

A. INTRODUCTION

Following the guidance of the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, this chapter considers the potential transportation impacts from the Proposed Project. As described in Chapter 1, “Project Description,” the applicant, WF Liberty, LLC, is proposing the redevelopment of a 17.72-acre portion of a 33.68-acre property (the “Project Site”) along the Arthur Kill waterfront in Staten Island that would result in a development composed of 589,619-gross-square-foot (gsf) commercial center with destination and smaller scale retail, supermarket, restaurant, cinema, and small office use as well as required and accessory parking spaces, with waterfront open space, and street and infrastructure improvements, including the opening of Richmond Valley Road west of Arthur Kill Road and addition of new turning lanes into the Project Site along Arthur Kill Road (the “Proposed Project”). The Project Site is located within the West Shore area of Staten Island Community District 3 and is bounded by the structural supports for the Outerbridge Crossing to the north, Arthur Kill Road to the east, the mapped but unbuilt Richmond Valley Road and the shoreline of Mill Creek to the south, and the Arthur Kill waterway to the west. The Proposed Project would consist of approximately 300,128 gsf of retail uses, supermarket of up to 80,000 gsf, 53,770 gsf of restaurant uses, a 55,000 gsf (1,088-seat) cinema, and 1,500 gsf of office space and 1,721 accessory parking spaces.

This chapter examines the potential effects of the Proposed Project on the study area transportation systems, and compares the With Action Condition to the No Action Condition in the 2019 analysis year to identify potential impacts, and, if warranted, determine feasible mitigation measures that would be appropriate to address those impacts (see Chapter 20, “Mitigation”). The travel demand projections, trip assignments, and capacity analysis contained in this chapter were conducted pursuant to the methodologies outlined in the *CEQR Technical Manual*.

PRINCIPAL CONCLUSIONS

TRAFFIC

Traffic conditions were evaluated at 20 intersections for the weekday AM, midday, PM, and Saturday peak hours. In the 2019 With Action (the Proposed Project) condition, there would be the potential for significant adverse traffic impacts at ten intersections during the weekday AM peak hour, twelve intersections during the weekday midday peak hour, fifteen intersections during the weekday PM peak hour, and fifteen intersections during the Saturday peak hour. **Table 12-1** provides a summary of the impacted locations by lane group and analysis time period. Potential measures to mitigate the projected traffic impacts are described in Chapter 20, “Mitigation.” As detailed in that chapter, the significant adverse traffic impacts identified under the

Table 12-1
Summary of Significant Adverse Traffic Impacts
Proposed Project

Intersection		Weekday AM	Weekday Midday	Weekday PM	Saturday
EB/WB Street	NB/SB Street	Peak Hour	Peak Hour	Peak Hour	Peak Hour
Woodrow Road/School Driveway	Bloomingtondale Road			WB-L	WB-L
Englewood Avenue	Veterans Road East			EB-LTR	EB-LTR
Veterans Road West/Allentown Lane	Arthur Kill Road	WB-LTR	WB-LTR NB-LTR SB-LTR	WB-LTR NB-LTR SB-LTR	WB-LTR NB-LTR SB-LTR
North Bridge Street	Arthur Kill Road	WB-LR	WB-LR	WB-LR	WB-LR SB-T
Richmond Valley Road	Arthur Kill Road	WB-TR	EB-L EB-TR WB-TR	EB-L EB-TR WB-L WB-TR NB-TR	EB-L EB-TR WB-TR NB-TR
Richmond Valley Road	Page Avenue		EB-L EB-TR NB-L	EB-L EB-TR WB-LTR NB-L	EB-L EB-TR WB-LTR NB-L
South Bridge Street	Page Avenue/Boscombe Avenue	EB-LT	EB-LT	EB-LT	EB-LT
Boscombe Avenue	Route 440 Ramps	EB-L	EB-L	EB-L	EB-L
Veterans Road West	Tyrellan Avenue	WB-LTR	WB-LTR	EB-LTR WB-LTR	EB-LTR WB-LTR
Veterans Road West	North Bridge Street/Bricktown Way	EB-L WB-L	EB-L EB-TR WB-L	EB-L EB-TR WB-L	EB-L EB-TR WB-T
Amboy Road	Page Avenue	EB-L	SB-L	EB-L NB-T SB-L	EB-L NB-L NB-T SB-T
Hylan Boulevard	Page Avenue	EB-L SB-L	SB-L	EB-L SB-L	EB-L SB-L
Amboy Road/Pleasant Plains Avenue	Bloomingtondale Road			NB-LTR	WB-L NB-LTR
Route 440 Off-Ramp	North Bridge Street	WB-L	WB-L	WB-L	WB-L
South Bridge Street	Arthur Kill Road		SB-LT	SB-LT	SB-LT
Total Impacted Intersections/Lane Groups		10/12	12/20	15/30	15/32
Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.					

Proposed Project—except for those occurring the intersections of Arthur Kill Road at North Bridge Street, Arthur Kill Road at Richmond Valley Road, Page Avenue at Richmond Valley Road, Boscombe Avenue at the Route 440 Ramps, Amboy Road and Page Avenue, Page Avenue at Hylan Boulevard, North Bridge Street at the 440 westbound off-ramp, and Arthur Kill Road at South Bridge Street during one or more analysis peak hours—could be fully mitigated with standard mitigation measures, including signal timing/phasing and lane restriping changes.

TRANSIT

Based on the distribution of project-generated bus trips, the S78 Bus Route would experience more than 50 peak hour bus trips in one direction, which is the *CEQR Technical Manual* recommended threshold for undertaking a quantified bus analysis. Accordingly, a bus line haul analysis was conducted for the S78 Bus Route, which concluded that the S78 Bus Route would not exceed guideline capacity for the PM peak period. Therefore, the Proposed Project is not expected to result in any significant adverse bus line-haul impacts.

In addition, because there would not be any subway/rail trips during any of the peak hours, a detailed analysis of the Staten Island Railway is not warranted and the Proposed Project is not expected to result in any significant adverse rail impacts.

PEDESTRIANS

For the Proposed Project, all auto trips are expected to park on site, and all taxi trips would be dropped off and picked up within the Project Site, adjacent to store entrances. Person trips associated with autos and taxis would therefore not traverse the pedestrian elements surrounding the Project Site. The remaining pedestrian walk trips would be below the *CEQR Technical Manual* threshold of 200 peak hour pedestrian trips and are not expected to result in any significant adverse pedestrian impacts.

VEHICULAR AND PEDESTRIAN SAFETY

Crash data for the study area intersections were obtained from the New York State Department of Transportation (NYSDOT) for the time period between January 1, 2013 and December 31, 2015. During this period, a total of 63 reportable and non-reportable accidents, zero fatalities, 39 injuries, and zero pedestrian/bicyclist-related accidents occurred at the study area intersections. A rolling total of accident data identified no intersections as high accident locations in the 2013 to 2015 period.

PARKING

The Proposed Project would include 1,721 parking spaces on the Project Site. Accounting for the incremental parking supply and demand generated by the Proposed Project, the With Action parking utilization is expected to reach a maximum of 85 percent of the on-site parking capacity during the Saturday peak hour. Therefore, the Proposed Project would not result in the potential for a parking shortfall or significant adverse parking impacts.

B. PRELIMINARY ANALYSIS METHODOLOGY AND SCREENING ASSESSMENT

The *CEQR Technical Manual* recommends a two-tier screening procedure for the preparation of a “preliminary analysis” to determine if quantified analyses of transportation conditions are warranted. As discussed below, the preliminary analysis begins with a trip generation analysis (Level 1) to estimate the volume of person and vehicle trips attributable to the Proposed Project. If the Proposed Project is expected to result in fewer than 50 peak hour vehicle trips and fewer than 200 peak hour transit or pedestrian trips, further quantified analyses are not warranted. When these thresholds are exceeded, detailed trip assignments (Level 2) are performed to estimate the incremental trips at specific transportation elements and to identify potential locations for further analyses. If the trip assignments show that the Proposed Project would result in 50 or more peak hour vehicle trips at an intersection, 200 or more peak hour subway trips at a station, 50 or more peak hour bus trips in one direction along a bus route, or 200 or more peak hour pedestrian trips traversing a pedestrian element, then further quantified analyses may be warranted to assess the potential for significant adverse impacts on traffic, transit, pedestrians, parking, and vehicular and pedestrian safety.

LEVEL 1 SCREENING ASSESSMENT

A Level 1 trip generation screening assessment was conducted to estimate the numbers of person and vehicle trips by mode expected to be generated by the Proposed Project during the weekday AM, midday, PM, and Saturday peak hours. These estimates were then compared to the *CEQR*

Technical Manual thresholds to determine if a Level 2 screening and/or quantified operational analyses would be warranted.

TRANSPORTATION PLANNING ASSUMPTIONS

In consultation with the lead agency and the New York City Department of Transportation (NYCDOT), trip generation factors for the Proposed Project were determined based on information from the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, U.S. Census Data, the *Institute of Transportation Engineers (ITE) Trip Generation Manual*, 9th Edition, and other approved EASs and EISs. The travel demand assumptions and trip generation sources are summarized in **Table 12-2**.

**Table 12-2
Travel Demand Assumptions**

Land Use	Shopping Center				
Total Daily Person Trip	(1,2) Weekday 65.17 Trips/KSF			(1,2) Saturday 76.27 Trips/KSF	
	(3,4)				
Temporal Distribution	AM	MD	PM	Saturday	
	3%	9%	9%	11%	
Direction	(1,5)				
	In	62%	48%	48%	52%
	Out	38%	52%	52%	48%
	Total	100%	100%	100%	100%
Modal Split	(4)				
	Auto	94.0%			
	Taxi	1.0%			
	Subway/Rail	0.0%			
	Bus	4.0%			
	Walk	1.0%			
Total	100%				
Vehicle Occupancy	(6)				
	Auto/Taxi	1.45/1.65			
Daily Delivery Trip Generation Rate	(3) Weekday 0.35 Delivery Trips/KSF			(3) Saturday 0.04 Delivery Trips/KSF	
	(3)				
Delivery Temporal	AM	MD	PM	Saturday	
	8%	11%	2%	11%	
Delivery Direction	(3)				
	In	50%	50%	50%	50%
	Out	50%	50%	50%	50%
	Total	100%	100%	100%	100%
Sources/Notes:					
(1) <i>ITE Trip Generation Manual</i> , 9th Edition (LU 820)					
(2) Established by multiplying the daily vehicle trip rate by the auto occupancy and dividing by 0.95 per NYCDOT guidance.					
(3) 2014 <i>CEQR Technical Manual</i> , Destination Retail Use.					
(4) Based on NYCDOT guidance.					
(5) Weekday midday assumed to be the same as weekday PM.					
(6) <i>Staten Island Mall FEIS</i> (2015)					

Shopping Center

Based on guidance from NYCDOT, trip factors for the Shopping Center use from the *ITE Trip Generation Manual*, 9th Edition were used to project future trip-making associated with the

Proposed Project. The daily person trip generation rates were determined using the ITE weekday and Saturday vehicle trip rates and the auto occupancy from the 2015 *Staten Island Mall FEIS*. The directional distributions are from the *ITE Trip Generation Manual*, 9th Edition. Modal splits are based on guidance from NYCDOT. The temporal distributions, as well as the daily delivery trip rate and temporal and directional distributions, are from the 2014 *CEQR Technical Manual* for destination retail.

