

TRAFFIC IMPACT STUDY

DIAMOND CHIP LOGISTICS PARK

33 Demarest Road
Block 12008, Lot 23
Sparta, NJ

PREPARED FOR:

Diamond Chip Realty, LLC

AUGUST 2021

Prepared By:

Kimley»»Horn

ADAM GIBSON, P.E.
NJ LICENSE NO. 51211

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NARRATIVE SUMMARY

PURPOSE OF REPORT AND STUDY OBJECTIVES

This report presents the results of a traffic impact study for the construction of two warehouse buildings at 33 Demarest Road, Block 12008, Lot 23 in Sparta Township, Sussex County, New Jersey. The warehouse development is expected to consist of one building of 506,880 square feet and one building of 373,600 square feet, totaling 880,480 square feet. The proposed development will redevelop the existing Sparta Ready-Mix concrete supplier.

This report describes the area transportation system, existing traffic volumes and analysis, the calculation of future no-build traffic volumes and analysis, and the calculation of future build volumes and analysis. The future build year for this project is 2023.

The following traffic study was prepared based upon discussion with Sparta Township staff during a traffic methodology meeting with CP Engineers on July 20, 2021. Notes from this meeting are provided in **Appendix A**.

EXECUTIVE SUMMARY

SITE LOCATION AND STUDY AREA

The property proposed for development is located in Sparta Township, Sussex County, New Jersey. The parcel is currently occupied by Sparta Ready-Mix concrete supplier and is bounded to the south by Demarest Road, to the north by undeveloped property, to the east by a railroad, and to the west by several small commercial properties. The site location is shown in **Figure 1**. There are two existing signalized intersections, two existing unsignalized intersections, one existing site access, and one proposed site access located in the project vicinity which were identified for study. The study area was determined during the traffic methodology meeting.

DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed warehouse development is expected to consist of 880,480 square feet across two buildings (506,880 square feet and 373,600 square feet). Vehicle access will be provided to the proposed development via two (2) full-access driveways along Demarest Road. The proposed site plan is included in **Appendix B**.

PRINCIPAL FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Under existing conditions, all study intersections operate at an overall LOS C or better during the AM, PM, and Friday peak hours. The northbound and southbound approaches at the signalized intersection of Lafayette Road (NJ Route 15) & Houses Corner Road (CR 669) operate at LOS E during the PM and Friday peak periods. The northbound approach at the signalized intersection of Wilson Drive/White Lake Road & Lafayette Road (NJ Route 15) operates at LOS F during the PM and Friday peak periods. The southbound approach at the signalized intersection of Wilson Drive/White Lake Road & Lafayette Road (NJ Route 15) operates at LOS E during the AM and PM peak periods and LOS F during the Friday peak period. These delays are associated only with the minor streets and are likely attributed to 130-second cycle lengths which prioritize the mainline (i.e., NJDOT maintained directions along Lafayette Road).

Under no-build conditions in 2023, all intersections are expected to operate at an overall LOS C or better. As part of the no-build conditions analysis, minor signal timing modifications were made to the intersection of Lafayette Road (NJ Route 15) & Wilson Drive/White Lake Road to improve the operating conditions of the side street (Wilson Drive/White Lake Road). During the PM and Friday peak periods, the northbound and southbound approaches at the signalized intersection of Lafayette Road (NJ Route 15) & Houses Corner Road (CR 669) as well as the northbound approach at the signalized intersection of Lafayette Road (NJ Route 15) & Wilson Drive/White Lake Road are expected to operate at LOS E. The side street approaches are not likely to improve beyond this level of service due to NJDOT prioritizing the mainline movements controlled by NJDOT. It should be noted that the v/c ratios for these movements do not exceed 0.82.

The results of the build-out analysis are similar to that of the no-build analysis: under build-out conditions in 2023, all intersections are expected to operate at an overall LOS C or better. During the PM and Friday peak periods, the northbound and southbound approaches at the signalized intersection of Lafayette Road (NJ Route 15) & Houses Corner Road (CR 669) as well as the northbound approach at the signalized intersection of Lafayette Road (NJ Route 15) & Wilson Drive/White Lake Road are expected to operate at LOS E. As with the no-build conditions, the side street approaches are not likely to improve beyond this level of service due to NJDOT prioritizing the mainline movements controlled by NJDOT. It should be noted that the v/c ratios for these movements do not exceed 0.82.

The 95th percentile queuing analysis results indicated that the available queue storage is sufficient to accommodate build traffic volumes at each study intersection with the exception of the southbound left-turn lane at Wilson Drive/White Lake Road & Lafayette Road (NJ Route 15). The 95th percentile queue lengths for the southbound left-turn movement at this intersection exceed the available storage for all scenarios and the queue length does not increase between the future no-build and future build conditions. It should be noted that the proposed warehouse development does not add trips to this movement.

Based upon capacity and queue analysis, the study intersections are expected to operate at an acceptable level of service in the build-out year of 2023 with the addition of project-generated traffic. Therefore, no mitigation measures are proposed to reduce the impact of the project on the study area network.

BACKGROUND INFORMATION

FUTURE TRANSPORTATION IMPROVEMENTS

Currently, there are no programmed roadway improvements within the study area.

DESCRIPTION OF EXISTING ONSITE DEVELOPMENT

The property proposed for development is located in Sparta Township, Sussex County, New Jersey. The parcel is currently developed and hosts the Sparta Ready-Mix concrete supplier. The site location is shown in **Figure 1**.

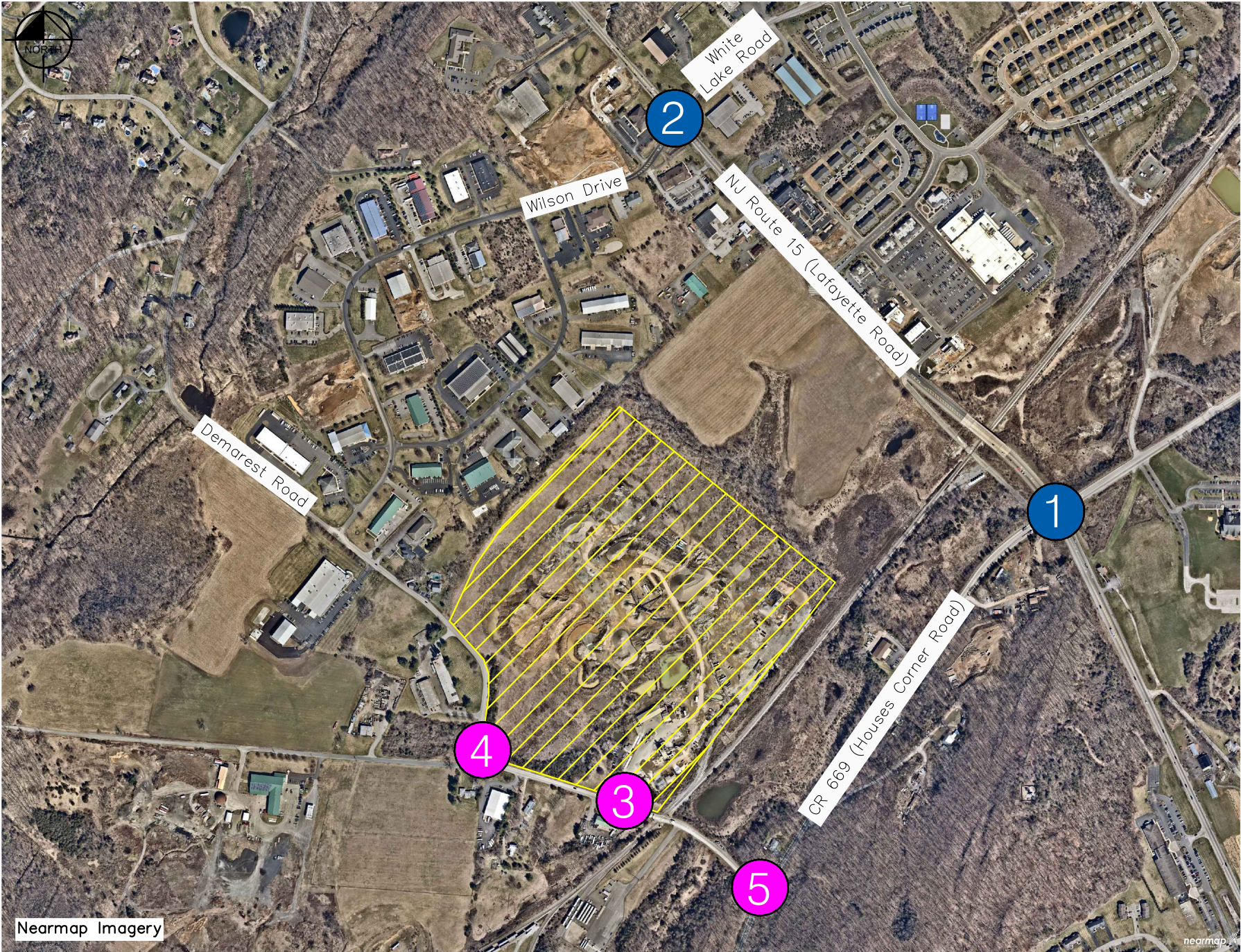
STUDY AREA

The study area is bounded to the south by Demarest Road, to the north by NJ Route 15, to the east by Houses Corner Road (CR 669), and to the west by Wilson Drive/White Lake Road. The following intersections were identified for study:

- Houses Corner Road (CR 669) & Lafayette Road (NJ Route 15)
- Wilson Drive/White Lake Road & Lafayette Road (NJ Route 15)
- Existing Site Access & Demarest Road
- Proposed Site Access & Demarest Road
- Houses Corner Road (CR 669) & Demarest Road

Intersection capacity and queueing analyses were performed at all study intersections for weekday AM and PM peak hours, and Friday peak hour.

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Legend

-  Signalized Intersection
-  Unsignalized Intersection

EXISTING AREA ROADWAYS

Key roadways in the study area include Houses Corner Road (CR 669), Lafayette Road (NJ Route 15), Demarest Road, Wilson Drive, and White Lake Road.

Houses Corner Road (CR 669) – This is a two-lane undivided rural major collector roadway that generally runs north-south through the study area. The posted speed limit is 40 MPH. At its T-intersection with Demarest Road, Houses Corner Road (CR 669) provides one northbound shared left/through lane and one southbound shared through/right-turn lane. At its four-way signalized intersection with Lafayette Road (NJ Route 15), Houses Corner Road (CR 669) provides one northbound dedicated left-turn lane with approximately 180 feet of storage, one northbound shared through/right-turn lane, one southbound dedicated left-turn lane with approximately 175 feet of storage, and one southbound shared through/right-turn lane.

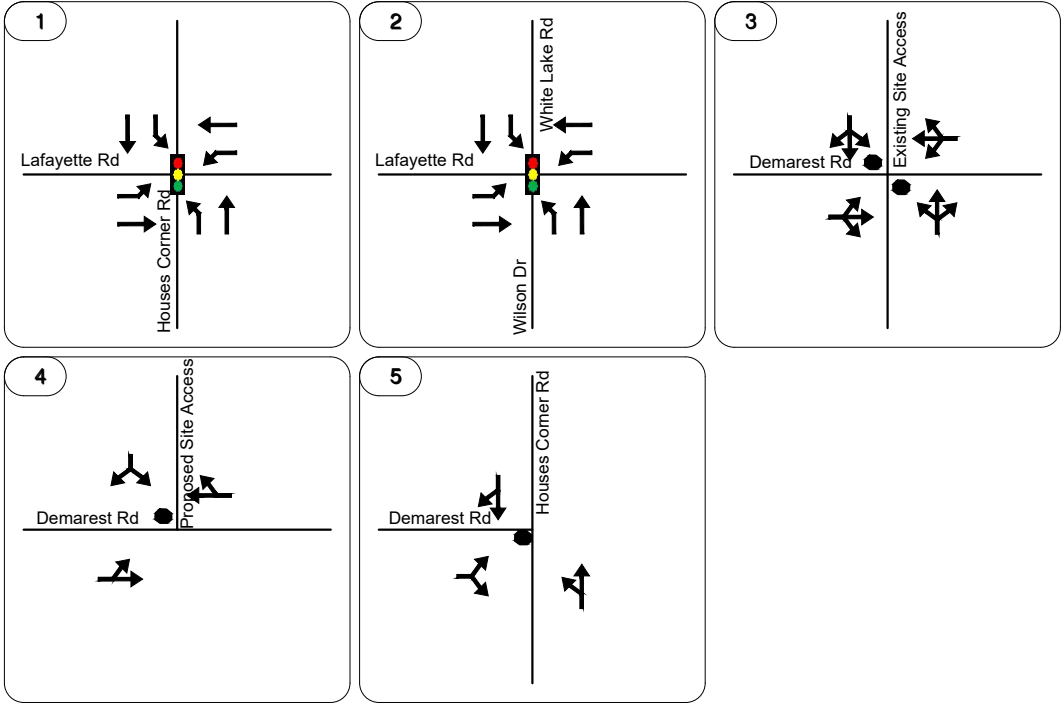
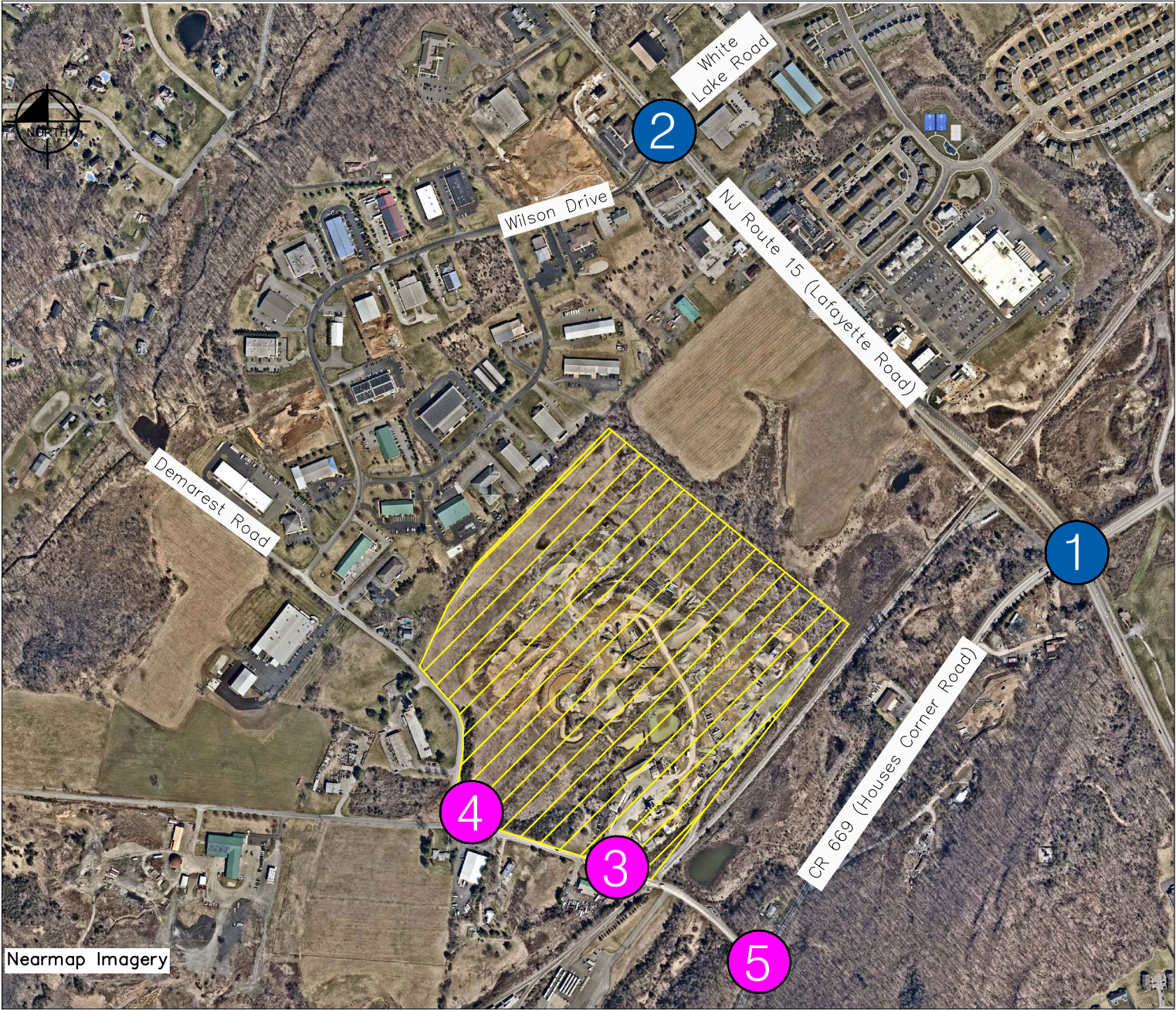
Lafayette Road (NJ Route 15) – This is a two-lane undivided rural principal arterial roadway that generally runs east-west through the study area. The posted speed limit is 50 MPH. At its four-way signalized intersection with Houses Corner Road (CR 669), Lafayette Road (NJ Route 15) provides one eastbound dedicated left-turn lane with approximately 275 feet of storage, one eastbound shared through/right-turn lane, one westbound dedicated left-turn lane with approximately 320 feet of storage, and one westbound shared through/right-turn lane. At its four-way signalized intersection with Wilson Drive/White Lake Road, Lafayette Road (NJ Route 15) provides one eastbound dedicated left-turn lane with approximately 150 feet of storage, one eastbound shared through/right-turn lane, one westbound dedicated left-turn lane with approximately 150 feet of storage, and one westbound shared through/right-turn lane.

Demarest Road – This is a two-lane undivided local roadway that generally runs east-west through the study area. The posted speed limit is 35 MPH. At its stop-controlled T-intersection with Houses Corner Road (CR 669), Demarest Road provides one shared left/right-turn lane. At its free-flowing intersection with Existing Site Access, Demarest Road provides one shared left/through/right-turn lane in both the eastbound and westbound directions. At its free-flowing intersection with Proposed Site Access, Demarest Road provides one shared left-turn/through lane in the eastbound direction and one shared through/right-turn lane in the westbound direction.

Wilson Drive/White Lake Road – This is a two-lane undivided local roadway that generally runs north-south through the study area. The posted speed limit is 25 MPH south of Lafayette Road (NJ Route 15) and 40 MPH north of Lafayette Road (NJ Route 15). At its four-way signalized intersection with Lafayette Road (NJ Route 15), Wilson Drive provides one northbound dedicated left-turn lane with approximately 120 feet of storage and one northbound shared through/right-turn lane, while White Lake Road provides one southbound dedicated left-turn lane with approximately 165 feet of storage and one southbound shared through/right-turn lane.

Figure 2 shows the lane designations and traffic control at the study intersections.

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EXISTING CONDITIONS

ANALYSIS METHODOLOGY

Intersection capacity analyses were performed for existing, future no-build, and future build traffic volumes for the study area intersections. The analyses were performed using the Synchro 11 Software Package, which utilizes methodologies contained in the *Highway Capacity Manual (6th Edition)* for signalized and unsignalized intersections. According to the HCM6th, capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a fixed time duration. The capacity is described by Level of Service (LOS) to indicate the operating characteristics of a road segment or intersection. LOS is defined as a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A being the best and F being the worst. Typically, a LOS “D” or better at signalized and unsignalized intersections is preferred. The New Jersey Administrative Code (NJAC) §16:47-4.24 provides general LOS standards. The ranges of delay for each level of service are shown in **Table 1**, below.

Table 1: Level of Service Range of Delay		
Level of Service (LOS)	Delay per Vehicle (seconds per vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	10 -20	10 -15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	≥ 80	≥ 50

Of the five study intersections, two are signalized and three are unsignalized, with four existing and one proposed. The existing traffic signal timings were obtained from NJDOT. These timings were used for the existing and future conditions analyses.

EXISTING TRAFFIC VOLUMES

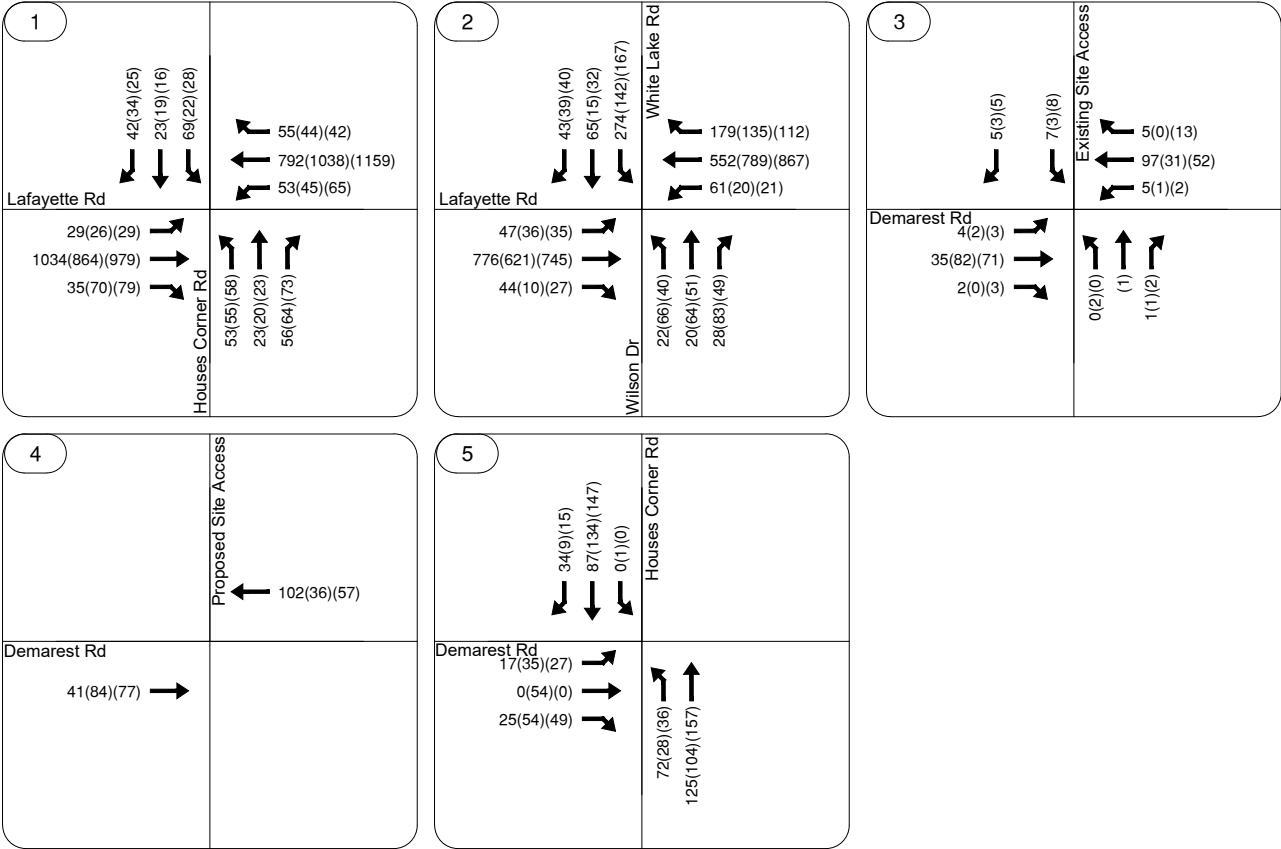
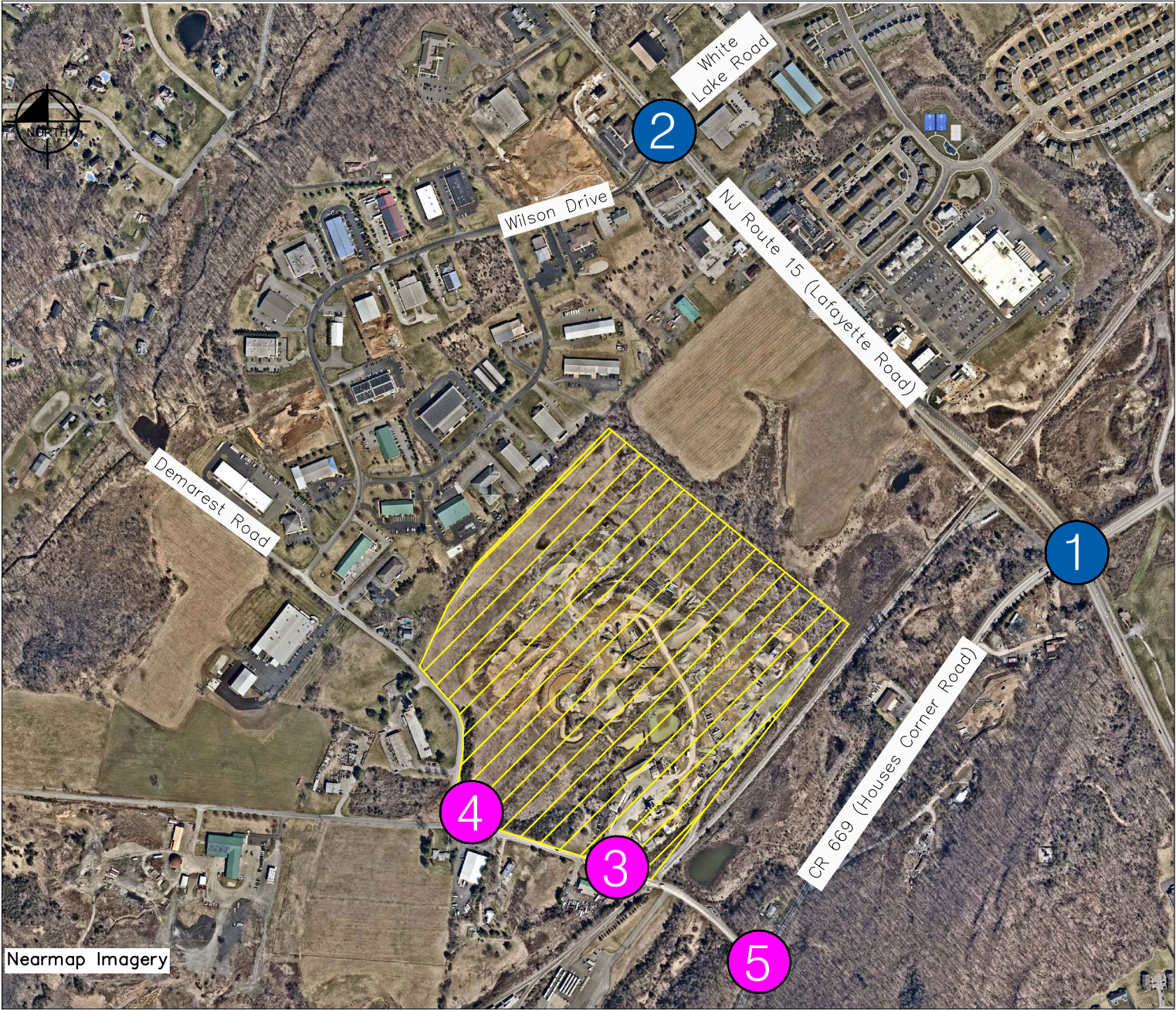
Traffic volumes used in this study include existing traffic volumes, future no-build traffic volumes, and future build traffic volumes. The AM and PM peak hours, as well as the Friday peak hour, were studied at four (4) existing intersections. The existing study area intersections consisted of:

- Houses Corner Road (CR 669) & Lafayette Road (NJ Route 15)
- Wilson Drive/White Lake Road & Lafayette Road (NJ Route 15)
- Existing Site Access & Demarest Road
- Houses Corner Road (CR 669) & Demarest Road

Weekday AM peak period (7:00am to 9:00am) and PM peak period (4:00pm to 6:00pm) vehicle turning movement counts were collected on Thursday, July 29, 2021. The Friday peak period (2:00pm to 7:00pm) vehicle turning movement counts were conducted on Friday, July 30, 2021. The existing weekday AM, PM, and Friday peak-hour traffic volumes at the study intersections are shown on **Figure 3** and the raw data is provided in **Appendix C**.

Due to the ongoing effects of the COVID-19 pandemic, the observed traffic volumes were reviewed to determine if an adjustment factor needed to be applied. To make this determination, ATR counts were collected on Lafayette Road (NJ Route 15) between Wilson Drive/White Lake Road and Houses Corner Road (CR 669) over 48 hours from Wednesday, July 28, 2021 to Thursday, July 29, 2021. The average daily traffic volume over these two days was compared to the most recent NJDOT ADT count data (2018) grown to the year 2021. The comparison revealed that observed AM peak-hour volumes were 1.7% lower than anticipated, and as a result, all AM traffic volumes were multiplied by a factor of 1.017. The comparison of the observed PM and Friday peak-hour volumes revealed that these volumes were higher than anticipated. Therefore, an adjustment factor was not applied to the PM and Friday traffic volumes. The summary of this review and the calculation of the AM peak-hour adjustment factor is shown in **Appendix C**.

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ANALYSIS OF EXISTING CONDITIONS

The existing conditions analyses were based on the existing traffic volumes and existing lane uses and traffic controls at the study area intersections. The existing peak hour factors (PHF) by intersection were calculated and used for this analysis. Heavy vehicle percentages obtained from the vehicle turning movement counts were used.

The results of the intersection capacity analyses are summarized in **Table 2**. Analysis results show level of service and corresponding delay information for each intersection by movement, approach, and the overall intersection. The intersection analysis worksheets are contained in **Appendix E**.

Table 2: Summary of 2021 Existing Intersection Capacity Analysis Results				
Level of Service (Delay, Seconds per Vehicle)				
Intersection		Existing		
Approach	Movement	AM	PM	FRI
1. Houses Corner Road & Lafayette Road (Signalized)				
Eastbound (Lafayette Road)	L	B (13.5)	C (20.1)	C (20.3)
	R	B (11.0)	A (7.8)	A (7.4)
	Approach	B (11.1)	A (8.1)	A (7.7)
Westbound (Lafayette Road)	L	C (23.8)	B (14.1)	B (15.0)
	R	A (7.4)	A (9.4)	A (9.3)
	Approach	A (8.4)	A (9.6)	A (9.6)
Northbound (Houses Corner Road)	L	D (43.6)	E (61.0)	E (61.0)
	R	D (41.3)	E (56.6)	E (58.2)
	Approach	D (42.4)	E (58.7)	E (59.7)
Southbound (Houses Corner Road)	L	D (45.8)	E (59.4)	E (61.1)
	R	D (40.7)	E (56.2)	E (56.9)
	Approach	D (43.7)	E (57.2)	E (59.0)
Overall Intersection		B (13.3)	B (13.0)	B (12.2)
2. Wilson Drive/White Lake Road & Lafayette Road (Signalized)				
Eastbound (Lafayette Road)	L	C (22.5)	C (25.8)	C (26.9)
	R	B (17.1)	A (9.5)	B (11.1)
	Approach	B (17.4)	B (10.4)	B (11.8)
Westbound (Lafayette Road)	L	C (28.4)	B (13.4)	B (16.8)
	R	B (13.8)	B (12.7)	B (12.9)
	Approach	B (15.0)	B (12.7)	B (13.0)
Northbound (Wilson Drive)	L	D (42.0)	D (54.7)	E (56.2)
	R	D (45.4)	F (239.3)	F (199.6)
	Approach	D (44.2)	F (169.5)	F (158.9)
Southbound (White Lake Road)	L	E (74.6)	E (75.1)	F (96.5)
	R	D (38.7)	E (56.3)	E (55.9)
	Approach	E (66.2)	E (72.0)	F (84.3)
Overall Intersection		C (25.8)	C (31.2)	C (29.7)

Table 2: Summary of 2021 Existing Intersection Capacity Analysis Results				
Level of Service (Delay, Seconds per Vehicle)				
Intersection		Existing		
Approach	Movement	AM	PM	FRI
3. Existing Site Access & Demarest Road (Unsignalized)				
Eastbound (Demarest Road)	L	A (7.8)	A (7.3)	A (8.4)
	Approach	A (0.8)	A (0.2)	A (0.3)
Westbound (Demarest Road)	L	A (7.3)	A (7.4)	A (7.9)
	Approach	A (0.3)	A (0.2)	A (0.0)
Northbound (Private Driveway)	Approach	A (9.4)	A (9.4)	B (10.0)
Southbound (Existing Site Access)	L	B (10.9)	A (9.6)	B (10.8)
	R	A (9.9)	A (8.5)	A (8.6)
	Approach	B (10.5)	A (9.1)	B (10.0)
Overall Intersection		A (1.2)	A (0.8)	A (1.2)
5. Houses Corner Road & Demarest Road (Unsignalized)				
Eastbound (Demarest Road)	Approach	B (10.6)	B (10.3)	B (10.7)
Northbound (Houses Corner Road)	L	A (7.7)	A (7.6)	A (7.8)
	Approach	A (2.8)	A (1.6)	A (1.4)
Southbound (Houses Corner Road)	Approach	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		A (2.8)	A (3.1)	A (2.5)

Under existing conditions, all intersections operate at an overall LOS C or better during the AM, PM, and Friday peak hours. The northbound and southbound approaches at the signalized intersection of Lafayette Road (NJ Route 15) & Houses Corner Road (CR 669) operate at LOS E during the PM and Friday peak periods. The northbound approach at the signalized intersection of Wilson Drive/White Lake Road & Lafayette Road (NJ Route 15) operates at LOS F during the PM and Friday peak periods. The southbound approach at the signalized intersection of Wilson Drive/White Lake Road & Lafayette Road (NJ Route 15) operates at LOS E during the AM and PM peak periods and LOS F during the Friday peak period. These delays are associated only with the minor streets and are likely attributed to 130-second cycle lengths which prioritize the mainline (i.e., NJDOT maintained directions along Lafayette Road).

SITE TRAFFIC

TRIP GENERATION

Peak-hour traffic volumes generated by the proposed development were calculated using trip generation equations and average rates for land use code (LUC) 150 – Warehousing found in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 10th Edition*. The site is proposed to be a single-use development and was not considered for trip generation reduction due to shared (internal) trips or pass-by trips. The trip generation for the AM and PM peak hours was based upon data for the adjacent street peak hour, while the trip generation for the Friday peak hour was based upon data for the PM peak hour of generator. A summary of the daily and peak-hour trip generation is shown in **Table 3** and detailed in **Appendix D**.

Table 3: Proposed Site Trip Generation												
Land Use	Quantity (SF)	Vehicle Type	Daily Trips	AM			PM			FRI		
				In	Out	Total	In	Out	Total	In	Out	Total
LUC 150 - Warehousing	880,480	Passenger	1,437	92	21	113	23	84	107	13	97	110
		Truck		9	9	18	13	13	26	24	21	45

SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

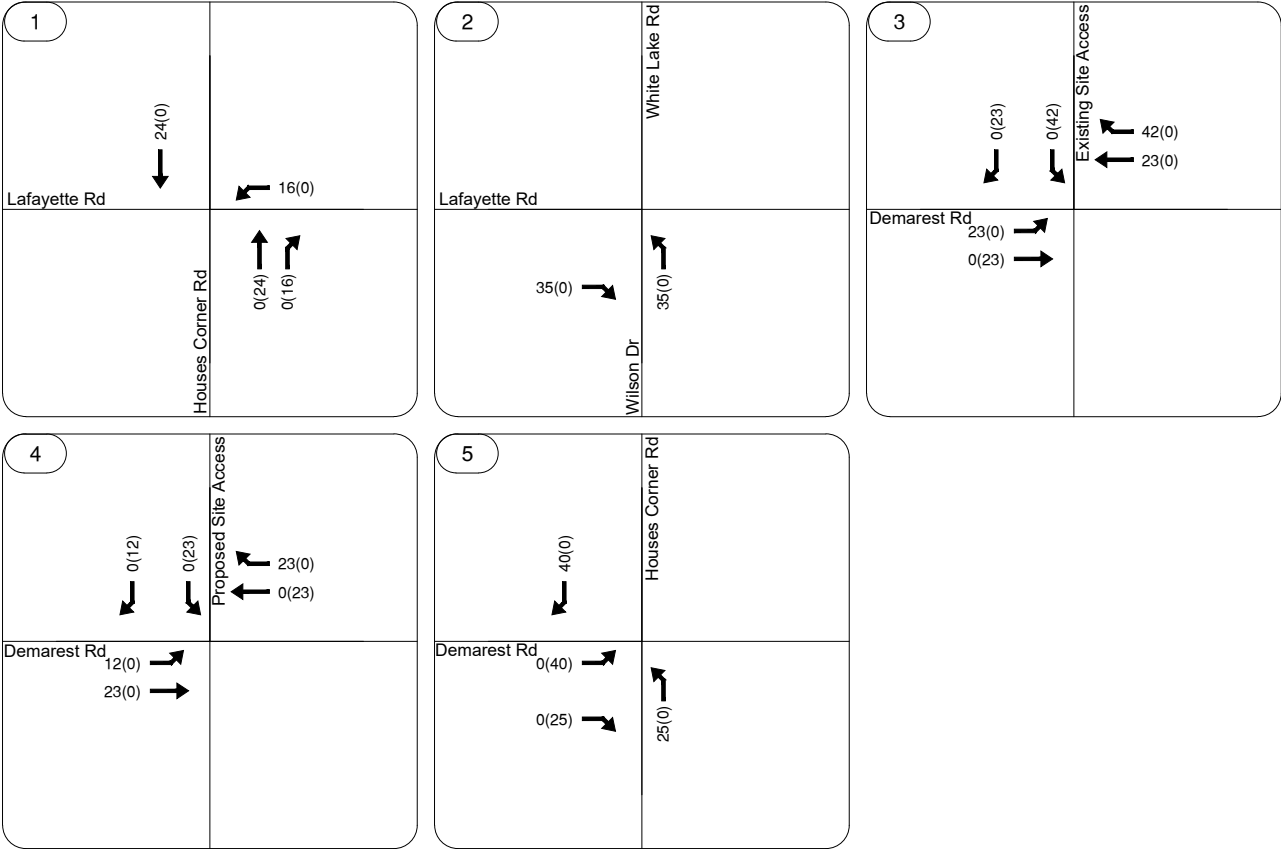
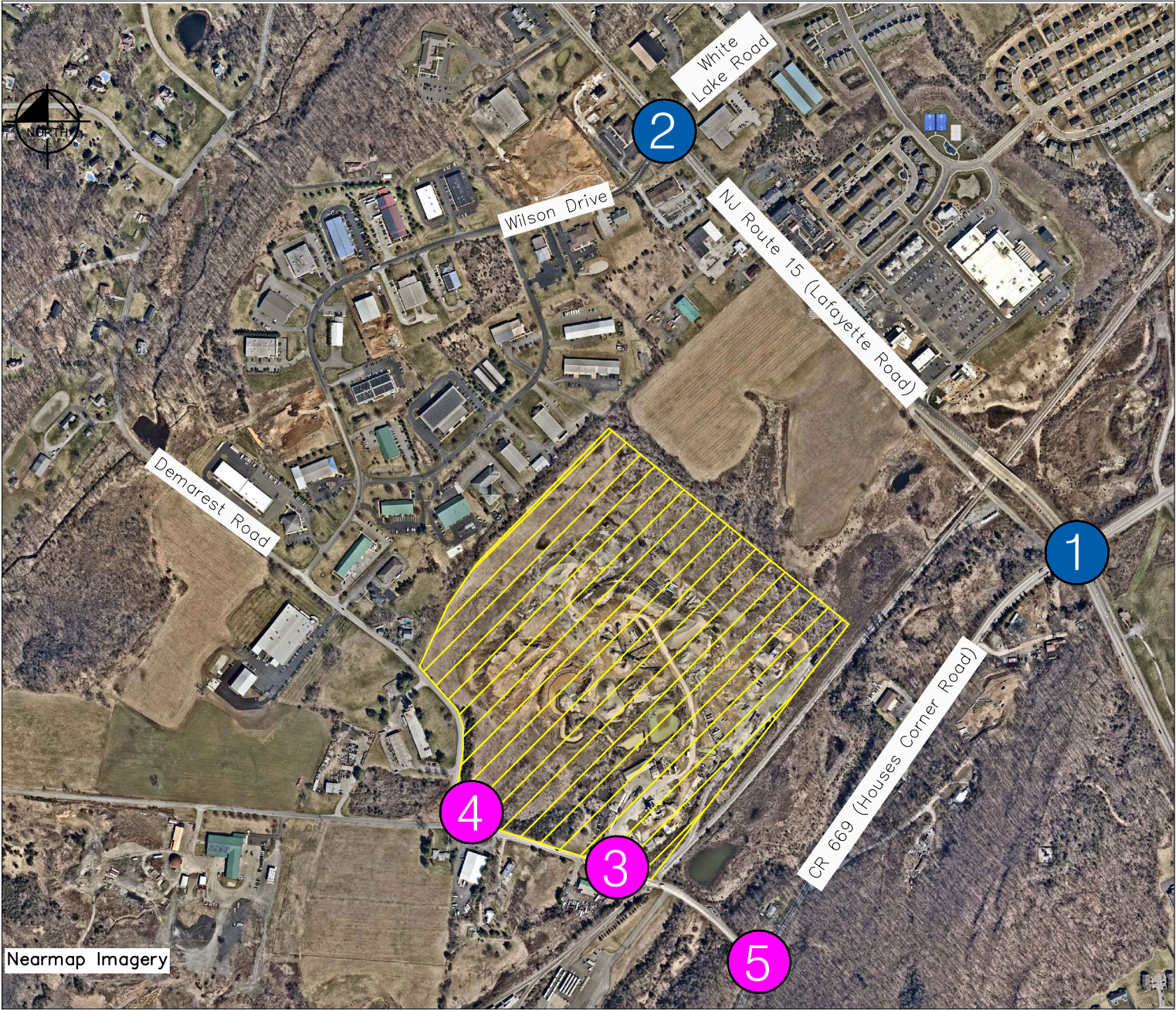
Site generated trips were assigned to the study area intersections based upon the existing roadway network surrounding the site and a review of the nearby municipal populations. Distribution percentages were calculated using a gravity model; by dividing each municipality's population (US Census Bureau, Census 2010) by the squared distance from the center of the municipality to the proposed site. The distributions are summarized in **Table 4** and detailed in **Appendix D**.

