

Traffic Impact Study

for the proposed

Briercliff Townhome Development

**Town of Hamburg
Erie County, New York**

December 13, 2021

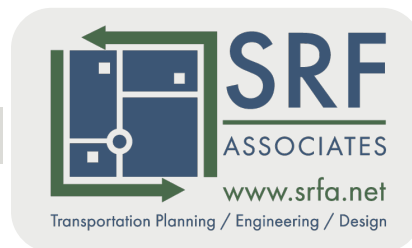
Project No. 41110

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LIST OF REFERENCES

- 1. Highway Capacity Manual 6th Edition. Transportation Research Board (TRB). The National Academies, Washington, DC. 2016.
- 2. Trip Generation, 11th Edition. Institute of Transportation Engineers (ITE). Washington, DC. 2021.
- 3. New York State Department of Transportation (NYSDOT) Traffic Data Viewer. 2021. Retrieved from <https://www.dot.ny.gov/tdv>.
- 4. OnTheMap. U.S. Census Bureau. 2021.
- 5. Transportation Data Management System. Greater Buffalo-Niagara Regional Transportation Council (GBNRTC). Retrieved from <http://www.gbnrtc.org/maps/>. 2021.
- 6. NCHRP Report 279, Intersection Channelization Design Guide. TRB. 1985.

EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to evaluate the potential traffic impacts related to the proposed townhome development to be located on the vacant property at 0 Briercliff Drive in the Town of Hamburg, NY that is properly zoned PUD pursuant to the Town's Zoning Map. Within this report, the operating characteristics of the proposed access point and impacts to the adjacent roadway network are evaluated and recommends mitigating measures (if needed) to minimize operational concerns.

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

The proposed project is located at 0 Briercliff Dr in the Town of Hamburg, Erie County, New York. The project site is bounded by Cloverbank Road to the north, single family homes and Briercliff Drive to the east, single family homes and Briercliff Drive to the south, and railroad tracks to the west. Land uses in the vicinity of the proposed project include residential and educational. This study evaluated the existing intersections of:

- Cloverbank Road/Briercliff Drive
- Cloverbank Road/Sawgrass Court
- Amsdell Road/Briercliff Drive

The proposed project consists of constructing 98 townhome units. Access to the proposed project will be provided via two access points along Briercliff Drive. **Figure 5** illustrates the proposed Site Plan for the proposed project as prepared by Carmina Wood Morris DPC.

Construction of the proposed project is anticipated to reach full build-out in approximately three years depending on market conditions. Town of Hamburg personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. No projects were identified.

To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, a growth rate of 1.0% was applied to the existing traffic volumes in the study area based upon a review of historical traffic information obtained from the New York State Department of Transportation.

CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed townhome development at 0 Briercliff Drive in the Town of Hamburg, NY. The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor 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 13 entering/40 exiting vehicle trips during the AM peak hour and 39 entering/23 exiting vehicle trips during the PM peak hour based upon ITE Trip Generation Manual data.
2. The existing crash investigation did not reveal any discernible crash patterns.

3. The projected minor traffic impacts resulting from full development of the proposed project during both peak hours can be accommodated by the existing transportation network and study area intersections. No capacity improvements are required.
4. The detailed analysis contained in this Traffic Impact Study demonstrates the proposed project will not result in any potentially significant adverse environmental impacts for the purpose of the coordinated environmental review of the project pursuant to the State Environmental Quality Review Act ("SEQRA").

I. INTRODUCTION

The purpose of this report is to evaluate the potential traffic impacts related to the proposed townhome development at 0 Briercliff Drive in the Town of Hamburg, NY. Within this report, the operating characteristics of the proposed access point and impacts to the adjacent roadway network are evaluated and recommends mitigating measures (if needed) to minimize operational concerns.

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

II. LOCATION

The proposed project is located at 0 Briercliff Dr in the Town of Hamburg, Erie County, New York. The project site is bounded by Cloverbank Road to the north, single family homes and Briercliff Drive to the east, single family homes and Briercliff Drive to the south, and railroad tracks to the west. Land uses in the vicinity of the proposed project include residential and educational. This study evaluated the existing intersections of:

- Cloverbank Road/Briercliff Drive
- Cloverbank Road/Sawgrass Court
- Amsdell Road/Briercliff Drive

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

III. EXISTING HIGHWAY SYSTEM

A. Vehicular Network Description

The following information outlined in **Table I** 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) volumes on the study roadways. The AADTs reflect the most recently collected data obtained from the New York State Department of Transportation (NYSDOT). Where recent data is not available, traffic data is shown as an extrapolation of turning movement counts performed by SRF Associates (SRF) in 2021.

Functional classification of highways within the study area is determined by the NYSDOT and the Federal Highway Administration (FHWA). Definitions of the functional classifications shown in **Table I** are provided after the table.

Briercliff Drive and Sawgrass Court are local streets.

TABLE I: EXISTING HIGHWAY SYSTEM

ROADWAY	CLASS ¹	AGENCY ²	SPEED LIMIT ³	TRAVEL LANES ⁴	TRAVEL PATTERN/DIRECTION	EST. AADT & SOURCE ⁵
Cloverbank Road	19	Town	30	2	Two-way/ East-West	3,180 NYSDOT (2015)
Amsdell Road (CR-122)	17	ECDPW	35	2	Two-way/ Northwest- Southeast	6,311 NYSDOT (2019)
Briercliff Drive	19	Town	30	2	Two-way/ North-South	936 SRF (2021)
Sawgrass Court	19	Town	30	2	Two-way/ North-South	189 SRF (2021)

Notes:

1. State Functional Classification of Roadway.
2. Jurisdictional Agency of Roadway. "ECDPW" = Erie County Department of Public Works.
3. Posted or Statewide Limit in Miles per Hour (mph).
4. Total number of travel lanes. Excludes turning/auxiliary lanes developed at intersections.
5. Estimated AADT in Vehicles per Day (vpd). AADT Source (Year). SRF data determined via extrapolation of collected turning movement counts.

Urban Major Collector (Class 17)

The collector street system provides both land access service and traffic circulation in higher density residential neighborhoods and commercial and industrial areas. The collector street distributes trips from the arterials through the area to their ultimate destination and vice versa (i.e., the collector street also collects traffic from local streets in residential neighborhoods and channels it into the arterial system). The collector street system may also service bus routes. Operating characteristics tend to include higher speeds and more signalized intersections.

Urban Local (Class 19)

The local street system typically constitutes the largest percentage of all roadways and includes all facilities not in one of the higher systems. It primarily permits direct access to abutting lands and connections to the higher order systems and are not intended for use in long distance travel. It usually contains no bus routes. As public roads, they should be accessible for public use throughout the year.

B. Multi-Modal Network Description

This evaluation reviewed the study area's pedestrian, bicycle, and transit network via field and aerial reconnaissance. A description of the multi-modal infrastructure is described hereafter.

Pedestrian & Bicycle Facilities

Sidewalks are present throughout the existing Briercliff residential development. There is also a walking path along the southwest side of Amsdell Road that starts at Briercliff Drive and extends southeast to the Frontier Middle School.

There are no dedicated bicycle facilities are present in the study area; however, cyclists are permitted to share the road with motorists on all roadways within the study area.

Transit Facilities

The Niagara Frontier Transportation Authority (NFTA) provides regional bus and rail service. There are no transit facilities within the study area.

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 by SRF at the study intersections described in Section II on Tuesday, November 23, 2021. Traffic counts were conducted from 7:00-9:00 AM and 4:00-6:00 PM. At each intersection, the peak hour traffic periods are as follows:

- Cloverbank Road/Briercliff Drive
 - 8:00-9:00 AM
 - 4:45-5:45 PM
- Cloverbank Road/Sawgrass Court
 - 8:00-9:00 AM
 - 4:45-5:45 PM
- Amsdell Road/Briercliff Drive
 - 7:00-8:00 AM
 - 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. **Figure 3** illustrates the weekday AM and PM peak hour volumes used for analysis purposes in this study.

C. Existing Crash Investigation

The purpose of this crash analysis is to identify inherent safety issues by studying and quantifying historical crashes at the study intersections and identifying potential crash 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 crash investigation within the study area was conducted to assess the safety history from January 1, 2017, through December 31, 2019. The data was provided by the New York State Department of Motor Vehicles through a Freedom of Information (FOIL) request.

Given that the COVID-19 pandemic influenced daily travel in 2020, any reported crashes in 2020 were not considered.

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 study intersection and compared with NYSDOT average crash rates for similar intersections, as summarized in **Table II**. Intersection rates are listed as crashes per million entering vehicle (CR/MEV). Pertinent crash data is provided in the Appendices.

There were no reported crashes at Cloverbank Road/Briercliff Drive.

For the remaining study intersections, despite the crash rates being higher than the statewide average for similar intersections, there were no discernible crash patterns at the study intersections which require consideration of improvements.

TABLE II: EXISTING CRASH INVESTIGATION

LOCATION:	Cloverbank Road/ Sawgrass Court	Amsdell Road/ Briercliff Drive
Time of Day		
12:00 AM – 5:59 AM		
6:00 AM – 8:59 AM		
9:00 AM – 3:29 PM	1	1
3:30 PM – 5:59 PM		
6:00 PM – 11:59 PM		
Pavement Condition		
Dry	1	1
Wet		
Snow/Ice		
Slush		
Unclassified		
Type of Collision		
Pedestrian/Bicycle		
Right Angle		1
Sideswipe (Overtake)		
Head On		
Rear End		
Left Turn		
Right Turn		
Fixed Object	1	
Animal		
Other		
Severity		
Fatal		
Injury		
Property Damage		
Property Damage and Injury	1	
Non-Reportable		1
Total	1	1
Average No. of Daily Vehicles Entering Intersection	189	736
Crash Rate (CR/MEV)	4.82	1.24
Statewide Average (CR/MEV)	0.19	0.19
Below or Above Statewide Average	Above	Above

Note:

1. All roadways within the study area are not State roadways but are compared to Statewide average rates for informational purposes.

V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed project is anticipated to reach full build-out in approximately three years depending on market conditions. Town of Hamburg personnel were contacted to discuss any other specific projects that are currently approved or under construction that would generate additional traffic in the study area. No projects were identified.

To account for normal increases in background traffic growth, including any unforeseen developments in the project study area, a growth rate of 1.0% was applied to the existing traffic volumes in the study area based upon a review of historical traffic information obtained from the New York State Department of Transportation. All ambient growth calculations are included in the Appendices. The background traffic volumes are depicted in **Figure 4**.

VI. PROPOSED DEVELOPMENT

A. Project Description

The proposed project consists of constructing 98 townhome units. Access to the proposed project will be provided via two access points along Briercliff Drive. **Figure 5** illustrates the proposed Site Plan for the proposed project as prepared by Carmina Wood Morris DPC.

B. Site Generated 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 Manual (11th Edition) 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 commuter AM and PM peak hours for the proposed project. All trip generation information has been included in the Appendices.

TABLE III: SITE GENERATED TRIPS

DESCRIPTION	ITE LUC ¹	SIZE	AM PEAK HOUR		PM PEAK HOUR	
			ENTER	EXIT	ENTER	EXIT
Multifamily Housing (Low-Rise)	220	98 units	13	40	39	23

Note:

1. LUC = Land Use Code.

The proposed project is expected to generate approximately 13 entering/40 exiting vehicle trips during the AM peak hour and 39 entering/23 exiting vehicle trips during the PM peak hour based upon ITE Trip Generation Manual data.

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 using Census Data
- Commercial centers
- Existing traffic patterns at Briercliff Drive/Cloverbank Road and Briercliff Drive/Amsdell Road
- Existing traffic conditions and controls

Figure 6 shows the anticipated trip distribution pattern percentages for the traffic from the proposed project. **Figures 7** illustrates the peak hour project 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

A. Description of 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 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 conditions with little to no delay, and LOS "F" conditions with very long delays. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendices. LOS "C" or better is generally desirable, but LOS "D" for signalized locations and LOS "E" for unsignalized are generally acceptable during peak periods so long as the volume to capacity ratio (v/c) is below 1.0.

The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the Highway Capacity Manual (HCM 2016) published by the Transportation Research Board (TRB). Traffic analysis software, Synchro 11, 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 Level of Service based on the HCM as an indicator of how well intersections operate.

B. Capacity Analysis Results

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.

INTERSECTION	2021 EXISTING BASE CONDITIONS					2024 BACKGROUND CONDITIONS					2024 FULL DEVELOPMENT CONDITIONS					
	AM		PM			AM		PM			AM		PM			
1. Cloverbank Road/Briercliff Drive																
WB - Cloverbank Road	A	7.4	A	7.5		A	7.4	A	7.5		A	7.4	A	7.6		
NB - Briercliff Drive	A	9.5	A	9.4		A	9.6	A	9.4		A	9.7	A	9.7		
2. Cloverbank Road/Sawgrass Court																
WB - Cloverbank Road	A	7.4	A	7.4		A	7.4	A	7.4		A	7.4	A	7.5		
NB - Sawgrass Court	A	8.8	A	9.1		A	8.8	A	9.2		A	9.0	A	9.3		
3. Amsdell Road/Briercliff Drive																
WB left - Briercliff Drive	B	13.3	B	12.0		B	13.6	B	12.2		B	13.8	B	12.2		
WB right - Briercliff Drive	A	9.6	A	9.9		A	9.7	B	10.0		A	9.7	B	10.0		
SE left - Amsdell Road	A	8.1	A	7.9		A	8.1	A	7.9		A	8.1	A	7.9		

Notes:

1. A (2.8) = Level of Service (Delay in seconds per vehicle)
2. WB = Westbound, NB = Northbound, SE = Southeastbound
3. Green shaded cells indicate low delays, yellow shaded cells indicate moderate delays, red shaded cells indicate long delays.

1. Cloverbank Road/Briercliff Drive

All approaches operate at LOS "A" during both peak hours under existing and projected background conditions. No changes in LOS are anticipated because of the project, therefore, no capacity improvements are warranted or recommended.

2. Cloverbank Road/Sawgrass Court

All approaches operate at LOS "A" during both peak hours under existing and projected background conditions. No changes in LOS are anticipated because of the project, therefore, no capacity improvements are warranted or recommended.

3. Amsdell Road/Briercliff Drive

All approaches operate at LOS "B" or better during both peak hours under existing and projected background conditions. No changes in LOS are anticipated because of the project, therefore, no capacity improvements are warranted or recommended.

IX. LEFT TURN TREATMENT INVESTIGATION

Volume warrants for a left turn treatment at the existing Cloverbank Road/Briercliff Drive intersection was investigated using the Transportation Research Board's [NCHRP Report 279, Intersection Channelization Design Guide](#). 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. All warrant calculations are included in the Appendices. Warrants were investigated for full build conditions of the project site during both peak hours analyzed.

Based upon this review, the warrants for a left-turn lane were not satisfied during either peak hour. Therefore, no treatment is recommended.

X. CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identified and evaluated the potential traffic impacts that can be expected from the proposed townhome development at 0 Briercliff Drive in the Town of Hamburg, NY. The results of this study determined that the existing transportation network can adequately accommodate the projected traffic volumes and resulting minor 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 13 entering/40 exiting vehicle trips during the AM peak hour and 39 entering/23 exiting vehicle trips during the PM peak hour based upon ITE Trip Generation Manual data.
2. The existing crash investigation did not reveal any discernible crash patterns.
3. The projected minor traffic impacts resulting from full development of the proposed project during both peak hours can be accommodated by the existing transportation network and study area intersections. No capacity improvements are required.

XI. FIGURES

Figures 1 through 8 are included on the following pages.

FIGURE 1: SITE LOCATION AND STUDY AREA



Key

- # Study Intersection
- Study Area
- Site Location



0 600
FEET

Project No: 41110

PROPOSED BRIERCLIFF
TOWNHOME DEVELOPMENT

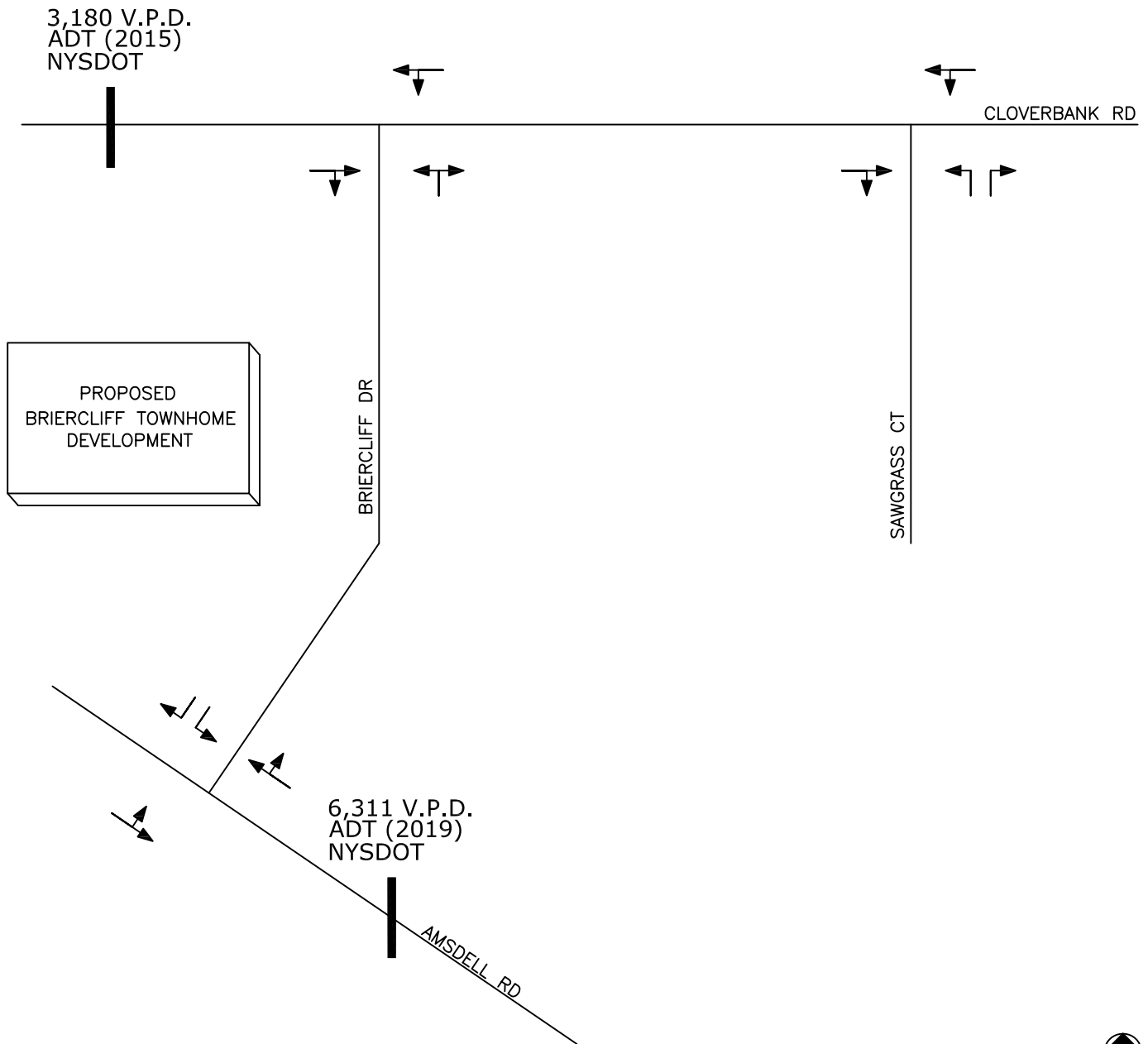
TOWN OF HAMBURG, ERIE COUNTY, NEW YORK



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Notes:

1. All AADT volumes by those noted:
 - 1.1. NYSDOT = New York State Department of Transportation
2. V.P.D. = Vehicles per Day



KEY

FIGURE 2

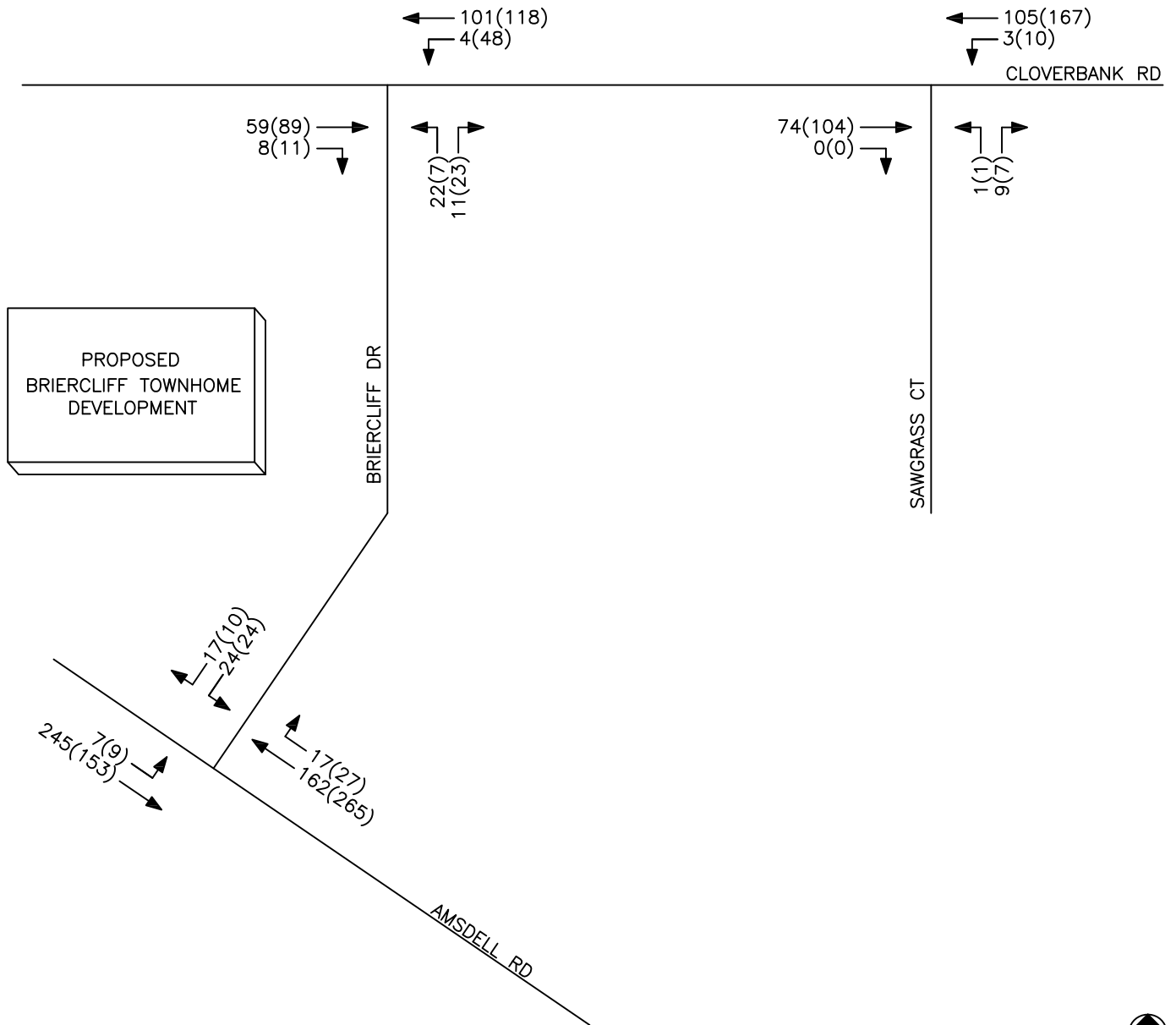
LANE GEOMETRY &
AVERAGE DAILY TRAFFIC

PROPOSED BRIERCLIFF TOWNHOME
DEVELOPMENT
TOWN OF HAMBURG, NY

PROJECT NO: 41110

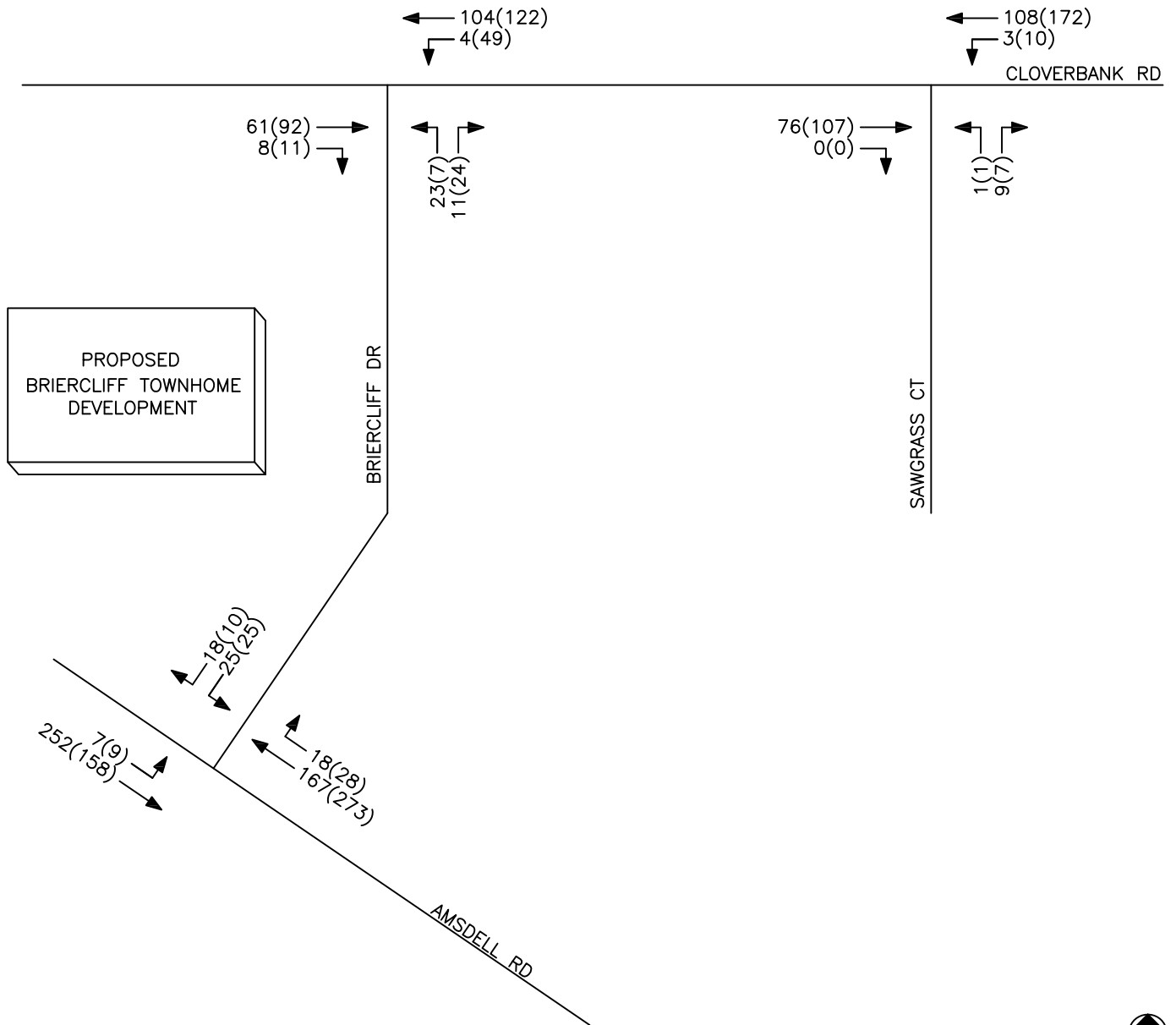
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ASSOCIATES

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NOT TO SCALE

KEY	FIGURE 3		 Transportation Planning / Engineering / Design www.srfa.net / (585) 272-4660
00(00) = AM(PM)	PEAK HOUR VOLUMES 2021 EXISTING CONDITIONS		
	PROPOSED BRIERCLIFF TOWNHOME DEVELOPMENT TOWN OF HAMBURG, NY		
PROJECT NO: 41110			



NOT TO SCALE

KEY

FIGURE 4

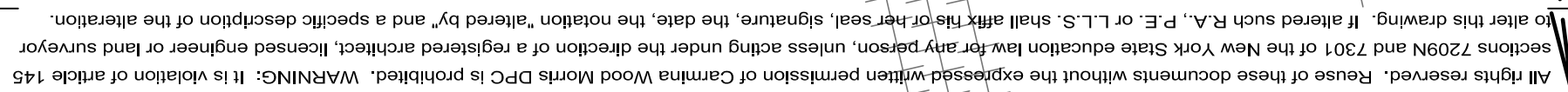
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PEAK HOUR VOLUMES
2024 BACKGROUND CONDITIONS

PROPOSED BRIERCLIFF TOWNHOME
DEVELOPMENT
TOWN OF HAMBURG, NY



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**Carmina
Wood
Morris[®]**

487 Main Street Suite 500
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

Proposed Townhomes

New Construction

Date: 2/15/21
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Concept Site Plan

DRAWING NO.

