Traffic Impact Study

for the proposed

Multifamily Project

299 Leydecker Road

Town of West Seneca
Erie County, New York

May 9, 2019

Project No. 39009

Prepared For:

DATO DEVELOPMENT, LLC

c/o Dave Burke
S-5540 Southwestern Boulevard
Hamburg, NY 14075

Prepared By:

SRF ASSOCIATES
www.srfa.net
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, New York 14623

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1. Highway Capacity Manual 6th Edition. Transportation Research Board (TRB). The National Academies, Washington, DC. 2016.
2. Trip Generation, 10th Edition. Institute of Transportation Engineers (ITE). Washington, DC. 2017.
3. New York State Department of Transportation Traffic Data Viewer. Retrieved from https://www.dot.ny.gov/tdv. 2019.
4. Transportation Data Management System. Greater Buffalo-Niagara Regional Transportation Council (GBNRTC). Retrieved from http://www.gbnrtc.org/maps/. 2019.
5. National Cooperative Highway Research Program (NCHRP) Report 279: Intersection Channelization Design Guide. TRB. 1985.

EXECUTIVE SUMMARY

OVERVIEW

The purpose of this Traffic Impact Study (TIS) is to evaluate the potential traffic impacts associated with the proposed multifamily project at 299 Leydecker Road in the Town of West Seneca, Erie County, New York. Within this TIS, the operating characteristics of the proposed access drive and impacts to the adjacent roadway network are identified and mitigating measures, if needed, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes existing traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

The project site is located at 299 Leydecker Road between East & West Road and Southwestern Boulevard (US-20) in the Town of West Seneca, New York. Surrounding the site is residential development to the north, Cazenovia Creek to the east, residential development to the south, and Leydecker Road to the west. Land uses nearby the site are primarily residential and recreational. The project site was formerly the VFW West Seneca Post. The study area includes the following existing intersections:

1. Leydecker Road/Seneca Street
2. Leydecker Road/East & West Road
3. Leydecker Road/Southwestern Boulevard

The proposed project consists of constructing 74 units of single-story and two-story multifamily housing consisting of ten buildings. Each residential unit have a garage. Access to the project site will be provided via one full access driveway connection to Leydecker Road.

Construction of the proposed project is expected to be completed between one (1) to two (2) years depending on market conditions. The Town of West Seneca Building Department was contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. No specific projects were identified.

A review of historical traffic volume data obtained from the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) within the study area indicates that traffic has remained stable or increased slightly between 2005 and 2017. To account for normal increases in background traffic growth, including any unforeseen developments in the project study area aside from the previously mentioned projects, a growth rate of 1.0% per year has been applied to the existing traffic volumes for the one-year build-out timeframe.

CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identifies and evaluates the potential traffic impacts that can be expected from the proposed multifamily project at 299 Leydecker Road in the Town of West Seneca, Erie County, New York, as described in this study. The results of this study determine that the existing transportation network can adequately accommodate the projected traffic volumes and resulting impacts to study area intersections. The following sets forth the conclusions and recommendations based upon the results of the analyses:

1. The proposed project is expected to generate approximately 8 entering/28 exiting vehicle trips during the weekday AM peak hour and 28 entering/17 exiting vehicle trips during the PM peak hour.

2. The proposed driveway shall be stop-controlled for its approach to Leydecker Road.

3. The warrants for a southbound left-turn treatment at the proposed driveway location are not satisfied during both peak hours of study; thus, no treatment is recommended.

4. The proposed project will not result in any potentially significant adverse traffic impacts. The minor projected traffic impacts resulting from full development of the proposed project during both peak hours can be adequately accommodated by the existing transportation network.

I. INTRODUCTION

The purpose of this Traffic Impact Study (TIS) to evaluate the potential traffic impacts associated with the proposed multifamily project at 299 Leydecker Road in the Town of West Seneca, Erie County, New York. Within this report, the operating characteristics of the proposed access drive and impacts to the adjacent roadway network are identified and mitigating measures, if needed, are provided to minimize capacity or safety concerns.

In an effort to define traffic impact, this analysis establishes existing traffic conditions, projects background traffic flow including area growth, and determines the traffic operations that would result from the proposed project.

II. LOCATION

The project site is located at 299 Leydecker Road between East & West Road and Southwestern Boulevard (US-20) in the Town of West Seneca, New York. Surrounding the site is residential development to the north, Cazenovia Creek to the east, residential development to the south, and Leydecker Road to the west. Land uses nearby the site are primarily residential and recreational. The project site was formerly the VFW West Seneca Post. The study area includes the following existing intersections:

1. Leydecker Road/Seneca Street
2. Leydecker Road/East & West Road
3. Leydecker Road/Southwestern Boulevard

The site location and study area are illustrated in **Figure 1** (all Figures are included at the end of this report).

III. EXISTING HIGHWAY SYSTEM

The following information outlined in **Table 1** provides a description of the existing roadway network within project study area. **Figure 2** illustrates the lane geometry at each of the study intersections and the Annual Average Daily Traffic (AADT/ADT) volumes on the study roadways.

TABLE 1
EXISTING HIGHWAY SYSTEM

ROADWAY/ ROUTE[1]	FUNC. CLASS[2]	JURIS.[3]	SPEED LIMIT[4]	# OF TRAVEL LANES[5]	TRAVEL PATTERN/ DIRECTION	EST. AADT[6]/ SOURCE[7]
Leydecker Road *Seneca Street to East & West Road*	Local	Town of West Seneca	35	2	Two-way/ North-South	1,596 GBNRTC (2013)
Leydecker Road (CR-364) *East & West Road to Southwestern Boulevard*	Major Collector	ECDPW	35	2	Two-way/ North-South	2,438 GBNRTC (2017)

ROADWAY/ ROUTE[1]	FUNC. CLASS[2]	JURIS.[3]	SPEED LIMIT[4]	# OF TRAVEL LANES[5]	TRAVEL PATTERN/ DIRECTION	EST. AADT[6]/ SOURCE[7]
East & West Road (CR-363)	Major Collector	ECDPW	35	2	Two-way/ East-West	6,773 GBNRTC (2015)
Seneca Street (CR-215) *Leydecker Road to Union Road*	Minor Arterial	ECDPW	35	2	Two-way/ East-West	8,023 GBNRTC (2016)
Seneca Street (CR-215) *Leydecker Road to Center Road*	Minor Arterial	ECDPW	35	2	Two-way/ East-West	6,715 GBNRTC (2016)
Southwestern Boulevard (US-20)	Principal Arterial	NYSDOT	45	4	Two-way/ East-West	20,763 NYSDOT (2015)

Notes:
1. "NYS" = New York State; "CR" = County Road.
2. State Functional Classification of Roadway. All are Urban.
3. Jurisdiction: "NYSDOT" = New York State Department of Transportation; "ECDPW" = Erie County Department of Public Works.
4. Posted or Statewide Limit in Miles per Hour (MPH).
5. Excludes turning/auxiliary lanes developed at intersections.
6. Estimated Annual Average Daily Traffic (AADT) in Vehicles per Day (vpd).
7. Source (Year). Obtained volumes represent the most recent available data. "GBNRTC" = Greater Buffalo-Niagara Regional Transportation Council.

PEDESTRIAN FACILITIES
There are no sidewalks within the study area.

BICYCLE FACILITIES
There are no dedicated bicycle lanes within the study area.

TRANSIT FACILITIES
Public transit services in Erie County and the Town of West Seneca are provided by the Niagara Frontier Transportation Authority (NFTA). There are no routes servicing the project site.

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the corridors, adjacent land uses, and the proposed land use for the project site (residential), the peak hours selected for analysis are the weekday commuter AM and PM peak periods. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Turning movement traffic counts were collected on Wednesday, March 20, 2019 by SRF Associates at the study area intersections. Traffic counts were conducted between 7:00-9:00

AM and 4:00-6:00 PM for the weekday commuter AM and PM peak hours. The peak hour traffic periods generally occurred between 7:15-8:15 AM and 4:30-5:30 PM.

All turning movement count data was collected on a typical weekday. No adverse weather conditions impacted the traffic counts and all schools in the vicinity of the study area were in session. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. The actual differences in traffic volumes can be attributed to temporal variations in traffic volumes as well as activity related to driveways located in the segments between the study intersections.

The 2019 existing weekday AM and PM peak hour volumes are reflected in **Figure 3**.

C. ***Field Observations***

The study intersections were observed during both peak intervals to assess current traffic operations. Signal timing information was obtained from NYSDOT for intersections within the study area and were utilized to determine peak hour phasing plans and phase durations during each interval. This information was used to support and/or calibrate capacity analysis models described in detail later in this report.

D. ***Existing Crash Investigation***

An existing crash investigation was completed to assess the safety history at the existing study intersections. Crash data was compiled from April 2016 through March 2019. The data was obtained from Town of West Seneca and NYSDOT through a Freedom of Information (FOIL) request.

The purpose of this crash analysis is to identify safety issues by studying and quantifying crashes at the study intersections and identifying abnormal patterns and clusters. A crash cluster is defined as an abnormal occurrence of similar crash types occurring at approximately the same location or involving the same geometric features. The severity of the crashes should also be considered. A history of crashes is an indication that further analysis is required to determine the cause(s) of the crash(es) and to identify what actions, if any, could be taken to mitigate the crashes.

A total of 13 crashes were documented at the study intersections during the investigation period. The severity of the documented crashes is as follows:

- 0 Reportable – Injury
- 11 Reportable – Non-Injury/Property Damage Only
- 2 Non-Reportable/Unknown

Reportable (non-injury, injury, and fatal injury) type crashes are defined as damage to one person's property in the amount of $1,001 or more. The Non-Reportable type crashes result in property damage of $1,000 or less.

Crash rates were computed for the project study intersections and compared with the NYSDOT average accident rates for similar intersections, as summarized in the following table. Intersection rates are listed as accidents per million entering vehicles (Acc/MEV).

TABLE II
INTERSECTION CRASH RATES

INTERSECTION	NUMBER OF CRASHES	ACTUAL PROJECT RATE	STATEWIDE AVERAGE RATE
Leydecker Road/Seneca Street	5	0.51	0.18
Leydecker Road/East & West Road	1	0.37	0.18
Leydecker Road/Southwestern Boulevard	7	0.29	0.07

Because these intersections have crash rates that exceed statewide averages, further investigation was performed to identify higher incident areas and possible trends/causes of the crashes. The results of the investigation are discussed in the following section. Most accidents were caused by either driver inattention, following too closely, or failure to yield to the right of way. Human error contributing factors were the most prevalent causes of the accidents.

Leydecker Road/Seneca Street

A total of five crashes were documented at this intersection. The calculated crash rate is approximately 2.8 times higher than the statewide average for other similar intersections. Two of the five crashes were animal related. The remaining crashes were categorized as rear end (2) and right angle (1).

Leydecker Road/East & West Road

A single crash occurred whereby the driver struck a fixed object traveling eastbound on East & West Road.

Leydecker Road/Southwestern Boulevard

A total of seven crashes were documented at this intersection. The calculated crash rate is approximately 4.1 times higher than the statewide average for other similar intersections. One of the seven crashes was animal related. The remaining crashes were categorized as right angle (2), left turn (2), rear end (1), and right turn (1).

V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed project is expected to be completed between one (1) to two (2) years depending on market conditions. The Town of West Seneca Building Department was contacted to discuss any other specific developments that are currently approved or under construction that would generate additional traffic in the study area. No specific projects were identified.

A review of historical traffic volume data obtained from the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) within the study area indicates that traffic has remained stable or increased slightly between 2005 and 2017. To account for normal increases in background traffic growth, including any unforeseen developments in the project study area aside from the previously mentioned projects, a growth rate of 1.0% per year has been applied to the existing traffic volumes for the one-year build-out timeframe. Future background traffic volumes at the time of full development are shown in **Figure 4**.

VI. PROPOSED DEVELOPMENT

A. Description

The proposed project consists of constructing 74 units of multi-family type housing over five (5) buildings. Access will be provided via one full access driveway along Leydecker Road. **Figure 5** illustrates the proposed Concept Site Plan prepared by Carmina Wood Morris DPC.

B. Site Traffic

The volume of traffic generated by a site is dependent on the intended land use and size of the development. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. Trip Generation, 10th Edition (2017) published by the Institute of Transportation Engineers (ITE) is used as a reference for this information. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of the adjacent street traffic and proposed land use, in this case the weekday commuter AM and PM peaks, represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis.

Table III shows the total site generated trips for the weekday AM and PM peak hours for the proposed project. All trip generation information has been included in the Appendices.

TABLE III
PROJECTED TRIP GENERATION

DESCRIPTION	ITE LUC[1]	SIZE	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Multi-Family Housing	220	74 Units	8	28	28	17

Note:
1. "LUC" = Land Use Code

The proposed project is expected to generate approximately 8 entering/28 exiting vehicle trips during the weekday AM peak hour and 28 entering/17 exiting vehicle trips during the PM peak hour.

C. Site Traffic Distribution

The cumulative effect of site-generated traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site. The proposed arrival/departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Employment centers;
- Commercial centers in the area;
- Access to NYS-400;
- Location of proposed driveway;
- Existing traffic patterns; and
- Existing traffic conditions and controls

Figure 6 shows the anticipated trip distribution pattern percentages for the traffic from the proposed project. **Figure 7** illustrates the peak hour site generated traffic based on those percentages.

VII. FULL DEVELOPMENT VOLUMES

Proposed design hour traffic volumes are developed for the AM and PM peak hours by combining the background traffic conditions (Figure 4) and the new site-generated traffic volumes (Figure 7) to yield the traffic volumes under full development conditions. The resulting design hour volumes for the proposed project are illustrated in **Figure 8** under full build-out conditions.

VIII. CAPACITY ANALYSIS

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service (LOS). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis typically focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the best conditions and LOS "F" the worst. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendices.

The standard procedure for capacity analysis of signalized and un-signalized intersections is outlined in the Highway Capacity Manual (HCM) 6th Edition (2016) published by the Transportation Research Board (TRB). Traffic analysis software, SYNCHRO 10, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a LOS based on the HCM 6th Edition as an indicator of how well intersections operate.

Existing and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The future traffic conditions generated by the project were analyzed to assess the operation of the study area intersections. Capacity results for existing, background, and full development conditions are listed in **Table IV**. The discussion following the table summarizes capacity conditions. The discussion following the table summarizes capacity conditions. All capacity analysis calculations are included in the Appendices.

TABLE IV
CAPACITY ANALYSIS RESULTS

INTERSECTION	2019 EXISTING CONDITIONS		2021 BACKGROUND CONDITIONS		2021 FULL DEVELOPMENT CONDITIONS	
	AM	PM	AM	PM	AM	PM
Seneca Street/Leydecker Road						
WB - Seneca Street	A 8.0	A 8.3	A 8.1	A 8.3	A 8.1	A 8.3
NB - Leydecker Road	B 13.6	C 17.2	B 13.9	C 17.8	B 14.4	C 18.4
East & West Road/ Leydecker Road						
EB - E & W Road	A 9.5	A 9.7	A 9.5	A 9.8	A 9.6	A 9.9
NB - Leydecker Road	A 7.3	A 7.5	A 7.3	A 7.5	A 7.4	A 7.5
Proposed Driveway/ Leydecker Road						
WB - Proposed Dwy	N/A		N/A		A 9.2	A 9.4
SB - Leydecker Road					A 7.4	A 7.4
US-20/Leydecker Road						
EB left - US-20	B 10.1	B 11.2	B 10.2	B 11.4	B 10.2	B 11.5
SB left - Leydecker Road	D 28.2	D 28.3	D 29.1	D 29.3	D 30.9	D 31.3
SB right - Leydecker Road	B 12.2	B 13.2	B 12.3	B 13.4	B 12.4	B 13.5

Notes:

1. EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound
2. C (18.1) = Level of Service (Delay in seconds per vehicle)
3. (U) = Unsignalized
4. Green shaded cells indicate low delays, yellow shaded cells indicate moderate delays, red shaded cells indicate longer delays.

Seneca Street/Leydecker Road

All approaches are projected to operate at a highly acceptable LOS "C" or better during both peak hours under all conditions. No change in LOS is projected because of the proposed project; thus, no mitigation is warranted nor recommended.

East & West Road/Leydecker Road

All approaches are projected to operate at LOS "A" during both peak hours under all conditions. No change in LOS is projected because of the proposed project; thus, no mitigation is warranted nor recommended.

Proposed Driveway/Leydecker Road

All approaches are projected to operate at LOS "A" during both peak hours under full development conditions. The proposed driveway shall be stop-controlled on its westbound approach to Leydecker Road. No other mitigation is warranted nor recommended.

Southwestern Boulevard (US-20)/Leydecker Road

All approaches are projected to operate at an acceptable LOS "D" or better during both peak hours under all conditions. The LOS and delay for the southbound left-turn movement is characteristic of minor road approaches to heavily trafficked roadways, such as Southwestern

Boulevard. However, no change in LOS is projected because of the proposed project; thus, no mitigation is warranted nor recommended.

