TRAFFIC IMPACT REPORT

July 15, 2025

20255012.0001

4548-4564 MAIN STREET

AMHERST, NY

PREPARED FOR:
Benderson Development Company
570 Delaware Avenue
Buffalo, NY 14202

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APPENDICES

1.0 EXECUTIVE SUMMARY

The purpose of this report is to evaluate the potential traffic impacts associated with the proposed retail project located at 4548-4564 Main Street in the Town of Amherst, NY. Within this report, the operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified. Mitigating measures (if needed) are provided to minimize capacity or safety 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. All figures, supporting calculations, and the conceptual site plan are included at the end of this report.

Traffic Impact Report Methodology

This comprehensive Traffic Impact Report provides the Town of Amherst, the New York State Department of Transportation (NYSDOT), and other involved/interested agencies with detailed information allowing for a "hard look" of potential traffic impacts.

This study was completed in accordance with the procedures of the New York State Environmental Quality Review Act (SEQRA), the NYSDOT, the Institute of Transportation Engineers (ITE), and local requirements. SEQR assumes that a project generating fewer than 100 peak hour vehicle trips per day will not result in any significant increases in traffic.

Project Location, Description, and Study Area

The site's address is 4548-4564 Main Street. The site was cleared of existing buildings in anticipation of redevelopment. Vicinity land uses include residential, office, service, and retail.

The project entails constructing ±12,285 SF of retail space. Access is proposed via Chateau Terrace and Fruehauf Avenue. Drivers will be restricted from turning left out of the Chateau Terrace access and right out from the Fruehauf Avenue access. Chateau Terrace is posted as a "No Outlet" street while Fruehauf Avenue is posted as a "Dead End" street. This restriction was explicitly required by the Town of Amherst Traffic Safety Board (ATSB).

The following existing intersections were selected to ensure a comprehensive analysis of potential traffic impacts based on the peak hours of trip generation.

- Main Street (NY-5)/Chateau Terrace/Bernhardt Drive
- Main Street/Fruehauf Avenue

Findings and Recommendations

This report identified and evaluated the potential traffic impacts that can be expected from the proposed retail project. The primary conclusion of this comprehensive study is that the existing transportation network can adequately accommodate the projected traffic volumes and minor impacts to study area intersections.

All movements generally operate at an acceptable LOS D or better under all conditions during the peak hours at the study intersections. Very minor changes in delay are anticipated under full build conditions during the peak hours.

Pursuant to the State Environmental Quality Review Act, this detailed analysis conducted with respect to nationally and locally accepted standards demonstrates that the proposed project does not result in any significant adverse traffic impacts.

2.0 INTRODUCTION

2.1 Study Purpose and Objectives

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2.3 Project Location

The site's address is 4548-4564 Main Street. The site was cleared of existing buildings in anticipation of redevelopment. Vicinity land uses include residential, office, service, and retail. The site boundaries are:

- (North) Residential
- (East) Chateau Terrace
- (South) Main Street
- (West) Fruehauf Avenue

2.4 Study Area

The following existing intersections were selected to ensure a comprehensive analysis of potential traffic impacts based on the peak hours of trip generation. **Figure 1** illustrates the study area and project location.

- Main Street (NY-5)/Chateau Terrace/Bernhardt Drive
- Main Street/Fruehauf Avenue

3.0 TRANSPORTATION SETTING

3.1 Description of Study Area Roadways

The information outlined in **Table 1** provides a description of the existing roadway network within the study area. The Annual Average Daily Traffic (AADT), in vehicles per day (vpd), reflect the most recently collected data obtained from the NYSDOT or Passero via an extrapolation of traffic counts performed at the study intersections. **Figure 2** illustrates existing lane geometries.

Functional classification (FC) of roadways, determined by NYSDOT and the Federal Highway Administration (FHWA), organizes roads, streets, and highways into classes based on their usage.

Table 1: *Existing Roadway Network*

ROADWAY	FC	AGENCY	ROADWAY CONDITIONS				AADT		
			SPEED	LANES	LANE WIDTH	SHOULDER WIDTH	VOLUME	SOURCE	YEAR
Main Street (NY-5)	14	NYSDOT	40	4	11	0	20,116	NYSDOT	2024
Chateau Terrace	19	Town	30	2	13	0	1,120	Passero	2022
Bernhardt Drive	19	Town	30	2	11	0	400	Passero	2022
Fruehauf Avenue	19	Town	30	2	11	0	900	Passero	2022

Speeds shown in miles per hour. Widths shown in feet.

Table 2 summarizes the traffic controls, pedestrian, bicycle, and transit accommodations at the study intersections.

Table 2: *Multimodal Network*

INTERSECTION	TRAFFIC CONTROL	PEDESTRIAN			BICYCLE		OTHER	
		SIDE-WALK	CROSS-WALK	PED SIGNAL	LANE	OTHER	TRANSIT	LIGHTING
Main/Chateau/Bernhardt	Signal	F	F	F	N	In-lane	Y	Y
Main/Fruehauf	Stop	F	N	N	N	In-lane	Y	Y

Note: F = Fully, P = Partial, Y = Yes, N = Not Present

4.0 EXISTING CONDITIONS ANALYSIS

4.1 Peak Intervals for Analysis

Given the functional characteristics of the corridors, adjacent land uses, and the proposed land uses, the following peak periods were selected for analysis. The combination of future site traffic and adjacent street traffic produces the greatest travel demands during these peaks.

- Weekday AM Peak: 7:00 to 9:00 AM
- Weekday PM Peak: 4:00 to 6:00 PM

4.2 Existing Traffic Volume Data

Passero conducted manual turning movement traffic counts on Tuesday, December 13, 2022, to determine peak hour traffic volumes. The turning movement count data was collected on a typical weekday while local schools were in

session. No adverse weather conditions impacted the traffic counts. 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 parking in the segments between the study intersections. **Figure 3** illustrates the peak hour volumes used for analysis purposes in this study. The peak hour traffic periods generally occurred from 7:30-8:30 AM and 4:00-5:00 PM.

4.3 Field Observations

The study intersections were observed during peak intervals to assess current traffic operations. Signal timing and phasing information was obtained from the NYSDOT to determine peak hour phasing plans and phase durations during each interval at the signalized intersections. This information was used to support and/or calibrate the study's capacity analysis models.

4.4 Peak Hour Queue Assessment

A peak hour queuing assessment was performed along Fruehauf Avenue during the AM and PM peak hours to measure the frequency of southbound vehicles that block the proposed driveway. The centerline of the proposed driveway is located approximately 38 feet from the stop bar. Given this distance, the driveway is located approximately 1.7 vehicle lengths from the stop bar.

Our firm documented southbound queues at the intersection of Main Street/Fruehauf Avenue on Thursday, July 22, 2021, from 7:00-9:00 AM and 4:00-6:00 PM. The peak hours generally occurred from 8:00-9:00 AM and 4:30-5:30 PM. Based on this field investigation during the peak hours of study, the proposed driveway location was blocked once during the AM peak hour for a duration of five seconds and was blocked once during the PM peak hour for a duration of three seconds.

4.5 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 July 31, 2017, through July 31, 2021. The data was provided by the New York State Department of Motor Vehicles through a Freedom of Information (FOIL) request.

Despite the COVID-19 pandemic influencing daily travel in 2020 and 2021, only one crash was reported during this period, and it occurred in 2021. This crash was included in the analysis.

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 intersections and compared with NYSDOT average crash rates for similar intersections, as summarized in **Table 3**. Intersection rates are listed as crashes per million entering vehicle (CR/MEV). Pertinent crash data is provided in the Appendices.

Table 3: *Intersection Crash Rate Analysis*

INTERSECTION	CRASHES	ENTER VEHICLES	ACTUAL CRASH RATE	STATEWIDE AVERAGE CRASH RATE
Main/Chateau/Bernhardt	9	19,800 vpd	0.25	0.26
Main/Fruehauf	0	18,958 vpd	0.00	0.26

Main Street/Chateau Terrace/Bernhardt Drive
Five of the nine (56%) reported crashes were attributed to rear end collisions. This is characteristic of heavily trafficked signalized intersections. Three of the crashes occurred in the westbound direction. The causes of the rear end crashes were generally due to driver error (e.g., following too closely, driver inattention). The remaining crashes were sideswipe (2), left turn (1), and a crash into a parked vehicle. No geometric improvements are recommended.

5.0 BACKGROUND (NO BUILD) CONDITIONS

Background traffic volumes represent the traffic conditions during the proposed build year without development of the project. The project is anticipated to be completed and occupied within five years depending on project approvals and market conditions. The widely accepted methodology for preparing traffic impact studies requires that any projects in the study area that are currently approved and/or under construction must be considered in the traffic analysis. Projects that are contemplated but are not yet approved are not included in the traffic impact study.

Passero consulted with personnel from the Town of Amherst to identify any additional development projects that could potentially contribute to increased traffic within the study area. No projects were identified.

A review of available historical NYSDOT traffic volume data in the vicinity of the site indicates that traffic has fluctuated between 2015 and 2019. To account for normal increases in background traffic growth, including any unforeseen developments in the study area, an adjusted growth rate of 1.0% per year was applied to the existing traffic volumes. **Figure 4** depicts the background traffic volumes.

6.0 PROPOSED DEVELOPMENT CONDITIONS

6.1 Project Description

The project entails constructing ±12,285 SF of retail space. Access is proposed via Chateau Terrace and Fruehauf Avenue. Drivers will be restricted from turning left out of the Chateau Terrace access and right out from the Fruehauf Avenue access. Chateau Terrace is posted as a "No Outlet" street while Fruehauf Avenue is posted as a "Dead End" street. This restriction was explicitly required by the Town of Amherst Traffic Safety Board (ATSB).

6.2 Trip Generation

The traffic volume generated by a site depends on the development's land use and size. Trip generation estimates the number of trips associated with a specific land use or building, representing the volume of traffic entering and exiting the site. The peak-hour trip rate for the site may differ in timing or volume from the peak hour of traffic on adjacent streets. The latest ITE *Trip Generation Manual (11th Edition)* is the industry standard reference for this information.

For capacity analysis, the critical volumes are those generated during the weekday AM and PM peak hours of the adjacent street traffic and proposed land use. These intervals form the basis of this analysis. **Table 4** shows the anticipated trip generation.

Table 4: *Site Generated Trips*

DESCRIPTION	SOURCE	SIZE	UNIT	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Retail	ITE 822	±12,285	SF	17	12	29	40	41	81

6.3 Trip 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 and departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Employment and residential areas using Longitudinal Employer-Household Dynamics (LODES) data from the U.S. Census.
- Proximity and access to main roadways (e.g., I-290).
- Site access locations
- Existing roadway network and contextual factors.
- Navigational aids (e.g., Google Maps, Apple Maps, Waze, etc.).
- Existing traffic patterns derived from the traffic counts.
- Existing traffic conditions and controls.

Figure 5 shows the anticipated trip distribution pattern percentage for the project site. **Figure 6** illustrates the total peak hour trip assignments based on the anticipated trip distribution.

6.4 Full Development Volumes

The proposed future traffic volumes are developed for the peak hours by combining the background traffic conditions without the project (**Figure 4**) and the new site trips (**Figure 6**) to yield the traffic volumes under full build conditions. **Figure 7** illustrates the total anticipated full build peak hour volumes for the AM and PM peak hours.

7.0 TRAFFIC OPERATIONS AND ANALYSIS

7.1 Description of Capacity Analysis and Evaluation Techniques

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 period of time. 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 roadway/highway segments.

The standard procedure for capacity analysis of signalized and unsignalized intersections is outlined in the latest Transportation Research Board (TRB) *Highway Capacity Manual (HCM) (7th Edition)*. Traffic analysis software, *Synchro 12*, 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 as an indicator of how well intersections operate.

Evaluations may also be supplemented with traffic simulation modeling using an extension of *Synchro* called *SimTraffic*. During simulation modeling, vehicles are individually tracked, and statistics are recorded on a second-by-second basis to determine the delays each vehicle experiences. Since *SimTraffic* simulation modeling is microscopic and stochastic, meaning car movement parameters vary randomly within a set distribution based on an initial seed number, the same traffic volume may result in slightly different results depending on the random seed used. Therefore, simulation results are reported based on an average value of multiple simulation runs (five or more) to reduce the variability in results.

7.2 Performance Measures

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. **Table 8** depicts LOS criteria for signalized and unsignalized intersections with their associated average delays per vehicle in seconds.

Table 5: *Level of Service Criteria by Traffic Control*

LOS	SIGNALIZED	UNSIGNALIZED
A	< 10	< 10
B	10 – 20	10 – 15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	> 80	> 50

Signalized intersection LOS is defined in terms of the average total vehicle delay of individual and all movements through an intersection for a 15-minute analysis period. The total delay experienced by a road user can be defined as the difference between the measured travel time and the reference travel time that would result in the absence of traffic control, changes in speed due to geometric conditions, any incidents, and the interaction with any other road users (adapted from the HCM definition).

LOS criteria for unsignalized intersections differ from those for signalized intersections. This is primarily due to driver expectations—signalized intersections are designed to accommodate higher traffic volumes, while unsignalized intersections introduce more uncertainty for users. Delays at unsignalized intersections are generally less predictable compared to signalized intersections, where traffic control provides more consistent operations.

The volume-to-capacity (v/c) ratio, also referred to as degree of saturation, represents the sufficiency of an intersection movement or the overall intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur.

7.3 Generalized Acceptable Level of Service Thresholds

In accordance with common transportation engineering practice in conjunction with NYSDOT, ITE, and SEQRA methodologies, a project may have a noticeable impact if the addition of peak hour trips would increase traffic

volumes by 100 vehicles or more.[1] Permitting agencies (e.g., NYSDOT and the SEQRA process) use guidelines in determining whether a project may result in a change in vehicular operations—noticeable drop in LOS, increase in delays, or increase in v/c ratios—and potentially requires appropriate mitigation to offset project-related impacts. SEQRA requires the lead agency to identify an impact as either "none/small impact" or "moderate to large impact."

LOS C or better is desirable, but LOS D for signalized locations and LOS E for unsignalized locations are generally thresholds of acceptable operation during peak periods so long as the v/c ratio is below 1.0. NYSDOT specifically considers a LOS C to be acceptable in rural conditions and a LOS D to be acceptable in urban conditions.

SEQRA guidelines and recommended practice indicate that a project generating fewer than 100 peak hour vehicle trips per day is unlikely to result in significant adverse impacts. In general, traffic volume increases less than these thresholds could be attributed to the fluctuation of vehicles due to driver patterns that occur during the day, on different days of the week, or different months of the year.

7.4 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. **Table 6** depicts the capacity results for existing, background, and full build conditions. The discussion following the table summarizes capacity conditions.

[1] *Multimodal Transportation Impact Analysis for Site Development: An ITE Recommended Practice. Institute of Transportation Engineers. Washington DC. 2023.*

Table 4: *Capacity Analysis Results*

INTERSECTION	EXISTING CONDITIONS						BACKGROUND CONDITIONS						FULL BUILD CONDITIONS					
	AM			PM			AM			PM			AM			PM		
	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	v/c
1. Main Street at Bernhardt Dr / Chateau Ter (S)																		
EB Left - Main	A	8.3	0.10	A	7.6	0.06	A	8.5	0.11	A	7.7	0.06	A	8.7	0.11	A	8.5	0.06
EB Thru/Right - Main	A	7.9	0.38	A	7.9	0.37	A	8.0	0.39	A	8.0	0.38	A	8.2	0.39	A	8.8	0.38
WB Left - Main	A	8.1	0.04	A	7.6	0.04	A	8.2	0.04	A	7.7	0.04	A	8.4	0.04	A	8.4	0.04
WB Thru/Right - Main	A	7.8	0.37	A	7.6	0.33	A	7.9	0.38	A	7.7	0.34	A	8.1	0.39	A	8.4	0.35
NB - Bernhardt Drive	C	30.3	0.24	D	36.3	0.33	C	30.3	0.24	D	36.3	0.33	C	30.3	0.24	D	36.3	0.33
SB - Chateau Terrace	D	37.4	0.43	D	37.8	0.44	D	37.4	0.44	D	38.3	0.45	D	38.5	0.46	D	44.1	0.51
Overall LOS	**A**	**9.3**	**0.43**	**A**	**9.5**	**0.44**	**A**	**9.4**	**0.44**	**A**	**9.7**	**0.45**	**A**	**9.7**	**0.46**	**B**	**10.8**	**0.51**
2. Main Street at Fruehauf Avenue (U)																		
EB Left - Main Street	A	9.4	0.01	A	9.2	0.02	A	9.5	0.01	A	9.2	0.02	A	9.6	0.02	A	9.4	0.04
SB - Fruehauf Avenue	B	13.8	0.05	B	13.2	0.03	B	14.0	0.06	B	13.4	0.03	B	13.5	0.07	B	11.5	0.07
3. Fruehauf Avenue at Proposed Access (U)																		
WB - Proposed Access	*Not Built*			*Not Built*			*Not Built*			*Not Built*			A	8.7	0.01	A	8.8	0.03
SB - Fruehauf Avenue													A	0.0	0.00	A	0.0	0.00
4. Chateau Terrace at Proposed Access (U)																		
EB - Proposed Access	*Not Built*			*Not Built*			*Not Built*			*Not Built*			A	8.7	0.01	A	8.7	0.02
NB - Chateau Terrace													A	7.4	0.01	A	7.4	0.01

NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound

1. Main Street / Chateau Terrace / Bernhardt Drive
All movements operate at LOS D or better under all conditions during both peak hours. The overall LOS is projected to change from A to B during the PM peak hour between background and full development conditions. However, this is a borderline condition. There are no other projected changes in LOS because of the proposed project. There is capacity to accommodate the additional traffic volumes and projected minor impacts from the proposed project; thus, no mitigation is warranted nor recommended.