TRAVEL DEMAND PROJECTION SUMMARY

As summarized in **Table 12-3**, in the future, the Proposed Project is estimated to generate 960, 2,877, 2,877, 4,114 person trips during the weekday AM, midday, PM, and Saturday peak hours, respectively. Approximately 648, 1,917, 1,903, and 2,719 vehicle trips would be generated during the same respective peak hours.

**Table 12-3
Trip Generation Summary**

Peak Hour	In/Out	Person Trips *					Vehicle Trips			
		Auto	Taxi	Bus	Walk	Total	Auto	Taxi	Delivery	Total
AM	In	559	6	24	6	595	386	6	7	399
	Out	342	4	15	4	365	236	6	7	249
	Total	901	10	39	10	960	622	12	14	648
Midday	In	1298	14	55	14	1381	895	17	9	921
	Out	1406	15	60	15	1496	970	17	9	996
	Total	2704	29	115	29	2877	1865	34	18	1917
PM	In	1298	14	55	14	1381	895	17	2	914
	Out	1406	15	60	15	1496	970	17	2	989
	Total	2704	29	115	29	2877	1865	34	4	1903
Saturday	In	2011	21	86	21	2139	1387	25	1	1413
	Out	1856	20	79	20	1975	1280	25	1	1306
	Total	3867	41	165	41	4114	2667	50	2	2719

Note: * No person trips are projected to use the Staten Island Railway

Traffic

As shown in Table 12-3, the incremental trips generated by the Proposed Project would be 648, 1,917, 1,903, and 2,719 vehicle trips during the weekday AM, midday, PM, and Saturday peak hours, respectively. Since the incremental vehicle trips would be greater than 50 vehicles, a Level 2 screening assessments (presented in the section below) was conducted to establish a recommended study area for quantified traffic analysis.

Transit

As shown in Table 12-3, the incremental transit trips generated by the Proposed Project were projected to be 39, 115, 115, and 165 person trips by bus during the weekday AM, midday, PM, and Saturday peak hours, respectively, and there would not be any subway/rail trips during any of the peak hours. In accordance with guidance prescribed in the *CEQR Technical Manual*, a Level 2 screening assessment was conducted to determine if a quantified bus line-haul analysis is warranted.

Pedestrian

For the Proposed Project, all auto trips are expected to park on site, and all taxi trips would be dropped off and picked up within the Project Site, adjacent to store entrances. Person trips associated with autos and taxis would therefore not traverse the pedestrian elements surrounding the Project Site. The remaining 10, 29, 29, and 41 pedestrian walk trips would be below the *CEQR Technical Manual* threshold of 200 peak hour pedestrian trips; therefore, no further analysis of pedestrian conditions is warranted and the Proposed Project is not expected to result in any significant adverse pedestrian impacts.

LEVEL 2 SCREENING ASSESSMENT

A Level 2 screening assessment involves the distribution and assignment of projected trips to the transportation network and the determination of whether specific locations are expected to experience incremental trips exceeding *CEQR Technical Manual* thresholds. Typically, if the results of this analysis show that the Proposed Project would result in 50 or more peak hour vehicle trips through an intersection, 50 or more peak hour bus riders on a bus route in a single direction, 200 or more peak hour subway passengers per station, or 200 or more peak hour pedestrian trips per pedestrian element, further quantified analyses may be warranted to evaluate the potential for significant adverse traffic, transit, pedestrian, and parking impacts.

SITE ACCESS AND EGRESS

Access to the Project Site would be provided at three locations along Arthur Kill Road between Richmond Valley Road and South Bridge Street. At the intersection of Arthur Kill Road and Richmond Valley Road, the Proposed Project would enlarge and improve the existing mapped Richmond Valley Road right-of-way west of Arthur Kill Road. In addition, the westbound, northbound and southbound approaches of the intersection would be widened to include additional travel lanes. A second signalized entrance would provide two-way access to Arthur Kill Road from the northern boundary of the Project Site. The southbound approach to this intersection would be widened along Arthur Kill Road to provide a channelized right-turn only lane entry into the project site. All traffic movements except the northbound left-turn into the project site would be permitted. Finally, a third entrance would be provided between the two signalized entrances. The third entry would be an unsignalized right-turn only entrance from a proposed curb cut along southbound Arthur Kill Road.

The cellar-level parking spaces would be accessible via each of the three private drives. Each of the three cellar-level parking entrances would connect to the same cellar-level parking, allowing for different entrance and exit travel patterns. Egress from the cellar-level parking would be provided at two locations connecting to either the northernmost or southernmost private drives. The Proposed Project ground level site plan is show in **Figure 12-1**.

TRAFFIC

As shown in Table 12-3, incremental vehicle trips resulting from the Proposed Project would exceed the *CEQR* Level-1 screening threshold during the weekday AM, midday, and PM, and Saturday peak hours. These vehicle trips were assigned to area intersections based on the most likely travel routes to and from the Project Site, prevailing travel patterns, commuter origin-destination (O-D) summaries from the census data, the configuration of the roadway network, and the anticipated locations of site access and egress. Auto trips were assigned to the structured parking facility and parking along the private drive provided on the Project Site. Taxi trips were

assigned to enter the Project Site and drop-off/pick-up along the Project Site's internal private drives. All delivery trips were assigned to the Project Site via NYCDOT-designated truck routes.

Shopping Center

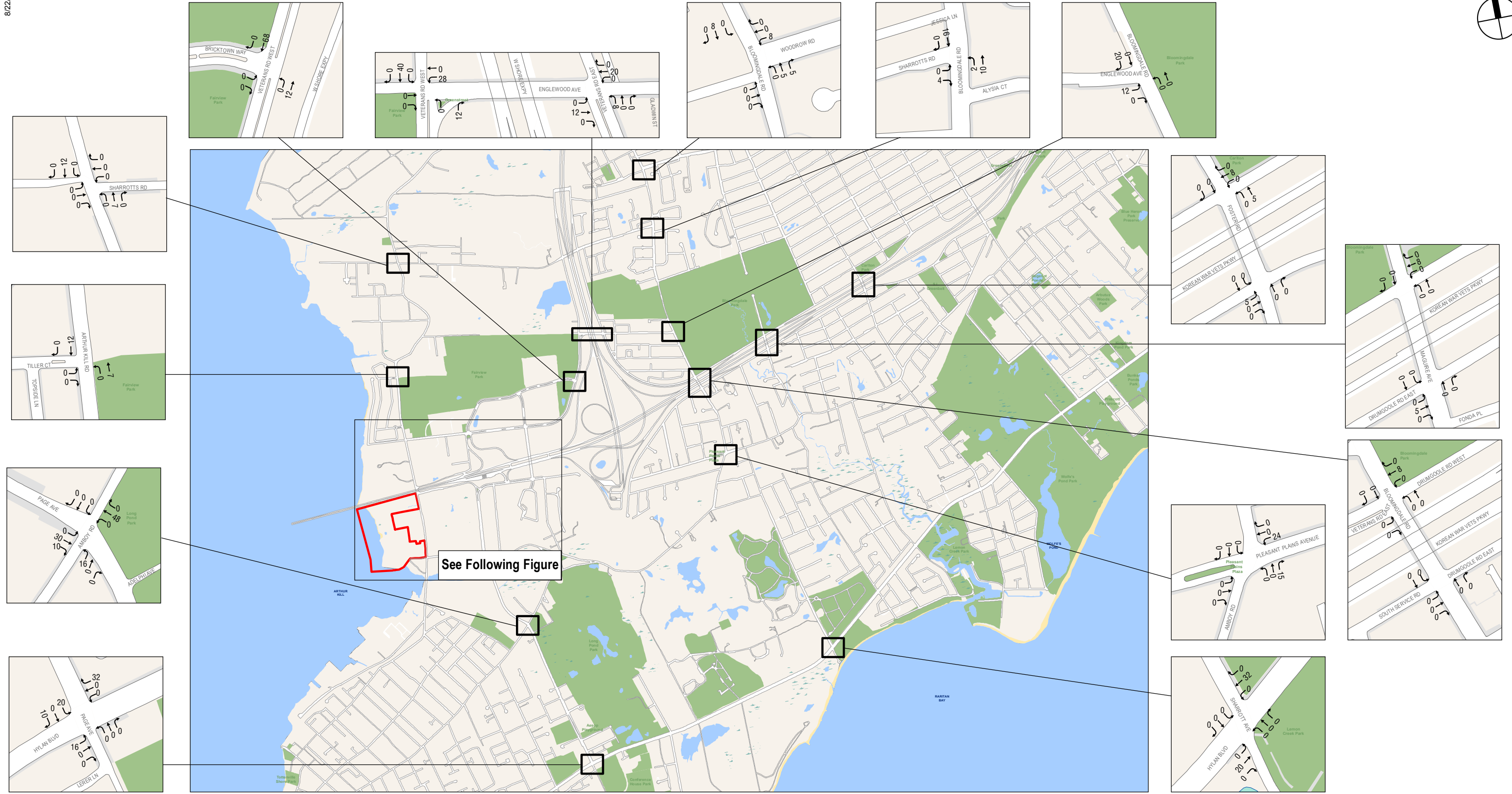
The commercial center is anticipated to draw both regional and local customers. Based on previously approved studies in the surrounding area and 2010 census population data, approximately 25 percent of total vehicle trips were projected to originate outside Staten Island, of which approximately 5 percent originating from the Perth Amboy section of New Jersey and the remaining 20 percent originating from areas of Brooklyn and Long Island. The trip distribution patterns for the approximately 75 percent Staten Island vehicle trips were based on 2010 U.S. Census population data for trips originating within a three-mile radius. Trips originating within Staten Island outside the three-mile radius were assumed to use the West Shore Expressway and Korean War Veterans Parkway to access the Project Site. Overall, vehicle trips generated by the Proposed Project were distributed to the study area streets/roadways in the following manner: approximately 36 percent of project-generated trips were assumed to approach the site from the north, 46 percent from the east and southeast, and 18 percent from the west and southwest. Departing trips were assigned along the same routes as arrivals.

