

Transportation Impact Study for the Eland Downe Residential Subdivision

Phoenixville Borough, Chester County, PA



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Executive Summary

The applicant is proposing to redevelop a mixed-use property located to the north of Kimberton Road (S.R. 0113), between Dawson Drive East and West, in Phoenixville Borough, Chester County, Pennsylvania. The applicant is planning on redeveloping the existing mixed-use property with 34,935 square feet of space to provide 193 residential apartments. Access to the site will continue to be provide via the main access located along Kimberton Road (S.R. 0113) directly opposite Ross Lane, as well as the two intersections with Dawson Drive to the east and west of the main access. Along Dawson Drive, there are currently four driveways provided for the mixed-use site; however, with the proposed redevelopment only the western driveway will remain open to Dawson Drive.

The purpose of this study is to determine the potential impact of the traffic anticipated by the redevelopment of the property on the adjacent roadways and intersections. This study focuses on the existing (2015) conditions along with the projected future build-out year (2019) conditions, both without- and with-redevelopment of the site. The study area intersections, which were approved by PennDOT and the Borough as part of the scoping process, are as follows:

- Kimberton Road (S.R. 0113) and Township Line Road (S.R. 1038)
- Kimberton Road (S.R. 0113) and Dawson Drive West;
- Kimberton Road (S.R. 0113) and Ross Lane /Main Access;
- Kimberton Road (S.R. 0113) and Dawson Drive East; and
- Kimberton Road (S.R. 0113) and Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023).

The evaluation of traffic conditions associated with the proposed redevelopment reveals the following findings and conclusions:

- **Trip Generation** – Traffic volumes generated by the existing vacant space within the mixed-use site were prepared based on the driveway traffic count data which is more conservative than the rates for similar uses from the Institute of Transportation Engineers (ITE) publication entitled, *Trip Generation Manual, Ninth Edition*. With full-occupancy of the mixed use space, the existing center is anticipated to generate approximately 1,492 total trips (inbound and outbound) on a typical weekday with 52 total trips (inbound and outbound) in the weekday morning peak-hour and 183 total trips (inbound and outbound) in the weekday afternoon peak-hour.

Traffic volumes generated by the proposed redevelopment of the site were prepared based on the equations provided by ITE for Land Use Code 220: Apartment. The site is anticipated to generate approximately 1,293 total trips (inbound and outbound) during a typical weekday, of which 98 total trips (inbound and outbound) will be generated during weekday morning peak hour and 124 total trips (inbound and outbound) will be generated during the weekday afternoon peak hours. The change in use from mixed-use to apartments will result in less trips overall on the surrounding roadway network.

- **Off-Site Study Area Intersections** – The off-site study area intersections were evaluated to determine the operational characteristics under existing and future without- and with-

development conditions. A review of the overall levels-of-service indicates that the study intersections will operate at the same acceptable levels-of-service overall (LOS C or better) from without- to with-development conditions for the future build-out year (2019). As a result, no off-site mitigation measures are recommended or required.

- **Site Access** –The Main Site Access along Kimberton Road will continue to serve the site, while only the far western driveway along Dawson Drive will remain open as the other three driveways along Dawson Drive for this parcel will be closed. According to the anticipated daily trips for the site, the existing main access will continue to be classified as low-volume driveways per PennDOT criteria, as the entire site will generate less than 750 vehicles per day. No modifications are planned except for the installation of a sidewalk system along the Kimberton Road site frontage, which will require ADA compliant ramps and crossings where the sidewalk system crosses the Dawson Drive intersections, as well as the Main Site Access.

The traffic analyses contained herein reveals that safe and efficient access to and from the site can be provided and that the adjacent roadways and intersections can accommodate the projected site-generated traffic. Level-of-service and queue matrix tables for the study area intersections are provided in **Appendix A**. A full size site plan has been attached for reference.

Introduction

The applicant is proposing to redevelop a mixed-use property located to the north of Kimberton Road (S.R. 0113), between Dawson Drive East and West, in Phoenixville Borough, Chester County, Pennsylvania (see **Figure 1**). The applicant is planning on redeveloping the existing mixed-use property with 34,935 square feet of space to provide 193 residential apartments. Access to the site will continue to be provide via the main access located along Kimberton Road (S.R. 0113) directly opposite Ross Lane, as well as the two intersections with Dawson Drive to the east and west of the main access. Along Dawson Drive, there are currently four driveways provided for the mixed-use site; however, with the proposed redevelopment only the western driveway will remain open to Dawson Drive. **Figure 2** provides an illustration of the most recent site plan layout as prepared by Bohler Engineering.

The purpose of this study is to present an evaluation of the incremental traffic impacts of the proposed development within the study area in Phoenixville Borough and to evaluate the design criteria for the accesses. The scope was confirmed with PennDOT and the Borough. Copies of the relevant correspondence and/or meeting minutes related to the preparation of this study are contained in **Appendix B**.

Manual turning movement traffic counts were completed at the study area intersections during the weekday morning peak period (7:00 A.M. to 9:00 A.M.) and the weekday afternoon peak period (4:00 P.M. to 6:00 P.M.). In order to assess the existing traffic conditions, the existing traffic volumes were subjected to detailed capacity/level-of-service analysis, in accordance with accepted methodologies, for the highest peak hour during each peak period, which serves as the basis for this evaluation.

The total background growth along with the additional trips that could be generated by the existing vacant space within the mixed-use property was then added to the existing (2015) traffic volumes. The traffic volumes were then projected to the future build-out year (2019) at each of the study intersections. The future traffic volumes without the proposed redevelopment were then subjected to detailed capacity/level-of-service and queuing analysis.

Finally, the traffic generated by the proposed redevelopment was established based on accepted methodologies, and assigned to the roadway network and site accesses, as necessary. The existing traffic associated with full-occupancy of the mixed-use space was then removed from the roadway network. The site-generated traffic volumes for the redevelopment of the property were then added to the future without-development traffic volumes, and subjected to detailed capacity/level-of-service and queuing analysis to assess the future traffic conditions with development.

Existing Transportation Setting

The site that will be redeveloped is located to the north of Kimberton Road (S.R. 0113), between Dawson Drive East and West, in Phoenixville Borough, Chester County, Pennsylvania. The existing roadways and intersections in the vicinity of the site, which comprise the study area roadway network, are described in this section.

Roadway Characteristics

The characteristics of the study roadways surrounding the development are described below in **Table 1**. Copies of the daily count data are provided in **Appendix C**.

Table 1 - Existing Roadway Characteristics

Roadway	Average Daily Traffic Volumes (vehicles per day)	Smart Transportation Roadway Classification ⁽¹⁾	Travel Lanes (per direction)	Posted Speed Limit (mph)
Kimberton Road (S.R. 0113)	16,125 ⁽²⁾	Suburban, Community Arterial	1	45
Township Line Road, North of Kimberton Road	5,855 ⁽³⁾	Suburban, Community Collector	1	35
Township Line Road, South of Kimberton Road (S.R. 1038)	7,407 ⁽³⁾	Suburban, Community Collector	1	35
Dawson Drive (East and West)	n/a	Suburban, Private Road	1	Not Posted
Ross Lane	n/a	Suburban, Private Road	1	Not Posted
Schuylkill Road (S.R. 0023)	15,543 ⁽³⁾	Suburban, Community Arterial	1	35
Nutt Road (S.R. 0023)	24,619 ⁽³⁾	Suburban, Community Arterial	1	35

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

(2) Based on the daily traffic volume counts conducted by McMahon Associates in November 2015.

(3) Based on the information from PennDOT's internet Traffic Monitoring System (iTMS) website.

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

- Kimberton Road (S.R. 0113) and Township Line Road (S.R. 1038)
- Kimberton Road (S.R. 0113) and Dawson Drive West;
- Kimberton Road (S.R. 0113) and Ross Lane /Main Access;
- Kimberton Road (S.R. 0113) and Dawson Drive East; and
- Kimberton Road (S.R. 0113) and Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023).

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

Transit Services

Under current conditions, there are no direct transit services provided along the Kimberton Road (S.R. 0113). However, there is a bus station for SEPTA Bus Route 139 located in the northwestern quadrant of the Kimberton Road (S.R. 0113) and Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023) intersection. The bus stop is within walking distance of the site.

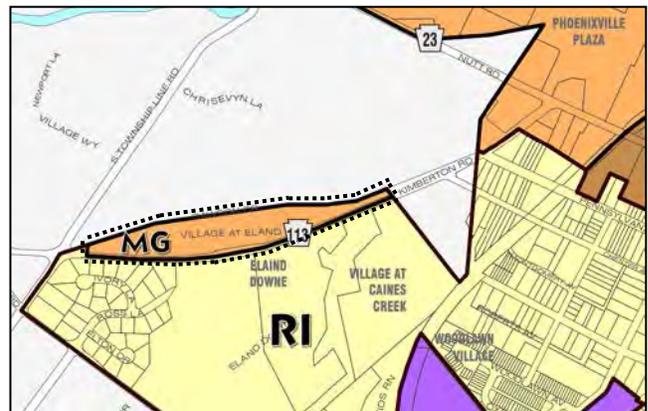
Pedestrian Facilities

Under current conditions, there are no sidewalks provided along the Kimberton Road (S.R. 0113) site frontage. While the shoulders are wide enough to serve as a pedestrian accessible route, there are no dedicated sidewalks from Township Line Road (S.R. 1038) to the north of Pennsylvania Avenue. The sidewalk is then located on the north side of Kimberton Road (S.R. 0113) and extends to Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023).

With redevelopment of the site, a new sidewalk system will be provided along the site frontage, which will require ADA compliant ramps and crosswalks for the Dawson Drive intersections with Kimberton Road (S.R. 0113), as well as the main access for the site.

Land Use Context

The site is located in the “Mixed Use Growth” (MG) Zoning District of Phoenixville Borough and is surrounded by “Residential” zoning districts as illustrated in **Exhibit 1** (see dashed area). Based upon the Phoenixville Borough zoning code, residential uses are permitted by right.



Traffic Count Data

Daily traffic counts were conducted in November 2015 over a 24-hour period during a typical weekday (Tuesday, Wednesday, or Thursday) along Kimberton Road (S.R. 0113) to the west of Ross Lane to record volume data, vehicle classification, and speeds. During a typical weekday, Kimberton Road (S.R. 0113) carries approximately 16,125 vehicles per day (total both directions), of which approximately 14% are classified as heavy vehicles. The posted speed limit along Kimberton Road (S.R. 0113) is 45 miles per hour. The 85th percentile travel speeds along Kimberton Road (S.R. 0113) are approximately 42 and 43 miles per hour in the eastbound and westbound directions of travel,

respectively, which is slightly lower than the posted speed limit. Copies of the Automatic Traffic Recorder (ATR) counts are provided in Appendix C.

Manual turning movement traffic counts were conducted at the study area intersections in November 2015 during the weekday morning peak period (7:00 A.M. to 9:00 A.M.) and the weekday afternoon peak period (4:00 P.M. to 6:00 P.M.). The results of these traffic counts are tabulated by 15-minute intervals in **Appendix E**. The four highest consecutive 15-minute peak intervals during these traffic count periods constitute the peak hours that are the basis of this traffic analysis. The existing peak hour traffic volumes were balanced conservatively (adjusted upwardly) between the intersections, where appropriate. The initial, unbalanced volumes are illustrated in a figure in Appendix E. The resultant 2015 existing weekday morning and weekday afternoon peak hours that are the basis of this analysis are depicted in **Figure 3A**.

Capacity/Level of Service Analysis

The existing peak hour traffic volumes were analyzed to determine current operating conditions in accordance with the standard techniques contained in the current *Highway Capacity Manual (2010)*. These standard capacity/level-of-service analysis techniques, which calculate total control delay, are more thoroughly described in **Appendix F** for unsignalized and signalized intersections, as well the correlation between average total control delay and the respective level-of-service (LOS) criteria for each intersection type. PennDOT District 6-0, as well as many local municipalities, considers LOS A through D acceptable operating conditions, while LOS E represents conditions approaching capacity, and LOS F indicates that traffic volumes have exceeded available capacity.

The results of the capacity/level-of-service analyses are illustrated in **Figure 3B** for the existing conditions, while the detailed capacity/level-of-service analysis worksheets are contained in **Appendix G**. Specific details regarding the analysis and operations of each intersection are contained in the “Capacity/Level-of-Service Results” section of this study.

Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of this site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements. As the existing site contains some vacancies in the commercial space, for comparison purposes, the without-development traffic volumes have been adjusted to account for the on-site vacancies being filled.

Existing Mixed-Use with Full-Occupancy

The existing mixed-use commercial center, which consists of approximately 34,935 square feet of space (+/-) in multiple buildings, is currently underutilized. When the counts were conducted in November 2015, the existing mixed-use commercial center had an occupancy rate of approximately 65% to 70% of the total space. As this space could be filled based on current approvals for the property and normal tenant turnover, the future without-development traffic volumes account for full-use of the vacant space. An existing occupancy rate of 70% or 24,455 square feet was utilized.

Traffic volumes generated by the existing vacant space within the mixed-use site were prepared based on the driveway traffic count data and compared to the rates for similar uses from the Institute of Transportation Engineers (ITE) publication entitled, *Trip Generation Manual, Ninth Edition*. The calculations for the local trip generation rate, as well as the comparison to the ITE-based rates are provided in **Appendix H**. According to the results, the existing multi-use center generates more trips than anticipated by ITE during weekday morning and afternoon peak hours. Therefore, the existing trip generation characteristics of the site are based on the driveway count data, which is more conservative and representative of the site as it includes a mix of retail and office uses. It should also be noted that this rate also includes the existing trips associated with the single-family homes located on the north side of Dawson Drive.

Table 2 provides a summary of the trip generation characteristics for the existing site. As shown in the table, if fully occupied, the existing site could generate an additional 16 total trips (inbound and outbound) during the weekday morning peak hour and additional 55 total trips (inbound and outbound) during the weekday afternoon peak hour. These additional trips were then added to the surrounding roadway network under without development conditions.

Table 2 - Vehicular Trip Generation for Existing Multi-Use Center

Description	Size (s.f.)	Daily ⁽¹⁾	Weekday Morning			Weekday Afternoon		
			In	Out	Total	In	Out	Total
Full Occupancy ⁽²⁾	34,935	1,492	36	16	52	73	110	183
<u>Current Occupancy (70% Occupied) ^(2,3)</u>	<u>24,455</u>	<u>1,044</u>	<u>25</u>	<u>11</u>	<u>36</u>	<u>51</u>	<u>77</u>	<u>128</u>
Additional Trips	10,480	448	11	5	16	22	33	55

(1) Based upon the ITE rates for Land Use Code 820: Shopping Center.

(2) Based on the number of trips per square feet of the commercial space obtained from existing occupancy of the site and driveway count data.

(3) Occupancy as of November 2015 when the data collection was completed.

Trip Generation Characteristics for Change of Use

Traffic volumes generated by the proposed redevelopment of the site were prepared based on trip generation data compiled from numerous studies contained in ITE’s publication entitled, *Trip Generation Manual, Ninth Edition*. Specifically, the equations provided by ITE for Land Use Code 220: Apartment were utilized. **Table 3** provides a summary of the total trips anticipated to be generated by the site as a result of the proposed residential subdivision. Based on the results, the site is anticipated to generate approximately 1,293 total trips (inbound and outbound) during a typical weekday, of which 98 total trips (inbound and outbound) will be generated during weekday morning peak hour and 124 total trips (inbound and outbound) will be generated during the weekday afternoon peak hours.

Table 3 - Vehicular Trip Generation

Land Use	Size	Daily	Weekday Morning			Weekday Afternoon		
			In	Out	Total	In	Out	Total
Proposed Apartments ⁽¹⁾	193 dwelling units	1,293	20	78	98	81	43	124

(1) Based upon the ITE equations for Land Use Code 220: Apartment.

When compared to the full occupancy conditions of the site as a mixed use property (see Table 2), the conversion of the site to apartments will generate 199 less daily trips (total inbound and outbound) on a typical weekday. During the morning peak hour, the proposed apartments will generate 46 more trips (total inbound and outbound), while during the afternoon peak hour the change in use will generate 59 less trips (total inbound and outbound).

Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, the location of the development’s site accesses and the layout of the site. The anticipated site trip distribution for the vacant commercial space is illustrated in **Figure 4A**. The application of the percentages in Figure 4A to the additional trip generation contained in Table 2 is illustrated in **Figure 4B**.

As the on-site use will be modified with the planned redevelopment, all traffic associated with the full occupancy of the commercial space must then be removed from the roadway network. **Figures 4C** and **4D** illustrate the removal of these trips, which is based upon the current traffic pattern at the driveways and on the surrounding roadway network. Please note that not all of the existing traffic was removed from the Dawson Drive intersections as there are single-family homes services by this roadway. These trips are documented in Figure 4D.

For the redevelopment of the site for apartment units, the anticipated site trip distribution is illustrated in **Figure 4E**, while the application of these percentages to the trip generation contained in Table 3 is illustrated in **Figure 4F**.

Site Access Configuration and Traffic Control

Access to the site will continue to be provided via the main access located along Kimberton Road (S.R. 0113) directly across from Ross Lane, as well as the two Dawson Drive intersections with Kimberton Road (S.R. 0113). Under current conditions, the main access provides a 54-foot cartway consisting of a single ingress lane and a single egress lane separated by a 10-foot median. Stop-control is provided along the access approach to Kimberton Road (S.R. 0113).

Dawson Drive is an existing local road that serves this property, as well as existing single-family homes located on the north side. Along Dawson Drive, there are currently four driveways provided for the mixed-use site; however, with the proposed redevelopment only the western driveway will remain open to Dawson Drive. At the Dawson Drive West intersection with Kimberton Road (S.R. 0113), signage is provided that restricts entering and exiting movements to right-in/right-out only given its spacing to the adjacent signal to the west of Kimberton Road (S.R. 0113)/Township Line Road (S.R. 1038). The Dawson Drive East intersection with Kimberton Road (S.R. 0113) will continue to allow for all movements. Both Dawson Drive approaches to Kimberton Road (S.R. 0113) are stop-controlled.

As part of this evaluation, a review of the auxiliary lane warrants for the intersections of Kimberton Road (S.R. 0113) with both Dawson Drive West and East were reviewed based on the current PennDOT guidelines in accordance with *Publication 46, Chapter 11 – Traffic Studies*. In addition, the lengths for the separate left- and right-turn lanes along Kimberton Road (S.R. 0113) for the main access were also reviewed based upon the *Publication 46* requirements. Copies of the various warrant/guideline analysis worksheets are contained in **Appendix I**.

The lane warrants indicate that separate auxiliary lanes are not warranted for either of the Dawson Drive intersections with Kimberton Road (S.R. 0113). Under current conditions, a separate eastbound left-turn lane with 125 feet of storage and a separate westbound right-turn lane with 100 feet of storage are provided along Kimberton Road (S.R. 0113) at the main access. Although the guidelines recommend a 125-foot storage area for the right-turn lane, the length as currently provided will be adequate to meet the demand associated with the site given that this is a free-flow movement into the site. Therefore, no modifications to these three intersections are proposed as part of the redevelopment of the site except for the provision of the new sidewalk system along the site frontage and the ADA compliant ramps and crossings.

Sight Distance

Field measurements for sight distance were performed for the existing main access located directly opposite Ross Lane. Generally, the prevailing (or 85th percentile) travel speeds, posted speed limit, roadway grades and profiles, and the number of travel lanes play a role in determining if safe sight distances are available for egress and ingress at each driveway. The existing sight distances at the access locations were measured and compared to PennDOT's requirements, which are contained in the PennDOT publication *Pennsylvania Code, Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads*. The field measurement worksheets are provided in **Appendix J**.

Table 4 summarizes the available sight distance measurements at the existing main access, as well as the desirable and minimum required PennDOT sight distances based on the posted speed limit of 45 miles per hour for Kimberton Road (S.R. 0113). As shown in Table 4, the existing available sight distance measurements at the proposed driveways either exceed the desirable and/or minimum acceptable PennDOT requirements.

Table 4 - Sight Distance Evaluation
Main Access along Kimberton Road (S.R. 0113)

Movement	Direction	Posted Speed Limit (mph)	Approach Grade	PennDOT Required		Available Sight Distance (feet)	Meets Minimum and/or Desirable Criteria
				Desirable (feet)	Minimum (feet)		
Exiting	Looking Left	45	+4%	635	358	404	Yes
	Looking Right	45	-3%	570	406	542	Yes
Left turn Entering ⁽¹⁾	Looking Ahead	45	+4%	445	358	≥ 800	Yes
	From the Rear	45	-3%	445	406	≥ 800	Yes

(1) A separate left-turn lane is provided that protects vehicles from through traffic.

Future Build-Out Year (2019) Traffic Conditions

This section presents the future build-out year (2019) traffic conditions, both without and with the proposed redevelopment of the site, which is anticipated to be complete by the end of 2019. The future 2019 build-out year without-development traffic volumes were estimated by increasing the existing 2015 traffic volumes to account for regional growth, as well as the number of trips that can be generated by the remaining occupancy of vacant commercial space as shown in Table 2. All of the trips generated by the existing commercial use were then removed from the network prior to adding on the incremental increase due to the anticipated change to a residential use for the site.

Regional and Local Growth

According to the traffic growth rates compiled by PennDOT's Bureau of Planning and Research *Growth Factors for August 2016 to July 2017*, the anticipated growth for similar urban, non-interstate roadways in Chester County is 1.71 percent per year. To account for regional traffic growth, the existing (2015) peak hour traffic volumes were increased by the annual traffic growth rate, compounded for four years (7.02 percent total) to obtain the base build-out year (2019) volumes. We are not aware of any other nearby development projects within the study area that would impact traffic conditions.

Future without Development Traffic Volumes

The total background growth along with the additional trips generated by the existing space within the center, as illustrated in Figure 4B, were then added to the existing 2015 traffic volumes. The resultant future 2019 build-out year peak hour traffic volumes are illustrated in **Figure 5A** for the weekday morning and weekday afternoon peak hours.

Planned Roadway Improvements

There are no known roadway and/or intersection improvements planned for this area by PennDOT, the County, the Township or others that would impact the operations of the study area intersections.

Future with Development Traffic Volumes

All the trips generated by the existing commercial use were then removed from the network based upon the traffic patterns in the area as illustrated in Figures 4C and 4D. The site generated traffic volumes, as shown in Figure 4F that reflects the additional increase in traffic associated with the proposed change to apartments, were then added to the future 2019 without-development traffic volumes (Figure 5A), resulting in the future 2019 with-development peak hour traffic volumes. The resultant future 2019 with-development peak hour volumes are illustrated in **Figure 5B**. Detailed spreadsheets summarizing the existing balancing modifications, the without-development regional growth, the trips associated with the current vacant space, the adjustments to replace the existing

commercial use, and the trips associated with the proposed new use are provided in **Appendix K** for future 2019 build-out year.

Capacity/Level-of-Service Analysis

The future 2019 peak hour traffic volumes, as illustrated in Figures 5A and 5B were then subjected to detailed capacity/level-of-service analysis. The results of the traffic analyses for the build-out year (2019) are illustrated in **Figure 5C** for the without-development condition and in **Figure 5D** for the with-development condition.

The detailed capacity/level-of-service analysis worksheets for the future year (2019) without- and with-development conditions are provided in **Appendices L** and **M** respectively. Specific details regarding the analysis results and traffic operations are provided later in this report.

Capacity/ Level-of-Service Results

This section presents a detailed summary of the traffic analysis results for the existing and future build-out year (2019) traffic conditions, both without- and with- development of the site, for the two peak hours at the study area intersections, the existing main access that will continue to serve the site, and the relocated Dawson Drive West access. The comparison of the without- to with-development is based upon the incremental increase in the trips associated with the redevelopment of the property for the proposed apartments (with-development) to the without-development conditions that account for full occupancy of the existing on-site commercial use, which could potentially occur with no renovations and would not require any approvals from the Township or PennDOT, as it would be a turnover in tenants only.

The peak hour traffic volumes were analyzed to determine the existing and future traffic operating conditions, both without and with the proposed development, in accordance with the standard techniques contained in the current *Highway Capacity Manual (2010)* for both signalized and unsignalized intersections. The HCM 2010 Methodology within Synchro 8.0 (build 806, rev. 77) traffic analysis software was utilized to complete traffic analyses with the exception of the intersection of Kimberton Road (S.R. 0113) and Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023). The analyses for this intersection is based upon Synchro's Percentile Methodology since the HCM 2010 Methodology does not accurately analyze the channelized northbound right-turn lane.

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

- For signalized intersections, the Pennsylvania base saturation flow rate (Exhibit 10-9) and Pennsylvania traffic signal control calibration parameters (Exhibit 10-10) outlined in PennDOT's *Publication 46, Traffic Engineering Manual*, were used.
- For unsignalized intersections, the base critical headways at TWSC intersections (Exhibit 10-11) and base follow-up headways at TWSC intersections (Exhibit 10-12) outlined in PennDOT's *Publication 46, Traffic Engineering Manual*, were used.
- If the evaluation of without development to with development indicates that the overall intersection level-of-service has dropped, the applicant will be required to mitigate the level-of-service if the increase in delay is greater than 10 seconds. If the overall intersection delay increase is less than or equal to 10 seconds, mitigation of the intersection will not be required.
- Vehicle queues are based on the 2010 Highway Capacity Manual methodology, which are initially reported in vehicles. The reported number of vehicles was then converted to feet by multiplying by a factor of 25. The queues for the intersection of Kimberton Road (S.R. 0113) and Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023) are based on Synchro's percentile methodology.

The two signalized study area intersection timings are not optimized under without-development conditions, since the overall levels of service are acceptable (LOS C or better).

Kimberton Road (S.R. 0113) and Township Line Road (S.R. 1038)

Under existing and future year (2019) without-development conditions, the intersection operates at acceptable conditions overall (LOS C) during the weekday morning and afternoon peak hours with all approaches also operating acceptably (LOS D or better). With the redevelopment of the site, the intersection will continue to operate at the same acceptable conditions overall (LOS C) during both peak hours, as well as for all approaches (LOS D or better) during both peak hours as under without development conditions. Therefore, no mitigation measures are required for this intersection as a result of the proposed redevelopment of the site.

Kimberton Road (S.R. 0113) and Dawson Drive West

This intersection currently has stop-control provided along the Dawson Drive West approach along with signage restricting all left-turns into and out of the access. Under existing and future year (2019) without-development conditions, the intersection operates at acceptable conditions overall (LOS A) during the weekday morning and afternoon peak hours with the stop-controlled approach also operating acceptably (LOS B). With the redevelopment of the site, the intersection will continue to operate at the same acceptable conditions overall (LOS A) during both peak hours, as well as for the stop-controlled approach (LOS B) as under without-development conditions. Therefore, no mitigation measures are required for this intersection as a result of the proposed redevelopment of the site.

Kimberton Road (S.R. 0113) and Main Access/Ross Lane

The Ross Lane and Main Access approaches are both stop-controlled. Under existing and future year (2019) without-development conditions, the intersection operates acceptably overall (LOS A) during both peak hours with the stop-controlled approaches also operate acceptably (LOS D or better). With redevelopment of the site, the intersection overall will continue to operate acceptably (LOS A) and the stop-controlled approaches will also continue to operate acceptably (LOS D or better). As a result, no mitigation measures are recommended for this intersection.

Kimberton Road (S.R. 0113) and Eland Downe/Dawson Drive East

This intersection currently has stop-control provided along the Dawson Drive East and Eland Downe approaches. Additionally, there is signage along the Eland Down approach restricting left-turn egress movements. Under existing and future year (2019) without-development conditions, the intersection operates at acceptable conditions overall (LOS A) during the weekday morning and weekday afternoon peak hours with the stop-controlled Eland Downe approach also operating acceptably (LOS A). The Dawson Drive East approach operates acceptably (LOS C) under existing and future year (2019) without-development conditions during the weekday morning peak hour, but at capacity conditions (LOS E) during the weekday afternoon peak hour. With the redevelopment of the site, the intersection will continue to operate at the same levels of service overall and for the stop-controlled approaches as under without-development conditions. A review of the volumes exiting from Dawson Drive East

indicates that less than 10 vehicles per hour are anticipated; therefore, no feasible improvements can be provided to alleviate the LOS E condition for this stop-controlled approach.

Kimberton Road (S.R. 0113) and Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023)

Under existing and future year (2019) without-development conditions, the intersection operates at acceptable conditions overall (LOS C) during the weekday morning and afternoon peak hours. All of the lane groups also operate acceptably (LOS D or better) with two exceptions. During the weekday morning, the southbound dual lefts from the Phoenixville Town Center Drive will operate at capacity (LOS E) conditions and during the weekday afternoon, the northbound Kimberton Road (S.R. 0113) left-turn lane will operate at capacity (LOS E) conditions.

With the redevelopment of the site, the intersection will continue to operate at the same acceptable conditions overall (LOS C) during both peak hours and all lane group will also operate at the same levels of service. Therefore, no mitigation measures are required for this intersection as a result of the proposed redevelopment of the site.

Conclusions

Based upon the analysis conducted herein, it can be concluded that the redevelopment of the property will not have a significant impact upon the surrounding roadway network. A review of the overall levels-of-service indicates that the off-site study intersections indicates that they will operate at the same acceptable levels-of-service overall (LOS C or better) from without- to with-development conditions for the future build-out year (2019). As a result, no off-site mitigation measures are recommended or required.

Access to the site will continue to be provide via the main access located along Kimberton Road (S.R. 0113) directly opposite Ross Lane, as well as the two intersections with Dawson Drive to the east and west of the main access. Along Dawson Drive, there are currently four driveways provided for the mixed-use site; however, with the proposed redevelopment only the western driveway will remain open to Dawson Drive.

Along Kimberton Road (S.R. 0113), a new sidewalk system will be provided along the entire site frontage. Where the sidewalk crosses the main access for the proposed apartments, as well as at the Dawson Drive intersections, ADA compliant curb ramps are proposed. No other modifications are proposed for the access with the redevelopment of the site.



FIGURE 1
Site Map

**ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE TOWNSHIP, CHESTER COUNTY, PA**



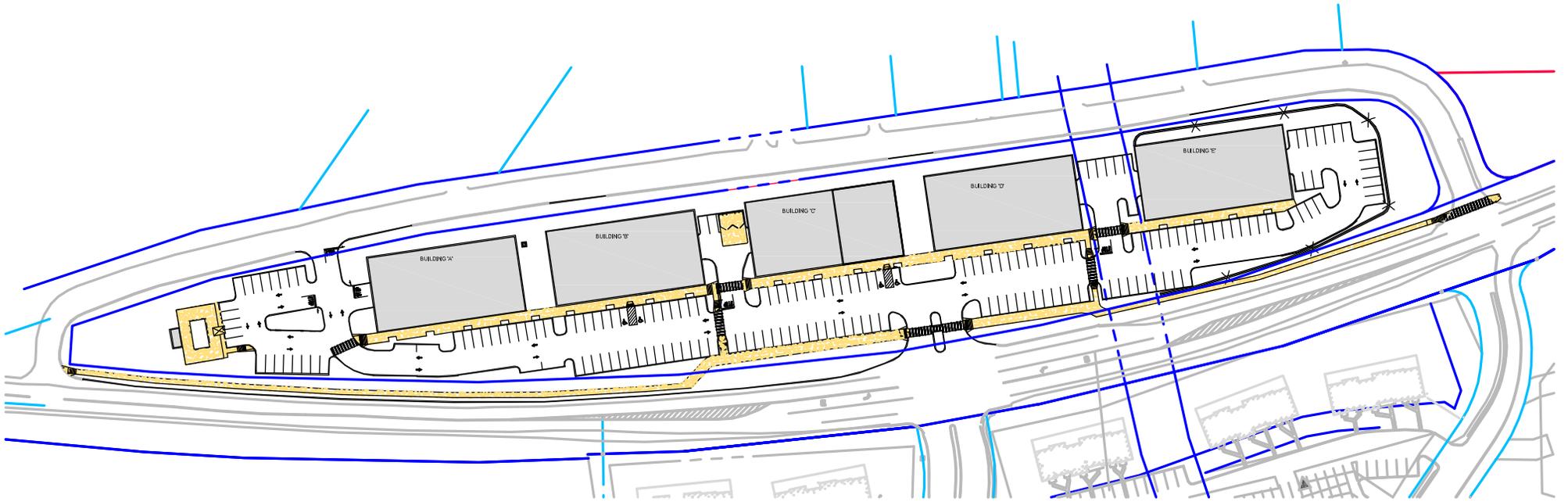
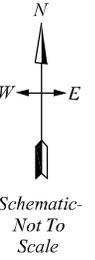
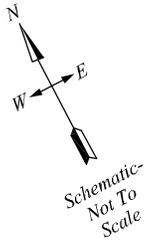


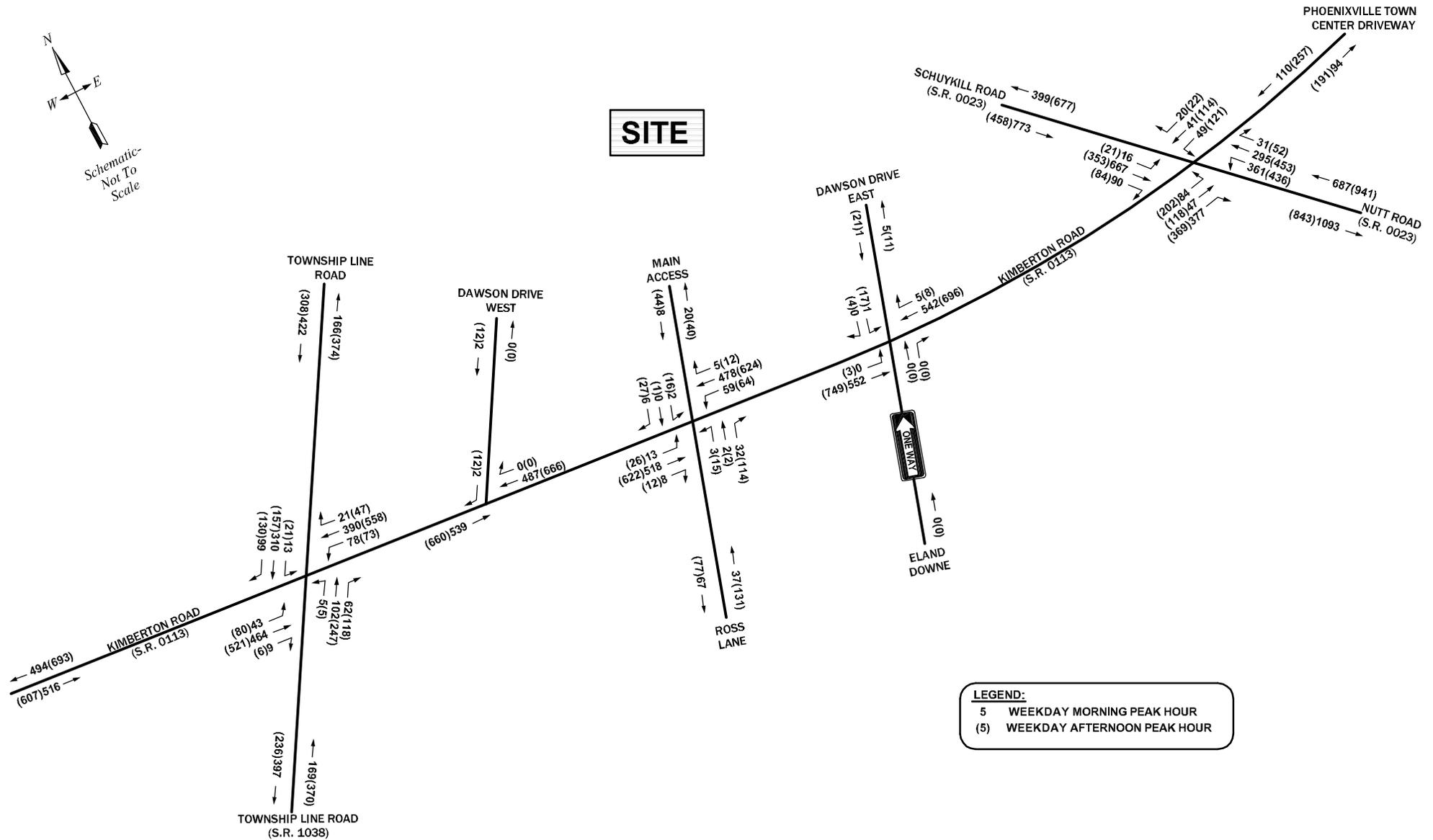
FIGURE 2
Site Plan (prepared by Bohler Engineering)

ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





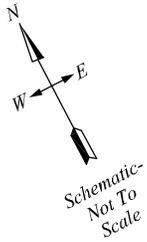
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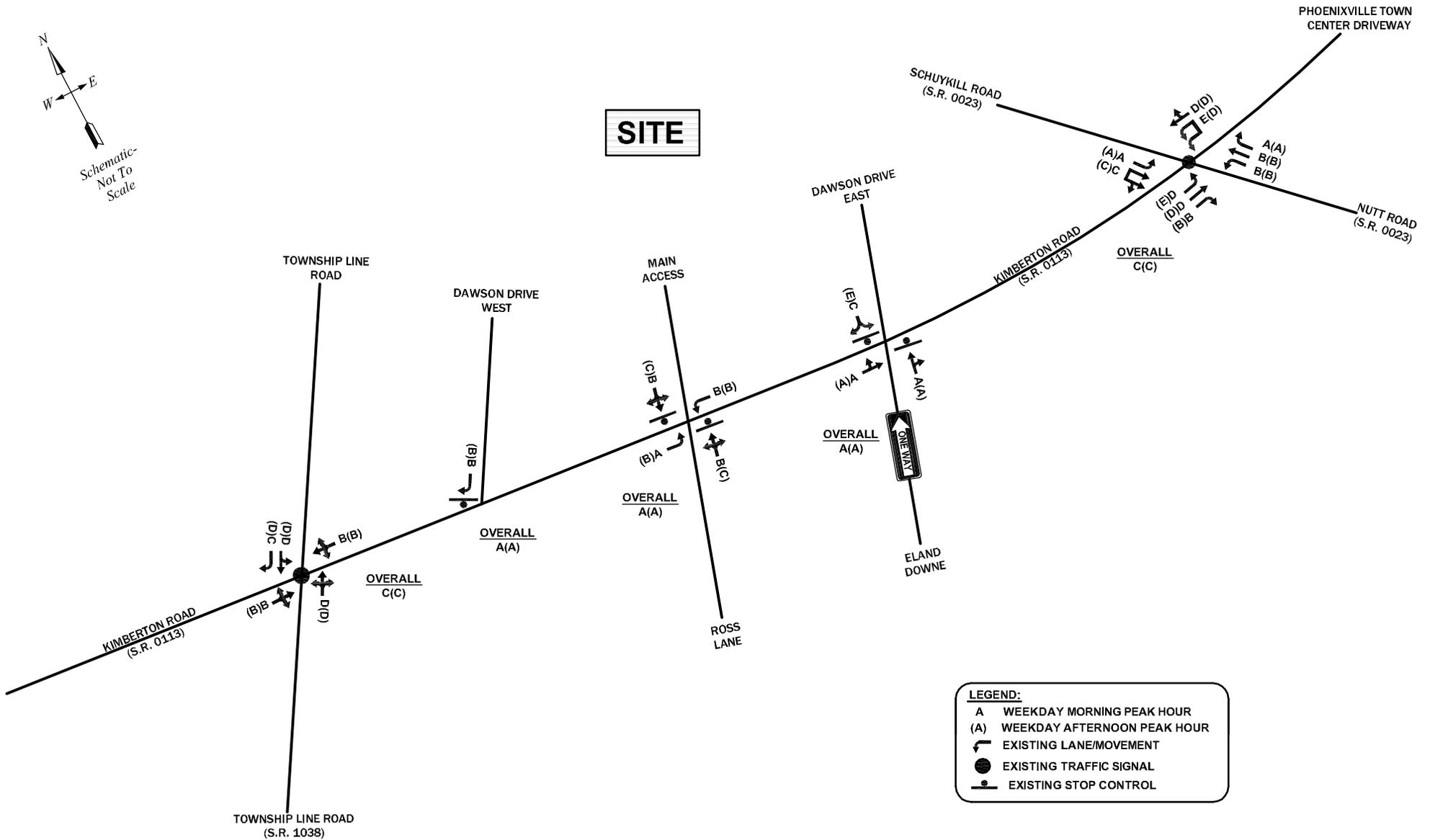
LEGEND:
 5 WEEKDAY MORNING PEAK HOUR
 (5) WEEKDAY AFTERNOON PEAK HOUR

FIGURE 3A
 2015 Existing Peak Hour Traffic Volumes
ELAND DOWNE RESIDENTIAL SUBDIVISION
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





SITE



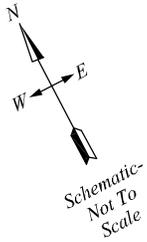
LEGEND:

- A WEEKDAY MORNING PEAK HOUR
- (A) WEEKDAY AFTERNOON PEAK HOUR
- ↩ EXISTING LANE/MOVEMENT
- EXISTING TRAFFIC SIGNAL
- EXISTING STOP CONTROL

FIGURE 3B
2015 Existing Peak Hour Levels of Service

ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





SITE

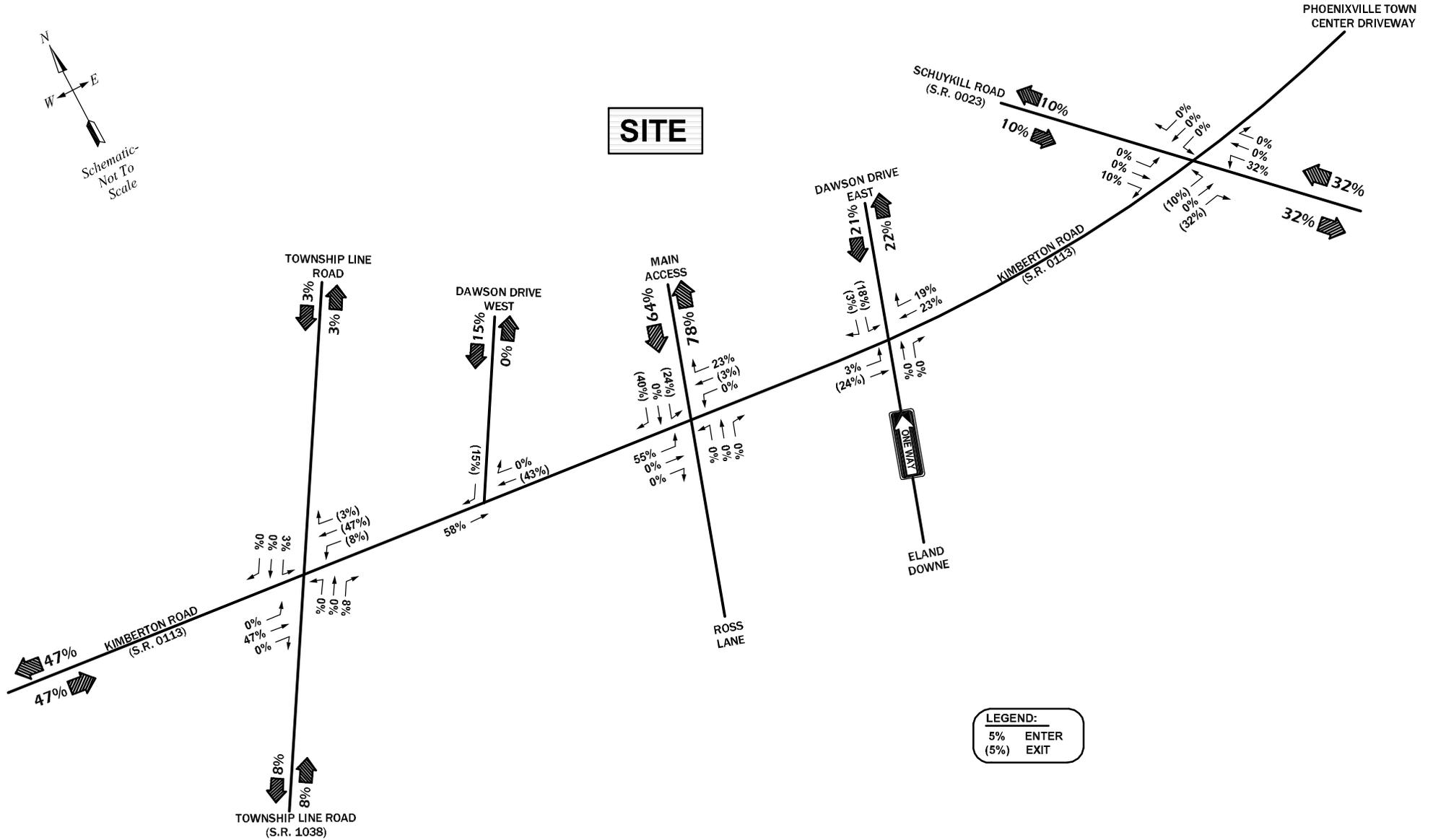
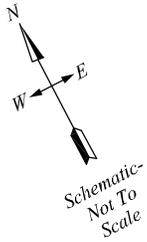


FIGURE 4A

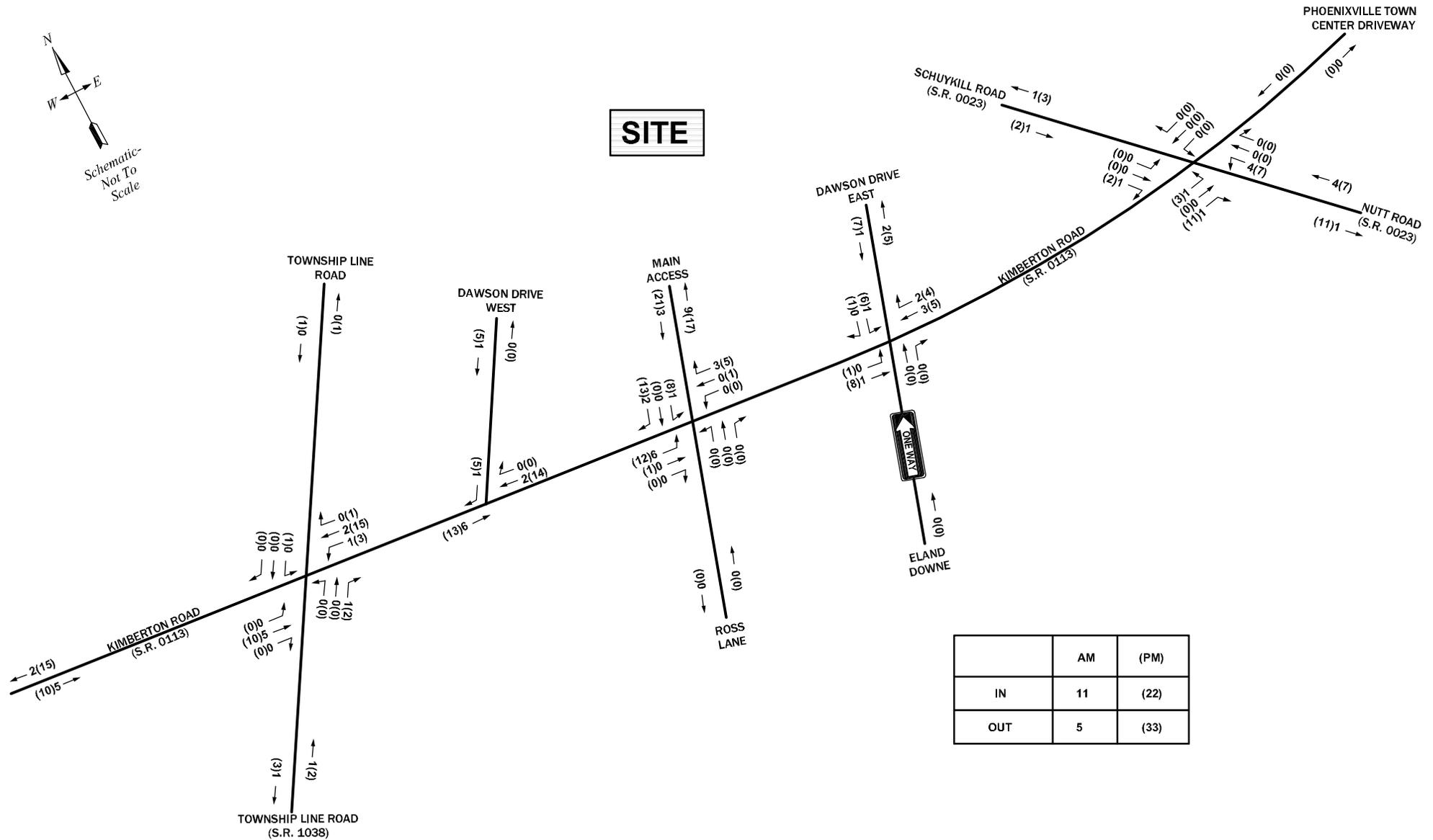
Vacant Commercial Space Trip Distribution

ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





SITE

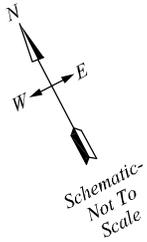


	AM	PM
IN	11	(22)
OUT	5	(33)

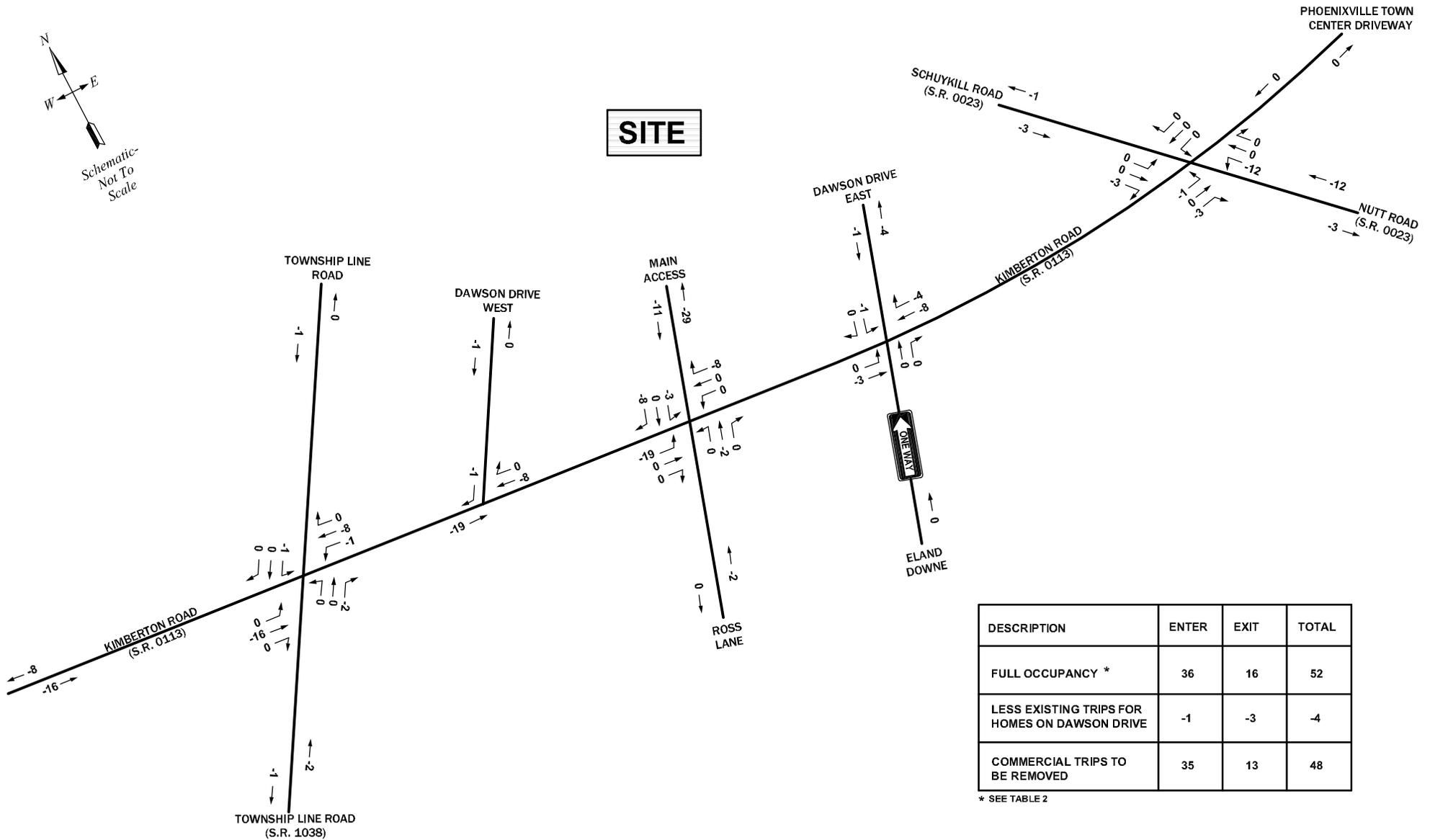
FIGURE 4B
 Vacant Commercial Space Trip Assignment
ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



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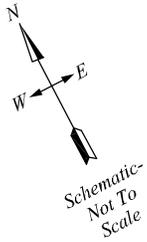


DESCRIPTION	ENTER	EXIT	TOTAL
FULL OCCUPANCY *	36	16	52
LESS EXISTING TRIPS FOR HOMES ON DAWSON DRIVE	-1	-3	-4
COMMERCIAL TRIPS TO BE REMOVED	35	13	48

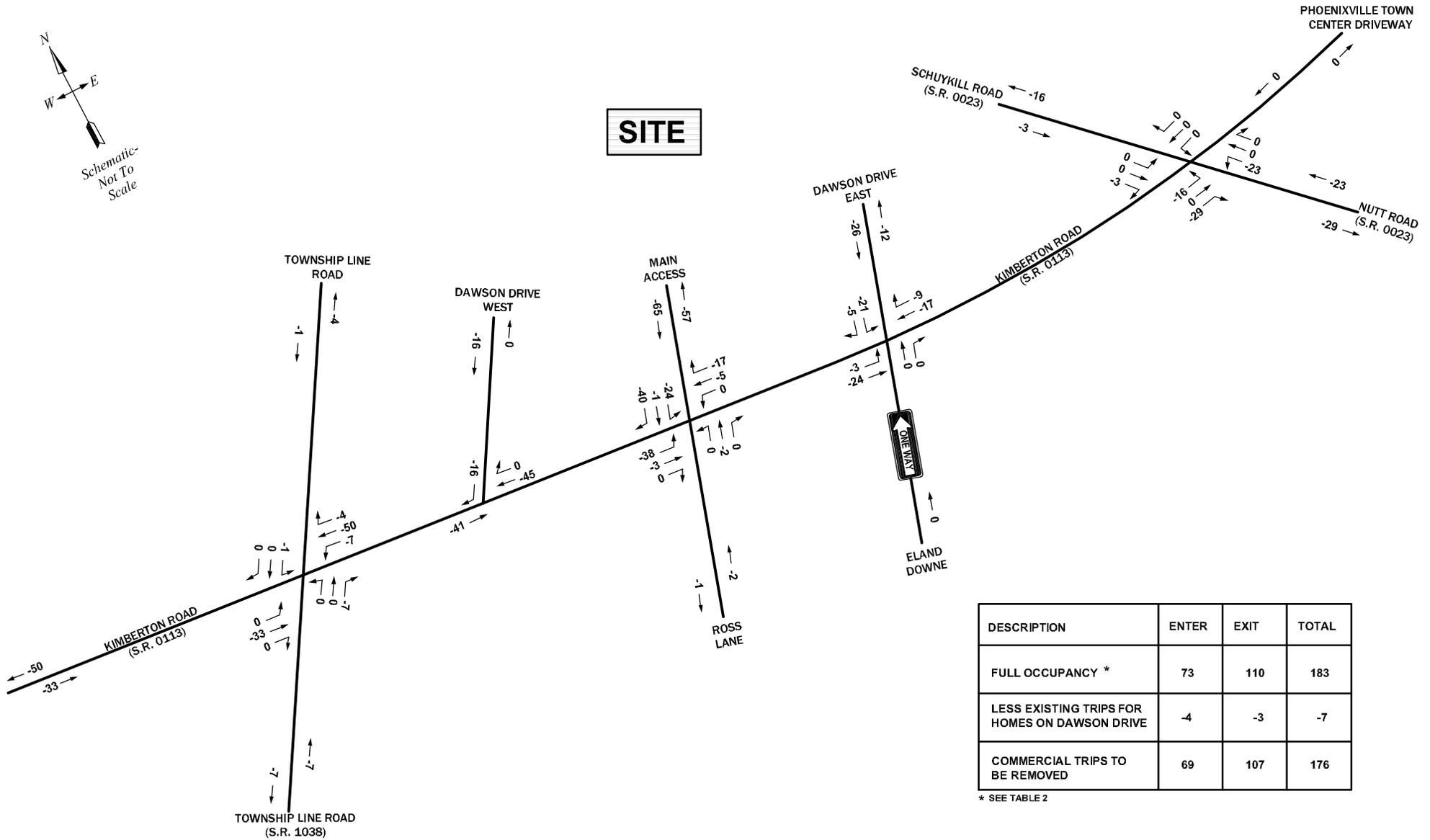
* SEE TABLE 2

FIGURE 4C
 Weekday Morning Trip Removal for Full-Occupancy of Commercial Space
ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





SITE

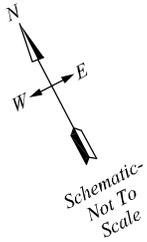


DESCRIPTION	ENTER	EXIT	TOTAL
FULL OCCUPANCY *	73	110	183
LESS EXISTING TRIPS FOR HOMES ON DAWSON DRIVE	-4	-3	-7
COMMERCIAL TRIPS TO BE REMOVED	69	107	176

* SEE TABLE 2

FIGURE 4D
 Weekday Afternoon Trip Removal for Full-Occupancy of Commercial Space
ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





SITE

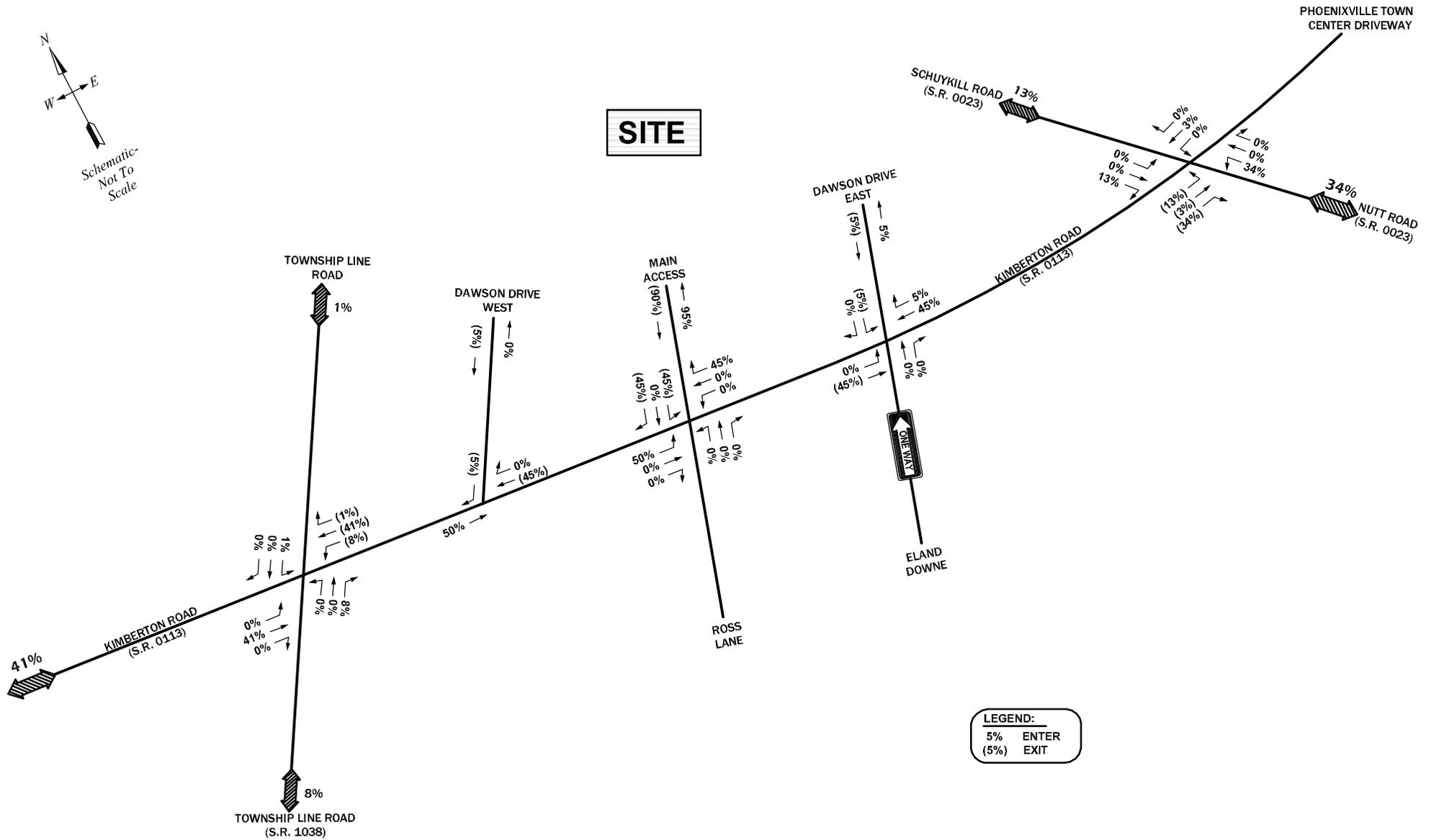
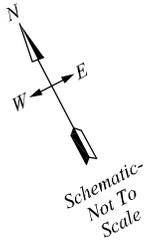