2. Main Street / Fruehauf Avenue
All movements operate at LOS B or better under all conditions during both peak hours. There are no projected changes in LOS between background and full development conditions. There is capacity to accommodate the additional traffic volumes and projected minor impacts from the proposed project; thus, no mitigation is warranted nor recommended.

3. Fruehauf Avenue / Proposed Driveway
All movements are projected to operate at LOS A under full development conditions. There is capacity to accommodate the additional traffic volumes and projected minor impacts from the proposed project; thus, no mitigation is warranted nor recommended.

4. Chateau Terrace/Proposed Driveway
All movements are projected to operate at LOS A under full development conditions. There is capacity to accommodate the additional traffic volumes and projected minor impacts from the proposed project; thus, no mitigation is warranted nor recommended.

8.0 SIGHT LINE EVALUATION

Based upon a review of the site plan, the proposed building is projected to be built in approximately the same footprint as the existing structures fronting Main Street. There is a marked stop bar for traffic exiting Fruehauf Avenue. In this case, the primary concern is with the proposed building at the existing Main Street/Fruehauf Avenue intersection. The attached **Figure 8** illustrates the sight line evaluation performed at the intersection to the east of the intersection.

Sight distance is provided at intersections to allow drivers to perceive the presence of potentially conflicting vehicles. This should occur in sufficient time for a motorist to stop or adjust their speed, as appropriate, to avoid a collision at the intersection. Sight distance is also provided at intersections to allow the drivers of stopped vehicles to have a sufficient view of the intersecting highway to anticipate and avoid potential incidents. If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions.

A Policy on Geometric Design of Highways and Streets (7th Edition) published by the American Association of State Highway and Transportation Officials (AASHTO), was used as a reference to establish the required Stopping Sight Distance (SSD) and desirable Intersection Sight Distance (ISD) for the adjacent driveway location. **Table 7** depicts the results of the sight distance evaluation at the Main Street/Fruehauf Avenue intersection.

Table 7: *Level of Service Criteria by Traffic Control*

DESCRIPTION	VALUE
Posted Speed	40 mph
85th Percentile Speed	45 mph
Required SSD	360 feet
Desirable ISD	500 feet
Available Sight Distance to the East	**SSD**: >360 feet
	ISD: 505 (no vehicles); 155 feet (parked vehicles)

The required SSD is satisfied to the east of the study intersection. When cars are parked in the spaces in front of the building, the ISD is not satisfied. However, with no vehicles parked, the ISD is satisfied.

It is understood that urbanized environments consist of on-street parking, limited to zero building setback lines, and other fixed objects (e.g., signs, trees, street furniture). By regulation, on-street parking is restricted within 20 feet of a crosswalk at an intersection and within 30 feet of a traffic signal or stop sign. In this case, parking is restricted for more than 60 feet along the northern side of Main Street from Fruehauf Avenue. Legally parked vehicles may be considered as allowable objects in this case. It is noted that on-street parking can be beneficial in these settings to reduce vehicle speeds and provide a buffer to pedestrians on the sidewalk. This condition is not unique to this study location and can be found in other areas along Main Street in Amherst and Williamsville.

Parking within the sight triangle may occur throughout the day and limit the sight lines, as noted on **Figure 8**. However, given the existing condition of the intersection and intermittent nature of the sight line being impacted, intersection warning signage may be considered as relief.

9.0 CONCLUSIONS AND RECOMMENDATIONS

This report identified and evaluated the potential traffic impacts that can be expected from the proposed retail project. The primary conclusion of this comprehensive study is that the existing transportation network can adequately accommodate the projected traffic volumes and minor impacts to study area intersections.

All movements generally operate at an acceptable LOS D or better under all conditions during the peak hours at the study intersections. Very minor changes in delay are anticipated under full build conditions during the peak hours.

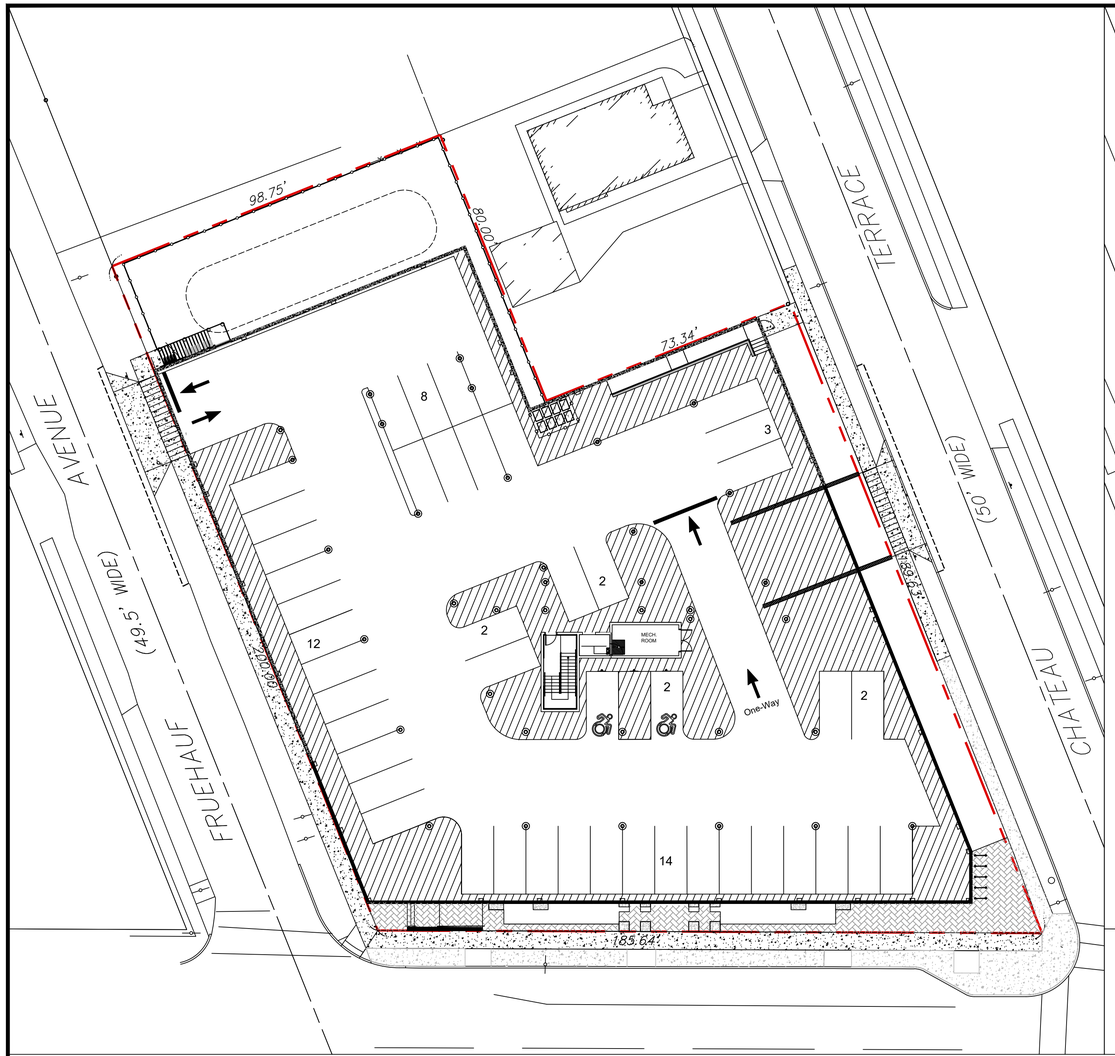
Pursuant to the State Environmental Quality Review Act, this detailed analysis conducted with respect to nationally and locally accepted standards demonstrates that the proposed project does not result in any significant adverse traffic impacts.

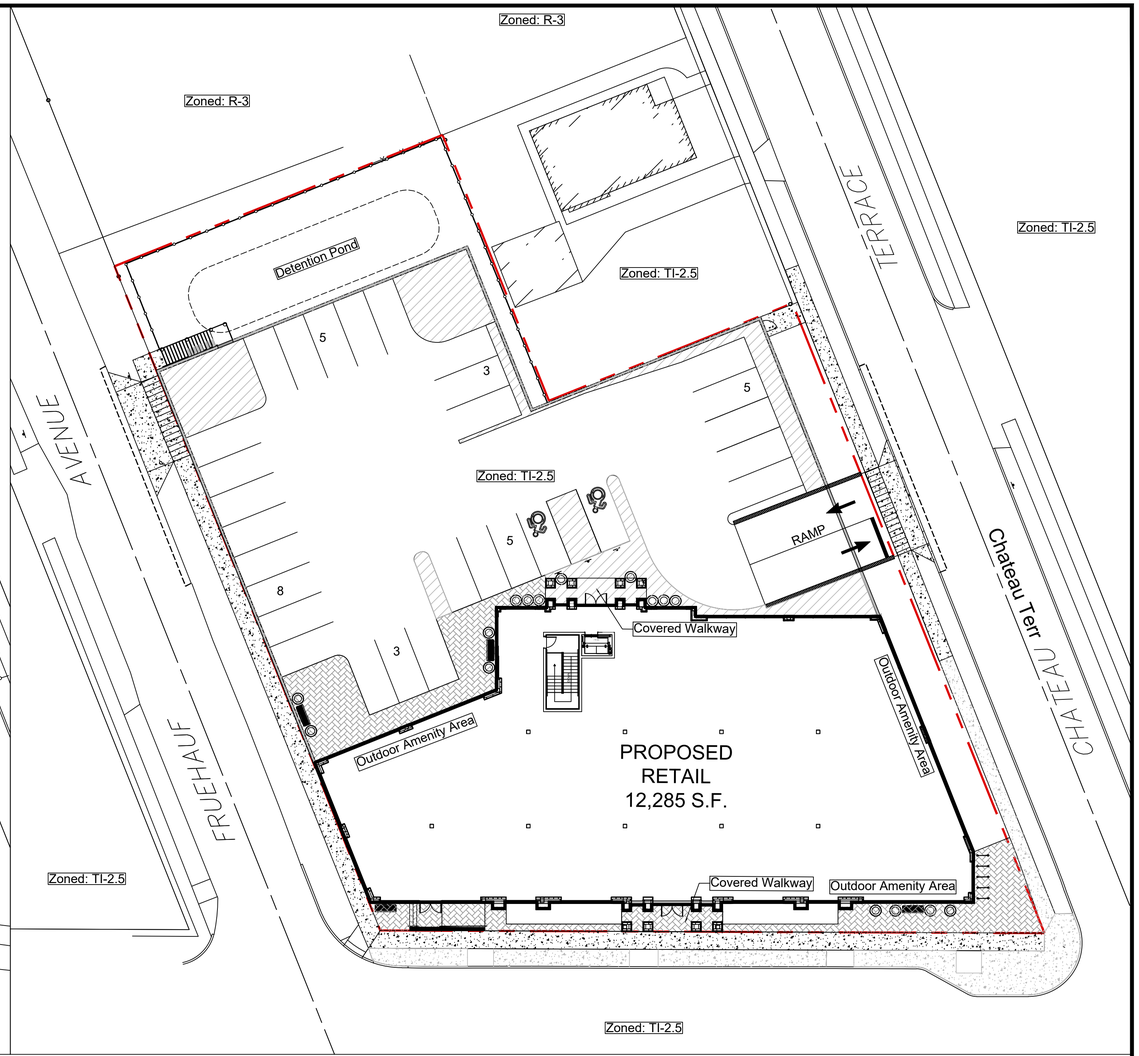
10.0 REFERENCES

- Synchro 12 Software. Cubic ITS. 2023.
- Highway Capacity Manual (7th Edition). Transportation Research Board (TRB). Washington, DC. 2022.
- Trip Generation Manual (11th Edition). Institute of Transportation Engineers (ITE). Washington, DC. 2021.
- OnTheMap. United States Census Bureau. 2025.
- Traffic Data Viewer. New York State Department of Transportation (NYSDOT). 2025.
- Manual on Uniform Traffic Control Devices (11th Edition). Federal Highway Administration (FHWA). 2023.
- Highway Functional Classification Concepts, Criteria, and Procedures. Federal Highway Administration (FHWA). 2023.
- Highway Design Manual. New York State Department of Transportation (NYSDOT). Latest Revisions.
- A Policy on Geometric Design of Highways and Streets (7th Edition). The American Association of State Highway and Transportation Officials (AASHTO). 2018.

11.0 FIGURES

Figures 1 through 8 are included on the following pages.





Basement Level

45

Ground Level

29

TOWN OF AMHERST, NY ZONING ANALYSIS

	REQUIRED	PROVIDED
ZONED	TI-2.5 (Village Frontage)	TI-2.5 (Village Frontage)
5A-1-3: TI-2.5 Traditional Infill 2.5 Section		
LOT		
Area	0 S.F. min.	34,542 S.F.
Width	0' min.	170.7'
Outdoor Amenity Space	10% min. = 3,454 S.F.	3,590 S.F. = 10.4%
w/ Green Space	25% Min	44.3%
BUILDING SETBACKS		
Building-to-zone	Refer to Section 5A-2 Infill Frontages	
Lot Frontage	Refer to Section 5A-2 Infill Frontages	
Common lot line	0' min.	0.2' (North Side)
Alley	5' min.	N/A
PARKING SETBACKS		
Primary and Side Street	Refer to Section 5A-2 Infill Frontages (below)	
Common lot line	0' min.	3.8' (North Side)
Alley	5' min.	N/A
BUILDING HEIGHT		
Top Plate Height	2 Stories / 24' max.	N/A
Building Height	2.5 Stories / 35' max.	35'-0"
Roof Pitch	18:12 max.	18:12
BUILDING LENGTH	Refer to Section 5A-2 Infill Frontages (below)	168.5'
STORY HEIGHT	Refer to Section 5A-2 Infill Frontages (below)	16.5'

5A-2-4: Village Frontage		
BUILDING SETBACKS		
Build-to zone	0' min./10' max.	0.0'
Street Frontage:		
Front: Main Street	90% min.	90.9% (169.1)
Side: Fruehauf Ave		80.3% (160.6 / 200)
Side: Chateau Terr.		92.0% (174.4/189.6)
PARKING SETBACKS		
Street	20' min.	52.8' (Main Street)
BUILDING MASS		
Street facing building length:		
Front: Main Street	200' max.	168.5'
STORY HEIGHT		
Ground floor elevation	0' min. / 2' max.	0.0'
Ground story height	13' min.	16.5'
Upper story height	9' min.	12.5'
TRANSPARENCY		
Ground story	70% min.	70.1%
Upper story	20% min.	41.0%
Blank wall length	15' max.	4.0'
PEDESTRIAN ACCESS		
Street facing entrance	Required	Complies
Entrance spacing	50' max.	Complies
STREETSCAPE		
Clear pedestrian zone	10' min.	10.3' Total - Existing Condition
Curb zone	6' min.	
Tree planting type	Grates	Complies
Tree spacing	35' on-center avg.	Existing: 33.3' c-c Average

Proposed Outdoor Amenity Space

PROPOSED PARKING ANAYLSIS TI-2.5

USE	CODE	REQUIRED	PROVIDED
RETAIL	2.5/1000 SF	12,285 sqft / 1000 x 2.5 = 31 SPACES	74 SPACES
Bike Rack	1/3000 SF	12,285 sqft / 3000 = 5 SPACES	5 SPACES
STALL SIZE		9'x19'	9'x19'

OFFICIAL TOWN USE ONLY

DRAWING REVISIONS:

No.	DATE	BY	REMARKS
1	04.29.2025	DZ	Arch Updates
2	05.27.2025	DZ	Coordination Notes and Town Comments
3	06.04.2025	DZ	Town Meeting Update
4	07.14.2025	DZ	Site Updates

SPECIAL INFORMATION:

ALL CONTRACTORS SHALL GUARANTEE THEIR WORK FOR A PERIOD OF ONE YEAR FROM THE DATE OF OWNERS ACCEPTANCE.