Summary

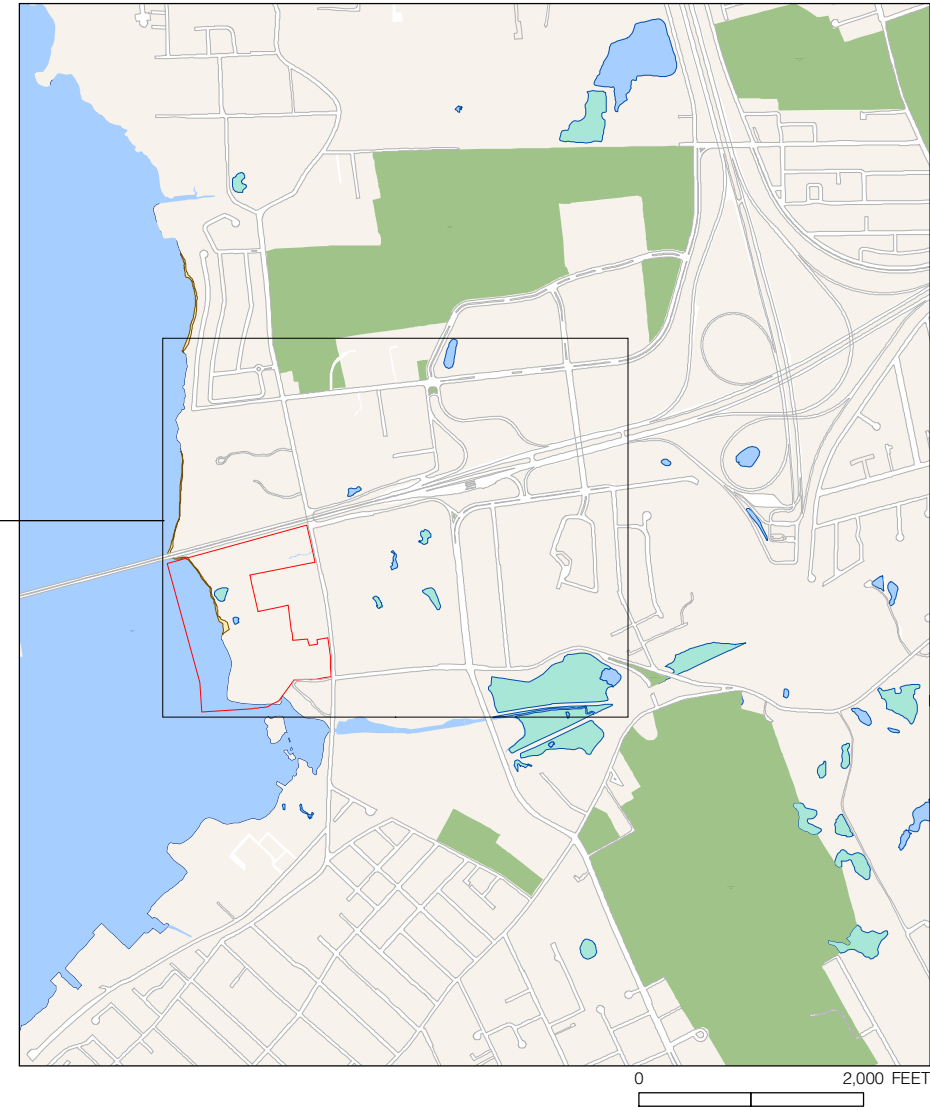
Figures 12-2 through 12-5 show the Proposed Project's project-generated vehicle trips for the weekday AM, midday, PM, and Saturday peak hours. **Table 12-3** summarizes the incremental vehicle trips generated by the Proposed Project. Typically, according to the *CEQR Technical Manual*, intersections expected to incur 50 or more incremental peak hour vehicle trips as a result of a proposed action should be considered for inclusion in a quantified traffic analysis to assess the potential for significant adverse traffic impacts. Based on consultation with the lead agency and NYCDOT, 20 intersections, comprising the traffic study area, have been selected for analysis, as shown in **Figure 12-6** and **Table 12-4**.

TRANSIT

There are numerous bus routes with stops adjacent to or near the project site, including the S74, S78, and S84 bus routes. As summarized in Table 12-3, the Proposed Project is expected to generate 39, 115, 115, and 165 incremental bus trips during the weekday AM, midday, PM, and Saturday peak hours, respectively. Based on a distribution of the projected bus trips it was determined that a quantified bus line-haul analysis would be warranted for the S78 bus route, which currently has stops along Arthur Kill Road just south of the project site.



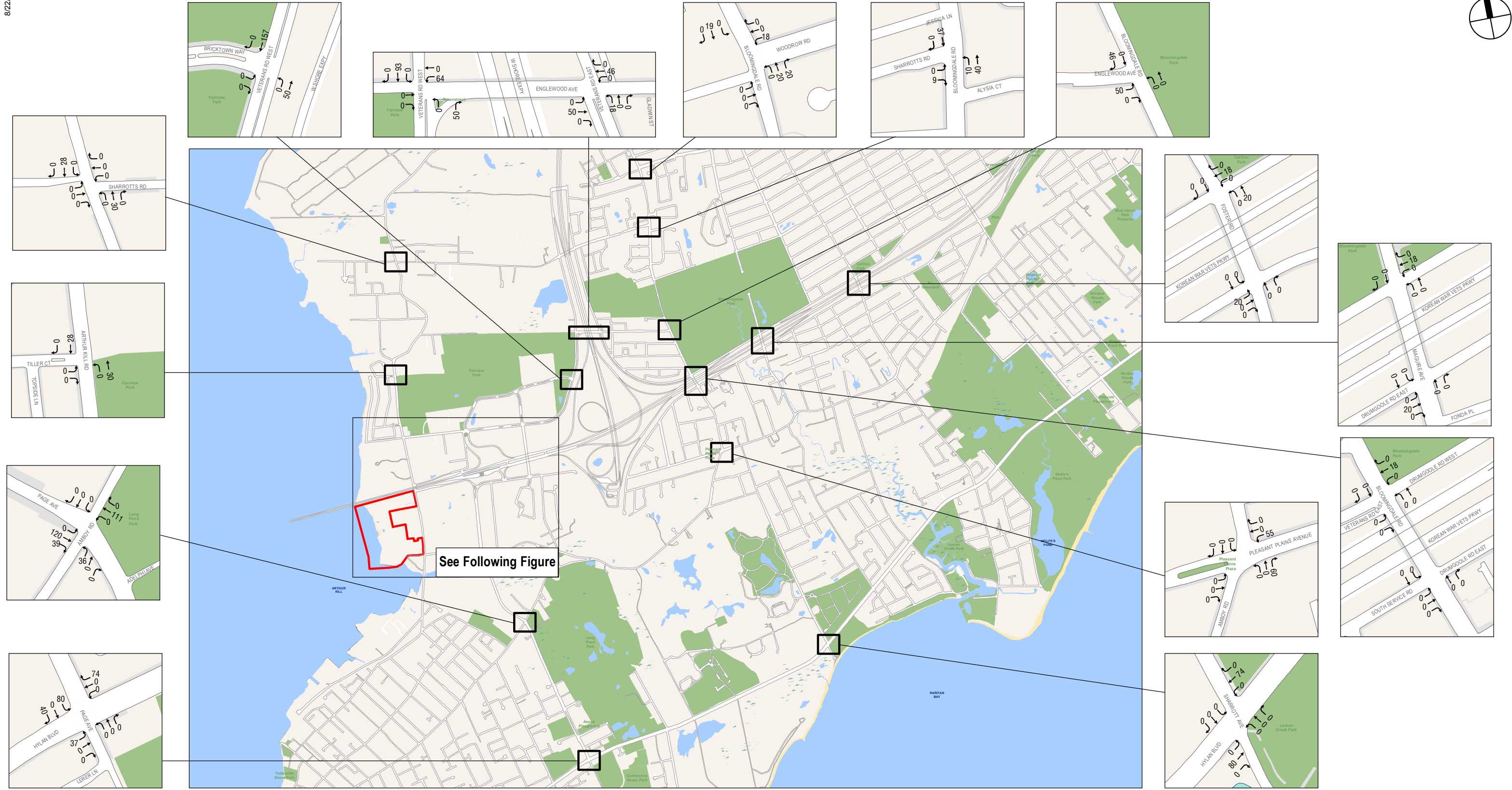
 Project Site



Project Site

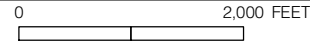
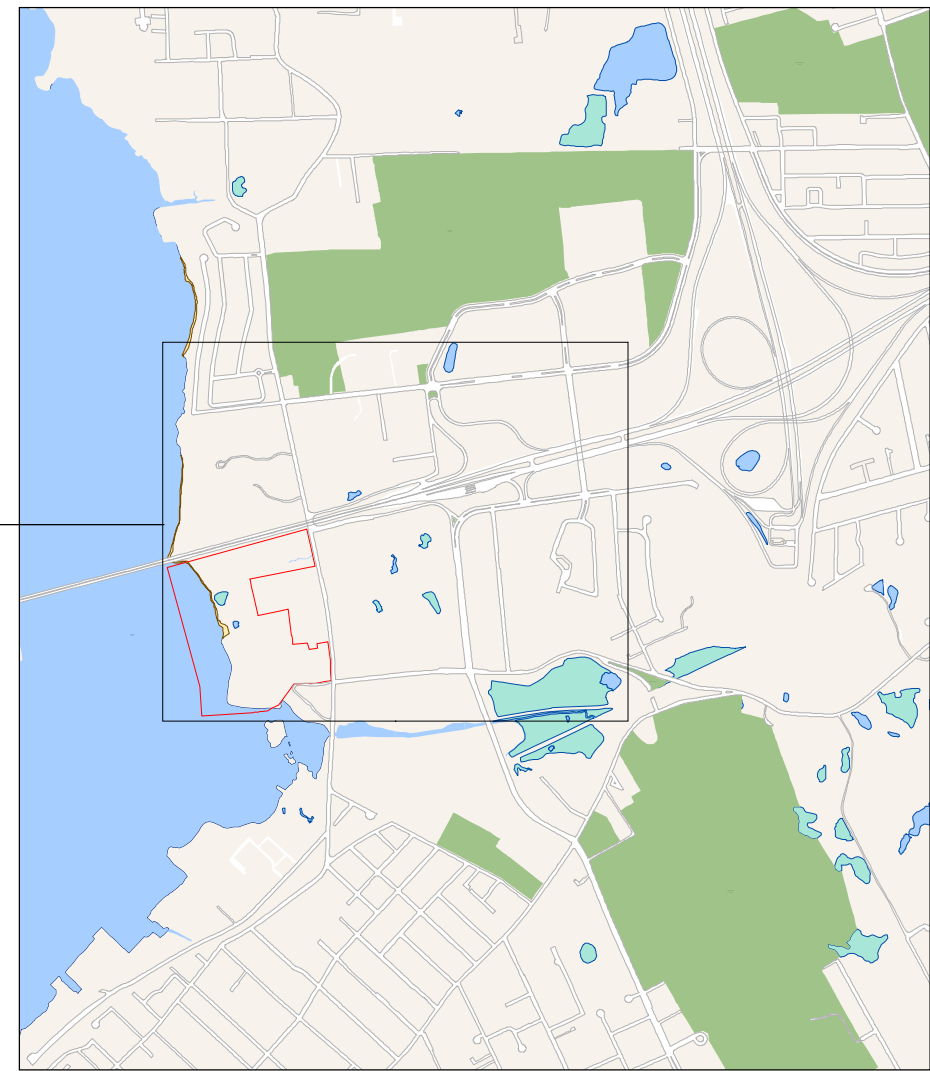
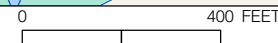
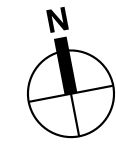
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Project Generated Incremental Vehicle Trips
 Weekday AM Peak Hour
Figure 12-2b



