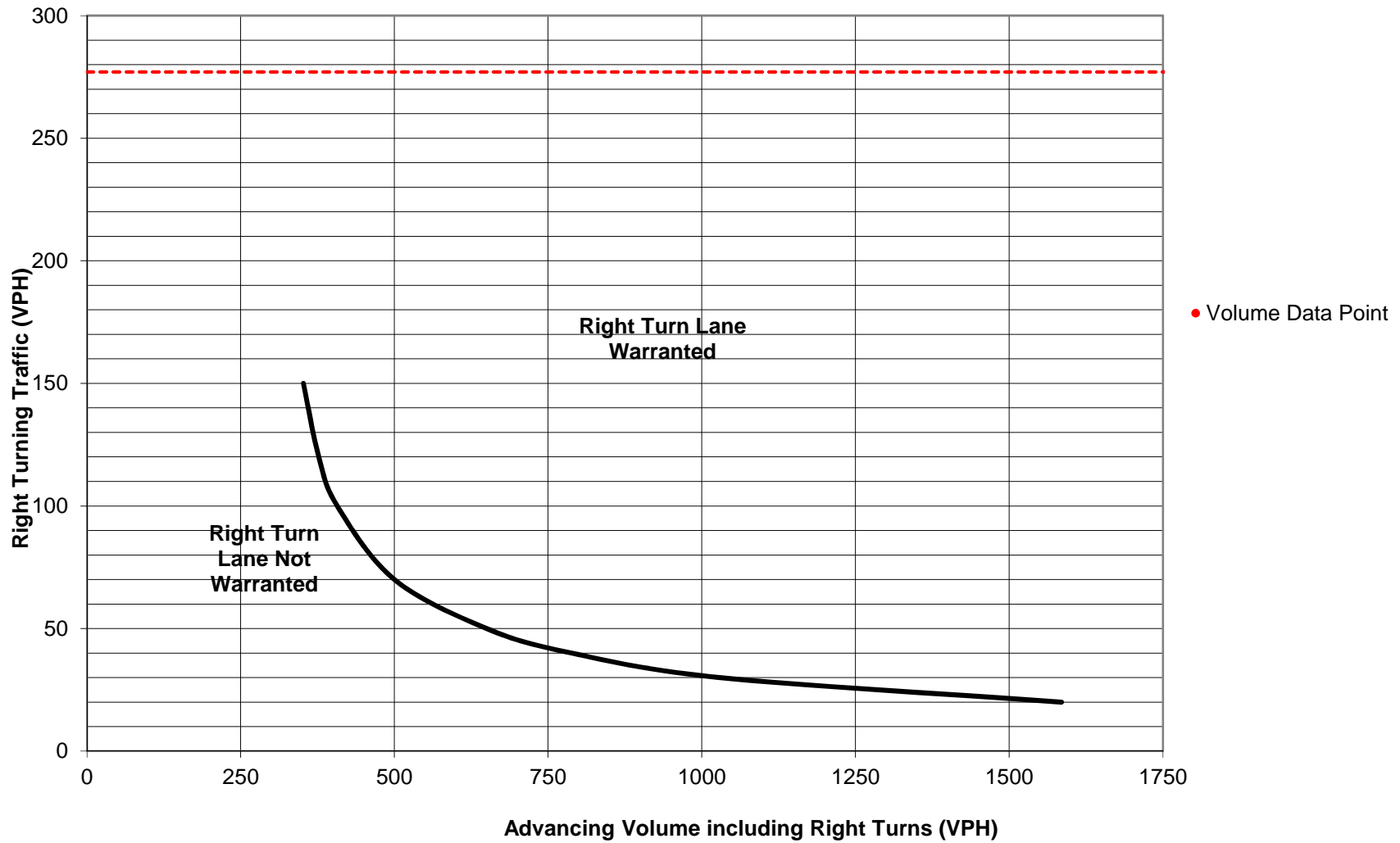
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	275	Feet
Required Right Turn Lane Storage Length:	275	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

**Figure 12. Warrant for right turn lanes on four-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="11/5/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="U.S. Route 202 and West Pleasant Grove Road
Southbound U.S. Route 202 Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/>	Number of Approach Lanes: <input type="text" value="2"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Divided"/>
Intersection Control: <input type="text" value="Unsignalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume: <input style="width: 100px;" type="text" value="N/A"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	110	0.0%	N/A
	Through	-	1506	3.0%	1574
	Right	-	373	1.0%	379

Advancing Volume:	1953
Right Turn Volume:	379

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 12"/>
Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/>	Warrant Met?: <input style="width: 100px;" type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="379"/>	
Cycles Per Hour (Assumed): <input type="text" value="60"/>	
Cycles Per Hour (If Known): <input type="text"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="6.0"/>

PennDOT Publication 46, Exhibit 11-6

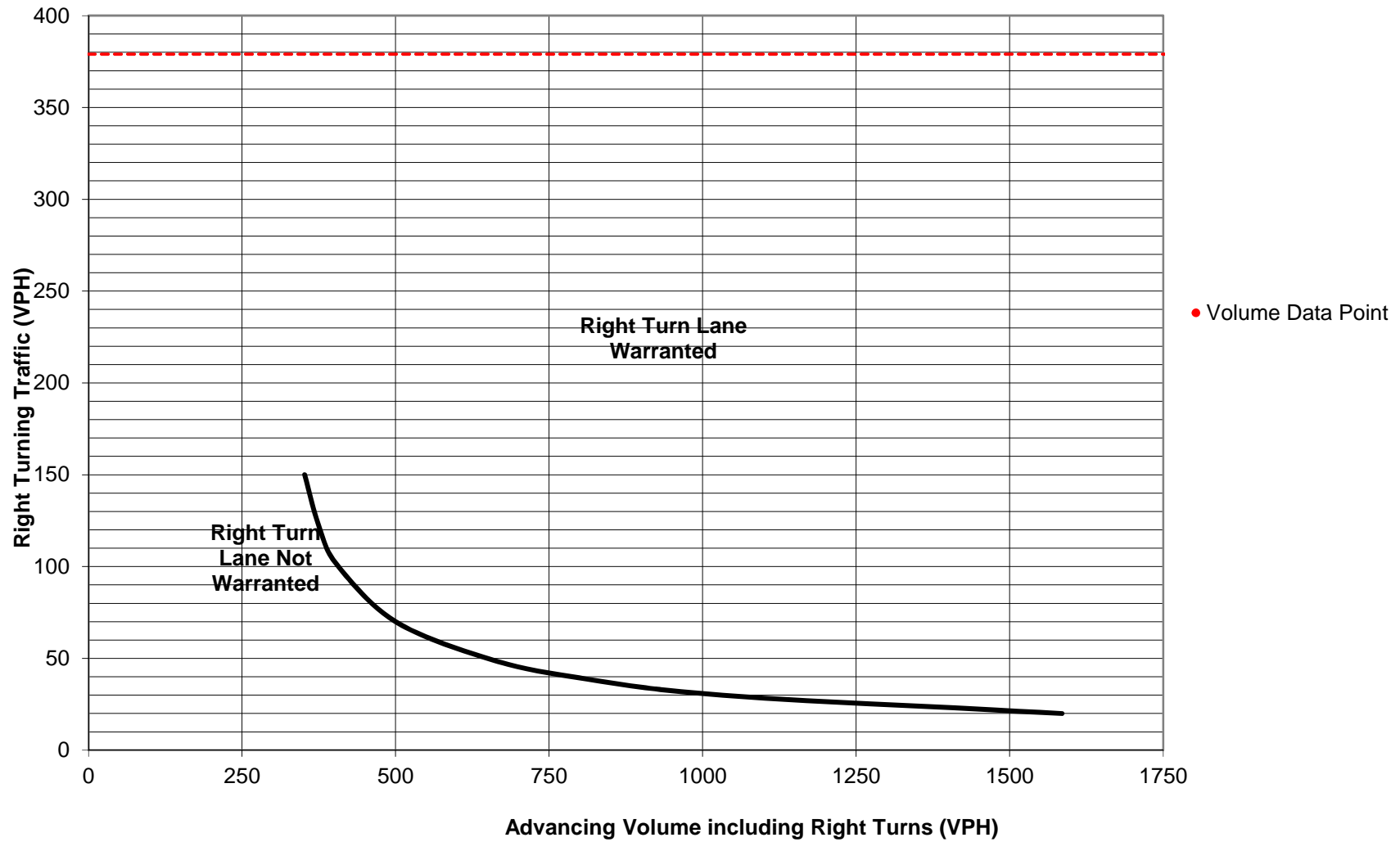
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	325	Feet
Required Right Turn Lane Storage Length:	325	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 12. Warrant for right turn lanes on four-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



*Street Road (S.R. 0926) and
New Street*

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Eastbound Street Road (S.R. 0926) Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	84	2.0%	87
	Through	-	663	4.0%	703
	Right	Yes	5	0.0%	5
Opposing	Left	Yes	12	0.0%	12
	Through	-	393	7.0%	435
	Right	Yes	38	3.0%	40

Advancing Volume:	795
Opposing Volume:	487
Left Turn Volume:	87
% Left Turns in Advancing Volume:	
	10.94%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			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: Figure 3	Applicable Warrant Figure: N/A
Warrant Met?: Yes	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="87"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="2.0"/>
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PennDOT Publication 46, Exhibit 11-6

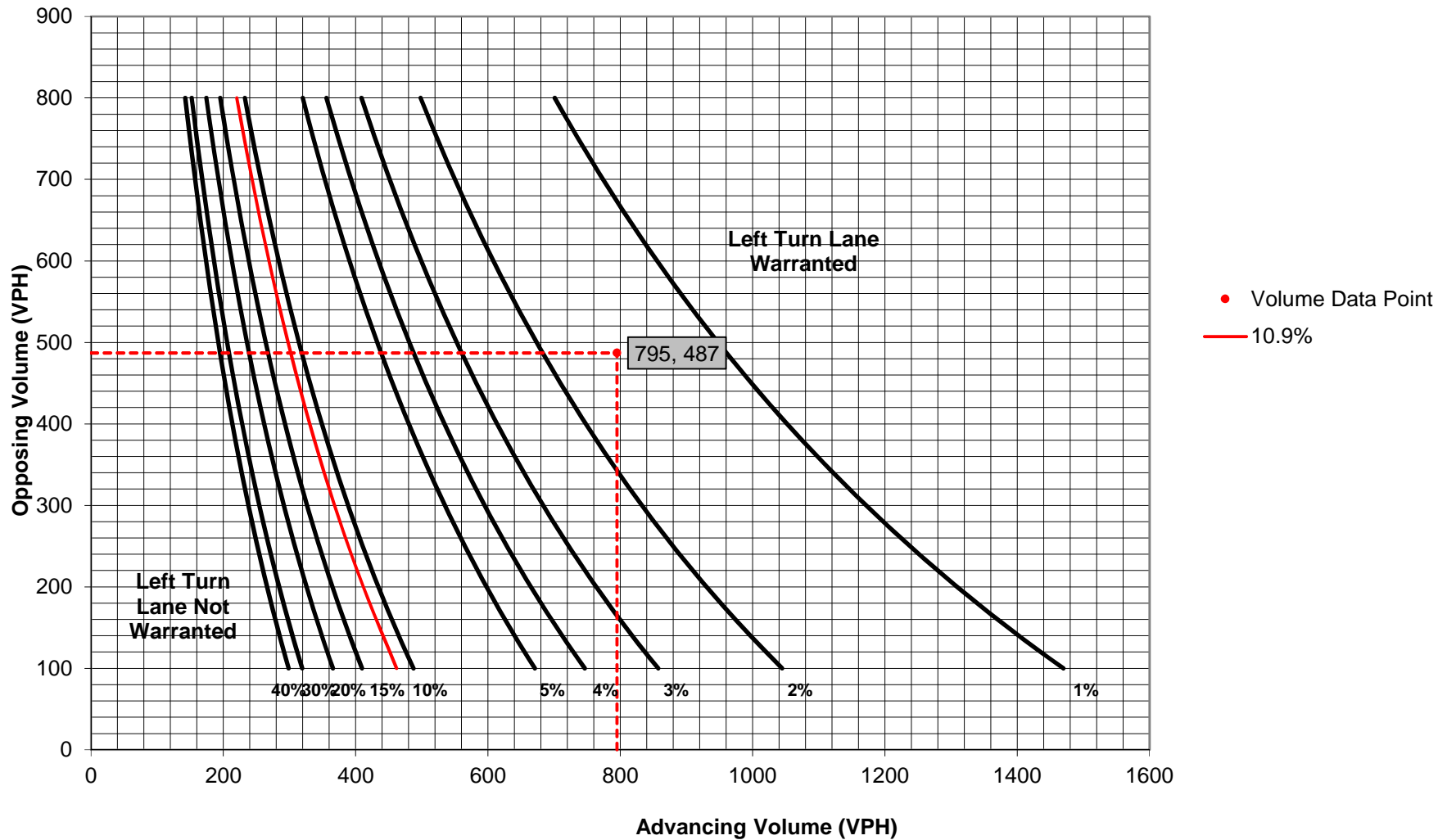
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	125	Feet
Condition C:	175	Feet
Required Left Turn Lane Storage Length:	175	Feet

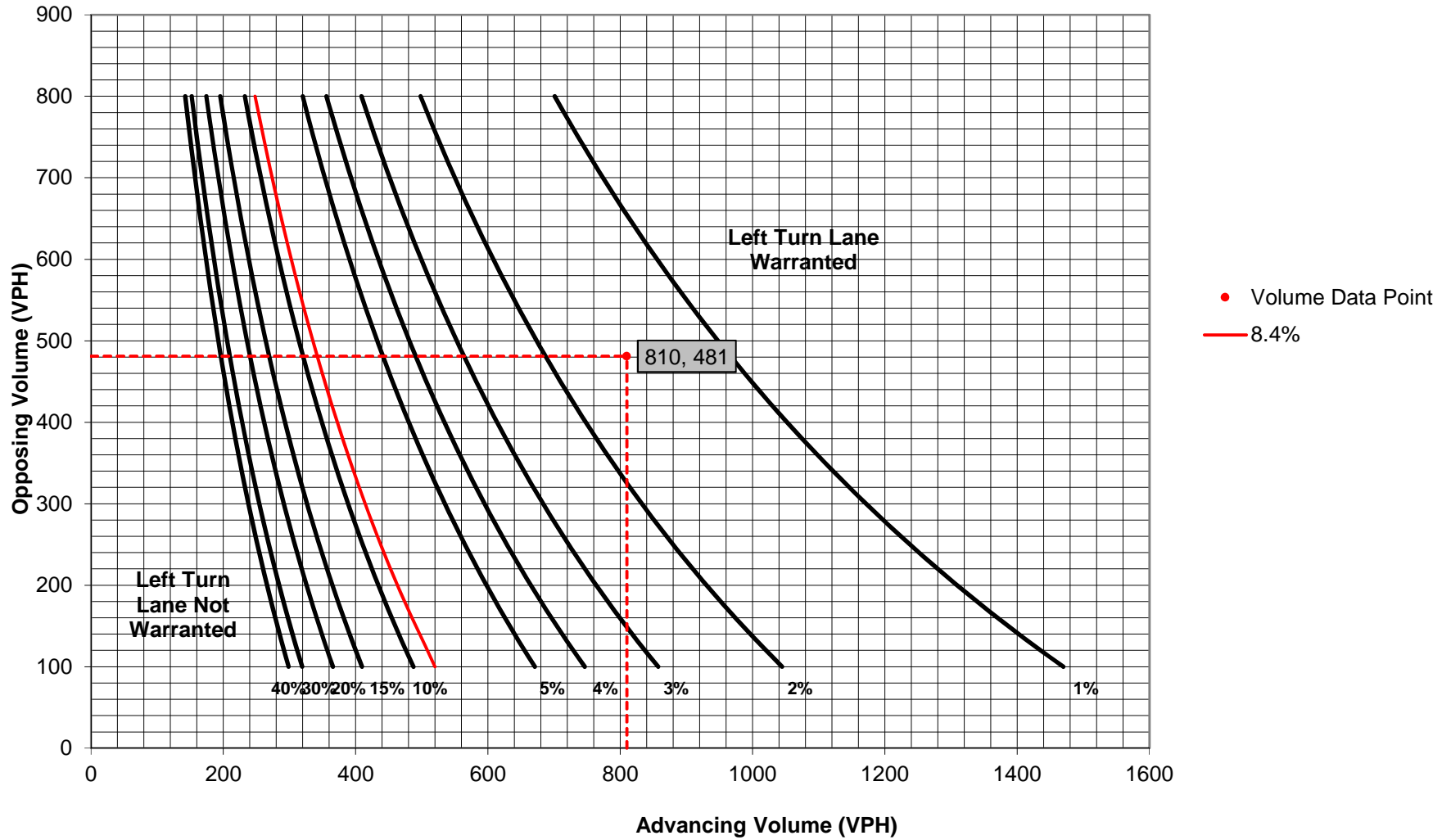
Additional Findings:
N/A

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Eastbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	84	2.0%	87
	Through	-	663	4.0%	703
	Right	-	5	0.0%	5

Advancing Volume:	795
Right Turn Volume:	5

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: N/A Warrant Met?: N/A	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: Figure 10 Warrant Met?: No
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="5"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

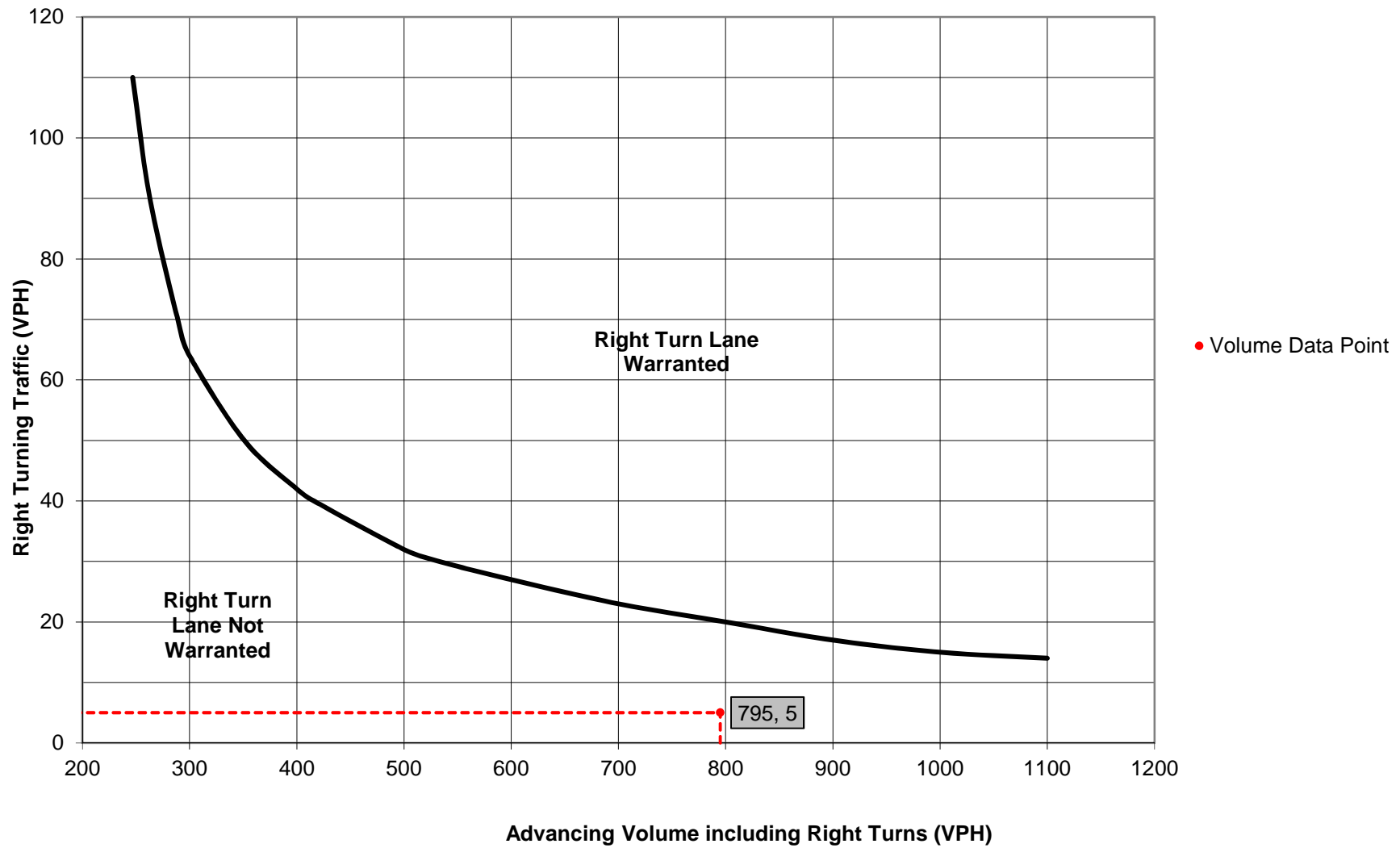
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Eastbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	
	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	66	2.0%	68
	Through	-	686	4.0%	728
	Right	-	14	0.0%	14

Advancing Volume:	810
Right Turn Volume:	14

TURN LANE WARRANT FINDINGS

<h4 style="text-align: center; margin: 0;">Left Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: N/A</p> <p>Warrant Met?: N/A</p>		<h4 style="text-align: center; margin: 0;">Right Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: Figure 10</p> <p>Warrant Met?: No</p>
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="14"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="36"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

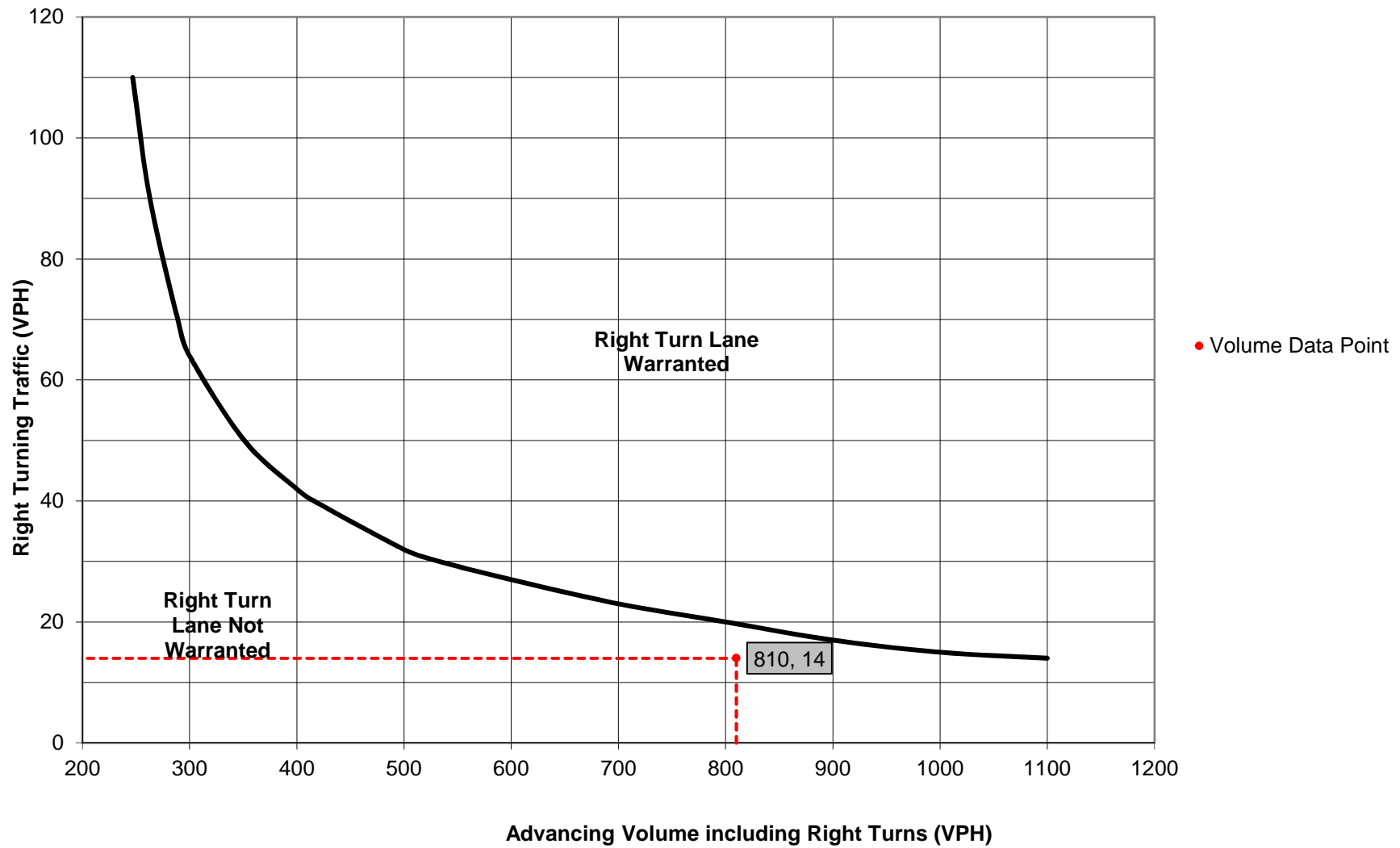
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/23/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Northbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="25"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	11.0%	12
	Through	-	106	1.0%	108
	Right	Yes	44	5.0%	48
Opposing	Left	Yes	8	13.0%	10
	Through	-	133	0.0%	133
	Right	Yes	156	2.0%	161

Advancing Volume:	168
Opposing Volume:	304
Left Turn Volume:	12

% Left Turns in Advancing Volume:	7.14%
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Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 1
Warrant Met?:	No

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	12
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

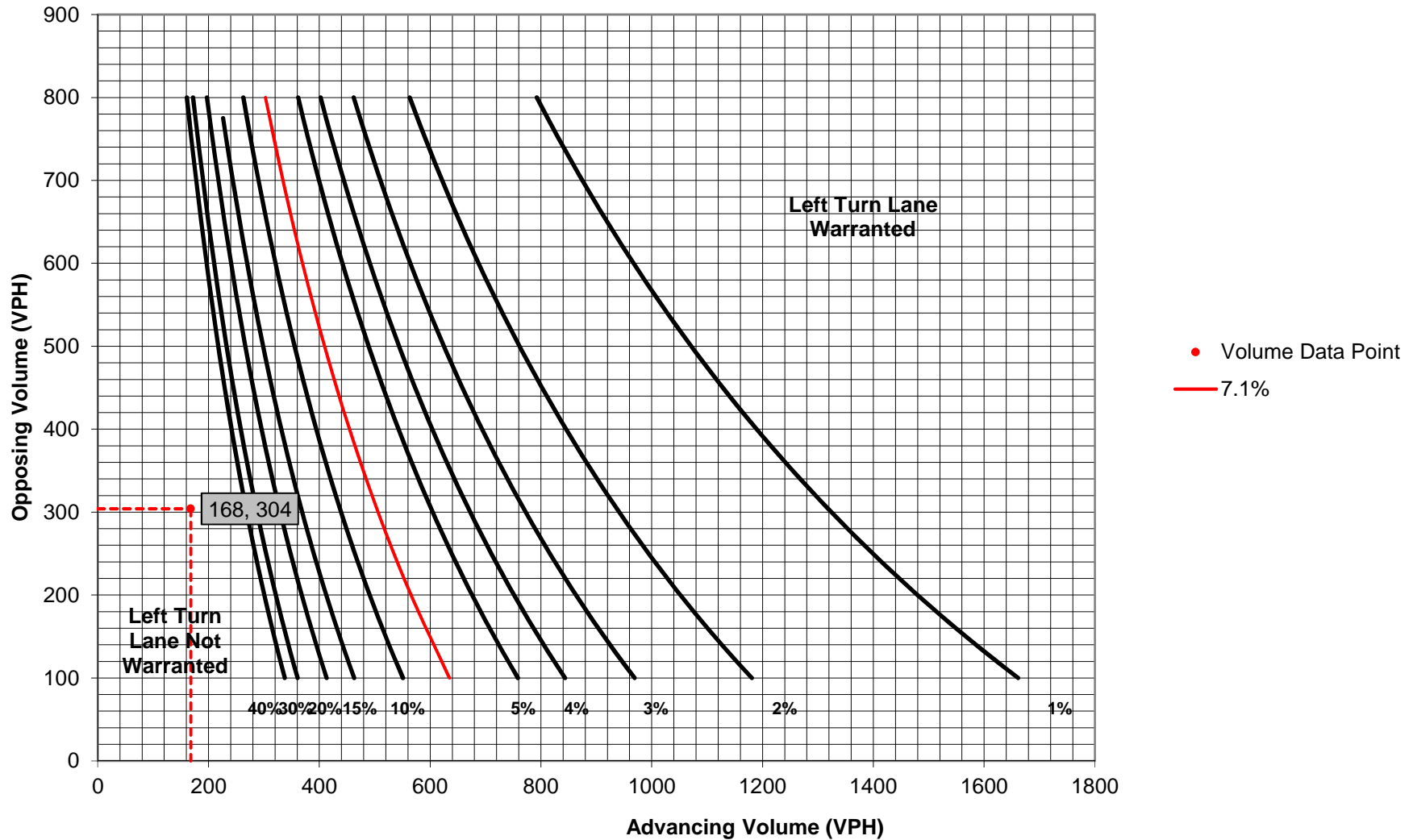
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:	N/A
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Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Northbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	11.0%	12
	Through	-	92	1.0%	94
	Right	Yes	43	5.0%	47
Opposing	Left	Yes	52	13.0%	63
	Through	-	178	0.0%	178
	Right	Yes	104	2.0%	108

Advancing Volume:	153
Opposing Volume:	349
Left Turn Volume:	12
% Left Turns in Advancing Volume:	7.84%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: Figure 1 Warrant Met?: No	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: N/A Warrant Met?: N/A
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="12"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="36"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

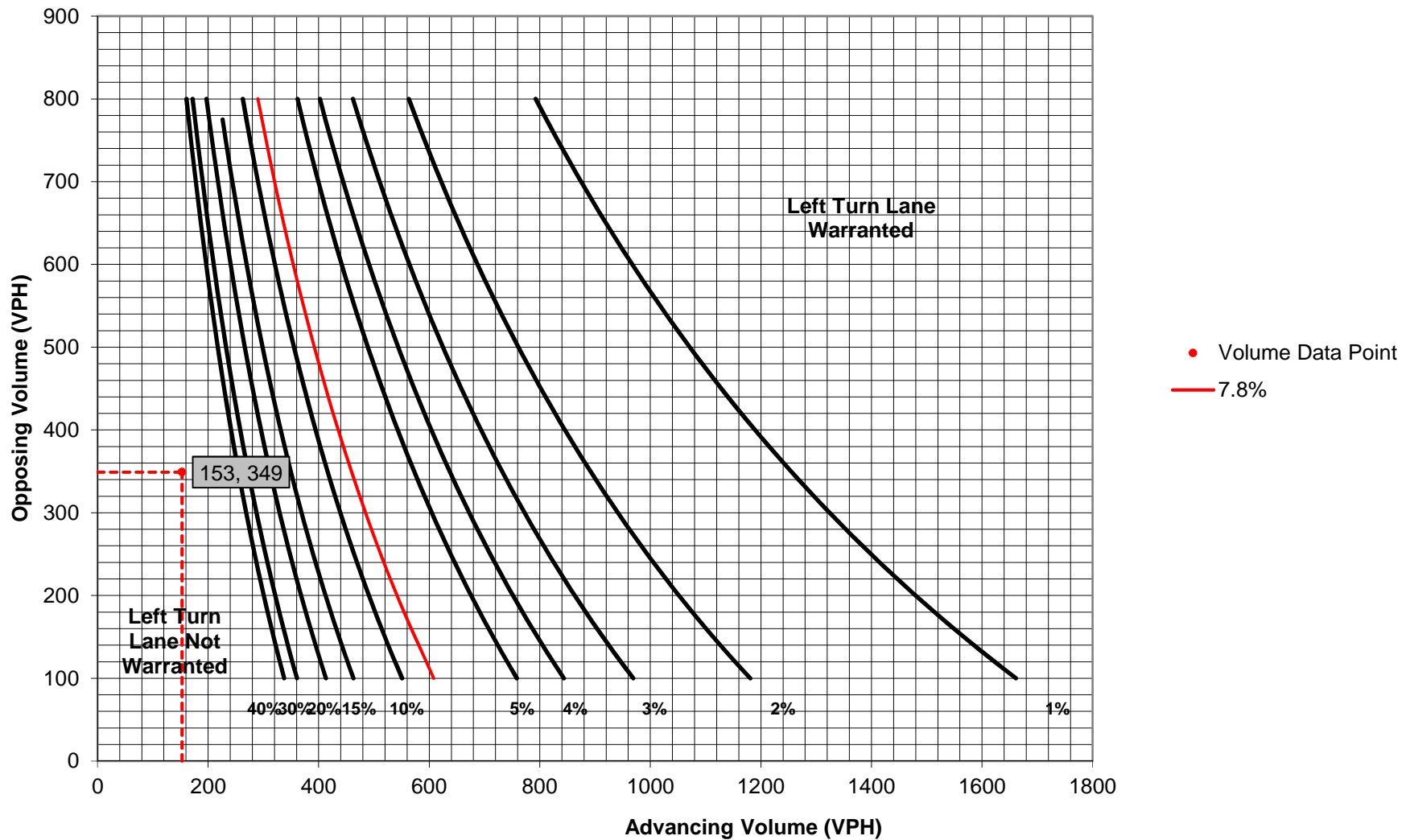
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Northbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> Type of Analysis Right Turn Lane </div>
Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>	

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	
N/A	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	11.0%	12
	Through	-	106	1.0%	108
	Right	-	44	5.0%	48

Advancing Volume:	168
Right Turn Volume:	48

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 80%;" type="text" value="N/A"/> Warrant Met?: <input style="width: 80%;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 80%;" type="text" value="Figure 9"/> Warrant Met?: <input style="width: 80%;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	48
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

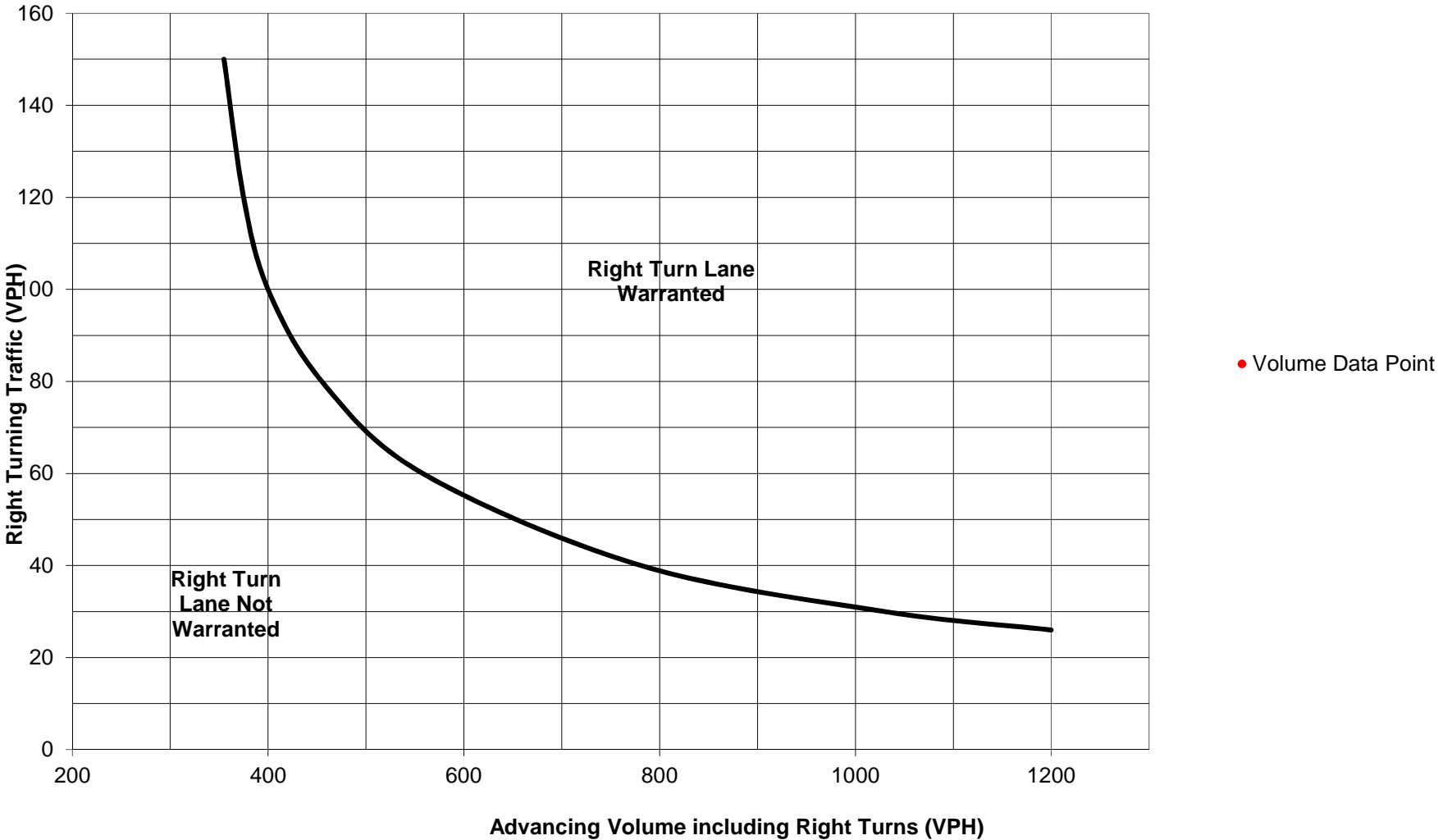
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/23/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Northbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="25"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations				
Movement		Include?	Volume	PCEV
Advancing	Left	Yes		N/A
	Through	-		N/A
	Right	Yes		N/A
Opposing	Left	Yes		N/A
	Through	-		N/A
	Right	Yes		N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	11.0%	12
	Through	-	92	1.0%	94
	Right	-	43	5.0%	47

Advancing Volume:	153
Right Turn Volume:	47

TURN LANE WARRANT FINDINGS

<p style="text-align: center; margin: 0;">Left Turn Lane Warrant Findings</p> <p>Applicable Warrant Figure: N/A</p> <p>Warrant Met?: N/A</p>		<p style="text-align: center; margin: 0;">Right Turn Lane Warrant Findings</p> <p>Applicable Warrant Figure: Figure 9</p> <p>Warrant Met?: No</p>
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="47"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="36"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

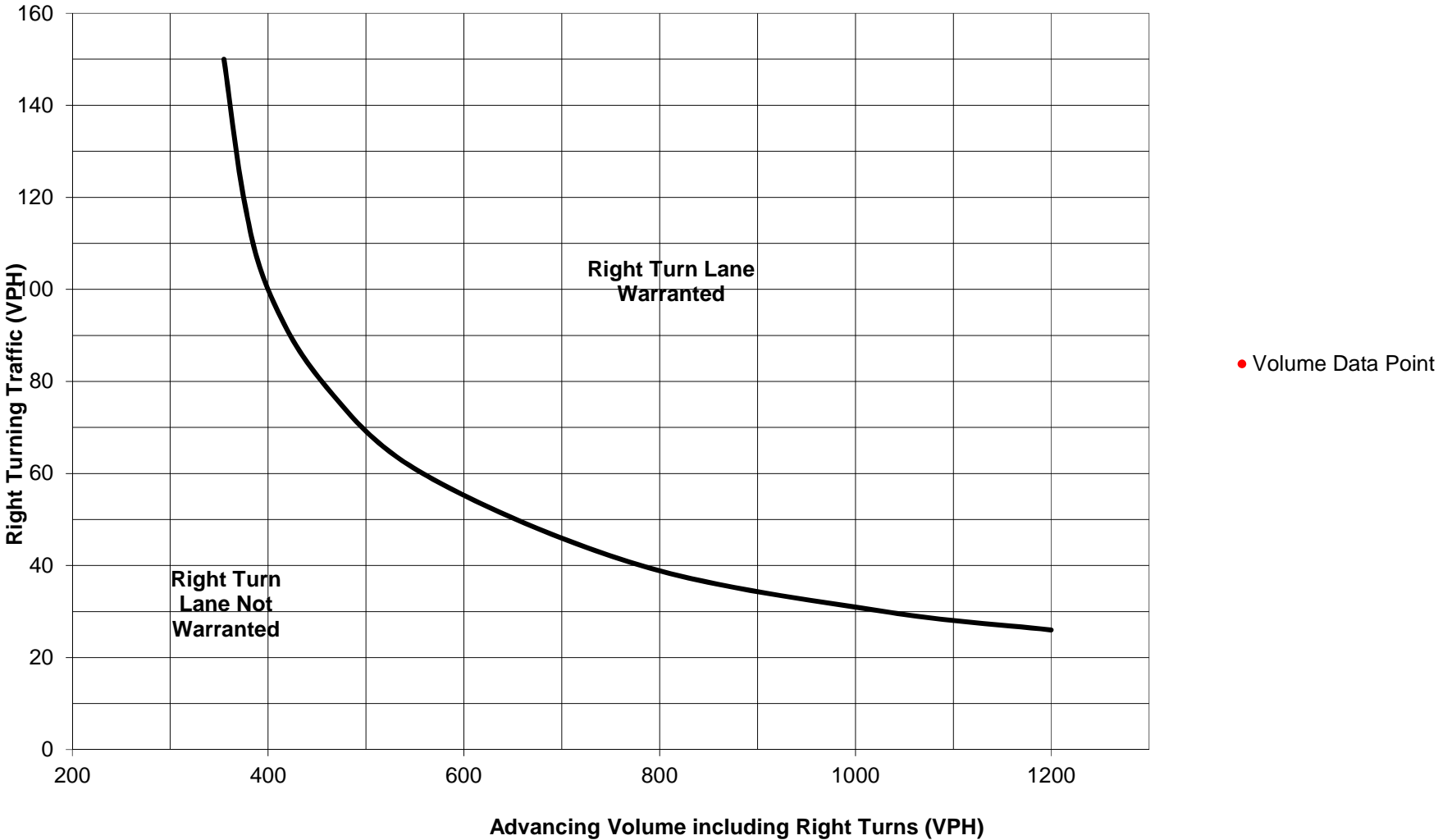
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Southbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	8	13.0%	10
	Through	-	133	0.0%	133
	Right	Yes	156	2.0%	161
Opposing	Left	Yes	10	11.0%	12
	Through	-	106	1.0%	108
	Right	Yes	44	5.0%	48

Advancing Volume:	304
Opposing Volume:	168
Left Turn Volume:	10

% Left Turns in Advancing Volume:

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 1"/> Warrant Met?: <input style="width: 100px;" type="text" value="No"/>	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/> Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/>
---	--

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="10"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/>	Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/>
--	---

PennDOT Publication 46, Exhibit 11-6

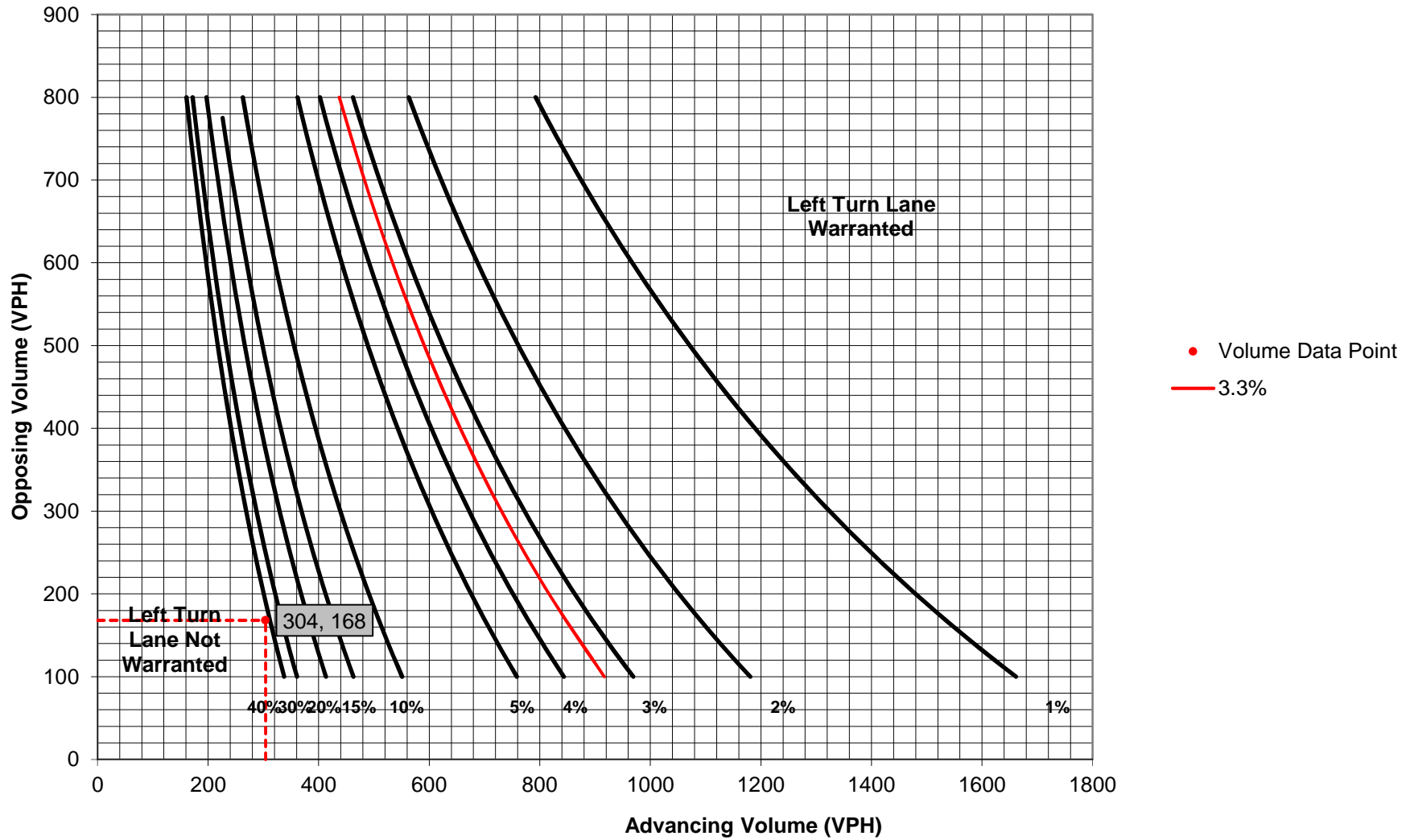
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/23/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Southbound New Street Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="35"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	52	13.0%	63
	Through	-	178	0.0%	178
	Right	Yes	104	2.0%	108
Opposing	Left	Yes	10	11.0%	12
	Through	-	92	1.0%	94
	Right	Yes	43	5.0%	47

Advancing Volume:	<input type="text" value="349"/>
Opposing Volume:	<input type="text" value="153"/>
Left Turn Volume:	<input type="text" value="63"/>
% Left Turns in Advancing Volume: <input type="text" value="18.05%"/>	

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Right Turn Volume:	<input type="text" value="N/A"/>

TURN LANE WARRANT FINDINGS

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

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/>	
Design Hour Volume of Turning Lane: <input type="text" value="63"/>	
Cycles Per Hour (Assumed): <input type="text" value="Known"/>	
Cycles Per Hour (If Known): <input type="text" value="34"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>

PennDOT Publication 46, Exhibit 11-6

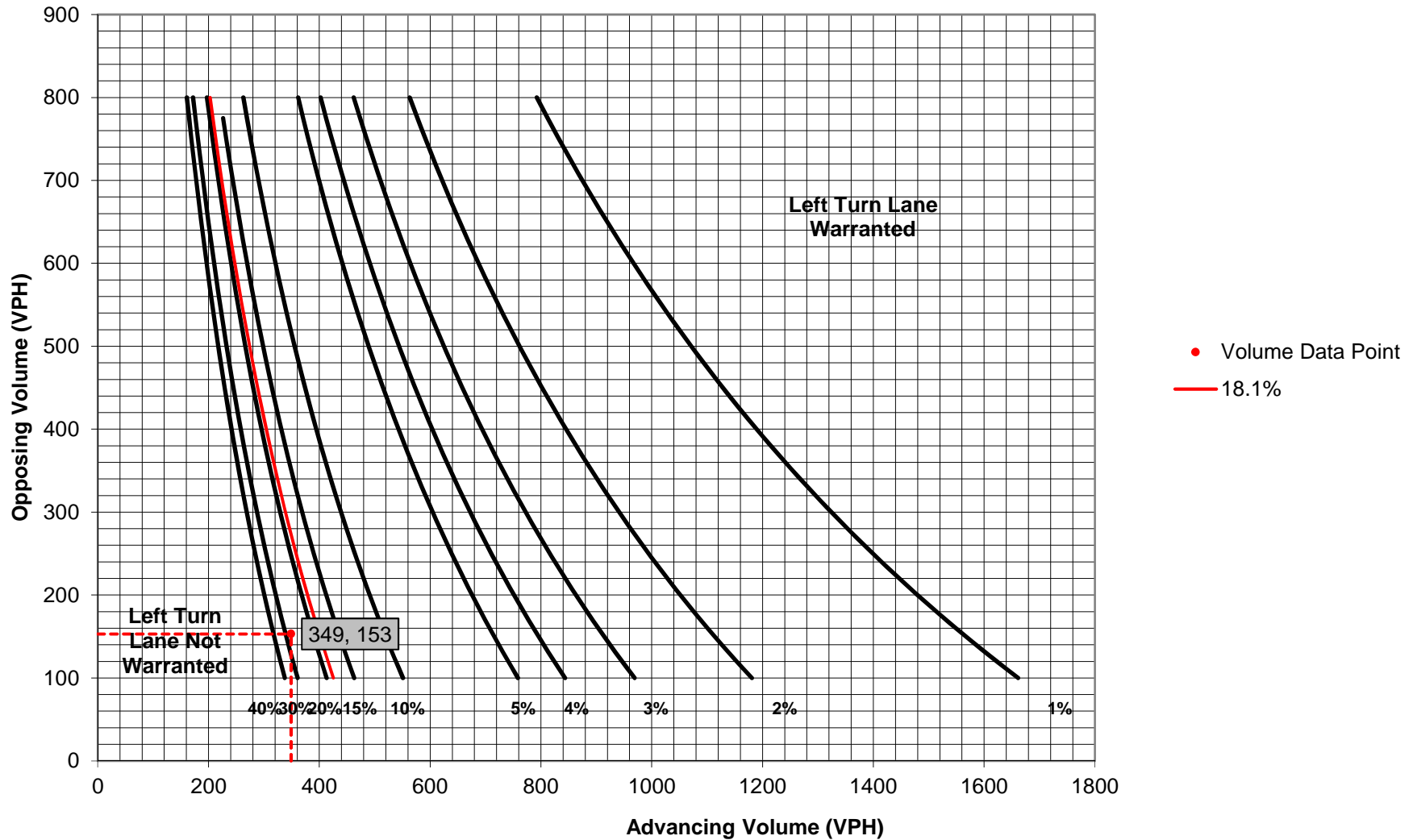
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Left Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input style="width: 100%;" type="text" value="Westtown Township"/> County: <input style="width: 100%;" type="text" value="Chester County"/> PennDOT Engineering District: <input style="width: 100%;" type="text" value="6"/>	Analysis Date: <input style="width: 100%;" type="text" value="10/23/2019"/> Conducted By: <input style="width: 100%;" type="text" value="BGG"/> Checked By: <input style="width: 100%;" type="text" value="JDG"/> Agency/Company Name: <input style="width: 100%;" type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input style="width: 100%;" type="text" value="Street Road (S.R. 0926) and New Street
Southbound New Street Right-Turn Lane"/>	
Analysis Period: <input style="width: 100%;" type="text" value="2030 with Dev"/> Design Hour: <input style="width: 100%;" type="text" value="AM Peak Hour"/> Intersection Control: <input style="width: 100%;" type="text" value="Signalized"/> Posted Speed Limit (MPH): <input style="width: 100%;" type="text" value="35"/> Type of Terrain: <input style="width: 100%;" type="text" value="Rolling"/>	Number of Approach Lanes: <input style="width: 100%;" type="text" value="1"/> Undivided or Divided Highway: <input style="width: 100%;" type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input style="width: 100%;" type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes			N/A	Advancing Volume: <input style="width: 100%;" type="text" value="N/A"/> Opposing Volume: <input style="width: 100%;" type="text" value="N/A"/> Left Turn Volume: <input style="width: 100%;" type="text" value="N/A"/>
	Through	-			N/A	
	Right	Yes			N/A	
Opposing	Left	Yes			N/A	% Left Turns in Advancing Volume: <input style="width: 100%;" type="text" value="N/A"/>
	Through	-			N/A	
	Right	Yes			N/A	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	8	13.0%	10	Advancing Volume: <input style="width: 100%;" type="text" value="304"/> Right Turn Volume: <input style="width: 100%;" type="text" value="161"/>
	Through	-	133	0.0%	133	
	Right	-	156	2.0%	161	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="width: 100%;" type="text" value="N/A"/> Warrant Met?: <input style="width: 100%;" type="text" value="N/A"/>	Applicable Warrant Figure: <input style="width: 100%;" type="text" value="Figure 9"/> Warrant Met?: <input style="width: 100%;" type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input style="width: 100%;" type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input style="width: 100%;" type="text" value="161"/> Cycles Per Hour (Assumed): <input style="width: 100%;" type="text" value="Known"/> Cycles Per Hour (If Known): <input style="width: 100%;" type="text" value="40"/>	Average # of Vehicles/Cycle: <input style="width: 100%;" type="text" value="N/A"/>
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PennDOT Publication 46, Exhibit 11-6

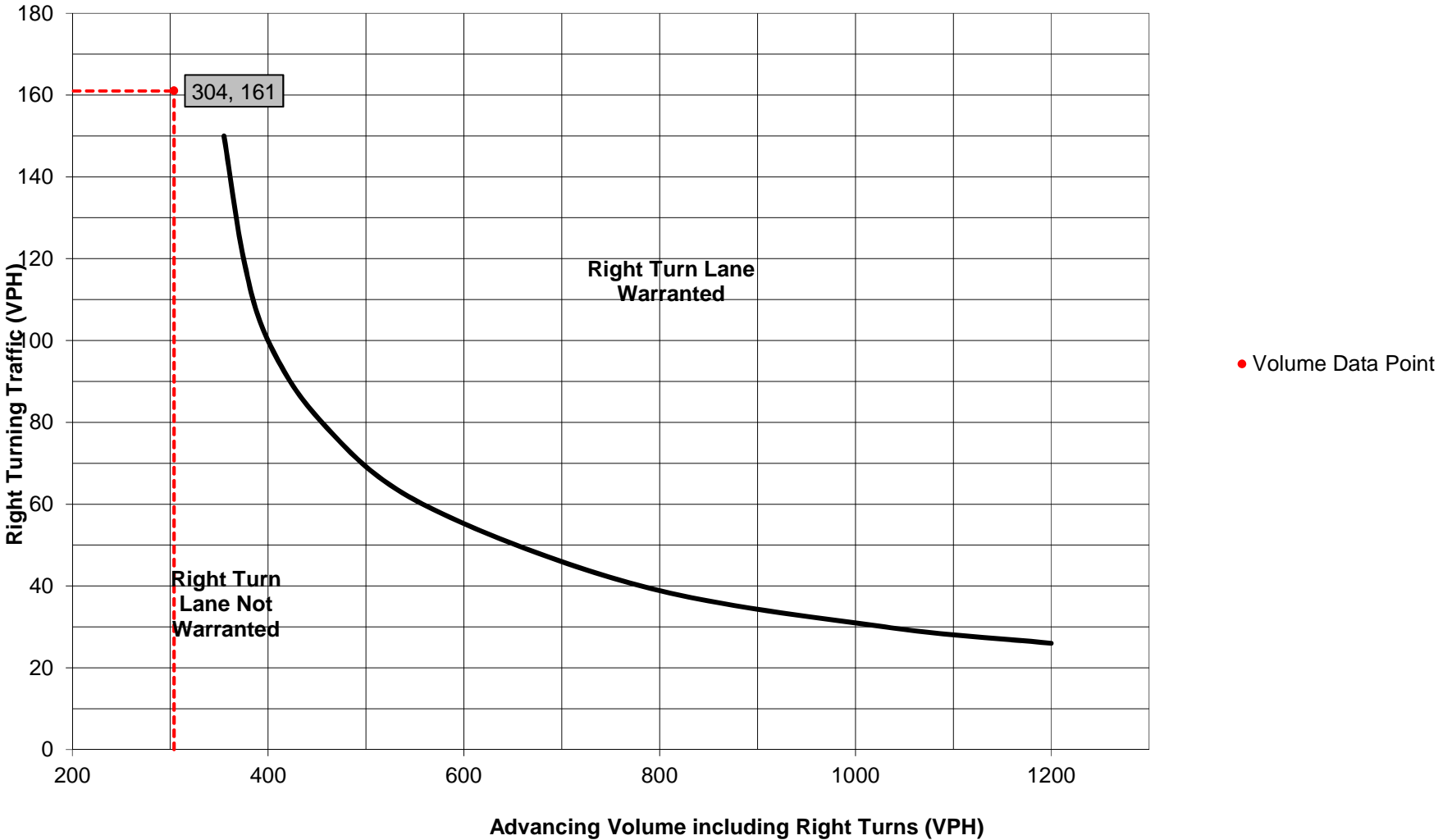
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input style="width: 100%;" type="text" value="N/A"/>	Feet
Condition B:	<input style="width: 100%;" type="text" value="N/A"/>	Feet
Condition C:	<input style="width: 100%;" type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input style="width: 100%;" type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Southbound New Street Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="35"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	52	13.0%	63
	Through	-	178	0.0%	178
	Right	-	104	2.0%	108

Advancing Volume:	349
Right Turn Volume:	108

TURN LANE WARRANT FINDINGS

<h4 style="text-align: center; margin: 0;">Left Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: N/A</p> <p>Warrant Met?: N/A</p>		<h4 style="text-align: center; margin: 0;">Right Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: Figure 9</p> <p>Warrant Met?: No</p>
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TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	108
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	34
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

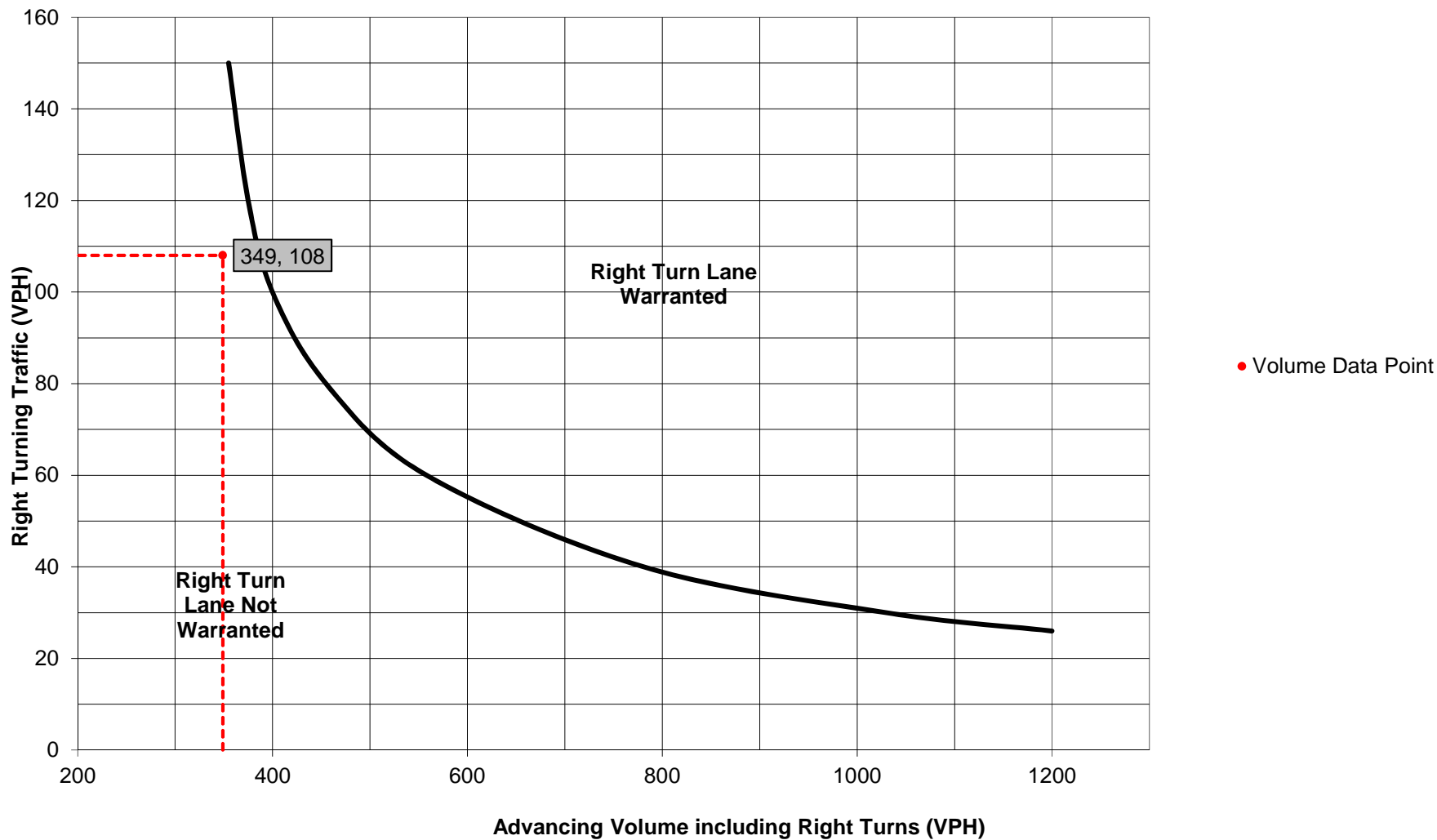
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/23/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Westbound Street Road (S.R. 0926) Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="AM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	12	0.0%	12
	Through	-	393	7.0%	435
	Right	Yes	38	3.0%	40
Opposing	Left	Yes	84	2.0%	87
	Through	-	663	4.0%	703
	Right	Yes	5	0.0%	5

Advancing Volume:	487
Opposing Volume:	795
Left Turn Volume:	12

% Left Turns in Advancing Volume:	2.46%
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Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 3
Warrant Met?:	Yes

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	12
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40
Average # of Vehicles/Cycle:	1.0

PennDOT Publication 46, Exhibit 11-6

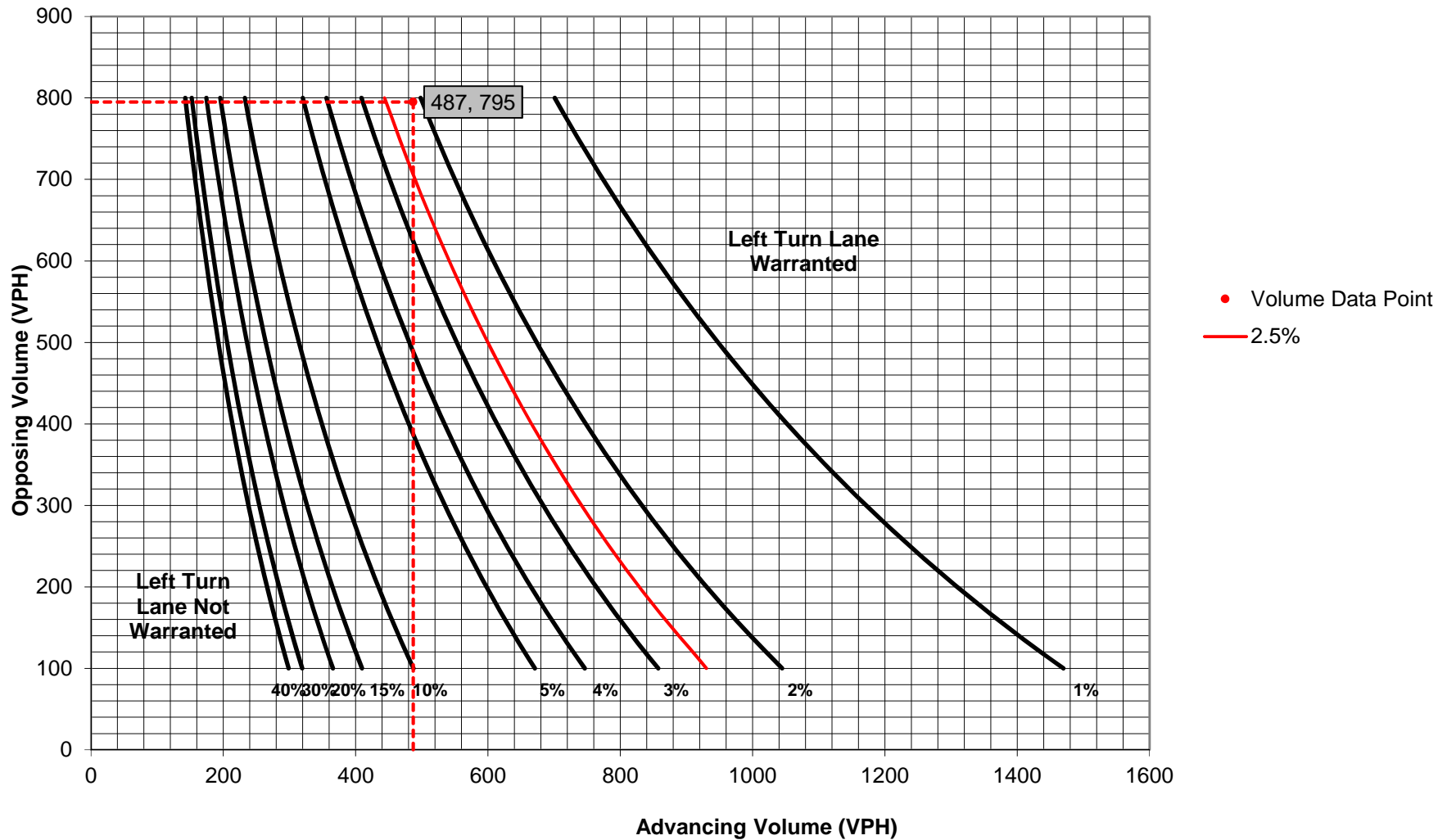
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	125	Feet
Condition C:	150	Feet
Required Left Turn Lane Storage Length:	150	Feet

Additional Findings:	N/A
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Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Westbound Street Road (S.R. 0926) Left-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 with Dev"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	23	0.0%	23
	Through	-	383	7.0%	424
	Right	Yes	32	3.0%	34
Opposing	Left	Yes	66	2.0%	68
	Through	-	686	4.0%	728
	Right	Yes	14	0.0%	14

Advancing Volume:	481
Opposing Volume:	810
Left Turn Volume:	23
% Left Turns in Advancing Volume:	
	4.78%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Left Turn Lane Warrant Findings</div> Applicable Warrant Figure: Figure 3 Warrant Met?: Yes	<div style="border: 1px solid black; text-align: center; margin-bottom: 5px;">Right Turn Lane Warrant Findings</div> Applicable Warrant Figure: N/A Warrant Met?: N/A
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TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Signalized"/> Design Hour Volume of Turning Lane: <input type="text" value="23"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="34"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>
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PennDOT Publication 46, Exhibit 11-6

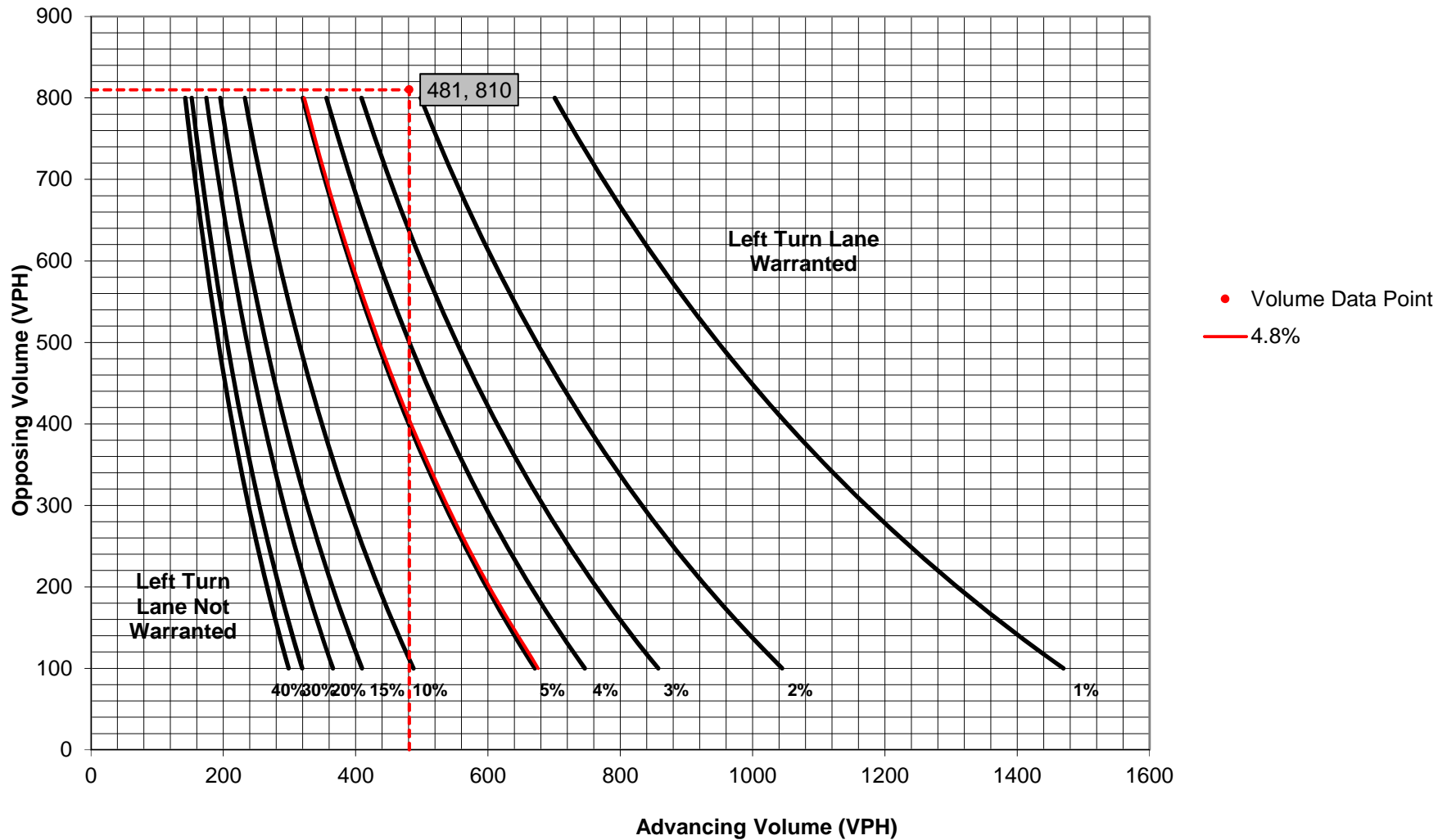
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	125	Feet
Condition C:	150	Feet
Required Left Turn Lane Storage Length:	150	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="10/23/2019"/> Conducted By: <input type="text" value="BGG"/> Checked By: <input type="text" value="JDG"/> Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street Westbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2030 wth Dev"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Signalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Rolling"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A	
Opposing Volume:	N/A	
Left Turn Volume:	N/A	
% Left Turns in Advancing Volume:		N/A

Right Turn Lane Volume Calculations

Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	Yes	12	0.0%	12
	Through	-	393	7.0%	435
	Right	-	38	3.0%	40

Advancing Volume:	487
Right Turn Volume:	40

TURN LANE WARRANT FINDINGS

<h4 style="text-align: center; margin: 0;">Left Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: N/A</p> <p>Warrant Met?: N/A</p>		<h4 style="text-align: center; margin: 0;">Right Turn Lane Warrant Findings</h4> <p>Applicable Warrant Figure: Figure 10</p> <p>Warrant Met?: Yes</p>
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TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	40
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40
Average # of Vehicles/Cycle:	1.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

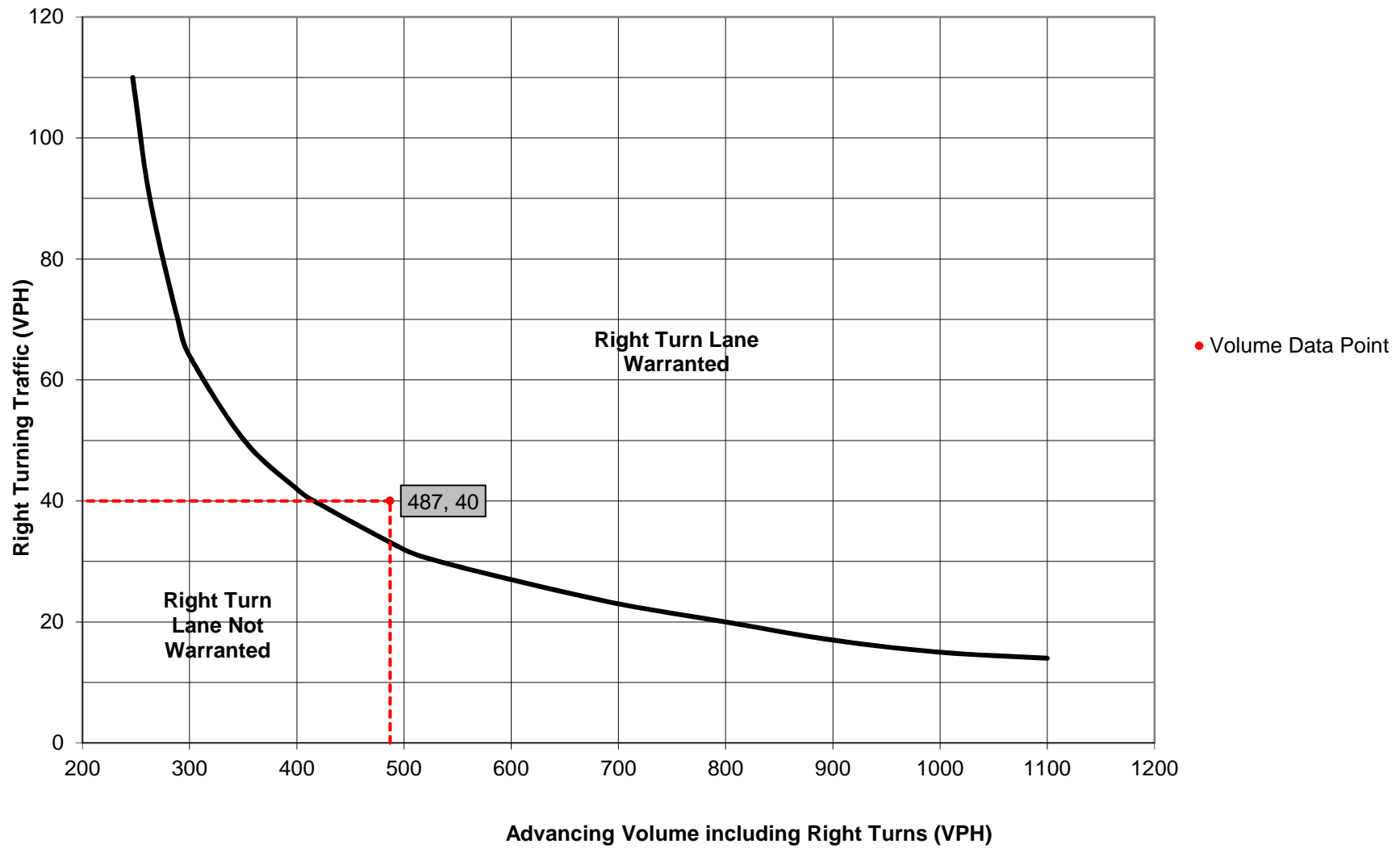
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	125	Feet
Condition C:	150	Feet
Required Right Turn Lane Storage Length:	150	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Westtown Township"/>	Analysis Date: <input type="text" value="10/23/2019"/>
County: <input type="text" value="Chester County"/>	Conducted By: <input type="text" value="BGG"/>
PennDOT Engineering District: <input type="text" value="6"/>	Checked By: <input type="text" value="JDG"/>
	Agency/Company Name: <input type="text" value="McMahon Associates, Inc."/>
Intersection & Approach Description: <input type="text" value="Street Road (S.R. 0926) and New Street
Westbound Street Road (S.R. 0926) Right-Turn Lane"/>	
Analysis Period: <input type="text" value="2019 Existing"/>	Number of Approach Lanes: <input type="text" value="1"/>
Design Hour: <input type="text" value="PM Peak Hour"/>	Undivided or Divided Highway: <input type="text" value="Undivided"/>
Intersection Control: <input type="text" value="Signalized"/>	Type of Analysis
Posted Speed Limit (MPH): <input type="text" value="45"/>	
Type of Terrain: <input type="text" value="Rolling"/>	Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>

% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>
-----------------------------------	----------------------------------

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	23	0.0%	23
	Through	-	383	7.0%	424
	Right	-	32	3.0%	34

Advancing Volume:	<input type="text" value="481"/>
Right Turn Volume:	<input type="text" value="34"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="N/A"/>
Warrant Met?:	<input type="text" value="N/A"/>

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	<input type="text" value="Figure 10"/>
Warrant Met?:	<input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control:	<input type="text" value="Signalized"/>
Design Hour Volume of Turning Lane:	<input type="text" value="34"/>
Cycles Per Hour (Assumed):	<input type="text" value="Known"/>
Cycles Per Hour (If Known):	<input type="text" value="34"/>
Average # of Vehicles/Cycle:	<input type="text" value="1.0"/>

PennDOT Publication 46, Exhibit 11-6

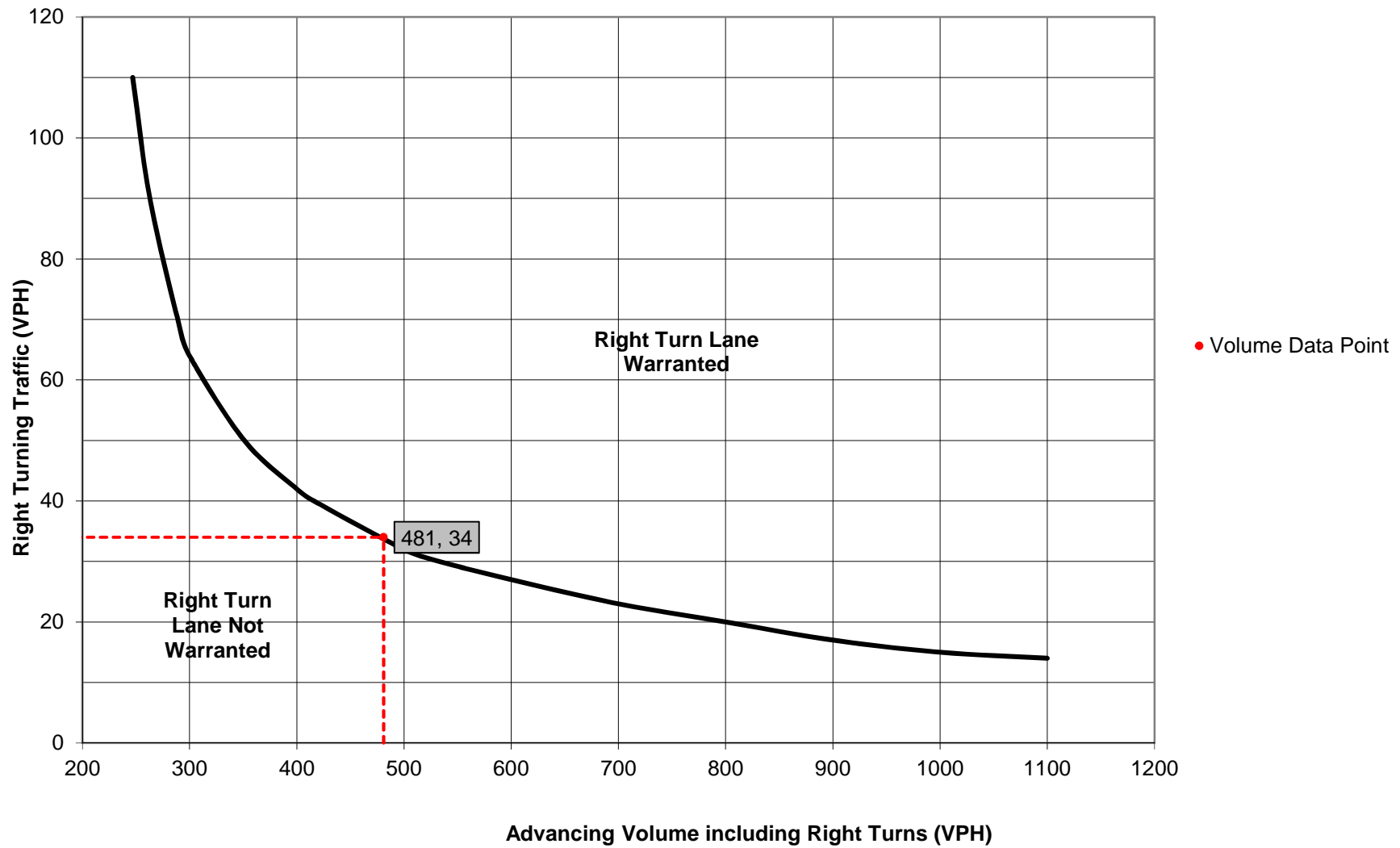
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="125"/>	Feet
Condition C:	<input type="text" value="150"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="150"/>	Feet

Additional Findings:	<input type="text" value="N/A"/>
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Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



This illustration and the following PennDOT signal permit plan provide a preliminary estimate of the roadway widening to provide the warranted turn lanes.