Table 4: Trip Distribution		
<i>Direction (To/From)</i>	Passenger Vehicle Trip Percentage	Truck Trip Percentage
North on Lafayette Road	35%	45%
South on Lafayette Road	16%	45%
East on Houses Corner Road	24%	0%
West on Houses Corner Road	25%	10%

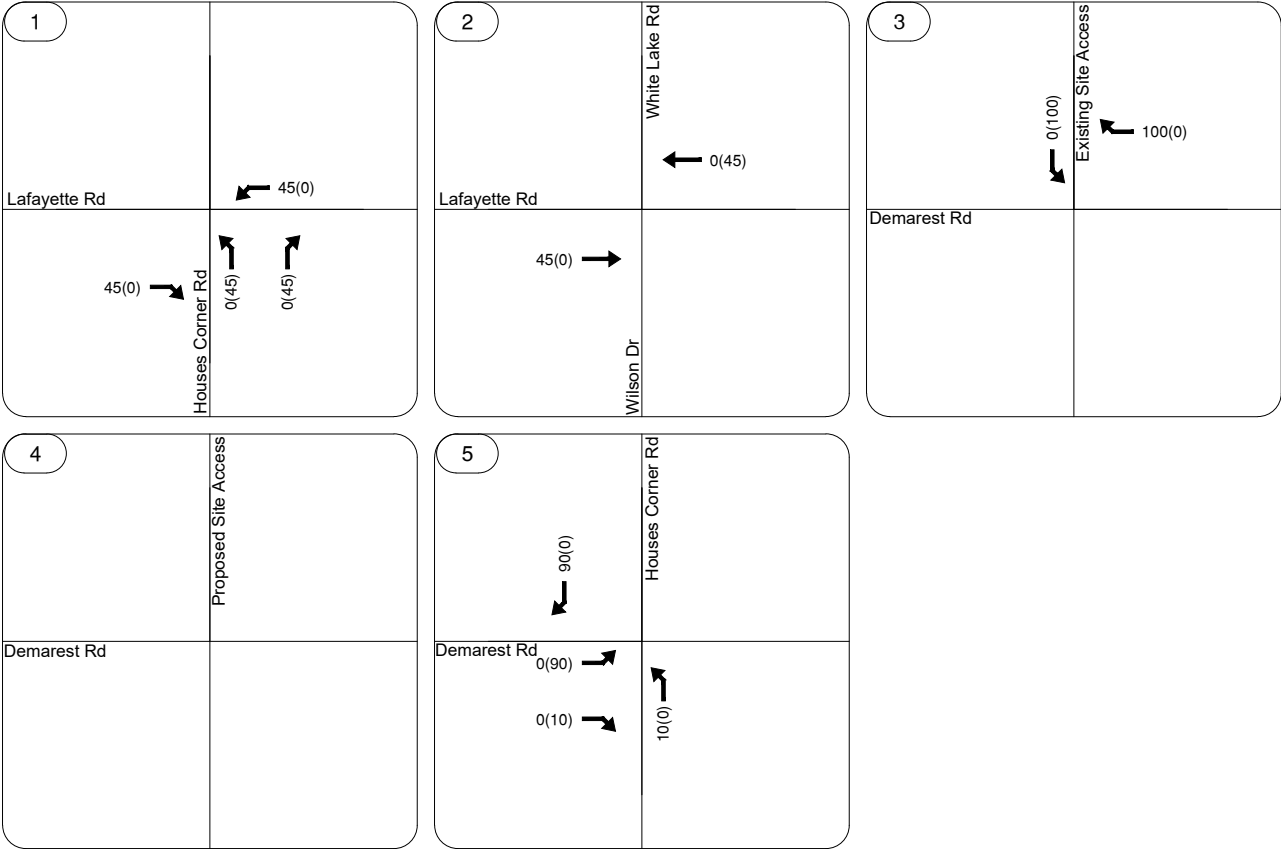
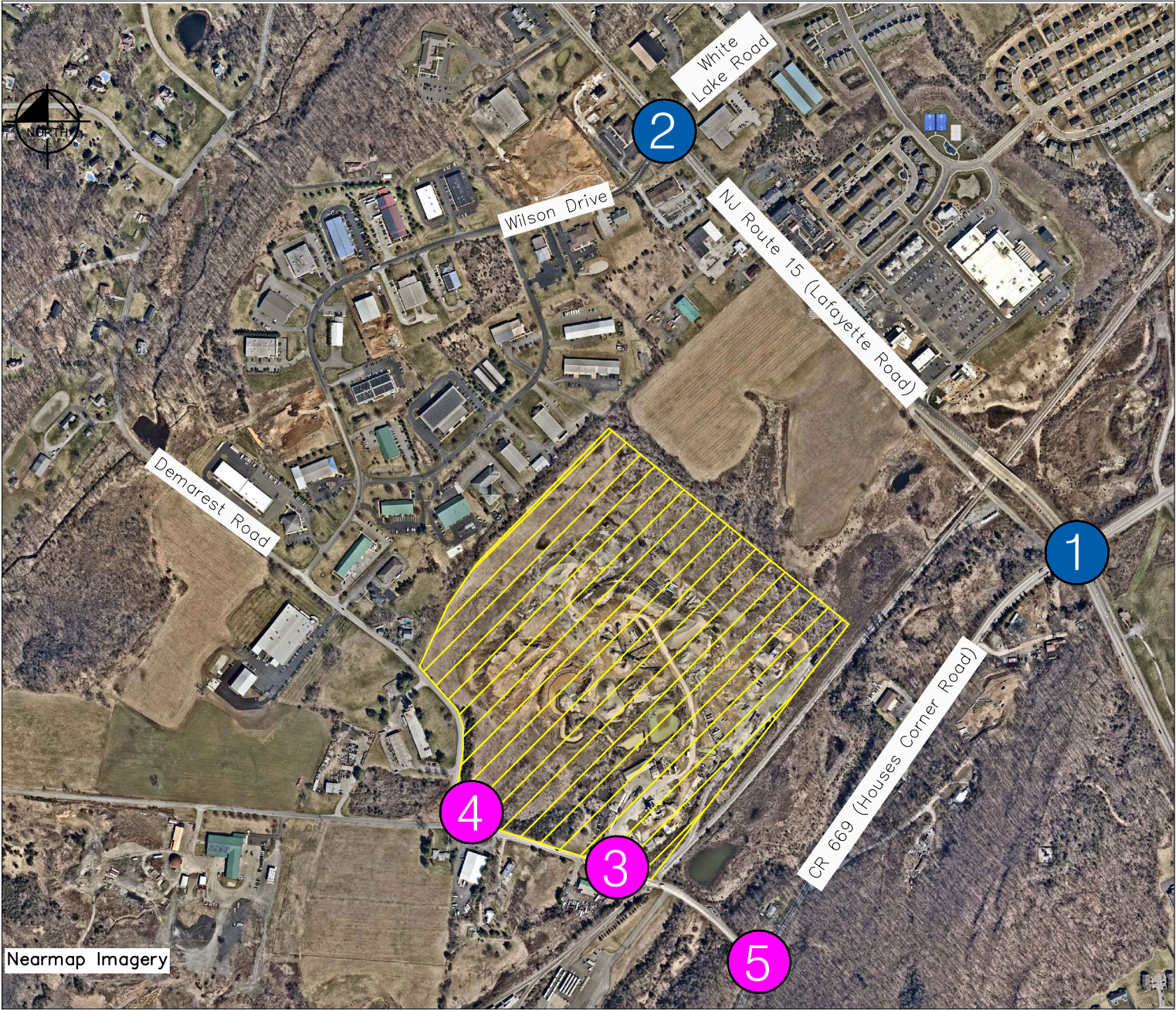
The proposed development will include rail service to the site. Consideration was given to assigning a percentage of truck deliveries to rail delivers. Research showed this value to be between 3% and 7% (Samimi, et. al). However, to provide a conservative analysis, this modal shift was not included in the trip generation for the site.

Figures 4 and 5 illustrate the directional distribution of site-generated passenger vehicles and trucks, respectively. **Figure 6** illustrates the assignment of net, new trips to the study intersections.

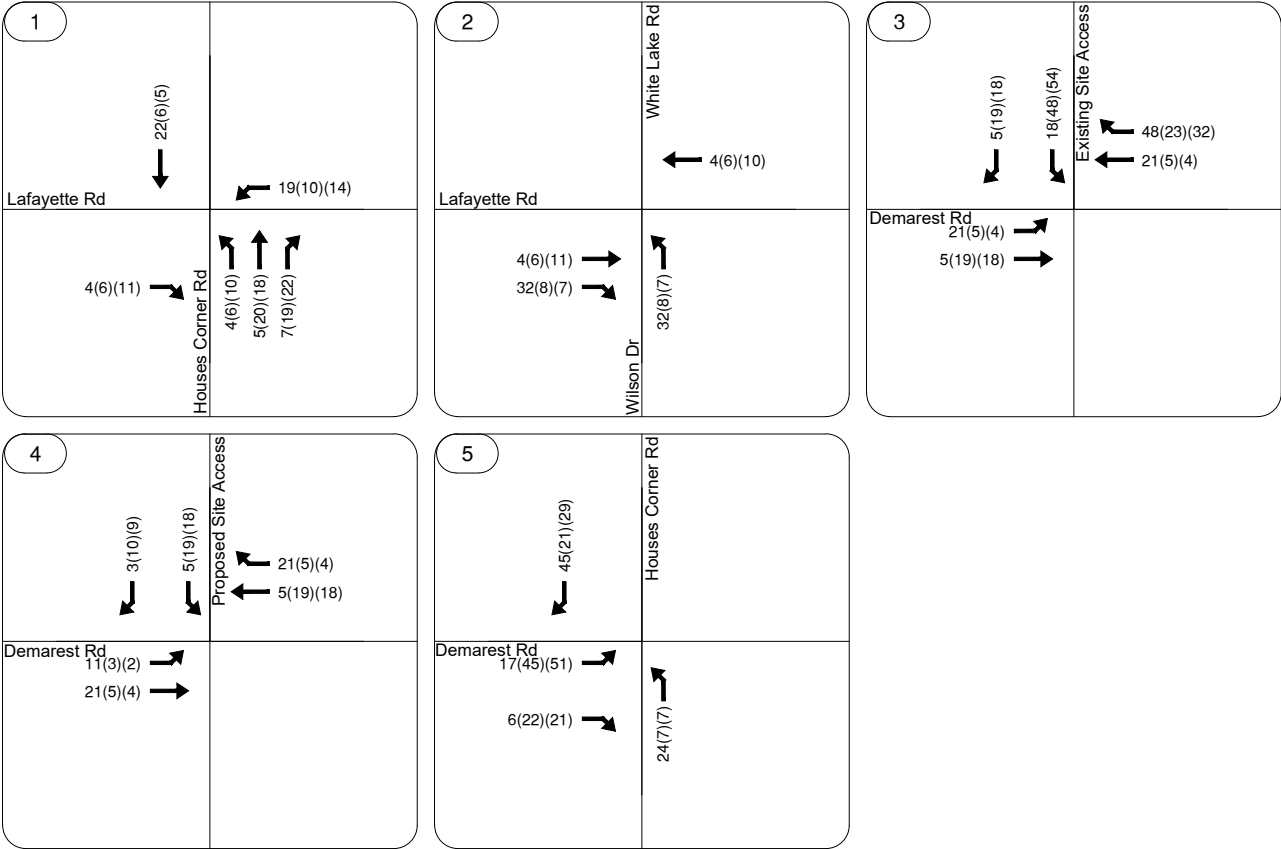
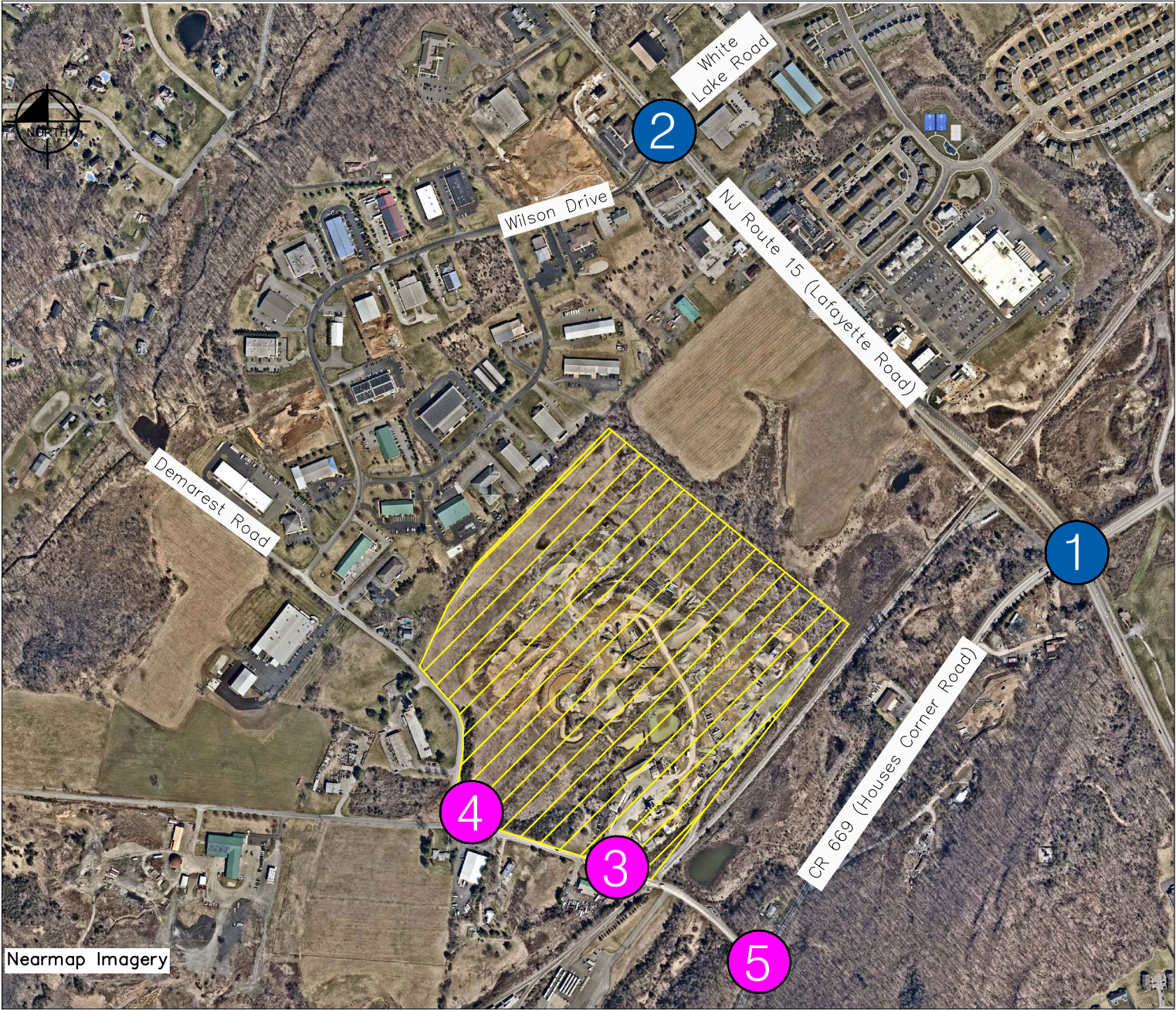
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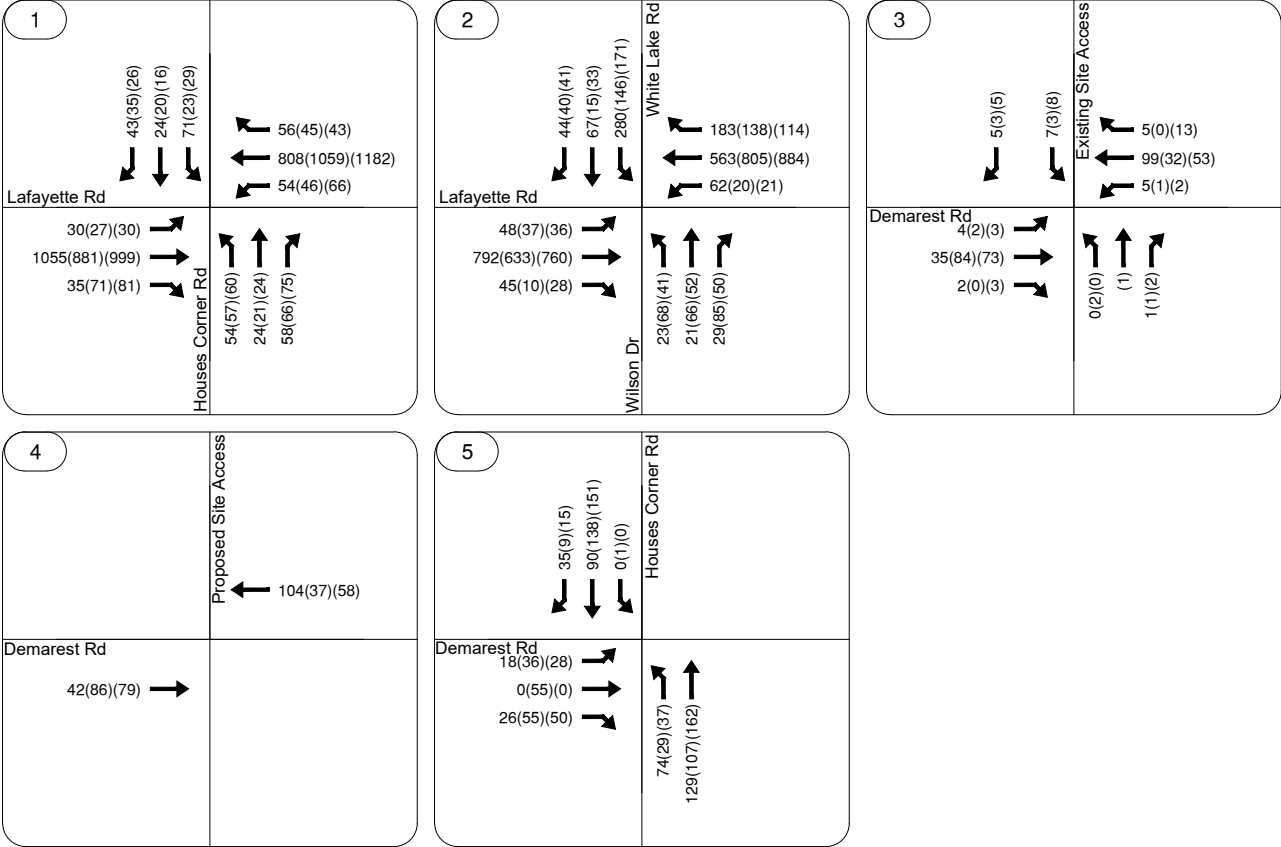
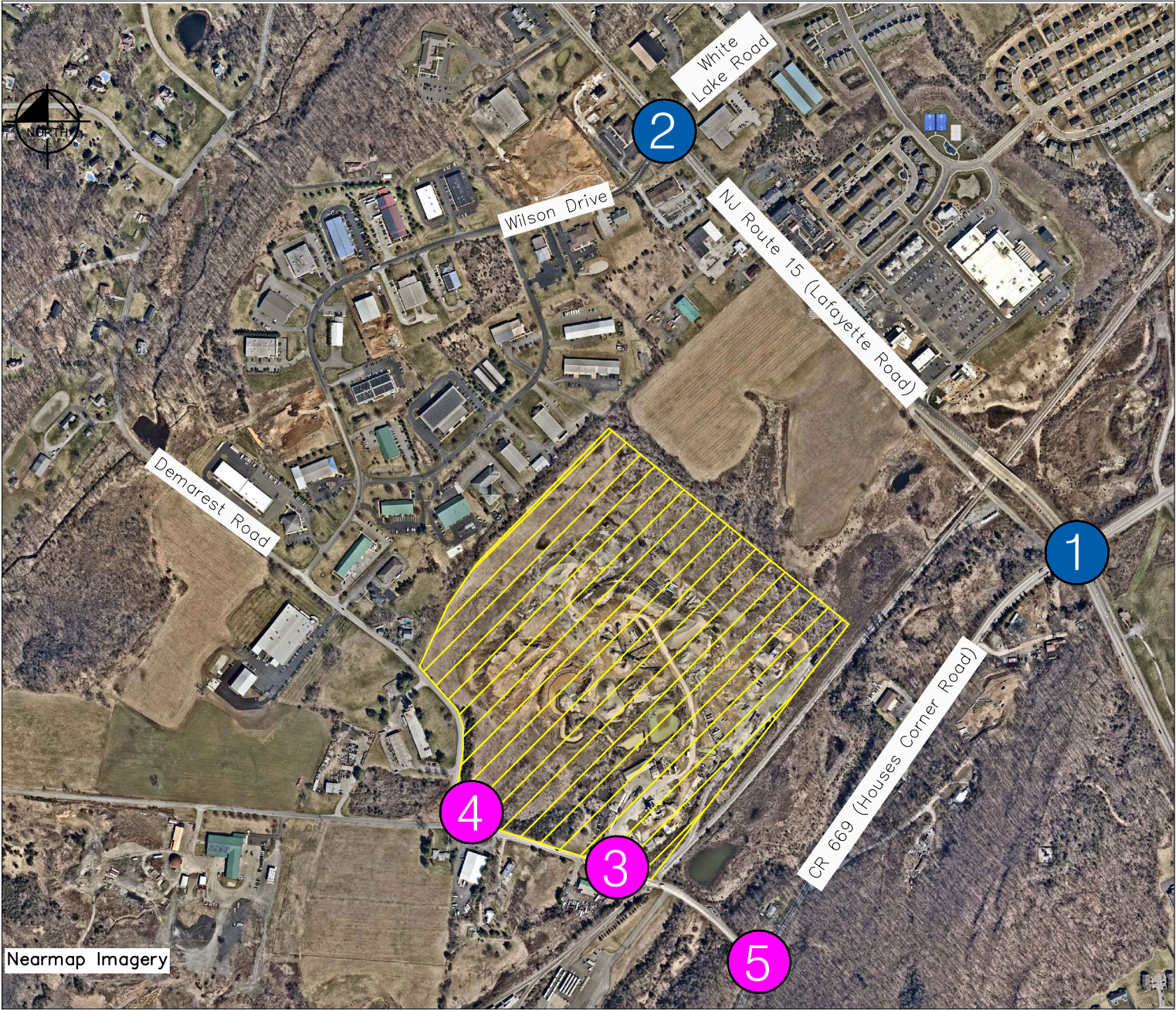
CAPACITY ANALYSIS

2023 NO-BUILD CONDITIONS

FUTURE NO-BUILD TRAFFIC VOLUMES

Future no-build traffic volumes represent future traffic that would travel through the area intersections without the proposed development. As discussed during the traffic methodology meeting, the future no-build traffic volumes were developed by applying an annual growth rate of one 1.00% per year to the existing volumes on Lafayette Road (NJ Route 15), 1.50% on Houses Corner Road (CR 669), and 1.25% on all other roads. The growth rates were based upon the most recent NJDOT Access Permit Annual Background Growth Rate Table (valid April 2019 – April 2021) for a Rural Principal Arterial, Rural Major Collector, and Local Road in Sussex County. These future no-build volumes were computed for the build year of 2023 and are illustrated in **Figure 7**.

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ANALYSIS OF 2023 NO-BUILD CONDITIONS

The 2023 no-build condition analyses were based upon the future no-build traffic volumes with existing lane uses and traffic controls at the study area intersections. The results of the 2023 no-build intersection capacity analyses are summarized in **Table 5**.

For comparison, the existing conditions results are also shown within this table. Analysis results show level of service and corresponding delay information for each intersection by movement, approach, and the overall intersection.

Table 5: Summary of 2023 No-Build Intersection Capacity Analysis Results							
Level of Service (Delay, Seconds per Vehicle)							
Intersection		Existing			No-Build		
Approach	Movement	AM	PM	FRI	AM	PM	FRI
1. Houses Corner Road & Lafayette Road (Signalized)							
Eastbound (Lafayette Road)	L	B (13.5)	C (20.1)	C (20.3)	B (14.4)	C (22.4)	C (22.5)
	R	B (11.0)	A (7.8)	A (7.4)	B (11.7)	A (8.2)	A (7.8)
	Approach	B (11.1)	A (8.1)	A (7.7)	B (11.8)	A (8.6)	A (8.2)
Westbound (Lafayette Road)	L	C (23.8)	B (14.1)	B (15.0)	C (26.2)	B (15.4)	B (16.4)
	R	A (7.4)	A (9.4)	A (9.3)	A (7.9)	B (10.4)	B (10.2)
	Approach	A (8.4)	A (9.6)	A (9.6)	A (9.0)	B (10.6)	B (10.6)
Northbound (Houses Corner Road)	L	D (43.6)	E (61.0)	E (61.0)	D (43.5)	E (60.9)	E (60.9)
	R	D (41.3)	E (56.6)	E (58.2)	D (41.1)	E (56.3)	E (58.1)
	Approach	D (42.4)	E (58.7)	E (59.7)	D (42.1)	E (58.5)	E (59.6)
Southbound (Houses Corner Road)	L	D (45.8)	E (59.4)	E (61.1)	D (45.7)	E (59.3)	E (61.3)
	R	D (40.7)	E (56.2)	E (56.9)	D (40.4)	E (55.9)	E (56.7)
	Approach	D (43.7)	E (57.2)	E (59.0)	D (43.5)	E (56.9)	E (58.9)
Overall Intersection		B (13.3)	B (13.0)	B (12.2)	B (13.9)	B (13.8)	B (12.9)
2. Wilson Drive/White Lake Road & Lafayette Road (Signalized)							
Eastbound (Lafayette Road)	L	C (22.5)	C (25.8)	C (26.9)	C (27.6)	D (38.5)	D (39.5)
	R	B (17.1)	A (9.5)	B (11.1)	C (21.4)	B (13.2)	B (15.4)
	Approach	B (17.4)	B (10.4)	B (11.8)	C (21.8)	B (14.6)	B (16.5)
Westbound (Lafayette Road)	L	C (28.4)	B (13.4)	B (16.8)	D (35.5)	B (19.1)	C (23.9)
	R	B (13.8)	B (12.7)	B (12.9)	B (16.7)	B (18.4)	B (18.4)
	Approach	B (15.0)	B (12.7)	B (13.0)	B (18.2)	B (18.4)	B (18.5)
Northbound (Wilson Drive)	L	D (42.0)	D (54.7)	E (56.2)	D (41.9)	D (50.8)	D (53.1)
	R	D (45.4)	F (239.3)	F (199.6)	D (45.5)	E (66.0)	E (63.0)
	Approach	D (44.2)	F (169.5)	F (158.9)	D (44.2)	E (60.3)	E (60.2)
Southbound (White Lake Road)	L	E (74.6)	E (75.1)	F (96.5)	D (50.6)	D (50.9)	E (55.2)
	R	D (38.7)	E (56.3)	E (55.9)	D (36.0)	D (50.2)	D (49.8)
	Approach	E (66.2)	E (72.0)	F (84.3)	D (47.2)	D (50.8)	D (53.5)
Overall Intersection		C (25.8)	C (31.2)	C (29.7)	C (25.5)	C (23.7)	C (24.3)

Table 5: Summary of 2023 No-Build Intersection Capacity Analysis Results							
Level of Service (Delay, Seconds per Vehicle)							
Intersection		Existing			No-Build		
Approach	Movement	AM	PM	FRI	AM	PM	FRI
3. Existing Site Access & Demarest Road (Unsignalized)							
Eastbound (Demarest Road)	L	A (7.8)	A (7.3)	A (8.4)	A (7.8)	A (7.3)	A (8.4)
	Approach	A (0.8)	A (0.2)	A (0.3)	A (0.8)	A (0.2)	A (0.3)
Westbound (Demarest Road)	L	A (7.3)	A (7.4)	A (7.9)	A (7.3)	A (7.4)	A (7.9)
	Approach	A (0.3)	A (0.2)	A (0.0)	A (0.3)	A (0.2)	A (0.2)
Northbound (Private Driveway)	Approach	A (9.4)	A (9.4)	B (10.0)	A (9.4)	A (9.4)	B (10.0)
Southbound (Existing Site Access)	L	B (10.9)	A (9.6)	B (10.8)	B (10.9)	A (9.6)	B (10.9)
	R	A (9.9)	A (8.5)	A (8.6)	B (10.0)	A (8.5)	A (8.6)
	Approach	B (10.5)	A (9.1)	B (10.0)	B (10.5)	A (9.1)	B (10.0)
Overall Intersection		A (1.2)	A (0.8)	A (1.2)	A (1.2)	A (0.8)	A (1.2)
5. Houses Corner Road & Demarest Road (Unsignalized)							
Eastbound (Demarest Road)	Approach	B (10.6)	B (10.3)	B (10.7)	B (10.7)	B (10.4)	B (10.8)
Northbound (Houses Corner Road)	L	A (7.7)	A (7.6)	A (7.8)	A (7.7)	A (7.6)	A (7.8)
	Approach	A (2.8)	A (1.6)	A (1.4)	A (2.8)	A (1.6)	A (1.4)
Southbound (Houses Corner Road)	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		A (2.8)	A (3.1)	A (2.5)	A (2.8)	A (3.1)	A (2.5)

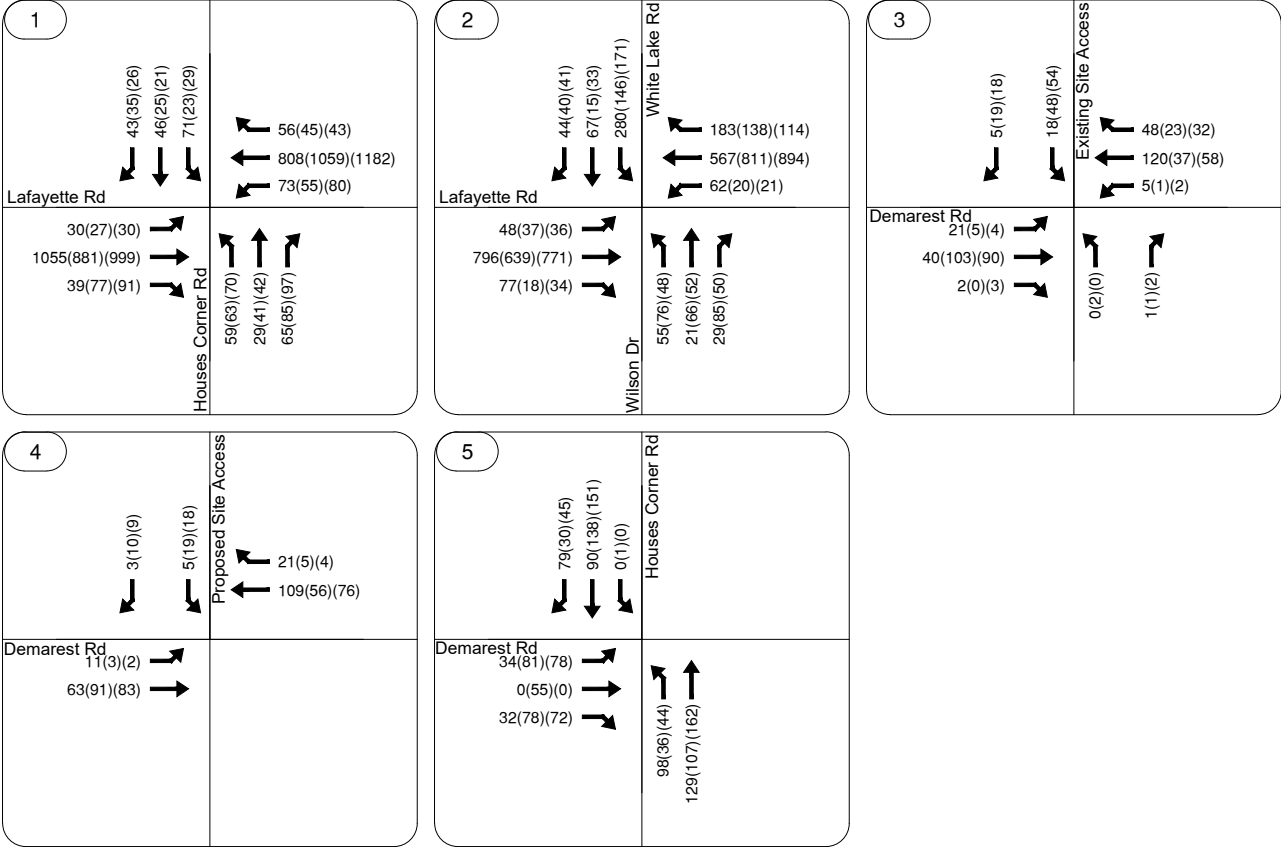
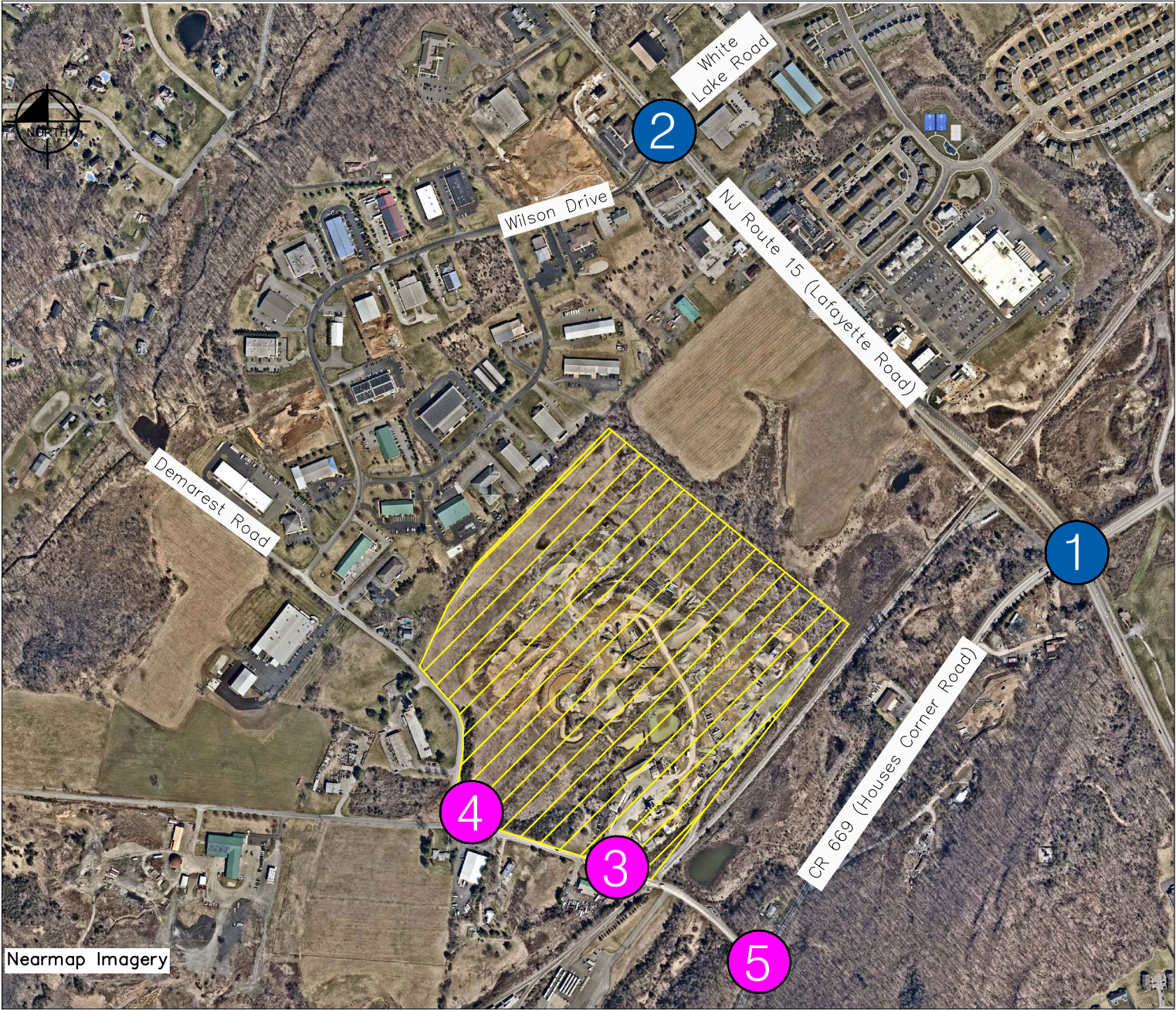
Under no-build conditions in 2023, all intersections are expected to operate at an overall LOS C or better. As part of the no-build conditions analysis, minor signal timing modifications were made to the intersection of Lafayette Road (NJ Route 15) & Wilson Drive/White Lake Road to improve the operating conditions of the side street (Wilson Drive/White Lake Road). During the PM and Friday peak periods, the northbound and southbound approaches at the signalized intersection of Lafayette Road (NJ Route 15) & Houses Corner Road (CR 669) as well as the northbound approach at the signalized intersection of Lafayette Road (NJ Route 15) & Wilson Drive/White Lake Road are expected to operate at LOS E. The side street approaches are not likely to improve beyond this level of service due to NJDOT prioritizing the mainline movements controlled by NJDOT. It should be noted that the v/c ratios for these movements do not exceed 0.82.

2023 FUTURE BUILD CONDITIONS

FUTURE BUILD TRAFFIC VOLUMES

Future build volumes represent future traffic volumes with the full build of the proposed development. These volumes were developed by adding the trips generated by the proposed development to the future no-build traffic volumes. These future build volumes were developed for the build year of 2023 and are illustrated in **Figure 8**.

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ANALYSIS OF 2023 FUTURE BUILD CONDITIONS

Intersection capacity analyses were conducted for future build traffic volumes for the study area intersections in the year 2023. The future build conditions analyses were based upon the future build traffic volumes with existing lane uses and traffic controls at the study area intersections. The modified signal timing utilized in the future no-build conditions scenario was utilized for the future build conditions scenario. Peak-hour factors and heavy vehicle percentages for existing intersections were the same as those used in existing and future no-build analyses. Peak-hour factors and heavy vehicle percentages at project driveways were estimated to be 0.92 and 2%, respectively. Background traffic volumes entering and exiting the site driveways were set to zero under build conditions so that only project-generated trips would be accessing the site driveways. However, these trips were not removed from the rest of the network in order to provide a conservative analysis.

The results of the intersection capacity analyses for the year 2023 build conditions are summarized in **Table 6**. For comparison, the results for the 2023 no-build conditions and 2021 existing conditions are shown. Analysis results show level of service and corresponding delay information for each intersection by movement, approach, and the overall intersection.

The results of the build-out analysis are similar to that of the no-build analysis: under build-out conditions in 2023, all intersections are expected to operate at an overall LOS C or better. During the PM and Friday peak periods, the northbound and southbound approaches at the signalized intersection of Lafayette Road (NJ Route 15) & Houses Corner Road (CR 669) as well as the northbound approach at the signalized intersection of Lafayette Road (NJ Route 15) & Wilson Drive/White Lake Road are expected to operate at LOS E. As with the no-build conditions, the side street approaches are not likely to improve beyond this level of service due to NJDOT prioritizing the mainline movements controlled by NJDOT. It should be noted that the v/c ratios for these movements do not exceed 0.82.

Table 6: Summary of 2023 Build Intersection Capacity Analysis Results

Level of Service (Delay, Seconds per Vehicle)										
Intersection		Existing			No-Build			Build		
Approach	Movement	AM	PM	FRI	AM	PM	FRI	AM	PM	FRI
1. Houses Corner Road & Lafayette Road (Signalized)										
Eastbound (Lafayette Road)	L	B (13.5)	C (20.1)	C (20.3)	B (14.4)	C (22.4)	C (22.5)	B (15.3)	C (24.3)	C (27.4)
	R	B (11.0)	A (7.8)	A (7.4)	B (11.7)	A (8.2)	A (7.8)	B (12.2)	A (8.9)	A (9.4)
	Approach	B (11.1)	A (8.1)	A (7.7)	B (11.8)	A (8.6)	A (8.2)	B (12.3)	A (9.3)	A (9.9)
Westbound (Lafayette Road)	L	C (23.8)	B (14.1)	B (15.0)	C (26.2)	B (15.4)	B (16.4)	C (30.0)	B (17.4)	C (21.6)
	R	A (7.4)	A (9.4)	A (9.3)	A (7.9)	B (10.4)	B (10.2)	A (8.4)	B (11.2)	B (12.5)
	Approach	A (8.4)	A (9.6)	A (9.6)	A (9.0)	B (10.6)	B (10.6)	B (10.1)	B (11.5)	B (13.1)
Northbound (Houses Corner Road)	L	D (43.6)	E (61.0)	E (61.0)	D (43.5)	E (60.9)	E (60.9)	D (44.0)	E (60.5)	E (59.1)
	R	D (41.3)	E (56.6)	E (58.2)	D (41.1)	E (56.3)	E (58.1)	D (40.7)	E (57.3)	E (57.7)
	Approach	D (42.4)	E (58.7)	E (59.7)	D (42.1)	E (58.5)	E (59.6)	D (42.1)	E (58.6)	E (58.3)
Southbound (Houses Corner Road)	L	D (45.8)	E (59.4)	E (61.1)	D (45.7)	E (59.3)	E (61.3)	D (45.6)	E (61.4)	E (62.0)
	R	D (40.7)	E (56.2)	E (56.9)	D (40.4)	E (55.9)	E (56.7)	D (40.3)	D (55.0)	D (54.4)
	Approach	D (43.7)	E (57.2)	E (59.0)	D (43.5)	E (56.9)	E (58.9)	D (42.9)	E (56.8)	E (57.8)
Overall Intersection		B (13.3)	B (13.0)	B (12.2)	B (13.9)	B (13.8)	B (12.9)	B (15.0)	B (15.4)	B (15.7)
2. Wilson Drive/White Lake Road & Lafayette Road (Signalized)										
Eastbound (Lafayette Road)	L	C (22.5)	C (25.8)	C (26.9)	C (27.6)	D (38.5)	D (39.5)	C (28.0)	D (39.1)	D (40.6)
	R	B (17.1)	A (9.5)	B (11.1)	C (21.4)	B (13.2)	B (15.4)	C (24.0)	B (13.5)	B (15.9)
	Approach	B (17.4)	B (10.4)	B (11.8)	C (21.8)	B (14.6)	B (16.5)	C (24.2)	B (14.9)	B (17.0)
Westbound (Lafayette Road)	L	C (28.4)	B (13.4)	B (16.8)	D (35.5)	B (19.1)	C (23.9)	D (40.1)	B (19.7)	C (24.9)
	R	B (13.8)	B (12.7)	B (12.9)	B (16.7)	B (18.4)	B (18.4)	B (16.9)	B (18.5)	B (18.6)
	Approach	B (15.0)	B (12.7)	B (13.0)	B (18.2)	B (18.4)	B (18.5)	B (18.7)	B (18.5)	B (18.7)
Northbound (Wilson Drive)	L	D (42.0)	D (54.7)	E (56.2)	D (41.9)	D (50.8)	D (53.1)	D (41.0)	D (50.4)	D (52.7)
	R	D (45.4)	F (239.3)	F (199.6)	D (45.5)	E (66.0)	E (63.0)	D (45.4)	E (66.0)	E (63.0)
	Approach	D (44.2)	F (169.5)	F (158.9)	D (44.2)	E (60.3)	E (60.2)	D (42.9)	E (59.7)	E (59.7)
Southbound (White Lake Road)	L	E (74.6)	E (75.1)	F (96.5)	D (50.6)	D (50.9)	E (55.2)	D (50.4)	D (50.9)	E (55.2)
	R	D (38.7)	E (56.3)	E (55.9)	D (36.0)	D (50.2)	D (49.8)	D (37.9)	D (50.8)	D (50.5)
	Approach	E (66.2)	E (72.0)	F (84.3)	D (47.2)	D (50.8)	D (53.5)	D (47.4)	D (50.9)	D (53.7)
Overall Intersection		C (25.8)	C (31.2)	C (29.7)	C (25.5)	C (23.7)	C (24.3)	C (27.0)	C (23.9)	C (24.6)
3. Existing Site Access & Demarest Road (Unsignalized)										
Eastbound (Demarest Road)	L	A (7.8)	A (7.3)	A (8.4)	A (7.8)	A (7.3)	A (8.4)	A (7.6)	A (7.4)	A (7.4)
	Approach	A (0.8)	A (0.2)	A (0.3)	A (0.8)	A (0.2)	A (0.3)	A (2.5)	A (0.3)	A (0.3)
Westbound (Demarest Road)	L	A (7.3)	A (7.4)	A (7.9)	A (7.3)	A (7.4)	A (7.9)	A (7.3)	A (7.4)	A (7.9)
	Approach	A (0.3)	A (0.2)	A (0.0)	A (0.3)	A (0.2)	A (0.2)	A (0.2)	A (0.1)	A (0.2)
Northbound (Private Driveway)	Approach	A (9.4)	A (9.4)	B (10.0)	A (9.4)	A (9.4)	B (10.0)	A (9.5)	A (9.4)	A (9.3)
Southbound (Existing Site Access)	L	B (10.9)	A (9.6)	B (10.8)	B (10.9)	A (9.6)	B (10.9)	B (10.4)	A (9.9)	B (10.1)
	R	A (9.9)	A (8.5)	A (8.6)	B (10.0)	A (8.5)	A (8.6)	A (9.1)	A (8.6)	A (8.8)
	Approach	B (10.5)	A (9.1)	B (10.0)	B (10.5)	A (9.1)	B (10.0)	B (10.1)	A (9.5)	A (9.8)
Overall Intersection		A (1.2)	A (0.8)	A (1.2)	A (1.2)	A (0.8)	A (1.2)	A (1.7)	A (2.9)	A (2.9)

Table 6: Summary of 2023 Build Intersection Capacity Analysis Results

Level of Service (Delay, Seconds per Vehicle)										
Intersection		Existing			No-Build			Build		
Approach	Movement	AM	PM	FRI	AM	PM	FRI	AM	PM	FRI
4. Proposed Site Access & Demarest Road (Unsignalized)										
Eastbound (Demarest Road)	L							A (7.5)	A (7.3)	A (7.4)
	Approach							A (1.1)	A (0.2)	A (0.2)
Westbound (Demarest Road)	Approach							A (0.0)	A (0.0)	A (0.0)
Southbound (Proposed Site Access)	Approach							A (9.5)	A (9.3)	A (9.3)
Overall Intersection								A (0.7)	A (1.6)	A (1.4)
5. Houses Corner Road & Demarest Road (Unsignalized)										
Eastbound (Demarest Road)	Approach	B (10.6)	B (10.3)	B (10.7)	B (10.7)	B (10.4)	B (10.8)	B (12.0)	B (11.7)	B (12.7)
Northbound (Houses Corner Road)	L	A (7.7)	A (7.6)	A (7.8)	A (7.7)	A (7.6)	A (7.8)	A (7.9)	A (7.7)	A (7.9)
	Approach	A (2.8)	A (1.6)	A (1.4)	A (2.8)	A (1.6)	A (1.4)	A (3.4)	A (1.9)	A (1.7)
Southbound (Houses Corner Road)	Approach	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Overall Intersection		A (2.8)	A (3.1)	A (2.5)	A (2.8)	A (3.1)	A (2.5)	A (3.4)	A (4.5)	A (4.1)

QUEUING ANALYSIS

Vehicle queue lengths were calculated for each of the movements at all study intersections. Queues were analyzed for 2021 existing conditions, 2023 no-build conditions, and 2023 future build conditions.

