TRANSPORTATION IMPACT ASSESSMENT

For

Westtown AM West TIC, LLC
Proposed Chase Bank

Property Located at:

1502 West Chester Pike (SR 0003)
Parcel ID #67-2-42:4
Township of Westtown, Chester County, PA

Prepared by:

826 Newtown Yardley Road, Suite 201
Newtown, PA 18940
445-202-5400

Corey M. Chase, PE
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Kevin M. Savage, PE, PTOE
PA PE License #090923

September 13, 2024
Last Revised: October 16, 2024

DT# 1478 99-191T

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APPENDICES

EXECUTIVE SUMMARY

Dynamic Traffic, LLC has been retained to prepare this Transportation Impact Assessment to assess the traffic impact associated with the construction of a 3,294 SF Chase Bank (The Project) on the adjacent roadway network. The study area includes the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway. Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed 3,294 SF Chase Bank will generate 23 entering trips and 22 exiting trips during the weekday evening peak hour and 27 entering trips and 27 exiting trips during the Saturday peak hour that are "new" to the adjacent roadway network.

- Access to the site will continue be provided via the existing signalized driveway along West Chester Pike (SR 0003).

- With the addition of site generated traffic, the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway is anticipated to operate at overall level of service "C" or better during the peak hours studied.

- As proposed, The Project's site driveway and internal circulation have been designed to provide for safe and efficient movement of automobiles and large wheel base vehicles.

- The proposed parking supply and design is sufficient to support the projected demand and exceeds the Municipal Code requirements.

INTRODUCTION

It is proposed to construct a Chase Bank within the Marketplace at Westtown Shopping Center, located on the southern side of West Chester Pike (SR 0003), just west of Chester Road (SR 0352) in Westtown Township, Chester County, Pennsylvania, see Figure 1 in Appendix B. The site is designated as Parcel Number 67-2-42:4 on the Township of Westtown Tax Maps. Specifically, the development proposal includes the construction of a 3,294 SF Chase Bank (The Project). The site is located within the C-1 – Neighborhood and Highway Commercial. Access to the site will continue be provided via the existing signalized driveway along West Chester Pike (SR 0003).

Dynamic Traffic LLC has been retained to prepare this Transportation Impact Assessment (TIA) to assess the traffic impact associated with the construction of The Project on the adjacent roadway network. This study documents the methodology, analyses, findings and conclusions of our study and includes:

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, traffic control, and location and geometry of existing driveways and intersection.

- Existing traffic data was collected via turning movement counts (TMC) during the weekday PM and Saturday midday peak periods at the intersection of West Chester Pike (SR 0003) and Marketplace at Westtown driveway and Wawa driveway.

- Projections of traffic to be generated by the proposed development were prepared utilizing trip generation data as published by the Institute of Transportation Engineers. Site traffic was then assigned to the adjacent street system based upon the anticipated directional distribution.

- Capacity analyses were conducted for the Existing, No Build, and Build for the study intersection.

- The proposed points of ingress and egress were inspected for adequacy of geometric design, spacing and/or alignment to streets and driveways on the opposite side of the street, relationship to other driveways adjacent to the development, and conformance with accepted design standards.

- The site plan as designed was reviewed for sufficiency in accommodating large wheel base vehicles such as delivery trucks, refuse trucks, and emergency vehicles.

- The parking layout and supply was assessed based on accepted design standards and demand experienced at similar developments.

EXISTING CONDITIONS

A review of the existing roadway conditions near the proposed site was conducted to provide the basis for assessing the traffic impact of the development. This included field investigations of the surrounding roadways and intersection, collection of traffic volume data, and extensive analyses.

Existing Roadway Conditions

The following are descriptions of the roadways in the study area:

West Chester Pike (SR 0003) is an Urban Principal Arterial roadway under PennDOT jurisdiction with a general east/west orientation. In the vicinity of the site, the posted speed limit is 45 MPH and the roadway provides two travel lanes in each direction separated by a curbed median. Curb is provided along the westbound side of the roadway east of the Marketplace at Westtown driveway and both sides of the road west of the Marketplace at Westtown Driveway. Sidewalk is not provided along either side of the road. West Chester Pike (SR 0003) provides a slightly curved horizontal alignment and a relatively flat vertical alignment. The land uses along West Chester Pike (SR 0003) within the study area are primarily commercial.

Existing Bicycle and Pedestrian Facilities

Pedestrian and bicycle facilities are provided in the form of paved shoulders along West Chester Pike (SR 0003) that are eliminated in place of dedicated right turn lanes at the major intersections. Crosswalks, curb ramps, pedestrian signal heads, and push buttons are provided to cross the western and northern legs of the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway. No direct sidewalk access is provided from West Chester Pike (SR 0003) into the Marketplace at Westtown shopping center.

Existing Mass Transit Facilities

The Southeastern Pennsylvania Transportation Authority (SEPTA) provides bus service in the nearby area. Bus service is provided via the 104 line, which runs from West Chester University to 69th Street Transit Center in Philadelphia. The nearest bus stop is located at the intersection of West Chester Pike (SR 0003) and Marketplace at Westtown driveway/Wawa driveway.

Existing Traffic Volumes

Turning movement counts (TMC) were conducted on Thursday, September 5, 2024 from 4:00 PM to 6:00 PM and on Saturday, September 7, 2024 from 11:00 AM to 2:00 PM at the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway. Figure 2, located in Appendix B, shows the existing peak hour traffic volumes at the study intersection. All TMC counts are contained in Appendix C.

Existing Capacity Analysis

The methodology utilized in the capacity analyses is described in the *Highway Capacity Manual*, published by the Transportation Research Board. In general, the term Level of Service (LOS) is used to provide a "qualitative" evaluation of capacity based upon certain "quantitative" calculations related to empirical values, such as traffic volume and intersection control.

At the signalized intersections, factors that affect the various approach capacities include width of approach, number of lanes, signal "green time", turning percentages, truck volumes, etc. However, delays cannot be related to capacity in a simple one-to-one fashion. For example, it is possible to have delays in the Level of Service "F" range without exceeding roadway capacity. Substantial delays can exist without exceeding capacity if one or more of the following conditions exist: long signal cycle lengths; a particular traffic movement experiences a long red time; or progressive movement for a particular lane group is poor. Table 1 describes the level of service ranges for signalized intersections.

Table 1
Level of Service Criteria
for Signalized Intersections

Level of Service	Average Control Delay (seconds per vehicle)
A	0.0 to 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	greater than 80.0

Analyses within the *Highway Capacity Manual* assume a random arrival for all the movements, which may not be the case if an adjacent traffic signal is present that platoons vehicles. As detailed in Exhibits 10-9 and 10-10 contained within PennDOT's *Publication 46*, the default values for Base Saturation Flow Rate, Start-Up Lost Time, and Extension of Effective Green Time for signalized intersections.

All capacity analyses were performed utilizing Synchro 12 software in accordance with Highway Capacity Manual (HCM) 6th Edition methodologies. Table 2 summarizes the existing levels of service (LOS) and delays. All capacity analysis calculation worksheets are contained in Appendix D.

Table 2
Existing Levels of Service

Intersection	Direction/ Movement		PM PSH	Sat PSH
West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway	EB	L	E (69.7)	D (49.0)
		T	B (16.5)	B (14.4)
		R	B (13.1)	B (12.2)
	WB	L	E (64.1)	D (44.9)
		TR	B (13.1)	B (11.1)
	NB	L	E (58.0)	D (40.2)
		TR	D (53.9)	D (38.6)
	SB	L	E (63.4)	D (44.7)
		TR	D (48.8)	C (35.0)
	Overall		**C (24.4)**	**B (19.6)**

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicle)

The following is a discussion pertaining to the existing intersection analyzed. It should be noted that the existing percentage of trucks and peak hour factors were used in the existing analysis.

West Chester Pike (SR 0003) and Marketplace at Westtown Driveway/Wawa Driveway

The Marketplace at Westtown driveway and the Wawa driveway intersect West Chester Pike (SR 0003) to form a four-leg intersection controlled by a three-phase traffic signal. The traffic signal permit and system permit plans were obtained from PennDOT which indicate that this signal operates within the West Chester Pike Signal System (I-0181). A 140-second background cycle is utilized during the weekday evening PSH and a 100-second background cycle is utilized during the Saturday midday PSH (the signal plans are included in Appendix (F).

The eastbound approach of West Chester Pike (SR 0003) provides one dedicated left turn lane, two dedicated through lanes and one dedicated right turn lane. The westbound approach provides one dedicated left turn lane, one dedicated through lane and one shared through/right turn lane. The northbound approach of the Marketplace at Westtown driveway provides one dedicated left turn lane and one shared through/right turn lane. The southbound approach of the Wawa driveway provides one dedicated left turn lane and one shared through/right turn lane.

A review of the existing analysis reveals that the intersection operates at overall levels of service "C" or better and all movements operate at levels of service "E" or better during the analyzed peak periods. See Table 2 for the individual movement levels of service and delays.

FUTURE CONDITIONS

Traffic volumes and operational analyses were developed for the 2026 No Build and Build conditions. The No Build conditions provide a baseline for assessing the impact of site development traffic on the roadway system. The process of developing the No Build and Build traffic volumes and the subsequent analyses is outlined below.

Regardless of whether the subject site is developed or not, traffic volumes on the surrounding roadways are expected to increase as a result of developments throughout the region. A growth rate for urban non-interstate roadways in Chester County within the study area was obtained from the PennDOT Growth Factors Table for August 2024 to July 2025, which indicates a growth rate of 0.44% per year.

Through consultation with the Township of Westtown staff, there are no other developments in the vicinity of the site that have been approved but not yet constructed that are identified as significant traffic generators. It was assumed that the background growth rate was adequate to account for the traffic associated with all developments not listed.

Additionally, through coordination with the Marketplace at Westtown shopping center owner, one 1,200 SF storefront is vacant. This storefront accounts for approximately 1% of the 125,883 SF shopping center, exclusive of the vacant pad site to be occupied by The Project. As such, traffic volumes into and out of the shopping center were increased by a commensurate 1% to account for the future potential reoccupation of the vacant storefront. The vacant storefront traffic volumes are shown on Figure 3 in Appendix C.

Future 2026 No Build traffic volumes were developed by applying the background growth rate of 0.44% for two (2) years to the study area roadways existing traffic volumes. Figure 4, in Appendix C, shows the 2026 No Build traffic volumes.

Traffic Generation

Trip generation projections for The Project were prepared utilizing trip generation research data as published under Land Use Code (LUC) 912 – Drive-in Bank in the Institute of Transportation Engineers' (ITE) publication, *Trip Generation, 11th Edition.* This publication sets forth trip generation rates based on empirical traffic count data conducted at numerous research sites. The trip generation calculations are included in Appendix E.

Passby Traffic

According to studies conducted by ITE, traffic associated with LUC 912 is not 100% newly generated. Rather, a portion of the traffic is diverted from the existing traffic stream on the adjacent roadway network. This is because the Chase Bank is not exclusively destination land uses, instead patrons stop on their way to/from other locations such as home or work. ITE identifies a 35% passby traffic percentage during the weekday evening PSH and a 38% passby traffic percentage during the Saturday midday PSH for LUC 912. Table 3 below details the traffic volumes associated with the subject project taking into account passby credits.

Table 3
Trip Generation Considering Passby Traffic

Trip Type		PM PSH			Sat PSH		
		In	Out	Total	In	Out	Total
3,294 SF Chase Bank	Total	35	34	69	44	43	87
	Passby	12	12	24	17	16	33
	New (Primary)	**23**	**22**	**45**	**27**	**27**	**54**

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

Located in Appendix B, Figure 5 illustrates the primary site generated trip distribution, Figure 6 illustrates the primary site generated volumes, Figure 7 illustrates the passby site generated trip distribution, Figure 8 illustrates the passby site generated volumes and Figure 9 illustrates the total site generated volumes assigned to the study area network. The site generated volumes were added to the 2026 No Build traffic volumes to generate the 2026 Build traffic volumes, which are shown in Figure 10.

Future Capacity Analysis

Operational conditions at the study intersection were analyzed under the No Build and Build conditions and are summarized in Table 4 below.

Table 4
2026 Future Levels of Service

Intersection	Direction/ Movement		PM PSH		Sat PSH	
			No Build	Build	No Build	Build
West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway	EB	L	E (69.7)	E (69.7)	D (49.0)	D (49.0)
		T	B (16.8)	B (18.6)	B (14.6)	B (16.3)
		R	B (13.3)	B (14.9)	B (12.4)	B (14.2)
	WB	L	E (64.0)	E (63.4)	D (44.9)	D (44.2)
		TR	B (13.3)	B (14.2)	B (11.2)	B (12.0)
	NB	L	E (57.8)	E (58.0)	D (40.2)	D (39.6)
		TR	D (53.8)	D (54.0)	D (38.6)	D (39.7)
	SB	L	E (63.4)	E (63.4)	D (44.7)	D (44.7)
		TR	D (48.6)	D (47.2)	C (34.9)	C (33.6)
	Overall		**C (24.6)**	**C (26.1)**	**B (19.7)**	**C (21.3)**

A (#) - Signalized Intersection Level of Service (seconds of delay per vehicle)

West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway

With the addition of site generated traffic, the intersection is anticipated to operate at overall No Build level of service "C" and all movements are anticipated to operate at No Build levels of service "E" or better during the studied peak hours. The increase in delay from No Build to Build scenarios across all peak hours falls within PennDOT's allowable 10 second variance. It is noted that due to the increased number of major street left turn and minor street movements, additional actuated green time is anticipated to be assigned to the movements. As such, the delay experienced by these movements are anticipated to be slightly reduced from No Build to Build conditions. See Tables 4 for the individual movement levels of service and delays.

Queue Analysis

Queue length conditions at the study intersection were analyzed under the No Build and Build conditions. The 95th percentile queues for each study peak hour are summarized in Table 5 below.

Table 5
2026 Queue Analysis

Intersection	Direction/ Movement		Storage Length	PM PSH		Sat PSH	
				No Build	Build	No Build	Build
West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway	EB	L	200'	40'	40'	28'	28'
		T	-	320'	338'	218'	230'
		R	350'	105'	125'	80'	100'
	WB	L	300'	210'	230'	150'	173'
		TR	-	335'	348'	205'	210'
	NB	L	-	208'	230'	125'	145'
		TR	-	263'	285'	193'	218'
	SB	L	-	118'	118'	63'	63'
		TR	-	140'	143'	85'	88'

West Chester Pike (SR 0003) & Marketplace at Westtown Driveway/Wawa Driveway

With the addition of site generated traffic, there is anticipated to be a maximum increase of approximately one vehicle in the 95th percentile queues for all movements at the intersection. It is not anticipated that the increase in queues will have a detrimental impact on the operation of the intersection. See Table 5 for the individual movement 95th percentile queues.

SITE PLAN

Site Access and Circulation

The site was reviewed with respect to the site access and on-site circulation design. As previously noted, access to the site will continue to be provided via the existing signalized driveway along West Chester Pike (SR 0003).

The site will be served by aisles of 26.7 feet to 28 feet wide for two-way movements and 20 feet wide for one-way movements, which allows for full site circulation for the anticipated vehicle mix on site and meets generally accepted design standards.

Parking

Westtown Township's parking schedule was obtained from the Section §170-1709.C, amended by Ordinance 2024-01, in the Westtown Township Code of Ordinances. For shopping center uses, 3.5 spaces per 1,000 square feet of gross leasable area (GLA) are required for a total of 436 parking spaces. For the Marketplace at Westtown, a total of 518 parking spaces (a reduction of 20 spaces) are proposed, which complies with the Township's Ordinance.

FINDINGS & CONCLUSIONS

Findings

Based upon the detailed analyses as documented herein, the following findings are noted:

- The proposed 3,294 SF Chase Bank will generate 23 entering trips and 22 exiting trips during the weekday evening peak hour and 27 entering trips and 27 exiting trips during the Saturday peak hour that are "new" to the adjacent roadway network.

- Access to the site will continue be provided via the existing signalized driveway along West Chester Pike (SR 0003).

- With the addition of site generated traffic, the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway is anticipated to operate at overall level of service "C" or better during the peak hours studied.

- As proposed, The Project's site driveway and internal circulation have been designed to provide for safe and efficient movement of automobiles and large wheel base vehicles.

- The proposed parking supply and design is sufficient to support the projected demand and exceeds the Municipal Code requirements.

Conclusions

Based upon our Transportation Impact Assessment as detailed in the body of this report, it is the professional opinion of Dynamic Traffic LLC that the adjacent street system of the Township of Westtown and PennDOT will not experience any significant degradation in operating conditions with the construction of The Project. The site driveway is located to provide safe and efficient access to the adjacent roadway system. The site plan as proposed provides for good circulation throughout the site and provides adequate parking to accommodate The Project's needs.

Appendix A
Correspondences

ALBERT FEDERICO CONSULTING, LLC
Traffic Engineering and Mobility Solutions

133 Rutgers Avenue
Swarthmore, PA 19081

February 28, 2023

via email only
c/o Jon Altshul, Township Manager

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

Re: Westtown AM West TIC, LLC (Chase Bank) - Variance Traffic Review
1502 West Chester Pike (Marketplace at Westtown)
Westtown Township, Chester County

Mr. Hatton:

As requested, the following materials have been reviewed for compliance with applicable sections of the Westtown Township Code, as well as reasonable and customary standards for Traffic Engineering practice:

- Zoning Variance Plan, prepared by Dynamic Engineering, dated September 7, 2022, last revised January 18, 2023
- Parking Assessment, prepared by Dynamic Engineering, dated January 19, 2023

The applicant is proposing to develop a Drive-in Bank (3,294 sf) within the northeast portion of the Marketplace at Westtown parking field, immediately south of West Chester Pike (SR 0003). The applicant has applied to the Zoning Hearing Board for several variances, including variances for the size of parking spaces, the overall number of parking spaces and the width of drive aisles.

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

1. *§170-2107A* – The submitted materials should:
    a. Clearly articulate the "unique physical circumstances or conditions" supporting the requested variances.
    b. Provide additional details on the specific locations within the property that the variances are being requested.
    c. Include documentation of existing non-conformities and previous relief granted to the subject property.
    d. Include an overall plan for the entire Shopping Center that documents the existing number of parking spaces and an illustration of the parking spaces proposed to be removed.

