



Engineering
& Design

Traffic Impact Study

October 3, 2023, Revised February 21, 2024

12-18 Vanderhoof LLC

Block 62002, Lot 1

Township of Denville, Morris County, New Jersey

Prepared for:

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Project No. 22011505A

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Introduction

The following report has been prepared for 12-18 Vanderhoof LLC (“Applicant”) in association with a proposed warehouse development (“the Project”) within the Township of Denville, Morris County, New Jersey. The site is currently undeveloped with woodlands. It is proposed to construct a 119,706 SF warehouse facility. The subject property is bounded by Vanderhoof Avenue to the north, Dock Road to the east, and woodlands to the west and south. The site is designated as Block 62002, Lot 1 on the Township of Denville Tax Maps and is located in the Dock Road Redevelopment (DRR) Zoning District. A site location map is included as **Figure 1 in Appendix A**.

Access to the site is proposed via one (1) full-movement driveway designated for passenger vehicles and one (1) right-in/left-out-only driveway designated for trucks along Dock Road southbound. **Figure 2 in Appendix A** illustrates the proposed Dimension Plan.

This study presents an evaluation of the current and future traffic conditions within the vicinity of the site. Specific elements included in this study are:

- An inventory of the roadway facilities in the vicinity of the Project, including the existing physical and traffic operating characteristics;
- Determination of the Existing Conditions;
- Site Generated Trips as described in the *ITE Trip Generation Manual, 11th Edition*;
- Trip Distribution and Assignment;
- Forecast of 2026 No-Build Traffic Volumes;
- Peak Hour Capacity Analysis for the 2026 No-Build Conditions;
- Forecast of the 2026 Build Traffic Volumes;
- Peak Hour Capacity Analysis for the 2026 Build Conditions;
- Site Access and Parking Assessment; and
- Summary and Conclusions.

Existing Roadway Conditions

A field investigation was conducted adjacent to the project site to obtain an inventory of existing roadway conditions, posted traffic controls, adjacent land uses, lane configurations, and existing vehicular/pedestrian traffic patterns.

Roadways

Vanderhoof Avenue is a local roadway with a general east-west orientation under the Township of Denville jurisdiction. The roadway provides one (1) travel lane in each direction. The speed limit is not posted. Land uses along Vanderhoof Avenue are primarily commercial.

Dock Road is a local roadway with a general north-south orientation under the Township of Denville jurisdiction. The roadway provides one (1) travel lane in each direction. The speed limit is not posted. Land uses along Dock Road are primarily residential.

Hibernia Avenue (CR 513)/Hibernia Avenue is an urban minor arterial roadway with a general east-west orientation under the Borough of Rockaway jurisdiction east of Union Street and under the jurisdiction of Morris County west of Union Street. The roadway provides one (1) travel lane in each direction. The speed limit is 30 mph. Land uses along Hibernia Avenue are primarily residential and commercial.

Oak Street is an urban major collector roadway with a general north-south orientation under the Borough of Rockaway jurisdiction. The roadway provides one (1) travel lane in each direction. The speed limit is 25 mph. Land uses along Oak Street are primarily residential.

Elm Street is a local roadway with a general north-south orientation under the Borough of Rockaway jurisdiction. The roadway provides one (1) travel lane in each direction. The speed limit is 25 mph. Land uses along Elm Street are primarily residential.

Union Street is an urban major collector roadway with a general north-south orientation under the Borough of Rockaway jurisdiction. The roadway provides one (1) travel lane in each direction. The speed limit is 25 mph. Land uses along Union Street are primarily residential.

Stickle Avenue is an urban major collector roadway with a general east-west orientation under the Borough of Rockaway jurisdiction. The roadway provides one (1) travel lane in each direction. The speed limit is not posted. Land uses along Stickle Avenue are primarily residential and industrial.

I-80 is an urban interstate with a general east-west orientation under New Jersey Department of Transportation (NJDOT) jurisdiction. The roadway provides four (4) travel lanes in each direction separated by a concrete median. The speed limit is 65 mph.

Intersections

Vanderhoof Avenue & Dock Road is an unsignalized T-intersection with the northbound approach of Dock Road under stop control. The eastbound approach of Vanderhoof Avenue provides one (1) shared through/right-turn lane. The westbound approach of Vanderhoof Avenue provides one (1)

shared left-turn/through lane. The northbound approach of Dock Road provides one (1) shared left-turn/right-turn lane.

Hibernia Avenue & Oak Street is an unsignalized T-intersection with the northbound approach of Oak Street under stop control. The eastbound approach of Hibernia Avenue provides one (1) shared through/right-turn lane. The westbound approach of Hibernia Avenue provides one (1) shared left-turn/through lane. The northbound approach of Oak Street provides one (1) shared left-turn/right-turn lane.

Hibernia Avenue & Elm Street is an unsignalized T-intersection with the northbound approach of Elm Street under stop control. The eastbound approach of Hibernia Avenue provides one (1) shared through/right-turn lane. The westbound approach of Hibernia Avenue provides one (1) shared left-turn/through lane. The northbound approach of Elm Street provides one (1) shared left-turn/right-turn lane.

Hibernia Avenue (CR 513) & Union Street is an unsignalized T-intersection with the northbound approach of Union Street under stop control. The eastbound approach of Hibernia Avenue (CR 513) provides one (1) shared through/right-turn lane. The westbound approach of Hibernia Avenue (CR 513) provides one (1) shared left-turn/through lane. The northbound approach of Union Street provides one (1) shared left-turn/right-turn lane.

Union Street & Stickle Avenue is an unsignalized T-intersection with the westbound approach of Stickle Avenue under stop control. The northbound approach of Union Street provides one (1) shared through/right-turn lane. The southbound approach of Union Street provides one (1) shared left-turn/through lane. The westbound approach of Stickle Avenue provides one (1) shared left-turn/right-turn lane.

Stickle Avenue & Elm Street is an unsignalized four-leg intersection with the northbound and southbound approaches of Elm Street under stop control. The northbound and southbound approaches of Elm Street each provide one (1) shared lane for all movements. The eastbound and westbound approaches of Stickle Avenue each provide one (1) shared lane for all movements.

Stickle Avenue & Oak Street is an unsignalized T-intersection with the southbound approach of Oak Street under stop control. The eastbound approach of Stickle Avenue provides one (1) shared left-turn/through lane. The westbound approach of Stickle Avenue provides one (1) shared through/right-turn lane. The southbound approach of Oak Street provides one (1) shared left-turn/right-turn lane.

Hibernia Avenue/I-80 EB On-Ramp & Vanderhoof Avenue is an unsignalized T-intersection with the westbound approach of Vanderhoof Avenue under stop control. The northbound approach of Hibernia Avenue provides one (1) shared through/right-turn lane. The westbound approach of Vanderhoof Avenue provides one (1) shared left-turn/right-turn lane. The southbound approach of I-80 EB On-Ramp is an egress-only approach and provides one (1) receiving lane.

Existing Traffic Conditions

Turning Movement Counts

Traffic volume data for the roadway network adjacent to the subject property was obtained through turning movement counts (TMC) on Thursday, February 9, 2023 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM at the intersection of Vanderhoof Avenue & Dock Road.

The data collection efforts are detailed in **Table 1**. The processed count data is provided in **Appendix B**.

Table 1 – Data Collection Efforts and Established Network Peak Hours

Peak Period	Date Collected	Traffic Count Time Frame	Established Network Peak Hour
Weekday Morning	Thursday, February 9, 2023	7:00 AM – 9:00 AM	8:00 AM – 9:00 AM
Weekday Evening		4:00 PM – 6:00 PM	4:30 PM – 5:30 PM

To provide a conservative estimate, the 2023 traffic volumes were grown to 2024 utilizing a background growth rate of 1.00% to establish the 2024 Existing Condition.

Additionally, turning movement counts (TMCs) were conducted on Thursday, February 15, 2024 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM at the following intersections:

- Hibernia Avenue (CR 513) & Union Street;
- Union Street & Stickle Avenue;
- Elm Street & Hibernia Avenue;
- Stickle Avenue & Elm Street;
- Hibernia Avenue & Oak Street;
- Stickle Avenue & Oak Street; and
- Hibernia Avenue & I-80 EB On-Ramp.

The data collection efforts are detailed in **Table 2**. The processed count data is provided in **Appendix B**.

Table 2 – Data Collection Efforts and Established Network Peak Hours

Peak Period	Date Collected	Traffic Count Time Frame	Established Network Peak Hour
Weekday Morning	Thursday, February 15, 2024	7:00 AM – 9:00 AM	7:30 AM – 8:30 AM
Weekday Evening		4:00 PM – 6:00 PM	4:45 PM – 5:45 PM

A Volume Flow diagram illustrating the 2024 Existing Conditions is provided as **Figure 3**, located in **Appendix A**.

Trip Generation and Distribution

Trip Generation

The ability of any roadway network to serve anticipated traffic volumes is measured by comparing peak hour traffic volumes to roadway capacities. Thus, it is essential to determine the hourly traffic volumes to be generated by the Project and add them to the No-Build traffic volumes for the peak hours.

Trip generation estimates for the development of the Project were made utilizing data published under Land Use Code 150 – Warehousing in the Institute of Transportation Engineers’ (ITE) publication *Trip Generation Manual, Eleventh Edition*. This publication sets forth trip generation rates based on traffic counts conducted at research sites throughout the country. **Table 2** details the anticipated trips for the Project.

Table 3 – Site Generated Trips

Land Use	Size	Vehicle Type	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
LUC 150 – Warehousing	119,706 SF	Passenger Vehicle	25	10	35	5	26	31
		Trucks	3	4	7	4	3	7
	Total	28	14	42	9	29	38	

It is noted both ITE and NJDOT consider a significant increase in traffic to be 100 or more new peak hour trips to the adjacent roadway network. As shown in **Table 3**, the Project generates a maximum of **42** new peak hour trips.

Trip Distribution

Trip distribution methodology is developed based on a variety of factors. These factors include the existing travel patterns within the adjacent roadway network, adjacent land uses, proposed land use, development locations, driveway locations, and the proximity of major arterials within the project vicinity.

Passenger Vehicle Trip Distribution

The following passenger vehicle trip distribution was established based upon a review of the existing roadway volumes, adjacent land uses, and anticipated commuter travel patterns within the project vicinity:

- To/From I-80, West of Site – 50%, and
- To/From I-80, East of Site – 50%.

Volume Flow Diagrams illustrating the Passenger Vehicle Trip Distribution and the Passenger Vehicle Site Generated Trips are provided as **Figures 4** and **5** in **Appendix A**.

Truck Trip Distribution

The following truck trip distribution was established based upon a review of the existing roadway volumes, adjacent land uses, and anticipated truck travel patterns within the project vicinity:

- To/From I-80, West of Site – 50%, and
- To/From I-80, East of Site – 50%.

Volume Flow Diagrams illustrating the Truck Trip Distribution and the Truck Site Generated Trips are provided as **Figures 6** and **7** in **Appendix A**. A Volume Flow Diagram illustrating the Total Site Generated Trips is provided as **Figure 8** in **Appendix A**.

Future Traffic Conditions

To determine the traffic impact of the development, an estimation of the traffic operational characteristics at the Build date, without the construction of the project (or “No-Build” condition), is made. The existing volumes have been projected to the Build year of 2026.

Background Growth

The NJDOT Annual Background Growth Rate Table recommends a rate of 1.25% for urban local roadways, 2.50% for minor arterial roadways, and 1.00% for major collector roadways within Morris County. To provide a conservative analysis, the existing traffic volumes were grown by 2.50%. This forecast accounts for general increases in local traffic volumes each year in the study area.

Adjacent Developments

Colliers Engineering & Design contacted the Township of Denville to determine if there are any planned or approved developments in the vicinity of the project site. There are no planned or approved projects at this time.

2026 No-Build Conditions

The 2026 No-Build volumes were forecasted by applying the recommended growth rate to the 2024 existing traffic volumes. The 2026 No-Build Conditions are illustrated as **Figure 9** in **Appendix A**.

2026 Build Conditions

The 2026 Build volumes were forecasted by adding the total site generated traffic of the proposed development to the 2026 No-Build traffic volumes within the roadway network. The 2026 Build Conditions are illustrated as **Figure 10** in **Appendix A**.

HCM Capacity Analysis

The peak hour traffic operations within the project vicinity were evaluated at the study intersections. The analyses were performed using the latest version of *Synchro Trafficware*, a traffic analysis and simulation program. The results of these analyses provide Levels of Service (LOS), volume/capacity descriptions, and average seconds of delay for the intersection movements.

The efficiency with which an intersection operates is a function of volume and capacity. The capacity of an intersection is the volume of vehicles it can accommodate during a given time period. LOS is a qualitative measure describing operational conditions within a traffic stream in terms of traffic characteristics such as freedom to maneuver, traffic interruption, comfort, and convenience. Six LOS are defined for each type of facility with analysis procedures available. Levels of Service range from "A" through "F," with Level "A" representing excellent conditions with no delays, and failure and deficient operations denoted by Level "F." The HCM LOS criteria for unsignalized intersections is summarized in **Table 4**.

Table 4 – HCM LOS/Delay Criteria

Level of Service	Average Control Delay (sec/veh)
	Unsignalized Intersections
A	≤ 10
B	> 10 – 15
C	> 15 – 25
D	> 25 – 35
E	> 35 – 50
F	> 50

The Levels of Service for the 2026 No-Build and Build Conditions are detailed in **Table 5**. The capacity analysis calculation worksheets are provided in **Appendix D**.

Table 5 – Level of Service Summary

Intersection	Movement		2026 No-Build Conditions				2026 Build Conditions			
			AM Peak		PM Peak		AM Peak		PM Peak	
			LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Vanderhoof Avenue (EB/WB) & Dock Road (NB)	WB	L	A	7.3	A	7.2	A	7.3	A	7.3
	NB	LR	A	8.6	A	8.5	A	8.9	A	8.9
Hibernia Avenue (CR 513) (EB/WB) & Union Street (NB)	WB	L	B	14.8	A	9.6	C	15.7	A	9.6
	NB	LR	F	219.6	F	68.4	F	274.7	F	80.1
Union Street (NB/SB) & Stickle Avenue (WB)	WB	LR	B	12.2	B	14.2	B	12.6	B	14.5
	SB	L	A	8.3	A	8.4	A	8.4	A	8.4
Hibernia Avenue (EB/WB) & Elm Street (NB)	WB	L	A	9.8	A	8.0	A	9.8	A	8.0
	NB	LR	C	15.1	B	10.2	C	15.5	B	10.2
Elm Street (NB/SB) & Stickle Avenue (EB/WB)	EB	L	A	7.6	A	7.6	A	7.6	A	7.6
	WB	L	A	7.9	A	7.8	A	8.0	A	7.8
	NB	LTR	B	11.4	B	11.9	B	11.9	B	12.2
	SB	LTR	A	9.6	A	9.8	A	9.9	A	9.9
Hibernia Avenue (EB/WB) & Oak Street (NB)	WB	L	A	9.7	A	8.1	A	9.8	A	8.1
	NB	LR	C	17.7	B	11.1	C	19.0	B	11.2
Oak Street (SB) & Stickle Avenue (EB/WB)	EB	L	A	7.7	A	7.8	A	7.7	A	7.8
	SB	LR	B	10.5	B	10.1	B	10.6	B	10.1
Hibernia Avenue/I-80 EB On-Ramp (NB) & Vanderhoof Avenue (WB)	WB	LR	C	16.1	B	12.2	C	16.9	B	12.9
Dock Road (NB/SB) & North Site Driveway (EB)	EB	LR	-	-	-	-	A	9.5	A	9.3
	NB	L	-	-	-	-	A	7.3	A	7.2
Dock Road (SB) & South Site Driveway (EB)	EB	L	-	-	-	-	A	8.6	A	8.7
	NB	L	-	-	-	-	A	7.3	A	7.2

Vanderhoof Avenue & Dock Road

2026 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at a Level of Service “A” during both peak hours studied.

2026 Build Analysis

Under the Build condition, all intersection movements will continue to operate at or near No-Build Levels of Service during both peak hours studied.

Hibernia Avenue (Cr 513) & Union Street

2026 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at a Level of Service “B” during both peak hours studied, with the exception of the northbound movements which will experience significant delays during both peak hours studied.

2026 Build Analysis

Under the Build condition, all intersection movements will continue to operate at or near No-Build Levels of Service during both peak hours studied. Table 6 illustrates that the site generated traffic at the intersection of Hibernia Avenue & Union Street is approximately 2% or less of the overall traffic; therefore, the impact of the site generated traffic at the intersection is negligible.

Table 6- Volume Comparison – Hibernia Avenue & Union Street

Peak Period	2026 No-Build Volumes	Site Generated Trips	2026 Build Volumes	Percent Impact
Weekday AM Peak	1,794	35	1,829	1.91%
Weekday PM Peak	1,764	24	1,788	1.34%

Union Street & Stickle Avenue

2026 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at a Level of Service “B” or better during both peak hours studied.

2026 Build Analysis

Under the Build condition, all intersection movements will continue to operate at or near No-Build Levels of Service during both peak hours studied.