IX. LEFT-TURN TREATMENT WARRANT INVESTIGATION

Volume warrants for a left-turn treatment along Leydecker Road at the proposed driveway was investigated using the TRB's NCHRP Report 279: Intersection Channelization Design Guide (1985). Provisions for left-turn lane facilities should be established where traffic volumes are high enough and safety considerations are sufficient to warrant the additional lane. This investigation analyzes warrants during the peak hours of study. **Table V** depicts the results of the analysis. All supporting calculations are included in the Appendices.

TABLE V
LEFT-TURN TREATMENT WARRANT INVESTIGATION

INTERSECTION	APPROACH	WARRANT SATISFIED
Leydecker Road/Proposed Driveway	Southbound	AM: No PM: No

The warrants for a southbound left-turn treatment at the proposed driveway location are not satisfied during both peak hours of study; thus, no treatment is recommended.

X. CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identifies and evaluates the potential traffic impacts that can be expected from the proposed Multi-Family project at 299 Leydecker Road in the Town of West Seneca, Erie County, New York, as described in this study. The results of this study demonstrate that the existing transportation network can adequately accommodate the projected traffic volumes and resulting impacts to study area intersections. The following sets forth the conclusions and recommendations based upon the results of the analyses:

1. The proposed project is expected to generate approximately 8 entering/28 exiting vehicle trips during the weekday AM peak hour and 28 entering/17 exiting vehicle trips during the PM peak hour.

2. The proposed driveway shall be stop-controlled for its approach to Leydecker Road.

3. The warrants for a southbound left-turn treatment at the proposed driveway location are not satisfied during both peak hours of study; thus, no treatment is recommended.

4. The proposed project will not result in any potentially significant adverse traffic impacts. The minor projected traffic impacts resulting from full development of the proposed project during both peak hours can be adequately accommodated by the existing transportation network.

XI. FIGURES

Figures 1 through 8 are included on the following pages.

FIGURE 1 - SITE LOCATION AND STUDY AREA

Existing Intersection
Proposed Intersection
Study Area
Site Location

PROPOSED
MULTI-FAMILY DEVELOPMENT
TOWN OF WEST SENECA, NY

Feet
0 500 1,000 2,000

N

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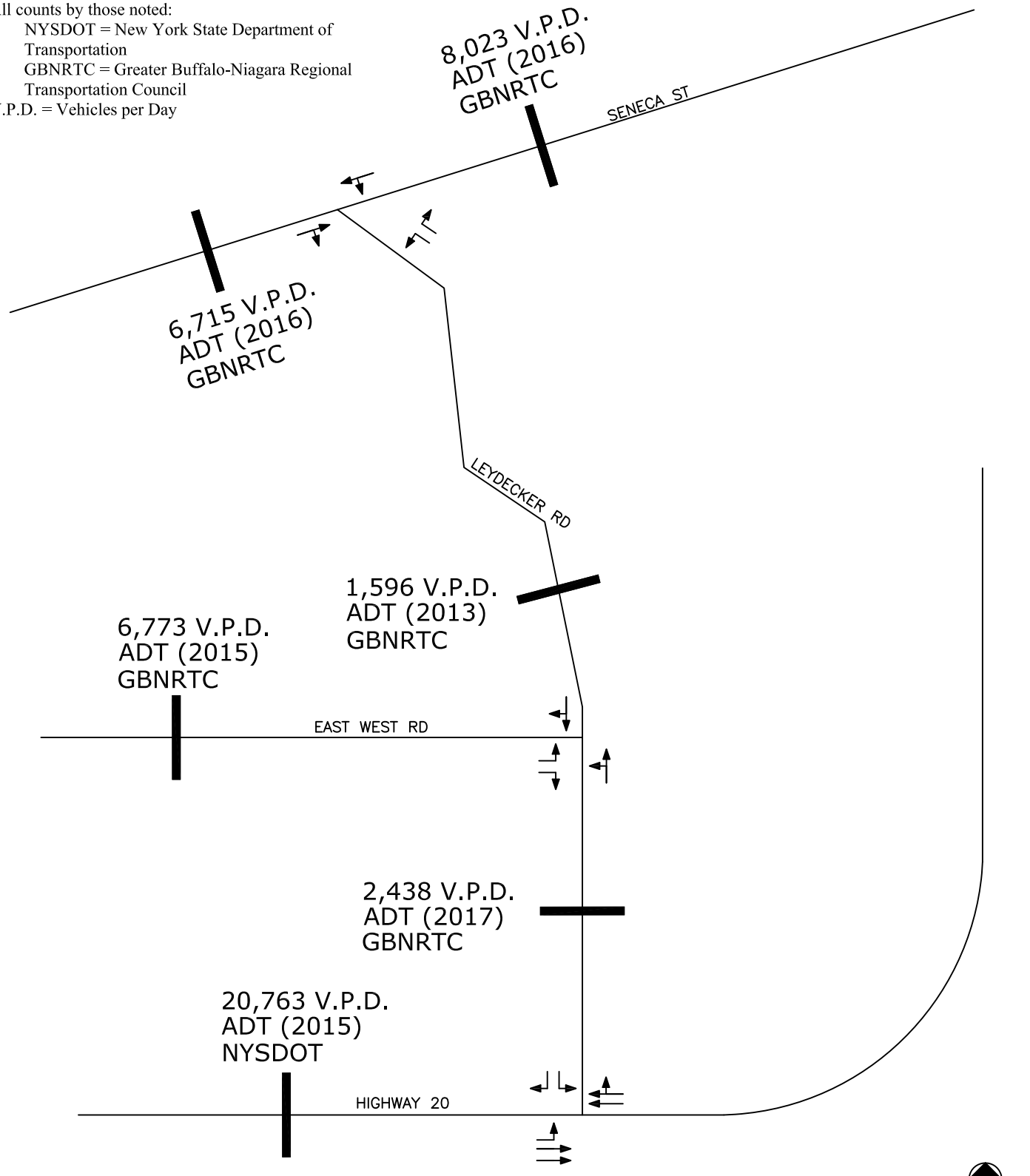
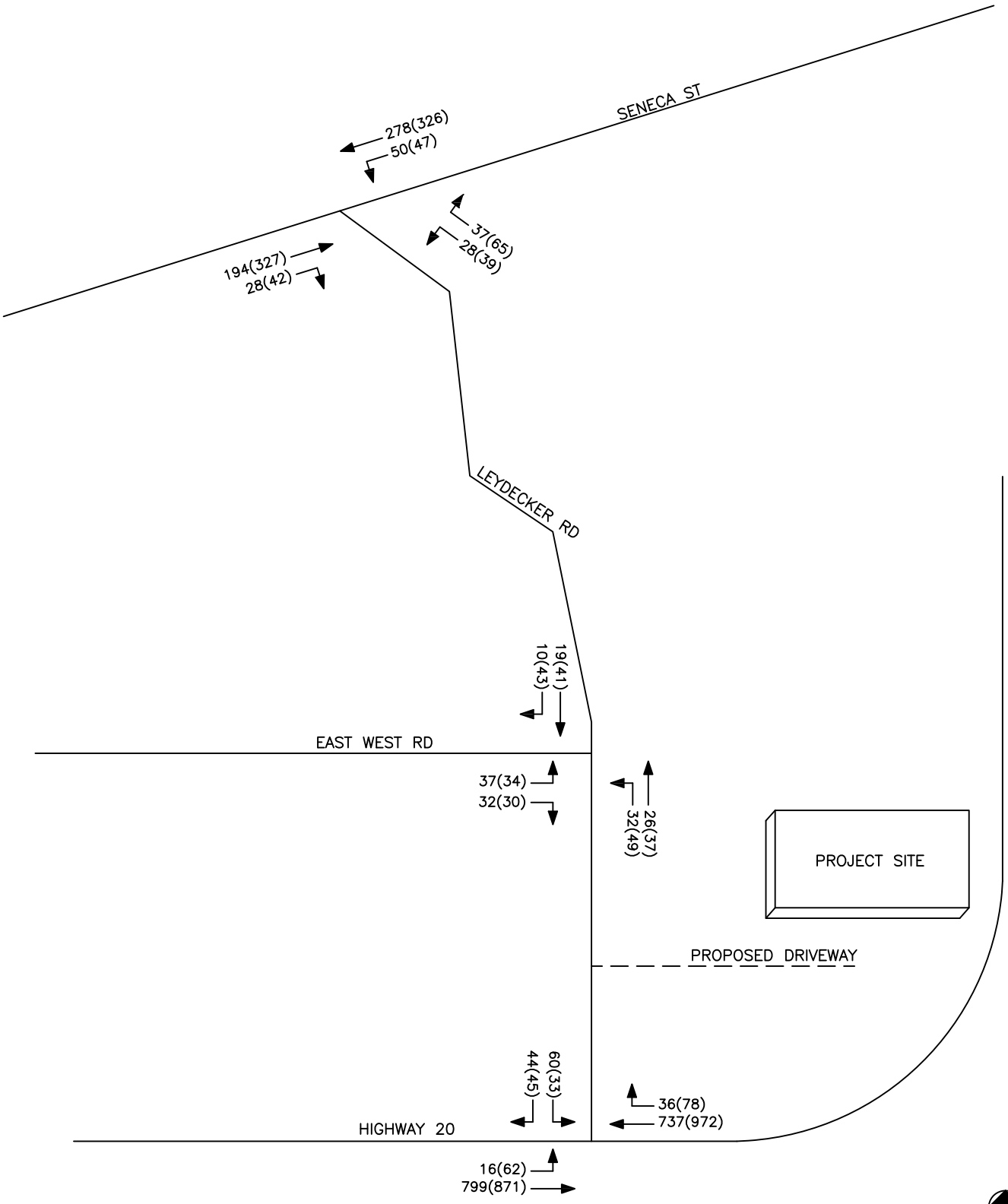
Notes:

1. All counts by those noted:
   - 1.1. NYSDOT = New York State Department of Transportation
   - 1.2. GBNRTC = Greater Buffalo-Niagara Regional Transportation Council
2. V.P.D. = Vehicles per Day



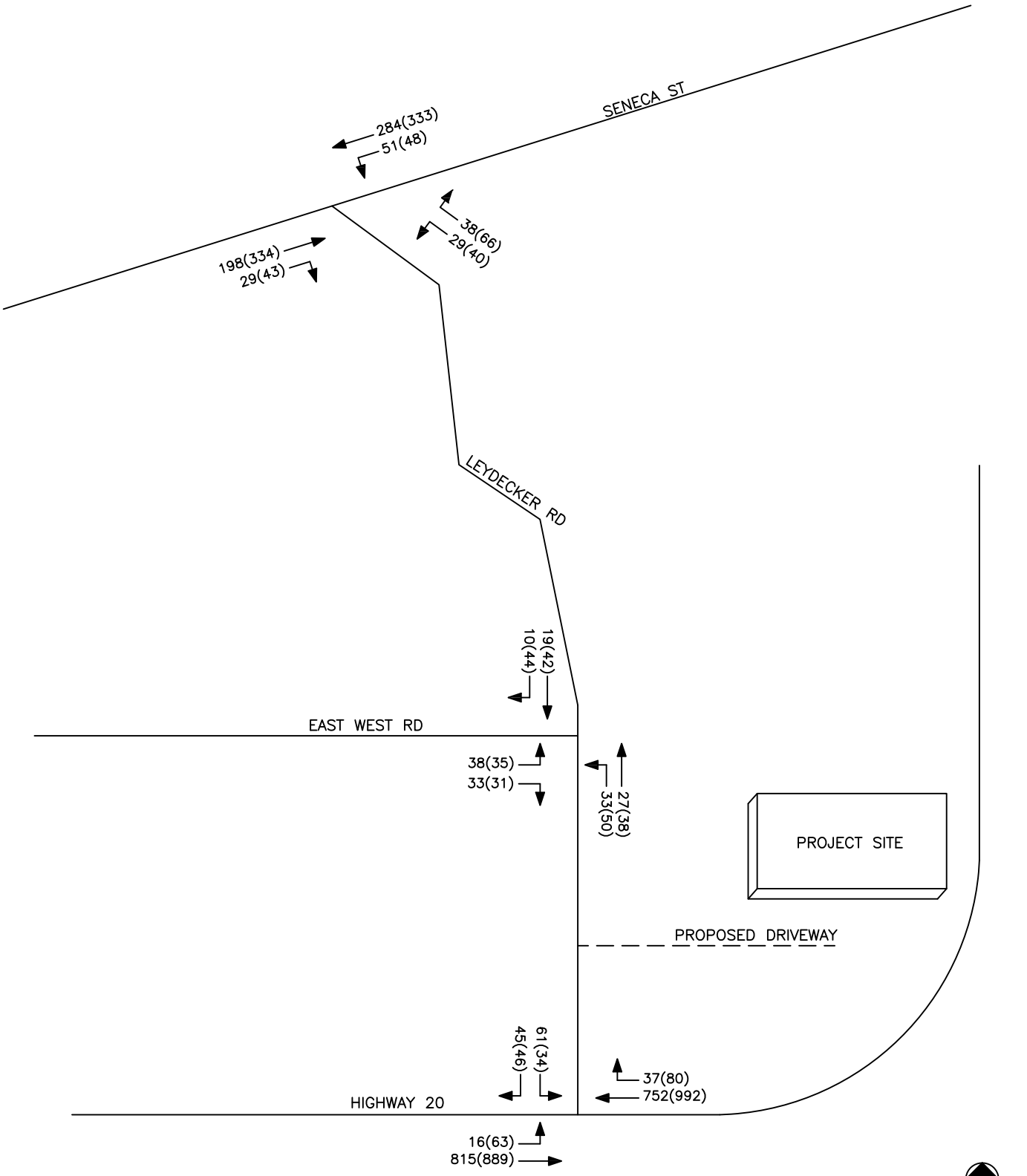
KEY	FIGURE 2	
	LANE GEOMETRY & AVERAGE DAILY TRAFFIC	
PROJECT NO: 39009	PROPOSED MULTI-FAMILY DEVELOPMENT TOWN OF WEST SENECA, N.Y.	SRF ASSOCIATES Transportation Planning / Engineering / Design www.srfa.net / (585) 272-4660



AM PEAK: 7:15–8:15AM
PM PEAK: 4:30–5:30PM

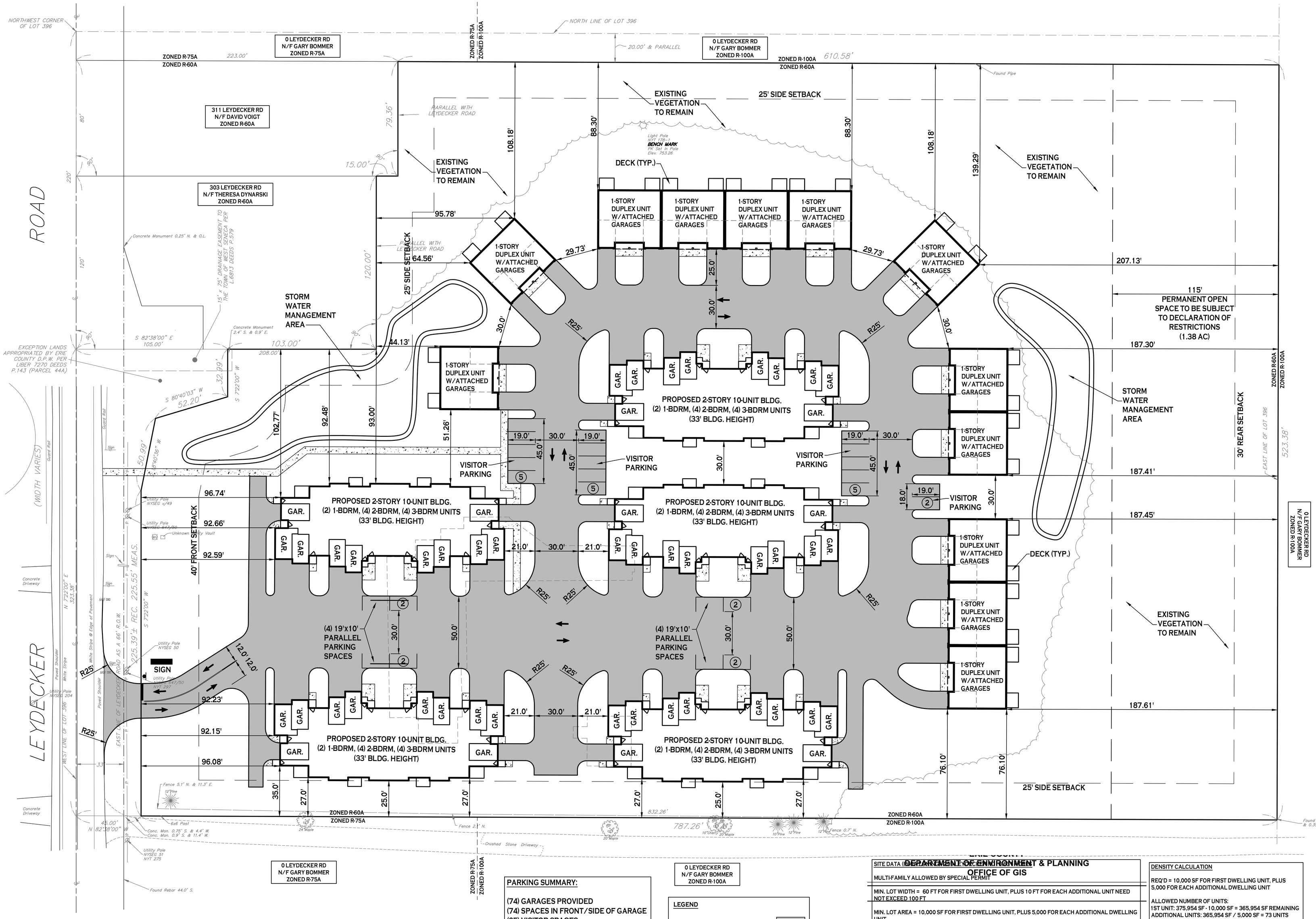
NOT TO SCALE

KEY	FIGURE 3	SRF ASSOCIATES
00(00) = AM(PM)	PEAK HOUR VOLUMES 2019 EXISTING CONDITIONS	Transportation Planning / Engineering / Design www.srfa.net / (585) 272-4660
PROJECT NO: 39009	PROPOSED MULTI-FAMILY DEVELOPMENT TOWN OF WEST SENECA, N.Y.	



