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Pennsylvania Act 209 Transportation Impact Fee Study for New Hanover Township

Roadway Sufficiency Analyses Report and Transportation Capital Improvement Plan

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June 13, 2019
McMahon Project Number: 817749.11

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INTRODUCTION

This joint *Roadway Sufficiency Analysis and Transportation Capital Improvements Plan* has been prepared in accordance with the requirements set forth in Pennsylvania Act 209 on behalf of New Hanover Township, Montgomery County, Pennsylvania. Pennsylvania Act 209 was signed into law effective December 19, 1990. It amends the Pennsylvania Municipalities Code (Act 247 of 1968, as amended) to permit municipalities to assess transportation impact fees on new development within their boundaries provided that they have adopted a municipal transportation impact fee ordinance in accordance with the procedures set forth in the Act.

Impact fees under Act 209, with only one exception contained in Act 68 amendments to the Municipalities Planning Code, may only be used for those costs incurred for improvements designated in the adopted transportation capital improvements plan of the municipality that are attributable to new development. The impact fees cannot be used for municipal, non-transportation-related capital improvements; for the repair, maintenance, or operation of existing or new municipal transportation capital improvements; or for the upgrade or replacement of existing municipal transportation capital improvements due to operational or safety deficiencies not related to new development. The Act specifically and only applies to off-site transportation capital improvements attributable to new development; it neither applies to, nor restricts, the procedures or powers of the municipality to require on-site transportation improvements to remedy impacts of new development, nor is it intended to replace the municipality's ordinance requirements for submission of traffic impact studies.

Without the adoption of this Ordinance permitted by the Act 209 Law, a municipality does not have the power to require, as a condition for approval of a land development or subdivision application, the construction, dedication, or payment of any offsite improvements or capital expenditures.

All appendices supporting the *Roadway Sufficiency Analysis and Transportation Capital Improvements Plan* referred to in this report are contained in a separate document entitled *Pennsylvania Act 209 Transportation Impact Fee Study Technical Appendices*, New Hanover Township, Montgomery County.

Process

The process that New Hanover Township has undertaken includes the completion of the necessary milestones pursuant to the Act 209 legislation, as follows:

1. Appointment of a Transportation Impact Fee Advisory Committee (TIFAC) and designation of the geographic areas of the municipality that will be subject to the transportation impact fee ordinance. Meeting minutes prepared by the TIFAC are included in **Appendix A**.

2. Development and adoption of a land use assumptions report for the Township and its designated geographic area, called a Transportation Service Area (TSA), which together with existing developments, are the subject of the roadway sufficiency analysis and development of a transportation capital improvements plan.

3. Completion and approval of a roadway sufficiency analysis for the Transportation Service Area, identifying traffic deficiencies and needed improvements attributable to existing traffic, future traffic not originating from the service area (i.e., pass-through traffic), and future traffic originating from new development within the service area based on preferred levels of service (desired traffic operations) for the designated peak hour of study.

4. Development and adoption of a transportation capital improvements plan, including costs, implementation priorities, and funding sources, specifically and separately addressing improvements required to remedy:

   - Traffic deficiencies resulting from **existing** traffic volumes and capacity limitations;

   - Traffic deficiencies attributable to future **pass-through** traffic after existing deficiencies have been addressed; and

   - Traffic deficiencies attributable to expected **new development** within the service area after pass-through and existing traffic deficiencies have been addressed.

5. Adoption of a *Transportation Impact Fee Ordinance* based on the total cost of identified transportation improvements attributable to new development within the Transportation Service Area, to be assessed on a "per trip" basis.

Act 209 requires a minimum future planning horizon of five years. In order to be consistent with the future horizon year of the *Land Use Assumptions Report*, the future year 2030 was selected as the design year of this study. However, this document should not be considered a static, "one-time" effort, as the Act 209 legislation has provisions for periodic updates of the roadway sufficiency analysis, capital improvements plan, and impact fees, as changes in the land use assumptions, transportation improvement needs, or funding conditions occur.

As the law allows for the periodic update of the impact fees, it is recommended that the TIFAC continue to meet periodically and make recommendations to the Board of Supervisors, as necessary, to update the Capital Improvements Plan (CIP) or impact fees based on the following:

1. New subsequent development that has occurred in the Township.
2. Capital improvements, listed in the CIP, which have been constructed.
3. Unavoidable delays in construction of the improvements listed in the CIP that are outside the control or responsibility of the Township.
4. Significant changes in the land use assumptions.
5. Significant changes in the estimated costs of the improvements listed in the CIP.
6. Significant changes in the projected revenues from all sources listed, needed for the construction of the improvements listed in the CIP.

TRANSPORTATION SERVICE AREA

Act 209 requires the establishment of specific study boundaries, or transportation service areas, for evaluation and application of transportation impact fees. By law, each transportation service area is limited to a maximum size of seven square miles. Moreover, traffic impact fees for each transportation service area are applicable only to development located within that respective service area, and therefore, development traffic from one service area is considered pass-through traffic within the other service areas. Further explanation of pass-through and development traffic will be provided in subsequent sections.

As illustrated in **Figure 1**, the TIFAC has established one transportation service area within New Hanover Township in accordance with the requirements of Act 209, which covers the majority of the developable areas of the Township. As shown, this transportation service area measures equal to or less than the maximum seven square miles required by the Act 209 legislation. **Table 1** lists the study intersections within the transportation service area.

Table 1. Transportation Service Area Study Intersections

Reference Number	Intersection	Existing Traffic Control
1	Big Road (S.R. 0073) and Middle Creek Road	Stop Sign
2	Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663)	Stop Sign
3	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Stop Sign
4	Layfield Road (S.R. 0663) and Hoffmansville Road	Signal
5	Big Road (S.R. 073) and Hoffmansville Road/New Hanover Square Road	Signal
6	North Charlotte Street (S.R. 0663) and Dotterer Road	Stop Sign
7	Swamp Pike and Middle Creek Road	Stop Sign
8	Swamp Pike and Dotterer Road	Stop Sign
9	Swamp Pike and North Charlotte Street (S.R. 0063)	Signal
10	Swamp Pike and Leidy Road	Stop Sign
11	Swamp Pike and Romig Road	Stop Sign
12	Swamp Pike and Rosenberry Road/Reifsnyder Road	Stop Sign
13	Swamp Pike and New Hanover Square Road	Signal
14	Swamp Pike and Wagner Road	Stop Sign
15	Swamp Pike and Sanatoga Road/Fagleysville Road	Signal
16	North Charlotte Street (S.R. 0663) and Kleman Road	Stop Sign
17	North Charlotte Street (S.R. 0663) and Buchert Road	Signal
18	North Charlotte Street (S.R. 0663) and Moyer Road	Stop Sign

LAND USE ASSUMPTIONS REPORT SUMMARY

As required by Act 209, the New Hanover Township TIFAC has reviewed the Township's *Land Use Assumptions Report (LUAR)*, which was prepared and completed by Montgomery County Planning Commission. A copy of the *Land Use Assumptions Report,* dated January 15, 2019 is provided in **Appendix B**.

The *Land Use Assumptions Report* identifies the anticipated development build-out potential within New Hanover Township, as well as the projected 2030 build-out. The projected 2030 build-out, which is the basis of this analysis, is summarized below in **Table 2.**

Table 2. Land Use Assumptions Report 2030 Build-Out Summary

Land Use Classification	Approved/Under Construction	New Development Within the Impact Fee Service Area	Total Build-Out
Single Family Homes	310 dwelling units	548 dwelling units	858 dwelling units
Multi-Family Homes	66 dwelling units	536 dwelling units	602 dwelling units
Detached Age-Qualified	n/a	184 dwelling units	184 dwelling units
Attached Age-Qualified	n/a	433 dwelling units	433 dwelling units
Independent Living	n/a	210 beds	210 beds
Assisted Living	n/a	128 beds	128 beds
Gibraltar Rock	n/a	160.30 acres	160.30 acres
Office Space	n/a	18,088 square feet	18,088 square feet
Retail Space	n/a	77,366 square feet	77,366 square feet

The table indicates projects that have already been "Approved and/or Under Construction" based on the active and pending land development plans as of May 24, 2018 that are referenced in Table 1.4 and Map 1.4 of the *Land Use Assumptions Report.* When combined with the anticipated "New Development Within the Impact Fee Service Area", the total number of residential units anticipated to be built by 2030 is then equal to 2,077, which is consistent with the projected number from the *Land Use Assumptions Report.* More specific details regarding the location of these new developments can be seen in Maps 2.1 and 2.2 of the *Land Use Assumptions Report*.

EXISTING TRANSPORTATION NETWORK

This section includes a designation of the roadways and intersections selected to be evaluated as part of this *Roadway Sufficiency Analysis*, as well as an inventory of physical and operational characteristics of the existing Township transportation system required for the completion of the *Roadway Sufficiency Analysis*.

Roadway Characteristics

The New Hanover Township roadway system, as illustrated in **Figure 2**, consists primarily of two-lane, undivided roadways. Additionally, illustrated in Figure 2 is the existing 2018 Average Daily Traffic (ADT) volumes on the main roadways entering, within, and exiting the Township. These volumes were either collected for this project specifically by others in the region, such as the Delaware Valley Regional Planning Commission or for area development projects**.** These volumes will assist in establishing current traffic patterns along the area roadways, as well as future distribution patterns in the Township. The detailed daily traffic count data is provided in **Appendix C.**

Major regional access to/from the Township is provided via Big Road (S.R. 0073) and Swamp Pike which are major east-west arterial that bisect the Township, as well as North Charlotte Street (S.R. 0663)/Layfield Road (S.R. 0663) which is the major north-south arterial that bisects the Township. The roadway network shown in Figure 2, including both roadway segments and intersections, constitutes the transportation roadway network analyzed pursuant to Act 209. The operating characteristics of each of the major study roadways are summarized in **Table 3**, along with the corresponding roadway classification as per the Township's *Subdivision and Land Development Ordinance*.

Table 3. Existing Transportation Network Summary

Roadway	Classification [1]	Ownership	Posted Speed Limit (mph)
Big Road (S.R. 0073)	Primary Arterial	State	45
Layfield Road (S.R. 0663)	Primary Arterial	State	Not Posted
North Charlotte Street (S.R. 0663)	Primary Arterial	State	40
Swamp Pike	Primary Arterial	County	35
Buchert Road	Major Collector	Township	30
Hoffmansville Road	Major Collector	Township	45
New Hanover Square Road	Major Collector	Township	45
Reifsnyder Road	Major Collector	Township	25
Romig Road	Major Collector	Township	25 to 35
Rosenberry Road	Major Collector	Township	25
Dotterer Road	Minor Collector [2]	Township	25
Fagleysville Road	Minor Collector	Township	35
Kleman Road	Minor Collector	Township	35
Leidy Road	Minor Collector	Township	30
Middle Creek Road	Minor Collector [2]	Township	25
Moyer Road	Minor Collector [2]	Township	40
Sanatoga Road	Minor Collector	Township	35
Wagner Road	Minor Collector	Township	25

(1) As identified in *Section 22-812* of the Township *Subdivision and Land Development Ordinance.*
(2) Classification to be reevaluated by the Township in the future.

EXISTING TRANSPORTATION CONDITIONS

The evaluation of the existing transportation network is based on the physical (i.e., intersection geometry, lane usage, etc.) and operational (i.e., traffic control, traffic volumes, signal timing/phasing) characteristics of the study intersections and roadways during the weekday afternoon peak hour. The TIFAC selected the weekday afternoon peak hour as the basis of this *Roadway Sufficiency Analysis*, since new developments, whether residential or non-residential, generate more trips during this time-period.

Existing Traffic Volumes

Traffic operating conditions are influenced by the relationships between traffic volumes and the service capacities of the roadways and intersections. In order to evaluate existing conditions at area intersections, Manual Turning Movement (MTM) counts were conducted at the eighteen study intersections listed in Table 1 during the weekday afternoon peak period (4:00 PM to 6:00 PM) on a typical Tuesday, Wednesday, or Thursday in January, February, March, and May 2018. This traffic count/volume data should be considered the baseline by the Township for determining new development or redevelopment's effect on the study roadway network, based upon the vacancy/occupancy levels of each property at the time of the counts. These traffic counts were tabulated by fifteen-minute periods to establish the four highest consecutive 15-minute periods which constitute the weekday afternoon peak hour, and serve as the basis for this analysis. **Figure 3** illustrates the 2018 existing weekday afternoon peak hour traffic volumes at the study area intersections. The actual MTM counts are provided in **Appendix D**.

Analysis Methodology

The traffic volumes depicted in Figure 3 were subjected to detailed capacity/level-of-service analysis in accordance with the standard techniques contained in the *Highway Capacity Manual*. These standard capacity/level-of-service analysis techniques, which calculate total control delay, are more thoroughly described in **Appendix E** for signalized and unsignalized intersections, including those with conventional stop-control and roundabouts. The correlation between average total control delay and the respective levels of service (LOS) for each intersection type are also summarized.

Level of service (LOS) is the criteria utilized to evaluate the study intersections and roadways in accordance with standard traffic engineering practice and the Act 209 legislation. In the surrounding area, PennDOT District 6-0, as well as many local municipalities, considers LOS A through D as constituting acceptable operating conditions, while LOS E represents conditions approaching capacity, and LOS F indicates that traffic volumes exceed available capacity.

Preferred Levels of Service

Consistent with the Act 209 legislation, the TIFAC has adopted preferred levels of service for the intersections studied. The preferred level of service is considered the operational design standard by which each study intersection must operate under existing conditions, future pass-through conditions, and future development conditions in this *Roadway Sufficiency Analysis Report*. Deficient (worsened)

operations that do not satisfy the preferred levels of service at the study intersections must be improved for each condition.

According to Act 209, the preferred level of service may be waived by the municipality at individual intersections based upon difficulty in implementing various improvements (i.e., geometric design limitations, topographic limitations, or unavailable/unobtainable necessary right-of-way). For unsignalized intersections where the preferred level-of-service criterion is not satisfied, most often only signalization can mitigate the traffic deficiency. Where traffic volumes do not meet traffic signal warrant criteria, these intersections cannot be improved and the improvement must be waived or deferred until traffic volumes warrant signalization.

As shown in **Table 4**, the TIFAC has adopted specific preferred level-of-service criteria for the purposes of this *Roadway Sufficiency Analysis* for the Transportation Service Area. For signalized intersections, the preferred levels of service apply to the individual movements, as well as the overall intersection operation. For unsignalized intersections, the preferred levels of service apply only to the main street left-turn movements and the minor street, stop-controlled movements. The preferred levels of service were established based on a review of typical acceptable thresholds utilized by PennDOT and other adjacent municipalities, and also reflect the suburban character of the Transportation Service Area.

Table 4. Preferred Level-of-Service Criteria

Intersection	Preferred Criteria
Signalized	LOS E all movements
	LOS D overall
Unsignalized	LOS E all movements
	LOS D overall

Existing Levels of Service

The 2018 existing weekday afternoon peak hour traffic volumes presented in Figure 3 were subjected to the detailed capacity/level-of-service analysis methodology previously described. The results of the analysis are illustrated in **Figure 4**, and the detailed capacity/level-of-service analysis worksheets are contained in **Appendix F**.

As shown in Figure 4, of the eighteen existing study intersections, the following five intersections currently do not satisfy the preferred level-of-service criteria as shown in Table 4 and have "red" lettering on the figure to denote this condition:

- Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663);
- Big Road (S.R. 0073) and Layfield Road (S.R. 0663);
- Big Road (S.R. 0073) and Hoffmansville Road/New Hanover Square Road;
- Swamp Pike and Romig Road;
- Swamp Pike and Rosenberry Road/Reifsnyder Road.

Existing Improvement Program

The improvements necessary to mitigate existing traffic deficiencies are summarized in **Table 5,** while the resultant levels of service with the recommended improvements are illustrated in **Figure 5**. It is noted that the recommended transportation improvements contained herein do not preclude the necessity or desirability of improvements at other non-study intersections/roadways within the Township, or any other intersection/roadways where operational deficiencies or the need for traffic-calming measures may be identified in the future through studies completed for specific development projects.

Table 5. 2018 Existing Conditions Needs Assessment

Int. No.	Intersection	Existing Traffic Control	Improvements Required to Meet the Preferred Level of Service Criteria
2	Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663)	Stop Sign	Current Township Act 209 Project Underway.
3	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Stop Sign	Current Township Act 209 Project Underway.
5	Big Road (S.R. 0073) and New Hanover Square Road	Signal	Optimize the signal timings/phasing.
11	Swamp Pike and Romig Road	Stop Sign	No improvements recommended as a traffic control signal is not warranted.
12	Swamp Pike and Rosenberry Road/Reifsnyder Road	Stop Sign	No improvements recommended as traffic control signal is not warranted.

At the intersections of Big Road (S.R. 0073)/North Charlotte Street (S.R. 0663) and Big Road (S.R. 0073)/Layfield Road (S.R. 0663), there are active Act 209 projects that are currently ready for construction or in the design phase. These projects will be further discussed in the "Future Transportation Conditions" section, as they will both be completed prior to the horizon year of 2030. For the purposes of existing conditions, the improvements have been deferred to the pass-through conditions.

At the unsignalized intersections of Swamp Pike with Romig Road and Rosenberry Road/Reifsnyder Road, it is noted that based upon a review of the 2018 existing weekday afternoon peak hour traffic volumes, these intersections do <u>not</u> meet warrants for the installation of a traffic control signal in accordance with PennDOT guidelines. As a result, improvements at these intersections must also be deferred at this time. These intersections will however, continue to be monitored by the Township, in the future.

FUTURE TRANSPORTATION CONDITIONS

Act 209 requires a minimum five-year future time horizon for the development of the *Transportation Capital Improvements Plan* and *Transportation Impact Fee Ordinance*. A twelve-year time frame was selected by consensus of the TIFAC for the New Hanover Township Act 209 traffic analysis, which is consistent with the development projections contained in the *Land Use Assumptions Report.* Therefore, a future forecast year of 2030 was utilized in the study.

Future Traffic Components

Traffic volume forecasts for 2030 include three components: existing traffic, pass-through traffic, and development traffic. The first component, **existing traffic,** was described in the previous section. The second component of future traffic projections is **pass-through traffic**, which reflects future increases in regional traffic, and consists of regional traffic which is both generated by, and destined to, locations external to the designated transportation service area, but passes through the designated service area along the study area roadways. Pass-through traffic also includes traffic generated by specific known future developments located within the adjacent municipalities, as well as within the Township itself that have already been approved and are under construction, where impact fees have already been assessed by the Township.

Development traffic is generated by new development within the respective or designated transportation service area, and constitutes the third and final component of future 2030 traffic volumes. These include development projects that are also under review, but have not yet received any type of preliminary approval from the Township as of 2018 when the peak hour traffic counts were conducted.

This section first addresses pass-through traffic conditions, which includes regional growth, as well as known development projects within the Township that are already approved and under construction. Development projections based upon the information contained in the *Land Use Assumptions Report* is then discussed. The development trips are then distributed and assigned to the area roadway network based upon known traffic patterns from the peak hour and daily traffic count data. Finally, future 2030 development traffic conditions are defined, incorporating existing traffic volumes, future pass-through traffic volumes, and future development traffic volumes.

2030 Future Pass-Through Traffic

To determine 2030 future weekday afternoon peak hour pass-through traffic volumes, an annual traffic growth rate of 0.34 percent per year was applied to existing weekday afternoon peak hour traffic volumes to reflect regional traffic growth. This growth rate is consistent with the traffic growth rate recommended by the PennDOT Bureau of Planning and Research *Growth Factors for August 2018 to July 2019* for similar urban, non-interstate roadways in Montgomery County. The total applied growth rate of 4.16% (compounded over twelve years) is also representative of regional traffic growth associated with the surrounding municipalities that could then travel through New Hanover Township. Additionally, traffic with select projects within the other surrounding Township has also been accounted for as well. In addition to regional traffic growth, the traffic generated by

development projects that have already been approved and/or are under construction within the Township are also accounted for as pass-through traffic. The approved projects that are currently under construction, whose impact fee has already been determined and would not be subject to the revised impact fee are listed below and shown in Table 1.4 and Map 1.4 of the *Land Use Assumptions Report*:

- Hanover Pointe: 118 single-family homes;
- Rolling Meadows: 38 single-family homes and 24 multi-family homes;
- Brenning Subdivision: 2 single-family homes;
- Renninger Tract: 42 multi-family homes;
- Country Meadows: 9 single-family homes;
- Erdenheim: 11 single-family homes;
- Mann Tract: 7 single-family homes;
- Woodfield: 121 single-family homes;
- 2557 Swamp Pike: 4 single-family homes.

Additional information on these projects, including the locations and the total amount of approved units is documented within the *Land Use Assumptions Report*. The numbers above represent the number of units that remain to be built as of May 24, 2018.

Specific details related to the weekday afternoon peak hour trip generation for all of these potential projects in New Hanover Township and the surrounding Townships are provided in **Appendix G**, as the traffic associated with them has been accounted for as part of the pass-through conditions. The resultant 2030 future weekday afternoon peak hour pass-through traffic volumes are illustrated in **Figure 6**.

Programmed Improvements

The following is a summary of projects that are scheduled to be completed by the horizon year 2030:

- **Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663)** – Install a traffic control signal and provide a separate westbound left-turn lane along Big Road (S.R. 0073) as an Act 209 Project. This project is anticipated to be constructed by 2020. The design and part of the construction is funded through the current Act 209 program. Additional funding for construction will be provided through PennDOT's Multimodal Transportation Fund and the Commonwealth Financing Authority Multimodal Transportation Fund Grant programs.

- **Big Road (S.R. 0073) and Layfield Road (S.R. 0663)** – Two potential projects are being investigated with PennDOT. The first is to install a traffic control signal and provide a separate westbound left-turn lane. The second is to install a single-lane roundabout with a southbound bypass lane or install a traffic control signal along with a separate eastbound left-turn lane on Big Road (S.R. 0073). The southbound approach of Layfield Road (S.R. 0663) will also be relocated approximately 300 feet to the east of its current location as part of both projects. This project is still in the planning/design stage and is being completed as an Act 209 Project.

- **Swamp Pike and Middle Creek Road** – Install a westbound right-turn lane along Swamp Pike and shift the Middle Creek Road approach to Swamp Pike to the east to reduce the approach grade. This project is to be completed in conjunction with the final phase of the Renninger Tract development project and was requested by Montgomery County.

- **North Charlotte Street (S.R. 0663) and Moyer Road** – Install a traffic control signal and a separate northbound left-turn lane along North Charlotte Street (S.R. 0663). This project is still in the planning/design stage and is being completed as an Act 209 Project.

2030 Future Pass-Through Levels of Service

The future 2030 weekday afternoon pass-through traffic volumes illustrated in Figure 6 were then subjected to the previously described capacity/level-of-service analysis procedures to determine 2030 pass-through levels of service. The results of the analysis are illustrated in **Figure 7**, and the detailed capacity/level-of-service analysis worksheets are contained in **Appendix H.** As required by Act 209, the future 2030 pass-through conditions analysis for each study intersection determines the **incremental** traffic impacts and required mitigation of future pass-through traffic in comparison to existing traffic conditions after required existing traffic mitigation has been added.

As shown in Figure 7, of the eighteen existing study intersections, the following eight intersections currently do not satisfy the preferred level-of-service criteria as shown in Table 4 and have "red" lettering on the figure to denote this condition:

- Big Road (S.R. 0073) and Middle Creek Road;
- Big Road (S.R. 0073) and Hoffmansville Road/New Hanover Square Road;
- Swamp Pike and Middle Creek Road;
- Swamp Pike and Dotterer Road;
- Swamp Pike and North Charlotte Street (S.R. 0663);
- Swamp Pike and Romig Road;
- Swamp Pike and Rosenberry Road/Reifsnyder Road;
- Swamp Pike and New Hanover Square Road;

2030 Future Pass-Through Improvement Program

The additional improvements required to accommodate pass-through traffic are illustrated in **Figure 8** and listed in **Table 6.** The unsignalized intersections of Swamp Pike/Middle Creek Road, Swamp Pike/Dotterer Road, Swamp Pike/Romig Road, and Swamp Pike/Rosenberry Road/Reifsnyder Road currently do not satisfy the preferred level-of-service criteria. Based upon a review of the 2030 future pass-through weekday afternoon peak hour traffic volumes, these intersections do not meet warrants for the installation of a traffic control signal in accordance with PennDOT guidelines; therefore, improvements at these intersections must be deferred at this time. These intersections will however, continue to be monitored by the Township, in the future.

With the installation of the separate left-turn lanes along Swamp Pike at New Hanover Square Road, a separate eastbound left-turn lane will also be provided for Wagner Road given the proximity of these intersections.

Table 6. 2030 Future Pass-Through Conditions Needs Assessment

Int. No.	Intersection	Existing Traffic Control	Improvements Required to Meet the Preferred Level of Service Criteria	
			Existing	Pass-Through
1	Big Road (S.R. 0073) and Middle Creek Road	Stop Sign	No improvements recommended.	Install traffic control signal.
2	Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663)	Stop Sign	Township project planned.	Install traffic control signal and install westbound left-turn lane (Current Township Act 209 Project).
3A	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Stop Sign	Township project planned.	Install a traffic control signal along with a separate eastbound left-turn lane (Current Township Act 209 Project).
3B	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Stop Sign	Township project planned.	Install a single-lane roundabout with a southbound bypass lane (Current Township Act 209 Project).
5	Big Road (S.R. 0073) and New Hanover Square Road	Signal	Optimize the signal timings/phasing.	Optimize the signal timings/phasing and install a northbound left-turn lane.
7	Swamp Pike and Middle Creek Road	Stop Sign	No improvements recommended.	Install a westbound right-turn lane and realign the Middle Creek Road approach (Developer Project). A traffic control signal is not warranted.
8	Swamp Pike and Dotterer Road	Stop Sign	No improvements recommended.	No improvements recommended as a traffic control signal is not warranted.
9	Swamp Pike and North Charlotte Street (S.R. 0663)	Signal	No improvements recommended.	Optimize the signal timings/phasing.
11	Swamp Pike and Romig Road	Stop Sign	No improvements recommended as a traffic control signal is not warranted.	No improvements recommended as a traffic control signal is not warranted.
12	Swamp Pike and Rosenberry Road/Reifsnyder Road	Stop Sign	No improvements recommended as a traffic control signal is not warranted.	No improvements recommended as a traffic control signal is not warranted.
13	Swamp Pike and New Hanover Square Road	Signal	No improvements recommended.	Optimize the signal timing/phasing and install eastbound and westbound left-turn lanes.
14	Swamp Pike and Wagner Road	Stop Sign	No improvements recommended.	Install an eastbound left-turn lane.
18	North Charlotte Street (S.R. 0663) and Moyer Road	Stop Sign	No improvements recommended.	Install traffic control signal and install a northbound left-turn lane. (Current Township Act 209 Project).

Development Traffic

This section provides a summary of the anticipated trip generation characteristics associated with the projected development projects that are located within the Transportation Service Area and would be subject to the new impact fee. These projections, which are referenced in the *Land Use Assumptions Report,* also include known projects that have not yet received any type of preliminary approval from the Township.

Details regarding the shared/internal trips associated with the potential Town Center are provided in **Appendix I. Table 7** then provides a summary of the total anticipated trip generation for the Transportation Service Area that would be subject to the impact fee, which is estimated to be based on **1,301 total "new" trips (entering and exiting) during the weekday afternoon peak hour.**

Table 7. Transportation Service Area Trip Generation Characteristics (1,2)

Description	ITE Land Use Code	Size	Weekday Afternoon Peak Hour		
			In	Out	Total
Single Family Homes (3)	210	548 d.u.	328	192	520
Multi-Family Homes (3)	220	536 d.u.	166	97	263
Detached Age-Qualified	251	184 d.u.	47	30	77
Attached Age-Qualified	252	433 d.u.	58	48	106
Independent Living	253	210 beds	18	17	35
Assisted Living	254	128 beds	12	21	33
Gibraltar Rock	n/a (4)	160.30 acres	1	12	13
Office Space	710	18,088 s.f.	3	18	21
Retail Space (3)	820	77,366 s.f.	215	234	449
Sub-Total			848	669	1,517
Less Internal Trips (5)			-38	-38	-76
Sub-Total			810	631	1,441
Less Pass-By Trips (6)			-70	-70	-140
Total "New" Trips			**740**	**561**	**1,301**

(1) The locations of developments are identified and illustrated in the *Land Use Assumptions Report*.
(2) Based on the Institute of Transportation Engineers publication, *Trip Generation Manual, 10th Edition.*
(3) Does not account for full build-out of the New Hanover Town Center.
(4) Based on prior study dated October 14, 2003 for Gibraltar Rock, which used custom trip generation rates.
(5) Internal interaction within the New Hanover Town Center only for 337 homes, 10,000 s.f. of office space, and 53,503 s.f. of retail space.
(6) According to the Institute of Transportation Engineers publication, *Trip Generation Handbook*, approximately 34% of retail trips are pass-by during the weekday afternoon peak hour. Reduction applied after application of internal trips for retail uses only.

Trip Distribution

Vehicular traffic volumes generated by the new developments over the next twelve years was then distributed to the Township roadways based on existing travel patterns determined from a review of the daily and peak hour counts, as well as other known internal travel patterns within the Township. The locations of specific future development parcels with respect to the study roadway network and other major traffic generators and destinations were also reviewed based upon specific information provided for the known projects from any corresponding Transportation Impact Studies, if available. The resultant overall directions of approach and departure for the Township utilized to assign the "new" development-based traffic are listed below and illustrated in **Figure 9.**

- 18% to/from the east via Swamp Pike;
- 16% to/from the west via Swamp Pike;
- 14% to/from the east via Big Road (S.R. 0073);
- 14% to/from the west via Big Road (S.R. 0073);
- 5% to/from the west via Hoffmansville Road;
- 14% to/from the north via Layfield Road (S.R. 0663);
- 12% to/from the south via North Charlotte Street (S.R. 0663);
- 4% to/from the west via Moyer Road;
- 3% to/from the west via Buchert Road.

2030 Future Development Traffic

As explained previously, traffic generated by new development internal to the designated transportation service area, and subject to the impact fee from this study, constitutes the third and final component of future 2030 traffic. The 2030 future development traffic volumes were determined based on assignment of service area development traffic within each respective sub-area to the study roadway network, and the addition of these volumes to 2030 future pass-through traffic volumes. The resultant future development traffic volumes are summarized in **Figure 10**.

2030 Future Development Levels of Service

The future development traffic volumes presented in Figure 10 were then subject to the previously described capacity/level-of-service analysis procedures to determine future 2030 development levels of service, and the detailed analyses are provided in **Appendix J**. The 2030 future development conditions are illustrated in **Figure 11**, and indicate that the following eleven study intersections will not satisfy the preferred level-of-service criteria and will require further improvements beyond the previously identified future pass-through improvements:

- Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663);
- Big Road (S.R. 0073) and Layfield Road (S.R. 0663);
- Big Road (S.R. 0073) and Hoffmansville Road/New Hanover Square Road;
- Swamp Pike and Middle Creek Road;
- Swamp Pike and Dotterer Road;
- Swamp Pike and North Charlotte Street (S.R. 0663);

- Swamp Pike and Leidy Road;
- Swamp Pike and Romig Road;
- Swamp Pike and Rosenberry Road/Reifsnyder Road;
- Swamp Pike and New Hanover Square Road;
- Swamp Pike and Sanatoga Road/Fagleysville Road

2030 Future Development Improvement Program

The additional improvements required to accommodate pass-through traffic are illustrated in **Figure 12** and listed in **Table 8.** The unsignalized intersections of Swamp Pike/Leidy Road and Swamp Pike/Rosenberry Road/Reifsnyder Road currently do not satisfy the preferred level-of-service criteria. Based upon a review of the 2030 future development weekday afternoon peak hour traffic volumes, these intersections do not meet warrants for the installation of a traffic control signal in accordance with PennDOT guidelines; therefore, improvements at these intersections must be deferred at this time. These intersections will however, continue to be monitored by the Township, in the future.

Table 8. 2030 Future Development Conditions Needs Assessment

Int. No.	Intersection	Existing Traffic Control	Improvements Required to Meet the Preferred Level of Service Criteria		
			Existing	Pass-Through	Development
1	Big Road (S.R. 0073) and Middle Creek Road	Stop Sign	No improvements recommended.	Install traffic control signal.	No improvements recommended.
2	Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663)	Stop Sign	No improvements recommended.	Install traffic control signal and install westbound left-turn lane (Current Township Act 209 Project).	Optimize the signal timings/phasing, install an additional eastbound through lane and northbound right-turn lane.
3A	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Stop Sign	No improvements recommended.	Install a traffic control signal along with a separate eastbound left-turn lane (Current Township Act 209 Project).	Install an additional westbound through lane that will be dropped as the westbound left-turn lane at the adjacent intersection of Big Road (S.R. 0073)/North Charlotte Street (S.R. 0663).
3B	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Stop Sign	No improvements recommended.	Install a single-lane roundabout with a southbound bypass lane (Current Township Act 209 Project).	Install an additional westbound through lane that will be dropped as the westbound left-turn lane at the adjacent intersection of Big Road (S.R. 0073)/North Charlotte Street (S.R. 0663).
5	Big Road (S.R. 0073) and New Hanover Square Road	Signal	Optimize the signal timings/phasing.	Optimize the signal timings/phasing and install a northbound left-turn lane.	Optimize the signal timings/phasing and install a westbound right-turn lane.
7	Swamp Pike and Middle Creek Road	Stop Sign	No improvements recommended.	Install a westbound right-turn lane and realign the Middle Creek Road approach (Developer Project).	Install traffic control signal and install eastbound left-turn lane.
8	Swamp Pike and Dotterer Road	Stop Sign	No improvements recommended.	No improvements recommended.	Install eastbound left-turn lane, restrict northbound left-turn movements via a channelized island.
9	Swamp Pike and North Charlotte Street (S.R. 0663)	Signal	No improvements recommended.	Optimize the signal timings/phasing.	Optimize the signal timings/phasing and install an additional eastbound and westbound through lane.
10	Swamp Pike and Leidy Road	Stop Sign	No improvements recommended.	No improvements recommended.	No improvements recommended as a traffic control signal is not warranted.

Table 8. 2030 Future Development Conditions Needs Assessment (Continued)

Int. No.	Intersection	Existing Traffic Control	Improvements Required to Meet the Preferred Level of Service Criteria		
			Existing	Pass-Through	Development
11	Swamp Pike and Romig Road	Stop Sign	No improvements recommended.	No improvements recommended.	Install traffic control signal.
12	Swamp Pike and Rosenberry Road/Reifsnyder Road	Stop Sign	No improvements recommended.	No improvements recommended.	No improvements recommended as a traffic control signal is not warranted.
13	Swamp Pike and New Hanover Square Road	Signal	No improvements recommended.	Optimize the signal timing/phasing and install eastbound and westbound left-turn lanes.	Optimize traffic signal timings/phasing and install westbound right-turn lane.
15	Swamp Pike and Sanatoga Road/Fagleysville Road	Signal	No improvements recommended.	No improvements recommended.	Optimize the signal timings/phasing.

TRANSPORTATION CAPITAL IMPROVEMENT PLAN

This section summarizes New Hanover Township's *Transportation Capital Improvements Plan,* as a result of the analyses conducted in the *Roadway Sufficiency Analysis Report* section of this combined report. In accordance with Act 209, the following public notification requirements need to be met by the Township:

1. Public notice of a public hearing on the *Transportation Capital Improvements Plan* to be published two successive weeks, between seven and thirty days from the date of the hearing.

2. The *Transportation Capital Improvements Plan* will be available for public inspection at the Township building at least ten working days prior to the hearing along with the corresponding section of this study related to the *Roadway Sufficiency Analyses Report*.

3. A public hearing for the *Transportation Capital Improvements Plan* to receive comments.

Following the public hearing, the *Transportation Capital Improvements Plan* will then be adopted by the Township Board of Supervisors by resolution, along with the *Roadway Sufficiency Analysis Report*.

The *Transportation Capital Improvements Plan* consists of three sections, which are described below, and includes the "Existing Transportation Capital Improvements Program", "Future Pass-Through Transportation Capital Improvements Program", and "Future Development Transportation Capital Improvements Program".

Existing Transportation Capital Improvements Program

The Existing Transportation Capital Improvement Program is summarized in **Table 9** for the Transportation Service Area and details the improvements necessary to achieve the preferred levels of service under existing 2018 conditions. Table 9 also provides cost allocations for the improvements, indicating the portions of the total cost for which the Township and PennDOT are responsible. **The total cost of the Existing Transportation Capital Improvements Program is approximately $22,000**. The anticipated completion year for each of the improvements is also included in Table 9.

Future Pass-Through Transportation Capital Improvements Program

The Future Pass-Through Transportation Capital Improvements Program is summarized in **Table 10** for the Transportation Service Area and details the additional improvements necessary to achieve the preferred levels of service under future 2030 pass-through conditions. Table 10 also provides cost allocations for the improvements, indicating the portions of the total cost for which the Township and PennDOT are responsible. **The total cost of the Future Pass-through Transportation Capital Improvements Program is approximately $6,957,186.** The anticipated completion year for each of the improvements is also included in Table 10.

Table 9. 2018 Existing Conditions Cost Estimates

Int. No.	Intersection	Improvements Required to Meet the Preferred Level of Service Criteria	Total Project Cost	Allocated Funding		Anticipated Completion Year
				PennDOT/ County	Township	
5	Big Road (S.R. 0073) and New Hanover Square Road	Optimize the signal timings/phasing.	$22,000	$11,000	$11,000	2030
			$22,000	$11,000	$11,000	

Table 10. 2030 Future Pass-Through Conditions Cost Estimates

Int. No.	Intersection	Improvements Required to Meet the Preferred Level of Service Criteria	Total Project Cost	Allocated Funding		Anticipated Completion Year
				PennDOT/ County	Township	
1	Big Road (S.R. 0073) and Middle Creek Road	Install traffic control signal.	$326,800	$163,400	$163,400	2030
2	Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663)	Install traffic control signal and install westbound left-turn lane (Current Township Act 209 Project).	$631,336	$315,668	$315,668	2020
3A	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Install a traffic control signal along with a separate eastbound left-turn lane (Current Township Act 209 Project).	$1,692,800	$846,400	$846,400	2023
3B	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Install a single-lane roundabout with a southbound bypass lane (Current Township Act 209 Project).	$3,500,00 (1)	$1,750,000 (1)	$1,750,000 (1)	n/a
5	Big Road (S.R. 0073) and New Hanover Square Road	Optimize the signal timings/phasing and install a northbound left-turn lane.	$866,550	$433,275	$433,275	2030
7	Swamp Pike and Middle Creek Road (1)	Install a westbound right-turn lane and realign the Middle Creek Road approach (Developer Project).	$653,000 (2)	$0	$0	2030
9	Swamp Pike and North Charlotte Street (S.R. 0663)	Optimize the signal timings/phasing.	$22,000	$11,000	$11,000	2030
13	Swamp Pike and New Hanover Square Road	Optimize the signal timing/phasing and install eastbound and westbound left-turn lanes.	$942,800	$471,400	$471,400	2030
14	Swamp Pike and Wagner Road	Install an eastbound left-turn lane.	$273,600	$136,800	$136,800	2030
18	North Charlotte Street (S.R. 0663) and Moyer Road	Install traffic control signal and install a northbound left-turn lane (Current Township Act 209 Project).	$1,548,300	$774,150	$774,150	2023
			$6,957,186	$3,152,093	$3,152,0933	

(1) Excluded from overall project costs.
(2) On-site development work, not eligible for Act 209 reimbursement.

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Future Development Transportation Capital Improvements Program

The Future Development Transportation Capital Improvements Program is summarized in **Table 11** for the Transportation Service Area and details the improvements necessary to achieve the preferred levels of service under future 2030 development traffic conditions. Table 11 also provides cost allocations for the improvements, indicating the portions of the total cost for which PennDOT, the County, the Township, and future developers are responsible. The anticipated completion year for each of the improvements is also included in Table 11. **The total cost of the Future Development Transportation Capital Improvement Program is approximately $15,176,750.**

Table 11. 2030 Future Development Conditions Cost Estimates

Int. No.	Intersection	Improvements Required to Meet the Preferred Level of Service Criteria	Total Project Cost	Allocated Funding				Anticipated Completion Year
				PennDOT/ County	Township	On-Site (1)	Developer	
2	Big Road (S.R. 0073) and North Charlotte Street (S.R. 0663)	Optimize the signal timings/phasing, install an additional eastbound through lane and northbound right-turn lane.	$986,800	$493,400	$0	$0	$493,400	2030
3A	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Install an additional westbound through lane that will be dropped prior to the Big Road (S.R. 0073) bridge structure.	$1,149,800	$484,050	$0	$181,700	$484,050	2030
3B	Big Road (S.R. 0073) and Layfield Road (S.R. 0663)	Install a multi-lane roundabout with an additional westbound travel lane and maintain the southbound right-turn bypass lane.	$1,000,000 (2)	$500,000 (2)	$0	$0	$500,000 (2)	n/a
5	Big Road (S.R. 0073) and New Hanover Square Road	Optimize the signal timings/phasing and install a westbound right-turn lane.	$565,800	$282,900	$0	$0	$282,900	2030
7	Swamp Pike and Middle Creek Road	Install traffic control signal and install eastbound left-turn lane.	$5,103,800	$1,415,510	$0	$2,272,780	$1,415,510	2030
8	Swamp Pike and Dotterer Road	Install eastbound left-turn lane, restrict northbound left-turn movements via a channelized island.	$3,243,000	$1,053,975	$0	$1,135,050	$1,053,975	2030
9	Swamp Pike and North Charlotte Street (S.R. 0663)	Optimize the signal timings/phasing and install an additional eastbound and westbound through lane.	$3,573,800	$1,786,900	$0	$0	$1,786,900	2030
11	Swamp Pike and Romig Road	Install traffic control signal.	$363,000	$181,500	$0	$0	$181,500	2030
13	Swamp Pike and New Hanover Square Road	Optimize traffic signal timings/phasing and install westbound right-turn lane.	$168,750	$84,375	$0	$0	$84,375	2030
15	Swamp Pike and Sanatoga Road/Fagleysville Road	Optimize the signal timings/phasing.	$22,000	$11,000	$0	$0	$11,000	2030
			$15,176,750 (100%)	$5,793,610 (38%)	$0 (0%)	$3,589,530 (24%)	$5,793,610 (38%)	

(1) On-site development work, not eligible for Act 209 reimbursement.
(2) Excluded from overall project costs.

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Improvements Summary

The total costs of the New Hanover Township *Transportation Capital Improvements Plan*, which includes existing, pass-through, and development improvements are summarized in **Table 12**. As indicated, the total cost of the *Transportation Capital Improvements Plan* for the entire Township is approximately **$22,155,936**. The allocation for the costs have been sub-divided by PennDOT, the County, Township, and Developer based on Tables 9, 10, and 11.

Table 12. Initial Cost Improvements Summary

Condition	Cost Allocation				Total
	PennDOT/County	Township	On-Site [(1)]	Developer	
Existing Program	$11,000	$11,000	$0	$0	$22,000
Pass-Through Program	$3,152,093	$3,152,093	$653,000	$0	$6,957,186
Development Program	$5,793,610	$0	$3,589,530	$5,793,610	$15,176,750
Total (Percent)	$8,956,703 (40.4%)	$3,163,093 (14.4%)	$4,242,530 (19.1%)	$5,793,610 (26.1%)	$22,155,936 (100%)

Impact Fee

The Pennsylvania Municipalities Code also allows for a fair-share of the costs to complete the Act 209 Studies to be included within the fee. As the developers' costs represent approximately 26.1% of the total program (inclusive of existing, pass-through, and development improvements), the fair-share cost would then be $15,503.

The developers' costs for the capital improvement program that the fee would be based on then totals **$5,809,113.** The impact fee is then determined by dividing this amount by the total "new" weekday afternoon peak hour trips anticipated as shown in Table 7 of **1,301.** The corresponding impact fee for New Hanover Township would then be **$4,465 per "new" weekday afternoon peak hour trip.**

However, the Township has recently been successful in obtaining grant funding from the both the DCED and PennDOT Multi-Modal Grant Programs to assist with the associated construction costs for the intersection improvements at the intersection of Big Road (S.R. 0073)/North Charlotte Street (S.R. 0663) to install a traffic control signal and widen along Big Road (S.R. 0073) for a separate left-turn lane. These improvements are referenced in the pass-through conditions. As the Township has been successful in obtaining alternative funding through these grants and others such as the Automate Red Light Enforcement (ARLE), Green Light Go, or Transportation Alternatives Grant Programs may also provide opportunities to assist in the design and construction costs associated with roadway and/or intersection improvement projects, the Transportation Impact Fee Advisory Committee has reduced the above calculated fee by 7% or $312.55 per new weekday afternoon trip. **The resultant recommended Transportation Impact Fee is then $4,152.45 per "new" weekday afternoon peak hour trip.**

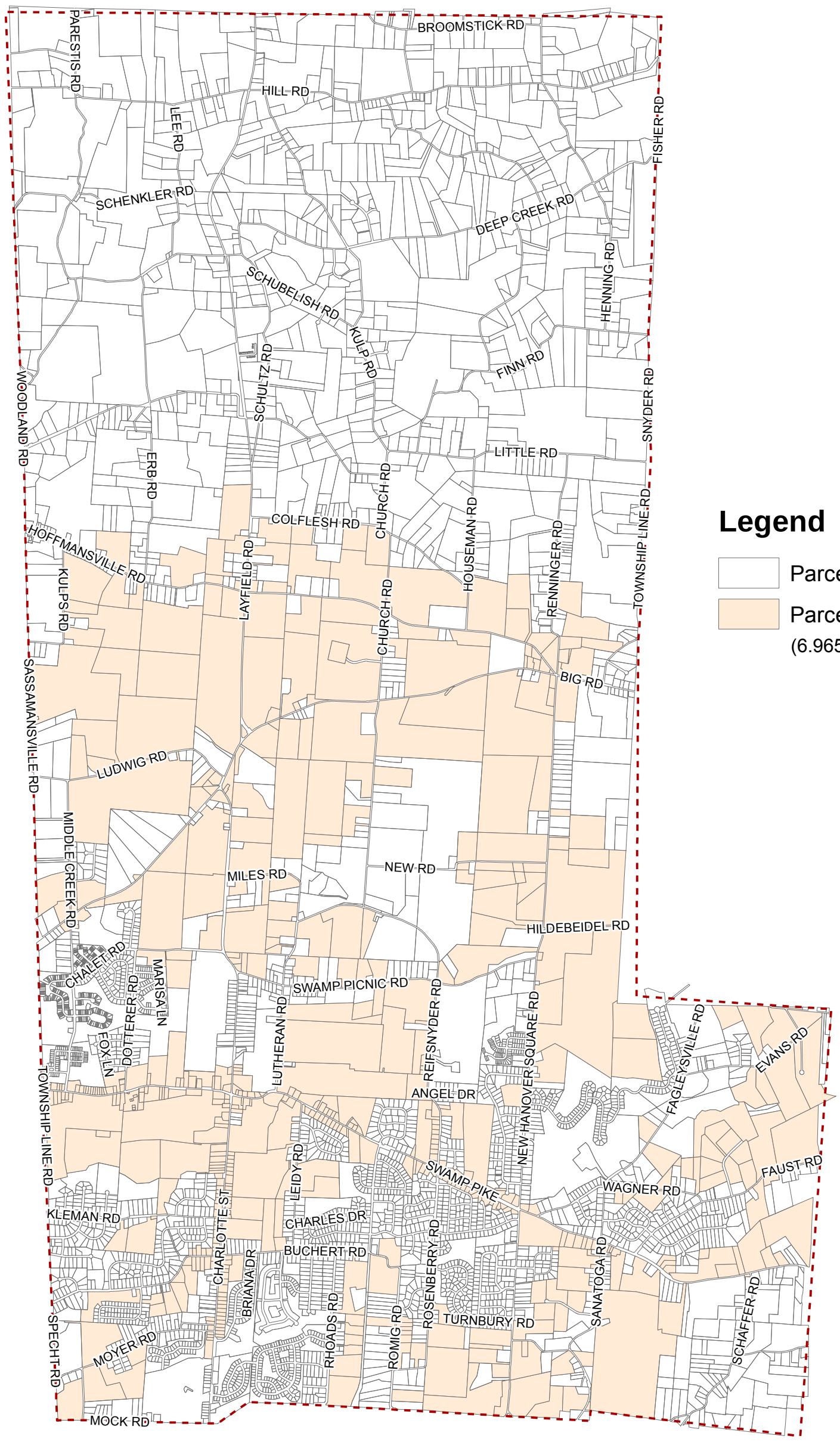

Figure 1

Transportation Service Areas

NEW HANOVER ACT 209 STUDY

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

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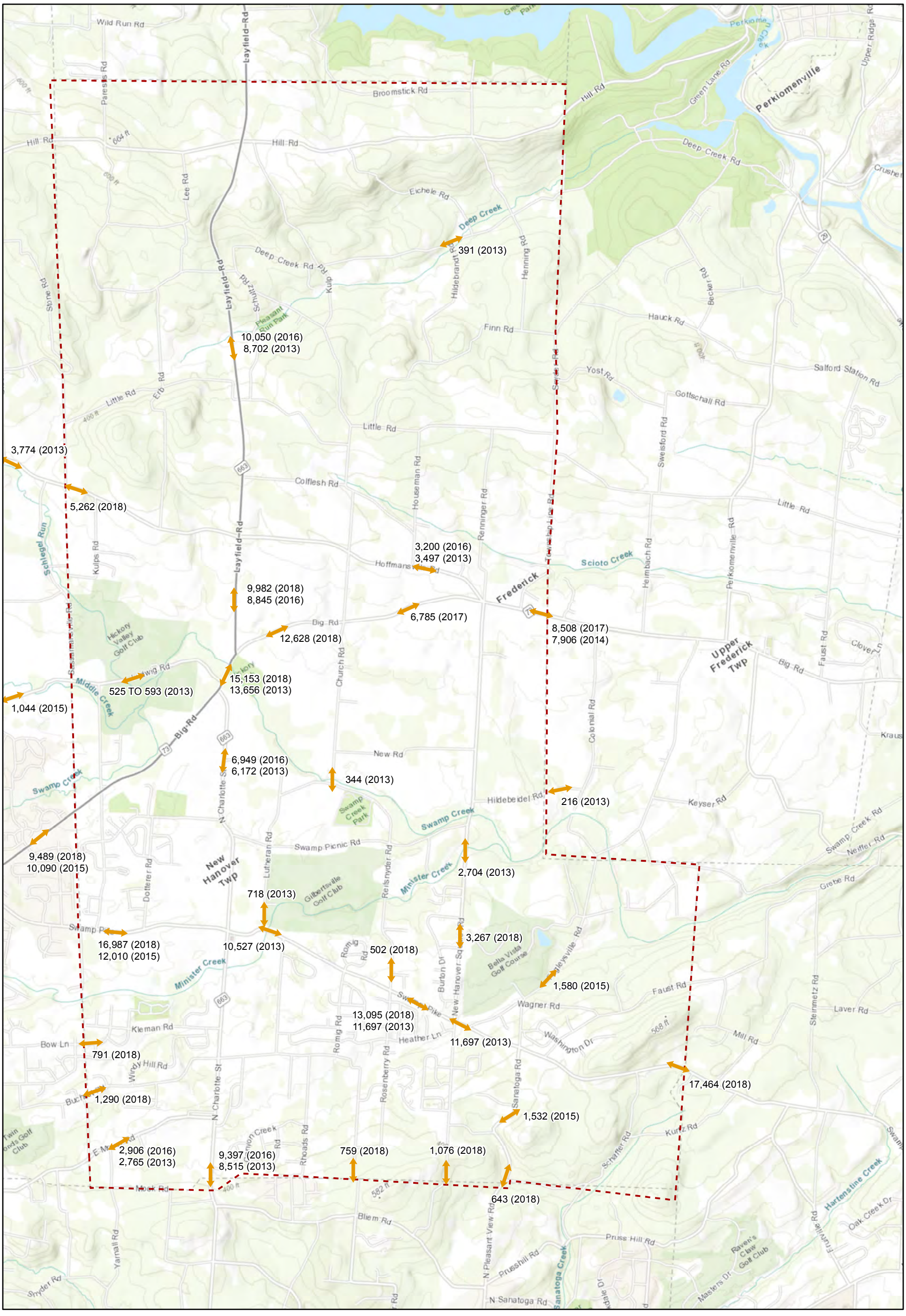

Figure 2
Daily Traffic Summary

NEW HANOVER ACT 209 STUDY

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

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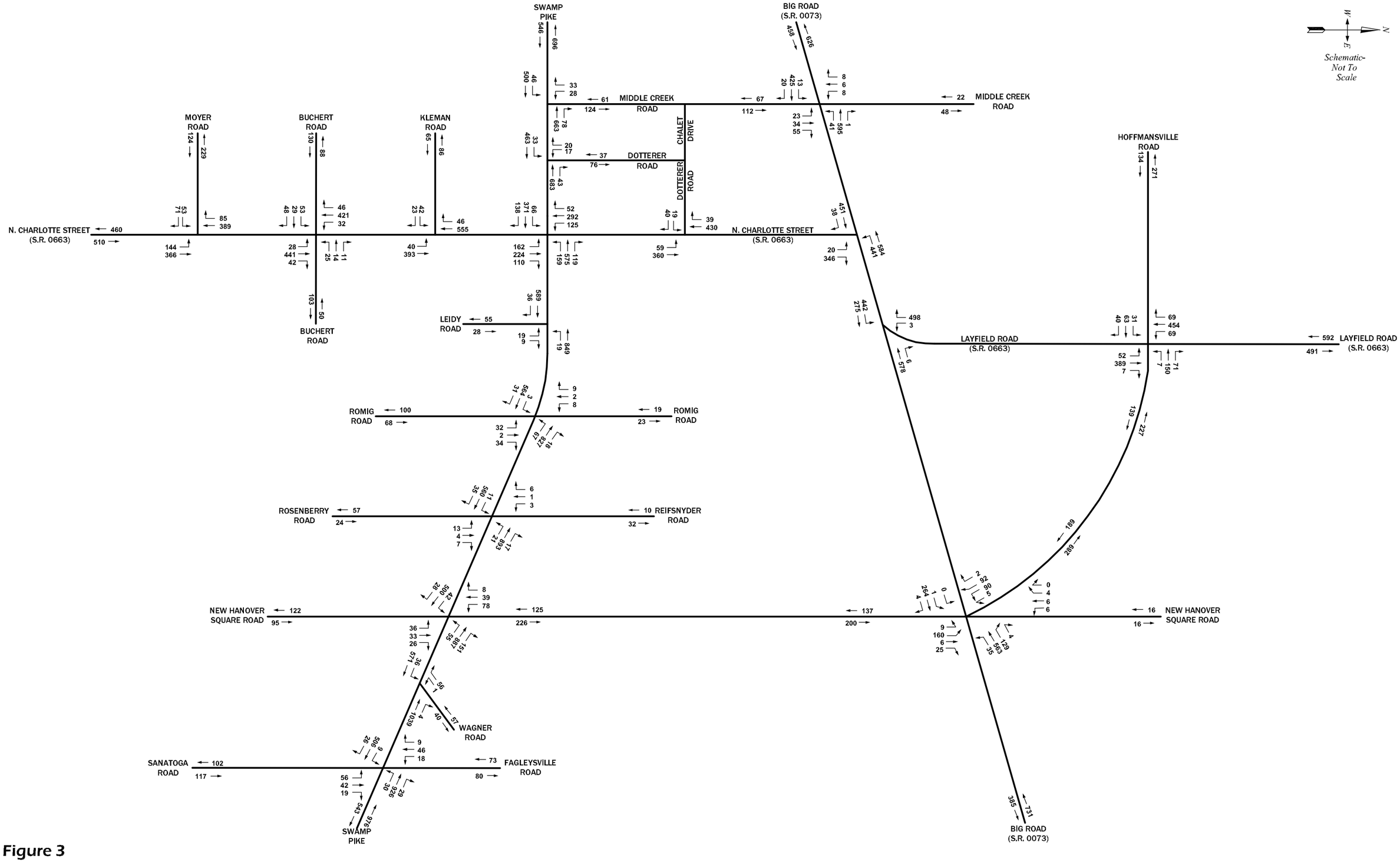

Figure 3

2018 Existing Weekday Afternoon Traffic Volumes

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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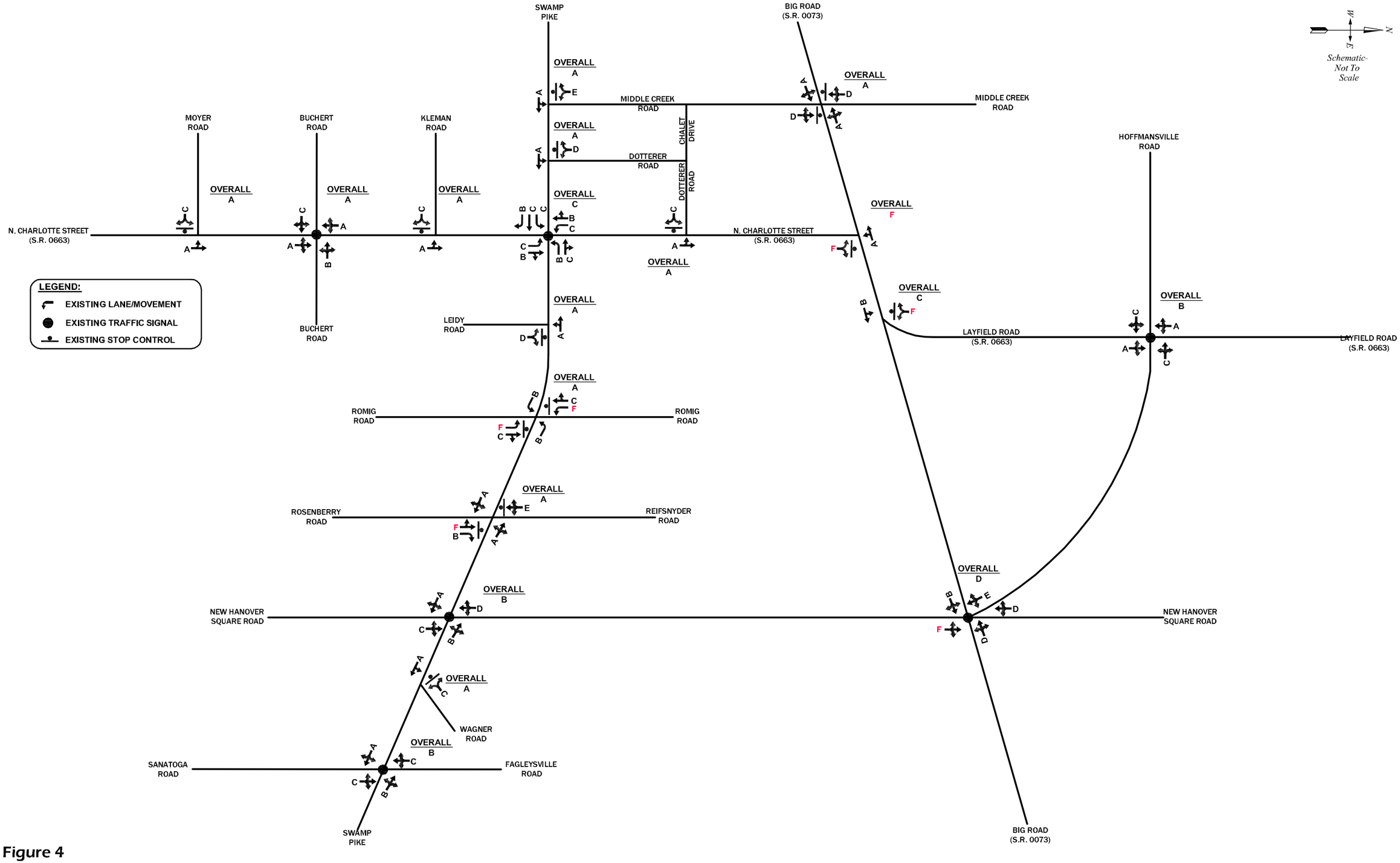

Figure 4

2018 Existing Weekday Afternoon Levels of Service

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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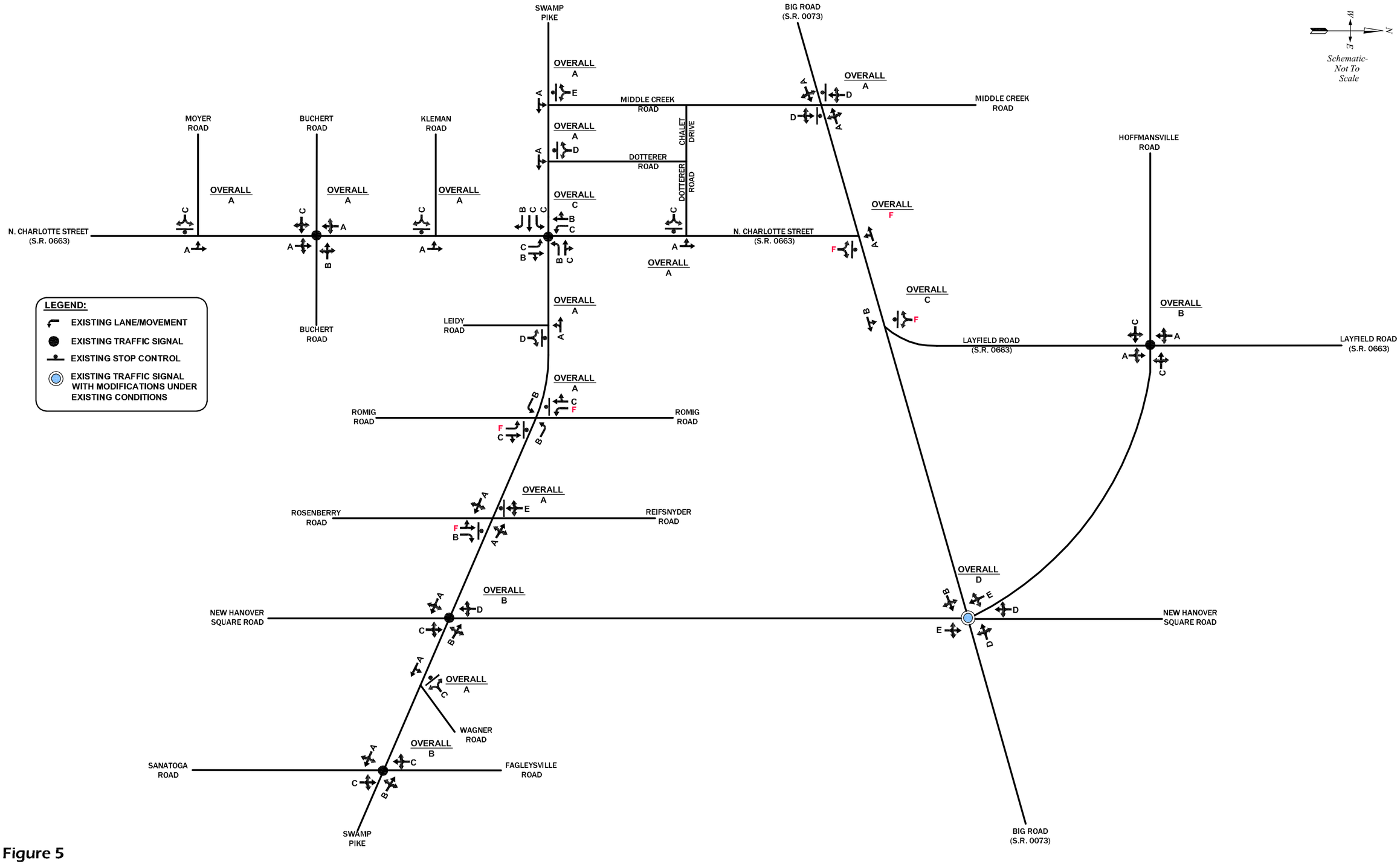

Figure 5

2018 Existing Weekday Afternoon Levels of Service With Improvements

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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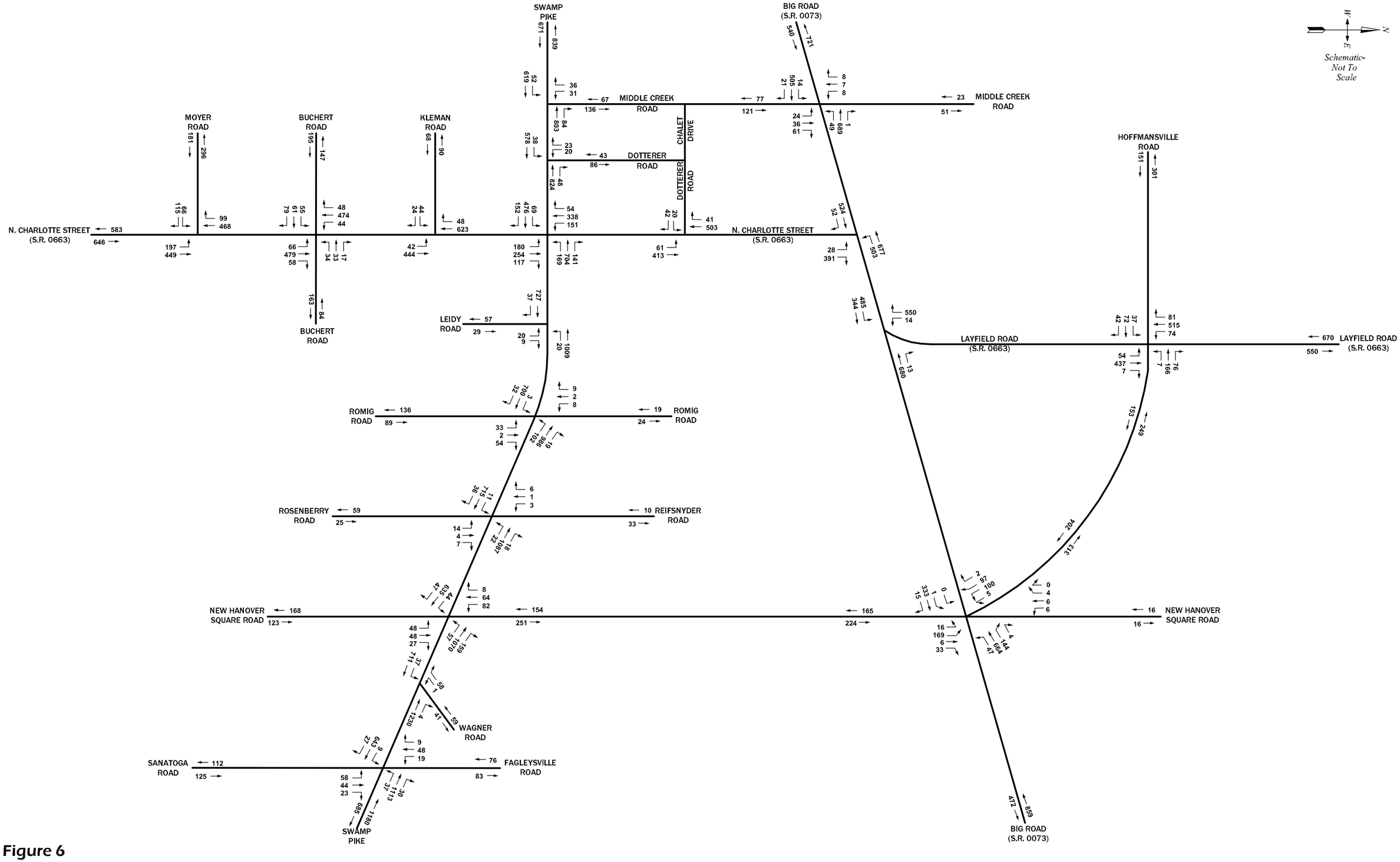

Figure 6

2030 Future Pass Through Weekday Afternoon Traffic Volumes

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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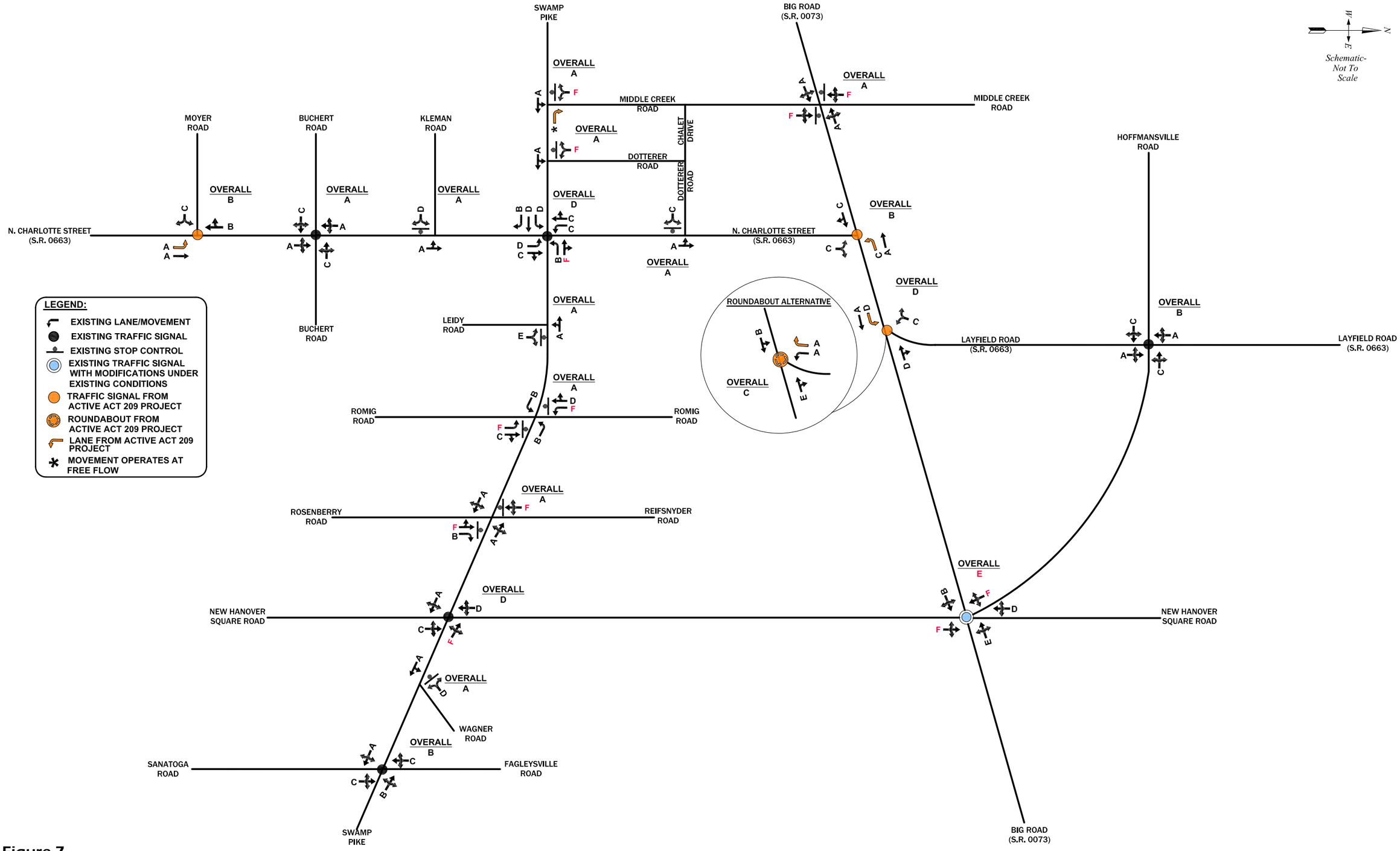

Figure 7

2030 Future Pass Through Weekday Afternoon Levels of Service

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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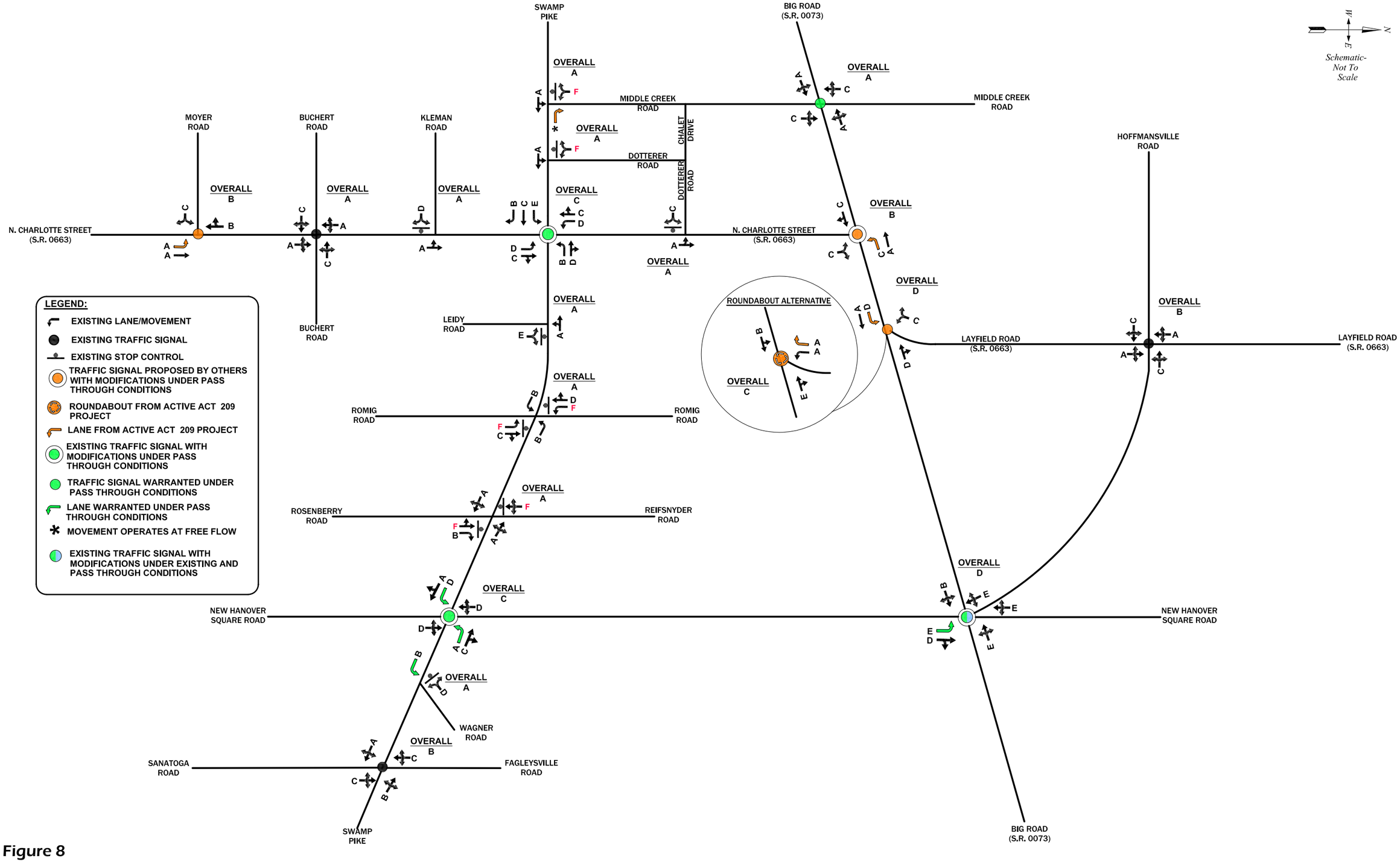

Figure 8

2030 Future Pass Through Weekday Afternoon Levels of Service With Improvements

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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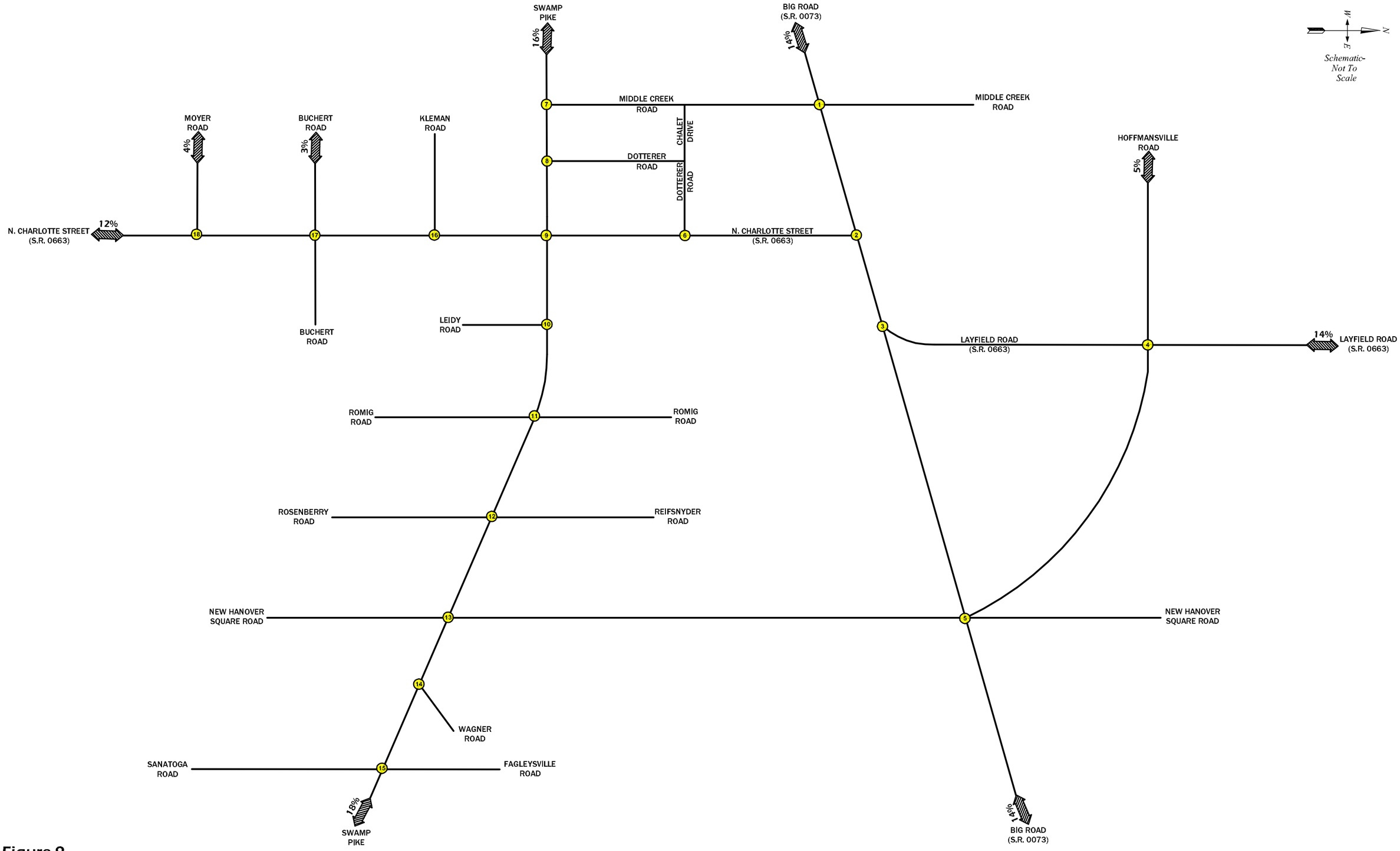

Figure 9
Trip Distribution

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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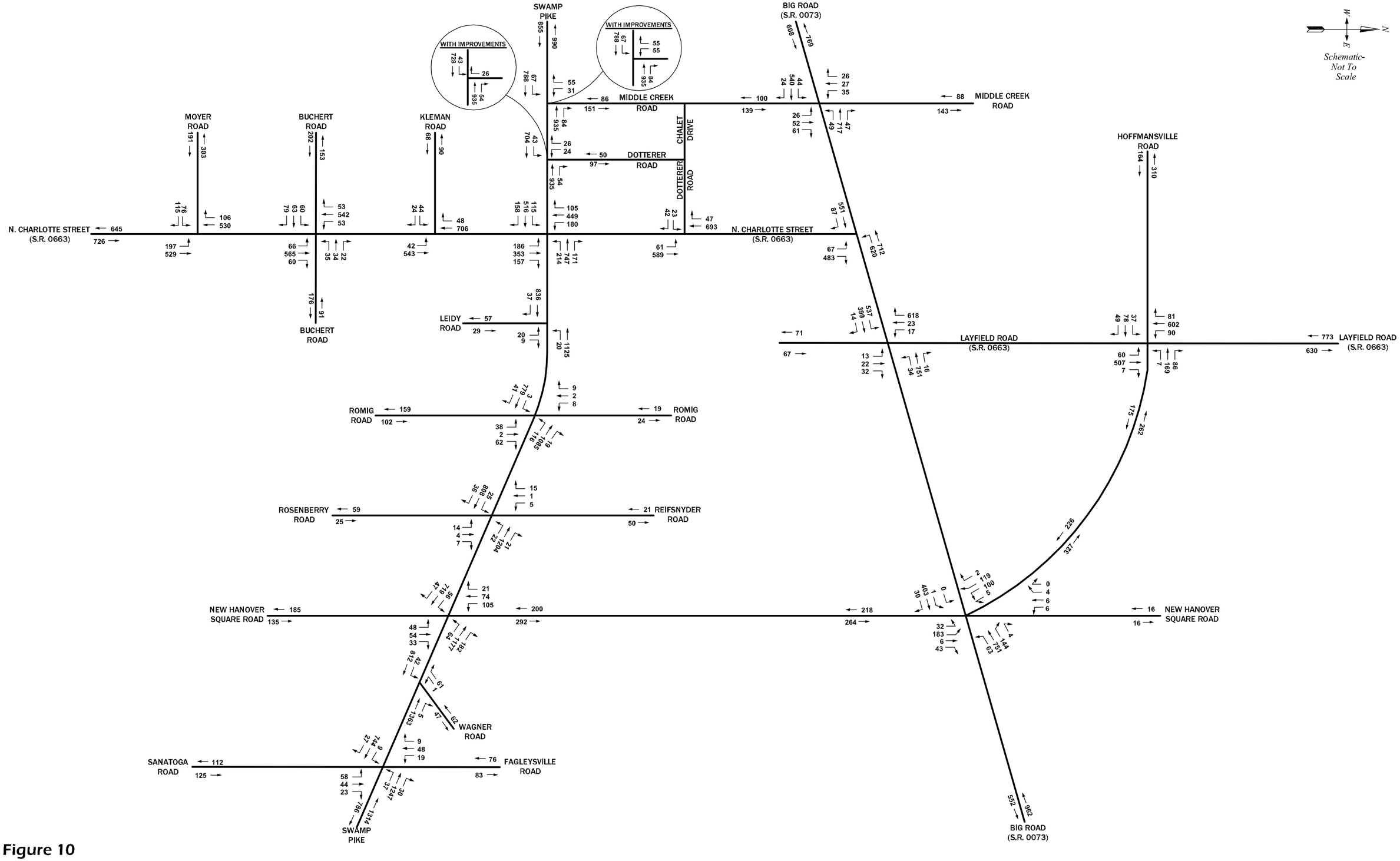

Figure 10

2030 Future Development Weekday Afternoon Traffic Volumes

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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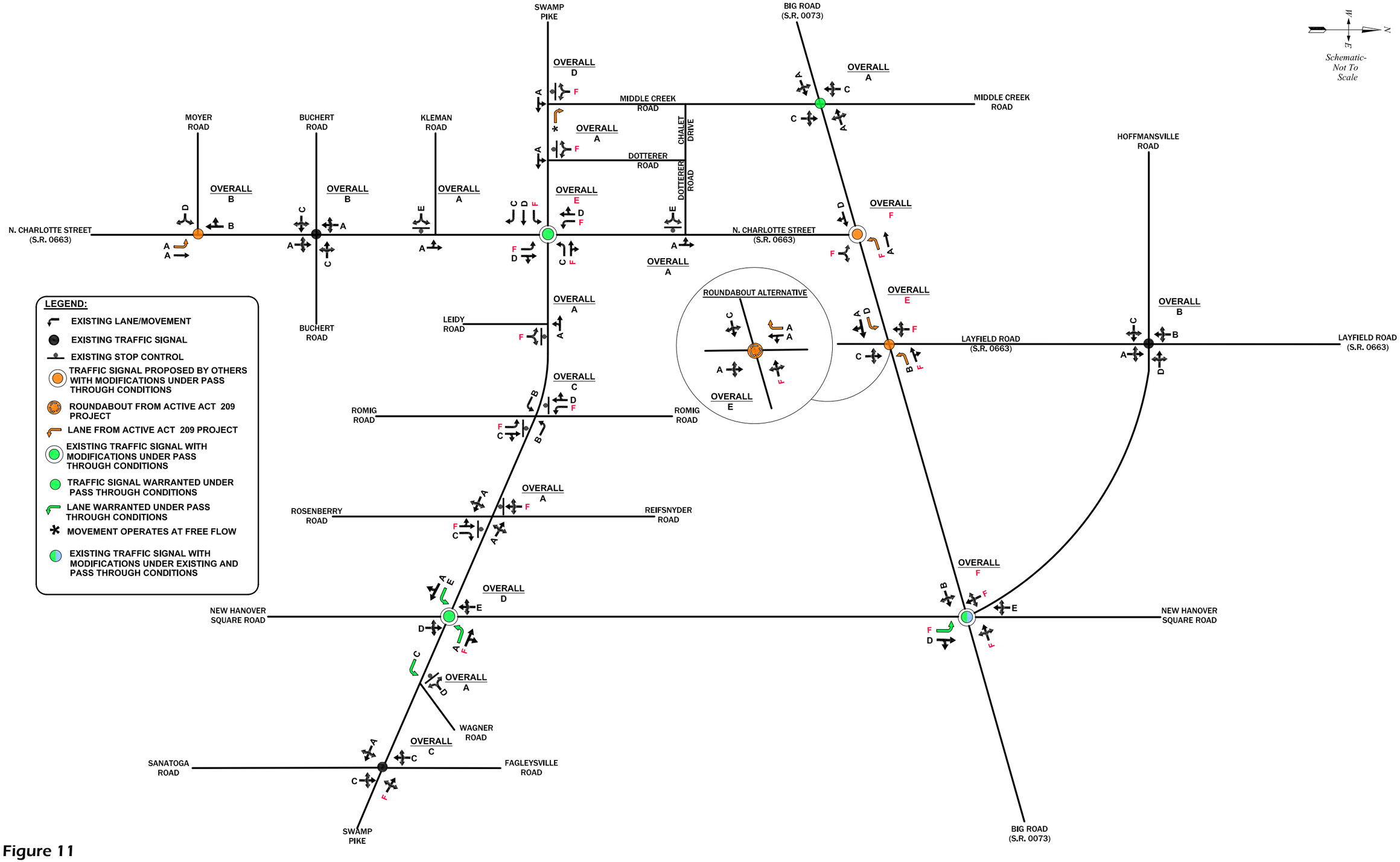

Figure 11

2030 Future Development Weekday Afternoon Levels of Service

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

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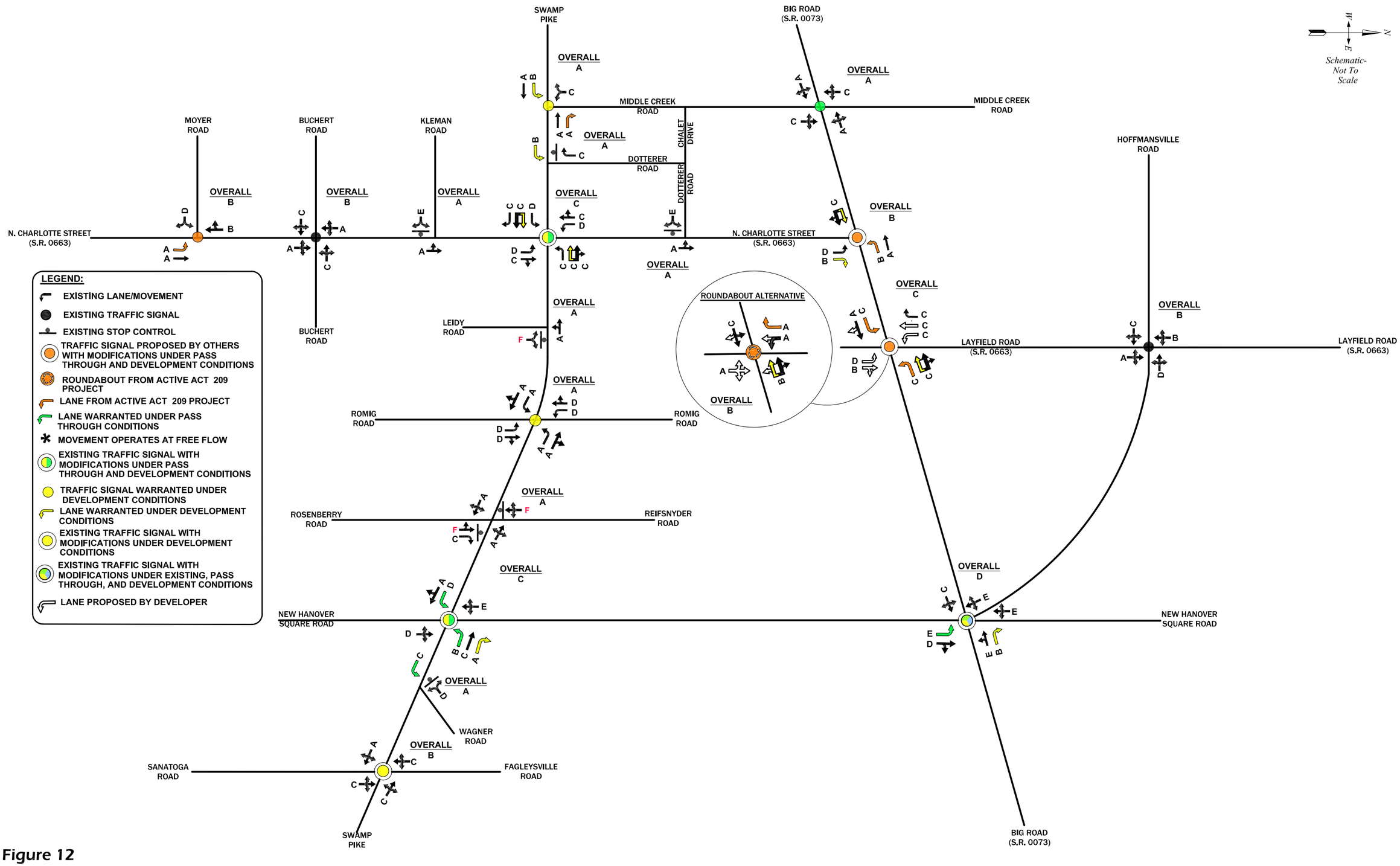

Figure 12

2030 Future Development Weekday Afternoon Levels of Service With Improvements

NEW HANOVER TOWNSHIP ACT 209

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

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Appendix A

TIFAC Meeting Minutes

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

MARCH 14, 2018

An organization and regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday March 14, 2018 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Bruce Moyer, Gregory Herb, Susan Smith, Linda Swagzdis, and Boone Flint. Absent were Donna Hoffman and Emil Palladino. Also present were Sandy Koza-Traffic Engineer, Brian Olszak-Montgomery County Planning Commission, Jamie Gwynn-Township Manager and Eileen Pogany. Jamie Gwynn opened the meeting at 5:30 thanking members of the committee for their commitment.

ORGANIZATION

Jamie Gwynn advised that positions of Chairman, Vice Chairman, and Secretary are needed and call for nomination for the position of Chairman.

Chairman – Susan Smith **moved** to appoint Gregory Herb as Chairman. Boone Flint **seconded** the motion, and the motion **carried unanimously**.

Mr. Herb proceeded to call for nomination for the position of Vice Chairman.

Vice Chairman – Boone Flint **moved** to nominate Bruce Moyer as Vice-Chairman. Motion was **seconded** by Linda Swagzdis and **carried unanimously**.

Secretary – **Motion** to appoint Linda Swagzdis as secretary was made by Susan Smith, **seconded** by Boone Flint and **carried unanimously**.

DISCUSSION ITEMS

Sandy Koza explained that Act 209 provides a way to allocate fair share costs for municipal transportation capital improvements between developer, municipality, and PennDOT but does not include roadway maintenance or improvements to address existing design deficiencies and does not provide for 100% of the cost. The committee will be identifying intersections where anticipated improvements will be needed taking into consideration development trends and projections for the upcoming ten-year period. Improvements needed near development sites can be partially funded through the Act 209 fees assessed to the developer. Committee members will be asked to contribute to establishing service areas and intersection improvements based on last ten years and trends and projecting into the upcoming ten years. Mrs. Koza also provided a checklist taken from PennDOT Act 639 outlining steps to be taken and stated that initial steps of appointing committee members and first advertisement have been accomplished. Next step is to complete the Land Use Assumption Report.

Land Use Assumption looks at past ten year and projects the next ten years to determine where developable areas exist and to establish service areas excluding areas which are not expected to be developed. Projected trip generation, level of service needed and cost projections are needed.

Susan Smith commented that the process seems to apply to vehicular traffic and that roadways are becoming congested. Ms. Koza pointed out that there are references to public transportation by bus which could reduce the number of automobiles and that park and share-a-ride areas could also be a possibility reducing numbers of automobiles. A handout detailing the overall process was distributed to each member and a recap provided. Seven square mile service areas need to be established and areas fully developed can be defined and excluded so that boundaries of the areas can be adjusted to include where improvements will be needed.

Brian Olszak, Sr. Planner stated there are six steps in preparing the Land Use Assumptions Report and provided maps showing current TSA areas Nos. 1 and 2, an existing land use map, and a map showing areas receiving preferential assessments which are not expected to be developed; he estimates the existing information to be approximately 75% accurate. Need to develop an accurate land use map which now has fifteen categories. He stated that the committee will provide info to project population for the upcoming ten years and to project where development will occur analyzing Township ordinances to exclude undevelopable areas such as stormwater basins, roadways, lot sizes etc. It was noted that the previous projected number of persons was 5,000 less than projected but was likely due to the downturn in economy and it was noted that projects which did not build out previously are becoming active. Sandy provided map of intersections which have had traffic counts taken. The map needs to be reviewed to determine if changes have occurred which significantly affect these intersections and if certain intersections need to be excluded or need to be added.

Committee members were asked to digest the information presented and make recommendations at the next meeting. Linda Swagzdis asked if the bridge along Swamp Pike near New Hanover Square Road will be widened and Mrs. Koza said it is a County project and is being looked at but ultimately will be decision of Montgomery County. Next meeting is scheduled for May 11, 2018 beginning at 5:30 PM.

Boone Flint moved to adjourn at 6:27 and the meeting was declared adjourned.

_____
Linda Swagzdis, Secretary

NEW HANOVER TOWNSHIP

TRAFFIC IMPACT FEE ADVISORY COMMITTEE

APRIL 11, 2018

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday April 11, 2018 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Bruce Moyer, Greg Herb, Susan Smith, Linda Swagzdis, Donna Hoffman and Boone Flint. Absent was Emil Palladino. Also present were Sandy Koza-Traffic Engineer, Brian Olszak- Montgomery County Planning Commission, Jamie Gwynn-Township Manager and Eileen Pogany. Chairman Greg Herb opened the meeting at 5:30 PM.