FIGURE 4E

Proposed Residential Trip Distribution

ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





SITE

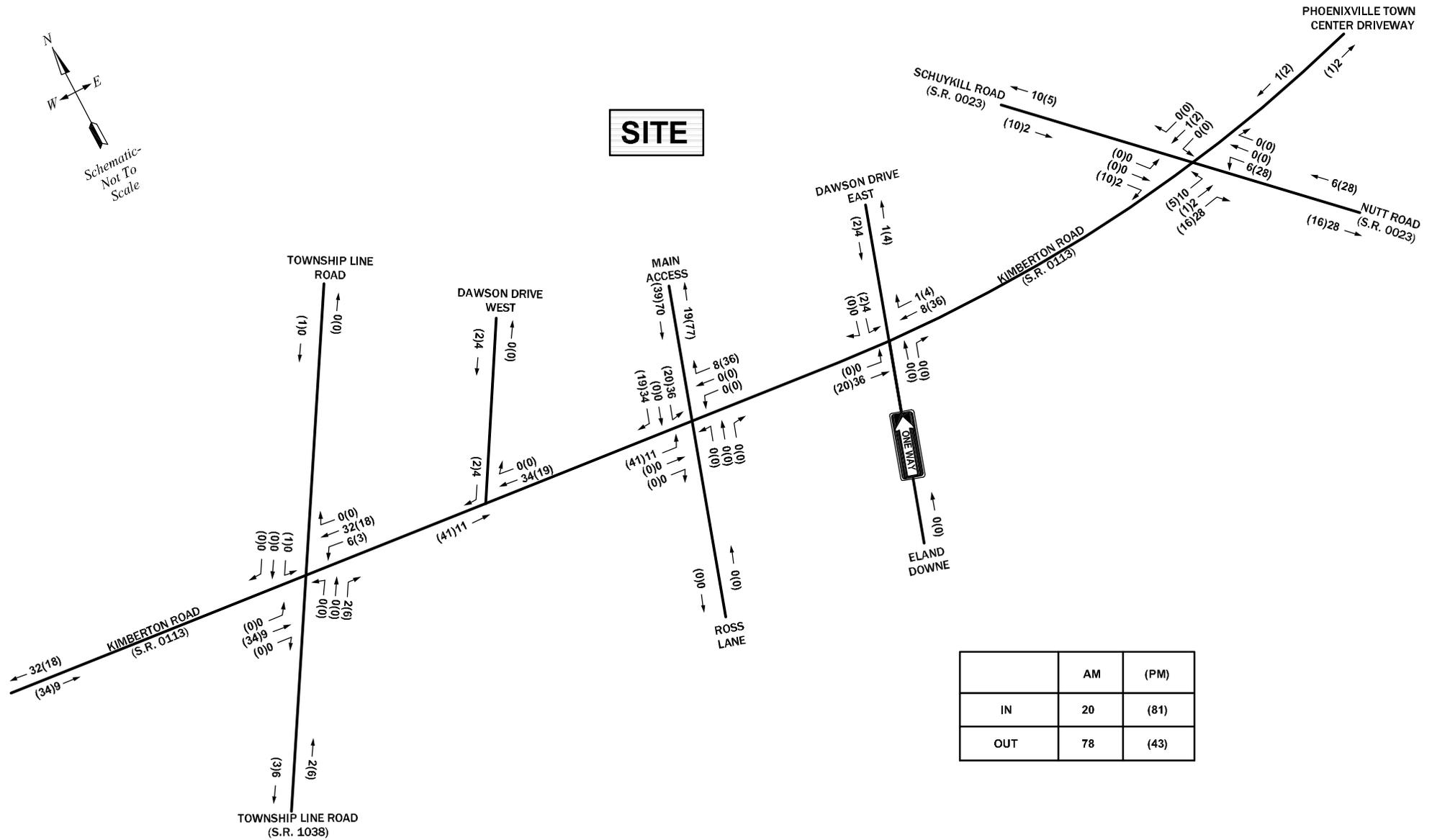
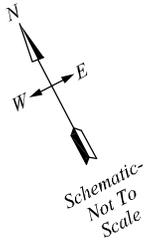


FIGURE 4F
Proposed Residential Trip Assignment

ELAND DOWNE RESIDENTIAL SUBDIVISION

PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





SITE

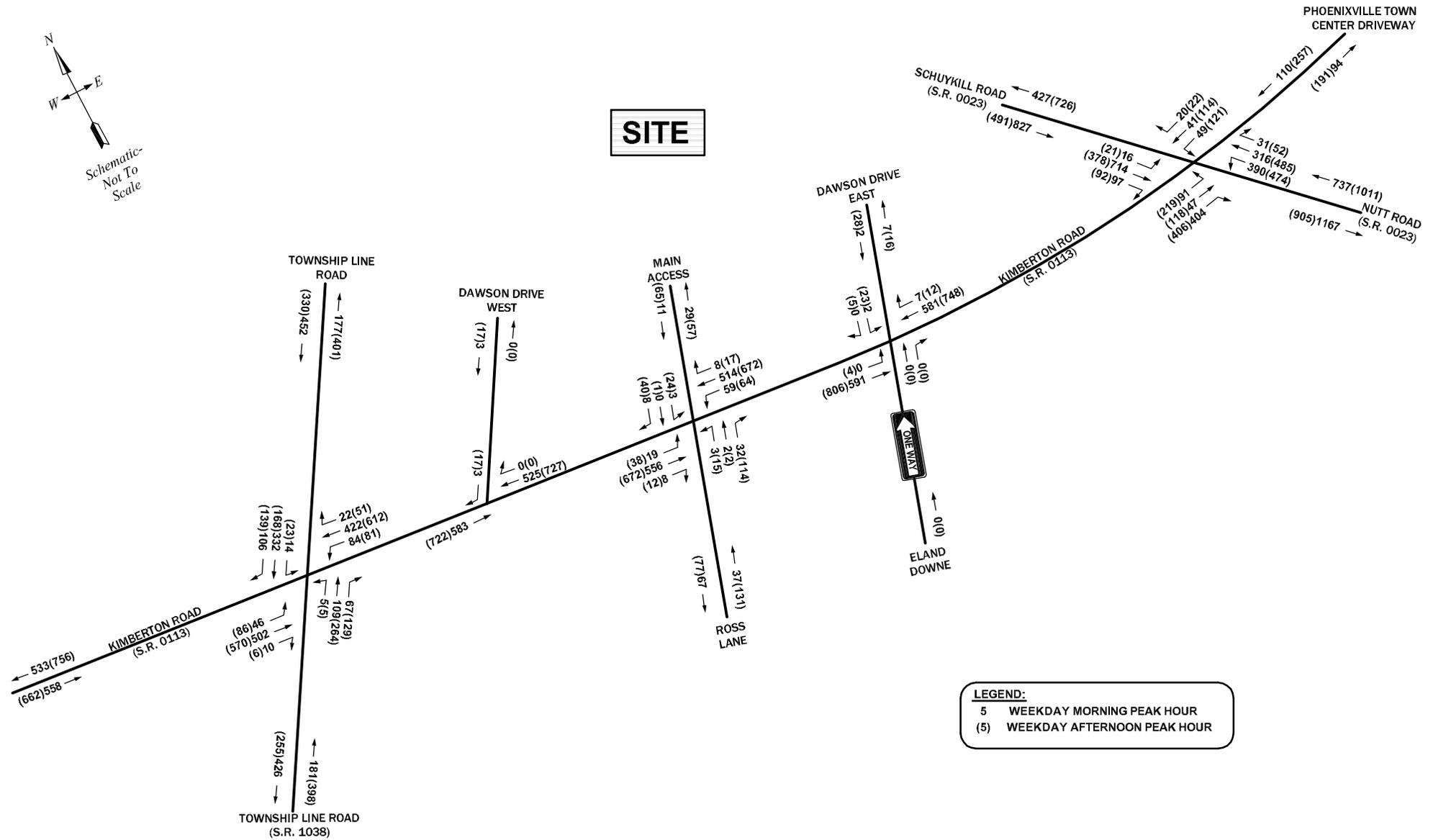
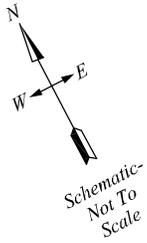


FIGURE 5A
 2019 Future Peak Hour Traffic Volumes without Development
ELAND DOWNE RESIDENTIAL SUBDIVISION
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA





SITE

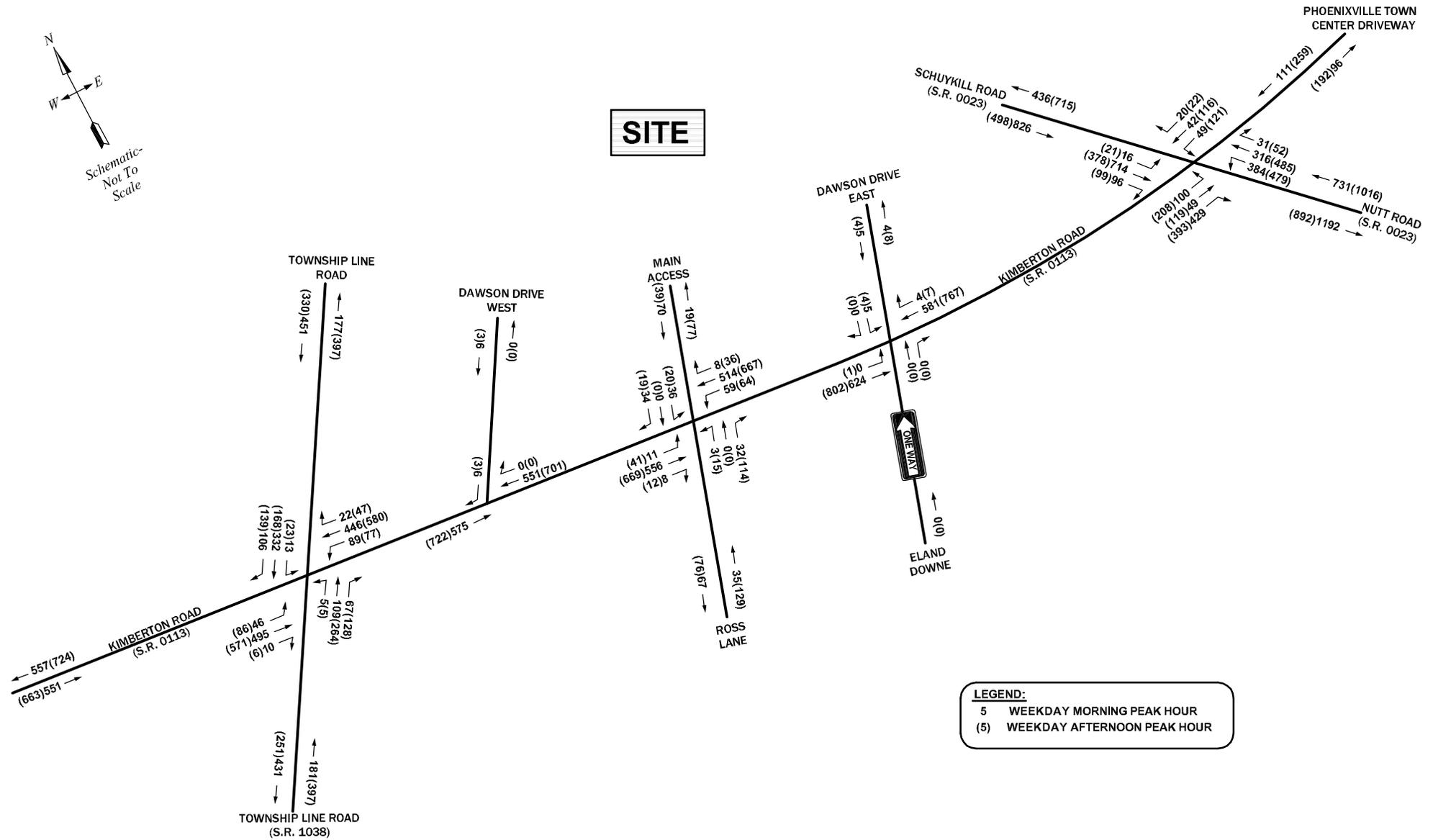


FIGURE 5B
 2019 Future Peak Hour Traffic Volumes with Development
ELAND DOWNE RESIDENTIAL SUBDIVISION
 PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



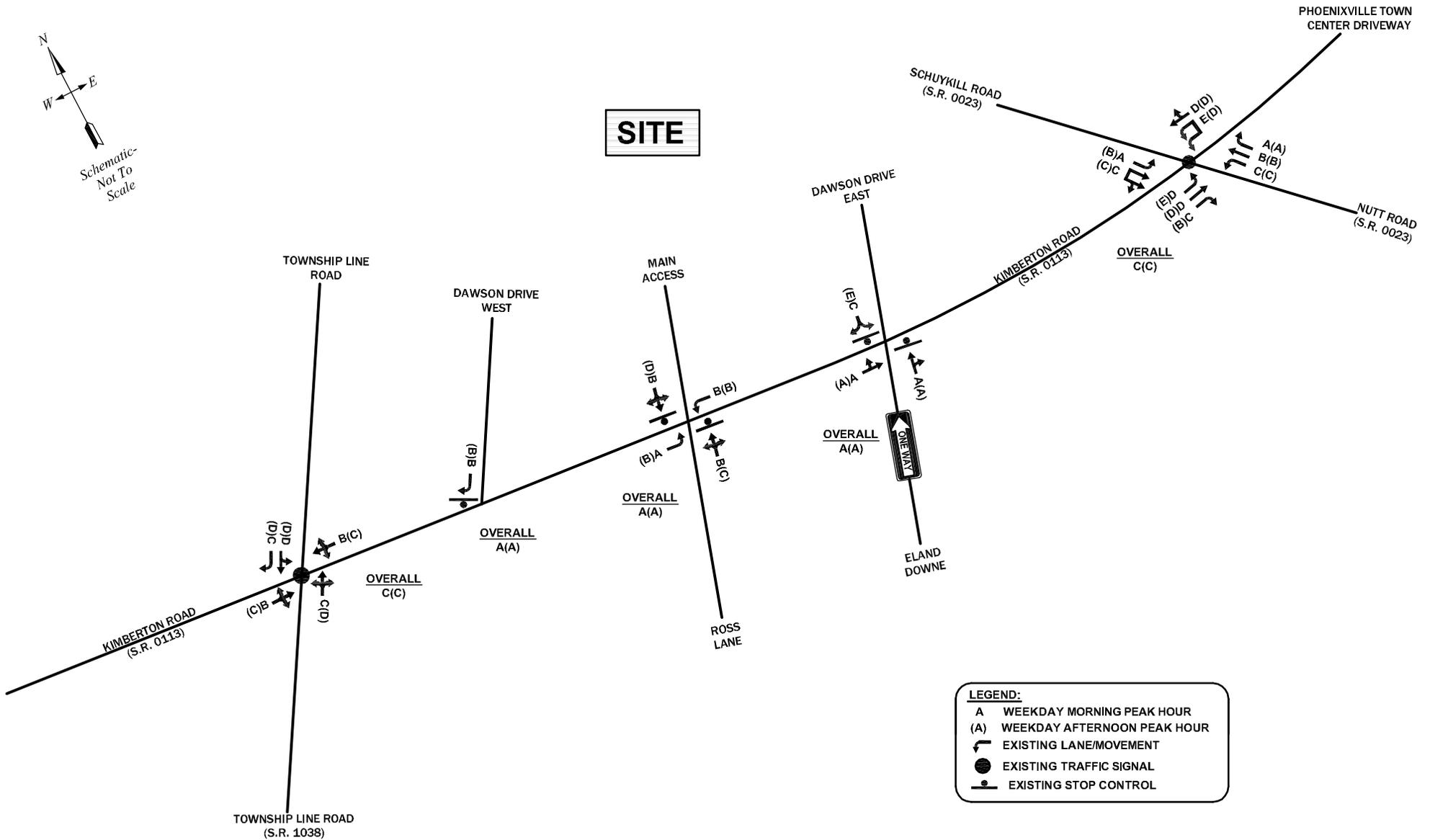


FIGURE 5C
2019 Future Peak Hour Levels of Service without Development

ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



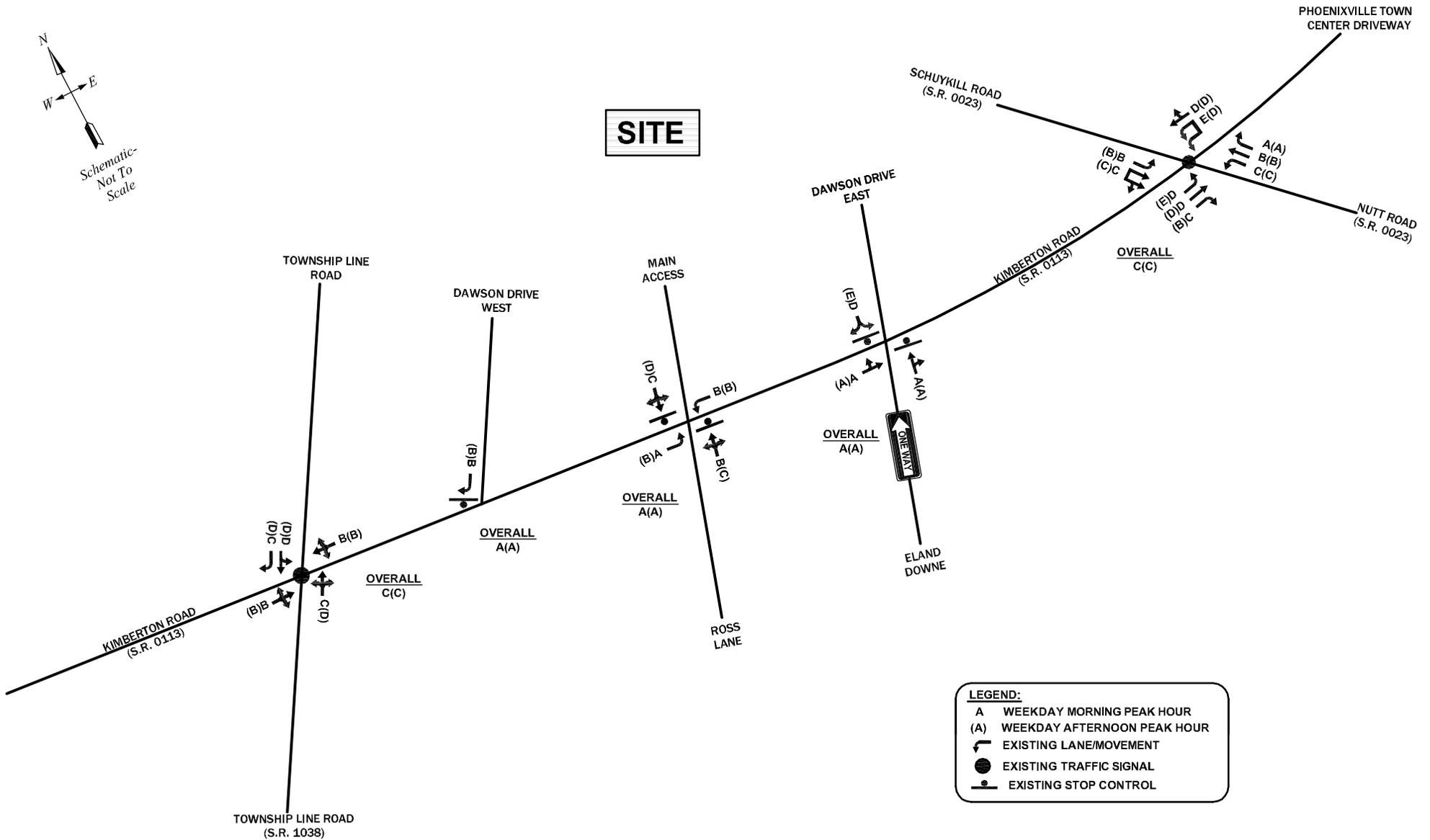


FIGURE 5D
 2017 Future Peak Hour Levels of Service with Development

ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



APPENDIX A

Level of Service and Queue Matrix Tables

Table 1 - Level of Service Matrices
1- Kimberton Road (S.R. 0113) and Township Line Road (S.R. 1038)

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year		
Development Condition			w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)
Kimberton Road (S.R. 0113)	Left	B	B	B	---	B	C	B	---
	EB Thru	11.0	12.6	12.4	---	11.7	21.4	17.9	---
	Right								
	Left	B	B	B	---	B	C	B	---
Township Line Road (S.R. 1038)	WB Thru	11.8	14.0	14.7	---	13.4	25.7	19.6	---
	Right								
	Left	D	C	C	---	D	D	D	---
	NB Thru	35.6	34.4	34.5	---	48.0	48.0	48.0	---
Township Line Road	Right								
	Left	D	D	D	---	D	D	D	---
	SB Thru	44.4	44.5	44.5	---	41.3	39.9	40.0	---
	Right	C	C	C	---	D	D	D	---
Overall		32.9	31.7	31.8	---	39.8	38.3	38.4	---
		C	C	C	---	C	C	C	---
	21.5	22.6	22.6	---	23.0	30.2	27.0	---	

Table 1 - Level of Service Matrices
2- Kimberton Road (S.R. 0113) and Dawson Drive West

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year		
Development Condition			w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)
Kimberton Road (S.R. 0113)	EB Thru	(1)	(1)	(1)	---	(1)	(1)	(1)	---
Kimberton Road (S.R. 0113)	WB Thru Right	(1)	(1)	(1)	---	(1)	(1)	(1)	---
Dawson Drive West	SB Right	B 11.3	B 11.6	B 11.9	---	B 13.4	B 14.3	B 13.6	---
Overall		A 0.0	A 0.0	A 0.1	---	A 0.1	A 0.2	A 0.0	---

(1) Movement operates at free-flow conditions.

Table 1 - Level of Service Matrices
3- Kimberton Road (S.R. 0113) and Ross Lane/Main Access

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour				
Design Year		2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year			
Development Condition			w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)	
Kimberton Road (S.R. 0113)	Left	A 9.6	A 9.8	A 9.8	--- ---	B 10.3	B 10.6	B 10.6	--- ---	
	EB Thru	(1)	(1)	(1)	--- ---	(1)	(1)	(1)	--- ---	
		Right	(1)	(1)	(1)	--- ---	(1)	(1)	(1)	--- ---
	WB Thru	Left	B 10.4	B 10.6	B 10.6	--- ---	B 10.6	B 10.8	B 10.8	--- ---
		Thru	(1)	(1)	(1)	--- ---	(1)	(1)	(1)	--- ---
		Right	(1)	(1)	(1)	--- ---	(1)	(1)	(1)	--- ---
Ross Lane	Left	B	B	B	---	C	C	C	---	
NB Thru	Thru	12.3	12.8	12.5	---	15.9	17.4	16.8	---	
	Right									
Main Access	Left	B	B	C	---	C	D	D	---	
	SB Thru	13.3	14.2	19.0	---	21.0	26.4	27.3	---	
Overall	Left	A 1.1	A 1.2	A 2.0	--- ---	A 2.6	A 3.1	A 2.6	--- ---	
	Right									

(1) Movement operates at free-flow conditions.

Table 1 - Level of Service Matrices
4- Kimberton Road (S.R. 0113) and Eland Downe/Dawson Drive East

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year		
Development Condition			w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)
Kimberton Road (S.R. 0113)	Left EB Thru	A 0.0	A 0.0	A 0.0	--- ---	A 0.0	A 0.1	A 0.0	--- ---
	Thru WB Right	(1)	(1)	(1)	--- ---	(1)	(1)	(1)	--- ---
Eland Downe	Thru NB Right	A 0.0	A 0.0	A 0.0	--- ---	A 0.0	A 0.0	A 0.0	--- ---
Dawson Drive East	Left SB Right	C 22.2	C 24.7	D 26.2	--- ---	E 35.0	E 45.8	E 42.2	--- ---
Overall		A 0.0	A 0.0	A 0.1	--- ---	A 0.5	A 0.9	A 0.1	--- ---

(1) Movement operates at free-flow conditions.

(2) Movement does not exist.

Table 1 - Level of Service Matrices

5- Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023) and Kimberton Road (S.R. 0113)/Phoenixville Town Center

Time Period		Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year		2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year		
Development Condition			w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)
Schuylkill Road (S.R. 0023)	Left	A 9.1	A 9.9	B 10.3	---	A 10.0	B 10.1	B 10.1	---
	EB Thru	C 22.5	C 25.7	C 26.6	---	C 21.9	C 23.0	C 23.0	---
	Thru/Right								
Nutt Road (S.R. 0023)	Left	B 18.5	C 28.7	C 29.8	---	B 18.3	C 23.1	C 24.1	---
	WB Thru	B 11.1	B 12.4	B 13.0	---	B 16.3	B 17.1	B 17.1	---
	Right	A 0.1	A 0.1	A 0.1	---	A 0.1	A 0.1	A 0.1	---
Kimberton Road (S.R. 0113)	Left	D 46.6	D 44.9	D 44.6	---	E 56.5	E 65.4	E 59.2	---
	NB Thru	D 50.7	D 47.8	D 46.4	---	D 45.8	D 45.5	D 45.5	---
	Right	B 18.9	C 24.2	C 28.3	---	B 10.5	B 10.6	B 10.5	---
Phoenixville Town Center	Left/Left	E 56.5	E 56.5	E 56.5	---	D 51.1	D 51.1	D 51.1	---
	SB Thru	D 39.9	D 37.3	D 36.0	---	D 45.0	D 44.6	D 44.9	---
	Right								
Overall		C 22.0	C 25.8	C 27.2	---	C 24.8	C 26.6	C 26.2	---

Table 2 - 95th Percentile Queue Matrices

1- Kimberton Road (S.R. 0113) and Township Line Road (S.R. 1038)

Time Period		Current Storage ⁽¹⁾ (feet)	Future Storage (feet)	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year		
Development Condition					w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)
Kimberton Road (S.R. 0113)	Left	420	420	348	400	395	---	448	713	650	---
	EB Thru										
	Right										
	Left										
WB Thru	85,960 ⁽²⁾	85,960 ⁽²⁾	345	408	443	---	520	835	700	---	
	Right										
Township Line Road (S.R. 1038)	Left	≥500	≥500	185	195	195	---	423	458	455	---
	NB Thru										
Township Line Road	Right	≥500	≥500	405	433	433	---	238	250	250	---
	SB Thru										
	Right	100	100	73	80	80	---	163	170	170	---

(1) Distance measured from stop bar, if present, to near edge of closest study area intersection or adjacent signalized intersection..

(2) Distance measured from stop bar to Dawson Drive West and Main Access

Table 2 - 95th Percentile Queue Matrices
2- Kimberton Road (S.R. 0113) and Dawson Drive West

Time Period		Current Storage ⁽¹⁾ (feet)	Future Storage (feet)	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year		
Development Condition					w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)
Kimberton Road (S.R. 0113)	EB Thru	60	60	0	0	0	---	0	0	0	---
	WB Thru Right	895	895	0	0	0	---	0	0	0	---
Dawson Drive West	SB Right	250	250	0	0	0	---	3	3	0	---

(1) Distance measured from stop bar, if present, to near edge of closest study area intersection or adjacent signalized intersection..

Table 2 - 95th Percentile Queue Matrices
3- Kimberton Road (S.R. 0113) and Ross Lane/Main Access

Time Period		Current Storage ⁽¹⁾ (feet)	Future Storage (feet)	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour				
Design Year				2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year			
Development Condition					w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)	
Kimberton Road (S.R. 0113)	Left	125	125	3	3	0	---	3	5	5	---	
	EB Thru	900	900	0	0	0	---	0	0	0	---	
		Right	100	100	0	0	0	---	0	0	0	---
	WB	Left	160	160	8	8	8	---	8	8	8	---
		Thru	485	485	0	0	0	---	0	0	0	---
		Right	100	100	0	0	0	---	0	0	0	---
Ross Lane	Left											
NB	Thru	150	150	5	8	5	---	30	35	33	---	
	Right						---				---	
Main Access	Left											
SB	Thru	40	40	3	3	23	---	15	30	18	---	
	Right						---				---	

(1) Distance measured from stop bar, if present, to near edge of closest study area intersection or adjacent signalized intersection..

Table 2 - 95th Percentile Queue Matrices
4- Kimberton Road (S.R. 0113) and Eland Downe/Dawson Drive East

Time Period		Current Storage ⁽¹⁾ (feet)	Future Storage (feet)	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year		
Development Condition					w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)
Kimberton Road (S.R. 0113)	EB Left Thru	485	485	0	0	0	---	0	0	0	---
	WB Thru Right	1700	1700	0	0	0	---	0	0	0	---
Eland Downe	NB Thru Right	270	270	0	0	0	---	0	0	0	---
Dawson Drive East	SB Left Right	250	250	0	0	3	---	13	23	3	---

(1) Distance measured from stop bar, if present, to near edge of closest study area intersection or adjacent signalized intersection..

(2) Movement/Approach to be removed with redevelopment of the site.

Table 2 - 95th Percentile Queue Matrices

5- Schuylkill Road (S.R. 0023)/Nutt Road (S.R. 0023) and Kimberton Road (S.R. 0113)/Phoenixville Town Center

Time Period		Current Storage ⁽¹⁾ (feet)	Future Storage (feet)	Weekday Morning Peak Hour				Weekday Afternoon Peak Hour			
Design Year				2015 Existing	2019 Build-Out Year			2015 Existing	2019 Build-Out Year		
Development Condition					w/o Dev	w/Dev (Base)	w/Dev (Imps)		w/o Dev	w/Dev (Base)	w/Dev (Imps)
Schuylkill Road (S.R. 0023)	Left	175	175	14	14	14	---	16	16	16	---
	EB Thru	545	545	328	366	365	---	153	166	168	---
	Thru/Right										
Nutt Road (S.R. 0023)	Left	110 ⁽²⁾	110 ⁽²⁾	239	361	354	---	230	321	329	---
	WB Thru	2200	2200	208	231	231	---	320	354	352	---
	Right	175	175	0	0	0	---	0	0	0	---
Kimberton Road (S.R. 0113)	Left	200	200	96	100	109	---	178	206	188	---
	NB Thru	1700	1700	70	69	70	---	123	122	123	---
	Right	300	300	119	160	191	---	79	82	82	---
Phoenixville Town Center	Left/Left	70	70	41	41	41	---	70	70	70	---
	SB Thru	135	135	72	71	71	---	133	132	135	---
	Right										

(1) Distance measured from stop bar, if present, to near edge of closest study area intersection or adjacent signalized intersection.

(2) A two-way center left-turn lane is provided along this approach.

APPENDIX B

Correspondence and/or Meeting Minutes



January 4, 2016

CHESTER COUNTY, BOROUGH OF PHOENIXVILLE
SR 0113 (KIMBERTON ROAD)
HIGHWAY OCCUPANCY PERMIT APPLICATION NO. PRE1254
ELAND DOWNE RESIDENTIAL SUBDIVISION
TRAFFIC LOG NO.: C15-013XP
SCOPING APPLICATION REVIEW

Sandy A. Koza, PE, PTOE
McMahon Associates, Inc.
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Dear Ms. Koza:

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

The Department understands that the provided transportation impact analysis is preliminary in nature. As such, the Department reserves the right to make future additional comments based on a formal submission with a complete transportation impact study (TIS).

Our comments on your preliminary submission are as follows:

PRELIMINARY COMMENTS

1. The study area, trip generation data, and ITE land use Scoping elements appear acceptable.
2. Pedestrian access to the immediate residential and commercial developments must be explored. Specifically, providing ADA compliant sidewalk and ramps along the property frontage up to the signalized intersection of SR 0113 and Township Line Road and a crossing to the existing Eland Downe Townhouse Development (Pedestrian Study dependent).
3. The applicant must apply for a Business Partner ID (BPID). The BPID is to be used in the establishment of a billing account for the invoicing of inspection costs. For information on obtaining a BPID, please visit:

<https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp>

(Please make sure that you follow the instructions that are in the "PINK" area). After a BPID is obtained and activated by the system administrator, please provide the following

information in the applicant contact information tab under "Applicant Team":
-BPID

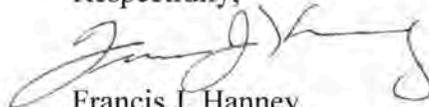
-Contact information (name/title/phone/email) for a "general" contact person (person that typically deals with the Highway Occupancy Permit application process)

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

4. Please be aware that the installation of drainage facilities within the Legal Right-of-Way may necessitate additional permitting requirements, including, but not limited to, a separate Highway Occupancy Permit from the Municipality for the future maintenance of the new drainage facilities. Specific information relating to five potential drainage scenarios, as well each scenario's submission requirements, is presented in PennDOT Strike-Off Letter 470-10-03. PennDOT is legally bound by Section 421 of the State Highway Law (36 P.S. § 670-421) to enforce this maintenance responsibility for stormwater facilities relating to HOP projects. Please be guided according.
5. The PennDOT project number, C15-013XP, for this scoping application review must be referenced when the formal HOP application is submitted.
6. Unless requested by the Borough, a meeting does not appear to be warranted at this time.

The Department has performed this preliminary review based only on the limited information provided. We reserve the right to make future, additional, detailed comments based on subsequent submissions. If you have any questions pertaining to the technical aspects of this review, please contact John R. Otten at 610-205-6571 or jotten@pa.gov.

Respectfully,



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

cc: M. Meile, P.E.
L.R. Belmonte, P.E.
Traffic Services File



McMAHON ASSOCIATES, INC.
425 Commerce Drive | Suite 200 | Fort Washington, PA 19034
p 215-283-9444 | f 215-283-9446
mcmahonassociates.com

November 24, 2015

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

RE: **Transportation Impact Study Scoping Meeting Application**
Proposed Eland Downe Residential Subdivision
Phoenixville Borough, Chester County, PA
McMahon No. 815697.11

Dear Mr. Hanney:

McMahon Associates, Inc. (McMahon) is submitting the attached *Transportation Impact Study (TIS) Scoping Meeting Application* to the Department related to the redevelopment of a mixed-use property located to the north of Kimberton Road (S.R. 0113), between Dawson Drive East and West, in Phoenixville Borough, Chester County. The applicant is planning on redeveloping the existing mixed-use property with 34,935 square feet of space to provide 188 residential apartments. Access to the site will be provided via two of the three existing accesses located along Kimberton Road (S.R. 0113). The full-movement access located directly opposite Ross Lane will remain and could potentially be signalized. The second access that will remain is the full-movement Dawson Drive West access. The other access to the east will then be closed.

We are requesting that the Department review the attached documents to provide us with your feedback on the proposed scope and methodology that will be utilized to prepare a *Transportation Impact Assessment*. If the Department feels that a meeting between the applicant, the Borough and the Department is necessary, please contact us and we will coordinate with you on the scheduling. If you should have any questions or require additional information regarding the submission, please feel free to contact me.

Sincerely,

Sandy A. Koza, PE, PTOE
Project Manager

Attachments

cc: E. Jean Krack, Phoenixville Borough Manager
David Crockett, The Quarry Center, LP

TRANSPORTATION IMPACT STUDY (TIS) SCOPING MEETING APPLICATION

Scoping Meeting Date: TBD

Applicant: The Quarry Center, LP

Applicant's Consultant: McMahon Associates, Inc.

Applicant's Primary Contact: Sandy A. Koza, PE, PTOE

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

(1) LOCATION OF PROPOSED DEVELOPMENT: (See attached location map)

PennDOT Engineering Dist.: 6-0 County: Chester

Municipality: Phoenixville Borough

State Route(s) (SR): 0113 (Kimberton Road from Dawson Drive West to Dawson Drive East)

From Segment(s): 0260

Offset(s): 0761

To Segment(s): 0260

Offset(s): 2231

(2) DESCRIPTION OF PROPOSED DEVELOPMENT: (See attached)

Proposed site access: Access to the site will be provided via two of the existing three accesses on Kimberton Road (S.R. 0113) that currently serve the site. The full-movement access located directly opposite Ross Lane will remain and could potentially be signalized. The second access that will remain is the full-movement Dawson Drive West access. The other access to the east will then be closed.

Proposed land uses: 188 Apartments

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

There are no sidewalks provided along Kimberton Road (S.R. 0113) along the site frontage under current conditions and there are no transit services provided to this area.

(3) DEVELOPMENT SCHEDULE AND STAGING:

Anticipated Opening Date: 2017

Full Buildout Date: 2017

Describe Proposed Development Schedule/Staging: No Phasing is anticipated.

(4) TRIP GENERATION

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

Trip generation for the proposed development will be based on:

ITE Trip Generation Manual.

(List proposed development land uses and associated ITE Land Use Codes)

Other independent surveys.

(Attach justification for non-ITE methods)

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

Vehicular Trip Generation (1)

Land Use	Size	Daily	Weekday Morning			Weekday Afternoon		
			In	Out	Total	In	Out	Total
Proposed Apartments (2)	188 dwelling units	1263	19	77	96	79	42	121
Existing Retail (3)	34,935 square feet	1492	21	13	34	62	68	130
Difference	---	-229	-2	64	62	17	-26	-9

(1) Based on ITE's Trip Generation Manual, Ninth Edition.

(2) Based upon the equations for Land Use Code 220: Apartment.

(3) Based on rates for Land Use Code 820: Shopping Center.

(5) ESTIMATED DAILY TRIP GENERATION/DRIVEWAY CLASSIFICATION:

(a) Estimated Daily Trip Generation of Proposed Development – Assuming One Access Point and Full Build out/Occupancy of Entire Tract: 1263 trips/day

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

Low Volume:

Medium Volume:

High Volume:

(6) TRANSPORTATION IMPACT STUDY REQUIRED?

No

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

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

Other considerations as described below:

(7) TRAFFIC IMPACT ASSESSMENT REQUIRED? ____ No x Yes

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

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

Roadway and Study Intersections

- Kimberton Road (S.R. 0113) and Township Line Road
- Kimberton Road (S.R. 0113) and Dawson Drive West
- Kimberton Road (S.R. 0113) and Ross Lane /Main Access
- Kimberton Road (S.R. 0113) and Dawson Drive East
- Kimberton Road (S.R. 0113) and Schuylkill Road (S.R. 0023)

Land use context (Refer to Smart Transportation Handbook): Suburban Corridor

Known Congestion Areas: None

Known Safety Concerns: Unknown

Known Environmental Constraints: None

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

Transit Review (Current routes/stops): None

(9) STUDY AREA TYPE: Urban ____ Suburban x Rural ____

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

The study will include analysis of the weekday morning (7:00 AM to 9:00 AM) and weekday afternoon (4:00 PM to 6:00 PM) peak periods for existing conditions, as well as the future build-out year (2017), both without and with the proposed development of the site. The without-development analysis will also account for full-occupancy of the existing center to properly account for the change in use.

(11) TRAFFIC ADJUSTMENT FACTORS:

(a) Seasonal Adjustment: (Identify counts requiring adjustment and methodology):
Not Applicable

(b) Annual Base Traffic Growth: 1.75 %/yr.

Source: PennDOT Bureau of Planning and Research Growth Factors for August 2015 to July 2016 for similar non-interstate urban highways within Chester County.

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

Not Applicable

(d) Captured Trips for Multi-Use Sites: (List % and manner of application. Attach justification where required.):

Not Applicable

(e) Modal Split Reductions:

Not Applicable

(f) Other Reductions:

Not Applicable

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

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

The applicant will contact the Borough to inquire about other planned/proposed area developments that should be included in the study.

(13) TRIP DISTRIBUTION AND ASSIGNMENT:

(Describe; explain/justify; attach diagram and related information.)

The trips will be distributed based on existing traffic patterns and the location of the proposed accesses.

(14) APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:

<u>Location</u>	<u>Period</u>	<u>Type</u>
All study intersections listed above (Item 8)	Weekday AM (7-9) Weekday PM (4-6)	MTMs
Kimberton Road (S.R. 0113) and Ross Lane (Potential Signal)	Weekday 12-hour Count (6AM – 6 PM)	MTMs
Kimberton Road (S.R. 0113)	Weekday, Daily Count	ATR

(15) CAPACITY/LOS ANALYSIS:

<u>Location</u>	<u>Period</u>	<u>Type</u>
Study intersections listed above (Item 8)	AM and PM Peak Hours	Synchro Version 8 Build 806 HCM 2010 Methodology

Please note that we will utilize the HCM 2010 Methodology for capacity/LOS analysis unless there are any issues encountered with the program results that do not make sense with current field conditions or if the HCM 2010 Methodology is not able to model the intersection configuration. In these situations, we will utilize Synchro's percentile methodology.

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

Not Applicable

(17) OTHER NEEDED ANALYSES:

- (a) Sight Distance Analysis:
(Required for all site access driveways; identify other locations)
McMahon will complete this for the two accesses that are to remain.
- (b) Signal Warrant Analysis:
(Identify locations)
McMahon will complete this step for any unsignalized intersections that currently or are anticipated to operate at deficient conditions (LOS E or F) on the stop-controlled approaches. A signal warrant evaluation will also be conducted for the intersection of Kimberton Road (S.R. 0113) and Ross Lane/Main Access.
- (c) Required Signal Phasing/Timing Modifications:
(Determine for all signalized intersections; specify methodology)
McMahon will indicate any proposed signal modifications at the existing signalized intersections within the study area, if they are necessary for mitigation of development impacts.
- (d) Traffic Signal Corridor/Network Analysis:
(Identify locations/methodology)
Not Applicable
- (e) Analysis of the Need for Turning Lanes:
(Identify locations/methodology)
PennDOT's latest guidelines in Publication 46 will be reviewed for two accesses that are to remain.
- (f) Turning Lane Lengths:
(Identify methodology to be used)
PennDOT's latest guidelines in Publication 46 will be reviewed, if lanes are warranted.
- (g) Left Turn Signal Phasing Analysis:
(Identify locations/methodology)
McMahon will determine if modifications are necessary for the two off-site signalized intersections. McMahon will also evaluate left-turn conflict factors for the potential signal at the intersection of Kimberton Road (S.R. 0113) and Ross Lane/Main Access.
- (h) Queuing Analysis:
(Identify locations/methodology)
McMahon will complete this at the study intersections using the 95th percentile queues based on the HCM 2010 methodology.
- (i) Gap Studies:
(Identify locations/methodology)
Upon Request Only

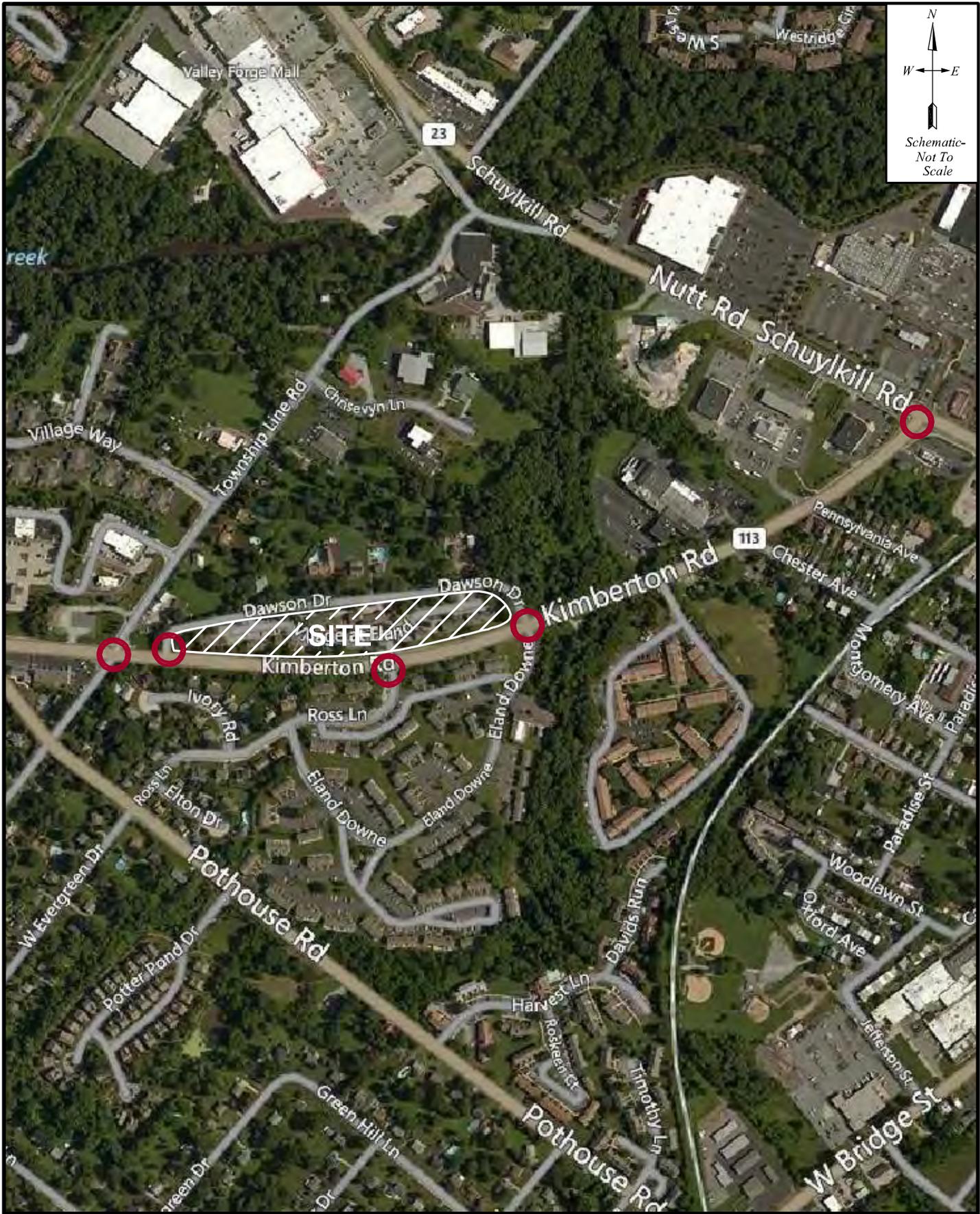


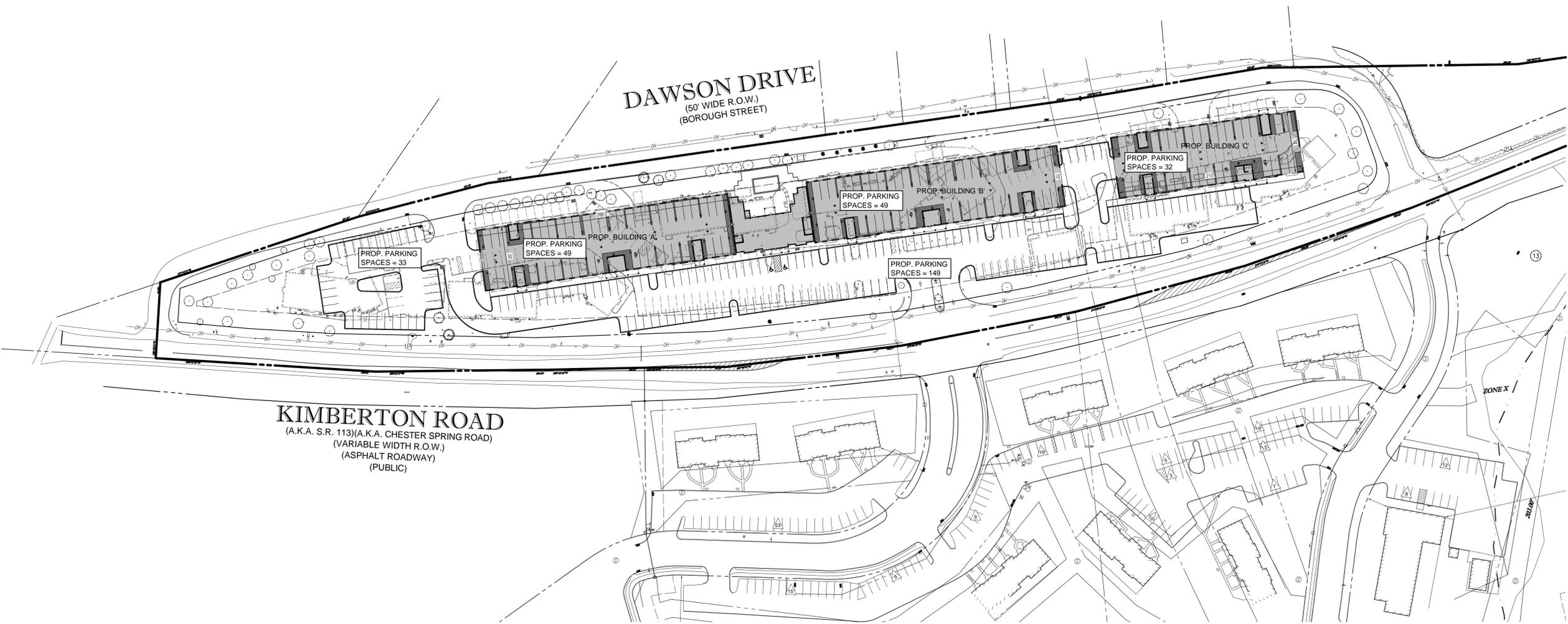
FIGURE 1

Roadway and Study Intersections

**PROPOSED RESIDENTIAL DEVELOPMENT
PHOENIXVILLE TOWNSHIP, CHESTER COUNTY, PA**



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KIMBERTON ROAD
 (A.K.A. S.R. 113)(A.K.A. CHESTER SPRING ROAD)
 (VARIABLE WIDTH R.O.W.)
 (ASPHALT ROADWAY)
 (PUBLIC)

DAWSON DRIVE
 (50' WIDE R.O.W.)
 (BOROUGH STREET)

PROP. PARKING SPACES = 33

PROP. PARKING SPACES = 49

PROP. PARKING SPACES = 49

PROP. PARKING SPACES = 149

PROP. PARKING SPACES = 32

CONCEPT PLAN GENERAL NOTES

- 1) THIS PLAN REFERENCES DOCUMENTS AND INFORMATION BY: CONTROL POINT ASSOCIATES, INC. ENTITLED: DRAFT "BOUNDARY & TOPOGRAPHIC SURVEY" FILE NO: B02-150246-00 DATED: 7/23/2015
- 2) THIS CONCEPT WAS PREPARED STRICTLY BASED UPON INFORMATION IDENTIFIED ABOVE.
- 3) THE CONCEPT REPRESENTED HEREIN IDENTIFIES A DESIGN CONCEPT RESULTING FROM LAYOUT PREFERENCES IDENTIFIED BY THE OWNER COUPLED WITH A PRELIMINARY REVIEW OF ZONING AND LAND DEVELOPMENT REQUIREMENTS AND ISSUES. THE FEASIBILITY WITH RESPECT TO OBTAINING LOCAL, COUNTY, STATE, AND OTHER APPLICABLE APPROVALS ARE NOT WARRANTED AND CAN ONLY BE ASSESSED AFTER FURTHER EXAMINATION AND VERIFICATION OF SAME REQUIREMENTS AND PROCUREMENT OF JURISDICTIONAL APPROVALS.
- 4) THIS CONCEPT PLAN IS PREPARED FOR CONCEPTUAL PRESENTATION PURPOSES ONLY AND IS NOT INTENDED FOR UTILIZATION AS A ZONING AND/OR CONSTRUCTION DOCUMENT. THE EXISTING CONDITIONS SHOWN HEREON ARE BASED UPON INFORMATION THAT WAS SUPPLIED TO OUR OFFICE AT THE TIME OF PLAN PREPARATION AND MAY BE SUBJECT TO CHANGE AND MUST BE UPDATED UPON PERFORMANCE OF ADDITIONAL DUE DILIGENCE.
- 5) ZONING REQUIREMENTS:
 PROPOSED PARKING = 308 SPACES
 MAXIMUM IMPERVIOUS AREA = 70.0%
 PROPOSED IMPERVIOUS AREA = 69.4%



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01	11/12/15	PER CLIENT COMMENT	HLH

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POCS SERIAL NUMBER

NOT APPROVED FOR CONSTRUCTION

PROJECT No.: PC151188
 DRAWN BY: HLH
 CHECKED BY: JRH
 DATE: 11/12/2015
 SCALE: AS NOTED
 CAD I.D.: PC151188 SITE-0

PROJECT:

CONCPET PLAN

FOR

ELAND DOWNE

ROUTE 113 & DAWSON DRIVE
 PHOENIXVILLE, PA

BOHLER ENGINEERING

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 CHALFONT, PENNSYLVANIA 18914
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J.R. HORNICK

PROFESSIONAL ENGINEER
 PENNSYLVANIA LICENSE NO. PE072504

SHEET TITLE:

CONCEPT PLAN

SHEET NUMBER:

1
 OF 1

REVISION 0 - 11/12/2015

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APPENDIX C

Automatic Traffic Recorder (ATR) Counts and Daily Traffic Volumes

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/15	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	15	365	82	6	16	7	2	35	4	1	0	1	1	535
16:00	15	381	84	15	17	6	1	40	1	4	0	2	3	569
17:00	28	452	56	11	16	11	4	27	2	6	0	5	4	622
18:00	28	338	69	10	10	6	1	31	3	4	0	1	2	503
19:00	22	278	48	4	10	12	1	17	0	0	0	0	1	393
20:00	34	246	44	5	6	6	0	12	0	0	1	0	0	354
21:00	23	171	33	1	8	6	0	4	0	0	0	0	0	246
22:00	12	98	23	0	0	5	0	4	0	0	0	0	0	142
23:00	6	84	14	1	1	7	0	2	0	0	0	0	0	115
Total	183	2413	453	53	84	66	9	172	10	15	1	9	11	3479
Percent	5.3%	69.4%	13.0%	1.5%	2.4%	1.9%	0.3%	4.9%	0.3%	0.4%	0.0%	0.3%	0.3%	
AM Peak Vol.														
PM Peak Vol.	20:00 34	17:00 452	16:00 84	16:00 15	16:00 17	19:00 12	17:00 4	16:00 40	15:00 4	17:00 6	20:00 1	17:00 5	17:00 4	17:00 622

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/15	9	46	8	0	0	2	0	0	0	0	0	0	0	65
01:00	4	23	4	0	0	3	0	0	0	0	0	0	0	34
02:00	2	10	2	0	1	1	0	0	0	0	0	0	0	16
03:00	1	15	3	0	2	3	1	0	0	0	0	0	0	25
04:00	5	43	8	0	3	2	0	1	0	0	0	0	0	62
05:00	12	82	32	2	11	9	0	5	0	0	0	0	0	153
06:00	17	201	66	4	17	13	4	4	2	0	0	0	1	329
07:00	34	307	66	8	14	9	3	32	2	2	0	1	4	482
08:00	25	344	63	9	20	14	1	22	1	4	2	0	3	508
09:00	19	254	72	7	20	8	4	24	3	2	0	1	5	419
10:00	16	236	67	6	14	8	4	22	5	0	0	0	0	378
11:00	17	275	83	7	17	5	2	23	1	2	0	0	2	434
12 PM	24	291	90	13	19	7	5	24	1	0	0	0	2	476
13:00	14	334	113	7	15	6	5	23	5	2	1	2	2	529
14:00	14	350	88	14	22	5	2	26	2	1	0	2	5	531
15:00	21	375	72	11	12	14	1	28	1	0	0	1	2	538
16:00	23	462	78	18	10	9	1	30	0	6	1	2	5	645
17:00	20	444	69	10	14	8	4	30	3	2	0	3	8	615
18:00	18	369	60	7	8	12	0	25	1	3	0	1	1	505
19:00	21	294	56	5	7	6	1	7	1	3	0	0	3	404
20:00	23	297	46	1	4	10	1	11	0	1	0	2	1	397
21:00	22	195	24	2	0	7	0	2	0	0	0	0	0	252
22:00	15	130	16	1	4	5	0	1	0	0	0	1	0	173
23:00	15	81	10	0	1	3	0	3	0	1	0	0	0	114
Total	391	5458	1196	132	235	169	39	343	28	29	4	16	44	8084
Percent	4.8%	67.5%	14.8%	1.6%	2.9%	2.1%	0.5%	4.2%	0.3%	0.4%	0.0%	0.2%	0.5%	
AM Peak	07:00	08:00	11:00	08:00	08:00	08:00	06:00	07:00	10:00	08:00	08:00	07:00	09:00	08:00
Vol.	34	344	83	9	20	14	4	32	5	4	2	1	5	508
PM Peak	12:00	16:00	13:00	16:00	14:00	15:00	12:00	16:00	13:00	16:00	13:00	17:00	17:00	16:00
Vol.	24	462	113	18	22	14	5	30	5	6	1	3	8	645

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Eastbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/15	4	57	5	1	0	3	0	1	0	0	0	1	0	72
01:00	4	21	5	0	0	2	0	0	0	0	0	0	0	32
02:00	2	13	3	0	0	0	0	0	1	0	0	0	0	19
03:00	2	15	4	1	2	1	0	0	0	0	0	0	0	25
04:00	2	43	9	1	0	5	0	0	0	0	0	0	0	60
05:00	15	78	35	1	11	5	0	4	1	0	0	0	0	150
06:00	19	200	53	8	23	12	2	14	2	0	0	0	2	335
07:00	18	322	77	16	19	10	3	26	1	5	0	0	2	499
08:00	15	298	70	13	17	8	2	22	2	3	0	1	4	455
09:00	20	257	78	11	17	6	5	20	5	3	1	0	1	424
10:00	21	285	70	13	19	7	3	18	2	2	0	0	1	441
11:00	19	358	70	8	19	12	4	19	2	3	0	3	4	521
12 PM	22	304	73	9	21	4	4	28	1	5	1	0	3	475
13:00	5	310	90	8	28	10	2	21	5	0	0	0	0	479
14:00	10	322	96	12	15	6	4	27	1	2	0	1	2	498
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	178	2883	738	102	191	91	29	200	23	23	2	6	19	4485
Percent	4.0%	64.3%	16.5%	2.3%	4.3%	2.0%	0.6%	4.5%	0.5%	0.5%	0.0%	0.1%	0.4%	
AM Peak	10:00	11:00	09:00	07:00	06:00	06:00	09:00	07:00	09:00	07:00	09:00	11:00	08:00	11:00
Vol.	21	358	78	16	23	12	5	26	5	5	1	3	4	521
PM Peak	12:00	14:00	14:00	14:00	13:00	13:00	12:00	12:00	13:00	12:00	12:00	14:00	12:00	14:00
Vol.	22	322	96	12	28	10	4	28	5	5	1	1	3	498
Grand Total	752	10754	2387	287	510	326	77	715	61	67	7	31	74	16048
Percent	4.7%	67.0%	14.9%	1.8%	3.2%	2.0%	0.5%	4.5%	0.4%	0.4%	0.0%	0.2%	0.5%	

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/16/15	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	4	281	131	10	39	4	1	32	5	2	0	1	2	512
16:00	9	281	145	13	36	4	3	37	1	2	0	2	9	542
17:00	3	338	130	8	21	0	0	43	2	3	2	1	6	557
18:00	4	275	145	4	22	0	0	35	4	3	0	0	1	493
19:00	11	255	119	2	15	1	0	17	0	1	1	0	2	424
20:00	7	208	102	0	13	0	0	17	1	0	0	0	0	348
21:00	3	117	73	2	8	0	0	7	0	0	0	1	0	211
22:00	3	106	48	1	9	0	0	2	0	0	0	0	0	169
23:00	0	58	16	1	2	0	0	3	0	0	0	0	0	80
Total	44	1919	909	41	165	9	4	193	13	11	3	5	20	3336
Percent	1.3%	57.5%	27.2%	1.2%	4.9%	0.3%	0.1%	5.8%	0.4%	0.3%	0.1%	0.1%	0.6%	
AM Peak Vol.														
PM Peak Vol.	19:00	17:00	16:00	16:00	15:00	15:00	16:00	17:00	15:00	17:00	17:00	16:00	16:00	17:00
	11	338	145	13	39	4	3	43	5	3	2	2	9	557

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/17/15	2	45	18	0	2	0	0	0	0	0	0	0	0	67
01:00	0	26	13	0	3	0	0	0	0	0	0	0	0	42
02:00	0	16	5	0	2	0	0	0	0	0	0	0	0	23
03:00	0	14	6	0	1	0	0	1	0	0	0	0	0	22
04:00	1	20	16	0	1	0	0	0	0	0	0	0	0	38
05:00	4	88	42	0	13	0	0	5	3	0	0	0	1	156
06:00	12	219	91	4	27	1	0	15	1	4	0	0	4	378
07:00	9	327	130	6	39	0	3	18	0	4	0	2	4	542
08:00	6	390	145	14	23	1	3	36	6	3	0	1	2	630
09:00	7	267	132	8	22	1	0	23	6	4	0	1	3	474
10:00	8	230	141	9	21	1	0	15	2	3	1	0	3	434
11:00	5	215	142	3	31	5	2	18	0	2	0	0	0	423
12 PM	6	255	142	8	34	0	2	33	2	0	1	0	0	483
13:00	7	249	120	9	38	1	2	34	5	5	0	0	1	471
14:00	7	254	125	13	27	2	0	37	3	5	2	0	4	479
15:00	9	277	132	6	31	4	0	36	5	1	1	2	9	513
16:00	5	267	131	12	42	1	2	33	1	3	0	2	6	505
17:00	5	332	163	10	35	4	1	56	4	6	0	1	5	622
18:00	11	281	138	0	29	0	0	29	2	2	0	1	7	500
19:00	10	248	112	3	15	2	0	18	2	5	1	0	2	418
20:00	5	178	85	2	13	1	0	10	1	2	0	0	1	298
21:00	1	141	55	1	6	0	1	6	1	0	0	0	0	212
22:00	4	127	47	0	10	1	1	1	0	1	0	0	0	192
23:00	2	70	33	1	11	0	0	2	0	0	0	0	0	119
Total	126	4536	2164	109	476	25	17	426	44	50	6	10	52	8041
Percent	1.6%	56.4%	26.9%	1.4%	5.9%	0.3%	0.2%	5.3%	0.5%	0.6%	0.1%	0.1%	0.6%	
AM Peak	06:00	08:00	08:00	08:00	07:00	11:00	07:00	08:00	08:00	06:00	10:00	07:00	06:00	08:00
Vol.	12	390	145	14	39	5	3	36	6	4	1	2	4	630
PM Peak	18:00	17:00	17:00	14:00	16:00	15:00	12:00	17:00	13:00	17:00	14:00	15:00	15:00	17:00
Vol.	11	332	163	13	42	4	2	56	5	6	2	2	9	622