2. *§170-1700A(2)* – No parking facility now serving uses shall be reduced below the requirements of this chapter. The most current approved plan on file with the Township (2016 Giant expansion) added 59 parking spaces to provide 553 total spaces on-site. The requested variance would reduce the parking to 518 total spaces.
3. It is recommended that the Parking Assessment be revised to address the following:
    a. Table 1 presents the "non-December" parking rates provided by the *Institute of Transportation Engineers (ITE)*. Information supporting the use of these rates instead of the higher "December" rates should be provided.
    b. The on-site parking observations should include the periods of peak demand (between 1:00 and 2:00 PM weekdays and Saturdays) identified by the *Institute of Transportation Engineers.*
    c. The parking observations should identify the specific locations the vehicles are parked to ensure adequate spaces is available for patrons. Specifically, for the observed periods identify how many vehicles are parked in the front of the center, east of the entrance; in the front, west of the entrance; and to the rear of the in-line stores.
4. It appears that the magnitude of the variances requested from *§170-1513B* {drive aisle width} and *§170-1702A(1)* {parking space length} could be reduced by revising the design to implement one-way, counter-clockwise circulation around the bank, from the drive-thru exit past the "front door" parking. Such a change could also minimize the potential for vehicles exiting the drive-thru to make "awkward" left/U-turns to exit the center.

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

August 1, 2024

via email only
c/o Liudmila (Mila) Carter, Township Manager

John Embick, Esq., Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

Re: Westtown AM West TIC, LLC Chase Bank - Traffic Review
1502 West Chester Pike (Marketplace at Westtown)
Westtown Township, Chester County

Mr. Embick:

As requested, the following materials have been reviewed for compliance with applicable sections of the Westtown Township Code, as well as reasonable and customary standards for Traffic Engineering practice:

- Preliminary/Final Land Development Plan, prepared by Dynamic Engineering, dated July 12, 2024
- Parking Assessment, prepared by Dynamic Engineering, dated January 19, 2023, revised March 16, 2023

The applicant is proposing to develop a Drive-in Bank (3,294 sf) within the northeast portion of the Marketplace at Westtown parking field, immediately south of West Chester Pike.

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

1. *§170-1709C(1)* – The submitted Parking Assessment provides sufficient documentation that the existing Shopping Center has adequate parking to accommodate the proposed Bank use.
2. *§149-804(A)* – A traffic impact study shall be required for any subdivision or land development that is expected to generate more than 250 total average weekday trip-ends after build-out.
3. *§149-916* - Sidewalks, bike paths and other paths may be required to be installed at the discretion of the Board of Supervisors upon the recommendation of the Planning Commission. As previously discussed with the Planning Commission, consideration should be given to providing an accessible path along the Marketplace driveway to provide access to the adjacent bus stop along West Chester Pike.

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

September 30, 2024

via email only
c/o Liudmila (Mila) Carter, Township Manager

John Embick, Esq., Chair
Westtown Township Planning Commission
1039 Wilmington Pike
West Chester, PA 19382

Re: Westtown AM West TIC, LLC Chase Bank - Traffic Review
1502 West Chester Pike (Marketplace at Westtown)
Westtown Township, Chester County

Mr. Embick:

As requested, the following materials have been reviewed for compliance with applicable sections of the Westtown Township Code, as well as reasonable and customary standards for Traffic Engineering practice:

- Transportation Impact Assessment for Westtown AM West TIC, LLC, Proposed Chase Bank, prepared by Dynamic Engineering, dated September 13, 2024
- Pedestrian Path Exhibit, prepared by Dynamic Engineering, dated September 10, 2024

The applicant is proposing to develop a Drive-in Bank (3,294 sf) within the northeast portion of the Marketplace at Westtown parking field, immediately south of West Chester Pike.

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

1. *§149-804(A)* – A traffic impact study shall be required for any subdivision or land development that is expected to generate more than 250 total average weekday trip-ends after build-out. The submitted Assessment should be revised to address the following:
    a. Provide the full two-hour traffic counts and confirm that data collection included pedestrians.
    b. Verify the description of pedestrian facilities at the signalized West Chester Pike driveway and provide additional information on pedestrian access to West Chester Pike from the Shopping Center.
    c. Verify that the capacity analyses utilized the current system timings and included pedestrian intervals.
    d. Verify the tenant occupancy of the Marketplace at the time of data collection and, if appropriate, adjust the No-Build traffic volumes.
    e. Based on a review of the submitted counts it appears that the distribution should be adjusted to include movements across West Chester Pike to/from the Wawa.
    f. Provide additional information regarding the changes in actuated green times assumed for the Build conditions analyses.

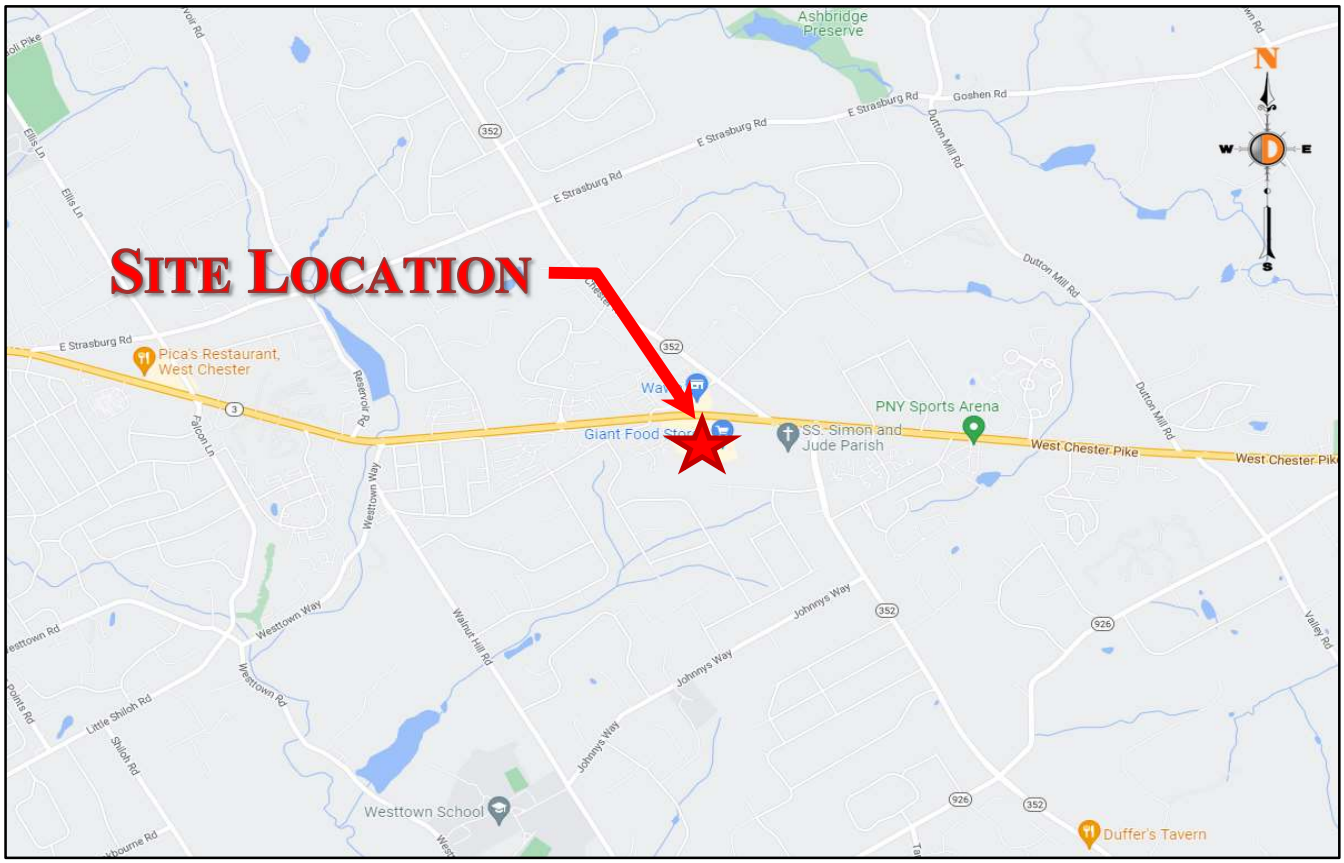
2. *§149-916* - Sidewalks, bike paths and other paths may be required to be installed at the discretion of the Board of Supervisors upon the recommendation of the Planning Commission. The pedestrian path illustrated in the submitted exhibit has a number of undesirable jogs as it crosses the parking area. Further, insufficient detail has been provided to demonstrate compliance with accessibility standards. Consideration should be given to other alignments providing access to West Chester Pike, including along the west side of the entering driveway.

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

Appendix B
Traffic Volume Figures



Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 1

Site Location Map

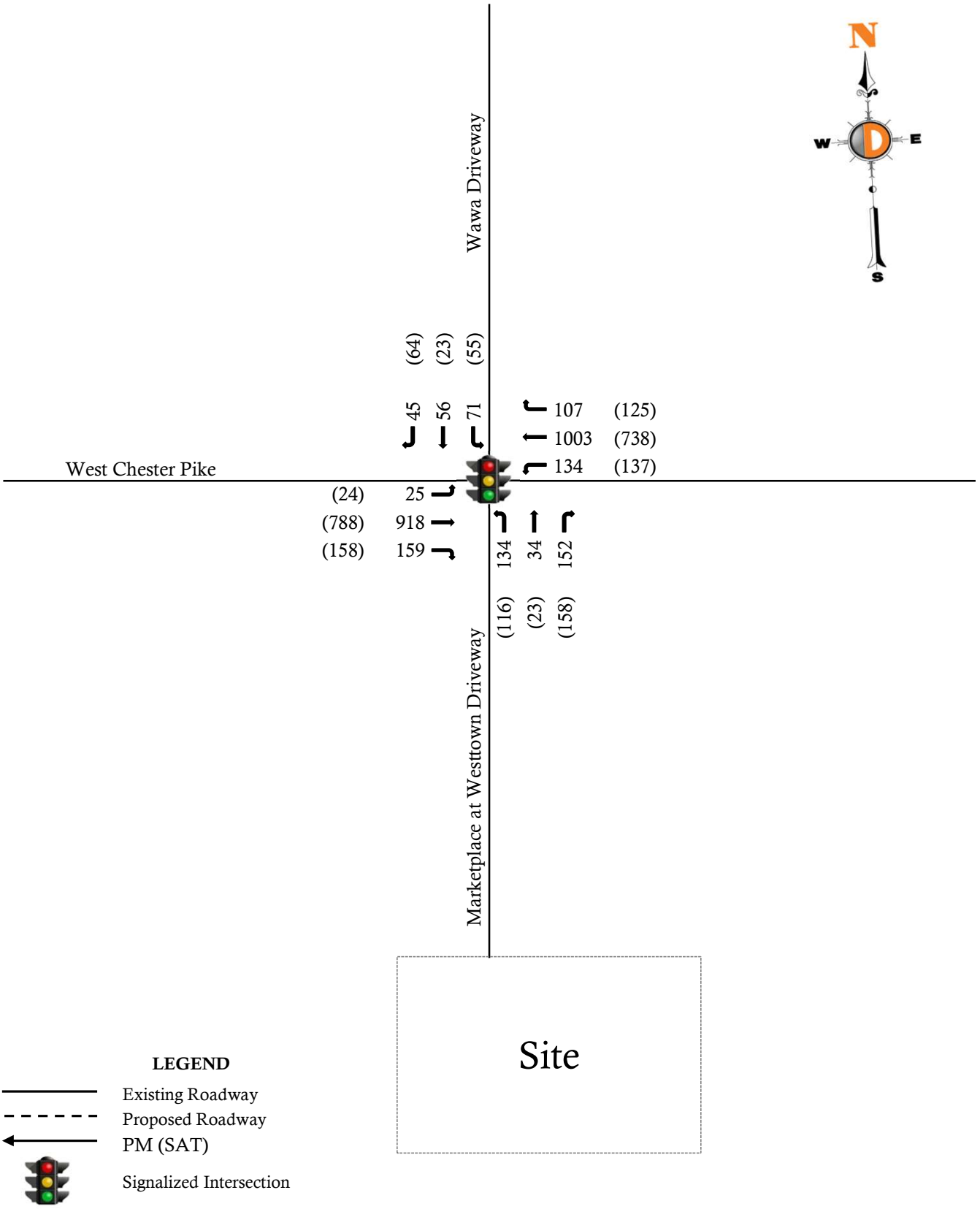


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Figure 2

Existing Traffic Volumes

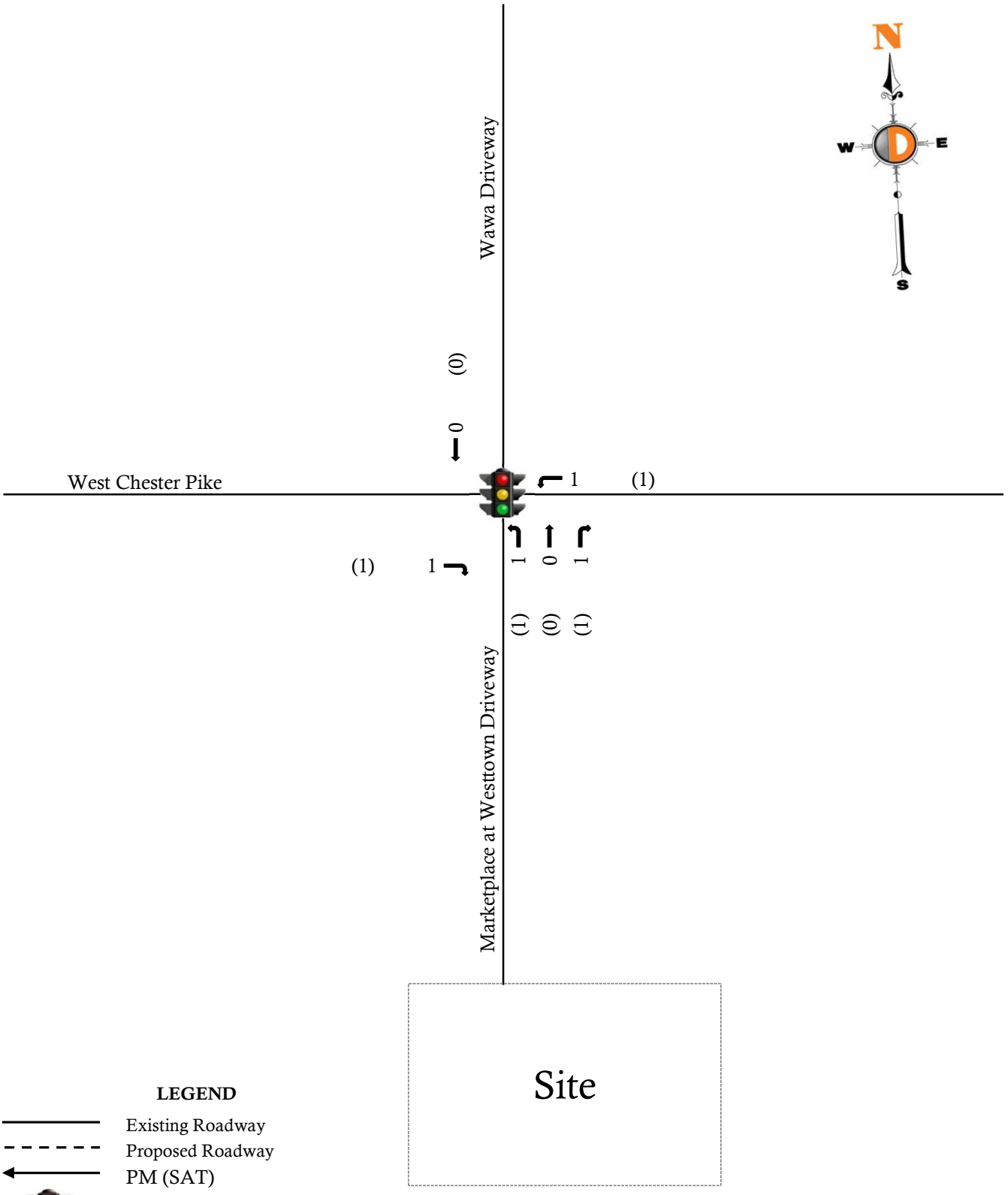

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Figure 3

Vacant Shopping Center Traffic Volumes

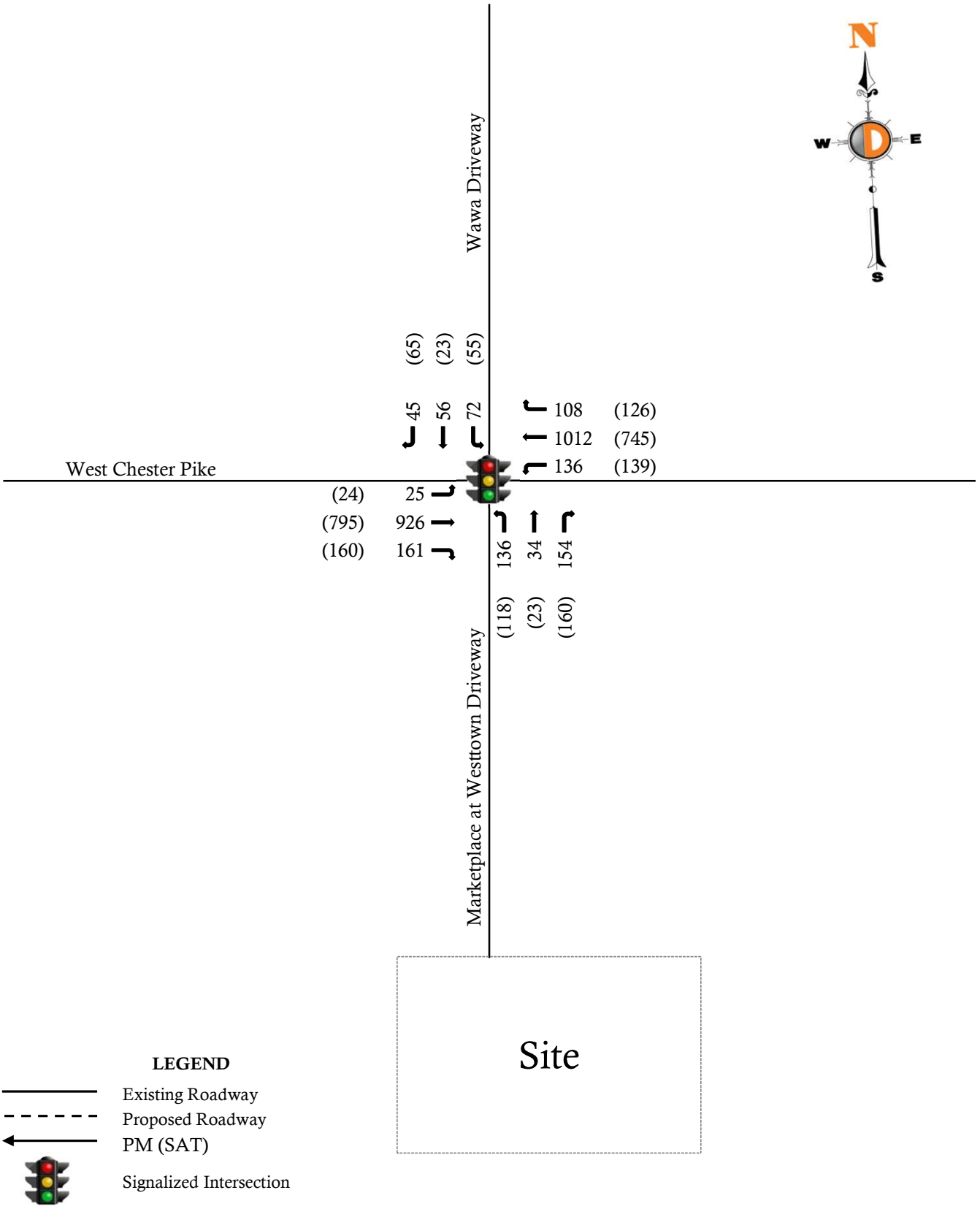

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Figure 4

No Build Traffic Volumes

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Figure 5

Percent Distribution (Primary Trips)