HCM 6th Edition methodology and an average vehicle length of 25 feet were used in calculating the 95th percentile vehicle queue lengths, summarized in **Table 7** below. The 95th percentile queue is defined to be the queue length that has only a 5-percent probability of being exceeded during the analysis time period. The mean queue length is a more accurate characterization of what the average driver would experience.

Table 7: Summary of 95 th Percentile Queue Analysis Results											
Queue Length (feet)											
Intersection		Available Storage	Existing			No-Build			Build		
Approach	Movement		AM	PM	FRI	AM	PM	FRI	AM	PM	FRI
1. Houses Corner Road & Lafayette Road (Signalized)											
Eastbound (Lafayette Road)	L	275	25	25	25	25	25	28	25	28	30
	TR	1,000*	343	313	305	365	333	325	305	360	390
Westbound (Lafayette Road)	L	320	40	30	43	43	33	45	65	43	68
	TR	1,000*	250	428	420	263	465	455	210	495	543
Northbound (Houses Corner Road)	L	180	58	88	88	58	90	90	63	100	103
	TR	580*	68	90	78	70	93	83	83	155	143
Southbound (Houses Corner Road)	L	175	75	35	43	78	35	45	78	38	45
	TR	450*	48	80	43	50	83	45	73	90	50
2. Wilson Drive/White Lake Road & Lafayette Road (Signalized)											
Eastbound (Lafayette Road)	L	150	38	38	35	43	50	48	43	50	48
	TR	1,100*	430	298	375	503	378	475	555	338	493
Westbound (Lafayette Road)	L	150	55	25	25	65	25	25	70	25	25
	TR	1,000*	328	470	483	375	615	623	423	623	633
Northbound (Wilson Drive)	L	120	25	103	60	25	100	60	60	113	70
	TR	900*	45	333	283	48	195	165	48	195	165
Southbound (White Lake Road)	L	165	215	248	140	85	210	240	83	210	240
	TR	2,400*	85	43	105	85	40	103	88	40	103

Table 7: Summary of 95 th Percentile Queue Analysis Results											
Queue Length (feet)											
Intersection		Available Storage	Existing			No-Build			Build		
Approach	Movement		AM	PM	FRI	AM	PM	FRI	AM	PM	FRI
3. Existing Site Access & Demarest Road (Unsignalized)											
Eastbound (Demarest Road)	L	630*	0	0	0	0	0	0	25	0	0
Westbound (Demarest Road)	L	1,000*	0	0	0	0	0	0	0	0	0
Northbound (Private Driveway)	LTR	125*	0	0	0	0	0	0	0	0	0
Southbound (Existing Site Access)	L	150*	0	0	0	0	0	0	25	25	25
	R	150*	0	0	0	0	0	0	0	25	25
4. Proposed Site Access & Demarest Road (Unsignalized)											
Eastbound (Demarest Road)	L	N/A							0	0	0
Southbound (Proposed Site Access)	LR	N/A							0	25	25
5. Houses Corner Road & Demarest Road (Unsignalized)											
Eastbound (Demarest Road)	LR	1,000*	25	25	0	25	25	25	25	25	25
Northbound (Houses Corner Road)	L	1,400*	25	25	25	25	25	25	25	25	25

Note: 95th percentile queue lengths provided are based on the HCM6th analysis results.

* - Distance to nearest upstream intersection

The analysis results indicated that the available queue storage is sufficient to accommodate build traffic volumes at each study intersection with the exception of the southbound left-turn lane at Wilson Drive/White Lake Road & Lafayette Road (NJ Route 15). The 95th percentile queue lengths for the southbound left-turn movement at this intersection exceed the available storage for all scenarios and the queue length does not increase between the future no-build and future build conditions. It should be noted that the proposed warehouse development does not add trips to this movement.

CONCLUSIONS AND RECOMMENDATIONS

Based upon capacity and queue analysis, the study intersections are expected to operate at an acceptable level of service in the build-out year of 2023 with the addition of project-generated traffic. Therefore, no mitigation measures are proposed to reduce the impact of the project on the study area network.

REFERENCES

Samimi, et al., "A behavioral analysis of freight mode choice decisions." *Transportation Planning and Technology*, vol. 34, no. 8, Dec. 2011, pp. 857-869
<<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.868.3318&rep=rep1&type=pdf>>

APPENDIX

APPENDIX A

Correspondence

2021.07.20 Traffic Methodology Zoom Meeting Meeting Summary

RE: FCL - Sparta
Traffic Methodology
33 Demarest Road

Date: July 20, 2021

Time: 12:00 pm

Location: Zoom Meeting

Attendees	Organization	Email
Stan Puszczy	CP Engineers	Stan_Puszczy@cpengineers.com
Dave Clark	CP Engineers	dave.clark@cpengineers.com
Tony Diggan	Kimley-Horn	Tony.Diggan@kimley-horn.com
Adam Gibson	Kimley-Horn	adam.gibson@kimley-horn.com
Brian Liebeskind	Kimley-Horn	Brian.Liebeskind@kimley-horn.com
Lisa Juan	Kimley-Horn	Lisa.juan@kimley-horn.com

The following statements represent our understanding of the key items discussed during the Zoom meeting held on Tuesday, July 20, 2021, regarding the FCL Sparta Project:

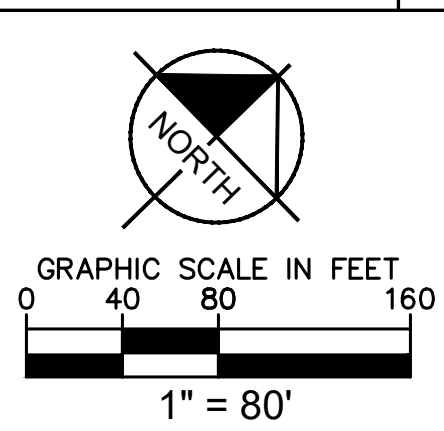
- The Dunkin Donuts near the project site did not prepare a traffic study.
- Kimley-Horn will collect Automatic Traffic Record (ATR) counts along Route 15 and compare it with NJDOT's historical count to develop an appropriate calibration/COVID-19 factor.
- The previous traffic study that was prepared and provided to Kimley-Horn, *NJDOT Traffic Impact Assessment for North Village at Sparta Proposed Mix-Use Development, 2014*, evaluated a project that has been constructed; thus, the traffic count data included with the study will not be applicable.
- The study area will include the following intersections and Friday traffic counts will be reviewed.
 - Route 15 & Houses Corner Road
 - Route 15 & White Lake Road/Wilson Drive
 - Houses Corner Road & Demarest Road
 - Demarest Road & Existing Site Driveway
 - Demarest Road & Proposed Site Driveway
- Due to the unique location of the project site with the proximity and use of the rail line, it was suggested to conduct two scenarios due to modal split; 1) only truck traffic and, 2) shift a portion of the truck traffic to rail.
- It was communicated that the Planning Board may ask if Kimley-Horn reviewed Friday afternoon traffic conditions. Although Friday is an anomaly and not a typical weekday, Kimley-Horn should at least understand the impacts because the perception of traffic conditions on a Friday along Route 15 is that there is a lot of congestion.
- There are a handful of planned vicinity developments but applications have not been submitted. Therefore, the use of the NJDOT background growth factor accounting for these planned vicinity developments will be sufficient.
- There should not be other planned vicinity developments that Kimley-Horn will specifically need to account for within the traffic study.

- Kimley-Horn would like to do a page turn late July/early August. The Applicant will first pursue a preliminary site plan approval and then final. Kimley-Horn plans to submit the application this calendar year.
- CP Engineers did not provide a preference on Synchro outputs but Kimley-Horn will provide HCM 6th where possible. CP Engineers will check with the Board Engineer to determine if there is a preference and get back with Kimley-Horn.
- Dave Simmons is the Engineer and will provide a comprehensive review of traffic along with the Board.
- It was suggested before the Applicant has a hearing but after the page turn of the site plan, to receive and resolve the Township comments. Township staff indicated that Board members and the Public will take issues with open comments.

The statements and information represent our understanding of the items discussed in the referenced meeting. If Kimley-Horn and Associates, Inc. has misrepresented any statements made by any of the attendees, please notify us immediately so that we may revise and redistribute the meeting minutes. If no response is received within five business days, the information contained in this document will be considered true and accurate.

APPENDIX B

Background Information

[illegible]

REFERENCES:

1. ALTA BOUNDARY AND TOPOGRAPHICAL SURVEY PREPARED BY CONTROL POINT

Kimley»»Horn

902 CARNEGIE CENTER BLVD., SUITE 450, PRINCETON, NJ 08540
 PHONE: 609-661-2434
 WWW.KIMLEY-HORN.COM

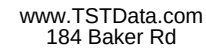
CERTIFICATE OF AUTHORIZATION No. 3040803000

PROFESSIONAL ENGINEER
 NEW JERSEY LICENSE No. 447260

J. W. DIGGAN
 LICENSED PROFESSIONAL

APPENDIX C

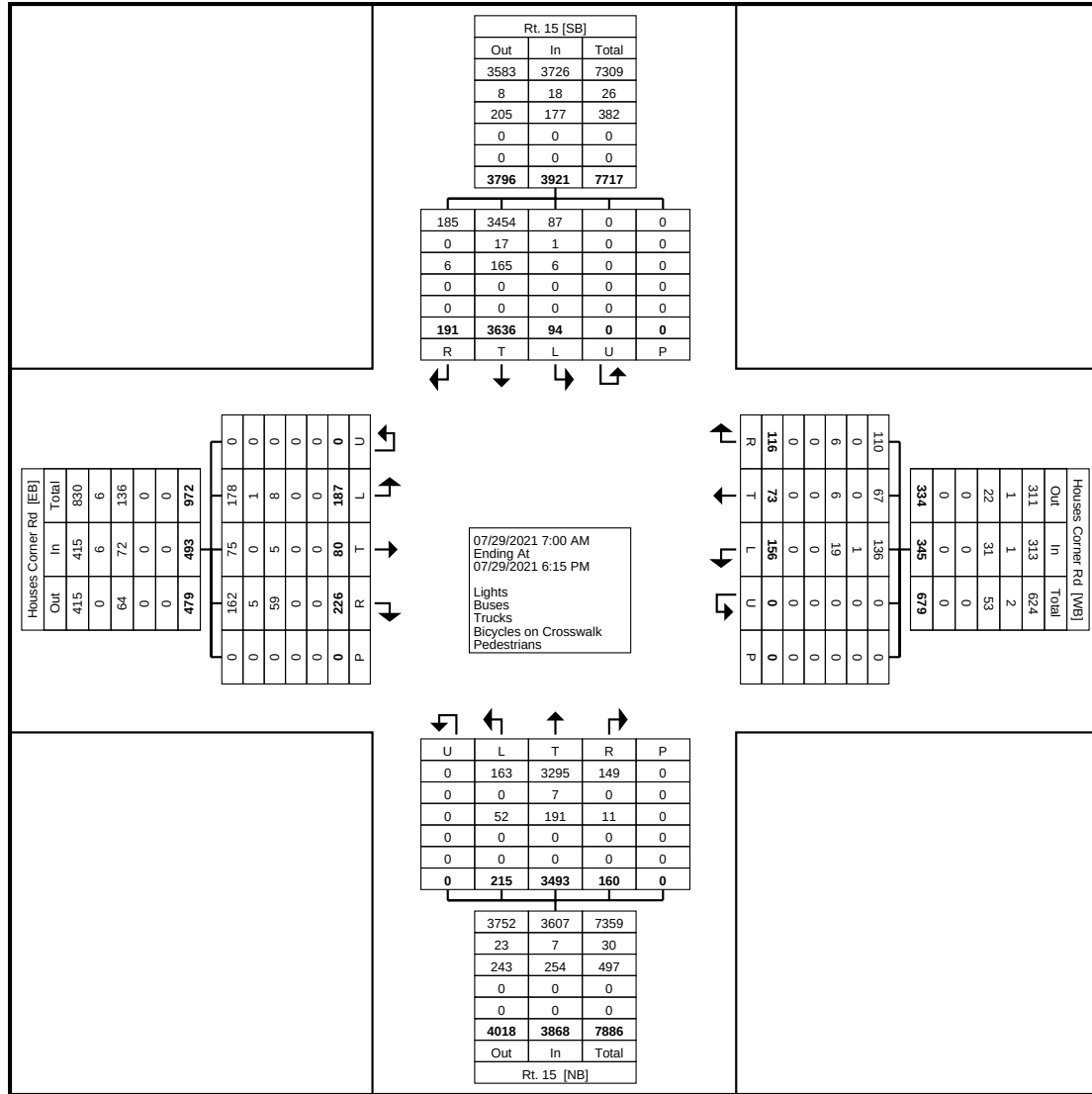
Data Collection



Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rt. 15 & Houses
Corner Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 1

Start Time	Houses Corner Rd							Houses Corner Rd							Rt. 15							Rt. 15							Int. Total	
	Eastbound							Westbound							Northbound							Southbound								
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total		
7:00 AM	2	7	13	5	0	0	27	8	5	2	0	0	0	15	14	103	5	0	0	0	0	122	2	255	3	1	0	0	261	425
7:15 AM	16	6	5	3	0	0	30	15	8	0	4	0	0	27	15	140	4	2	0	0	0	161	3	268	3	0	0	0	274	492
7:30 AM	9	6	8	11	0	0	34	15	9	1	4	0	0	29	20	151	9	5	0	0	0	185	8	235	7	0	0	0	250	498
7:45 AM	16	4	14	3	0	0	37	13	4	6	3	0	0	26	18	212	12	1	0	0	0	243	6	246	3	0	0	0	255	561
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8:00 AM	10	2	17	5	0	0	34	19	3	4	3	0	0	29	15	182	8	0	0	0	0	205	8	251	10	3	0	0	272	540
8:15 AM	14	8	10	2	0	0	34	20	5	5	3	0	0	33	15	210	14	1	0	0	0	240	8	245	6	1	0	0	260	567
8:30 AM	13	7	9	1	0	0	30	9	8	8	3	0	0	28	7	203	12	0	0	0	0	222	6	263	6	0	0	0	275	555
8:45 AM	15	6	5	6	0	0	32	20	7	6	9	0	0	42	15	184	16	3	0	0	0	218	7	258	6	2	0	0	273	565
Hourly Total	52	23	41	14	0	0	130	68	23	23	18	0	0	132	52	779	50	4	0	0	0	885	29	1017	28	6	0	0	1080	2227
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	14	5	9	6	0	0	34	3	5	5	5	0	0	18	10	285	13	4	0	0	0	312	7	239	21	0	0	0	267	631
4:15 PM	13	6	9	6	0	0	34	6	3	3	8	0	0	20	20	275	9	0	0	0	0	304	7	222	18	2	0	0	249	607
4:30 PM	9	4	15	6	0	0	34	6	7	4	2	0	0	19	14	227	9	2	0	0	0	252	7	196	14	1	0	0	218	523
4:45 PM	19	5	6	7	0	0	37	7	4	4	3	0	0	18	14	279	8	0	0	0	0	301	5	207	14	0	0	0	226	582
Hourly Total	55	20	39	25	0	0	139	22	19	16	18	0	0	75	58	1066	39	6	0	0	0	1169	26	864	67	3	0	0	960	2343
5:00 PM	12	1	15	8	0	0																								



Turning Movement Data Plot

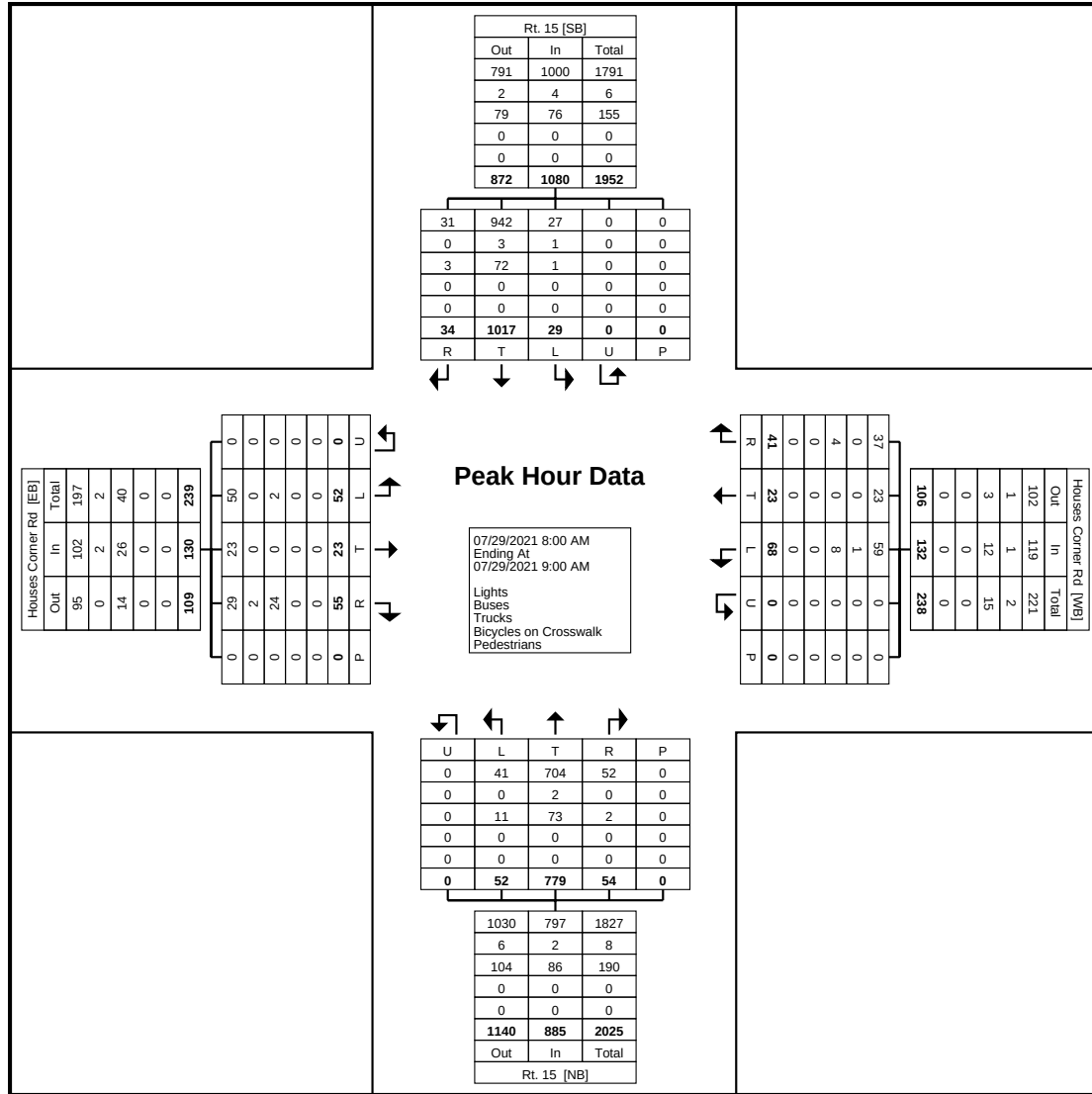


Coatesville, Pennsylvania, United States 19320
610-466-1469
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Count Name: Rt. 15 & Houses
Corner Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 3

[illegible]

Sparta, NJ
Route 15 & Houses Corner Rd
Thursday, July 29, 2021
Location: 41.072555, -74.65583



Turning Movement Peak Hour Data Plot (8:00 AM)

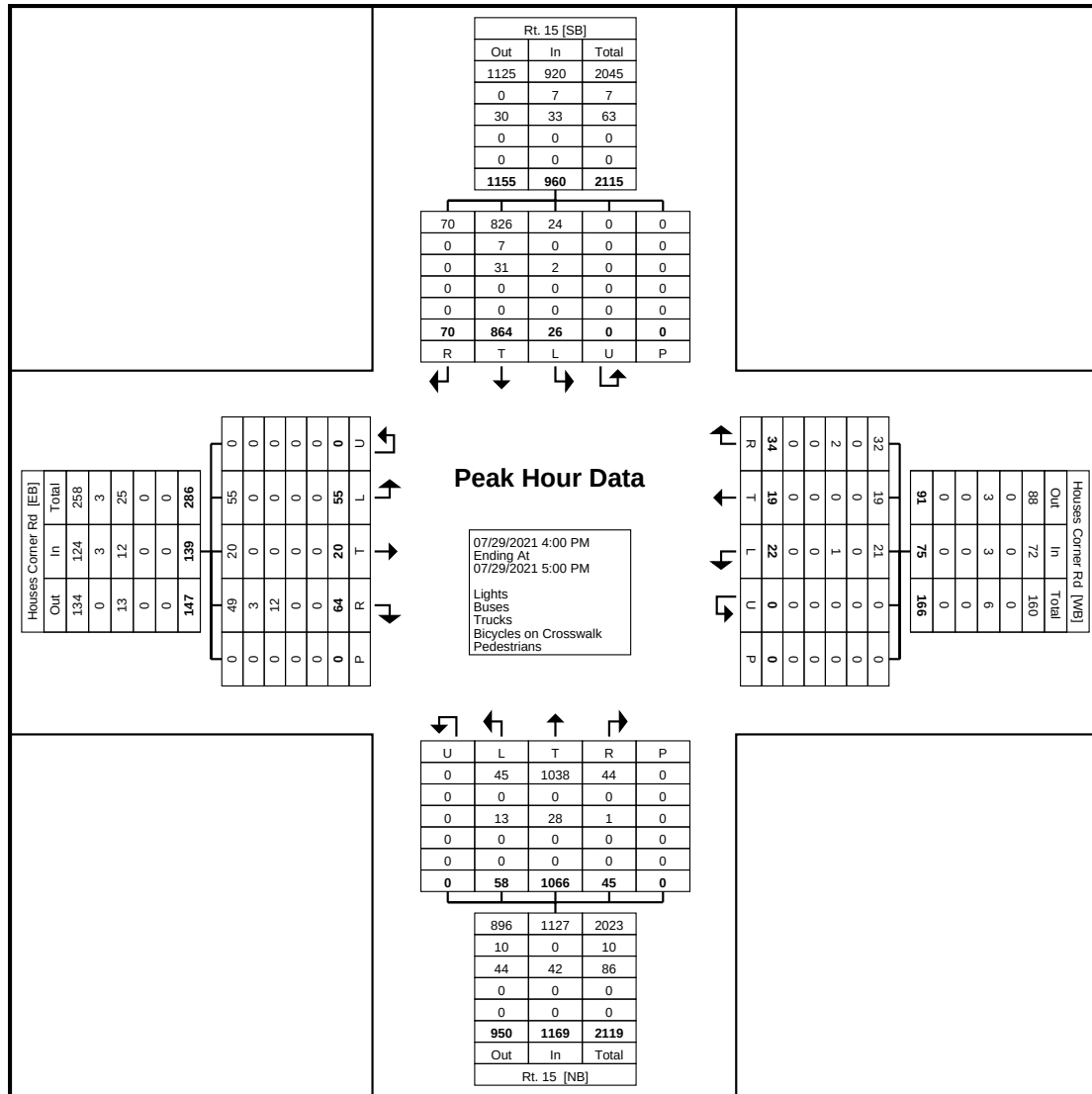


Coatesville, Pennsylvania, United States 19320
610-466-1469
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Count Name: Rt. 15 & Houses
Corner Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 5

[illegible]

Sparta, NJ
Route 15 & Houses Corner Rd
Thursday, July 29, 2021
Location: 41.072555, -74.65583



Turning Movement Peak Hour Data Plot (4:00 PM)

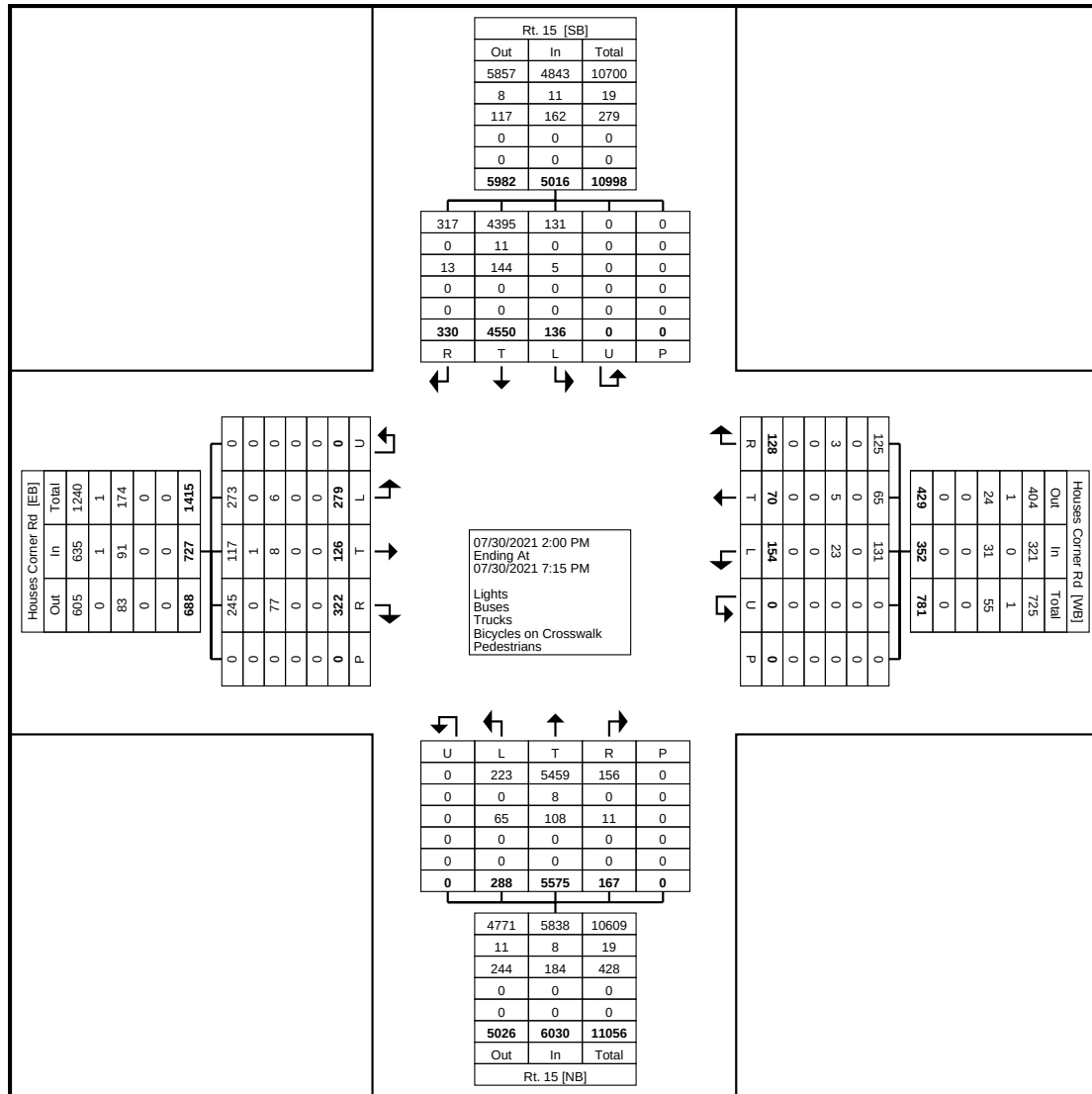


Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rt. 15 & Houses
Corner Rd Fri
Site Code:
Start Date: 07/30/2021
Page No: 1

Start Time	Houses Corner Rd							Houses Corner Rd							Rt. 15							Rt. 15							Int. Total
	Eastbound							Westbound							Northbound							Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
2:00 PM	11	5	18	6	0	0	40	9	2	4	1	0	0	16	24	256	4	1	0	0	285	4	229	24	2	0	0	259	600
2:15 PM	17	9	11	9	0	0	46	7	2	3	3	0	0	15	10	277	7	1	0	0	295	5	219	20	0	0	0	244	600
2:30 PM	18	6	7	7	0	0	38	1	2	2	0	0	0	5	10	271	8	0	0	0	289	8	256	10	1	0	0	275	607
2:45 PM	13	12	12	2	0	0	39	7	2	3	2	0	0	14	18	281	14	1	0	0	314	12	231	11	4	0	0	258	625
Hourly Total	59	32	48	24	0	0	163	24	8	12	6	0	0	50	62	1085	33	3	0	0	1183	29	935	65	7	0	0	1036	2432
3:00 PM	20	7	15	9	0	0	51	22	14	6	6	0	0	48	23	242	9	7	0	0	281	11	250	15	2	0	0	278	658
3:15 PM	22	7	15	7	0	0	51	15	5	9	5	0	0	34	17	264	6	0	0	0	287	7	239	17	1	0	0	264	636
3:30 PM	10	9	14	9	0	0	42	9	5	4	5	0	0	23	15	286	2	2	0	0	305	3	255	15	0	0	0	273	643
3:45 PM	14	5	12	9	0	0	40	8	4	7	4	0	0	23	19	277	6	1	0	0	303	7	220	17	0	0	0	244	610
Hourly Total	66	28	56	34	0	0	184	54	28	26	20	0	0	128	74	1069	23	10	0	0	1176	28	964	64	3	0	0	1059	2547
4:00 PM	13	12	8	8	0	0	41	7	4	3	2	0	0	16	12	272	6	3	0	0	293	8	248	24	4	0	0	284	634
4:15 PM	8	13	9	6	0	0	36	12	2	2	2	0	0	18	17	287	13	2	0	0	319	11	242	16	2	0	0	271	644
4:30 PM	17	3	10	12	0	0	42	6	5	3	3	0	0	17	20	288	12	5	0	0	325	9	225	20	2	0	0	256	640
4:45 PM	15	8	6	7	0	0	36	11	5	6	1	0	0	23	16	303	8	0	0	0	327	6	221	11	0	0	0	238	624
Hourly Total	53	36	33	33	0	0	155	36	16	14	8	0	0	74	65	1150	39	10	0	0	1264	34	936	71	8	0	0	1049	2542
5:00 PM	15	7	8	12	0	0	42	11	3	3	5	0	0	22	17	284	9	0	0	0	310	12	243	23	1	0	0	279	653
5:15 PM	11	5	7	11	0	0	34	0	3	2	2	0	0	7	12	284	6	2	0	0	304	2	290	18	4	0	0	314	659
5:30 PM	20	5	6	9	0	0	40	5	1	2	1	0	0	9	12	281	6	0	0	0	299	8	233	11	0	0	0	252	600
5:45 PM	13	6	3	5	0	0	27	5</																					

Sparta, NJ
Route 15 & Houses Corner Rd
Friday, July 30, 2021
Location: 41.072555, -74.65583



Turning Movement Data Plot

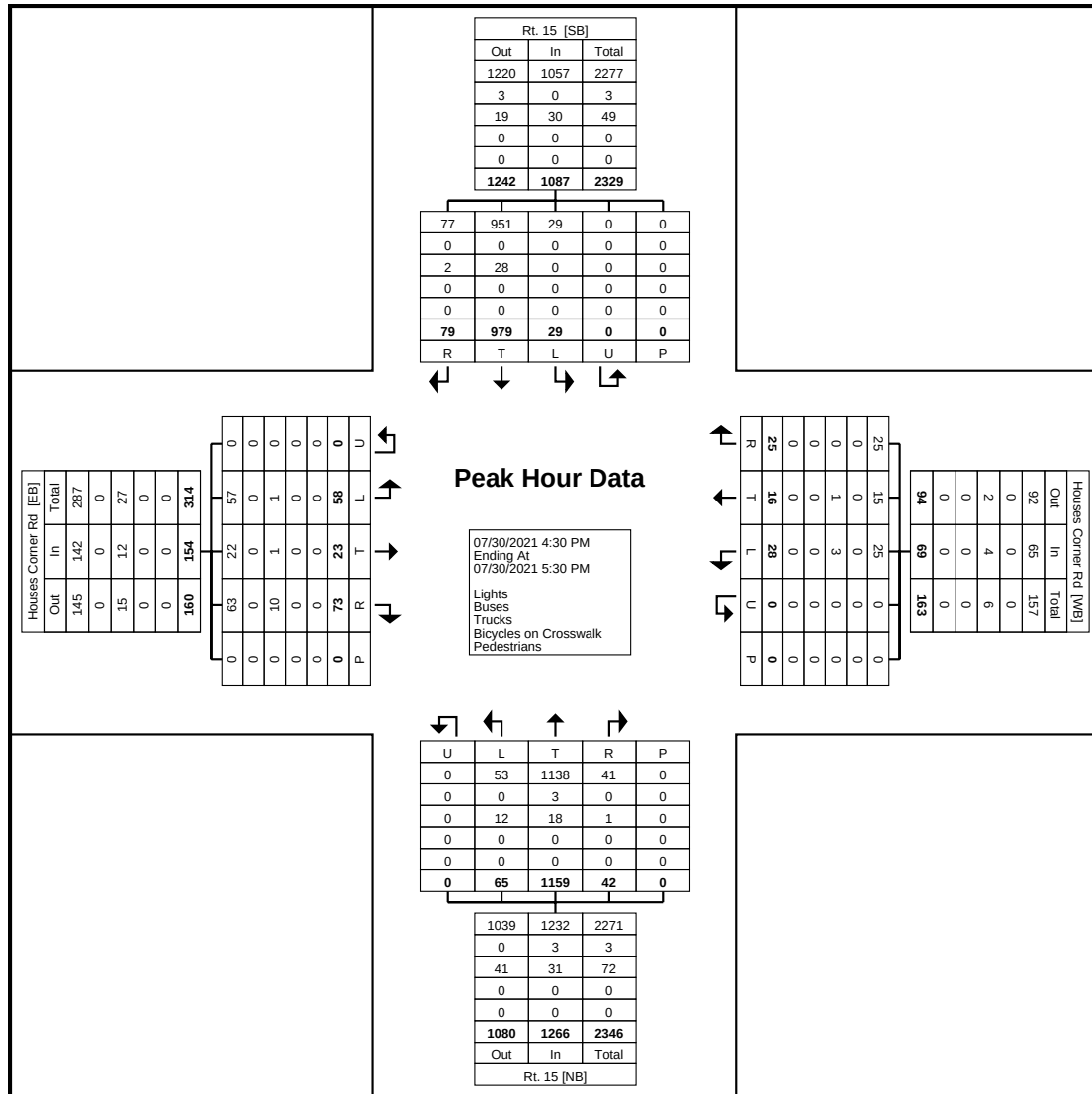


Coatesville, Pennsylvania, United States 19320
610-466-1469
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Count Name: Rt. 15 & Houses
Corner Rd Fri
Site Code:
Start Date: 07/30/2021
Page No: 3

[illegible]

Sparta, NJ
Route 15 & Houses Corner Rd
Friday, July 30, 2021
Location: 41.072555, -74.65583



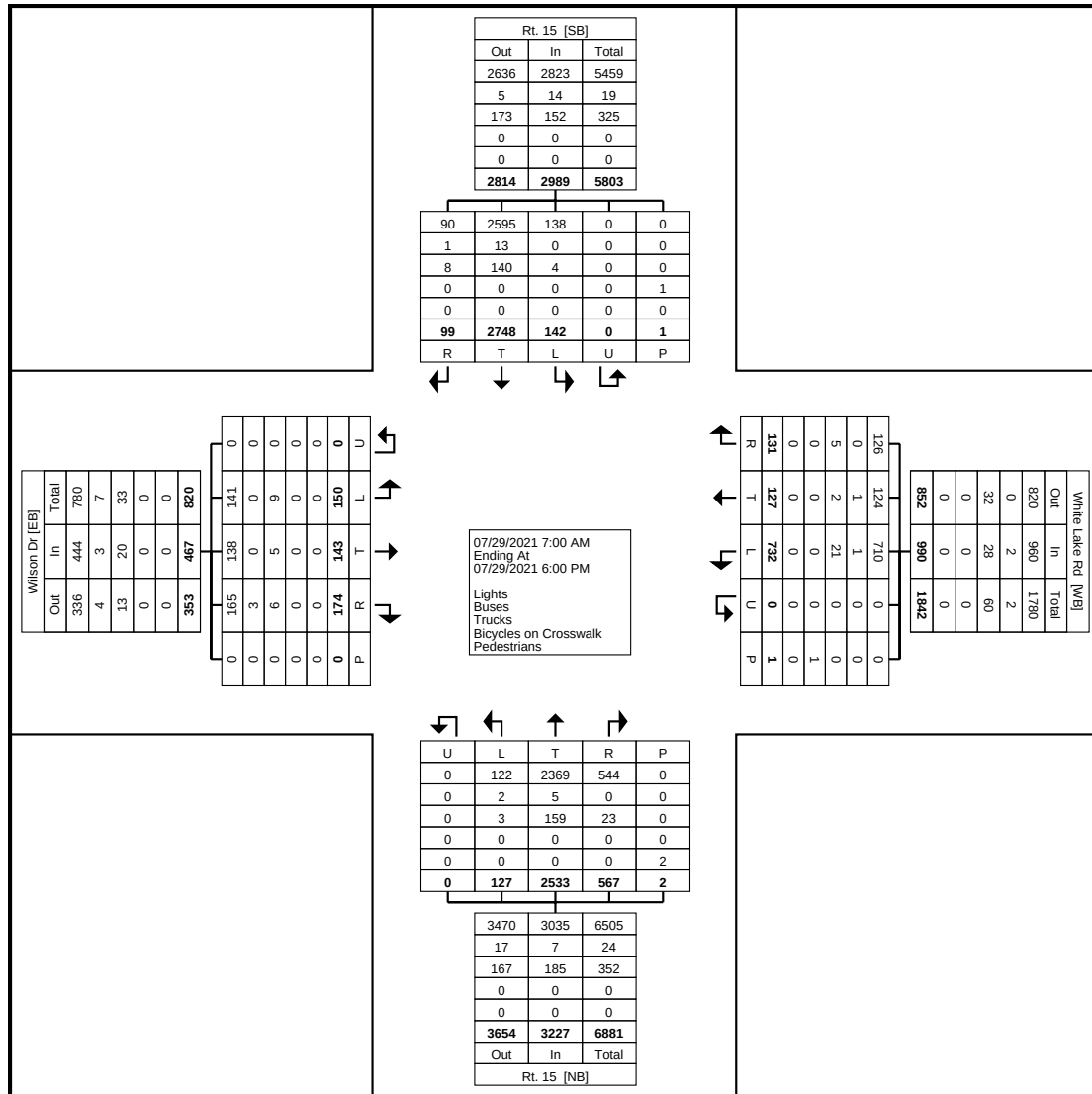
Turning Movement Peak Hour Data Plot (4:30 PM)



Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rt. 15 & White
Lake Rd/Wilson Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 1

Start Time	Wilson Dr							White Lake Rd							Rt. 15							Rt. 15							Int. Total
	Eastbound							Westbound							Northbound							Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:00 AM	0	3	7	0	0	0	10	33	8	3	2	0	1	46	7	61	21	1	0	0	90	6	213	5	1	0	1	225	371
7:15 AM	5	1	1	2	0	0	9	52	4	4	2	0	0	62	7	104	25	2	0	2	138	6	209	8	1	0	0	224	433
7:30 AM	5	1	2	0	0	0	8	44	10	1	3	0	0	58	6	112	35	0	0	0	153	10	210	8	0	0	0	228	447
7:45 AM	5	8	4	1	0	0	18	64	17	5	6	0	0	92	11	147	41	9	0	0	208	16	196	9	0	0	0	221	539
Hourly Total	15	13	14	3	0	0	45	193	39	13	13	0	1	258	31	424	122	12	0	2	589	38	828	30	2	0	1	898	1790
8:00 AM	6	5	2	3	0	0	16	60	15	6	9	0	0	90	16	120	30	3	0	0	169	14	200	9	2	0	0	225	500
8:15 AM	6	4	1	2	0	0	13	59	16	3	7	0	0	85	19	138	40	3	0	0	200	11	191	19	0	0	0	221	519
8:30 AM	5	3	12	3	0	0	23	86	16	3	3	0	0	108	14	138	48	2	0	0	202	5	176	4	0	0	0	185	518
8:45 AM	12	8	2	1	0	0	23	62	10	5	6	0	0	83	14	120	35	6	0	0	175	7	184	9	0	0	0	200	481
Hourly Total	29	20	17	9	0	0	75	267	57	17	25	0	0	366	63	516	153	14	0	0	746	37	751	41	2	0	0	831	2018
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	12	18	11	5	0	0	46	42	5	6	2	0	0	55	4	215	27	1	0	0	247	5	169	2	1	0	0	177	525
4:15 PM	13	10	9	10	0	0	42	29	5	4	8	0	0	46	6	204	28	0	0	0	238	14	159	3	0	0	0	176	502
4:30 PM	16	17	11	9	0	0	53	29	4	3	4	0	0	40	3	187	16	1	0	0	207	5	140	1	1	0	0	147	447
4:45 PM	7	5	7	7	0	0	26	39	2	3	5	0	0	49	3	221	41	1	0	0	266	9	165	1	0	0	0	175	516
Hourly Total	48	50	38	31	0	0	167	139	16	16	19	0	0	190	16	827	112	3	0	0	958	33	633	7	2	0	0	675	1990
5:00 PM	30	32	19	11	0	0	92	45	4	3	9	0	0	61	8	177	48	0	0	0	233	8	157	4	0	0	0	169	555
5:15 PM	10	12	6	4	0	0	32	36	3	1	2	0	0	42	1	204	30	0	0	0	235	16	155	2	0	0	0	173	482
5:30 PM	10	8	5	6	0	0	29	32	4	4	3	0	0	43	3	215	3												