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Westbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
11/18/15	1	37	19	1	2	0	0	0	0	0	0	0	0	60
01:00	0	26	11	1	3	0	0	0	0	0	0	0	0	41
02:00	0	14	7	0	2	0	0	0	0	0	0	0	0	23
03:00	0	17	5	0	2	0	0	0	0	0	0	0	0	24
04:00	0	25	14	1	6	0	0	1	0	0	0	0	0	47
05:00	6	86	44	1	12	0	0	0	1	0	0	0	0	150
06:00	6	185	113	4	27	0	0	11	2	3	0	0	0	351
07:00	10	304	142	7	24	2	1	28	7	1	0	3	2	531
08:00	5	323	136	12	33	0	0	30	7	4	3	0	6	559
09:00	8	247	134	10	23	2	2	30	6	2	2	0	5	471
10:00	13	235	156	3	36	5	1	21	2	4	0	1	0	477
11:00	4	219	142	8	31	2	1	25	3	3	0	2	3	443
12 PM	9	224	179	16	41	1	0	25	2	1	0	1	0	499
13:00	11	197	153	6	48	4	1	24	4	0	0	0	1	449
14:00	11	205	163	8	37	5	0	27	3	0	0	0	1	460
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	84	2344	1418	78	327	21	6	222	37	18	5	7	18	4585
Percent	1.8%	51.1%	30.9%	1.7%	7.1%	0.5%	0.1%	4.8%	0.8%	0.4%	0.1%	0.2%	0.4%	
AM Peak	10:00	08:00	10:00	08:00	10:00	10:00	09:00	08:00	07:00	08:00	08:00	07:00	08:00	08:00
Vol.	13	323	156	12	36	5	2	30	7	4	3	3	6	559
PM Peak	13:00	12:00	12:00	12:00	13:00	14:00	13:00	14:00	13:00	12:00		12:00	13:00	12:00
Vol.	11	224	179	16	48	5	1	27	4	1		1	1	499
Grand Total	254	8799	4491	228	968	55	27	841	94	79	14	22	90	15962
Percent	1.6%	55.1%	28.1%	1.4%	6.1%	0.3%	0.2%	5.3%	0.6%	0.5%	0.1%	0.1%	0.6%	

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Eastbound	Start	0	16	21	26	31	36	41	46	51	56	61	66	71	Total	85th	95th
Time	15	20	25	30	35	40	45	50	55	60	65	70	75		Percent	Percent	
11/16/15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	12	1	2	20	157	210	107	13	5	3	0	0	0	530	42	44	
16:00	16	1	8	34	179	202	99	18	4	0	4	0	0	565	42	44	
17:00	21	8	33	99	219	165	64	7	0	2	1	0	0	619	39	43	
18:00	12	0	2	39	130	205	92	13	3	3	1	0	0	500	42	44	
19:00	13	1	2	16	105	165	66	16	5	0	0	0	0	389	42	45	
20:00	7	0	1	46	136	103	46	12	1	0	0	0	0	352	40	44	
21:00	3	0	0	5	70	119	38	8	2	0	0	0	0	245	41	44	
22:00	1	0	1	11	32	53	34	8	1	0	1	0	0	142	43	46	
23:00	3	0	0	5	24	43	28	9	1	0	1	0	0	114	43	47	
Total	88	11	49	275	1052	1265	574	104	22	8	8	0	0	3456			
Percent	2.5%	0.3%	1.4%	8.0%	30.4%	36.6%	16.6%	3.0%	0.6%	0.2%	0.2%	0.0%	0.0%				
AM Peak																	
Vol.																	
PM Peak	17:00	17:00	17:00	17:00	17:00	15:00	15:00	16:00	15:00	15:00	16:00				17:00		
Vol.	21	8	33	99	219	210	107	18	5	3	4				619		

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Eastbound															85th	95th
Start	0	16	21	26	31	36	41	46	51	56	61	66	71	Total	Percent	Percent
Time	15	20	25	30	35	40	45	50	55	60	65	70	75			
11/17/15	0	0	0	2	19	20	23	1	0	0	0	0	0	65	43	44
01:00	0	0	0	3	17	12	1	1	0	0	0	0	0	34	38	41
02:00	0	0	0	1	3	8	1	1	1	1	0	0	0	16	47	55
03:00	1	0	0	1	3	8	11	0	1	0	0	0	0	25	43	44
04:00	0	0	2	2	10	22	22	4	0	0	0	0	0	62	43	46
05:00	2	0	0	8	16	64	36	22	5	0	0	0	0	153	45	49
06:00	9	1	0	10	70	153	63	19	3	0	0	0	0	328	42	46
07:00	19	0	0	11	104	221	97	23	1	2	1	0	0	479	42	45
08:00	21	0	1	19	134	210	87	27	1	2	2	0	0	504	42	46
09:00	11	4	14	19	95	162	83	17	6	2	2	0	0	415	42	46
10:00	5	0	2	17	108	139	91	10	2	1	0	0	0	375	42	44
11:00	11	0	2	25	103	178	86	18	7	0	0	0	0	430	42	45
12 PM	17	0	0	11	120	205	101	12	5	2	1	0	0	474	42	44
13:00	9	4	2	19	156	207	96	21	5	4	1	0	0	524	42	46
14:00	25	3	10	30	177	180	88	10	3	0	0	0	0	526	41	44
15:00	19	0	0	16	122	249	106	18	3	0	2	0	0	535	42	44
16:00	30	1	12	50	164	282	82	14	4	2	2	0	0	643	40	44
17:00	21	0	14	74	229	189	72	6	4	0	2	0	0	611	39	43
18:00	25	1	2	46	132	192	83	12	4	2	2	0	0	501	41	44
19:00	17	2	2	26	128	147	60	16	1	0	1	0	0	400	41	44
20:00	12	26	62	92	97	77	23	3	1	0	2	0	0	395	38	42
21:00	6	0	14	89	82	46	10	2	0	1	0	0	0	250	37	40
22:00	1	0	8	50	68	25	15	3	1	0	0	0	0	171	38	43
23:00	1	0	3	17	45	31	12	4	1	0	0	0	0	114	39	44
Total	262	42	150	638	2202	3027	1349	264	59	19	18	0	0	8030		
Percent	3.3%	0.5%	1.9%	7.9%	27.4%	37.7%	16.8%	3.3%	0.7%	0.2%	0.2%	0.0%	0.0%			
AM Peak	08:00	09:00	09:00	11:00	08:00	07:00	07:00	08:00	11:00	07:00	08:00					08:00
Vol.	21	4	14	25	134	221	97	27	7	2	2					504
PM Peak	16:00	20:00	20:00	20:00	17:00	16:00	15:00	13:00	12:00	13:00	15:00					16:00
Vol.	30	26	62	92	229	282	106	21	5	4	2					643

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Eastbound																	
Start Time	0	16	21	26	31	36	41	46	51	56	61	66	71	Total	85th Percent	95th Percent	
11/18/15	1	0	0	2	24	24	16	4	1	0	0	0	0	72	43	46	
01:00	0	0	0	3	8	13	5	1	1	0	1	0	0	32	43	52	
02:00	0	0	0	2	6	5	3	2	0	0	1	0	0	19	45	60	
03:00	0	0	0	0	5	6	10	3	0	1	0	0	0	25	45	49	
04:00	0	0	1	1	11	29	14	4	0	0	0	0	0	60	43	46	
05:00	0	0	0	1	17	73	46	11	2	0	0	0	0	150	43	47	
06:00	9	0	0	3	58	150	87	17	6	2	2	0	0	334	43	48	
07:00	23	0	4	17	102	230	87	25	5	2	0	0	0	495	42	46	
08:00	19	0	0	22	105	184	106	14	2	1	1	0	0	454	42	44	
09:00	11	1	4	26	124	161	79	12	2	1	0	0	0	421	41	44	
10:00	15	3	4	17	118	183	77	18	1	2	0	0	0	438	42	44	
11:00	14	24	7	19	155	195	81	15	5	2	2	0	0	519	41	44	
12 PM	8	1	9	32	126	198	77	16	5	0	1	0	0	473	41	44	
13:00	10	0	3	17	111	207	110	13	5	1	0	0	0	477	42	44	
14:00	15	0	1	25	117	197	109	22	5	2	1	0	0	494	42	46	
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Total	125	29	33	187	1087	1855	907	177	40	14	9	0	0	4463			
Percent	2.8%	0.6%	0.7%	4.2%	24.4%	41.6%	20.3%	4.0%	0.9%	0.3%	0.2%	0.0%	0.0%				
AM Peak	07:00	11:00	11:00	09:00	11:00	07:00	08:00	07:00	06:00	06:00	06:00			11:00			
Vol.	23	24	7	26	155	230	106	25	6	2	2			519			
PM Peak	14:00	12:00	12:00	12:00	12:00	13:00	13:00	14:00	12:00	14:00	12:00			14:00			
Vol.	15	1	9	32	126	207	110	22	5	2	1			494			
Grand Total	475	82	232	1100	4341	6147	2830	545	121	41	35	0	0	15949			
Percent	3.0%	0.5%	1.5%	6.9%	27.2%	38.5%	17.7%	3.4%	0.8%	0.3%	0.2%	0.0%	0.0%				

15th Percentile : 30 MPH
50th Percentile : 36 MPH
85th Percentile : 42 MPH
95th Percentile : 44 MPH

Stats
10 MPH Pace Speed : 31-40 MPH
Number in Pace : 10508
Percent in Pace : 65.9%
Number of Vehicles > 55 MPH : 76
Percent of Vehicles > 55 MPH : 0.5%

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Westbound

Start Time	0	16	21	26	31	36	41	46	51	56	61	66	71	Total	85th Percent	95th Percent
11/16/15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	11	0	0	31	121	160	132	35	14	2	4	0	0	510	44	49
16:00	29	7	15	56	115	170	112	24	8	4	1	0	0	541	43	47
17:00	22	4	13	31	115	215	124	18	10	1	0	0	0	553	42	45
18:00	12	0	4	17	93	190	130	30	9	3	0	0	0	488	43	47
19:00	14	2	1	6	72	159	128	26	8	3	3	0	0	422	44	48
20:00	2	0	2	8	79	132	85	28	6	2	2	0	0	346	44	48
21:00	4	0	0	6	34	83	53	22	5	3	0	0	0	210	44	49
22:00	2	0	0	6	27	50	55	19	7	1	2	0	0	169	45	51
23:00	1	0	0	1	13	30	25	7	3	0	0	0	0	80	44	49
Total	97	13	35	162	669	1189	844	209	70	19	12	0	0	3319		
Percent	2.9%	0.4%	1.1%	4.9%	20.2%	35.8%	25.4%	6.3%	2.1%	0.6%	0.4%	0.0%	0.0%			
AM Peak Vol.																
PM Peak Vol.	16:00	16:00	16:00	16:00	15:00	17:00	15:00	15:00	15:00	16:00	15:00			17:00		
	29	7	15	56	121	215	132	35	14	4	4			553		

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

Westbound

Start Time	0	16	21	26	31	36	41	46	51	56	61	66	71	Total	85th Percent	95th Percent
11/17/15	0	0	0	3	9	18	23	8	3	3	0	0	0	67	47	54
01:00	0	0	0	1	11	8	13	6	2	0	1	0	0	42	47	52
02:00	0	0	1	0	4	8	7	3	0	0	0	0	0	23	44	48
03:00	0	0	0	1	3	6	6	5	0	6	1	0	0	22	53	54
04:00	0	0	0	0	6	7	11	7	3	2	2	0	0	38	52	60
05:00	1	0	1	6	20	61	32	14	11	5	4	0	0	155	48	56
06:00	7	4	2	23	50	122	112	41	12	1	1	0	0	375	44	49
07:00	9	5	10	29	159	207	94	17	7	1	1	0	0	539	42	44
08:00	36	15	6	35	164	252	99	16	1	1	2	0	0	627	41	44
09:00	13	0	3	27	107	183	107	23	6	3	0	0	0	472	43	46
10:00	7	0	6	21	88	182	88	37	4	1	0	0	0	434	43	47
11:00	6	1	1	14	67	160	121	43	7	0	0	0	0	420	44	48
12 PM	8	0	2	15	108	173	132	29	8	2	2	0	0	479	43	47
13:00	12	1	2	21	102	155	123	30	16	4	0	0	0	466	44	49
14:00	11	0	4	29	100	164	108	44	10	4	3	0	0	477	44	49
15:00	19	1	2	7	87	200	143	39	5	3	1	0	0	507	44	47
16:00	21	0	3	33	115	192	105	23	7	2	0	0	0	501	42	46
17:00	24	1	8	51	162	227	98	32	7	8	2	0	0	620	42	47
18:00	17	0	0	16	129	182	113	31	7	1	0	0	0	496	43	47
19:00	10	0	0	21	60	171	109	33	11	2	0	0	0	417	44	48
20:00	9	11	29	40	80	66	49	9	2	1	0	0	0	296	41	44
21:00	2	0	8	20	66	80	27	4	1	1	1	0	0	210	40	44
22:00	0	0	4	16	52	70	38	9	2	1	0	0	0	192	42	46
23:00	0	0	0	4	14	58	34	6	1	2	0	0	0	119	43	47
Total	212	39	92	433	1763	2952	1791	504	139	49	20	0	0	7994		
Percent	2.7%	0.5%	1.2%	5.4%	22.1%	36.9%	22.4%	6.3%	1.7%	0.6%	0.3%	0.0%	0.0%			
AM Peak	08:00	08:00	07:00	08:00	08:00	08:00	11:00	11:00	06:00	05:00	05:00			08:00		
Vol.	36	15	10	35	164	252	121	43	12	5	4			627		
PM Peak	17:00	20:00	20:00	17:00	17:00	17:00	15:00	14:00	13:00	17:00	14:00			17:00		
Vol.	24	11	29	51	162	227	143	44	16	8	3			620		

McMahon Associates Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Phoenixville
Comments: None
Weather: Variable
Operator/ATR #: NDB

Site Code: 00000000000000000000
Station ID:
Route 113 (Kimberton Road) west of
Ross Lane
Latitude: 0' 0.0000 Undefined

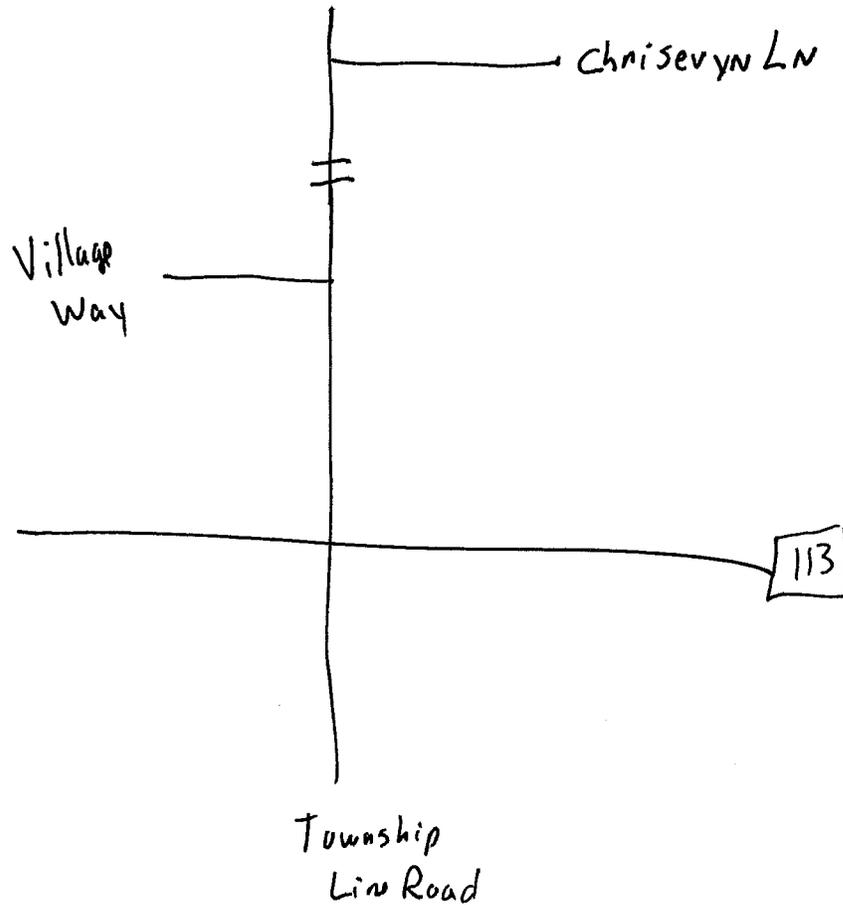
Westbound

Start Time	0	16	21	26	31	36	41	46	51	56	61	66	71	Total	85th Percent	95th Percent
11/18/15	0	0	1	1	6	20	20	8	3	1	0	0	0	60	46	51
01:00	0	0	0	2	9	13	14	3	0	0	0	0	0	41	43	46
02:00	0	0	0	0	2	10	7	4	0	0	0	0	0	23	45	48
03:00	0	0	0	2	5	6	3	5	3	0	0	0	0	24	49	53
04:00	1	0	0	0	5	11	11	11	2	5	1	0	0	47	52	58
05:00	1	0	0	4	23	48	29	29	10	4	1	0	0	149	48	53
06:00	1	0	1	4	32	148	110	41	10	3	0	0	0	350	45	49
07:00	10	2	14	41	139	161	101	38	14	6	1	0	0	527	44	49
08:00	15	1	11	34	173	204	87	23	2	4	2	0	0	556	41	45
09:00	11	0	0	19	105	188	108	26	10	2	0	0	0	469	43	47
10:00	3	0	3	42	84	176	127	32	6	1	2	0	0	476	43	47
11:00	11	1	5	13	90	161	113	30	12	3	1	0	0	440	44	49
12 PM	17	2	3	16	102	164	132	46	12	3	1	0	0	498	44	49
13:00	5	0	0	15	48	148	154	59	18	0	1	0	0	448	45	49
14:00	13	0	0	10	72	159	140	44	16	1	2	0	0	457	44	49
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	88	6	38	203	895	1617	1156	399	118	33	12	0	0	4565		
Percent	1.9%	0.1%	0.8%	4.4%	19.6%	35.4%	25.3%	8.7%	2.6%	0.7%	0.3%	0.0%	0.0%			
AM Peak	08:00	07:00	07:00	10:00	08:00	08:00	10:00	06:00	07:00	07:00	08:00			08:00		
Vol.	15	2	14	42	173	204	127	41	14	6	2			556		
PM Peak	12:00	12:00	12:00	12:00	12:00	12:00	13:00	13:00	13:00	12:00	14:00			12:00		
Vol.	17	2	3	16	102	164	154	59	18	3	2			498		
Grand Total	397	58	165	798	3327	5758	3791	1112	327	101	44	0	0	15878		
Percent	2.5%	0.4%	1.0%	5.0%	21.0%	36.3%	23.9%	7.0%	2.1%	0.6%	0.3%	0.0%	0.0%			

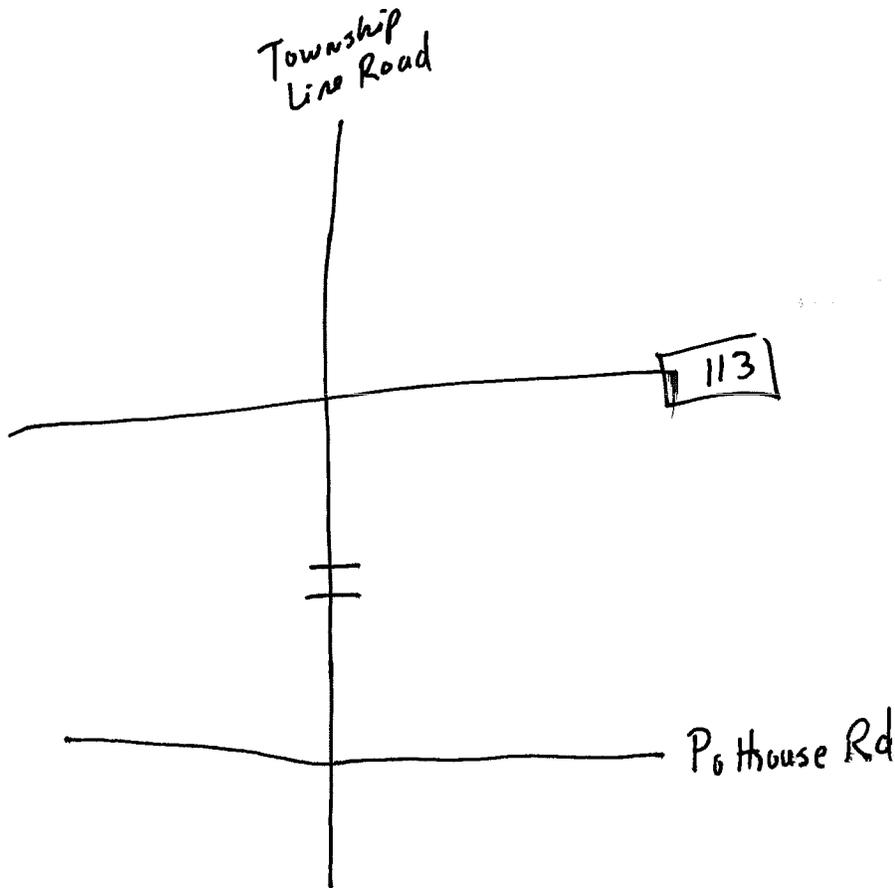
15th Percentile : 31 MPH
50th Percentile : 37 MPH
85th Percentile : 43 MPH
95th Percentile : 48 MPH

Stats
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 9564
Percent in Pace : 60.2%
Number of Vehicles > 55 MPH : 145
Percent of Vehicles > 55 MPH : 0.9%

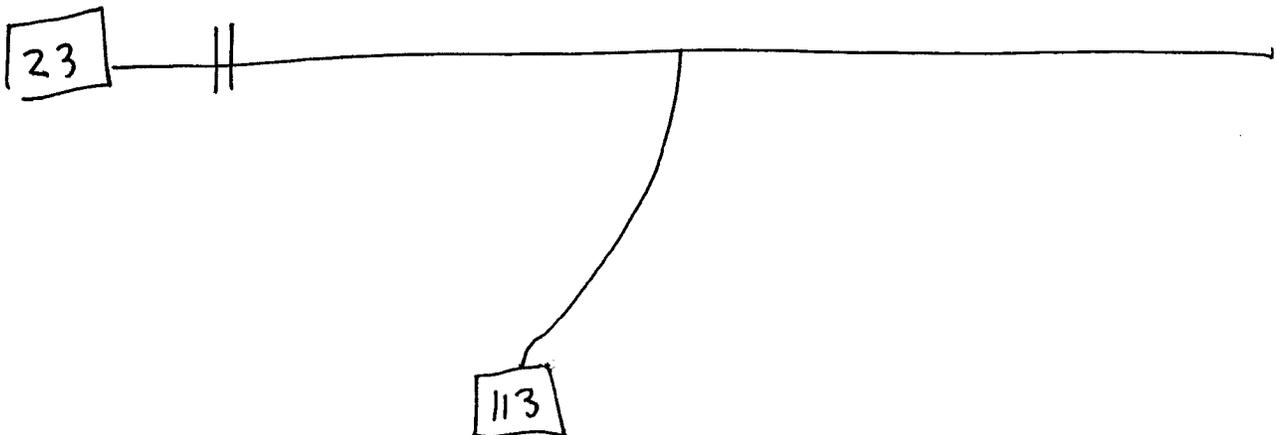
SITE NO: 28270	
County	CHESTER (15)
Route	G626
Segment	0020
Dir	B
Current Avg Daily Traffic	5855
Current Avg Daily Truck Volume	293
K Factor	10
D Factor	55
T Factor	3
Truck Percent	5
Base Traffic Year	2013
Traffic Pattern Group	URBAN - MINOR ARTERIALS, COLLECTORS, LOCAL ROADS



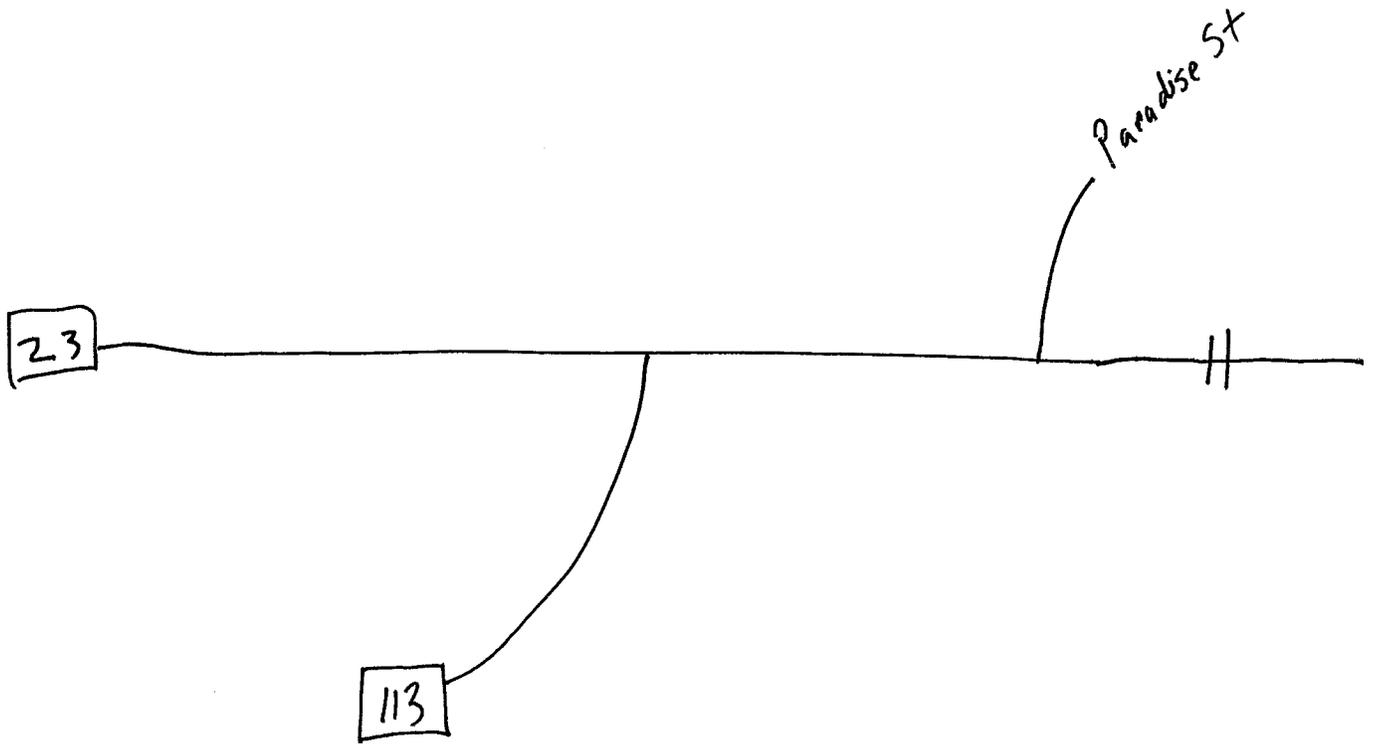
SITE NO: 16553	
County	CHESTER (15)
Route	1038
Segment	0010
Dir	B
Current Avg Daily Traffic	7407
Current Avg Daily Truck Volume	222
K Factor	11
D Factor	65
T Factor	2
Truck Percent	3
Base Traffic Year	2014
Traffic Pattern Group	URBAN - MINOR ARTERIALS, COLLECTORS, LOCAL ROADS



SITE NO: 11650	
County	CHESTER (15)
Route	0023
Segment	0390
Dir	B
Current Avg Daily Traffic	15543
Current Avg Daily Truck Volume	560
K Factor	7
D Factor	65
T Factor	3
Truck Percent	4
Base Traffic Year	2013
Traffic Pattern Group	URBAN - MINOR ARTERIALS, COLLECTORS, LOCAL ROADS



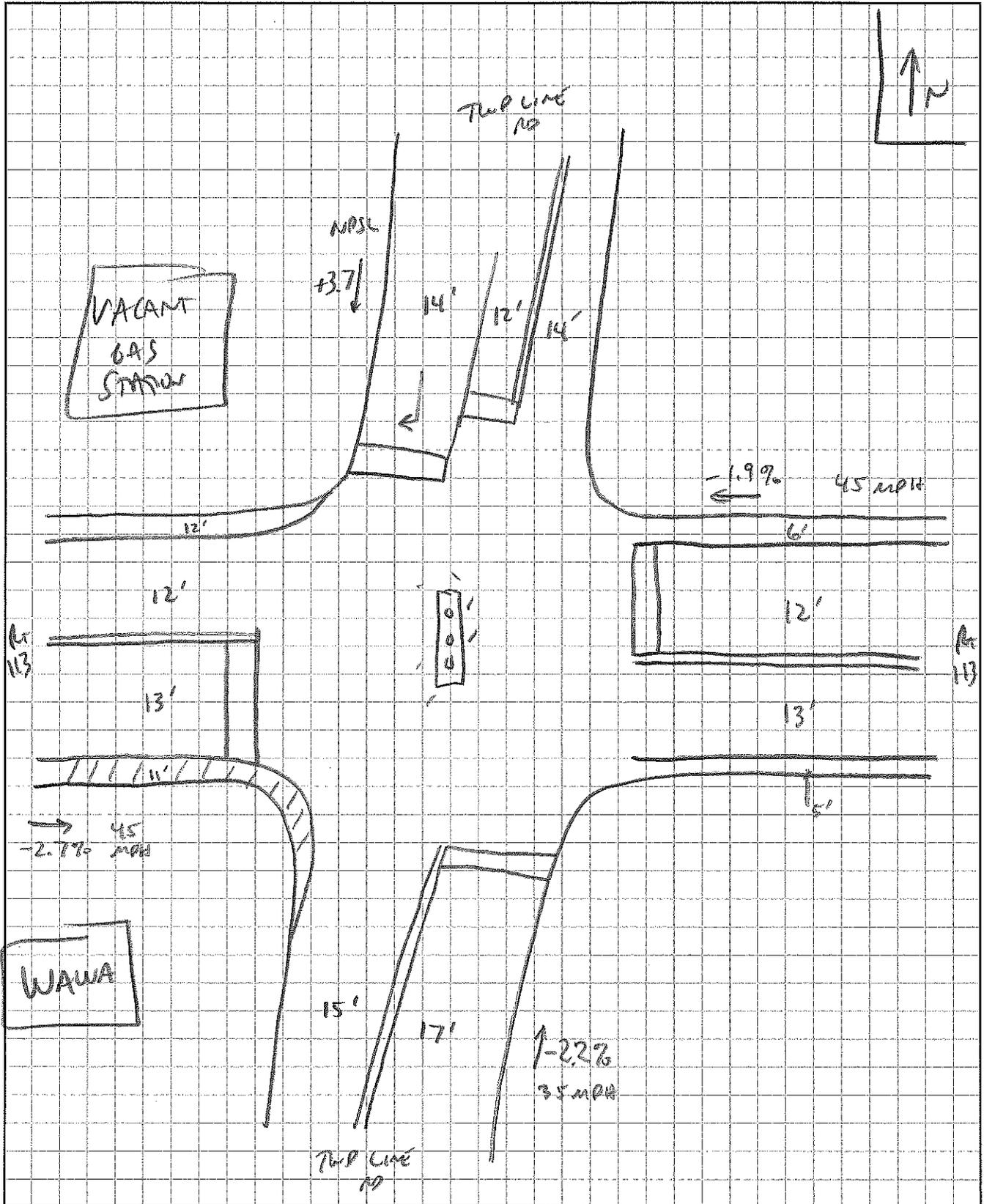
SITE NO: 11651	
County	CHESTER (15)
Route	0023
Segment	0420
Dir	B
Current Avg Daily Traffic	24619
Current Avg Daily Truck Volume	1215
K Factor	8
D Factor	53
T Factor	4
Truck Percent	5
Base Traffic Year	2014
Traffic Pattern Group	URBAN - MINOR ARTERIALS, COLLECTORS, LOCAL ROADS



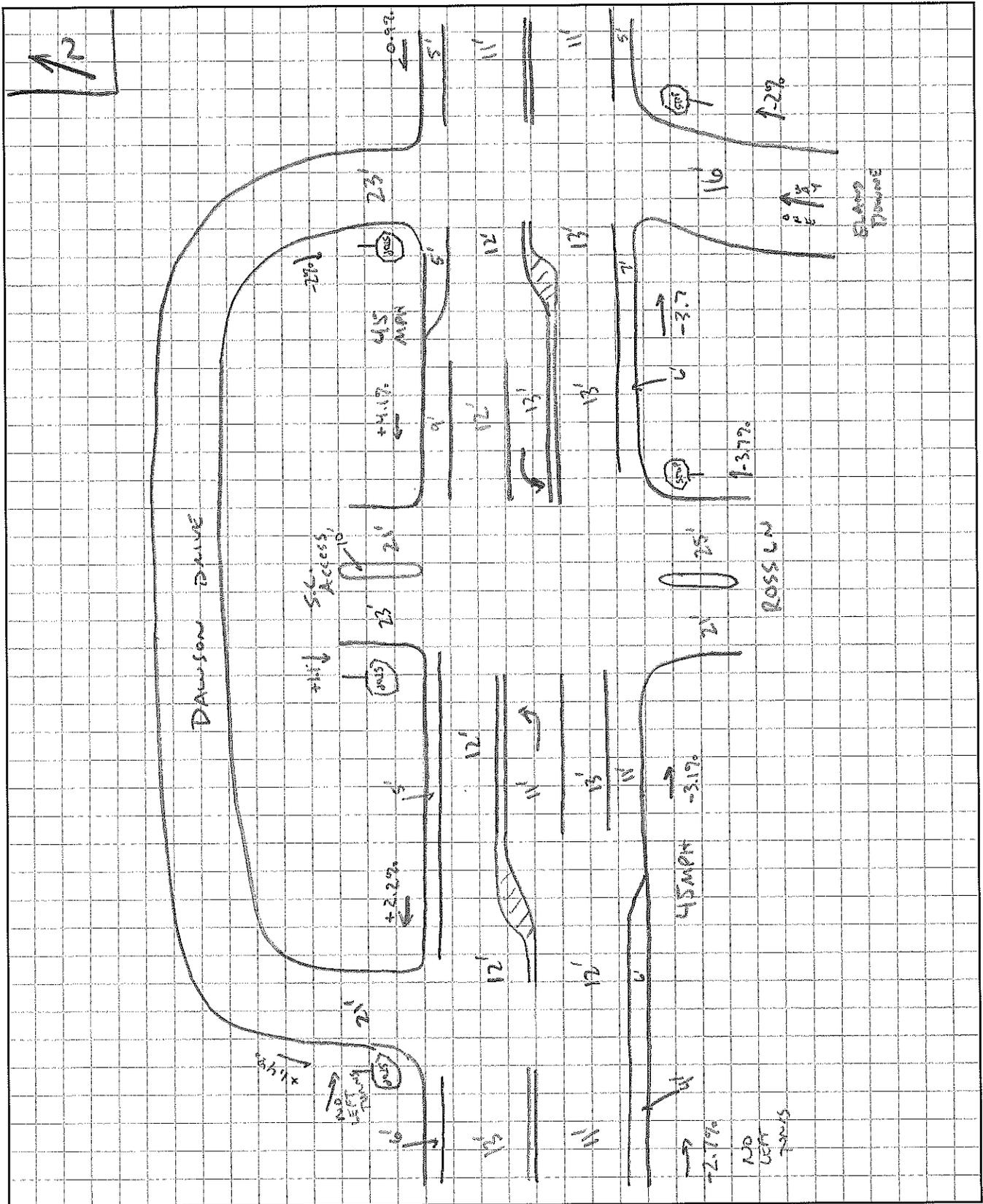
APPENDIX D

Study Area Sketches, Signal Permit Plans and Photographs

Job _____ McMahon Project No. _____ Sheet _____ of _____
 Description RT 113 (WILMINGTON RD) + Designed By NBS Date _____
TOWNSHIP LINE RD Checked By _____ Date _____



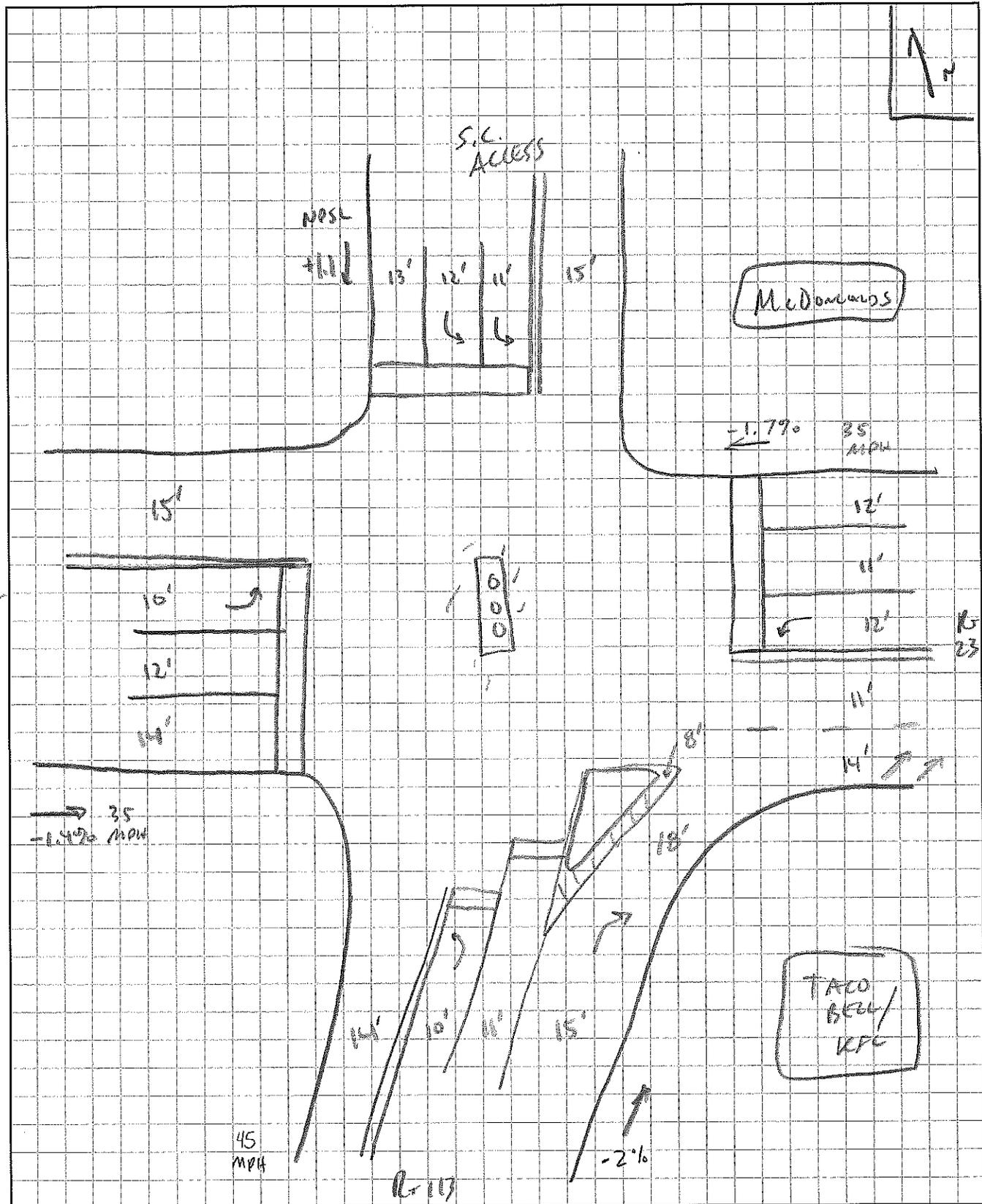
Job _____ McMahon Project No. _____ Sheet _____ of _____
 Description Rt 113 (Wimberly Rd) + Designed By NPB Date _____
Dawson Dr / Ross Lane Checked By _____ Date _____



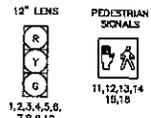
Job _____ McMahon Project No. _____ Sheet _____ of _____

Description RT 113 (KIMBERLY RD) & RT 23 (SILVERCREEK RD) Designed By NDS Date _____

Checked By _____ Date _____



SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS AND LOUVERS

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-3	48" x 48"	SIGNAL AHEAD
D	R10-3B(L)	9" x 12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL
E	R10-3B(R)	9" x 12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL
F	D3-4	98" x 16"	Township Line Rd
G	D3-4	98" x 16"	Kimberton Rd
J	R3-7R	30" x 30"	RIGHT LANE MUST TURN RIGHT
M	R3-B(LS-R)	30" x 30"	LANE USE CONTROL
N	R10-6AL	24" x 30"	STOP HERE ON RED
P	R10-E-1	24" x 18"	LEFT LANE PLAQUE
R	R3-3	18" x 18"	NO PEDESTRIAN CROSSING

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0023	CL2	45 OF 59

PHOENIXVILLE BOROUGH, EAST PIKELAND TOWNSHIP, & SCHUYLKILL TOWNSHIP

NO.	REVISIONS	DATE	BY
1	AS-BUILT DRAWING	12-1-10	R/BN/KJM

TRAFFIC SIGNAL 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 18 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 LATEST PROVISIONS OF ACT 287, FOR PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

ALL DESIGNERS AND CONTRACTORS UTILIZING THIS PLAN AND THE INFORMATION CONTAINED THEREON ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 189, ENTITLED "UNDERGROUND UTILITY LINE PROTECTION LAW", (AMENDS PENNSYLVANIA ACT 187 & 287). 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 192. THIS INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USER IN RESPONSE TO THE PA ONE CALL SYSTEM REFERENCE SERIAL #119332-1119332 PER PHONE CALL ON APRIL 21, 2005.

ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION. CARROLL ENGINEERING CORP. 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. CALL BEFORE YOU DIG!

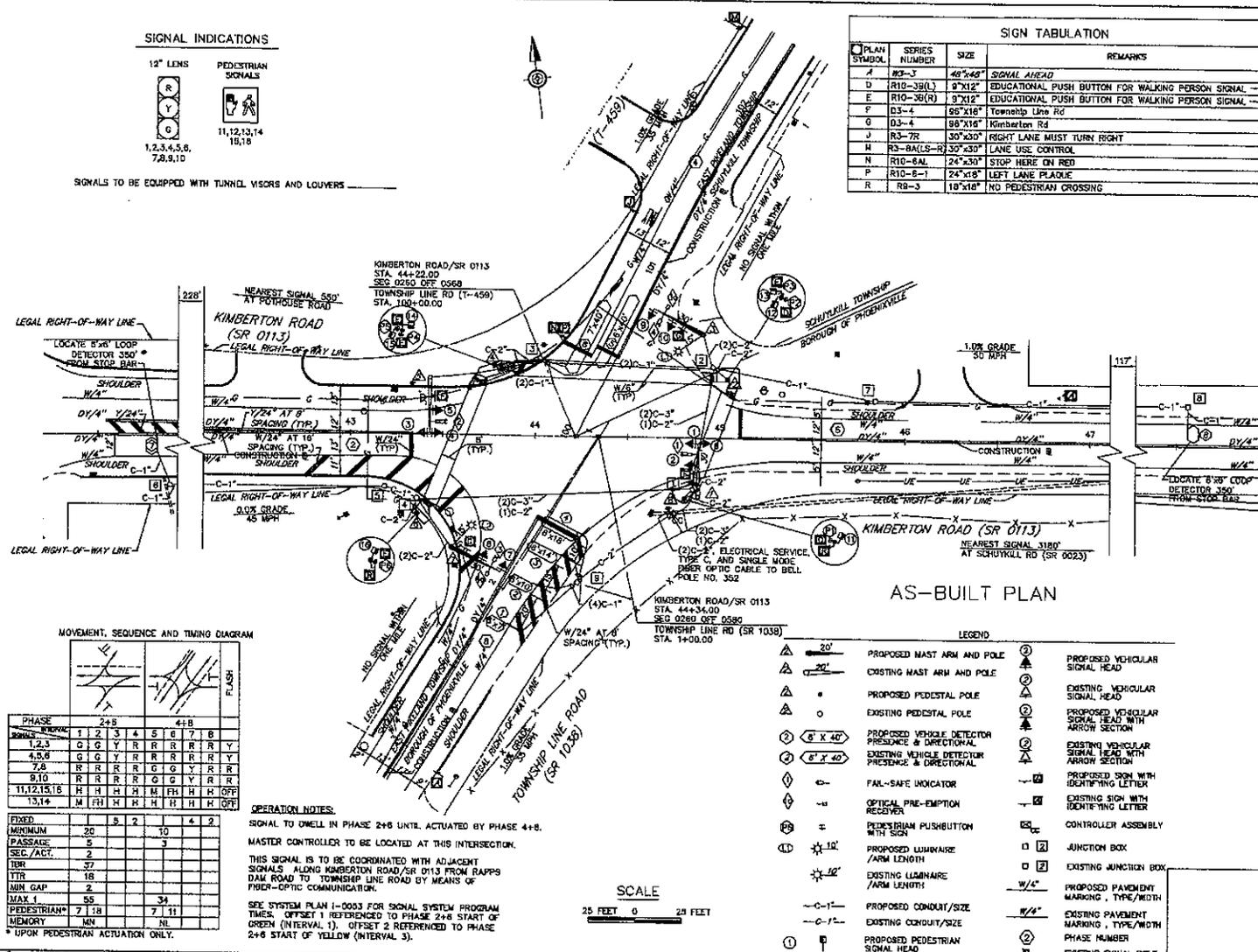
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE-STOP CALL PENNSYLVANIA ONE CALL SYSTEM, INC.

1-800-242-1776
24469

COUNTY :	CHESTER
MUNICIPALITY :	PHOENIXVILLE BOROUGH, EAST PIKELAND & SCHUYLKILL TOWNSHIPS
INTERSECTION :	KIMBERTON ROAD (SR 0113) & TOWNSHIP LINE ROAD (SR 1038)/(T-459) FILE #2449

REVIEWED :	KIMBERLY MORETTI	5/16/07
MUNICIPAL OFFICIAL :		DATE
SCHUYLKILL TOWNSHIP OFFICIAL :		5/16/07
MUNICIPAL OFFICIAL :		DATE
PHOENIXVILLE BOROUGH OFFICIAL :		3/17/07
MUNICIPAL OFFICIAL :		DATE
RECOMMENDED :	LOUIS BELMONT	5/31/07
DISTRICT TRAFFIC ENGINEER :		DATE

AS-BUILT PLAN



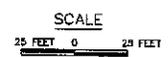
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+8	4+8
1,2,3	T 2 3 4 5 6 7 8	
4,5,6	G G Y R R R R R Y	
7,8	R R R R G G Y R R	
9,10	R R R R G G V R R	
11,12,15,16	H H H H M H H H OFF	
13,14	M F H H R H H H H OFF	

FIXED	5	2	4	2
MINIMUM	20		10	
PASSAGE	5		3	
SEC./ACT.	2			
YER	37			
TTR	18			
MIN GAP	2			
MAX I	55		34	
PEDESTRIAN*	7 18		7 11	
MEMORY	NL		NL	

* UPON PEDESTRIAN ACTUATION ONLY.

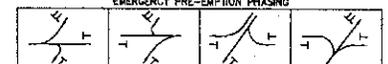
OPERATION NOTES.
 SIGNAL TO OPEN IN PHASE 2+8 UNTIL ACTUATED BY PHASE 4+8.
 MASTER CONTROLLER TO BE LOCATED AT THIS INTERSECTION.
 THIS SIGNAL IS TO BE COORDINATED WITH ADJACENT SIGNALS ALONG KIMBERTON ROAD/SR 0113 FROM RAPPS DAM ROAD TO TOWNSHIP LINE ROAD BY MEANS OF PRIOR-OPTIC COMMUNICATION.
 SEE SYSTEM PLAN I-0003 FOR SIGNAL SYSTEM PROGRAM TIMES; OFFSET 1 REFERENCED TO PHASE 2+8 START OF GREEN (INTERVAL 1). OFFSET 2 REFERENCED TO PHASE 2+8 START OF YELLOW (INTERVAL 3).



LEGEND	
▲	PROPOSED MAST ARM AND POLE
▲	EXISTING MAST ARM AND POLE
●	PROPOSED PEDESTAL POLE
●	EXISTING PEDESTAL POLE
⊙	PROPOSED VEHICLE DETECTOR PRESENCE & DIRECTIONAL
⊙	EXISTING VEHICLE DETECTOR PRESENCE & DIRECTIONAL
◇	FAIL-SAFE INDICATOR
◇	OPTICAL PRE-EMPTION RECEIVER
⊕	PEDESTRIAN PUSHBUTTON WITH SIGN
⊕	PROPOSED LUMINAIRE /ARM LENGTH
⊕	EXISTING LUMINAIRE /ARM LENGTH
-C-1-	PROPOSED CONDUIT/SIZE
-C-1-	EXISTING CONDUIT/SIZE
⊙	PROPOSED PEDESTRIAN SIGNAL HEAD
⊙	PROPOSED VEHICULAR SIGNAL HEAD
⊙	EXISTING VEHICULAR SIGNAL HEAD
⊙	PROPOSED VEHICULAR SIGNAL HEAD WITH ARROW SECTION
⊙	EXISTING VEHICULAR SIGNAL HEAD WITH ARROW SECTION
⊙	PROPOSED SIGN WITH IDENTIFYING LETTER
⊙	EXISTING SIGN WITH IDENTIFYING LETTER
⊙	CONTROLLER ASSEMBLY
⊙	JUNCTION BOX
⊙	EXISTING JUNCTION BOX
W/4"	PROPOSED PAVEMENT MARKING, TYPE/WIDTH
W/4"	EXISTING PAVEMENT MARKING, TYPE/WIDTH
⊙	PHASE NUMBER
⊙	EXISTING SIGNAL POLE

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
8-0	CHESTER	0023	0L2	48 OF 99
PHOENIXVILLE BOROUGH, EAST PIKELAND TOWNSHIP, & SCHUYLKILL TOWNSHIP				
NUMBER	REVISIONS	DATE	BY	
1	AS-BUILT DRAWING	12-2-10		1/10/10 KJM

EMERGENCY PRE-EMPTION PHASING



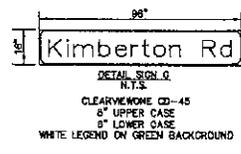
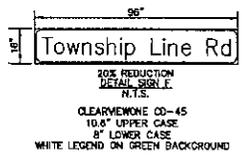
PHASE	1	2	3	4	5
9	G	Ys	R	R	R
10	R	R	R	R	R
11	R	R	R	R	R
12	R	R	R	R	R
13	R	R	R	R	R
14	R	R	R	R	R
15	R	R	R	R	R
16	R	R	R	R	R
17	R	R	R	R	R
18	R	R	R	R	R
19	R	R	R	R	R
20	R	R	R	R	R
21	R	R	R	R	R
22	R	R	R	R	R
23	R	R	R	R	R
24	R	R	R	R	R
25	R	R	R	R	R
26	R	R	R	R	R
27	R	R	R	R	R
28	R	R	R	R	R
29	R	R	R	R	R
30	R	R	R	R	R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

a SIGNAL TO REMAIN G WHEN RETURNING TO PHASE 2+8
b FOR DURATION OF OPTICAL 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.

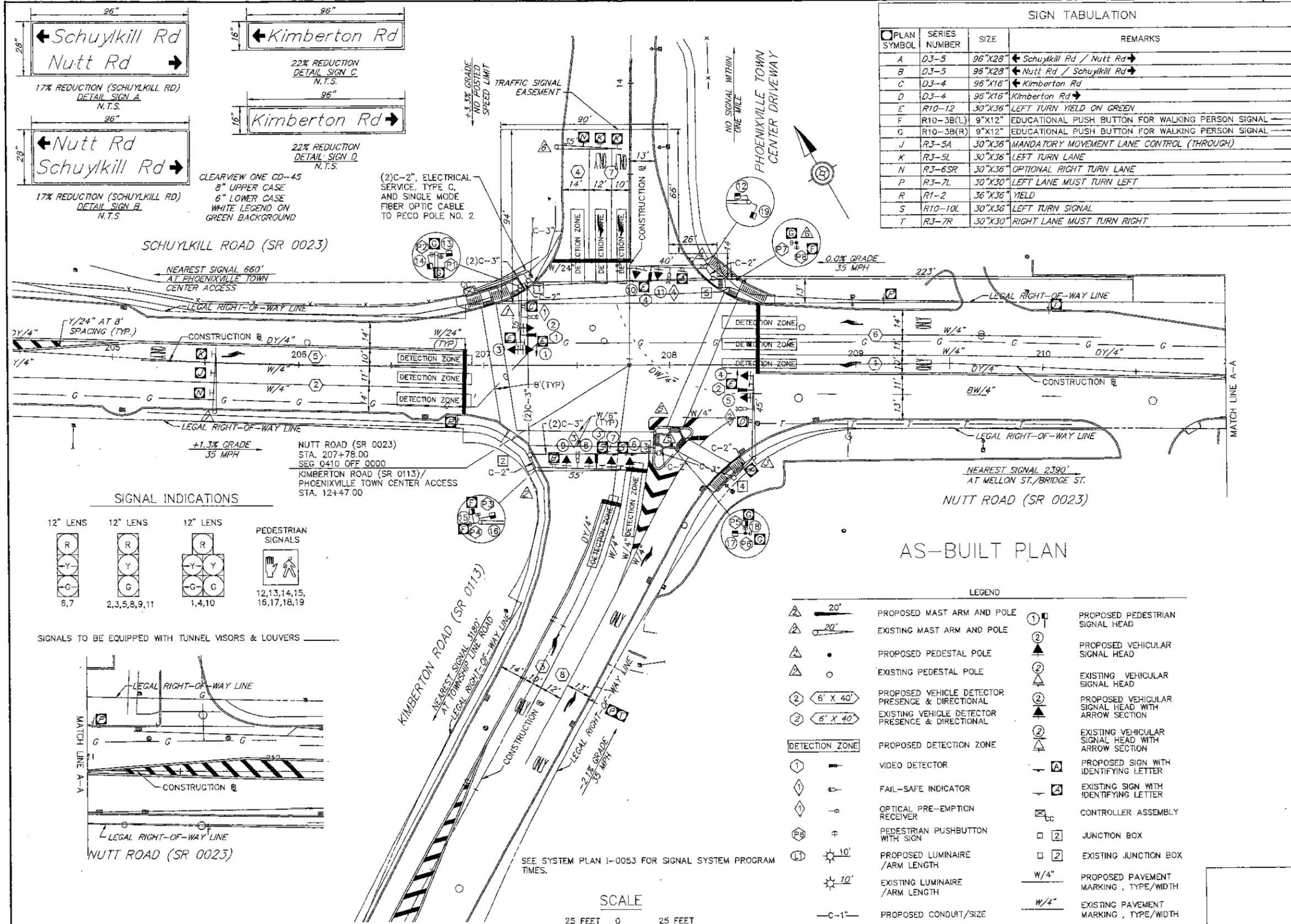
EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND & SOUTHBOUND APPROACHES OF KIMBERTON ROAD/SR 0113 AND THE EASTBOUND & WESTBOUND APPROACHES OF TOWNSHIP LINE ROAD (SR 1036/T-459) 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. LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLES, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY, THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.
- 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 SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN PED "WALK (MAN)" AND PED "CLEAR (HAND)", THE PED "WALK (MAN)" INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE PED "CLEAR (HAND)" INTERVAL. THIS INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.
- 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+8 INTERVAL 1 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.



2049

COUNTY :	CHESTER
MUNICIPALITY :	PHOENIXVILLE BOROUGH, EAST PIKELAND & SCHUYLKILL TOWNSHIPS
INTERSECTION :	KIMBERTON ROAD (SR 0113) & TOWNSHIP LINE ROAD (SR 1036/T-459), FILE #2449
REVIEWED :	KIMBERLY MORETTI 5/16/07
MUNICIPAL OFFICIAL :	DATE
SCHUYLKILL TOWNSHIP OFFICIAL :	5/16/07
MUNICIPAL OFFICIAL :	DATE
PHOENIXVILLE BOROUGH OFFICIAL :	5/17/07
MUNICIPAL OFFICIAL :	DATE
RECOMMENDED :	
LOUIS BELMONTI 5/31/07	DATE
DISTRICT TRAFFIC ENGINEER :	



SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	D3-5	96"X28"	Schuylkill Rd / Nutt Rd
B	D3-5	96"X28"	Nutt Rd / Schuylkill Rd
C	D3-4	96"X16"	Kimberton Rd
D	D3-4	96"X16"	Kimberton Rd
E	R10-12	30"X36"	LEFT TURN YIELD ON GREEN
F	R10-3B(L)	9"X12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL
G	R10-3B(R)	9"X12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL
J	R3-5A	30"X36"	MANDATORY MOVEMENT LANE CONTROL (THROUGH)
K	R3-5L	30"X36"	LEFT TURN LANE
N	R3-6SR	30"X36"	OPTIONAL RIGHT TURN LANE
P	R3-7L	30"X30"	LEFT LANE MUST TURN LEFT
R	R1-2	36"X36"	YIELD
S	R10-10L	30"X36"	LEFT TURN SIGNAL
T	R3-7R	30"X30"	RIGHT LANE MUST TURN RIGHT

TRAFFIC SIGNAL 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.

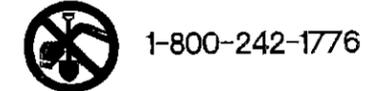
CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

COMPLY WITH LATEST PROVISIONS OF ACT 287, FOR PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

ALL DESIGNERS AND CONTRACTORS UTILIZING THIS PLAN AND THE INFORMATION CONTAINED THEREON ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 199, ENTITLED "UNDERGROUND UTILITY LINE PROTECTION LAW", (AMENDS PENNSYLVANIA ACT 187 & 287). 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 199. THIS INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM REFERENCE SERIAL #1115849 & #1115850 PER PHONE CALL ON APRIL 21, 2005.

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CALL BEFORE YOU DIG!
 PENNSYLVANIA LAW REQUIRES
 3 WORKING DAYS NOTICE FOR
 CONSTRUCTION PHASE AND 10 WORKING
 DAYS IN DESIGN STAGE-STOP CALL

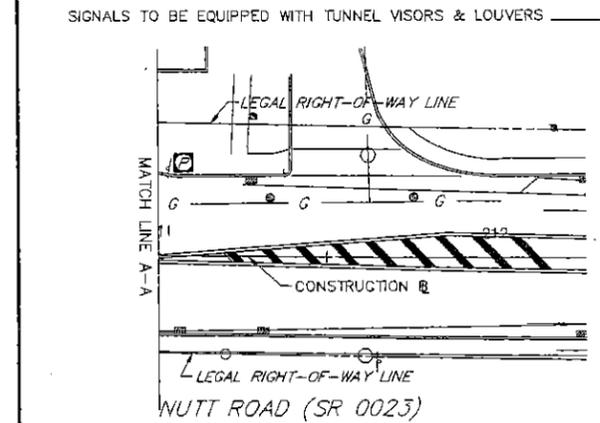
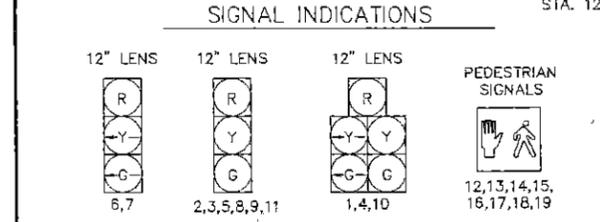


COUNTY : CHESTER
 MUNICIPALITY : PHOENIXVILLE BOROUGH
 INTERSECTION : NUTT ROAD (SR 0023) &
 KIMBERTON ROAD (SR 0113)/
 PHOENIXVILLE TOWN CENTER DRIVEWAY, FILE #0031

REVIEWED :
 PHOENIXVILLE BOROUGH OFFICIAL 5/17/07
 MUNICIPAL OFFICIAL DATE

RECOMMENDED :
 LOUIS BELMONTE 5/31/07
 DISTRICT TRAFFIC ENGINEER DATE

LEGEND	
	PROPOSED MAST ARM AND POLE
	EXISTING MAST ARM AND POLE
	PROPOSED PEDESTAL POLE
	EXISTING PEDESTAL POLE
	PROPOSED VEHICLE DETECTOR PRESENCE & DIRECTIONAL
	EXISTING VEHICLE DETECTOR PRESENCE & DIRECTIONAL
	PROPOSED DETECTION ZONE
	VIDEO DETECTOR
	FAIL-SAFE INDICATOR
	OPTICAL PRE-EMPTION RECEIVER
	PEDESTRIAN PUSHBUTTON WITH SIGN
	PROPOSED LUMINAIRE / ARM LENGTH
	EXISTING LUMINAIRE / ARM LENGTH
	PROPOSED CONDUIT/SIZE
	EXISTING CONDUIT/SIZE
	PROPOSED PEDESTRIAN SIGNAL HEAD
	PROPOSED VEHICULAR SIGNAL HEAD
	EXISTING VEHICULAR SIGNAL HEAD
	PROPOSED VEHICULAR SIGNAL HEAD WITH ARROW SECTION
	EXISTING VEHICULAR SIGNAL HEAD WITH ARROW SECTION
	PROPOSED SIGN WITH IDENTIFYING LETTER
	EXISTING SIGN WITH IDENTIFYING LETTER
	CONTROLLER ASSEMBLY
	JUNCTION BOX
	EXISTING JUNCTION BOX
	PROPOSED PAVEMENT MARKING, TYPE/WIDTH
	EXISTING PAVEMENT MARKING, TYPE/WIDTH
	PHASE NUMBER



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	CHESTER	0023	CL2	11 OF 59
PHOENIXVILLE BOROUGH				
REVISION NUMBER	REVISIONS	DATE	BY	
1	AS-BUILT DRAWING W/ 12-8-16	11/10/10	KMJ	

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

		MOVEMENT, SEQUENCE AND TIMING DIAGRAM																																		
		1+5			1+6			2+5			2+6			3+7			3+8			4+7			4+8													
PHASE	INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30					
SIGNALS		R	R	R	G	G	Y	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y	
1		R	R	R	G	G	Y	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y	
2		R	R	R	G	G	Y	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y	
3,5		R	R	R	R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y	
4		R	R	R	R	R	R	R	G	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y	
6,7		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
8,9		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
10		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
11		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	OFF	
12,13		H	H	H	M	FH	H	H	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF	
14,15		H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	M	FH	H	H	H	H	H	OFF	
16,17		H	H	H	H	H	H	H	M	FH	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF	
18,19		H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	M	FH	H	H	H	H	H	OFF	
FIXED			4	2					4	2							4	2							4	2							4	2		
MINIMUM		3			3				3				15				3							3				5								
PASSAGE		3			3				3				3				3							3				3								
MAX 1		10			10				20				30				10							10				25								
PEDESTRIAN													9	11														10	13							
MEMORY		NL							NL				MaR				NL							NL				NL				NL				

OPERATION NOTES:

- ① R/G IF FOLLOWED BY 1+6
- ② R/G IF FOLLOWED BY 2+5
- ③ G/Y IF FOLLOWED BY 2+6
- ④ G IF FOLLOWED BY 2+6
- ⑤ G IF FOLLOWED BY 4+7
- ⑥ R/G IF FOLLOWED BY 3+8
- ⑦ G IF FOLLOWED BY 4+8
- ⑧ G/Y IF FOLLOWED BY 4+8

- ⑨ TIMINGS SHALL BE AS SHOWN IN PHASE 2+6. IT MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN PHASE 2+6.
- ⑩ TIMINGS SHALL BE AS SHOWN IN PHASE 4+8. IT MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN PHASE 4+8.