C-100

Project no.: 20.241

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

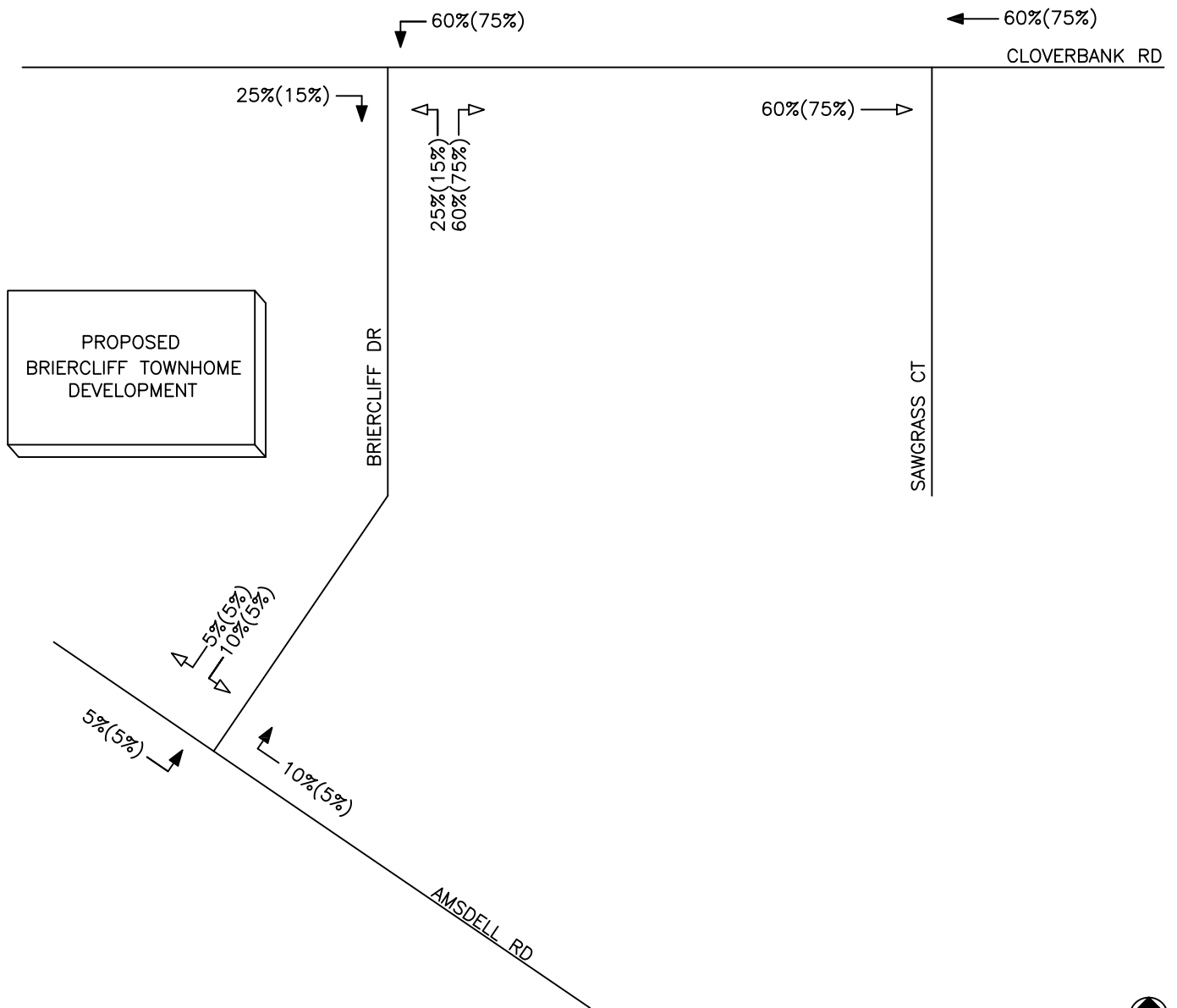


N  **SITE PLAN**
SCALE: 1"=60'



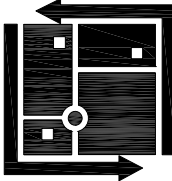
TYPICAL BUILDING ELEVATION

FIGURE 5 - CONCEPT SITE PLAN



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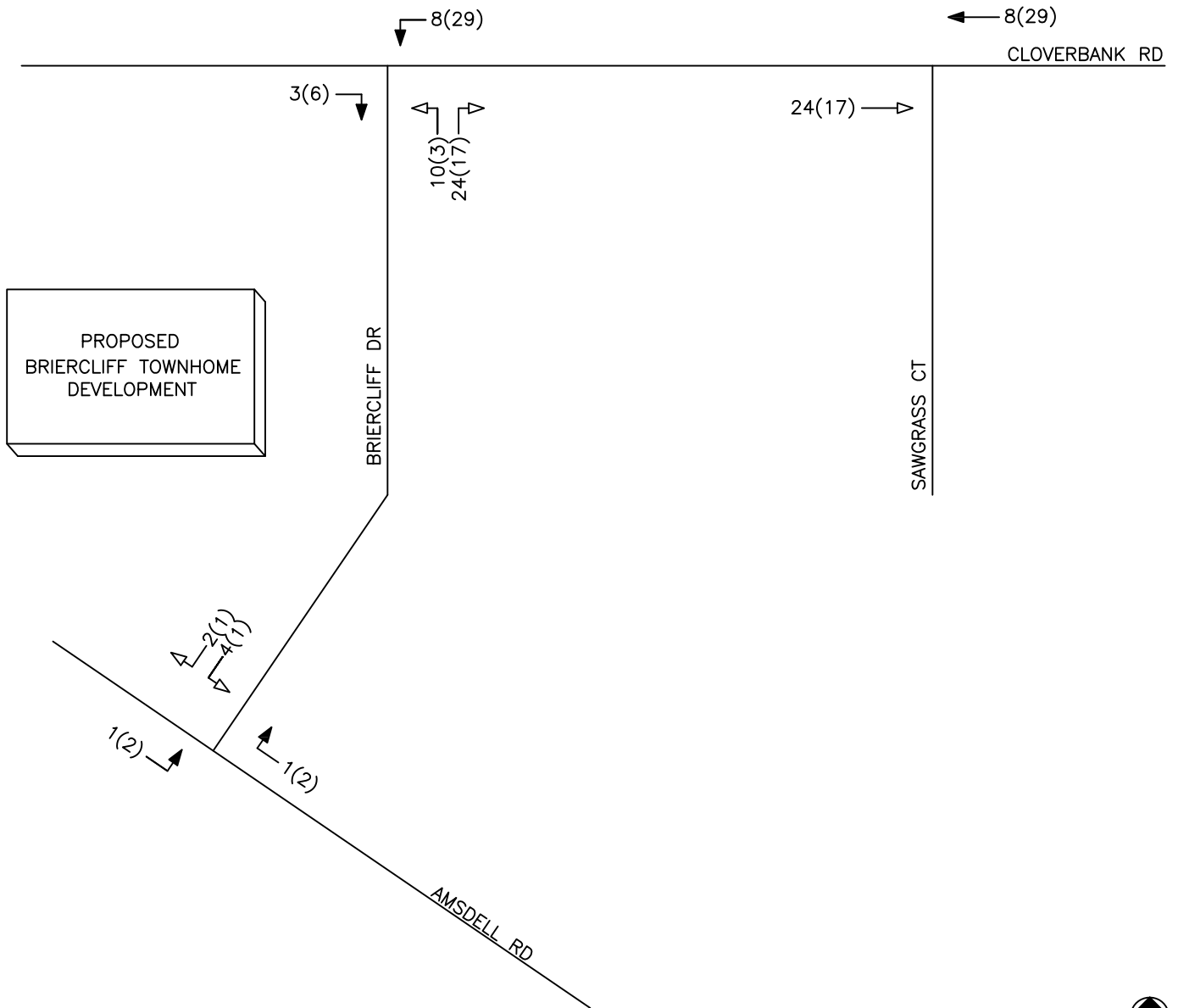
KEY	FIGURE 6	
00(00) = AM(PM)	TRIP DISTRIBUTION	
	PROPOSED BRIERCLIFF TOWNHOME DEVELOPMENT TOWN OF HAMBURG, NY	
PROJECT NO: 41110		



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KEY

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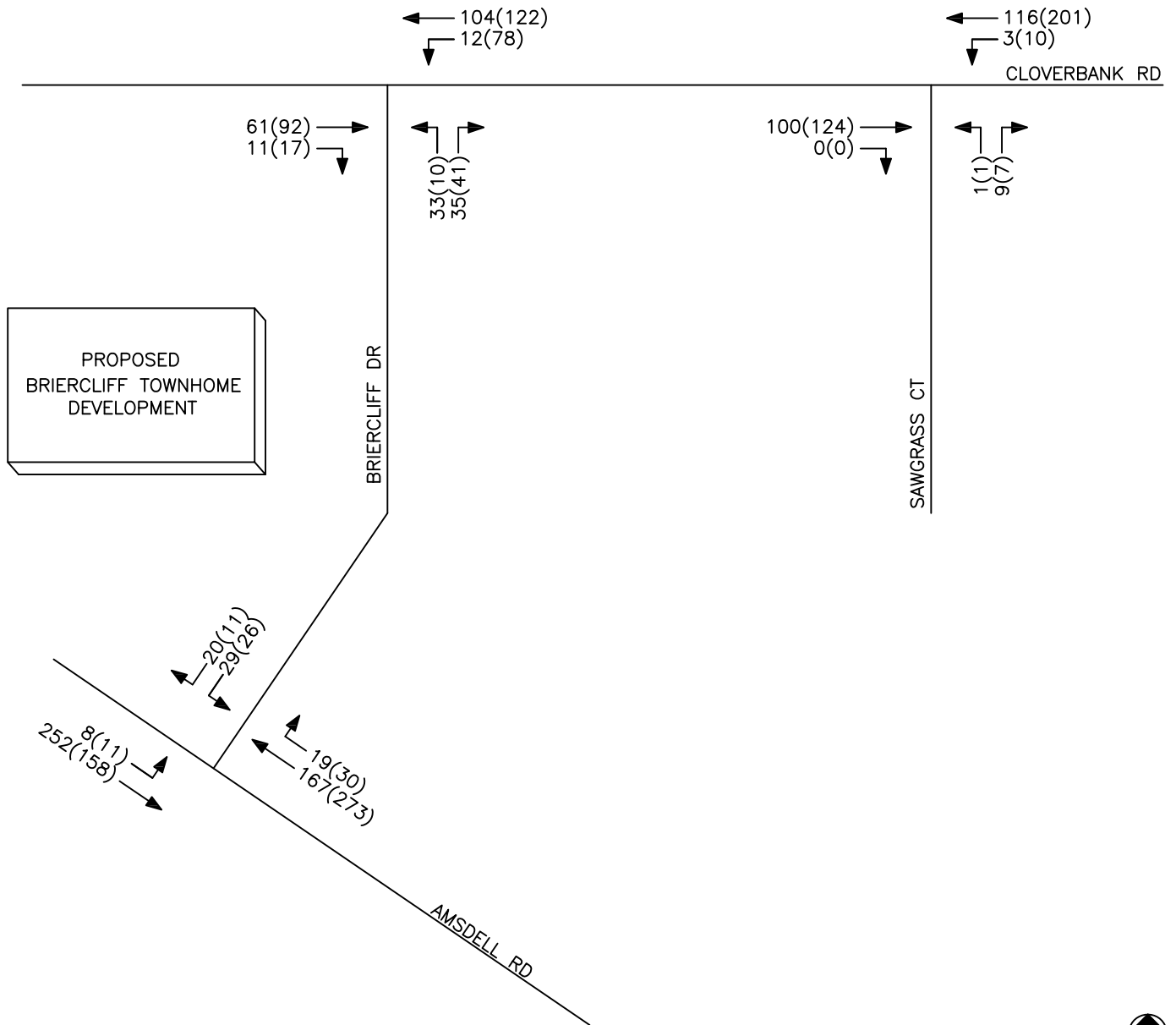
FIGURE 7

SITE GENERATED TRIPS

PROPOSED BRIERCLIFF TOWNHOME
DEVELOPMENT
TOWN OF HAMBURG, NY



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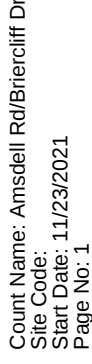
NOT TO SCALE

KEY	FIGURE 8		 Transportation Planning / Engineering / Design www.srfa.net / (585) 272-4660
00(00) = AM(PM)	PEAK HOUR VOLUMES FULL DEVELOPMENT CONDITIONS		
	PROPOSED BRIERCLIFF TOWNHOME DEVELOPMENT TOWN OF HAMBURG, NY		
PROJECT NO: 41110			

APPENDICES

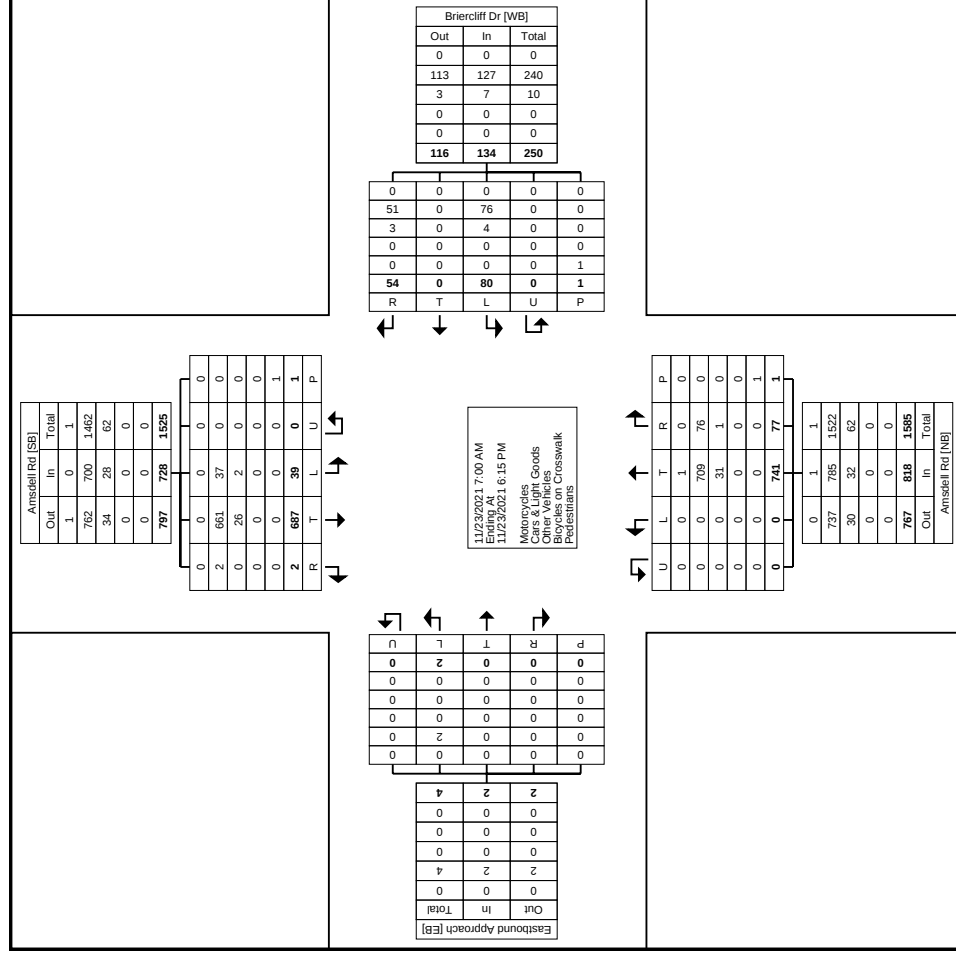
A1

Collected Traffic Volume Data



Start Time	Amsdell Rd Southbound					Briercliff Dr Westbound					Amsdell Rd Northbound					Eastbound Approach Eastbound					Int. Total		
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total					
7:00 AM	0	54	0	0	0	54	1	0	6	0	0	7	5	17	0	0	0	22	0	0	0	0	83
7:15 AM	0	64	3	0	0	67	6	0	6	0	0	12	6	41	0	0	0	47	0	0	1	0	127
7:30 AM	0	80	3	0	1	83	9	0	7	0	0	16	1	57	0	0	1	58	0	0	0	0	157
7:45 AM	0	47	1	0	0	48	1	0	5	0	0	6	5	47	0	0	0	52	0	0	1	0	107
Hourly Total	0	245	7	0	1	252	17	0	24	0	0	41	17	162	0	0	1	179	0	0	2	0	474
8:00 AM	0	30	3	0	0	33	4	0	7	0	0	11	6	23	0	0	0	29	0	0	0	0	73
8:15 AM	0	27	2	0	0	29	5	0	5	0	0	10	1	30	0	0	0	31	0	0	0	0	70
8:30 AM	0	44	1	0	0	45	5	0	3	0	0	8	2	26	0	0	0	28	0	0	0	0	81
8:45 AM	0	35	2	0	0	37	3	0	3	0	0	6	6	24	0	0	0	30	0	0	0	0	73
Hourly Total	0	136	8	0	0	144	17	0	18	0	0	35	15	103	0	0	0	118	0	0	0	0	297
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	36	7	0	0	43	2	0	5	0	0	7	3	62	0	0	0	65	0	0	0	0	115
4:15 PM	0	46	1	0	0	47	3	0	5	0	0	8	5	67	0	0	0	72	0	0	0	0	127
4:30 PM	0	44	4	0	0	48	1	0	4	0	0	5	4	72	0	0	0	76	0	0	0	0	129
4:45 PM	0	46	1	0	0	47	3	0	4	0	0	7	4	50	0	0	0	54	0	0	0	0	108
Hourly Total	0	172	13	0	0	185	9	0	18	0	0	27	16	251	0	0	0	267	0	0	0	0	479
5:00 PM	0	31	2	0	0	33	2	0	7	0	1	9	9	69	0	0	0	78	0	0	0	0	120
5:15 PM	0	32	2	0	0	34	4	0	9	0	0	13	10	74	0	0	0	84	0	0	0	0	131
5:30 PM	2	32	2	0	0	36	2	0	1	0	0	3	7	48	0	0	0	55	0	0	0	0	94
5:45 PM	0	39	5	0	0	44	3	0	3	0	0	6	3	34	0	0	0	37	0	0	0	0	87
Hourly Total	2	134	11	0	0	147	11	0	20	0	1	31	29	225	0	0	0	254	0	0	0	0	432
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	687	39	0	1	728	54	0	80	0	1	134	77	741	0	0							

