

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**

Handwritten signature of Corey M. Chase in black ink.

**Corey M. Chase, PE
PA PE License #076836**

Handwritten signature of Kevin M. Savage in black ink.

**Kevin M. Savage, PE, PTOE
PA PE License #090923**



September 13, 2024

DT# 1478 99-191T

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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). Crosswalks, curb ramps, and pedestrian signals are provided to cross the western and southern legs of the intersection of West Chester Pike (SR 0003) and the Marketplace at Westtown driveway/Wawa driveway.

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.

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 3, 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 4 illustrates the primary site generated trip distribution, Figure 5 illustrates the primary site generated volumes, Figure 6 illustrates the passby site generated trip distribution, Figure 7 illustrates the passby site generated volumes and Figure 8 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 9.

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 (16.7)	B (18.5)	B (14.5)	B (16.3)
		R	B (13.2)	B (14.9)	B (12.3)	B (14.2)
	WB	L	E (64.0)	E (63.4)	D (44.9)	D (44.2)
		TR	B (13.3)	B (14.1)	B (11.2)	B (12.0)
	NB	L	E (57.8)	E (58.0)	D (40.2)	D (39.7)
		TR	D (53.8)	D (54.0)	D (38.6)	D (38.3)
	SB	L	E (63.4)	E (63.4)	D (44.7)	D (44.7)
		TR	D (48.7)	D (47.3)	C (34.9)	C (33.7)
	Overall		C (24.5)	C (26.0)	B (19.7)	C (21.0)

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. 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'	335'	218'	230'
		R	350'	105'	125'	80'	103'
	WB	L	300'	208'	230'	148'	173'
		TR	-	335'	345'	205'	210'
	NB	L	-	208'	230'	123'	148'
		TR	-	263'	283'	193'	210'
	SB	L	-	118'	118'	63'	63'
TR		-	143'	140'	85'	83'	

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:

- o Zoning Variance Plan, prepared by Dynamic Engineering, dated September 7, 2022, last revised January 18, 2023
- o 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.



ALBERT FEDERICO CONSULTING, LLC

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:

- o Preliminary/Final Land Development Plan, prepared by Dynamic Engineering, dated July 12, 2024
- o 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:

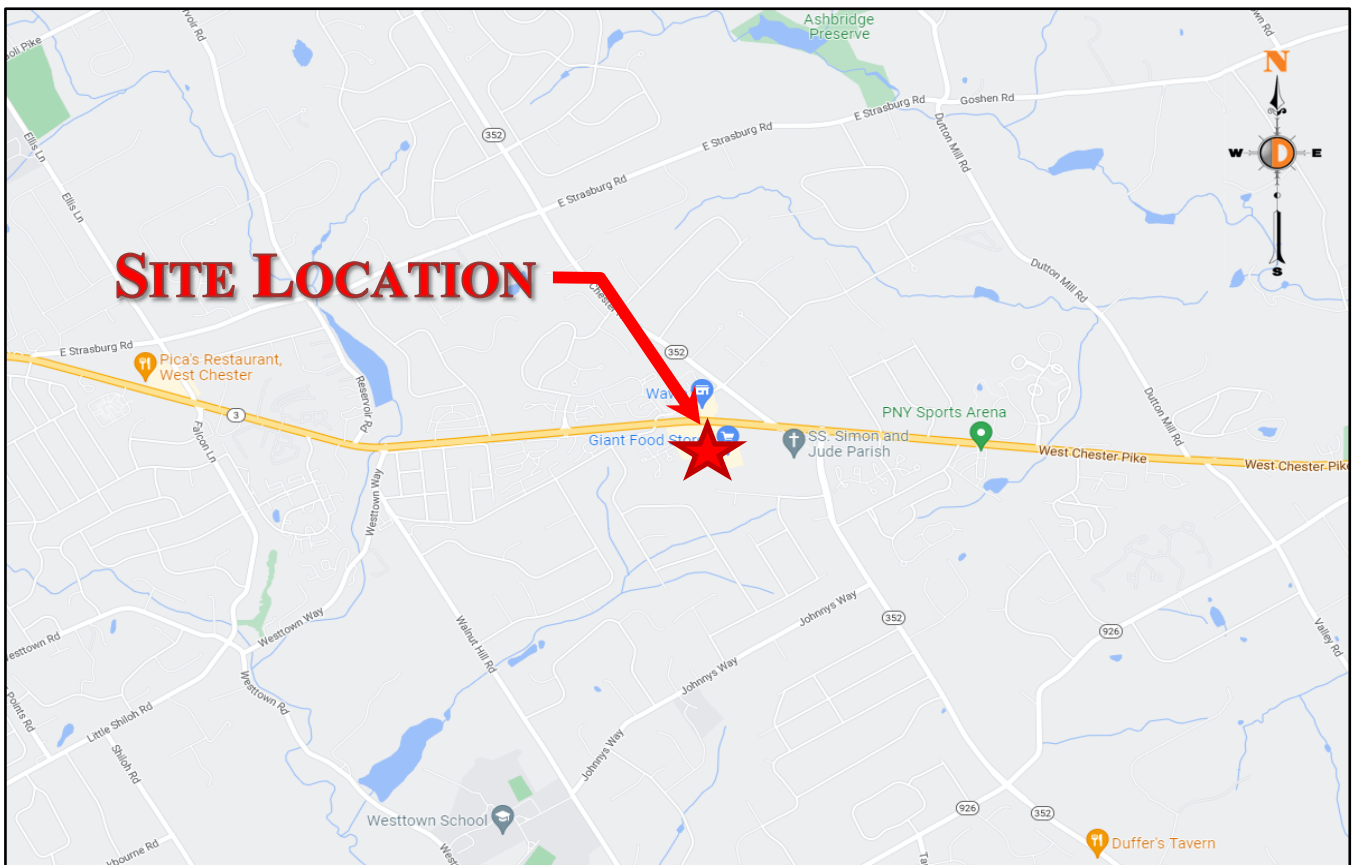
- ack. 1. §170-1709C(1) - The submitted Parking Assessment provides sufficient documentation that the existing Shopping Center has adequate parking to accommodate the proposed Bank use.
- w/c 2. §149-804(A) - A traffic impact study shall be required for any subdivision or land development that is expected to generate more than 250 total average weekday trip-ends after build-out.
- To be discussed at PC Meeting 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

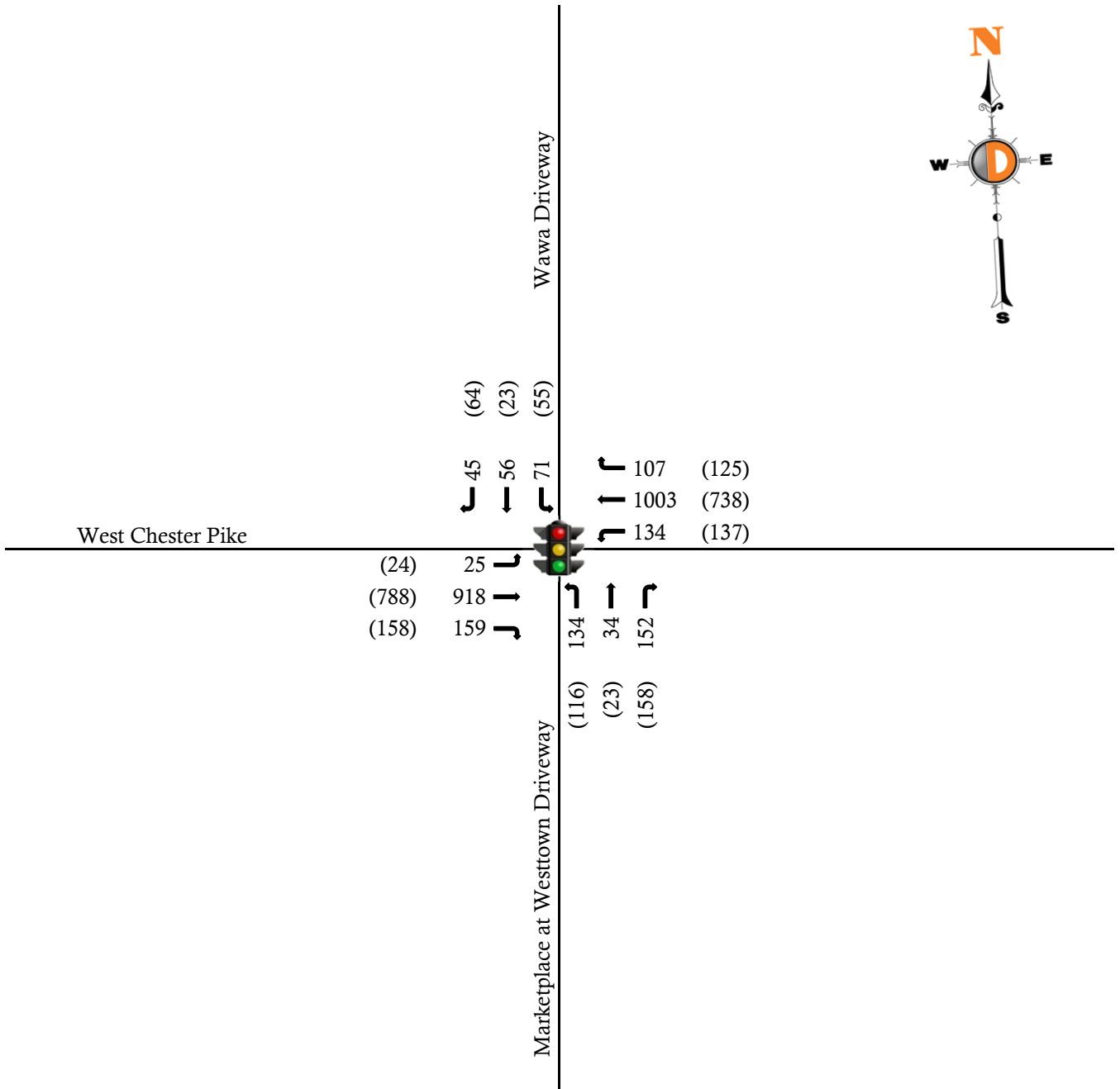
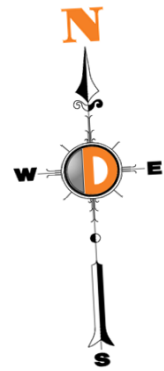
Appendix B
Traffic Volume Figures