KEY	FIGURE 4	SRF ASSOCIATES
00(00) = AM(PM)	PEAK HOUR VOLUMES 2021 BACKGROUND CONDITIONS	Transportation Planning / Engineering / Design www.srfa.net / (585) 272-4660
PROJECT NO: 39009	PROPOSED MULTI-FAMILY DEVELOPMENT TOWN OF WEST SENECA, N.Y.	

FIGURE 5 - CONCEPT SITE PLAN



PARKING SUMMARY:

(74) GARAGES PROVIDED
(74) SPACES IN FRONT/SIDE OF GARAGE
(25) VISITOR SPACES
(173) TOTAL SPACES PROVIDED

LEGEND

ASPHALT PAVEMENT

N

SITE PLAN

SCALE: 1"=30'

SITE DATA (DEPARTMENT OF ENVIRONMENT & PLANNING OFFICE OF GIS)

MULTI-FAMILY ALLOWED BY SPECIAL PERMIT

MIN. LOT WIDTH = 60 FT FOR FIRST DWELLING UNIT, PLUS 10 FT FOR EACH ADDITIONAL UNIT NEED NOT EXCEED 100 FT

MIN. LOT AREA = 10,000 SF FOR FIRST DWELLING UNIT, PLUS 5,000 FOR EACH ADDITIONAL DWELLING UNIT

FRONT SETBACK = 40 FT
SIDE SETBACK = 25 FT MIN. OR A DISTANCE EQUAL TO ½ HGT. OF SUCH BUILDING, WHICHEVER IS GREATER
REAR SETBACK = 30 FT

MAXIMUM BUILDING HEIGHT = 40 FT (MULTI-FAMILY)

DRIVEWAY: 30 FT WIDE REQUIRED FOR MULTI-FAMILY

DWELLING SIZE: 500 SF EACH MULTI-FAMILY UNIT

GROUP DWELLING: NO BUILDING SHALL BE NEARER ANY OTHER PRINCIPAL STRUCTURE THAN A DISTANCE EQUAL TO THE AVERAGE HEIGHT OF SUCH BUILDINGS

DENSITY CALCULATION

REQ'D = 10,000 SF FOR FIRST DWELLING UNIT, PLUS 5,000 FOR EACH ADDITIONAL DWELLING UNIT

ALLOWED NUMBER OF UNITS:
1ST UNIT: 375,954 SF - 10,000 SF = 365,954 SF REMAINING
ADDITIONAL UNITS: 365,954 SF / 5,000 SF = 73 UNITS

TOTAL ALLOWED UNITS = 74 UNITS

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

40' 40 0 40 80Ft.

Carmina Wood Morris DPC
487 Main Street Suite 600
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date

PROJECT NAME:

Site Improvements for
Multi-Family Development
299 Leydecker Road
West Seneca, New York

Date: 4/17/19
Drawn by: C. Wood
Scale: As Noted

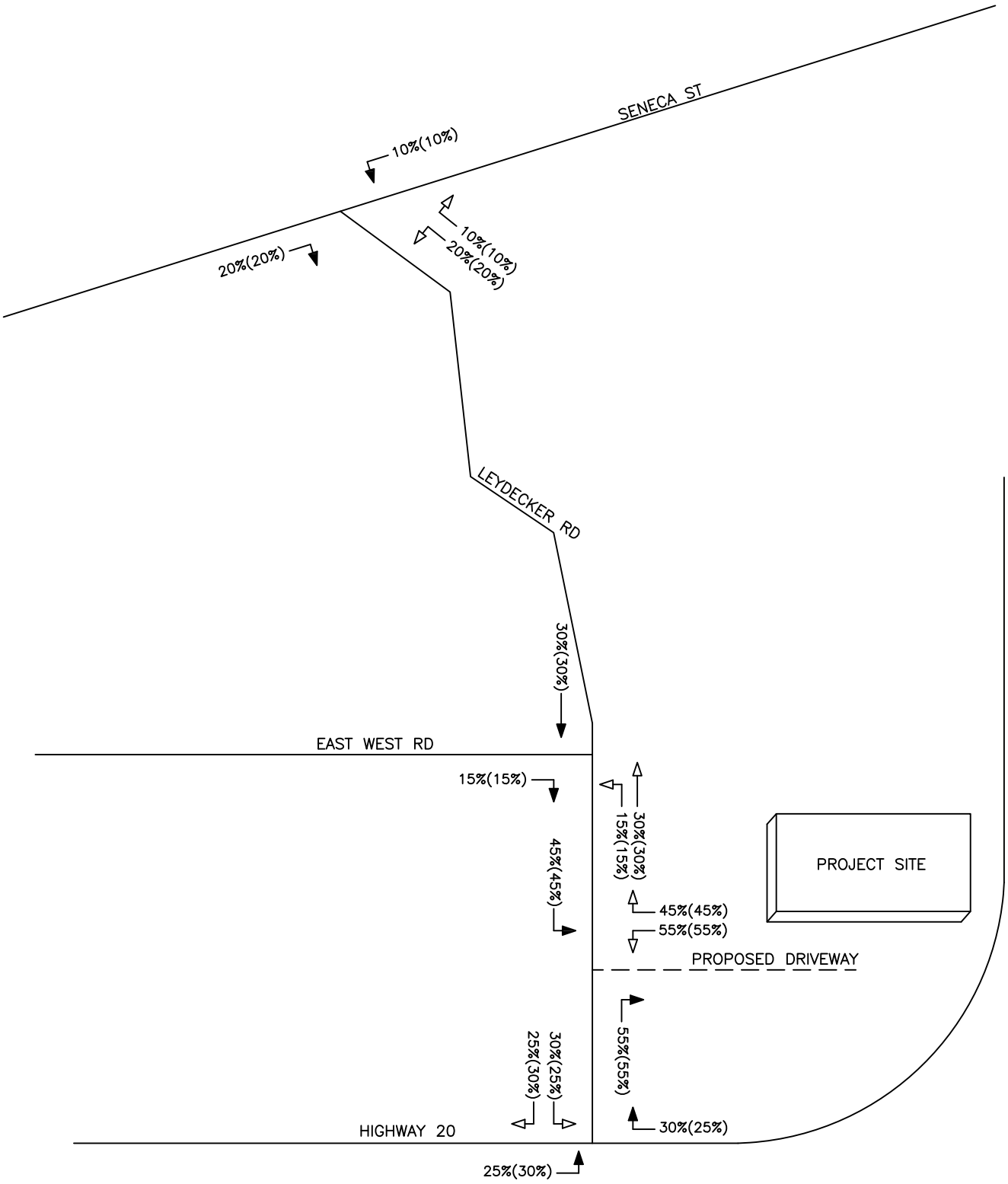
DRAWING NAME:

Concept Site Plan

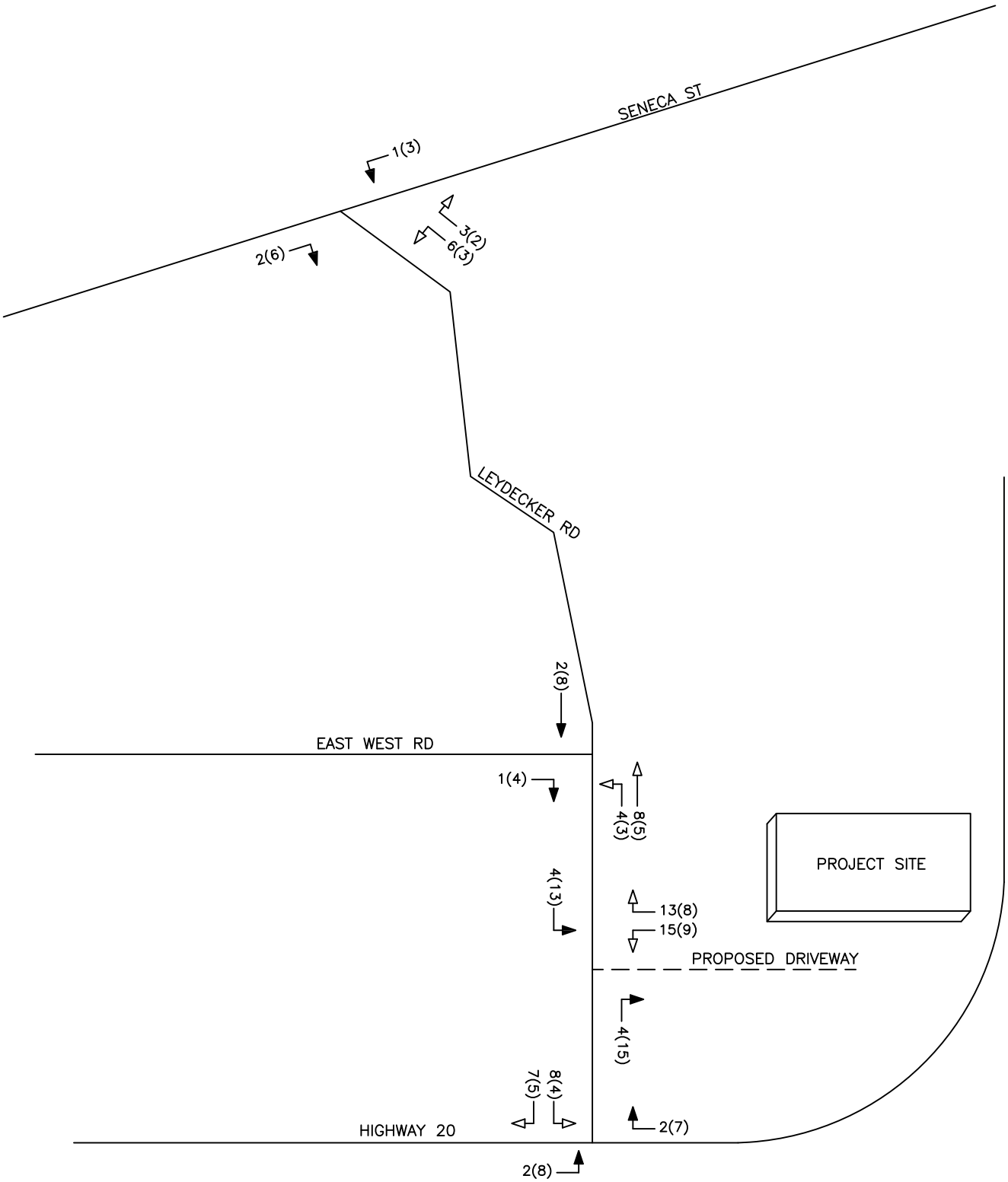
DRAWING NO.

C-100

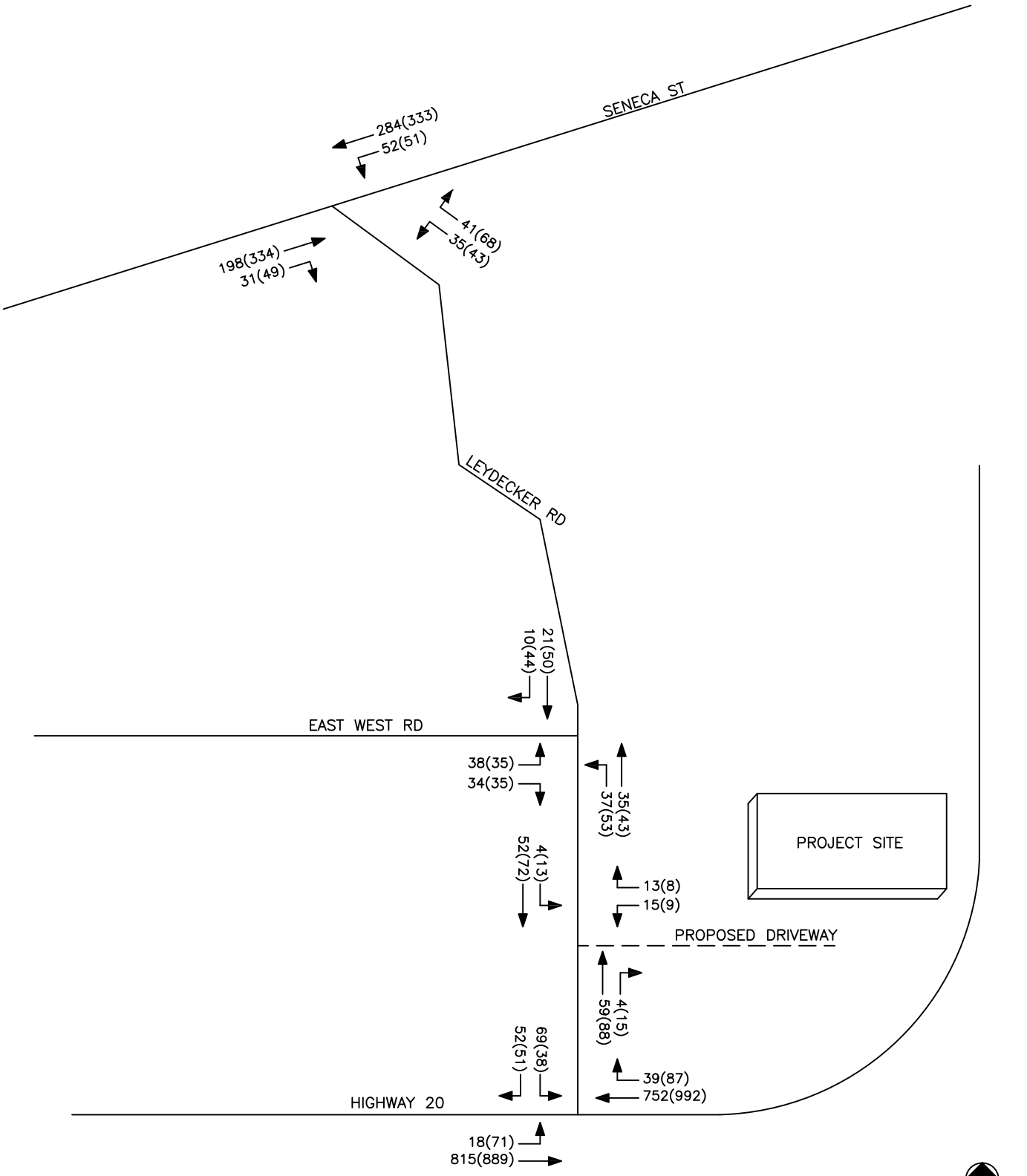
Project no.: 18.xxx



KEY	FIGURE 6	SRF ASSOCIATES
00(00) = AM(PM) ENTERING TRIPS EXITING TRIPS	TRIP DISTRIBUTION	Transportation Planning / Engineering / Design www.srfa.net / (585) 272-4660
PROJECT NO: 39009	PROPOSED MULTI-FAMILY DEVELOPMENT TOWN OF WEST SENECA, N.Y.	



KEY	FIGURE 7	SRF ASSOCIATES
00(00) = AM(PM) ENTERING TRIPS EXITING TRIPS	SITE GENERATED TRIPS	Transportation Planning / Engineering / Design www.srfa.net / (585) 272-4660
PROJECT NO: 39009	PROPOSED MULTI-FAMILY DEVELOPMENT TOWN OF WEST SENECA, N.Y.	



KEY	FIGURE 8	SRF ASSOCIATES
00(00) = AM(PM)	PEAK HOUR VOLUMES FULL DEVELOPMENT CONDITIONS	Transportation Planning / Engineering / Design www.srfa.net / (585) 272-4660
PROJECT NO: 39009	PROPOSED MULTI-FAMILY DEVELOPMENT TOWN OF WEST SENECA, N.Y.	