THIS SIGNAL IS TO BE COORDINATED WITH ADJACENT SIGNALS ALONG NUTT ROAD (SR 0023) FROM RAPPS DAM ROAD/MOWERE ROAD TO BRIDGE STREET BY MEANS OF FIBER-OPTIC COMMUNICATION.

SEE SYSTEM PLAN I-0053 FOR SIGNAL SYSTEM PROGRAM TIMES. OFFSET REFERENCED TO PHASE 2+6 START OF GREEN (INTERVAL 12).

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND & SOUTHBOUND APPROACHES OF NUTT ROAD (SR 0023) AND THE EASTBOUND APPROACH OF KIMBERTON ROAD (SR 0113) AND THE WESTBOUND APPROACH OF PHOENIXVILLE TOWN CENTER DRIVEWAY 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. LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLES, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.
- 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 SIGNALS HAVE BEEN ACTUATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PEDESTRIAN TIME SHALL BE SPLIT BETWEEN PED "WALK (MAN)" AND PED "CLEAR (HAND)". THE PED "WALK (MAN)" INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE PED "CLEAR (HAND)" INTERVAL. THIS INTERVAL SHALL TIME OUT, FOLLOWED BY THE APPROPRIATE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION.
- 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+5, 4+7, 1+6, OR 3+8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 12 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

EMERGENCY PRE-EMPTION PHASING

		EMERGENCY PRE-EMPTION PHASING											
		2+5			1+6			4+7			3+8		
PHASE	INTERVAL	31	32	33	34	35	36	37	38	39	40	41	42
SIGNALS		R	R	R	G	Y	R	R	R	R	R	R	R
1		R	R	R	G	Y	R	R	R	R	R	R	R
2		R	R	R	G	Y	R	R	R	R	R	R	R
3,5		G	Y	R	R	R	R	R	R	R	R	R	R
4		G	Y	R	R	R	R	R	R	R	R	R	R
6,7		R	R	R	R	R	R	G	Y	R	R	R	R
8,9		R	R	R	R	R	R	G	Y	R	R	R	R
10		R	R	R	R	R	R	R	R	R	G	Y	R
11		R	R	R	R	R	R	R	R	R	G	Y	R
12,13,16,17		H	H	H	H	H	H	H	H	H	H	H	H
14,15,18,19		H	H	H	H	H	H	H	H	H	H	H	H
FIXED TIME		b	4	2	b	4	2	b	4	2	b	4	2

a SIGNAL TO REMAIN G WHEN RETURNING TO PHASE 2+6
 b FOR DURATION OF OPTICAL PRE-EMPTION
 c G/Y IF FOLLOWED BY 2+6

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.

COUNTY :	CHESTER
MUNICIPALITY :	PHOENIXVILLE BOROUGH
INTERSECTION :	NUTT ROAD (SR 0023) & KIMBERTON ROAD (SR 0113)/ PHOENIXVILLE TOWN CENTER DRIVEWAY, FILE #0031
REVIEWED :	
PHOENIXVILLE BOROUGH OFFICIAL	5/17/07
MUNICIPAL OFFICIAL	DATE
RECOMMENDED :	
LOUIS BELMONTE	5/31/07
DISTRICT TRAFFIC ENGINEER	DATE

SUBSYSTEM 1				PROGRAM CYCLE LENGTH		
INTERSECTION	IP ADDRESS	FILE #		1	2	3
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	10.0.71.2	2441		120	110	100
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	10.0.71.3	1986		120	110	100
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	10.0.71.23	2614				
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	10.0.71.4	3216		120	110	100
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	10.0.71.5	0031		120	110	100
5 NUTT RD (SR 0023) AND BRIDGE ST*	10.0.71.6	0568		120	110	100
SUBSYSTEM 2				PROGRAM CYCLE LENGTH		
INTERSECTION	IP ADDRESS	FILE #		1	2	3
6 NUTT RD (SR 0023) AND LINCOLN AVE/FOURTH AVE	10.0.71.7	0587		90	70	90
7 NUTT RD (SR 0023) AND GAY ST	10.0.71.8	0584		90	70	90
8 NUTT RD (SR 0023) AND MAIN ST/MANAYON ST*	10.0.71.10	0582		90	70	90
9 NUTT RD (SR 0023) AND STARR ST	10.0.71.11	0279		90	70	90
10 VALLEY FORGE RD (SR 0023) AND WHITE HORSE ROAD	10.0.71.12	0929		90	70	90
13 STARR ST (SR 0029) AND MANAYON ST/FIFTH AVE	10.0.71.9	0019		90	70	90
SUBSYSTEM 3				PROGRAM CYCLE LENGTH		
INTERSECTION	IP ADDRESS	FILE #		1	2	3
11 VALLEY FORGE RD (SR 0023) AND PAWLINGS RD	10.0.71.13	3366		90	60	100
12 VALLEY FORGE RD (SR 0023) AND FERRY LN/COUNTRY CLUB RD*	10.0.71.14	0252		90	60	100
SUBSYSTEM 4				PROGRAM CYCLE LENGTH		
INTERSECTION	IP ADDRESS	FILE #		1	2	3
18 KIMBERTON RD/SR 0113 AND PRIVATE DR	10.0.71.15	2952		110	100	120
19 KIMBERTON RD/SR 0113 AND RAPPS DAM RD	10.0.71.16	2748		110	100	120
20 KIMBERTON RD/SR 0113 AND POTHOUSE RD	10.0.71.17	2449		110	100	120
21 KIMBERTON RD/SR 0113 AND TOWNSHIP LINE RD*	10.0.71.17	2449		110	100	120
SUBSYSTEM 5				PROGRAM CYCLE LENGTH		
INTERSECTION	IP ADDRESS	FILE #		1	2	3
14 BRIDGE ST AND CHURCH ST	10.0.71.18	0055		60	70	70
15 BRIDGE ST AND GAY ST	10.0.71.19	0566		60	70	70
16 BRIDGE ST AND MAIN ST	10.0.71.20	0567		60	70	70
17 BRIDGE ST AND STARR ST*	10.0.71.21	0054		120	70	70

WEEKLY PROGRAM CHART

EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-5	06:00	1	AM PEAK
2	1-5	10:00	2	MIDDAY
3	1-5	15:00	3	PM PEAK
4	1-7	19:00	2	EVENING/WEEKEND
5	1-7	22:00	FREE	
6	6,7	09:00	2	EVENING/WEEKEND

MONDAY = DAY 1

GENERAL NOTES

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REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, 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 PERMITEE COMPLIES WITH THE LATEST PROVISIONS OF ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES EFFECTIVE DATE 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.

PERMITEE 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.

INTERCONNECT I-0053

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER

MUNICIPALITY: PHOENIXVILLE BOROUGH,

EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP

INTERSECTION: SCHUYLKILL ROAD/NUTT ROAD (SR 0023) TRAFFIC SIGNAL SYSTEM

REVIEWED: _____ DATE _____

MUNICIPAL OFFICIAL _____ DATE _____

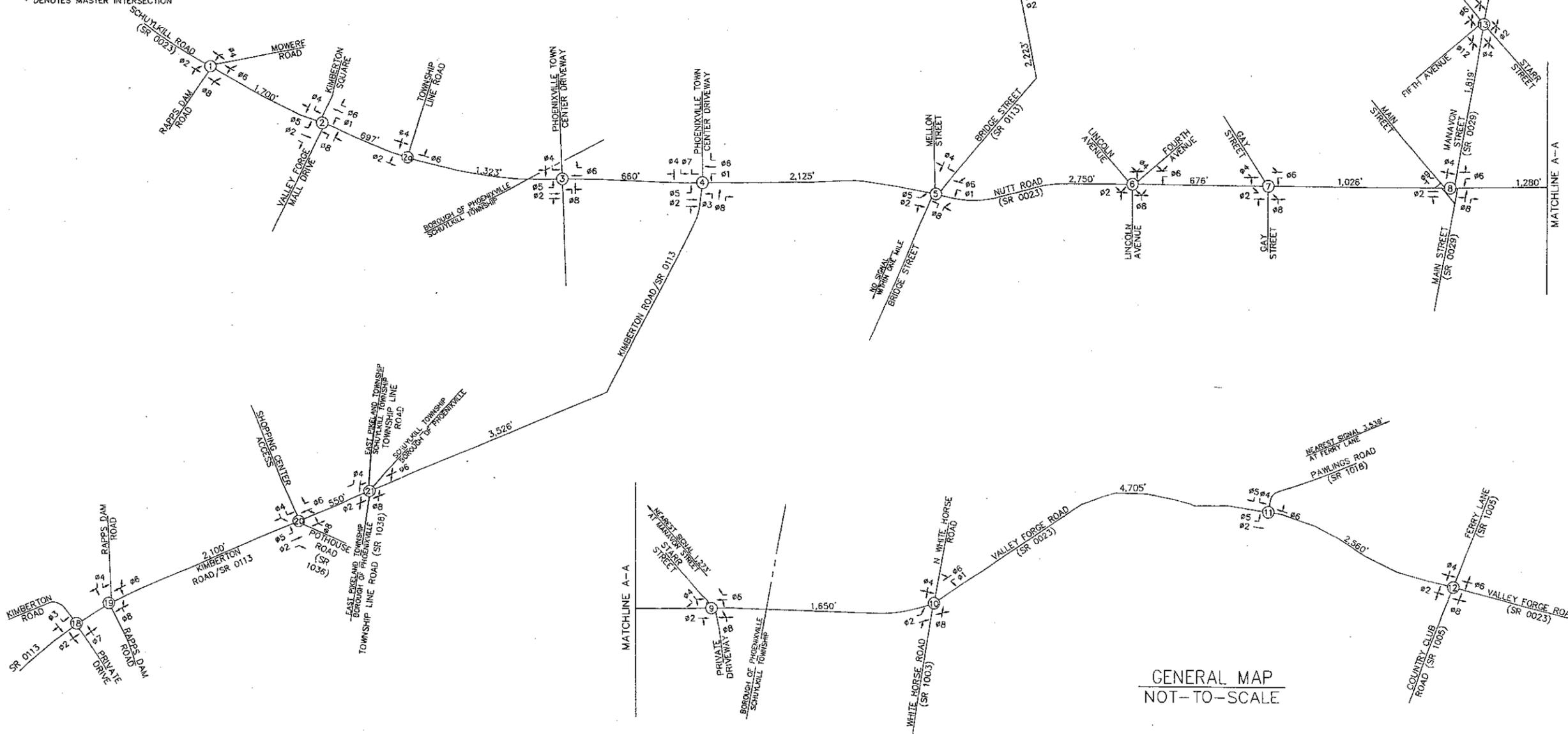
RECOMMENDED: *Paul Jutz* 12-8-10 DATE

MUNICIPAL SIGNALS ENGINEER _____ DATE 12-8-10

DISTRICT TRAFFIC ENGINEER _____ DATE _____

NO.	REVISION	DES. REV.	DATE	RI. VV.	DATE	RECOM. DATE
1						
2						
3						
4						
5						
6						
7						
8						

INTERCONNECT PERMIT # I-0053 SHEET 1 OF 8



GENERAL MAP
NOT-TO-SCALE

GENERAL NOTES

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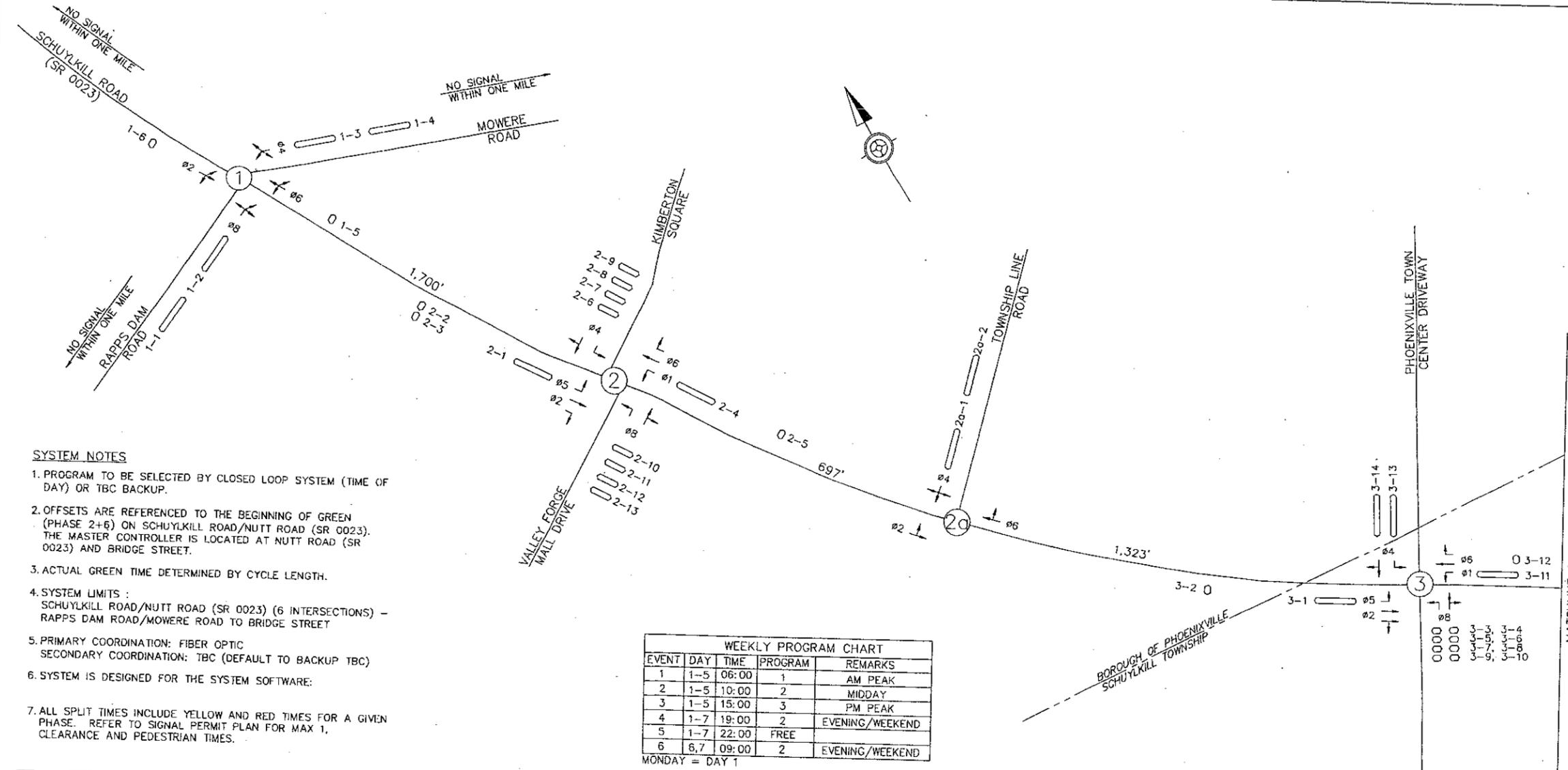
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SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (PHASE 2+6) ON SCHUYLKILL ROAD/NUTT ROAD (SR 0023). THE MASTER CONTROLLER IS LOCATED AT NUTT ROAD (SR 0023) AND BRIDGE STREET.
- ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.
- SYSTEM LIMITS :
SCHUYLKILL ROAD/NUTT ROAD (SR 0023) (6 INTERSECTIONS) - RAPPS DAM ROAD/MOWERE ROAD TO BRIDGE STREET
- PRIMARY COORDINATION: FIBER OPTIC
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
- SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE.
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE. REFER TO SIGNAL PERMIT PLAN FOR MAX 1, CLEARANCE AND PEDESTRIAN TIMES.

WEEKLY PROGRAM CHART

EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-5	06:00	1	AM PEAK
2	1-5	10:00	2	MIDDAY
3	1-5	15:00	3	PM PEAK
4	1-7	19:00	2	EVENING/WEEKEND
5	1-7	22:00	FREE	
6	6,7	09:00	2	EVENING/WEEKEND

MONDAY = DAY 1

PROGRAM 1		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		72		24(LEAD)		72		24(LAG)		120	54	1	0	3
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	13(LEAD)	76(LAG)		31	13(LEAD)	76(LAG)		31		120	89	12	39	14
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2614														
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		81(LAG)												
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	29(LEAD)	49(LAG)	13(LEAD)	39	21(LEAD)	60(LAG)		39		120	84	5	18	7
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	18(LEAD)	70(LAG)		32	38(LEAD)	50(LAG)		32		120	67	12	110	14
PROGRAM 2		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		62		24(LEAD)		62		24(LAG)		110	80	1	26	3
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	15(LEAD)	61(LAG)		34	15(LEAD)	61(LAG)		34		110	106	12	51	14
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2620														
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		74(LAG)												
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	24(LEAD)	44(LAG)	13(LEAD)	36	18(LEAD)	56(LAG)		39		110	99	5	39	7
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	12(LEAD)	75(LAG)		23	28(LEAD)	59(LAG)		23		110	74	12	2	14
PROGRAM 3		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		50		26(LEAD)		50		24(LAG)		100	54	1	98	3
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	13(LEAD)	56(LAG)		31	13(LEAD)	56(LAG)		31		100	0	12	50	14
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2620														
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		69(LAG)												
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	25(LEAD)	33(LAG)	13(LEAD)	31	13(LEAD)	56(LAG)		39		100	80	5	30	7
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	11(LEAD)	66(LAG)		23	26(LEAD)	51(LAG)		23		100	75	12	2	14

NOT TO SCALE

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: PHOENIXVILLE BOROUGH,
EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP

INTERSECTION: SCHUYLKILL ROAD/NUTT ROAD
(SR 0023) TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #1

REVIEWED: _____ DATE _____

MUNICIPAL OFFICIAL: _____ DATE _____

RECOMMENDED: *Paul Juty* 12-8-10 DATE

MUNICIPAL SIGNALS ENGINEER: *[Signature]* 12-8-10 DATE

DISTRICT TRAFFIC ENGINEER: _____ DATE _____

NO	REVISION	DES/REV	DATE	REV#	DATE	RECOM	DATE
1							
2							
3							
4							
5							
6							
7							
8							

INTERCONNECT PERMIT # I-0053 SHEET 2 OF 8

GENERAL NOTES

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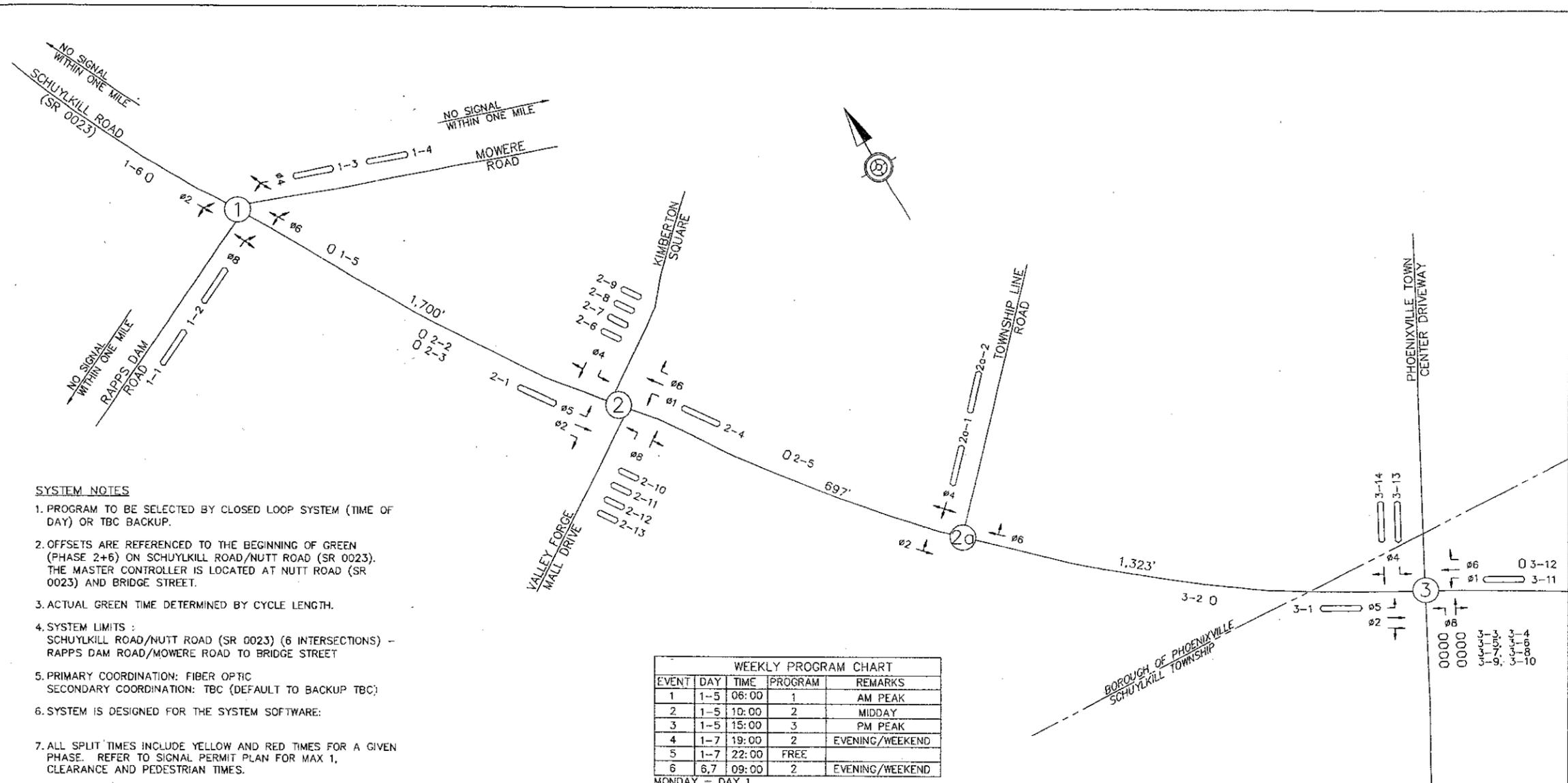
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- SYSTEM NOTES**
- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
 - OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (PHASE 2+6) ON SCHUYLKILL ROAD/NUTT ROAD (SR 0023). THE MASTER CONTROLLER IS LOCATED AT NUTT ROAD (SR 0023) AND BRIDGE STREET.
 - ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.
 - SYSTEM LIMITS :
SCHUYLKILL ROAD/NUTT ROAD (SR 0023) (6 INTERSECTIONS) - RAPPS DAM ROAD/MOWERE ROAD TO BRIDGE STREET
 - PRIMARY COORDINATION: FIBER OPTIC
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
 - SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE:
 - ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE. REFER TO SIGNAL PERMIT PLAN FOR MAX 1, CLEARANCE AND PEDESTRIAN TIMES.

WEEKLY PROGRAM CHART

EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-5	06:00	1	AM PEAK
2	1-5	10:00	2	MIDDAY
3	1-5	15:00	3	PM PEAK
4	1-7	19:00	2	EVENING/WEEKEND
5	1-7	22:00	FREE	
6	6,7	09:00	2	EVENING/WEEKEND

MONDAY = DAY 1

PROGRAM 1		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		72		24(LEAD)		72		24(LAG)		120	54	1	0	3
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	13(LEAD)	76(LAG)		31	13(LEAD)	76(LAG)		31		120	89	12	39	14
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2614														
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		81(LAG)		39	21(LEAD)	60(LAG)		39		120	84	5	18	7
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	29(LEAD)	49(LAG)	13(LEAD)	29(LAG)	13(LEAD)	65(LAG)	13(LEAD)	29(LAG)		120	67	12	110	14
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	18(LEAD)	70(LAG)		32	38(LEAD)	50(LAG)		32		120	0	12	0	14

PROGRAM 2		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		62		24(LEAD)		62		24(LAG)		110	80	1	26	3
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	15(LEAD)	61(LAG)		34	15(LEAD)	61(LAG)		34		110	106	12	51	14
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2620														
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		74(LAG)		36	18(LEAD)	56(LAG)		39		110	99	5	39	7
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	24(LEAD)	44(LAG)	13(LEAD)	29(LAG)	13(LEAD)	55(LAG)	13(LEAD)	29(LAG)		110	74	12	2	14
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	12(LEAD)	75(LAG)		23	28(LEAD)	59(LAG)		23		110	0	12	0	14

PROGRAM 3		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
1 SCHUYLKILL RD (SR 0023) AND RAPPS DAM RD/MOWERE RD	2441		50		26(LEAD)		50		24(LAG)		100	54	1	98	3
2 SCHUYLKILL RD (SR 0023) AND KIMBERTON SQ/VALLEY FORGE MALL DR	1986	13(LEAD)	56(LAG)		31	13(LEAD)	56(LAG)		31		100	0	12	50	14
2a SCHUYLKILL RD (SR 0023) AND TOWNSHIP LINE ROAD	2620														
3 SCHUYLKILL RD (SR 0023) AND PHOENIXVILLE TOWN CTR DRIVEWAY	3216		69(LAG)		31	13(LEAD)	56(LAG)		39		100	80	5	30	7
4 NUTT RD (SR 0023) AND KIMBERTON RD/SR 0113/PHOENIXVILLE TOWN CTR	0031	25(LEAD)	33(LAG)	13(LEAD)	29(LAG)	13(LEAD)	45(LAG)	13(LEAD)	29(LAG)		100	75	12	2	14
5 NUTT RD (SR 0023) AND BRIDGE ST	0568	11(LEAD)	66(LAG)		23	26(LEAD)	51(LAG)		23		100	0	12	0	14

NOT TO SCALE

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0.

COUNTY: CHESTER
MUNICIPALITY: PHOENIXVILLE BOROUGH,
EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP
INTERSECTION: SCHUYLKILL ROAD/NUTT ROAD
(SR 0023) TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #1

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL _____ DATE _____
RECOMMENDED: *Paul Smith* 12-8-10
MUNICIPAL SIGNALS ENGINEER _____ DATE _____
DISTRICT TRAFFIC ENGINEER _____ DATE _____

NO.	REVISION	DES/REV.	DATE	REV.	DATE	RECOM.	DATE
1							
2							
3							
4							
5							
6							
7							
8							

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, GEOMETRY, 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-D 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 THE LATEST PROVISIONS OF ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES EFFECTIVE DATE 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-C

COUNTY: CHESTER

MUNICIPALITY: PHOENIXVILLE BOROUGH,
EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP

INTERSECTION: SCHUYLKILL ROAD/NUTT ROAD
(SR 0023) TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #1

REVIEWED: _____ DATE _____

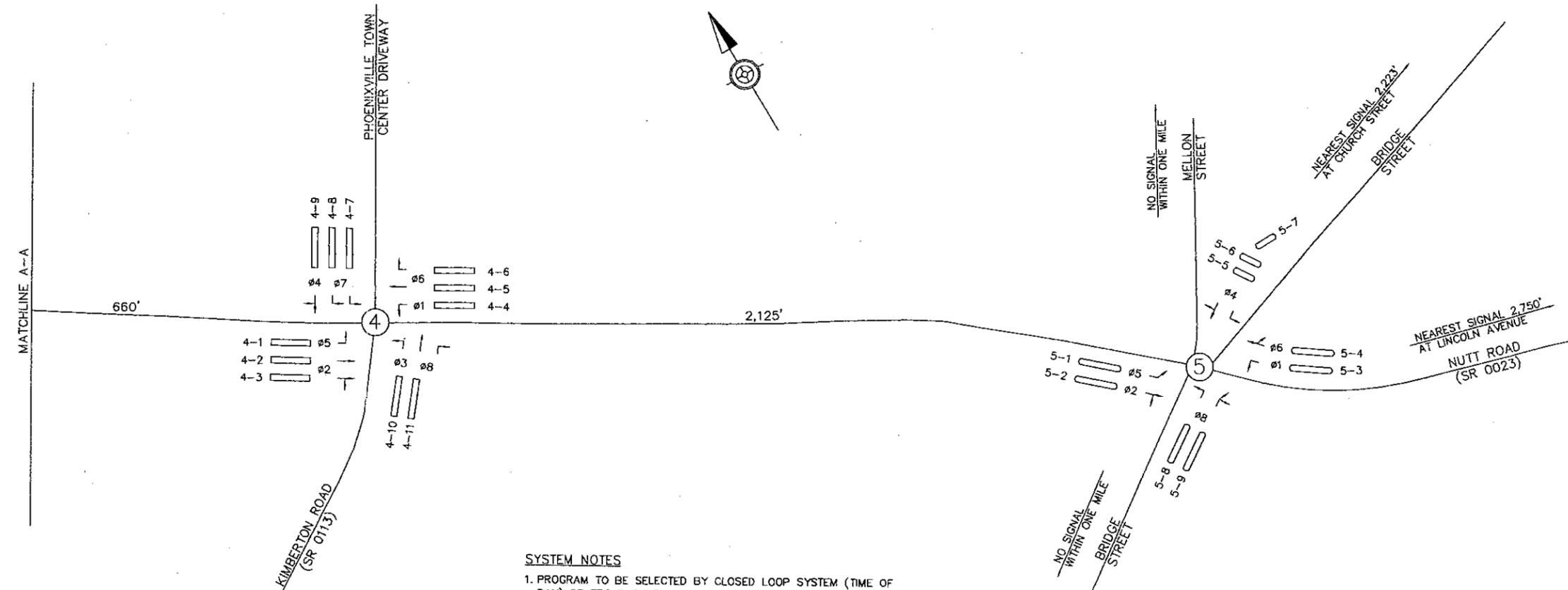
RECOMMENDED: _____ DATE _____

MUNICIPAL OFFICIAL: _____ DATE _____

RECOMMENDED: *Paul Jantz* 12-8-10 DATE _____

MUNICIPAL SIGNALS ENGINEER: _____ DATE _____

DISTRICT TRAFFIC ENGINEER: _____ DATE _____



SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (PHASE 2+6) ON SCHUYLKILL ROAD/NUTT ROAD (SR 0023). THE MASTER CONTROLLER IS LOCATED AT NUTT ROAD (SR 0023) AND BRIDGE STREET.
- ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.
- SYSTEM LIMITS :
SCHUYLKILL ROAD/NUTT ROAD (SR 0023) (6 INTERSECTIONS) - RAPPS DAM ROAD/MOWERE ROAD TO BRIDGE STREET
- PRIMARY COORDINATION: FIBER OPTIC
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
- SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE. REFER TO SIGNAL PERMIT PLAN FOR MAX 1, CLEARANCE AND PEDESTRIAN TIMES.

NOT TO SCALE

GENERAL NOTES

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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.

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER

MUNICIPALITY: EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP

INTERSECTION: KIMBERTON ROAD/SR 0113
TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #4

REVIEWED: _____ DATE _____

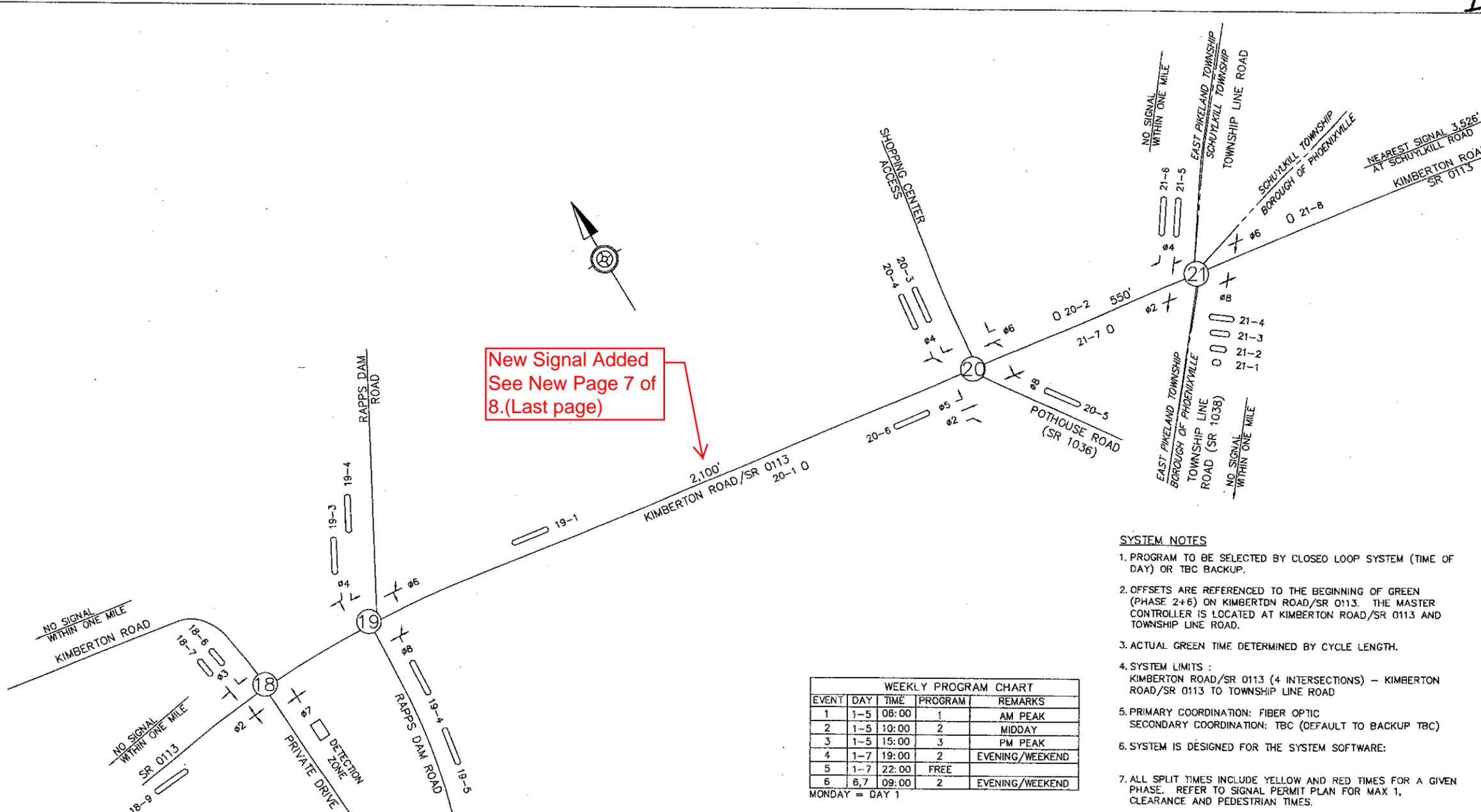
MUNICIPAL OFFICIAL: _____ DATE _____

RECOMMENDED: *Paul Jutz* 12-8-10 DATE

MUNICIPAL SIGNALS ENGINEER: *JR* 12-8-10 DATE

DISTRICT TRAFFIC ENGINEER: _____ DATE _____

NO.	REVISION	DES/REV.	DATE	REV.	DATE	RECOM.	DATE
1							
2							
3							
4							
5							
6							
7							
8							



New Signal Added
See New Page 7 of
8. (Last page)

SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (PHASE 2+6) ON KIMBERTON ROAD/SR 0113. THE MASTER CONTROLLER IS LOCATED AT KIMBERTON ROAD/SR 0113 AND TOWNSHIP LINE ROAD.
- ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.
- SYSTEM LIMITS : KIMBERTON ROAD/SR 0113 (4 INTERSECTIONS) - KIMBERTON ROAD/SR 0113 TO TOWNSHIP LINE ROAD
- PRIMARY COORDINATION: FIBER OPTIC
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
- SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE. REFER TO SIGNAL PERMIT PLAN FOR MAX 1, CLEARANCE AND PEDESTRIAN TIMES.

WEEKLY PROGRAM CHART

EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-5	08:00	1	AM PEAK
2	1-5	10:00	2	MIDDAY
3	1-5	15:00	3	PM PEAK
4	1-7	19:00	2	EVENING/WEEKEND
5	1-7	22:00	FREE	
6	6,7	09:00	2	EVENING/WEEKEND

MONDAY = DAY 1

PROGRAM	INTERSECTION	FILE #	PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
			1	2	3	4	5	6	7	8	9					
PROGRAM 1	18 KIMBERTON RD/SR 0113 AND PRIVATE DR															
	19 KIMBERTON RD/SR 0113 AND RAPPS DAM RD	2952		40	22	26		40	22	22		110	83	1	7	2
	20 KIMBERTON RD/SR 0113 AND POTHOUSE RD	2748		67		12(LEAD)	12(LEAD)	55(LAG)		31(LAG)		110	3	5	52	7
	21 KIMBERTON RD/SR 0113 AND TOWNSHIP LINE RD	2449		66		44		66		44		110	0	1	0	3
PROGRAM 2	18 KIMBERTON RD/SR 0113 AND PRIVATE DR															
	19 KIMBERTON RD/SR 0113 AND RAPPS DAM RD	2952		34	22	22		34	22	22		100	53	1	81	2
	20 KIMBERTON RD/SR 0113 AND POTHOUSE RD	2748		52		16(LEAD)	12(LEAD)	40(LAG)		32(LAG)		100	2	5	36	7
	21 KIMBERTON RD/SR 0113 AND TOWNSHIP LINE RD	2449		63		37		63		37		100	0	1	0	3
PROGRAM 3	18 KIMBERTON RD/SR 0113 AND PRIVATE DR															
	19 KIMBERTON RD/SR 0113 AND RAPPS DAM RD	2952		54	22	22		54	22	22		120	90	1	18	2
	20 KIMBERTON RD/SR 0113 AND POTHOUSE RD	2748		59		12(LEAD)	12(LEAD)	47(LAG)		49(LAG)		120	9	5	50	7
	21 KIMBERTON RD/SR 0113 AND TOWNSHIP LINE RD	2449		72		48		72		48		120	0	1	0	3

NOT TO SCALE

GENERAL NOTES

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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.

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: CHESTER
MUNICIPALITY: EAST PIKELAND TOWNSHIP & SCHUYLKILL TOWNSHIP

INTERSECTION: KIMBERTON ROAD/SR 0113
TRAFFIC SIGNAL SYSTEM, SUBSYSTEM #4

REVIEWED: _____ DATE _____

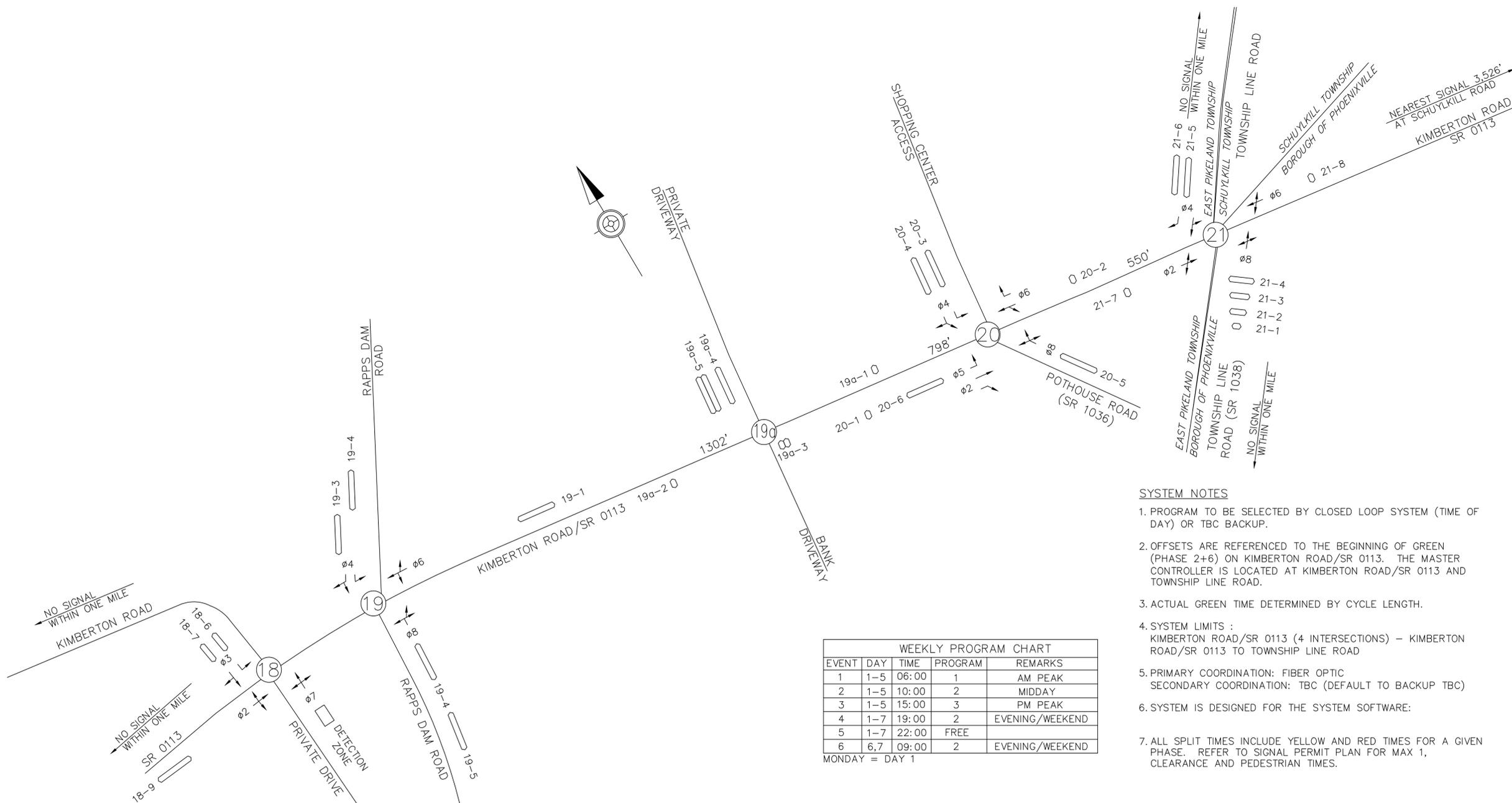
MUNICIPAL OFFICIAL _____ DATE _____

RECOMMENDED: PAUL LUTZ 12/8/2010
MUNICIPAL SIGNALS ENGINEER DATE

LOU BELMONTE 12/8/2010
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES. REV. KML	DATE	REVW.	DATE	RECOM.	DATE
1	ADDED INTERSECTION 19a						
2							
3							
4							
5							
6							
7							
8							

INTERCONNECT PERMIT # I-0053 SHEET 7 OF 8



SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
- OFFSETS ARE REFERENCED TO THE BEGINNING OF GREEN (PHASE 2+6) ON KIMBERTON ROAD/SR 0113. THE MASTER CONTROLLER IS LOCATED AT KIMBERTON ROAD/SR 0113 AND TOWNSHIP LINE ROAD.
- ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.
- SYSTEM LIMITS : KIMBERTON ROAD/SR 0113 (4 INTERSECTIONS) - KIMBERTON ROAD/SR 0113 TO TOWNSHIP LINE ROAD
- PRIMARY COORDINATION: FIBER OPTIC
SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
- SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE. REFER TO SIGNAL PERMIT PLAN FOR MAX 1, CLEARANCE AND PEDESTRIAN TIMES.

WEEKLY PROGRAM CHART

EVENT	DAY	TIME	PROGRAM	REMARKS
1	1-5	06:00	1	AM PEAK
2	1-5	10:00	2	MIDDAY
3	1-5	15:00	3	PM PEAK
4	1-7	19:00	2	EVENING/WEEKEND
5	1-7	22:00	FREE	
6	6,7	09:00	2	EVENING/WEEKEND

MONDAY = DAY 1

PROGRAM 1		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
18 KIMBERTON RD/SR 0113 AND PRIVATE DR	2952										FREE	FREE	FREE	FREE	FREE
19 KIMBERTON RD/SR 0113 AND RAPPS DAM RD	2952										FREE	FREE	FREE	FREE	FREE
19a KIMBERTON RD/SR 0113 AND AND PHOENIXVILLE BANK	3622		81		29		81		29		110	0	1	81	3
20 KIMBERTON RD/SR 0113 AND POTHOUSE RD	2748		67		12(LEAD)	12(LEAD)	55(LAG)		31(LAG)		110	3	5	52	7
21 KIMBERTON RD/SR 0113 AND TOWNSHIP LINE RD	2449		66		44		66		44		110	0	1	0	3

PROGRAM 2		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
18 KIMBERTON RD/SR 0113 AND PRIVATE DR	2952										FREE	FREE	FREE	FREE	FREE
19 KIMBERTON RD/SR 0113 AND RAPPS DAM RD	2952										FREE	FREE	FREE	FREE	FREE
19a KIMBERTON RD/SR 0113 AND AND PHOENIXVILLE BANK	3622		71		29		71		29		100	0	1	71	3
20 KIMBERTON RD/SR 0113 AND POTHOUSE RD	2748		52		16(LEAD)	12(LEAD)	40(LAG)		32(LAG)		100	2	5	36	7
21 KIMBERTON RD/SR 0113 AND TOWNSHIP LINE RD	2449		63		37		63		37		100	0	1	0	3

PROGRAM 3		PHASE									CYCLE	OFFSET 1	REFERENCE INTERVAL 1	OFFSET 2	REFERENCE INTERVAL 2
INTERSECTION	FILE #	1	2	3	4	5	6	7	8	9					
18 KIMBERTON RD/SR 0113 AND PRIVATE DR	2952										FREE	FREE	FREE	FREE	FREE
19 KIMBERTON RD/SR 0113 AND RAPPS DAM RD	2952										FREE	FREE	FREE	FREE	FREE
19a KIMBERTON RD/SR 0113 AND AND PHOENIXVILLE BANK	3622		91		29		91		29		120	0	1	91	3
20 KIMBERTON RD/SR 0113 AND POTHOUSE RD	2748		59		12(LEAD)	12(LEAD)	47(LAG)		49(LAG)		120	9	5	50	7
21 KIMBERTON RD/SR 0113 AND TOWNSHIP LINE RD	2449		72		48		72		48		120	0	1	0	3

NOT TO SCALE



IMG_0001.JPG

Rt 113 & Twp Line Rd - Twp Line Rd SB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0002.JPG

Rt 113 & Twp Line Rd - Twp Line Rd SB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0003.JPG

Rt 113 & Twp Line Rd - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0005.JPG

Rt 113 & Twp Line Rd - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0006.JPG

Rt 113 & Twp Line Rd - Twp Line Rd NB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0009.JPG

Rt 113 & Twp Line Rd - Twp Line Rd NB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0011.JPG

Rt 113 & Twp Line Rd - Rt 113 WB Approach
Phoenixville Borough, Chester County, Pennsylvania



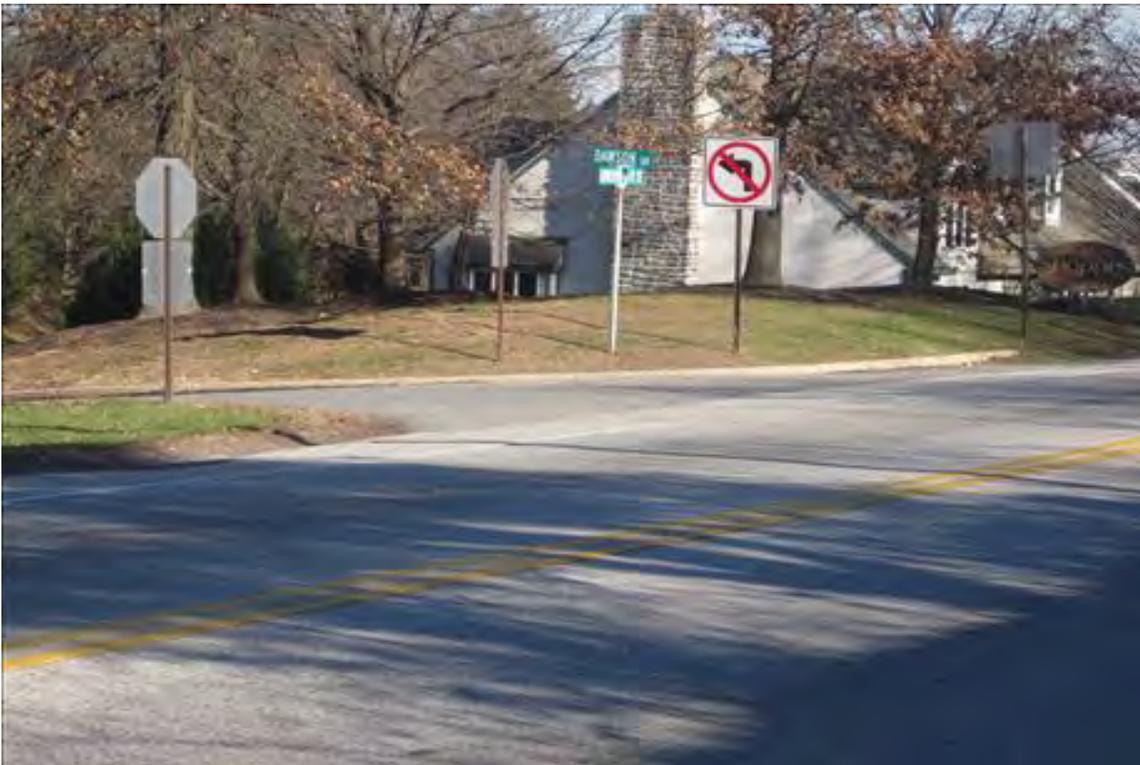
IMG_0012.JPG

Rt 113 & Twp Line Rd - Rt 113 WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0013.JPG

Rt 113 & Dawson Dr (West) - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0014.JPG

Rt 113 & Dawson Dr (West) - Looking to Dawson Dr
Phoenixville Borough, Chester County, Pennsylvania



IMG_0015.JPG

Rt 113 & Dawson Dr (West) - Looking south to Dawson Dr
Phoenixville Borough, Chester County, Pennsylvania



IMG_0017.JPG

Rt 113 & Dawson Dr (West) - Rt 113 WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0018.JPG

Rt 113 & Dawson Dr (West) - Dawson Dr SB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0019.JPG

Rt 113 & Dawson Dr (West) - Dawson Dr SB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0021.JPG

Rt 113 & Ross Lane - Ross Ln NB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0022.JPG

Rt 113 & Ross Lane - Ross Ln NB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0026.JPG

Rt 113 & Ross Lane - Ross Ln SB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0027.JPG

Rt 113 & Ross Lane - Ross Ln SB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0031.JPG

Rt 113 & Ross Lane - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0032.JPG

Rt 113 & Ross Lane - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0037.JPG

Rt 113 & Ross Lane - Rt 113 WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0038.JPG

Rt 113 & Ross Lane - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0039.JPG

Rt 113 & Ross Lane - Rt 113 Dawson Dr (East) / Eland Downe - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0041.JPG

Rt 113 & Ross Lane - Rt 113 Dawson Dr (East) / Eland Downe - Dawson Dr SB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0042.JPG

Rt 113 & Ross Lane - Rt 113 Dawson Dr (East) / Eland Downe - Dawson Dr SB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0048.JPG

Rt 113 & Ross Lane - Rt 113 Dawson Dr (East) / Eland Downe - Rt 113 WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0051.JPG

Rt 113 & Ross Lane - Rt 113 Dawson Dr (East) / Eland Downe - Eland Downe NB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0052.JPG

Rt 113 & Ross Lane - Rt 113 Dawson Dr (East) / Eland Downe - Eland Downe NB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0053.JPG

Rt 23 & Rt 113/ S. C. Access - S.C. WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0054.JPG

Rt 23 & Rt 113/ S. C. Access - S.C. WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0055.JPG

Rt 23 & Rt 113/ S. C. Access - S.C. WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0057.JPG

Rt 23 & Rt 113/ S. C. Access - Rt 23 WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0058.JPG

Rt 23 & Rt 113/ S. C. Access - Rt 23 WB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0064.JPG

Rt 23 & Rt 113/ S. C. Access - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0066.JPG

Rt 23 & Rt 113/ S. C. Access - Rt 113 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0071.JPG

Rt 23 & Rt 113/ S. C. Access - Rt 23 EB Approach
Phoenixville Borough, Chester County, Pennsylvania



IMG_0072.JPG

Rt 23 & Rt 113/ S. C. Access - Rt 23 EB Approach
Phoenixville Borough, Chester County, Pennsylvania

APPENDIX E

Manual Turning Movement (MTM) Counts and Volume Balancing Notes

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Township Line Road
Counter/Board #: LB

File Name : eland03w
Site Code : 81569703
Start Date : 11/18/2015
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Township Line Rd Southbound				Rt 113 (Kimberton Rd) Westbound				Township Line Rd Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	1	85	10	10	23	82	0	1	0	15	8	11	8	79	0	0	333
07:15	1	81	12	17	11	92	0	4	1	18	13	10	6	107	0	2	375
07:30	1	81	10	16	14	95	2	1	3	20	8	12	6	86	0	4	359
07:45	2	72	10	12	23	103	1	2	2	28	6	15	6	130	0	0	412
Total	5	319	42	55	71	372	3	8	6	81	35	48	26	402	0	6	1479
08:00	2	76	6	18	16	101	1	2	0	20	6	6	13	95	0	2	364
08:15	4	80	13	16	22	82	0	4	0	23	6	7	16	103	0	2	378
08:30	3	82	7	17	14	90	0	10	3	31	5	3	8	94	0	5	372
08:45	3	75	9	6	29	86	0	5	1	29	11	9	12	99	0	3	377
Total	12	313	35	57	81	359	1	21	4	103	28	25	49	391	0	12	1491
16:00	5	29	5	12	16	97	0	4	1	40	7	15	3	102	0	3	339
16:15	6	41	5	19	25	112	0	4	1	68	7	31	16	100	0	0	435
16:30	2	21	8	8	9	115	0	6	0	26	13	2	15	114	0	3	342
16:45	6	38	5	14	12	122	2	10	4	63	9	13	22	94	0	4	418
Total	19	129	23	53	62	446	2	24	6	197	36	61	56	410	0	10	1534
17:00	6	37	0	24	16	169	0	18	2	58	15	11	20	147	0	2	525
17:15	5	41	6	22	19	113	5	7	1	53	15	16	5	110	0	0	418
17:30	4	40	0	33	14	158	0	10	0	67	11	21	23	137	0	3	521
17:45	6	39	5	40	24	118	0	7	2	69	10	19	32	127	0	1	499
Total	21	157	11	119	73	558	5	42	5	247	51	67	80	521	0	6	1963
Grand Total	57	918	111	284	287	1735	11	95	21	628	150	201	211	1724	0	34	6467
Apprch %	4.2	67	8.1	20.7	13.5	81.5	0.5	4.5	2.1	62.8	15	20.1	10.7	87.6	0	1.7	
Total %	0.9	14.2	1.7	4.4	4.4	26.8	0.2	1.5	0.3	9.7	2.3	3.1	3.3	26.7	0	0.5	
Passenger Vehicles	56	894	111	271	248	1666	11	93	19	614	150	180	208	1665	0	32	6218
% Passenger Vehicles	98.2	97.4	100	95.4	86.4	96	100	97.9	90.5	97.8	100	89.6	98.6	96.6	0	94.1	96.1
Heavy Vehicles	1	24	0	13	39	69	0	2	2	14	0	21	3	59	0	2	249
% Heavy Vehicles	1.8	2.6	0	4.6	13.6	4	0	2.1	9.5	2.2	0	10.4	1.4	3.4	0	5.9	3.9

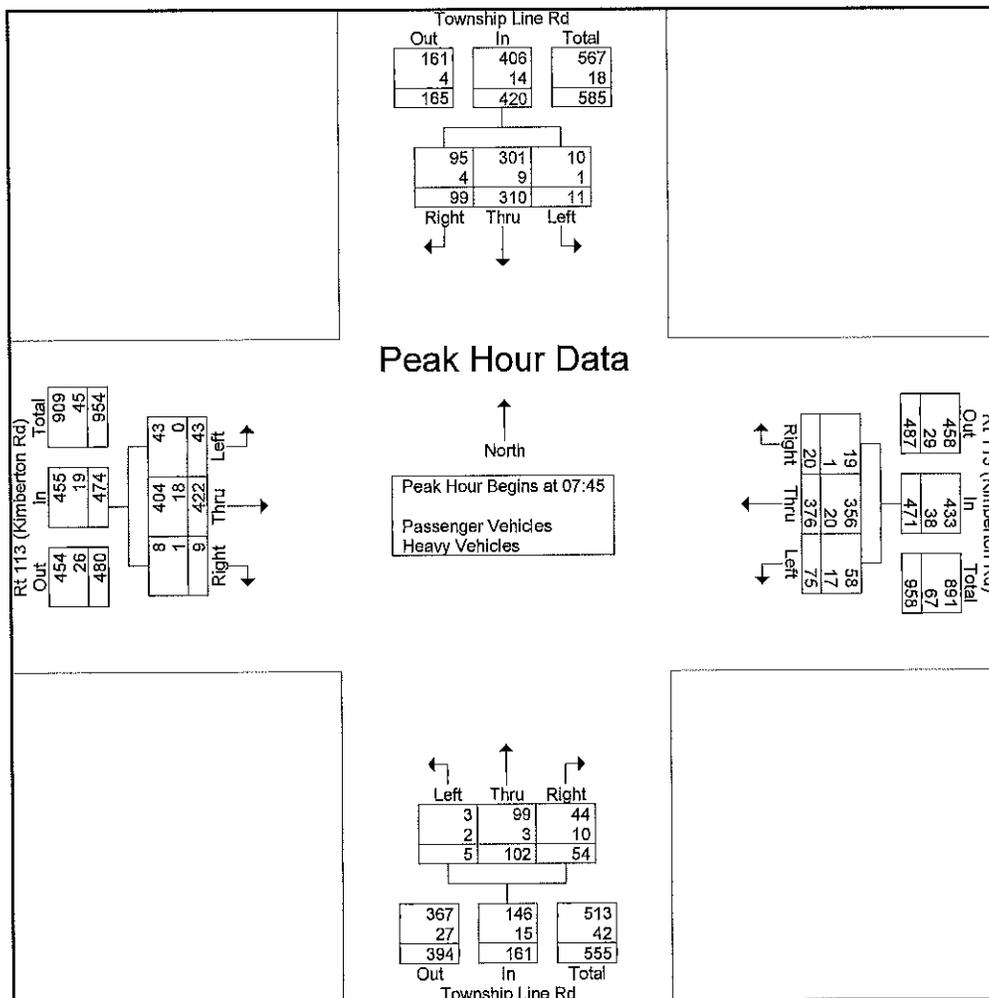
McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Township Line Road
Counter/Board #: LB

File Name : eland03w
Site Code : 81569703
Start Date : 11/18/2015
Page No : 2

Start Time	Township Line Rd Southbound					Rt 113 (Kimberton Rd) Westbound					Township Line Rd Northbound					Rt 113 (Kimberton Rd) Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45																					
07:45	2	72	10	12	96	23	103	1	2	129	2	28	6	15	51	6	130	0	0	136	412
08:00	2	76	6	18	102	16	101	1	2	120	0	20	6	6	32	13	95	0	2	110	364
08:15	4	80	13	16	113	22	82	0	4	108	0	23	6	7	36	16	103	0	2	121	378
08:30	3	82	7	17	109	14	90	0	10	114	3	31	5	3	42	8	94	0	5	107	372
Total Volume	11	310	36	63	420	75	376	2	18	471	5	102	23	31	161	43	422	0	9	474	1526
% App. Total	2.6	73.8	8.6	15		15.9	79.8	0.4	3.8		3.1	63.4	14.3	19.3		9.1	89	0	1.9		
PHF	.688	.945	.692	.875	.929	.815	.913	.500	.450	.913	.417	.823	.958	.517	.789	.672	.812	.000	.450	.871	.926
Passenger Vehicles																					
% Passenger Vehicles	90.9	97.1	100	93.7	96.7	77.3	94.7	100	94.4	91.9	60.0	97.1	100	67.7	90.7	100	95.7	0	88.9	96.0	94.4
Heavy Vehicles																					
% Heavy Vehicles	9.1	2.9	0	6.3	3.3	22.7	5.3	0	5.6	8.1	40.0	2.9	0	32.3	9.3	0	4.3	0	11.1	4.0	5.6