SHOP DRAWING SUBMITTALS ARE REQUIRED FOR ANY AND ALL STRUCTURES.

NOTICE

CONSTRUCTION SET

811 Know what's below. Call before you dig.

PROPERTY NUMBER: #5202

AREA: -

PROPOSED RETAIL

4548-4564 Main St. - Snyder
Amherst, NY14226

CONSULTANT

JAMES ALLEN RUMSEY
ARCHITECT
PREPARED FOR
BENDERSON DEVELOPMENT
570 DELAWARE AVE., BUFFALO, NY 14202
(716) 886-0211

SEAL

TITLE:

Overall Site Plan

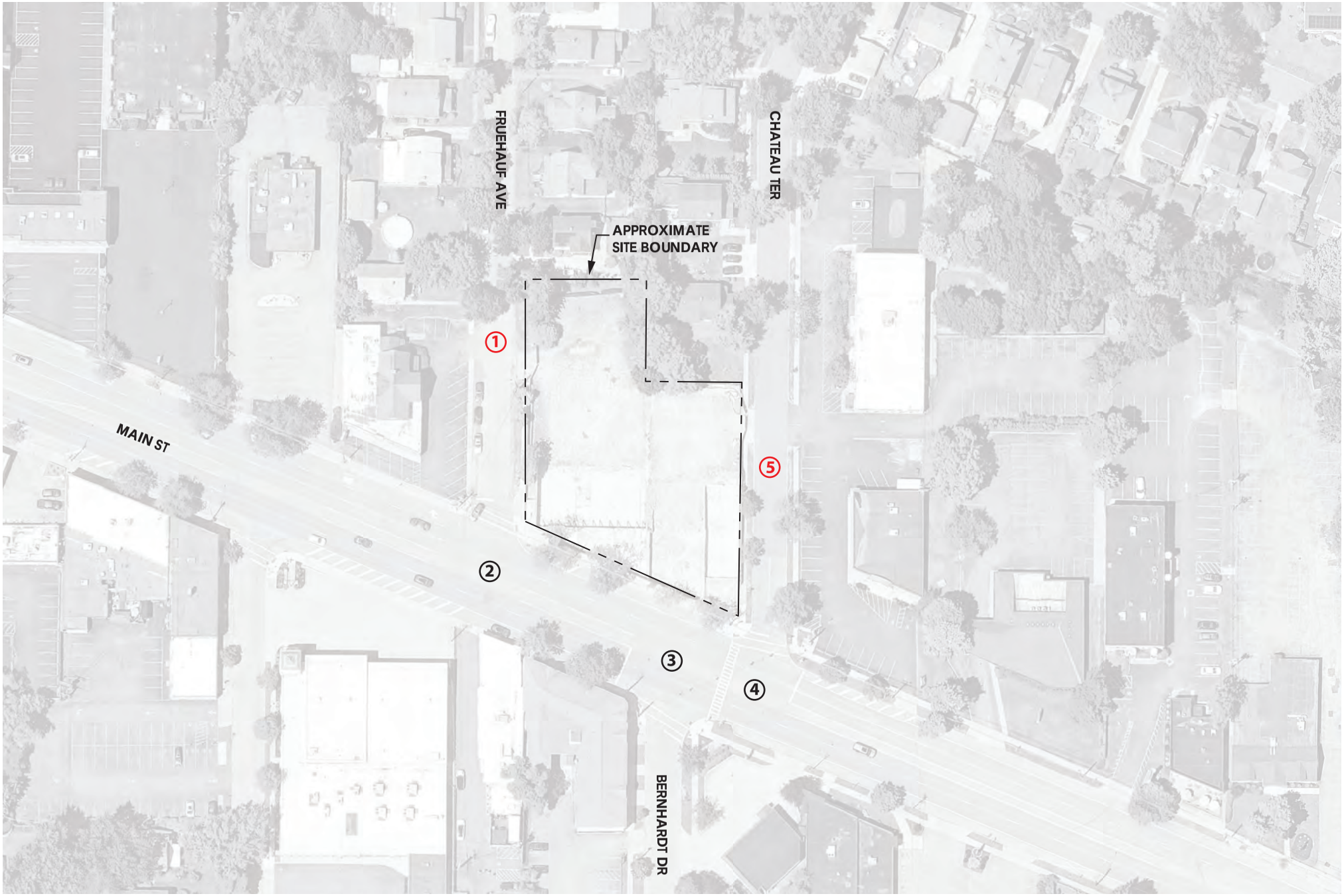
SCALE: 1" = 20'

DRAWN BY: DMZ

CHECKED BY: MAO

DATE: 04.16.2025

DRAWING NO. C4.0



PASSERO
engineering architecture

242 West Main Street, Suite 100, Rochester, NY 14614

Study Area and Site Location

4548-4564 MAIN STREET RETAIL

TOWN OF AMHERST, NY

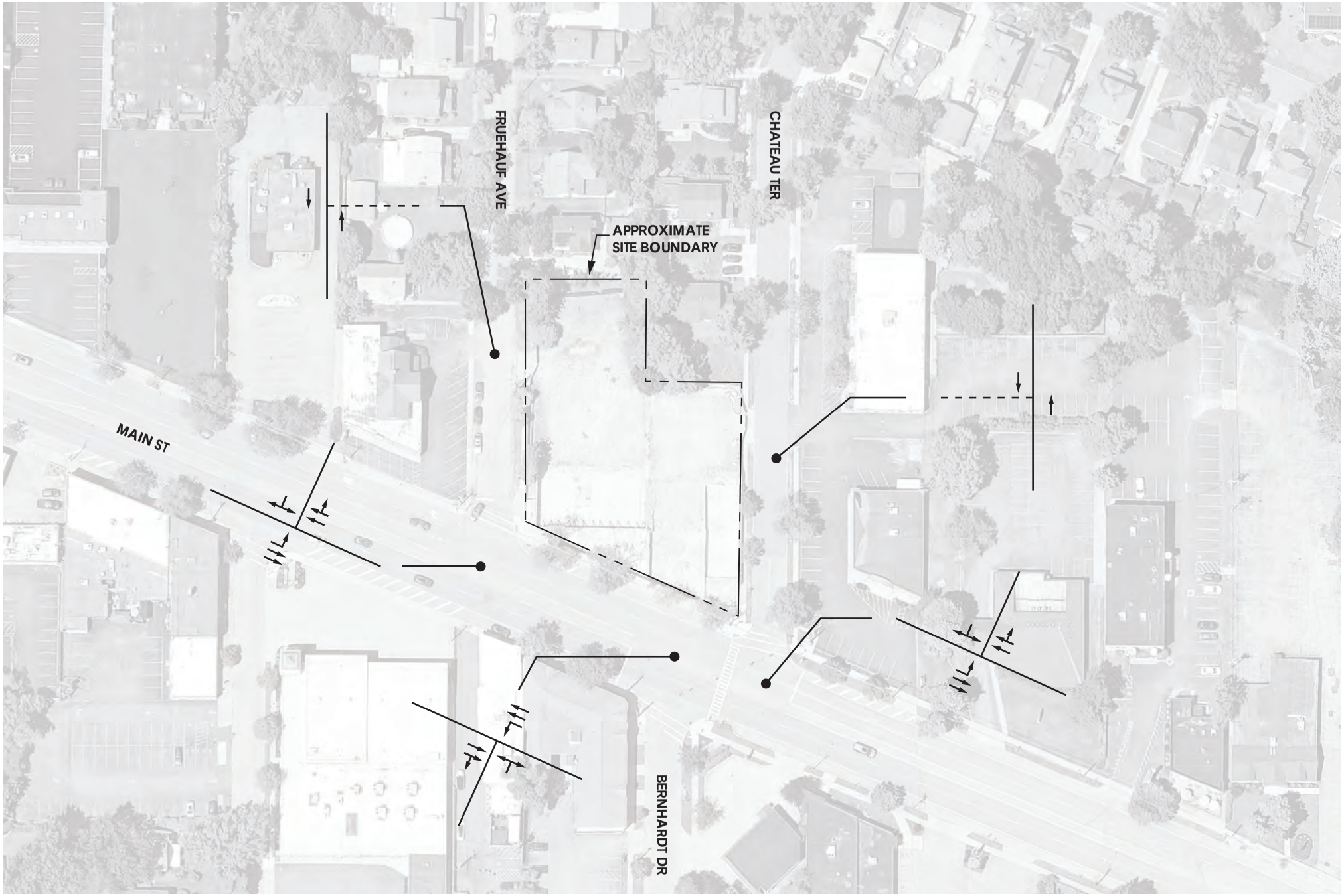
(#) Existing Intersection
(#) Proposed Intersection

Peak Hours:
7:30 to 8:30 AM | 4:00 to 5:00 PM

N

FIGURE 1

20255012.0001



PASSERO
engineering architecture

242 West Main Street, Suite 100, Rochester, NY 14614

Lane Geometry

4548-4564 MAIN STREET RETAIL

TOWN OF AMHERST, NY

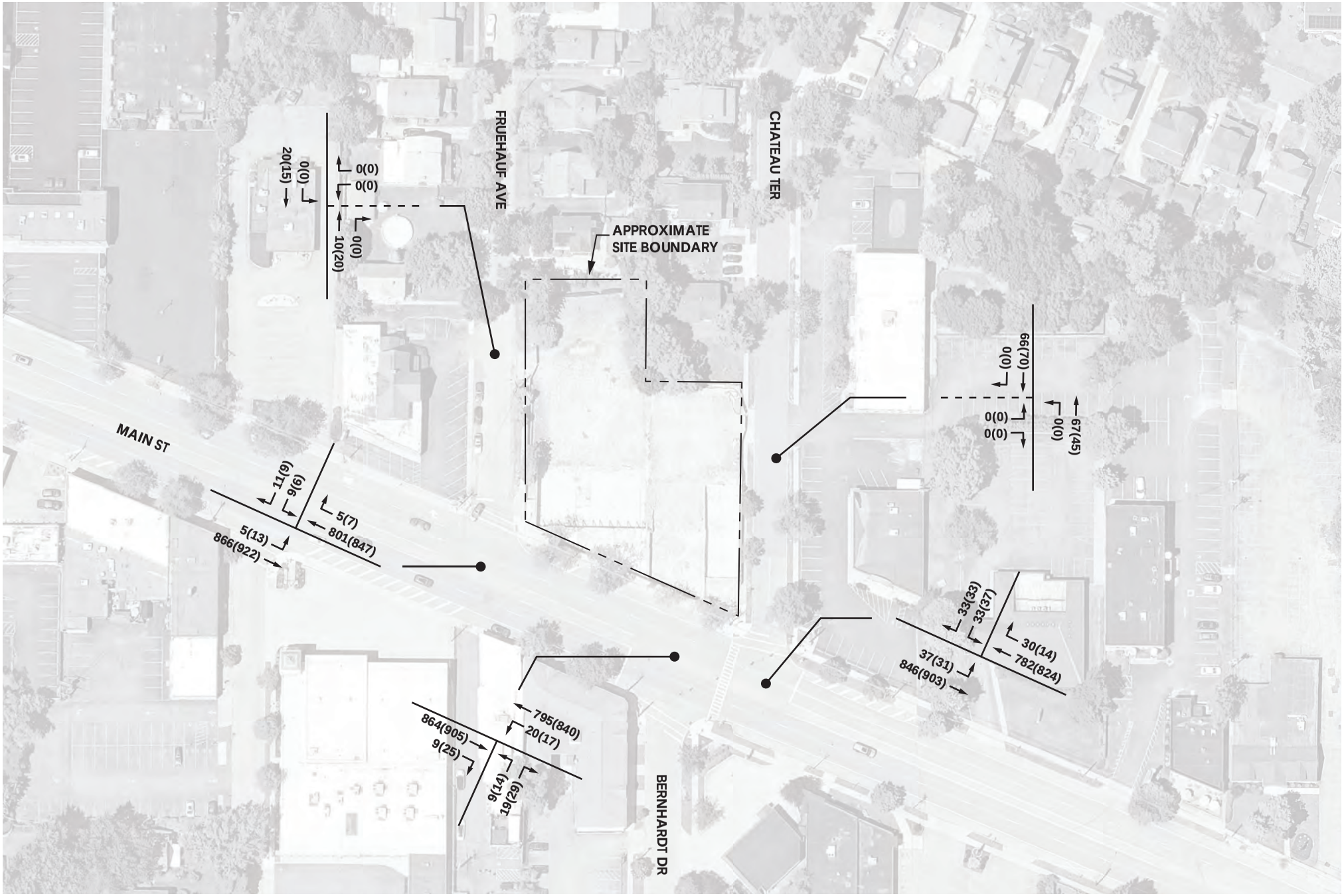
---- Proposed Driveway

Peak Hours:
7:30 to 8:30 AM | 4:00 to 5:00 PM

N

FIGURE 2

20255012.0001



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Peak Hour Volumes: Existing Conditions

4548-4564 MAIN STREET RETAIL

TOWN OF AMHERST, NY

---- Proposed Driveway

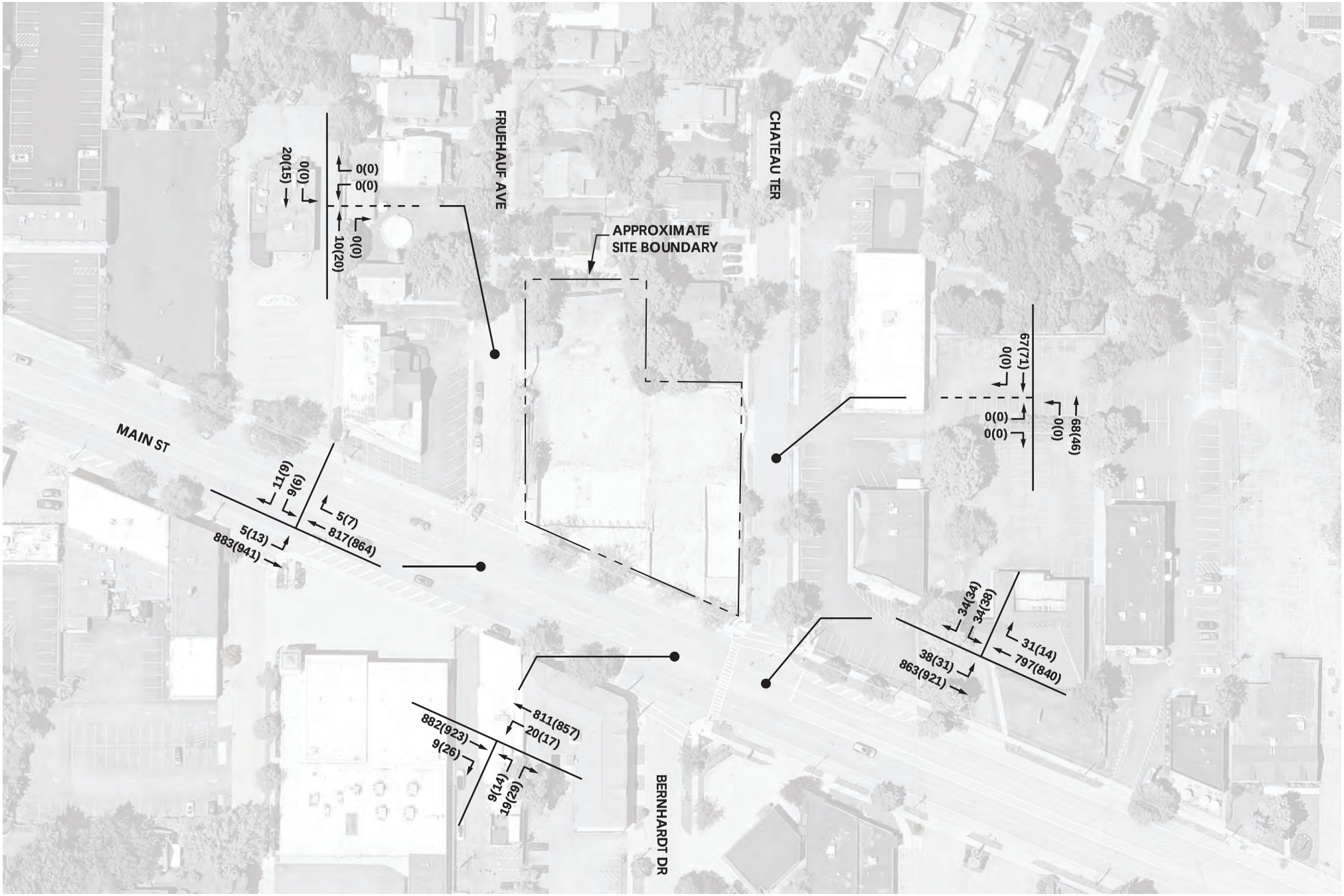
#(#) AM(PM)