Hibernia Avenue & Elm Street

2026 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at a Level of Service “C” or better during both peak hours studied.

2026 Build Analysis

Under the Build condition, all intersection movements will continue to operate at or near No-Build Levels of Service during both peak hours studied.

Elm Street & Stickle Avenue

2026 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at a Level of Service “B” or better during both peak hours studied.

2026 Build Analysis

Under the Build condition, all intersection movements will continue to operate at or near No-Build Levels of Service during both peak hours studied.

Hibernia Avenue & Oak Street

2026 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at a Level of Service “C” or better during both peak hours studied.

2026 Build Analysis

Under the Build condition, all intersection movements will continue to operate at or near No-Build Levels of Service during both peak hours studied.

Oak Street & Stickle Avenue

2026 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at a Level of Service “B” or better during both peak hours studied.

2026 Build Analysis

Under the Build condition, all intersection movements will continue to operate at or near No-Build Levels of Service during both peak hours studied.

Hibernia Avenue/I-80 EB On-Ramp & Vanderhoof Avenue

2026 No-Build Analysis

Under the No-Build condition, all intersection movements will operate at a Level of Service “C” or better during both peak hours studied.

2026 Build Analysis

Under the Build condition, all intersection movements will continue to operate at or near No-Build Levels of Service during both peak hours studied.

Dock Road & North Site Driveway

2026 Build Analysis

Under the Build condition, all intersection movements would operate at a Level of Service "A" during both peak hours studied. The calculated 95th percentile queue lengths at the North Site Driveway would be one (1) vehicle or less during both peak hours studied, which could be accommodated within the layout of the site.

Dock Road & South Site Driveway

2026 Build Analysis

Under the Build condition, the eastbound left-turn movement would operate at a Level of Service "A" during both peak hours studied. The calculated 95th percentile queue lengths at the South Site Driveway would be one (1) vehicle or less during both peak hours studied, which could be accommodated within the layout of the site.

Site Access and Parking Assessment

Site Access

Access to the site is proposed via one (1) full-movement driveway designated for passenger vehicles and one (1) right-in/left-out-only driveway designated for trucks along Dock Road southbound. The proposed site plan provides minimum 24-foot-wide drive aisles, which can accommodate two-way circulation throughout the site. The layout of the site provides sufficient circulation for a garbage truck, delivery truck, and emergency vehicle to efficiently maneuver throughout the site. The aisle within the vicinity of the loading dock area has a designated turnaround area to accommodate the turning maneuvers of a WB-67 design vehicle.

Parking Assessment

The Township of Denville Redevelopment Plan in Connection with Block 62002, Lot 1 (12-18 Vanderhoof Avenue), *Article LIIG Dock Road Redevelopment (DRR) Zone (None-condemnation), §600-358.43(G) – Required Conditions*, sets forth a parking requirement of one (1) space per every 2,500 SF of GFA for new buildings. For the proposed 119,706 SF warehouse facility, this equates to a parking requirement of 48 spaces. It is proposed to provide 56 parking spaces, thus satisfying the Redevelopment Plan requirement. Additionally, it is proposed to provide 13 trailer parking spaces, and 18 loading docks. **Table 7** further details the parking calculations for the development.

Table 7 – Municipal Parking Requirements

Land Use	Size	Redevelopment Plan Requirement		Proposed Parking Supply
		Requirement	Calculation	
Warehouse	119,706 SF	One (1) space per 2,500 SF of GFA	48 spaces	56 spaces

Summary and Conclusions

The Traffic Impact Study evaluated the proposed warehouse building within the Township of Denville, Morris County, New Jersey. The findings of the Traffic Impact Study are summarized as follows:

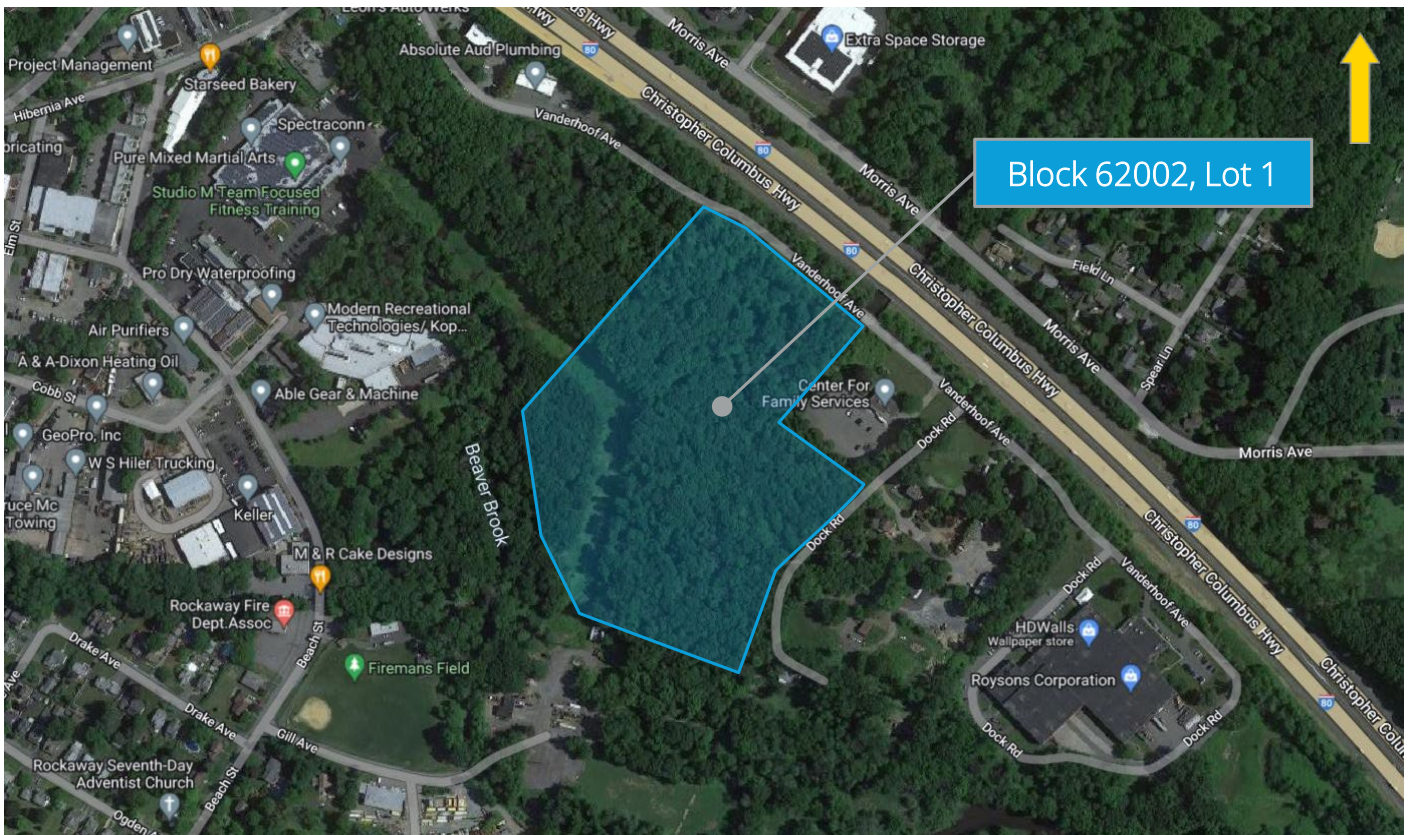
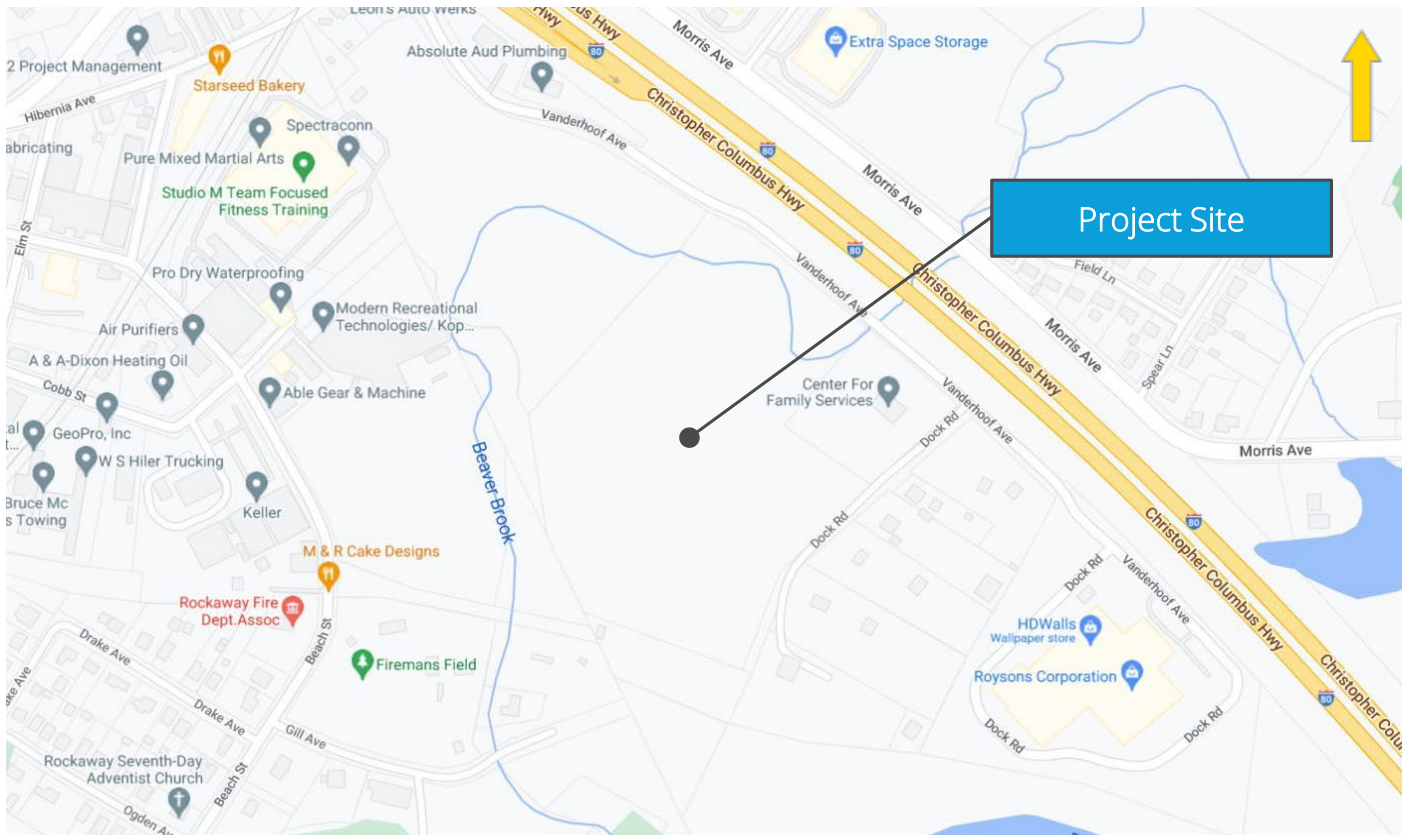
1. It is proposed to construct a 119,706 SF warehouse facility.
2. Access to the site is proposed via one (1) full-movement driveway designated for passenger vehicles and one (1) right-in/left-out-only driveway designated for trucks along Dock Road southbound.
3. Under the Build condition, all movements at the intersection of Vanderhoof Avenue & Dock Road would operate at or near No-Build Levels of Service during both peak hours studied.
4. Under the Build condition, all movements at the intersection of Hibernia Avenue (CR 513) & Union Street would operate at or near No-Build Levels of Service during both peak hours studied.
5. Under the Build condition, all movements at the intersection of Union Street & Stickle Avenue would operate at or near No-Build Levels of Service during both peak hours studied.
6. Under the Build condition, all movements at the intersection of Hibernia Avenue & Elm Street would operate at or near No-Build Levels of Service during both peak hours studied.
7. Under the Build condition, all movements at the intersection of Elm Street & Stickle Avenue would operate at or near No-Build Levels of Service during both peak hours studied.
8. Under the Build condition, all movements at the intersection of Hibernia Avenue & Oak Street would operate at or near No-Build Levels of Service during both peak hours studied.
9. Under the Build condition, all movements at the intersection of Oak Street & Stickle Avenue would operate at or near No-Build Levels of Service during both peak hours studied.
10. Under the Build condition, all movements at the intersection of Hibernia Avenue/I-80 EB On-Ramp & Vanderhoof Avenue would operate at or near No-Build Levels of Service during both peak hours studied.
11. Under the Build condition, all movements at the intersection of Dock Road & North Site Driveway would operate at a Level of Service "A" during both peak hours studied. The calculated 95th percentile queue lengths at the Site Driveway would be one (1) vehicle or less during both peak hours studied, which could be accommodated within the layout of the site.

12. Under the Build condition, the eastbound left-turn movement at the intersection of Dock Road & South Site Driveway would operate at a Level of Service "A" during both peak hours studied. The calculated 95th percentile queue lengths at the Site Driveway would be one (1) vehicle or less during both peak hours studied, which could be accommodated within the layout of the site.
13. The proposed site plan provides minimum 24-foot-wide aisles and can accommodate two-way circulation throughout the site. The layout of the site provides sufficient circulation for pedestrians and the design vehicles to maneuver through the site safely. The aisle within the vicinity of the loading dock area has a designated turnaround area to accommodate the turning maneuvers of a WB-67 design vehicle.
14. The proposed parking is sufficient based on the Redevelopment Plan requirement.

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Traffic Impact Study

Appendix A | Traffic Figures

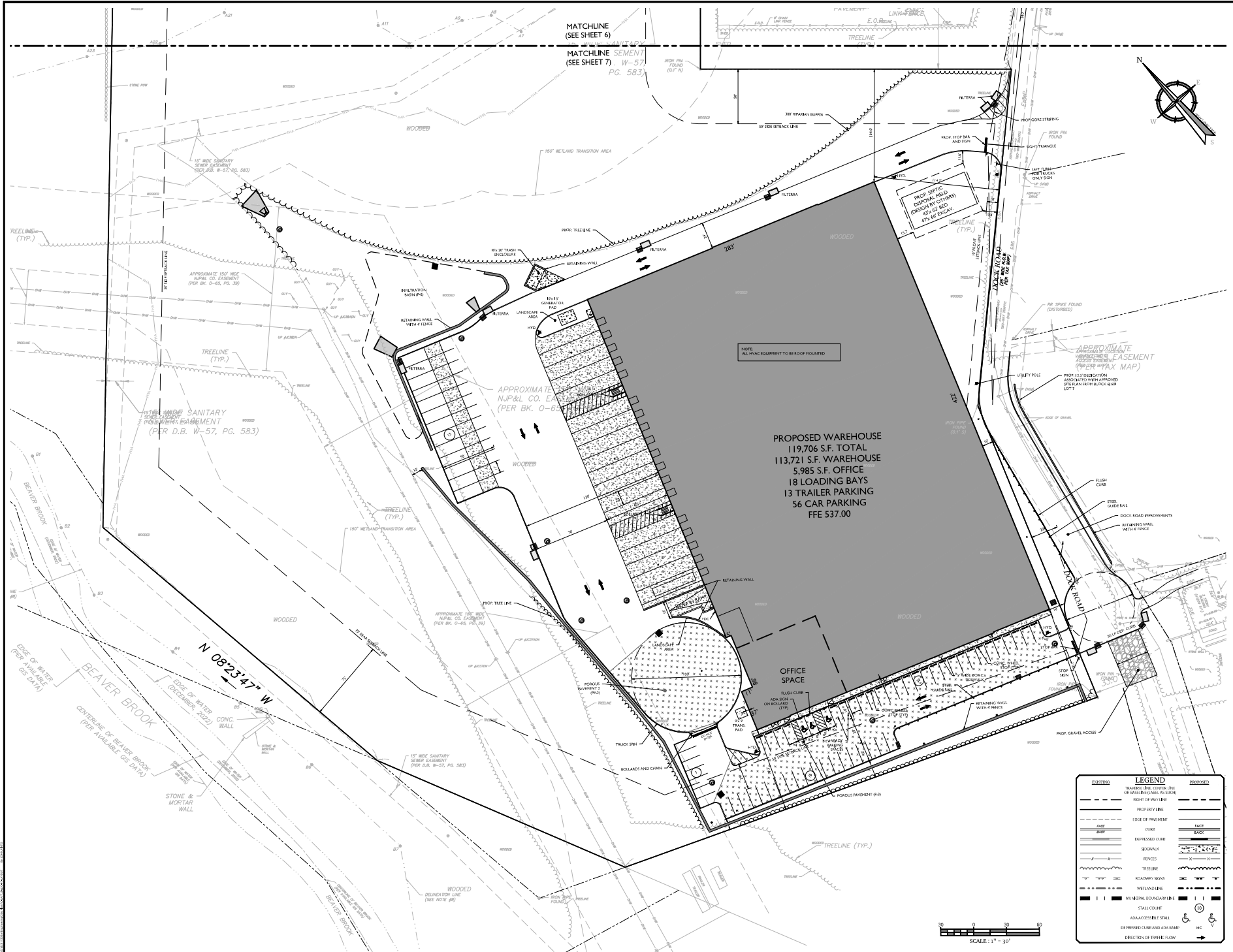


12-18 Vanderhoof LLC
 Project No. 22011505A

Township of Denville, Morris County, New Jersey

Figure 1

Site Location Map



Engineering & Design
www.colliersengineering.com

Using Business as Usual

Professional Engineer
Richard Procanik
No. 006 436600000

NO.	DESCRIPTION	DATE	BY	CHECKED BY
1	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
2	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
3	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
4	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
5	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
6	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
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32	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
33	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
34	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
35	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
36	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
37	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
38	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
39	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
40	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
41	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
42	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
43	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
44	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
45	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
46	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
47	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
48	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
49	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.
50	ISSUED FOR PERMITTING	08/15/2024	R.P.	R.P.