[illegible]



Turning Movement Peak Hour Data (7:00 AM)

Start Time	Amsdell Rd Southbound						Briercliff Dr Westbound						Amsdell Rd Northbound						Eastbound Approach Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:00 AM	0	54	0	0	0	54	1	0	6	0	0	7	5	17	0	0	0	0	22	0	0	0	0	0	83
7:15 AM	0	64	3	0	0	67	6	0	6	0	0	12	6	41	0	0	0	0	47	0	0	1	0	0	127
7:30 AM	0	80	3	0	1	83	9	0	7	0	0	16	1	57	0	0	1	1	58	0	0	0	0	0	157
7:45 AM	0	47	1	0	0	48	1	0	5	0	0	6	5	47	0	0	0	0	52	0	0	1	0	0	107
Total	0	245	7	0	1	252	17	0	24	0	0	41	17	162	0	0	1	1	179	0	0	2	0	0	474
Approach %	0.0	97.2	2.8	0.0	-	-	41.5	0.0	58.5	0.0	-	-	9.5	90.5	0.0	0.0	-	-	-	0.0	0.0	100.0	0.0	-	-
Total %	0.0	51.7	1.5	0.0	-	53.2	3.6	0.0	5.1	0.0	-	8.6	3.6	34.2	0.0	0.0	-	-	37.8	0.0	0.4	0.0	-	0.4	
PHF	0.000	0.766	0.583	0.000	-	0.759	0.472	0.000	0.857	0.000	-	0.641	0.708	0.711	0.000	0.000	-	0.772	0.000	0.000	0.500	0.000	-	0.500	0.755
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	-	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.6	-	-	-	0.6	-	-	0.0	-	-	0.0	0.2
Cars & Light Goods	0	231	5	0	-	236	16	0	21	0	-	37	17	141	0	0	-	158	0	0	2	0	-	2	433
% Cars & Light Goods	-	94.3	71.4	-	-	93.7	94.1	-	87.5	-	-	90.2	100.0	87.0	-	-	-	88.3	-	-	100.0	-	-	100.0	91.4
Other Vehicles	0	14	2	0	-	16	1	0	3	0	-	4	0	20	0	0	-	20	0	0	0	0	-	0	40
% Other Vehicles	-	5.7	28.6	-	-	6.3	5.9	-	12.5	-	-	9.8	0.0	12.3	-	-	-	11.2	-	-	0.0	-	-	0.0	8.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

[illegible]



Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Cloverbank Rd/Briercliff Dr
Site Code:
Start Date: 11/23/2021
Page No: 1

Turning Movement Data

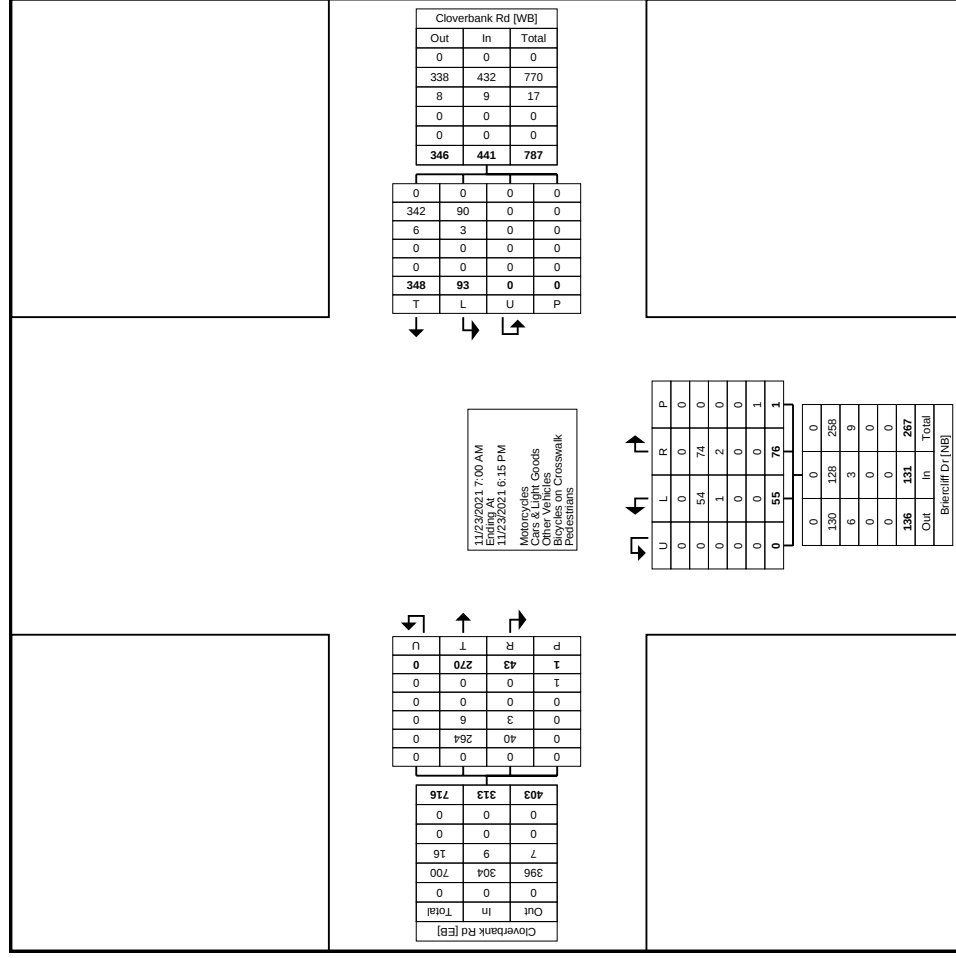
Start Time	Cloverbank Rd Westbound					Briercliff Dr Northbound					Cloverbank Rd Eastbound				
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	Int. Total
7:00 AM	9	5	0	0	14	3	5	0	0	8	2	11	0	0	35
7:15 AM	6	2	0	0	8	5	5	0	1	10	2	14	0	1	34
7:30 AM	12	4	0	0	16	8	1	0	0	9	3	13	0	0	41
7:45 AM	13	1	0	0	14	8	6	0	0	14	1	10	0	0	39
Hourly Total	40	12	0	0	52	24	17	0	1	41	8	48	0	1	149
8:00 AM	30	0	0	0	30	1	7	0	0	8	1	14	0	0	53
8:15 AM	21	1	0	0	22	5	6	0	0	11	5	22	0	0	60
8:30 AM	19	0	0	0	19	2	5	0	0	7	1	15	0	0	42
8:45 AM	31	3	0	0	34	3	4	0	0	7	1	8	0	0	50
Hourly Total	101	4	0	0	105	11	22	0	0	33	8	59	0	0	205
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	20	8	0	0	28	5	2	0	0	7	2	20	0	0	57
4:15 PM	15	11	0	0	26	2	5	0	0	7	8	15	0	0	56
4:30 PM	29	6	0	0	35	9	1	0	0	10	4	13	0	0	62
4:45 PM	29	13	0	0	42	6	0	0	0	6	4	19	0	0	71
Hourly Total	93	38	0	0	131	22	8	0	0	30	18	67	0	0	246
5:00 PM	28	12	0	0	40	6	1	0	0	7	1	23	0	0	71
5:15 PM	31	10	0	0	41	5	2	0	0	7	3	20	0	0	71
5:30 PM	30	13	0	0	43	6	4	0	0	10	3	27	0	0	83
5:45 PM	25	4	0	0	29	2	1	0	0	3	2	26	0	0	60
Hourly Total	114	39	0	0	153	19	8	0	0	27	9	96	0	0	285
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	348	93	0	0	441	76	55	0	1	131	43	270	0	1	885
Approach %	78.9	21.1	0.0	-	-	58.0	42.0	0.0	-	-	13.7	86.3	0.0	-	-
Total %	39.3	10.5	0.0	-	49.8	8.6	6.2	0.0	-	14.8	4.9	30.5	0.0	-	35.4
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0
Cars & Light Goods	342	90	0	-	432	74	54	0	-	128	40	264	0	-	864
% Cars & Light Goods	98.3	96.8	-	-	98.0	97.4	98.2	-	-	97.7	93.0	97.8	-	-	97.6
Other Vehicles	6	3	0	-	9	2	1	0	-	3	3	6	0	-	21
% Other Vehicles	1.7	3.2	-	-	2.0	2.6	1.8	-	-	2.3	7.0	2.2	-	-	2.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	1	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-



Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-517-2338 bkarz@tsdata.com

Count Name: Cloverbank Rd/Briercliff Dr
Site Code:
Start Date: 11/23/2021
Page No: 2



Turning Movement Data Plot

Turning Movement Peak Hour Data (8:00 AM)

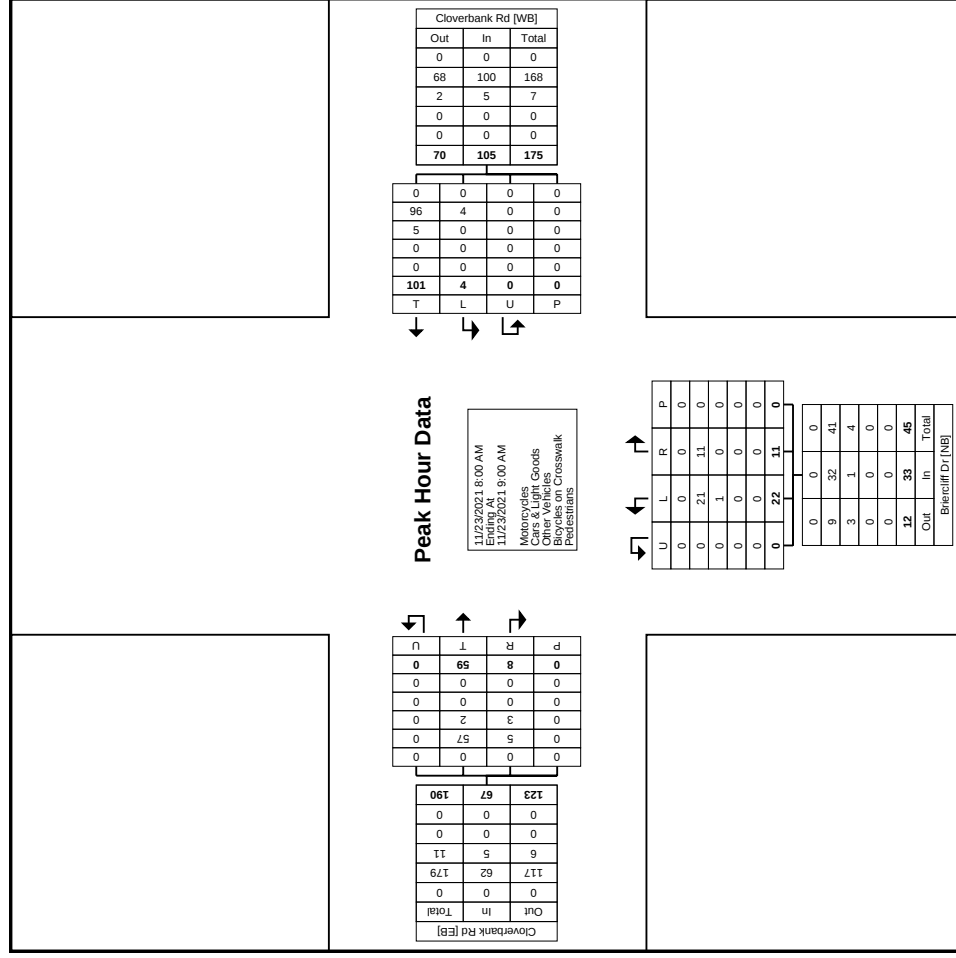
[illegible]



Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
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Count Name: Cloverbank Rd/Briercliff Dr
Site Code:
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[illegible]

The diagram illustrates the intersection of Cloverbank Rd and Bleckhoff Dr. It includes traffic flow arrows, vehicle counts for various modes, and peak hour data.