Peak Hours:
7:30 to 8:30 AM | 4:00 to 5:00 PM

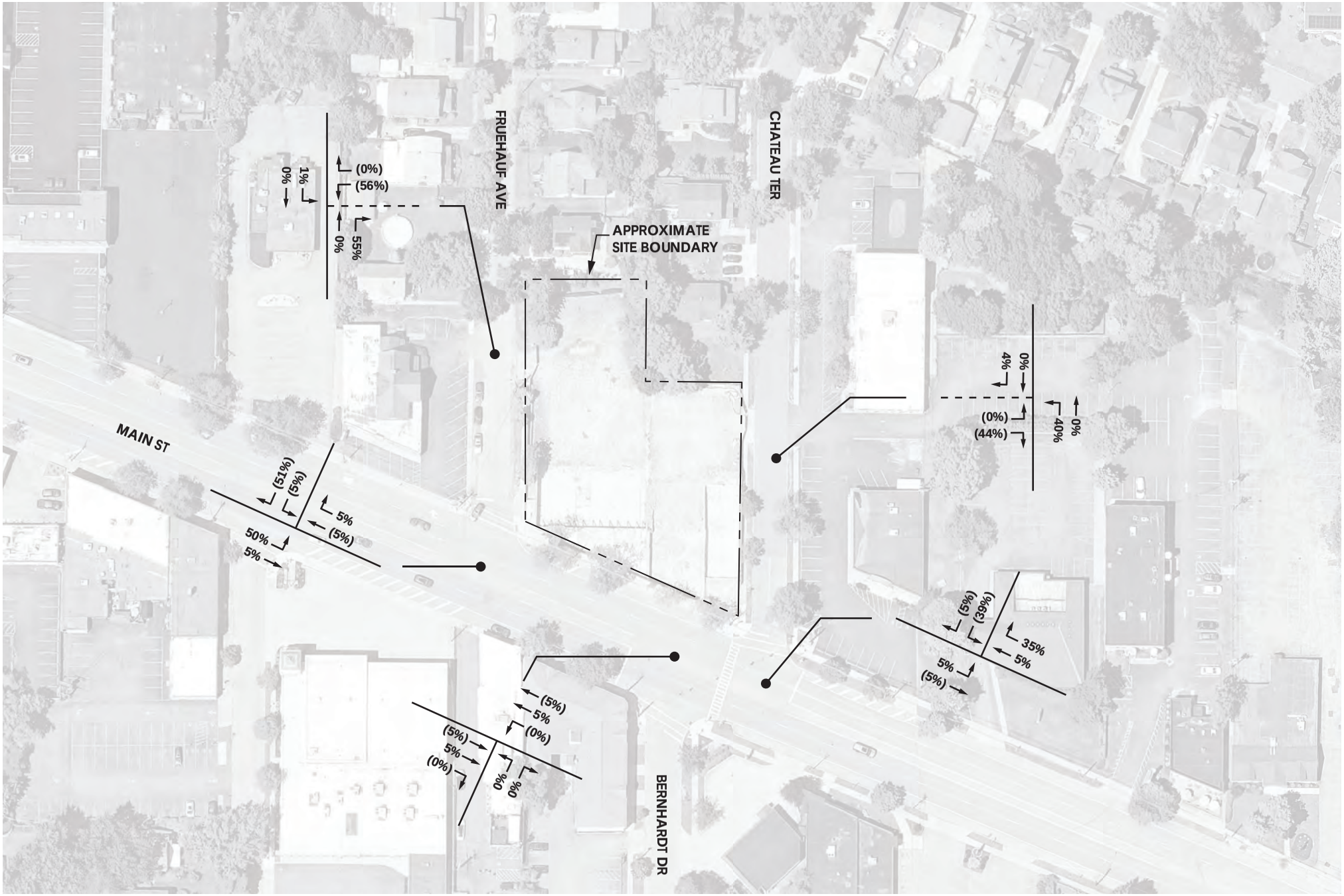
N

FIGURE 3

20255012.0001



PASSERO engineering architecture 242 West Main Street, Suite 100, Rochester, NY 14614	Peak Hour Volumes: Background Conditions **4548-4564 MAIN STREET RETAIL** TOWN OF AMHERST, NY	---- Proposed Driveway #(#) AM(PM) Peak Hours: **7:30 to 8:30 AM | 4:00 to 5:00 PM**	N **FIGURE 4** 20255012.0001



PASSERO engineering architecture

242 West Main Street, Suite 100, Rochester, NY 14614

Trip Distribution

4548-4564 MAIN STREET RETAIL

TOWN OF AMHERST, NY

---- Proposed Driveway

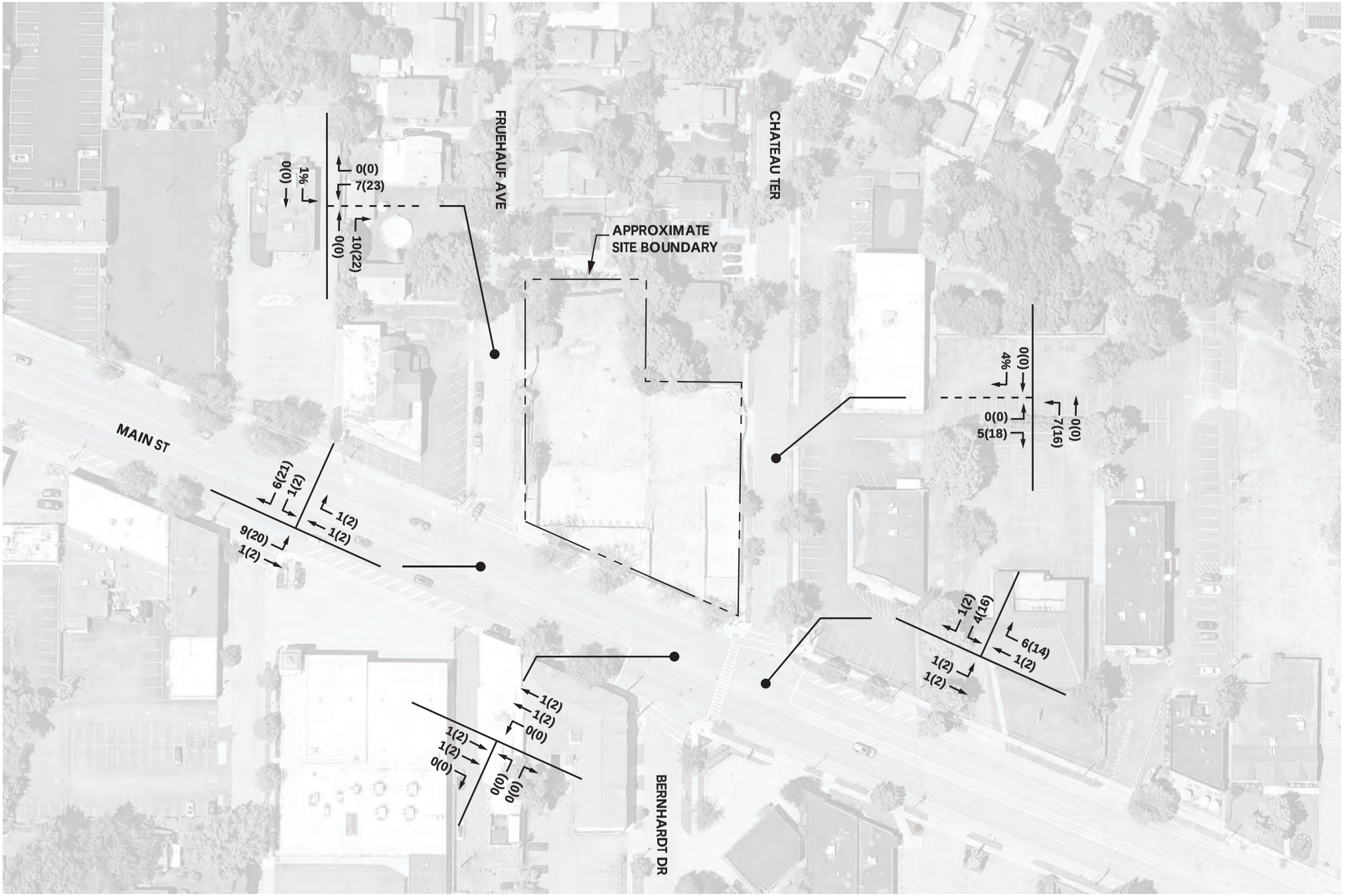
#(#) Inbound(Outbound)

Peak Hours:
7:30 to 8:30 AM | 4:00 to 5:00 PM

N

FIGURE 5

20255012.0001



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engineering architecture

242 West Main Street, Suite 100, Rochester, NY 14614

Trip Distribution

4548-4564 MAIN STREET RETAIL

TOWN OF AMHERST, NY

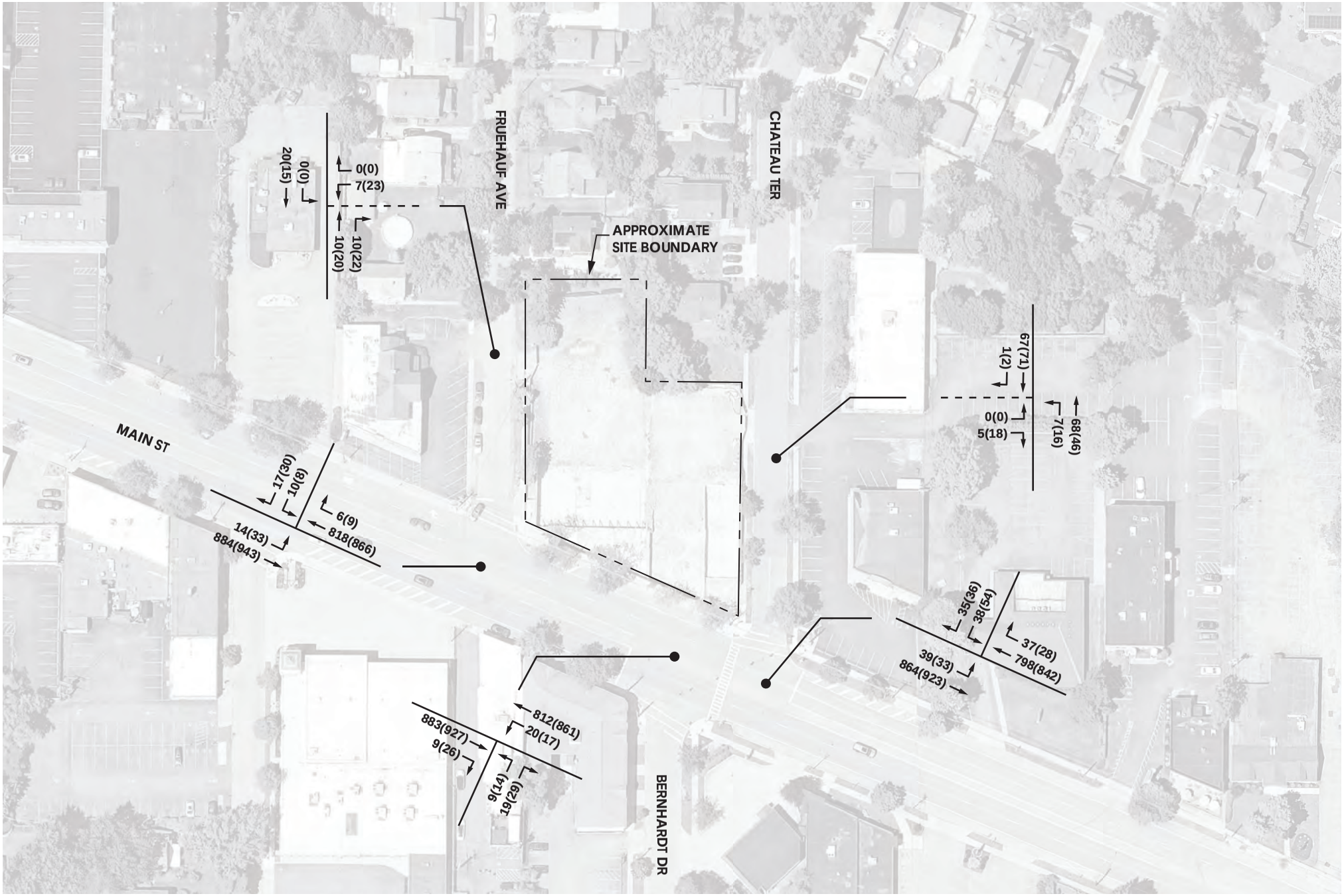
---- Proposed Driveway
#(#) AM(PM)

Peak Hours:
7:30 to 8:30 AM | 4:00 to 5:00 PM

N

FIGURE 6

20255012.0001



PASSERO
engineering architecture

242 West Main Street, Suite 100, Rochester, NY 14614

Peak Hour Volumes: Full Build Conditions

4548-4564 MAIN STREET RETAIL

TOWN OF AMHERST, NY

---- Proposed Driveway
#(#) AM(PM)

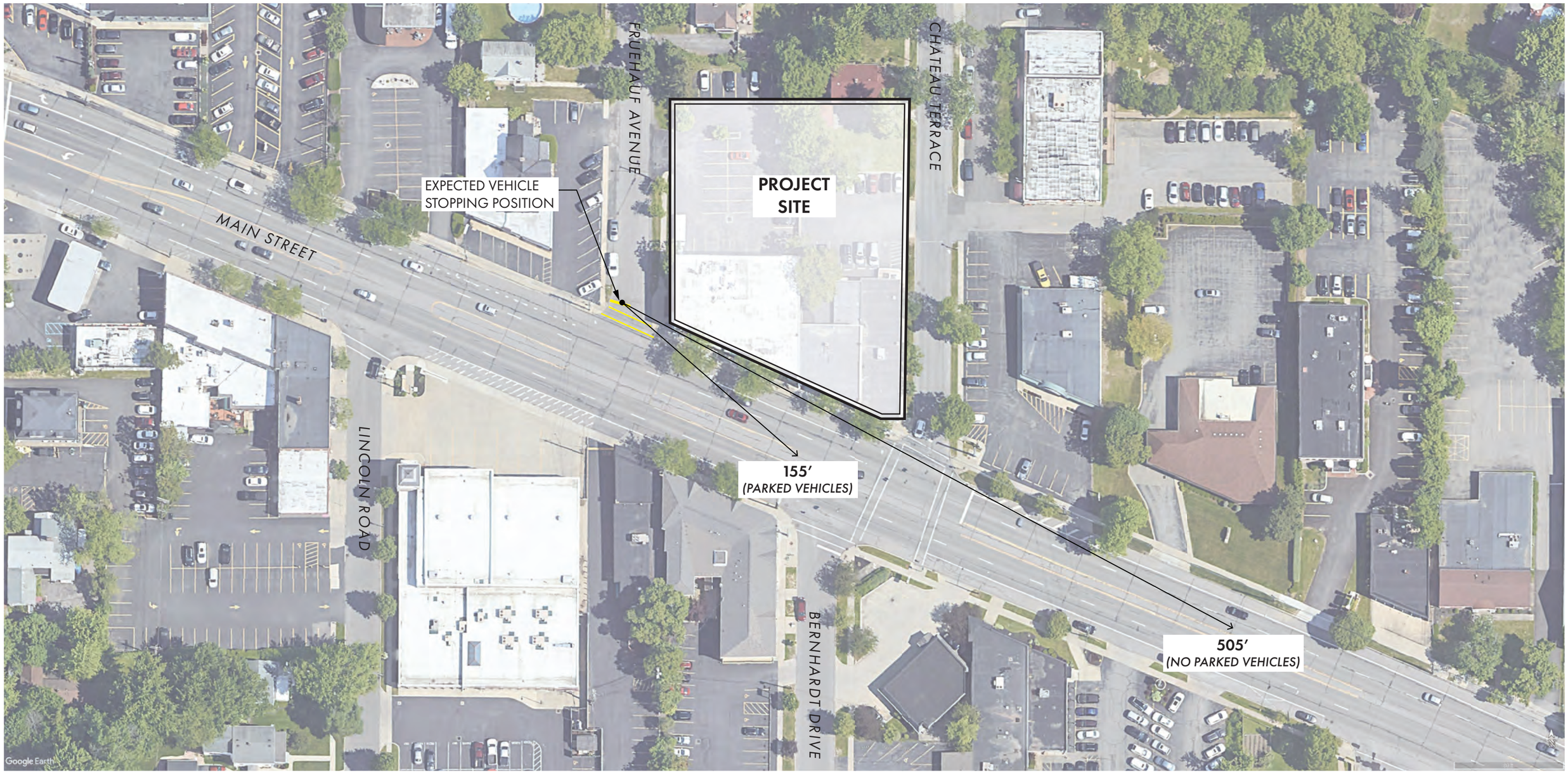
Peak Hours:
7:30 to 8:30 AM | 4:00 to 5:00 PM