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Figure 6

Primary Site Generated Trips

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Figure 7

Percent Distribution (Passby Trips)

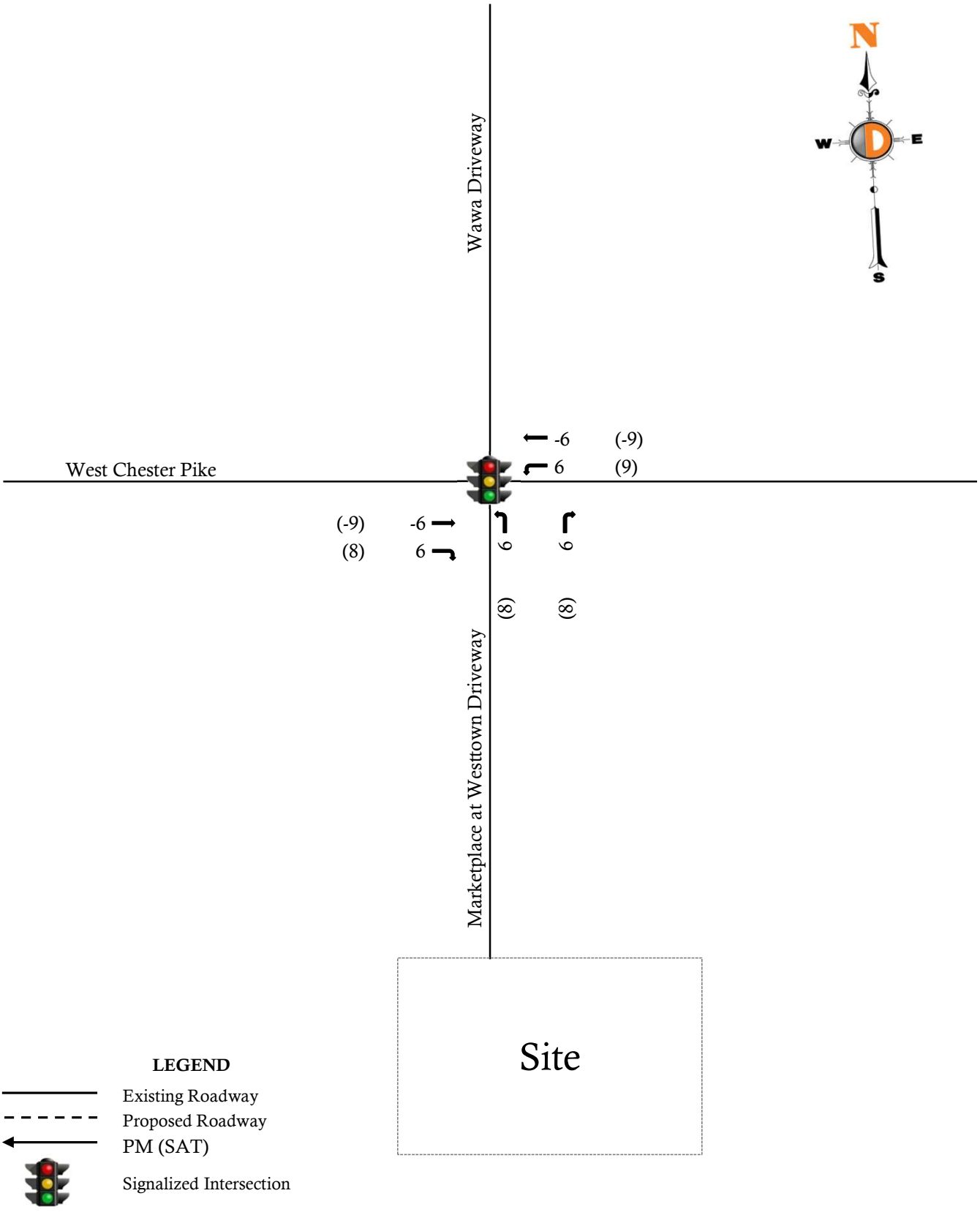

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Figure 8

Passby Site Generated Trips

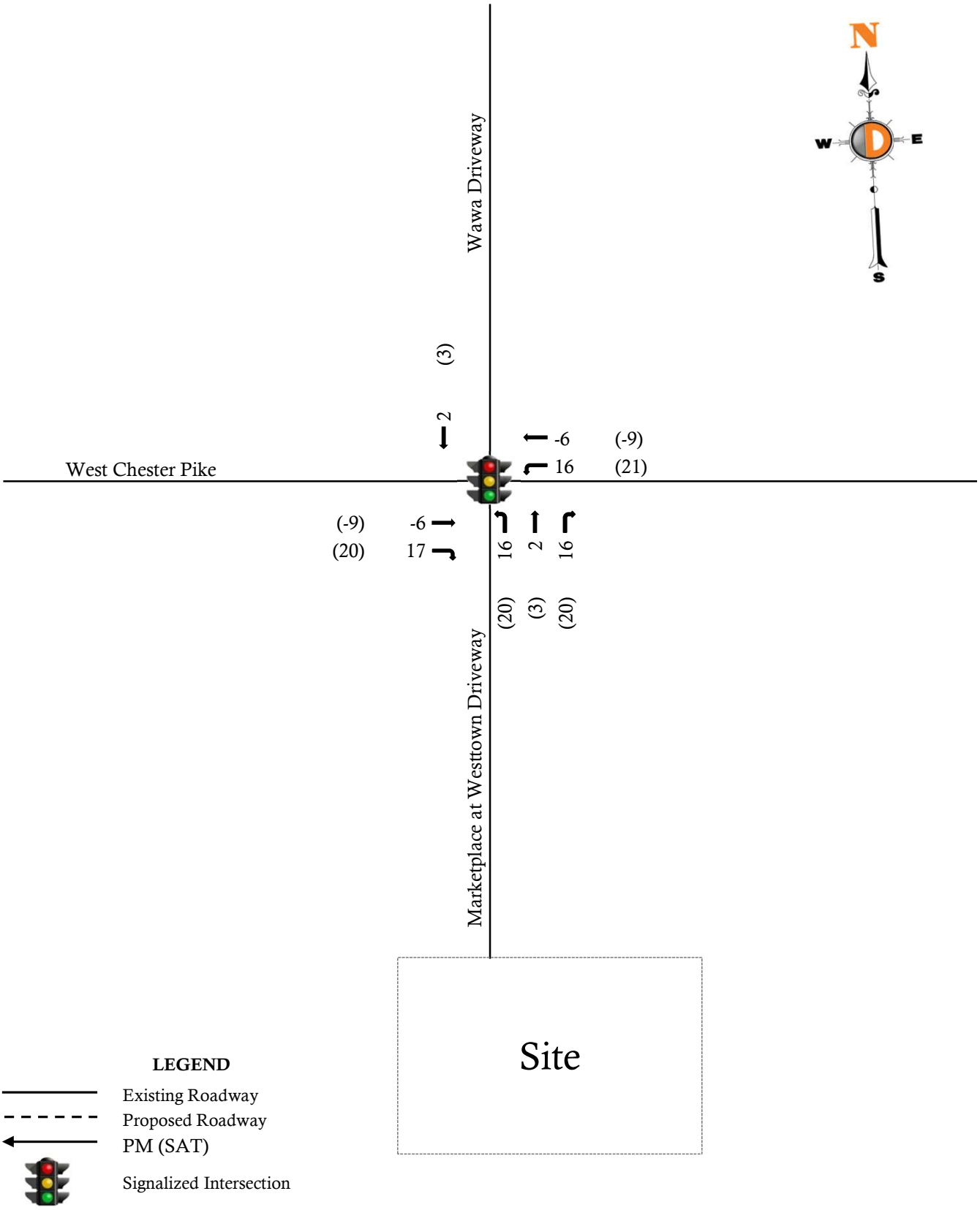

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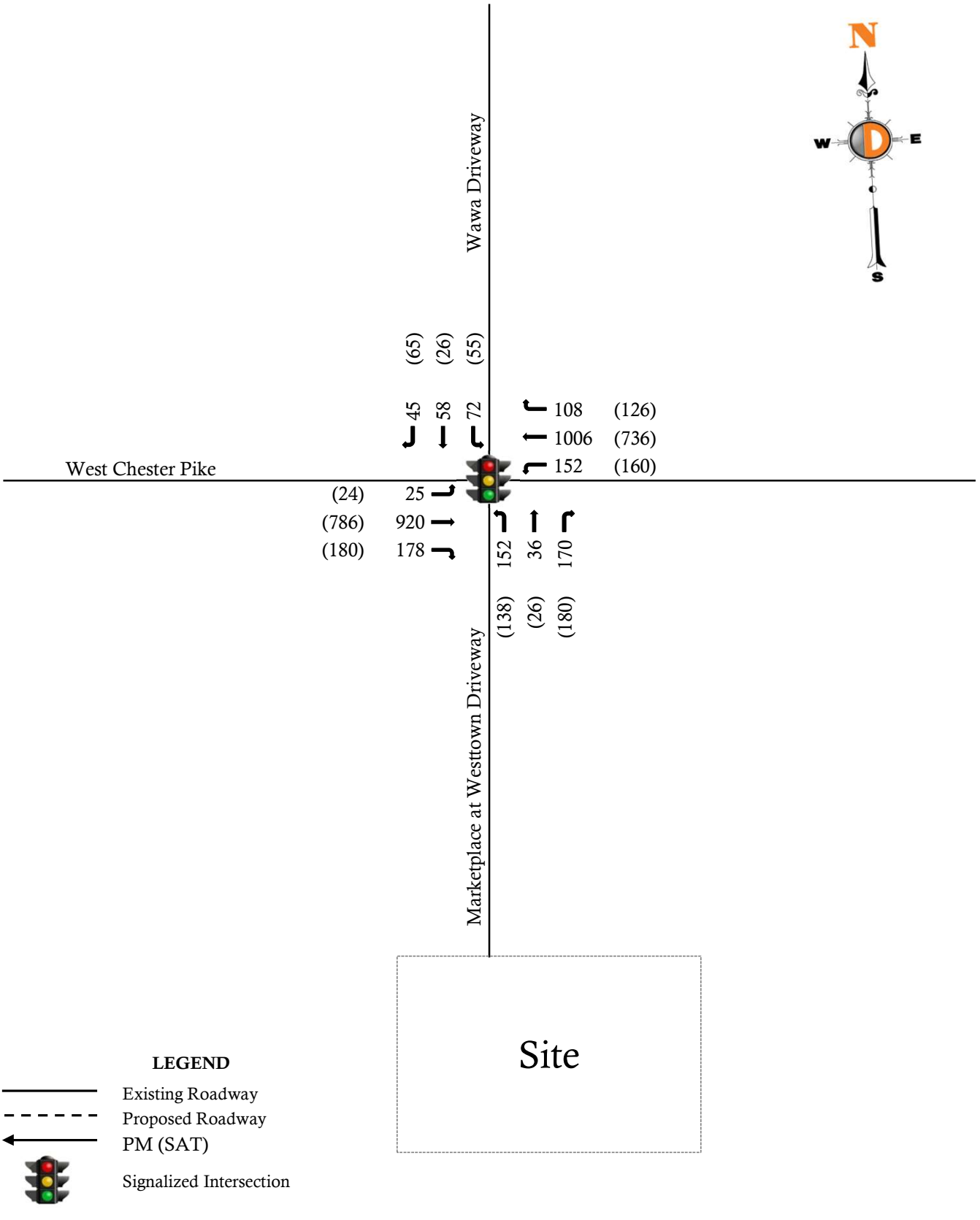
Figure 9

Total Site Generated Trips



Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 10

Build Traffic Volumes

Appendix C
Traffic Counts

Imperial
TRAFFIC & DATA COLLECTION

Imperial Traffic & Data Collection
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1804 Haddonfield-Berlin Road
Cherry Hill, New Jersey, United States 08034
609-706-6100 hfurey@imperialtdc.com

Project: Route 3 & WAWA
Municipality: West Chester, Chester County, PA
Setup: AH
Location: 39.966836, -75.526915

Count Name: 1. 1502 West Chester Pike (Route 3)/Wawa Driveways
Site Code: 1
Start Date: 09/05/2024

Turning Movement Data

Start Time	Route 3 Eastbound						Route 3 Westbound						Shopping Center Northbound						Wawa Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:00 PM	0	4	239	26	0	269	0	24	208	27	0	259	0	23	10	34	0	67	0	20	4	12	0	36	631
4:15 PM	0	3	192	20	2	215	0	40	236	33	0	309	0	38	10	38	0	86	0	13	8	14	1	35	645
4:30 PM	0	6	226	28	1	260	0	16	207	32	0	255	0	29	9	30	0	68	0	18	13	17	2	48	631
4:45 PM	0	7	266	38	0	311	1	37	230	23	0	291	0	26	10	30	0	66	0	21	8	7	0	36	704
Hourly Total	0	20	923	112	3	1055	1	117	881	115	0	1114	0	116	39	132	0	287	0	72	33	50	3	155	2611
5:00 PM	0	2	235	50	0	287	0	26	240	28	0	294	0	34	10	44	0	88	0	17	22	13	0	52	721
5:15 PM	0	9	238	34	0	281	0	35	247	27	0	309	0	39	6	34	0	79	0	14	8	12	0	34	703
5:30 PM	0	7	179	37	0	223	0	36	286	29	0	351	1	35	8	44	0	88	0	19	18	13	0	50	712
5:45 PM	0	5	243	51	3	299	0	39	184	29	0	252	0	25	11	37	1	73	0	18	12	11	0	41	665
Hourly Total	0	23	895	172	3	1090	0	136	957	113	0	1206	1	133	35	159	1	328	0	68	60	49	0	177	2801
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	3	170	38	0	211	0	33	154	35	0	222	0	23	15	27	0	65	0	20	8	18	0	46	544
11:15 AM	0	8	192	39	0	239	0	27	152	27	0	206	0	34	6	41	0	81	0	14	5	15	0	34	560
11:30 AM	0	5	148	27	0	180	0	32	127	20	0	179	0	31	9	39	0	79	0	23	4	14	0	41	479
11:45 AM	1	6	212	51	0	270	0	33	166	30	0	229	0	22	2	34	0	58	0	18	8	15	0	41	598
Hourly Total	1	22	722	155	0	900	0	125	599	112	0	836	0	110	32	141	0	283	0	75	25	62	0	162	2181
12:00 PM	0	7	180	41	0	228	0	34	204	35	0	273	0	26	7	44	0	77	0	7	6	15	0	28	606
12:15 PM	0	5	185	33	0	223	0	33	186	35	0	254	0	34	8	48	0	90	0	13	4	24	0	41	608
12:30 PM	0	6	211	33	0	250	0	37	182	25	0	244	0	34	6	32	0	72	0	17	5	10	0	32	598
12:45 PM	0	3	140	23	0	166	0	26	182	25	0	233	0	17	12	37	0	66	0	10	2	18	0	30	495
Hourly Total	0	21	716	130	0	867	0	130	754	120	0	1004	0	111	33	161	0	305	0	47	17	67	0	131	2307
1:00 PM	0	9	184	37	0	230	0	25	152	26	0	203	0	24	8	37	0	69	0	19	9	8	0	36	538
1:15 PM	0	6	168	24	0	198	0	37	181	29	0	247	0	24	12	35	0	71	0	10	8	15	0	33	549
1:30 PM	0	3	203	37	0	243	1	32	160	22	0	215	0	28	14	37	0	79	0	13	2	18	0	33	570
1:45 PM	0	3	186	34	0	223	0	34	156	21	0	211	0	23	9	34	0	66	0	11	7	11	0	29	529
Hourly Total	0	21	741	132	0	894	1	128	649	98	0	876	0	99	43	143	0	285	0	53	26	52	0	131	2186
Grand Total	1	107	3997	701	6	4806	2	636	3840	558	0	5036	1	569	182	736	1	1488	0	315	161	280	3	756	12086
Approach %	0.0	2.2	83.2	14.6	-	-	0.0	12.6	76.3	11.1	-	-	0.1	38.2	12.2	49.5	-	-	0.0	41.7	21.3	37.0	-	-	-
Total %	0.0	0.9	33.1	5.8	-	39.8	0.0	5.3	31.8	4.6	-	41.7	0.0	4.7	1.5	6.1	-	12.3	0.0	2.6	1.3	2.3	-	6.3	-
Lights	1	107	3940	698	-	4746	2	634	3781	552	-	4969	1	565	181	733	-	1480	0	307	161	275	-	743	11938
% Lights	100.0	100.0	98.6	99.6	-	98.8	100.0	99.7	98.5	98.9	-	98.7	100.0	99.3	99.5	99.6	-	99.5	-	97.5	100.0	98.2	-	98.3	98.8
Mediums	0	0	48	3	-	51	0	2	52	4	-	58	0	3	1	2	-	6	0	5	0	5	-	10	125
% Mediums	0.0	0.0	1.2	0.4	-	1.1	0.0	0.3	1.4	0.7	-	1.2	0.0	0.5	0.5	0.3	-	0.4	-	1.6	0.0	1.8	-	1.3	1.0
Articulated Trucks	0	0	9	0	-	9	0	0	7	2	-	9	0	1	0	1	-	2	0	3	0	0	-	3	23
% Articulated Trucks	0.0	0.0	0.2	0.0	-	0.2	0.0	0.0	0.2	0.4	-	0.2	0.0	0.2	0.0	0.1	-	0.1	-	1.0	0.0	0.0	-	0.4	0.2

Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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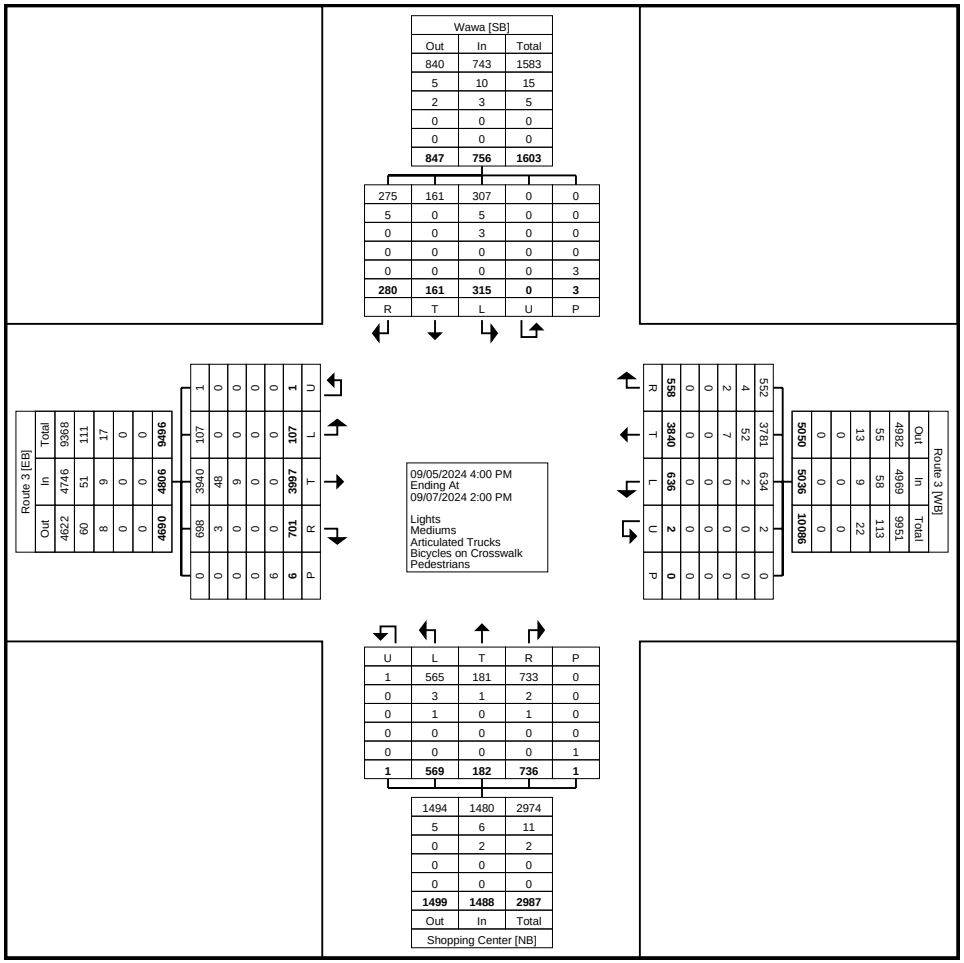

Turning Movement Data Plot

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Count Name: 1. 1502 West Chester Pike (Route 3)/Wawa Driveways
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Start Date: 09/05/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Route 3 Eastbound						Route 3 Westbound						Shopping Center Northbound						Wawa Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:45 PM	0	7	266	38	0	311	1	37	230	23	0	291	0	26	10	30	0	66	0	21	8	7	0	36	704
5:00 PM	0	2	235	50	0	287	0	26	240	28	0	294	0	34	10	44	0	88	0	17	22	13	0	52	721
5:15 PM	0	9	238	34	0	281	0	35	247	27	0	309	0	39	6	34	0	79	0	14	8	12	0	34	703
5:30 PM	0	7	179	37	0	223	0	36	286	29	0	351	1	35	8	44	0	88	0	19	18	13	0	50	712
Total	0	25	918	159	0	1102	1	134	1003	107	0	1245	1	134	34	152	0	321	0	71	56	45	0	172	2840
Approach %	0.0	2.3	83.3	14.4	-	-	0.1	10.8	80.6	8.6	-	-	0.3	41.7	10.6	47.4	-	-	0.0	41.3	32.6	26.2	-	-	-
Total %	0.0	0.9	32.3	5.6	-	38.8	0.0	4.7	35.3	3.8	-	43.8	0.0	4.7	1.2	5.4	-	11.3	0.0	2.5	2.0	1.6	-	6.1	-
PHF	0.000	0.694	0.863	0.795	-	0.886	0.250	0.905	0.877	0.922	-	0.887	0.250	0.859	0.850	0.864	-	0.912	0.000	0.845	0.636	0.865	-	0.827	0.985
Lights	0	25	904	159	-	1088	1	134	980	105	-	1220	1	134	34	152	-	321	0	71	56	42	-	169	2798
% Lights	-	100.0	98.5	100.0	-	98.7	100.0	100.0	97.7	98.1	-	98.0	100.0	100.0	100.0	100.0	-	100.0	-	100.0	100.0	93.3	-	98.3	98.5
Mediums	0	0	9	0	-	9	0	0	20	2	-	22	0	0	0	0	-	0	0	0	0	3	-	3	34
% Mediums	-	0.0	1.0	0.0	-	0.8	0.0	0.0	2.0	1.9	-	1.8	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	6.7	-	1.7	1.2
Articulated Trucks	0	0	5	0	-	5	0	0	3	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	8
% Articulated Trucks	-	0.0	0.5	0.0	-	0.5	0.0	0.0	0.3	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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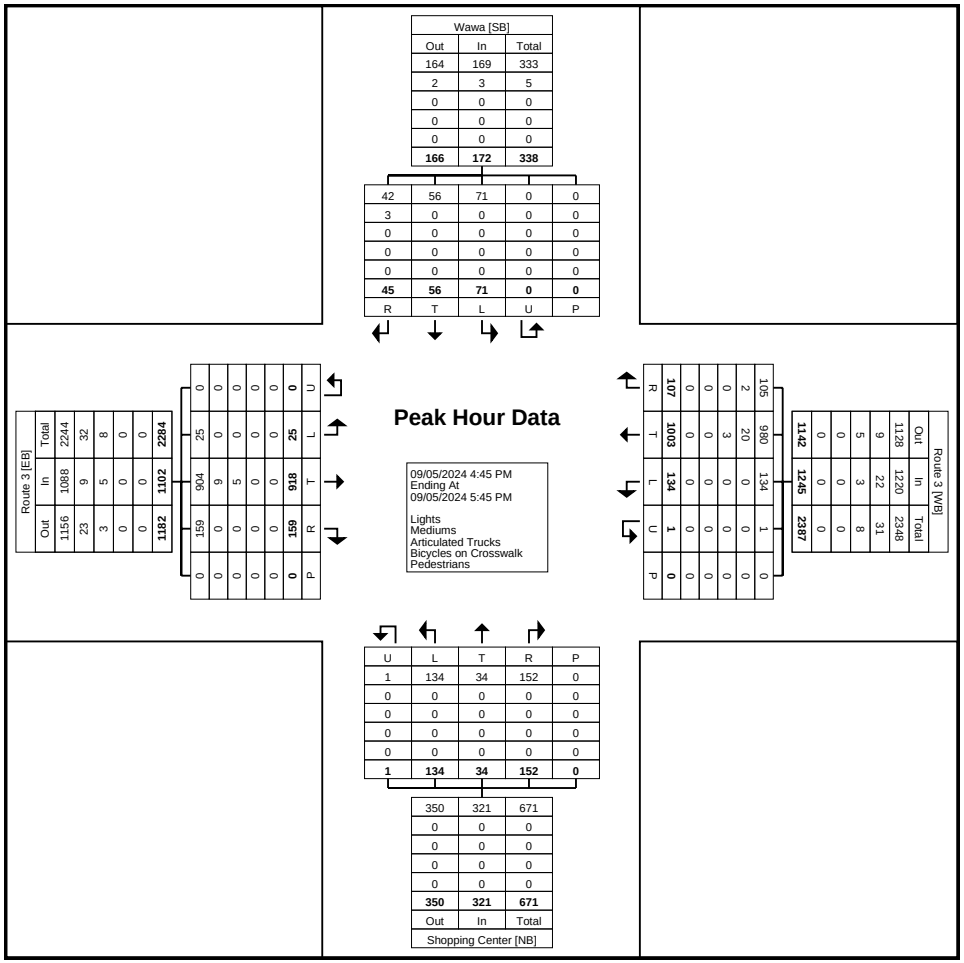

Turning Movement Peak Hour Data Plot (4:45 PM)

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Location: 39.966836, -75.526915

Count Name: 1. 1502 West Chester Pike (Route 3)/Wawa Driveways
Site Code: 1
Start Date: 09/05/2024

Turning Movement Peak Hour Data (11:45 AM)

Start Time	Route 3 Eastbound						Route 3 Westbound						Shopping Center Northbound						Wawa Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
11:45 AM	1	6	212	51	0	270	0	33	166	30	0	229	0	22	2	34	0	58	0	18	8	15	0	41	598
12:00 PM	0	7	180	41	0	228	0	34	204	35	0	273	0	26	7	44	0	77	0	7	6	15	0	28	606
12:15 PM	0	5	185	33	0	223	0	33	186	35	0	254	0	34	8	48	0	90	0	13	4	24	0	41	608
12:30 PM	0	6	211	33	0	250	0	37	182	25	0	244	0	34	6	32	0	72	0	17	5	10	0	32	598
Total	1	24	788	158	0	971	0	137	738	125	0	1000	0	116	23	158	0	297	0	55	23	64	0	142	2410
Approach %	0.1	2.5	81.2	16.3	-	-	0.0	13.7	73.8	12.5	-	-	0.0	39.1	7.7	53.2	-	-	0.0	38.7	16.2	45.1	-	-	-
Total %	0.0	1.0	32.7	6.6	-	40.3	0.0	5.7	30.6	5.2	-	41.5	0.0	4.8	1.0	6.6	-	12.3	0.0	2.3	1.0	2.7	-	5.9	-
PHF	0.250	0.857	0.929	0.775	-	0.899	0.000	0.926	0.904	0.893	-	0.916	0.000	0.853	0.719	0.823	-	0.825	0.000	0.764	0.719	0.667	-	0.866	0.991
Lights	1	24	780	157	-	962	0	137	734	125	-	996	0	116	23	158	-	297	0	52	23	64	-	139	2394
% Lights	100.0	100.0	99.0	99.4	-	99.1	-	100.0	99.5	100.0	-	99.6	-	100.0	100.0	100.0	-	100.0	-	94.5	100.0	100.0	-	97.9	99.3
Mediums	0	0	7	1	-	8	0	0	3	0	-	3	0	0	0	0	-	0	0	2	0	0	-	2	13
% Mediums	0.0	0.0	0.9	0.6	-	0.8	-	0.0	0.4	0.0	-	0.3	-	0.0	0.0	0.0	-	0.0	-	3.6	0.0	0.0	-	1.4	0.5
Articulated Trucks	0	0	1	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	3
% Articulated Trucks	0.0	0.0	0.1	0.0	-	0.1	-	0.0	0.1	0.0	-	0.1	-	0.0	0.0	0.0	-	0.0	-	1.8	0.0	0.0	-	0.7	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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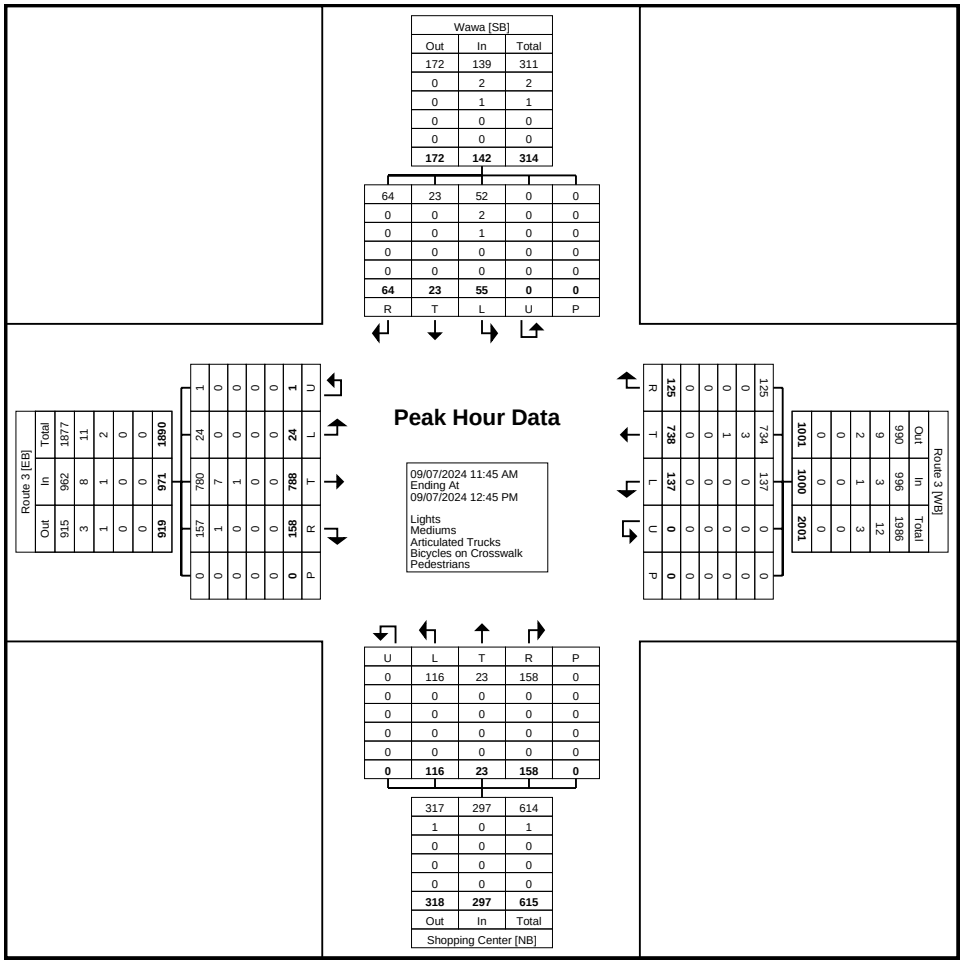
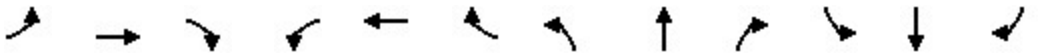


Turning Movement Peak Hour Data Plot (11:45 AM)

Appendix D
Capacity Analysis

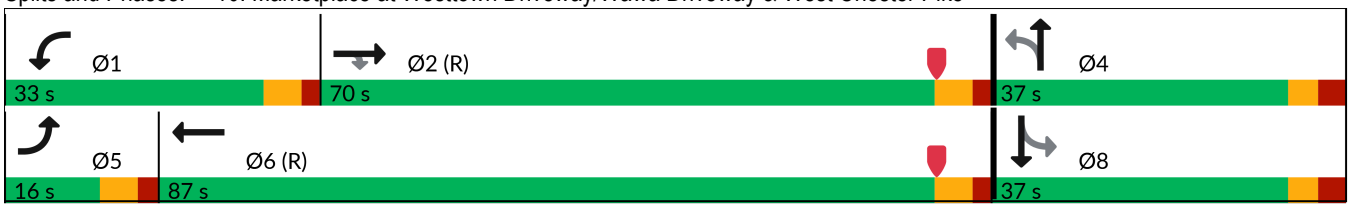


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	918	159	134	1003	107	134	34	152	71	56	45
Future Volume (vph)	25	918	159	134	1003	107	134	34	152	71	56	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	14	10	12	12	13	13	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.986			0.877			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3225	1624	1588	3289	0	1732	1599	0	1661	1748	0
Flt Permitted	0.950			0.950			0.617			0.357		
Satd. Flow (perm)	1701	3225	1624	1588	3289	0	1125	1599	0	624	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			161		14			151			26	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	16.0	70.0	70.0	33.0	87.0		37.0	37.0		37.0	37.0	
Total Split (%)	11.4%	50.0%	50.0%	23.6%	62.1%		26.4%	26.4%		26.4%	26.4%	
Maximum Green (s)	10.0	64.0	64.0	27.0	81.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-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	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)		20.0	20.0		20.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
90th %ile Green (s)	8.3	71.8	71.8	22.1	85.6		28.1	28.1		28.1	28.1	
90th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
70th %ile Green (s)	6.7	80.8	80.8	18.2	92.3		23.0	23.0		23.0	23.0	
70th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	5.6	87.1	87.1	15.5	97.0		19.4	19.4		19.4	19.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	93.6	93.6	12.7	112.3		15.7	15.7		15.7	15.7	
30th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	102.9	102.9	8.7	117.6		10.4	10.4		10.4	10.4	
10th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 127 (91%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike



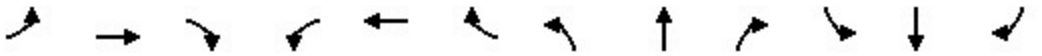
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	918	159	134	1003	107	134	34	152	71	56	45
Future Volume (veh/h)	25	918	159	134	1003	107	134	34	152	71	56	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	1794	1766	1866	1794	1766	1766	1779	1779	1711	1837	1911	1807
Adj Flow Rate, veh/h	25	927	161	135	1013	108	135	34	154	72	57	45
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	0	0	2	2	0	0	0	0	0	7
Cap, veh/h	50	2003	944	174	2049	218	239	54	246	153	192	151
Arrive On Green	0.03	0.60	0.60	0.10	0.67	0.66	0.19	0.19	0.18	0.19	0.19	0.18
Sat Flow, veh/h	1709	3356	1582	1709	3060	326	1298	280	1270	1239	989	781
Grp Volume(v), veh/h	25	927	161	135	555	566	135	0	188	72	0	102
Grp Sat Flow(s),veh/h/ln	1709	1678	1582	1709	1678	1708	1298	0	1551	1239	0	1770
Q Serve(g_s), s	2.0	21.5	6.4	10.8	22.9	23.1	13.9	0.0	15.7	7.9	0.0	6.9
Cycle Q Clear(g_c), s	2.0	21.5	6.4	10.8	22.9	23.1	20.8	0.0	15.7	23.6	0.0	6.9
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.82	1.00		0.44
Lane Grp Cap(c), veh/h	50	2003	944	174	1123	1143	239	0	301	153	0	343
V/C Ratio(X)	0.50	0.46	0.17	0.78	0.49	0.49	0.57	0.00	0.63	0.47	0.00	0.30
Avail Cap(c_a), veh/h	134	2003	944	342	1123	1143	284	0	354	196	0	405
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.9	15.7	12.7	61.3	11.4	11.5	57.2	0.0	52.5	62.6	0.0	48.7
Incr Delay (d2), s/veh	2.8	0.8	0.4	2.8	1.6	1.5	0.8	0.0	1.3	0.8	0.0	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	1.6	12.6	4.1	8.3	12.9	13.2	8.2	0.0	10.5	4.6	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	16.5	13.1	64.1	13.0	13.1	58.0	0.0	53.9	63.4	0.0	48.8
LnGrp LOS	E	B	B	E	B	B	E		D	E		D
Approach Vol, veh/h		1113			1256			323			174	
Approach Delay, s/veh		17.2			18.5			55.6			54.9	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.3	88.6		32.2	9.1	98.7		32.2				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	27.0	64.0		31.0	10.0	81.0		31.0				
Max Q Clear Time (g_c+I1), s	13.3	24.0		23.3	4.5	25.6		26.1				
Green Ext Time (p_c), s	0.1	0.9		0.2	0.0	0.6		0.1				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			24.4									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.