Richard Procanik
REGISTERED PROFESSIONAL ENGINEER
COLLIERS ENGINEERING & DESIGN, INC.
NO. 006 436600000

PRELIMINARY AND FINAL
MAJOR SITE PLAN
FOR
12-18 VANDERHOOF LLC

BLOCK 62002
LOT 1

TOWNSHIP OF DENVILLE
MORRIS COUNTY
NEW JERSEY

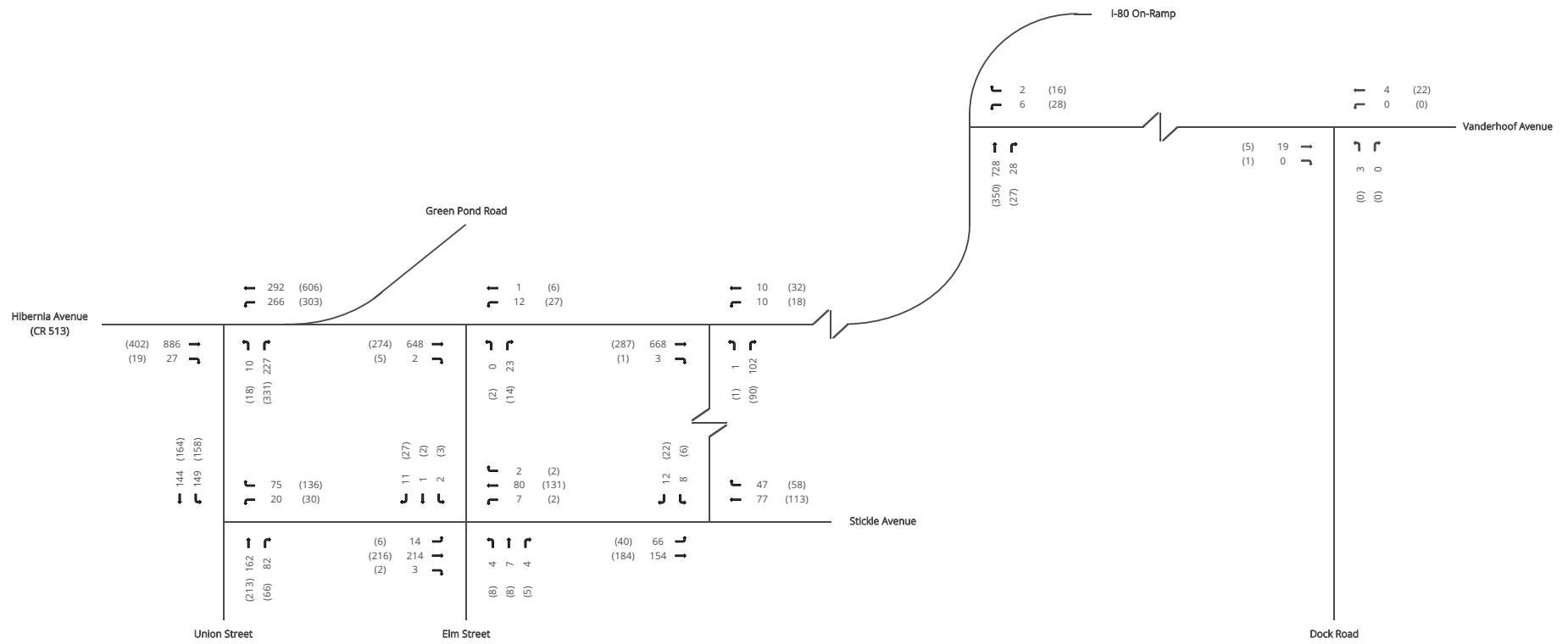
LEGEND

DATE: 08/15/2024
DRAWN BY: R.P.
CHECKED BY: R.P.

PROJECT: 12-18 VANDERHOOF LLC

SCALE: 1" = 30'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION



12-18 Vanderhoof LLC
 Project No. 22011505A
 Township of Denville, Morris County, New Jersey



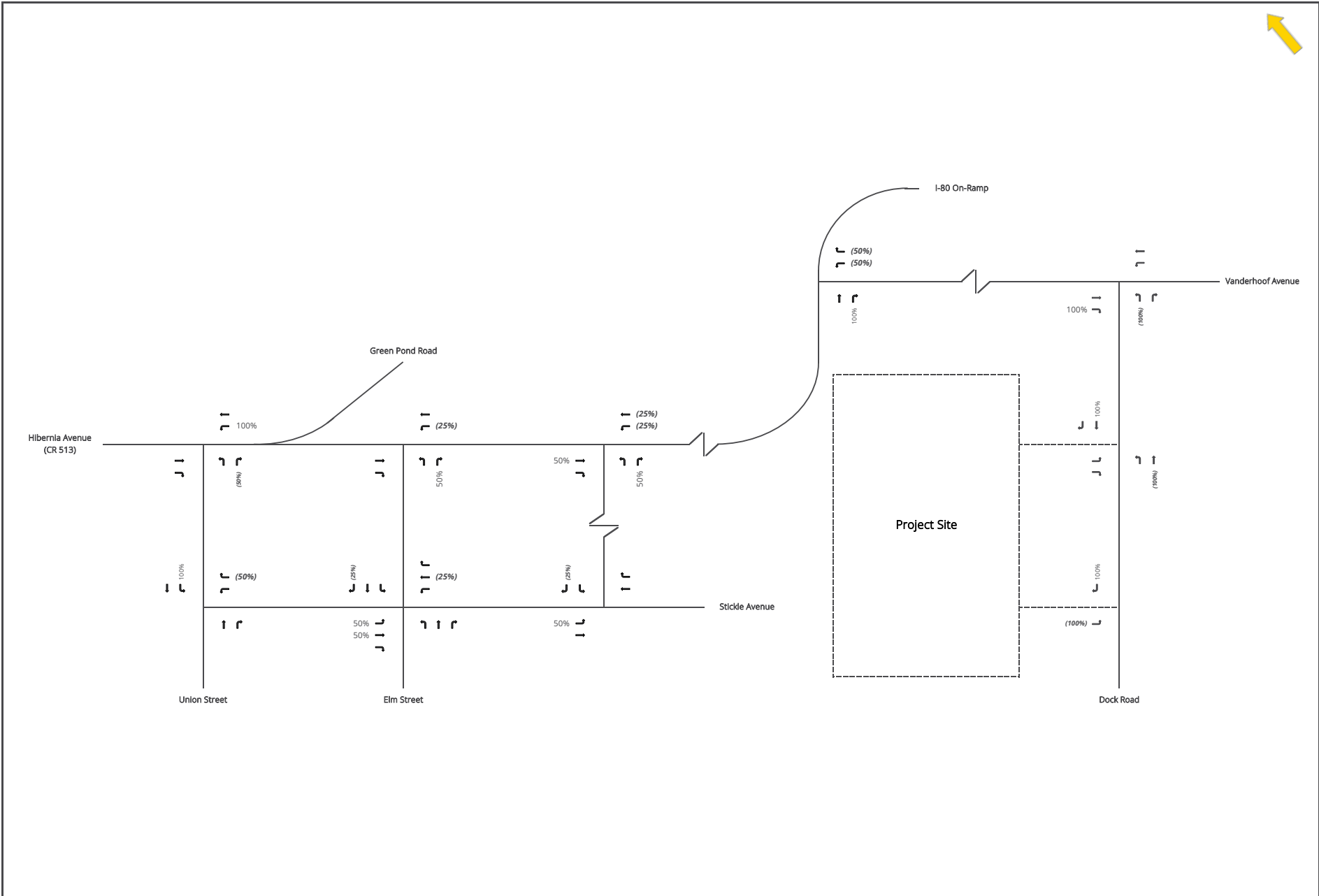
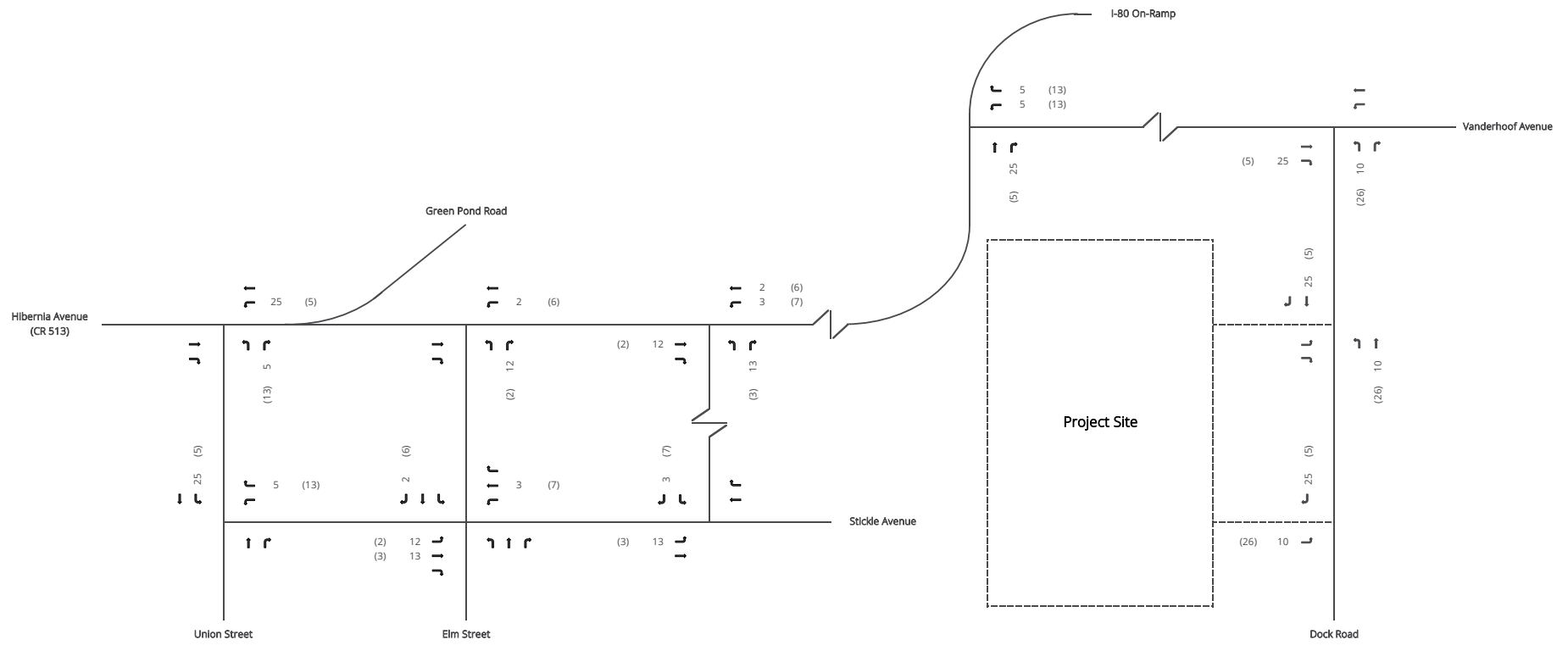
Legend
 AM Peak Hour: ###
 PM Peak Hour: (###)
 Thru Movement: 
 Turning Movement: 

Figure 3
 2024 Existing Conditions
 AM & PM Peak Hours



	12-18 Vanderhoof LLC	Legend AM Peak Hour: ### PM Peak Hour: (###) Thru Movement: — Turning Movement: ↗	Figure 4
	Project No. 22011505A		Passenger Vehicle Trip Distribution
	Township of Denville, Morris County, New Jersey		AM & PM Peak Hours



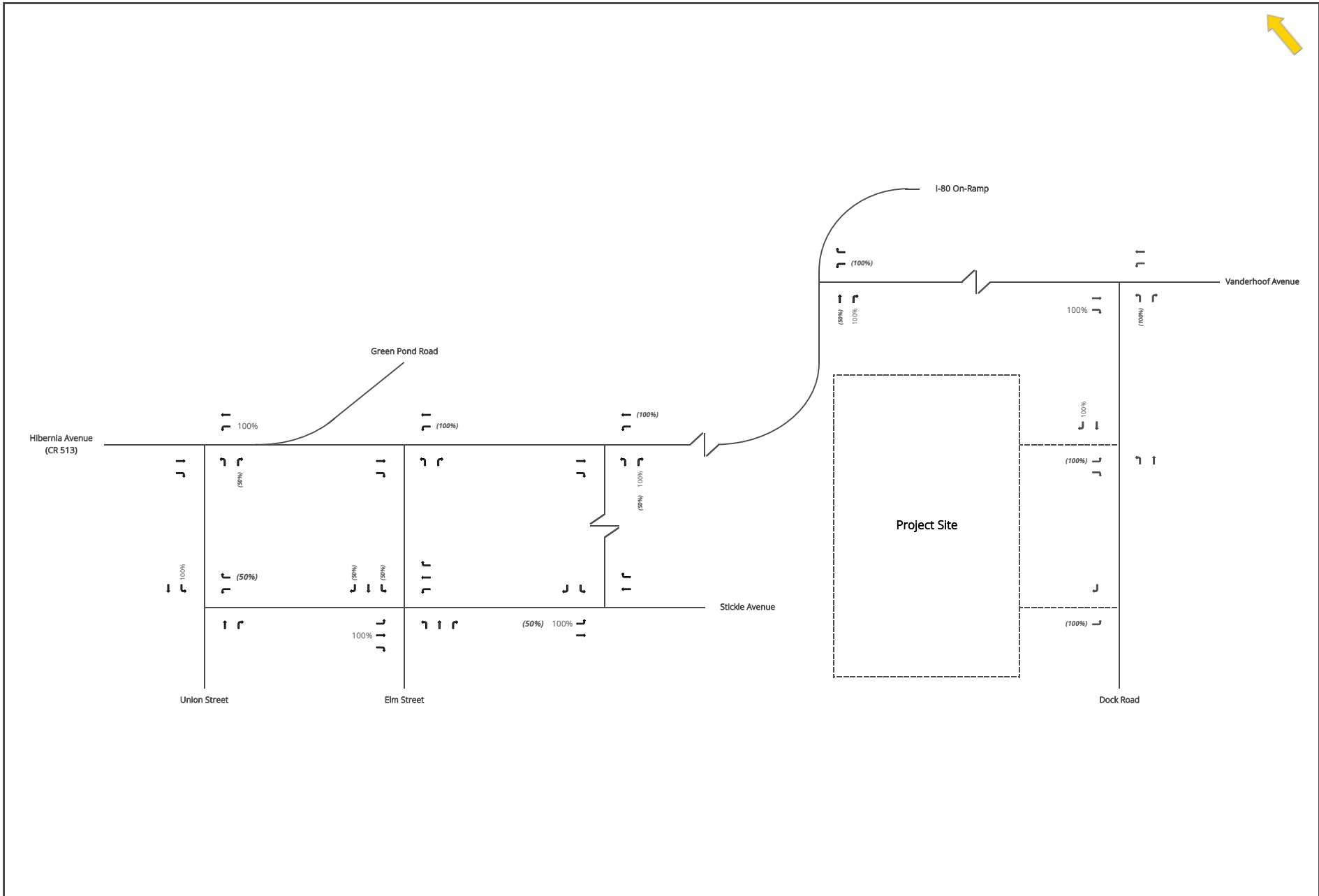
Peak Hour	Enter	Exit	Total
AM	25	10	35
PM	5	26	31