N

FIGURE 7

20255012.0001

FIGURE 8



SIGHT LINE EVALUATION

4548-4564 MAIN STREET

TOWN OF AMHERST | ERIE COUNTY | NEW YORK

Notes:
Main Street Speed Limit: **40 MPH**
Design Speed: **45 MPH (posted speed limit plus 5 MPH)**
Required Stopping Sight Distance: **360 feet**
Desirable Intersection Sight Distance: **500 feet**

0 80
FEET

JANUARY 11, 2023

PASSERO
engineering architecture

242 West Main Street, Suite 100
Rochester, New York 14614
585.325.1000 | www.passero.com

APPENDICES

APPENDIX A: EXISTING TRAFFIC COUNT DATA

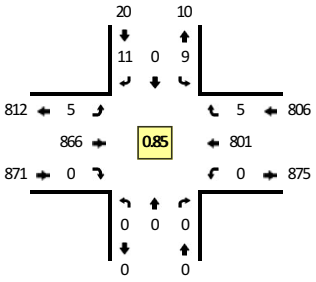
Type of peak hour being reported: Intersection Peak

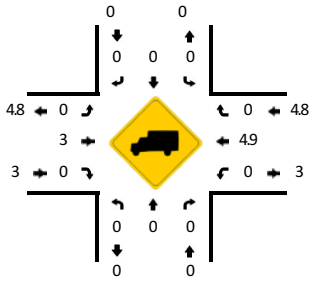
Method for determining peak hour: Total Entering Volume

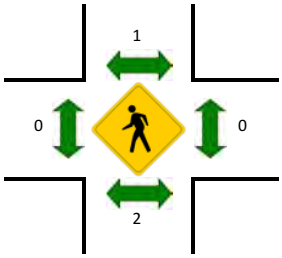
LOCATION: Fruehauf Ave -- Main St
CITY/STATE: Amherst, NY

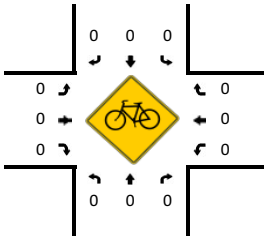
QC JOB #: 16040101
DATE: Tue, Dec 13 2022

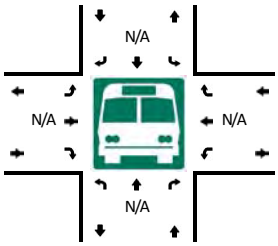
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

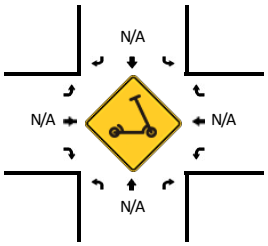












15-Min Count Period Beginning At	Fruehauf Ave (Northbound)				Fruehauf Ave (Southbound)				Main St (Eastbound)				Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	1	0	2	0	1	116	0	2	0	130	1	0	253	
7:15 AM	0	0	0	0	4	0	1	0	2	170	0	0	0	159	1	0	337	
7:30 AM	0	0	0	0	2	0	4	0	1	212	0	0	0	201	1	0	421	
7:45 AM	0	0	0	0	4	0	2	0	1	260	0	0	0	230	0	0	497	1508
8:00 AM	0	0	0	0	1	0	4	0	2	186	0	0	0	183	2	0	378	1633
8:15 AM	0	0	0	0	2	0	1	0	1	208	0	0	0	187	2	0	401	1697
8:30 AM	0	0	0	0	0	0	4	0	1	185	0	0	0	142	0	0	332	1608
8:45 AM	0	0	0	0	0	0	2	0	0	191	0	0	0	153	0	0	346	1457

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	16	0	8	0	4	1040	0	0	0	920	0	0	1988
Heavy Trucks	0	0	0		0	0	0		0	44	0		0	44	0		88
Buses																	
Pedestrians		4				4				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/20/2022 8:43 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

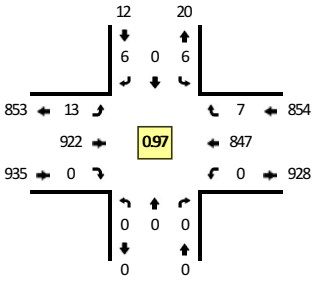
Type of peak hour being reported: Intersection Peak

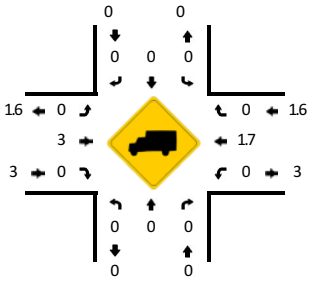
Method for determining peak hour: Total Entering Volume

LOCATION: Fruehauf Ave -- Main St
CITY/STATE: Amherst, NY

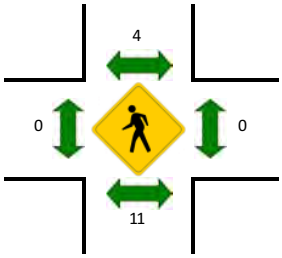
QC JOB #: 16040102
DATE: Tue, Dec 13 2022

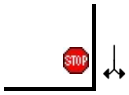
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

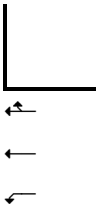


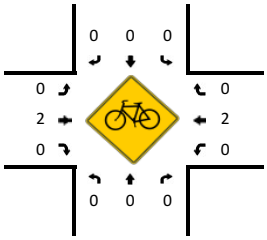


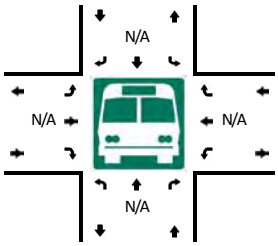
Quality Counts
DATA THAT DRIVES COMMUNITIES

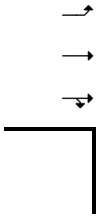


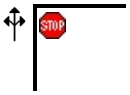


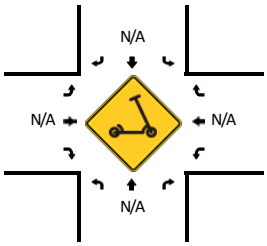












15-Min Count Period Beginning At	Fruehauf Ave (Northbound)				Fruehauf Ave (Southbound)				Main St (Eastbound)				Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	2	0	4	0	5	237	0	0	0	201	1	0	450	
4:15 PM	0	0	0	0	4	0	2	0	3	229	0	0	0	226	1	0	465	
4:30 PM	0	0	0	0	0	0	0	0	3	227	0	0	0	210	4	0	444	
4:45 PM	0	0	0	0	0	0	0	0	2	229	0	0	0	210	1	0	442	1801
5:00 PM	0	0	0	0	0	0	3	0	4	210	0	0	0	173	1	0	391	1742
5:15 PM	0	0	0	0	3	0	0	0	0	217	0	0	0	218	2	0	440	1717
5:30 PM	0	0	0	0	1	0	5	0	3	194	0	0	0	201	2	0	406	1679
5:45 PM	0	0	0	0	1	0	3	0	2	180	0	0	0	208	2	0	396	1633

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	16	0	8	0	12	916	0	0	0	904	4	0	1860
Heavy Trucks	0	0	0		0	0	0		0	36	0		0	16	0		52
Buses																	
Pedestrians		0				12				0				0			12
Bicycles	0	0	0		0	0	0		0	8	0		0	8	0		16
Scooters																	

Comments:

Report generated on 12/20/2022 8:43 AM

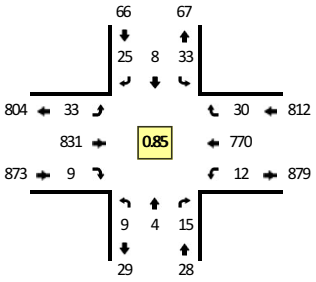
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

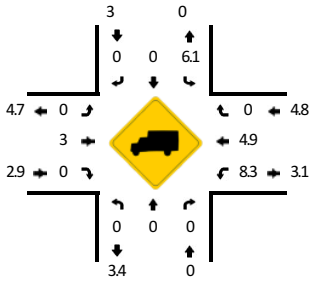
LOCATION: Chateau Terr/Bernhardt Dr -- Main St
CITY/STATE: Amherst, NY

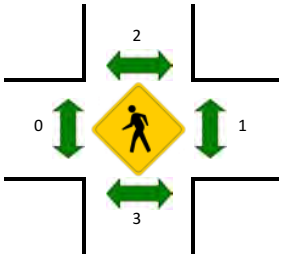
QC JOB #: 16040103
DATE: Tue, Dec 13 2022

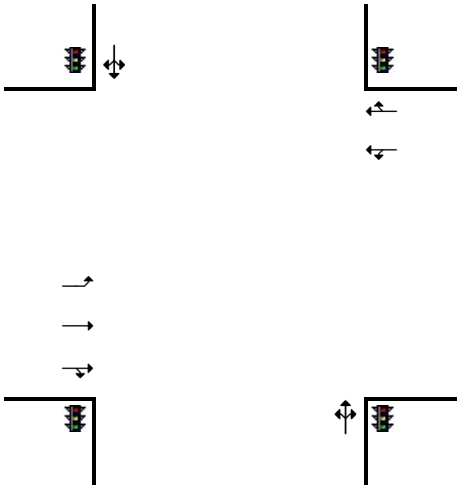
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

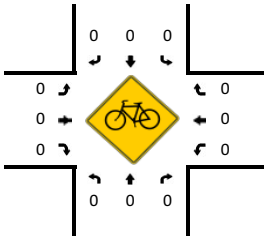


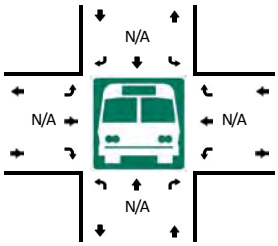
Quality Counts
DATA THAT DRIVES COMMUNITIES

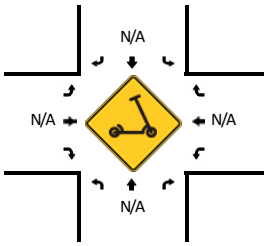












15-Min Count Period Beginning At	Chateau Terr/Bernhardt Dr (Northbound)				Chateau Terr/Bernhardt Dr (Southbound)				Main St (Eastbound)				Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	2	0	1	0	1	0	1	116	0	0	3	126	1	0	253	
7:15 AM	2	3	2	0	3	0	3	0	1	170	1	0	1	156	3	0	345	
7:30 AM	2	1	6	0	6	1	2	0	5	207	1	0	2	195	7	0	435	
7:45 AM	3	2	2	0	9	0	5	0	15	248	4	0	4	219	12	0	523	1556
8:00 AM	1	1	4	0	10	4	12	0	11	176	3	0	4	173	10	0	409	1712
8:15 AM	3	0	3	0	8	3	6	0	2	200	1	0	2	183	1	0	412	1779
8:30 AM	2	3	0	0	1	1	3	0	9	175	6	0	2	134	3	0	339	1683
8:45 AM	5	1	4	0	7	1	12	0	7	179	4	0	5	133	5	0	363	1523

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	8	8	0	36	0	20	0	60	992	16	0	16	876	48	0	2092
Heavy Trucks	0	0	0		8	0	0		0	36	0		0	44	0		88
Buses																	
Pedestrians		4				4				0				4			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/20/2022 8:43 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

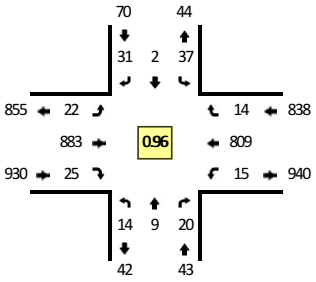
Type of peak hour being reported: Intersection Peak

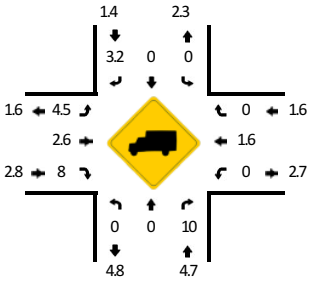
Method for determining peak hour: Total Entering Volume

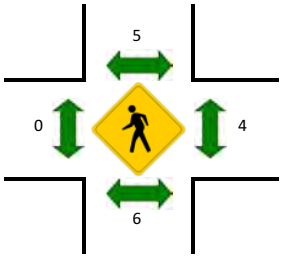
LOCATION: Chateau Terr/Bernhardt Dr -- Main St
CITY/STATE: Amherst, NY

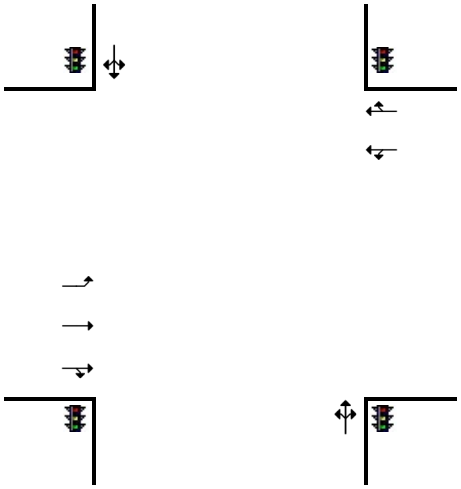
QC JOB #: 16040104
DATE: Tue, Dec 13 2022

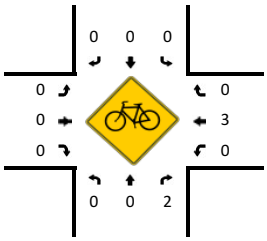
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

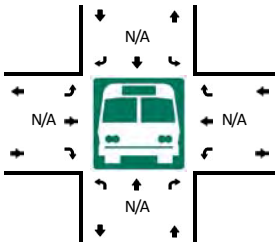


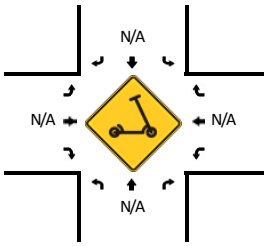












15-Min Count Period Beginning At	Chateau Terr/Bernhardt Dr (Northbound)				Chateau Terr/Bernhardt Dr (Southbound)				Main St (Eastbound)				Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	3	10	0	7	0	6	0	1	227	5	0	2	195	2	0	460	
4:15 PM	4	2	4	0	9	1	10	0	9	224	9	0	4	215	1	0	492	
4:30 PM	4	1	4	0	11	0	8	0	7	217	4	0	5	199	5	0	465	
4:45 PM	4	3	2	0	10	1	7	0	4	215	7	1	4	200	6	0	464	1881
5:00 PM	5	0	2	0	2	1	4	0	4	200	8	0	2	163	5	0	396	1817
5:15 PM	5	1	2	0	1	2	5	0	3	201	7	0	3	202	2	0	434	1759
5:30 PM	2	2	4	0	1	3	3	0	2	192	2	0	3	196	1	0	411	1705
5:45 PM	2	0	2	0	1	0	4	0	2	172	8	0	1	204	1	0	397	1638