Intersection Details:

- Cloverbank Rd [WB]:**
 - Out: 0, In: 0, Total: 0
 - 112, 166, 278
 - 0, 0, 0
 - 0, 0, 0
 - 0, 0, 0
 - 112, 166, 278
- Bleckhoff Dr [NB]:**
 - Out: 0, In: 0, Total: 0
 - 59, 30, 89
 - 0, 0, 0
 - 0, 0, 0
 - 0, 0, 0
 - 59, 30, 89

Peak Hour Data:

- 11/23/2021 4:45 PM Ending At:**
 - Motorcycles: 0
 - Cars & Light Goods: 0
 - Other Vehicles: 0
 - Bicycles: 0
 - Pedestrians: 0
- 11/23/2021 5:45 PM Ending At:**
 - Motorcycles: 0
 - Cars & Light Goods: 0
 - Other Vehicles: 0
 - Bicycles: 0
 - Pedestrians: 0

Vehicle Counts:

- Cloverbank Rd [EB]:**
 - Out: 0, In: 0, Total: 0
 - 125, 100, 225
 - 0, 0, 0
 - 0, 0, 0
 - 0, 0, 0
 - 0, 0, 0
 - 125, 100, 225
- Bleckhoff Dr [SB]:**
 - Out: 0, In: 0, Total: 0
 - 59, 30, 89
 - 0, 0, 0
 - 0, 0, 0
 - 0, 0, 0
 - 59, 30, 89



Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville , Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Cloverbank Rd/Sawgrass Ct
Site Code:
Start Date: 11/23/2021
Page No: 1

Turning Movement Data

Start Time	Cloverbank Rd Westbound					Sawgrass Ct Northbound					Cloverbank Rd Eastbound				
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	Int. Total
7:00 AM	15	0	0	0	15	1	0	0	0	1	0	18	0	0	34
7:15 AM	9	2	0	0	11	1	0	0	0	1	0	19	0	0	31
7:30 AM	16	2	0	0	18	2	0	0	0	2	0	19	0	0	39
7:45 AM	13	0	0	0	13	2	0	0	0	2	0	18	0	0	33
Hourly Total	53	4	0	0	57	6	0	0	0	6	0	74	0	0	137
8:00 AM	30	1	0	0	31	1	0	0	0	1	0	16	0	0	48
8:15 AM	22	2	0	0	24	4	0	0	0	4	0	28	0	0	56
8:30 AM	18	0	0	0	18	4	1	0	0	5	0	18	0	0	41
8:45 AM	35	0	0	0	35	0	0	0	0	0	0	12	0	0	47
Hourly Total	105	3	0	0	108	9	1	0	0	10	0	74	0	0	192
9:00 AM	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
4:00 PM	31	4	0	0	35	2	0	0	0	2	0	26	0	0	63
4:15 PM	26	3	0	0	29	1	0	0	0	1	0	18	0	0	48
4:30 PM	34	1	0	0	35	2	0	0	0	2	0	19	0	0	56
4:45 PM	43	4	0	0	47	3	0	0	0	3	0	26	0	0	76
Hourly Total	134	12	0	0	146	8	0	0	0	8	0	89	0	0	243
5:00 PM	38	3	0	0	41	2	1	0	0	3	0	30	0	0	74
5:15 PM	45	2	0	0	47	1	0	0	0	1	0	24	0	0	72
5:30 PM	41	1	0	0	42	1	0	0	0	1	0	24	0	0	67
5:45 PM	34	9	0	0	43	4	0	0	0	4	1	17	0	0	65
Hourly Total	158	15	0	0	173	8	1	0	0	9	1	95	0	0	278
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	450	34	0	0	484	31	2	0	0	33	1	332	0	0	850
Approach %	93.0	7.0	0.0	-	-	93.9	6.1	0.0	-	-	0.3	99.7	0.0	-	-
Total %	52.9	4.0	0.0	-	56.9	3.6	0.2	0.0	-	3.9	0.1	39.1	0.0	-	39.2
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0
Cars & Light Goods	440	33	0	-	473	30	2	0	-	32	1	324	0	-	830
% Cars & Light Goods	97.8	97.1	-	-	97.7	96.8	100.0	-	-	97.0	100.0	97.6	-	-	97.6
Other Vehicles	10	1	0	-	11	1	0	0	-	1	0	8	0	-	20
% Other Vehicles	2.2	2.9	-	-	2.3	3.2	0.0	-	-	3.0	0.0	2.4	-	-	2.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-

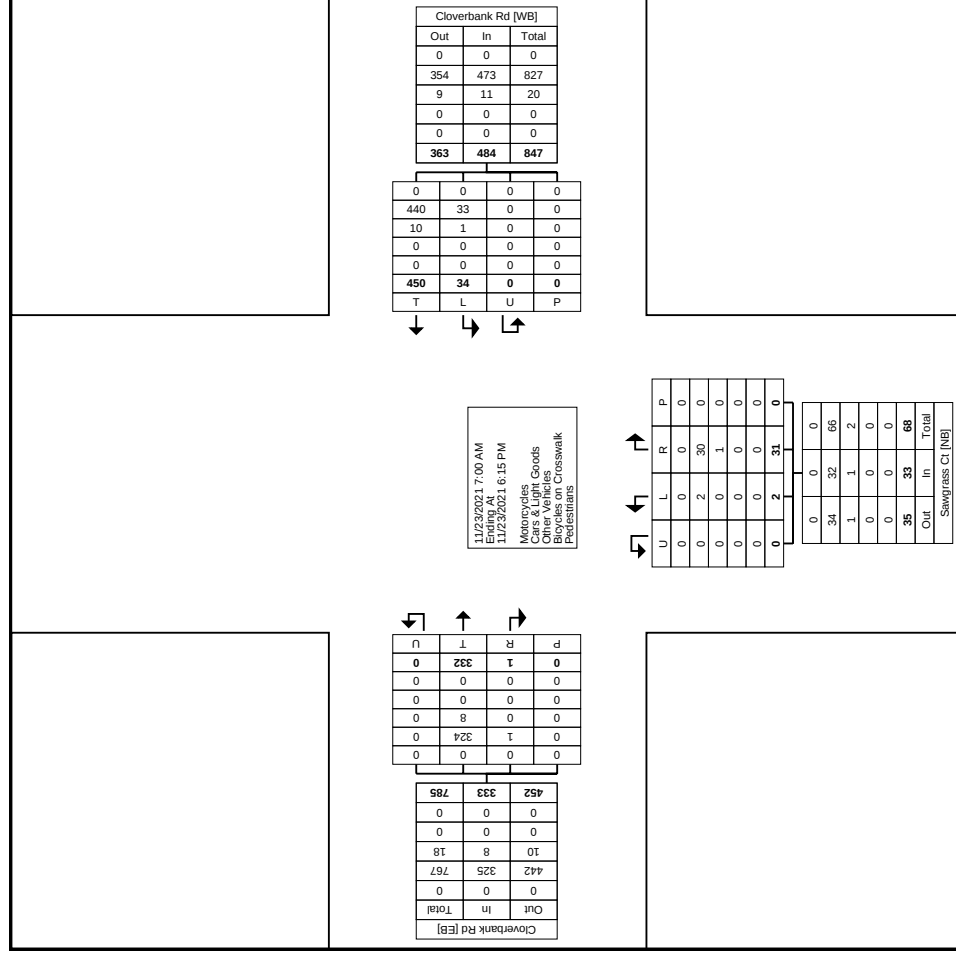
[illegible]



Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-517-2338 bkarz@tsdata.com

Count Name: Cloverbank Rd/Sawgrass Ct
Site Code:
Start Date: 11/23/2021
Page No: 3



Turning Movement Data Plot



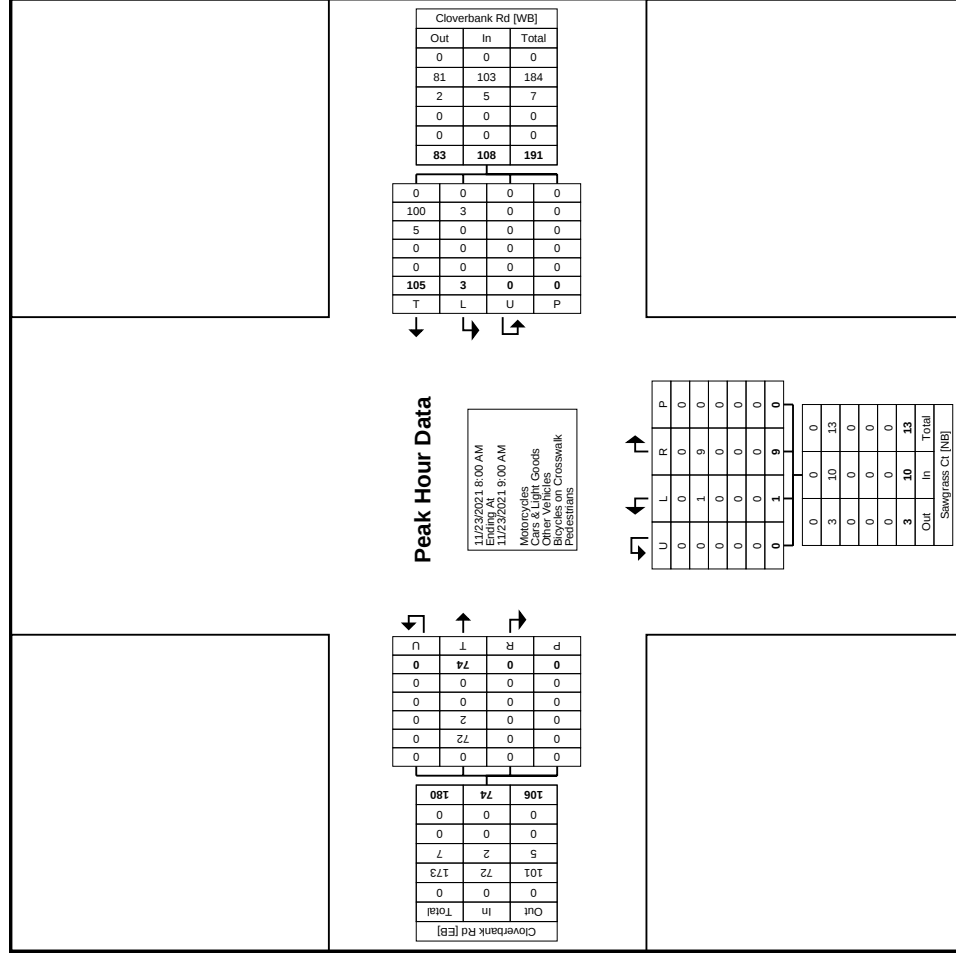
Start Time	Cloverbank Rd Westbound						Sawgrass Ct Northbound						Cloverbank Rd Eastbound					
	Thru	Left	U-Turn	Peds	App. Total		Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total	
8:00 AM	30	1	0	0	31		1	0	0	0	1		0	16	0	16	48	
8:15 AM	22	2	0	0	24		4	0	0	0	4		0	28	0	28	56	
8:30 AM	18	0	0	0	18		4	1	0	0	5		0	18	0	18	41	
8:45 AM	35	0	0	0	35		0	0	0	0	0		0	12	0	12	47	
Total	105	3	0	0	108		9	1	0	0	10		0	74	0	74	192	
Approach %	97.2	2.8	0.0	-	-		90.0	10.0	0.0	-	-		0.0	100.0	0.0	-	-	
Total %	54.7	1.6	0.0	-	56.3		4.7	0.5	0.0	-	5.2		0.0	38.5	0.0	-	38.5	
PHF	0.750	0.375	0.000	-	0.771		0.563	0.250	0.000	-	0.500		0.000	0.661	0.000	-	0.661	
Motorcycles	0	0	0	-	0		0	0	0	-	0		0	0	0	-	0	
% Motorcycles	0.0	0.0	-	-	0.0		0.0	0.0	-	-	0.0		-	0.0	-	-	0.0	
Cars & Light Goods	100	3	0	-	103		9	1	0	-	10		0	72	0	72	185	
% Cars & Light Goods	95.2	100.0	-	-	95.4		100.0	100.0	-	-	100.0		-	97.3	-	-	97.3	
Other Vehicles	5	0	0	-	5		0	0	0	-	0		0	2	0	2	7	
% Other Vehicles	4.8	0.0	-	-	4.6		0.0	0.0	-	-	0.0		-	2.7	-	-	2.7	
Bicycles on Crosswalk	-	-	-	0	-		-	-	-	0	-		-	-	0	-	-	
% Bicycles on Crosswalk	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	
Pedestrians	-	-	-	0	-		-	-	-	0	-		-	-	0	-	-	
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	



Tri-State Traffic Data: New York Division
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-517-2338 bkarz@tstdata.com

Count Name: Cloverbank Rd/Sawgrass Ct
Site Code:
Start Date: 11/23/2021
Page No: 5



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

Turning Movement Peak Hour Data (4:45 PM)

[illegible]

[illegible]

A2

Miscellaneous Traffic Data and Calculations



Int #

1

Cloverbank Rd/Briercliff Dr

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
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

	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						0
Totals	0	0	0	0	0	0

1

Cloverbank Rd/Briercliff Dr - 36 months

ADT = Peak hour entering volume / k factor

ADT =

VPH /

0.095

=

0

VPD

Rate =

0

Acc.

0

VPD

x

1,000,000

x

365 Days

x

3,000 Yrs.

=

#DIV/0!

Crash / MEV

Int #	Cloverbank Rd/Sawgrass Ct																
2	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					1	1			1

TOTALS 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0 0 1

	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	1					1
Backing						0
Other						0
Bike/Ped						0
Animal						0
Totals	0	1	0	0	0	1

2

Cloverbank Rd/Sawgrass Ct - 36 months

ADT = Peak hour entering volume / k factor

ADT =

18

Rate = $\frac{1}{189.473684}$

Acc. VPD

1000.000

365 Days

0.095

=

189.473684

VPH /

=

4.82

3.000 Yrs.

x

Crash / MEV

=

Int #	Amsdell Rd/Briercliff Dr																
3	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									1			1	1

TOTALS	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	
--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--

	Northbound	Southbound	Eastbound	Westbound	Unknown	Totals
Left turn						0
Rear-end						0
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						0
Totals	0	0	0	1	0	1

3

Amsdeill Rd/Briercliff Dr - 36 months

ADT = Peak hour entering volume / k factor

ADT =

70

Rate = $\frac{1}{736.842105}$ Acc. VPD

$\frac{1}{736.842105}$

x

$\frac{1,000,000}{365 \text{ Days}}$

x

$\frac{0.095}{3,000 \text{ Yrs.}}$

=

$\frac{736.842105}{1.24}$ Crash / MEV

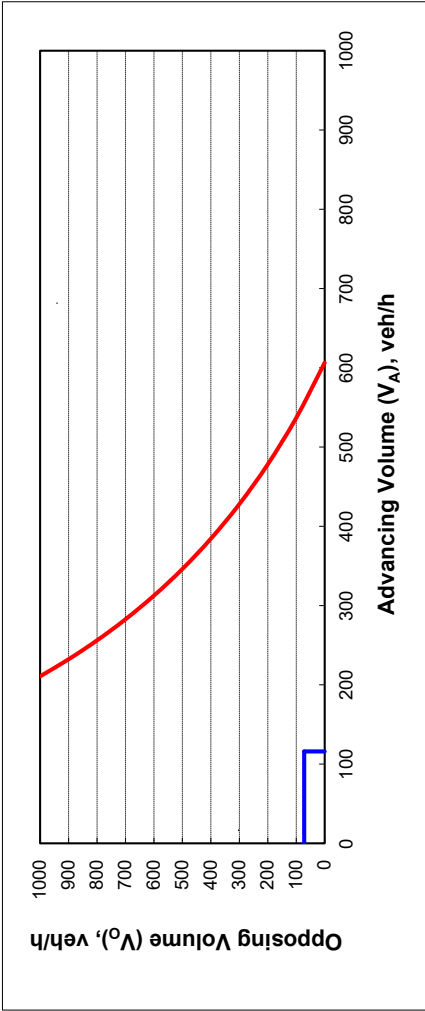
VPD

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

INPUT		
Variable		Value
Major Approach		Cloverbank Road @ Briercliff
Approach		Westbound (AM Peak)
Design Speed Limit - MPH		35
Percent of left-turns in advancing volume (V _A), %:		10%
Advancing volume (V _A), veh/h:		116
Opposing volume (V _O), veh/h:		72