APPROVAL OF MINUTES

Minutes of the March 14, 2018 containing discussion and attachments of documents were review by the committee. Boone Flint **moved** to approve the minutes; Susan Smith **seconded** the motion and it carried unanimously.

LAND USE ASSUMPTIONS REPORT STATUS

Brian Olszak, led the discussion on how predictions of population are arrived at and advised that DVRPC works closely with the County. Every five years, updated population forecasts are provided and distributed by DVRPC to the County. Township demographic information is also available. The committee may choose to compare the predictions from DVRPC to those predicted based on actual development trends in the Township for the LUAR, as the report typically uses the higher prediction. He stated that the Township fell short of the prediction in 2005.

Jamie Gwynn provided a list of 37 developments currently in the review/approval process. Mr. Olszak stated that the township needs to be realistic to provide what is needed and needs data to back-up predictions. He stated that it is important to consider numbers of employees being employed within the township which contribute to numbers of traffic.

Residential and Proposed Development – Brian Olszak provided a document of trends and strategies which can be used to predict future growth. Currently over 3,500 housing units are in the development process and 900 houses were built over the last ten years. The Township could expect an additional 2,600 housing units to be developed by 2028 and an additional 7,500 residents could then be expected, which is greater than the DVRPC population prediction. Jamie Gwynn provided a color-coded map showing active and approved subdivisions, which had the number of residential units. It was noted that the table should be updated to also note non-residential development components as well.

Nonresidential Development - Five commercial sites were identified as having been built and it was noted that the Gaugler commercial and residential may become active again. Predictions needs to be reasonable. Sandy Koza stated that commercial needs to be

taken into consideration since employees contribute to the number of trips. Projections should be based upon land development in process and how vacant land is zoned to consider possibilities and to make an estimate as to when buildout could be expected.

Sandy Koza stated that Brian Olszak will prepare a draft of predictions to present for the committee's review. It was noted that commercial space may be built out over a period of time. Jamie Gwynn reviewed the appendix of residential development proposed and built which will be updated as the review continues. Sandy suggested the YMCA property be considered, keeping in mind that the property is zoned residential and does not have public water or sewer. It was noted that development is anticipated on the Marinari tract since there is a court order approval. In reviewing the list, the time limit for McGee and Gaugler Commercial are approaching for when the prior approvals will run out and any development activity on these properties would then require a new submission to the Township.

Undeveloped parcels will be reviewed by Brian to determine how they could be built-out. The committee will then review and make a judgement on what the possibilities are for the next ten years, taking past development trends into consideration. Jamie Gwynn estimated that a maximum of 1,000 to 1,500 new housing units could be expected by 2030 with 4,300 new residents. It was mentioned that large development may be built out over a period of time and that it is expected that commercial development may begin to become more active during 2025 to 2030. Jamie Gwynn stated that the township's comprehensive plan may direct commercial development. Committee predictions will be based on trends and what is being proposed with as much data as available. Sandy Koza stated that adjoining townships will be contacted since the future traffic projections need to account for pass-through traffic noting that developers are not required to share costs for improvements for existing and pass-through traffic.

Motion to establish a horizon date for predictions for year 2030 was made by Boone Flint and **seconded** by Bruce Moyer and **unanimously carried**. Jamie Gwynn stating that the Township may have an updated comprehensive plan by 2020.

Next steps are to begin evaluating underdeveloped land and taking into account preserved and agricultural properties. Sandy Koza suggested that a map be prepared showing only developable properties in color, to allow for easy identification of properties for evaluation and excluding parcels which will never be able to be developed. Committee was also provided a map showing daily traffic counts and potential locations where turning movement counts may be needed for the study. Township will coordinate with DVRPC data relative to the traffic. Middle Creek Road and Rt. 73 will be counted by the County study; 2018 count data has been collected for the Rt. 73/663 North and Rt. 663/Moyer Road intersections by McMahon; and a traffic study has been performed that includes 2018 counts for the Swamp Pike intersections with New Hanover Square Road and Reifsnyder Road/Rosenberry Road. The County will also be updating the Rt. 73 daily count shown on the map in Douglass Township with as10,090. At the next meeting, the committee will review the map to determine which intersections to include in the study.

Committee confirmed their next meeting to be May 9, 2018 at 5:30 PM. Motion to adjourn was made by Boone Flint and the meeting was declared adjourned.

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NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

MAY 09, 2018

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday May 9, 2018 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Greg Herb, Donna Hoffman, Linda Swagzdis, and Boone Flint. Absent were Bruce Moyer, Susan Smith, and Emil Palladino. Also present were Sandy Koza-Traffic Engineer, Brian Olszak- Montgomery County Planning Commission, Jamie Gwynn-Township Manager and Eileen Pogany. Chairman Greg Herb called the meeting to order at 5:30 PM.

APPROVAL OF MINUTES – April 11, 2018 Donna Hoffman moved to approve the minutes replacing Gregory Herb with Greg Herb and removing the DCR notation. Linda Swagzdis seconded the motion and it carried unanimously.

DISCUSSION -Sandy Koza provided an updated map showing potential study intersections along with recent daily traffic data (see attached **Exhibit D**). The daily counts are typically done with tubes on the road, while the intersection counts are done with people/cameras that document turning movements (left, thru, right) on all legs along with heavy vehicles and any pedestrian/bicycle activity.

A review of intersections where recent counts were conducted and/or are scheduled to occur by the County/DVRPC were reviewed. McMahon completed weekday morning and afternoon counts at the intersections of PA 73/663 North and PA 63/Moyer Road. Daily traffic counts were also conducted on all approaches to the PA 73/663 intersection, which would be needed for submission to PennDOT if a roundabout is installed. The applicant for Hanover Crossings also completed a traffic study with weekday morning and afternoon intersection counts at the intersections of Swamp Pike with Reifsnyder Road/Rosenberry Road and New Hanover Square Road, as well as some daily counts on Swamp Pike, Reifsnyder Road and New Hanover Square Road. The County and DVRPC are planning on conducting weekday morning and afternoon intersection counts at PA 73/Middle Creek Road along with some daily counts along PA 73 as part of a regional study that was requested by the Pottstown Metropolitan Planning Commission. Even though these counts and intersections are being studied by McMahon or others, they still need to be included in the Act 209 as funding will be needed for upgrades and improvements.

It was noted that it is best to collect data prior to school closures for the summer season so that as the Land Use Assumptions report is being completed and then under review, the existing traffic conditions can be laid out. This will also reduce delays once the Land Use Assumptions Report is completed.

The committee was asked to review each intersection location to determine if it would be included in the study and scheduled to be counted, as up to 20 can be selected. An updated map is provided that should be reviewed before the July 11, 2018 meeting (see attached **Revised Exhibit D**). It was noted that the Town Center development will be studied as phases are developed. If counts are taken and upon review, the committee decides that they should not be included in the formal study, then they can then be dropped.

During the course of the review, the committee noted some potential operational issues at the Swamp Pike intersection with Fagleysville Road/Sanatoga Road, as they approach from Swamp Pike the light turns from green to red in a rather quick manner to the side streets. It was noted that this intersection will be looked at to see if minor timing modifications can be made. If coordination is needed, it is recommended to provide via GPS time clocks, which could be funded through the ARLE or Green Light Go grant programs. The County currently has a grant program to reimburse municipalities for the required match for the Green Light Go Grant program.

Brian Olszak from Montgomery County Planning Commission provided maps showing natural features and potentially developable land within the Township to be used to determine a maximum build-out. Identifying developable areas will help in identifying where traffic improvements will be needed. Brian is currently using these maps in conjunction with a review of the Township's Zoning Ordinance to provide the initial estimates of all potential residential/commercial development within the Township. These numbers will then be worked back to the horizon year. A copy of these maps is attached.

Linda Swagzdis asked how some communities are able to preserve large areas of land. Items like sewage capacity could have an effect, along with the development's need to meet zoning and planning requirements. The Municipalities Planning Code also has requirements that place emphasis on preservation that may influence this as well.

Committee members were asked to digest the information presented and were asked to review the updated Act 209 study map to assure the areas to be studied are correctly identified, as they will be counted before the next meeting. If upon review the group notices an intersection that they would like counted that is not included, then they can email the group with the request for it to be added.

Boone Flint moved to adjourn at 6:30 PM and the meeting was declared adjourned.

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Linda Swagzdis, Secretary

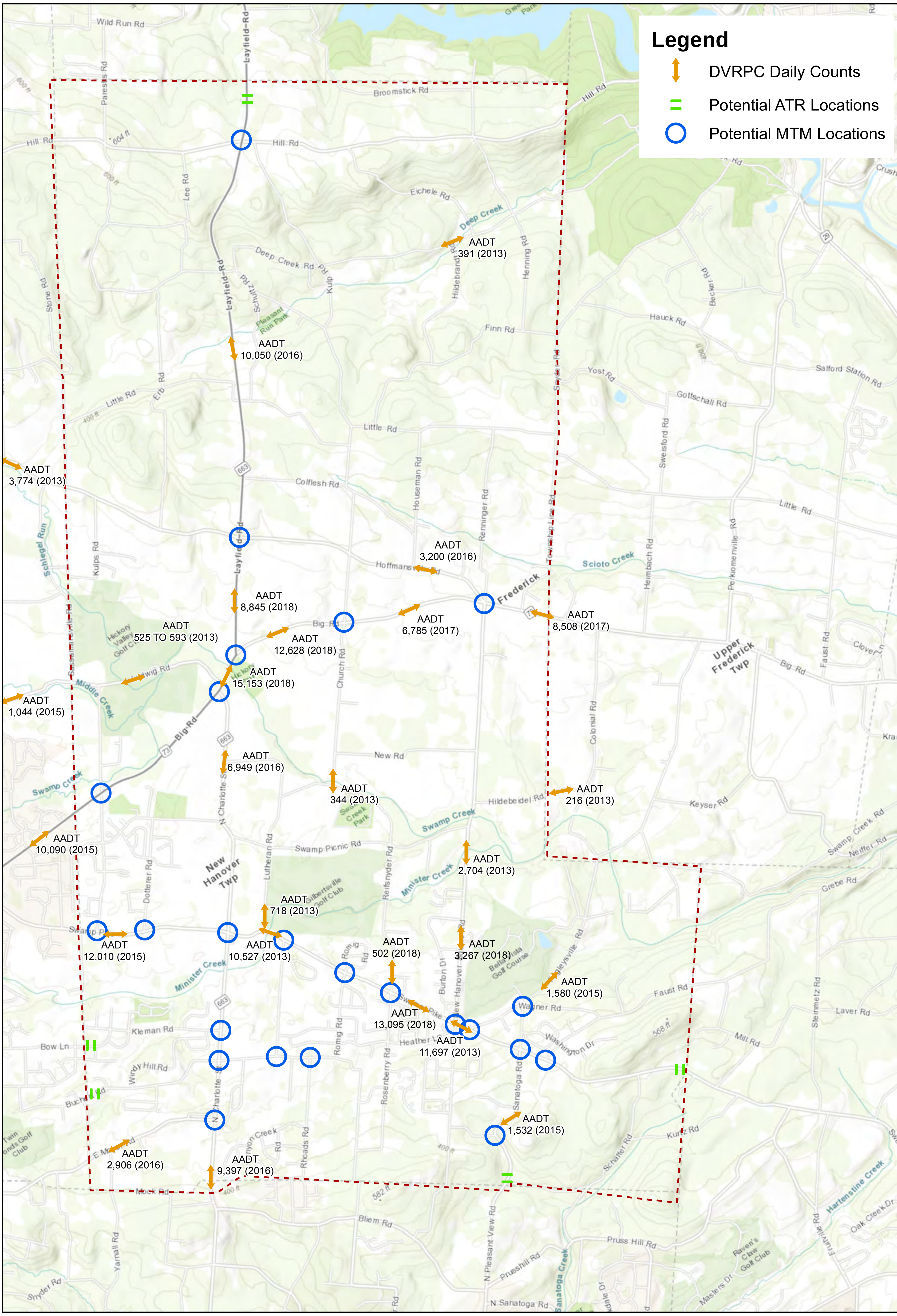


Exhibit D

Intersection/ATR Count Locations

NEW HANOVER ACT 209 STUDY

NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON TRANSPORTATION ENGINEERS & PLANNERS

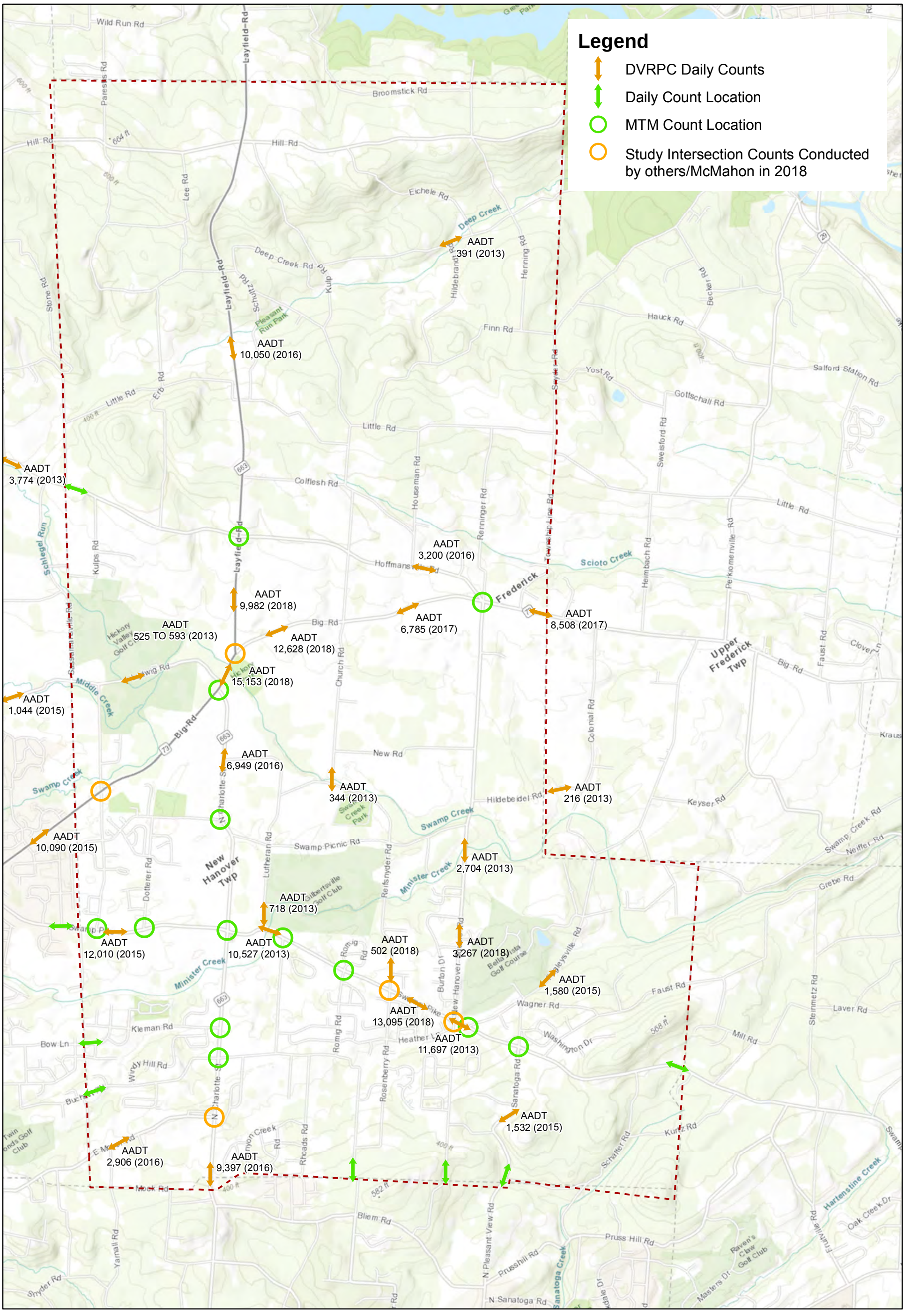


Exhibit D

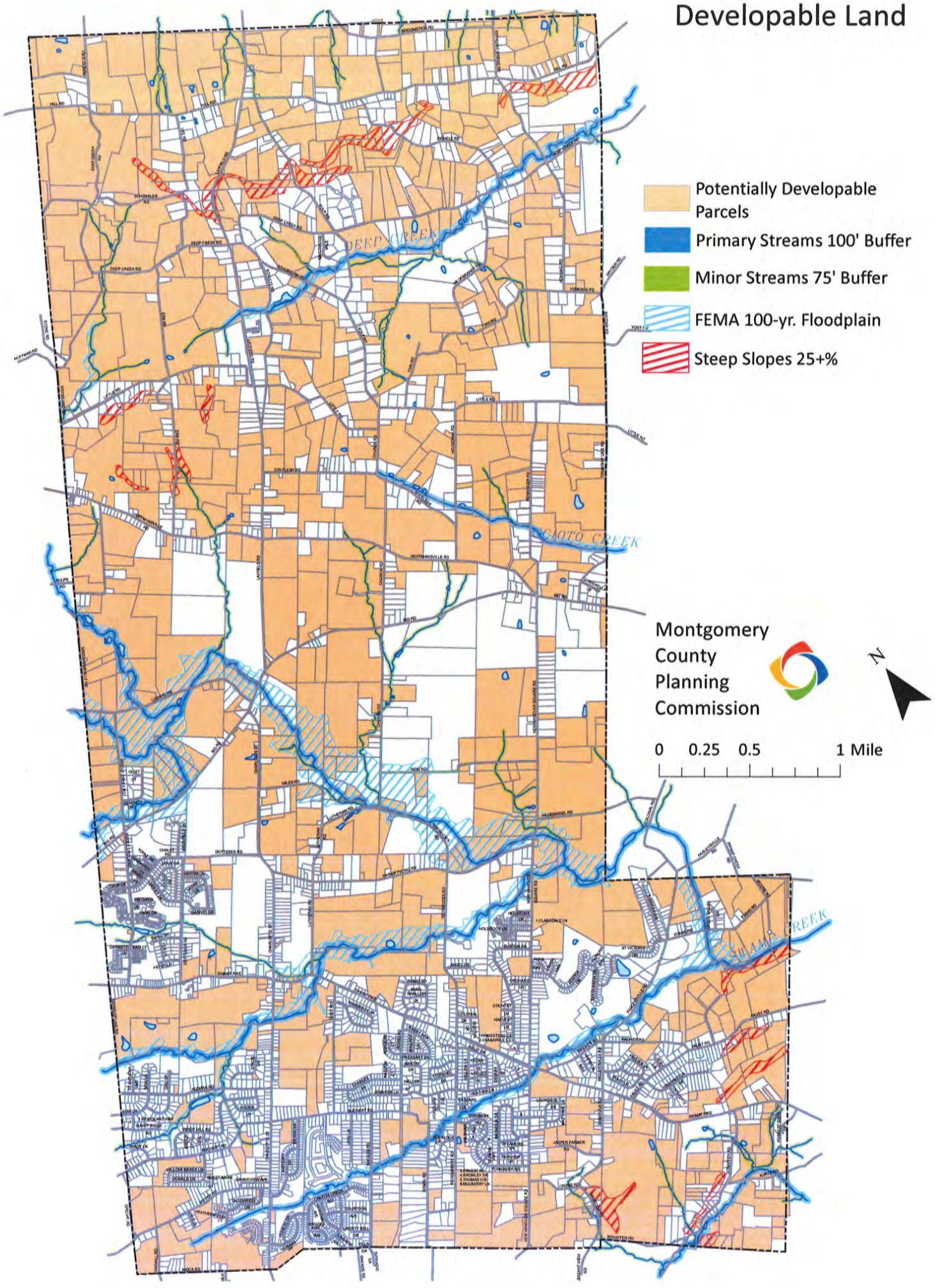
Revised Intersection/ATR Count Locations

NEW HANOVER ACT 209 STUDY

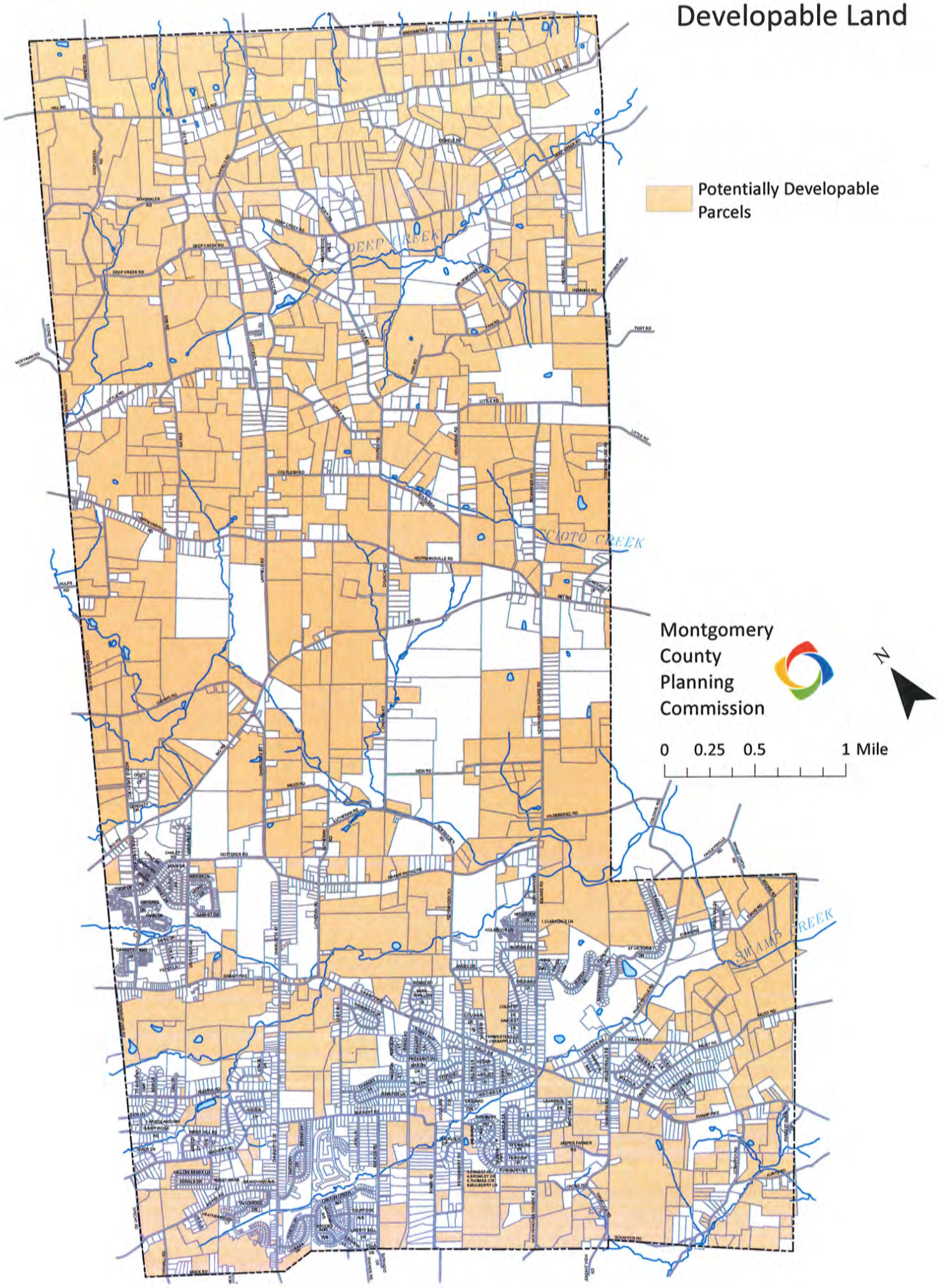
NEW HANOVER TOWNSHIP, MONTGOMERY COUNTY, PA

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Developable Land



Developable Land



NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

AUGUST 8, 2018

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday May 9, 2018 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Bruce Moyer, Donna Hoffman, Linda Swagzdis, Susan Smith and Boone Flint. Absent were Greg Herb, and Emil Palladino. Also present were Sandy Koza-Traffic Engineer, Brian Olszak- Montgomery County Planning Commission, Jamie Gwynn-Township Manager and Eileen Pogany. Vice Chairman Bruce Moyer called the meeting to order at 5:37 PM.

APPROVAL OF MINUTES – May 9, 2018 Boone Flint moved to approve the minutes contingent upon correction PA 63/Moyer Road to read PA 663/Moyer Road. Linda Swagzdis seconded the motion and it carried unanimously.

DISCUSSION ITEMS

RESIDENTIAL

Sandy Koza advised that the committee is working toward finalizing where the Township residential growth will be taking place in the Township for the next 12 years and up to 2030. Tables and development forecasts were provided and outlined in a communication of the Montgomery County Planning Commission July 11, 2018. Brian Olszak explained that there are two primary methods were used to estimate future residential growth: 1. Delaware Valley Regional Planning Commission (DVRBC) 2030 population forecast and projected future population created by residential land development currently in various stages of review, approval and construction in the Township. Moderate growth is projected for the 11-12 years until 2030. It was noted that the prior study projections were had not been achieved. Members discussed the probabilities of various projects included in the potential growth projections of the Township and discussed the many variables which could affect growth scenarios. **Donna Hoffman moved to make a recommendation of using the population growth projection based on the number of units in the Township pipeline less 435 (1/2 of total for the town center project) or 6,900 total new residents in the next 12 years. Susan Smith seconded the motion and it carried unanimously.**

NON-RESIDENTIAL (does not include institutional)

There are only a few anticipated development projects which may be built within the time horizon. Scenarios used to estimate commercial growth through year 2030 were based on development forecasts provided and outlined in a communication of the Montgomery County Planning Commission July 11, 2018 and included the prior 10-year period square footage, square footage projected by Township trends and square footage projected by County trends. **Susan Smith moved to recommend that the calculation projected by the County of 95,454 square feet be used as the estimated commercial square footage anticipated for the next 12 years to 2030. Motion was seconded by Boone Flint and carried unanimously.**

Sandy Koza informed the committee that it may be advisable to establish one transportation service area and that one impact fee would apply. Areas subject to the fee would be a minimum

of 7 square miles and each area would need to be connected and contiguous within the boundary and all fully developed areas would be eliminated from the district. Mrs. Koza expects that the update may take another year to complete. She also advised that when a new fee has been established, it will be applied to projects when preliminary plan approval is given.

The committee agreed to meet on September 12, 2018 beginning at 5:30 PM.

Boone Flint moved to adjourn at 6:31 PM and the meeting was declared adjourned.

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Eileen Pogany, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

SEPTEMBER 12, 2018

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday September 12, 2018 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Bruce Moyer, Donna Hoffman, Linda Swagzdis, Susan Smith and Boone Flint. Absent were Greg Herb and Emil Palladino. Also present were Sandy Koza-Traffic Engineer, Brian Olszak-Montgomery County Planning Commission, Jamie Gwynn-Township Manager and Eileen Pogany. Vice Chairman Bruce Moyer called the meeting to order at 5:35 PM.

APPROVAL OF MINUTES – August 8, 2018 Susan Smith moved to approve the minutes contingent upon correction to the draft minutes to indicate a projected number of residential units in the next 12 years to be 6,082 units rather than 6,900 units. Boone Flint seconded the motion and it carried unanimously.

DISCUSSION ITEMS

NON-RESIDENTIAL (does not include institutional)

The committee discussed where commercial development is expected by 2030. Potential developable sites included the vacated gasoline station at Swamp Pike and N. Charlotte Street; the YMCA facility on N. Charlotte Street; the Gaugler property along N. Charlotte Street; and the Town Center property along Swamp Pike. In non-residential areas, growth is based upon square footage of commercial buildings and is estimated to be 95,454 square feet anticipated by year 2030 with 25% occurring in the CB-1 Zoning District and 75% occurring in the TC (Town Center) Zoning District. Other potential areas that were looked at, but determined to have less development pressure were the CC and CB2 Zoning Districts. As an industrial use, there is not a standard size that can be used for the proposed quarry. The proposed quarry traffic will be accounted for in the roadway study based. It was noted that 209 fees may not be used for repairs or maintenance and also that truck traffic will likely be confined primarily to Rt. 73 and Rt. 663 for the quarry.

RESIDENTIAL

Township's predicted ability to handle additional residential development up to year 2030 is estimated to be 7,000 new single-family units or a total of 15,000 more residents. There are currently 2547 residential units in the pipeline which are not included in the 2030 projection.

REVIEW OF DRAFT LAND USE ASSUMPTIONS REPORT

Mention was made for a correction in the last paragraph of page 2 where the word "while" was used and the word "which" was intended. It was suggested to apply the color codes shown on page 8 to the chart provided on page 9 or list the project status rather than using the abbreviations, as outside reviewing agencies will not know what they mean. Full build-out of units remaining in the pipeline is 2,112.

Susan Smith voiced concerns regarding residents needing to back into busy roadways, as their classifications change due to development. It was noted that this may be a consideration for the Subdivision/Land Development Ordinance.

Classifications of highways and roads was discussed and will be reviewed and adjusted to coincide with what is identified in the Township's Subdivision/Land Development Ordinance and Zoning Ordinance. Private roads identified include Jaspar Farm, Hildebeidel Road, and Jays Lane. It was suggested that private roads be color coded on the map. It was noted that there most likely are no marginal access streets in the Township or any alleys. It was suggested that an additional line be added to the graph on page 14 to show actual population.

On page 7, the paragraph above Table 1.2 refers to 943 units, but the numbers in the table add to 942. It would be helpful to add a total under each year and overall for the entire time period for Table 1.2. The total remaining units in the pipeline shown on Table 1.3 is to be rechecked and it is recommended that a total be added to Table 1.4. It was noted that the projected 6,082 residents would result in about 2,112 units over the next 12 year.

NEXT STEPS

Committee members were asked to continue to review the Land Use Assumptions Report. Brian and Sandy will coordinate with the Township to make sure the list of proposed and approved projects on Table 1.4 of the DRAFT LUAR is up-to-date. Following review of the draft, it will be provided to adjoining municipalities, the school district and the Montgomery County Planning Commission for a minimum 30-day review period. Once all comments and any revisions have been made, it will be presented to the Township Board of Supervisors for approval.

The committee agreed to meet on October 10, 2018 beginning at 5:30 PM.

Donna Hoffman moved to adjourn at 6:47 PM and the meeting was declared adjourned.

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Eileen Pogany, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

OCTOBER 10, 2018

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday, October 10, 2018 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Bruce Moyer, Donna Hoffman, Linda Swagzdis, Susan Smith and Greg Herb. Absent were Boone Flint and Emil Palladino. Also present were Sandy Koza-Traffic Engineer, Brian Olszak-Montgomery County Planning Commission and Eileen Pogany. Chairman Greg Herb called the meeting to order at 5:34 PM.

APPROVAL OF MINUTES –Linda Swagzdis **moved** to approve the September 12, 2018 minutes. Susan Smith **seconded** the motion and it **carried unanimously**.

DISCUSSION ITEMS

Brian Olszak lead in a review of the draft Land Use Assumption Report, several items were updated which included updating of listed plans and traffic counts, Brian explained that there is no good way to forecast employment numbers and that various methods are used. Suggestions were made as to the order/ numbering of several pages and notations for correction of totals for certain tables were made. The street classifications map will need to be updated and Adam Supplee will be asked to provide the correct information to Brian.

Susan Smith questioned the adverse impact on current residents when development impacts the roadways i.e. such as increased traffic, speed, and residents needing to back out of their driveways onto the roadway. Sandy Koza stated that addressing these situations it is not a function of this committee and that the committee will be addressing increased traffic by recommending upgrades the intersections where needed.

Sandy Koza stated that the area to which the seven square mile Transportation Service Area applies will need to be decided upon; clarification will need to be made as to whether the parcels need to be contiguous.

NEXT STEPS

Committee members were asked to continue to review the Land Use Assumptions Report and that road classifications will be mapped, volumes of traffic considered and intersections needing upgrading will be discussed. Following review of the draft, the report will be provided to adjoining municipalities, the school district and the Montgomery County Planning Commission for a minimum 30-day review period. Once all comments and any revisions have been made, it will be presented to the Township Board of Supervisors for approval.

The committee agreed to meet on November 14, 2018 beginning at 5:30 PM.

Susan Smith **moved** to adjourn at 6:20 PM and the meeting was declared adjourned.

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Eileen Pogany, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

NOVEMBER 14, 2018

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday, November 14, 2018 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Bruce Moyer, Donna Hoffman, Linda Swagzdis, Susan Smith and Boone Flint. Absent were Greg Herb and Emil Palladino. Also present were Sandy Koza-Traffic Engineer, Brian Olszak-Montgomery County Planning Commission and Eileen Pogany. Vice Chairman Bruce Moyer called the meeting to order at 5:37 PM.

APPROVAL OF MINUTES – Susan Smith **moved** to approve the October 10, 2018 minutes. Linda Swagzdis **seconded** the motion and it **carried unanimously**.

DISCUSSION ITEMS

Brian Olszak lead in a review of the draft Land Use Assumption Report and reported that he had made minor corrections and updates subsequent to prior discussions and added Map 1.5 illustrating the road classifications according to the Township Zoning Ordinance. Susan Smith questioned the classification of Moyer Road as a minor versus major road and was advised that road classifications will be addressed during the comprehensive plan review and update and that classifications may change due to vehicle projections. Sandy Koza advised that the draft Land Use Assumptions Report has been provided to adjacent municipalities, school districts, and Montgomery County Planning Commission for their 30 day review period. She advised that any comments received will be included in the Land Use Assumption Report, as will any comments made during the public hearing. Motion to approve the draft Land Use Assumption Report contingent upon minor corrections to table and map no. 1.4 as presented was made by Susan Smith, seconded by Linda Swagzdis and unanimously carried. Sandy Koza advised that a presentation and public hearing will be held on December 12, 2018 at 5:30 PM and that it will be presented to the Board of Supervisors for consideration of approval at the January 7, 2019 meeting and asked that at least one committee member be present at the meeting.

A map was presented illustrating a 6.965523 square area of the proposed transportation district with all parcels within the district being physically connected. Potentially developable parcels are illustrated, and locations of intersections are shown. Committee members were asked to review the map and were advised the impact fee will be assessed on a single district only. The committee then reviewed the daily and peak hour traffic counts on the exhibits. Brian Olszak advised that traffic is counted in both directions for the daily counts. It was noted that counts include pass-thru traffic from the area and also noted that motorists are seeking alternate routes to avoid congested areas by using GPS or other navigational systems that offer alternate routes. Sandy will recheck two of the volumes along Swamp Pike to make sure that the information is correct as it was noted that there was a drop in the daily volumes going from east to west.

The impact fees assessed for new construction must be based on needs which occur as a result of estimated additional traffic created as a result of development; pass through traffic from other municipalities and any existing deficiencies/repairs to existing roads cannot be the responsibility of the developer.

Susan Smith thanked Brian Olszak and Sandy Koza for the excellent work, committee members echoed her sentiments. Motion to adjourn was made by Donna Hoffman and the meeting was declared adjourned.

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Eileen Pogany, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

DECEMBER 12, 2018

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday, December 12, 2018 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Greg Herb, Bruce Moyer, Linda Swagzdis, Susan Smith and Boone Flint. Donna Hoffman was absent. Also present were Sandy Koza-Traffic Engineer, Brian Olszak-Montgomery County Planning Commission and Eileen Pogany. Chairman Greg Herb called the meeting to order at 5:35 PM.

APPROVAL OF MINUTES – Susan Smith **moved** to approve the November 14, 2018 minutes. Bruce Moyer **seconded** the motion and it **carried unanimously**.

Chairman Herb opened the **Public Hearing** at 5:36 PM

Brian Olszak, member of the Montgomery County Planning Commission introduced himself and addressed the audience providing a power point presentation and overview of the New Hanover Township Land Use Assumptions Report dated December 12, 2018 the contents of which included: background information including community context, existing and future land use, residential and nonresidential development, road network, DVRPC population, housing and employment forecasts. The presentation also analyzed forecasted residential and nonresidential growth in New Hanover Township to year 2030. Figures, maps and tables showing existing and future land uses, residential construction by housing types, residential units proposed and constructed as of May 24, 2018 as well as those active and pending approval as of May 24, 2018; nonresidential development was also shown on a table. Township road classifications were mapped according to the Township zoning ordinance as well as according to *Montco 2040: A Shared Vision*. Comparisons of actual populations and employment forecasts were provided along with anticipated residential growth in number of units for 2018-2030. Nonresidential office square footage and anticipated nonresidential growth for 2018–2030 were mapped. Maximum residential buildout and developable land with environmental constraints removed was illustrated on map.

Questions from the Committee/Public:

1. Susan Smith asked if some of the maps could be made so that anyone who is colorblind could view the different items on the maps. Brian indicated that he would look into this
2. Rusty Oister asked how the number of people per household re determined since he is seeing large homes being built. Brian indicated that this is based on U.S. Census survey information. Sandy Koza stated that including the age restricted community and townhomes may affect the calculation lowering it to 2.8 persons per household value. Mr. Oister also mentioned that the Jasper Farm Road designation needs to be corrected since it is a dedicated Township Road. Sandy indicated that this would be confirmed.
3. Barbara Furman spoke of the impact of additional students traveling to school and the additional school bus traffic along Swamp Pike and other roadways and asked if the community impact was accounted for in the study. Ms. Koza advised that the Boyertown School administration has been provided a copy of the report and that school bus issues are not a part of this component of the study. Greg Herb added that pass-through traffic cannot be considered when determining where improvements are needed. Mr. Herb stated this committee needs to consider development in the Township and cannot address pass-thru traffic and the study is driven by data. Ms. Koza suggested that Mrs. Furman contact the school district regarding her concerns. So far no

comments were received from the school district, but when they do their student projections, they should account for the projections within the study.

4. Celeste Bish asked what the difference is between private and public open space. Brian indicated that open space properties on developed properties are maintained by private Home Owners Associations and are considered private open space, which could include golf courses. Public open space includes recreational parcels owned by government that are open to the public.
5. Prosper Guerre-Chaley inquired as to which Township roads had been improved with impact fees collected previously. Sandy Koza mentioned that the signalized intersections of 663/Hoffmansville Road and Swamp Pike/Sanatoga Road/Fagleysville Road were installed and the advance left-turn phase at the 663/Swamp Pike intersection was provided. The Township has also completed the design for intersection improvements to the 73/663 South intersection that are scheduled for construction pending grant applications to help offset the construction costs and plans are being worked on for the 73/663 North intersection and 663/Moyer Road intersection. Mr. Guerre-Chaley also noted that there is a high volume of traffic on Swamp Pike that makes turning movements difficult. Sandy noted that Swamp Pike is a County Road. She stated that sections of Swamp Pike will be widened along with the development of the proposed town center and that traffic has increased in the area due to the various developments along the Dotterer and Middle Creek Roads. She added that fees required of developers are spent to manage traffic created by their developments. Mr. Guerre-Chaley asked how funds are accounted for in the Township and was told that separate accounts are set up to assure the money is appropriated properly. Sandy Koza invited Mr. Gurre-Chaley to attend township meetings and stated that she would share traffic count data with him for the area that was presented at the prior TIFAC meeting. In regards to Mr. Guerre-Chaley inquiry about providing an eastbound left-turn phase along Swamp Pike at the 663 signal, Sandy noted that there is criteria that needs to be met in order for PennDOT to allow for that type of phasing and this was reviewed for all of the legs at the intersection when the westbound left-turn phase was provided. Until the criteria is met, PennDOT will not allow the phasing.
6. Celeste Bish stated having difficulty making turns during the noon hour even when there were no school buses and asked how it is possible to know which vehicles are pass-through or local traffic. Sandy indicated that the only way to know would be to track vehicles across the Township.

Sandy Koza stated that comments and responses will be included in the study along with written comments received as follows:

1. Montgomery County Planning Commission issued a letter in support of the land use assumptions report and “accurately reflect the best projection of future growth”.
2. The Pottstown Regional Planning Commission letter was also in support of the study and noted that the designation for Moyer Road should be modified from “all other roads” to a major collector highway since it is “an important and direct connection between Route 663 in New Hanover Township and Route 100 in Upper Pottsgrove Township”, which are two arterials. It was noted that the TIFAC also had this same comment when they reviewed the study.
3. There was an email from Celeste Bish referencing Map 1.1- Existing Land Use and stating that the “industrial” (lavender color) is misleading and suggested several minor corrections to show Gibraltar Rock north of Hoffmansville Road and no Industrial across Hoffmansville Road on the South side between Hoffmansville Road and Rt. 73 encompassing 163+ acres. The light green area denoting “undeveloped” is also industrial. Celeste indicated that upon further review and discussions with Jamie Gwynn the mapping was correct as shown.
4. Greg and Deb Maskrey sent an email commenting on the steady increase of traffic and the safety issues with accessing and exiting driveways, the need to cross the street to access their mailbox, the impacts to emergency response times, disregard for traffic signals and speed limits from some vehicles, and the general absence of sidewalks or walking areas for children to access bus stops.

Brian Olszak noted two minor edits that he was planning for the study:

- Map 1.2 should be labeled “Suburban Residential Area” and the description should read “Residential areas which depend on automobiles for transportation and often have extensive landscaping on individual properties. These areas will have a variety of housing types, with single-family detached homes the most prominent type.”
- Map 2.2 to correct the Anticipated Nonresidential Growth for the Town Center Zoning District should be corrected to 53,503 sq. ft. as opposed to 71,590 sq. ft.; total nonresidential square footage determined to be 95,454 sq. ft.

Other noted modifications to the study are as follows as suggested by the TIFAC:

- Paragraph above table 1.5 – reference is made to the intersection of PA Route 663/N. Charlotte Street, this should be PA Route 663/Swamp Pike
- Page 4 definition for Rural Resource Area includes phrase “slow low-density residential development”. This means that the development is being slowly built and not rapid.
- Page 17 under Growth Forecasts revise from “forecasts that the Township will generate” to “forecasts that the development in the Township will result in”.

Public Hearing was declared adjourned at 6:35

Regular Meeting

It was noted that the LUAR will be presented for approval to the Board of Supervisors as part of their February hearing to make sure the 30 day review time-period has been met for the adjacent Townships and the school district.

Sandy noted that a revised plan for the Town Center was submitted that only shows 10,000 s.f. of office space. Brian noted that the area for office space in the LUAR map includes land that is not part of the Town Center. Sandy also noted that the number of residential units has decreased.

Trip generation will be the focus of the January 2019 meeting along with a list of what is happening in surrounding townships. Susan Smith asked if the Code allows for an impact fee adjustment and was told that an adjustment can be made one time each year. The Township has made one adjustment to the impact fees to account for increased construction costs, which is allowed. The next meeting is scheduled for January 9, 2019 at 5:30 PM. Meeting was adjourned by motion of Linda Swagzdis.

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Linda Swagzdis, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

JANUARY 9, 2019

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday, January 9, 2019 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Greg Herb, Donna Hoffman, Linda Swagzdis, Susan Smith and Boone Flint. Bruce Moyer was absent. Also present were Sandy Koza, Traffic Engineer and Eileen Pogany. Chairman Greg Herb called the meeting to order at 5:33 PM.

APPROVAL OF MINUTES – Susan Smith **moved** to approve the December 12, 2018 minutes. Boone Flint **seconded** the motion and it **carried unanimously**.

Sandy Koza advised that Brian Olszak is updating/correcting figures in the Draft Land Use Assumptions Report which were brought to his attention on December 12, 2018. Linda Swagzdis pointed out an additional two items which will be called to his attention. Ms. Koza went on to advise that she had updated the Trip Generation calculations report to determine what trips may be generated outside the identified area. She stated that Hanover Point and Rolling Meadows are outside the area, trips will be considered pass-thru, and the developers will be subject to the transportation impact fee assessed at the time of development. The 1258 trips shown on Table 1 as Proposed and Approved Plans were counted in May of 2018 and will be adjusted to decrease by 90 units. She stated that Table 2 accounts for non-residential uses. Table 3 lists 342 trips being generated outside the service area. Table 4 projects 2077 trips from Gibraltar Rock, assisted living facilities, office space, retail and other similar situations. Credit was given for internal trips (such as town center internal) and pass-by trips such as in and out quickly (purchasing gasoline, in & out trips shopping at CVS) etc. Trips for both morning and afternoon were provided to the committee saying that afternoon trip numbers will be used since they are greater.
Ms. Koza provided maps showing developments approved or in the networks of townships surrounding New Hanover Township and accounting for the traffic which could be generated as a result of the new developments. Ms. Koza advised that Douglass Township had begun their Impact Fee review/update which had been put on hold due to financial issues and has currently picked up where they are stopped previously; she will be coordinating and sharing information with them as well as exploring the possibility of an alternate Swamp Pike paralleling with Swamp Pike either to the North or South and asked committee member to explore possibilities; there may be some connectivity to current Swamp Pike and Rt. 663. Ms. Koza updated committee members on progress on developments in Douglass Township and reviewed lists of developments in other surrounding townships. Members discussed how travelers are finding alternate routes/shortcuts to access Rt. 422. Susan Smith suggested that transit is needed to reduce traffic volumes and believes that it would be welcomed if bus transportation were available to other public transportation such as train stations to change and reduce local traffic patterns. Ms. Koza will be creating a table to include pass-through traffic. She also stated that decisions will need to be made regarding the preferred level of service to determine if the Township will stay with same level or whether any improvements need to be upgraded. She stated that she would like to give committee member at least one week to review the table describing service levels which may not be ready for the February 13 meeting – committee member will be advised in advance if the February meeting will be postponed until March 13.

The Land Use Assumptions report will be provided to the Board of Supervisors at their February 7, 2019 meeting, Brian Olszak will be in attendance and committee members were invited to attend and represent the committee.

Committee will be notified of next meeting date. Motion to adjourn was made by Susan Smith and the meeting was declared adjourned.

_____
Linda Swagzdis, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

MARCH 13, 2019

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday, March 13, 2019 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Greg Herb, Linda Swagzdis, Bruce Moyer and Boone Flint. Susan Smith and Donna Hoffman were absent. Also present were Sandy Koza, Traffic Engineer and Eileen Pogany. Chairman Greg Herb called the meeting to order at 5:30 PM.

APPROVAL OF MINUTES – Boone Flint moved to approve the January 9, 2019 minutes. Linda Swagzdis seconded the motion, Bruce Moyer abstained since he had not been in attendance and the minutes were approved by **vote of 3-0**.

Ms. Koza presented existing weekday afternoon traffic volumes shown on diagrams created by McMahon, as well as projected trip generation from anticipated development projects. Projected peak afternoon trips for New Hanover Township were reviewed as well as peak afternoon trip generation from the surrounding townships of Douglass, Limerick, Lower Pottsgrove and Upper Pottsgrove, noting that these would be part of the pass-through traffic conditions. Drawings showing weekday afternoon traffic were provided as well as the corresponding classification of the level of service. Intersections operating below the preferred LOS criteria were also noted along with potential improvements to maintain the preferred level of service.

Improvements at the intersection of Routes 663 and Route 73 were discussed including signalization or a roundabout. It was noted that a single lane roundabout initially works, but with development conditions a multi-lane roundabout is needed, which does is not always supported by PennDOT. The roundabout would need to provide a larger area to also accommodate busses and large trucks, and depending on the cost and operations, a traffic control signal may be preferred. Members discussed the traffic improvements along Swamp Pike and suggested a traffic light at Middle Creek Road, if one is to be provided there or at Dotterer Road. Cost estimates will be calculated and provided by McMahon Associates for the April meeting. Ms. Koza advised the committee that, at the discretion of the Township, the Act 209 fees can be modified each year to account for price increases. It was also noted that several bridges in the Township are in need of replacement and that detour routes will be established during replacement projects creating unusual traffic patterns during that same time.

Sandy Koza confirmed that the next meeting date is April 10, 2019 beginning at 5:30 PM at which time a DRAFT of the Roadway Sufficiency Analyses Report and Transportation Capital Improvement Plan, which includes the initial impact fee estimate will be provided.

Motion to adjourn was made by Gregory Herb and the meeting was declared adjourned at 6:30 PM.

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Linda Swagzdis, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

APRIL 10, 2019

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday, April 10, 2019 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Linda Swagzdis, Bruce Moyer, Donna Hoffman, Susan Smith and Boone Flint. Greg Herb was absent. Also present were Sandy Koza, Traffic Engineer and Eileen Pogany. Vice-Chairman Bruce Moyer called the meeting to order at 5:27 PM.

APPROVAL OF MINUTES – Linda Swagzdis moved to approve the February 13, 2019 minutes. Boone Flint seconded the motion, and it carried unanimously with Donna Hoffman and Susan Smith abstaining since they had not been in attendance.

Ms. Koza advised that it is likely that a traffic light will be preferred at the intersection of Routes 663 and Route 73 due to the cost, additional traffic lanes, and right-of-way potentially needed with an installation of a roundabout. She also noted that the analyses was updated to illustrate the traffic light on Swamp Pike at Middle Creek Road as recommended at the last meeting that would also serve Dotterer Road. Smith stated that a left turn lane is needed at Buchert Road. Ms. Koza advised that PennDOT does not permit a traffic signal without a left turn lane currently, but that signal was installed prior to that general requirement and due to the limited right-of-way and homes on the corners, it would be difficult to install.

The Roadway Sufficiency Analyses Report and Transportation Capital Improvement Plan were reviewed with a few minor corrections being suggested which included: renumbering the figures referred to in the text, and corrections on Table 3 with respect to posted speed limits.

Ms. Koza provided a listing of traffic impact fees charged by other local municipalities as a reference in determining what the committee's suggestion would be for New Hanover Township's fee and suggested that a fee of $4,400 might be high for New Hanover Township's single service area compared to other municipalities. Fees varied in different communities for various reasons including whether or not the community is experiencing development and whether or not the community is counting on receiving grant monies. She stated that there are various grants which could be applied for but that funding by grants is no guarantee until the grant is awarded. She advised that any money collected for projects which had not moved forward will be used to complete projects being worked on now and if any remained, it would be moved to the funds for the next period. Any project not having preliminary approval at the time of the fee schedule being adopted would be subject to the new fee. Committee members asked how pricing for projects is determined and was told that PennDOT's construction schedule of unit pricing is used. She stated that typically two to four bids by contractors are needed and that price of materials will have an impact on the project price once they are ultimately let for bid. It was noted that contractors are very busy and also that if utility poles need repairs or replacement it increases the price of the contract substantially. She noted that a township can/could adjust their fees one time each year, which is permitted under the municipal planning code, based upon a comparison of past and current construction cost indices.

Committee members stated that a high fee may discourage developers interested in 1-2 lots and may encourage them to create more lots to ease the burden. Susan Smith stated that she would like the Township to apply for grants to supplement cost of improvements since she does not believe that township residents should bear the cost of improvements needed due to development. Projects cannot move forward absent funding.

Sandy Koza confirmed that the next meeting date is May 8, 2019 beginning at 5:30 PM

Motion to adjourn was made by Susan Smith and the meeting was declared adjourned at 5:27 PM.

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Linda Swagzdis, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

MAY 8, 2019

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday, May 8, 2019 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Greg Herb, Linda Swagzdis, Bruce Moyer, and Boone Flint. Also present were Sandy Koza, Traffic Engineer and Eileen Pogany. Chairman Greg Herb called the meeting to order at 5:27 PM.

APPROVAL OF MINUTES – Linda Swagzdis **moved** to approve the April 10, 2019 minutes. Boone Flint **seconded** the motion, and it **carried** Greg Herb abstaining since he had not been in attendance.

REVIEW OF UPDATES REQUESTED AND IMPACT FEE CALCULATIONS

Engineer Sandy Koza led in the discussion of the Roadway Sufficiency Analysis Review and Transportation Capital Improvement Plan and noted that updates/corrections to the draft plan have been made. She advised that she is following the Douglass Township's progress on their Act 209 plan, but has not heard of any updates to their studies since the last meeting.

Committee members discussed the current impact fees and the potential increase of 22% from the Township's fees that were last updated based upon the change in the construction cost index value from December 2011 to December 2018. The existing fees would then be increased from $1972.50 to $2,406.45 for Service Area 1 and from $3,695.00 to $4,507.90 for Service Area 2. The average impact fee would then be $3,457.18 if these service areas were combined. The Transportation Capital Improvement Plan has an estimated impact fee for the single service area in the Township of $4,465 per "new" weekday afternoon peak hour trip. Following discussions by the committee, it was concluded that the fee should be reduced by 7% to $4,152.45. The fee is still the highest in the County based on the municipal comparison sheet provided. The 7% reduction can be justified though based on the success the Township has had in obtaining two grants to offset the construction costs associated with the 73/663 South Intersection project. This would be similar to what Lower Salford Township did to reduce their calculated impact fee. She stated that New Hanover could benefit in the future if applications for grants are submitted but added that there are no assurances of guarantees of awards. She added that construction costs are increasing and that fees can be adjusted yearly in accordance with the construction cost index. She stated that McMahon tracks when grants are open for submissions and could continue to assist the Township in applying for grant funds.

VOTE ON APPROVAL OF DRAFT ROADWAY SUFFICIENCY ANALYSES REPORT AND TRANSPORTATION CAPITAL IMPROVEMENT PLAN

Boone Flint **moved** to approve the draft RSAR/TCIP plan contingent upon a change being made in the RSAR/TCIP to coincide with the recommended traffic impact fee. Linda Swagzdis **seconded** the motion and it unanimously **carried.**

VOTE ON RECOMMENDED IMPACT FEE

Boone Flint **moved** to recommend to the Board of Supervisors that a fee of $4,152.45 be established for the Township's district. Linda Swagzdis **seconded** the motion and it **carried** unanimously.

NEXT STEPS

Recommendation for the $4,152.45 fee will be forwarded to the Board of Supervisors and a public hearing will be scheduled for June 12, 2019 at 5:30 PM for the *Roadway Sufficiency Analysis Report and Transportation Capital Improvement Plan*. The RSAR/TCIP will be presented to the Board of Supervisors for adoption by

resolution at their June 24, 2019 meeting. The Traffic Impact Fee Ordinance will be advertised and presented for adoption at the Board of Supervisors meeting on July 22, 2019.

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Linda Swagzdis, Secretary

NEW HANOVER TOWNSHIP

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

JUNE 12, 2019

A regular meeting of the New Hanover Transportation Impact Fee Advisory Committee was held on Wednesday, June 12, 2019 at the New Hanover Township Municipal Building, 2943 North Charlotte Street, Gilbertsville, PA 19525. Present were committee members Greg Herb, Linda Swagzdis, Bruce Moyer, Donna Hoffman and Boone Flint. Also present were Sandy Koza, Traffic Engineer and Township Manager Jamie L. Gwynn. Chairman Greg Herb called the meeting to order at 5:33 PM.

APPROVAL OF MINUTES – Linda Swagzdis **moved** to approve the May 8, 2019 minutes. Bruce Moyer **seconded** the motion, and it **carried** with Donna Hoffman abstaining since she had not been in attendance.

PUBLIC HEARING

Public Hearing was opened at 5:41 PM for the Roadway Sufficiency Analyses Report and Transportation Capital Improvement Plan components of the Act 2019 Study Process. Traffic Engineer Sandy Koza reviewed the draft copy of the joint studies discussing how the prior approved Land Use Assumption Report data was utilized to determine the future traffic conditions within the Township; how the pass-through traffic conditions were projected based upon development projects within the Township that have final approval and are under construction, as well as accounting for regional background growth and known development projects within the surrounding municipalities; the current Act 209 projects that have been started along with one development intersection project that should all be completed within the next few years that are included in the pass-through conditions; the number of new trips estimated for development conditions; and the overall intersection recommendations to achieve the preferred level-of-service criteria. The overall costs for the existing, pass-through, and development costs were reviewed based upon the intersection recommendations and the calculation for the impact fee based on the developer's fair-share divided by the projected number of new development trips was presented as $4,465 along with the recommended reduction by the TIFAC at their prior meeting to account for future grants also being utilized to fund the improvement projects. The resultant impact fee is then **$4,152.45** for the single Transportation Service Area, which is higher than the current impact fees for the two service areas of $1,972.50 and $3,695.00. There were no questions from the committee or public. The public hearing was closed at 5:54 PM.

Boone Flint moved to adjourn at 6:05 PM and the meeting was declared adjourned.

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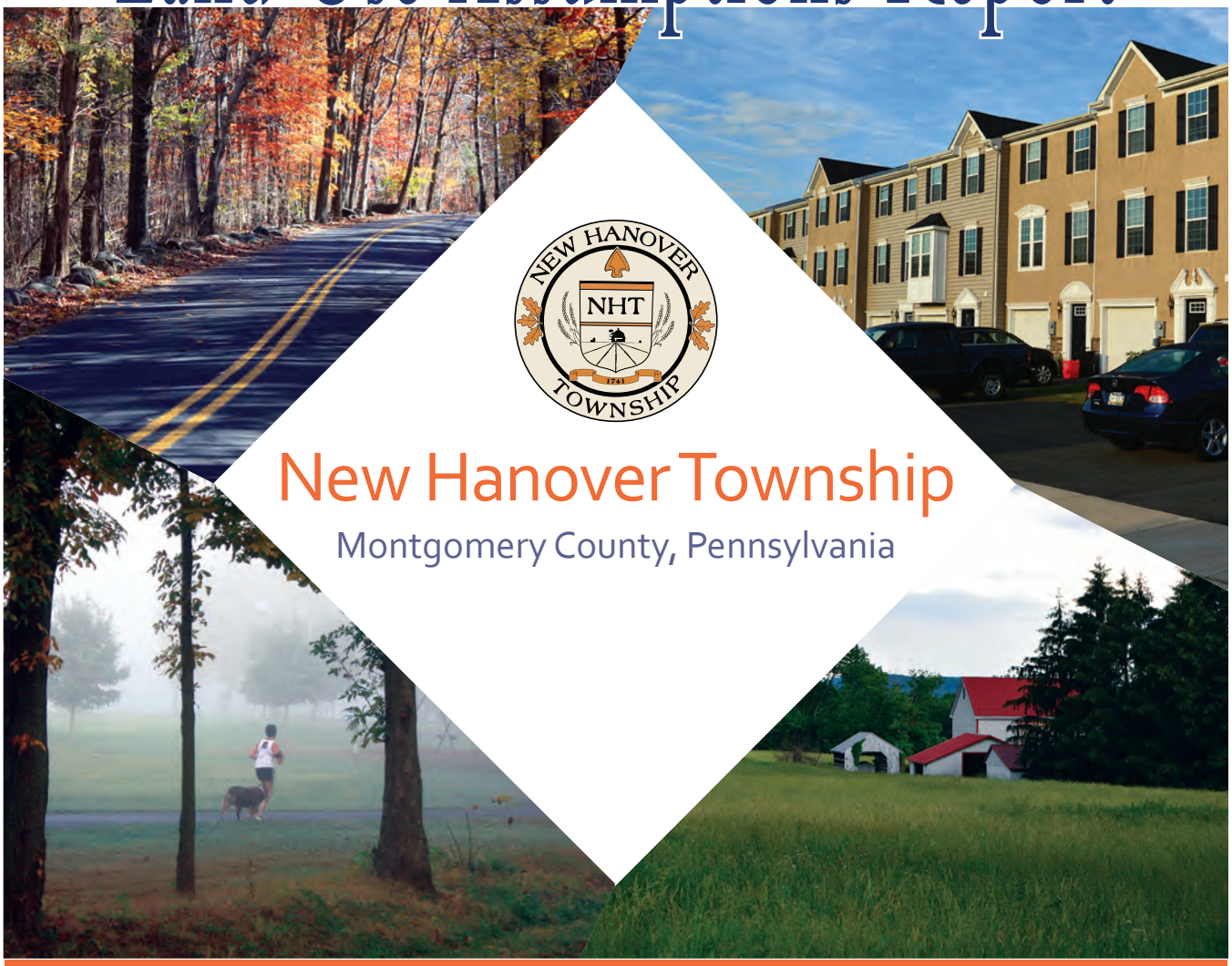
Linda Swagzdis, Secretary

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Appendix B

Land Use Assumptions Report

Land Use Assumptions Report



New Hanover Township

Montgomery County, Pennsylvania

February 7, 2019

New Hanover Township Board & Committee Members

BOARD OF SUPERVISORS

Charles Garner, *Chairman*
Marie Livelsberger, *Vice Chairman*
Phil Agliano
Kurt Zebrowski
William Ross Snook

BOARD OF AUDITORS

Nate McKnight
Shawn Malloy

ENVIRONMENTAL ADVISORY BOARD

William Ross Snook, *Chairman*
Lisa Nolan
John Auman
Thomas Quinn
Michael Millman
Edward Swagzdis

TOWNSHIP AUTHORITY BOARD

Thomas Miskiewicz, *Chairman*
James Shope
Mike Millman
Russel Oister
Douglas Mueller

PARKS AND RECREATION COMMITTEE

Robert Rinehart, *Chairman*
Kenneth Martin
Ronald Frederick
Barbara Furman
Thomas Miskiewicz
Susan Saylor
Matthew Breitbarth

PLANNING COMMISSION

Sue Smith, *Chairman*
Kurt Zebrowski, *Vice Chairman*
Emil Palladino
Boone Flint
Linda Swagzdis

ZONING HEARING BOARD

Lorene Little
James Butler
Charles Ballard *(alternate)*
Anastasia Meder
Gregory Maskrey
Mark Wylie

Land Use Assumptions Report

New Hanover Township

Montgomery County, Pennsylvania

TRANSPORTATION IMPACT FEE ADVISORY COMMITTEE

Greg Herb, *Chairman*
Bruce Moyer, *Vice Chairman*
Linda Swagzdis, *Secretary*
Boone Flint
Donna Hoffman
Emil Palladino
Sue Smith

February 7 2019

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NEW HANOVER TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

RESOLUTION 19-04

A RESOLUTION APPROVING THE LAND USE ASSUMPTIONS REPORT SUBMITTED TO NEW HANOVER TOWNSHIP'S TRAFFIC IMPACT FEE ADVISORY COMMITTEE

WHEREAS, the Township passed Resolution 18-6, creating the Traffic Impact Fee Advisory Committee pursuant to Act 209 of 1990; and

WHEREAS, the Traffic Impact Fee Advisory Committee has submitted a Land Use Assumptions Report to the Board of Supervisors for the implementation of impact fees for capital improvements; and

WHEREAS, the Board of Supervisors desires to take action on the Land Use Assumptions Report; and

NOW, THEREFORE, BE IT RESOLVED, the Board of Supervisors of New Hanover Township approves the Land Use Assumptions Report, dated January 15, 2019, as prepared by the Montgomery County Planning Commission for the Township's Traffic Impact Fee Advisory Committee; and this resolution is in order to comply with the requirements of the Pennsylvania Municipalities Planning Code, and in particular Section 504-A(c)(1) of the Code.

RESOLVED and **ENACTED** this 7th day of February, 2019 by the Board of Supervisors of New Hanover Township, Montgomery County, Pennsylvania, in lawful session duly assembled.

NEW HANOVER TOWNSHIP
BOARD OF SUPERVISORS

Charles D. Garner, Jr.

Kurt D. Zebrowski

Absent
Philip J. Agliano

Marie Livelsberger

William Ross Snook

ATTEST:

Jamie L. Gwynn, Township Manager

Introduction

Residential and nonresidential growth in New Hanover has had an impact on the Township's roads, in terms of both roadway conditions and traffic volume. New roads, driveways and parking lots associated with this growth are built as needed to access and serve new homes or commercial properties. To help fund municipal capital improvement projects, New Hanover has taken advantage of Pennsylvania Act 209, enacted in 1990 to allow municipalities to impose a transportation impact fee (TIF). The impact fee that a municipality establishes must be justified by the findings of a transportation capital improvements plan, which is reviewed by an impact fee advisory committee. This land use assumptions report is the first of four components of a transportation capital improvements plan and provides the basis from which the other components—a roadway sufficiency analysis, the capital improvements plan itself, and the resulting transportation impact fee ordinance—are created.

In the early 1990s New Hanover completed its first Act 209 process, which was updated in 2005. In March 2018, the Township began working on another update and a new TIF Advisory Committee (TIFAC) was formed to oversee the preparation of the Land Use Assumptions Report, Roadway Sufficiency Analysis and Capital Improvements Plan. The Township's traffic engineer, McMahon Associates, and the Montgomery County Planning Commission were engaged to provide technical assistance and recommendations to the TIFAC on the ensuing Land Use Assumptions Report.

The purpose of this Report, the first of the three documents prepared in the Act 209 process, is to determine what future growth and development will occur in New Hanover Township in the next several years, which then dictates what transportation improvements will be needed in the Township due to this growth. This report uses population and employment forecasts, existing zoning regulations, an assessment of pending and approved subdivision and land development plans, recent municipal and regional planning documents, and local knowledge of developable areas and development trends in the Township.

The land use assumptions report is divided into two sections. *Chapter 1: Background* describes the general community context of the Township; the existing and future land uses and road conditions in the Township; the status of pending, approved, and recently-constructed development; and population, housing, and employment forecasts through the report's horizon year of 2030. *Chapter 2: Future Growth* describes the forecasted growth in both residential and nonresidential development, as well as the specific methodologies used to produce the forecasts.

Chapter 1 | *Background*

Chapter 1 outlines the background information used to develop the residential and nonresidential growth forecasts provided in Chapter 2. This chapter discusses the following:

- Community context
- Analysis of existing and future land uses
- Recent residential and nonresidential development activity
- Summary of the Township's existing road network
- Population, housing, and employment forecasts

Community Context

New Hanover Township is located in the northwestern part of Montgomery County and is a member of the Pottstown Metropolitan Regional Planning Commission (other participants include Douglass, East Coventry, Lower Pottsgrove, North Coventry, Upper Pottsgrove, and West Pottsgrove Townships and Pottstown Borough). The Township is situated roughly 30 miles northwest of Philadelphia, 20 miles east of Reading, and about 20 miles south of Allentown. The 21.7-square-mile municipality is bordered by Lower Pottsgrove, Upper Pottsgrove, Douglass, Upper Hanover, Lower Frederick, and Limerick Townships. PA Route 663 (N. Charlotte Street/Layfield Road) runs vertically through the length of the Township and connects New Hanover to the Quakertown Interchange on the PA Turnpike Northeast Extension to the north, and to the Hanover Street Interchange on US Route 422/Pottstown Expressway to the south. PA Route 73 (Big Road) bisects the municipality from east to west and connects residents to PA Routes 29 and 100, respectively. The southern tip of the Township is just a few miles north of the Sanatoga Interchange on US Route 422/Pottstown Expressway and PA Route 100, another major corridor in the area, lies just to the west of New Hanover and is easily accessible from the Township.

The first Europeans to settle in New Hanover Township sailed from Germany early in the 18th century. Thick woods were cleared to make way for acres of pasture and cropland as agriculture quickly became the center of New Hanover's economy. Despite the rapid development that occurred elsewhere in southeastern Pennsylvania during the 19th century, New Hanover remained predominantly agricultural and rural in character. By the middle of the 20th century, though, suburbanization reached the Township. Patches of farmland were transformed into residential subdivisions and more commercial development began to appear, particularly along the Township's major thoroughfares, Swamp Pike, N. Charlotte Street (Route 663), and Big Road (Route 73).

The Township's population nearly doubled between 1950 and 1960 and has increased by double-digit percentages nearly every decade since[1]. Nevertheless, New Hanover's character remains primarily rural, especially within the northern half of the Township, whereas most of the significant development, both residential and nonresidential, occurs along Swamp Pike and points south.

1 U.S. Census, Decennial Census, 1930-2010.

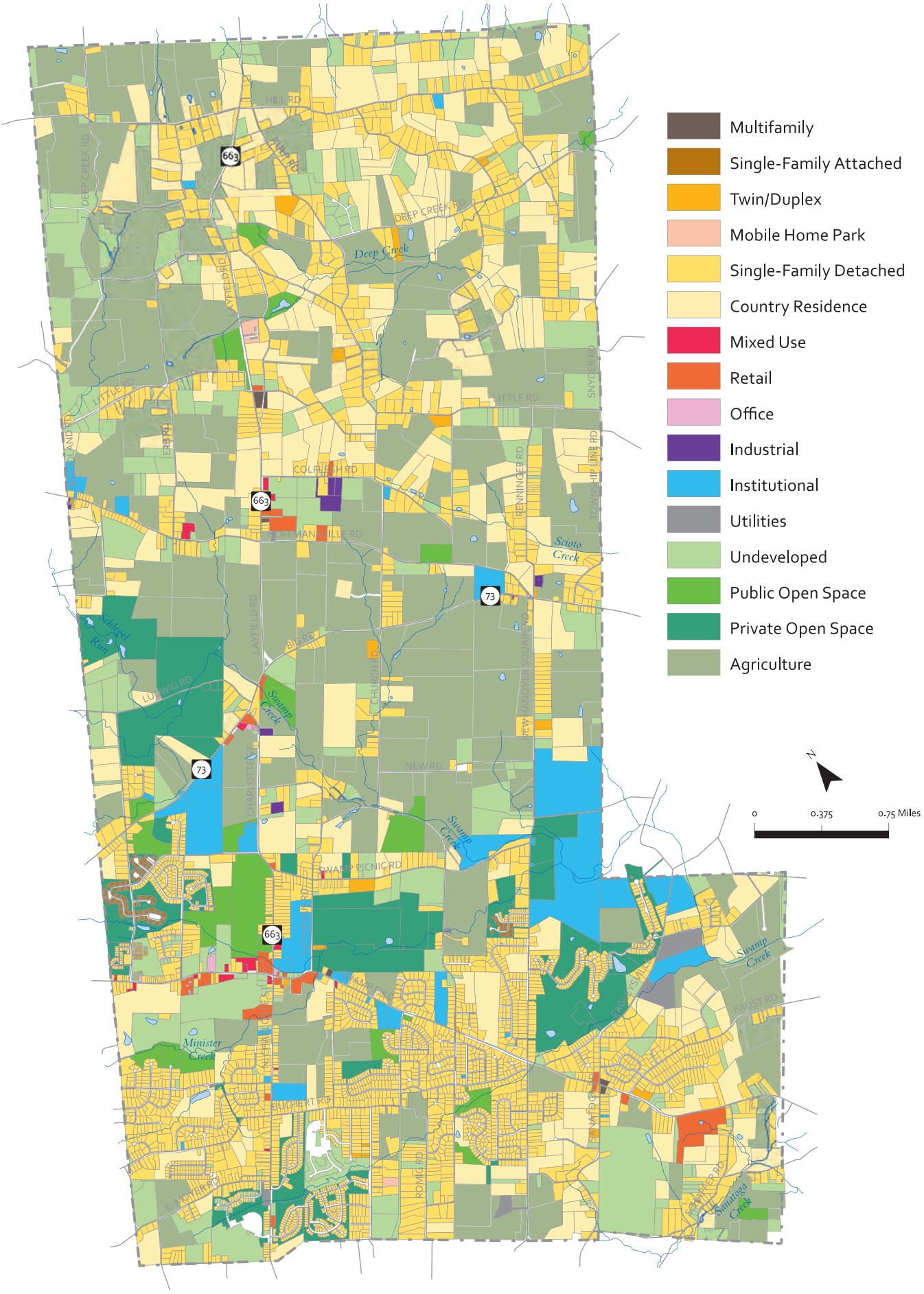
Existing Land Use

Large single-family residential subdivisions have been a driving force in the transformation of New Hanover's landscape over the past three decades. Map 1.1 shows the existing land use in the Township: the northern half of the Township remains largely rural and agricultural in character; small areas of commercial land uses are primarily situated along Swamp Pike; and suburban residential subdivisions lie at the southern end of the Township. North of the PA Route 73, large agricultural properties and larger single-family lots are the predominant land uses. Table 1.1 below illustrates each land use category in total acreage and as a percent of the total land in the Township. Agricultural uses still occupy the most amount of land in New Hanover, but the total acreage is expected to decrease as new development is added.

Table 1.1 | *Existing Land Uses by Total Acreage and by Percent of Total Land Area*

NEW HANOVER TOWNSHIP EXISTING LAND USE		
Land Use Description	**Total Acres**	**% of Total Land Area**
Agriculture	4,255.31	32.00%
Single-Family Detached	3,594.99	27.04%
Country Residence	2,116.39	15.92%
Undeveloped	1,160.09	8.73%
Private Open Space	824.19	6.20%
Institutional	747.28	5.62%
Public Open Space	189.01	1.42%
Mixed Use	129.68	0.98%
Retail	107.65	0.81%
Twin/Duplex	51.24	0.39%
Utility	44.57	0.34%
Single-Family Attached	28.65	0.22%
Industrial	19.36	0.15%
Office	10.63	0.08%
Mobile Home	9.71	0.07%
Multifamily	7.27	0.05%

Map 1.1 | *Existing Land Use*



Future Land Use

The Future Land Use of an area is determined by several factors, including local policy priorities, existing land use, available developable land, sewer capacity, and current zoning. The capacity and availability of public sewer service in the Township is a significant determinant of growth—development potential of land which lacks access to public sewer is greatly limited. Future land use patterns in New Hanover were identified in both the Montgomery County comprehensive plan, *Montco 2040: A Shared Vision*, and in the *Pottstown Metropolitan Regional Comprehensive Plan*. Map 1.2 on page 5 shows the future land use map of the Township from Montco 2040.

Community Mixed Use and Services

Local community focal points that typically have a significant retail or institutional element with surrounding residential uses. Usually located on major roads and have a suburban character.

Village Center

Traditional village areas with a mix of retail, institutional, office, and residential uses. Usually have small separate buildings located close to each other to allow people to either walk or drive from one to another.

Suburban Residential Area

Residential areas which depend on automobiles for transportation and often have extensive landscaping on individual properties. These areas will have a variety of housing types, with single-family detached homes the most prominent type.

Rural Resource Area

Consist of open land with a traditional rural appearance that includes farms, small woodlands, some low-density residential development, and rural villages.

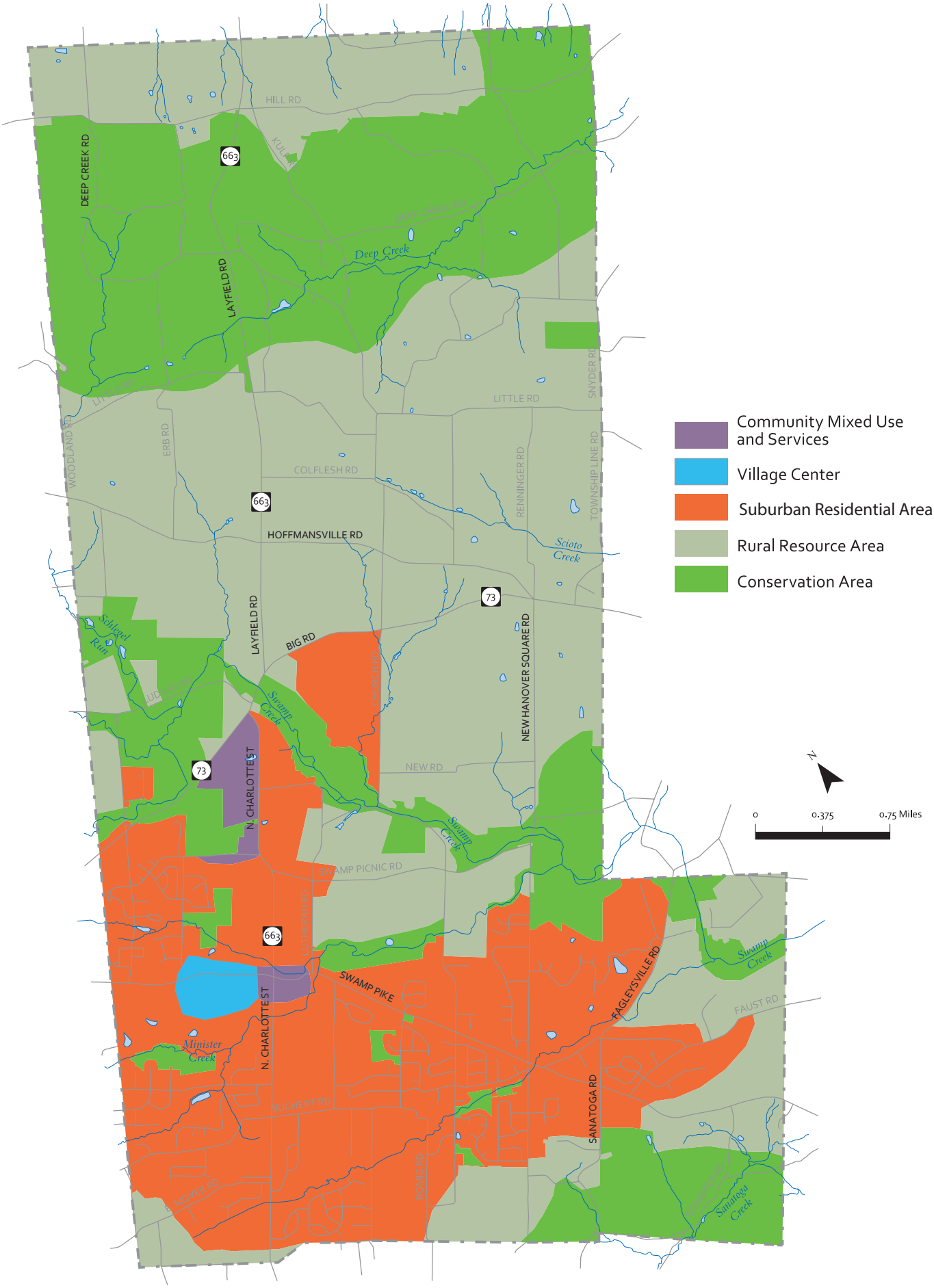
Conservation Area

Primarily consists of parks, environmentally-sensitive land, and connecting land with little, if any, development.

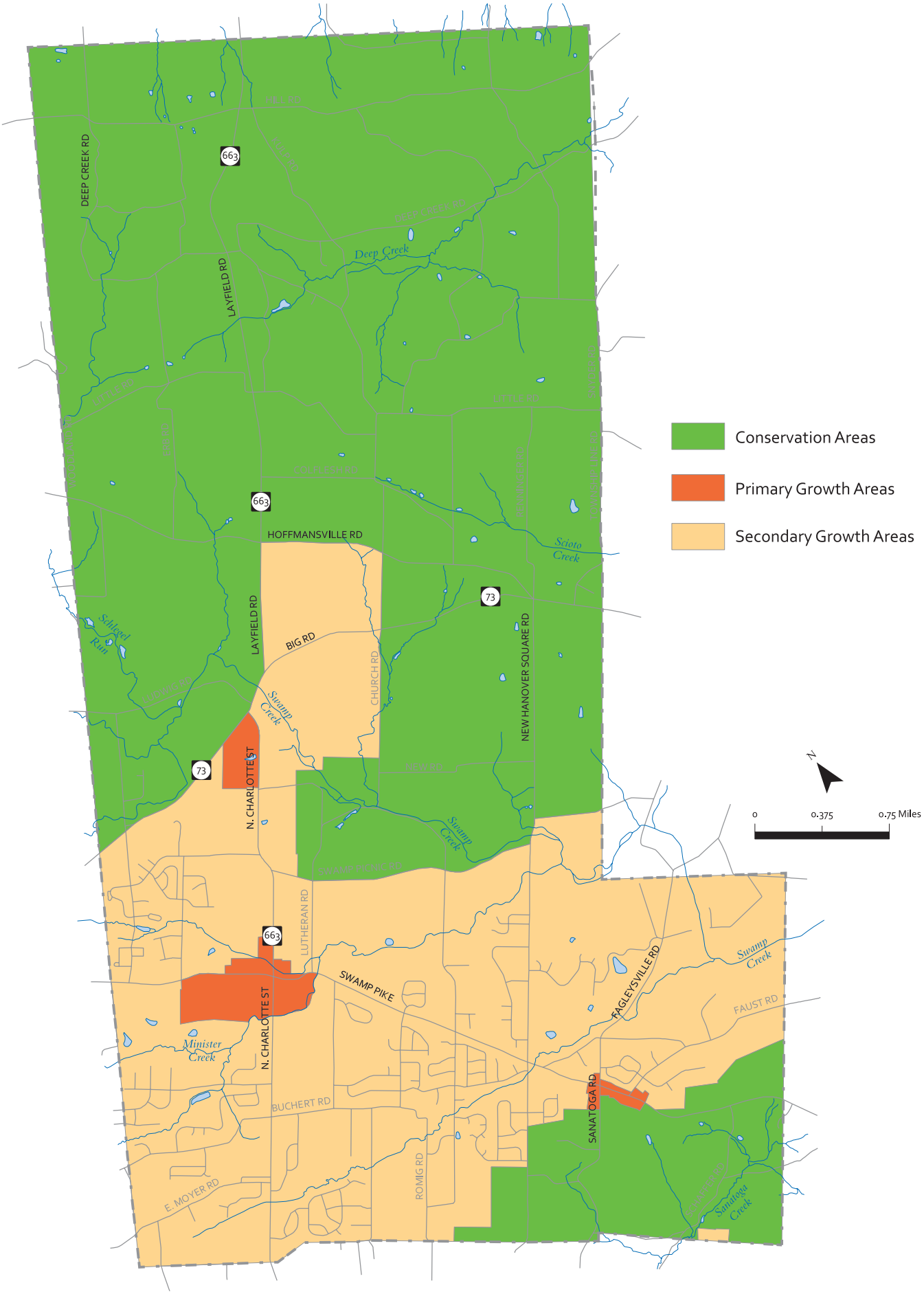
The map reflects the expectation that development will continue to be concentrated in the southern portion of the Township, thus allowing the remaining land to retain its rural character for the foreseeable future. In particular, the land indicated as Regional Mixed Use Center and Village Center, areas which contain or will accommodate increased development patterns, largely coincide with the New Hanover Township Sewer Authority service area.

The New Hanover Township Future Land Use Map from the 2015 *Pottstown Metropolitan Regional Comprehensive Plan*, shown in Map 1.3, uses slightly different future land use categories, but largely reflects the same anticipation of development concentrated in the southern half of the Township and open space and agricultural uses remaining to the north. Both maps also identify similar areas for denser growth potential in and around the Township's TC Town Center and TN Traditional Neighborhood zoning districts; it is in these areas where the proposed New Hanover Town Center will be located.

Map 1.2 | *Future Land Use: Montco 2040: A Shared Vision, 2015*



Map 1.3 | ***Future Land Use: Pottstown Metropolitan Regional Comprehensive Plan, 2015***



Residential Development

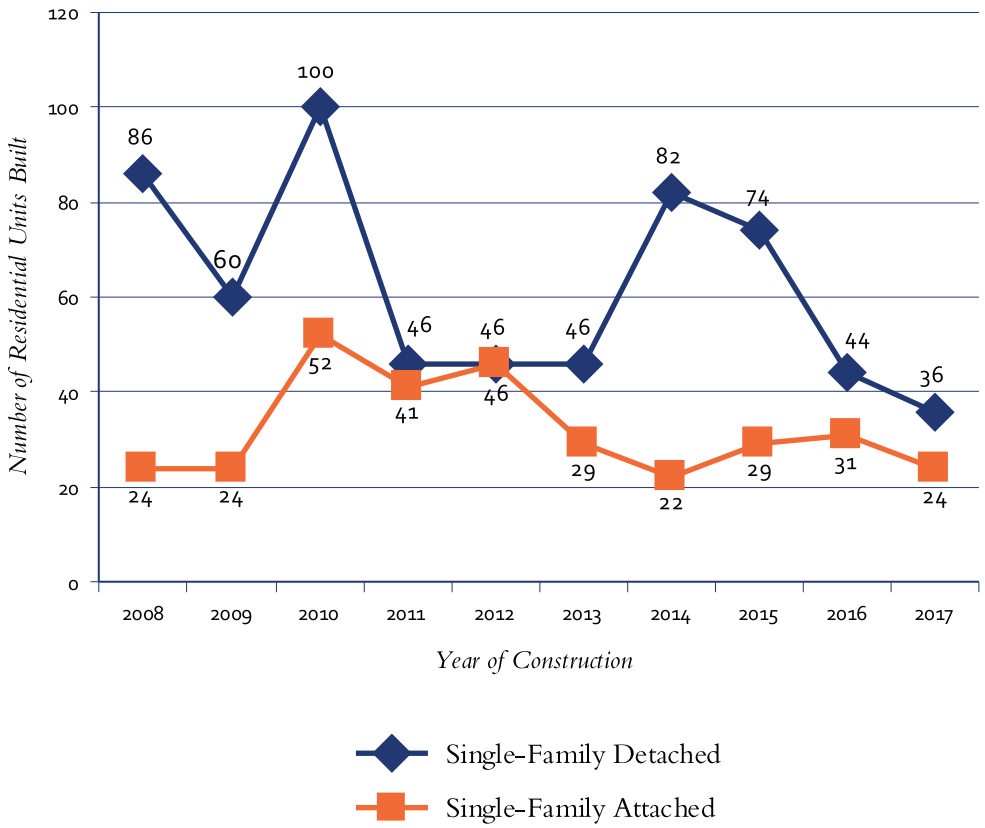
Most of the development that has occurred in New Hanover since it first saw significant population increases beginning in the 1950s has been residential. In recent decades, scattered single-family homes on fairly large lots have been joined by sizeable planned residential subdivisions which are more suburban in character; these are mostly found south of PA Route 73 and many are located adjacent to Swamp Pike.

Table 1.2 and Figure 1.1 below show that between 2008 and 2017, the latest year for which data are available, a total of 942 residential units were constructed in the Township, composed of exclusively single-family detached and single-family attached homes (i.e. townhouses). Detached homes outpaced attached units each year except for 2012, which has generally been the opposite of the trend seen on the County level, where attached homes have outpaced detached homes in new construction. No multifamily units were built in the Township during this period.

Table 1.2 | *Residential Construction by Housing Type: 2008-2017*

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	SUBTOTAL	TOTAL
Single-Family Detached	86	60	100	46	46	46	82	74	44	36	**620**	**942**
Single-Family Attached	24	24	52	41	46	29	22	29	31	24	**322**	

Figure 1.1 | *Residential Construction by Housing Type: 2008-2017*



As of May 24, 2018, 21 land developments composed of 2,647 housing units are proposed and under review, are approved and have not started construction, or are currently under construction in the Township; of these, 2,518 have not yet been constructed. Map 1.4 on page 9 shows these active and approved residential subdivisions which are currently in some stage of development in the Township. Several of these proposals have not yet been approved and constructed, so the final number of units constructed could still fluctuate. The tables below provide further detail on the residential proposals in New Hanover's approval/ development pipeline.

Table 1.3 | ***Residential Units Proposed and Constructed: May 24, 2018***

# Units Proposed in Land Developments	2,643
# Units Built	126
Remaining Units in Pipeline	2,517

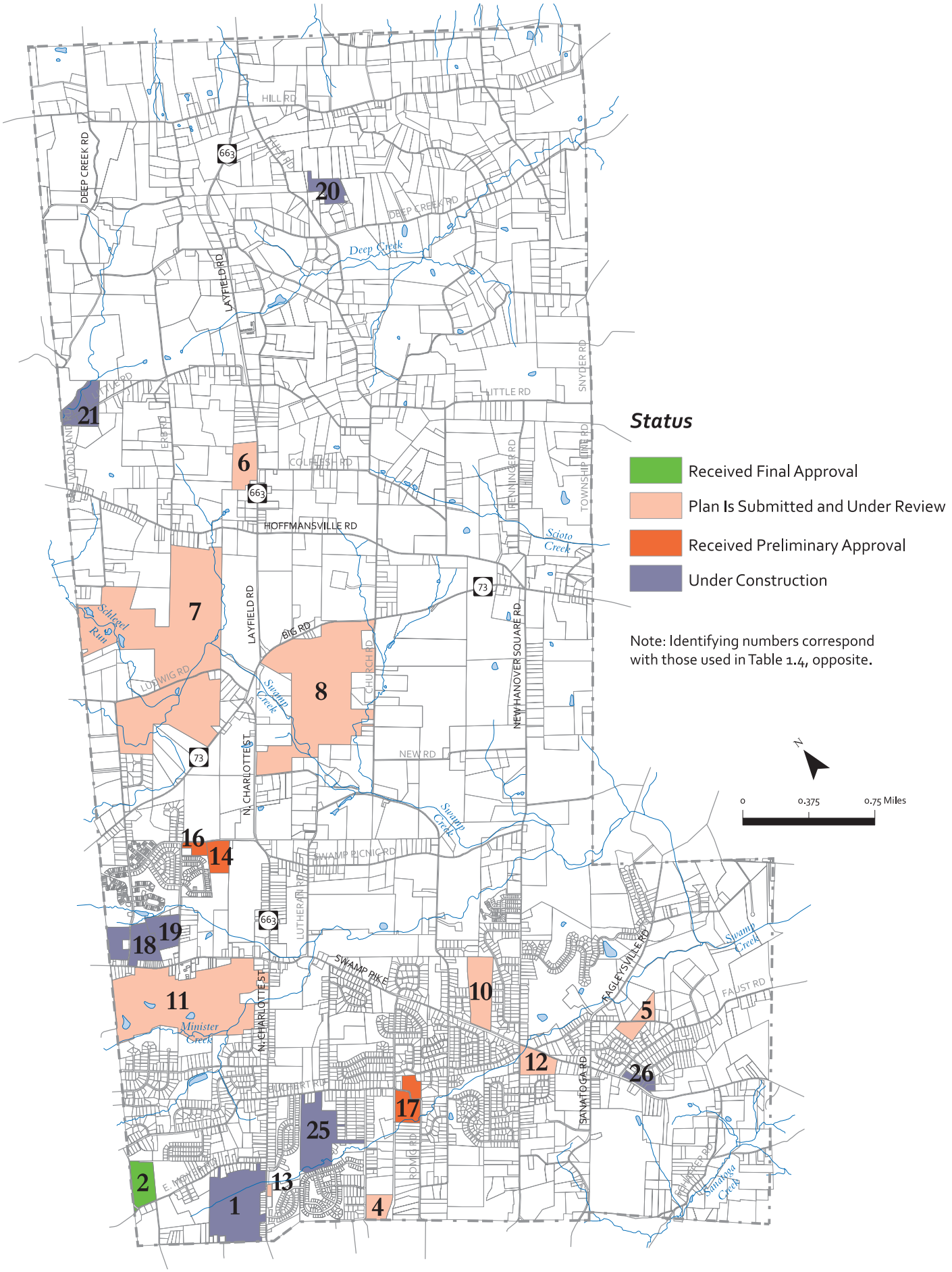
Abbreviation Key:

AC-N	Plan Is Submitted and Under Review
AC-P	Received Preliminary Approval
AC-F	Received Final Approval
AP	Under Construction

Table 1.4 | ***Residential Land Developments – Proposed and Approved, as of May 24, 2018***

NUMBER	SUBDIVISION	STATUS	TOTAL UNITS	UNITS BUILT	UNITS LEFT TO BUILD
1	Hanover Pointe	AP	145	27	118
2	Rolling Meadows	AC-F	63	0	63
4	Westwood/Maguire	AC-N	65	0	65
5	Wagner Tract	AC-N	9	0	9
6	FDEV	AC-N	3	0	3
7	Bart Golf	AC-N	135	0	135
8	Marinari Tract	AC-N	871	0	871
10	Hanover Crossing	AC-N	79	0	79
11	New Hanover Town Center	AC-N	875	0	875
12	Farmview Acres	AC-N	15	0	15
13	Brenning Subdivision	AC-N	2	0	2
14	Trotter's Gait	AC-P	29	0	29
16	Pacer's Gait	AC-P	7	0	7
17	2481 Romig Road	AC-P	52	0	52
18	Renninger Tract	AP	115	73	42
19	Country Meadows	AP	32	23	9
20	Erdenheim	AP	12	1	11
21	Mann Tract	AP	8	1	7
25	Woodfield	AP	121	0	121
26	2557 Swamp Pike	AP	5	1	4

Map 1.4 | *Active and Pending Land Development Plans, as of May 24, 2018*



Status

- Received Final Approval
- Plan Is Submitted and Under Review
- Received Preliminary Approval
- Under Construction

Note: Identifying numbers correspond with those used in Table 1.4, opposite.

Nonresidential Development

The development of nonresidential uses and buildings is also factored into the overall growth forecasts of the Township; nonresidential uses generate vehicle trips from employees, customers, clients, deliveries, etc. Nonresidential growth is measured in square footage instead of the number of units, as residential growth is measured. Nonresidential growth forecasts consider nonresidential land developments in the Township's pipeline, the availability of land zoned to accommodate nonresidential development, and a "straight-line" projection using the previous 10-year period as a framework for trending out the pace of nonresidential development to year 2030.

New Hanover has seen much more modest nonresidential development than residential over the past ten years with only five additions from 2008 through 2017, shown in Table 1.5 below. Most of the nonresidential development in New Hanover is located along one of the Township's four primary road corridors: PA Route 663, PA Route 73, Swamp Pike, and Hoffmansville Road. Swamp Pike near the intersection of Route 663/N. Charlotte Street in particular has been a focal point for nonresidential development. The Hanover Court Shopping Center sits just to the west of the intersection at 1885 Swamp Pike, and the Park Suites professional office building (1831 Swamp Pike), which was built in the last ten years, is about one-quarter of a mile further west on Swamp Pike. These are the only multi-unit nonresidential developments in the Township; the remaining nonresidential uses largely occupy standalone buildings. The total areas dedicated to existing nonresidential land uses is provided in Table 1.1 on page 2.

Table 1.5 | *Nonresidential Development: 2008-2017*

NONRESIDENTIAL DEVELOPMENT NAME	TOTAL SQUARE FOOTAGE PROPOSED	TOTAL SQUARE FOOTAGE BUILT
Landis Riding Academy	2,992	2,992
Kulp Car Rentals	4,800	4,800
North Charlotte Street Property – Saras Partnership	8,520	8,520
1831 Swamp Pike (professional offices)	16,000	16,000
Halteman Office Center (Swamp Pike @ Dotterer Road)	14,400	14,400
TOTAL	**46,712**	**46,712**

Road Network

The Township's road network consists of four major corridors: PA Route 663, PA Route 73, Swamp Pike, and Hoffmansville Road. No transit service currently reaches New Hanover, however there have been discussions in the past of extending bus service to the Township through either SEPTA or PART (Pottstown Area Rapid Transit) to connect with Pottstown and other regional destinations.