Proposed Chase Bank
 Parking Assessment
 1478-99-191T

Figure 1

Site Location Map



LEGEND





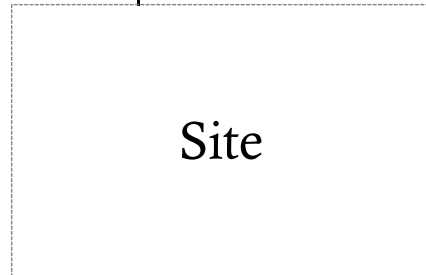
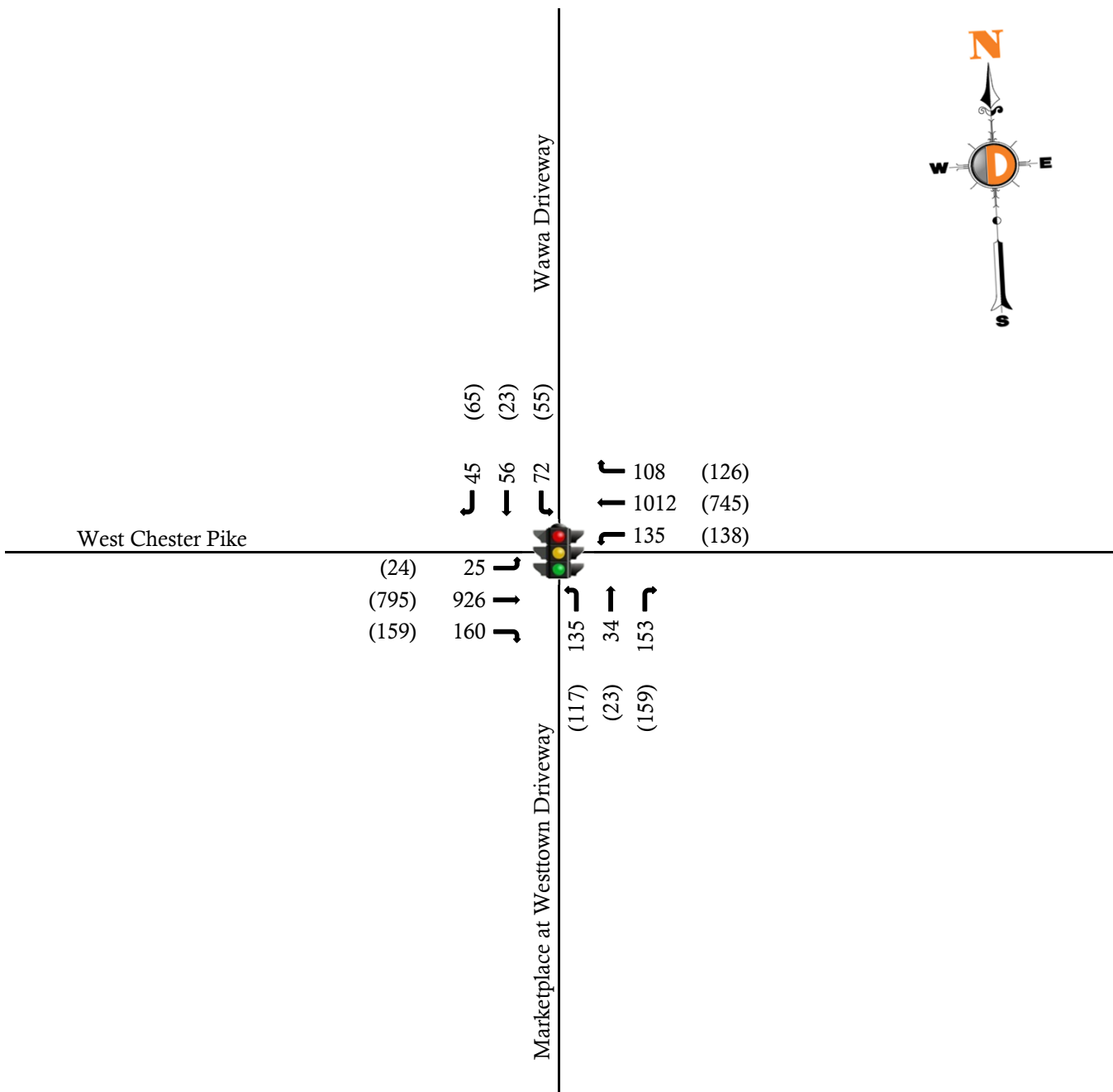
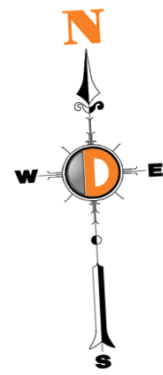
-  Existing Roadway
-  Proposed Roadway
-  PM (SAT)
-  Signalized Intersection



Figure 2

Existing Traffic Volumes



LEGEND


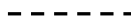


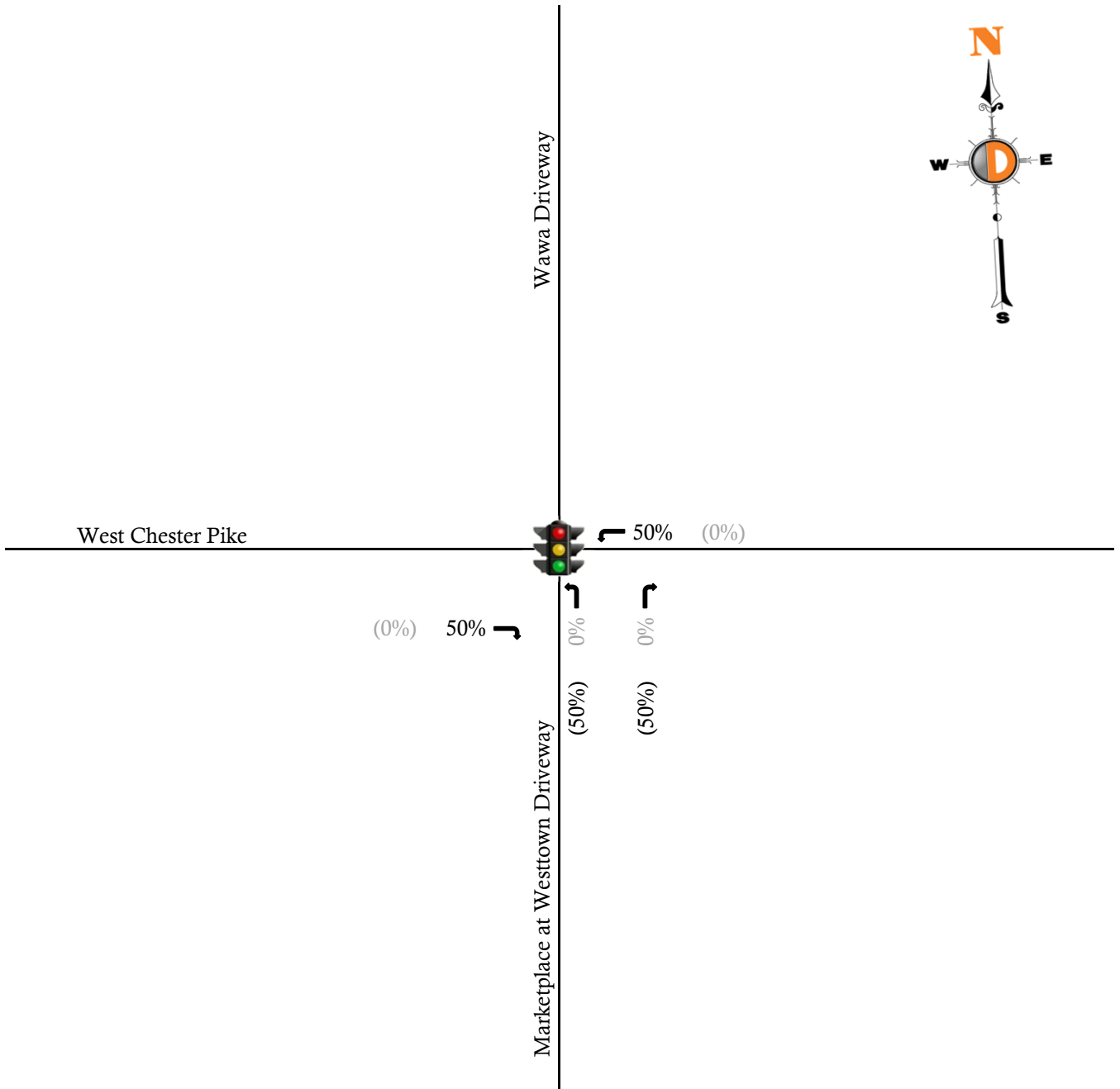
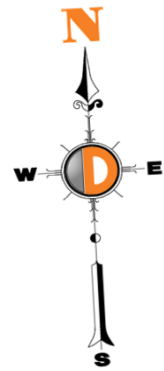
-  Existing Roadway
-  Proposed Roadway
-  PM (SAT)
-  Signalized Intersection




Figure 3

No Build Traffic Volumes



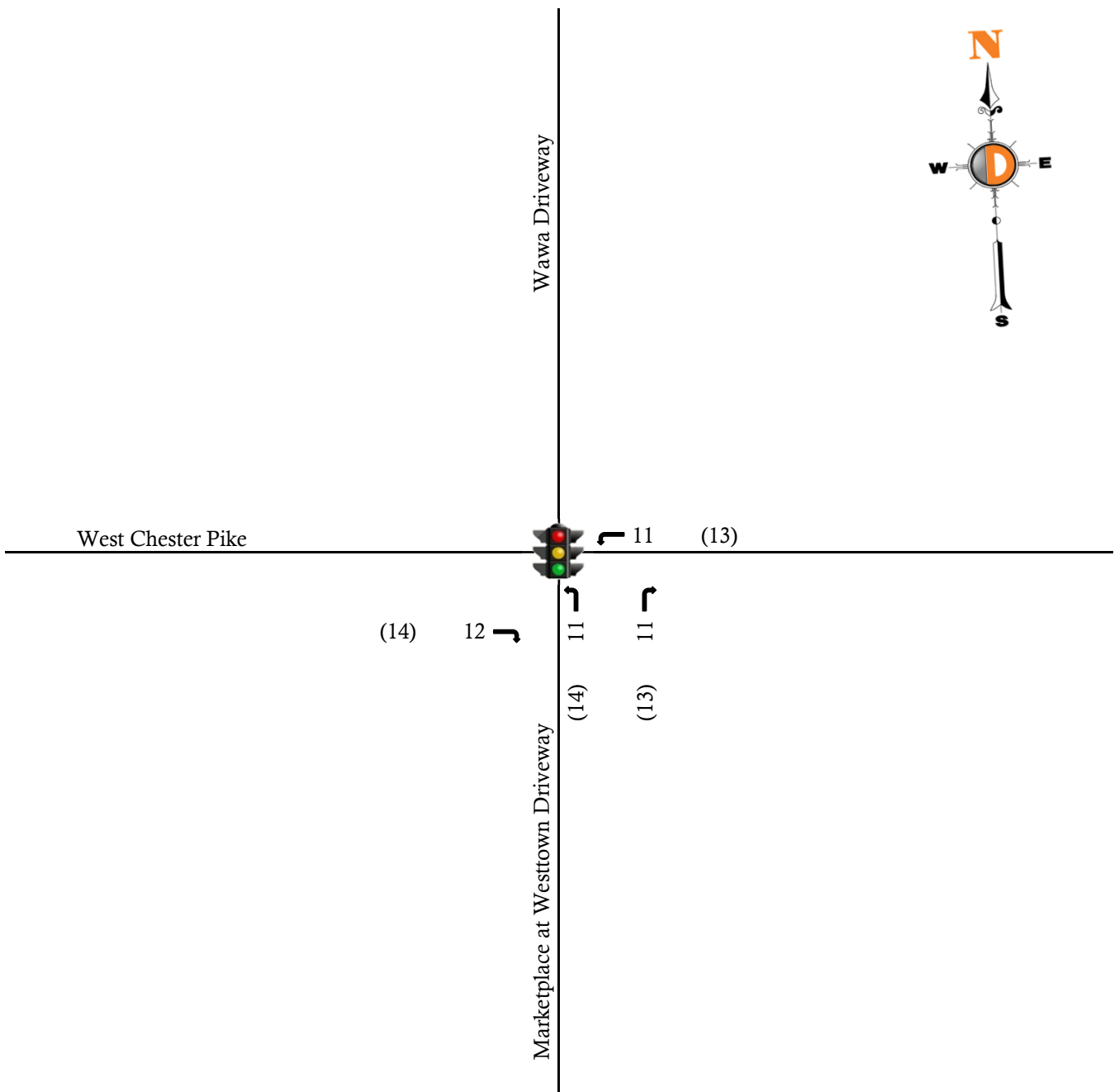
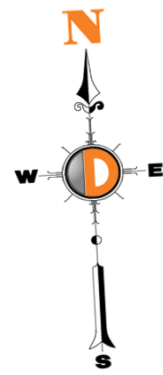
LEGEND