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		
0	72	116
116	72	0



OUTPUT	
Variable	Value
Limiting advancing volume (V _A), veh/h:	555
Guidance for determining the need for a major-road left-turn bay: Westbound (AM Peak) Left-turn treatment NOT warranted at Cloverbank Road @ Briercliff Intersections	

ρ 0.0225
 f = 0.79
Wait Time 0.259 s
Service Rate 1142 veh/h
Arrival Rate 555 veh/h

V _O	Time _{tw}	V _O	Serv _{rate}
0	0.0	0	1200
100	0.4	100	1121
200	0.8	200	1046
300	1.2	300	976
400	1.7	400	910
500	2.2	500	848
600	2.8	600	789
700	3.5	700	735
800	4.2	800	683
900	5.0	900	635
1000	5.8	1000	590

% LT veh.	10%						15%		20%		40%	
	V _O	V _A	V _A	V _A	V _A	V _A	V _A	V _A	V _A	V _A	V _A	
	0	606	616	517	462	377						
	100	537	545	458	409	334						
	200	478	485	408	364	297						
	300	428	434	365	326	266						
	400	384	390	328	293	239						
	500	346	351	295	264	215						
	600	313	317	267	238	194						
	700	283	287	241	215	176						
	800	256	260	218	195	159						
	900	232	236	198	177	144						
	1000	211	214	180	160	131						

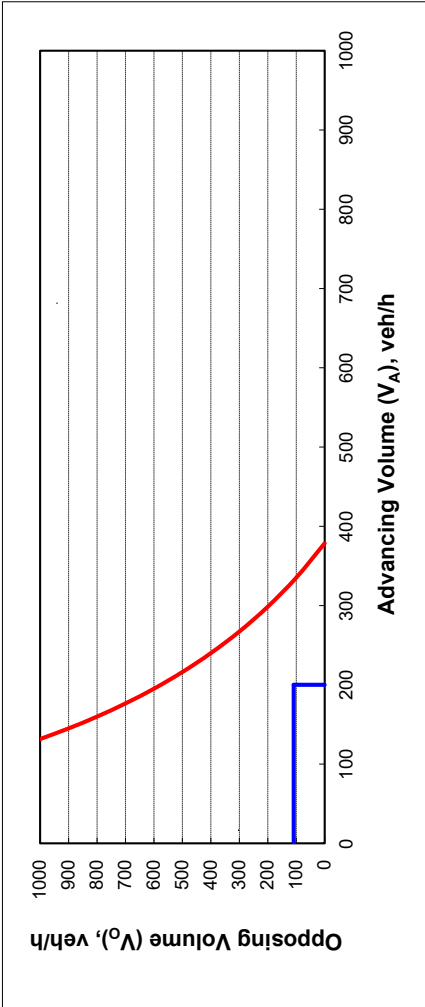
Guideline for determining left-turn Lane at a two-way stop-controlled intersection
TWO LANE ROADWAY

INPUT		
Variable		Value
Major Approach		Cloverbank Road @ Briercliff
Approach		Westbound (PM Peak)
Design Speed Limit - MPH		35
Percent of left-turns in advancing volume (V _A), %:		39%
Advancing volume (V _A), veh/h:		200
Opposing volume (V _O), veh/h:		109

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		
0	109	200
200	109	200

PLOT - LINE 2		
0	200	0
200	200	109



OUTPUT	
Variable	Value
Limiting advancing volume (V _A), veh/h:	332
Guidance for determining the need for a major-road left-turn bay: Westbound (PM Peak) Left-turn treatment NOT warranted at Cloverbank Road @ Briercliff Intersections	

ρ 0.0225
 f = 0.79
Wait Time 0.398 s
Service Rate 1114 veh/h
Arrival Rate 332 veh/h

V _O	Time _{tw}	V _O	Serv _{rate}
0	0.0	0	1200
100	0.4	100	1121
200	0.8	200	1046
300	1.2	300	976
400	1.7	400	910
500	2.2	500	848
600	2.8	600	789
700	3.5	700	735
800	4.2	800	683
900	5.0	900	635
1000	5.8	1000	590

% LT veh.		39%	10%	15%	20%	40%
V_O	V_A	V_A	V_A	V_A	V_A	V_A
0		379	616	517	462	377
100		335	545	458	409	334
200		299	485	408	364	297
300		267	434	365	326	266
400		240	390	328	293	239
500		216	351	295	264	215
600		195	317	267	238	194
700		176	287	241	215	176
800		160	260	218	195	159
900		145	236	198	177	144
1000		132	214	180	160	131

PROJECT: Proposed Briercliff Townhomes Development
LOCATION: Briercliff Dr, Town of Hamburg, New York
PEAK HOUR: AM Peak

Figure Number: 3 4 6 7 8

Num of yrs

3

LOCATION NUMBER	INTERSECTION DESCRIPTION	2021 Existing Volumes	2026 Bkgd Vol 1.0%	Proposed Briercliff Townhomes				Total Site Trips	Full Build Volumes
				Enter Dist. %	Exit Dist. %	Trips IN 13	Trips OUT 40		
1	Cloverbank Rd/ Briercliff Dr								
	SR								
	ST								
	SL								
	WR								
2	WT	101	104						104
	WL	4	4	60%		8		8	12
	NR	11	11		60%		24	24	35
	NT								
	NL	22	23		25%		10	10	33
3	ER	8	8	25%		3		3	11
	ET	59	61						61
	EL								
	SR								
	ST								
4	SL								
	WR								
	WT	105	108	60%		8		8	116
	WL	3	3						3
	NR	9	9						9
5	NT								
	NL	1	1						1
	ER								
	ET	74	76		60%		24	24	100
	EL								
6	Amsdell Rd/ Briercliff Dr								
	SR								
	ST	245	252						252
	SL	7	7	5%		1		1	8
	WR	17	18		5%		2	2	20
7	WT								
	WL	24	25		10%		4	4	29
	NR	17	18	10%		1		1	19
	NT	162	167						167
	NL								
8	ER								
	ET								
	EL								
	SR								
	ST								

PROJECT: Proposed Briercliff Townhomes Development
LOCATION: Briercliff Dr, Town of Hamburg, New York
PEAK HOUR: PM Peak

Figure Number: 3 4 6 7 8

Num of yrs

3

LOCATION NUMBER	INTERSECTION DESCRIPTION	2021 Existing Volumes	2026 Bkgd Vol 1.0%	Proposed Briercliff Townhomes				Total Site Trips	Full Build Volumes
				Enter Dist. %	Exit Dist. %	Trips IN 39	Trips OUT 23		
1	Cloverbank Rd/ Briercliff Dr								
	SR								
	ST								
	SL								
	WR								
2	WT	118	122						122
	WL	48	49	75%		29		29	78
	NR	23	24		75%		17	17	41
	NT								
	NL	7	7		15%		3	3	10
3	ER	11	11	15%		6		6	17
	ET	89	92						92
	EL								
	SR								
	ST								
4	SL								
	WR								
	WT	167	172	75%		29		29	201
	WL	10	10						10
	NR	7	7						7
5	NT								
	NL	1	1						1
	ER								
	ET	104	107		75%		17	17	124
	EL								
6	Amsdell Rd/ Briercliff Dr								
	SR								
	ST	153	158						158
	SL	9	9	5%		2		2	11
	WR	10	10		5%		1	1	11
7	WT								
	WL	24	25		5%		1	1	26
	NR	27	28	5%		2		2	30
	NT	265	273						273
	NL								
8	ER								
	ET								
	EL								
	SR								
	ST								

Scenario - 1

Scenario Name: AM Peak

User Group:

Dev. phase: 1

No. of Years to Project 0

Traffic :

Analyst Note:

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method		Entry		Exit		Total
					Rate/Equation	Split%	Split%	Split%	Split%	Split%	
220 - Multifamily Housing (Low-Rise) - Not Close Data Source: Trip Generation Manual, 11th Ed	General Urban/Suburban	Dwelling Units	98	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LIN)		13		40		53
					$T = 0.31(X) + 22.85$		24%		76%		

VEHICLE TO PERSON TRIP CONVERSION**BASELINE SITE VEHICLE CHARACTERISTICS:**

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit	100	100	1	1	24	76

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit	13	40	0	0	13	40
	53		0		53	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips	
	Entry	Exit
220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit	13	40
	53	

RESULTS

Site Totals		Entry	Exit	Total
Vehicle Trips Before Reduction		13	40	53
External Vehicle Trips		13	40	53
New Vehicle Trips		13	40	53

Scenario - 2

Scenario Name: PM Peak

User Group:

Dev. phase: 1

No. of Years to Project 0

Analyst Note:

Traffic :

Warning:

VEHICLE TRIPS BEFORE REDUCTION									
Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry Split%	Exit Split%	Total	
					Rate/Equation				
2220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit	General Urban/Suburban	Dwelling Units	98	Weekday, Peak Hour of Adjacent Street Traffic,	Best Fit (LN)	39	23	62	
Data Source: Trip Generation Manual, 11th Ed					$T = 0.43(X) + 20.55$	63%	37%		

VEHICLE TO PERSON TRIP CONVERSION									
BASELINE SITE VEHICLE CHARACTERISTICS:									
Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split				
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)	Entry (%)	Exit (%)	Total
220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit	100	100	1	1	63	37			

ESTIMATED BASELINE SITE PERSON TRIPS:						
Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
	39	23	0	0	39	23
220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit	62		0		62	

NEW VEHICLE TRIPS									
Land Use						New Vehicle Trips			
						Entry	Exit	Total	Total
220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit						39	23	62	62

RESULTS									
Site Totals									
Vehicle Trips Before Reduction						39	23	62	62
External Vehicle Trips						39	23	62	62
New Vehicle Trips						39	23	62	62

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

HCM 6th TWSC
1: Briercliff Dr & Cloverbank Rd

HCM 6th TWSC
2: Sawgrass Ct & Cloverbank Rd

Briercliff Townhomes
2021 Existing AM

Briercliff Townhomes
2021 Existing AM

Intersection										
Int Delay, s/veh		1.7								
Movement		EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations										
Traffic Vol, veh/h		59	8	4	101	22	11			
Future Vol, veh/h		59	8	4	101	22	11			
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		85	85	85	85	85	85			
Heavy Vehicles, %		3	38	0	5	5	0			
Mvmt Flow		69	9	5	119	26	13			
Major/Minor		Major1	Major2		Minor1					
Conflicting Flow All		0	0	78	0	203	74			
Stage 1		-	-	-	-	74	-			
Stage 2		-	-	-	-	129	-			
Critical Hdwy		-	-	4.1	-	6.45	6.2			
Critical Hdwy Stg 1		-	-	-	-	5.45	-			
Critical Hdwy Stg 2		-	-	-	-	5.45	-			
Follow-up Hdwy		-	-	2.2	-	3.545	3.3			
Pot Cap-1 Maneuver		-	-	1533	-	779	993			
Stage 1		-	-	-	-	941	-			
Stage 2		-	-	-	-	890	-			
Platoon blocked, %		-	-	-	-	-	-			
Mov Cap-1 Maneuver		-	-	1533	-	777	993			
Mov Cap-2 Maneuver		-	-	-	-	777	-			
Stage 1		-	-	-	-	941	-			
Stage 2		-	-	-	-	887	-			
Approach										
EB		WB		NB						
HCM Control Delay, s		0		0.3		9.5				
HCM LOS				A		A				
Minor Lane/Major Mvmt										
NBLn1		EBT		EBR		WBL		WBT		
Capacity (veh/h)		838		-		-		1533		-
HCM Lane V/C Ratio		0.046		-		-		0.003		-
HCM Control Delay (s)		9.5		-		-		7.4		0
HCM Lane LOS		A		-		-		A		A
HCM 95th %ile Q(veh)		0.1		-		-		0		-

Intersection										
Int Delay, s/veh		0.6								
Movement										
Lane Configurations	EBT	EBR	WBL	WBT	NBL	NBR				
Traffic Vol, veh/h	74	0	3	105	1	9				
Future Vol, veh/h	74	0	3	105	1	9				
Conflicting Peds, #/hr	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Stop	Stop				
RT Channelized	-	None	-	None	-	None				
Storage Length	-	-	-	-	0	-				
Veh in Median Storage, #	0	-	-	0	0	-				
Grade, %	0	-	-	0	0	-				
Peak Hour Factor	86	86	86	86	86	86				
Heavy Vehicles, %	3	0	0	5	0	0				
Mvmt Flow	86	0	3	122	1	10				
Major/Minor										
	Major1	Major2	Minor1							
Conflicting Flow All	0	0	86	0	214	86				
Stage 1	-	-	-	-	86	-				
Stage 2	-	-	-	-	128	-				
Critical Hdwy	-	-	4.1	-	6.4	6.2				
Critical Hdwy Stg 1	-	-	-	-	5.4	-				
Critical Hdwy Stg 2	-	-	-	-	5.4	-				
Follow-up Hdwy	-	-	2.2	-	3.5	3.3				
Pot Cap-1 Maneuver	-	-	1523	-	779	978				
Stage 1	-	-	-	-	942	-				
Stage 2	-	-	-	-	903	-				
Platoon blocked, %	-	-	-	-	-	-				
Mov Cap-1 Maneuver	-	-	1523	-	777	978				
Mov Cap-2 Maneuver	-	-	-	-	777	-				
Stage 1	-	-	-	-	942	-				
Stage 2	-	-	-	-	901	-				
Approach										
EB	EB	WB	WB	NB						
HCM Control Delay, s	0	0.2	8.8	8.8						
HCM LOS	A									
Minor Lane/Major Mvmt										
NBLn1	EBT	EBR	WBL	WBT						
Capacity (veh/h)	953	-	-	1523	-					
HCM Lane V/C Ratio	0.012	-	-	0.002	-					
HCM Control Delay (s)	8.8	-	-	7.4	0					
HCM Lane LOS	A	-	-	A	A					
HCM 95th %tile Q(veh)	0	-	-	0	-					

HCM 6th TWSC
 3: Amsdell Rd & Briercliff Dr
 Briercliff Townhomes
 2021 Existing AM