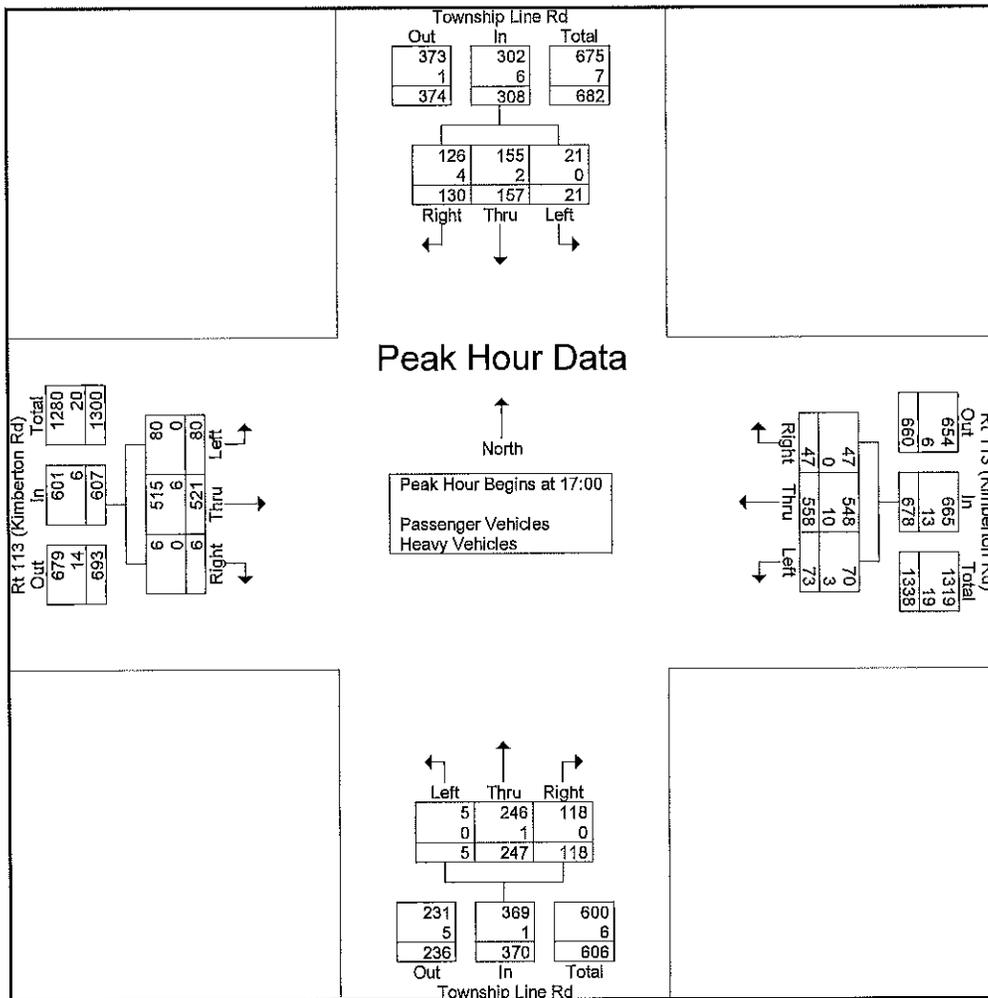
McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Township Line Road
Counter/Board #: LB

File Name : eland03w
Site Code : 81569703
Start Date : 11/18/2015
Page No : 3

Start Time	Township Line Rd Southbound					Rt 113 (Kimberton Rd) Westbound					Township Line Rd Northbound					Rt 113 (Kimberton Rd) Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	6	37	0	24	67	16	169	0	18	203	2	58	15	11	86	20	147	0	2	169	525
17:15	5	41	6	22	74	19	113	5	7	144	1	53	15	16	85	5	110	0	0	115	418
17:30	4	40	0	33	77	14	158	0	10	182	0	67	11	21	99	23	137	0	3	163	521
17:45	6	39	5	40	90	24	118	0	7	149	2	69	10	19	100	32	127	0	1	160	499
Total Volume	21	157	11	119	308	73	558	5	42	678	5	247	51	67	370	80	521	0	6	607	1963
% App. Total	6.8	51	3.6	38.6		10.8	82.3	0.7	6.2		1.4	66.8	13.8	18.1		13.2	85.8	0	1		
PHF	.875	.957	.458	.744	.856	.760	.825	.250	.583	.835	.625	.895	.850	.798	.925	.625	.886	.000	.500	.898	.935
Passenger Vehicles																					
% Passenger Vehicles	100	98.7	100	96.6	98.1	95.9	98.2	100	100	98.1	100	99.6	100	100	99.7	100	98.8	0	100	99.0	98.7
Heavy Vehicles																					
% Heavy Vehicles	0	1.3	0	3.4	1.9	4.1	1.8	0	0	1.9	0	0.4	0	0	0.3	0	1.2	0	0	1.0	1.3



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
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File Name : eland03w
Site Code : 81569703
Start Date : 11/18/2015
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Township Line Rd Southbound				Rt 113 (Kimberton Rd) Westbound				Township Line Rd Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	1	82	10	10	19	79	0	1	0	13	8	8	8	74	0	0	313
07:15	1	79	12	16	10	87	0	4	1	17	13	8	6	97	0	2	353
07:30	1	79	10	15	8	91	2	1	3	17	8	6	4	84	0	4	333
07:45	2	69	10	11	19	98	1	2	1	26	6	10	6	125	0	0	386
Total	5	309	42	52	56	355	3	8	5	73	35	32	24	380	0	6	1385
08:00	2	75	6	17	14	96	1	2	0	19	6	4	13	92	0	1	348
08:15	4	77	13	14	19	75	0	4	0	23	6	5	16	98	0	2	356
08:30	2	80	7	17	6	87	0	9	2	31	5	2	8	89	0	5	350
08:45	3	71	9	6	26	83	0	4	1	28	11	9	11	94	0	2	358
Total	11	303	35	54	65	341	1	19	3	101	28	20	48	373	0	10	1412
16:00	5	28	5	12	14	83	0	4	1	40	7	15	3	96	0	3	316
16:15	6	41	5	18	24	109	0	4	1	67	7	31	16	95	0	0	424
16:30	2	21	8	7	7	113	0	6	0	26	13	2	15	113	0	3	336
16:45	6	37	5	13	12	117	2	10	4	61	9	13	22	93	0	4	408
Total	19	127	23	50	57	422	2	24	6	194	36	61	56	397	0	10	1484
17:00	6	36	0	22	16	164	0	18	2	58	15	11	20	145	0	2	515
17:15	5	41	6	22	18	110	5	7	1	53	15	16	5	110	0	0	414
17:30	4	40	0	32	12	157	0	10	0	66	11	21	23	134	0	3	513
17:45	6	38	5	39	24	117	0	7	2	69	10	19	32	126	0	1	495
Total	21	155	11	115	70	548	5	42	5	246	51	67	80	515	0	6	1937
Grand Total	56	894	111	271	248	1666	11	93	19	614	150	180	208	1665	0	32	6218
Approch %	4.2	67.1	8.3	20.3	12.3	82.6	0.5	4.6	2	63.8	15.6	18.7	10.9	87.4	0	1.7	
Total %	0.9	14.4	1.8	4.4	4	26.8	0.2	1.5	0.3	9.9	2.4	2.9	3.3	26.8	0	0.5	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200

Fort Washington, P A 19034

Municipality: Phoenixville
 Location: Route 113 (Kimberton Road) &
 Township Line Road
 Counter/Board #: LB

File Name : eland03w
 Site Code : 81569703
 Start Date : 11/18/2015
 Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Township Line Rd Southbound				Rt 113 (Kimberton Rd) Westbound				Township Line Rd Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	0	3	0	0	4	3	0	0	0	2	0	3	0	5	0	0	20
07:15	0	2	0	1	1	5	0	0	0	1	0	2	0	10	0	0	22
07:30	0	2	0	1	6	4	0	0	0	3	0	6	2	2	0	0	26
07:45	0	3	0	1	4	5	0	0	1	2	0	5	0	5	0	0	26
Total	0	10	0	3	15	17	0	0	1	8	0	16	2	22	0	0	94
08:00	0	1	0	1	2	5	0	0	0	1	0	2	0	3	0	1	16
08:15	0	3	0	2	3	7	0	0	0	0	0	2	0	5	0	0	22
08:30	1	2	0	0	8	3	0	1	1	0	0	1	0	5	0	0	22
08:45	0	4	0	0	3	3	0	1	0	1	0	0	1	5	0	1	19
Total	1	10	0	3	16	18	0	2	1	2	0	5	1	18	0	2	79
16:00	0	1	0	0	2	14	0	0	0	0	0	0	0	6	0	0	23
16:15	0	0	0	1	1	3	0	0	0	1	0	0	0	5	0	0	11
16:30	0	0	0	1	2	2	0	0	0	0	0	0	0	1	0	0	6
16:45	0	1	0	1	0	5	0	0	0	2	0	0	0	1	0	0	10
Total	0	2	0	3	5	24	0	0	0	3	0	0	0	13	0	0	50
17:00	0	1	0	2	0	5	0	0	0	0	0	0	0	2	0	0	10
17:15	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	4
17:30	0	0	0	1	2	1	0	0	0	1	0	0	0	3	0	0	8
17:45	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	4
Total	0	2	0	4	3	10	0	0	0	1	0	0	0	6	0	0	26
Grand Total	1	24	0	13	39	69	0	2	2	14	0	21	3	59	0	2	249
Approch %	2.6	63.2	0	34.2	35.5	62.7	0	1.8	5.4	37.8	0	56.8	4.7	92.2	0	3.1	
Total %	0.4	9.6	0	5.2	15.7	27.7	0	0.8	0.8	5.6	0	8.4	1.2	23.7	0	0.8	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Township Line Road
Counter/Board #: LB

File Name : eland03w
Site Code : 81569703
Start Date : 11/18/2015
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Township Line Rd Southbound				Rt 113 (Kimberton Rd) Westbound				Township Line Rd Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	0	3	0	0	4	3	0	0	0	2	0	3	0	5	0	0	20
07:15	0	2	0	1	1	5	0	0	0	1	0	2	0	10	0	0	22
07:30	0	2	0	1	6	4	0	0	0	3	0	6	2	2	0	0	26
07:45	0	3	0	1	4	5	0	0	1	2	0	5	0	5	0	0	26
Total	0	10	0	3	15	17	0	0	1	8	0	16	2	22	0	0	94
08:00	0	1	0	1	2	5	0	0	0	1	0	2	0	3	0	1	16
08:15	0	3	0	2	3	7	0	0	0	0	0	2	0	5	0	0	22
08:30	1	2	0	0	8	3	0	1	1	0	0	1	0	5	0	0	22
08:45	0	4	0	0	3	3	0	1	0	1	0	0	1	5	0	1	19
Total	1	10	0	3	16	18	0	2	1	2	0	5	1	18	0	2	79
16:00	0	1	0	0	2	14	0	0	0	0	0	0	0	6	0	0	23
16:15	0	0	0	1	1	3	0	0	0	1	0	0	0	5	0	0	11
16:30	0	0	0	1	2	2	0	0	0	0	0	0	0	1	0	0	6
16:45	0	1	0	1	0	5	0	0	0	2	0	0	0	1	0	0	10
Total	0	2	0	3	5	24	0	0	0	3	0	0	0	13	0	0	50
17:00	0	1	0	2	0	5	0	0	0	0	0	0	0	2	0	0	10
17:15	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	4
17:30	0	0	0	1	2	1	0	0	0	1	0	0	0	3	0	0	8
17:45	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	4
Total	0	2	0	4	3	10	0	0	0	1	0	0	0	6	0	0	26
Grand Total	1	24	0	13	39	69	0	2	2	14	0	21	3	59	0	2	249
Approch %	2.6	63.2	0	34.2	35.5	62.7	0	1.8	5.4	37.8	0	56.8	4.7	92.2	0	3.1	
Total %	0.4	9.6	0	5.2	15.7	27.7	0	0.8	0.8	5.6	0	8.4	1.2	23.7	0	0.8	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (West)
Counter/Board #: DB

File Name : eland02a
Site Code : 81569702
Start Date : 11/18/2015
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Dawson Dr (West) Southbound		Rt 113 (Kimberton Rd) Westbound		Rt 113 (Kimberton Rd) Eastbound		Int. Total
	Left	Right	Thru	Right	Left	Thru	
07:00	0	0	113	0	0	98	211
07:15	0	1	114	0	0	134	249
07:30	0	0	114	0	0	116	230
07:45	0	0	126	0	0	145	271
Total	0	1	467	0	0	493	961
08:00	0	1	133	0	0	123	257
08:15	0	0	114	0	0	125	239
08:30	0	0	121	0	0	111	232
08:45	0	2	101	0	0	115	218
Total	0	3	469	0	0	474	946
Grand Total	0	4	936	0	0	967	1907
Apprch %	0	100	100	0	0	100	
Total %	0	0.2	49.1	0	0	50.7	
Passenger Vehicles	0	4	849	0	0	899	1752
% Passenger Vehicles	0	100	90.7	0	0	93	91.9
Heavy Vehicles	0	0	87	0	0	68	155
% Heavy Vehicles	0	0	9.3	0	0	7	8.1

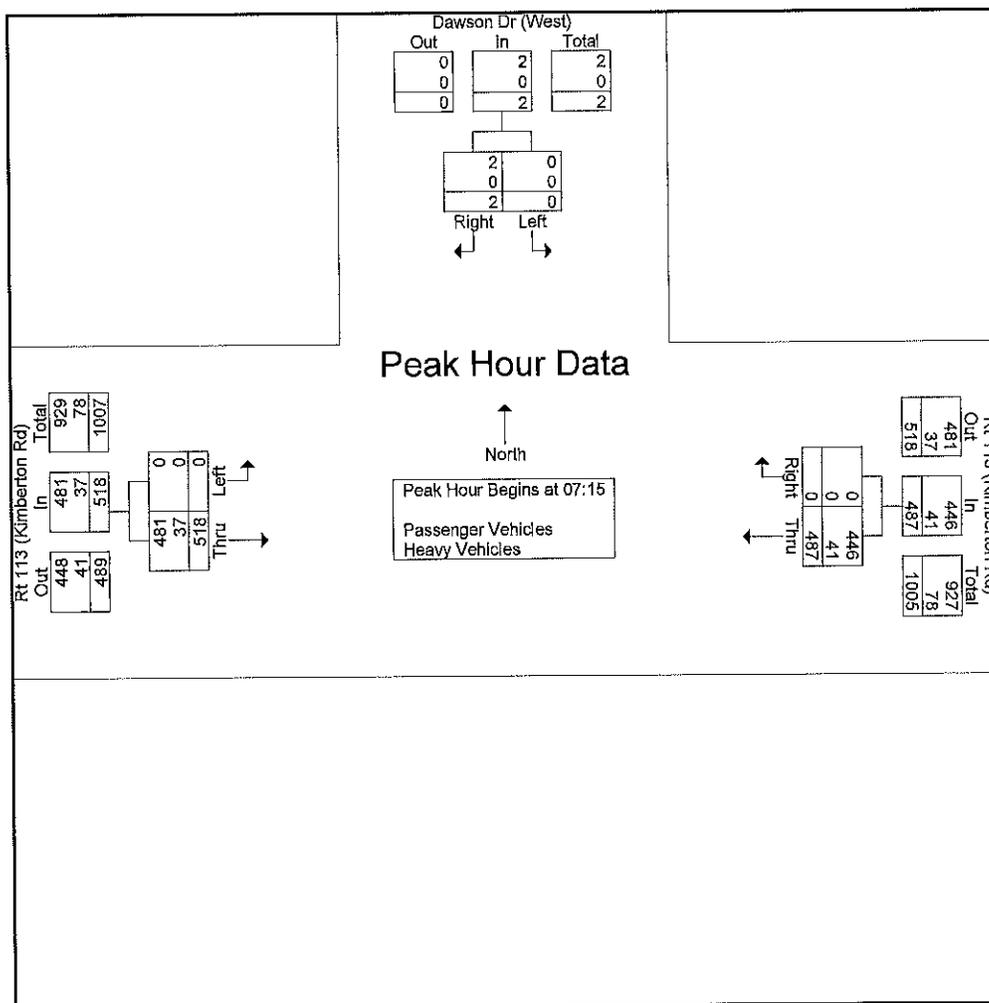
McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (West)
Counter/Board #: DB

File Name : eland02a
Site Code : 81569702
Start Date : 11/18/2015
Page No : 2

Start Time	Dawson Dr (West) Southbound			Rt 113 (Kimberton Rd) Westbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15										
07:15	0	1	1	114	0	114	0	134	134	249
07:30	0	0	0	114	0	114	0	116	116	230
07:45	0	0	0	126	0	126	0	145	145	271
08:00	0	1	1	133	0	133	0	123	123	257
Total Volume	0	2	2	487	0	487	0	518	518	1007
% App. Total	0	100	100	91.6	0	91.6	0	92.9	92.9	92.3
PHF	.000	.500	.500	.915	.000	.915	.000	.893	.893	.929
Passenger Vehicles	0	2	2	446	0	446	0	481	481	929
% Passenger Vehicles	0	100	100	91.6	0	91.6	0	92.9	92.9	92.3
Heavy Vehicles	0	0	0	41	0	41	0	37	37	78
% Heavy Vehicles	0	0	0	8.4	0	8.4	0	7.1	7.1	7.7



McMahon Associates, Inc.

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

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Dawson Drive (West)
Counter/Board #: DB

File Name : eland02a
Site Code : 81569702
Start Date : 11/18/2015
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Dawson Dr (West) Southbound		Rt 113 (Kimberton Rd) Westbound		Rt 113 (Kimberton Rd) Eastbound		Int. Total
	Left	Right	Thru	Right	Left	Thru	
07:00	0	0	106	0	0	88	194
07:15	0	1	107	0	0	124	232
07:30	0	0	101	0	0	106	207
07:45	0	0	117	0	0	134	251
Total	0	1	431	0	0	452	884
08:00	0	1	121	0	0	117	239
08:15	0	0	100	0	0	117	217
08:30	0	0	108	0	0	104	212
08:45	0	2	89	0	0	109	200
Total	0	3	418	0	0	447	868
Grand Total	0	4	849	0	0	899	1752
Apprch %	0	100	100	0	0	100	
Total %	0	0.2	48.5	0	0	51.3	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (West)
Counter/Board #: DB

File Name : eland02a
Site Code : 81569702
Start Date : 11/18/2015
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Dawson Dr (West) Southbound		Rt 113 (Kimberton Rd) Westbound		Rt 113 (Kimberton Rd) Eastbound		Int. Total
	Left	Right	Thru	Right	Left	Thru	
07:00	0	0	7	0	0	10	17
07:15	0	0	7	0	0	10	17
07:30	0	0	13	0	0	10	23
07:45	0	0	9	0	0	11	20
Total	0	0	36	0	0	41	77
08:00	0	0	12	0	0	6	18
08:15	0	0	14	0	0	8	22
08:30	0	0	13	0	0	7	20
08:45	0	0	12	0	0	6	18
Total	0	0	51	0	0	27	78
Grand Total	0	0	87	0	0	68	155
Apprch %	0	0	100	0	0	100	
Total %	0	0	56.1	0	0	43.9	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (West)
Counter/Board #: KB

File Name : eland02p
Site Code : 81569702
Start Date : 11/19/2015
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Dawson Dr. (West) Southbound		Rt 113 (Kimberton Rd) Westbound		Rt 113 (Kimberton Rd) Eastbound		Int. Total
	Left	Right	Thru	Right	Left	Thru	
16:00	0	1	107	0	0	123	231
16:15	0	4	141	0	0	125	270
16:30	0	3	145	0	0	159	307
16:45	0	2	150	0	0	167	319
Total	0	10	543	0	0	574	1127
17:00	0	4	109	0	0	160	273
17:15	0	3	135	0	0	154	292
17:30	1	6	127	0	0	154	288
17:45	1	4	117	0	0	133	255
Total	2	17	488	0	0	601	1108
Grand Total	2	27	1031	0	0	1175	2235
Apprch %	6.9	93.1	100	0	0	100	
Total %	0.1	1.2	46.1	0	0	52.6	
Passenger Vehicles	2	27	1018	0	0	1167	2214
% Passenger Vehicles	100	100	98.7	0	0	99.3	99.1
Heavy Vehicles	0	0	13	0	0	8	21
% Heavy Vehicles	0	0	1.3	0	0	0.7	0.9

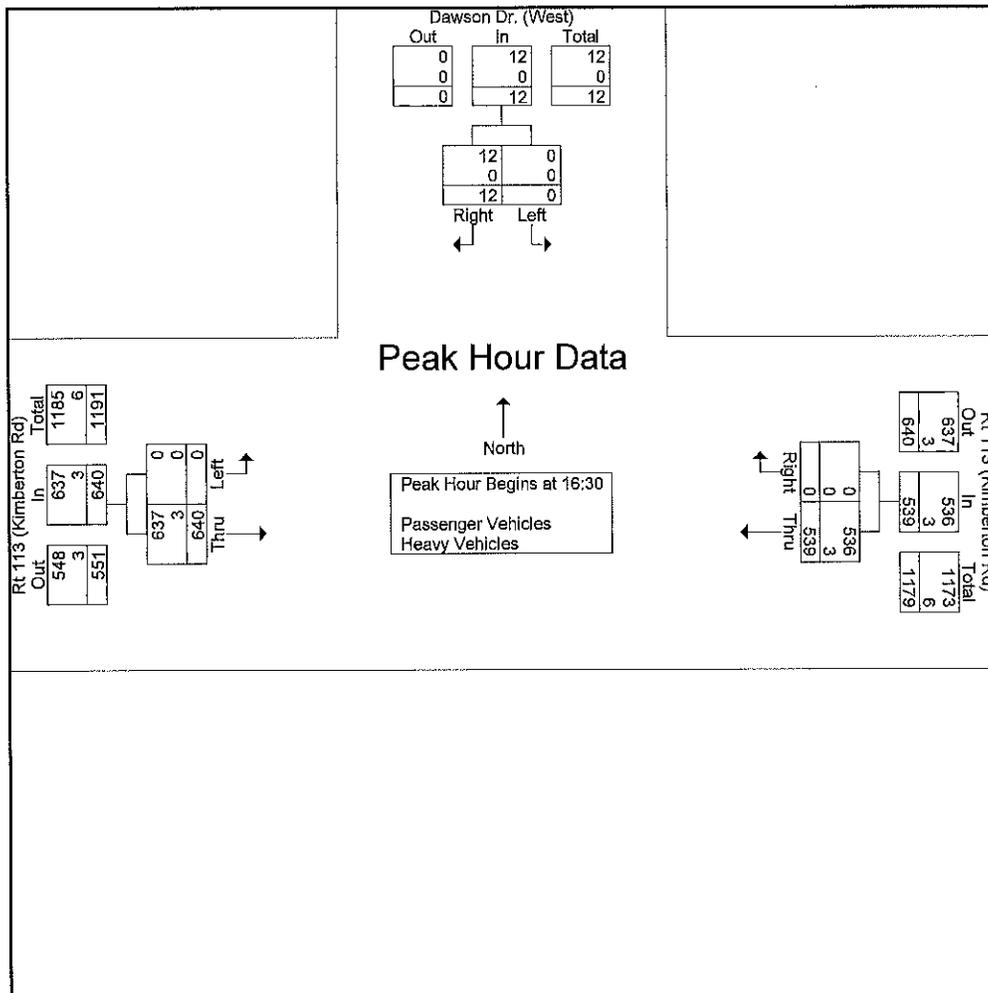
McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (West)
Counter/Board #: KB

File Name : eland02p
Site Code : 81569702
Start Date : 11/19/2015
Page No : 2

Start Time	Dawson Dr. (West) Southbound			Rt 113 (Kimberton Rd) Westbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:30										
16:30	0	3	3	145	0	145	0	159	159	307
16:45	0	2	2	150	0	150	0	167	167	319
17:00	0	4	4	109	0	109	0	160	160	273
17:15	0	3	3	135	0	135	0	154	154	292
Total Volume	0	12	12	539	0	539	0	640	640	1191
% App. Total	0	100	100	99.4	0	99.4	0	99.5	99.5	99.5
PHF	.000	.750	.750	.898	.000	.898	.000	.958	.958	.933
Passenger Vehicles	0	12	12	536	0	536	0	637	637	1185
% Passenger Vehicles	0	100	100	99.4	0	99.4	0	99.5	99.5	99.5
Heavy Vehicles	0	0	0	3	0	3	0	3	3	6
% Heavy Vehicles	0	0	0	0.6	0	0.6	0	0.5	0.5	0.5



McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (West)
Counter/Board #: KB

File Name : eland02p
Site Code : 81569702
Start Date : 11/19/2015
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Dawson Dr. (West) Southbound		Rt 113 (Kimberton Rd) Westbound		Rt 113 (Kimberton Rd) Eastbound		Int. Total
	Left	Right	Thru	Right	Left	Thru	
16:00	0	1	104	0	0	120	225
16:15	0	4	138	0	0	124	266
16:30	0	3	144	0	0	158	305
16:45	0	2	149	0	0	166	317
Total	0	10	535	0	0	568	1113
17:00	0	4	109	0	0	159	272
17:15	0	3	134	0	0	154	291
17:30	1	6	126	0	0	154	287
17:45	1	4	114	0	0	132	251
Total	2	17	483	0	0	599	1101
Grand Total	2	27	1018	0	0	1167	2214
Apprch %	6.9	93.1	100	0	0	100	
Total %	0.1	1.2	46	0	0	52.7	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (West)
Counter/Board #: KB

File Name : eland02p
Site Code : 81569702
Start Date : 11/19/2015
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Dawson Dr. (West) Southbound		Rt 113 (Kimberton Rd) Westbound		Rt 113 (Kimberton Rd) Eastbound		Int. Total
	Left	Right	Thru	Right	Left	Thru	
16:00	0	0	3	0	0	3	6
16:15	0	0	3	0	0	1	4
16:30	0	0	1	0	0	1	2
16:45	0	0	1	0	0	1	2
Total	0	0	8	0	0	6	14
17:00	0	0	0	0	0	1	1
17:15	0	0	1	0	0	0	1
17:30	0	0	1	0	0	0	1
17:45	0	0	3	0	0	1	4
Total	0	0	5	0	0	2	7
Grand Total	0	0	13	0	0	8	21
Apprch %	0	0	100	0	0	100	
Total %	0	0	61.9	0	0	38.1	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Ross Lane / S.C. Access
Counter/Board #: LB+DB

File Name : eland05w
Site Code : 81569705
Start Date : 11/19/2015
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	S.C. Access Southbound			Rt 113 (Kimberton Rd) Westbound			Ross Ln Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
06:00	0	0	0	5	39	0	0	0	2	0	32	0	78
06:15	0	0	0	4	53	0	0	0	3	0	43	0	103
06:30	0	0	0	9	70	1	2	0	10	0	79	1	172
06:45	0	0	1	16	80	2	1	0	7	3	72	0	182
Total	0	0	1	34	242	3	3	0	22	3	226	1	535
07:00	0	0	0	17	84	1	1	0	8	2	70	2	185
07:15	1	0	0	27	102	0	2	0	8	2	129	1	272
07:30	0	0	0	6	41	2	0	0	4	0	45	8	106
07:45	0	0	0	11	62	0	0	0	8	2	69	4	156
Total	1	0	0	61	289	3	3	0	28	6	313	15	719
08:00	1	0	0	21	104	1	0	1	11	0	113	1	253
08:15	0	0	3	14	91	1	1	0	9	4	107	0	230
08:30	1	0	1	13	97	1	2	0	6	4	107	3	235
08:45	0	0	2	11	74	2	0	1	6	5	99	4	204
Total	2	0	6	59	366	5	3	2	32	13	426	8	922
09:00	3	0	2	8	77	5	3	0	14	2	100	1	215
09:15	2	0	2	6	71	1	0	1	5	2	99	1	190
09:30	0	0	1	8	92	0	2	3	6	4	97	0	213
09:45	2	0	2	3	68	3	0	1	6	9	48	2	144
Total	7	0	7	25	308	9	5	5	31	17	344	4	762
10:00	1	1	1	16	74	2	0	0	10	3	83	0	191
10:15	1	1	1	7	90	2	0	2	5	4	76	0	189
10:30	0	1	1	12	91	2	0	1	8	5	87	1	209
10:45	0	1	3	7	94	3	1	1	7	5	73	0	195
Total	2	4	6	42	349	9	1	4	30	17	319	1	784
11:00	1	0	2	6	101	1	0	1	8	6	93	1	220
11:15	3	0	3	5	91	6	1	1	6	2	99	3	220
11:30	5	1	2	8	105	0	0	2	8	5	93	2	231
11:45	3	0	1	10	95	3	0	1	7	3	97	0	220
Total	12	1	8	29	392	10	1	5	29	16	382	6	891
12:00	1	1	6	11	115	2	0	0	5	4	115	0	260
12:15	0	0	5	11	97	3	0	1	6	4	121	0	248
12:30	3	0	2	8	102	2	1	1	5	5	109	2	240
12:45	4	2	1	11	123	5	0	0	6	6	105	2	265
Total	8	3	14	41	437	12	1	2	22	19	450	4	1013
13:00	6	1	2	8	112	1	1	0	5	6	109	1	252
13:15	8	0	0	7	106	6	0	1	10	6	114	0	258
13:30	5	0	3	9	115	6	1	0	14	8	114	0	275
13:45	5	0	3	15	74	4	1	0	8	7	100	2	219
Total	24	1	8	39	407	17	3	1	37	27	437	3	1004
14:00	3	0	4	10	104	3	1	0	5	6	87	1	224
14:15	2	1	2	12	103	2	0	2	14	4	91	1	234
14:30	2	1	6	14	99	5	0	0	11	6	107	2	253
14:45	2	0	4	9	85	3	0	1	10	5	71	1	191
Total	9	2	16	45	391	13	1	3	40	21	356	5	902

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Ross Lane / S.C. Access
Counter/Board #: LB+DB

File Name : eland05w
Site Code : 81569705
Start Date : 11/19/2015
Page No : 2

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	S.C. Access Southbound			Rt 113 (Kimberton Rd) Westbound			Ross Ln Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15:00	0	2	4	12	99	4	1	1	9	5	101	0	238
15:15	2	0	4	10	72	4	2	0	10	4	73	2	183
15:30	5	0	2	7	61	1	0	0	16	3	84	8	187
15:45	0	0	4	13	118	6	0	0	20	12	124	2	299
Total	7	2	14	42	350	15	3	1	55	24	382	12	907
16:00	1	0	2	17	118	4	3	1	23	6	109	2	286
16:15	1	0	2	10	99	5	2	0	33	5	96	2	255
16:30	3	0	4	14	118	3	1	1	17	3	131	0	295
16:45	3	0	8	11	137	0	6	0	24	7	148	4	348
Total	8	0	16	52	472	12	12	2	97	21	484	8	1184
17:00	4	0	4	18	105	5	3	2	31	9	156	2	339
17:15	6	0	10	13	132	4	4	0	33	7	157	4	370
17:30	3	1	5	22	140	3	2	0	26	3	144	2	351
17:45	0	0	3	24	106	2	2	3	21	7	126	2	296
Total	13	1	22	77	483	14	11	5	111	26	583	10	1356
Grand Total	93	14	118	546	4486	122	47	30	534	210	4702	77	10979
Apprch %	41.3	6.2	52.4	10.6	87	2.4	7.7	4.9	87.4	4.2	94.2	1.5	
Total %	0.8	0.1	1.1	5	40.9	1.1	0.4	0.3	4.9	1.9	42.8	0.7	
Passenger Vehicles	91	14	116	525	4203	120	46	29	523	208	4416	72	10363
% Passenger Vehicles	97.8	100	98.3	96.2	93.7	98.4	97.9	96.7	97.9	99	93.9	93.5	94.4
Heavy Vehicles	2	0	2	21	283	2	1	1	11	2	286	5	616
% Heavy Vehicles	2.2	0	1.7	3.8	6.3	1.6	2.1	3.3	2.1	1	6.1	6.5	5.6

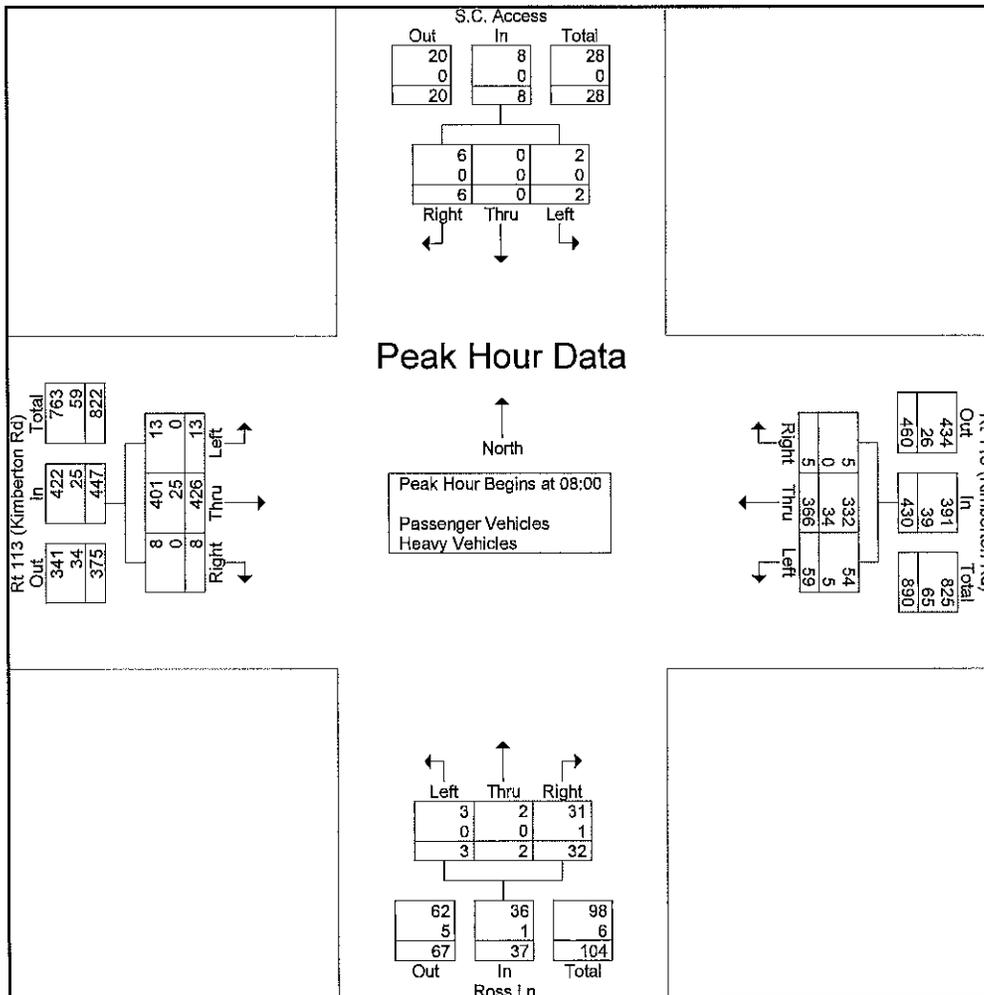
McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Ross Lane / S.C. Access
Counter/Board #: LB+DB

File Name : eland05w
Site Code : 81569705
Start Date : 11/19/2015
Page No : 3

Start Time	S.C. Access Southbound				Rt 113 (Kimberton Rd) Westbound				Ross Ln Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 06:00 to 09:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	1	0	0	1	21	104	1	126	0	1	11	12	0	113	1	114	253
08:15	0	0	3	3	14	91	1	106	1	0	9	10	4	107	0	111	230
08:30	1	0	1	2	13	97	1	111	2	0	6	8	4	107	3	114	235
08:45	0	0	2	2	11	74	2	87	0	1	6	7	5	99	4	108	204
Total Volume	2	0	6	8	59	366	5	430	3	2	32	37	13	426	8	447	922
% App. Total	25	0	75		13.7	85.1	1.2		8.1	5.4	86.5		2.9	95.3	1.8		
PHF	.500	.000	.500	.667	.702	.880	.625	.853	.375	.500	.727	.771	.650	.942	.500	.980	.911
Passenger Vehicles	2	0	6	8	54	332	5	391	3	2	31	36	13	401	8	422	857
% Passenger Vehicles	100	0	100	100	91.5	90.7	100	90.9	100	100	96.9	97.3	100	94.1	100	94.4	93.0
Heavy Vehicles	0	0	0	0	5	34	0	39	0	0	1	1	0	25	0	25	65
% Heavy Vehicles	0	0	0	0	8.5	9.3	0	9.1	0	0	3.1	2.7	0	5.9	0	5.6	7.0



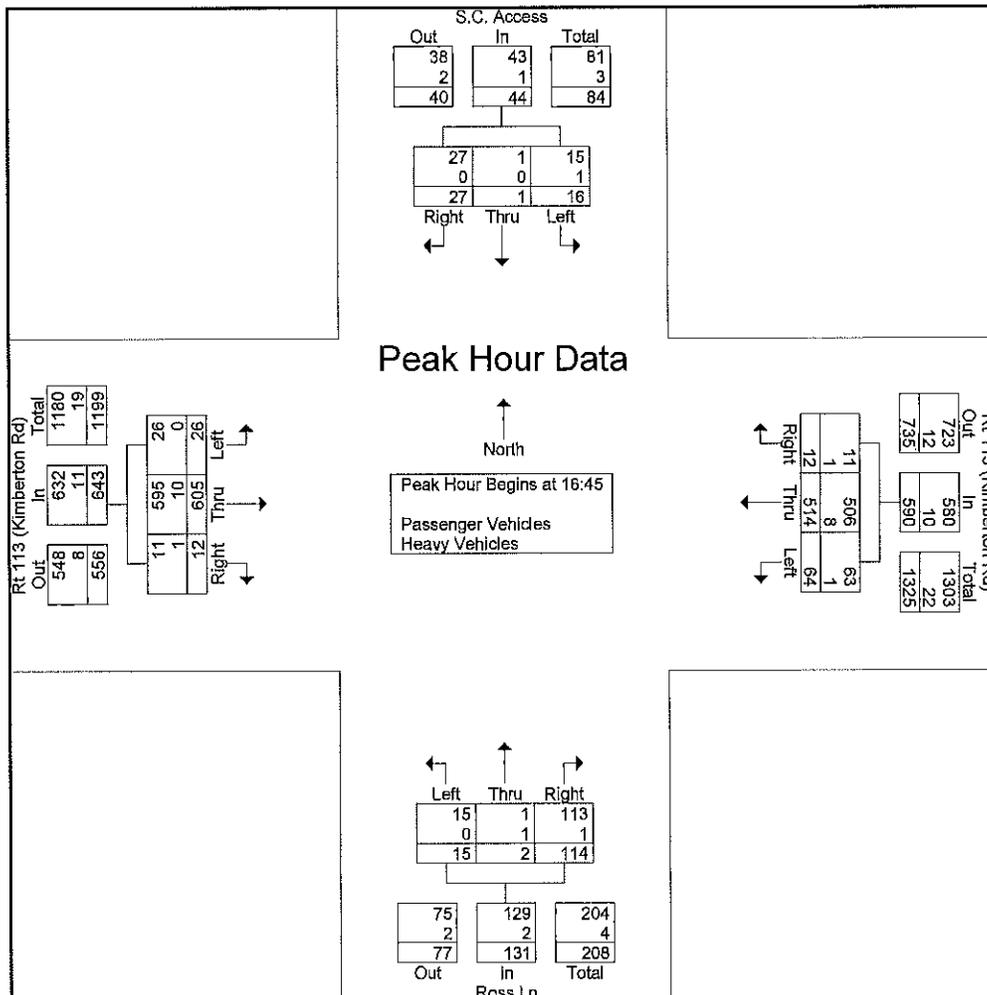
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425 Commerce Drive, Suite 200
Fort Washington, P A 19034

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Ross Lane / S.C. Access
Counter/Board #: LB+DB

File Name : eland05w
Site Code : 81569705
Start Date : 11/19/2015
Page No : 5

Start Time	S.C. Access Southbound				Rt 113 (Kimberton Rd) Westbound				Ross Ln Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 14:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	3	0	8	11	11	137	0	148	6	0	24	30	7	148	4	159	348
17:00	4	0	4	8	18	105	5	128	3	2	31	36	9	156	2	167	339
17:15	6	0	10	16	13	132	4	149	4	0	33	37	7	157	4	168	370
17:30	3	1	5	9	22	140	3	165	2	0	26	28	3	144	2	149	351
Total Volume	16	1	27	44	64	514	12	590	15	2	114	131	26	605	12	643	1408
% App. Total	36.4	2.3	61.4		10.8	87.1	2		11.5	1.5	87		4	94.1	1.9		
PHF	.667	.250	.675	.688	.727	.918	.600	.894	.625	.250	.864	.885	.722	.963	.750	.957	.951
Passenger Vehicles	15	1	27	43	63	506	11	580	15	1	113	129	26	595	11	632	1384
% Passenger Vehicles	93.8	100	100	97.7	98.4	98.4	91.7	98.3	100	50.0	99.1	98.5	100	98.3	91.7	98.3	98.3
Heavy Vehicles	1	0	0	1	1	8	1	10	0	1	1	2	0	10	1	11	24
% Heavy Vehicles	6.3	0	0	2.3	1.6	1.6	8.3	1.7	0	50.0	0.9	1.5	0	1.7	8.3	1.7	1.7



McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
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Counter/Board #: LB+DB

File Name : eland05w
Site Code : 81569705
Start Date : 11/19/2015
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	S.C. Access Southbound			Rt 113 (Kimberton Rd) Westbound			Ross Ln Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
06:00	0	0	0	5	38	0	0	0	2	0	30	0	75
06:15	0	0	0	4	49	0	0	0	3	0	35	0	91
06:30	0	0	0	9	68	1	2	0	9	0	72	1	162
06:45	0	0	1	16	77	2	1	0	7	3	64	0	171
Total	0	0	1	34	232	3	3	0	21	3	201	1	499
07:00	0	0	0	17	79	1	1	0	8	1	68	2	177
07:15	0	0	0	26	97	0	2	0	8	2	122	1	258
07:30	0	0	0	6	37	2	0	0	3	0	44	8	100
07:45	0	0	0	11	58	0	0	0	8	2	63	3	145
Total	0	0	0	60	271	3	3	0	27	5	297	14	680
08:00	1	0	0	21	95	1	0	1	11	0	106	1	237
08:15	0	0	3	13	83	1	1	0	8	4	100	0	213
08:30	1	0	1	9	85	1	2	0	6	4	100	3	212
08:45	0	0	2	11	69	2	0	1	6	5	95	4	195
Total	2	0	6	54	332	5	3	2	31	13	401	8	857
09:00	3	0	2	6	72	5	3	0	14	2	95	1	203
09:15	2	0	2	6	64	1	0	1	5	2	87	1	171
09:30	0	0	1	6	84	0	2	3	6	4	88	0	194
09:45	2	0	2	2	65	3	0	1	6	9	45	2	137
Total	7	0	7	20	285	9	5	5	31	17	315	4	705
10:00	1	1	0	16	58	2	0	0	10	3	76	0	167
10:15	1	1	1	7	80	2	0	2	5	4	68	0	171
10:30	0	1	1	12	83	2	0	1	8	5	80	1	194
10:45	0	1	3	6	86	3	1	1	6	5	66	0	178
Total	2	4	5	41	307	9	1	4	29	17	290	1	710
11:00	1	0	2	6	95	1	0	1	8	6	87	1	208
11:15	3	0	3	5	86	5	1	1	6	2	94	3	209
11:30	5	1	2	7	96	0	0	2	8	5	86	1	213
11:45	3	0	1	10	87	3	0	1	6	3	90	0	204
Total	12	1	8	28	364	9	1	5	28	16	357	5	834
12:00	1	1	6	11	105	2	0	0	5	4	104	0	239
12:15	0	0	5	10	92	3	0	1	6	4	117	0	238
12:30	3	0	2	8	95	2	1	1	5	5	98	2	222
12:45	4	2	1	11	113	5	0	0	6	5	95	2	244
Total	8	3	14	40	405	12	1	2	22	18	414	4	943
13:00	6	1	2	7	100	1	1	0	5	6	101	1	231
13:15	8	0	0	6	100	6	0	1	10	6	95	0	232
13:30	5	0	3	9	104	6	0	0	14	8	107	0	256
13:45	5	0	3	15	67	4	1	0	8	7	94	2	206
Total	24	1	8	37	371	17	2	1	37	27	397	3	925
14:00	3	0	4	10	96	3	1	0	5	6	86	1	215
14:15	2	1	2	12	99	2	0	2	12	4	88	1	225
14:30	2	1	6	13	95	5	0	0	11	6	98	2	239
14:45	2	0	4	9	82	3	0	1	8	5	61	1	176
Total	9	2	16	44	372	13	1	3	36	21	333	5	855

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Ross Lane / S.C. Access
Counter/Board #: LB+DB

File Name : eland05w
Site Code : 81569705
Start Date : 11/19/2015
Page No : 2

Groups Printed- Passenger Vehicles

Start Time	S.C. Access Southbound			Rt 113 (Kimberton Rd) Westbound			Ross Ln Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15:00	0	2	3	12	94	4	1	1	9	5	94	0	225
15:15	2	0	4	10	72	4	2	0	10	4	69	2	179
15:30	5	0	2	7	59	1	0	0	16	3	77	7	177
15:45	0	0	4	13	110	6	0	0	20	12	123	2	290
Total	7	2	13	42	335	15	3	1	55	24	363	11	871
16:00	1	0	2	15	110	4	3	1	22	6	107	1	272
16:15	1	0	2	10	95	5	2	0	33	5	94	2	249
16:30	3	0	4	13	115	3	1	1	17	3	126	0	286
16:45	3	0	8	11	134	0	6	0	24	7	146	4	343
Total	8	0	16	49	454	12	12	2	96	21	473	7	1150
17:00	3	0	4	17	105	4	3	1	31	9	152	1	330
17:15	6	0	10	13	130	4	4	0	33	7	155	4	366
17:30	3	1	5	22	137	3	2	0	25	3	142	2	345
17:45	0	0	3	24	103	2	2	3	21	7	126	2	293
Total	12	1	22	76	475	13	11	4	110	26	575	9	1334
Grand Total	91	14	116	525	4203	120	46	29	523	208	4416	72	10363
Apprch %	41.2	6.3	52.5	10.8	86.7	2.5	7.7	4.8	87.5	4.4	94	1.5	
Total %	0.9	0.1	1.1	5.1	40.6	1.2	0.4	0.3	5	2	42.6	0.7	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Ross Lane / S.C. Access
Counter/Board #: LB+DB

File Name : eland05w
Site Code : 81569705
Start Date : 11/19/2015
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	S.C. Access Southbound			Rt 113 (Kimberton Rd) Westbound			Ross Ln Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
06:00	0	0	0	0	1	0	0	0	0	0	2	0	3
06:15	0	0	0	0	4	0	0	0	0	0	8	0	12
06:30	0	0	0	0	2	0	0	0	0	1	7	0	10
06:45	0	0	0	0	3	0	0	0	0	0	8	0	11
Total	0	0	0	0	10	0	0	0	1	0	25	0	36
07:00	0	0	0	0	5	0	0	0	0	1	2	0	8
07:15	1	0	0	1	5	0	0	0	0	0	7	0	14
07:30	0	0	0	0	4	0	0	0	1	0	1	0	6
07:45	0	0	0	0	4	0	0	0	0	0	6	1	11
Total	1	0	0	1	18	0	0	0	1	1	16	1	39
08:00	0	0	0	0	9	0	0	0	0	0	7	0	16
08:15	0	0	0	1	8	0	0	0	1	0	7	0	17
08:30	0	0	0	4	12	0	0	0	0	0	7	0	23
08:45	0	0	0	0	5	0	0	0	0	0	4	0	9
Total	0	0	0	5	34	0	0	0	1	0	25	0	65
09:00	0	0	0	2	5	0	0	0	0	0	5	0	12
09:15	0	0	0	0	7	0	0	0	0	0	12	0	19
09:30	0	0	0	2	8	0	0	0	0	0	9	0	19
09:45	0	0	0	1	3	0	0	0	0	0	3	0	7
Total	0	0	0	5	23	0	0	0	0	0	29	0	57
10:00	0	0	1	0	16	0	0	0	0	0	7	0	24
10:15	0	0	0	0	10	0	0	0	0	0	8	0	18
10:30	0	0	0	0	8	0	0	0	0	0	7	0	15
10:45	0	0	0	1	8	0	0	0	1	0	7	0	17
Total	0	0	1	1	42	0	0	0	1	0	29	0	74
11:00	0	0	0	0	6	0	0	0	0	0	6	0	12
11:15	0	0	0	0	5	1	0	0	0	0	5	0	11
11:30	0	0	0	1	9	0	0	0	0	0	7	1	18
11:45	0	0	0	0	8	0	0	0	1	0	7	0	16
Total	0	0	0	1	28	1	0	0	1	0	25	1	57
12:00	0	0	0	0	10	0	0	0	0	0	11	0	21
12:15	0	0	0	1	5	0	0	0	0	0	4	0	10
12:30	0	0	0	0	7	0	0	0	0	0	11	0	18
12:45	0	0	0	0	10	0	0	0	0	1	10	0	21
Total	0	0	0	1	32	0	0	0	0	1	36	0	70
13:00	0	0	0	1	12	0	0	0	0	0	8	0	21
13:15	0	0	0	1	6	0	0	0	0	0	19	0	26
13:30	0	0	0	0	11	0	1	0	0	0	7	0	19
13:45	0	0	0	0	7	0	0	0	0	0	6	0	13
Total	0	0	0	2	36	0	1	0	0	0	40	0	79
14:00	0	0	0	0	8	0	0	0	0	0	1	0	9
14:15	0	0	0	0	4	0	0	0	2	0	3	0	9
14:30	0	0	0	1	4	0	0	0	0	0	9	0	14
14:45	0	0	0	0	3	0	0	0	2	0	10	0	15
Total	0	0	0	1	19	0	0	0	4	0	23	0	47

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Ross Lane / S.C. Access
Counter/Board #: LB+DB

File Name : eland05w
Site Code : 81569705
Start Date : 11/19/2015
Page No : 2

Groups Printed- Heavy Vehicles

Start Time	S.C. Access Southbound			Rt 113 (Kimberton Rd) Westbound			Ross Ln Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15:00	0	0	1	0	5	0	0	0	0	0	7	0	13
15:15	0	0	0	0	0	0	0	0	0	0	4	0	4
15:30	0	0	0	0	2	0	0	0	0	0	7	1	10
15:45	0	0	0	0	8	0	0	0	0	0	1	0	9
Total	0	0	1	0	15	0	0	0	0	0	19	1	36
16:00	0	0	0	2	8	0	0	0	1	0	2	1	14
16:15	0	0	0	0	4	0	0	0	0	0	2	0	6
16:30	0	0	0	1	3	0	0	0	0	0	5	0	9
16:45	0	0	0	0	3	0	0	0	0	0	2	0	5
Total	0	0	0	3	18	0	0	0	1	0	11	1	34
17:00	1	0	0	1	0	1	0	1	0	0	4	1	9
17:15	0	0	0	0	2	0	0	0	0	0	2	0	4
17:30	0	0	0	0	3	0	0	0	1	0	2	0	6
17:45	0	0	0	0	3	0	0	0	0	0	0	0	3
Total	1	0	0	1	8	1	0	1	1	0	8	1	22
Grand Total	2	0	2	21	283	2	1	1	11	2	286	5	616
Apprch %	50	0	50	6.9	92.5	0.7	7.7	7.7	84.6	0.7	97.6	1.7	
Total %	0.3	0	0.3	3.4	45.9	0.3	0.2	0.2	1.8	0.3	46.4	0.8	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (East) / Eland Downe
Counter/Board #: GG

File Name : eland01w
Site Code : 81569701
Start Date : 11/19/2015
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Dawson Dr. (East) Southbound			Rt 113 (Kimberton Rd) Westbound			Eland Downe Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	2	0	0	0	106	2	0	0	0	0	98	0	208
07:15	0	0	0	0	129	0	0	0	0	0	132	0	261
07:30	0	0	0	0	132	0	0	0	0	0	138	0	270
07:45	0	0	0	0	138	1	0	0	0	0	149	0	288
Total	2	0	0	0	505	3	0	0	0	0	517	0	1027
08:00	1	0	0	0	119	2	0	0	0	0	121	0	243
08:15	0	0	0	0	119	2	0	0	0	0	144	0	265
08:30	0	0	0	0	123	0	0	0	0	0	134	0	257
08:45	3	0	0	0	99	3	0	0	0	0	123	0	228
Total	4	0	0	0	460	7	0	0	0	0	522	0	993
16:00	2	1	1	0	134	3	0	0	0	0	149	0	290
16:15	2	0	2	0	104	0	0	0	0	0	150	0	258
16:30	2	0	0	0	157	2	0	0	0	0	145	0	306
16:45	5	0	0	0	141	5	0	0	0	3	162	0	316
Total	11	1	3	0	536	10	0	0	0	3	606	0	1170
17:00	9	0	2	0	142	2	0	0	0	1	197	0	353
17:15	5	0	0	0	123	0	0	0	0	0	191	0	319
17:30	1	0	0	0	169	3	0	0	0	1	173	0	347
17:45	2	0	2	0	130	3	0	0	0	1	185	0	323
Total	17	0	4	0	564	8	0	0	0	3	746	0	1342
Grand Total	34	1	7	0	2065	28	0	0	0	6	2391	0	4532
Apprch %	81	2.4	16.7	0	98.7	1.3	0	0	0	0.3	99.7	0	
Total %	0.8	0	0.2	0	45.6	0.6	0	0	0	0.1	52.8	0	
Passenger Vehicles	34	1	7	0	1985	26	0	0	0	6	2315	0	4374
% Passenger Vehicles	100	100	100	0	96.1	92.9	0	0	0	100	96.8	0	96.5
Heavy Vehicles	0	0	0	0	80	2	0	0	0	0	76	0	158
% Heavy Vehicles	0	0	0	0	3.9	7.1	0	0	0	0	3.2	0	3.5

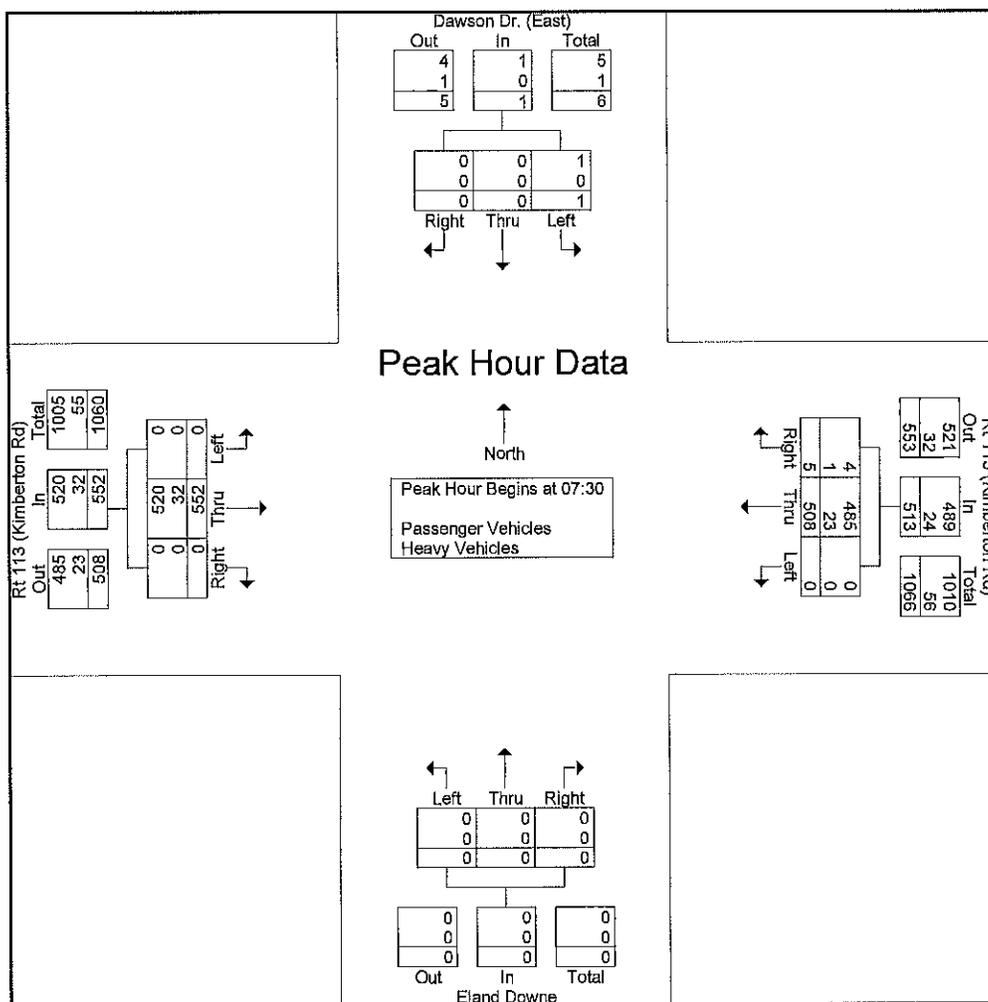
McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (East) / Eland Downe
Counter/Board #: GG

File Name : eland01w
Site Code : 81569701
Start Date : 11/19/2015
Page No : 2

Start Time	Dawson Dr. (East) Southbound				Rt 113 (Kimberton Rd) Westbound				Eland Downe Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 to 10:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	0	0	0	0	0	132	0	132	0	0	0	0	0	138	0	138	270
07:45	0	0	0	0	0	138	1	139	0	0	0	0	0	149	0	149	288
08:00	1	0	0	1	0	119	2	121	0	0	0	0	0	121	0	121	243
08:15	0	0	0	0	0	119	2	121	0	0	0	0	0	144	0	144	265
Total Volume	1	0	0	1	0	508	5	513	0	0	0	0	0	552	0	552	1066
% App. Total	100	0	0	0	0	99	1	100	0	0	0	0	0	100	0	100	
PHF	.250	.000	.000	.250	.000	.920	.625	.923	.000	.000	.000	.000	.000	.926	.000	.926	.925
Passenger Vehicles	1	0	0	1	0	485	4	489	0	0	0	0	0	520	0	520	1010
% Passenger Vehicles	100	0	0	100	0	95.5	80.0	95.3	0	0	0	0	0	94.2	0	94.2	94.7
Heavy Vehicles	0	0	0	0	0	23	1	24	0	0	0	0	0	32	0	32	56
% Heavy Vehicles	0	0	0	0	0	4.5	20.0	4.7	0	0	0	0	0	5.8	0	5.8	5.3



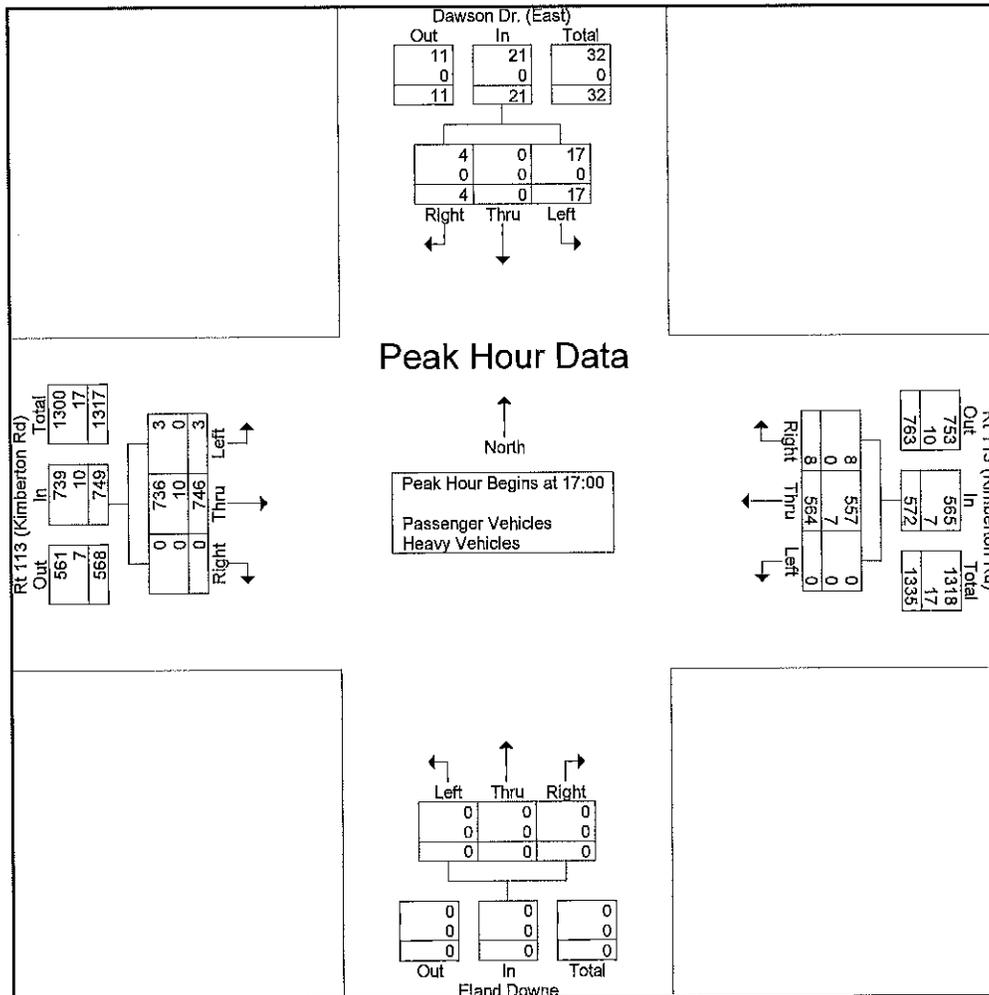
McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (East) / Eland Downe
Counter/Board #: GG