APPENDICES

A1

Collected Traffic Volume Data

www.TSTData.com
184 Baker Rd

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

W.Seneca, NY
Leydecker Rd/Seneca St
Wednesday, March 20, 2019
Location: 42.833359, -78.718491

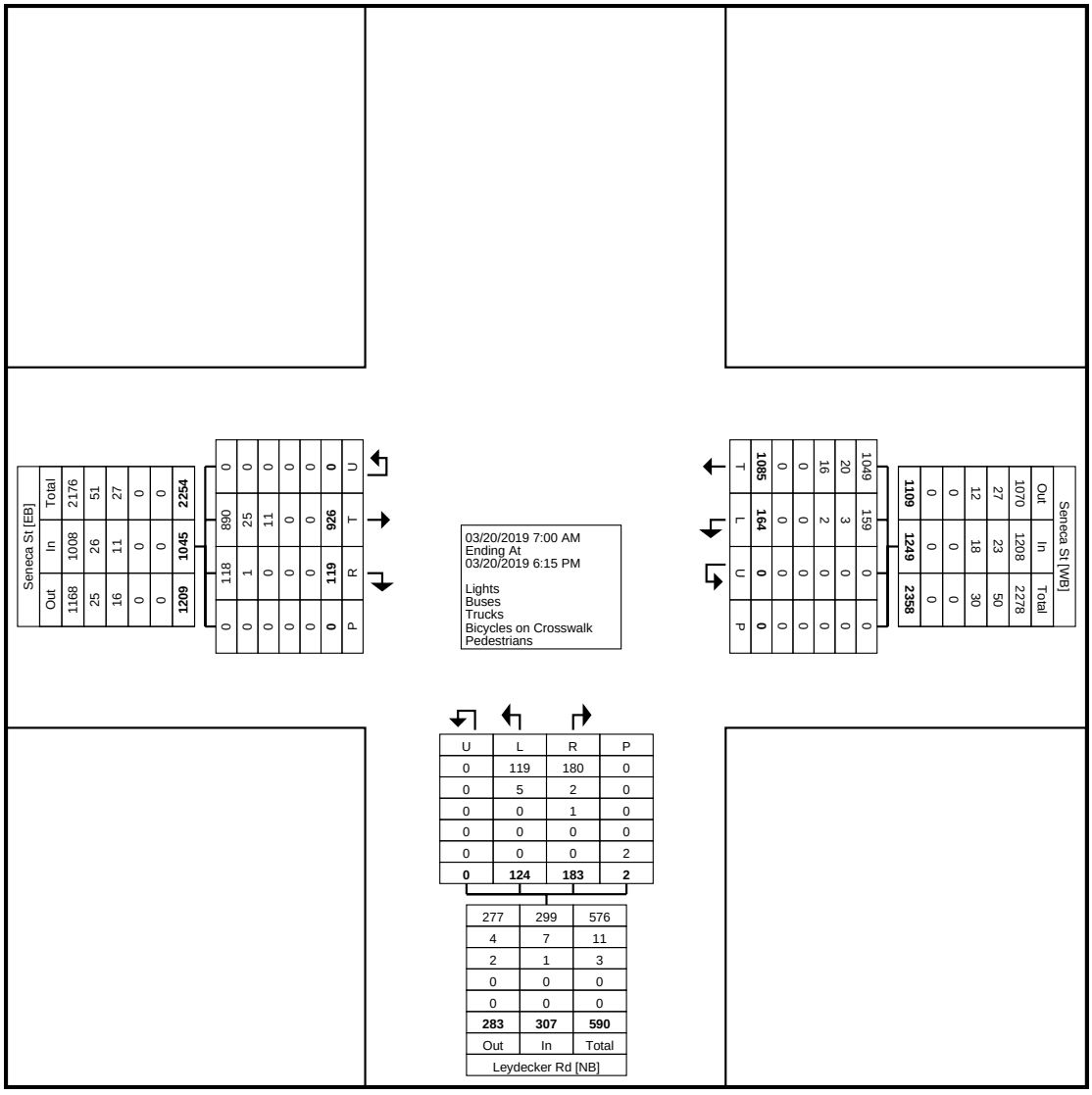
Count Name: Leydecker Rd/Seneca St
Site Code:
Start Date: 03/20/2019

Turning Movement Data

Start Time	Seneca St Westbound					Leydecker Rd Northbound					Seneca St Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:00 AM	58	8	0	0	66	12	14	0	0	26	3	31	0	0	34	126
7:15 AM	99	12	0	0	111	7	10	0	0	17	3	69	0	0	72	200
7:30 AM	49	10	0	0	59	12	6	0	0	18	8	35	0	0	43	120
7:45 AM	77	19	0	0	96	12	7	0	0	19	9	39	0	0	48	163
Hourly Total	283	49	0	0	332	43	37	0	0	80	23	174	0	0	197	609
8:00 AM	53	9	0	0	62	6	5	0	0	11	8	51	0	0	59	132
8:15 AM	44	6	0	0	50	7	5	0	0	12	6	44	0	0	50	112
8:30 AM	46	4	0	0	50	6	3	0	0	9	4	46	0	0	50	109
8:45 AM	49	7	0	0	56	7	4	0	0	11	6	30	0	0	36	103
Hourly Total	192	26	0	0	218	26	17	0	0	43	24	171	0	0	195	456
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	66	12	0	0	78	26	10	0	0	36	9	59	0	0	68	182
4:15 PM	61	12	0	0	73	15	9	0	0	24	7	72	0	0	79	176
4:30 PM	73	11	0	0	84	26	18	0	0	44	11	90	0	0	101	229
4:45 PM	88	13	0	0	101	10	8	0	0	18	7	96	0	0	103	222
Hourly Total	288	48	0	0	336	77	45	0	0	122	34	317	0	0	351	809
5:00 PM	79	13	0	0	92	18	11	0	0	29	14	60	0	0	74	195
5:15 PM	86	10	0	0	96	11	2	0	2	13	10	81	0	0	91	200
5:30 PM	70	10	0	0	80	3	3	0	0	6	3	60	0	0	63	149
5:45 PM	87	8	0	0	95	5	9	0	0	14	11	63	0	0	74	183
Hourly Total	322	41	0	0	363	37	25	0	2	62	38	264	0	0	302	727
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1085	164	0	0	1249	183	124	0	2	307	119	926	0	0	1045	2601
Approach %	86.9	13.1	0.0	-	-	59.6	40.4	0.0	-	-	11.4	88.6	0.0	-	-	-
Total %	41.7	6.3	0.0	-	48.0	7.0	4.8	0.0	-	11.8	4.6	35.6	0.0	-	40.2	-
Lights	1049	159	0	-	1208	180	119	0	-	299	118	890	0	-	1008	2515
% Lights	96.7	97.0	-	-	96.7	98.4	96.0	-	-	97.4	99.2	96.1	-	-	96.5	96.7
Buses	20	3	0	-	23	2	5	0	-	7	1	25	0	-	26	56
% Buses	1.8	1.8	-	-	1.8	1.1	4.0	-	-	2.3	0.8	2.7	-	-	2.5	2.2
Trucks	16	2	0	-	18	1	0	0	-	1	0	11	0	-	11	30
% Trucks	1.5	1.2	-	-	1.4	0.5	0.0	-	-	0.3	0.0	1.2	-	-	1.1	1.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

W.Seneca, NY
Leydecker Rd/Seneca St
Wednesday, March 20, 2019
Location: 42.833359, -78.718491

Count Name: Leydecker Rd/Seneca St
Site Code:
Start Date: 03/20/2019



Turning Movement Data Plot

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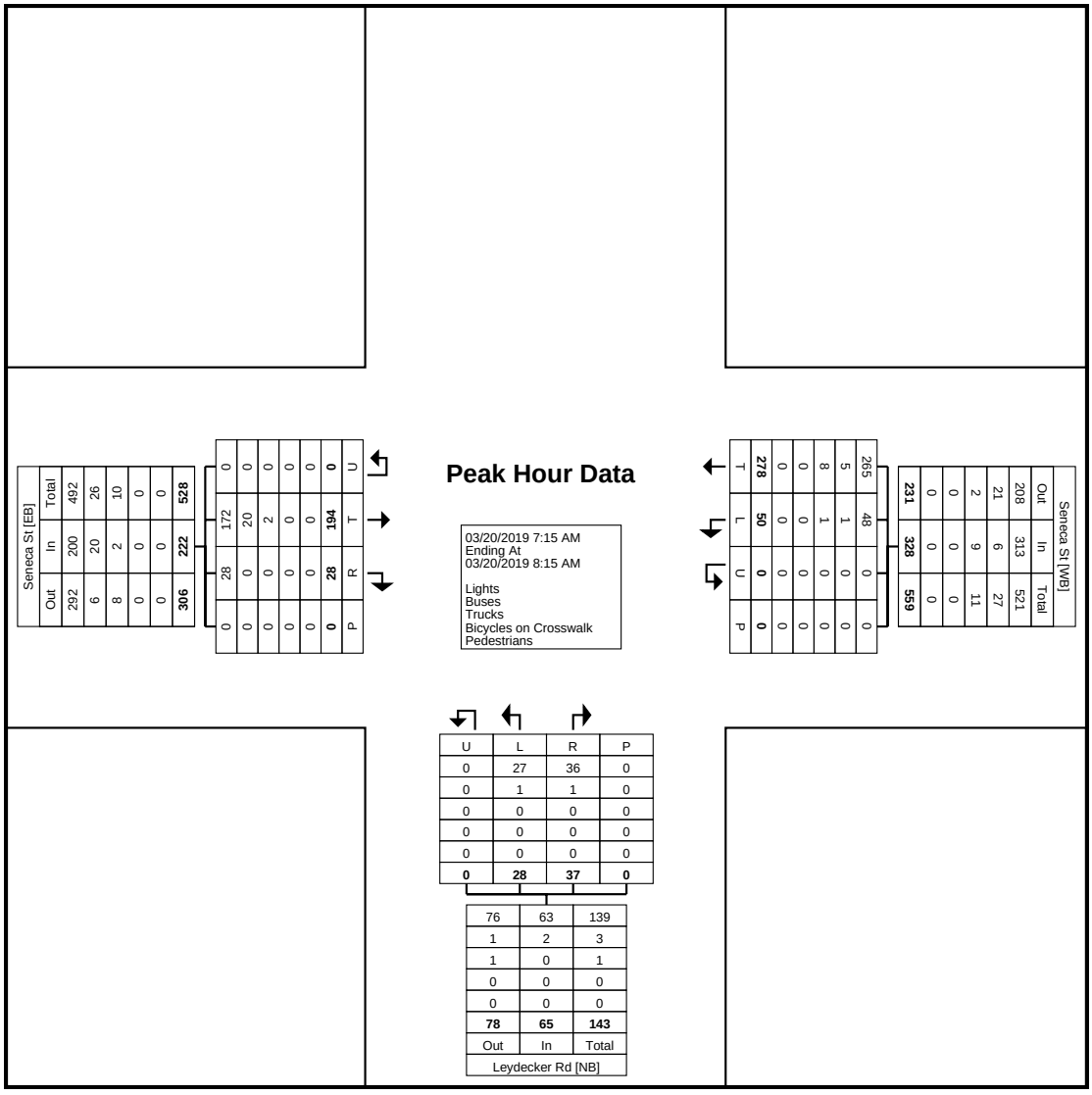
W.Seneca, NY
Leydecker Rd/Seneca St
Wednesday, March 20, 2019
Location: 42.833359, -78.718491

Count Name: Leydecker Rd/Seneca St
Site Code:
Start Date: 03/20/2019

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Seneca St Westbound					Leydecker Rd Northbound					Seneca St Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
7:15 AM	99	12	0	0	111	7	10	0	0	17	3	69	0	0	72	200
7:30 AM	49	10	0	0	59	12	6	0	0	18	8	35	0	0	43	120
7:45 AM	77	19	0	0	96	12	7	0	0	19	9	39	0	0	48	163
8:00 AM	53	9	0	0	62	6	5	0	0	11	8	51	0	0	59	132
Total	278	50	0	0	328	37	28	0	0	65	28	194	0	0	222	615
Approach %	84.8	15.2	0.0	-	-	56.9	43.1	0.0	-	-	12.6	87.4	0.0	-	-	-
Total %	45.2	8.1	0.0	-	53.3	6.0	4.6	0.0	-	10.6	4.6	31.5	0.0	-	36.1	-
PHF	0.702	0.658	0.000	-	0.739	0.771	0.700	0.000	-	0.855	0.778	0.703	0.000	-	0.771	0.769
Lights	265	48	0	-	313	36	27	0	-	63	28	172	0	-	200	576
% Lights	95.3	96.0	-	-	95.4	97.3	96.4	-	-	96.9	100.0	88.7	-	-	90.1	93.7
Buses	5	1	0	-	6	1	1	0	-	2	0	20	0	-	20	28
% Buses	1.8	2.0	-	-	1.8	2.7	3.6	-	-	3.1	0.0	10.3	-	-	9.0	4.6
Trucks	8	1	0	-	9	0	0	0	-	0	0	2	0	-	2	11
% Trucks	2.9	2.0	-	-	2.7	0.0	0.0	-	-	0.0	0.0	1.0	-	-	0.9	1.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Turning Movement Peak Hour Data Plot (7:15 AM)

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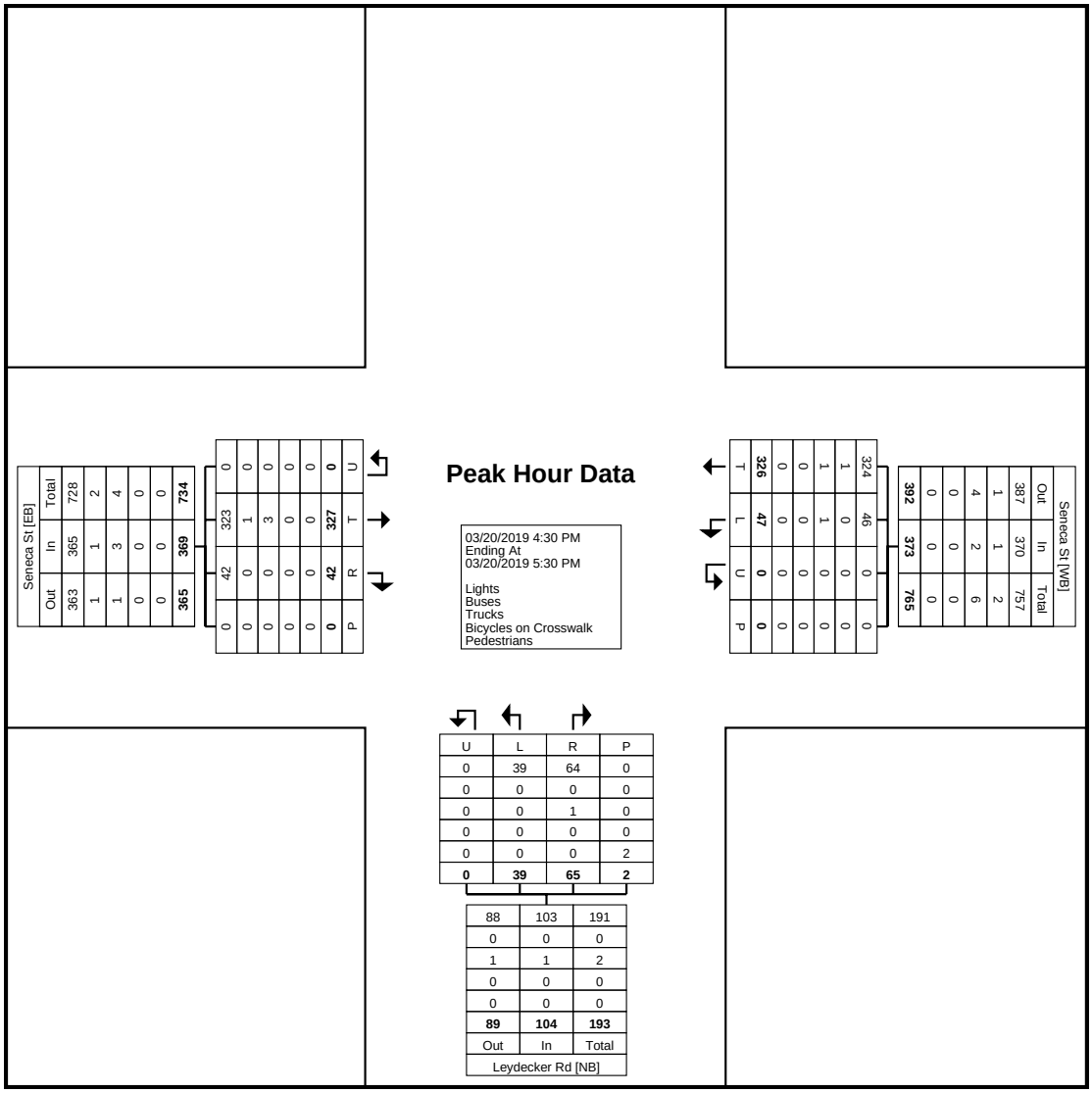
W.Seneca, NY
Leydecker Rd/Seneca St
Wednesday, March 20, 2019
Location: 42.833359, -78.718491