Left-turn lanes along SR 926 are warranted based on the existing traffic volumes.

Legal right-of-way does not currently exist to provide left-turn lanes along SR 926.

Additional right-of-way from the Robinson Tract alone will not accommodate left-turn lanes along SR 926



DESCRIPTION AND LEGEND FOR ROADWAY WIDENING

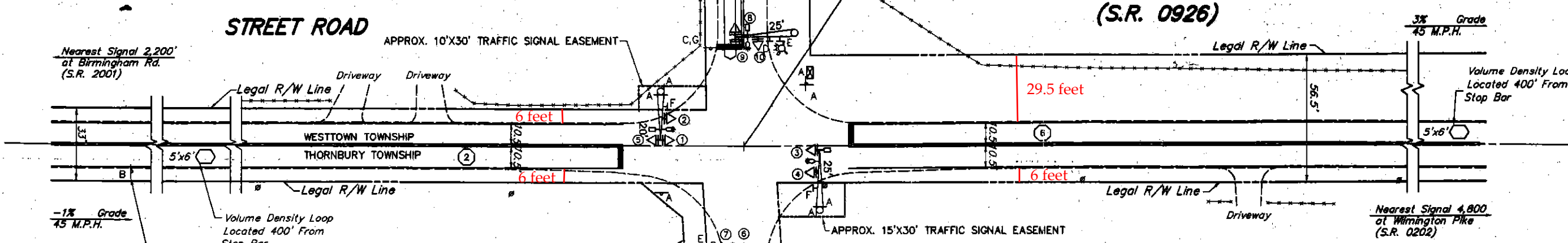
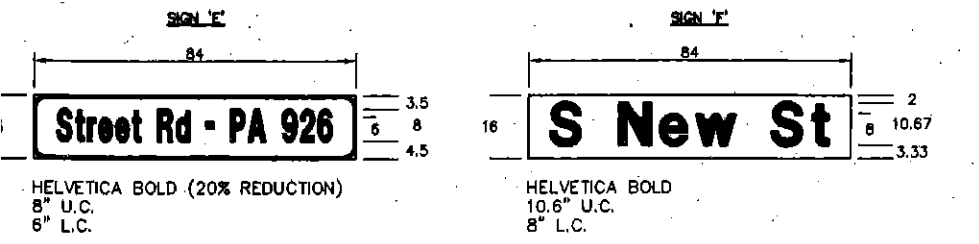
(Per PennDOT Publication 13M, DM-2, Minimum 3R Design Criteria)
 PA Route 926 and New Street
 2 foot shoulders
 11 foot through lanes
 10 foot left-turn lanes
 36 foot total width

RED
 ROADWAY WIDENING AND CONSTRUCTION CANNOT BE ACCOMMODATED WITHIN EXISTING LEGAL RIGHT-OF-WAY

GREEN
 ROADWAY WIDENING AND CONSTRUCTION CAN BE ACCOMMODATED WITHIN EXISTING LEGAL RIGHT-OF-WAY

Preliminary Roadway Widening Impacts for Left-Turn Lanes at PA Route 926 and New Street

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R9-3	18"X18"	NO PEDESTRIAN CROSSING
B	W3-3	36"X36"	SIGNAL AHEAD
C	R10-11	24"X30"	NO TURN ON RED
D	R10-11	30"X36"	NO TURN ON RED
E	D3-4	72"X16"	SINGLE LINE OVERHEAD STREET NAME
F	D3-4	96"X16"	SINGLE LINE OVERHEAD STREET NAME
G	R10-6L	24"X30"	STOP HERE ON RED



Time	Count	Total
7:00 AM TO 8:00 AM		
8:00 AM TO 9:00 AM		
9:00 AM TO 10:00 AM		
10:00 AM TO 11:00 AM		
11:00 AM TO 12:00 PM		
12:00 PM TO 1:00 PM		
1:00 PM TO 2:00 PM		
2:00 PM TO 3:00 PM		
3:00 PM TO 4:00 PM		
4:00 PM TO 5:00 PM		
5:00 PM TO 6:00 PM		
6:00 PM TO 7:00 PM		
7:00 PM TO 8:00 PM		
8:00 PM TO 9:00 PM		
9:00 PM TO 10:00 PM		
10:00 PM TO 11:00 PM		
11:00 PM TO 12:00 AM		
TOTAL		

COUNT DATE 12/1/98

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

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

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

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

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

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

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 19, 1996.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDITN INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY, INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

LEGAL RIGHT-OF-WAY BEYOND EXISTING ROADWAY WIDTHS

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+6	4+8	EMERGENCY FLASHING
1,2	G Y R	R R R	Y
3,4,5	G Y R	R R R	Y
6,7,8	R R R	G Y R	R
9,10	R R R	G Y R	R

EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1,2	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R
3,4,5	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R
6,7,8	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R
9,10	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	R
FIXED TIME	* 4 2				* 4 2				* 4 2				* 4 2			

* FOR DURATION OF PRE-EMPTION

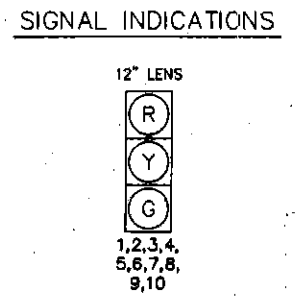
EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND & WESTBOUND APPROACHES OF STREET ROAD (S.R. 0926), AND THE NORTHBOUND & SOUTHBOUND APPROACHES OF SOUTH NEW STREET ROAD, WITH A FLASHING FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.
- THE SIGNALS SHALL TERMINATE ALL GREEN INDICATIONS WHEN ACTIVATED BY AN EMERGENCY VEHICLE EXCEPT THE GREEN INDICATIONS FOR THE PHASE COVERED BY THE APPROACHING EMERGENCY VEHICLE, FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PRE-EMPTION OCCURS. THE GREEN INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN GREEN FOR THE DURATION OF SIGNAL PRE-EMPTION AND RED INDICATIONS DISPLAYED FOR ALL OTHER PHASES.
- THE SIGNALS SHALL TIME OUT ALL YELLOW AND RED INDICATIONS WHEN ACTIVATED BY AN EMERGENCY VEHICLE FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE ACTUATION OF THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNALS ARE FLASHING WHEN ACTIVATED BY AN EMERGENCY VEHICLE ALL SIGNALS SHALL REMAIN FLASHING.
- IN RETURNING TO NORMAL OPERATION UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6, OR 8 OPERATION, PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- ⊙ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

FIXED	4	2	4	2
MINIMUM	22		3	
SEC./ACT.	2			
MAX. INIT.	42			
PASSAGE	5		3	
TBR	42			
TTR	21			
MIN. GAP	2			
MAXIMUM 1	63		15	
MAXIMUM 2	68		25	
PEDESTRIAN				
MEMORY	MR		L	

OPERATION NOTES:

- SIGNAL TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8.
- MAXIMUM 2 TO OPERATE FROM 1500 TO 1900 MONDAY THROUGH FRIDAY. MAXIMUM 1 TO OPERATE ALL OTHER TIMES.
- VOLUME DENSITY DETECTOR AMPLIFIER TO BE SET ON PRESENCE MODE.



SIGNALS TO BE EQUIPPED WITH RED LED LENSES 1-10
 SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS
 SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS

LEGEND

20'	MAST ARM/IDENTIFYING LENGTH	12"x6'	LOOP SENSOR/SIZE
⊙	VEHICULAR SIGNAL HEAD/BACKPLATE/VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER	⊙	MICROWAVE DETECTOR
⊙	PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER	⊙	EMERGENCY PREEMPTION BEACON
⊙	PEDESTRIAN PUSHBUTTON/SIGN	⊙	EMERGENCY PREEMPTION DETECTOR
⊙	SIGN/IDENTIFYING LETTER	⊙	CURB CUT RAMP
⊙	FIRE HYDRANT	⊙	UTILITY POLE
⊙	CONTROLLER CABINET	⊙	PHASE NUMBER
		⊙	INLET
		⊙	MAN HOLE

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
 ENGINEERING DISTRICT 6-0

COUNTY: CHESTER COUNTY

MUNICIPALITY: WESTTOWN & THORNBURY TOWNSHIP

INTERSECTION: STREET ROAD (S.R. 0926) AND SOUTH NEW STREET

REVIEWED: _____ DATE _____

MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: MARK L KRAY 5/6/99

DOUGLAS MAY 5/7/99

DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DATE	REVISION	DATE	REVISION	DATE
1	Revise CSN Signs	5/4/99				
2	Shorten MA	5/11/99				
3	MINIMUM TIME REVISED	7/10/99				
4						
5						
6						
7						
8						

Appendix J

Other Development Trip Generation, Distribution, & Assignment

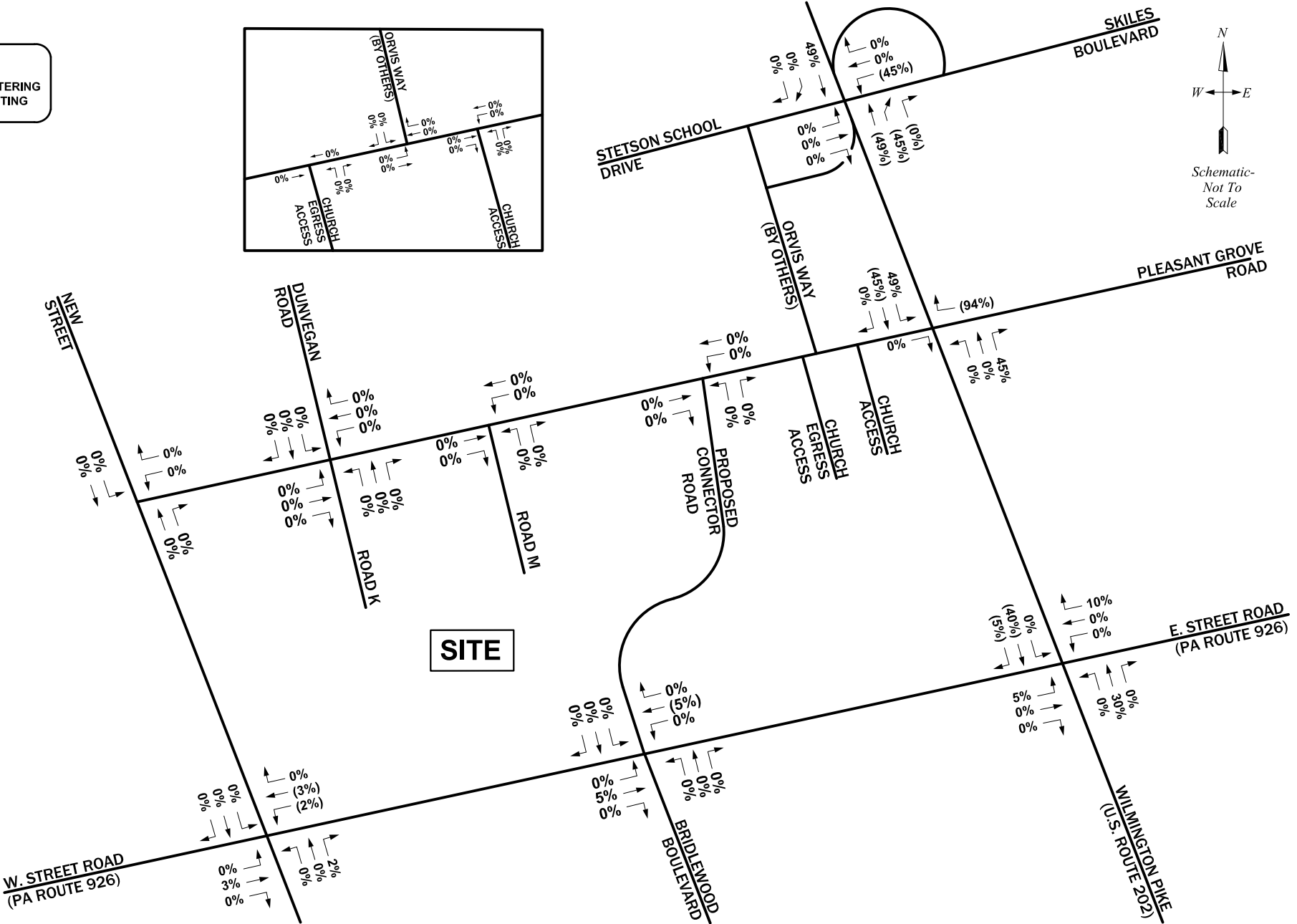
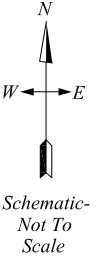
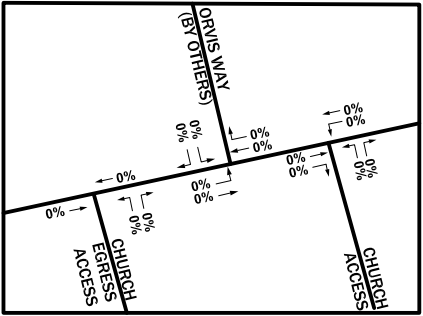
The Malvern School

Project Information	
Project Name:	Robinson Tract Other Development - Malvern School
McMahon Project No:	816451
Date:	8/6/2019
City/Municipality:	Westtown Township
State:	Pennsylvania
Client Name:	Toll Brothers, Inc.
Analyst's Name:	BGG
ITE Edition:	ITE-TGM 10th Edition

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
		Total	In	Out	Total	In	Out	Total
565 - Day Care Center		256	31	28	59	28	32	60
Pass-By Trips ⁽¹⁾	5,375 square feet	-87	-14	-12	-26	-12	-14	-26
"New" Trips		169	17	16	33	16	18	34

(1) Pass-by estimated to be 44 percent during the weekday morning and weekday afternoon peak hours and 34 percent (or 10 percent less than the weekday afternoon peak hour) on a daily basis. This pass-by rate is consistent with the data presented in *Trip Generation for Day Care Centers*, provided in the ITE 1990 Compendium of Technical Papers.

LEGEND:
 10% ENTERING
 (10%) EXITING



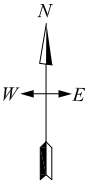
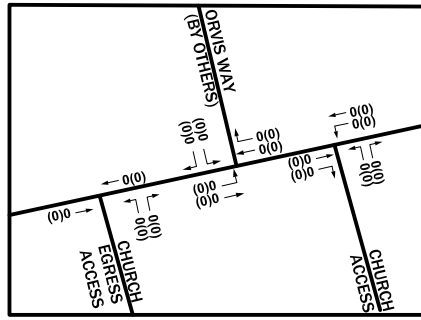
Other Development New Trip Distribution
 The Malvern School
ROBINSON TRACT
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



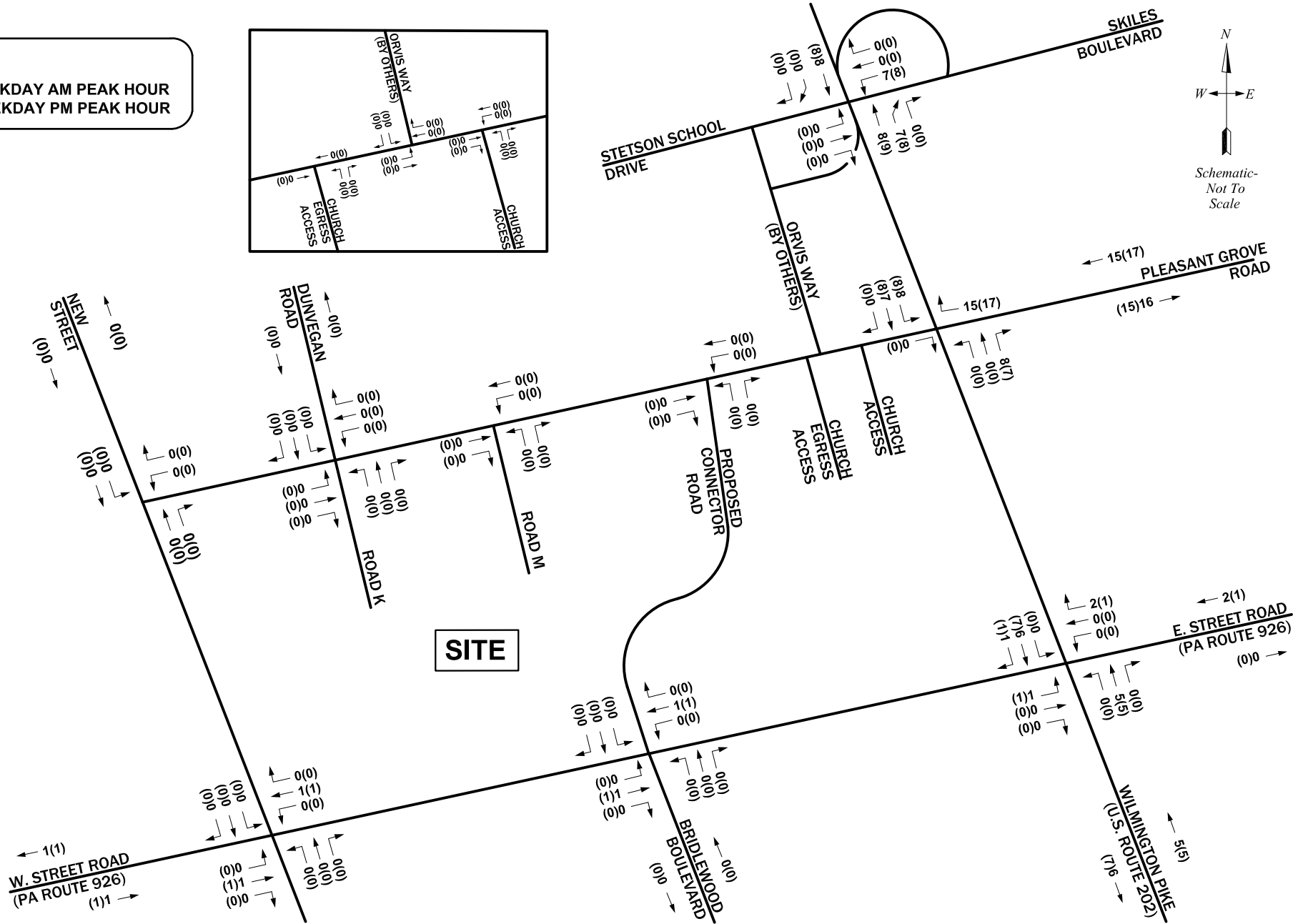
(2020-01-10) I:\eng\816451 - Crebilly Farm\dwg\2020-01 Robinson Tract Revised TIS\Figure J1.dwg

LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



Schematic-
Not To
Scale



Other Development New Trip Assignment
The Malvern School

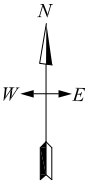
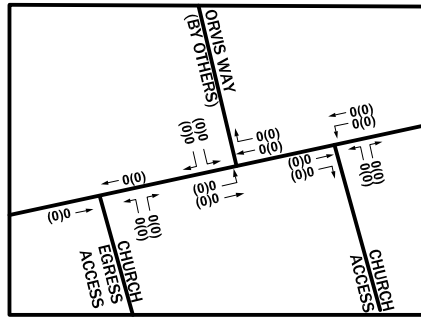
ROBINSON TRACT

WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

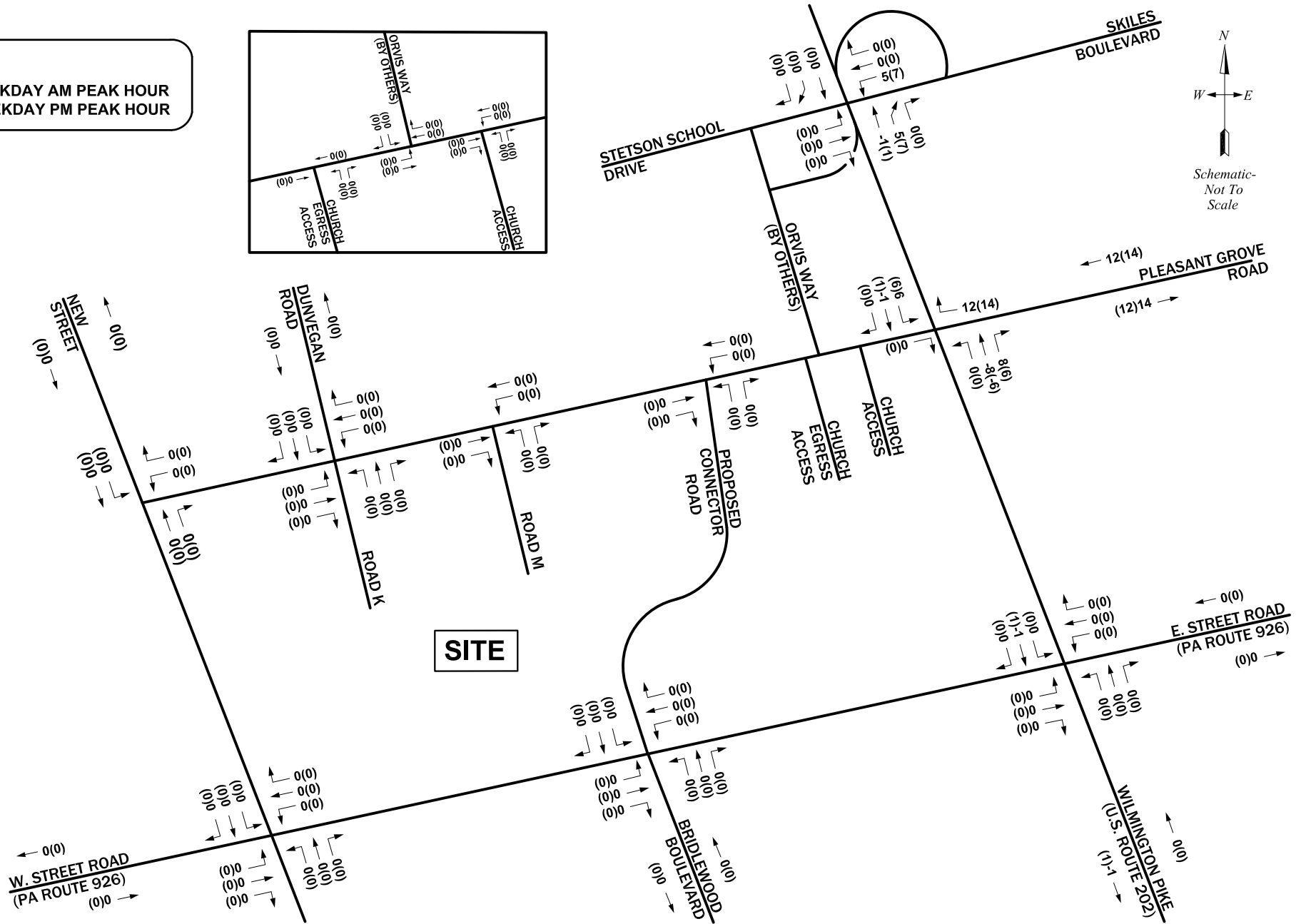


LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



Schematic-
Not To
Scale



SITE

Other Development Passby Trip Assignment
The Malvern School
ROBINSON TRACT
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



Arborview (Fair Share Properties)

ARBORVIEW

TRANSPORTATION IMPACT ASSESSMENT

January 26, 2015
TPD # TAG.A.00003

Westtown Township
Chester County, PA



For Submission To:

PennDOT District 6-0
&
Westtown Township

Prepared By:

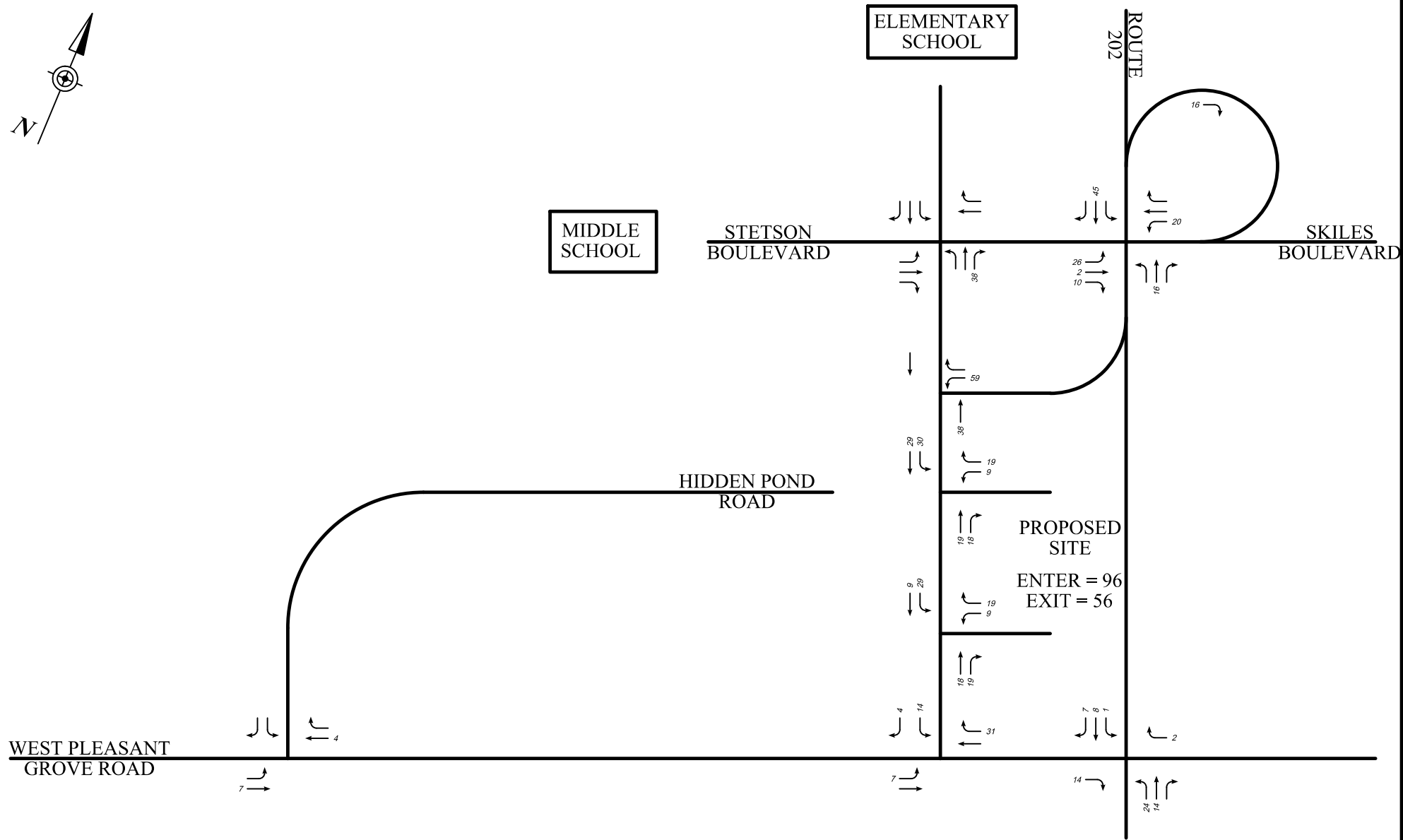
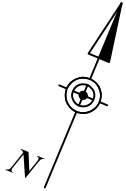


TRAFFIC PLANNING AND DESIGN, INC.

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TPD Services:
Roadway Design
Bridge Design & Inspection
Transportation Planning

Traffic Signal System Design
Municipal Services
Environmental Services
Construction Management & Inspection

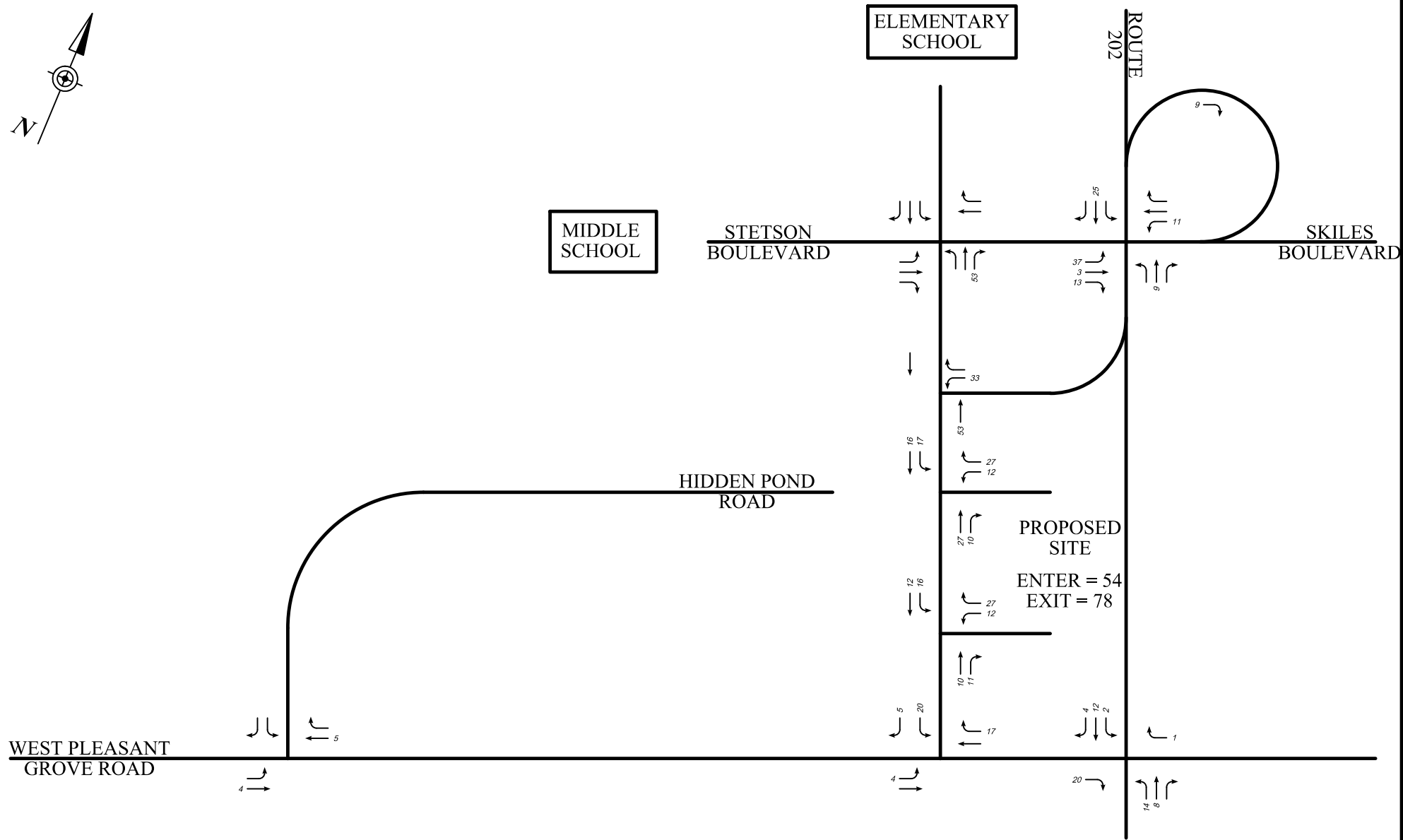
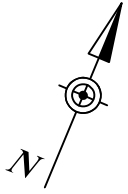


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 LEHIGH VALLEY (610)625-4242 POTTSTOWN (610)326-3100 SOUTH JERSEY (856)966-4242
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FIGURE 7

WEEKDAY AM PEAK HOUR
 TRIP DISTRIBUTIONS

KEY:
 SCHEMATIC DRAWING: NOT TO SCALE



KEY:
 SCHEMATIC DRAWING: NOT TO SCALE

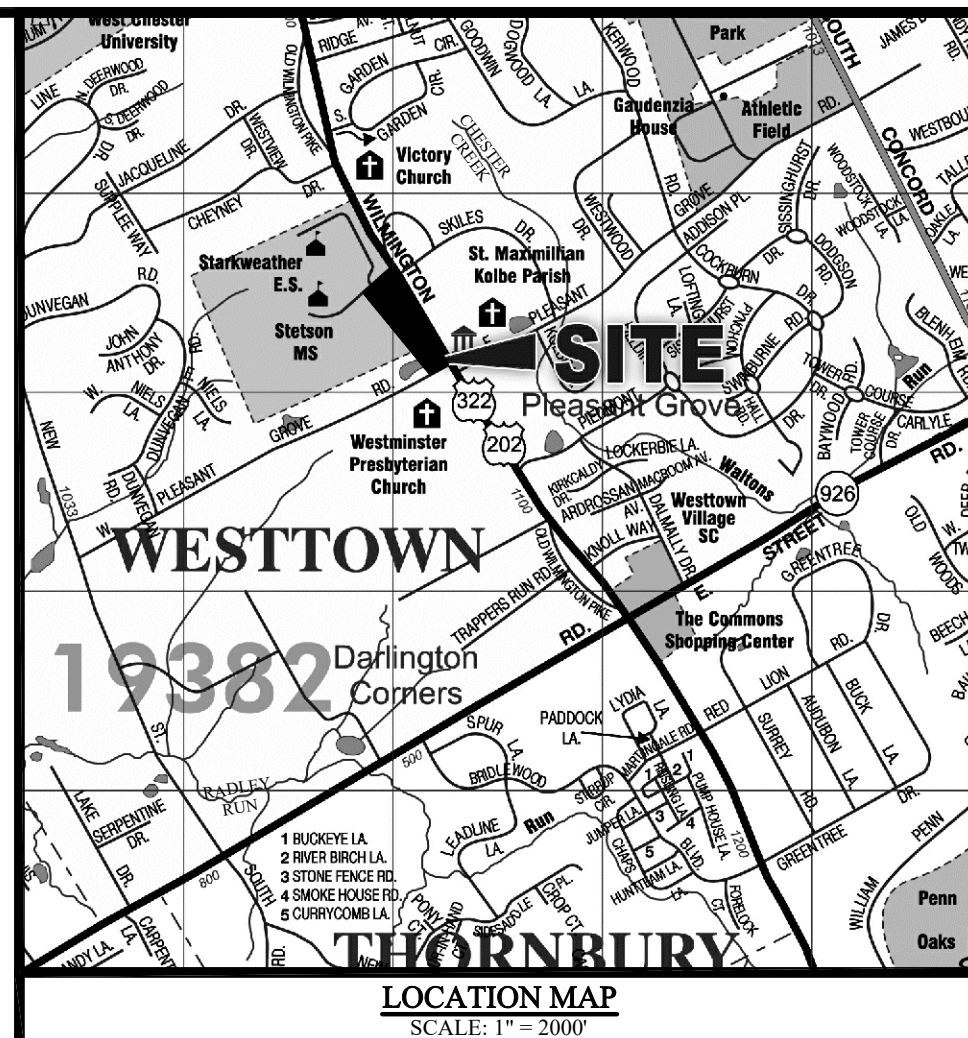
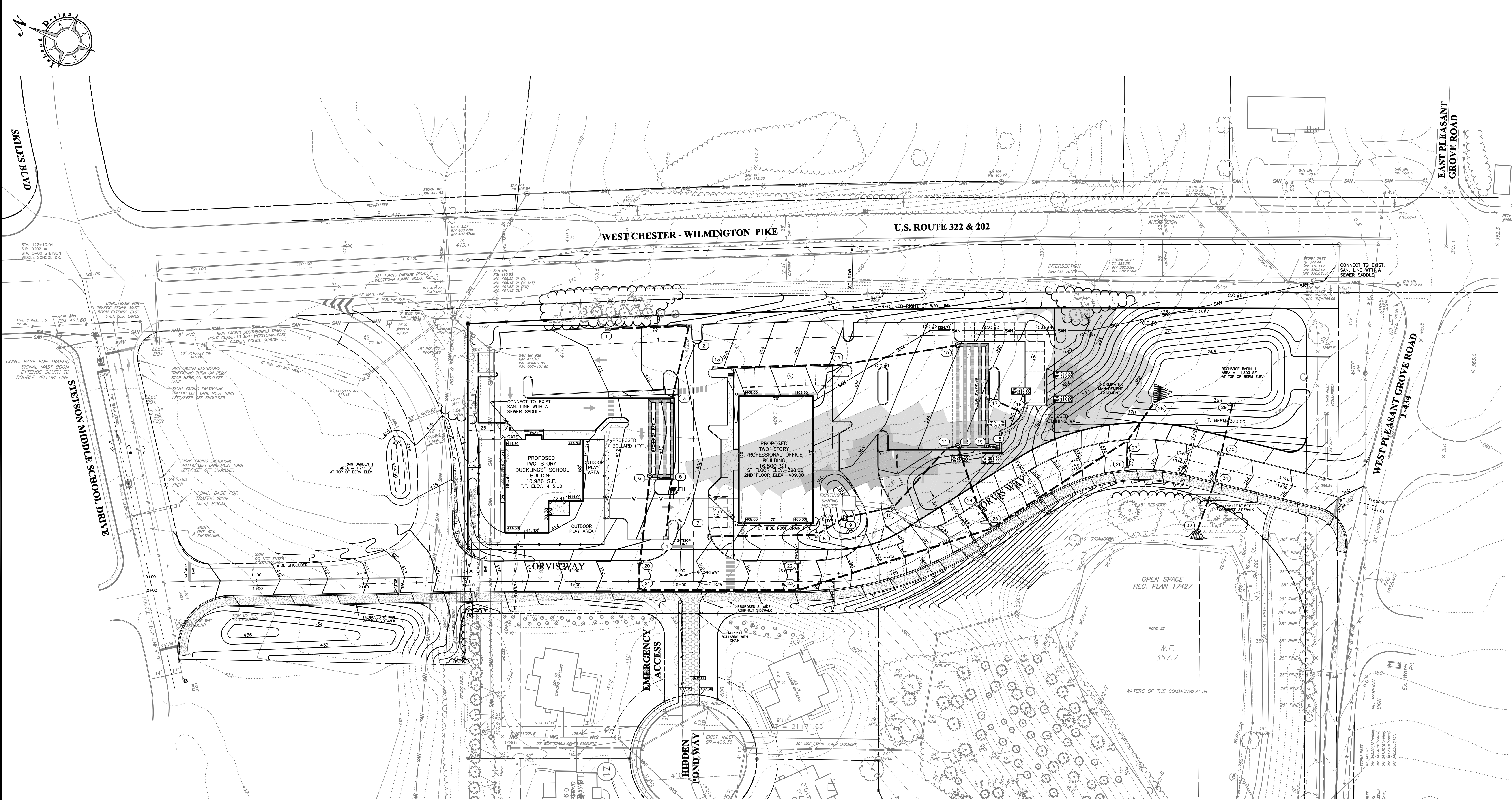
TRAFFIC PLANNING AND DESIGN, INC.

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

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FIGURE 8

WEEKDAY PM PEAK HOUR
 TRIP DISTRIBUTIONS



LEGEND

	PROPERTY BOUNDARY
	ADJOINING PROPERTY LINE
	EXISTING RIGHT OF WAY LINE
	EXISTING EASEMENT LINE
	FLOOD PLAIN LINE
	EXISTING 2' CONTOUR
	EXISTING 10' CONTOUR
	EXISTING SPOT ELEVATION
	EXISTING TREE
	EXISTING TREE SYMBOLS
	EXISTING LIGHT
	EXISTING UTILITY POLE
	EXISTING WELL
	EXISTING WATER VALVE
	EXISTING SIGN
	TEST PIT LOCATION
	EXISTING FENCE LINE
	EXISTING LINE AND DESCRIPTION
	STEEP SLOPE 15% - 25%
	STEEP SLOPE 25% - UP
	EXISTING STORM STRUCTURES & PIPE
	EXISTING SANITARY STRUCTURES & PIPE
	EXISTING ROAD CENTERLINE
	EXISTING CURB LINE
	EXISTING ROAD PAVING
	EXISTING DRIVEWAY
	EXISTING STONE DRIVE
	EXISTING CONCRETE SIDEWALK
	EXISTING WALL
	EXISTING WATER LINE
	PROPOSED RIGHT OF WAY LINE
	PROPOSED EASEMENT LINE
	PROPOSED 2' CONTOUR
	PROPOSED 10' CONTOUR
	PROPOSED SPOT ELEVATION
	PROPOSED TREE LINE
	PROPOSED UTILITY POLE
	PROPOSED WELL
	PROPOSED WATER VALVE
	PROPOSED SIGN
	PROPOSED FENCE LINE
	PROPOSED STORM STRUCTURES & PIPE
	PROPOSED SANITARY CLEANOUT & PIPE
	PROPOSED ROAD CENTERLINE
	PROPOSED CURB LINE
	PROPOSED ROAD PAVING
	PROPOSED DRIVEWAY
	PROPOSED STONE DRIVE
	PROPOSED CONCRETE SIDEWALK
	PROPOSED ASPHALT SIDEWALK
	PROPOSED WALL
	PROPOSED WATER LINE

- GENERAL NOTES:**
- CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS OF UNDERGROUND UTILITIES AND STRUCTURES PRIOR TO THE START OF CONSTRUCTION.
 - THIS DEVELOPMENT WILL BE SERVICED WITH PUBLIC SANITARY SEWER AND PUBLIC WATER SUPPLY.
 - ALL MATERIALS, METHODS AND DETAILS OF CONSTRUCTION SHALL CONFORM TO THE REGULATIONS OF WESTTOWN TOWNSHIP AND/OR THE APPROPRIATE UTILITY COMPANY, WHICHEVER REGULATION TAKES PRECEDENCE.
 - ALL ELECTRIC, TELEPHONE AND OTHER UTILITY LINES SHALL BE INSTALLED UNDERGROUND THROUGHOUT THE DEVELOPMENT IN ACCORDANCE WITH THE REGULATIONS OF THE LOCAL UTILITY COMPANY AND WESTTOWN TOWNSHIP.
 - ALL HDPE STORM SEWER PIPE SHALL BE SMOOTH-BORE INTERIOR, CORRUGATED EXTERIOR POLYETHYLENE PIPE W/ WATERIGHT JOINTS CONFORMING TO AASHTO M294 (ABS N-12 OR APPROVED EQUAL).
 - ALL RCP STORM SEWER PIPE SHALL BE REINFORCED CEMENT CONCRETE PIPE, CLASS V IN ACCORDANCE WITH SECTION 601.2 (A) 3.A OF PENNDOT PUB. WORK SPECIFICATIONS CONFORMING TO THE REQUIREMENTS OF AASHTO M179 OR AASHTO M214. PIPE JOINTS SHALL BE "O" RING RUBBER COMPRESSION GASKET JOINTS CONFORMING TO ASTM C443.
 - ALL SANITARY SEWER PIPE AND FITTINGS SHALL BE TYPE PSM PVC CONFORMING TO ASTM D3034 SDR 35 WITH PUSH-ON JOINTS.
 - ALL SANITARY SEWER CLEANOUTS IN PAVED AREAS SHALL USE A CLEANOUT PROTECTION SLEEVE.

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Pennsylvania One Call System
PA, Act 172 of 1986 requires
three working days notice
Serial Number:
2015101118

PENNSYLVANIA ACT 187 REQUIREMENTS:
Inland Design, LLC does not guarantee the accuracy of the location for existing subsurface utility structures shown on the plans, nor does Inland Design, LLC guarantee that all subsurface structures are shown. The contractor shall verify the location and elevation of all underground utilities and structures before the start of work.

INLAND DESIGN
Civil Engineers, Surveyors & Land Development Consultants
16 Hagerty Blvd.
West Chester, PA 19382
www.InlandDesign.net

Phone: (484) 947-2928
Fax: (484) 947-2946
Info@InlandDesign.net

PROFESSIONAL ENGINEER
CHARLES A. DOBSON
ENGINEER
WESTCHESTER
PENNSYLVANIA

No.	Date:	Description:
1	7-15-2015	PER TWP ENGINEER REVIEW LETTER DATED 6-11-2015.
2	9-3-2015	PER TWP ENGINEER REVIEW LETTER DATED 7-30-2015.
4	9-18-2015	PER TWP SEWER ENGINEER REVIEW LETTER DATED 6-12-2015.
5	12-4-2015	NPDES SUBMITTAL.
6	03-11-2016	REVISED PER CCED LETTER DATED 2-10-2016.
7	07-01-2016	REVISED BASIN MAINTENANCE RESPONSIBILITIES
8	10-11-2016	REVISED BASIN MAINTENANCE RESPONSIBILITIES
9	5-18-2018	REVISED SCHOOL BUILDING FOOTPRINT

**PRELIMINARY/FINAL
LAND DEVELOPMENT PLAN**

GRAPHIC SCALE
0 20 40 60 80 100 120 140 160
(IN FEET)
1 inch = 40'

Date: 5/13/2018
Scale: 1" = 40'
Drawn by: TAH
Checked by: CAD
Project No. **10365**

**GRADING & UTILITY PLAN
FOR
FAIR SHARE PROPERTIES, L.P.
ARBORVIEW COMMERCIAL LOT**

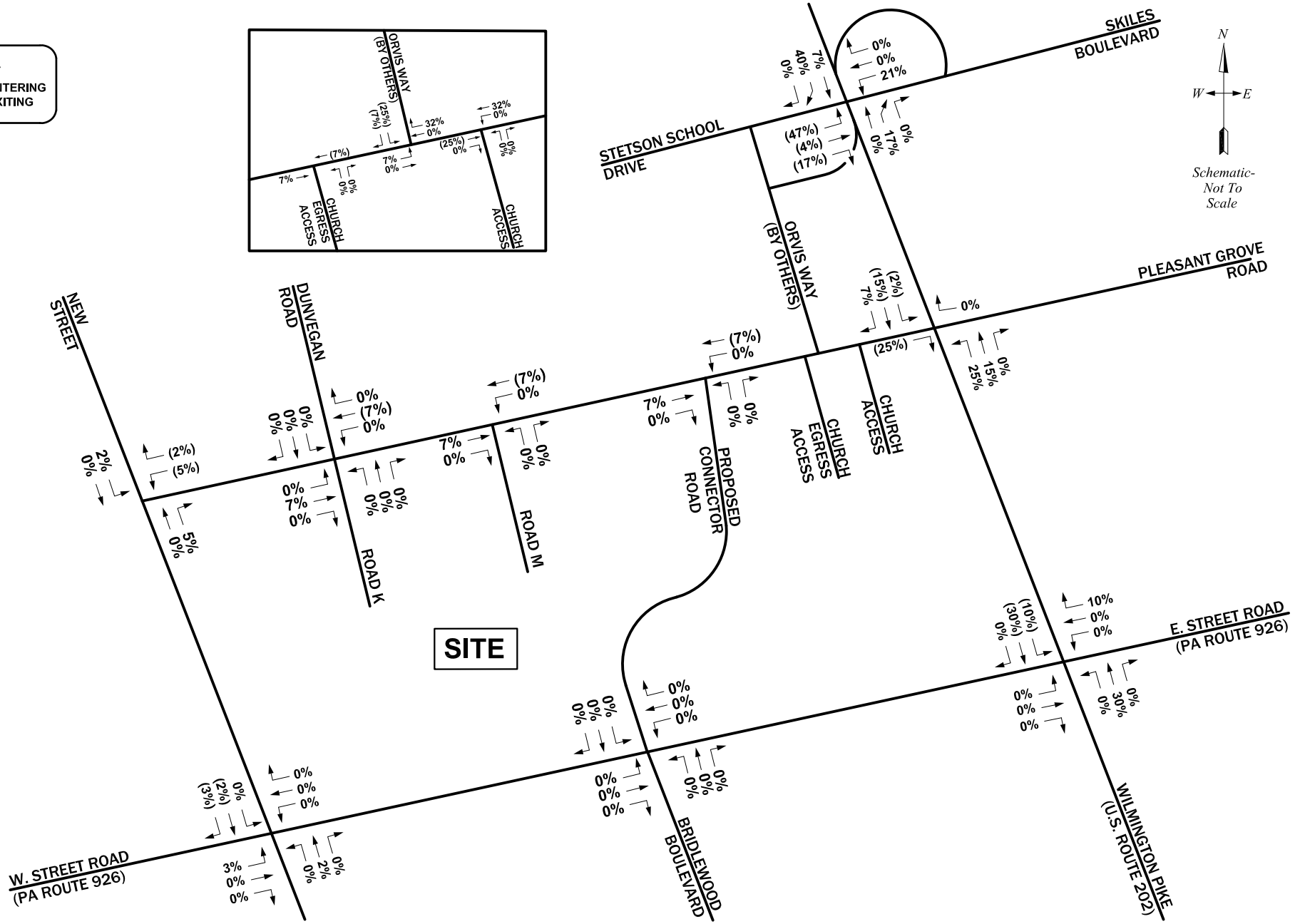
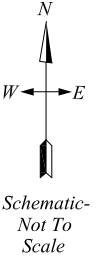
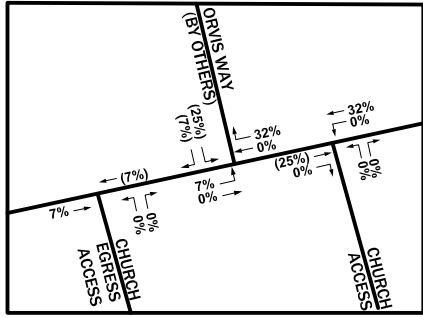
WESTTOWN TOWNSHIP • CHESTER COUNTY • PENNSYLVANIA

SHEET
4
OF 20

Project Information	
Project Name:	Robinson Tract Other Development - Arborview
McMahon Project No:	816451.11
Date:	8/6/2019
City/Municipality:	Westtown Township
State:	Pennsylvania
Client Name:	Toll Brothers, Inc.
Analyst's Name:	BGG
ITE Edition:	ITE-TGM 10th Edition

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
		Total	In	Out	Total	In	Out	Total
710 - General Office Building	16,800 SF	164	16	3	19	3	16	19
565 - Day Care Center	10,986 SF	522	64	57	121	57	65	122
Total Trips		686	80	60	140	60	81	141

LEGEND:
 10% ENTERING
 (10%) EXITING

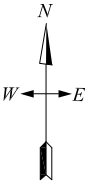
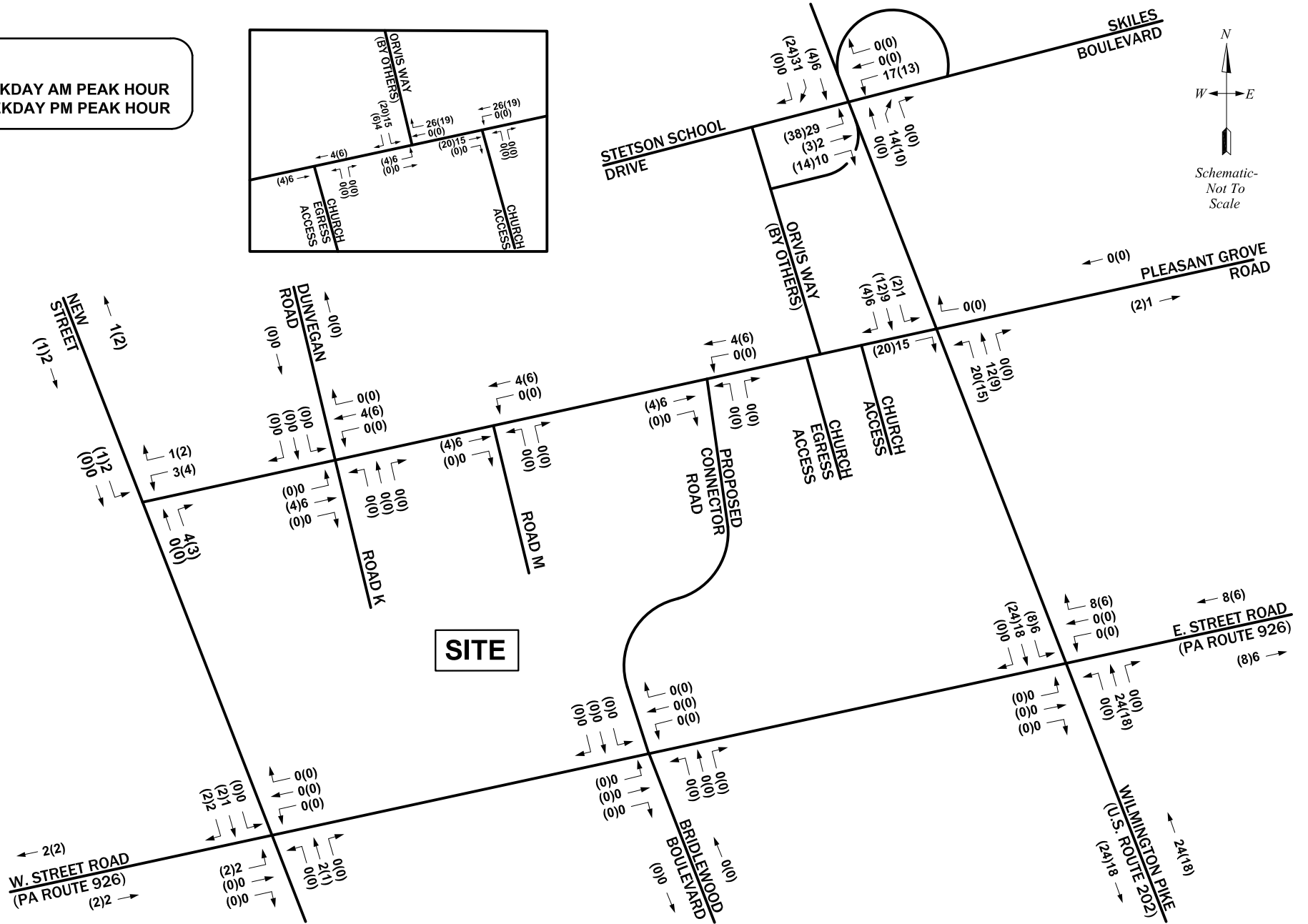
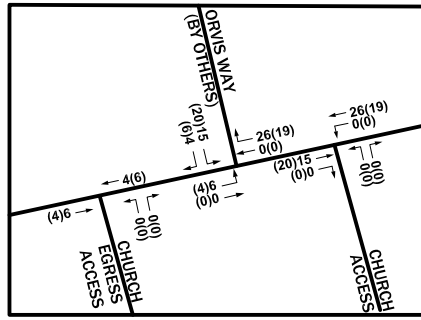


Other Development New Trip Distribution
 Arborview
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



Schematic-
Not To
Scale

Other Development New Trip Assignment
Arborview

ROBINSON TRACT

WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

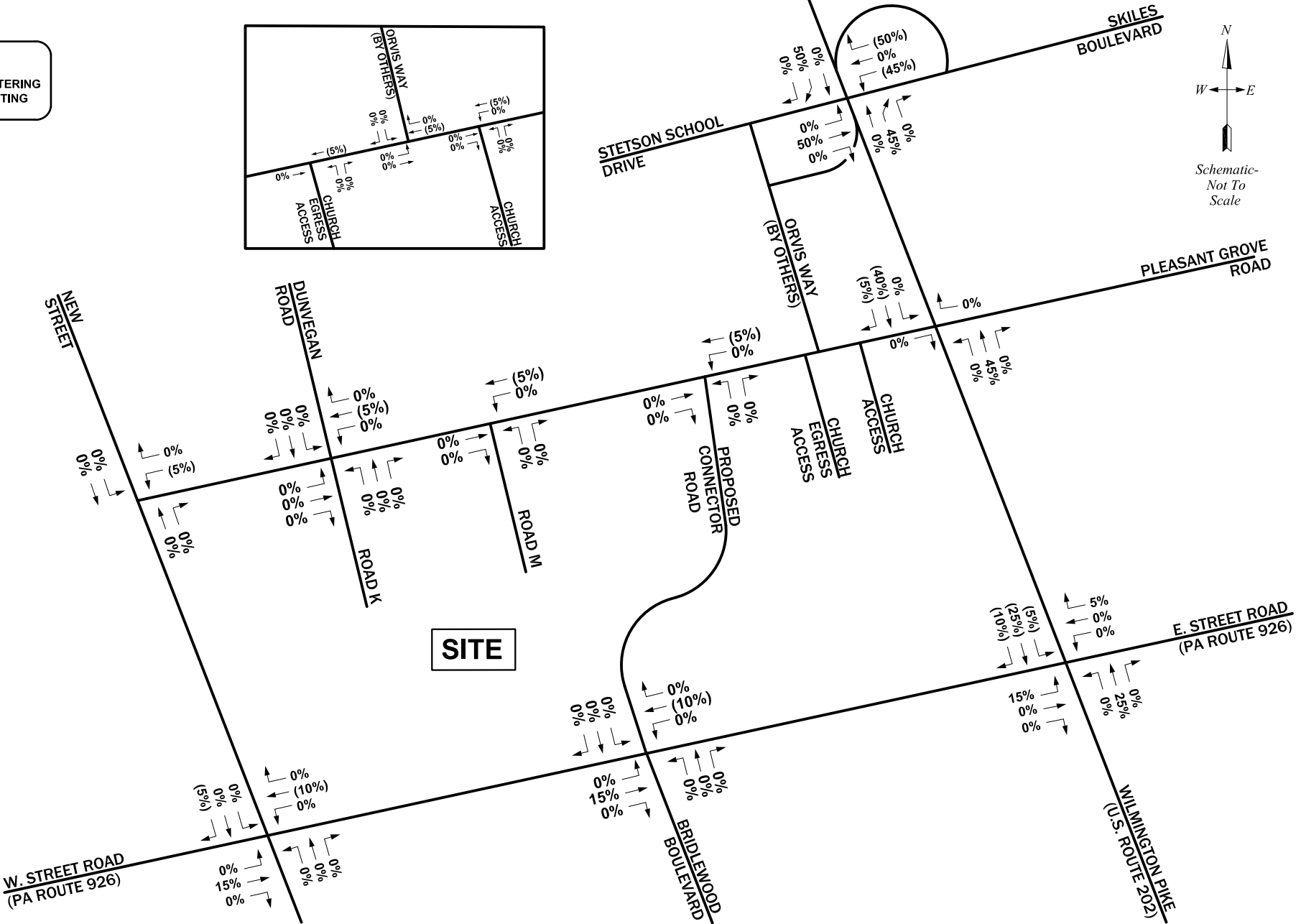
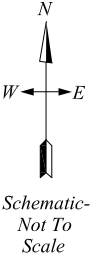
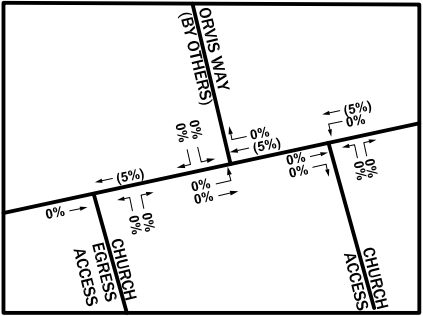


Condominium Development

Project Information	
Project Name:	Robinson Tract Other Development - Condominium Development
McMahon Project No:	816451
Date:	8/6/2019
City/Municipality:	Westtown Township
State:	Pennsylvania
Client Name:	Toll Brothers, Inc.
Analyst's Name:	BGG
ITE Edition:	ITE-TGM 10th Edition

Land Use	Size	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
		Total	In	Out	Total	In	Out	Total
221 - Multifamily Housing (Mid Rise)	39 units	211	4	10	14	11	7	18

LEGEND:
 10% ENTERING
 (10%) EXITING



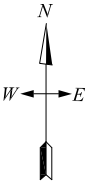
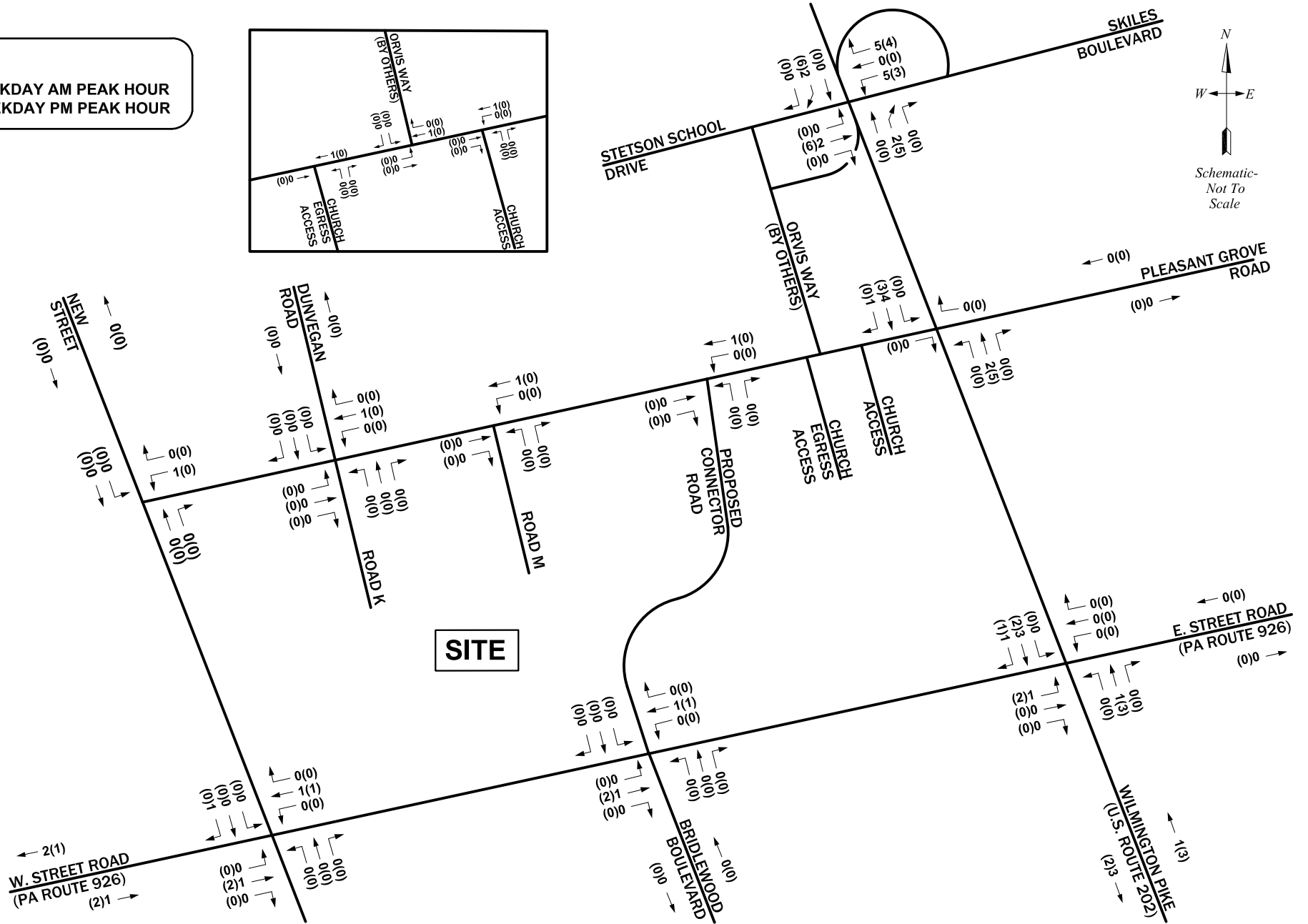
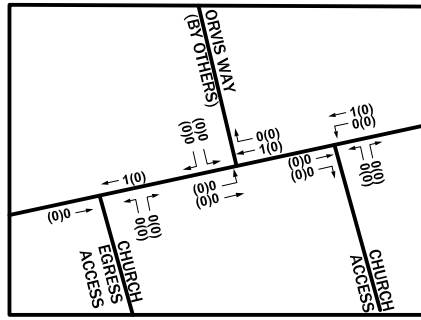
Other Development New Trip Distribution
 Condominium Development
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



(2020-01-10) I:\eng\816451 - Crebilly Farm\dwg\2020-01 Robinson Tract Revised TIS\Figure J6.dwg

LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



Schematic-
Not To
Scale

Other Development New Trip Assignment
 Condominium Development
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



Appendix K

Traffic Diversions

Revised February 21, 2020



McMAHON ASSOCIATES, INC.
835 Springdale Drive, Suite 200
Exton, PA 19341
p 610-594-9995 | f 610-594-9565

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Dean A. Carr, P.E.
Jason T. Adams, P.E., PTOE
Christopher K. Bauer, P.E., PTOE

FOUNDER

Joseph W. McMahon, P.E.

February 21, 2020

Mr. Albert Federico, P.E., PTOE
Albert Federico Consulting, LLC
133 Rutgers Avenue
Swarthmore, PA 19081

RE: Robinson Tract Residential Development – Traffic Diversions
Westtown Township, Chester County, PA
McMahon Project No. 816451.11

Dear Mr. Federico:

As requested, this letter provides additional information and clarification regarding the methodology utilized to develop the traffic diversions presented in the *Transportation Impact Study for the Robinson Tract*, last revised December 2, 2019.