New Hanover's Zoning Ordinance provides a road hierarchy with design standards for each. Section 27-1918 of the Zoning Ordinance notes that the Township's street hierarchy for new residential streets is related to average daily traffic (ADT) levels, lot frontage and the need for on-street parking. The street classifications are:

- **Rural arterial highways,** which connect major centers of activity and moves vehicles through the

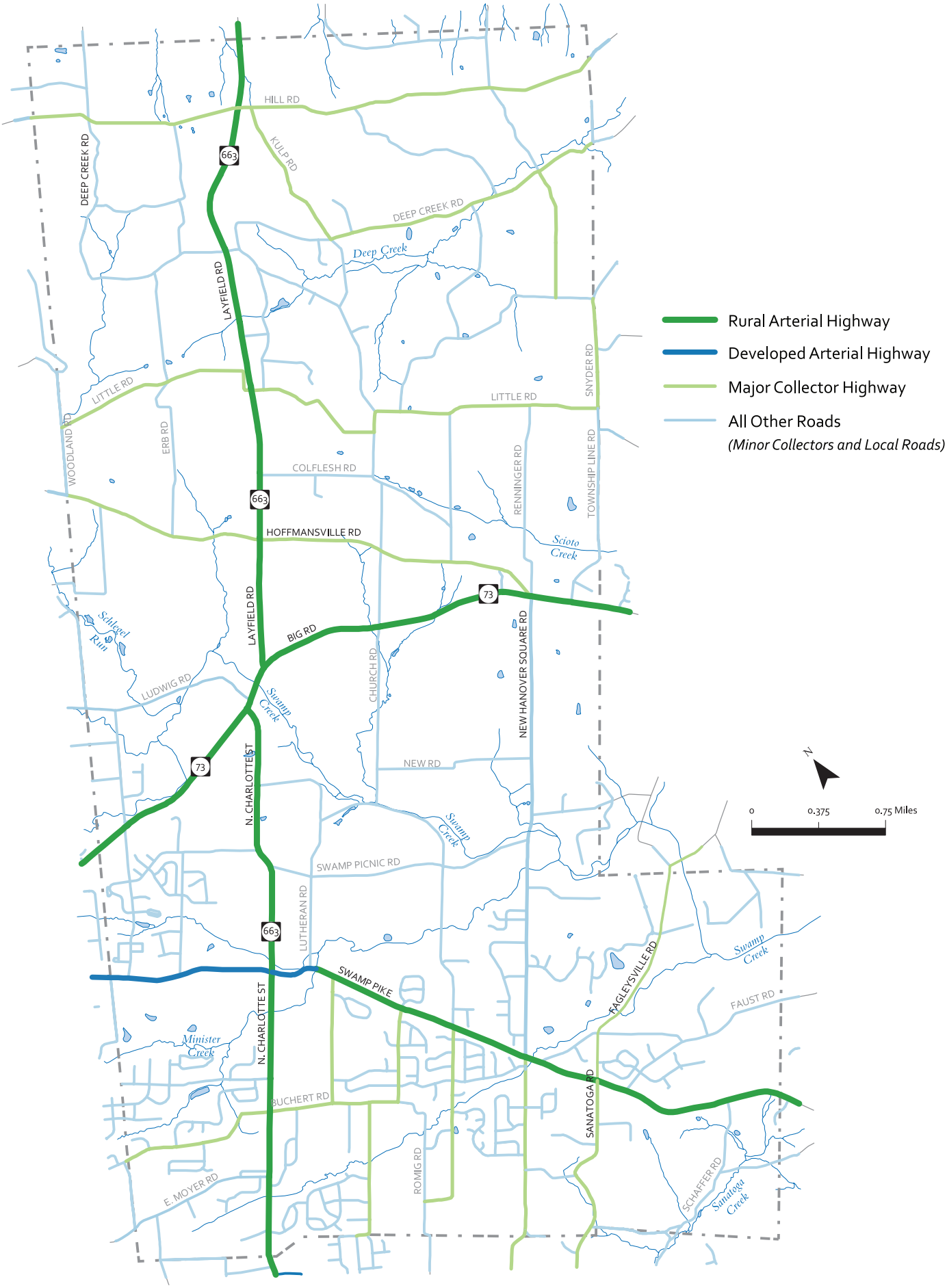
municipality. Rural arterial highways include PA Route 663, PA Route 73, and Swamp Pike from the Minister Creek crossing south to the municipal boundary with Limerick Township.

- **Developed arterial highways,** whose primary functions are to connect major centers of activity, move higher volumes of traffic through the municipality, and to provide access to multiple properties. The only developed arterial highway in the Township is Swamp Pike from the Douglass Township municipal boundary south to the Minister Creek crossing.
- **Major collector highways,** which provide links between the arterial highways, minor collector roads, and local streets. These include:
  - Deep Creek Road from Kulp Road to the Upper Frederick Township municipal boundary;
  - Kulp Road from Hill Road to Deep Creek Road
  - Henning Road from Deep Creek Road to Finn Road;
  - Township Line Road from Finn Road to Little Road;
  - Romig Road from Swamp Pike to Buchert Road;
  - Leidy Road;
  - Little Road;
  - Hill Road;
  - Hoffmansville Road;
  - New Hanover Square Road;
  - Buchert Road;
  - Rhoades Road;
  - Rosenberry Road; and
  - Sanatoga Road.
- **Minor collector roads,** which serve similar functions as major collector roads in that they provide connections among arterial highways, collectors, local roads, residential neighborhoods and nonresidential areas. Traffic volumes are lower than on higher classification roads. Minor collector roads should be designed to provide traffic flow with minor interruptions. Minor collectors are all other roads shown on the Zoning Map, and minor collector roads within subdivisions and land devleopments designed as such.
- **Local roads or streets,** which are all other roadways not of a higher classification, including Moore Road, except private roads.
- **Private roads,** which are privately-owned access roads, including but not limited to Hildbeidel Road and Jays Lane.

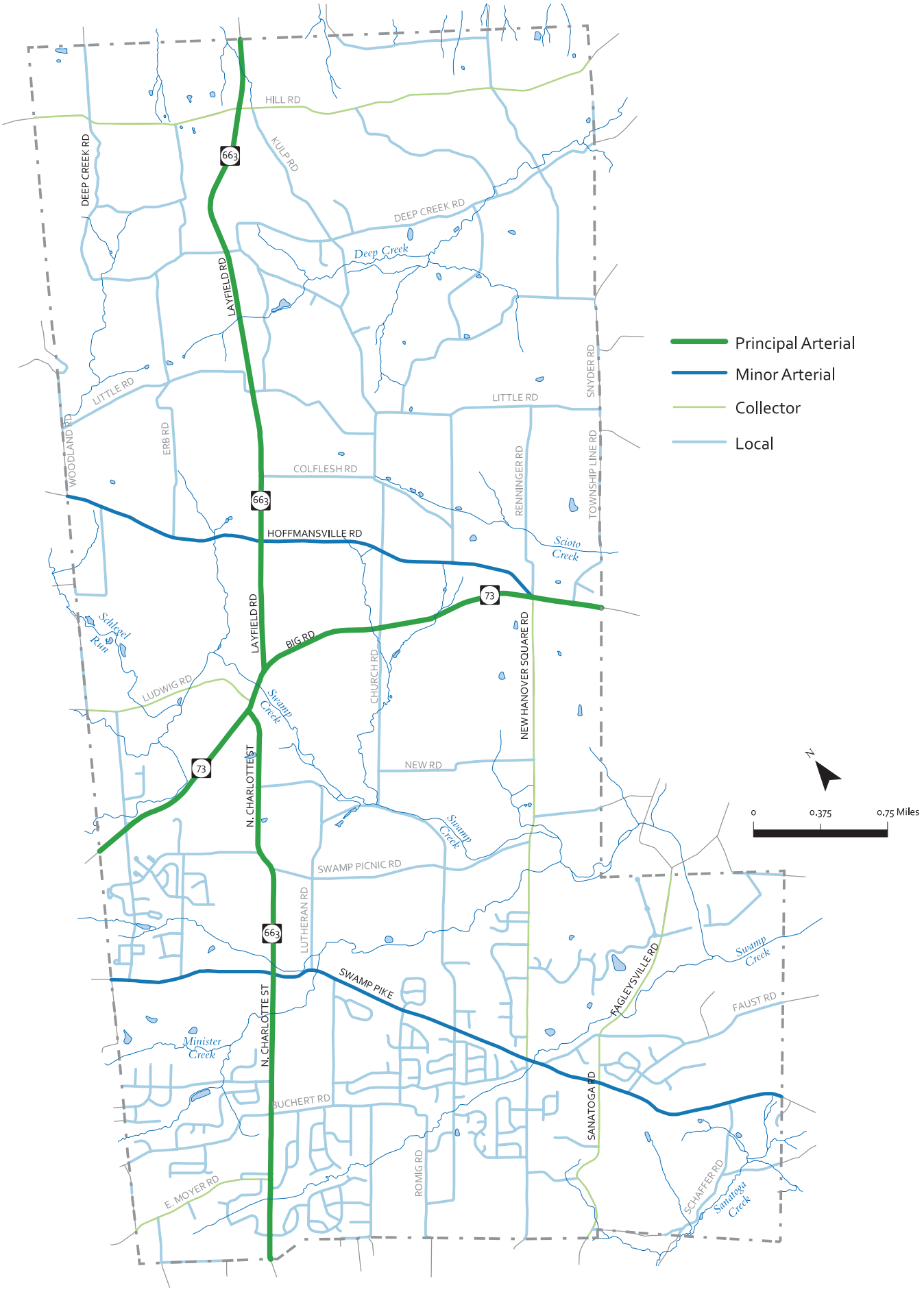
The Township's own road classification categories differ from the functional classification system shown in *Montco 2040*. The county comprehensive plan references the hierarchical system maintained by the Federal Highway Administration (FHWA) and PennDOT, which categorizes roads according to function and service characteristics. Descriptions of the road classifications found in New Hanover are also provided below.

- **Arterial roads** are either "**principal**" or "**minor**" and provide greater mobility for longer trips, but offer more accessibility than expressways.
- **Collector roads** channel traffic to or from high classification roads.
- **Local roads** make up the bottom tier of the system and represent the majority or roads in the county. They include all residential side streets.

Map 1.5 | *Township Road Classification, according to Township Zoning Ordinance*



Map 1.6 | *Township Road Classification, according to Montco 2040: A Shared Vision*

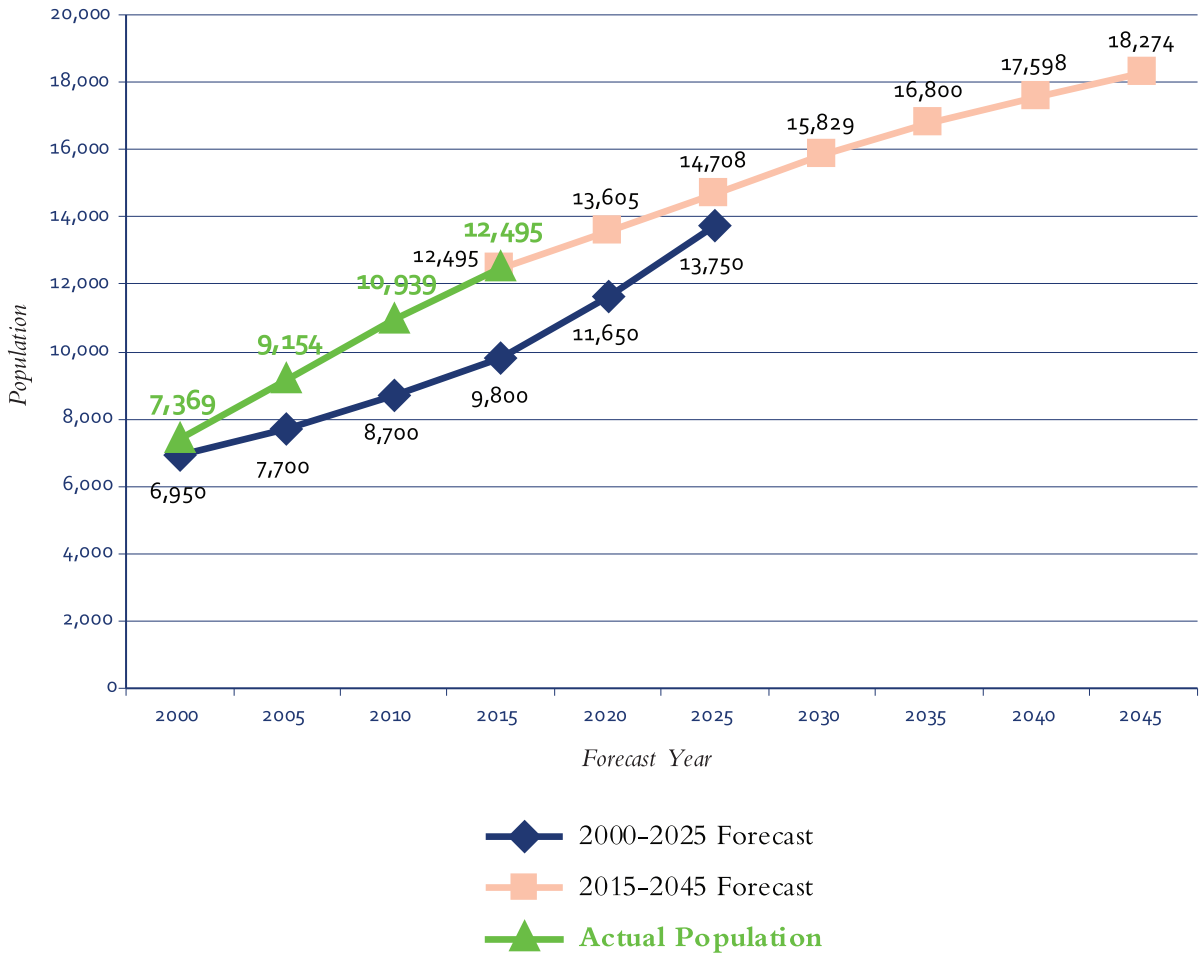


DVRPC Population and Housing Forecasts

To aid in estimating residential growth in the Township, population forecasts are used. Typically, the Delaware Valley Regional Planning Commission's (DVRPC) population forecasts are used to anticipate how many housing units will be needed to accommodate the rise in population. The most recent forecasts use 2010 U.S. Census data and 2015 Census Population Estimates as the base and project population totals, in five-year increments through the year 2045. New Hanover's population forecast from the DVRPC's previous forecasts (years 2000-2025) and for the current forecast (years 2015-2045) are shown in Figure 1.2 below. The increase in the population estimated in the later forecast indicates that the Township is expected to grow faster than it was anticipated to grow in previous forecasts. The latest DVRPC forecasts anticipate the Township's population to be 15,829 people by 2030.

However, as will be discussed in Chapter 2, it was determined that using DVRPC's population forecasts alone would be insufficient. The Township TIFAC concluded that a forecasted 2030 population would need to be further refined to account for local conditions, the previous development patterns, and the development outlook in the Township. The need for this has been borne out by the observed population growth in the Township since 2005, in which actual growth has significantly outpaced the DVRPC forecasts for that time period. The TIFAC believes that the growth figures shown in Chapter 2 represent a more realistic expectation of the future development within the Township.

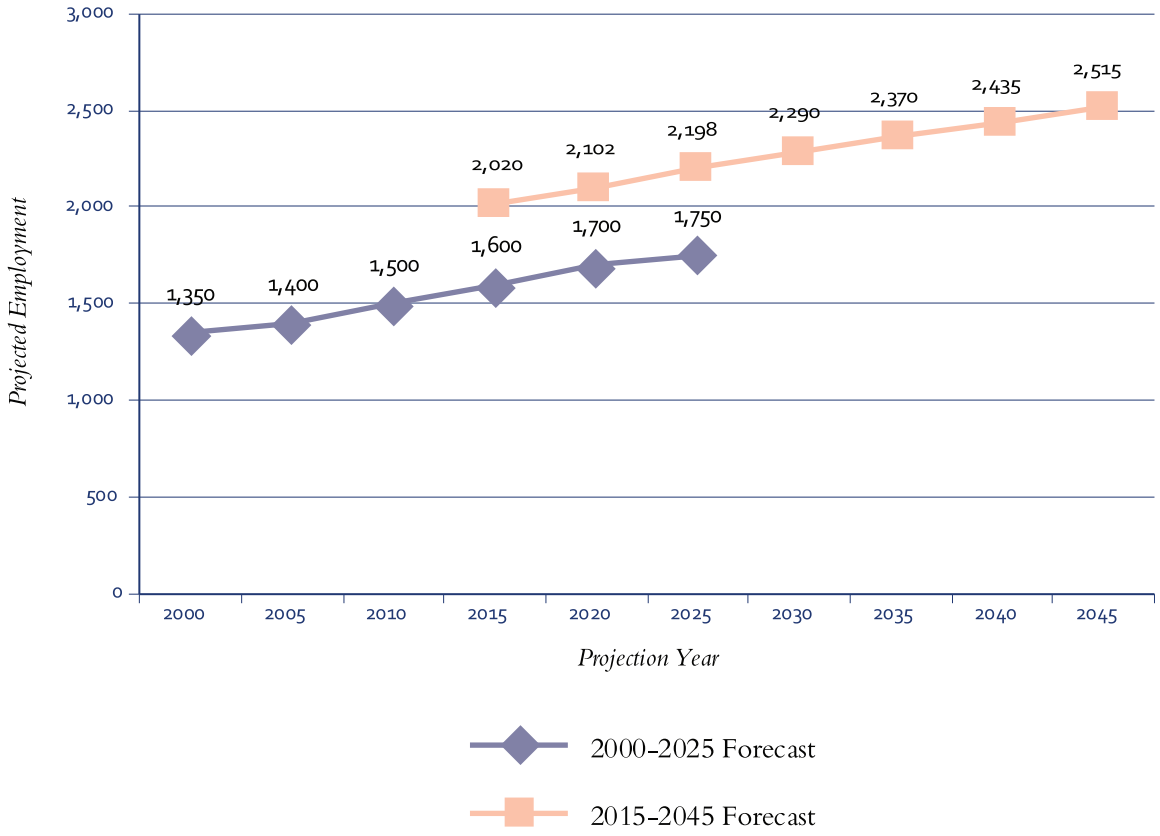
Figure 1.2 | ***Comparison of Actual Populations Observed and 2000-2025 and 2015-2045 DVRPC Population Forecasts***



Employment Forecasts

DVRPC also regularly produces employment forecasts. Similar to the population forecast chart above, the graphic below illustrates the DVRPC's employment forecasts for years 2000-2025 and for their most recent forecast, years 2015-2045. As was the case with the population forecasts presented above, the DVRPC determined that employment would grow more quickly in New Hanover than was previously anticipated. The latest DVRPC forecasts anticipate the Township's employment to be 2,290 people by 2030. The figures for the beginning years of each of the 2000-2025 and the 2015-2045 forecasts represent the actual employment estimate for those years.

Figure 1.3 | ***Comparison of 2000-2025 and 2015-2045 DVRPC Employment Forecasts***



Chapter 2 | *Future Growth*

This chapter analyzes the forecasted residential and nonresidential growth in New Hanover Township to the horizon year of 2030, representing approximately 12 years of growth. Analyzing the type of growth expected is necessary in order to calculate the traffic impact fees associated with anticipated transportation capital improvements. Residential growth is considered in terms of number of units, or dwellings, while nonresidential growth is measured by the amount of commercial square footage which could be built. Due to a number of circumstances, such as the limited number of past development trends from which to extrapolate future growth, as well as the constrained land supply for such uses, this Report has not attempted to forecast any significant industrial, institutional or municipal development.

Future Residential Growth

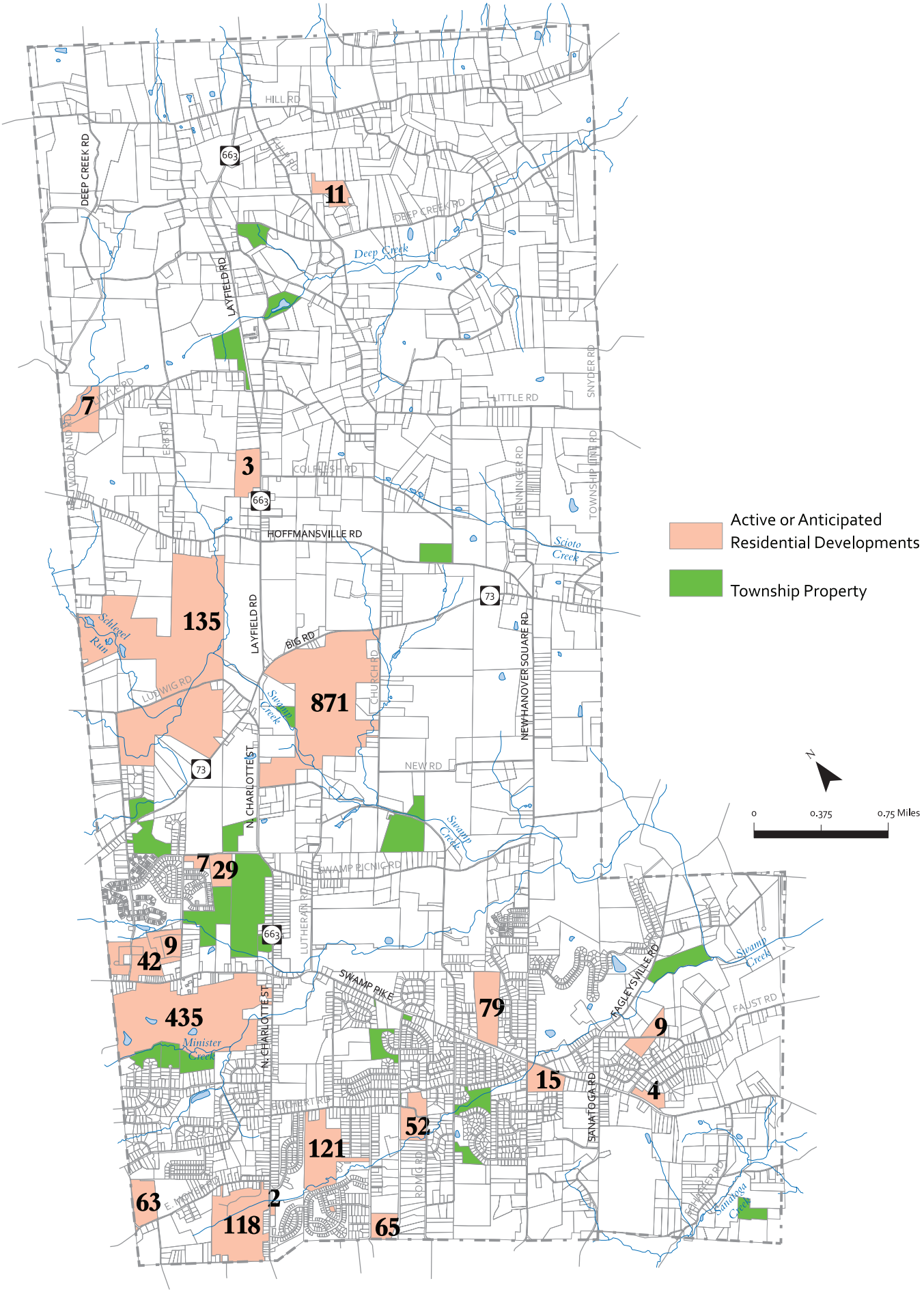
Methodology for Residential Growth Forecasts

As was stated in Chapter 1, past findings and observations of population growth in the Township have necessitated a more nuanced calculation of residential growth beyond those forecasts produced by DVRPC. Considering the current development and construction trends in the Township, the availability of land, and other local conditions, the Township TIFAC has determined that a blended methodology is most appropriate. The TIFAC first considered the land developments in the approval and construction pipeline in the Township (illustrated in Table 1.4: Residential Land Developments, above), then considered the likelihood of whether certain large developments could be completed by the horizon year of 2030, and finally weighed the likelihood of other possible developments. Specifically, the TIFAC acknowledged that the New Hanover Town Center development, one of the largest proposals in the Township, may develop approximately half of its proposed 875 units (or 435 units) by the year 2030. To yield an estimated population from these new housing units, the Township's average household size of 2.88 people was multiplied by the number of anticipated dwelling units.

Growth Forecasts

Based on the above methodology, the TIFAC forecasts that the Township will generate **2,077** more dwellings by the year 2030, which would yield an additional **5,982** new residents. The additional 2,077 residential dwelling units forecasted represents approximately 30% of the Township's total remaining residential development capacity, or "maximum buildout," of 6,968 additional units (see Appendix below for the maximum buildout calculation method). Map 2.1 below denotes where and how many additional dwelling units are anticipated to be developed and built.

Map 2.1 | *Anticipated Residential Growth in Number of Units: 2018-2030*



Future Nonresidential Growth

Methodology for Nonresidential Growth Forecasts

The TIFAC identified two main methods for forecasting nonresidential (commercial) growth: (1) using a straight-line extrapolation based upon the rate of growth over the previous 10-year period, and (2) extrapolating commercial development by the DVRPC's employment forecasts for the Township, in essence determining how much new nonresidential space would be needed to satisfy the projected increase in employees over the next 12 years. Each method would also be tempered by analyzing the growth trends of specific subtypes of commercial in the area, as well as the availability of land and the development projects which might be in various stages of approval in the Township. Based upon the land currently available for strictly commercial development, and based upon the commercial development currently in the process of approvals in the Township, the TIFAC determined that using Method #2 produced the most likely outcome, while also adjusting for local factors. A total of 270 new employees are forecasted within the Township.

To determine the amount of nonresidential square footage needed to accommodate the expected rise in employees in the Township, accepted "square footage per employee" values that developments have been shown to generate were used. For office uses, the square footage per employee values for "Office under 100,000 sq. ft." from the San Diego Association of Governments (SANDAG) and "General Office – Suburbs" from the Institute of Transportation Engineers (ITE) were used and averaged together to generate an office square-footage per employee multiplier to use in New Hanover. For general commercial/retail uses, the square footage per employee multiplier from SANDAG's "community retail" use was adopted for New Hanover, at 383 sq. ft. per employee.

To use the two multipliers we developed for office and general commercial/retail square-footage, assumptions were made of how many of the 270 new employees are expected to be office employees and how many would be general commercial/retail employees. To determine the breakdown of general commercial/retail and office uses, respectively, the TIFAC chose the 75% general commercial/retail and 25% office breakdown which has been observed in construction in the County overall during the years 2008-2017.

Table 2.1 | *Nonresidential Office Square Footage Multipliers*

SANDAG "Office under 100,000 sq. ft."	228 sq. ft./employee
ITE "General Office – Suburbs"	304 sq. ft./employee
Average Office Space needed *(applied to New Hanover)*	266 sq. ft./employee

Growth Forecasts

From the above methodology, the TIFAC forecasts that growth in the Township will result in **95,454 sq. ft.** total nonresidential space by 2030, which would consist of 18,088 sq. ft. of office space and 77,366 sq. ft. of general commercial/retail space, as illustrated in Table 2.2 below. Acknowledging the likelihood that the New Hanover Town Center development proposal in the Town Center Zoning District will deliver at least some of its nonresidential space by 2030, and also acknowledging the development potential of the CB-1 Commercial District, the TIFAC determined that the nonresidential development would be distributed in the Township as illustrated in Map 2.2 on the next page.

Table 2.2 | *Nonresidential Square Footage Projected by County Trends in Use Type*

2030 EMPLOYMENT = 2,290 (INCREASE OF 270 EMPLOYEES)			
25% Office	68	x 266 sq. ft. per employee	= 18,088 sq. ft. of office space
75% General Commercial/Retail	202	x 383 sq. ft. per employee	= 77,366 sq. ft. of general commercial/retail space
			= **95,454 sq. ft.** total nonresidential space by 2030

Map 2.2 | *Anticipated Nonresidential Growth: 2018-2030*

Conclusion

New Hanover will still be expected to incur significant residential growth through the year 2030, which will largely be concentrated in the growth areas in the central and southern portions of the Township. The New Hanover Town Center, once constructed, will contain a significant proportion of new residential development in the Township. Single-family detached units will be the primary driver of residential trips originating in the Township.

Nonresidential growth is anticipated to largely consist of infill projects, with the capacity to accommodate larger nonresidential projects which still may be in the works. The major nonresidential development associated with the New Hanover Town Center will likely not be fully constructed by the end of the horizon year of this Report, but it will likely represent the largest commercial development that the Township has seen in decades.

Appendix

Maximum Residential Buildout

The maximum residential buildout was calculated for the Township at final buildout, in which all parcels in the Township are presumed to be fully developed according to the current zoning ordinance. Final buildout of all parcels in the Township is projected to occur long after the year 2030. To determine the maximum residential buildout potential of the Township, the following calculation method was used:

1. **Inventory of developable parcels**. All of the potentially developable parcels in the Township were identified (see Map A.1 on page 22). This list formed the foundation for the buildout.
2. **Identification and removal of environmentally sensitive areas**. In addition to specific zoning district standards, the presence of certain environmental features also controls development. Local ordinances regulate, or even prohibit, development on these areas where disturbances could have significant negative impacts.

   The following features were mapped and then removed from the potentially developable areas in the Township:

   - Steep slopes of 25% or greater
   - 100-year floodplain (as revised by FEMA in 2016)
   - 100' buffer from the centerline of primary streams
   - 75' buffer from the centerline of all other streams
   - Water bodies (ponds)
3. **Removal of area for roads and infrastructure**. Ten percent (10%) of the remaining lot area was subtracted from each developable parcel to account for land that would be covered by roads, right-of-way and related infrastructure, and therefore would also be considered undevelopable.
4. **Developable area calculations**. The size of the remaining developable areas was calculated for all parcels in each of New Hanover's residential zoning districts—R-2, R-2M, R-5, R-15, R-25, TN and TC. No significant developable areas were present in the RV district, so that district was eliminated from the analysis.
5. **Buildout calculations**. To determine the maximum number of additional units that could fit onto each developable parcel in residential districts, the remaining developable area was divided by the minimum lot size area for B1-Detached Dwellings as cited in the zoning code for the R-2 and R2M Districts.

For the R-5 District, because all the developable parcels are owned by a single owner, who has pending application under the B11-Retirement Village use for 871 units, this figure was used for the buildout for that district.

For the R-15 and R-25 Districts, calculations were done for both B1-Detached Dwelling and B2-Performance Standard Development uses, where Performance Standard Developments are permitted by-right. For B1-

Detached Dwelling uses, we assumed that all parcels in these two districts would have access to water and sewer service. For B2-Performance Standard Development uses, while a mix of residential types is permitted, calculations were done only for off-center detached dwellings, as these appear to be the most popular dwelling type used when a Performance Standard Development is proposed in the Township. Calculations also included the subtraction of 50% of the minimum required open space area (-17.5% and -20% for the R-15 and R-25 districts, respectively). For ease of calculation, only 50% of the open space requirement was subtracted from the developable lot size because environmental constraint areas had already been subtracted, and environmental constraint areas can be included in open space.

Due to the complexity and variety of development scenarios which are possible, and due to the fact that almost all land in these districts have pending applications submitted for them, the TC and TN zoning districts were combined, and the units proposed in these applications were used for their respective buildout figures.

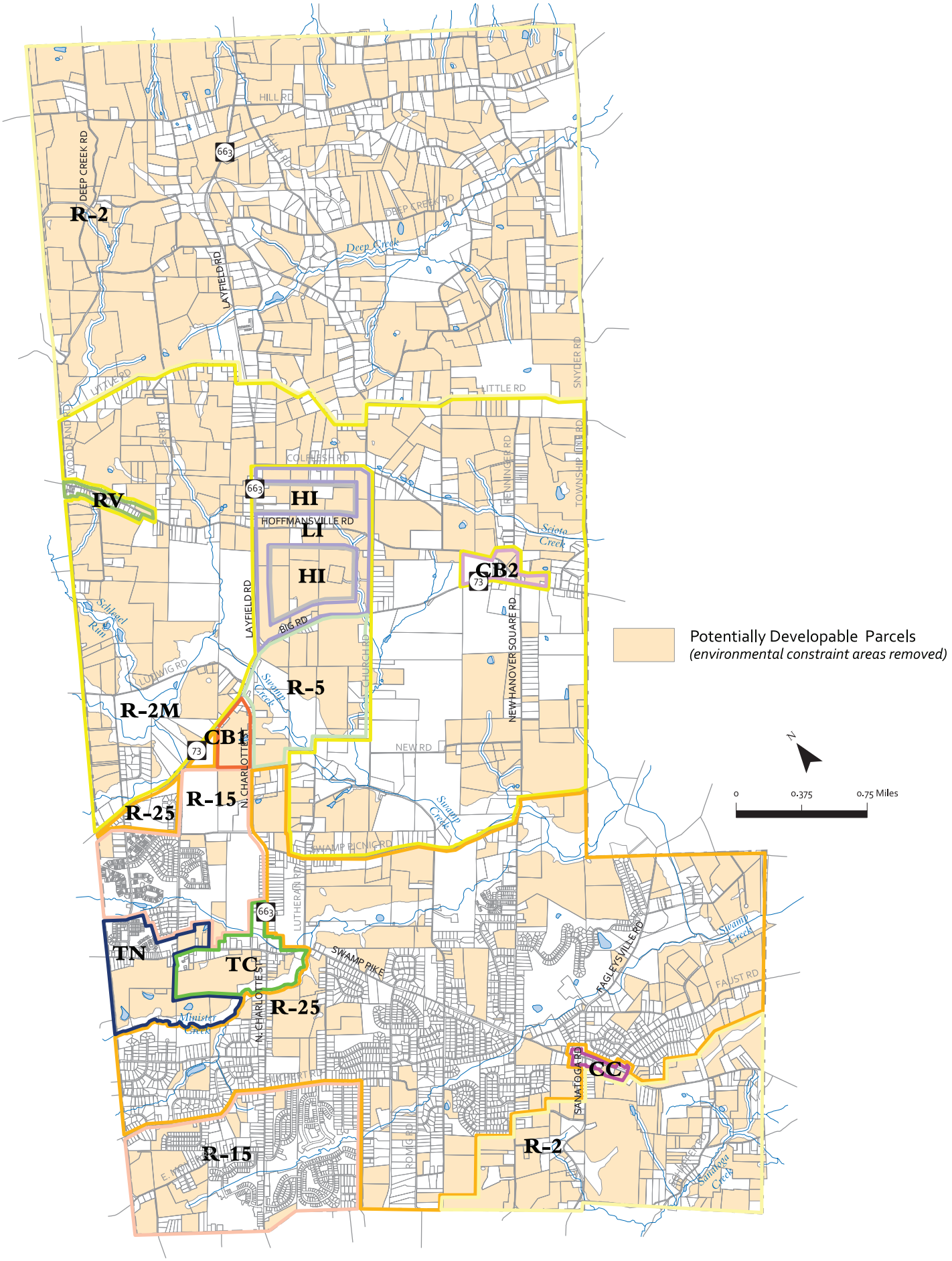
A summary of the buildout findings is provided below, which concludes that 6,968 new units could be created from new development in the Township from developable parcels:

Table A.1 | ***Summary of Maximum Residential Buildout***

ZONING DISTRICT	DEVELOPMENT TYPE	REMAINING & ELIGIBLE DEVELOPABLE PARCELS	TOTAL INCREASE OF NEW UNITS	TOTAL UNITS POSSIBLE POST-DEVELOPMENT
R-2	B1-Detached Dwelling	209	925	1,134
R-2M	B1-Detached Dwelling	133	576	709
R-5	B11-Retirement Village	12	871	883
R-15*	B1-Detached Dwelling	9	111	120
	B2-Performance Standard Development Units	8	541	549
R-25*	B1-Detached Dwelling	78	1,130	1,208
	B2-Performance Standard Development Units	19	1,909	1,928
TC + TN			905	905
TOTAL			**6,968**	7,436

** For the R-15 and the R-25 Zoning Districts, developable lots over the minimum eligible tract size to implement the B2-Performance Standard Development (10 acres and 20 acres, respectively) were calculated using that development type; all other tracts in those districts calculated the maximum units using the conventional development type of B1-Detached Dwelling.*

Map A.1 | *Developable Land: Environmental Constraints Removed, with Zoning*



New Hanover Township

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McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Appendix C

Daily Traffic Volume Data

ATR Summary

Location	Boundary	Travel Direction	Day of Week							By Direction	
			Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Percent Heavy Vehicles [1]	Average Daily Traffic [2]
			1/29/2108	1/23/2018	1/24/2018	1/25/2018	1/26/2018	1/27/2018	1/28/2018		
New Hanover Square Road	Between Orchard Lane and Jessica Drive	NB	1,580	1,603	1,649	1,642	1,677	1,422	1,109	10%	1,630
		SB	1,614	1,604	1,679	1,644	1,644	1,459	1,132	6%	1,637
		Total	3,194	3,207	3,328	3,286	3,321	2,881	2,241	8%	3,267
Reifsnyder Road	Between Swamp Pike and Colonial Drive	NB	283	257	280	247	273	243	187	12%	268
		SB	233	215	242	235	246	217	228	8%	234
		Total	516	472	522	482	519	460	415	11%	502
Swamp Pike	Between New Hanover Square Road and Reifsnyder Road	EB	6,374	n/a	n/a	6,506	6,848	6,254	4,636	10%	6,576
		WB	6,235	n/a	n/a	6,586	6,737	6,182	4,669	9%	6,519
		Total	12,609	n/a	n/a	13,092	13,585	12,436	9,305	9%	13,095

(1) Based on all count data, including partial days.

(2) Based on average of weekday data from Monday to Friday.

ATR Summary

Location	Boundary	Travel Direction	Day of Week	By Direction		
			Thursday	Percent Heavy Vehicles [1]	85th Percentile Speed [1]	Average Daily Traffic [2]
			3/1/2018			
PA 73	East of PA 663 North	EB	6,287	9%	44	6,287
		WB	6,341	9%	44	6,341
		Total	12,628	9%	44	12,628
PA 73	West of PA 663 North	EB	7,603	8%	44	7,603
		WB	7,550	8%	43	7,550
		Total	15,153	8%	44	15,153
PA 663	North of PA 73	NB	4,962	10%	39	4,962
		SB	4,920	10%	39	4,920
		Total	9,882	10%	39	9,882

(1) Based on all count data, including partial days.

(2) Based on average of weekday data from Monday to Friday.

DVRPC - Travel Monitoring

TAKEN BY: BB **DATE:** 7/26/2017 **PROJECT:** 17-PAM **STATION ID:** 03833

ROAD: PA 73 BIG RD **SR/SEG/OFF:** 0073/0130/0150

FROM: TOWNSHIP LINE RD **TO:** FAGLEYSVILLE RD

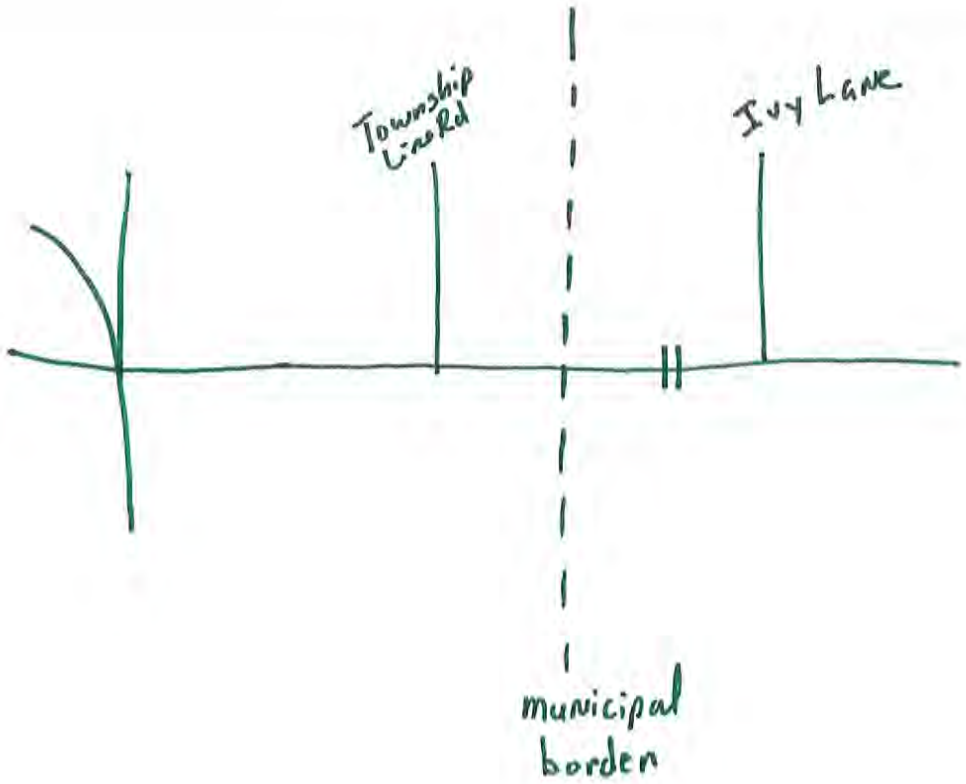
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209179040 - UPPER FREDERICK TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 55 **FC:** 14

DVRPC FILE #: 135364 **COUNTER #:** 1527 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 7/26/2017
12 AM	45
1 AM	27
2 AM	23
3 AM	40
4 AM	122
5 AM	362
6 AM	666
7 AM	741
8 AM	608
9 AM	478
10 AM	407
11 AM	451
12 PM	470
1 PM	475
2 PM	596
3 PM	753
4 PM	837
5 PM	897
6 PM	608
7 PM	404
8 PM	344
9 PM	269
10 PM	164
11PM	107
Total	**9,894**



AXLE CORR. FACTOR: 1.000 **AADT:** 8,508 **AM Peak %:** 7.5 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.860 **PM Peak %:** 9.1 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: PR **DATE:** 7/9/2014 **PROJECT:** PAM-14 **STATION ID:** 03833

ROAD: PA 73 BIG RD **SR/SEG/OFF:** 0073/0130/0150

FROM: NEW HANOVER SQUARE RD **TO:** FAGLEYSVILLE RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 50 **FC:** 2

DVRPC FILE #: 110221 **COUNTER #:** 1255 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS: *

Hour Beginning	Tuesday 7/8/2014	Wednesday 7/9/2014	Thursday 7/10/2014	Friday 7/11/2014	Saturday 7/12/2014
12 AM		40	59	58	88
1 AM		32	37	28	38
2 AM		20	25	31	33
3 AM		49	43	53	20
4 AM		108	102	96	43
5 AM		349	354	337	108
6 AM		725	713	645	233
7 AM		711	757	676	343
8 AM		570	594	594	421
9 AM		455	464	482	494
10 AM		439	413	450	527
11 AM		460	495	492	571
12 PM		483	459	523	575
1 PM		477	485	518	562
2 PM		559	511	606	615
3 PM		734	814	762	602
4 PM		855	918	962	515
5 PM		889	898	819	487
6 PM		632	688	554	450
7 PM		411	448	427	358
8 PM	343	337	364	322	
9 PM	227	289	299	289	
10 PM	161	192	188	221	
11PM	105	126	110	149	
Total	**836**	**9,942**	**10,238**	**10,094**	**7,083**

AXLE CORR. FACTOR: 0.893 **AADT:** 7,906 **AM Peak %:** 7.3 **Hour Beginning:** 6:00 AM

SEASONAL FACTOR: 0.891 **PM Peak %:** 8.9 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: BB **DATE:** 7/25/2017 **PROJECT:** 17-PAM **STATION ID:** 03832

ROAD: PA 73 BIG RD **SR/SEG/OFF:** 0073/0104/0000

FROM: PA 663 LAYFIELD RD **TO:** NEW HANOVER SQUARE RD

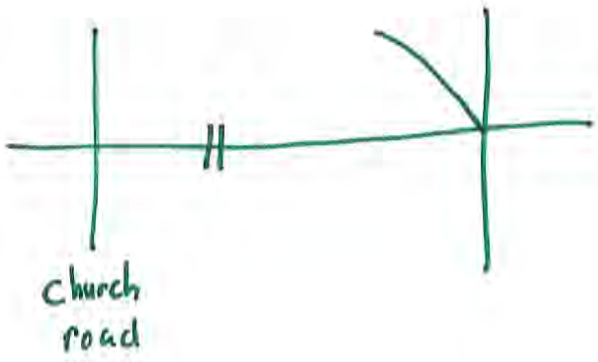
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 45 **FC:** 2

DVRPC FILE #: 135230 **COUNTER #:** 1611 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Monday 7/24/2017	Tuesday 7/25/2017	Wednesday 7/26/2017	Thursday 7/27/2017
12 AM		37	39	53
1 AM		25	19	24
2 AM		18	25	27
3 AM		43	42	30
4 AM		107	117	111
5 AM		333	311	362
6 AM		560	584	562
7 AM		677	618	636
8 AM		526	563	547
9 AM		436	447	392
10 AM		360	383	376
11 AM		401	438	462
12 PM		453	480	480
1 PM	348	407	450	462
2 PM	482	492	547	490
3 PM	626	680	650	
4 PM	700	728	738	
5 PM	705	739	785	
6 PM	483	529	551	
7 PM	333	347	314	
8 PM	232	272	297	
9 PM	165	184	221	
10 PM	106	118	134	
11PM	76	102	89	
Total	**4,256**	**8,574**	**8,842**	**5,014**



AXLE CORR. FACTOR: 0.885 **AADT:** 6,785 **AM Peak %:** 7.9 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.894 **PM Peak %:** 8.6 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: KH **DATE:** 9/22/2016 **PROJECT:** 16-PAM **STATION ID:** 03862

ROAD: PA 663 CHARLOTTE RD **SR/SEG/OFF:** 0663/0100/2300

FROM: BLEIM RD **TO:** BUCHERT RD

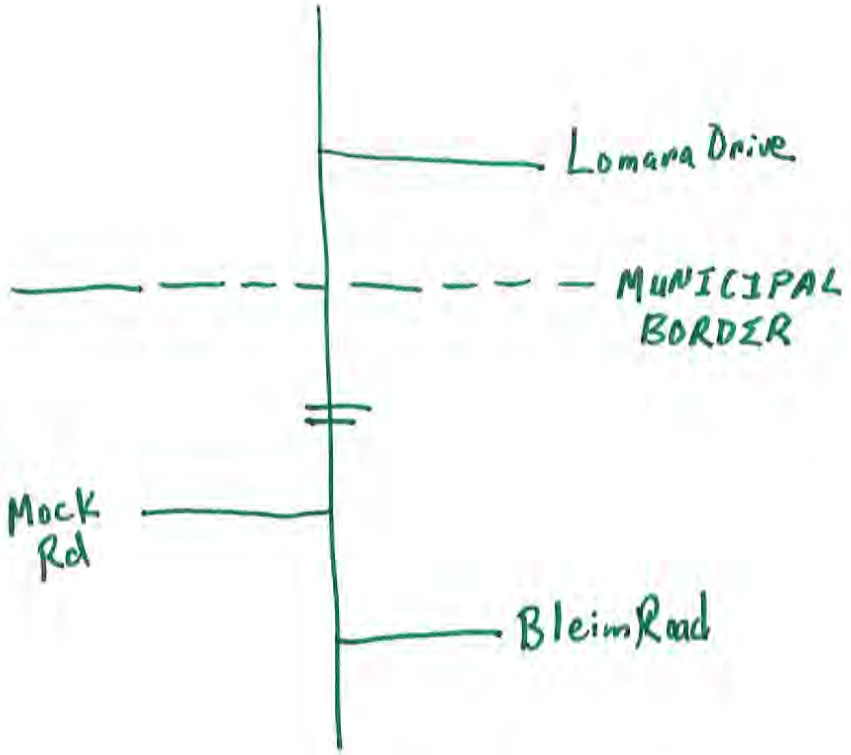
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209145072 - LOWER POTTSGROVE TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 45 **FC:** 14

DVRPC FILE #: 127762 **COUNTER #:** 1335 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Thursday 9/22/2016
12 AM	43
1 AM	25
2 AM	17
3 AM	33
4 AM	61
5 AM	255
6 AM	548
7 AM	775
8 AM	698
9 AM	565
10 AM	465
11 AM	522
12 PM	559
1 PM	541
2 PM	640
3 PM	878
4 PM	1,033
5 PM	973
6 PM	863
7 PM	663
8 PM	402
9 PM	304
10 PM	163
11PM	82
Total	**11,108**



AXLE CORR. FACTOR: 1.000 **AADT:** 9,397 **AM Peak %:** 7.0 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.846 **PM Peak %:** 9.3 **Hour Beginning:** 4:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 8/21/2013 **PROJECT:** 13-PAM **STATION ID:** 03862

ROAD: PA 663 CHARLOTTE RD **SR/SEG/OFF:** 0663/0100/2300

FROM: BLEIM RD **TO:** BUCHERT RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 50 **FC:** 14

DVRPC FILE #: 102327 **COUNTER #:** 1114 **WEATHER:** F **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Tuesday 8/20/2013	Wednesday 8/21/2013	Thursday 8/22/2013
12 AM		56	64
1 AM		34	28
2 AM		25	23
3 AM		24	30
4 AM		61	64
5 AM		235	244
6 AM		486	447
7 AM		644	621
8 AM		623	616
9 AM		537	533
10 AM		545	524
11 AM	561	555	543
12 PM	629	635	
1 PM	587	649	
2 PM	607	675	
3 PM	773	814	
4 PM	901	900	
5 PM	954	976	
6 PM	735	714	
7 PM	549	580	
8 PM	509	518	
9 PM	309	354	
10 PM	178	199	
11PM	110	100	
Total	**7,402**	**10,939**	**3,737**

AXLE CORR. FACTOR: 0.942 **AADT:** 8,515 **AM Peak %:** 5.9 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.826 **PM Peak %:** 8.9 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 7/26/2016 **PROJECT:** 16-PAM **STATION ID:** 29521

ROAD: HOFFMANSVILLE RD **SR/SEG/OFF:** 0016/0040/6300

FROM: PA 73 BIG RD **TO:** PA 663 LAYFIELD RD

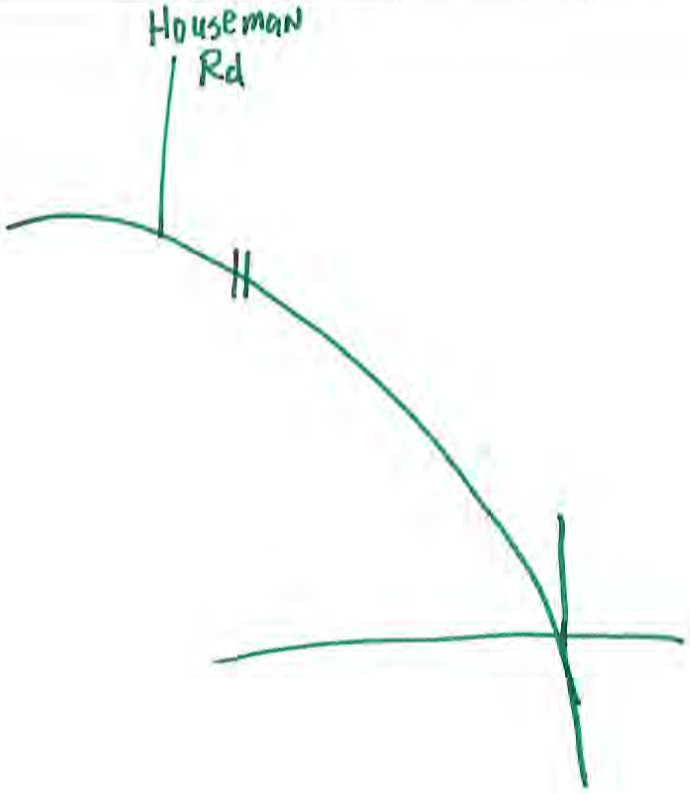
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 35 **FC:** 6

DVRPC FILE #: 127640 **COUNTER #:** 1085 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Monday 7/25/2016	Tuesday 7/26/2016	Wednesday 7/27/2016
12 AM		11	19
1 AM		10	10
2 AM		13	7
3 AM		15	12
4 AM		52	36
5 AM		151	143
6 AM		230	242
7 AM		269	58
8 AM		188	
9 AM	38	147	
10 AM	141	114	
11 AM	144	136	
12 PM	134	149	
1 PM	139	118	
2 PM	181	233	
3 PM	288	275	
4 PM	316	332	
5 PM	297	380	
6 PM	187	259	
7 PM	127	175	
8 PM	87	130	
9 PM	66	105	
10 PM	57	125	
11PM	41	58	
Total	**2,243**	**3,675**	**527**



AXLE CORR. FACTOR: 0.946 **AADT:** 3,200 **AM Peak %:** 7.3 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.921 **PM Peak %:** 10.3 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 8/21/2013 **PROJECT:** 13-PAM **STATION ID:** 29521

ROAD: HOFFMANSVILLE RD **SR/SEG/OFF:** 0016/0040/6300

FROM: PA 73 BIG RD **TO:** PA 663 LAYFIELD RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 35 **FC:** 6

DVRPC FILE #: 102346 **COUNTER #:** 1083 **WEATHER:** **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Wednesday 8/21/2013
12 AM	15
1 AM	7
2 AM	6
3 AM	16
4 AM	27
5 AM	105
6 AM	256
7 AM	300
8 AM	246
9 AM	202
10 AM	150
11 AM	182
12 PM	142
1 PM	179
2 PM	200
3 PM	274
4 PM	361
5 PM	384
6 PM	288
7 PM	166
8 PM	167
9 PM	151
10 PM	72
11PM	47
Total	**3,943**

AXLE CORR. FACTOR: 1.000 **AADT:** 3,497 **AM Peak %:** 7.6 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.887 **PM Peak %:** 9.7 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 7/26/2016 **PROJECT:** 16-PAM **STATION ID:** 24785

ROAD: PA 663 CHARLOTTE ST **SR/SEG/OFF:** 0663/0140/1450

FROM: DOTTERER RD **TO:** MILES RD

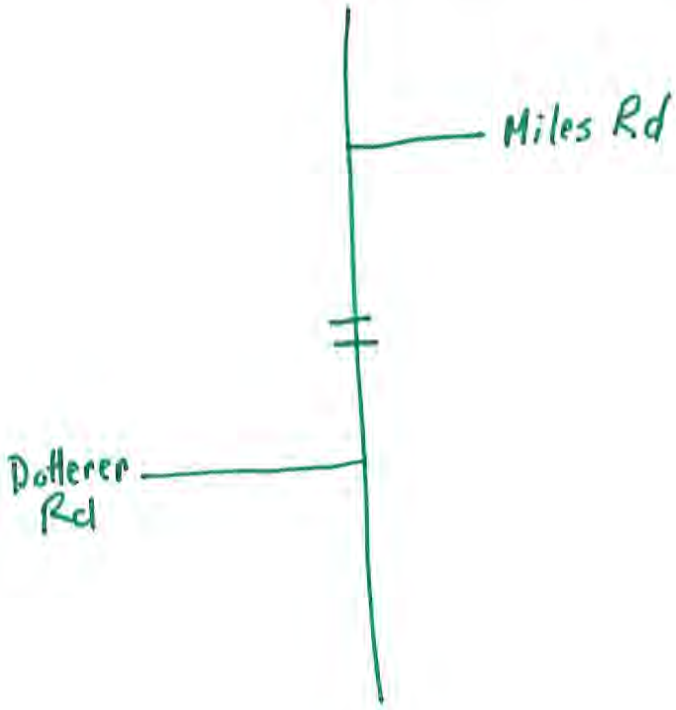
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 40 **FC:** 14

DVRPC FILE #: 127641 **COUNTER #:** 1115 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Monday 7/25/2016	Tuesday 7/26/2016	Wednesday 7/27/2016
12 AM		30	40
1 AM		10	13
2 AM		13	15
3 AM		35	27
4 AM		73	92
5 AM		237	211
6 AM		433	423
7 AM		553	500
8 AM		523	506
9 AM		442	228
10 AM	104	419	
11 AM	433	456	
12 PM	469	532	
1 PM	427	441	
2 PM	451	516	
3 PM	517	583	
4 PM	619	652	
5 PM	652	669	
6 PM	441	513	
7 PM	363	339	
8 PM	205	357	
9 PM	162	222	
10 PM	97	135	
11PM	72	76	
Total	**5,012**	**8,259**	**2,055**



AXLE CORR. FACTOR: 0.954 **AADT:** 6,949 **AM Peak %:** 6.7 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.882 **PM Peak %:** 8.1 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 8/21/2013 **PROJECT:** 13-PAM **STATION ID:** 24785

ROAD: PA 663 CHARLOTTE ST **SR/SEG/OFF:** 0663/0140/1450

FROM: DOTTERER RD **TO:** MILES RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 40 **FC:** 14

DVRPC FILE #: 102349 **COUNTER #:** 1112 **WEATHER:** **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Wednesday 8/21/2013
12 AM	46
1 AM	23
2 AM	18
3 AM	31
4 AM	47
5 AM	178
6 AM	371
7 AM	522
8 AM	454
9 AM	366
10 AM	350
11 AM	425
12 PM	407
1 PM	412
2 PM	470
3 PM	548
4 PM	587
5 PM	648
6 PM	491
7 PM	387
8 PM	272
9 PM	204
10 PM	142
11PM	73
Total	**7,472**

AXLE CORR. FACTOR: 1.000 **AADT:** 6,172 **AM Peak %:** 7.0 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.826 **PM Peak %:** 8.7 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 7/26/2016 **PROJECT:** 16-PAM **STATION ID:** 14199

ROAD: PA 663 LAYFIELD RD **SR/SEG/OFF:** 0663/0160/1775

FROM: PA 73 BIG RD **TO:** HOFFMANSVILLE RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 40 **FC:** 14

DVRPC FILE #: 127642 **COUNTER #:** 1133 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Monday 7/25/2016	Tuesday 7/26/2016	Wednesday 7/27/2016
12 AM		44	49
1 AM		18	25
2 AM		23	22
3 AM		45	41
4 AM		118	126
5 AM		312	295
6 AM		532	557
7 AM		710	651
8 AM		676	623
9 AM		552	139
10 AM	491	511	
11 AM	521	550	
12 PM	526	608	
1 PM	567	555	
2 PM	596	715	
3 PM	708	800	
4 PM	823	853	
5 PM	808	807	
6 PM	530	636	
7 PM	424	423	
8 PM	260	472	
9 PM	205	288	
10 PM	132	170	
11PM	94	95	
Total	**6,685**	**10,513**	**2,528**

AXLE CORR. FACTOR: 0.954 **AADT:** 8,845 **AM Peak %:** 6.8 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.882 **PM Peak %:** 8.1 **Hour Beginning:** 4:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 8/20/2013 **PROJECT:** 13-PAM **STATION ID:** 14199

ROAD: PA 663 LAYFIELD RD **SR/SEG/OFF:** 0663/0160/1775

FROM: PA 73 BIG RD **TO:** HOFFMANSVILLE RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 40 **FC:** 14

DVRPC FILE #: 102187 **COUNTER #:** 1248 **WEATHER:** FAIR **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Tuesday 8/20/2013
12 AM	55
1 AM	42
2 AM	13
3 AM	32
4 AM	79
5 AM	266
6 AM	480
7 AM	698
8 AM	609
9 AM	438
10 AM	440
11 AM	456
12 PM	421
1 PM	537
2 PM	550
3 PM	679
4 PM	735
5 PM	777
6 PM	568
7 PM	400
8 PM	332
9 PM	227
10 PM	135
11PM	108
Total	**9,077**

AXLE CORR. FACTOR: 1.000 **AADT:** 7,670 **AM Peak %:** 7.7 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.845 **PM Peak %:** 8.6 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 7/26/2016 **PROJECT:** 16-PAM **STATION ID:** 29520

ROAD: MOYER RD **SR/SEG/OFF:** 001M/0020/0900

FROM: SPECHT RD **TO:** PA 663 CHARLOTTE ST

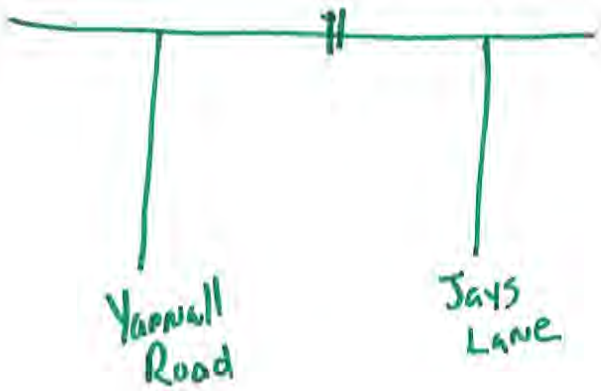
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 40 **FC:** 17

DVRPC FILE #: 127767 **COUNTER #:** 1249 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Tuesday 7/26/2016
12 AM	19
1 AM	9
2 AM	12
3 AM	8
4 AM	35
5 AM	83
6 AM	149
7 AM	242
8 AM	187
9 AM	156
10 AM	136
11 AM	169
12 PM	179
1 PM	168
2 PM	193
3 PM	231
4 PM	316
5 PM	329
6 PM	213
7 PM	188
8 PM	134
9 PM	108
10 PM	56
11PM	29
Total	**3,349**



AXLE CORR. FACTOR: 1.000 **AADT:** 2,906 **AM Peak %:** 7.2 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.868 **PM Peak %:** 9.8 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 8/21/2013 **PROJECT:** 13-PAM **STATION ID:** 29520

ROAD: MOYER RD **SR/SEG/OFF:** 001M/0020/0900

FROM: SPECHT RD **TO:** PA 663 CHARLOTTE ST

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 30 **FC:** 17

DVRPC FILE #: 102347 **COUNTER #:** 1084 **WEATHER:** F **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Tuesday 8/20/2013	Wednesday 8/21/2013	Thursday 8/22/2013
12 AM		19	22
1 AM		12	5
2 AM		10	5
3 AM		7	4
4 AM		28	22
5 AM		69	74
6 AM		131	125
7 AM		176	112
8 AM		178	
9 AM		157	
10 AM	79	144	
11 AM	165	159	
12 PM	189	176	
1 PM	168	162	
2 PM	177	183	
3 PM	239	232	
4 PM	286	271	
5 PM	331	324	
6 PM	245	230	
7 PM	179	173	
8 PM	199	144	
9 PM	149	109	
10 PM	68	53	
11PM	28	30	
Total	**2,502**	**3,177**	**369**

AXLE CORR. FACTOR: 0.970 **AADT:** 2,765 **AM Peak %:** 5.6 **Hour Beginning:** 8:00 AM

SEASONAL FACTOR: 0.897 **PM Peak %:** 10.2 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 7/26/2016 **PROJECT:** 16-PAM **STATION ID:** 03863

ROAD: PA 663 LAYFIELD RD **SR/SEG/OFF:** 0663/0210/0000

FROM: LITTLE RD **TO:** DEEP CREEK RD

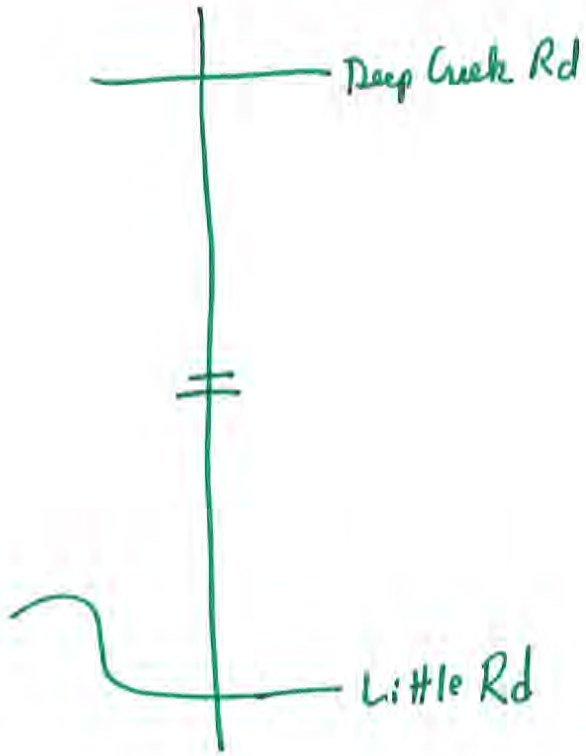
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 45 **FC:** 2

DVRPC FILE #: 127768 **COUNTER #:** 304 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Tuesday 7/26/2016
12 AM	41
1 AM	18
2 AM	26
3 AM	50
4 AM	132
5 AM	344
6 AM	618
7 AM	782
8 AM	673
9 AM	506
10 AM	471
11 AM	539
12 PM	575
1 PM	536
2 PM	753
3 PM	817
4 PM	995
5 PM	966
6 PM	731
7 PM	497
8 PM	469
9 PM	283
10 PM	293
11PM	127
Total	**11,242**



AXLE CORR. FACTOR: 1.000 **AADT:** 10,050 **AM Peak %:** 7.0 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.894 **PM Peak %:** 8.9 **Hour Beginning:** 4:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 8/21/2013 **PROJECT:** 13-PAM **STATION ID:** 03863

ROAD: PA 663 LAYFIELD RD **SR/SEG/OFF:** 0663/0210/0000

FROM: LITTLE RD **TO:** DEEP CREEK RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 50 **FC:** 2

DVRPC FILE #: 102188 **COUNTER #:** 1081 **WEATHER:** F **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Tuesday 8/20/2013	Wednesday 8/21/2013	Thursday 8/22/2013
12 AM		68	69
1 AM		40	41
2 AM		27	26
3 AM		46	36
4 AM		110	101
5 AM		315	290
6 AM		620	617
7 AM		873	
8 AM		643	
9 AM	251	573	
10 AM	538	502	
11 AM	523	549	
12 PM	509	583	
1 PM	617	560	
2 PM	631	641	
3 PM	780	780	
4 PM	875	844	
5 PM	887	946	
6 PM	653	657	
7 PM	418	451	
8 PM	364	373	
9 PM	248	322	
10 PM	172	185	
11PM	118	107	
Total	**7,584**	**10,815**	**1,180**

AXLE CORR. FACTOR: 0.891 **AADT:** 8,702 **AM Peak %:** 8.1 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.903 **PM Peak %:** 8.7 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 9/9/2015 **PROJECT:** PAM-15 **STATION ID:** 12254

ROAD: PA 73 BIG RD **SR/SEG/OFF:** 0073/0064/1330

FROM: GILBERTSVILLE RD **TO:** MIDDLE CREEK RD

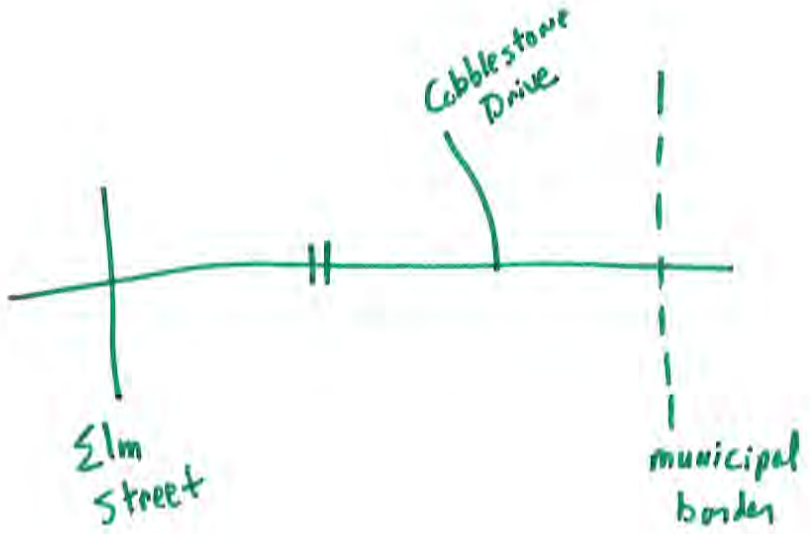
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209119672 - DOUGLASS TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 45 **FC:** 14

DVRPC FILE #: 118362 **COUNTER #:** 303 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 9/9/2015
12 AM	38
1 AM	22
2 AM	24
3 AM	45
4 AM	137
5 AM	436
6 AM	807
7 AM	941
8 AM	735
9 AM	521
10 AM	488
11 AM	509
12 PM	530
1 PM	631
2 PM	700
3 PM	825
4 PM	973
5 PM	1,103
6 PM	681
7 PM	548
8 PM	361
9 PM	250
10 PM	137
11PM	89
Total	**11,531**



AXLE CORR. FACTOR: 1.000 **AADT:** 10,090 **AM Peak %:** 8.2 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.875 **PM Peak %:** 9.6 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 9/9/2015 **PROJECT:** PAM-15 **STATION ID:** 29523

ROAD: MIDDLE CREEK RD **SR/SEG/OFF:** 003M/0020/1309

FROM: SASSAMANSVILLE RD **TO:** CONGO RD

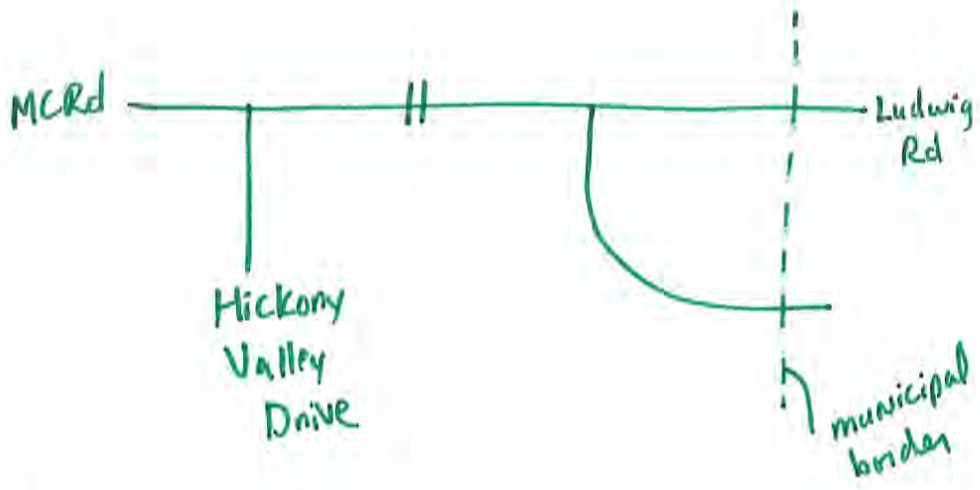
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209119672 - DOUGLASS TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 25 **FC:** 17

DVRPC FILE #: 118360 **COUNTER #:** 1084 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Tuesday 9/8/2015	Wednesday 9/9/2015	Thursday 9/10/2015
12 AM		6	0
1 AM		0	1
2 AM		2	1
3 AM		1	0
4 AM		8	2
5 AM		17	17
6 AM		39	
7 AM		81	
8 AM	22	52	
9 AM	41	46	
10 AM	57	45	
11 AM	55	59	
12 PM	86	54	
1 PM	71	65	
2 PM	85	83	
3 PM	120	137	
4 PM	144	137	
5 PM	171	153	
6 PM	74	82	
7 PM	38	51	
8 PM	27	35	
9 PM	13	21	
10 PM	10	12	
11PM	4	8	
Total	**1,018**	**1,194**	**21**



AXLE CORR. FACTOR: 0.970 **AADT:** 1,044 **AM Peak %:** 6.8 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.901 **PM Peak %:** 12.8 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 9/9/2015 **PROJECT:** PAM-15 **STATION ID:** 04982

ROAD: SWAMP PK **SR/SEG/OFF:** 004M/0030/1250

FROM: TOWNSHIP LINE RD **TO:** ROMIG RD

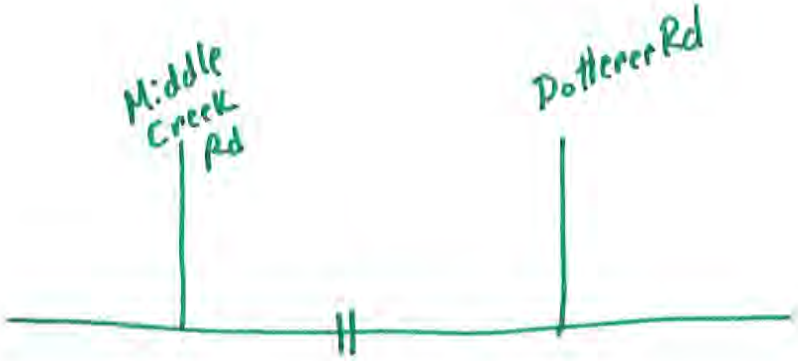
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 35 **FC:** 14

DVRPC FILE #: 118434 **COUNTER #:** 304 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 9/9/2015
12 AM	48
1 AM	28
2 AM	25
3 AM	36
4 AM	136
5 AM	382
6 AM	789
7 AM	1,045
8 AM	889
9 AM	672
10 AM	640
11 AM	648
12 PM	684
1 PM	659
2 PM	772
3 PM	982
4 PM	1,069
5 PM	1,207
6 PM	973
7 PM	801
8 PM	569
9 PM	362
10 PM	195
11PM	115
Total	**13,726**



AXLE CORR. FACTOR: 1.000 **AADT:** 12,010 **AM Peak %:** 7.6 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.875 **PM Peak %:** 8.8 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 9/9/2015 **PROJECT:** PAM-15 **STATION ID:** 29524

ROAD: SANATOGA RD **SR/SEG/OFF:** 005M/0010/3300

FROM: SCHAFFER RD N **TO:** SWAMP PK

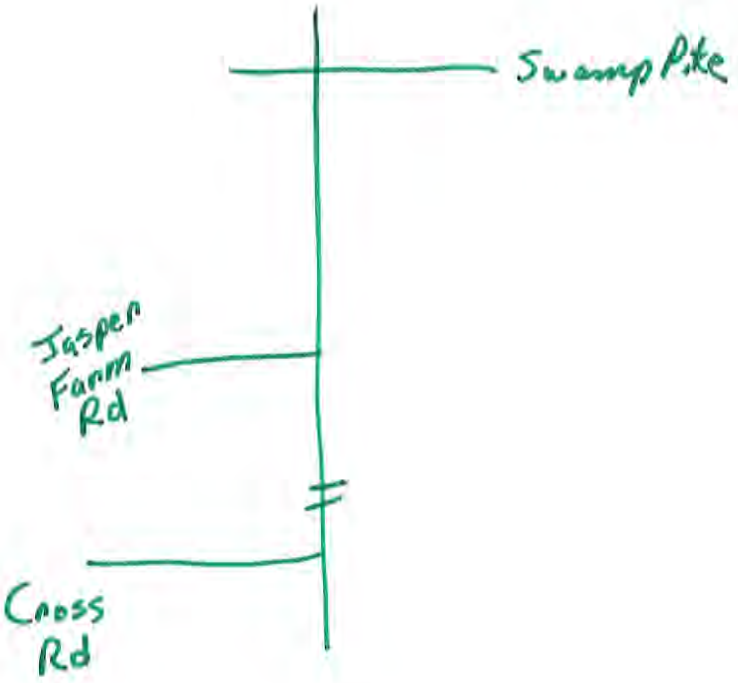
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 40 **FC:** 17

DVRPC FILE #: 118435 **COUNTER #:** 1085 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Tuesday 9/8/2015	Wednesday 9/9/2015	Thursday 9/10/2015
12 AM		9	6
1 AM		2	2
2 AM		2	7
3 AM		2	5
4 AM		16	14
5 AM		33	37
6 AM		83	83
7 AM		119	116
8 AM		105	50
9 AM		88	
10 AM		92	
11 AM	66	86	
12 PM	94	79	
1 PM	112	104	
2 PM	100	107	
3 PM	154	142	
4 PM	149	145	
5 PM	145	160	
6 PM	107	112	
7 PM	87	88	
8 PM	71	56	
9 PM	52	57	
10 PM	28	42	
11PM	14	23	
Total	**1,179**	**1,752**	**320**



AXLE CORR. FACTOR: 0.970 **AADT:** 1,532 **AM Peak %:** 6.8 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.901 **PM Peak %:** 9.1 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 9/9/2015 **PROJECT:** PAM-15 **STATION ID:** 37996

ROAD: FAGLEYSVILLE RD BRIDGE **SR/SEG/OFF:** 4023/0012/0020

FROM: WAGNER RD **TO:** EVANS RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 35 **FC:** 8

DVRPC FILE #: 118436 **COUNTER #:** 1079 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Tuesday 9/8/2015	Wednesday 9/9/2015	Thursday 9/10/2015
12 AM		8	4
1 AM		5	2
2 AM		1	1
3 AM		4	4
4 AM		12	12
5 AM		49	40
6 AM		107	94
7 AM		145	135
8 AM		110	87
9 AM		77	28
10 AM		79	
11 AM	20	68	
12 PM	87	99	
1 PM	109	100	
2 PM	86	103	
3 PM	154	139	
4 PM	147	166	
5 PM	183	186	
6 PM	145	134	
7 PM	116	100	
8 PM	86	67	
9 PM	54	54	
10 PM	30	24	
11PM	20	22	
Total	**1,237**	**1,859**	**407**

AXLE CORR. FACTOR: 0.960 **AADT:** 1,580 **AM Peak %:** 7.8 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.885 **PM Peak %:** 10.0 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 11/13/2013 **PROJECT:** 14-43-035 **STATION ID:**

ROAD: COLONIAL RD BRIDGE OVER SWAMP CRK **SR/SEG/OFF:** LOCAL

FROM: FAGLEYSVILLE RD **TO:** HILDEBEIDEL RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209179040 - UPPER FREDERICK TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 30 **FC:** 9

DVRPC FILE #: 103781 **COUNTER #:** 1087 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 11/13/2013
12 AM	4
1 AM	0
2 AM	0
3 AM	1
4 AM	1
5 AM	1
6 AM	9
7 AM	17
8 AM	31
9 AM	13
10 AM	10
11 AM	15
12 PM	5
1 PM	12
2 PM	12
3 PM	21
4 PM	23
5 PM	17
6 PM	12
7 PM	6
8 PM	9
9 PM	3
10 PM	4
11PM	4
Total	**230**

AXLE CORR. FACTOR: 1.000 **AADT:** 216 **AM Peak %:** 13.5 **Hour Beginning:** 8:00 AM

SEASONAL FACTOR: 0.939 **PM Peak %:** 10.0 **Hour Beginning:** 4:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 10/30/2013 **PROJECT:** 14-43-035 **STATION ID:**

ROAD: LUDWIG RD BRIDGE OVER SWAMP CRK **SR/SEG/OFF:** 003M/0010/2217

FROM: PA 73 BIG RD **TO:** MIDDLE CREEK RD

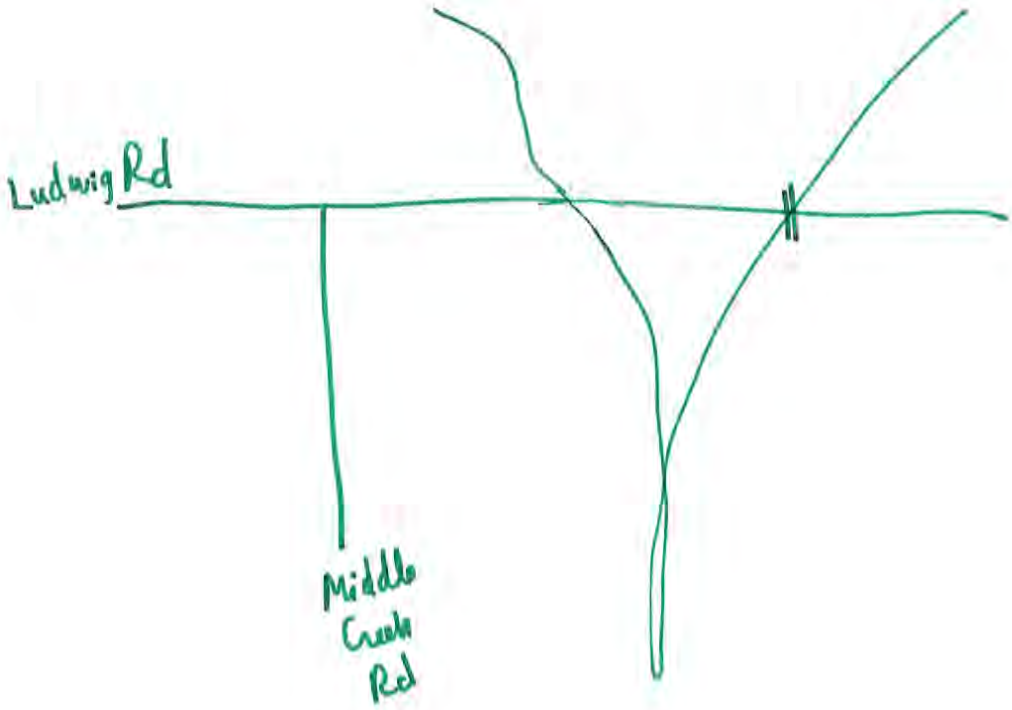
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 25 **FC:** 7

DVRPC FILE #: 103749 **COUNTER #:** 1090 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 10/30/2013
12 AM	3
1 AM	2
2 AM	0
3 AM	1
4 AM	3
5 AM	10
6 AM	12
7 AM	56
8 AM	27
9 AM	31
10 AM	29
11 AM	26
12 PM	30
1 PM	41
2 PM	36
3 PM	65
4 PM	76
5 PM	72
6 PM	42
7 PM	13
8 PM	18
9 PM	8
10 PM	8
11PM	5
Total	**614**



AXLE CORR. FACTOR: 1.000 **AADT:** 525 **AM Peak %:** 9.1 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.855 **PM Peak %:** 12.4 **Hour Beginning:** 4:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 10/30/2013 **PROJECT:** 14-43-035 **STATION ID:**

ROAD: LUDWIG RD BRIDGE OVER SCHLEGEL RUN **SR/SEG/OFF:** 003M/0010/3696

FROM: PA 73 BIG RD **TO:** MIDDLE CREEK RD

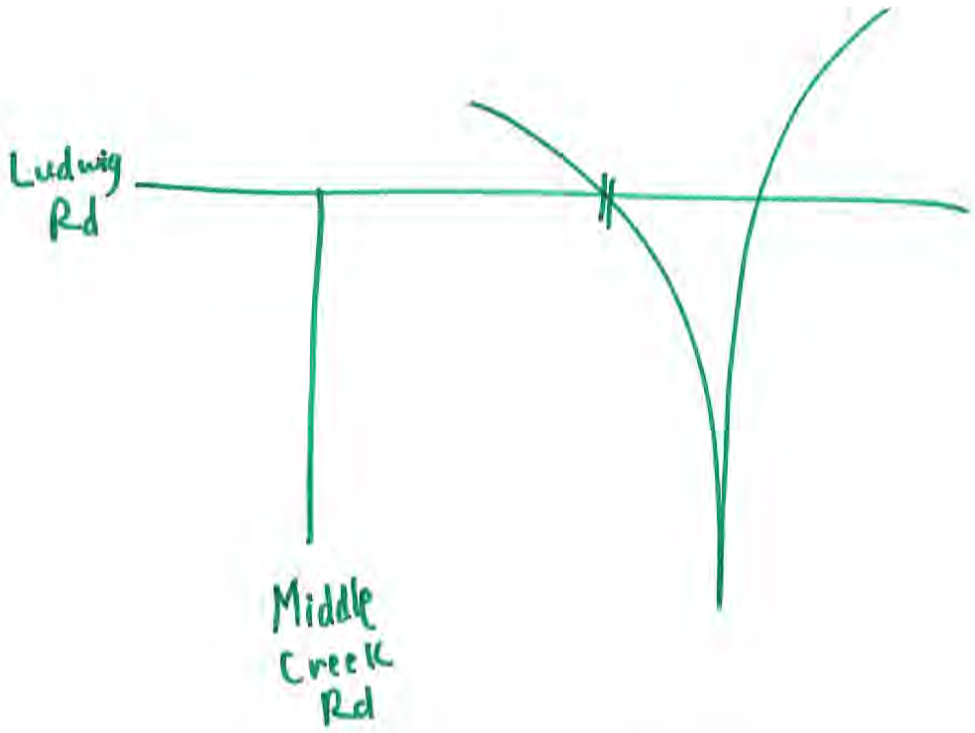
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 25 **FC:** 17

DVRPC FILE #: 103761 **COUNTER #:** 1151 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 10/30/2013
12 AM	3
1 AM	3
2 AM	0
3 AM	1
4 AM	3
5 AM	10
6 AM	22
7 AM	58
8 AM	28
9 AM	29
10 AM	35
11 AM	35
12 PM	32
1 PM	39
2 PM	39
3 PM	74
4 PM	72
5 PM	78
6 PM	49
7 PM	19
8 PM	18
9 PM	10
10 PM	8
11PM	6
Total	**671**



AXLE CORR. FACTOR: 1.000 **AADT:** 593 **AM Peak %:** 8.6 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.884 **PM Peak %:** 11.6 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 10/30/2013 **PROJECT:** 14-43-035 **STATION ID:**

ROAD: SWAMP PK BRIDGE OVER MINISTER CRK **SR/SEG/OFF:** 004M/0030/1426

FROM: LUTHERAN RD **TO:** LEIDY RD

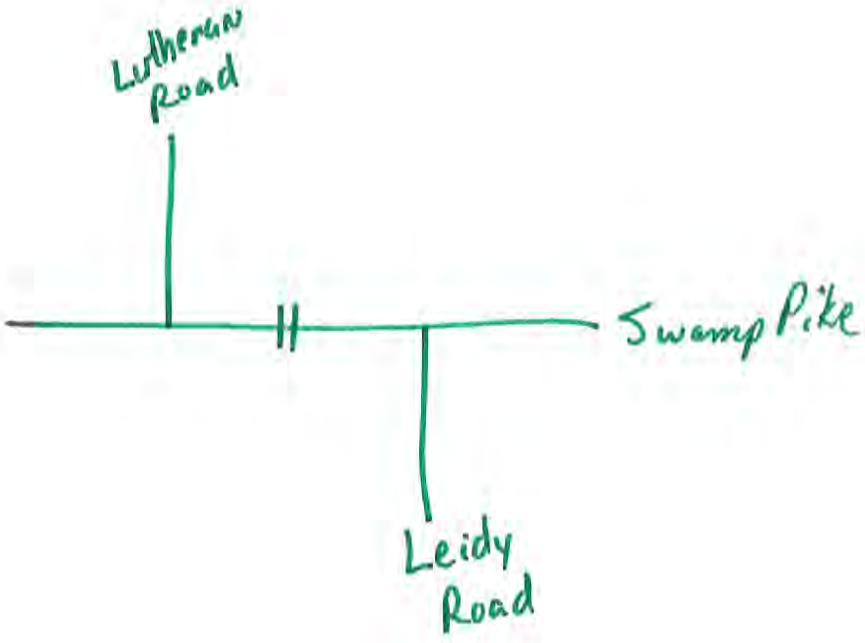
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 35 **FC:** 14

DVRPC FILE #: 103750 **COUNTER #:** 1248 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 10/30/2013
12 AM	50
1 AM	28
2 AM	20
3 AM	43
4 AM	93
5 AM	325
6 AM	676
7 AM	946
8 AM	753
9 AM	604
10 AM	591
11 AM	584
12 PM	618
1 PM	619
2 PM	698
3 PM	946
4 PM	1,047
5 PM	1,179
6 PM	1,001
7 PM	682
8 PM	508
9 PM	383
10 PM	187
11PM	117
Total	**12,698**



AXLE CORR. FACTOR: 1.000 **AADT:** 10,527 **AM Peak %:** 7.5 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.829 **PM Peak %:** 9.3 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 10/30/2013 **PROJECT:** 14-43-035 **STATION ID:**

ROAD: LUTHERAN RD BRIDGE OVER MINISTER CRK **SR/SEG/OFF:** LOCAL

FROM: SWAMP PK **TO:** SWAMP PICNIC RD

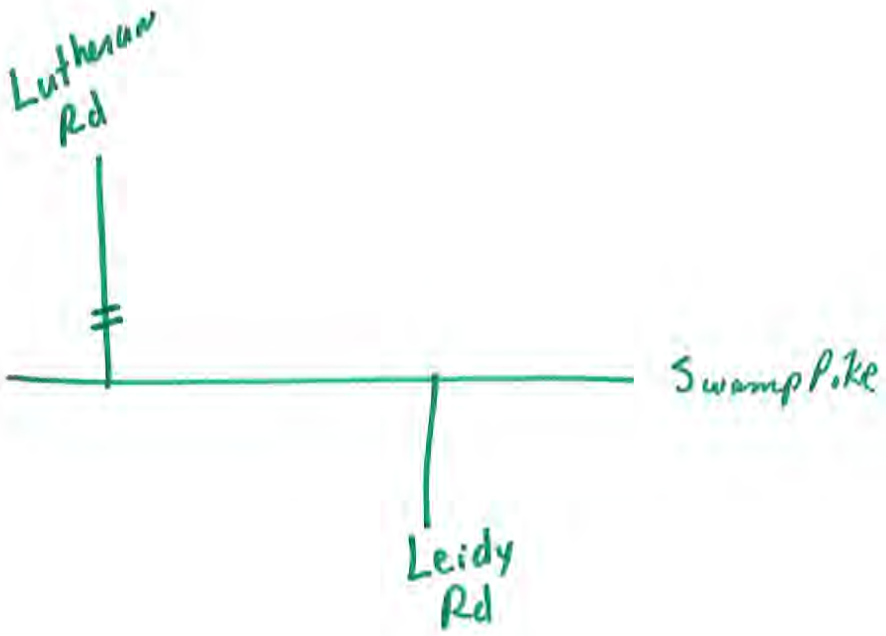
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 25 **FC:** 19

DVRPC FILE #: 103746 **COUNTER #:** 1246 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 10/30/2013
12 AM	1
1 AM	1
2 AM	1
3 AM	0
4 AM	1
5 AM	4
6 AM	11
7 AM	42
8 AM	56
9 AM	35
10 AM	43
11 AM	38
12 PM	53
1 PM	72
2 PM	60
3 PM	55
4 PM	53
5 PM	71
6 PM	68
7 PM	74
8 PM	40
9 PM	20
10 PM	10
11PM	3
Total	**812**



AXLE CORR. FACTOR: 1.000 **AADT:** 718 **AM Peak %:** 6.9 **Hour Beginning:** 8:00 AM

SEASONAL FACTOR: 0.884 **PM Peak %:** 9.1 **Hour Beginning:** 7:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 10/30/2013 **PROJECT:** 14-43-035 **STATION ID:**

ROAD: SWAMP PK BRIDGE OVER SWAMP CRK **SR/SEG/OFF:** 004M/0040/0211

FROM: NEW HANOVER SQUARE RD **TO:** WAGNER RD

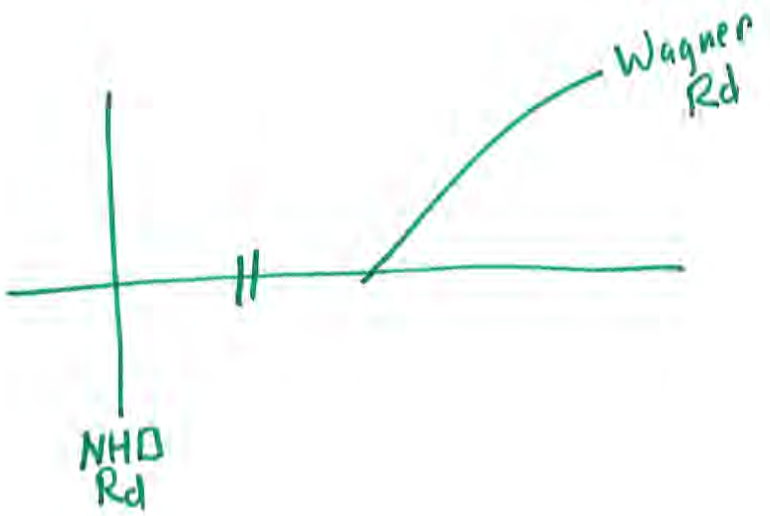
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 45 **FC:** 14

DVRPC FILE #: 103747 **COUNTER #:** 1247 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 10/30/2013
12 AM	56
1 AM	36
2 AM	27
3 AM	49
4 AM	134
5 AM	420
6 AM	955
7 AM	1,204
8 AM	916
9 AM	667
10 AM	638
11 AM	585
12 PM	615
1 PM	624
2 PM	753
3 PM	1,028
4 PM	1,163
5 PM	1,254
6 PM	1,016
7 PM	702
8 PM	507
9 PM	397
10 PM	235
11PM	129
Total	**14,110**



AXLE CORR. FACTOR: 1.000 **AADT:** 11,697 **AM Peak %:** 8.5 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.829 **PM Peak %:** 8.9 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 8/21/2013 **PROJECT:** 13-PAM **STATION ID:** 07285

ROAD: SANATOGA RD BRIDGE **SR/SEG/OFF:** 4030/0040/0025

FROM: HOLBROOK **TO:** SWAMP PICNIC RD

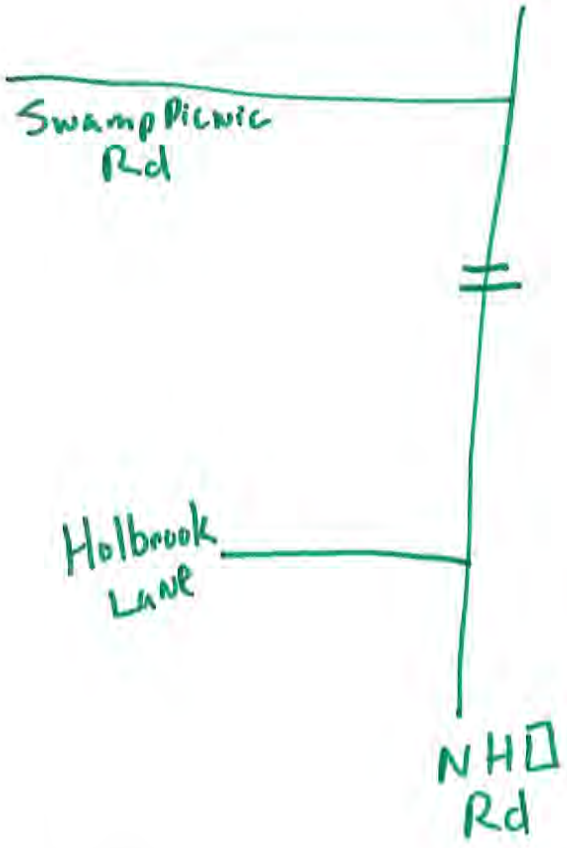
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 35 **FC:** 17

DVRPC FILE #: 102189 **COUNTER #:** 1250 **WEATHER:** **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Wednesday 8/21/2013
12 AM	7
1 AM	4
2 AM	6
3 AM	6
4 AM	24
5 AM	62
6 AM	156
7 AM	216
8 AM	189
9 AM	155
10 AM	117
11 AM	145
12 PM	124
1 PM	144
2 PM	162
3 PM	225
4 PM	262
5 PM	321
6 PM	215
7 PM	138
8 PM	141
9 PM	107
10 PM	60
11PM	29
Total	**3,015**



AXLE CORR. FACTOR: 1.000 **AADT:** 2,704 **AM Peak %:** 7.2 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.897 **PM Peak %:** 10.6 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 10/30/2013 **PROJECT:** 14-43-035 **STATION ID:**

ROAD: CHURCH RD BRIDGE OVER SWAMP CRK **SR/SEG/OFF:** LOCAL

FROM: REIFFSNYDER RD **TO:** NEW RD

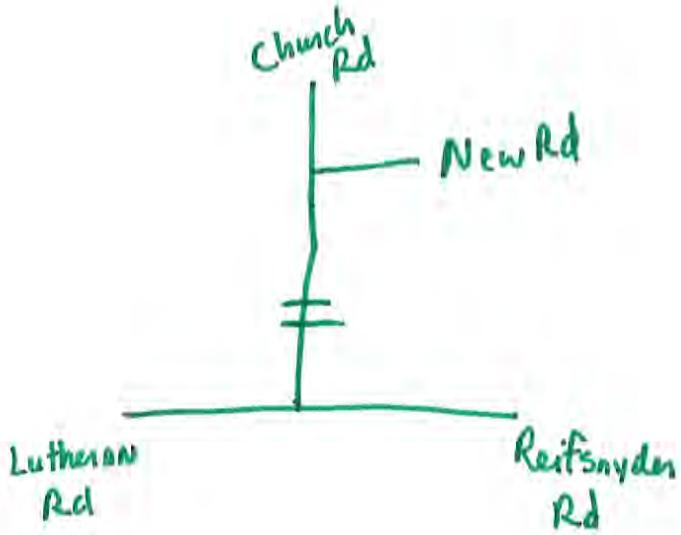
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 30 **FC:** 9

DVRPC FILE #: 103748 **COUNTER #:** 1115 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Wednesday 10/30/2013
12 AM	2
1 AM	0
2 AM	1
3 AM	0
4 AM	1
5 AM	2
6 AM	9
7 AM	19
8 AM	29
9 AM	13
10 AM	18
11 AM	21
12 PM	17
1 PM	28
2 PM	26
3 PM	43
4 PM	50
5 PM	33
6 PM	22
7 PM	26
8 PM	14
9 PM	20
10 PM	5
11PM	3
Total	**402**



AXLE CORR. FACTOR: 1.000 **AADT:** 344 **AM Peak %:** 7.2 **Hour Beginning:** 8:00 AM

SEASONAL FACTOR: 0.855 **PM Peak %:** 12.4 **Hour Beginning:** 4:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 10/29/2013 **PROJECT:** 14-43-035 **STATION ID:**

ROAD: DEEP CREEK RD BRIDGE OVER DEEP CRK **SR/SEG/OFF:** LOCAL

FROM: HILDEBRANDT RD **TO:** EICHELE RD

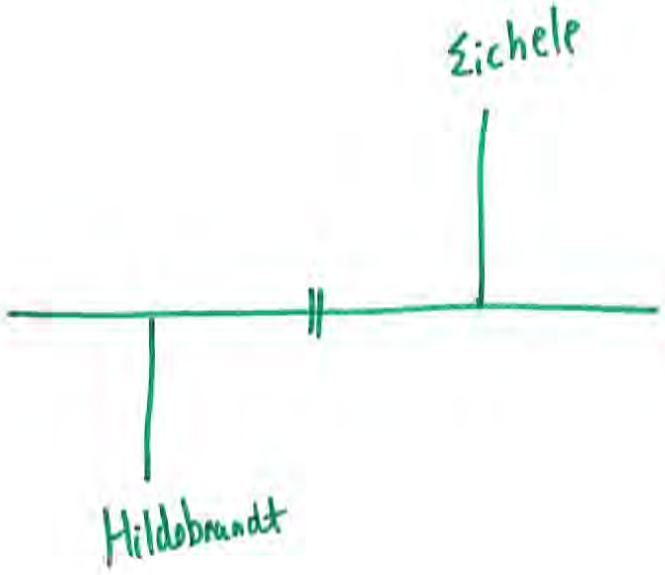
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 35 **FC:** 9

DVRPC FILE #: 103762 **COUNTER #:** 1089 **WEATHER:** FAIR **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Tuesday 10/29/2013
12 AM	0
1 AM	1
2 AM	0
3 AM	1
4 AM	5
5 AM	11
6 AM	28
7 AM	25
8 AM	35
9 AM	19
10 AM	16
11 AM	25
12 PM	21
1 PM	22
2 PM	28
3 PM	31
4 PM	48
5 PM	46
6 PM	37
7 PM	16
8 PM	13
9 PM	15
10 PM	6
11PM	2
Total	**451**



AXLE CORR. FACTOR: 1.000 **AADT:** 391 **AM Peak %:** 7.8 **Hour Beginning:** 8:00 AM

SEASONAL FACTOR: 0.868 **PM Peak %:** 10.6 **Hour Beginning:** 4:00 PM

DVRPC - Travel Monitoring

TAKEN BY: JH **DATE:** 8/21/2013 **PROJECT:** 13-PAM **STATION ID:** 12255

ROAD: PA 73 BIG RD **SR/SEG/OFF:** 0073/0080/0622

FROM: PA 663 CHARLOTTE ST **TO:** PA 663 LAYFIELD RD

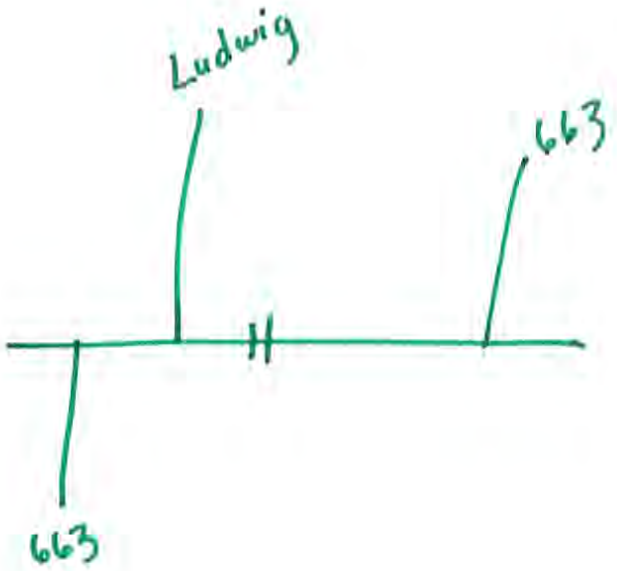
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 30 **FC:** 14

DVRPC FILE #: 102348 **COUNTER #:** 1080 **WEATHER:** F **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Tuesday 8/20/2013	Wednesday 8/21/2013	Thursday 8/22/2013
12 AM		108	128
1 AM		71	59
2 AM		54	41
3 AM		65	61
4 AM		182	178
5 AM		573	560
6 AM		1,036	1,031
7 AM		1,307	
8 AM		1,092	
9 AM	220	848	
10 AM	855	849	
11 AM	825	898	
12 PM	846	905	
1 PM	960	946	
2 PM	1,029	1,063	
3 PM	1,271	1,250	
4 PM	1,399	1,402	
5 PM	1,499	1,525	
6 PM	1,036	1,066	
7 PM	728	750	
8 PM	622	618	
9 PM	414	459	
10 PM	260	297	
11PM	210	181	
Total	**12,174**	**17,545**	**2,058**



AXLE CORR. FACTOR: 0.942 **AADT:** 13,657 **AM Peak %:** 7.4 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.826 **PM Peak %:** 8.7 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: PR **DATE:** 8/20/2013 **PROJECT:** 13-PAM **STATION ID:** 03874

ROAD: HOFFMANSVILLE RD BRIDGE **SR/SEG/OFF:** 1039/0030/0020

FROM: SASSAMANSVILLE RD **TO:** GREEN HILL RD

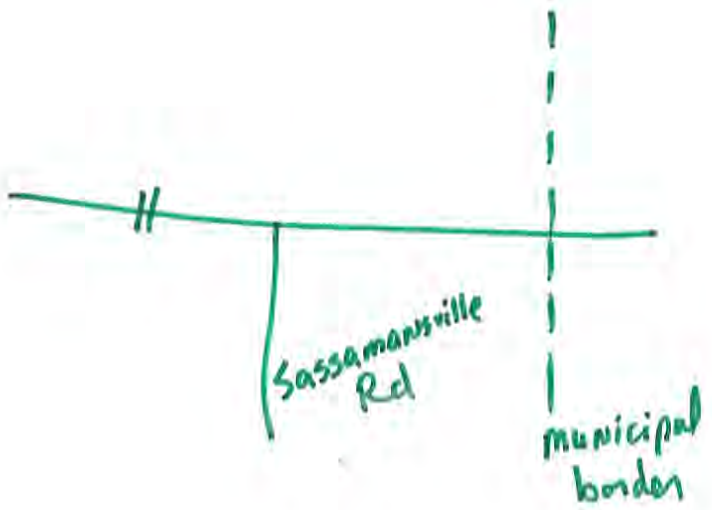
STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209119672 - DOUGLASS TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 35 **FC:** 16

DVRPC FILE #: 102238 **COUNTER #:** 1108 **WEATHER:** FAIR **DATA SOURCE:** INTERNAL

COMMENTS:

Hour Beginning	Tuesday 8/20/2013
12 AM	19
1 AM	9
2 AM	4
3 AM	9
4 AM	26
5 AM	104
6 AM	198
7 AM	278
8 AM	235
9 AM	166
10 AM	209
11 AM	227
12 PM	204
1 PM	197
2 PM	279
3 PM	367
4 PM	349
5 PM	433
6 PM	291
7 PM	202
8 PM	180
9 PM	141
10 PM	72
11PM	51
Total	**4,250**



AXLE CORR. FACTOR: 1.000 **AADT:** 3,774 **AM Peak %:** 6.5 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.888 **PM Peak %:** 10.2 **Hour Beginning:** 5:00 PM

DVRPC - Travel Monitoring

TAKEN BY: BB **DATE:** 5/2/2018 **PROJECT:** 18-PAM **STATION ID:** 012254

ROAD: PA 73 BIG RD **SR/SEG/OFF:** 0073/0050/1000

FROM: ELM ST **TO:** MIDDLE CREEK RD

STATE: PA **COUNTY:** MONTGOMERY **MCD:** 4209153664 - NEW HANOVER TWP

COUNT DIR: BOTH **TRAFFIC DIR:** BOTH **SPEED LIMIT:** 45 **FC:** 14

DVRPC FILE #: 141181 **COUNTER #:** 1500 **WEATHER:** F **DATA SOURCE:** EXTERNAL

COMMENTS:

Hour Beginning	Tuesday 5/1/2018	Wednesday 5/2/2018	Thursday 5/3/2018
12 AM		45	58
1 AM		29	25
2 AM		27	31
3 AM		88	64
4 AM		177	167
5 AM		438	412
6 AM		869	849
7 AM		1,064	1,019
8 AM		771	794
9 AM		464	497
10 AM		440	474
11 AM		504	448
12 PM		489	118
1 PM	257	538	
2 PM	733	719	
3 PM	856	885	
4 PM	998	1,049	
5 PM	1,078	991	
6 PM	742	646	
7 PM	511	515	
8 PM	440	419	
9 PM	315	281	
10 PM	150	135	
11PM	89	91	
Total	**6,169**	**11,674**	**4,956**

AXLE CORR. FACTOR: 0.954 **AADT:** 9,489 **AM Peak %:** 9.1 **Hour Beginning:** 7:00 AM

SEASONAL FACTOR: 0.852 **PM Peak %:** 9.0 **Hour Beginning:** 4:00 PM

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Appendix D

Manual Turning Movement (MTM) Counts

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 73 &
Route 663 (Southern Intersection)
Counter: HP

File Name : newhanact02w
Site Code : 81774902
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Route 73 Westbound		Route 663 Northbound		Route 73 Eastbound		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00	56	96	11	71	126	3	363
07:15	50	111	7	79	175	40	462
07:30	71	101	2	85	133	13	405
07:45	78	67	1	69	130	7	352
Total	255	375	21	304	564	63	1582
08:00	78	72	5	85	108	10	358
08:15	52	82	5	78	122	10	349
08:30	77	72	7	66	98	8	328
08:45	56	72	1	54	92	7	282
Total	263	298	18	283	420	35	1317
*** BREAK ***							
16:00	95	144	7	67	99	10	422
16:15	98	137	7	69	108	5	424
16:30	105	146	5	53	115	27	451
16:45	117	123	4	57	73	8	382
Total	415	550	23	246	395	50	1679
17:00	97	145	7	78	113	14	454
17:15	110	161	2	80	114	6	473
17:30	117	151	5	104	117	8	502
17:45	117	127	6	84	107	10	451
Total	441	584	20	346	451	38	1880
Grand Total	1374	1807	82	1179	1830	186	6458
Apprch %	43.2	56.8	6.5	93.5	90.8	9.2	
Total %	21.3	28	1.3	18.3	28.3	2.9	
Passenger Vehicles	1307	1708	72	1126	1694	174	6081
% Passenger Vehicles	95.1	94.5	87.8	95.5	92.6	93.5	94.2
Heavy Vehicles	67	99	10	53	136	12	377
% Heavy Vehicles	4.9	5.5	12.2	4.5	7.4	6.5	5.8

Zero Pedestrians were observed during this study.