Count Name: Leydecker Rd/Seneca St
Site Code:
Start Date: 03/20/2019

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Seneca St Westbound					Leydecker Rd Northbound					Seneca St Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
4:30 PM	73	11	0	0	84	26	18	0	0	44	11	90	0	0	101	229
4:45 PM	88	13	0	0	101	10	8	0	0	18	7	96	0	0	103	222
5:00 PM	79	13	0	0	92	18	11	0	0	29	14	60	0	0	74	195
5:15 PM	86	10	0	0	96	11	2	0	2	13	10	81	0	0	91	200
Total	326	47	0	0	373	65	39	0	2	104	42	327	0	0	369	846
Approach %	87.4	12.6	0.0	-	-	62.5	37.5	0.0	-	-	11.4	88.6	0.0	-	-	-
Total %	38.5	5.6	0.0	-	44.1	7.7	4.6	0.0	-	12.3	5.0	38.7	0.0	-	43.6	-
PHF	0.926	0.904	0.000	-	0.923	0.625	0.542	0.000	-	0.591	0.750	0.852	0.000	-	0.896	0.924
Lights	324	46	0	-	370	64	39	0	-	103	42	323	0	-	365	838
% Lights	99.4	97.9	-	-	99.2	98.5	100.0	-	-	99.0	100.0	98.8	-	-	98.9	99.1
Buses	1	0	0	-	1	0	0	0	-	0	0	1	0	-	1	2
% Buses	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.0	0.3	-	-	0.3	0.2
Trucks	1	1	0	-	2	1	0	0	-	1	0	3	0	-	3	6
% Trucks	0.3	2.1	-	-	0.5	1.5	0.0	-	-	1.0	0.0	0.9	-	-	0.8	0.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-



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

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W.Seneca, NY
Leydecker Rd/East and West Rd
Wednesday, March 20, 2019
Location: 42.820263, -78.706826

Count Name: Leydecker Rd/East and West Rd
Site Code:
Start Date: 03/20/2019

Turning Movement Data

Start Time	Leydecker Rd Southbound					Leydecker Rd Northbound					East and West Rd Eastbound					
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Int. Total
7:00 AM	1	7	0	0	8	6	5	0	0	11	5	5	0	0	10	29
7:15 AM	2	2	0	0	4	6	6	0	0	12	9	11	0	0	20	36
7:30 AM	4	4	0	0	8	5	11	0	0	16	9	14	0	0	23	47
7:45 AM	3	7	0	0	10	8	10	1	0	19	8	10	0	0	18	47
Hourly Total	10	20	0	0	30	25	32	1	0	58	31	40	0	0	71	159
8:00 AM	1	6	0	0	7	7	5	0	0	12	6	2	0	0	8	27
8:15 AM	3	9	0	0	12	4	8	0	0	12	8	7	0	0	15	39
8:30 AM	5	2	0	0	7	8	6	0	0	14	4	2	0	0	6	27
8:45 AM	4	8	0	0	12	5	7	0	0	12	5	3	0	0	8	32
Hourly Total	13	25	0	0	38	24	26	0	0	50	23	14	0	0	37	125
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	10	15	0	0	25	7	9	0	0	16	5	6	0	0	11	52
4:15 PM	11	11	0	0	22	6	14	0	0	20	13	8	0	0	21	63
4:30 PM	11	12	0	0	23	11	12	0	0	23	5	13	0	0	18	64
4:45 PM	13	6	0	0	19	11	11	0	0	22	13	7	0	0	20	61
Hourly Total	45	44	0	0	89	35	46	0	0	81	36	34	0	0	70	240
5:00 PM	11	13	0	0	24	10	11	0	0	21	7	11	0	0	18	63
5:15 PM	8	10	0	0	18	5	15	0	0	20	5	3	0	0	8	46
5:30 PM	5	7	0	0	12	6	2	0	0	8	11	4	0	0	15	35
5:45 PM	4	11	0	0	15	6	8	1	0	15	7	5	0	0	12	42
Hourly Total	28	41	0	0	69	27	36	1	0	64	30	23	0	0	53	186
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	96	130	0	0	226	111	140	2	0	253	120	111	0	0	231	710
Approach %	42.5	57.5	0.0	-	-	43.9	55.3	0.8	-	-	51.9	48.1	0.0	-	-	-
Total %	13.5	18.3	0.0	-	31.8	15.6	19.7	0.3	-	35.6	16.9	15.6	0.0	-	32.5	-
Lights	92	129	0	-	221	106	139	2	-	247	112	109	0	-	221	689
% Lights	95.8	99.2	-	-	97.8	95.5	99.3	100.0	-	97.6	93.3	98.2	-	-	95.7	97.0
Buses	3	1	0	-	4	5	1	0	-	6	8	1	0	-	9	19
% Buses	3.1	0.8	-	-	1.8	4.5	0.7	0.0	-	2.4	6.7	0.9	-	-	3.9	2.7
Trucks	1	0	0	-	1	0	0	0	-	0	0	1	0	-	1	2
% Trucks	1.0	0.0	-	-	0.4	0.0	0.0	0.0	-	0.0	0.0	0.9	-	-	0.4	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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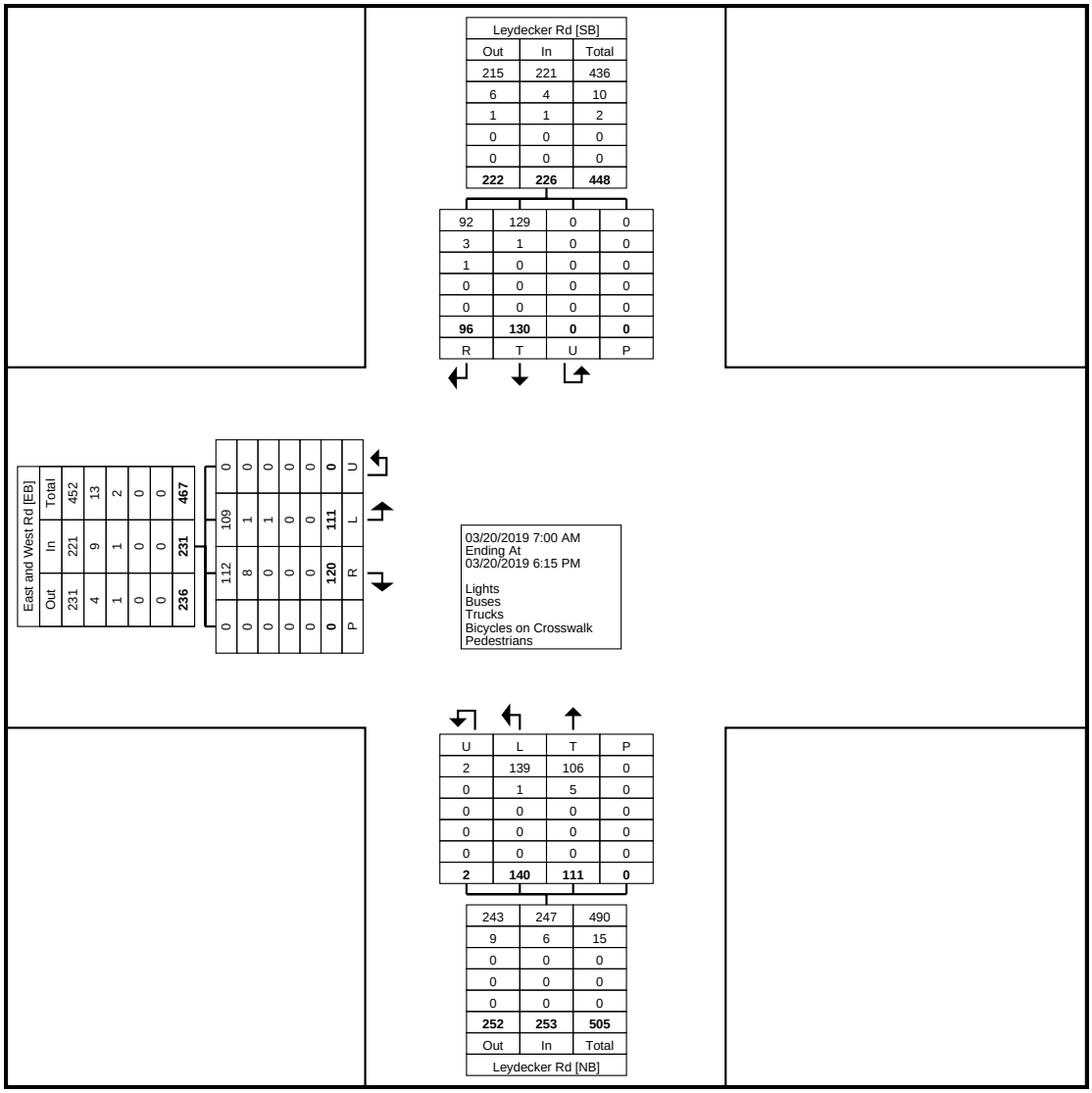
Wednesday, March 20, 2019
Location: 42.820263, -78.706826

Count Name: Leydecker Rd/East and West Rd
Site Code:
Start Date: 03/20/2019



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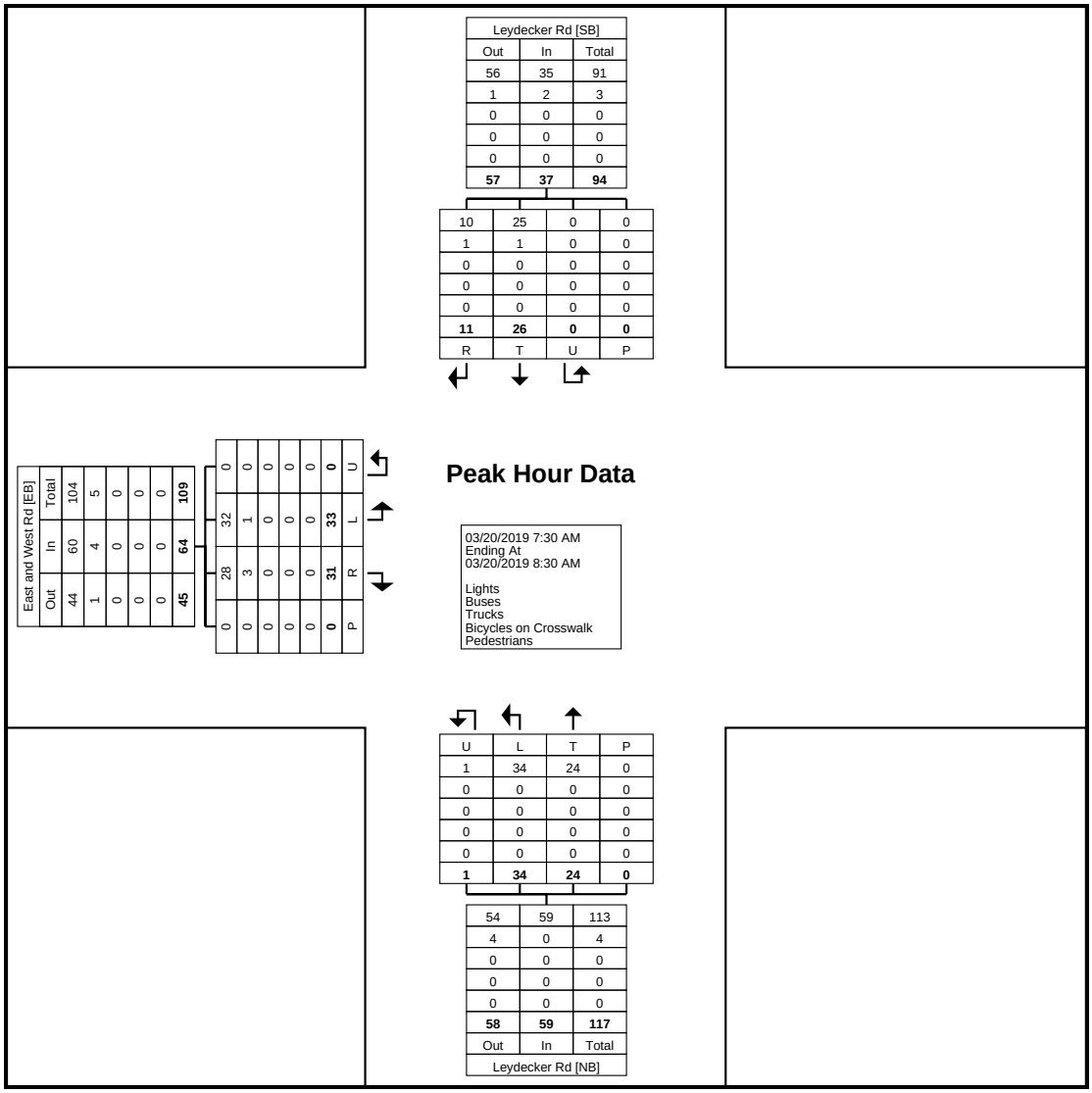
Leydecker Rd/East and West Rd
Wednesday, March 20, 2019
Location: 42.820263, -78.706826

Count Name: Leydecker Rd/East and West Rd
Site Code:
Start Date: 03/20/2019

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Leydecker Rd Southbound					Leydecker Rd Northbound					East and West Rd Eastbound					Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	
7:30 AM	4	4	0	0	8	5	11	0	0	16	9	14	0	0	23	47
7:45 AM	3	7	0	0	10	8	10	1	0	19	8	10	0	0	18	47
8:00 AM	1	6	0	0	7	7	5	0	0	12	6	2	0	0	8	27
8:15 AM	3	9	0	0	12	4	8	0	0	12	8	7	0	0	15	39
Total	11	26	0	0	37	24	34	1	0	59	31	33	0	0	64	160
Approach %	29.7	70.3	0.0	-	-	40.7	57.6	1.7	-	-	48.4	51.6	0.0	-	-	-
Total %	6.9	16.3	0.0	-	23.1	15.0	21.3	0.6	-	36.9	19.4	20.6	0.0	-	40.0	-
PHF	0.688	0.722	0.000	-	0.771	0.750	0.773	0.250	-	0.776	0.861	0.589	0.000	-	0.696	0.851
Lights	10	25	0	-	35	24	34	1	-	59	28	32	0	-	60	154
% Lights	90.9	96.2	-	-	94.6	100.0	100.0	100.0	-	100.0	90.3	97.0	-	-	93.8	96.3
Buses	1	1	0	-	2	0	0	0	-	0	3	1	0	-	4	6
% Buses	9.1	3.8	-	-	5.4	0.0	0.0	0.0	-	0.0	9.7	3.0	-	-	6.3	3.8
Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Trucks	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	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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

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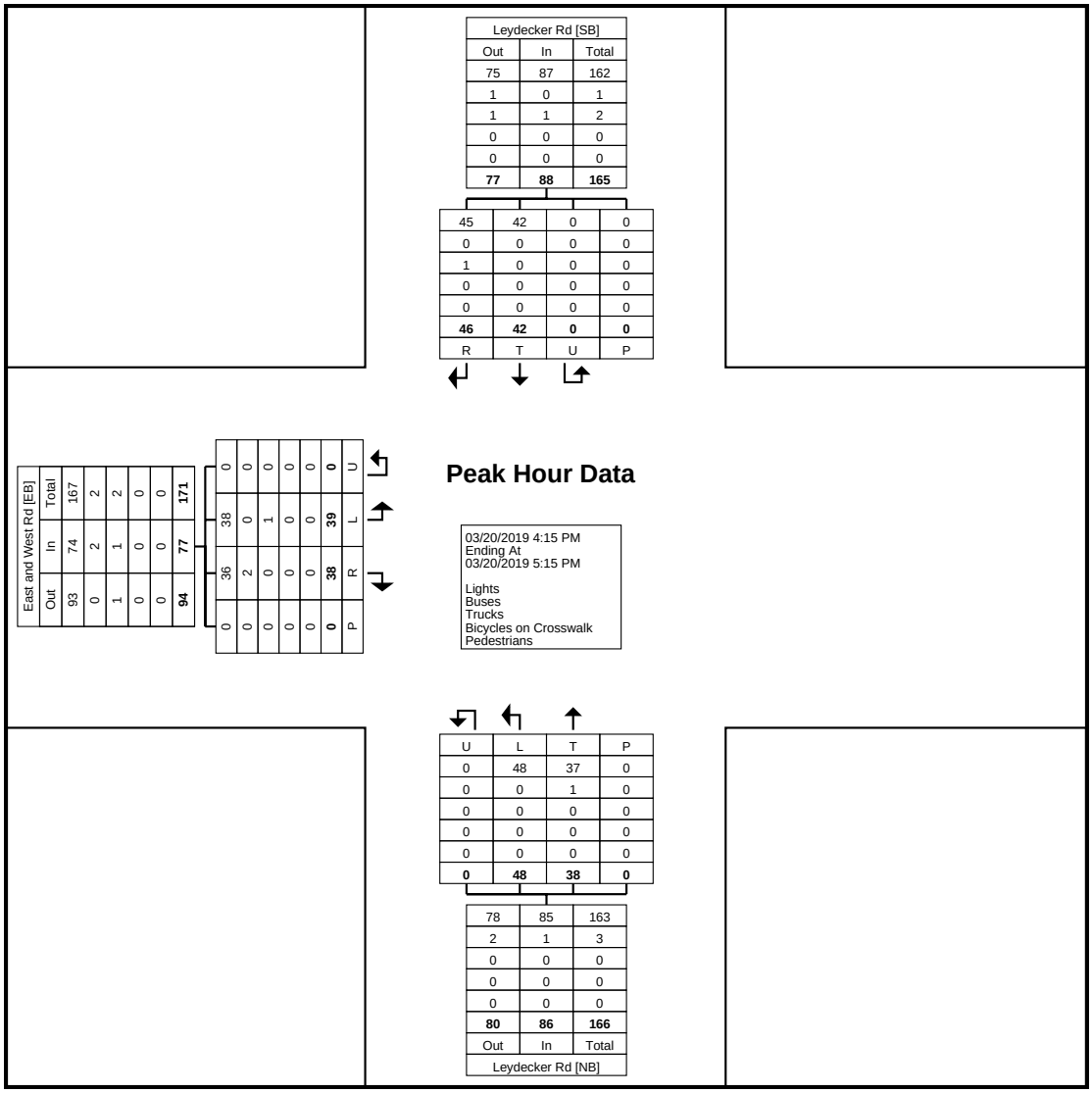
Leydecker Rd/East and West Rd
Wednesday, March 20, 2019
Location: 42.820263, -78.706826