Orvis Way: West Pleasant Grove Road to Stetson School Collector Road

In conjunction with the Arborview (Fair Share Properties) development, Orvis Way connects West Pleasant Grove Road to Stetson School. In accordance with the Township approved *Arborview Transportation Impact Assessment*, prepared by Traffic Planning & Design and dated January 26, 2015, and based on our review of those assumptions and traffic data collected in the fall of 2019, traffic in the area is estimated to divert to utilize Orvis Way as follows:

- **Diversion A:** 5 percent of the eastbound left-turns from Street Road (S.R. 0926) to northbound U.S. Route 202 (Wilmington Pike) will divert via New Street and West Pleasant Grove Road to Orvis Way, per the Arborview study.
- **Diversion B:** 10 percent of the northbound U.S. Route 202 (Wilmington Pike) jughandle volume onto Stetson School will divert via West Pleasant Grove Road to Orvis Way, per the Arborview study.
- **Diversion C:** 25 percent of the eastbound right-turns exiting Stetson School to southbound U.S. Route 202 (Wilmington Pike) to eastbound Street Road (S.R. 0926) will divert to Orvis Way and utilize West Pleasant Grove Road to New Street to eastbound Street Road (S.R. 0926). This diversion was decreased from the approved Arborview

study as the majority of traffic currently making this movement during the peak hours is generated by Stetson Middle School, and the school service area ends just to the west of New Street.

Table 1 below provides a comparison of the resulting diverted traffic volumes from the approved Arborview study versus the current Robinson Tract TIS.

Table 1. Orvis Way Diverted Traffic Volume Comparison

	Arborview Study ⁽¹⁾	Robinson Tract TIS ⁽²⁾
Diversion A	AM: 25 PM: 21	AM: 28 PM: 24
Diversion B	AM: 4 PM: 2	AM: 2 PM: 2
Diversion C	AM: 30 PM: 23	AM: 8 PM: 16
Total	AM: 59 PM: 46	AM: 38 PM: 42

(1) As shown in Figures 9 and 10 of the *Arborview Transportation Impact Assessment*, prepared by Traffic Planning and Design, Inc., and dated January 26, 2015.

(2) As shown in Appendix K of the *Transportation Impact Assessment for the Robinson Tract*, prepared by McMahan Associates, Inc., and last revised December 2, 2019.

Robinson Tract: Street Road (S.R. 0926) to West Pleasant Grove Road Collector Road

Based on the vision for this Collector Road by Westtown Township, the submitted Transportation Impact Study incorporates diversions for several existing movements, as detailed below, as an alternative to the congested Wilmington Pike (U.S. Route 202) and Street Road (PA 926) intersection for local traffic. Travel time comparisons were completed for each peak hour and for each diversion route individually in order to determine an appropriate percentage of vehicles, beyond site traffic, to utilize the Collector Road that would result in more balanced travel times along the route options. This was completed in an iterative process, resulting in the percentage diversions listed below.

As shown in the travel time calculations provided in Appendix K, the travel times are not perfectly balanced, in favor of the existing base route, in order to provide a conservative estimate of traffic operations at the off-site study intersections. The travel time comparisons alone support diverting more traffic from the existing base routes to the Collector Road. Diverting more traffic would further reduce development traffic impact at the Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926) intersection. Regardless of travel times, some drivers will not deviate from their existing route for various reasons.

Additionally, it is noted that existing travel patterns were considered when evaluating the Collector Road traffic diversion potential. Specifically, traffic currently traveling south along U.S. Route 202 (Wilmington Pike) has two route options within the study area to travel westbound along Street Road (S.R. 0926). During the weekday morning peak hour, 45 percent utilizes West Pleasant Grove Road and 55 percent utilizes Street Road (S.R. 0926) directly. In the weekday afternoon peak hour when

congestion is greater, 62 percent utilizes West Pleasant Grove Road and 38 percent utilizes Street Road (S.R. 0926) directly. As delay and travel times increase, drivers are more likely to utilize alternate route options, but some continue on their primary course regardless.

- **Diversion D:** This diversion further increases Diversion A (above under Orvis Way discussion), by diverting an additional 5 percent of the weekday morning and an additional 25 percent of the weekday afternoon eastbound left-turns from Street Road (S.R. 0926) to northbound U.S. Route 202 (Wilmington Pike) which will divert via the Collector Road to West Pleasant Grove Road to Orvis Way.
- **Diversion E:** 25 percent of the southbound U.S. Route 202 (Wilmington Pike) right-turns to West Pleasant Grove Road will divert to Orvis Way and utilize West Pleasant Grove Road to the Collector Road.
- **Diversion F:** 66 percent (two-thirds) of the northbound Bridlewood Boulevard right-turns will divert to the Collector Road to West Pleasant Grove to Orvis Way to northbound U.S. Route 202 (Wilmington Pike).
- **Diversion G:** 50 percent of the southbound U.S. Route 202 (Wilmington Pike) right-turns to westbound Street Road (S.R. 0926) will divert to Orvis Way and utilize West Pleasant Grove Road to the Collector Road to eastbound Street Road (S.R. 0926).
- **Diversion H:** 250 vehicles (approximately 16 percent) of the southbound U.S. Route 202 (Wilmington Pike) through traffic was diverted to West Pleasant Grove Road to the Collector Road to Bridlewood Boulevard back to U.S. Route 202 (Wilmington Pike) southbound. Based on a travel time comparison (without implementation of PennDOT’s US 202/PA 926 intersection improvements), during the weekday afternoon peak hour in the southbound direction when U.S. Route 202 (Wilmington Pike) congestion is highest, the travel time along the Collector Road system may be shorter than staying on U.S. Route 202 (Wilmington Road).

Table 2 below provides a summary of the approximate travel distances, between the base route and the diverted route. Additional details regarding travel distance is provided in Appendix K of the submitted TIS, which is also attached.

Table 2. Approximate Travel Distance

Diversion	Base Route	Diverted Route
Diversion D	6,800'	6,200'
Diversion E	7,200'	6,700'
Diversion F	6,800'	6,200'
Diversion G	6,800'	6,200'
Diversion H	7,700'	10,300'

If there are any questions or if additional information is needed, please feel free to contact me at nkline@mcmahonassociates.com or (610) 594-9995.

Sincerely,



Nicole R. Kline-Elsier, P.E., PTOE
Regional Service Leader - Traffic

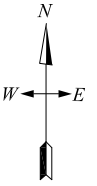
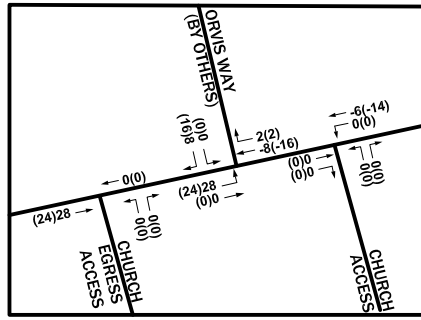
NRKE

cc: Robert Pingar, P.E., Westtown Township
Will Ethridge, Westtown Township
Andrew Semon, Toll Brothers
Michael Downs, P.E., Toll Brothers
Gregg Adelman, Esq., Kaplin Stewart
Jeff Madden, Eastern States Engineering

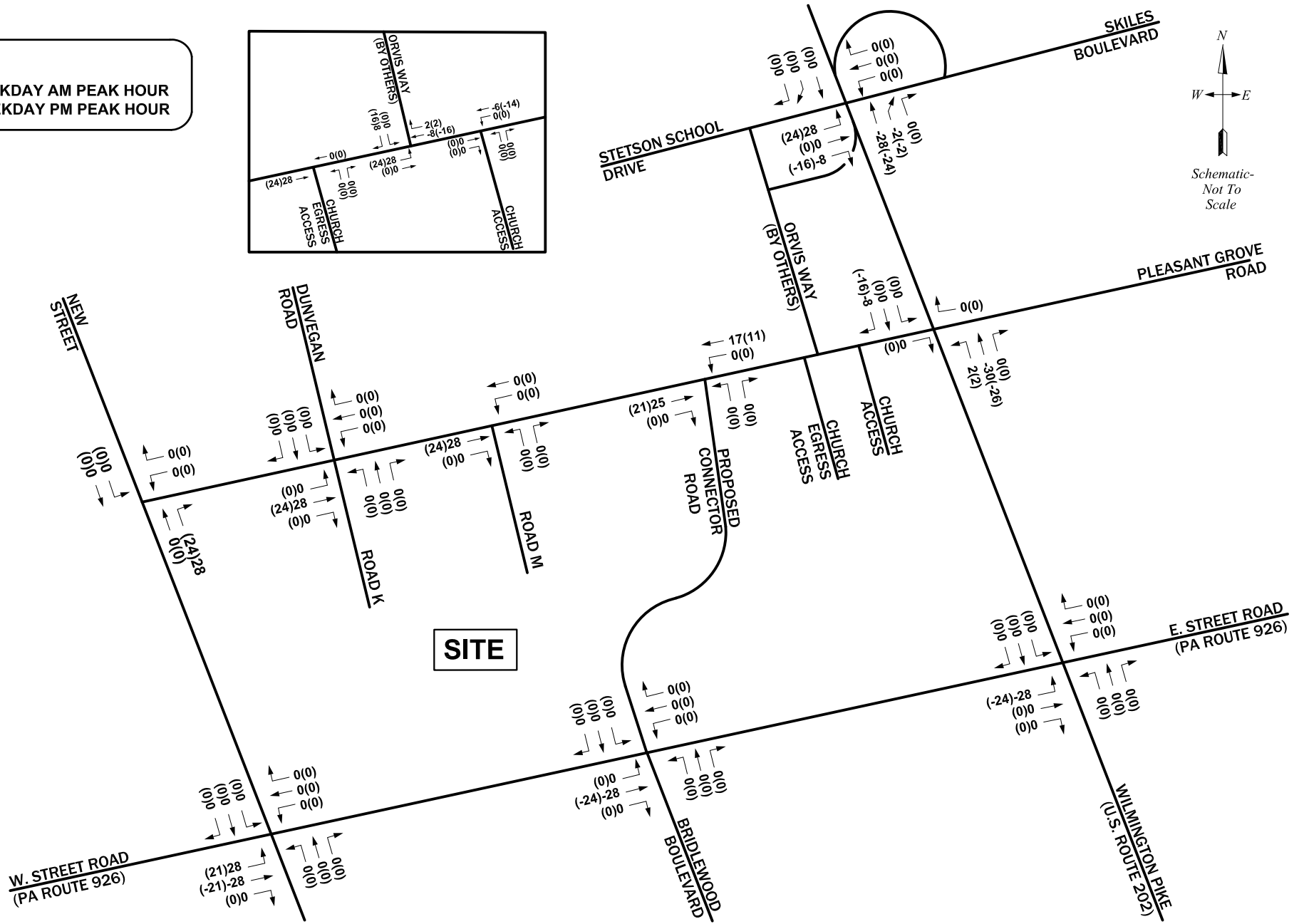
Without Development Diversions

LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



Schematic-
Not To
Scale



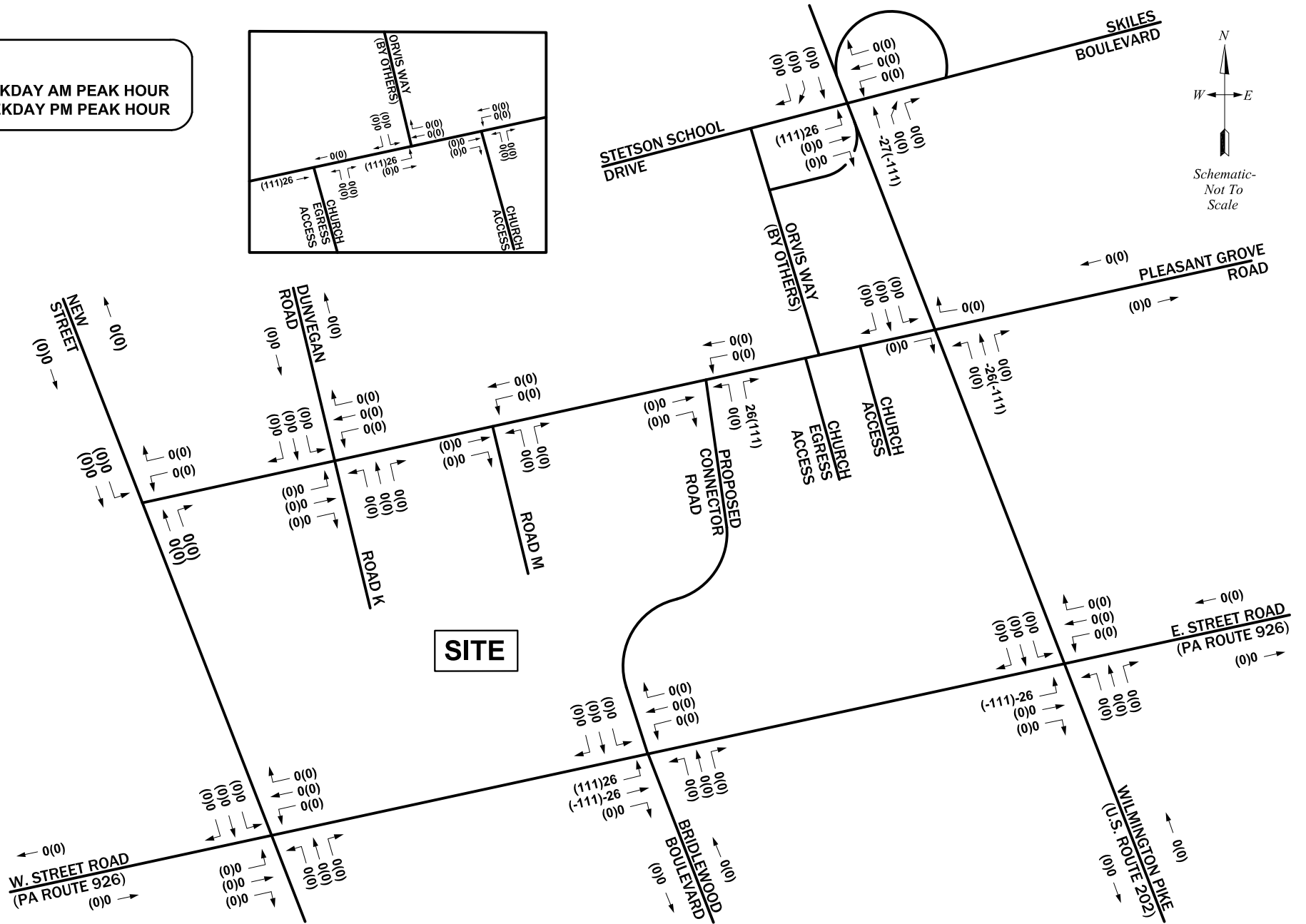
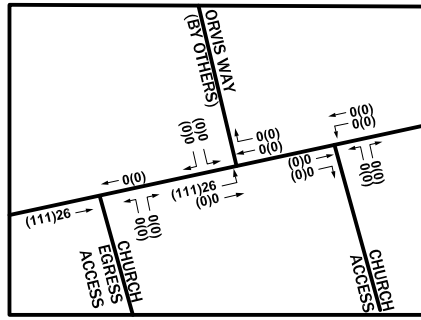
Diversions A, B, and C
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



With Development Diversions

LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



2025 with Development Diversions
 Diversion D - SR 926 EBL to NB US 202

ROBINSON TRACT

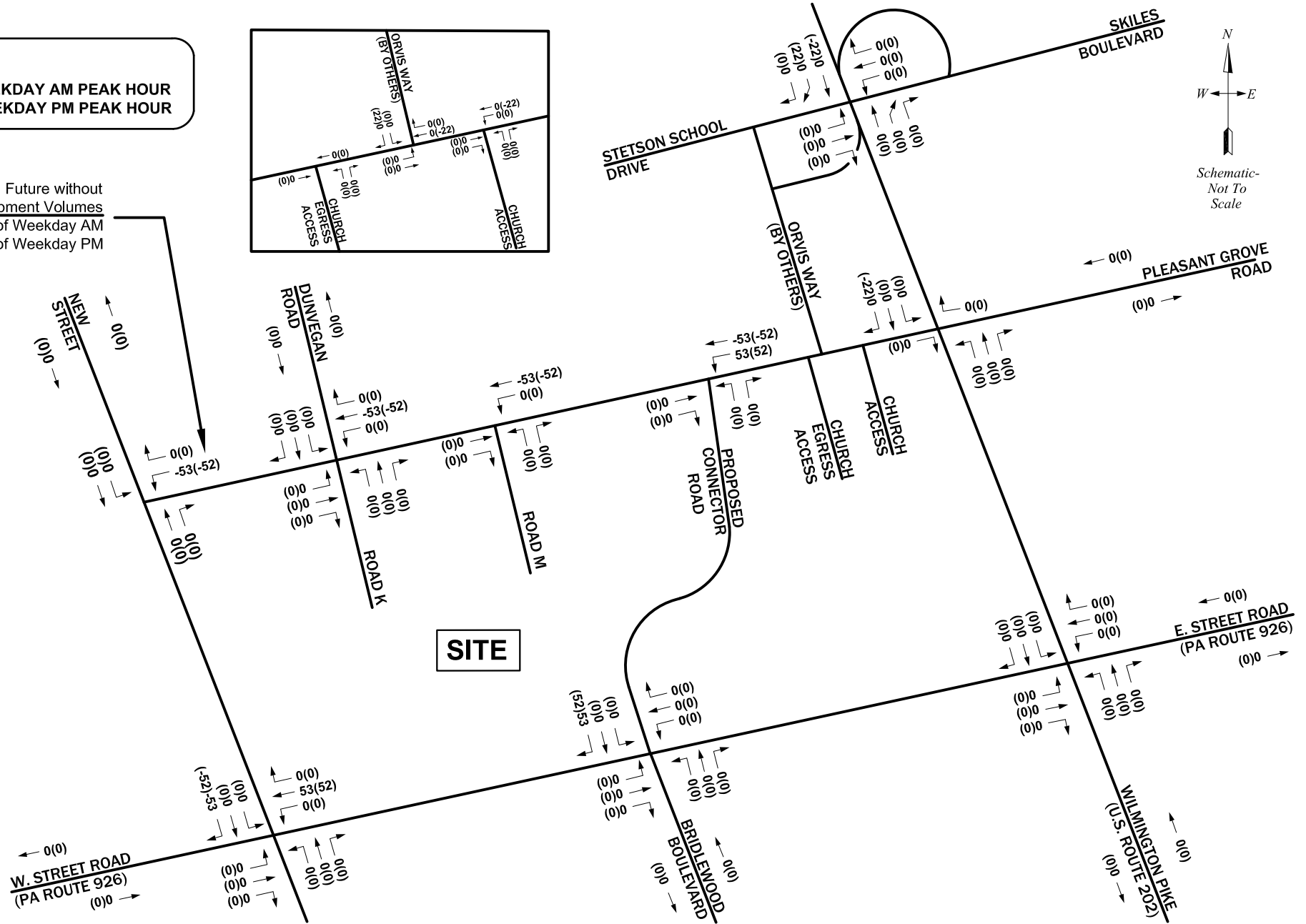
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR

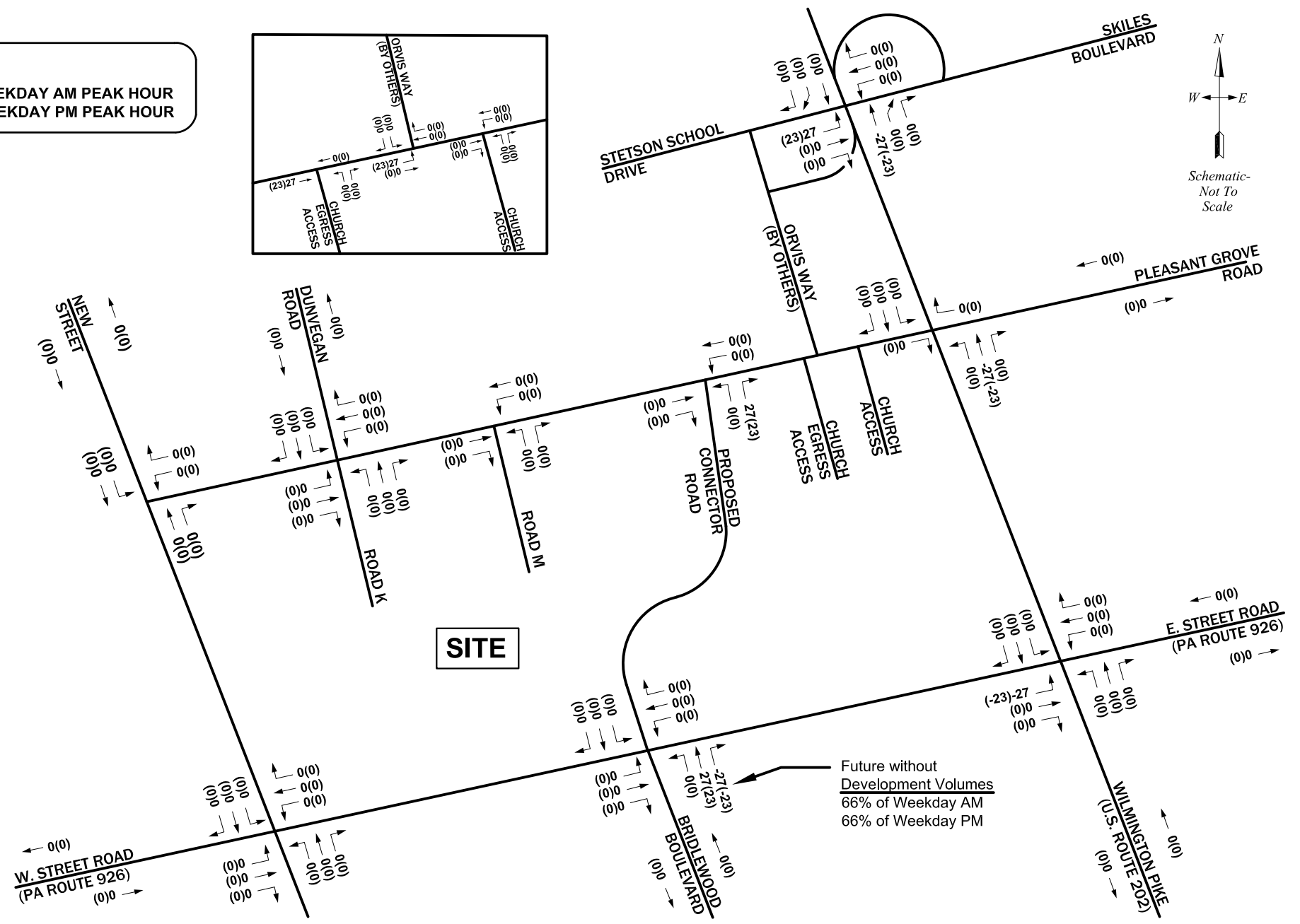
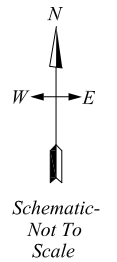
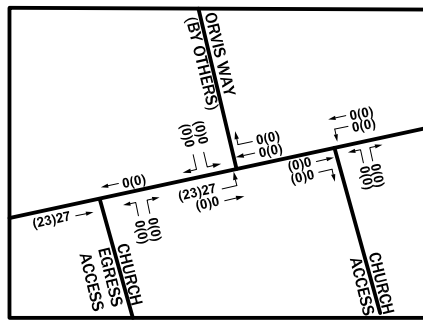
Future without
Development Volumes
25% of Weekday AM
25% of Weekday PM



2025 with Development Diversions
 Diversion E - SBR US 202 to W. Pleasant Grove Road / New Street
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

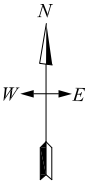
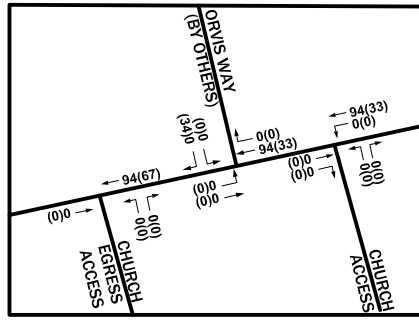


2025 with Development Diversions
 Diversion F - NBR Bridlewood Blvd to US 202 NB
ROBINSON TRACT
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

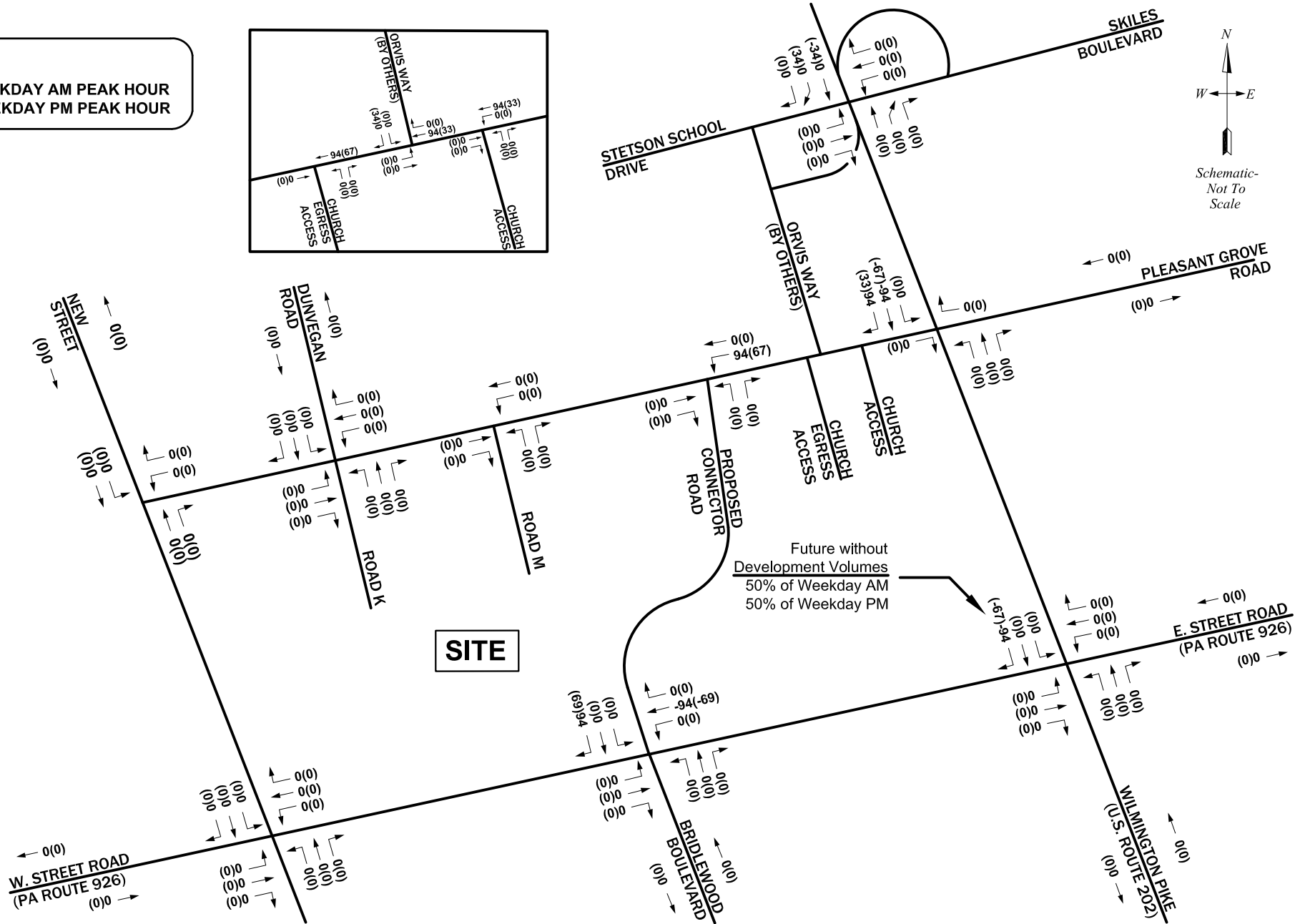


LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



Schematic-
Not To
Scale



2025 with Development Diversions
Diversions G - SBR US 202 to WB SR 926

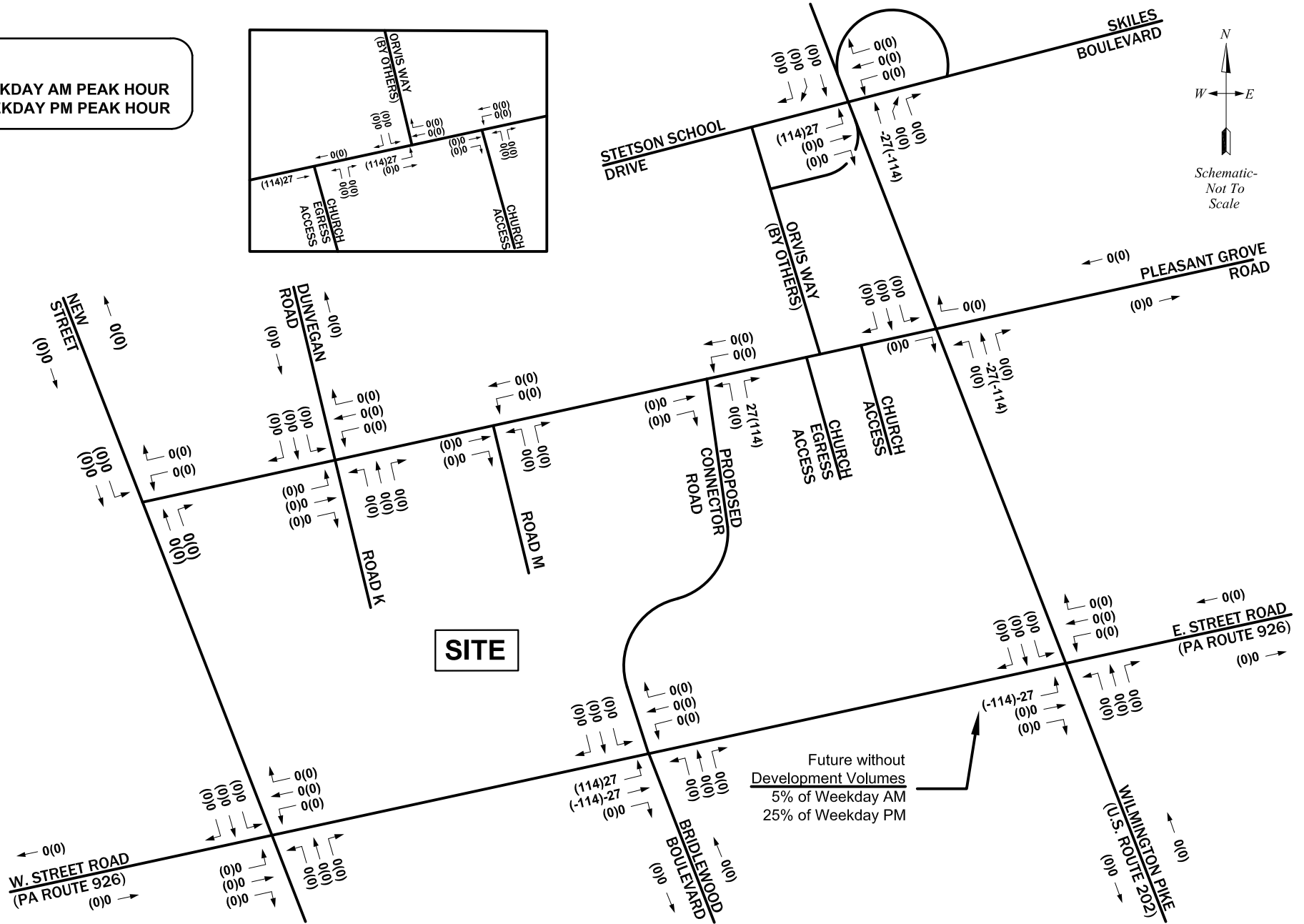
ROBINSON TRACT

WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



2030 with Development Diversions
 Diversion D - SR 926 EBL to NB US 202

ROBINSON TRACT

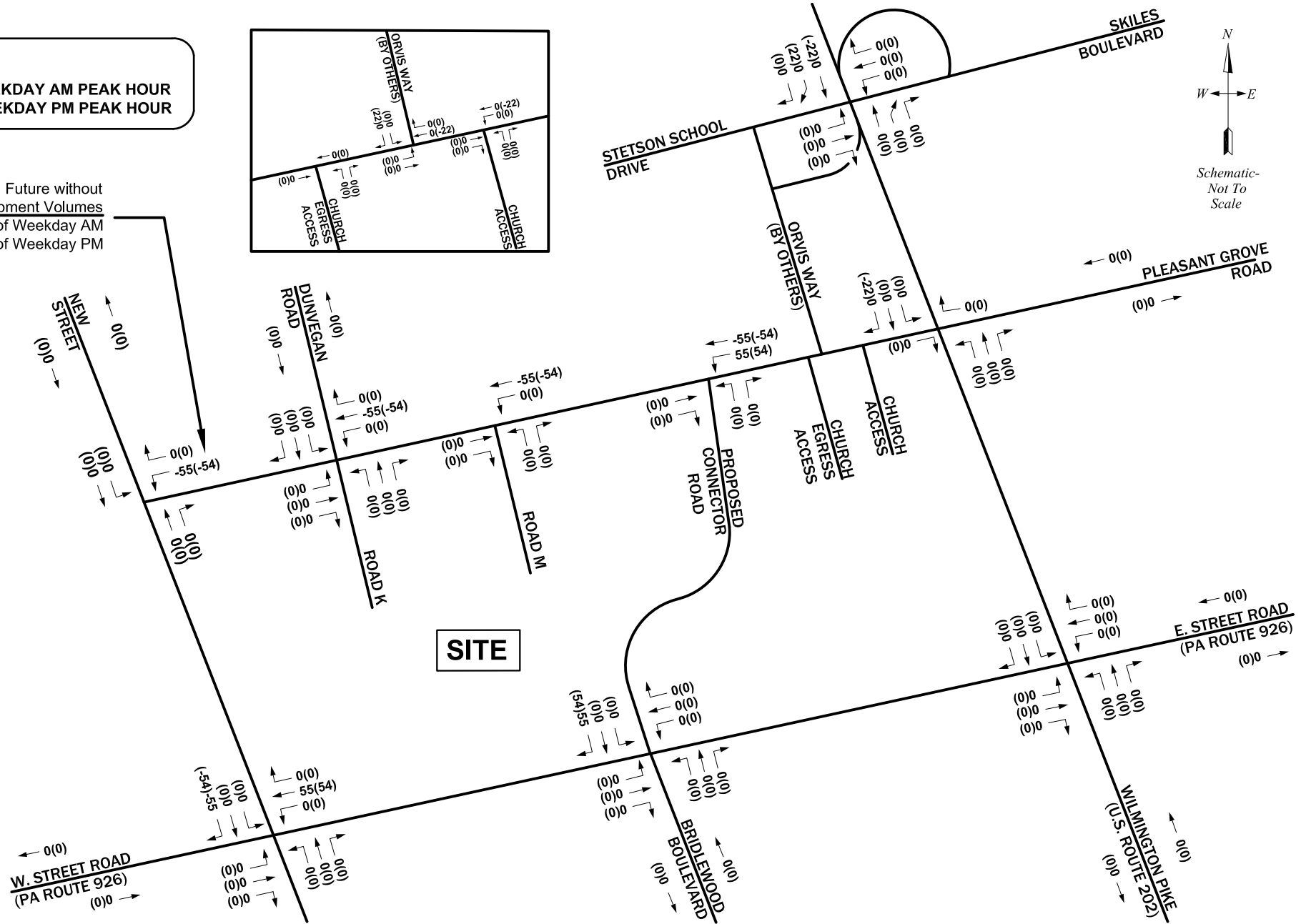
WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR

Future without
Development Volumes
25% of Weekday AM
25% of Weekday PM

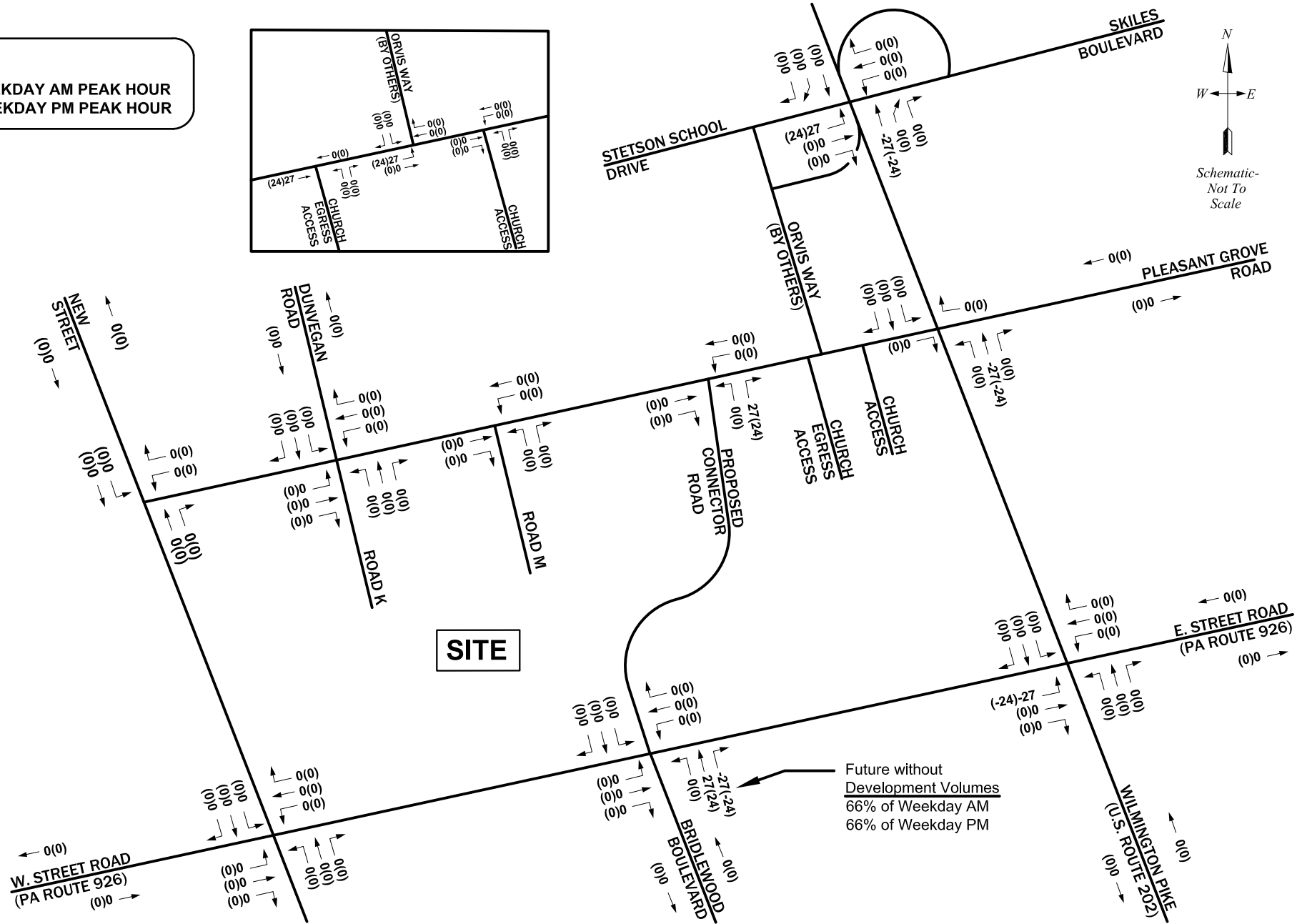


2030 with Development Diversions
 Diversion E - SBR US 202 to W. Pleasant Grove Road / New Street
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



LEGEND:

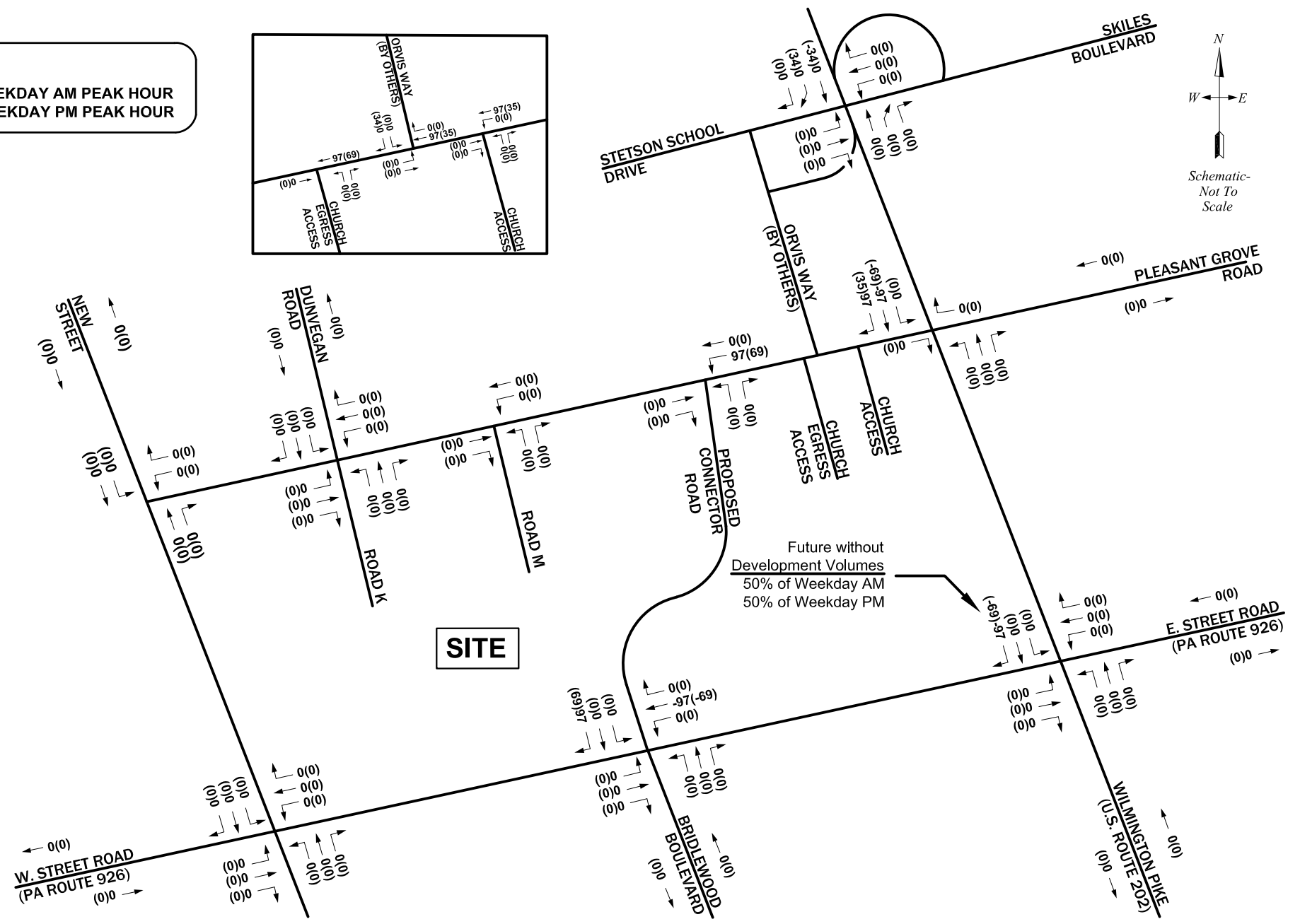
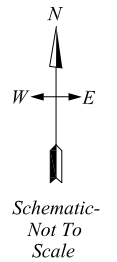
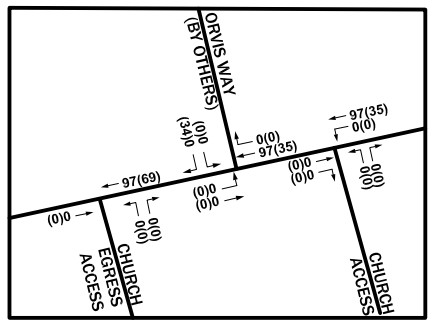
- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



2030 with Development Diversions
 Diversion F - NBR Bridlewood Blvd to US 202 NB
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



LEGEND:
 10 WEEKDAY AM PEAK HOUR
 (10) WEEKDAY PM PEAK HOUR

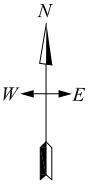
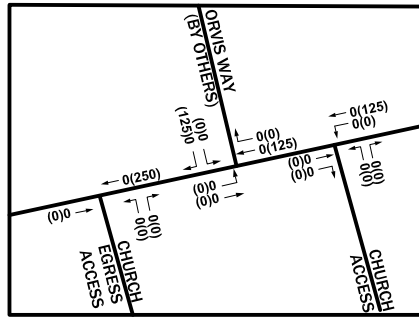


2030 with Development Diversions
 Diversion G - SBR US 202 to WB SR 926
ROBINSON TRACT
 WESTTOWN TOWNSHIP, CHESTER COUNTY, PA

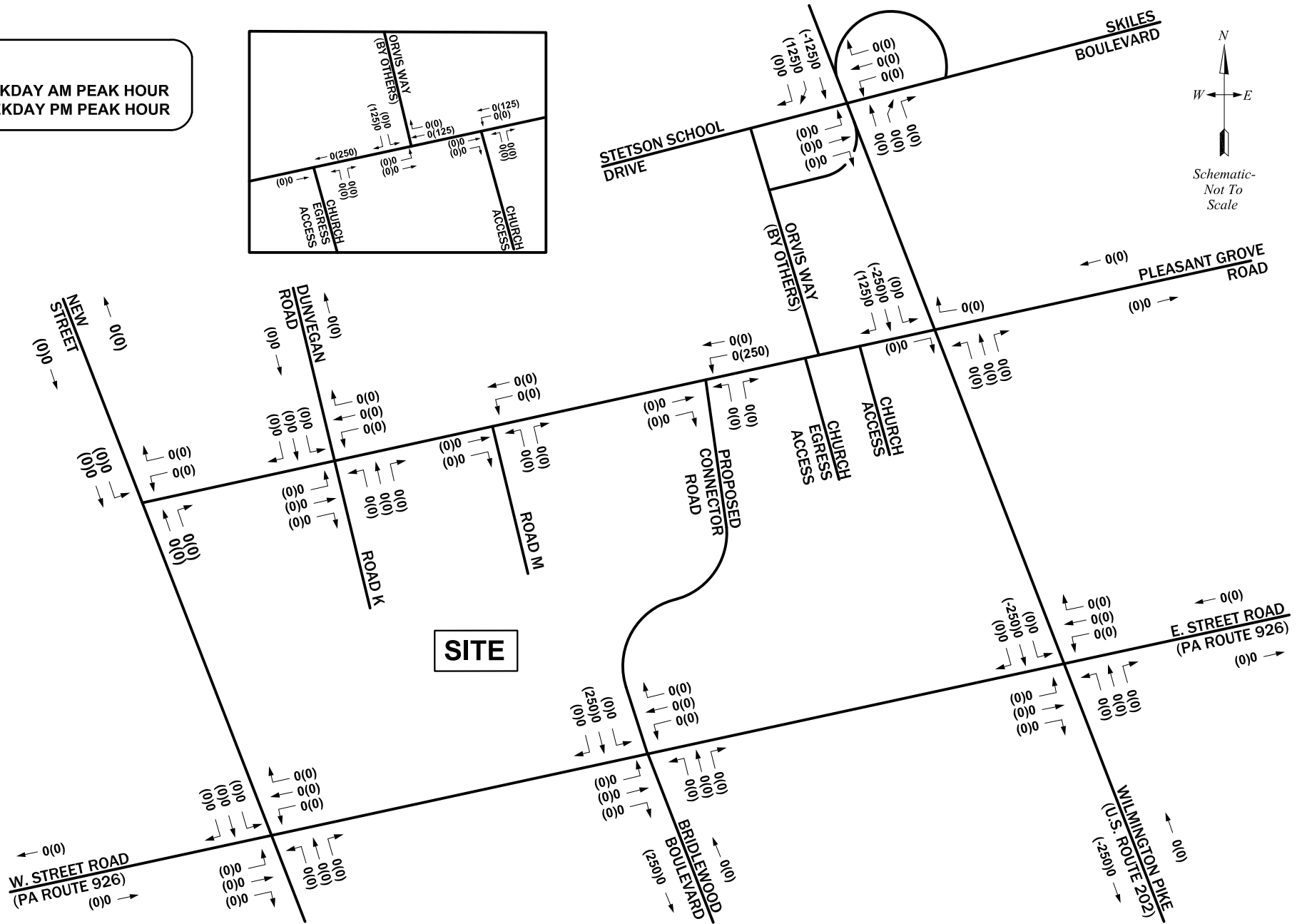


LEGEND:

- 10 WEEKDAY AM PEAK HOUR
- (10) WEEKDAY PM PEAK HOUR



Schematic-
Not To
Scale



2025 & 2030 with Development Diversions
 Diversion H - US 202 Southbound Through Traffic

ROBINSON TRACT

WESTTOWN TOWNSHIP, CHESTER COUNTY, PA



TRAVEL TIME COMPARISON
2030 Future without Development Conditions
With ORVIS WAY DIVERSIONS

DIVERSION A					
EB PA 926 LEFT-TURNS ONTO US 202 NB WILL DIVERT VIA NEW STREET TO WEST PLEASANT GROVE ROAD TO ORVIS WAY					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	EBT @ New / PA 926			14.6	15.3
	PA 926 Newto US 202	4750	45	72	72
	EBL @ US 202/PA 926			195.4	194.2
	US 202 PA 926 TO SKILES	4300	45	65	65
	NBT @ US 202 / SKILES			50.3	25.5
	TOTAL			397.5	372.2
DIVERTED ROUTE	EBL @ PA 926 / New			14.6	15.3
	New PA 926 to Pleasant Grove	3400	35	66	66
	NBR @ Pleasant Grove / New			0	0
	Pleasant Grove New to Orvis	4100	35	80	80
	EBL @ Pleasant Grove / Orvis			8.9	9.1
	Orvis Pleasant Grove to Skiles	1100	25	30	30
	Skiles Orvis to US 202	200	25	6	6
	EBL @ US 202 / Skiles			68.9	55
TOTAL			274.0	261.0	

DIVERSION B					
NB US 202 JUGHANDLE WILL DIVERT TO ORVIS WAY VIA WEST PLEASANT GROVE ROAD					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	NBT @ US 202 / Pleasant Grove			0.0	0.0
	US 202 Pleasant Grove to Skiles	1200	45	18.2	18.2
	NBR @ US 202 / Skiles			7.0	5.8
	Jughandle US 202 to US 202	900	30	20.5	20.5
	WBT @ US 202 / Skiles			44.0	40.8
	Skiles US 202 to Orvis	200	25	5.5	5.5
TOTAL			95.2	90.8	
DIVERTED ROUTE	NBL @ US 202 / Pleasant Grove			14.5	13.8
	Pleasant Grove US 202 to Orvis	200	35	3.9	3.9
	WBR @ Pleasant Grove / Orvis			0.0	0.0
	Orvis Pleasant Grove to Skiles	1100	25	30.0	30.0
TOTAL			48.4	47.7	

DIVERSION C					
EB RIGHT-TURN EXITING STETSON SCHOOL DESTINED TO WEST PLEASANT GROVE ROAD WILL DIVERT TO ORVIS WAY					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	Skiles Orvis to US 202	200	25	5.5	5.5
	EBR @ US 202 / Skiles			37.8	37.6
	US 202 Skiles to Pleasant Grove	1200	45	18.2	18.2
	SBR @ US 202 / Pleasant Grove			0.0	0.0
	Pleasant Grove US 202 to Orvis	200	35	3.9	3.9
TOTAL			65.4	65.2	
DIVERTED ROUTE	Orvis Skiles to Pleasant Grove	1100	25	30.0	30.0
	SBR @ Orvis / Pleasant Grove			10.0	10.6
TOTAL			40.0	40.6	

TRAVEL TIME COMPARISON

**2030 Future with Development Conditions | Without PennDOT Improvements at Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
WITHOUT COLLECTOR ROAD DIVERSIONS**

DIVERSION D					
EB PA 926 LEFT-TURNS ONTO US 202 NB WILL DIVERT VIA NEW STREET TO WEST PLEASANT GROVE ROAD TO ORVIS WAY					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	EBT @ Collector / PA 926			1.0	0.8
	PA 926 Collector to US 202	2300	45	34.8	34.8
	EBL @ US 202/PA 926			213.4	267.8
NO DIVERSIONS	US 202 PA 926 TO SKILES	4300	45	65.2	65.2
	NBT @ US 202 / SKILES			61.7	30.9
	TOTAL			376.1	399.5

DIVERSION E					
SB US 202 RIGHT-TURN TO WEST PLEASANT GROVE ROAD TO COLLECTOR ROAD TO PA 926					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	Pleasant Grove Collector to New	3700	35	72.1	72.1
	WBL @ New / Pleasant Grove			14.4	15.6
	New Pleasant Grove to PA 926	3400	35	66.2	66.2
NO DIVERSIONS	SBR @ PA 926 / New			37.0	38.9
	TOTAL			189.7	192.8

DIVERSION F					
NB BRIDLEWOOD RIGHT-TURN TO PA 926 TO NB US 202					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	NBR @ PA 926 / Bridlewood			39.8	45.9
	PA 926 Bridlewood to US 202	2300	35	44.8	44.8
	EBL @ US 202 / PA 926			213.4	267.8
NO DIVERSIONS	US 202 PA 926 to Skiles	4300	45	65.2	65.2
	NBT @ US 202 / Skiles			61.7	30.9
	TOTAL			424.9	454.6

TRAVEL TIME COMPARISON

2030 Future with Development Conditions | Without PennDOT Improvements at Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
 WITHOUT COLLECTOR ROAD DIVERSIONS

DIVERSION G					
SB US ROUTE 202 RIGHT-TURN TO WB PA 926					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	SBT @ US 202 / Pleasant Grove			0.0	0.0
	US 202 Pleasant Grove to PA 926	3100	45	47.0	47.0
NO DIVERSIONS	SBR @ US 202 / PA 926			137.5	459.7
	PA 926 US 202 to Collector	2300	45	34.8	34.8
	WBT @ PA 926 / Collector			2.4	2.1
TOTAL				221.7	543.6

DIVERSION H					
US 202 SBT DIVERTS FROM US 202 AND USES ORVIS, COLLECTOR, AND BRIDLEWOOD BACK TO US 202					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	SBT @ US 202 / Skiles			29.2	20.2
	US 202 PA 926 to Skiles	4320	45	65.5	65.5
NO DIVERSIONS	SBT @ US 202 / PA 926			123.3	472.4
	US 202 Bridlewood to PA 926	2770	45	42.0	42.0
TOTAL				260	600.1

TRAVEL TIME COMPARISON
2030 Future with Development Conditions | Without PennDOT Improvements at Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
WITH COLLECTOR ROAD DIVERSIONS

DIVERSION D					
EB PA 926 LEFT-TURNS ONTO US 202 NB WILL DIVERT VIA NEW STREET TO WEST PLEASANT GROVE ROAD TO ORVIS WAY					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	EBT @ Collector / PA 926			1.8	7.0
	PA 926 Collector to US 202	2300	45	35	35
	EBL @ US 202/PA 926			187.2	167.0
	US 202 PA 926 TO SKILES	4300	45	65	65
	NBT @ US 202 / SKILES			52.2	30.6
	TOTAL			341.2	304.6
DIVERTED ROUTE	EBL @ PA 926 / Collector			0.2	6.1
	Collector PA 926 to Pleasant Grove	4200	35	82	82
	NBR @ Pleasant Grove / Collector			9.5	11.2
	Pleasant Grove Collector to Orvis	400	35	8	8
	EBL @ Pleasant Grove / Orvis			10.3	10.9
	Orvis Pleasant Grove to Skiles	1100	25	30	30
	EBL @ US 202 / Skiles			78.5	53.9
	TOTAL			218.1	201.7

DIVERSION E					
SB US 202 RIGHT-TURN TO WEST PLEASANT GROVE ROAD TO COLLECTOR ROAD TO PA 926					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	Pleasant Grove Collector to New	3700	35	72	72
	WBL @ New / Pleasant Grove			13	13.8
	New Pleasant Grove to PA 926	3400	35	66	66
	SBR @ PA 926 / New			37.1	39
	TOTAL			188.4	191.1
DIVERTED ROUTE	WBL @ Pleasant Grove / Collector			9.1	11.3
	Collector Pleasant Grove to PA 926	4200	35	82	82
	SBR @ PA 926 / Collector			52.1	49.9
	PA 926 Collector to New	2400	45	36	36
	WBT @ PA 926 / New			2.9	0.9
	TOTAL			182.3	180.3

DIVERSION F					
NB BRIDLEWOOD RIGHT-TURN TO PA 926 TO NB US 202					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	NBR @ PA 926 / Bridlewood			33.4	27.0
	PA 926 Bridlewood to US 202	2300	35	45	45
	EBL @ US 202 / PA 926			187.2	167.0
	US 202 PA 926 to Skiles	4300	45	65	65
	NBT @ US 202 / Skiles			52.2	30.6
	TOTAL			382.8	334.6
DIVERTED ROUTE	NBT @ PA 926 / Bridlewood			33.4	27
	Collector PA 926 to Pleasant Grove	4200	35	82	82
	NBR @ Pleasant Grove / Collector			9.5	11.2
	Pleasant Grove Collector to Orvis	400	35	7.8	7.8
	EBL @ Pleasant Grove / Orvis			10.3	10.9
	Orvis Pleasant Grove to Skiles	1100	25	30	30
	EBL @ US 202 / Skiles			78.5	53.9
	TOTAL			251.3	222.6

TRAVEL TIME COMPARISON

**2030 Future with Development Conditions | Without PennDOT Improvements at Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
WITH COLLECTOR ROAD DIVERSIONS**

DIVERSION G					
SB US ROUTE 202 RIGHT-TURN TO WB PA 926					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	SBT @ US 202 / Pleasant Grove			0	0
	US 202 Pleasant Grove to PA 926	3100	45	47	47
	SBR @ US 202 / PA 926			103.1	359.3
	PA 926 US 202 to Collector	2300	45	35	35
	WBT @ PA 926 / Collector			3.0	8.6
	TOTAL			187.9	449.7
DIVERTED ROUTE	SBR @ US 202 / Pleasant Grove			0	0
	Pleasant Grove US 202 to Collector	600	35	12	12
	WBL @ Pleasant Grove / Collector			9.1	11.3
	Collector Pleasant Grove to PA 926	4200	35	82	82
	SBR @ PA 926 / Collector			52.1	49.9
	TOTAL			154.7	154.7

DIVERSION H					
US 202 SBT DIVERTS FROM US 202 AND USES ORVIS, COLLECTOR, AND BRIDLEWOOD BACK TO US 202					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	SBT @ US 202 / Skiles			29.2	20.5
	US 202 PA 926 to Skiles	4320	45	66	66
	SBT @ US 202 / PA 926			98.3	379.4
	US 202 Bridlewood to PA 926	2770	45	42	42
	TOTAL			235	507.4
DIVERTED ROUTE (PM ONLY)	SBR @ US 202 / Skiles			9.9	10.6
	Orvis Pleasant to Skiles	1100	25	30	30
	SBR @ Pleasant Grove / Orvis			14.0	17.6
	Pleasant Grove Orvis to Collector	400	35	8	7.8
	WBL @ Pleasant Grove / Collector			9.1	11.3
	Collector Pleasant Grove to PA 926	4200	35	82	81.8
	SBT @ PA 926 / Collector			52.1	49.9
	Bridlewood US 202 to PA 926	4150	25	113	113.2
	TOTAL			317.9	322.2

TRAVEL TIME COMPARISON
2030 Future with Development Conditions | With PennDOT Improvements at Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
WITH COLLECTOR ROAD DIVERSIONS

DIVERSION D					
EB PA 926 LEFT-TURNS ONTO US 202 NB WILL DIVERT VIA NEW STREET TO WEST PLEASANT GROVE ROAD TO ORVIS WAY					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	EBT @ Collector / PA 926			1.8	7.0
	PA 926 Collector to US 202	2300	45	35	35
	EBL @ US 202/PA 926			63.6	61.2
	US 202 PA 926 TO SKILES	4300	45	65	65
	NBT @ US 202 / SKILES			52.2	30.6
	TOTAL			217.6	198.8
DIVERTED ROUTE	EBL @ PA 926 / Collector			0.2	6.1
	Collector PA 926 to Pleasant Grove	4200	35	82	82
	NBR @ Pleasant Grove / Collector			9.5	11.2
	Pleasant Grove Collector to Orvis	400	35	8	8
	EBL @ Pleasant Grove / Orvis			10.3	10.9
	Orvis Pleasant Grove to Skiles	1100	25	30	30
	EBL @ US 202 / Skiles			78.5	53.9
TOTAL			218.1	201.7	

DIVERSION E					
SB US 202 RIGHT-TURN TO WEST PLEASANT GROVE ROAD TO COLLECTOR ROAD TO PA 926					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	Pleasant Grove Collector to New	3700	35	72	72
	WBL @ New / Pleasant Grove			13	13.8
	New Pleasant Grove to PA 926	3400	35	66	66
	SBR @ PA 926 / New			37.1	39
	TOTAL			188.4	191.1
DIVERTED ROUTE	WBL @ Pleasant Grove / Collector			9.1	11.3
	Collector Pleasant Grove to PA 926	4200	35	82	82
	SBR @ PA 926 / Collector			52.1	49.9
	PA 926 Collector to New	2400	45	36	36
	WBT @ PA 926 / New			2.9	0.9
TOTAL			182.3	180.3	

DIVERSION F					
NB BRIDLEWOOD RIGHT-TURN TO PA 926 TO NB US 202					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	NBR @ PA 926 / Bridlewood			33.4	27.0
	PA 926 Bridlewood to US 202	2300	35	45	45
	EBL @ US 202 / PA 926			63.6	61.2
	US 202 PA 926 to Skiles	4300	45	65	65
	NBT @ US 202 / Skiles			52.2	30.6
	TOTAL			259.2	228.8
DIVERTED ROUTE	NBT @ PA 926 / Bridlewood			33.4	27
	Collector PA 926 to Pleasant Grove	4200	35	82	82
	NBR @ Pleasant Grove / Collector			9.5	11.2
	Pleasant Grove Collector to Orvis	400	35	7.8	7.8
	EBL @ Pleasant Grove / Orvis			10.3	10.9
	Orvis Pleasant Grove to Skiles	1100	25	30	30
	EBL @ US 202 / Skiles			78.5	53.9
TOTAL			251.3	222.6	

TRAVEL TIME COMPARISON

**2030 Future with Development Conditions | With PennDOT Improvements at Wilmington Pike (U.S. Route 202) and Street Road (S.R. 0926)
WITH COLLECTOR ROAD DIVERSIONS**

DIVERSION G					
SB US ROUTE 202 RIGHT-TURN TO WB PA 926					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	SBT @ US 202 / Pleasant Grove			0	0
	US 202 Pleasant Grove to PA 926	3100	45	47	47
	SBR @ US 202 / PA 926 ⁽¹⁾			56.3	301.8
	PA 926 US 202 to Collector	2300	45	35	35
	WBT @ PA 926 / Collector			3.0	8.6
	TOTAL				141.1
DIVERTED ROUTE	SBR @ US 202 / Pleasant Grove			0	0
	Pleasant Grove US 202 to Collector	600	35	12	12
	WBL @ Pleasant Grove / Collector			9.1	11.3
	Collector Pleasant Grove to PA 926	4200	35	82	82
	SBR @ PA 926 / Collector			52.1	49.9
	TOTAL				154.7

(1) US 202 southbound through delay utilized for travel time calculation as HCM methodology does not account for delay caused by blockage of right-turn lane by through queue.