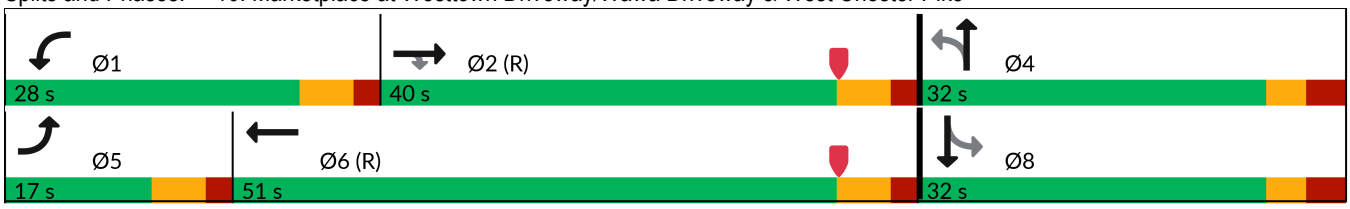


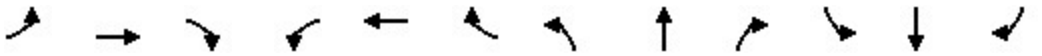
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	788	158	137	738	125	116	23	158	55	23	64
Future Volume (vph)	24	788	158	137	738	125	116	23	158	55	23	64
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.869			0.889	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3257	1507	1701	3300	0	1676	1533	0	1582	1715	0
Flt Permitted	0.950			0.950			0.700			0.427		
Satd. Flow (perm)	1701	3257	1507	1701	3300	0	1235	1533	0	711	1715	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164		25			160			65	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	0%	0%	0%	5%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	17.0	40.0	40.0	28.0	51.0		32.0	32.0		32.0	32.0	
Total Split (%)	17.0%	40.0%	40.0%	28.0%	51.0%		32.0%	32.0%		32.0%	32.0%	
Maximum Green (s)	11.0	34.0	34.0	22.0	45.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-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	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)		20.0	20.0		20.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
90th %ile Green (s)	7.2	45.3	45.3	16.9	55.0		19.8	19.8		19.8	19.8	
90th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
70th %ile Green (s)	5.8	52.3	52.3	13.8	60.3		15.9	15.9		15.9	15.9	
70th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	0.0	57.2	57.2	11.7	74.9		13.1	13.1		13.1	13.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	62.2	62.2	9.5	77.7		10.3	10.3		10.3	10.3	
30th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	69.3	69.3	6.4	81.7		6.3	6.3		6.3	6.3	
10th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 48 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike





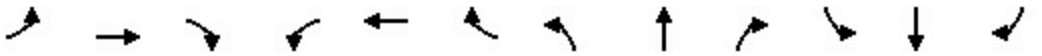
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	788	158	137	738	125	116	23	158	55	23	64
Future Volume (veh/h)	24	788	158	137	738	125	116	23	158	55	23	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	1794	1780	1780	1794	1780	1794	1711	1711	1711	1766	1911	1911
Adj Flow Rate, veh/h	24	796	160	138	745	126	117	23	160	56	23	65
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	1	1	0	1	0	0	0	0	5	0	0
Cap, veh/h	59	1837	819	190	1795	303	262	36	253	169	86	244
Arrive On Green	0.03	0.54	0.54	0.11	0.62	0.60	0.20	0.20	0.18	0.20	0.20	0.18
Sat Flow, veh/h	1709	3383	1509	1709	2894	489	1264	186	1292	1197	441	1246
Grp Volume(v), veh/h	24	796	160	138	435	436	117	0	183	56	0	88
Grp Sat Flow(s),veh/h/ln	1709	1691	1509	1709	1691	1692	1264	0	1478	1197	0	1687
Q Serve(g_s), s	1.4	14.1	5.4	7.8	13.2	13.3	8.7	0.0	11.5	4.5	0.0	4.5
Cycle Q Clear(g_c), s	1.4	14.1	5.4	7.8	13.2	13.3	13.2	0.0	11.5	16.0	0.0	4.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.87	1.00		0.74
Lane Grp Cap(c), veh/h	59	1837	819	190	1049	1049	262	0	289	169	0	330
V/C Ratio(X)	0.41	0.43	0.20	0.73	0.41	0.42	0.45	0.00	0.63	0.33	0.00	0.27
Avail Cap(c_a), veh/h	205	1837	819	393	1049	1049	356	0	399	258	0	455
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.3	13.6	11.7	43.0	9.7	9.9	39.8	0.0	37.8	44.3	0.0	34.8
Incr Delay (d2), s/veh	1.7	0.7	0.5	2.0	1.2	1.2	0.4	0.0	0.9	0.4	0.0	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	1.1	8.6	3.2	5.9	7.9	8.0	4.9	0.0	7.7	2.5	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	14.4	12.2	44.9	10.9	11.1	40.2	0.0	38.6	44.7	0.0	35.0
LnGrp LOS	D	B	B	D	B	B	D		D	D		C
Approach Vol, veh/h		980			1009			300			144	
Approach Delay, s/veh		14.9			15.7			39.2			38.8	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.1	59.3		24.6	8.4	67.0		24.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	22.0	34.0		26.0	11.0	45.0		26.0				
Max Q Clear Time (g_c+I1), s	10.3	16.6		15.7	3.9	15.8		18.5				
Green Ext Time (p_c), s	0.1	0.7		0.2	0.0	0.4		0.1				

Intersection Summary			
HCM 6th Ctrl Delay, s/veh		19.6	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

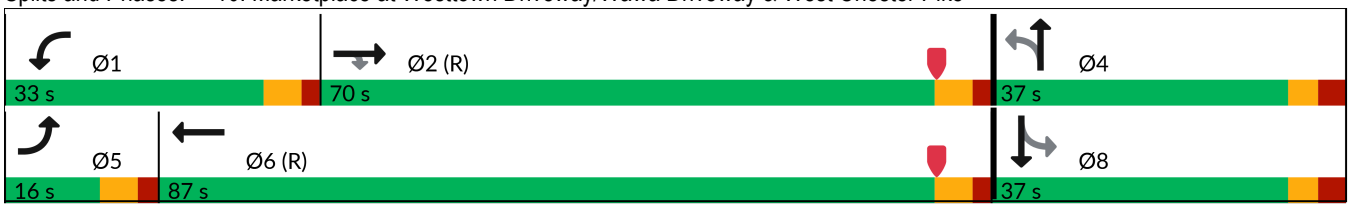


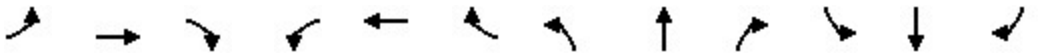
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	926	161	136	1012	108	136	34	154	72	56	45
Future Volume (vph)	25	926	161	136	1012	108	136	34	154	72	56	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	14	10	12	12	13	13	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.986			0.877			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3225	1624	1588	3289	0	1732	1599	0	1661	1748	0
Flt Permitted	0.950			0.950			0.618			0.356		
Satd. Flow (perm)	1701	3225	1624	1588	3289	0	1126	1599	0	623	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163		14			153			26	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	16.0	70.0	70.0	33.0	87.0		37.0	37.0		37.0	37.0	
Total Split (%)	11.4%	50.0%	50.0%	23.6%	62.1%		26.4%	26.4%		26.4%	26.4%	
Maximum Green (s)	10.0	64.0	64.0	27.0	81.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-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	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)		20.0	20.0		20.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
90th %ile Green (s)	8.3	71.4	71.4	22.3	85.4		28.3	28.3		28.3	28.3	
90th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
70th %ile Green (s)	6.7	80.4	80.4	18.4	92.1		23.2	23.2		23.2	23.2	
70th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	5.6	86.8	86.8	15.6	96.8		19.6	19.6		19.6	19.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	93.1	93.1	12.9	112.0		16.0	16.0		16.0	16.0	
30th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	102.4	102.4	8.9	117.3		10.7	10.7		10.7	10.7	
10th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 127 (91%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	926	161	136	1012	108	136	34	154	72	56	45
Future Volume (veh/h)	25	926	161	136	1012	108	136	34	154	72	56	45
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	1794	1766	1866	1794	1766	1766	1779	1779	1711	1837	1911	1807
Adj Flow Rate, veh/h	25	935	163	137	1022	109	137	34	156	73	57	45
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	0	0	2	2	0	0	0	0	0	7
Cap, veh/h	50	1993	939	176	2042	218	242	54	249	154	194	153
Arrive On Green	0.03	0.59	0.59	0.10	0.67	0.65	0.20	0.20	0.18	0.20	0.20	0.18
Sat Flow, veh/h	1709	3356	1582	1709	3060	326	1298	277	1273	1237	989	781
Grp Volume(v), veh/h	25	935	163	137	560	571	137	0	190	73	0	102
Grp Sat Flow(s),veh/h/ln	1709	1678	1582	1709	1678	1708	1298	0	1550	1237	0	1770
Q Serve(g_s), s	2.0	22.0	6.5	10.9	23.3	23.5	14.1	0.0	15.8	8.1	0.0	6.9
Cycle Q Clear(g_c), s	2.0	22.0	6.5	10.9	23.3	23.5	21.0	0.0	15.8	23.9	0.0	6.9
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.82	1.00		0.44
Lane Grp Cap(c), veh/h	50	1993	939	176	1120	1140	242	0	304	154	0	347
V/C Ratio(X)	0.50	0.47	0.17	0.78	0.50	0.50	0.57	0.00	0.63	0.47	0.00	0.29
Avail Cap(c_a), veh/h	134	1993	939	342	1120	1140	284	0	354	194	0	405
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.9	16.0	12.9	61.2	11.6	11.7	57.0	0.0	52.4	62.6	0.0	48.4
Incr Delay (d2), s/veh	2.8	0.8	0.4	2.8	1.6	1.6	0.8	0.0	1.4	0.8	0.0	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	1.6	12.8	4.2	8.4	13.1	13.4	8.3	0.0	10.5	4.7	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	16.8	13.3	64.0	13.2	13.3	57.8	0.0	53.8	63.4	0.0	48.6
LnGrp LOS	E	B	B	E	B	B	E		D	E		D
Approach Vol, veh/h		1123			1268			327			175	
Approach Delay, s/veh		17.5			18.7			55.5			54.8	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.4	88.1		32.4	9.1	98.5		32.4				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	27.0	64.0		31.0	10.0	81.0		31.0				
Max Q Clear Time (g_c+I1), s	13.4	24.5		23.5	4.5	26.0		26.4				
Green Ext Time (p_c), s	0.1	0.9		0.2	0.0	0.6		0.1				

Intersection Summary			
HCM 6th Ctrl Delay, s/veh		24.6	
HCM 6th LOS		C	

Notes

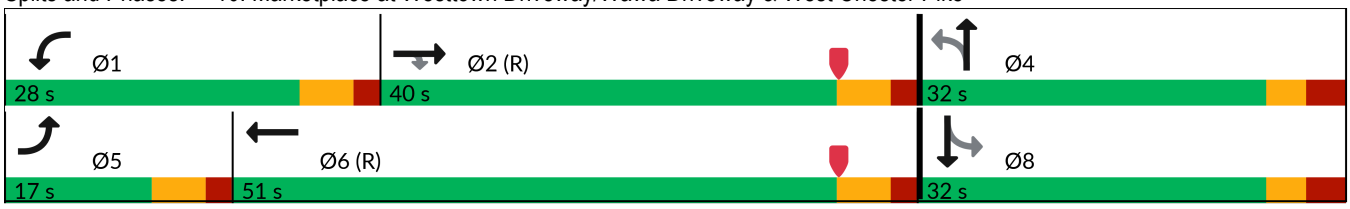
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	795	160	139	745	126	118	23	160	55	23	65
Future Volume (vph)	24	795	160	139	745	126	118	23	160	55	23	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.869			0.889	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3257	1507	1701	3300	0	1676	1533	0	1582	1715	0
Flt Permitted	0.950			0.950			0.699			0.423		
Satd. Flow (perm)	1701	3257	1507	1701	3300	0	1233	1533	0	704	1715	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164		25			162			66	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	0%	0%	0%	5%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	17.0	40.0	40.0	28.0	51.0		32.0	32.0		32.0	32.0	
Total Split (%)	17.0%	40.0%	40.0%	28.0%	51.0%		32.0%	32.0%		32.0%	32.0%	
Maximum Green (s)	11.0	34.0	34.0	22.0	45.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-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	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)		20.0	20.0		20.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
90th %ile Green (s)	7.2	44.8	44.8	17.1	54.7		20.1	20.1		20.1	20.1	
90th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
70th %ile Green (s)	5.8	52.0	52.0	14.0	60.2		16.0	16.0		16.0	16.0	
70th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	0.0	57.0	57.0	11.8	74.8		13.2	13.2		13.2	13.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	61.9	61.9	9.6	77.5		10.5	10.5		10.5	10.5	
30th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	69.2	69.2	6.4	81.6		6.4	6.4		6.4	6.4	
10th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	

Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 48 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	795	160	139	745	126	118	23	160	55	23	65
Future Volume (veh/h)	24	795	160	139	745	126	118	23	160	55	23	65
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	1794	1780	1780	1794	1780	1794	1711	1711	1711	1766	1911	1911
Adj Flow Rate, veh/h	24	803	162	140	753	127	119	23	162	56	23	66
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	1	1	0	1	0	0	0	0	5	0	0
Cap, veh/h	59	1828	816	192	1792	302	263	36	255	169	86	246
Arrive On Green	0.03	0.54	0.54	0.11	0.62	0.60	0.20	0.20	0.18	0.20	0.20	0.18
Sat Flow, veh/h	1709	3383	1509	1709	2896	488	1263	184	1294	1195	436	1250
Grp Volume(v), veh/h	24	803	162	140	440	440	119	0	185	56	0	89
Grp Sat Flow(s),veh/h/ln	1709	1691	1509	1709	1691	1692	1263	0	1478	1195	0	1686
Q Serve(g_s), s	1.4	14.3	5.5	7.9	13.4	13.6	8.8	0.0	11.6	4.5	0.0	4.5
Cycle Q Clear(g_c), s	1.4	14.3	5.5	7.9	13.4	13.6	13.4	0.0	11.6	16.1	0.0	4.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.88	1.00		0.74
Lane Grp Cap(c), veh/h	59	1828	816	192	1047	1047	263	0	291	169	0	332
V/C Ratio(X)	0.41	0.44	0.20	0.73	0.42	0.42	0.45	0.00	0.64	0.33	0.00	0.27
Avail Cap(c_a), veh/h	205	1828	816	393	1047	1047	356	0	399	256	0	455
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.3	13.8	11.8	42.9	9.8	10.0	39.7	0.0	37.7	44.3	0.0	34.7
Incr Delay (d2), s/veh	1.7	0.8	0.5	2.0	1.2	1.2	0.5	0.0	0.9	0.4	0.0	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	1.1	8.7	3.2	6.0	8.0	8.2	5.0	0.0	7.7	2.5	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	14.6	12.4	44.9	11.1	11.2	40.2	0.0	38.6	44.7	0.0	34.9
LnGrp LOS	D	B	B	D	B	B	D		D	D		C
Approach Vol, veh/h		989			1020			304			145	
Approach Delay, s/veh		15.1			15.8			39.2			38.7	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.3	59.1		24.7	8.4	66.9		24.7				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	22.0	34.0		26.0	11.0	45.0		26.0				
Max Q Clear Time (g_c+I1), s	10.4	16.8		15.9	3.9	16.1		18.6				
Green Ext Time (p_c), s	0.1	0.8		0.2	0.0	0.4		0.1				

Intersection Summary			
HCM 6th Ctrl Delay, s/veh		19.7	
HCM 6th LOS		B	

Notes

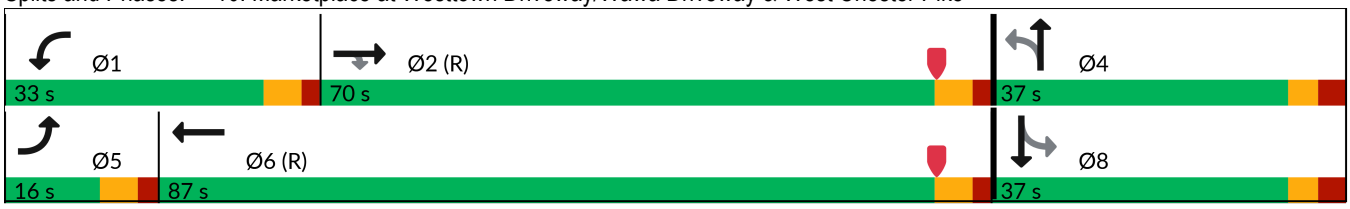
User approved pedestrian interval to be less than phase max green.