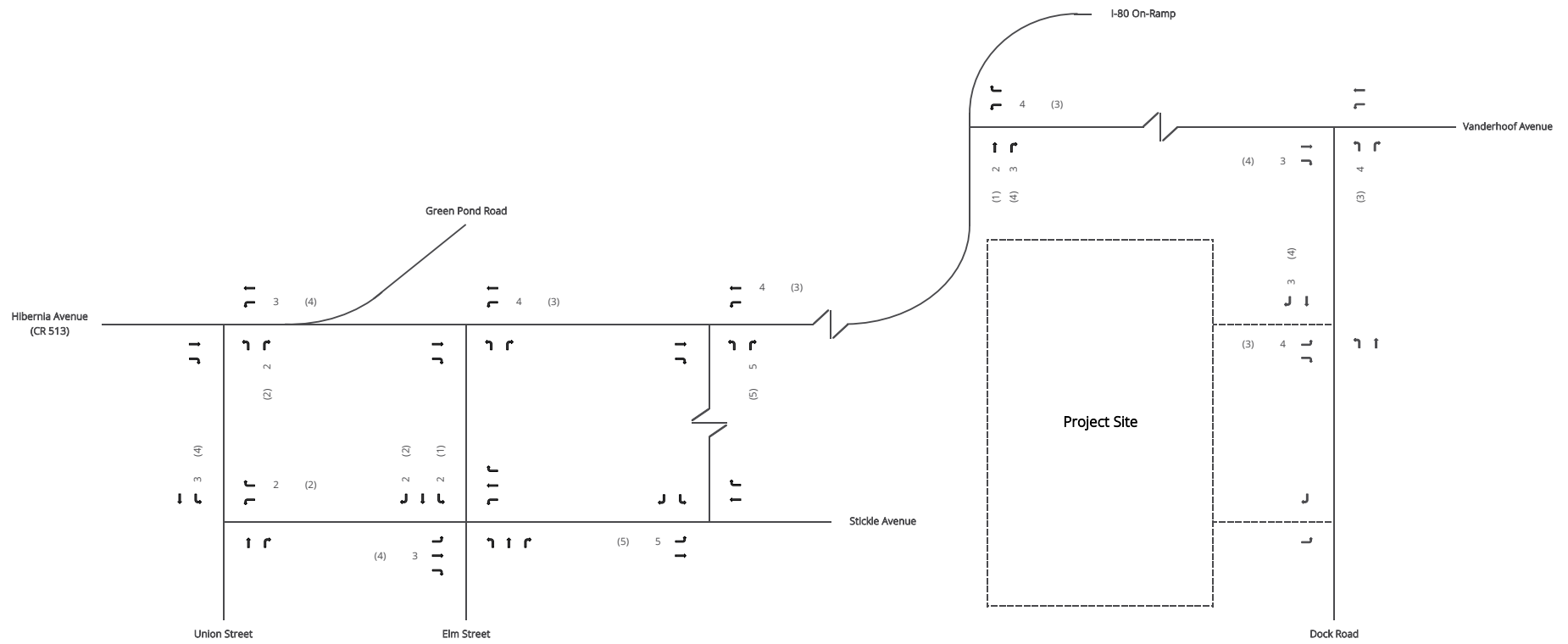
12-18 Vanderhoof LLC
 Project No. 22011505A
 Township of Denville, Morris County, New Jersey

Legend
 AM Peak Hour: ###
 PM Peak Hour: (###)
 Thru Movement: —
 Turning Movement: ↵

Figure 5
 Passenger Vehicle Site Generated Trips
 AM & PM Peak Hours



	12-18 Vanderhoof LLC	Legend AM Peak Hour: ### PM Peak Hour: (###) Thru Movement: — Turning Movement: ↗	Figure 6
	Project No. 22011505A		Truck Trip Distribution
	Township of Denville, Morris County, New Jersey		AM & PM Peak Hours



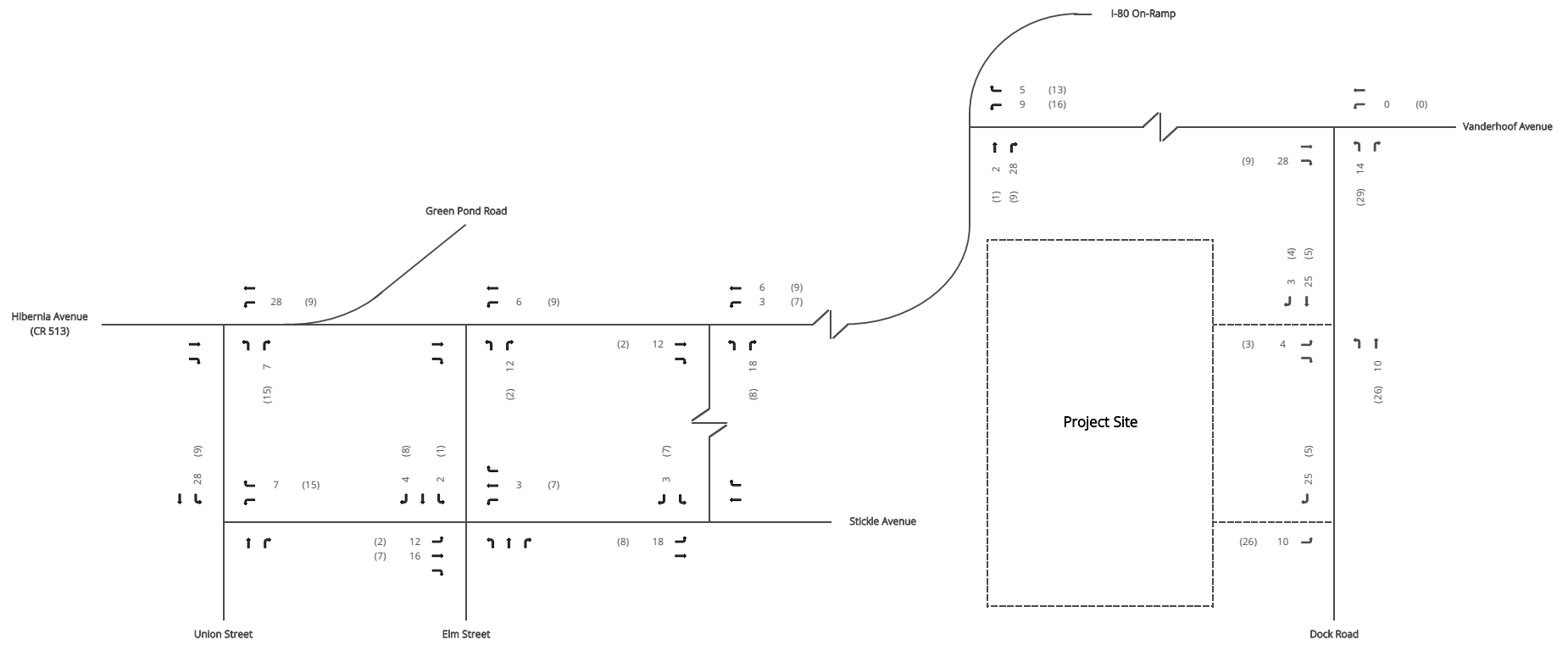
Peak Hour	Enter	Exit	Total
AM	3	4	7
PM	4	3	7



12-18 Vanderhoof LLC
 Project No. 22011505A
 Township of Denville, Morris County, New Jersey

Legend
 AM Peak Hour: ###
 PM Peak Hour: (###)
 Thru Movement: —
 Turning Movement: ↗

Figure 7
 Truck Site Generated Trips
 AM & PM Peak Hours



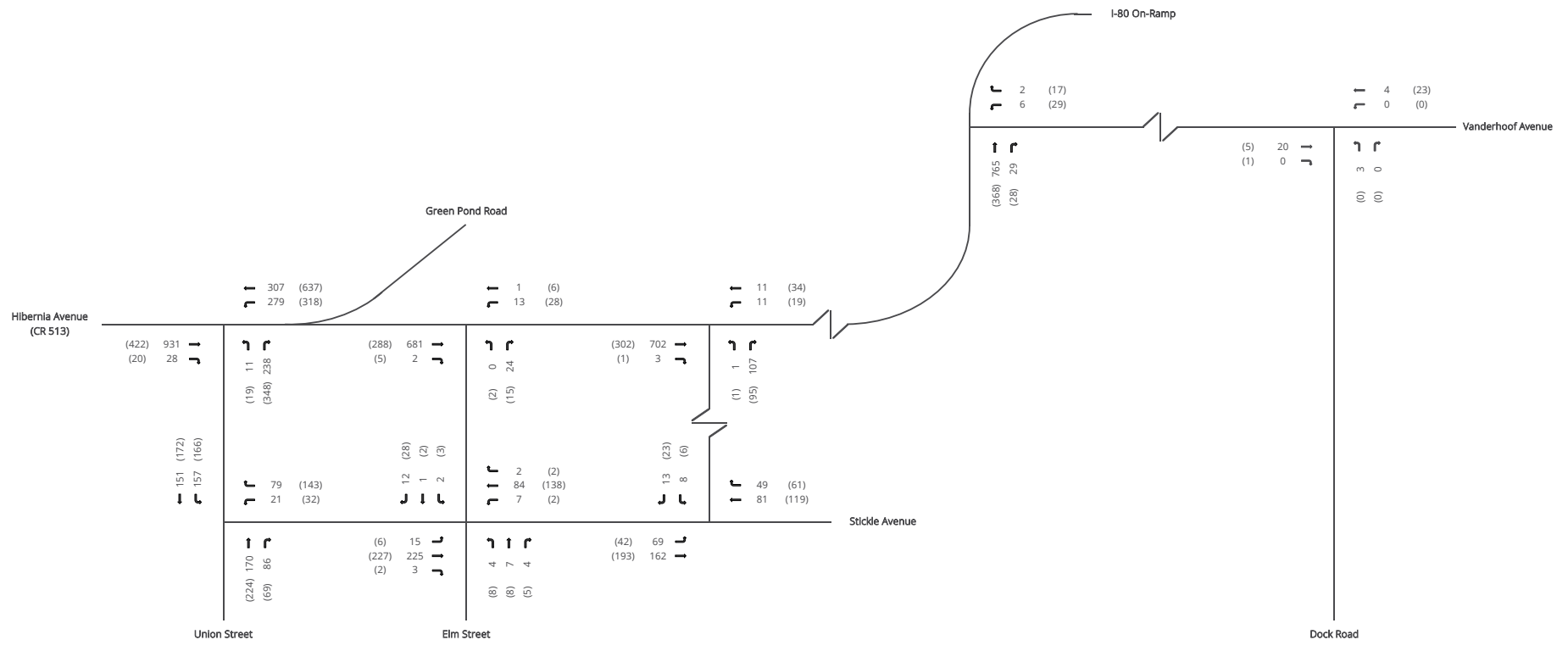
Peak Hour	Enter	Exit	Total
AM	28	14	42
PM	9	29	38



12-18 Vanderhoof LLC
 Project No. 22011505A
 Township of Denville, Morris County, New Jersey

Legend
 AM Peak Hour: ###
 PM Peak Hour: (###)
 Thru Movement: —
 Turning Movement: ↵

Figure 8
 Total Site Generated Trips
 AM & PM Peak Hours



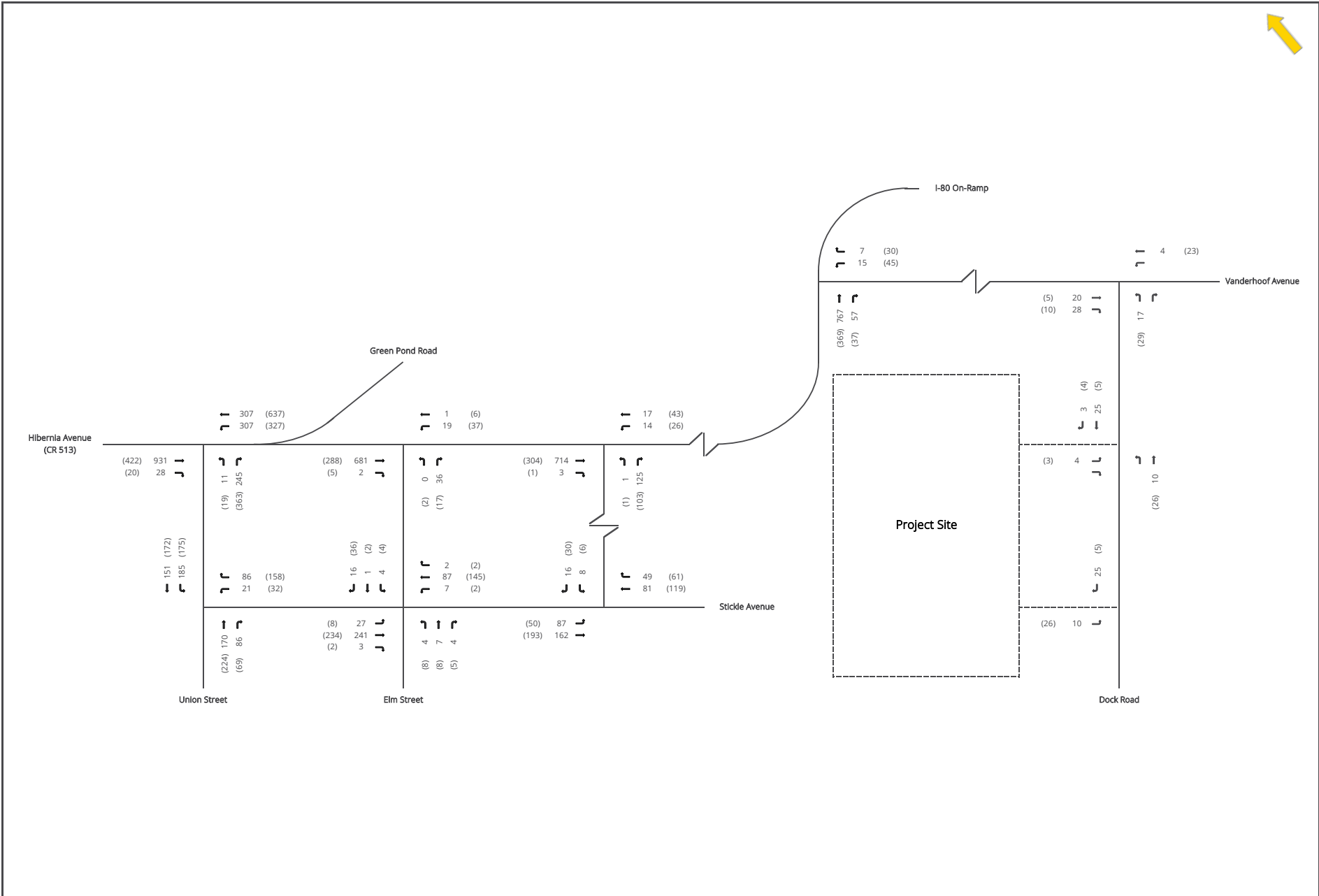
Build-Year Growth Rate	
Growth Rate:	2.50%
Years:	2
Growth Factor:	1.051



12-18 Vanderhoof LLC
 Project No. 22011505A
 Township of Denville, Morris County, New Jersey

Legend
 AM Peak Hour: ###
 PM Peak Hour: (###)
 Thru Movement: —
 Turning Movement: ↗

Figure 9
 2026 No-Build Conditions
 AM & PM Peak Hours



	12-18 Vanderhoof LLC	Legend AM Peak Hour: ### PM Peak Hour: (###) Thru Movement: — Turning Movement: ↗	Figure 10
	Project No. 22011505A		2026 Build Conditions
	Township of Denville, Morris County, New Jersey		AM & PM Peak Hours

Traffic Impact Study

Appendix B | Traffic Count Data



TRAFFIC & DATA COLLECTION

Imperial Traffic & Data Collection

www.imperialtdc.com

1804 Haddonfield-Berlin Road

Cherry Hill, New Jersey, United States 08034

609-706-6100 hfurey@imperialtdc.com

Project: Hibernia Avenue & Union Street
 Municipality: Denville, Morris County, NJ
 Setup: BC
 Location: 40.906818, -74.507088

Count Name: 2. Hibernia Avenue & Union Street
 Site Code: 2
 Start Date: 02/15/2024
 Page No: 1

Turning Movement Data

Start Time	Hibernia Avenue Eastbound					Hibernia Avenue Westbound					Union Street Northbound					Int. Total
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
7:00 AM	0	219	4	0	223	0	81	47	0	128	0	3	48	0	51	402
7:15 AM	0	215	2	1	217	0	40	73	0	113	0	1	53	0	54	384
7:30 AM	0	253	2	0	255	0	50	73	0	123	0	1	59	0	60	438
7:45 AM	0	235	5	0	240	0	73	84	0	157	0	1	59	0	60	457
Hourly Total	0	922	13	1	935	0	244	277	0	521	0	6	219	0	225	1681
8:00 AM	0	210	4	0	214	0	77	67	0	144	0	2	47	0	49	407
8:15 AM	0	188	6	0	194	0	63	68	0	131	0	4	54	1	58	383
8:30 AM	0	176	2	0	178	0	51	62	0	113	0	0	44	0	44	335
8:45 AM	0	150	1	0	151	0	81	73	0	154	0	3	40	0	43	348
Hourly Total	0	724	13	0	737	0	272	270	0	542	0	9	185	1	194	1473
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	108	2	0	110	0	71	152	0	223	0	4	70	0	74	407
4:15 PM	0	107	4	0	111	0	76	163	0	239	0	2	90	0	92	442
4:30 PM	0	97	3	0	100	0	70	119	0	189	0	7	81	0	88	377
4:45 PM	0	112	7	0	119	0	74	151	0	225	0	6	78	0	84	428
Hourly Total	0	424	16	0	440	0	291	585	0	876	0	19	319	0	338	1654
5:00 PM	0	100	6	0	106	0	69	155	0	224	0	6	88	0	94	424
5:15 PM	0	101	2	0	103	0	87	139	0	226	0	3	96	0	99	428
5:30 PM	0	89	4	0	93	0	73	161	0	234	0	3	69	0	72	399
5:45 PM	0	103	1	0	104	0	64	121	0	185	0	5	78	0	83	372
Hourly Total	0	393	13	0	406	0	293	576	0	869	0	17	331	0	348	1623
Grand Total	0	2463	55	1	2518	0	1100	1708	0	2808	0	51	1054	1	1105	6431
Approach %	0.0	97.8	2.2	-	-	0.0	39.2	60.8	-	-	0.0	4.6	95.4	-	-	-
Total %	0.0	38.3	0.9	-	39.2	0.0	17.1	26.6	-	43.7	0.0	0.8	16.4	-	17.2	-
Lights	0	2414	55	-	2469	0	1077	1654	-	2731	0	49	1024	-	1073	6273
% Lights	-	98.0	100.0	-	98.1	-	97.9	96.8	-	97.3	-	96.1	97.2	-	97.1	97.5
Mediums	0	48	0	-	48	0	18	46	-	64	0	2	29	-	31	143
% Mediums	-	1.9	0.0	-	1.9	-	1.6	2.7	-	2.3	-	3.9	2.8	-	2.8	2.2
Articulated Trucks	0	1	0	-	1	0	5	8	-	13	0	0	1	-	1	15
% Articulated Trucks	-	0.0	0.0	-	0.0	-	0.5	0.5	-	0.5	-	0.0	0.1	-	0.1	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