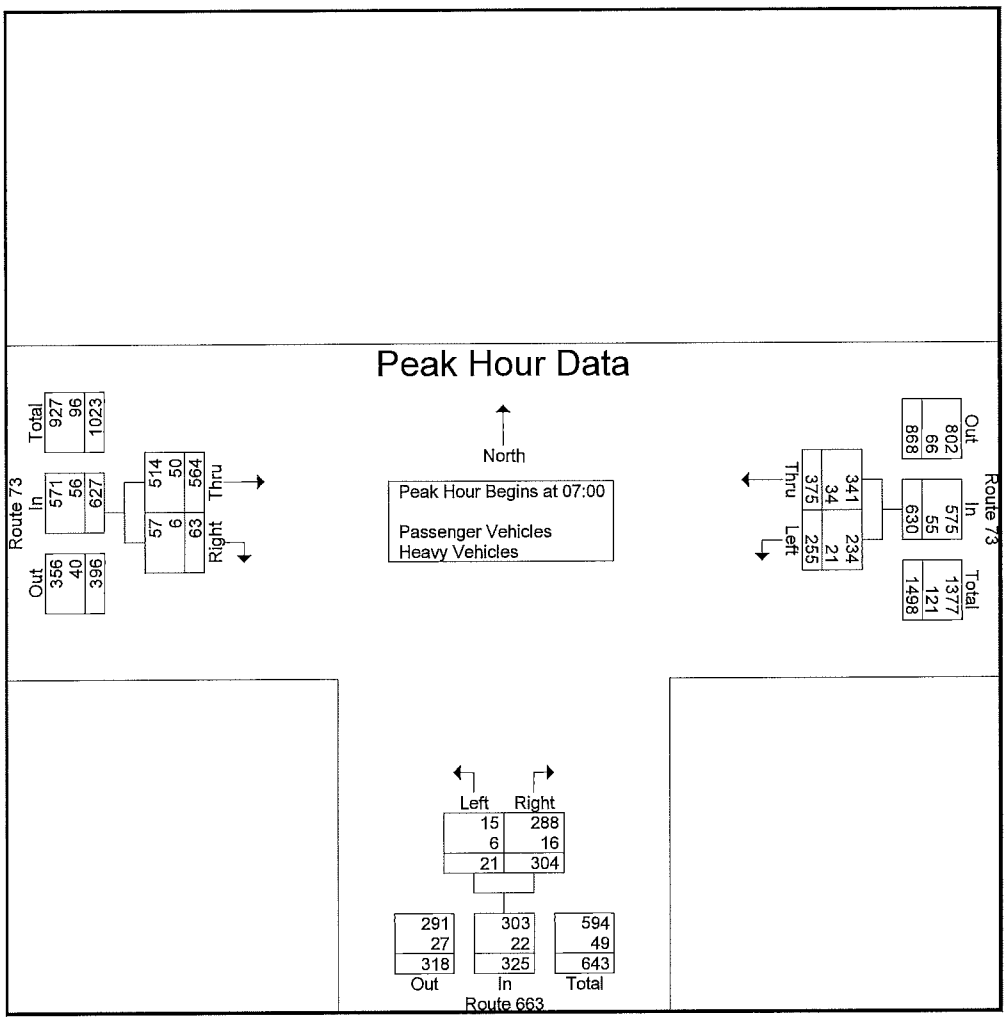
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 73 &
Route 663 (Southern Intersection)
Counter: HP

File Name : newhanact02w
Site Code : 81774902
Start Date : 5/23/2018
Page No : 2

	Route 73 Westbound			Route 663 Northbound			Route 73 Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00										
07:00	56	96	152	**11**	71	82	126	3	129	363
07:15	50	**111**	161	7	79	86	**175**	**40**	**215**	**462**
07:30	71	101	**172**	2	**85**	**87**	133	13	146	405
07:45	**78**	67	145	1	69	70	130	7	137	352
Total Volume	255	375	630	21	304	325	564	63	627	1582
% App. Total	40.5	59.5		6.5	93.5		90	10		
PHF	.817	.845	.916	.477	.894	.934	.806	.394	.729	.856
Passenger Vehicles	234	341	575	15	288	303	514	57	571	1449
% Passenger Vehicles	91.8	90.9	91.3	71.4	94.7	93.2	91.1	90.5	91.1	91.6
Heavy Vehicles	21	34	55	6	16	22	50	6	56	133
% Heavy Vehicles	8.2	9.1	8.7	28.6	5.3	6.8	8.9	9.5	8.9	8.4



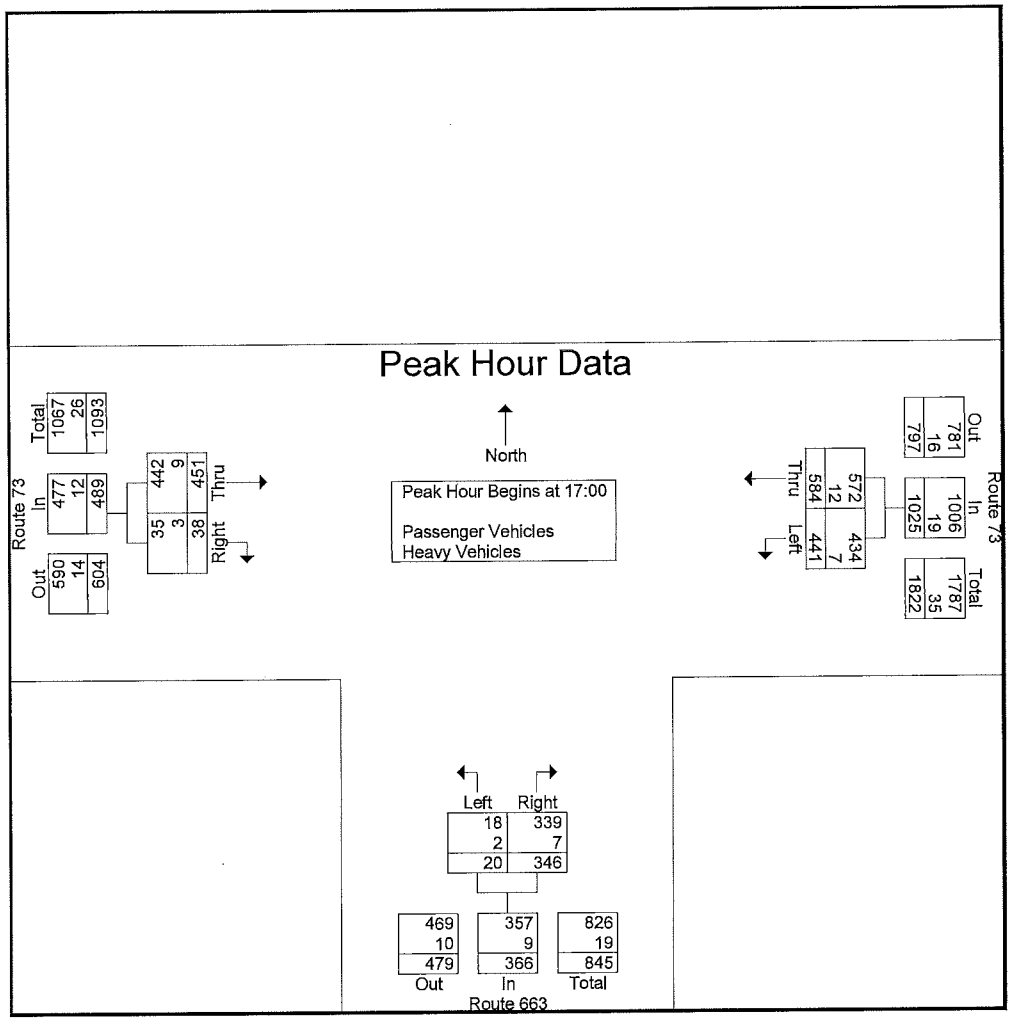
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 73 &
Route 663 (Southern Intersection)
Counter: HP

File Name : newhanact02w
Site Code : 81774902
Start Date : 5/23/2018
Page No : 3

	Route 73 Westbound			Route 663 Northbound			Route 73 Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. 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	97	145	242	**7**	78	85	113	**14**	**127**	454
17:15	110	**161**	**271**	2	80	82	114	6	120	473
17:30	**117**	151	268	5	**104**	**109**	**117**	8	125	**502**
17:45	117	127	244	6	84	90	107	10	117	451
Total Volume	441	584	1025	20	346	366	451	38	489	1880
% App. Total	43	57		5.5	94.5		92.2	7.8		
PHF	.942	.907	.946	.714	.832	.839	.964	.679	.963	.936
Passenger Vehicles	434	572	1006	18	339	357	442	35	477	1840
% Passenger Vehicles	98.4	97.9	98.1	90.0	98.0	97.5	98.0	92.1	97.5	97.9
Heavy Vehicles	7	12	19	2	7	9	9	3	12	40
% Heavy Vehicles	1.6	2.1	1.9	10.0	2.0	2.5	2.0	7.9	2.5	2.1



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 73 &
Route 663 (Southern Intersection)
Counter: HP

File Name : newhanact02w
Site Code : 81774902
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Route 73 Westbound		Route 663 Northbound		Route 73 Eastbound		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00	53	87	6	67	112	3	328
07:15	50	104	6	78	156	38	432
07:30	63	92	2	78	125	12	372
07:45	68	58	1	65	121	4	317
Total	234	341	15	288	514	57	1449
08:00	71	65	5	79	102	9	331
08:15	47	78	4	71	112	9	321
08:30	69	57	7	65	80	8	286
08:45	55	66	1	53	79	7	261
Total	242	266	17	268	373	33	1199
*** BREAK ***							
16:00	92	139	6	61	86	10	394
16:15	91	132	7	65	101	4	400
16:30	101	140	5	50	111	27	434
16:45	113	118	4	55	67	8	365
Total	397	529	22	231	365	49	1593
17:00	96	140	7	74	106	12	435
17:15	105	158	2	80	114	6	465
17:30	117	147	5	101	115	8	493
17:45	116	127	4	84	107	9	447
Total	434	572	18	339	442	35	1840
Grand Total	1307	1708	72	1126	1694	174	6081
Apprch %	43.3	56.7	6	94	90.7	9.3	
Total %	21.5	28.1	1.2	18.5	27.9	2.9	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 73 &
Route 663 (Southern Intersection)
Counter: HP

File Name : newhanact02w
Site Code : 81774902
Start Date : 5/23/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Route 73 Westbound		Route 663 Northbound		Route 73 Eastbound		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
07:00	3	9	5	4	14	0	35
07:15	0	7	1	1	19	2	30
07:30	8	9	0	7	8	1	33
07:45	10	9	0	4	9	3	35
Total	21	34	6	16	50	6	133
08:00	7	7	0	6	6	1	27
08:15	5	4	1	7	10	1	28
08:30	8	15	0	1	18	0	42
08:45	1	6	0	1	13	0	21
Total	21	32	1	15	47	2	118
*** BREAK ***							
16:00	3	5	1	6	13	0	28
16:15	7	5	0	4	7	1	24
16:30	4	6	0	3	4	0	17
16:45	4	5	0	2	6	0	17
Total	18	21	1	15	30	1	86
17:00	1	5	0	4	7	2	19
17:15	5	3	0	0	0	0	8
17:30	0	4	0	3	2	0	9
17:45	1	0	2	0	0	1	4
Total	7	12	2	7	9	3	40
Grand Total	67	99	10	53	136	12	377
Apprch %	40.4	59.6	15.9	84.1	91.9	8.1	
Total %	17.8	26.3	2.7	14.1	36.1	3.2	

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 73 & Route 663 &
Hickory Park Access
Counter/Board #: HP

File Name : nhhickory01w
Site Code : 81767501
Start Date : 3/1/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Rt 663 Southbound			Rt 73 Westbound			Hickory Park Access Northbound			Rt 663/ Rt 73 Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00	0	0	79	0	72	1	0	0	1	76	124	2	355
07:15	1	0	91	1	67	0	1	0	0	112	124	2	399
07:30	0	0	111	3	63	0	0	1	2	113	126	3	422
07:45	0	0	101	0	45	0	2	0	0	100	100	0	348
Total	1	0	382	4	247	1	3	1	3	401	474	7	1524
08:00	1	1	75	1	58	0	1	0	1	94	112	4	348
08:15	2	0	80	0	57	3	1	0	3	82	85	1	314
08:30	0	0	90	3	69	4	0	0	1	64	80	3	314
08:45	0	0	78	1	53	0	1	0	2	59	71	3	268
Total	3	1	323	5	237	7	3	0	7	299	348	11	1244
09:00	1	0	75	0	54	3	1	0	4	66	62	1	267
09:15	1	0	56	0	37	1	0	0	3	60	58	1	217
09:30	0	0	62	0	51	1	3	1	0	67	51	1	237
09:45	1	0	72	1	47	2	3	1	0	53	45	1	226
Total	3	0	265	1	189	7	7	2	7	246	216	4	947
10:00	0	0	63	1	43	2	1	0	0	39	47	1	197
10:15	1	0	58	2	38	0	3	0	2	50	57	2	213
10:30	1	0	57	0	42	1	2	0	1	61	37	1	203
10:45	0	0	44	0	35	2	1	0	1	41	30	2	156
Total	2	0	222	3	158	5	7	0	4	191	171	6	769
11:00	0	2	46	0	40	1	0	0	0	49	42	0	180
11:15	2	1	61	1	47	3	2	1	2	55	42	0	217
11:30	4	0	60	0	47	1	0	0	0	49	38	2	201
11:45	0	0	57	0	40	1	0	0	1	65	38	0	202
Total	6	3	224	1	174	6	2	1	3	218	160	2	800
12:00	0	0	62	0	49	1	2	0	0	71	48	2	235
12:15	0	1	58	0	48	2	2	0	0	58	40	0	209
12:30	0	0	52	0	38	0	0	0	0	69	38	1	198
12:45	0	0	53	0	34	3	0	0	0	66	34	0	190
Total	0	1	225	0	169	6	4	0	0	264	160	3	832
13:00	1	0	51	0	51	2	0	1	1	68	42	0	217
13:15	2	0	65	0	51	0	1	3	0	62	42	0	226
13:30	1	0	45	0	35	1	0	0	0	51	37	3	173
13:45	0	0	49	1	43	4	0	1	1	76	50	0	225
Total	4	0	210	1	180	7	1	5	2	257	171	3	841
14:00	1	0	59	0	48	2	0	2	1	58	57	0	228
14:15	2	1	82	0	66	2	3	0	0	80	56	1	293
14:30	1	0	74	0	62	1	0	1	1	61	46	1	248
14:45	0	0	70	0	64	4	0	0	0	64	43	0	245
Total	4	1	285	0	240	9	3	3	2	263	202	2	1014
15:00	2	0	77	1	73	2	2	0	0	80	71	1	309
15:15	0	0	83	0	84	1	0	0	0	113	73	1	355
15:30	1	0	113	0	130	4	0	0	0	126	62	1	437
15:45	0	0	99	0	123	2	2	0	1	100	65	1	393
Total	3	0	372	1	410	9	4	0	1	419	271	4	1494

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 73 & Route 663 &
Hickory Park Access
Counter/Board #: HP

File Name : nhhickory01w
Site Code : 81767501
Start Date : 3/1/2018
Page No : 2

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Rt 663 Southbound			Rt 73 Westbound			Hickory Park Access Northbound			Rt 663/ Rt 73 Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	0	0	96	0	118	1	0	0	0	89	66	2	372
16:15	1	0	113	2	108	3	0	0	0	93	64	0	384
16:30	0	0	114	1	151	1	0	0	0	107	57	1	432
16:45	1	0	146	0	143	0	0	0	0	104	58	0	452
Total	2	0	469	3	520	5	0	0	0	393	245	3	1640
17:00	1	0	128	0	155	4	1	0	0	115	68	0	472
17:15	1	0	110	0	128	1	0	0	0	93	78	0	411
17:30	1	0	124	0	109	3	1	2	1	97	62	0	400
17:45	1	0	81	1	103	2	0	0	0	92	52	0	332
Total	4	0	443	1	495	10	2	2	1	397	260	0	1615
Grand Total	32	6	3420	20	3019	72	36	14	30	3348	2678	45	12720
Apprch %	0.9	0.2	98.9	0.6	97	2.3	45	17.5	37.5	55.1	44.1	0.7	
Total %	0.3	0	26.9	0.2	23.7	0.6	0.3	0.1	0.2	26.3	21.1	0.4	
Passenger Vehicles	27	6	3124	20	2846	62	32	13	27	3060	2516	37	11770
% Passenger Vehicles	84.4	100	91.3	100	94.3	86.1	88.9	92.9	90	91.4	94	82.2	92.5
Heavy Vehicles	5	0	296	0	173	10	4	1	3	288	162	8	950
% Heavy Vehicles	15.6	0	8.7	0	5.7	13.9	11.1	7.1	10	8.6	6	17.8	7.5

Zero Pedestrians were observed during this study.

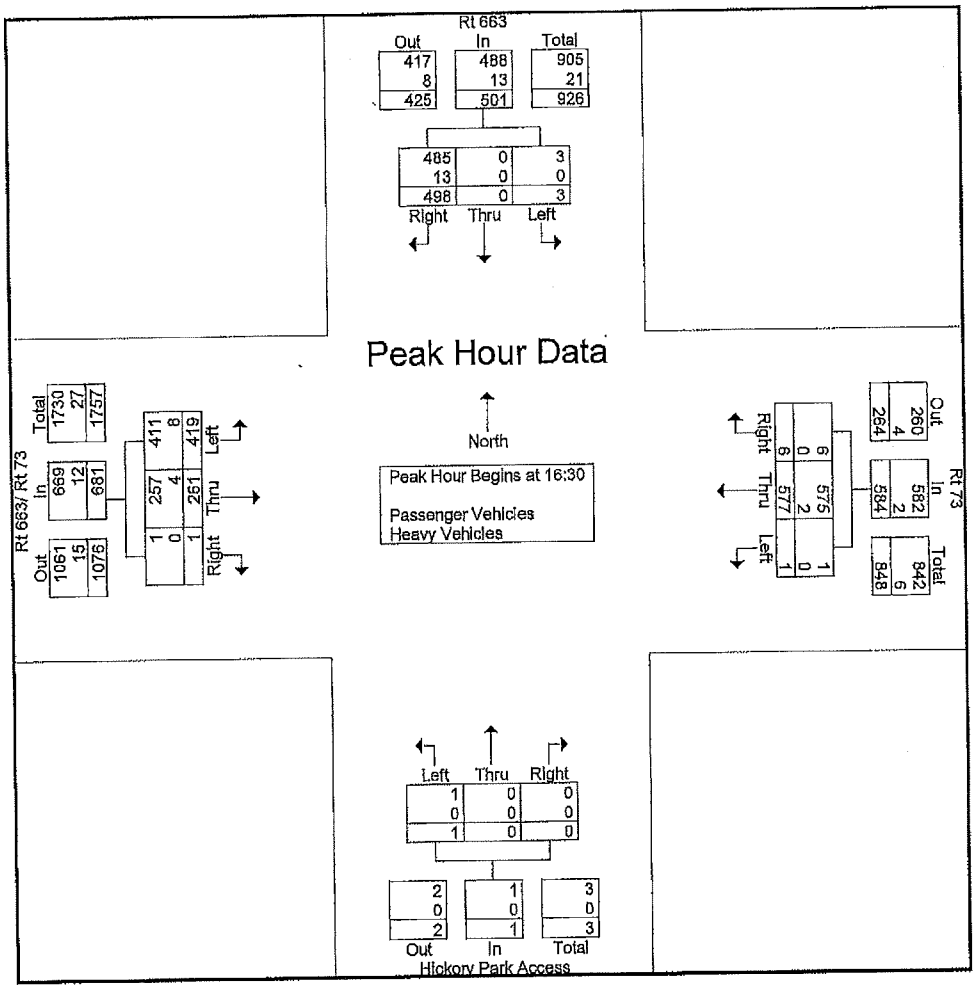
McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 73 & Route 663 &
Hickory Park Access
Counter/Board #: HP

File Name : nhhickory01w
Site Code : 81767501
Start Date : 3/1/2018
Page No : 3

	Rt 663 Southbound				Rt 73 Westbound				Hickory Park Access Northbound				Rt 663/ Rt 73 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	0	0	114	114	1	151	1	153	0	0	0	0	107	57	1	165	432
16:45	1	0	146	147	0	143	0	143	0	0	0	0	104	58	0	162	452
17:00	1	0	128	129	0	155	4	159	1	0	0	1	115	68	0	183	472
17:15	1	0	110	111	0	128	1	129	0	0	0	0	93	78	0	171	411
Total Volume	3	0	498	501	1	577	6	584	1	0	0	1	419	261	1	681	1767
% App. Total	0.6	0	99.4		0.2	98.8	1		100	0	0		61.5	38.3	0.1		
PHF	.750	.000	.853	.852	.250	.931	.375	.918	.250	.000	.000	.250	.911	.837	.250	.930	.936
Passenger Vehicles	3	0	485	488	1	575	6	582	1	0	0	1	411	257	1	669	1740
% Passenger Vehicles	100	0	97.4	97.4	100	99.7	100	99.7	100	0	0	100	98.1	98.5	100	98.2	98.5
Heavy Vehicles	0	0	13	13	0	2	0	2	0	0	0	0	8	4	0	12	27
% Heavy Vehicles	0	0	2.6	2.6	0	0.3	0	0.3	0	0	0	0	1.9	1.5	0	1.8	1.5



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
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Municipality: New Hanover Township
Location: Route 73 & Route 663 &
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File Name : nhhickory01w
Site Code : 81767501
Start Date : 3/1/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Rt 663 Southbound			Rt 73 Westbound			Hickory Park Access Northbound			Rt 663/ Rt 73 Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00	0	0	73	0	62	1	0	0	1	71	122	2	332
07:15	0	0	82	1	65	0	1	0	0	103	115	0	367
07:30	0	0	103	3	60	0	0	0	0	107	120	2	395
07:45	0	0	87	0	41	0	1	0	0	93	96	0	318
Total	0	0	345	4	228	1	2	0	1	374	453	4	1412
08:00	1	1	67	1	50	0	1	0	0	78	107	2	308
08:15	2	0	72	0	54	3	0	0	3	78	81	1	294
08:30	0	0	82	3	58	2	0	0	1	58	77	3	284
08:45	0	0	69	1	50	0	1	0	2	50	67	3	243
Total	3	1	290	5	212	5	2	0	6	264	332	9	1129
09:00	1	0	69	0	49	3	1	0	4	57	59	1	244
09:15	1	0	50	0	34	1	0	0	3	55	55	1	200
09:30	0	0	58	0	45	1	3	1	0	59	46	1	214
09:45	1	0	65	1	43	2	3	1	0	48	42	1	207
Total	3	0	242	1	171	7	7	2	7	219	202	4	865
10:00	0	0	55	1	38	2	1	0	0	33	45	1	176
10:15	1	0	48	2	36	0	3	0	2	45	52	2	191
10:30	0	0	50	0	38	1	2	0	1	55	33	1	181
10:45	0	0	38	0	31	2	1	0	1	33	27	2	135
Total	1	0	191	3	143	5	7	0	4	166	157	6	683
11:00	0	2	42	0	35	0	0	0	0	43	35	0	157
11:15	2	1	56	1	42	2	2	1	2	48	37	0	194
11:30	3	0	50	0	41	1	0	0	0	43	34	2	174
11:45	0	0	45	0	38	1	0	0	1	61	34	0	180
Total	5	3	193	1	156	4	2	1	3	195	140	2	705
12:00	0	0	54	0	43	0	2	0	0	64	44	2	209
12:15	0	1	50	0	43	2	2	0	0	52	37	0	187
12:30	0	0	42	0	36	0	0	0	0	60	31	1	170
12:45	0	0	46	0	29	3	0	0	0	53	33	0	164
Total	0	1	192	0	151	5	4	0	0	229	145	3	730
13:00	0	0	43	0	47	2	0	1	1	61	36	0	191
13:15	2	0	60	0	49	0	1	3	0	56	33	0	204
13:30	1	0	39	0	31	1	0	0	0	44	34	1	151
13:45	0	0	40	1	39	4	0	1	1	61	46	0	193
Total	3	0	182	1	166	7	1	5	2	222	149	1	739
14:00	1	0	49	0	43	1	0	2	1	50	51	0	198
14:15	1	1	73	0	57	2	1	0	0	65	53	1	254
14:30	1	0	68	0	60	1	0	1	1	54	42	1	229
14:45	0	0	59	0	61	4	0	0	0	56	40	0	220
Total	3	1	249	0	221	8	1	3	2	225	186	2	901
15:00	2	0	74	1	70	2	2	0	0	72	65	1	289
15:15	0	0	77	0	80	1	0	0	0	106	69	1	334
15:30	1	0	106	0	125	4	0	0	0	122	59	1	418
15:45	0	0	95	0	116	0	2	0	1	95	63	1	373
Total	3	0	352	1	391	7	4	0	1	395	256	4	1414

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 73 & Route 663 &
Hickory Park Access
Counter/Board #: HP

File Name : nhhickory01w
Site Code : 81767501
Start Date : 3/1/2018
Page No : 2

Groups Printed- Passenger Vehicles

	Rt 663 Southbound			Rt 73 Westbound			Hickory Park Access Northbound			Rt 663/ Rt 73 Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	0	0	92	0	116	0	0	0	0	85	62	1	356
16:15	1	0	112	2	105	3	0	0	0	92	63	0	378
16:30	0	0	107	1	150	1	0	0	0	106	55	1	421
16:45	1	0	144	0	142	0	0	0	0	102	58	0	447
Total	2	0	455	3	513	4	0	0	0	385	238	2	1602
17:00	1	0	124	0	155	4	1	0	0	111	67	0	463
17:15	1	0	110	0	128	1	0	0	0	92	77	0	409
17:30	1	0	121	0	108	2	1	2	1	95	62	0	393
17:45	1	0	78	1	103	2	0	0	0	88	52	0	325
Total	4	0	433	1	494	9	2	2	1	386	258	0	1590
Grand Total	27	6	3124	20	2846	62	32	13	27	3060	2516	37	11770
Apprch %	0.9	0.2	99	0.7	97.2	2.1	44.4	18.1	37.5	54.5	44.8	0.7	
Total %	0.2	0.1	26.5	0.2	24.2	0.5	0.3	0.1	0.2	26	21.4	0.3	

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 73 & Route 663 &
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Counter/Board #: HP

File Name : nhhickory01w
Site Code : 81767501
Start Date : 3/1/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Rt 663 Southbound			Rt 73 Westbound			Hickory Park Access Northbound			Rt 663/ Rt 73 Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00	0	0	6	0	10	0	0	0	0	5	2	0	23
07:15	1	0	9	0	2	0	0	0	0	9	9	2	32
07:30	0	0	8	0	3	0	0	1	2	6	6	1	27
07:45	0	0	14	0	4	0	1	0	0	7	4	0	30
Total	1	0	37	0	19	0	1	1	2	27	21	3	112
08:00	0	0	8	0	8	0	0	0	1	16	5	2	40
08:15	0	0	8	0	3	0	1	0	0	4	4	0	20
08:30	0	0	8	0	11	2	0	0	0	6	3	0	30
08:45	0	0	9	0	3	0	0	0	0	9	4	0	25
Total	0	0	33	0	25	2	1	0	1	35	16	2	115
09:00	0	0	6	0	5	0	0	0	0	9	3	0	23
09:15	0	0	6	0	3	0	0	0	0	5	3	0	17
09:30	0	0	4	0	6	0	0	0	0	8	5	0	23
09:45	0	0	7	0	4	0	0	0	0	5	3	0	19
Total	0	0	23	0	18	0	0	0	0	27	14	0	82
10:00	0	0	8	0	5	0	0	0	0	6	2	0	21
10:15	0	0	10	0	2	0	0	0	0	5	5	0	22
10:30	1	0	7	0	4	0	0	0	0	6	4	0	22
10:45	0	0	6	0	4	0	0	0	0	8	3	0	21
Total	1	0	31	0	15	0	0	0	0	25	14	0	86
11:00	0	0	4	0	5	1	0	0	0	6	7	0	23
11:15	0	0	5	0	5	1	0	0	0	7	5	0	23
11:30	1	0	10	0	6	0	0	0	0	6	4	0	27
11:45	0	0	12	0	2	0	0	0	0	4	4	0	22
Total	1	0	31	0	18	2	0	0	0	23	20	0	95
12:00	0	0	8	0	6	1	0	0	0	7	4	0	26
12:15	0	0	8	0	5	0	0	0	0	6	3	0	22
12:30	0	0	10	0	2	0	0	0	0	9	7	0	28
12:45	0	0	7	0	5	0	0	0	0	13	1	0	26
Total	0	0	33	0	18	1	0	0	0	35	15	0	102
13:00	1	0	8	0	4	0	0	0	0	7	6	0	26
13:15	0	0	5	0	2	0	0	0	0	6	9	0	22
13:30	0	0	6	0	4	0	0	0	0	7	3	2	22
13:45	0	0	9	0	4	0	0	0	0	15	4	0	32
Total	1	0	28	0	14	0	0	0	0	35	22	2	102
14:00	0	0	10	0	5	1	0	0	0	8	6	0	30
14:15	1	0	9	0	9	0	2	0	0	15	3	0	39
14:30	0	0	6	0	2	0	0	0	0	7	4	0	19
14:45	0	0	11	0	3	0	0	0	0	8	3	0	25
Total	1	0	36	0	19	1	2	0	0	38	16	0	113
15:00	0	0	3	0	3	0	0	0	0	8	6	0	20
15:15	0	0	6	0	4	0	0	0	0	7	4	0	21
15:30	0	0	7	0	5	0	0	0	0	4	3	0	19
15:45	0	0	4	0	7	2	0	0	0	5	2	0	20
Total	0	0	20	0	19	2	0	0	0	24	15	0	80

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 73 & Route 663 &
Hickory Park Access
Counter/Board #: HP

File Name : nhhickory01w
Site Code : 81767501
Start Date : 3/1/2018
Page No : 2

Groups Printed- Heavy Vehicles

	Rt 663 Southbound			Rt 73 Westbound			Hickory Park Access Northbound			Rt 663/ Rt 73 Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	0	0	4	0	2	1	0	0	0	4	4	1	16
16:15	0	0	1	0	3	0	0	0	0	1	1	0	6
16:30	0	0	7	0	1	0	0	0	0	1	2	0	11
16:45	0	0	2	0	1	0	0	0	0	2	0	0	5
Total	0	0	14	0	7	1	0	0	0	8	7	1	38
17:00	0	0	4	0	0	0	0	0	0	4	1	0	9
17:15	0	0	0	0	0	0	0	0	0	1	1	0	2
17:30	0	0	3	0	1	1	0	0	0	2	0	0	7
17:45	0	0	3	0	0	0	0	0	0	4	0	0	7
Total	0	0	10	0	1	1	0	0	0	11	2	0	25
Grand Total	5	0	296	0	173	10	4	1	3	288	162	8	950
Apprch %	1.7	0	98.3	0	94.5	5.5	50	12.5	37.5	62.9	35.4	1.7	
Total %	0.5	0	31.2	0	18.2	1.1	0.4	0.1	0.3	30.3	17.1	0.8	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Hoffmansville Road
Counter: HP

File Name : newhanact01w
Site Code : 81774901
Start Date : 5/22/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Route 663 Southbound				Hoffmansville Rd Westbound				Route 663 Northbound				Hoffmansville Rd Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
07:00	11	82	0	5	0	14	0	10	4	70	0	1	10	34	0	14	255
07:15	16	72	0	11	2	11	0	13	12	92	0	1	13	32	0	12	287
07:30	24	79	0	7	1	12	0	16	7	117	0	0	8	33	0	14	318
07:45	13	93	0	6	1	10	1	10	8	73	0	1	13	30	0	7	266
Total	64	326	0	29	4	47	1	49	31	352	0	3	44	129	0	47	1126
08:00	9	69	0	0	3	8	0	14	4	86	0	2	15	34	0	5	249
08:15	12	59	0	4	1	11	0	5	9	87	0	3	5	29	0	5	230
08:30	10	69	0	11	4	15	0	13	9	69	0	2	6	22	0	7	237
08:45	14	63	0	3	1	14	0	9	9	46	0	0	10	19	0	8	196
Total	45	260	0	18	9	48	0	41	31	288	0	7	36	104	0	25	912
*** BREAK ***																	
16:00	9	89	0	16	2	24	0	22	13	81	0	3	2	16	0	12	289
16:15	9	105	0	11	1	33	0	11	11	86	0	2	8	9	0	5	291
16:30	7	95	0	21	0	36	0	18	11	79	0	1	4	18	0	7	297
16:45	15	92	0	21	2	42	0	14	12	90	0	2	8	15	0	8	321
Total	40	381	0	69	5	135	0	65	47	336	0	8	22	58	0	32	1198
17:00	17	114	0	12	0	29	0	18	8	92	0	1	7	23	0	11	332
17:15	18	126	0	21	2	42	0	24	11	90	0	1	13	10	0	6	364
17:30	19	92	0	15	2	37	0	15	17	84	0	2	3	15	0	12	313
17:45	11	86	0	7	1	36	0	11	14	74	0	0	5	25	0	9	279
Total	65	418	0	55	5	144	0	68	50	340	0	4	28	73	0	38	1288
Grand Total	214	1385	0	171	23	374	1	223	159	1316	0	22	130	364	0	142	4524
Apprch %	12.1	78.2	0	9.7	3.7	60.2	0.2	35.9	10.6	87.9	0	1.5	20.4	57.2	0	22.3	
Total %	4.7	30.6	0	3.8	0.5	8.3	0	4.9	3.5	29.1	0	0.5	2.9	8	0	3.1	
Passenger Vehicles	206	1261	0	163	23	355	1	209	148	1221	0	21	122	352	0	136	4218
% Passenger Vehicles	96.3	91	0	95.3	100	94.9	100	93.7	93.1	92.8	0	95.5	93.8	96.7	0	95.8	93.2
Heavy Vehicles	8	124	0	8	0	19	0	14	11	95	0	1	8	12	0	6	306
% Heavy Vehicles	3.7	9	0	4.7	0	5.1	0	6.3	6.9	7.2	0	4.5	6.2	3.3	0	4.2	6.8

Zero Pedestrians were observed during this study.

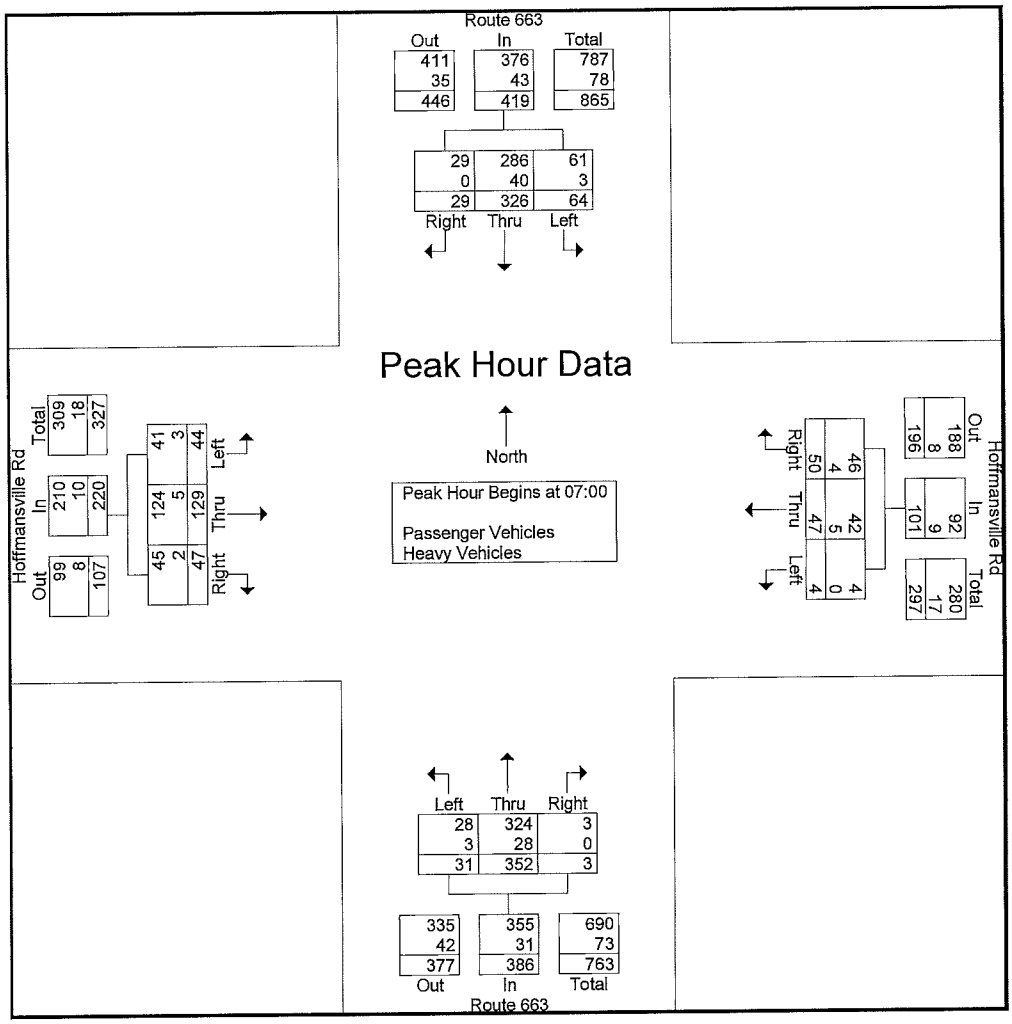
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Hoffmansville Road
Counter: HP

File Name : newhanact01w
Site Code : 81774901
Start Date : 5/22/2018
Page No : 2

	Route 663 Southbound					Hoffmansville Rd Westbound					Route 663 Northbound					Hoffmansville Rd Eastbound					
Start Time	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	11	82	0	5	98	0	**14**	0	10	24	4	70	0	**1**	75	10	**34**	0	**14**	**58**	255
07:15	16	72	0	**11**	99	**2**	11	0	13	26	**12**	92	0	1	105	**13**	32	0	12	57	287
07:30	**24**	79	0	7	110	1	12	0	**16**	**29**	7	**117**	0	0	**124**	8	33	0	14	55	**318**
07:45	13	**93**	0	6	**112**	1	10	**1**	10	22	8	73	0	1	82	13	30	0	7	50	266
Total Volume	64	326	0	29	419	4	47	1	49	101	31	352	0	3	386	44	129	0	47	220	1126
% App. Total	15.3	77.8	0	6.9		4	46.5	1	48.5		8	91.2	0	0.8		20	58.6	0	21.4		
PHF	.667	.876	.000	.659	.935	.500	.839	.250	.766	.871	.646	.752	.000	.750	.778	.846	.949	.000	.839	.948	.885
Passenger Vehicles																					
% Passenger Vehicles	95.3	87.7	0	100	89.7	100	89.4	100	91.8	91.1	90.3	92.0	0	100	92.0	93.2	96.1	0	95.7	95.5	91.7
Heavy Vehicles																					
% Heavy Vehicles	4.7	12.3	0	0	10.3	0	10.6	0	8.2	8.9	9.7	8.0	0	0	8.0	6.8	3.9	0	4.3	4.5	8.3



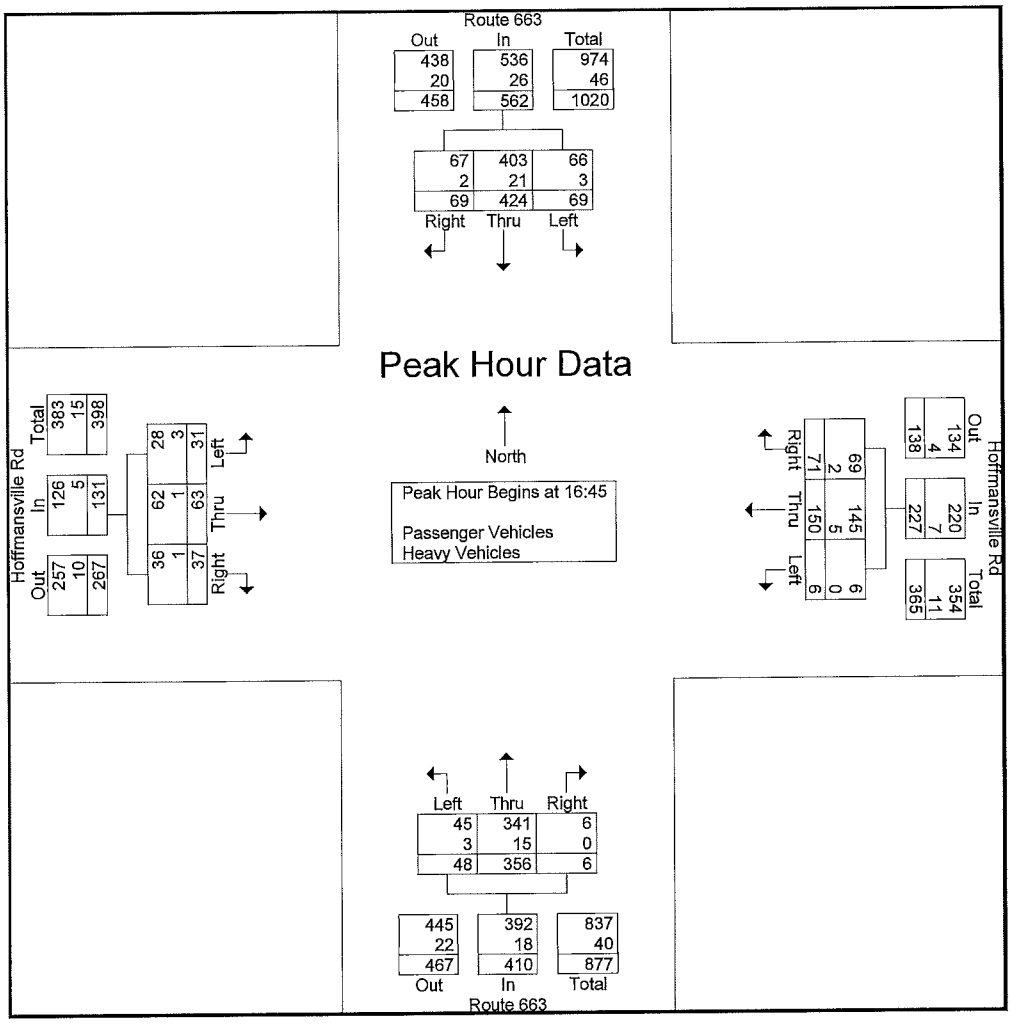
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Hoffmansville Road
Counter: HP

File Name : newhanact01w
Site Code : 81774901
Start Date : 5/22/2018
Page No : 3

	Route 663 Southbound					Hoffmansville Rd Westbound					Route 663 Northbound					Hoffmansville Rd Eastbound					
Start Time	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	15	92	0	**21**	128	**2**	**42**	0	14	58	12	90	0	**2**	**104**	8	15	0	8	31	321
17:00	17	114	0	12	143	0	29	0	18	47	8	**92**	0	1	101	7	**23**	0	11	**41**	332
17:15	18	**126**	0	21	**165**	2	42	0	**24**	**68**	11	90	0	1	102	**13**	10	0	6	29	**364**
17:30	**19**	92	0	15	126	2	37	0	15	54	**17**	84	0	2	103	3	15	0	**12**	30	313
Total Volume	69	424	0	69	562	6	150	0	71	227	48	356	0	6	410	31	63	0	37	131	1330
% App. Total	12.3	75.4	0	12.3		2.6	66.1	0	31.3		11.7	86.8	0	1.5		23.7	48.1	0	28.2		
PHF	.908	.841	.000	.821	.852	.750	.893	.000	.740	.835	.706	.967	.000	.750	.986	.596	.685	.000	.771	.799	.913
Passenger Vehicles																					
% Passenger Vehicles	95.7	95.0	0	97.1	95.4	100	96.7	0	97.2	96.9	93.8	95.8	0	100	95.6	90.3	98.4	0	97.3	96.2	95.8
Heavy Vehicles																					
% Heavy Vehicles	4.3	5.0	0	2.9	4.6	0	3.3	0	2.8	3.1	6.3	4.2	0	0	4.4	9.7	1.6	0	2.7	3.8	4.2



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
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Counter: HP

File Name : newhanact01w
Site Code : 81774901
Start Date : 5/22/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Route 663 Southbound				Hoffmansville Rd Westbound				Route 663 Northbound				Hoffmansville Rd Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
07:00	9	72	0	5	0	12	0	9	4	68	0	1	10	34	0	12	236
07:15	16	65	0	11	2	11	0	11	11	84	0	1	13	28	0	12	265
07:30	23	70	0	7	1	11	0	15	6	105	0	0	8	33	0	14	293
07:45	13	79	0	6	1	8	1	10	7	67	0	1	10	29	0	7	239
Total	61	286	0	29	4	42	1	45	28	324	0	3	41	124	0	45	1033
08:00	9	58	0	0	3	8	0	14	2	79	0	2	15	33	0	5	228
08:15	11	47	0	3	1	10	0	4	9	78	0	2	5	28	0	5	203
08:30	10	60	0	8	4	13	0	13	9	58	0	2	6	21	0	7	211
08:45	13	56	0	3	1	14	0	9	9	39	0	0	8	18	0	6	176
Total	43	221	0	14	9	45	0	40	29	254	0	6	34	100	0	23	818
*** BREAK ***																	
16:00	9	84	0	16	2	24	0	21	11	73	0	3	2	16	0	12	273
16:15	9	97	0	11	1	30	0	11	11	84	0	2	8	9	0	5	278
16:30	7	87	0	19	0	33	0	12	10	74	0	1	4	17	0	6	270
16:45	14	88	0	20	2	37	0	12	11	87	0	2	7	14	0	8	302
Total	39	356	0	66	5	124	0	56	43	318	0	8	21	56	0	31	1123
17:00	17	108	0	12	0	29	0	18	8	85	0	1	5	23	0	11	317
17:15	18	119	0	20	2	42	0	24	9	88	0	1	13	10	0	5	351
17:30	17	88	0	15	2	37	0	15	17	81	0	2	3	15	0	12	304
17:45	11	83	0	7	1	36	0	11	14	71	0	0	5	24	0	9	272
Total	63	398	0	54	5	144	0	68	48	325	0	4	26	72	0	37	1244
Grand Total	206	1261	0	163	23	355	1	209	148	1221	0	21	122	352	0	136	4218
Apprch %	12.6	77.4	0	10	3.9	60.4	0.2	35.5	10.6	87.8	0	1.5	20	57.7	0	22.3	
Total %	4.9	29.9	0	3.9	0.5	8.4	0	5	3.5	28.9	0	0.5	2.9	8.3	0	3.2	

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Hoffmansville Road
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File Name : newhanact01w
Site Code : 81774901
Start Date : 5/22/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Route 663 Southbound				Hoffmansville Rd Westbound				Route 663 Northbound				Hoffmansville Rd Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
07:00	2	10	0	0	0	2	0	1	0	2	0	0	0	0	0	2	19
07:15	0	7	0	0	0	0	0	2	1	8	0	0	0	4	0	0	22
07:30	1	9	0	0	0	1	0	1	1	12	0	0	0	0	0	0	25
07:45	0	14	0	0	0	2	0	0	1	6	0	0	3	1	0	0	27
Total	3	40	0	0	0	5	0	4	3	28	0	0	3	5	0	2	93
08:00	0	11	0	0	0	0	0	0	2	7	0	0	0	1	0	0	21
08:15	1	12	0	1	0	1	0	1	0	9	0	1	0	1	0	0	27
08:30	0	9	0	3	0	2	0	0	0	11	0	0	0	1	0	0	26
08:45	1	7	0	0	0	0	0	0	0	7	0	0	2	1	0	2	20
Total	2	39	0	4	0	3	0	1	2	34	0	1	2	4	0	2	94
*** BREAK ***																	
16:00	0	5	0	0	0	0	0	1	2	8	0	0	0	0	0	0	16
16:15	0	8	0	0	0	3	0	0	0	2	0	0	0	0	0	0	13
16:30	0	8	0	2	0	3	0	6	1	5	0	0	0	1	0	1	27
16:45	1	4	0	1	0	5	0	2	1	3	0	0	1	1	0	0	19
Total	1	25	0	3	0	11	0	9	4	18	0	0	1	2	0	1	75
17:00	0	6	0	0	0	0	0	0	0	7	0	0	2	0	0	0	15
17:15	0	7	0	1	0	0	0	0	2	2	0	0	0	0	0	1	13
17:30	2	4	0	0	0	0	0	0	0	3	0	0	0	0	0	0	9
17:45	0	3	0	0	0	0	0	0	0	3	0	0	0	1	0	0	7
Total	2	20	0	1	0	0	0	0	2	15	0	0	2	1	0	1	44
Grand Total	8	124	0	8	0	19	0	14	11	95	0	1	8	12	0	6	306
Apprch %	5.7	88.6	0	5.7	0	57.6	0	42.4	10.3	88.8	0	0.9	30.8	46.2	0	23.1	
Total %	2.6	40.5	0	2.6	0	6.2	0	4.6	3.6	31	0	0.3	2.6	3.9	0	2	

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: London Grove Township
Location: Route 73 & Renninger Road &
New Hanover Square Rd& Hoffmansville Rd
Counter: BW

File Name : newhanac12p
Site Code : 81774912
Start Date : 5/24/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Renninger Rd Southbound					Route 73 Westbound					New Hanover Sq Rd Northbound					Route 73 Eastbound					Hoffmansville Rd Southeastbound				
Start Time	Left	Thru	ROR	Right	Hard Right	Left	Thru	Bear Right	ROR	Right	Left	Bear Left	Thru	ROR	Right	Hard Left	Left	Thru	ROR	Right	Hard Left	Bear Left	Bear Right	Hard Right	Int. Total
16:00	1	2	0	2	0	10	109	35	0	2	3	9	2	0	1	0	2	60	0	4	0	25	14	0	281
16:15	0	1	0	2	0	12	125	27	0	1	3	34	2	0	3	0	1	70	0	2	0	17	13	0	313
16:30	0	1	0	0	0	5	131	46	0	2	4	34	1	0	7	0	2	59	0	4	0	16	12	0	324
16:45	1	1	0	1	0	5	128	28	0	2	2	40	0	0	9	0	0	81	0	1	0	26	31	0	356
Total	2	5	0	5	0	32	493	136	0	7	12	117	5	0	20	0	5	270	0	11	0	84	70	0	1274
17:00	1	1	0	1	0	9	153	29	0	1	2	37	0	0	3	0	1	59	0	3	4	16	19	1	340
17:15	3	0	0	1	0	12	151	33	0	0	3	43	5	0	2	0	0	78	0	0	0	20	15	1	367
17:30	1	4	0	1	0	9	131	39	0	1	2	40	1	0	11	0	0	46	0	0	1	28	27	0	342
17:45	1	0	0	1	0	11	116	41	0	0	3	35	2	0	5	1	2	72	0	1	3	20	13	0	327
Total	6	5	0	4	0	41	551	142	0	2	10	155	8	0	21	1	3	255	0	4	8	84	74	2	1376
Grand Total	8	10	0	9	0	73	1044	278	0	9	22	272	13	0	41	1	8	525	0	15	8	168	144	2	2650
Apprch %	29.6	37	0	33.3	0	5.2	74.4	19.8	0	0.6	6.3	78.2	3.7	0	11.8	0.2	1.5	95.6	0	2.7	2.5	52.2	44.7	0.6	
Total %	0.3	0.4	0	0.3	0	2.8	39.4	10.5	0	0.3	0.8	10.3	0.5	0	1.5	0	0.3	19.8	0	0.6	0.3	6.3	5.4	0.1	
Passenger Vehicles	8	10	0	9	0	73	1024	273	0	8	22	270	12	0	41	1	8	493	0	15	8	165	144	2	2586
% Passenger Vehicles	100	100	0	100	0	100	98.1	98.2	0	88.9	100	99.3	92.3	0	100	100	100	93.9	0	100	100	98.2	100	100	97.6
Heavy Vehicles	0	0	0	0	0	0	20	5	0	1	0	2	1	0	0	0	0	32	0	0	0	3	0	0	64
% Heavy Vehicles	0	0	0	0	0	0	1.9	1.8	0	11.1	0	0.7	7.7	0	0	0	0	6.1	0	0	0	1.8	0	0	2.4

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: London Grove Township
Location: Route 73 & Renninger Road &
New Hanover Square Rd& Hoffmansville Rd
Counter: BW

File Name : newhanac12p
Site Code : 81774912
Start Date : 5/24/2018
Page No : 2

	Renninger Rd Southbound						Route 73 Westbound						New Hanover Sq Rd Northbound						Route 73 Eastbound						Hoffmansville Rd Southeastbound					
Start Time	Left	Thru	ROR	Right	Hard Right	App. Total	Left	Thru	Bear Right	ROR	Right	App. Total	Left	Bear Left	Thru	ROR	Right	App. Total	Hard Left	Left	Thru	ROR	Right	App. Total	Hard Left	Bear Left	Bear Right	Hard Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																														
Peak Hour for Entire Intersection Begins at 16:45																														
16:45	1	1	0	**1**	0	3	5	128	28	0	**2**	163	2	40	0	0	9	51	0	0	**81**	0	1	**82**	0	26	**31**	0	**57**	356
17:00	1	1	0	1	0	3	9	153	29			192	2	37						**1**	59		**3**		**4**	16	19	**1**		340
17:15	**3**						**12**	151	33			**196**	**3**	**43**	**5**						78					20	15			**367**
17:30	**1**	**4**				**6**		131	**39**			180	2	40			**11**	**54**			46					**28**	27			342
Total Volume							35	563	129			731	9	160			25	200	0	1	264			269	5	90	92		189	1405
% App. Total	37.5	37.5	0	25	0		4.8	77	17.6	0	0.5		4.5	80	3	0	12.5		0	0.4	98.1	0	1.5		2.6	47.6	48.7	1.1		
PHF	.500	.375	.000	1.00	.000	.667	.729	.920	.827	.000	.500	.932	.750	.930	.300	.000	.568	.926	.000	.250	.815	.000	.333	.820	.313	.804	.742	.500	.829	.957
Passenger Vehicles	6	6	0	4	0	16	35	551	127	0	3	716	9	158	6	0	25	198	0	1	249	0	4	254	5	88	92	2	187	1371
% Passenger Vehicles	100	100	0	100	0	100	100	97.9	98.4	0	75.0	97.9	100	98.8	100	0	100	99.0	0	100	94.3	0	100	94.4	100	97.8	100	100	98.9	97.6
Heavy Vehicles								12													15									
% Heavy Vehicles	0	0	0	0	0	0	0	2.1	1.6	0	25.0	2.1	0	1.3	0	0	0	1.0	0	0	5.7	0	0	5.6	0	2.2	0	0	1.1	2.4

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: London Grove Township
Location: Route 73 & Renninger Road &
New Hanover Square Rd& Hoffmansville Rd
Counter: BW

File Name : newhanac12p
Site Code : 81774912
Start Date : 5/24/2018
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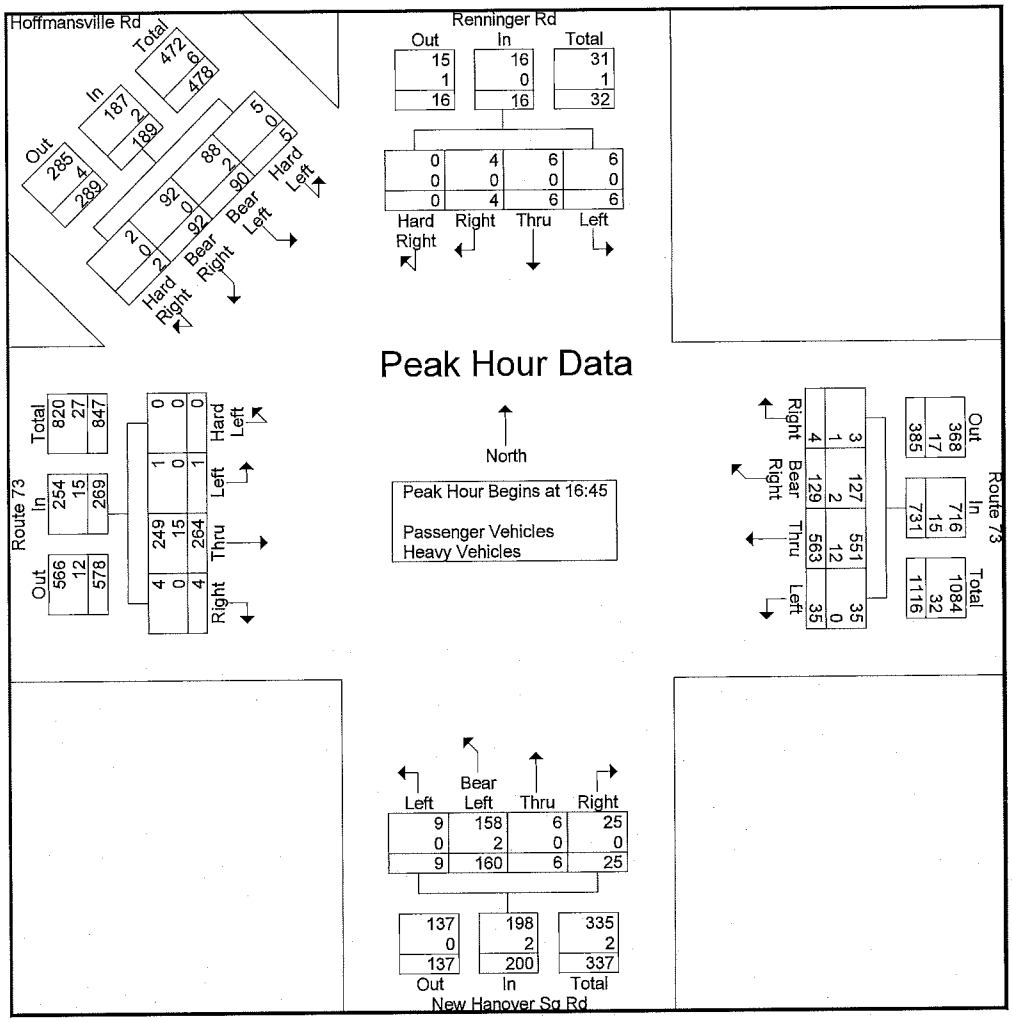


McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: London Grove Township
Location: Route 73 & Renninger Road &
New Hanover Square Rd& Hoffmansville Rd
Counter: BW

File Name : newhanac12p
Site Code : 81774912
Start Date : 5/24/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Renninger Rd Southbound					Route 73 Westbound					New Hanover Sq Rd Northbound					Route 73 Eastbound					Hoffmansville Rd Southeastbound				
Start Time	Left	Thru	ROR	Right	Hard Right	Left	Thru	Bear Right	ROR	Right	Left	Bear Left	Thru	ROR	Right	Hard Left	Left	Thru	ROR	Right	Hard Left	Bear Left	Bear Right	Hard Right	Int. Total
16:00	1	2	0	2	0	10	106	35	0	2	3	9	2	0	1	0	2	53	0	4	0	25	14	0	271
16:15	0	1	0	2	0	12	121	25	0	1	3	34	1	0	3	0	1	65	0	2	0	16	13	0	300
16:30	0	1	0	0	0	5	130	45	0	2	4	34	1	0	7	0	2	57	0	4	0	16	12	0	320
16:45	1	1	0	1	0	5	124	28	0	2	2	39	0	0	9	0	0	77	0	1	0	25	31	0	346
Total	2	5	0	5	0	32	481	133	0	7	12	116	4	0	20	0	5	252	0	11	0	82	70	0	1237
17:00	1	1	0	1	0	9	151	27	0	0	2	37	0	0	3	0	1	55	0	3	4	15	19	1	330
17:15	3	0	0	1	0	12	147	33	0	0	3	42	5	0	2	0	0	73	0	0	0	20	15	1	357
17:30	1	4	0	1	0	9	129	39	0	1	2	40	1	0	11	0	0	44	0	0	1	28	27	0	338
17:45	1	0	0	1	0	11	116	41	0	0	3	35	2	0	5	1	2	69	0	1	3	20	13	0	324
Total	6	5	0	4	0	41	543	140	0	1	10	154	8	0	21	1	3	241	0	4	8	83	74	2	1349
Grand Total	8	10	0	9	0	73	1024	273	0	8	22	270	12	0	41	1	8	493	0	15	8	165	144	2	2586
Apprch %	29.6	37	0	33.3	0	5.3	74.3	19.8	0	0.6	6.4	78.3	3.5	0	11.9	0.2	1.5	95.4	0	2.9	2.5	51.7	45.1	0.6	
Total %	0.3	0.4	0	0.3	0	2.8	39.6	10.6	0	0.3	0.9	10.4	0.5	0	1.6	0	0.3	19.1	0	0.6	0.3	6.4	5.6	0.1	

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: London Grove Township
Location: Route 73 & Renninger Road &
New Hanover Square Rd& Hoffmansville Rd
Counter: BW

File Name : newhanac12p
Site Code : 81774912
Start Date : 5/24/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Renninger Rd Southbound					Route 73 Westbound					New Hanover Sq Rd Northbound					Route 73 Eastbound					Hoffmansville Rd Southeastbound				
Start Time	Left	Thru	ROR	Right	Hard Right	Left	Thru	Bear Right	ROR	Right	Left	Bear Left	Thru	ROR	Right	Hard Left	Left	Thru	ROR	Right	Hard Left	Bear Left	Bear Right	Hard Right	Int. Total
16:00	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	10
16:15	0	0	0	0	0	0	4	2	0	0	0	0	1	0	0	0	0	5	0	0	0	1	0	0	13
16:30	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4
16:45	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	0	4	0	0	0	1	0	0	10
Total	0	0	0	0	0	0	12	3	0	0	0	1	1	0	0	0	0	18	0	0	0	2	0	0	37
17:00	0	0	0	0	0	0	2	2	0	1	0	0	0	0	0	0	0	4	0	0	0	1	0	0	10
17:15	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	0	5	0	0	0	0	0	0	10
17:30	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
Total	0	0	0	0	0	0	8	2	0	1	0	1	0	0	0	0	0	14	0	0	0	1	0	0	27
Grand Total	0	0	0	0	0	0	20	5	0	1	0	2	1	0	0	0	0	32	0	0	0	3	0	0	64
Apprch %	0	0	0	0	0	0	76.9	19.2	0	3.8	0	66.7	33.3	0	0	0	0	100	0	0	0	100	0	0	
Total %	0	0	0	0	0	0	31.2	7.8	0	1.6	0	3.1	1.6	0	0	0	0	50	0	0	0	4.7	0	0	

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Dotterrer Road
Counter: M

File Name : newhanact11p
Site Code :
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Route 663 Southbound		Route 663 Northbound		Dotterer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	96	3	11	76	2	8	196
16:15	89	8	9	75	1	7	189
16:30	118	6	8	64	2	4	202
16:45	119	7	10	62	2	10	210
Total	422	24	38	277	7	29	797
17:00	101	8	19	74	6	5	213
17:15	95	10	7	88	3	10	213
17:30	112	9	14	107	6	7	255
17:45	122	12	19	91	4	18	266
Total	430	39	59	360	19	40	947
Grand Total	852	63	97	637	26	69	1744
Apprch %	93.1	6.9	13.2	86.8	27.4	72.6	
Total %	48.9	3.6	5.6	36.5	1.5	4	
Passenger Vehicles	835	63	97	626	25	68	1714
% Passenger Vehicles	98	100	100	98.3	96.2	98.6	98.3
Heavy Vehicles	17	0	0	11	1	1	30
% Heavy Vehicles	2	0	0	1.7	3.8	1.4	1.7

Zero Pedestrians were observed during this study.

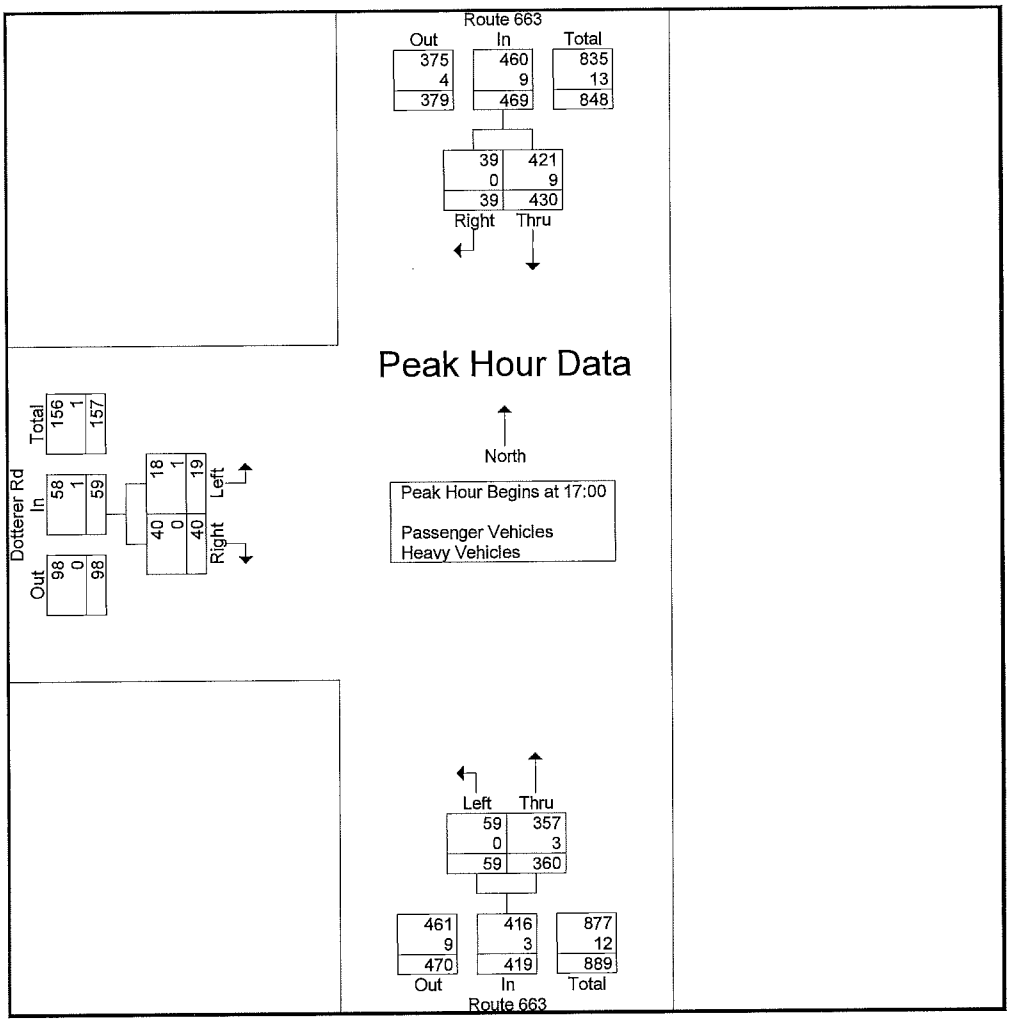
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Dotterrer Road
Counter: M

File Name : newhanact11p
Site Code :
Start Date : 5/23/2018
Page No : 2

	Route 663 Southbound			Route 663 Northbound			Dotterer Rd Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	101	8	109	**19**	74	93	**6**	5	11	213
17:15	95	10	105	7	88	95	3	10	13	213
17:30	112	9	121	14	**107**	**121**	6	7	13	255
17:45	**122**	**12**	**134**	19	91	110	4	**18**	**22**	**266**
Total Volume	430	39	469	59	360	419	19	40	59	947
% App. Total	91.7	8.3		14.1	85.9		32.2	67.8		
PHF	.881	.813	.875	.776	.841	.866	.792	.556	.670	.890
Passenger Vehicles	421	39	460	59	357	416	18	40	58	934
% Passenger Vehicles	97.9	100	98.1	100	99.2	99.3	94.7	100	98.3	98.6
Heavy Vehicles	9	0	9	0	3	3	1	0	1	13
% Heavy Vehicles	2.1	0	1.9	0	0.8	0.7	5.3	0	1.7	1.4



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Dotterrer Road
Counter: M

File Name : newhanact11p
Site Code :
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Route 663 Southbound		Route 663 Northbound		Dotterer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	95	3	11	75	2	8	194
16:15	89	8	9	73	1	7	187
16:30	116	6	8	61	2	3	196
16:45	114	7	10	60	2	10	203
Total	414	24	38	269	7	28	780
17:00	98	8	19	73	6	5	209
17:15	90	10	7	88	2	10	207
17:30	112	9	14	106	6	7	254
17:45	121	12	19	90	4	18	264
Total	421	39	59	357	18	40	934
Grand Total	835	63	97	626	25	68	1714
Apprch %	93	7	13.4	86.6	26.9	73.1	
Total %	48.7	3.7	5.7	36.5	1.5	4	

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Dotterer Road
Counter: M

File Name : newhanact11p
Site Code :
Start Date : 5/23/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Route 663 Southbound		Route 663 Northbound		Dotterer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	1	0	0	1	0	0	2
16:15	0	0	0	2	0	0	2
16:30	2	0	0	3	0	1	6
16:45	5	0	0	2	0	0	7
Total	8	0	0	8	0	1	17
17:00	3	0	0	1	0	0	4
17:15	5	0	0	0	1	0	6
17:30	0	0	0	1	0	0	1
17:45	1	0	0	1	0	0	2
Total	9	0	0	3	1	0	13
Grand Total	17	0	0	11	1	1	30
Apprch %	100	0	0	100	50	50	
Total %	56.7	0	0	36.7	3.3	3.3	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Middle Creek Road
Counter: TB

File Name : newhanact03w
Site Code : 81774903
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Middle Creek Rd Southbound		Swamp Pk Westbound		Swamp Pk Eastbound		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00	17	12	100	16	3	126	274
07:15	6	10	82	23	4	135	260
07:30	14	9	87	6	6	156	278
07:45	16	8	90	15	5	140	274
Total	53	39	359	60	18	557	1086
08:00	13	9	84	8	5	116	235
08:15	11	9	92	4	6	112	234
08:30	14	7	95	6	5	129	256
08:45	13	5	91	10	3	108	230
Total	51	30	362	28	19	465	955

*** BREAK ***

16:00	2	8	116	13	6	119	264
16:15	5	5	160	24	14	101	309
16:30	9	9	163	14	11	107	313
16:45	10	5	157	19	16	118	325
Total	26	27	596	70	47	445	1211
17:00	4	7	163	25	8	137	344
17:15	6	11	172	15	9	136	349
17:30	8	10	171	19	13	109	330
Grand Total	148	124	1823	217	114	1849	4275
Apprch %	54.4	45.6	89.4	10.6	5.8	94.2	
Total %	3.5	2.9	42.6	5.1	2.7	43.3	
Passenger Vehicles	146	117	1763	217	114	1799	4156
% Passenger Vehicles	98.6	94.4	96.7	100	100	97.3	97.2
Heavy Vehicles	2	7	60	0	0	50	119
% Heavy Vehicles	1.4	5.6	3.3	0	0	2.7	2.8

Zero Pedestrians were observed during this study.