Intersection									
Int Delay, s/veh		1.1							
Movement		WBL	WBR	SEL	SET	NWT	NWR		
Lane Configurations									
Traffic Vol, veh/h		24	17	7	245	162	17		
Future Vol, veh/h		24	17	7	245	162	17		
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		76	76	76	76	76	76		
Heavy Vehicles, %		13	6	29	6	12	0		
Mvmt Flow		32	22	9	322	213	22		
Major/Minor		Minor2	Major1	Major2					
Conflicting Flow All		564	224	235	0	-	0		
Stage 1		224	-	-	-	-	-		
Stage 2		340	-	-	-	-	-		
Critical Hdwy		6.53	6.26	4.39	-	-	-		
Critical Hdwy Stg 1		5.53	-	-	-	-	-		
Critical Hdwy Stg 2		5.53	-	-	-	-	-		
Follow-up Hdwy		3.617	3.354	2.461	-	-	-		
Pot Cap-1 Maneuver		469	806	1189	-	-	-		
Stage 1		788	-	-	-	-	-		
Stage 2		697	-	-	-	-	-		
Platoon blocked, %		-	-	-	-	-	-		
Mov Cap-1 Maneuver		465	806	1189	-	-	-		
Mov Cap-2 Maneuver		465	-	-	-	-	-		
Stage 1		781	-	-	-	-	-		
Stage 2		697	-	-	-	-	-		
Approach									
Approach		WB	SE	SE	NW				
HCM Control Delay, s		11.8	0.2	0.2	0				
HCM LOS		B							
Minor Lane/Major Mvmt									
Minor Lane/Major Mvmt		NWT	NWR	WBL	nTWBL	n2	SEL	SET	
Capacity (veh/h)		-	-	465	806	1189	-	-	
HCM Lane V/C Ratio		-	-	0.068	0.028	0.008	-	-	
HCM Control Delay (s)		-	-	13.3	9.6	8.1	0	-	
HCM Lane LOS		-	-	B	A	A	A	A	
HCM 95th %tile Q(veh)		-	-	0.2	0.1	0	-	-	

HCM 6th TWSC
1: Briercliff Dr & Cloverbank Rd

HCM 6th TWSC
2: Sawgrass Ct & Cloverbank Rd

Briercliff Townhomes
2021 Existing PM

Briercliff Townhomes
2021 Existing PM

Intersection										
Int Delay, s/veh		2.2								
Movement										
	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations										
Traffic Vol, veh/h	89	11	48	118	7	23				
Future Vol, veh/h	89	11	48	118	7	23				
Conflicting Peds, #/hr	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Stop	Stop				
RT Channelized	-	None	-	-	-	None				
Storage Length	-	-	-	-	0	-				
Veh in Median Storage, #	0	-	-	0	0	-				
Grade, %	0	-	-	0	0	-				
Peak Hour Factor	89	89	89	89	89	89				
Heavy Vehicles, %	0	0	0	0	0	0				
Mvmt Flow	100	12	54	133	8	26				

Major/Minor										
	Major1	Major2	Minor1							
Conflicting Flow All	0	0	112	0	347	106				
Stage 1	-	-	-	-	106	-				
Stage 2	-	-	-	-	241	-				
Critical Hdwy	-	-	4.1	-	6.4	6.2				
Critical Hdwy Stg 1	-	-	-	-	5.4	-				
Critical Hdwy Stg 2	-	-	-	-	5.4	-				
Follow-up Hdwy	-	-	2.2	-	3.5	3.3				
Pot Cap-1 Maneuver	-	-	1490	-	684	954				
Stage 1	-	-	-	-	923	-				
Stage 2	-	-	-	-	804	-				
Platoon blocked, %	-	-	-	-	-	-				
Mov Cap-1 Maneuver	-	-	1490	-	628	954				
Mov Cap-2 Maneuver	-	-	-	-	628	-				
Stage 1	-	-	-	-	923	-				
Stage 2	-	-	-	-	773	-				

Approach										
	EB	WB	NB							
HCM Control Delay, s	0	2.2	9.4							
HCM LOS			A							

Minor Lane/Major Mvmt										
	NBLn1	EBT	EBR	WBL	WBT					
Capacity (veh/h)	851	-	-	1490	-					
HCM Lane V/C Ratio	0.04	-	-	0.036	-					
HCM Control Delay (s)	9.4	-	-	7.5	0					
HCM Lane LOS	A	-	-	A	A					
HCM 95th %ile Q(veh)	0.1	-	-	0.1	-					

Intersection										
Int Delay, s/veh		0.5								
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations										
Traffic Vol, veh/h	104	0	10	167	1	7				
Future Vol, veh/h	104	0	10	167	1	7				
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	95	95	95	95	95	95				
Heavy Vehicles, %	0	0	0	1	0	14				
Mvmt Flow	109	0	11	176	1	7				

Major/Minor										
	Major1	Major2	Minor1							
Conflicting Flow All	0	0	109	0	307	109				
Stage 1	-	-	-	-	109	-				
Stage 2	-	-	-	-	198	-				
Critical Hdwy	-	-	4.1	-	6.4	6.34				
Critical Hdwy Stg 1	-	-	-	-	5.4	-				
Critical Hdwy Stg 2	-	-	-	-	5.4	-				
Follow-up Hdwy	-	-	2.2	-	3.5	3.426				
Pot Cap-1 Maneuver	-	-	1494	-	689	913				
Stage 1	-	-	-	-	921	-				
Stage 2	-	-	-	-	840	-				
Platoon blocked, %	-	-	-	-	-	-				
Mov Cap-1 Maneuver	-	-	1494	-	683	913				
Mov Cap-2 Maneuver	-	-	-	-	683	-				
Stage 1	-	-	-	-	921	-				
Stage 2	-	-	-	-	833	-				

Approach										
	EB	WB	NB							
HCM Control Delay, s	0	0.4	9.1							
HCM LOS			A							

Minor Lane/Major Mvmt										
	NBLn1	EBT	EBR	WBL	WBT					
Capacity (veh/h)	876	-	-	1494	-					
HCM Lane V/C Ratio	0.01	-	-	0.007	-					
HCM Control Delay (s)	9.1	-	-	7.4	0					
HCM Lane LOS	A	-	-	A	A					
HCM 95th %ile Q(veh)	0	-	-	0	-					

HCM 6th TWSC
3: Amsdell Rd & Briercliff Dr

Briercliff Townhomes
2021 Existing PM

Intersection											
Int Delay, s/veh		0.9									
Movement		WBL	WBR	SEL	SET	NWT	NWR				
Lane Configurations											
Traffic Vol, veh/h		24	10	9	153	265	27				
Future Vol, veh/h		24	10	9	153	265	27				
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		93	93	93	93	93	93				
Heavy Vehicles, %		0	0	0	1	1	0				
Mvmt Flow		26	11	10	165	285	29				
Major/Minor		Minor2		Major1		Major2					
Conflicting Flow All		485	300	314	0	-	0				
Stage 1		300	-	-	-	-	-				
Stage 2		185	-	-	-	-	-				
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		545	744	1258	-	-	-				
Stage 1		756	-	-	-	-	-				
Stage 2		852	-	-	-	-	-				
Platoon blocked, %		-	-	-	-	-	-				
Mov Cap-1 Maneuver		540	744	1258	-	-	-				
Mov Cap-2 Maneuver		540	-	-	-	-	-				
Stage 1		749	-	-	-	-	-				
Stage 2		852	-	-	-	-	-				
Approach											
WB		SE		NW							
HCM Control Delay, s		11.4		0.4		0					
HCM LOS		B									
Minor Lane/Major Mvmt											
NWT		NWR		WBLn1		WBLn2		SEL		SET	
Capacity (veh/h)		-		-		540		744		1258	
HCM Lane V/C Ratio		-		-		0.048		0.014		0.008	
HCM Control Delay (s)		-		-		12		9.9		7.9	
HCM Lane LOS		-		-		B		A		A	
HCM 95th %ile Q(veh)		-		-		0.1		0		0	

A5

Level of Service Calculations: Background Conditions

Intersection										
Int Delay, s/veh		1.7								
Movement										
	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations										
Traffic Vol, veh/h	61	8	4	104	23	11				
Future Vol, veh/h	61	8	4	104	23	11				
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	85	85	85	85	85	85				
Heavy Vehicles, %	3	38	0	5	5	0				
Mvmt Flow	72	9	5	122	27	13				
Major/Minor										
	Major1	Major2	Minor1							
Conflicting Flow All	0	0	81	0	209	77				
Stage 1										
Stage 2	-	-	-	-	77	-				
Critical Hdwy	-	-	4.1	-	132	-				
Critical Hdwy Stg 1	-	-	-	-	6.45	6.2				
Critical Hdwy Stg 2	-	-	-	-	5.45	-				
Follow-up Hdwy	-	-	2.2	-	3.545	3.3				
Pot Cap-1 Maneuver	-	1529	-	773	990	-				
Stage 1										
Stage 2	-	-	-	-	938	-				
Platoon blocked, %	-	-	-	-	887	-				
Mov Cap-1 Maneuver	-	-	-	-	770	990				
Mov Cap-2 Maneuver	-	-	1529	-	770	-				
Stage 1										
Stage 2	-	-	-	-	938	-				
Stage 2										
-	-	-	-	-	883	-				
Approach										
EB	EB	WB	WB	NB						
HCM Control Delay, s	0	0.3	9.6							
HCM LOS	A									
Minor Lane/Major Mvmt										
NBLn1	EBT	EBR	WBL	WBT						
Capacity (veh/h)	830	-	-	1529	-					
HCM Lane V/C Ratio	0.048	-	-	0.003	-					
HCM Control Delay (s)	9.6	-	-	7.4	0					
HCM Lane LOS	A	-	-	A	A					
HCM 95th %tile Q(veh)	0.2	-	-	0	-					

Intersection										
Int Delay, s/veh		0.6								
Movement										
	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations										
Traffic Vol, veh/h	76	0	3	108	1	9				
Future Vol, veh/h	76	0	3	108	1	9				
Conflicting Peds, #/hr	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Stop	Stop				
RT Channelized	-	None	-	None	-	None				
Storage Length	-	-	-	-	0	-				
Veh in Median Storage, #	0	-	-	0	0	-				
Grade, %	0	-	-	0	0	-				
Peak Hour Factor	86	86	86	86	86	86				
Heavy Vehicles, %	3	0	0	5	0	0				
Mvmt Flow	88	0	3	126	1	10				
Major/Minor										
	Major1	Major2	Minor1							
Conflicting Flow All	0	0	88	0	220	88				
Stage 1	-	-	-	-	-	88				
Stage 2	-	-	-	-	-	132				
Critical Hdwy	-	-	4.1	-	6.4	6.2				
Critical Hdwy Stg 1	-	-	-	-	-	5.4				
Critical Hdwy Stg 2	-	-	-	-	-	5.4				
Follow-up Hdwy	-	-	2.2	-	3.5	3.3				
Pot Cap-1 Maneuver	-	-	1520	-	773	976				
Stage 1	-	-	-	-	940	-				
Stage 2	-	-	-	-	899	-				
Platoon blocked, %	-	-	-	-	-	-				
Mov Cap-1 Maneuver	-	-	1520	-	771	976				
Mov Cap-2 Maneuver	-	-	-	-	771	-				
Stage 1	-	-	-	-	940	-				
Stage 2	-	-	-	-	897	-				
Approach										
	EB	WB	NB							
HCM Control Delay, s	0	0.2	8.8							
HCM LOS	A									
Minor Lane/Major Mvmt										
	NBLn1	EBT	EBR	WBL	WBT					
Capacity (a/veh/h)	951	-	-	-	1520	-				
HCM Lane V/C Ratio	0.012	-	-	-	0.002	-				
HCM Control Delay (s)	8.8	-	-	-	7.4	0				
HCM Lane LOS	A	-	-	-	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	-	-				

Intersection											
Int Delay, s/veh		1.2									
Movement		WBL	WBR	SEL	SET	NWT	NWR				
Lane Configurations											
Traffic Vol, veh/h		25	18	7	252	167	18				
Future Vol, veh/h		25	18	7	252	167	18				
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		76	76	76	76	76	76				
Heavy Vehicles, %		13	6	29	6	12	0				
Mvmt Flow		33	24	9	332	220	24				
Major/Minor		Minor2	Major1	Major2							
Conflicting Flow All		582	232	244	0	-	0				
Stage 1		232	-	-	-	-	-				
Stage 2		350	-	-	-	-	-				
Critical Hdwy		6.53	6.26	4.39	-	-	-				
Critical Hdwy Sg 1		5.53	-	-	-	-	-				
Critical Hdwy Sg 2		5.53	-	-	-	-	-				
Follow-up Hdwy		3.617	3.354	2.461	-	-	-				
Pot Cap-1 Maneuver		457	797	1179	-	-	-				
Stage 1		781	-	-	-	-	-				
Stage 2		690	-	-	-	-	-				
Platoon blocked, %		-	-	-	-	-	-				
Mov Cap-1 Maneuver		453	797	1179	-	-	-				
Mov Cap-2 Maneuver		453	-	-	-	-	-				
Stage 1		774	-	-	-	-	-				
Stage 2		690	-	-	-	-	-				
Approach		WB	SE	NW							
HCM Control Delay, s		12	0.2	0							
HCM LOS		B									
Minor Lane/Major Mvmt		NWT	NWR	WBLn1	WBLn2	SEL	SET				
Capacity (veh/h)		-	-	453	797	1179	-				
HCM Lane V/C Ratio		-	-	0.073	0.03	0.008	-				
HCM Control Delay (s)		-	-	13.6	9.7	8.1	0				
HCM Lane LOS		-	-	B	A	A	A				
HCM 95th %tile Q(veh)		-	-	0.2	0.1	0	-				

Intersection										
Int Delay, s/veh		2.2								
Movement										
	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations										
Traffic Vol, veh/h	92	11	49	122	7	24				
Future Vol, veh/h	92	11	49	122	7	24				
Conflicting Peds, #/hr	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Stop	Stop				
RT Channelized	-	None	-	-	-	None				
Storage Length		-	-	-	-	0				
Veh in Median Storage, #	0	-	-	0	0	-				
Grade, %	0	-	-	0	0	-				
Peak Hour Factor	89	89	89	89	89	89				
Heavy Vehicles, %	0	0	0	0	0	0				
Mvmt Flow	103	12	55	137	8	27				

Major/Minor										
Major/Minor		Major1	Major2	Minor1						
Conflicting Flow All		0	0	115	0	356	109			
Stage 1		-	-	-	-	109	-			
Stage 2		-	-	-	-	247	-			
Critical Hdwy		-	-	4.1	-	6.4	6.2			
Critical Hdwy Stg 1		-	-	-	-	5.4	-			
Critical Hdwy Stg 2		-	-	-	-	5.4	-			
Follow-up Hdwy		-	-	2.2	-	3.5	3.3			
Pot Cap-1 Maneuver		-	-	1487	-	646	950			
Stage 1		-	-	-	-	921	-			
Stage 2		-	-	-	-	799	-			
Platoon blocked, %		-	-	-	-	-	-			
Mov Cap-1 Maneuver		-	-	1487	-	620	950			
Mov Cap-2 Maneuver		-	-	-	-	620	-			
Stage 1		-	-	-	-	921	-			
Stage 2		-	-	-	-	767	-			

Approach			
EB	WB	NB	NB
HCM Control Delay, s			
0	2.2	9.4	9.4
HCM LOS			
A			

Minor Lane/Major Mvmt										
NBLn1		EBT		EBR		WBL		WBT		
Capacity (veh/h)		848		-		-		1487		-
HCM Lane V/C Ratio		0.041		-		-		0.037		-
HCM Control Delay (s)		9.4		-		-		7.5		0
HCM Lane LOS		A		-		-		A		A
HCM 95th %ile Q(veh)		0.1		-		-		0.1		-

Intersection											
Int Delay, s/veh		0.5									
Movement											
	EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations											
Traffic Vol, veh/h	107	0	10	172	1	7					
Future Vol, veh/h	107	0	10	172	1	7					
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	95	95	95	95	95	95					
Heavy Vehicles, %	0	0	0	1	0	14					
Mvmt Flow	113	0	11	181	1	7					