 Project Site

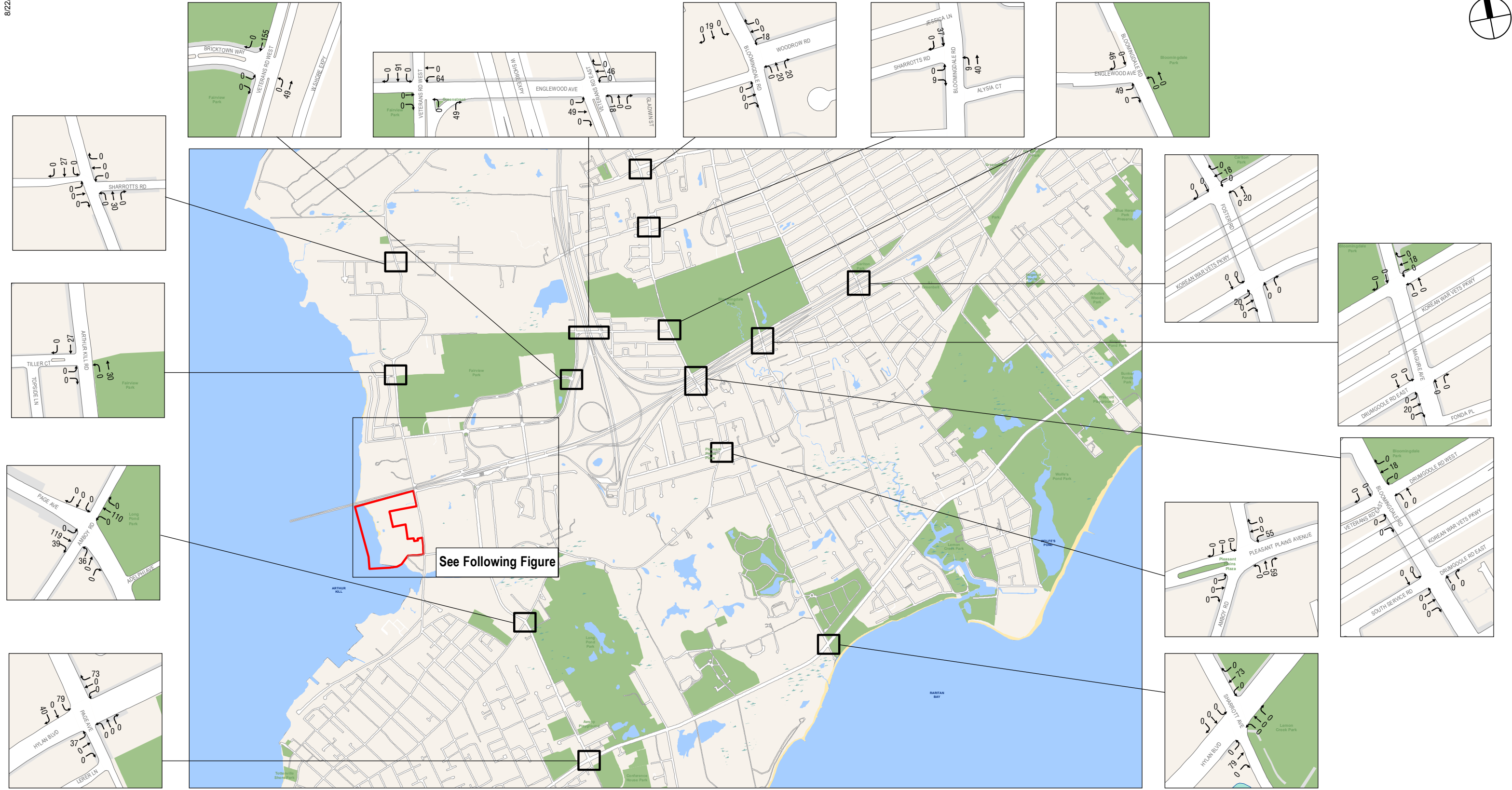
Project Generated Incremental Vehicle Trips
Weekday Midday Peak Hour
Figure 12-3a



 Project Site

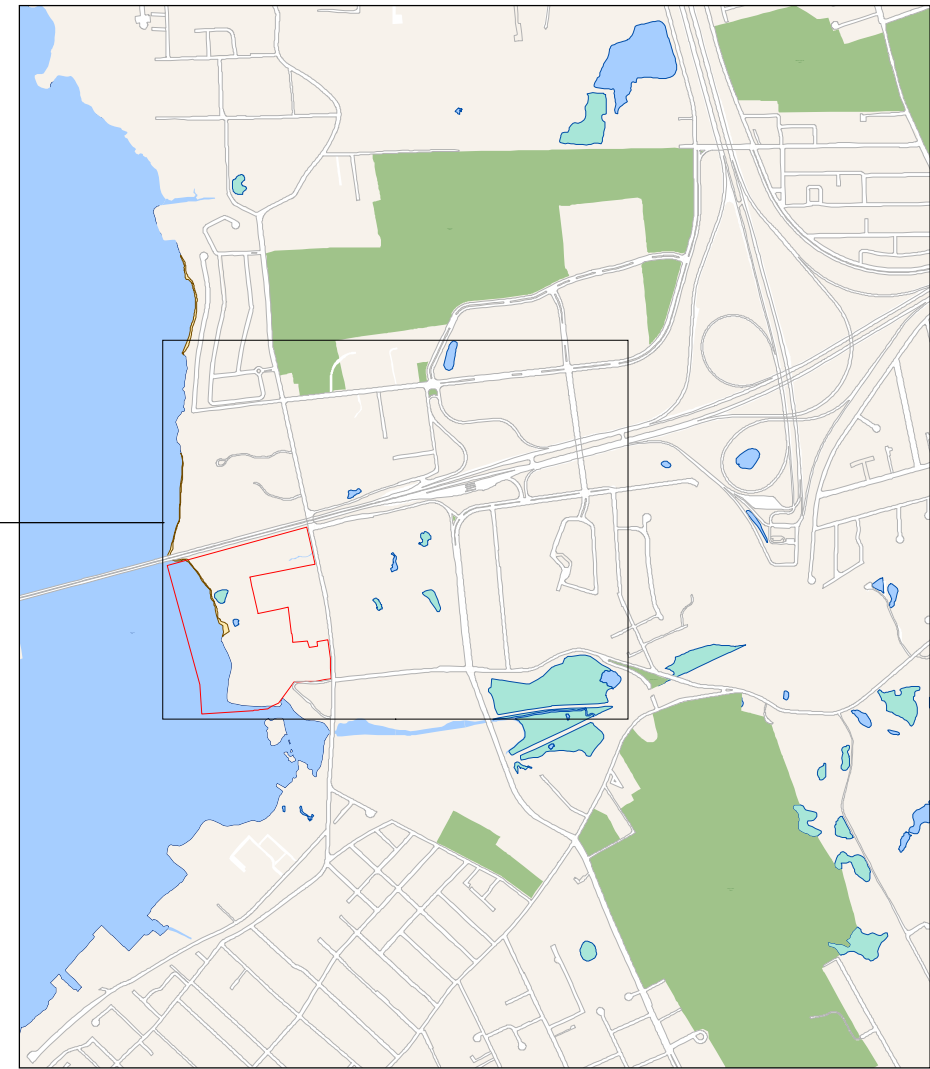
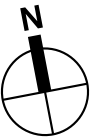
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Project Generated Incremental Vehicle Trips
 Weekday Midday Peak Hour
Figure 12-3b



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 Project Site



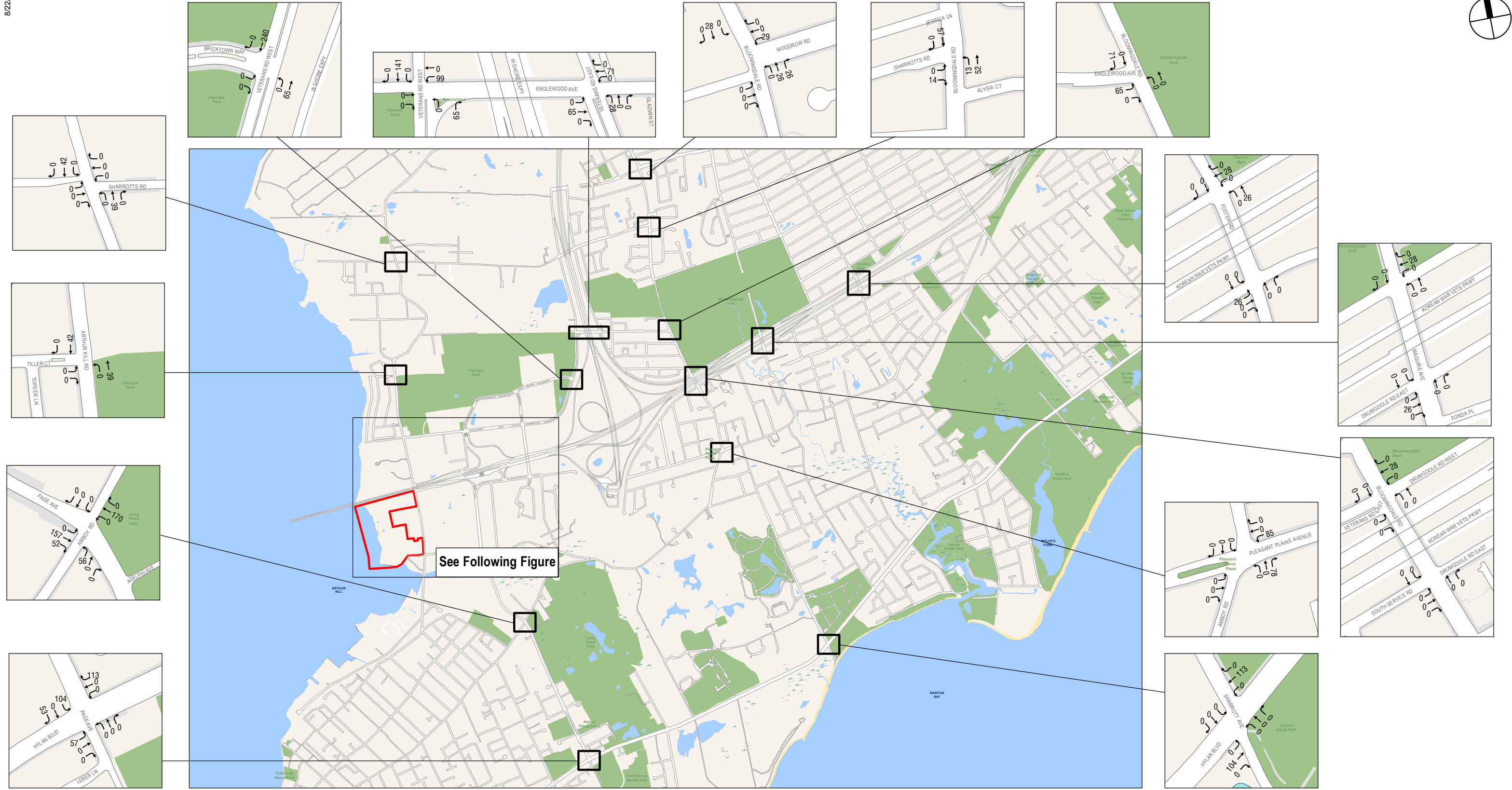
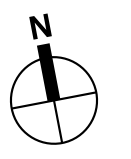
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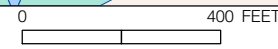
 Project Site