DIVERSION H					
US 202 SBT DIVERTS FROM US 202 AND USES ORVIS, COLLECTOR, AND BRIDLEWOOD BACK TO US 202					
	SEGMENT / INTERSECTION	DISTANCE (ft)	TRAVEL SPEED (mph)	Time AM (s)	Time PM (s)
BASE ROUTE	SBT @ US 202 / Skiles			29.2	20.5
	US 202 PA 926 to Skiles	4320	45	66	66
	SBT @ US 202 / PA 926			56.3	301.8
	US 202 Bridlewood to PA 926	2770	45	42	42
	TOTAL				193
DIVERTED ROUTE (PM ONLY)	SBR @ US 202 / Skiles			9.9	10.6
	Orvis Pleasant to Skiles	1100	25	30	30
	SBR @ Pleasant Grove / Orvis			14.0	17.6
	Pleasant Grove Orvis to Collector	400	35	8	7.8
	WBL @ Pleasant Grove / Collector			9.1	11.3
	Collector Pleasant Grove to PA 926	4200	35	82	81.8
	SBT @ PA 926 / Collector			52.1	49.9
Bridlewood US 202 to PA 926	4150	25	113	113.2	
TOTAL				317.9	322.2

Appendix L

Future 2025

Detailed Traffic Volume Worksheets

INTERSECTION VOLUME SUMMARY New Street/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Build-Out Year (2025)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND New Street			WESTBOUND Street Road (PA 926)			SOUTHBOUND New Street		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	48	648	5	9	97	41	8	310	36	8	122	190
Seasonal Adjustment Factor 1.000	48	648	5	9	97	41	8	310	36	8	122	190
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	48	648	5	9	97	41	8	310	36	8	122	190
Background Growth 3.16 %	2	20	0	0	3	1	0	10	1	0	4	6
EXISTING W/ BACKGROUND	50	668	5	9	100	42	8	320	37	8	126	196
TOTAL "OTHER" DEVELOPMENTS	30	-26	0	0	2	0	0	2	0	0	1	3
Condominium Development	0	1	0	0	0	0	0	1	0	0	0	1
Malvern School (NEW)	0	1	0	0	0	0	0	1	0	0	0	0
Arborview Development	2	0	0	0	2	0	0	0	0	0	1	2
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	28	-28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	80	642	5	9	102	42	8	322	37	8	127	199
TOTAL "NEW" SITE TRAFFIC	3	3	0	0	1	1	4	61	0	0	3	-46
Single Family Homes	2	2	0	0	1	1	3	5	0	0	2	5
Carriage Homes	1	1	0	0	0	0	1	2	0	0	1	2
Site Balancing	0	0	0	0	0	0	0	1	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	53	0	0	0	-53
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	83	645	5	9	103	43	12	383	37	8	130	153
"New" Site Traffic % of Total 0.0%	3.6	0.5	0.0	0.0	1.0	2.3	33.3	15.9	0.0	0.0	2.3	-30.1

INTERSECTION VOLUME SUMMARY New Street/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Build-Out Year (2025)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND New Street			WESTBOUND Street Road (PA 926)			SOUTHBOUND New Street		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	30	659	13	9	83	37	19	305	30	49	164	143
Seasonal Adjustment Factor 1.000	30	659	13	9	83	37	19	305	30	49	164	143
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	30	659	13	9	83	37	19	305	30	49	164	143
Background Growth 3.16 %	1	21	0	0	3	1	1	10	1	2	5	5
EXISTING W/ BACKGROUND	31	680	13	9	86	38	20	315	31	51	169	148
TOTAL "OTHER" DEVELOPMENTS	26	-21	0	0	1	0	0	2	0	0	2	2
Condominium Development	0	2	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	1	0	0	0	0	0	1	0	0	0	0
Arborview Development	2	0	0	0	1	0	0	0	0	0	2	2
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	24	-24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	57	659	13	9	87	38	20	317	31	51	171	150
TOTAL "NEW" SITE TRAFFIC	8	9	0	0	3	4	3	56	0	0	2	-47
Single Family Homes	6	6	0	0	2	3	2	3	0	0	1	3
Carriage Homes	2	2	0	0	1	1	1	1	0	0	1	1
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	1
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	52	0	0	0	-52
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	65	668	13	9	90	42	23	373	31	51	173	103
"New" Site Traffic % of Total 0.0%	12.3	1.3	0.0	0.0	3.3	9.5	13.0	15.0	0.0	0.0	1.2	-45.6

INTERSECTION VOLUME SUMMARY Bridlewood Blvd/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Build-Out Year (2025)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND Bridlewood Blvd			WESTBOUND Street Road (PA 926)			SOUTHBOUND Bridlewood Blvd		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	682	31	25	0	39	13	325	0	0	0	0
Seasonal Adjustment Factor 1.000	0	682	31	25	0	39	13	325	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	682	31	25	0	39	13	325	0	0	0	0
Background Growth 3.16 %	0	22	1	1	0	1	0	10	0	0	0	0
EXISTING W/ BACKGROUND	0	704	32	26	0	40	13	335	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	-26	0	0	0	0	0	2	0	0	0	0
Condominium Development	0	1	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	1	0	0	0	0	0	1	0	0	0	0
Arborview Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	-28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	678	32	26	0	40	13	337	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	30	-26	0	0	31	-27	0	-94	14	46	15	159
Single Family Homes	3	0	0	0	3	0	0	0	10	31	10	8
Carriage Homes	1	0	0	0	1	0	0	0	4	15	5	4
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	26	-26	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	53
Diversion D - NBR Bridlewood to 202	0	0	0	0	27	-27	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	-94	0	0	0	94
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	30	652	32	26	31	13	13	243	14	46	15	159
"New" Site Traffic % of Total ####	100.0	-4.0	0.0	0.0	100.0	-207.7	0.0	-38.7	100.0	100.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Bridlewood Blvd/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Build-Out Year (2025)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND Bridlewood Blvd			WESTBOUND Street Road (PA 926)			SOUTHBOUND Bridlewood Blvd		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	692	37	16	0	34	20	357	0	0	0	0
Seasonal Adjustment Factor 1.000	0	692	37	16	0	34	20	357	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	692	37	16	0	34	20	357	0	0	0	0
Background Growth 3.16 %	0	22	1	1	0	1	1	11	0	0	0	0
EXISTING W/ BACKGROUND	0	714	38	17	0	35	21	368	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	-21	0	0	0	0	0	2	0	0	0	0
Condominium Development	0	2	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	1	0	0	0	0	0	1	0	0	0	0
Arborview Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	-24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	693	38	17	0	35	21	370	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	124	-111	0	0	40	-23	0	-69	49	29	260	128
Single Family Homes	9	0	0	0	12	0	0	0	35	20	7	5
Carriage Homes	4	0	0	0	5	0	0	0	14	9	3	2
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	111	-111	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	52
Diversion D - NBR Bridlewood to 202	0	0	0	0	23	-23	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	-69	0	0	0	69
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	124	582	38	17	40	12	21	301	49	29	260	128
"New" Site Traffic % of Total ####	100.0	-19.1	0.0	0.0	100.0	-191.7	0.0	-22.9	100.0	100.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Street Road (PA 926)

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
Build-Out Year (2025)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Street Road (PA 926)			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	531	221	8	12	1551	151	142	158	45	48	1465	181
Seasonal Adjustment Factor 1.000	531	221	8	12	1551	151	142	158	45	48	1465	181
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	531	221	8	12	1551	151	142	158	45	48	1465	181
Background Growth 3.16 %	17	7	0	0	49	5	4	5	1	2	46	6
EXISTING W/ BACKGROUND	548	228	8	12	1600	156	146	163	46	50	1511	187
TOTAL "OTHER" DEVELOPMENTS	-26	0	0	0	30	0	0	0	10	6	26	2
Condominium Development	1	0	0	0	1	0	0	0	0	0	3	1
Malvern School (NEW)	1	0	0	0	5	0	0	0	2	0	6	1
Arborview Development	0	0	0	0	24	0	0	0	8	6	18	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	-1	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	-28	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	522	228	8	12	1630	156	146	163	56	56	1537	189
TOTAL "NEW" SITE TRAFFIC	-38	8	23	10	0	0	0	4	0	8	8	-94
Single Family Homes	10	5	15	7	0	0	0	3	0	5	5	0
Carriage Homes	5	2	7	3	0	0	0	1	0	2	2	0
Site Balancing	0	1	1	0	0	0	0	0	0	1	1	0
Diversion A - EBL 926 to NB 202	-26	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	-27	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	-94
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	484	236	31	22	1630	156	146	167	56	64	1545	95
"New" Site Traffic % of Total 0.0%	-7.9	3.4	74.2	45.5	0.0	0.0	0.0	2.4	0.0	12.5	0.5	-98.9

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Build-Out Year (2025)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Street Road (PA 926)			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
	EXISTING TRAFFIC	451	204	27	29	1551	121	199	221	57	79	1451
Seasonal Adjustment Factor 1.000	451	204	27	29	1551	121	199	221	57	79	1451	128
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	451	204	27	29	1551	121	199	221	57	79	1451	128
Background Growth 3.16 %	14	6	1	1	49	4	6	7	2	2	46	4
EXISTING W/ BACKGROUND	465	210	28	30	1600	125	205	228	59	81	1497	132
TOTAL "OTHER" DEVELOPMENTS	-21	0	0	0	26	0	0	0	7	8	34	2
Condominium Development	2	0	0	0	3	0	0	0	0	0	2	1
Malvern School (NEW)	1	0	0	0	5	0	0	0	1	0	7	1
Arborview Development	0	0	0	0	18	0	0	0	6	8	24	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	-24	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	444	210	28	30	1626	125	205	228	66	89	1531	134
TOTAL "NEW" SITE TRAFFIC	-124	4	15	32	0	0	0	17	0	6	-245	-67
Single Family Homes	7	3	10	23	0	0	0	12	0	3	3	0
Carriage Homes	3	1	4	10	0	0	0	5	0	1	1	0
Site Balancing	0	0	1	-1	0	0	0	0	0	2	1	0
Diversion A - EBL 926 to NB 202	-111	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	-23	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	-250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	-67
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	320	214	43	62	1626	125	205	245	66	95	1286	67
"New" Site Traffic % of Total #####	-38.8	1.9	34.9	51.6	0.0	0.0	0.0	6.9	0.0	6.3	-19.1	-100.0

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Build-Out Year (2025)

Traffic Component	EASTBOUND Pleasant Grove Road			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Pleasant Grove Road			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
	EXISTING TRAFFIC	0	0	12	10	2082	52	0	0	7	37	1753
Seasonal Adjustment Factor 1.000	0	0	12	10	2082	52	0	0	7	37	1753	150
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	12	10	2082	52	0	0	7	37	1753	150
Background Growth 3.16 %	0	0	0	0	66	2	0	0	0	1	55	5
EXISTING W/ BACKGROUND	0	0	12	10	2148	54	0	0	7	38	1808	155
TOTAL "OTHER" DEVELOPMENTS	0	0	15	22	-24	16	0	0	27	15	19	-1
Condominium Development	0	0	0	0	2	0	0	0	0	0	4	1
Malvern School (NEW)	0	0	0	0	0	8	0	0	15	8	7	0
Arborview Development	0	0	15	20	12	0	0	0	0	1	9	6
Malvern School (PB AM)	0	0	0	0	-8	8	0	0	12	6	-1	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	-28	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	2	-2	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	-8
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	27	32	2124	70	0	0	34	53	1827	154
TOTAL "NEW" SITE TRAFFIC	0	0	16	0	-38	0	0	0	0	0	-94	104
Single Family Homes	0	0	10	0	10	0	0	0	0	0	0	7
Carriage Homes	0	0	5	0	5	0	0	0	0	0	0	3
Site Balancing	0	0	1	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	-26	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	-27	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	-94	94
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	43	32	2086	70	0	0	34	53	1733	258
"New" Site Traffic % of Total 0.0%	0.0	0.0	37.2	0.0	-1.8	0.0	0.0	0.0	0.0	0.0	-5.4	40.3

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
Build-Out Year (2025)

Traffic Component	EASTBOUND Pleasant Grove Road			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Pleasant Grove Road			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
	EXISTING TRAFFIC	0	0	24	32	2004	46	0	0	11	89	1701
Seasonal Adjustment Factor 1.000	0	0	24	32	2004	46	0	0	11	89	1701	202
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	24	32	2004	46	0	0	11	89	1701	202
Background Growth 3.16 %	0	0	1	1	63	1	0	0	0	3	54	6
EXISTING W/ BACKGROUND	0	0	25	33	2067	47	0	0	11	92	1755	208
TOTAL "OTHER" DEVELOPMENTS	0	0	20	17	-18	13	0	0	31	16	24	-12
Condominium Development	0	0	0	0	5	0	0	0	0	0	3	0
Malvern School (NEW)	0	0	0	0	0	7	0	0	17	8	8	0
Arborview Development	0	0	20	15	9	0	0	0	0	2	12	4
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	-6	6	0	0	14	6	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	-24	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	2	-2	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	-16
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	45	50	2049	60	0	0	42	108	1779	196
TOTAL "NEW" SITE TRAFFIC	0	0	11	0	-124	0	0	0	0	0	-317	169
Single Family Homes	0	0	7	0	7	0	0	0	0	0	0	23
Carriage Homes	0	0	3	0	3	0	0	0	0	0	0	10
Site Balancing	0	0	1	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	-111	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	-22
Diversion D - NBR Bridlewood to 202	0	0	0	0	-23	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	-250	125
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	-67	33
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	56	50	1925	60	0	0	42	108	1462	365
"New" Site Traffic % of Total #####	0.0	0.0	19.6	0.0	-6.4	0.0	0.0	0.0	0.0	0.0	-21.7	46.3

INTERSECTION VOLUME SUMMARY Church Full-Movement/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Church Full-Movement			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Church Full-Movement		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	12	1	1	0	0	8	152	0	0	0	0
Seasonal Adjustment Factor 1.000	0	12	1	1	0	0	8	152	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	12	1	1	0	0	8	152	0	0	0	0
Background Growth 3.16 %	0	0	0	0	0	0	0	5	0	0	0	0
EXISTING W/ BACKGROUND	0	12	1	1	0	0	8	157	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	15	0	0	0	0	0	21	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	15	0	0	0	0	0	26	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	2	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	-8	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	27	1	1	0	0	8	178	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	16	0	0	0	0	0	104	0	0	0	0
Single Family Homes	0	10	0	0	0	0	0	7	0	0	0	0
Carriage Homes	0	5	0	0	0	0	0	3	0	0	0	0
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	94	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	43	1	1	0	0	8	282	0	0	0	0
"New" Site Traffic % of Total ####	0.0	37.2	0.0	0.0	0.0	0.0	0.0	36.9	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Church Full-Movement/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Church Full-Movement			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Church Full-Movement		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	20	0	1	0	4	5	229	0	0	0	0
Seasonal Adjustment Factor 1.000	0	20	0	1	0	4	5	229	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	20	0	1	0	4	5	229	0	0	0	0
Background Growth 3.16 %	0	1	0	0	0	0	0	7	0	0	0	0
EXISTING W/ BACKGROUND	0	21	0	1	0	4	5	236	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	20	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	20	0	0	0	0	0	19	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	2	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	-16	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	41	0	1	0	4	5	241	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	11	0	0	0	0	0	169	0	0	0	0
Single Family Homes	0	7	0	0	0	0	0	23	0	0	0	0
Carriage Homes	0	3	0	0	0	0	0	10	0	0	0	0
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-22	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	125	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	33	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	52	0	1	0	4	5	410	0	0	0	0
"New" Site Traffic % of Total ####	0.0	21.2	0.0	0.0	0.0	0.0	0.0	41.2	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Orvis Way/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Orvis Way			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Orvis Way		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	12	0	0	0	0	0	153	0	0	0	0
Seasonal Adjustment Factor 1.000	0	12	0	0	0	0	0	153	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	12	0	0	0	0	0	153	0	0	0	0
Background Growth 3.16 %	0	0	0	0	0	0	0	5	0	0	0	0
EXISTING W/ BACKGROUND	0	12	0	0	0	0	0	158	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	34	0	0	0	0	0	0	-7	28	15	0	12
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	6	0	0	0	0	0	0	0	26	15	0	4
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	28	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	2	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	-8	0	0	0	8
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	34	12	0	0	0	0	0	151	28	15	0	12
TOTAL "NEW" SITE TRAFFIC	99	16	0	0	0	0	0	104	0	0	0	10
Single Family Homes	31	10	0	0	0	0	0	7	0	0	0	7
Carriage Homes	15	5	0	0	0	0	0	3	0	0	0	3
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	26	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	27	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	94	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	133	28	0	0	0	0	0	255	28	15	0	22
"New" Site Traffic % of Total #####	74.4	57.1	0.0	0.0	0.0	0.0	0.0	40.8	0.0	0.0	0.0	45.5

INTERSECTION VOLUME SUMMARY Orvis Way/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
 Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Orvis Way			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Orvis Way		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	24	0	0	0	0	0	230	0	0	0	0
Seasonal Adjustment Factor 1.000	0	24	0	0	0	0	0	230	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	24	0	0	0	0	0	230	0	0	0	0
Background Growth 3.16 %	0	1	0	0	0	0	0	7	0	0	0	0
EXISTING W/ BACKGROUND	0	25	0	0	0	0	0	237	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	28	0	0	0	0	0	0	-16	21	20	0	22
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	4	0	0	0	0	0	0	0	19	20	0	6
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	24	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	2	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	-16	0	0	0	16
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	28	25	0	0	0	0	0	221	21	20	0	22
TOTAL "NEW" SITE TRAFFIC	163	11	0	0	0	0	0	169	0	0	0	213
Single Family Homes	20	7	0	0	0	0	0	23	0	0	0	23
Carriage Homes	9	3	0	0	0	0	0	10	0	0	0	10
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	-1
Diversion A - EBL 926 to NB 202	111	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-22	0	0	0	22
Diversion D - NBR Bridlewood to 202	23	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	125	0	0	0	125
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	33	0	0	0	34
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	191	36	0	0	0	0	0	390	21	20	0	235
"New" Site Traffic % of Total #####	85.3	30.6	0.0	0.0	0.0	0.0	0.0	43.3	0.0	0.0	0.0	90.6

INTERSECTION VOLUME SUMMARY Church Egress Only /W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Church Egress Only			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Church Egress Only		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	13	0	0	0	0	0	153	0	0	0	0
Seasonal Adjustment Factor 1.000	0	13	0	0	0	0	0	153	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	13	0	0	0	0	0	153	0	0	0	0
Background Growth 3.16 %	0	0	0	0	0	0	0	5	0	0	0	0
EXISTING W/ BACKGROUND	0	13	0	0	0	0	0	158	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	34	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	6	0	0	0	0	0	4	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	47	0	0	0	0	0	163	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	115	0	0	0	0	0	114	0	0	0	0
Single Family Homes	0	41	0	0	0	0	0	13	0	0	0	0
Carriage Homes	0	20	0	0	0	0	0	6	0	0	0	0
Site Balancing	0	1	0	0	0	0	0	1	0	0	0	0
Diversion A - EBL 926 to NB 202	0	26	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	27	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	94	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	162	0	0	0	0	0	277	0	0	0	0
"New" Site Traffic % of Total #####	0.0	71.0	0.0	0.0	0.0	0.0	0.0	41.2	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Church Egress Only /W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Church Egress Only			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Church Egress Only		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	20	0	0	0	0	0	230	0	0	0	0
Seasonal Adjustment Factor 1.000	0	20	0	0	0	0	0	230	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	20	0	0	0	0	0	230	0	0	0	0
Background Growth 3.16 %	0	1	0	0	0	0	0	7	0	0	0	0
EXISTING W/ BACKGROUND	0	21	0	0	0	0	0	237	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	28	0	0	0	0	0	6	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	4	0	0	0	0	0	6	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	49	0	0	0	0	0	243	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	174	0	0	0	0	0	382	0	0	0	0
Single Family Homes	0	27	0	0	0	0	0	46	0	0	0	0
Carriage Homes	0	12	0	0	0	0	0	19	0	0	0	0
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	111	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	23	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	250	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	67	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	223	0	0	0	0	0	625	0	0	0	0
"New" Site Traffic % of Total #####	0.0	78.0	0.0	0.0	0.0	0.0	0.0	61.1	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Collector Road/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Collector Road			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Collector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	13	0	0	0	0	0	152	0	0	0	0
Seasonal Adjustment Factor 1.000	0	13	0	0	0	0	0	152	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	13	0	0	0	0	0	152	0	0	0	0
Background Growth 3.16 %	0	0	0	0	0	0	0	5	0	0	0	0
EXISTING W/ BACKGROUND	0	13	0	0	0	0	0	157	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	34	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	6	0	0	0	0	0	4	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	47	0	0	0	0	0	162	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	23	1	4	0	92	160	-46	0	0	0	0
Single Family Homes	0	15	1	3	0	26	8	5	0	0	0	0
Carriage Homes	0	7	0	1	0	12	4	2	0	0	0	0
Site Balancing	0	1	0	0	0	1	1	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	26	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	53	-53	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	27	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	94	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	70	1	4	0	92	160	116	0	0	0	0
"New" Site Traffic % of Total ####	0.0	32.9	100.0	100.0	0.0	100.0	100.0	-39.7	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Collector Road/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Collector Road			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Collector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	20	0	0	0	0	0	230	0	0	0	0
Seasonal Adjustment Factor 1.000	0	20	0	0	0	0	0	230	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	20	0	0	0	0	0	230	0	0	0	0
Background Growth 3.16 %	0	1	0	0	0	0	0	7	0	0	0	0
EXISTING W/ BACKGROUND	0	21	0	0	0	0	0	237	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	28	0	0	0	0	0	6	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	4	0	0	0	0	0	6	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	49	0	0	0	0	0	243	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	16	4	3	0	158	410	-28	0	0	0	0
Single Family Homes	0	10	3	2	0	17	29	17	0	0	0	0
Carriage Homes	0	4	1	1	0	7	12	7	0	0	0	0
Site Balancing	0	2	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	111	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	52	-52	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	23	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	250	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	67	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	65	4	3	0	158	410	215	0	0	0	0
"New" Site Traffic % of Total #####	0.0	24.6	100.0	100.0	0.0	100.0	100.0	-13.0	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Road M (Site Access)/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Road M (Site Access)			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Road M (Site Access)		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	24	0	0	0	0	0	225	0	0	0	0
Seasonal Adjustment Factor 1.000	0	24	0	0	0	0	0	225	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	24	0	0	0	0	0	225	0	0	0	0
Background Growth 3.16 %	0	1	0	0	0	0	0	7	0	0	0	0
EXISTING W/ BACKGROUND	0	25	0	0	0	0	0	232	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	34	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	6	0	0	0	0	0	4	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	59	0	0	0	0	0	237	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	10	0	1	0	13	4	-46	0	0	0	0
Single Family Homes	0	7	0	1	0	9	3	5	0	0	0	0
Carriage Homes	0	3	0	0	0	4	1	2	0	0	0	0
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-53	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	69	0	1	0	13	4	191	0	0	0	0
"New" Site Traffic % of Total #####	0.0	14.5	0.0	100.0	0.0	100.0	100.0	-24.1	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Road M (Site Access)/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Road M (Site Access)			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Road M (Site Access)		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	33	0	0	0	0	0	254	0	0	0	0
Seasonal Adjustment Factor 1.000	0	33	0	0	0	0	0	254	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	33	0	0	0	0	0	254	0	0	0	0
Background Growth 3.16 %	0	1	0	0	0	0	0	8	0	0	0	0
EXISTING W/ BACKGROUND	0	34	0	0	0	0	0	262	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	28	0	0	0	0	0	6	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	4	0	0	0	0	0	6	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	62	0	0	0	0	0	268	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	11	2	1	0	9	14	-39	0	0	0	0
Single Family Homes	0	7	1	1	0	6	10	9	0	0	0	0
Carriage Homes	0	3	0	0	0	3	4	4	0	0	0	0
Site Balancing	0	1	1	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-52	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	73	2	1	0	9	14	229	0	0	0	0
"New" Site Traffic % of Total 0.0%	0.0	15.1	100.0	100.0	0.0	100.0	100.0	-17.0	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Road K (Site Access) / Dunvegan/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Road K (Site Access) / Dunvegan			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Road K (Site Access) / Dunvegan		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	19	0	0	0	0	0	222	3	5	0	2
Seasonal Adjustment Factor 1.000	0	19	0	0	0	0	0	222	3	5	0	2
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	19	0	0	0	0	0	222	3	5	0	2
Background Growth 3.16 %	0	1	0	0	0	0	0	7	0	0	0	0
EXISTING W/ BACKGROUND	0	20	0	0	0	0	0	229	3	5	0	2
TOTAL "OTHER" DEVELOPMENTS	0	34	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	6	0	0	0	0	0	4	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	54	0	0	0	0	0	234	3	5	0	2
TOTAL "NEW" SITE TRAFFIC	0	2	4	12	0	9	3	-48	0	0	0	0
Single Family Homes	0	1	3	8	0	6	2	4	0	0	0	0
Carriage Homes	0	1	1	4	0	3	1	2	0	0	0	0
Site Balancing	0	0	0	0	0	0	0	-1	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-53	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	56	4	12	0	9	3	186	3	5	0	2
"New" Site Traffic % of Total ####	0.0	3.6	100.0	100.0	0.0	100.0	100.0	-25.8	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Road K (Site Access) / Dunvegan/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Road K (Site Access) / Dunvegan			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Road K (Site Access) / Dunvegan		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	3	32	0	0	0	0	0	243	11	1	0	2
Seasonal Adjustment Factor 1.000	3	32	0	0	0	0	0	243	11	1	0	2
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	3	32	0	0	0	0	0	243	11	1	0	2
Background Growth 3.16 %	0	1	0	0	0	0	0	8	0	0	0	0
EXISTING W/ BACKGROUND	3	33	0	0	0	0	0	251	11	1	0	2
TOTAL "OTHER" DEVELOPMENTS	0	28	0	0	0	0	0	6	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	4	0	0	0	0	0	6	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/OUT PROJECT	3	61	0	0	0	0	0	257	11	1	0	2
TOTAL "NEW" SITE TRAFFIC	0	7	13	7	0	6	10	-48	0	0	0	0
Single Family Homes	0	5	9	5	0	4	7	3	0	0	0	0
Carriage Homes	0	2	4	2	0	2	3	1	0	0	0	0
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-52	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	3	68	13	7	0	6	10	209	11	1	0	2
"New" Site Traffic % of Total 0.0%	0.0	10.3	100.0	100.0	0.0	100.0	100.0	-23.0	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY New Street/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND New Street			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND New Street		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	173	6	203	0	21	13	127	0
Seasonal Adjustment Factor 1.000	0	0	0	0	173	6	203	0	21	13	127	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	173	6	203	0	21	13	127	0
Background Growth 3.16 %	0	0	0	0	5	0	6	0	1	0	4	0
EXISTING W/ BACKGROUND	0	0	0	0	178	6	209	0	22	13	131	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	32	4	0	1	2	0	0
Condominium Development	0	0	0	0	0	0	1	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	0	0	0	0	4	3	0	1	2	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	0	28	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/OUT PROJECT	0	0	0	0	178	38	213	0	23	15	131	0
TOTAL "NEW" SITE TRAFFIC	0	0	0	0	0	3	-43	0	7	3	0	0
Single Family Homes	0	0	0	0	0	2	7	0	5	2	0	0
Carriage Homes	0	0	0	0	0	1	3	0	2	1	0	0
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	-53	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	0	0	178	41	170	0	30	18	131	0
"New" Site Traffic % of Total #####	0.0	0.0	0.0	0.0	0.0	7.3	-25.3	0.0	23.3	16.7	0.0	0.0

INTERSECTION VOLUME SUMMARY New Street/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Build-Out Year (2025)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND New Street			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND New Street		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	143	17	198	0	47	18	168	0
Seasonal Adjustment Factor 1.000	0	0	0	0	143	17	198	0	47	18	168	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	143	17	198	0	47	18	168	0
Background Growth 3.16 %	0	0	0	0	5	1	6	0	1	1	5	0
EXISTING W/ BACKGROUND	0	0	0	0	148	18	204	0	48	19	173	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	27	4	0	2	1	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	0	0	0	0	3	4	0	2	1	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	0	24	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	148	45	208	0	50	20	173	0
TOTAL "NEW" SITE TRAFFIC	0	0	0	0	0	11	-45	0	4	9	0	0
Single Family Homes	0	0	0	0	0	8	5	0	3	6	0	0
Carriage Homes	0	0	0	0	0	3	2	0	1	2	0	0
Site Balancing	0	0	0	0	0	0	0	0	0	1	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	-52	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	0	0	148	56	163	0	54	29	173	0
"New" Site Traffic % of Total 0.0%	0.0	0.0	0.0	0.0	0.0	19.6	-27.6	0.0	7.4	31.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Stetson Blvd / Skiles Blvd

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\SDS\ **Weekday 4-6 PM**
Build-Out Year (2025)

Traffic Component	EASTBOUND Stetson Blvd / Skiles Blvd			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Stetson Blvd / Skiles Blvd			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	120	129	61	0	1993	46	27	43	59	0	1925	131
Seasonal Adjustment Factor 1.000	120	129	61	0	1993	46	27	43	59	0	1925	131
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	120	129	61	0	1993	46	27	43	59	0	1925	131
Background Growth 3.16 %	4	4	2	0	63	1	1	1	2	0	61	4
EXISTING W/ BACKGROUND	124	133	63	0	2056	47	28	44	61	0	1986	135
TOTAL "OTHER" DEVELOPMENTS	62	9	-2	0	-14	28	31	0	4	0	12	30
Condominium Development	0	6	0	0	0	5	3	0	4	0	0	6
Malvern School (NEW)	0	0	0	0	9	8	8	0	0	0	8	0
Arborview Development	38	3	14	0	0	10	13	0	0	0	4	24
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	1	7	7	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	24	0	0	0	-24	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	-2	0	0	0	0	0	0
Orvis Way Diversion C	0	0	-16	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	186	142	61	0	2042	75	59	44	65	0	1998	165
TOTAL "NEW" SITE TRAFFIC	163	0	0	0	-124	0	0	0	0	0	-148	213
Single Family Homes	20	0	0	0	7	0	0	0	0	0	23	23
Carriage Homes	9	0	0	0	3	0	0	0	0	0	10	10
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	-1
Diversion A - EBL 926 to NB 202	111	0	0	0	-111	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	-22	22
Diversion D - NBR Bridlewood to 202	23	0	0	0	-23	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	-125	125
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	-34	34
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	349	142	61	0	1918	75	59	44	65	0	1850	378
"New" Site Traffic % of Total 0.0%	46.7	0.0	0.0	0.0	-6.5	0.0	0.0	0.0	0.0	0.0	-8.0	56.3

Appendix M

Future 2030

Detailed Traffic Volume Worksheets

INTERSECTION VOLUME SUMMARY New Street/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND New Street			WESTBOUND Street Road (PA 926)			SOUTHBOUND New Street		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	48	648	5	9	97	41	8	310	36	8	122	190
Seasonal Adjustment Factor 1.000	48	648	5	9	97	41	8	310	36	8	122	190
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	48	648	5	9	97	41	8	310	36	8	122	190
Background Growth 5.87 %	3	38	0	1	6	2	0	18	2	0	7	11
EXISTING W/ BACKGROUND	51	686	5	10	103	43	8	328	38	8	129	201
TOTAL "OTHER" DEVELOPMENTS	30	-26	0	0	2	0	0	2	0	0	1	3
Condominium Development	0	1	0	0	0	0	0	1	0	0	0	1
Malvern School (NEW)	0	1	0	0	0	0	0	1	0	0	0	0
Arborview Development	2	0	0	0	2	0	0	0	0	0	1	2
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	28	-28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	81	660	5	10	105	43	8	330	38	8	130	204
TOTAL "NEW" SITE TRAFFIC	3	3	0	0	1	1	4	63	0	0	3	-48
Single Family Homes	2	2	0	0	1	1	3	5	0	0	2	5
Carriage Homes	1	1	0	0	0	0	1	2	0	0	1	2
Site Balancing	0	0	0	0	0	0	0	1	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	55	0	0	0	-55
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	84	663	5	10	106	44	12	393	38	8	133	156
"New" Site Traffic % of Total 0.0%	3.6	0.5	0.0	0.0	0.9	2.3	33.3	16.0	0.0	0.0	2.3	-30.8

INTERSECTION VOLUME SUMMARY New Street/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND New Street			WESTBOUND Street Road (PA 926)			SOUTHBOUND New Street		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	30	659	13	9	83	37	19	305	30	49	164	143
Seasonal Adjustment Factor 1.000	30	659	13	9	83	37	19	305	30	49	164	143
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	30	659	13	9	83	37	19	305	30	49	164	143
Background Growth 5.87 %	2	39	1	1	5	2	1	18	2	3	10	8
EXISTING W/ BACKGROUND	32	698	14	10	88	39	20	323	32	52	174	151
TOTAL "OTHER" DEVELOPMENTS	26	-21	0	0	1	0	0	2	0	0	2	2
Condominium Development	0	2	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	1	0	0	0	0	0	1	0	0	0	0
Arborview Development	2	0	0	0	1	0	0	0	0	0	2	2
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	24	-24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	58	677	14	10	89	39	20	325	32	52	176	153
TOTAL "NEW" SITE TRAFFIC	8	9	0	0	3	4	3	58	0	0	2	-49
Single Family Homes	6	6	0	0	2	3	2	3	0	0	1	3
Carriage Homes	2	2	0	0	1	1	1	1	0	0	1	1
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	1
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	54	0	0	0	-54
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	66	686	14	10	92	43	23	383	32	52	178	104
"New" Site Traffic % of Total 0.0%	12.1	1.3	0.0	0.0	3.3	9.3	13.0	15.1	0.0	0.0	1.1	-47.1

INTERSECTION VOLUME SUMMARY Bridlewood Blvd/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND Bridlewood Blvd			WESTBOUND Street Road (PA 926)			SOUTHBOUND Bridlewood Blvd		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	682	31	25	0	39	13	325	0	0	0	0
Seasonal Adjustment Factor 1.000	0	682	31	25	0	39	13	325	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	682	31	25	0	39	13	325	0	0	0	0
Background Growth 5.87 %	0	40	2	1	0	2	1	19	0	0	0	0
EXISTING W/ BACKGROUND	0	722	33	26	0	41	14	344	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	-26	0	0	0	0	0	2	0	0	0	0
Condominium Development	0	1	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	1	0	0	0	0	0	1	0	0	0	0
Arborview Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	-28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	696	33	26	0	41	14	346	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	31	-27	0	0	31	-27	0	-97	14	46	15	164
Single Family Homes	3	0	0	0	3	0	0	0	10	31	10	8
Carriage Homes	1	0	0	0	1	0	0	0	4	15	5	4
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	27	-27	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	55
Diversion D - NBR Bridlewood to 202	0	0	0	0	27	-27	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	-97	0	0	0	97
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	31	669	33	26	31	14	14	249	14	46	15	164
"New" Site Traffic % of Total #####	100.0	-4.0	0.0	0.0	100.0	-192.9	0.0	-39.0	100.0	100.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Bridlewood Blvd/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND Bridlewood Blvd			WESTBOUND Street Road (PA 926)			SOUTHBOUND Bridlewood Blvd		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	692	37	16	0	34	20	357	0	0	0	0
Seasonal Adjustment Factor 1.000	0	692	37	16	0	34	20	357	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	692	37	16	0	34	20	357	0	0	0	0
Background Growth 5.87 %	0	41	2	1	0	2	1	21	0	0	0	0
EXISTING W/ BACKGROUND	0	733	39	17	0	36	21	378	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	-21	0	0	0	0	0	2	0	0	0	0
Condominium Development	0	2	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	1	0	0	0	0	0	1	0	0	0	0
Arborview Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	-24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	712	39	17	0	36	21	380	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	127	-114	0	0	41	-24	0	-69	49	29	260	130
Single Family Homes	9	0	0	0	12	0	0	0	35	20	7	5
Carriage Homes	4	0	0	0	5	0	0	0	14	9	3	2
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	114	-114	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	54
Diversion D - NBR Bridlewood to 202	0	0	0	0	24	-24	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	-69	0	0	0	69
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	127	598	39	17	41	12	21	311	49	29	260	130
"New" Site Traffic % of Total ####	100.0	-19.1	0.0	0.0	100.0	-200.0	0.0	-22.2	100.0	100.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Street Road (PA 926)

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
Design Year (2030)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Street Road (PA 926)			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	531	221	8	12	1551	151	142	158	45	48	1465	181
Seasonal Adjustment Factor 1.000	531	221	8	12	1551	151	142	158	45	48	1465	181
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	531	221	8	12	1551	151	142	158	45	48	1465	181
Background Growth 5.87 %	31	13	0	1	91	9	8	9	3	3	86	11
EXISTING W/ BACKGROUND	562	234	8	13	1642	160	150	167	48	51	1551	192
TOTAL "OTHER" DEVELOPMENTS	-26	0	0	0	30	0	0	0	10	6	26	2
Condominium Development	1	0	0	0	1	0	0	0	0	0	3	1
Malvern School (NEW)	1	0	0	0	5	0	0	0	2	0	6	1
Arborview Development	0	0	0	0	24	0	0	0	8	6	18	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	-1	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	-28	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	536	234	8	13	1672	160	150	167	58	57	1577	194
TOTAL "NEW" SITE TRAFFIC	-39	8	23	10	0	0	0	4	0	8	8	-97
Single Family Homes	10	5	15	7	0	0	0	3	0	5	5	0
Carriage Homes	5	2	7	3	0	0	0	1	0	2	2	0
Site Balancing	0	1	1	0	0	0	0	0	0	1	1	0
Diversion A - EBL 926 to NB 202	-27	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	-27	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	-97
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	497	242	31	23	1672	160	150	171	58	65	1585	97
"New" Site Traffic % of Total 0.0%	-7.8	3.3	74.2	43.5	0.0	0.0	0.0	2.3	0.0	12.3	0.5	-100.0

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Street Road (PA 926)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Street Road (PA 926)			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Street Road (PA 926)			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
	EXISTING TRAFFIC	451	204	27	29	1551	121	199	221	57	79	1451
Seasonal Adjustment Factor 1.000	451	204	27	29	1551	121	199	221	57	79	1451	128
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	451	204	27	29	1551	121	199	221	57	79	1451	128
Background Growth 5.87 %	26	12	2	2	91	7	12	13	3	5	85	8
EXISTING W/ BACKGROUND	477	216	29	31	1642	128	211	234	60	84	1536	136
TOTAL "OTHER" DEVELOPMENTS	-21	0	0	0	26	0	0	0	7	8	34	2
Condominium Development	2	0	0	0	3	0	0	0	0	0	2	1
Malvern School (NEW)	1	0	0	0	5	0	0	0	1	0	7	1
Arborview Development	0	0	0	0	18	0	0	0	6	8	24	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	-24	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	456	216	29	31	1668	128	211	234	67	92	1570	138
TOTAL "NEW" SITE TRAFFIC	-128	4	15	32	0	0	0	17	0	6	-245	-69
Single Family Homes	7	3	10	23	0	0	0	12	0	3	3	0
Carriage Homes	3	1	4	10	0	0	0	5	0	1	1	0
Site Balancing	0	0	1	-1	0	0	0	0	0	2	1	0
Diversion A - EBL 926 to NB 202	-114	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	-24	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	-250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	-69
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	328	220	44	63	1668	128	211	251	67	98	1325	69
"New" Site Traffic % of Total #####	-39.0	1.8	34.1	50.8	0.0	0.0	0.0	6.8	0.0	6.1	-18.5	-100.0

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Pleasant Grove Road			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Pleasant Grove Road			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
	EXISTING TRAFFIC	0	0	12	10	2082	52	0	0	7	37	1753
Seasonal Adjustment Factor 1.000	0	0	12	10	2082	52	0	0	7	37	1753	150
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	12	10	2082	52	0	0	7	37	1753	150
Background Growth 5.87 %	0	0	1	1	122	3	0	0	0	2	103	9
EXISTING W/ BACKGROUND	0	0	13	11	2204	55	0	0	7	39	1856	159
TOTAL "OTHER" DEVELOPMENTS	0	0	15	22	-24	16	0	0	27	15	19	-1
Condominium Development	0	0	0	0	2	0	0	0	0	0	4	1
Malvern School (NEW)	0	0	0	0	0	8	0	0	15	8	7	0
Arborview Development	0	0	15	20	12	0	0	0	0	1	9	6
Malvern School (PB AM)	0	0	0	0	-8	8	0	0	12	6	-1	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	-28	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	2	-2	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	-8
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	28	33	2180	71	0	0	34	54	1875	158
TOTAL "NEW" SITE TRAFFIC	0	0	16	0	-39	0	0	0	0	0	-97	107
Single Family Homes	0	0	10	0	10	0	0	0	0	0	0	7
Carriage Homes	0	0	5	0	5	0	0	0	0	0	0	3
Site Balancing	0	0	1	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	-27	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	-27	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	-97	97
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	44	33	2141	71	0	0	34	54	1778	265
"New" Site Traffic % of Total 0.0%	0.0	0.0	36.4	0.0	-1.8	0.0	0.0	0.0	0.0	0.0	-5.5	40.4

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Pleasant Grove Road			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Pleasant Grove Road			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
	EXISTING TRAFFIC	0	0	24	32	2004	46	0	0	11	89	1701
Seasonal Adjustment Factor 1.000	0	0	24	32	2004	46	0	0	11	89	1701	202
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	24	32	2004	46	0	0	11	89	1701	202
Background Growth 5.87 %	0	0	1	2	118	3	0	0	1	5	100	12
EXISTING W/ BACKGROUND	0	0	25	34	2122	49	0	0	12	94	1801	214
TOTAL "OTHER" DEVELOPMENTS	0	0	20	17	-18	13	0	0	31	16	24	-12
Condominium Development	0	0	0	0	5	0	0	0	0	0	3	0
Malvern School (NEW)	0	0	0	0	0	7	0	0	17	8	8	0
Arborview Development	0	0	20	15	9	0	0	0	0	2	12	4
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	-6	6	0	0	14	6	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	-24	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	2	-2	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	-16
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	45	51	2104	62	0	0	43	110	1825	202
TOTAL "NEW" SITE TRAFFIC	0	0	11	0	-128	0	0	0	0	0	-319	171
Single Family Homes	0	0	7	0	7	0	0	0	0	0	0	23
Carriage Homes	0	0	3	0	3	0	0	0	0	0	0	10
Site Balancing	0	0	1	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	-114	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	-22
Diversion D - NBR Bridlewood to 202	0	0	0	0	-24	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	-250	125
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	-69	35
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	56	51	1976	62	0	0	43	110	1506	373
"New" Site Traffic % of Total #####	0.0	0.0	19.6	0.0	-6.5	0.0	0.0	0.0	0.0	0.0	-21.2	45.8

INTERSECTION VOLUME SUMMARY Church Full-Movement/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Church Full-Movement			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Church Full-Movement		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	12	1	1	0	0	8	152	0	0	0	0
Seasonal Adjustment Factor 1.000	0	12	1	1	0	0	8	152	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	12	1	1	0	0	8	152	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	9	0	0	0	0
EXISTING W/ BACKGROUND	0	13	1	1	0	0	8	161	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	15	0	0	0	0	0	21	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	15	0	0	0	0	0	26	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	2	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	-8	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	28	1	1	0	0	8	182	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	16	0	0	0	0	0	107	0	0	0	0
Single Family Homes	0	10	0	0	0	0	0	7	0	0	0	0
Carriage Homes	0	5	0	0	0	0	0	3	0	0	0	0
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	97	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	44	1	1	0	0	8	289	0	0	0	0
"New" Site Traffic % of Total #####	0.0	36.4	0.0	0.0	0.0	0.0	0.0	37.0	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Church Full-Movement/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Church Full-Movement			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Church Full-Movement		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	20	0	1	0	4	5	229	0	0	0	0
Seasonal Adjustment Factor 1.000	0	20	0	1	0	4	5	229	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	20	0	1	0	4	5	229	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	13	0	0	0	0
EXISTING W/ BACKGROUND	0	21	0	1	0	4	5	242	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	20	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	20	0	0	0	0	0	19	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	2	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	-16	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	41	0	1	0	4	5	247	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	11	0	0	0	0	0	171	0	0	0	0
Single Family Homes	0	7	0	0	0	0	0	23	0	0	0	0
Carriage Homes	0	3	0	0	0	0	0	10	0	0	0	0
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-22	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	125	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	35	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	52	0	1	0	4	5	418	0	0	0	0
"New" Site Traffic % of Total ####	0.0	21.2	0.0	0.0	0.0	0.0	0.0	40.9	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Orvis Way/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Orvis Way			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Orvis Way		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	12	0	0	0	0	0	153	0	0	0	0
Seasonal Adjustment Factor 1.000	0	12	0	0	0	0	0	153	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	12	0	0	0	0	0	153	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	9	0	0	0	0
EXISTING W/ BACKGROUND	0	13	0	0	0	0	0	162	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	34	0	0	0	0	0	0	-7	28	15	0	12
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	6	0	0	0	0	0	0	0	26	15	0	4
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	28	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	2	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	-8	0	0	0	8
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	34	13	0	0	0	0	0	155	28	15	0	12
TOTAL "NEW" SITE TRAFFIC	100	16	0	0	0	0	0	107	0	0	0	10
Single Family Homes	31	10	0	0	0	0	0	7	0	0	0	7
Carriage Homes	15	5	0	0	0	0	0	3	0	0	0	3
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	27	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	27	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	97	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	134	29	0	0	0	0	0	262	28	15	0	22
"New" Site Traffic % of Total #####	74.6	55.2	0.0	0.0	0.0	0.0	0.0	40.8	0.0	0.0	0.0	45.5

INTERSECTION VOLUME SUMMARY Orvis Way/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Orvis Way			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Orvis Way		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	24	0	0	0	0	0	230	0	0	0	0
Seasonal Adjustment Factor 1.000	0	24	0	0	0	0	0	230	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	24	0	0	0	0	0	230	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	14	0	0	0	0
EXISTING W/ BACKGROUND	0	25	0	0	0	0	0	244	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	28	0	0	0	0	0	0	-16	21	20	0	22
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	4	0	0	0	0	0	0	0	19	20	0	6
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	24	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	2	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	-16	0	0	0	16
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	28	25	0	0	0	0	0	228	21	20	0	22
TOTAL "NEW" SITE TRAFFIC	167	11	0	0	0	0	0	171	0	0	0	213
Single Family Homes	20	7	0	0	0	0	0	23	0	0	0	23
Carriage Homes	9	3	0	0	0	0	0	10	0	0	0	10
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	-1
Diversion A - EBL 926 to NB 202	114	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-22	0	0	0	22
Diversion D - NBR Bridlewood to 202	24	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	125	0	0	0	125
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	35	0	0	0	34
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	195	36	0	0	0	0	0	399	21	20	0	235
"New" Site Traffic % of Total ####	85.6	30.6	0.0	0.0	0.0	0.0	0.0	42.9	0.0	0.0	0.0	90.6

INTERSECTION VOLUME SUMMARY Church Egress Only /W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Church Egress Only			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Church Egress Only		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	13	0	0	0	0	0	153	0	0	0	0
Seasonal Adjustment Factor 1.000	0	13	0	0	0	0	0	153	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	13	0	0	0	0	0	153	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	9	0	0	0	0
EXISTING W/ BACKGROUND	0	14	0	0	0	0	0	162	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	34	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	6	0	0	0	0	0	4	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	48	0	0	0	0	0	167	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	116	0	0	0	0	0	117	0	0	0	0
Single Family Homes	0	41	0	0	0	0	0	13	0	0	0	0
Carriage Homes	0	20	0	0	0	0	0	6	0	0	0	0
Site Balancing	0	1	0	0	0	0	0	1	0	0	0	0
Diversion A - EBL 926 to NB 202	0	27	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	27	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	97	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	164	0	0	0	0	0	284	0	0	0	0
"New" Site Traffic % of Total #####	0.0	70.7	0.0	0.0	0.0	0.0	0.0	41.2	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Church Egress Only /W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Church Egress Only			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Church Egress Only		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	20	0	0	0	0	0	230	0	0	0	0
Seasonal Adjustment Factor 1.000	0	20	0	0	0	0	0	230	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	20	0	0	0	0	0	230	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	14	0	0	0	0
EXISTING W/ BACKGROUND	0	21	0	0	0	0	0	244	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	28	0	0	0	0	0	6	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	4	0	0	0	0	0	6	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	49	0	0	0	0	0	250	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	178	0	0	0	0	0	384	0	0	0	0
Single Family Homes	0	27	0	0	0	0	0	46	0	0	0	0
Carriage Homes	0	12	0	0	0	0	0	19	0	0	0	0
Site Balancing	0	1	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	114	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	24	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	250	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	69	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	227	0	0	0	0	0	634	0	0	0	0
"New" Site Traffic % of Total #####	0.0	78.4	0.0	0.0	0.0	0.0	0.0	60.6	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Collector Road/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Collector Road			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Collector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	13	0	0	0	0	0	152	0	0	0	0
Seasonal Adjustment Factor 1.000	0	13	0	0	0	0	0	152	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	13	0	0	0	0	0	152	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	9	0	0	0	0
EXISTING W/ BACKGROUND	0	14	0	0	0	0	0	161	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	34	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	6	0	0	0	0	0	4	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	48	0	0	0	0	0	166	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	23	1	4	0	93	165	-48	0	0	0	0
Single Family Homes	0	15	1	3	0	26	8	5	0	0	0	0
Carriage Homes	0	7	0	1	0	12	4	2	0	0	0	0
Site Balancing	0	1	0	0	0	1	1	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	27	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	55	-55	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	27	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	97	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	71	1	4	0	93	165	118	0	0	0	0
"New" Site Traffic % of Total #####	0.0	32.4	100.0	100.0	0.0	100.0	100.0	-40.7	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Collector Road/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Collector Road			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Collector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	20	0	0	0	0	0	230	0	0	0	0
Seasonal Adjustment Factor 1.000	0	20	0	0	0	0	0	230	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	20	0	0	0	0	0	230	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	14	0	0	0	0
EXISTING W/ BACKGROUND	0	21	0	0	0	0	0	244	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	28	0	0	0	0	0	6	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	4	0	0	0	0	0	6	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	49	0	0	0	0	0	250	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	16	4	3	0	162	414	-30	0	0	0	0
Single Family Homes	0	10	3	2	0	17	29	17	0	0	0	0
Carriage Homes	0	4	1	1	0	7	12	7	0	0	0	0
Site Balancing	0	2	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	114	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	54	-54	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	24	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	250	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	69	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	65	4	3	0	162	414	220	0	0	0	0
"New" Site Traffic % of Total ####	0.0	24.6	100.0	100.0	0.0	100.0	100.0	-13.6	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Road M (Site Access)/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Road M (Site Access)			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Road M (Site Access)		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	24	0	0	0	0	0	225	0	0	0	0
Seasonal Adjustment Factor 1.000	0	24	0	0	0	0	0	225	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	24	0	0	0	0	0	225	0	0	0	0
Background Growth 5.87 %	0	1	0	0	0	0	0	13	0	0	0	0
EXISTING W/ BACKGROUND	0	25	0	0	0	0	0	238	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	34	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	6	0	0	0	0	0	4	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	59	0	0	0	0	0	243	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	10	0	1	0	13	4	-48	0	0	0	0
Single Family Homes	0	7	0	1	0	9	3	5	0	0	0	0
Carriage Homes	0	3	0	0	0	4	1	2	0	0	0	0
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-55	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	69	0	1	0	13	4	195	0	0	0	0
"New" Site Traffic % of Total #####	0.0	14.5	0.0	100.0	0.0	100.0	100.0	-24.6	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Road M (Site Access)/W. Pleasant Grove Road

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Road M (Site Access)			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Road M (Site Access)		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	33	0	0	0	0	0	254	0	0	0	0
Seasonal Adjustment Factor 1.000	0	33	0	0	0	0	0	254	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	33	0	0	0	0	0	254	0	0	0	0
Background Growth 5.87 %	0	2	0	0	0	0	0	15	0	0	0	0
EXISTING W/ BACKGROUND	0	35	0	0	0	0	0	269	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	28	0	0	0	0	0	6	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	4	0	0	0	0	0	6	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	63	0	0	0	0	0	275	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	11	2	1	0	9	14	-41	0	0	0	0
Single Family Homes	0	7	1	1	0	6	10	9	0	0	0	0
Carriage Homes	0	3	0	0	0	3	4	4	0	0	0	0
Site Balancing	0	1	1	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-54	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	74	2	1	0	9	14	234	0	0	0	0
"New" Site Traffic % of Total 0.0%	0.0	14.9	100.0	100.0	0.0	100.0	100.0	-17.5	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY

Road K (Site Access) / Dunvegan/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Road K (Site Access) / Dunvegan			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Road K (Site Access) / Dunvegan		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	19	0	0	0	0	0	222	3	5	0	2
Seasonal Adjustment Factor 1.000	0	19	0	0	0	0	0	222	3	5	0	2
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	19	0	0	0	0	0	222	3	5	0	2
Background Growth 5.87 %	0	1	0	0	0	0	0	13	0	0	0	0
EXISTING W/ BACKGROUND	0	20	0	0	0	0	0	235	3	5	0	2
TOTAL "OTHER" DEVELOPMENTS	0	34	0	0	0	0	0	5	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	1	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	6	0	0	0	0	0	4	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	28	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	54	0	0	0	0	0	240	3	5	0	2
TOTAL "NEW" SITE TRAFFIC	0	2	4	12	0	9	3	-50	0	0	0	0
Single Family Homes	0	1	3	8	0	6	2	4	0	0	0	0
Carriage Homes	0	1	1	4	0	3	1	2	0	0	0	0
Site Balancing	0	0	0	0	0	0	0	-1	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-55	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	56	4	12	0	9	3	190	3	5	0	2
"New" Site Traffic % of Total #####	0.0	3.6	100.0	100.0	0.0	100.0	100.0	-26.3	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY

Road K (Site Access) / Dunvegan/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND Road K (Site Access) / Dunvegan			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND Road K (Site Access) / Dunvegan		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	3	32	0	0	0	0	0	243	11	1	0	2
Seasonal Adjustment Factor 1.000	3	32	0	0	0	0	0	243	11	1	0	2
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	3	32	0	0	0	0	0	243	11	1	0	2
Background Growth 5.87 %	0	2	0	0	0	0	0	14	1	0	0	0
EXISTING W/ BACKGROUND	3	34	0	0	0	0	0	257	12	1	0	2
TOTAL "OTHER" DEVELOPMENTS	0	28	0	0	0	0	0	6	0	0	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	4	0	0	0	0	0	6	0	0	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	24	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/OUT PROJECT	3	62	0	0	0	0	0	263	12	1	0	2
TOTAL "NEW" SITE TRAFFIC	0	7	13	7	0	6	10	-50	0	0	0	0
Single Family Homes	0	5	9	5	0	4	7	3	0	0	0	0
Carriage Homes	0	2	4	2	0	2	3	1	0	0	0	0
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	-54	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	3	69	13	7	0	6	10	213	12	1	0	2
"New" Site Traffic % of Total 0.0%	0.0	10.1	100.0	100.0	0.0	100.0	100.0	-23.5	0.0	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY New Street/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND New Street			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND New Street		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	173	6	203	0	21	13	127	0
Seasonal Adjustment Factor 1.000	0	0	0	0	173	6	203	0	21	13	127	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	173	6	203	0	21	13	127	0
Background Growth 5.87 %	0	0	0	0	10	0	12	0	1	1	7	0
EXISTING W/ BACKGROUND	0	0	0	0	183	6	215	0	22	14	134	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	32	4	0	1	2	0	0
Condominium Development	0	0	0	0	0	0	1	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	0	0	0	0	4	3	0	1	2	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	0	28	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/OUT PROJECT	0	0	0	0	183	38	219	0	23	16	134	0
TOTAL "NEW" SITE TRAFFIC	0	0	0	0	0	3	-45	0	7	3	0	0
Single Family Homes	0	0	0	0	0	2	7	0	5	2	0	0
Carriage Homes	0	0	0	0	0	1	3	0	2	1	0	0
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	-55	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	0	0	183	41	174	0	30	19	134	0
"New" Site Traffic % of Total #####	0.0	0.0	0.0	0.0	0.0	7.3	-25.9	0.0	23.3	15.8	0.0	0.0

INTERSECTION VOLUME SUMMARY New Street/W. Pleasant Grove Road

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND W. Pleasant Grove Road			NORTHBOUND New Street			WESTBOUND W. Pleasant Grove Road			SOUTHBOUND New Street		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	143	17	198	0	47	18	168	0
Seasonal Adjustment Factor 1.000	0	0	0	0	143	17	198	0	47	18	168	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	143	17	198	0	47	18	168	0
Background Growth 5.87 %	0	0	0	0	8	1	12	0	3	1	10	0
EXISTING W/ BACKGROUND	0	0	0	0	151	18	210	0	50	19	178	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	27	4	0	2	1	0	0
Condominium Development	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (NEW)	0	0	0	0	0	0	0	0	0	0	0	0
Arborview Development	0	0	0	0	0	3	4	0	2	1	0	0
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	0	0	0	0	0	24	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion C	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	151	45	214	0	52	20	178	0
TOTAL "NEW" SITE TRAFFIC	0	0	0	0	0	11	-47	0	4	9	0	0
Single Family Homes	0	0	0	0	0	8	5	0	3	6	0	0
Carriage Homes	0	0	0	0	0	3	2	0	1	2	0	0
Site Balancing	0	0	0	0	0	0	0	0	0	1	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	-54	0	0	0	0	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	0	0	151	56	167	0	56	29	178	0
"New" Site Traffic % of Total 0.0%	0.0	0.0	0.0	0.0	0.0	19.6	-28.1	0.0	7.1	31.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Wilmington Pike (US 202)/Stetson Blvd / Skiles Blvd

Robinson Tract
I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\SDS\ **Weekday 4-6 PM**
Design Year (2030)

Traffic Component	EASTBOUND Stetson Blvd / Skiles Blvd			NORTHBOUND Wilmington Pike (US 202)			WESTBOUND Stetson Blvd / Skiles Blvd			SOUTHBOUND Wilmington Pike (US 202)		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	120	129	61	0	1993	46	27	43	59	0	1925	131
Seasonal Adjustment Factor 1.000	120	129	61	0	1993	46	27	43	59	0	1925	131
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	120	129	61	0	1993	46	27	43	59	0	1925	131
Background Growth 5.87 %	7	8	4	0	117	3	2	3	3	0	113	8
EXISTING W/ BACKGROUND	127	137	65	0	2110	49	29	46	62	0	2038	139
TOTAL "OTHER" DEVELOPMENTS	62	9	-2	0	-14	28	31	0	4	0	12	30
Condominium Development	0	6	0	0	0	5	3	0	4	0	0	6
Malvern School (NEW)	0	0	0	0	9	8	8	0	0	0	8	0
Arborview Development	38	3	14	0	0	10	13	0	0	0	4	24
Malvern School (PB AM)	0	0	0	0	0	0	0	0	0	0	0	0
Malvern School (PB PM)	0	0	0	0	1	7	7	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Orvis Way Diversion A	24	0	0	0	-24	0	0	0	0	0	0	0
Orvis Way Diversion B	0	0	0	0	0	-2	0	0	0	0	0	0
Orvis Way Diversion C	0	0	-16	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	189	146	63	0	2096	77	60	46	66	0	2050	169
TOTAL "NEW" SITE TRAFFIC	167	0	0	0	-128	0	0	0	0	0	-148	213
Single Family Homes	20	0	0	0	7	0	0	0	0	0	23	23
Carriage Homes	9	0	0	0	3	0	0	0	0	0	10	10
Site Balancing	0	0	0	0	0	0	0	0	0	0	0	-1
Diversion A - EBL 926 to NB 202	114	0	0	0	-114	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	-22	22
Diversion D - NBR Bridlewood to 202	24	0	0	0	-24	0	0	0	0	0	0	0
Diversion G - US 202 SBT	0	0	0	0	0	0	0	0	0	0	-125	125
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	-34	34
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	356	146	63	0	1968	77	60	46	66	0	1902	382
"New" Site Traffic % of Total 0.0%	46.9	0.0	0.0	0.0	-6.5	0.0	0.0	0.0	0.0	0.0	-7.8	55.8

Appendix N

Capacity/Level-of-Service Methodology

CAPACITY/LEVEL-OF-SERVICE ANALYSIS METHODOLOGY

The detailed capacity/level-of-service analysis contained in this transportation impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual 6th Edition*. By definition, capacity represents “the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.” The level at which an intersection or a uniform section of a lane or roadway function can be expressed in terms of a level of service. Level of service (LOS) is defined as “a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler’s perspective and LOS F the worst.”

Stop-Controlled Intersections

At unsignalized stop-controlled intersections, such as two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC), a methodology for evaluating the relative functioning of these intersections is based upon the control delay. For these types of unsignalized intersections, the analysis of the control delay is based upon the following data:

- Number and configuration of lanes on each approach;
- Percentage of heavy vehicles on each approach;
- Demand flow rate for each entering vehicular movement and pedestrian crossing movement;
- Unique geometric factors such as, channelization aspects; two-way left-turn lanes, raised or striped median storage; approach grades, flared approaches on the minor street; and upstream signals within 0.25 miles.

At TWSC intersections, only drivers on the minor street approaches are required to stop before proceeding into the intersection and left-turning drivers from the major street may have to yield to on-coming major street through or right-turning traffic, but are not required to stop in the absence of on-coming traffic. The capacity at stop-controlled legs is based primarily on three factors: the distribution of gaps in the major stream, driver judgment in selecting the gaps, and the follow-up headways required by each driver in a queue.

At AWSC intersections, every vehicle is required to stop at the intersection before proceeding, and as a result, the decision to proceed is a function of the traffic conditions on the other approaches. Each driver proceeds only after determining that no vehicles are currently in the intersection and that it is the driver’s turn to proceed. Capacity at an AWSC intersection is described by the saturation headway or time between departures of successive vehicles on a given approach for a particular case assuming a continuous queue; departure headway or the average time between departures of successive vehicles on a given approach accounting for the probability of each possible case; and service time or the average time sent by a vehicle in first position waiting to depart.

At both TWSC and AWSC intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. For TWSC intersections, the level of service is not calculated for major-street approaches or for the intersection as a whole; however, the intersection-wide level of service is calculated for AWSC intersections. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for TWSC and AWSC intersections.

Control Delay (Sec/Veh)	<u>LOS by Volume-to-Capacity Ratio</u>	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 – 15	B	F
> 15 – 25	C	F
> 25 – 35	D	F
> 35 – 50	E	F
> 50	F	F

Signalized Intersections

At three or four-legged signalized intersections, a methodology for evaluating the capacity and quality of service provided to road users traveling through the signalized intersection. For signalized intersections, the level of service can be characterized for the entire intersection, each approach, and each lane group. The level of service is based upon the control delay and volume-to-capacity ratio. The delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption, while the volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. Input data in determining the delay and volume-to-capacity ratio include:

- Demand flow rate for each entering vehicular movement and pedestrian crossing movement, including right-turn on red volumes and percent of heavy vehicles;
- Initial queue for each lane group;
- Number and configuration of lanes on each approach;
- Type of signal control and phase sequence;
- Allocation of minimum/maximum green times and clearance intervals (Yellow plus All Red phases); and
- Phase recall.

At signalized intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for signalized intersections.

Control Delay (Sec/Veh)	<u>LOS by Volume-to-Capacity Ratio</u>	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 – 20	B	F
> 20 – 35	C	F
> 35 – 55	D	F
> 55 – 80	E	F
> 80	F	F

Appendix O

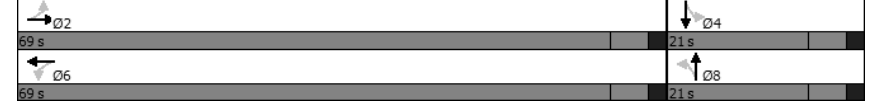
Existing Capacity/Level-of-Service Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	48	648	5	8	310	36	9	97	41	8	122	190
Future Volume (vph)	48	648	5	8	310	36	9	97	41	8	122	190
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.986			0.962			0.920		
Frt Protected	0.997			0.999			0.997			0.999		
Satd. Flow (prot)	0	1628	0	0	1547	0	0	1585	0	0	1514	0
Frt Permitted	0.955			0.986			0.897			0.991		
Satd. Flow (perm)	0	1559	0	0	1527	0	0	1426	0	0	1501	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	1			16			25			35		
Link Speed (mph)	45			45			714			826		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	49	668	5	8	320	37	9	100	42	8	126	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	722	0	0	365	0	0	151	0	0	330	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Permitted Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%		23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0			-1.0			-1.0		
Total Lost Time (s)	5.0			5.0			5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Natural Cycle:	60
Control Type:	Semi Act-Uncoordinated

Splits and Phases: 1: New St & Rt 926



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)	13.0	13.0						8.0	8.0		8.0	
Flash Dont Walk (s)	23.0	23.0						15.0	15.0		15.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	

Intersection Summary

Area Type: Other
Cycle Length: 165
Actuated Cycle Length: 151.1
Natural Cycle: 115
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Rt 202 & Rt 926

Phase	Duration	Phase	Duration
Ø1	76 s	Ø4	38 s
Ø2	76 s	Ø5	13 s
Ø3	38 s	Ø6	76 s

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↔	↗	↖	↔	↗	↖	↔	↗	↖	↔	↗
Traffic Volume (veh/h)	531	221	8	142	158	45	12	1551	151	48	1465	181
Future Volume (veh/h)	531	221	8	142	158	45	12	1551	151	48	1465	181
Initial Q (Qb), veh	8	7	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	1869	1914	1914	1892	1892	1923	1707	1864	1953	1589	1674	1674
Adj Flow Rate, veh/h	392	446	8	146	163	46	12	1599	156	49	1510	187
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	5	5	4	4	7	17	6	5	15	9	9
Cap, veh/h	382	408	2	205	215	185	26	1684	787	74	1450	177
Arrive On Green	0.21	0.21	0.21	0.11	0.11	0.11	0.02	0.48	0.48	0.05	0.51	0.50
Sat Flow, veh/h	1780	1875	34	1802	1892	1630	1626	3541	1655	1514	2852	349
Grp Volume(v), veh/h	392	0	454	146	163	46	12	1599	156	49	834	863
Grp Sat Flow(s),veh/h/ln	1780	0	1908	1802	1892	1630	1626	1771	1655	1514	1590	1611
Q Serve(g_s), s	32.0	0.0	32.0	11.7	12.5	3.8	1.1	64.4	8.1	4.7	75.9	75.9
Cycle Q Clear(g_c), s	32.0	0.0	32.0	11.7	12.5	3.8	1.1	64.4	8.1	4.7	75.9	75.9
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	382	0	410	205	215	185	26	1684	787	74	808	819
V/C Ratio(X)	1.03	0.00	1.11	0.71	0.76	0.25	0.46	0.95	0.20	0.66	1.03	1.05
Avail Cap(c_a), veh/h	382	0	409	386	406	349	87	1684	787	81	808	819
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.6	0.0	58.6	63.8	64.2	60.3	72.8	37.4	22.7	69.8	36.7	36.8
Incr Delay (d2), s/veh	53.2	0.0	76.7	4.6	5.4	0.7	11.9	12.8	0.6	16.3	40.1	46.5
Initial Q Delay(d3),s/veh	75.5	0.0	61.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	85.4	0.0	40.7	9.4	10.3	2.9	1.0	38.4	5.9	3.9	47.8	50.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	187.3	0.0	196.8	68.3	69.5	61.0	84.7	50.2	23.2	86.1	76.8	83.3
LnGrp LOS	F	A	F	E	E	E	F	D	C	F	F	F
Approach Vol, veh/h	846			355			1767				1746	
Approach Delay, s/veh	192.4			68.0			48.1				80.3	
Approach LOS	F			E			D				F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	76.0	76.0		23.0	7.4	80.9		38.0				
Change Period (Y+Rc), s	6.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	70.0	70.0		31.0	7.0	70.0		31.0				
Max Q Clear Time (g_c+1), s	66.9	66.9		15.0	3.6	78.4		34.5				
Green Ext Time (p_c), s	0.0	2.8		1.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 87.4
HCM 6th LOS F

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

McMahon Associates, Inc. Robinson Tract
 12: Rt 202 & Stetson School Dr/Skiles Blvd Existing Weekday Morning Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	81	141	31	50	134	54	0	2036	29	0	1874	256
Future Volume (vph)	81	141	31	50	134	54	0	2036	29	0	1874	256
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	12	12	14	12	12	16
Grade (%)	-5%				2%		2%				-3%	
Storage Length (ft)	200		200	350		0	0		220	0		200
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	75			100			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850		0.957				0.850			0.850	
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1598	1765	1434	1628	1691	0	0	3225	1616	0	3214	1676
Flt Permitted	0.536			0.663								
Satd. Flow (perm)	902	1765	1434	1136	1691	0	0	3225	1616	0	3214	1676
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	25				25		45				45	
Link Distance (ft)	637				560		1356				940	
Travel Time (s)	17.4				15.3		20.5				14.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	8%	13%	4%	9%	4%	0%	5%	0%	0%	8%	5%
Adj. Flow (vph)	85	148	33	53	141	57	0	2143	31	0	1973	269
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	148	33	53	198	0	0	2143	31	0	1973	269
Number of Detectors	1	4	1	1	4			2	1		2	1
Detector Template	Right								Right		Right	
Leading Detector (ft)	35	68	30	35	68			490	30		490	30
Trailing Detector (ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Position(ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Size(ft)	40	6	40	40	6			40	40		40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 2 Position(ft)	15				15				450		450	
Detector 2 Size(ft)	6				6				40		40	
Detector 2 Type	Cl+Ex				Cl+Ex				Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0				0.0				0.0		0.0	
Detector 3 Position(ft)	36				36							
Detector 3 Size(ft)	6				6							
Detector 3 Type	Cl+Ex				Cl+Ex							
Detector 3 Channel												
Detector 3 Extend (s)	0.0				0.0							
Detector 4 Position(ft)	62				62							
Detector 4 Size(ft)	6				6							
Detector 4 Type	Cl+Ex				Cl+Ex							

Lanes, Volumes, Timings Existing Weekday Morning Peak Hour
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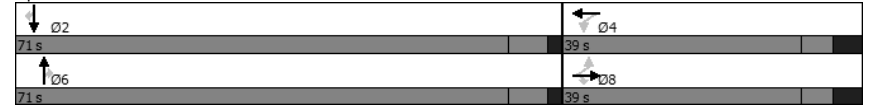
McMahon Associates, Inc. Robinson Tract
 12: Rt 202 & Stetson School Dr/Skiles Blvd Existing Weekday Morning Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 4 Channel												
Detector 4 Extend (s)	0.0				0.0							
Turn Type	Perm	NA	Perm	Perm	NA			NA	Perm		NA	Perm
Protected Phases	8				4				6		2	
Permitted Phases	8		8		4				6		2	
Detector Phase	8		8		4		4		6		2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0			15.0	15.0		15.0	15.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0			22.0	22.0		22.0	22.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0			71.0	71.0		71.0	71.0
Total Split (%)	35.5%	35.5%	35.5%	35.5%	35.5%			64.5%	64.5%		64.5%	64.5%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0			64.0	64.0		64.0	64.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			5.0	5.0		5.0	5.0
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0			2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0			-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	7.0	7.0	8.0	7.0	7.0			6.0	6.0		6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			6.0	6.0		6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0			48.0	48.0		48.0	48.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0			24.0	24.0		24.0	24.0
Recall Mode	None	None	None	None	None			Max	Max		Max	Max

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	95.5
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated

Splits and Phases: 12: Rt 202 & Stetson School Dr/Skiles Blvd



Lanes, Volumes, Timings Existing Weekday Morning Peak Hour
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McMahon Associates, Inc.

Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

Existing Weekday Morning Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Traffic Volume (veh/h)	81	141	31	50	134	54	0	2036	29	0	1874	256
Future Volume (veh/h)	81	141	31	50	134	54	0	2036	29	0	1874	256
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1901	1947	1874	1722	1717	1717	0	1707	1849	0	1798	1914
Adj Flow Rate, veh/h	85	148	33	53	141	57	0	2143	31	0	1973	269
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	8	13	4	9	9	0	5	0	0	8	5
Cap, veh/h	210	413	320	245	246	100	0	2131	1029	0	2244	1066
Arrive On Green	0.21	0.21	0.20	0.21	0.21	0.20	0.00	0.66	0.66	0.00	0.66	0.66
Sat Flow, veh/h	1271	1947	1588	1169	1163	470	0	3330	1567	0	3506	1622
Grp Volume(v), veh/h	85	148	33	53	0	198	0	2143	31	0	1973	269
Grp Sat Flow(s),veh/h/ln	1271	1947	1588	1169	0	1633	0	1622	1567	0	1708	1622
Q Serve(g_s), s	6.3	6.4	1.7	4.0	0.0	10.8	0.0	65.0	0.7	0.0	46.4	6.8
Cycle Q Clear(g_c), s	16.6	6.4	1.7	10.4	0.0	10.8	0.0	65.0	0.7	0.0	46.4	6.8
Prop In Lane	1.00		1.00	1.00		0.29	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	210	413	320	245	0	346	0	2131	1029	0	2244	1066
V/C Ratio(X)	0.40	0.36	0.10	0.22	0.00	0.57	0.00	1.01	0.03	0.00	0.88	0.25
Avail Cap(c_a), veh/h	352	630	497	375	0	528	0	2131	1029	0	2244	1066
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	42.2	33.3	32.2	37.7	0.0	35.1	0.0	17.0	5.9	0.0	13.8	7.0
Incr Delay (d2), s/veh	1.3	0.5	0.1	0.4	0.0	1.5	0.0	20.9	0.1	0.0	5.3	0.6
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	3.7	5.6	1.2	2.1	0.0	7.9	0.0	32.7	0.4	0.0	21.8	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.5	33.8	32.3	38.2	0.0	36.6	0.0	37.9	6.0	0.0	19.1	7.6
LnGrp LOS	D	C	C	D	A	D	A	F	A	A	B	A
Approach Vol, veh/h		266			251			2174			2242	
Approach Delay, s/veh		36.7			36.9			37.4			17.7	
Approach LOS		D			D			D			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.0		28.0		71.0		28.0				
Change Period (Y+Rc), s		7.0		8.0		7.0		8.0				
Max Green Setting (Gmax), s		64.0		31.0		64.0		31.0				
Max Q Clear Time (g_c+1), s		48.9		12.9		67.5		19.1				
Green Ext Time (p_c), s		15.1		1.1		0.0		0.9				
Intersection Summary												
HCM 6th Ctrl Delay				28.4								
HCM 6th LOS				C								

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	682	31	13	325	25	39
Future Volume (vph)	682	31	13	325	25	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	14
Grade (%)	8%			-8%	-1%	
Storage Length (ft)		350	120		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1662	1521	1719	1733	1719	1592
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1662	1521	1719	1733	1719	1592
Link Speed (mph)	45			45	25	
Link Distance (ft)	2436			2349	414	
Travel Time (s)	36.9			35.6	11.3	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	3%	0%	8%	0%	3%
Adj. Flow (vph)	703	32	13	335	26	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	703	32	13	335	26	40
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	682	31	13	325	25	39
Future Vol, veh/h	682	31	13	325	25	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None		- None
Storage Length	-	350	120	-	0	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	8	-	-	-8	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	4	3	0	8	0	3
Mvmt Flow	703	32	13	335	26	40

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	735
Stage 1	-	-	703
Stage 2	-	-	361
Critical Hdwy	-	4.3	6.2
Critical Hdwy Stg 1	-	-	5.2
Critical Hdwy Stg 2	-	-	5.2
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	667	290
Stage 1	-	-	574
Stage 2	-	-	825
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	667	284
Mov Cap-2 Maneuver	-	-	284
Stage 1	-	-	574
Stage 2	-	-	809

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	15.5
HCM LOS			C

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	284	468	-	-	667	-
HCM Lane V/C Ratio	0.091	0.086	-	-	0.02	-
HCM Control Delay (s)	18.9	13.4	-	-	10.5	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.1	-

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Volume (vph)	0	0	12	0	0	7	10	2082	52	37	1753	150
Future Volume (vph)	0	0	12	0	0	7	10	2082	52	37	1753	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	
Frt			0.865			0.865	0.996			0.988		
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1379	1488	3205	0	1629	3160	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1379	1488	3205	0	1629	3160	0
Link Speed (mph)			35			35		45		45		
Link Distance (ft)			499			858		3154		1356		
Travel Time (s)			9.7			16.7		47.8		20.5		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	14%	10%	5%	14%	3%	9%	3%
Adj. Flow (vph)	0	0	13	0	0	7	10	2169	54	39	1826	156
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	13	0	0	7	10	2223	0	39	1982	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Vol, veh/h	0	0	12	0	0	7	10	2082	52	37	1753	150
Future Vol, veh/h	0	0	12	0	0	7	10	2082	52	37	1753	150
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	0	350	-	-	380	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-2	-	-	2	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	14	10	5	14	3	9	3
Mvmt Flow	0	0	13	0	0	7	10	2169	54	39	1826	156

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	-	-	991	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	7.2	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.9	-
Pot Cap-1 Maneuver	0	0	248	0
Stage 1	0	0	-	0
Stage 2	0	0	-	0
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	248	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	26.3	24.8	0.1	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	277	-	-	248	189	243	-
HCM Lane V/C Ratio	0.038	-	-	0.05	0.039	0.159	-
HCM Control Delay (s)	18.5	-	-	20.3	24.8	22.6	-
HCM Lane LOS	C	-	-	C	C	C	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0.6	-

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (vph)	12	1	8	152	1	0
Future Volume (vph)	12	1	8	152	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					
Flt Protected				0.998	0.950	
Satd. Flow (prot)	1692	0	0	1722	1636	1663
Flt Permitted				0.998	0.950	
Satd. Flow (perm)	1692	0	0	1722	1636	1663
Link Speed (mph)	35			35	35	
Link Distance (ft)	429			499	469	
Travel Time (s)	8.4			9.7	9.1	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	17	1	11	217	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	228	1	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Vol, veh/h	12	1	8	152	1	0
Future Vol, veh/h	12	1	8	152	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	4	-	-	-4	2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	17	1	11	217	1	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	18
Stage 1	-	-	18
Stage 2	-	-	239
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1183	820
Stage 1	-	-	1174
Stage 2	-	-	901
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1183	811
Mov Cap-2 Maneuver	-	-	811
Stage 1	-	-	1174
Stage 2	-	-	891

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.4
HCM LOS			A

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	811	-	-	-	1183	-
HCM Lane V/C Ratio	0.002	-	-	-	0.01	-
HCM Control Delay (s)	9.4	0	-	-	8.1	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	13	0	0	153	0	0
Future Volume (vph)	13	0	0	153	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1714	0	0	1715	1879	0
Flt Permitted						
Satd. Flow (perm)	1714	0	0	1715	1879	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	2929			429	436	
Travel Time (s)	57.1			8.4	8.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	19	0	0	219	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	219	0	0
Sign Control	Free			Free	Stop	

Intersection Summary

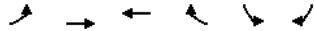
Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	13	0	0	153	0	0
Future Vol, veh/h	13	0	0	153	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3	-	-	-3	-2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	19	0	0	219	0	0

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	-	-	238 19
Stage 1	-	-	-	19 -
Stage 2	-	-	-	219 -
Critical Hdwy	-	-	-	6 6
Critical Hdwy Stg 1	-	-	-	5 -
Critical Hdwy Stg 2	-	-	-	5 -
Follow-up Hdwy	-	-	-	3 3.1
Pot Cap-1 Maneuver	-	0	0	890 1134
Stage 1	-	0	0	1178 -
Stage 2	-	0	0	969 -
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	890 1134
Mov Cap-2 Maneuver	-	-	-	890 -
Stage 1	-	-	-	1178 -
Stage 2	-	-	-	969 -

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	0	19	222	3	5	2
Future Volume (vph)	0	19	222	3	5	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		3%	-3%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.959	
Flt Protected					0.966	
Satd. Flow (prot)	0	1576	1643	0	1441	0
Flt Permitted					0.966	
Satd. Flow (perm)	0	1576	1643	0	1441	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		496	2929		306	
Travel Time (s)		9.7	57.1		8.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	3%	50%	0%	25%
Adj. Flow (vph)	0	27	317	4	7	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	27	321	0	10	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	0	19	222	3	5	2
Future Vol, veh/h	0	19	222	3	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	3	-3	-	1	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	5	3	50	0	25
Mvmt Flow	0	27	317	4	7	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	321	0	346
Stage 1	-	-	319
Stage 2	-	-	27
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	32	-	732
Stage 1	-	-	832
Stage 2	-	-	1164
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	32	-	732
Mov Cap-2 Maneuver	-	-	732
Stage 1	-	-	832
Stage 2	-	-	1164

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	932	-	-	-	724
HCM Lane V/C Ratio	-	-	-	-	-0.014
HCM Control Delay (s)	0	-	-	-	10
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T	T	T	T	T	T
Traffic Volume (vph)	203	21	173	6	13	127
Future Volume (vph)	203	21	173	6	13	127
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987		0.995			
Flt Protected	0.957					0.995
Satd. Flow (prot)	1648	0	1757	0	0	1762
Flt Permitted	0.957					0.995
Satd. Flow (perm)	1648	0	1757	0	0	1762
Link Speed (mph)	35		35			35
Link Distance (ft)	496		2543			619
Travel Time (s)	9.7		49.5			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	14%	2%	0%	8%	1%
Adj. Flow (vph)	228	24	194	7	15	143
Shared Lane Traffic (%)						
Lane Group Flow (vph)	252	0	201	0	0	158
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T	T	T	T	T	T
Traffic Vol, veh/h	203	21	173	6	13	127
Future Vol, veh/h	203	21	173	6	13	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
Grade, %	0		-		-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	14	2	0	8	1
Mvmt Flow	228	24	194	7	15	143

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	371	198	0
Stage 1	198	-	-
Stage 2	173	-	-
Critical Hdwy	6.42	6.34	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.2	-
Pot Cap-1 Maneuver	20	866	-
Stage 1	966	-	-
Stage 2	993	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	708	866	-
Mov Cap-2 Maneuver	708	-	-
Stage 1	966	-	-
Stage 2	977	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/BLn1	SBL	SBT
Capacity (veh/h)	-	-	720	989
HCM Lane V/C Ratio	-	-	0.35	0.015
HCM Control Delay (s)	-	-	12.7	8.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.6	0

McMahon Associates, Inc.
1: New St & Rt 926

Robinson Tract
Existing Weekday Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕		↕		↕		↕		↕		↕	
Traffic Volume (vph)	30	659	13	19	305	30	9	83	37	49	164	143
Future Volume (vph)	30	659	13	19	305	30	9	83	37	49	164	143
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%				1%		-2%				1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.989		0.961				0.946	
Flt Protected	0.998				0.997		0.997				0.993	
Satd. Flow (prot)	0	1627	0	0	1551	0	0	1581	0	0	1530	0
Flt Permitted	0.974				0.950		0.963				0.940	
Satd. Flow (perm)	0	1588	0	0	1478	0	0	1527	0	0	1449	0
Right Turn on Red	Yes				Yes		No				No	
Satd. Flow (RTOR)	2				9							
Link Speed (mph)	45				45		25				35	
Link Distance (ft)	819				2436		714				826	
Travel Time (s)	12.4				36.9		19.5				16.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	31	679	13	20	314	31	9	86	38	51	169	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	723	0	0	365	0	0	133	0	0	367	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left		Left		Left Thru		Left Thru		Left Thru			
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2				6		8				4	
Permitted Phases	2				6		8				4	
Detector Phase	2				6		8				4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	74.0	74.0		74.0	74.0		31.0	31.0		31.0	31.0	
Total Split (%)	70.5%	70.5%		70.5%	70.5%		29.5%	29.5%		29.5%	29.5%	
Maximum Green (s)	68.0	68.0		68.0	68.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0		-1.0				-1.0	
Total Lost Time (s)	5.0				5.0		5.0				5.0	
Lead/Lag												
Lead-Lag Optimize?												