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	8	16	0	36	4	40	0	36	896	36	0	16	860	4	0	1968
Heavy Trucks	0	0	0		0	0	0		4	28	4		0	20	0		56
Buses																	
Pedestrians		0				12				0				4			16
Bicycles	0	0	8		0	0	0		0	0	0		0	12	0		20
Scooters																	

Comments:

Report generated on 12/20/2022 8:43 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

APPENDIX B: MISCELLANEOUS CALCULATIONS

Proposed 4548-4564 Main Street Mixed-Use Development, Town of Amherst, Erie County, NY

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2015	2016	2017	2018	2019	Annual Growth
Main Street (NY-5)	NY-240 Harlem Road	ACC RT 290I	22,313	22,014	22,120	20,853	21,436	-1.00%
Harlem Road (NY-240)	Main Street	NY-324		11,976			11,530	-1.26%
Harlem Road (NY-240)	Main Street	CR-290		13,038			12,973	-0.17%
							AVERAGE	**-0.81%**

Intersection Crash Rate Calculations

4548-4564 Main Street

Intersection #1: Main Street at Bernhardt Drive/Chateau Terrace
Date of Count: Tuesday, December 13, 2022

Number of Crashes: 9
Number of Injuries: 2
Number of Fatalities: 0
Entering Vehicles (PM): 1881
ADT: 19800
Start Date: July 31, 2017
End Date: July 31, 2022
Number of Years: 5

Intersection Type: 4 Legged
Area Type: Urban
Control Type: Signal w/ Left Turn 5 or More Lanes

crash rate = Number of Crashes x 1 Million / ADT x 365 Days per Year x Number of Years

crash rate = 9 x 1,000,000 / 19800 x 365 x 5

	Crash Rate		Fatality Rate	Injury Rate
Study Intersection	**0.25**	**cr/mve**	**0%**	**22%**
Statewide Average*	**0.26**	**cr/mve**		

ADT = Average Daily Total vehicles entering intersection
cr/mve = crashes per million entering vehicles
* Most recent available 2019 Average Crash Rates for State Highways by Facility Type

	Direction					
Type	Northbound - 1	Southbound - 5	Eastbound - 3	Westbound - 7	Unknown	Totals
Left turn				1		1
Rear-end		1	1	3		5
Overtaking						0
Right Angle						0
Right Turn						0
Head On						0
Side-swipe			2			2
Fixed Object			1			1
Backing						0
Other						0
Bike/Ped						0
Animal						0
Totals	0	1	4	4	0	9

PDO	7
Injury	
Injury + PDO	2
Fatal	
NR	
Total	9

Intersection Crash Rate Calculations

4548-4564 Main Street

Intersection #2: Main Street at Fruehauf Avenue
Date of Count: Tuesday, December 13, 2022

Number of Crashes: 0
Number of Injuries: 0
Number of Fatalities: 0
Entering Vehicles (PM): 1801
ADT: 18958
Start Date: July 31, 2017
End Date: July 31, 2022
Number of Years: 5

Intersection Type: 3 Legged
Area Type: Urban
Control Type: Sign 5 or More Lanes

crash rate = Number of Crashes x 1 Million / ADT x 365 Days per Year x Number of Years

crash rate = 0 x 1,000,000 / 18958 x 365 x 5

	Crash Rate		Fatality Rate	Injury Rate
Study Intersection	**0.00**	**cr/mve**	**#DIV/0!**	**#DIV/0!**
Statewide Average*	**0.07**	**cr/mve**		

ADT = Average Daily Total vehicles entering intersection
cr/mve = crashes per million entering vehicles
* Most recent available 2019 Average Crash Rates for State Highways by Facility Type

	Direction					
Type	Northbound - 1	Southbound - 5	Eastbound - 3	Westbound - 7	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

PDO	
Injury	
Injury + PDO	
Fatal	
NR	
Total	0

Project: **4548-4564 Main Street**
Location: **Amherst, NY**
Peak Hour: **Weekday AM**
Peak: **7:30 to 8:30 AM**
Condition: **Proposed Action**

Figure:		3	4	5				6	7
			Num of yrs						
			2						
Int. #	**Intersection**	**2022 Volumes**	**2024 Bkgd Vol**	**Trip Distribution and Trip Assignment**				**Total Site Trips**	**Full Build Volumes**
			1.00%	Enter Dist. %	Exit Dist. %	Trips IN 17	Trips OUT 12		
1	**Main Street/ Chateau Terrace/Bernhardt Drive**								
	SR	25	26		5%		1	1	27
	ST - Chateau Terrace	8	8						8
	SL	33	34		39%		4	4	38
	WR	30	31	35%		6		6	37
	WT - Main Street	770	785	5%		1		1	786
	WL	12	12						12
	NR	15	15						15
	NT	4	4						4
	NL	9	9						9
	ER	9	9						9
	ET - Main Street	831	848		5%		1	1	849
	EL	33	34	5%		1		1	35
2	**Main Street/ Fruehauf Avenue**								
	SR	11	11		51%		6	6	17
	ST - Fruehauf Avenue								
	SL	9	9		5%		1	1	10
	WR	5	5	5%		1		1	6
	WT - Main Street	801	817		5%		1	1	818
	WL								
	NR								
	NT								
	NL								
	ER								
	ET - Main Street	866	883	5%		1		1	884
	EL	5	5	50%		9		9	14
3	**Fruehauf Avenue/ Proposed Driveway**								
	SR								
	ST - Fruehauf Avenue	20	20						20
	SL			1%		0		0	0
	WR								
	WT - Proposed Driveway								
	WL				56%		7	7	7
	NR			55%		10		10	10
	NT - Fruehauf Avenue	10	10						10
	NL								
	ER								
	ET								
	EL								
4	**Chateau Terrace/ Proposed Driveway**								
	SR			4%		1		1	1
	ST - Chateau Terrace	66	67						67
	SL								
	WR								
	WT								
	WL								
	NR								
	NT - Chateau Terrace	67	68						68
	NL			40%		7		7	7
	ER				44%		5	5	5
	ET - Proposed Driveway								
	EL								

Project: **4548-4564 Main Street**
Location: **Amherst, NY**
Peak Hour: **Weekday PM**
Peak: **4:00 to 5:00 PM**
Condition: **Proposed Action**

Figure: 3 4 5 6 7

Num of yrs: 2

Int. #	Intersection	2022 Volumes	2024 Bkgd Vol 1.00%	Trip Distribution and Trip Assignment				Total Site Trips	Full Build Volumes
				Enter Dist. %	Exit Dist. %	Trips IN 40	Trips OUT 41		
1	**Main Street/ Chateau Terrace/Bernhardt Drive**								
	SR	31	32		5%		2	2	34
	ST - Chateau Terrace	2	2						2
	SL	37	38		39%		16	16	54
	WR	14	14	35%		14		14	28
	WT - Main Street	809	825	5%		2		2	827
	WL	15	15						15
	NR	20	20						20
	NT	9	9						9
	NL	14	14						14
	ER	25	26						26
	ET - Main Street	883	901		5%		2	2	903
	EL	22	22	5%		2		2	24
2	**Main Street/ Fruehauf Avenue**								
	SR	9	9		51%		21	21	30
	ST - Fruehauf Avenue								
	SL	6	6		5%		2	2	8
	WR	7	7	5%		2		2	9
	WT - Main Street	847	864		5%		2	2	866
	WL								
	NR								
	NT								
	NL								
	ER								
	ET - Main Street	922	941	5%		2		2	943
	EL	13	13	50%		20		20	33
3	**Fruehauf Avenue/ Proposed Driveway**								
	SR								
	ST - Fruehauf Avenue	15	15						15
	SL			1%		0		0	0
	WR								
	WT - Proposed Driveway								
	WL				56%		23	23	23
	NR			55%		22		22	22
	NT - Fruehauf Avenue	20	20						20
	NL								
	ER								
	ET								
	EL								
4	**Chateau Terrace/ Proposed Driveway**								
	SR			4%		2		2	2
	ST - Chateau Terrace	70	71						71
	SL								
	WR								
	WT								
	WL								
	NR								
	NT - Chateau Terrace	45	46						46
	NL			40%		16		16	16
	ER				44%		18	18	18
	ET - Proposed Driveway								
	EL								

Strip Retail Plaza (<40k)
(822)

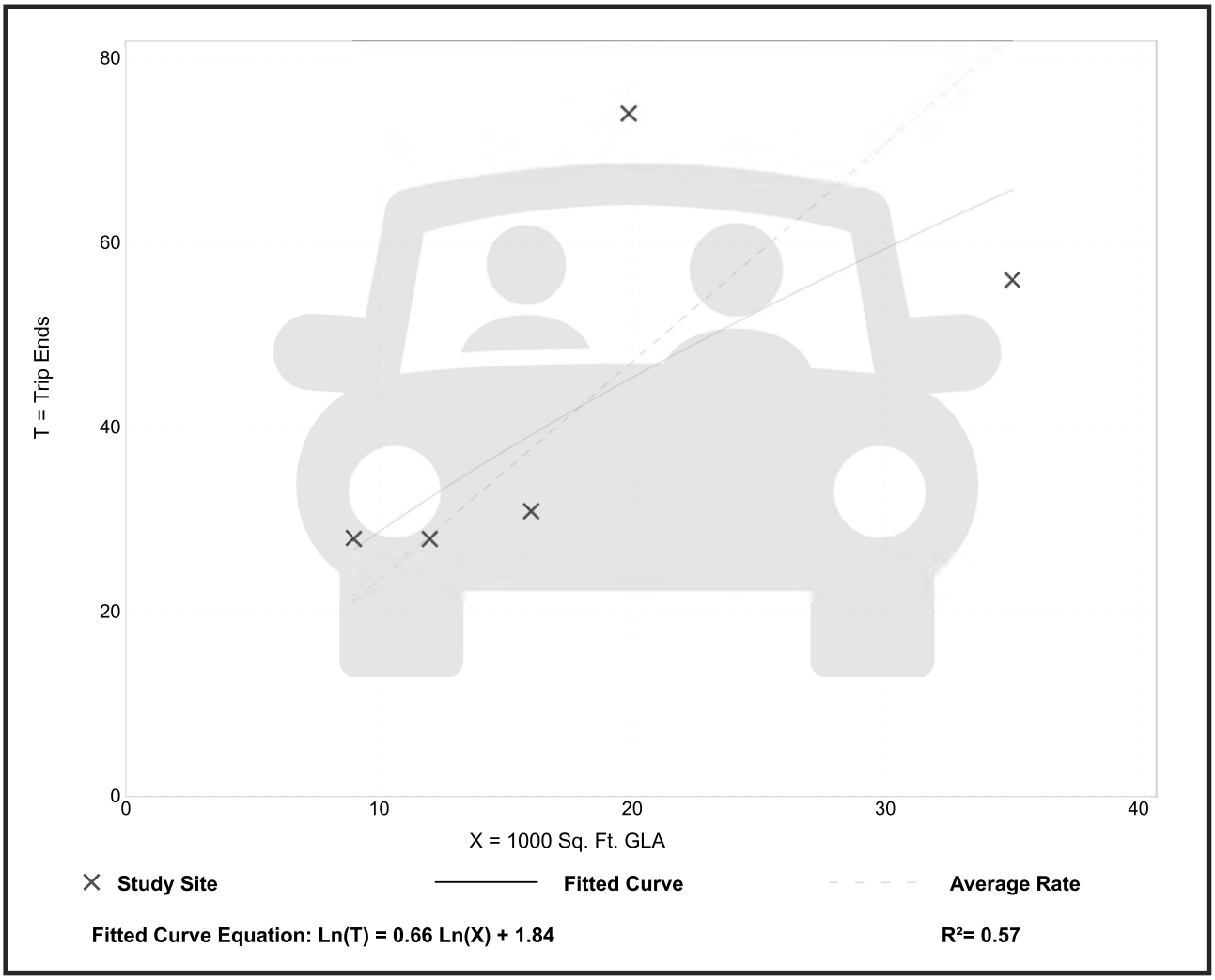
Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 18
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Ln(T) = 0.66 Ln(X) + 1.84

R^2= 0.57

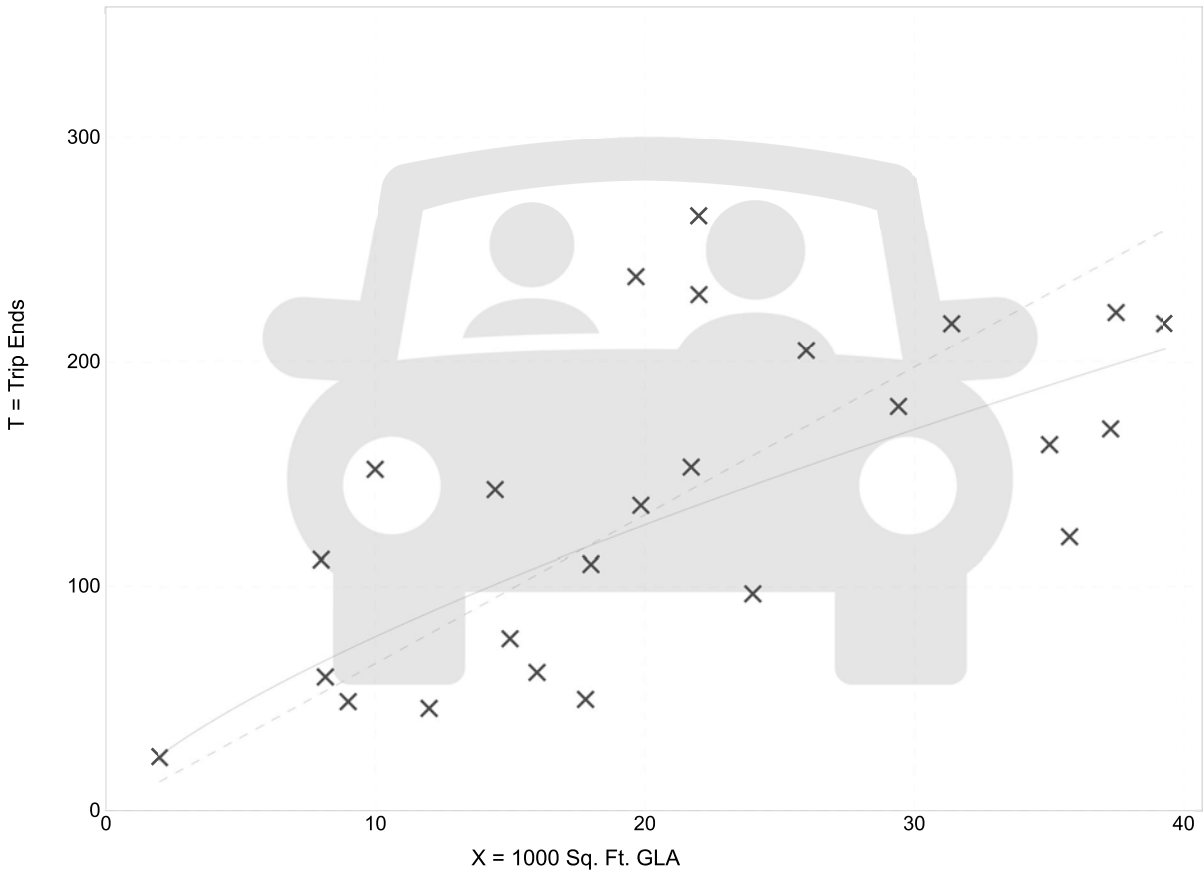
Strip Retail Plaza (<40k)
(822)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 25
Avg. 1000 Sq. Ft. GLA: 21
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

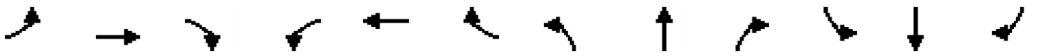
Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.71 Ln(X) + 2.72