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Project Generated Incremental Vehicle Trips
Weekday PM Peak Hour
Figure 12-4b

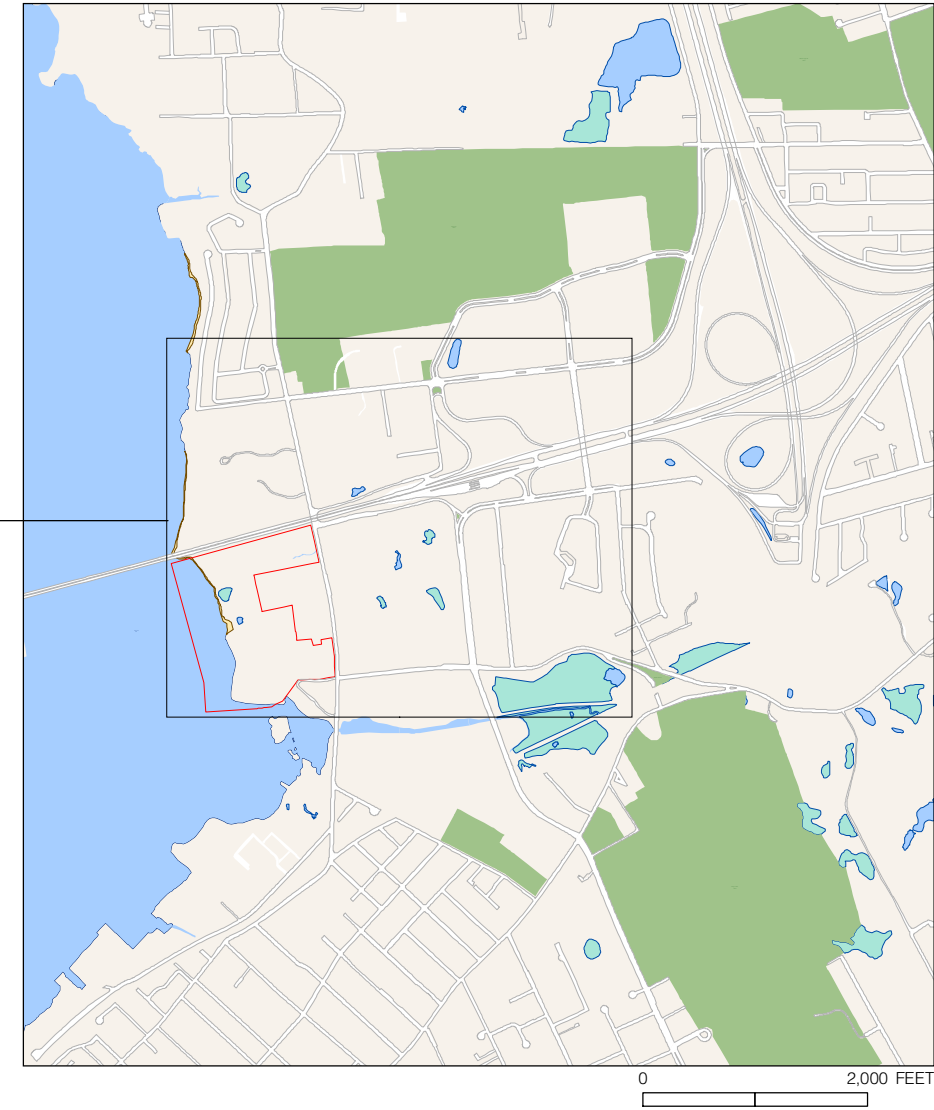
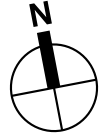


 Project Site

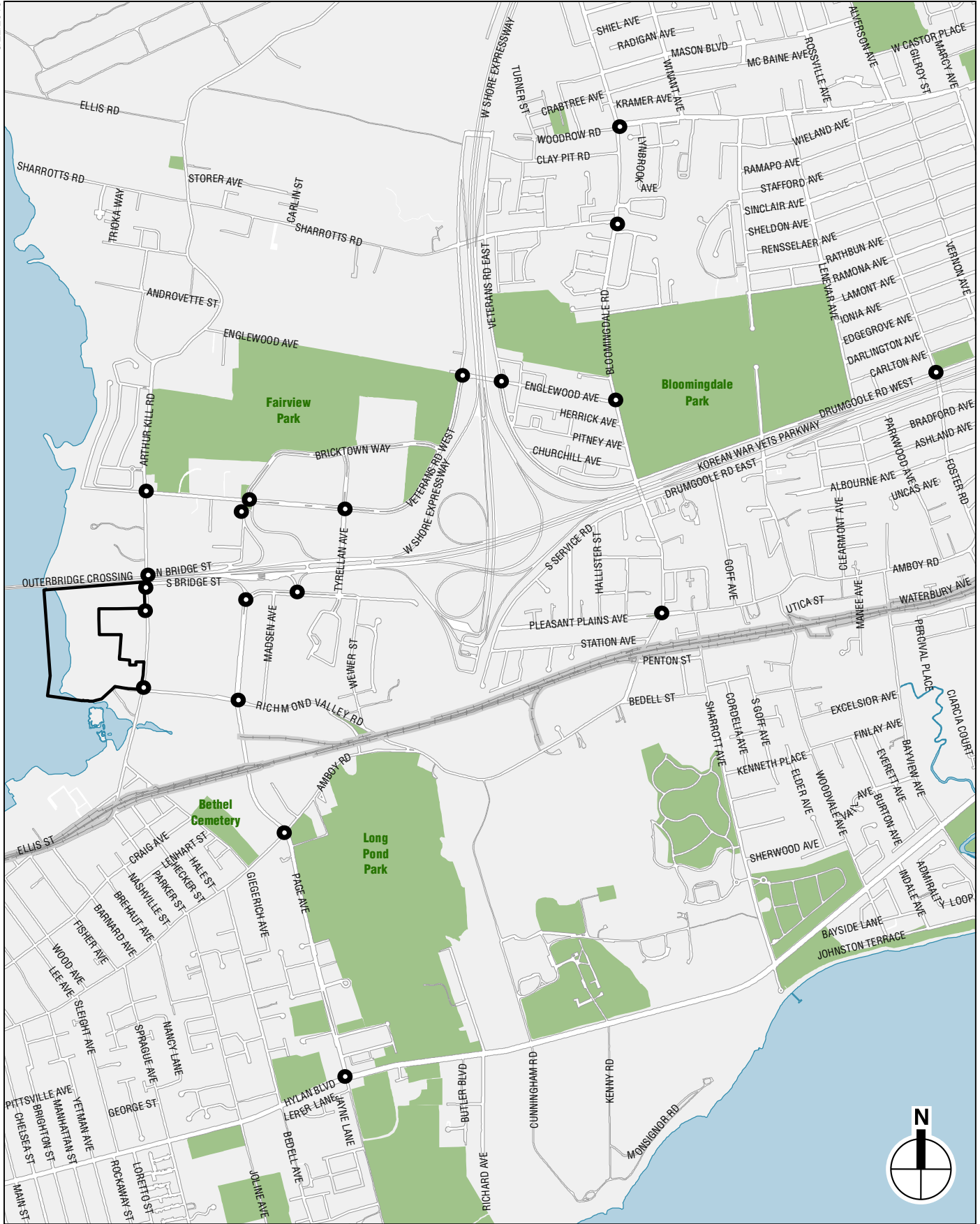


Project Site

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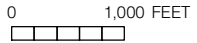


Project Generated Incremental Vehicle Trips
 Saturday Peak Hour
Figure 12-5b



- Project Site
- Traffic Analysis Location

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Traffic Analysis Locations
Figure 12-6

Table 12-4

Traffic Level 2 Screening Analysis Results—Selected Analysis Locations

Intersection	Incremental Vehicle Trips				Selected Analysis Locations
	Weekday AM	Weekday Midday	Weekday PM	Saturday	
Arthur Kill Road and Sharrotts Road ¹	19	58	57	81	
Route 440 Westbound Off-Ramp and Veterans Road West	93	257	253	370	✓
Route 440 Westbound Off-Ramp and North Bridge Street	200	483	479	729	✓
Route 440 Westbound On-Ramp and North Bridge Street ²	200	483	479	729	
Arthur Kill Road and Veterans Road West	119	333	330	479	✓
Arthur Kill Road and North Bridge Street	306	766	760	1143	✓
Arthur Kill Road and South Bridge Street	383	1075	1067	1548	✓
Page Avenue and South Bridge Street	167	634	630	842	✓
Route 440 Eastbound Ramps and Boscombe Avenue	167	634	630	842	✓
Arthur Kill Road and Richmond Valley Road	380	1155	1146	1626	✓
Arthur Kill Road and Project Driveway ³	398	1135	1126	1626	✓
Arthur Kill Road and Parking Garage Entrance ^{2,3}	222	585	579	858	
Page Avenue and Richmond Valley Road	233	746	741	1035	✓
Page Avenue and Amboy Road	104	306	304	435	✓
Page Avenue and Hylan Boulevard	78	231	229	327	✓
Bloomingtondale Road and Woodrow Road	26	77	77	109	✓
Bloomingtondale Road and Sharrotts Road	32	96	95	136	✓
Veteran Road West and Englewood Avenue	80	207	204	305	✓
Veterans Road East and Englewood Avenue	40	114	113	164	✓
Bloomingtondale Road and Englewood Avenue	32	96	95	136	✓
Veterans Road West and Bricktown Way ¹	80	207	204	305	
Veterans Road West and Bricktown Way/Tyrellan Avenue	80	207	204	305	✓
Bloomingtondale Road and Veterans Road East	8	18	18	28	
Maguire Avenue and Drumgoole Road West	8	18	18	28	
Foster Road and Drumgoole Road West	13	38	38	54	✓
Bloomingtondale Road and Drumgoole Road East	0	0	0	0	
Maguire Avenue and Drumgoole Road East	5	20	20	26	
Foster Road and Drumgoole Road East	5	20	20	26	
Tyrellan Avenue and Boscombe Avenue	0	0	0	0	
Bloomingtondale Road and Amboy Road/Pleasant Plains Avenue	39	115	114	163	✓
Sharrotts Avenue and Hylan Boulevard ¹	52	154	152	217	

Notes: ✓ denotes intersections recommended for the detailed traffic analysis.
 (1) Incremental vehicle trips are all through movements at this intersection, therefore it is not recommended for analysis.
 (2) Intersection is uncontrolled without conflicting maneuvers; therefore, it is not recommended for analysis.
 (3) New intersection created by the Proposed Project, with right-turn entry movement only.

C. TRANSPORTATION ANALYSIS METHODOLOGIES

TRAFFIC OPERATIONS

The operation of all of the signalized intersections and unsignalized intersection in the study area were assessed using methodologies presented in the *2000 Highway Capacity Manual (HCM)* using the *Synchro Software (Version 8)*. The *HCM* procedure evaluates the levels of service (LOS) for signalized and unsignalized intersections using average stop control delay, in seconds per vehicle, as described below.