Lanes, Volumes, Timings Existing Weekday Afternoon Peak Hour
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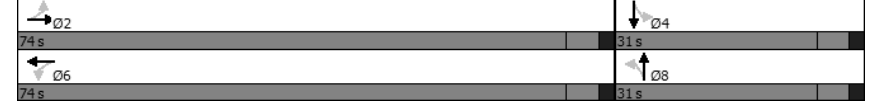
McMahon Associates, Inc.
1: New St & Rt 926

Robinson Tract
Existing Weekday Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary		
Area Type:	Other	
Cycle Length:	105	
Actuated Cycle Length:	105	
Natural Cycle:	60	
Control Type:	Semi Act-Uncoordinated	

Splits and Phases: 1: New St & Rt 926



Lanes, Volumes, Timings Existing Weekday Afternoon Peak Hour
I:\eng\816451 - Crebilly Farm\Traffic Analysis\2020-02 Robinson Tract Revised TIS\Synchro\1 - Existing Weekday PM.syn

McMahon Associates, Inc.
3: Rt 202 & Rt 926

Robinson Tract
Existing Weekday Afternoon Peak Hour

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Walk Time (s)	13.0	13.0						8.0	8.0		8.0	
Flash Dont Walk (s)	23.0	23.0						15.0	15.0		15.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	

Intersection Summary

Area Type: Other
Cycle Length: 165
Actuated Cycle Length: 158.8
Natural Cycle: 115
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Rt 202 & Rt 926

Phase	Duration	Phase	Duration
Ø1	76 s	Ø4	38 s
Ø2	76 s	Ø5	13 s
Ø3	76 s	Ø6	76 s

Lanes, Volumes, Timings Existing Weekday Afternoon Peak Hour
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McMahon Associates, Inc.
3: Rt 202 & Rt 926

Robinson Tract
Existing Weekday Afternoon Peak Hour

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↔	↘	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (veh/h)	451	204	27	199	221	57	29	1551	121	79	1451	128
Future Volume (veh/h)	451	204	27	199	221	57	29	1551	121	79	1451	128
Initial Q (Qb), veh	3	5	0	0	0	0	0	0	0	0	160	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	1841	1959	1959	1949	1935	1968	1949	1906	1997	1800	1744	1744
Adj Flow Rate, veh/h	352	369	28	205	228	59	30	1599	125	81	1496	132
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	2	2	0	1	4	0	3	2	0	4	4
Cap, veh/h	361	396	6	269	280	241	55	1654	773	88	1559	57
Arrive On Green	0.21	0.21	0.20	0.14	0.14	0.14	0.03	0.46	0.46	0.05	0.48	0.47
Sat Flow, veh/h	1753	1798	136	1856	1935	1668	1856	3622	1693	1714	3082	270
Grp Volume(v), veh/h	352	0	397	205	228	59	30	1599	125	81	799	829
Grp Sat Flow(s),veh/h/ln	1753	0	1934	1856	1935	1668	1856	1811	1693	1714	1657	1695
Q Serve(g_s), s	31.0	0.0	31.9	16.5	17.8	4.9	2.5	66.8	6.7	7.3	74.4	74.4
Cycle Q Clear(g_c), s	31.0	0.0	31.9	16.5	17.8	4.9	2.5	66.8	6.7	7.3	74.4	74.4
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	361	0	402	269	280	241	55	1654	773	88	792	824
V/C Ratio(X)	0.98	0.00	0.99	0.76	0.81	0.24	0.54	0.97	0.16	0.92	1.01	1.01
Avail Cap(c_a), veh/h	361	0	398	382	398	343	95	1654	773	88	792	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.8	0.0	61.8	63.9	64.5	59.0	74.4	41.1	24.8	73.4	40.6	40.6
Incr Delay (d2), s/veh	40.8	0.0	41.9	5.6	8.4	0.5	8.1	15.6	0.4	69.4	34.2	32.8
Initial Q Delay(d3),s/veh	19.1	0.0	39.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	363.5	349.6
%ile BackOfQ(95%),veh/ln	26.9	0.0	32.0	12.8	14.3	3.7	2.3	41.4	5.0	8.5	126.6	127.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.6	0.0	142.9	69.5	72.9	59.5	82.5	56.7	25.2	142.8	438.2	422.9
LnGrp LOS	F	A	F	E	E	E	F	E	C	F	F	F
Approach Vol, veh/h	749			492			1754				1709	
Approach Delay, s/veh	132.9			69.9			54.9				416.8	
Approach LOS	F			E			D				F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.0	76.0		28.5	9.6	79.4		38.0				
Change Period (Y+Rc), s	6.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	70.0	70.0		31.0	7.0	70.0		31.0				
Max Q Clear Time (g_c+1) s	69.3			20.3	5.0	76.9		33.9				
Green Ext Time (p_c), s	0.0	0.7		1.2	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 200.4
HCM 6th LOS F

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary Existing Weekday Afternoon Peak Hour
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McMahon Associates, Inc.

Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

Existing Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↓	↗	↘	↑	↗	↘	↑	↗
Traffic Volume (veh/h)	120	129	61	27	43	59	0	1993	46	0	1925	131
Future Volume (veh/h)	120	129	61	27	43	59	0	1993	46	0	1925	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	2036	1778	1849	1849	0	1722	1849	0	1869	1944
Adj Flow Rate, veh/h	124	133	63	28	44	61	0	2055	47	0	1985	135
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	2	0	0	0	0	4	0	0	3	3
Cap, veh/h	288	408	359	246	138	192	0	2276	1090	0	2471	1146
Arrive On Green	0.20	0.20	0.21	0.20	0.20	0.17	0.00	0.70	0.70	0.00	0.70	0.70
Sat Flow, veh/h	1424	2066	1726	1191	701	972	0	3357	1567	0	3645	1647
Grp Volume(v), veh/h	124	133	63	28	0	105	0	2055	47	0	1985	135
Grp Sat Flow(s),veh/h/ln	1424	2066	1726	1191	0	1674	0	1635	1567	0	1776	1647
Q Serve(g_s), s	7.6	5.2	2.8	1.9	0.0	5.1	0.0	48.1	0.9	0.0	36.0	2.5
Cycle Q Clear(g_c), s	12.2	5.2	2.8	7.1	0.0	5.1	0.0	48.1	0.9	0.0	36.0	2.5
Prop In Lane	1.00		1.00	1.00		0.58	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	288	408	359	246	0	330	0	2276	1090	0	2471	1146
V/C Ratio(X)	0.43	0.33	0.18	0.11	0.00	0.32	0.00	0.90	0.04	0.00	0.80	0.12
Avail Cap(c_a), veh/h	388	553	480	330	0	448	0	2276	1090	0	2471	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	32.2	30.4	35.2	0.0	32.9	0.0	11.6	4.5	0.0	9.8	4.7
Incr Delay (d2), s/veh	1.0	0.5	0.2	0.2	0.0	0.5	0.0	6.4	0.1	0.0	2.9	0.2
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	4.9	4.7	2.1	1.0	0.0	3.8	0.0	20.2	0.4	0.0	16.1	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	32.6	30.6	35.4	0.0	33.4	0.0	18.1	4.5	0.0	12.7	4.9
LnGrp LOS	D	C	C	D	A	C	A	B	A	A	B	A
Approach Vol, veh/h		320			133			2102			2120	
Approach Delay, s/veh		34.4			33.9			17.8			12.2	
Approach LOS		C			C			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		70.0		23.4		70.0		23.4				
Change Period (Y+Rc), s		7.0		8.0		7.0		8.0				
Max Green Setting (Gmax), s		63.0		22.0		63.0		22.0				
Max Q Clear Time (g_c+1), s		38.5		9.6		50.6		14.7				
Green Ext Time (p_c), s		24.4		0.4		12.4		0.7				
Intersection Summary												
HCM 6th Ctrl Delay			16.8									
HCM 6th LOS			B									

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	692	37	20	357	16	34
Future Volume (vph)	692	37	20	357	16	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	14
Grade (%)	8%			-8%	-1%	
Storage Length (ft)		350	120		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1678	1567	1637	1817	1719	1505
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1678	1567	1637	1817	1719	1505
Link Speed (mph)	45			45	25	
Link Distance (ft)	2436			2349	414	
Travel Time (s)	36.9			35.6	11.3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	0%	5%	3%	0%	9%
Adj. Flow (vph)	721	39	21	372	17	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	721	39	21	372	17	35
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	692	37	20	357	16	34
Future Vol, veh/h	692	37	20	357	16	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	120	-	0	0
Veh in Median Storage	#	-	-	0	0	-
Grade, %	8	-	-	-8	-1	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	0	5	3	0	9
Mvmt Flow	721	39	21	372	17	35

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	760
Stage 1	-	-	721
Stage 2	-	-	414
Critical Hdwy	-	4.3	6.2
Critical Hdwy Stg 1	-	-	5.2
Critical Hdwy Stg 2	-	-	5.2
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	653	263
Stage 1	-	-	563
Stage 2	-	-	780
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	653	255
Mov Cap-2 Maneuver	-	-	255
Stage 1	-	-	563
Stage 2	-	-	755

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	15.7
HCM LOS			C

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	255	451	-	-	653	-
HCM Lane V/C Ratio	0.065	0.079	-	-	0.032	-
HCM Control Delay (s)	20.1	13.7	-	-	10.7	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0.1	-

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Volume (vph)	0	0	24	0	0	11	32	2004	46	89	1701	202
Future Volume (vph)	0	0	24	0	0	11	32	2004	46	89	1701	202
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	
Frt			0.865			0.865	0.997			0.984		
Flt Protected						0.950			0.950			
Satd. Flow (prot)	0	0	1773	0	0	1573	1636	3249	0	1678	3323	0
Flt Permitted						0.950		0.950				
Satd. Flow (perm)	0	0	1773	0	0	1573	1636	3249	0	1678	3323	0
Link Speed (mph)			35			35		45		45		
Link Distance (ft)			553			858		3154		1356		
Travel Time (s)			10.8			16.7		47.8		20.5		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	1%
Adj. Flow (vph)	0	0	24	0	0	11	33	2045	47	91	1736	206
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	24	0	0	11	33	2092	0	91	1942	0
Sign Control		Stop			Stop			Free		Free		

Intersection Summary
Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Vol, veh/h	0	0	24	0	0	11	32	2004	46	89	1701	202
Future Vol, veh/h	0	0	24	0	0	11	32	2004	46	89	1701	202
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	350	-	-	380	-	-
Veh in Median Storage, #	0	-	-	-	0	-	-	0	-	0	-	0
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	1
Mvmt Flow	0	0	24	0	0	11	33	2045	47	91	1736	206

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	-	-	971	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	7.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.9	-
Pot Cap-1 Maneuver	0	0	264	0
Stage 1	0	0	-	0
Stage 2	0	0	-	0
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	264	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20	22.1	0.3	1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	326	-	-	264	222	288	-
HCM Lane V/C Ratio	0.1	-	-	0.093	0.051	0.315	-
HCM Control Delay (s)	17.3	-	-	20	22.1	23.2	-
HCM Lane LOS	C	-	-	C	C	C	-
HCM 95th %tile Q(veh)	0.3	-	-	0.3	0.2	1.3	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	20	0	5	229	1	4
Future Volume (vph)	20	0	5	229	1	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	1705	0	0	1756	1636	1414
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	1705	0	0	1756	1636	1414
Link Speed (mph)	35			35	35	
Link Distance (ft)	385			553	359	
Travel Time (s)	7.5			10.8	7.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	27	0	7	305	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	0	312	1	5
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	20	0	5	229	1	4
Future Vol, veh/h	20	0	5	229	1	4
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	0
Veh in Median Storage#	-	-	-	-	0	0
Grade, %	4	-	-	-4	2	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	27	0	7	305	1	5

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	27
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3
Pot Cap-1 Maneuver	-	-	1175
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1175
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	8.6
HCM LOS			A

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	714	1120	-	-	1175	-
HCM Lane V/C Ratio	0.002	0.005	-	-	-0.006	-
HCM Control Delay (s)	10.1	8.2	-	-	8.1	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Volume (vph)	20	0	0	230	0	0
Future Volume (vph)	20	0	0	230	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1773	0	0	1809	1818	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	1809	1818	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	2826			385	323	
Travel Time (s)	55.1			7.5	6.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	27	0	0	307	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	0	307	0	0
Sign Control	Free			Free	Stop	

Intersection Summary

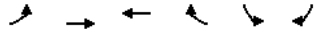
Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Vol, veh/h	20	0	0	230	0	0
Future Vol, veh/h	20	0	0	230	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3			-3	-2	
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	27	0	0	307	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	334
Stage 1	-	-	27
Stage 2	-	-	307
Critical Hdwy	-	-	6
Critical Hdwy Stg 1	-	-	5
Critical Hdwy Stg 2	-	-	5
Follow-up Hdwy	-	-	3
Pot Cap-1 Maneuver	0	0	788
Stage 1	0	0	1169
Stage 2	0	0	888
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	788
Mov Cap-2 Maneuver	-	-	788
Stage 1	-	-	1169
Stage 2	-	-	888

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Volume (vph)	3	32	243	11	1	2
Future Volume (vph)	3	32	243	11	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		3%	-3%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.899	
Flt Protected		0.996			0.988	
Satd. Flow (prot)	0	1648	1679	0	1485	0
Flt Permitted		0.996			0.988	
Satd. Flow (perm)	0	1648	1679	0	1485	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		591	2826		385	
Travel Time (s)		11.5	55.1		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Adj. Flow (vph)	4	43	324	15	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	47	339	0	4	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	3	32	243	11	1	2
Future Vol, veh/h	3	32	243	11	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	3	-3	-	1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	4	43	324	15	1	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	339	0	332
Stage 1	-	-	332
Stage 2	-	-	51
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3.1
Pot Cap-1 Maneuver	19	-	747
Stage 1	-	-	820
Stage 2	-	-	1132
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	19	-	747
Mov Cap-2 Maneuver	-	-	692
Stage 1	-	-	817
Stage 2	-	-	1132

Approach	EB	WB	SB
HCM Control Delay, s	8.8	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	919	-	-	-	728
HCM Lane V/C Ratio	0.004	-	-	-	-0.005
HCM Control Delay (s)	8.9	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↓	↔	↔
Traffic Volume (vph)	198	47	143	17	18	168
Future Volume (vph)	198	47	143	17	18	168
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.974		0.986			
Flt Protected	0.961					0.995
Satd. Flow (prot)	1665	0	1759	0	0	1759
Flt Permitted	0.961					0.995
Satd. Flow (perm)	1665	0	1759	0	0	1759
Link Speed (mph)	35		35			35
Link Distance (ft)	591		636			619
Travel Time (s)	11.5		12.4			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	2%
Adj. Flow (vph)	222	53	161	19	20	189
Shared Lane Traffic (%)						
Lane Group Flow (vph)	275	0	180	0	0	209
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	5.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↓	↔	↔
Traffic Vol, veh/h	198	47	143	17	18	168
Future Vol, veh/h	198	47	143	17	18	168
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		-	
Grade, %	0		-		-	
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	2	1	0	0	2
Mvmt Flow	222	53	161	19	20	189

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	400	171	0
Stage 1	171	-	-
Stage 2	229	-	-
Critical Hdwy	6.41	6.22	-
Critical Hdwy Stg 1	5.41	-	-
Critical Hdwy Stg 2	5.41	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuve	692	929	-
Stage 1	996	-	-
Stage 2	934	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuve	677	929	-
Mov Cap-2 Maneuve	677	-	-
Stage 1	996	-	-
Stage 2	914	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	714	1042	-
HCM Lane V/C Ratio	-	-	0.386	0.019	-
HCM Control Delay (s)	-	-	13.2	8.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.1	-

Appendix P

Future (2025) Capacity/Level-of-Service Without Development Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	80	642	5	8	322	37	9	102	42	8	127	199
Future Volume (vph)	80	642	5	8	322	37	9	102	42	8	127	199
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.986			0.963			0.920		
Frt Protected	0.995			0.999			0.997			0.999		
Satd. Flow (prot)	0	1626	0	0	1547	0	0	1587	0	0	1514	0
Frt Permitted	0.916			0.986			0.888			0.992		
Satd. Flow (perm)	0	1497	0	0	1527	0	0	1413	0	0	1503	0
Right Turn on Red	Yes			Yes			No			No		
Satd. Flow (RTOR)	1			15			25			35		
Link Speed (mph)	45			45			25			35		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	82	662	5	8	332	38	9	105	43	8	131	205
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	749	0	0	378	0	0	157	0	0	344	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%		23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0			-1.0			-1.0		
Total Lost Time (s)	5.0			5.0			5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Natural Cycle:	60
Control Type:	Semi Act-Uncoordinated

Splits and Phases: 1: New St & Rt 926

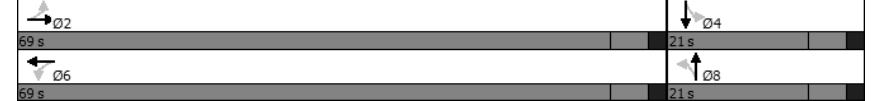


Table with 13 columns (EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR) and 40 rows of traffic data including Lane Configurations, Traffic Volume, Future Volume, Initial Q, Ped-Bike Adj, Parking Bus, Work Zone, Adj Sat Flow, Adj Flow Rate, Peak Hour Factor, Percent Heavy Veh, Cap, Arrive On Green, Sat Flow, Grp Volume, Grp Sat Flow, Q Serve, Cycle Q Clear, Prop In Lane, Lane Grp Cap, V/C Ratio, Avail Cap, HCM Platoon Ratio, Upstream Filter, Uniform Delay, Incr Delay, Initial Q Delay, %ile BackOfQ, Unsig. Movement Delay, LnGrp Delay, Approach Vol, Approach Delay, Approach LOS, and Timer - Assigned Phs.

Intersection Summary table with 3 columns: HCM 6th Ctrl Delay (34.3), HCM 6th LOS (C).

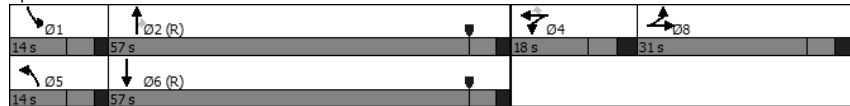
Table with 13 columns (EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR) and 40 rows of traffic data including Lane Group, Lane Configurations, Traffic Volume, Future Volume, Ideal Flow, Lane Width, Grade, Storage Length, Storage Lanes, Taper Length, Lane Util. Factor, Flt, Flt Protected, Satd. Flow, Flt Permitted, Satd. Flow, Right Turn on Red, Satd. Flow (RTOR), Link Speed, Link Distance, Travel Time, Peak Hour Factor, Heavy Vehicles, Adj. Flow, Shared Lane Traffic, Lane Group Flow, Number of Detectors, Detector Template, Leading Detector, Trailing Detector, Detector 1 Position, Detector 1 Size, Detector 1 Type, Detector 1 Channel, Detector 1 Extend, Detector 1 Queue, Detector 1 Delay, Turn Type, Protected Phases, Permitted Phases, Detector Phase, Switch Phase, Minimum Initial, Minimum Split, Total Split, Total Split (%), Maximum Green, Yellow Time, All-Red Time, Lost Time Adjust.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0					7.0	7.0			7.0	
Flash Dont Walk (s)	31.0	31.0					21.0	21.0			21.0	
Pedestrian Calls (#/hr)	0	0					0	0			0	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	522	228	8	146	163	56	12	1630	156	56	1537	189
Future Volume (veh/h)	522	228	8	146	163	56	12	1630	156	56	1537	189
Initial Q (Qb), veh	8	7	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	1869	1914	1914	1892	1892	1923	1707	1864	1953	1589	1674	1674
Adj Flow Rate, veh/h	390	441	8	151	168	58	12	1680	161	58	1585	195
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	5	5	4	4	7	17	6	5	15	9	9
Cap, veh/h	371	397	2	180	189	163	29	1594	745	88	1401	170
Arrive On Green	0.21	0.21	0.20	0.10	0.10	0.10	0.02	0.45	0.45	0.06	0.49	0.48
Sat Flow, veh/h	1780	1874	34	1802	1892	1630	1626	3541	1655	1514	2855	346
Grp Volume(v), veh/h	390	0	449	151	168	58	12	1680	161	58	873	907
Grp Sat Flow(s),veh/h/ln	1780	0	1908	1802	1892	1630	1626	1771	1655	1514	1590	1611
Q Serve(g_s), s	25.0	0.0	25.0	9.9	10.5	4.0	0.9	54.0	7.1	4.5	58.9	58.9
Cycle Q Clear(g_c), s	25.0	0.0	25.0	9.9	10.5	4.0	0.9	54.0	7.1	4.5	58.9	58.9
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	371	0	398	180	189	163	29	1594	745	88	780	791
V/C Ratio(X)	1.05	0.00	1.13	0.84	0.89	0.36	0.42	1.05	0.22	0.66	1.12	1.15
Avail Cap(c_a), veh/h	371	0	398	180	189	163	122	1594	745	114	780	791
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	47.5	53.0	53.3	50.4	58.3	33.0	20.1	55.3	30.6	30.7
Incr Delay (d2), s/veh	60.9	0.0	84.2	27.9	36.2	1.3	9.4	38.4	0.7	8.6	69.9	81.0
Initial Q Delay(d3),s/veh	77.7	0.0	63.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	82.4	0.0	37.1	9.7	11.0	3.0	0.8	40.4	5.0	3.4	49.6	54.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	186.1	0.0	195.0	80.9	89.5	51.7	67.8	71.4	20.8	64.0	100.4	111.6
LnGrp LOS	F	A	F	F	F	D	E	F	C	E	F	F
Approach Vol, veh/h	839			377			1853			1838		
Approach Delay, s/veh	190.8			80.2			66.9			104.8		
Approach LOS	F			F			E			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	59.0		18.0	7.1	63.9		31.0				
Change Period (Y+Rc), s	6.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	80	51.0		11.0	8.0	51.0		24.0				
Max Q Clear Time (g_c+1), s	70	56.5		13.0	3.4	61.4		27.5				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 103.3
 HCM 6th LOS F

Notes

User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↘	↔	↑	↘	↔	↑	↘	↔	↑	↘
Traffic Volume (vph)	141	149	34	86	138	61	0	2079	56	0	1947	297
Future Volume (vph)	141	149	34	86	138	61	0	2079	56	0	1947	297
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	12	12	14	12	12	16
Grade (%)		-5%			2%			2%			-3%	
Storage Length (ft)	200		200	350		0	0		220	0		200
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	75			100			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.850		0.954				0.850			0.850	
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1598	1765	1434	1628	1687	0	0	3225	1616	0	3214	1676
Flt Permitted	0.483			0.599								
Satd. Flow (perm)	813	1765	1434	1026	1687	0	0	3225	1616	0	3214	1676
Right Turn on Red			No			No		No			No	
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		637			560			1356			940	
Travel Time (s)		17.4			15.3			20.5			14.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	8%	13%	4%	9%	4%	0%	5%	0%	0%	8%	5%
Adj. Flow (vph)	148	157	36	91	145	64	0	2188	59	0	2049	313
Shared Lane Traffic (%)												
Lane Group Flow (vph)	148	157	36	91	209	0	0	2188	59	0	2049	313
Number of Detectors	1	4	1	1	4			2	1		2	1
Detector Template		Right						Right			Right	
Leading Detector (ft)	35	68	30	35	68			490	30		490	30
Trailing Detector (ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Position(ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Size(ft)	40	6	40	40	6			40	40		40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 2 Position(ft)		15			15			450			450	
Detector 2 Size(ft)		6			6			40			40	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Detector 3 Position(ft)					36							
Detector 3 Size(ft)					6							
Detector 3 Type					Cl+Ex							
Detector 3 Channel												
Detector 3 Extend (s)					0.0							
Detector 4 Position(ft)								62				
Detector 4 Size(ft)					6			6				
Detector 4 Type					Cl+Ex			Cl+Ex				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 4 Channel												
Detector 4 Extend (s)		0.0			0.0							
Turn Type	Perm	NA	Perm	Perm	NA		NA	Perm		NA	Perm	
Protected Phases		8			4		6				2	
Permitted Phases	8		8	4			6			6		2
Detector Phase	8	8	8	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		22.0	22.0		22.0	22.0	
Total Split (s)	34.0	34.0	34.0	34.0	34.0		86.0	86.0		86.0	86.0	
Total Split (%)	28.3%	28.3%	28.3%	28.3%	28.3%		71.7%	71.7%		71.7%	71.7%	
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		79.0	79.0		79.0	79.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	7.0	7.0	8.0	7.0	7.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		48.0	48.0		48.0	48.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		24.0	24.0		24.0	24.0	
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	

Intersection Summary

Area Type: Other

Cycle Length: 120

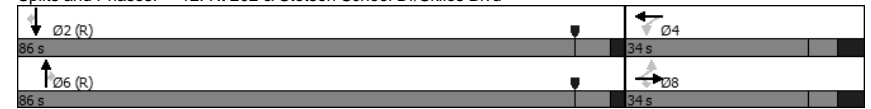
Actuated Cycle Length: 120

Offset: 83 (69%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 12: Rt 202 & Stetson School Dr/Skiles Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↘	↗	↗	↘	↗	↗
Traffic Volume (veh/h)	141	149	34	86	138	61	0	2079	56	0	1947	297
Future Volume (veh/h)	141	149	34	86	138	61	0	2079	56	0	1947	297
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1901	1947	1874	1722	1717	1717	0	1707	1849	0	1798	1914
Adj Flow Rate, veh/h	148	157	36	91	145	64	0	2188	59	0	2049	313
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	8	13	4	9	9	0	5	0	0	8	5
Cap, veh/h	204	438	344	242	254	112	0	2163	1045	0	2277	1082
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.00	0.67	0.67	0.00	0.67	0.67
Sat Flow, veh/h	1258	1947	1588	1156	1129	498	0	3330	1567	0	3506	1622
Grp Volume(v), veh/h	148	157	36	91	0	209	0	2188	59	0	2049	313
Grp Sat Flow(s),veh/h/ln	1258	1947	1588	1156	0	1628	0	1622	1567	0	1708	1622
Q Serve(g_s), s	13.8	8.2	2.2	8.6	0.0	13.7	0.0	80.0	1.6	0.0	59.9	9.6
Cycle Q Clear(g_c), s	27.0	8.2	2.2	16.8	0.0	13.7	0.0	80.0	1.6	0.0	59.9	9.6
Prop In Lane	1.00		1.00	1.00		0.31	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	204	438	344	242	0	366	0	2163	1045	0	2277	1082
V/C Ratio(X)	0.72	0.36	0.10	0.38	0.00	0.57	0.00	1.01	0.06	0.00	0.90	0.29
Avail Cap(c_a), veh/h	204	438	344	242	0	366	0	2163	1045	0	2277	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	39.2	37.7	46.3	0.0	41.5	0.0	20.0	6.9	0.0	16.7	8.3
Incr Delay (d2), s/veh	11.9	0.5	0.1	1.0	0.0	2.1	0.0	22.3	0.1	0.0	6.2	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	8.9	7.2	1.6	4.6	0.0	9.7	0.0	40.7	0.9	0.0	28.8	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.2	39.7	37.8	47.2	0.0	43.6	0.0	42.3	7.0	0.0	22.9	8.9
LnGrp LOS	E	D	D	D	A	D	A	F	A	A	C	A
Approach Vol, veh/h	341			300			2247			2362		
Approach Delay, s/veh	50.6			44.7			41.3			21.0		
Approach LOS	D			D			D			C		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	86.0		34.0		86.0		34.0					
Change Period (Y+Rc), s	7.0		8.0		7.0		8.0					
Max Green Setting (Gmax), s	79.0		26.0		79.0		26.0					
Max Q Clear Time (g_c+1), s	62.4		19.3		82.5		29.5					
Green Ext Time (p_c), s	16.5		0.8		0.0		0.0					
Intersection Summary												
HCM 6th Ctrl Delay	33.0											
HCM 6th LOS	C											

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	678	32	13	337	26	40
Future Volume (vph)	678	32	13	337	26	40
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	14
Grade (%)	8%			-8%	-1%	
Storage Length (ft)		350	120		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1662	1521	1719	1733	1719	1592
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1662	1521	1719	1733	1719	1592
Link Speed (mph)	45			45	25	
Link Distance (ft)	2436			2349	414	
Travel Time (s)	36.9			35.6	11.3	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	3%	0%	8%	0%	3%
Adj. Flow (vph)	699	33	13	347	27	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	699	33	13	347	27	41
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	678	32	13	337	26	40
Future Vol, veh/h	678	32	13	337	26	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None		- None
Storage Length	-	350	120	-	0	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	8	-	-	-8	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	4	3	0	8	0	3
Mvmt Flow	699	33	13	347	27	41

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	732
Stage 1	-	-	699
Stage 2	-	-	373
Critical Hdwy	-	4.3	6.2
Critical Hdwy Stg 1	-	-	5.2
Critical Hdwy Stg 2	-	-	5.2
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	669	286
Stage 1	-	-	577
Stage 2	-	-	815
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	669	281
Mov Cap-2 Maneuver	-	-	281
Stage 1	-	-	577
Stage 2	-	-	800

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	15.7
HCM LOS			C

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	281	470	-	-	669	-
HCM Lane V/C Ratio	0.095	0.088	-	-	0.02	-
HCM Control Delay (s)	19.2	13.4	-	-	10.5	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.1	-

	↖	→	↘	↙	←	↖	↙	↗	↘	↖	↙	↗	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑↑	
Traffic Volume (vph)	0	0	27	0	0	34	32	2124	70	53	1827	154	
Future Volume (vph)	0	0	27	0	0	34	32	2124	70	53	1827	154	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12	
Grade (%)		-1%			-2%			2%				-3%	
Storage Length (ft)	0		0	0		0	350		0	380		0	
Storage Lanes	0		1	0		1	1		0	1		0	
Taper Length (ft)	75			75			75			75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95		
Frt			0.865			0.865	0.995			0.988			
Flt Protected							0.950			0.950			
Satd. Flow (prot)	0	0	1773	0	0	1379	1488	3200	0	1629	3160	0	
Flt Permitted							0.950			0.950			
Satd. Flow (perm)	0	0	1773	0	0	1379	1488	3200	0	1629	3160	0	
Link Speed (mph)			35			35		45		45			
Link Distance (ft)			499			858		3154		1356			
Travel Time (s)			9.7			16.7		47.8		20.5			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	14%	10%	5%	14%	3%	9%	3%	
Adj. Flow (vph)	0	0	28	0	0	35	33	2213	73	55	1903	160	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	0	28	0	0	35	33	2286	0	55	2063	0	
Sign Control		Stop			Stop			Free			Free		

Intersection Summary
Area Type: Other
Control Type: Unsignalized

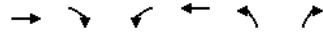
Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑↑
Traffic Vol, veh/h	0	0	27	0	0	34	32	2124	70	53	1827	154
Future Vol, veh/h	0	0	27	0	0	34	32	2124	70	53	1827	154
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	0	350	-	-	380	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	14	10	5	14	3	9	3
Mvmt Flow	0	0	28	0	0	35	33	2213	73	55	1903	160

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	-	-	1032	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	7.2	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.9	-
Pot Cap-1 Maneuver	0	0	*386	0
Stage 1	0	0	0	0
Stage 2	0	0	0	0
Platoon blocked, %			1	1
Mov Cap-1 Maneuver	-	-	*386	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.1	24	0.2	0.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 449	-	-	386	225	* 291	-
HCM Lane V/C Ratio	0.074	-	-	0.157	0.19	-	-
HCM Control Delay (s)	13.7	-	-	15.1	24	20.2	-
HCM Lane LOS	B	-	-	C	C	C	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.5	0.7	-

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	27	1	8	178	1	0
Future Volume (vph)	27	1	8	178	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997					
Flt Protected				0.998	0.950	
Satd. Flow (prot)	1700	0	0	1722	1636	1663
Flt Permitted				0.998	0.950	
Satd. Flow (perm)	1700	0	0	1722	1636	1663
Link Speed (mph)	35			35	35	
Link Distance (ft)	108			499	469	
Travel Time (s)	2.1			9.7	9.1	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	39	1	11	254	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	0	265	1	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

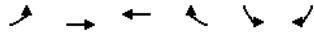
Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	27	1	8	178	1	0
Future Vol, veh/h	27	1	8	178	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	0
Veh in Median Storage#	-	-	-	-	0	0
Grade, %	4			-4	2	
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	39	1	11	254	1	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	40
Stage 1	-	-	40
Stage 2	-	-	276
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1163	751
Stage 1	-	-	1144
Stage 2	-	-	861
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1163	743
Mov Cap-2 Maneuver	-	-	743
Stage 1	-	-	1144
Stage 2	-	-	852

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

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	743	-	-	-	1163	-
HCM Lane V/C Ratio	0.002	-	-	-	0.01	-
HCM Control Delay (s)	9.9	0	-	-	8.1	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	34	12	151	28	15	12
Future Volume (vph)	34	12	151	28	15	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.940	
Flt Protected		0.964			0.973	
Satd. Flow (prot)	0	1676	1748	0	1614	0
Flt Permitted		0.964			0.973	
Satd. Flow (perm)	0	1676	1748	0	1614	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		322	108		349	
Travel Time (s)		6.3	2.1		9.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	2%	0%	3%	2%	2%	2%
Adj. Flow (vph)	49	17	216	40	21	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	66	256	0	38	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection

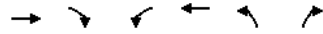
Int Delay, s/veh 2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	34	12	151	28	15	12
Future Vol, veh/h	34	12	151	28	15	12
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	0	-
Grade, %	-	4	-4	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	0	3	2	2	2
Mvmt Flow	49	17	216	40	21	17

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	256	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	881	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	881	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	6.5	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	981	-	-	-	763
HCM Lane V/C Ratio	0.05	-	-	-	-0.051
HCM Control Delay (s)	8.9	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	47	0	0	163	0	0
Future Volume (vph)	47	0	0	163	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1714	0	0	1715	1879	0
Flt Permitted						
Satd. Flow (perm)	1714	0	0	1715	1879	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	2929			322	436	
Travel Time (s)	57.1			6.3	8.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	67	0	0	233	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	0	233	0	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

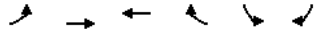
Intersection
 Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	47	0	0	163	0	0
Future Vol, veh/h	47	0	0	163	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3	-	-	-3	-2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	67	0	0	233	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	300
Stage 1	-	-	67
Stage 2	-	-	233
Critical Hdwy	-	-	6
Critical Hdwy Stg 1	-	-	5
Critical Hdwy Stg 2	-	-	5
Follow-up Hdwy	-	-	3
Pot Cap-1 Maneuver	0	0	823
Stage 1	-	0	1124
Stage 2	-	0	955
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	823
Mov Cap-2 Maneuver	-	-	823
Stage 1	-	-	1124
Stage 2	-	-	955

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Volume (vph)	0	54	234	3	5	2
Future Volume (vph)	0	54	234	3	5	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		3%	-3%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.959	
Flt Protected					0.966	
Satd. Flow (prot)	0	1576	1643	0	1441	0
Flt Permitted					0.966	
Satd. Flow (perm)	0	1576	1643	0	1441	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		496	2929		306	
Travel Time (s)		9.7	57.1		8.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	3%	50%	0%	25%
Adj. Flow (vph)	0	77	334	4	7	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	77	338	0	10	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	54	234	3	5	2
Future Vol, veh/h	0	54	234	3	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	3	-3	-	1	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	5	3	50	0	25
Mvmt Flow	0	77	334	4	7	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	338	0	413
Stage 1	-	-	336
Stage 2	-	-	77
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	20	-	665
Stage 1	-	-	816
Stage 2	-	-	1099
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	20	-	665
Mov Cap-2 Maneuver	-	-	665
Stage 1	-	-	816
Stage 2	-	-	1099

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	920	-	-	-	671
HCM Lane V/C Ratio	-	-	-	-	-0.015
HCM Control Delay (s)	0	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↓	↔	↔
Traffic Volume (vph)	213	23	178	38	15	131
Future Volume (vph)	213	23	178	38	15	131
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987		0.976			
Flt Protected	0.957					0.995
Satd. Flow (prot)	1648	0	1728	0	0	1761
Flt Permitted	0.957					0.995
Satd. Flow (perm)	1648	0	1728	0	0	1761
Link Speed (mph)	35		35			35
Link Distance (ft)	496		2543			619
Travel Time (s)	9.7		49.5			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	14%	2%	0%	8%	1%
Adj. Flow (vph)	239	26	200	43	17	147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	265	0	243	0	0	164
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	5.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↓	↔	↔
Traffic Vol, veh/h	213	23	178	38	15	131
Future Vol, veh/h	213	23	178	38	15	131
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		-	
Grade, %	0		-		-	
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	14	2	0	8	1
Mvmt Flow	239	26	200	43	17	147

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	403	222	0
Stage 1	222	-	-
Stage 2	181	-	-
Critical Hdwy	6.42	6.34	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.2	-
Pot Cap-1 Maneuve	689	839	-
Stage 1	941	-	-
Stage 2	984	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuve	676	839	-
Mov Cap-2 Maneuve	676	-	-
Stage 1	941	-	-
Stage 2	965	-	-

Approach	WB	NB	SB
HCM Control Delay, s	5.5	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NB	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	689	956	-
HCM Lane V/C Ratio	-	-	0.385	0.018	-
HCM Control Delay (s)	-	-	13.5	8.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	57	659	13	20	317	31	9	87	38	51	171	150
Future Volume (vph)	57	659	13	20	317	31	9	87	38	51	171	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.989			0.962			0.946		
Frt Protected	0.996			0.997			0.997			0.993		
Satd. Flow (prot)	0	1625	0	0	1551	0	0	1583	0	0	1530	0
Frt Permitted	0.941			0.947			0.972			0.939		
Satd. Flow (perm)	0	1536	0	0	1473	0	0	1544	0	0	1447	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	2			8								
Link Speed (mph)	45			45			25			35		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	59	679	13	21	327	32	9	90	39	53	176	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	751	0	0	380	0	0	138	0	0	384	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		36.0	36.0		36.0	36.0	
Total Split (%)	65.7%	65.7%		65.7%	65.7%		34.3%	34.3%		34.3%	34.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0			-1.0			-1.0		
Total Lost Time (s)	5.0			5.0			5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary												
Area Type:	Other											
Cycle Length:	105											
Actuated Cycle Length:	103.9											
Natural Cycle:	70											
Control Type:	Semi Act-Uncoordinated											

Splits and Phases: 1: New St & Rt 926





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	31.0	31.0						21.0	21.0		21.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	

Intersection Summary

Area Type: Other

Cycle Length: 120

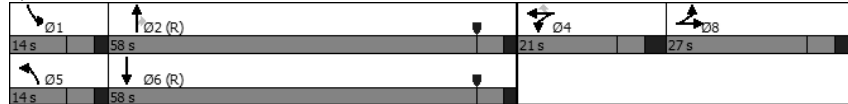
Actuated Cycle Length: 120

Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↔	↗	↖	↔	↗	↖	↔	↗	↖	↔	↗
Traffic Volume (veh/h)	444	210	28	205	228	66	30	1626	125	89	1531	134
Future Volume (veh/h)	444	210	28	205	228	66	30	1626	125	89	1531	134
Initial Q (Qb), veh	3	5	0	0	0	0	0	0	0	0	160	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	1841	1959	1959	1949	1935	1968	1949	1906	1997	1800	1744	1744
Adj Flow Rate, veh/h	352	365	29	211	235	68	31	1676	129	92	1578	138
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	2	2	0	1	4	0	3	2	0	4	4
Cap, veh/h	307	336	5	232	242	208	60	1600	748	129	1576	60
Arrive On Green	0.17	0.17	0.17	0.13	0.13	0.13	0.03	0.44	0.44	0.08	0.48	0.48
Sat Flow, veh/h	1753	1791	142	1856	1935	1668	1856	3622	1693	1714	3085	267
Grp Volume(v), veh/h	352	0	394	211	235	68	31	1676	129	92	1576	841
Grp Sat Flow(s),veh/h/ln	1753	0	1933	1856	1935	1668	1856	1811	1693	1714	1657	1696
Q Serve(g_s), s	21.0	0.0	21.0	13.5	14.5	4.5	2.0	53.0	5.5	6.3	58.1	58.1
Cycle Q Clear(g_c), s	21.0	0.0	21.0	13.5	14.5	4.5	2.0	53.0	5.5	6.3	58.1	58.1
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	307	0	342	232	242	208	60	1600	748	129	802	834
V/C Ratio(X)	1.15	0.00	1.15	0.91	0.97	0.33	0.52	1.05	0.17	0.72	1.05	1.05
Avail Cap(c_a), veh/h	307	0	338	232	242	208	139	1600	748	129	802	821
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	49.5	51.8	52.3	47.9	57.1	33.5	20.2	54.2	30.9	31.0
Incr Delay (d2), s/veh	97.4	0.0	96.9	35.6	49.8	0.9	6.7	36.1	0.5	17.2	45.2	45.0
Initial Q Delay(d3),s/veh	35.2	0.0	52.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	359.0	345.5
%ile BackOfQ(95%),veh/ln	28.7	0.0	33.2	13.1	15.4	3.4	1.8	39.9	4.0	5.9	122.0	123.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	182.1	0.0	199.1	87.5	102.0	48.8	63.8	69.6	20.7	71.4	435.1	421.4
LnGrp LOS	F	A	F	F	F	D	E	F	C	E	F	F
Approach Vol, veh/h	746				514			1836				1808
Approach Delay, s/veh	191.1				89.0			66.1				410.0
Approach LOS	F				F			E				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.0	58.0		21.0	8.9	63.1		27.0				
Change Period (Y+Rc), s	6.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	8.0	52.0		14.0	8.0	52.0		20.0				
Max Q Clear Time (g_c+I), s	8.0	55.5		17.0	4.5	60.6		23.5				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 214.3

HCM 6th LOS F

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↘	↗	↗	↘	↗	↗
Traffic Volume (veh/h)	186	142	61	59	44	65	0	2042	75	0	1998	165
Future Volume (veh/h)	186	142	61	59	44	65	0	2042	75	0	1998	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	2036	1778	1849	1849	0	1722	1849	0	1869	1944
Adj Flow Rate, veh/h	192	146	63	61	45	67	0	2105	77	0	2060	170
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	2	0	0	0	0	4	0	0	3	3
Cap, veh/h	292	448	388	245	145	216	0	2290	1097	0	2486	1153
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.19	0.00	0.70	0.70	0.00	0.70	0.70
Sat Flow, veh/h	1415	2066	1726	1177	671	998	0	3357	1567	0	3645	1647
Grp Volume(v), veh/h	192	146	63	61	0	112	0	2105	77	0	2060	170
Grp Sat Flow(s),veh/h/ln	1415	2066	1726	1177	0	1669	0	1635	1567	0	1776	1647
Q Serve(g_s), s	15.8	7.1	3.5	5.5	0.0	6.9	0.0	65.0	1.9	0.0	49.7	4.1
Cycle Q Clear(g_c), s	22.1	7.1	3.5	12.7	0.0	6.9	0.0	65.0	1.9	0.0	49.7	4.1
Prop In Lane	1.00		1.00	1.00		0.60	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	292	448	388	245	0	362	0	2290	1097	0	2486	1153
V/C Ratio(X)	0.66	0.33	0.16	0.25	0.00	0.31	0.00	0.92	0.07	0.00	0.83	0.15
Avail Cap(c_a), veh/h	292	448	388	245	0	362	0	2290	1097	0	2486	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(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	39.6	37.4	45.0	0.0	40.3	0.0	15.1	5.7	0.0	12.9	6.0
Incr Delay (d2), s/veh	5.3	0.4	0.2	0.5	0.0	0.5	0.0	7.4	0.1	0.0	3.4	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	0.1	6.7	2.8	3.0	0.0	5.3	0.0	28.9	1.0	0.0	23.7	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	40.0	37.6	45.5	0.0	40.7	0.0	22.6	5.8	0.0	16.2	6.3
LnGrp LOS	D	D	D	D	A	D	A	C	A	A	B	A
Approach Vol, veh/h		401			173			2182			2230	
Approach Delay, s/veh		46.3			42.4			22.0			15.5	
Approach LOS		D			D			C			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		89.0		31.0		89.0		31.0				
Change Period (Y+Rc), s		7.0		8.0		7.0		8.0				
Max Green Setting (Gmax), s		82.0		23.0		82.0		23.0				
Max Q Clear Time (g_c+1), s		52.2		15.2		67.5		24.6				
Green Ext Time (p_c), s		29.7		0.4		14.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				21.7								
HCM 6th LOS				C								

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	693	38	21	370	17	35
Future Volume (vph)	693	38	21	370	17	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	14
Grade (%)	8%			-8%	-1%	
Storage Length (ft)		350	120		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1678	1567	1637	1817	1719	1505
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1678	1567	1637	1817	1719	1505
Link Speed (mph)	45			45	25	
Link Distance (ft)	2436			2349	414	
Travel Time (s)	36.9			35.6	11.3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	0%	5%	3%	0%	9%
Adj. Flow (vph)	722	40	22	385	18	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	722	40	22	385	18	36
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	693	38	21	370	17	35
Future Vol, veh/h	693	38	21	370	17	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	120	-	0	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	8	-	-	-8	-1	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	0	5	3	0	9
Mvmt Flow	722	40	22	385	18	36

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	762
Stage 1	-	-	722
Stage 2	-	-	429
Critical Hdwy	-	4.3	6.2
Critical Hdwy Stg 1	-	-	5.2
Critical Hdwy Stg 2	-	-	5.2
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	652	257
Stage 1	-	-	563
Stage 2	-	-	768
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	652	248
Mov Cap-2 Maneuver	-	-	248
Stage 1	-	-	563
Stage 2	-	-	742

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	16
HCM LOS			C

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	248	451	-	-	652	-
HCM Lane V/C Ratio	0.071	0.081	-	-	0.034	-
HCM Control Delay (s)	20.6	13.7	-	-	10.7	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0.1	-

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Volume (vph)	0	0	45	0	0	42	50	2049	60	108	1779	196
Future Volume (vph)	0	0	45	0	0	42	50	2049	60	108	1779	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	
Frt			0.865			0.865	0.996			0.985		
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1573	1636	3246	0	1678	3326	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1573	1636	3246	0	1678	3326	0
Link Speed (mph)			35			35		45			45	
Link Distance (ft)			553			858		3154			1356	
Travel Time (s)			10.8			16.7		47.8			20.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	1%
Adj. Flow (vph)	0	0	46	0	0	43	51	2091	61	110	1815	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	46	0	0	43	51	2152	0	110	2015	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Vol, veh/h	0	0	45	0	0	42	50	2049	60	108	1779	196
Future Vol, veh/h	0	0	45	0	0	42	50	2049	60	108	1779	196
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	0	350	-	-	380	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	4	0	0	3
Mvmt Flow	0	0	46	0	0	43	51	2091	61	110	1815	200

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	-	-	1008	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	7.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.9	-
Pot Cap-1 Maneuver	0	0	*386	0
Stage 1	0	0	0	0
Stage 2	0	0	0	0
Platoon blocked, %			1	1
Mov Cap-1 Maneuver	-	-	*386	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	21.6	0.3	1.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 467	-	-	386	260	* 326	-
HCM Lane V/C Ratio	0.109	-	-	0.119	0.165	0.338	-
HCM Control Delay (s)	13.7	-	-	15.6	21.6	21.6	-
HCM Lane LOS	B	-	-	C	C	C	-
HCM 95th %tile Q(veh)	0.4	-	-	0.4	0.6	1.5	-

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	41	0	5	241	1	4
Future Volume (vph)	41	0	5	241	1	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	1705	0	0	1756	1636	1414
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	1705	0	0	1756	1636	1414
Link Speed (mph)	35			35	35	
Link Distance (ft)	85			553	359	
Travel Time (s)	1.7			10.8	7.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	55	0	7	321	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	0	0	328	1	5
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	41	0	5	241	1	4
Future Vol, veh/h	41	0	5	241	1	4
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	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	4	-	-	-4	2	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	55	0	7	321	1	5

Major/Minor

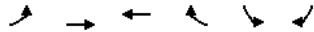
	Major1	Major2	Minor1
Conflicting Flow All	0	0	55
Stage 1	-	-	55
Stage 2	-	-	335
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1150	673
Stage 1	-	-	1124
Stage 2	-	-	802
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1150	668
Mov Cap-2 Maneuver	-	-	668
Stage 1	-	-	1124
Stage 2	-	-	796

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.2	8.8
HCM LOS			A

Minor Lane/Major Mvm

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	668	1078	-	-	1150	-
HCM Lane V/C Ratio	0.002	0.005	-	-	0.006	-
HCM Control Delay (s)	10.4	8.4	-	-	8.1	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	28	25	221	21	20	22
Future Volume (vph)	28	25	221	21	20	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-3%		0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.988		0.930	
Flt Protected		0.974			0.976	
Satd. Flow (prot)	0	1700	1786	0	1602	0
Flt Permitted		0.974			0.976	
Satd. Flow (perm)	0	1700	1786	0	1602	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		300	85		315	
Travel Time (s)		5.8	1.7		8.6	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	2%	0%	1%	2%	2%	2%
Adj. Flow (vph)	37	33	295	28	27	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	70	323	0	56	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	28	25	221	21	20	22
Future Vol, veh/h	28	25	221	21	20	22
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	-	0
Grade, %	-	4	-3	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	0	1	2	2	2
Mvmt Flow	37	33	295	28	27	29

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	323	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	31	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	31	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	4.8	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	931	-	-	-	-	709
HCM Lane V/C Ratio	0.04	-	-	-	-	-0.079
HCM Control Delay (s)	9	0	-	-	-	10.5
HCM Lane LOS	A	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.3



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Volume (vph)	49	0	0	243	0	0
Future Volume (vph)	49	0	0	243	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1773	0	0	1809	1818	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	1809	1818	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	2826			300	323	
Travel Time (s)	55.1			5.8	6.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	65	0	0	324	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	324	0	0
Sign Control	Free			Free	Stop	

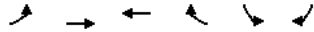
Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Vol, veh/h	49	0	0	243	0	0
Future Vol, veh/h	49	0	0	243	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3	-	-	-3	-2	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	65	0	0	324	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	- 389 65
Stage 1	-	-	- 65 -
Stage 2	-	-	- 324 -
Critical Hdwy	-	-	- 6 6
Critical Hdwy Stg 1	-	-	- 5 -
Critical Hdwy Stg 2	-	-	- 5 -
Follow-up Hdwy	-	-	- 3 3.1
Pot Cap-1 Maneuver	-	0	0 - 735 1071
Stage 1	-	0	0 - 1126 -
Stage 2	-	0	0 - 873 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 735 1071
Mov Cap-2 Maneuver	-	-	- 735 -
Stage 1	-	-	- 1126 -
Stage 2	-	-	- 873 -

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	3	61	257	11	1	2
Future Volume (vph)	3	61	257	11	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		3%	-3%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994		0.899		
Flt Protected		0.998		0.988		
Satd. Flow (prot)	0	1651	1679	0	1485	0
Flt Permitted		0.998		0.988		
Satd. Flow (perm)	0	1651	1679	0	1485	0
Link Speed (mph)		35		25		
Link Distance (ft)		591		2826		
Travel Time (s)		11.5		55.1		
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Adj. Flow (vph)	4	81	343	15	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	85	358	0	4	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	3	61	257	11	1	2
Future Vol, veh/h	3	61	257	11	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	0	0	0	0	-
Grade, %	-	3	-3	-	1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	4	81	343	15	1	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	358	0	440
Stage 1	-	-	351
Stage 2	-	-	89
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver005	-	-	640
Stage 1	-	-	802
Stage 2	-	-	1084
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver005	-	-	637
Mov Cap-2 Maneuver	-	-	637
Stage 1	-	-	798
Stage 2	-	-	1084

Approach	EB	WB	SB
HCM Control Delay, s	4	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	695
HCM Lane V/C Ratio	0.004	-	-	-	-0.006
HCM Control Delay (s)	9	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗		↘	↙
Traffic Volume (vph)	208	50	148	45	20	173
Future Volume (vph)	208	50	148	45	20	173
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.974		0.968			
Flt Protected	0.961					0.995
Satd. Flow (prot)	1665	0	1729	0	0	1759
Flt Permitted	0.961					0.995
Satd. Flow (perm)	1665	0	1729	0	0	1759
Link Speed (mph)	35		35			35
Link Distance (ft)	591		636			619
Travel Time (s)	11.5		12.4			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	2%
Adj. Flow (vph)	234	56	166	51	22	194
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	0	217	0	0	216
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗		↘	↙
Traffic Vol, veh/h	208	50	148	45	20	173
Future Vol, veh/h	208	50	148	45	20	173
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
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	2	1	0	0	2
Mvmt Flow	234	56	166	51	22	194

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	430	192	0
Stage 1	192	-	-
Stage 2	238	-	-
Critical Hdwy	6.41	6.22	-
Critical Hdwy Stg 1	5.41	-	-
Critical Hdwy Stg 2	5.41	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuve	664	904	-
Stage 1	973	-	-
Stage 2	925	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuve	648	904	-
Mov Cap-2 Maneuve	648	-	-
Stage 1	973	-	-
Stage 2	903	-	-

Approach	WB	NB	SB
HCM Control Delay, s/4		0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NB	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	686	1012	-
HCM Lane V/C Ratio	-	-	0.423	0.022	-
HCM Control Delay (s)	-	-	14	8.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	2.1	0.1	-

Base

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	80	642	5	8	322	37	9	102	42	8	127	199
Future Volume (vph)	80	642	5	8	322	37	9	102	42	8	127	199
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.986			0.963			0.920		
Flt Protected	0.995			0.999			0.997			0.999		
Satd. Flow (prot)	0	1626	0	0	1547	0	0	1587	0	0	1514	0
Flt Permitted	0.916			0.986			0.888			0.992		
Satd. Flow (perm)	0	1497	0	0	1527	0	0	1413	0	0	1503	0
Right Turn on Red	Yes			Yes			No			No		
Satd. Flow (RTOR)	1			15			25			35		
Link Speed (mph)	45			45			25			35		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	82	662	5	8	332	38	9	105	43	8	131	205
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	749	0	0	378	0	0	157	0	0	344	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%		23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0			-1.0			-1.0		
Total Lost Time (s)	5.0			5.0			5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Natural Cycle:	60
Control Type:	Semi Act-Uncoordinated

Splits and Phases: 1: New St & Rt 926





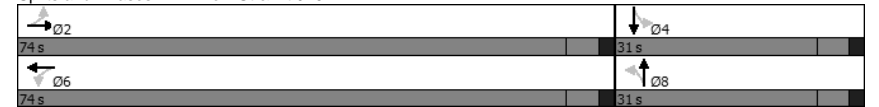
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕				↕			↕			↕	
Traffic Volume (veh/h)	80	642	5	8	322	37	9	102	42	8	127	199
Future Volume (veh/h)	80	642	5	8	322	37	9	102	42	8	127	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No			No	
Adj Sat Flow, veh/h/ln	1818	1818	1818	1696	1696	1696	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	82	662	5	8	332	38	9	105	43	8	131	205
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	7	7	7	1	1	1	0	0	0
Cap, veh/h	145	1106	8	48	1050	118	50	222	87	44	113	171
Arrive On Green	0.70	0.71	0.70	0.70	0.71	0.70	0.17	0.18	0.17	0.17	0.18	0.17
Sat Flow, veh/h	142	1556	11	10	1476	166	43	1248	487	15	637	962
Grp Volume(v), veh/h	749	0	0	378	0	0	157	0	0	344	0	0
Grp Sat Flow(s),veh/h/ln	1709	0	0	1653	0	0	1778	0	0	1615	0	0
Q Serve(g_s), s	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Cycle Q Clear(g_c), s	19.2	0.0	0.0	7.7	0.0	0.0	7.3	0.0	0.0	15.0	0.0	0.0
Prop In Lane	0.11		0.01	0.02		0.10	0.06		0.27	0.02		0.60
Lane Grp Cap(c), veh/h	1241	0	0	1198	0	0	339	0	0	310	0	0
V/C Ratio(X)	0.60	0.00	0.00	0.32	0.00	0.00	0.46	0.00	0.00	1.11	0.00	0.00
Avail Cap(c_a), veh/h	1241	0	0	1198	0	0	339	0	0	310	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	0.0	0.0	4.9	0.0	0.0	33.6	0.0	0.0	37.9	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.0	0.7	0.0	0.0	1.0	0.0	0.0	83.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.7	0.0	0.0	3.9	0.0	0.0	5.8	0.0	0.0	21.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.7	0.0	0.0	5.6	0.0	0.0	34.5	0.0	0.0	121.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	F	A	A
Approach Vol, veh/h	749			378			157			344		
Approach Delay, s/veh	8.7			5.6			34.5			121.7		
Approach LOS	A			A			C			F		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	69.0		21.0		69.0		21.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	63.0		15.0		63.0		15.0					
Max Q Clear Time (g_c+1), s	21.2		17.0		9.7		9.3					
Green Ext Time (p_c), s	7.3		0.0		2.9		0.2					
Intersection Summary												
HCM 6th Ctrl Delay	34.3											
HCM 6th LOS	C											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	57	659	13	20	317	31	9	87	38	51	171	150
Future Volume (vph)	57	659	13	20	317	31	9	87	38	51	171	150
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.989			0.962			0.946		
Flt Protected	0.996			0.997			0.997			0.993		
Satd. Flow (prot)	0	1625	0	0	1551	0	0	1583	0	0	1530	0
Flt Permitted	0.941			0.947			0.960			0.938		
Satd. Flow (perm)	0	1536	0	0	1473	0	0	1525	0	0	1446	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	2			9			25			35		
Link Speed (mph)	45			45			25			35		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	59	679	13	21	327	32	9	90	39	53	176	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	751	0	0	380	0	0	138	0	0	384	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	74.0	74.0		74.0	74.0		31.0	31.0		31.0	31.0	
Total Split (%)	70.5%	70.5%		70.5%	70.5%		29.5%	29.5%		29.5%	29.5%	
Maximum Green (s)	68.0	68.0		68.0	68.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0			-1.0			-1.0		
Total Lost Time (s)	5.0			5.0			5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	105
Natural Cycle:	70
Control Type:	Semi Act-Uncoordinated

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕				↕			↕			↕	
Traffic Volume (veh/h)	57	659	13	20	317	31	9	87	38	51	171	150
Future Volume (veh/h)	57	659	13	20	317	31	9	87	38	51	171	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No			No	
Adj Sat Flow, veh/h/ln	1818	1818	1818	1696	1696	1696	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	59	679	13	21	327	32	9	90	39	53	176	155
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	7	7	7	1	1	1	0	0	0
Cap, veh/h	102	1058	20	69	933	89	49	298	122	81	196	161
Arrive On Green	0.67	0.66	0.65	0.67	0.66	0.65	0.26	0.25	0.24	0.26	0.25	0.24
Sat Flow, veh/h	99	1610	30	50	1420	135	49	1204	493	171	791	651
Grp Volume(v), veh/h	751	0	0	380	0	0	138	0	0	384	0	0
Grp Sat Flow(s),veh/h/ln	1739	0	0	1604	0	0	1746	0	0	1613	0	0
Q Serve(g_s), s	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.7	0.0	0.0
Cycle Q Clear(g_c), s	25.9	0.0	0.0	10.6	0.0	0.0	6.7	0.0	0.0	24.4	0.0	0.0
Prop In Lane	0.08		0.02	0.06		0.08	0.07		0.28	0.14		0.40
Lane Grp Cap(c), veh/h	1197	0	0	1106	0	0	485	0	0	454	0	0
V/C Ratio(X)	0.63	0.00	0.00	0.34	0.00	0.00	0.28	0.00	0.00	0.85	0.00	0.00
Avail Cap(c_a), veh/h	1197	0	0	1106	0	0	485	0	0	454	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.5	0.0	0.0	8.0	0.0	0.0	32.3	0.0	0.0	38.9	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.8	0.0	0.0	0.3	0.0	0.0	13.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.5	0.0	0.0	5.9	0.0	0.0	5.2	0.0	0.0	16.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	0.0	0.0	8.8	0.0	0.0	32.6	0.0	0.0	52.7	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	C	A	A	D	A	A
Approach Vol, veh/h	751			380			138			384		
Approach Delay, s/veh	13.0			8.8			32.6			52.7		
Approach LOS	B			A			C			D		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	74.0		31.0		74.0		31.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	68.0		25.0		68.0		25.0					
Max Q Clear Time (g_c+1), s	27.9		26.4		12.6		8.7					
Green Ext Time (p_c), s	7.2		0.0		3.0		0.4					
Intersection Summary												
HCM 6th Ctrl Delay	22.9											
HCM 6th LOS	C											

Appendix Q

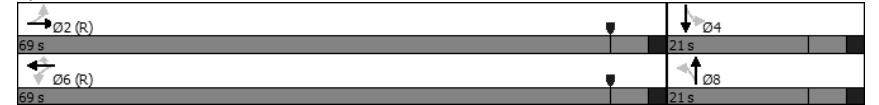
Future (2025) Capacity/Level-of-Service With Development Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	645	5	12	383	37	9	103	43	8	130	153
Future Volume (vph)	83	645	5	12	383	37	9	103	43	8	130	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%		1%			-2%		1%				
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					0.850		0.963			0.929	
Flt Protected	0.994					0.999		0.997			0.999	
Satd. Flow (prot)	0	1624	0	0	1564	1379	0	1587	0	0	1530	0
Flt Permitted	0.908					0.977		0.925			0.991	
Satd. Flow (perm)	0	1484	0	0	1529	1379	0	1472	0	0	1518	0
Right Turn on Red	Yes			Yes			No			No		
Satd. Flow (RTOR)	1					38						
Link Speed (mph)	45					45		25			35	
Link Distance (ft)	819					2436		714			826	
Travel Time (s)	12.4					36.9		19.5			16.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	86	665	5	12	395	38	9	106	44	8	134	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	756	0	0	407	38	0	159	0	0	300	0
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template	Left		Left			Right		Left Thru			Left Thru	
Leading Detector (ft)	30	6			30	6	30	30	35		30	35
Trailing Detector (ft)	-10	0		-10	0	-10	-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0	-10	-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2		6			6		8			4	
Permitted Phases	2		6			8		8			4	
Detector Phase	2		6			8		8			4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0	69.0	21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%	76.7%	23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0	63.0	15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0					-1.0		0.0			-1.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0		5.0			6.0		5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0	42.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0	21.0	0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	50 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926



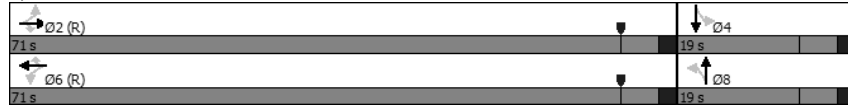


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection	
Natural Cycle:	45
Control Type:	Actuated-Coordinated

Splits and Phases: 2: Bridlewood Blvd/Collector Road & Rt 926



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↔	↔	↑	↔	↔	↑	↔	↔	↑	↔
Traffic Volume (veh/h)	30	652	32	13	243	14	26	31	13	46	15	159
Future Volume (veh/h)	30	652	32	13	243	14	26	31	13	46	15	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1415	1387	1457	2098	1984	2070	1837	1809	1881	1772	1772	1772
Adj Flow Rate, veh/h	31	672	33	13	251	14	27	32	13	47	15	164
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	4	3	0	8	2	0	2	2	2	2	2
Cap, veh/h	698	1017	905	695	1455	1286	140	190	77	268	20	217
Arrive On Green	0.98	0.98	0.98	0.73	0.73	0.73	0.16	0.16	0.14	0.16	0.16	0.14
Sat Flow, veh/h	890	1387	1235	879	1984	1754	1250	1223	497	1361	127	1394
Grp Volume(v), veh/h	31	672	33	13	251	14	27	0	45	47	0	179
Grp Sat Flow(s),veh/h/ln	890	1387	1235	879	1984	1754	1250	0	1719	1361	0	1521
Q Serve(g_s), s	0.2	3.0	0.1	0.4	3.5	0.2	1.9	0.0	2.0	2.8	0.0	10.2
Cycle Q Clear(g_c), s	3.7	3.0	0.1	3.4	3.5	0.2	11.6	0.0	2.0	4.3	0.0	10.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.92
Lane Grp Cap(c), veh/h	698	1017	905	695	1455	1286	140	0	267	268	0	237
V/C Ratio(X)	0.04	0.66	0.04	0.02	0.17	0.01	0.19	0.00	0.17	0.18	0.00	0.76
Avail Cap(c_a), veh/h	698	1017	905	695	1455	1286	140	0	267	268	0	237
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.63	0.63	0.63	0.34	0.34	0.34	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.5	0.3	0.3	4.1	3.7	3.2	41.7	0.0	33.1	34.6	0.0	36.8
Incr Delay (d2), s/veh	0.1	2.1	0.0	0.0	0.1	0.0	0.7	0.0	0.3	0.3	0.0	13.1
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	0.0	1.5	0.0	0.1	1.7	0.1	1.1	0.0	1.6	1.7	0.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.6	2.5	0.3	4.1	3.8	3.2	42.3	0.0	33.4	34.9	0.0	49.9
LnGrp LOS	A	A	A	A	A	A	D	A	C	C	A	D
Approach Vol, veh/h		736			278			72				226
Approach Delay, s/veh		2.3			3.7			36.7				46.8
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.0		19.0		71.0		19.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		65.0		13.0		65.0		13.0				
Max Q Clear Time (g_c+I1), s		6.2		12.2		6.0		14.1				
Green Ext Time (p_c), s		2.8		0.1		0.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

McMahon Associates, Inc.

Robinson Tract

3: Rt 202 & Rt 926

2025 with Dev Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↔	↘	↙	↔	↘	↙	↔	↘	↙	↔	↘
Traffic Volume (vph)	484	236	31	146	167	56	22	1630	156	64	1545	95
Future Volume (vph)	484	236	31	146	167	56	22	1630	156	64	1545	95
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	14	12	12	15	12	12	12
Grade (%)	-3%				-4%				-4%		0%	
Storage Length (ft)	450		0	200		215	305		170	375		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95	
Frt	0.988				0.850				0.850		0.991	
Flt Protected	0.950	0.985		0.950			0.950			0.950		
Satd. Flow (prot)	1494	1715	0	1565	1765	1556	1491	3291	1635	1487	3109	0
Flt Permitted	0.950	0.985		0.950			0.950			0.950		
Satd. Flow (perm)	1494	1715	0	1565	1765	1556	1491	3291	1635	1487	3109	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									155			7
Link Speed (mph)	45				45				45		45	
Link Distance (ft)	2349				982				1123		3154	
Travel Time (s)	35.6				14.9				17.0		47.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	13%	4%	4%	7%	17%	6%	5%	15%	9%	9%
Adj. Flow (vph)	499	243	32	151	172	58	23	1680	161	66	1593	98
Shared Lane Traffic (%)	23%											
Lane Group Flow (vph)	384	390	0	151	172	58	23	1680	161	66	1691	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	40	40				35	40	30	30	35	30	
Trailing Detector (ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	
Detector 1 Position(ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	
Detector 1 Size(ft)	40	40		40	40	40	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases						4			2			
Detector Phase	8	8		4	4	4	5			1		
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0	3.0	20.0	20.0	3.0	20.0	
Minimum Split (s)	45.0	45.0		10.0	10.0	10.0	9.0	34.0	34.0	9.0	34.0	
Total Split (s)	31.0	31.0		18.0	18.0	18.0	14.0	57.0	57.0	14.0	57.0	
Total Split (%)	25.8%	25.8%		15.0%	15.0%	15.0%	11.7%	47.5%	47.5%	11.7%	47.5%	
Maximum Green (s)	24.0	24.0		11.0	11.0	11.0	8.0	51.0	51.0	8.0	51.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	
Last Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2025 with Dev Weekday Morning Peak Hour

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Robinson Tract

3: Rt 202 & Rt 926

2025 with Dev Weekday Morning Peak Hour

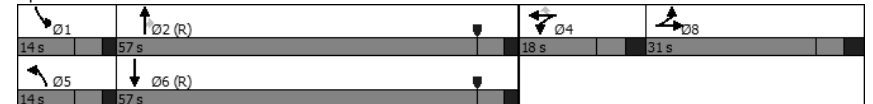


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0			3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0			0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0
Time To Reduce (s)	0.0	0.0			0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0
Recall Mode	None	None			None	None	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0	7.0							7.0	7.0		7.0
Flash Dont Walk (s)	31.0	31.0							21.0	21.0		21.0
Pedestrian Calls (#/hr)	0	0							0	0		0

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

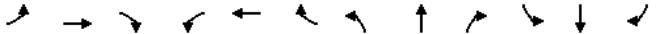
Splits and Phases: 3: Rt 202 & Rt 926



Lanes, Volumes, Timings

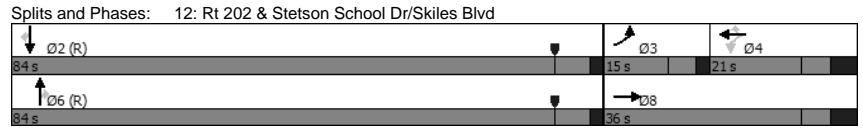
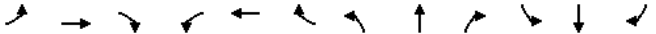
2025 with Dev Weekday Morning Peak Hour

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 4 Channel												
Detector 4 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases	3	8			4			6			2	
Permitted Phases				4		4			6			2
Detector Phase	3	8		4	4	4		6	6		2	2
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0		15.0	15.0		15.0	15.0
Minimum Split (s)	9.0	15.0		15.0	15.0	15.0		22.0	22.0		22.0	22.0
Total Split (s)	15.0	36.0		21.0	21.0	21.0		84.0	84.0		84.0	84.0
Total Split (%)	12.5%	30.0%		17.5%	17.5%	17.5%		70.0%	70.0%		70.0%	70.0%
Maximum Green (s)	9.0	28.0		13.0	13.0	13.0		77.0	77.0		77.0	77.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0		5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	4.0		4.0	4.0	4.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	0.0		-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	5.0	7.0		7.0	7.0	8.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lag			Lag			
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		6.0	6.0		6.0	6.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0		48.0	48.0		48.0	48.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0		24.0	24.0		24.0	24.0
Recall Mode	None	None		None	None	None		C-Max	C-Max		C-Max	C-Max

Intersection Summary
 Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑		↓	↓	↓		↑↑	↑		↑↑	↑
Traffic Volume (veh/h)	240	149	34	86	138	61	0	2040	56	0	1957	307
Future Volume (veh/h)	240	149	34	86	138	61	0	2040	56	0	1957	307
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1901	1947	1947	1722	1717	1790	0	1707	1849	0	1798	1914
Adj Flow Rate, veh/h	253	157	36	91	145	64	0	2147	59	0	2060	323
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	8	8	4	9	4	0	5	0	0	8	5
Cap, veh/h	293	363	83	189	192	157	0	2124	1026	0	2237	1062
Arrive On Green	0.08	0.24	0.23	0.11	0.11	0.10	0.00	0.65	0.65	0.00	0.65	0.65
Sat Flow, veh/h	3512	1533	351	1156	1717	1517	0	3330	1567	0	3506	1622
Grp Volume(v), veh/h	253	0	193	91	145	64	0	2147	59	0	2060	323
Grp Sat Flow(s),veh/h/ln	1756	0	1884	1156	1717	1517	0	1622	1567	0	1708	1622
Q Serve(g_s), s	8.5	0.0	10.5	9.1	9.8	4.7	0.0	78.6	1.6	0.0	62.9	10.3
Cycle Q Clear(g_c), s	8.5	0.0	10.5	9.1	9.8	4.7	0.0	78.6	1.6	0.0	62.9	10.3
Prop In Lane	1.00		0.19	1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	293	0	446	189	192	157	0	2124	1026	0	2237	1062
V/C Ratio(X)	0.86	0.00	0.43	0.48	0.75	0.41	0.00	1.01	0.06	0.00	0.92	0.30
Avail Cap(c_a), veh/h	293	0	455	195	200	164	0	2124	1026	0	2237	1062
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	0.0	39.0	51.4	51.7	50.3	0.0	20.7	7.4	0.0	18.0	8.9
Incr Delay (d2), s/veh	22.5	0.0	0.7	1.9	14.5	1.7	0.0	22.2	0.1	0.0	7.7	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	8.3	0.0	8.6	5.0	8.7	3.4	0.0	40.6	0.9	0.0	30.9	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.9	0.0	39.7	53.3	66.1	52.0	0.0	42.9	7.5	0.0	25.7	9.7
LnGrp LOS	E	A	D	D	E	D	A	F	A	A	C	A
Approach Vol, veh/h	446			300			2206			2383		
Approach Delay, s/veh	60.8			59.2			41.9			23.5		
Approach LOS	E			E			D			C		
Timer - Assigned Phs	2	3	4	6			8					
Phs Duration (G+Y+Rc), s	84.6	15.0	20.4	84.6			35.4					
Change Period (Y+Rc), s	7.0	6.0	8.0	7.0			8.0					
Max Green Setting (Gmax), s	77.0	9.0	13.0	77.0			28.0					
Max Q Clear Time (g_c+I1), s	65.4	11.0	12.3	81.1			12.5					
Green Ext Time (p_c), s	11.6	0.0	0.1	0.0			0.7					
Intersection Summary												
HCM 6th Ctrl Delay	36.3											
HCM 6th LOS	D											



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑
Traffic Volume (vph)	0	0	43	0	0	34	32	2086	70	53	1733	258
Future Volume (vph)	0	0	43	0	0	34	32	2086	70	53	1733	258
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		325
Storage Lanes	0		1	0		1	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00
Frt			0.865			0.865	0.995				0.850	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1379	1488	3200	0	1629	3185	1508
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1379	1488	3200	0	1629	3185	1508
Link Speed (mph)			35			35		45			45	
Link Distance (ft)			499			858		3154			1356	
Travel Time (s)			9.7			16.7		47.8			20.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	14%	10%	5%	14%	3%	9%	3%
Adj. Flow (vph)	0	0	45	0	0	35	33	2173	73	55	1805	269
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	45	0	0	35	33	2246	0	55	1805	269
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑
Traffic Vol, veh/h	0	0	43	0	0	34	32	2086	70	53	1733	258
Future Vol, veh/h	0	0	43	0	0	34	32	2086	70	53	1733	258
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	350	-	-	380	-	325
Veh in Median Storage, #	0	0	0	0	0	0	0	0	0	0	0	0
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	14	10	5	14	3	9
Mvmt Flow	0	0	45	0	0	35	33	2173	73	55	1805	269

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	-	-	903	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	7.2	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.9	-
Pot Cap-1 Maneuver	0	0	*415	0
Stage 1	0	0	-	0
Stage 2	0	0	-	0
Platoon blocked, %	-	-	1	-
Mov Cap-1 Maneuver	-	-	*415	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	24	0.2	0.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	399	-	-	415	225	*291	-
HCM Lane V/C Ratio	0.084	-	-	0.108	0.157	0.19	-
HCM Control Delay (s)	14.8	-	-	14.7	24	20.2	-
HCM Lane LOS	B	-	-	B	C	C	-
HCM 95th %tile Q(veh)	0.3	-	-	0.4	0.5	0.7	-

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	43	1	8	282	1	0
Future Volume (vph)	43	1	8	282	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998					
Flt Protected				0.999	0.950	
Satd. Flow (prot)	1702	0	0	1723	1636	1663
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	1702	0	0	1723	1636	1663
Link Speed (mph)	35			35	35	
Link Distance (ft)	108			499	469	
Travel Time (s)	2.1			9.7	9.1	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	61	1	11	403	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	0	0	414	1	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	43	1	8	282	1	0
Future Vol, veh/h	43	1	8	282	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	4	-	-	-4	2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	61	1	11	403	1	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	62
Stage 1	-	-	62
Stage 2	-	-	425
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1143	582
Stage 1	-	-	1114
Stage 2	-	-	719
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1143	575
Mov Cap-2 Maneuver	-	-	575
Stage 1	-	-	1114
Stage 2	-	-	710

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	11.3
HCM LOS			B

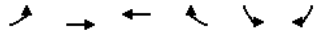
Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	575	-	-	-	1143	-
HCM Lane V/C Ratio	0.002	-	-	-	0.01	-
HCM Control Delay (s)	11.3	0	-	-	8.2	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	-

McMahon Associates, Inc.