- Existing Roadway
- - - Proposed Roadway
- ← IN (OUT)
-  Signalized Intersection


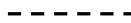




Proposed Chase Bank
Transportation Impact Assessment
1478 99-191T

Figure 4
Percent Distribution
(Primary Trips)



LEGEND

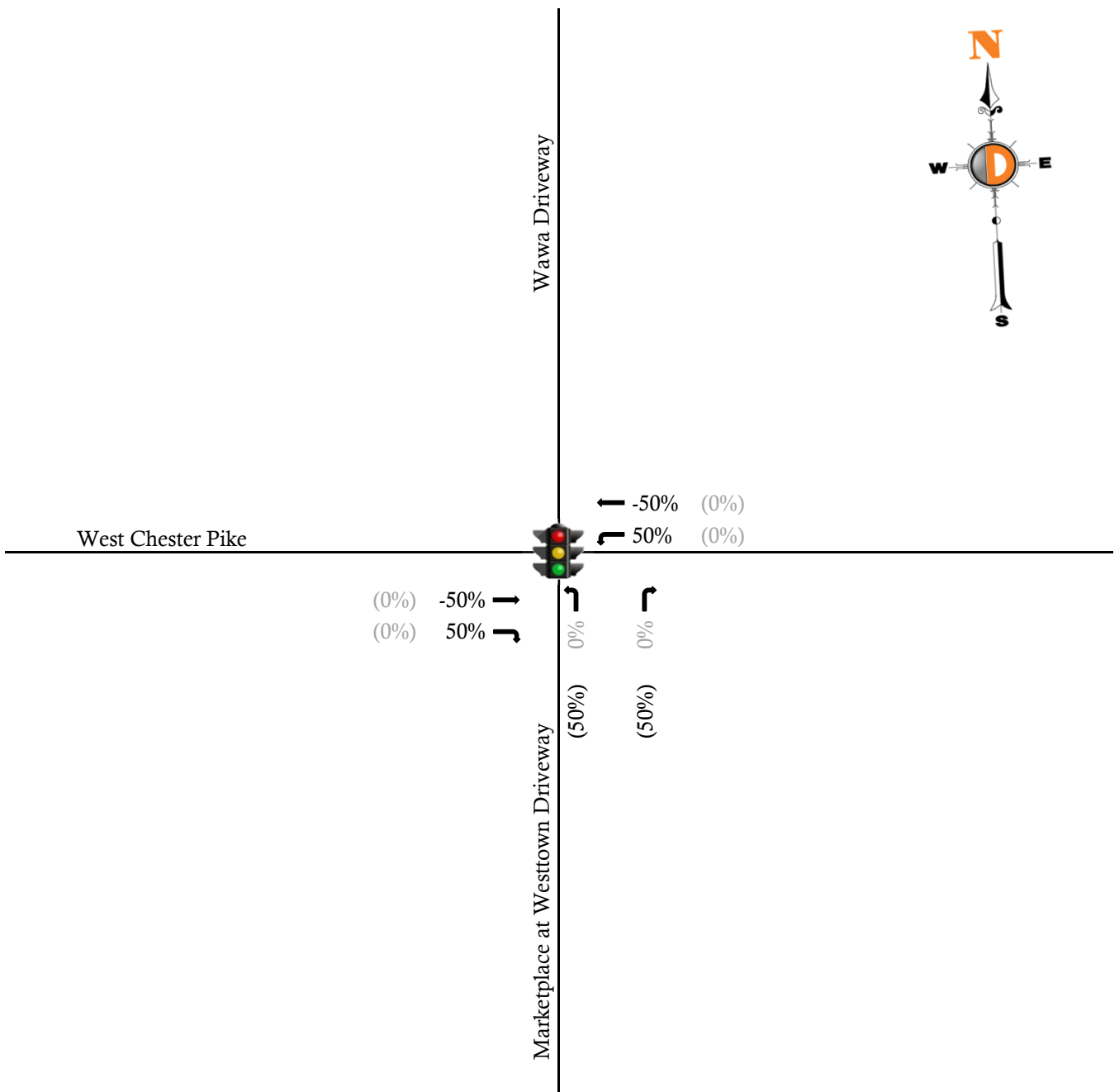
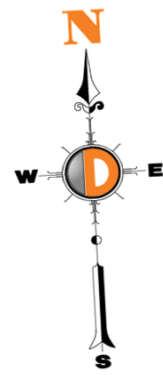
-  Existing Roadway
-  Proposed Roadway
-  PM (SAT)
-  Signalized Intersection

Site


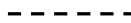




Figure 5

Primary Site Generated Trips



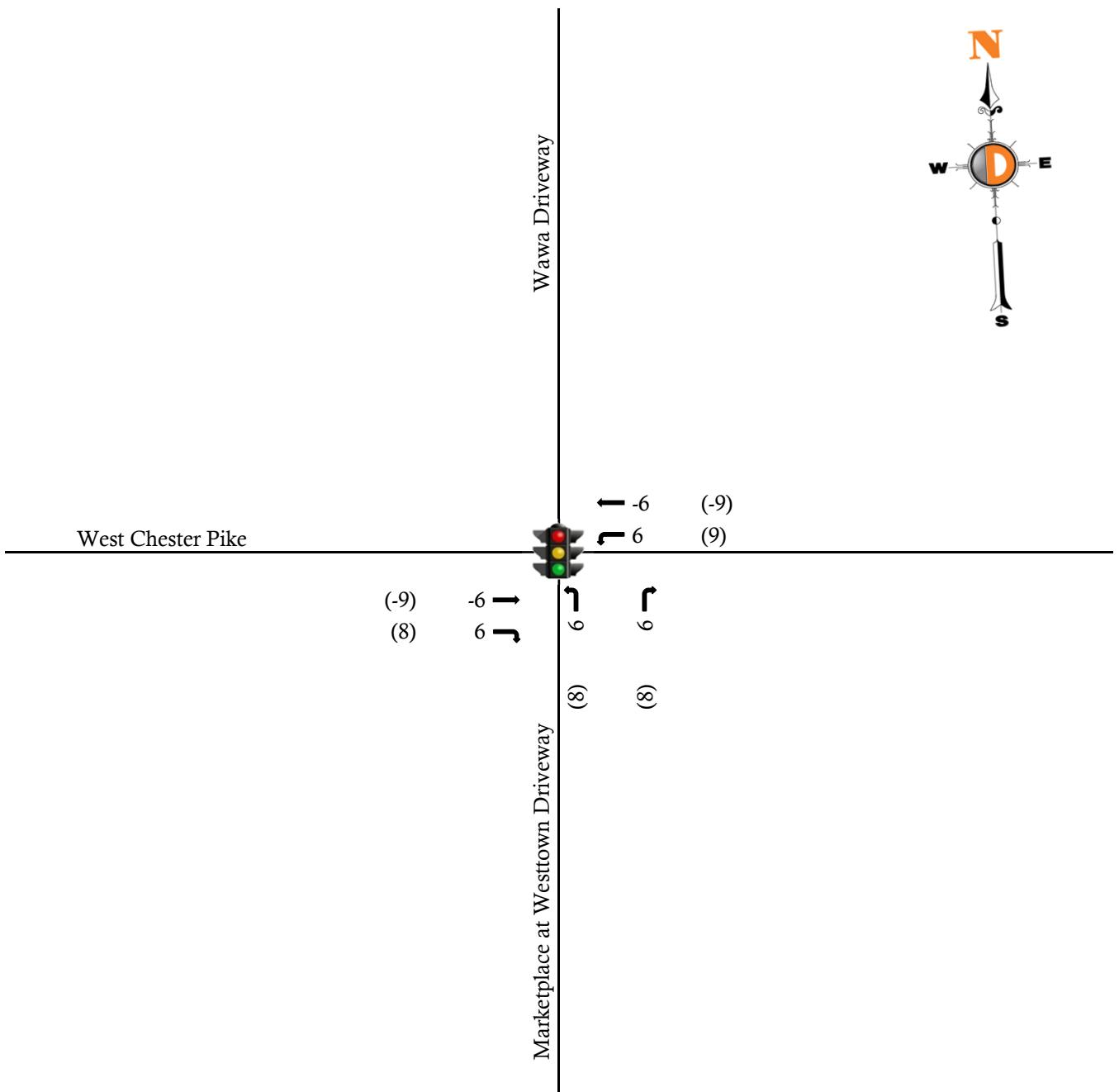
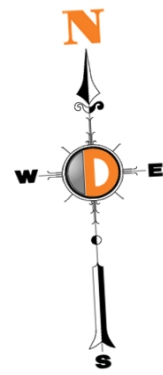
LEGEND

-  Existing Roadway
-  Proposed Roadway
-  IN (OUT)
-  Signalized Intersection


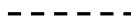


Site



Figure 6
Percent Distribution
(Passby Trips)