SIGNALIZED INTERSECTIONS

The average control delay per vehicle is the basis for LOS determination for individual lane groups (grouping of movements in one or more travel lanes), the approaches, and the overall intersection. The levels of service are defined in **Table 12-5**.

Table 12-5
Level of Service Criteria for Signalized Intersections

LOS	Average Control Delay
A	≤ 10.0 seconds
B	>10.0 and ≤ 20.0 seconds
C	>20.0 and ≤ 35.0 seconds
D	>35.0 and ≤ 55.0 seconds
E	>55.0 and ≤ 80.0 seconds
F	>80.0 seconds
Source: Transportation Research Board. <i>Highway Capacity Manual</i> , 2000.	

Although the HCM methodology calculates a volume-to-capacity (v/c) ratio, there is no strict relationship between v/c ratios and LOS as defined in the *HCM*. A high v/c ratio indicates substantial traffic passing through an intersection, but a high v/c ratio combined with low average delay actually represents the most efficient condition in terms of traffic engineering standards, where an approach or the whole intersection processes traffic close to its theoretical maximum capacity with minimal delay. However, very high v/c ratios—especially those approaching or greater than 1.0—are often correlated with a deteriorated LOS. Other important variables affecting delay include cycle length, progression, and green time. LOS A and B indicate good operating conditions with minimal delay. At LOS C, the number of vehicles stopping is higher, but congestion is still fairly light. LOS D describes a condition where congestion levels are more noticeable and individual cycle failures (a condition where motorists may have to wait for more than one green phase to clear the intersection) can occur. Conditions at LOS E and F reflect poor service levels, and cycle breakdowns are frequent. The *HCM* methodology also provides for a summary of the total intersection operating conditions. The analysis chooses the two critical movements (the worst case from each roadway) and calculates a summary critical v/c ratio. The overall intersection delay, which determines the intersection's LOS, is based on a weighted average of control delays of the individual lane groups. Per the *CEQR Technical Manual*, the midpoint of LOS D (45 seconds of delay) is generally considered as the threshold between acceptable and unacceptable operations.

Significant Impact Criteria

According to the criteria presented in the *CEQR Technical Manual*, impacts are considered significant and require examination of mitigation if they result in an increase in the With Action condition of 5 or more seconds of delay in a lane group over No Action levels beyond mid-LOS D. For No Action LOS E, a 4-second increase in delay is considered significant. For No Action LOS F, a 3-second increase in delay is considered significant. In addition, impacts are considered significant if levels of service deteriorate from acceptable A, B, or C in the No Action condition to marginally unacceptable LOS D (i.e., a delay in excess of 45 seconds, the midpoint of LOS D), or unacceptable LOS E or F in the With Action condition.

UNSIGNALIZED INTERSECTIONS

For unsignalized intersections, the average control delay is defined as the total elapsed time from which a vehicle stops at the end of the queue until the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. As per the *HCM*, the average control delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The LOS criteria for unsignalized intersections are summarized in **Table 12-6**.

Table 12-6

Level of Service Criteria for Unsignalized Intersections

LOS	Average Control Delay
A	≤ 10.0 seconds
B	> 10.0 and ≤ 15.0 seconds
C	> 15.0 and ≤ 25.0 seconds
D	> 25.0 and ≤ 35.0 seconds
E	> 35.0 and ≤ 50.0 seconds
F	> 50.0 seconds
Source: Transportation Research Board. <i>Highway Capacity Manual</i> , 2000.	

The LOS thresholds for unsignalized intersections are different from those for signalized intersections. The primary reason is that drivers expect different levels of performance from different types of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection; hence, the corresponding control delays are higher at a signalized intersection than at an unsignalized intersection for the same LOS. In addition, certain driver behavioral considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections. For these reasons, the corresponding delay thresholds for unsignalized intersections are lower than those of signalized intersections. Per the *CEQR Technical Manual*, as with signalized intersections, the midpoint of LOS D (30 seconds of delay) is generally perceived as the threshold between acceptable and unacceptable operations.

Significant Impact Criteria

The same sliding scale of significant delays described for signalized intersections applies for unsignalized intersections. To trigger significant impacts on the minor street, at least 90 passenger car equivalents (PCE) must be identified on that street in the With Action condition in any peak hour.

TRANSIT OPERATIONS

BUS LINE HAUL CAPACITIES

Per the *CEQR Technical Manual*, line-haul capacities are evaluated when a proposed action is anticipated to generate a perceptible number of passengers on a particular subway and bus route. Bus line-haul capacities are evaluated when a proposed action is anticipated to generate 50 or more bus passengers to a single bus line in one direction. The assessment of bus line-haul conditions involves analyzing bus routes at their peak load points and, if necessary, also their bus stops closest to the project site to identify the potential for the analyzed routes to exceed their guideline (or practical) capacities. New York City Transit (NYCT), the Metropolitan Transportation Authority (MTA) Bus Company, and Long Island Buses operate three types of buses: standard buses, articulated buses, and over-the-road coaches. During peak hours, standard buses operate with up to 54 passengers per bus, articulated buses operate with up to 85 passengers per bus, and over-the-road coaches operate with up to 55 passengers per bus.

Significant Impact Criteria

Projected increases from the future No Action condition within guideline capacity to a future With Action condition that exceeds guideline capacity may be a significant impact.

VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

An evaluation of vehicular and pedestrian safety is necessary for locations within the traffic and pedestrian study areas that have been identified as high accident locations, where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes occurred in any consecutive 12 months of the most recent 3-year period for which data are available. For these locations, accident trends are identified to determine whether projected vehicular and pedestrian traffic would further impact safety at these locations. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic volumes, accident types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety are identified and coordinated with NYCDOT for their approval.

PARKING CONDITIONS ASSESSMENT

The parking analysis identifies the extent to which off-street parking is available and utilized under existing and future conditions. It takes into consideration anticipated changes in area parking supply and provides a comparison of parking needs versus availability to determine if a parking shortfall is likely to result from parking displacement attributable to or additional demand generated by a Proposed Project.

D. DETAILED TRAFFIC ANALYSIS

As described above in Section B, “Preliminary Analysis Methodology and Screening Assessment,” in consultation with NYCDOT, 20 intersections have been selected for analysis in the weekday AM, midday, PM, and Saturday peak periods. All analysis intersections are signalized except for the intersections of North Bridge Street and Route 440 Off-Ramp and Arthur Kill Road and South Bridge Street.

2016 EXISTING CONDITIONS

ROADWAY NETWORK AND TRAFFIC STUDY AREA

The traffic study area encompasses 18 signalized intersections and two unsignalized intersections. The study area primarily encompasses intersections along Arthur Kill Road, Page Avenue, Veterans Road West and Bloomingdale Avenue in Staten Island. These main vehicular access routes to the site within the study area are discussed below.

Arthur Kill Road, located on the western edge of the study area, is a north/south roadway typically operating with one moving lane in each direction. On-street parking is provided in limited segments on both sides of Arthur Kill Road. The S78 bus route is routed along Arthur Kill Road south of Veterans Road West.

Page Avenue is a two-way north/south roadway that connects Boscombe Avenue to the north and extends to the southern waterfront of Staten Island. It generally operates with one moving lane and on-street parking in each direction, except for the segment between Richmond Valley

Road and Boscombe Avenue, which operates with two moving lanes and on-street parking in each direction.

Veterans Road West extends from Arthur Kill Road to the west to Woodrow Road to the north and serves as a major roadway connecting the surrounding roadway network to the nearby Korean War Veterans Parkway and West Shore Expressway. Between Woodrow Road and Englewood Avenue, Veterans Road West operates as a one-way southbound roadway with three travel lanes. From Englewood Avenue to Bricktown Way, the roadway operates as a two-way roadway transitioning from northbound/southbound to eastbound/westbound. The roadway accommodates two moving lanes in the northbound direction and three moving lanes in the southbound direction until it transitions to two moving lanes at the intersection with Tyrellan Avenue. Between Bricktown Way and Arthur Kill Road the roadway operates with one moving lane in each direction. The S74, S78, and S84 bus routes operate along Veterans Road West.

Bloomington Road, located on the eastern edge of the study area, is a two-way north/south roadway connecting Arthur Kill Road to the north and with Amboy Road to the south. The roadway typically operates with one travel lane and on-street parking in each direction. Bloomington Road accommodates the S55, X22, and X17 bus routes south of Woodrow Road and the S74 and S84 bus routes north of Woodrow Road.

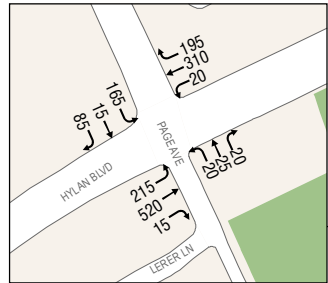
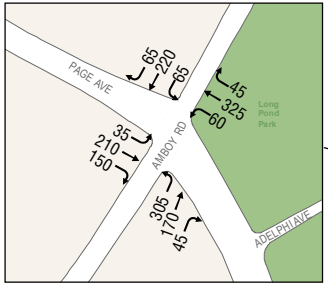
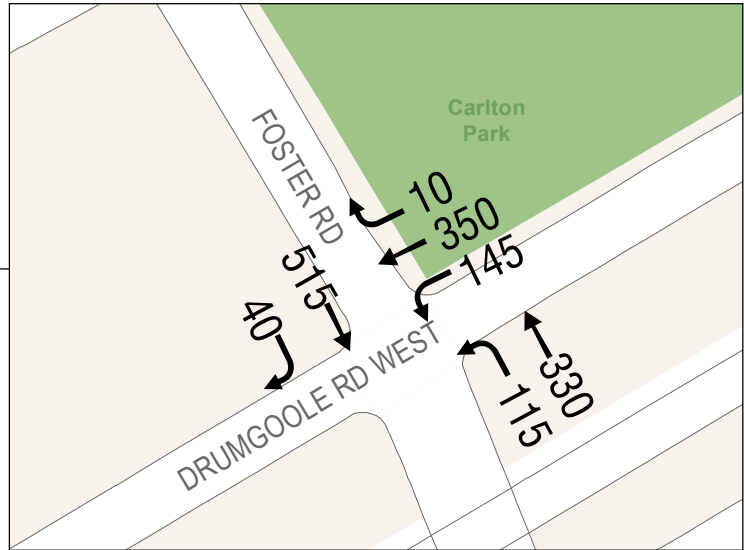
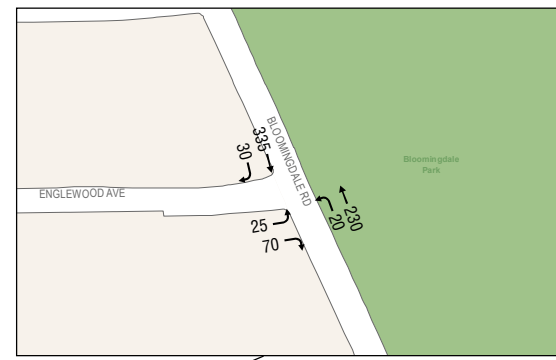
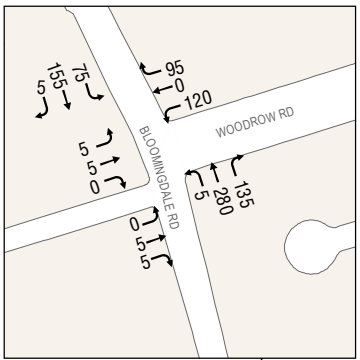
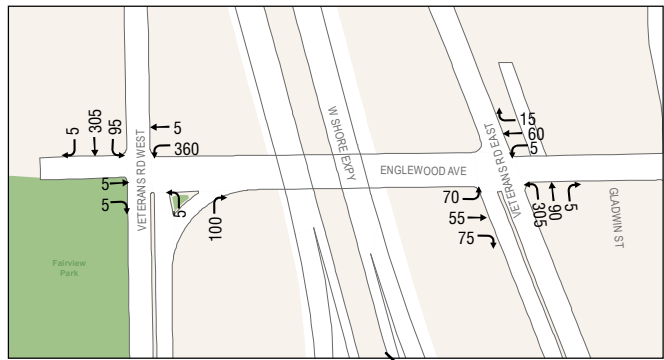
TRAFFIC CONDITIONS

Traffic data were collected in May 2016 for the weekday AM, midday, PM, and Saturday peak periods via a combination of video data intersection counts and 24-hour Automatic Traffic Recorder (ATR) counts. These traffic counts were used along with observations of traffic conditions to develop balanced traffic networks for the weekday AM, midday, and PM peak hours, as well as the Saturday peak hour, which are generally 7:30 to 8:30AM, 12:00 to 1:00PM, 4:45 to 5:45PM and 12:45 to 1:45PM, respectively.