File Name : eland01w
Site Code : 81569701
Start Date : 11/19/2015
Page No : 3

Start Time	Dawson Dr. (East) Southbound				Rt 113 (Kimberton Rd) Westbound				Eland Downe Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	9	0	2	11	0	142	2	144	0	0	0	0	1	197	0	198	353
17:15	5	0	0	5	0	123	0	123	0	0	0	0	0	191	0	191	319
17:30	1	0	0	1	0	169	3	172	0	0	0	0	1	173	0	174	347
17:45	2	0	2	4	0	130	3	133	0	0	0	0	1	185	0	186	323
Total Volume	17	0	4	21	0	564	8	572	0	0	0	0	3	746	0	749	1342
% App. Total	81	0	19		0	98.6	1.4		0	0	0		0.4	99.6	0		
PHF	.472	.000	.500	.477	.000	.834	.667	.831	.000	.000	.000	.000	.750	.947	.000	.946	.950
Passenger Vehicles	17	0	4	21	0	557	8	565	0	0	0	0	3	736	0	739	1325
% Passenger Vehicles	100	0	100	100	0	98.8	100	98.8	0	0	0	0	100	98.7	0	98.7	98.7
Heavy Vehicles	0	0	0	0	0	7	0	7	0	0	0	0	0	10	0	10	17
% Heavy Vehicles	0	0	0	0	0	1.2	0	1.2	0	0	0	0	0	1.3	0	1.3	1.3



McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (East) / Eland Downe
Counter/Board #: GG

File Name : eland01w
Site Code : 81569701
Start Date : 11/19/2015
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Dawson Dr. (East) Southbound			Rt 113 (Kimberton Rd) Westbound			Eland Downe Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	2	0	0	0	103	1	0	0	0	0	93	0	199
07:15	0	0	0	0	127	0	0	0	0	0	125	0	252
07:30	0	0	0	0	126	0	0	0	0	0	132	0	258
07:45	0	0	0	0	136	1	0	0	0	0	141	0	278
Total	2	0	0	0	492	2	0	0	0	0	491	0	987
08:00	1	0	0	0	110	2	0	0	0	0	114	0	227
08:15	0	0	0	0	113	1	0	0	0	0	133	0	247
08:30	0	0	0	0	103	0	0	0	0	0	127	0	230
08:45	3	0	0	0	93	3	0	0	0	0	118	0	217
Total	4	0	0	0	419	6	0	0	0	0	492	0	921
16:00	2	1	1	0	125	3	0	0	0	0	146	0	278
16:15	2	0	2	0	101	0	0	0	0	0	148	0	253
16:30	2	0	0	0	152	2	0	0	0	0	142	0	298
16:45	5	0	0	0	139	5	0	0	0	3	160	0	312
Total	11	1	3	0	517	10	0	0	0	3	596	0	1141
17:00	9	0	2	0	139	2	0	0	0	1	193	0	346
17:15	5	0	0	0	122	0	0	0	0	0	188	0	315
17:30	1	0	0	0	168	3	0	0	0	1	171	0	344
17:45	2	0	2	0	128	3	0	0	0	1	184	0	320
Total	17	0	4	0	557	8	0	0	0	3	736	0	1325
Grand Total	34	1	7	0	1985	26	0	0	0	6	2315	0	4374
Approch %	81	2.4	16.7	0	98.7	1.3	0	0	0	0.3	99.7	0	
Total %	0.8	0	0.2	0	45.4	0.6	0	0	0	0.1	52.9	0	

McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Dawson Drive (East) / Eland Downe
Counter/Board #: GG

File Name : eland01w
Site Code : 81569701
Start Date : 11/19/2015
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Dawson Dr. (East) Southbound			Rt 113 (Kimberton Rd) Westbound			Eland Downe Northbound			Rt 113 (Kimberton Rd) Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	0	0	3	1	0	0	0	0	5	0	9
07:15	0	0	0	0	2	0	0	0	0	0	7	0	9
07:30	0	0	0	0	6	0	0	0	0	0	6	0	12
07:45	0	0	0	0	2	0	0	0	0	0	8	0	10
Total	0	0	0	0	13	1	0	0	0	0	26	0	40
08:00	0	0	0	0	9	0	0	0	0	0	7	0	16
08:15	0	0	0	0	6	1	0	0	0	0	11	0	18
08:30	0	0	0	0	20	0	0	0	0	0	7	0	27
08:45	0	0	0	0	6	0	0	0	0	0	5	0	11
Total	0	0	0	0	41	1	0	0	0	0	30	0	72
16:00	0	0	0	0	9	0	0	0	0	0	3	0	12
16:15	0	0	0	0	3	0	0	0	0	0	2	0	5
16:30	0	0	0	0	5	0	0	0	0	0	3	0	8
16:45	0	0	0	0	2	0	0	0	0	0	2	0	4
Total	0	0	0	0	19	0	0	0	0	0	10	0	29
17:00	0	0	0	0	3	0	0	0	0	0	4	0	7
17:15	0	0	0	0	1	0	0	0	0	0	3	0	4
17:30	0	0	0	0	1	0	0	0	0	0	2	0	3
17:45	0	0	0	0	2	0	0	0	0	0	1	0	3
Total	0	0	0	0	7	0	0	0	0	0	10	0	17
Grand Total	0	0	0	0	80	2	0	0	0	0	76	0	158
Apprch %	0	0	0	0	97.6	2.4	0	0	0	0	100	0	
Total %	0	0	0	0	50.6	1.3	0	0	0	0	48.1	0	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200

Fort Washington, P A 19034

Municipality: Phoenixville
 Location: Route 113 (Kimberton Road) &
 Route 23 (Schuylkill Road) & S.C. Access
 Counter/Board #: HP

File Name : eland04w
 Site Code : 81569704
 Start Date : 11/19/2015
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Rt 23 (Schuylkill Rd) Southbound				S.C. Access Westbound				Rt 23 (Schuylkill Rd) Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	10	207	0	13	10	2	2	2	86	58	1	3	13	8	10	60	485
07:15	3	181	0	18	10	4	1	4	75	64	0	3	18	10	11	82	484
07:30	6	180	0	19	14	9	2	6	81	85	2	11	17	12	15	78	537
07:45	2	155	0	20	14	15	0	2	70	79	0	6	27	10	15	82	497
Total	21	723	0	70	48	30	5	14	312	286	3	23	75	40	51	302	2003
08:00	5	151	0	19	11	13	1	4	81	67	0	9	22	15	17	77	492
08:15	6	131	0	14	21	14	0	6	60	50	1	7	11	7	15	66	409
08:30	6	123	0	15	19	12	1	3	71	64	0	4	12	18	11	69	428
08:45	5	121	0	14	16	13	0	5	64	74	2	5	22	18	10	56	425
Total	22	526	0	62	67	52	2	18	276	255	3	25	67	58	53	268	1754
16:00	7	93	2	19	34	24	0	6	76	108	1	10	29	29	17	61	516
16:15	4	97	1	18	27	27	1	3	99	108	0	16	39	32	18	34	524
16:30	3	72	0	20	23	24	0	7	100	125	2	10	39	32	11	59	527
16:45	7	91	2	10	37	39	0	5	92	112	1	12	41	25	12	58	544
Total	21	353	5	67	121	114	1	21	367	453	4	48	148	118	58	212	2111
17:00	8	85	4	19	28	28	2	3	73	70	0	2	44	25	15	66	472
17:15	8	91	1	24	29	17	0	1	95	85	0	2	50	16	14	76	509
17:30	8	70	1	19	33	21	2	5	100	67	2	8	42	26	15	73	492
17:45	4	96	0	21	26	18	0	3	79	94	0	8	39	25	17	44	474
Total	28	342	6	83	116	84	4	12	347	316	2	20	175	92	61	259	1947
Grand Total	92	1944	11	282	352	280	12	65	1302	1310	12	116	465	308	223	1041	7815
Apprch %	4	83.5	0.5	12.1	49.6	39.5	1.7	9.2	47.5	47.8	0.4	4.2	22.8	15.1	10.9	51.1	
Total %	1.2	24.9	0.1	3.6	4.5	3.6	0.2	0.8	16.7	16.8	0.2	1.5	6	3.9	2.9	13.3	
Passenger Vehicles	91	1888	11	249	351	279	12	56	1245	1276	12	114	446	307	223	1014	7574
% Passenger Vehicles	98.9	97.1	100	88.3	99.7	99.6	100	86.2	95.6	97.4	100	98.3	95.9	99.7	100	97.4	96.9
Heavy Vehicles	1	56	0	33	1	1	0	9	57	34	0	2	19	1	0	27	241
% Heavy Vehicles	1.1	2.9	0	11.7	0.3	0.4	0	13.8	4.4	2.6	0	1.7	4.1	0.3	0	2.6	3.1

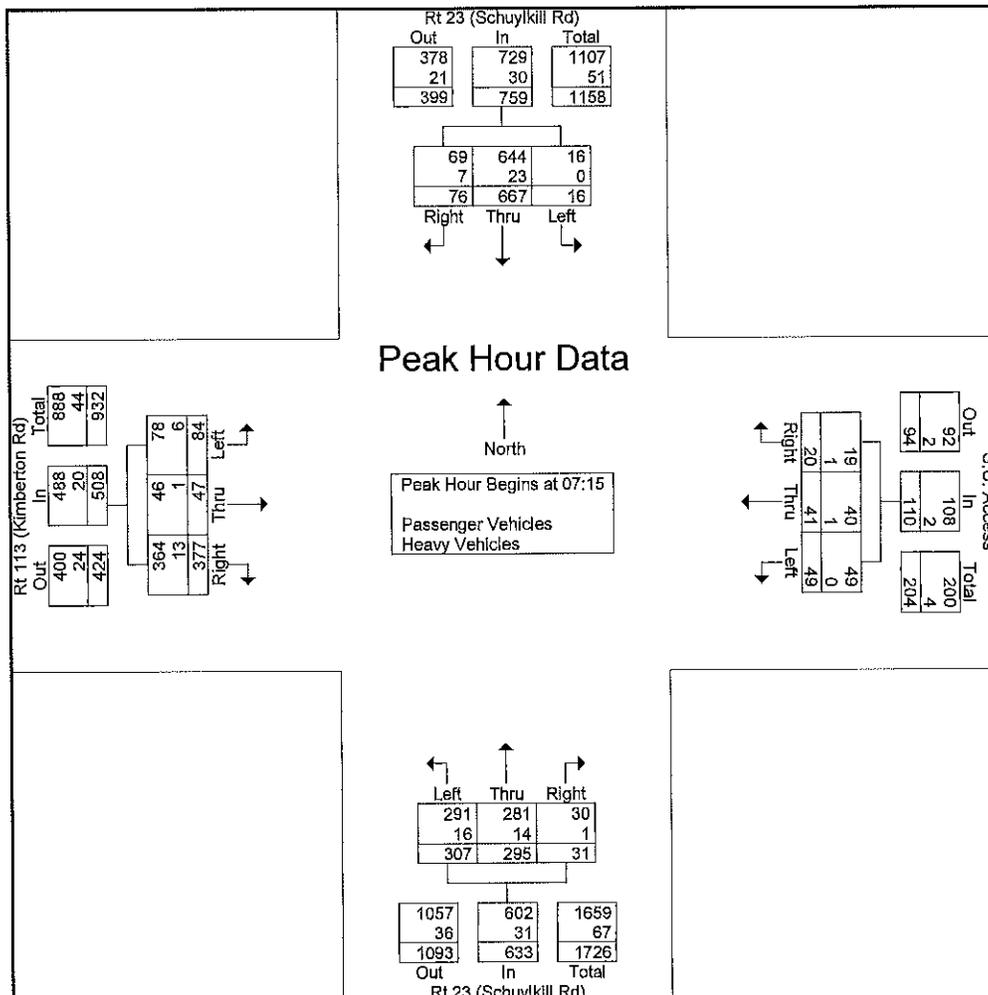
McMahon Associates, Inc.

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

Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
Route 23 (Schuylkill Road) & S.C. Access
Counter/Board #: HP

File Name : eland04w
Site Code : 81569704
Start Date : 11/19/2015
Page No : 2

Start Time	Rt 23 (Schuylkill Rd) Southbound					S.C. Access Westbound					Rt 23 (Schuylkill Rd) Northbound					Rt 113 (Kimberton Rd) Eastbound					Int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15																					
07:15	3	181	0	18	202	10	4	1	4	19	75	64	0	3	142	18	10	11	82	121	484
07:30	6	180	0	19	205	14	9	2	6	31	81	85	2	11	179	17	12	15	78	122	537
07:45	2	155	0	20	177	14	15	0	2	31	70	79	0	6	155	27	10	15	82	134	497
08:00	5	151	0	19	175	11	13	1	4	29	81	67	0	9	157	22	15	17	77	131	492
Total Volume	16	667	0	76	759	49	41	4	16	110	307	295	2	29	633	84	47	58	319	508	2010
% App. Total	2.1	87.9	0	10		44.5	37.3	3.6	14.5		48.5	46.6	0.3	4.6		16.5	9.3	11.4	62.8		
PHF	.667	.921	.000	.950	.926	.875	.683	.500	.667	.887	.948	.868	.250	.659	.884	.778	.783	.853	.973	.948	.936
Passenger Vehicles																					
% Passenger Vehicles	100	96.6	0	90.8	96.0	100	97.6	100	93.8	98.2	94.8	95.3	100	96.6	95.1	92.9	97.9	100	95.9	96.1	95.9
Heavy Vehicles																					
% Heavy Vehicles	0	3.4	0	9.2	4.0	0	2.4	0	6.3	1.8	5.2	4.7	0	3.4	4.9	7.1	2.1	0	4.1	3.9	4.1



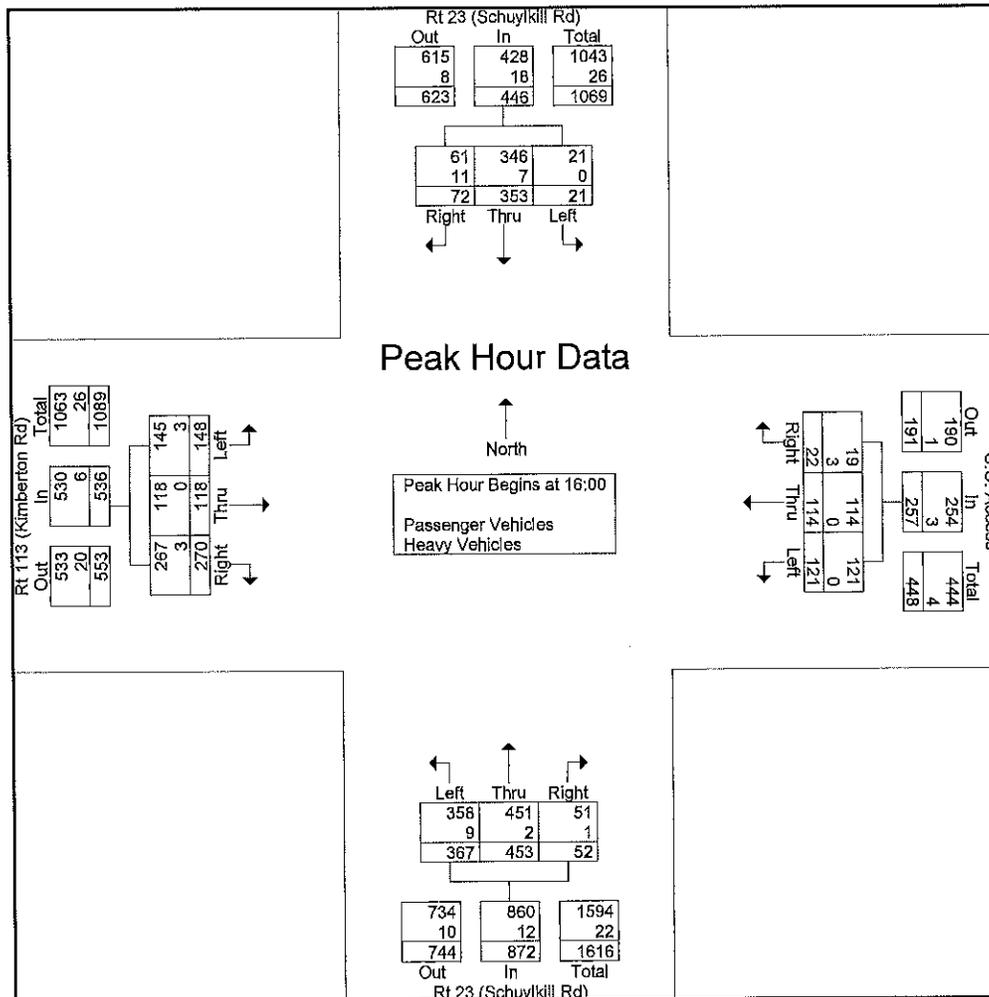
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Municipality: Phoenixville
Location: Route 113 (Kimberton Road) &
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Counter/Board #: HP

File Name : eland04w
Site Code : 81569704
Start Date : 11/19/2015
Page No : 3

Start Time	Rt 23 (Schuylkill Rd) Southbound					S.C. Access Westbound					Rt 23 (Schuylkill Rd) Northbound					Rt 113 (Kimberton Rd) Eastbound					int. Total
	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	7	93	2	19	121	34	24	0	6	64	76	108	1	10	195	29	29	17	61	136	516
16:15	4	97	1	18	120	27	27	1	3	58	99	108	0	16	223	39	32	18	34	123	524
16:30	3	72	0	20	95	23	24	0	7	54	100	125	2	10	237	39	32	11	59	141	527
16:45	7	91	2	10	110	37	39	0	5	81	92	112	1	12	217	41	25	12	58	136	544
Total Volume	21	353	5	67	446	121	114	1	21	257	367	453	4	48	872	148	118	58	212	536	2111
% App. Total	4.7	79.1	1.1	15		47.1	44.4	0.4	8.2		42.1	51.9	0.5	5.5		27.6	22	10.8	39.6		
PHF	.750	.910	.625	.838	.921	.818	.731	.250	.750	.793	.918	.906	.500	.750	.920	.902	.922	.806	.869	.950	.970
Passenger Vehicles																					
% Passenger Vehicles	100	98.0	100	83.6	96.0	100	100	100	85.7	98.8	97.5	99.6	100	97.9	98.6	98.0	100	100	98.6	98.9	98.2
Heavy Vehicles																					
% Heavy Vehicles	0	2.0	0	16.4	4.0	0	0	0	14.3	1.2	2.5	0.4	0	2.1	1.4	2.0	0	0	1.4	1.1	1.8



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Route 23 (Schuylkill Road) & S.C. Access
Counter/Board #: HP

File Name : eland04w
Site Code : 81569704
Start Date : 11/19/2015
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Rt 23 (Schuylkill Rd) Southbound				S.C. Access Westbound				Rt 23 (Schuylkill Rd) Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	10	199	0	13	10	2	2	2	82	57	1	3	12	8	10	57	468
07:15	3	174	0	17	10	4	1	3	70	61	0	3	15	10	11	78	460
07:30	6	176	0	17	14	9	2	6	78	83	2	10	16	11	15	73	518
07:45	2	153	0	19	14	14	0	2	67	74	0	6	26	10	15	80	482
Total	21	702	0	66	48	29	5	13	297	275	3	22	69	39	51	288	1928
08:00	5	141	0	16	11	13	1	4	76	63	0	9	21	15	17	75	467
08:15	5	126	0	9	21	14	0	4	54	48	1	7	11	7	15	63	385
08:30	6	116	0	11	19	12	1	3	58	57	0	4	10	18	11	66	392
08:45	5	118	0	10	15	13	0	4	59	68	2	5	18	18	10	55	400
Total	21	501	0	46	66	52	2	15	247	236	3	25	60	58	53	259	1644
16:00	7	91	2	13	34	24	0	6	71	107	1	10	27	29	17	61	500
16:15	4	96	1	17	27	27	1	2	95	108	0	15	39	32	18	33	515
16:30	3	69	0	17	23	24	0	6	100	125	2	10	39	32	11	58	519
16:45	7	90	2	9	37	39	0	4	92	111	1	12	40	25	12	57	538
Total	21	346	5	56	121	114	1	18	358	451	4	47	145	118	58	209	2072
17:00	8	83	4	18	28	28	2	2	73	68	0	2	43	25	15	65	464
17:15	8	90	1	24	29	17	0	0	94	85	0	2	49	16	14	76	505
17:30	8	70	1	19	33	21	2	5	99	67	2	8	41	26	15	73	490
17:45	4	96	0	20	26	18	0	3	77	94	0	8	39	25	17	44	471
Total	28	339	6	81	116	84	4	10	343	314	2	20	172	92	61	258	1930
Grand Total	91	1888	11	249	351	279	12	56	1245	1276	12	114	446	307	223	1014	7574
Apprch %	4.1	84.3	0.5	11.1	50.3	40	1.7	8	47	48.2	0.5	4.3	22.4	15.4	11.2	51	
Total %	1.2	24.9	0.1	3.3	4.6	3.7	0.2	0.7	16.4	16.8	0.2	1.5	5.9	4.1	2.9	13.4	

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425 Commerce Drive, Suite 200

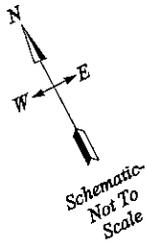
Fort Washington, P A 19034

Municipality: Phoenixville
 Location: Route 113 (Kimberton Road) &
 Route 23 (Schuylkill Road) & S.C. Access
 Counter/Board #: HP

File Name : eland04w
 Site Code : 81569704
 Start Date : 11/19/2015
 Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Rt 23 (Schuylkill Rd) Southbound				S.C. Access Westbound				Rt 23 (Schuylkill Rd) Northbound				Rt 113 (Kimberton Rd) Eastbound				Int. Total
	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	
07:00	0	8	0	0	0	0	0	0	4	1	0	0	1	0	0	3	17
07:15	0	7	0	1	0	0	0	1	5	3	0	0	3	0	0	4	24
07:30	0	4	0	2	0	0	0	0	3	2	0	1	1	1	0	5	19
07:45	0	2	0	1	0	1	0	0	3	5	0	0	1	0	0	2	15
Total	0	21	0	4	0	1	0	1	15	11	0	1	6	1	0	14	75
08:00	0	10	0	3	0	0	0	0	5	4	0	0	1	0	0	2	25
08:15	1	5	0	5	0	0	0	2	6	2	0	0	0	0	0	3	24
08:30	0	7	0	4	0	0	0	0	13	7	0	0	2	0	0	3	36
08:45	0	3	0	4	1	0	0	1	5	6	0	0	4	0	0	1	25
Total	1	25	0	16	1	0	0	3	29	19	0	0	7	0	0	9	110
16:00	0	2	0	6	0	0	0	0	5	1	0	0	2	0	0	0	16
16:15	0	1	0	1	0	0	0	1	4	0	0	1	0	0	0	1	9
16:30	0	3	0	3	0	0	0	1	0	0	0	0	0	0	0	1	8
16:45	0	1	0	1	0	0	0	1	0	1	0	0	1	0	0	1	6
Total	0	7	0	11	0	0	0	3	9	2	0	1	3	0	0	3	39
17:00	0	2	0	1	0	0	0	1	0	2	0	0	1	0	0	1	8
17:15	0	1	0	0	0	0	0	1	1	0	0	0	1	0	0	0	4
17:30	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2
17:45	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	3
Total	0	3	0	2	0	0	0	2	4	2	0	0	3	0	0	1	17
Grand Total	1	56	0	33	1	1	0	9	57	34	0	2	19	1	0	27	241
Approch %	1.1	62.2	0	36.7	9.1	9.1	0	81.8	61.3	36.6	0	2.2	40.4	2.1	0	57.4	
Total %	0.4	23.2	0	13.7	0.4	0.4	0	3.7	23.7	14.1	0	0.8	7.9	0.4	0	11.2	



SITE

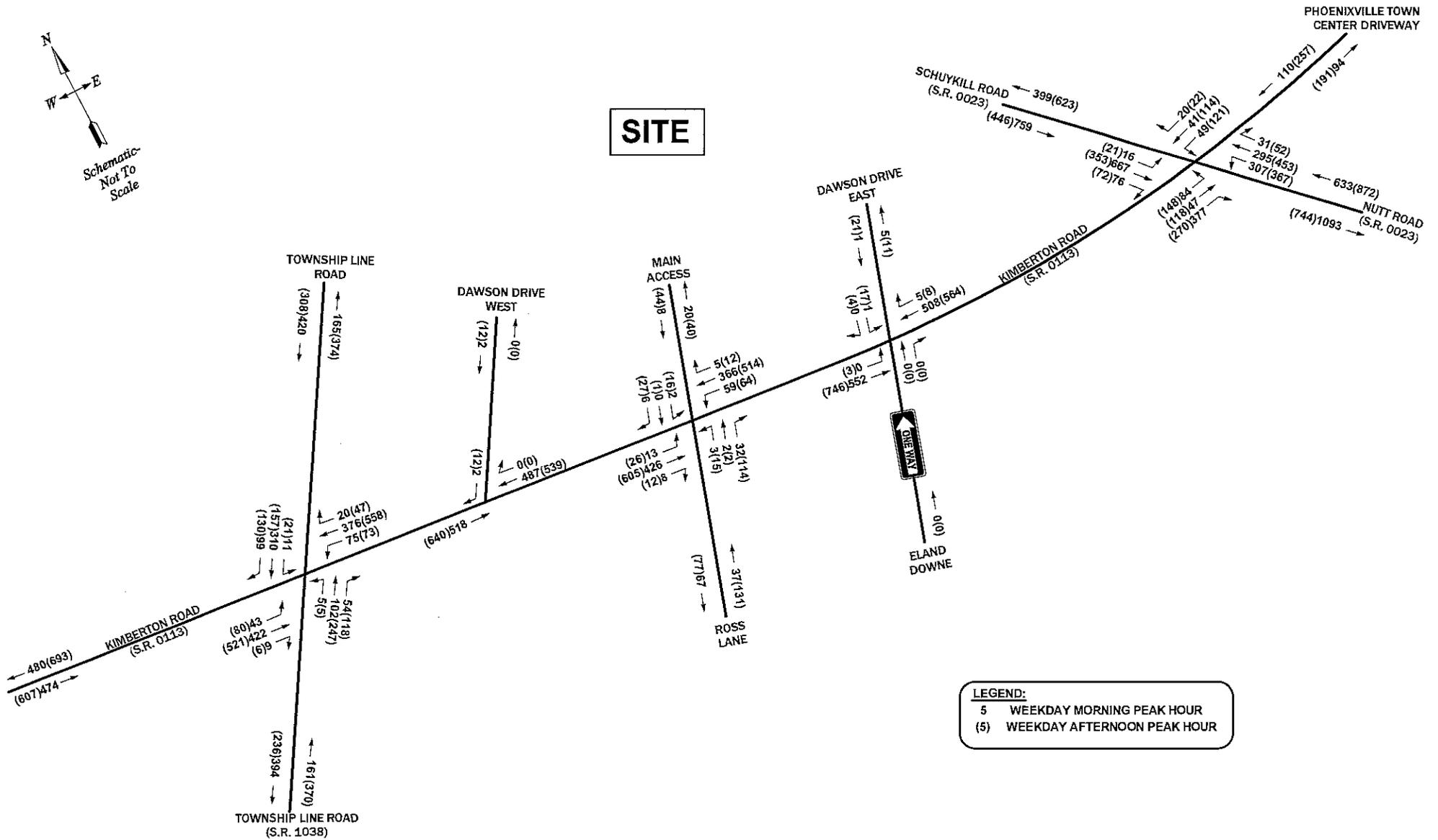


FIGURE A
 2015 Unbalanced Peak Hour Traffic Volumes

ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



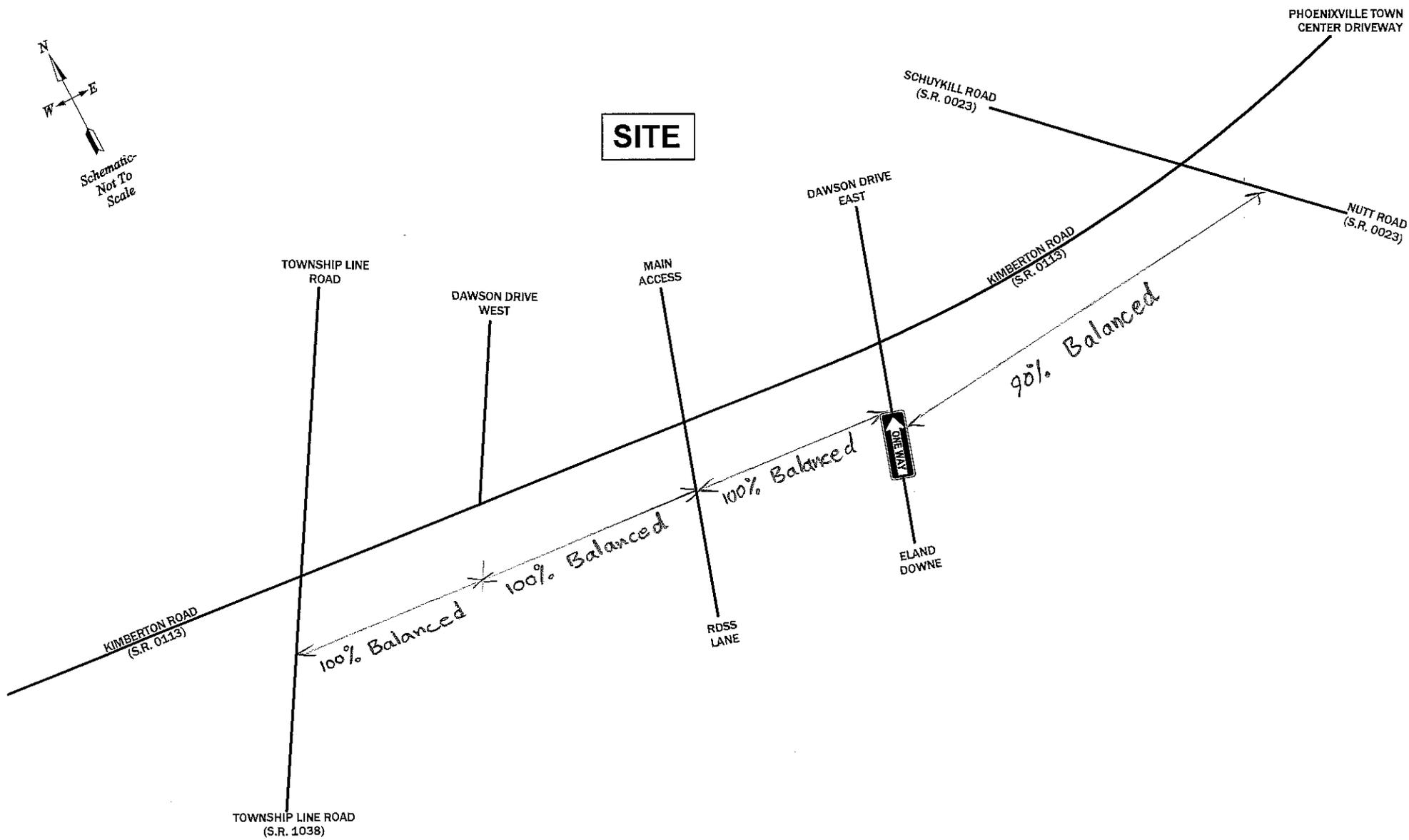


FIGURE B
Balancing Notes

ELAND DOWNE RESIDENTIAL SUBDIVISION
PHOENIXVILLE BOROUGH, CHESTER COUNTY, PA



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APPENDIX F

HCM Methodology

CAPACITY/LEVEL-OF-SERVICE ANALYSIS METHODOLOGY

The detailed capacity/level-of-service analysis contained in this transportation impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual 2010*. By definition, capacity represents “the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.” The level at which an intersection or a uniform section of a lane or roadway function can be expressed in terms of a level of service. Level of service (LOS) is defined as “a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler’s perspective and LOS F the worst.”

Stop-Controlled Intersections

At unsignalized stop-controlled intersections, such as two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC), a methodology for evaluating the relative functioning of these intersections is based upon the control delay. For these types of unsignalized intersections, the analysis of the control delay is based upon the following data:

- Number and configuration of lanes on each approach;
- Percentage of heavy vehicles on each approach;
- Demand flow rate for each entering vehicular movement and pedestrian crossing movement;
- Unique geometric factors such as, channelization aspects; two-way left-turn lanes, raised or striped median storage; approach grades, flared approaches on the minor street; and upstream signals within 0.25 miles.

At TWSC intersections, only drivers on the minor street approaches are required to stop before proceeding into the intersection and left-turning drivers from the major street may have to yield to on-coming major street through or right-turning traffic, but are not required to stop in the absence of on-coming traffic. The capacity at stop-controlled legs is based primarily on three factors: the distribution of gaps in the major stream, driver judgment in selecting the gaps, and the follow-up headways required by each driver in a queue.

At AWSC intersections, every vehicle is required to stop at the intersection before proceeding, and as a result, the decision to proceed is a function of the traffic conditions on the other approaches. Each driver proceeds only after determining that no vehicles are currently in the intersection and that it is the driver’s turn to proceed. Capacity at an AWSC intersection is described by the saturation headway or time between departures of successive vehicles on a given approach for a particular case assuming a continuous queue; departure headway or the average time between departures of successive vehicles on a given approach accounting for the probability of each possible case; and service time or the average time sent by a vehicle in first position waiting to depart.

At both TWSC and AWSC intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. For TWSC intersections, the level of service is not calculated for major-street approaches or for the intersection as a whole; however, the intersection-wide level of service is calculated for AWSC intersections. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for TWSC and AWSC intersections.

Control Delay (Sec/Veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 – 15	B	F
> 15 – 25	C	F
> 25 – 35	D	F
> 35 – 50	E	F
> 50	F	F

Signalized Intersections

At three or four-legged signalized intersections, a methodology for evaluating the capacity and quality of service provided to road users traveling through the signalized intersection. For signalized intersections, the level of service can be characterized for the entire intersection, each approach, and each lane group. The level of service is based upon the control delay and volume-to-capacity ratio. The delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption, while the volume-to-capacity ratio quantifies the degree to which a phase’s capacity is utilized by a lane group. Input data in determining the delay and volume-to-capacity ratio include:

- Demand flow rate for each entering vehicular movement and pedestrian crossing movement, including right-turn on red volumes and percent of heavy vehicles;
- Initial queue for each lane group;
- Number and configuration of lanes on each approach;
- Type of signal control and phase sequence;
- Allocation of minimum/maximum green times and clearance intervals (Yellow plus All Red phases); and
- Phase recall.

At signalized intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for signalized intersections.

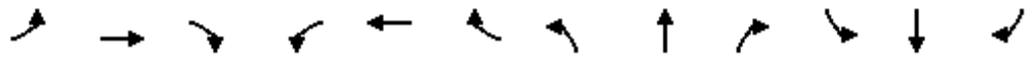
Control Delay (Sec/Veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 – 20	B	F
> 20 – 35	C	F
> 35 – 55	D	F
> 55 – 80	E	F
> 80	F	F

APPENDIX G

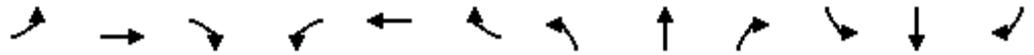
**2015 Existing
Capacity/Level-of-Service
Analysis Worksheets**

McMahon Associates, Inc.
 1: Township Line Rd & Kimberton Rd (S.R. 0113)

2015 Existing Condition
 Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	43	464	9	78	390	21	5	102	62	13	310	99
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	12	12	12	16	12	12	12	14
Grade (%)		-3%			-2%			-2%				4%
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.994			0.950				0.850
Flt Protected		0.996			0.992			0.999			0.998	
Satd. Flow (prot)	0	1808	0	0	1662	0	0	1779	0	0	1705	1538
Flt Permitted		0.924			0.838			0.989			0.985	
Satd. Flow (perm)	0	1677	0	0	1404	0	0	1761	0	0	1683	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			3			30				77
Link Speed (mph)		45			45			35				35
Link Distance (ft)		498			191			356				352
Travel Time (s)		7.5			2.9			6.9				6.9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	11%	23%	5%	5%	40%	3%	19%	9%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	46	499	10	84	419	23	5	110	67	14	333	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	555	0	0	526	0	0	182	0	0	347	106
Number of Detectors	1	2		1	2		1	4		1	1	1
Detector Template	Left			Left			Left			Left	Thru	Right
Leading Detector (ft)	30	353		30	353		30	73		30	35	30
Trailing Detector (ft)	-10	0		-10	0		-10	-4		-10	-5	-10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		4
Detector Phase	2	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	27.0	27.0		27.0	27.0		16.0	16.0		16.0	16.0	16.0
Total Split (s)	66.0	66.0		66.0	66.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	59.0	59.0		59.0	59.0		38.0	38.0		38.0	38.0	38.0
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		6.0			6.0			5.0			5.0	5.0

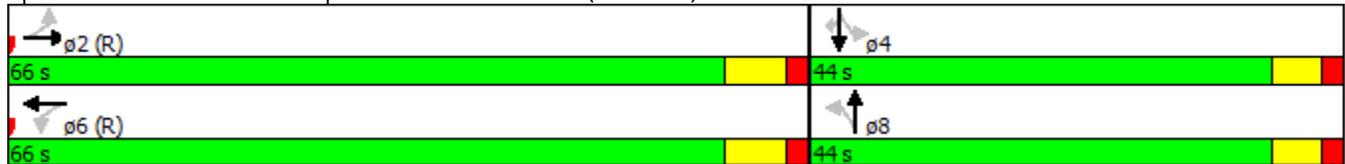


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

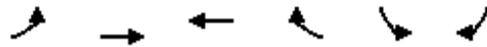
Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Township Line Rd & Kimberton Rd (S.R. 0113)



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	464	9	78	390	21	5	102	62	13	310	99
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1827	1831	1827	1818	1685	1818	1818	1720	1818	1764	1709	1764
Adj Flow Rate, veh/h	46	499	10	84	419	21	5	110	42	14	333	67
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	4	4	4	5	5	5	3	3	3	3	3	4
Cap, veh/h	100	1052	20	168	802	39	36	251	92	42	406	369
Arrive On Green	0.64	0.65	0.64	0.64	0.65	0.64	0.24	0.25	0.24	0.24	0.25	0.25
Sat Flow, veh/h	99	1609	31	199	1227	60	8	1018	375	30	1650	1499
Grp Volume(v), veh/h	555	0	0	524	0	0	157	0	0	347	0	67
Grp Sat Flow(s),veh/h/ln	1739	0	0	1485	0	0	1401	0	0	1680	0	1499
Q Serve(g_s), s	0.0	0.0	0.0	2.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	3.9
Cycle Q Clear(g_c), s	16.8	0.0	0.0	18.8	0.0	0.0	22.2	0.0	0.0	21.8	0.0	3.9
Prop In Lane	0.08		0.02	0.16		0.04	0.03		0.27	0.04		1.00
Lane Grp Cap(c), veh/h	1156	0	0	995	0	0	366	0	0	433	0	369
V/C Ratio(X)	0.48	0.00	0.00	0.53	0.00	0.00	0.43	0.00	0.00	0.80	0.00	0.18
Avail Cap(c_a), veh/h	1156	0	0	995	0	0	540	0	0	614	0	532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.5	0.0	0.0	9.8	0.0	0.0	34.8	0.0	0.0	39.4	0.0	32.7
Incr Delay (d2), s/veh	1.4	0.0	0.0	2.0	0.0	0.0	0.8	0.0	0.0	5.1	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	13.9	0.0	0.0	13.8	0.0	0.0	7.4	0.0	0.0	16.2	0.0	2.9
LnGrp Delay(d),s/veh	11.0	0.0	0.0	11.8	0.0	0.0	35.6	0.0	0.0	44.4	0.0	32.9
LnGrp LOS	B			B			D			D		C
Approach Vol, veh/h		555			524			157				414
Approach Delay, s/veh		11.0			11.8			35.6				42.6
Approach LOS		B			B			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		77.9		32.1		77.9		32.1				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		59.0		38.0		59.0		38.0				
Max Q Clear Time (g_c+I1), s		18.8		23.8		20.8		24.2				
Green Ext Time (p_c), s		26.4		1.9		25.5		1.9				
Intersection Summary												
HCM 2010 Ctrl Delay				21.5								
HCM 2010 LOS				C								



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↔			↗
Volume (vph)	0	539	487	0	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	10
Grade (%)		-3%	2%		1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1651	1650	0	0	1446
Flt Permitted						
Satd. Flow (perm)	0	1651	1650	0	0	1446
Link Speed (mph)		45	45		25	
Link Distance (ft)		191	463		154	
Travel Time (s)		2.9	7.0		4.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	7%	8%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	580	524	0	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	580	524	0	0	2
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	539	487	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-3	2	-	1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	7	8	0	0	0
Mvmt Flow	0	580	524	0	0	2

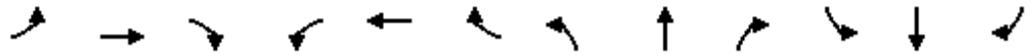
Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	524	0	524
Stage 1	-	-	524
Stage 2	-	-	580
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	792	-	792
Stage 1	-	-	655
Stage 2	-	-	614
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	792	-	792
Mov Cap-2 Maneuver	-	-	243
Stage 1	-	-	655
Stage 2	-	-	614

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	792	-	-	-	577
HCM Lane V/C Ratio	-	-	-	-	0.004
HCM Control Delay (s)	0	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

McMahon Associates, Inc.
 3: Ross Lane/Main Access & Kimberton Rd (S.R. 0113)

2015 Existing Condition
 Weekday Morning Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	518	8	59	478	5	3	2	32	2	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	11	13	12	9	12	16	12	11	16	12
Grade (%)		-3%			4%			-4%			1%	
Storage Length (ft)	125		100	160		100	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	60			60			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.882			0.895	
Flt Protected	0.950			0.950				0.996			0.989	
Satd. Flow (prot)	1678	1781	1501	1589	1618	1349	0	1781	0	0	1797	0
Flt Permitted	0.950			0.950				0.996			0.989	
Satd. Flow (perm)	1678	1781	1501	1589	1618	1349	0	1781	0	0	1797	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		441			356			228			111	
Travel Time (s)		6.7			5.4			6.2			3.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	6%	0%	9%	9%	0%	0%	0%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	14	569	9	65	525	5	3	2	35	2	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	569	9	65	525	5	0	40	0	0	9	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

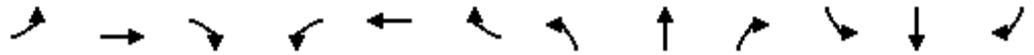
Intersection													
Int Delay, s/veh	1.1												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	518	8	59	478	5	3	2	32	2	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	125	-	100	160	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	-3	-	-	4	-	-	-4	-	-	1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	6	0	9	9	0	0	0	3	0	0	0
Mvmt Flow	14	569	9	65	525	5	3	2	35	2	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	525	0	0	569	0	0	1256	1253	569	1271	1253	525
Stage 1	-	-	-	-	-	-	598	598	-	655	655	-
Stage 2	-	-	-	-	-	-	658	655	-	616	598	-
Critical Hdwy	4.3	-	-	4.4	-	-	6.3	5.7	5.83	7.3	6.7	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	5.3	4.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.3	4.7	-	6.3	5.7	-
Follow-up Hdwy	3	-	-	3.1	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	791	-	-	733	-	-	215	229	585	148	162	576
Stage 1	-	-	-	-	-	-	632	564	-	495	449	-
Stage 2	-	-	-	-	-	-	592	539	-	522	478	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	791	-	-	733	-	-	195	205	585	127	145	576
Mov Cap-2 Maneuver	-	-	-	-	-	-	346	327	-	262	252	-
Stage 1	-	-	-	-	-	-	621	554	-	486	409	-
Stage 2	-	-	-	-	-	-	533	491	-	480	470	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	12.3	13.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	532	791	-	-	733	-	-	443
HCM Lane V/C Ratio	0.076	0.018	-	-	0.088	-	-	0.02
HCM Control Delay (s)	12.3	9.6	-	-	10.4	-	-	13.3
HCM Lane LOS	B	A	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0.3	-	-	0.1



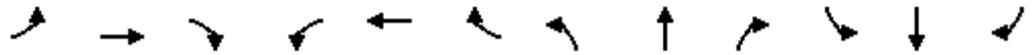
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	0	552	0	0	542	5	0	0	0	1	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	11	12	12	16	12	12	12	12
Grade (%)		-4%			-1%			-2%				-2%
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.999											
Flt Protected	0.950											
Satd. Flow (prot)	0	1790	0	0	1662	0	0	2060	0	0	1727	0
Flt Permitted	0.950											
Satd. Flow (perm)	0	1790	0	0	1662	0	0	2060	0	0	1727	0
Link Speed (mph)	45				45				25		25	
Link Distance (ft)	199				1377				142		122	
Travel Time (s)	3.0				20.9				3.9		3.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	6%	0%	0%	5%	20%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)	0%				0%				0%		0%	
Adj. Flow (vph)	0	594	0	0	583	5	0	0	0	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	594	0	0	588	0	0	0	0	0	1	0
Sign Control	Free				Free				Stop		Stop	

Intersection Summary

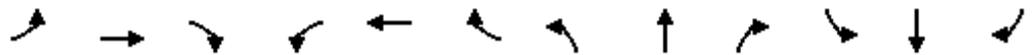
Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	552	0	0	542	5	0	0	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	-1	-	-	-2	-	-	-2	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	6	0	0	5	20	0	0	0	0	0	0
Mvmt Flow	0	594	0	0	583	5	0	0	0	1	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	588	0	0	594	0	0	1179	1182	594	1179	1179	585
Stage 1	-	-	-	-	-	-	594	594	-	585	585	-
Stage 2	-	-	-	-	-	-	585	588	-	594	594	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.7	6.1	6	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	752	-	-	748	-	-	210	218	551	210	219	558
Stage 1	-	-	-	-	-	-	594	530	-	600	534	-
Stage 2	-	-	-	-	-	-	600	533	-	594	530	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	752	-	-	748	-	-	210	218	551	210	219	558
Mov Cap-2 Maneuver	-	-	-	-	-	-	210	218	-	210	219	-
Stage 1	-	-	-	-	-	-	594	530	-	600	534	-
Stage 2	-	-	-	-	-	-	600	533	-	594	530	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			22.2		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	752	-	-	748	-	-	210				
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.005				
HCM Control Delay (s)	0	0	-	-	0	-	-	22.2				
HCM Lane LOS	A	A	-	-	A	-	-	C				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	667	90	361	295	31	84	47	377	49	41	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	12	11	12	10	11	15	11	13	13
Grade (%)		-1%			-2%			-2%				1%
Storage Length (ft)	175		0	110		175	200		300	70		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	85			85			75			60		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.982				0.850			0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1604	3363	0	1645	1674	1500	1507	1723	1634	3191	1711	0
Flt Permitted	0.570			0.247			0.636			0.950		
Satd. Flow (perm)	962	3363	0	428	1674	1500	1009	1723	1634	3191	1711	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				136			372			18
Link Speed (mph)		35			35			45				25
Link Distance (ft)		446			440			427				196
Travel Time (s)		8.7			8.6			6.5				5.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	9%	5%	5%	3%	7%	2%	4%	0%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	17	710	96	384	314	33	89	50	401	52	44	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	806	0	384	314	33	89	50	401	52	65	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	35	35		30	30	30	30	30	5	30	30	
Trailing Detector (ft)	-5	-5		-10	-10	-10	-10	-10	0	-10	-10	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8			
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	11.0	11.0	9.0	11.0	
Total Split (s)	13.0	49.0		29.0	65.0	65.0	13.0	29.0	29.0	13.0	29.0	
Total Split (%)	10.8%	40.8%		24.2%	54.2%	54.2%	10.8%	24.2%	24.2%	10.8%	24.2%	
Maximum Green (s)	7.0	43.0		23.0	59.0	59.0	7.0	23.0	23.0	7.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	67.7	60.7		86.9	81.9	81.9	19.1	12.7	12.7	7.7	12.5	
Actuated g/C Ratio	0.56	0.51		0.72	0.68	0.68	0.16	0.11	0.11	0.06	0.10	
v/c Ratio	0.03	0.47		0.73	0.28	0.03	0.46	0.27	0.79	0.25	0.34	
Control Delay	9.1	22.5		18.5	11.1	0.1	46.6	50.7	18.9	56.5	39.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.1	22.5		18.5	11.1	0.1	46.6	50.7	18.9	56.5	39.9	
LOS	A	C		B	B	A	D	D	B	E	D	
Approach Delay		22.2			14.5			26.4			47.3	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	3	212		94	73	0	60	37	21	20	35	
Queue Length 95th (ft)	14	328		239	208	0	96	70	119	41	72	
Internal Link Dist (ft)		366			360			347			116	
Turn Bay Length (ft)	175			110		175	200		300	70		
Base Capacity (vph)	593	1707		553	1141	1066	194	344	624	212	356	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.47		0.69	0.28	0.03	0.46	0.15	0.64	0.25	0.18	

Intersection Summary

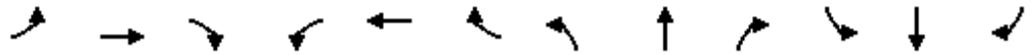
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 67 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 22.0 Intersection LOS: C
 Intersection Capacity Utilization 67.7% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 5: Kimberton Rd (S.R. 0113)/Phoenixville T.C. Driveway & S.R. 0023

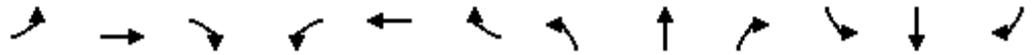


McMahon Associates, Inc.
 1: Township Line Rd & Kimberton Rd (S.R. 0113)

2015 Existing Condition
 Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	80	521	6	73	558	47	5	247	118	21	157	130
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	12	12	12	16	12	12	12	14
Grade (%)		-3%			-2%			-2%				4%
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.991			0.957				0.850
Flt Protected		0.993			0.995			0.999			0.994	
Satd. Flow (prot)	0	1857	0	0	1756	0	0	1970	0	0	1738	1553
Flt Permitted		0.831			0.868			0.996			0.824	
Satd. Flow (perm)	0	1554	0	0	1532	0	0	1964	0	0	1441	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			5			22				138
Link Speed (mph)		45			45			35				35
Link Distance (ft)		498			191			356				352
Travel Time (s)		7.5			2.9			6.9				6.9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	4%	2%	0%	0%	0%	0%	0%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	85	554	6	78	594	50	5	263	126	22	167	138
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	645	0	0	722	0	0	394	0	0	189	138
Number of Detectors	1	2		1	2		1	4		1	1	1
Detector Template	Left			Left			Left			Left	Thru	Right
Leading Detector (ft)	30	353		30	353		30	73		30	35	30
Trailing Detector (ft)	-10	0		-10	0		-10	-4		-10	-5	-10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		4
Detector Phase	2	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	27.0	27.0		27.0	27.0		16.0	16.0		16.0	16.0	16.0
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	48.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	65.0	65.0		65.0	65.0		42.0	42.0		42.0	42.0	42.0
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		6.0			6.0			5.0			5.0	5.0

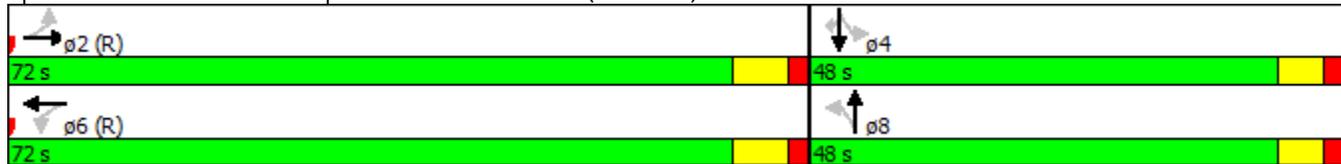


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

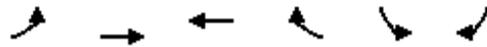
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Township Line Rd & Kimberton Rd (S.R. 0113)



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	521	6	73	558	47	5	247	118	21	157	130
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1827	1884	1827	1818	1781	1818	1818	1891	1818	1764	1749	1781
Adj Flow Rate, veh/h	85	554	6	78	594	45	5	263	72	22	167	126
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	1	1	3
Cap, veh/h	151	971	10	128	931	69	32	323	87	56	339	343
Arrive On Green	0.67	0.68	0.67	0.67	0.68	0.67	0.22	0.23	0.22	0.22	0.23	0.23
Sat Flow, veh/h	172	1425	15	140	1365	101	8	1424	385	101	1496	1514
Grp Volume(v), veh/h	645	0	0	717	0	0	340	0	0	189	0	126
Grp Sat Flow(s),veh/h/ln	1612	0	0	1606	0	0	1817	0	0	1597	0	1514
Q Serve(g_s), s	0.0	0.0	0.0	4.7	0.0	0.0	3.7	0.0	0.0	0.0	0.0	8.4
Cycle Q Clear(g_c), s	24.9	0.0	0.0	29.6	0.0	0.0	21.5	0.0	0.0	11.4	0.0	8.4
Prop In Lane	0.13		0.01	0.11		0.06	0.01		0.21	0.12		1.00
Lane Grp Cap(c), veh/h	1119	0	0	1114	0	0	427	0	0	382	0	343
V/C Ratio(X)	0.58	0.00	0.00	0.64	0.00	0.00	0.80	0.00	0.00	0.49	0.00	0.37
Avail Cap(c_a), veh/h	1119	0	0	1114	0	0	665	0	0	595	0	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.6	0.0	0.0	10.6	0.0	0.0	44.3	0.0	0.0	40.3	0.0	39.1
Incr Delay (d2), s/veh	2.2	0.0	0.0	2.9	0.0	0.0	3.7	0.0	0.0	1.0	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	17.9	0.0	0.0	20.8	0.0	0.0	16.9	0.0	0.0	9.5	0.0	6.5
LnGrp Delay(d),s/veh	11.7	0.0	0.0	13.4	0.0	0.0	48.0	0.0	0.0	41.3	0.0	39.8
LnGrp LOS	B			B			D			D		D
Approach Vol, veh/h		645			717			340				315
Approach Delay, s/veh		11.7			13.4			48.0				40.7
Approach LOS		B			B			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.8		32.2		87.8		32.2				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		65.0		42.0		65.0		42.0				
Max Q Clear Time (g_c+I1), s		26.9		13.4		31.6		23.5				
Green Ext Time (p_c), s		31.4		2.9		28.1		2.7				
Intersection Summary												
HCM 2010 Ctrl Delay			23.0									
HCM 2010 LOS			C									



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↔			↘
Volume (vph)	0	660	666	0	0	12
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	10
Grade (%)		-3%	2%		1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1749	1764	0	0	1446
Flt Permitted						
Satd. Flow (perm)	0	1749	1764	0	0	1446
Link Speed (mph)		45	45		25	
Link Distance (ft)		191	463		154	
Travel Time (s)		2.9	7.0		4.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	710	716	0	0	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	710	716	0	0	13
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	660	666	0	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-3	2	-	1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	0	710	716	0	0	13

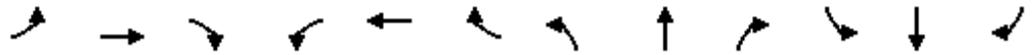
Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	716	0	1426
Stage 1	-	-	716
Stage 2	-	-	710
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	677	-	150
Stage 1	-	-	523
Stage 2	-	-	527
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	677	-	150
Mov Cap-2 Maneuver	-	-	150
Stage 1	-	-	523
Stage 2	-	-	527

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	677	-	-	-	444
HCM Lane V/C Ratio	-	-	-	-	0.029
HCM Control Delay (s)	0	-	-	-	13.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

McMahon Associates, Inc.
 3: Ross Lane/Main Access & Kimberton Rd (S.R. 0113)

2015 Existing Condition
 Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	622	12	64	624	12	15	2	114	16	1	27
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	11	13	12	9	12	16	13	11	16	12
Grade (%)		-3%			4%			-4%				1%
Storage Length (ft)	125		100	160		100	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	60			60			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.883				0.918
Flt Protected	0.950			0.950				0.994				0.982
Satd. Flow (prot)	1678	1851	1390	1698	1729	1250	0	1798	0	0	1790	0
Flt Permitted	0.950			0.950				0.994				0.982
Satd. Flow (perm)	1678	1851	1390	1698	1729	1250	0	1798	0	0	1790	0
Link Speed (mph)		45			45			25				25
Link Distance (ft)		441			356			228				111
Travel Time (s)		6.7			5.4			6.2				3.0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	8%	2%	2%	8%	0%	50%	1%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	27	655	13	67	657	13	16	2	120	17	1	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	655	13	67	657	13	0	138	0	0	46	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

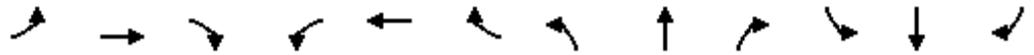
Intersection												
Int Delay, s/veh	2.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	26	622	12	64	624	12	15	2	114	16	1	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	125	-	100	160	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	-3	-	-	4	-	-	-4	-	-	1	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	2	8	2	2	8	0	50	1	6	0	0
Mvmt Flow	27	655	13	67	657	13	16	2	120	17	1	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	657	0	0	655	0	0	1515	1501	655	1563	1501	657
Stage 1	-	-	-	-	-	-	709	709	-	792	792	-
Stage 2	-	-	-	-	-	-	806	792	-	771	709	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.3	6.2	5.81	7.36	6.7	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	5.3	5.2	-	6.36	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.3	5.2	-	6.36	5.7	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.45	3.1	3.1	4	3.1
Pot Cap-1 Maneuver	711	-	-	712	-	-	149	134	528	87	113	482
Stage 1	-	-	-	-	-	-	560	436	-	395	386	-
Stage 2	-	-	-	-	-	-	503	404	-	407	423	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	711	-	-	712	-	-	126	117	528	60	98	482
Mov Cap-2 Maneuver	-	-	-	-	-	-	266	224	-	158	202	-
Stage 1	-	-	-	-	-	-	539	419	-	380	350	-
Stage 2	-	-	-	-	-	-	428	366	-	301	407	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1	15.9	21
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	466	711	-	-	712	-	-	271
HCM Lane V/C Ratio	0.296	0.038	-	-	0.095	-	-	0.171
HCM Control Delay (s)	15.9	10.3	-	-	10.6	-	-	21
HCM Lane LOS	C	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	1.2	0.1	-	-	0.3	-	-	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	3	749	0	0	696	8	0	0	0	17	0	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	11	12	12	16	12	12	12	12
Grade (%)		-4%			-1%			-2%				-2%
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.999							0.975
Flt Protected												0.961
Satd. Flow (prot)	0	1878	0	0	1730	0	0	2060	0	0	1703	0
Flt Permitted												0.961
Satd. Flow (perm)	0	1878	0	0	1730	0	0	2060	0	0	1703	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		199			1377			142			122	
Travel Time (s)		3.0			20.9			3.9			3.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	788	0	0	733	8	0	0	0	18	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	791	0	0	741	0	0	0	0	0	22	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

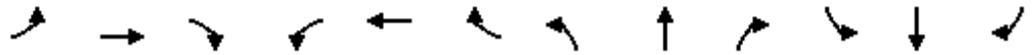
Intersection													
Int Delay, s/veh	0.5												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	749	0	0	696	8	0	0	0	17	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	-1	-	-	-2	-	-	-2	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	3	788	0	0	733	8	0	0	0	18	0	4

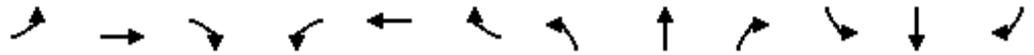
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	741	0	0	788	0	0	1534	1536	788	1532	1532	737
Stage 1	-	-	-	-	-	-	795	795	-	737	737	-
Stage 2	-	-	-	-	-	-	739	741	-	795	795	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.7	6.1	6	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	664	-	-	639	-	-	122	139	430	123	140	459
Stage 1	-	-	-	-	-	-	466	439	-	500	464	-
Stage 2	-	-	-	-	-	-	499	462	-	466	439	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	664	-	-	639	-	-	120	138	430	122	139	459
Mov Cap-2 Maneuver	-	-	-	-	-	-	120	138	-	122	139	-
Stage 1	-	-	-	-	-	-	462	435	-	496	464	-
Stage 2	-	-	-	-	-	-	494	462	-	462	435	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	35
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	664	-	-	639	-	-	142
HCM Lane V/C Ratio	-	0.005	-	-	-	-	-	0.156
HCM Control Delay (s)	0	10.4	0	-	0	-	-	35
HCM Lane LOS	A	B	A	-	A	-	-	E
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	353	84	436	453	52	202	118	369	121	114	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	12	11	12	10	11	15	11	13	13
Grade (%)		-1%			-2%			-2%				1%
Storage Length (ft)	175		0	110		175	200		300	70		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	85			85			75			60		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.971				0.850			0.850		0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1604	3300	0	1677	1757	1515	1580	1757	1683	3191	1766	0
Flt Permitted	0.495			0.388			0.558			0.950		
Satd. Flow (perm)	836	3300	0	685	1757	1515	928	1757	1683	3191	1766	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29				164			380			9
Link Speed (mph)		35			35			45				25
Link Distance (ft)		446			440			427				196
Travel Time (s)		8.7			8.6			6.5				5.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	15%	3%	0%	2%	2%	0%	1%	0%	0%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	22	364	87	449	467	54	208	122	380	125	118	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	451	0	449	467	54	208	122	380	125	141	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	35	35		30	30	30	30	30	5	30	30	
Trailing Detector (ft)	-5	-5		-10	-10	-10	-10	-10	0	-10	-10	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8			
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	11.0	11.0	9.0	11.0	
Total Split (s)	13.0	33.0		25.0	45.0	45.0	13.0	29.0	29.0	13.0	29.0	
Total Split (%)	13.0%	33.0%		25.0%	45.0%	45.0%	13.0%	29.0%	29.0%	13.0%	29.0%	
Maximum Green (s)	7.0	27.0		19.0	39.0	39.0	7.0	23.0	23.0	7.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	46.3	39.2		62.9	57.8	57.8	22.1	14.1	14.1	8.0	14.1	
Actuated g/C Ratio	0.46	0.39		0.63	0.58	0.58	0.22	0.14	0.14	0.08	0.14	
v/c Ratio	0.05	0.34		0.73	0.46	0.06	0.81	0.49	0.67	0.49	0.55	
Control Delay	10.0	21.9		18.3	16.3	0.1	56.5	45.8	10.5	51.1	45.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.0	21.9		18.3	16.3	0.1	56.5	45.8	10.5	51.1	45.0	
LOS	A	C		B	B	A	E	D	B	D	D	
Approach Delay		21.4			16.3			30.0			47.8	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	5	99		132	137	0	111	73	0	40	79	
Queue Length 95th (ft)	16	153		230	320	0	#178	123	79	70	133	
Internal Link Dist (ft)		366			360			347			116	
Turn Bay Length (ft)	175			110		175	200		300	70		
Base Capacity (vph)	455	1310		629	1016	945	256	421	692	255	430	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.34		0.71	0.46	0.06	0.81	0.29	0.55	0.49	0.33	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 75 (75%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 24.8 Intersection LOS: C
 Intersection Capacity Utilization 74.8% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Kimberton Rd (S.R. 0113)/Phoenixville T.C. Driveway & S.R. 0023



APPENDIX H

Trip Generation Rates

Table A – Local Trip Generation Calculations

Description	Size (s.f.)	Weekday Morning			Weekday Afternoon		
		In	Out	Total	In	Out	Total
Existing Commercial Center ⁽¹⁾							
Existing Trips	24,455	25	11	36	51	77	128
Existing Rate per 1,000 s.f.		1.02	0.45	1.47	2.09	3.14	5.23

(1) 70% Occupancy as of November 2015 when the data collection was completed in the driveways.