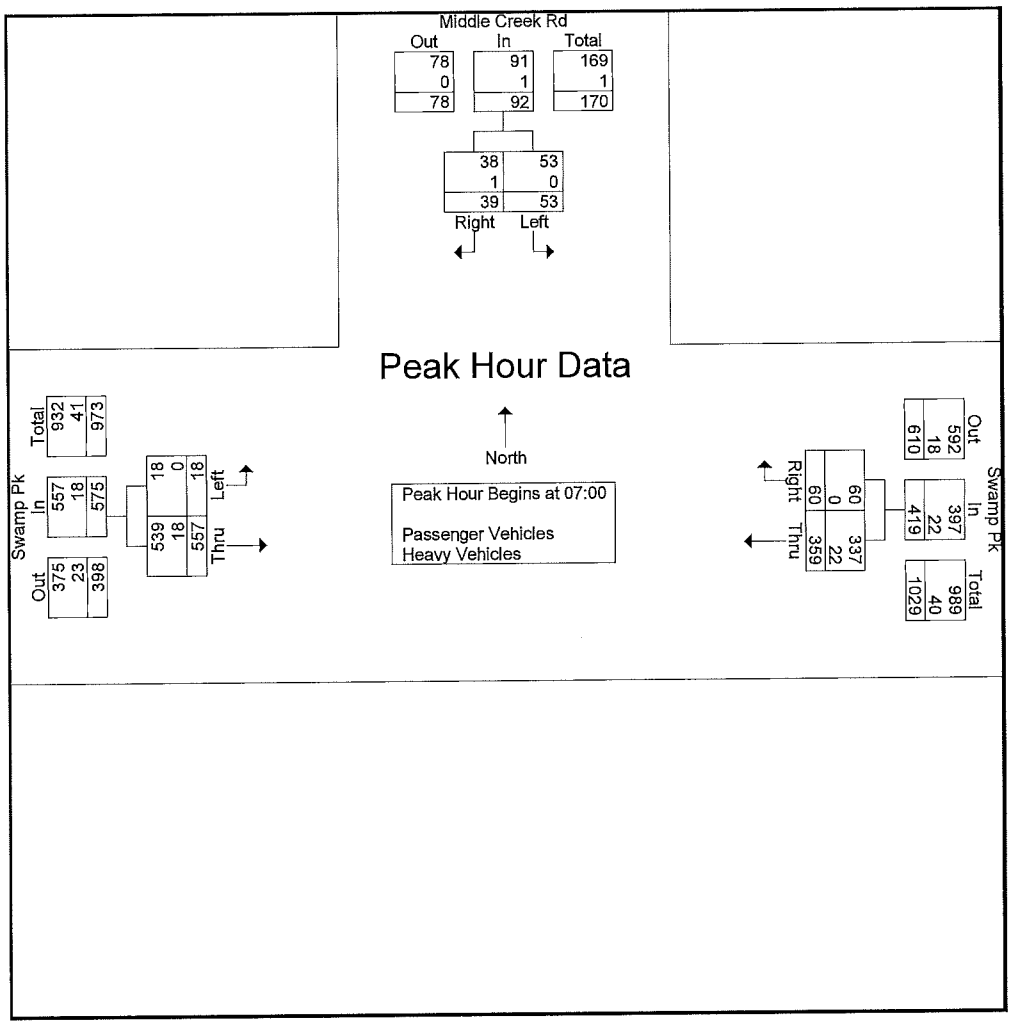
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Middle Creek Road
Counter: TB

File Name : newhanact03w
Site Code : 81774903
Start Date : 5/23/2018
Page No : 2

	Middle Creek Rd Southbound			Swamp Pk Westbound			Swamp Pk Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00										
07:00	**17**	**12**	**29**	**100**	16	**116**	3	126	129	274
07:15	6	10	16	82	**23**	105	4	135	139	260
07:30	14	9	23	87	6	93	**6**	**156**	**162**	**278**
07:45	16	8	24	90	15	105	5	140	145	274
Total Volume	53	39	92	359	60	419	18	557	575	1086
% App. Total	57.6	42.4		85.7	14.3		3.1	96.9		
PHF	.779	.813	.793	.898	.652	.903	.750	.893	.887	.977
Passenger Vehicles	53	38	91	337	60	397	18	539	557	1045
% Passenger Vehicles	100	97.4	98.9	93.9	100	94.7	100	96.8	96.9	96.2
Heavy Vehicles	0	1	1	22	0	22	0	18	18	41
% Heavy Vehicles	0	2.6	1.1	6.1	0	5.3	0	3.2	3.1	3.8



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Middle Creek Road
Counter: TB

File Name : newhanact03w
Site Code : 81774903
Start Date : 5/23/2018
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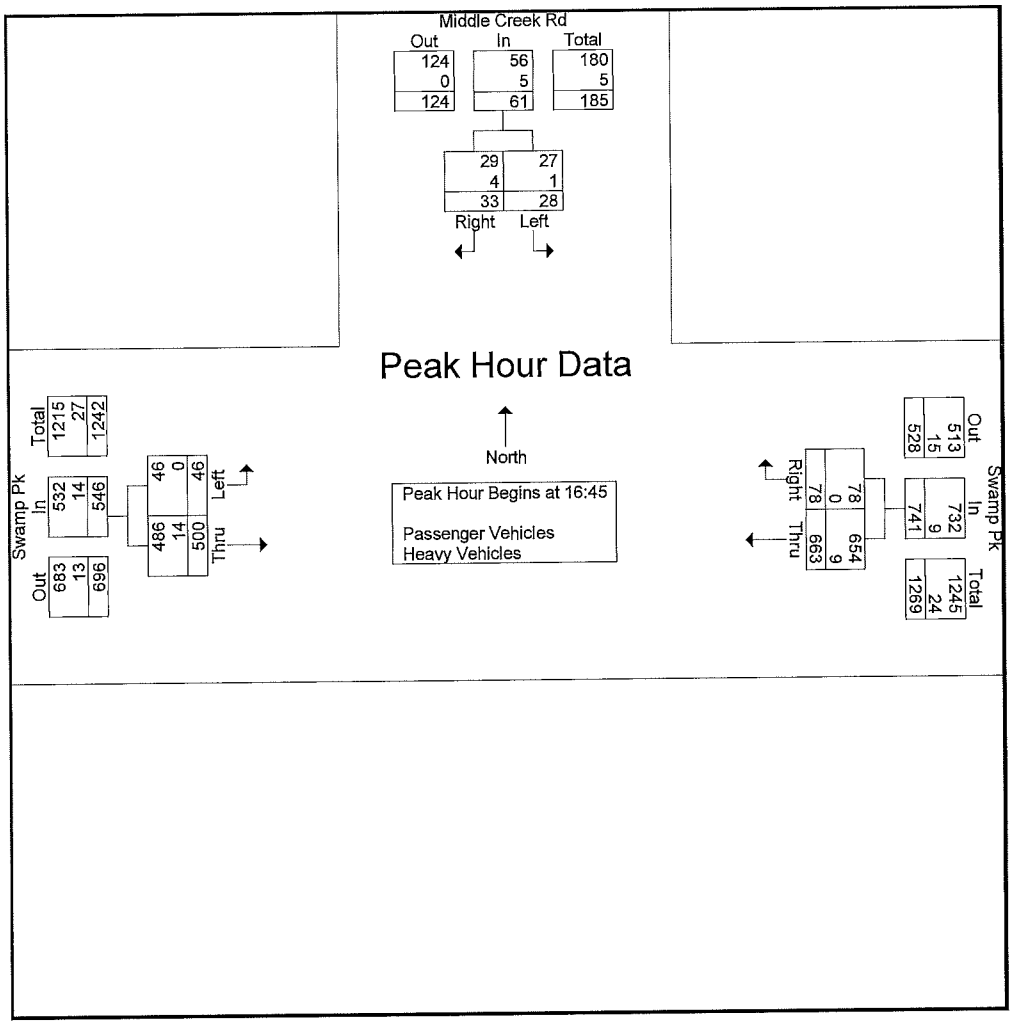
	Middle Creek Rd Southbound			Swamp Pk Westbound			Swamp Pk Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:30 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:45										
16:45	**10**	5	15	157	19	176	**16**	118	134	325
17:00	4	7	11	163	**25**	188	8	**137**	**145**	344
17:15	6	**11**	17	**172**	15	187	9	136	145	**349**
17:30	8	10	**18**	171	19	**190**	13	109	122	330
Total Volume	28	33	61	663	78	741	46	500	546	1348
% App. Total	45.9	54.1		89.5	10.5		8.4	91.6		
PHF	.700	.750	.847	.964	.780	.975	.719	.912	.941	.966
Passenger Vehicles	27	29	56	654	78	732	46	486	532	1320
% Passenger Vehicles	96.4	87.9	91.8	98.6	100	98.8	100	97.2	97.4	97.9
Heavy Vehicles	1	4	5	9	0	9	0	14	14	28
% Heavy Vehicles	3.6	12.1	8.2	1.4	0	1.2	0	2.8	2.6	2.1



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Middle Creek Road
Counter: TB

File Name : newhanact03w
Site Code : 81774903
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Middle Creek Rd Southbound		Swamp Pk Westbound		Swamp Pk Eastbound		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00	17	12	95	16	3	122	265
07:15	6	10	77	23	4	130	250
07:30	14	8	80	6	6	152	266
07:45	16	8	85	15	5	135	264
Total	53	38	337	60	18	539	1045
08:00	13	8	76	8	5	110	220
08:15	11	9	87	4	6	108	225
08:30	13	7	93	6	5	127	251
08:45	13	4	86	10	3	108	224
Total	50	28	342	28	19	453	920
*** BREAK ***							
16:00	2	8	112	13	6	117	258
16:15	5	5	158	24	14	101	307
16:30	9	9	160	14	11	103	306
16:45	9	5	156	19	16	116	321
Total	25	27	586	70	47	437	1192
17:00	4	6	161	25	8	133	337
17:15	6	9	170	15	9	131	340
17:30	8	9	167	19	13	106	322
Grand Total	146	117	1763	217	114	1799	4156
Apprch %	55.5	44.5	89	11	6	94	
Total %	3.5	2.8	42.4	5.2	2.7	43.3	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Dotterer Road
Counter: LB

File Name : newhanact04w
Site Code : 81774904
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Dotterer Rd Southbound		Swamp Pk Westbound		Swamp Pk Eastbound		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00	5	2	107	2	3	135	254
07:15	7	3	87	2	0	132	231
07:30	6	4	81	0	1	167	259
07:45	5	3	96	4	3	133	244
Total	23	12	371	8	7	567	988
08:00	3	1	46	4	3	94	151
08:15	6	5	90	6	1	118	226
08:30	11	4	80	1	5	123	224
08:45	4	4	67	1	1	76	153
Total	24	14	283	12	10	411	754
*** BREAK ***							
16:00	4	2	127	8	5	122	268
16:15	1	7	163	11	6	111	299
16:30	2	4	155	9	3	110	283
16:45	4	4	167	11	5	113	304
Total	11	17	612	39	19	456	1154
17:00	7	5	178	12	9	131	342
17:15	3	3	169	11	14	122	322
17:30	3	8	169	9	5	97	291
17:45	2	4	159	4	7	115	291
Total	15	20	675	36	35	465	1246
Grand Total	73	63	1941	95	71	1899	4142
Apprch %	53.7	46.3	95.3	4.7	3.6	96.4	
Total %	1.8	1.5	46.9	2.3	1.7	45.8	
Passenger Vehicles	69	60	1867	91	66	1857	4010
% Passenger Vehicles	94.5	95.2	96.2	95.8	93	97.8	96.8
Heavy Vehicles	4	3	74	4	5	42	132
% Heavy Vehicles	5.5	4.8	3.8	4.2	7	2.2	3.2

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

File Name : newhanact04w
Site Code : 81774904
Start Date : 5/23/2018
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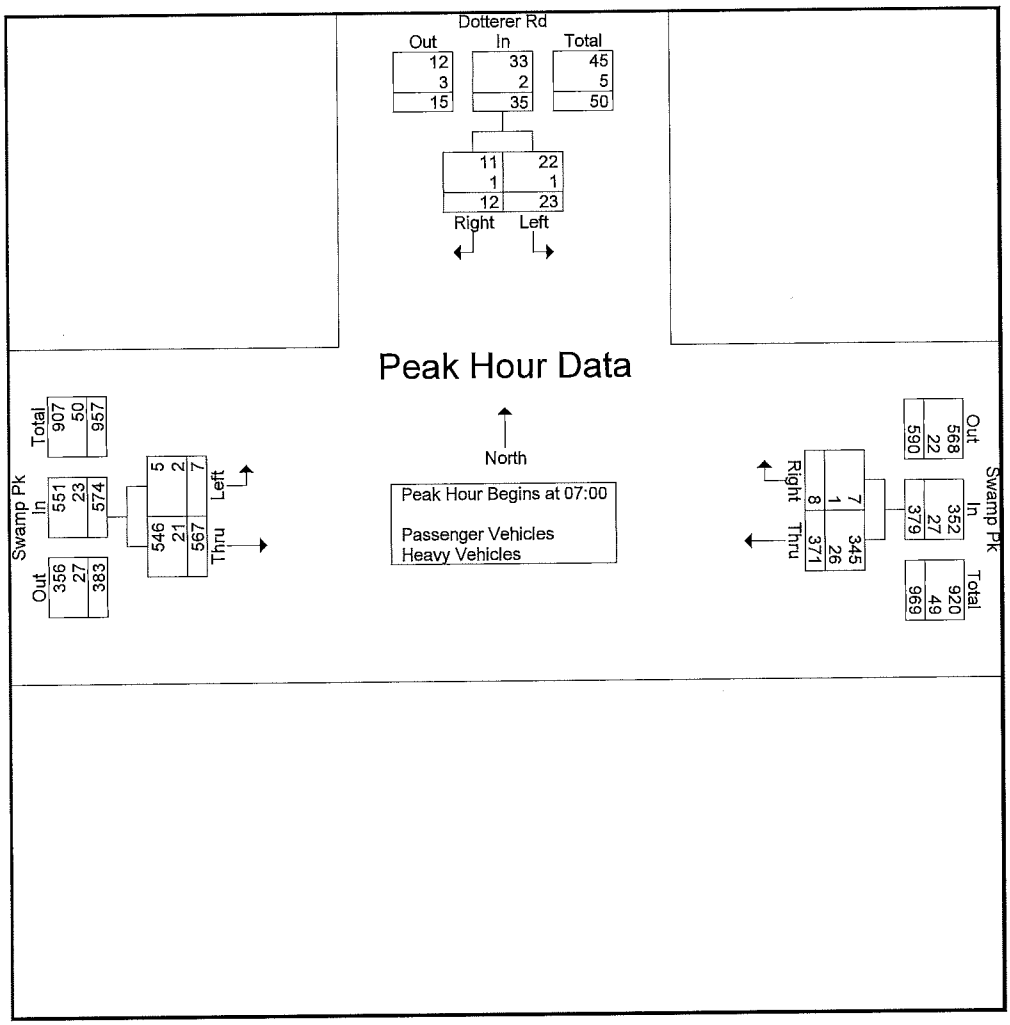
	Dotterer Rd Southbound			Swamp Pk Westbound			Swamp Pk Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00										
07:00	5	2	7	**107**	2	**109**	**3**	135	138	254
07:15	**7**	3	**10**	87	2	89	0	132	132	231
07:30	6	**4**	10	81	0	81	1	**167**	**168**	**259**
07:45	5	3	8	96	**4**	100	3	133	136	244
Total Volume	23	12	35	371	8	379	7	567	574	988
% App. Total	65.7	34.3		97.9	2.1		1.2	98.8		
PHF	.821	.750	.875	.867	.500	.869	.583	.849	.854	.954
Passenger Vehicles	22	11	33	345	7	352	5	546	551	936
% Passenger Vehicles	95.7	91.7	94.3	93.0	87.5	92.9	71.4	96.3	96.0	94.7
Heavy Vehicles	1	1	2	26	1	27	2	21	23	52
% Heavy Vehicles	4.3	8.3	5.7	7.0	12.5	7.1	28.6	3.7	4.0	5.3

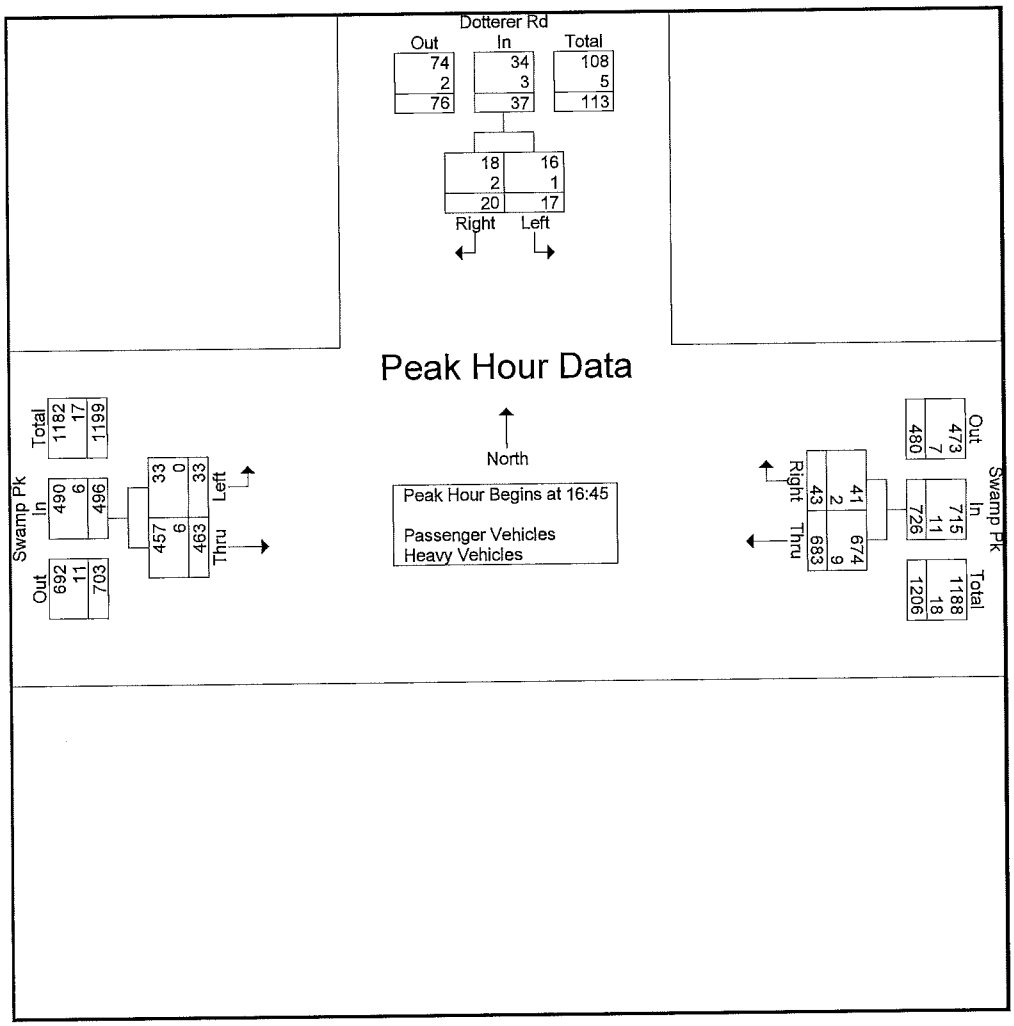


McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

File Name : newhanact04w
Site Code : 81774904
Start Date : 5/23/2018
Page No : 3

	Dotterer Rd Southbound			Swamp Pk Westbound			Swamp Pk Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:45										
16:45	4	4	8	167	11	178	5	113	118	304
17:00	**7**	5	**12**	**178**	**12**	**190**	9	**131**	**140**	**342**
17:15	3	3	6	169	11	180	**14**	122	136	322
17:30	3	**8**	11	169	9	178	5	97	102	291
Total Volume	17	20	37	683	43	726	33	463	496	1259
% App. Total	45.9	54.1		94.1	5.9		6.7	93.3		
PHF	.607	.625	.771	.959	.896	.955	.589	.884	.886	.920
Passenger Vehicles	16	18	34	674	41	715	33	457	490	1239
% Passenger Vehicles	94.1	90.0	91.9	98.7	95.3	98.5	100	98.7	98.8	98.4
Heavy Vehicles	1	2	3	9	2	11	0	6	6	20
% Heavy Vehicles	5.9	10.0	8.1	1.3	4.7	1.5	0	1.3	1.2	1.6



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Dotterer Road
Counter: LB

File Name : newhanact04w
Site Code : 81774904
Start Date : 5/23/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Dotterer Rd Southbound		Swamp Pk Westbound		Swamp Pk Eastbound		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00	1	0	9	1	1	4	16
07:15	0	1	6	0	0	4	11
07:30	0	0	3	0	0	10	13
07:45	0	0	8	0	1	3	12
Total	1	1	26	1	2	21	52
08:00	0	0	3	1	1	4	9
08:15	0	0	13	0	0	1	14
08:30	0	0	5	0	0	1	6
08:45	1	0	2	0	0	4	7
Total	1	0	23	1	1	10	36
*** BREAK ***							
16:00	1	0	6	0	2	3	12
16:15	0	0	3	0	0	0	3
16:30	0	0	3	0	0	2	5
16:45	0	0	2	1	0	1	4
Total	1	0	14	1	2	6	24
17:00	1	1	1	1	0	1	5
17:15	0	0	3	0	0	2	5
17:30	0	1	3	0	0	2	6
17:45	0	0	4	0	0	0	4
Total	1	2	11	1	0	5	20
Grand Total	4	3	74	4	5	42	132
Apprch %	57.1	42.9	94.9	5.1	10.6	89.4	
Total %	3	2.3	56.1	3	3.8	31.8	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Route 663
Counter: HP

File Name : newhanact10p
Site Code : 81774910
Start Date : 5/24/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Route 663 Southbound				Swamp Pk Westbound				Route 663 Northbound				Swamp Pk Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
16:00	19	63	3	10	43	103	0	23	36	60	3	25	18	91	2	22	521
16:15	30	59	1	21	44	134	0	30	54	60	2	25	22	91	4	20	597
16:30	42	87	0	10	39	117	0	28	36	48	0	16	13	84	0	27	547
16:45	33	76	2	10	40	134	0	43	43	54	0	27	16	106	1	26	611
Total	124	285	6	51	166	488	0	124	169	222	5	93	69	372	7	95	2276
17:00	29	79	0	13	46	139	1	15	39	65	0	22	17	92	0	44	601
17:15	35	65	1	14	38	159	0	25	37	53	0	32	17	91	1	29	597
17:30	28	72	2	10	35	143	0	35	43	52	2	27	16	82	3	34	584
17:45	28	88	0	12	31	148	0	29	36	50	3	23	20	86	0	43	597
Total	120	304	3	49	150	589	1	104	155	220	5	104	70	351	4	150	2379
Grand Total	244	589	9	100	316	1077	1	228	324	442	10	197	139	723	11	245	4655
Apprch %	25.9	62.5	1	10.6	19.5	66.4	0.1	14.1	33.3	45.4	1	20.2	12.4	64.7	1	21.9	
Total %	5.2	12.7	0.2	2.1	6.8	23.1	0	4.9	7	9.5	0.2	4.2	3	15.5	0.2	5.3	
Passenger Vehicles	243	579	9	100	310	1055	1	220	317	426	10	197	138	715	11	244	4575
% Passenger Vehicles	99.6	98.3	100	100	98.1	98	100	96.5	97.8	96.4	100	100	99.3	98.9	100	99.6	98.3
Heavy Vehicles	1	10	0	0	6	22	0	8	7	16	0	0	1	8	0	1	80
% Heavy Vehicles	0.4	1.7	0	0	1.9	2	0	3.5	2.2	3.6	0	0	0.7	1.1	0	0.4	1.7

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Route 663
Counter: HP

File Name : newhanact10p
Site Code : 81774910
Start Date : 5/24/2018
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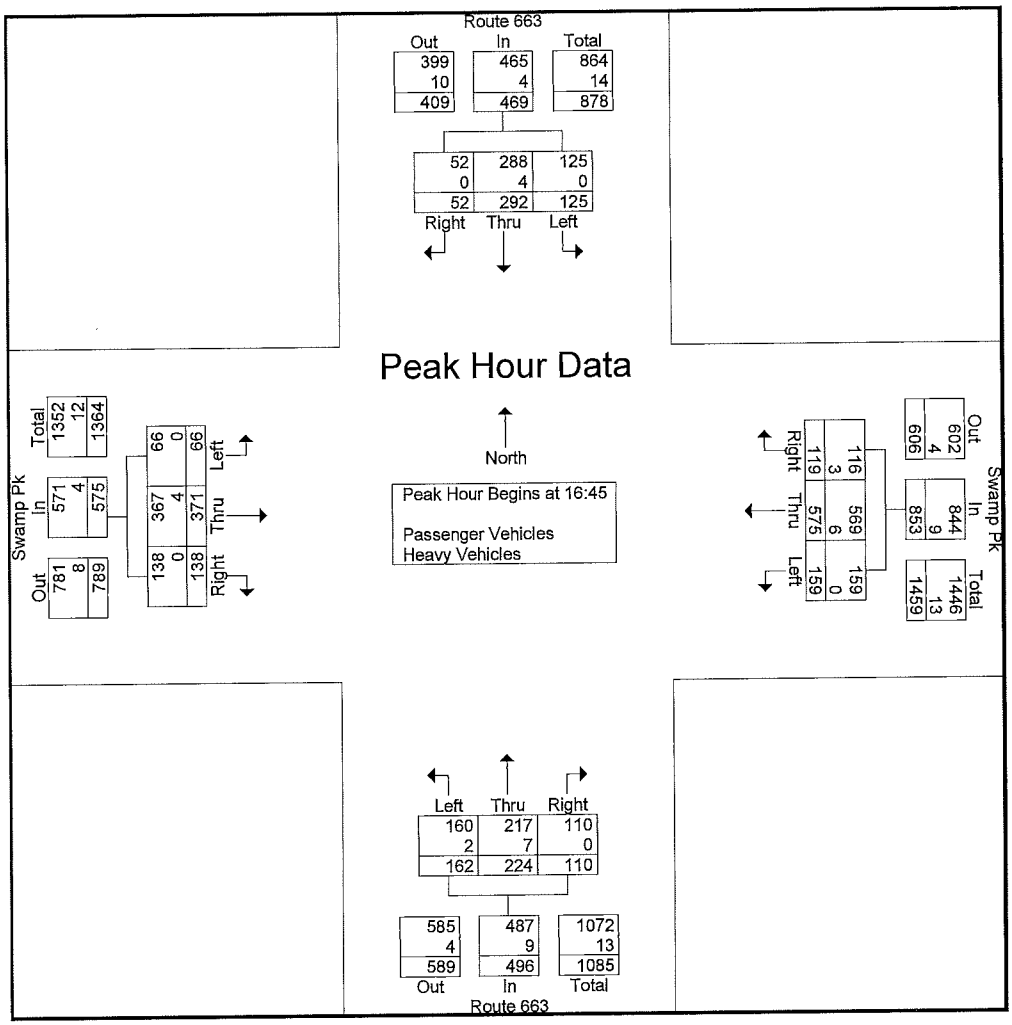
	Route 663 Southbound					Swamp Pk Westbound					Route 663 Northbound					Swamp Pk Eastbound					
Start Time	Left	Thru	ROR	Right	App. Total	Left	Thru	RO R	Right	App. Total	Left	Thru	RO R	Right	App. Total	Left	Thru	RO R	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	33	76	**2**	10	**121**	40	134	0	**43**	217	**43**	54	0	27	124	16	**106**	1	26	149	**611**
17:00	29	**79**	0	13	121	**46**	139	**1**	15	201	39	**65**	0	22	**126**	**17**	92	0	**44**	**153**	601
17:15	**35**	65	1	**14**	115	38	**159**	0	25	**222**	37	53	0	**32**	122	17	91	1	29	138	597
17:30	28	72	2	10	112	35	143	0	35	213	43	52	**2**	27	124	16	82	**3**	34	135	584
Total Volume	125	292	5	47	469	159	575	1	118	853	162	224	2	108	496	66	371	5	133	575	2393
% App. Total	26.7	62.3	1.1	10		18.6	67.4	0.1	13.8		32.7	45.2	0.4	21.8		11.5	64.5	0.9	23.1		
PHF	.893	.924	.625	.839	.969	.864	.904	.250	.686	.961	.942	.862	.250	.844	.984	.971	.875	.417	.756	.940	.979
Passenger Vehicles																					
% Passenger Vehicles	100	98.6	100	100	99.1	100	99.0	100	97.5	98.9	98.8	96.9	100	100	98.2	100	98.9	100	100	99.3	98.9
Heavy Vehicles																					
% Heavy Vehicles	0	1.4	0	0	0.9	0	1.0	0	2.5	1.1	1.2	3.1	0	0	1.8	0	1.1	0	0	0.7	1.1



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Route 663
Counter: HP

File Name : newhanact10p
Site Code : 81774910
Start Date : 5/24/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Route 663 Southbound				Swamp Pk Westbound				Route 663 Northbound				Swamp Pk Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
16:00	19	63	3	10	41	97	0	22	35	53	3	25	17	88	2	21	499
16:15	30	58	1	21	41	131	0	27	53	58	2	25	22	91	4	20	584
16:30	41	84	0	10	38	113	0	27	33	48	0	16	13	83	0	27	533
16:45	33	76	2	10	40	132	0	41	41	50	0	27	16	104	1	26	599
Total	123	281	6	51	160	473	0	117	162	209	5	93	68	366	7	94	2215
17:00	29	79	0	13	46	139	1	15	39	65	0	22	17	92	0	44	601
17:15	35	64	1	14	38	157	0	25	37	50	0	32	17	90	1	29	590
17:30	28	69	2	10	35	141	0	34	43	52	2	27	16	81	3	34	577
17:45	28	86	0	12	31	145	0	29	36	50	3	23	20	86	0	43	592
Total	120	298	3	49	150	582	1	103	155	217	5	104	70	349	4	150	2360
Grand Total	243	579	9	100	310	1055	1	220	317	426	10	197	138	715	11	244	4575
Apprch %	26.1	62.2	1	10.7	19.5	66.5	0.1	13.9	33.4	44.8	1.1	20.7	12.5	64.5	1	22	
Total %	5.3	12.7	0.2	2.2	6.8	23.1	0	4.8	6.9	9.3	0.2	4.3	3	15.6	0.2	5.3	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Route 663
Counter: HP

File Name : newhanact10p
Site Code : 81774910
Start Date : 5/24/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Route 663 Southbound				Swamp Pk Westbound				Route 663 Northbound				Swamp Pk Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
16:00	0	0	0	0	2	6	0	1	1	7	0	0	1	3	0	1	22
16:15	0	1	0	0	3	3	0	3	1	2	0	0	0	0	0	0	13
16:30	1	3	0	0	1	4	0	1	3	0	0	0	0	1	0	0	14
16:45	0	0	0	0	0	2	0	2	2	4	0	0	0	2	0	0	12
Total	1	4	0	0	6	15	0	7	7	13	0	0	1	6	0	1	61
*** BREAK ***																	
17:15	0	1	0	0	0	2	0	0	0	3	0	0	0	1	0	0	7
17:30	0	3	0	0	0	2	0	1	0	0	0	0	0	1	0	0	7
17:45	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
Total	0	6	0	0	0	7	0	1	0	3	0	0	0	2	0	0	19
Grand Total	1	10	0	0	6	22	0	8	7	16	0	0	1	8	0	1	80
Apprch %	9.1	90.9	0	0	16.7	61.1	0	22.2	30.4	69.6	0	0	10	80	0	10	
Total %	1.2	12.5	0	0	7.5	27.5	0	10	8.8	20	0	0	1.2	10	0	1.2	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Leidy Road
Counter: M

File Name : newhanact09p
Site Code :
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Swamp Pk Southbound		Swamp Pk Northbound		Leidy Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	125	15	7	163	3	1	314
16:15	104	11	1	202	13	5	336
16:30	136	9	2	198	7	3	355
16:45	117	20	6	184	7	2	336
Total	482	55	16	747	30	11	1341
17:00	142	13	4	197	7	2	365
17:15	123	7	8	216	3	5	362
17:30	119	9	3	220	3	1	355
17:45	115	7	4	216	6	1	349
Total	499	36	19	849	19	9	1431
Grand Total	981	91	35	1596	49	20	2772
Apprch %	91.5	8.5	2.1	97.9	71	29	
Total %	35.4	3.3	1.3	57.6	1.8	0.7	
Passenger Vehicles	968	91	35	1568	48	20	2730
% Passenger Vehicles	98.7	100	100	98.2	98	100	98.5
Heavy Vehicles	13	0	0	28	1	0	42
% Heavy Vehicles	1.3	0	0	1.8	2	0	1.5

Zero Pedestrians were observed during this study.

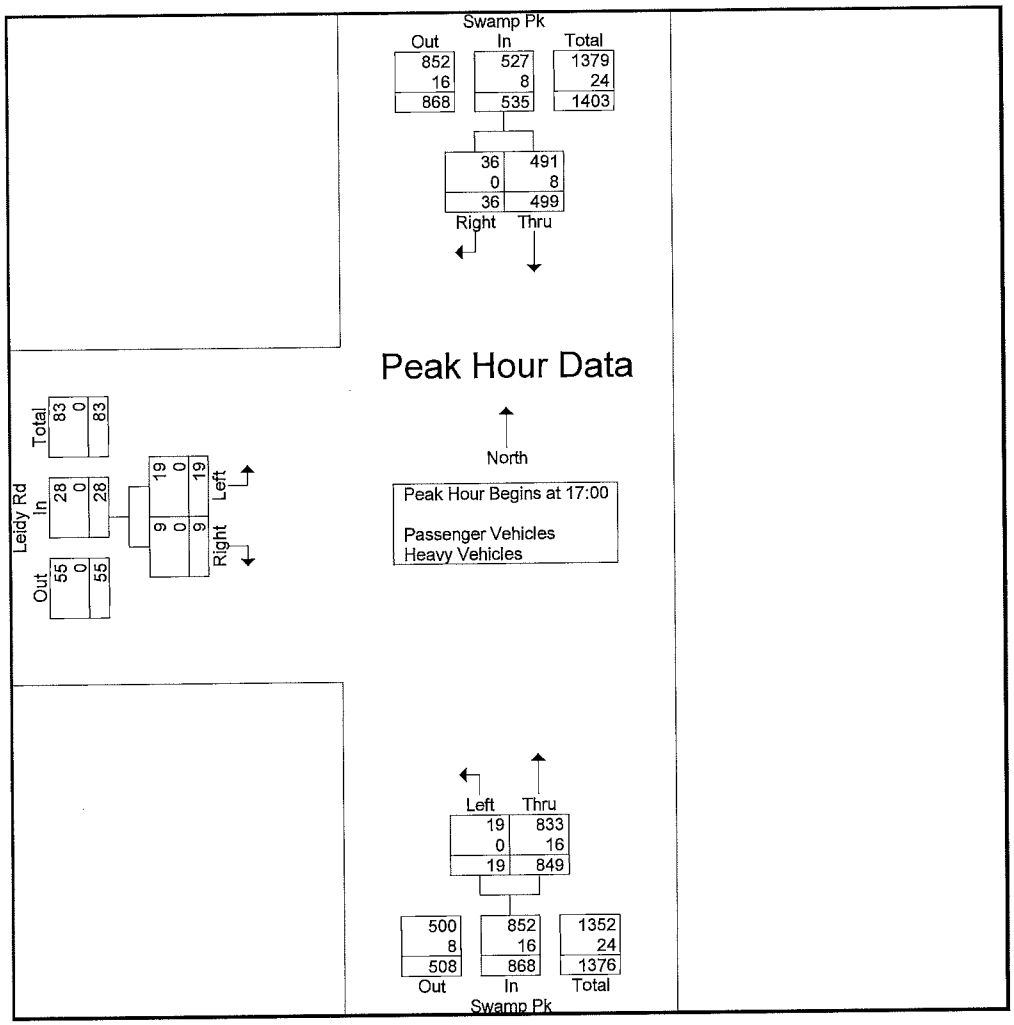
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Leidy Road
Counter: M

File Name : newhanact09p
Site Code :
Start Date : 5/23/2018
Page No : 2

	Swamp Pk Southbound			Swamp Pk Northbound			Leidy Rd Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 17:00										
17:00	**142**	**13**	**155**	4	197	201	**7**	2	**9**	**365**
17:15	123	7	130	**8**	216	**224**	3	**5**	8	362
17:30	119	9	128	3	**220**	223	3	1	4	355
17:45	115	7	122	4	216	220	6	1	7	349
Total Volume	499	36	535	19	849	868	19	9	28	1431
% App. Total	93.3	6.7		2.2	97.8		67.9	32.1		
PHF	.879	.692	.863	.594	.965	.969	.679	.450	.778	.980
Passenger Vehicles	491	36	527	19	833	852	19	9	28	1407
% Passenger Vehicles	98.4	100	98.5	100	98.1	98.2	100	100	100	98.3
Heavy Vehicles	8	0	8	0	16	16	0	0	0	24
% Heavy Vehicles	1.6	0	1.5	0	1.9	1.8	0	0	0	1.7



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Page No : 1

Groups Printed- Passenger Vehicles

	Swamp Pk Southbound		Swamp Pk Northbound		Leidy Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	124	15	7	158	3	1	308
16:15	103	11	1	200	12	5	332
16:30	136	9	2	195	7	3	352
16:45	114	20	6	182	7	2	331
Total	477	55	16	735	29	11	1323
17:00	136	13	4	197	7	2	359
17:15	122	7	8	213	3	5	358
17:30	118	9	3	214	3	1	348
17:45	115	7	4	209	6	1	342
Total	491	36	19	833	19	9	1407
Grand Total	968	91	35	1568	48	20	2730
Apprch %	91.4	8.6	2.2	97.8	70.6	29.4	
Total %	35.5	3.3	1.3	57.4	1.8	0.7	

Zero Pedestrians were observed during this study.

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File Name : newhanact09p
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Start Date : 5/23/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Swamp Pk Southbound		Swamp Pk Northbound		Leidy Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	1	0	0	5	0	0	6
16:15	1	0	0	2	1	0	4
16:30	0	0	0	3	0	0	3
16:45	3	0	0	2	0	0	5
Total	5	0	0	12	1	0	18
17:00	6	0	0	0	0	0	6
17:15	1	0	0	3	0	0	4
17:30	1	0	0	6	0	0	7
17:45	0	0	0	7	0	0	7
Total	8	0	0	16	0	0	24
Grand Total	13	0	0	28	1	0	42
Apprch %	100	0	0	100	100	0	
Total %	31	0	0	66.7	2.4	0	

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Romig Road
Counter: KB

File Name : newhanact08p
Site Code : 81774908
Start Date : 5/24/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Romig Rd Southbound			Swamp Pk Westbound			Romig Rd Northbound			Swamp Pk Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	0	3	2	19	167	5	5	0	8	2	107	6	324
16:15	0	0	1	10	204	3	4	0	5	2	114	4	347
16:30	2	0	1	19	157	1	4	1	10	2	106	8	311
16:45	3	1	0	19	208	5	9	0	8	2	133	10	398
Total	5	4	4	67	736	14	22	1	31	8	460	28	1380
17:00	0	0	2	13	203	4	8	2	6	0	120	8	366
17:15	3	0	1	19	198	3	6	0	10	0	123	7	370
17:30	2	1	6	16	210	6	9	0	10	1	110	6	377
17:45	0	0	2	19	230	2	3	1	11	3	102	13	386
Total	5	1	11	67	841	15	26	3	37	4	455	34	1499
Grand Total	10	5	15	134	1577	29	48	4	68	12	915	62	2879
Apprch %	33.3	16.7	50	7.7	90.6	1.7	40	3.3	56.7	1.2	92.5	6.3	
Total %	0.3	0.2	0.5	4.7	54.8	1	1.7	0.1	2.4	0.4	31.8	2.2	
Passenger Vehicles	10	4	14	134	1561	28	47	4	68	11	904	62	2847
% Passenger Vehicles	100	80	93.3	100	99	96.6	97.9	100	100	91.7	98.8	100	98.9
Heavy Vehicles	0	1	1	0	16	1	1	0	0	1	11	0	32
% Heavy Vehicles	0	20	6.7	0	1	3.4	2.1	0	0	8.3	1.2	0	1.1

Zero Pedestrians were observed during this study.

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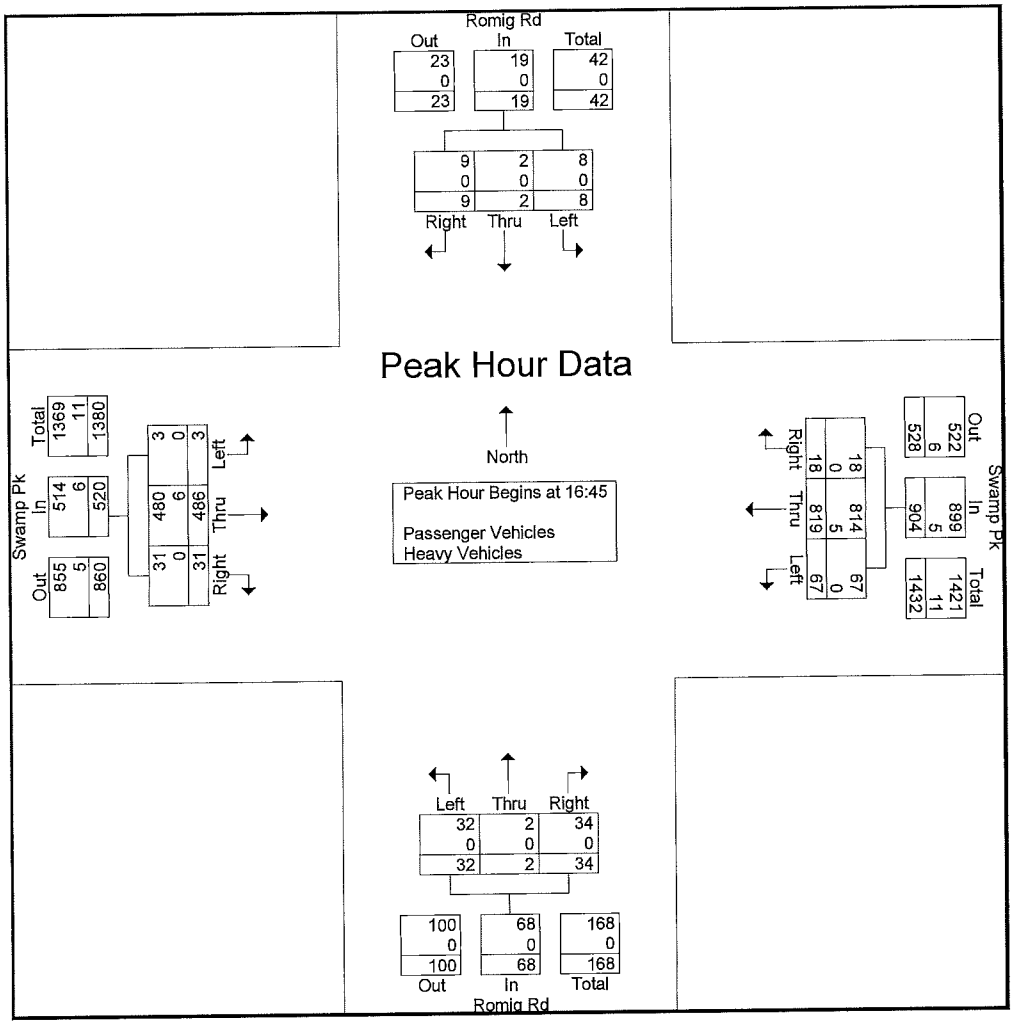
File Name : newhanact08p
Site Code : 81774908
Start Date : 5/24/2018
Page No : 2

	Romig Rd Southbound				Swamp Pk Westbound				Romig Rd Northbound				Swamp Pk Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	**3**	**1**	0	4	**19**	208	5	**232**	**9**	0	8	17	**2**	**133**	**10**	**145**	**398**
17:00	0	0	2	2	13	203	4	220	8	**2**	6	16	0	120	8	128	366
17:15	3	0	1	4	19	198	3	220	6	0	**10**	16	0	123	7	130	370
17:30	2	1	**6**	**9**	16	**210**	**6**	232	9	0	10	**19**	1	110	6	117	377
Total Volume	8	2	9	19	67	819	18	904	32	2	34	68	3	486	31	520	1511
% App. Total	42.1	10.5	47.4		7.4	90.6	2		47.1	2.9	50		0.6	93.5	6		
PHF	.667	.500	.375	.528	.882	.975	.750	.974	.889	.250	.850	.895	.375	.914	.775	.897	.949
Passenger Vehicles	8	2	9	19	67	814	18	899	32	2	34	68	3	480	31	514	1500
% Passenger Vehicles	100	100	100	100	100	99.4	100	99.4	100	100	100	100	100	98.8	100	98.8	99.3
Heavy Vehicles	0	0	0	0	0	5	0	5	0	0	0	0	0	6	0	6	11
% Heavy Vehicles	0	0	0	0	0	0.6	0	0.6	0	0	0	0	0	1.2	0	1.2	0.7



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Municipality: New Hanover Township
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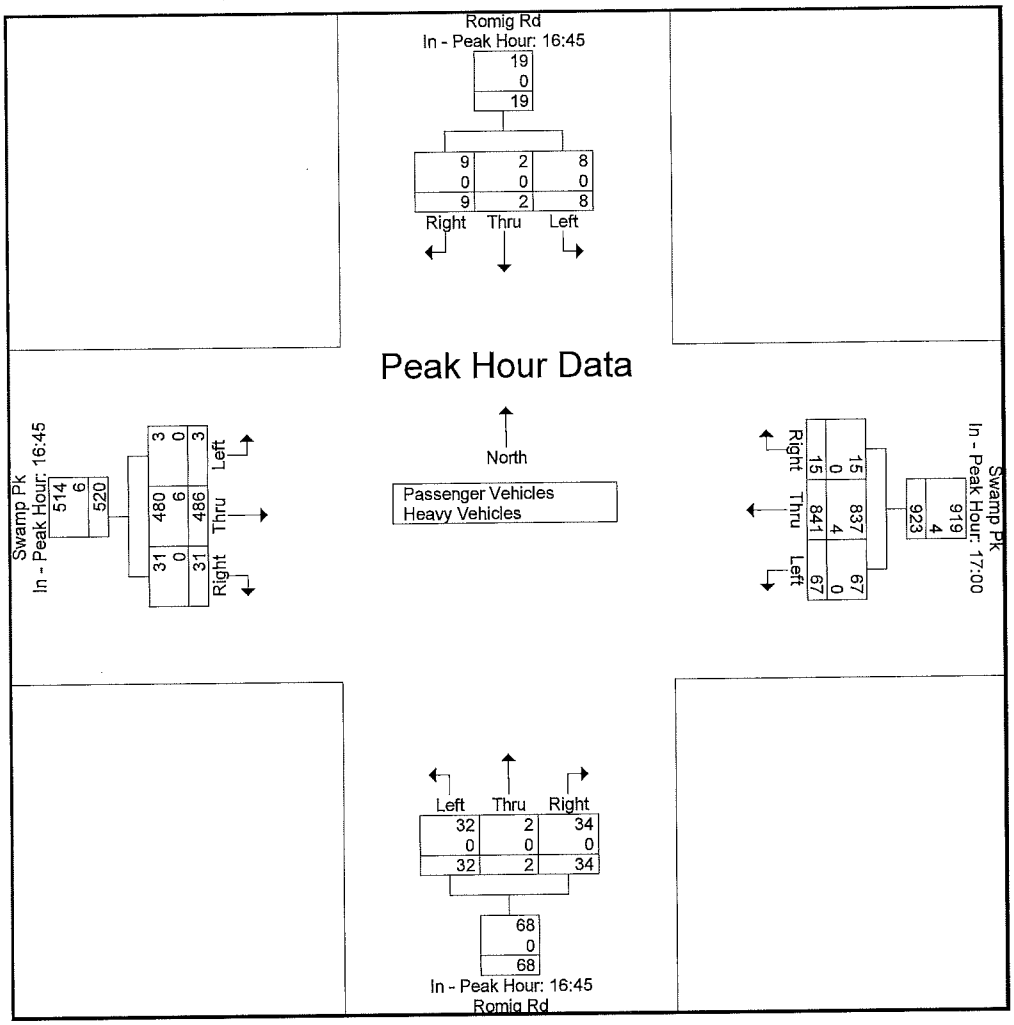
File Name : newhanact08p
Site Code : 81774908
Start Date : 5/24/2018
Page No : 3

	Romig Rd Southbound				Swamp Pk Westbound				Romig Rd Northbound				Swamp Pk Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	16:45				17:00				16:45				16:45				
+0 mins.	**3**	**1**	0	4	13	203	4	220	**9**	0	8	17	**2**	**133**	**10**	**145**	
+15 mins.	0	0	2	2	**19**	198	3	220	8	**2**	6	16	0	120	8	128	
+30 mins.	3	0	1	4	16	210	**6**	232	6	0	**10**	16	0	123	7	130	
+45 mins.	2	1	**6**	**9**	19	**230**	2	**251**	9	0	10	**19**	1	110	6	117	
Total Volume	8	2	9	19	67	841	15	923	32	2	34	68	3	486	31	520	
% App. Total	42.1	10.5	47.4		7.3	91.1	1.6		47.1	2.9	50		0.6	93.5	6		
PHF	.667	.500	.375	.528	.882	.914	.625	.919	.889	.250	.850	.895	.375	.914	.775	.897	
Passenger Vehicles	8	2	9	19	67	837	15	919	32	2	34	68	3	480	31	514	
% Passenger Vehicles	100	100	100	100	100	99.5	100	99.6	100	100	100	100	100	98.8	100	98.8	
Heavy Vehicles	0	0	0	0	0	4	0	4	0	0	0	0	0	6	0	6	
% Heavy Vehicles	0	0	0	0	0	0.5	0	0.4	0	0	0	0	0	1.2	0	1.2	



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Site Code : 81774908
Start Date : 5/24/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Romig Rd Southbound			Swamp Pk Westbound			Romig Rd Northbound			Swamp Pk Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	0	2	2	19	163	4	4	0	8	2	105	6	315
16:15	0	0	0	10	200	3	4	0	5	1	113	4	340
16:30	2	0	1	19	156	1	4	1	10	2	104	8	308
16:45	3	1	0	19	205	5	9	0	8	2	131	10	393
Total	5	3	3	67	724	13	21	1	31	7	453	28	1356
17:00	0	0	2	13	203	4	8	2	6	0	118	8	364
17:15	3	0	1	19	197	3	6	0	10	0	122	7	368
17:30	2	1	6	16	209	6	9	0	10	1	109	6	375
17:45	0	0	2	19	228	2	3	1	11	3	102	13	384
Total	5	1	11	67	837	15	26	3	37	4	451	34	1491
Grand Total	10	4	14	134	1561	28	47	4	68	11	904	62	2847
Apprch %	35.7	14.3	50	7.8	90.6	1.6	39.5	3.4	57.1	1.1	92.5	6.3	
Total %	0.4	0.1	0.5	4.7	54.8	1	1.7	0.1	2.4	0.4	31.8	2.2	

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File Name : newhanact08p
Site Code : 81774908
Start Date : 5/24/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Romig Rd Southbound			Swamp Pk Westbound			Romig Rd Northbound			Swamp Pk Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
16:00	0	1	0	0	4	1	1	0	0	0	2	0	9
16:15	0	0	1	0	4	0	0	0	0	1	1	0	7
16:30	0	0	0	0	1	0	0	0	0	0	2	0	3
16:45	0	0	0	0	3	0	0	0	0	0	2	0	5
Total	0	1	1	0	12	1	1	0	0	1	7	0	24
17:00	0	0	0	0	0	0	0	0	0	0	2	0	2
17:15	0	0	0	0	1	0	0	0	0	0	1	0	2
17:30	0	0	0	0	1	0	0	0	0	0	1	0	2
17:45	0	0	0	0	2	0	0	0	0	0	0	0	2
Total	0	0	0	0	4	0	0	0	0	0	4	0	8
Grand Total	0	1	1	0	16	1	1	0	0	1	11	0	32
Apprch %	0	50	50	0	94.1	5.9	100	0	0	8.3	91.7	0	
Total %	0	3.1	3.1	0	50	3.1	3.1	0	0	3.1	34.4	0	

SAFE Highway Engineering

36 Trevose Road
Trevose, PA 19053
www.SAFEHighwayengineering.com

Countboard: TU-1458
Weather: Cloudy
Chris Lemanowicz

File Name : Reifsnyder-Rosenberry Swamp
Site Code : 00000000
Start Date : 1/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Trucks - Buses

	Reifsnyder Rd From North					Swamp Pk From East					Rosenberry Rd From South					Swamp Pk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	3	0	2	0	5	0	96	1	0	97	4	0	12	0	16	1	198	1	0	200	318
07:15 AM	3	0	4	0	7	1	74	0	0	75	5	0	5	0	10	3	210	0	0	213	305
07:30 AM	1	0	3	0	4	0	74	1	0	75	3	1	4	0	8	3	219	0	0	222	309
07:45 AM	4	1	1	0	6	2	69	1	0	72	3	1	2	0	6	2	145	2	0	149	233
Total	11	1	10	0	22	3	313	3	0	319	15	2	23	0	40	9	772	3	0	784	1165
08:00 AM	0	0	1	0	1	2	91	1	0	94	11	0	4	0	15	2	158	0	0	160	270
08:15 AM	4	0	5	0	9	2	62	1	0	65	5	2	7	0	14	1	140	1	0	142	230
08:30 AM	3	0	1	0	4	0	63	3	0	66	4	0	3	0	7	1	119	2	0	122	199
08:45 AM	1	0	2	0	3	0	54	0	0	54	5	0	3	0	8	2	124	1	0	127	192
Total	8	0	9	0	17	4	270	5	0	279	25	2	17	0	44	6	541	4	0	551	891
*** BREAK ***																					
04:00 PM	0	3	0	0	3	4	183	3	0	190	3	0	2	0	5	5	89	6	0	100	298
04:15 PM	2	0	1	0	3	6	174	5	0	185	2	0	4	0	6	5	98	2	0	105	299
04:30 PM	2	1	0	0	3	5	233	7	0	245	1	1	5	0	7	9	104	5	0	118	373
04:45 PM	1	0	0	0	1	6	213	3	0	222	4	1	3	0	8	4	93	1	0	98	329
Total	5	4	1	0	10	21	803	18	0	842	10	2	14	0	26	23	384	14	0	421	1299
05:00 PM	3	0	3	0	6	3	177	5	0	185	1	2	4	0	7	10	97	3	0	110	308
05:15 PM	0	0	0	0	0	3	187	6	0	196	1	0	1	0	2	12	113	2	0	127	325
05:30 PM	3	3	1	0	7	7	217	6	0	230	2	2	5	0	9	7	108	1	0	116	362
05:45 PM	4	0	1	0	5	2	164	5	0	171	1	0	5	0	6	8	99	3	0	110	292
Total	10	3	5	0	18	15	745	22	0	782	5	4	15	0	24	37	417	9	0	463	1287
Grand Total	34	8	25	0	67	43	2131	48	0	2222	55	10	69	0	134	75	2114	30	0	2219	4642
Apprch %	50.7	11.9	37.3	0		1.9	95.9	2.2	0		41	7.5	51.5	0		3.4	95.3	1.4	0		
Total %	0.7	0.2	0.5	0	1.4	0.9	45.9	1	0	47.9	1.2	0.2	1.5	0	2.9	1.6	45.5	0.6	0	47.8	
Passenger Vehicles	32	7	25	0	64	41	2079	48	0	2168	55	10	68	0	133	74	2087	30	0	2191	4556
% Passenger Vehicles	94.1	87.5	100	0	95.5	95.3	97.6	100	0	97.6	100	100	98.6	0	99.3	98.7	98.7	100	0	98.7	98.1
Trucks	1	0	0	0	1	1	28	0	0	29	0	0	1	0	1	0	16	0	0	16	47
% Trucks	2.9	0	0	0	1.5	2.3	1.3	0	0	1.3	0	0	1.4	0	0.7	0	0.8	0	0	0.7	1
Buses	1	1	0	0	2	1	24	0	0	25	0	0	0	0	0	1	11	0	0	12	39
% Buses	2.9	12.5	0	0	3	2.3	1.1	0	0	1.1	0	0	0	0	0	1.3	0.5	0	0	0.5	0.8

SAFE Highway Engineering

36 Trevose Road
Trevose, PA 19053
www.SAFEHighwayengineering.com

Countboard: TU-1458
Weather: Cloudy
Chris Lemanowicz

File Name : Reifsnyder-Rosenberry Swamp
Site Code : 00000000
Start Date : 1/23/2018
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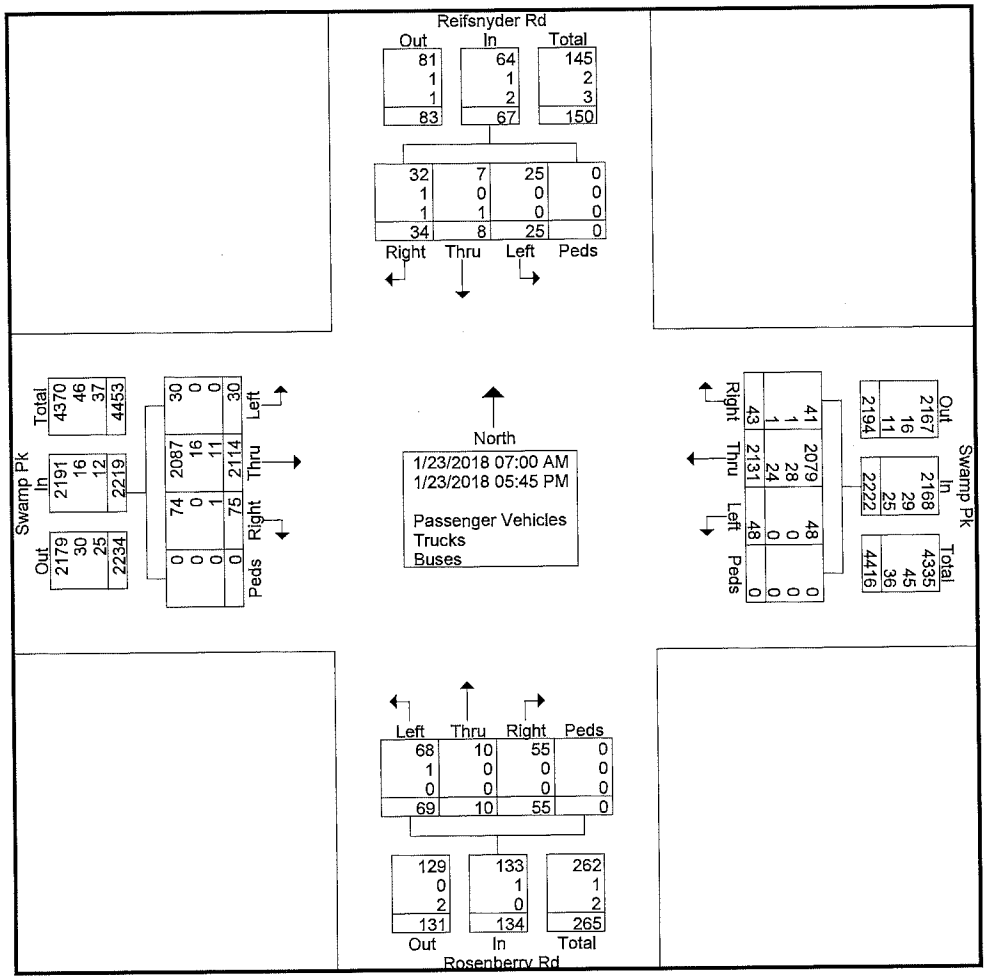

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Countboard: TU-1458
Weather: Cloudy
Chris Lemanowicz

File Name : Reifsnyder-Rosenberry Swamp
Site Code : 00000000
Start Date : 1/23/2018
Page No : 3

	Reifsnyder Rd From North					Swamp Pk From East					Rosenberry Rd From South					Swamp Pk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	3	0	2	0	5	0	**96**	**1**	0	**97**	4	0	**12**	0	**16**	1	198	1	0	200	**318**
07:15 AM	3	0	4	0	**7**	1	74	0	0	75	**5**	0	5	0	10	**3**	210	0	0	213	305
07:30 AM	1	0	3	0	4	0	74	1	0	75	3	**1**	4	0	8	3	**219**	0	0	**222**	309
07:45 AM	**4**	**1**	1	0	6	**2**	69	1	0	72	3	1	2	0	6	2	145	**2**	0	149	233
Total Volume	11	1	10	0	22	3	313	3	0	319	15	2	23	0	40	9	772	3	0	784	1165
% App. Total	50	4.5	45.5	0		0.9	98.1	0.9	0		37.5	5	57.5	0		1.1	98.5	0.4	0		
PHF	.688	.250	.625	.000	.786	.375	.815	.750	.000	.822	.750	.500	.479	.000	.625	.750	.881	.375	.000	.883	.916
Passenger Vehicles	10	1	10	0	21	3	291	3	0	297	15	2	23	0	40	9	760	3	0	772	1130
% Passenger Vehicles	90.9	100	100	0	95.5	100	93.0	100	0	93.1	100	100	100	0	100	100	98.4	100	0	98.5	97.0
Trucks	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	6	0	0	6	15
% Trucks	0	0	0	0	0	0	2.9	0	0	2.8	0	0	0	0	0	0	0.8	0	0	0.8	1.3
Buses	1	0	0	0	1	0	13	0	0	13	0	0	0	0	0	0	6	0	0	6	20
% Buses	9.1	0	0	0	4.5	0	4.2	0	0	4.1	0	0	0	0	0	0	0.8	0	0	0.8	1.7

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Trevose, PA 19053
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Countboard: TU-1458
Weather: Cloudy
Chris Lemanowicz

File Name : Reifsnyder-Rosenberry Swamp
Site Code : 00000000
Start Date : 1/23/2018

	Reifsnyder Rd From North					Swamp Pk From East					Rosenberry Rd From South					Swamp Pk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	2	**1**	0	0	3	5	**233**	7	0	**245**	1	1	**5**	0	7	9	104	**5**	0	118	**373**
04:45 PM	1	0	0	0	1	**6**	213	3	0	222	4	1	3	0	**8**	4	93	1	0	98	329
05:00 PM	**3**	0	**3**	0	**6**	3	177	5	0	185	1	**2**	4	0	7	10	97	3	0	110	308
05:15 PM	0	0	0	0	0	3	187	6	0	196	1	0	1	0	2	**12**	**113**	2	0	**127**	325
Total Volume	6	1	3	0	10	17	810	21	0	848	7	4	13	0	24	35	407	11	0	453	1335
% App. Total	60	10	30	0		2	95.5	2.5	0		29.2	16.7	54.2	0		7.7	89.8	2.4	0		
PHF	.500	.250	.250	.000	.417	.708	.869	.750	.000	.865	.438	.500	.650	.000	.750	.729	.900	.550	.000	.892	.895
Passenger Vehicles	6	1	3	0	10	17	805	21	0	843	7	4	13	0	24	35	403	11	0	449	1326
% Passenger Vehicles	100	100	100	0	100	100	99.4	100	0	99.4	100	100	100	0	100	100	99.0	100	0	99.1	99.3
Trucks	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
% Trucks	0	0	0	0	0	0	0.5	0	0	0.5	0	0	0	0	0	0	1.0	0	0	0.9	0.6
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0.1

SAFE Highway Engineering

36 Trevose Road
Trevose, PA 19053
www.SAFEHighwayengineering.com

Countboard: TU-1458
Weather: Clear
Chris Lemanowicz

File Name : NH & Swamp
Site Code : 00000000
Start Date : 1/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Trucks - Buses

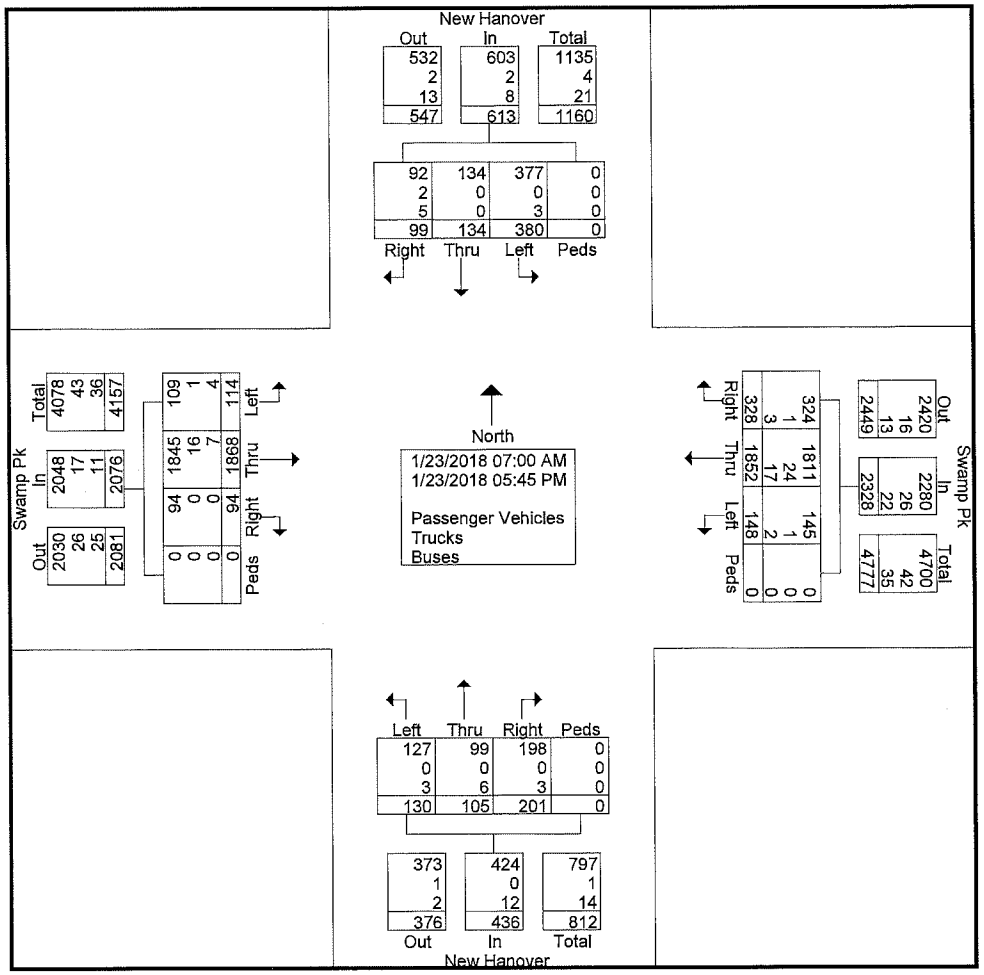
	New Hanover From North					Swamp Pk From East					New Hanover From South					Swamp Pk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	15	6	36	0	57	12	53	1	0	66	24	3	18	0	45	4	194	2	0	200	368
07:15 AM	8	7	42	0	57	6	60	2	0	68	23	1	6	0	30	3	199	13	0	215	370
07:30 AM	7	9	35	0	51	10	63	3	0	76	33	7	6	0	46	4	214	3	0	221	394
07:45 AM	9	13	32	0	54	3	58	5	0	66	14	3	12	0	29	6	126	2	0	134	283
Total	39	35	145	0	219	31	234	11	0	276	94	14	42	0	150	17	733	20	0	770	1415
08:00 AM	9	8	33	0	50	11	67	4	0	82	18	6	12	0	36	4	162	9	0	175	343
08:15 AM	9	5	22	0	36	4	47	4	0	55	10	7	3	0	20	5	121	2	0	128	239
08:30 AM	11	11	24	0	46	10	50	8	0	68	17	6	2	0	25	5	114	6	0	125	264
08:45 AM	5	10	18	0	33	4	45	5	0	54	10	4	6	0	20	3	119	5	0	127	234
Total	34	34	97	0	165	29	209	21	0	259	55	23	23	0	101	17	516	22	0	555	1080
*** BREAK ***																					
04:00 PM	4	5	18	0	27	24	154	13	0	191	6	2	12	0	20	5	80	6	0	91	329
04:15 PM	6	3	19	0	28	31	159	18	0	208	7	12	6	0	25	7	78	7	0	92	353
04:30 PM	5	7	11	0	23	37	197	14	0	248	4	12	6	0	22	14	67	6	0	87	380
04:45 PM	3	8	13	0	24	42	209	10	0	261	7	8	17	0	32	4	74	19	0	97	414
Total	18	23	61	0	102	134	719	55	0	908	24	34	41	0	99	30	299	38	0	367	1476
05:00 PM	2	7	16	0	25	36	179	6	0	221	7	10	3	0	20	7	77	10	0	94	360
05:15 PM	2	14	17	0	33	37	177	21	0	235	6	6	6	0	18	12	94	6	0	112	398
05:30 PM	1	10	32	0	43	36	190	18	0	244	6	9	10	0	25	5	79	7	0	91	403
05:45 PM	3	11	12	0	26	25	144	16	0	185	9	9	5	0	23	6	70	11	0	87	321
Total	8	42	77	0	127	134	690	61	0	885	28	34	24	0	86	30	320	34	0	384	1482
Grand Total	99	134	380	0	613	328	1852	148	0	2328	201	105	130	0	436	94	1868	114	0	2076	5453
Apprch %	16.2	21.9	62	0		14.1	79.6	6.4	0		46.1	24.1	29.8	0		4.5	90	5.5	0		
Total %	1.8	2.5	7	0	11.2	6	34	2.7	0	42.7	3.7	1.9	2.4	0	8	1.7	34.3	2.1	0	38.1	
Passenger Vehicles	92	134	377	0	603	324	1811	145	0	2280	198	99	127	0	424	94	1845	109	0	2048	5355
% Passenger Vehicles	92.9	100	99.2	0	98.4	98.8	97.8	98	0	97.9	98.5	94.3	97.7	0	97.2	100	98.8	95.6	0	98.7	98.2
Trucks	2	0	0	0	2	1	24	1	0	26	0	0	0	0	0	0	16	1	0	17	45
% Trucks	2	0	0	0	0.3	0.3	1.3	0.7	0	1.1	0	0	0	0	0	0	0.9	0.9	0	0.8	0.8
Buses	5	0	3	0	8	3	17	2	0	22	3	6	3	0	12	0	7	4	0	11	53
% Buses	5.1	0	0.8	0	1.3	0.9	0.9	1.4	0	0.9	1.5	5.7	2.3	0	2.8	0	0.4	3.5	0	0.5	1

SAFE Highway Engineering

36 Trevose Road
Trevose, PA 19053
www.SAFEHighwayengineering.com

Countboard: TU-1458
Weather: Clear
Chris Lemanowicz

File Name : NH & Swamp
Site Code : 00000000
Start Date : 1/23/2018
Page No : 2



SAFE Highway Engineering

36 Trevose Road
Trevose, PA 19053
www.SAFEHighwayengineering.com

Countboard: TU-1458
Weather: Clear
Chris Lemanowicz

File Name : NH & Swamp
Site Code : 00000000
Start Date : 1/23/2018

	New Hanover From North					Swamp Pk From East					New Hanover From South					Swamp Pk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	**15**	6	36	0	**57**	**12**	53	1	0	66	24	3	**18**	0	45	4	194	2	0	200	368
07:15 AM	8	7	**42**	0	57	6	60	2	0	68	23	1	6	0	30	3	199	**13**	0	215	370
07:30 AM	7	9	35	0	51	10	**63**	3	0	**76**	**33**	7	6	0	**46**	4	**214**	3	0	**221**	**394**
07:45 AM	9	**13**	32	0	54	3	58	**5**	0	66	14	3	12	0	29	**6**	126	2	0	134	283
Total Volume	39	35	145	0	219	31	234	11	0	276	94	14	42	0	150	17	733	20	0	770	1415
% App. Total	17.8	16	66.2	0		11.2	84.8	4	0		62.7	9.3	28	0		2.2	95.2	2.6	0		
PHF	.650	.673	.863	.000	.961	.646	.929	.550	.000	.908	.712	.500	.583	.000	.815	.708	.856	.385	.000	.871	.898
Passenger Vehicles	36	35	142	0	213	29	215	10	0	254	91	10	41	0	142	17	720	19	0	756	1365
% Passenger Vehicles	92.3	100	97.9	0	97.3	93.5	91.9	90.9	0	92.0	96.8	71.4	97.6	0	94.7	100	98.2	95.0	0	98.2	96.5
Trucks	1	0	0	0	1	0	8	0	0	8	0	0	0	0	0	0	8	0	0	8	17
% Trucks	2.6	0	0	0	0.5	0	3.4	0	0	2.9	0	0	0	0	0	0	1.1	0	0	1.0	1.2
Buses	2	0	3	0	5	2	11	1	0	14	3	4	1	0	8	0	5	1	0	6	33
% Buses	5.1	0	2.1	0	2.3	6.5	4.7	9.1	0	5.1	3.2	28.6	2.4	0	5.3	0	0.7	5.0	0	0.8	2.3

SAFE Highway Engineering

36 Trevose Road
Trevose, PA 19053
www.SAFEHighwayengineering.com

Countboard: TU-1458
Weather: Clear
Chris Lemanowicz

File Name : NH & Swamp
Site Code : 00000000
Start Date : 1/23/2018

	New Hanover From North					Swamp Pk From East					New Hanover From South					Swamp Pk From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	3	8	13	0	24	42	209	10	0	261	7	8	17	0	32	4	74	19	0	97	414
05:00 PM	2	7	16	0	25	36	179	6	0	221	7	10	3	0	20	7	77	10	0	94	360
05:15 PM	2	14	17	0	33	37	177	21	0	235	6	6	6	0	18	12	94	6	0	112	398
05:30 PM	1	10	32	0	43	36	190	18	0	244	6	9	10	0	25	5	79	7	0	91	403
Total Volume	8	39	78	0	125	151	755	55	0	961	26	33	36	0	95	28	324	42	0	394	1575
% App. Total	6.4	31.2	62.4	0		15.7	78.6	5.7	0		27.4	34.7	37.9	0		7.1	82.2	10.7	0		
PHF	.667	.696	.609	.000	.727	.899	.903	.655	.000	.920	.929	.825	.529	.000	.742	.583	.862	.553	.000	.879	.951
Passenger Vehicles	8	39	78	0	125	151	751	55	0	957	26	33	36	0	95	28	319	41	0	388	1565
% Passenger Vehicles	100	100	100	0	100	100	99.5	100	0	99.6	100	100	100	0	100	100	98.5	97.6	0	98.5	99.4
Trucks	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	1	0	5	9
% Trucks	0	0	0	0	0	0	0.5	0	0	0.4	0	0	0	0	0	0	1.2	2.4	0	1.3	0.6
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.3	0.1

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Wagner Road
Counter: TB

File Name : newhanact07p
Site Code : 81774907
Start Date : 5/24/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Wagner Rd Southbound		Swamp Pk Westbound		Swamp Pk Eastbound		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
16:00	1	8	199	1	14	127	350
16:15	1	9	224	0	15	127	376
16:30	2	22	249	3	9	123	408
16:45	1	16	271	0	9	144	441
Total	5	55	943	4	47	521	1575
17:00	0	16	259	2	9	124	410
17:15	0	13	258	2	7	166	446
17:30	0	11	251	0	11	137	410
17:45	1	15	263	0	7	137	423
Total	1	55	1031	4	34	564	1689
Grand Total	6	110	1974	8	81	1085	3264
Apprch %	5.2	94.8	99.6	0.4	6.9	93.1	
Total %	0.2	3.4	60.5	0.2	2.5	33.2	
Passenger Vehicles	6	110	1949	8	81	1062	3216
% Passenger Vehicles	100	100	98.7	100	100	97.9	98.5
Heavy Vehicles	0	0	25	0	0	23	48
% Heavy Vehicles	0	0	1.3	0	0	2.1	1.5

Zero Pedestrians were observed during this study.

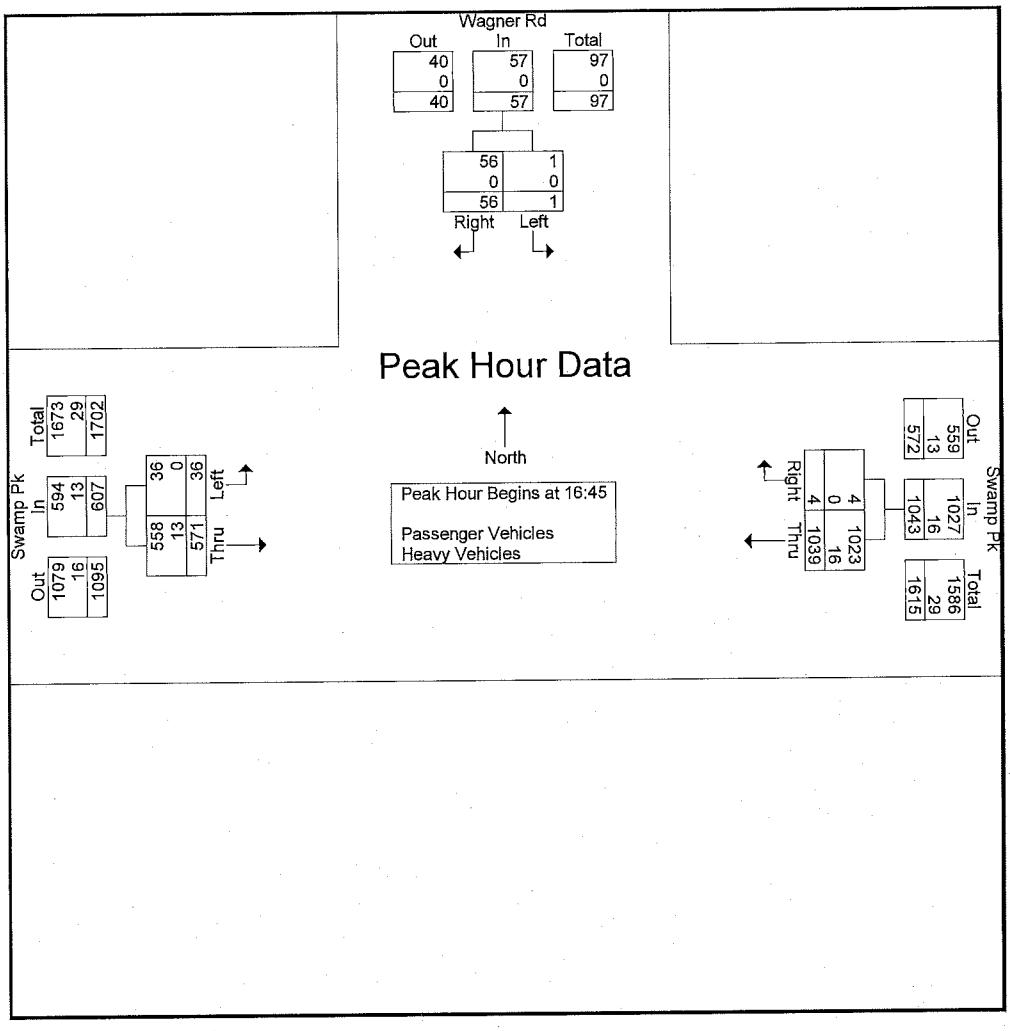
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Wagner Road
Counter: TB

File Name : newhanact07p
Site Code : 81774907
Start Date : 5/24/2018
Page No : 2

	Wagner Rd Southbound			Swamp Pk Westbound			Swamp Pk Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:45										
16:45	**1**	**16**	**17**	**271**	0	**271**	9	144	153	441
17:00	0	16	16	259	**2**	261	9	124	133	410
17:15	0	13	13	258	2	260	7	**166**	**173**	**446**
17:30	0	11	11	251	0	251	**11**	137	148	410
Total Volume	1	56	57	1039	4	1043	36	571	607	1707
% App. Total	1.8	98.2		99.6	0.4		5.9	94.1		
PHF	.250	.875	.838	.958	.500	.962	.818	.860	.877	.957
Passenger Vehicles	1	56	57	1023	4	1027	36	558	594	1678
% Passenger Vehicles	100	100	100	98.5	100	98.5	100	97.7	97.9	98.3
Heavy Vehicles	0	0	0	16	0	16	0	13	13	29
% Heavy Vehicles	0	0	0	1.5	0	1.5	0	2.3	2.1	1.7



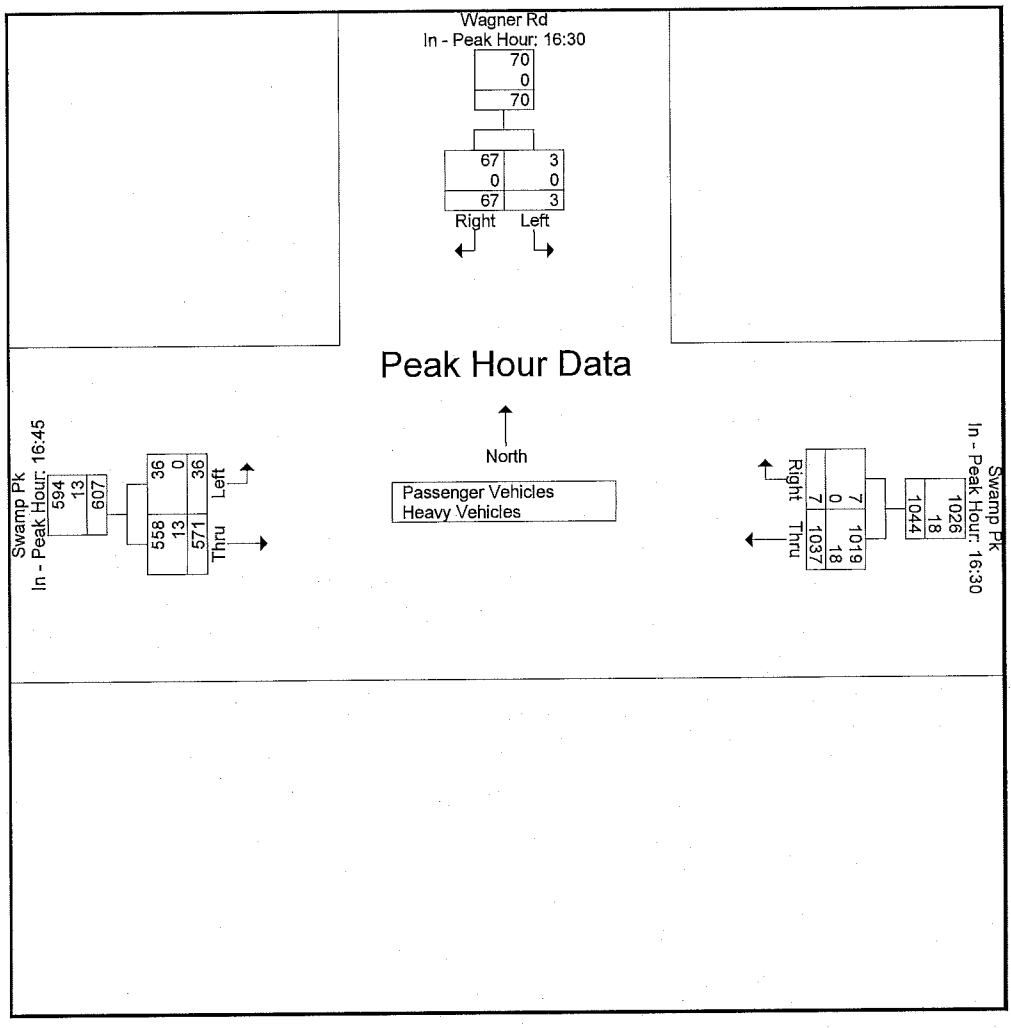
McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Wagner Road
Counter: TB

File Name : newhanact07p
Site Code : 81774907
Start Date : 5/24/2018
Page No : 3

	Wagner Rd Southbound			Swamp Pk Westbound			Swamp Pk Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1										
Peak Hour for Each Approach Begins at:										
	16:30			16:30			16:45			
+0 mins.	**2**	**22**	**24**	249	**3**	252	9	144	153	
+15 mins.	1	16	17	**271**	0	**271**	9	124	133	
+30 mins.	0	16	16	259	2	261	7	**166**	**173**	
+45 mins.	0	13	13	258	2	260	**11**	137	148	
Total Volume	3	67	70	1037	7	1044	36	571	607	
% App. Total	4.3	95.7		99.3	0.7		5.9	94.1		
PHF	.375	.761	.729	.957	.583	.963	.818	.860	.877	
Passenger Vehicles	3	67	70	1019	7	1026	36	558	594	
% Passenger Vehicles	100	100	100	98.3	100	98.3	100	97.7	97.9	
Heavy Vehicles	0	0	0	18	0	18	0	13	13	
% Heavy Vehicles	0	0	0	1.7	0	1.7	0	2.3	2.1	



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Wagner Road
Counter: TB

File Name : newhanact07p
Site Code : 81774907
Start Date : 5/24/2018
Page No : 1

Groups Printed- Passenger Vehicles

	Wagner Rd Southbound		Swamp Pk Westbound		Swamp Pk Eastbound		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
16:00	1	8	198	1	14	125	347
16:15	1	9	222	0	15	123	370
16:30	2	22	244	3	9	120	400
16:45	1	16	267	0	9	139	432
Total	5	55	931	4	47	507	1549
17:00	0	16	254	2	9	122	403
17:15	0	13	254	2	7	162	438
17:30	0	11	248	0	11	135	405
17:45	1	15	262	0	7	136	421
Total	1	55	1018	4	34	555	1667
Grand Total	6	110	1949	8	81	1062	3216
Apprch %	5.2	94.8	99.6	0.4	7.1	92.9	
Total %	0.2	3.4	60.6	0.2	2.5	33	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Wagner Road
Counter: TB

File Name : newhanact07p
Site Code : 81774907
Start Date : 5/24/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Wagner Rd Southbound		Swamp Pk Westbound		Swamp Pk Eastbound		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
16:00	0	0	1	0	0	2	3
16:15	0	0	2	0	0	4	6
16:30	0	0	5	0	0	3	8
16:45	0	0	4	0	0	5	9
Total	0	0	12	0	0	14	26
17:00	0	0	5	0	0	2	7
17:15	0	0	4	0	0	4	8
17:30	0	0	3	0	0	2	5
17:45	0	0	1	0	0	1	2
Total	0	0	13	0	0	9	22
Grand Total	0	0	25	0	0	23	48
Apprch %	0	0	100	0	0	100	
Total %	0	0	52.1	0	0	47.9	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Fagleysville Road / Sanatoga Road
Counter: BW

File Name : newhanact06w
Site Code : 81774906
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Fagleysville Rd Southbound				Swamp Pk Westbound				Sanatoga Rd Northbound				Swamp Pk Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
07:00	8	7	0	4	1	52	0	5	7	5	0	8	2	234	0	4	337
07:15	9	4	0	3	2	50	0	2	5	11	0	4	0	232	0	6	328
07:30	12	8	0	3	4	66	0	1	2	8	0	7	4	242	0	4	361
07:45	4	14	0	1	7	77	0	3	6	9	0	2	0	197	0	2	322
Total	33	33	0	11	14	245	0	11	20	33	0	21	6	905	0	16	1348
08:00	3	4	0	0	4	50	0	1	2	7	0	4	0	177	0	3	255
08:15	4	8	0	0	3	69	0	1	7	7	0	4	2	143	0	10	258
08:30	6	6	0	3	2	60	0	11	6	5	0	8	2	164	0	3	276
08:45	5	7	0	0	2	70	0	4	2	8	0	2	0	173	0	7	280
Total	18	25	0	3	11	249	0	17	17	27	0	18	4	657	0	23	1069
*** BREAK ***																	
16:00	7	3	0	3	4	183	0	8	9	10	0	6	2	87	0	4	326
16:15	6	8	0	2	2	212	0	7	15	9	0	5	1	89	0	12	368
16:30	6	8	0	0	8	228	0	9	2	9	0	3	1	105	0	7	386
16:45	9	10	0	3	4	217	0	10	12	11	0	6	4	87	0	6	379
Total	28	29	0	8	18	840	0	34	38	39	0	20	8	368	0	29	1459
17:00	7	12	0	2	8	219	0	9	20	11	0	7	1	112	0	7	415
17:15	8	13	0	2	1	232	0	4	17	15	0	5	1	114	0	3	415
17:30	1	10	0	3	12	217	0	7	11	6	0	4	3	108	0	6	388
17:45	2	11	0	2	9	232	0	9	8	10	0	3	4	116	0	10	416
Total	18	46	0	9	30	900	0	29	56	42	0	19	9	450	0	26	1634
Grand Total	97	133	0	31	73	2234	0	91	131	141	0	78	27	2380	0	94	5510
Apprch %	37.2	51	0	11.9	3	93.2	0	3.8	37.4	40.3	0	22.3	1.1	95.2	0	3.8	
Total %	1.8	2.4	0	0.6	1.3	40.5	0	1.7	2.4	2.6	0	1.4	0.5	43.2	0	1.7	
Passenger Vehicles	96	129	0	26	70	2183	0	87	129	137	0	76	24	2323	0	91	5371
% Passenger Vehicles	99	97	0	83.9	95.9	97.7	0	95.6	98.5	97.2	0	97.4	88.9	97.6	0	96.8	97.5
Heavy Vehicles	1	4	0	5	3	51	0	4	2	4	0	2	3	57	0	3	139
% Heavy Vehicles	1	3	0	16.1	4.1	2.3	0	4.4	1.5	2.8	0	2.6	11.1	2.4	0	3.2	2.5

Zero Pedestriasns were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Fagleysville Road / Sanatoga Road
Counter: BW

File Name : newhanact06w
Site Code : 81774906
Start Date : 5/23/2018
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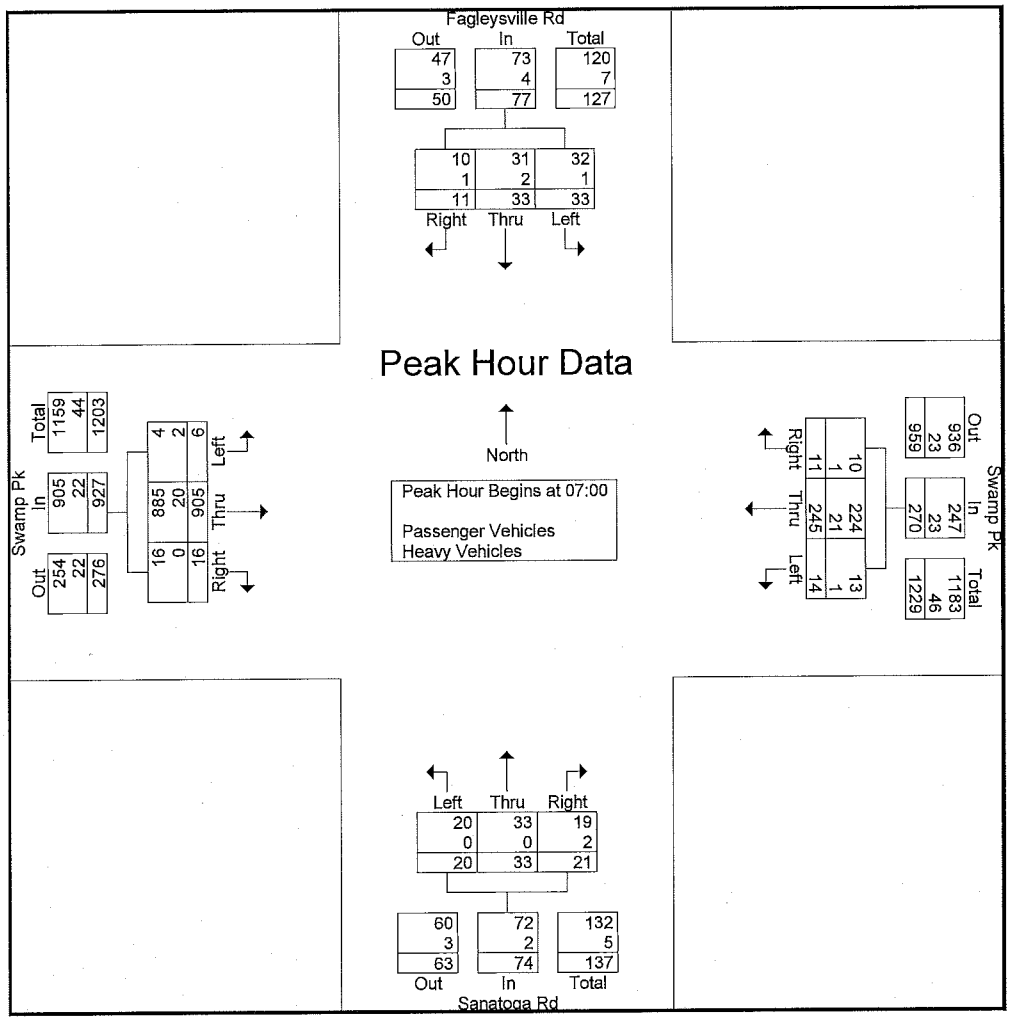
	Fagleysville Rd Southbound					Swamp Pk Westbound					Sanatoga Rd Northbound					Swamp Pk Eastbound					
Start Time	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00																					
07:00	8	7	0	**4**	19	1	52	0	**5**	58	**7**	5	0	**8**	**20**	2	234	0	4	240	337
07:15	9	4	0	3	16	2	50	0	2	54	5	**11**	0	4	20	0	232	0	**6**	238	328
07:30	**12**	8	0	3	**23**	4	66	0	1	71	2	8	0	7	17	**4**	**242**	0	4	**250**	**361**
07:45	4	**14**	0	1	19	**7**	**77**	0	3	**87**	6	9	0	2	17	0	197	0	2	199	322
Total Volume	33	33	0	11	77	14	245	0	11	270	20	33	0	21	74	6	905	0	16	927	1348
% App. Total	42.9	42.9	0	14.3		5.2	90.7	0	4.1		27	44.6	0	28.4		0.6	97.6	0	1.7		
PHF	.688	.589	.000	.688	.837	.500	.795	.000	.550	.776	.714	.750	.000	.656	.925	.375	.935	.000	.667	.927	.934
Passenger Vehicles																					
% Passenger Vehicles	97.0	93.9	0	90.9	94.8	92.9	91.4	0	90.9	91.5	100	100	0	90.5	97.3	66.7	97.8	0	100	97.6	96.2
Heavy Vehicles																					
% Heavy Vehicles	3.0	6.1	0	9.1	5.2	7.1	8.6	0	9.1	8.5	0	0	0	9.5	2.7	33.3	2.2	0	0	2.4	3.8



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
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File Name : newhanact06w
Site Code : 81774906
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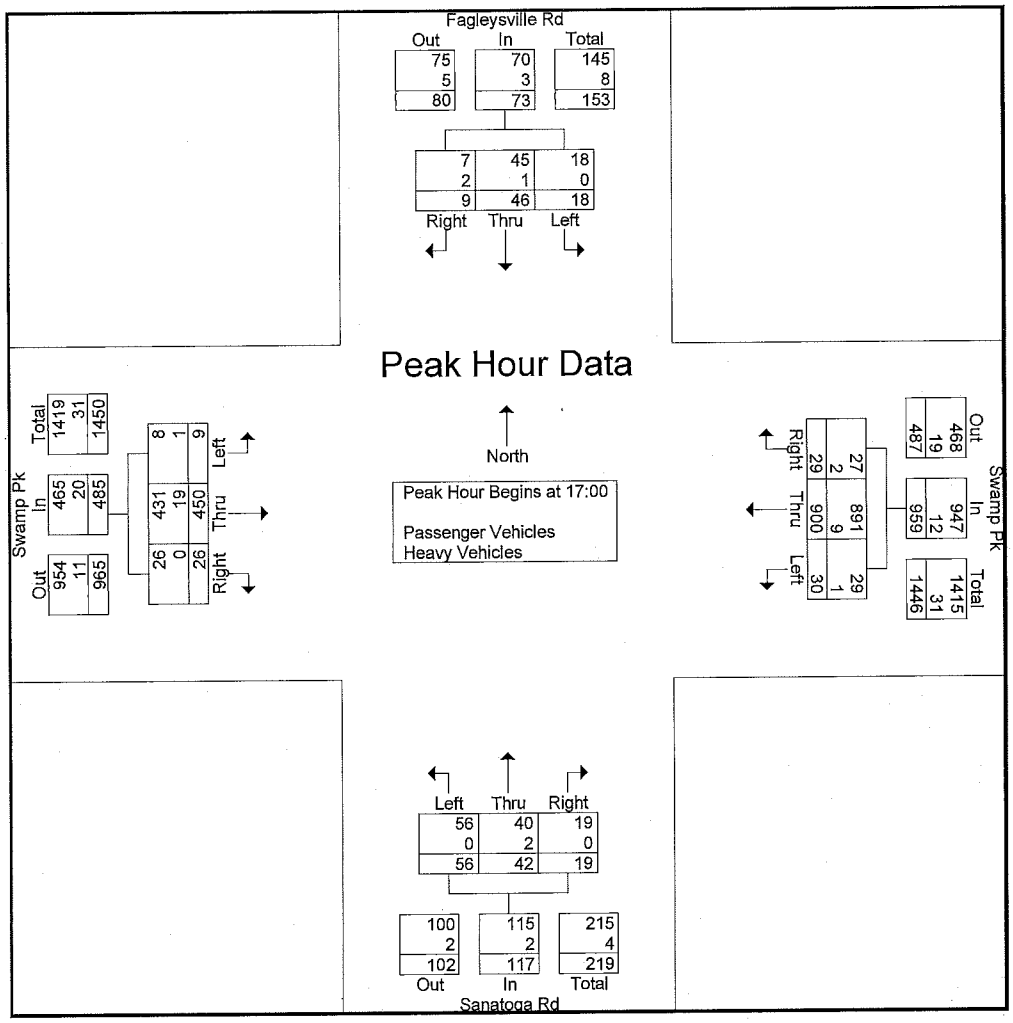
	Fagleysville Rd Southbound					Swamp Pk Westbound					Sanatoga Rd Northbound					Swamp Pk Eastbound					
Start Time	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	7	12	0	2	21	8	219	0	**9**	236	**20**	11	0	**7**	**38**	1	112	0	7	120	415
17:15	**8**	**13**	0	2	**23**	1	**232**	0	4	237	17	**15**	0	5	37	1	114	0	3	118	415
17:30	1	10	0	**3**	14	**12**	217	0	7	236	11	6	0	4	21	3	108	0	6	117	388
17:45	2	11	0	2	15	9	232	0	9	**250**	8	10	0	3	21	**4**	**116**	0	**10**	**130**	**416**
Total Volume	18	46	0	9	73	30	900	0	29	959	56	42	0	19	117	9	450	0	26	485	1634
% App. Total	24.7	63	0	12.3		3.1	93.8	0	3		47.9	35.9	0	16.2		1.9	92.8	0	5.4		
PHF	.563	.885	.000	.750	.793	.625	.970	.000	.806	.959	.700	.700	.000	.679	.770	.563	.970	.000	.650	.933	.982
Passenger Vehicles	100	97.8	0	77.8	95.9	96.7	99.0	0	93.1	98.7	100	95.2	0	100	98.3	88.9	95.8	0	100	95.9	97.7
% Passenger Vehicles																					
Heavy Vehicles	0	2.2	0	22.2	4.1	3.3	1.0	0	6.9	1.3	0	4.8	0	0	1.7	11.1	4.2	0	0	4.1	2.3
% Heavy Vehicles																					



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
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Counter: BW

File Name : newhanact06w
Site Code : 81774906
Start Date : 5/23/2018
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Groups Printed- Passenger Vehicles

	Fagleysville Rd Southbound				Swamp Pk Westbound				Sanatoga Rd Northbound				Swamp Pk Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
07:00	8	7	0	4	1	48	0	5	7	5	0	7	0	232	0	4	328
07:15	9	4	0	2	2	46	0	2	5	11	0	3	0	229	0	6	319
07:30	11	7	0	3	4	59	0	1	2	8	0	7	4	233	0	4	343
07:45	4	13	0	1	6	71	0	2	6	9	0	2	0	191	0	2	307
Total	32	31	0	10	13	224	0	10	20	33	0	19	4	885	0	16	1297
08:00	3	4	0	0	4	50	0	1	2	6	0	4	0	174	0	2	250
08:15	4	8	0	0	3	63	0	0	6	7	0	4	2	143	0	10	250
08:30	6	6	0	2	1	55	0	11	6	5	0	8	2	161	0	3	266
08:45	5	7	0	0	2	69	0	4	2	8	0	2	0	168	0	6	273
Total	18	25	0	2	10	237	0	16	16	26	0	18	4	646	0	21	1039
*** BREAK ***																	
16:00	7	3	0	2	4	180	0	8	9	9	0	6	2	85	0	4	319
16:15	6	8	0	2	2	212	0	7	14	9	0	5	1	87	0	11	364
16:30	6	8	0	0	8	224	0	9	2	9	0	3	1	102	0	7	379
16:45	9	9	0	3	4	215	0	10	12	11	0	6	4	87	0	6	376
Total	28	28	0	7	18	831	0	34	37	38	0	20	8	361	0	28	1438
17:00	7	12	0	2	8	219	0	9	20	11	0	7	1	103	0	7	406
17:15	8	13	0	2	1	230	0	3	17	14	0	5	1	110	0	3	407
17:30	1	9	0	1	11	212	0	7	11	5	0	4	2	106	0	6	375
17:45	2	11	0	2	9	230	0	8	8	10	0	3	4	112	0	10	409
Total	18	45	0	7	29	891	0	27	56	40	0	19	8	431	0	26	1597
Grand Total	96	129	0	26	70	2183	0	87	129	137	0	76	24	2323	0	91	5371
Apprch %	38.2	51.4	0	10.4	3	93.3	0	3.7	37.7	40.1	0	22.2	1	95.3	0	3.7	
Total %	1.8	2.4	0	0.5	1.3	40.6	0	1.6	2.4	2.6	0	1.4	0.4	43.3	0	1.7	

McMahon Associates, Inc.