Inventories of roadway geometry, traffic controls, bus stops, and parking regulations/activities were recorded to provide appropriate inputs for the operational analyses. Official signal timings were also obtained from NYCDOT for use in the analysis of the study area signalized intersections. **Figures 12-7** through **12-10** show the 2016 existing traffic volumes for the weekday AM, midday, PM, and Saturday peak hours, respectively.

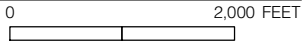
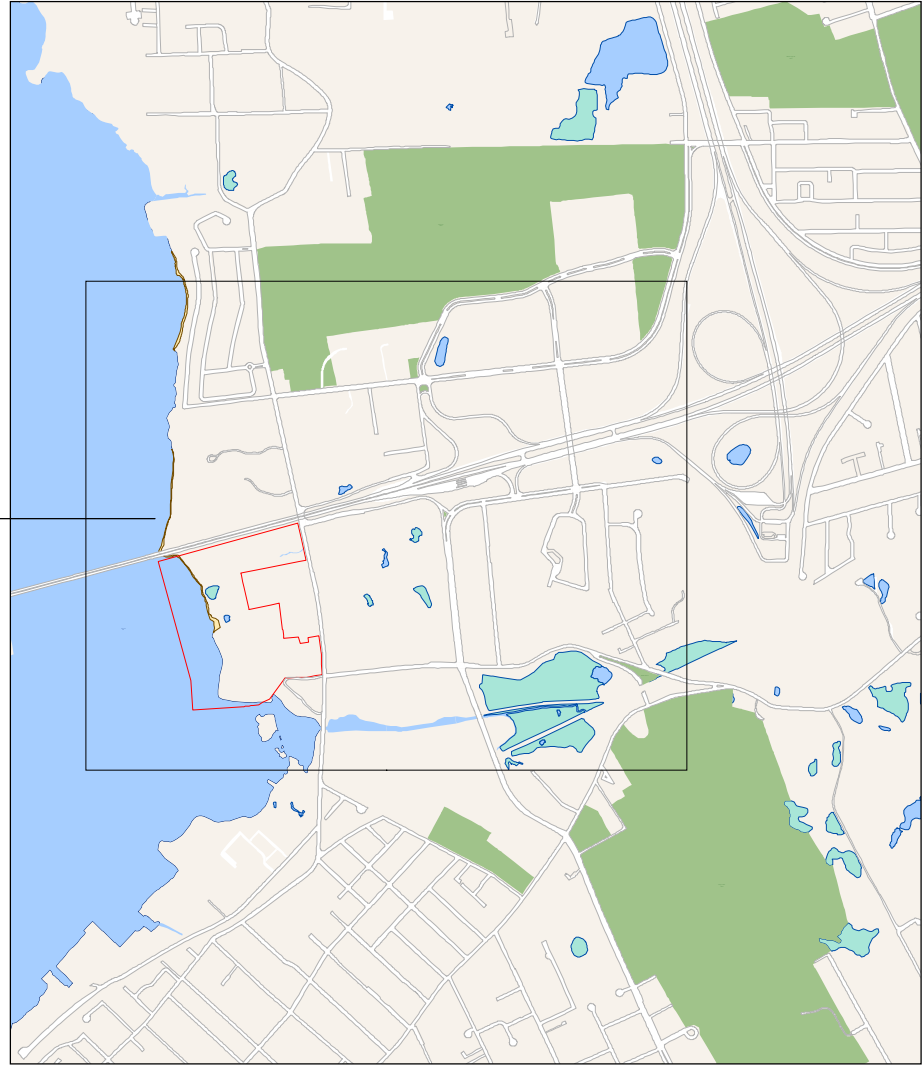
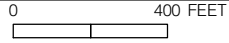
LEVELS OF SERVICE

A summary of the 2016 existing conditions traffic analysis results is presented in **Table 12-7**. Details on level-of-service, v/c ratios, and average delays are presented in **Table 12-8**. Overall, the capacity analysis indicates that most of the study area's intersection approaches/lane groups operate acceptably—at mid-LOS D or better (i.e., with delays of 45 seconds or less per vehicle for signalized intersections and 30 seconds or less per vehicle for unsignalized intersections) for the analysis peak hours. Approaches/lane groups operating beyond mid-LOS D and/or those with v/c ratios of 0.90 or greater are listed below.

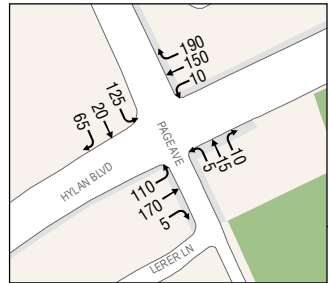
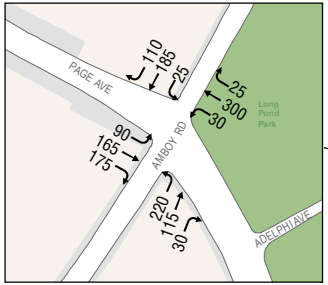
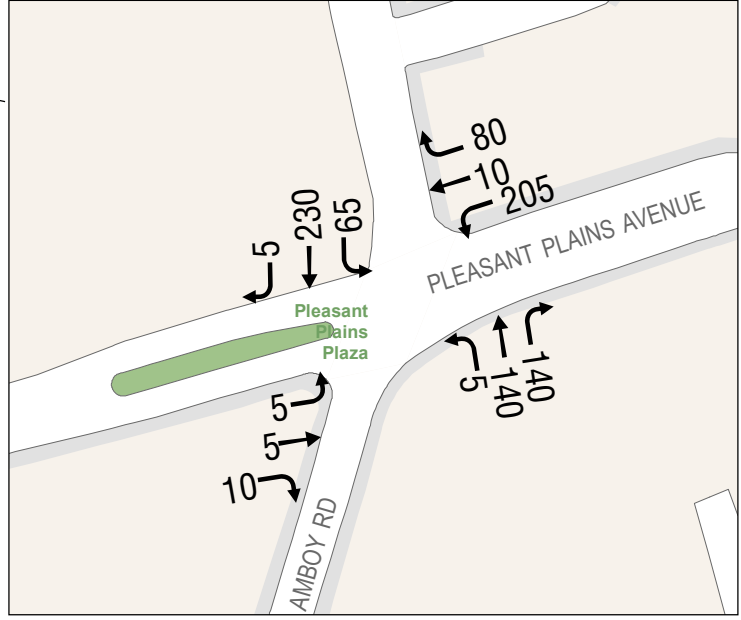
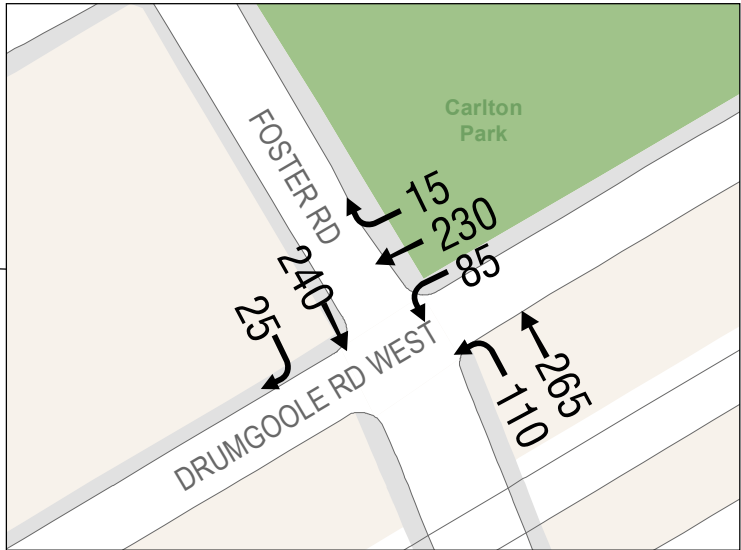
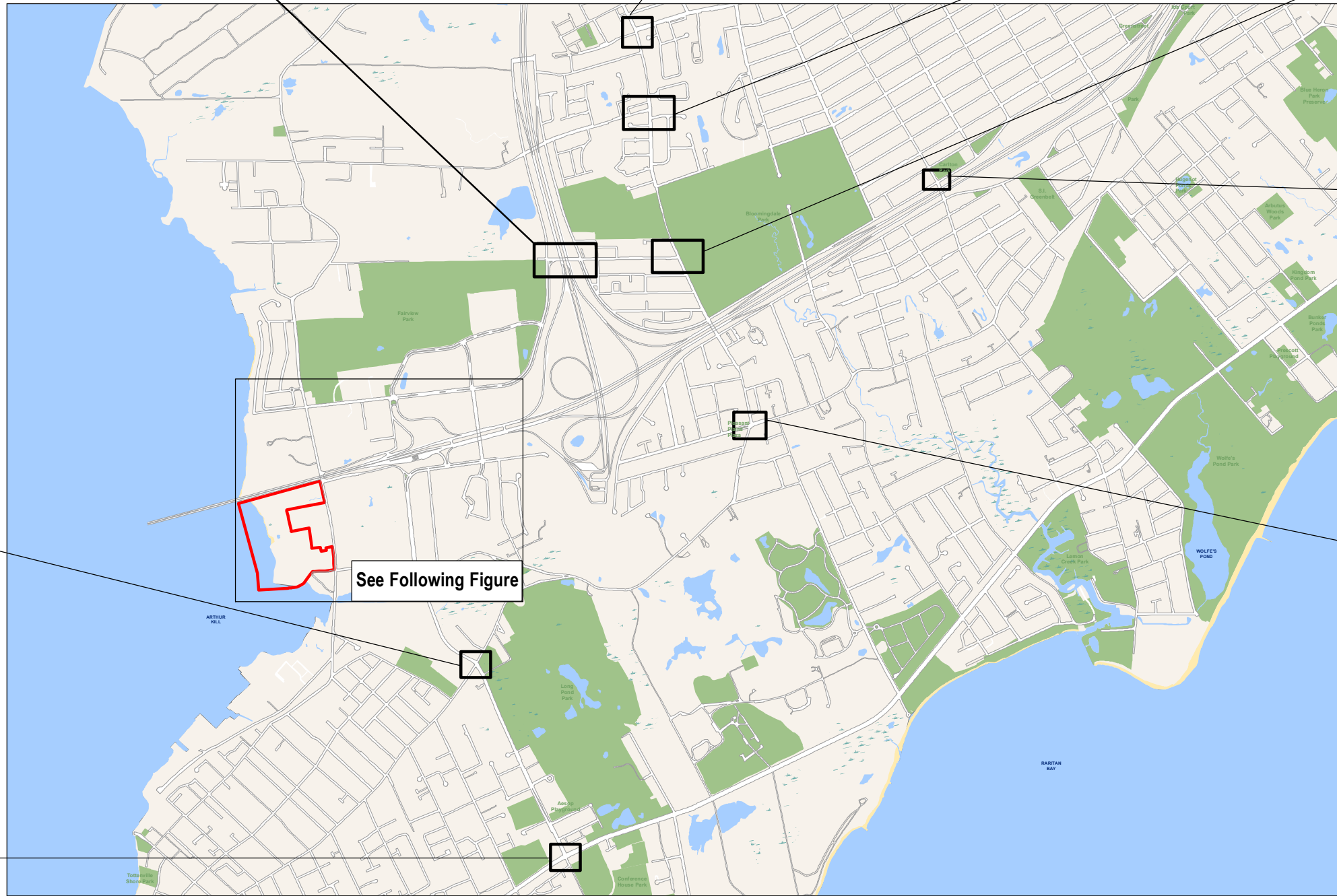
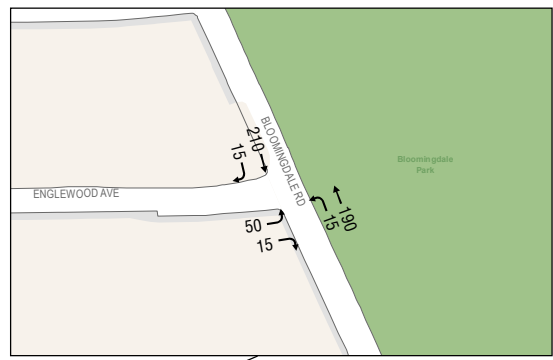
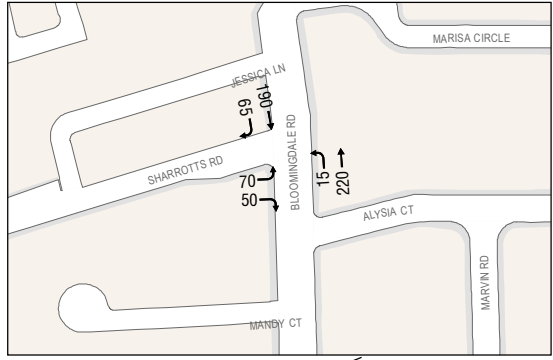
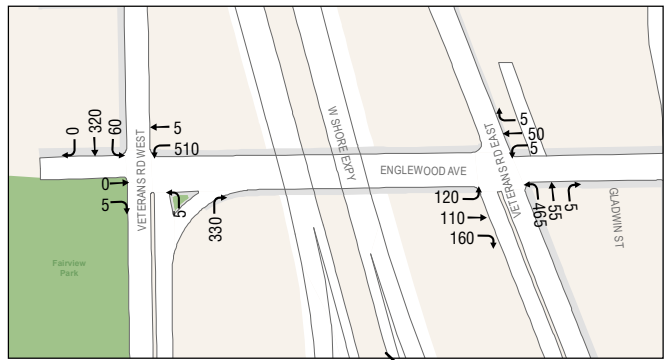