Robinson Tract

6: Pleasant Grove Rd & Orvis Way

2025 with Dev Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	133	28	255	28	15	22
Future Volume (vph)	133	28	255	28	15	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987		0.920	
Flt Protected		0.960			0.980	
Satd. Flow (prot)	0	1666	1761	0	1591	0
Flt Permitted		0.960			0.980	
Satd. Flow (perm)	0	1666	1761	0	1591	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		322	108		349	
Travel Time (s)		6.3	2.1		9.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	2%	0%	3%	2%	2%	2%
Adj. Flow (vph)	190	40	364	40	21	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	230	404	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Lanes, Volumes, Timings

2025 with Dev Weekday Morning Peak Hour

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McMahon Associates, Inc.

Robinson Tract

6: Pleasant Grove Rd & Orvis Way

2025 with Dev Weekday Morning Peak Hour

Intersection

Int Delay, s/veh 3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	133	28	255	28	15	22
Future Vol, veh/h	133	28	255	28	15	22
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	0	0	-
Grade, %	-	4	-4	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	0	3	2	2	2
Mvmt Flow	190	40	364	40	21	31

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	404	0	804
Stage 1	-	-	384
Stage 2	-	-	420
Critical Hdwy	4.3	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	672	-	393
Stage 1	-	-	787
Stage 2	-	-	756
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	672	-	305
Mov Cap-2 Maneuver	-	-	305
Stage 1	-	-	611
Stage 2	-	-	756

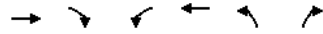
Approach	EB	WB	SB
HCM Control Delay, s	8.5	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	872	-	-	-	460
HCM Lane V/C Ratio	0.218	-	-	-	-0.115
HCM Control Delay (s)	10.3	0	-	-	13.8
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	0.4

HCM 6th TWSC

2025 with Dev Weekday Morning Peak Hour

I:\eng\816451 - Crebilly Farm\Traffic Analysis\2020-02 Robinson Tract Revised TIS\Synchro\3 - 2025 with Dev Scenario 2AW



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	162	0	0	277	0	0
Future Volume (vph)	162	0	0	277	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1714	0	0	1715	1879	0
Flt Permitted						
Satd. Flow (perm)	1714	0	0	1715	1879	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	318			322	436	
Travel Time (s)	6.2			6.3	8.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	231	0	0	396	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	231	0	0	396	0	0
Sign Control	Free			Free	Stop	

Intersection Summary

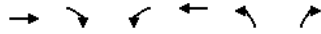
Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	162	0	0	277	0	0
Future Vol, veh/h	162	0	0	277	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3	-	-	-3	-2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	231	0	0	396	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	627
Stage 1	-	-	231
Stage 2	-	-	396
Critical Hdwy	-	-	6
Critical Hdwy Stg 1	-	-	5
Critical Hdwy Stg 2	-	-	5
Follow-up Hdwy	-	-	3
Pot Cap-1 Maneuver	0	0	542
Stage 1	0	0	957
Stage 2	0	0	813
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	542
Mov Cap-2 Maneuver	-	-	542
Stage 1	-	-	957
Stage 2	-	-	813

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	70	1	160	116	4	92
Future Volume (vph)	70	1	160	116	4	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	3%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.871		
Flt Protected				0.972	0.998	
Satd. Flow (prot)	1712	0	0	1676	1534	0
Flt Permitted				0.972	0.998	
Satd. Flow (perm)	1712	0	0	1676	1534	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1878			318	459	
Travel Time (s)	36.6			6.2	8.9	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	2%	2%	3%	2%	2%
Adj. Flow (vph)	100	1	229	166	6	131
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	0	0	395	137	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	70	1	160	116	4	92
Future Vol, veh/h	70	1	160	116	4	92
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	-
Grade, %	3	-	-	-3	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	2	2	3	2	2
Mvmt Flow	100	1	229	166	6	131

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	101
Stage 1	-	-	101
Stage 2	-	-	624
Critical Hdwy	-	4.3	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1109	439
Stage 1	-	-	1075
Stage 2	-	-	601
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1109	339
Mov Cap-2 Maneuver	-	-	339
Stage 1	-	-	1075
Stage 2	-	-	465

Approach	EB	WB	NB
HCM Control Delay, s	0	5.3	9.5
HCM LOS			A

Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	940	-	-	1109	-
HCM Lane V/C Ratio	0.146	-	-	0.206	-
HCM Control Delay (s)	9.5	-	-	9.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.8	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	69	0	4	191	1	13
Future Volume (vph)	69	0	4	191	1	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	6%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.872	
Flt Protected				0.999	0.998	
Satd. Flow (prot)	1607	0	0	1713	1536	0
Flt Permitted				0.999	0.998	
Satd. Flow (perm)	1607	0	0	1713	1536	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	733			1878	268	
Travel Time (s)	14.3			36.6	5.2	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	5%	2%	2%	3%	2%	2%
Adj. Flow (vph)	99	0	6	273	1	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	0	0	279	20	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	69	0	4	191	1	13
Future Vol, veh/h	69	0	4	191	1	13
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	-
Grade, %	6	-	-	-3	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	5	2	2	3	2	2
Mvmt Flow	99	0	6	273	1	19

Major/Minor

	Major1	Major2	Minor1
Conflicting Flow All	0	0	99
Stage 1	-	-	99
Stage 2	-	-	285
Critical Hdwy	-	4.3	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1111	1021
Stage 1	-	-	1077
Stage 2	-	-	878
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1111	703
Mov Cap-2 Maneuver	-	-	703
Stage 1	-	-	1077
Stage 2	-	-	873

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.2	8.7
HCM LOS			A

Minor Lane/Major Mvm

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	989	-	-	1111	-
HCM Lane V/C Ratio	0.02	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	0	56	4	3	186	3	12	0	9	5	0	2
Future Volume (vph)	0	56	4	3	186	3	12	0	9	5	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Grade (%)	3%			-3%			0%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991				0.998				0.941		0.959	
Flt Protected					0.999				0.972		0.966	
Satd. Flow (prot)	0	1565	0	0	1640	0	0	1614	0	0	1441	0
Flt Permitted					0.999				0.972		0.966	
Satd. Flow (perm)	0	1565	0	0	1640	0	0	1614	0	0	1441	0
Link Speed (mph)	35				35				25		25	
Link Distance (ft)	496				733				274		306	
Travel Time (s)	9.7				14.3				7.5		8.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	2%	2%	3%	50%	2%	2%	0%	2%	25%	25%
Adj. Flow (vph)	0	80	6	4	266	4	17	0	13	7	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	0	0	274	0	0	30	0	0	10	0
Sign Control	Free				Free				Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	0	56	4	3	186	3	12	0	9	5	0	2
Future Vol, veh/h	0	56	4	3	186	3	12	0	9	5	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-	0	-
Grade, %	-	3	-	-	-3	-	-	0	-	-	1	-
Peak Hour Factor	70	70	70	70	70	70	70	70	70	70	70	70
Heavy Vehicles, %	0	5	2	2	3	50	2	2	2	0	2	25
Mvmt Flow	0	80	6	4	266	4	17	0	13	7	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	270	0	86	0
Stage 1	-	-	83	83
Stage 2	-	-	278	278
Critical Hdwy	4.3	-	4.3	-
Critical Hdwy Stg 1	-	-	6.12	5.52
Critical Hdwy Stg 2	-	-	6.12	5.52
Follow-up Hdwy	3	-	3	-
Pot Cap-1 Maneuver	71	-	1122	-
Stage 1	-	-	1079	826
Stage 2	-	-	838	680
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	71	-	1122	-
Stage 1	-	-	675	564
Stage 2	-	-	1079	826
Stage 1	-	-	831	677
Stage 2	-	-	831	677

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	9.7	10.4
HCM LOS			A	B

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	795	971	-	-	1122	-	-	679
HCM Lane V/C Ratio	0.038	-	-	-	0.004	-	-	0.015
HCM Control Delay (s)	9.7	0	-	-	8.2	0	-	10.4
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↔	↔	↓
Traffic Volume (vph)	170	30	178	41	18	131
Future Volume (vph)	170	30	178	41	18	131
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980		0.975			
Flt Protected	0.959					0.994
Satd. Flow (prot)	1630	0	1727	0	0	1757
Flt Permitted	0.959					0.994
Satd. Flow (perm)	1630	0	1727	0	0	1757
Link Speed (mph)	35		35			35
Link Distance (ft)	496		2543			619
Travel Time (s)	9.7		49.5			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	14%	2%	0%	8%	1%
Adj. Flow (vph)	191	34	200	46	20	147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	225	0	246	0	0	167
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	4.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↔	↔	↓
Traffic Vol, veh/h	170	30	178	41	18	131
Future Vol, veh/h	170	30	178	41	18	131
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
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	14	2	0	8	1
Mvmt Flow	191	34	200	46	20	147

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	410	223	0
Stage 1	223	-	-
Stage 2	187	-	-
Critical Hdwy	6.42	6.34	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.2	-
Pot Cap-1 Maneuve	682	837	-
Stage 1	940	-	-
Stage 2	978	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuve	666	837	-
Mov Cap-2 Maneuve	666	-	-
Stage 1	940	-	-
Stage 2	956	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	1.1
HCM LOS	B		

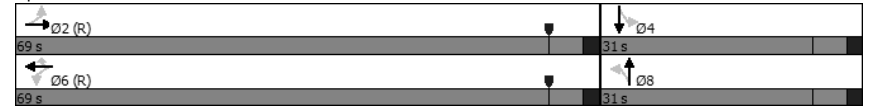
Minor Lane/Major Mvmt	NBT	NB/BLn1	SBL	SBT
Capacity (veh/h)	-	-	687	954
HCM Lane V/C Ratio	-	-	0.327	0.021
HCM Control Delay (s)	-	-	12.8	8.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.4	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔				↕			↔			↕	
Traffic Volume (vph)	65	668	13	23	373	31	9	90	42	51	173	103
Future Volume (vph)	65	668	13	23	373	31	9	90	42	51	173	103
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%				1%			-2%			1%	
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.850			0.960			0.958	
Flt Protected	0.996				0.997			0.997			0.992	
Satd. Flow (prot)	0	1626	0	0	1564	1379	0	1580	0	0	1547	0
Flt Permitted	0.930				0.940			0.974			0.930	
Satd. Flow (perm)	0	1518	0	0	1474	1379	0	1543	0	0	1451	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	2				33							
Link Speed (mph)	45				45			25			35	
Link Distance (ft)	819				2436			714			826	
Travel Time (s)	12.4				36.9			19.5			16.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	67	689	13	24	385	32	9	93	43	53	178	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	769	0	0	409	32	0	145	0	0	337	0
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6	6	30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0	0	-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0	0	-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6	6	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Permitted Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0	69.0	31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0	63.0	25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0		-2.0	-1.0			-1.0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0				5.0			4.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0	42.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0	21.0	0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	65
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926



McMahon Associates, Inc.

2: Bridlewood Blvd/Collector Road & Rt 926

Robinson Tract

2025 with Dev Weekday Afternoon Peak Hour

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	66.0%	66.0%	66.0%	66.0%	66.0%	66.0%	34.0%	34.0%		34.0%	34.0%	
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	28.0	28.0		28.0	28.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection

Natural Cycle: 55

Control Type: Actuated-Coordinated

Splits and Phases: 2: Bridlewood Blvd/Collector Road & Rt 926

↗ Q2 (R)					↙ Q4
66 s					34 s
↖ Q6 (R)					↗ Q8
66 s					34 s

McMahon Associates, Inc.

2: Bridlewood Blvd/Collector Road & Rt 926

Robinson Tract

2025 with Dev Weekday Afternoon Peak Hour

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↑	↗	↖	↑	↗	↖	↑		↗	
Traffic Volume (veh/h)	124	582	38	21	301	49	17	40	12	29	260	128
Future Volume (veh/h)	124	582	38	21	301	49	17	40	12	29	260	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1415	1401	1501	2027	2055	2070	1837	1809	1881	1772	1772	1772
Adj Flow Rate, veh/h	129	606	40	22	314	51	18	42	12	30	271	133
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	3	0	5	3	2	0	2	2	2	2	2
Cap, veh/h	522	872	792	631	1279	1092	125	375	107	422	311	153
Arrive On Green	1.00	1.00	1.00	0.62	0.62	0.62	0.28	0.28	0.27	0.28	0.28	0.27
Sat Flow, veh/h	812	1401	1272	897	2055	1754	1017	1353	387	1350	1122	551
Grp Volume(v), veh/h	129	606	40	22	314	51	18	0	54	30	0	404
Grp Sat Flow(s),veh/h/ln	812	1401	1272	897	2055	1754	1017	0	1739	1350	0	1673
Q Serve(g_s), s	2.3	0.0	0.0	0.9	6.8	1.1	1.7	0.0	2.3	1.7	0.0	23.0
Cycle Q Clear(g_c), s	9.1	0.0	0.0	0.9	6.8	1.1	24.2	0.0	2.3	3.5	0.0	23.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		0.33
Lane Grp Cap(c), veh/h	522	872	792	631	1279	1092	125	0	483	422	0	464
V/C Ratio(X)	0.25	0.70	0.05	0.03	0.25	0.05	0.14	0.00	0.11	0.07	0.00	0.87
Avail Cap(c_a), veh/h	522	872	792	631	1279	1092	138	0	504	439	0	485
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.53	0.53	0.23	0.23	0.23	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.5	0.0	0.0	7.3	8.4	7.3	45.7	0.0	27.0	28.1	0.0	34.6
Incr Delay (d2), s/veh	0.6	2.4	0.1	0.0	0.1	0.0	0.5	0.0	0.1	0.1	0.0	15.2
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	0.2	1.1	0.0	0.3	3.9	0.7	0.8	0.0	1.8	1.0	0.0	16.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.1	2.4	0.1	7.3	8.5	7.4	46.2	0.0	27.1	28.1	0.0	49.8
LnGrp LOS	A	A	A	A	A	A	D	A	C	C	A	D
Approach Vol, veh/h		775			387			72				434
Approach Delay, s/veh		2.1			8.3			31.9				48.3
Approach LOS		A			A			C				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		67.2		32.8		67.2		32.8				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		60.0		28.0		60.0		28.0				
Max Q Clear Time (g_c+I1), s		11.6		25.0		9.3		26.7				
Green Ext Time (p_c), s		3.3		0.7		1.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

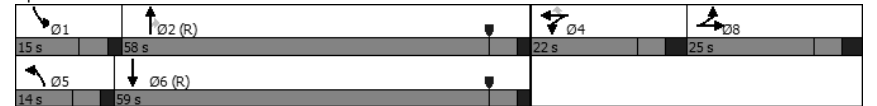
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	320	214	43	205	245	66	62	1626	125	95	1286	67
Future Volume (vph)	320	214	43	205	245	66	62	1626	125	95	1286	67
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	14	12	12	15	12	12	12
Grade (%)	-3%				-4%						0%	
Storage Length (ft)	450		0	200		215	305		170	375		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95	
Frt	0.981				0.850				0.850		0.993	
Flt Protected	0.950	0.988	0.950		0.950		0.950		0.950			
Satd. Flow (prot)	1466	1728	0	1628	1818	1601	1744	3387	1683	1710	3264	0
Flt Permitted	0.950	0.988	0.950		0.950		0.950		0.950			
Satd. Flow (perm)	1466	1728	0	1628	1818	1601	1744	3387	1683	1710	3264	0
Right Turn on Red			No		No		Yes		Yes		Yes	
Satd. Flow (RTOR)							155		6			
Link Speed (mph)	45		45		45		45		45			
Link Distance (ft)	2349		982		1123		3154		47.8			
Travel Time (s)	35.6		14.9		17.0		47.8					
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	2%	11%	0%	1%	4%	0%	3%	2%	0%	4%	5%
Adj. Flow (vph)	330	221	44	211	253	68	64	1676	129	98	1326	69
Shared Lane Traffic (%)	25%											
Lane Group Flow (vph)	247	348	0	211	253	68	64	1676	129	98	1395	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	40	40		35	35	35	40	30	30	35	30	
Trailing Detector (ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	
Detector 1 Position(ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	
Detector 1 Size(ft)	40	40		40	40	40	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		4	4	4	5	2		1	6	
Permitted Phases												
Detector Phase	8	8		4	4	4	5			1		
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0	3.0	20.0	20.0	3.0	20.0	
Minimum Split (s)	45.0	45.0		10.0	10.0	10.0	9.0	34.0	34.0	9.0	34.0	
Total Split (s)	25.0	25.0		22.0	22.0	22.0	14.0	58.0	58.0	15.0	59.0	
Total Split (%)	20.8%	20.8%		18.3%	18.3%	18.3%	11.7%	48.3%	48.3%	12.5%	49.2%	
Maximum Green (s)	18.0	18.0		15.0	15.0	15.0	8.0	52.0	52.0	9.0	53.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	
Last Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	31.0	31.0						21.0	21.0		21.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑
Traffic Volume (vph)	0	0	56	0	0	42	50	1925	60	108	1462	365
Future Volume (vph)	0	0	56	0	0	42	50	1925	60	108	1462	365
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		325
Storage Lanes	0		1	0		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.850
Frt			0.865			0.865	0.995					0.850
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1573	1636	3243	0	1678	3370	1538
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1573	1636	3243	0	1678	3370	1538
Link Speed (mph)			35			35		45			45	
Link Distance (ft)			553			858		3154			1356	
Travel Time (s)			10.8			16.7		47.8			20.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	1%
Adj. Flow (vph)	0	0	57	0	0	43	51	1964	61	110	1492	372
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	57	0	0	43	51	2025	0	110	1492	372
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑
Traffic Vol, veh/h	0	0	56	0	0	42	50	1925	60	108	1462	365
Future Vol, veh/h	0	0	56	0	0	42	50	1925	60	108	1462	365
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	350	-	-	380	-	325
Veh in Median Storage, #	0	0	0	0	0	0	0	0	0	0	0	0
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	4	0	0	3
Mvmt Flow	0	0	57	0	0	43	51	1964	61	110	1492	372

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	-	-	746	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	7.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.9	-
Pot Cap-1 Maneuver	0	0	*561	0
Stage 1	0	0	-	0
Stage 2	0	0	-	0
Platoon blocked, %			1	1
Mov Cap-1 Maneuver	-	-	*561	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.1	18.1	0.3	1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	468	-	-	561	317	*397	-
HCM Lane V/C Ratio	0.109	-	-	0.102	0.135	0.278	-
HCM Control Delay (s)	13.6	-	-	12.1	18.1	17.5	-
HCM Lane LOS	B	-	-	B	C	C	-
HCM 95th %tile Q(veh)	0.4	-	-	0.3	0.5	1.1	-

Notes

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	52	0	5	410	1	4
Future Volume (vph)	52	0	5	410	1	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	1705	0	0	1756	1636	1414
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	1705	0	0	1756	1636	1414
Link Speed (mph)	35			35	35	
Link Distance (ft)	85			553	359	
Travel Time (s)	1.7			10.8	7.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	69	0	7	547	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	554	1	5
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	52	0	5	410	1	4
Future Vol, veh/h	52	0	5	410	1	4
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	0
Veh in Median Storage#	-	-	-	-	0	0
Grade, %	4			-4	2	
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	69	0	7	547	1	5

Major/Minor

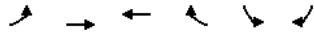
	Major1	Major2	Minor1
Conflicting Flow All	0	0	69
Stage 1	-	-	69
Stage 2	-	-	561
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1137	469
Stage 1	-	-	1105
Stage 2	-	-	608
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1137	465
Mov Cap-2 Maneuver	-	-	465
Stage 1	-	-	1105
Stage 2	-	-	603

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.1	9.3
HCM LOS			A

Minor Lane/Major Mvm

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	465	1058	-	-	1137	-
HCM Lane V/C Ratio	0.003	0.005	-	-	0.006	-
HCM Control Delay (s)	12.8	8.4	-	-	8.2	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	191	36	390	21	20	235
Future Volume (vph)	191	36	390	21	20	235
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-3%		0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.875	
Flt Protected		0.960			0.996	
Satd. Flow (prot)	0	1665	1795	0	1538	0
Flt Permitted		0.960			0.996	
Satd. Flow (perm)	0	1665	1795	0	1538	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		300	85		315	
Travel Time (s)		5.8	1.7		8.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	1%	2%	2%	2%
Adj. Flow (vph)	212	40	433	23	22	261
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	252	456	0	283	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	7.2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	191	36	390	21	20	235
Future Vol, veh/h	191	36	390	21	20	235
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	-	0
Grade, %	-	4	-3	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	1	2	2	2
Mvmt Flow	212	40	433	23	22	261

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	456	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	37	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	37	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	9.1	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	837	-	-	-	-	576
HCM Lane V/C Ratio	0.254	-	-	-	-	-0.492
HCM Control Delay (s)	10.8	0	-	-	-	17.1
HCM Lane LOS	B	A	-	-	-	C
HCM 95th %tile Q(veh)	1	-	-	-	-	2.7



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Volume (vph)	223	0	0	625	0	0
Future Volume (vph)	223	0	0	625	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1773	0	0	1809	1818	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	1809	1818	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	228			300	323	
Travel Time (s)	4.4			5.8	6.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	297	0	0	833	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	297	0	0	833	0	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

Intersection
 Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Vol, veh/h	223	0	0	625	0	0
Future Vol, veh/h	223	0	0	625	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3			-3	-2	
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	297	0	0	833	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	- 1130 297
Stage 1	-	-	- 297 -
Stage 2	-	-	- 833 -
Critical Hdwy	-	-	- 6 6
Critical Hdwy Stg 1	-	-	- 5 -
Critical Hdwy Stg 2	-	-	- 5 -
Follow-up Hdwy	-	-	- 3 3.1
Pot Cap-1 Maneuver	-	0	0 - 282 802
Stage 1	-	0	0 - 897 -
Stage 2	-	0	0 - 523 -
Platoon blocked, %	-		-
Mov Cap-1 Maneuver	-	-	- 282 802
Mov Cap-2 Maneuver	-	-	- 282 -
Stage 1	-	-	- 897 -
Stage 2	-	-	- 523 -

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	65	4	410	215	3	158
Future Volume (vph)	65	4	410	215	3	158
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	3%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.868	
Flt Protected				0.968	0.999	
Satd. Flow (prot)	1700	0	0	1682	1530	0
Flt Permitted				0.968	0.999	
Satd. Flow (perm)	1700	0	0	1682	1530	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1811			228	439	
Travel Time (s)	35.3			4.4	8.6	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	2%	2%	1%	2%	2%
Adj. Flow (vph)	87	5	547	287	4	211
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	0	834	215	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 7.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	65	4	410	215	3	158
Future Vol, veh/h	65	4	410	215	3	158
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	-
Grade, %	3			-3	0	
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	2	2	1	2	2
Mvmt Flow	87	5	547	287	4	211

Major/Minor

	Major1	Major2	Minor1
Conflicting Flow All	0	0	92
Stage 1	-	-	90
Stage 2	-	-	1381
Critical Hdwy	-	4.3	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1117	151
Stage 1	-	-	1088
Stage 2	-	-	253
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1117	63
Mov Cap-2 Maneuver	-	-	63
Stage 1	-	-	1088
Stage 2	-	-	106

Approach

	EB	WB	NB
HCM Control Delay, s	0	7.4	11.1
HCM LOS			B

Minor Lane/Major Mvm

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	803	-	-	1117	-
HCM Lane V/C Ratio	0.267	-	-	0.489	-
HCM Control Delay (s)	11.1	-	-	11.3	0
HCM Lane LOS	B	-	-	B	A
HCM 95th %tile Q(veh)	1.1	-	-	2.8	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	73	2	14	229	1	9
Future Volume (vph)	73	2	14	229	1	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	6%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.875	
Flt Protected				0.997	0.996	
Satd. Flow (prot)	1680	0	0	1742	1538	0
Flt Permitted				0.997	0.996	
Satd. Flow (perm)	1680	0	0	1742	1538	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	787			1811	415	
Travel Time (s)	15.3			35.3	11.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	2%	2%	1%	2%	2%
Adj. Flow (vph)	97	3	19	305	1	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	0	324	13	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	73	2	14	229	1	9
Future Vol, veh/h	73	2	14	229	1	9
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	-
Grade, %	6	-	-	-3	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	2	2	1	2	2
Mvmt Flow	97	3	19	305	1	12

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	100
Stage 1	-	-	99
Stage 2	-	-	343
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	-2.218	-3.518
Pot Cap-1 Maneuver	-	1493	573
Stage 1	-	-	925
Stage 2	-	-	719
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1493	564
Mov Cap-2 Maneuver	-	-	564
Stage 1	-	-	925
Stage 2	-	-	708

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

Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	895	-	-	1493	-
HCM Lane V/C Ratio	0.015	-	-	0.013	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	3	68	13	10	209	11	7	0	6	1	0	2
Future Volume (vph)	3	68	13	10	209	11	7	0	6	1	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Grade (%)	3%			-3%			0%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980				0.993				0.936			
Frt Protected	0.998				0.998				0.974			
Satd. Flow (prot)	0	1614	0	0	1673	0	0	1609	0	0	1485	0
Frt Permitted	0.998				0.998				0.974			
Satd. Flow (perm)	0	1614	0	0	1673	0	0	1609	0	0	1485	0
Link Speed (mph)	35				35				25			
Link Distance (ft)	591				787				452			
Travel Time (s)	11.5				15.3				12.3			
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	2%	2%	1%	0%	2%	2%	0%	0%	2%	0%
Adj. Flow (vph)	4	91	17	13	279	15	9	0	8	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	307	0	0	17	0	0	4	0
Sign Control	Free				Free				Stop			

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	3	68	13	10	209	11	7	0	6	1	0	2
Future Vol, veh/h	3	68	13	10	209	11	7	0	6	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free		Free		Free		Free		Stop		Stop	
RT Channelized	-		None		-		None		-		None	
Storage Length	-											
Veh in Median Storage, #	0											
Grade, %	-3			-			-3			-		
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	2	2	1	0	2	2	2	0	2	0
Mvmt Flow	4	91	17	13	279	15	9	0	8	1	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	294	0	108	422
Stage 1	-	-	-	108
Stage 2	-	-	-	320
Critical Hdwy	4.3	-	4.3	7.12
Critical Hdwy Stg 1	-	-	-	6.12
Critical Hdwy Stg 2	-	-	-	6.12
Follow-up Hdwy	3	-	3	34.018
Pot Cap-1 Maneuver	52	-	1103	618
Stage 1	-	-	-	1044
Stage 2	-	-	-	800
Platoon blocked, %	-			
Mov Cap-1 Maneuver	52	-	1103	607
Mov Cap-2 Maneuver	-	-	-	607
Stage 1	-	-	-	1040
Stage 2	-	-	-	786

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	0.4	9.9	10.1
HCM LOS	A		B	

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	747	952	-	-	1103	-	-	711
HCM Lane V/C Ratio	0.023	0.004	-	-	0.012	-	-	0.006
HCM Control Delay (s)	9.9	8.8	0	-	8.3	0	-	10.1
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	T
Traffic Volume (vph)	163	54	148	56	29	173
Future Volume (vph)	163	54	148	56	29	173
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966		0.963			
Flt Protected	0.964					0.993
Satd. Flow (prot)	1656	0	1721	0	0	1757
Flt Permitted	0.964					0.993
Satd. Flow (perm)	1656	0	1721	0	0	1757
Link Speed (mph)	35		35			35
Link Distance (ft)	591		636			619
Travel Time (s)	11.5		12.4			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	2%
Adj. Flow (vph)	183	61	166	63	33	194
Shared Lane Traffic (%)						
Lane Group Flow (vph)	244	0	229	0	0	227
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	T
Traffic Vol, veh/h	163	54	148	56	29	173
Future Vol, veh/h	163	54	148	56	29	173
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
Grade, %	0		-		-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	2	1	0	0	2
Mvmt Flow	183	61	166	63	33	194

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	458	198	0
Stage 1	198	-	-
Stage 2	260	-	-
Critical Hdwy	6.41	6.22	-
Critical Hdwy Stg 1	5.41	-	-
Critical Hdwy Stg 2	5.41	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuve	639	897	-
Stage 1	967	-	-
Stage 2	903	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuve	815	897	-
Mov Cap-2 Maneuve	815	-	-
Stage 1	967	-	-
Stage 2	870	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	SBL	SBT
Capacity (veh/h)	-	-	667	1003
HCM Lane V/C Ratio	-	-	0.366	0.032
HCM Control Delay (s)	-	-	13.5	8.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.7	0.1

Base

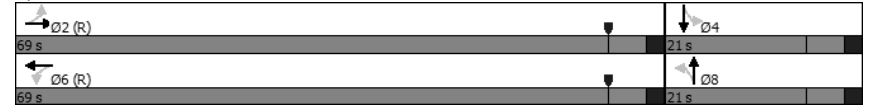
	↖	→	↘	↙	←	↖	↙	↘	↗	↖	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕		↕		↕		↕		↕		↕	
Traffic Volume (vph)	83	645	5	12	383	37	9	103	43	8	130	153
Future Volume (vph)	83	645	5	12	383	37	9	103	43	8	130	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%				1%		-2%		1%			
Storage Length (ft)	0		0		150		0		0		0	
Storage Lanes	0		0		0		0		0		0	
Taper Length (ft)	75		75		75		75		75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.988		0.963				0.929	
Flt Protected	0.994				0.999		0.997				0.999	
Satd. Flow (prot)	0	1624	0	0	1550	0	0	1587	0	0	1530	0
Flt Permitted	0.902				0.979		0.925				0.991	
Satd. Flow (perm)	0	1474	0	0	1519	0	0	1472	0	0	1518	0
Right Turn on Red			Yes				Yes				No	
Satd. Flow (RTOR)	1				13						No	
Link Speed (mph)	45				45		25				35	
Link Distance (ft)	819				2436		714				826	
Travel Time (s)	12.4				36.9		19.5				16.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	86	665	5	12	395	38	9	106	44	8	134	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	756	0	0	445	0	0	159	0	0	300	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left		Left		Left Thru		Left Thru		Left Thru		Left Thru	
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2				6		8				4	
Permitted Phases	2				6		8				4	
Detector Phase	2				6		8				4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%		23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0		-1.0				-1.0	

	↖	→	↘	↙	←	↖	↙	↘	↗	↖	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0				5.0		5.0				5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	50 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (veh/h)	83	645	5	12	383	37	9	103	43	8	130	153
Future Volume (veh/h)	83	645	5	12	383	37	9	103	43	8	130	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1818	1818	1818	1696	1696	1696	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	86	665	5	12	395	38	9	106	44	8	134	158
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	7	7	7	1	1	1	0	0	0
Cap, veh/h	149	1089	8	52	1062	100	50	221	87	44	134	153
Arrive On Green	0.70	0.71	0.70	0.93	0.95	0.93	0.17	0.18	0.17	0.17	0.18	0.17
Sat Flow, veh/h	147	1531	11	16	1493	141	42	1244	492	17	755	860
Grp Volume(v), veh/h	756	0	0	445	0	0	159	0	0	300	0	0
Grp Sat Flow(s),veh/h/ln	1690	0	0	1650	0	0	1778	0	0	1632	0	0
Q Serve(g_s), s	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Cycle Q Clear(g_c), s	19.8	0.0	0.0	2.1	0.0	0.0	7.4	0.0	0.0	15.0	0.0	0.0
Prop In Lane	0.11		0.01	0.03		0.09	0.06		0.28	0.03		0.53
Lane Grp Cap(c), veh/h	1227	0	0	1196	0	0	339	0	0	313	0	0
V/C Ratio(X)	0.62	0.00	0.00	0.37	0.00	0.00	0.47	0.00	0.00	0.96	0.00	0.00
Avail Cap(c_a), veh/h	1227	0	0	1196	0	0	339	0	0	313	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.99	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	0.0	0.0	0.8	0.0	0.0	33.6	0.0	0.0	37.5	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.9	0.0	0.0	1.0	0.0	0.0	39.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.9	0.0	0.0	1.2	0.0	0.0	5.9	0.0	0.0	15.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.9	0.0	0.0	1.7	0.0	0.0	34.6	0.0	0.0	77.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	E	A	A
Approach Vol, veh/h	756			445			159			300		
Approach Delay, s/veh	8.9			1.7			34.6			77.2		
Approach LOS	A			A			C			E		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	69.0		21.0		69.0		21.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	63.0		15.0		63.0		15.0					
Max Q Clear Time (g_c+1), s	21.8		17.0		4.1		9.4					
Green Ext Time (p_c), s	7.5		0.0		3.5		0.2					
Intersection Summary												
HCM 6th Ctrl Delay	21.7											
HCM 6th LOS	C											



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Volume (vph)	0	0	43	0	0	34	32	2086	70	53	1733	258
Future Volume (vph)	0	0	43	0	0	34	32	2086	70	53	1733	258
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		325
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	
Frt			0.865			0.865	0.995			0.981		
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1379	1488	3200	0	1629	3147	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1379	1488	3200	0	1629	3147	0
Link Speed (mph)			35			35		45		45		
Link Distance (ft)			499			858		3154		1356		
Travel Time (s)			9.7			16.7		47.8		20.5		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	14%	10%	5%	14%	3%	9%	3%
Adj. Flow (vph)	0	0	45	0	0	35	33	2173	73	55	1805	269
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	45	0	0	35	33	2246	0	55	2074	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

Intersection												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Int Delay, s/veh	0.7											
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Vol, veh/h	0	0	43	0	0	34	32	2086	70	53	1733	258
Future Vol, veh/h	0	0	43	0	0	34	32	2086	70	53	1733	258
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	350	-	-	380	-	-
Veh in Median Storage, #	0	0	0	0	0	0	0	0	0	0	0	0
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	14	10	5	14	3	9	3
Mvmt Flow	0	0	45	0	0	35	33	2173	73	55	1805	269

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	-	-	1037	-	-	1123	2074	0	0	2246	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.2	-	-	7.3	4.1	-	-	4	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.9	-	-	3.1	2.5	-	-	2.4	-	-
Pot Cap-1 Maneuver	0	0	*415	0	0	*225	399	-	-	*291	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1			1		
Mov Cap-1 Maneuver	-	-	*415	-	-	*225	399	-	-	*291	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	24	0.2	0.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	399	-	-	415	225	*291	-
HCM Lane V/C Ratio	0.084	-	-	0.108	0.157	0.19	-
HCM Control Delay (s)	14.8	-	-	14.7	24	20.2	-
HCM Lane LOS	B	-	-	B	C	C	-
HCM 95th %tile Q(veh)	0.3	-	-	0.4	0.5	0.7	-

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

McMahon Associates, Inc.

Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

2025 with Dev Weekday Morning Peak Hour



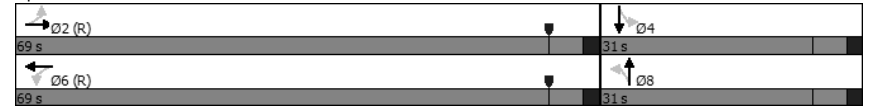
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↘	↗	↗	↘	↗	↗
Traffic Volume (veh/h)	240	149	34	86	138	61	0	2040	56	0	1957	307
Future Volume (veh/h)	240	149	34	86	138	61	0	2040	56	0	1957	307
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1901	1947	1874	1722	1717	1717	0	1707	1849	0	1798	1914
Adj Flow Rate, veh/h	253	157	36	91	145	64	0	2147	59	0	2060	323
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	8	13	4	9	9	0	5	0	0	8	5
Cap, veh/h	228	471	370	263	273	120	0	2109	1018	0	2221	1054
Arrive On Green	0.24	0.24	0.23	0.24	0.24	0.23	0.00	0.65	0.65	0.00	0.65	0.65
Sat Flow, veh/h	1258	1947	1588	1156	1129	498	0	3330	1567	0	3506	1622
Grp Volume(v), veh/h	253	157	36	91	0	209	0	2147	59	0	2060	323
Grp Sat Flow(s),veh/h/ln	1258	1947	1588	1156	0	1628	0	1622	1567	0	1708	1622
Q Serve(g_s), s	16.1	8.0	2.1	8.5	0.0	13.4	0.0	78.0	1.6	0.0	63.8	10.4
Cycle Q Clear(g_c), s	29.0	8.0	2.1	16.4	0.0	13.4	0.0	78.0	1.6	0.0	63.8	10.4
Prop In Lane	1.00		1.00	1.00		0.31	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	228	471	370	263	0	393	0	2109	1018	0	2221	1054
V/C Ratio(X)	1.11	0.33	0.10	0.35	0.00	0.53	0.00	1.02	0.06	0.00	0.93	0.31
Avail Cap(c_a), veh/h	228	471	370	263	0	393	0	2109	1018	0	2221	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	37.5	36.1	44.3	0.0	39.7	0.0	21.0	7.6	0.0	18.5	9.2
Incr Delay (d2), s/veh	91.3	0.4	0.1	0.8	0.0	1.4	0.0	24.3	0.1	0.0	8.3	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	9.7	7.0	1.5	4.5	0.0	9.5	0.0	41.4	0.9	0.0	31.5	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	145.4	37.9	36.2	45.1	0.0	41.1	0.0	45.3	7.7	0.0	26.8	9.9
LnGrp LOS	F	D	D	D	A	D	A	F	A	A	C	A
Approach Vol, veh/h		446			300			2206			2383	
Approach Delay, s/veh		98.7			42.3			44.3			24.5	
Approach LOS		F			D			D			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		84.0		36.0		84.0		36.0				
Change Period (Y+Rc), s		7.0		8.0		7.0		8.0				
Max Green Setting (Gmax), s		77.0		28.0		77.0		28.0				
Max Q Clear Time (g_c+I1), s		66.3		18.9		80.5		31.5				
Green Ext Time (p_c), s		10.7		0.9		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			39.9									
HCM 6th LOS			D									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	65	668	13	23	373	31	9	90	42	51	173	103
Future Volume (vph)	65	668	13	23	373	31	9	90	42	51	173	103
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.990			0.960			0.958		
Flt Protected	0.996			0.997			0.997			0.992		
Satd. Flow (prot)	0	1626	0	0	1552	0	0	1580	0	0	1547	0
Flt Permitted	0.926			0.944			0.974			0.930		
Satd. Flow (perm)	0	1511	0	0	1469	0	0	1543	0	0	1451	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	2			8			25			35		
Link Speed (mph)	45			45			25			35		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	67	689	13	24	385	32	9	93	43	53	178	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	769	0	0	441	0	0	145	0	0	337	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Permitted Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%		31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Last Time Adjust (s)	-1.0			-1.0			-1.0			-1.0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0			5.0			5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	70
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕				↕			↕			↕	
Traffic Volume (veh/h)	65	668	13	23	373	31	9	90	42	51	173	103
Future Volume (veh/h)	65	668	13	23	373	31	9	90	42	51	173	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No			No	
Adj Sat Flow, veh/h/ln	1818	1818	1818	1696	1696	1696	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	67	689	13	24	385	32	9	93	43	53	178	106
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	7	7	7	1	1	1	0	0	0
Cap, veh/h	114	1057	19	70	966	78	49	275	121	87	213	119
Arrive On Green	0.68	0.67	0.66	1.00	1.00	1.00	0.24	0.23	0.22	0.24	0.23	0.22
Sat Flow, veh/h	112	1579	29	48	1444	117	48	1190	522	197	922	514
Grp Volume(v), veh/h	769	0	0	441	0	0	145	0	0	337	0	0
Grp Sat Flow(s),veh/h/ln	1720	0	0	1609	0	0	1761	0	0	1633	0	0
Q Serve(g_s), s	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.8	0.0	0.0
Cycle Q Clear(g_c), s	25.1	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0	19.7	0.0	0.0
Prop In Lane	0.09		0.02	0.05		0.07	0.06		0.30	0.16		0.31
Lane Grp Cap(c), veh/h	1207	0	0	1131	0	0	462	0	0	435	0	0
V/C Ratio(X)	0.64	0.00	0.00	0.39	0.00	0.00	0.31	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	1207	0	0	1131	0	0	512	0	0	482	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.97	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.5	0.0	0.0	0.0	0.0	0.0	32.3	0.0	0.0	37.1	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	7.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	0.0	0.6	0.0	0.0	5.3	0.0	0.0	13.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.1	0.0	0.0	1.0	0.0	0.0	32.7	0.0	0.0	44.1	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	C	A	A	D	A	A
Approach Vol, veh/h	769			441			145			337		
Approach Delay, s/veh	12.1			1.0			32.7			44.1		
Approach LOS	B			A			C			D		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	71.9		28.1		71.9		28.1					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	63.0		25.0		63.0		25.0					
Max Q Clear Time (g_c+1), s	27.1		21.7		2.5		8.9					
Green Ext Time (p_c), s	7.4		0.4		3.6		0.4					
Intersection Summary												
HCM 6th Ctrl Delay	17.3											
HCM 6th LOS	B											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Volume (vph)	0	0	56	0	0	42	50	1925	60	108	1462	365
Future Volume (vph)	0	0	56	0	0	42	50	1925	60	108	1462	365
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		325
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Frt			0.865			0.865	0.995			0.970		
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1573	1636	3243	0	1678	3282	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1573	1636	3243	0	1678	3282	0
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		553			858			3154			1356	
Travel Time (s)		10.8			16.7			47.8			20.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	1%
Adj. Flow (vph)	0	0	57	0	0	43	51	1964	61	110	1492	372
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	57	0	0	43	51	2025	0	110	1864	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Vol, veh/h	0	0	56	0	0	42	50	1925	60	108	1462	365
Future Vol, veh/h	0	0	56	0	0	42	50	1925	60	108	1462	365
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	0	350	-	-	380	-	-	-
Veh in Median Storage, #	0	0	0	0	0	0	0	0	4	0	0	3
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	4	0	0	3
Mvmt Flow	0	0	57	0	0	43	51	1964	61	110	1492	372

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	-	-	932	-	-	1013	1864	0	0	2025	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.1	-	-	7.2	3.9	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.9	-	-	3	2.4	-	-	2.4	-	-
Pot Cap-1 Maneuver	0	0	*561	0	0	*317	468	-	-	*397	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %	-	-	1	-	-	1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*561	-	-	*317	468	-	-	*397	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.1	18.1	0.3	1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	468	-	-	561	317	*397	-
HCM Lane V/C Ratio	0.109	-	-	0.102	0.135	0.278	-
HCM Control Delay (s)	13.6	-	-	12.1	18.1	17.5	-
HCM Lane LOS	B	-	-	B	C	C	-
HCM 95th %tile Q(veh)	0.4	-	-	0.3	0.5	1.1	-

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

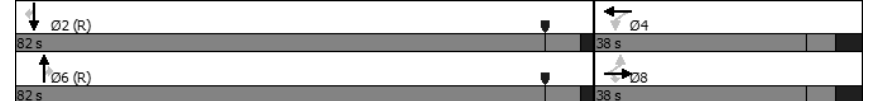
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	349	142	61	59	44	65	0	1918	75	0	1850	378
Future Volume (vph)	349	142	61	59	44	65	0	1918	75	0	1850	378
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	12	12	14	12	12	16
Grade (%)	-5%				2%		2%				-3%	
Storage Length (ft)	200		200	350		0	0		220	0		200
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25		25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Flt Protected	0.950		0.950									
Satd. Flow (prot)	1661	1906	1589	1693	1730	0	0	3256	1616	0	3370	1709
Flt Permitted	0.669		0.610									
Satd. Flow (perm)	1170	1906	1589	1087	1730	0	0	3256	1616	0	3370	1709
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	25		25		45		45		45		45	
Link Distance (ft)	637		560		1356		940		14.2		14.2	
Travel Time (s)	17.4		15.3		20.5		20.5		20.5		20.5	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	0%	4%	0%	0%	3%	3%
Adj. Flow (vph)	360	146	63	61	45	67	0	1977	77	0	1907	390
Shared Lane Traffic (%)												
Lane Group Flow (vph)	360	146	63	61	112	0	0	1977	77	0	1907	390
Number of Detectors	1	1	1	1	1			5	1		5	1
Detector Template	Right				Right				Right			
Leading Detector (ft)	35	68	30	35	68			490	30		490	30
Trailing Detector (ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Position(ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Size(ft)	40	69	40	40	69			40	40		40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 2 Position(ft)												
Detector 2 Size(ft)												
Detector 2 Type												
Detector 2 Channel												
Detector 2 Extend (s)												
Detector 3 Position(ft)												
Detector 3 Size(ft)												
Detector 3 Type												
Detector 3 Channel												
Detector 3 Extend (s)												
Detector 4 Position(ft)												
Detector 4 Size(ft)												
Detector 4 Type												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 4 Channel												
Detector 4 Extend (s)												
Detector 5 Position(ft)												
Detector 5 Size(ft)												
Detector 5 Type												
Detector 5 Channel												
Detector 5 Extend (s)												
Turn Type	Perm	NA	Perm	Perm	NA		NA	Perm	NA	Perm	NA	Perm
Protected Phases												
Permitted Phases	8	8	8	4	4		6	6	6	2	2	2
Detector Phase	8	8	8	4	4		6	6	6	2	2	2
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		15.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	38.0	38.0	38.0	38.0	38.0		82.0	82.0	82.0	82.0	82.0	82.0
Total Split (%)	31.7%	31.7%	31.7%	31.7%	31.7%		68.3%	68.3%	68.3%	68.3%	68.3%	68.3%
Maximum Green (s)	30.0	30.0	30.0	30.0	30.0		75.0	75.0	75.0	75.0	75.0	75.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-3.0	-3.0	-4.0	-3.0	-3.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		6.0	6.0	6.0	6.0	6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		48.0	48.0	48.0	48.0	48.0	48.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		24.0	24.0	24.0	24.0	24.0	24.0
Recall Mode	None	None	None	None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	84 (70%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Description:	Signal

Splits and Phases: 12: Rt 202 & Stetson School Dr/Skiles Blvd



McMahon Associates, Inc.

Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

2025 with Dev Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↘	↗	↗	↘	↗	↘
Traffic Volume (veh/h)	349	142	61	59	44	65	0	1918	75	0	1850	378
Future Volume (veh/h)	349	142	61	59	44	65	0	1918	75	0	1850	378
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	2036	1778	1849	1849	0	1722	1849	0	1869	1944
Adj Flow Rate, veh/h	360	146	63	61	45	67	0	1977	77	0	1907	390
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	2	0	0	0	0	4	0	0	3	3
Cap, veh/h	380	568	489	319	184	275	0	2099	1005	0	2279	1057
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.25	0.00	0.64	0.64	0.00	0.64	0.64
Sat Flow, veh/h	1415	2066	1726	1177	671	998	0	3357	1567	0	3645	1647
Grp Volume(v), veh/h	360	146	63	61	0	112	0	1977	77	0	1907	390
Grp Sat Flow(s),veh/h/ln	1415	2066	1726	1177	0	1669	0	1635	1567	0	1776	1647
Q Serve(g_s), s	27.1	6.6	3.3	5.1	0.0	6.4	0.0	65.7	2.2	0.0	49.9	13.3
Cycle Q Clear(g_c), s	33.0	6.6	3.3	11.7	0.0	6.4	0.0	65.7	2.2	0.0	49.9	13.3
Prop In Lane	1.00		1.00	1.00		0.60	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	380	568	489	319	0	459	0	2099	1005	0	2279	1057
V/C Ratio(X)	0.95	0.26	0.13	0.19	0.00	0.24	0.00	0.94	0.08	0.00	0.84	0.37
Avail Cap(c_a), veh/h	380	568	489	319	0	459	0	2099	1005	0	2279	1057
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	47.9	33.9	32.0	38.5	0.0	34.5	0.0	19.5	8.1	0.0	16.6	10.1
Incr Delay (d2), s/veh	32.8	0.2	0.1	0.3	0.0	0.3	0.0	10.1	0.1	0.0	3.8	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	20.7	6.1	2.5	2.7	0.0	4.8	0.0	31.9	1.3	0.0	25.5	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.7	34.2	32.1	38.8	0.0	34.8	0.0	29.5	8.3	0.0	20.5	11.1
LnGrp LOS	F	C	C	D	A	C	A	C	A	A	C	B
Approach Vol, veh/h	569			173			2054			2297		
Approach Delay, s/veh	63.4			36.2			28.7			18.9		
Approach LOS	E			D			C			B		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	82.0		38.0		82.0		38.0					
Change Period (Y+Rc), s	7.0		8.0		7.0		8.0					
Max Green Setting (Gmax), s	75.0		30.0		75.0		30.0					
Max Q Clear Time (g_c+1), s	52.4		14.2		68.2		35.5					
Green Ext Time (p_c), s	22.6		0.6		6.8		0.0					
Intersection Summary												
HCM 6th Ctrl Delay	28.4											
HCM 6th LOS	C											

Appendix R

Future (2030) Capacity/Level-of-Service Without Development Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕		↕		↕		↕		↕		↕	
Traffic Volume (vph)	81	660	5	8	330	38	10	105	43	8	130	204
Future Volume (vph)	81	660	5	8	330	38	10	105	43	8	130	204
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%				1%		-2%				1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.986		0.963				0.919	
Frt Protected	0.995				0.999		0.997				0.999	
Satd. Flow (prot)	0	1626	0	0	1547	0	0	1586	0	0	1512	0
Frt Permitted	0.914				0.986		0.869				0.992	
Satd. Flow (perm)	0	1493	0	0	1527	0	0	1383	0	0	1502	0
Right Turn on Red	Yes				Yes		No				No	
Satd. Flow (RTOR)	1				16		25				35	
Link Speed (mph)	45				45		714				826	
Link Distance (ft)	819				2436		714				826	
Travel Time (s)	12.4				36.9		19.5				16.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	84	680	5	8	340	39	10	108	44	8	134	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	769	0	0	387	0	0	162	0	0	352	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left				Left		Thru				Thru	
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2				6		8				4	
Detector Phase	2				6		8				4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%		23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0		-1.0				-1.0	
Total Lost Time (s)	5.0				5.0		5.0				5.0	
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Natural Cycle:	70
Control Type:	Semi Act-Uncoordinated

Splits and Phases: 1: New St & Rt 926

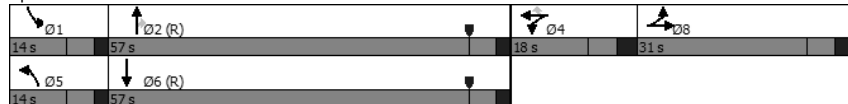


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0					7.0	7.0		7.0		
Flash Dont Walk (s)	31.0	31.0					21.0	21.0		21.0		
Pedestrian Calls (#/hr)	0	0					0	0		0		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	536	234	8	150	167	58	13	1672	160	57	1577	194
Future Volume (veh/h)	536	234	8	150	167	58	13	1672	160	57	1577	194
Initial Q (Qb), veh	8	7	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	1869	1914	1914	1892	1892	1923	1707	1864	1953	1589	1674	1674
Adj Flow Rate, veh/h	401	454	8	155	172	60	13	1724	165	59	1626	200
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	5	5	4	4	7	17	6	5	15	9	9
Cap, veh/h	371	397	2	180	189	163	30	1591	743	90	1399	69
Arrive On Green	0.21	0.21	0.20	0.10	0.10	0.10	0.02	0.45	0.45	0.06	0.49	0.48
Sat Flow, veh/h	1780	1875	33	1802	1892	1630	1626	3541	1655	1514	2856	346
Grp Volume(v), veh/h	401	0	462	155	172	60	13	1724	165	59	894	932
Grp Sat Flow(s),veh/h/ln	1780	0	1908	1802	1892	1630	1626	1771	1655	1514	1590	1611
Q Serve(g_s), s	25.0	0.0	25.0	10.2	10.8	4.1	0.9	53.9	7.3	4.6	58.8	58.8
Cycle Q Clear(g_c), s	25.0	0.0	25.0	10.2	10.8	4.1	0.9	53.9	7.3	4.6	58.8	58.8
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	371	0	398	180	189	163	30	1591	743	90	779	789
V/C Ratio(X)	1.08	0.00	1.16	0.86	0.91	0.37	0.43	1.08	0.22	0.66	1.15	1.18
Avail Cap(c_a), veh/h	371	0	398	180	189	163	122	1591	743	114	779	789
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	47.5	53.2	53.5	50.5	58.3	33.0	20.2	55.3	30.6	30.7
Incr Delay (d2), s/veh	70.2	0.0	96.2	31.8	40.8	1.4	9.6	49.0	0.7	9.1	81.0	94.3
Initial Q Delay(d3),s/veh	77.7	0.0	63.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	84.0	0.0	39.3	10.1	11.5	3.1	0.8	44.1	5.1	3.5	53.4	58.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	195.4	0.0	206.9	85.0	94.3	51.8	67.8	82.0	20.9	64.3	111.6	125.0
LnGrp LOS	F	A	F	F	F	D	E	F	C	E	F	F
Approach Vol, veh/h	863			387			1902				1885	
Approach Delay, s/veh	201.6			84.0			76.6				116.8	
Approach LOS	F			F			E				F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.1	58.9		18.0	7.2	63.8		31.0				
Change Period (Y+Rc), s	6.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	80	51.0		11.0	8.0	51.0		24.0				
Max Q Clear Time (g_c+l1), s	56.4			13.3	3.4	61.3		27.5				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 113.6
 HCM 6th LOS F

Notes

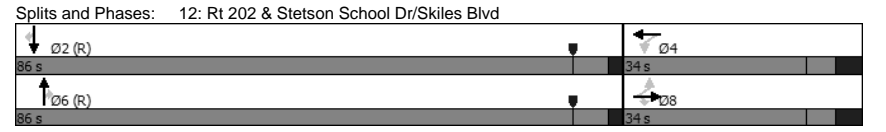
User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	143	153	35	87	142	62	0	2135	57	0	1998	304
Future Volume (vph)	143	153	35	87	142	62	0	2135	57	0	1998	304
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	12	12	14	12	12	16
Grade (%)	-5%		2%			2%			-3%			
Storage Length (ft)	200		200	350		0	0		220	0		200
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	75		100			75			75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.850		0.954				0.850			0.850	
Flt Protected	0.950		0.950									
Satd. Flow (prot)	1598	1765	1434	1628	1687	0	0	3225	1616	0	3214	1676
Flt Permitted	0.477		0.593									
Satd. Flow (perm)	803	1765	1434	1016	1687	0	0	3225	1616	0	3214	1676
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	25		25			45			45			
Link Distance (ft)	637		560			1356			940			
Travel Time (s)	17.4		15.3			20.5			14.2			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	8%	13%	4%	9%	4%	0%	5%	0%	0%	8%	5%
Adj. Flow (vph)	151	161	37	92	149	65	0	2247	60	0	2103	320
Shared Lane Traffic (%)												
Lane Group Flow (vph)	151	161	37	92	214	0	0	2247	60	0	2103	320
Number of Detectors	1	4	1	1	4			2	1		2	1
Detector Template	Right				Right				Right			
Leading Detector (ft)	35	68	30	35	68			490	30		490	30
Trailing Detector (ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Position(ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Size(ft)	40	6	40	40	6			40	40		40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 2 Position(ft)	15				450				450			
Detector 2 Size(ft)	6				40				40			
Detector 2 Type	Cl+Ex				Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0				0.0				0.0			
Detector 3 Position(ft)	36				36							
Detector 3 Size(ft)	6				6							
Detector 3 Type	Cl+Ex				Cl+Ex							
Detector 3 Channel												
Detector 3 Extend (s)	0.0				0.0							
Detector 4 Position(ft)	62				62							
Detector 4 Size(ft)	6				6							
Detector 4 Type	Cl+Ex				Cl+Ex							

Lanes, Volumes, Timings 2030 without Dev Weekday Morning Peak Hour
 I:\eng\816451 - Crebilly Farm\Traffic Analysis\2020-05 Robinson Tract Revised TIS\Synchro4 - 2030 without Dev - Base\W

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Detector 4 Channel												
Detector 4 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Perm	NA	Perm	Perm	NA			NA	Perm		NA	Perm
Protected Phases	8		8		4		4		6		2	
Permitted Phases	8		8	4				6		6		2
Detector Phase	8	8	8	4	4			6	6		2	2
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0			15.0	15.0		15.0	15.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0			22.0	22.0		22.0	22.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0			86.0	86.0		86.0	86.0
Total Split (%)	28.3%	28.3%	28.3%	28.3%	28.3%			71.7%	71.7%		71.7%	71.7%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0			79.0	79.0		79.0	79.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			5.0	5.0		5.0	5.0
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0			2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0			-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	7.0	7.0	8.0	7.0	7.0			6.0	6.0		6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			6.0	6.0		6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0			48.0	48.0		48.0	48.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0			24.0	24.0		24.0	24.0
Recall Mode	None	None	None	None	None			C-Max	C-Max		C-Max	C-Max

Intersection Summary
 Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 83 (69%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated



Lanes, Volumes, Timings 2030 without Dev Weekday Morning Peak Hour
 I:\eng\816451 - Crebilly Farm\Traffic Analysis\2020-05 Robinson Tract Revised TIS\Synchro4 - 2030 without Dev - Base\W

McMahon Associates, Inc.

Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

2030 without Dev Weekday Morning Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↘	↗	↗	↘	↗	↗
Traffic Volume (veh/h)	143	153	35	87	142	62	0	2135	57	0	1998	304
Future Volume (veh/h)	143	153	35	87	142	62	0	2135	57	0	1998	304
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1901	1947	1874	1722	1717	1717	0	1707	1849	0	1798	1914
Adj Flow Rate, veh/h	151	161	37	92	149	65	0	2247	60	0	2103	320
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	8	13	4	9	9	0	5	0	0	8	5
Cap, veh/h	200	438	344	239	255	111	0	2163	1045	0	2277	1082
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.00	0.67	0.67	0.00	0.67	0.67
Sat Flow, veh/h	1252	1947	1588	1151	1134	495	0	3330	1567	0	3506	1622
Grp Volume(v), veh/h	151	161	37	92	0	214	0	2247	60	0	2103	320
Grp Sat Flow(s),veh/h/ln	1252	1947	1588	1151	0	1628	0	1622	1567	0	1708	1622
Q Serve(g_s), s	13.4	8.4	2.2	8.8	0.0	14.1	0.0	80.0	1.6	0.0	64.1	9.8
Cycle Q Clear(g_c), s	27.0	8.4	2.2	17.2	0.0	14.1	0.0	80.0	1.6	0.0	64.1	9.8
Prop In Lane	1.00		1.00	1.00		0.30	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	200	438	344	239	0	366	0	2163	1045	0	2277	1082
V/C Ratio(X)	0.76	0.37	0.11	0.39	0.00	0.58	0.00	1.04	0.06	0.00	0.92	0.30
Avail Cap(c_a), veh/h	200	438	344	239	0	366	0	2163	1045	0	2277	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	39.3	37.7	46.5	0.0	41.6	0.0	20.0	6.9	0.0	17.3	8.3
Incr Delay (d2), s/veh	15.1	0.5	0.1	1.0	0.0	2.4	0.0	30.3	0.1	0.0	7.8	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	9.3	7.4	1.6	4.7	0.0	10.0	0.0	44.6	0.9	0.0	31.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.9	39.8	37.8	47.6	0.0	44.0	0.0	50.3	7.0	0.0	25.1	9.0
LnGrp LOS	E	D	D	D	A	D	A	F	A	A	C	A
Approach Vol, veh/h	349			306			2307			2423		
Approach Delay, s/veh	52.2			45.1			49.2			23.0		
Approach LOS	D			D			D			C		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	86.0		34.0		86.0		34.0					
Change Period (Y+Rc), s	7.0		8.0		7.0		8.0					
Max Green Setting (Gmax), s	79.0		26.0		79.0		26.0					
Max Q Clear Time (g_c+1), s	66.6		19.7		82.5		29.5					
Green Ext Time (p_c), s	12.4		0.8		0.0		0.0					

Intersection Summary	
HCM 6th Ctrl Delay	37.4
HCM 6th LOS	D

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	696	33	14	346	26	41
Future Volume (vph)	696	33	14	346	26	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	14
Grade (%)	8%			-8%	-1%	
Storage Length (ft)		350	120		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1662	1521	1719	1733	1719	1592
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1662	1521	1719	1733	1719	1592
Link Speed (mph)	45			45	25	
Link Distance (ft)	2436			2349	414	
Travel Time (s)	36.9			35.6	11.3	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	4%	3%	0%	8%	0%	3%
Adj. Flow (vph)	718	34	14	357	27	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	718	34	14	357	27	42
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	696	33	14	346	26	41
Future Vol, veh/h	696	33	14	346	26	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	120	-	0	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	8	-	-	-8	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	4	3	0	8	0	3
Mvmt Flow	718	34	14	357	27	42

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	718
Stage 1	-	-	718
Stage 2	-	-	385
Critical Hdwy	-	4.3	6.2
Critical Hdwy Stg 1	-	-	5.2
Critical Hdwy Stg 2	-	-	5.2
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	658	275
Stage 1	-	-	565
Stage 2	-	-	804
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	658	269
Mov Cap-2 Maneuver	-	-	269
Stage 1	-	-	565
Stage 2	-	-	787

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	16.1
HCM LOS			C

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	269	458	-	-	658	-
HCM Lane V/C Ratio	0.1	0.092	-	-	0.022	-
HCM Control Delay (s)	19.9	13.7	-	-	10.6	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.1	-

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Volume (vph)	0	0	28	0	0	34	33	2180	71	54	1875	158
Future Volume (vph)	0	0	28	0	0	34	33	2180	71	54	1875	158
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	
Frt			0.865			0.865	0.995			0.988		
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1379	1488	3200	0	1629	3160	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1379	1488	3200	0	1629	3160	0
Link Speed (mph)			35			35		45		45		
Link Distance (ft)			499			858		3154		1356		
Travel Time (s)			9.7			16.7		47.8		20.5		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	14%	10%	5%	14%	3%	9%	3%
Adj. Flow (vph)	0	0	29	0	0	35	34	2271	74	56	1953	165
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	29	0	0	35	34	2345	0	56	2118	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

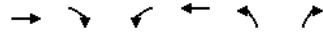
Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Vol, veh/h	0	0	28	0	0	34	33	2180	71	54	1875	158
Future Vol, veh/h	0	0	28	0	0	34	33	2180	71	54	1875	158
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	0	350	-	-	380	-	-	-
Veh in Median Storage, #	0	0	0	0	0	0	0	0	0	0	0	0
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	14	10	5	14	3	9	3
Mvmt Flow	0	0	29	0	0	35	34	2271	74	56	1953	165

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	-	-	1059	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	7.2	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.9	-
Pot Cap-1 Maneuver	0	0	*357	0
Stage 1	0	0	-	0
Stage 2	0	0	-	0
Platoon blocked, %			1	1
Mov Cap-1 Maneuver	-	-	*357	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/6		27.2	0.2	0.6
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 415	-	-	357	197	* 255	-
HCM Lane V/C Ratio	0.083	-	-0.082	0.18	0.221	-	-
HCM Control Delay (s)	14.5	-	-	16	27.2	23.1	-
HCM Lane LOS	B	-	-	C	D	C	-
HCM 95th %tile Q(veh)	0.3	-	-	0.3	0.6	0.8	-

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	28	1	8	182	1	0
Future Volume (vph)	28	1	8	182	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997					
Flt Protected				0.998	0.950	
Satd. Flow (prot)	1700	0	0	1722	1636	1663
Flt Permitted				0.998	0.950	
Satd. Flow (perm)	1700	0	0	1722	1636	1663
Link Speed (mph)	35			35	35	
Link Distance (ft)	108			499	469	
Travel Time (s)	2.1			9.7	9.1	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	40	1	11	260	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	0	271	1	0
Sign Control	Free			Free	Stop	

Intersection Summary

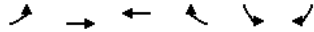
Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	28	1	8	182	1	0
Future Vol, veh/h	28	1	8	182	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	4	-	-	-4	2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	40	1	11	260	1	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	41
Stage 1	-	-	41
Stage 2	-	-	282
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1162	744
Stage 1	-	-	1143
Stage 2	-	-	855
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1162	736
Mov Cap-2 Maneuver	-	-	736
Stage 1	-	-	1143
Stage 2	-	-	846

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

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	736	-	-	-	1162	-
HCM Lane V/C Ratio	0.002	-	-	-	0.01	-
HCM Control Delay (s)	9.9	0	-	-	8.1	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Volume (vph)	34	13	155	28	15	12
Future Volume (vph)	34	13	155	28	15	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.940	
Flt Protected		0.965			0.973	
Satd. Flow (prot)	0	1678	1748	0	1614	0
Flt Permitted		0.965			0.973	
Satd. Flow (perm)	0	1678	1748	0	1614	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		322	108		349	
Travel Time (s)		6.3	2.1		9.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	2%	0%	3%	2%	2%	2%
Adj. Flow (vph)	49	19	221	40	21	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	68	261	0	38	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection

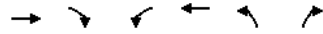
Int Delay, s/veh 2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	34	13	155	28	15	12
Future Vol, veh/h	34	13	155	28	15	12
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	0	0	0
Grade, %	-	4	-4	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	0	3	2	2	2
Mvmt Flow	49	19	221	40	21	17

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	261	0	358
Stage 1	-	-	241
Stage 2	-	-	117
Critical Hdwy	4.3	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	778	-	733
Stage 1	-	-	921
Stage 2	-	-	1056
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	778	-	696
Mov Cap-2 Maneuver	-	-	696
Stage 1	-	-	874
Stage 2	-	-	1056

Approach	EB	WB	SB
HCM Control Delay, s	4	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	978	-	-	-	756
HCM Lane V/C Ratio	0.05	-	-	-	-0.051
HCM Control Delay (s)	8.9	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	48	0	0	167	0	0
Future Volume (vph)	48	0	0	167	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1714	0	0	1715	1879	0
Flt Permitted						
Satd. Flow (perm)	1714	0	0	1715	1879	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	2929			322	436	
Travel Time (s)	57.1			6.3	8.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	69	0	0	239	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	239	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

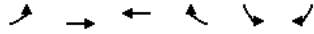
Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	48	0	0	167	0	0
Future Vol, veh/h	48	0	0	167	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3	-	-	-3	-2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	69	0	0	239	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	308
Stage 1	-	-	69
Stage 2	-	-	239
Critical Hdwy	-	-	6
Critical Hdwy Stg 1	-	-	5
Critical Hdwy Stg 2	-	-	5
Follow-up Hdwy	-	-	3
Pot Cap-1 Maneuver	0	0	814
Stage 1	-	0	1122
Stage 2	-	0	950
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	814
Mov Cap-2 Maneuver	-	-	814
Stage 1	-	-	1122
Stage 2	-	-	950

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Volume (vph)	0	54	240	3	5	2
Future Volume (vph)	0	54	240	3	5	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		3%	-3%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.959	
Flt Protected					0.966	
Satd. Flow (prot)	0	1576	1644	0	1441	0
Flt Permitted					0.966	
Satd. Flow (perm)	0	1576	1644	0	1441	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		496	2929		306	
Travel Time (s)		9.7	57.1		8.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	3%	50%	0%	25%
Adj. Flow (vph)	0	77	343	4	7	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	77	347	0	10	0
Sign Control		Free	Free		Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	54	240	3	5	2
Future Vol, veh/h	0	54	240	3	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	3	-3	-	1	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	5	3	50	0	25
Mvmt Flow	0	77	343	4	7	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	347	0	422
Stage 1	-	-	345
Stage 2	-	-	77
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	13	-	657
Stage 1	-	-	807
Stage 2	-	-	1099
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	13	-	657
Mov Cap-2 Maneuver	-	-	657
Stage 1	-	-	807
Stage 2	-	-	1099

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	913	-	-	-	663
HCM Lane V/C Ratio	-	-	-	-	-0.015
HCM Control Delay (s)	0	-	-	-	10.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (vph)	219	23	183	38	16	134
Future Volume (vph)	219	23	183	38	16	134
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987		0.977			
Flt Protected	0.957					0.995
Satd. Flow (prot)	1648	0	1730	0	0	1760
Flt Permitted	0.957					0.995
Satd. Flow (perm)	1648	0	1730	0	0	1760
Link Speed (mph)	35		35			35
Link Distance (ft)	496		2543			619
Travel Time (s)	9.7		49.5			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	14%	2%	0%	8%	1%
Adj. Flow (vph)	246	26	206	43	18	151
Shared Lane Traffic (%)						
Lane Group Flow (vph)	272	0	249	0	0	169
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	5.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	219	23	183	38	16	134
Future Vol, veh/h	219	23	183	38	16	134
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		-	
Grade, %	0		-		-	
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	14	2	0	8	1
Mvmt Flow	246	26	206	43	18	151

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	415	228	0
Stage 1	228	-	-
Stage 2	187	-	-
Critical Hdwy	6.42	6.34	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.2	-
Pot Cap-1 Maneuve	677	832	-
Stage 1	935	-	-
Stage 2	978	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuve	663	832	-
Mov Cap-2 Maneuve	663	-	-
Stage 1	935	-	-
Stage 2	957	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	0.9
HCM LOS	B		

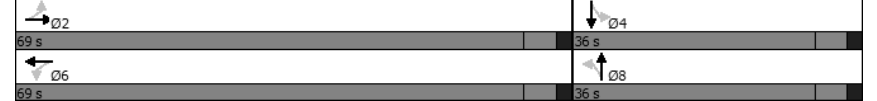
Minor Lane/Major Mvmt	NBT	NB/BLn1	SBL	SBT
Capacity (veh/h)	-	-	676	952
HCM Lane V/C Ratio	-	-	0.402	0.019
HCM Control Delay (s)	-	-	13.9	8.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.9	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	58	677	14	20	325	32	10	89	39	52	176	153
Future Volume (vph)	58	677	14	20	325	32	10	89	39	52	176	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%				1%				-2%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.989				0.962		0.946	
Frt Protected	0.996				0.997				0.996		0.993	
Satd. Flow (prot)	0	1625	0	0	1551	0	0	1581	0	0	1531	0
Frt Permitted	0.940				0.946				0.969		0.939	
Satd. Flow (perm)	0	1534	0	0	1471	0	0	1538	0	0	1447	0
Right Turn on Red			Yes				Yes				No	
Satd. Flow (RTOR)	2				8							
Link Speed (mph)	45				45				25		35	
Link Distance (ft)	819				2436				714		826	
Travel Time (s)	12.4				36.9				19.5		16.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	60	698	14	21	335	33	10	92	40	54	181	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	772	0	0	389	0	0	142	0	0	393	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left				Left		Thru		Left		Thru	
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2				6				8		4	
Permitted Phases	2				6				8		4	
Detector Phase	2				6				8		4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		36.0	36.0		36.0	36.0	
Total Split (%)	65.7%	65.7%		65.7%	65.7%		34.3%	34.3%		34.3%	34.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0				-1.0		-1.0	
Total Lost Time (s)	5.0				5.0				5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	104.2
Natural Cycle:	80
Control Type:	Semi Act-Uncoordinated

Splits and Phases: 1: New St & Rt 926



McMahon Associates, Inc.
3: Rt 202 & Rt 926

Robinson Tract
2030 without Dev Weekday Afternoon Peak Hour

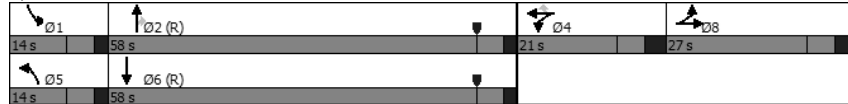


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	31.0	31.0						21.0	21.0		21.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926



Lanes, Volumes, Timings
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McMahon Associates, Inc.
3: Rt 202 & Rt 926

Robinson Tract
2030 without Dev Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	456	216	29	211	234	67	31	1668	128	92	1570	138
Future Volume (veh/h)	456	216	29	211	234	67	31	1668	128	92	1570	138
Initial Q (Qb), veh	3	5	0	0	0	0	0	0	0	0	160	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	1841	1959	1959	1949	1935	1968	1949	1906	1997	1800	1744	1744
Adj Flow Rate, veh/h	362	375	30	218	241	69	32	1720	132	95	1619	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	2	2	0	1	4	0	3	2	0	4	4
Cap, veh/h	307	336	6	232	242	208	62	1600	748	129	1571	62
Arrive On Green	0.17	0.17	0.17	0.13	0.13	0.13	0.03	0.44	0.44	0.08	0.48	0.48
Sat Flow, veh/h	1753	1790	143	1856	1935	1668	1856	3622	1693	1714	3084	268
Grp Volume(v), veh/h	362	0	405	218	241	69	32	1720	132	95	1619	899
Grp Sat Flow(s),veh/h/ln	1753	0	1933	1856	1935	1668	1856	3622	1693	1714	3084	268
Q Serve(g_s), s	21.0	0.0	21.0	14.0	14.9	4.5	2.0	53.0	5.7	6.5	58.0	58.0
Cycle Q Clear(g_c), s	21.0	0.0	21.0	14.0	14.9	4.5	2.0	53.0	5.7	6.5	58.0	58.0
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	307	0	342	232	242	208	62	1600	748	129	1571	832
V/C Ratio(X)	1.18	0.00	1.19	0.94	1.00	0.33	0.52	1.08	0.18	0.74	1.08	1.08
Avail Cap(c_a), veh/h	307	0	338	232	242	208	139	1600	748	129	1571	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	49.5	52.1	52.5	47.9	57.1	33.5	20.3	54.3	31.0	31.0
Incr Delay (d2), s/veh	109.5	0.0	109.0	42.6	56.8	0.9	6.6	45.7	0.5	20.0	54.4	55.2
Initial Q Delay(d3),s/veh	35.2	0.0	52.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	359.6	346.1
%ile BackOfQ(95%),veh/ln	80.3	0.0	35.0	14.0	16.3	3.4	1.9	43.2	4.1	6.2	125.3	127.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	194.2	0.0	211.2	94.6	109.3	48.8	63.7	79.2	20.8	74.3	445.0	432.3
LnGrp LOS	F	A	F	F	F	D	E	F	C	E	F	F
Approach Vol, veh/h	767			528			1884				1856	
Approach Delay, s/veh	203.2			95.3			74.9				419.9	
Approach LOS	F			F			E				F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.0	58.0		21.0	9.0	63.0		27.0				
Change Period (Y+Rc), s	6.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	8.0	52.0		14.0	8.0	52.0		20.0				
Max Q Clear Time (g_c+I), s	9.0	55.5		17.4	4.5	60.5		23.5				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay: 223.7
HCM 6th LOS: F

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
I:\eng\816451 - Crebilly Farm\Traffic Analysis\2020-05 Robinson Tract Revised TIS\Synchro\4 - 2030 without Dev Weekday Afternoon Peak Hour - Base\W

McMahon Associates, Inc. Robinson Tract
 12: Rt 202 & Stetson School Dr/Skiles Blvd 2030 without Dev Weekday Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗		↖ ↗		↖ ↗		↖ ↗		↖ ↗		↖ ↗	
Traffic Volume (vph)	189	146	63	60	46	66	0	2096	77	0	2050	169
Future Volume (vph)	189	146	63	60	46	66	0	2096	77	0	2050	169
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	12	12	14	12	12	16
Grade (%)	-5%				2%		2%				-3%	
Storage Length (ft)	200		200	350		0	0		220	0		200
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25		25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Flt Protected	0.950		0.950									
Satd. Flow (prot)	1661	1906	1589	1693	1732	0	0	3256	1616	0	3370	1709
Flt Permitted	0.642		0.562									
Satd. Flow (perm)	1123	1906	1589	1001	1732	0	0	3256	1616	0	3370	1709
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	25		25		45		45		45		45	
Link Distance (ft)	637		560		1356		940		14.2		14.2	
Travel Time (s)	17.4		15.3		20.5		14.2		14.2		14.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	0%	4%	0%	0%	3%	3%
Adj. Flow (vph)	195	151	65	62	47	68	0	2161	79	0	2113	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	195	151	65	62	115	0	0	2161	79	0	2113	174
Number of Detectors	1	1	1	1	1			5	1		5	1
Detector Template	Right				Right				Right			
Leading Detector (ft)	35	68	30	35	68			490	30		490	30
Trailing Detector (ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Position(ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Size(ft)	40	69	40	40	69			40	40		40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 2 Position(ft)												
Detector 2 Size(ft)												
Detector 2 Type												
Detector 2 Channel												
Detector 2 Extend (s)												
Detector 3 Position(ft)												
Detector 3 Size(ft)												
Detector 3 Type												
Detector 3 Channel												
Detector 3 Extend (s)												
Detector 4 Position(ft)												
Detector 4 Size(ft)												
Detector 4 Type												

Lanes, Volumes, Timings 2030 without Dev Weekday Afternoon Peak Hour
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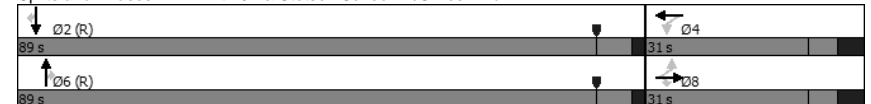
McMahon Associates, Inc. Robinson Tract
 12: Rt 202 & Stetson School Dr/Skiles Blvd 2030 without Dev Weekday Afternoon Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 4 Channel												
Detector 4 Extend (s)												
Detector 5 Position(ft)												
Detector 5 Size(ft)												
Detector 5 Type												
Detector 5 Channel												
Detector 5 Extend (s)												
Turn Type	Perm	NA	Perm	Perm	NA			NA	Perm	NA	Perm	Perm
Protected Phases												
Permitted Phases	8		8	4	4			6		6		2
Detector Phase	8	8	8	4	4			6	6		2	2
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0			15.0	15.0		15.0	15.0
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0			22.0	22.0		22.0	22.0
Total Split (s)	31.0	31.0	31.0	31.0	31.0			89.0	89.0		89.0	89.0
Total Split (%)	25.8%	25.8%	25.8%	25.8%	25.8%			74.2%	74.2%		74.2%	74.2%
Maximum Green (s)	23.0	23.0	23.0	23.0	23.0			82.0	82.0		82.0	82.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0			5.0	5.0		5.0	5.0
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0			2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-3.0	-3.0	-4.0	-3.0	-3.0			-2.0	-2.0		-2.0	-2.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0			5.0	5.0		5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			6.0	6.0		6.0	6.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0			48.0	48.0		48.0	48.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0			24.0	24.0		24.0	24.0
Recall Mode	None	None	None	None	None			C-Max	C-Max		C-Max	C-Max

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 84 (70%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Description: Signal

Splits and Phases: 12: Rt 202 & Stetson School Dr/Skiles Blvd



Lanes, Volumes, Timings 2030 without Dev Weekday Afternoon Peak Hour
 I:\eng\816451 - Crebilly Farm\TrafficAnalysis\2020-05 Robinson Tract Revised TIS\Synchro\4 - 2030 without Dev Weekday Afternoon Peak Hour - Base\We

McMahon Associates, Inc.

Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

2030 without Dev Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↘	↗	↗	↘	↗	↘
Traffic Volume (veh/h)	189	146	63	60	46	66	0	2096	77	0	2050	169
Future Volume (veh/h)	189	146	63	60	46	66	0	2096	77	0	2050	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	2036	1778	1849	1849	0	1722	1849	0	1869	1944
Adj Flow Rate, veh/h	195	151	65	62	47	68	0	2161	79	0	2113	174
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	2	0	0	0	0	4	0	0	3	3
Cap, veh/h	289	448	388	241	148	214	0	2290	1097	0	2486	1153
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.19	0.00	0.70	0.70	0.00	0.70	0.70
Sat Flow, veh/h	1411	2066	1726	1169	683	988	0	3357	1567	0	3645	1647
Grp Volume(v), veh/h	195	151	65	62	0	115	0	2161	79	0	2113	174
Grp Sat Flow(s),veh/h/ln	1411	2066	1726	1169	0	1671	0	1635	1567	0	1776	1647
Q Serve(g_s), s	16.1	7.4	3.6	5.7	0.0	7.0	0.0	70.1	1.9	0.0	52.9	4.3
Cycle Q Clear(g_c), s	22.7	7.4	3.6	13.1	0.0	7.0	0.0	70.1	1.9	0.0	52.9	4.3
Prop In Lane	1.00		1.00	1.00		0.59	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	289	448	388	241	0	362	0	2290	1097	0	2486	1153
V/C Ratio(X)	0.68	0.34	0.17	0.26	0.00	0.32	0.00	0.94	0.07	0.00	0.85	0.15
Avail Cap(c_a), veh/h	289	448	388	241	0	362	0	2290	1097	0	2486	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(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	39.7	37.4	45.3	0.0	40.3	0.0	15.9	5.7	0.0	13.3	6.0
Incr Delay (d2), s/veh	6.1	0.4	0.2	0.6	0.0	0.5	0.0	9.6	0.1	0.0	3.9	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	0.3	7.0	2.9	3.1	0.0	5.4	0.0	31.5	1.0	0.0	25.1	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.0	40.2	37.6	45.8	0.0	40.8	0.0	25.5	5.8	0.0	17.2	6.3
LnGrp LOS	D	D	D	D	A	D	A	C	A	A	B	A
Approach Vol, veh/h		411			177			2240			2287	
Approach Delay, s/veh		46.8			42.6			24.8			16.4	
Approach LOS		D			D			C			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		89.0		31.0		89.0		31.0				
Change Period (Y+Rc), s		7.0		8.0		7.0		8.0				
Max Green Setting (Gmax), s		82.0		23.0		82.0		23.0				
Max Q Clear Time (g_c+1), s		55.4		15.6		72.6		25.2				
Green Ext Time (p_c), s		26.6		0.4		9.4		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				23.4								
HCM 6th LOS				C								

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	712	39	21	380	17	36
Future Volume (vph)	712	39	21	380	17	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	14
Grade (%)	8%			-8%	-1%	
Storage Length (ft)		350	120		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1678	1567	1637	1817	1719	1505
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1678	1567	1637	1817	1719	1505
Link Speed (mph)	45			45	25	
Link Distance (ft)	2436			2349	414	
Travel Time (s)	36.9			35.6	11.3	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	0%	5%	3%	0%	9%
Adj. Flow (vph)	742	41	22	396	18	38
Shared Lane Traffic (%)						
Lane Group Flow (vph)	742	41	22	396	18	38
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	712	39	21	380	17	36
Future Vol, veh/h	712	39	21	380	17	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	120	-	0	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	8	-	-	-8	-1	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	0	5	3	0	9
Mvmt Flow	742	41	22	396	18	38

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	783
Stage 1	-	-	742
Stage 2	-	-	440
Critical Hdwy	-	4.3	6.2
Critical Hdwy Stg 1	-	-	5.2
Critical Hdwy Stg 2	-	-	5.2
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	641	246
Stage 1	-	-	551
Stage 2	-	-	759
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	641	238
Mov Cap-2 Maneuver	-	-	238
Stage 1	-	-	551
Stage 2	-	-	733

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	16.3
HCM LOS			C

Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	238	439	-	-	641	-
HCM Lane V/C Ratio	0.074	0.085	-	-	0.034	-
HCM Control Delay (s)	21.3	14	-	-	10.8	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Volume (vph)	0	0	45	0	0	43	51	2104	62	110	1825	202
Future Volume (vph)	0	0	45	0	0	43	51	2104	62	110	1825	202
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	
Frt			0.865			0.865	0.996			0.985		
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1573	1636	3246	0	1678	3326	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1573	1636	3246	0	1678	3326	0
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		553			858			3154			1356	
Travel Time (s)		10.8			16.7			47.8			20.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	1%
Adj. Flow (vph)	0	0	46	0	0	44	52	2147	63	112	1862	206
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	46	0	0	44	52	2210	0	112	2068	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Vol, veh/h	0	0	45	0	0	43	51	2104	62	110	1825	202
Future Vol, veh/h	0	0	45	0	0	43	51	2104	62	110	1825	202
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	0	350	-	-	380	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	1
Mvmt Flow	0	0	46	0	0	44	52	2147	63	112	1862	206

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	-	-	1034	-	-	1105	2068	0	0	2210	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.1	-	-	7.2	3.9	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.9	-	-	3	2.4	-	-	2.4	-	-
Pot Cap-1 Maneuver	0	0	*386	0	0	*232	464	-	-	*291	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1			1		
Mov Cap-1 Maneuver	-	-	*386	-	-	*232	464	-	-	*291	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	24.1	0.3	1.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	464	-	-	386	232	*291	-
HCM Lane V/C Ratio	0.112	-	-	0.119	0.189	0.386	-
HCM Control Delay (s)	13.7	-	-	15.6	24.1	24.9	-
HCM Lane LOS	B	-	-	C	C	C	-
HCM 95th %tile Q(veh)	0.4	-	-	0.4	0.7	1.7	-

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	41	0	5	247	1	4
Future Volume (vph)	41	0	5	247	1	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	1705	0	0	1756	1636	1414
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	1705	0	0	1756	1636	1414
Link Speed (mph)	35			35	35	
Link Distance (ft)	85			553	359	
Travel Time (s)	1.7			10.8	7.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	55	0	7	329	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	0	0	336	1	5
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	41	0	5	247	1	4
Future Vol, veh/h	41	0	5	247	1	4
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	0
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	4	-	-	-4	2	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	55	0	7	329	1	5

Major/Minor

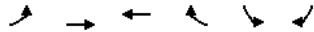
	Major1	Major2	Minor1
Conflicting Flow All	0	0	55
Stage 1	-	-	55
Stage 2	-	-	343
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1150	665
Stage 1	-	-	1124
Stage 2	-	-	794
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1150	660
Mov Cap-2 Maneuver	-	-	660
Stage 1	-	-	1124
Stage 2	-	-	788

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.2	8.8
HCM LOS			A

Minor Lane/Major Mvm

	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	660	1078	-	-	1150	-
HCM Lane V/C Ratio	0.002	0.005	-	-	0.006	-
HCM Control Delay (s)	10.5	8.4	-	-	8.1	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	28	25	228	21	20	22
Future Volume (vph)	28	25	228	21	20	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-3%		0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.989		0.930	
Flt Protected		0.974			0.976	
Satd. Flow (prot)	0	1700	1788	0	1602	0
Flt Permitted		0.974			0.976	
Satd. Flow (perm)	0	1700	1788	0	1602	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		300	85		315	
Travel Time (s)		5.8	1.7		8.6	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	2%	0%	1%	2%	2%	2%
Adj. Flow (vph)	37	33	304	28	27	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	70	332	0	56	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection

Int Delay, s/veh 2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	28	25	228	21	20	22
Future Vol, veh/h	28	25	228	21	20	22
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, %	-	4	-3	-	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	0	1	2	2	2
Mvmt Flow	37	33	304	28	27	29

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	332	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	24	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	24	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	4.8	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	924	-	-	-	-	701
HCM Lane V/C Ratio	0.04	-	-	-	-	0.08
HCM Control Delay (s)	9.1	0	-	-	-	10.6
HCM Lane LOS	A	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.3



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Volume (vph)	49	0	0	250	0	0
Future Volume (vph)	49	0	0	250	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	1773	0	0	1809	1818	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	1809	1818	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	2826			300	323	
Travel Time (s)	55.1			5.8	6.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	65	0	0	333	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	333	0	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

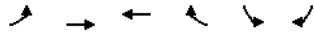
Intersection
 Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Vol, veh/h	49	0	0	250	0	0
Future Vol, veh/h	49	0	0	250	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3	-	-	-3	-2	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	65	0	0	333	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	398
Stage 1	-	-	65
Stage 2	-	-	333
Critical Hdwy	-	-	6
Critical Hdwy Stg 1	-	-	5
Critical Hdwy Stg 2	-	-	5
Follow-up Hdwy	-	-	3
Pot Cap-1 Maneuver	0	0	1071
Stage 1	0	0	1126
Stage 2	0	0	865
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1071
Mov Cap-2 Maneuver	-	-	726
Stage 1	-	-	1126
Stage 2	-	-	865

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	3	62	263	12	1	2
Future Volume (vph)	3	62	263	12	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10
Grade (%)		3%	-3%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994		0.899		
Flt Protected		0.998		0.988		
Satd. Flow (prot)	0	1651	1679	0	1485	0
Flt Permitted		0.998		0.988		
Satd. Flow (perm)	0	1651	1679	0	1485	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		591	2826		385	
Travel Time (s)		11.5	55.1		10.5	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Adj. Flow (vph)	4	83	351	16	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	87	367	0	4	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	3	62	263	12	1	2
Future Vol, veh/h	3	62	263	12	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None		- None		- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	3	-3	-	1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	4	83	351	16	1	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	367	0	450
Stage 1	-	-	359
Stage 2	-	-	91
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	899	-	631
Stage 1	-	-	794
Stage 2	-	-	1082
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	899	-	628
Mov Cap-2 Maneuver	-	-	628
Stage 1	-	-	790
Stage 2	-	-	1082

Approach	EB	WB	SB
HCM Control Delay, s	4	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	899	-	-	-	686
HCM Lane V/C Ratio	0.004	-	-	-	-0.006
HCM Control Delay (s)	9	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T	T	T	T	T	T
Traffic Volume (vph)	214	52	151	45	20	178
Future Volume (vph)	214	52	151	45	20	178
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.974	0.969				
Flt Protected	0.961			0.995		
Satd. Flow (prot)	1665	0	1731	0	0	1759
Flt Permitted	0.961			0.995		
Satd. Flow (perm)	1665	0	1731	0	0	1759
Link Speed (mph)	35	35		35		
Link Distance (ft)	591	636		619		
Travel Time (s)	11.5	12.4		12.1		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	2%
Adj. Flow (vph)	240	58	170	51	22	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	298	0	221	0	0	222
Sign Control	Stop	Free		Free		

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	6.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T	T	T	T	T	T
Traffic Vol, veh/h	214	52	151	45	20	178
Future Vol, veh/h	214	52	151	45	20	178
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
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	2	1	0	0	2
Mvmt Flow	240	58	170	51	22	200

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	440	196	0
Stage 1	196	-	-
Stage 2	244	-	-
Critical Hdwy	6.41	6.22	-
Critical Hdwy Stg 1	5.41	-	-
Critical Hdwy Stg 2	5.41	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuve	655	900	-
Stage 1	969	-	-
Stage 2	919	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuve	639	900	-
Mov Cap-2 Maneuve	639	-	-
Stage 1	969	-	-
Stage 2	896	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	SBL	SBT
Capacity (veh/h)	-	-	677	1009
HCM Lane V/C Ratio	-	-	0.441	0.022
HCM Control Delay (s)	-	-	14.5	8.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	2.3	0.1

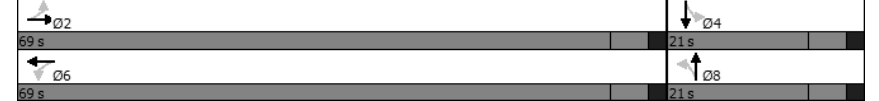
Base

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	81	660	5	8	330	38	10	105	43	8	130	204
Future Volume (vph)	81	660	5	8	330	38	10	105	43	8	130	204
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.986			0.963			0.919		
Frt Protected	0.995			0.999			0.997			0.999		
Satd. Flow (prot)	0	1626	0	0	1547	0	0	1586	0	0	1512	0
Frt Permitted	0.914			0.986			0.869			0.992		
Satd. Flow (perm)	0	1493	0	0	1527	0	0	1383	0	0	1502	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	1			16			25			35		
Link Speed (mph)	45			45			714			826		
Link Distance (ft)	819			2436			19.5			16.1		
Travel Time (s)	12.4			36.9			0.97			0.97		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	84	680	5	8	340	39	10	108	44	8	134	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	769	0	0	387	0	0	162	0	0	352	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%		23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0			-1.0			-1.0		
Total Lost Time (s)	5.0			5.0			5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Natural Cycle:	70
Control Type:	Semi Act-Uncooord

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕				↕			↕			↕	
Traffic Volume (veh/h)	81	660	5	8	330	38	10	105	43	8	130	204
Future Volume (veh/h)	81	660	5	8	330	38	10	105	43	8	130	204
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No			No	
Adj Sat Flow, veh/h/ln	1818	1818	1818	1696	1696	1696	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	84	680	5	8	340	39	10	108	44	8	134	210
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	7	7	7	1	1	1	0	0	0
Cap, veh/h	146	1104	8	48	1050	118	51	221	86	44	113	171
Arrive On Green	0.70	0.71	0.70	0.70	0.71	0.70	0.17	0.18	0.17	0.17	0.18	0.17
Sat Flow, veh/h	142	1553	11	10	1476	167	48	1244	482	15	637	963
Grp Volume(v), veh/h	769	0	0	387	0	0	162	0	0	352	0	0
Grp Sat Flow(s),veh/h/ln	1707	0	0	1653	0	0	1773	0	0	1615	0	0
Q Serve(g_s), s	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Cycle Q Clear(g_c), s	20.2	0.0	0.0	7.9	0.0	0.0	7.5	0.0	0.0	15.0	0.0	0.0
Prop In Lane	0.11		0.01	0.02		0.10	0.06		0.27	0.02		0.60
Lane Grp Cap(c), veh/h	1239	0	0	1198	0	0	338	0	0	310	0	0
V/C Ratio(X)	0.62	0.00	0.00	0.32	0.00	0.00	0.48	0.00	0.00	1.14	0.00	0.00
Avail Cap(c_a), veh/h	1239	0	0	1198	0	0	338	0	0	310	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.6	0.0	0.0	4.9	0.0	0.0	33.7	0.0	0.0	37.9	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	0.0	0.7	0.0	0.0	1.1	0.0	0.0	92.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.0	4.0	0.0	0.0	6.0	0.0	0.0	22.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	0.0	0.0	5.6	0.0	0.0	34.7	0.0	0.0	130.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	F	A	A
Approach Vol, veh/h	769				387		162				352	
Approach Delay, s/veh	9.0				5.6		34.7				130.7	
Approach LOS	A				A		C				F	
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	69.0		21.0		69.0		21.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	63.0		15.0		63.0		15.0					
Max Q Clear Time (g_c+1), s	22.2		17.0		9.9		9.5					
Green Ext Time (p_c), s	7.6		0.0		3.0		0.2					
Intersection Summary												
HCM 6th Ctrl Delay			36.4									
HCM 6th LOS			D									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	58	677	14	20	325	32	10	89	39	52	176	153
Future Volume (vph)	58	677	14	20	325	32	10	89	39	52	176	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%				1%				-2%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.989				0.962		0.946	
Frt Protected	0.996				0.997				0.996		0.993	
Satd. Flow (prot)	0	1625	0	0	1551	0	0	1581	0	0	1531	0
Frt Permitted	0.941				0.947				0.951		0.935	
Satd. Flow (perm)	0	1536	0	0	1473	0	0	1510	0	0	1441	0
Right Turn on Red			Yes				Yes				No	
Satd. Flow (RTOR)	2				9							
Link Speed (mph)	45				45				25		35	
Link Distance (ft)	819				2436				714		826	
Travel Time (s)	12.4				36.9				19.5		16.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	60	698	14	21	335	33	10	92	40	54	181	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	772	0	0	389	0	0	142	0	0	393	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left				Left				Thru		Thru	
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2				6				8		4	
Permitted Phases	2				6				8		4	
Detector Phase	2				6				8		4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	74.0	74.0		74.0	74.0		31.0	31.0		31.0	31.0	
Total Split (%)	70.5%	70.5%		70.5%	70.5%		29.5%	29.5%		29.5%	29.5%	
Maximum Green (s)	68.0	68.0		68.0	68.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0				-1.0		-1.0	
Total Lost Time (s)	5.0				5.0				5.0		5.0	
Lead/Lag												
Lead-Lag Optimize?												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary

Area Type:	Other
Cycle Length:	105
Actuated Cycle Length:	105
Natural Cycle:	80
Control Type:	Semi Act-Uncoordinated

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	58	677	14	20	325	32	10	89	39	52	176	153
Future Volume (veh/h)	58	677	14	20	325	32	10	89	39	52	176	153
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1818	1818	1818	1696	1696	1696	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	60	698	14	21	335	33	10	92	40	54	181	158
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	7	7	7	1	1	1	0	0	0
Cap, veh/h	102	1057	21	68	933	89	50	295	121	81	197	161
Arrive On Green	0.67	0.66	0.65	0.67	0.66	0.65	0.26	0.25	0.24	0.26	0.25	0.24
Sat Flow, veh/h	99	1608	32	48	1420	136	53	1190	488	171	795	649
Grp Volume(v), veh/h	772	0	0	389	0	0	142	0	0	393	0	0
Grp Sat Flow(s),veh/h/ln	1738	0	0	1604	0	0	1731	0	0	1615	0	0
Q Serve(g_s), s	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	0.0	0.0
Cycle Q Clear(g_c), s	27.3	0.0	0.0	10.9	0.0	0.0	6.9	0.0	0.0	25.1	0.0	0.0
Prop In Lane	0.08		0.02	0.05		0.08	0.07		0.28	0.14		0.40
Lane Grp Cap(c), veh/h	1196	0	0	1106	0	0	482	0	0	454	0	0
V/C Ratio(X)	0.65	0.00	0.00	0.35	0.00	0.00	0.29	0.00	0.00	0.87	0.00	0.00
Avail Cap(c_a), veh/h	1196	0	0	1106	0	0	482	0	0	454	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.7	0.0	0.0	8.0	0.0	0.0	32.4	0.0	0.0	39.1	0.0	0.0
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.9	0.0	0.0	0.3	0.0	0.0	15.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	0.0	0.0	6.1	0.0	0.0	5.4	0.0	0.0	17.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.4	0.0	0.0	8.9	0.0	0.0	32.7	0.0	0.0	55.0	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	C	A	A	E	A	A
Approach Vol, veh/h		772			389			142			393	
Approach Delay, s/veh		13.4			8.9			32.7			55.0	
Approach LOS		B			A			C			E	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		74.0		31.0		74.0		31.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		68.0		25.0		68.0		25.0				
Max Q Clear Time (g_c+1), s		29.3		27.1		12.9		8.9				
Green Ext Time (p_c), s		7.5		0.0		3.1		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				23.7								
HCM 6th LOS				C								

Appendix S

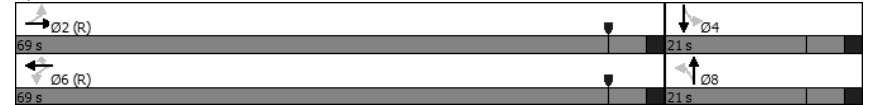
Future (2030) Capacity/Level-of-Service With Development Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↕			↔			↕		
Traffic Volume (vph)	84	663	5	12	393	38	10	106	44	8	133	156
Future Volume (vph)	84	663	5	12	393	38	10	106	44	8	133	156
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.850			0.963			0.929		
Flt Protected	0.994			0.999			0.997			0.999		
Satd. Flow (prot)	0	1624	0	0	1564	1379	0	1586	0	0	1530	0
Flt Permitted	0.907			0.977			0.910			0.991		
Satd. Flow (perm)	0	1482	0	0	1529	1379	0	1448	0	0	1518	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	1			39								
Link Speed (mph)	45			45			25			35		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	87	684	5	12	405	39	10	109	45	8	137	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	776	0	0	417	39	0	164	0	0	306	0
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template	Left			Left		Right	Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6	30	30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0	-10	-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0	-10	-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Permitted Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0	69.0	21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%	76.7%	23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0	63.0	15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0		0.0	-1.0			-1.0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0			5.0		6.0	5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0	42.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0	21.0	0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	50 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	65
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926



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Robinson Tract

2: Bridlewood Blvd/Collector Road & Rt 926

2030 with Dev Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection	
Natural Cycle:	50
Control Type:	Actuated-Coordinated

Splits and Phases: 2: Bridlewood Blvd/Collector Road & Rt 926



Lanes, Volumes, Timings

2030 with Dev Weekday Morning Peak Hour

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McMahon Associates, Inc.

Robinson Tract

2: Bridlewood Blvd/Collector Road & Rt 926

2030 with Dev Weekday Morning Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↔	↔	↑	↔	↔	↑	↔	↔	↑	↔
Traffic Volume (veh/h)	31	669	33	14	249	14	26	31	14	46	15	164
Future Volume (veh/h)	31	669	33	14	249	14	26	31	14	46	15	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No				No
Adj Sat Flow, veh/h/ln	1415	1387	1457	2098	1984	2070	1837	1809	1881	1772	1772	1772
Adj Flow Rate, veh/h	32	690	34	14	257	14	27	32	14	47	15	169
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	4	3	0	8	2	0	2	2	2	2	2
Cap, veh/h	694	1017	905	682	1455	1286	135	186	81	267	19	217
Arrive On Green	0.98	0.98	0.98	0.73	0.73	0.73	0.16	0.16	0.14	0.16	0.16	0.14
Sat Flow, veh/h	885	1387	1235	864	1984	1754	1244	1193	522	1360	124	1397
Grp Volume(v), veh/h	32	690	34	14	257	14	27	0	46	47	0	184
Grp Sat Flow(s),veh/h/ln	885	1387	1235	864	1984	1754	1244	0	1715	1360	0	1521
Q Serve(g_s), s	0.3	3.3	0.1	0.4	3.6	0.2	1.9	0.0	2.1	2.8	0.0	10.5
Cycle Q Clear(g_c), s	3.8	3.3	0.1	3.7	3.6	0.2	11.9	0.0	2.1	4.4	0.0	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		0.92
Lane Grp Cap(c), veh/h	694	1017	905	682	1455	1286	135	0	267	267	0	237
V/C Ratio(X)	0.05	0.68	0.04	0.02	0.18	0.01	0.20	0.00	0.17	0.18	0.00	0.78
Avail Cap(c_a), veh/h	694	1017	905	682	1455	1286	135	0	267	267	0	237
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	0.30	0.30	0.30	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.5	0.3	0.3	4.2	3.7	3.2	42.0	0.0	33.1	34.7	0.0	37.0
Incr Delay (d2), s/veh	0.1	2.2	0.0	0.0	0.1	0.0	0.7	0.0	0.3	0.3	0.0	15.1
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	0.0	1.5	0.0	0.1	1.7	0.1	1.1	0.0	1.6	1.7	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.6	2.5	0.3	4.2	3.8	3.2	42.7	0.0	33.4	35.0	0.0	52.1
LnGrp LOS	A	A	A	A	A	A	D	A	C	C	A	D
Approach Vol, veh/h		756			285			73				231
Approach Delay, s/veh		2.4			3.8			36.9				48.6
Approach LOS		A			A			D				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.0		19.0		71.0		19.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		65.0		13.0		65.0		13.0				
Max Q Clear Time (g_c+I1), s		6.3		12.5		6.2		14.4				
Green Ext Time (p_c), s		2.9		0.0		0.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary

2030 with Dev Weekday Morning Peak Hour

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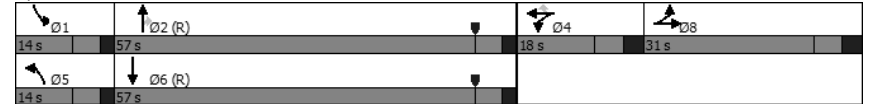
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	497	242	31	150	171	58	23	1672	160	65	1585	97
Future Volume (vph)	497	242	31	150	171	58	23	1672	160	65	1585	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	14	12	12	15	12	12	12
Grade (%)		-3%			-4%			-4%				0%
Storage Length (ft)	450		0	200		215	305		170	375		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95	
Frt		0.988				0.850			0.850		0.991	
Flt Protected	0.950	0.985		0.950			0.950			0.950		
Satd. Flow (prot)	1494	1715	0	1565	1765	1556	1491	3291	1635	1487	3109	0
Flt Permitted	0.950	0.985		0.950			0.950			0.950		
Satd. Flow (perm)	1494	1715	0	1565	1765	1556	1491	3291	1635	1487	3109	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									155		7	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2349			982			1123			3154	
Travel Time (s)		35.6			14.9			17.0			47.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	13%	4%	4%	7%	17%	6%	5%	15%	9%	9%
Adj. Flow (vph)	512	249	32	155	176	60	24	1724	165	67	1634	100
Shared Lane Traffic (%)	23%											
Lane Group Flow (vph)	394	399	0	155	176	60	24	1724	165	67	1734	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	40	40		35	35	35	40	30	30	35	30	
Trailing Detector (ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	
Detector 1 Position(ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	
Detector 1 Size(ft)	40	40		40	40	40	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases						4			2			
Detector Phase	8	8		4	4	4	5			1		
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0	3.0	20.0	20.0	3.0	20.0	
Minimum Split (s)	45.0	45.0		10.0	10.0	10.0	9.0	34.0	34.0	9.0	34.0	
Total Split (s)	31.0	31.0		18.0	18.0	18.0	14.0	57.0	57.0	14.0	57.0	
Total Split (%)	25.8%	25.8%		15.0%	15.0%	15.0%	11.7%	47.5%	47.5%	11.7%	47.5%	
Maximum Green (s)	24.0	24.0		11.0	11.0	11.0	8.0	51.0	51.0	8.0	51.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	
Last Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	
Flash Dont Walk (s)	31.0	31.0						21.0	21.0		21.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926



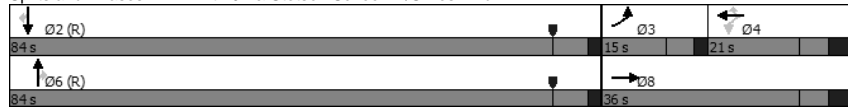


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 4 Channel												
Detector 4 Extend (s)		0.0			0.0							
Turn Type	Prot	NA		Perm	NA	Perm		NA	Perm		NA	Perm
Protected Phases	3	8			4			6			2	
Permitted Phases				4		4			6			2
Detector Phase	3	8		4	4	4		6	6		2	2
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0		15.0	15.0		15.0	15.0
Minimum Split (s)	9.0	15.0		15.0	15.0	15.0		22.0	22.0		22.0	22.0
Total Split (s)	15.0	36.0		21.0	21.0	21.0		84.0	84.0		84.0	84.0
Total Split (%)	12.5%	30.0%		17.5%	17.5%	17.5%		70.0%	70.0%		70.0%	70.0%
Maximum Green (s)	9.0	28.0		13.0	13.0	13.0		77.0	77.0		77.0	77.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0		5.0	5.0		5.0	5.0
All-Red Time (s)	2.0	4.0		4.0	4.0	4.0		2.0	2.0		2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	0.0		-1.0	-1.0		-1.0	-1.0
Total Lost Time (s)	5.0	7.0		7.0	7.0	8.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		6.0	6.0		6.0	6.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0		48.0	48.0		48.0	48.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0		24.0	24.0		24.0	24.0
Recall Mode	None	None		None	None	None		C-Max	C-Max		C-Max	C-Max

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Splits and Phases: 12: Rt 202 & Stetson School Dr/Skiles Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑		↑	↑	↑		↑↑	↑		↑↑	↑
Traffic Volume (veh/h)	243	153	35	87	142	62	0	2096	57	0	2008	314
Future Volume (veh/h)	243	153	35	87	142	62	0	2096	57	0	2008	314
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1901	1947	1947	1722	1717	1790	0	1707	1849	0	1798	1914
Adj Flow Rate, veh/h	256	161	37	92	149	65	0	2206	60	0	2114	331
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	8	8	4	9	4	0	5	0	0	8	5
Cap, veh/h	293	366	84	191	196	160	0	2118	1023	0	2230	1059
Arrive On Green	0.08	0.24	0.23	0.11	0.11	0.11	0.00	0.65	0.65	0.00	0.65	0.65
Sat Flow, veh/h	3512	1532	352	1151	1717	1517	0	3330	1567	0	3506	1622
Grp Volume(v), veh/h	256	0	198	92	149	65	0	2206	60	0	2114	331
Grp Sat Flow(s),veh/h/ln	1756	0	1884	1151	1717	1517	0	1622	1567	0	1708	1622
Q Serve(g_s), s	8.6	0.0	10.7	9.2	10.1	4.8	0.0	78.3	1.7	0.0	67.6	10.7
Cycle Q Clear(g_c), s	8.6	0.0	10.7	9.2	10.1	4.8	0.0	78.3	1.7	0.0	67.6	10.7
Prop In Lane	1.00		0.19	1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	293	0	450	191	196	160	0	2118	1023	0	2230	1059
V/C Ratio(X)	0.87	0.00	0.44	0.48	0.76	0.41	0.00	1.04	0.06	0.00	0.95	0.31
Avail Cap(c_a), veh/h	293	0	455	194	200	164	0	2118	1023	0	2230	1059
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	0.0	38.9	51.2	51.6	50.2	0.0	20.8	7.5	0.0	19.0	9.1
Incr Delay (d2), s/veh	24.1	0.0	0.7	1.9	15.4	1.7	0.0	31.4	0.1	0.0	10.2	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	8.4	0.0	8.8	5.0	9.0	3.5	0.0	44.8	1.0	0.0	33.7	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.5	0.0	39.6	53.1	67.0	51.8	0.0	52.2	7.6	0.0	29.2	9.9
LnGrp LOS	E	A	D	D	E	D	A	F	A	A	C	A
Approach Vol, veh/h	454				306			2266				2445
Approach Delay, s/veh	61.6				59.6			51.1				26.6
Approach LOS	E				E			D				C
Timer - Assigned Phs	2	3	4		6		8					
Phs Duration (G+Y+Rc), s	84.3	15.0	20.7		84.3		35.7					
Change Period (Y+Rc), s	7.0	6.0	8.0		7.0		8.0					
Max Green Setting (Gmax), s	77.0	9.0	13.0		77.0		28.0					
Max Q Clear Time (g_c+I1), s	70.1	11.1	12.6		80.8		12.7					
Green Ext Time (p_c), s	6.9	0.0	0.1		0.0		0.8					

Intersection Summary

HCM 6th Ctrl Delay 41.5
 HCM 6th LOS D



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	44	1	8	289	1	0
Future Volume (vph)	44	1	8	289	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998					
Flt Protected				0.999	0.950	
Satd. Flow (prot)	1702	0	0	1723	1636	1663
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	1702	0	0	1723	1636	1663
Link Speed (mph)	35			35	35	
Link Distance (ft)	108			499	469	
Travel Time (s)	2.1			9.7	9.1	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	63	1	11	413	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	0	0	424	1	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	44	1	8	289	1	0
Future Vol, veh/h	44	1	8	289	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage#	-	-	-	-	0	0
Grade, %	4	-	-	-4	2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	63	1	11	413	1	0

Major/Minor

	Major1	Major2	Minor1
Conflicting Flow All	0	0	64
Stage 1	-	-	64
Stage 2	-	-	435
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1142	571
Stage 1	-	-	1112
Stage 2	-	-	710
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1142	564
Mov Cap-2 Maneuver	-	-	564
Stage 1	-	-	1112
Stage 2	-	-	701

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.2	11.4
HCM LOS			B

Minor Lane/Major Mvmt

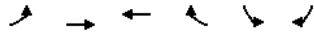
	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	564	-	-	-	1142	-
HCM Lane V/C Ratio	0.003	-	-	-	0.01	-
HCM Control Delay (s)	11.4	0	-	-	8.2	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0	-

McMahon Associates, Inc.

Robinson Tract

6: Pleasant Grove Rd & Orvis Way

2030 with Dev Weekday Morning Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	134	29	262	28	15	22
Future Volume (vph)	134	29	262	28	15	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-4%		0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987		0.920	
Flt Protected		0.960			0.980	
Satd. Flow (prot)	0	1666	1761	0	1591	0
Flt Permitted		0.960			0.980	
Satd. Flow (perm)	0	1666	1761	0	1591	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		322	108		349	
Travel Time (s)		6.3	2.1		9.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	2%	0%	3%	2%	2%	2%
Adj. Flow (vph)	191	41	374	40	21	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	232	414	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Lanes, Volumes, Timings

2030 with Dev Weekday Morning Peak Hour

I:\eng\816451 - Crebilly Farm\Traffic Analysis\2020-02 Robinson Tract Revised TIS\Synchro\5 - 2030 with Dev Scenario 2AW

McMahon Associates, Inc.

Robinson Tract

6: Pleasant Grove Rd & Orvis Way

2030 with Dev Weekday Morning Peak Hour

Intersection

Int Delay, s/veh 3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	134	29	262	28	15	22
Future Vol, veh/h	134	29	262	28	15	22
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	0	0	-
Grade, %	-	4	-4	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	0	3	2	2	2
Mvmt Flow	191	41	374	40	21	31

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	414	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	665	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	665	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	8.5	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	865	-	-	-	-	451
HCM Lane V/C Ratio	0.221	-	-	-	-	-0.117
HCM Control Delay (s)	10.3	0	-	-	-	14
HCM Lane LOS	B	A	-	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	-	0.4

HCM 6th TWSC

2030 with Dev Weekday Morning Peak Hour

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	164	0	0	284	0	0
Future Volume (vph)	164	0	0	284	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1714	0	0	1715	1879	0
Flt Permitted						
Satd. Flow (perm)	1714	0	0	1715	1879	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	318			322	436	
Travel Time (s)	6.2			6.3	8.5	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	234	0	0	406	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	234	0	0	406	0	0
Sign Control	Free			Free	Stop	

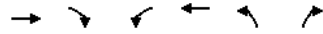
Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	164	0	0	284	0	0
Future Vol, veh/h	164	0	0	284	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3	-	-	-3	-2	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	234	0	0	406	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	640
Stage 1	-	-	234
Stage 2	-	-	406
Critical Hdwy	-	-	6
Critical Hdwy Stg 1	-	-	5
Critical Hdwy Stg 2	-	-	5
Follow-up Hdwy	-	-	3
Pot Cap-1 Maneuver	0	0	533
Stage 1	0	0	954
Stage 2	0	0	805
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	533
Mov Cap-2 Maneuver	-	-	533
Stage 1	-	-	954
Stage 2	-	-	805

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (vph)	71	1	165	118	4	93
Future Volume (vph)	71	1	165	118	4	93
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	3%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.871		
Flt Protected				0.972	0.998	
Satd. Flow (prot)	1712	0	0	1676	1534	0
Flt Permitted				0.972	0.998	
Satd. Flow (perm)	1712	0	0	1676	1534	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1878			318	459	
Travel Time (s)	36.6			6.2	8.9	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	2%	2%	3%	2%	2%
Adj. Flow (vph)	101	1	236	169	6	133
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	0	0	405	139	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Int Delay, s/veh	5.4					
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	71	1	165	118	4	93
Future Vol, veh/h	71	1	165	118	4	93
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	-
Grade, %	3	-	-	-3	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	0	2	2	3	2	2
Mvmt Flow	101	1	236	169	6	133

Major/Minor

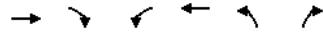
	Major1	Major2	Minor1
Conflicting Flow All	0	0	102
Stage 1	-	-	102
Stage 2	-	-	641
Critical Hdwy	-	4.3	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1108	428
Stage 1	-	-	1074
Stage 2	-	-	590
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1108	327
Mov Cap-2 Maneuver	-	-	327
Stage 1	-	-	1074
Stage 2	-	-	451

Approach

	EB	WB	NB
HCM Control Delay, s	0	5.3	9.5
HCM LOS			A

Minor Lane/Major Mvmt

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	936	-	-	1108	-
HCM Lane V/C Ratio	0.148	-	-	0.213	-
HCM Control Delay (s)	9.5	-	-	9.1	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.8	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	69	0	4	195	1	13
Future Volume (vph)	69	0	4	195	1	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	6%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.872	
Flt Protected				0.999	0.998	
Satd. Flow (prot)	1607	0	0	1713	1536	0
Flt Permitted				0.999	0.998	
Satd. Flow (perm)	1607	0	0	1713	1536	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	733			1878	268	
Travel Time (s)	14.3			36.6	5.2	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	5%	2%	2%	3%	2%	2%
Adj. Flow (vph)	99	0	6	279	1	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	0	0	285	20	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	69	0	4	195	1	13
Future Vol, veh/h	69	0	4	195	1	13
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	-
Grade, %	6	-	-	-3	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	5	2	2	3	2	2
Mvmt Flow	99	0	6	279	1	19

Major/Minor

	Major1	Major2	Minor1
Conflicting Flow All	0	0	99
Stage 1	-	-	99
Stage 2	-	-	291
Critical Hdwy	-	4.3	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1111	701
Stage 1	-	-	1077
Stage 2	-	-	872
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1111	697
Mov Cap-2 Maneuver	-	-	697
Stage 1	-	-	1077
Stage 2	-	-	867

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.2	8.7
HCM LOS			A

Minor Lane/Major Mvm

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	988	-	-	1111	-
HCM Lane V/C Ratio	0.02	-	-	0.005	-
HCM Control Delay (s)	8.7	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	0	56	4	3	190	3	12	0	9	5	0	2
Future Volume (vph)	0	56	4	3	190	3	12	0	9	5	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Grade (%)	3%				-3%		0%				1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991				0.998		0.941				0.959	
Flt Protected					0.999		0.972				0.966	
Satd. Flow (prot)	0	1565	0	0	1640	0	0	1614	0	0	1441	0
Flt Permitted					0.999		0.972				0.966	
Satd. Flow (perm)	0	1565	0	0	1640	0	0	1614	0	0	1441	0
Link Speed (mph)	35				35		25				25	
Link Distance (ft)	496				733		274				306	
Travel Time (s)	9.7				14.3		7.5				8.3	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	0%	5%	2%	2%	3%	50%	2%	2%	0%	2%	25%	25%
Adj. Flow (vph)	0	80	6	4	271	4	17	0	13	7	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	0	0	279	0	0	30	0	0	10	0
Sign Control	Free				Free		Stop				Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	0	56	4	3	190	3	12	0	9	5	0	2
Future Vol, veh/h	0	56	4	3	190	3	12	0	9	5	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-		None		-		None		-		None	
Storage Length	-											
Veh in Median Storage, #	0											
Grade, %	-3				-3		0				1	
Peak Hour Factor	70	70	70	70	70	70	70	70	70	70	70	70
Heavy Vehicles, %	0	5	2	2	3	50	2	2	2	0	2	25
Mvmt Flow	0	80	6	4	271	4	17	0	13	7	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	275	0	86	0
Stage 1	-	-	83	83
Stage 2	-	-	283	283
Critical Hdwy	4.3	-	4.3	-
Critical Hdwy Stg 1	-	-	6.12	5.52
Critical Hdwy Stg 2	-	-	6.12	5.52
Follow-up Hdwy	3	-	3	-
Pot Cap-1 Maneuver	67	-	1122	-
Stage 1	-	-	1079	826
Stage 2	-	-	833	677
Platoon blocked, %	-			
Mov Cap-1 Maneuver	67	-	1122	-
Stage 1	-	-	670	560
Stage 2	-	-	1079	826
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	9.7	10.4
HCM LOS			A	B

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	791	967	-	-	1122	-	-	673
HCM Lane V/C Ratio	0.038	-	-	-	0.004	-	-	0.015
HCM Control Delay (s)	9.7	0	-	-	8.2	0	-	10.4
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T	T	T	T	T	T
Traffic Volume (vph)	174	30	183	41	19	134
Future Volume (vph)	174	30	183	41	19	134
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980		0.975			
Flt Protected	0.959					0.994
Satd. Flow (prot)	1630	0	1727	0	0	1757
Flt Permitted	0.959					0.994
Satd. Flow (perm)	1630	0	1727	0	0	1757
Link Speed (mph)	35		35			35
Link Distance (ft)	496		2543			619
Travel Time (s)	9.7		49.5			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	14%	2%	0%	8%	1%
Adj. Flow (vph)	196	34	206	46	21	151
Shared Lane Traffic (%)						
Lane Group Flow (vph)	230	0	252	0	0	172
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	4.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T	T	T	T	T	T
Traffic Vol, veh/h	174	30	183	41	19	134
Future Vol, veh/h	174	30	183	41	19	134
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
Grade, %	0		-		-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	14	2	0	8	1
Mvmt Flow	196	34	206	46	21	151

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	422	229	0
Stage 1	229	-	-
Stage 2	193	-	-
Critical Hdwy	6.42	6.34	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.2	-
Pot Cap-1 Maneuve	671	831	-
Stage 1	934	-	-
Stage 2	972	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuve	655	831	-
Mov Cap-2 Maneuve	655	-	-
Stage 1	934	-	-
Stage 2	949	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	1.1
HCM LOS	B		

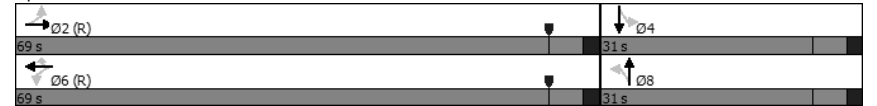
Minor Lane/Major Mvmt	NBT	NB/BLn1	SBL	SBT
Capacity (veh/h)	-	-	676	949
HCM Lane V/C Ratio	-	-	0.339	0.022
HCM Control Delay (s)	-	-	13	8.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.5	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕											
Traffic Volume (vph)	66	686	14	23	383	32	10	92	43	52	178	104
Future Volume (vph)	66	686	14	23	383	32	10	92	43	52	178	104
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.850			0.960			0.958		
Flt Protected	0.996			0.997			0.997			0.992		
Satd. Flow (prot)	0	1626	0	0	1563	1379	0	1579	0	0	1547	0
Flt Permitted	0.929			0.940			0.970			0.928		
Satd. Flow (perm)	0	1516	0	0	1474	1379	0	1536	0	0	1448	0
Right Turn on Red	Yes			Yes			No			No		
Satd. Flow (RTOR)	2			33								
Link Speed (mph)	45			45			25			35		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	68	707	14	24	395	33	10	95	44	54	184	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	789	0	0	419	33	0	149	0	0	345	0
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template	Left		Left		Left Thru		Left Thru		Left Thru			
Leading Detector (ft)	30	6		30	6	6	30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0	0	-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0	0	-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6	6	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	2		6		6		8		4		4	
Permitted Phases	2		6		8		8		4		4	
Detector Phase	2		6		8		8		4		4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0	22.0	3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0	69.0	31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%	69.0%	31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0	63.0	25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0		0.0		-1.0			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0			5.0			6.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0	2.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0	42.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0	21.0	0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	75
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926



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Robinson Tract

2: Bridlewood Blvd/Collector Road & Rt 926

2030 with Dev Weekday Afternoon Peak Hour

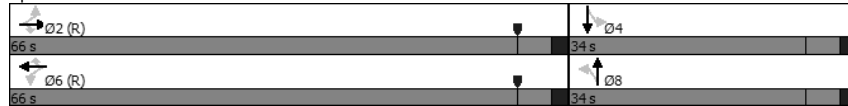


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	66.0%	66.0%	66.0%	66.0%	66.0%	66.0%	34.0%	34.0%		34.0%	34.0%	
Maximum Green (s)	60.0	60.0	60.0	60.0	60.0	60.0	28.0	28.0		28.0	28.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection	
Natural Cycle:	55
Control Type:	Actuated-Coordinated

Splits and Phases: 2: Bridlewood Blvd/Collector Road & Rt 926



Lanes, Volumes, Timings

2030 with Dev Weekday Afternoon Peak Hour

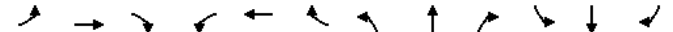
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Robinson Tract

2: Bridlewood Blvd/Collector Road & Rt 926

2030 with Dev Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	598	39	21	311	49	17	41	12	29	260	130
Future Volume (veh/h)	127	598	39	21	311	49	17	41	12	29	260	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1415	1401	1501	2027	2055	2070	1837	1809	1881	1772	1772	1772
Adj Flow Rate, veh/h	132	623	41	22	324	51	18	43	12	30	271	135
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	3	0	5	3	2	0	2	2	2	2	2
Cap, veh/h	515	870	790	620	1277	1089	125	379	106	423	311	155
Arrive On Green	1.00	1.00	1.00	0.62	0.62	0.62	0.28	0.28	0.27	0.28	0.28	0.27
Sat Flow, veh/h	805	1401	1272	883	2055	1754	1015	1361	380	1349	1116	556
Grp Volume(v), veh/h	132	623	41	22	324	51	18	0	55	30	0	406
Grp Sat Flow(s),veh/h/ln	805	1401	1272	883	2055	1754	1015	0	1740	1349	0	1672
Q Serve(g_s), s	2.5	0.0	0.0	1.0	7.1	1.1	1.7	0.0	2.4	1.7	0.0	23.1
Cycle Q Clear(g_c), s	9.6	0.0	0.0	1.0	7.1	1.1	24.4	0.0	2.4	3.5	0.0	23.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		0.33
Lane Grp Cap(c), veh/h	515	870	790	620	1277	1089	125	0	485	423	0	466
V/C Ratio(X)	0.26	0.72	0.05	0.04	0.25	0.05	0.14	0.00	0.11	0.07	0.00	0.87
Avail Cap(c_a), veh/h	515	870	790	620	1277	1089	136	0	505	438	0	485
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.49	0.49	0.49	0.18	0.18	0.18	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.5	0.0	0.0	7.4	8.5	7.4	45.7	0.0	26.9	28.0	0.0	34.5
Incr Delay (d2), s/veh	0.6	2.5	0.1	0.0	0.1	0.0	0.5	0.0	0.1	0.1	0.0	15.4
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	0.2	1.1	0.0	0.3	3.8	0.7	0.8	0.0	1.8	1.0	0.0	16.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.1	2.5	0.1	7.4	8.6	7.4	46.2	0.0	27.0	28.1	0.0	49.9
LnGrp LOS	A	A	A	A	A	A	D	A	C	C	A	D
Approach Vol, veh/h		796			397			73				436
Approach Delay, s/veh		2.2			8.4			31.8				48.4
Approach LOS		A			A			C				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		67.1		32.9		67.1		32.9				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		60.0		28.0		60.0		28.0				
Max Q Clear Time (g_c+1), s		12.1		25.1		9.6		26.9				
Green Ext Time (p_c), s		3.4		0.7		1.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay	16.7
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary

2030 with Dev Weekday Afternoon Peak Hour

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	328	220	44	211	251	67	63	1668	128	98	1325	69
Future Volume (vph)	328	220	44	211	251	67	63	1668	128	98	1325	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	14	12	12	15	12	12	12
Grade (%)	-3%				-4%						0%	
Storage Length (ft)	450		0	200		215	305		170	375		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95	
Frt	0.981				0.850				0.850		0.993	
Flt Protected	0.950	0.988	0.950		0.950		0.950		0.950			
Satd. Flow (prot)	1466	1728	0	1628	1818	1601	1744	3387	1683	1710	3264	0
Flt Permitted	0.950	0.988	0.950		0.950		0.950		0.950			
Satd. Flow (perm)	1466	1728	0	1628	1818	1601	1744	3387	1683	1710	3264	0
Right Turn on Red			No		No		Yes		Yes		Yes	
Satd. Flow (RTOR)							155		6			
Link Speed (mph)	45		45		45		45		45			
Link Distance (ft)	2349		982		1123		3154		47.8			
Travel Time (s)	35.6		14.9		17.0		47.8					
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	2%	11%	0%	1%	4%	0%	3%	2%	0%	4%	5%
Adj. Flow (vph)	338	227	45	218	259	69	65	1720	132	101	1366	71
Shared Lane Traffic (%)	25%											
Lane Group Flow (vph)	253	357	0	218	259	69	65	1720	132	101	1437	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	40	40		35	35	35	40	30	30	35	30	
Trailing Detector (ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	
Detector 1 Position(ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	
Detector 1 Size(ft)	40	40		40	40	40	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	8	8		4	4	4	5	2	2	1	6	
Permitted Phases												
Detector Phase	8	8		4	4	4	5			1		
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0	3.0	20.0	20.0	3.0	20.0	
Minimum Split (s)	45.0	45.0		10.0	10.0	10.0	9.0	34.0	34.0	9.0	34.0	
Total Split (s)	25.0	25.0		22.0	22.0	22.0	14.0	58.0	58.0	15.0	59.0	
Total Split (%)	20.8%	20.8%		18.3%	18.3%	18.3%	11.7%	48.3%	48.3%	12.5%	49.2%	
Maximum Green (s)	18.0	18.0		15.0	15.0	15.0	8.0	52.0	52.0	9.0	53.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	
Last Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	31.0	31.0		31.0	31.0	31.0	31.0	21.0	21.0	21.0	21.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0	0	0	0	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑
Traffic Volume (vph)	0	0	56	0	0	43	51	1976	62	110	1506	373
Future Volume (vph)	0	0	56	0	0	43	51	1976	62	110	1506	373
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		325
Storage Lanes	0		1	0		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00
Frt			0.865			0.865	0.995				0.850	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1573	1636	3243	0	1678	3370	1538
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1573	1636	3243	0	1678	3370	1538
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		553			858			3154			1356	
Travel Time (s)		10.8			16.7			47.8			20.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	1%
Adj. Flow (vph)	0	0	57	0	0	44	52	2016	63	112	1537	381
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	57	0	0	44	52	2079	0	112	1537	381
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑
Traffic Vol, veh/h	0	0	56	0	0	43	51	1976	62	110	1506	373
Future Vol, veh/h	0	0	56	0	0	43	51	1976	62	110	1506	373
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	0	350	-	-	380	-	325	-
Veh in Median Storage, #	0	0	0	0	0	0	0	0	4	0	0	3
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	4	0	0	3
Mvmt Flow	0	0	57	0	0	44	52	2016	63	112	1537	381

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	-	-	769	-	-	1040	1918	0	0	2079	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.1	-	-	7.2	3.9	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.9	-	-	3	2.4	-	-	2.4	-	-
Pot Cap-1 Maneuver	0	0	*532	0	0	*289	447	-	-	*361	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1			1		
Mov Cap-1 Maneuver	-	-	*532	-	-	*289	447	-	-	*361	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	19.7	0.3	1.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	447	-	-	532	289	*361	-
HCM Lane V/C Ratio	0.116	-	-	0.107	0.152	0.311	-
HCM Control Delay (s)	14.1	-	-	12.6	19.7	19.4	-
HCM Lane LOS	B	-	-	B	C	C	-
HCM 95th %tile Q(veh)	0.4	-	-	0.4	0.5	1.3	-

Notes

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	52	0	5	418	1	4
Future Volume (vph)	52	0	5	418	1	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	10
Grade (%)	4%			-4%	2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	1705	0	0	1756	1636	1414
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	1705	0	0	1756	1636	1414
Link Speed (mph)	35			35	35	
Link Distance (ft)	85			553	359	
Travel Time (s)	1.7			10.8	7.0	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	69	0	7	557	1	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	564	1	5
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	52	0	5	418	1	4
Future Vol, veh/h	52	0	5	418	1	4
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	0
Veh in Median Storage#	-	-	-	-	0	0
Grade, %	4			-4	2	
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	69	0	7	557	1	5

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	69
Stage 1	-	-	69
Stage 2	-	-	571
Critical Hdwy	-	4.3	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1137	462
Stage 1	-	-	1105
Stage 2	-	-	601
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1137	458
Mov Cap-2 Maneuver	-	-	458
Stage 1	-	-	1105
Stage 2	-	-	596

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.3
HCM LOS			A

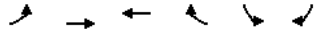
Minor Lane/Major Mvm	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	458	1058	-	-	1137	-
HCM Lane V/C Ratio	0.003	0.005	-	-	0.006	-
HCM Control Delay (s)	12.9	8.4	-	-	8.2	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-

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Robinson Tract

6: Pleasant Grove Rd & Orvis Way

2030 with Dev Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Volume (vph)	195	36	399	21	20	235
Future Volume (vph)	195	36	399	21	20	235
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		4%	-3%		0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt			0.993		0.875	
Flt Protected		0.959			0.996	
Satd. Flow (prot)	0	1664	1795	0	1538	0
Flt Permitted		0.959			0.996	
Satd. Flow (perm)	0	1664	1795	0	1538	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		300	85		315	
Travel Time (s)		5.8	1.7		8.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	1%	2%	2%	2%
Adj. Flow (vph)	217	40	443	23	22	261
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	257	466	0	283	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Lanes, Volumes, Timings

2030 with Dev Weekday Afternoon Peak Hour

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Robinson Tract

6: Pleasant Grove Rd & Orvis Way

2030 with Dev Weekday Afternoon Peak Hour

Intersection

Int Delay, s/veh 7.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	195	36	399	21	20	235
Future Vol, veh/h	195	36	399	21	20	235
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	-	0
Grade, %	-	4	-3	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	1	2	2	2
Mvmt Flow	217	40	443	23	22	261

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	466	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.3	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3	-	-
Pot Cap-1 Maneuver	30	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	30	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	9.2	0	17.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	830	-	-	-	566
HCM Lane V/C Ratio	0.261	-	-	-	-0.501
HCM Control Delay (s)	10.9	0	-	-	17.6
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	1	-	-	-	2.8

HCM 6th TWSC

2030 with Dev Weekday Afternoon Peak Hour

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Volume (vph)	227	0	0	634	0	0
Future Volume (vph)	227	0	0	634	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)	3%			-3%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1773	0	0	1809	1818	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	1809	1818	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	228			300	323	
Travel Time (s)	4.4			5.8	6.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%
Adj. Flow (vph)	303	0	0	845	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	303	0	0	845	0	0
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

Intersection
 Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	227	0	0	634	0	0
Future Vol, veh/h	227	0	0	634	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None			- None	- None	
Storage Length	-	-	-	-	0	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	3			-3	-2	
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	1	0	0
Mvmt Flow	303	0	0	845	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	- 1148 303
Stage 1	-	-	- 303 -
Stage 2	-	-	- 845 -
Critical Hdwy	-	-	- 6 6
Critical Hdwy Stg 1	-	-	- 5 -
Critical Hdwy Stg 2	-	-	- 5 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	- 0	0	- 252 754
Stage 1	- 0	0	- 780 -
Stage 2	- 0	0	- 466 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 252 754
Mov Cap-2 Maneuver	-	-	- 252 -
Stage 1	-	-	- 780 -
Stage 2	-	-	- 466 -

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

Minor Lane/Major Mvm	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	65	4	414	220	3	162
Future Volume (vph)	65	4	414	220	3	162
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	3%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.867	
Flt Protected				0.968	0.999	
Satd. Flow (prot)	1700	0	0	1682	1528	0
Flt Permitted				0.968	0.999	
Satd. Flow (perm)	1700	0	0	1682	1528	0
Link Speed (mph)	35			35	35	
Link Distance (ft)	1811			228	439	
Travel Time (s)	35.3			4.4	8.6	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	2%	2%	1%	2%	2%
Adj. Flow (vph)	87	5	552	293	4	216
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	0	845	220	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

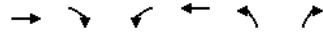
Int Delay, s/veh 7.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	65	4	414	220	3	162
Future Vol, veh/h	65	4	414	220	3	162
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	-
Grade, %	3			-3	0	
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	2	2	1	2	2
Mvmt Flow	87	5	552	293	4	216

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	92
Stage 1	-	-	90
Stage 2	-	-	1397
Critical Hdwy	-	4.3	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1117	148
Stage 1	-	-	1088
Stage 2	-	-	248
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1117	61
Mov Cap-2 Maneuver	-	-	61
Stage 1	-	-	1088
Stage 2	-	-	102

Approach	EB	WB	NB
HCM Control Delay, s	0	7.4	11.2
HCM LOS			B

Minor Lane/Major Mvm	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	801	-	-	1117	-
HCM Lane V/C Ratio	0.275	-	-	0.494	-
HCM Control Delay (s)	11.2	-	-	11.3	0
HCM Lane LOS	B	-	-	B	A
HCM 95th %tile Q(veh)	1.1	-	-	2.8	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	T
Traffic Volume (vph)	74	2	14	234	1	9
Future Volume (vph)	74	2	14	234	1	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	6%			-3%	0%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996			0.875		
Flt Protected				0.997	0.996	
Satd. Flow (prot)	1680	0	0	1742	1538	0
Flt Permitted				0.997	0.996	
Satd. Flow (perm)	1680	0	0	1742	1538	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	787			1811	415	
Travel Time (s)	15.3			35.3	11.3	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	2%	2%	1%	2%	2%
Adj. Flow (vph)	99	3	19	312	1	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	0	0	331	13	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T			T	T	T
Traffic Vol, veh/h	74	2	14	234	1	9
Future Vol, veh/h	74	2	14	234	1	9
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	-
Grade, %	6			-3	0	
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	2	2	1	2	2
Mvmt Flow	99	3	19	312	1	12

Major/Minor

	Major1	Major2	Minor1
Conflicting Flow All	0	0	102
Stage 1	-	-	101
Stage 2	-	-	350
Critical Hdwy	-	4.3	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	3	3
Pot Cap-1 Maneuver	-	1108	644
Stage 1	-	-	1075
Stage 2	-	-	817
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1108	630
Mov Cap-2 Maneuver	-	-	630
Stage 1	-	-	1075
Stage 2	-	-	800

Approach

	EB	WB	NB
HCM Control Delay, s	0	0.5	8.8
HCM LOS			A

Minor Lane/Major Mvm

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	959	-	-	1108	-
HCM Lane V/C Ratio	0.014	-	-	0.017	-
HCM Control Delay (s)	8.8	-	-	8.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (vph)	3	69	13	10	213	12	7	0	6	1	0	2
Future Volume (vph)	3	69	13	10	213	12	7	0	6	1	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	12	12	12	10	10	10
Grade (%)	3%			-3%			0%			1%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980			0.993			0.936			0.899		
Flt Protected	0.998			0.998			0.974			0.988		
Satd. Flow (prot)	0	1614	0	0	1673	0	0	1609	0	0	1485	0
Flt Permitted	0.998			0.998			0.974			0.988		
Satd. Flow (perm)	0	1614	0	0	1673	0	0	1609	0	0	1485	0
Link Speed (mph)	35			35			25			25		
Link Distance (ft)	591			787			452			385		
Travel Time (s)	11.5			15.3			12.3			10.5		
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	2%	2%	1%	0%	2%	2%	0%	0%	2%	0%
Adj. Flow (vph)	4	92	17	13	284	16	9	0	8	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	113	0	0	313	0	0	17	0	0	4	0
Sign Control	Free			Free			Stop			Stop		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	3	69	13	10	213	12	7	0	6	1	0	2
Future Vol, veh/h	3	69	13	10	213	12	7	0	6	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-	0	-
Grade, %	-	3	-	-	-3	-	-	0	-	-	1	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	2	2	1	0	2	2	2	0	2	0
Mvmt Flow	4	92	17	13	284	16	9	0	8	1	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	300	0	109	0
Stage 1	-	-	109	109
Stage 2	-	-	320	326
Critical Hdwy	4.3	-	4.3	-
Critical Hdwy Stg 1	-	-	6.12	5.52
Critical Hdwy Stg 2	-	-	6.12	5.52
Follow-up Hdwy	3	-	3	-
Pot Cap-1 Maneuver	448	-	1102	-
Stage 1	-	-	1043	805
Stage 2	-	-	793	648
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	448	-	1102	-
Mov Cap-2 Maneuver	-	-	600	504
Stage 1	-	-	1038	801
Stage 2	-	-	779	639

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	0.4	10	10.1
HCM LOS			B	B

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	740	948	-	-	1102	-	-	705
HCM Lane V/C Ratio	0.023	0.004	-	-	0.012	-	-	0.006
HCM Control Delay (s)	10	8.8	0	-	8.3	0	-	10.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	T
Traffic Volume (vph)	167	56	151	56	29	178
Future Volume (vph)	167	56	151	56	29	178
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966		0.963			
Flt Protected	0.964					0.993
Satd. Flow (prot)	1655	0	1721	0	0	1757
Flt Permitted	0.964					0.993
Satd. Flow (perm)	1655	0	1721	0	0	1757
Link Speed (mph)	35		35			35
Link Distance (ft)	591		636			619
Travel Time (s)	11.5		12.4			12.1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	2%	1%	0%	0%	2%
Adj. Flow (vph)	188	63	170	63	33	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	251	0	233	0	0	233
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	5.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T		T	T
Traffic Vol, veh/h	167	56	151	56	29	178
Future Vol, veh/h	167	56	151	56	29	178
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		-	
Grade, %	0		-		-	
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	2	1	0	0	2
Mvmt Flow	188	63	170	63	33	200

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	468	202	0
Stage 1	202	-	-
Stage 2	266	-	-
Critical Hdwy	6.41	6.22	-
Critical Hdwy Stg 1	5.41	-	-
Critical Hdwy Stg 2	5.41	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuv	630	892	-
Stage 1	962	-	-
Stage 2	897	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuv	607	892	-
Mov Cap-2 Maneuv	607	-	-
Stage 1	962	-	-
Stage 2	864	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	1.2
HCM LOS	B		

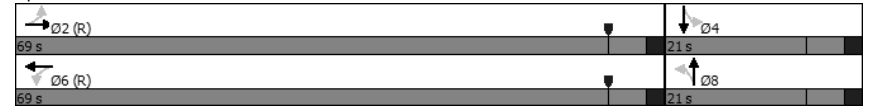
Minor Lane/Major Mvmt	NBT	NBR	SBL	SBT
Capacity (veh/h)	-	-	660	1000
HCM Lane V/C Ratio	-	-	0.38	0.033
HCM Control Delay (s)	-	-	13.8	8.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.8	0.1

Base

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕		↕		↕		↕		↕		↕	
Traffic Volume (vph)	84	663	5	12	393	38	10	106	44	8	133	156
Future Volume (vph)	84	663	5	12	393	38	10	106	44	8	133	156
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%				1%		-2%		1%			
Storage Length (ft)	0		0		150		0		0		0	
Storage Lanes	0		0		0		0		0		0	
Taper Length (ft)	75		75		75		75		75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.988		0.963				0.929	
Flt Protected	0.994				0.999		0.997				0.999	
Satd. Flow (prot)	0	1624	0	0	1550	0	0	1586	0	0	1530	0
Flt Permitted	0.901				0.979		0.910				0.991	
Satd. Flow (perm)	0	1472	0	0	1519	0	0	1448	0	0	1518	0
Right Turn on Red			Yes				Yes				No	
Satd. Flow (RTOR)	1				13						No	
Link Speed (mph)	45				45		25				35	
Link Distance (ft)	819				2436		714				826	
Travel Time (s)	12.4				36.9		19.5				16.1	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	87	684	5	12	405	39	10	109	45	8	137	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	776	0	0	456	0	0	164	0	0	306	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left		Left		Left Thru		Left Thru		Left Thru		Left Thru	
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2				6		8				4	
Permitted Phases	2				6		8				4	
Detector Phase	2				6		8				4	
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		21.0	21.0		21.0	21.0	
Total Split (%)	76.7%	76.7%		76.7%	76.7%		23.3%	23.3%		23.3%	23.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0				-1.0		-1.0				-1.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0				5.0		5.0				5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max				C-Max		C-Max				None	
Intersection Summary												
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	90											
Offset:	50 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow											
Natural Cycle:	65											
Control Type:	Actuated-Coordinated											