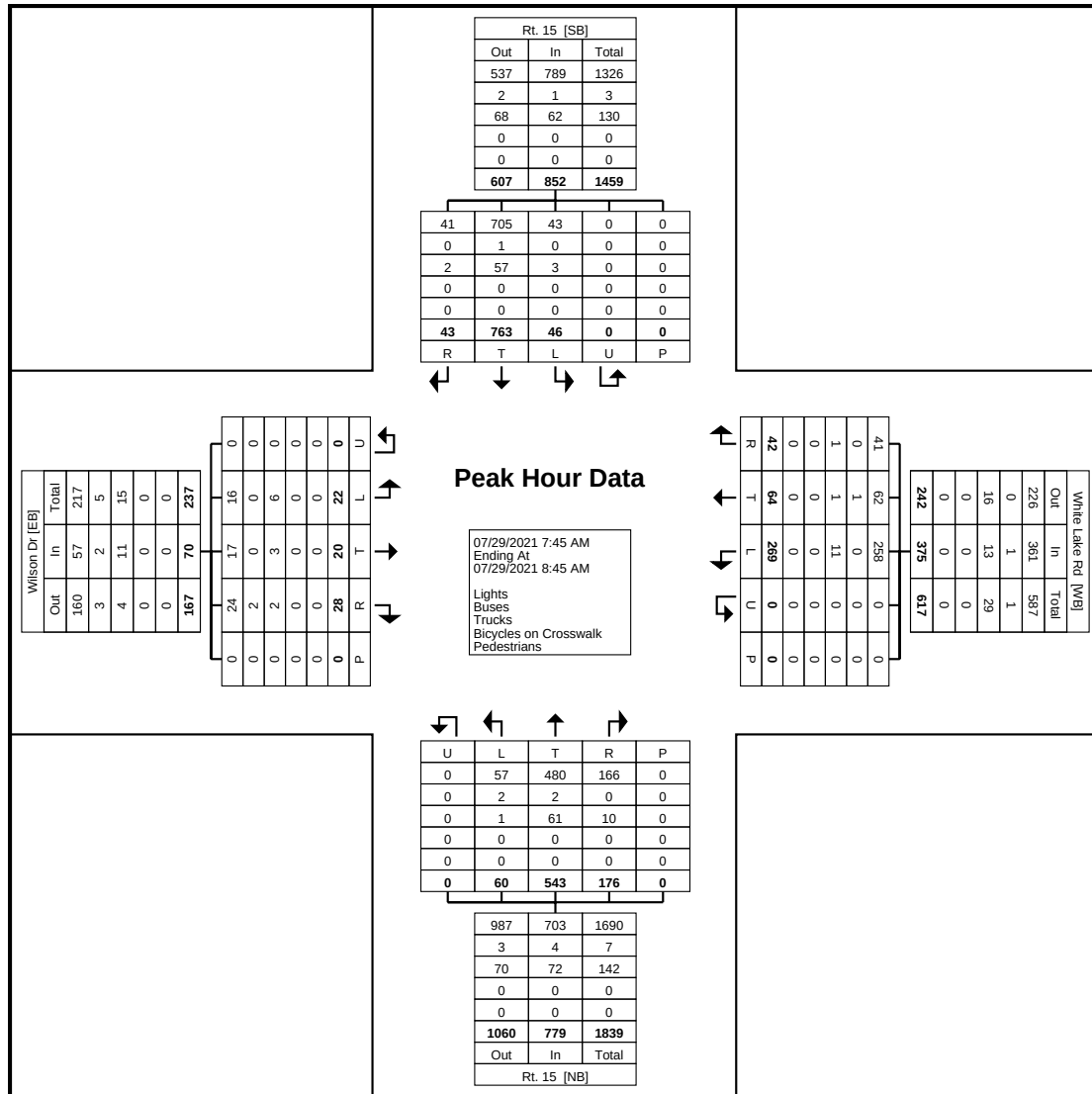
Turning Movement Data Plot



Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rt. 15 & White
Lake Rd/Wilson Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 3

[illegible]



Turning Movement Peak Hour Data Plot (7:45 AM)



Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

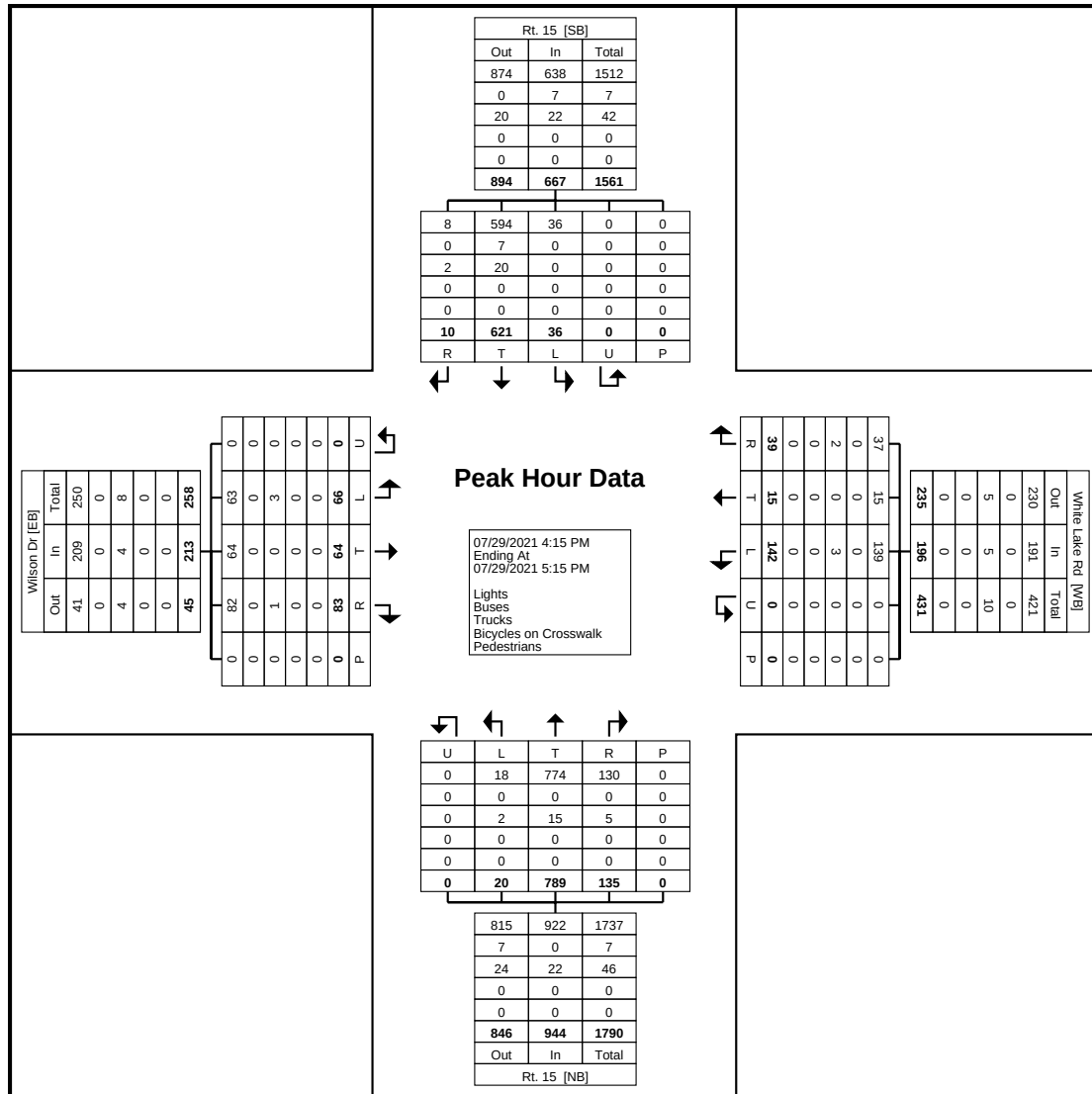
Count Name: Rt. 15 & White
Lake Rd/Wilson Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 5

[illegible]

Sparta, NJ
Route 15 & White Lake
Rd/Wilson Rd
Thursday, July 29, 2021
Location: 41.078387, -
74.663311

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Rt. 15 & White
Lake Rd/Wilson Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 6

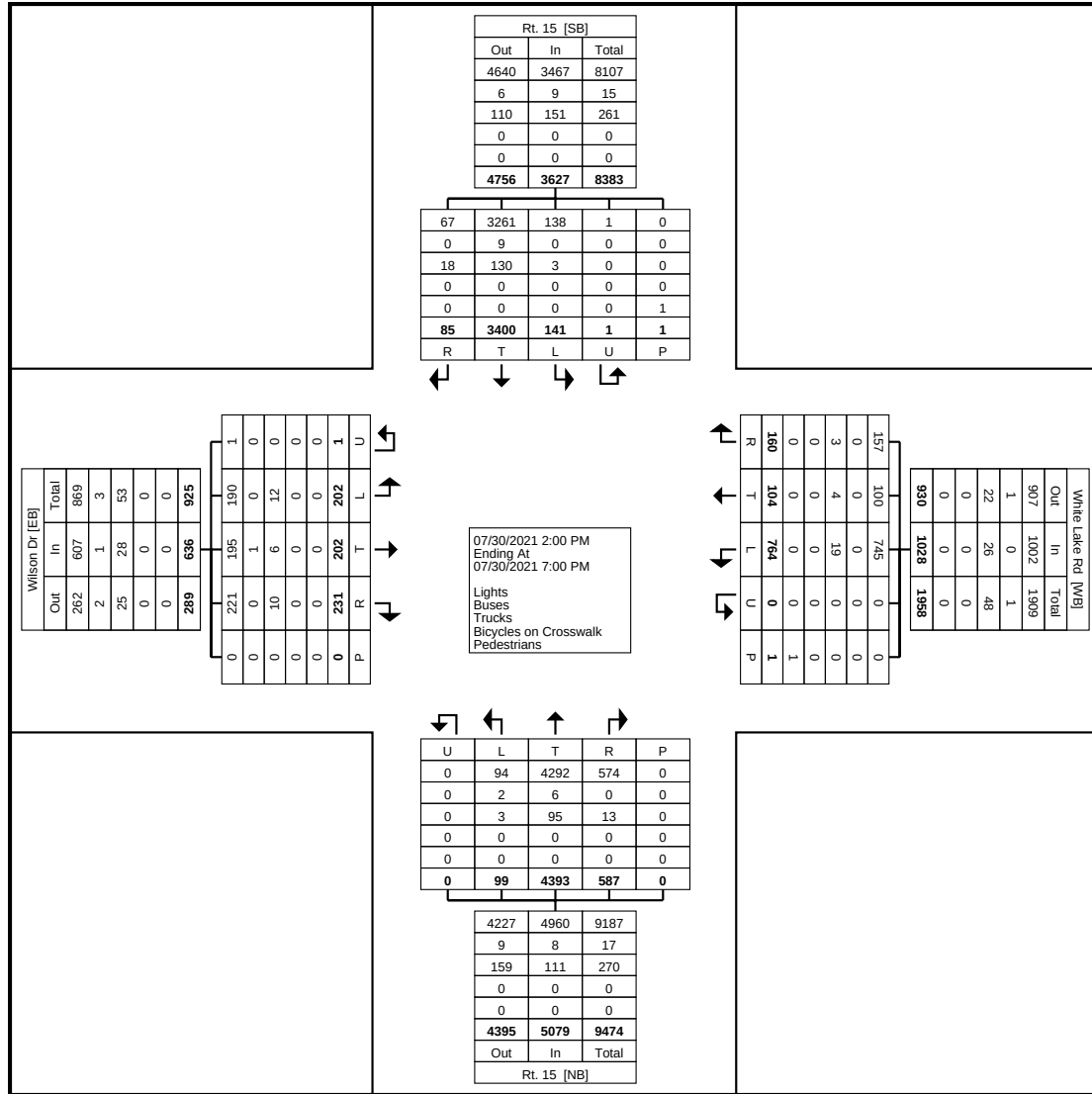


Turning Movement Peak Hour Data Plot (4:15 PM)

Turning Movement Data

Start Time	Wilson Dr Eastbound							White Lake Rd Westbound							Rt. 15 Northbound							Rt. 15 Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	
2:00 PM	19	9	9	5	0	0	42	51	8	10	4	0	0	73	8	221	22	3	0	0	254	11	166	8	2	0	0	187	556
2:15 PM	14	9	8	1	0	0	32	41	10	4	4	0	0	59	5	230	19	1	0	0	255	2	173	5	2	0	0	182	528
2:30 PM	17	16	15	7	0	0	55	41	2	2	3	0	0	48	7	214	24	0	0	0	245	9	194	2	0	0	0	205	553
2:45 PM	9	7	8	6	0	0	30	40	3	7	3	0	0	53	3	222	33	1	0	0	259	9	178	3	0	0	0	190	532
Hourly Total	59	41	40	19	0	0	159	173	23	23	14	0	0	233	23	887	98	5	0	0	1013	31	711	18	4	0	0	764	2169
3:00 PM	13	5	11	7	0	0	36	56	7	8	4	0	0	75	6	190	38	1	0	0	235	5	172	7	0	0	0	184	530
3:15 PM	8	13	8	2	0	0	31	33	8	7	4	0	1	52	2	232	28	2	0	0	264	13	200	7	1	0	1	221	568
3:30 PM	12	9	1	5	0	0	27	50	7	8	5	0	0	70	5	212	32	0	0	0	249	10	191	4	1	0	0	206	552
3:45 PM	5	11	4	5	0	0	25	40	9	7	5	0	0	61	6	211	25	0	0	0	242	5	151	7	1	1	0	165	493
Hourly Total	38	38	24	19	0	0	119	179	31	30	18	0	1	258	19	845	123	3	0	0	990	33	714	25	3	1	1	776	2143
4:00 PM	15	18	13	11	0	0	57	44	8	4	0	0	0	56	8	212	25	0	0	0	245	6	203	6	0	0	0	215	573
4:15 PM	11	11	5	4	0	0	31	27	3	2	5	0	0	37	3	209	21	1	0	0	234	17	177	3	1	0	0	198	500
4:30 PM	15	15	9	5	1	0	45	43	4	6	3	0	0	56	6	208	28	1	0	0	243	4	162	1	0	0	0	167	511
4:45 PM	6	11	3	8	0	0	28	32	5	0	1	0	0	38	5	245	27	2	0	0	279	2	159	3	1	0	0	165	510
Hourly Total	47	55	30	28	1	0	161	146	20	12	9	0	0	187	22	874	101	4	0	0	1001	29	701	13	2	0	0	745	2094
5:00 PM	21	25	15	6	0	0	67	41	8	6	3	0	0	58	6	183	35	2	0	0	226	9	188	5	0	0	0	202	553
5:15 PM	17	21	8	7	0	0	53	48	6	5	2	0	0	61	5	218	22	0	0	0	245	16	202	4	0	0	0	222	581
5:30 PM	5	7	1	6	0	0	19	38	4	3	2	0	0	47	6	235	30	1	0	0	272	7	171	3	0	0	0	181	519
5:45 PM	0	3	3	5	0	0	11	35	6	4	1	0	0	46	4	238	36	1	0	0	279	2	162	3	0	0	0	167	503
Hourly Total	43	56	27	24	0	0	150	162	24	18	8	0	0	212	21	874	123	4	0	0	1022	34	723	15	0	0	0	772	2156
6:00 PM	5	5	4	4	0	0	18	29	2	3	6	0	0	40	8	235	27	1	0	0	271	6	155	0	1	0	0	162	491
6:15 PM	5	4	5	3	0	0	17	29	4	4	4	0	0	41	1	228	30	4	0	0	263	2	144	1	1	0	0	148	469
6:30 PM	3	1	0	3	0	0	7	26	0	1	1	0	0	28	4	210	28	1	0	0	243	3	116	1	0	0	0	120	398
6:45 PM	2	2	1	0	0	0	5	20	0	3	6	0	0	29	1	240	35	0	0	0	276	3	136	1	0	0	0	140	450
Hourly Total	15	12	10	10	0	0	47	104	6	11	17	0	0	138	14	913	120	6	0	0	1053	14	551	3	2	0	0	570	1808
Grand Total	202	202	131	100	1	0	636	764	104	94	66	0	1	1028	99	4393	565	22	0	0	5079	141	3400	74	11	1	1	3627	10370
Approach %	31.8	31.8	20.6	15.7	0.2	-	-	74.3	10.1	9.1	6.4	0.0	-	-	1.9	86.5	11.1	0.4	0.0	-	-	3.9	93.7	2.0	0.3	0.0	-	-	-
Total %	1.9	1.9	1.3	1.0	0.0	-	6.1	7.4	1.0	0.9	0.6	0.0	-	9.9	1.0	42.4	5.4	0.2	0.0	-	49.0	1.4	32.8	0.7	0.1	0.0	-	35.0	-
Lights	190	195	124	97	1	-	607	745	100	92	65	0	-	1002	94	4292	553	21	0	-	4960	138	3261	58	9	1	-	3467	10036
% Lights	94.1	96.5	94.7	97.0	100.0	-	95.4	97.5	96.2	97.9	98.5	-	-	97.5	94.9	97.7	97.9	95.5	-	-	97.7	97.9	95.9	78.4	81.8	100.0	-	95.6	96.8
Buses	0	1	0	0	0	-	1	0	0	0	0	0	-	0	2	6	0	0	0	-	8	0	9	0	0	0	-	9	18
% Buses	0.0	0.5	0.0	0.0	0.0	-	0.2	0.0	0.0	0.0	0.0	-	-	0.0	2.0	0.1	0.0	0.0	-	-	0.2	0.0	0.3	0.0	0.0	0.0	-	0.2	0.2
Trucks	12	6	7	3	0	-	28	19	4	2	1	0	-	26	3	95	12	1	0	-	111	3	130	16	2	0	-	151	316
% Trucks	5.9	3.0	5.3	3.0	0.0	-	4.4	2.5	3.8	2.1	1.5	-	-	2.5	3.0	2.2	2.1	4.5	-	-	2.2	2.1	3.8	21.6	18.2	0.0	-	4.2	3.0
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Sparta, NJ
Route 15 & White Lake
Rd/Wilson Dr
Friday, July 30, 2021
Location: 41.078387, -
74.663311

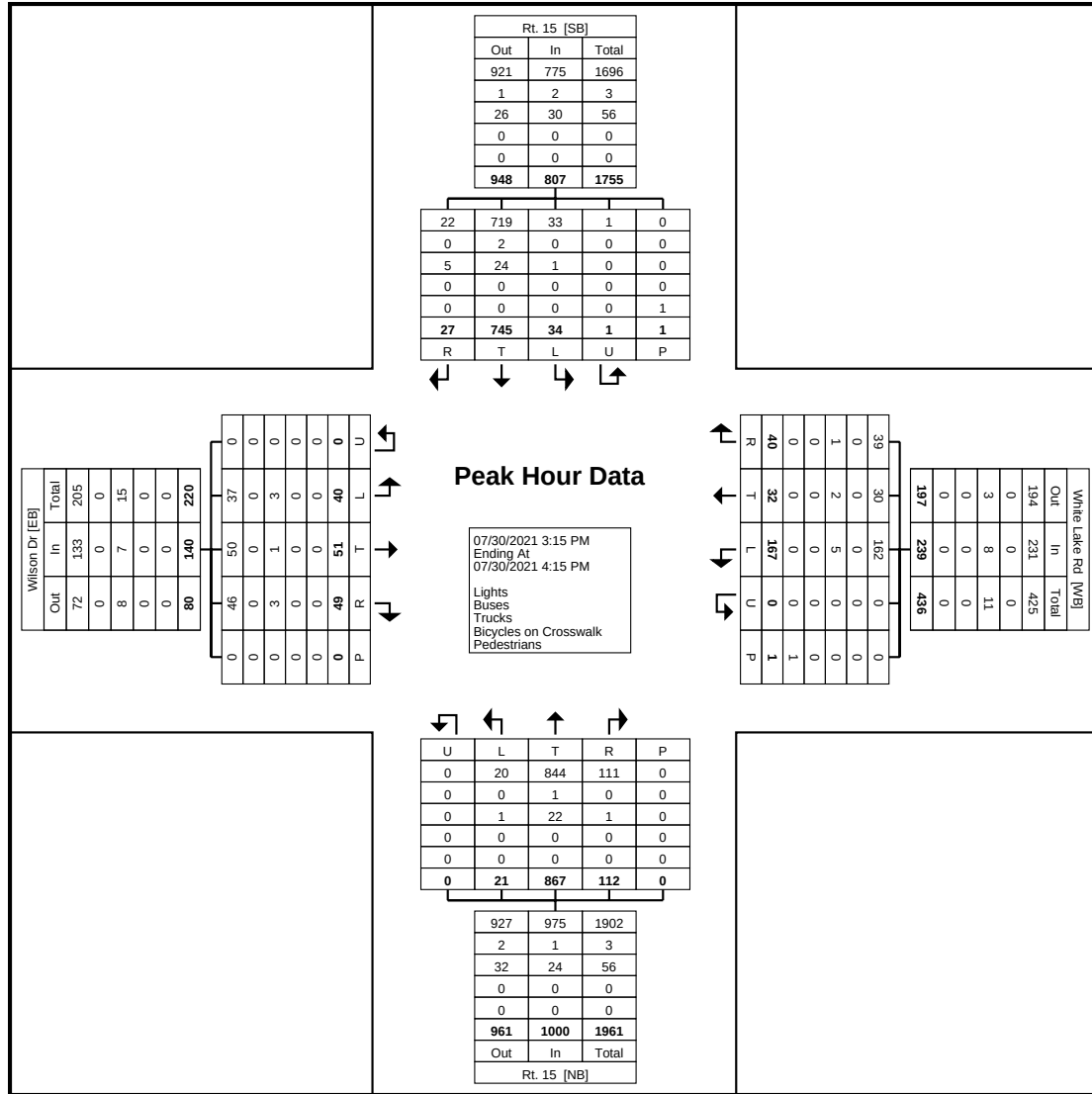


Turning Movement Data Plot

Turning Movement Peak Hour Data (3:15 PM)

Start Time	Wilson Dr Eastbound							White Lake Rd Westbound							Rt. 15 Northbound							Rt. 15 Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	
3:15 PM	8	13	8	2	0	0	31	33	8	7	4	0	1	52	2	232	28	2	0	0	264	13	200	7	1	0	1	221	568
3:30 PM	12	9	1	5	0	0	27	50	7	8	5	0	0	70	5	212	32	0	0	0	249	10	191	4	1	0	0	206	552
3:45 PM	5	11	4	5	0	0	25	40	9	7	5	0	0	61	6	211	25	0	0	0	242	5	151	7	1	1	0	165	493
4:00 PM	15	18	13	11	0	0	57	44	8	4	0	0	0	56	8	212	25	0	0	0	245	6	203	6	0	0	0	215	573
Total	40	51	26	23	0	0	140	167	32	26	14	0	1	239	21	867	110	2	0	0	1000	34	745	24	3	1	1	807	2186
Approach %	28.6	36.4	18.6	16.4	0.0	-	-	69.9	13.4	10.9	5.9	0.0	-	-	2.1	86.7	11.0	0.2	0.0	-	-	4.2	92.3	3.0	0.4	0.1	-	-	-
Total %	1.8	2.3	1.2	1.1	0.0	-	6.4	7.6	1.5	1.2	0.6	0.0	-	10.9	1.0	39.7	5.0	0.1	0.0	-	45.7	1.6	34.1	1.1	0.1	0.0	-	36.9	-
PHF	0.667	0.708	0.500	0.523	0.000	-	0.614	0.835	0.889	0.813	0.700	0.000	-	0.854	0.656	0.934	0.859	0.250	0.000	-	0.947	0.654	0.917	0.857	0.750	0.250	-	0.913	0.954
Lights	37	50	26	20	0	-	133	162	30	26	13	0	-	231	20	844	109	2	0	-	975	33	719	19	3	1	-	775	2114
% Lights	92.5	98.0	100.0	87.0	-	-	95.0	97.0	93.8	100.0	92.9	-	-	96.7	95.2	97.3	99.1	100.0	-	-	97.5	97.1	96.5	79.2	100.0	100.0	-	96.0	96.7
Buses	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	1	0	0	0	-	1	0	2	0	0	0	-	2	3
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	-	0.1	0.0	0.3	0.0	0.0	0.0	-	0.2	0.1
Trucks	3	1	0	3	0	-	7	5	2	0	1	0	-	8	1	22	1	0	0	-	24	1	24	5	0	0	-	30	69
% Trucks	7.5	2.0	0.0	13.0	-	-	5.0	3.0	6.3	0.0	7.1	-	-	3.3	4.8	2.5	0.9	0.0	-	-	2.4	2.9	3.2	20.8	0.0	0.0	-	3.7	3.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Sparta, NJ
Route 15 & White Lake
Rd/Wilson Dr
Friday, July 30, 2021
Location: 41.078387, -
74.663311



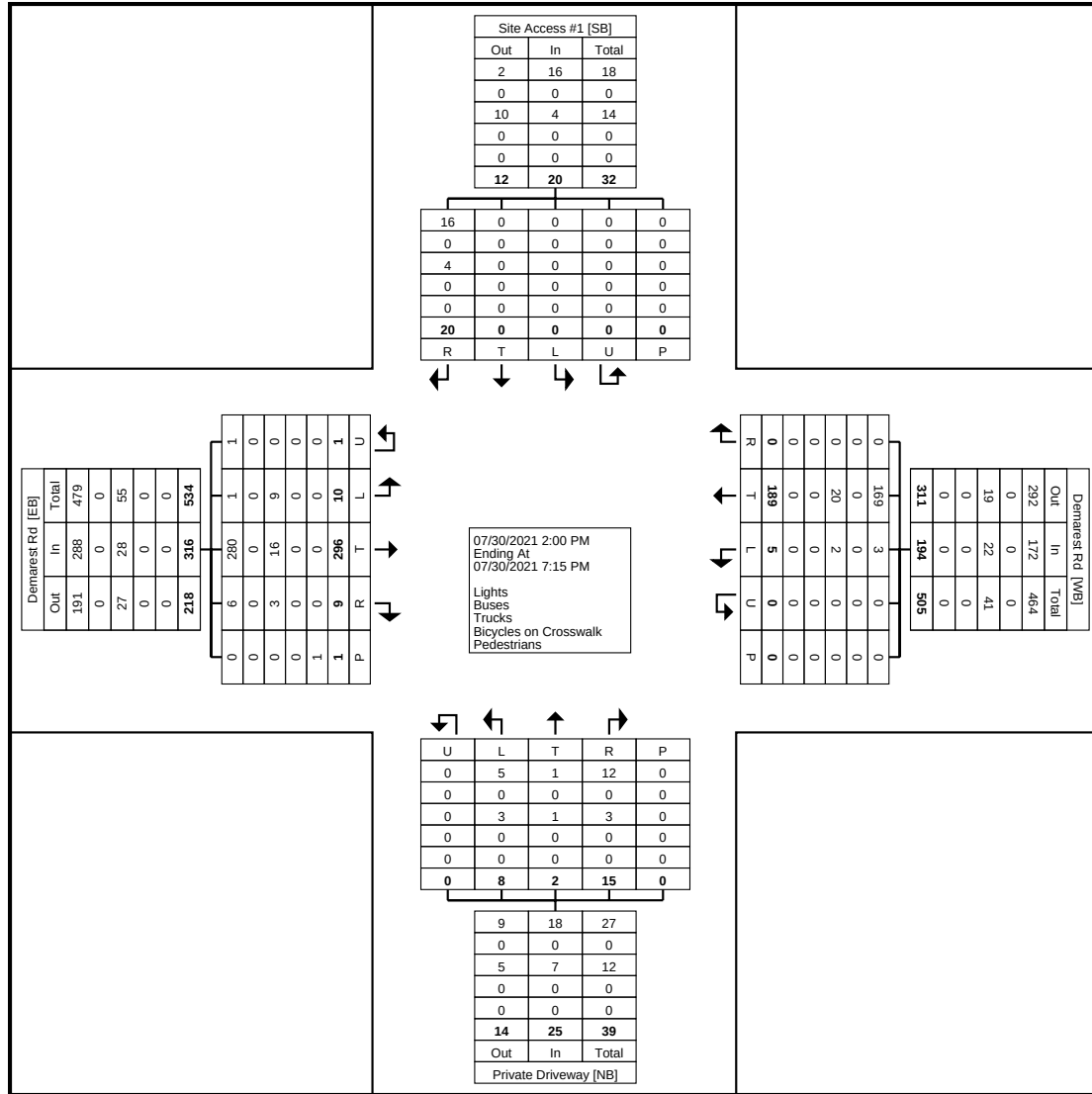


Coatesville, Pennsylvania, United States 19320
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Page No: 1

Start Time	Demarest Rd Eastbound						Demarest Rd Westbound						Private Driveway Northbound						Site Access #1 Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
2:00 PM	3	26	0	0	0	29	1	11	0	0	0	12	0	0	2	0	0	2	0	0	2	0	0	2	45
2:15 PM	0	13	1	0	0	14	1	15	0	0	0	16	2	0	0	0	0	2	0	0	2	0	0	2	34
2:30 PM	0	16	1	0	0	17	0	15	0	0	0	15	1	0	1	0	0	2	0	0	1	0	0	1	35
2:45 PM	0	9	0	0	0	9	0	11	0	0	0	11	0	0	0	0	0	0	0	0	1	0	0	1	21
Hourly Total	3	64	2	0	0	69	2	52	0	0	0	54	3	0	3	0	0	6	0	0	6	0	0	6	135
3:00 PM	1	12	1	0	0	14	0	11	0	0	0	11	1	0	2	0	0	3	0	0	1	0	0	1	29
3:15 PM	1	12	0	0	0	13	1	14	0	0	0	15	0	1	1	0	0	2	0	0	0	0	0	0	30
3:30 PM	0	24	2	0	0	26	1	13	0	0	0	14	0	0	0	0	0	0	0	0	2	0	0	2	42
3:45 PM	0	18	0	0	0	18	0	10	0	0	0	10	0	0	1	0	0	1	0	0	1	0	0	1	30
Hourly Total	2	66	3	0	0	71	2	48	0	0	0	50	1	1	4	0	0	6	0	0	4	0	0	4	131
4:00 PM	2	17	1	0	0	20	0	15	0	0	0	15	0	0	0	0	0	0	0	0	2	0	0	2	37
4:15 PM	0	20	0	0	0	20	0	7	0	0	0	7	0	0	2	0	0	2	0	0	1	0	0	1	30
4:30 PM	1	16	1	0	0	18	0	14	0	0	0	14	1	0	0	0	0	1	0	0	1	0	0	1	34
4:45 PM	1	18	0	1	1	20	0	8	0	0	0	8	0	0	0	0	0	0	0	0	3	0	0	3	31
Hourly Total	4	71	2	1	1	78	0	44	0	0	0	44	1	0	2	0	0	3	0	0	7	0	0	7	132
5:00 PM	0	21	0	0	0	21	0	7	0	0	0	7	2	0	3	0	0	5	0	0	2	0	0	2	35
5:15 PM	1	20	0	0	0	21	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	28
5:30 PM	0	9	0	0	0	9	1	8	0	0	0	9	0	0	1	0	0	1	0	0	0	0	0	0	19
5:45 PM	0	11	1	0	0	12	0	6	0	0	0	6	1	0	0	0	0	1	0	0	1	0	0	1	20
Hourly Total	1	61	1	0	0	63	1	28	0	0	0	29	3	0	4	0	0	7	0	0	3	0	0	3	102
6:00 PM	0	11	0	0	0	11	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	16
6:15 PM	0	10	0	0	0	10	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	16
6:30 PM	0	6	1	0	0	7	0	2	0																

Sparta, NJ
Demarest Rd & Driveway 1
Friday, July 30, 2021
Location: 41.068304, -
74.664883



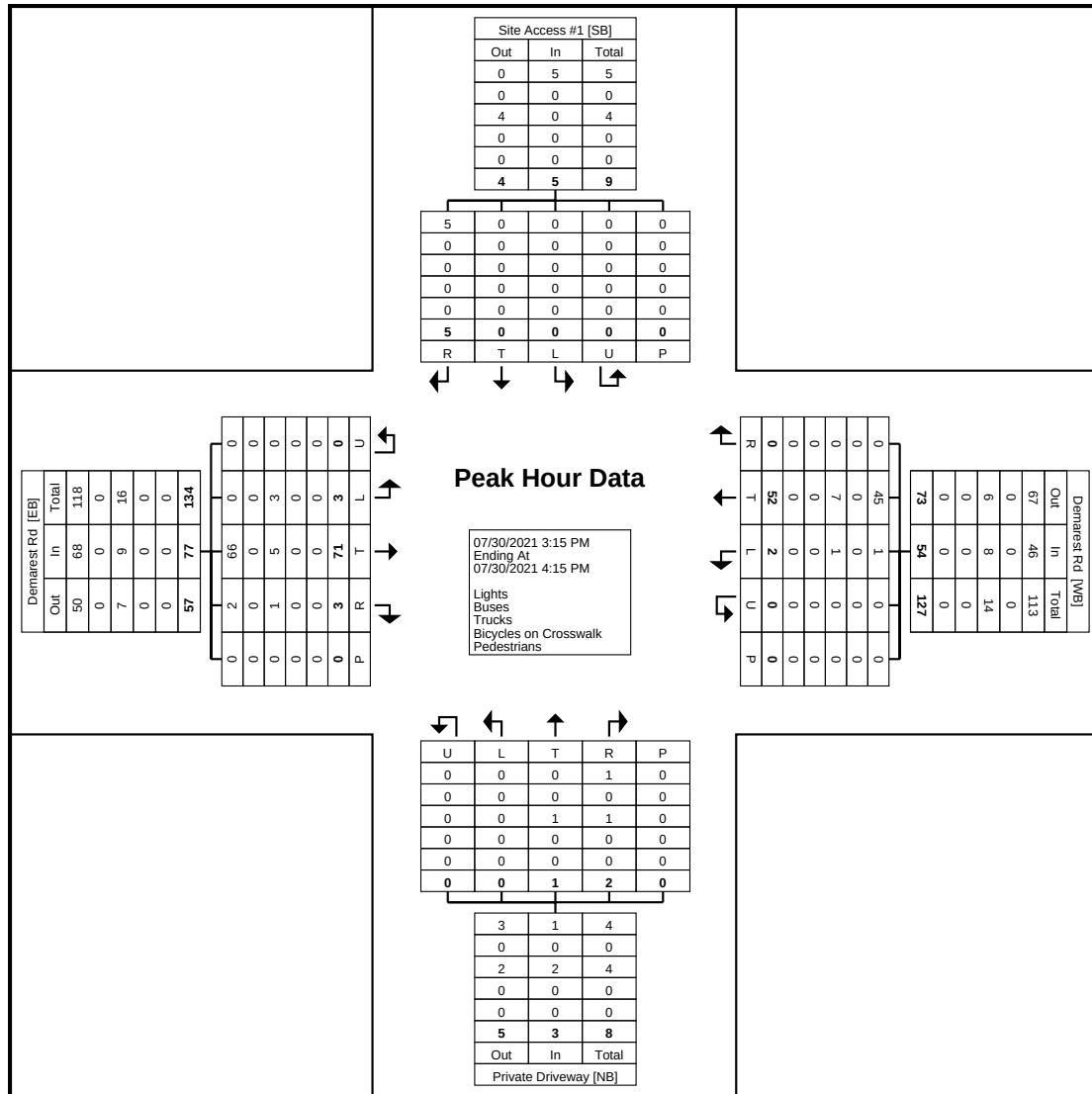
Turning Movement Data Plot



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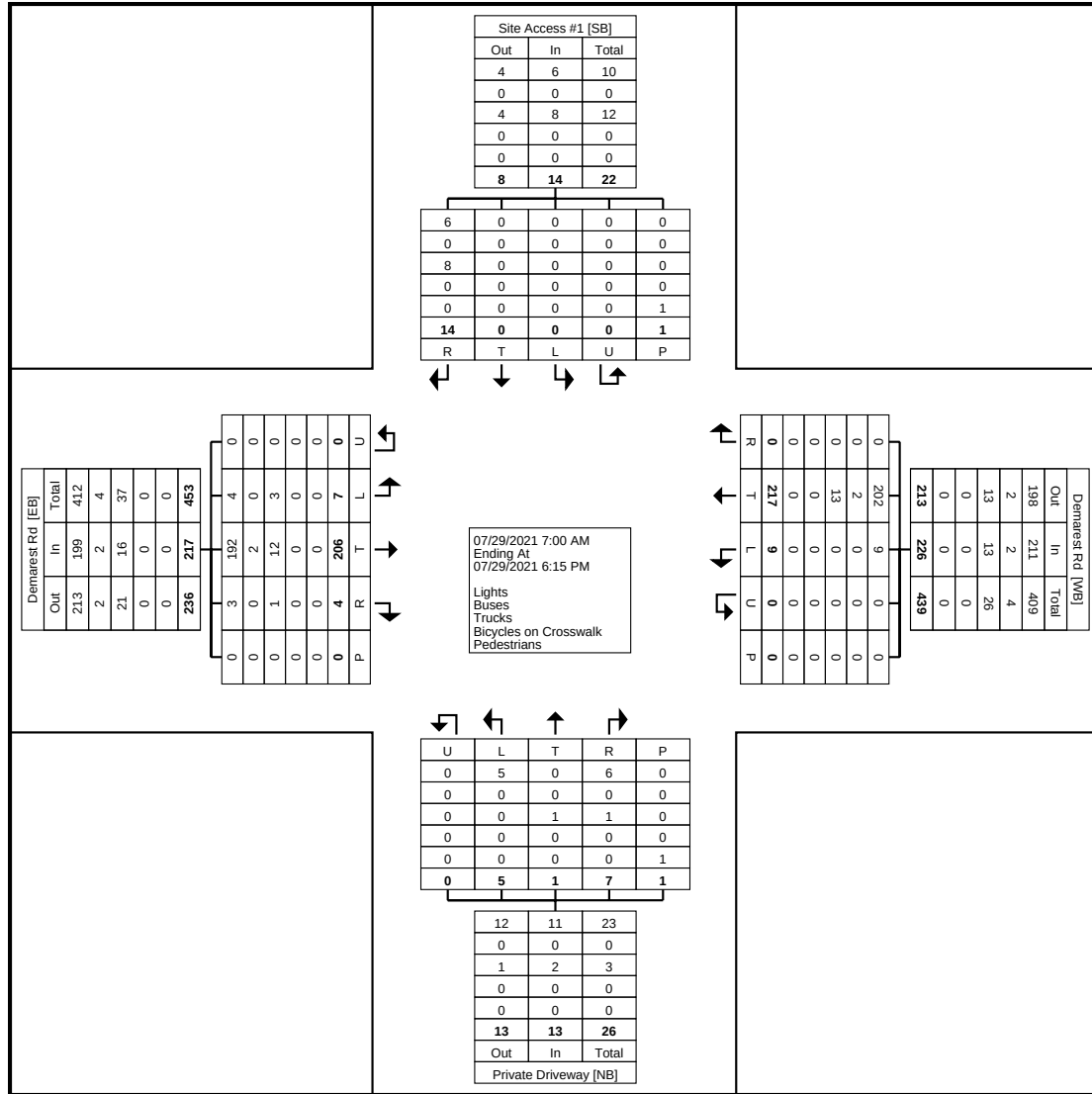
Sparta, NJ
Demarest Rd & Driveway 1
Thursday, July 29, 2021
Location: 41.068304, -
74.664883

Coatesville, Pennsylvania, United States 19320
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Count Name: Demarest Rd &
Site Access #1 Thurs
Site Code:
Start Date: 07/29/2021
Page No: 1

Turning Movement Data

Start Time	Demarest Rd Eastbound						Demarest Rd Westbound						Private Driveway Northbound						Site Access #1 Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	5	0	0	0	6	0	13	0	0	0	13	0	0	0	0	0	0	0	0	1	0	1	0	20
7:15 AM	0	7	0	0	0	7	0	11	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	18
7:30 AM	0	6	0	0	0	6	2	22	0	0	0	24	0	0	1	0	0	1	0	0	0	0	0	0	31
7:45 AM	0	6	2	0	0	8	2	24	0	0	0	26	0	0	0	0	0	0	0	0	2	0	0	2	36
Hourly Total	1	24	2	0	0	27	4	70	0	0	0	74	0	0	1	0	0	1	0	0	3	0	1	3	105
8:00 AM	1	10	0	0	0	11	1	25	0	0	0	26	0	0	0	0	0	0	0	0	2	0	0	2	39
8:15 AM	3	12	0	0	0	15	0	24	0	0	0	24	0	0	0	0	0	0	0	0	1	0	0	1	40
8:30 AM	0	8	1	0	0	9	0	14	0	0	0	14	0	0	0	0	0	0	0	0	2	0	0	2	25
8:45 AM	1	6	1	0	0	8	0	24	0	0	0	24	2	1	0	0	0	3	0	0	1	0	0	1	36
Hourly Total	5	36	2	0	0	43	1	87	0	0	0	88	2	1	0	0	0	3	0	0	6	0	0	6	140
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	1	23	0	0	0	24	2	12	0	0	0	14	0	0	1	0	0	1	0	0	1	0	0	1	40
4:15 PM	0	22	0	0	0	22	1	11	0	0	0	12	1	0	0	0	0	1	0	0	1	0	0	1	36
4:30 PM	0	20	0	0	0	20	0	8	0	0	0	8	0	0	1	0	1	1	0	0	0	0	0	0	29
4:45 PM	0	5	0	0	0	5	0	4	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	2	11
Hourly Total	1	70	0	0	0	71	3	35	0	0	0	38	1	0	2	0	1	3	0	0	4	0	0	4	116
5:00 PM	0	35	0	0	0	35	0	8	0	0	0	8	1	0	0	0	0	1	0	0	0	0	0	0	44
5:15 PM	0	18	0	0	0	18	0	11	0	0	0	11	1	0	2	0	0	3	0	0	0	0	0	0	32
5:30 PM	0	11	0	0	0	11	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	13
5:45 PM	0	12	0	0	0	12	1	5	0	0	0	6	0	0	2	0	0	2	0	0	0	0	0	0	20
Hourly Total	0	76	0	0	0	76	1	25	0	0	0	26	2	0	4	0	0	6	0	0	1	0	0	1	109
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	7	206	4	0	0	217	9	217	0	0	0	226	5	1	7	0	1	13	0	0	14	0	1	14	470
Approach %	3.2	94.9	1.8	0.0	-	-	4.0	96.0	0.0	0.0	-	-	38.5	7.7	53.8	0.0	-	-	0.0	0.0	100.0	0.0	-	-	-
Total %	1.5	43.8	0.9	0.0	-	46.2	1.9	46.2	0.0	0.0	-	48.1	1.1	0.2	1.5	0.0	-	2.8	0.0	0.0	3.0	0.0	-	3.0	-
Lights	4	192	3	0	-	199	9	202	0	0	-	211	5	0	6	0	-	11	0	0	6	0	-	6	427
% Lights	57.1	93.2	75.0	-	-	91.7	100.0	93.1	-	-	-	93.4	100.0	0.0	85.7	-	-	84.6	-	-	42.9	-	-	42.9	90.9
Buses	0	2	0	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	4
% Buses	0.0	1.0	0.0	-	-	0.9	0.0	0.9	-	-	-	0.9	0.0	0.0	0.0	-	-	0.0	-	-	0.0	-	-	0.0	0.9
Trucks	3	12	1	0	-	16	0	13	0	0	-	13	0	1	1	0	-	2	0	0	8	0	-	8	39
% Trucks	42.9	5.8	25.0	-	-	7.4	0.0	6.0	-	-	-	5.8	0.0	100.0	14.3	-	-	15.4	-	-	57.1	-	-	57.1	8.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