Count Name: Leydecker Rd/East and West Rd
Site Code:
Start Date: 03/20/2019

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Leydecker Rd Southbound					Leydecker Rd Northbound					East and West Rd Eastbound					Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	
4:15 PM	11	11	0	0	22	6	14	0	0	20	13	8	0	0	21	63
4:30 PM	11	12	0	0	23	11	12	0	0	23	5	13	0	0	18	64
4:45 PM	13	6	0	0	19	11	11	0	0	22	13	7	0	0	20	61
5:00 PM	11	13	0	0	24	10	11	0	0	21	7	11	0	0	18	63
Total	46	42	0	0	88	38	48	0	0	86	38	39	0	0	77	251
Approach %	52.3	47.7	0.0	-	-	44.2	55.8	0.0	-	-	49.4	50.6	0.0	-	-	-
Total %	18.3	16.7	0.0	-	35.1	15.1	19.1	0.0	-	34.3	15.1	15.5	0.0	-	30.7	-
PHF	0.885	0.808	0.000	-	0.917	0.864	0.857	0.000	-	0.935	0.731	0.750	0.000	-	0.917	0.980
Lights	45	42	0	-	87	37	48	0	-	85	36	38	0	-	74	246
% Lights	97.8	100.0	-	-	98.9	97.4	100.0	-	-	98.8	94.7	97.4	-	-	96.1	98.0
Buses	0	0	0	-	0	1	0	0	-	1	2	0	0	-	2	3
% Buses	0.0	0.0	-	-	0.0	2.6	0.0	-	-	1.2	5.3	0.0	-	-	2.6	1.2
Trucks	1	0	0	-	1	0	0	0	-	0	0	1	0	-	1	2
% Trucks	2.2	0.0	-	-	1.1	0.0	0.0	-	-	0.0	0.0	2.6	-	-	1.3	0.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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

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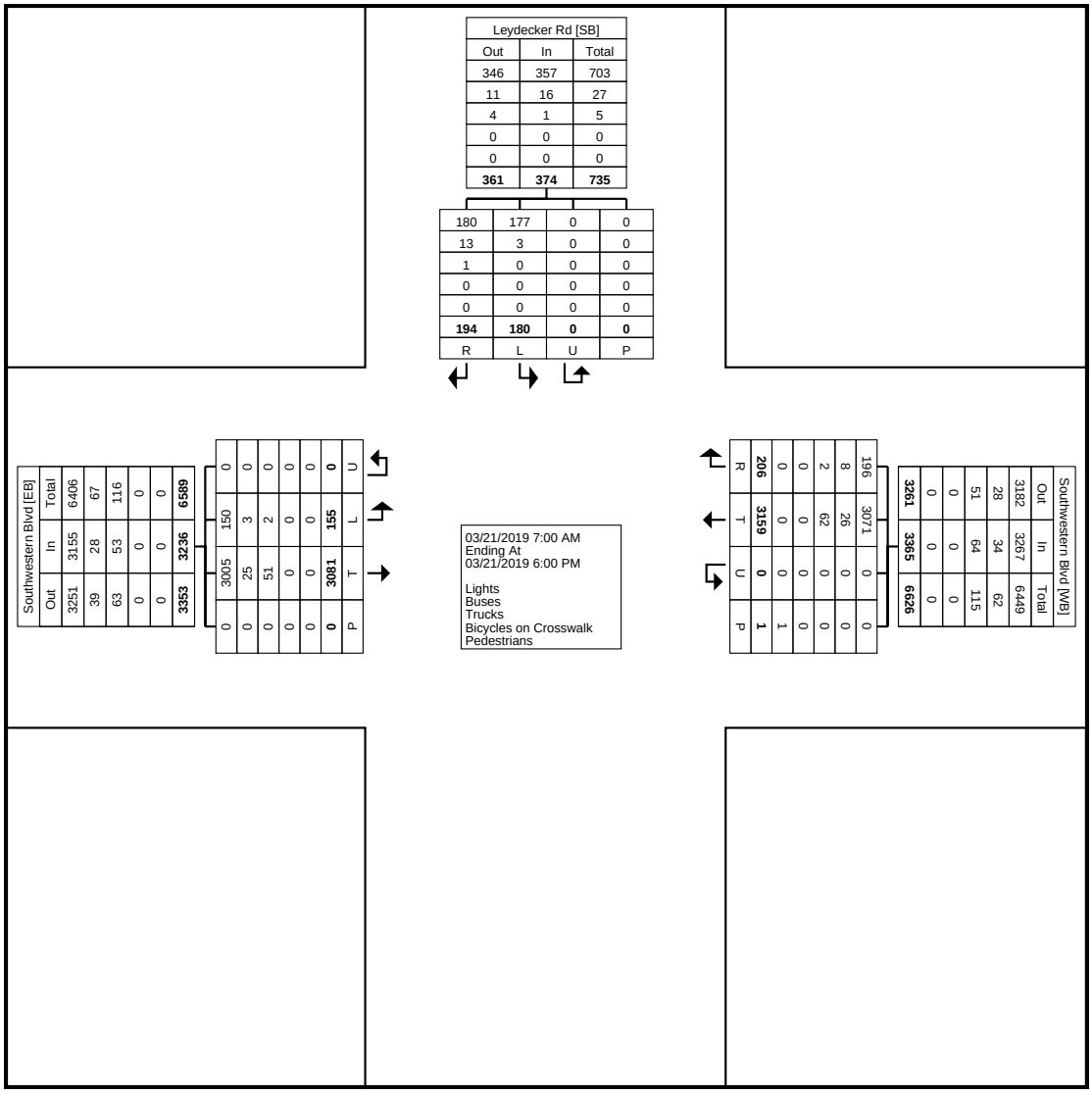
W.Seneca, NY
Leydecker Rd/Southwestern Blvd
Thursday, March 21, 2019
Location: 42.811242, -78.70682

Count Name: Leydecker Rd/Southwestern Blvd
Site Code:
Start Date: 03/21/2019

Turning Movement Data

Start Time	Leydecker Rd Southbound					Southwestern Blvd Westbound					Southwestern Blvd Eastbound					
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:00 AM	18	18	0	0	36	4	118	0	0	122	145	7	0	0	152	310
7:15 AM	7	17	0	0	24	8	150	0	0	158	208	7	0	0	215	397
7:30 AM	19	10	0	0	29	10	216	0	0	226	184	2	0	0	186	441
7:45 AM	7	18	0	0	25	13	215	0	0	228	236	6	0	0	242	495
Hourly Total	51	63	0	0	114	35	699	0	0	734	773	22	0	0	795	1643
8:00 AM	11	15	0	0	26	5	156	0	0	161	171	1	0	0	172	359
8:15 AM	11	12	0	0	23	3	157	0	0	160	171	6	0	0	177	360
8:30 AM	8	8	0	0	16	8	157	0	0	165	134	7	0	0	141	322
8:45 AM	10	10	0	0	20	8	162	0	0	170	138	2	0	0	140	330
Hourly Total	40	45	0	0	85	24	632	0	0	656	614	16	0	0	630	1371
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	7	11	0	0	18	19	214	0	0	233	213	13	0	0	226	477
4:15 PM	15	7	0	0	22	16	221	0	0	237	195	21	0	0	216	475
4:30 PM	10	9	0	0	19	21	233	0	0	254	208	18	0	0	226	499
4:45 PM	8	8	0	0	16	15	256	0	0	271	235	13	0	0	248	535
Hourly Total	40	35	0	0	75	71	924	0	0	995	851	65	0	0	916	1986
5:00 PM	16	5	0	0	21	24	240	0	0	264	198	23	0	0	221	506
5:15 PM	11	11	0	0	22	18	243	0	0	261	230	8	0	0	238	521
5:30 PM	15	8	0	0	23	15	216	0	0	231	230	9	0	0	239	493
5:45 PM	21	13	0	0	34	19	205	0	1	224	185	12	0	0	197	455
Hourly Total	63	37	0	0	100	76	904	0	1	980	843	52	0	0	895	1975
Grand Total	194	180	0	0	374	206	3159	0	1	3365	3081	155	0	0	3236	6975
Approach %	51.9	48.1	0.0	-	-	6.1	93.9	0.0	-	-	95.2	4.8	0.0	-	-	-
Total %	2.8	2.6	0.0	-	5.4	3.0	45.3	0.0	-	48.2	44.2	2.2	0.0	-	46.4	-
Lights	180	177	0	-	357	196	3071	0	-	3267	3005	150	0	-	3155	6779
% Lights	92.8	98.3	-	-	95.5	95.1	97.2	-	-	97.1	97.5	96.8	-	-	97.5	97.2
Buses	13	3	0	-	16	8	26	0	-	34	25	3	0	-	28	78
% Buses	6.7	1.7	-	-	4.3	3.9	0.8	-	-	1.0	0.8	1.9	-	-	0.9	1.1
Trucks	1	0	0	-	1	2	62	0	-	64	51	2	0	-	53	118
% Trucks	0.5	0.0	-	-	0.3	1.0	2.0	-	-	1.9	1.7	1.3	-	-	1.6	1.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-



Turning Movement Data Plot

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W.Seneca, NY
Leydecker Rd/Southwestern Blvd
Thursday, March 21, 2019
Location: 42.811242, -78.70682

Count Name: Leydecker Rd/Southwestern Blvd
Site Code:
Start Date: 03/21/2019

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Leydecker Rd Southbound					Southwestern Blvd Westbound					Southwestern Blvd Eastbound					Int. Total
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	
7:15 AM	7	17	0	0	24	8	150	0	0	158	208	7	0	0	215	397
7:30 AM	19	10	0	0	29	10	216	0	0	226	184	2	0	0	186	441
7:45 AM	7	18	0	0	25	13	215	0	0	228	236	6	0	0	242	495
8:00 AM	11	15	0	0	26	5	156	0	0	161	171	1	0	0	172	359
Total	44	60	0	0	104	36	737	0	0	773	799	16	0	0	815	1692
Approach %	42.3	57.7	0.0	-	-	4.7	95.3	0.0	-	-	98.0	2.0	0.0	-	-	-
Total %	2.6	3.5	0.0	-	6.1	2.1	43.6	0.0	-	45.7	47.2	0.9	0.0	-	48.2	-
PHF	0.579	0.833	0.000	-	0.897	0.692	0.853	0.000	-	0.848	0.846	0.571	0.000	-	0.842	0.855
Lights	35	59	0	-	94	30	704	0	-	734	761	16	0	-	777	1605
% Lights	79.5	98.3	-	-	90.4	83.3	95.5	-	-	95.0	95.2	100.0	-	-	95.3	94.9
Buses	9	1	0	-	10	6	11	0	-	17	12	0	0	-	12	39
% Buses	20.5	1.7	-	-	9.6	16.7	1.5	-	-	2.2	1.5	0.0	-	-	1.5	2.3
Trucks	0	0	0	-	0	0	22	0	-	22	26	0	0	-	26	48
% Trucks	0.0	0.0	-	-	0.0	0.0	3.0	-	-	2.8	3.3	0.0	-	-	3.2	2.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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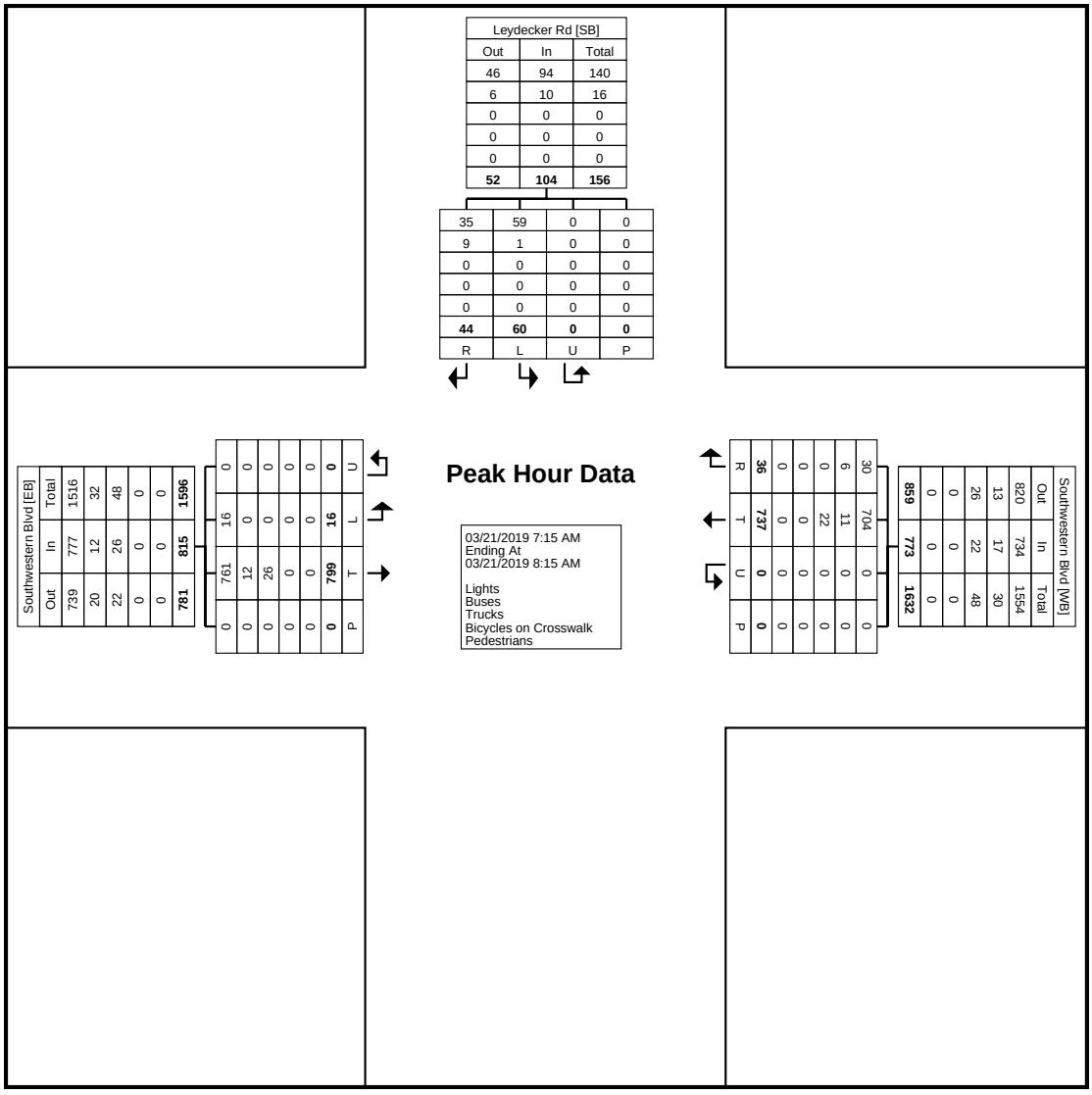

Turning Movement Peak Hour Data Plot (7:15 AM)