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Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Swamp Pike &
Fagleysville Road / Sanatoga Road
Counter: BW

File Name : newhanact06w
Site Code : 81774906
Start Date : 5/23/2018
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Groups Printed- Heavy Vehicles

	Fagleysville Rd Southbound				Swamp Pk Westbound				Sanatoga Rd Northbound				Swamp Pk Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
07:00	0	0	0	0	0	4	0	0	0	0	0	1	2	2	0	0	9
07:15	0	0	0	1	0	4	0	0	0	0	0	1	0	3	0	0	9
07:30	1	1	0	0	0	7	0	0	0	0	0	0	0	9	0	0	18
07:45	0	1	0	0	1	6	0	1	0	0	0	0	0	6	0	0	15
Total	1	2	0	1	1	21	0	1	0	0	0	2	2	20	0	0	51
08:00	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	1	5
08:15	0	0	0	0	0	6	0	1	1	0	0	0	0	0	0	0	8
08:30	0	0	0	1	1	5	0	0	0	0	0	0	0	3	0	0	10
08:45	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	1	7
Total	0	0	0	1	1	12	0	1	1	1	0	0	0	11	0	2	30
*** BREAK ***																	
16:00	0	0	0	1	0	3	0	0	0	1	0	0	0	2	0	0	7
16:15	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	1	4
16:30	0	0	0	0	0	4	0	0	0	0	0	0	0	3	0	0	7
16:45	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
Total	0	1	0	1	0	9	0	0	1	1	0	0	0	7	0	1	21
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9
17:15	0	0	0	0	0	2	0	1	0	1	0	0	0	4	0	0	8
17:30	0	1	0	2	1	5	0	0	0	1	0	0	1	2	0	0	13
17:45	0	0	0	0	0	2	0	1	0	0	0	0	0	4	0	0	7
Total	0	1	0	2	1	9	0	2	0	2	0	0	1	19	0	0	37
Grand Total	1	4	0	5	3	51	0	4	2	4	0	2	3	57	0	3	139
Apprch %	10	40	0	50	5.2	87.9	0	6.9	25	50	0	25	4.8	90.5	0	4.8	
Total %	0.7	2.9	0	3.6	2.2	36.7	0	2.9	1.4	2.9	0	1.4	2.2	41	0	2.2	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Kleman Road
Counter: HP

File Name : newhanact05w
Site Code : 81774905
Start Date : 5/23/2018
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Route 663 Southbound		Route 663 Northbound		Kleman Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00	63	4	1	89	19	4	180
07:15	66	4	5	84	12	9	180
07:30	71	4	0	77	15	13	180
07:45	96	3	3	66	12	7	187
Total	296	15	9	316	58	33	727
08:00	76	3	3	89	12	10	193
08:15	86	7	1	65	17	8	184
08:30	72	3	1	71	23	7	177
08:45	89	1	0	72	13	12	187
Total	323	14	5	297	65	37	741
*** BREAK ***							
16:00	107	8	4	73	10	3	205
16:15	106	10	8	104	7	13	248
16:30	124	17	4	62	10	5	222
16:45	143	12	10	86	14	7	272
Total	480	47	26	325	41	28	947
17:00	147	11	11	97	8	4	278
17:15	129	13	4	91	13	2	252
17:30	136	10	15	119	7	10	297
17:45	84	24	18	69	10	8	213
Total	496	58	48	376	38	24	1040
Grand Total	1595	134	88	1314	202	122	3455
Apprch %	92.2	7.8	6.3	93.7	62.3	37.7	
Total %	46.2	3.9	2.5	38	5.8	3.5	
Passenger Vehicles	1506	133	87	1260	194	113	3293
% Passenger Vehicles	94.4	99.3	98.9	95.9	96	92.6	95.3
Heavy Vehicles	89	1	1	54	8	9	162
% Heavy Vehicles	5.6	0.7	1.1	4.1	4	7.4	4.7

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Kleman Road
Counter: HP

File Name : newhanact05w
Site Code : 81774905
Start Date : 5/23/2018
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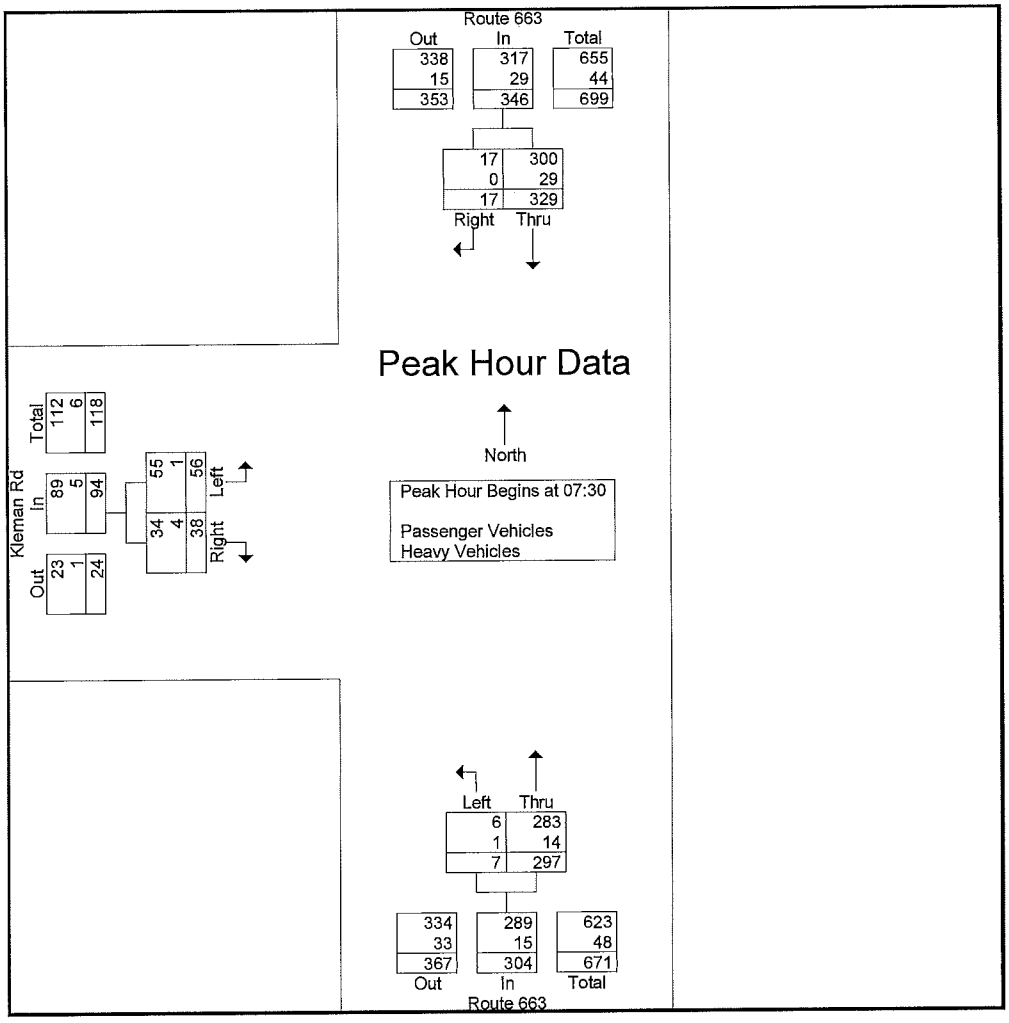
	Route 663 Southbound			Route 663 Northbound			Kleman Rd Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30										
07:30	71	4	75	0	77	77	15	**13**	**28**	180
07:45	**96**	3	**99**	**3**	66	69	12	7	19	187
08:00	76	3	79	3	**89**	**92**	12	10	22	**193**
08:15	86	**7**	93	1	65	66	**17**	8	25	184
Total Volume	329	17	346	7	297	304	56	38	94	744
% App. Total	95.1	4.9		2.3	97.7		59.6	40.4		
PHF	.857	.607	.874	.583	.834	.826	.824	.731	.839	.964
Passenger Vehicles	300	17	317	6	283	289	55	34	89	695
% Passenger Vehicles	91.2	100	91.6	85.7	95.3	95.1	98.2	89.5	94.7	93.4
Heavy Vehicles	29	0	29	1	14	15	1	4	5	49
% Heavy Vehicles	8.8	0	8.4	14.3	4.7	4.9	1.8	10.5	5.3	6.6



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Transportation Engineers and Planners

Municipality: New Hanover Township
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File Name : newhanact05w
Site Code : 81774905
Start Date : 5/23/2018
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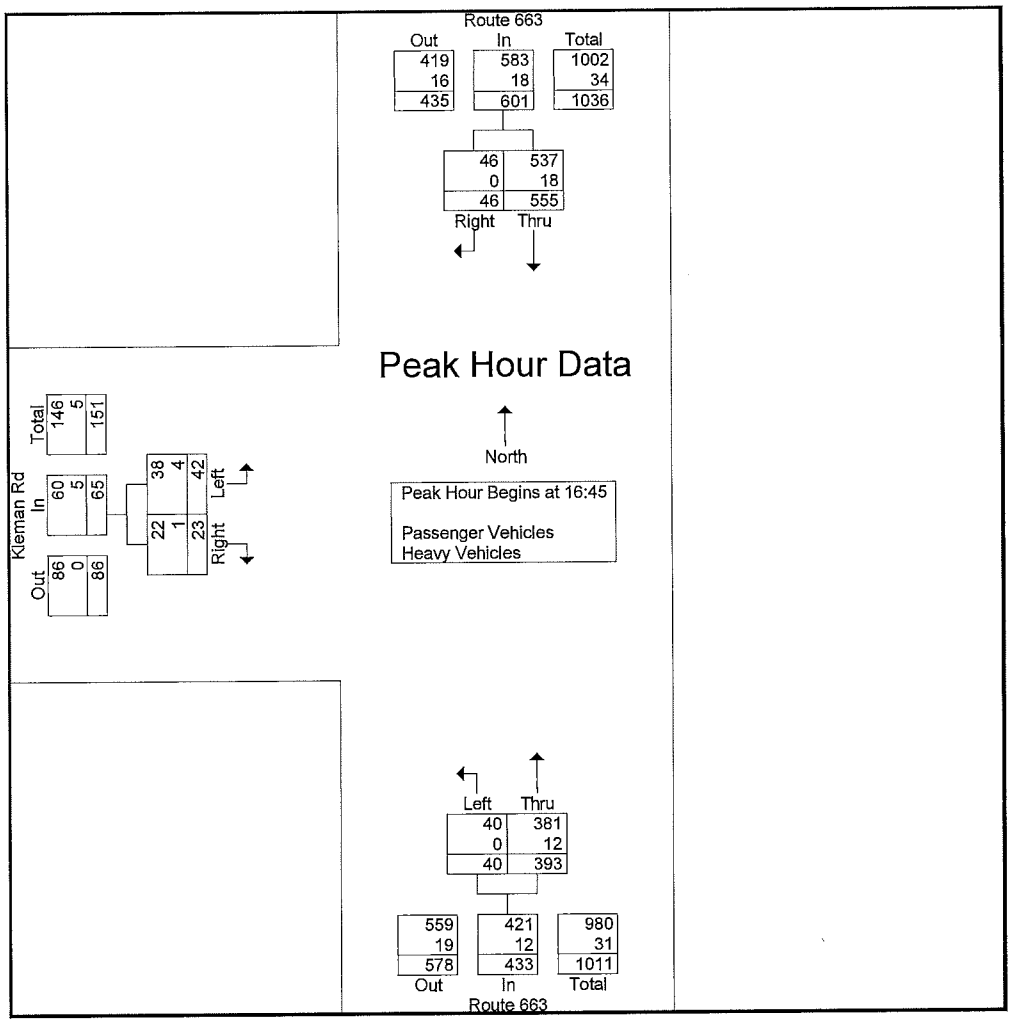
	Route 663 Southbound			Route 663 Northbound			Kleman Rd Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:45										
16:45	143	12	155	10	86	96	**14**	7	**21**	272
17:00	**147**	11	**158**	11	97	108	8	4	12	278
17:15	129	**13**	142	4	91	95	13	2	15	252
17:30	136	10	146	**15**	**119**	**134**	7	**10**	17	**297**
Total Volume	555	46	601	40	393	433	42	23	65	1099
% App. Total	92.3	7.7		9.2	90.8		64.6	35.4		
PHF	.944	.885	.951	.667	.826	.808	.750	.575	.774	.925
Passenger Vehicles	537	46	583	40	381	421	38	22	60	1064
% Passenger Vehicles	96.8	100	97.0	100	96.9	97.2	90.5	95.7	92.3	96.8
Heavy Vehicles	18	0	18	0	12	12	4	1	5	35
% Heavy Vehicles	3.2	0	3.0	0	3.1	2.8	9.5	4.3	7.7	3.2



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Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
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File Name : newhanact05w
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Groups Printed- Passenger Vehicles

	Route 663 Southbound		Route 663 Northbound		Kleman Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00	57	4	1	84	18	3	167
07:15	61	4	5	79	11	8	168
07:30	66	4	0	75	14	12	171
07:45	90	3	3	64	12	7	179
Total	274	15	9	302	55	30	685
08:00	65	3	2	86	12	8	176
08:15	79	7	1	58	17	7	169
08:30	65	3	1	63	23	7	162
08:45	79	0	0	68	13	12	172
Total	288	13	4	275	65	34	679
*** BREAK ***							
16:00	103	8	4	71	9	3	198
16:15	100	10	8	101	7	11	237
16:30	121	17	4	61	10	5	218
16:45	137	12	10	81	11	7	258
Total	461	47	26	314	37	26	911
17:00	145	11	11	93	8	4	272
17:15	125	13	4	90	13	2	247
17:30	130	10	15	117	6	9	287
17:45	83	24	18	69	10	8	212
Total	483	58	48	369	37	23	1018
Grand Total	1506	133	87	1260	194	113	3293
Apprch %	91.9	8.1	6.5	93.5	63.2	36.8	
Total %	45.7	4	2.6	38.3	5.9	3.4	

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Site Code : 81774905
Start Date : 5/23/2018
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Groups Printed- Heavy Vehicles

	Route 663 Southbound		Route 663 Northbound		Kleman Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00	6	0	0	5	1	1	13
07:15	5	0	0	5	1	1	12
07:30	5	0	0	2	1	1	9
07:45	6	0	0	2	0	0	8
Total	22	0	0	14	3	3	42
08:00	11	0	1	3	0	2	17
08:15	7	0	0	7	0	1	15
08:30	7	0	0	8	0	0	15
08:45	10	1	0	4	0	0	15
Total	35	1	1	22	0	3	62
*** BREAK ***							
16:00	4	0	0	2	1	0	7
16:15	6	0	0	3	0	2	11
16:30	3	0	0	1	0	0	4
16:45	6	0	0	5	3	0	14
Total	19	0	0	11	4	2	36
17:00	2	0	0	4	0	0	6
17:15	4	0	0	1	0	0	5
17:30	6	0	0	2	1	1	10
17:45	1	0	0	0	0	0	1
Total	13	0	0	7	1	1	22
Grand Total	89	1	1	54	8	9	162
Apprch %	98.9	1.1	1.8	98.2	47.1	52.9	
Total %	54.9	0.6	0.6	33.3	4.9	5.6	

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
Buchert Road
Counter: KB

File Name : newhanact13p
Site Code : 81774913
Start Date : 5/23/2018
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Groups Printed- Passenger Vehicles - Heavy Vehicles

	Route 663 Southbound				Buchert Rd Westbound				Route 663 Northbound				Buchert Rd Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
16:00	7	93	0	9	2	3	0	4	9	98	0	4	4	9	0	5	247
16:15	9	82	0	9	4	1	0	3	10	114	0	4	10	4	0	8	258
16:30	2	90	0	10	7	3	0	4	10	110	0	12	15	4	0	7	274
16:45	7	108	0	15	11	1	0	2	4	105	0	10	11	5	0	11	290
Total	25	373	0	43	24	8	0	13	33	427	0	30	40	22	0	31	1069
17:00	13	95	0	8	3	5	0	5	7	117	0	15	12	10	0	9	299
17:15	6	113	0	13	4	6	0	1	10	103	0	5	13	10	0	15	299
17:30	6	105	0	10	7	2	0	3	7	116	0	12	17	4	0	13	302
17:45	3	73	0	10	5	5	0	7	14	117	0	9	9	10	0	7	269
Total	28	386	0	41	19	18	0	16	38	453	0	41	51	34	0	44	1169
Grand Total	53	759	0	84	43	26	0	29	71	880	0	71	91	56	0	75	2238
Apprch %	5.9	84.7	0	9.4	43.9	26.5	0	29.6	6.9	86.1	0	6.9	41	25.2	0	33.8	
Total %	2.4	33.9	0	3.8	1.9	1.2	0	1.3	3.2	39.3	0	3.2	4.1	2.5	0	3.4	
Passenger Vehicles	52	753	0	84	43	26	0	29	71	869	0	71	91	56	0	75	2220
% Passenger Vehicles	98.1	99.2	0	100	100	100	0	100	100	98.8	0	100	100	100	0	100	99.2
Heavy Vehicles	1	6	0	0	0	0	0	0	0	11	0	0	0	0	0	0	18
% Heavy Vehicles	1.9	0.8	0	0	0	0	0	0	0	1.2	0	0	0	0	0	0	0.8

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

425 Commerce Drive, Suite 200
Fort Washington, PA 19034
Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
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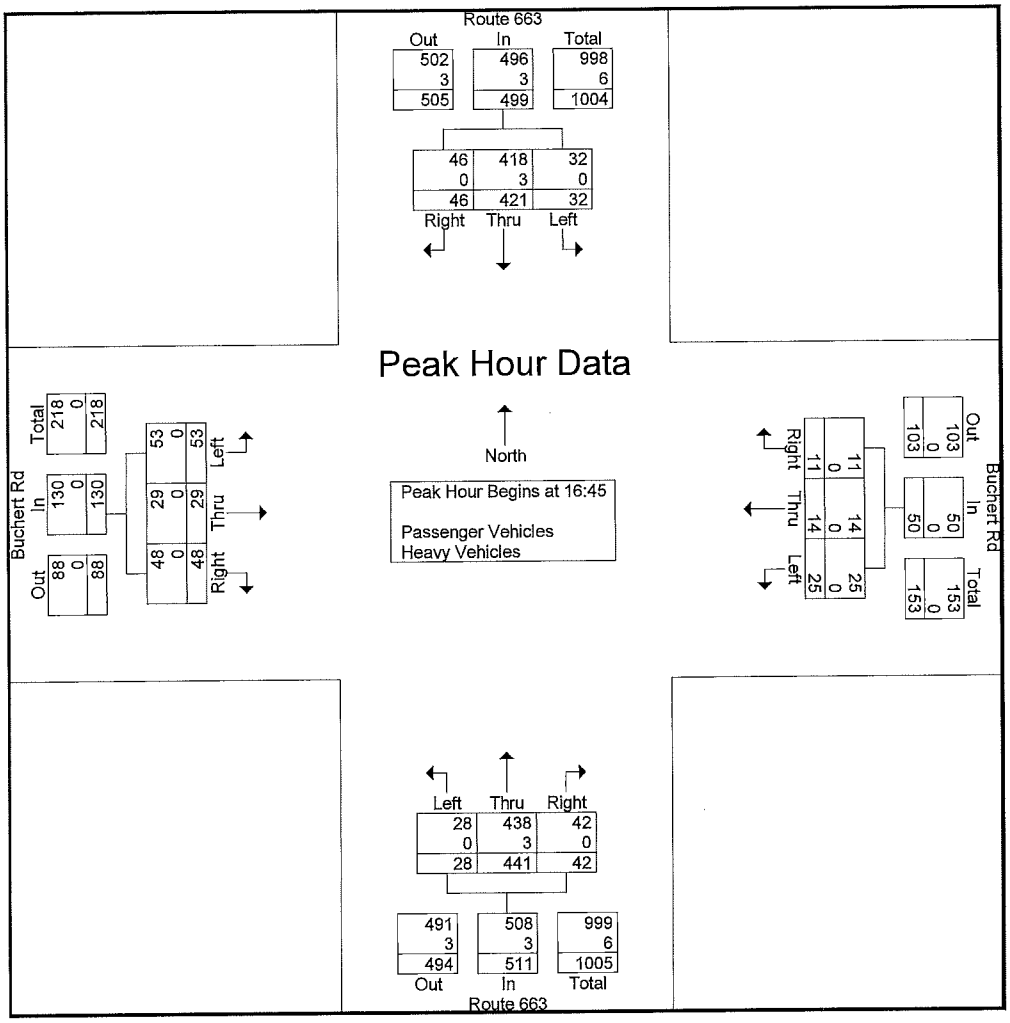
	Route 663 Southbound					Buchert Rd Westbound					Route 663 Northbound					Buchert Rd Eastbound					
Start Time	Left	Thru	ROR	Right	App. Total	Left	Thru	RO R	Right	App. Total	Left	Thru	RO R	Right	App. Total	Left	Thru	RO R	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	7	108	0	**15**	130	**11**	1	0	2	**14**	4	105	0	10	119	11	5	0	11	27	290
17:00	**13**	95	0	8	116	3	5	0	**5**	13	7	**117**	0	**15**	**139**	12	**10**	0	9	31	299
17:15	6	**113**	0	13	**132**	4	**6**	0	1	11	**10**	103	0	5	118	13	10	0	**15**	**38**	299
17:30	6	105	0	10	121	7	2	0	3	12	7	116	0	12	135	**17**	4	0	13	34	**302**
Total Volume	32	421	0	46	499	25	14	0	11	50	28	441	0	42	511	53	29	0	48	130	1190
% App. Total	6.4	84.4	0	9.2		50	28	0	22		5.5	86.3	0	8.2		40.8	22.3	0	36.9		
PHF	.615	.931	.000	.767	.945	.568	.583	.000	.550	.893	.700	.942	.000	.700	.919	.779	.725	.000	.800	.855	.985
Passenger Vehicles																					
% Passenger Vehicles	100	99.3	0	100	99.4	100	100	0	100	100	100	99.3	0	100	99.4	100	100	0	100	100	99.5
Heavy Vehicles																					
% Heavy Vehicles	0	0.7	0	0	0.6	0	0	0	0	0	0	0.7	0	0	0.6	0	0	0	0	0	0.5



McMahon Associates, Inc.

425 Commerce Drive, Suite 200
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Transportation Engineers and Planners

Municipality: New Hanover Township
Location: Route 663 &
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Groups Printed- Passenger Vehicles

	Route 663 Southbound				Buchert Rd Westbound				Route 663 Northbound				Buchert Rd Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
16:00	6	91	0	9	2	3	0	4	9	95	0	4	4	9	0	5	241
16:15	9	82	0	9	4	1	0	3	10	113	0	4	10	4	0	8	257
16:30	2	89	0	10	7	3	0	4	10	106	0	12	15	4	0	7	269
16:45	7	106	0	15	11	1	0	2	4	105	0	10	11	5	0	11	288
Total	24	368	0	43	24	8	0	13	33	419	0	30	40	22	0	31	1055
17:00	13	95	0	8	3	5	0	5	7	116	0	15	12	10	0	9	298
17:15	6	112	0	13	4	6	0	1	10	101	0	5	13	10	0	15	296
17:30	6	105	0	10	7	2	0	3	7	116	0	12	17	4	0	13	302
17:45	3	73	0	10	5	5	0	7	14	117	0	9	9	10	0	7	269
Total	28	385	0	41	19	18	0	16	38	450	0	41	51	34	0	44	1165
Grand Total	52	753	0	84	43	26	0	29	71	869	0	71	91	56	0	75	2220
Apprch %	5.8	84.7	0	9.4	43.9	26.5	0	29.6	7	86	0	7	41	25.2	0	33.8	
Total %	2.3	33.9	0	3.8	1.9	1.2	0	1.3	3.2	39.1	0	3.2	4.1	2.5	0	3.4	

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425 Commerce Drive, Suite 200
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Site Code : 81774913
Start Date : 5/23/2018
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Groups Printed- Heavy Vehicles

	Route 663 Southbound				Buchert Rd Westbound				Route 663 Northbound				Buchert Rd Eastbound				
Start Time	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Int. Total
16:00	1	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	6
16:15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
16:30	0	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	5
16:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	1	5	0	0	0	0	0	0	0	8	0	0	0	0	0	0	14
17:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
17:15	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
*** BREAK ***																	
Total	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4
Grand Total	1	6	0	0	0	0	0	0	0	11	0	0	0	0	0	0	18
Apprch %	14.3	85.7	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	5.6	33.3	0	0	0	0	0	0	0	61.1	0	0	0	0	0	0	

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) &
Moyer Road
Counter/Board #: HP

File Name : nhmoyer01w
Site Code : 81767601
Start Date : 2/27/2018
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Groups Printed- Passenger Vehicles - Heavy Vehicles

	Rt 663 (N. Charlotte St) Southbound		Rt 663 (N. Charlotte St) Northbound		Moyer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00	74	14	18	58	14	20	198
07:15	73	16	19	76	17	13	214
07:30	108	14	11	66	21	24	244
07:45	95	16	11	69	13	35	239
Total	350	60	59	269	65	92	895
08:00	72	13	23	63	11	19	201
08:15	62	11	13	46	11	17	160
08:30	56	9	8	54	11	26	164
08:45	80	10	13	52	6	23	184
Total	270	43	57	215	39	85	709
09:00	61	14	8	41	8	18	150
09:15	63	5	7	43	2	11	131
09:30	53	7	9	48	4	11	132
09:45	53	7	9	55	8	10	142
Total	230	33	33	187	22	50	555
10:00	47	6	11	42	5	12	123
10:15	50	5	9	41	11	9	125
10:30	71	5	11	41	6	10	144
10:45	57	4	9	61	5	9	145
Total	225	20	40	185	27	40	537
11:00	43	6	10	44	5	11	119
11:15	52	6	7	48	8	9	130
11:30	64	11	16	71	9	10	181
11:45	53	9	10	71	7	7	157
Total	212	32	43	234	29	37	587
12:00	54	10	14	43	12	11	144
12:15	45	14	10	64	4	8	145
12:30	62	12	4	63	5	6	152
12:45	48	3	7	74	6	16	154
Total	209	39	35	244	27	41	595
13:00	47	10	5	41	5	7	115
13:15	43	8	11	49	10	7	128
13:30	60	13	14	63	12	13	175
13:45	58	6	13	51	7	11	146
Total	208	37	43	204	34	38	564
14:00	70	13	19	62	4	12	180
14:15	63	10	7	62	3	6	151
14:30	59	15	15	70	9	8	176
14:45	58	17	14	59	11	15	174
Total	250	55	55	253	27	41	681
15:00	66	13	21	90	7	16	213
15:15	82	20	31	78	15	23	249
15:30	78	20	24	100	10	15	247
15:45	94	19	38	100	18	17	286
Total	320	72	114	368	50	71	995

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) &
Moyer Road
Counter/Board #: HP

File Name : nhmoyer01w
Site Code : 81767601
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Groups Printed- Passenger Vehicles - Heavy Vehicles

	Rt 663 (N. Charlotte St) Southbound		Rt 663 (N. Charlotte St) Northbound		Moyer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	102	15	43	88	16	21	285
16:15	90	16	32	96	13	19	266
16:30	80	19	23	94	19	18	253
16:45	109	20	29	97	8	19	282
Total	381	70	127	375	56	77	1086
17:00	75	22	39	98	16	16	266
17:15	103	21	49	97	13	11	294
17:30	102	22	27	74	16	25	266
17:45	117	19	25	86	16	16	279
Total	397	84	140	355	61	68	1105
Grand Total	3052	545	746	2889	437	640	8309
Apprch %	84.8	15.2	20.5	79.5	40.6	59.4	
Total %	36.7	6.6	9	34.8	5.3	7.7	
Passenger Vehicles	2938	522	727	2796	415	627	8025
% Passenger Vehicles	96.3	95.8	97.5	96.8	95	98	96.6
Heavy Vehicles	114	23	19	93	22	13	284
% Heavy Vehicles	3.7	4.2	2.5	3.2	5	2	3.4

Zero Pedestrians were observed during this study.

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) &
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File Name : nhmoyer01w
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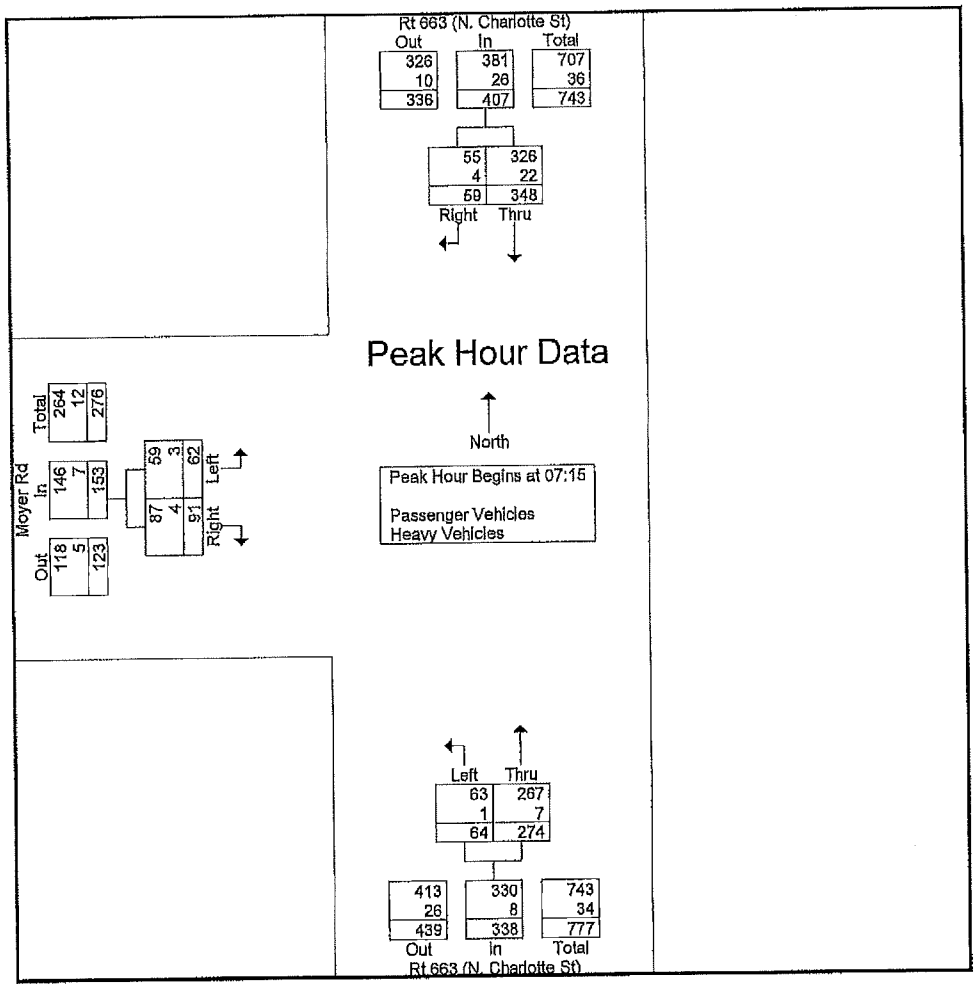
	Rt 663 (N. Charlotte St) Southbound			Rt 663 (N. Charlotte St) Northbound			Moyer Rd Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 09:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15										
07:15	73	16	89	19	76	95	17	13	30	214
07:30	108	14	122	11	66	77	21	24	45	244
07:45	95	16	111	11	69	80	13	35	48	239
08:00	72	13	85	23	63	86	11	19	30	201
Total Volume	348	59	407	64	274	338	62	91	153	898
% App. Total	85.5	14.5		18.9	81.1		40.5	59.5		
PHF	.806	.922	.834	.696	.901	.889	.738	.650	.797	.920
Passenger Vehicles	326	55	381	63	267	330	59	87	146	857
% Passenger Vehicles	93.7	93.2	93.6	98.4	97.4	97.6	95.2	95.6	95.4	95.4
Heavy Vehicles	22	4	26	1	7	8	3	4	7	41
% Heavy Vehicles	6.3	6.8	6.4	1.6	2.6	2.4	4.8	4.4	4.6	4.6



McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) & Moyer Road
Counter/Board #: HP

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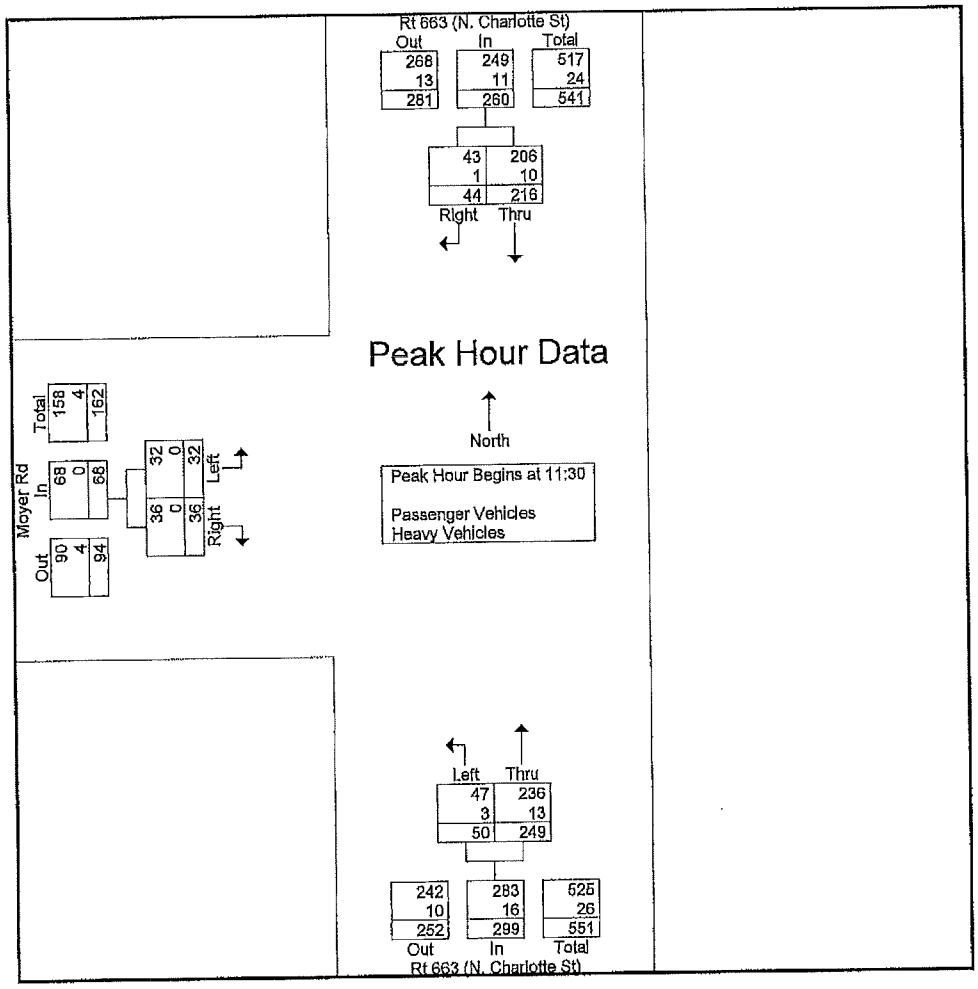
	Rt 663 (N. Charlotte St) Southbound			Rt 663 (N. Charlotte St) Northbound			Moyer Rd Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 to 13:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:30										
11:30	64	11	75	16	71	87	9	10	19	181
11:45	53	9	62	10	71	81	7	7	14	157
12:00	54	10	64	14	43	57	12	11	23	144
12:15	45	14	59	10	64	74	4	8	12	145
Total Volume	216	44	260	50	249	299	32	36	68	627
% App. Total	83.1	16.9		16.7	83.3		47.1	52.9		
PHF	.844	.786	.867	.781	.877	.859	.667	.818	.739	.866
Passenger Vehicles	206	43	249	47	236	283	32	36	68	600
% Passenger Vehicles	95.4	97.7	95.8	94.0	94.8	94.6	100	100	100	95.7
Heavy Vehicles	10	1	11	3	13	16	0	0	0	27
% Heavy Vehicles	4.6	2.3	4.2	6.0	5.2	5.4	0	0	0	4.3



McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) &
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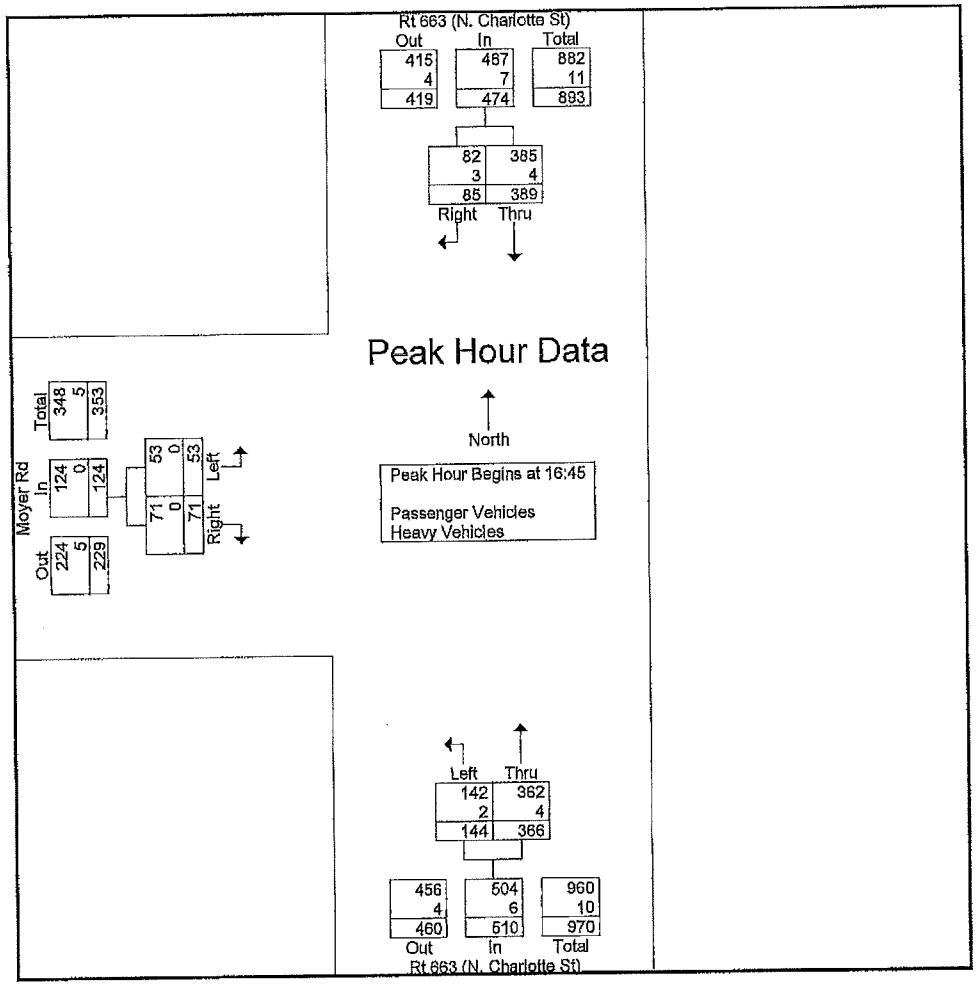
	Rt 663 (N. Charlotte St) Southbound			Rt 663 (N. Charlotte St) Northbound			Moyer Rd Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 14:00 to 17:45 - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 16:45										
16:45	109	20	129	29	97	126	8	19	27	282
17:00	75	22	97	39	98	137	16	16	32	266
17:15	103	21	124	49	97	146	13	11	24	294
17:30	102	22	124	27	74	101	16	25	41	266
Total Volume	389	85	474	144	366	510	53	71	124	1108
% App. Total	82.1	17.9		28.2	71.8		42.7	57.3		
PHF	.892	.966	.919	.735	.934	.873	.828	.710	.756	.942
Passenger Vehicles	385	82	467	142	362	504	53	71	124	1095
% Passenger Vehicles	99.0	96.5	98.5	98.6	98.9	98.8	100	100	100	98.8
Heavy Vehicles	4	3	7	2	4	6	0	0	0	13
% Heavy Vehicles	1.0	3.5	1.5	1.4	1.1	1.2	0	0	0	1.2



McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) &
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Counter/Board #: HP

File Name : nhmoyer01w
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Groups Printed- Passenger Vehicles

	Rt 663 (N. Charlotte St) Southbound		Rt 663 (N. Charlotte St) Northbound		Moyer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00	69	14	18	58	14	20	193
07:15	70	15	19	73	16	13	206
07:30	106	13	11	65	21	24	240
07:45	90	14	11	69	12	33	229
Total	335	56	59	265	63	90	868
08:00	60	13	22	60	10	17	182
08:15	58	11	11	44	11	17	152
08:30	55	9	7	53	9	24	157
08:45	79	10	13	51	6	23	182
Total	252	43	53	208	36	81	673
09:00	58	14	8	40	6	18	144
09:15	61	5	6	42	2	11	127
09:30	52	7	8	46	3	11	127
09:45	52	7	9	55	8	10	141
Total	223	33	31	183	19	50	539
10:00	46	6	11	41	4	12	120
10:15	48	4	9	40	11	9	121
10:30	69	5	11	41	5	10	141
10:45	55	4	8	59	5	9	140
Total	218	19	39	181	25	40	522
11:00	38	6	10	41	5	11	111
11:15	50	5	6	47	7	9	124
11:30	61	11	15	66	9	10	172
11:45	51	9	10	65	7	7	149
Total	200	31	41	219	28	37	556
12:00	52	9	13	43	12	11	140
12:15	42	14	9	62	4	8	139
12:30	60	11	4	58	5	6	144
12:45	48	3	6	70	6	14	147
Total	202	37	32	233	27	39	570
13:00	43	10	5	36	5	7	106
13:15	41	8	10	46	10	7	122
13:30	57	12	14	58	12	13	166
13:45	57	4	11	49	5	10	136
Total	198	34	40	189	32	37	530
14:00	68	12	19	57	4	11	171
14:15	59	10	7	60	3	6	145
14:30	53	15	15	67	9	8	167
14:45	57	15	14	57	10	15	168
Total	237	52	55	241	26	40	651
15:00	62	12	21	86	6	14	201
15:15	79	20	31	76	14	23	243
15:30	76	19	24	99	9	15	242
15:45	87	19	37	98	16	16	273
Total	304	70	113	359	45	68	959

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) &
Moyer Road
Counter/Board #: HP

File Name : nhmoyer01w
Site Code : 81767601
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Groups Printed- Passenger Vehicles

	Rt 663 (N. Charlotte St) Southbound		Rt 663 (N. Charlotte St) Northbound		Moyer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	100	14	43	85	14	21	277
16:15	87	15	31	93	12	19	257
16:30	80	18	23	92	19	18	250
16:45	108	20	29	95	8	19	279
Total	375	67	126	365	53	77	1063
17:00	75	22	39	98	16	16	266
17:15	103	20	47	95	13	11	289
17:30	99	20	27	74	16	25	261
17:45	117	18	25	86	16	16	278
Total	394	80	138	353	61	68	1094
Grand Total	2938	522	727	2796	415	627	8025
Apprch %	84.9	15.1	20.6	79.4	39.8	60.2	
Total %	36.6	6.5	9.1	34.8	5.2	7.8	

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) &
Moyer Road
Counter/Board #: HP

File Name : nhmoyer01w
Site Code : 81767601
Start Date : 2/27/2018
Page No : 1

Groups Printed- Heavy Vehicles

	Rt 663 (N. Charlotte St) Southbound		Rt 663 (N. Charlotte St) Northbound		Moyer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
07:00	5	0	0	0	0	0	5
07:15	3	1	0	3	1	0	8
07:30	2	1	0	1	0	0	4
07:45	5	2	0	0	1	2	10
Total	15	4	0	4	2	2	27
08:00	12	0	1	3	1	2	19
08:15	4	0	2	2	0	0	8
08:30	1	0	1	1	2	2	7
08:45	1	0	0	1	0	0	2
Total	18	0	4	7	3	4	36
09:00	3	0	0	1	2	0	6
09:15	2	0	1	1	0	0	4
09:30	1	0	1	2	1	0	5
09:45	1	0	0	0	0	0	1
Total	7	0	2	4	3	0	16
10:00	1	0	0	1	1	0	3
10:15	2	1	0	1	0	0	4
10:30	2	0	0	0	1	0	3
10:45	2	0	1	2	0	0	5
Total	7	1	1	4	2	0	15
11:00	5	0	0	3	0	0	8
11:15	2	1	1	1	1	0	6
11:30	3	0	1	5	0	0	9
11:45	2	0	0	6	0	0	8
Total	12	1	2	15	1	0	31
12:00	2	1	1	0	0	0	4
12:15	3	0	1	2	0	0	6
12:30	2	1	0	5	0	0	8
12:45	0	0	1	4	0	2	7
Total	7	2	3	11	0	2	25
13:00	4	0	0	5	0	0	9
13:15	2	0	1	3	0	0	6
13:30	3	1	0	5	0	0	9
13:45	1	2	2	2	2	1	10
Total	10	3	3	15	2	1	34
14:00	2	1	0	5	0	1	9
14:15	4	0	0	2	0	0	6
14:30	6	0	0	3	0	0	9
14:45	1	2	0	2	1	0	6
Total	13	3	0	12	1	1	30
15:00	4	1	0	4	1	2	12
15:15	3	0	0	2	1	0	6
15:30	2	1	0	1	1	0	5
15:45	7	0	1	2	2	1	13
Total	16	2	1	9	5	3	36

McMahon Associates, Inc.

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

Municipality: New Hanover Township
Location: Route 663 (N. Charlotte St) &
Moyer Road
Counter/Board #: HP

File Name : nhmoyer01w
Site Code : 81767601
Start Date : 2/27/2018
Page No : 2

Groups Printed- Heavy Vehicles

	Rt 663 (N. Charlotte St) Southbound		Rt 663 (N. Charlotte St) Northbound		Moyer Rd Eastbound		
Start Time	Thru	Right	Left	Thru	Left	Right	Int. Total
16:00	2	1	0	3	2	0	8
16:15	3	1	1	3	1	0	9
16:30	0	1	0	2	0	0	3
16:45	1	0	0	2	0	0	3
Total	6	3	1	10	3	0	23
17:15	0	1	2	2	0	0	5
17:30	3	2	0	0	0	0	5
17:45	0	1	0	0	0	0	1
Total	3	4	2	2	0	0	11
Grand Total	114	23	19	93	22	13	284
Apprch %	83.2	16.8	17	83	62.9	37.1	
Total %	40.1	8.1	6.7	32.7	7.7	4.6	

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Appendix E

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

Roundabouts

A roundabout is a type of unsignalized intersection, generally with a circular shape that is characterized by yield on entry and circulation around a central island. The corresponding control delay and level-of-service criteria for a roundabout are the same as for a two-way or all-way stop-controlled intersection. The methodology utilized within the latest *Highway Capacity Manual 6th Edition* is limited to isolated roundabouts with up to two entry lanes and up to one bypass lane per approach. The analysis does not account for the geometric features of the roundabout (diameter, entry lane widths, approach grades, etc.) or the presence of adjacent traffic control signals that could influence the roundabout operations.

The capacity of a roundabout is influenced by the entering flow of traffic, the circulating flow, and the exiting flow. The capacity of an approach decreases as the conflicting flow increases. In general, the primary conflicting flow is the circulating flow that passes directly by an entry approach. As a result, the capacity of a roundabout is a function of the entering flow and the circulating flow. The analysis of the capacity is based upon the number and configuration of lanes on each approach, the demand volumes for each entering volume movement and each potential pedestrian crossing movement, the percentage of heavy vehicles, the volume distribution across lanes for multi-lane entries, and the length of the analysis period (typically the peak 15-minute period).

The results of the Roundabout analysis provide an estimate of average delay for each approach to the roundabout, which are as follows from Exhibit 22-8, which are based on the volume-to-capacity ratio and control delay for each approach. When the volume-to capacity ratio exceeds 1.0, the level-of-service is automatically reported as LOS F, despite the corresponding control delay for the approach.

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

It should also be noted that the *Highway Capacity Manual 6th Edition* also recommends reviewing the exiting flow of traffic to determine if additional exit lanes are appropriate. German research indicates that a single exit lane in an urban setting can accommodate 1,200 to 1,300 vehicles per hour. Further guidance on the need for dual exit lanes, which may be warranted to provide basic lane continuity along a corridor, regardless of the exit volume, are provided in *NCHRP Report 672: Roundabouts: An Informational Guide.*

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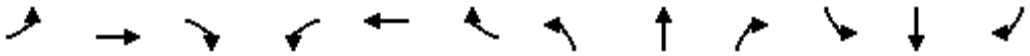
Appendix F

2018 Existing Capacity/Level-of-Service Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	425	20	41	595	1	23	34	55	8	6	8
Future Volume (vph)	13	425	20	41	595	1	23	34	55	8	6	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	13	13	13	12	12	12	10	10	10
Grade (%)		-2%			1%			-2%			1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994						0.934			0.951	
Flt Protected		0.999			0.997			0.990			0.982	
Satd. Flow (prot)	0	1754	0	0	1809	0	0	1648	0	0	1530	0
Flt Permitted		0.999			0.997			0.990			0.982	
Satd. Flow (perm)	0	1754	0	0	1809	0	0	1648	0	0	1530	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		360			1976			2527			378	
Travel Time (s)		5.5			29.9			68.9			10.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	15	478	22	46	669	1	26	38	62	9	7	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	515	0	0	716	0	0	126	0	0	25	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.03	1.03	1.03	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	13	425	20	41	595	1	23	34	55	8	6	8
Future Vol, veh/h	13	425	20	41	595	1	23	34	55	8	6	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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	1	-	-	-2	-	-	1	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	3	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	478	22	46	669	1	26	38	62	9	7	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	670	0	0	500	0	0	1289	1281	489	1331	1292	670
Stage 1	-	-	-	-	-	-	519	519	-	762	762	-
Stage 2	-	-	-	-	-	-	770	762	-	569	530	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.72	6.12	6.02	7.32	6.72	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	5.72	5.12	-	6.32	5.72	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.72	5.12	-	6.32	5.72	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.018	3.1	3	4.018	3.1
Pot Cap-1 Maneuver	703	-	-	808	-	-	177	191	628	133	152	471
Stage 1	-	-	-	-	-	-	648	564	-	425	396	-
Stage 2	-	-	-	-	-	-	478	450	-	555	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	703	-	-	808	-	-	152	168	628	90	134	471
Mov Cap-2 Maneuver	-	-	-	-	-	-	152	168	-	90	134	-
Stage 1	-	-	-	-	-	-	629	547	-	412	360	-
Stage 2	-	-	-	-	-	-	418	409	-	451	496	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.6	32.3	34.6
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	254	703	-	-	808	-	-	146
HCM Lane V/C Ratio	0.495	0.021	-	-	0.057	-	-	0.169
HCM Control Delay (s)	32.3	10.2	0	-	9.7	0	-	34.6
HCM Lane LOS	D	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	2.5	0.1	-	-	0.2	-	-	0.6

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	451	38	441	584	20	346
Future Volume (vph)	451	38	441	584	20	346
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	13	13	11	11
Grade (%)	-2%			2%	-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.872	
Flt Protected				0.979	0.997	
Satd. Flow (prot)	1757	0	0	1767	1484	0
Flt Permitted				0.979	0.997	
Satd. Flow (perm)	1757	0	0	1767	1484	0
Link Speed (mph)	45			45	40	
Link Distance (ft)	3116			1326	4252	
Travel Time (s)	47.2			20.1	72.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	8%	2%	2%	10%	2%
Adj. Flow (vph)	480	40	469	621	21	368
Shared Lane Traffic (%)						
Lane Group Flow (vph)	520	0	0	1090	389	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.04	1.04	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	251.1

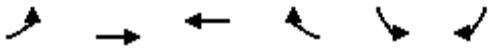
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	451	38	441	584	20	346
Future Vol, veh/h	451	38	441	584	20	346
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	2	-1	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	8	2	2	10	2
Mvmt Flow	480	40	469	621	21	368

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	520	0	2059	500
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	1559	-
Critical Hdwy	-	-	4.3	-	6.3	6.12
Critical Hdwy Stg 1	-	-	-	-	5.3	-
Critical Hdwy Stg 2	-	-	-	-	5.3	-
Follow-up Hdwy	-	-	3	-	3.1	3.1
Pot Cap-1 Maneuver	-	-	795	-	68	611
Stage 1	-	-	-	-	685	-
Stage 2	-	-	-	-	213	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	795	-	~ 7	611
Mov Cap-2 Maneuver	-	-	-	-	~ 7	-
Stage 1	-	-	-	-	685	-
Stage 2	-	-	-	-	~ 21	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.8	$ 1270.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	107	-	-	795	-
HCM Lane V/C Ratio	3.639	-	-	0.59	-
HCM Control Delay (s)	$ 1270.9	-	-	15.8	0
HCM Lane LOS	F	-	-	C	A
HCM 95th %tile Q(veh)	39	-	-	3.9	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	442	275	578	6	3	498
Future Volume (vph)	442	275	578	6	3	498
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	11	11
Grade (%)		1%	-1%		-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.866	
Flt Protected		0.970				
Satd. Flow (prot)	0	1703	1807	0	1485	0
Flt Permitted		0.970				
Satd. Flow (perm)	0	1703	1807	0	1485	0
Link Speed (mph)		45	45		40	
Link Distance (ft)		1326	2274		455	
Travel Time (s)		20.1	34.5		7.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	0%	0%	0%	3%
Adj. Flow (vph)	470	293	615	6	3	530
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	763	621	0	533	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.08	1.08	1.07	1.07	1.10	1.10
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

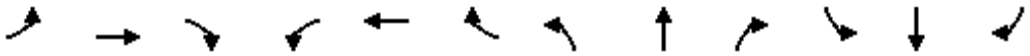
Intersection	
Int Delay, s/veh	21.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	442	275	578	6	3	498
Future Vol, veh/h	442	275	578	6	3	498
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	-3	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	0	0	0	3
Mvmt Flow	470	293	615	6	3	530

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	621	0	-	0	1851	618
Stage 1	-	-	-	-	618	-
Stage 2	-	-	-	-	1233	-
Critical Hdwy	4.3	-	-	-	5.8	5.93
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	732	-	-	-	119	541
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	371	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	732	-	-	-	28	541
Mov Cap-2 Maneuver	-	-	-	-	28	-
Stage 1	-	-	-	-	157	-
Stage 2	-	-	-	-	371	-

Approach	EB	WB	SB
HCM Control Delay, s	11.3	0	61.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	732	-	-	-	544
HCM Lane V/C Ratio	0.642	-	-	-	0.98
HCM Control Delay (s)	18.3	0	-	-	61.3
HCM Lane LOS	C	A	-	-	F
HCM 95th %tile Q(veh)	4.7	-	-	-	13.5



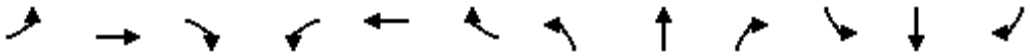
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	63	40	7	150	71	52	389	7	69	454	69
Future Volume (vph)	31	63	40	7	150	71	52	389	7	69	454	69
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	10	10	10	11	11	11	11	11	11
Grade (%)		1%			-4%			4%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.960			0.958			0.998			0.984	
Flt Protected		0.989			0.998			0.994			0.994	
Satd. Flow (prot)	0	1578	0	0	1592	0	0	1624	0	0	1667	0
Flt Permitted		0.852			0.988			0.878			0.893	
Satd. Flow (perm)	0	1360	0	0	1576	0	0	1434	0	0	1498	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		459			4343			3327			485	
Travel Time (s)		7.0			65.8			41.2			6.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	10%	2%	3%	0%	3%	3%	6%	4%	0%	4%	5%	3%
Adj. Flow (vph)	34	69	44	8	165	78	57	427	8	76	499	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	0	251	0	0	492	0	0	651	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.13	1.13	1.14	1.14	1.14	1.15	1.15	1.15	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	2		1	2	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	35		20	35		20	336		20	336	
Trailing Detector (ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Position(ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Size(ft)	20	40		20	40		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)								330			330	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		26.0	26.0		26.0	26.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		33.0	33.0		33.0	33.0	
Total Split (s)	27.0	27.0		27.0	27.0		67.0	67.0		67.0	67.0	
Total Split (%)	28.7%	28.7%		28.7%	28.7%		71.3%	71.3%		71.3%	71.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		60.0	60.0		60.0	60.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		2.7	2.7		2.7	2.7	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		35.0	35.0		35.0	35.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 94
Actuated Cycle Length: 71.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Rt 663 & Hoffmansville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	63	40	7	150	71	52	389	7	69	454	69
Future Volume (veh/h)	31	63	40	7	150	71	52	389	7	69	454	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1766	1766	1766	1906	1906	1906	1655	1655	1655	1915	1915	1915
Adj Flow Rate, veh/h	34	69	44	8	165	78	57	427	8	76	499	76
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	3	3	3	4	4	4	5	5	5
Cap, veh/h	118	173	93	65	232	107	131	861	15	150	871	126
Arrive On Green	0.17	0.19	0.17	0.17	0.19	0.17	0.60	0.61	0.60	0.60	0.61	0.60
Sat Flow, veh/h	240	906	490	23	1216	558	107	1400	25	138	1416	205
Grp Volume(v), veh/h	147	0	0	251	0	0	492	0	0	651	0	0
Grp Sat Flow(s),veh/h/ln	1636	0	0	1797	0	0	1531	0	0	1760	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	4.9	0.0	0.0	8.2	0.0	0.0	10.3	0.0	0.0	13.1	0.0	0.0
Prop In Lane	0.23		0.30	0.03		0.31	0.12		0.02	0.12		0.12
Lane Grp Cap(c), veh/h	357	0	0	374	0	0	982	0	0	1118	0	0
V/C Ratio(X)	0.41	0.00	0.00	0.67	0.00	0.00	0.50	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	581	0	0	641	0	0	1529	0	0	1758	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.4	0.0	0.0	23.7	0.0	0.0	6.6	0.0	0.0	7.1	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	2.1	0.0	0.0	0.8	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	0.0	0.0	6.0	0.0	0.0	4.1	0.0	0.0	5.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	0.0	0.0	25.8	0.0	0.0	7.4	0.0	0.0	8.2	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		147			251			492			651	
Approach Delay, s/veh		23.2			25.8			7.4			8.2	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.9		17.8		43.9		17.8				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		60.0		20.0		60.0		20.0				
Max Q Clear Time (g_c+I1), s		12.3		6.9		15.1		10.2				
Green Ext Time (p_c), s		15.6		0.3		21.8		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			12.2									
HCM 6th LOS			B									

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Lane Configurations												
Traffic Volume (vph)	9	160	6	25	6	6	4	35	563	129	4	1
Future Volume (vph)	9	160	6	25	6	6	4	35	563	129	4	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	12	12	12
Grade (%)			4%			0%			2%			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983			0.966			0.975			
Flt Protected			0.959			0.982			0.998			
Satd. Flow (prot)	0	0	1540	0	0	1594	0	0	1700	0	0	0
Flt Permitted			0.748			0.890			0.973			
Satd. Flow (perm)	0	0	1201	0	0	1444	0	0	1657	0	0	0
Right Turn on Red				No							No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			35			45			
Link Distance (ft)			7311			698			620			
Travel Time (s)			110.8			13.6			9.4			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	2%	25%	0%
Adj. Flow (vph)	9	167	6	26	6	6	4	36	586	134	4	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	208	0	0	16	0	0	760	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)			0			0			0			
Link Offset(ft)			0			0			0			
Crosswalk Width(ft)			16			16			16			
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.17	1.17	1.17	1.09	1.09	1.09	1.09	1.07
Turning Speed (mph)	15	15		9	15		9	15		9	9	15
Number of Detectors	1	1	1		1	1		1	1			1
Detector Template	Left	Left			Left			Left				Left
Leading Detector (ft)	20	20	35		20	30		20	411			20
Trailing Detector (ft)	0	0	-5		0	-10		0	405			0
Detector 1 Position(ft)	0	0	-5		0	-10		0	405			0
Detector 1 Size(ft)	20	20	40		20	40		20	6			20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Turn Type	Perm	Perm	NA		Perm	NA		Perm	NA			Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2				6
Detector Phase	4	4	4		8	8		2	2			6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0		3.0	3.0		25.0	25.0			25.0
Minimum Split (s)	9.0	9.0	9.0		9.0	9.0		32.0	32.0			32.0
Total Split (s)	26.0	26.0	26.0		26.0	26.0		72.0	72.0			72.0

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations						
Traffic Volume (vph)	264	4	5	90	92	2
Future Volume (vph)	264	4	5	90	92	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%			-2%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.933		
Flt Protected				0.975		
Satd. Flow (prot)	1696	0	0	1584	0	0
Flt Permitted	0.998			0.975		
Satd. Flow (perm)	1693	0	0	1584	0	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45		
Link Distance (ft)	3007			1962		
Travel Time (s)	45.6			29.7		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	0%	0%	2%	0%	0%
Adj. Flow (vph)	275	4	5	94	96	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	280	0	0	197	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(ft)	0			11		
Link Offset(ft)	0			0		
Crosswalk Width(ft)	16			16		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.11	1.11	1.11	1.11
Turning Speed (mph)		9	15	15	9	9
Number of Detectors	1		1	1		
Detector Template			Left			
Leading Detector (ft)	806		20	35		
Trailing Detector (ft)	800		0	-5		
Detector 1 Position(ft)	800		0	-5		
Detector 1 Size(ft)	6		20	40		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0		
Turn Type	NA		Perm	Prot		
Protected Phases	6			9		
Permitted Phases			9			
Detector Phase	6		9	9		
Switch Phase						
Minimum Initial (s)	25.0		3.0	3.0		
Minimum Split (s)	32.0		10.0	10.0		
Total Split (s)	72.0		22.0	22.0		

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Total Split (%)	21.7%	21.7%	21.7%		21.7%	21.7%		60.0%	60.0%			60.0%
Maximum Green (s)	20.0	20.0	20.0		20.0	20.0		65.0	65.0			65.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0		5.0	5.0			5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0			2.0
Lost Time Adjust (s)			0.0			-1.0			-1.0			
Total Lost Time (s)			6.0			5.0			6.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		6.1	6.1			6.1
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0		3.8	3.8			3.8
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0		43.0	43.0			43.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0		20.0	20.0			20.0
Recall Mode	None	None	None		None	None		Min	Min			Min
Act Effct Green (s)			20.2			21.2			53.0			
Actuated g/C Ratio			0.19			0.20			0.49			
v/c Ratio			0.92			0.06			0.93			
Control Delay			88.8			40.7			44.1			
Queue Delay			0.0			0.0			0.0			
Total Delay			88.8			40.7			44.1			
LOS			F			D			D			
Approach Delay			88.8			40.7			44.1			
Approach LOS			F			D			D			
Queue Length 50th (ft)			144			9			468			
Queue Length 95th (ft)			#329			31			669			
Internal Link Dist (ft)			7231			618			540			
Turn Bay Length (ft)												
Base Capacity (vph)			226			285			1029			
Starvation Cap Reductn			0			0			0			
Spillback Cap Reductn			0			0			0			
Storage Cap Reductn			0			0			0			
Reduced v/c Ratio			0.92			0.06			0.74			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 107.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 49.5		Intersection LOS: D	
Intersection Capacity Utilization 112.8%		ICU Level of Service H	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Rt 73 & NH Square Rd/Renninger Rd & Hoffmansville Rd

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Total Split (%)	60.0%		18.3%	18.3%		
Maximum Green (s)	65.0		15.0	15.0		
Yellow Time (s)	5.0		5.0	5.0		
All-Red Time (s)	2.0		2.0	2.0		
Lost Time Adjust (s)	-1.0			-1.0		
Total Lost Time (s)	6.0			6.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	6.1		3.0	3.0		
Minimum Gap (s)	3.8		3.0	3.0		
Time Before Reduce (s)	43.0		0.0	0.0		
Time To Reduce (s)	20.0		0.0	0.0		
Recall Mode	Min		None	None		
Act Effct Green (s)	53.0			16.1		
Actuated g/C Ratio	0.49			0.15		
v/c Ratio	0.34			0.83		
Control Delay	17.2			75.3		
Queue Delay	0.0			0.0		
Total Delay	17.2			75.3		
LOS	B			E		
Approach Delay	17.2			75.3		
Approach LOS	B			E		
Queue Length 50th (ft)	112			135		
Queue Length 95th (ft)	168			#299		
Internal Link Dist (ft)	2927			1882		
Turn Bay Length (ft)						
Base Capacity (vph)	1051			238		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.27			0.83		

Intersection Summary

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Lane Configurations												
Traffic Volume (vph)	9	160	6	25	6	6	4	35	563	129	4	1
Future Volume (vph)	9	160	6	25	6	6	4	35	563	129	4	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	12	12	12
Grade (%)			4%			0%			2%			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983			0.966			0.975			
Flt Protected			0.959			0.982			0.998			
Satd. Flow (prot)	0	0	1540	0	0	1594	0	0	1700	0	0	0
Flt Permitted			0.748			0.893			0.972			
Satd. Flow (perm)	0	0	1201	0	0	1449	0	0	1655	0	0	0
Right Turn on Red				No							No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			35			45			
Link Distance (ft)			7311			698			620			
Travel Time (s)			110.8			13.6			9.4			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	2%	25%	0%
Adj. Flow (vph)	9	167	6	26	6	6	4	36	586	134	4	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	208	0	0	16	0	0	760	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)			0			0			0			
Link Offset(ft)			0			0			0			
Crosswalk Width(ft)			16			16			16			
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.17	1.17	1.17	1.09	1.09	1.09	1.09	1.07
Turning Speed (mph)	15	15		9	15		9	15		9	9	15
Number of Detectors	1	1	1		1	1		1	1			1
Detector Template	Left	Left			Left			Left				Left
Leading Detector (ft)	20	20	35		20	30		20	411			20
Trailing Detector (ft)	0	0	-5		0	-10		0	405			0
Detector 1 Position(ft)	0	0	-5		0	-10		0	405			0
Detector 1 Size(ft)	20	20	40		20	40		20	6			20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Turn Type	Perm	Perm	NA		Perm	NA		Perm	NA			Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2				6
Detector Phase	4	4	4		8	8		2	2			6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0		3.0	3.0		25.0	25.0			25.0
Minimum Split (s)	9.0	9.0	9.0		9.0	9.0		32.0	32.0			32.0
Total Split (s)	29.0	29.0	29.0		29.0	29.0		69.0	69.0			69.0

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations						
Traffic Volume (vph)	264	4	5	90	92	2
Future Volume (vph)	264	4	5	90	92	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%			-2%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.933		
Flt Protected				0.975		
Satd. Flow (prot)	1696	0	0	1584	0	0
Flt Permitted	0.998			0.975		
Satd. Flow (perm)	1693	0	0	1584	0	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45		
Link Distance (ft)	3007			1962		
Travel Time (s)	45.6			29.7		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	0%	0%	2%	0%	0%
Adj. Flow (vph)	275	4	5	94	96	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	280	0	0	197	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(ft)	0			11		
Link Offset(ft)	0			0		
Crosswalk Width(ft)	16			16		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.11	1.11	1.11	1.11
Turning Speed (mph)		9	15	15	9	9
Number of Detectors	1		1	1		
Detector Template			Left			
Leading Detector (ft)	806		20	35		
Trailing Detector (ft)	800		0	-5		
Detector 1 Position(ft)	800		0	-5		
Detector 1 Size(ft)	6		20	40		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0		
Turn Type	NA		Perm	Prot		
Protected Phases	6			9		
Permitted Phases			9			
Detector Phase	6		9	9		
Switch Phase						
Minimum Initial (s)	25.0		3.0	3.0		
Minimum Split (s)	32.0		10.0	10.0		
Total Split (s)	69.0		22.0	22.0		

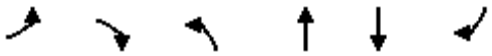
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Total Split (%)	24.2%	24.2%	24.2%		24.2%	24.2%		57.5%	57.5%			57.5%
Maximum Green (s)	23.0	23.0	23.0		23.0	23.0		62.0	62.0			62.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0		5.0	5.0			5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0			2.0
Lost Time Adjust (s)			0.0			-1.0			-1.0			
Total Lost Time (s)			6.0			5.0			6.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		6.1	6.1			6.1
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0		3.8	3.8			3.8
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0		43.0	43.0			43.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0		20.0	20.0			20.0
Recall Mode	None	None	None		None	None		Min	Min			Min
Act Effct Green (s)			21.8			22.9			53.8			
Actuated g/C Ratio			0.20			0.21			0.49			
v/c Ratio			0.87			0.05			0.94			
Control Delay			78.8			38.9			47.0			
Queue Delay			0.0			0.0			0.0			
Total Delay			78.8			38.9			47.0			
LOS			E			D			D			
Approach Delay			78.8			38.9			47.0			
Approach LOS			E			D			D			
Queue Length 50th (ft)			152			10			498			
Queue Length 95th (ft)			#304			30			#762			
Internal Link Dist (ft)			7231			618			540			
Turn Bay Length (ft)												
Base Capacity (vph)			254			319			959			
Starvation Cap Reductn			0			0			0			
Spillback Cap Reductn			0			0			0			
Storage Cap Reductn			0			0			0			
Reduced v/c Ratio			0.82			0.05			0.79			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 110.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 50.3		Intersection LOS: D	
Intersection Capacity Utilization 112.8%		ICU Level of Service H	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: Rt 73 & NH Square Rd/Renninger Rd & Hoffmansville Rd

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Total Split (%)	57.5%		18.3%	18.3%		
Maximum Green (s)	62.0		15.0	15.0		
Yellow Time (s)	5.0		5.0	5.0		
All-Red Time (s)	2.0		2.0	2.0		
Lost Time Adjust (s)	-1.0			-1.0		
Total Lost Time (s)	6.0			6.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	6.1		3.0	3.0		
Minimum Gap (s)	3.8		3.0	3.0		
Time Before Reduce (s)	43.0		0.0	0.0		
Time To Reduce (s)	20.0		0.0	0.0		
Recall Mode	Min		None	None		
Act Effct Green (s)	53.8			16.2		
Actuated g/C Ratio	0.49			0.15		
v/c Ratio	0.34			0.85		
Control Delay	18.2			79.0		
Queue Delay	0.0			0.0		
Total Delay	18.2			79.0		
LOS	B			E		
Approach Delay	18.2			79.0		
Approach LOS	B			E		
Queue Length 50th (ft)	119			147		
Queue Length 95th (ft)	178			#299		
Internal Link Dist (ft)	2927			1882		
Turn Bay Length (ft)						
Base Capacity (vph)	981			233		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.29			0.85		

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	40	59	360	430	39
Future Volume (vph)	19	40	59	360	430	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	11	11	11	11
Grade (%)	2%			-2%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.908				0.989	
Flt Protected	0.984			0.993		
Satd. Flow (prot)	1619	0	0	1730	1707	0
Flt Permitted	0.984			0.993		
Satd. Flow (perm)	1619	0	0	1730	1707	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	2834			804	4252	
Travel Time (s)	77.3			13.7	72.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	5%	0%	0%	1%	2%	0%
Adj. Flow (vph)	21	45	66	404	483	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	0	470	527	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.11	1.11	1.11	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

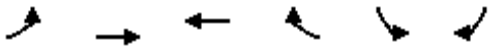
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	40	59	360	430	39
Future Vol, veh/h	19	40	59	360	430	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	-2	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	5	0	0	1	2	0
Mvmt Flow	21	45	66	404	483	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1041	505	527	0	-	0
Stage 1	505	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Critical Hdwy	6.85	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.85	-	-	-	-	-
Critical Hdwy Stg 2	5.85	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	248	584	790	-	-	-
Stage 1	647	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	221	584	790	-	-	-
Mov Cap-2 Maneuver	221	-	-	-	-	-
Stage 1	577	-	-	-	-	-
Stage 2	623	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.4	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	790	-	382	-	-
HCM Lane V/C Ratio	0.084	-	0.174	-	-
HCM Control Delay (s)	10	0	16.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.6	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	46	500	663	78	28	33
Future Volume (vph)	46	500	663	78	28	33
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)		-2%	1%		7%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.986		0.927	
Flt Protected		0.996			0.978	
Satd. Flow (prot)	0	1704	1692	0	1405	0
Flt Permitted		0.996			0.978	
Satd. Flow (perm)	0	1704	1692	0	1405	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		480	1529		1959	
Travel Time (s)		9.4	29.8		53.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	4%	12%
Adj. Flow (vph)	47	515	684	80	29	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	562	764	0	63	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.13	1.13	1.17	1.17
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

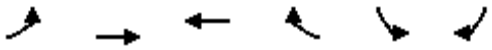
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	46	500	663	78	28	33
Future Vol, veh/h	46	500	663	78	28	33
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, %	-	-2	1	-	7	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	3	1	0	4	12
Mvmt Flow	47	515	684	80	29	34

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	764	0	-	0	1333	724
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	609	-
Critical Hdwy	4.3	-	-	-	7.84	7.02
Critical Hdwy Stg 1	-	-	-	-	6.84	-
Critical Hdwy Stg 2	-	-	-	-	6.84	-
Follow-up Hdwy	3	-	-	-	3	3.2
Pot Cap-1 Maneuver	651	-	-	-	109	372
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	481	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	651	-	-	-	98	372
Mov Cap-2 Maneuver	-	-	-	-	98	-
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	481	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	40.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	651	-	-	-	163
HCM Lane V/C Ratio	0.073	-	-	-	0.386
HCM Control Delay (s)	11	0	-	-	40.3
HCM Lane LOS	B	A	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	1.7



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	463	683	43	17	20
Future Volume (vph)	33	463	683	43	17	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	12	12
Grade (%)		-1%	2%		6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992		0.926	
Flt Protected		0.997			0.978	
Satd. Flow (prot)	0	1787	1688	0	1461	0
Flt Permitted		0.997			0.978	
Satd. Flow (perm)	0	1787	1688	0	1461	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		1529	1692		3357	
Travel Time (s)		29.8	33.0		91.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	1%	5%	6%	10%
Adj. Flow (vph)	36	503	742	47	18	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	539	789	0	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.13	1.13	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

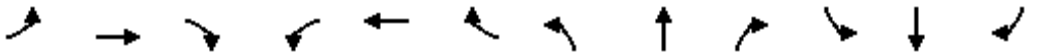
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	463	683	43	17	20
Future Vol, veh/h	33	463	683	43	17	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	2	-	6	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	5	6	10
Mvmt Flow	36	503	742	47	18	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	789	0	-	0	1341	766
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	575	-
Critical Hdwy	4.3	-	-	-	7.66	6.9
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	6.66	-
Follow-up Hdwy	3	-	-	-	3.1	3.2
Pot Cap-1 Maneuver	638	-	-	-	113	357
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	638	-	-	-	104	357
Mov Cap-2 Maneuver	-	-	-	-	104	-
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	32.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	638	-	-	-	169
HCM Lane V/C Ratio	0.056	-	-	-	0.238
HCM Control Delay (s)	11	0	-	-	32.8
HCM Lane LOS	B	A	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

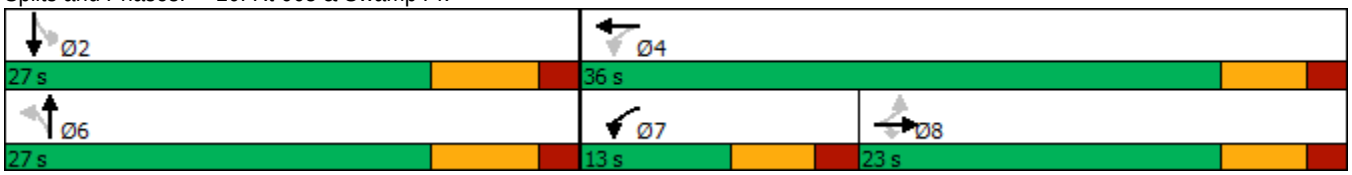


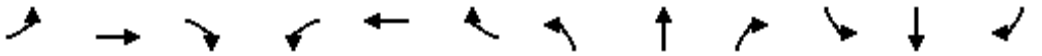
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	371	138	159	575	119	162	224	110	125	292	52
Future Volume (vph)	66	371	138	159	575	119	162	224	110	125	292	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	16	11	12	12	10	12	12	10	15	15
Grade (%)		4%			1%			-2%			2%	
Storage Length (ft)	110		130	110		0	80		0	115		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	75			75			50			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.974			0.951			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1620	1747	1699	1645	1721	0	1596	1695	0	1580	1899	0
Flt Permitted	0.338			0.293			0.432			0.446		
Satd. Flow (perm)	576	1747	1699	507	1721	0	726	1695	0	742	1899	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		23			42			15	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1056			1880			3165			2949	
Travel Time (s)		20.6			36.6			53.9			50.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	3%	0%	0%	1%	0%
Adj. Flow (vph)	67	379	141	162	587	121	165	229	112	128	298	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	379	141	162	708	0	165	341	0	128	351	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.10	0.94	1.13	1.08	1.08	1.16	1.06	1.06	1.19	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	35	35	35	35	35		35	35		35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Size(ft)	40	40	40	40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		8		7	4			6			2	
Permitted Phases	8		8	4			6			2		
Detector Phase	8	8	8	7	4		6	6		2	2	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	10.0	10.0	10.0	3.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	16.0	16.0	16.0	9.0	16.0		17.0	17.0		17.0	17.0	
Total Split (s)	23.0	23.0	23.0	13.0	36.0		27.0	27.0		27.0	27.0	
Total Split (%)	36.5%	36.5%	36.5%	20.6%	57.1%		42.9%	42.9%		42.9%	42.9%	
Maximum Green (s)	17.0	17.0	17.0	7.0	30.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	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	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		5.0	5.0		5.0	5.0	
Recall Mode	Min	Min	Min	None	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 63	
Actuated Cycle Length: 58.4	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 10: Rt 663 & Swamp Pk





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	371	138	159	575	119	162	224	110	125	292	52
Future Volume (veh/h)	66	371	138	159	575	119	162	224	110	125	292	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1779	1794	1780	1780	1860	1832	1832	1778	1834	1834
Adj Flow Rate, veh/h	67	379	136	162	587	120	165	229	110	128	298	48
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	1	0	0	1	1	1	3	3	0	1	1
Cap, veh/h	210	494	439	382	691	141	322	397	191	312	524	84
Arrive On Green	0.29	0.29	0.29	0.11	0.48	0.47	0.34	0.34	0.32	0.34	0.34	0.32
Sat Flow, veh/h	716	1697	1508	1709	1434	293	1086	1169	562	1045	1541	248
Grp Volume(v), veh/h	67	379	136	162	0	707	165	0	339	128	0	346
Grp Sat Flow(s),veh/h/ln	716	1697	1508	1709	0	1728	1086	0	1731	1045	0	1790
Q Serve(g_s), s	5.5	12.6	4.3	3.6	0.0	22.2	9.0	0.0	10.0	7.0	0.0	9.8
Cycle Q Clear(g_c), s	15.5	12.6	4.3	3.6	0.0	22.2	18.3	0.0	10.0	16.5	0.0	9.8
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.32	1.00		0.14
Lane Grp Cap(c), veh/h	210	494	439	382	0	833	322	0	588	312	0	608
V/C Ratio(X)	0.32	0.77	0.31	0.42	0.00	0.85	0.51	0.00	0.58	0.41	0.00	0.57
Avail Cap(c_a), veh/h	210	494	439	416	0	867	322	0	588	312	0	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.7	20.0	17.0	12.9	0.0	14.1	23.9	0.0	16.9	23.3	0.0	16.7
Incr Delay (d2), s/veh	1.8	8.3	0.8	0.7	0.0	8.6	2.7	0.0	2.2	1.9	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	9.4	2.6	2.2	0.0	13.9	4.1	0.0	6.8	3.1	0.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	28.3	17.9	13.6	0.0	22.8	26.7	0.0	19.1	25.1	0.0	18.8
LnGrp LOS	C	C	B	B	A	C	C	A	B	C	A	B
Approach Vol, veh/h		582			869			504			474	
Approach Delay, s/veh		25.8			21.1			21.6			20.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		27.0		34.8		27.0	11.8	23.0				
Change Period (Y+Rc), s		7.0		6.0		7.0	6.0	6.0				
Max Green Setting (Gmax), s		20.0		30.0		20.0	7.0	17.0				
Max Q Clear Time (g_c+I1), s		19.0		24.2		20.8	6.1	18.0				
Green Ext Time (p_c), s		0.4		2.8		0.0	0.0	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			22.2									
HCM 6th LOS			C									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	589	36	19	849	19	9
Future Volume (vph)	589	36	19	849	19	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	16	16
Grade (%)	2%			-2%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.957	
Flt Protected				0.999	0.967	
Satd. Flow (prot)	1735	0	0	1781	1907	0
Flt Permitted				0.999	0.967	
Satd. Flow (perm)	1735	0	0	1781	1907	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	1880			2257	428	
Travel Time (s)	36.6			44.0	9.7	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	601	37	19	866	19	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	638	0	0	885	28	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.06	1.06	0.90	0.90
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

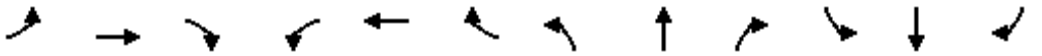
Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	589	36	19	849	19	9
Future Vol, veh/h	589	36	19	849	19	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	601	37	19	866	19	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	638	0	1524	620
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	904	-
Critical Hdwy	-	-	4.3	-	6	6
Critical Hdwy Stg 1	-	-	-	-	5	-
Critical Hdwy Stg 2	-	-	-	-	5	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	722	-	167	533
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	722	-	158	533
Mov Cap-2 Maneuver	-	-	-	-	158	-
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	462	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	25.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	204	-	-	722	-
HCM Lane V/C Ratio	0.14	-	-	0.027	-
HCM Control Delay (s)	25.5	-	-	10.1	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	564	31	67	827	18	32	2	34	8	2	9
Future Volume (vph)	3	564	31	67	827	18	32	2	34	8	2	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	16	16	11	14	14	10	11	11
Grade (%)		4%			-3%			2%			-2%	
Storage Length (ft)	60		0	65		0	50		0	50		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65			70			35			30		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.997			0.858			0.877	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	1733	0	1620	2044	0	1636	1631	0	1612	1541	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1564	1733	0	1620	2044	0	1636	1631	0	1612	1541	0
Link Speed (mph)		35			35			35			25	
Link Distance (ft)		2257			1618			320			222	
Travel Time (s)		44.0			31.5			6.2			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	594	33	71	871	19	34	2	36	8	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	627	0	71	890	0	34	38	0	8	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.20	1.10	1.10	1.15	0.89	0.89	1.13	1.00	1.00	1.16	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

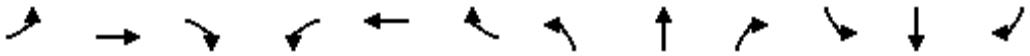
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	564	31	67	827	18	32	2	34	8	2	9
Future Vol, veh/h	3	564	31	67	827	18	32	2	34	8	2	9
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	60	-	-	65	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	-3	-	-	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	594	33	71	871	19	34	2	36	8	2	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	890	0	0	627	0	0	1645	1649	611	1659	1656	881
Stage 1	-	-	-	-	-	-	617	617	-	1023	1023	-
Stage 2	-	-	-	-	-	-	1028	1032	-	636	633	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.5	6.9	6.4	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.9	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.9	-	5.7	5.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	587	-	-	729	-	-	72	83	504	101	119	382
Stage 1	-	-	-	-	-	-	504	452	-	353	354	-
Stage 2	-	-	-	-	-	-	279	279	-	565	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	587	-	-	729	-	-	64	75	504	85	107	382
Mov Cap-2 Maneuver	-	-	-	-	-	-	64	75	-	85	107	-
Stage 1	-	-	-	-	-	-	501	450	-	351	320	-
Stage 2	-	-	-	-	-	-	244	252	-	520	508	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	60.8	33.2
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	64	382	587	-	-	729	-	-	85	260
HCM Lane V/C Ratio	0.526	0.099	0.005	-	-	0.097	-	-	0.099	0.045
HCM Control Delay (s)	111.8	15.5	11.2	-	-	10.5	-	-	52	19.5
HCM Lane LOS	F	C	B	-	-	B	-	-	F	C
HCM 95th %tile Q(veh)	2.1	0.3	0	-	-	0.3	-	-	0.3	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	560	35	21	893	17	13	4	7	3	1	6
Future Volume (vph)	11	560	35	21	893	17	13	4	7	3	1	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	13	13	13	10	10	10	13	13	13
Grade (%)		4%			-4%			-2%			3%	
Storage Length (ft)	0		0	0		0	0		60	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.998				0.850		0.914	
Flt Protected		0.999			0.999			0.963			0.987	
Satd. Flow (prot)	0	1732	0	0	1874	0	0	1634	1442	0	1653	0
Flt Permitted		0.999			0.999			0.963			0.987	
Satd. Flow (perm)	0	1732	0	0	1874	0	0	1634	1442	0	1653	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1618			2306			635			412	
Travel Time (s)		31.5			44.9			17.3			11.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	622	39	23	992	19	14	4	8	3	1	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	673	0	0	1034	0	0	18	8	0	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.00	1.00	1.00	1.16	1.16	1.16	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

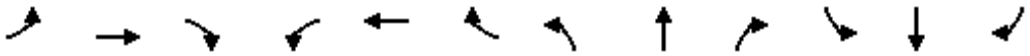
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	11	560	35	21	893	17	13	4	7	3	1	6
Future Vol, veh/h	11	560	35	21	893	17	13	4	7	3	1	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	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	-	-	60	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	-4	-	-	-2	-	-	3	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	12	622	39	23	992	19	14	4	8	3	1	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1011	0	0	661	0	0	1718	1723	642	1716	1733	1002
Stage 1	-	-	-	-	-	-	666	666	-	1048	1048	-
Stage 2	-	-	-	-	-	-	1052	1057	-	668	685	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.7	6.1	6	7.7	7.1	6.5
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	6.7	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	6.7	6.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	531	-	-	709	-	-	92	109	519	57	67	284
Stage 1	-	-	-	-	-	-	545	496	-	256	258	-
Stage 2	-	-	-	-	-	-	341	342	-	451	403	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	531	-	-	709	-	-	81	97	519	50	60	284
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	97	-	50	60	-
Stage 1	-	-	-	-	-	-	525	478	-	247	239	-
Stage 2	-	-	-	-	-	-	307	317	-	424	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	45.9	44.6
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	84	519	531	-	-	709	-	-	102
HCM Lane V/C Ratio	0.225	0.015	0.023	-	-	0.033	-	-	0.109
HCM Control Delay (s)	59.9	12	11.9	0	-	10.2	0	-	44.6
HCM Lane LOS	F	B	B	A	-	B	A	-	E
HCM 95th %tile Q(veh)	0.8	0	0.1	-	-	0.1	-	-	0.4



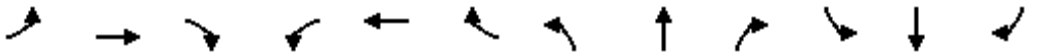
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	500	28	55	887	151	36	33	26	78	39	8
Future Volume (vph)	42	500	28	55	887	151	36	33	26	78	39	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	11	11	11	12	12	12	16	16	16
Grade (%)		-7%			0%			1%			-6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.981			0.964			0.992	
Flt Protected		0.996			0.997			0.981			0.970	
Satd. Flow (prot)	0	1808	0	0	1688	0	0	1694	0	0	2022	0
Flt Permitted		0.865			0.946			0.838			0.790	
Satd. Flow (perm)	0	1570	0	0	1602	0	0	1447	0	0	1647	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			17			19			3	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		2306			510			926			6332	
Travel Time (s)		44.9			9.9			18.0			123.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	44	526	29	58	934	159	38	35	27	82	41	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	599	0	0	1151	0	0	100	0	0	131	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.12	1.12	1.12	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	4	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	371		20	371		20	35		20	56	
Trailing Detector (ft)	0	0		0	0		0	-5		0	-10	
Detector 1 Position(ft)	0	0		0	0		0	-5		0	-10	
Detector 1 Size(ft)	20	6		20	6		20	40		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		365			365						4	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Detector 3 Position(ft)											25	
Detector 3 Size(ft)											6	
Detector 3 Type											Cl+Ex	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 3 Channel												
Detector 3 Extend (s)											0.0	
Detector 4 Position(ft)											50	
Detector 4 Size(ft)											6	
Detector 4 Type											Cl+Ex	
Detector 4 Channel												
Detector 4 Extend (s)											0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	26.0	26.0		26.0	26.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		12.0	12.0		12.0	12.0	
Total Split (s)	64.0	64.0		64.0	64.0		28.0	28.0		28.0	28.0	
Total Split (%)	69.6%	69.6%		69.6%	69.6%		30.4%	30.4%		30.4%	30.4%	
Maximum Green (s)	57.0	57.0		57.0	57.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.5	2.5		2.5	2.5		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	37.0	37.0		37.0	37.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 92
Actuated Cycle Length: 84.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: NH Square Rd & Swamp Pk



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	500	28	55	887	151	36	33	26	78	39	8
Future Volume (veh/h)	42	500	28	55	887	151	36	33	26	78	39	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2032	2032	2032	1786	1786	1786	1794	1794	1794	2104	2104	2104
Adj Flow Rate, veh/h	44	526	29	58	934	159	38	35	27	82	41	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	0	0	0	0	0	0
Cap, veh/h	102	1181	63	89	1031	172	119	77	49	198	66	12
Arrive On Green	0.73	0.74	0.73	0.73	0.74	0.73	0.10	0.11	0.10	0.10	0.11	0.10
Sat Flow, veh/h	71	1598	85	56	1396	233	511	718	454	1143	614	114
Grp Volume(v), veh/h	599	0	0	1151	0	0	100	0	0	131	0	0
Grp Sat Flow(s),veh/h/ln	1754	0	0	1684	0	0	1683	0	0	1871	0	0
Q Serve(g_s), s	0.0	0.0	0.0	26.3	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	8.8	0.0	0.0	45.3	0.0	0.0	4.3	0.0	0.0	5.1	0.0	0.0
Prop In Lane	0.07		0.05	0.05		0.14	0.38		0.27	0.63		0.06
Lane Grp Cap(c), veh/h	1323	0	0	1271	0	0	224	0	0	253	0	0
V/C Ratio(X)	0.45	0.00	0.00	0.91	0.00	0.00	0.45	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	1326	0	0	1275	0	0	490	0	0	553	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	8.4	0.0	0.0	33.4	0.0	0.0	33.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	9.9	0.0	0.0	1.4	0.0	0.0	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.7	0.0	0.0	19.6	0.0	0.0	3.3	0.0	0.0	4.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.4	0.0	0.0	18.3	0.0	0.0	34.8	0.0	0.0	35.4	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	C	A	A	D	A	A
Approach Vol, veh/h		599			1151			100			131	
Approach Delay, s/veh		4.4			18.3			34.8			35.4	
Approach LOS		A			B			C			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.8		14.5		63.8		14.5				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		57.0		21.0		57.0		21.0				
Max Q Clear Time (g_c+I1), s		10.8		7.1		47.3		6.3				
Green Ext Time (p_c), s		25.8		0.4		9.5		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			16.0									
HCM 6th LOS			B									

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	56	1039	4	36	571
Future Volume (vph)	1	56	1039	4	36	571
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%		-3%			2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.867					
Flt Protected	0.999					0.997
Satd. Flow (prot)	1530	0	1732	0	0	1744
Flt Permitted	0.999					0.997
Satd. Flow (perm)	1530	0	1732	0	0	1744
Link Speed (mph)	25		35			35
Link Distance (ft)	364		1765			510
Travel Time (s)	9.9		34.4			9.9
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	1	58	1082	4	38	595
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	1086	0	0	633
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.10	1.10	1.10	1.10	1.09	1.09
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

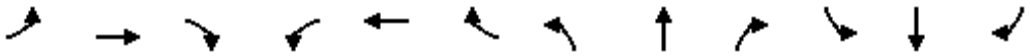
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	56	1039	4	36	571
Future Vol, veh/h	1	56	1039	4	36	571
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	-3	-	-	2
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	1	58	1082	4	38	595

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1755	1084	0	0	1086	0
Stage 1	1084	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.3	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	135	302	-	-	498	-
Stage 1	430	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	120	302	-	-	498	-
Mov Cap-2 Maneuver	120	-	-	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	567	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.3	0	0.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	294	498	-
HCM Lane V/C Ratio	-	-	0.202	0.075	-
HCM Control Delay (s)	-	-	20.3	12.8	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.7	0.2	-

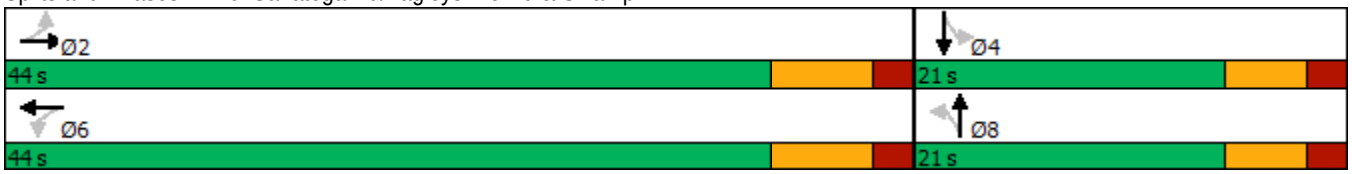


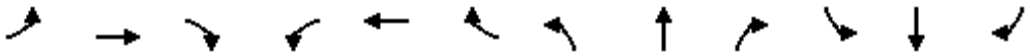
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	506	26	30	926	29	56	42	19	18	46	9
Future Volume (vph)	9	506	26	30	926	29	56	42	19	18	46	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	10	10	10	13	13	13
Grade (%)		4%			-8%			-5%			6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.996			0.978			0.984	
Flt Protected		0.999			0.998			0.977			0.988	
Satd. Flow (prot)	0	1684	0	0	1838	0	0	1616	0	0	1687	0
Flt Permitted		0.983			0.975			0.810			0.911	
Satd. Flow (perm)	0	1657	0	0	1796	0	0	1340	0	0	1556	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			4			14			9	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1765			540			508			343	
Travel Time (s)		34.4			10.5			9.9			6.7	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	11%	4%	0%	3%	1%	7%	0%	5%	0%	0%	2%	22%
Adj. Flow (vph)	9	516	27	31	945	30	57	43	19	18	47	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	552	0	0	1006	0	0	119	0	0	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			20	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.02	1.02	1.02	1.13	1.13	1.13	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	456		20	456		20	35		20	35	
Trailing Detector (ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Position(ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Size(ft)	20	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		450			450							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		9.0	9.0		9.0	9.0	
Total Split (s)	44.0	44.0		44.0	44.0		21.0	21.0		21.0	21.0	
Total Split (%)	67.7%	67.7%		67.7%	67.7%		32.3%	32.3%		32.3%	32.3%	
Maximum Green (s)	37.0	37.0		37.0	37.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 16: Sanatoga Rd/Fagleysville Rd & Swamp Pk

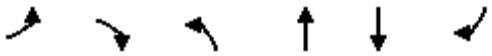




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	506	26	30	926	29	56	42	19	18	46	9
Future Volume (veh/h)	9	506	26	30	926	29	56	42	19	18	46	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1655	1655	1655	2084	2084	2084	1915	1915	1915	1634	1634	1634
Adj Flow Rate, veh/h	9	516	27	31	945	30	57	43	19	18	47	9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	2	2	2
Cap, veh/h	72	1041	54	88	1321	41	187	86	33	113	135	23
Arrive On Green	0.66	0.68	0.66	0.66	0.68	0.66	0.10	0.12	0.10	0.10	0.12	0.10
Sat Flow, veh/h	7	1539	80	29	1952	61	738	712	276	252	1118	190
Grp Volume(v), veh/h	552	0	0	1006	0	0	119	0	0	74	0	0
Grp Sat Flow(s),veh/h/ln	1626	0	0	2042	0	0	1726	0	0	1560	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.1	0.0	0.0	17.1	0.0	0.0	3.5	0.0	0.0	2.3	0.0	0.0
Prop In Lane	0.02		0.05	0.03		0.03	0.48		0.16	0.24		0.12
Lane Grp Cap(c), veh/h	1137	0	0	1412	0	0	275	0	0	243	0	0
V/C Ratio(X)	0.49	0.00	0.00	0.71	0.00	0.00	0.43	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h	1173	0	0	1458	0	0	557	0	0	500	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.3	0.0	0.0	5.6	0.0	0.0	22.8	0.0	0.0	22.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	1.6	0.0	0.0	2.3	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	0.0	0.0	8.2	0.0	0.0	2.7	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.7	0.0	0.0	7.2	0.0	0.0	25.0	0.0	0.0	23.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	A
Approach Vol, veh/h		552			1006			119			74	
Approach Delay, s/veh		4.7			7.2			25.0			23.7	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		42.8		11.6		42.8		11.6				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		37.0		15.0		37.0		15.0				
Max Q Clear Time (g_c+I1), s		11.1		4.3		19.1		5.5				
Green Ext Time (p_c), s		14.9		0.2		16.7		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			8.3									
HCM 6th LOS			A									



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	42	23	40	393	555	46
Future Volume (vph)	42	23	40	393	555	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	11	11	12	12
Grade (%)	-1%			-4%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952				0.990	
Flt Protected	0.969			0.995		
Satd. Flow (prot)	1754	0	0	1719	1699	0
Flt Permitted	0.969			0.995		
Satd. Flow (perm)	1754	0	0	1719	1699	0
Link Speed (mph)	35			40	40	
Link Distance (ft)	540			956	3165	
Travel Time (s)	10.5			16.3	53.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	10%	4%	0%	3%	3%	0%
Adj. Flow (vph)	45	25	43	423	597	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	0	0	466	646	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	16			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.90	0.90	1.09	1.09	1.10	1.10
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

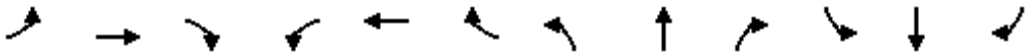
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	42	23	40	393	555	46
Future Vol, veh/h	42	23	40	393	555	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	-4	4	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	10	4	0	3	3	0
Mvmt Flow	45	25	43	423	597	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1131	622	646	0	-	0
Stage 1	622	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.3	6.14	4.3	-	-	-
Critical Hdwy Stg 1	5.3	-	-	-	-	-
Critical Hdwy Stg 2	5.3	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3	-	-	-
Pot Cap-1 Maneuver	251	519	717	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	231	519	717	-	-	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	678	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.5	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	717	-	287	-	-
HCM Lane V/C Ratio	0.06	-	0.244	-	-
HCM Control Delay (s)	10.3	0	21.5	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-



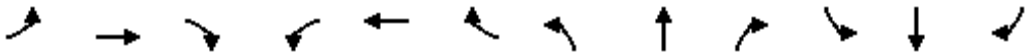
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	29	48	25	14	11	28	441	42	32	421	46
Future Volume (vph)	53	29	48	25	14	11	28	441	42	32	421	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		2%			-1%			-1%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.970			0.989			0.988	
Flt Protected		0.980			0.976			0.997			0.997	
Satd. Flow (prot)	0	1550	0	0	1598	0	0	1768	0	0	1723	0
Flt Permitted		0.847			0.860			0.961			0.952	
Satd. Flow (perm)	0	1340	0	0	1408	0	0	1705	0	0	1645	0
Right Turn on Red			No			No			Yes			No
Satd. Flow (RTOR)								10				
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		477			665			1951			956	
Travel Time (s)		10.8			15.1			33.3			16.3	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	54	29	48	25	14	11	28	445	42	32	425	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	131	0	0	50	0	0	515	0	0	503	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.16	1.16	1.16	1.07	1.07	1.07	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	2		1	2	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	35		20	35		20	369		20	371	
Trailing Detector (ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Position(ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Size(ft)	20	40		20	40		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)								363			365	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	8.0	8.0		8.0	8.0		22.0	22.0		22.0	22.0	
Total Split (s)	25.0	25.0		25.0	25.0		65.0	65.0		65.0	65.0	
Total Split (%)	27.8%	27.8%		27.8%	27.8%		72.2%	72.2%		72.2%	72.2%	
Maximum Green (s)	20.0	20.0		20.0	20.0		58.0	58.0		58.0	58.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		2.5	2.5		2.5	2.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		37.0	37.0		37.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		10.0	10.0		10.0	10.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 51
Natural Cycle: 40
Control Type: Actuated-Uncoordinated

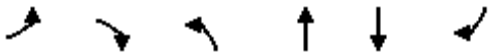
Splits and Phases: 18: Rt 663 & Buchert Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	29	48	25	14	11	28	441	42	32	421	46
Future Volume (veh/h)	53	29	48	25	14	11	28	441	42	32	421	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1778	1778	1778	1837	1837	1837	1823	1823	1823	1697	1697	1697
Adj Flow Rate, veh/h	54	29	48	25	14	11	28	445	42	32	425	46
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	184	61	79	198	102	52	107	1020	93	112	926	96
Arrive On Green	0.12	0.14	0.12	0.12	0.14	0.12	0.63	0.65	0.63	0.63	0.65	0.63
Sat Flow, veh/h	542	438	567	593	733	374	40	1576	144	46	1432	149
Grp Volume(v), veh/h	131	0	0	50	0	0	515	0	0	503	0	0
Grp Sat Flow(s),veh/h/ln	1547	0	0	1699	0	0	1760	0	0	1626	0	0
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.8	0.0	0.0	1.2	0.0	0.0	6.8	0.0	0.0	7.3	0.0	0.0
Prop In Lane	0.41		0.37	0.50		0.22	0.05		0.08	0.06		0.09
Lane Grp Cap(c), veh/h	291	0	0	315	0	0	1183	0	0	1100	0	0
V/C Ratio(X)	0.45	0.00	0.00	0.16	0.00	0.00	0.44	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	757	0	0	786	0	0	2235	0	0	2068	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.3	0.0	0.0	18.2	0.0	0.0	4.1	0.0	0.0	4.2	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.2	0.0	0.0	0.5	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.4	0.0	0.0	0.8	0.0	0.0	2.3	0.0	0.0	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	0.0	0.0	18.4	0.0	0.0	4.7	0.0	0.0	4.9	0.0	0.0
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		131			50			515			503	
Approach Delay, s/veh		20.4			18.4			4.7			4.9	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		36.3		10.5		36.3		10.5				
Change Period (Y+Rc), s		7.0		5.0		7.0		5.0				
Max Green Setting (Gmax), s		58.0		20.0		58.0		20.0				
Max Q Clear Time (g_c+I1), s		8.8		5.8		9.3		3.2				
Green Ext Time (p_c), s		20.5		0.3		20.0		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			7.0									
HCM 6th LOS			A									



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	71	144	366	389	85
Future Volume (vph)	53	71	144	366	389	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	12	12	11	11
Grade (%)	-2%			2%	-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.922				0.976	
Flt Protected	0.979			0.986		
Satd. Flow (prot)	1532	0	0	1740	1698	0
Flt Permitted	0.979			0.986		
Satd. Flow (perm)	1532	0	0	1740	1698	0
Link Speed (mph)	40			40	40	
Link Distance (ft)	847			673	1951	
Travel Time (s)	14.4			11.5	33.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	1%	1%	4%
Adj. Flow (vph)	56	76	153	389	414	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	542	504	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.16	1.16	1.09	1.09	1.10	1.10
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	71	144	366	389	85
Future Vol, veh/h	53	71	144	366	389	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	2	-3	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	1	1	4
Mvmt Flow	56	76	153	389	414	90

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1154	459	504	0	-	0
Stage 1	459	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Critical Hdwy	6	6	4.3	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	273	654	805	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	207	654	805	-	-	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	602	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.1	3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	805	-	340	-	-
HCM Lane V/C Ratio	0.19	-	0.388	-	-
HCM Control Delay (s)	10.5	0	22.1	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0.7	-	1.8	-	-

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Appendix G

Pass-Through Trip Generation Characteristics

Table G1 - Pass-Through Vehicular Trip Generation within New Hanover Township [1,2]

Description	ITE Land Use Code	Size	Daily	Weekday Afternoon Peak Hour		
				In	Out	Total
Single-Family Homes	210	310 d.u.	2,944	190	111	301
Multi-Family Homes	220	66 d.u.	458	26	15	41
Total		**376 d.u.**	**3,402**	**216**	**126**	**342**

(1) Includes previously approved plans/projects not located within the new Transportation Service Area.