LEGEND

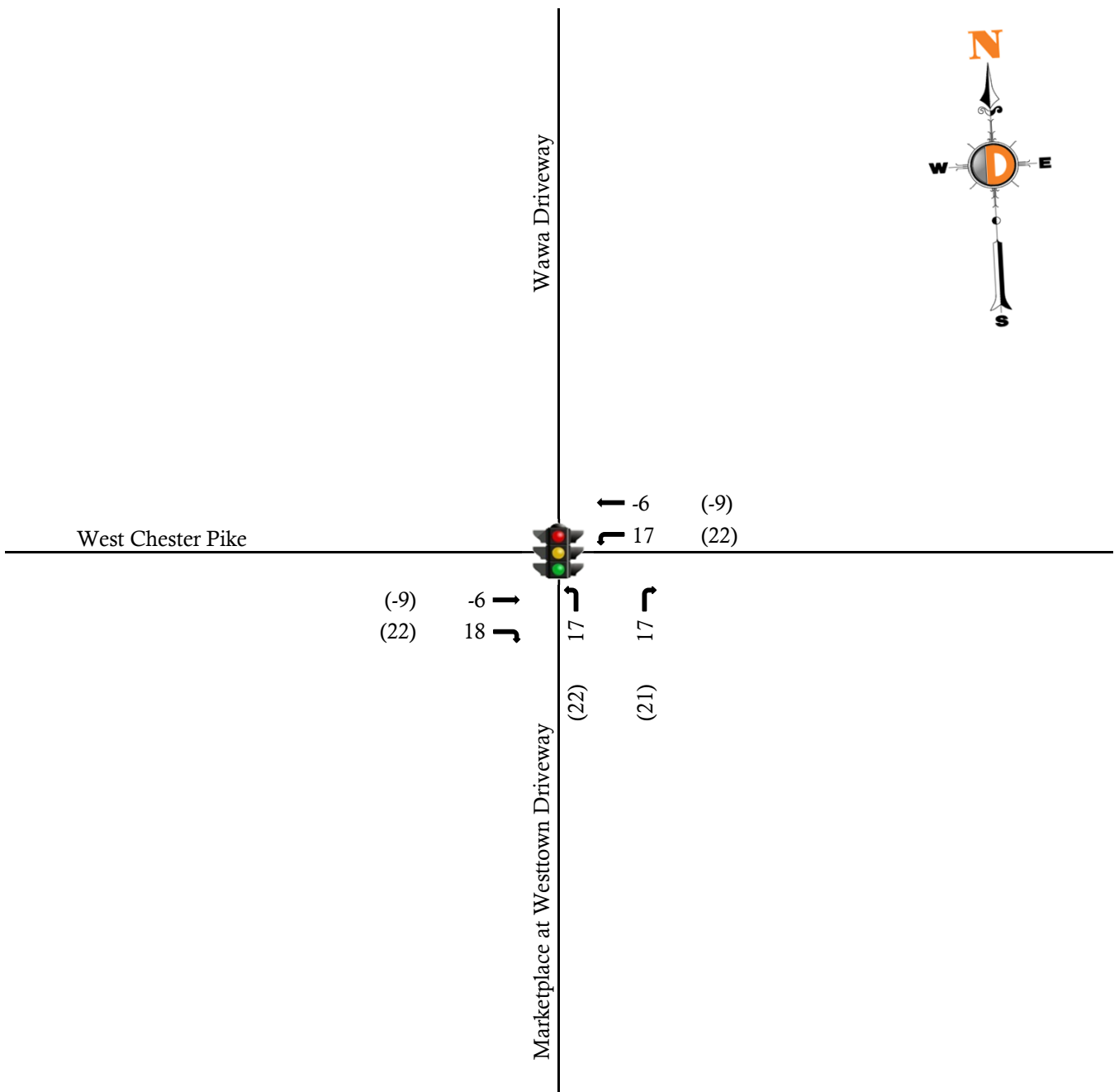
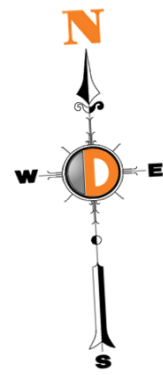
-  Existing Roadway
-  Proposed Roadway
-  PM (SAT)
-  Signalized Intersection

Site



Figure 7

Passby Site Generated Trips



LEGEND


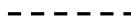


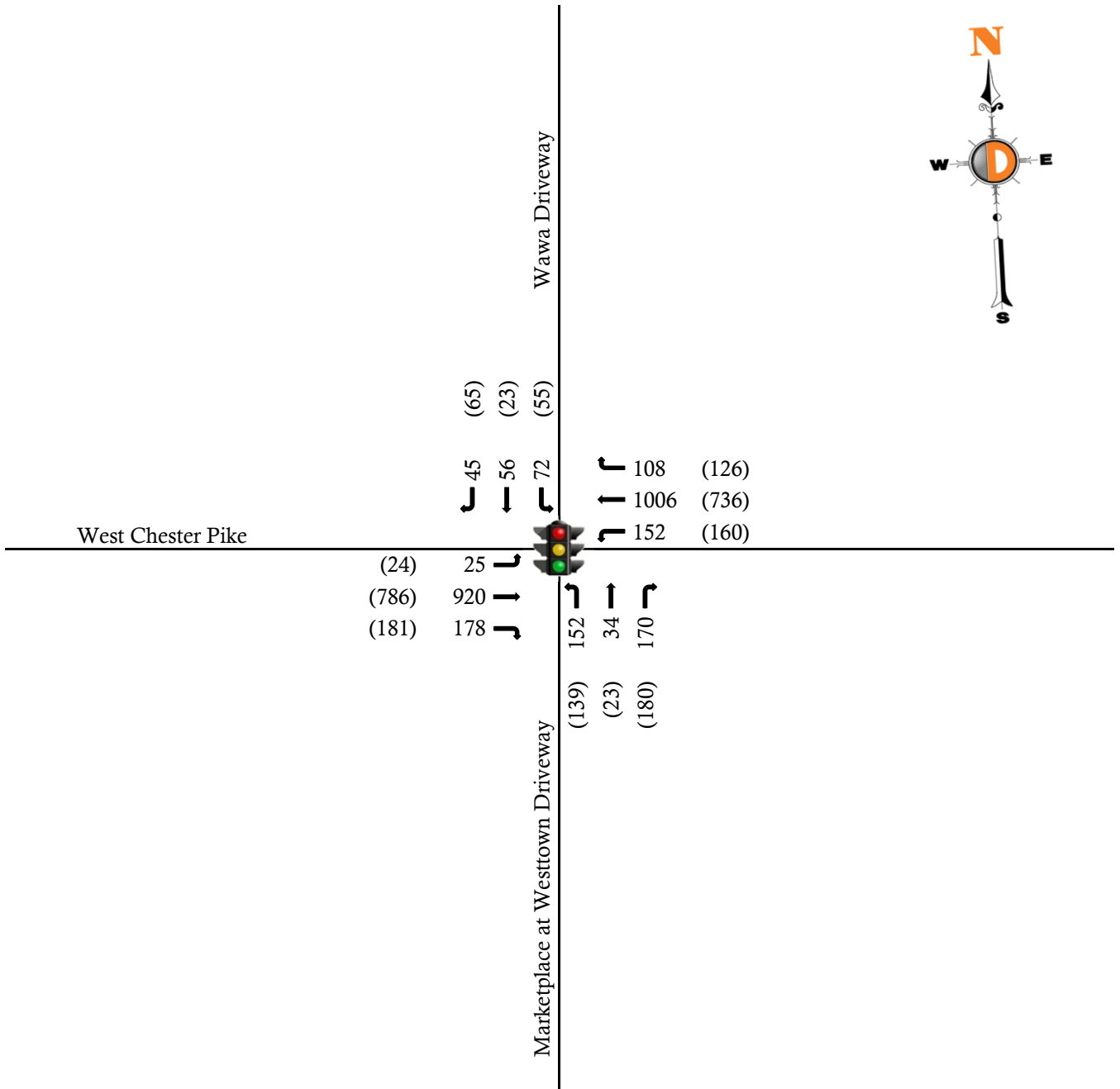
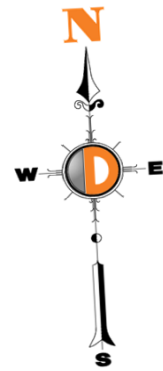
-  Existing Roadway
-  Proposed Roadway
-  PM (SAT)
-  Signalized Intersection







Figure 8

Total Site Generated Trips



LEGEND

-  Existing Roadway
-  Proposed Roadway
-  PM (SAT)
-  Signalized Intersection



Appendix C
Traffic Counts



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

Count Name: 1. 1502 West Chester Pike (Route 3)/Wawa Driveways
 Site Code: 1
 Start Date: 09/05/2024
 Page No: 4

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

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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



TRAFFIC & DATA COLLECTION

Imperial Traffic & Data Collection

www.imperialtdc.com

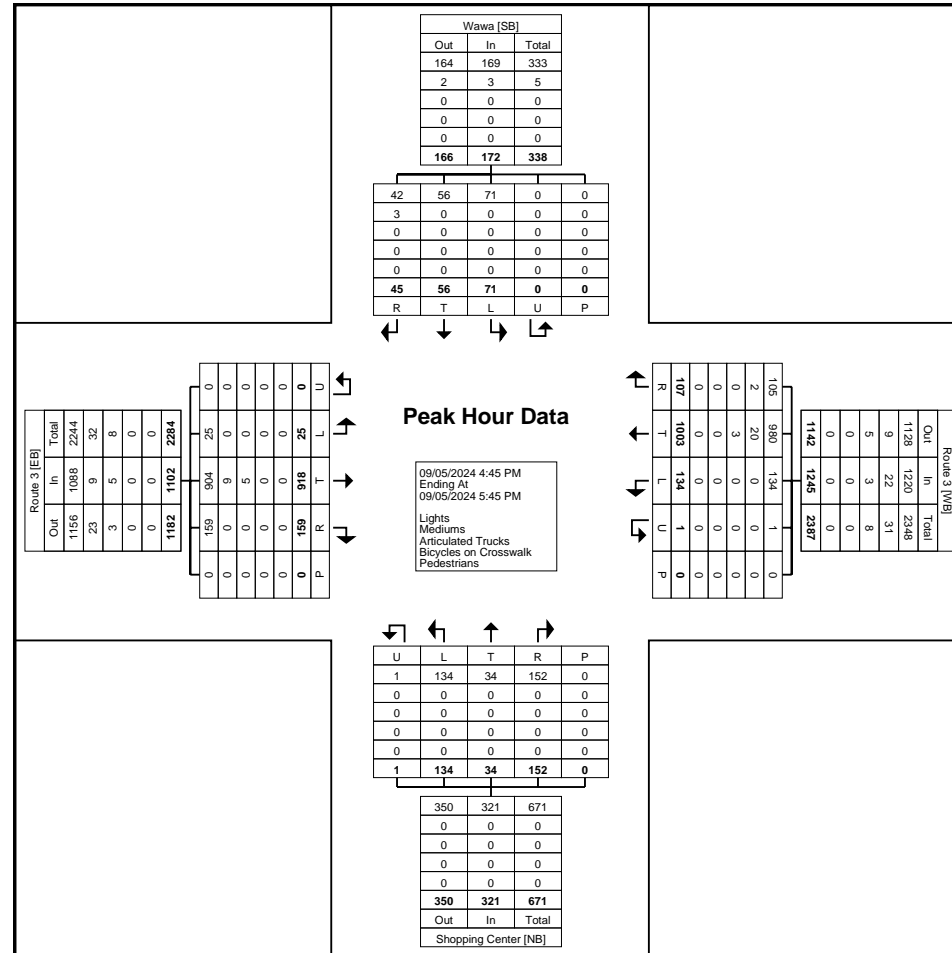
1804 Haddonfield-Berlin Road

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
 Page No: 5



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



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

Count Name: 1. 1502 West Chester Pike (Route 3)/Wawa Driveways
 Site Code: 1
 Start Date: 09/05/2024
 Page No: 6

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

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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