TRAFFIC & DATA COLLECTION

Imperial Traffic & Data Collection

www.imperialtdc.com

1804 Haddonfield-Berlin Road

Cherry Hill, New Jersey, United States 08034

609-706-6100 hfurey@imperialtdc.com

Project: Hibernia Avenue & Union Street
 Municipality: Denville, Morris County, NJ
 Setup: BC
 Location: 40.906818, -74.507088

Count Name: 2. Hibernia Avenue & Union Street
 Site Code: 2
 Start Date: 02/15/2024
 Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Hibernia Avenue Eastbound					Hibernia Avenue Westbound					Union Street Northbound					Int. Total
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
7:30 AM	0	253	2	0	255	0	50	73	0	123	0	1	59	0	60	438
7:45 AM	0	235	5	0	240	0	73	84	0	157	0	1	59	0	60	457
8:00 AM	0	210	4	0	214	0	77	67	0	144	0	2	47	0	49	407
8:15 AM	0	188	6	0	194	0	63	68	0	131	0	4	54	1	58	383
Total	0	886	17	0	903	0	263	292	0	555	0	8	219	1	227	1685
Approach %	0.0	98.1	1.9	-	-	0.0	47.4	52.6	-	-	0.0	3.5	96.5	-	-	-
Total %	0.0	52.6	1.0	-	53.6	0.0	15.6	17.3	-	32.9	0.0	0.5	13.0	-	13.5	-
PHF	0.000	0.875	0.708	-	0.885	0.000	0.854	0.869	-	0.884	0.000	0.500	0.928	-	0.946	0.922
Lights	0	865	17	-	882	0	257	266	-	523	0	8	208	-	216	1621
% Lights	-	97.6	100.0	-	97.7	-	97.7	91.1	-	94.2	-	100.0	95.0	-	95.2	96.2
Mediums	0	21	0	-	21	0	5	23	-	28	0	0	11	-	11	60
% Mediums	-	2.4	0.0	-	2.3	-	1.9	7.9	-	5.0	-	0.0	5.0	-	4.8	3.6
Articulated Trucks	0	0	0	-	0	0	1	3	-	4	0	0	0	-	0	4
% Articulated Trucks	-	0.0	0.0	-	0.0	-	0.4	1.0	-	0.7	-	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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

Project: Hibernia Avenue & Union Street
 Municipality: Denville, Morris County, NJ
 Setup: BC
 Location: 40.906145, -74.506043

Count Name: 4. Stickle Avenue & Oak Street
 Site Code: 4
 Start Date: 02/15/2024
 Page No: 1

Turning Movement Data

Start Time	Stickle Avenue Eastbound						Stickle Avenue Westbound						Elm Street Northbound						Elm Street Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	7	51	3	0	61	0	1	12	1	5	14	0	0	1	0	1	1	0	0	1	0	0	1	77
7:15 AM	0	6	32	2	0	40	0	0	14	0	2	14	0	0	0	1	0	1	0	0	0	2	0	2	57
7:30 AM	0	4	34	1	0	39	0	0	17	1	1	18	0	1	0	1	1	2	0	0	1	3	0	4	63
7:45 AM	0	4	61	0	0	65	0	5	8	0	0	13	0	3	3	2	0	8	0	1	0	5	1	6	92
Hourly Total	0	21	178	6	0	205	0	6	51	2	8	59	0	4	4	4	2	12	0	1	2	10	1	13	289
8:00 AM	0	2	65	1	0	68	0	0	25	1	0	26	0	0	3	0	1	3	0	1	0	1	0	2	99
8:15 AM	0	4	54	1	0	59	0	2	30	0	0	32	0	0	1	1	0	2	0	0	0	2	0	2	95
8:30 AM	0	2	35	0	0	37	0	0	16	1	1	17	0	1	0	0	0	1	0	0	0	1	0	1	56
8:45 AM	0	6	46	0	0	52	0	0	11	1	0	12	0	1	0	0	0	1	0	0	0	3	0	3	68
Hourly Total	0	14	200	2	0	216	0	2	82	3	1	87	0	2	4	1	1	7	0	1	0	7	0	8	318
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	1	43	0	0	44	0	0	32	0	0	32	0	1	3	1	1	5	0	1	1	4	0	6	87
4:15 PM	0	3	49	2	0	54	0	1	25	1	1	27	0	2	2	0	0	4	0	2	1	4	0	7	92
4:30 PM	0	0	37	0	0	37	0	4	25	2	2	31	0	3	1	0	0	4	0	1	1	3	0	5	77
4:45 PM	0	1	61	1	1	63	0	1	31	1	3	33	0	3	3	1	1	7	0	2	0	5	0	7	110
Hourly Total	0	5	190	3	1	198	0	6	113	4	6	123	0	9	9	2	2	20	0	6	3	16	0	25	366
5:00 PM	0	1	56	1	0	58	0	0	41	1	0	42	0	2	1	3	0	6	0	1	2	9	0	12	118
5:15 PM	0	1	55	0	0	56	0	1	28	0	0	29	0	2	1	1	0	4	0	0	0	9	0	9	98
5:30 PM	0	3	44	0	0	47	0	0	31	0	0	31	0	1	0	0	0	1	0	0	0	4	1	4	83
5:45 PM	0	4	38	0	0	42	0	0	40	1	0	41	0	0	0	0	0	0	0	0	0	5	0	5	88
Hourly Total	0	9	193	1	0	203	0	1	140	2	0	143	0	5	2	4	0	11	0	1	2	27	1	30	387
Grand Total	0	49	761	12	1	822	0	15	386	11	15	412	0	20	19	11	5	50	0	9	7	60	2	76	1360
Approach %	0.0	6.0	92.6	1.5	-	-	0.0	3.6	93.7	2.7	-	-	0.0	40.0	38.0	22.0	-	-	0.0	11.8	9.2	78.9	-	-	-
Total %	0.0	3.6	56.0	0.9	-	60.4	0.0	1.1	28.4	0.8	-	30.3	0.0	1.5	1.4	0.8	-	3.7	0.0	0.7	0.5	4.4	-	5.6	-
Lights	0	45	748	12	-	805	0	14	377	10	-	401	0	20	19	10	-	49	0	9	7	56	-	72	1327
% Lights	-	91.8	98.3	100.0	-	97.9	-	93.3	97.7	90.9	-	97.3	-	100.0	100.0	90.9	-	98.0	-	100.0	100.0	93.3	-	94.7	97.6
Mediums	0	4	10	0	-	14	0	1	9	1	-	11	0	0	0	1	-	1	0	0	0	4	-	4	30
% Mediums	-	8.2	1.3	0.0	-	1.7	-	6.7	2.3	9.1	-	2.7	-	0.0	0.0	9.1	-	2.0	-	0.0	0.0	6.7	-	5.3	2.2
Articulated Trucks	0	0	3	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	-	0.0	0.4	0.0	-	0.4	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	15	-	-	-	-	-	-	5	-	-	-	-	-	2	-	-



TRAFFIC & DATA COLLECTION

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Project: Hibernia Avenue & Union Street

Municipality: Denville, Morris County, NJ

Setup: BC

Location: 40.906145, -74.506043

Count Name: 4. Stickle Avenue & Oak Street

Site Code: 4

Start Date: 02/15/2024

Page No: 4

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Stickle Avenue Eastbound						Stickle Avenue Westbound						Elm Street Northbound						Elm Street Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:30 AM	0	4	34	1	0	39	0	0	17	1	1	18	0	1	0	1	1	2	0	0	1	3	0	4	63
7:45 AM	0	4	61	0	0	65	0	5	8	0	0	13	0	3	3	2	0	8	0	1	0	5	1	6	92
8:00 AM	0	2	65	1	0	68	0	0	25	1	0	26	0	0	3	0	1	3	0	1	0	1	0	2	99
8:15 AM	0	4	54	1	0	59	0	2	30	0	0	32	0	0	1	1	0	2	0	0	0	2	0	2	95
Total	0	14	214	3	0	231	0	7	80	2	1	89	0	4	7	4	2	15	0	2	1	11	1	14	349
Approach %	0.0	6.1	92.6	1.3	-	-	0.0	7.9	89.9	2.2	-	-	0.0	26.7	46.7	26.7	-	-	0.0	14.3	7.1	78.6	-	-	-
Total %	0.0	4.0	61.3	0.9	-	66.2	0.0	2.0	22.9	0.6	-	25.5	0.0	1.1	2.0	1.1	-	4.3	0.0	0.6	0.3	3.2	-	4.0	-
PHF	0.000	0.875	0.823	0.750	-	0.849	0.000	0.350	0.667	0.500	-	0.695	0.000	0.333	0.583	0.500	-	0.469	0.000	0.500	0.250	0.550	-	0.583	0.881
Lights	0	12	209	3	-	224	0	6	78	1	-	85	0	4	7	4	-	15	0	2	1	9	-	12	336
% Lights	-	85.7	97.7	100.0	-	97.0	-	85.7	97.5	50.0	-	95.5	-	100.0	100.0	100.0	-	100.0	-	100.0	100.0	81.8	-	85.7	96.3
Mediums	0	2	3	0	-	5	0	1	2	1	-	4	0	0	0	0	-	0	0	0	0	2	-	2	11
% Mediums	-	14.3	1.4	0.0	-	2.2	-	14.3	2.5	50.0	-	4.5	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	18.2	-	14.3	3.2
Articulated Trucks	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Articulated Trucks	-	0.0	0.9	0.0	-	0.9	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Cherry Hill, New Jersey, United States 08034

609-706-6100 hfurey@imperialtdc.com

Project: Hibernia Avenue & Union Street

Municipality: Denville, Morris County, NJ

Setup: BC

Location: 40.906145, -74.506043

Count Name: 4. Stickle Avenue & Oak Street

Site Code: 4

Start Date: 02/15/2024

Page No: 6

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Stickle Avenue Eastbound						Stickle Avenue Westbound						Elm Street Northbound						Elm Street Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:45 PM	0	1	61	1	1	63	0	1	31	1	3	33	0	3	3	1	1	7	0	2	0	5	0	7	110
5:00 PM	0	1	56	1	0	58	0	0	41	1	0	42	0	2	1	3	0	6	0	1	2	9	0	12	118
5:15 PM	0	1	55	0	0	56	0	1	28	0	0	29	0	2	1	1	0	4	0	0	0	9	0	9	98
5:30 PM	0	3	44	0	0	47	0	0	31	0	0	31	0	1	0	0	0	1	0	0	0	4	1	4	83
Total	0	6	216	2	1	224	0	2	131	2	3	135	0	8	5	5	1	18	0	3	2	27	1	32	409
Approach %	0.0	2.7	96.4	0.9	-	-	0.0	1.5	97.0	1.5	-	-	0.0	44.4	27.8	27.8	-	-	0.0	9.4	6.3	84.4	-	-	-
Total %	0.0	1.5	52.8	0.5	-	54.8	0.0	0.5	32.0	0.5	-	33.0	0.0	2.0	1.2	1.2	-	4.4	0.0	0.7	0.5	6.6	-	7.8	-
PHF	0.000	0.500	0.885	0.500	-	0.889	0.000	0.500	0.799	0.500	-	0.804	0.000	0.667	0.417	0.417	-	0.643	0.000	0.375	0.250	0.750	-	0.667	0.867
Lights	0	6	214	2	-	222	0	2	129	2	-	133	0	8	5	5	-	18	0	3	2	26	-	31	404
% Lights	-	100.0	99.1	100.0	-	99.1	-	100.0	98.5	100.0	-	98.5	-	100.0	100.0	100.0	-	100.0	-	100.0	100.0	96.3	-	96.9	98.8
Mediums	0	0	2	0	-	2	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	1	-	1	5
% Mediums	-	0.0	0.9	0.0	-	0.9	-	0.0	1.5	0.0	-	1.5	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	3.7	-	3.1	1.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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 Cherry Hill, New Jersey, United States 08034
 609-706-6100 hfurey@imperialtdc.com

Project: Hibernia Avenue & Union Street
 Municipality: Denville, Morris County, NJ
 Setup: BC
 Location: 40.905964, -74.504992

Count Name: 6. Stickle Avenue & Oak Street
 Site Code: 6
 Start Date: 02/15/2024
 Page No: 1

Turning Movement Data

Start Time	Stickle Avenue Eastbound					Stickle Avenue Westbound					Oak Street Southbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
7:00 AM	0	22	29	0	51	0	15	8	0	23	0	2	1	0	3	77
7:15 AM	0	13	20	0	33	0	12	6	0	18	0	1	2	0	3	54
7:30 AM	0	12	23	0	35	0	12	14	0	26	0	3	6	0	9	70
7:45 AM	0	22	41	0	63	0	10	9	0	19	0	1	3	1	4	86
Hourly Total	0	69	113	0	182	0	49	37	0	86	0	7	12	1	19	287
8:00 AM	0	19	47	0	66	0	25	15	0	40	0	1	1	0	2	108
8:15 AM	0	13	41	0	54	0	29	9	0	38	0	3	2	0	5	97
8:30 AM	0	8	28	0	36	0	16	16	0	32	0	0	1	0	1	69
8:45 AM	0	7	38	0	45	0	9	6	0	15	0	2	3	0	5	65
Hourly Total	0	47	154	0	201	0	79	46	0	125	0	6	7	0	13	339
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	8	37	0	45	0	30	14	0	44	0	5	2	0	7	96
4:15 PM	0	7	43	0	50	0	25	15	0	40	0	5	3	0	8	98
4:30 PM	0	6	32	0	38	0	26	9	0	35	0	0	4	0	4	77
4:45 PM	0	11	52	0	63	0	27	15	0	42	0	2	6	0	8	113
Hourly Total	0	32	164	0	196	0	108	53	0	161	0	12	15	0	27	384
5:00 PM	0	13	47	0	60	0	36	23	0	59	0	3	4	1	7	126
5:15 PM	0	13	42	0	55	0	23	12	0	35	0	1	6	0	7	97
5:30 PM	0	3	42	0	45	0	25	8	0	33	0	0	6	0	6	84
5:45 PM	0	4	32	0	36	0	41	6	0	47	0	0	1	0	1	84
Hourly Total	0	33	163	0	196	0	125	49	0	174	0	4	17	1	21	391
Grand Total	0	181	594	0	775	0	361	185	0	546	0	29	51	2	80	1401
Approach %	0.0	23.4	76.6	-	-	0.0	66.1	33.9	-	-	0.0	36.3	63.8	-	-	-
Total %	0.0	12.9	42.4	-	55.3	0.0	25.8	13.2	-	39.0	0.0	2.1	3.6	-	5.7	-
Lights	0	175	588	-	763	0	355	181	-	536	0	27	47	-	74	1373
% Lights	-	96.7	99.0	-	98.5	-	98.3	97.8	-	98.2	-	93.1	92.2	-	92.5	98.0
Mediums	0	5	4	-	9	0	5	4	-	9	0	2	4	-	6	24
% Mediums	-	2.8	0.7	-	1.2	-	1.4	2.2	-	1.6	-	6.9	7.8	-	7.5	1.7
Articulated Trucks	0	1	2	-	3	0	1	0	-	1	0	0	0	-	0	4
% Articulated Trucks	-	0.6	0.3	-	0.4	-	0.3	0.0	-	0.2	-	0.0	0.0	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Project: Hibernia Avenue & Union Street