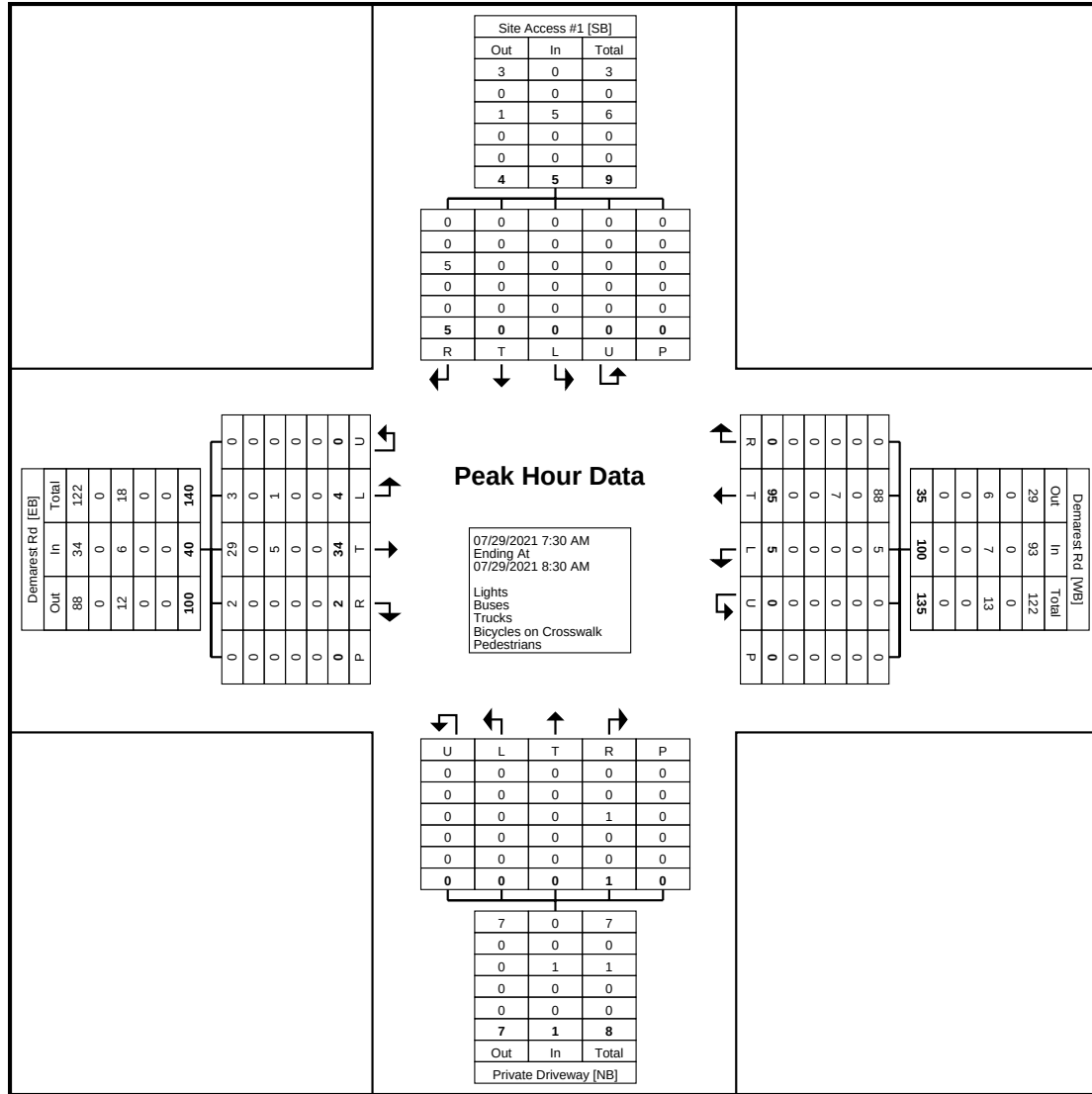
Turning Movement Data Plot



Coatesville, Pennsylvania, United States 19320
610-466-1469
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Count Name: Demarest Rd &
Site Access #1 Thurs
Site Code:
Start Date: 07/29/2021
Page No: 3

[illegible]



Turning Movement Peak Hour Data Plot (7:30 AM)

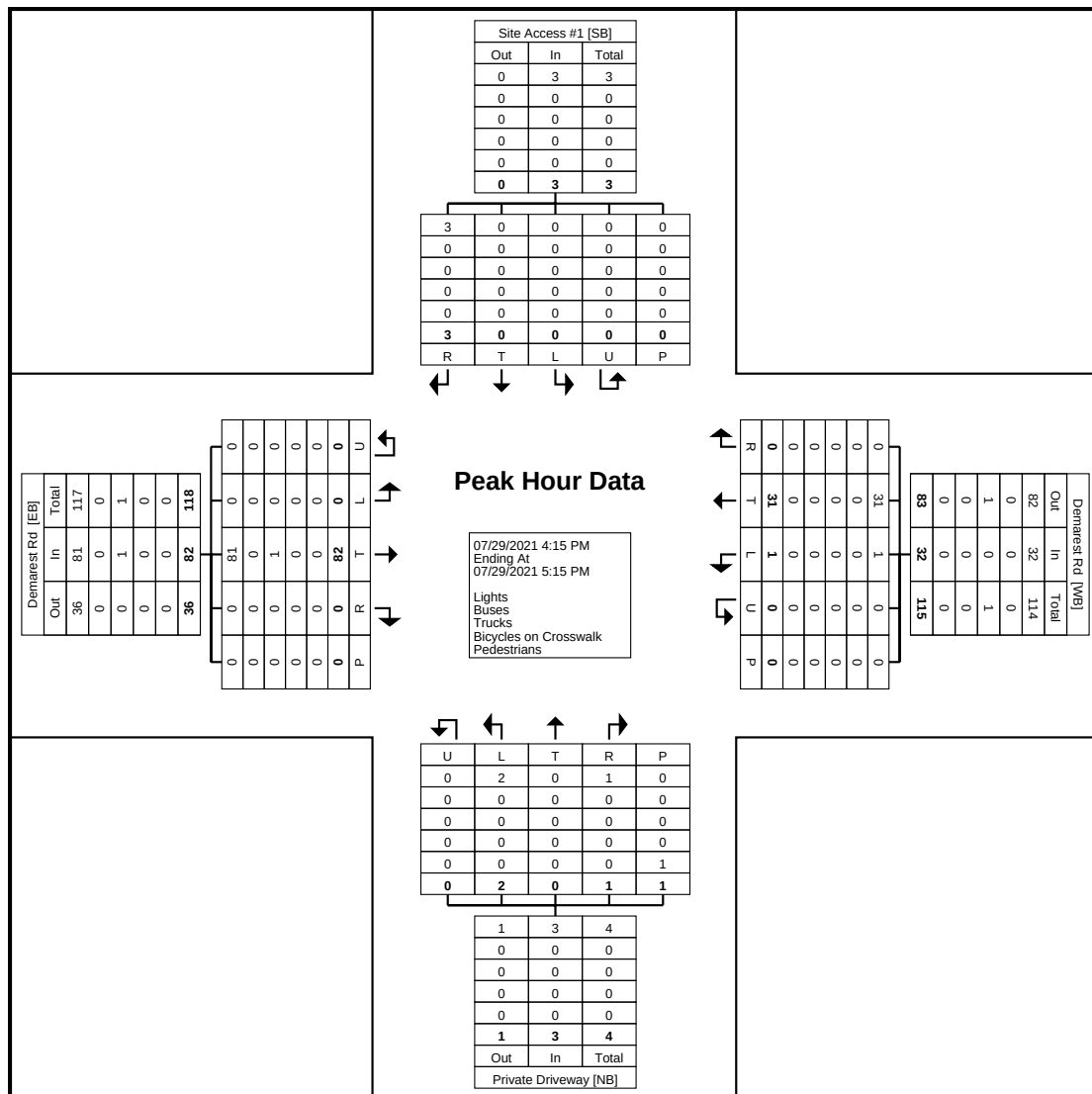
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Demarest Rd Eastbound						Demarest Rd Westbound						Private Driveway Northbound						Site Access #1 Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:15 PM	0	22	0	0	0	22	1	11	0	0	0	12	1	0	0	0	0	1	0	0	1	0	0	1	36
4:30 PM	0	20	0	0	0	20	0	8	0	0	0	8	0	0	1	0	1	1	0	0	0	0	0	0	29
4:45 PM	0	5	0	0	0	5	0	4	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	2	11
5:00 PM	0	35	0	0	0	35	0	8	0	0	0	8	1	0	0	0	0	1	0	0	0	0	0	0	44
Total	0	82	0	0	0	82	1	31	0	0	0	32	2	0	1	0	1	3	0	0	3	0	0	3	120
Approach %	0.0	100.0	0.0	0.0	-	-	3.1	96.9	0.0	0.0	-	-	66.7	0.0	33.3	0.0	-	-	0.0	0.0	100.0	0.0	-	-	-
Total %	0.0	68.3	0.0	0.0	-	68.3	0.8	25.8	0.0	0.0	-	26.7	1.7	0.0	0.8	0.0	-	2.5	0.0	0.0	2.5	0.0	-	2.5	-
PHF	0.000	0.586	0.000	0.000	-	0.586	0.250	0.705	0.000	0.000	-	0.667	0.500	0.000	0.250	0.000	-	0.750	0.000	0.000	0.375	0.000	-	0.375	0.682
Lights	0	81	0	0	-	81	1	31	0	0	-	32	2	0	1	0	-	3	0	0	3	0	-	3	119
% Lights	-	98.8	-	-	-	98.8	100.0	100.0	-	-	-	100.0	100.0	-	100.0	-	-	100.0	-	-	100.0	-	-	100.0	99.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	-	0.0	-	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	0.0
Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Trucks	-	1.2	-	-	-	1.2	0.0	0.0	-	-	-	0.0	0.0	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	0.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Sparta, NJ
Demarest Rd & Driveway 1
Thursday, July 29, 2021
Location: 41.068304, -
74.664883

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Count Name: Demarest Rd &
Site Access #1 Thurs
Site Code:
Start Date: 07/29/2021
Page No: 6



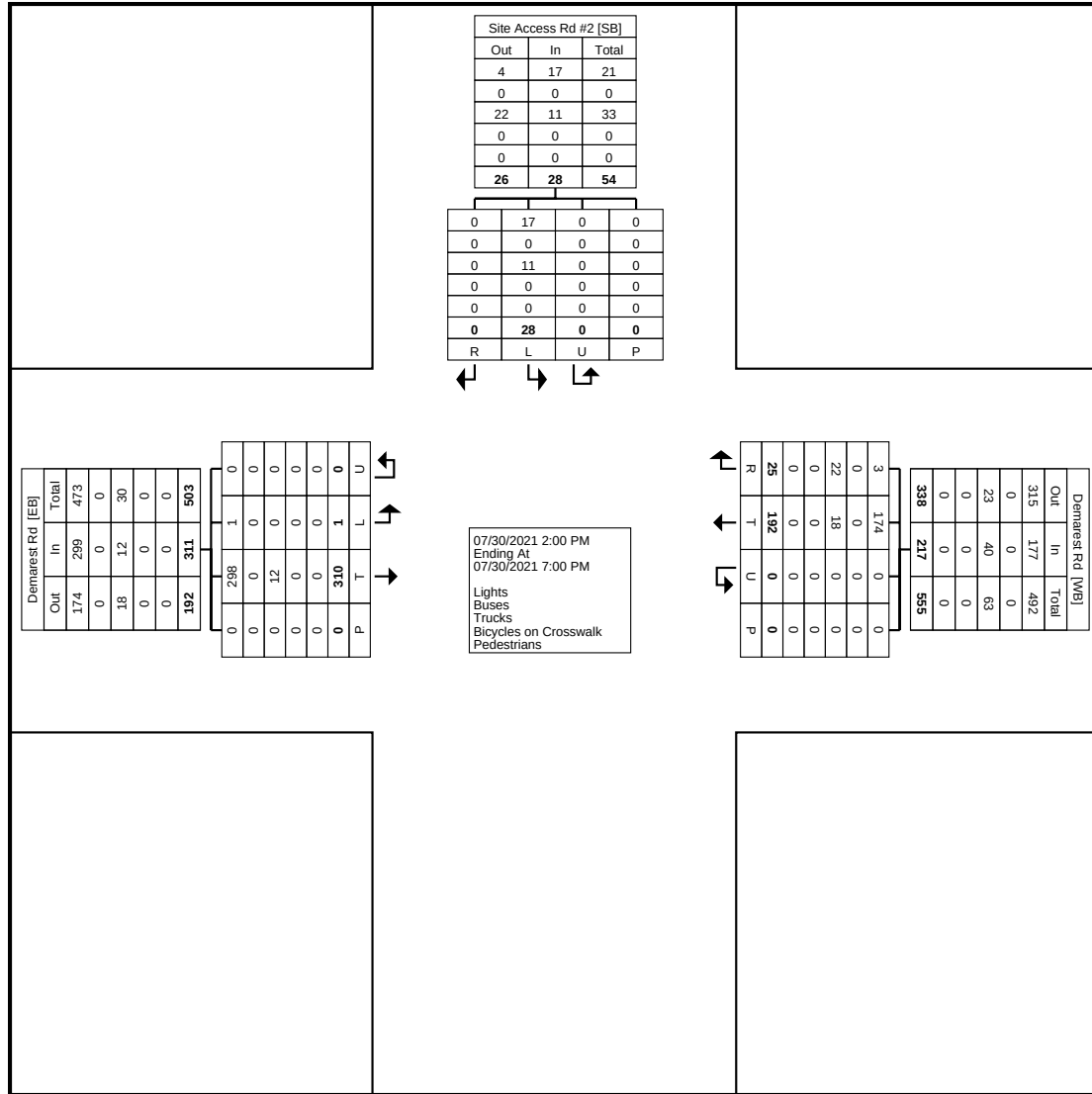
Turning Movement Peak Hour Data Plot (4:15 PM)



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Page No: 1

Start Time	Demarest Rd Eastbound					Demarest Rd Westbound					Site Access Rd #2 Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
2:00 PM	0	27	0	0	27	12	6	0	0	18	1	0	0	0	1	46
2:15 PM	0	14	0	0	14	16	3	0	0	19	2	0	0	0	2	35
2:30 PM	0	17	0	0	17	15	1	0	0	16	3	0	0	0	3	36
2:45 PM	0	9	0	0	9	11	3	0	0	14	2	0	0	0	2	25
Hourly Total	0	67	0	0	67	54	13	0	0	67	8	0	0	0	8	142
3:00 PM	0	14	0	0	14	11	0	0	0	11	2	0	0	0	2	27
3:15 PM	0	13	0	0	13	14	1	0	0	15	1	0	0	0	1	29
3:30 PM	0	24	0	0	24	14	1	0	0	15	1	0	0	0	1	40
3:45 PM	0	19	0	0	19	10	2	0	0	12	4	0	0	0	4	35
Hourly Total	0	70	0	0	70	49	4	0	0	53	8	0	0	0	8	131
4:00 PM	0	17	0	0	17	15	2	0	0	17	1	0	0	0	1	35
4:15 PM	0	22	0	0	22	7	1	0	0	8	2	0	0	0	2	32
4:30 PM	0	16	0	0	16	14	2	0	0	16	0	0	0	0	0	32
4:45 PM	1	17	0	0	18	8	2	0	0	10	1	0	0	0	1	29
Hourly Total	1	72	0	0	73	44	7	0	0	51	4	0	0	0	4	128
5:00 PM	0	24	0	0	24	7	0	0	0	7	2	0	0	0	2	33
5:15 PM	0	19	0	0	19	8	1	0	0	9	0	0	0	0	0	28
5:30 PM	0	11	0	0	11	8	0	0	0	8	0	0	0	0	0	19
5:45 PM	0	11	0	0	11	5	0	0	0	5	4	0	0	0	4	20
Hourly Total	0	65	0	0	65	28	1	0	0	29	6	0	0	0	6	100
6:00 PM	0	11	0	0	11	5	0	0	0	5	1	0	0	0	1	17
6:15 PM	0	10	0	0	10	6	0	0	0	6	1	0	0	0	1	17
6:30 PM	0	8	0	0	8	2	0	0	0	2	0	0	0	0	0	10
6:45 PM	0	7	0	0	7	4	0	0	0	4	0	0	0	0	0	11
Hourly Total	0	36	0	0	36	17	0	0	0	17	2	0	0	0	2	55
Grand Total	1	310	0	0	311	192	25	0	0	217	28	0	0	0	28	556
Approach %	0.3	99.7	0.0	-	-	88.5	11.5	0.0	-	-	100.0	0.0	0.0	-	-	-
Total %	0.2	55.8	0.0	-	55.9	34.5	4.5	0.0	-	39.0	5.0	0.0	0.0	-	5.0	-
Lights	1	298	0	-	299	174	3	0	-	177	17	0	0	-	17	493
% Lights	100.0	96.1	-	-	96.1	90.6	12.0	-	-	81.6	60.7	-	-	-	60.7	88.7
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-							



Turning Movement Data Plot

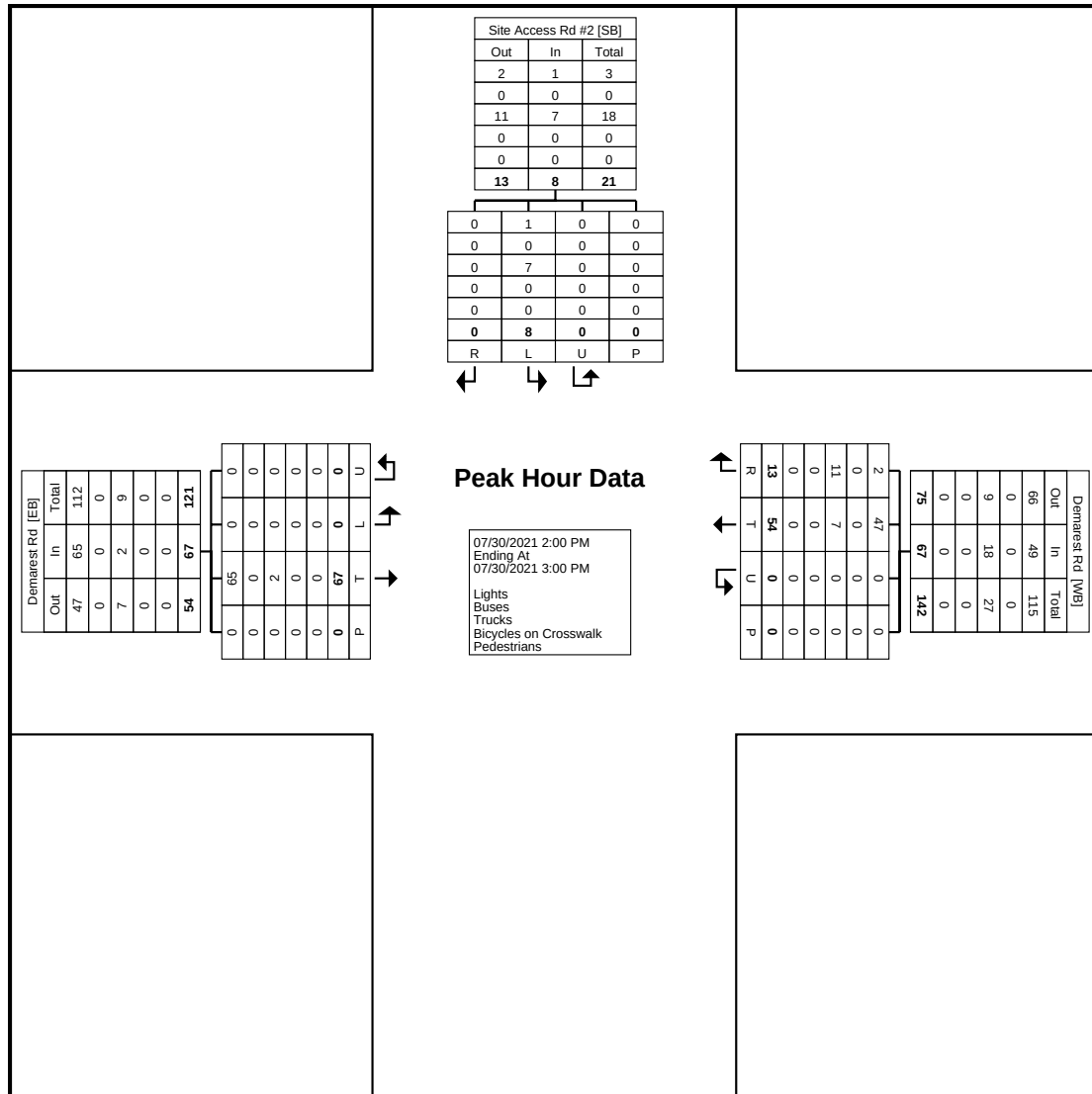


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Page No: 3

[illegible]

Sparta, NJ
Demarest Rd & Driveway 2
Friday, July 30, 2021
Location: 41.068156, -
74.664195



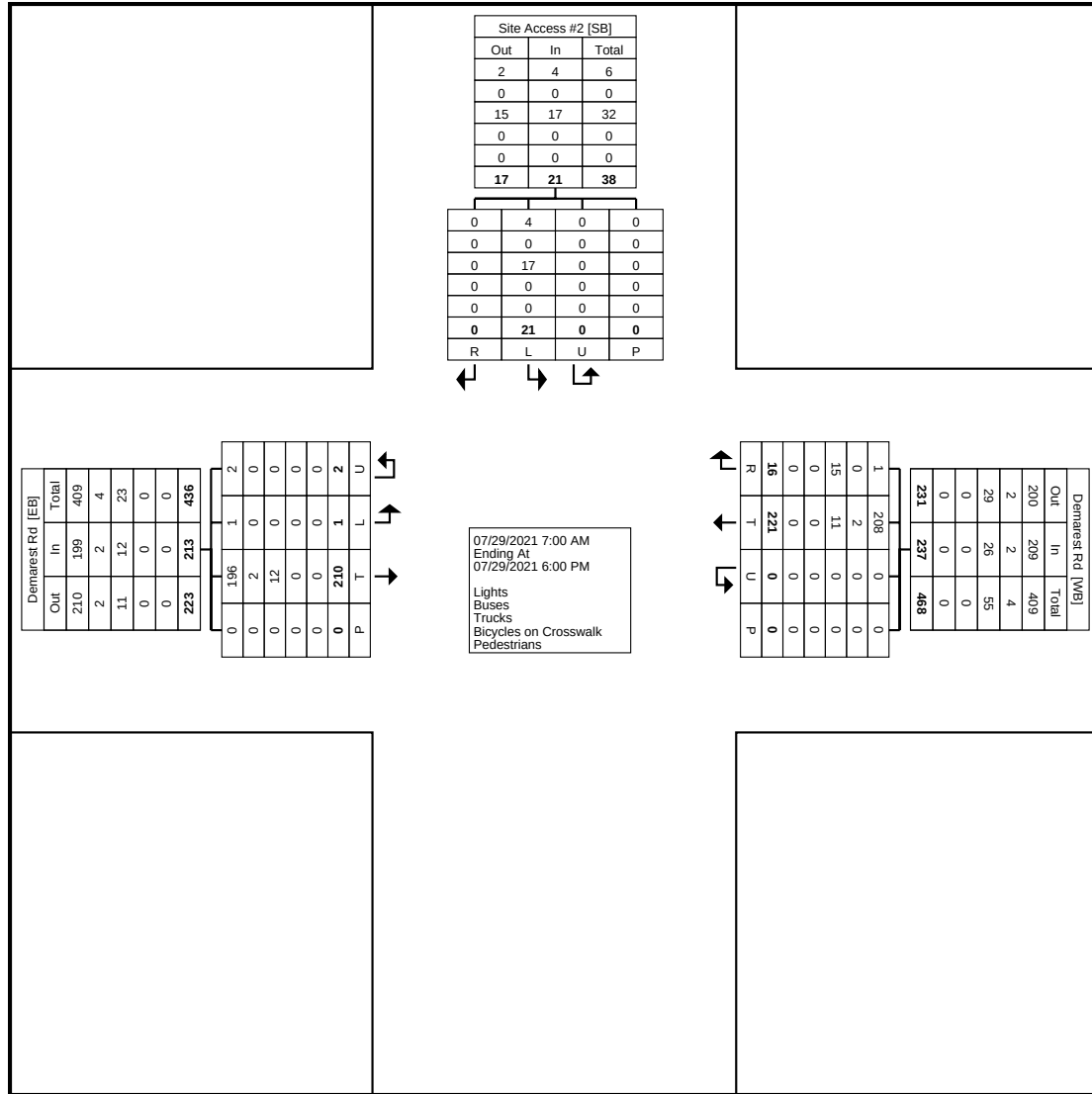
Turning Movement Peak Hour Data Plot (2:00 PM)



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Page No: 1

Start Time	Demarest Rd Eastbound					Demarest Rd Westbound					Site Access #2 Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	0	5	0	0	5	12	1	0	0	13	6	0	0	0	6	24
7:15 AM	0	7	0	0	7	12	3	0	0	15	2	0	0	0	2	24
7:30 AM	0	7	0	0	7	24	1	0	0	25	2	0	0	0	2	34
7:45 AM	0	6	0	0	6	24	2	0	0	26	2	0	0	0	2	34
Hourly Total	0	25	0	0	25	72	7	0	0	79	12	0	0	0	12	116
8:00 AM	0	10	0	0	10	26	2	0	0	28	2	0	0	0	2	40
8:15 AM	0	12	0	0	12	24	0	0	0	24	1	0	0	0	1	37
8:30 AM	0	8	0	0	8	14	2	0	0	16	0	0	0	0	0	24
8:45 AM	0	6	0	0	6	24	5	0	0	29	1	0	0	0	1	36
Hourly Total	0	36	0	0	36	88	9	0	0	97	4	0	0	0	4	137
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	24	0	0	24	14	0	0	0	14	2	0	0	0	2	40
4:15 PM	0	23	0	0	23	12	0	0	0	12	0	0	0	0	0	35
4:30 PM	0	21	0	0	21	8	0	0	0	8	1	0	0	0	1	30
4:45 PM	0	3	2	0	5	1	0	0	0	1	1	0	0	0	1	7
Hourly Total	0	71	2	0	73	35	0	0	0	35	4	0	0	0	4	112
5:00 PM	0	35	0	0	35	8	0	0	0	8	1	0	0	0	1	44
5:15 PM	0	20	0	0	20	11	0	0	0	11	0	0	0	0	0	31
5:30 PM	1	9	0	0	10	1	0	0	0	1	0	0	0	0	0	11
5:45 PM	0	14	0	0	14	6	0	0	0	6	0	0	0	0	0	20
Hourly Total	1	78	0	0	79	26	0	0	0	26	1	0	0	0	1	106
Grand Total	1	210	2	0	213	221	16	0	0	237	21	0	0	0	21	471
Approach %	0.5	98.6	0.9	-	-	93.2	6.8	0.0	-	-	100.0	0.0	0.0	-	-	-
Total %	0.2	44.6	0.4	-	45.2	46.9	3.4	0.0	-	50.3	4.5	0.0	0.0	-	4.5	-
Lights	1	196	2	-	199	208	1	0	-	209	4	0	0	-	4	412
% Lights	100.0	93.3	100.0	-	93.4	94.1	6.3	-	-	88.2	19.0	-	-	-	19.0	87.5
Buses	0	2	0	-	2	2	0	0	-	2	0	0	0	-	0	4
% Buses	0.0	1.0	0.0	-	0.9	0.9	0.0	-	-	0.8	0.0	-	-	-	0.0	0.8
Trucks	0	12	0	-	12	11	15	0	-	26	17	0	0	-	17	55
% Trucks	0.0	5.7	0.0	-	5.6	5.0	93.8	-	-	11.0	81.0	-	-	-	81.0	11.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	0	-	-	-	-	-	0	-						



Turning Movement Data Plot

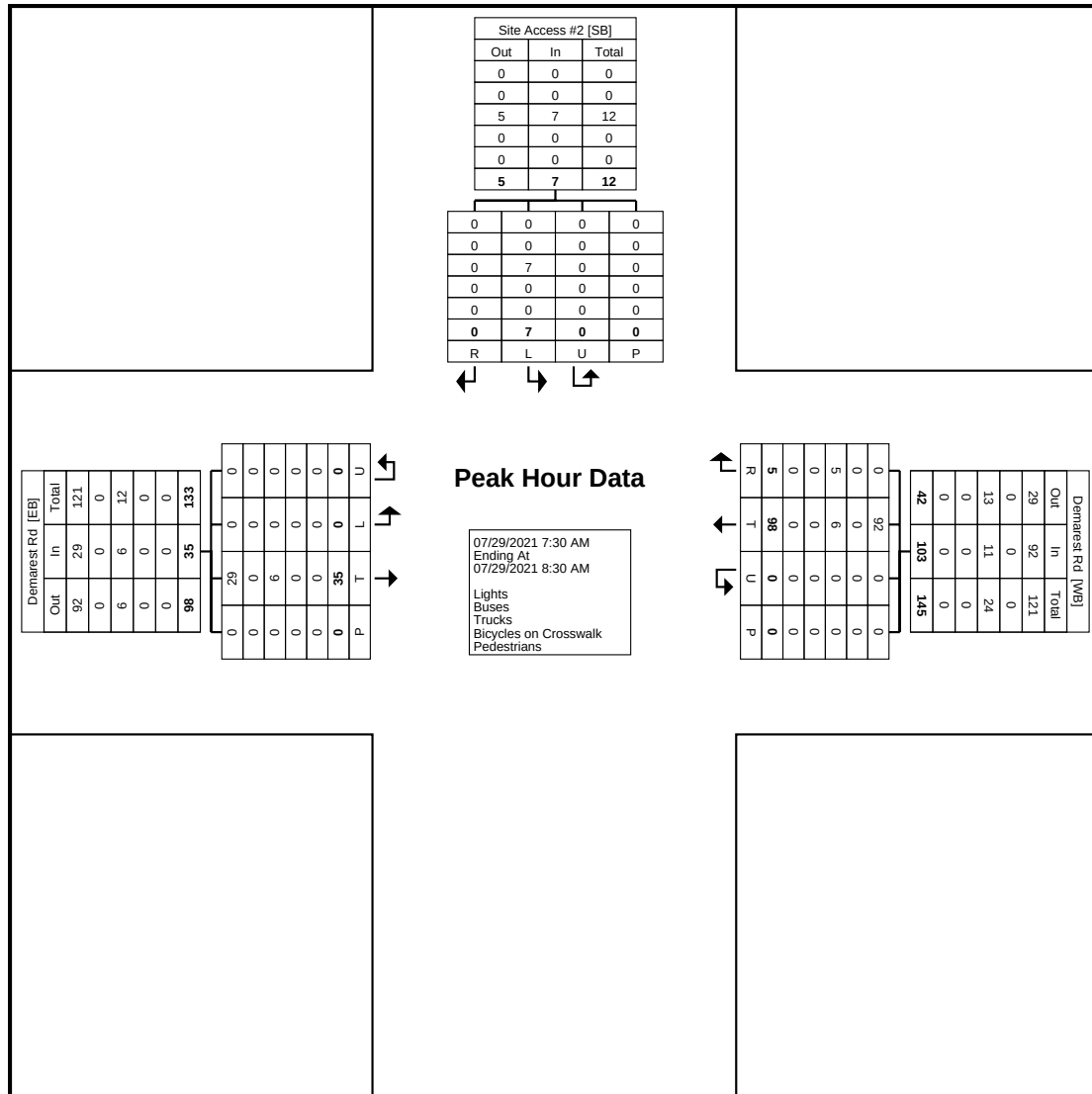


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Turning Movement Peak Hour Data (7:30 AM)

[illegible]

Sparta, NJ
Demarest Rd & Driveway 2
Thursday, July 29, 2021
Location: 41.068156, -
74.664195



Turning Movement Peak Hour Data Plot (7:30 AM)

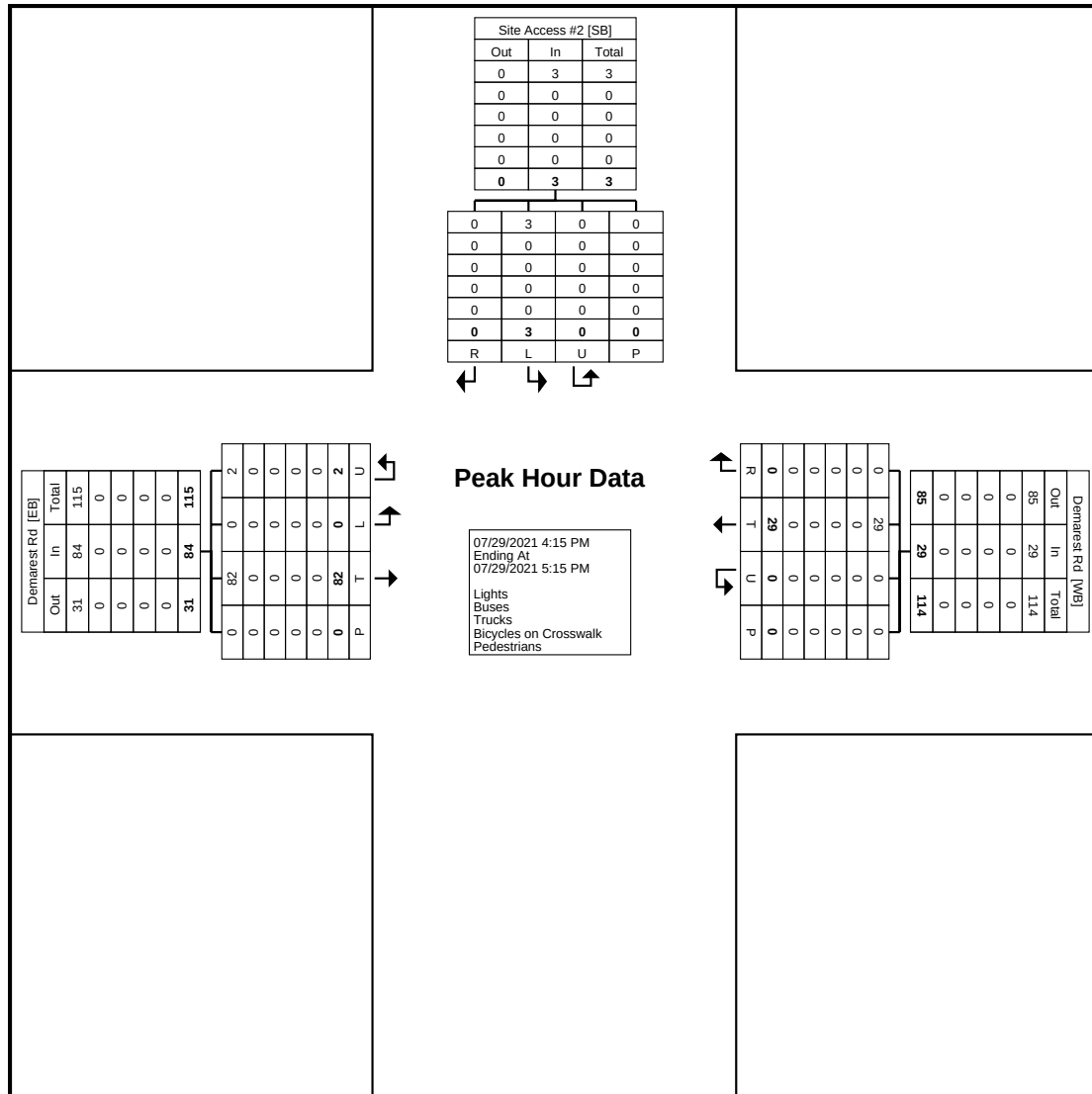


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[illegible]

Sparta, NJ
Demarest Rd & Driveway 2
Thursday, July 29, 2021
Location: 41.068156, -
74.664195



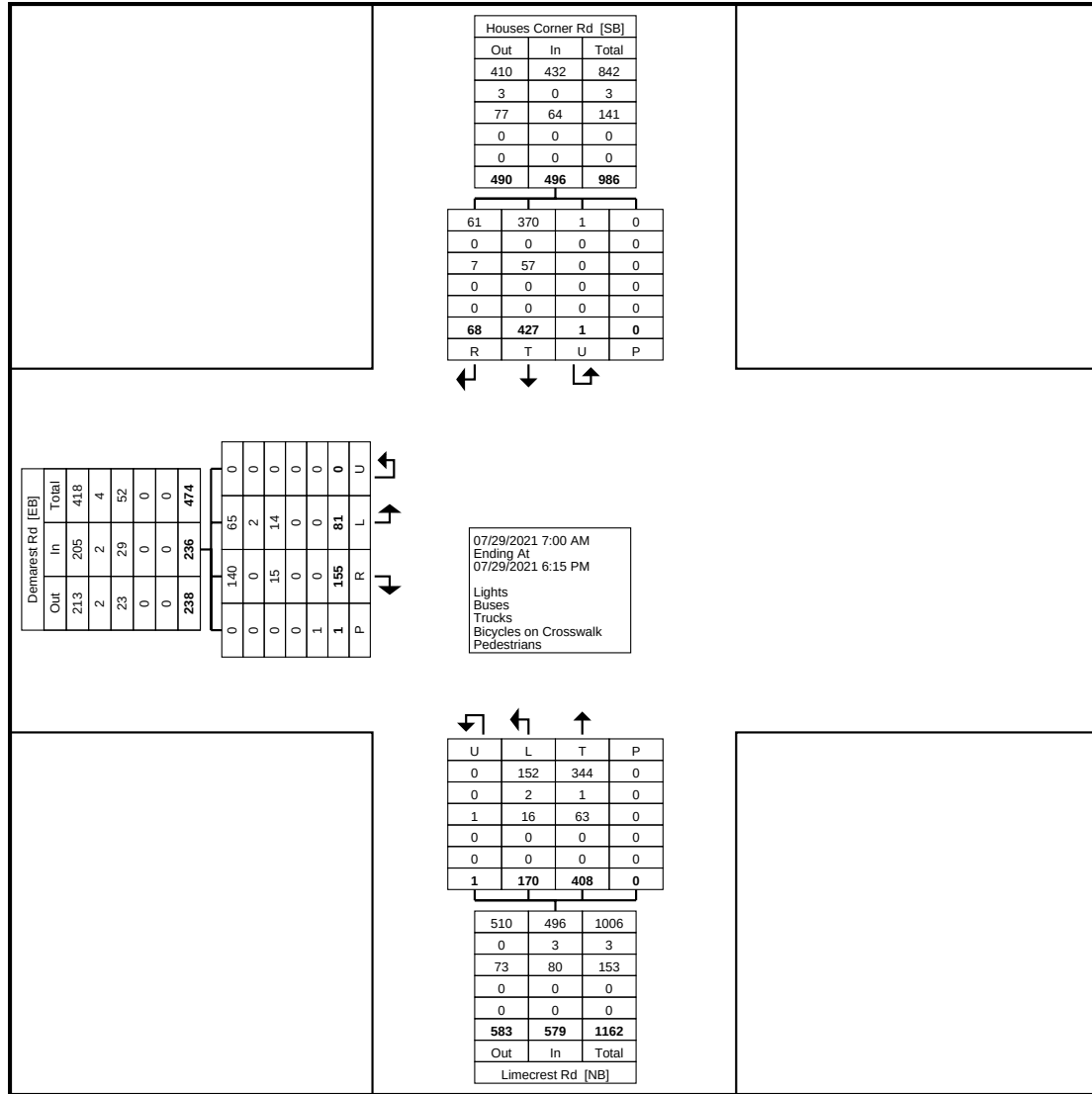
Turning Movement Peak Hour Data Plot (4:15 PM)



Coatesville, Pennsylvania, United States 19320
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Count Name: Demarest Rd &
Houses Corner Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 1

Start Time	Demarest Rd Eastbound					Limecrest Rd Northbound					Houses Corner Rd Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	6	5	0	1	11	11	25	0	0	36	22	2	0	0	24	71
7:15 AM	1	8	0	0	9	11	24	1	0	36	25	3	0	0	28	73
7:30 AM	5	3	0	0	8	18	33	0	0	51	28	6	0	0	34	93
7:45 AM	3	6	0	0	9	18	32	0	0	50	12	10	0	0	22	81
Hourly Total	15	22	0	1	37	58	114	1	0	173	87	21	0	0	108	318
8:00 AM	6	5	0	0	11	14	31	0	0	45	24	12	0	0	36	92
8:15 AM	3	11	0	0	14	21	27	0	0	48	22	5	0	0	27	89
8:30 AM	1	6	0	0	7	8	30	0	0	38	18	6	0	0	24	69
8:45 AM	3	5	0	0	8	19	33	0	0	52	19	10	0	0	29	89
Hourly Total	13	27	0	0	40	62	121	0	0	183	83	33	0	0	116	339
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	8	18	0	0	26	10	24	0	0	34	37	1	0	0	38	98
4:15 PM	8	13	0	0	21	10	29	0	0	39	40	2	1	0	43	103
4:30 PM	8	14	0	0	22	5	19	0	0	24	34	3	0	0	37	83
4:45 PM	7	0	0	0	7	8	32	0	0	40	28	4	0	0	32	79
Hourly Total	31	45	0	0	76	33	104	0	0	137	139	10	1	0	150	363
5:00 PM	12	27	0	0	39	5	24	0	0	29	32	0	0	0	32	100
5:15 PM	3	17	0	0	20	8	19	0	0	27	38	1	0	0	39	86
5:30 PM	2	7	0	0	9	1	13	0	0	14	33	0	0	0	33	56
5:45 PM	5	10	0	0	15	3	13	0	0	16	15	3	0	0	18	49
Hourly Total	22	61	0	0	83	17	69	0	0	86	118	4	0	0	122	291
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	81	155	0	1	236	170	408	1	0	579	427	68	1	0	496	1311
Approach %	34.3	65.7	0.0	-	-	29.4	70.5	0.2	-	-	86.1	13.7	0.2	-	-	-
Total %	6.2	11.8	0.0	-	18.0	13.0	31.1	0.1	-	44.2	32.6	5.2	0.1	-	37.8	-
Lights	65	140	0	-	205	152	344	0	-	496	370	61	1	-	432	1133
% Lights	80.2	90.3	-	-	86.9	89.4	84.3	0.0	-	85.7	86.7	89.7	100.0	-	87.1	86.4
Buses	2	0	0	-	2	2	1	0	-	3	0	0	0	-	0	5
% Buses	2.5	0.0	-	-	0.8	1.2	0.2	0.0	-	0.5	0.0	0.0	0.0	-	0.0	0.4
Trucks	14	15	0	-	29	16	63	1	-	80	57	7	0	-	64	173
% Trucks	17.3	9.7	-	-	12.3	9.4	15.4	100.0	-	13.8	13.3	10.3	0.0	-	12.9	13.2
Bicycles on Crosswalk																



Turning Movement Data Plot



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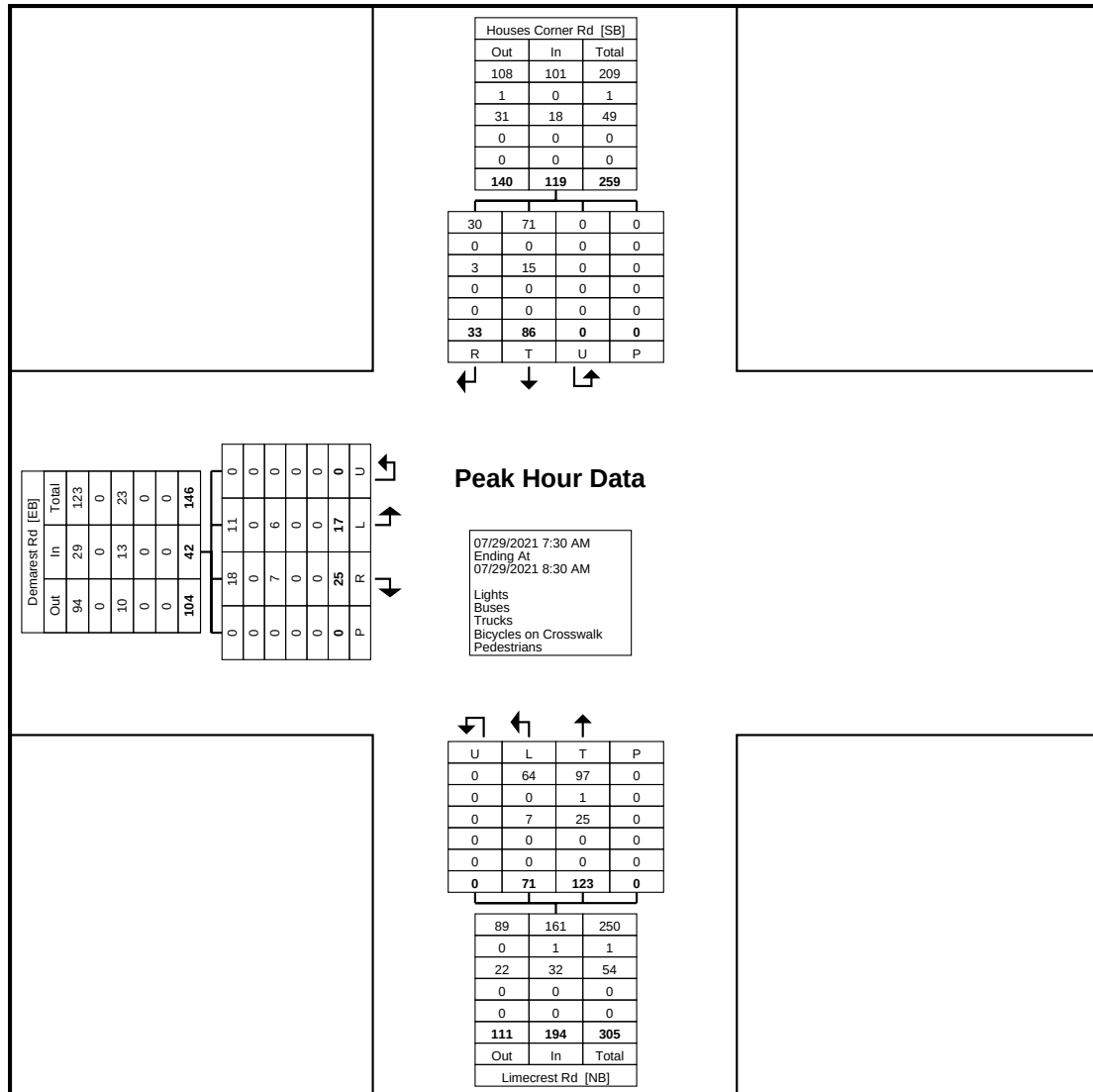
Count Name: Demarest Rd &
Houses Corner Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 3