TRAFFIC & DATA COLLECTION

Imperial Traffic & Data Collection

www.imperialtdc.com

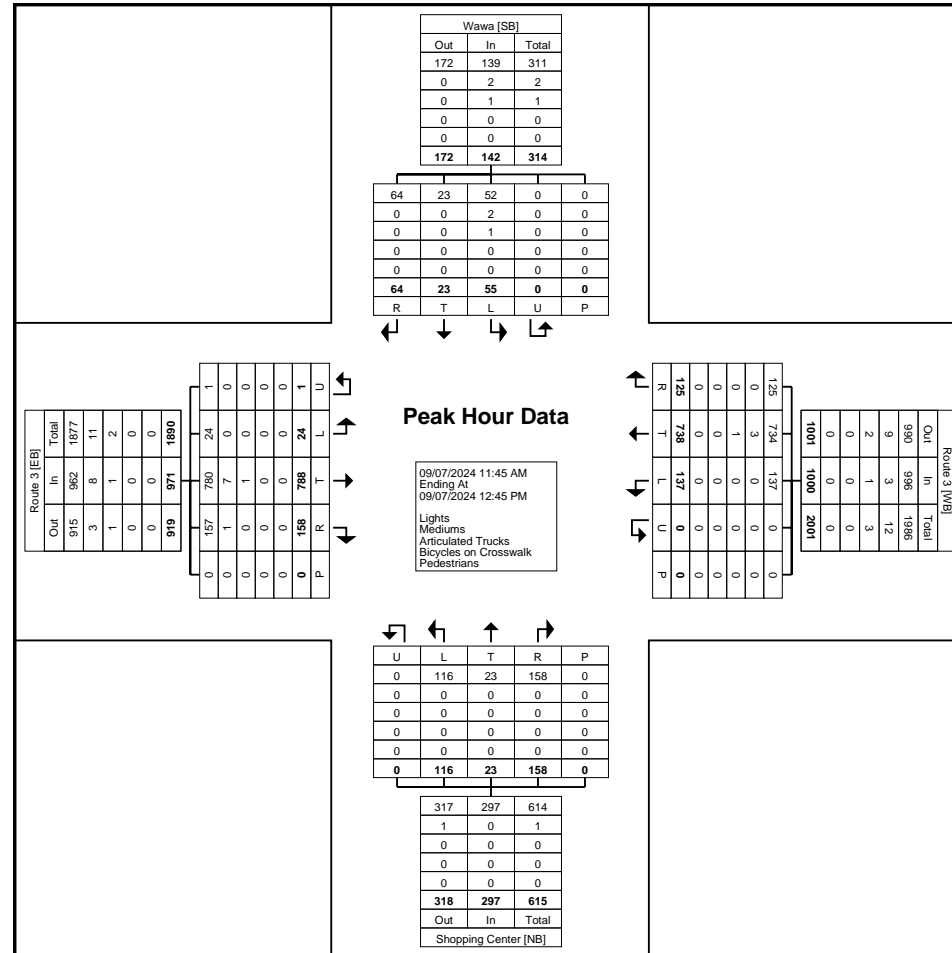
1804 Haddonfield-Berlin Road

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
 Page No: 7



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

Appendix D
Capacity Analysis

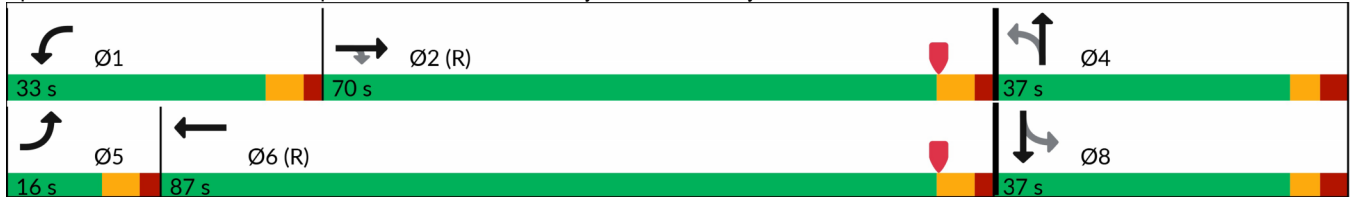
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	918	159	134	1003	107	134	34	152	71	56	45
Future Volume (vph)	25	918	159	134	1003	107	134	34	152	71	56	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane 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 (%)												
Lane Group Flow (vph)	25	927	161	135	1121	0	135	188	0	72	102	0
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	16.0	16.0	11.0	16.0		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	
Act Effct Green (s)	7.1	88.2	88.2	16.4	102.0		20.3	20.3		20.3	20.3	
Actuated g/C Ratio	0.05	0.63	0.63	0.12	0.73		0.15	0.15		0.15	0.15	
v/c Ratio	0.29	0.46	0.15	0.73	0.47		0.83	0.52		0.80	0.37	
Control Delay (s/veh)	72.2	16.0	2.5	80.4	10.2		93.6	17.8		108.3	41.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	72.2	16.0	2.5	80.4	10.2		93.6	17.8		108.3	41.9	
LOS	E	B	A	F	B		F	B		F	D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		15.3			17.8			49.5			69.4	
Approach LOS		B			B			D			E	
Queue Length 50th (ft)	22	218	0	120	220		121	30		64	63	
Queue Length 95th (ft)	54	354	35	185	349		187	99		118	112	
Internal Link Dist (ft)		1110			977			464			389	
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	133	2032	1082	317	2399		257	481		142	419	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.46	0.15	0.43	0.47		0.53	0.39		0.51	0.24	






















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
Maximum v/c Ratio:	0.83
Intersection Signal Delay (s/veh):	23.5
Intersection LOS:	C
Intersection Capacity Utilization	69.6%
ICU Level of Service	C
Analysis Period (min)	15

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								

												
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 (%)												
Lane Group Flow (vph)	24	796	160	138	871	0	117	183	0	56	88	0
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	
Act Effct Green (s)	6.6	58.3	58.3	12.7	70.9		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.07	0.58	0.58	0.13	0.71		0.14	0.14		0.14	0.14	
v/c Ratio	0.21	0.42	0.17	0.64	0.37		0.68	0.52		0.56	0.30	
Control Delay (s/veh)	48.5	14.0	2.7	54.6	7.8		58.7	13.7		59.7	16.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	48.5	14.0	2.7	54.6	7.8		58.7	13.7		59.7	16.0	
LOS	D	B	A	D	A		E	B		E	B	

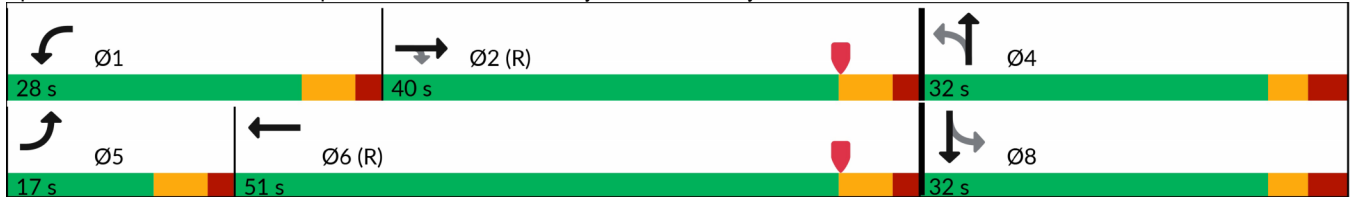


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		13.0			14.2			31.2				33.0
Approach LOS		B			B			C				C
Queue Length 50th (ft)	15	137	0	85	75		72	13		34		13
Queue Length 95th (ft)	40	240	33	140	207		123	70		71		53
Internal Link Dist (ft)		1110			977			464				389
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	204	1897	946	391	2347		333	530		191		510
Starvation Cap Reductn	0	0	0	0	0		0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0	0		0		0
Reduced v/c Ratio	0.12	0.42	0.17	0.35	0.37		0.35	0.35		0.29		0.17

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
Maximum v/c Ratio:	0.68
Intersection Signal Delay (s/veh):	16.9
Intersection LOS:	B
Intersection Capacity Utilization:	63.4%
ICU Level of Service:	B
Analysis Period (min):	15

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	160	135	1012	108	135	34	153	72	56	45
Future Volume (vph)	25	926	160	135	1012	108	135	34	153	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			0.617			0.356		
Satd. Flow (perm)	1701	3225	1624	1588	3289	0	1125	1599	0	623	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			162		14			152				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 (%)												
Lane Group Flow (vph)	25	935	162	136	1131	0	136	189	0	73	102	0
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	16.0	16.0	11.0	16.0		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
Act Effct Green (s)	7.1	88.1	88.1	16.5	101.9		20.4	20.4		20.4		20.4
Actuated g/C Ratio	0.05	0.63	0.63	0.12	0.73		0.15	0.15		0.15		0.15
v/c Ratio	0.29	0.46	0.15	0.73	0.47		0.83	0.52		0.81		0.37
Control Delay (s/veh)	72.2	16.2	2.6	80.5	10.3		93.6	17.7		109.0		41.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0		0.0
Total Delay (s/veh)	72.2	16.2	2.6	80.5	10.3		93.6	17.7		109.0		41.8
LOS	E	B	A	F	B		F	B		F		D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		15.5			17.9			49.4			69.9	
Approach LOS		B			B			D			E	
Queue Length 50th (ft)	22	221	0	121	224		122	30		65	63	
Queue Length 95th (ft)	54	360	35	186	355		188	100		#120	112	
Internal Link Dist (ft)		1110			977			464			389	
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	133	2028	1081	317	2397		257	482		142	419	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.46	0.15	0.43	0.47		0.53	0.39		0.51	0.24	

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: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

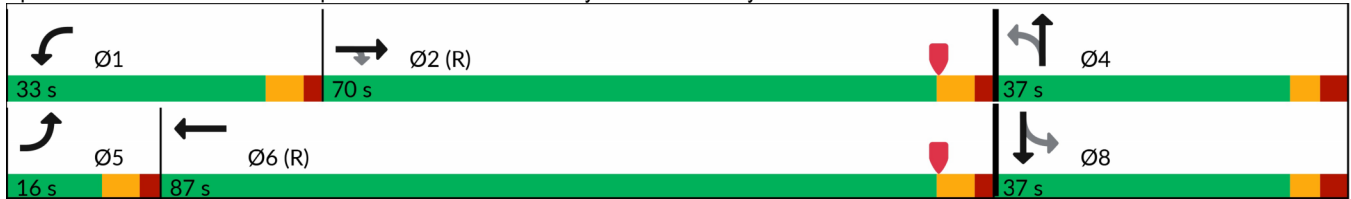
Intersection Signal Delay (s/veh): 23.6 Intersection LOS: C






















Intersection Capacity Utilization 70.0% ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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	160	135	1012	108	135	34	153	72	56	45
Future Volume (veh/h)	25	926	160	135	1012	108	135	34	153	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	162	136	1022	109	136	34	155	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	1997	941	175	2044	218	241	54	248	154	193	153
Arrive On Green	0.03	0.60	0.60	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	279	1271	1238	989	781
Grp Volume(v), veh/h	25	935	162	136	560	571	136	0	189	73	0	102
Grp Sat Flow(s),veh/h/ln	1709	1678	1582	1709	1678	1708	1298	0	1550	1238	0	1770
Q Serve(g_s), s	2.0	21.9	6.5	10.9	23.3	23.5	14.0	0.0	15.7	8.0	0.0	6.9
Cycle Q Clear(g_c), s	2.0	21.9	6.5	10.9	23.3	23.5	20.9	0.0	15.7	23.8	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	1997	941	175	1121	1141	241	0	303	154	0	346
V/C Ratio(X)	0.50	0.47	0.17	0.78	0.50	0.50	0.57	0.00	0.62	0.47	0.00	0.30
Avail Cap(c_a), veh/h	134	1997	941	342	1121	1141	284	0	354	195	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	15.9	12.8	61.3	11.6	11.7	57.1	0.0	52.4	62.6	0.0	48.5
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	4.1	8.3	13.1	13.4	8.2	0.0	10.5	4.7	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	16.7	13.2	64.0	13.2	13.3	57.8	0.0	53.8	63.4	0.0	48.7
LnGrp LOS	E	B	B	E	B	B	E		D	E		D
Approach Vol, veh/h		1122			1267			325				175
Approach Delay, s/veh		17.4			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	88.3		32.3	9.1	98.5		32.3				
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	24.4		23.4	4.5	26.0		26.3				
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			24.5									
HCM 6th LOS			C									