R^2= 0.56

APPENDIX C: LOS CALCULATIONS – EXISTING CONDITIONS

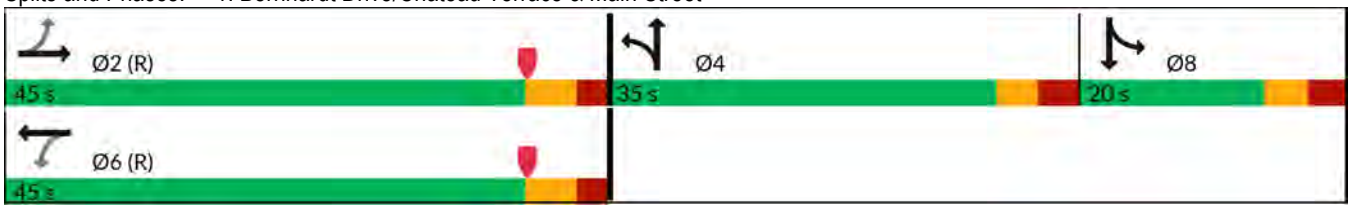


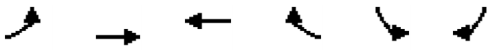
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	831	9	12	770	30	9	4	15	33	8	25
Future Volume (vph)	33	831	9	12	770	30	9	4	15	33	8	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	25		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt		0.998			0.994			0.929			0.949	
Flt Protected	0.950			0.950				0.984			0.975	
Satd. Flow (prot)	1805	3498	0	1671	3420	0	0	1725	0	0	1697	0
Flt Permitted	0.279			0.263				0.984			0.975	
Satd. Flow (perm)	530	3498	0	462	3420	0	0	1725	0	0	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			4			18			25	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		152			705			712			310	
Travel Time (s)		2.6			12.0			16.2			7.0	
Confl. Peds. (#/hr)	2		3	3		2			1			1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	0%	8%	5%	0%	0%	0%	0%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	39	978	11	14	906	35	11	5	18	39	9	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	989	0	14	941	0	0	34	0	0	77	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2			6								
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	32.2	32.2		32.2	32.2		34.1	34.1		32.2	32.2	
Total Split (s)	45.0	45.0		45.0	45.0		35.0	35.0		20.0	20.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		35.0%	35.0%		20.0%	20.0%	
Maximum Green (s)	38.8	38.8		38.8	38.8		28.9	28.9		13.9	13.9	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	3.2		3.2	3.2	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.1			6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				
Flash Don't Walk (s)	13.0	13.0		11.0	11.0		21.0	21.0				
Pedestrian Calls (#/hr)	0	0		0	0		0	0				
Act Effct Green (s)	73.7	73.7		73.7	73.7			7.2			9.1	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.07			0.09	
v/c Ratio	0.10	0.38		0.04	0.37			0.24			0.43	
Control Delay (s/veh)	8.3	7.9		8.1	7.8			30.3			37.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	8.3	7.9		8.1	7.8			30.3			37.4	
LOS	A	A		A	A			C			D	
Approach Delay (s/veh)		7.9			7.8			30.3			37.4	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)	8	142		3	133			10			32	
Queue Length 95th (ft)	25	204		11	192			37			69	
Internal Link Dist (ft)		72			625			632			230	
Turn Bay Length (ft)	25			25								
Base Capacity (vph)	390	2579		340	2522			511			257	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.10	0.38		0.04	0.37			0.07			0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 7 (7%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay (s/veh): 9.3		Intersection LOS: A	
Intersection Capacity Utilization 43.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Bernhardt Drive/Chateau Terrace & Main Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	866	801	5	9	11
Future Volume (vph)	5	866	801	5	9	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	25			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.927	
Flt Protected	0.950				0.978	
Satd. Flow (prot)	1805	3505	3436	0	1723	0
Flt Permitted	0.950				0.978	
Satd. Flow (perm)	1805	3505	3436	0	1723	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		469	152		721	
Travel Time (s)		8.0	2.6		16.4	
Confl. Peds. (#/hr)	1			1		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	6	1019	942	6	11	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	1019	948	0	24	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.9%		ICU Level of Service A	
Analysis Period (min) 15			

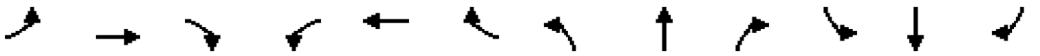
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	866	801	5	9	11
Future Vol, veh/h	5	866	801	5	9	11
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	3	5	0	0	0
Mvmt Flow	6	1019	942	6	11	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	949	0	-	0	1467	475
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	521	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	816	-	-	-	145	784
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	566	-
Platoon blocked, %	0	-	-	-	0	0
Mov Cap-1 Maneuver	815	-	-	-	144	784
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.05	0	13.75
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	815	-	-	-	435
HCM Lane V/C Ratio	0.007	-	-	-	0.054
HCM Ctrl Dly (s/v)	9.4	-	-	-	13.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

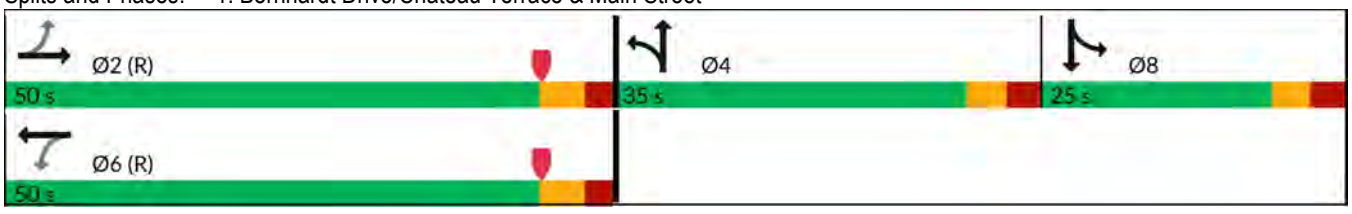


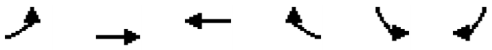
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	883	25	15	809	14	14	9	20	37	2	31
Future Volume (vph)	22	883	25	15	809	14	14	9	20	37	2	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	25		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt		0.996			0.997			0.937			0.941	
Flt Protected	0.950			0.950				0.984			0.974	
Satd. Flow (prot)	1719	3483	0	1805	3528	0	0	1661	0	0	1705	0
Flt Permitted	0.310			0.278				0.984			0.974	
Satd. Flow (perm)	560	3483	0	527	3528	0	0	1661	0	0	1705	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			21			31	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		152			705			712			310	
Travel Time (s)		2.6			12.0			16.2			7.0	
Confl. Peds. (#/hr)	5		6	6		5			4			4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	3%	8%	0%	2%	0%	0%	0%	10%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	23	920	26	16	843	15	15	9	21	39	2	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	946	0	16	858	0	0	45	0	0	73	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2			6								
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	32.2	32.2		32.2	32.2		35.2	35.2		32.2	32.2	
Total Split (s)	50.0	50.0		50.0	50.0		35.0	35.0		25.0	25.0	
Total Split (%)	45.5%	45.5%		45.5%	45.5%		31.8%	31.8%		22.7%	22.7%	
Maximum Green (s)	43.8	43.8		43.8	43.8		28.9	28.9		18.9	18.9	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	3.2		3.2	3.2	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.1			6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				
Flash Don't Walk (s)	13.0	13.0		11.0	11.0		21.0	21.0				
Pedestrian Calls (#/hr)	0	0		0	0		0	0				
Act Effct Green (s)	80.9	80.9		80.9	80.9			7.8			8.9	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.07			0.08	
v/c Ratio	0.06	0.37		0.04	0.33			0.33			0.44	
Control Delay (s/veh)	7.6	7.9		7.6	7.6			36.3			37.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	7.6	7.9		7.6	7.6			36.3			37.8	
LOS	A	A		A	A			D			D	
Approach Delay (s/veh)		7.9			7.6			36.3			37.8	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)	5	135		3	117			16			29	
Queue Length 95th (ft)	17	213		13	187			52			73	
Internal Link Dist (ft)		72			625			632			230	
Turn Bay Length (ft)	25			25								
Base Capacity (vph)	412	2563		387	2596			451			318	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.06	0.37		0.04	0.33			0.10			0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 25 (23%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay (s/veh): 9.5		Intersection LOS: A	
Intersection Capacity Utilization 42.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Bernhardt Drive/Chateau Terrace & Main Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	922	847	7	6	6
Future Volume (vph)	13	922	847	7	6	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	25			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.932	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1805	3505	3536	0	1728	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1805	3505	3536	0	1728	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		469	152		721	
Travel Time (s)		8.0	2.6		16.4	
Confl. Peds. (#/hr)	4			4		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	13	951	873	7	6	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	951	880	0	12	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	922	847	7	6	6
Future Vol, veh/h	13	922	847	7	6	6
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	3	2	0	0	0
Mvmt Flow	13	951	873	7	6	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	884	0	-	0	1383	444
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	502	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	879	-	-	-	170	856
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	579	-
Platoon blocked, %	0	-	-	-	0	0
Mov Cap-1 Maneuver	875	-	-	-	167	853
Mov Cap-2 Maneuver	-	-	-	-	307	-
Stage 1	-	-	-	-	457	-
Stage 2	-	-	-	-	577	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.13	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	875	-	-	-	452
HCM Lane V/C Ratio	0.015	-	-	-	0.027
HCM Ctrl Dly (s/v)	9.2	-	-	-	13.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

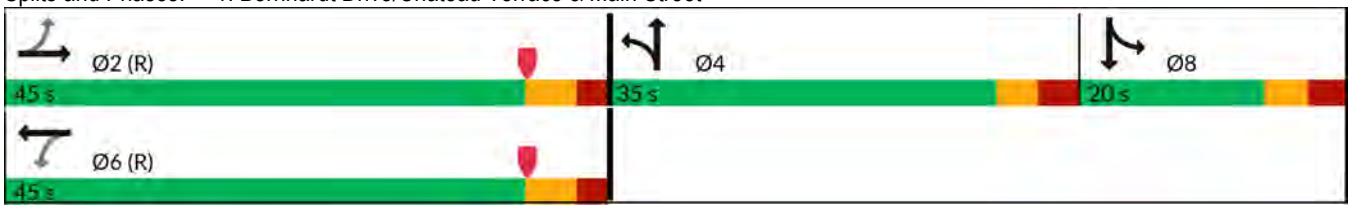
APPENDIX D: LOS CALCULATIONS – BACKGROUND CONDITIONS

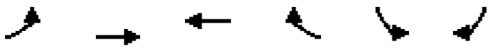
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	848	9	12	785	31	9	4	15	34	8	26
Future Volume (vph)	34	848	9	12	785	31	9	4	15	34	8	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	25		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt		0.998			0.994			0.929			0.948	
Flt Protected	0.950			0.950				0.984			0.976	
Satd. Flow (prot)	1805	3498	0	1671	3420	0	0	1725	0	0	1697	0
Flt Permitted	0.272			0.256				0.984			0.976	
Satd. Flow (perm)	516	3498	0	450	3420	0	0	1725	0	0	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			5			18			26	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		152			705			712			310	
Travel Time (s)		2.6			12.0			16.2			7.0	
Confl. Peds. (#/hr)	2		3	3		2			1			1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	0%	8%	5%	0%	0%	0%	0%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	40	998	11	14	924	36	11	5	18	40	9	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	1009	0	14	960	0	0	34	0	0	80	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2			6								
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	32.2	32.2		32.2	32.2		34.1	34.1		32.2	32.2	
Total Split (s)	45.0	45.0		45.0	45.0		35.0	35.0		20.0	20.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		35.0%	35.0%		20.0%	20.0%	
Maximum Green (s)	38.8	38.8		38.8	38.8		28.9	28.9		13.9	13.9	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	3.2		3.2	3.2	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.1			6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				
Flash Don't Walk (s)	13.0	13.0		11.0	11.0		21.0	21.0				
Pedestrian Calls (#/hr)	0	0		0	0		0	0				
Act Effct Green (s)	73.6	73.6		73.6	73.6			7.2			9.3	
Actuated g/C Ratio	0.74	0.74		0.74	0.74			0.07			0.09	
v/c Ratio	0.11	0.39		0.04	0.38			0.24			0.44	
Control Delay (s/veh)	8.5	8.0		8.2	7.9			30.3			37.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	8.5	8.0		8.2	7.9			30.3			37.4	
LOS	A	A		A	A			C			D	
Approach Delay (s/veh)		8.0			7.9			30.3			37.4	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)	9	147		3	137			10			33	
Queue Length 95th (ft)	25	211		12	199			37			71	
Internal Link Dist (ft)		72			625			632			230	
Turn Bay Length (ft)	25			25								
Base Capacity (vph)	379	2574		331	2517			511			258	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.11	0.39		0.04	0.38			0.07			0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 7 (7%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay (s/veh): 9.4		Intersection LOS: A	
Intersection Capacity Utilization 44.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Bernhardt Drive/Chateau Terrace & Main Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	883	817	5	9	11
Future Volume (vph)	5	883	817	5	9	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	25			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.927	
Flt Protected	0.950				0.978	
Satd. Flow (prot)	1805	3505	3436	0	1723	0
Flt Permitted	0.950				0.978	
Satd. Flow (perm)	1805	3505	3436	0	1723	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		469	152		721	
Travel Time (s)		8.0	2.6		16.4	
Confl. Peds. (#/hr)	1			1		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	6	1039	961	6	11	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	1039	967	0	24	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.4%		ICU Level of Service A	
Analysis Period (min) 15			

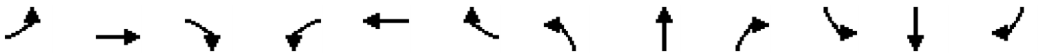
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	883	817	5	9	11
Future Vol, veh/h	5	883	817	5	9	11
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	3	5	0	0	0
Mvmt Flow	6	1039	961	6	11	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	968	0	-	0	1496	485
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	801	-	-	-	138	772
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	560	-
Platoon blocked, %	0	-	-	-	0	0
Mov Cap-1 Maneuver	800	-	-	-	137	771
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	559	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.05	0	13.97
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	800	-	-	-	425
HCM Lane V/C Ratio	0.007	-	-	-	0.055
HCM Ctrl Dly (s/v)	9.5	-	-	-	14
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

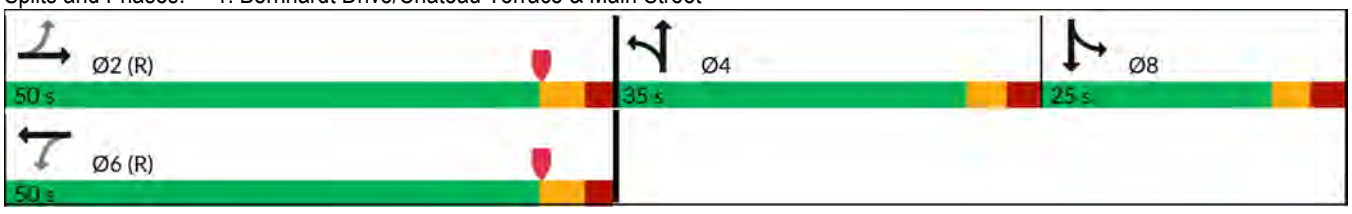


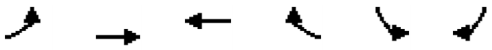
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	901	26	15	825	14	14	9	20	38	2	32
Future Volume (vph)	22	901	26	15	825	14	14	9	20	38	2	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	25		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt		0.996			0.997			0.937			0.941	
Flt Protected	0.950			0.950				0.984			0.974	
Satd. Flow (prot)	1719	3483	0	1805	3528	0	0	1661	0	0	1704	0
Flt Permitted	0.303			0.271				0.984			0.974	
Satd. Flow (perm)	547	3483	0	514	3528	0	0	1661	0	0	1704	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			21			31	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		152			705			712			310	
Travel Time (s)		2.6			12.0			16.2			7.0	
Confl. Peds. (#/hr)	5		6	6		5			4			4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	3%	8%	0%	2%	0%	0%	0%	10%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	23	939	27	16	859	15	15	9	21	40	2	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	966	0	16	874	0	0	45	0	0	75	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2			6								
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	32.2	32.2		32.2	32.2		35.2	35.2		32.2	32.2	
Total Split (s)	50.0	50.0		50.0	50.0		35.0	35.0		25.0	25.0	
Total Split (%)	45.5%	45.5%		45.5%	45.5%		31.8%	31.8%		22.7%	22.7%	
Maximum Green (s)	43.8	43.8		43.8	43.8		28.9	28.9		18.9	18.9	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	3.2		3.2	3.2	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.1			6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				
Flash Don't Walk (s)	13.0	13.0		11.0	11.0		21.0	21.0				
Pedestrian Calls (#/hr)	0	0		0	0		0	0				
Act Effct Green (s)	80.8	80.8		80.8	80.8			7.8			9.0	
Actuated g/C Ratio	0.73	0.73		0.73	0.73			0.07			0.08	
v/c Ratio	0.06	0.38		0.04	0.34			0.33			0.45	
Control Delay (s/veh)	7.7	8.0		7.7	7.7			36.3			38.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	7.7	8.0		7.7	7.7			36.3			38.3	
LOS	A	A		A	A			D			D	
Approach Delay (s/veh)		8.0			7.7			36.3			38.3	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)	5	139		3	121			16			30	
Queue Length 95th (ft)	17	220		14	192			52			74	
Internal Link Dist (ft)		72			625			632			230	
Turn Bay Length (ft)	25			25								
Base Capacity (vph)	402	2559		377	2591			451			318	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.06	0.38		0.04	0.34			0.10			0.24	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 25 (23%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay (s/veh): 9.7		Intersection LOS: A	
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Bernhardt Drive/Chateau Terrace & Main Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	941	864	7	6	6
Future Volume (vph)	13	941	864	7	6	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	25			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.932	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1805	3505	3536	0	1728	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1805	3505	3536	0	1728	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		469	152		721	
Travel Time (s)		8.0	2.6		16.4	
Confl. Peds. (#/hr)	4			4		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	13	970	891	7	6	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	970	898	0	12	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