[illegible]

Sparta, NJ
Demarest Rd & Houses Corner
Rd
Thursday, July 29, 2021
Location: 41.066927, -
74.661673

Coatesville, Pennsylvania, United States 19320
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Count Name: Demarest Rd &
Houses Corner Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 4



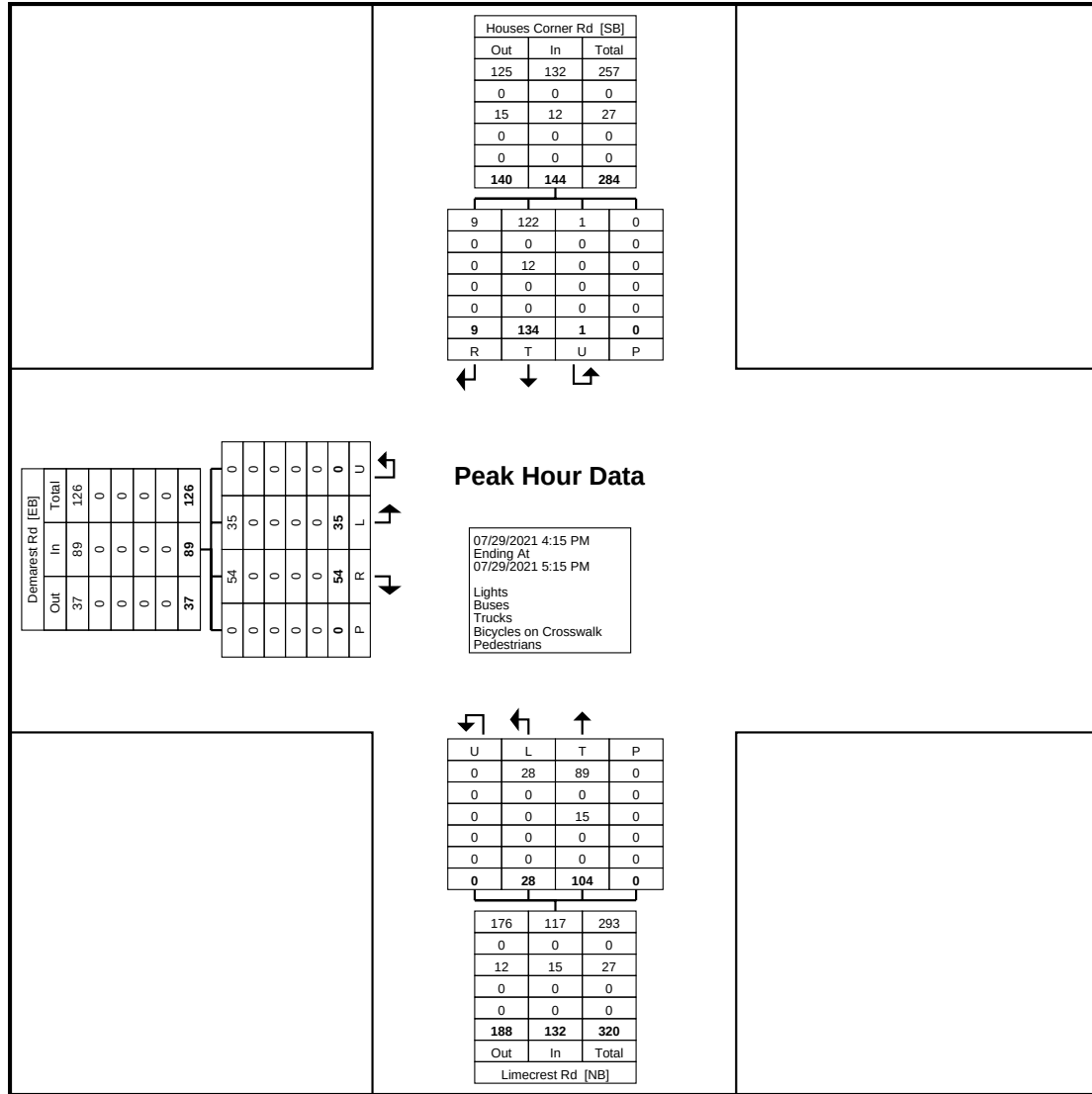
Turning Movement Peak Hour Data Plot (7:30 AM)



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Count Name: Demarest Rd &
Houses Corner Rd Thurs
Site Code:
Start Date: 07/29/2021
Page No: 5

[illegible]



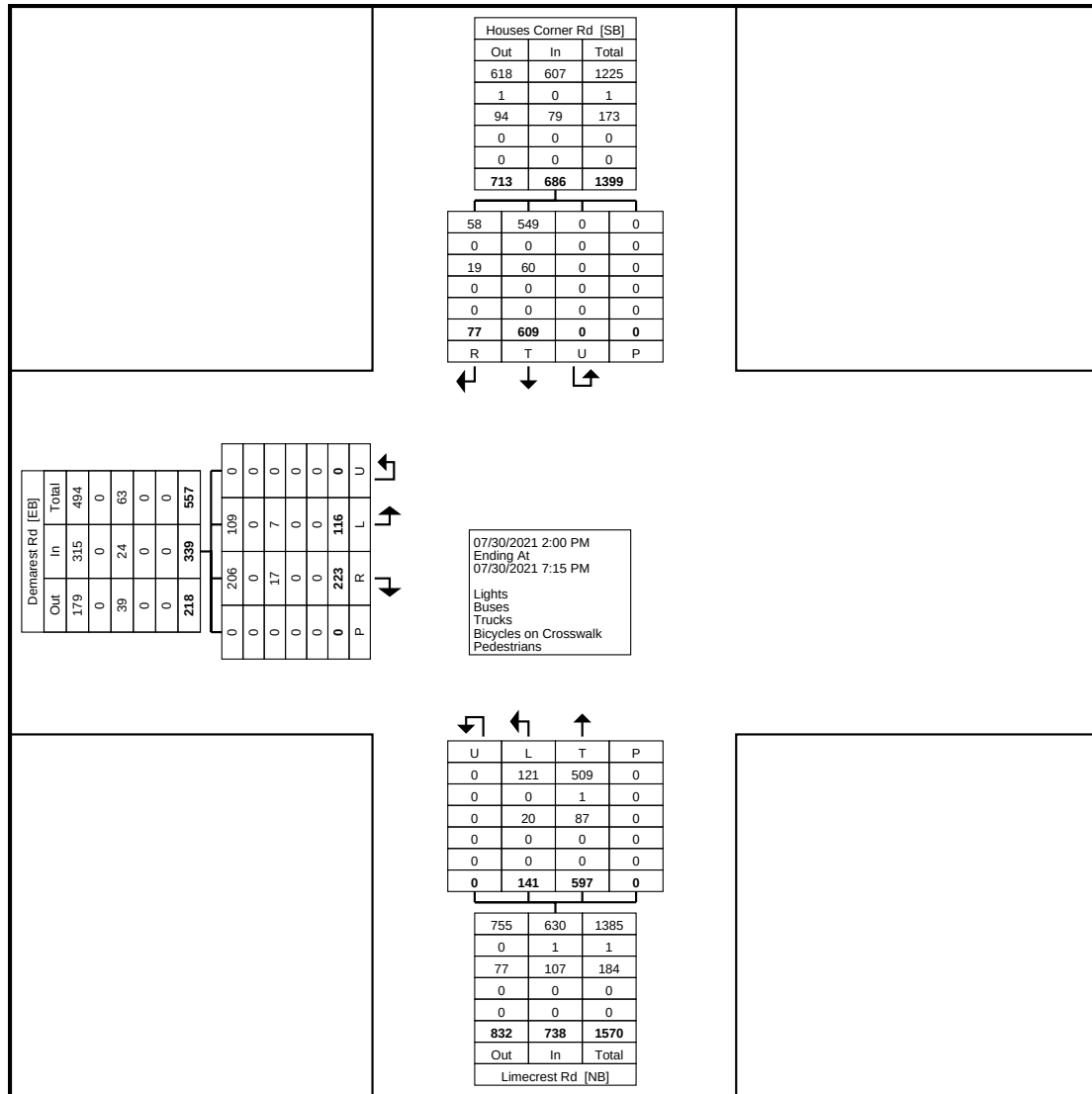
Turning Movement Peak Hour Data Plot (4:15 PM)



Coatesville, Pennsylvania, United States 19320
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Count Name: Demarest Rd &
Houses Corner Rd Fri
Site Code:
Start Date: 07/30/2021
Page No: 1

Start Time	Demarest Rd Eastbound					Limecrest Rd Northbound					Houses Corner Rd Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	
2:00 PM	14	14	0	0	28	7	33	0	0	40	42	11	0	0	53	121
2:15 PM	8	9	0	0	17	12	31	0	0	43	26	7	0	0	33	93
2:30 PM	6	13	0	0	19	14	35	0	0	49	18	5	0	0	23	91
2:45 PM	6	6	0	0	12	5	34	0	0	39	29	6	0	0	35	86
Hourly Total	34	42	0	0	76	38	133	0	0	171	115	29	0	0	144	391
3:00 PM	5	11	0	0	16	8	45	0	0	53	47	2	0	0	49	118
3:15 PM	3	11	0	0	14	10	44	0	0	54	34	5	0	0	39	107
3:30 PM	9	16	0	0	25	8	37	0	0	45	29	6	0	0	35	105
3:45 PM	10	11	0	0	21	10	31	0	0	41	37	2	0	0	39	101
Hourly Total	27	49	0	0	76	36	157	0	0	193	147	15	0	0	162	431
4:00 PM	2	16	0	0	18	11	35	0	0	46	36	6	0	0	42	106
4:15 PM	9	14	0	0	23	7	29	0	0	36	39	1	0	0	40	99
4:30 PM	6	12	0	0	18	12	35	0	0	47	38	6	0	0	44	109
4:45 PM	7	11	0	0	18	7	23	0	0	30	32	3	0	0	35	83
Hourly Total	24	53	0	0	77	37	122	0	0	159	145	16	0	0	161	397
5:00 PM	7	20	0	0	27	4	36	0	0	40	39	3	0	0	42	109
5:15 PM	4	14	0	0	18	5	26	0	0	31	35	4	0	0	39	88
5:30 PM	2	10	0	0	12	6	36	0	0	42	24	2	0	0	26	80
5:45 PM	4	11	0	0	15	3	20	0	0	23	26	2	0	0	28	66
Hourly Total	17	55	0	0	72	18	118	0	0	136	124	11	0	0	135	343
6:00 PM	2	9	0	0	11	4	17	0	0	21	28	1	0	0	29	61
6:15 PM	5	7	0	0	12	5	22	0	0	27	20	1	0	0	21	60
6:30 PM	3	5	0	0	8	1	17	0	0	18	23	2	0	0	25	51
6:45 PM	4	3	0	0	7	2	11	0	0	13	7	2	0	0	9	29
Hourly Total	14	24	0	0	38	12	67	0	0	79	78	6	0	0	84	201
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	116	223	0	0	339	141	597	0	0	738	609	77	0	0	686	1763
Approach %	34.2	65.8	0.0	-	-	19.1	80.9	0.0	-	-	88.8	11.2	0.0	-	-	-
Total %	6.6	12.6	0.0	-	19.2	8.0	33.9	0.0	-	41.9	34.5	4.4	0.0	-	38.9	-
Lights	109	206	0	-	315	121	509	0	-	630	549	58	0	-	607	1552
% Lights	94.0	92.4	-	-	92.9	85.8										



Turning Movement Data Plot

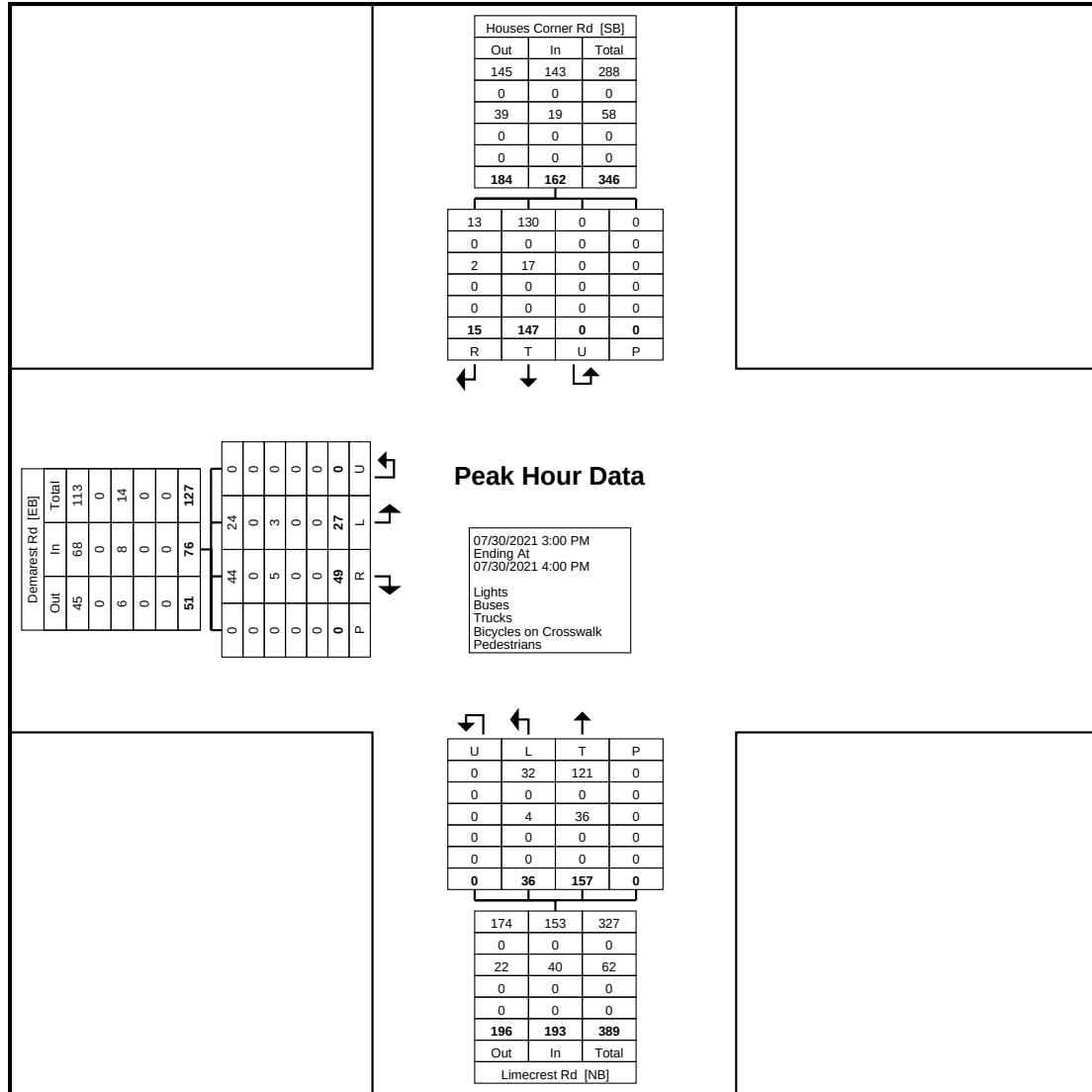


Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Demarest Rd &
Houses Corner Rd Fri
Site Code:
Start Date: 07/30/2021
Page No: 3

[illegible]

Sparta, NJ
Demarest Rd & Houses Corner
Rd
Friday, July 30, 2021
Location: 41.066927, -
74.661673



Turning Movement Peak Hour Data Plot (3:00 PM)

COVID-19 Adjustment Factor

LAFAYETTE ROAD BETWEEN WILSON DRIVE AND HOUSES CORNER ROAD							
	NJDOT		Kimley-Horn's ATR 2021				
	8/7/2018	2021	7/28/2021	7/29/2021			
HOUR	TUES.	GROWN	WED.	THURS.	AVG.	DIFF.	Adjustment (%)
7:00	1,715	1,767	1,718	1,698	1,708	-59	3%
8:00	1,914	1,972	1,983	1,953	1,968	-4	0%
16:00	1,960	2,019	2,149	2,057	2,103	84	-4%
17:00	1,913	1,971	2,191	1,946	2,069	98	-5%

ANNUAL GROWTH RATE	
LAFAYETTE ROAD	1%

CALIBRATION FACTOR	
AM	1.7%
PM	-4.5%

APPENDIX D

Traffic Volume Development

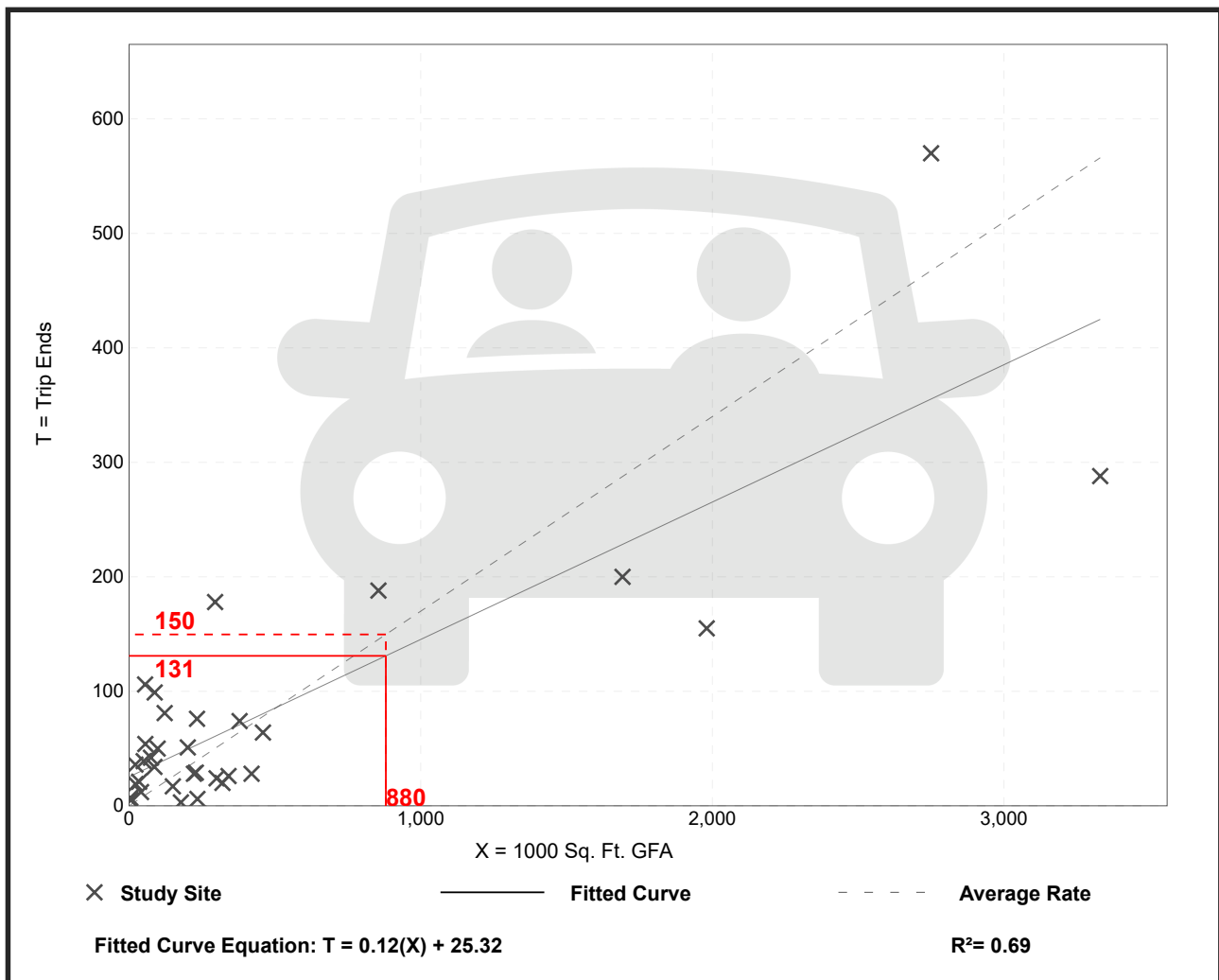
Warehousing (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 34
 Avg. 1000 Sq. Ft. GFA: 451
 Directional Distribution: 77% entering, 23% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.02 - 1.93	0.20

Data Plot and Equation



Warehousing (150)

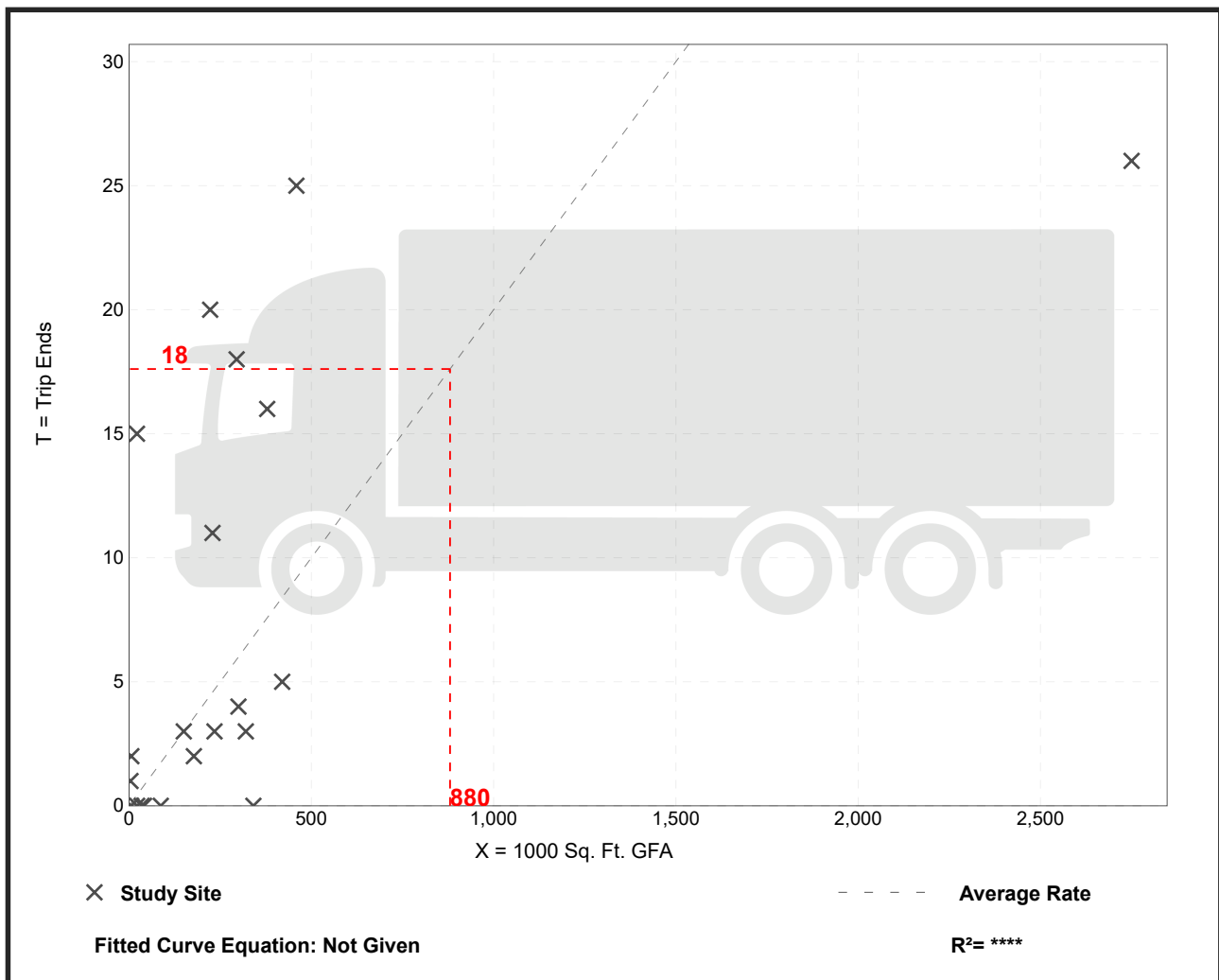
Truck Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 21
 Avg. 1000 Sq. Ft. GFA: 309
 Directional Distribution: 52% entering, 48% exiting

Truck Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.02	0.00 - 0.69	0.05

Data Plot and Equation



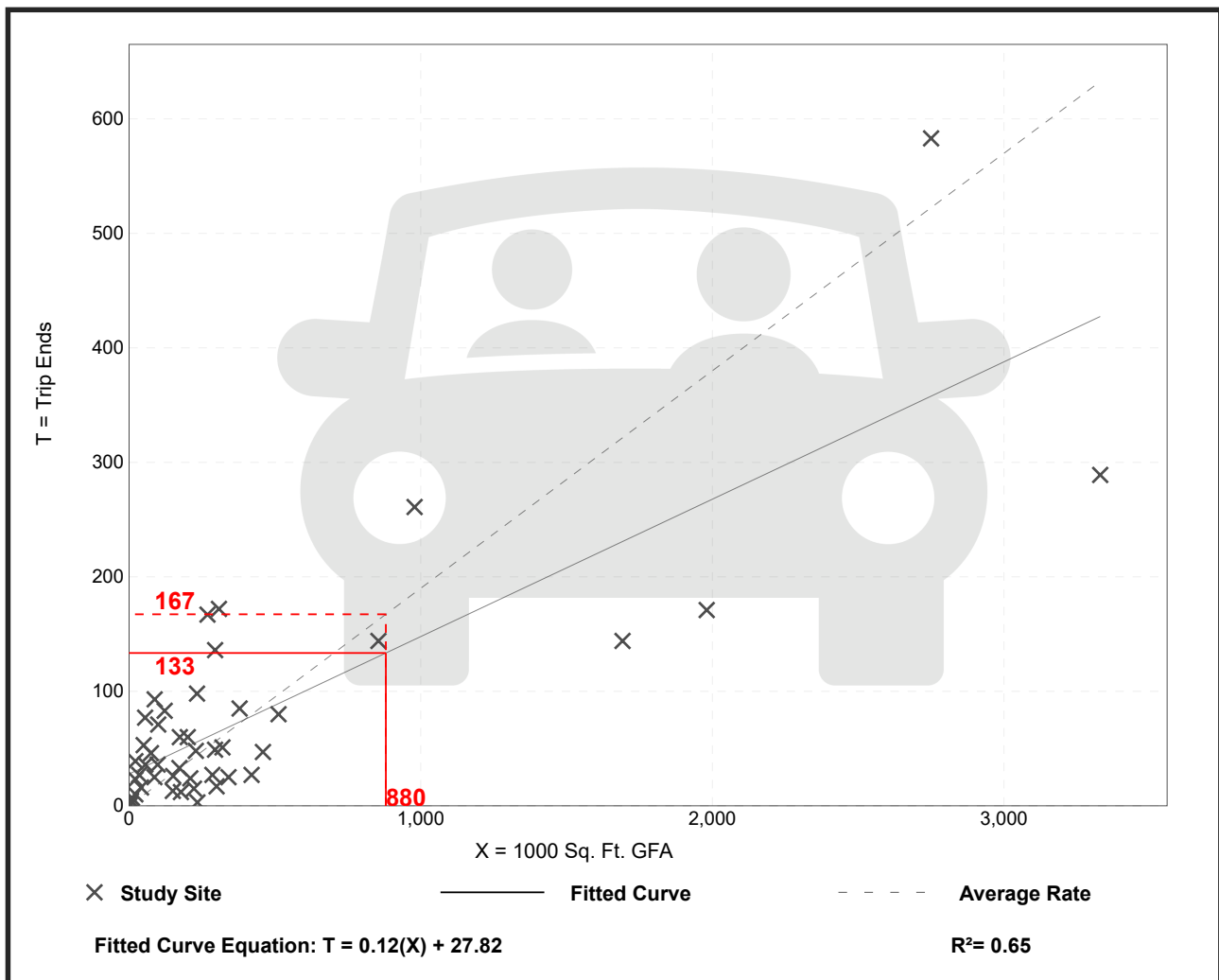
Warehousing (150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 47
 Avg. 1000 Sq. Ft. GFA: 400
 Directional Distribution: 27% entering, 73% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.19	0.01 - 1.80	0.18

Data Plot and Equation



Warehousing (150)

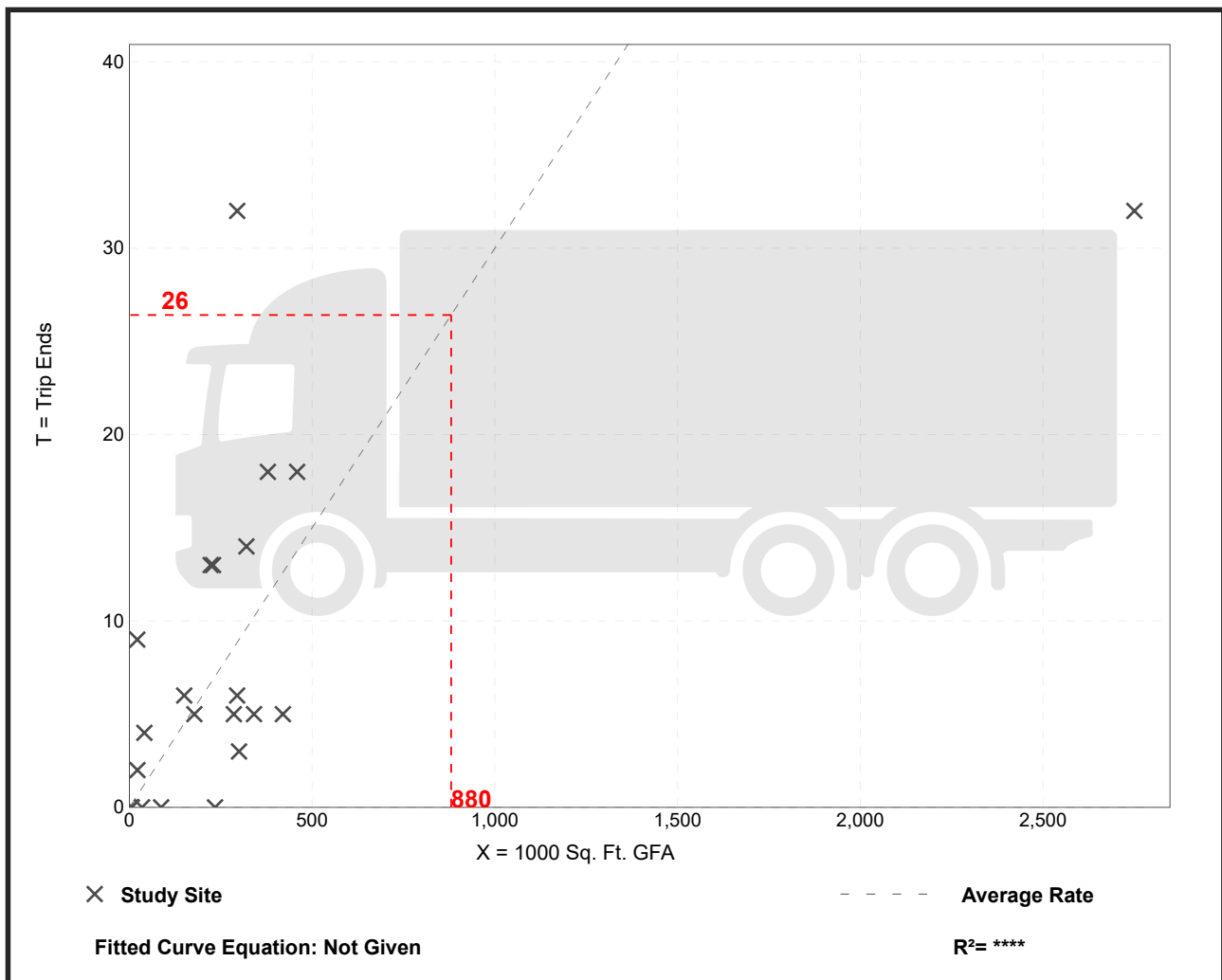
Truck Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 23
 Avg. 1000 Sq. Ft. GFA: 308
 Directional Distribution: 52% entering, 48% exiting

Truck Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.03	0.00 - 0.42	0.03

Data Plot and Equation



Warehousing (150)

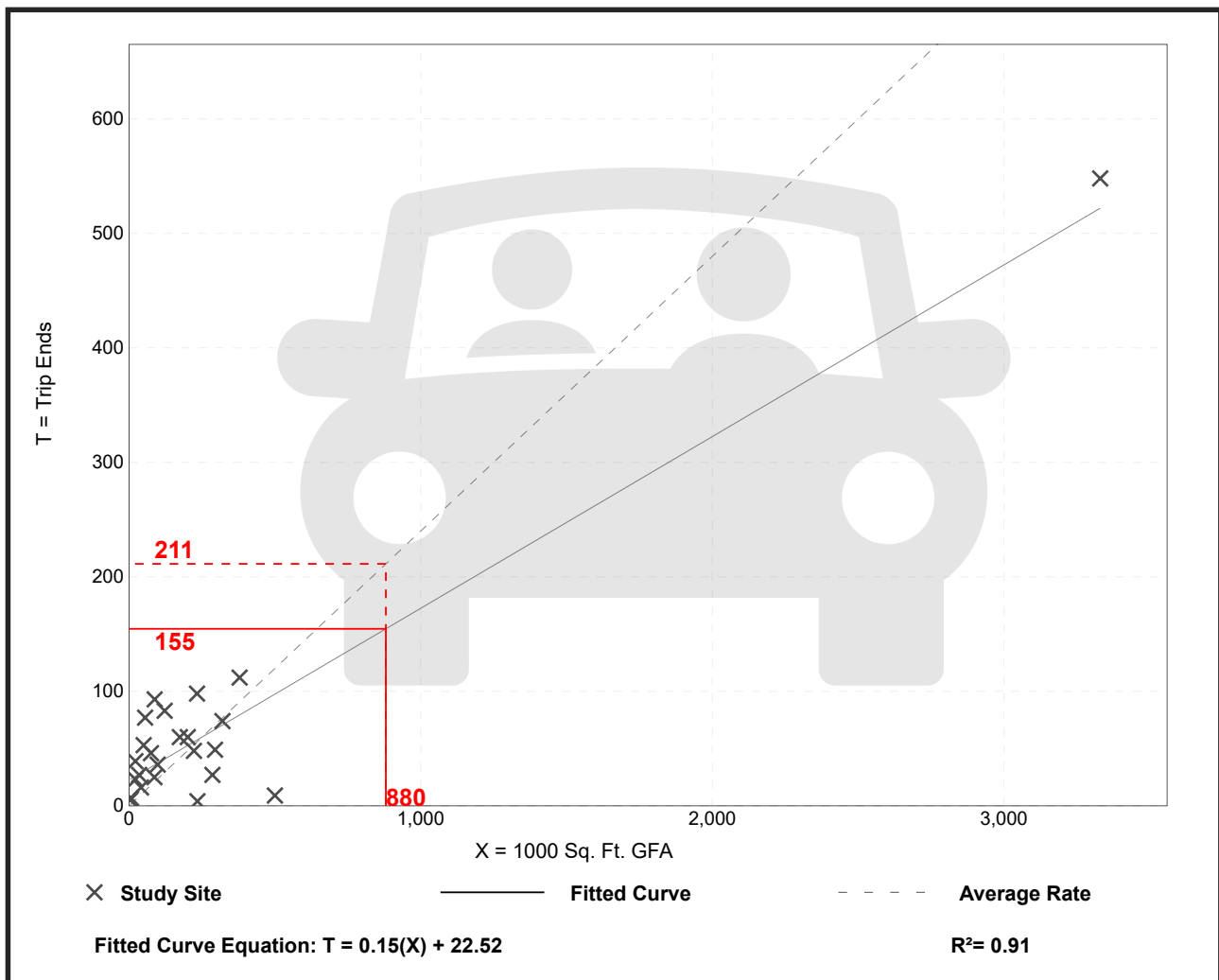
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 25
Avg. 1000 Sq. Ft. GFA: 275
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.24	0.02 - 1.80	0.24

Data Plot and Equation



Warehousing (150)

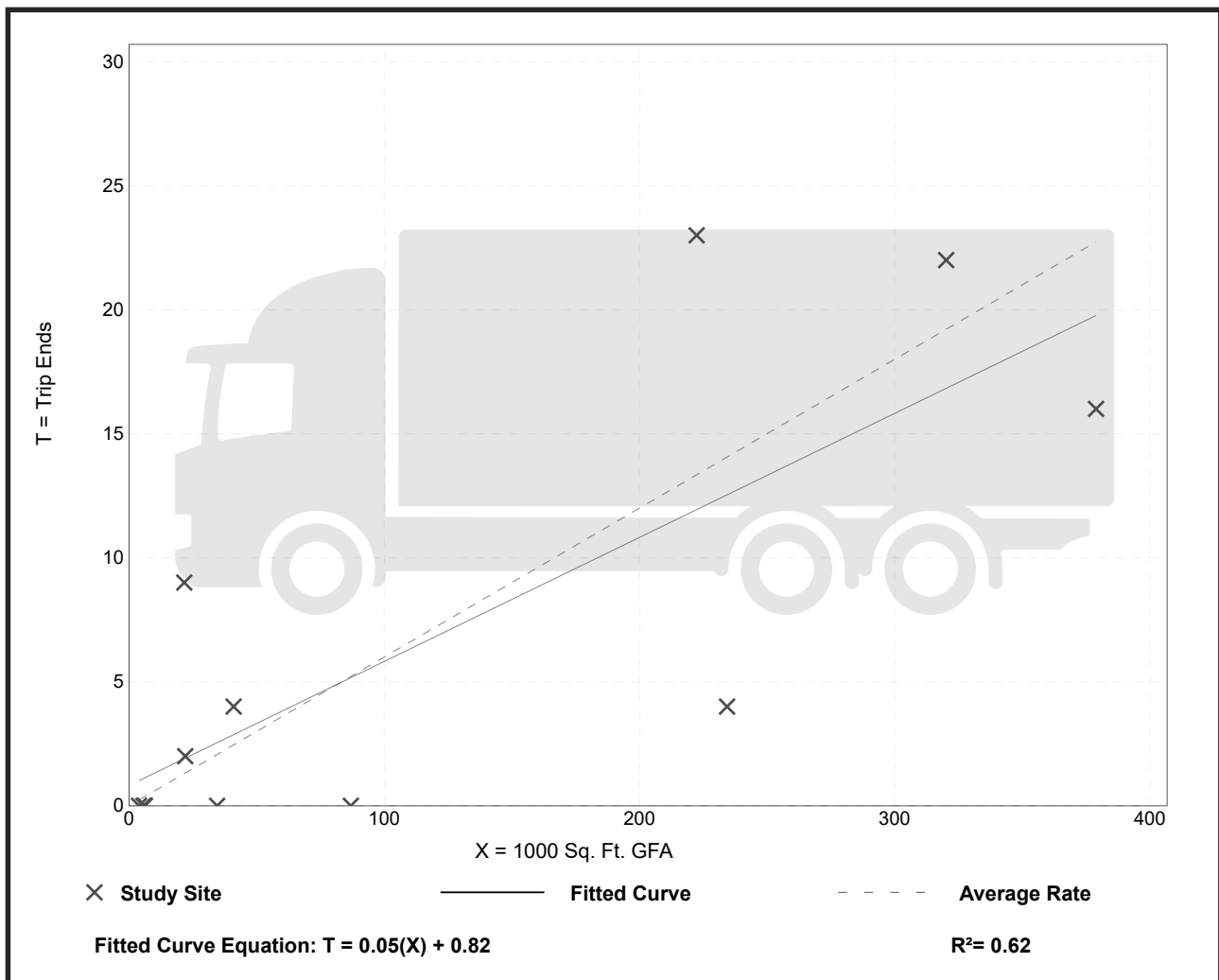
Truck Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 12
Avg. 1000 Sq. Ft. GFA: 115
Directional Distribution: 53% entering, 47% exiting

Truck Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.06	0.00 - 0.42	0.06

Data Plot and Equation



Trip Distribution Gravity Model

County	Municipality	Population*	Distance** (miles)	P/D ²	Percentage	Use	To/From the South via Lafayette Road	To/From the North via Lafayette Road	To/From the East via Limecrest Road	To/From the West via Limecrest Road
Sussex	Ogdensburg Borough	2,410	6.8	52.12	3.4%	3%	2%		1%	
	Andover Borough	606	8.2	9.01	0.6%	1%				1%
	Newton Town	7,997	7.3	150.07	9.7%	10%		2%		8%
	Lafayette Township	2,538	2.8	323.72	20.9%	21%		21%		
	Franklin Borough	5,045	7.2	97.32	6.3%	6%			6%	
	Andover Township	6,319	5.9	181.53	11.7%	12%				12%
	Fredon Township	3,437	11	28.40	1.8%	2%		2%		
	Hampton Township	5,196	9.8	54.10	3.5%	4%		4%		
	Branchville Borough	841	7.8	13.82	0.9%	1%		1%		
	Frankford Township	5,565	9.6	60.38	3.9%	4%		3%		1%
	Byram Township	8,350	14.3	40.83	2.6%	3%	2%			1%
	Green Township	3,601	11.5	27.23	1.8%	2%				2%
	Hamburg Borough	3,277	8.4	46.44	3.0%	3%			3%	
	Hardyston Township	8,213	7	167.61	10.8%	11%	7%		4%	
	Hopatcong Borough	15,147	13.6	81.89	5.3%	5%	5%			
	Montague Township	3,847	19.9	9.71	0.6%	1%		1%		
	Vernon Township	23,943	15.1	105.01	6.8%	7%			7%	
	Wantage Township	11,358	16	44.37	2.9%	3%		2%	1%	
	Stillwater Township	4,099	14.9	18.46	1.2%	1%				1%
	Sandyston Township	1,998	14.1	10.05	0.6%	1%		1%		
	Stanhope Borough	3,610	14.2	17.90	1.2%	1%			1%	
	Sussex Borough	2,130	13.7	11.35	0.7%	1%		1%		
TOTAL					100%	100%	16%	35%	24%	25%