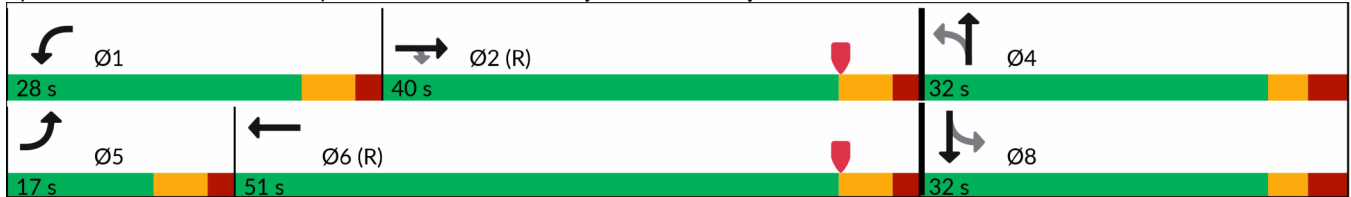
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	795	159	138	745	126	117	23	159	55	23	65
Future Volume (vph)	24	795	159	138	745	126	117	23	159	55	23	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane 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			0.426		
Satd. Flow (perm)	1701	3257	1507	1701	3300	0	1233	1533	0	709	1715	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164		25			161			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 (%)												
Lane Group Flow (vph)	24	803	161	139	880	0	118	184	0	56	89	0
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	
Act Effct Green (s)	6.6	58.1	58.1	12.7	70.8		14.2	14.2		14.2	14.2	
Actuated g/C Ratio	0.07	0.58	0.58	0.13	0.71		0.14	0.14		0.14	0.14	
v/c Ratio	0.21	0.42	0.17	0.64	0.38		0.68	0.52		0.56	0.30	
Control Delay (s/veh)	48.5	14.1	2.8	54.5	7.9		58.6	13.6		59.5	15.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	48.5	14.1	2.8	54.5	7.9		58.6	13.6		59.5	15.8	
LOS	D	B	A	D	A		E	B		E	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		13.1			14.2			31.2				32.7
Approach LOS		B			B			C				C
Queue Length 50th (ft)	15	140	0	86	76		72	13		34		13
Queue Length 95th (ft)	40	245	33	140	211		123	70		71		53
Internal Link Dist (ft)		1110			977			464				389
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	204	1892	944	391	2344		332	531		191		511
Starvation Cap Reductn	0	0	0	0	0		0	0		0		0
Spillback Cap Reductn	0	0	0	0	0		0	0		0		0
Storage Cap Reductn	0	0	0	0	0		0	0		0		0
Reduced v/c Ratio	0.12	0.42	0.17	0.36	0.38		0.36	0.35		0.29		0.17

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
Maximum v/c Ratio:	0.68
Intersection Signal Delay (s/veh):	17.0
Intersection LOS:	B
Intersection Capacity Utilization:	63.7%
ICU Level of Service:	B
Analysis Period (min):	15

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	159	138	745	126	117	23	159	55	23	65
Future Volume (veh/h)	24	795	159	138	745	126	117	23	159	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	161	139	753	127	118	23	161	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	1833	818	191	1794	302	262	36	254	169	85	245
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	185	1293	1196	436	1250
Grp Volume(v), veh/h	24	803	161	139	440	440	118	0	184	56	0	89
Grp Sat Flow(s),veh/h/ln	1709	1691	1509	1709	1691	1692	1263	0	1478	1196	0	1686
Q Serve(g_s), s	1.4	14.3	5.5	7.9	13.4	13.5	8.8	0.0	11.5	4.5	0.0	4.5
Cycle Q Clear(g_c), s	1.4	14.3	5.5	7.9	13.4	13.5	13.3	0.0	11.5	16.0	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	1833	818	191	1048	1048	262	0	290	169	0	331
V/C Ratio(X)	0.41	0.44	0.20	0.73	0.42	0.42	0.45	0.00	0.63	0.33	0.00	0.27
Avail Cap(c_a), veh/h	205	1833	818	393	1048	1048	356	0	399	257	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	39.8	0.0	37.7	44.3	0.0	34.8
Incr Delay (d2), s/veh	1.7	0.8	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	8.7	3.2	5.9	8.0	8.1	5.0	0.0	7.7	2.5	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	14.5	12.3	44.9	11.0	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		988			1019			302				145
Approach Delay, s/veh		15.0			15.7			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	16.2	59.2		24.6	8.4	66.9		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	10.4	16.8		15.8	3.9	16.0		18.5				
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	34	170	72	56	45
Future Volume (vph)	25	920	178	152	1006	108	152	34	170	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		0.985			0.875				0.934
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3225	1624	1588	3286	0	1732	1595	0	1661	1748	0
Flt Permitted	0.950			0.950			0.628			0.344		
Satd. Flow (perm)	1701	3225	1624	1588	3286	0	1145	1595	0	602	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			180		14			169			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 (%)												
Lane Group Flow (vph)	25	929	180	154	1125	0	154	206	0	73	102	0
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	16.0	16.0	11.0	16.0		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	
Act Effct Green (s)	7.1	84.4	84.4	18.1	99.8		22.5	22.5		22.5	22.5	
Actuated g/C Ratio	0.05	0.60	0.60	0.13	0.71		0.16	0.16		0.16	0.16	
v/c Ratio	0.29	0.48	0.17	0.75	0.48		0.84	0.52		0.76	0.34	
Control Delay (s/veh)	72.2	18.5	2.8	80.1	11.3		90.6	15.9		97.1	39.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	72.2	18.5	2.8	80.1	11.3		90.6	15.9		97.1	39.6	
LOS	E	B	A	F	B		F	B		F	D	

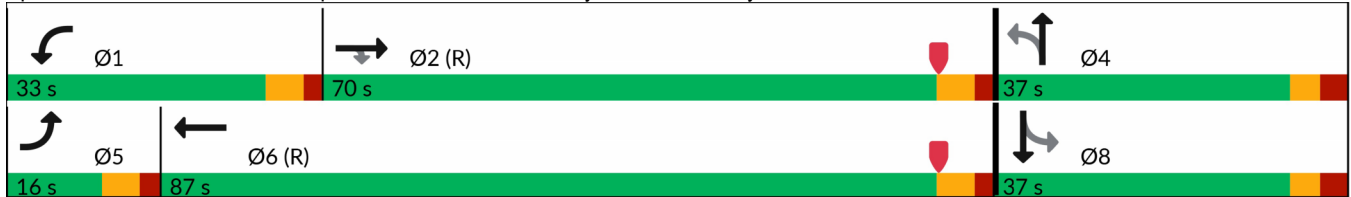
10: Marketplace at Westtown Driveway/Wawa Driveway & West Chester Pike

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		17.2			19.6			47.9				63.6
Approach LOS		B			B			D				E
Queue Length 50th (ft)	22	237	0	137	235		138	29		64	61	
Queue Length 95th (ft)	54	383	40	205	371		207	99		118	110	
Internal Link Dist (ft)		1110			977			464				389
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	133	1944	1050	317	2346		261	494		137	419	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.19	0.48	0.17	0.49	0.48		0.59	0.42		0.53	0.24	

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
Maximum v/c Ratio:	0.84
Intersection Signal Delay (s/veh):	24.7
Intersection LOS:	C
Intersection Capacity Utilization	71.0%
ICU Level of Service	C
Analysis Period (min)	15

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	34	170	72	56	45
Future Volume (veh/h)	25	920	178	152	1006	108	152	34	170	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	929	180	154	1016	109	154	34	172	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	1925	907	193	2009	215	256	53	267	153	204	161
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	1298	255	1291	1219	989	781
Grp Volume(v), veh/h	25	929	180	154	557	568	154	0	206	73	0	102
Grp Sat Flow(s),veh/h/ln	1709	1678	1582	1709	1678	1707	1298	0	1547	1219	0	1770
Q Serve(g_s), s	2.0	22.9	7.7	12.3	23.9	24.0	15.9	0.0	17.2	8.2	0.0	6.8
Cycle Q Clear(g_c), s	2.0	22.9	7.7	12.3	23.9	24.0	22.7	0.0	17.2	25.3	0.0	6.8
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.83	1.00		0.44
Lane Grp Cap(c), veh/h	50	1925	907	193	1103	1122	256	0	319	153	0	365
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	1925	907	342	1103	1122	285	0	354	181	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	17.6	14.4	60.5	12.3	12.5	56.4	0.0	51.7	62.5	0.0	47.2
Incr Delay (d2), s/veh	2.8	0.9	0.5	2.8	1.7	1.6	1.6	0.0	2.3	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	13.4	5.0	9.2	13.5	13.8	9.2	0.0	11.3	4.7	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.7	18.5	14.9	63.4	14.0	14.1	58.0	0.0	54.0	63.4	0.0	47.3
LnGrp LOS	E	B	B	E	B	B	E		D	E		D
Approach Vol, veh/h		1134			1279			360				175
Approach Delay, s/veh		19.0			20.0			55.7				54.0
Approach LOS		B			B			E				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.8	85.3		33.9	9.1	97.0		33.9				
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		25.2	4.5	26.5		27.8				
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				26.0								
HCM 6th LOS				C								

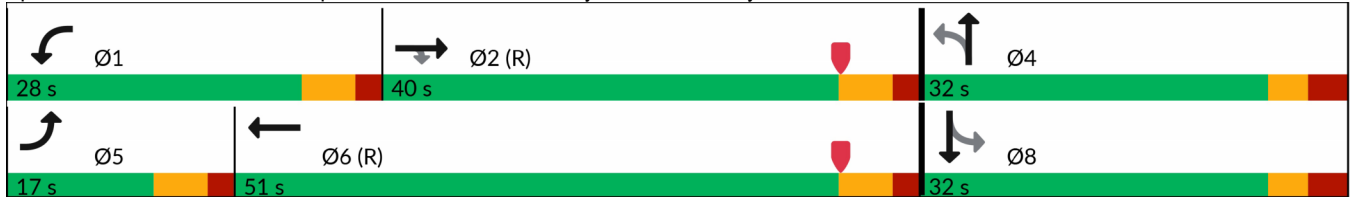
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	786	181	160	736	126	139	23	180	55	23	65
Future Volume (vph)	24	786	181	160	736	126	139	23	180	55	23	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane 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			0.867				0.889
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1701	3257	1507	1701	3300	0	1676	1529	0	1582	1715	0
Flt Permitted	0.950			0.950			0.699			0.399		
Satd. Flow (perm)	1701	3257	1507	1701	3300	0	1233	1529	0	665	1715	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			183		26			182			66	
Link Speed (mph)		45		45			25		25		25	
Link Distance (ft)		1190		1057			544		469		469	
Travel Time (s)		18.0		16.0			14.8		12.8		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 (%)												
Lane Group Flow (vph)	24	794	183	162	870	0	140	205	0	56	89	0
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	
Act Effct Green (s)	6.6	55.0	55.0	14.1	69.1		15.9	15.9		15.9	15.9	
Actuated g/C Ratio	0.07	0.55	0.55	0.14	0.69		0.16	0.16		0.16	0.16	
v/c Ratio	0.21	0.44	0.20	0.68	0.38		0.71	0.52		0.53	0.27	
Control Delay (s/veh)	48.5	16.3	3.2	54.5	8.7		58.5	12.1		54.9	14.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	48.5	16.3	3.2	54.5	8.7		58.5	12.1		54.9	14.6	
LOS	D	B	A	D	A		E	B		D	B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay (s/veh)		14.6			15.9			30.9				30.2
Approach LOS		B			B			C				C
Queue Length 50th (ft)	15	150	0	99	83		86	13		33	13	
Queue Length 95th (ft)	40	261	40	158	220		140	70		70	51	
Internal Link Dist (ft)		1110			977			464				389
Turn Bay Length (ft)	200		350	300								
Base Capacity (vph)	204	1791	910	391	2287		332	545		179	511	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.44	0.20	0.41	0.38		0.42	0.38		0.31	0.17	