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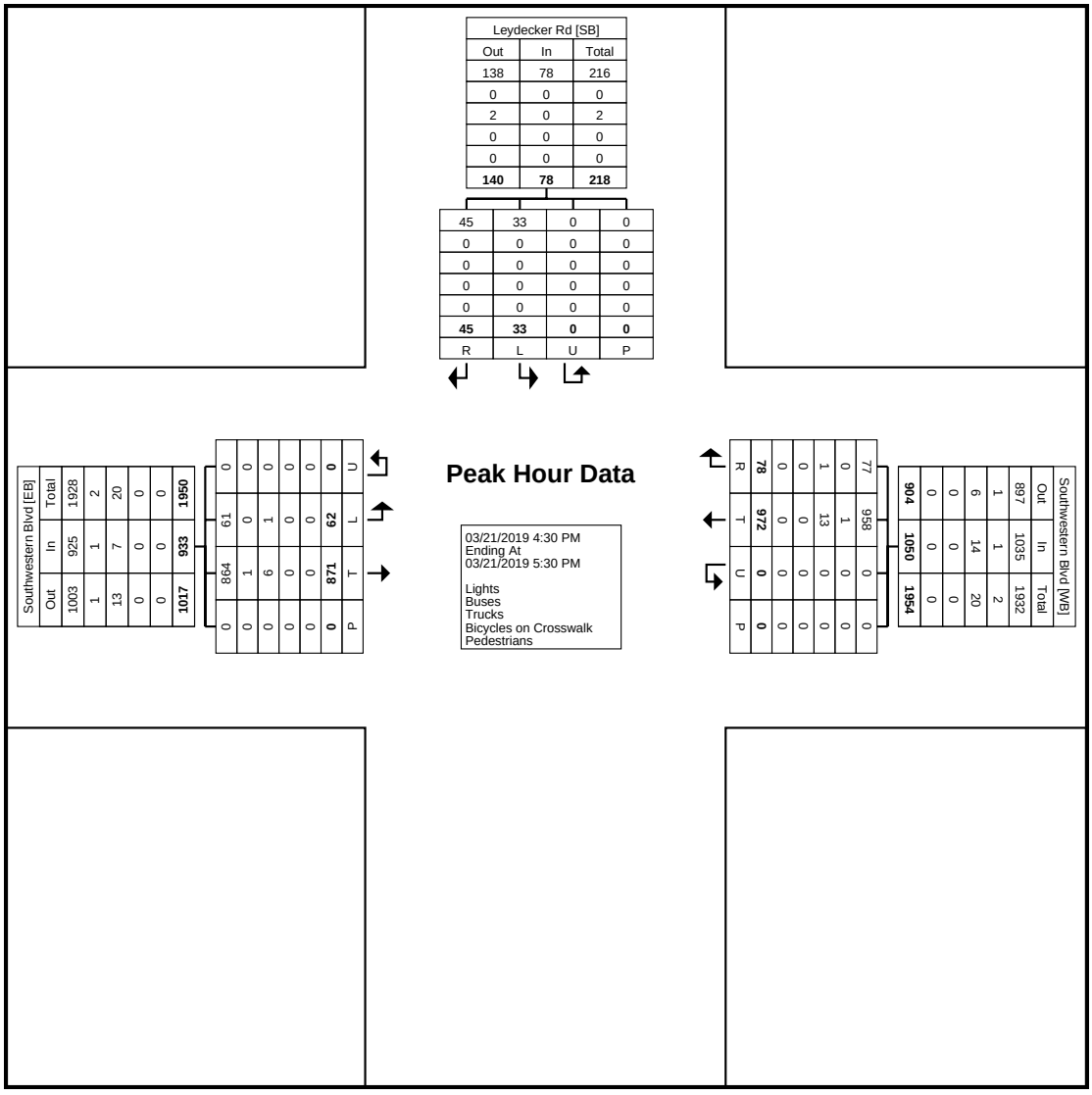
W.Seneca, NY
Leydecker Rd/Southwestern Blvd
Thursday, March 21, 2019
Location: 42.811242, -78.70682

Count Name: Leydecker Rd/Southwestern Blvd
Site Code:
Start Date: 03/21/2019

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Leydecker Rd Southbound					Southwestern Blvd Westbound					Southwestern Blvd Eastbound					Int. Total
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	10	9	0	0	19	21	233	0	0	254	208	18	0	0	226	499
4:45 PM	8	8	0	0	16	15	256	0	0	271	235	13	0	0	248	535
5:00 PM	16	5	0	0	21	24	240	0	0	264	198	23	0	0	221	506
5:15 PM	11	11	0	0	22	18	243	0	0	261	230	8	0	0	238	521
Total	45	33	0	0	78	78	972	0	0	1050	871	62	0	0	933	2061
Approach %	57.7	42.3	0.0	-	-	7.4	92.6	0.0	-	-	93.4	6.6	0.0	-	-	-
Total %	2.2	1.6	0.0	-	3.8	3.8	47.2	0.0	-	50.9	42.3	3.0	0.0	-	45.3	-
PHF	0.703	0.750	0.000	-	0.886	0.813	0.949	0.000	-	0.969	0.927	0.674	0.000	-	0.941	0.963
Lights	45	33	0	-	78	77	958	0	-	1035	864	61	0	-	925	2038
% Lights	100.0	100.0	-	-	100.0	98.7	98.6	-	-	98.6	99.2	98.4	-	-	99.1	98.9
Buses	0	0	0	-	0	0	1	0	-	1	1	0	0	-	1	2
% Buses	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.1	0.0	-	-	0.1	0.1
Trucks	0	0	0	-	0	1	13	0	-	14	6	1	0	-	7	21
% Trucks	0.0	0.0	-	-	0.0	1.3	1.3	-	-	1.3	0.7	1.6	-	-	0.8	1.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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

A2

Miscellaneous Traffic Data and Calculations

SRF ASSOCIATES
Transportation Planning / Engineering / Design

Proposed Multi-Family Development, Town of West Seneca, Erie County, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2003	2004	2005	2006	2007	2008	2010	2011	2012	2015	2016	2017	Annual Growth
Southwestern Boulevard	Reserve Road	Transit Road		15,700		20,220		21,900		19,310		20,763			2.57%
Seneca Street	RT 277	Leydecker Road		8,100			7,200		6,900				6,697		-1.57%
Seneca Street	Leydecker Road	Lein Rd	6,700				7,600	8,000	10,900				8,022		1.39%
Leydecker Road	East & West Road	US-20			2,100			2,100		2,159	2,147			2,438	1.25%

SRF ASSOCIATES
Transportation Planning / Engineering / Design

3495 Winton Place
Building E, Suite 110
Rochester, NY 14623

(585) 272-4660
www.srfa.net

Project Information	
Project Name:	Multi-Family Development
No:	39009
Date:	2/28/2019
City:	West Seneca
State/Province:	New York
Zip/Postal Code:	
Country:	USA
Client Name:	DATO Development, LLC
Analyst's Name:	David Kruse, AICP, PTP
Edition:	ITE-TGM 10th Edition

Land Use	Size	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.		Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	
		Entry	Exit	Entry	Exit
220 - Multifamily Housing (Low-Rise)	74 Dwelling Units	8	28	28	17

PROPOSED MULTI-FAMILY DEVELOPMENT
TOWN OF WEST SENECA, NY
AM PEAK FIG 3 FIG 4 FIG 6 FIG 7 FIG 8

			Num of yrs 2						
LOCATION NUMBER	**INTERSECTION DESCRIPTION**	**2019 Existing Volume**	**2021 Bkgd Vol. 1.00%**	**Proposed Multi-Family Dev. (74 Units)** Enter Dist. %	Exit Dist. %	Trips IN 8	Trips OUT 28	**Total Site Trips**	**FULL Build Volumes**
1	Seneca Street/ Leydecker Road								
	SR								
	ST								
	SL								
	WR								
	WT	278	284						284
	WL	50	51	10%		1		1	52
	NR	37	38		10%		3	3	41
	NT								
	NL	28	29		20%		6	6	35
	ER	28	29	20%		2		2	31
	ET	194	198						198
	EL								
2	Leydecker Road/ E & West Road								
	SR	10	10						10
	ST	19	19	30%		2		2	21
	SL								
	WR								
	WT								
	WL								
	NR								
	NT	26	27		30%		8	8	35
	NL	32	33		15%		4	4	37
	ER	32	33	15%		1		1	34
	ET								
	EL	37	38						38
3	Leydecker Road/ Proposed Driveway								
	SR								
	ST	51	52						52
	SL			45%		4		4	4
	WR				45%		13	13	13
	WT								
	WL				55%		15	15	15
	NR			55%		4		4	4
	NT	58	59						59
	NL								
	ER								
	ET								
	EL								
4	Leydecker Road/ Highway 20								
	SR	44	45		25%		7	7	52
	ST								
	SL	60	61		30%		8	8	69
	WR	36	37	30%		2		2	39
	WT	737	752						752
	WL								
	NR								
	NT								
	NL								
	ER								
	ET	799	815						815
	EL	16	16	25%		2		2	18

PROPOSED MULTI-FAMILY DEVELOPMENT
TOWN OF WEST SENECA, NY
PM PEAK FIG 3 FIG 4 FIG 6 FIG 7 FIG 8

			Num of yrs 2						
LOCATION NUMBER	**INTERSECTION DESCRIPTION**	**2019 Existing Volume**	**2021 Bkgd Vol. 1.00%**	**Proposed Multi-Family Dev. (74 Units)** Enter Dist. %	Exit Dist. %	Trips IN 28	Trips OUT 17	**Total Site Trips**	**FULL Build Volumes**
1	Seneca Street/ Leydecker Road								
	SR								
	ST								
	SL								
	WR								
	WT	326	333						333
	WL	47	48	10%		3		3	51
	NR	65	66		10%		2	2	68
	NT								
	NL	39	40		20%		3	3	43
	ER	42	43	20%		6		6	49
	ET	327	334						334
	EL								
2	Leydecker Road/ E & West Road								
	SR	43	44						44
	ST	41	42	30%		8		8	50
	SL								
	WR								
	WT								
	WL								
	NR								
	NT	37	38		30%		5	5	43
	NL	49	50		15%		3	3	53
	ER	30	31	15%		4		4	35
	ET								
	EL	34	35						35
3	Leydecker Road/ Proposed Driveway								
	SR								
	ST	71	72						72
	SL			45%		13		13	13
	WR				45%		8	8	8
	WT								
	WL				55%		9	9	9
	NR			55%		15		15	15
	NT	86	88						88
	NL								
	ER								
	ET								
	EL								
4	Leydecker Road/ Highway 20								
	SR	45	46		30%		5	5	51
	ST								
	SL	33	34		25%		4	4	38
	WR	78	80	25%		7		7	87
	WT	972	992						992
	WL								
	NR								
	NT								
	NL								
	ER								
	ET	871	889						889
	EL	62	63	30%		8		8	71

Guideline for determining left-turn Lane at a two-way stop-controlled intersection

TWO LANE ROADWAY

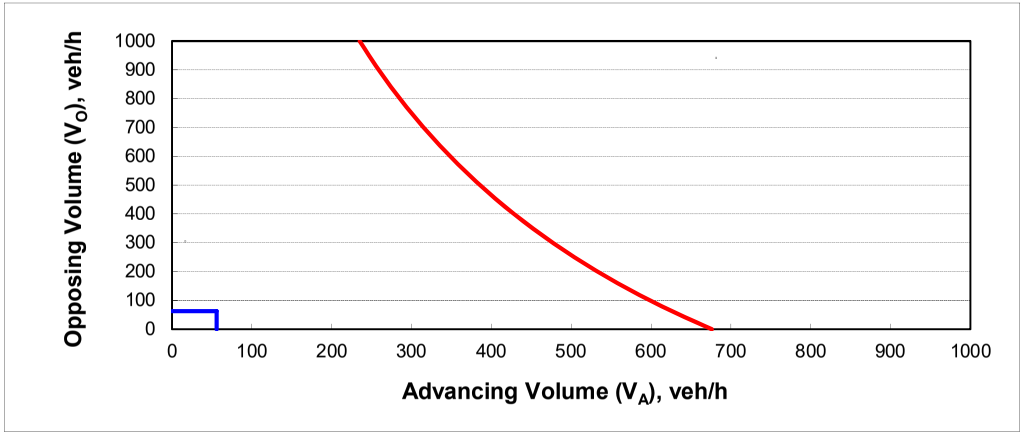
INPUT

Variable	Value
Major Approach	Leydecker @ Prop. Dwy
Approach	Southbound (AM Peak)
Design Speed Limit - MPH	40
Percent of left-turns in advancing volume (V_A), %:	7%
Advancing volume (V_A), veh/h:	56
Opposing volume (V_O), veh/h:	63

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

PLOT - LINE 1		PLOT - LINE 2	
0	63	56	0
56	63	56	63



OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	626
Guidance for determining the need for a major-road left-turn bay:	
Southbound (AM Peak) Left-turn treatment NOT warranted at Leydecker @ Prop. Dwy Intersections	

ρ	0.02	
f =	0.79	
Wait Time	0.225	s
Service Rate	1150	veh/h
Arrival Rate	626	veh/h

Vo	Time_tw
0	0.0
100	0.4
200	0.8
300	1.2
400	1.7
500	2.2
600	2.8
700	3.5
800	4.2
900	5.0
1000	5.8

Vo	Serv_rate
0	1200
100	1121
200	1046
300	976
400	910
500	848
600	789
700	735
800	683
900	635
1000	590

% LT veh.	7%	10%	15%	20%	40%
Vo	V_A	V_A	V_A	V_A	V_A
0	676	580	488	435	355
100	599	514	432	385	315
200	533	458	385	343	280
300	477	410	344	307	251
400	428	368	309	276	225
500	386	331	278	248	203
600	348	299	251	224	183
700	315	271	227	203	166
800	285	245	206	184	150
900	259	222	187	167	136
1000	235	202	169	151	124

Guideline for determining left-turn Lane at a two-way stop-controlled intersection

TWO LANE ROADWAY

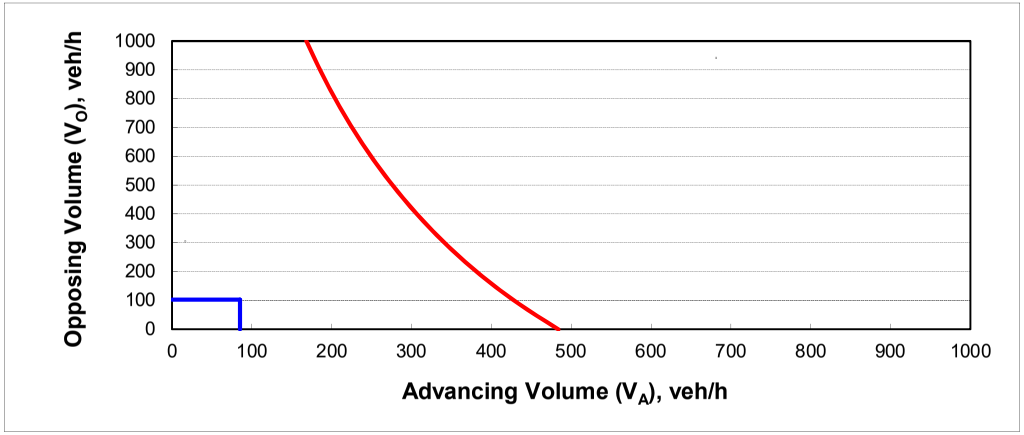
INPUT

Variable	Value
Major Approach	Leydecker @ Prop. Dwy
Approach	Southbound (PM Peak)
Design Speed Limit - MPH	40
Percent of left-turns in advancing volume (V_A), %:	15%
Advancing volume (V_A), veh/h:	85
Opposing volume (V_O), veh/h:	103

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

PLOT - LINE 1		PLOT - LINE 2	
0	103	85	0
85	103	85	103



OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	427
Guidance for determining the need for a major-road left-turn bay:	
Southbound (PM Peak) Left-turn treatment NOT warranted at Leydecker @ Prop. Dwy Intersections	

ρ	0.02	
f =	0.79	
Wait Time	0.375	s
Service Rate	1118	veh/h
Arrival Rate	427	veh/h

Vo	Time_tw
0	0.0
100	0.4
200	0.8
300	1.2
400	1.7
500	2.2
600	2.8
700	3.5
800	4.2
900	5.0
1000	5.8

Vo	Serv_rate
0	1200
100	1121
200	1046
300	976
400	910
500	848
600	789
700	735
800	683
900	635
1000	590

% LT veh.	15%	10%	15%	20%	40%
Vo	V_A	V_A	V_A	V_A	V_A
0	484	580	488	435	355
100	428	514	432	385	315
200	381	458	385	343	280
300	341	410	344	307	251
400	307	368	309	276	225
500	276	331	278	248	203
600	249	299	251	224	183
700	225	271	227	203	166
800	204	245	206	184	150
900	185	222	187	167	136
1000	168	202	169	151	124

INTERSECTION CRASH RATE CALCULATIONS

$$\text{Rate per MEV} = \frac{\text{\# of Crashes} \times 1{,}000{,}000}{\text{Total No. of Entering Vehicles}} =$$

$$\text{Rate} = \frac{\text{\# of Crashes} \times 1{,}000{,}000}{\text{Veh./Day} \times \text{Duration of Study}} =$$

Crashes per million entering vehicles (Crash / MEV)

---

1 Leydecker Rd/Seneca St

ADT = Peak hour entering volume / k factor

ADT = 846 VPH / 0.095 = 8905 VPD

$$\text{Rate} = \frac{5 \text{ Acc.} \times 1{,}000{,}000}{8905.3 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}} = 0.51 \text{ Crash / MEV}$$