(2) Based on the Institute of Transportation Engineers' publication, *Trip Generation Manual, 10th Edition.*

Table G2 - Potential "New" Vehicular Trip Generation from Surrounding Municipalities

Description/Location	Municipality	Size	ITE LU Code	Weekday Afternoon Peak Hour		
				Enter	Exit	Total
Route 100/Cross Road	Upper Pottsgrove Township	51 units	220	20	12	32
Sprogels Run	Upper Pottsgrove Township	58 units	210	38	22	60
GEG Investments	Lower Pottsgrove Township	189 units	151	2	2	4
Spring Vally Farms	Lower Pottsgrove Township	178 units	210	111	66	177
Limerick Town Center	Limerick Township	200 units, 123 beds, 50,000 s,f,	varies	171	159	330
Hallowell Tract	Douglass Township	92	210	61	36	97
Cobblestone Crossing	Douglass Township	106	210	70	41	111
Holly Road	Douglass Township	196 d.u. and 28,130 s.f.	varies	161	132	293
Minister Creek Phase 1	Douglass Township	196,400 s.f., 100 rooms	varies	229	227	456
Danney Jake	Douglass Township	241 units	220	83	42	125
Graterford Properties	Douglass Township	10 units	210	6	4	10
303 Gilbertsville Road	Douglass Township	20 units	210	14	8	22
650 Englesville Road	Douglass Township	303 units	220	100	58	158
TOTAL				**1,066**	**809**	**1,875**

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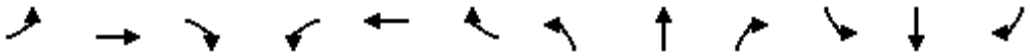
Appendix H

2030 Future Pass-Through Capacity/Level-of-Service Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	505	21	49	689	1	24	36	61	8	7	8
Future Volume (vph)	14	505	21	49	689	1	24	36	61	8	7	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	13	13	13	12	12	12	10	10	10
Grade (%)		-2%			1%			-2%			1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995						0.932			0.953	
Flt Protected		0.999			0.997			0.990			0.983	
Satd. Flow (prot)	0	1756	0	0	1809	0	0	1645	0	0	1535	0
Flt Permitted		0.999			0.997			0.990			0.983	
Satd. Flow (perm)	0	1756	0	0	1809	0	0	1645	0	0	1535	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		360			1976			2527			378	
Travel Time (s)		5.5			29.9			68.9			10.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	16	567	24	55	774	1	27	40	69	9	8	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	607	0	0	830	0	0	136	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.03	1.03	1.03	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	14	505	21	49	689	1	24	36	61	8	7	8
Future Vol, veh/h	14	505	21	49	689	1	24	36	61	8	7	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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	1	-	-	-2	-	-	1	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	3	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	567	24	55	774	1	27	40	69	9	8	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	775	0	0	591	0	0	1504	1496	579	1551	1508	775
Stage 1	-	-	-	-	-	-	611	611	-	885	885	-
Stage 2	-	-	-	-	-	-	893	885	-	666	623	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.72	6.12	6.02	7.32	6.72	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	5.72	5.12	-	6.32	5.72	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.72	5.12	-	6.32	5.72	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.018	3.1	3	4.018	3.1
Pot Cap-1 Maneuver	645	-	-	750	-	-	127	145	560	91	111	408
Stage 1	-	-	-	-	-	-	580	518	-	359	346	-
Stage 2	-	-	-	-	-	-	412	401	-	486	462	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	645	-	-	750	-	-	102	122	560	52	93	408
Mov Cap-2 Maneuver	-	-	-	-	-	-	102	122	-	52	93	-
Stage 1	-	-	-	-	-	-	559	499	-	346	301	-
Stage 2	-	-	-	-	-	-	342	349	-	377	445	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.7	61.7	58.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	189	645	-	-	750	-	-	92
HCM Lane V/C Ratio	0.719	0.024	-	-	0.073	-	-	0.281
HCM Control Delay (s)	61.7	10.7	0	-	10.2	0	-	58.8
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	4.6	0.1	-	-	0.2	-	-	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	524	52	503	677	28	391
Future Volume (vph)	524	52	503	677	28	391
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	-1%			4%	1%	
Storage Length (ft)		0	125		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.874	
Flt Protected			0.950		0.997	
Satd. Flow (prot)	1685	0	1588	1672	1471	0
Flt Permitted			0.191		0.997	
Satd. Flow (perm)	1685	0	319	1672	1471	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6				416	
Link Speed (mph)	45			45	40	
Link Distance (ft)	3116			1171	4252	
Travel Time (s)	47.2			17.7	72.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	8%	2%	2%	10%	2%
Adj. Flow (vph)	557	55	535	720	30	416
Shared Lane Traffic (%)						
Lane Group Flow (vph)	612	0	535	720	446	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.15	1.15	1.13	1.13
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	
Detector Template			Left		Left	
Leading Detector (ft)	450		35	450	35	
Trailing Detector (ft)	0		-5	0	-10	
Detector 1 Position(ft)	0		-5	0	-10	
Detector 1 Size(ft)	6		40	6	45	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)	444			444		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	22.0		12.0	22.0	11.0	
Total Split (s)	46.0		33.0	79.0	16.0	
Total Split (%)	48.4%		34.7%	83.2%	16.8%	
Maximum Green (s)	39.0		26.0	72.0	10.0	
Yellow Time (s)	5.0		5.0	5.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	6.0		6.0	6.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Min		None	C-Min	None	
Act Effct Green (s)	42.4		74.1	74.1	9.9	
Actuated g/C Ratio	0.45		0.78	0.78	0.10	
v/c Ratio	0.81		0.90	0.55	0.85	
Control Delay	33.9		21.1	3.0	22.3	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	33.9		21.1	3.0	22.3	
LOS	C		C	A	C	
Approach Delay	33.9			10.7	22.3	
Approach LOS	C			B	C	
Queue Length 50th (ft)	323		89	39	17	
Queue Length 95th (ft)	#531		m130	m39	#170	
Internal Link Dist (ft)	3036			1091	4172	
Turn Bay Length (ft)			125			
Base Capacity (vph)	755		609	1304	538	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.81		0.88	0.55	0.83	

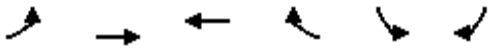
Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 103.2%		ICU Level of Service G	
Analysis Period (min) 15			

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

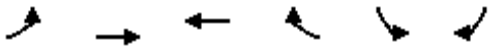
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 663 & Rt 73



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	485	344	680	13	14	550
Future Volume (vph)	485	344	680	13	14	550
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	12	12	12
Grade (%)		1%	-1%		-3%	
Storage Length (ft)	310			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.868	
Flt Protected	0.950				0.999	
Satd. Flow (prot)	1612	1756	1804	0	1539	0
Flt Permitted	0.087				0.999	
Satd. Flow (perm)	148	1756	1804	0	1539	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			1		540	
Link Speed (mph)		45	45		40	
Link Distance (ft)		500	1964		479	
Travel Time (s)		7.6	29.8		8.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	0%	0%	0%	3%
Adj. Flow (vph)	516	366	723	14	15	585
Shared Lane Traffic (%)						
Lane Group Flow (vph)	516	366	737	0	600	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		11	11		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.13	1.08	1.07	1.07	1.05	1.05
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	3	3		1	
Detector Template	Left	Thru	Thru		Left	
Leading Detector (ft)	35	250	250		35	
Trailing Detector (ft)	-5	0	0		-5	
Detector 1 Position(ft)	-5	0	0		-5	
Detector 1 Size(ft)	40	6	6		40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		122	122			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			



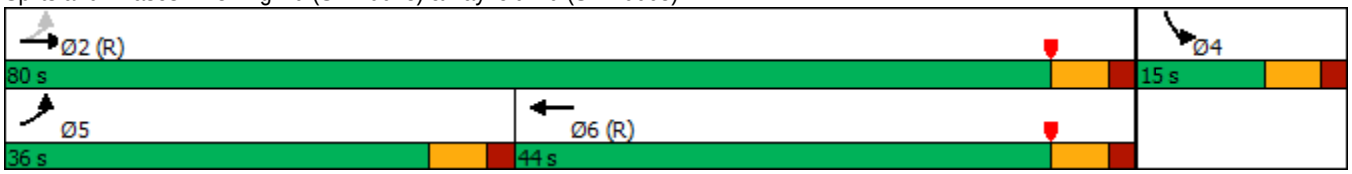
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector 3 Position(ft)		244	244			
Detector 3 Size(ft)		6	6			
Detector 3 Type		Cl+Ex	Cl+Ex			
Detector 3 Channel						
Detector 3 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases	2					
Detector Phase	5	2	6		4	
Switch Phase						
Minimum Initial (s)	5.0	15.0	15.0		5.0	
Minimum Split (s)	11.0	24.0	24.0		11.0	
Total Split (s)	36.0	80.0	44.0		15.0	
Total Split (%)	37.9%	84.2%	46.3%		15.8%	
Maximum Green (s)	30.0	74.0	38.0		9.0	
Yellow Time (s)	4.0	4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	C-Min	C-Min		None	
Act Effct Green (s)	75.0	75.0	41.1		10.0	
Actuated g/C Ratio	0.79	0.79	0.43		0.11	
v/c Ratio	0.92	0.26	0.94		0.93	
Control Delay	47.2	1.7	49.1		29.3	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	47.2	1.7	49.1		29.3	
LOS	D	A	D		C	
Approach Delay		28.3	49.1		29.3	
Approach LOS		C	D		C	
Queue Length 50th (ft)	241	16	432		34	
Queue Length 95th (ft)	m#366	m37	#688		#241	
Internal Link Dist (ft)		420	1884		399	
Turn Bay Length (ft)	310					
Base Capacity (vph)	594	1386	782		645	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.87	0.26	0.94		0.93	

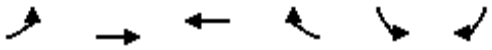
Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 35 (37%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	

Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 35.5	Intersection LOS: D
Intersection Capacity Utilization 116.2%	ICU Level of Service H
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Big Rd (S.R. 0073) & Layfield Rd (S.R. 0663)





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	485	344	680	13	14	550
Future Volume (vph)	485	344	680	13	14	550
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Grade (%)		1%	-1%		-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.997		0.868	
Flt Protected		0.972			0.999	
Satd. Flow (prot)	0	1707	1804	0	1539	0
Flt Permitted		0.972			0.999	
Satd. Flow (perm)	0	1707	1804	0	1539	0
Link Speed (mph)		45	45		40	
Link Distance (ft)		500	1964		479	
Travel Time (s)		7.6	29.8		8.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	0%	0%	0%	3%
Adj. Flow (vph)	516	366	723	14	15	585
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	882	737	0	600	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		16	16		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.08	1.08	1.07	1.07	1.05	1.05
Turning Speed (mph)	15			9	15	9
Sign Control		Yield	Yield		Yield	

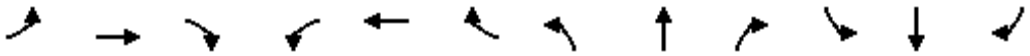
Intersection Summary	
Area Type:	Other

Control Type: Roundabout

Intersection	
Intersection Delay, s/veh	16.6
Intersection LOS	C

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	882	737	600
Demand Flow Rate, veh/h	899	737	618
Vehicles Circulating, veh/h	15	526	723
Vehicles Exiting, veh/h	723	388	540
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.1	36.6	0.1
Approach LOS	B	E	A

Lane	Left	Left	Left	Bypass
Designated Moves	LT	TR	L	R
Assumed Moves	LT	TR	L	R
RT Channelized				Free
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	603
Entry Flow, veh/h	899	737	15	1854
Cap Entry Lane, veh/h	1359	807	660	0.971
Entry HV Adj Factor	0.981	1.000	1.000	585
Flow Entry, veh/h	882	737	15	1800
Cap Entry, veh/h	1333	807	660	0.325
V/C Ratio	0.662	0.913	0.023	0.0
Control Delay, s/veh	11.1	36.6	5.7	A
LOS	B	E	A	1
95th %tile Queue, veh	5	13	0	



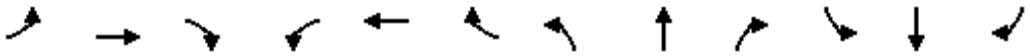
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	72	42	7	166	76	54	437	7	74	515	81
Future Volume (vph)	37	72	42	7	166	76	54	437	7	74	515	81
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	10	10	10	11	11	11	11	11	11
Grade (%)		1%			-4%			4%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.959			0.998			0.984	
Flt Protected		0.988			0.999			0.995			0.995	
Satd. Flow (prot)	0	1580	0	0	1595	0	0	1626	0	0	1669	0
Flt Permitted		0.783			0.989			0.870			0.887	
Satd. Flow (perm)	0	1252	0	0	1579	0	0	1421	0	0	1488	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		459			4343			3219			485	
Travel Time (s)		7.0			65.8			39.9			6.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	10%	2%	3%	0%	3%	3%	6%	4%	0%	4%	5%	3%
Adj. Flow (vph)	41	79	46	8	182	84	59	480	8	81	566	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	166	0	0	274	0	0	547	0	0	736	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.13	1.13	1.14	1.14	1.14	1.15	1.15	1.15	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	2		1	2	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	35		20	35		20	336		20	336	
Trailing Detector (ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Position(ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Size(ft)	20	40		20	40		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)								330			330	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		26.0	26.0		26.0	26.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		33.0	33.0		33.0	33.0	
Total Split (s)	27.0	27.0		27.0	27.0		67.0	67.0		67.0	67.0	
Total Split (%)	28.7%	28.7%		28.7%	28.7%		71.3%	71.3%		71.3%	71.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		60.0	60.0		60.0	60.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		2.7	2.7		2.7	2.7	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		35.0	35.0		35.0	35.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 94
Actuated Cycle Length: 78.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Rt 663 & Hoffmansville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	72	42	7	166	76	54	437	7	74	515	81
Future Volume (veh/h)	37	72	42	7	166	76	54	437	7	74	515	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1766	1766	1766	1906	1906	1906	1655	1655	1655	1915	1915	1915
Adj Flow Rate, veh/h	41	79	46	8	182	84	59	480	8	81	566	89
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	3	3	3	4	4	4	5	5	5
Cap, veh/h	113	171	85	57	241	108	122	890	14	143	889	134
Arrive On Green	0.18	0.20	0.18	0.18	0.20	0.18	0.62	0.63	0.62	0.62	0.63	0.62
Sat Flow, veh/h	252	872	431	20	1227	552	104	1405	22	137	1404	212
Grp Volume(v), veh/h	166	0	0	274	0	0	547	0	0	736	0	0
Grp Sat Flow(s),veh/h/ln	1554	0	0	1799	0	0	1532	0	0	1753	0	0
Q Serve(g_s), s	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0
Cycle Q Clear(g_c), s	6.6	0.0	0.0	10.3	0.0	0.0	13.0	0.0	0.0	17.8	0.0	0.0
Prop In Lane	0.25		0.28	0.03		0.31	0.11		0.01	0.11		0.12
Lane Grp Cap(c), veh/h	347	0	0	381	0	0	1005	0	0	1142	0	0
V/C Ratio(X)	0.48	0.00	0.00	0.72	0.00	0.00	0.54	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	497	0	0	562	0	0	1343	0	0	1538	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.5	0.0	0.0	27.0	0.0	0.0	7.2	0.0	0.0	8.0	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	2.6	0.0	0.0	1.0	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.3	0.0	0.0	7.7	0.0	0.0	5.6	0.0	0.0	8.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	0.0	0.0	29.6	0.0	0.0	8.1	0.0	0.0	9.3	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		166			274			547			736	
Approach Delay, s/veh		26.5			29.6			8.1			9.3	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		50.6		19.8		50.6		19.8				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		60.0		20.0		60.0		20.0				
Max Q Clear Time (g_c+I1), s		15.0		8.6		19.8		12.3				
Green Ext Time (p_c), s		17.5		0.4		23.8		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			13.8									
HCM 6th LOS			B									

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Lane Configurations												
Traffic Volume (vph)	16	169	6	33	6	6	4	47	664	144	4	1
Future Volume (vph)	16	169	6	33	6	6	4	47	664	144	4	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	12	12	12
Grade (%)			4%			0%			2%			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.980			0.966			0.977			
Flt Protected			0.960			0.982			0.997			
Satd. Flow (prot)	0	0	1537	0	0	1594	0	0	1702	0	0	0
Flt Permitted			0.752			0.902			0.959			
Satd. Flow (perm)	0	0	1204	0	0	1464	0	0	1637	0	0	0
Right Turn on Red				No							No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			35			45			
Link Distance (ft)			7311			698			620			
Travel Time (s)			110.8			13.6			9.4			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	2%	25%	0%
Adj. Flow (vph)	17	176	6	34	6	6	4	49	692	150	4	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	233	0	0	16	0	0	895	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)			0			0			0			
Link Offset(ft)			0			0			0			
Crosswalk Width(ft)			16			16			16			
Two way Left Turn Lane												
Headway Factor	1.20	1.20	1.20	1.20	1.17	1.17	1.17	1.09	1.09	1.09	1.09	1.07
Turning Speed (mph)	15	15		9	15		9	15		9	9	15
Number of Detectors	1	1	1		1	1		1	1			1
Detector Template	Left	Left			Left			Left				Left
Leading Detector (ft)	20	20	35		20	30		20	411			20
Trailing Detector (ft)	0	0	-5		0	-10		0	405			0
Detector 1 Position(ft)	0	0	-5		0	-10		0	405			0
Detector 1 Size(ft)	20	20	40		20	40		20	6			20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Turn Type	Perm	Perm	NA		Perm	NA		Perm	NA			Perm
Protected Phases			4			8			2			
Permitted Phases	4	4			8			2				6
Detector Phase	4	4	4		8	8		2	2			6
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0		3.0	3.0		25.0	25.0			25.0
Minimum Split (s)	9.0	9.0	9.0		9.0	9.0		32.0	32.0			32.0
Total Split (s)	29.0	29.0	29.0		29.0	29.0		69.0	69.0			69.0

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations						
Traffic Volume (vph)	333	15	5	100	97	2
Future Volume (vph)	333	15	5	100	97	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%			-2%		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994			0.934		
Flt Protected				0.975		
Satd. Flow (prot)	1692	0	0	1585	0	0
Flt Permitted	0.999			0.975		
Satd. Flow (perm)	1691	0	0	1585	0	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45		
Link Distance (ft)	3007			1962		
Travel Time (s)	45.6			29.7		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	0%	0%	2%	0%	0%
Adj. Flow (vph)	347	16	5	104	101	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	364	0	0	212	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(ft)	0			11		
Link Offset(ft)	0			0		
Crosswalk Width(ft)	16			16		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.11	1.11	1.11	1.11
Turning Speed (mph)		9	15	15	9	9
Number of Detectors	1		1	1		
Detector Template			Left			
Leading Detector (ft)	806		20	35		
Trailing Detector (ft)	800		0	-5		
Detector 1 Position(ft)	800		0	-5		
Detector 1 Size(ft)	6		20	40		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0		
Turn Type	NA		Perm	Prot		
Protected Phases	6			9		
Permitted Phases			9			
Detector Phase	6		9	9		
Switch Phase						
Minimum Initial (s)	25.0		3.0	3.0		
Minimum Split (s)	32.0		10.0	10.0		
Total Split (s)	69.0		22.0	22.0		

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Total Split (%)	24.2%	24.2%	24.2%		24.2%	24.2%		57.5%	57.5%			57.5%
Maximum Green (s)	23.0	23.0	23.0		23.0	23.0		62.0	62.0			62.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0		5.0	5.0			5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0			2.0
Lost Time Adjust (s)			0.0			-1.0			-1.0			
Total Lost Time (s)			6.0			5.0			6.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		6.1	6.1			6.1
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0		3.8	3.8			3.8
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0		43.0	43.0			43.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0		20.0	20.0			20.0
Recall Mode	None	None	None		None	None		Min	Min			Min
Act Effct Green (s)			23.0			24.0			63.0			
Actuated g/C Ratio			0.19			0.20			0.52			
v/c Ratio			1.01			0.05			1.04			
Control Delay			111.3			39.6			71.2			
Queue Delay			0.0			0.0			0.0			
Total Delay			111.3			39.6			71.2			
LOS			F			D			E			
Approach Delay			111.3			39.6			71.2			
Approach LOS			F			D			E			
Queue Length 50th (ft)			~185			10			~750			
Queue Length 95th (ft)			#352			30			#998			
Internal Link Dist (ft)			7231			618			540			
Turn Bay Length (ft)												
Base Capacity (vph)			230			292			859			
Starvation Cap Reductn			0			0			0			
Spillback Cap Reductn			0			0			0			
Storage Cap Reductn			0			0			0			
Reduced v/c Ratio			1.01			0.05			1.04			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 70.7		Intersection LOS: E	
Intersection Capacity Utilization 122.4%		ICU Level of Service H	
Analysis Period (min) 15			

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

Splits and Phases: 5: Rt 73 & NH Square Rd/Renninger Rd & Hoffmansville Rd

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Total Split (%)	57.5%		18.3%	18.3%		
Maximum Green (s)	62.0		15.0	15.0		
Yellow Time (s)	5.0		5.0	5.0		
All-Red Time (s)	2.0		2.0	2.0		
Lost Time Adjust (s)	-1.0			-1.0		
Total Lost Time (s)	6.0			6.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	6.1		3.0	3.0		
Minimum Gap (s)	3.8		3.0	3.0		
Time Before Reduce (s)	43.0		0.0	0.0		
Time To Reduce (s)	20.0		0.0	0.0		
Recall Mode	Min		None	None		
Act Effct Green (s)	63.0			16.0		
Actuated g/C Ratio	0.52			0.13		
v/c Ratio	0.41			1.00		
Control Delay	19.0			115.4		
Queue Delay	0.0			0.0		
Total Delay	19.0			115.4		
LOS	B			F		
Approach Delay	19.0			115.4		
Approach LOS	B			F		
Queue Length 50th (ft)	164			~167		
Queue Length 95th (ft)	239			#328		
Internal Link Dist (ft)	2927			1882		
Turn Bay Length (ft)						
Base Capacity (vph)	887			211		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.41			1.00		

Intersection Summary

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Lane Configurations												
Traffic Volume (vph)	16	169	6	33	6	6	4	47	664	144	4	1
Future Volume (vph)	16	169	6	33	6	6	4	47	664	144	4	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	13	13	10	10	10	12	12	12	12	12
Grade (%)			4%			0%			2%			
Storage Length (ft)		150		0	0		0	0		0		100
Storage Lanes		1		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
Frt			0.872			0.966			0.977			
Flt Protected		0.950				0.982			0.997			
Satd. Flow (prot)	0	1716	1589	0	0	1594	0	0	1702	0	0	0
Flt Permitted		0.622				0.860			0.959			
Satd. Flow (perm)	0	1124	1589	0	0	1396	0	0	1637	0	0	0
Right Turn on Red				No							No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			35			45			
Link Distance (ft)			7311			698			620			
Travel Time (s)			110.8			13.6			9.4			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	2%	25%	0%
Adj. Flow (vph)	17	176	6	34	6	6	4	49	692	150	4	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	193	40	0	0	16	0	0	895	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)			13			13			0			
Link Offset(ft)			0			0			0			
Crosswalk Width(ft)			16			16			16			
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.17	1.17	1.17	1.09	1.09	1.09	1.09	1.07
Turning Speed (mph)	15	15		9	15		9	15		9	9	15
Number of Detectors	1	1	1		1	1		1	1			1
Detector Template	Left	Left			Left			Left				Left
Leading Detector (ft)	20	35	35		20	30		35	411			20
Trailing Detector (ft)	0	-5	-5		0	-10		-5	405			0
Detector 1 Position(ft)	0	-5	-5		0	-10		-5	405			0
Detector 1 Size(ft)	20	40	40		20	40		40	6			20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Turn Type	pm+pt	pm+pt	NA		Perm	NA		Perm	NA			Perm
Protected Phases	7	7	4			8			2			
Permitted Phases	4	4			8			2				6
Detector Phase	7	7	4		8	8		2	2			6
Switch Phase												

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations						
Traffic Volume (vph)	333	15	5	100	97	2
Future Volume (vph)	333	15	5	100	97	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%			-2%		
Storage Length (ft)		0		0	0	
Storage Lanes		0		1	0	
Taper Length (ft)				75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994			0.934		
Flt Protected				0.975		
Satd. Flow (prot)	1692	0	0	1585	0	0
Flt Permitted	0.999			0.975		
Satd. Flow (perm)	1691	0	0	1585	0	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45		
Link Distance (ft)	3007			1962		
Travel Time (s)	45.6			29.7		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	0%	0%	2%	0%	0%
Adj. Flow (vph)	347	16	5	104	101	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	364	0	0	212	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(ft)	0			11		
Link Offset(ft)	0			0		
Crosswalk Width(ft)	16			16		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.11	1.11	1.11	1.11
Turning Speed (mph)		9	15	15	9	9
Number of Detectors	1		1	1		
Detector Template			Left			
Leading Detector (ft)	806		20	35		
Trailing Detector (ft)	800		0	-5		
Detector 1 Position(ft)	800		0	-5		
Detector 1 Size(ft)	6		20	40		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0		
Turn Type	NA		Perm	Prot		
Protected Phases	6			9		
Permitted Phases			9			
Detector Phase	6		9	9		
Switch Phase						

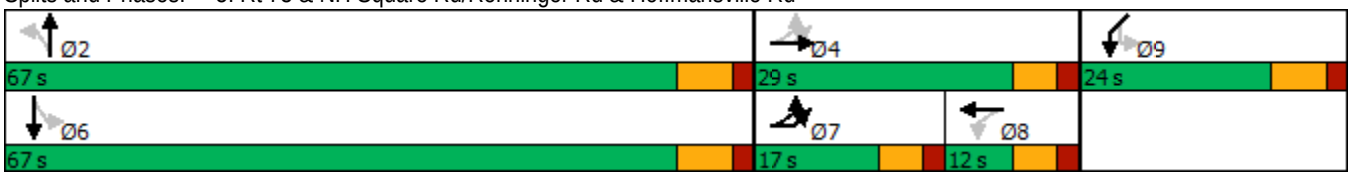
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Minimum Initial (s)	3.0	3.0	3.0		3.0	3.0		25.0	25.0			25.0
Minimum Split (s)	9.0	9.0	9.0		9.0	9.0		32.0	32.0			32.0
Total Split (s)	17.0	17.0	29.0		12.0	12.0		67.0	67.0			67.0
Total Split (%)	14.2%	14.2%	24.2%		10.0%	10.0%		55.8%	55.8%			55.8%
Maximum Green (s)	11.0	11.0	23.0		6.0	6.0		60.0	60.0			60.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0		5.0	5.0			5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0			2.0
Lost Time Adjust (s)		-1.0	-1.0			-1.0			-1.0			
Total Lost Time (s)		5.0	5.0			5.0			6.0			
Lead/Lag	Lead	Lead			Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		6.1	6.1			6.1
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0		3.8	3.8			3.8
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0		43.0	43.0			43.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0		20.0	20.0			20.0
Recall Mode	None	None	None		None	None		Min	Min			Min
Act Effct Green (s)		16.5	16.5			7.0			61.2			
Actuated g/C Ratio		0.15	0.15			0.06			0.54			
v/c Ratio		0.85	0.17			0.19			1.01			
Control Delay		76.5	42.8			57.9			58.6			
Queue Delay		0.0	0.0			0.0			0.0			
Total Delay		76.5	42.8			57.9			58.6			
LOS		E	D			E			E			
Approach Delay			70.7			57.9			58.6			
Approach LOS			E			E			E			
Queue Length 50th (ft)		~138	26			11			563			
Queue Length 95th (ft)		#216	58			36			#1020			
Internal Link Dist (ft)			7231			618			540			
Turn Bay Length (ft)		150										
Base Capacity (vph)		228	340			87			890			
Starvation Cap Reductn		0	0			0			0			
Spillback Cap Reductn		0	0			0			0			
Storage Cap Reductn		0	0			0			0			
Reduced v/c Ratio		0.85	0.12			0.18			1.01			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 112.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 53.8		Intersection LOS: D	
Intersection Capacity Utilization 119.2%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

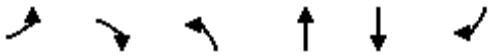
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Rt 73 & NH Square Rd/Renninger Rd & Hoffmansville Rd



Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Minimum Initial (s)	25.0		3.0	3.0		
Minimum Split (s)	32.0		10.0	10.0		
Total Split (s)	67.0		24.0	24.0		
Total Split (%)	55.8%		20.0%	20.0%		
Maximum Green (s)	60.0		17.0	17.0		
Yellow Time (s)	5.0		5.0	5.0		
All-Red Time (s)	2.0		2.0	2.0		
Lost Time Adjust (s)	-1.0			-1.0		
Total Lost Time (s)	6.0			6.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	6.1		3.0	3.0		
Minimum Gap (s)	3.8		3.0	3.0		
Time Before Reduce (s)	43.0		0.0	0.0		
Time To Reduce (s)	20.0		0.0	0.0		
Recall Mode	Min		None	None		
Act Effct Green (s)	61.2			17.7		
Actuated g/C Ratio	0.54			0.16		
v/c Ratio	0.40			0.85		
Control Delay	17.5			76.7		
Queue Delay	0.0			0.0		
Total Delay	17.5			76.7		
LOS	B			E		
Approach Delay	17.5			76.7		
Approach LOS	B			E		
Queue Length 50th (ft)	132			143		
Queue Length 95th (ft)	248			#306		
Internal Link Dist (ft)	2927			1882		
Turn Bay Length (ft)						
Base Capacity (vph)	920			254		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.40			0.83		

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	42	61	413	503	41
Future Volume (vph)	20	42	61	413	503	41
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	11	11	11	11
Grade (%)	2%			-2%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.908				0.990	
Flt Protected	0.984			0.994		
Satd. Flow (prot)	1619	0	0	1732	1708	0
Flt Permitted	0.984			0.994		
Satd. Flow (perm)	1619	0	0	1732	1708	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	2834			804	4252	
Travel Time (s)	77.3			13.7	72.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	5%	0%	0%	1%	2%	0%
Adj. Flow (vph)	22	47	69	464	565	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	533	611	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.11	1.11	1.11	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

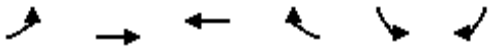
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	42	61	413	503	41
Future Vol, veh/h	20	42	61	413	503	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	-2	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	5	0	0	1	2	0
Mvmt Flow	22	47	69	464	565	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1190	588	611	0	-	0
Stage 1	588	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Critical Hdwy	6.85	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.85	-	-	-	-	-
Critical Hdwy Stg 2	5.85	-	-	-	-	-
Follow-up Hdwy	3	3.1	3	-	-	-
Pot Cap-1 Maneuver	197	520	738	-	-	-
Stage 1	584	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	172	520	738	-	-	-
Mov Cap-2 Maneuver	172	-	-	-	-	-
Stage 1	510	-	-	-	-	-
Stage 2	574	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.6	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	738	-	315	-	-
HCM Lane V/C Ratio	0.093	-	0.221	-	-
HCM Control Delay (s)	10.4	0	19.6	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	619	803	84	31	36
Future Volume (vph)	52	619	803	84	31	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	12	11	11
Grade (%)		-2%	1%		7%	
Storage Length (ft)	0			125	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.928	
Flt Protected		0.996			0.977	
Satd. Flow (prot)	0	1703	1714	1522	1406	0
Flt Permitted		0.996			0.977	
Satd. Flow (perm)	0	1703	1714	1522	1406	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		480	1529		1959	
Travel Time (s)		9.4	29.8		53.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	4%	12%
Adj. Flow (vph)	54	638	828	87	32	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	692	828	87	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.13	1.08	1.17	1.17
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

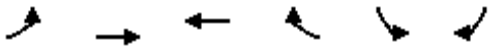
Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	619	803	84	31	36
Future Vol, veh/h	52	619	803	84	31	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-2	1	-	7	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	3	1	0	4	12
Mvmt Flow	54	638	828	87	32	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	915	0	-	0	1574	828
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	746	-
Critical Hdwy	4.3	-	-	-	7.84	7.02
Critical Hdwy Stg 1	-	-	-	-	6.84	-
Critical Hdwy Stg 2	-	-	-	-	6.84	-
Follow-up Hdwy	3	-	-	-	3.1	3.2
Pot Cap-1 Maneuver	575	-	-	-	69	316
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	575	-	-	-	59	316
Mov Cap-2 Maneuver	-	-	-	-	59	-
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	381	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	89.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	575	-	-	-	105
HCM Lane V/C Ratio	0.093	-	-	-	0.658
HCM Control Delay (s)	11.9	0	-	-	89.1
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	3.3



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	578	824	48	20	23
Future Volume (vph)	38	578	824	48	20	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	12	12
Grade (%)		-1%	2%		6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.928	
Flt Protected		0.997			0.977	
Satd. Flow (prot)	0	1787	1690	0	1464	0
Flt Permitted		0.997			0.977	
Satd. Flow (perm)	0	1787	1690	0	1464	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		1529	1692		3357	
Travel Time (s)		29.8	33.0		91.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	1%	5%	6%	10%
Adj. Flow (vph)	41	628	896	52	22	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	669	948	0	47	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.13	1.13	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

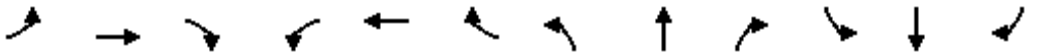
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	578	824	48	20	23
Future Vol, veh/h	38	578	824	48	20	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	2	-	6	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	5	6	10
Mvmt Flow	41	628	896	52	22	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	948	0	-	0	1632	922
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	710	-
Critical Hdwy	4.3	-	-	-	7.66	6.9
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	6.66	-
Follow-up Hdwy	3	-	-	-	3.1	3.2
Pot Cap-1 Maneuver	559	-	-	-	67	282
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	417	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	559	-	-	-	59	282
Mov Cap-2 Maneuver	-	-	-	-	59	-
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	67.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	559	-	-	-	102
HCM Lane V/C Ratio	0.074	-	-	-	0.458
HCM Control Delay (s)	12	0	-	-	67.2
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	2

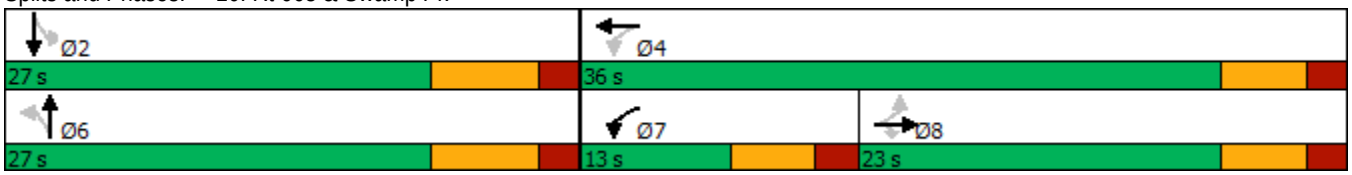


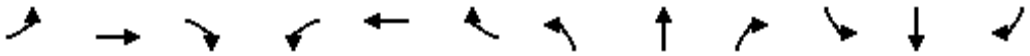
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	476	152	169	704	141	180	254	117	151	338	54
Future Volume (vph)	69	476	152	169	704	141	180	254	117	151	338	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	16	11	12	12	10	12	12	10	15	15
Grade (%)		4%			1%			-2%			2%	
Storage Length (ft)	110		130	110		0	80		0	140		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	75			75			50			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.975			0.953			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1620	1747	1699	1645	1723	0	1596	1698	0	1580	1903	0
Flt Permitted	0.193			0.185			0.363			0.393		
Satd. Flow (perm)	329	1747	1699	320	1723	0	610	1698	0	654	1903	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			173		23			39			14	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1056			1880			3165			2949	
Travel Time (s)		20.6			36.6			53.9			50.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	3%	0%	0%	1%	0%
Adj. Flow (vph)	70	486	155	172	718	144	184	259	119	154	345	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	486	155	172	862	0	184	378	0	154	400	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.10	0.94	1.13	1.08	1.08	1.16	1.06	1.06	1.19	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	35	35	35	35	35		35	35		35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Size(ft)	40	40	40	40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		8		7	4			6			2	
Permitted Phases	8		8	4			6			2		
Detector Phase	8	8	8	7	4		6	6		2	2	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	10.0	10.0	10.0	3.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	16.0	16.0	16.0	9.0	16.0		17.0	17.0		17.0	17.0	
Total Split (s)	23.0	23.0	23.0	13.0	36.0		27.0	27.0		27.0	27.0	
Total Split (%)	36.5%	36.5%	36.5%	20.6%	57.1%		42.9%	42.9%		42.9%	42.9%	
Maximum Green (s)	17.0	17.0	17.0	7.0	30.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	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	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		5.0	5.0		5.0	5.0	
Recall Mode	Min	Min	Min	None	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 63	
Actuated Cycle Length: 62.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 10: Rt 663 & Swamp Pk

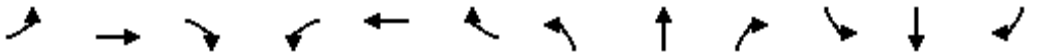




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	476	152	169	704	141	180	254	117	151	338	54
Future Volume (veh/h)	69	476	152	169	704	141	180	254	117	151	338	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1779	1794	1780	1780	1860	1832	1832	1778	1834	1834
Adj Flow Rate, veh/h	70	486	150	172	718	143	184	259	117	154	345	50
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	1	0	0	1	1	1	3	3	0	1	1
Cap, veh/h	119	510	453	322	709	141	273	398	180	272	522	76
Arrive On Green	0.30	0.30	0.30	0.11	0.49	0.48	0.33	0.33	0.32	0.33	0.33	0.32
Sat Flow, veh/h	620	1697	1508	1709	1442	287	1039	1195	540	1010	1566	227
Grp Volume(v), veh/h	70	486	150	172	0	861	184	0	376	154	0	395
Grp Sat Flow(s),veh/h/ln	620	1697	1508	1709	0	1729	1039	0	1735	1010	0	1793
Q Serve(g_s), s	0.5	17.7	4.9	3.9	0.0	31.0	9.6	0.0	11.7	9.6	0.0	11.9
Cycle Q Clear(g_c), s	18.9	17.7	4.9	3.9	0.0	31.0	21.0	0.0	11.7	20.7	0.0	11.9
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.31	1.00		0.13
Lane Grp Cap(c), veh/h	119	510	453	322	0	851	273	0	578	272	0	598
V/C Ratio(X)	0.59	0.95	0.33	0.53	0.00	1.01	0.67	0.00	0.65	0.57	0.00	0.66
Avail Cap(c_a), veh/h	119	510	453	347	0	851	273	0	578	272	0	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.5	21.6	17.1	14.1	0.0	16.1	27.4	0.0	18.0	26.5	0.0	18.0
Incr Delay (d2), s/veh	11.3	28.9	0.9	1.4	0.0	33.9	8.4	0.0	3.5	4.5	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	15.6	2.9	2.4	0.0	24.9	5.8	0.0	8.1	4.3	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.7	50.6	18.0	15.5	0.0	50.0	35.7	0.0	21.6	31.0	0.0	21.7
LnGrp LOS	D	D	B	B	A	F	D	A	C	C	A	C
Approach Vol, veh/h		706			1033			560			549	
Approach Delay, s/veh		42.9			44.2			26.2			24.3	
Approach LOS		D			D			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		27.0		36.0		27.0	12.1	23.9				
Change Period (Y+Rc), s		7.0		6.0		7.0	6.0	6.0				
Max Green Setting (Gmax), s		20.0		30.0		20.0	7.0	17.0				
Max Q Clear Time (g_c+I1), s		23.2		33.0		23.5	6.4	21.4				
Green Ext Time (p_c), s		0.0		0.0		0.0	0.0	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			36.5									
HCM 6th LOS			D									

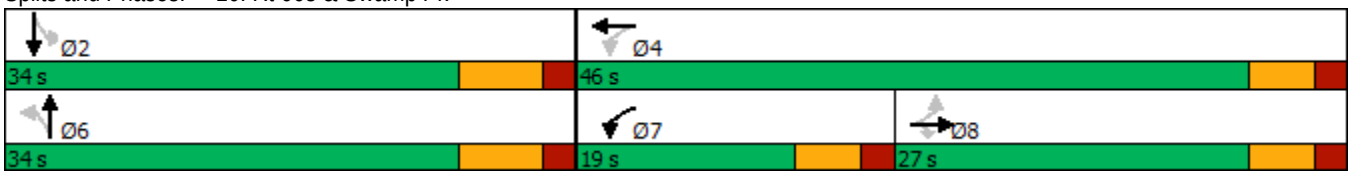


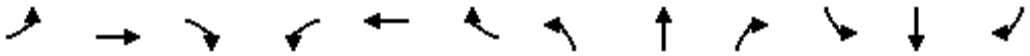
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	476	152	169	704	141	180	254	117	151	338	54
Future Volume (vph)	69	476	152	169	704	141	180	254	117	151	338	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	16	11	12	12	10	12	12	10	15	15
Grade (%)		4%			1%			-2%			2%	
Storage Length (ft)	110		130	110		0	80		0	140		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	75			75			50			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.975			0.953			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1620	1747	1699	1645	1723	0	1596	1698	0	1580	1903	0
Flt Permitted	0.162			0.161			0.354			0.381		
Satd. Flow (perm)	276	1747	1699	279	1723	0	595	1698	0	634	1903	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136		19			32			11	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1056			1880			3165			2949	
Travel Time (s)		20.6			36.6			53.9			50.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	3%	0%	0%	1%	0%
Adj. Flow (vph)	70	486	155	172	718	144	184	259	119	154	345	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	486	155	172	862	0	184	378	0	154	400	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.10	0.94	1.13	1.08	1.08	1.16	1.06	1.06	1.19	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	35	35	35	35	35		35	35		35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Size(ft)	40	40	40	40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		8		7	4			6			2	
Permitted Phases	8		8	4			6			2		
Detector Phase	8	8	8	7	4		6	6		2	2	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	10.0	10.0	10.0	3.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	16.0	16.0	16.0	9.0	16.0		17.0	17.0		17.0	17.0	
Total Split (s)	27.0	27.0	27.0	19.0	46.0		34.0	34.0		34.0	34.0	
Total Split (%)	33.8%	33.8%	33.8%	23.8%	57.5%		42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	21.0	21.0	21.0	13.0	40.0		27.0	27.0		27.0	27.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	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	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		5.0	5.0		5.0	5.0	
Recall Mode	Min	Min	Min	None	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 78.4	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 10: Rt 663 & Swamp Pk





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	476	152	169	704	141	180	254	117	151	338	54
Future Volume (veh/h)	69	476	152	169	704	141	180	254	117	151	338	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1779	1794	1780	1780	1860	1832	1832	1778	1834	1834
Adj Flow Rate, veh/h	70	486	155	172	718	144	184	259	119	154	345	55
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	1	0	0	1	1	1	3	3	0	1	1
Cap, veh/h	107	589	523	334	738	148	265	416	191	266	540	86
Arrive On Green	0.35	0.35	0.35	0.10	0.51	0.51	0.35	0.35	0.34	0.35	0.35	0.34
Sat Flow, veh/h	619	1697	1508	1709	1440	289	1034	1188	546	1008	1544	246
Grp Volume(v), veh/h	70	486	155	172	0	862	184	0	378	154	0	400
Grp Sat Flow(s),veh/h/ln	619	1697	1508	1709	0	1728	1034	0	1734	1008	0	1790
Q Serve(g_s), s	2.2	21.0	6.0	4.6	0.0	38.8	13.5	0.0	14.5	11.9	0.0	15.0
Cycle Q Clear(g_c), s	27.8	21.0	6.0	4.6	0.0	38.8	28.0	0.0	14.5	25.9	0.0	15.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.31	1.00		0.14
Lane Grp Cap(c), veh/h	107	589	523	334	0	886	265	0	607	266	0	626
V/C Ratio(X)	0.65	0.82	0.30	0.52	0.00	0.97	0.70	0.00	0.62	0.58	0.00	0.64
Avail Cap(c_a), veh/h	107	589	523	457	0	886	265	0	607	266	0	626
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.7	23.9	19.0	16.4	0.0	19.0	33.6	0.0	21.8	32.2	0.0	21.8
Incr Delay (d2), s/veh	17.9	10.3	0.7	1.2	0.0	24.0	9.7	0.0	2.9	5.0	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	14.5	3.7	3.1	0.0	26.3	7.4	0.0	9.9	5.6	0.0	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.7	34.2	19.7	17.6	0.0	42.9	43.3	0.0	24.6	37.1	0.0	24.9
LnGrp LOS	E	C	B	B	A	D	D	A	C	D	A	C
Approach Vol, veh/h		711			1034			562			554	
Approach Delay, s/veh		33.4			38.7			30.7			28.3	
Approach LOS		C			D			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		34.0		46.0		34.0	13.2	32.8				
Change Period (Y+Rc), s		7.0		6.0		7.0	6.0	6.0				
Max Green Setting (Gmax), s		27.0		40.0		27.0	13.0	21.0				
Max Q Clear Time (g_c+I1), s		28.4		41.3		30.5	7.1	30.3				
Green Ext Time (p_c), s		0.0		0.0		0.0	0.2	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			33.8									
HCM 6th LOS			C									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	727	37	20	1009	20	9
Future Volume (vph)	727	37	20	1009	20	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	16	16
Grade (%)	2%			-2%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.958	
Flt Protected				0.999	0.967	
Satd. Flow (prot)	1736	0	0	1781	1909	0
Flt Permitted				0.999	0.967	
Satd. Flow (perm)	1736	0	0	1781	1909	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	1880			2257	428	
Travel Time (s)	36.6			44.0	9.7	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	742	38	20	1030	20	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	780	0	0	1050	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.06	1.06	0.90	0.90
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

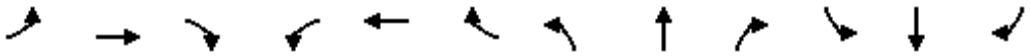
Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	727	37	20	1009	20	9
Future Vol, veh/h	727	37	20	1009	20	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	742	38	20	1030	20	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	780	0	1831	761
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	1070	-
Critical Hdwy	-	-	4.3	-	6	6
Critical Hdwy Stg 1	-	-	-	-	5	-
Critical Hdwy Stg 2	-	-	-	-	5	-
Follow-up Hdwy	-	-	3	-	3.1	3.1
Pot Cap-1 Maneuver	-	-	643	-	109	445
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	402	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	643	-	101	445
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	373	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	39.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	133	-	-	643	-
HCM Lane V/C Ratio	0.222	-	-	0.032	-
HCM Control Delay (s)	39.6	-	-	10.8	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	700	32	102	986	19	33	2	54	8	2	9
Future Volume (vph)	3	700	32	102	986	19	33	2	54	8	2	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	16	16	11	14	14	10	11	11
Grade (%)		4%			-3%			2%			-2%	
Storage Length (ft)	60		0	65		0	50		0	50		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65			70			35			30		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.997			0.855			0.877	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	1735	0	1620	2044	0	1636	1625	0	1612	1541	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1564	1735	0	1620	2044	0	1636	1625	0	1612	1541	0
Link Speed (mph)		35			35			35			25	
Link Distance (ft)		2257			1618			320			222	
Travel Time (s)		44.0			31.5			6.2			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	737	34	107	1038	20	35	2	57	8	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	771	0	107	1058	0	35	59	0	8	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.20	1.10	1.10	1.15	0.89	0.89	1.13	1.00	1.00	1.16	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	8.8

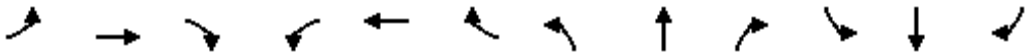
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	700	32	102	986	19	33	2	54	8	2	9
Future Vol, veh/h	3	700	32	102	986	19	33	2	54	8	2	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	65	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	-3	-	-	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	737	34	107	1038	20	35	2	57	8	2	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1058	0	0	771	0	0	2028	2032	754	2052	2039	1048
Stage 1	-	-	-	-	-	-	760	760	-	1262	1262	-
Stage 2	-	-	-	-	-	-	1268	1272	-	790	777	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.5	6.9	6.4	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.9	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.9	-	5.7	5.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	510	-	-	648	-	-	36	46	413	55	72	307
Stage 1	-	-	-	-	-	-	411	384	-	263	280	-
Stage 2	-	-	-	-	-	-	197	209	-	469	447	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	510	-	-	648	-	-	~ 30	38	413	40	60	307
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 30	38	-	40	60	-
Stage 1	-	-	-	-	-	-	409	382	-	261	234	-
Stage 2	-	-	-	-	-	-	158	175	-	400	444	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	165.5	65.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	30	305	510	-	-	648	-	-	40	176
HCM Lane V/C Ratio	1.158	0.193	0.006	-	-	0.166	-	-	0.211	0.066
HCM Control Delay (s)	$ 413.1	19.6	12.1	-	-	11.7	-	-	117.6	26.9
HCM Lane LOS	F	C	B	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	3.9	0.7	0	-	-	0.6	-	-	0.7	0.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	715	36	22	1087	18	14	4	7	3	1	6
Future Volume (vph)	11	715	36	22	1087	18	14	4	7	3	1	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	13	13	13	10	10	10	13	13	13
Grade (%)		4%			-4%			-2%			3%	
Storage Length (ft)	0		0	0		0	0		60	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.998				0.850		0.914	
Flt Protected		0.999			0.999			0.962			0.987	
Satd. Flow (prot)	0	1735	0	0	1873	0	0	1632	1442	0	1653	0
Flt Permitted		0.999			0.999			0.962			0.987	
Satd. Flow (perm)	0	1735	0	0	1873	0	0	1632	1442	0	1653	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1618			2306			635			412	
Travel Time (s)		31.5			44.9			17.3			11.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	794	40	24	1208	20	16	4	8	3	1	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	846	0	0	1252	0	0	20	8	0	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.00	1.00	1.00	1.16	1.16	1.16	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

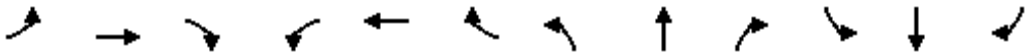
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	11	715	36	22	1087	18	14	4	7	3	1	6
Future Vol, veh/h	11	715	36	22	1087	18	14	4	7	3	1	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	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	-	-	60	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	-4	-	-	-2	-	-	3	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	12	794	40	24	1208	20	16	4	8	3	1	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1228	0	0	834	0	0	2108	2114	814	2106	2124	1218
Stage 1	-	-	-	-	-	-	838	838	-	1266	1266	-
Stage 2	-	-	-	-	-	-	1270	1276	-	840	858	-
Critical Hdwy	4.3	-	-	4.3	-	-	6.7	6.1	6	7.7	7.1	6.5
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	6.7	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	6.7	6.1	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	442	-	-	615	-	-	50	65	416	28	36	208
Stage 1	-	-	-	-	-	-	442	422	-	184	196	-
Stage 2	-	-	-	-	-	-	260	276	-	349	326	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	442	-	-	615	-	-	41	54	416	22	30	208
Mov Cap-2 Maneuver	-	-	-	-	-	-	41	54	-	22	30	-
Stage 1	-	-	-	-	-	-	419	400	-	175	172	-
Stage 2	-	-	-	-	-	-	219	242	-	321	309	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	109.9	96.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	43	416	442	-	-	615	-	-	50
HCM Lane V/C Ratio	0.465	0.019	0.028	-	-	0.04	-	-	0.222
HCM Control Delay (s)	147.3	13.8	13.4	0	-	11.1	0	-	96.5
HCM Lane LOS	F	B	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	1.7	0.1	0.1	-	-	0.1	-	-	0.7

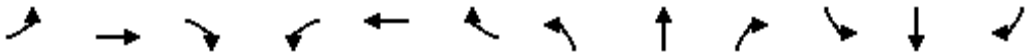


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	635	47	57	1070	159	48	48	27	82	64	8
Future Volume (vph)	44	635	47	57	1070	159	48	48	27	82	64	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	11	11	11	12	12	12	16	16	16
Grade (%)		-7%			0%			1%			-6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.983			0.971			0.993	
Flt Protected		0.997			0.998			0.981			0.974	
Satd. Flow (prot)	0	1807	0	0	1693	0	0	1706	0	0	2032	0
Flt Permitted		0.857			0.938			0.803			0.772	
Satd. Flow (perm)	0	1553	0	0	1591	0	0	1396	0	0	1611	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			15			14			3	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		2306			510			926			6332	
Travel Time (s)		44.9			9.9			18.0			123.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	46	668	49	60	1126	167	51	51	28	86	67	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	763	0	0	1353	0	0	130	0	0	161	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.12	1.12	1.12	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	4	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	371		20	371		20	35		20	56	
Trailing Detector (ft)	0	0		0	0		0	-5		0	-10	
Detector 1 Position(ft)	0	0		0	0		0	-5		0	-10	
Detector 1 Size(ft)	20	6		20	6		20	40		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		365			365						4	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Detector 3 Position(ft)											25	
Detector 3 Size(ft)											6	
Detector 3 Type											Cl+Ex	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 3 Channel												
Detector 3 Extend (s)											0.0	
Detector 4 Position(ft)											50	
Detector 4 Size(ft)											6	
Detector 4 Type											Cl+Ex	
Detector 4 Channel												
Detector 4 Extend (s)											0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	26.0	26.0		26.0	26.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		12.0	12.0		12.0	12.0	
Total Split (s)	64.0	64.0		64.0	64.0		28.0	28.0		28.0	28.0	
Total Split (%)	69.6%	69.6%		69.6%	69.6%		30.4%	30.4%		30.4%	30.4%	
Maximum Green (s)	57.0	57.0		57.0	57.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.5	2.5		2.5	2.5		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	37.0	37.0		37.0	37.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 92	
Actuated Cycle Length: 84.9	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	

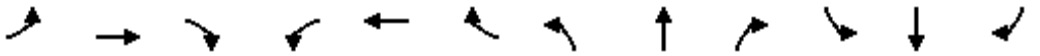
Splits and Phases: 14: NH Square Rd & Swamp Pk



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	635	47	57	1070	159	48	48	27	82	64	8
Future Volume (veh/h)	44	635	47	57	1070	159	48	48	27	82	64	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2032	2032	2032	1786	1786	1786	1794	1794	1794	2104	2104	2104
Adj Flow Rate, veh/h	46	668	49	60	1126	167	51	51	28	86	67	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	1	1	1	0	0	0	0	0	0
Cap, veh/h	86	1074	76	83	1026	149	129	98	45	183	105	11
Arrive On Green	0.71	0.72	0.71	0.71	0.72	0.71	0.12	0.13	0.12	0.12	0.13	0.12
Sat Flow, veh/h	53	1489	106	50	1422	207	514	758	349	887	812	89
Grp Volume(v), veh/h	763	0	0	1353	0	0	130	0	0	161	0	0
Grp Sat Flow(s),veh/h/ln	1648	0	0	1679	0	0	1621	0	0	1788	0	0
Q Serve(g_s), s	0.0	0.0	0.0	38.7	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Cycle Q Clear(g_c), s	13.9	0.0	0.0	57.0	0.0	0.0	6.0	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.06		0.06	0.04		0.12	0.39		0.22	0.53		0.05
Lane Grp Cap(c), veh/h	1216	0	0	1237	0	0	252	0	0	278	0	0
V/C Ratio(X)	0.63	0.00	0.00	1.09	0.00	0.00	0.52	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1216	0	0	1237	0	0	473	0	0	532	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.1	0.0	0.0	11.9	0.0	0.0	33.4	0.0	0.0	33.7	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	55.2	0.0	0.0	1.6	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	0.0	0.0	48.2	0.0	0.0	4.5	0.0	0.0	5.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	0.0	0.0	67.1	0.0	0.0	35.0	0.0	0.0	35.7	0.0	0.0
LnGrp LOS	A	A	A	F	A	A	C	A	A	D	A	A
Approach Vol, veh/h		763			1353			130			161	
Approach Delay, s/veh		6.6			67.1			35.0			35.7	
Approach LOS		A			E			C			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		64.0		16.4		64.0		16.4				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		57.0		21.0		57.0		21.0				
Max Q Clear Time (g_c+I1), s		15.9		9.0		59.0		8.0				
Green Ext Time (p_c), s		30.6		0.4		0.0		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			44.1									
HCM 6th LOS			D									

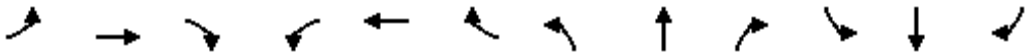


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	635	47	57	1070	159	48	48	27	82	64	8
Future Volume (vph)	44	635	47	57	1070	159	48	48	27	82	64	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	13	12	13	13	12	12	12	16	16	16
Grade (%)		-7%			0%			1%			-6%	
Storage Length (ft)	75		0	75		0	0		0	0		0
Storage Lanes	1		0	1		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
Frt		0.990			0.981			0.971			0.993	
Flt Protected	0.950			0.950				0.981			0.974	
Satd. Flow (prot)	1735	1871	0	1710	1809	0	0	1706	0	0	2032	0
Flt Permitted	0.061			0.335				0.792			0.750	
Satd. Flow (perm)	111	1871	0	603	1809	0	0	1377	0	0	1565	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			22			13			2	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		2306			510			926			6332	
Travel Time (s)		44.9			9.9			18.0			123.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	46	668	49	60	1126	167	51	51	28	86	67	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	717	0	60	1293	0	0	130	0	0	161	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	0.98	0.98	1.07	1.03	1.03	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	4	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	35	371		35	371		20	35		20	56	
Trailing Detector (ft)	-5	0		-5	0		0	-5		0	-10	
Detector 1 Position(ft)	-5	0		-5	0		0	-5		0	-10	
Detector 1 Size(ft)	40	6		40	6		20	40		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		365			365						4	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 3 Position(ft)											25	
Detector 3 Size(ft)											6	
Detector 3 Type											Cl+Ex	
Detector 3 Channel												
Detector 3 Extend (s)											0.0	
Detector 4 Position(ft)											50	
Detector 4 Size(ft)											6	
Detector 4 Type											Cl+Ex	
Detector 4 Channel												
Detector 4 Extend (s)											0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	26.0	26.0		26.0	26.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		12.0	12.0		12.0	12.0	
Total Split (s)	72.0	72.0		72.0	72.0		18.0	18.0		18.0	18.0	
Total Split (%)	80.0%	80.0%		80.0%	80.0%		20.0%	20.0%		20.0%	20.0%	
Maximum Green (s)	65.0	65.0		65.0	65.0		11.0	11.0		11.0	11.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.5	2.5		2.5	2.5		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	37.0	37.0		37.0	37.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 89.7	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

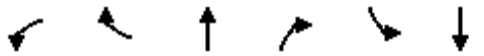
Splits and Phases: 14: NH Square Rd & Swamp Pk



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	635	47	57	1070	159	48	48	27	82	64	8
Future Volume (veh/h)	44	635	47	57	1070	159	48	48	27	82	64	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2032	2114	2114	1800	1857	1857	1794	1794	1794	2104	2104	2104
Adj Flow Rate, veh/h	46	668	49	60	1126	167	51	51	28	86	67	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	0	1	1	0	0	0	0	0	0
Cap, veh/h	129	1438	106	535	1169	173	119	93	43	170	98	11
Arrive On Green	0.74	0.74	0.73	0.74	0.74	0.73	0.11	0.13	0.11	0.11	0.13	0.11
Sat Flow, veh/h	489	1945	143	746	1581	234	502	738	340	856	777	85
Grp Volume(v), veh/h	46	0	717	60	0	1293	130	0	0	161	0	0
Grp Sat Flow(s),veh/h/ln	489	0	2088	746	0	1815	1580	0	0	1718	0	0
Q Serve(g_s), s	8.3	0.0	12.2	3.1	0.0	57.6	0.0	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	65.5	0.0	12.2	14.7	0.0	57.6	7.0	0.0	0.0	8.2	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.13	0.39		0.22	0.53		0.05
Lane Grp Cap(c), veh/h	129	0	1544	535	0	1342	238	0	0	259	0	0
V/C Ratio(X)	0.36	0.00	0.46	0.11	0.00	0.96	0.55	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	129	0	1544	535	0	1342	250	0	0	274	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	40.0	0.0	4.6	7.4	0.0	10.6	37.4	0.0	0.0	37.9	0.0	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.5	0.2	0.0	16.8	2.2	0.0	0.0	3.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	0.0	7.0	0.8	0.0	29.0	5.1	0.0	0.0	6.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.5	0.0	5.1	7.6	0.0	27.4	39.6	0.0	0.0	41.9	0.0	0.0
LnGrp LOS	D	A	A	A	A	C	D	A	A	D	A	A
Approach Vol, veh/h		763			1353			130			161	
Approach Delay, s/veh		7.4			26.5			39.6			41.9	
Approach LOS		A			C			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		72.0		17.3		72.0		17.3				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		65.0		11.0		65.0		11.0				
Max Q Clear Time (g_c+I1), s		68.0		10.2		59.6		9.0				
Green Ext Time (p_c), s		0.0		0.0		5.4		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			22.2									
HCM 6th LOS			C									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	58	1230	4	37	711
Future Volume (vph)	1	58	1230	4	37	711
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)	-3%		-3%			2%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.867					
Flt Protected	0.999					0.998
Satd. Flow (prot)	1530	0	1732	0	0	1745
Flt Permitted	0.999					0.998
Satd. Flow (perm)	1530	0	1732	0	0	1745
Link Speed (mph)	25		35			35
Link Distance (ft)	364		1765			510
Travel Time (s)	9.9		34.4			9.9
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	1	60	1281	4	39	741
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	1285	0	0	780
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.10	1.10	1.10	1.10	1.09	1.09
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	58	1230	4	37	711
Future Vol, veh/h	1	58	1230	4	37	711
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	-3	-	-	2
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	1	60	1281	4	39	741

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2102	1283	0	0	1285	0
Stage 1	1283	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.3	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	86	234	-	-	421	-
Stage 1	353	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	72	234	-	-	421	-
Mov Cap-2 Maneuver	72	-	-	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	469	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.9	0	0.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	225	421	-
HCM Lane V/C Ratio	-	-	0.273	0.092	-
HCM Control Delay (s)	-	-	26.9	14.4	0
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	1.1	0.3	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	58	1230	4	37	711
Future Volume (vph)	1	58	1230	4	37	711
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	-3%		-3%			2%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.867					
Flt Protected	0.999				0.950	
Satd. Flow (prot)	1530	0	1732	0	1636	1689
Flt Permitted	0.999				0.950	
Satd. Flow (perm)	1530	0	1732	0	1636	1689
Link Speed (mph)	25		35			35
Link Distance (ft)	364		1765			510
Travel Time (s)	9.9		34.4			9.9
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	1	60	1281	4	39	741
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	1285	0	39	741
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.10	1.10	1.10	1.10	1.13	1.13
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

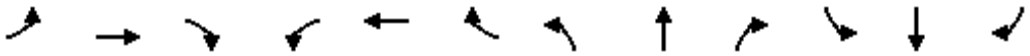
Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	58	1230	4	37	711
Future Vol, veh/h	1	58	1230	4	37	711
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	-3	-	-	2
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	1	60	1281	4	39	741

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2102	1283	0	0	1285	0
Stage 1	1283	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.3	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	86	234	-	-	421	-
Stage 1	353	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	78	234	-	-	421	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	504	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.8	0	0.7
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	226	421	-
HCM Lane V/C Ratio	-	-	0.272	0.092	-
HCM Control Delay (s)	-	-	26.8	14.4	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	1.1	0.3	-

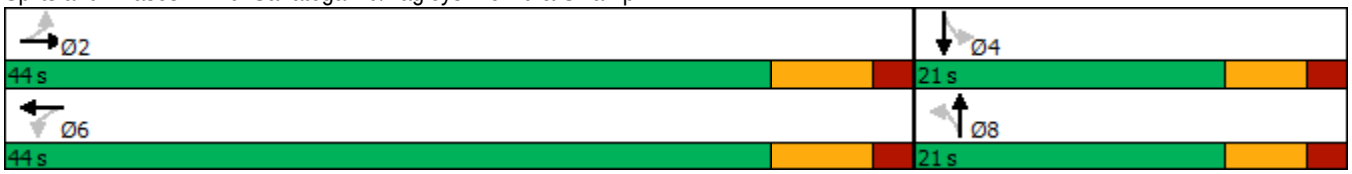


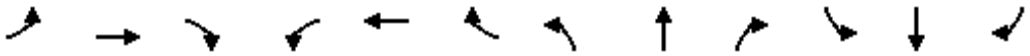
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	643	27	37	1113	30	58	44	23	19	48	9
Future Volume (vph)	9	643	27	37	1113	30	58	44	23	19	48	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	10	10	10	13	13	13
Grade (%)		4%			-8%			-5%			6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.997			0.976			0.984	
Flt Protected		0.999			0.998			0.977			0.988	
Satd. Flow (prot)	0	1687	0	0	1840	0	0	1613	0	0	1689	0
Flt Permitted		0.982			0.966			0.820			0.913	
Satd. Flow (perm)	0	1658	0	0	1781	0	0	1354	0	0	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			4			16			9	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1765			540			508			343	
Travel Time (s)		34.4			10.5			9.9			6.7	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	11%	4%	0%	3%	1%	7%	0%	5%	0%	0%	2%	22%
Adj. Flow (vph)	9	656	28	38	1136	31	59	45	23	19	49	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	693	0	0	1205	0	0	127	0	0	77	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			20	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.02	1.02	1.02	1.13	1.13	1.13	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	456		20	456		20	35		20	35	
Trailing Detector (ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Position(ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Size(ft)	20	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		450			450							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		9.0	9.0		9.0	9.0	
Total Split (s)	44.0	44.0		44.0	44.0		21.0	21.0		21.0	21.0	
Total Split (%)	67.7%	67.7%		67.7%	67.7%		32.3%	32.3%		32.3%	32.3%	
Maximum Green (s)	37.0	37.0		37.0	37.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 62.2	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 16: Sanatoga Rd/Fagleysville Rd & Swamp Pk

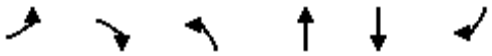




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	643	27	37	1113	30	58	44	23	19	48	9
Future Volume (veh/h)	9	643	27	37	1113	30	58	44	23	19	48	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1655	1655	1655	2084	2084	2084	1915	1915	1915	1634	1634	1634
Adj Flow Rate, veh/h	9	656	28	38	1136	31	59	45	23	19	49	9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	2	2	2
Cap, veh/h	69	1055	45	88	1319	35	183	89	39	112	142	23
Arrive On Green	0.66	0.68	0.66	0.66	0.68	0.66	0.11	0.13	0.11	0.11	0.13	0.11
Sat Flow, veh/h	6	1556	66	32	1947	52	705	707	312	251	1127	182
Grp Volume(v), veh/h	693	0	0	1205	0	0	127	0	0	77	0	0
Grp Sat Flow(s),veh/h/ln	1628	0	0	2031	0	0	1724	0	0	1561	0	0
Q Serve(g_s), s	0.0	0.0	0.0	9.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	13.4	0.0	0.0	26.9	0.0	0.0	3.8	0.0	0.0	2.5	0.0	0.0
Prop In Lane	0.01		0.04	0.03		0.03	0.46		0.18	0.25		0.12
Lane Grp Cap(c), veh/h	1139	0	0	1406	0	0	280	0	0	248	0	0
V/C Ratio(X)	0.61	0.00	0.00	0.86	0.00	0.00	0.45	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	1142	0	0	1410	0	0	541	0	0	486	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.1	0.0	0.0	7.2	0.0	0.0	23.3	0.0	0.0	22.6	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	5.4	0.0	0.0	2.4	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	0.0	0.0	13.2	0.0	0.0	3.0	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	0.0	0.0	12.6	0.0	0.0	25.7	0.0	0.0	24.1	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	C	A	A	C	A	A
Approach Vol, veh/h		693			1205			127			77	
Approach Delay, s/veh		6.0			12.6			25.7			24.1	
Approach LOS		A			B			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.9		12.0		43.9		12.0				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		37.0		15.0		37.0		15.0				
Max Q Clear Time (g_c+I1), s		15.4		4.5		28.9		5.8				
Green Ext Time (p_c), s		15.8		0.3		8.0		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			11.7									
HCM 6th LOS			B									



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	44	24	42	444	623	48
Future Volume (vph)	44	24	42	444	623	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	11	11	12	12
Grade (%)	-1%			-4%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952				0.990	
Flt Protected	0.969			0.996		
Satd. Flow (prot)	1753	0	0	1721	1699	0
Flt Permitted	0.969			0.996		
Satd. Flow (perm)	1753	0	0	1721	1699	0
Link Speed (mph)	35			40	40	
Link Distance (ft)	540			956	3165	
Travel Time (s)	10.5			16.3	53.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	10%	4%	0%	3%	3%	0%
Adj. Flow (vph)	47	26	45	477	670	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	0	0	522	722	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	16			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.90	0.90	1.09	1.09	1.10	1.10
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

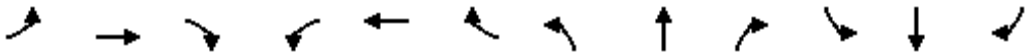
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	24	42	444	623	48
Future Vol, veh/h	44	24	42	444	623	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	-4	4	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	10	4	0	3	3	0
Mvmt Flow	47	26	45	477	670	52

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1263	696	722	0	-	0
Stage 1	696	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Critical Hdwy	6.3	6.14	4.3	-	-	-
Critical Hdwy Stg 1	5.3	-	-	-	-	-
Critical Hdwy Stg 2	5.3	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3	-	-	-
Pot Cap-1 Maneuver	209	471	674	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	190	471	674	-	-	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	504	-	-	-	-	-
Stage 2	637	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.3	0.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	674	-	241	-	-
HCM Lane V/C Ratio	0.067	-	0.303	-	-
HCM Control Delay (s)	10.7	0	26.3	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-



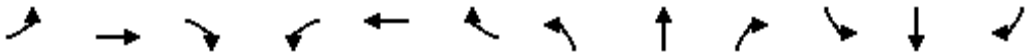
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	61	79	34	33	17	66	479	58	44	474	48
Future Volume (vph)	55	61	79	34	33	17	66	479	58	44	474	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		2%			-1%			-1%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.945			0.973			0.987			0.989	
Flt Protected		0.986			0.980			0.995			0.996	
Satd. Flow (prot)	0	1550	0	0	1610	0	0	1763	0	0	1723	0
Flt Permitted		0.892			0.859			0.892			0.926	
Satd. Flow (perm)	0	1402	0	0	1411	0	0	1580	0	0	1602	0
Right Turn on Red			No			No			Yes			No
Satd. Flow (RTOR)								12				
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		477			665			1951			956	
Travel Time (s)		10.8			15.1			33.3			16.3	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	56	62	80	34	33	17	67	484	59	44	479	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	84	0	0	610	0	0	571	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.16	1.16	1.16	1.07	1.07	1.07	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	2		1	2	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	35		20	35		20	369		20	371	
Trailing Detector (ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Position(ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Size(ft)	20	40		20	40		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)								363			365	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	8.0	8.0		8.0	8.0		22.0	22.0		22.0	22.0	
Total Split (s)	25.0	25.0		25.0	25.0		65.0	65.0		65.0	65.0	
Total Split (%)	27.8%	27.8%		27.8%	27.8%		72.2%	72.2%		72.2%	72.2%	
Maximum Green (s)	20.0	20.0		20.0	20.0		58.0	58.0		58.0	58.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		2.5	2.5		2.5	2.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		37.0	37.0		37.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		10.0	10.0		10.0	10.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 65.1
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

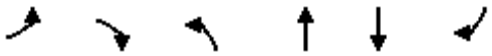
Splits and Phases: 18: Rt 663 & Buchert Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	61	79	34	33	17	66	479	58	44	474	48
Future Volume (veh/h)	55	61	79	34	33	17	66	479	58	44	474	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1778	1778	1778	1837	1837	1837	1823	1823	1823	1697	1697	1697
Adj Flow Rate, veh/h	56	62	80	34	33	17	67	484	59	44	479	48
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	138	107	113	171	154	61	143	911	106	109	913	88
Arrive On Green	0.16	0.18	0.16	0.16	0.18	0.16	0.63	0.65	0.63	0.63	0.65	0.63
Sat Flow, veh/h	335	600	633	477	866	341	115	1399	162	66	1402	135
Grp Volume(v), veh/h	198	0	0	84	0	0	610	0	0	571	0	0
Grp Sat Flow(s),veh/h/ln	1567	0	0	1685	0	0	1676	0	0	1603	0	0
Q Serve(g_s), s	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.0	0.0	0.0	2.4	0.0	0.0	10.8	0.0	0.0	10.8	0.0	0.0
Prop In Lane	0.28		0.40	0.40		0.20	0.11		0.10	0.08		0.08
Lane Grp Cap(c), veh/h	331	0	0	357	0	0	1131	0	0	1083	0	0
V/C Ratio(X)	0.60	0.00	0.00	0.24	0.00	0.00	0.54	0.00	0.00	0.53	0.00	0.00
Avail Cap(c_a), veh/h	608	0	0	632	0	0	1705	0	0	1633	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.0	0.0	0.0	21.1	0.0	0.0	5.5	0.0	0.0	5.5	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.3	0.0	0.0	0.9	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.7	0.0	0.0	1.8	0.0	0.0	4.9	0.0	0.0	4.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.7	0.0	0.0	21.4	0.0	0.0	6.3	0.0	0.0	6.3	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		198			84			610			571	
Approach Delay, s/veh		24.7			21.4			6.3			6.3	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.2		14.4		44.2		14.4				
Change Period (Y+Rc), s		7.0		5.0		7.0		5.0				
Max Green Setting (Gmax), s		58.0		20.0		58.0		20.0				
Max Q Clear Time (g_c+I1), s		12.8		9.0		12.8		4.4				
Green Ext Time (p_c), s		24.4		0.5		22.5		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			9.7									
HCM 6th LOS			A									

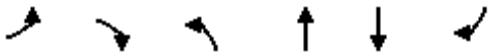


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	66	115	197	449	468	99
Future Volume (vph)	66	115	197	449	468	99
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	-2%			2%	-3%	
Storage Length (ft)	0	0	150			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.914				0.976	
Flt Protected	0.982		0.950			
Satd. Flow (prot)	1577	0	1620	1706	1698	0
Flt Permitted	0.982		0.242			
Satd. Flow (perm)	1577	0	413	1706	1698	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	98				22	
Link Speed (mph)	40			40	40	
Link Distance (ft)	847			673	1951	
Travel Time (s)	14.4			11.5	33.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	1%	1%	4%
Adj. Flow (vph)	70	122	210	478	498	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	192	0	210	478	603	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.13	1.13	1.10	1.10
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	2	2	
Detector Template	Left		Left			
Leading Detector (ft)	35		35	350	350	
Trailing Detector (ft)	-5		-5	0	0	
Detector 1 Position(ft)	-5		-5	0	0	
Detector 1 Size(ft)	40		40	6	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)				344	344	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	10.0		3.0	20.0	20.0	
Minimum Split (s)	16.0		9.0	26.0	26.0	
Total Split (s)	16.0		13.0	59.0	46.0	
Total Split (%)	21.3%		17.3%	78.7%	61.3%	
Maximum Green (s)	10.0		7.0	53.0	40.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	5.0	5.0	
Minimum Gap (s)	3.0		3.0	2.5	2.5	
Time Before Reduce (s)	0.0		0.0	35.0	35.0	
Time To Reduce (s)	0.0		0.0	10.0	10.0	
Recall Mode	None		None	Min	Min	

Intersection Summary	
Area Type:	Other
Cycle Length: 75	
Actuated Cycle Length: 68	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 19: Rt 663 & Moyer Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	66	115	197	449	468	99
Future Volume (veh/h)	66	115	197	449	468	99
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1875	1875	1764	1764	1898	1898
Adj Flow Rate, veh/h	70	122	210	478	498	105
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	1	1	1
Cap, veh/h	98	171	502	1205	765	161
Arrive On Green	0.16	0.15	0.10	0.68	0.50	0.49
Sat Flow, veh/h	601	1047	1680	1764	1520	320
Grp Volume(v), veh/h	193	0	210	478	0	603
Grp Sat Flow(s),veh/h/ln	1656	0	1680	1764	0	1840
Q Serve(g_s), s	7.2	0.0	3.3	7.7	0.0	15.9
Cycle Q Clear(g_c), s	7.2	0.0	3.3	7.7	0.0	15.9
Prop In Lane	0.36	0.63	1.00			0.17
Lane Grp Cap(c), veh/h	271	0	502	1205	0	926
V/C Ratio(X)	0.71	0.00	0.42	0.40	0.00	0.65
Avail Cap(c_a), veh/h	279	0	534	1457	0	1154
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	8.0	4.5	0.0	12.1
Incr Delay (d2), s/veh	8.0	0.0	0.6	0.5	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.8	0.0	1.5	3.1	0.0	9.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.2	0.0	8.6	4.9	0.0	13.8
LnGrp LOS	C	A	A	A	A	B
Approach Vol, veh/h	193			688	603	
Approach Delay, s/veh	34.2			6.1	13.8	
Approach LOS	C			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.7		15.7	11.8	37.9
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		53.0		10.0	7.0	40.0
Max Q Clear Time (g_c+I1), s		10.2		9.7	5.8	17.9
Green Ext Time (p_c), s		16.4		0.0	0.1	14.0

Intersection Summary	
HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

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Appendix I

Internal Trip Generation Characteristics

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	New Hanover Town Center	**Organization:**	
Project Location:	Phase 1 to 4 residential	**Performed By:**	
Scenario Description:	All Office Space	**Date:**	
Analysis Year:	Partial Retail	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	10000 s.f		12	2	10
Retail	820	53,503 s.f.		322	154	168
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 and 220	337 d.u.		244	154	90
Hotel				0		
All Other Land Uses[2]				0		
				578	310	268

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		310			1250	
Retail					1850	
Restaurant						
Cinema/Entertainment						
Residential		1850				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	0		0	0	29	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	6	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	578	310	268
Internal Capture Percentage	13%	12%	14%
External Vehicle-Trips[5]	502	272	230
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	50%	20%
Retail	5%	17%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	19%	8%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	New Hanover Town Center
Analysis Period:	**New Hanover Town Center**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	2	2	1.00	10	10
Retail	1.00	154	154	1.00	168	168
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	154	154	1.00	90	90
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	3		49	7	29	8
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	15	19	0		3
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		12	0	0	6	0
Retail	1		0	0	71	0
Restaurant	1	77		0	25	0
Cinema/Entertainment	0	6	0		6	0
Residential	1	6	0	0		0
Hotel	0	3	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	1	2	1	0	0
Retail	8	146	154	146	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	29	125	154	125	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	2	8	10	8	0	0
Retail	29	139	168	139	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	7	83	90	83	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

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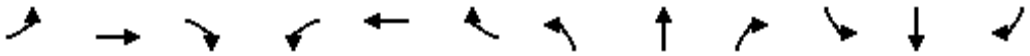
Appendix J

2030 Future Development Capacity/Level-of-Service Worksheets

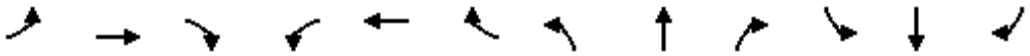


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	540	24	49	717	47	26	52	61	35	27	26
Future Volume (vph)	44	540	24	49	717	47	26	52	61	35	27	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	13	13	13	12	12	12	10	10	10
Grade (%)		-2%			1%			-2%			1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.992			0.940			0.960	
Flt Protected		0.996			0.997			0.991			0.980	
Satd. Flow (prot)	0	1751	0	0	1794	0	0	1660	0	0	1542	0
Flt Permitted		0.898			0.932			0.923			0.817	
Satd. Flow (perm)	0	1579	0	0	1678	0	0	1546	0	0	1285	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			7			41			22	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		664			1976			2527			378	
Travel Time (s)		10.1			29.9			68.9			10.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	49	607	27	55	806	53	29	58	69	39	30	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	683	0	0	914	0	0	156	0	0	98	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.03	1.03	1.03	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	1	
Detector Template	Left			Left			Left	Thru		Left	Thru	
Leading Detector (ft)	20	350		20	350		20	35		20	35	
Trailing Detector (ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Position(ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Size(ft)	20	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		344			344							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		16.0	16.0		16.0	16.0	
Total Split (s)	64.0	64.0		64.0	64.0		26.0	26.0		26.0	26.0	
Total Split (%)	71.1%	71.1%		71.1%	71.1%		28.9%	28.9%		28.9%	28.9%	
Maximum Green (s)	58.0	58.0		58.0	58.0		20.0	20.0		20.0	20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 72.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Middle Creek Rd & Rt 73



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	540	24	49	717	47	26	52	61	35	27	26
Future Volume (veh/h)	44	540	24	49	717	47	26	52	61	35	27	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1832	1832	1832	1837	1837	1837	1846	1846	1846	1766	1766	1766
Adj Flow Rate, veh/h	49	607	27	55	806	53	29	58	69	39	30	29
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	1098	47	100	1098	70	93	115	116	144	107	75
Arrive On Green	0.68	0.70	0.68	0.68	0.70	0.68	0.14	0.16	0.14	0.14	0.16	0.14
Sat Flow, veh/h	71	1574	68	64	1574	101	197	727	732	453	680	476
Grp Volume(v), veh/h	683	0	0	914	0	0	156	0	0	98	0	0
Grp Sat Flow(s),veh/h/ln	1713	0	0	1739	0	0	1656	0	0	1609	0	0
Q Serve(g_s), s	0.0	0.0	0.0	5.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.8	0.0	0.0	22.4	0.0	0.0	6.1	0.0	0.0	3.6	0.0	0.0
Prop In Lane	0.07		0.04	0.06		0.06	0.19		0.44	0.40		0.30
Lane Grp Cap(c), veh/h	1226	0	0	1243	0	0	299	0	0	304	0	0
V/C Ratio(X)	0.56	0.00	0.00	0.74	0.00	0.00	0.52	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	1477	0	0	1506	0	0	535	0	0	515	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.1	0.0	0.0	6.5	0.0	0.0	27.3	0.0	0.0	26.4	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.5	0.0	0.0	1.4	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.3	0.0	0.0	9.0	0.0	0.0	4.5	0.0	0.0	2.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.5	0.0	0.0	8.0	0.0	0.0	28.8	0.0	0.0	27.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	A
Approach Vol, veh/h		683			914			156			98	
Approach Delay, s/veh		5.5			8.0			28.8			27.0	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.3		15.9		53.3		15.9				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		58.0		20.0		58.0		20.0				
Max Q Clear Time (g_c+I1), s		14.8		5.6		24.4		8.1				
Green Ext Time (p_c), s		18.6		0.2		22.9		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			9.9									
HCM 6th LOS			A									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	551	87	620	712	67	483
Future Volume (vph)	551	87	620	712	67	483
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	-1%			4%	1%	
Storage Length (ft)		0	125		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.982				0.881	
Flt Protected			0.950		0.994	
Satd. Flow (prot)	1670	0	1588	1672	1472	0
Flt Permitted			0.112		0.994	
Satd. Flow (perm)	1670	0	187	1672	1472	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	10				310	
Link Speed (mph)	45			45	40	
Link Distance (ft)	3116			1171	4252	
Travel Time (s)	47.2			17.7	72.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	8%	2%	2%	10%	2%
Adj. Flow (vph)	586	93	660	757	71	514
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	0	660	757	585	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.15	1.15	1.13	1.13
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	
Detector Template			Left		Left	
Leading Detector (ft)	450		35	450	35	
Trailing Detector (ft)	0		-5	0	-10	
Detector 1 Position(ft)	0		-5	0	-10	
Detector 1 Size(ft)	6		40	6	45	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)	444			444		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases			6			
Detector Phase	2		1	6	8	
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	
Minimum Split (s)	22.0		12.0	22.0	11.0	
Total Split (s)	46.0		33.0	79.0	16.0	
Total Split (%)	48.4%		34.7%	83.2%	16.8%	
Maximum Green (s)	39.0		26.0	72.0	10.0	
Yellow Time (s)	5.0		5.0	5.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	6.0		6.0	6.0	5.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Min		None	C-Min	None	
Act Effct Green (s)	40.0		73.0	73.0	11.0	
Actuated g/C Ratio	0.42		0.77	0.77	0.12	
v/c Ratio	0.96		1.22	0.59	1.32	
Control Delay	53.1		122.1	3.1	176.6	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	53.1		122.1	3.1	176.6	
LOS	D		F	A	F	
Approach Delay	53.1			58.5	176.6	
Approach LOS	D			E	F	
Queue Length 50th (ft)	383		~423	38	~282	
Queue Length 95th (ft)	#625		m#362	m35	#491	
Internal Link Dist (ft)	3036			1091	4172	
Turn Bay Length (ft)			125			
Base Capacity (vph)	708		541	1284	444	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.96		1.22	0.59	1.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.32			
Intersection Signal Delay: 82.9		Intersection LOS: F	
Intersection Capacity Utilization 122.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 663 & Rt 73

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	551	87	620	712	67	483
Future Volume (vph)	551	87	620	712	67	483
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	-1%			4%	1%	
Storage Length (ft)		250	125		0	175
Storage Lanes		1	1		1	1
Taper Length (ft)			75		75	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.979					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3163	0	1588	1672	1495	1443
Flt Permitted			0.249		0.950	
Satd. Flow (perm)	3163	0	416	1672	1495	1443
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	19					514
Link Speed (mph)	45			45	40	
Link Distance (ft)	3116			431	4252	
Travel Time (s)	47.2			6.5	72.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	8%	2%	2%	10%	2%
Adj. Flow (vph)	586	93	660	757	71	514
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	0	660	757	71	514
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.15	1.15	1.13	1.13
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template			Left		Left	Right
Leading Detector (ft)	450		35	450	35	20
Trailing Detector (ft)	0		-5	0	-10	0
Detector 1 Position(ft)	0		-5	0	-10	0
Detector 1 Size(ft)	6		40	6	45	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)	444			444		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	15.0		5.0	15.0	5.0	5.0
Minimum Split (s)	22.0		12.0	22.0	11.0	11.0
Total Split (s)	35.0		45.0	80.0	15.0	15.0
Total Split (%)	36.8%		47.4%	84.2%	15.8%	15.8%
Maximum Green (s)	28.0		38.0	73.0	9.0	9.0
Yellow Time (s)	5.0		5.0	5.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	5.0	6.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Min		None	C-Min	None	None
Act Effct Green (s)	34.7		74.4	74.4	9.6	8.6
Actuated g/C Ratio	0.37		0.78	0.78	0.10	0.09
v/c Ratio	0.58		0.89	0.58	0.47	0.86
Control Delay	27.6		19.6	3.9	50.9	19.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	27.6		19.6	3.9	50.9	19.6
LOS	C		B	A	D	B
Approach Delay	27.6			11.2	23.4	
Approach LOS	C			B	C	
Queue Length 50th (ft)	178		66	43	41	0
Queue Length 95th (ft)	248		m122	m42	85	#162
Internal Link Dist (ft)	3036			351	4172	
Turn Bay Length (ft)			125			175
Base Capacity (vph)	1166		806	1308	157	602
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.58		0.82	0.58	0.45	0.85

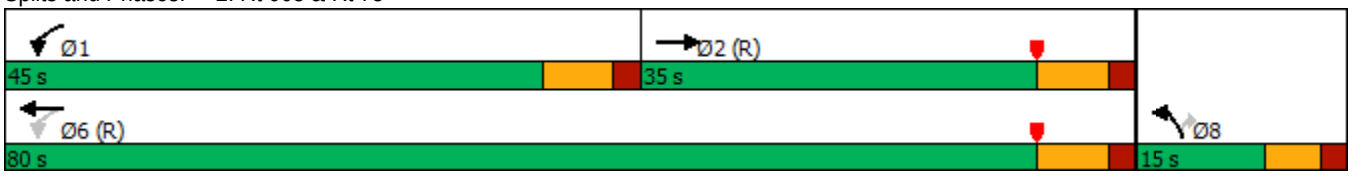
Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 73.6%		ICU Level of Service D	
Analysis Period (min) 15			

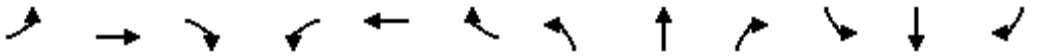
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

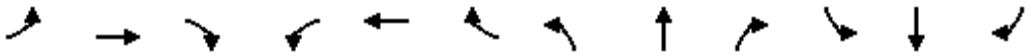
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Rt 663 & Rt 73





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	537	399	14	34	751	16	13	22	32	17	23	618
Future Volume (vph)	537	399	14	34	751	16	13	22	32	17	23	618
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	12	12	12	12	12	12
Grade (%)		1%			-1%			0%			-3%	
Storage Length (ft)	310		0	75		0	0		0	0		0
Storage Lanes	1		0	1		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
Frt		0.995			0.997			0.935			0.873	
Flt Protected	0.950			0.950				0.990			0.999	
Satd. Flow (prot)	1612	1747	0	1629	1804	0	0	1633	0	0	1549	0
Flt Permitted	0.090			0.508				0.757			0.989	
Satd. Flow (perm)	153	1747	0	871	1804	0	0	1249	0	0	1533	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			1			34			527	
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		500			1964			329			479	
Travel Time (s)		7.6			29.8			9.0			8.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	2%	2%	2%	0%	2%	3%
Adj. Flow (vph)	571	424	15	36	799	17	14	23	34	18	24	657
Shared Lane Traffic (%)												
Lane Group Flow (vph)	571	439	0	36	816	0	0	71	0	0	699	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.11	1.07	1.07	1.07	1.07	1.07	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	3		1	3		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	35	250		35	250		20	35		35	35	
Trailing Detector (ft)	-5	0		-5	0		0	-5		-5	-5	
Detector 1 Position(ft)	-5	0		-5	0		0	-5		-5	-5	
Detector 1 Size(ft)	40	6		40	6		20	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		122			122							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 3 Position(ft)		244			244							
Detector 3 Size(ft)		6			6							
Detector 3 Type		Cl+Ex			Cl+Ex							
Detector 3 Channel												
Detector 3 Extend (s)		0.0			0.0							
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		24.0	24.0		11.0	11.0		11.0	11.0	
Total Split (s)	36.0	80.0		44.0	44.0		15.0	15.0		15.0	15.0	
Total Split (%)	37.9%	84.2%		46.3%	46.3%		15.8%	15.8%		15.8%	15.8%	
Maximum Green (s)	30.0	74.0		38.0	38.0		10.5	10.5		9.0	9.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	1.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		0.0	-1.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0		6.0	5.0			4.5			6.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Min		C-Min	C-Min		None	None		None	None	
Act Effct Green (s)	75.0	75.0		38.4	39.4			10.5			9.0	
Actuated g/C Ratio	0.79	0.79		0.40	0.41			0.11			0.09	
v/c Ratio	0.97	0.32		0.10	1.09			0.42			1.12	
Control Delay	41.9	2.5		19.0	89.3			31.8			87.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	41.9	2.5		19.0	89.3			31.8			87.3	
LOS	D	A		B	F			C			F	
Approach Delay		24.8			86.4			31.8			87.3	
Approach LOS		C			F			C			F	
Queue Length 50th (ft)	285	44		13	~565			21			~178	
Queue Length 95th (ft)	m255	m40		34	#796			64			#399	
Internal Link Dist (ft)		420			1884			249			399	
Turn Bay Length (ft)	310			75								
Base Capacity (vph)	596	1380		351	748			168			622	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.96	0.32		0.10	1.09			0.42			1.12	

Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 35 (37%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 140	
Control Type: Actuated-Coordinated	

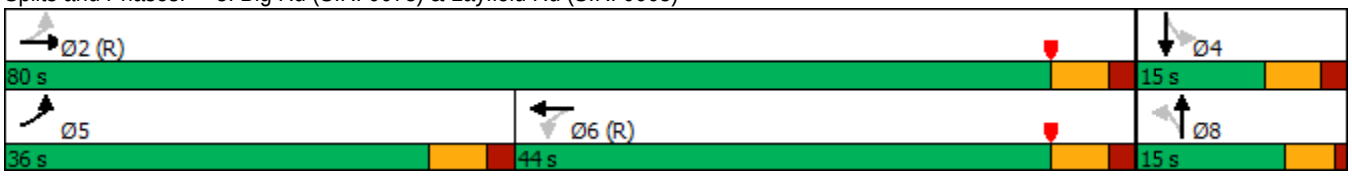
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 61.5	Intersection LOS: E
Intersection Capacity Utilization 131.5%	ICU Level of Service H
Analysis Period (min) 15	

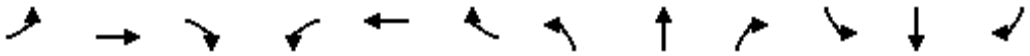
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Big Rd (S.R. 0073) & Layfield Rd (S.R. 0663)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	537	399	14	34	751	16	13	22	32	17	23	618
Future Volume (vph)	537	399	14	34	751	16	13	22	32	17	23	618
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		1%			-1%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.997			0.935			0.873	
Flt Protected		0.973			0.998			0.991			0.999	
Satd. Flow (prot)	0	1705	0	0	1798	0	0	1635	0	0	1549	0
Flt Permitted		0.973			0.998			0.991			0.999	
Satd. Flow (perm)	0	1705	0	0	1798	0	0	1635	0	0	1549	0
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		500			1967			290			479	
Travel Time (s)		7.6			29.8			7.9			8.2	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	2%	2%	2%	0%	2%	3%
Adj. Flow (vph)	571	424	15	37	799	17	14	24	35	18	25	657
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1010	0	0	853	0	0	73	0	0	700	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		16			16			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	1.08	1.07	1.07	1.07	1.07	1.07	1.07	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

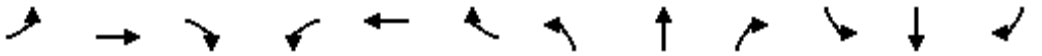
Intersection Summary	
Area Type:	Other

Control Type: Roundabout

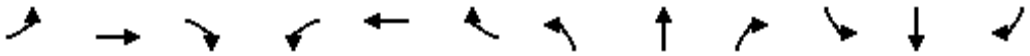
Intersection	
Intersection Delay, s/veh	42.8
Intersection LOS	E

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	1010	853	73	700
Demand Flow Rate, veh/h	1029	854	74	721
Vehicles Circulating, veh/h	81	620	1032	851
Vehicles Exiting, veh/h	813	486	78	623
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	17.9	109.8	9.8	0.4
Approach LOS	C	F	A	A

Lane	Left	Left	Left	Left	Bypass
Designated Moves	LTR	LTR	LTR	LT	R
Assumed Moves	LTR	LTR	LTR	LT	R
RT Channelized					Free
Lane Util	1.000	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	4.976	677
Entry Flow, veh/h	1029	854	74	44	1854
Cap Entry Lane, veh/h	1270	733	482	579	0.971
Entry HV Adj Factor	0.981	0.999	0.980	0.988	657
Flow Entry, veh/h	1010	853	73	43	1800
Cap Entry, veh/h	1246	732	472	573	0.365
V/C Ratio	0.810	1.165	0.154	0.076	0.0
Control Delay, s/veh	17.9	109.8	9.8	7.2	A
LOS	C	F	A	A	2
95th %tile Queue, veh	10	27	1	0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	537	399	14	34	751	16	13	22	32	17	23	618
Future Volume (vph)	537	399	14	34	751	16	13	22	32	17	23	618
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	12	11	12	12	10	13	13	10	11	12
Grade (%)		1%			-1%			0%			-3%	
Storage Length (ft)	310		0	75		300	75		0	75		360
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.997			0.911				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1612	1747	0	1629	3427	0	1565	1661	0	1620	1731	1508
Flt Permitted	0.189			0.508			0.742			0.720		
Satd. Flow (perm)	321	1747	0	871	3427	0	1222	1661	0	1228	1731	1508
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			2			34				568
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		500			1968			275			479	
Travel Time (s)		7.6			29.8			7.5			8.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	2%	2%	2%	0%	2%	3%
Adj. Flow (vph)	571	424	15	36	799	17	14	23	34	18	24	657
Shared Lane Traffic (%)												
Lane Group Flow (vph)	571	439	0	36	816	0	14	57	0	18	24	657
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.11	1.07	1.07	1.17	1.03	1.03	1.15	1.10	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	3		1	3		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	35	250		20	250		20	100		35	100	20
Trailing Detector (ft)	-5	0		0	0		0	0		-5	0	0
Detector 1 Position(ft)	-5	0		0	0		0	0		-5	0	0
Detector 1 Size(ft)	40	6		20	6		20	6		40	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		122			122			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



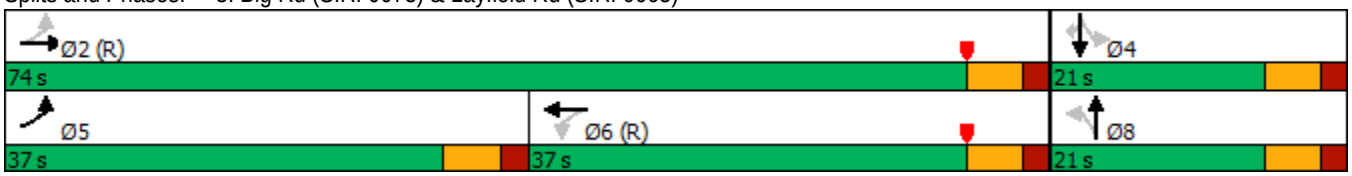
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 3 Position(ft)		244			244							
Detector 3 Size(ft)		6			6							
Detector 3 Type		Cl+Ex			Cl+Ex							
Detector 3 Channel												
Detector 3 Extend (s)		0.0			0.0							
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		6	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	24.0		24.0	24.0		11.0	11.0		11.0	11.0	11.0
Total Split (s)	37.0	74.0		37.0	37.0		21.0	21.0		21.0	21.0	21.0
Total Split (%)	38.9%	77.9%		38.9%	38.9%		22.1%	22.1%		22.1%	22.1%	22.1%
Maximum Green (s)	31.0	68.0		31.0	31.0		15.0	15.0		15.0	15.0	15.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		0.0	-1.0		-1.0	-1.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		6.0	5.0		5.0	5.0	6.0
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Min		C-Min	C-Min		None	None		None	None	None
Act Effct Green (s)	70.4	70.4		36.0	36.0		13.6	14.6		14.6	14.6	13.6
Actuated g/C Ratio	0.74	0.74		0.38	0.38		0.14	0.15		0.15	0.15	0.14
v/c Ratio	0.90	0.34		0.11	0.63		0.08	0.20		0.10	0.09	0.94
Control Delay	29.5	2.1		22.8	27.8		35.5	19.7		34.9	34.5	29.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	29.5	2.1		22.8	27.8		35.5	19.7		34.9	34.5	29.1
LOS	C	A		C	C		D	B		C	C	C
Approach Delay		17.6			27.6			22.8			29.4	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	101	33		15	222		7	12		9	12	49
Queue Length 95th (ft)	m#360	m35		38	291		25	46		29	35	#278
Internal Link Dist (ft)		420			1888			195			399	
Turn Bay Length (ft)	310			75			75			75		360
Base Capacity (vph)	672	1295		329	1299		192	308		206	291	716
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.85	0.34		0.11	0.63		0.07	0.19		0.09	0.08	0.92

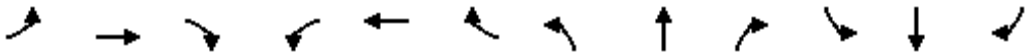
Intersection Summary	
Area Type:	Other
Cycle Length: 95	
Actuated Cycle Length: 95	
Offset: 45 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	

Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 24.1	Intersection LOS: C
Intersection Capacity Utilization 80.3%	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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Big Rd (S.R. 0073) & Layfield Rd (S.R. 0663)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	537	399	14	34	751	16	13	22	32	17	23	618
Future Volume (vph)	537	399	14	34	751	16	13	22	32	17	23	618
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Grade (%)		1%			-1%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.997			0.935			0.873	
Flt Protected		0.973			0.998			0.991			0.999	
Satd. Flow (prot)	0	1705	0	0	3417	0	0	1635	0	0	1549	0
Flt Permitted		0.973			0.998			0.991			0.999	
Satd. Flow (perm)	0	1705	0	0	3417	0	0	1635	0	0	1549	0
Link Speed (mph)		45			45			25			40	
Link Distance (ft)		500			1967			290			479	
Travel Time (s)		7.6			29.8			7.9			8.2	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Heavy Vehicles (%)	2%	2%	2%	2%	0%	0%	2%	2%	2%	0%	2%	3%
Adj. Flow (vph)	571	424	15	37	799	17	14	24	35	18	25	657
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1010	0	0	853	0	0	73	0	0	700	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		16			16			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	1.08	1.07	1.07	1.07	1.07	1.07	1.07	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

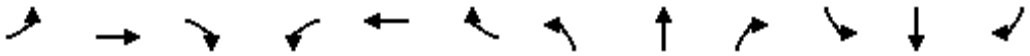
Intersection Summary	
Area Type:	Other

Control Type: Roundabout

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	2	1	1
Conflicting Circle Lanes	1	1	1	2
Adj Approach Flow, veh/h	1010	853	73	700
Demand Flow Rate, veh/h	1029	854	74	721
Vehicles Circulating, veh/h	81	620	1032	851
Vehicles Exiting, veh/h	813	486	78	623
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	17.9	12.1	9.8	0.4
Approach LOS	C	B	A	A

Lane	Left	Left	Right	Left	Left	Bypass
Designated Moves	LTR	LT	TR	LTR	LT	R
Assumed Moves	LTR	LT	TR	LTR	LT	R
RT Channelized						Free
Lane Util	1.000	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.609	2.535	2.535	2.609	2.535	
Critical Headway, s	4.976	4.544	4.544	4.976	4.328	677
Entry Flow, veh/h	1029	401	453	74	44	1854
Cap Entry Lane, veh/h	1270	808	808	482	689	0.971
Entry HV Adj Factor	0.981	1.000	0.998	0.980	0.988	657
Flow Entry, veh/h	1010	401	452	73	43	1800
Cap Entry, veh/h	1246	808	806	472	681	0.365
V/C Ratio	0.810	0.496	0.561	0.154	0.064	0.0
Control Delay, s/veh	17.9	11.3	12.8	9.8	6.0	A
LOS	C	B	B	A	A	2
95th %tile Queue, veh	10	3	4	1	0	



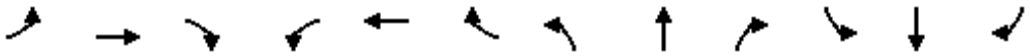
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	78	49	7	169	86	60	507	7	90	602	81
Future Volume (vph)	37	78	49	7	169	86	60	507	7	90	602	81
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	10	10	10	11	11	11	11	11	11
Grade (%)		1%			-4%			4%			-5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.960			0.956			0.998			0.986	
Flt Protected		0.989			0.999			0.995			0.994	
Satd. Flow (prot)	0	1579	0	0	1590	0	0	1626	0	0	1670	0
Flt Permitted		0.728			0.989			0.849			0.863	
Satd. Flow (perm)	0	1162	0	0	1574	0	0	1387	0	0	1450	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			55			55	
Link Distance (ft)		459			4343			3217			485	
Travel Time (s)		7.0			65.8			39.9			6.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	10%	2%	3%	0%	3%	3%	6%	4%	0%	4%	5%	3%
Adj. Flow (vph)	41	86	54	8	186	95	66	557	8	99	662	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	181	0	0	289	0	0	631	0	0	850	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.13	1.13	1.14	1.14	1.14	1.15	1.15	1.15	1.08	1.08	1.08
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	2		1	2	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	35		20	35		20	336		20	336	
Trailing Detector (ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Position(ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Size(ft)	20	40		20	40		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)								330			330	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		26.0	26.0		26.0	26.0	
Minimum Split (s)	12.0	12.0		12.0	12.0		33.0	33.0		33.0	33.0	
Total Split (s)	27.0	27.0		27.0	27.0		67.0	67.0		67.0	67.0	
Total Split (%)	28.7%	28.7%		28.7%	28.7%		71.3%	71.3%		71.3%	71.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0		60.0	60.0		60.0	60.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		2.7	2.7		2.7	2.7	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		35.0	35.0		35.0	35.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0		15.0	15.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 94
Actuated Cycle Length: 89
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 4: Rt 663 & Hoffmansville Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	78	49	7	169	86	60	507	7	90	602	81
Future Volume (veh/h)	37	78	49	7	169	86	60	507	7	90	602	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1766	1766	1766	1906	1906	1906	1655	1655	1655	1915	1915	1915
Adj Flow Rate, veh/h	41	86	54	8	186	95	66	557	8	99	662	89
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	3	3	3	4	4	4	5	5	5
Cap, veh/h	98	164	89	49	235	117	118	890	12	151	903	118
Arrive On Green	0.19	0.20	0.19	0.19	0.20	0.19	0.64	0.65	0.64	0.64	0.65	0.64
Sat Flow, veh/h	221	828	446	19	1184	589	105	1362	19	156	1382	180
Grp Volume(v), veh/h	181	0	0	289	0	0	631	0	0	850	0	0
Grp Sat Flow(s),veh/h/ln	1496	0	0	1792	0	0	1486	0	0	1718	0	0
Q Serve(g_s), s	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0
Cycle Q Clear(g_c), s	8.7	0.0	0.0	12.6	0.0	0.0	18.5	0.0	0.0	26.7	0.0	0.0
Prop In Lane	0.23		0.30	0.03		0.33	0.10		0.01	0.12		0.10
Lane Grp Cap(c), veh/h	333	0	0	379	0	0	1001	0	0	1151	0	0
V/C Ratio(X)	0.54	0.00	0.00	0.76	0.00	0.00	0.63	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	423	0	0	487	0	0	1144	0	0	1317	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.6	0.0	0.0	31.2	0.0	0.0	8.0	0.0	0.0	9.3	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	5.2	0.0	0.0	1.6	0.0	0.0	2.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.7	0.0	0.0	9.6	0.0	0.0	8.1	0.0	0.0	11.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.9	0.0	0.0	36.5	0.0	0.0	9.6	0.0	0.0	12.0	0.0	0.0
LnGrp LOS	C	A	A	D	A	A	A	A	A	B	A	A
Approach Vol, veh/h		181			289			631			850	
Approach Delay, s/veh		30.9			36.5			9.6			12.0	
Approach LOS		C			D			A			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.9		22.1		58.9		22.1				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		60.0		20.0		60.0		20.0				
Max Q Clear Time (g_c+I1), s		20.5		10.7		28.7		14.6				
Green Ext Time (p_c), s		19.7		0.4		23.2		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			16.6									
HCM 6th LOS			B									

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Lane Configurations												
Traffic Volume (vph)	32	183	6	43	6	6	4	63	751	144	4	1
Future Volume (vph)	32	183	6	43	6	6	4	63	751	144	4	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	13	13	10	10	10	12	12	12	12	12
Grade (%)			4%			0%			2%			
Storage Length (ft)		150		0	0		0	0		0		100
Storage Lanes		1		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
Frt			0.868			0.966			0.979			
Flt Protected		0.950				0.982			0.997			
Satd. Flow (prot)	0	1717	1582	0	0	1594	0	0	1706	0	0	0
Flt Permitted		0.624				0.855			0.940			
Satd. Flow (perm)	0	1128	1582	0	0	1388	0	0	1608	0	0	0
Right Turn on Red				No							No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			35			45			
Link Distance (ft)			7311			698			620			
Travel Time (s)			110.8			13.6			9.4			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	2%	25%	0%
Adj. Flow (vph)	33	191	6	45	6	6	4	66	782	150	4	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	224	51	0	0	16	0	0	1002	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)			13			13			0			
Link Offset(ft)			0			0			0			
Crosswalk Width(ft)			16			16			16			
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.17	1.17	1.17	1.09	1.09	1.09	1.09	1.07
Turning Speed (mph)	15	15		9	15		9	15		9	9	15
Number of Detectors	1	1	1		1	1		1	1			1
Detector Template	Left	Left			Left			Left				Left
Leading Detector (ft)	20	35	35		20	30		35	411			20
Trailing Detector (ft)	0	-5	-5		0	-10		-5	405			0
Detector 1 Position(ft)	0	-5	-5		0	-10		-5	405			0
Detector 1 Size(ft)	20	40	40		20	40		40	6			20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0			0.0
Turn Type	pm+pt	pm+pt	NA		Perm	NA		Perm	NA			Perm
Protected Phases	7	7	4			8			2			
Permitted Phases	4	4			8			2				6
Detector Phase	7	7	4		8	8		2	2			6
Switch Phase												

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations						
Traffic Volume (vph)	403	30	5	100	119	2
Future Volume (vph)	403	30	5	100	119	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%			-2%		
Storage Length (ft)		0		0	0	
Storage Lanes		0		1	0	
Taper Length (ft)				75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991			0.928		
Flt Protected				0.977		
Satd. Flow (prot)	1690	0	0	1579	0	0
Flt Permitted	0.999			0.977		
Satd. Flow (perm)	1688	0	0	1579	0	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45		
Link Distance (ft)	3007			1962		
Travel Time (s)	45.6			29.7		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	0%	0%	2%	0%	0%
Adj. Flow (vph)	420	31	5	104	124	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	0	0	235	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(ft)	0			11		
Link Offset(ft)	0			0		
Crosswalk Width(ft)	16			16		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.11	1.11	1.11	1.11
Turning Speed (mph)		9	15	15	9	9
Number of Detectors	1		1	1		
Detector Template			Left			
Leading Detector (ft)	806		20	35		
Trailing Detector (ft)	800		0	-5		
Detector 1 Position(ft)	800		0	-5		
Detector 1 Size(ft)	6		20	40		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0		
Turn Type	NA		Perm	Prot		
Protected Phases	6			9		
Permitted Phases			9			
Detector Phase	6		9	9		
Switch Phase						

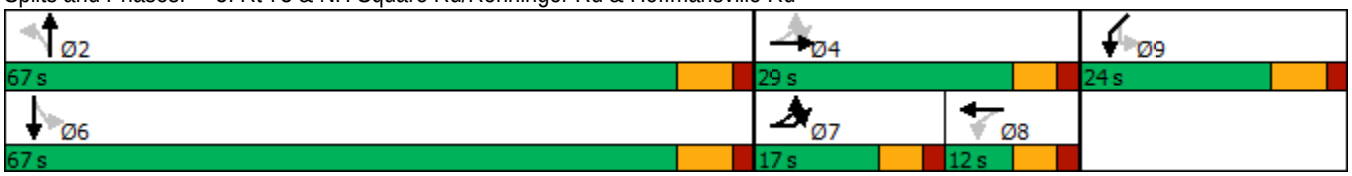
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Minimum Initial (s)	3.0	3.0	3.0		3.0	3.0		25.0	25.0			25.0
Minimum Split (s)	9.0	9.0	9.0		9.0	9.0		32.0	32.0			32.0
Total Split (s)	17.0	17.0	29.0		12.0	12.0		67.0	67.0			67.0
Total Split (%)	14.2%	14.2%	24.2%		10.0%	10.0%		55.8%	55.8%			55.8%
Maximum Green (s)	11.0	11.0	23.0		6.0	6.0		60.0	60.0			60.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0		5.0	5.0			5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0			2.0
Lost Time Adjust (s)		-1.0	-1.0			-1.0			-1.0			
Total Lost Time (s)		5.0	5.0			5.0			6.0			
Lead/Lag	Lead	Lead			Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		6.1	6.1			6.1
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0		3.8	3.8			3.8
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0		43.0	43.0			43.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0		20.0	20.0			20.0
Recall Mode	None	None	None		None	None		Min	Min			Min
Act Effct Green (s)		16.5	16.5			7.0			61.2			
Actuated g/C Ratio		0.15	0.15			0.06			0.54			
v/c Ratio		0.98	0.22			0.19			1.15			
Control Delay		103.5	43.8			58.0			107.1			
Queue Delay		0.0	0.0			0.0			0.0			
Total Delay		103.5	43.8			58.0			107.1			
LOS		F	D			E			F			
Approach Delay			92.4			58.0			107.1			
Approach LOS			F			E			F			
Queue Length 50th (ft)		~186	33			11			~792			
Queue Length 95th (ft)		#291	70			36			#1208			
Internal Link Dist (ft)			7231			618			540			
Turn Bay Length (ft)		150										
Base Capacity (vph)		228	337			85			872			
Starvation Cap Reductn		0	0			0			0			
Spillback Cap Reductn		0	0			0			0			
Storage Cap Reductn		0	0			0			0			
Reduced v/c Ratio		0.98	0.15			0.19			1.15			

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 112.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 82.6		Intersection LOS: F	
Intersection Capacity Utilization 131.6%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Rt 73 & NH Square Rd/Renninger Rd & Hoffmansville Rd



Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Minimum Initial (s)	25.0		3.0	3.0		
Minimum Split (s)	32.0		10.0	10.0		
Total Split (s)	67.0		24.0	24.0		
Total Split (%)	55.8%		20.0%	20.0%		
Maximum Green (s)	60.0		17.0	17.0		
Yellow Time (s)	5.0		5.0	5.0		
All-Red Time (s)	2.0		2.0	2.0		
Lost Time Adjust (s)	-1.0			-1.0		
Total Lost Time (s)	6.0			6.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	6.1		3.0	3.0		
Minimum Gap (s)	3.8		3.0	3.0		
Time Before Reduce (s)	43.0		0.0	0.0		
Time To Reduce (s)	20.0		0.0	0.0		
Recall Mode	Min		None	None		
Act Effct Green (s)	61.2			18.0		
Actuated g/C Ratio	0.54			0.16		
v/c Ratio	0.49			0.93		
Control Delay	19.4			89.8		
Queue Delay	0.0			0.0		
Total Delay	19.4			89.8		
LOS	B			F		
Approach Delay	19.4			89.8		
Approach LOS	B			F		
Queue Length 50th (ft)	176			161		
Queue Length 95th (ft)	325			#351		
Internal Link Dist (ft)	2927			1882		
Turn Bay Length (ft)						
Base Capacity (vph)	915			252		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.49			0.93		

Intersection Summary

Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Lane Configurations												
Traffic Volume (vph)	32	183	6	43	6	6	4	63	751	144	4	1
Future Volume (vph)	32	183	6	43	6	6	4	63	751	144	4	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	13	13	10	10	10	12	12	13	13	12
Grade (%)			4%			0%			2%			
Storage Length (ft)		150		0	0		0	0		125		0
Storage Lanes		1		0	0		0	0		1		0
Taper Length (ft)		75			75			75				75
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.868			0.966				0.850		
Flt Protected		0.950				0.982			0.996			
Satd. Flow (prot)	0	1717	1582	0	0	1594	0	0	1743	1526	0	0
Flt Permitted		0.563							0.927			
Satd. Flow (perm)	0	1018	1582	0	0	1623	0	0	1622	1526	0	0
Right Turn on Red				No							No	
Satd. Flow (RTOR)												
Link Speed (mph)			45			35			45			
Link Distance (ft)			7311			698			620			
Travel Time (s)			110.8			13.6			9.4			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	2%	2%	25%	0%
Adj. Flow (vph)	33	191	6	45	6	6	4	66	782	150	4	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	224	51	0	0	16	0	0	848	154	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Left	Right	Left	Left	Right	Right	Left
Median Width(ft)			13			2			0			
Link Offset(ft)			0			0			0			
Crosswalk Width(ft)			16			16			16			
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.17	1.17	1.17	1.09	1.09	1.04	1.04	1.07
Turning Speed (mph)	15	15		9	15		9	15		9	9	15
Number of Detectors	1	1	1		1	1		1	1	1		1
Detector Template	Left	Left			Left			Left		Right		Left
Leading Detector (ft)	20	20	35		20	30		20	411	20		20
Trailing Detector (ft)	0	0	-5		0	-10		0	405	0		0
Detector 1 Position(ft)	0	0	-5		0	-10		0	405	0		0
Detector 1 Size(ft)	20	20	40		20	40		20	6	20		20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0
Turn Type	pm+pt	pm+pt	NA		Perm	NA		Perm	NA	Perm		Perm
Protected Phases	7	7	4			8			2			
Permitted Phases	4	4			8			2		2		6
Detector Phase	7	7	4		8	8		2	2	2		6
Switch Phase												

Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Lane Configurations						
Traffic Volume (vph)	403	30	5	100	119	2
Future Volume (vph)	403	30	5	100	119	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%			-2%		
Storage Length (ft)		0		0	0	
Storage Lanes		0		1	0	
Taper Length (ft)				75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991			0.928		
Flt Protected				0.977		
Satd. Flow (prot)	1690	0	0	1579	0	0
Flt Permitted	0.978			0.992		
Satd. Flow (perm)	1652	0	0	1604	0	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	45			45		
Link Distance (ft)	3007			1962		
Travel Time (s)	45.6			29.7		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	6%	0%	0%	2%	0%	0%
Adj. Flow (vph)	420	31	5	104	124	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	0	0	235	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Right
Median Width(ft)	0			11		
Link Offset(ft)	0			0		
Crosswalk Width(ft)	16			16		
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.11	1.11	1.11	1.11
Turning Speed (mph)		9	15	15	9	9
Number of Detectors	1		1	1		
Detector Template			Left			
Leading Detector (ft)	806		20	35		
Trailing Detector (ft)	800		0	-5		
Detector 1 Position(ft)	800		0	-5		
Detector 1 Size(ft)	6		20	40		
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex		
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0		0.0	0.0		
Turn Type	NA		Perm	Prot		
Protected Phases	6			9		
Permitted Phases			9			
Detector Phase	6		9	9		
Switch Phase						

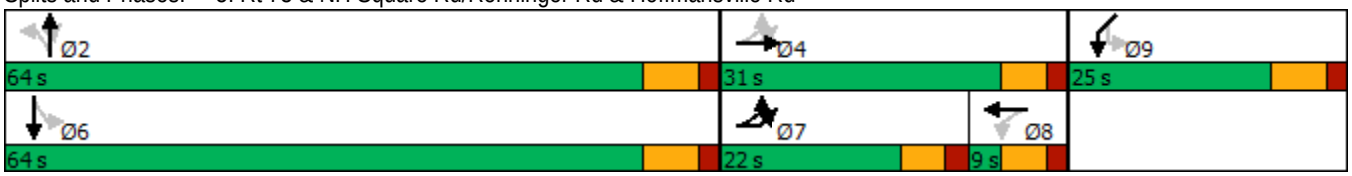
Lane Group	EBL2	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	NBR2	SBL
Minimum Initial (s)	3.0	3.0	3.0		3.0	3.0		25.0	25.0	25.0		25.0
Minimum Split (s)	9.0	9.0	9.0		9.0	9.0		32.0	32.0	32.0		32.0
Total Split (s)	22.0	22.0	31.0		9.0	9.0		64.0	64.0	64.0		64.0
Total Split (%)	18.3%	18.3%	25.8%		7.5%	7.5%		53.3%	53.3%	53.3%		53.3%
Maximum Green (s)	16.0	16.0	25.0		3.0	3.0		57.0	57.0	57.0		57.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0		5.0	5.0	5.0		5.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0		2.0
Lost Time Adjust (s)		0.0	0.0			-1.0			-1.0	-1.0		
Total Lost Time (s)		6.0	6.0			5.0			6.0	6.0		
Lead/Lag	Lead	Lead			Lag	Lag						
Lead-Lag Optimize?	Yes	Yes			Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		6.1	6.1	6.1		6.1
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0		3.8	3.8	3.8		3.8
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0		43.0	43.0	43.0		43.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0		20.0	20.0	20.0		20.0
Recall Mode	None	None	None		None	None		Min	Min	Min		Min
Act Effct Green (s)		18.8	18.8			4.0			58.1	58.1		
Actuated g/C Ratio		0.17	0.17			0.04			0.51	0.51		
v/c Ratio		0.85	0.20			0.28			1.03	0.20		
Control Delay		73.8	42.1			68.2			67.1	17.0		
Queue Delay		0.0	0.0			0.0			0.0	0.0		
Total Delay		73.8	42.1			68.2			67.1	17.0		
LOS		E	D			E			E	B		
Approach Delay			67.9			68.2			59.4			
Approach LOS			E			E			E			
Queue Length 50th (ft)		159	33			11			~582	56		
Queue Length 95th (ft)		#263	69			37			#978	110		
Internal Link Dist (ft)			7231			618			540			
Turn Bay Length (ft)		150								125		
Base Capacity (vph)		272	347			57			827	778		
Starvation Cap Reductn		0	0			0			0	0		
Spillback Cap Reductn		0	0			0			0	0		
Storage Cap Reductn		0	0			0			0	0		
Reduced v/c Ratio		0.82	0.15			0.28			1.03	0.20		

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 113.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 54.7		Intersection LOS: D	
Intersection Capacity Utilization 123.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

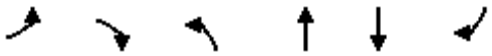
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Rt 73 & NH Square Rd/Renninger Rd & Hoffmansville Rd



Lane Group	SBT	SBR	SWL2	SWL	SWR	SWR2
Minimum Initial (s)	25.0		3.0	3.0		
Minimum Split (s)	32.0		10.0	10.0		
Total Split (s)	64.0		25.0	25.0		
Total Split (%)	53.3%		20.8%	20.8%		
Maximum Green (s)	57.0		18.0	18.0		
Yellow Time (s)	5.0		5.0	5.0		
All-Red Time (s)	2.0		2.0	2.0		
Lost Time Adjust (s)	-1.0			-1.0		
Total Lost Time (s)	6.0			6.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	6.1		3.0	3.0		
Minimum Gap (s)	3.8		3.0	3.0		
Time Before Reduce (s)	43.0		0.0	0.0		
Time To Reduce (s)	20.0		0.0	0.0		
Recall Mode	Min		None	None		
Act Effct Green (s)	58.1			18.9		
Actuated g/C Ratio	0.51			0.17		
v/c Ratio	0.54			0.88		
Control Delay	22.6			80.0		
Queue Delay	0.0			0.0		
Total Delay	22.6			80.0		
LOS	C			E		
Approach Delay	22.6			80.0		
Approach LOS	C			E		
Queue Length 50th (ft)	203			164		
Queue Length 95th (ft)	348			#337		
Internal Link Dist (ft)	2927			1882		
Turn Bay Length (ft)						
Base Capacity (vph)	842			267		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.54			0.88		

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	42	61	589	693	47
Future Volume (vph)	23	42	61	589	693	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	11	11	11	11
Grade (%)	2%			-2%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.913				0.991	
Flt Protected	0.983			0.995		
Satd. Flow (prot)	1624	0	0	1733	1710	0
Flt Permitted	0.983			0.995		
Satd. Flow (perm)	1624	0	0	1733	1710	0
Link Speed (mph)	25			40	40	
Link Distance (ft)	2834			804	4252	
Travel Time (s)	77.3			13.7	72.5	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	5%	0%	0%	1%	2%	0%
Adj. Flow (vph)	26	47	69	662	779	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	0	0	731	832	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.11	1.11	1.11	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

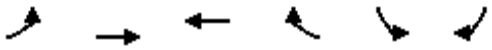
Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	42	61	589	693	47
Future Vol, veh/h	23	42	61	589	693	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	-2	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	5	0	0	1	2	0
Mvmt Flow	26	47	69	662	779	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1606	806	832	0	-	0
Stage 1	806	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Critical Hdwy	6.85	6.4	4.1	-	-	-
Critical Hdwy Stg 1	5.85	-	-	-	-	-
Critical Hdwy Stg 2	5.85	-	-	-	-	-
Follow-up Hdwy	3.545	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	95	368	809	-	-	-
Stage 1	397	-	-	-	-	-
Stage 2	400	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	82	368	809	-	-	-
Mov Cap-2 Maneuver	82	-	-	-	-	-
Stage 1	343	-	-	-	-	-
Stage 2	400	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.1	0.9	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	809	-	165	-	-
HCM Lane V/C Ratio	0.085	-	0.443	-	-
HCM Control Delay (s)	9.9	0	43.1	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.3	-	2	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	67	788	935	84	55	31
Future Volume (vph)	67	788	935	84	55	31
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	12	11	11
Grade (%)		-2%	1%		7%	
Storage Length (ft)	0			125	0	0
Storage Lanes	0			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.951	
Flt Protected		0.996			0.969	
Satd. Flow (prot)	0	1703	1714	1522	1448	0
Flt Permitted		0.996			0.969	
Satd. Flow (perm)	0	1703	1714	1522	1448	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		480	1529		1959	
Travel Time (s)		9.4	29.8		53.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	4%	12%
Adj. Flow (vph)	69	812	964	87	57	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	881	964	87	89	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.13	1.08	1.17	1.17
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	33.2

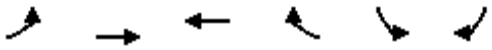
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	67	788	935	84	55	31
Future Vol, veh/h	67	788	935	84	55	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-2	1	-	7	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	3	1	0	4	12
Mvmt Flow	69	812	964	87	57	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1051	0	-	0	1914	964
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	950	-
Critical Hdwy	4.3	-	-	-	7.84	7.02
Critical Hdwy Stg 1	-	-	-	-	6.84	-
Critical Hdwy Stg 2	-	-	-	-	6.84	-
Follow-up Hdwy	3	-	-	-	3	3.2
Pot Cap-1 Maneuver	513	-	-	-	~ 37	256
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	286	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	513	-	-	-	~ 28	256
Mov Cap-2 Maneuver	-	-	-	-	~ 28	-
Stage 1	-	-	-	-	211	-
Stage 2	-	-	-	-	286	-

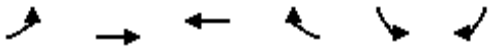
Approach	EB	WB	SB
HCM Control Delay, s	1	0	$ 746.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	513	-	-	-	41
HCM Lane V/C Ratio	0.135	-	-	-	2.162
HCM Control Delay (s)	13.1	0	-	-	-$ 746.6
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	9.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



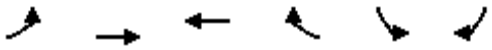
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	67	788	935	84	55	55
Future Volume (vph)	67	788	935	84	55	55
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	12	11	11
Grade (%)		-2%	1%		7%	
Storage Length (ft)	75			125	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.932	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1670	1706	1714	1522	1414	0
Flt Permitted	0.238				0.976	
Satd. Flow (perm)	418	1706	1714	1522	1414	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				87	46	
Link Speed (mph)		35	35		25	
Link Distance (ft)		480	1529		1959	
Travel Time (s)		9.4	29.8		53.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	3%	1%	0%	4%	12%
Adj. Flow (vph)	69	812	964	87	57	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	812	964	87	114	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		11	11		11	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.11	1.11	1.13	1.08	1.17	1.17
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	1	1	1	1	
Detector Template	Left		Thru		Left	
Leading Detector (ft)	6	6	6	6	35	
Trailing Detector (ft)	0	0	0	0	-5	
Detector 1 Position(ft)	0	0	0	0	-5	
Detector 1 Size(ft)	6	6	6	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	Perm	NA	NA	Perm	Prot	
Protected Phases		2	6		4	
Permitted Phases	2			6		
Detector Phase	2	2	6	6	4	
Switch Phase						



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	15.0	15.0	15.0	15.0	3.0	
Minimum Split (s)	21.0	21.0	21.0	21.0	9.0	
Total Split (s)	73.0	73.0	73.0	73.0	17.0	
Total Split (%)	81.1%	81.1%	81.1%	81.1%	18.9%	
Maximum Green (s)	67.0	67.0	67.0	67.0	11.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	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)	5.0	5.0	5.0	5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 8: Swamp Pk & Middle Creek Rd



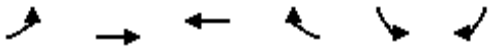
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	67	788	935	84	55	55
Future Volume (veh/h)	67	788	935	84	55	55
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1875	1832	1780	1794	1527	1527
Adj Flow Rate, veh/h	69	812	964	87	57	57
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	3	1	0	0	0
Cap, veh/h	365	1414	1374	1173	77	77
Arrive On Green	0.77	0.77	0.77	0.77	0.12	0.11
Sat Flow, veh/h	568	1832	1780	1521	654	654
Grp Volume(v), veh/h	69	812	964	87	115	0
Grp Sat Flow(s),veh/h/ln	568	1832	1780	1521	1320	0
Q Serve(g_s), s	6.2	16.4	24.3	1.2	7.6	0.0
Cycle Q Clear(g_c), s	30.5	16.4	24.3	1.2	7.6	0.0
Prop In Lane	1.00			1.00	0.50	0.50
Lane Grp Cap(c), veh/h	365	1414	1374	1173	155	0
V/C Ratio(X)	0.19	0.57	0.70	0.07	0.74	0.00
Avail Cap(c_a), veh/h	365	1414	1374	1173	176	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.7	4.2	5.1	2.5	38.7	0.0
Incr Delay (d2), s/veh	1.1	1.7	3.0	0.1	13.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	7.9	10.9	0.5	5.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.8	5.9	8.1	2.6	52.4	0.0
LnGrp LOS	B	A	A	A	D	A
Approach Vol, veh/h		881	1051		115	
Approach Delay, s/veh		6.5	7.7		52.4	
Approach LOS		A	A		D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	74.4	15.6	74.4
Change Period (Y+Rc), s	6.0	6.0	6.0
Max Green Setting (Gmax), s	67.0	11.0	67.0
Max Q Clear Time (g_c+I1), s	33.0	10.1	26.8
Green Ext Time (p_c), s	3.2	0.0	3.6

Intersection Summary	
HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

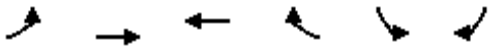
Notes

User approved volume balancing among the lanes for turning movement.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	704	935	54	24	26
Future Volume (vph)	43	704	935	54	24	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	11	11	12	12
Grade (%)		-1%	2%		6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.930	
Flt Protected		0.997			0.976	
Satd. Flow (prot)	0	1787	1690	0	1466	0
Flt Permitted		0.997			0.976	
Satd. Flow (perm)	0	1787	1690	0	1466	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		1529	1692		3357	
Travel Time (s)		29.8	33.0		91.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	1%	5%	6%	10%
Adj. Flow (vph)	47	765	1016	59	26	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	812	1075	0	54	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.13	1.13	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	728	935	54	0	26
Future Volume (vph)	43	728	935	54	0	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Grade (%)		-1%	2%		6%	
Storage Length (ft)	75			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993			0.865
Flt Protected	0.950					
Satd. Flow (prot)	1661	1731	1690	0	0	1373
Flt Permitted	0.950					
Satd. Flow (perm)	1661	1731	1690	0	0	1373
Link Speed (mph)		35	35		25	
Link Distance (ft)		1529	1692		3357	
Travel Time (s)		29.8	33.0		91.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	1%	5%	6%	10%
Adj. Flow (vph)	47	791	1016	59	0	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	791	1075	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		11	11		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes				
Headway Factor	1.11	1.11	1.13	1.13	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	43	728	935	54	0	26
Future Vol, veh/h	43	728	935	54	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	75	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	2	-	6	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	5	6	10
Mvmt Flow	47	791	1016	59	0	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1075	0	-	0	-	1046
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.3	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3	-	-	-	-	3.2
Pot Cap-1 Maneuver	503	-	-	-	0	233
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	503	-	-	-	-	233
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	22.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	503	-	-	-	233
HCM Lane V/C Ratio	0.093	-	-	-	0.121
HCM Control Delay (s)	12.9	-	-	-	22.6
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.4

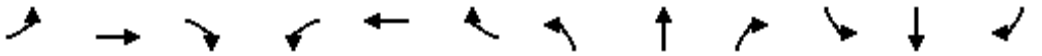
Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	43	704	935	54	24	26
Future Vol, veh/h	43	704	935	54	24	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	2	-	6	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	1	5	6	10
Mvmt Flow	47	765	1016	59	26	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1075	0	-	0	1905	1046
Stage 1	-	-	-	-	1046	-
Stage 2	-	-	-	-	859	-
Critical Hdwy	4.3	-	-	-	7.66	6.9
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	6.66	-
Follow-up Hdwy	3	-	-	-	3.1	3.2
Pot Cap-1 Maneuver	503	-	-	-	41	233
Stage 1	-	-	-	-	254	-
Stage 2	-	-	-	-	335	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	503	-	-	-	34	233
Mov Cap-2 Maneuver	-	-	-	-	34	-
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	335	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	195.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	503	-	-	-	61
HCM Lane V/C Ratio	0.093	-	-	-	0.891
HCM Control Delay (s)	12.9	0	-	-	195.2
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	4.1

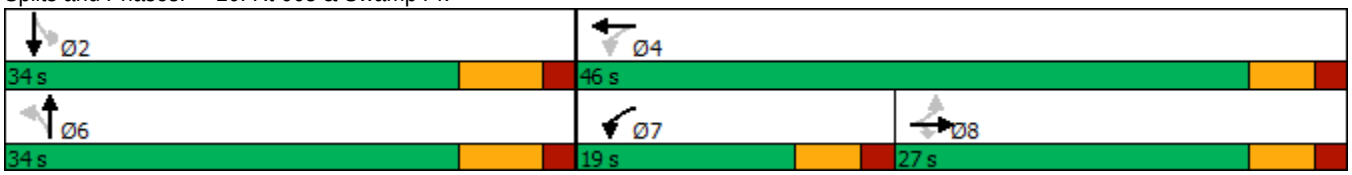


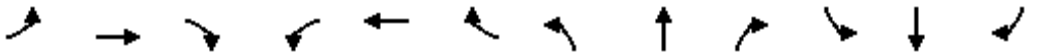
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	516	158	214	747	171	186	353	157	180	449	105
Future Volume (vph)	115	516	158	214	747	171	186	353	157	180	449	105
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	16	11	12	12	10	12	12	10	15	15
Grade (%)		4%			1%			-2%			2%	
Storage Length (ft)	110		130	110		0	80		0	140		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	75			75			50			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972			0.954			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1620	1747	1699	1645	1717	0	1596	1699	0	1580	1890	0
Flt Permitted	0.167			0.138			0.165			0.217		
Satd. Flow (perm)	285	1747	1699	239	1717	0	277	1699	0	361	1890	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136		21			31			16	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1056			1880			3165			2949	
Travel Time (s)		20.6			36.6			53.9			50.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	3%	0%	0%	1%	0%
Adj. Flow (vph)	117	527	161	218	762	174	190	360	160	184	458	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	527	161	218	936	0	190	520	0	184	565	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.10	0.94	1.13	1.08	1.08	1.16	1.06	1.06	1.19	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	35	35	35	35	35		35	35		35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Size(ft)	40	40	40	40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		8		7	4			6			2	
Permitted Phases	8		8	4			6			2		
Detector Phase	8	8	8	7	4		6	6		2	2	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	10.0	10.0	10.0	3.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	16.0	16.0	16.0	9.0	16.0		17.0	17.0		17.0	17.0	
Total Split (s)	27.0	27.0	27.0	19.0	46.0		34.0	34.0		34.0	34.0	
Total Split (%)	33.8%	33.8%	33.8%	23.8%	57.5%		42.5%	42.5%		42.5%	42.5%	
Maximum Green (s)	21.0	21.0	21.0	13.0	40.0		27.0	27.0		27.0	27.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	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	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		5.0	5.0		5.0	5.0	
Recall Mode	Min	Min	Min	None	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 10: Rt 663 & Swamp Pk

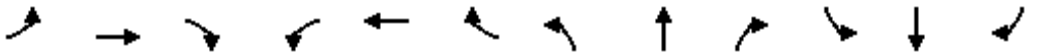




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	516	158	214	747	171	186	353	157	180	449	105
Future Volume (veh/h)	115	516	158	214	747	171	186	353	157	180	449	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1779	1794	1780	1780	1860	1832	1832	1778	1834	1834
Adj Flow Rate, veh/h	117	527	161	218	762	174	190	360	160	184	458	107
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	1	0	0	1	1	1	3	3	0	1	1
Cap, veh/h	90	556	494	318	719	164	136	421	187	159	503	118
Arrive On Green	0.33	0.33	0.33	0.12	0.51	0.51	0.35	0.35	0.34	0.35	0.35	0.34
Sat Flow, veh/h	578	1697	1508	1709	1402	320	888	1202	534	885	1438	336
Grp Volume(v), veh/h	117	527	161	218	0	936	190	0	520	184	0	565
Grp Sat Flow(s),veh/h/ln	578	1697	1508	1709	0	1723	888	0	1736	885	0	1774
Q Serve(g_s), s	0.0	24.2	6.4	6.1	0.0	41.0	4.2	0.0	22.3	6.2	0.0	24.3
Cycle Q Clear(g_c), s	26.2	24.2	6.4	6.1	0.0	41.0	28.0	0.0	22.3	28.0	0.0	24.3
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.31	1.00		0.19
Lane Grp Cap(c), veh/h	90	556	494	318	0	883	136	0	608	159	0	621
V/C Ratio(X)	1.30	0.95	0.33	0.69	0.00	1.06	1.39	0.00	0.86	1.16	0.00	0.91
Avail Cap(c_a), veh/h	90	556	494	408	0	883	136	0	608	159	0	621
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.0	26.2	20.2	17.4	0.0	19.5	39.3	0.0	24.3	38.6	0.0	24.9
Incr Delay (d2), s/veh	195.0	26.1	0.8	3.3	0.0	47.5	215.2	0.0	12.5	120.2	0.0	18.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.9	19.0	4.0	4.3	0.0	35.5	18.9	0.0	15.7	14.1	0.0	18.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	235.0	52.3	21.0	20.7	0.0	67.0	254.5	0.0	36.8	158.9	0.0	43.2
LnGrp LOS	F	D	C	C	A	F	F	A	D	F	A	D
Approach Vol, veh/h		805			1154			710			749	
Approach Delay, s/veh		72.6			58.3			95.0			71.6	
Approach LOS		E			E			F			E	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		34.0		46.0		34.0	14.8	31.2				
Change Period (Y+Rc), s		7.0		6.0		7.0	6.0	6.0				
Max Green Setting (Gmax), s		27.0		40.0		27.0	13.0	21.0				
Max Q Clear Time (g_c+I1), s		30.5		43.5		30.5	8.6	28.7				
Green Ext Time (p_c), s		0.0		0.0		0.0	0.3	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			72.2									
HCM 6th LOS			E									



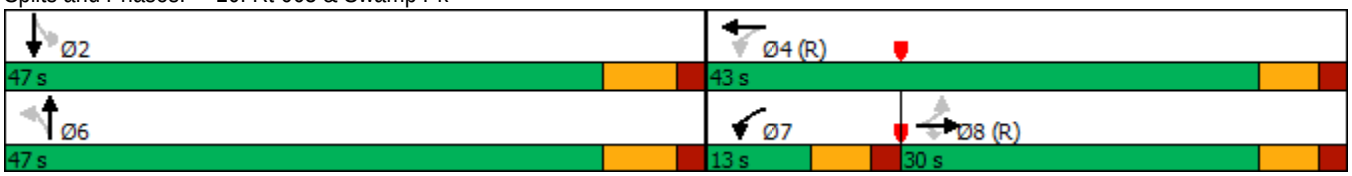
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	516	158	214	747	171	186	353	157	180	449	105
Future Volume (vph)	115	516	158	214	747	171	186	353	157	180	449	105
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	12	16	11	12	12	10	12	12	10	15	15
Grade (%)		4%			1%			-2%			2%	
Storage Length (ft)	110		130	110		400	80		0	140		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	75			75			50			75		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.972			0.954			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1620	3318	1699	1645	3263	0	1596	1699	0	1580	1890	0
Flt Permitted	0.293			0.288			0.257			0.299		
Satd. Flow (perm)	500	3318	1699	499	3263	0	432	1699	0	497	1890	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			161		38			33			17	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		1056			1880			3165			2949	
Travel Time (s)		20.6			36.6			53.9			50.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	1%	0%	0%	1%	3%	1%	3%	0%	0%	1%	0%
Adj. Flow (vph)	117	527	161	218	762	174	190	360	160	184	458	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	527	161	218	936	0	190	520	0	184	565	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.15	1.10	0.94	1.13	1.08	1.08	1.16	1.06	1.06	1.19	0.96	0.96
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	35	35	35	35	35		35	35		35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5		-5	-5		-5	-5	
Detector 1 Size(ft)	40	40	40	40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		8		7	4			6			2	
Permitted Phases	8		8	4			6			2		
Detector Phase	8	8	8	7	4		6	6		2	2	
Switch Phase												

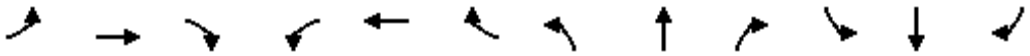
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	10.0	10.0	10.0	3.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	16.0	16.0	16.0	9.0	16.0		17.0	17.0		17.0	17.0	
Total Split (s)	30.0	30.0	30.0	13.0	43.0		47.0	47.0		47.0	47.0	
Total Split (%)	33.3%	33.3%	33.3%	14.4%	47.8%		52.2%	52.2%		52.2%	52.2%	
Maximum Green (s)	24.0	24.0	24.0	7.0	37.0		40.0	40.0		40.0	40.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	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	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		5.0	5.0		5.0	5.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:WBTL and 8:EBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 10: Rt 663 & Swamp Pk





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	516	158	214	747	171	186	353	157	180	449	105
Future Volume (veh/h)	115	516	158	214	747	171	186	353	157	180	449	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1779	1794	1780	1780	1860	1832	1832	1778	1834	1834
Adj Flow Rate, veh/h	117	527	161	218	762	174	190	360	160	184	458	107
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	1	0	0	1	1	1	3	3	0	1	1
Cap, veh/h	195	895	419	336	1155	264	263	547	243	281	655	153
Arrive On Green	0.28	0.28	0.28	0.09	0.42	0.41	0.46	0.46	0.44	0.46	0.46	0.44
Sat Flow, veh/h	578	3224	1508	1709	2735	624	888	1202	534	885	1438	336
Grp Volume(v), veh/h	117	527	161	218	471	465	190	0	520	184	0	565
Grp Sat Flow(s),veh/h/ln	578	1612	1508	1709	1691	1668	888	0	1736	885	0	1774
Q Serve(g_s), s	17.9	12.7	7.8	8.0	20.1	20.2	18.6	0.0	21.0	18.3	0.0	22.9
Cycle Q Clear(g_c), s	25.0	12.7	7.8	8.0	20.1	20.2	41.0	0.0	21.0	38.8	0.0	22.9
Prop In Lane	1.00		1.00	1.00		0.37	1.00		0.31	1.00		0.19
Lane Grp Cap(c), veh/h	195	895	419	336	714	704	263	0	791	281	0	808
V/C Ratio(X)	0.60	0.59	0.38	0.65	0.66	0.66	0.72	0.00	0.66	0.65	0.00	0.70
Avail Cap(c_a), veh/h	195	895	419	336	714	704	263	0	791	281	0	808
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.2	28.1	26.3	20.7	20.8	21.0	36.1	0.0	19.2	33.9	0.0	19.7
Incr Delay (d2), s/veh	12.9	2.8	2.7	4.3	4.7	4.8	11.4	0.0	2.7	7.3	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.7	8.7	5.4	6.1	13.1	13.0	8.4	0.0	13.0	7.7	0.0	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	30.9	28.9	25.0	25.6	25.8	47.5	0.0	21.9	41.2	0.0	23.1
LnGrp LOS	D	C	C	C	C	C	D	A	C	D	A	C
Approach Vol, veh/h		805			1154			710			749	
Approach Delay, s/veh		33.1			25.6			28.7			27.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		47.0		43.0		47.0	13.0	30.0				
Change Period (Y+Rc), s		7.0		6.0		7.0	6.0	6.0				
Max Green Setting (Gmax), s		40.0		37.0		40.0	7.0	24.0				
Max Q Clear Time (g_c+I1), s		41.3		22.6		43.5	10.5	27.5				
Green Ext Time (p_c), s		0.0		6.5		0.0	0.0	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			28.4									
HCM 6th LOS			C									

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	836	37	20	1125	20	9
Future Volume (vph)	836	37	20	1125	20	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	16	16
Grade (%)	2%			-2%	-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994				0.958	
Flt Protected				0.999	0.967	
Satd. Flow (prot)	1738	0	0	1781	1909	0
Flt Permitted				0.999	0.967	
Satd. Flow (perm)	1738	0	0	1781	1909	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	1880			2257	428	
Travel Time (s)	36.6			44.0	9.7	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	853	38	20	1148	20	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	891	0	0	1168	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.06	1.06	0.90	0.90
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

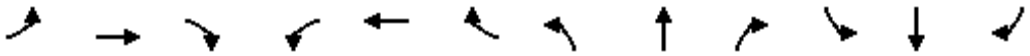
Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	836	37	20	1125	20	9
Future Vol, veh/h	836	37	20	1125	20	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	853	38	20	1148	20	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	891	0	2060	872
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	1188	-
Critical Hdwy	-	-	4.1	-	6	6
Critical Hdwy Stg 1	-	-	-	-	5	-
Critical Hdwy Stg 2	-	-	-	-	5	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	769	-	77	370
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	333	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	769	-	71	370
Mov Cap-2 Maneuver	-	-	-	-	71	-
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	309	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	59.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	95	-	-	769	-
HCM Lane V/C Ratio	0.311	-	-	0.027	-
HCM Control Delay (s)	59.2	-	-	9.8	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	779	41	116	1085	19	38	2	62	8	2	9
Future Volume (vph)	3	779	41	116	1085	19	38	2	62	8	2	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	16	16	11	14	14	10	11	11
Grade (%)		4%			-3%			2%			-2%	
Storage Length (ft)	60		0	65		0	50		0	50		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65			70			35			30		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.997			0.854			0.877	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	1735	0	1620	2044	0	1636	1623	0	1612	1541	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1564	1735	0	1620	2044	0	1636	1623	0	1612	1541	0
Link Speed (mph)		35			35			35			25	
Link Distance (ft)		2257			1618			320			222	
Travel Time (s)		44.0			31.5			6.2			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	820	43	122	1142	20	40	2	65	8	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	863	0	122	1162	0	40	67	0	8	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.20	1.10	1.10	1.15	0.89	0.89	1.13	1.00	1.00	1.16	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	18.6

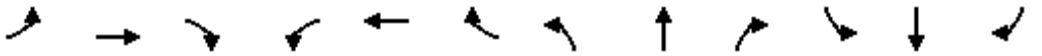
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	779	41	116	1085	19	38	2	62	8	2	9
Future Vol, veh/h	3	779	41	116	1085	19	38	2	62	8	2	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	65	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	-3	-	-	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	820	43	122	1142	20	40	2	65	8	2	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1162	0	0	863	0	0	2250	2254	842	2277	2265	1152
Stage 1	-	-	-	-	-	-	848	848	-	1396	1396	-
Stage 2	-	-	-	-	-	-	1402	1406	-	881	869	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.9	6.4	6.7	6.1	6
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.9	-	5.7	5.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.9	-	5.7	5.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	608	-	-	788	-	-	~ 23	33	350	37	53	259
Stage 1	-	-	-	-	-	-	327	346	-	206	245	-
Stage 2	-	-	-	-	-	-	150	178	-	380	410	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	608	-	-	788	-	-	~ 19	28	350	25	45	259
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 19	28	-	25	45	-
Stage 1	-	-	-	-	-	-	325	344	-	205	207	-
Stage 2	-	-	-	-	-	-	121	150	-	306	408	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	$ 363.1	107.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	19	257	608	-	-	788	-	-	25	139
HCM Lane V/C Ratio	2.105	0.262	0.005	-	-	0.155	-	-	0.337	0.083
HCM Control Delay (s)	$ 934.4	23.9	11	-	-	10.4	-	-	209.8	33.2
HCM Lane LOS	F	C	B	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	5.4	1	0	-	-	0.5	-	-	1	0.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

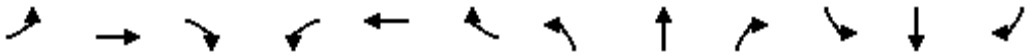


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	779	41	116	1085	19	38	2	62	8	2	9
Future Volume (vph)	3	779	41	116	1085	19	38	2	62	8	2	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	16	16	11	14	14	10	11	11
Grade (%)		4%			-3%			2%			-2%	
Storage Length (ft)	60		0	65		0	50		0	50		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65			70			35			30		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.997			0.854			0.877	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	1735	0	1620	2044	0	1636	1623	0	1612	1541	0
Flt Permitted	0.166			0.292			0.750			0.713		
Satd. Flow (perm)	273	1735	0	498	2044	0	1292	1623	0	1210	1541	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			3			65			9	
Link Speed (mph)		35			35			35			25	
Link Distance (ft)		2257			1618			320			222	
Travel Time (s)		44.0			31.5			6.2			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	820	43	122	1142	20	40	2	65	8	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	863	0	122	1162	0	40	67	0	8	11	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.20	1.10	1.10	1.15	0.89	0.89	1.13	1.00	1.00	1.16	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	6	6		6	6		35	35		35	35	
Trailing Detector (ft)	0	0		0	0		-5	-5		-5	-5	
Detector 1 Position(ft)	0	0		0	0		-5	-5		-5	-5	
Detector 1 Size(ft)	6	6		6	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	76.0	76.0		76.0	76.0		14.0	14.0		14.0	14.0	
Total Split (%)	84.4%	84.4%		84.4%	84.4%		15.6%	15.6%		15.6%	15.6%	
Maximum Green (s)	70.0	70.0		70.0	70.0		8.0	8.0		8.0	8.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-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	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	

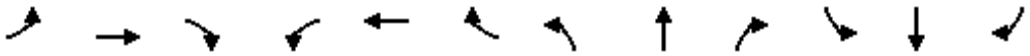
Splits and Phases: 12: Roming Rd & Swamp Pk



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	779	41	116	1085	19	38	2	62	8	2	9
Future Volume (veh/h)	3	779	41	116	1085	19	38	2	62	8	2	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1711	1697	1697	1912	1973	1973	1778	1849	1849	1875	1875	1875
Adj Flow Rate, veh/h	3	820	43	122	1142	20	40	2	65	8	2	9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	1	1	0	1	1	0	0	0	0	0	0
Cap, veh/h	333	1292	68	505	1563	27	190	4	119	141	23	104
Arrive On Green	0.81	0.81	0.80	0.81	0.81	0.80	0.08	0.08	0.07	0.08	0.08	0.07
Sat Flow, veh/h	467	1598	84	691	1934	34	1408	47	1527	1411	297	1337
Grp Volume(v), veh/h	3	0	863	122	0	1162	40	0	67	8	0	11
Grp Sat Flow(s),veh/h/ln	467	0	1682	691	0	1967	1408	0	1574	1411	0	1634
Q Serve(g_s), s	0.3	0.0	17.8	7.3	0.0	24.3	2.4	0.0	3.6	0.5	0.0	0.6
Cycle Q Clear(g_c), s	24.0	0.0	17.8	24.6	0.0	24.3	2.4	0.0	3.6	3.6	0.0	0.6
Prop In Lane	1.00		0.05	1.00		0.02	1.00		0.97	1.00		0.82
Lane Grp Cap(c), veh/h	333	0	1360	505	0	1591	190	0	122	141	0	127
V/C Ratio(X)	0.01	0.00	0.63	0.24	0.00	0.73	0.21	0.00	0.55	0.06	0.00	0.09
Avail Cap(c_a), veh/h	333	0	1360	505	0	1591	225	0	161	176	0	167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.4	0.0	3.3	8.0	0.0	3.9	38.5	0.0	39.5	40.5	0.0	38.0
Incr Delay (d2), s/veh	0.0	0.0	2.3	1.1	0.0	3.0	0.5	0.0	3.8	0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.0	6.6	2.0	0.0	9.8	1.5	0.0	2.7	0.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.5	0.0	5.6	9.2	0.0	6.9	39.0	0.0	43.3	40.7	0.0	38.3
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h		866			1284			107			19	
Approach Delay, s/veh		5.6			7.1			41.7			39.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		76.0		11.8		76.0		11.8				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		70.0		8.0		70.0		8.0				
Max Q Clear Time (g_c+I1), s		27.1		5.6		26.5		6.1				
Green Ext Time (p_c), s		6.2		0.1		2.8		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			8.5									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	808	36	22	1204	21	14	4	7	5	1	15
Future Volume (vph)	25	808	36	22	1204	21	14	4	7	5	1	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	13	13	13	10	10	10	13	13	13
Grade (%)		4%			-4%			-2%			3%	
Storage Length (ft)	0		0	0		0	0		60	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.998				0.850		0.904	
Flt Protected		0.999			0.999			0.962			0.988	
Satd. Flow (prot)	0	1736	0	0	1873	0	0	1632	1442	0	1636	0
Flt Permitted		0.999			0.999			0.962			0.988	
Satd. Flow (perm)	0	1736	0	0	1873	0	0	1632	1442	0	1636	0
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1618			2306			635			412	
Travel Time (s)		31.5			44.9			17.3			11.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	28	898	40	24	1338	23	16	4	8	6	1	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	966	0	0	1385	0	0	20	8	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.00	1.00	1.00	1.16	1.16	1.16	1.05	1.05	1.05
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

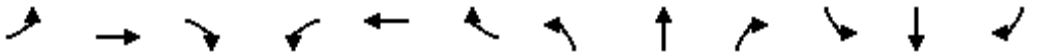
Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	25	808	36	22	1204	21	14	4	7	5	1	15
Future Vol, veh/h	25	808	36	22	1204	21	14	4	7	5	1	15
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	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	-	-	60	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	4	-	-	-4	-	-	-2	-	-	3	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	28	898	40	24	1338	23	16	4	8	6	1	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1361	0	0	938	0	0	2381	2383	918	2374	2392	1350
Stage 1	-	-	-	-	-	-	974	974	-	1398	1398	-
Stage 2	-	-	-	-	-	-	1407	1409	-	976	994	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.7	6.1	6	7.7	7.1	6.5
Critical Hdwy Stg 1	-	-	-	-	-	-	5.7	5.1	-	6.7	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.7	5.1	-	6.7	6.1	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	512	-	-	739	-	-	31	45	349	16	23	166
Stage 1	-	-	-	-	-	-	340	371	-	139	166	-
Stage 2	-	-	-	-	-	-	203	242	-	259	276	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	512	-	-	739	-	-	22	34	349	12	18	166
Mov Cap-2 Maneuver	-	-	-	-	-	-	22	34	-	12	18	-
Stage 1	-	-	-	-	-	-	301	328	-	123	144	-
Stage 2	-	-	-	-	-	-	157	209	-	221	244	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.2	261.8	205
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	24	349	512	-	-	739	-	-	37
HCM Lane V/C Ratio	0.833	0.022	0.054	-	-	0.033	-	-	0.631
HCM Control Delay (s)	$ 357.6	15.6	12.4	0	-	10	0	-	205
HCM Lane LOS	F	C	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	2.5	0.1	0.2	-	-	0.1	-	-	2.2

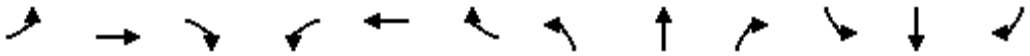


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	719	47	64	1177	182	48	54	33	105	74	21
Future Volume (vph)	56	719	47	64	1177	182	48	54	33	105	74	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	13	12	13	13	12	12	12	16	16	16
Grade (%)		-7%			0%			1%			-6%	
Storage Length (ft)	75		0	75		0	0		0	0		0
Storage Lanes	1		0	1		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
Frt		0.991			0.980			0.967			0.986	
Flt Protected	0.950			0.950				0.982			0.974	
Satd. Flow (prot)	1735	1873	0	1710	1807	0	0	1701	0	0	2018	0
Flt Permitted	0.061			0.288				0.776			0.723	
Satd. Flow (perm)	111	1873	0	518	1807	0	0	1344	0	0	1498	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			23			15			5	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		2306			510			926			6332	
Travel Time (s)		44.9			9.9			18.0			123.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	59	757	49	67	1239	192	51	57	35	111	78	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	806	0	67	1431	0	0	143	0	0	211	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	0.98	0.98	1.07	1.03	1.03	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	4	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	35	371		35	371		20	35		20	56	
Trailing Detector (ft)	-5	0		-5	0		0	-5		0	-10	
Detector 1 Position(ft)	-5	0		-5	0		0	-5		0	-10	
Detector 1 Size(ft)	40	6		40	6		20	40		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		365			365						4	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 3 Position(ft)											25	
Detector 3 Size(ft)											6	
Detector 3 Type											Cl+Ex	
Detector 3 Channel												
Detector 3 Extend (s)											0.0	
Detector 4 Position(ft)											50	
Detector 4 Size(ft)											6	
Detector 4 Type											Cl+Ex	
Detector 4 Channel												
Detector 4 Extend (s)											0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	26.0	26.0		26.0	26.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	33.0	33.0		33.0	33.0		12.0	12.0		12.0	12.0	
Total Split (s)	72.0	72.0		72.0	72.0		18.0	18.0		18.0	18.0	
Total Split (%)	80.0%	80.0%		80.0%	80.0%		20.0%	20.0%		20.0%	20.0%	
Maximum Green (s)	65.0	65.0		65.0	65.0		11.0	11.0		11.0	11.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.5	2.5		2.5	2.5		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	37.0	37.0		37.0	37.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	

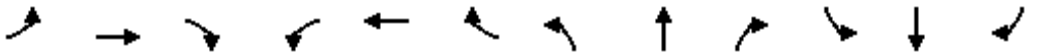
Splits and Phases: 14: NH Square Rd & Swamp Pk



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	719	47	64	1177	182	48	54	33	105	74	21
Future Volume (veh/h)	56	719	47	64	1177	182	48	54	33	105	74	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2032	2114	2114	1800	1857	1857	1794	1794	1794	2104	2104	2104
Adj Flow Rate, veh/h	59	757	49	67	1239	192	51	57	35	111	78	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	0	1	1	0	0	0	0	0	0
Cap, veh/h	82	1440	93	472	1152	178	111	96	50	170	80	22
Arrive On Green	0.73	0.73	0.72	0.73	0.73	0.72	0.12	0.13	0.12	0.12	0.13	0.12
Sat Flow, veh/h	429	1964	127	687	1570	243	429	720	372	817	599	165
Grp Volume(v), veh/h	59	0	806	67	0	1431	143	0	0	211	0	0
Grp Sat Flow(s),veh/h/ln	429	0	2091	687	0	1814	1521	0	0	1581	0	0
Q Serve(g_s), s	0.5	0.0	15.1	4.2	0.0	66.0	0.0	0.0	0.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	66.0	0.0	15.1	18.8	0.0	66.0	8.1	0.0	0.0	11.0	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.13	0.36		0.24	0.53		0.10
Lane Grp Cap(c), veh/h	82	0	1533	472	0	1330	240	0	0	254	0	0
V/C Ratio(X)	0.72	0.00	0.53	0.14	0.00	1.08	0.60	0.00	0.00	0.83	0.00	0.00
Avail Cap(c_a), veh/h	82	0	1533	472	0	1330	240	0	0	254	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	45.0	0.0	5.2	9.2	0.0	12.1	37.5	0.0	0.0	39.5	0.0	0.0
Incr Delay (d2), s/veh	30.9	0.0	0.6	0.3	0.0	47.9	3.9	0.0	0.0	20.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.6	0.0	8.6	1.1	0.0	48.3	5.9	0.0	0.0	10.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.8	0.0	5.9	9.5	0.0	59.9	41.4	0.0	0.0	59.5	0.0	0.0
LnGrp LOS	E	A	A	A	A	F	D	A	A	E	A	A
Approach Vol, veh/h		865			1498			143			211	
Approach Delay, s/veh		10.6			57.7			41.4			59.5	
Approach LOS		B			E			D			E	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	72.0	18.0	72.0	18.0
Change Period (Y+Rc), s	7.0	7.0	7.0	7.0
Max Green Setting (Gmax), s	65.0	11.0	65.0	11.0
Max Q Clear Time (g_c+I1), s	68.5	13.0	68.0	10.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	42.0
HCM 6th LOS	D

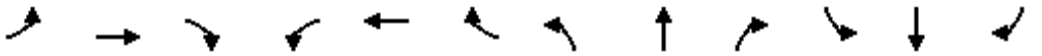


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	719	47	64	1177	182	48	54	33	105	74	21
Future Volume (vph)	56	719	47	64	1177	182	48	54	33	105	74	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	11	11	13	12	12	12	16	16	16
Grade (%)		-7%			0%			1%			-6%	
Storage Length (ft)	75		0	75		75	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991				0.850		0.967			0.986	
Flt Protected	0.950			0.950				0.982			0.974	
Satd. Flow (prot)	1677	1873	0	1653	1723	1581	0	1701	0	0	2018	0
Flt Permitted	0.066			0.287				0.776			0.723	
Satd. Flow (perm)	117	1873	0	499	1723	1581	0	1344	0	0	1498	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				89		15			5	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		2306			510			926			6332	
Travel Time (s)		44.9			9.9			18.0			123.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	59	757	49	67	1239	192	51	57	35	111	78	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	806	0	67	1239	192	0	143	0	0	211	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		11			11			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	0.98	0.98	1.12	1.12	1.03	1.08	1.08	1.08	0.88	0.88	0.88
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	1		1	4	
Detector Template	Left			Left		Right	Left			Left		
Leading Detector (ft)	20	371		20	371	20	20	35		20	56	
Trailing Detector (ft)	0	0		0	0	0	0	-5		0	-10	
Detector 1 Position(ft)	0	0		0	0	0	0	-5		0	-10	
Detector 1 Size(ft)	20	6		20	6	20	20	40		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		365			365						4	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 3 Position(ft)											25	
Detector 3 Size(ft)											6	
Detector 3 Type											Cl+Ex	
Detector 3 Channel												
Detector 3 Extend (s)											0.0	
Detector 4 Position(ft)											50	
Detector 4 Size(ft)											6	
Detector 4 Type											Cl+Ex	
Detector 4 Channel												
Detector 4 Extend (s)											0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Detector Phase	2	2		6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	26.0	26.0		26.0	26.0	26.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	12.0	12.0		12.0	12.0	
Total Split (s)	72.0	72.0		72.0	72.0	72.0	18.0	18.0		18.0	18.0	
Total Split (%)	80.0%	80.0%		80.0%	80.0%	80.0%	20.0%	20.0%		20.0%	20.0%	
Maximum Green (s)	65.0	65.0		65.0	65.0	65.0	11.0	11.0		11.0	11.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	-1.0		0.0	-1.0	0.0		-1.0			-1.0	
Total Lost Time (s)	7.0	6.0		7.0	6.0	7.0		6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0	5.0	3.0	3.0		3.0	3.0	
Minimum Gap (s)	2.5	2.5		2.5	2.5	2.5	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	37.0	37.0		37.0	37.0	37.0	0.0	0.0		0.0	0.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min	Min	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 14: NH Square Rd & Swamp Pk



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	719	47	64	1177	182	48	54	33	105	74	21
Future Volume (veh/h)	56	719	47	64	1177	182	48	54	33	105	74	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2032	2114	2114	1800	1786	1872	1794	1794	1794	2104	2104	2104
Adj Flow Rate, veh/h	59	757	49	67	1239	192	51	57	35	111	78	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	0	1	0	0	0	0	0	0	0
Cap, veh/h	128	1440	93	461	1310	1146	111	96	50	170	80	22
Arrive On Green	0.72	0.73	0.72	0.72	0.73	0.72	0.12	0.13	0.12	0.12	0.13	0.12
Sat Flow, veh/h	429	1964	127	687	1786	1586	429	720	372	817	599	165
Grp Volume(v), veh/h	59	0	806	67	1239	192	143	0	0	211	0	0
Grp Sat Flow(s),veh/h/ln	429	0	2091	687	1786	1586	1521	0	0	1581	0	0
Q Serve(g_s), s	10.1	0.0	15.1	4.3	54.4	3.4	0.0	0.0	0.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	65.0	0.0	15.1	19.4	54.4	3.4	8.1	0.0	0.0	11.0	0.0	0.0
Prop In Lane	1.00		0.06	1.00		1.00	0.36		0.24	0.53		0.10
Lane Grp Cap(c), veh/h	128	0	1533	461	1310	1146	240	0	0	254	0	0
V/C Ratio(X)	0.46	0.00	0.53	0.15	0.95	0.17	0.60	0.00	0.00	0.83	0.00	0.00
Avail Cap(c_a), veh/h	128	0	1533	461	1310	1146	240	0	0	254	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	40.9	0.0	5.2	9.9	10.4	4.0	37.5	0.0	0.0	39.5	0.0	0.0
Incr Delay (d2), s/veh	5.4	0.0	0.6	0.3	14.3	0.1	3.9	0.0	0.0	20.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	0.0	8.6	1.1	26.8	1.6	5.9	0.0	0.0	10.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	0.0	5.9	10.2	24.7	4.1	41.4	0.0	0.0	59.5	0.0	0.0
LnGrp LOS	D	A	A	B	C	A	D	A	A	E	A	A
Approach Vol, veh/h		865			1498			143			211	
Approach Delay, s/veh		8.6			21.4			41.4			59.5	
Approach LOS		A			C			D			E	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		72.0		18.0		72.0		18.0				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		65.0		11.0		65.0		11.0				
Max Q Clear Time (g_c+I1), s		67.0		13.0		56.9		10.1				
Green Ext Time (p_c), s		0.0		0.0		8.1		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			21.4									
HCM 6th LOS			C									

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	61	1363	5	42	812
Future Volume (vph)	1	61	1363	5	42	812
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	-3%		-3%			2%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.867					
Flt Protected	0.999				0.950	
Satd. Flow (prot)	1530	0	1732	0	1636	1689
Flt Permitted	0.999				0.950	
Satd. Flow (perm)	1530	0	1732	0	1636	1689
Link Speed (mph)	25		35			35
Link Distance (ft)	364		1765			510
Travel Time (s)	9.9		34.4			9.9
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%
Adj. Flow (vph)	1	64	1420	5	44	846
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	1425	0	44	846
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	11		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.10	1.10	1.10	1.10	1.13	1.13
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	61	1363	5	42	812
Future Vol, veh/h	1	61	1363	5	42	812
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	-3	-	-	2
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	1	64	1420	5	44	846

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2357	1423	0	0	1425	0
Stage 1	1423	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.3	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	61	196	-	-	374	-
Stage 1	307	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	54	196	-	-	374	-
Mov Cap-2 Maneuver	54	-	-	-	-	-
Stage 1	307	-	-	-	-	-
Stage 2	438	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.9	0	0.8
HCM LOS	D		

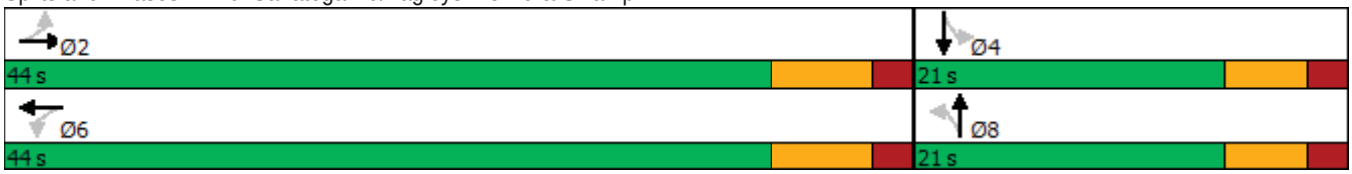
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	188	374	-
HCM Lane V/C Ratio	-	-	0.344	0.117	-
HCM Control Delay (s)	-	-	33.9	15.9	-
HCM Lane LOS	-	-	D	C	-
HCM 95th %tile Q(veh)	-	-	1.4	0.4	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	744	27	37	1247	30	58	44	23	19	48	9
Future Volume (vph)	9	744	27	37	1247	30	58	44	23	19	48	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	10	10	10	13	13	13
Grade (%)		4%			-8%			-5%			6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.997			0.976			0.984	
Flt Protected		0.999			0.999			0.977			0.988	
Satd. Flow (prot)	0	1687	0	0	1740	0	0	1613	0	0	1689	0
Flt Permitted		0.982			0.964			0.820			0.913	
Satd. Flow (perm)	0	1658	0	0	1679	0	0	1354	0	0	1561	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			3			16			9	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1765			540			508			343	
Travel Time (s)		34.4			10.5			9.9			6.7	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	11%	4%	0%	3%	1%	7%	0%	5%	0%	0%	2%	22%
Adj. Flow (vph)	9	759	28	38	1272	31	59	45	23	19	49	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	796	0	0	1341	0	0	127	0	0	77	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			20	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.02	1.10	1.02	1.13	1.13	1.13	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	456		20	456		20	35		20	35	
Trailing Detector (ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Position(ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Size(ft)	20	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		450			450							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		9.0	9.0		9.0	9.0	
Total Split (s)	44.0	44.0		44.0	44.0		21.0	21.0		21.0	21.0	
Total Split (%)	67.7%	67.7%		67.7%	67.7%		32.3%	32.3%		32.3%	32.3%	
Maximum Green (s)	37.0	37.0		37.0	37.0		15.0	15.0		15.0	15.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 62.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 16: Sanatoga Rd/Fagleysville Rd & Swamp Pk



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	744	27	37	1247	30	58	44	23	19	48	9
Future Volume (veh/h)	9	744	27	37	1247	30	58	44	23	19	48	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1655	1655	1655	2084	1968	2084	1915	1915	1915	1634	1634	1634
Adj Flow Rate, veh/h	9	759	28	38	1272	31	59	45	23	19	49	9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	2	2	2
Cap, veh/h	68	1068	39	85	1251	30	183	89	39	112	142	23
Arrive On Green	0.66	0.68	0.66	0.66	0.68	0.66	0.11	0.13	0.11	0.11	0.13	0.11
Sat Flow, veh/h	5	1575	58	27	1845	44	705	707	312	251	1127	182
Grp Volume(v), veh/h	796	0	0	1341	0	0	127	0	0	77	0	0
Grp Sat Flow(s),veh/h/ln	1638	0	0	1917	0	0	1724	0	0	1561	0	0
Q Serve(g_s), s	0.0	0.0	0.0	19.1	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	17.4	0.0	0.0	37.0	0.0	0.0	3.8	0.0	0.0	2.5	0.0	0.0
Prop In Lane	0.01		0.04	0.03		0.02	0.46		0.18	0.25		0.12
Lane Grp Cap(c), veh/h	1147	0	0	1332	0	0	280	0	0	248	0	0
V/C Ratio(X)	0.69	0.00	0.00	1.01	0.00	0.00	0.45	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	1147	0	0	1332	0	0	539	0	0	485	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	0.0	9.6	0.0	0.0	23.3	0.0	0.0	22.7	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.0	26.3	0.0	0.0	2.4	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.1	0.0	0.0	26.4	0.0	0.0	3.0	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	0.0	0.0	35.9	0.0	0.0	25.8	0.0	0.0	24.2	0.0	0.0
LnGrp LOS	A	A	A	F	A	A	C	A	A	C	A	A
Approach Vol, veh/h		796			1341			127			77	
Approach Delay, s/veh		7.5			35.9			25.8			24.2	
Approach LOS		A			D			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.0		12.0		44.0		12.0				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		37.0		15.0		37.0		15.0				
Max Q Clear Time (g_c+I1), s		19.4		4.5		39.0		5.8				
Green Ext Time (p_c), s		14.6		0.3		0.0		0.5				

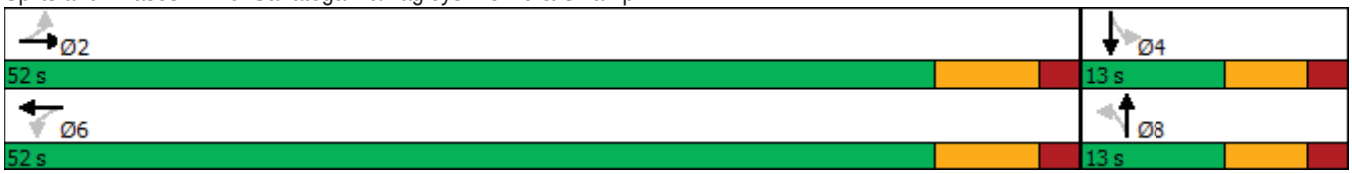
Intersection Summary												
HCM 6th Ctrl Delay			25.3									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	744	27	37	1247	30	58	44	23	19	48	9
Future Volume (vph)	9	744	27	37	1247	30	58	44	23	19	48	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	12	12	12	10	10	10	13	13	13
Grade (%)		4%			-8%			-5%			6%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.997			0.976			0.984	
Flt Protected		0.999			0.999			0.977			0.988	
Satd. Flow (prot)	0	1687	0	0	1740	0	0	1613	0	0	1689	0
Flt Permitted		0.983			0.965			0.879			0.891	
Satd. Flow (perm)	0	1660	0	0	1681	0	0	1452	0	0	1523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			4			14			8	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1765			540			508			343	
Travel Time (s)		34.4			10.5			9.9			6.7	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	11%	4%	0%	3%	1%	7%	0%	5%	0%	0%	2%	22%
Adj. Flow (vph)	9	759	28	38	1272	31	59	45	23	19	49	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	796	0	0	1341	0	0	127	0	0	77	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			20	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.10	1.02	1.10	1.02	1.13	1.13	1.13	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	456		20	456		20	35		20	35	
Trailing Detector (ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Position(ft)	0	0		0	0		0	-5		0	-5	
Detector 1 Size(ft)	20	6		20	6		20	40		20	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		450			450							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		9.0	9.0		9.0	9.0	
Total Split (s)	52.0	52.0		52.0	52.0		13.0	13.0		13.0	13.0	
Total Split (%)	80.0%	80.0%		80.0%	80.0%		20.0%	20.0%		20.0%	20.0%	
Maximum Green (s)	45.0	45.0		45.0	45.0		7.0	7.0		7.0	7.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		6.0			6.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 65	
Actuated Cycle Length: 65.4	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

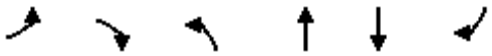
Splits and Phases: 16: Sanatoga Rd/Fagleysville Rd & Swamp Pk



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	744	27	37	1247	30	58	44	23	19	48	9
Future Volume (veh/h)	9	744	27	37	1247	30	58	44	23	19	48	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1655	1655	1655	2084	1968	2084	1915	1915	1915	1634	1634	1634
Adj Flow Rate, veh/h	9	759	28	38	1272	31	59	45	23	19	49	9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	4	4	1	1	1	5	5	5	2	2	2
Cap, veh/h	60	1125	41	78	1318	32	164	79	36	99	128	21
Arrive On Green	0.70	0.72	0.70	0.70	0.72	0.70	0.10	0.11	0.10	0.10	0.11	0.10
Sat Flow, veh/h	5	1572	58	28	1843	44	726	696	314	257	1129	184
Grp Volume(v), veh/h	796	0	0	1341	0	0	127	0	0	77	0	0
Grp Sat Flow(s),veh/h/ln	1635	0	0	1915	0	0	1736	0	0	1570	0	0
Q Serve(g_s), s	0.0	0.0	0.0	24.1	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	17.6	0.0	0.0	45.0	0.0	0.0	4.4	0.0	0.0	2.9	0.0	0.0
Prop In Lane	0.01		0.04	0.03		0.02	0.46		0.18	0.25		0.12
Lane Grp Cap(c), veh/h	1201	0	0	1398	0	0	252	0	0	224	0	0
V/C Ratio(X)	0.66	0.00	0.00	0.96	0.00	0.00	0.50	0.00	0.00	0.34	0.00	0.00
Avail Cap(c_a), veh/h	1201	0	0	1398	0	0	270	0	0	240	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.1	0.0	0.0	8.8	0.0	0.0	27.5	0.0	0.0	26.7	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	15.4	0.0	0.0	3.3	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.1	0.0	0.0	22.4	0.0	0.0	3.6	0.0	0.0	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	0.0	0.0	24.2	0.0	0.0	30.8	0.0	0.0	28.7	0.0	0.0
LnGrp LOS	A	A	A	C	A	A	C	A	A	C	A	A
Approach Vol, veh/h		796			1341			127			77	
Approach Delay, s/veh		6.5			24.2			30.8			28.7	
Approach LOS		A			C			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		52.0		12.3		52.0		12.3				
Change Period (Y+Rc), s		7.0		6.0		7.0		6.0				
Max Green Setting (Gmax), s		45.0		7.0		45.0		7.0				
Max Q Clear Time (g_c+I1), s		19.6		4.9		47.0		6.4				
Green Ext Time (p_c), s		20.2		0.1		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			18.7									
HCM 6th LOS			B									



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	44	24	42	543	706	48
Future Volume (vph)	44	24	42	543	706	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	11	11	12	12
Grade (%)	-1%			-4%	4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952				0.991	
Flt Protected	0.969			0.996		
Satd. Flow (prot)	1753	0	0	1720	1700	0
Flt Permitted	0.969			0.996		
Satd. Flow (perm)	1753	0	0	1720	1700	0
Link Speed (mph)	35			40	40	
Link Distance (ft)	540			956	3165	
Travel Time (s)	10.5			16.3	53.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	10%	4%	0%	3%	3%	0%
Adj. Flow (vph)	47	26	45	584	759	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	0	0	629	811	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	16			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.90	0.90	1.09	1.09	1.10	1.10
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

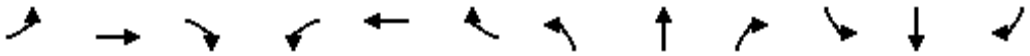
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	24	42	543	706	48
Future Vol, veh/h	44	24	42	543	706	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	-4	4	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	10	4	0	3	3	0
Mvmt Flow	47	26	45	584	759	52

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1459	785	811	0	-	0
Stage 1	785	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Critical Hdwy	6.3	6.14	4.3	-	-	-
Critical Hdwy Stg 1	5.3	-	-	-	-	-
Critical Hdwy Stg 2	5.3	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	3	-	-	-
Pot Cap-1 Maneuver	159	419	627	-	-	-
Stage 1	503	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	142	419	627	-	-	-
Mov Cap-2 Maneuver	142	-	-	-	-	-
Stage 1	450	-	-	-	-	-
Stage 2	567	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	36.6	0.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	627	-	185	-	-
HCM Lane V/C Ratio	0.072	-	0.395	-	-
HCM Control Delay (s)	11.2	0	36.6	-	-
HCM Lane LOS	B	A	E	-	-
HCM 95th %tile Q(veh)	0.2	-	1.7	-	-



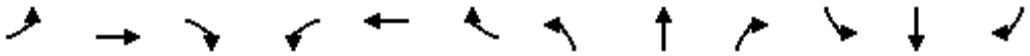
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	63	79	35	34	22	66	565	60	53	542	53
Future Volume (vph)	60	63	79	35	34	22	66	565	60	53	542	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		2%			-1%			-1%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.947			0.967			0.988			0.989	
Flt Protected		0.985			0.981			0.995			0.996	
Satd. Flow (prot)	0	1551	0	0	1602	0	0	1764	0	0	1723	0
Flt Permitted		0.883			0.849			0.892			0.905	
Satd. Flow (perm)	0	1391	0	0	1386	0	0	1581	0	0	1566	0
Right Turn on Red			No			No			Yes			No
Satd. Flow (RTOR)								11				
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		477			665			1951			956	
Travel Time (s)		10.8			15.1			33.3			16.3	
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Adj. Flow (vph)	61	64	80	35	34	22	67	571	61	54	547	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	205	0	0	91	0	0	699	0	0	655	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.16	1.16	1.16	1.07	1.07	1.07	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	2		1	2	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	35		20	35		20	369		20	371	
Trailing Detector (ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Position(ft)	0	-5		0	-5		0	0		0	0	
Detector 1 Size(ft)	20	40		20	40		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)								363			365	
Detector 2 Size(ft)								6			6	
Detector 2 Type								Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)								0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	8.0	8.0		8.0	8.0		22.0	22.0		22.0	22.0	
Total Split (s)	25.0	25.0		25.0	25.0		65.0	65.0		65.0	65.0	
Total Split (%)	27.8%	27.8%		27.8%	27.8%		72.2%	72.2%		72.2%	72.2%	
Maximum Green (s)	20.0	20.0		20.0	20.0		58.0	58.0		58.0	58.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)		4.0			4.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		5.0	5.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		2.5	2.5		2.5	2.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		37.0	37.0		37.0	37.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		10.0	10.0		10.0	10.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

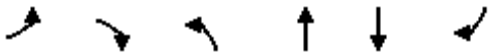
Splits and Phases: 18: Rt 663 & Buchert Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	63	79	35	34	22	66	565	60	53	542	53
Future Volume (veh/h)	60	63	79	35	34	22	66	565	60	53	542	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1778	1778	1778	1837	1837	1837	1823	1823	1823	1697	1697	1697
Adj Flow Rate, veh/h	61	64	80	35	34	22	67	571	61	54	547	54
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	1	1	1
Cap, veh/h	135	105	108	154	141	70	130	957	98	111	920	87
Arrive On Green	0.16	0.18	0.16	0.16	0.18	0.16	0.66	0.67	0.66	0.66	0.67	0.66
Sat Flow, veh/h	364	594	613	441	801	396	104	1426	146	78	1370	130
Grp Volume(v), veh/h	205	0	0	91	0	0	699	0	0	655	0	0
Grp Sat Flow(s),veh/h/ln	1572	0	0	1637	0	0	1676	0	0	1578	0	0
Q Serve(g_s), s	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	0.0	3.0	0.0	0.0	14.1	0.0	0.0	14.2	0.0	0.0
Prop In Lane	0.30		0.39	0.38		0.24	0.10		0.09	0.08		0.08
Lane Grp Cap(c), veh/h	325	0	0	340	0	0	1160	0	0	1095	0	0
V/C Ratio(X)	0.63	0.00	0.00	0.27	0.00	0.00	0.60	0.00	0.00	0.60	0.00	0.00
Avail Cap(c_a), veh/h	543	0	0	558	0	0	1525	0	0	1438	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.9	0.0	0.0	23.8	0.0	0.0	5.9	0.0	0.0	5.9	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	0.4	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.7	0.0	0.0	2.2	0.0	0.0	6.8	0.0	0.0	6.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	0.0	0.0	24.2	0.0	0.0	7.0	0.0	0.0	7.1	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		205			91			699			655	
Approach Delay, s/veh		27.9			24.2			7.0			7.1	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		50.1		15.6		50.1		15.6				
Change Period (Y+Rc), s		7.0		5.0		7.0		5.0				
Max Green Setting (Gmax), s		58.0		20.0		58.0		20.0				
Max Q Clear Time (g_c+I1), s		16.1		10.2		16.2		5.0				
Green Ext Time (p_c), s		27.1		0.5		25.2		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			10.6									
HCM 6th LOS			B									

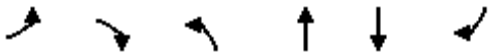


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	76	115	197	529	530	106
Future Volume (vph)	76	115	197	529	530	106
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	11	11
Grade (%)	-2%			2%	-3%	
Storage Length (ft)	0	0	225			0
Storage Lanes	1	0	1			0
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.919				0.977	
Flt Protected	0.980		0.950			
Satd. Flow (prot)	1583	0	1620	1706	1700	0
Flt Permitted	0.980		0.205			
Satd. Flow (perm)	1583	0	350	1706	1700	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	85				21	
Link Speed (mph)	40			40	40	
Link Distance (ft)	847			673	1951	
Travel Time (s)	14.4			11.5	33.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	1%	1%	1%	4%
Adj. Flow (vph)	81	122	210	563	564	113
Shared Lane Traffic (%)						
Lane Group Flow (vph)	203	0	210	563	677	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	11	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.13	1.13	1.10	1.10
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	2	2	
Detector Template	Left		Left			
Leading Detector (ft)	35		35	350	350	
Trailing Detector (ft)	-5		-5	0	0	
Detector 1 Position(ft)	-5		-5	0	0	
Detector 1 Size(ft)	40		40	6	6	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)				344	344	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	10.0		3.0	20.0	20.0	
Minimum Split (s)	16.0		9.0	26.0	26.0	
Total Split (s)	16.0		13.0	59.0	46.0	
Total Split (%)	21.3%		17.3%	78.7%	61.3%	
Maximum Green (s)	10.0		7.0	53.0	40.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	
Total Lost Time (s)	5.0		5.0	5.0	5.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	5.0	5.0	
Minimum Gap (s)	3.0		3.0	2.5	2.5	
Time Before Reduce (s)	0.0		0.0	35.0	35.0	
Time To Reduce (s)	0.0		0.0	10.0	10.0	
Recall Mode	None		None	Min	Min	

Intersection Summary	
Area Type:	Other
Cycle Length: 75	
Actuated Cycle Length: 70.7	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 19: Rt 663 & Moyer Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	76	115	197	529	530	106
Future Volume (veh/h)	76	115	197	529	530	106
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1875	1875	1764	1764	1898	1898
Adj Flow Rate, veh/h	81	122	210	563	564	113
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	1	1	1
Cap, veh/h	106	159	462	1224	800	160
Arrive On Green	0.16	0.15	0.10	0.69	0.52	0.51
Sat Flow, veh/h	660	994	1680	1764	1535	307
Grp Volume(v), veh/h	204	0	210	563	0	677
Grp Sat Flow(s),veh/h/ln	1663	0	1680	1764	0	1842
Q Serve(g_s), s	8.1	0.0	3.4	9.8	0.0	19.1
Cycle Q Clear(g_c), s	8.1	0.0	3.4	9.8	0.0	19.1
Prop In Lane	0.40	0.60	1.00			0.17
Lane Grp Cap(c), veh/h	267	0	462	1224	0	960
V/C Ratio(X)	0.76	0.00	0.45	0.46	0.00	0.70
Avail Cap(c_a), veh/h	267	0	490	1389	0	1101
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.8	0.0	9.1	4.7	0.0	12.5
Incr Delay (d2), s/veh	12.4	0.0	0.7	0.6	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.0	0.0	1.5	4.1	0.0	11.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.3	0.0	9.8	5.3	0.0	15.1
LnGrp LOS	D	A	A	A	A	B
Approach Vol, veh/h	204			773	677	
Approach Delay, s/veh	40.3			6.5	15.1	
Approach LOS	D			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		52.6		16.0	11.8	40.7
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		53.0		10.0	7.0	40.0
Max Q Clear Time (g_c+I1), s		12.3		10.6	5.9	21.1
Green Ext Time (p_c), s		19.5		0.0	0.1	13.6

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B