*US Census Bureau, Census 2010

**Google Maps Directions

	Intersection (North/South and East/West)	Direction	Movement SYNCHRO	AutoCAD Index	Existing 2021		COVID Adjusted 2021		No Build 2023		Passenger Trip Distribution		Truck Trip Distribution		Trip Assignments		Build Out 2023	
					AM	PM	AM	PM	AM	PM	%IN	%OUT	%IN	%OUT	AM	PM	AM	PM
1	Houses Corner Road	SB	SBL	SBL	68	22	69	22	71	23	24		45		0	0	71	23
	and	(Houses Corner Road)	SBT	SBT	23	19	23	19	24	20					22	6	46	25
	Lafayette Road (Route 15)		SBR	SBR	41	34	42	34	43	35					0	0	43	35
	Lafayette Road (Route 15))	WB	WBL	WBL	52	45	53	45	54	46	16		45		19	10	73	55
		WBT	WBT	WBT	779	1038	792	1038	808	1,059					0	0	808	1,059
		WBR	WBR	WBR	54	44	55	44	56	45					0	0	56	45
	(Houses Corner Road)	NB	NBL	NBL	52	55	53	55	54	57	24	16	45	45	4	6	59	63
		NBT	NBT	NBT	23	20	23	20	24	21					5	20	29	41
		NBR	NBR	NBR	55	64	56	64	58	66					7	19	65	85
	(Lafayette Road (Route 15))	EB	EBL	EBL	29	26	29	26	30	27			45		0	0	30	27
		EBT	EBT	EBT	1017	864	1034	864	1,055	881					0	0	1,055	881
		EBR	EBR	EBR	34	70	35	70	35	71					4	6	39	77
2	Wilson Drive	SB	SBL	SBL	269	142	274	142	280	146			45		0	0	280	146
	and	(Wilson Drive)	SBT	SBT	64	15	65	15	67	15					0	0	67	15
	Lafayette Road (Route 15)		SBR	SBR	42	39	43	39	44	40					0	0	44	40
	Lafayette Road (Route 15))	WB	WBL	WBL	60	20	61	20	62	20	35		45		0	0	62	20
		WBT	WBT	WBT	543	789	552	789	563	805					4	6	567	811
		WBR	WBR	WBR	176	135	179	135	183	138					0	0	183	138
	(Wilson Drive)	NB	NBL	NBL	22	66	22	66	23	68	35		45		32	8	55	76
		NBT	NBT	NBT	20	64	20	64	21	66					0	0	21	66
		NBR	NBR	NBR	28	83	28	83	29	85					0	0	29	85
	(Lafayette Road (Route 15))	EB	EBL	EBL	46	36	47	36	48	37	35		45		0	0	48	37
		EBT	EBT	EBT	763	621	776	621	792	633					4	6	796	639
		EBR	EBR	EBR	43	10	44	10	45	10					32	8	77	18
3	Existing Driveway	SB	SBL	SBL	7	3	7	3	7	3	42	23	100		18	48	18	48
	and	(Existing Driveway)	SBT	SBT			0	0	0	0					0	0	0	0
	Demarest Road		SBR	SBR	5	3	5	3	5	3					5	19	5	19
	Demarest Road)	WB	WBL	WBL	5	1	5	1	5	1	23	42	100		0	0	5	1
		WBT	WBT	WBT	95	31	97	31	99	32					21	5	120	37
		WBR	WBR	WBR	5	0	5	0	5	0					48	23	48	23
	(Existing Driveway)	NB	NBL	NBL	0	2	0	2	0	2					0	0	0	2
		NBT	NBT	NBT			0	0	0	0					0	0	0	0
		NBR	NBR	NBR	1	1	1	1	1	1					0	0	1	1
	(Demarest Road)	EB	EBL	EBL	4	2	4	2	4	2	23	23			21	5	21	5
		EBT	EBT	EBT	34	82	35	82	35	84					5	19	40	103
		EBR	EBR	EBR	2	0	2	0	2	0					0	0	2	0
4	Proposed Northern Driveway	SB	SBL	SBL			0	0	0	0	23	12			5	19	5	19
	and	Proposed Northern Driveway	SBT	SBT			0	0	0	0					0	0	0	0
	Demarest Road		SBR	SBR			0	0	0	0					3	10	3	10
	Demarest Road)	WB	WBL	WBL			0	0	0	0	23	23			0	0	0	0
		WBT	WBT	WBT	100	36	102	36	104	37					5	19	109	56
		WBR	WBR	WBR			0	0	0	0					21	5	21	5
	(Proposed Northern Driveway)	NB	NBL	NBL			0	0	0	0					0	0	0	0
		NBT	NBT	NBT			0	0	0	0					0	0	0	0
		NBR	NBR	NBR			0	0	0	0					0	0	0	0
	(Demarest Road)	EB	EBL	EBL			0	0	0	0	12	23			11	3	11	3
		EBT	EBT	EBT	40	84	41	84	42	86					21	5	63	91
		EBR	EBR	EBR			0	0	0	0					0	0	0	0
5	Houses Corner Road	SB	SBL	SBL	0	1	0	1	0	1	40		90		0	0	0	1
	and	(Houses Corner Road)	SBT	SBT	86	134	87	134	90	138					0	0	90	138
	Demarest Road		SBR	SBR	33	9	34	9	35	9					45	21	79	30
	Demarest Road)	WB	WBL	WBL			0	0	0	0					0	0	0	0
		WBT	WBT	WBT			0	0	0	0					0	0	0	0
		WBR	WBR	WBR			0	0	0	0					0	0	0	0
	(Houses Corner Road)	NB	NBL	NBL	71	28	72	28	74	29	25		10		24	7	98	36
		NBT	NBT	NBT	123	104	125	104	129	107					0	0	129	107
		NBR	NBR	NBR			0	0	0	0					0	0	0	0
	(Demarest Road)	EB	EBL	EBL	17	35	17	35	18	36	40		90		17	45	34	81
		EBT	EBT	EBT		54	0	54	0	55					0	0	0	55
		EBR	EBR	EBR	25	54	25	54	26	55					6	22	32	78

Intersection (North/South and East/West)		Direction	Movement SYNCHRO	AutoCAD Index	Existing 2021 FRI	COVID Adjusted 2021 FRI	No Build 2023 FRI	Passenger Trip Distribution		Truck Trip Distribution		Trip Assignments FRI	Build Out 2023 FRI
								%IN	%OUT	%IN	%OUT		
1	Houses Corner Road	SB	SBL	SBL	28	28	29	24		16	45	0	29
	and	(Houses Corner Road)	SBT	SBT	16	16	16					5	21
	Lafayette Road (Route 15)		SBR	SBR	25	25	26					0	26
	(Lafayette Road (Route 15))	WB	WBL	WBL	65	65	66					14	80
		WBT	WBT	WBT	1159	1159	1,182					0	1,182
		WBR	WBR	WBR	42	42	43					0	43
		NB	NBL	NBL	58	58	60	24	16	45	45	10	70
		(Houses Corner Road)	NBT	NBT	23	23	24					18	42
		NBR	NBR	NBR	73	73	75					22	97
		EB	EBL	EBL	29	29	30				45	0	30
		(Lafayette Road (Route 15))	EBT	EBT	979	979	999					0	999
			EBR	EBR	79	79	81					11	91
	Wilson Drive	SB	SBL	SBL	167	167	171				45	0	171
	and	(Wilson Drive)	SBT	SBT	32	32	33					0	33
	Lafayette Road (Route 15)		SBR	SBR	40	40	41					0	41
2	(Lafayette Road (Route 15))	WB	WBL	WBL	21	21	21				45	0	21
		WBT	WBT	WBT	867	867	884					10	894
		WBR	WBR	WBR	112	112	114					0	114
		NB	NBL	NBL	40	40	41	35				7	48
		(Wilson Drive)	NBT	NBT	51	51	52					0	52
		NBR	NBR	NBR	49	49	50					0	50
		EB	EBL	EBL	35	35	36				45	0	36
		(Lafayette Road (Route 15))	EBT	EBT	745	745	760					11	771
			EBR	EBR	27	27	28					7	34
	Existing Driveway	SB	SBL	SBL	8	8	8	35	42		100	54	54
	and	(Existing Driveway)	SBT	SBT	0	0	0					0	0
	Demarest Road		SBR	SBR	5	5	5					18	18
3	(Demarest Road)	WB	WBL	WBL	2	2	2	23	42		100	0	2
		WBT	WBT	WBT	52	52	53					4	58
		WBR	WBR	WBR	13	13	13					32	32
		NB	NBL	NBL	0	0	0					0	0
		(Existing Driveway)	NBT	NBT	1	1	1					0	0
		NBR	NBR	NBR	2	2	2					0	2
		EB	EBL	EBL	3	3	3	23	23			4	4
		(Demarest Road)	EBT	EBT	71	71	73					18	90
			EBR	EBR	3	3	3					0	3
	Proposed Northern Driveway	SB	SBL	SBL		0	0	23				18	18
	and	Proposed Northern Driveway	SBT	SBT		0	0					0	0
	Demarest Road		SBR	SBR		0	0					9	9
4	(Demarest Road)	WB	WBL	WBL		0	0	23	23			0	0
		WBT	WBT	WBT	57	57	58					18	76
		WBR	WBR	WBR		0	0					4	4
		NB	NBL	NBL		0	0					0	0
		(Proposed Northern Driveway)	NBT	NBT		0	0					0	0
		NBR	NBR	NBR		0	0					0	0
		EB	EBL	EBL		0	0	12	23			2	2
		(Demarest Road)	EBT	EBT	77	77	79					4	83
			EBR	EBR		0	0					0	0
	Houses Corner Road	SB	SBL	SBL	0	0	0	40		90		0	0
	and	(Houses Corner Road)	SBT	SBT	147	147	151					0	151
	Demarest Road		SBR	SBR	15	15	15					29	45
5	(Demarest Road)	WB	WBL	WBL		0	0				10	0	0
		WBT	WBT	WBT		0	0					0	0
		WBR	WBR	WBR		0	0					0	0
		NB	NBL	NBL	36	36	37	25				7	44
		(Houses Corner Road)	NBT	NBT	157	157	162					0	162
		NBR	NBR	NBR		0	0					0	0
		EB	EBL	EBL	27	27	28	40	25	90	10	51	78
		(Demarest Road)	EBT	EBT		0	0					0	0
			EBR	EBR	49	49	50					21	72

APPENDIX E

Intersection Capacity Analysis Worksheets

2021 Existing AM Peak

HCM 6th Signalized Intersection Summary

FCL Sparta

1: Route 669 & Route 15

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1034	35	53	792	55	53	23	56	69	23	42
Future Volume (veh/h)	29	1034	35	53	792	55	53	23	56	69	23	42
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	1796	1796	1737	1589	1752	1841	1841	1900	1218	1707	1900	1767
Adj Flow Rate, veh/h	30	1055	30	54	808	52	54	23	43	70	23	25
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, %	7	7	11	21	10	4	4	0	46	13	0	9
Cap, veh/h	379	1298	37	229	1216	78	190	67	125	166	94	102
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	617	1738	49	442	1628	105	1336	593	1108	1219	832	905
Grp Volume(v), veh/h	30	0	1085	54	0	860	54	0	66	70	0	48
Grp Sat Flow(s),veh/h/ln	617	0	1787	442	0	1733	1336	0	1701	1219	0	1737
Q Serve(g_s), s	2.6	0.0	39.1	9.0	0.0	24.9	3.8	0.0	3.6	5.6	0.0	2.5
Cycle Q Clear(g_c), s	27.5	0.0	39.1	48.1	0.0	24.9	6.4	0.0	3.6	9.2	0.0	2.5
Prop In Lane	1.00		0.03	1.00		0.06	1.00		0.65	1.00		0.52
Lane Grp Cap(c), veh/h	379	0	1335	229	0	1294	190	0	192	166	0	197
V/C Ratio(X)	0.08	0.00	0.81	0.24	0.00	0.66	0.28	0.00	0.34	0.42	0.00	0.24
Avail Cap(c_a), veh/h	379	0	1335	229	0	1294	292	0	323	260	0	330
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.00	0.50	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.3	0.0	8.2	23.6	0.0	6.4	43.3	0.0	40.9	45.2	0.0	40.4
Incr Delay (d2), s/veh	0.2	0.0	2.8	0.2	0.0	1.0	0.3	0.0	0.4	0.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	13.7	1.6	0.0	10.0	2.3	0.0	2.7	3.0	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.5	0.0	11.0	23.8	0.0	7.4	43.6	0.0	41.3	45.8	0.0	40.7
LnGrp LOS	B	A	B	C	A	A	D	A	D	D	A	D
Approach Vol, veh/h	1115			914			120			118		
Approach Delay, s/veh	11.1			8.4			42.4			43.7		
Approach LOS	B			A			D			D		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	82.7			17.3			82.7			17.3		
Change Period (Y+Rc), s	8.0			6.0			8.0			6.0		
Max Green Setting (Gmax), s	67.0			19.0			67.0			19.0		
Max Q Clear Time (g_c+l1), s	41.1			8.4			50.1			11.2		
Green Ext Time (p_c), s	5.7			0.2			3.9			0.1		
Intersection Summary												
HCM 6th Ctrl Delay	13.3											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary

2: Wilson Drive/White Lake Road & Route 15

FCL Sparta
Existing AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	776	44	61	552	179	22	20	28	274	65	43
Future Volume (veh/h)	47	776	44	61	552	179	22	20	28	274	65	43
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	1796	1781	1826	1826	1791	1811	1500	1678	1589	1841	1856	1811
Adj Flow Rate, veh/h	49	808	44	64	575	168	23	21	20	285	68	19
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	8	5	5	12	6	27	15	21	4	3	6
Cap, veh/h	326	1073	58	265	854	249	178	54	52	306	203	57
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.02	0.07	0.07	0.10	0.15	0.15
Sat Flow, veh/h	688	1674	91	632	1332	389	1428	790	752	1753	1395	390
Grp Volume(v), veh/h	49	0	852	64	0	743	23	0	41	285	0	87
Grp Sat Flow(s),veh/h/ln	688	0	1765	632	0	1721	1428	0	1542	1753	0	1785
Q Serve(g_s), s	4.8	0.0	33.5	7.8	0.0	27.3	1.5	0.0	2.5	10.0	0.0	4.4
Cycle Q Clear(g_c), s	32.1	0.0	33.5	41.3	0.0	27.3	1.5	0.0	2.5	10.0	0.0	4.4
Prop In Lane	1.00		0.05	1.00		0.23	1.00		0.49	1.00		0.22
Lane Grp Cap(c), veh/h	326	0	1131	265	0	1103	178	0	106	306	0	259
V/C Ratio(X)	0.15	0.00	0.75	0.24	0.00	0.67	0.13	0.00	0.39	0.93	0.00	0.34
Avail Cap(c_a), veh/h	326	0	1131	265	0	1103	287	0	108	306	0	259
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.75	0.00	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	12.5	26.8	0.0	11.3	41.8	0.0	44.5	41.0	0.0	38.4
Incr Delay (d2), s/veh	1.0	0.0	4.7	1.6	0.0	2.5	0.1	0.0	0.8	33.6	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	1.5	0.0	17.2	2.2	0.0	13.1	1.0	0.0	1.8	8.6	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	0.0	17.1	28.4	0.0	13.8	42.0	0.0	45.4	74.6	0.0	38.7
LnGrp LOS	C	A	B	C	A	B	D	A	D	E	A	D
Approach Vol, veh/h	901					807		64		372		
Approach Delay, s/veh	17.4					15.0		44.2		66.2		
Approach LOS	B					B		D		E		
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	71.1		15.0		13.9		71.1		7.4		21.5	
Change Period (Y+Rc), s	7.0		5.0		7.0		7.0		5.0		7.0	
Max Green Setting (Gmax), s	64.0		10.0		7.0		64.0		10.0		7.0	
Max Q Clear Time (g_c+l1), s	35.5		12.0		4.5		43.3		3.5		6.4	
Green Ext Time (p_c), s	4.0		0.0		0.0		3.4		0.0		0.0	
Intersection Summary												
HCM 6th Ctrl Delay			25.8									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

FCL Sparta
Existing AM

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	4	35	2	5	97	5	0	0	1	7	0	5
Future Vol, veh/h	4	35	2	5	97	5	0	0	1	7	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	36	15	0	0	7	100	0	0	100	100	0	100
Mvmt Flow	4	38	2	5	107	5	0	0	1	8	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	112	0	0	40	0	0	169	169	39	168	-	110
Stage 1	-	-	-	-	-	-	47	47	-	120	-	-
Stage 2	-	-	-	-	-	-	122	122	-	48	-	-
Critical Hdwy	4.46	-	-	4.1	-	-	7.1	6.5	7.2	8.1	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	-	-
Follow-up Hdwy	2.524	-	-	2.2	-	-	3.5	4	4.2	4.4	-	4.2
Pot Cap-1 Maneuver	1291	-	-	1583	-	-	799	728	811	620	0	733
Stage 1	-	-	-	-	-	-	972	860	-	694	0	-
Stage 2	-	-	-	-	-	-	887	799	-	766	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1291	-	-	1583	-	-	789	724	811	616	-	733
Mov Cap-2 Maneuver	-	-	-	-	-	-	789	724	-	616	-	-
Stage 1	-	-	-	-	-	-	969	857	-	692	-	-
Stage 2	-	-	-	-	-	-	878	797	-	763	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.3			9.4			10.5		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	811	1291	-	-	1583	-	-	616	733			
HCM Lane V/C Ratio	0.001	0.003	-	-	0.003	-	-	0.012	0.007			
HCM Control Delay (s)	9.4	7.8	0	-	7.3	0	-	10.9	9.9			
HCM Lane LOS	A	A	A	-	A	A	-	B	A			
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0	0			

HCM 6th TWSC
4: Demarest Road & Proposed Driveway

FCL Sparta
Existing AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	41	102	0	0	0
Future Vol, veh/h	0	41	102	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	111	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	111	0	-	0	156	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1479	-	-	-	835	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1479	-	-	-	835	942
Mov Cap-2 Maneuver	-	-	-	-	835	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	977	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1479	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	25	72	125	87	34
Future Vol, veh/h	17	25	72	125	87	34
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, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	35	28	10	21	17	9
Mvmt Flow	18	26	76	132	92	36
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	394	110	128	0	-	0
Stage 1	110	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.75	6.48	4.2	-	-	-
Critical Hdwy Stg 1	5.75	-	-	-	-	-
Critical Hdwy Stg 2	5.75	-	-	-	-	-
Follow-up Hdwy	3.815	3.552	2.29	-	-	-
Pot Cap-1 Maneuver	551	877	1410	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	519	877	1410	-	-	-
Mov Cap-2 Maneuver	519	-	-	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.6	2.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1410	-	686	-	-	
HCM Lane V/C Ratio	0.054	-	0.064	-	-	
HCM Control Delay (s)	7.7	0	10.6	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-	

2021 Existing PM Peak

HCM 6th Signalized Intersection Summary

1: Limecrest Road/Houses Corner Road & Route 15

FCL Sparta
Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	864	70	45	1038	44	55	20	64	22	19	34
Future Volume (veh/h)	26	864	70	45	1038	44	55	20	64	22	19	34
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	1781	1841	1900	1574	1856	1856	1900	1900	1707	1826	1900	1707
Adj Flow Rate, veh/h	28	929	72	48	1116	41	59	22	42	24	20	37
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	8	4	0	22	3	3	0	0	13	5	0	13
Cap, veh/h	272	1353	105	320	1426	52	136	53	101	127	54	100
Arrive On Green	0.80	0.80	0.80	0.80	0.80	0.80	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	463	1686	131	474	1778	65	1368	584	1115	1306	597	1104
Grp Volume(v), veh/h	28	0	1001	48	0	1157	59	0	64	24	0	57
Grp Sat Flow(s),veh/h/ln	463	0	1817	474	0	1844	1368	0	1699	1306	0	1701
Q Serve(g_s), s	4.5	0.0	31.6	6.5	0.0	43.4	5.5	0.0	4.6	2.3	0.0	4.1
Cycle Q Clear(g_c), s	47.8	0.0	31.6	38.0	0.0	43.4	9.6	0.0	4.6	6.9	0.0	4.1
Prop In Lane	1.00		0.07	1.00		0.04	1.00		0.66	1.00		0.65
Lane Grp Cap(c), veh/h	272	0	1457	320	0	1479	136	0	153	127	0	154
V/C Ratio(X)	0.10	0.00	0.69	0.15	0.00	0.78	0.43	0.00	0.42	0.19	0.00	0.37
Avail Cap(c_a), veh/h	272	0	1457	320	0	1479	212	0	248	200	0	249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.00	0.78	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	5.7	14.1	0.0	6.8	60.2	0.0	55.9	59.2	0.0	55.7
Incr Delay (d2), s/veh	0.6	0.0	2.1	0.1	0.0	2.6	0.8	0.0	0.7	0.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	0.0	12.5	1.2	0.0	17.1	3.5	0.0	3.6	1.4	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	0.0	7.8	14.1	0.0	9.4	61.0	0.0	56.6	59.4	0.0	56.2
LnGrp LOS	C	A	A	B	A	A	E	A	E	E	A	E
Approach Vol, veh/h	1029			1205			123			81		
Approach Delay, s/veh	8.1			9.6			58.7			57.2		
Approach LOS	A			A			E			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	112.3			17.7			112.3			17.7		
Change Period (Y+Rc), s	8.0			6.0			8.0			6.0		
Max Green Setting (Gmax), s	97.0			19.0			97.0			19.0		
Max Q Clear Time (g_c+l1), s	49.8			11.6			45.4			8.9		
Green Ext Time (p_c), s	5.4			0.1			7.6			0.1		
Intersection Summary												
HCM 6th Ctrl Delay	13.0											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary

2: Wilson Drive/White Lake Road & Route 15

FCL Sparta
Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	621	10	20	789	135	66	64	83	142	15	39
Future Volume (veh/h)	36	621	10	20	789	135	66	64	83	142	15	39
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	1900	1841	1574	1752	1945	1841	1826	1900	1900	1870	1900	1900
Adj Flow Rate, veh/h	40	682	10	22	867	146	73	70	50	156	16	14
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, %	0	4	22	10	2	4	5	0	0	2	0	0
Cap, veh/h	285	1308	19	447	1173	198	216	56	40	192	75	65
Arrive On Green	0.72	0.72	0.72	0.72	0.72	0.72	0.05	0.05	0.05	0.08	0.08	0.08
Sat Flow, veh/h	565	1809	27	704	1623	273	1739	1031	736	1781	935	818
Grp Volume(v), veh/h	40	0	692	22	0	1013	73	0	120	156	0	30
Grp Sat Flow(s),veh/h/ln	565	0	1836	704	0	1896	1739	0	1767	1781	0	1753
Q Serve(g_s), s	5.9	0.0	21.8	1.9	0.0	41.3	5.1	0.0	7.0	10.0	0.0	2.1
Cycle Q Clear(g_c), s	47.2	0.0	21.8	23.6	0.0	41.3	5.1	0.0	7.0	10.0	0.0	2.1
Prop In Lane	1.00		0.01	1.00		0.14	1.00		0.42	1.00		0.47
Lane Grp Cap(c), veh/h	285	0	1328	447	0	1371	216	0	95	192	0	140
V/C Ratio(X)	0.14	0.00	0.52	0.05	0.00	0.74	0.34	0.00	1.26	0.81	0.00	0.21
Avail Cap(c_a), veh/h	285	0	1328	447	0	1371	262	0	95	192	0	140
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	0.55	0.00	0.55	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.7	0.0	8.0	13.3	0.0	10.7	54.4	0.0	61.5	54.1	0.0	56.0
Incr Delay (d2), s/veh	1.0	0.0	1.5	0.1	0.0	2.0	0.3	0.0	177.8	21.0	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	1.5	0.0	11.9	0.5	0.0	18.8	4.1	0.0	13.3	9.9	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	0.0	9.5	13.4	0.0	12.7	54.7	0.0	239.3	75.1	0.0	56.3
LnGrp LOS	C	A	A	B	A	B	D	A	F	E	A	E
Approach Vol, veh/h	732		1035				193			186		
Approach Delay, s/veh	10.4		12.7				169.5			72.0		
Approach LOS	B		B				F			E		
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	101.0		15.0		14.0		101.0		11.6		17.4	
Change Period (Y+Rc), s	7.0		5.0		7.0		7.0		5.0		7.0	
Max Green Setting (Gmax), s	94.0		10.0		7.0		94.0		10.0		7.0	
Max Q Clear Time (g_c+l1), s	49.2		12.0		9.0		43.3		7.1		4.1	
Green Ext Time (p_c), s	3.0		0.0		0.0		5.3		0.0		0.0	
Intersection Summary												
HCM 6th Ctrl Delay			31.2									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

FCL Sparta
Existing PM

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕		↕
Traffic Vol, veh/h	2	82	0	1	31	0	2	0	1	3	0	3
Future Vol, veh/h	2	82	0	1	31	0	2	0	1	3	0	3
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	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	68	68	68	68	68	68	68	68	68
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	121	0	1	46	0	3	0	1	4	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	46	0	0	121	0	0	177	175	121	176	-	46
Stage 1	-	-	-	-	-	-	127	127	-	48	-	-
Stage 2	-	-	-	-	-	-	50	48	-	128	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	-	3.3
Pot Cap-1 Maneuver	1575	-	-	1479	-	-	790	722	936	791	0	1029
Stage 1	-	-	-	-	-	-	882	795	-	971	0	-
Stage 2	-	-	-	-	-	-	968	859	-	881	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1575	-	-	1479	-	-	784	720	936	788	-	1029
Mov Cap-2 Maneuver	-	-	-	-	-	-	784	720	-	788	-	-
Stage 1	-	-	-	-	-	-	880	793	-	969	-	-
Stage 2	-	-	-	-	-	-	963	858	-	878	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			9.4			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	829	1575	-	-	1479	-	-	788	1029			
HCM Lane V/C Ratio	0.005	0.002	-	-	0.001	-	-	0.006	0.004			
HCM Control Delay (s)	9.4	7.3	0	-	7.4	0	-	9.6	8.5			
HCM Lane LOS	A	A	A	-	A	A	-	A	A			
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0	0			

HCM 6th TWSC
4: Demarest Road & Proposed Northern Driveway

FCL Sparta
Existing PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	84	36	0	0	0
Future Vol, veh/h	0	84	36	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	91	39	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	39	0	-	0	130	39
Stage 1	-	-	-	-	39	-
Stage 2	-	-	-	-	91	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1571	-	-	-	864	1033
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	933	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1571	-	-	-	864	1033
Mov Cap-2 Maneuver	-	-	-	-	864	-
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	933	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1571	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile O(veh)	0	-	-	-	-	

HCM 6th TWSC
5: Limecrest Road & Demarest Road

FCL Sparta
Existing PM

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	54	28	104	134	9
Future Vol, veh/h	35	54	28	104	134	9
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, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	14	9	0
Mvmt Flow	39	61	31	117	151	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	335	156	161	0	-	0
Stage 1	156	-	-	-	-	-
Stage 2	179	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	664	895	1430	-	-	-
Stage 1	877	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	649	895	1430	-	-	-
Mov Cap-2 Maneuver	649	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.3	1.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1430	-	779	-	-	
HCM Lane V/C Ratio	0.022	-	0.128	-	-	
HCM Control Delay (s)	7.6	0	10.3	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

2021 Existing Friday Peak

HCM 6th Signalized Intersection Summary

1: Limecrest Road/Houses Corner Road & Route 15

FCL Sparta
Existing FRI

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	979	79	65	1159	42	58	23	73	28	16	25
Future Volume (veh/h)	29	979	79	65	1159	42	58	23	73	28	16	25
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	1900	1856	1856	1618	1870	1856	1870	1841	1752	1737	1811	1900
Adj Flow Rate, veh/h	30	999	74	66	1183	36	59	23	31	29	16	15
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	3	3	19	2	3	2	4	10	11	6	0
Cap, veh/h	273	1393	103	309	1474	45	136	54	73	112	65	61
Arrive On Green	0.82	0.82	0.82	0.82	0.82	0.82	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	465	1706	126	455	1806	55	1378	711	958	1254	860	806
Grp Volume(v), veh/h	30	0	1073	66	0	1219	59	0	54	29	0	31
Grp Sat Flow(s),veh/h/ln	465	0	1833	455	0	1860	1378	0	1668	1254	0	1666
Q Serve(g_s), s	4.8	0.0	33.7	9.8	0.0	45.3	5.5	0.0	4.0	2.9	0.0	2.3
Cycle Q Clear(g_c), s	50.1	0.0	33.7	43.5	0.0	45.3	7.8	0.0	4.0	7.0	0.0	2.3
Prop In Lane	1.00		0.07	1.00		0.03	1.00		0.57	1.00		0.48
Lane Grp Cap(c), veh/h	273	0	1496	309	0	1519	136	0	127	112	0	126
V/C Ratio(X)	0.11	0.00	0.72	0.21	0.00	0.80	0.43	0.00	0.43	0.26	0.00	0.25
Avail Cap(c_a), veh/h	273	0	1496	309	0	1519	233	0	244	200	0	243
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.00	0.70	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.7	0.0	5.3	14.9	0.0	6.4	60.2	0.0	57.4	60.7	0.0	56.6
Incr Delay (d2), s/veh	0.6	0.0	2.1	0.1	0.0	3.0	0.8	0.0	0.8	0.5	0.0	0.4
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	1.0	0.0	12.2	1.7	0.0	16.8	3.5	0.0	3.1	1.7	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	7.4	15.0	0.0	9.3	61.0	0.0	58.2	61.1	0.0	56.9
LnGrp LOS	C	A	A	B	A	A	E	A	E	E	A	E
Approach Vol, veh/h	1103		1285				113		60			
Approach Delay, s/veh	7.7		9.6				59.7		59.0			
Approach LOS	A		A				E		E			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	114.1		15.9		114.1		15.9					
Change Period (Y+Rc), s	8.0		6.0		8.0		6.0					
Max Green Setting (Gmax), s	97.0		19.0		97.0		19.0					
Max Q Clear Time (g_c+l1), s	52.1		9.8		47.3		9.0					
Green Ext Time (p_c), s	6.2		0.1		8.9		0.1					
Intersection Summary												
HCM 6th Ctrl Delay	12.2											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary

2: Wilson Drive/White Lake Road & Route 15

FCL Sparta
Existing FRI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	745	27	21	867	112	40	51	49	167	32	40
Future Volume (veh/h)	35	745	27	21	867	112	40	51	49	167	32	40
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	1856	1841	1589	1826	1930	1885	1781	1870	1900	1856	1811	1900
Adj Flow Rate, veh/h	37	784	28	22	913	118	42	54	52	176	34	42
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, %	3	4	21	5	3	1	8	2	0	3	6	0
Cap, veh/h	268	1277	46	385	1211	156	175	47	45	191	74	92
Arrive On Green	0.72	0.72	0.72	0.72	0.72	0.72	0.03	0.05	0.05	0.08	0.10	0.10
Sat Flow, veh/h	543	1766	63	656	1674	216	1697	876	843	1767	737	910
Grp Volume(v), veh/h	37	0	812	22	0	1031	42	0	106	176	0	76
Grp Sat Flow(s),veh/h/ln	543	0	1829	656	0	1891	1697	0	1719	1767	0	1647
Q Serve(g_s), s	5.8	0.0	28.7	2.2	0.0	43.2	3.0	0.0	7.0	10.0	0.0	5.7
Cycle Q Clear(g_c), s	49.0	0.0	28.7	31.0	0.0	43.2	3.0	0.0	7.0	10.0	0.0	5.7
Prop In Lane	1.00		0.03	1.00		0.11	1.00		0.49	1.00		0.55
Lane Grp Cap(c), veh/h	268	0	1323	385	0	1367	175	0	93	191	0	166
V/C Ratio(X)	0.14	0.00	0.61	0.06	0.00	0.75	0.24	0.00	1.15	0.92	0.00	0.46
Avail Cap(c_a), veh/h	268	0	1323	385	0	1367	254	0	93	191	0	166
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	0.50	0.00	0.50	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	9.0	16.7	0.0	11.0	55.9	0.0	61.5	54.2	0.0	55.1
Incr Delay (d2), s/veh	1.1	0.0	2.1	0.1	0.0	2.0	0.3	0.0	138.1	42.4	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	0.0	15.0	0.6	0.0	19.3	2.4	0.0	11.3	5.6	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	0.0	11.1	16.8	0.0	12.9	56.2	0.0	199.6	96.5	0.0	55.9
LnGrp LOS	C	A	B	B	A	B	E	A	F	F	A	E
Approach Vol, veh/h	849		1053			148			252			
Approach Delay, s/veh	11.8		13.0			158.9			84.3			
Approach LOS	B		B			F			F			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	101.0		15.0		14.0		101.0		8.9		20.1	
Change Period (Y+Rc), s	7.0		5.0		7.0		7.0		5.0		7.0	
Max Green Setting (Gmax), s	94.0		10.0		7.0		94.0		10.0		7.0	
Max Q Clear Time (g_c+l1), s	51.0		12.0		9.0		45.2		5.0		7.7	
Green Ext Time (p_c), s	3.8		0.0		0.0		5.5		0.0		0.0	
Intersection Summary												
HCM 6th Ctrl Delay			29.7									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

FCL Sparta
Existing FRI

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	3	71	3	2	52	13	0	1	2	8	0	5
Future Vol, veh/h	3	71	3	2	52	13	0	1	2	8	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	100	7	33	50	14	85	0	100	50	88	0	0
Mvmt Flow	4	86	4	2	63	16	0	1	2	10	0	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	79	0	0	90	0	0	174	179	88	173	-	71
Stage 1	-	-	-	-	-	-	96	96	-	75	-	-
Stage 2	-	-	-	-	-	-	78	83	-	98	-	-
Critical Hdwy	5.1	-	-	4.6	-	-	7.1	7.5	6.7	7.98	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6.5	-	6.98	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6.5	-	6.98	-	-
Follow-up Hdwy	3.1	-	-	2.65	-	-	3.5	4.9	3.75	4.292	-	3.3
Pot Cap-1 Maneuver	1074	-	-	1251	-	-	793	570	853	633	0	997
Stage 1	-	-	-	-	-	-	916	659	-	758	0	-
Stage 2	-	-	-	-	-	-	936	669	-	735	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1074	-	-	1251	-	-	784	567	853	627	-	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	784	567	-	627	-	-
Stage 1	-	-	-	-	-	-	912	656	-	755	-	-
Stage 2	-	-	-	-	-	-	928	668	-	729	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.2			10			10		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	730	1074	-	-	1251	-	-	627	997			
HCM Lane V/C Ratio	0.005	0.003	-	-	0.002	-	-	0.015	0.006			
HCM Control Delay (s)	10	8.4	0	-	7.9	0	-	10.8	8.6			
HCM Lane LOS	B	A	A	-	A	A	-	B	A			
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0	0			

HCM 6th TWSC
4: Demarest Road & Proposed Northern Driveway

FCL Sparta
Existing FRI

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	77	57	0	0	0
Future Vol, veh/h	0	77	57	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	84	62	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	62	0	-	0	146	62
Stage 1	-	-	-	-	62	-
Stage 2	-	-	-	-	84	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1541	-	-	-	846	1003
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	939	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1541	-	-	-	846	1003
Mov Cap-2 Maneuver	-	-	-	-	846	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	939	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1541	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

HCM 6th TWSC
5: Limecrest Road & Demarest Road

FCL Sparta
Existing FRI

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	49	36	157	147	15
Future Vol, veh/h	27	49	36	157	147	15
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, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	11	10	11	23	12	13
Mvmt Flow	30	54	40	173	162	16
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	423	170	178	0	-	0
Stage 1	170	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.51	6.3	4.21	-	-	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.599	3.39	2.299	-	-	-
Pot Cap-1 Maneuver	571	853	1345	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	769	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	552	853	1345	-	-	-
Mov Cap-2 Maneuver	552	-	-	-	-	-
Stage 1	810	-	-	-	-	-
Stage 2	769	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	1.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1345	-	715	-	-	
HCM Lane V/C Ratio	0.029	-	0.117	-	-	
HCM Control Delay (s)	7.8	0	10.7	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

2023 No-Build AM Peak

HCM 6th Signalized Intersection Summary

FCL Sparta

1: Route 669 & Route 15

No Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1055	35	54	808	56	54	24	58	71	24	43
Future Volume (veh/h)	30	1055	35	54	808	56	54	24	58	71	24	43
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	1796	1796	1737	1589	1752	1841	1841	1900	1218	1707	1900	1767
Adj Flow Rate, veh/h	31	1077	30	55	824	53	55	24	45	72	24	26
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, %	7	7	11	21	10	4	4	0	46	13	0	9
Cap, veh/h	364	1293	36	213	1210	78	193	69	129	168	97	105
Arrive On Green	0.74	0.74	0.74	0.74	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	607	1739	48	433	1628	105	1333	591	1109	1216	834	903
Grp Volume(v), veh/h	31	0	1107	55	0	877	55	0	69	72	0	50
Grp Sat Flow(s),veh/h/ln	607	0	1788	433	0	1733	1333	0	1700	1216	0	1737
Q Serve(g_s), s	2.8	0.0	41.7	9.8	0.0	26.3	3.9	0.0	3.7	5.8	0.0	2.6
Cycle Q Clear(g_c), s	29.1	0.0	41.7	51.6	0.0	26.3	6.5	0.0	3.7	9.5	0.0	2.6
Prop In Lane	1.00		0.03	1.00		0.06	1.00		0.65	1.00		0.52
Lane Grp Cap(c), veh/h	364	0	1329	213	0	1288	193	0	198	168	0	203
V/C Ratio(X)	0.09	0.00	0.83	0.26	0.00	0.68	0.29	0.00	0.35	0.43	0.00	0.25
Avail Cap(c_a), veh/h	364	0	1329	213	0	1288	290	0	323	258	0	330
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.00	0.47	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	8.6	26.0	0.0	6.7	43.2	0.0	40.7	45.1	0.0	40.2
Incr Delay (d2), s/veh	0.2	0.0	3.1	0.2	0.0	1.2	0.3	0.0	0.4	0.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	14.6	1.7	0.0	10.5	2.3	0.0	2.8	3.1	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.4	0.0	11.7	26.2	0.0	7.9	43.5	0.0	41.1	45.7	0.0	40.4
LnGrp LOS	B	A	B	C	A	A	D	A	D	D	A	D
Approach Vol, veh/h	1138			932			124			122		
Approach Delay, s/veh	11.8			9.0			42.1			43.5		
Approach LOS	B			A			D			D		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	82.3			17.7			82.3			17.7		
Change Period (Y+Rc), s	8.0			6.0			8.0			6.0		
Max Green Setting (Gmax), s	67.0			19.0			67.0			19.0		
Max Q Clear Time (g_c+l1), s	43.7			8.5			53.6			11.5		
Green Ext Time (p_c), s	5.8			0.2			3.7			0.1		
Intersection Summary												
HCM 6th Ctrl Delay	13.9											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary 2: Wilson Drive/White Lake Road & Route 15

FCL Sparta
No Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	792	45	62	563	183	23	21	29	280	67	44
Future Volume (veh/h)	48	792	45	62	563	183	23	21	29	280	67	44
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	1796	1781	1826	1826	1791	1811	1500	1678	1589	1841	1856	1811
Adj Flow Rate, veh/h	50	825	45	65	586	173	24	22	21	292	70	20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	8	5	5	12	6	27	15	21	4	3	6
Cap, veh/h	278	1022	56	217	811	240	179	55	52	357	243	69
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.02	0.07	0.07	0.13	0.17	0.17
Sat Flow, veh/h	678	1674	91	621	1328	392	1428	789	753	1753	1388	396
Grp Volume(v), veh/h	50	0	870	65	0	759	24	0	43	292	0	90
Grp Sat Flow(s),veh/h/ln	678	0	1765	621	0	1720	1428	0	1542	1753	0	1784
Q Serve(g_s), s	5.5	0.0	37.8	9.0	0.0	30.7	1.5	0.0	2.7	13.0	0.0	4.4
Cycle Q Clear(g_c), s	36.3	0.0	37.8	46.8	0.0	30.7	1.5	0.0	2.7	13.0	0.0	4.4
Prop In Lane	1.00		0.05	1.00		0.23	1.00		0.49	1.00		0.22
Lane Grp Cap(c), veh/h	278	0	1078	217	0	1051	179	0	107	357	0	312
V/C Ratio(X)	0.18	0.00	0.81	0.30	0.00	0.72	0.13	0.00	0.40	0.82	0.00	0.29
Avail Cap(c_a), veh/h	278	0	1078	217	0	1051	330	0	139	357	0	312
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	0.73	0.00	0.73	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	14.9	32.9	0.0	13.5	41.8	0.0	44.6	37.6	0.0	35.9
Incr Delay (d2), s/veh	1.4	0.0	6.5	2.6	0.0	3.2	0.1	0.0	0.9	13.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	20.1	2.6	0.0	15.0	1.0	0.0	1.9	3.4	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	21.4	35.5	0.0	16.7	41.9	0.0	45.5	50.6	0.0	36.0
LnGrp LOS	C	A	C	D	A	B	D	A	D	D	A	D
Approach Vol, veh/h	920		824			67			382			
Approach Delay, s/veh	21.8		18.2			44.2			47.2			
Approach LOS	C		B			D			D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	68.1		18.0		13.9		68.1		7.4		24.5	
Change Period (Y+Rc), s	7.0		5.0		7.0		7.0		5.0		7.0	
Max Green Setting (Gmax), s	59.0		13.0		9.0		59.0		13.0		9.0	
Max Q Clear Time (g_c+l1), s	39.8		15.0		4.7		48.8		3.5		6.4	
Green Ext Time (p_c), s	3.8		0.0		0.0		2.7		0.0		0.0	
Intersection Summary												
HCM 6th Ctrl Delay			25.5									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

FCL Sparta
No Build AM

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	4	35	2	5	99	5	0	0	1	7	0	5
Future Vol, veh/h	4	35	2	5	99	5	0	0	1	7	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	36	15	0	0	7	100	0	0	100	100	0	100
Mvmt Flow	4	38	2	5	109	5	0	0	1	8	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	114	0	0	40	0	0	171	171	39	170	-	112
Stage 1	-	-	-	-	-	-	47	47	-	122	-	-
Stage 2	-	-	-	-	-	-	124	124	-	48	-	-
Critical Hdwy	4.46	-	-	4.1	-	-	7.1	6.5	7.2	8.1	-	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	-	-
Follow-up Hdwy	2.524	-	-	2.2	-	-	3.5	4	4.2	4.4	-	4.2
Pot Cap-1 Maneuver	1289	-	-	1583	-	-	797	726	811	618	0	731
Stage 1	-	-	-	-	-	-	972	860	-	692	0	-
Stage 2	-	-	-	-	-	-	885	797	-	766	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1289	-	-	1583	-	-	787	722	811	614	-	731
Mov Cap-2 Maneuver	-	-	-	-	-	-	787	722	-	614	-	-
Stage 1	-	-	-	-	-	-	969	857	-	690	-	-
Stage 2	-	-	-	-	-	-	876	795	-	763	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.3			9.4			10.5		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	811	1289	-	-	1583	-	-	614	731			
HCM Lane V/C Ratio	0.001	0.003	-	-	0.003	-	-	0.013	0.008			
HCM Control Delay (s)	9.4	7.8	0	-	7.3	0	-	10.9	10			
HCM Lane LOS	A	A	A	-	A	A	-	B	B			
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0	0			

HCM 6th TWSC
4: Demarest Road & Proposed Driveway

FCL Sparta
No Build AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	42	104	0	0	0
Future Vol, veh/h	0	42	104	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	46	113	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	113	0	-	0	159	113
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	46	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1476	-	-	-	832	940
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1476	-	-	-	832	940
Mov Cap-2 Maneuver	-	-	-	-	832	-
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	976	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1476	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	26	74	129	90	35
Future Vol, veh/h	18	26	74	129	90	35
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, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	35	28	10	21	17	9
Mvmt Flow	19	27	78	136	95	37
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	406	114	132	0	-	0
Stage 1	114	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Critical Hdwy	6.75	6.48	4.2	-	-	-
Critical Hdwy Stg 1	5.75	-	-	-	-	-
Critical Hdwy Stg 2	5.75	-	-	-	-	-
Follow-up Hdwy	3.815	3.552	2.29	-	-	-
Pot Cap-1 Maneuver	542	873	1405	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	509	873	1405	-	-	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.7	2.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1405	-	675	-	-	
HCM Lane V/C Ratio	0.055	-	0.069	-	-	
HCM Control Delay (s)	7.7	0	10.7	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-	