2 Leydecker Rd/East & West Rd

ADT = Peak hour entering volume / k factor

ADT = 234 VPH / 0.095 = 2463 VPD

$$\text{Rate} = \frac{1 \text{ Acc.} \times 1{,}000{,}000}{2463.2 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}} = 0.37 \text{ Crash / MEV}$$

3 Leydecker Rd/Southwestern Blvd

ADT = Peak hour entering volume / k factor

ADT = 2061 VPH / 0.095 = 21695 VPD

$$\text{Rate} = \frac{7 \text{ Acc.} \times 1{,}000{,}000}{21695 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}} = 0.29 \text{ Crash / MEV}$$

Int #		Left turn	Rear-end	Overtaking	Right Angle	Right Turn	Head On	Side-swipe	Fixed Object	Backing	Other	Animal	Bike/Ped	Total	Injury	Non Injury	Non-Repo	Sum
1	Leydecker Rd/Seneca St		2		1							2		5		4	1	5
2	Leydecker Rd/East & West Rd								1					1		1		1
3	Leydecker Rd/Southwestern Blvd	2	1		2	1						1		7		6	1	7
TOTALS		**2**	**3**	**0**	**3**	**1**	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**13**	**0**	**11**	**2**	**13**

1. Leydecker Rd/Seneca St

	Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn						**0**
Rear-end			2			**2**
Overtaking						**0**
Right Angle					1	**1**
Right Turn						**0**
Head On						**0**
Side-swipe						**0**
Fixed Object						**0**
Backing						**0**
Other						**0**
Bike/Ped						**0**
Animal			1	1		**2**
Totals	**0**	**0**	**3**	**1**	**1**	**5**

2. Leydecker Rd/East & West Rd

	Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn						**0**
Rear-end						**0**
Overtaking						**0**
Right Angle						**0**
Right Turn						**0**
Head On						**0**
Side-swipe						**0**
Fixed Object						**0**
Backing						**0**
Other						**0**
Bike/Ped						**0**
Animal			1			**1**
Totals	**0**	**0**	**1**	**0**	**0**	**1**

3. Leydecker Rd/Southwestern Blvd

	Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn	1	1				**2**
Rear-end			1			**1**
Overtaking						**0**
Right Angle		2				**2**
Right Turn			1			**1**
Head On						**0**
Side-swipe						**0**
Fixed Object						**0**
Backing						**0**
Other						**0**
Bike/Ped						**0**
Animal			1			**1**
Totals	**1**	**3**	**3**	**0**	**0**	**7**

A3

Level of Service:
Criteria and Definitions

Level of Service Criteria

Highway Capacity Manual 2016

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15 minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

A4

Level of Service Calculations: Existing Conditions

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	194	28	50	278	28	37
Future Vol, veh/h	194	28	50	278	28	37
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	77	77	74	74	85	85
Heavy Vehicles, %	0	11	5	4	3	4
Mvmt Flow	252	36	68	376	33	44

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	288	0	782	270
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	512	-
Critical Hdwy	-	-	4.15	-	6.43	6.24
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.245	-	3.527	3.336
Pot Cap-1 Maneuver	-	-	1257	-	361	764
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1257	-	336	764
Mov Cap-2 Maneuver	-	-	-	-	336	-
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	NW
HCM Control Delay, s	0	1.2	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	493	-	-	1257	-
HCM Lane V/C Ratio	0.155	-	-	0.054	-
HCM Control Delay (s)	13.6	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	32	32	26	19	10
Future Vol, veh/h	37	32	32	26	19	10
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	75	75	78	78	72	72
Heavy Vehicles, %	3	12	0	4	0	10
Mvmt Flow	49	43	41	33	26	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	148	33	40	0	-	0
Stage 1	33	-	-	-	-	-
Stage 2	115	-	-	-	-	-
Critical Hdwy	6.43	6.32	4.1	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.408	2.2	-	-	-
Pot Cap-1 Maneuver	842	1013	1583	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	820	1013	1583	-	-	-
Mov Cap-2 Maneuver	820	-	-	-	-	-
Stage 1	961	-	-	-	-	-
Stage 2	907	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1583	-	899	-	-
HCM Lane V/C Ratio	0.026	-	0.102	-	-
HCM Control Delay (s)	7.3	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	799	737	36	60	44
Future Vol, veh/h	16	799	737	36	60	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	65
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	85	85	90	90
Heavy Vehicles, %	5	0	17	4	20	2
Mvmt Flow	19	951	867	42	67	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	909	0	-	0	1402	455
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	514	-
Critical Hdwy	4.2	-	-	-	7.2	6.94
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	2.25	-	-	-	3.7	3.32
Pot Cap-1 Maneuver	726	-	-	-	111	552
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	517	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	726	-	-	-	108	552
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	313	-
Stage 2	-	-	-	-	517	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	21.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	726	-	-	-	221	552
HCM Lane V/C Ratio	0.026	-	-	-	0.302	0.089
HCM Control Delay (s)	10.1	-	-	-	28.2	12.2
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2	0.3

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	327	42	47	326	39	65
Future Vol, veh/h	327	42	47	326	39	65
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	90	90	92	92	59	59
Heavy Vehicles, %	0	1	1	2	2	0
Mvmt Flow	363	47	51	354	66	110

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	410	0	843	387
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	456	-
Critical Hdwy	-	-	4.11	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.3
Pot Cap-1 Maneuver	-	-	1154	-	334	665
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	638	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1154	-	316	665
Mov Cap-2 Maneuver	-	-	-	-	316	-
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	638	-

Approach	EB	WB	NW
HCM Control Delay, s	0	1	17.2
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	470	-	-	1154	-
HCM Lane V/C Ratio	0.375	-	-	0.044	-
HCM Control Delay (s)	17.2	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	30	49	37	41	43
Future Vol, veh/h	34	30	49	37	41	43
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	94	94	88	88
Heavy Vehicles, %	3	3	0	2	0	2
Mvmt Flow	43	38	52	39	47	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	215	72	96	0	-	0
Stage 1	72	-	-	-	-	-
Stage 2	143	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.1	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.2	-	-	-
Pot Cap-1 Maneuver	771	987	1510	-	-	-
Stage 1	948	-	-	-	-	-
Stage 2	882	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	744	987	1510	-	-	-
Mov Cap-2 Maneuver	744	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	882	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	4.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1510	-	841	-	-
HCM Lane V/C Ratio	0.035	-	0.095	-	-
HCM Control Delay (s)	7.5	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	62	871	972	78	33	45
Future Vol, veh/h	62	871	972	78	33	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	65
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	97	97	89	89
Heavy Vehicles, %	1	2	1	1	0	0
Mvmt Flow	66	927	1002	80	37	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1082	0	-	0	1638	541
Stage 1	-	-	-	-	1042	-
Stage 2	-	-	-	-	596	-
Critical Hdwy	4.12	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	646	-	-	-	93	491
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	519	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	646	-	-	-	84	491
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	274	-
Stage 2	-	-	-	-	519	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	19.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	646	-	-	-	191	491
HCM Lane V/C Ratio	0.102	-	-	-	0.194	0.103
HCM Control Delay (s)	11.2	-	-	-	28.3	13.2
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7	0.3

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Level of Service Calculations: Background Conditions

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	198	29	51	284	29	38
Future Vol, veh/h	198	29	51	284	29	38
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	77	77	74	74	85	85
Heavy Vehicles, %	0	11	5	4	3	4
Mvmt Flow	257	38	69	384	34	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	295	0	798	276
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	522	-
Critical Hdwy	-	-	4.15	-	6.43	6.24
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.245	-	3.527	3.336
Pot Cap-1 Maneuver	-	-	1249	-	354	758
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	593	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1249	-	329	758
Mov Cap-2 Maneuver	-	-	-	-	329	-
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	593	-

Approach	EB	WB	NW
HCM Control Delay, s	0	1.2	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	485	-	-	1249	-
HCM Lane V/C Ratio	0.163	-	-	0.055	-
HCM Control Delay (s)	13.9	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	33	33	27	19	10
Future Vol, veh/h	38	33	33	27	19	10
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	75	75	78	78	72	72
Heavy Vehicles, %	3	12	0	4	0	10
Mvmt Flow	51	44	42	35	26	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	152	33	40	0	-	0
Stage 1	33	-	-	-	-	-
Stage 2	119	-	-	-	-	-
Critical Hdwy	6.43	6.32	4.1	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.408	2.2	-	-	-
Pot Cap-1 Maneuver	837	1013	1583	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	814	1013	1583	-	-	-
Mov Cap-2 Maneuver	814	-	-	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	904	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1583	-	896	-	-
HCM Lane V/C Ratio	0.027	-	0.106	-	-
HCM Control Delay (s)	7.3	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	815	752	37	61	45
Future Vol, veh/h	16	815	752	37	61	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	65
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	85	85	90	90
Heavy Vehicles, %	5	0	17	4	20	2
Mvmt Flow	19	970	885	44	68	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	929	0	-	0	1430	465
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	523	-
Critical Hdwy	4.2	-	-	-	7.2	6.94
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	2.25	-	-	-	3.7	3.32
Pot Cap-1 Maneuver	714	-	-	-	106	544
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	714	-	-	-	103	544
Mov Cap-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	511	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	22
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	714	-	-	-	216	544
HCM Lane V/C Ratio	0.027	-	-	-	0.314	0.092
HCM Control Delay (s)	10.2	-	-	-	29.1	12.3
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.3	0.3

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	334	43	48	333	40	66
Future Vol, veh/h	334	43	48	333	40	66
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	90	90	92	92	59	59
Heavy Vehicles, %	0	1	1	2	2	0
Mvmt Flow	371	48	52	362	68	112

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	419	0	861	395
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	466	-
Critical Hdwy	-	-	4.11	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.3
Pot Cap-1 Maneuver	-	-	1145	-	326	659
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1145	-	307	659
Mov Cap-2 Maneuver	-	-	-	-	307	-
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	632	-

Approach	EB	WB	NW
HCM Control Delay, s	0	1	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	460	-	-	1145	-
HCM Lane V/C Ratio	0.391	-	-	0.046	-
HCM Control Delay (s)	17.8	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	31	50	38	42	44
Future Vol, veh/h	35	31	50	38	42	44
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	94	94	88	88
Heavy Vehicles, %	3	3	0	2	0	2
Mvmt Flow	44	39	53	40	48	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	219	73	98	0	-	0
Stage 1	73	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.1	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.2	-	-	-
Pot Cap-1 Maneuver	767	986	1508	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	879	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	739	986	1508	-	-	-
Mov Cap-2 Maneuver	739	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	879	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	4.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1508	-	838	-	-
HCM Lane V/C Ratio	0.035	-	0.098	-	-
HCM Control Delay (s)	7.5	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	63	889	992	80	34	46
Future Vol, veh/h	63	889	992	80	34	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	65
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	97	97	89	89
Heavy Vehicles, %	1	2	1	1	0	0
Mvmt Flow	67	946	1023	82	38	52

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1105	0	-	0	1671	553
Stage 1	-	-	-	-	1064	-
Stage 2	-	-	-	-	607	-
Critical Hdwy	4.12	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	633	-	-	-	89	482
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	512	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	633	-	-	-	80	482
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	266	-
Stage 2	-	-	-	-	512	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	20.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	633	-	-	-	186	482
HCM Lane V/C Ratio	0.106	-	-	-	0.205	0.107
HCM Control Delay (s)	11.4	-	-	-	29.3	13.4
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.7	0.4

A6

Level of Service Calculations: Full Development Conditions

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	198	31	52	284	35	41
Future Vol, veh/h	198	31	52	284	35	41
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	77	77	74	74	85	85
Heavy Vehicles, %	0	11	5	4	3	4
Mvmt Flow	257	40	70	384	41	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	297	0	801	277
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	524	-
Critical Hdwy	-	-	4.15	-	6.43	6.24
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.245	-	3.527	3.336
Pot Cap-1 Maneuver	-	-	1247	-	352	757
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	592	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1247	-	327	757
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	592	-

Approach	EB	WB	NW
HCM Control Delay, s	0	1.2	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	471	-	-	1247	-
HCM Lane V/C Ratio	0.19	-	-	0.056	-
HCM Control Delay (s)	14.4	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	34	37	35	21	10
Future Vol, veh/h	38	34	37	35	21	10
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	75	75	78	78	72	72
Heavy Vehicles, %	3	12	0	4	0	10
Mvmt Flow	51	45	47	45	29	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	175	36	43	0	-	0
Stage 1	36	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Critical Hdwy	6.43	6.32	4.1	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.408	2.2	-	-	-
Pot Cap-1 Maneuver	813	1009	1579	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	788	1009	1579	-	-	-
Mov Cap-2 Maneuver	788	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	885	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	3.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	879	-	-
HCM Lane V/C Ratio	0.03	-	0.109	-	-
HCM Control Delay (s)	7.4	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	13	59	4	4	52
Future Vol, veh/h	15	13	59	4	4	52
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	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	78	78	72	72
Heavy Vehicles, %	0	0	3	0	0	8
Mvmt Flow	21	19	76	5	6	72

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	163	79	0	0	81	0
Stage 1	79	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	832	987	-	-	1529	-
Stage 1	949	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	829	987	-	-	1529	-
Mov Cap-2 Maneuver	829	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	829	987	1529	-
HCM Lane V/C Ratio	-	-	0.026	0.019	0.004	-
HCM Control Delay (s)	-	-	9.5	8.7	7.4	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	815	752	39	69	52
Future Vol, veh/h	18	815	752	39	69	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	65
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	85	85	90	90
Heavy Vehicles, %	5	0	17	4	20	2
Mvmt Flow	21	970	885	46	77	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	931	0	-	0	1435	466
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	527	-
Critical Hdwy	4.2	-	-	-	7.2	6.94
Critical Hdwy Stg 1	-	-	-	-	6.2	-
Critical Hdwy Stg 2	-	-	-	-	6.2	-
Follow-up Hdwy	2.25	-	-	-	3.7	3.32
Pot Cap-1 Maneuver	712	-	-	-	106	543
Stage 1	-	-	-	-	313	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	712	-	-	-	103	543
Mov Cap-2 Maneuver	-	-	-	-	214	-
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	22.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	712	-	-	-	214	543
HCM Lane V/C Ratio	0.03	-	-	-	0.358	0.106
HCM Control Delay (s)	10.2	-	-	-	30.9	12.4
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.5	0.4

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	334	43	51	333	43	68
Future Vol, veh/h	334	43	51	333	43	68
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	90	90	92	92	59	59
Heavy Vehicles, %	0	1	1	2	2	0
Mvmt Flow	371	48	55	362	73	115

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	419	0	867	395
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	472	-
Critical Hdwy	-	-	4.11	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.209	-	3.518	3.3
Pot Cap-1 Maneuver	-	-	1145	-	323	659
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	628	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1145	-	304	659
Mov Cap-2 Maneuver	-	-	-	-	304	-
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	628	-

Approach	EB	WB	NW
HCM Control Delay, s	0	1.1	18.4
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	454	-	-	1145	-
HCM Lane V/C Ratio	0.414	-	-	0.048	-
HCM Control Delay (s)	18.4	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2	-	-	0.2	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	35	53	43	50	44
Future Vol, veh/h	35	35	53	43	50	44
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	94	94	88	88
Heavy Vehicles, %	3	3	0	2	0	2
Mvmt Flow	44	44	56	46	57	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	240	82	107	0	-	0
Stage 1	82	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.1	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.2	-	-	-
Pot Cap-1 Maneuver	746	975	1497	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	868	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	718	975	1497	-	-	-
Mov Cap-2 Maneuver	718	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	868	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	4.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1497	-	827	-	-
HCM Lane V/C Ratio	0.038	-	0.106	-	-
HCM Control Delay (s)	7.5	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	8	88	15	13	72
Future Vol, veh/h	9	8	88	15	13	72
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	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	94	94	88	88
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	13	11	94	16	15	82

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	214	102	0	0	110	0
Stage 1	102	-	-	-	-	-
Stage 2	112	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	779	959	-	-	1493	-
Stage 1	927	-	-	-	-	-
Stage 2	918	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	770	959	-	-	1493	-
Mov Cap-2 Maneuver	770	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	918	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	770	959	1493	-
HCM Lane V/C Ratio	-	-	0.017	0.012	0.01	-
HCM Control Delay (s)	-	-	9.8	8.8	7.4	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	71	889	992	87	38	51
Future Vol, veh/h	71	889	992	87	38	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	65
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	97	97	89	89
Heavy Vehicles, %	1	2	1	1	0	0
Mvmt Flow	76	946	1023	90	43	57

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1113	0	-	0	1693	557
Stage 1	-	-	-	-	1068	-
Stage 2	-	-	-	-	625	-
Critical Hdwy	4.12	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	629	-	-	-	86	479
Stage 1	-	-	-	-	296	-
Stage 2	-	-	-	-	501	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	629	-	-	-	76	479
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	501	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	21.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	629	-	-	-	179	479
HCM Lane V/C Ratio	0.12	-	-	-	0.239	0.12
HCM Control Delay (s)	11.5	-	-	-	31.3	13.5
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.9	0.4