Municipality: Denville, Morris County, NJ

Setup: BC

Location: 40.905964, -74.504992

Count Name: 6. Stickle Avenue & Oak Street

Site Code: 6

Start Date: 02/15/2024

Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Stickle Avenue Eastbound					Stickle Avenue Westbound					Oak Street Southbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
7:30 AM	0	12	23	0	35	0	12	14	0	26	0	3	6	0	9	70
7:45 AM	0	22	41	0	63	0	10	9	0	19	0	1	3	1	4	86
8:00 AM	0	19	47	0	66	0	25	15	0	40	0	1	1	0	2	108
8:15 AM	0	13	41	0	54	0	29	9	0	38	0	3	2	0	5	97
Total	0	66	152	0	218	0	76	47	0	123	0	8	12	1	20	361
Approach %	0.0	30.3	69.7	-	-	0.0	61.8	38.2	-	-	0.0	40.0	60.0	-	-	-
Total %	0.0	18.3	42.1	-	60.4	0.0	21.1	13.0	-	34.1	0.0	2.2	3.3	-	5.5	-
PHF	0.000	0.750	0.809	-	0.826	0.000	0.655	0.783	-	0.769	0.000	0.667	0.500	-	0.556	0.836
Lights	0	64	150	-	214	0	76	46	-	122	0	7	8	-	15	351
% Lights	-	97.0	98.7	-	98.2	-	100.0	97.9	-	99.2	-	87.5	66.7	-	75.0	97.2
Mediums	0	1	1	-	2	0	0	1	-	1	0	1	4	-	5	8
% Mediums	-	1.5	0.7	-	0.9	-	0.0	2.1	-	0.8	-	12.5	33.3	-	25.0	2.2
Articulated Trucks	0	1	1	-	2	0	0	0	-	0	0	0	0	-	0	2
% Articulated Trucks	-	1.5	0.7	-	0.9	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Project: Hibernia Avenue & Union Street

Municipality: Denville, Morris County, NJ

Setup: BC

Location: 40.905964, -74.504992

Count Name: 6. Stickle Avenue & Oak Street

Site Code: 6

Start Date: 02/15/2024

Page No: 5

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Stickle Avenue Eastbound					Stickle Avenue Westbound					Oak Street Southbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
4:45 PM	0	11	52	0	63	0	27	15	0	42	0	2	6	0	8	113
5:00 PM	0	13	47	0	60	0	36	23	0	59	0	3	4	1	7	126
5:15 PM	0	13	42	0	55	0	23	12	0	35	0	1	6	0	7	97
5:30 PM	0	3	42	0	45	0	25	8	0	33	0	0	6	0	6	84
Total	0	40	183	0	223	0	111	58	0	169	0	6	22	1	28	420
Approach %	0.0	17.9	82.1	-	-	0.0	65.7	34.3	-	-	0.0	21.4	78.6	-	-	-
Total %	0.0	9.5	43.6	-	53.1	0.0	26.4	13.8	-	40.2	0.0	1.4	5.2	-	6.7	-
PHF	0.000	0.769	0.880	-	0.885	0.000	0.771	0.630	-	0.716	0.000	0.500	0.917	-	0.875	0.833
Lights	0	39	182	-	221	0	109	58	-	167	0	5	22	-	27	415
% Lights	-	97.5	99.5	-	99.1	-	98.2	100.0	-	98.8	-	83.3	100.0	-	96.4	98.8
Mediums	0	1	1	-	2	0	2	0	-	2	0	1	0	-	1	5
% Mediums	-	2.5	0.5	-	0.9	-	1.8	0.0	-	1.2	-	16.7	0.0	-	3.6	1.2
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Impact Study

Appendix C | Trip Generation Calculations

Warehousing (150)

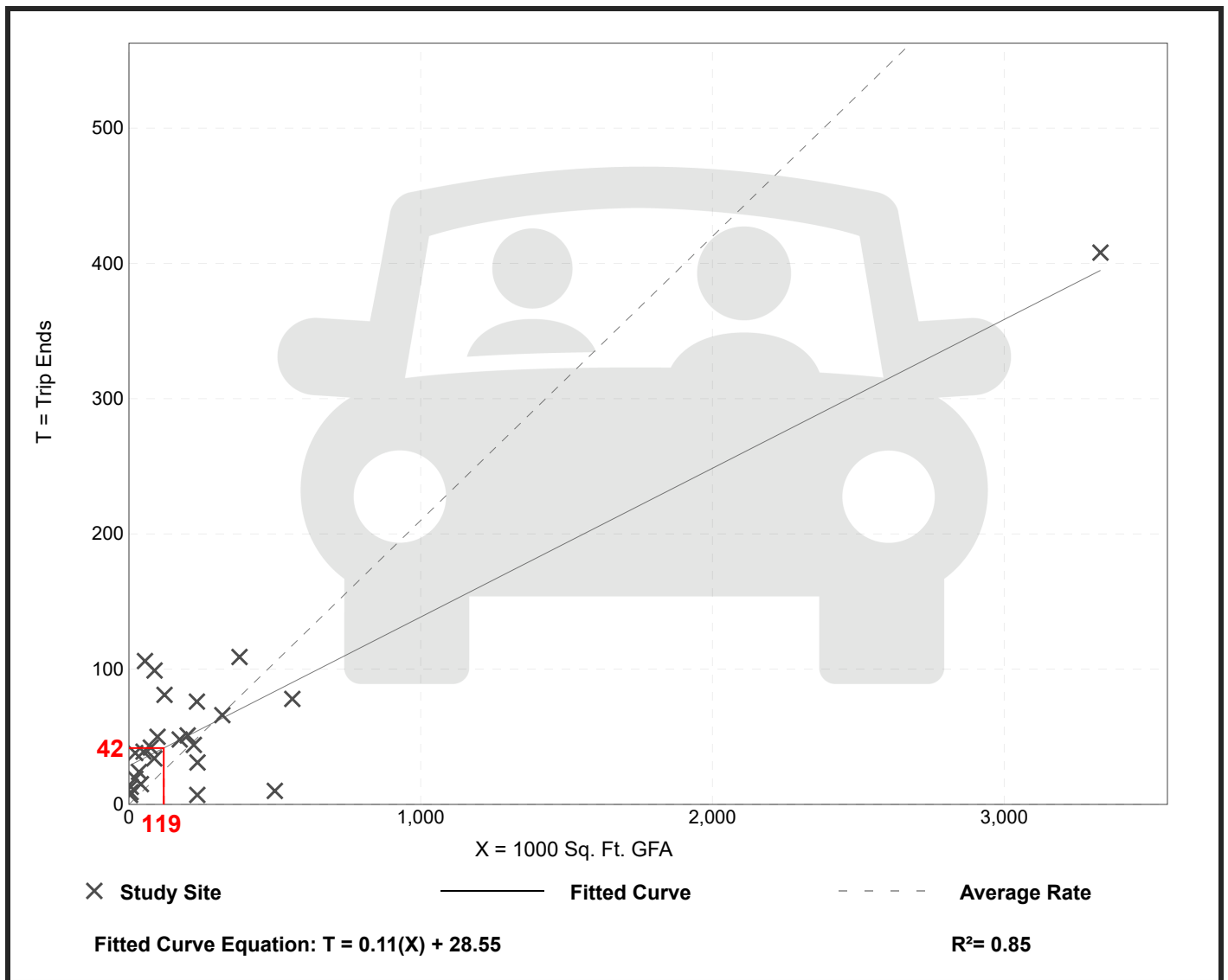
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 25
 Avg. 1000 Sq. Ft. GFA: 284
 Directional Distribution: 66% entering, 34% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.21	0.02 - 2.08	0.26

Data Plot and Equation



Warehousing (150)

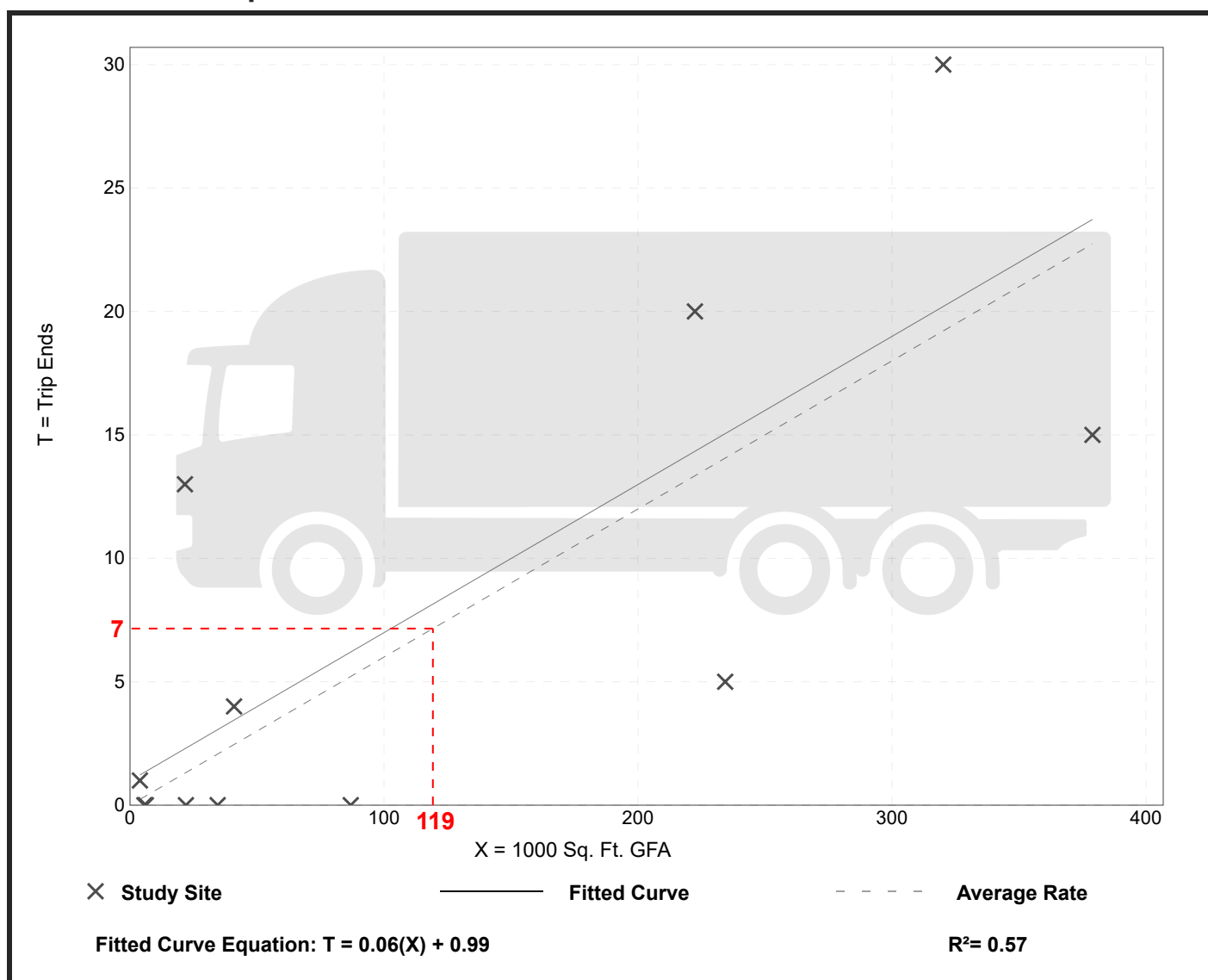
Truck Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 12
 Avg. 1000 Sq. Ft. GFA: 115
 Directional Distribution: 35% entering, 65% exiting

Truck Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.06	0.00 - 0.60	0.08

Data Plot and Equation



Warehousing (150)

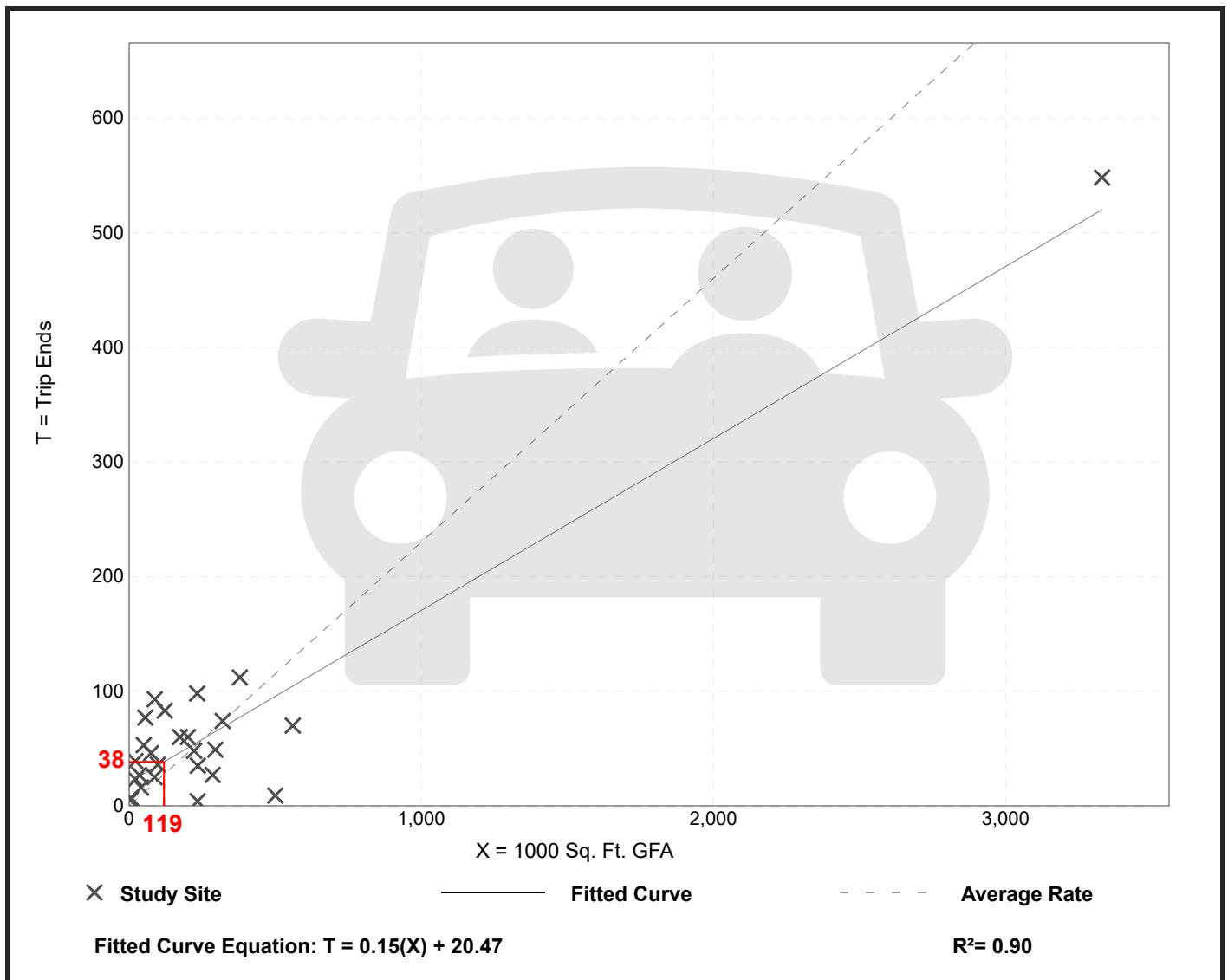
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 27
Avg. 1000 Sq. Ft. GFA: 284
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.23	0.02 - 1.80	0.23

Data Plot and Equation



Warehousing (150)

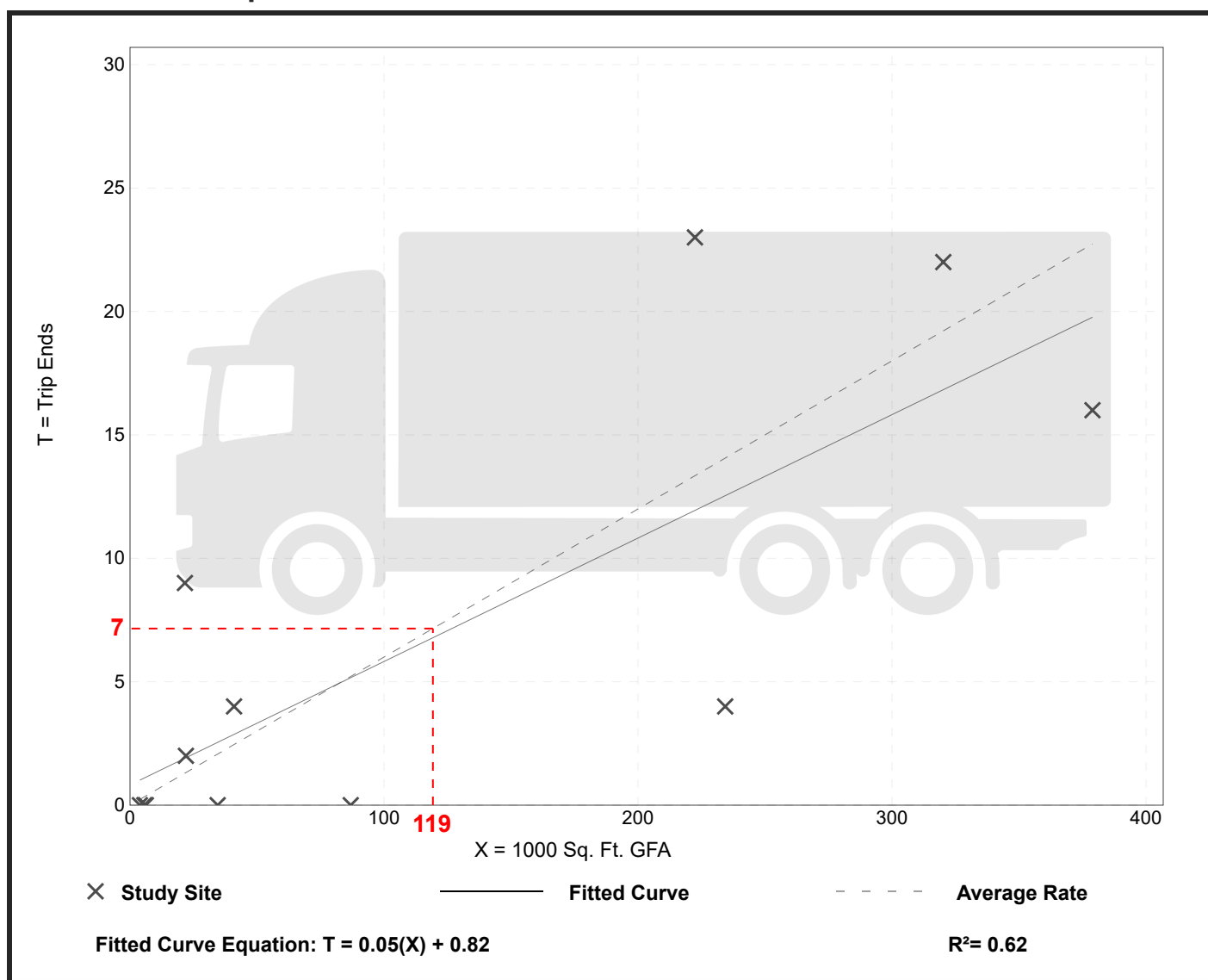
Truck Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 PM Peak Hour of Generator