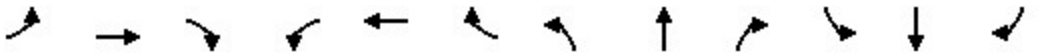
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	920	178	152	1006	108	152	36	170	72	58	45
Future Volume (vph)	25	920	178	152	1006	108	152	36	170	72	58	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	14	10	12	12	13	13	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.985			0.876			0.935	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3225	1624	1588	3286	0	1732	1597	0	1661	1751	0
Flt Permitted	0.950			0.950			0.623			0.340		
Satd. Flow (perm)	1701	3225	1624	1588	3286	0	1136	1597	0	595	1751	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180		14			159			25	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	2%	0%	0%	2%	2%	0%	0%	0%	0%	0%	7%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	16.0	70.0	70.0	33.0	87.0		37.0	37.0		37.0	37.0	
Total Split (%)	11.4%	50.0%	50.0%	23.6%	62.1%		26.4%	26.4%		26.4%	26.4%	
Maximum Green (s)	10.0	64.0	64.0	27.0	81.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-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	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)		20.0	20.0		20.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
90th %ile Green (s)	8.3	66.9	66.9	24.2	82.8		30.9	30.9		30.9	30.9	
90th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
70th %ile Green (s)	6.7	76.5	76.5	20.0	89.8		25.5	25.5		25.5	25.5	
70th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	5.6	83.2	83.2	17.1	94.7		21.7	21.7		21.7	21.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50th %ile Term Code	Gap	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	90.0	90.0	14.2	110.2		17.8	17.8		17.8	17.8	
30th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	99.9	99.9	10.0	115.9		12.1	12.1		12.1	12.1	
10th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 127 (91%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	920	178	152	1006	108	152	36	170	72	58	45
Future Volume (veh/h)	25	920	178	152	1006	108	152	36	170	72	58	45
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	1794	1766	1866	1794	1766	1766	1779	1779	1711	1837	1911	1807
Adj Flow Rate, veh/h	25	929	180	154	1016	109	154	36	172	73	59	45
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	0	0	2	2	0	0	0	0	0	7
Cap, veh/h	50	1921	905	193	2006	215	256	56	266	153	209	159
Arrive On Green	0.03	0.57	0.57	0.11	0.66	0.64	0.21	0.21	0.19	0.21	0.21	0.19
Sat Flow, veh/h	1709	3356	1582	1709	3057	328	1295	268	1281	1217	1006	767
Grp Volume(v), veh/h	25	929	180	154	557	568	154	0	208	73	0	104
Grp Sat Flow(s),veh/h/ln	1709	1678	1582	1709	1678	1707	1295	0	1549	1217	0	1773
Q Serve(g_s), s	2.0	22.9	7.7	12.3	24.0	24.1	15.9	0.0	17.3	8.2	0.0	7.0
Cycle Q Clear(g_c), s	2.0	22.9	7.7	12.3	24.0	24.1	22.9	0.0	17.3	25.5	0.0	7.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.83	1.00		0.43
Lane Grp Cap(c), veh/h	50	1921	905	193	1101	1120	256	0	321	153	0	368
V/C Ratio(X)	0.50	0.48	0.20	0.80	0.51	0.51	0.60	0.00	0.65	0.48	0.00	0.28
Avail Cap(c_a), veh/h	134	1921	905	342	1101	1120	283	0	354	179	0	405
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.9	17.7	14.4	60.5	12.4	12.5	56.3	0.0	51.6	62.5	0.0	47.1
Incr Delay (d2), s/veh	2.8	0.9	0.5	2.8	1.7	1.6	1.7	0.0	2.4	0.8	0.0	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	1.6	13.5	5.0	9.2	13.6	13.9	9.2	0.0	11.4	4.7	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	18.6	14.9	63.4	14.1	14.2	58.0	0.0	54.0	63.4	0.0	47.2
LnGrp LOS	E	B	B	E	B	B	E		D	E		D
Approach Vol, veh/h		1134			1279			362			177	
Approach Delay, s/veh		19.1			20.0			55.7			53.9	
Approach LOS		B			C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.8	85.1		34.0	9.1	96.8		34.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	27.0	64.0		31.0	10.0	81.0		31.0				
Max Q Clear Time (g_c+I1), s	14.8	25.4		25.4	4.5	26.6		28.0				
Green Ext Time (p_c), s	0.1	0.9		0.2	0.0	0.6		0.0				

Intersection Summary		
HCM 6th Ctrl Delay, s/veh		26.1
HCM 6th LOS		C

Notes

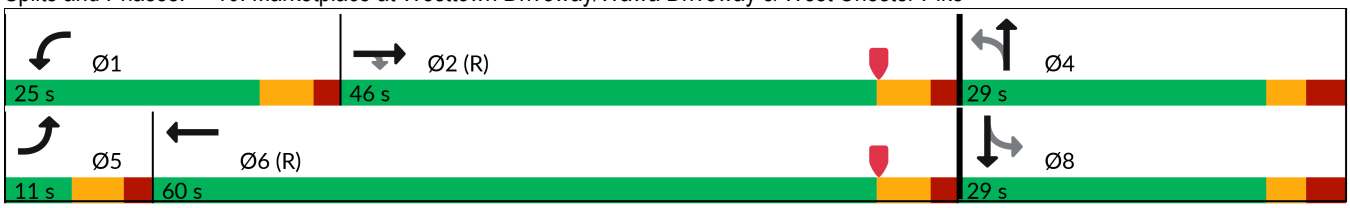
User approved pedestrian interval to be less than phase max green.

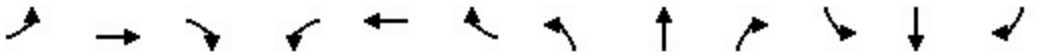
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	786	180	160	736	126	138	26	180	55	26	65
Future Volume (vph)	24	786	180	160	736	126	138	26	180	55	26	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	12	12	12	12	11	14	14
Grade (%)		1%			1%			4%			-1%	
Storage Length (ft)	200		350	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	100			55			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.978			0.869			0.892	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3257	1507	1701	3300	0	1676	1533	0	1582	1721	0
Flt Permitted	0.950			0.950			0.697			0.389		
Satd. Flow (perm)	1701	3257	1507	1701	3300	0	1230	1533	0	648	1721	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182		31			182			66	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1190			1057			544			469	
Travel Time (s)		18.0			16.0			14.8			12.8	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	1%	1%	0%	1%	0%	0%	0%	0%	5%	0%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases			2				4			8		
Detector Phase	5	2	2	1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	33.0	33.0	11.0	33.0		11.0	11.0		11.0	11.0	
Total Split (s)	11.0	46.0	46.0	25.0	60.0		29.0	29.0		29.0	29.0	
Total Split (%)	11.0%	46.0%	46.0%	25.0%	60.0%		29.0%	29.0%		29.0%	29.0%	
Maximum Green (s)	5.0	40.0	40.0	19.0	54.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-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	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Recall Mode	None	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Don't Walk (s)		20.0	20.0		20.0		27.0	27.0		27.0	27.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
90th %ile Green (s)	5.0	41.2	41.2	18.7	54.9		22.1	22.1		22.1	22.1	
90th %ile Term Code	Max	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
70th %ile Green (s)	5.0	48.7	48.7	15.4	59.1		17.9	17.9		17.9	17.9	
70th %ile Term Code	Max	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
50th %ile Green (s)	0.0	54.1	54.1	13.0	73.1		14.9	14.9		14.9	14.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
30th %ile Green (s)	0.0	59.4	59.4	10.7	76.1		11.9	11.9		11.9	11.9	
30th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	
10th %ile Green (s)	0.0	67.3	67.3	7.3	80.6		7.4	7.4		7.4	7.4	
10th %ile Term Code	Skip	Coord	Coord	Gap	Coord		Gap	Gap		Hold	Hold	

Intersection Summary
Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 48 (48%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	786	180	160	736	126	138	26	180	55	26	65
Future Volume (veh/h)	24	786	180	160	736	126	138	26	180	55	26	65
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	1794	1780	1780	1794	1780	1794	1711	1711	1711	1766	1911	1911
Adj Flow Rate, veh/h	24	794	182	162	743	127	139	26	182	56	26	66
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	1	1	0	1	0	0	0	0	5	0	0
Cap, veh/h	59	1734	773	215	1745	298	281	39	274	167	101	257
Arrive On Green	0.03	0.51	0.51	0.13	0.60	0.58	0.21	0.21	0.19	0.21	0.21	0.19
Sat Flow, veh/h	1709	3383	1509	1709	2889	494	1259	185	1293	1170	478	1214
Grp Volume(v), veh/h	24	794	182	162	435	435	139	0	208	56	0	92
Grp Sat Flow(s),veh/h/ln	1709	1691	1509	1709	1691	1692	1259	0	1478	1170	0	1692
Q Serve(g_s), s	1.4	15.0	6.7	9.2	13.7	13.9	10.4	0.0	13.0	4.6	0.0	4.6
Cycle Q Clear(g_c), s	1.4	15.0	6.7	9.2	13.7	13.9	14.9	0.0	13.0	17.6	0.0	4.6
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.88	1.00		0.72
Lane Grp Cap(c), veh/h	59	1734	773	215	1021	1022	281	0	313	167	0	358
V/C Ratio(X)	0.41	0.46	0.24	0.75	0.43	0.43	0.50	0.00	0.66	0.33	0.00	0.26
Avail Cap(c_a), veh/h	103	1734	773	342	1021	1022	316	0	355	200	0	406
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.3	15.5	13.5	42.2	10.6	10.7	39.1	0.0	37.0	44.3	0.0	33.5
Incr Delay (d2), s/veh	1.7	0.9	0.7	2.0	1.3	1.3	0.5	0.0	2.7	0.4	0.0	0.1
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	1.1	9.2	4.0	6.9	8.3	8.4	5.8	0.0	8.7	2.5	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	16.4	14.2	44.2	11.9	12.0	39.6	0.0	39.7	44.7	0.0	33.6
LnGrp LOS	D	B	B	D	B	B	D		D	D		C
Approach Vol, veh/h		1000			1032			347			148	
Approach Delay, s/veh		16.8			17.0			39.7			37.8	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.6	56.2		26.2	8.4	65.4		26.2				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	19.0	40.0		23.0	5.0	54.0		23.0				
Max Q Clear Time (g_c+I1), s	11.7	17.5		17.4	3.9	16.4		20.1				
Green Ext Time (p_c), s	0.1	0.8		0.2	0.0	0.4		0.0				

Intersection Summary			
HCM 6th Ctrl Delay, s/veh		21.3	
HCM 6th LOS		C	

Notes

User approved pedestrian interval to be less than phase max green.

Appendix E
Trip Generation Worksheets

Trip Generation Worksheet, *ITE Trip Generation 11th Edition*

DYNAMIC TRAFFIC

Land Use Code: 912 Drive-in Bank
Setting: General Urban/Suburban
Size: 3.294 KSF
Prepared By: SHC
Date: 9/10/2024
Job #: 1478 99-191T

ITE Study Information

Peak Hour	# Studies	Avg. Variable	Distribution In	Distribution Out
Weekday	19	6	50%	50%
AM Peak Street Hour	44	5	58%	42%
PM Peak Street Hour	114	4	50%	50%
AM Generator	51	5	53%	47%
PM Generator	57	5	50%	50%
Saturday	5	3	50%	50%
Saturday Generator	41	4	51%	49%
Sunday	5	3	50%	50%
Sunday Generator	5	3	0%	0%

Trip Generation using ITE Average Rates

Peak Hour	Rate Min.	Rate Avg.	Rate Max.	Rate S.D.	Trip Generation In	Trip Generation Out	Trip Generation Total	
Weekday	32.67	100.35	408.42	66.62	166	165	331	x
AM Peak Street Hour	2.12	9.95	29.47	6.00	19	14	33	x
PM Peak Street Hour	3.04	21.01	109.91	15.13	35	34	69	x
AM Generator	4.18	14.78	47.03	9.60	26	23	49	x
PM Generator	4.54	20.92	68.50	13.57	35	34	69	x
Saturday	42.46	86.48	171.78	38.92	143	142	285	x
Saturday Generator	7.18	26.35	107.00	15.32	44	43	87	x
Sunday	23.41	31.96	69.31	15.99	53	52	105	x
Sunday Generator	3.68	4.79	7.43	1.21	-	-	16	x

Trip Generation using ITE Equations

Peak Hour	Equation	R^2 value	Effective Rate	Trip Generation In	Trip Generation Out	Trip Generation Total
Weekday	*Not Given*		-	-	-	-
AM Peak Street Hour	*Not Given*		-	-	-	-
PM Peak Street Hour	*Not Given*		-	-	-	-
AM Generator	*Not Given*		-	-	-	-
PM Generator	*Not Given*		-	-	-	-
Saturday	*Not Given*		-	-	-	-
Saturday Generator	*Not Given*		-	-	-	-
Sunday	*Not Given*		-	-	-	-
Sunday Generator	*Not Given*		-	-	-	-

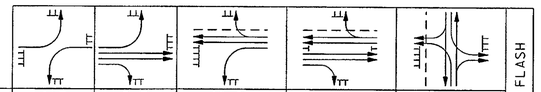
ITE Land Use Subcategory Description and/or DTraffic Comments:

Appendix F
Traffic Signal Permit Plans

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0003	GLG	22 OF 121
	WESTTOWN TOWNSHIP			
PERMIT NO. #2067		PAGE 13 OF 112		
DATE ISSUED		DATE REVISED		

REVISION NUMBER	REVISIONS	DATE	BY

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM



PHASE	1+5			2+5			1+6				2+6				4+8				FLASH
SIGNAL INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	G①	Y①	R①	R	R	R	G①	G①	Y①	R	R	R	R	R	R	R	R	R	OFF
2,9	R	R	R	R	R	R	G	G	Y②	R②	G	G	Y②	R②	R	R	R	R	Y
3	G①	Y②	R②	G①	Y①	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF
4,10	R	R	R	G	Y	R②	R	R	R	R	G	G	Y②	R②	R	R	R	R	Y
5,6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	R
7,8	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	R
12,13	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF
14,15	H	H	H	H	H	H	M	FH③	H③	H③	M	FH③	H③	H③	H	H	H	H	OFF

FIXED		4	2		4	2		4	2		4	2				3	3		
MINIMUM	5			5			5			10				5					
PASSAGE	1++			1++			1++			1++				1++					
MAX 1	7			7			7			50				31					
MAX 2																			
PEDESTRIAN*							④			7	20			7	27				
MEMORY	NL			NL			NL			SVR				NL					

SYSTEM NOTE

REFER TO SYSTEM PERMIT #1-0181
ADAPTIVE OPERATION

• PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL
* UPON PEDESTRIAN ACTUATION, OTHERWISE HAND SYMBOL AT ALL TIMES

OPERATION NOTES

① R/G IF FOLLOWED BY 1+6
② R/G IF FOLLOWED BY 2+5
③ G IF FOLLOWED BY 2+6
④ TIMING WILL BE AS SHOWN IN PHASE 2+6. IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6
⑤ G IF FOLLOWED BY 1+6
⑥ G IF FOLLOWED BY 2+5
⑦ M IF FOLLOWED BY 2+6
⑧ M IF FOLLOWED BY 1+6

• PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR

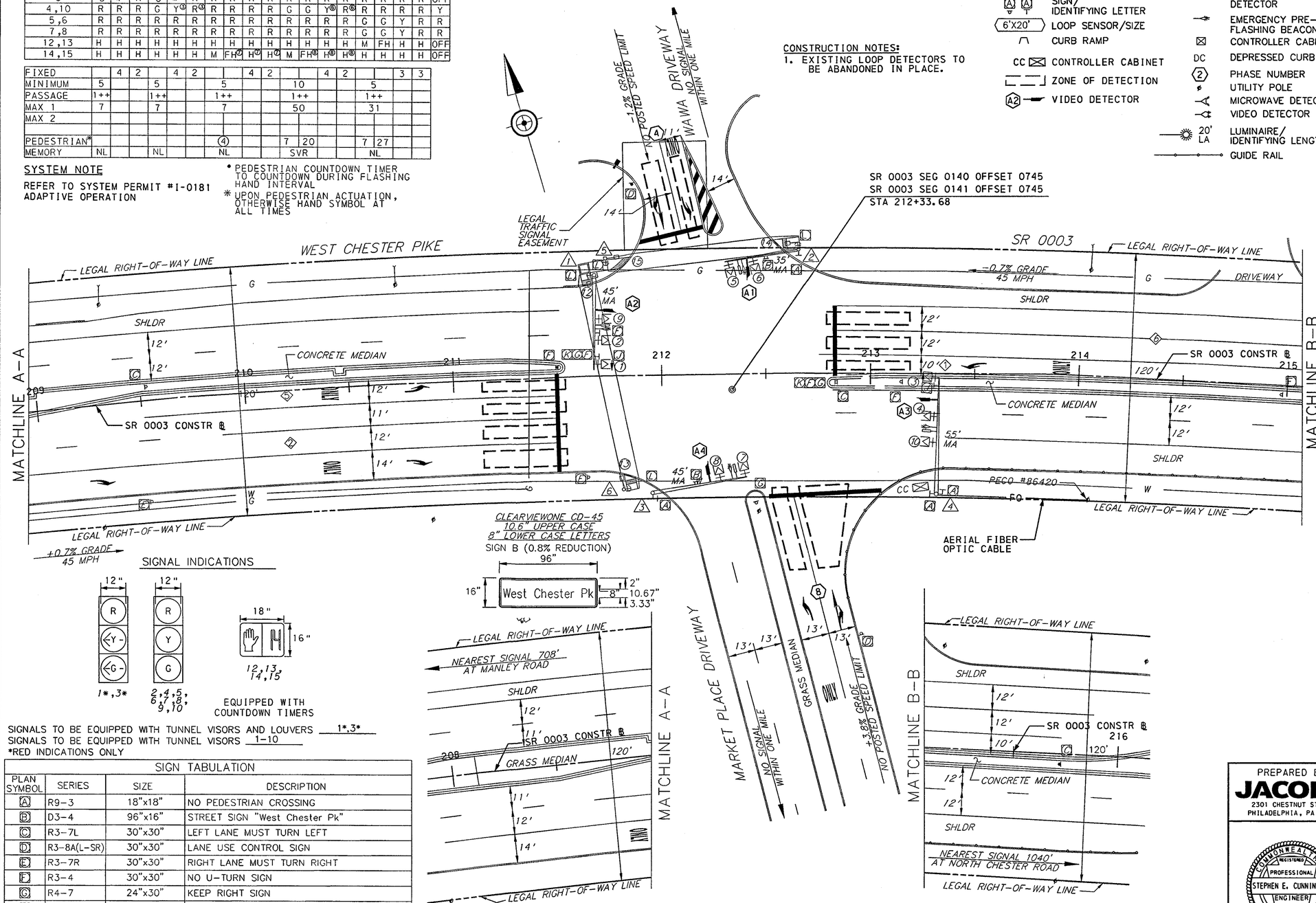
++ PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR

LEGEND

- 25' MA — MAST ARM/ IDENTIFYING LENGTH
- ④ — SIGNAL HEAD/ IDENTIFYING NUMBER
- ④ — PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- A — PEDESTRIAN PUSHBUTTON/ SIGN WITH IDENTIFYING LETTER
- A A — SIGN/ IDENTIFYING LETTER
- 6'X20' — LOOP SENSOR/SIZE
- CURB RAMP
- CC — CONTROLLER CABINET
- ZONE OF DETECTION
- A2 — VIDEO DETECTOR
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- CONTROLLER CABINET
- DC — DEPRESSED CURB
- ② — PHASE NUMBER
- UTILITY POLE
- MICROWAVE DETECTOR
- VIDEO DETECTOR
- 20' LA — LUMINAIRE/ IDENTIFYING LENGTH
- GUIDE RAIL

CONSTRUCTION NOTES:

1. EXISTING LOOP DETECTORS TO BE ABANDONED IN PLACE.



SIGNAL INDICATIONS

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS AND LOUVERS 1*,3*
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 1-10
*RED INDICATIONS ONLY

SIGN TABULATION

PLAN SYMBOL	SERIES	SIZE	DESCRIPTION
A	R9-3	18"x18"	NO PEDESTRIAN CROSSING
B	D3-4	96"x16"	STREET SIGN "West Chester Pk"
C	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
D	R3-8A(L-SR)	30"x30"	LANE USE CONTROL SIGN
E	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
F	R3-4	30"x30"	NO U-TURN SIGN
G	R4-7	24"x30"	KEEP RIGHT SIGN
J	R10-10L	30"x36"	LEFT TURN SIGNAL
K	OM1-3	18"x18"	OBJECT MARKER
L	R10-3E	9" x 15"	EDUCATIONAL PUSH BUTTON SIGN ←OR→

CONSTRUCTION NOTES

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ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212.