Table B – ITE Trip Generation Rates vs. Local Data

Description	Trip Generation Rates Per 1,000 Square Feet	
	Weekday Morning Peak Hour	Weekday Afternoon Peak Hour
Shopping Center ITE Land Use Code 820	62% In / 38% Out 0.96	48% In / 52% Out 3.71
General Office Building ITE Land Use Code 710	88% In / 12% Out 1.56	17% In / 83% Out 1.49
Local Data	69% In / 31% Out 1.47	40% In / 60% Out 5.23

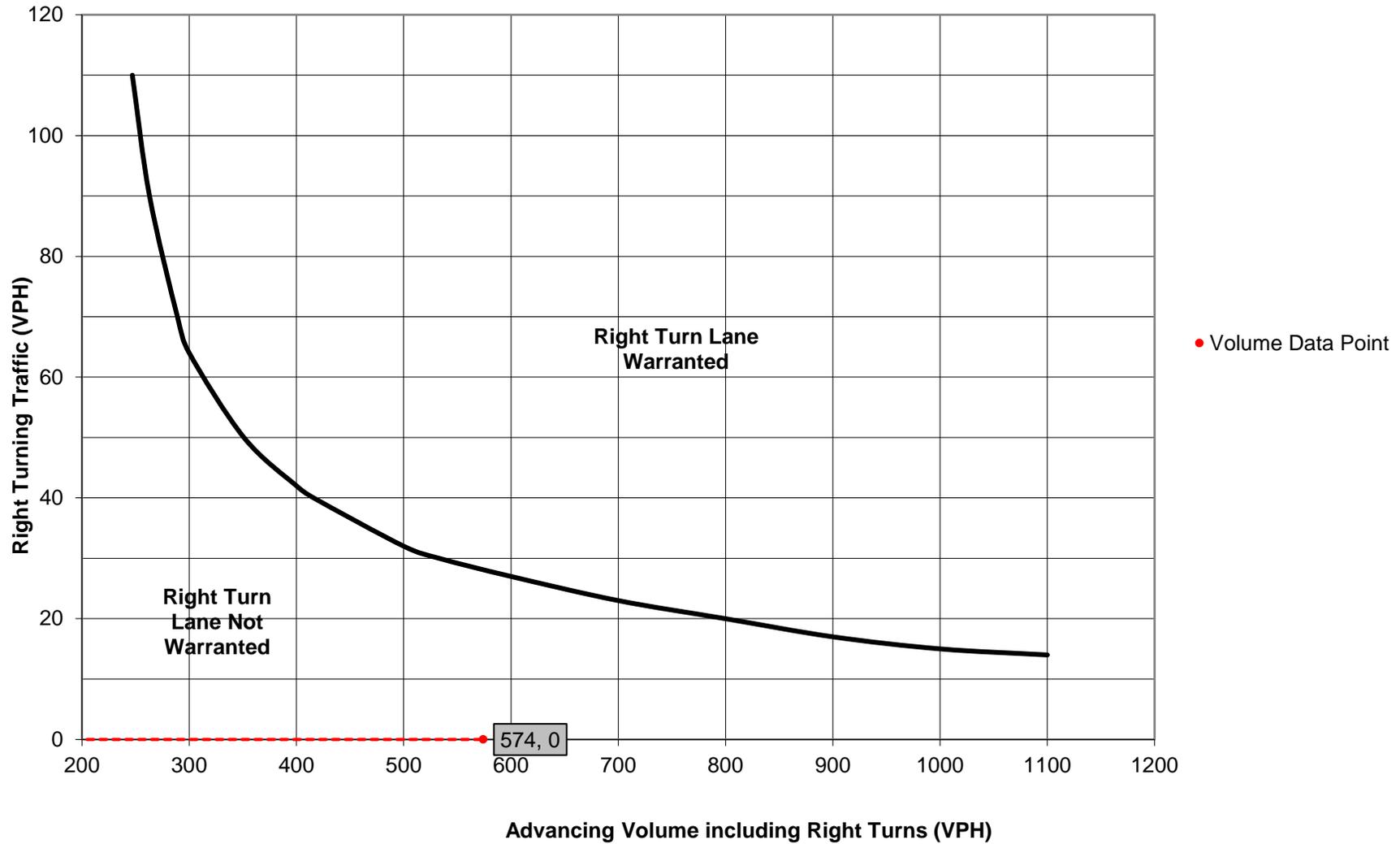
APPENDIX I

Auxiliary Lane Warrants

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION										
Municipality:	Phoenixville Borough	Analysis Date:	7/26/2017							
County:	Chester County	Conducted By:	AM							
PennDOT Engineering District:	6	Checked By:	SAK							
		Agency/Company Name:	McMahon							
Intersection & Approach Description:		Kimberton Rd & Dawson Dr West - WB Kimberton Rd Approach								
Analysis Period:	2019 Build	Number of Approach Lanes:	1							
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided							
Intersection Control:	Unsignalized	Type of Analysis		Right Turn Lane						
Posted Speed Limit (MPH):	45	Left or Right-Turn Lane Analysis?:		Right Turn Lane						
Type of Terrain:	Level									
VOLUME CALCULATIONS										
Left Turn Lane Volume Calculations										
Movement	Include?	Volume	% Trucks	PCEV						
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume:				N/A
	Through	-	0	0.0%	N/A	Opposing Volume:				N/A
	Right	Yes	0	0.0%	N/A	Left Turn Volume:				N/A
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume:				N/A
	Through	-	0	0.0%	N/A					
	Right	Yes	0	0.0%	N/A					
Right Turn Lane Volume Calculations										
Movement	Include?	Volume	% Trucks	PCEV						
Advancing	Left	Yes	0	0.0%	0	Advancing Volume:				574
	Through	-	551	8.0%	574	Right Turn Volume:				0
	Right	-	0	0.0%	0					
TURN LANE WARRANT FINDINGS										
Left Turn Lane Warrant Findings					Right Turn Lane Warrant Findings					
Applicable Warrant Figure:					Applicable Warrant Figure:					
N/A					Figure 10					
Warrant Met?:					Warrant Met?:					
N/A					No					
TURN LANE LENGTH CALCULATIONS										
Intersection Control:		Unsignalized								
Design Hour Volume of Turning Lane:		0								
Cycles Per Hour (Assumed):		60								
Cycles Per Hour (If Known):		60								
		Average # of Vehicles/Cycle: N/A								
PennDOT Publication 46, Exhibit 11-6										
Type of Traffic Control	Speed (MPH)									
	25-35		40-45		50-60					
	Turn Demand Volume									
	High	Low	High	Low	High	Low				
Signalized	A	A	B or C	B or C	B or C	B or C				
Unsignalized	A	A	C	B	B or C	B				
Right Turn Lane Storage Length, Condition A:		N/A								Feet
Condition B:		N/A								Feet
Condition C:		N/A								Feet
Required Right Turn Lane Storage Length:		N/A								Feet
Additional Findings:		N/A								
Additional Comments / Justifications:										

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

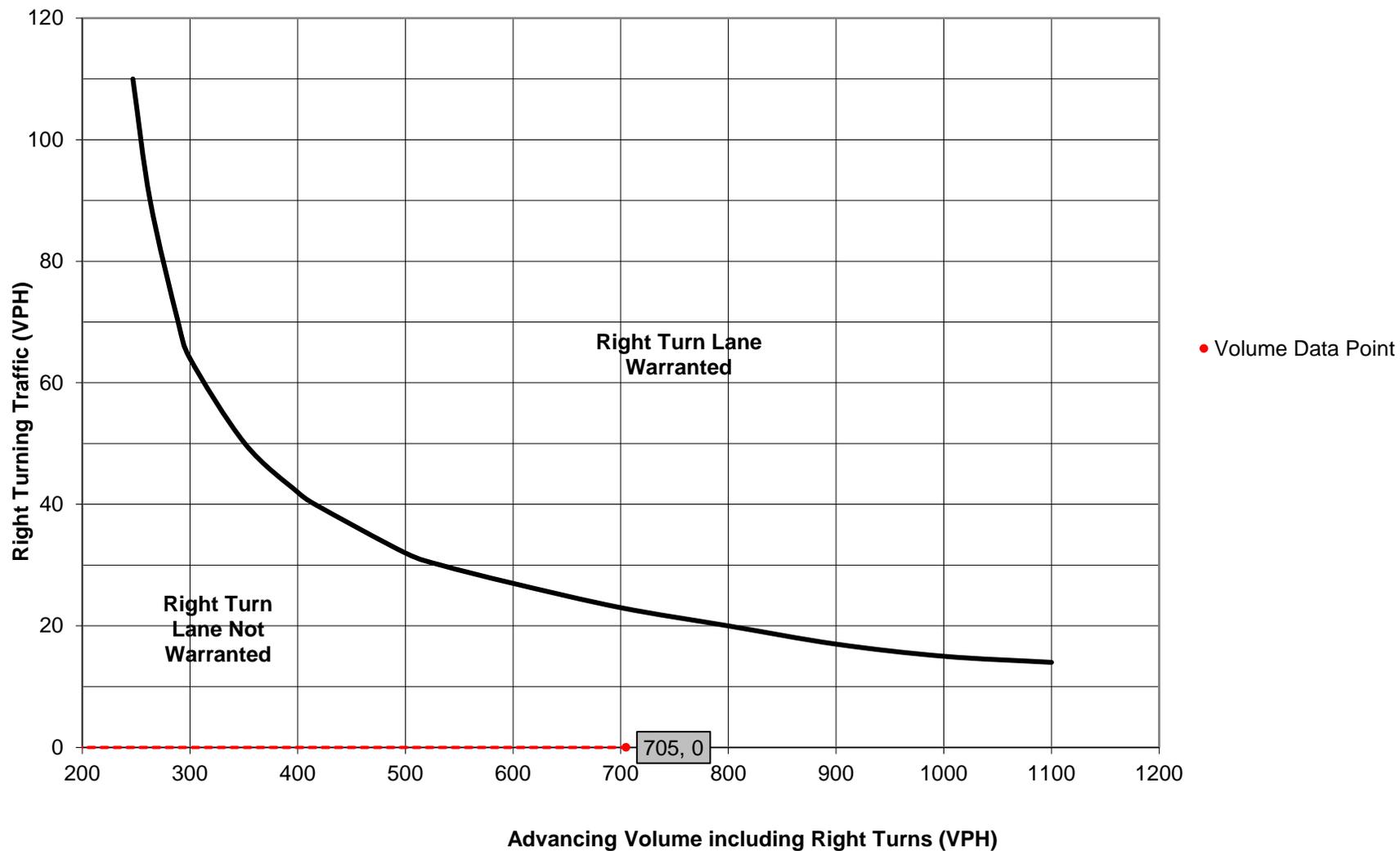
STUDY LOCATION AND ANALYSIS INFORMATION					
Municipality:	Phoenixville Borough	Analysis Date:	7/26/2017		
County:	Chester County	Conducted By:	AM		
PennDOT Engineering District:	6	Checked By:	SAK		
		Agency/Company Name:	McMahon		
Intersection & Approach Description:	Kimberton Rd & Dawson Dr West - WB Kimberton Rd Approach				
Analysis Period:	2019 Build	Number of Approach Lanes:	1		
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided		
Intersection Control:	Unsignalized				
Posted Speed Limit (MPH):	45				
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	<div style="border: 1px solid red; padding: 2px;">Type of Analysis</div> <div style="border: 1px solid black; padding: 2px;">Right Turn Lane</div>		

VOLUME CALCULATIONS						
Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A
	Through	-	0	0.0%	N/A	
	Right	Yes	0	0.0%	N/A	
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: N/A
	Through	-	0	0.0%	N/A	
	Right	Yes	0	0.0%	N/A	
Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	0.0%	0	Advancing Volume: 705 Right Turn Volume: 0
	Through	-	701	1.0%	705	
	Right	-	0	0.0%	0	

TURN LANE WARRANT FINDINGS	
Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 10 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS						
Intersection Control:	Unsignalized					
Design Hour Volume of Turning Lane:	0					
Cycles Per Hour (Assumed):	Known					
Cycles Per Hour (If Known):	60					
	Average # of Vehicles/Cycle: N/A					
PennDOT Publication 46, Exhibit 11-6						
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B
	Right Turn Lane Storage Length, Condition A: N/A Feet					
	Condition B: N/A Feet					
	Condition C: N/A Feet					
	Required Right Turn Lane Storage Length: N/A Feet					
	Additional Findings: N/A					
Additional Comments / Justifications:						

Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION										
Municipality:	Phoenixville Borough	Analysis Date:	7/26/2017							
County:	Chester County	Conducted By:	AM							
PennDOT Engineering District:	6	Checked By:	SAK							
		Agency/Company Name:	McMahon							
Intersection & Approach Description:	Kimberton Rd & Main Access- EB Kimberton Rd Approach									
Analysis Period:	2019 Build	Number of Approach Lanes:	1							
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided							
Intersection Control:	Unsignalized									
Posted Speed Limit (MPH):	45	Type of Analysis	Left Turn Lane							
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane							
VOLUME CALCULATIONS										
Left Turn Lane Volume Calculations										
Movement	Include?	Volume	% Trucks	PCEV						
Advancing	Left	Yes	11	0.0%	11	Advancing Volume:				592
	Through	-	556	6.0%	573	Opposing Volume:				608
	Right	Yes	8	0.0%	8	Left Turn Volume:				11
Opposing	Left	Yes	59	9.0%	62					
	Through	-	514	9.0%	538					
	Right	Yes	8	0.0%	8	% Left Turns in Advancing Volume:				1.86%
Right Turn Lane Volume Calculations										
Movement	Include?	Volume	% Trucks	PCEV						
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume:				N/A
	Through	-	0	0.0%	N/A	Right Turn Volume:				N/A
	Right	-	0	0.0%	N/A					
TURN LANE WARRANT FINDINGS										
Left Turn Lane Warrant Findings					Right Turn Lane Warrant Findings					
Applicable Warrant Figure: Figure 3					Applicable Warrant Figure: N/A					
Warrant Met?: No					Warrant Met?: N/A					
TURN LANE LENGTH CALCULATIONS										
Intersection Control:	Unsignalized									
Design Hour Volume of Turning Lane:	11									
Cycles Per Hour (Assumed):	Known									
Cycles Per Hour (If Known):	60									
	Average # of Vehicles/Cycle: N/A									
PennDOT Publication 46, Exhibit 11-6										
Type of Traffic Control	Speed (MPH)									
	25-35		40-45		50-60					
	Turn Demand Volume									
	High	Low	High	Low	High	Low				
Signalized	A	A	B or C	B or C	B or C	B or C				
Unsignalized	A	A	C	B	B or C	B				
Left Turn Lane Storage Length, Condition A:						N/A				Feet
Condition B:						N/A				Feet
Condition C:						N/A				Feet
Required Left Turn Lane Storage Length:						N/A				Feet
Additional Findings:						N/A				
Additional Comments / Justifications:										
Based on volumes, a 125-foot left-turn lane would be required										

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="7/26/2017"/> Conducted By: <input type="text" value="AM"/> Checked By: <input type="text" value="SAK"/> Agency/Company Name: <input type="text" value="McMahon"/>
Intersection & Approach Description: <input type="text" value="Kimberton Rd & Main Access- EB Kimberton Rd Approach"/>	
Analysis Period: <input type="text" value="2019 Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: <input style="border: 2px solid red;" type="text" value="Left Turn Lane"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	41	0.0%	41	Advancing Volume: <input type="text" value="730"/> Opposing Volume: <input type="text" value="776"/> Left Turn Volume: <input type="text" value="41"/>
	Through	-	669	2.0%	676	
	Right	Yes	12	8.0%	13	
Opposing	Left	Yes	64	2.0%	65	% Left Turns in Advancing Volume: <input type="text" value="5.62%"/>
	Through	-	667	2.0%	674	
	Right	Yes	36	2.0%	37	
Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input style="background-color: #90EE90;" type="text" value="Figure 3"/> Warrant Met?: <input style="background-color: #90EE90;" type="text" value="Yes"/>	Applicable Warrant Figure: <input style="background-color: #90EE90;" type="text" value="N/A"/> Warrant Met?: <input style="background-color: #90EE90;" type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="41"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3" style="text-align: left;">Type of Traffic Control</th> <th colspan="6" style="text-align: center;">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2" style="text-align: center;">25-35</th> <th colspan="2" style="text-align: center;">40-45</th> <th colspan="2" style="text-align: center;">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center; background-color: #F08080;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </tbody> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
	25-35		40-45		50-60																																				
	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Left Turn Lane Storage Length, Condition A: <input style="background-color: #90EE90;" type="text" value="N/A"/> Feet Condition B: <input style="background-color: #90EE90;" type="text" value="125"/> Feet Condition C: <input style="background-color: #90EE90;" type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input style="background-color: #90EE90;" type="text" value="125"/> Feet																																									
Additional Findings: <input style="background-color: #90EE90;" type="text" value="N/A"/>																																									
Additional Comments / Justifications: <input style="background-color: #90EE90;" type="text" value="Based on volumes, a 125-foot left-turn lane would be required"/>																																									

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="7/26/2017"/> Conducted By: <input type="text" value="AM"/> Checked By: <input type="text" value="SAK"/> Agency/Company Name: <input type="text" value="McMahon"/>
Intersection & Approach Description: <input type="text" value="Kimberton Rd & Main Access- WB Kimberton Rd Approach"/>	
Analysis Period: <input type="text" value="2019 Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Opposing Volume: <input type="text" value="N/A"/> Left Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	Yes	0	0.0%	N/A	
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	Yes	0	0.0%	N/A	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	59	9.0%	N/A	Advancing Volume: <input type="text" value="546"/> Right Turn Volume: <input type="text" value="8"/>
	Through	-	514	9.0%	538	
	Right	-	8	0.0%	8	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/> Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="8"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
---	---

Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="N/A"/> Feet
--

Additional Findings:

Additional Comments / Justifications:

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="7/26/2017"/> Conducted By: <input type="text" value="AM"/> Checked By: <input type="text" value="SAK"/> Agency/Company Name: <input type="text" value="McMahon"/>
Intersection & Approach Description: <input type="text" value="Kimberton Rd & Main Access - WB Kimberton Rd Approach"/>	
Analysis Period: <input type="text" value="2019 Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Opposing Volume: <input type="text" value="N/A"/> Left Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	Yes	0	0.0%	N/A	
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	Yes	0	0.0%	N/A	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	64	2.0%	N/A	Advancing Volume: <input type="text" value="711"/> Right Turn Volume: <input type="text" value="37"/>
	Through	-	667	2.0%	674	
	Right	-	36	2.0%	37	

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/> Warrant Met?: <input type="text" value="Yes"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="37"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="1.0"/>																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
	25-35		40-45		50-60																																				
	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="125"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="125"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <input type="text" value="Based on volumes, a 125-foot left-turn lane would be required"/>																																									

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="7/26/2017"/> Conducted By: <input type="text" value="AM"/> Checked By: <input type="text" value="SAK"/> Agency/Company Name: <input type="text" value="McMahon"/>
Intersection & Approach Description: <input type="text" value="Kimberton Rd & Dawson Dr East - EB Kimberton Rd Approach"/>	
Analysis Period: <input type="text" value="2019 Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

Type of Analysis

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0.1	0.0%	1	Advancing Volume: <input type="text" value="644"/> Opposing Volume: <input type="text" value="601"/> Left Turn Volume: <input type="text" value="1"/>
	Through	-	624	6.0%	643	
	Right	Yes	0	0.0%	0	
Opposing	Left	Yes	0	0.0%	0	% Left Turns in Advancing Volume: <input type="text" value="0.16%"/>
	Through	-	581	5.0%	596	
	Right	Yes	4	20.0%	5	

Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

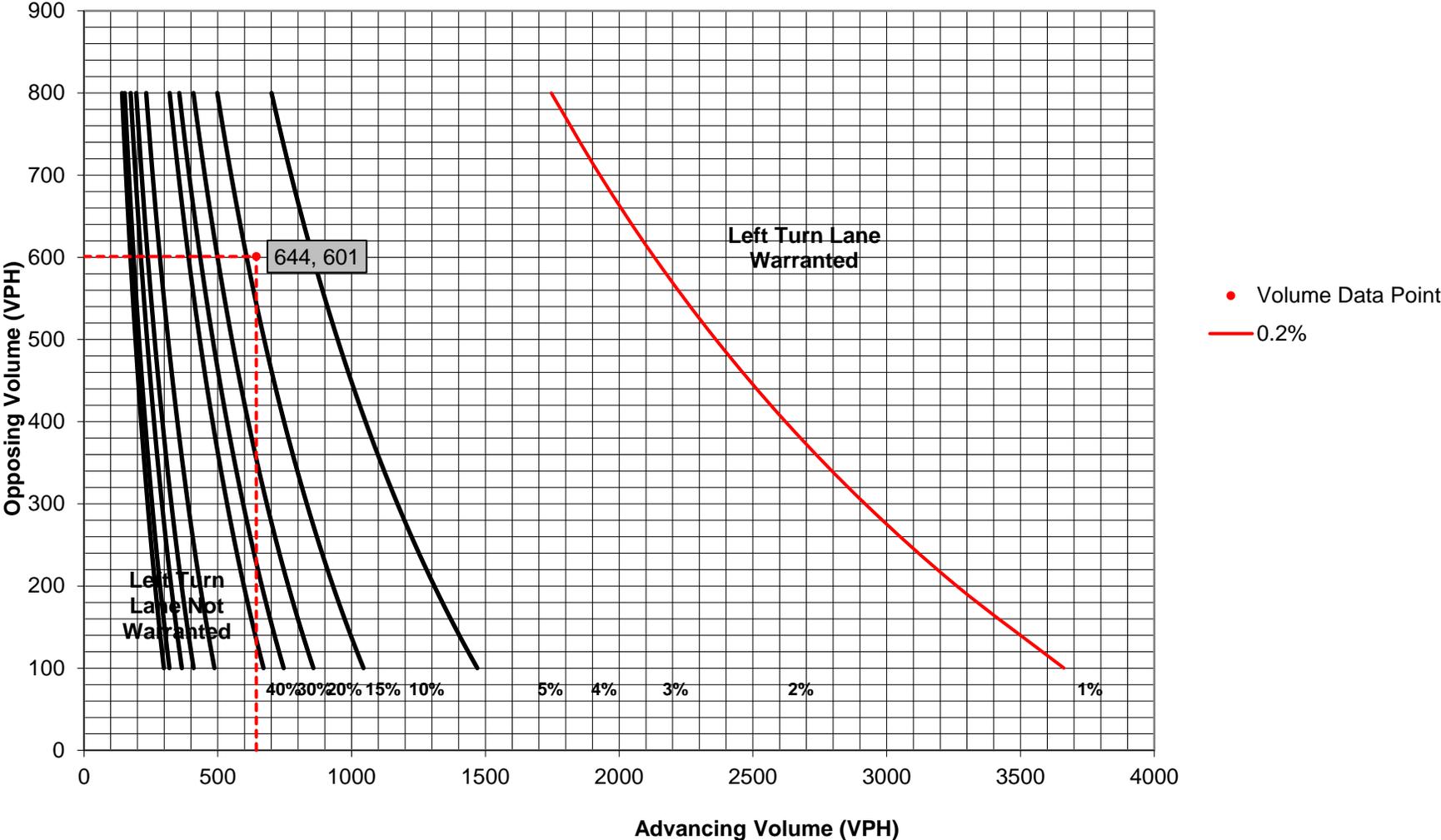
Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 3"/> Warrant Met?: <input type="text" value="No"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="1"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
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Type of Traffic Control	Speed (MPH)																																								
	25-35		40-45		50-60																																				
	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Left Turn Lane Storage Length, Condition A: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <input style="height: 40px;" type="text"/>																																									

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="7/26/2017"/> Conducted By: <input type="text" value="AM"/> Checked By: <input type="text" value="SAK"/> Agency/Company Name: <input type="text" value="McMahon"/>
Intersection & Approach Description: <input type="text" value="Kimberton Rd & Dawson Dr East - EB Kimberton Rd Approach"/>	
Analysis Period: <input type="text" value="2019 Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: Left Turn Lane Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	1	0.0%	1	Advancing Volume: <input type="text" value="808"/> Opposing Volume: <input type="text" value="778"/> Left Turn Volume: <input type="text" value="1"/>
	Through	-	802	1.0%	807	
	Right	Yes	0	0.0%	0	
Opposing	Left	Yes	0	0.0%	0	% Left Turns in Advancing Volume: <input type="text" value="0.12%"/>
	Through	-	767	1.0%	771	
	Right	Yes	7	0.0%	7	
Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	-	0	0.0%	N/A	

TURN LANE WARRANT FINDINGS

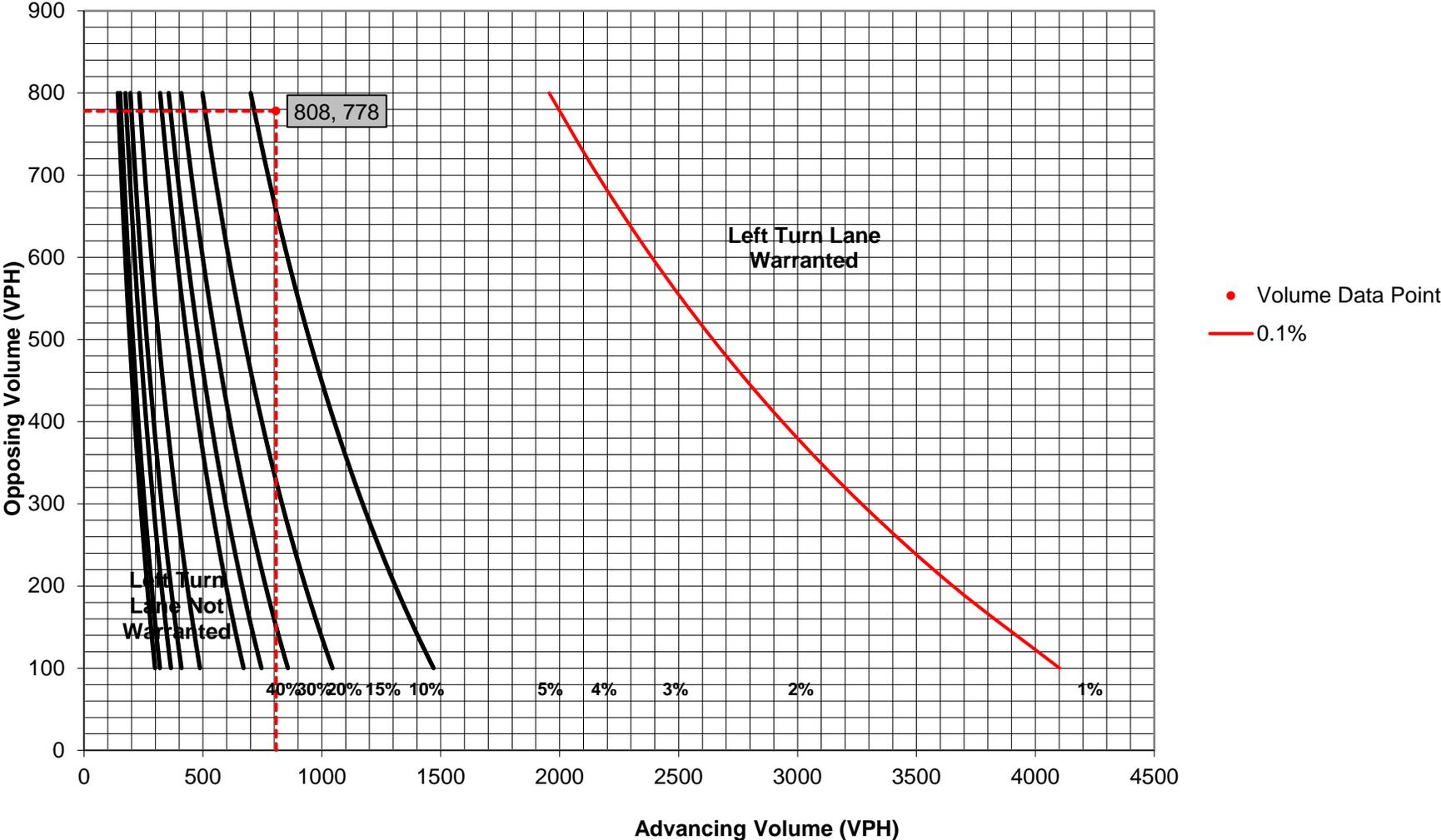
Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="Figure 3"/> Warrant Met?: <input type="text" value="No"/>	Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>

TURN LANE LENGTH CALCULATIONS

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

**Figure 3. Warrant for left turn lanes on two-lane highways
(45 mph speed, unsignalized and signalized intersections)**

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="7/26/2017"/> Conducted By: <input type="text" value="AM"/> Checked By: <input type="text" value="SAK"/> Agency/Company Name: <input type="text" value="McMahon"/>
Intersection & Approach Description: <input type="text" value="Kimberton Rd & Dawson Dr East - EB Kimberton Rd Approach"/>	
Analysis Period: <input type="text" value="2019 Build"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px;"> Type of Analysis: <input type="text" value="Right Turn Lane"/> </div>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	0	0.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume:	<input type="text" value="N/A"/>
Opposing Volume:	<input type="text" value="N/A"/>
Left Turn Volume:	<input type="text" value="N/A"/>
% Left Turns in Advancing Volume:	<input type="text" value="N/A"/>

Right Turn Lane Volume Calculations					
Movement	Include?	Volume	% Trucks	PCEV	
Advancing	Left	No	0	0.0%	N/A
	Through	-	581	5.0%	596
	Right	-	4	20.0%	5

Advancing Volume:	<input type="text" value="601"/>
Right Turn Volume:	<input type="text" value="5"/>

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/> Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="5"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>
---	---

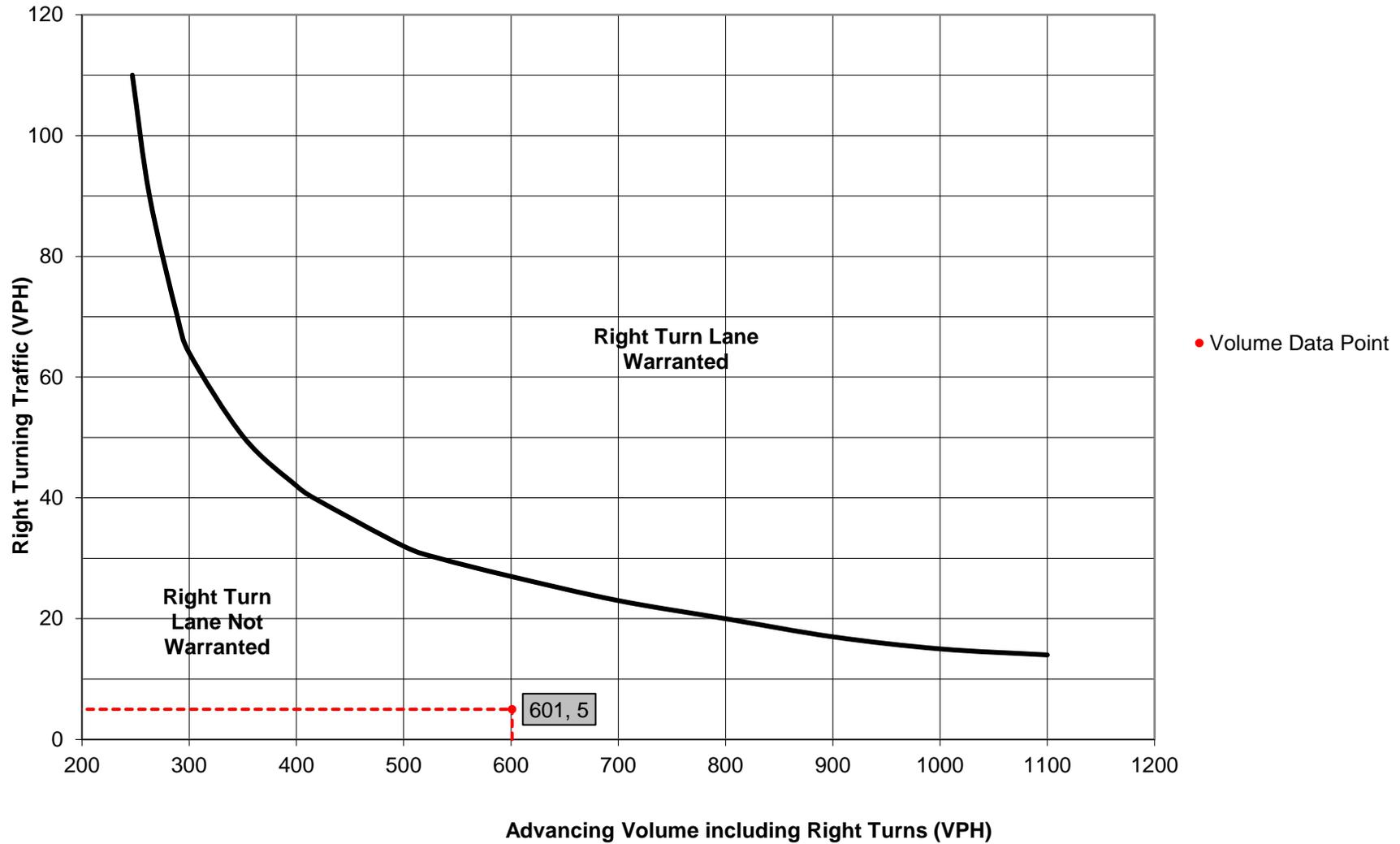
Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	<input type="text" value="N/A"/>	Feet
Condition B:	<input type="text" value="N/A"/>	Feet
Condition C:	<input type="text" value="N/A"/>	Feet
Required Right Turn Lane Storage Length:	<input type="text" value="N/A"/>	Feet

Additional Findings:

Additional Comments / Justifications:

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: <input type="text" value="Phoenixville Borough"/> County: <input type="text" value="Chester County"/> PennDOT Engineering District: <input type="text" value="6"/>	Analysis Date: <input type="text" value="7/26/2017"/> Conducted By: <input type="text" value="AM"/> Checked By: <input type="text" value="SAK"/> Agency/Company Name: <input type="text" value="McMahon"/>
Intersection & Approach Description: <input type="text" value="Kimberton Rd & Dawson Dr East - EB Kimberton Rd Approach"/>	
Analysis Period: <input type="text" value="2019 Build"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="45"/> Type of Terrain: <input type="text" value="Level"/>	Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px; display: inline-block;"> Type of Analysis <input type="text" value="Right Turn Lane"/> </div>

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	0	0.0%	N/A	Advancing Volume: <input type="text" value="N/A"/> Opposing Volume: <input type="text" value="N/A"/> Left Turn Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	Yes	0	0.0%	N/A	
Opposing	Left	Yes	0	0.0%	N/A	% Left Turns in Advancing Volume: <input type="text" value="N/A"/>
	Through	-	0	0.0%	N/A	
	Right	Yes	0	0.0%	N/A	
Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	No	0	0.0%	N/A	Advancing Volume: <input type="text" value="778"/> Right Turn Volume: <input type="text" value="7"/>
	Through	-	767	1.0%	771	
	Right	-	7	0.0%	7	

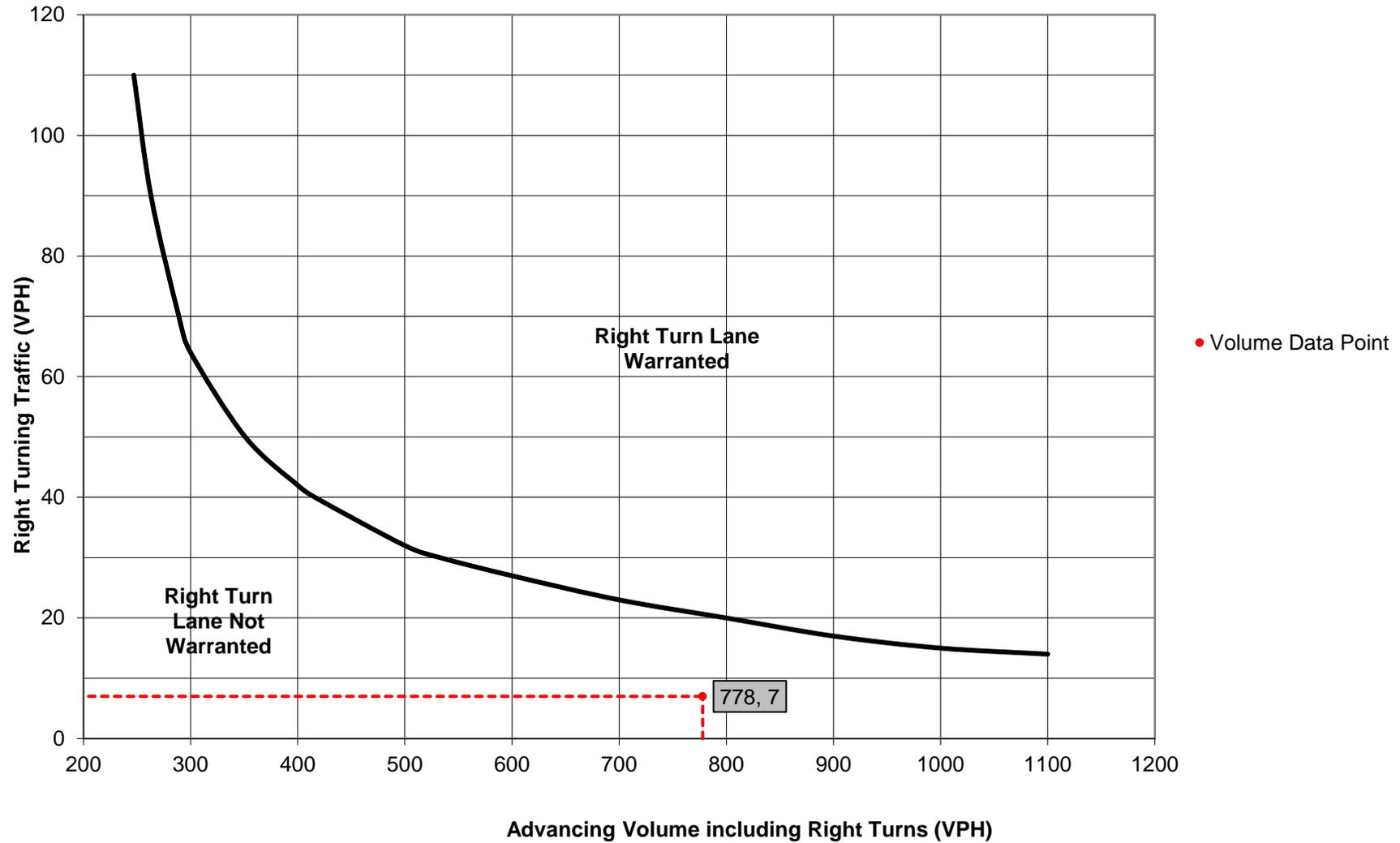
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/>	Applicable Warrant Figure: <input type="text" value="Figure 10"/> Warrant Met?: <input type="text" value="No"/>

TURN LANE LENGTH CALCULATIONS

Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="7"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="60"/>	Average # of Vehicles/Cycle: <input type="text" value="N/A"/>																																								
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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3" style="text-align: left;">Type of Traffic Control</th> <th colspan="6" style="text-align: center;">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2" style="text-align: center;">25-35</th> <th colspan="2" style="text-align: center;">40-45</th> <th colspan="2" style="text-align: center;">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </tbody> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
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	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="N/A"/> Feet																																									
Additional Findings: <input type="text" value="N/A"/>																																									
Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text"/>																																									

**Figure 10. Warrant for right turn lanes on two-lane roadways
(45 mph or greater speeds, unsignalized and signalized intersections)**



APPENDIX J

Sight Distance Field Measurements

DRIVEWAY SIGHT DISTANCE MEASUREMENTS

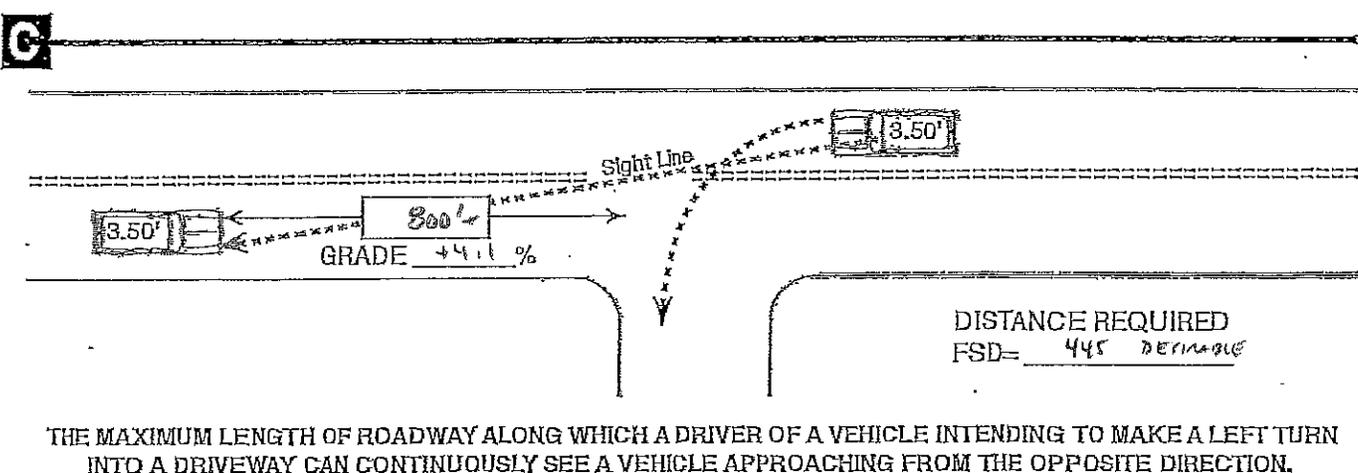
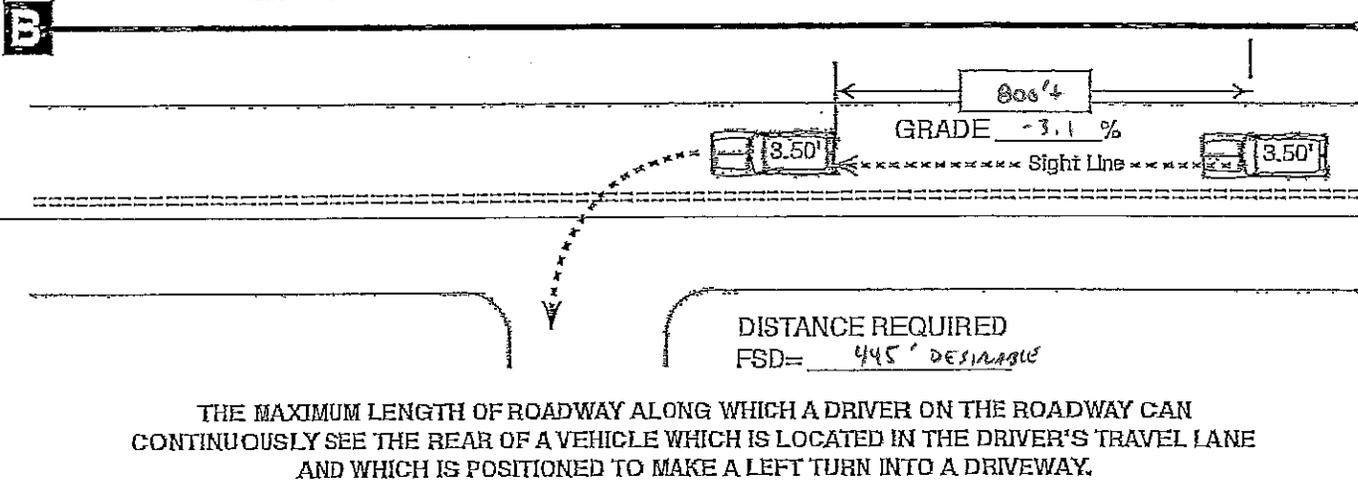
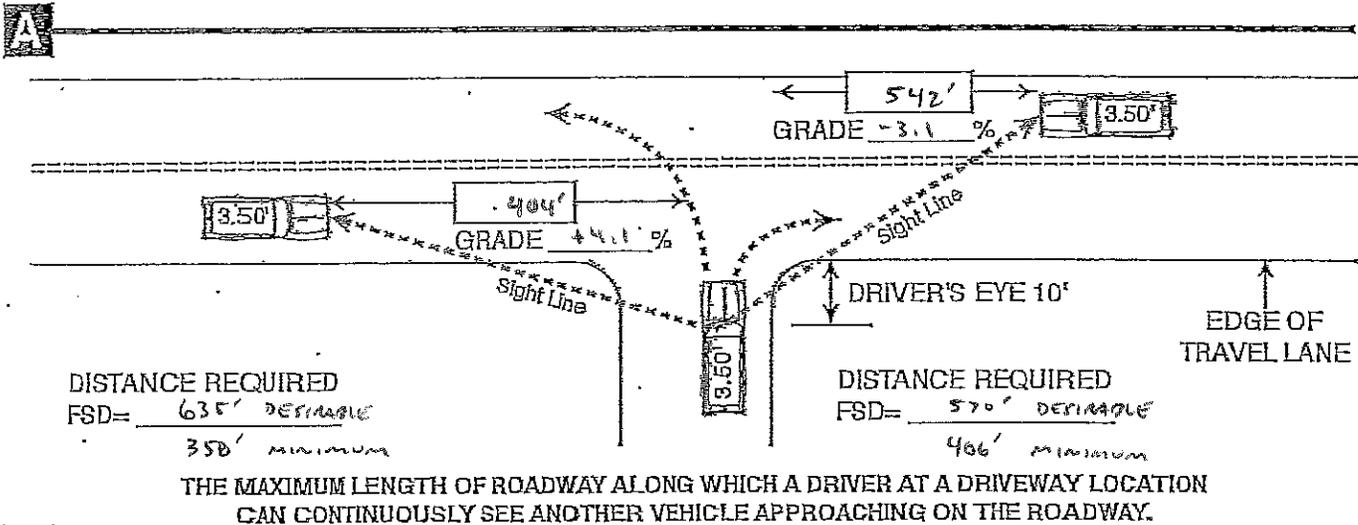
(FOR LOCAL ROADS, USE PENNDOT PUB 70)

APPLICANT _____ APPLICATION NO. _____

S.R. 0113 SEG. 260 OFFSET 1657 LEGAL SPEED LIMIT 45 mph

MEASURED BY NOB DATE 11/10/15

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



APPENDIX K

**2019 Build-out Year
Volume Spreadsheets**

INTERSECTION VOLUME SUMMARY **Township Line Rd/Kimberton Rd (S.R. 0113)**

Eland Downe Residential Subdivision
I:\eng\815697\Traffic\2017-07 TIS\SDS\SDS-2019.xls]
Build-Out Year (2019)

Weekday 7-9 AM

Traffic Component	EASTBOUND			NORTHBOUND			WESTBOUND			SOUTHBOUND		
	Kimberton Rd (S.R. 0113)			Township Line Rd			Kimberton Rd (S.R. 0113)			Township Line Rd		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	43	422	9	5	102	54	75	376	20	11	310	99
Seasonal Adjustment Factor ###	43	422	9	5	102	54	75	376	20	11	310	99
Balancing Adjustments	0	42	0	0	0	8	3	14	1	2	0	0
ADJUSTED EXISTING TRAFFIC	43	464	9	5	102	62	78	390	21	13	310	99
Background Growth 7.02 %	3	33	1	0	7	4	5	30	1	1	22	7
EXISTING W/ BACKGROUND	46	497	10	5	109	66	83	420	22	14	332	106
TOTAL "OTHER" DEVELOPMENTS	0	5	0	0	0	1	1	2	0	0	0	0
Vacant Retail	0	5	0	0	0	1	1	2	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	46	502	10	5	109	67	84	422	22	14	332	106
TOTAL "NEW" SITE TRAFFIC	0	-7	0	0	0	0	5	24	0	-1	0	0
Residential Apartments	0	9	0	0	0	2	6	32	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	0	-16	0	0	0	-2	-1	-8	0	-1	0	0
PM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	46	495	10	5	109	67	89	446	22	13	332	106
"New" Site Traffic % of Total 0.0%	0.0	-1.4	0.0	0.0	0.0	0.0	5.6	5.4	0.0	-7.7	0.0	0.0

INTERSECTION VOLUME SUMMARY Dawson Dr West/Kimberton Rd (S.R. 0113)

Eland Downe Residential Subdivision
I:\eng\815697\Traffic\2017-07 TIS\SDS\SDS-2019.xls]
Build-Out Year (2019)

Weekday 7-9 AM

Traffic Component	EASTBOUND Kimberton Rd (S.R. 0113)			NORTHBOUND Dawson Dr West			WESTBOUND Kimberton Rd (S.R. 0113)			SOUTHBOUND Dawson Dr West		
	L	S	R	L	S	R	L	S	R	L	S	R
	EXISTING TRAFFIC	0	518	0	0	0	0	0	487	0	0	0
Seasonal Adjustment Factor ###	0	518	0	0	0	0	0	487	0	0	0	2
Balancing Adjustments	0	21	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	539	0	0	0	0	0	487	0	0	0	2
Background Growth 7.02 %	0	38	0	0	0	0	0	36	0	0	0	0
EXISTING W/ BACKGROUND	0	577	0	0	0	0	0	523	0	0	0	2
TOTAL "OTHER" DEVELOPMENTS	0	6	0	0	0	0	0	2	0	0	0	1
Vacant Retail	0	6	0	0	0	0	0	2	0	0	0	1
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	583	0	0	0	0	0	525	0	0	0	3
TOTAL "NEW" SITE TRAFFIC	0	-8	0	0	0	0	0	26	0	0	0	3
Residential Apartments	0	11	0	0	0	0	0	34	0	0	0	4
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	0	-19	0	0	0	0	0	-8	0	0	0	-1
PM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	575	0	0	0	0	0	551	0	0	0	6
"New" Site Traffic % of Total 0.0%	0.0	-1.4	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	50.0

INTERSECTION VOLUME SUMMARY
Main Access/Ross Ln/Kimberton Rd (S.R. 0113)

Eland Downe Residential Subdivision
 I:\eng\815697\Traffic\2017-07 TIS\SDS\SDS-2019.xls]
 Build-Out Year (2019)

Weekday 7-9 AM

Traffic Component	EASTBOUND Kimberton Rd (S.R. 0113)			NORTHBOUND Main Access/Ross Ln			WESTBOUND Kimberton Rd (S.R. 0113)			SOUTHBOUND Main Access/Ross Ln		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	13	426	8	3	2	32	59	366	5	2	0	6
Seasonal Adjustment Factor ####	13	426	8	3	2	32	59	366	5	2	0	6
Balancing Adjustments	0	92	0	0	0	0	0	112	0	0	0	0
ADJUSTED EXISTING TRAFFIC	13	518	8	3	2	32	59	478	5	2	0	6
Background Growth 7.02 %	0	38	0	0	0	0	0	36	0	0	0	0
EXISTING W/ BACKGROUND	13	556	8	3	2	32	59	514	5	2	0	6
TOTAL "OTHER" DEVELOPMENTS	6	0	0	0	0	0	0	0	3	1	0	2
Vacant Retail	6	0	0	0	0	0	0	0	3	1	0	2
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	19	556	8	3	2	32	59	514	8	3	0	8
TOTAL "NEW" SITE TRAFFIC	-8	0	0	0	-2	0	0	0	0	33	0	26
Residential Apartments	11	0	0	0	0	0	0	0	8	36	0	34
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	-19	0	0	0	-2	0	0	0	-8	-3	0	-8
PM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	11	556	8	3	0	32	59	514	8	36	0	34
"New" Site Traffic % of Total 0.0%	-72.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7	0.0	76.5

INTERSECTION VOLUME SUMMARY
Dawson Dr East/Kimberton Rd (S.R. 0113)

Eland Downe Residential Subdivision
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 Build-Out Year (2019)

Weekday 7-9 AM

Traffic Component	EASTBOUND Kimberton Rd (S.R. 0113)			NORTHBOUND Dawson Dr East			WESTBOUND Kimberton Rd (S.R. 0113)			SOUTHBOUND Dawson Dr East		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	552	0	0	0	0	0	508	5	1	0	0
Seasonal Adjustment Factor ###	0	552	0	0	0	0	0	508	5	1	0	0
Balancing Adjustments	0	0	0	0	0	0	0	34	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	552	0	0	0	0	0	542	5	1	0	0
Background Growth 7.02 %	0	38	0	0	0	0	0	36	0	0	0	0
EXISTING W/ BACKGROUND	0	590	0	0	0	0	0	578	5	1	0	0
TOTAL "OTHER" DEVELOPMENTS	0	1	0	0	0	0	0	3	2	1	0	0
Vacant Retail	0	1	0	0	0	0	0	3	2	1	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	591	0	0	0	0	0	581	7	2	0	0
TOTAL "NEW" SITE TRAFFIC	0	33	0	0	0	0	0	0	-3	3	0	0
Residential Apartments	0	36	0	0	0	0	0	8	1	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	0	-3	0	0	0	0	0	-8	-4	-1	0	0
PM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	624	0	0	0	0	0	581	4	5	0	0
"New" Site Traffic % of Total 0.0%	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	-75.0	60.0	0.0	0.0

INTERSECTION VOLUME SUMMARY
S.C./Kimberton Rd (S.R. 0113)/Nutt Rd (S.R. 0023)/Schuylkill Rd (S.R. 0023)

Eland Downe Residential Subdivision
 I:\eng\815697\Traffic\2017-07 TIS\SDS\SDS-2019.xls]
 Build-Out Year (2019)

Weekday 7-9 AM

Traffic Component	EASTBOUND Schuylkill Road			NORTHBOUND Kimberton Road			WESTBOUND Nutt Road			SOUTHBOUND Shopping Center		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	16	667	76	84	47	377	307	295	31	49	41	20
Seasonal Adjustment Factor ###	16	667	76	84	47	377	307	295	31	49	41	20
Balancing Adjustments	0	0	14	0	0	0	54	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	16	667	90	84	47	377	361	295	31	49	41	20
Background Growth 7.02 %	0	47	6	6	0	26	25	21	0	0	0	0
EXISTING W/ BACKGROUND	16	714	96	90	47	403	386	316	31	49	41	20
TOTAL "OTHER" DEVELOPMENTS	0	0	1	1	0	1	4	0	0	0	0	0
Vacant Retail	0	0	1	1	0	1	4	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	16	714	97	91	47	404	390	316	31	49	41	20
TOTAL "NEW" SITE TRAFFIC	0	0	-1	9	2	25	-6	0	0	0	1	0
Residential Apartments	0	0	2	10	2	28	6	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	0	0	-3	-1	0	-3	-12	0	0	0	0	0
PM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	16	714	96	100	49	429	384	316	31	49	42	20
"New" Site Traffic % of Total 0.0%	0.0	0.0	-1.0	9.0	4.1	5.8	-1.6	0.0	0.0	0.0	2.4	0.0

INTERSECTION VOLUME SUMMARY Township Line Rd/Kimberton Rd (S.R. 0113)

Eland Downe Residential Subdivision
I:\eng\815697\Traffic\2017-07 TIS\SDS\SDS-2019.xls]
Build-Out Year (2019)

Weekday 4-6 PM

Traffic Component	EASTBOUND Kimberton Rd (S.R. 0113)			NORTHBOUND Township Line Rd			WESTBOUND Kimberton Rd (S.R. 0113)			SOUTHBOUND Township Line Rd		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	80	521	6	5	247	118	73	558	47	21	157	130
Seasonal Adjustment Factor 1.000	80	521	6	5	247	118	73	558	47	21	157	130
Balancing Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	80	521	6	5	247	118	73	558	47	21	157	130
Background Growth 7.02 %	6	39	0	0	17	9	5	39	3	1	11	9
EXISTING W/ BACKGROUND	86	560	6	5	264	127	78	597	50	22	168	139
TOTAL "OTHER" DEVELOPMENTS	0	10	0	0	0	2	3	15	1	1	0	0
Vacant Retail	0	10	0	0	0	2	3	15	1	1	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	86	570	6	5	264	129	81	612	51	23	168	139
TOTAL "NEW" SITE TRAFFIC	0	1	0	0	0	-1	-4	-32	-4	0	0	0
Residential Apartments	0	34	0	0	0	6	3	18	0	1	0	0
AM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
PM Removal of Existing Retail	0	-33	0	0	0	-7	-7	-50	-4	-1	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	86	571	6	5	264	128	77	580	47	23	168	139
"New" Site Traffic % of Total 0.0%	0.0	0.2	0.0	0.0	0.0	-0.8	-5.2	-5.5	-8.5	0.0	0.0	0.0

INTERSECTION VOLUME SUMMARY Dawson Dr West/Kimberton Rd (S.R. 0113)

Eland Downe Residential Subdivision
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 Build-Out Year (2019)

Weekday 4-6 PM

Traffic Component	EASTBOUND Kimberton Rd (S.R. 0113)			NORTHBOUND Dawson Dr West			WESTBOUND Kimberton Rd (S.R. 0113)			SOUTHBOUND Dawson Dr West		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	0	640	0	0	0	0	0	539	0	0	0	12
Seasonal Adjustment Factor 1.000	0	640	0	0	0	0	0	539	0	0	0	12
Balancing Adjustments	0	20	0	0	0	0	0	127	0	0	0	0
ADJUSTED EXISTING TRAFFIC	0	660	0	0	0	0	0	666	0	0	0	12
Background Growth 7.02 %	0	49	0	0	0	0	0	47	0	0	0	0
EXISTING W/ BACKGROUND	0	709	0	0	0	0	0	713	0	0	0	12
TOTAL "OTHER" DEVELOPMENTS	0	13	0	0	0	0	0	14	0	0	0	5
Vacant Retail	0	13	0	0	0	0	0	14	0	0	0	5
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	0	722	0	0	0	0	0	727	0	0	0	17
TOTAL "NEW" SITE TRAFFIC	0	0	0	0	0	0	0	-26	0	0	0	-14
Residential Apartments	0	41	0	0	0	0	0	19	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
PM Removal of Existing Retail	0	-41	0	0	0	0	0	-45	0	0	0	-16
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	0	722	0	0	0	0	0	701	0	0	0	3
"New" Site Traffic % of Total 0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-3.7	0.0	0.0	0.0	-466.7

INTERSECTION VOLUME SUMMARY
Main Access/Ross Ln/Kimberton Rd (S.R. 0113)

Eland Downe Residential Subdivision
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Build-Out Year (2019)

Weekday 4-6 PM

Traffic Component	EASTBOUND Kimberton Rd (S.R. 0113)			NORTHBOUND Main Access/Ross Ln			WESTBOUND Kimberton Rd (S.R. 0113)			SOUTHBOUND Main Access/Ross Ln		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	26	605	12	15	2	114	64	514	12	16	1	27
Seasonal Adjustment Factor 1.000	26	605	12	15	2	114	64	514	12	16	1	27
Balancing Adjustments	0	17	0	0	0	0	0	110	0	0	0	0
ADJUSTED EXISTING TRAFFIC	26	622	12	15	2	114	64	624	12	16	1	27
Background Growth 7.02 %	0	49	0	0	0	0	0	47	0	0	0	0
EXISTING W/ BACKGROUND	26	671	12	15	2	114	64	671	12	16	1	27
TOTAL "OTHER" DEVELOPMENTS	12	1	0	0	0	0	0	1	5	8	0	13
Vacant Retail	12	1	0	0	0	0	0	1	5	8	0	13
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	38	672	12	15	2	114	64	672	17	24	1	40
TOTAL "NEW" SITE TRAFFIC	3	-3	0	0	-2	0	0	-5	19	-4	-1	-21
Residential Apartments	41	0	0	0	0	0	0	0	36	20	0	19
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
PM Removal of Existing Retail	-38	-3	0	0	-2	0	0	-5	-17	-24	-1	-40
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	41	669	12	15	0	114	64	667	36	20	0	19
"New" Site Traffic % of Total 0.0%	7.3	-0.4	0.0	0.0	0.0	0.0	0.0	-0.7	52.8	-20.0	0.0	-110.5