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



Traffic Impact Study

Appendix D | Capacity Analysis

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	1	1	4	3	1
Future Vol, veh/h	20	1	1	4	3	1
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	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	20	2	2
Mvmt Flow	27	1	1	5	4	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	28	0	35 28
Stage 1	-	-	-	-	28 -
Stage 2	-	-	-	-	7 -
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	-	-	1585	-	978 1047
Stage 1	-	-	-	-	995 -
Stage 2	-	-	-	-	1016 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1585	-	977 1047
Mov Cap-2 Maneuver	-	-	-	-	977 -
Stage 1	-	-	-	-	995 -
Stage 2	-	-	-	-	1015 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	994	-	-	1585	-
HCM Lane V/C Ratio	0.005	-	-	0.001	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	32.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	931	28	279	307	11	238
Future Vol, veh/h	931	28	279	307	11	238
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	9	2	5
Mvmt Flow	1012	30	303	334	12	259

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	1042	0
Stage 1	-	-	-	1027
Stage 2	-	-	-	940
Critical Hdwy	-	-	4.12	-
Critical Hdwy Stg 1	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-
Pot Cap-1 Maneuver	-	-	667	-
Stage 1	-	-	-	345
Stage 2	-	-	-	380
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	667	-
Mov Cap-2 Maneuver	-	-	-	30
Stage 1	-	-	-	345
Stage 2	-	-	-	168

Approach	EB	WB	NB
HCM Control Delay, s	0	7.1	219.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	205	-	-	667	-
HCM Lane V/C Ratio	1.32	-	-	0.455	-
HCM Control Delay (s)	219.6	-	-	14.8	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	15	-	-	2.4	-

Intersection						
Int Delay, s/veh	3.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	79	170	86	157	151
Future Vol, veh/h	21	79	170	86	157	151
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, %	5	2	8	3	3	4
Mvmt Flow	23	87	187	95	173	166

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	747	235	0	0	282
Stage 1	235	-	-	-	-
Stage 2	512	-	-	-	-
Critical Hdwy	6.45	6.22	-	-	4.13
Critical Hdwy Stg 1	5.45	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-
Follow-up Hdwy	3.545	3.318	-	-	2.227
Pot Cap-1 Maneuver	376	804	-	-	1275
Stage 1	797	-	-	-	-
Stage 2	596	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	320	804	-	-	1275
Mov Cap-2 Maneuver	320	-	-	-	-
Stage 1	797	-	-	-	-
Stage 2	507	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	4.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	610	1275
HCM Lane V/C Ratio	-	-	0.18	0.135
HCM Control Delay (s)	-	-	12.2	8.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.7	0.5

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	681	2	13	1	1	24
Future Vol, veh/h	681	2	13	1	1	24
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	88	88	88	88	88	88
Heavy Vehicles, %	2	2	20	2	2	9
Mvmt Flow	774	2	15	1	1	27

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	776	0	806
Stage 1	-	-	-	-	775
Stage 2	-	-	-	-	31
Critical Hdwy	-	-	4.3	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.38	-	3.518
Pot Cap-1 Maneuver	-	-	765	-	351
Stage 1	-	-	-	-	454
Stage 2	-	-	-	-	992
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	765	-	344
Mov Cap-2 Maneuver	-	-	-	-	344
Stage 1	-	-	-	-	454
Stage 2	-	-	-	-	972

Approach	EB	WB	NB
HCM Control Delay, s	0	9.1	15.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	385	-	-	765	-
HCM Lane V/C Ratio	0.074	-	-	0.019	-
HCM Control Delay (s)	15.1	-	-	9.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	225	3	7	84	2	4	7	4	2	1	12
Future Vol, veh/h	15	225	3	7	84	2	4	7	4	2	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	14	2	2	14	3	20	2	2	2	2	2	18
Mvmt Flow	17	256	3	8	95	2	5	8	5	2	1	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	97	0	0	259	0	0	412	405	258	410	405	96
Stage 1	-	-	-	-	-	-	292	292	-	112	112	-
Stage 2	-	-	-	-	-	-	120	113	-	298	293	-
Critical Hdwy	4.24	-	-	4.24	-	-	7.12	6.52	6.22	7.12	6.52	6.38
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.326	-	-	2.326	-	-	3.518	4.018	3.318	3.518	4.018	3.462
Pot Cap-1 Maneuver	1424	-	-	1239	-	-	550	535	781	552	535	918
Stage 1	-	-	-	-	-	-	716	671	-	893	803	-
Stage 2	-	-	-	-	-	-	884	802	-	711	670	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1424	-	-	1239	-	-	532	524	781	534	524	918
Mov Cap-2 Maneuver	-	-	-	-	-	-	532	524	-	534	524	-
Stage 1	-	-	-	-	-	-	706	662	-	880	797	-
Stage 2	-	-	-	-	-	-	864	796	-	689	661	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.6			11.4			9.6		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	577	1424	-	-	1239	-	-	801
HCM Lane V/C Ratio	0.03	0.012	-	-	0.006	-	-	0.021
HCM Control Delay (s)	11.4	7.6	0	-	7.9	0	-	9.6
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	702	3	11	11	1	107
Future Vol, veh/h	702	3	11	11	1	107
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	20	20	2	4
Mvmt Flow	763	3	12	12	1	116

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	766	0	801
Stage 1	-	-	-	-	765
Stage 2	-	-	-	-	36
Critical Hdwy	-	-	4.3	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.38	-	3.518
Pot Cap-1 Maneuver	-	-	772	-	354
Stage 1	-	-	-	-	459
Stage 2	-	-	-	-	986
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	772	-	348
Mov Cap-2 Maneuver	-	-	-	-	348
Stage 1	-	-	-	-	459
Stage 2	-	-	-	-	970

Approach	EB	WB	NB
HCM Control Delay, s	0	4.9	17.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	399	-	-	772	-
HCM Lane V/C Ratio	0.294	-	-	0.015	-
HCM Control Delay (s)	17.7	-	-	9.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0	-

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	69	162	81	49	8	13
Future Vol, veh/h	69	162	81	49	8	13
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	84	84	84	84	84	84
Heavy Vehicles, %	3	2	2	2	13	20
Mvmt Flow	82	193	96	58	10	15

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	154	0	-	0	482 125
Stage 1	-	-	-	-	125 -
Stage 2	-	-	-	-	357 -
Critical Hdwy	4.13	-	-	-	6.53 6.4
Critical Hdwy Stg 1	-	-	-	-	5.53 -
Critical Hdwy Stg 2	-	-	-	-	5.53 -
Follow-up Hdwy	2.227	-	-	-	3.617 3.48
Pot Cap-1 Maneuver	1420	-	-	-	524 879
Stage 1	-	-	-	-	874 -
Stage 2	-	-	-	-	684 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1420	-	-	-	490 879
Mov Cap-2 Maneuver	-	-	-	-	490 -
Stage 1	-	-	-	-	817 -
Stage 2	-	-	-	-	684 -

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1420	-	-	-	675
HCM Lane V/C Ratio	0.058	-	-	-	0.037
HCM Control Delay (s)	7.7	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	2	765	29	0	0
Future Vol, veh/h	6	2	765	29	0	0
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	94	94	94	94	94	94
Heavy Vehicles, %	17	2	2	8	2	2
Mvmt Flow	6	2	814	31	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	830	830	0	0
Stage 1	830	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.57	6.22	-	-
Critical Hdwy Stg 1	5.57	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.653	3.318	-	-
Pot Cap-1 Maneuver	321	370	-	-
Stage 1	404	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	321	370	-	-
Mov Cap-2 Maneuver	321	-	-	-
Stage 1	404	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	16.1	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	- 332
HCM Lane V/C Ratio	-	- 0.026
HCM Control Delay (s)	-	- 16.1
HCM Lane LOS	-	- C
HCM 95th %tile Q(veh)	-	- 0.1

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	1	1	23	1	1
Future Vol, veh/h	5	1	1	23	1	1
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	75	75	75	75	75	75
Heavy Vehicles, %	20	2	2	9	2	2
Mvmt Flow	7	1	1	31	1	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	8	0	41
Stage 1	-	-	-	-	8
Stage 2	-	-	-	-	33
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1612	-	970
Stage 1	-	-	-	-	1015
Stage 2	-	-	-	-	989
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1612	-	969
Mov Cap-2 Maneuver	-	-	-	-	969
Stage 1	-	-	-	-	1015
Stage 2	-	-	-	-	988

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1019	-	-	1612	-
HCM Lane V/C Ratio	0.003	-	-	0.001	-
HCM Control Delay (s)	8.5	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	16					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	422	20	318	637	19	348
Future Vol, veh/h	422	20	318	637	19	348
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	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	6	2
Mvmt Flow	431	20	324	650	19	355

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	451	0	1739
Stage 1	-	-	-	-	441
Stage 2	-	-	-	-	1298
Critical Hdwy	-	-	4.12	-	6.46
Critical Hdwy Stg 1	-	-	-	-	5.46
Critical Hdwy Stg 2	-	-	-	-	5.46
Follow-up Hdwy	-	-	2.218	-	3.554
Pot Cap-1 Maneuver	-	-	1109	-	94
Stage 1	-	-	-	-	640
Stage 2	-	-	-	-	251
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1109	-	51
Mov Cap-2 Maneuver	-	-	-	-	51
Stage 1	-	-	-	-	640
Stage 2	-	-	-	-	136

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	68.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	391	-	-	1109	-
HCM Lane V/C Ratio	0.958	-	-	0.293	-
HCM Control Delay (s)	68.4	-	-	9.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	10.9	-	-	1.2	-

Intersection						
Int Delay, s/veh	4.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	143	224	69	166	172
Future Vol, veh/h	32	143	224	69	166	172
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	155	243	75	180	187

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	828	281	0	0	318
Stage 1	281	-	-	-	-
Stage 2	547	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	341	758	-	-	1242
Stage 1	767	-	-	-	-
Stage 2	580	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	286	758	-	-	1242
Mov Cap-2 Maneuver	286	-	-	-	-
Stage 1	767	-	-	-	-
Stage 2	486	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	4.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	582	1242
HCM Lane V/C Ratio	-	-	0.327	0.145
HCM Control Delay (s)	-	-	14.2	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.4	0.5

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	288	5	28	6	2	15
Future Vol, veh/h	288	5	28	6	2	15
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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	306	5	30	6	2	16

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	311	0	375 309
Stage 1	-	-	-	-	309 -
Stage 2	-	-	-	-	66 -
Critical Hdwy	-	-	4.14	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.236	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1238	-	626 731
Stage 1	-	-	-	-	745 -
Stage 2	-	-	-	-	957 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1238	-	611 731
Mov Cap-2 Maneuver	-	-	-	-	611 -
Stage 1	-	-	-	-	745 -
Stage 2	-	-	-	-	934 -

Approach	EB	WB	NB
HCM Control Delay, s	0	6.6	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	714	-	-	1238	-
HCM Lane V/C Ratio	0.025	-	-	0.024	-
HCM Control Delay (s)	10.2	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	227	2	2	138	2	8	8	5	3	2	28
Future Vol, veh/h	6	227	2	2	138	2	8	8	5	3	2	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	4
Mvmt Flow	7	261	2	2	159	2	9	9	6	3	2	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	161	0	0	263	0	0	457	441	262	448	441	160
Stage 1	-	-	-	-	-	-	276	276	-	164	164	-
Stage 2	-	-	-	-	-	-	181	165	-	284	277	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.336
Pot Cap-1 Maneuver	1418	-	-	1301	-	-	514	510	777	521	510	880
Stage 1	-	-	-	-	-	-	730	682	-	838	762	-
Stage 2	-	-	-	-	-	-	821	762	-	723	681	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1418	-	-	1301	-	-	490	506	777	507	506	880
Mov Cap-2 Maneuver	-	-	-	-	-	-	490	506	-	507	506	-
Stage 1	-	-	-	-	-	-	726	678	-	833	760	-
Stage 2	-	-	-	-	-	-	787	760	-	704	677	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			11.9			9.8		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	544	1418	-	-	1301	-	-	792
HCM Lane V/C Ratio	0.044	0.005	-	-	0.002	-	-	0.048
HCM Control Delay (s)	11.9	7.6	0	-	7.8	0	-	9.8
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	302	1	19	34	1	95
Future Vol, veh/h	302	1	19	34	1	95
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	88	88	88	88	88	88
Heavy Vehicles, %	2	2	6	4	2	2
Mvmt Flow	343	1	22	39	1	108

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	344	0	427
Stage 1	-	-	-	-	344
Stage 2	-	-	-	-	83
Critical Hdwy	-	-	4.16	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.254	-	3.518
Pot Cap-1 Maneuver	-	-	1193	-	584
Stage 1	-	-	-	-	718
Stage 2	-	-	-	-	940
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1193	-	573
Mov Cap-2 Maneuver	-	-	-	-	573
Stage 1	-	-	-	-	718
Stage 2	-	-	-	-	922

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	11.1
HCM LOS			B



Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	697	-	-	1193	-
HCM Lane V/C Ratio	0.157	-	-	0.018	-
HCM Control Delay (s)	11.1	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	42	193	119	61	6	23
Future Vol, veh/h	42	193	119	61	6	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	2	2	2	17	2
Mvmt Flow	51	233	143	73	7	28

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	216	0	-	0	515 180
Stage 1	-	-	-	-	180 -
Stage 2	-	-	-	-	335 -
Critical Hdwy	4.13	-	-	-	6.57 6.22
Critical Hdwy Stg 1	-	-	-	-	5.57 -
Critical Hdwy Stg 2	-	-	-	-	5.57 -
Follow-up Hdwy	2.227	-	-	-	3.653 3.318
Pot Cap-1 Maneuver	1348	-	-	-	494 863
Stage 1	-	-	-	-	816 -
Stage 2	-	-	-	-	692 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1348	-	-	-	473 863
Mov Cap-2 Maneuver	-	-	-	-	473 -
Stage 1	-	-	-	-	781 -
Stage 2	-	-	-	-	692 -

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1348	-	-	-	737
HCM Lane V/C Ratio	0.038	-	-	-	0.047
HCM Control Delay (s)	7.8	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	17	368	28	0	0
Future Vol, veh/h	29	17	368	28	0	0
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	80	80	80	80	80	80
Heavy Vehicles, %	7	2	2	4	2	2
Mvmt Flow	36	21	460	35	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	478	478	0	0
Stage 1	478	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.47	6.22	-	-
Critical Hdwy Stg 1	5.47	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.563	3.318	-	-
Pot Cap-1 Maneuver	537	587	-	-
Stage 1	613	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	537	587	-	-
Mov Cap-2 Maneuver	537	-	-	-
Stage 1	613	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	12.2	0
HCM LOS	B	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	- 554
HCM Lane V/C Ratio	-	- 0.104
HCM Control Delay (s)	-	- 12.2
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0.3

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	28	1	4	17	1
Future Vol, veh/h	20	28	1	4	17	1
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	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	20	2	2
Mvmt Flow	27	37	1	5	23	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	64	0	53
Stage 1	-	-	-	-	46
Stage 2	-	-	-	-	7
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1538	-	955
Stage 1	-	-	-	-	976
Stage 2	-	-	-	-	1016
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1538	-	954
Mov Cap-2 Maneuver	-	-	-	-	954
Stage 1	-	-	-	-	976
Stage 2	-	-	-	-	1015