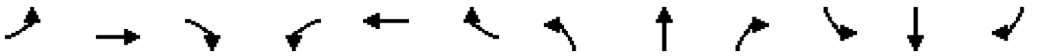
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	941	864	7	6	6
Future Vol, veh/h	13	941	864	7	6	6
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	3	2	0	0	0
Mvmt Flow	13	970	891	7	6	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	902	0	-	0	1410	453
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	512	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	864	-	-	-	163	844
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %	0	-	-	-	0	0
Mov Cap-1 Maneuver	861	-	-	-	159	841
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	570	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.13	0	13.39
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	861	-	-	-	441
HCM Lane V/C Ratio	0.016	-	-	-	0.028
HCM Ctrl Dly (s/v)	9.2	-	-	-	13.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

APPENDIX E: LOS CALCULATIONS – FULL BUILD CONDITIONS

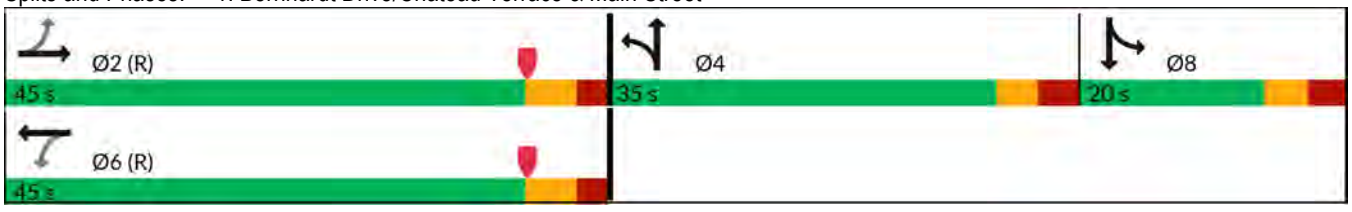


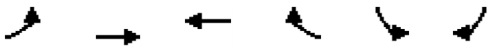
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	849	9	12	786	37	9	4	15	38	8	27
Future Volume (vph)	35	849	9	12	786	37	9	4	15	38	8	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	25		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt		0.998			0.993			0.929			0.950	
Flt Protected	0.950			0.950				0.984			0.975	
Satd. Flow (prot)	1805	3498	0	1671	3417	0	0	1725	0	0	1697	0
Flt Permitted	0.268			0.255				0.984			0.975	
Satd. Flow (perm)	509	3498	0	448	3417	0	0	1725	0	0	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			6			18			25	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		152			705			712			270	
Travel Time (s)		2.6			12.0			16.2			6.1	
Confl. Peds. (#/hr)	2		3	3		2			1			1
Confl. Bikes (#/hr)												
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	0%	8%	5%	0%	0%	0%	0%	6%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	41	999	11	14	925	44	11	5	18	45	9	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1010	0	14	969	0	0	34	0	0	86	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2			6								
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	32.2	32.2		32.2	32.2		34.1	34.1		32.2	32.2	
Total Split (s)	45.0	45.0		45.0	45.0		35.0	35.0		20.0	20.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		35.0%	35.0%		20.0%	20.0%	
Maximum Green (s)	38.8	38.8		38.8	38.8		28.9	28.9		13.9	13.9	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	3.2		3.2	3.2	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.1			6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				
Flash Don't Walk (s)	13.0	13.0		11.0	11.0		21.0	21.0				
Pedestrian Calls (#/hr)	0	0		0	0		0	0				
Act Effct Green (s)	73.2	73.2		73.2	73.2			7.2			9.6	
Actuated g/C Ratio	0.73	0.73		0.73	0.73			0.07			0.10	
v/c Ratio	0.11	0.39		0.04	0.39			0.24			0.46	
Control Delay (s/veh)	8.7	8.2		8.4	8.1			30.3			38.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	8.7	8.2		8.4	8.1			30.3			38.5	
LOS	A	A		A	A			C			D	
Approach Delay (s/veh)		8.2			8.1			30.3			38.5	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)	9	149		3	141			10			37	
Queue Length 95th (ft)	26	214		12	204			37			76	
Internal Link Dist (ft)		72			625			632			190	
Turn Bay Length (ft)	25			25								
Base Capacity (vph)	372	2562		328	2504			511			257	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.11	0.39		0.04	0.39			0.07			0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 7 (7%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay (s/veh): 9.7		Intersection LOS: A	
Intersection Capacity Utilization 46.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Bernhardt Drive/Chateau Terrace & Main Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	884	818	6	10	17
Future Volume (vph)	14	884	818	6	10	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	25			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.916	
Flt Protected	0.950				0.982	
Satd. Flow (prot)	1805	3505	3436	0	1709	0
Flt Permitted	0.950				0.982	
Satd. Flow (perm)	1805	3505	3436	0	1709	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		469	152		110	
Travel Time (s)		8.0	2.6		2.5	
Confl. Peds. (#/hr)	1			1		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	16	1040	962	7	12	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	1040	969	0	32	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	884	818	6	10	17
Future Vol, veh/h	14	884	818	6	10	17
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	3	5	0	0	0
Mvmt Flow	16	1040	962	7	12	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	970	0	-	0	1520	486
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	553	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	799	-	-	-	133	771
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %	0	-	-	-	0	0
Mov Cap-1 Maneuver	798	-	-	-	130	770
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	545	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.15	0	13.53
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	798	-	-	-	454
HCM Lane V/C Ratio	0.021	-	-	-	0.07
HCM Ctrl Dly (s/v)	9.6	-	-	-	13.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	0	10	10	0	20
Future Volume (vph)	7	0	10	10	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.932			
Flt Protected	0.950					
Satd. Flow (prot)	1805	0	1771	0	0	1900
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	1771	0	0	1900
Link Speed (mph)	30		30			30
Link Distance (ft)	145		110			611
Travel Time (s)	3.3		2.5			13.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	8	0	12	12	0	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	24	0	0	24
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

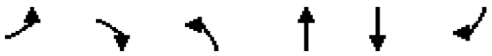
Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	0	10	10	0	20
Future Vol, veh/h	7	0	10	10	0	20
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	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	0	12	12	0	24

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	41	-	0	0	24	0
Stage 1	18	-	-	-	-	-
Stage 2	24	-	-	-	-	-
Critical Hdwy	6.4	-	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	-	-	-	2.2	-
Pot Cap-1 Maneuver	975	0	-	-	1605	-
Stage 1	1010	0	-	-	-	-
Stage 2	1004	0	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	975	-	-	-	1605	-
Mov Cap-2 Maneuver	975	-	-	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	1004	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	8.72	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1605	-
HCM Lane V/C Ratio	-	-	0.008	-	-
HCM Ctrl Dly (s/v)	-	-	8.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	5	7	68	67	1
Future Volume (vph)	0	5	7	68	67	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	0	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.865			0.998	
Flt Protected				0.995		
Satd. Flow (prot)	0	1644	0	1808	1896	0
Flt Permitted				0.995		
Satd. Flow (perm)	0	1644	0	1808	1896	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	124			270	178	
Travel Time (s)	2.8			6.1	4.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	5%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	0	6	8	80	79	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	6	0	88	80	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.6%		ICU Level of Service A	
Analysis Period (min) 15			

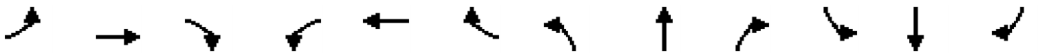
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	7	68	67	1
Future Vol, veh/h	0	5	7	68	67	1
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	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	5	0	0
Mvmt Flow	0	6	8	80	79	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	79	80	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	987	1531	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	987	1531	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.67	0.69	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	168	-	987	-	-
HCM Lane V/C Ratio	0.005	-	0.006	-	-
HCM Ctrl Dly (s/v)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

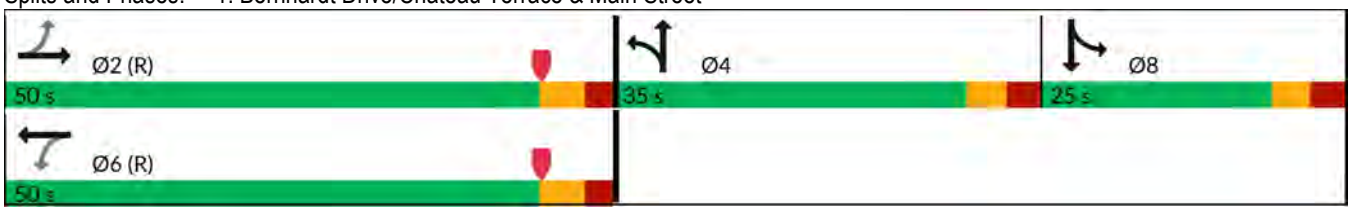


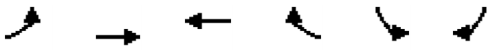
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	903	26	15	827	28	14	9	20	54	2	34
Future Volume (vph)	24	903	26	15	827	28	14	9	20	54	2	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	25		0	25		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00			0.99			0.99	
Frt		0.996			0.995			0.937			0.949	
Flt Protected	0.950			0.950				0.984			0.971	
Satd. Flow (prot)	1719	3483	0	1805	3520	0	0	1661	0	0	1719	0
Flt Permitted	0.295			0.268				0.984			0.971	
Satd. Flow (perm)	533	3483	0	508	3520	0	0	1661	0	0	1719	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			4			21			24	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		152			705			712			270	
Travel Time (s)		2.6			12.0			16.2			6.1	
Confl. Peds. (#/hr)	5		6	6		5			4			4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	3%	8%	0%	2%	0%	0%	0%	10%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	25	941	27	16	861	29	15	9	21	56	2	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	968	0	16	890	0	0	45	0	0	93	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		2			6		4	4		8	8	
Permitted Phases	2			6								
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	32.2	32.2		32.2	32.2		35.2	35.2		32.2	32.2	
Total Split (s)	50.0	50.0		50.0	50.0		35.0	35.0		25.0	25.0	
Total Split (%)	45.5%	45.5%		45.5%	45.5%		31.8%	31.8%		22.7%	22.7%	
Maximum Green (s)	43.8	43.8		43.8	43.8		28.9	28.9		18.9	18.9	
Yellow Time (s)	3.9	3.9		3.9	3.9		3.2	3.2		3.2	3.2	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.9	2.9		2.9	2.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.2	6.2		6.2	6.2			6.1			6.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.5	3.5		3.5	3.5	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0				
Flash Don't Walk (s)	13.0	13.0		11.0	11.0		21.0	21.0				
Pedestrian Calls (#/hr)	0	0		0	0		0	0				
Act Effct Green (s)	79.5	79.5		79.5	79.5			7.8			10.3	
Actuated g/C Ratio	0.72	0.72		0.72	0.72			0.07			0.09	
v/c Ratio	0.06	0.38		0.04	0.35			0.33			0.51	
Control Delay (s/veh)	8.5	8.8		8.4	8.4			36.3			44.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	8.5	8.8		8.4	8.4			36.3			44.1	
LOS	A	A		A	A			D			D	
Approach Delay (s/veh)		8.8			8.4			36.3			44.1	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)	6	147		4	130			16			47	
Queue Length 95th (ft)	20	232		14	207			52			96	
Internal Link Dist (ft)		72			625			632			190	
Turn Bay Length (ft)	25			25								
Base Capacity (vph)	385	2518		367	2545			451			315	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.06	0.38		0.04	0.35			0.10			0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 25 (23%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay (s/veh): 10.8		Intersection LOS: B	
Intersection Capacity Utilization 45.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Bernhardt Drive/Chateau Terrace & Main Street





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	943	866	9	8	30
Future Volume (vph)	33	943	866	9	8	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	25			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.893	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1805	3505	3536	0	1680	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1805	3505	3536	0	1680	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		469	152		110	
Travel Time (s)		8.0	2.6		2.5	
Confl. Peds. (#/hr)	4			4		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	3%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	34	972	893	9	8	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	972	902	0	39	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	943	866	9	8	30
Future Vol, veh/h	33	943	866	9	8	30
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	3	2	0	0	0
Mvmt Flow	34	972	893	9	8	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	906	0	-	0	1456	455
Stage 1	-	-	-	-	901	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	860	-	-	-	151	841
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	545	-
Platoon blocked, %	0	-	-	-	0	0
Mov Cap-1 Maneuver	857	-	-	-	143	838
Mov Cap-2 Maneuver	-	-	-	-	284	-
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	543	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.32	0	11.49
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	857	-	-	-	594
HCM Lane V/C Ratio	0.04	-	-	-	0.066
HCM Ctrl Dly (s/v)	9.4	-	-	-	11.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	0	20	22	0	15
Future Volume (vph)	23	0	20	22	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.929			
Flt Protected	0.950					
Satd. Flow (prot)	1805	0	1765	0	0	1900
Flt Permitted	0.950					
Satd. Flow (perm)	1805	0	1765	0	0	1900
Link Speed (mph)	30		30			30
Link Distance (ft)	145		110			611
Travel Time (s)	3.3		2.5			13.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	24	0	21	23	0	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	0	44	0	0	15
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

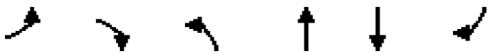
Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	0	20	22	0	15
Future Vol, veh/h	23	0	20	22	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	24	0	21	23	0	15

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	47	-	0	0	43	0
Stage 1	32	-	-	-	-	-
Stage 2	15	-	-	-	-	-
Critical Hdwy	6.4	-	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	-	-	-	2.2	-
Pot Cap-1 Maneuver	967	0	-	-	1578	-
Stage 1	996	0	-	-	-	-
Stage 2	1013	0	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	967	-	-	-	1578	-
Mov Cap-2 Maneuver	967	-	-	-	-	-
Stage 1	996	-	-	-	-	-
Stage 2	1013	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	8.81	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	967	1578	-
HCM Lane V/C Ratio	-	-	0.025	-	-
HCM Ctrl Dly (s/v)	-	-	8.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	18	16	46	71	2
Future Volume (vph)	0	18	16	46	71	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	0	1	0			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.865			0.996	
Flt Protected				0.987		
Satd. Flow (prot)	0	1644	0	1809	1839	0
Flt Permitted				0.987		
Satd. Flow (perm)	0	1644	0	1809	1839	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	124			270	178	
Travel Time (s)	2.8			6.1	4.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	5%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	0	19	17	48	74	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	19	0	65	76	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	18	16	46	71	2
Future Vol, veh/h	0	18	16	46	71	2
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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	5	3	0
Mvmt Flow	0	19	17	48	74	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	75	76	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	992	1536	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	992	1536	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.7	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	465	-	992	-	-
HCM Lane V/C Ratio	0.011	-	0.019	-	-
HCM Ctrl Dly (s/v)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-