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Volume (veh/h)	84	663	5	12	393	38	10	106	44	8	133	156
Future Volume (veh/h)	84	663	5	12	393	38	10	106	44	8	133	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1818	1818	1818	1696	1696	1696	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	87	684	5	12	405	39	10	109	45	8	137	161
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	7	7	7	1	1	1	0	0	0
Cap, veh/h	148	1089	8	52	1062	100	51	220	87	44	134	153
Arrive On Green	0.70	0.71	0.70	0.93	0.95	0.93	0.17	0.18	0.17	0.17	0.18	0.17
Sat Flow, veh/h	146	1532	11	15	1493	141	47	1240	487	17	756	859
Grp Volume(v), veh/h	776	0	0	456	0	0	164	0	0	306	0	0
Grp Sat Flow(s),veh/h/ln	1688	0	0	1650	0	0	1773	0	0	1632	0	0
Q Serve(g_s), s	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Cycle Q Clear(g_c), s	20.9	0.0	0.0	2.2	0.0	0.0	7.6	0.0	0.0	15.0	0.0	0.0
Prop In Lane	0.11		0.01	0.03		0.09	0.06		0.27	0.03		0.53
Lane Grp Cap(c), veh/h	1226	0	0	1196	0	0	338	0	0	313	0	0
V/C Ratio(X)	0.63	0.00	0.00	0.38	0.00	0.00	0.49	0.00	0.00	0.98	0.00	0.00
Avail Cap(c_a), veh/h	1226	0	0	1196	0	0	338	0	0	313	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.99	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	0.0	0.0	0.8	0.0	0.0	33.7	0.0	0.0	37.7	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.9	0.0	0.0	1.1	0.0	0.0	44.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.0	1.2	0.0	0.0	6.1	0.0	0.0	15.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	0.0	0.0	1.7	0.0	0.0	34.8	0.0	0.0	82.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	F	A	A
Approach Vol, veh/h	776				456		164		306			
Approach Delay, s/veh	9.2				1.7		34.8		82.2			
Approach LOS	A				A		C		F			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	69.0		21.0		69.0		21.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	63.0		15.0		63.0		15.0					
Max Q Clear Time (g_c+1), s	22.9		17.0		4.2		9.6					
Green Ext Time (p_c), s	7.8		0.0		3.7		0.2					
Intersection Summary												
HCM 6th Ctrl Delay			22.8									
HCM 6th LOS			C									

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Volume (vph)	0	0	44	0	0	34	33	2141	71	54	1778	265
Future Volume (vph)	0	0	44	0	0	34	33	2141	71	54	1778	265
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		325
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	
Frt			0.865			0.865	0.995			0.981		
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1379	1488	3200	0	1629	3147	0
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1379	1488	3200	0	1629	3147	0
Link Speed (mph)			35			35		45		45		
Link Distance (ft)			499			858		3154		1356		
Travel Time (s)			9.7			16.7		47.8		20.5		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	14%	10%	5%	14%	3%	9%	3%
Adj. Flow (vph)	0	0	46	0	0	35	34	2230	74	56	1852	276
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	46	0	0	35	34	2304	0	56	2128	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary
Area Type: Other
Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	
Traffic Vol, veh/h	0	0	44	0	0	34	33	2141	71	54	1778	265
Future Vol, veh/h	0	0	44	0	0	34	33	2141	71	54	1778	265
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	350	-	-	380	-	-
Veh in Median Storage, #	0	0	0	0	0	0	0	0	0	0	0	0
Grade, %	-	-1	-	-	-2	-	-	-	2	-	-	-3
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	14	10	5	14	3	9	3
Mvmt Flow	0	0	46	0	0	35	34	2230	74	56	1852	276

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	-	-	1064	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	7.2	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.9	-
Pot Cap-1 Maneuver	0	0	*386	0
Stage 1	0	0	0	0
Stage 2	0	0	0	0
Platoon blocked, %	-	-	1	1
Mov Cap-1 Maneuver	-	-	*386	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	27.2	0.2	0.6
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	382	-	-	386	197	*255	-
HCM Lane V/C Ratio	0.09	-	-	0.119	0.18	0.221	-
HCM Control Delay (s)	15.4	-	-	15.6	27.2	23.1	-
HCM Lane LOS	C	-	-	C	D	C	-
HCM 95th %tile Q(veh)	0.3	-	-	0.4	0.6	0.8	-

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

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Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

2030 with Dev Weekday Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	243	153	35	87	142	62	0	2096	57	0	2008	314
Future Volume (vph)	243	153	35	87	142	62	0	2096	57	0	2008	314
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	12	12	14	12	12	16
Grade (%)	-5%				2%		2%				-3%	
Storage Length (ft)	200		200	350		0	0		220	0		200
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	75			100			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.850			0.954			0.850				0.850
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1598	1765	1434	1628	1687	0	0	3225	1616	0	3214	1676
Flt Permitted	0.511			0.611								
Satd. Flow (perm)	860	1765	1434	1047	1687	0	0	3225	1616	0	3214	1676
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	25				25		45				45	
Link Distance (ft)	637				560		1356				940	
Travel Time (s)	17.4				15.3		20.5				14.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	6%	8%	13%	4%	9%	4%	0%	5%	0%	0%	8%	5%
Adj. Flow (vph)	256	161	37	92	149	65	0	2206	60	0	2114	331
Shared Lane Traffic (%)												
Lane Group Flow (vph)	256	161	37	92	214	0	0	2206	60	0	2114	331
Number of Detectors	1	4	1	1	4			2	1		2	1
Detector Template	Right								Right			
Leading Detector (ft)	35	68	30	35	68			490	30		490	30
Trailing Detector (ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Position(ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Size(ft)	40	6	40	40	6			40	40		40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 2 Position(ft)	15				15				450			
Detector 2 Size(ft)	6				6				40			
Detector 2 Type	Cl+Ex				Cl+Ex				Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0				0.0				0.0			
Detector 3 Position(ft)	36				36							
Detector 3 Size(ft)	6				6							
Detector 3 Type	Cl+Ex				Cl+Ex							
Detector 3 Channel												
Detector 3 Extend (s)	0.0				0.0							
Detector 4 Position(ft)	62				62							
Detector 4 Size(ft)	6				6							
Detector 4 Type	Cl+Ex				Cl+Ex							

Lanes, Volumes, Timings

2030 with Dev Weekday Morning Peak Hour

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Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

2030 with Dev Weekday Morning Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Detector 4 Channel												
Detector 4 Extend (s)	0.0					0.0						
Turn Type	Perm	NA	Perm	Perm	NA			NA	Perm			NA
Protected Phases	8			4			6			2		
Permitted Phases	8	8		4	4		6		6		2	2
Detector Phase	8	8	8	4	4	6		6	2		2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	15.0		15.0	15.0		15.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0	22.0		22.0	22.0		22.0	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	84.0		84.0	84.0		84.0	
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	70.0%		70.0%	70.0%		70.0%	
Maximum Green (s)	28.0	28.0	28.0	28.0	28.0	77.0		77.0	77.0		77.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	5.0		5.0	5.0		5.0	
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0	2.0		2.0	2.0		2.0	
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	
Total Lost Time (s)	7.0	7.0	8.0	7.0	7.0	6.0		6.0	6.0		6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	6.0		6.0	6.0		6.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	48.0		48.0	48.0		48.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	24.0		24.0	24.0		24.0	
Recall Mode	None	None	None	None	None	C-Max		C-Max	C-Max		C-Max	

Intersection Summary

Area Type: Other

Cycle Length: 120

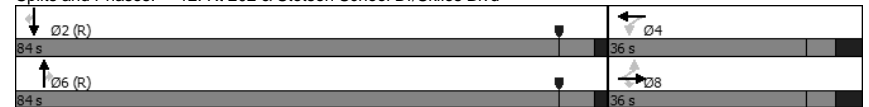
Actuated Cycle Length: 120

Offset: 83 (69%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Splits and Phases: 12: Rt 202 & Stetson School Dr/Skiles Blvd



Lanes, Volumes, Timings

2030 with Dev Weekday Morning Peak Hour

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2030 with Dev Weekday Morning Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↑	↑	↗	↘	↑	↗
Traffic Volume (veh/h)	243	153	35	87	142	62	0	2096	57	0	2008	314
Future Volume (veh/h)	243	153	35	87	142	62	0	2096	57	0	2008	314
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No			No			No	
Adj Sat Flow, veh/h/ln	1901	1947	1874	1722	1717	1717	0	1707	1849	0	1798	1914
Adj Flow Rate, veh/h	256	161	37	92	149	65	0	2206	60	0	2114	331
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	8	13	4	9	9	0	5	0	0	8	5
Cap, veh/h	224	471	370	259	274	120	0	2109	1018	0	2221	1054
Arrive On Green	0.24	0.24	0.23	0.24	0.24	0.23	0.00	0.65	0.65	0.00	0.65	0.65
Sat Flow, veh/h	1252	1947	1588	1151	1134	495	0	3330	1567	0	3506	1622
Grp Volume(v), veh/h	256	161	37	92	0	214	0	2206	60	0	2114	331
Grp Sat Flow(s),veh/h/ln	1252	1947	1588	1151	0	1628	0	1622	1567	0	1708	1622
Q Serve(g_s), s	15.7	8.2	2.2	8.6	0.0	13.8	0.0	78.0	1.7	0.0	68.2	10.8
Cycle Q Clear(g_c), s	29.0	8.2	2.2	16.8	0.0	13.8	0.0	78.0	1.7	0.0	68.2	10.8
Prop In Lane	1.00		1.00	1.00		0.30	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	224	471	370	259	0	394	0	2109	1018	0	2221	1054
V/C Ratio(X)	1.14	0.34	0.10	0.35	0.00	0.54	0.00	1.05	0.06	0.00	0.95	0.31
Avail Cap(c_a), veh/h	224	471	370	259	0	394	0	2109	1018	0	2221	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	37.6	36.1	44.6	0.0	39.9	0.0	21.0	7.6	0.0	19.3	9.2
Incr Delay (d2), s/veh	104.1	0.4	0.1	0.8	0.0	1.5	0.0	33.0	0.1	0.0	10.7	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	20.7	7.2	1.6	4.6	0.0	9.7	0.0	45.4	1.0	0.0	34.1	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	158.4	38.0	36.2	45.4	0.0	41.4	0.0	54.0	7.8	0.0	30.0	10.0
LnGrp LOS	F	D	D	D	A	D	A	F	A	A	C	B
Approach Vol, veh/h		454			306			2266			2445	
Approach Delay, s/veh		105.8			42.6			52.7			27.3	
Approach LOS		F			D			D			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		84.0		36.0		84.0		36.0				
Change Period (Y+Rc), s		7.0		8.0		7.0		8.0				
Max Green Setting (Gmax), s		77.0		28.0		77.0		28.0				
Max Q Clear Time (g_c+1), s		70.7		19.3		80.5		31.5				
Green Ext Time (p_c), s		6.3		0.9		0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	45.2
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary

2030 with Dev Weekday Morning Peak Hour

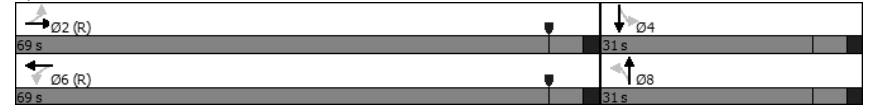
I:\eng\816451 - Crebilly Farm\Traffic Analysis\2020-02 Robinson Tract Revised TIS\Synchro5 - 2020-08-06 Scenario 2A\W

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	66	686	14	23	383	32	10	92	43	52	178	104
Future Volume (vph)	66	686	14	23	383	32	10	92	43	52	178	104
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)	-2%			1%			-2%			1%		
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.990			0.960			0.958		
Flt Protected	0.996			0.997			0.997			0.992		
Satd. Flow (prot)	0	1626	0	0	1552	0	0	1579	0	0	1547	0
Flt Permitted	0.925			0.944			0.970			0.928		
Satd. Flow (perm)	0	1510	0	0	1469	0	0	1536	0	0	1448	0
Right Turn on Red			Yes			Yes			No			No
Satd. Flow (RTOR)	2			8			25			35		
Link Speed (mph)	45			45			25			35		
Link Distance (ft)	819			2436			714			826		
Travel Time (s)	12.4			36.9			19.5			16.1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	4%	0%	0%	7%	3%	11%	1%	5%	13%	0%	2%
Adj. Flow (vph)	68	707	14	24	395	33	10	95	44	54	184	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	789	0	0	452	0	0	149	0	0	345	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left Thru			Left Thru		
Leading Detector (ft)	30	6		30	6		30	35		30	35	
Trailing Detector (ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Position(ft)	-10	0		-10	0		-10	-5		-10	-5	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2			6			8			4		
Permitted Phases	2			6			8			4		
Detector Phase	2			6			8			4		
Switch Phase												
Minimum Initial (s)	22.0	22.0		22.0	22.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	9.0		9.0	9.0	
Total Split (s)	69.0	69.0		69.0	69.0		31.0	31.0		31.0	31.0	
Total Split (%)	69.0%	69.0%		69.0%	69.0%		31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	63.0	63.0		63.0	63.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0			-1.0			-1.0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0			5.0			5.0			5.0		
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.0	2.0		2.0	2.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	42.0	42.0		42.0	42.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	21.0	21.0		21.0	21.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	

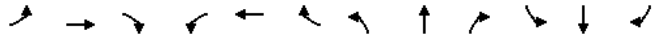
Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle:	80
Control Type:	Actuated-Coordinated

Splits and Phases: 1: New St & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	66	686	14	23	383	32	10	92	43	52	178	104
Future Volume (veh/h)	66	686	14	23	383	32	10	92	43	52	178	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1818	1818	1818	1696	1696	1696	1860	1860	1860	1794	1794	1794
Adj Flow Rate, veh/h	68	707	14	24	395	33	10	95	44	54	184	107
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	7	7	7	1	1	1	0	0	0
Cap, veh/h	113	1049	20	68	962	78	51	278	122	88	219	119
Arrive On Green	0.67	0.66	0.65	1.00	1.00	1.00	0.25	0.24	0.23	0.25	0.24	0.23
Sat Flow, veh/h	111	1577	30	46	1446	118	53	1184	518	197	930	507
Grp Volume(v), veh/h	789	0	0	452	0	0	149	0	0	345	0	0
Grp Sat Flow(s),veh/h/ln	1718	0	0	1610	0	0	1755	0	0	1634	0	0
Q Serve(g_s), s	10.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0
Cycle Q Clear(g_c), s	26.8	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	20.1	0.0	0.0
Prop In Lane	0.09		0.02	0.05		0.07	0.07		0.30	0.16		0.31
Lane Grp Cap(c), veh/h	1199	0	0	1124	0	0	469	0	0	442	0	0
V/C Ratio(X)	0.66	0.00	0.00	0.40	0.00	0.00	0.32	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	1199	0	0	1124	0	0	511	0	0	482	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.97	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.0	0.0	0.0	0.0	0.0	0.0	32.0	0.0	0.0	36.9	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	7.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	0.0	0.0	0.6	0.0	0.0	5.5	0.0	0.0	13.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	0.0	0.0	1.0	0.0	0.0	32.4	0.0	0.0	44.3	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	C	A	A	D	A	A
Approach Vol, veh/h		789			452			149			345	
Approach Delay, s/veh		12.8			1.0			32.4			44.3	
Approach LOS		B			A			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.5		28.5		71.5		28.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		63.0		25.0		63.0		25.0				
Max Q Clear Time (g_c+1), s		28.8		22.1		2.5		9.0				
Green Ext Time (p_c), s		7.7		0.4		3.7		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				17.7								
HCM 6th LOS				B								



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑
Traffic Volume (vph)	0	0	56	0	0	43	51	1976	62	110	1506	373
Future Volume (vph)	0	0	56	0	0	43	51	1976	62	110	1506	373
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	16	12	12	12	11	12	12	11	12	12
Grade (%)		-1%			-2%			2%			-3%	
Storage Length (ft)	0		0	0		0	350		0	380		325
Storage Lanes	0		1	0		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00
Frt			0.865			0.865	0.995				0.850	
Flt Protected							0.950			0.950		
Satd. Flow (prot)	0	0	1773	0	0	1573	1636	3243	0	1678	3370	1538
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	0	1773	0	0	1573	1636	3243	0	1678	3370	1538
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		553			858			3154			1356	
Travel Time (s)		10.8			16.7			47.8			20.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	1%
Adj. Flow (vph)	0	0	57	0	0	44	52	2016	63	112	1537	381
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	57	0	0	44	52	2079	0	112	1537	381
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑			↑	↑↑	↑↑		↑	↑↑	↑
Traffic Vol, veh/h	0	0	56	0	0	43	51	1976	62	110	1506	373
Future Vol, veh/h	0	0	56	0	0	43	51	1976	62	110	1506	373
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	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	0	350	-	-	380	-	325	-
Veh in Median Storage, #	0	0	-	0	-	0	-	0	4	0	0	3
Grade, %	-	-1	-	-	-2	-	-	2	-	-	-3	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	4	0	0	3
Mvmt Flow	0	0	57	0	0	44	52	2016	63	112	1537	381

Major/Minor	Minor2	Minor1	Major1	Major2								
Conflicting Flow All	-	-	769	-	-	1040	1918	0	0	2079	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.1	-	-	7.2	3.9	-	-	3.9	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.9	-	-	3	2.4	-	-	2.4	-	-
Pot Cap-1 Maneuver	0	0	*532	0	0	*289	447	-	-	*361	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1			1		
Mov Cap-1 Maneuver	-	-	*532	-	-	*289	447	-	-	*361	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	19.7	0.3	1.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	447	-	-	532	289	*361	-
HCM Lane V/C Ratio	0.116	-	-	0.107	0.152	0.311	-
HCM Control Delay (s)	14.1	-	-	12.6	19.7	19.4	-
HCM Lane LOS	B	-	-	B	C	C	-
HCM 95th %tile Q(veh)	0.4	-	-	0.4	0.5	1.3	-

Notes

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

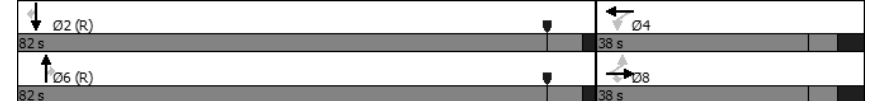
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↔	↔	↔	↔	↔	↑	↔	↔	↑	↔
Traffic Volume (vph)	356	146	63	60	46	66	0	1968	77	0	1902	382
Future Volume (vph)	356	146	63	60	46	66	0	1968	77	0	1902	382
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	12	12	14	12	12	16
Grade (%)	-5%				2%		2%				-3%	
Storage Length (ft)	200		200	350		0	0		220	0		200
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25		25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1661	1906	1589	1693	1732	0	0	3256	1616	0	3370	1709
Flt Permitted	0.664			0.602								
Satd. Flow (perm)	1161	1906	1589	1073	1732	0	0	3256	1616	0	3370	1709
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		637			560			1356			940	
Travel Time (s)		17.4			15.3			20.5			14.2	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	0%	4%	0%	0%	3%	3%
Adj. Flow (vph)	367	151	65	62	47	68	0	2029	79	0	1961	394
Shared Lane Traffic (%)												
Lane Group Flow (vph)	367	151	65	62	115	0	0	2029	79	0	1961	394
Number of Detectors	1	1	1	1	1			5	1		5	1
Detector Template	Right				Right				Right			
Leading Detector (ft)	35	68	30	35	68			490	30		490	30
Trailing Detector (ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Position(ft)	-5	-1	-10	-5	-1			-10	-10		-10	-10
Detector 1 Size(ft)	40	69	40	40	69			40	40		40	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	0.0
Detector 2 Position(ft)												
Detector 2 Size(ft)												
Detector 2 Type	Cl+Ex											
Detector 2 Channel												
Detector 2 Extend (s)	0.0											
Detector 3 Position(ft)	237											
Detector 3 Size(ft)	6											
Detector 3 Type	Cl+Ex											
Detector 3 Channel												
Detector 3 Extend (s)	0.0											
Detector 4 Position(ft)	360											
Detector 4 Size(ft)	6											
Detector 4 Type	Cl+Ex											

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 4 Channel												
Detector 4 Extend (s)	0.0											
Detector 5 Position(ft)	484											
Detector 5 Size(ft)	6											
Detector 5 Type	Cl+Ex											
Detector 5 Channel												
Detector 5 Extend (s)	0.0											
Turn Type	Perm	NA	Perm	Perm	NA		NA	Perm	NA	Perm	NA	Perm
Protected Phases	8			4			6			2		
Permitted Phases	8			4			6			2		
Detector Phase	8			8			4			4		
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	15.0	15.0	15.0	15.0	15.0		22.0	22.0		22.0	22.0	
Total Split (s)	38.0	38.0	38.0	38.0	38.0		82.0	82.0		82.0	82.0	
Total Split (%)	31.7%	31.7%	31.7%	31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Maximum Green (s)	30.0	30.0	30.0	30.0	30.0		75.0	75.0		75.0	75.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-3.0	-3.0	-4.0	-3.0	-3.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		48.0	48.0		48.0	48.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		24.0	24.0		24.0	24.0	
Recall Mode	None	None	None	None	None		C-Max	C-Max		C-Max	C-Max	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	84 (70%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Description:	Signal

Splits and Phases: 12: Rt 202 & Stetson School Dr/Skiles Blvd



McMahon Associates, Inc.

Robinson Tract

12: Rt 202 & Stetson School Dr/Skiles Blvd

2030 with Dev Weekday Afternoon Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↗	↘	↘	↗	↗	↘	↗	↗
Traffic Volume (veh/h)	356	146	63	60	46	66	0	1968	77	0	1902	382
Future Volume (veh/h)	356	146	63	60	46	66	0	1968	77	0	1902	382
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1958	2066	2036	1778	1849	1849	0	1722	1849	0	1869	1944
Adj Flow Rate, veh/h	367	151	65	62	47	68	0	2029	79	0	1961	394
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	2	0	0	0	0	4	0	0	3	3
Cap, veh/h	377	568	489	315	188	272	0	2099	1005	0	2279	1057
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.25	0.00	0.64	0.64	0.00	0.64	0.64
Sat Flow, veh/h	1411	2066	1726	1169	683	988	0	3357	1567	0	3645	1647
Grp Volume(v), veh/h	367	151	65	62	0	115	0	2029	79	0	1961	394
Grp Sat Flow(s),veh/h/ln	1411	2066	1726	1169	0	1671	0	1635	1567	0	1776	1647
Q Serve(g_s), s	27.0	6.9	3.4	5.3	0.0	6.5	0.0	70.3	2.3	0.0	53.0	13.5
Cycle Q Clear(g_c), s	33.0	6.9	3.4	12.1	0.0	6.5	0.0	70.3	2.3	0.0	53.0	13.5
Prop In Lane	1.00		1.00	1.00		0.59	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	377	568	489	315	0	460	0	2099	1005	0	2279	1057
V/C Ratio(X)	0.97	0.27	0.13	0.20	0.00	0.25	0.00	0.97	0.08	0.00	0.86	0.37
Avail Cap(c_a), veh/h	377	568	489	315	0	460	0	2099	1005	0	2279	1057
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	34.0	32.0	38.8	0.0	34.6	0.0	20.3	8.1	0.0	17.2	10.1
Incr Delay (d2), s/veh	39.1	0.2	0.1	0.3	0.0	0.3	0.0	13.2	0.2	0.0	4.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	21.8	6.4	2.6	2.8	0.0	4.9	0.0	34.7	1.3	0.0	27.1	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.4	34.3	32.1	39.1	0.0	34.9	0.0	33.5	8.3	0.0	21.7	11.1
LnGrp LOS	F	C	C	D	A	C	A	C	A	A	C	B
Approach Vol, veh/h		583			177			2108			2355	
Approach Delay, s/veh		67.5			36.3			32.6			20.0	
Approach LOS		E			D			C			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		82.0		38.0		82.0		38.0				
Change Period (Y+Rc), s		7.0		8.0		7.0		8.0				
Max Green Setting (Gmax), s		75.0		30.0		75.0		30.0				
Max Q Clear Time (g_c+1), s		55.5		14.6		72.8		35.5				
Green Ext Time (p_c), s		19.5		0.6		2.2		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				30.9								
HCM 6th LOS				C								

Appendix T

Future (2030) Collector Road Internal Intersection Analysis

INTERSECTION VOLUME SUMMARY Connector Road/Road N

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Road N			NORTHBOUND Connector Road			WESTBOUND Road N			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	8	0	8	2	89	0	0	0	0	0	163	3
Robinson Tract	8	0	8	2	35	0	0	0	0	0	11	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	55	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	97	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	8	0	8	2	89	0	0	0	0	0	163	3
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Connector Road/Road N

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Road N			NORTHBOUND Connector Road			WESTBOUND Road N			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	5	0	5	8	160	0	0	0	0	0	410	8
Robinson Tract	5	0	5	8	22	0	0	0	0	0	37	8
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	114	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	54	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	24	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	69	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	5	0	5	8	160	0	0	0	0	0	410	8
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Connector Road/Road D

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Road D			NORTHBOUND Connector Road			WESTBOUND Road D			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	21	0	52	16	70	0	0	0	0	0	164	7
Robinson Tract	21	0	52	16	16	0	0	0	0	0	12	7
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	55	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	97	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	21	0	52	16	70	0	0	0	0	0	164	7
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Connector Road/Road D

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Road D			NORTHBOUND Connector Road			WESTBOUND Road D			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	13	0	34	57	155	0	0	0	0	0	392	23
Robinson Tract	13	0	34	57	17	0	0	0	0	0	19	23
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	114	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	54	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	24	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	69	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	13	0	34	57	155	0	0	0	0	0	392	23
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Connector Road/Road B (North)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Road B (North)			NORTHBOUND Connector Road			WESTBOUND Road B (North)			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	4	0	2	1	82	0	0	0	0	0	215	1
Robinson Tract	4	0	2	1	28	0	0	0	0	0	63	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	55	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	97	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	4	0	2	1	82	0	0	0	0	0	215	1
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Connector Road/Road B (North)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Road B (North)			NORTHBOUND Connector Road			WESTBOUND Road B (North)			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	3	0	2	3	209	0	0	0	0	0	421	5
Robinson Tract	3	0	2	3	71	0	0	0	0	0	48	5
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	114	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	54	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	24	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	69	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	3	0	2	3	209	0	0	0	0	0	421	5
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Connector Road/Road C

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Road C			NORTHBOUND Connector Road			WESTBOUND Road C			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	0	0	0	78	1	3	0	5	0	217	0
Robinson Tract	0	0	0	0	24	1	3	0	5	0	65	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	55	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	97	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	0	0	78	1	3	0	5	0	217	0
"New" Site Traffic % of Total #####	0.0	0.0	0.0	0.0	100.0	100.0	100.0	0.0	100.0	0.0	100.0	0.0

INTERSECTION VOLUME SUMMARY Connector Road/Road C

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Road C			NORTHBOUND Connector Road			WESTBOUND Road C			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	0	0	0	0	209	4	2	0	3	5	418	0
Robinson Tract	0	0	0	0	71	4	2	0	3	5	45	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	114	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	54	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	24	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	69	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	0	0	0	209	4	2	0	3	5	418	0
"New" Site Traffic % of Total #####	0.0	0.0	0.0	0.0	100.0	100.0	100.0	0.0	100.0	100.0	100.0	0.0

INTERSECTION VOLUME SUMMARY Connector Road/Road B (South)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Road B (South)			NORTHBOUND Connector Road			WESTBOUND Road B (South)			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	3	0	4	1	76	0	0	0	0	0	219	1
Robinson Tract	3	0	4	1	22	0	0	0	0	0	67	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	55	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	97	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	3	0	4	1	76	0	0	0	0	0	219	1
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Connector Road/Road B (South)

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Road B (South)			NORTHBOUND Connector Road			WESTBOUND Road B (South)			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	2	0	3	5	211	0	0	0	0	0	417	3
Robinson Tract	2	0	3	5	73	0	0	0	0	0	44	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	114	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	54	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	24	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	69	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	2	0	3	5	211	0	0	0	0	0	417	3
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0

INTERSECTION VOLUME SUMMARY Connector Road/Road A

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS Weekday 7-9 AM
 Design Year (2030)

Traffic Component	EASTBOUND Road A			NORTHBOUND Connector Road			WESTBOUND Road A			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	1	0	2	0	76	0	0	0	0	0	223	0
Robinson Tract	1	0	2	0	22	0	0	0	0	0	71	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	55	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	27	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	0	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	97	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	1	0	2	0	76	0	0	0	0	0	223	0
"New" Site Traffic % of Total #####	100.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0

INTERSECTION VOLUME SUMMARY Connector Road/Road A

Robinson Tract
 I:\eng\816451 - Crebilly Farm\Traffic\Analysis\2019-11 Robinson Tract Revised TIS\ Weekday 4-6 PM
 Design Year (2030)

Traffic Component	EASTBOUND Road A			NORTHBOUND Connector Road			WESTBOUND Road A			SOUTHBOUND Connector Road		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adjustment Factor 1.000	0	0	0	0	0	0	0	0	0	0	0	0
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	0	0
Background Growth 0.00 %	0	0	0	0	0	0	0	0	0	0	0	0
EXISTING W/ BACKGROUND	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "OTHER" DEVELOPMENTS	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL "NEW" SITE TRAFFIC	1	0	1	2	215	0	0	0	0	0	418	2
Robinson Tract	1	0	1	2	77	0	0	0	0	0	45	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
Diversion A - EBL 926 to NB 202	0	0	0	0	114	0	0	0	0	0	0	0
Diversion B - SBR 202 to WPG/New	0	0	0	0	0	0	0	0	0	0	54	0
Diversion D - NBR Bridlewood to 202	0	0	0	0	24	0	0	0	0	0	0	0
Diversion F - EBR Stetson to SB 202	0	0	0	0	0	0	0	0	0	0	250	0
Diversion E - SBR 202 @ 926	0	0	0	0	0	0	0	0	0	0	69	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	1	0	1	2	215	0	0	0	0	0	418	2
"New" Site Traffic % of Total #####	100.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	8	8	2	89	163	3
Future Volume (vph)	8	8	2	89	163	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932			0.997		
Flt Protected	0.976			0.999		
Satd. Flow (prot)	1605	0	0	1763	1759	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1605	0	0	1763	1759	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	174			133	261	
Travel Time (s)	4.7			3.0	5.9	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	10	10	3	111	204	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	0	114	208	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	8	8	2	89	163	3
Future Vol, veh/h	8	8	2	89	163	3
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	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	3	111	204	4

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	323	206	208
Stage 1	206	-	-
Stage 2	117	-	-
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	769	888	1019
Stage 1	958	-	-
Stage 2	1056	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	767	888	1019
Mov Cap-2 Maneuver	767	-	-
Stage 1	955	-	-
Stage 2	1056	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1019	-	823	-	-
HCM Lane V/C Ratio	0.002	-	0.024	-	-
HCM Control Delay (s)	8.5	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Volume (vph)	21	52	16	70	164	7
Future Volume (vph)	21	52	16	70	164	7
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.904			0.994		
Flt Protected	0.986			0.991		
Satd. Flow (prot)	1573	0	0	1749	1754	0
Flt Permitted	0.986			0.991		
Satd. Flow (perm)	1573	0	0	1749	1754	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	209			58	104	
Travel Time (s)	5.7			1.3	2.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	26	65	20	88	205	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	0	0	108	214	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	21	52	16	70	164	7
Future Vol, veh/h	21	52	16	70	164	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	
Grade, %	0			0	0	
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	65	20	88	205	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	338	210	214
Stage 1	210	-	-
Stage 2	128	-	-
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#	754	883	1015
Stage 1	953	-	-
Stage 2	1043	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver#	738	883	1015
Mov Cap-2 Maneuver#	738	-	-
Stage 1	933	-	-
Stage 2	1043	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	1.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1015	-	836	-	-
HCM Lane V/C Ratio	0.02	-	0.109	-	-
HCM Control Delay (s)	8.6	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Volume (vph)	4	2	1	82	215	1
Future Volume (vph)	4	2	1	82	215	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.949			0.999		
Flt Protected	0.970					
Satd. Flow (prot)	1624	0	0	1765	1763	0
Flt Permitted	0.970					
Satd. Flow (perm)	1624	0	0	1765	1763	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	207			123	121	
Travel Time (s)	5.6			2.8	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	5	3	1	103	269	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	104	270	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕	↕	
Traffic Vol, veh/h	4	2	1	82	215	1
Future Vol, veh/h	4	2	1	82	215	1
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	
Grade, %	0			0	0	
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	3	1	103	269	1

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	375	270	270
Stage 1	270	-	-
Stage 2	105	-	-
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 Maneuv#	16	816	971
Stage 1	892	-	-
Stage 2	1070	-	-
Platoon blocked, %			
Mov Cap-1 Maneuv#	15	816	971
Mov Cap-2 Maneuv#	15	-	-
Stage 1	891	-	-
Stage 2	1070	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	971	-	746	-	-
HCM Lane V/C Ratio	0.001	-	0.01	-	-
HCM Control Delay (s)	8.7	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (vph)	3	5	78	1	0	217
Future Volume (vph)	3	5	78	1	0	217
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.919		0.999			
Flt Protected	0.980					
Satd. Flow (prot)	1589	0	1763	0	0	1765
Flt Permitted	0.980					
Satd. Flow (perm)	1589	0	1763	0	0	1765
Link Speed (mph)	25		30			30
Link Distance (ft)	251		324			216
Travel Time (s)	6.8		7.4			4.9
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	4	6	98	1	0	271
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	99	0	0	271
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Vol, veh/h	3	5	78	1	0	217
Future Vol, veh/h	3	5	78	1	0	217
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		-	
Grade, %	0		-		-	
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	6	98	1	0	271

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	370	99	0
Stage 1	99	-	-
Stage 2	271	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuver#	21	1021	-
Stage 1	1077	-	-
Stage 2	891	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver#	21	1021	-
Mov Cap-2 Maneuver#	21	-	-
Stage 1	1077	-	-
Stage 2	891	-	-

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

Minor Lane/Major Mvmt	NBT	NB/BLn1	SBL	SBT
Capacity (veh/h)	-	-	883	1111
HCM Lane V/C Ratio	-	-	0.011	-
HCM Control Delay (s)	-	-	9.1	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Volume (vph)	3	4	1	76	219	1
Future Volume (vph)	3	4	1	76	219	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.925					
Flt Protected	0.978			0.999		
Satd. Flow (prot)	1596	0	0	1763	1765	0
Flt Permitted	0.978			0.999		
Satd. Flow (perm)	1596	0	0	1763	1765	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	289			253	222	
Travel Time (s)	7.9			5.8	5.0	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	4	5	1	95	274	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	0	0	96	275	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

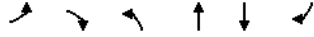
Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	3	4	1	76	219	1
Future Vol, veh/h	3	4	1	76	219	1
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	
Grade, %	0			0	0	
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	5	1	95	274	1

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	372	275	275
Stage 1	275	-	-
Stage 2	97	-	-
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 Maneuv#	19	811	967
Stage 1	888	-	-
Stage 2	1079	-	-
Platoon blocked, %			
Mov Cap-1 Maneuv#	18	811	967
Mov Cap-2 Maneuv#	18	-	-
Stage 1	887	-	-
Stage 2	1079	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	967	-	768	-	-
HCM Lane V/C Ratio	0.001	-	0.011	-	-
HCM Control Delay (s)	8.7	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1	2	0	76	223	0
Future Volume (vph)	1	2	0	76	223	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899					
Flt Protected	0.988					
Satd. Flow (prot)	1567	0	0	1765	1765	0
Flt Permitted	0.988					
Satd. Flow (perm)	1567	0	0	1765	1765	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	170			97	98	
Travel Time (s)	4.6			2.2	2.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	1	3	0	95	279	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	0	95	279	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

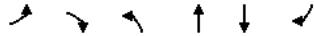
Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	1	2	0	76	223	0
Future Vol, veh/h	1	2	0	76	223	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None			- None		- None
Storage Length	0					
Veh in Median Storage#	-			0	0	
Grade, %	0			0	0	
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	3	0	95	279	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	374	279	279
Stage 1	279	-	-
Stage 2	95	-	-
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 Maneuv#	17	807	964
Stage 1	884	-	-
Stage 2	1082	-	-
Platoon blocked, %			
Mov Cap-1 Maneuv#	17	807	964
Mov Cap-2 Maneuv#	17	-	-
Stage 1	884	-	-
Stage 2	1082	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	964	-	775	-	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	0	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Volume (vph)	5	5	8	160	410	8
Future Volume (vph)	5	5	8	160	410	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932			0.997		
Flt Protected	0.976			0.998		
Satd. Flow (prot)	1605	0	0	1761	1759	0
Flt Permitted	0.976			0.998		
Satd. Flow (perm)	1605	0	0	1761	1759	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	174			133	261	
Travel Time (s)	4.7			3.0	5.9	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	6	6	10	200	513	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	0	210	523	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Vol, veh/h	5	5	8	160	410	8
Future Vol, veh/h	5	5	8	160	410	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None			- None		- None
Storage Length	0	-	-	-	-	-
Veh in Median Storage#	-	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	6	10	200	513	10

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	738	518	523
Stage 1	518	-	-
Stage 2	220	-	-
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	431	588	793
Stage 1	677	-	-
Stage 2	943	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	425	588	793
Mov Cap-2 Maneuver	425	-	-
Stage 1	668	-	-
Stage 2	943	-	-

Approach	EB	NB	SB
HCM Control Delay, s	2.5	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	793	-	493	-	-
HCM Lane V/C Ratio	0.013	-	0.025	-	-
HCM Control Delay (s)	9.6	-	12.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Volume (vph)	13	34	57	155	392	23
Future Volume (vph)	13	34	57	155	392	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.902			0.992		
Flt Protected	0.987			0.987		
Satd. Flow (prot)	1571	0	0	1742	1751	0
Flt Permitted	0.987			0.987		
Satd. Flow (perm)	1571	0	0	1742	1751	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	209			58	104	
Travel Time (s)	5.7			1.3	2.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	16	43	71	194	490	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	0	265	519	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	13	34	57	155	392	23
Future Vol, veh/h	13	34	57	155	392	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None			- None	- None	
Storage Length	0					
Veh in Median Storage#	-			0	0	
Grade, %	0			0	0	
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	43	71	194	490	29

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	841	505	519
Stage 1	505	-	-
Stage 2	336	-	-
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 Maneuv	673	598	795
Stage 1	687	-	-
Stage 2	830	-	-
Platoon blocked, %			
Mov Cap-1 Maneuv	636	598	795
Mov Cap-2 Maneuv	636	-	-
Stage 1	618	-	-
Stage 2	830	-	-

Approach	EB	NB	SB
HCM Control Delay, s	1.3	2.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	795	-	492	-	-
HCM Lane V/C Ratio	0.09	-	0.119	-	-
HCM Control Delay (s)	10	0	13.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Volume (vph)	3	2	3	209	421	5
Future Volume (vph)	3	2	3	209	421	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.942			0.998		
Flt Protected	0.972			0.999		
Satd. Flow (prot)	1616	0	0	1763	1761	0
Flt Permitted	0.972			0.999		
Satd. Flow (perm)	1616	0	0	1763	1761	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	207			123	121	
Travel Time (s)	5.6			2.8	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	4	3	4	261	526	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	0	265	532	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Vol, veh/h	3	2	3	209	421	5
Future Vol, veh/h	3	2	3	209	421	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None			- None		- None
Storage Length	0					
Veh in Median Storage#	-			0	0	
Grade, %	0			0	0	
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	3	4	261	526	6

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	798	529	532
Stage 1	529	-	-
Stage 2	269	-	-
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 Maneuv	896	580	787
Stage 1	669	-	-
Stage 2	893	-	-
Platoon blocked, %			
Mov Cap-1 Maneuv	894	580	787
Mov Cap-2 Maneuv	894	-	-
Stage 1	665	-	-
Stage 2	893	-	-

Approach	EB	NB	SB
HCM Control Delay, s	1.1	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	787	-	452	-	-
HCM Lane V/C Ratio	0.005	-	0.014	-	-
HCM Control Delay (s)	9.6	-	13.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗		↘	↙
Traffic Volume (vph)	2	3	209	4	5	418
Future Volume (vph)	2	3	209	4	5	418
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.923		0.997			
Flt Protected	0.979					0.999
Satd. Flow (prot)	1595	0	1759	0	0	1763
Flt Permitted	0.979					0.999
Satd. Flow (perm)	1595	0	1759	0	0	1763
Link Speed (mph)	25		30			30
Link Distance (ft)	251		324			216
Travel Time (s)	6.8		7.4			4.9
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	3	4	261	5	6	523
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	266	0	0	529
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖		↗		↘	↙
Traffic Vol, veh/h	2	3	209	4	5	418
Future Vol, veh/h	2	3	209	4	5	418
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- None		- None		- None	
Storage Length	0	-	-	-	-	-
Veh in Median Storage#	-	0	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	4	261	5	6	523

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	799	264	0
Stage 1	264	-	-
Stage 2	535	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3	3.1	-
Pot Cap-1 Maneuver	895	823	-
Stage 1	898	-	-
Stage 2	665	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	891	823	-
Mov Cap-2 Maneuver	891	-	-
Stage 1	898	-	-
Stage 2	659	-	-

Approach	WB	NB	SB
HCM Control Delay	14.4	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NB	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	974	-
HCM Lane V/C Ratio	-	-	0.011	0.006	-
HCM Control Delay (s)	-	-	11.4	8.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Volume (vph)	2	3	5	211	417	3
Future Volume (vph)	2	3	5	211	417	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.923			0.999		
Flt Protected	0.979			0.999		
Satd. Flow (prot)	1595	0	0	1763	1763	0
Flt Permitted	0.979			0.999		
Satd. Flow (perm)	1595	0	0	1763	1763	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	289			253	222	
Travel Time (s)	7.9			5.8	5.0	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	3	4	6	264	521	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	0	0	270	525	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Vol, veh/h	2	3	5	211	417	3
Future Vol, veh/h	2	3	5	211	417	3
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	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	4	6	264	521	4

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	799	523	525
Stage 1	523	-	-
Stage 2	276	-	-
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 Maneuv	895	584	791
Stage 1	674	-	-
Stage 2	887	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuv	891	584	791
Mov Cap-2 Maneuv	891	-	-
Stage 1	668	-	-
Stage 2	887	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	791	-	488	-	-
HCM Lane V/C Ratio	0.008	-	0.013	-	-
HCM Control Delay (s)	9.6	0	12.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Volume (vph)	1	1	2	215	418	2
Future Volume (vph)	1	1	2	215	418	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932			0.999		
Flt Protected	0.976			0.999		
Satd. Flow (prot)	1605	0	0	1763	1763	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1605	0	0	1763	1763	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	170			97	98	
Travel Time (s)	4.6			2.2	2.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	1	1	3	269	523	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	0	272	526	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other
Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Traffic Vol, veh/h	1	1	2	215	418	2
Future Vol, veh/h	1	1	2	215	418	2
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	
Grade, %	0			0	0	
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	3	269	523	3

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	800	525	526
Stage 1	525	-	-
Stage 2	275	-	-
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	895	583	791
Stage 1	672	-	-
Stage 2	888	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	893	583	791
Mov Cap-2 Maneuver	893	-	-
Stage 1	669	-	-
Stage 2	888	-	-

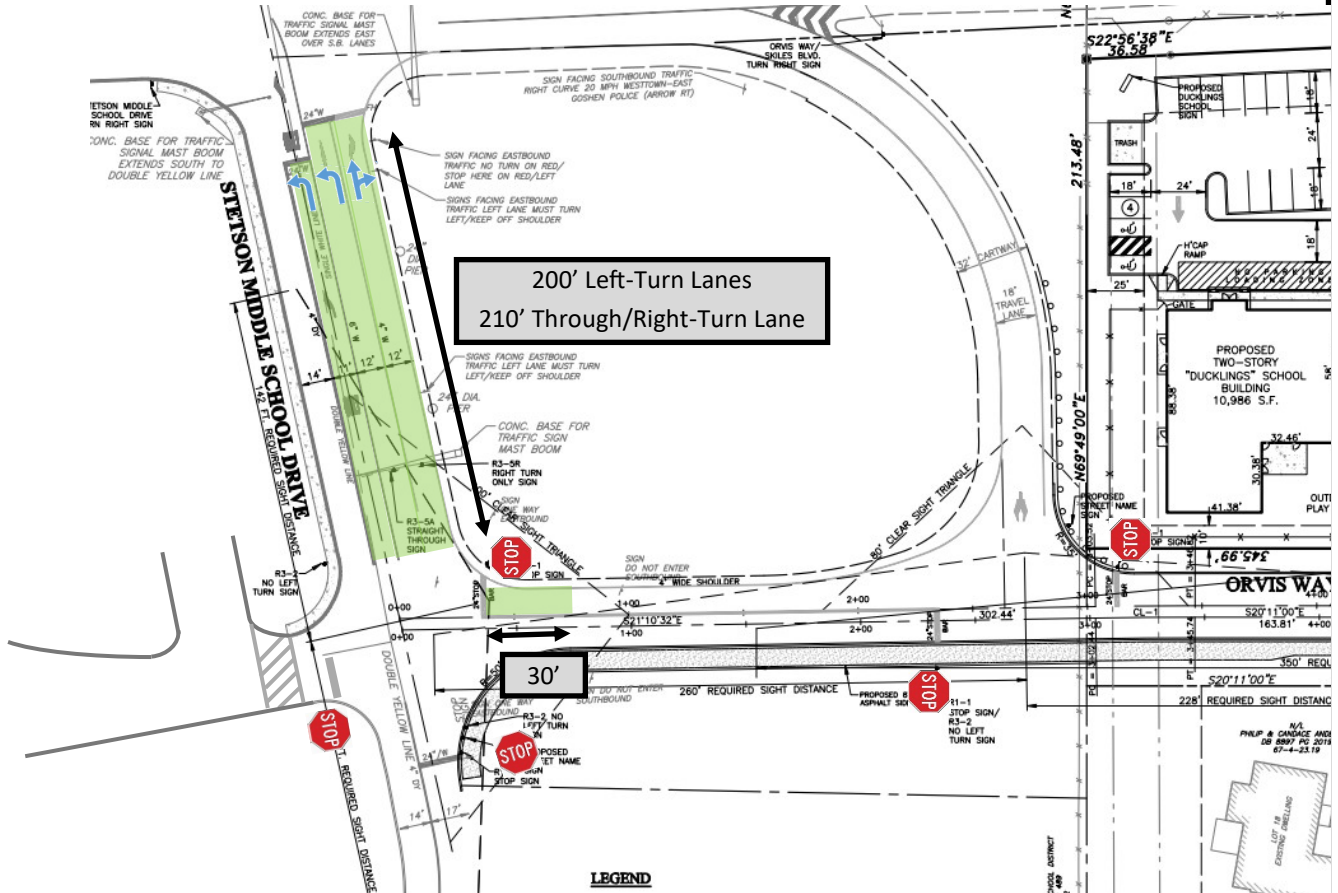
Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	791	-	470	-	-
HCM Lane V/C Ratio	0.003	-	0.005	-	-
HCM Control Delay (s)	9.6	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

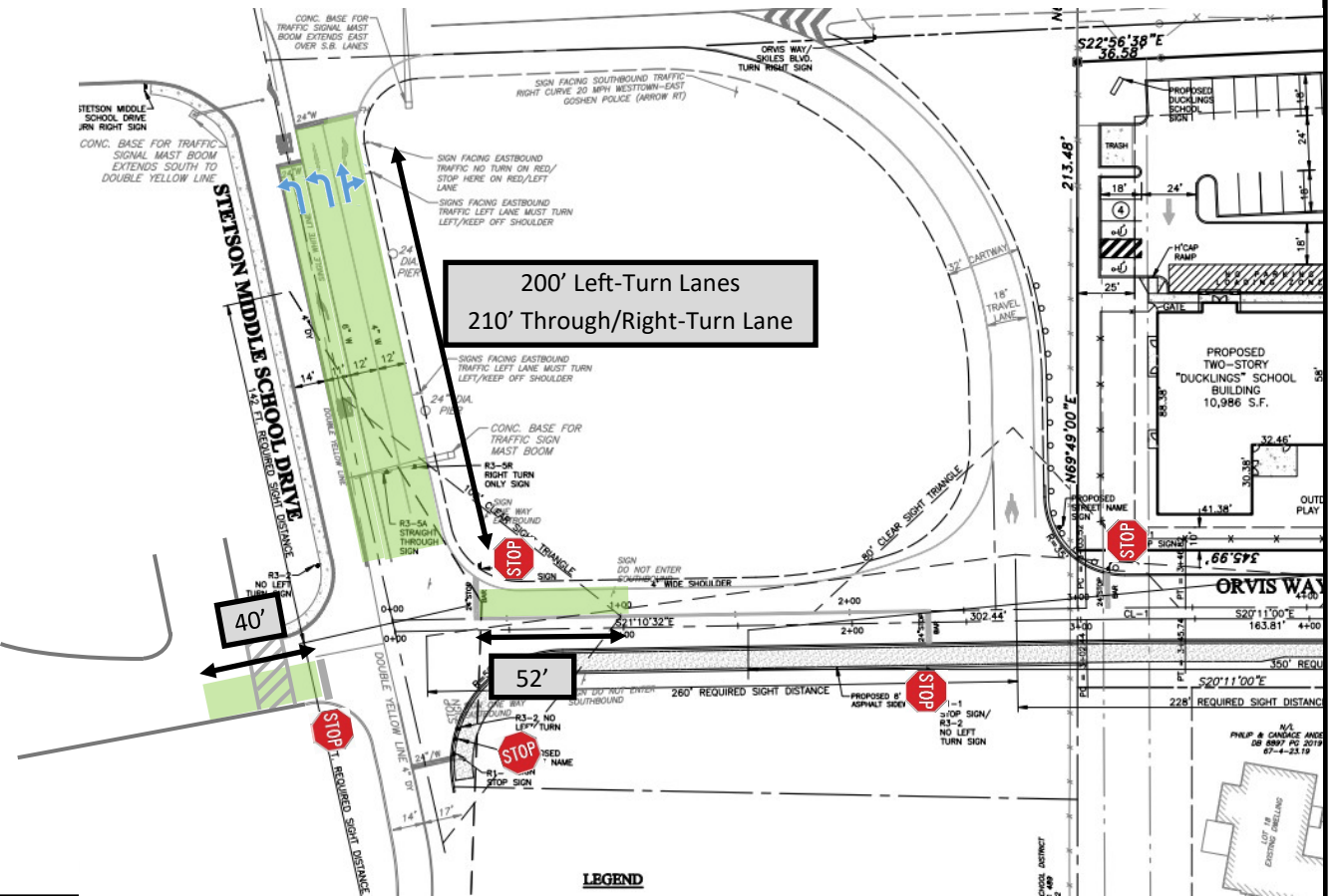
Appendix U

Wilmington Pike (U.S. Route 202) and Skiles Boulevard / Stetson Queue Illustration

FUTURE YEAR 2030 WITH DEV WEEKDAY MORNING PEAK HOUR RESULTANT QUEUES (IN FEET, BASED ON 95th PERCENTILE)



FUTURE YEAR 2030 WITH DEV WEEKDAY AFTERNOON PEAK HOUR RESULTANT QUEUES (IN FEET, BASED ON 95th PERCENTILE)



Appendix V

U.S. Route 202 and Street Road (S.R. 0926) PennDOT Improvement Project Analysis Worksheets

2025 Future with Development

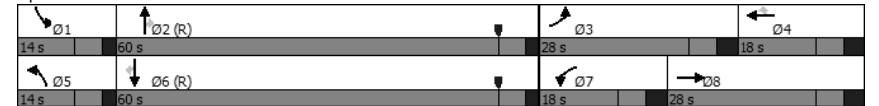
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	→	↘	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	484	236	31	146	167	56	22	1630	156	64	1545	95
Future Volume (vph)	484	236	31	146	167	56	22	1630	156	64	1545	95
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	14	12	12	15	12	12	12
Grade (%)	-3%				-4%						0%	
Storage Length (ft)	380		0	200		215	305		170	375		130
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Frt	0.983				0.850				0.850		0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3051	1808	0	1565	1765	1556	1491	3291	1635	1487	3138	1404
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3051	1808	0	1565	1765	1556	1491	3291	1635	1487	3138	1404
Right Turn on Red			No				No				Yes	
Satd. Flow (RTOR)									218		218	
Link Speed (mph)	45				45				45		45	
Link Distance (ft)	2349				982				1123		3154	
Travel Time (s)	35.6				14.9				17.0		47.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	13%	4%	4%	7%	17%	6%	5%	15%	9%	9%
Adj. Flow (vph)	499	243	32	151	172	58	23	1680	161	66	1593	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	499	275	0	151	172	58	23	1680	161	66	1593	98
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	40	40		35	35	35	40	30	30	35	30	30
Trailing Detector (ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	-10
Detector 1 Position(ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	-10
Detector 1 Size(ft)	40	40		40	40	40	40	40	40	40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4	4	5			1		6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0	3.0	20.0	20.0	3.0	20.0	20.0
Minimum Split (s)	45.0	45.0		45.0	10.0	10.0	9.0	34.0	34.0	9.0	34.0	34.0
Total Split (s)	28.0	28.0		18.0	18.0	18.0	14.0	60.0	60.0	14.0	60.0	60.0
Total Split (%)	23.3%	23.3%		15.0%	15.0%	15.0%	11.7%	50.0%	50.0%	11.7%	50.0%	50.0%
Maximum Green (s)	21.0	21.0		11.0	11.0	11.0	8.0	54.0	54.0	8.0	54.0	54.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Last Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	5.5
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	37.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	15.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0				7.0	7.0		7.0	7.0
Flash Dont Walk (s)	31.0	31.0		31.0				21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0				0	0		0	0

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	135
Control Type:	Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	484	236	31	146	167	56	22	1630	156	64	1545	95
Future Volume (veh/h)	484	236	31	146	167	56	22	1630	156	64	1545	95
Initial Q (Qb), veh	8	7	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			
Adj Sat Flow, veh/h/ln	1869	1914	1914	1892	1892	1923	1707	1864	1953	1589	1674	1674
Adj Flow Rate, veh/h	499	243	32	151	172	58	23	1680	161	66	1593	98
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	5	5	4	4	7	17	6	5	15	9	9
Cap, veh/h	604	317	26	180	189	163	44	1659	784	98	1626	714
Arrive On Green	0.17	0.17	0.16	0.10	0.10	0.10	0.03	0.48	0.48	0.06	0.52	0.51
Sat Flow, veh/h	3453	1657	218	1802	1892	1630	1626	3541	1655	1514	3180	1418
Grp Volume(v), veh/h	499	0	275	151	172	58	23	1680	161	66	1593	98
Grp Sat Flow(s),veh/h/ln	1727	0	1875	1802	1892	1630	1626	1771	1655	1514	1590	1418
Q Serve(g_s), s	16.8	0.0	17.1	9.9	10.8	4.0	1.7	56.4	6.7	5.1	58.1	4.4
Cycle Q Clear(g_c), s	16.8	0.0	17.1	9.9	10.8	4.0	1.7	56.4	6.7	5.1	58.1	4.4
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	604	0	333	180	189	163	44	1659	784	98	1626	714
V/C Ratio(X)	0.83	0.00	0.83	0.84	0.91	0.36	0.52	1.01	0.21	0.67	0.98	0.14
Avail Cap(c_a), veh/h	633	0	344	180	189	163	122	1698	794	114	1645	722
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.00	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	0.0	48.5	53.0	53.5	50.4	57.6	31.9	18.4	54.9	28.7	15.9
Incr Delay (d2), s/veh	7.3	0.0	12.8	27.9	40.8	1.3	9.3	25.2	0.6	12.0	18.0	0.4
Initial Q Delay(d3),s/veh	7.2	0.0	18.2	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	16.3	9.7	11.5	3.0	1.4	36.9	4.7	4.0	32.5	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.8	0.0	79.5	80.9	94.3	51.7	67.0	57.1	19.0	66.9	46.7	16.3
LnGrp LOS	E	A	E	F	F	D	E	F	B	E	D	B
Approach Vol, veh/h	774				381				1864			
Approach Delay, s/veh	68.8				82.5				54.0			
Approach LOS	E				F				D			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	62.5	26.7	18.0	8.2	67.1	18.0	26.7					
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	54.0	21.0	11.0	8.0	54.0	11.0	21.0					
Max Q Clear Time (g_c+1), s	58.9	19.3	13.3	4.2	60.6	12.4	19.1					
Green Ext Time (p_c), s	0.0	0.0	0.4	0.0	0.0	0.0	0.2					

Intersection Summary

HCM 6th Ctrl Delay	55.6
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

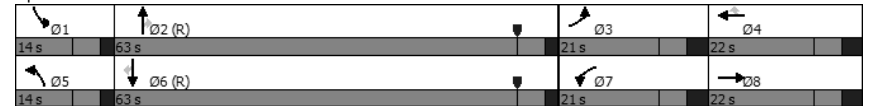
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	→	↗	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	320	214	43	205	245	66	62	1626	125	95	1286	67
Future Volume (vph)	320	214	43	205	245	66	62	1626	125	95	1286	67
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	14	12	12	15	12	12	12
Grade (%)	-3%				-4%						0%	
Storage Length (ft)	380		0	200		215	305		170	375		130
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Frt	0.975				0.850				0.850		0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2993	1836	0	1628	1818	1601	1744	3387	1683	1710	3288	1457
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2993	1836	0	1628	1818	1601	1744	3387	1683	1710	3288	1457
Right Turn on Red			No				No		Yes		Yes	
Satd. Flow (RTOR)									155		155	
Link Speed (mph)	45				45				45		45	
Link Distance (ft)	2349				982				1123		3154	
Travel Time (s)	35.6				14.9				17.0		47.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	2%	11%	0%	1%	4%	0%	3%	2%	0%	4%	5%
Adj. Flow (vph)	330	221	44	211	253	68	64	1676	129	98	1326	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	330	265	0	211	253	68	64	1676	129	98	1326	69
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	40	40		35	35	35	40	30	35	30	30	30
Trailing Detector (ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	-10
Detector 1 Position(ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	-10
Detector 1 Size(ft)	40	40		40	40	40	40	40	40	40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4	4	5			1		6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0	3.0	20.0	20.0	3.0	20.0	20.0
Minimum Split (s)	45.0	45.0		45.0	10.0	10.0	9.0	34.0	34.0	9.0	34.0	34.0
Total Split (s)	21.0	22.0		21.0	22.0	22.0	14.0	63.0	63.0	14.0	63.0	63.0
Total Split (%)	17.5%	18.3%		17.5%	18.3%	18.3%	11.7%	52.5%	52.5%	11.7%	52.5%	52.5%
Maximum Green (s)	14.0	15.0		14.0	15.0	15.0	8.0	57.0	57.0	8.0	57.0	57.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Last Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	5.5
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	37.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	15.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0				7.0	7.0		7.0	7.0
Flash Dont Walk (s)	31.0	31.0		31.0				21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0				0	0		0	0

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 135
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖	↗	↖↗	↖	↗	↖↗	↖	↗	↖↗	↖	↗
Traffic Volume (veh/h)	320	214	43	205	245	66	62	1626	125	95	1286	67
Future Volume (veh/h)	320	214	43	205	245	66	62	1626	125	95	1286	67
Initial Q (Qb), veh	3	5	0	0	0	0	0	0	0	0	160	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	1841	1959	1959	1949	1935	1968	1949	1906	1997	1800	1744	1730
Adj Flow Rate, veh/h	330	221	44	211	253	68	64	1676	129	98	1326	69
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	2	2	0	1	4	0	3	2	0	4	5
Cap, veh/h	421	241	6	232	259	223	105	1751	818	129	1663	723
Arrive On Green	0.12	0.13	0.13	0.13	0.13	0.13	0.06	0.48	0.48	0.08	0.50	0.49
Sat Flow, veh/h	3401	1586	316	1856	1935	1668	1856	3622	1693	1714	3313	1466
Grp Volume(v), veh/h	330	0	265	211	253	68	64	1676	129	98	1326	69
Grp Sat Flow(s),veh/h/ln	1700	0	1902	1856	1935	1668	1856	1811	1693	1714	1657	1466
Q Serve(g_s), s	11.3	0.0	16.0	13.5	15.6	4.4	4.0	53.4	5.1	6.7	39.9	3.0
Cycle Q Clear(g_c), s	11.3	0.0	16.0	13.5	15.6	4.4	4.0	53.4	5.1	6.7	39.9	3.0
Prop In Lane	1.00		0.17	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	421	0	260	232	259	223	105	1751	818	129	1663	723
V/C Ratio(X)	0.78	0.00	1.02	0.91	0.98	0.30	0.61	0.96	0.16	0.76	0.80	0.10
Avail Cap(c_a), veh/h	425	0	254	232	261	225	139	1751	818	129	1663	723
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.82	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	52.0	51.8	51.8	46.9	55.3	29.8	17.3	54.5	29.9	16.2
Incr Delay (d2), s/veh	7.7	0.0	55.5	35.6	49.2	0.8	5.6	13.5	0.4	23.1	4.1	0.3
Initial Q Delay(d3),s/veh	1.7	0.0	69.2	0.0	0.0	0.0	0.0	0.0	0.0	255.3	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.9	0.0	21.8	13.1	16.3	3.3	3.6	32.7	3.6	6.6	89.5	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	0.0	176.7	87.5	101.0	47.7	60.9	43.3	17.7	77.6	289.3	16.4
LnGrp LOS	E	A	F	F	F	D	E	D	B	E	F	B
Approach Vol, veh/h		595			532			1869			1493	
Approach Delay, s/veh		112.3			88.8			42.2			262.8	
Approach LOS		F			F			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.0	63.0	20.8	22.2	11.8	65.2	21.0	22.0				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax) s	8.0	57.0	14.0	15.0	8.0	57.0	14.0	15.0				
Max Q Clear Time (g_c+1) s	9.2	55.9	13.8	18.1	6.5	42.4	16.0	18.0				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.0	10.5	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	130.4
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

2030 Future with Development

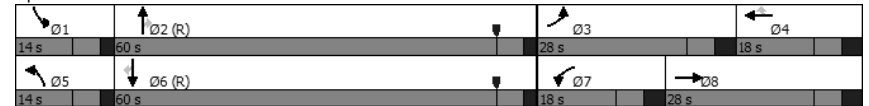
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	→	↘	↖	←	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	497	242	31	150	171	58	23	1672	160	65	1585	97
Future Volume (vph)	497	242	31	150	171	58	23	1672	160	65	1585	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	14	12	12	15	12	12	12
Grade (%)	-3%				-4%						0%	
Storage Length (ft)	380		0	200		215	305		170	375		130
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Frt	0.983				0.850				0.850		0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3051	1809	0	1565	1765	1556	1491	3291	1635	1487	3138	1404
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3051	1809	0	1565	1765	1556	1491	3291	1635	1487	3138	1404
Right Turn on Red			No				No				Yes	
Satd. Flow (RTOR)									218		218	
Link Speed (mph)	45				45				45		45	
Link Distance (ft)	2349				982				1123		3154	
Travel Time (s)	35.6				14.9				17.0		47.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	5%	13%	4%	4%	7%	17%	6%	5%	15%	9%	9%
Adj. Flow (vph)	512	249	32	155	176	60	24	1724	165	67	1634	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	512	281	0	155	176	60	24	1724	165	67	1634	100
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	40	40		35	35	35	40	30	30	35	30	30
Trailing Detector (ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	-10
Detector 1 Position(ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	-10
Detector 1 Size(ft)	40	40		40	40	40	40	40	40	40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4	4	5			1		6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0	3.0	20.0	20.0	3.0	20.0	20.0
Minimum Split (s)	45.0	45.0		45.0	10.0	10.0	9.0	34.0	34.0	9.0	34.0	34.0
Total Split (s)	28.0	28.0		18.0	18.0	18.0	14.0	60.0	60.0	14.0	60.0	60.0
Total Split (%)	23.3%	23.3%		15.0%	15.0%	15.0%	11.7%	50.0%	50.0%	11.7%	50.0%	50.0%
Maximum Green (s)	21.0	21.0		11.0	11.0	11.0	8.0	54.0	54.0	8.0	54.0	54.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Last Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	5.5
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	37.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	15.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0				7.0	7.0		7.0	7.0
Flash Dont Walk (s)	31.0	31.0		31.0				21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0				0	0		0	0

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle:	135
Control Type:	Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	497	242	31	150	171	58	23	1672	160	65	1585	97
Future Volume (veh/h)	497	242	31	150	171	58	23	1672	160	65	1585	97
Initial Q (Qb), veh	8	7	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	1869	1914	1914	1892	1892	1923	1707	1864	1953	1589	1674	1674
Adj Flow Rate, veh/h	512	249	32	155	176	60	24	1724	165	67	1634	100
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	5	5	4	4	7	17	6	5	15	9	9
Cap, veh/h	613	326	25	180	189	163	45	1656	779	99	1607	709
Arrive On Green	0.18	0.18	0.17	0.10	0.10	0.10	0.03	0.48	0.48	0.07	0.51	0.51
Sat Flow, veh/h	3453	1662	214	1802	1892	1630	1626	3541	1655	1514	3180	1418
Grp Volume(v), veh/h	512	0	281	155	176	60	24	1724	165	67	1634	100
Grp Sat Flow(s),veh/h/ln	1727	0	1876	1802	1892	1630	1626	1771	1655	1514	1590	1418
Q Serve(g_s), s	17.2	0.0	17.4	10.2	11.1	4.1	1.7	57.1	7.0	5.2	61.6	4.5
Cycle Q Clear(g_c), s	17.2	0.0	17.4	10.2	11.1	4.1	1.7	57.1	7.0	5.2	61.6	4.5
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	613	0	337	180	189	163	45	1656	779	99	1607	709
V/C Ratio(X)	0.84	0.00	0.83	0.86	0.93	0.37	0.53	1.04	0.21	0.67	1.02	0.14
Avail Cap(c_a), veh/h	633	0	344	180	189	163	122	1684	787	114	1633	716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.00	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	0.0	48.4	53.2	53.6	50.5	57.6	31.9	18.7	54.8	29.7	16.2
Incr Delay (d2), s/veh	7.9	0.0	13.5	31.8	45.9	1.4	9.3	33.6	0.6	12.4	26.7	0.4
Initial Q Delay(d3),s/veh	7.5	0.0	18.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	0.0	16.6	10.1	12.0	3.1	1.5	40.0	4.9	4.1	36.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.6	0.0	80.4	85.0	99.5	51.8	66.8	65.5	19.3	67.2	56.3	16.6
LnGrp LOS	E	A	F	F	F	D	E	F	B	E	F	B
Approach Vol, veh/h		793			391			1913			1801	
Approach Delay, s/veh		69.5			86.4			61.5			54.5	
Approach LOS		E			F			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	2.9	62.1	27.0	18.0	8.3	66.6	18.0	27.0				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax), s	8.0	54.0	21.0	11.0	8.0	54.0	11.0	21.0				
Max Q Clear Time (g_c+1), s	7.7	59.6	19.7	13.6	4.2	64.1	12.7	19.4				
Green Ext Time (p_c), s	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	62.2
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

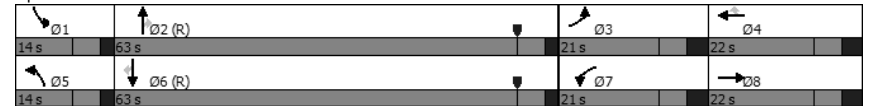
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	→	↘	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	328	220	44	211	251	67	63	1668	128	98	1325	69
Future Volume (vph)	328	220	44	211	251	67	63	1668	128	98	1325	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	12	14	12	12	15	12	12	12
Grade (%)	-3%				-4%						0%	
Storage Length (ft)	380		0	200		215	305		170	375		130
Storage Lanes	2		0	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Frt	0.975				0.850				0.850		0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2993	1836	0	1628	1818	1601	1744	3387	1683	1710	3288	1457
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2993	1836	0	1628	1818	1601	1744	3387	1683	1710	3288	1457
Right Turn on Red			No				No		Yes		Yes	
Satd. Flow (RTOR)									155		155	
Link Speed (mph)	45				45				45		45	
Link Distance (ft)	2349				982				1123		3154	
Travel Time (s)	35.6				14.9				17.0		47.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	2%	11%	0%	1%	4%	0%	3%	2%	0%	4%	5%
Adj. Flow (vph)	338	227	45	218	259	69	65	1720	132	101	1366	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	338	272	0	218	259	69	65	1720	132	101	1366	71
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	40	40		35	35	35	40	30	30	35	30	30
Trailing Detector (ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	-10
Detector 1 Position(ft)	0	0		-5	-5	-5	0	-10	-10	-5	-10	-10
Detector 1 Size(ft)	40	40		40	40	40	40	40	40	40	40	40
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4	4	5	2		1	6	
Permitted Phases												
Detector Phase	3	8		7	4	4	5			1		6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0	3.0	3.0	20.0	20.0	3.0	20.0	20.0
Minimum Split (s)	45.0	45.0		45.0	10.0	10.0	9.0	34.0	34.0	9.0	34.0	34.0
Total Split (s)	21.0	22.0		21.0	22.0	22.0	14.0	63.0	63.0	14.0	63.0	63.0
Total Split (%)	17.5%	18.3%		17.5%	18.3%	18.3%	11.7%	52.5%	52.5%	11.7%	52.5%	52.5%
Maximum Green (s)	14.0	15.0		14.0	15.0	15.0	8.0	57.0	57.0	8.0	57.0	57.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Last Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.5	5.5	3.0	5.5	5.5
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.5	3.5	3.0	3.5	3.5
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	37.0	37.0	0.0	37.0	37.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	15.0	15.0	0.0	15.0	15.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0				7.0	7.0		7.0	7.0
Flash Dont Walk (s)	31.0	31.0		31.0				21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)	0	0		0				0	0		0	0

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 135
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Rt 202 & Rt 926





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	328	220	44	211	251	67	63	1668	128	98	1325	69
Future Volume (veh/h)	328	220	44	211	251	67	63	1668	128	98	1325	69
Initial Q (Qb), veh	3	5	0	0	0	0	0	0	0	0	160	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	1841	1959	1959	1949	1935	1968	1949	1906	1997	1800	1744	1730
Adj Flow Rate, veh/h	338	227	45	218	259	69	65	1720	132	101	1366	71
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	2	2	0	1	4	0	3	2	0	4	5
Cap, veh/h	425	245	6	232	258	222	106	1751	818	129	1660	722
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.06	0.48	0.48	0.08	0.50	0.49
Sat Flow, veh/h	3401	1587	315	1856	1935	1668	1856	3622	1693	1714	3313	1466
Grp Volume(v), veh/h	338	0	272	218	259	69	65	1720	132	101	1366	71
Grp Sat Flow(s),veh/h/ln	1700	0	1902	1856	1935	1668	1856	1811	1693	1714	1657	1466
Q Serve(g_s), s	11.6	0.0	16.0	14.0	16.0	4.5	4.1	56.1	5.2	6.9	42.0	3.1
Cycle Q Clear(g_c), s	11.6	0.0	16.0	14.0	16.0	4.5	4.1	56.1	5.2	6.9	42.0	3.1
Prop In Lane	1.00		0.17	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	425	0	260	232	258	222	106	1751	818	129	1660	722
V/C Ratio(X)	0.80	0.00	1.05	0.94	1.00	0.31	0.61	0.98	0.16	0.79	0.82	0.10
Avail Cap(c_a), veh/h	425	0	254	232	258	222	139	1751	818	129	1660	722
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.00	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	52.0	52.1	52.0	47.0	55.3	30.5	17.4	54.6	29.9	16.2
Incr Delay (d2), s/veh	8.2	0.0	62.5	42.6	57.0	0.8	5.6	17.7	0.4	26.7	4.7	0.3
Initial Q Delay(d3),s/veh	1.7	0.0	69.2	0.0	0.0	0.0	0.0	0.0	0.0	267.1	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.0	0.0	22.6	14.0	17.2	3.4	3.7	35.1	3.7	7.0	92.3	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.2	0.0	183.7	94.6	109.0	47.8	60.9	48.2	17.8	81.2	301.8	16.5
LnGrp LOS	E	A	F	F	F	D	E	D	B	F	F	B
Approach Vol, veh/h		610			546			1917			1538	
Approach Delay, s/veh		115.8			95.5			46.6			274.1	
Approach LOS		F			F			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.0	63.0	21.0	22.0	11.9	65.1	21.0	22.0				
Change Period (Y+Rc), s	6.0	6.0	7.0	7.0	6.0	6.0	7.0	7.0				
Max Green Setting (Gmax) s	8.0	57.0	14.0	15.0	8.0	57.0	14.0	15.0				
Max Q Clear Time (g_c+1) s	9.4	58.6	14.1	18.5	6.6	44.5	16.5	18.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	9.4	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	137.4
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.