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	958	-	-	1538	-
HCM Lane V/C Ratio	0.025	-	-	0.001	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	41.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	931	28	307	307	11	245
Future Vol, veh/h	931	28	307	307	11	245
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	9	2	5
Mvmt Flow	1012	30	334	334	12	266

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1042	0	2029
Stage 1	-	-	-	-	1027
Stage 2	-	-	-	-	1002
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	667	-	63
Stage 1	-	-	-	-	345
Stage 2	-	-	-	-	355
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	667	-	24
Mov Cap-2 Maneuver	-	-	-	-	24
Stage 1	-	-	-	-	345
Stage 2	-	-	-	-	137

Approach	EB	WB	NB
HCM Control Delay, s	0	7.8	274.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	192	-	-	667	-
HCM Lane V/C Ratio	1.449	-	-	0.5	-
HCM Control Delay (s)	274.7	-	-	15.7	0
HCM Lane LOS	F	-	-	C	A
HCM 95th %tile Q(veh)	16.9	-	-	2.8	-

Intersection						
Int Delay, s/veh	4.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	86	170	86	185	151
Future Vol, veh/h	21	86	170	86	185	151
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, %	5	2	8	3	3	4
Mvmt Flow	23	95	187	95	203	166

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	807	235	0	0	282
Stage 1	235	-	-	-	-
Stage 2	572	-	-	-	-
Critical Hdwy	6.45	6.22	-	-	4.13
Critical Hdwy Stg 1	5.45	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-
Follow-up Hdwy	3.545	3.318	-	-	2.227
Pot Cap-1 Maneuver	347	804	-	-	1275
Stage 1	797	-	-	-	-
Stage 2	559	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	286	804	-	-	1275
Mov Cap-2 Maneuver	286	-	-	-	-
Stage 1	797	-	-	-	-
Stage 2	461	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	4.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	593	1275
HCM Lane V/C Ratio	-	-	0.198	0.159
HCM Control Delay (s)	-	-	12.6	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.7	0.6

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	681	2	19	1	1	36
Future Vol, veh/h	681	2	19	1	1	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	20	2	2	9
Mvmt Flow	774	2	22	1	1	41

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	776	0	820
Stage 1	-	-	-	-	775
Stage 2	-	-	-	-	45
Critical Hdwy	-	-	4.3	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.38	-	3.518
Pot Cap-1 Maneuver	-	-	765	-	345
Stage 1	-	-	-	-	454
Stage 2	-	-	-	-	977
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	765	-	335
Mov Cap-2 Maneuver	-	-	-	-	335
Stage 1	-	-	-	-	454
Stage 2	-	-	-	-	949

Approach	EB	WB	NB
HCM Control Delay, s	0	9.4	15.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	385	-	-	765	-
HCM Lane V/C Ratio	0.109	-	-	0.028	-
HCM Control Delay (s)	15.5	-	-	9.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	241	3	7	87	2	4	7	4	4	1	16
Future Vol, veh/h	27	241	3	7	87	2	4	7	4	4	1	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	14	2	2	14	3	20	2	2	2	2	2	18
Mvmt Flow	31	274	3	8	99	2	5	8	5	5	1	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	101	0	0	277	0	0	464	455	276	460	455	100
Stage 1	-	-	-	-	-	-	338	338	-	116	116	-
Stage 2	-	-	-	-	-	-	126	117	-	344	339	-
Critical Hdwy	4.24	-	-	4.24	-	-	7.12	6.52	6.22	7.12	6.52	6.38
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.326	-	-	2.326	-	-	3.518	4.018	3.318	3.518	4.018	3.462
Pot Cap-1 Maneuver	1419	-	-	1220	-	-	508	501	763	512	501	914
Stage 1	-	-	-	-	-	-	676	641	-	889	800	-
Stage 2	-	-	-	-	-	-	878	799	-	671	640	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1419	-	-	1220	-	-	485	484	763	490	484	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	485	484	-	490	484	-
Stage 1	-	-	-	-	-	-	658	624	-	866	794	-
Stage 2	-	-	-	-	-	-	853	793	-	641	623	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.6			11.9			9.9		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	537	1419	-	-	1220	-	-	757
HCM Lane V/C Ratio	0.032	0.022	-	-	0.007	-	-	0.032
HCM Control Delay (s)	11.9	7.6	0	-	8	0	-	9.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	2.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	714	3	14	17	1	125
Future Vol, veh/h	714	3	14	17	1	125
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	20	20	2	4
Mvmt Flow	776	3	15	18	1	136

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	779	0	826 778
Stage 1	-	-	-	-	778 -
Stage 2	-	-	-	-	48 -
Critical Hdwy	-	-	4.3	-	6.42 6.24
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.38	-	3.518 3.336
Pot Cap-1 Maneuver	-	-	763	-	342 393
Stage 1	-	-	-	-	453 -
Stage 2	-	-	-	-	974 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	763	-	335 393
Mov Cap-2 Maneuver	-	-	-	-	335 -
Stage 1	-	-	-	-	453 -
Stage 2	-	-	-	-	955 -

Approach	EB	WB	NB
HCM Control Delay, s	0	4.4	19
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	392	-	-	763	-
HCM Lane V/C Ratio	0.349	-	-	0.02	-
HCM Control Delay (s)	19	-	-	9.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.5	-	-	0.1	-

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	87	162	81	49	8	16
Future Vol, veh/h	87	162	81	49	8	16
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	84	84	84	84	84	84
Heavy Vehicles, %	3	2	2	2	13	20
Mvmt Flow	104	193	96	58	10	19

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	154	0	-	0	526 125
Stage 1	-	-	-	-	125 -
Stage 2	-	-	-	-	401 -
Critical Hdwy	4.13	-	-	-	6.53 6.4
Critical Hdwy Stg 1	-	-	-	-	5.53 -
Critical Hdwy Stg 2	-	-	-	-	5.53 -
Follow-up Hdwy	2.227	-	-	-	3.617 3.48
Pot Cap-1 Maneuver	1420	-	-	-	494 879
Stage 1	-	-	-	-	874 -
Stage 2	-	-	-	-	653 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1420	-	-	-	453 879
Mov Cap-2 Maneuver	-	-	-	-	453 -
Stage 1	-	-	-	-	802 -
Stage 2	-	-	-	-	653 -

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1420	-	-	-	669
HCM Lane V/C Ratio	0.073	-	-	-	0.043
HCM Control Delay (s)	7.7	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			
Traffic Vol, veh/h	15	7	767	57	0	0
Future Vol, veh/h	15	7	767	57	0	0
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	94	94	94	94	94	94
Heavy Vehicles, %	17	2	2	8	2	2
Mvmt Flow	16	7	816	61	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	847	847	0	0
Stage 1	847	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.57	6.22	-	-
Critical Hdwy Stg 1	5.57	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.653	3.318	-	-
Pot Cap-1 Maneuver	313	362	-	-
Stage 1	396	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	313	362	-	-
Mov Cap-2 Maneuver	313	-	-	-
Stage 1	396	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	16.9	0
HCM LOS	C	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	- 327
HCM Lane V/C Ratio	-	- 0.072
HCM Control Delay (s)	-	- 16.9
HCM Lane LOS	-	- C
HCM 95th %tile Q(veh)	-	- 0.2

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	4	1	1	10	25	3
Future Vol, veh/h	4	1	1	10	25	3
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	92	92	92	92	92	92
Heavy Vehicles, %	100	2	2	2	2	2
Mvmt Flow	4	1	1	11	27	3

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	42	29	30	0	0
Stage 1	29	-	-	-	-
Stage 2	13	-	-	-	-
Critical Hdwy	7.4	6.22	4.12	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-
Follow-up Hdwy	4.4	3.318	2.218	-	-
Pot Cap-1 Maneuver	770	1046	1583	-	-
Stage 1	791	-	-	-	-
Stage 2	806	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	769	1046	1583	-	-
Mov Cap-2 Maneuver	769	-	-	-	-
Stage 1	790	-	-	-	-
Stage 2	806	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1583	-	812	-	-
HCM Lane V/C Ratio	0.001	-	0.007	-	-
HCM Control Delay (s)	7.3	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	10	1	1	1	1	25
Future Vol, veh/h	10	1	1	1	1	25
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	1	1	1	1	27

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	18	15	28	0	0
Stage 1	15	-	-	-	-
Stage 2	3	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	1000	1065	1585	-	-
Stage 1	1008	-	-	-	-
Stage 2	1020	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	999	1065	1585	-	-
Mov Cap-2 Maneuver	999	-	-	-	-
Stage 1	1007	-	-	-	-
Stage 2	1020	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	3.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1585	-	1005	-	-
HCM Lane V/C Ratio	0.001	-	0.012	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	10	1	23	29	1
Future Vol, veh/h	5	10	1	23	29	1
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	75	75	75	75	75	75
Heavy Vehicles, %	20	2	2	9	2	2
Mvmt Flow	7	13	1	31	39	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	20	0	47
Stage 1	-	-	-	-	14
Stage 2	-	-	-	-	33
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1596	-	963
Stage 1	-	-	-	-	1009
Stage 2	-	-	-	-	989
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1596	-	962
Mov Cap-2 Maneuver	-	-	-	-	962
Stage 1	-	-	-	-	1009
Stage 2	-	-	-	-	988

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	965	-	-	1596	-
HCM Lane V/C Ratio	0.041	-	-	0.001	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	18.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	422	20	327	637	19	363
Future Vol, veh/h	422	20	327	637	19	363
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	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	6	2
Mvmt Flow	431	20	334	650	19	370

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	451	0	1759
Stage 1	-	-	-	-	441
Stage 2	-	-	-	-	1318
Critical Hdwy	-	-	4.12	-	6.46
Critical Hdwy Stg 1	-	-	-	-	5.46
Critical Hdwy Stg 2	-	-	-	-	5.46
Follow-up Hdwy	-	-	2.218	-	3.554
Pot Cap-1 Maneuver	-	-	1109	-	91
Stage 1	-	-	-	-	640
Stage 2	-	-	-	-	245
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1109	-	48
Mov Cap-2 Maneuver	-	-	-	-	48
Stage 1	-	-	-	-	640
Stage 2	-	-	-	-	130

Approach	EB	WB	NB
HCM Control Delay, s	0	3.3	80.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	388	-	-	1109	-
HCM Lane V/C Ratio	1.005	-	-	0.301	-
HCM Control Delay (s)	80.1	-	-	9.6	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	12.2	-	-	1.3	-

Intersection						
Int Delay, s/veh	5.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	158	224	69	175	172
Future Vol, veh/h	32	158	224	69	175	172
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	172	243	75	190	187

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	848	281	0	0	318
Stage 1	281	-	-	-	-
Stage 2	567	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	332	758	-	-	1242
Stage 1	767	-	-	-	-
Stage 2	568	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	275	758	-	-	1242
Mov Cap-2 Maneuver	275	-	-	-	-
Stage 1	767	-	-	-	-
Stage 2	471	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	4.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	585	1242
HCM Lane V/C Ratio	-	-	0.353	0.153
HCM Control Delay (s)	-	-	14.5	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.6	0.5

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	288	5	37	6	2	17
Future Vol, veh/h	288	5	37	6	2	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	4	2	2	2
Mvmt Flow	306	5	39	6	2	18

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	311	0	393 309
Stage 1	-	-	-	-	309 -
Stage 2	-	-	-	-	84 -
Critical Hdwy	-	-	4.14	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.236	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1238	-	611 731
Stage 1	-	-	-	-	745 -
Stage 2	-	-	-	-	939 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1238	-	591 731
Mov Cap-2 Maneuver	-	-	-	-	591 -
Stage 1	-	-	-	-	745 -
Stage 2	-	-	-	-	909 -

Approach	EB	WB	NB
HCM Control Delay, s	0	6.9	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	713	-	-	1238	-
HCM Lane V/C Ratio	0.028	-	-	0.032	-
HCM Control Delay (s)	10.2	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	234	2	2	145	2	8	8	5	4	2	36
Future Vol, veh/h	8	234	2	2	145	2	8	8	5	4	2	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	269	2	2	167	2	9	9	6	5	2	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	169	0	0	271	0	0	482	461	270	468	461	168
Stage 1	-	-	-	-	-	-	288	288	-	172	172	-
Stage 2	-	-	-	-	-	-	194	173	-	296	289	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1409	-	-	1292	-	-	495	497	769	505	497	876
Stage 1	-	-	-	-	-	-	720	674	-	830	756	-
Stage 2	-	-	-	-	-	-	808	756	-	712	673	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1409	-	-	1292	-	-	466	492	769	490	492	876
Mov Cap-2 Maneuver	-	-	-	-	-	-	466	492	-	490	492	-
Stage 1	-	-	-	-	-	-	714	669	-	823	754	-
Stage 2	-	-	-	-	-	-	766	754	-	691	668	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.1			12.2			9.9		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	526	1409	-	-	1292	-	-	788
HCM Lane V/C Ratio	0.046	0.007	-	-	0.002	-	-	0.061
HCM Control Delay (s)	12.2	7.6	0	-	7.8	0	-	9.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection						
Int Delay, s/veh	2.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	304	1	26	43	1	103
Future Vol, veh/h	304	1	26	43	1	103
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	88	88	88	88	88	88
Heavy Vehicles, %	2	2	6	4	2	2
Mvmt Flow	345	1	30	49	1	117

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	346	0	455
Stage 1	-	-	-	-	346
Stage 2	-	-	-	-	109
Critical Hdwy	-	-	4.16	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.254	-	3.518
Pot Cap-1 Maneuver	-	-	1191	-	563
Stage 1	-	-	-	-	716
Stage 2	-	-	-	-	916
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1191	-	548
Mov Cap-2 Maneuver	-	-	-	-	548
Stage 1	-	-	-	-	716
Stage 2	-	-	-	-	892

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	695	-	-	1191	-
HCM Lane V/C Ratio	0.17	-	-	0.025	-
HCM Control Delay (s)	11.2	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	↷
Traffic Vol, veh/h	50	193	119	61	6	30
Future Vol, veh/h	50	193	119	61	6	30
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	83	83	83	83	83	83
Heavy Vehicles, %	3	2	2	2	17	2
Mvmt Flow	60	233	143	73	7	36

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	216	0	-	0	533 180
Stage 1	-	-	-	-	180 -
Stage 2	-	-	-	-	353 -
Critical Hdwy	4.13	-	-	-	6.57 6.22
Critical Hdwy Stg 1	-	-	-	-	5.57 -
Critical Hdwy Stg 2	-	-	-	-	5.57 -
Follow-up Hdwy	2.227	-	-	-	3.653 3.318
Pot Cap-1 Maneuver	1348	-	-	-	482 863
Stage 1	-	-	-	-	816 -
Stage 2	-	-	-	-	679 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1348	-	-	-	457 863
Mov Cap-2 Maneuver	-	-	-	-	457 -
Stage 1	-	-	-	-	774 -
Stage 2	-	-	-	-	679 -

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1348	-	-	-	752
HCM Lane V/C Ratio	0.045	-	-	-	0.058
HCM Control Delay (s)	7.8	0	-	-	10.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	T		T			
Traffic Vol, veh/h	45	30	369	37	0	0
Future Vol, veh/h	45	30	369	37	0	0
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	80	80	80	80	80	80
Heavy Vehicles, %	7	2	2	4	2	2
Mvmt Flow	56	38	461	46	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	484	484	0	0
Stage 1	484	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.47	6.22	-	-
Critical Hdwy Stg 1	5.47	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.563	3.318	-	-
Pot Cap-1 Maneuver	533	583	-	-
Stage 1	610	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	533	583	-	-
Mov Cap-2 Maneuver	533	-	-	-
Stage 1	610	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	12.9	0
HCM LOS	B	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	552
HCM Lane V/C Ratio	-	0.17
HCM Control Delay (s)	-	12.9
HCM Lane LOS	-	B
HCM 95th %tile Q(veh)	-	0.6

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1	1	26	5	4
Future Vol, veh/h	3	1	1	26	5	4
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	92	92	92	92	92	92
Heavy Vehicles, %	100	2	2	2	2	2
Mvmt Flow	3	1	1	28	5	4

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	37	7	9	0	-	0
Stage 1	7	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	7.4	6.22	4.12	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	776	1075	1611	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	775	1075	1611	-	-	-
Mov Cap-2 Maneuver	775	-	-	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	790	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1611	-	833	-	-
HCM Lane V/C Ratio	0.001	-	0.005	-	-
HCM Control Delay (s)	7.2	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	6.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	26	1	1	1	1	5
Future Vol, veh/h	26	1	1	1	1	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	1	1	1	1	5

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	7	4	6	0	0
Stage 1	4	-	-	-	-
Stage 2	3	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	1014	1080	1615	-	-
Stage 1	1019	-	-	-	-
Stage 2	1020	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	1013	1080	1615	-	-
Mov Cap-2 Maneuver	1013	-	-	-	-
Stage 1	1018	-	-	-	-
Stage 2	1020	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	3.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1615	-	1015	-	-
HCM Lane V/C Ratio	0.001	-	0.029	-	-
HCM Control Delay (s)	7.2	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



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