INTERSECTION VOLUME SUMMARY Dawson Dr East/Kimberton Rd (S.R. 0113)

Eland Downe Residential Subdivision
I:\eng\815697\Traffic\2017-07 TIS\SDS\SDS-2019.xls]
Build-Out Year (2019)

Weekday 4-6 PM

Traffic Component	EASTBOUND Kimberton Rd (S.R. 0113)			NORTHBOUND Dawson Dr East			WESTBOUND Kimberton Rd (S.R. 0113)			SOUTHBOUND Dawson Dr East		
	L	S	R	L	S	R	L	S	R	L	S	R
	EXISTING TRAFFIC	3	746	0	0	0	0	0	564	8	17	0
Seasonal Adjustment Factor 1.000	3	746	0	0	0	0	0	564	8	17	0	4
Balancing Adjustments	0	3	0	0	0	0	0	132	0	0	0	0
ADJUSTED EXISTING TRAFFIC	3	749	0	0	0	0	0	696	8	17	0	4
Background Growth 7.02 %	0	49	0	0	0	0	0	47	0	0	0	0
EXISTING W/ BACKGROUND	3	798	0	0	0	0	0	743	8	17	0	4
TOTAL "OTHER" DEVELOPMENTS	1	8	0	0	0	0	0	5	4	6	0	1
Vacant Retail	1	8	0	0	0	0	0	5	4	6	0	1
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	4	806	0	0	0	0	0	748	12	23	0	5
TOTAL "NEW" SITE TRAFFIC	-3	-4	0	0	0	0	0	19	-5	-19	0	-5
Residential Apartments	0	20	0	0	0	0	0	36	4	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
PM Removal of Existing Retail	-3	-24	0	0	0	0	0	-17	-9	-21	0	-5
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	1	802	0	0	0	0	0	767	7	4	0	0
"New" Site Traffic % of Total 0.0%	-300.0	-0.5	0.0	0.0	0.0	0.0	0.0	2.5	-71.4	-475.0	0.0	0.0

INTERSECTION VOLUME SUMMARY
S.C./Kimberton Rd (S.R. 0113)/Nutt Rd (S.R. 0023)/Schuylkill Rd (S.R. 0023)

Eland Downe Residential Subdivision
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 Build-Out Year (2019)

Weekday 4-6 PM

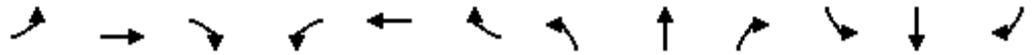
Traffic Component	EASTBOUND Schuylkill Road			NORTHBOUND Kimberton Road			WESTBOUND Nutt Road			SOUTHBOUND Shopping Center		
	L	S	R	L	S	R	L	S	R	L	S	R
EXISTING TRAFFIC	21	353	72	148	118	270	367	453	52	121	114	22
Seasonal Adjustment Factor 1.000	21	353	72	148	118	270	367	453	52	121	114	22
Balancing Adjustments	0	0	12	54	0	99	69	0	0	0	0	0
ADJUSTED EXISTING TRAFFIC	21	353	84	202	118	369	436	453	52	121	114	22
Background Growth 7.02 %	0	25	6	14	0	26	31	32	0	0	0	0
EXISTING W/ BACKGROUND	21	378	90	216	118	395	467	485	52	121	114	22
TOTAL "OTHER" DEVELOPMENTS	0	0	2	3	0	11	7	0	0	0	0	0
Vacant Retail	0	0	2	3	0	11	7	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/O PROJECT	21	378	92	219	118	406	474	485	52	121	114	22
TOTAL "NEW" SITE TRAFFIC	0	0	7	-11	1	-13	5	0	0	0	2	0
Residential Apartments	0	0	10	5	1	16	28	0	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
AM Removal of Existing Retail	0	0	0	0	0	0	0	0	0	0	0	0
PM Removal of Existing Retail	0	0	-3	-16	0	-29	-23	0	0	0	0	0
Pass-By Traffic	0	0	0	0	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0	0	0	0	0
FUTURE TRAFFIC W/ PROJECT	21	378	99	208	119	393	479	485	52	121	116	22
"New" Site Traffic % of Total 0.0%	0.0	0.0	7.1	-5.3	0.8	-3.3	1.0	0.0	0.0	0.0	1.7	0.0

APPENDIX L

2019 Future without Development Capacity/Level-of-Service Analysis Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	46	502	10	84	422	22	5	109	67	14	332	106
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	12	12	12	16	12	12	12	14
Grade (%)		-3%			-2%			-2%			4%	
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.994			0.950				0.850
Flt Protected		0.996			0.992			0.999			0.998	
Satd. Flow (prot)	0	1808	0	0	1662	0	0	1779	0	0	1705	1538
Flt Permitted		0.919			0.831			0.989			0.984	
Satd. Flow (perm)	0	1668	0	0	1392	0	0	1762	0	0	1681	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			3			30				78
Link Speed (mph)		45			45			35				35
Link Distance (ft)		498			191			356				352
Travel Time (s)		7.5			2.9			6.9				6.9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	11%	23%	5%	5%	40%	3%	19%	9%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	540	11	90	454	24	5	117	72	15	357	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	600	0	0	568	0	0	194	0	0	372	114
Number of Detectors	1	2		1	2		1	4		1	1	1
Detector Template	Left			Left			Left			Left	Thru	Right
Leading Detector (ft)	30	353		30	353		30	73		30	35	30
Trailing Detector (ft)	-10	0		-10	0		-10	-4		-10	-5	-10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		4
Detector Phase	2	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	27.0	27.0		27.0	27.0		16.0	16.0		16.0	16.0	16.0
Total Split (s)	66.0	66.0		66.0	66.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	59.0	59.0		59.0	59.0		38.0	38.0		38.0	38.0	38.0
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		6.0			6.0			5.0			5.0	5.0

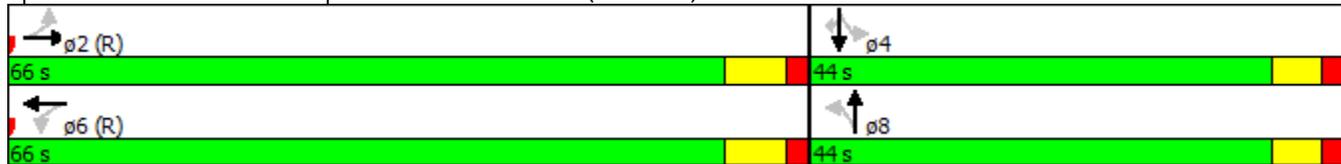


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Township Line Rd & Kimberton Rd (S.R. 0113)



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	502	10	84	422	22	5	109	67	14	332	106
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1827	1830	1827	1818	1686	1818	1818	1721	1818	1764	1709	1764
Adj Flow Rate, veh/h	49	540	11	90	454	22	5	117	47	15	357	75
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	4	4	4	5	5	5	3	3	3	3	3	4
Cap, veh/h	97	1027	20	160	774	36	36	263	102	42	431	394
Arrive On Green	0.63	0.64	0.63	0.63	0.64	0.63	0.25	0.26	0.25	0.25	0.26	0.26
Sat Flow, veh/h	97	1611	32	192	1214	57	8	1002	389	31	1643	1499
Grp Volume(v), veh/h	600	0	0	566	0	0	169	0	0	372	0	75
Grp Sat Flow(s),veh/h/ln	1741	0	0	1463	0	0	1398	0	0	1673	0	1499
Q Serve(g_s), s	0.0	0.0	0.0	4.2	0.0	0.0	0.5	0.0	0.0	0.0	0.0	4.3
Cycle Q Clear(g_c), s	19.7	0.0	0.0	24.0	0.0	0.0	23.9	0.0	0.0	23.4	0.0	4.3
Prop In Lane	0.08		0.02	0.16		0.04	0.03		0.28	0.04		1.00
Lane Grp Cap(c), veh/h	1129	0	0	957	0	0	388	0	0	458	0	394
V/C Ratio(X)	0.53	0.00	0.00	0.59	0.00	0.00	0.44	0.00	0.00	0.81	0.00	0.19
Avail Cap(c_a), veh/h	1129	0	0	957	0	0	535	0	0	613	0	532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	0.0	11.3	0.0	0.0	33.6	0.0	0.0	38.4	0.0	31.5
Incr Delay (d2), s/veh	1.8	0.0	0.0	2.7	0.0	0.0	0.8	0.0	0.0	6.1	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	16.0	0.0	0.0	16.3	0.0	0.0	7.8	0.0	0.0	17.3	0.0	3.2
LnGrp Delay(d),s/veh	12.6	0.0	0.0	14.0	0.0	0.0	34.4	0.0	0.0	44.5	0.0	31.7
LnGrp LOS	B			B			C			D		C
Approach Vol, veh/h		600			566			169				447
Approach Delay, s/veh		12.6			14.0			34.4				42.4
Approach LOS		B			B			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		76.1		33.9		76.1		33.9				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		59.0		38.0		59.0		38.0				
Max Q Clear Time (g_c+I1), s		21.7		25.4		26.0		25.9				
Green Ext Time (p_c), s		27.0		2.0		24.6		2.0				
Intersection Summary												
HCM 2010 Ctrl Delay				22.6								
HCM 2010 LOS				C								



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↔			↗
Volume (vph)	0	583	525	0	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	10
Grade (%)		-3%	2%		1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1651	1650	0	0	1446
Flt Permitted						
Satd. Flow (perm)	0	1651	1650	0	0	1446
Link Speed (mph)		45	45		25	
Link Distance (ft)		191	463		154	
Travel Time (s)		2.9	7.0		4.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	7%	8%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	627	565	0	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	627	565	0	0	3
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

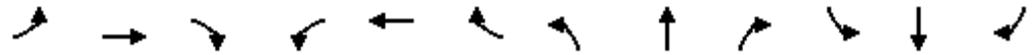
Int Delay, s/veh	0
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Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	583	525	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-3	2	-	1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	7	8	0	0	0
Mvmt Flow	0	627	565	0	0	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	565	0	565
Stage 1	-	-	565
Stage 2	-	-	627
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	766	-	766
Stage 1	-	-	625
Stage 2	-	-	581
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	766	-	766
Mov Cap-2 Maneuver	-	-	213
Stage 1	-	-	625
Stage 2	-	-	581

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	766	-	-	-	546
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	0	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	556	8	59	514	8	3	2	32	3	0	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	11	13	12	9	12	16	12	11	16	12
Grade (%)		-3%			4%			-4%				1%
Storage Length (ft)	125		100	160		100	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	60			60			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.882				0.899
Flt Protected	0.950			0.950				0.996				0.988
Satd. Flow (prot)	1678	1781	1501	1589	1618	1349	0	1781	0	0	1803	0
Flt Permitted	0.950			0.950				0.996				0.988
Satd. Flow (perm)	1678	1781	1501	1589	1618	1349	0	1781	0	0	1803	0
Link Speed (mph)		45			45			25				25
Link Distance (ft)		441			356			228				111
Travel Time (s)		6.7			5.4			6.2				3.0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	6%	0%	9%	9%	0%	0%	0%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	21	611	9	65	565	9	3	2	35	3	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	611	9	65	565	9	0	40	0	0	12	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

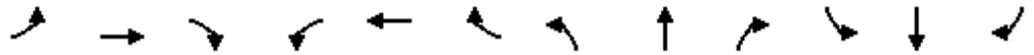
Intersection													
Int Delay, s/veh	1.2												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	556	8	59	514	8	3	2	32	3	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	125	-	100	160	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	-3	-	-	4	-	-	-4	-	-	1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	6	0	9	9	0	0	0	3	0	0	0
Mvmt Flow	21	611	9	65	565	9	3	2	35	3	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	565	0	0	611	0	0	1352	1348	611	1366	1348	565
Stage 1	-	-	-	-	-	-	653	653	-	695	695	-
Stage 2	-	-	-	-	-	-	699	695	-	671	653	-
Critical Hdwy	4.3	-	-	4.4	-	-	6.3	5.7	5.83	7.3	6.7	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	5.3	4.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.3	4.7	-	6.3	5.7	-
Follow-up Hdwy	3	-	-	3.1	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	766	-	-	708	-	-	188	205	555	126	141	546
Stage 1	-	-	-	-	-	-	595	540	-	468	430	-
Stage 2	-	-	-	-	-	-	566	521	-	484	450	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	766	-	-	708	-	-	168	181	555	107	125	546
Mov Cap-2 Maneuver	-	-	-	-	-	-	317	304	-	236	231	-
Stage 1	-	-	-	-	-	-	579	525	-	455	391	-
Stage 2	-	-	-	-	-	-	506	473	-	439	438	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.1	12.8	14.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	502	766	-	-	708	-	-	402
HCM Lane V/C Ratio	0.081	0.027	-	-	0.092	-	-	0.03
HCM Control Delay (s)	12.8	9.8	-	-	10.6	-	-	14.2
HCM Lane LOS	B	A	-	-	B	-	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.3	-	-	0.1



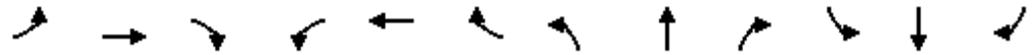
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	0	591	0	0	581	7	0	0	0	2	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	11	12	12	16	12	12	12	12
Grade (%)		-4%			-1%			-2%				-2%
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.998											
Flt Protected	0.950											
Satd. Flow (prot)	0	1790	0	0	1659	0	0	2060	0	0	1727	0
Flt Permitted	0.950											
Satd. Flow (perm)	0	1790	0	0	1659	0	0	2060	0	0	1727	0
Link Speed (mph)	45				45				25		25	
Link Distance (ft)	199				1377				142		122	
Travel Time (s)	3.0				20.9				3.9		3.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	6%	0%	0%	5%	20%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)	0%				0%				0%		0%	
Adj. Flow (vph)	0	635	0	0	625	8	0	0	0	2	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	635	0	0	633	0	0	0	0	0	2	0
Sign Control	Free				Free				Stop		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	591	0	0	581	7	0	0	0	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	-1	-	-	-2	-	-	-2	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	6	0	0	5	20	0	0	0	0	0	0
Mvmt Flow	0	635	0	0	625	8	0	0	0	2	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	632	0	0	635	0	0	1263	1267	635	1263	1263	628
Stage 1	-	-	-	-	-	-	635	635	-	628	628	-
Stage 2	-	-	-	-	-	-	628	632	-	635	635	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.7	6.1	6	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	726	-	-	724	-	-	185	196	523	185	197	528
Stage 1	-	-	-	-	-	-	565	510	-	570	514	-
Stage 2	-	-	-	-	-	-	570	512	-	565	510	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	726	-	-	724	-	-	185	196	523	185	197	528
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	196	-	185	197	-
Stage 1	-	-	-	-	-	-	565	510	-	570	514	-
Stage 2	-	-	-	-	-	-	570	512	-	565	510	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			24.7		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	726	-	-	724	-	-	185				
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.012				
HCM Control Delay (s)	0	0	-	-	0	-	-	24.7				
HCM Lane LOS	A	A	-	-	A	-	-	C				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	714	97	390	316	31	91	47	404	49	41	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	12	11	12	10	11	15	11	13	13
Grade (%)		-1%			-2%			-2%				1%
Storage Length (ft)	175		0	110		175	200		300	70		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	85			85			75			60		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.982				0.850			0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1604	3363	0	1645	1674	1500	1507	1723	1634	3191	1711	0
Flt Permitted	0.558			0.211			0.645			0.950		
Satd. Flow (perm)	942	3363	0	365	1674	1500	1023	1723	1634	3191	1711	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				136			362		18	
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		446			440			427			196	
Travel Time (s)		8.7			8.6			6.5			5.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	9%	5%	5%	3%	7%	2%	4%	0%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	17	760	103	415	336	33	97	50	430	52	44	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	863	0	415	336	33	97	50	430	52	65	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	35	35		30	30	30	30	30	5	30	30	
Trailing Detector (ft)	-5	-5		-10	-10	-10	-10	-10	0	-10	-10	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8			
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	11.0	11.0	9.0	11.0	
Total Split (s)	13.0	49.0		29.0	65.0	65.0	13.0	29.0	29.0	13.0	29.0	
Total Split (%)	10.8%	40.8%		24.2%	54.2%	54.2%	10.8%	24.2%	24.2%	10.8%	24.2%	
Maximum Green (s)	7.0	43.0		23.0	59.0	59.0	7.0	23.0	23.0	7.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	

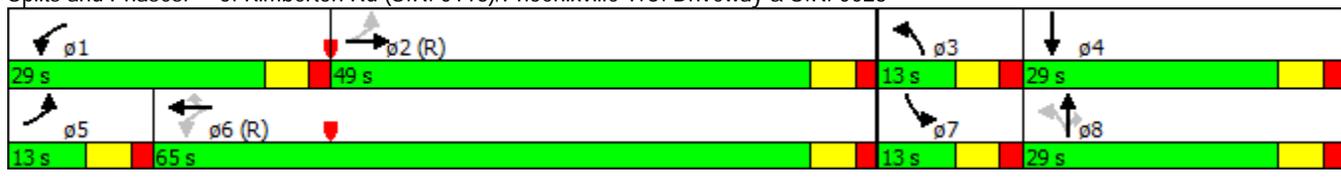


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	63.9	56.9		85.3	80.2	80.2	20.8	14.4	14.4	7.7	14.1	
Actuated g/C Ratio	0.53	0.47		0.71	0.67	0.67	0.17	0.12	0.12	0.06	0.12	
v/c Ratio	0.03	0.54		0.82	0.30	0.03	0.46	0.24	0.84	0.25	0.30	
Control Delay	9.9	25.7		28.7	12.4	0.1	44.9	47.8	24.2	56.5	37.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.9	25.7		28.7	12.4	0.1	44.9	47.8	24.2	56.5	37.3	
LOS	A	C		C	B	A	D	D	C	E	D	
Approach Delay		25.4			20.5			29.7			45.8	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)	4	245		143	87	0	64	36	50	20	34	
Queue Length 95th (ft)	14	366		#361	231	0	100	69	160	41	71	
Internal Link Dist (ft)		366			360			347			116	
Turn Bay Length (ft)	175			110		175	200		300	70		
Base Capacity (vph)	553	1600		515	1118	1047	209	344	616	212	356	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.54		0.81	0.30	0.03	0.46	0.15	0.70	0.25	0.18	

Intersection Summary

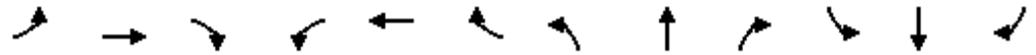
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 67 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 25.8 Intersection LOS: C
 Intersection Capacity Utilization 71.4% 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: 5: Kimberton Rd (S.R. 0113)/Phoenixville T.C. Driveway & S.R. 0023

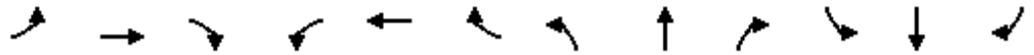


McMahon Associates, Inc.
 1: Township Line Rd & Kimberton Rd (S.R. 0113)

2019 without Development
 Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	86	570	6	81	612	51	5	264	129	23	168	139
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	12	12	12	16	12	12	12	14
Grade (%)		-3%			-2%			-2%				4%
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.991			0.956				0.850
Flt Protected		0.994			0.995			0.999			0.994	
Satd. Flow (prot)	0	1859	0	0	1756	0	0	1968	0	0	1738	1553
Flt Permitted		0.812			0.858			0.996			0.817	
Satd. Flow (perm)	0	1518	0	0	1514	0	0	1962	0	0	1429	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			5			22				148
Link Speed (mph)		45			45			35				35
Link Distance (ft)		498			191			356				352
Travel Time (s)		7.5			2.9			6.9				6.9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	4%	2%	0%	0%	0%	0%	0%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	91	606	6	86	651	54	5	281	137	24	179	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	703	0	0	791	0	0	423	0	0	203	148
Number of Detectors	1	2		1	2		1	4		1	1	1
Detector Template	Left			Left			Left			Left	Thru	Right
Leading Detector (ft)	30	353		30	353		30	73		30	35	30
Trailing Detector (ft)	-10	0		-10	0		-10	-4		-10	-5	-10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		4
Detector Phase	2	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	27.0	27.0		27.0	27.0		16.0	16.0		16.0	16.0	16.0
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	48.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	65.0	65.0		65.0	65.0		42.0	42.0		42.0	42.0	42.0
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		6.0			6.0			5.0			5.0	5.0

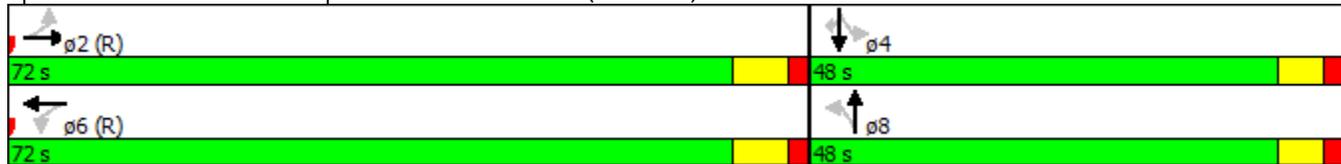


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

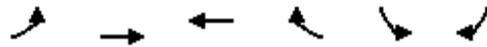
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Township Line Rd & Kimberton Rd (S.R. 0113)



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	86	570	6	81	612	51	5	264	129	23	168	139
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1827	1884	1827	1818	1781	1818	1818	1891	1818	1764	1749	1781
Adj Flow Rate, veh/h	91	606	6	86	651	49	5	281	83	24	179	136
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	1	1	3
Cap, veh/h	119	758	7	111	767	56	32	341	99	58	356	369
Arrive On Green	0.66	0.66	0.66	0.66	0.66	0.66	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	129	1140	11	117	1154	84	8	1398	408	102	1463	1514
Grp Volume(v), veh/h	703	0	0	786	0	0	369	0	0	203	0	136
Grp Sat Flow(s),veh/h/ln	1279	0	0	1355	0	0	1814	0	0	1565	0	1514
Q Serve(g_s), s	0.0	0.0	0.0	6.2	0.0	0.0	4.0	0.0	0.0	0.0	0.0	9.0
Cycle Q Clear(g_c), s	56.3	0.0	0.0	62.5	0.0	0.0	23.4	0.0	0.0	12.2	0.0	9.0
Prop In Lane	0.13		0.01	0.11		0.06	0.01		0.22	0.12		1.00
Lane Grp Cap(c), veh/h	874	0	0	923	0	0	457	0	0	402	0	369
V/C Ratio(X)	0.80	0.00	0.00	0.85	0.00	0.00	0.81	0.00	0.00	0.51	0.00	0.37
Avail Cap(c_a), veh/h	874	0	0	923	0	0	664	0	0	586	0	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	0.0	16.0	0.0	0.0	43.3	0.0	0.0	38.9	0.0	37.7
Incr Delay (d2), s/veh	7.8	0.0	0.0	9.8	0.0	0.0	4.7	0.0	0.0	1.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	28.5	0.0	0.0	33.4	0.0	0.0	18.3	0.0	0.0	10.0	0.0	6.8
LnGrp Delay(d),s/veh	21.4	0.0	0.0	25.7	0.0	0.0	48.0	0.0	0.0	39.9	0.0	38.3
LnGrp LOS	C			C			D			D		D
Approach Vol, veh/h		703			786			369				339
Approach Delay, s/veh		21.4			25.7			48.0				39.3
Approach LOS		C			C			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		85.8		34.2		85.8		34.2				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		65.0		42.0		65.0		42.0				
Max Q Clear Time (g_c+l1), s		58.3		14.2		64.5		25.4				
Green Ext Time (p_c), s		6.4		3.2		0.5		2.9				
Intersection Summary												
HCM 2010 Ctrl Delay				30.2								
HCM 2010 LOS				C								



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↔			↗
Volume (vph)	0	722	727	0	0	17
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	10
Grade (%)		-3%	2%		1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1749	1764	0	0	1446
Flt Permitted						
Satd. Flow (perm)	0	1749	1764	0	0	1446
Link Speed (mph)		45	45		25	
Link Distance (ft)		191	463		154	
Travel Time (s)		2.9	7.0		4.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	776	782	0	0	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	776	782	0	0	18
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	722	727	0	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-3	2	-	1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	0	776	782	0	0	18

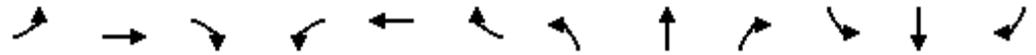
Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	782	0	782
Stage 1	-	-	782
Stage 2	-	-	776
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	642	-	123
Stage 1	-	-	484
Stage 2	-	-	487
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	642	-	123
Mov Cap-2 Maneuver	-	-	123
Stage 1	-	-	484
Stage 2	-	-	487

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	642	-	-	-	406
HCM Lane V/C Ratio	-	-	-	-	0.045
HCM Control Delay (s)	0	-	-	-	14.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

McMahon Associates, Inc.
 3: Ross Lane/Main Access & Kimberton Rd (S.R. 0113)

2019 without Development
 Weekday Afternoon Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	672	12	64	672	17	15	2	114	24	1	40
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	11	13	12	9	12	16	13	11	16	12
Grade (%)		-3%			4%			-4%				1%
Storage Length (ft)	125		100	160		100	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	60			60			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.883				0.917
Flt Protected	0.950			0.950				0.994				0.982
Satd. Flow (prot)	1678	1851	1390	1698	1729	1250	0	1798	0	0	1788	0
Flt Permitted	0.950			0.950				0.994				0.982
Satd. Flow (perm)	1678	1851	1390	1698	1729	1250	0	1798	0	0	1788	0
Link Speed (mph)		45			45			25				25
Link Distance (ft)		441			356			228				111
Travel Time (s)		6.7			5.4			6.2				3.0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	8%	2%	2%	8%	0%	50%	1%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	40	707	13	67	707	18	16	2	120	25	1	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	707	13	67	707	18	0	138	0	0	68	0
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

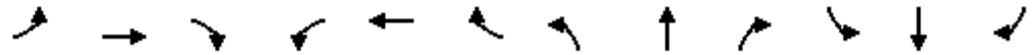
Intersection												
Int Delay, s/veh	3.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	38	672	12	64	672	17	15	2	114	24	1	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	125	-	100	160	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	-3	-	-	4	-	-	-4	-	-	1	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	2	8	2	2	8	0	50	1	6	0	0
Mvmt Flow	40	707	13	67	707	18	16	2	120	25	1	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	707	0	0	707	0	0	1651	1629	707	1690	1629	707
Stage 1	-	-	-	-	-	-	787	787	-	842	842	-
Stage 2	-	-	-	-	-	-	864	842	-	848	787	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.3	6.2	5.81	7.36	6.7	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	5.3	5.2	-	6.36	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.3	5.2	-	6.36	5.7	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.45	3.1	3.1	4	3.1
Pot Cap-1 Maneuver	683	-	-	683	-	-	123	114	495	70	94	450
Stage 1	-	-	-	-	-	-	514	406	-	369	365	-
Stage 2	-	-	-	-	-	-	472	386	-	366	388	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	683	-	-	683	-	-	98	97	495	47	80	450
Mov Cap-2 Maneuver	-	-	-	-	-	-	227	199	-	133	179	-
Stage 1	-	-	-	-	-	-	484	382	-	347	329	-
Stage 2	-	-	-	-	-	-	385	348	-	260	365	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.9	17.4	26.4
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	428	683	-	-	683	-	-	236
HCM Lane V/C Ratio	0.322	0.059	-	-	0.099	-	-	0.29
HCM Control Delay (s)	17.4	10.6	-	-	10.8	-	-	26.4
HCM Lane LOS	C	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	1.4	0.2	-	-	0.3	-	-	1.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	4	806	0	0	748	12	0	0	0	23	0	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	11	12	12	16	12	12	12	12
Grade (%)		-4%			-1%			-2%				-2%
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.998							0.977
Flt Protected												0.960
Satd. Flow (prot)	0	1879	0	0	1728	0	0	2060	0	0	1705	0
Flt Permitted												0.960
Satd. Flow (perm)	0	1879	0	0	1728	0	0	2060	0	0	1705	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		199			1377			142			122	
Travel Time (s)		3.0			20.9			3.9			3.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	4	848	0	0	787	13	0	0	0	24	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	852	0	0	800	0	0	0	0	0	29	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

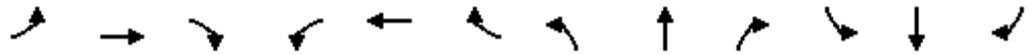
Intersection													
Int Delay, s/veh	0.9												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	806	0	0	748	12	0	0	0	23	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	-1	-	-	-2	-	-	-2	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	4	848	0	0	787	13	0	0	0	24	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	800	0	0	848	0	0	1653	1657	848	1651	1651	794
Stage 1	-	-	-	-	-	-	857	857	-	794	794	-
Stage 2	-	-	-	-	-	-	796	800	-	857	857	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.7	6.1	6	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	632	-	-	608	-	-	102	119	398	102	120	427
Stage 1	-	-	-	-	-	-	432	414	-	467	440	-
Stage 2	-	-	-	-	-	-	466	437	-	432	414	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	632	-	-	608	-	-	100	118	398	101	119	427
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	118	-	101	119	-
Stage 1	-	-	-	-	-	-	427	409	-	461	440	-
Stage 2	-	-	-	-	-	-	460	437	-	427	409	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	45.8
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	632	-	-	608	-	-	117
HCM Lane V/C Ratio	-	0.007	-	-	-	-	-	0.252
HCM Control Delay (s)	0	10.7	0	-	0	-	-	45.8
HCM Lane LOS	A	B	A	-	A	-	-	E
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	378	92	474	485	52	219	118	406	121	114	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	12	11	12	10	11	15	11	13	13
Grade (%)		-1%			-2%			-2%				1%
Storage Length (ft)	175		0	110		175	200		300	70		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	85			85			75			60		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.971				0.850			0.850		0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1604	3299	0	1677	1757	1515	1580	1757	1683	3191	1766	0
Flt Permitted	0.480			0.361			0.559			0.950		
Satd. Flow (perm)	810	3299	0	637	1757	1515	930	1757	1683	3191	1766	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30				164			419		9	
Link Speed (mph)		35			35			45			25	
Link Distance (ft)		446			440			427			196	
Travel Time (s)		8.7			8.6			6.5			5.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	15%	3%	0%	2%	2%	0%	1%	0%	0%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	22	390	95	489	500	54	226	122	419	125	118	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	485	0	489	500	54	226	122	419	125	141	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	35	35		30	30	30	30	30	5	30	30	
Trailing Detector (ft)	-5	-5		-10	-10	-10	-10	-10	0	-10	-10	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8			
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	11.0	11.0	9.0	11.0	
Total Split (s)	13.0	33.0		25.0	45.0	45.0	13.0	29.0	29.0	13.0	29.0	
Total Split (%)	13.0%	33.0%		25.0%	45.0%	45.0%	13.0%	29.0%	29.0%	13.0%	29.0%	
Maximum Green (s)	7.0	27.0		19.0	39.0	39.0	7.0	23.0	23.0	7.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	45.0	37.8		62.8	57.7	57.7	22.2	14.2	14.2	8.0	14.2	
Actuated g/C Ratio	0.45	0.38		0.63	0.58	0.58	0.22	0.14	0.14	0.08	0.14	
v/c Ratio	0.05	0.38		0.80	0.49	0.06	0.88	0.49	0.70	0.49	0.55	
Control Delay	10.1	23.0		23.1	17.1	0.1	65.4	45.5	10.6	51.1	44.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.1	23.0		23.1	17.1	0.1	65.4	45.5	10.6	51.1	44.6	
LOS	B	C		C	B	A	E	D	B	D	D	
Approach Delay		22.4			19.0			32.3			47.7	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	5	108		149	151	0	122	73	0	40	79	
Queue Length 95th (ft)	16	166		#321	354	0	#206	122	82	70	132	
Internal Link Dist (ft)		366			360			347			116	
Turn Bay Length (ft)	175			110		175	200		300	70		
Base Capacity (vph)	434	1266		608	1014	943	258	421	722	255	430	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.38		0.80	0.49	0.06	0.88	0.29	0.58	0.49	0.33	

Intersection Summary

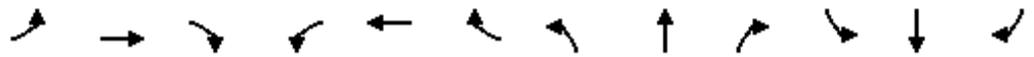
Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 75 (75%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 26.6 Intersection LOS: C
 Intersection Capacity Utilization 79.1% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Kimberton Rd (S.R. 0113)/Phoenixville T.C. Driveway & S.R. 0023

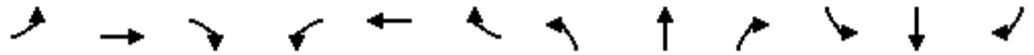


APPENDIX M

**2019 Future with Development
Capacity/Level-of-Service
Analysis Worksheets**



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	46	495	10	89	446	22	5	109	67	13	332	106
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	12	12	12	16	12	12	12	14
Grade (%)		-3%			-2%			-2%			4%	
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.995			0.950				0.850
Flt Protected		0.996			0.992			0.999			0.998	
Satd. Flow (prot)	0	1806	0	0	1663	0	0	1779	0	0	1705	1538
Flt Permitted		0.914			0.828			0.989			0.985	
Satd. Flow (perm)	0	1657	0	0	1388	0	0	1762	0	0	1683	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			3			30				78
Link Speed (mph)		45			45			35				35
Link Distance (ft)		498			191			356				352
Travel Time (s)		7.5			2.9			6.9				6.9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	4%	11%	23%	5%	5%	40%	3%	19%	9%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	49	532	11	96	480	24	5	117	72	14	357	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	592	0	0	600	0	0	194	0	0	371	114
Number of Detectors	1	2		1	2		1	4		1	1	1
Detector Template	Left			Left			Left			Left	Thru	Right
Leading Detector (ft)	30	353		30	353		30	73		30	35	30
Trailing Detector (ft)	-10	0		-10	0		-10	-4		-10	-5	-10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		4
Detector Phase	2	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	27.0	27.0		27.0	27.0		16.0	16.0		16.0	16.0	16.0
Total Split (s)	66.0	66.0		66.0	66.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	59.0	59.0		59.0	59.0		38.0	38.0		38.0	38.0	38.0
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		6.0			6.0			5.0			5.0	5.0

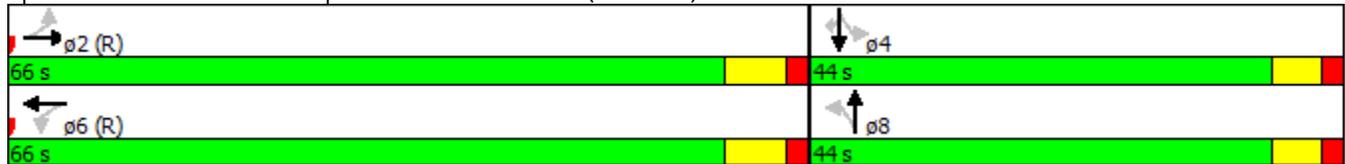


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Township Line Rd & Kimberton Rd (S.R. 0113)



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	495	10	89	446	22	5	109	67	13	332	106
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1827	1831	1827	1818	1685	1818	1818	1721	1818	1764	1709	1764
Adj Flow Rate, veh/h	49	532	11	96	480	22	5	117	47	14	357	75
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	4	4	4	5	5	5	3	3	3	3	3	4
Cap, veh/h	98	1025	21	162	777	34	36	262	102	41	431	392
Arrive On Green	0.63	0.64	0.63	0.63	0.64	0.63	0.25	0.26	0.25	0.25	0.26	0.26
Sat Flow, veh/h	98	1605	32	195	1216	54	8	1002	389	28	1651	1499
Grp Volume(v), veh/h	592	0	0	598	0	0	169	0	0	371	0	75
Grp Sat Flow(s),veh/h/ln	1736	0	0	1465	0	0	1399	0	0	1679	0	1499
Q Serve(g_s), s	0.0	0.0	0.0	7.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	4.3
Cycle Q Clear(g_c), s	19.3	0.0	0.0	26.2	0.0	0.0	23.8	0.0	0.0	23.3	0.0	4.3
Prop In Lane	0.08		0.02	0.16		0.04	0.03		0.28	0.04		1.00
Lane Grp Cap(c), veh/h	1128	0	0	960	0	0	386	0	0	457	0	392
V/C Ratio(X)	0.52	0.00	0.00	0.62	0.00	0.00	0.44	0.00	0.00	0.81	0.00	0.19
Avail Cap(c_a), veh/h	1128	0	0	960	0	0	536	0	0	614	0	532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.7	0.0	0.0	11.7	0.0	0.0	33.7	0.0	0.0	38.5	0.0	31.6
Incr Delay (d2), s/veh	1.7	0.0	0.0	3.0	0.0	0.0	0.8	0.0	0.0	6.0	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	15.8	0.0	0.0	17.7	0.0	0.0	7.8	0.0	0.0	17.3	0.0	3.2
LnGrp Delay(d),s/veh	12.4	0.0	0.0	14.7	0.0	0.0	34.5	0.0	0.0	44.5	0.0	31.8
LnGrp LOS	B			B			C			D		C
Approach Vol, veh/h		592			598			169				446
Approach Delay, s/veh		12.4			14.7			34.5				42.4
Approach LOS		B			B			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		76.3		33.7		76.3		33.7				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		59.0		38.0		59.0		38.0				
Max Q Clear Time (g_c+I1), s		21.3		25.3		28.2		25.8				
Green Ext Time (p_c), s		27.8		2.0		23.7		2.0				
Intersection Summary												
HCM 2010 Ctrl Delay				22.6								
HCM 2010 LOS				C								



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↔			↘
Volume (vph)	0	575	551	0	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	10
Grade (%)		-3%	2%		1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1651	1650	0	0	1446
Flt Permitted						
Satd. Flow (perm)	0	1651	1650	0	0	1446
Link Speed (mph)		45	45		25	
Link Distance (ft)		191	463		154	
Travel Time (s)		2.9	7.0		4.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	7%	8%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	618	592	0	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	618	592	0	0	6
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

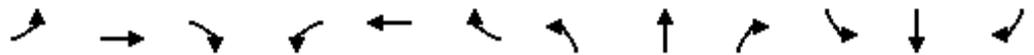
Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	575	551	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-3	2	-	1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	7	8	0	0	0
Mvmt Flow	0	618	592	0	0	6

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	592	0	592
Stage 1	-	-	592
Stage 2	-	-	618
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	750	-	207
Stage 1	-	-	605
Stage 2	-	-	587
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	750	-	207
Mov Cap-2 Maneuver	-	-	207
Stage 1	-	-	605
Stage 2	-	-	587

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	750	-	-	-	526
HCM Lane V/C Ratio	-	-	-	-	0.012
HCM Control Delay (s)	0	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	556	8	59	514	8	3	0	32	36	0	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	11	13	12	9	12	16	12	11	16	12
Grade (%)		-3%			4%			-4%			1%	
Storage Length (ft)	125		100	160		100	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	60			60			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.876				0.935
Flt Protected	0.950			0.950				0.996				0.975
Satd. Flow (prot)	1678	1781	1501	1589	1618	1349	0	1767	0	0	1850	0
Flt Permitted	0.950			0.950				0.996				0.975
Satd. Flow (perm)	1678	1781	1501	1589	1618	1349	0	1767	0	0	1850	0
Link Speed (mph)		45			45			25				25
Link Distance (ft)		441			356			228				111
Travel Time (s)		6.7			5.4			6.2				3.0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	6%	0%	9%	9%	0%	0%	0%	3%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	12	611	9	65	565	9	3	0	35	40	0	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	611	9	65	565	9	0	38	0	0	77	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection

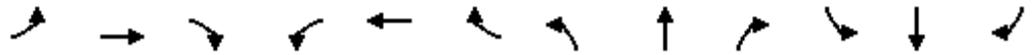
Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	11	556	8	59	514	8	3	0	32	36	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	125	-	100	160	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	-3	-	-	4	-	-	-4	-	-	1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	6	0	9	9	0	0	0	3	0	0	0
Mvmt Flow	12	611	9	65	565	9	3	0	35	40	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	565	0	0	611	0	0	1348	1330	611	1348	1330	565
Stage 1	-	-	-	-	-	-	635	635	-	695	695	-
Stage 2	-	-	-	-	-	-	713	695	-	653	635	-
Critical Hdwy	4.3	-	-	4.4	-	-	6.3	5.7	5.83	7.3	6.7	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	5.3	4.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.3	4.7	-	6.3	5.7	-
Follow-up Hdwy	3	-	-	3.1	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	766	-	-	708	-	-	189	210	555	130	145	546
Stage 1	-	-	-	-	-	-	607	548	-	468	430	-
Stage 2	-	-	-	-	-	-	557	521	-	496	459	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	766	-	-	708	-	-	162	188	555	112	130	546
Mov Cap-2 Maneuver	-	-	-	-	-	-	309	312	-	244	237	-
Stage 1	-	-	-	-	-	-	597	539	-	461	391	-
Stage 2	-	-	-	-	-	-	471	473	-	457	452	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.1	12.5	19
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	520	766	-	-	708	-	-	334
HCM Lane V/C Ratio	0.074	0.016	-	-	0.092	-	-	0.23
HCM Control Delay (s)	12.5	9.8	-	-	10.6	-	-	19
HCM Lane LOS	B	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.3	-	-	0.9



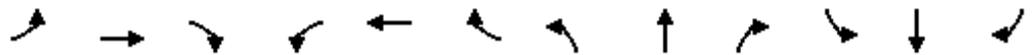
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	0	624	0	0	581	4	0	0	0	5	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	11	12	12	16	12	12	12	12
Grade (%)		-4%			-1%			-2%				-2%
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt	0.999											
Flt Protected	0.950											
Satd. Flow (prot)	0	1790	0	0	1662	0	0	2060	0	0	1727	0
Flt Permitted	0.950											
Satd. Flow (perm)	0	1790	0	0	1662	0	0	2060	0	0	1727	0
Link Speed (mph)	45				45				25		25	
Link Distance (ft)	199				1377				142		122	
Travel Time (s)	3.0				20.9				3.9		3.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	6%	0%	0%	5%	20%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)	0%				0%				0%		0%	
Adj. Flow (vph)	0	671	0	0	625	4	0	0	0	5	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	671	0	0	629	0	0	0	0	0	5	0
Sign Control	Free				Free				Stop		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	624	0	0	581	4	0	0	0	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	-1	-	-	-2	-	-	-2	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	6	0	0	5	20	0	0	0	0	0	0
Mvmt Flow	0	671	0	0	625	4	0	0	0	5	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	629	0	0	671	0	0	1298	1300	671	1298	1298	627
Stage 1	-	-	-	-	-	-	671	671	-	627	627	-
Stage 2	-	-	-	-	-	-	627	629	-	671	671	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.7	6.1	6	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	727	-	-	703	-	-	175	188	500	175	188	529
Stage 1	-	-	-	-	-	-	541	494	-	571	514	-
Stage 2	-	-	-	-	-	-	571	513	-	541	494	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	727	-	-	703	-	-	175	188	500	175	188	529
Mov Cap-2 Maneuver	-	-	-	-	-	-	175	188	-	175	188	-
Stage 1	-	-	-	-	-	-	541	494	-	571	514	-
Stage 2	-	-	-	-	-	-	571	513	-	541	494	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			26.2		
HCM LOS							A			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	727	-	-	703	-	-	175				
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.031				
HCM Control Delay (s)	0	0	-	-	0	-	-	26.2				
HCM Lane LOS	A	A	-	-	A	-	-	D				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1				



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	714	96	384	316	31	100	49	429	49	42	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	12	11	12	10	11	15	11	13	13
Grade (%)		-1%			-2%			-2%				1%
Storage Length (ft)	175		0	110		175	200		300	70		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	85			85			75			60		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.982				0.850			0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1604	3363	0	1645	1674	1500	1507	1723	1634	3191	1711	0
Flt Permitted	0.558			0.207			0.650			0.950		
Satd. Flow (perm)	942	3363	0	358	1674	1500	1031	1723	1634	3191	1711	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				136			362			18
Link Speed (mph)		35			35			45				25
Link Distance (ft)		446			440			427				196
Travel Time (s)		8.7			8.6			6.5				5.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	9%	5%	5%	3%	7%	2%	4%	0%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	17	760	102	409	336	33	106	52	456	52	45	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	862	0	409	336	33	106	52	456	52	66	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	35	35		30	30	30	30	30	5	30	30	
Trailing Detector (ft)	-5	-5		-10	-10	-10	-10	-10	0	-10	-10	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8			
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	11.0	11.0	9.0	11.0	
Total Split (s)	13.0	49.0		29.0	65.0	65.0	13.0	29.0	29.0	13.0	29.0	
Total Split (%)	10.8%	40.8%		24.2%	54.2%	54.2%	10.8%	24.2%	24.2%	10.8%	24.2%	
Maximum Green (s)	7.0	43.0		23.0	59.0	59.0	7.0	23.0	23.0	7.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	

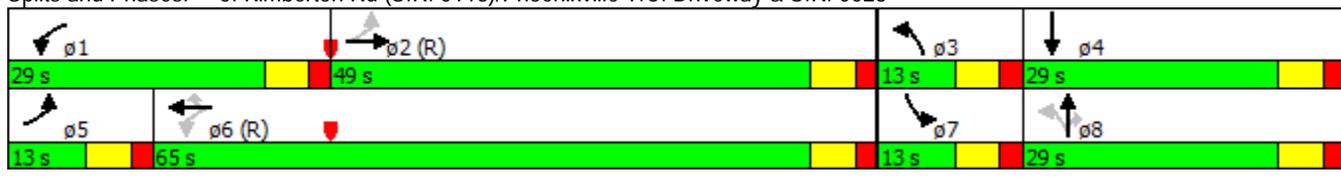


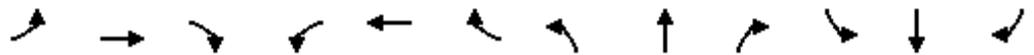
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	63.0	55.9		84.1	79.0	79.0	21.9	15.5	15.5	7.7	15.3	
Actuated g/C Ratio	0.52	0.47		0.70	0.66	0.66	0.18	0.13	0.13	0.06	0.13	
v/c Ratio	0.03	0.55		0.82	0.30	0.03	0.48	0.23	0.87	0.25	0.28	
Control Delay	10.3	26.6		29.8	13.0	0.1	44.6	46.4	28.3	56.5	36.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.3	26.6		29.8	13.0	0.1	44.6	46.4	28.3	56.5	36.0	
LOS	B	C		C	B	A	D	D	C	E	D	
Approach Delay		26.3			21.3			32.6			45.0	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)	4	254		149	94	0	68	37	69	20	34	
Queue Length 95th (ft)	14	365		#354	231	0	109	70	191	41	71	
Internal Link Dist (ft)		366			360			347			116	
Turn Bay Length (ft)	175			110		175	200		300	70		
Base Capacity (vph)	545	1574		508	1102	1034	220	344	616	212	356	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.55		0.81	0.30	0.03	0.48	0.15	0.74	0.25	0.19	

Intersection Summary

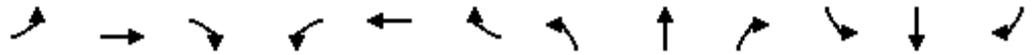
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 67 (56%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 27.2 Intersection LOS: C
 Intersection Capacity Utilization 71.5% 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: 5: Kimberton Rd (S.R. 0113)/Phoenixville T.C. Driveway & S.R. 0023





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Volume (vph)	86	571	6	77	580	47	5	264	128	23	168	139
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	12	12	12	12	12	16	12	12	12	14
Grade (%)		-3%			-2%			-2%				4%
Storage Length (ft)	0		0	0		0	0		0	0		100
Storage Lanes	0		0	0		0	0		0	0		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.991			0.956				0.850
Flt Protected		0.994			0.995			0.999			0.994	
Satd. Flow (prot)	0	1859	0	0	1756	0	0	1968	0	0	1738	1553
Flt Permitted		0.823			0.859			0.996			0.816	
Satd. Flow (perm)	0	1539	0	0	1516	0	0	1962	0	0	1427	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			5			22				148
Link Speed (mph)		45			45			35				35
Link Distance (ft)		498			191			356				352
Travel Time (s)		7.5			2.9			6.9				6.9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	4%	2%	0%	0%	0%	0%	0%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Adj. Flow (vph)	91	607	6	82	617	50	5	281	136	24	179	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	704	0	0	749	0	0	422	0	0	203	148
Number of Detectors	1	2		1	2		1	4		1	1	1
Detector Template	Left			Left			Left			Left	Thru	Right
Leading Detector (ft)	30	353		30	353		30	73		30	35	30
Trailing Detector (ft)	-10	0		-10	0		-10	-4		-10	-5	-10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8				4
Permitted Phases	2			6			8			4		4
Detector Phase	2	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	27.0	27.0		27.0	27.0		16.0	16.0		16.0	16.0	16.0
Total Split (s)	72.0	72.0		72.0	72.0		48.0	48.0		48.0	48.0	48.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	65.0	65.0		65.0	65.0		42.0	42.0		42.0	42.0	42.0
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	-1.0
Total Lost Time (s)		6.0			6.0			5.0			5.0	5.0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												

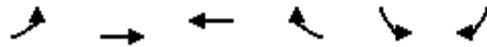
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Township Line Rd & Kimberton Rd (S.R. 0113)



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	86	571	6	77	580	47	5	264	128	23	168	139
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1827	1884	1827	1818	1781	1818	1818	1891	1818	1764	1749	1781
Adj Flow Rate, veh/h	91	607	6	82	617	45	5	281	82	24	179	136
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	1	1	3
Cap, veh/h	130	830	8	115	807	57	32	341	98	58	355	368
Arrive On Green	0.66	0.67	0.66	0.66	0.67	0.66	0.23	0.24	0.23	0.23	0.24	0.24
Sat Flow, veh/h	144	1247	12	123	1213	86	8	1402	404	102	1463	1514
Grp Volume(v), veh/h	704	0	0	744	0	0	368	0	0	203	0	136
Grp Sat Flow(s),veh/h/ln	1404	0	0	1422	0	0	1814	0	0	1565	0	1514
Q Serve(g_s), s	0.0	0.0	0.0	1.9	0.0	0.0	4.0	0.0	0.0	0.0	0.0	9.0
Cycle Q Clear(g_c), s	48.7	0.0	0.0	50.6	0.0	0.0	23.3	0.0	0.0	12.2	0.0	9.0
Prop In Lane	0.13		0.01	0.11		0.06	0.01		0.22	0.12		1.00
Lane Grp Cap(c), veh/h	956	0	0	967	0	0	456	0	0	401	0	368
V/C Ratio(X)	0.74	0.00	0.00	0.77	0.00	0.00	0.81	0.00	0.00	0.51	0.00	0.37
Avail Cap(c_a), veh/h	956	0	0	967	0	0	664	0	0	586	0	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.9	0.0	0.0	13.8	0.0	0.0	43.3	0.0	0.0	39.0	0.0	37.8
Incr Delay (d2), s/veh	5.0	0.0	0.0	5.9	0.0	0.0	4.7	0.0	0.0	1.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	26.0	0.0	0.0	28.0	0.0	0.0	18.2	0.0	0.0	10.0	0.0	6.8
LnGrp Delay(d),s/veh	17.9	0.0	0.0	19.6	0.0	0.0	48.0	0.0	0.0	40.0	0.0	38.4
LnGrp LOS	B			B			D			D		D
Approach Vol, veh/h		704			744			368				339
Approach Delay, s/veh		17.9			19.6			48.0				39.3
Approach LOS		B			B			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		85.8		34.2		85.8		34.2				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		65.0		42.0		65.0		42.0				
Max Q Clear Time (g_c+I1), s		50.7		14.2		52.6		25.3				
Green Ext Time (p_c), s		13.3		3.2		11.6		2.9				
Intersection Summary												
HCM 2010 Ctrl Delay				27.0								
HCM 2010 LOS				C								



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↔			↗
Volume (vph)	0	722	701	0	0	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	11	12	12	12	10
Grade (%)		-3%	2%		1%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	1
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	1749	1764	0	0	1446
Flt Permitted						
Satd. Flow (perm)	0	1749	1764	0	0	1446
Link Speed (mph)		45	45		25	
Link Distance (ft)		191	463		154	
Travel Time (s)		2.9	7.0		4.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	776	754	0	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	776	754	0	0	3
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized

Intersection

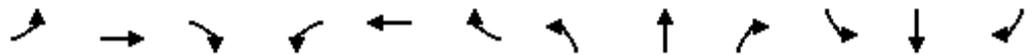
Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	722	701	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-3	2	-	1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	0	776	754	0	0	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	754	0	754
Stage 1	-	-	754
Stage 2	-	-	776
Critical Hdwy	4.3	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	3	-	3
Pot Cap-1 Maneuver	657	-	422
Stage 1	-	-	500
Stage 2	-	-	487
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	657	-	422
Mov Cap-2 Maneuver	-	-	128
Stage 1	-	-	500
Stage 2	-	-	487

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	657	-	-	-	422
HCM Lane V/C Ratio	-	-	-	-	0.008
HCM Control Delay (s)	0	-	-	-	13.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	669	12	64	667	36	15	0	114	20	0	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	11	13	12	9	12	16	13	11	16	12
Grade (%)		-3%			4%			-4%			1%	
Storage Length (ft)	125		100	160		100	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (ft)	60			60			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.881			0.934	
Flt Protected	0.950			0.950				0.994			0.975	
Satd. Flow (prot)	1678	1851	1390	1698	1729	1250	0	1806	0	0	1793	0
Flt Permitted	0.950			0.950				0.994			0.975	
Satd. Flow (perm)	1678	1851	1390	1698	1729	1250	0	1806	0	0	1793	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		441			356			228			111	
Travel Time (s)		6.7			5.4			6.2			3.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	8%	2%	2%	8%	0%	50%	1%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	43	704	13	67	702	38	16	0	120	21	0	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	704	13	67	702	38	0	136	0	0	41	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

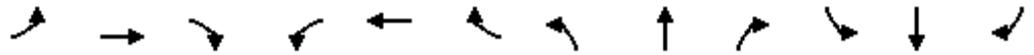
Intersection													
Int Delay, s/veh	2.6												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	41	669	12	64	667	36	15	0	114	20	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	125	-	100	160	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	-3	-	-	4	-	-	-4	-	-	1	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	2	8	2	2	8	0	50	1	6	0	0
Mvmt Flow	43	704	13	67	702	38	16	0	120	21	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	702	0	0	704	0	0	1638	1628	704	1688	1628	702
Stage 1	-	-	-	-	-	-	791	791	-	837	837	-
Stage 2	-	-	-	-	-	-	847	837	-	851	791	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.3	6.2	5.81	7.36	6.7	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	5.3	5.2	-	6.36	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.3	5.2	-	6.36	5.7	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.45	3.1	3.1	4	3.1
Pot Cap-1 Maneuver	685	-	-	684	-	-	125	114	497	70	94	453
Stage 1	-	-	-	-	-	-	511	404	-	371	367	-
Stage 2	-	-	-	-	-	-	481	388	-	364	387	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	685	-	-	684	-	-	105	96	497	47	79	453
Mov Cap-2 Maneuver	-	-	-	-	-	-	238	198	-	132	179	-
Stage 1	-	-	-	-	-	-	479	379	-	348	331	-
Stage 2	-	-	-	-	-	-	415	350	-	259	363	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.9	16.8	27.3
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	441	685	-	-	684	-	-	202
HCM Lane V/C Ratio	0.308	0.063	-	-	0.098	-	-	0.203
HCM Control Delay (s)	16.8	10.6	-	-	10.8	-	-	27.3
HCM Lane LOS	C	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	1.3	0.2	-	-	0.3	-	-	0.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Volume (vph)	1	802	0	0	767	7	0	0	0	4	0	0	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Lane Width (ft)	12	13	12	12	11	12	12	16	12	12	12	12	
Grade (%)		-4%			-1%			-2%				-2%	
Storage Length (ft)	0		0	0		0	0		0	0		0	
Storage Lanes	0		0	0		0	0		0	0		0	
Taper Length (ft)	75			75			75			75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor													
Frt	0.999												
Flt Protected											0.950		
Satd. Flow (prot)	0	1878	0	0	1730	0	0	2060	0	0	1727	0	
Flt Permitted											0.950		
Satd. Flow (perm)	0	1878	0	0	1730	0	0	2060	0	0	1727	0	
Link Speed (mph)					45					25			25
Link Distance (ft)					199					142			122
Travel Time (s)					3.0					20.9			3.9
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)					0%					0%			0%
Adj. Flow (vph)	1	844	0	0	807	7	0	0	0	4	0	0	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	0	845	0	0	814	0	0	0	0	0	4	0	
Sign Control					Free					Free			Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection

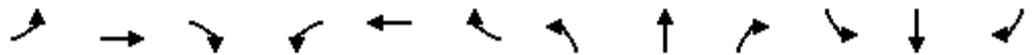
Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	802	0	0	767	7	0	0	0	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	-1	-	-	-2	-	-	-2	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	1	844	0	0	807	7	0	0	0	4	0	0

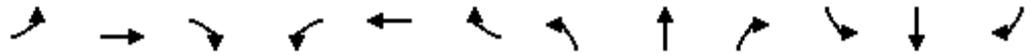
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	815	0	0	844	0	0	1657	1661	844	1657	1657	811
Stage 1	-	-	-	-	-	-	846	846	-	811	811	-
Stage 2	-	-	-	-	-	-	811	815	-	846	846	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.7	6.1	6	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	5.7	5.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	625	-	-	610	-	-	101	118	400	101	119	418
Stage 1	-	-	-	-	-	-	438	419	-	457	433	-
Stage 2	-	-	-	-	-	-	457	431	-	438	419	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	625	-	-	610	-	-	101	118	400	101	119	418
Mov Cap-2 Maneuver	-	-	-	-	-	-	101	118	-	101	119	-
Stage 1	-	-	-	-	-	-	437	418	-	456	433	-
Stage 2	-	-	-	-	-	-	457	431	-	437	418	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	42.2
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	625	-	-	610	-	-	101
HCM Lane V/C Ratio	-	0.002	-	-	-	-	-	0.042
HCM Control Delay (s)	0	10.8	0	-	0	-	-	42.2
HCM Lane LOS	A	B	A	-	A	-	-	E
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	378	99	479	485	52	208	119	393	121	116	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	12	11	12	10	11	15	11	13	13
Grade (%)		-1%			-2%			-2%				1%
Storage Length (ft)	175		0	110		175	200		300	70		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	85			85			75			60		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.969				0.850			0.850		0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1604	3287	0	1677	1757	1515	1580	1757	1683	3191	1767	0
Flt Permitted	0.480			0.357			0.553			0.950		
Satd. Flow (perm)	810	3287	0	630	1757	1515	920	1757	1683	3191	1767	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32				164			405			9
Link Speed (mph)		35			35			45				25
Link Distance (ft)		446			440			427				196
Travel Time (s)		8.7			8.6			6.5				5.3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	15%	3%	0%	2%	2%	0%	1%	0%	0%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	22	390	102	494	500	54	214	123	405	125	120	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	492	0	494	500	54	214	123	405	125	143	0
Number of Detectors	1	1		1	1	1	1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	35	35		30	30	30	30	30	5	30	30	
Trailing Detector (ft)	-5	-5		-10	-10	-10	-10	-10	0	-10	-10	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8			
Detector Phase	5	2		1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	5.0	5.0	3.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0	21.0	9.0	11.0	11.0	9.0	11.0	
Total Split (s)	13.0	33.0		25.0	45.0	45.0	13.0	29.0	29.0	13.0	29.0	
Total Split (%)	13.0%	33.0%		25.0%	45.0%	45.0%	13.0%	29.0%	29.0%	13.0%	29.0%	
Maximum Green (s)	7.0	27.0		19.0	39.0	39.0	7.0	23.0	23.0	7.0	23.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	45.0	37.8		62.8	57.7	57.7	22.2	14.2	14.2	8.0	14.2	
Actuated g/C Ratio	0.45	0.38		0.63	0.58	0.58	0.22	0.14	0.14	0.08	0.14	
v/c Ratio	0.05	0.39		0.82	0.49	0.06	0.83	0.49	0.69	0.49	0.55	
Control Delay	10.1	23.0		24.1	17.1	0.1	59.2	45.5	10.5	51.1	44.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.1	23.0		24.1	17.1	0.1	59.2	45.5	10.5	51.1	44.9	
LOS	B	C		C	B	A	E	D	B	D	D	
Approach Delay		22.4			19.5			30.4			47.8	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)	5	110		152	151	0	115	73	0	40	80	
Queue Length 95th (ft)	16	168		#329	352	0	#188	123	82	70	135	
Internal Link Dist (ft)		366			360			347			116	
Turn Bay Length (ft)	175			110		175	200		300	70		
Base Capacity (vph)	434	1262		605	1013	943	257	421	711	255	430	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.39		0.82	0.49	0.06	0.83	0.29	0.57	0.49	0.33	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 75 (75%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 26.2 Intersection LOS: C
 Intersection Capacity Utilization 79.1% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 5: Kimberton Rd (S.R. 0113)/Phoenixville T.C. Driveway & S.R. 0023