POST MOUNTED SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER; AND 8 FEET ABOVE SIDEWALK OR PAVEMENT GRADE.

OVERHEAD SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER. PROVIDE A MINIMUM SIGNAL HEAD CLEARANCE OF 16 FEET ABOVE ROADWAY; RIGIDLY MOUNT, TOP AND BOTTOM; AND EQUIP WITH BACKPLATES. PROVIDE A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNALS AS MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE WITH A PENNDOT REPRESENTATIVE, THE EXACT LOCATION OF DETECTORS PRIOR TO INSTALLATION.

CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

COMPLY WITH PROVISIONS OF ACT 181, FOR PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED MARCH 29, 2007.

ALL DESIGNERS AND CONTRACTORS UTILIZING THIS PLAN AND THE INFORMATION CONTAINED THEREON ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 181, ENTITLED "UNDERGROUND UTILITY LINE PROTECTION LAW", (AMENDS PENNSYLVANIA ACT 187). ANY INFORMATION APPEARING ON THESE DRAWINGS AS TO THE UNDERGROUND LINES OF A USER, SUCH AS A PUBLIC UTILITY, HAS BEEN INCORPORATED HEREON PURSUANT TO SAID PENNSYLVANIA ACT 181. THIS INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM REFERENCE SERIAL #20163550718 ISSUED ON 12/20/2016.

JACOBS ENGINEERING GROUP, INC. HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION. ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND MUST BE VERIFIED PRIOR TO CONSTRUCTION.

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

CALL BEFORE YOU DIG !

PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE
AND 10 WORKING DAYS IN DESIGN STAGE
BEFORE YOU DIG CALL
THE PA ONE CALL SYSTEM TELEPHONE NUMBER.

1-800-242-1776

SYSTEM PERMIT # I-0181

COUNTY: CHESTER
MUNICIPALITY: WESTTOWN TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003) & MARKET PLACE DRIVEWAY / WAWA DRIVEWAY

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103

REVIEWED:
MUNICIPAL OFFICIAL — DATE 8/10/17

RECOMMENDED:
DISTRICT TRAFFIC ENGINEER — DATE 11/22/17

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — STEPHEN E. CUNNINGHAM — ENGINEER — PE061714

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DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0003	GLG	23 OF 121
WESTTOWN TOWNSHIP				
PERMIT NO. #2067		PAGE 14 OF 112		
DATE ISSUED		DATE REVISED		

REVISION NUMBER	REVISIONS	DATE	BY

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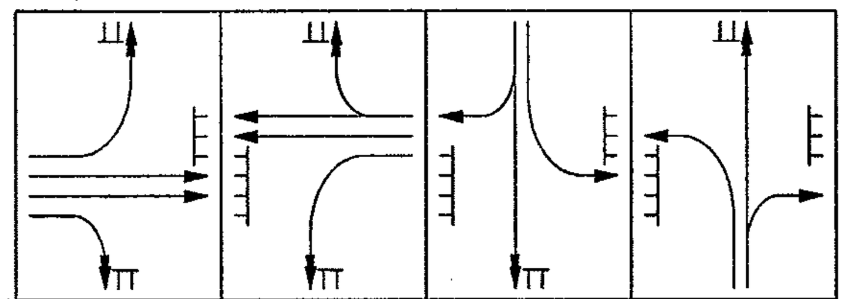
EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM



PHASE	2			6			4			8		
SIGNALS \ INTERVAL	19	20	21	22	23	24	25	26	27	28	29	30
1	R	R	R	←G	←Y	R	R	R	R	R	R	R
2,9	R	R	R	G	Y◎	R◎	R	R	R	R	R	R
3	←G	←Y	R	R	R	R	R	R	R	R	R	R
4,10	G	Y◎	R◎	R	R	R	R	R	R	R	R	R
5,6	R	R	R	R	R	R	R	R	R	G	Y	R
7,8	R	R	R	R	R	R	G	Y	R	R	R	R
12,13	H	H	H	H	H	H	H	H	H	H	H	H
14,15	H	H	H	H	H	H	H	H	H	H	H	H
FIXED	▲	4	2	▲	4	2	▲	3	3	▲	3	3

▲ FOR DURATION OF PRE-EMPTION

NOTE:
IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "OO" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

◎ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF THE MARKET PLACE DRIVEWAY, THE SOUTHBOUND APPROACH OF THE WAWA DRIVEWAY AND THE EASTBOUND AND WESTBOUND APPROACHES OF WEST CHESTER PIKE (SR 0003) WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2+5, 1+6, 2, OR 6) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE 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 11 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

MISCELLANEOUS			
ITEM NO.	QUANTITY	UNIT	DESCRIPTION
0956-0011	1	EACH	DETECTOR CARD RACK ASSEMBLY
9000-0005	1	EACH	MANAGED NETWORK SWITCH
9000-0006	1	EACH	FIBER OPTIC TERMINATION PANEL (FTP)
9000-0008	1	EACH	TRAFFIC ADAPTIVE SYSTEM, 4 APPROACHES
9000-0010	1	EACH	INSTALLATION OF TRAFFIC ADAPTIVE SYSTEM, 4 APPROACHES
9000-0012	1	EACH	FIBER OPTIC CABLE SPLICE ENCLOSURE

CONSTRUCTION NOTES:

1. PROVIDE MAINTENANCE AND PROTECTION OF TRAFFIC.
2. INSTALL TRAFFIC ADAPTIVE HARDWARE AND ETHERNET SWITCH IN EXISTING CABINET. FIELD LOCATE CABINET WITH A PENNDOT AND MUNICIPAL REPRESENTATIVE. CABINET SHALL MEET OR EXCEED APPLICABLE PENNDOT SPECIFICATIONS FOR TRAFFIC SIGNAL CONTROLLER ASSEMBLIES, AND INCLUDE VENTILATION, FILTRATION, AND LIGHTING.
3. INSTALL TRAFFIC ADAPTIVE VIDEO CAMERAS. CAMERA LOCATIONS ARE PRELIMINARY, AND SUBJECT TO CHANGE UPON INITIAL SET-UP. CAMERA LOCATIONS TO BE SPOTTED WITH A MANUFACTURER REPRESENTATIVE, PENNDOT, AND A MUNICIPAL REPRESENTATIVE. ALL EXISTING DETECTION SYSTEMS TO REMAIN IN OPERATION UNTIL SUCH TIME AS THE TRAFFIC ADAPTIVE SYSTEM IS READY FOR ACTIVATION. MINIMIZE SIGNAL OPERATIONS WITHOUT DETECTION.
4. INSTALL TRAFFIC ADAPTIVE VIDEO CAMERA CABLE(S) IN EXISTING CONDUIT, UNLESS OTHERWISE DIRECTED BY PENNDOT OR MUNICIPAL REPRESENTATIVE.
5. INSTALL NEW DETECTOR CARD RACK ASSEMBLY IN EXISTING CONTROLLER CABINET FOR VIDEO INPUT.
6. INSTALL FIBER OPTIC CABLE AERIALLY FROM UTILITY POLE, AS SHOWN ON PLAN. REFER TO INTERCONNECT PLAN FOR CABLE ROUTING BETWEEN INTERSECTIONS.
7. INSTALL FIBER OPTIC MODEM, PATCH PANEL AND SPLICE ENCLOSURE.

SYSTEM PERMIT # 1-0181

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
STEPHEN E. CUNNINGHAM
PE061714

COUNTY: CHESTER

MUNICIPALITY: WESTTOWN TOWNSHIP

INTERSECTION: WEST CHESTER PIKE (SR 0003) & MARKET PLACE DRIVEWAY / WAWA DRIVEWAY

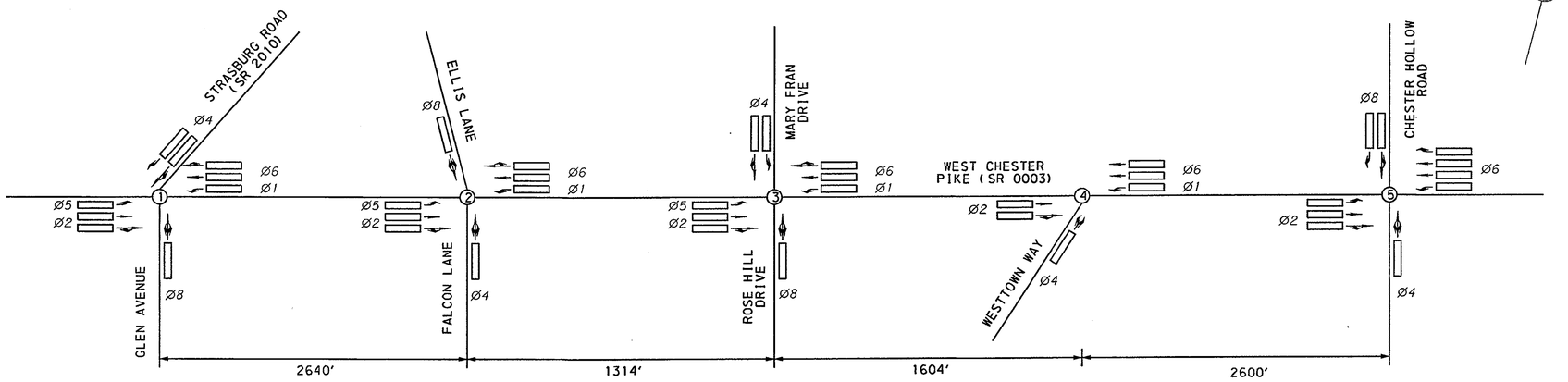
REVIEWED: [illegible] 8/10/17
MUNICIPAL OFFICIAL DATE

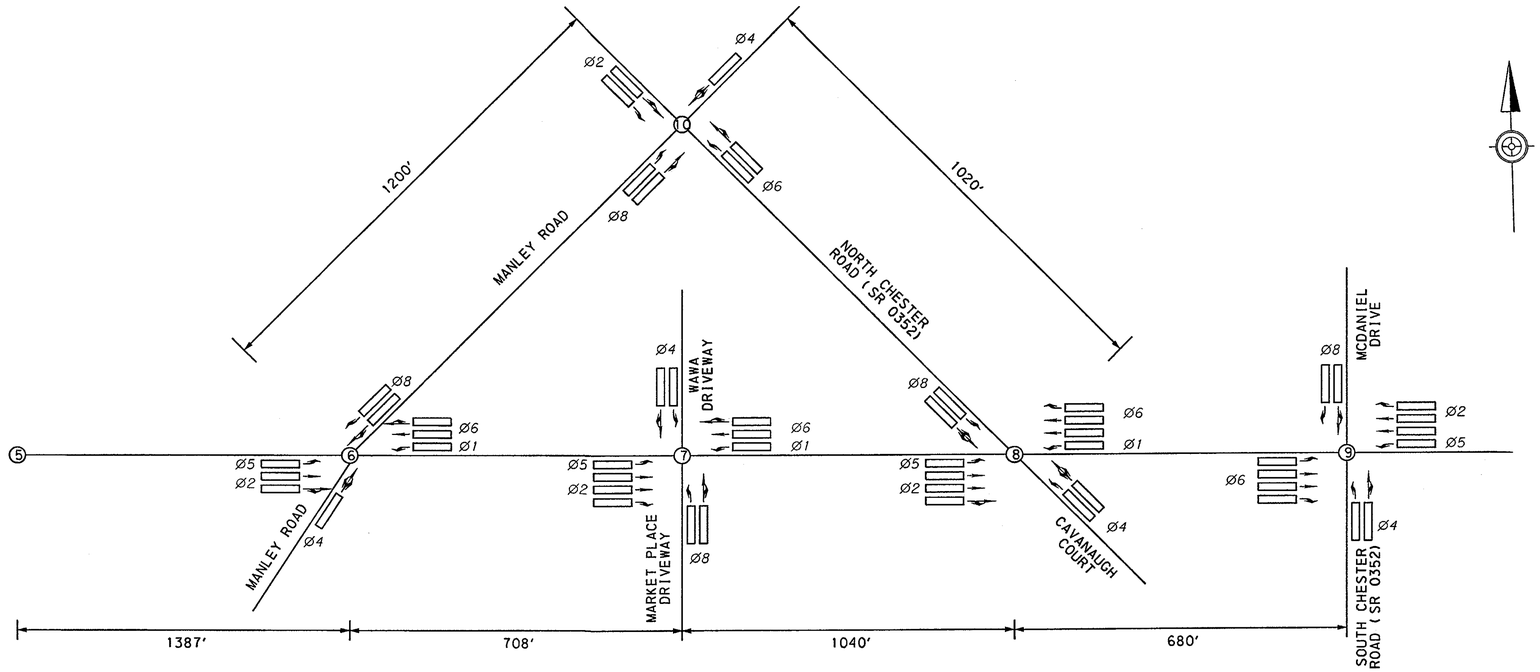
RECOMMENDED: [illegible] 11/22/17
DISTRICT TRAFFIC ENGINEER [illegible] 11/22/17 DATE

0 25 50 FEET

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0003/0352	GLG	30 OF 121
EAST GOSHEN, WEST GOSHEN & WESTTOWN TOWNSHIPS				
PERMIT NO. * 1-0181		PAGE 21 OF 112		
DATE ISSUED		DATE REVISED		

REVISION NUMBER	REVISIONS	DATE	BY





LEGEND

① INTERSECTION ADDRESS

Ø1 PHASE NUMBER

NOT TO SCALE

CONSTRUCTION NOTES

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3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE
AND 10 WORKING DAYS IN DESIGN STAGE
BEFORE YOU DIG CALL
THE PA ONE CALL SYSTEM TELEPHONE NUMBER.

1-800-242-1776

SYSTEM PERMIT * 1-0181

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — STEPHEN E. CUNNINGHAM — PE061714

COUNTY: CHESTER

MUNICIPALITY: EAST GOSHEN, WEST GOSHEN, AND WESTTOWN TOWNSHIPS

INTERSECTION: WEST CHESTER PIKE CORRIDOR

REVIEWED: R.J.P. 8-10-17
MUNICIPAL OFFICIAL DATE

RECOMMENDED: 11/22/17
DISTRICT TRAFFIC ENGINEER 11/22/17 DATE

SYSTEM PERMIT PLAN

7/24/2017
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$TIME$

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0003/0352	GLG	30 OF 121
EAST GOSHEN, WEST GOSHEN, & WESTTOWN TOWNSHIPS				
PERMIT NO. * I-08181		PAGE 21 OF 112		
DATE ISSUED		DATE REVISED		

REVISION NUMBER	REVISIONS	DATE	BY

BACKUP WEEKLY TIMING PROGRAMS

	PROGRAM 1 = AM		PHASE									
	INTERSECTIONS	FILE *	1	2	3	4	5	6	7	8	CYCLE	OFFSET *1
1	WEST CHESTER PIKE & STRASBURG ROAD / GLEN AVENUE	1716	14 (LEAD)	58		30	33 (LEAD)	58		30	120	
2	WEST CHESTER PIKE & ELLIS LANE / FALCON LANE	1717	17 (LEAD)	42		31(SPLIT)	17 (LEAD)	42		32(SPLIT)	101	
3	WEST CHESTER PIKE & MARY FRAN DRIVE / ROSE HILL DRIVE	3354	22 (LEAD)	60		27	22 (LEAD)	60		27	109	
4	WEST CHESTER PIKE & WESTTOWN WAY	2273	17	67				67		41	125	
5	WEST CHESTER PIKE & CHESTER HOLLOW ROAD	2396		82		18		82		18	100	53
6	WEST CHESTER PIKE & MANLEY ROAD	2470	14 (LEAD)	61		21(SPLIT)	21 (LEAD)	54		24(SPLIT)	120	23
7	WEST CHESTER PIKE & WAWA DRIVE / MARKET PLACE DRIVE	2067	16 (LEAD)	74		30	16 (LEAD)	74		30	120	30
8	WEST CHESTER PIKE & NORTH CHESTER ROAD	0349	13 (LEAD)	51		17(SPLIT)	13 (LEAD)	51		39(SPLIT)	120	24
9	WEST CHESTER PIKE & SOUTH CHESTER ROAD	2806		69		38(SPLIT)	12 (LEAD)	57		13(SPLIT)	120	24
10	NORTH CHESTER ROAD & MANLEY ROAD	2393		41		19		41		19	60	0
	PROGRAM 2 = PM		PHASE									
	INTERSECTIONS	FILE *	1	2	3	4	5	6	7	8	CYCLE	OFFSET *1
1	WEST CHESTER PIKE & STRASBURG ROAD / GLEN AVENUE	1716	14 (LEAD)	53		30	22 (LEAD)	53		30	106	
2	WEST CHESTER PIKE & ELLIS LANE / FALCON LANE	1717	14 (LEAD)	42		21(SPLIT)	14 (LEAD)	42		22(SPLIT)	91	
3	WEST CHESTER PIKE & MARY FRAN DRIVE / ROSE HILL DRIVE	3354	17 (LEAD)	55		27	17 (LEAD)	55		27	99	
4	WEST CHESTER PIKE & WESTTOWN WAY	2273	14	62				62		36	112	
5	WEST CHESTER PIKE & CHESTER HOLLOW ROAD	2396		82		18		82		18	100	53
6	WEST CHESTER PIKE & MANLEY ROAD	2470	19 (LEAD)	79		21(SPLIT)	17 (LEAD)	81		21(SPLIT)	140	128
7	WEST CHESTER PIKE & WAWA DRIVE / MARKET PLACE DRIVE	2067	33 (LEAD)	70		37	16 (LEAD)	87		37	140	127
8	WEST CHESTER PIKE & NORTH CHESTER ROAD	0349	15 (LEAD)	64		16(SPLIT)	15 (LEAD)	64		45(SPLIT)	140	132
9	WEST CHESTER PIKE & SOUTH CHESTER ROAD	2806		87		39(SPLIT)	12 (LEAD)	75		14(SPLIT)	140	47
10	NORTH CHESTER ROAD & MANLEY ROAD	2393		49		21		49		21	70	0
	PROGRAM 3 = MIDDAY		PHASE									
	INTERSECTIONS	FILE *	1	2	3	4	5	6	7	8	CYCLE	OFFSET *1
1	WEST CHESTER PIKE & STRASBURG ROAD / GLEN AVENUE	1716	14 (LEAD)	53		30	22 (LEAD)	53		30	106	
2	WEST CHESTER PIKE & ELLIS LANE / FALCON LANE	1717	14 (LEAD)	42		21(SPLIT)	14 (LEAD)	42		22(SPLIT)	91	
3	WEST CHESTER PIKE & MARY FRAN DRIVE / ROSE HILL DRIVE	3354	17 (LEAD)	55		27	17 (LEAD)	55		27	99	
4	WEST CHESTER PIKE & WESTTOWN WAY	2273	14	62				62		36	112	
5	WEST CHESTER PIKE & CHESTER HOLLOW ROAD	2396		62		18		62		18	80	33
6	WEST CHESTER PIKE & MANLEY ROAD	2470	14 (LEAD)	44		21(SPLIT)	14 (LEAD)	44		21(SPLIT)	100	50
7	WEST CHESTER PIKE & WAWA DRIVE / MARKET PLACE DRIVE	2067	28 (LEAD)	40		32	17 (LEAD)	51		32	100	48
8	WEST CHESTER PIKE & NORTH CHESTER ROAD	0349	13 (LEAD)	38		24(SPLIT)	13 (LEAD)	38		25(SPLIT)	100	43
9	WEST CHESTER PIKE & SOUTH CHESTER ROAD	2806		53		33(SPLIT)	13 (LEAD)	40		14(SPLIT)	100	4
10	NORTH CHESTER ROAD & MANLEY ROAD	2393		24		26		24		26	50	0

NOTES:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX II, CLEARANCE AND PED TIMES.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF YELLOW (PHASE 2+6).