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
Maximum v/c Ratio:	0.71
Intersection Signal Delay (s/veh):	18.3
Intersection LOS:	B
Intersection Capacity Utilization:	66.1%
ICU Level of Service:	C
Analysis Period (min):	15

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	181	160	736	126	139	23	180	55	23	65
Future Volume (veh/h)	24	786	181	160	736	126	139	23	180	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	794	183	162	743	127	140	23	182	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	1738	775	215	1749	299	281	35	275	168	92	263
Arrive On Green	0.03	0.51	0.51	0.13	0.61	0.59	0.21	0.21	0.19	0.21	0.21	0.19
Sat Flow, veh/h	1709	3383	1509	1709	2889	494	1263	165	1310	1173	436	1250
Grp Volume(v), veh/h	24	794	183	162	435	435	140	0	205	56	0	89
Grp Sat Flow(s),veh/h/ln	1709	1691	1509	1709	1691	1692	1263	0	1475	1173	0	1686
Q Serve(g_s), s	1.4	14.9	6.7	9.2	13.7	13.8	10.4	0.0	12.9	4.6	0.0	4.5
Cycle Q Clear(g_c), s	1.4	14.9	6.7	9.2	13.7	13.8	14.9	0.0	12.9	17.5	0.0	4.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.89	1.00		0.74
Lane Grp Cap(c), veh/h	59	1738	775	215	1024	1024	281	0	310	168	0	354
V/C Ratio(X)	0.41	0.46	0.24	0.75	0.42	0.42	0.50	0.00	0.66	0.33	0.00	0.25
Avail Cap(c_a), veh/h	205	1738	775	393	1024	1024	357	0	398	238	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	15.4	13.4	42.2	10.5	10.7	39.2	0.0	37.1	44.3	0.0	33.6
Incr Delay (d2), s/veh	1.7	0.9	0.7	2.0	1.3	1.3	0.5	0.0	1.2	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	8.2	8.4	5.9	0.0	8.4	2.5	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	16.3	14.2	44.2	11.8	12.0	39.7	0.0	38.3	44.7	0.0	33.7
LnGrp LOS	D	B	B	D	B	B	D		D	D		C
Approach Vol, veh/h		1001			1032			345				145
Approach Delay, s/veh		16.7			16.9			38.8				38.0
Approach LOS		B			B			D				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.6	56.4		26.0	8.4	65.5		26.0				
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	11.7	17.4		17.4	3.9	16.3		20.0				
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				21.0								
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



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	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

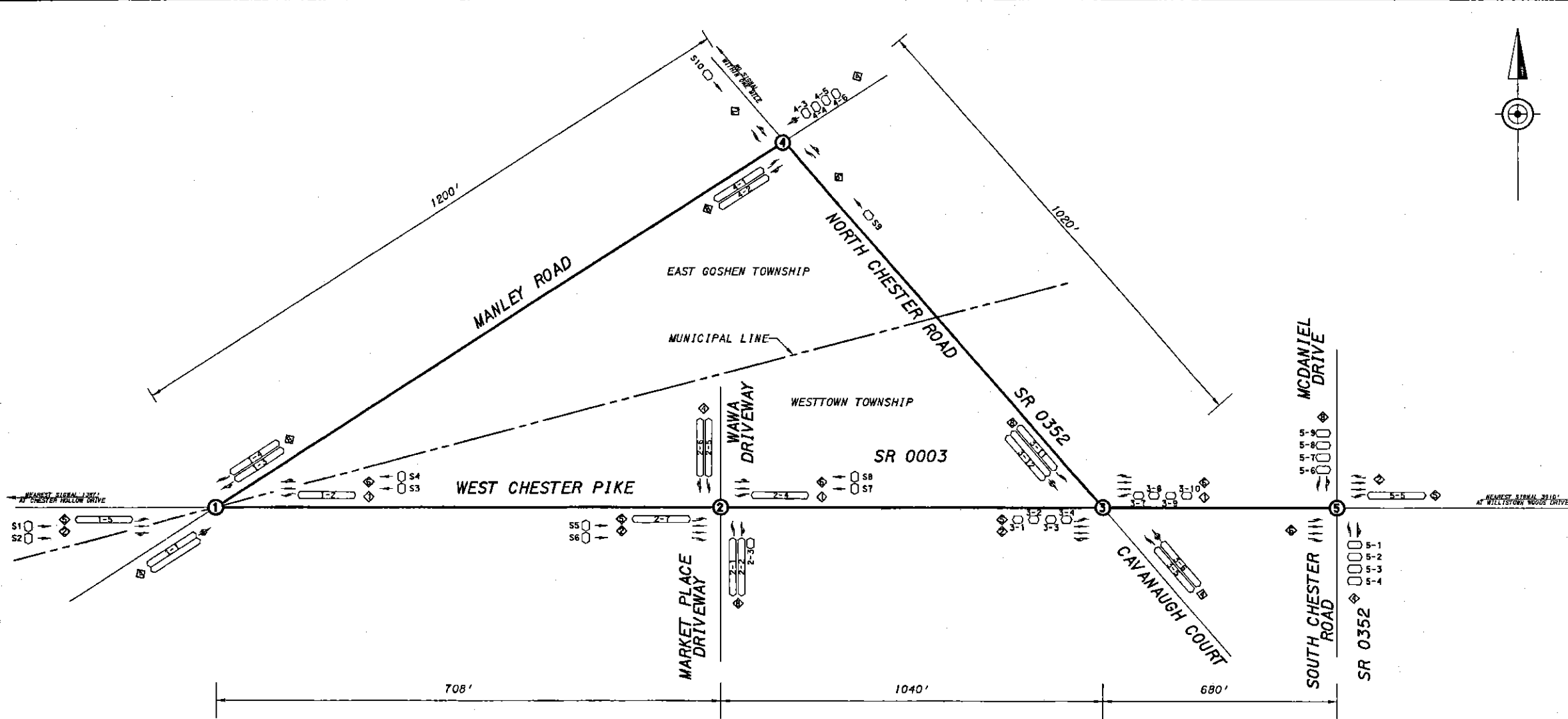
Peak Hour	Rate				Trip Generation			
	Min.	Avg.	Max.	S.D.	In	Out	Total	
Weekday	32.67	100.35	408.42	66.62	166	165	331	x
AM Peak Street Hour	2.12	9.95	29.47	6.00	19	14	33	x
PM Peak Street Hour	3.04	21.01	109.91	15.13	35	34	69	x
AM Generator	4.18	14.78	47.03	9.60	26	23	49	x
PM Generator	4.54	20.92	68.50	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	Out	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



GENERAL NOTES

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

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, SIGNAL PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

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

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

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

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

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

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

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

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: WESTTOWN TOWNSHIP AND EAST GOSHEN TOWNSHIP
INTERSECTION: WEST CHESTER PIKE (SR 0003) FROM MANLEY ROAD TO SOUTH CHESTER ROAD (SR 0352) AND MANLEY ROAD AND NORTH CHESTER ROAD (SR 0352)

REVIEWED: _____ DATE 9-2-09
MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: PAUL LUTZ 3-17-09
LOUIS R BELMONTE 3-17-09
DISTRICT TRAFFIC ENGINEER DATE

NO	REVISION	DES/REVW	DATE	REVW	DATE	RECOM	DATE
1	ADD PHASE 5 TO INTERSECTION 5	PAI	1/31/11				
2	OPTIMIZE TIMINGS	TPD	6/6/11	LUTZ	6/7/11	LRB	6/7/11
3	REVISE TIMINGS FOR PRG 3, INT 5	TPD	11/2/11	LUTZ	11/2/11	ABP	11/2/11
4	NODE 5 PHASE B TIMING	JOO	7/12/12	LUTZ	7/12/12	ABP	7/25/12
5	REVISE TIMINGS FOR INT 3	TPD	10/13/12	LUTZ	10/13/12	JRB	10/13/12
6							
7							
8							

SYSTEM PERMIT # I-0181

CYCLE / SPLIT / OFFSET													
PROGRAM 1=													
INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
5 WEST CHESTER PK / SOUTH CHESTER ROAD	2806		69		38(SPLIT)	12(LEAD)	57		13(SPLIT)	120	24		
4 NORTH CHESTER RD / MANLEY RD	2393		41		19		41		19	60	0		
3 WEST CHESTER PK / NORTH CHESTER ROAD	0349	13(LEAD)	51		17(SPLIT)	13(LEAD)	51		39(SPLIT)	120	24		
2 WEST CHESTER PK / WAWA DR / MARKET PLACE DR	2067	16(LEAD)	74		30	16(LEAD)	74		30	120	30		
1 WEST CHESTER PK/MANLEY RD	2470	14(LEAD)	61		21(SPLIT)	21(LEAD)	54		24(SPLIT)	120	23		
PROGRAM 2=													
INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
5 WEST CHESTER PK / SOUTH CHESTER ROAD	2806		87		39(SPLIT)	12(LEAD)	75		14(SPLIT)	140	47		
4 NORTH CHESTER RD / MANLEY RD	2393		49		21		49		21	70	0		
3 WEST CHESTER PK / NORTH CHESTER ROAD	0349	15(LEAD)	64		16(SPLIT)	15(LEAD)	64		45(SPLIT)	120	132		
2 WEST CHESTER PK / WAWA DR / MARKET PLACE DR	2067	33(LEAD)	70		37	16(LEAD)	87		37	140	127		
1 WEST CHESTER PK/MANLEY RD	2470	19(LEAD)	79		21(SPLIT)	17(LEAD)	81		21(SPLIT)	140	128		
PROGRAM 3=													
INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
5 WEST CHESTER PK / SOUTH CHESTER ROAD	2806		53		33(SPLIT)	13(LEAD)	40		14(SPLIT)	100	4		
4 NORTH CHESTER RD / MANLEY RD	2393		24		26		24		26	50	0		
3 WEST CHESTER PK / NORTH CHESTER ROAD	0349	13(LEAD)	39		24(SPLIT)	13(LEAD)	39		25(SPLIT)	100	43		
2 WEST CHESTER PK / WAWA DR / MARKET PLACE DR	2067	28(LEAD)	40		32	17(LEAD)	51		32	100	48		
1 WEST CHESTER PK/MANLEY RD	2470	14(LEAD)	44		21(SPLIT)	14(LEAD)	44		21(SPLIT)	100	50		
PROGRAM 4=													
INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	CYCLE	OFFSET#1	OFFSET#2	OFFSET#3

Notes:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE AND PED TIMES.

SYSTEM NOTES

- THE SIGNALS ALONG WEST CHESTER PIKE FROM MANLEY ROAD TO SOUTH CHESTER ROAD AND THE INTERSECTION OF NORTH CHESTER ROAD AND MANLEY ROAD ARE TO BE COORDINATED VIA GPS TIME CLOCKS.
- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF YELLOW (PHASE 2+6).
- SYSTEM LIMITS:
WEST CHESTER PIKE (SR 0003) - FROM MANLEY ROAD TO SOUTH CHESTER ROAD (SR 0352).
NORTH CHESTER ROAD (SR 0352) - FROM WEST CHESTER PIKE (SR 0003) TO MANLEY ROAD.
- MASTER CONTROLLER ON STREET MASTER AT NORTH CHESTER ROAD (SR 0352) AND MANLEY ROAD.
- PRIMARY COORDINATION: GPS TIME CLOCKS
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
- CYCLES, SPLITS & OFFSETS ARE IN SECONDS.

EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-7	0000	MAX 1	FREE
2	1-5	0600	1	AM PEAK
3	1-5	1000	3	MIDDAY PEAK
4	1-5	1500	2	PM PEAK
5	1-7	1900	MAX 1	FREE
6	6,7	1000	3	MIDDAY PEAK
7	6,7	1300	MAX 1	FREE

* DAY 1 = MONDAY
* MAX / FREE WHERE NOTED IN CYCLE / SPLIT / OFFSET MATRIX.

LEGEND

- ① INTERSECTION ADDRESS
- ⑤ SYSTEM LOOP / IDENTIFYING NUMBER
- LOOP SENSOR / INTERSECTION X - LOOP NUMBER Y
- ▽ MICROWAVE DETECTION AREA
- ◇ PHASE NUMBER
- NOT TO SCALE

7/24/2017
3:40:54 PM

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MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	1+5	2+5	1+6	2+6	4+8	FLASH
1	R	R	R	R	R	OFF
2,9	R	R	R	R	R	OFF
3	R	R	R	R	R	OFF
4,10	R	R	R	R	R	OFF
5,6	R	R	R	R	R	OFF
7,8	R	R	R	R	R	OFF
12,13	H	H	H	H	H	OFF
14,15	H	H	H	H	H	OFF

FIXED	4	2	4	2	4	2	4	2	3	3
MINIMUM	5	5	5	5	10	5				
PASSAGE	1++	1++	1++	1++	1++					
MAX 1	7	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 #I-0181 ADAPTIVE OPERATION
* PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL
* UPON PEDESTRIAN ACTUATION, OTHERWISE HAND SYMBOL AT ALL TIMES

OPERATION NOTES

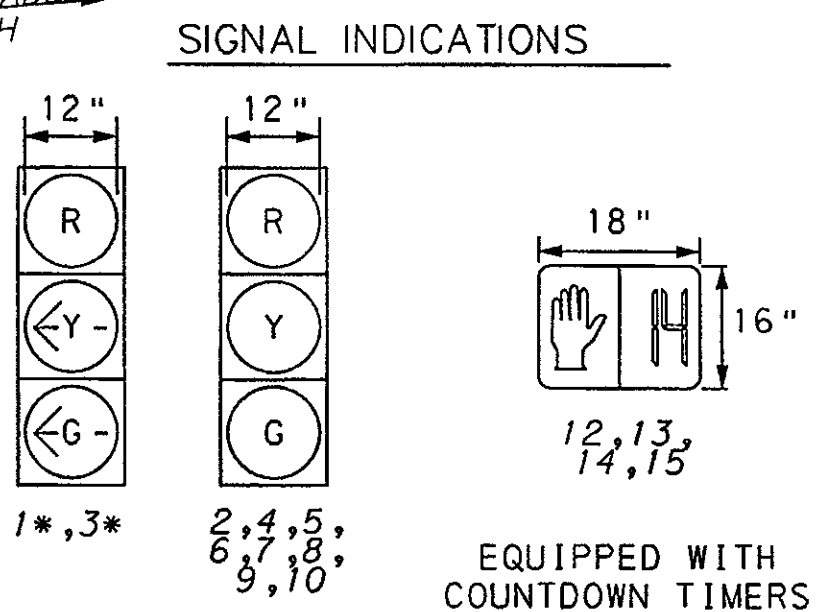
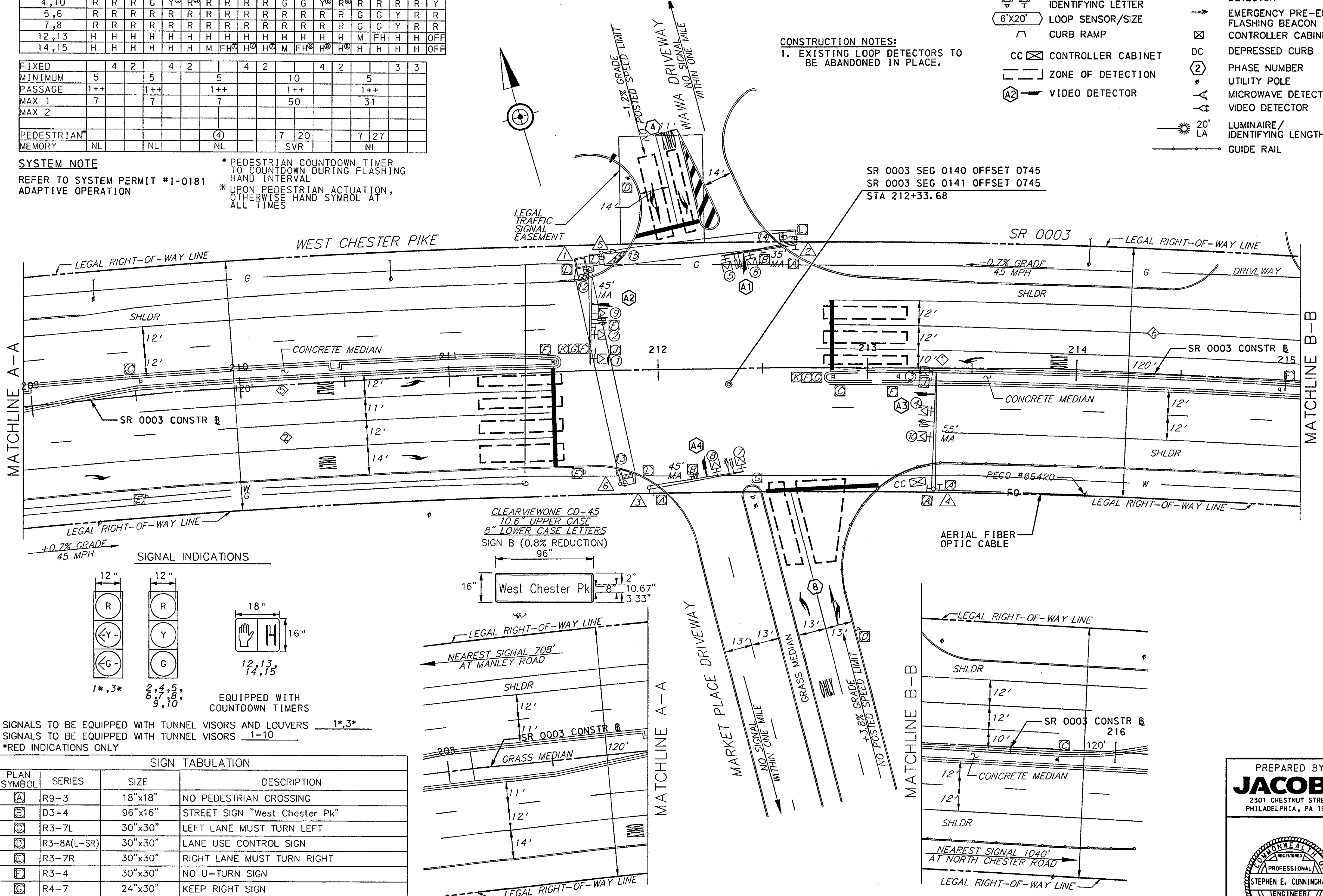
- ① R IF FOLLOWED BY 1+6
- ② R IF FOLLOWED BY 2+5
- ③ G IF FOLLOWED BY 2+6
- ④ TIMING WILL BE AS SHOWN IN PHASE 2+6. IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6
- ⑤ G IF FOLLOWED BY 1+6
- ⑥ G IF FOLLOWED BY 2+5
- ⑦ M IF FOLLOWED BY 2+6
- ⑧ M IF FOLLOWED BY 1+6

- 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
- Ⓜ PEDESTRIAN PUSHBUTTON/SIGN WITH IDENTIFYING LETTER
- Ⓜ SIGN/IDENTIFYING LETTER
- 6'x20' LOOP SENSOR/SIZE
- ∩ CURB RAMP
- CC CONTROLLER CABINET
- ZONE OF DETECTION
- Ⓜ VIDEO DETECTOR
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- CONTROLLER CABINET
- DEPRESSED CURB
- PHASE NUMBER
- UTILITY POLE
- MICROWAVE DETECTOR
- VIDEO DETECTOR
- LUMINAIRE/IDENTIFYING LENGTH
- GUIDE RAIL

CONSTRUCTION NOTES:
1. EXISTING LOOP DETECTORS TO BE ABANDONED IN PLACE.



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

SIGN TABULATION

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

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

CONSTRUCTION NOTES

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL.

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 181). 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

REVIEWED: *John F. Pinger* 9/10/17
MUNICIPAL OFFICIAL DATE

RECOMMENDED: *Stephen E. Cunningham* 11/22/17
DISTRICT TRAFFIC ENGINEER DATE

0 25 50 FEET

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103

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	

EMERGENCY PRE-EMPTION PHASING
MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE INTERVAL	2			6			4			8		
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 "00" 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.

CONSTRUCTION NOTES:

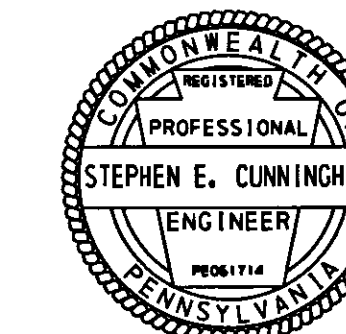
- PROVIDE MAINTENANCE AND PROTECTION OF TRAFFIC.
- INSTALL TRAFFIC ADAPTIVE HARDWARE AND ETHERNET SWITCH IN EXISTING CABINET. FIELD LOCATE CABINET WITH A PENNDOT AND MUNICIPAL REPRESENTATIVE. CABINET SHALL MEET OR EXCEED APPLICABLE PENNDOT SPECIFICATIONS FOR TRAFFIC SIGNAL CONTROLLER ASSEMBLIES, AND INCLUDE VENTILATION, FILTRATION, AND LIGHTING.
- 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.
- INSTALL TRAFFIC ADAPTIVE VIDEO CAMERA CABLE(S) IN EXISTING CONDUIT, UNLESS OTHERWISE DIRECTED BY PENNDOT OR MUNICIPAL REPRESENTATIVE.
- INSTALL NEW DETECTOR CARD RACK ASSEMBLY IN EXISTING CONTROLLER CABINET FOR VIDEO INPUT.
- INSTALL FIBER OPTIC CABLE AERIALY FROM UTILITY POLE, AS SHOWN ON PLAN. REFER TO INTERCONNECT PLAN FOR CABLE ROUTING BETWEEN INTERSECTIONS.
- INSTALL FIBER OPTIC MODEM, PATCH PANEL AND SPLICE ENCLOSURE.

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

SYSTEM PERMIT # I-0181

PREPARED BY:
JACOBS
2301 CHESTNUT STREET
PHILADELPHIA, PA 19103



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

REVIEWED: *Robert R. Pincus* 8/10/17
MUNICIPAL OFFICIAL DATE

RECOMMENDED: *scu 4/2/17*
STEPHEN E. CUNNINGHAM 11/27/17
DISTRICT TRAFFIC ENGINEER DATE

0 25 50 FEET

Appendix G
Site Plans