2023 No-Build PM Peak

HCM 6th Signalized Intersection Summary

1: Limecrest Road/Houses Corner Road & Route 15

FCL Sparta
No Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	881	71	46	1059	45	57	21	66	23	20	35
Future Volume (veh/h)	27	881	71	46	1059	45	57	21	66	23	20	35
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	1781	1841	1900	1574	1856	1856	1900	1900	1707	1826	1900	1707
Adj Flow Rate, veh/h	29	947	73	49	1139	42	61	23	44	25	22	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	8	4	0	22	3	3	0	0	13	5	0	13
Cap, veh/h	255	1348	104	307	1421	52	138	54	104	129	58	101
Arrive On Green	0.80	0.80	0.80	0.80	0.80	0.80	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	452	1687	130	465	1778	66	1364	583	1116	1303	625	1080
Grp Volume(v), veh/h	29	0	1020	49	0	1181	61	0	67	25	0	60
Grp Sat Flow(s),veh/h/ln	452	0	1817	465	0	1844	1364	0	1699	1303	0	1706
Q Serve(g_s), s	5.0	0.0	33.4	7.0	0.0	46.6	5.7	0.0	4.8	2.4	0.0	4.3
Cycle Q Clear(g_c), s	51.6	0.0	33.4	40.5	0.0	46.6	10.0	0.0	4.8	7.2	0.0	4.3
Prop In Lane	1.00		0.07	1.00		0.04	1.00		0.66	1.00		0.63
Lane Grp Cap(c), veh/h	255	0	1452	307	0	1473	138	0	159	129	0	159
V/C Ratio(X)	0.11	0.00	0.70	0.16	0.00	0.80	0.44	0.00	0.42	0.19	0.00	0.38
Avail Cap(c_a), veh/h	255	0	1452	307	0	1473	210	0	248	197	0	249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.77	0.00	0.77	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	6.0	15.3	0.0	7.3	60.1	0.0	55.6	59.0	0.0	55.4
Incr Delay (d2), s/veh	0.7	0.0	2.2	0.1	0.0	3.0	0.8	0.0	0.7	0.3	0.0	0.5
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	1.0	0.0	13.3	1.3	0.0	18.6	3.6	0.0	3.7	1.4	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.4	0.0	8.2	15.4	0.0	10.4	60.9	0.0	56.3	59.3	0.0	55.9
LnGrp LOS	C	A	A	B	A	B	E	A	E	E	A	E
Approach Vol, veh/h	1049			1230			128			85		
Approach Delay, s/veh	8.6			10.6			58.5			56.9		
Approach LOS	A			B			E			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	111.9			18.1			111.9			18.1		
Change Period (Y+Rc), s	8.0			6.0			8.0			6.0		
Max Green Setting (Gmax), s	97.0			19.0			97.0			19.0		
Max Q Clear Time (g_c+l1), s	53.6			12.0			48.6			9.2		
Green Ext Time (p_c), s	5.6			0.1			8.0			0.1		
Intersection Summary												
HCM 6th Ctrl Delay	13.8											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary

2: Wilson Drive/White Lake Road & Route 15

FCL Sparta
No Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	633	10	20	805	138	68	66	85	146	15	40
Future Volume (veh/h)	37	633	10	20	805	138	68	66	85	146	15	40
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	1900	1841	1574	1752	1945	1841	1826	1900	1900	1870	1900	1900
Adj Flow Rate, veh/h	41	696	10	22	885	150	75	73	52	160	16	15
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, %	0	4	22	10	2	4	5	0	0	2	0	0
Cap, veh/h	210	1218	18	381	1091	185	260	89	64	245	117	110
Arrive On Green	0.67	0.67	0.67	0.67	0.67	0.67	0.05	0.09	0.09	0.09	0.13	0.13
Sat Flow, veh/h	554	1810	26	695	1621	275	1739	1032	735	1781	902	846
Grp Volume(v), veh/h	41	0	706	22	0	1035	75	0	125	160	0	31
Grp Sat Flow(s),veh/h/ln	554	0	1836	695	0	1896	1739	0	1768	1781	0	1748
Q Serve(g_s), s	7.5	0.0	26.6	2.3	0.0	51.1	5.1	0.0	9.0	10.3	0.0	2.0
Cycle Q Clear(g_c), s	58.6	0.0	26.6	28.8	0.0	51.1	5.1	0.0	9.0	10.3	0.0	2.0
Prop In Lane	1.00		0.01	1.00		0.14	1.00		0.42	1.00		0.48
Lane Grp Cap(c), veh/h	210	0	1236	381	0	1276	260	0	153	245	0	227
V/C Ratio(X)	0.19	0.00	0.57	0.06	0.00	0.81	0.29	0.00	0.82	0.65	0.00	0.14
Avail Cap(c_a), veh/h	210	0	1236	381	0	1276	345	0	231	255	0	229
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	0.52	0.00	0.52	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.4	0.0	11.3	19.0	0.0	15.3	50.6	0.0	58.4	46.7	0.0	50.1
Incr Delay (d2), s/veh	2.1	0.0	1.9	0.2	0.0	3.0	0.2	0.0	7.6	4.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	15.1	0.7	0.0	24.6	4.0	0.0	7.8	8.4	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	13.2	19.1	0.0	18.4	50.8	0.0	66.0	50.9	0.0	50.2
LnGrp LOS	D	A	B	B	A	B	D	A	E	D	A	D
Approach Vol, veh/h	747		1057			200			191			
Approach Delay, s/veh	14.6		18.4			60.3			50.8			
Approach LOS	B		B			E			D			
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	94.5		17.3	18.2		94.5	11.6	23.9				
Change Period (Y+Rc), s	7.0		5.0	7.0		7.0	5.0	7.0				
Max Green Setting (Gmax), s	81.0		13.0	17.0		81.0	13.0	17.0				
Max Q Clear Time (g_c+l1), s	60.6		12.3	11.0		53.1	7.1	4.0				
Green Ext Time (p_c), s	2.9		0.0	0.2		5.3	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			23.7									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

FCL Sparta
No Build PM

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕		↕
Traffic Vol, veh/h	2	84	0	1	32	0	2	0	1	3	0	3
Future Vol, veh/h	2	84	0	1	32	0	2	0	1	3	0	3
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	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	68	68	68	68	68	68	68	68	68
Heavy Vehicles, %	0	1	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	124	0	1	47	0	3	0	1	4	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	47	0	0	124	0	0	181	179	124	180	-	47
Stage 1	-	-	-	-	-	-	130	130	-	49	-	-
Stage 2	-	-	-	-	-	-	51	49	-	131	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	-	3.3
Pot Cap-1 Maneuver	1573	-	-	1475	-	-	785	718	932	786	0	1028
Stage 1	-	-	-	-	-	-	878	792	-	969	0	-
Stage 2	-	-	-	-	-	-	967	858	-	877	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1573	-	-	1475	-	-	780	716	932	783	-	1028
Mov Cap-2 Maneuver	-	-	-	-	-	-	780	716	-	783	-	-
Stage 1	-	-	-	-	-	-	876	790	-	967	-	-
Stage 2	-	-	-	-	-	-	962	857	-	874	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			9.4			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	825	1573	-	-	1475	-	-	783	1028			
HCM Lane V/C Ratio	0.005	0.002	-	-	0.001	-	-	0.006	0.004			
HCM Control Delay (s)	9.4	7.3	0	-	7.4	0	-	9.6	8.5			
HCM Lane LOS	A	A	A	-	A	A	-	A	A			
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0	0			

HCM 6th TWSC
4: Demarest Road & Proposed Northern Driveway

FCL Sparta
No Build PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	86	37	0	0	0
Future Vol, veh/h	0	86	37	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	93	40	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	40	0	-	0	133	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	93	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1570	-	-	-	861	1031
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1570	-	-	-	861	1031
Mov Cap-2 Maneuver	-	-	-	-	861	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	931	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1570	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	-	0
HCM Lane LOS	A	-	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-	-

HCM 6th TWSC
5: Limecrest Road & Demarest Road

FCL Sparta
No Build PM

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	55	29	107	138	9
Future Vol, veh/h	36	55	29	107	138	9
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, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	14	9	0
Mvmt Flow	40	62	33	120	155	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	346	160	165	0	-	0
Stage 1	160	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	655	890	1426	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	639	890	1426	-	-	-
Mov Cap-2 Maneuver	639	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.4	1.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1426	-	770	-	-	
HCM Lane V/C Ratio	0.023	-	0.133	-	-	
HCM Control Delay (s)	7.6	0	10.4	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-	

2023 No-Build Friday Peak

HCM 6th Signalized Intersection Summary

1: Limecrest Road/Houses Corner Road & Route 15

FCL Sparta
No Build FRI

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	999	81	66	1182	43	60	24	75	29	16	26
Future Volume (veh/h)	30	999	81	66	1182	43	60	24	75	29	16	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	1900	1856	1856	1618	1870	1856	1870	1841	1752	1737	1811	1900
Adj Flow Rate, veh/h	31	1019	76	67	1206	37	61	24	34	30	16	16
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	3	3	19	2	3	2	4	10	11	6	0
Cap, veh/h	256	1389	104	295	1470	45	138	54	76	111	65	65
Arrive On Green	0.81	0.81	0.81	0.81	0.81	0.81	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	455	1705	127	446	1805	55	1377	689	976	1249	831	831
Grp Volume(v), veh/h	31	0	1095	67	0	1243	61	0	58	30	0	32
Grp Sat Flow(s),veh/h/ln	455	0	1833	446	0	1860	1377	0	1665	1249	0	1662
Q Serve(g_s), s	5.3	0.0	35.8	10.6	0.0	48.6	5.7	0.0	4.3	3.1	0.0	2.4
Cycle Q Clear(g_c), s	53.9	0.0	35.8	46.5	0.0	48.6	8.0	0.0	4.3	7.4	0.0	2.4
Prop In Lane	1.00		0.07	1.00		0.03	1.00		0.59	1.00		0.50
Lane Grp Cap(c), veh/h	256	0	1492	295	0	1515	138	0	130	111	0	130
V/C Ratio(X)	0.12	0.00	0.73	0.23	0.00	0.82	0.44	0.00	0.45	0.27	0.00	0.25
Avail Cap(c_a), veh/h	256	0	1492	295	0	1515	232	0	243	196	0	243
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.00	0.68	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.8	0.0	5.6	16.3	0.0	6.8	60.1	0.0	57.2	60.8	0.0	56.3
Incr Delay (d2), s/veh	0.7	0.0	2.2	0.1	0.0	3.5	0.8	0.0	0.9	0.5	0.0	0.4
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	1.1	0.0	13.0	1.8	0.0	18.2	3.6	0.0	3.3	1.8	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	0.0	7.8	16.4	0.0	10.2	60.9	0.0	58.1	61.3	0.0	56.7
LnGrp LOS	C	A	A	B	A	B	E	A	E	E	A	E
Approach Vol, veh/h	1126		1310			119			62			
Approach Delay, s/veh	8.2		10.6			59.6			58.9			
Approach LOS	A		B			E			E			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	113.9		16.1		113.9		16.1					
Change Period (Y+Rc), s	8.0		6.0		8.0		6.0					
Max Green Setting (Gmax), s	97.0		19.0		97.0		19.0					
Max Q Clear Time (g_c+l1), s	55.9		10.0		50.6		9.4					
Green Ext Time (p_c), s	6.4		0.1		9.4		0.1					
Intersection Summary												
HCM 6th Ctrl Delay	12.9											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary

2: Wilson Drive/White Lake Road & Route 15

FCL Sparta
No Build FRI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	760	28	21	884	114	41	52	50	171	33	41
Future Volume (veh/h)	36	760	28	21	884	114	41	52	50	171	33	41
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	1856	1841	1589	1826	1930	1885	1781	1870	1900	1856	1811	1900
Adj Flow Rate, veh/h	38	800	29	22	931	120	43	55	53	180	35	43
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, %	3	4	21	5	3	1	8	2	0	3	6	0
Cap, veh/h	199	1192	43	318	1131	146	206	69	66	253	109	134
Arrive On Green	0.68	0.68	0.68	0.68	0.68	0.68	0.03	0.08	0.08	0.10	0.15	0.15
Sat Flow, veh/h	533	1765	64	646	1675	216	1697	875	843	1767	739	908
Grp Volume(v), veh/h	38	0	829	22	0	1051	43	0	108	180	0	78
Grp Sat Flow(s),veh/h/ln	533	0	1829	646	0	1891	1697	0	1719	1767	0	1648
Q Serve(g_s), s	7.3	0.0	35.0	2.7	0.0	52.8	3.0	0.0	8.0	11.9	0.0	5.5
Cycle Q Clear(g_c), s	60.1	0.0	35.0	37.7	0.0	52.8	3.0	0.0	8.0	11.9	0.0	5.5
Prop In Lane	1.00		0.03	1.00		0.11	1.00		0.49	1.00		0.55
Lane Grp Cap(c), veh/h	199	0	1235	318	0	1277	206	0	135	253	0	244
V/C Ratio(X)	0.19	0.00	0.67	0.07	0.00	0.82	0.21	0.00	0.80	0.71	0.00	0.32
Avail Cap(c_a), veh/h	199	0	1235	318	0	1277	324	0	225	253	0	244
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.47	0.00	0.47	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	12.5	23.7	0.0	15.4	52.9	0.0	58.9	47.5	0.0	49.5
Incr Delay (d2), s/veh	2.1	0.0	2.9	0.2	0.0	3.0	0.2	0.0	4.1	7.7	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	1.9	0.0	19.0	0.8	0.0	24.9	2.4	0.0	6.6	9.6	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	0.0	15.4	23.9	0.0	18.4	53.1	0.0	63.0	55.2	0.0	49.8
LnGrp LOS	D	A	B	C	A	B	D	A	E	E	A	D
Approach Vol, veh/h	867		1073			151			258			
Approach Delay, s/veh	16.5		18.5			60.2			53.5			
Approach LOS	B		B			E			D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	94.8		18.0		17.2		94.8		9.0		26.2	
Change Period (Y+Rc), s	7.0		5.0		7.0		7.0		5.0		7.0	
Max Green Setting (Gmax), s	81.0		13.0		17.0		81.0		13.0		17.0	
Max Q Clear Time (g_c+l1), s	62.1		13.9		10.0		54.8		5.0		7.5	
Green Ext Time (p_c), s	3.5		0.0		0.2		5.4		0.0		0.1	
Intersection Summary												
HCM 6th Ctrl Delay			24.3									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

FCL Sparta
No Build FRI

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	3	73	3	2	53	13	0	1	2	8	0	5
Future Vol, veh/h	3	73	3	2	53	13	0	1	2	8	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	100	7	33	50	14	85	0	100	50	88	0	0
Mvmt Flow	4	88	4	2	64	16	0	1	2	10	0	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	80	0	0	92	0	0	177	182	90	176	-	72
Stage 1	-	-	-	-	-	-	98	98	-	76	-	-
Stage 2	-	-	-	-	-	-	79	84	-	100	-	-
Critical Hdwy	5.1	-	-	4.6	-	-	7.1	7.5	6.7	7.98	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6.5	-	6.98	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6.5	-	6.98	-	-
Follow-up Hdwy	3.1	-	-	2.65	-	-	3.5	4.9	3.75	4.292	-	3.3
Pot Cap-1 Maneuver	1073	-	-	1249	-	-	790	568	851	629	0	996
Stage 1	-	-	-	-	-	-	913	658	-	757	0	-
Stage 2	-	-	-	-	-	-	935	668	-	733	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1073	-	-	1249	-	-	781	565	851	623	-	996
Mov Cap-2 Maneuver	-	-	-	-	-	-	781	565	-	623	-	-
Stage 1	-	-	-	-	-	-	909	655	-	754	-	-
Stage 2	-	-	-	-	-	-	927	667	-	727	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.2			10			10		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	728	1073	-	-	1249	-	-	623	996			
HCM Lane V/C Ratio	0.005	0.003	-	-	0.002	-	-	0.015	0.006			
HCM Control Delay (s)	10	8.4	0	-	7.9	0	-	10.9	8.6			
HCM Lane LOS	B	A	A	-	A	A	-	B	A			
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0	0			

HCM 6th TWSC
4: Demarest Road & Proposed Northern Driveway

FCL Sparta
No Build FRI

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	79	58	0	0	0
Future Vol, veh/h	0	79	58	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	86	63	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	63	0	-	0	149	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	86	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1540	-	-	-	843	1002
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	937	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1540	-	-	-	843	1002
Mov Cap-2 Maneuver	-	-	-	-	843	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	937	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1540	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

HCM 6th TWSC
5: Limecrest Road & Demarest Road

FCL Sparta
No Build FRI

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	50	37	162	151	15
Future Vol, veh/h	28	50	37	162	151	15
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, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	11	10	11	23	12	13
Mvmt Flow	31	55	41	178	166	16
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	434	174	182	0	-	0
Stage 1	174	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Critical Hdwy	6.51	6.3	4.21	-	-	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.599	3.39	2.299	-	-	-
Pot Cap-1 Maneuver	562	849	1341	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	543	849	1341	-	-	-
Mov Cap-2 Maneuver	543	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.8	1.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1341	-	706	-	-	
HCM Lane V/C Ratio	0.03	-	0.121	-	-	
HCM Control Delay (s)	7.8	0	10.8	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

2023 Build AM Peak

HCM 6th Signalized Intersection Summary

FCL Sparta

1: Route 669 & Route 15

Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1055	39	73	808	56	59	29	65	71	46	43
Future Volume (veh/h)	30	1055	39	73	808	56	59	29	65	71	46	43
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	1796	1796	1737	1589	1752	1841	1841	1900	1218	1707	1900	1767
Adj Flow Rate, veh/h	31	1077	34	74	824	53	60	30	52	72	47	26
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, %	7	7	11	21	10	4	4	0	46	13	0	9
Cap, veh/h	354	1274	40	201	1198	77	186	78	135	168	143	79
Arrive On Green	0.74	0.74	0.74	0.74	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	607	1732	55	431	1628	105	1306	624	1081	1201	1150	636
Grp Volume(v), veh/h	31	0	1111	74	0	877	60	0	82	72	0	73
Grp Sat Flow(s),veh/h/ln	607	0	1786	431	0	1733	1306	0	1705	1201	0	1786
Q Serve(g_s), s	2.9	0.0	43.5	14.5	0.0	27.1	4.4	0.0	4.4	5.9	0.0	3.7
Cycle Q Clear(g_c), s	30.0	0.0	43.5	58.0	0.0	27.1	8.1	0.0	4.4	10.3	0.0	3.7
Prop In Lane	1.00		0.03	1.00		0.06	1.00		0.63	1.00		0.36
Lane Grp Cap(c), veh/h	354	0	1314	201	0	1275	186	0	212	168	0	222
V/C Ratio(X)	0.09	0.00	0.85	0.37	0.00	0.69	0.32	0.00	0.39	0.43	0.00	0.33
Avail Cap(c_a), veh/h	354	0	1314	201	0	1275	271	0	324	247	0	339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.00	0.41	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	9.3	29.5	0.0	7.1	43.7	0.0	40.3	45.0	0.0	40.0
Incr Delay (d2), s/veh	0.2	0.0	2.9	0.4	0.0	1.3	0.4	0.0	0.4	0.6	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	0.7	0.0	15.1	2.6	0.0	11.1	2.5	0.0	3.3	3.1	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	0.0	12.2	30.0	0.0	8.4	44.0	0.0	40.7	45.6	0.0	40.3
LnGrp LOS	B	A	B	C	A	A	D	A	D	D	A	D
Approach Vol, veh/h	1142			951			142			145		
Approach Delay, s/veh	12.3			10.1			42.1			42.9		
Approach LOS	B			B			D			D		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	81.6			18.4			81.6			18.4		
Change Period (Y+Rc), s	8.0			6.0			8.0			6.0		
Max Green Setting (Gmax), s	67.0			19.0			67.0			19.0		
Max Q Clear Time (g_c+I1), s	45.5			10.1			60.0			12.3		
Green Ext Time (p_c), s	5.7			0.2			2.7			0.2		
Intersection Summary												
HCM 6th Ctrl Delay	15.0											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary 2: Wilson Drive/White Lake Road & Route 15

FCL Sparta
Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	796	77	62	567	183	55	21	29	280	67	44
Future Volume (veh/h)	48	796	77	62	567	183	55	21	29	280	67	44
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	1796	1781	1826	1826	1791	1811	1500	1678	1589	1841	1856	1811
Adj Flow Rate, veh/h	50	829	78	65	591	173	57	22	21	292	70	20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	7	8	5	5	12	6	27	15	21	4	3	6
Cap, veh/h	274	979	92	188	813	238	210	55	52	358	214	61
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.05	0.07	0.07	0.13	0.15	0.15
Sat Flow, veh/h	675	1603	151	600	1331	390	1428	789	753	1753	1388	396
Grp Volume(v), veh/h	50	0	907	65	0	764	57	0	43	292	0	90
Grp Sat Flow(s),veh/h/ln	675	0	1754	600	0	1721	1428	0	1542	1753	0	1784
Q Serve(g_s), s	5.6	0.0	41.7	9.8	0.0	31.1	3.7	0.0	2.7	13.0	0.0	4.5
Cycle Q Clear(g_c), s	36.7	0.0	41.7	51.5	0.0	31.1	3.7	0.0	2.7	13.0	0.0	4.5
Prop In Lane	1.00		0.09	1.00		0.23	1.00		0.49	1.00		0.22
Lane Grp Cap(c), veh/h	274	0	1071	188	0	1050	210	0	107	358	0	275
V/C Ratio(X)	0.18	0.00	0.85	0.35	0.00	0.73	0.27	0.00	0.40	0.82	0.00	0.33
Avail Cap(c_a), veh/h	274	0	1071	188	0	1050	331	0	139	358	0	275
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	0.73	0.00	0.73	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	0.0	15.7	36.5	0.0	13.7	40.8	0.0	44.5	37.5	0.0	37.7
Incr Delay (d2), s/veh	1.5	0.0	8.3	3.6	0.0	3.3	0.3	0.0	0.9	12.9	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	1.7	0.0	22.2	2.8	0.0	15.2	2.4	0.0	1.9	3.3	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	24.0	40.1	0.0	16.9	41.0	0.0	45.4	50.4	0.0	37.9
LnGrp LOS	C	A	C	D	A	B	D	A	D	D	A	D
Approach Vol, veh/h	957		829			100			382			
Approach Delay, s/veh	24.2		18.7			42.9			47.4			
Approach LOS	C		B			D			D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	68.0		18.0		14.0		68.0		9.5		22.4	
Change Period (Y+Rc), s	7.0		5.0		7.0		7.0		5.0		7.0	
Max Green Setting (Gmax), s	59.0		13.0		9.0		59.0		13.0		9.0	
Max Q Clear Time (g_c+l1), s	43.7		15.0		4.7		53.5		5.7		6.5	
Green Ext Time (p_c), s	3.8		0.0		0.0		1.9		0.0		0.0	
Intersection Summary												
HCM 6th Ctrl Delay			27.0									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

FCL Sparta
Build AM

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕		↕
Traffic Vol, veh/h	21	40	2	5	120	48	0	0	1	18	0	5
Future Vol, veh/h	21	40	2	5	120	48	0	0	1	18	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	15	0	0	7	2	0	0	100	2	0	2
Mvmt Flow	23	43	2	5	130	52	0	0	1	20	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	182	0	0	45	0	0	259	282	44	257	-	156
Stage 1	-	-	-	-	-	-	90	90	-	166	-	-
Stage 2	-	-	-	-	-	-	169	192	-	91	-	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	7.2	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	4.2	3.518	-	3.318
Pot Cap-1 Maneuver	1393	-	-	1576	-	-	698	630	805	696	0	890
Stage 1	-	-	-	-	-	-	922	824	-	836	0	-
Stage 2	-	-	-	-	-	-	838	745	-	916	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1393	-	-	1576	-	-	683	617	805	684	-	890
Mov Cap-2 Maneuver	-	-	-	-	-	-	683	617	-	684	-	-
Stage 1	-	-	-	-	-	-	906	810	-	822	-	-
Stage 2	-	-	-	-	-	-	830	742	-	899	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.5			0.2			9.5			10.1		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	805	1393	-	-	1576	-	-	684	890			
HCM Lane V/C Ratio	0.001	0.016	-	-	0.003	-	-	0.029	0.006			
HCM Control Delay (s)	9.5	7.6	0	-	7.3	0	-	10.4	9.1			
HCM Lane LOS	A	A	A	-	A	A	-	B	A			
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.1	0			

HCM 6th TWSC
4: Demarest Road & Proposed Driveway

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Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	63	109	21	5	3
Future Vol, veh/h	11	63	109	21	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	68	118	23	5	3
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	141	0	-	0	222	130
Stage 1	-	-	-	-	130	-
Stage 2	-	-	-	-	92	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1442	-	-	-	766	920
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	932	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1442	-	-	-	759	920
Mov Cap-2 Maneuver	-	-	-	-	759	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	932	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.1	0		9.5		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1442	-	-	-	812	
HCM Lane V/C Ratio	0.008	-	-	-	0.011	
HCM Control Delay (s)	7.5	0	-	-	9.5	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	32	98	129	90	79
Future Vol, veh/h	34	32	98	129	90	79
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, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	35	28	10	21	17	9
Mvmt Flow	36	34	103	136	95	83
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	479	137	178	0	-	0
Stage 1	137	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Critical Hdwy	6.75	6.48	4.2	-	-	-
Critical Hdwy Stg 1	5.75	-	-	-	-	-
Critical Hdwy Stg 2	5.75	-	-	-	-	-
Follow-up Hdwy	3.815	3.552	2.29	-	-	-
Pot Cap-1 Maneuver	490	847	1351	-	-	-
Stage 1	815	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	450	847	1351	-	-	-
Mov Cap-2 Maneuver	450	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12	3.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1351	-	582	-	-	
HCM Lane V/C Ratio	0.076	-	0.119	-	-	
HCM Control Delay (s)	7.9	0	12	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-	

2023 Build PM Peak

HCM 6th Signalized Intersection Summary

1: Limecrest Road/Houses Corner Road & Route 15

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	881	77	55	1059	45	63	41	85	23	25	35
Future Volume (veh/h)	27	881	77	55	1059	45	63	41	85	23	25	35
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	1781	1841	1900	1574	1856	1856	1900	1900	1707	1826	1900	1707
Adj Flow Rate, veh/h	29	947	80	59	1139	42	68	44	64	25	27	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	8	4	0	22	3	3	0	0	13	5	0	13
Cap, veh/h	244	1324	112	295	1406	52	145	71	103	107	72	102
Arrive On Green	0.79	0.79	0.79	0.79	0.79	0.79	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	452	1674	141	462	1778	66	1358	699	1017	1255	714	1005
Grp Volume(v), veh/h	29	0	1027	59	0	1181	68	0	108	25	0	65
Grp Sat Flow(s),veh/h/ln	452	0	1815	462	0	1844	1358	0	1717	1255	0	1719
Q Serve(g_s), s	5.2	0.0	35.4	9.2	0.0	48.5	6.4	0.0	7.8	2.5	0.0	4.6
Cycle Q Clear(g_c), s	53.6	0.0	35.4	44.6	0.0	48.5	11.0	0.0	7.8	10.4	0.0	4.6
Prop In Lane	1.00		0.08	1.00		0.04	1.00		0.59	1.00		0.58
Lane Grp Cap(c), veh/h	244	0	1436	295	0	1458	145	0	174	107	0	174
V/C Ratio(X)	0.12	0.00	0.72	0.20	0.00	0.81	0.47	0.00	0.62	0.23	0.00	0.37
Avail Cap(c_a), veh/h	244	0	1436	295	0	1458	206	0	251	163	0	251
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.00	0.76	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.5	0.0	6.6	17.3	0.0	7.9	59.7	0.0	56.0	61.0	0.0	54.5
Incr Delay (d2), s/veh	0.8	0.0	2.4	0.1	0.0	3.3	0.9	0.0	1.3	0.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	0.0	14.4	1.7	0.0	19.8	4.0	0.0	6.2	1.5	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	0.0	8.9	17.4	0.0	11.2	60.5	0.0	57.3	61.4	0.0	55.0
LnGrp LOS	C	A	A	B	A	B	E	A	E	E	A	E
Approach Vol, veh/h	1056			1240			176			90		
Approach Delay, s/veh	9.3			11.5			58.6			56.8		
Approach LOS	A			B			E			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	110.8			19.2			110.8			19.2		
Change Period (Y+Rc), s	8.0			6.0			8.0			6.0		
Max Green Setting (Gmax), s	97.0			19.0			97.0			19.0		
Max Q Clear Time (g_c+l1), s	55.6			13.0			50.5			12.4		
Green Ext Time (p_c), s	5.7			0.2			8.1			0.1		
Intersection Summary												
HCM 6th Ctrl Delay	15.4											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary 2: Wilson Drive/White Lake Road & Route 15

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	639	18	20	811	138	76	66	85	146	15	40
Future Volume (veh/h)	37	639	18	20	811	138	76	66	85	146	15	40
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	1900	1841	1574	1752	1945	1841	1826	1900	1900	1870	1900	1900
Adj Flow Rate, veh/h	41	702	19	22	891	150	84	73	52	160	16	15
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, %	0	4	22	10	2	4	5	0	0	2	0	0
Cap, veh/h	207	1200	32	371	1092	184	270	89	64	245	112	105
Arrive On Green	0.67	0.67	0.67	0.67	0.67	0.67	0.06	0.09	0.09	0.09	0.12	0.12
Sat Flow, veh/h	551	1784	48	685	1623	273	1739	1032	735	1781	902	846
Grp Volume(v), veh/h	41	0	721	22	0	1041	84	0	125	160	0	31
Grp Sat Flow(s),veh/h/ln	551	0	1832	685	0	1896	1739	0	1768	1781	0	1748
Q Serve(g_s), s	7.6	0.0	27.6	2.3	0.0	51.8	5.7	0.0	9.0	10.3	0.0	2.1
Cycle Q Clear(g_c), s	59.4	0.0	27.6	29.9	0.0	51.8	5.7	0.0	9.0	10.3	0.0	2.1
Prop In Lane	1.00		0.03	1.00		0.14	1.00		0.42	1.00		0.48
Lane Grp Cap(c), veh/h	207	0	1233	371	0	1276	270	0	153	245	0	218
V/C Ratio(X)	0.20	0.00	0.58	0.06	0.00	0.82	0.31	0.00	0.82	0.65	0.00	0.14
Avail Cap(c_a), veh/h	207	0	1233	371	0	1276	345	0	231	255	0	229
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	0.51	0.00	0.51	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.9	0.0	11.5	19.5	0.0	15.4	50.2	0.0	58.4	46.7	0.0	50.7
Incr Delay (d2), s/veh	2.1	0.0	2.0	0.2	0.0	3.1	0.2	0.0	7.6	4.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	15.5	0.7	0.0	24.9	4.5	0.0	7.8	8.4	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	0.0	13.5	19.7	0.0	18.5	50.4	0.0	66.0	50.9	0.0	50.8
LnGrp LOS	D	A	B	B	A	B	D	A	E	D	A	D
Approach Vol, veh/h	762		1063			209			191			
Approach Delay, s/veh	14.9		18.5			59.7			50.9			
Approach LOS	B		B			E			D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	94.5		17.3		18.2		94.5		12.3		23.2	
Change Period (Y+Rc), s	7.0		5.0		7.0		7.0		5.0		7.0	
Max Green Setting (Gmax), s	81.0		13.0		17.0		81.0		13.0		17.0	
Max Q Clear Time (g_c+l1), s	61.4		12.3		11.0		53.8		7.7		4.1	
Green Ext Time (p_c), s	3.0		0.0		0.2		5.3		0.0		0.0	
Intersection Summary												
HCM 6th Ctrl Delay			23.9									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

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Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕		↕
Traffic Vol, veh/h	5	103	0	1	37	23	2	0	1	48	0	19
Future Vol, veh/h	5	103	0	1	37	23	2	0	1	48	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	1	0	0	0	2	0	0	0	2	0	2
Mvmt Flow	5	112	0	1	40	25	2	0	1	52	0	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	65	0	0	112	0	0	187	189	112	178	-	53
Stage 1	-	-	-	-	-	-	122	122	-	55	-	-
Stage 2	-	-	-	-	-	-	65	67	-	123	-	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.518	-	3.318
Pot Cap-1 Maneuver	1537	-	-	1490	-	-	778	709	947	784	0	1014
Stage 1	-	-	-	-	-	-	887	799	-	957	0	-
Stage 2	-	-	-	-	-	-	951	843	-	881	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1537	-	-	1490	-	-	760	706	947	781	-	1014
Mov Cap-2 Maneuver	-	-	-	-	-	-	760	706	-	781	-	-
Stage 1	-	-	-	-	-	-	884	797	-	954	-	-
Stage 2	-	-	-	-	-	-	931	842	-	877	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			9.4			9.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	814	1537	-	-	1490	-	-	781	1014			
HCM Lane V/C Ratio	0.004	0.004	-	-	0.001	-	-	0.067	0.02			
HCM Control Delay (s)	9.4	7.4	0	-	7.4	0	-	9.9	8.6			
HCM Lane LOS	A	A	A	-	A	A	-	A	A			
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2	0.1			

HCM 6th TWSC
4: Demarest Road & Proposed Northern Driveway

FCL Sparta
Build PM

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	91	56	5	19	10
Future Vol, veh/h	3	91	56	5	19	10
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	99	61	5	21	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	66	0	-	0	169	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	105	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1536	-	-	-	821	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1536	-	-	-	819	1000
Mov Cap-2 Maneuver	-	-	-	-	819	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	919	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		9.3		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1536	-	-	-	874	
HCM Lane V/C Ratio	0.002	-	-	-	0.036	
HCM Control Delay (s)	7.3	0	-	-	9.3	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th TWSC
5: Limecrest Road & Demarest Road

FCL Sparta
Build PM

Intersection						
Int Delay, s/veh	4.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	81	78	36	107	138	30
Future Vol, veh/h	81	78	36	107	138	30
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, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	14	9	0
Mvmt Flow	91	88	40	120	155	34
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	372	172	189	0	-	0
Stage 1	172	-	-	-	-	-
Stage 2	200	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	633	877	1397	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	613	877	1397	-	-	-
Mov Cap-2 Maneuver	613	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.7	1.9		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1397	-	719	-	-	
HCM Lane V/C Ratio	0.029	-	0.248	-	-	
HCM Control Delay (s)	7.7	0	11.7	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	1	-	-	

2023 Build Friday Peak

HCM 6th Signalized Intersection Summary

1: Limecrest Road/Houses Corner Road & Route 15

FCL Sparta
Build FRI

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	999	91	80	1182	43	70	42	97	29	21	26
Future Volume (veh/h)	30	999	91	80	1182	43	70	42	97	29	21	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	1900	1856	1856	1618	1870	1856	1870	1841	1752	1737	1811	1900
Adj Flow Rate, veh/h	31	1019	86	82	1206	37	71	43	56	30	21	16
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	3	3	19	2	3	2	4	10	11	6	0
Cap, veh/h	229	1342	113	269	1435	44	161	71	92	104	93	71
Arrive On Green	0.80	0.80	0.80	0.80	0.80	0.80	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	455	1687	142	441	1805	55	1371	726	945	1204	954	727
Grp Volume(v), veh/h	31	0	1105	82	0	1243	71	0	99	30	0	37
Grp Sat Flow(s),veh/h/ln	455	0	1830	441	0	1860	1371	0	1671	1204	0	1680
Q Serve(g_s), s	5.9	0.0	40.6	15.3	0.0	53.6	6.6	0.0	7.4	3.2	0.0	2.6
Cycle Q Clear(g_c), s	59.5	0.0	40.6	55.9	0.0	53.6	9.2	0.0	7.4	10.6	0.0	2.6
Prop In Lane	1.00		0.08	1.00		0.03	1.00		0.57	1.00		0.43
Lane Grp Cap(c), veh/h	229	0	1455	269	0	1479	161	0	162	104	0	163
V/C Ratio(X)	0.14	0.00	0.76	0.31	0.00	0.84	0.44	0.00	0.61	0.29	0.00	0.23
Avail Cap(c_a), veh/h	229	0	1455	269	0	1479	228	0	244	163	0	246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.00	0.67	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	6.9	21.4	0.0	8.2	58.4	0.0	56.3	61.4	0.0	54.2
Incr Delay (d2), s/veh	0.8	0.0	2.6	0.2	0.0	4.3	0.7	0.0	1.4	0.6	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	1.2	0.0	15.6	2.7	0.0	21.7	4.1	0.0	5.7	1.8	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	0.0	9.4	21.6	0.0	12.5	59.1	0.0	57.7	62.0	0.0	54.4
LnGrp LOS	C	A	A	C	A	B	E	A	E	E	A	D
Approach Vol, veh/h	1136		1325			170			67			
Approach Delay, s/veh	9.9		13.1			58.3			57.8			
Approach LOS	A		B			E			E			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	111.4		18.6		111.4		18.6					
Change Period (Y+Rc), s	8.0		6.0		8.0		6.0					
Max Green Setting (Gmax), s	97.0		19.0		97.0		19.0					
Max Q Clear Time (g_c+l1), s	61.5		11.2		57.9		12.6					
Green Ext Time (p_c), s	6.5		0.2		9.5		0.1					
Intersection Summary												
HCM 6th Ctrl Delay	15.7											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary

2: Wilson Drive/White Lake Road & Route 15

FCL Sparta
Build FRI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	771	34	21	894	114	48	52	50	171	33	41
Future Volume (veh/h)	36	771	34	21	894	114	48	52	50	171	33	41
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	1856	1841	1589	1826	1930	1885	1781	1870	1900	1856	1811	1900
Adj Flow Rate, veh/h	38	812	36	22	941	120	51	55	53	180	35	43
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, %	3	4	21	5	3	1	8	2	0	3	6	0
Cap, veh/h	193	1181	52	305	1133	144	216	69	66	253	105	129
Arrive On Green	0.68	0.68	0.68	0.68	0.68	0.68	0.04	0.08	0.08	0.10	0.14	0.14
Sat Flow, veh/h	528	1749	78	634	1677	214	1697	875	843	1767	739	908
Grp Volume(v), veh/h	38	0	848	22	0	1061	51	0	108	180	0	78
Grp Sat Flow(s),veh/h/ln	528	0	1827	634	0	1891	1697	0	1719	1767	0	1648
Q Serve(g_s), s	7.5	0.0	36.6	2.8	0.0	53.9	3.6	0.0	8.0	11.9	0.0	5.5
Cycle Q Clear(g_c), s	61.4	0.0	36.6	39.4	0.0	53.9	3.6	0.0	8.0	11.9	0.0	5.5
Prop In Lane	1.00		0.04	1.00		0.11	1.00		0.49	1.00		0.55
Lane Grp Cap(c), veh/h	193	0	1234	305	0	1277	216	0	135	253	0	235
V/C Ratio(X)	0.20	0.00	0.69	0.07	0.00	0.83	0.24	0.00	0.80	0.71	0.00	0.33
Avail Cap(c_a), veh/h	193	0	1234	305	0	1277	324	0	225	253	0	235
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.45	0.00	0.45	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.3	0.0	12.8	24.7	0.0	15.6	52.5	0.0	58.9	47.5	0.0	50.2
Incr Delay (d2), s/veh	2.3	0.0	3.1	0.2	0.0	3.0	0.2	0.0	4.1	7.7	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	1.9	0.0	19.7	0.8	0.0	25.3	2.8	0.0	6.6	9.6	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.6	0.0	15.9	24.9	0.0	18.6	52.7	0.0	63.0	55.2	0.0	50.5
LnGrp LOS	D	A	B	C	A	B	D	A	E	E	A	D
Approach Vol, veh/h	886		1083			159			258			
Approach Delay, s/veh	17.0		18.7			59.7			53.7			
Approach LOS	B		B			E			D			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	94.8		18.0		17.2		94.8		9.7		25.5	
Change Period (Y+Rc), s	7.0		5.0		7.0		7.0		5.0		7.0	
Max Green Setting (Gmax), s	81.0		13.0		17.0		81.0		13.0		17.0	
Max Q Clear Time (g_c+l1), s	63.4		13.9		10.0		55.9		5.6		7.5	
Green Ext Time (p_c), s	3.6		0.0		0.2		5.4		0.0		0.1	
Intersection Summary												
HCM 6th Ctrl Delay			24.6									
HCM 6th LOS			C									

HCM 6th TWSC
3: Private Driveway/Existing Driveway & Demarest Road

FCL Sparta
Build FRI

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕		↕
Traffic Vol, veh/h	4	90	3	2	58	32	0	0	2	54	0	18
Future Vol, veh/h	4	90	3	2	58	32	0	0	2	54	0	18
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	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	7	33	50	14	2	0	100	50	2	0	2
Mvmt Flow	4	98	3	2	63	35	0	0	2	59	0	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	98	0	0	101	0	0	203	210	100	194	-	81
Stage 1	-	-	-	-	-	-	108	108	-	85	-	-
Stage 2	-	-	-	-	-	-	95	102	-	109	-	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.1	7.5	6.7	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6.5	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6.5	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	3.5	4.9	3.75	3.518	-	3.318
Pot Cap-1 Maneuver	1495	-	-	1239	-	-	759	545	839	765	0	979
Stage 1	-	-	-	-	-	-	902	650	-	923	0	-
Stage 2	-	-	-	-	-	-	917	655	-	896	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1495	-	-	1239	-	-	741	542	839	760	-	979
Mov Cap-2 Maneuver	-	-	-	-	-	-	741	542	-	760	-	-
Stage 1	-	-	-	-	-	-	899	648	-	920	-	-
Stage 2	-	-	-	-	-	-	897	654	-	891	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.2			9.3			9.8		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	839	1495	-	-	1239	-	-	760	979			
HCM Lane V/C Ratio	0.003	0.003	-	-	0.002	-	-	0.077	0.02			
HCM Control Delay (s)	9.3	7.4	0	-	7.9	0	-	10.1	8.8			
HCM Lane LOS	A	A	A	-	A	A	-	B	A			
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2	0.1			

HCM 6th TWSC
4: Demarest Road & Proposed Northern Driveway

FCL Sparta
Build FRI

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	83	76	4	18	9
Future Vol, veh/h	2	83	76	4	18	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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	90	83	4	20	10
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	87	0	-	0	179	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	94	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1509	-	-	-	811	974
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	930	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1509	-	-	-	810	974
Mov Cap-2 Maneuver	-	-	-	-	810	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	930	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		9.3		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1509	-	-	-	858	
HCM Lane V/C Ratio	0.001	-	-	-	0.034	
HCM Control Delay (s)	7.4	0	-	-	9.3	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th TWSC
5: Limecrest Road & Demarest Road

FCL Sparta
Build FRI

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	78	72	44	162	151	45
Future Vol, veh/h	78	72	44	162	151	45
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, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	11	10	11	23	12	13
Mvmt Flow	86	79	48	178	166	49
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	465	191	215	0	-	0
Stage 1	191	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.51	6.3	4.21	-	-	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.599	3.39	2.299	-	-	-
Pot Cap-1 Maneuver	539	831	1303	-	-	-
Stage 1	820	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	517	831	1303	-	-	-
Mov Cap-2 Maneuver	517	-	-	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.7	1.7		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1303	-	632	-	-	
HCM Lane V/C Ratio	0.037	-	0.261	-	-	
HCM Control Delay (s)	7.9	0	12.7	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	1	-	-	