BACKUP WEEKLY PROGRAM CHART

EVENT	▲DAY	TIME	PROGRAM*	REMARKS
1	1-7	0000	MAX 1	--
2	1-5	0600	1	--
3	1-5	1000	3	--
4	1-5	1500	2	--
5	1-7	1900	MAX 1	--
6	6,7	1000	3	--
7	6,7	1300	MAX 1	--

▲ DAY 1 = MONDAY
• MAX / FREE WHERE NOTED IN CYCLE / SPLIT / OFFSET MATRIX

SYSTEM NOTES:

1. PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM, TRAFFIC ADAPTIVE SYSTEM, OR TBC BACKUP.
2. SYSTEM LIMITS:
   - WEST CHESTER PIKE (SR 0003) - FROM STRASBURG ROAD TO SOUTH CHESTER ROAD (SR 0352).
   - NORTH CHESTER ROAD (SR 0352) - FROM WEST CHESTER PIKE (SR 0003) TO MANLEY ROAD.
3. PRIMARY COORDINATION : HARD-WIRE COMMUNICATION CABLE (FIBER OPTIC)

   SECONDARY COORDINATION: TIME BASED COORDINATION (DEFAULT TO BACKUP PROGRAM CHART)
4. TRAFFIC ADAPTIVE SYSTEM IS DESIGNED FOR THE INSYNC SYSTEM SOFTWARE.
5. TRAFFIC ADAPTIVE SYSTEM TO UTILIZE RHYTHM ENGINEERING / INSYNC VIDEO DETECTION / TRAFFIC ADAPTIVE SIGNAL CONTROL SYSTEM AT DESIGNATED INTERSECTIONS.
6. TRAFFIC ADAPTIVE SYSTEM SETTINGS TO BE DETERMINED IN THE FIELD UPON ACTIVATION OF THE SYSTEM.

$FILE1$

SYSTEM PERMIT * I-0181

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103

COUNTY: CHESTER
MUNICIPALITY: EAST GOSHEN, WEST GOSHEN, AND WESTTOWN TOWNSHIPS
INTERSECTION: WEST CHESTER PIKE CORRIDOR

REVIEWED:
MUNICIPAL OFFICIAL DATE

RECOMMENDED:
DISTRICT TRAFFIC ENGINEER DATE

SYSTEM PERMIT PLAN

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0003/0352	GLG	32 OF 121
EAST GOSHEN, WEST GOSHEN & WESTTOWN TOWNSHIPS				
PERMIT NO. # 1-0181		PAGE 23 OF 112		
DATE ISSUED		DATE REVISED		

REVISION NUMBER	REVISIONS	DATE	BY

TRAFFIC ADAPTIVE TIMING PROGRAMS

	PROGRAM 1 = AM PEAK		TUNNEL PHASE DURATION										GLOBAL OFFSET		LOCAL OFFSET		TRAVEL TIME TO NEXT INTERSECTION	
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PERIOD	REMARKS	PHASE 2	PHASE 6	PHASE 2	PHASE 6	PHASE 2	PHASE 6
1	WEST CHESTER PIKE & STRASBURG ROAD / GLEN AVENUE	1716	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
2	WEST CHESTER PIKE & ELLIS LANE / FALCON LANE	1717	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
3	WEST CHESTER PIKE & MARY FRAN DRIVE / ROSE HILL DRIVE	3354	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
4	WEST CHESTER PIKE & WESTTOWN WAY	2273	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
5	WEST CHESTER PIKE & CHESTER HOLLOW ROAD	2396	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
6	WEST CHESTER PIKE & MANLEY ROAD	2470	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
7	WEST CHESTER PIKE & WAWA DRIVE / MARKET PLACE DRIVE	2067	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
8	WEST CHESTER PIKE & NORTH CHESTER ROAD	0349	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
9	WEST CHESTER PIKE & SOUTH CHESTER ROAD	2806	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
10		2393	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
	PROGRAM 2 = OFF PEAK		TUNNEL PHASE DURATION															
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8								
1	WEST CHESTER PIKE & STRASBURG ROAD / GLEN AVENUE	1716	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
2	WEST CHESTER PIKE & ELLIS LANE / FALCON LANE	1717	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
3	WEST CHESTER PIKE & MARY FRAN DRIVE / ROSE HILL DRIVE	3354	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
4	WEST CHESTER PIKE & WESTTOWN WAY	2273	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
5	WEST CHESTER PIKE & CHESTER HOLLOW ROAD	2396	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
6	WEST CHESTER PIKE & MANLEY ROAD	2470	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
7	WEST CHESTER PIKE & WAWA DRIVE / MARKET PLACE DRIVE	2067	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
8	WEST CHESTER PIKE & NORTH CHESTER ROAD	0349	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
9	WEST CHESTER PIKE & SOUTH CHESTER ROAD	2806	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
10		2393	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
	PROGRAM 3 = PM PEAK		TUNNEL PHASE DURATION															
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8								
1	WEST CHESTER PIKE & STRASBURG ROAD / GLEN AVENUE	1716	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
2	WEST CHESTER PIKE & ELLIS LANE / FALCON LANE	1717	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
3	WEST CHESTER PIKE & MARY FRAN DRIVE / ROSE HILL DRIVE	3354	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
4	WEST CHESTER PIKE & WESTTOWN WAY	2273	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
5	WEST CHESTER PIKE & CHESTER HOLLOW ROAD	2396	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
6	WEST CHESTER PIKE & MANLEY ROAD	2470	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
7	WEST CHESTER PIKE & WAWA DRIVE / MARKET PLACE DRIVE	2067	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
8	WEST CHESTER PIKE & NORTH CHESTER ROAD	0349	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
9	WEST CHESTER PIKE & SOUTH CHESTER ROAD	2806	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
10		2393	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
	PROGRAM 4 = WEEKEND		TUNNEL PHASE DURATION															
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8								
1	WEST CHESTER PIKE & STRASBURG ROAD / GLEN AVENUE	1716	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
2	WEST CHESTER PIKE & ELLIS LANE / FALCON LANE	1717	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
3	WEST CHESTER PIKE & MARY FRAN DRIVE / ROSE HILL DRIVE	3354	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
4	WEST CHESTER PIKE & WESTTOWN WAY	2273	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
5	WEST CHESTER PIKE & CHESTER HOLLOW ROAD	2396	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
6	WEST CHESTER PIKE & MANLEY ROAD	2470	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
7	WEST CHESTER PIKE & WAWA DRIVE / MARKET PLACE DRIVE	2067	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
8	WEST CHESTER PIKE & NORTH CHESTER ROAD	0349	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
9	WEST CHESTER PIKE & SOUTH CHESTER ROAD	2806	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--
10		2393	----	----	----	----	----	----	----	----	--	--	--	--	--	--	--	--

NOTES:

- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2, CLEARANCE AND PED TIMES.
- FACILITATOR INTERSECTION:
- GLOBAL OFFSET: VALUE IN SECONDS THAT OFFSETS A TUNNEL GLOBALLY AT THE FACILITATOR INTERSECTION.
- LOCAL OFFSET: TUNNEL OFFSET AT INTERSECTION.
- TRAVEL TIME TO NEXT INTERSECTION: VALUE FOR TRAVEL TIME OF THE CHOSEN TUNNEL TO THE CORRESPONDING TUNNEL AT THE NEXT INTERSECTION.
* REFER TO TRAFFIC ADAPTIVE WEEKLY PROGRAM CHART --.

ADAPTIVE TIMING PROGRAMS AND SETTINGS TO BE PROVIDED BY SYSTEM MANUFACTURER.

TRAFFIC ADAPTIVE WEEKLY PROGRAM CHART 1

EVENT	DAY	TIME	PROGRAM	REMARKS
--	--	--	--	--
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--	--	--	--	--
--	--	--	--	--
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--	--	--	--	--
--	--	--	--	--

* DAY 1 = MONDAY
** INTERSECTION OF ---- & ---- TO GO INTO FLASHING OPERATION

TRAFFIC ADAPTIVE WEEKLY PROGRAM CHART 2

EVENT	DAY	TIME	PROGRAM	REMARKS
--	--	--	--	--
--	--	--	--	--
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--	--	--	--	--
--	--	--	--	--

* DAY 1 = MONDAY
** INTERSECTION OF ---- & ---- TO GO INTO FLASHING OPERATION

SYSTEM PERMIT # 1-0181

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER STEPHEN E. CUNNINGHAM PE061714

COUNTY: CHESTER
MUNICIPALITY: EAST GOSHEN, WEST GOSHEN, AND WESTTOWN TOWNSHIPS
INTERSECTION: WEST CHESTER PIKE CORRIDOR

REVIEWED: 8-10-17
MUNICIPAL OFFICIAL DATE

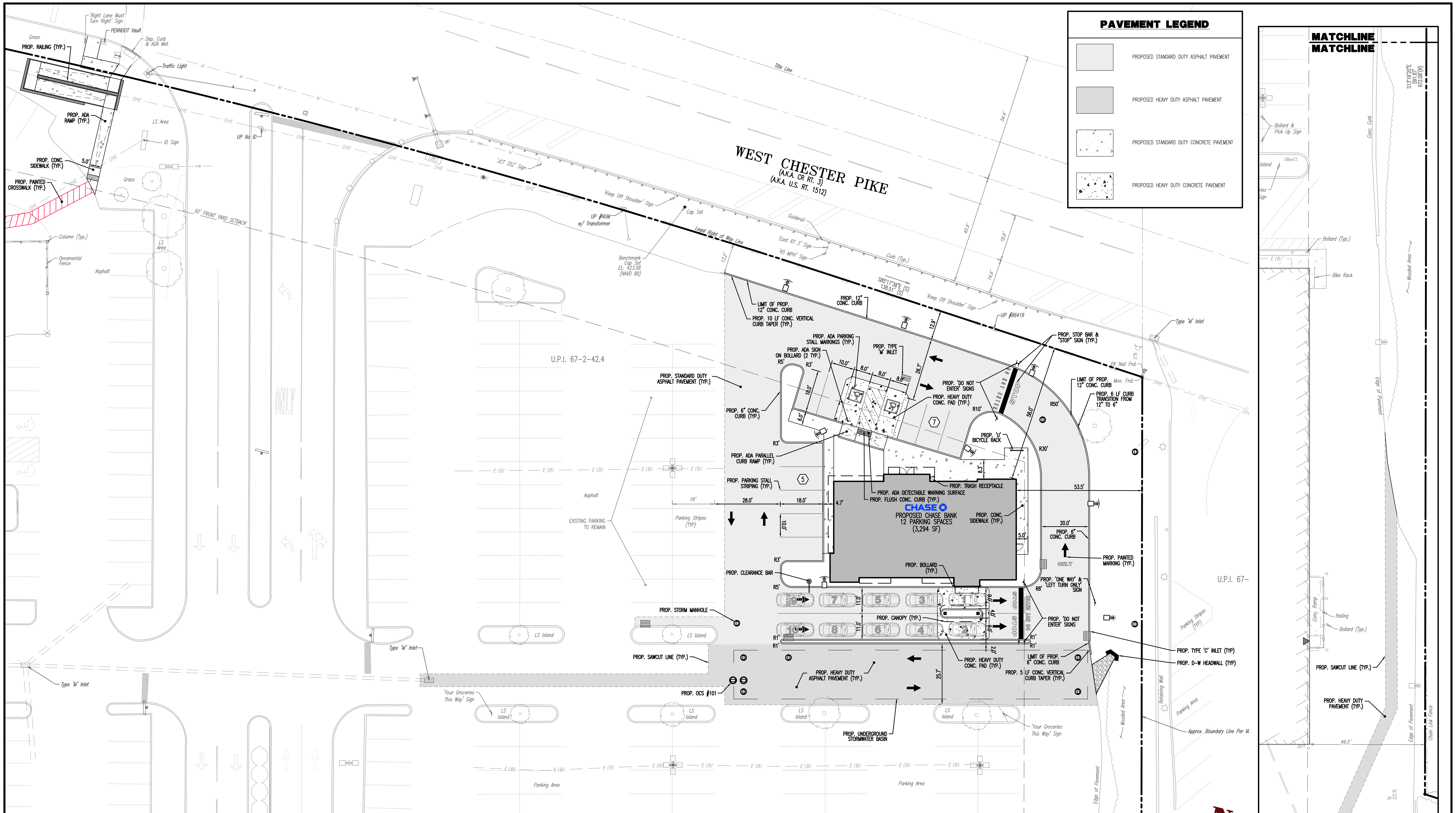
RECOMMENDED: 11/22/17
DISTRICT TRAFFIC ENGINEER 11/22/17 DATE

SYSTEM PERMIT PLAN

7/24/2017 3:41:18 PM

J:\2016 Projects\E3X45704\700CADD\713TRA\CD02 - Project #08\Plan Sheets\GLG-ChesDel-CD02_TS_SYSTM_0023.dgn

Appendix G
Site Plans



CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	409.48'	2959.83'	7°55'36"	N89°10'06"W	409.15'
C2	700.51'	3759.83'	10°40'30"	N89°22'07"E	699.50'

PAVEMENT LEGEND

- PROPOSED STANDARD DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT
- PROPOSED STANDARD DUTY CONCRETE PAVEMENT
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT

STANDARD GRAPHIC LEGEND

- PROPERTY LINE (PARCEL IN QUESTION)
- OFF-SITE PROPERTY LINES
- EXIST. CABLE LINE
- EXIST. ELECTRIC LINE
- EXIST. FIBER OPTIC LINE
- EXIST. GAS LINE
- EXIST. OVERHEAD WIRES
- EXIST. TELEPHONE LINE
- EXIST. UNDERGROUND ELEC./TELE. SERVICE (NO. & SIZE OF CONDUITS NOT DEFINED)
- EXIST. WATER LINE
- EXIST. SANITARY SEWER LINE
- EXIST. STORM DRAIN LINE
- PROP. CHAIN-LINK FENCE
- PROP. GUIDERAIL
- EXIST. FIRE HYDRANT
- EXIST. WATER VALVE
- EXIST. GAS VALVE
- EXIST. GAS METER
- EXIST. ELECTRIC METER
- EXIST. ELECTRIC BOX
- EXIST. CLEAN OUT
- EXIST. WELL
- EXIST. WATER SHUT OFF VALVE
- EXIST. TELEPHONE BOX
- EXIST. CABLE TV BOX
- EXIST. UTILITY POLE
- EXIST. GUY WIRE
- EXIST. LIGHT POLE
- EXIST. BUILDING LIGHT
- EXIST. SHOE BOX LIGHT
- EXIST. COBRA LIGHT POLE
- EXIST. TRAFFIC SIGNAL POLE
- EXIST. MANHOLE
- EXIST. 'M' INLET
- EXIST. 'C' INLET
- EXIST. DOUBLE 'M' INLET
- EXIST. YARD INLET
- EXIST. FLARED END SECTION
- EXIST. HEADWALL
- PROP. HYDRANT
- PROP. AREA LIGHT
- PROP. DRAINAGE MANHOLE
- PROP. SANITARY SEWER MANHOLE
- PROP. 'M' INLET
- PROP. 'C' INLET
- PROP. HEADWALL

SEE SHEET 3 OF 25 FOR SITE PLAN NOTES

GRAPHIC SCALE
-20 0 10 20 40 80
(IN FEET)
1 INCH = 20 FT.

DYNAMIC • ENGINEERING • EARTH • SURVEY • TRAFFIC

REV.	DATE	COMMENTS	BY
1	09/30/24	REV. PER TOWNSHIP COMMENTS	AJW

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

DRAWN BY: ARK
DESIGNED BY: MS
CHECKED BY: MS
CHECKED BY: -

PROJECT: WESTTOWN AM WEST TIC LLC
PROPOSED CHASE BANK
PARCEL NO. 67-2-42.4
1506 PENNSYLVANIA STATE HIGHWAY ROUTE 3 (WEST CHESTER PIKE)
TOWNSHIP OF WESTTOWN
CHESTER COUNTY, PENNSYLVANIA

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JUSTIN A. GEONNOTTI
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. 080629

MATTHEW SHARO
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52989

TITLE: SITE PLAN

SCALE: (H) 1"=20' (V)
DATE: 07/12/2024
PROJECT No: 1478-99-191

SHEET No: 6 OF 25
Rev. #: 1

Plotted: 09/30/24 - 4:01 PM, By: mdelaney
File: P:\DECPC PROJECTS\1478 Paramount Realty\99-191 West Chester PA\Dwg\4 Land Dev Plans\D1478991915S1.dwg, ---> 06 SITE PLAN