Major/Minor											
Major/Minor		Major1	Major2	Minor1							
Conflicting Flow All		0	0	113	0	316	113				
Stage 1		-	-	-	-	113	-				
Stage 2		-	-	-	-	203	-				
Critical Hdwy		-	-	4.1	-	6.4	6.34				
Critical Hdwy Stg 1		-	-	-	-	5.4	-				
Critical Hdwy Stg 2		-	-	-	-	5.4	-				
Follow-up Hdwy		-	2.2	-	3.5	3.426	-				
Pot Cap-1 Maneuver		-	1489	-	681	908	-				
Stage 1		-	-	-	-	917	-				
Stage 2		-	-	-	-	836	-				
Platoon blocked, %		-	-	-	-	-	-				
Mov Cap-1 Maneuver		-	-	1489	-	676	908				
Mov Cap-2 Maneuver		-	-	-	-	676	-				
Stage 1		-	-	-	-	917	-				
Stage 2		-	-	-	-	829	-				

Intersection											
Int Delay, s/veh		0.9									
Movement		WBL	WBR	SEL	SET	NWT	NWR				
Lane Configurations		↔	↔	↔	↔	↔	↔				
Traffic Vol, veh/h		25	10	9	158	273	28				
Future Vol, veh/h		25	10	9	158	273	28				
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		93	93	93	93	93	93				
Heavy Vehicles, %		0	0	0	1	1	0				
Mvmt Flow		27	11	10	170	294	30				
Major/Minor		Minor2	Major1		Major2						
Conflicting Flow All		499	309	324	0	-	0				
Stage 1		309	-	-	-	-	-				
Stage 2		190	-	-	-	-	-				
Critical Hdwy		6.4	6.2	4.1	-	-	-				
Critical Hdwy Sg 1		5.4	-	-	-	-	-				
Critical Hdwy Sg 2		5.4	-	-	-	-	-				
Follow-up Hdwy		3.5	3.3	2.2	-	-	-				
Pot Cap-1 Maneuver		535	736	1247	-	-	-				
Stage 1		749	-	-	-	-	-				
Stage 2		847	-	-	-	-	-				
Platoon blocked, %		-	-	-	-	-	-				
Mov Cap-1 Maneuver		530	736	1247	-	-	-				
Mov Cap-2 Maneuver		530	-	-	-	-	-				
Stage 1		742	-	-	-	-	-				
Stage 2		847	-	-	-	-	-				
Approach		WB	SE	SE	NW						
HCM Control Delay, s		11.6	0.4	-	0						
HCM LOS		B	-	-	-						
Minor Lane/Major Mvmt		NWT	NWR	WBLn1	WBLn2	SEL	SET				
Capacity (veh/h)		-	-	530	736	1247	-				
HCM Lane V/C Ratio		-	-	0.051	0.015	0.008	-				
HCM Control Delay (s)		-	-	12.2	10	7.9	0				
HCM Lane LOS		-	-	B	B	A	A				
HCM 95th %ile Q(veh)		-	-	0.2	0	0	-				

A6

Level of Service Calculations: Full Development Conditions

Intersection											
Int Delay, s/veh		2.9									
Movement											
	EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations											
Traffic Vol, veh/h	61	11	12	104	33	35					
Future Vol, veh/h	61	11	12	104	33	35					
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	85	85	85	85	85	85					
Heavy Vehicles, %	3	38	0	5	5	0					
Mvmt Flow	72	13	14	122	39	41					
Major/Minor											
	Major1	Major2	Minor1								
Conflicting Flow All	0	0	85	0	229	79					
Stage 1	-	-	-	-	79	-					
Stage 2	-	-	-	-	150	-					
Critical Hdwy	-	-	4.1	-	6.45	6.2					
Critical Hdwy Stg 1	-	-	-	-	5.45	-					
Critical Hdwy Stg 2	-	-	-	-	5.45	-					
Follow-up Hdwy	-	-	2.2	-	3.545	3.3					
Pot Cap-1 Maneuver	-	-	1524	-	753	987					
Stage 1	-	-	-	-	937	-					
Stage 2	-	-	-	-	870	-					
Platoon blocked, %	-	-	-	-	-	-					
Mov Cap-1 Maneuver	-	-	1524	-	745	987					
Mov Cap-2 Maneuver	-	-	-	-	745	-					
Stage 1	-	-	-	-	937	-					
Stage 2	-	-	-	-	861	-					
Approach											
	EB	WB	NB								
HCM Control Delay, s	0	0.8	0.8	9.7	9.7	-					
HCM LOS					A						
Minor Lane/Major Mvmt											
	NBLn1	EBT	EBR	WBL	WBT						
Capacity (veh/h)	853	-	-	1524	-						
HCM Lane V/C Ratio	0.094	-	-	0.009	-						
HCM Control Delay (s)	9.7	-	-	7.4	0						
HCM Lane LOS	A	-	-	A	A						
HCM 95th %ile Q(veh)	0.3	-	-	0	-						

Intersection												
Int Delay, s/veh		0.5										
Movement	EBT	EBR	WBL	WBT	NBL	NBR						
Lane Configurations												
Traffic Vol, veh/h	100	0	3	116	1	9						
Future Vol, veh/h	100	0	3	116	1	9						
Conflicting Peds. #/hr	0	0	0	0	0	0						
Sign Control	Free	Free	Free	Free	Stop	Stop						
RT Channelized	-	None	-	None	-	None						
Storage Length	-	-	-	-	0	-						
Veh in Median Storage, #	0	-	-	0	0	-						
Grade, %	0	-	-	0	0	-						
Peak Hour Factor	86	86	86	86	86	86						
Heavy Vehicles, %	3	0	0	5	0	0						
Mvmt Flow	116	0	3	135	1	10						
Major/Minor												
Conflicting Flow All	Major1	Major2	Minor1									
Stage 1	0	0	116	0	257	116						
Stage 2	-	-	-	-	116	-						
Critical Hdwy	-	-	4.1	-	6.4	6.2						
Critical Hdwy Stg 1	-	-	-	-	5.4	-						
Critical Hdwy Stg 2	-	-	-	-	5.4	-						
Follow-up Hdwy	-	-	2.2	-	3.5	3.3						
Pot Cap-1 Maneuver	-	-	1485	-	736	942						
Stage 1	-	-	-	-	914	-						
Stage 2	-	-	-	-	891	-						
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	-	-	1485	-	735	942						
Mov Cap-2 Maneuver	-	-	-	-	735	-						
Stage 1	-	-	-	-	914	-						
Stage 2	-	-	-	-	889	-						
Approach												
EB	WB	NB										
HCM Control Delay, s	0	0.2	9									
HCM LOS	A											
Minor Lane/Major Mvmt												
NBLn1	EBT	EBR	WBL	WBT								
Capacity (veh/h)	916	-	-	1485	-							
HCM Lane V/C Ratio	0.013	-	-	0.002	-							
HCM Control Delay (s)	9	-	-	7.4	0							
HCM Lane LOS	A	-	-	A	A							
HCM 95th %tile Q(veh)	0	-	-	0	-							

Intersection									
Int Delay, s/veh		1.3							
Movement		WBL	WBR	SEL	SET	NWT	NWR		
Lane Configurations		5	7		4	1			
Traffic Vol, veh/h		29	20	8	252	167	19		
Future Vol, veh/h		29	20	8	252	167	19		
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		76	76	76	76	76	76		
Heavy Vehicles, %		13	6	29	6	12	0		
Mvmt Flow		38	26	11	332	220	25		
Major/Minor		Minor2	Major1		Major2				
Conflicting Flow All		587	233	245	0	-	0		
Stage 1		233	-	-	-	-	-		
Stage 2		354	-	-	-	-	-		
Critical Hdwy		6.53	6.26	4.39	-	-	-		
Critical Hdwy Sg 1		5.53	-	-	-	-	-		
Critical Hdwy Sg 2		5.53	-	-	-	-	-		
Follow-up Hdwy		3.617	3.354	2.461	-	-	-		
Pot Cap-1 Maneuver		454	796	1178	-	-	-		
Stage 1		780	-	-	-	-	-		
Stage 2		687	-	-	-	-	-		
Platoon blocked, %		-	-	-	-	-	-		
Mov Cap-1 Maneuver		449	796	1178	-	-	-		
Mov Cap-2 Maneuver		449	-	-	-	-	-		
Stage 1		771	-	-	-	-	-		
Stage 2		687	-	-	-	-	-		
Approach		WB	SE	SE	NW				
HCM Control Delay, s		12.1	0.2	0.2	0				
HCM LOS		B							
Minor Lane/Major Mvmt		NWT	NWR	WBLn1	WBLn2	SEL	SET		
Capacity (veh/h)		-	-	449	796	1178	-		
HCM Lane V/C Ratio		-	-	0.085	0.033	0.009	-		
HCM Control Delay (s)		-	-	13.8	9.7	8.1	0		
HCM Lane LOS		-	-	B	A	A	A		
HCM 95th %ile Q(veh)		-	-	0.3	0.1	0	-		

Intersection												
Int Delay, s/veh		3										
Movement		EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations												
Traffic Vol, veh/h		92	17	78	122	10	41					
Future Vol, veh/h		92	17	78	122	10	41					
Conflicting Peds. #/hr		0	0	0	0	0	0					
Sign Control		Free	Free	Free	Free	Sbp	Stop					
RT Channelized		-	None	-	None	-	None					
Storage Length		-	-	-	-	0	-					
Veh in Median Storage, #		0	-	-	0	0	-					
Grade, %		0	-	-	0	0	-					
Peak Hour Factor		89	89	89	89	89	89					
Heavy Vehicles, %		0	0	0	0	0	0					
Mvmt Flow		103	19	88	137	11	46					
Major/Minor		Major1	Major2	Minor1								
Conflicting Flow All		0	0	122	0	426	113					
Stage 1		-	-	-	-	113	-					
Stage 2		-	-	-	-	313	-					
Critical Hdwy		-	-	4.1	-	6.4	6.2					
Critical Hdwy Sig 1		-	-	-	-	5.4	-					
Critical Hdwy Sig 2		-	-	-	-	5.4	-					
Follow-up Hdwy		-	-	2.2	-	3.5	3.3					
Pot Cap-1 Maneuver		-	-	1478	-	589	945					
Stage 1		-	-	-	-	917	-					
Stage 2		-	-	-	-	746	-					
Platoon blocked, %		-	-	-	-	-	-					
Mov Cap-1 Maneuver		-	-	1478	-	551	945					
Mov Cap-2 Maneuver		-	-	-	-	551	-					
Stage 1		-	-	-	-	917	-					
Stage 2		-	-	-	-	698	-					
Approach		EB	WB	NB								
HCM Control Delay, s		0	3	9.7								
HCM LOS		A										
Minor Lane/Major Mvmt		NBLn1	EBT	EBR	WBL	WBT						
Capacity (veh/h)		829	-	-	1478	-						
HCM Lane V/C Ratio		0.069	-	-	0.059	-						
HCM Control Delay (s)		9.7	-	-	7.6	0						
HCM Lane LOS		A	-	-	A	A						
HCM 95th %ile Qivert		0.2	-	-	0.2	-						

Intersection										
Int Delay, s/veh		0.5								
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations										
Traffic Vol, veh/h	124	0	10	201	1	7				
Future Vol, veh/h	124	0	10	201	1	7				
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	95	95	95	95	95	95				
Heavy Vehicles, %	0	0	0	1	0	14				
Mvmt Flow	131	0	11	212	1	7				
Major/Minor	Major1		Major2		Minor1					
Conflicting Flow All	0	0	131	0	365	131				
Stage 1	-	-	-	-	131	-				
Stage 2	-	-	-	-	234	-				
Critical Hdwy	-	-	4.1	-	6.4	6.34				
Critical Hdwy Stg 1	-	-	-	-	-	5.4				
Critical Hdwy Stg 2	-	-	-	-	-	5.4				
Follow-up Hdwy	-	-	2.2	-	3.5	3.428				
Pot Cap-1 Maneuver	-	-	1467	-	639	887				
Stage 1	-	-	-	-	900	-				
Stage 2	-	-	-	-	810	-				
Platoon blocked, %	-	-	-	-	-	-				
Mov Cap-1 Maneuver	-	-	1467	-	634	887				
Mov Cap-2 Maneuver	-	-	-	-	634	-				
Stage 1	-	-	-	-	900	-				
Stage 2	-	-	-	-	804	-				
Approach	EB	WB	WB	NB						
HCM Control Delay, s	0	0.4	9.3							
HCM LOS	A									
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT					
Capacity (veh/h)	845	-	-	1467	-					
HCM Lane V/C Ratio	0.01	-	-	0.007	-					
HCM Control Delay (s)	9.3	-	-	7.5	0					
HCM Lane LOS	A	-	-	A	A					
HCM 95th %ile Q(veh)	0	-	-	0	-					

Intersection											
Int Delay, s/veh		1									
Movement	WBL	WBR	SEL	SET	NWT	NWR					
Lane Configurations	↰	↱		↰	↱						
Traffic Vol, veh/h	26	11	11	158	273	30					
Future Vol, veh/h	26	11	11	158	273	30					
Conflicting Peds. #/hr	0	0	0	0	0	0					
Sign Control	Stop	Stop	Free	Free	Free	Free					
RT Channelized	-	None	-	None	-	None					
Storage Length	0	0	-	-	-	-					
Veh in Median Storage, #	0	-	-	0	0	-					
Grade, %	0	-	-	0	0	-					
Peak Hour Factor	93	93	93	93	93	93					
Heavy Vehicles, %	0	0	0	1	1	0					
Mvmt Flow	28	12	12	170	294	32					
Major/Minor		Minor2	Major1		Major2						
Conflicting Flow All	504	310	326	0	-	0					
Stage 1	310	-	-	-	-	-					
Stage 2	194	-	-	-	-	-					
Critical Hdwy	6.4	6.2	4.1	-	-	-					
Critical Hdwy Sg 1	5.4	-	-	-	-	-					
Critical Hdwy Sg 2	5.4	-	-	-	-	-					
Follow-up Hdwy	3.5	3.3	2.2	-	-	-					
Pot Cap-1 Maneuver	531	735	1245	-	-	-					
Stage 1	748	-	-	-	-	-					
Stage 2	844	-	-	-	-	-					
Platoon blocked, %	-	-	-	-	-	-					
Mov Cap-1 Maneuver	525	735	1245	-	-	-					
Mov Cap-2 Maneuver	525	-	-	-	-	-					
Stage 1	740	-	-	-	-	-					
Stage 2	844	-	-	-	-	-					
Approach	WB	SE	SE		NW						
HCM Control Delay, s	11.5	0.5	0.5		0						
HCM LOS	B										
Minor Lane/Major Mvmt	NWT	NWR	WBLn1	WBLn2	SEL	SET					
Capacity (veh/h)	-	-	525	735	1245	-					
HCM Lane V/C Ratio	-	-	0.053	0.016	0.01	-					
HCM Control Delay (s)	-	-	12.2	10	7.9	0					
HCM Lane LOS	-	-	B	B	A	A					
HCM 95th %tile Q(veh)	-	-	0.2	0	0	-					