Project Site

2016 Existing Traffic Volumes
Weekday AM Peak Hour
Figure 12-7a

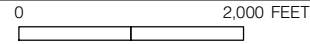
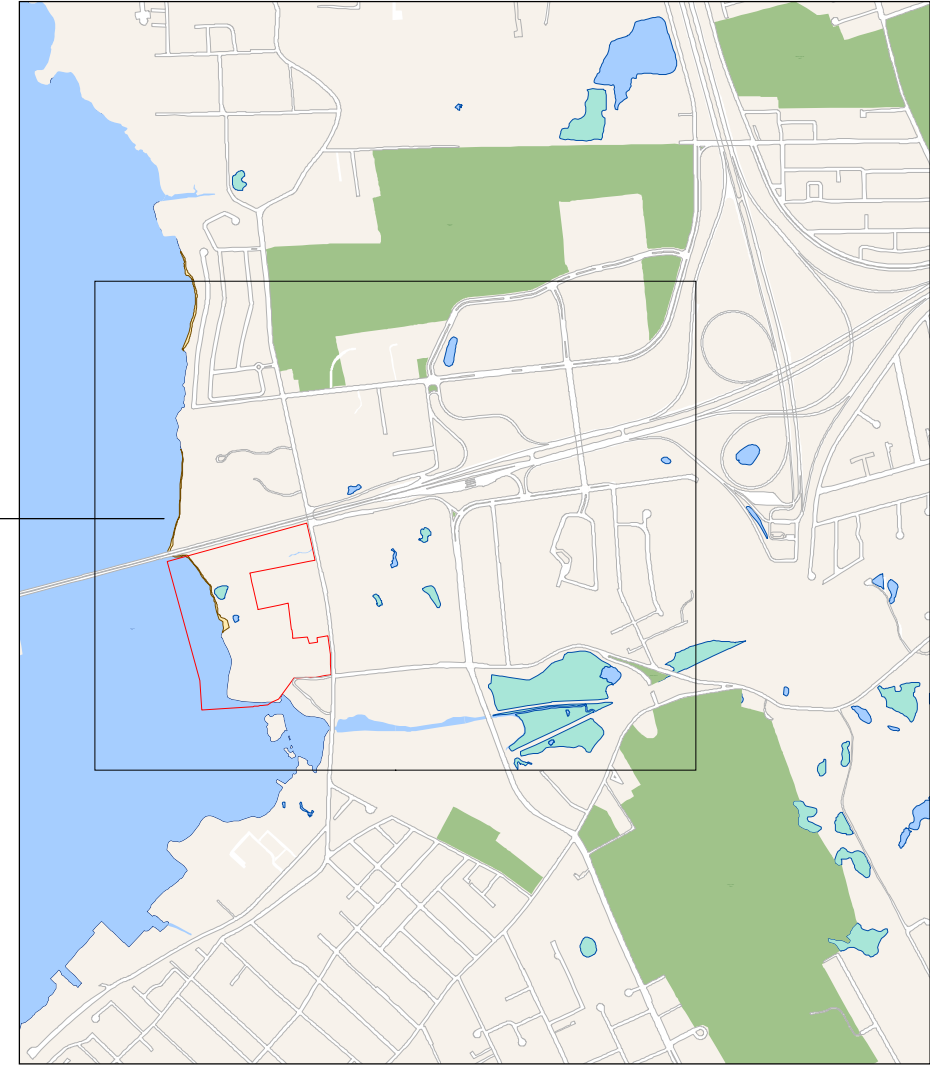
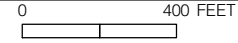


 Project Site

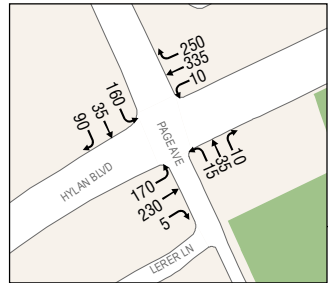
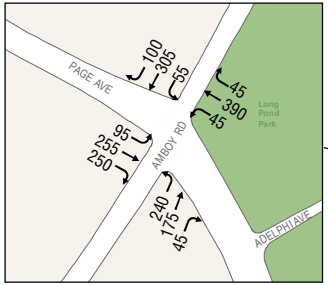
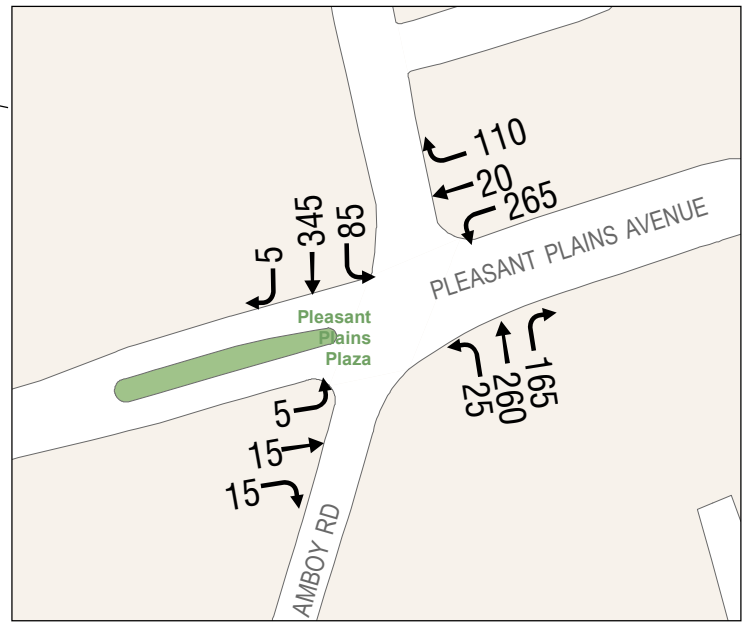
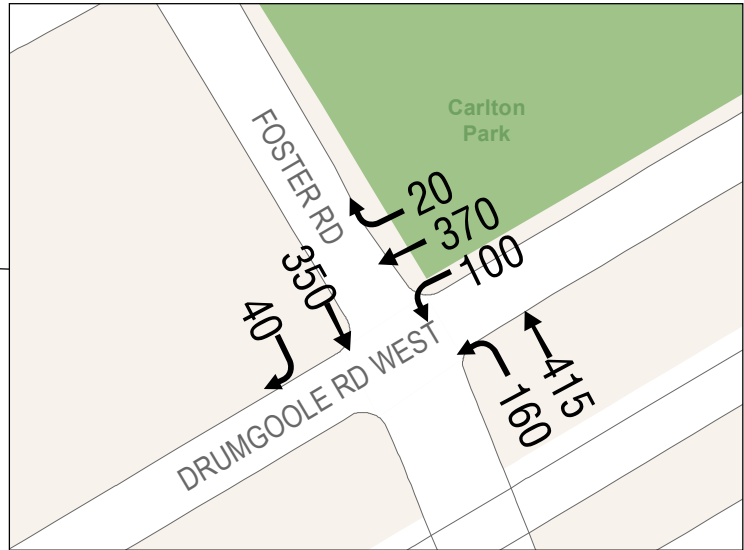
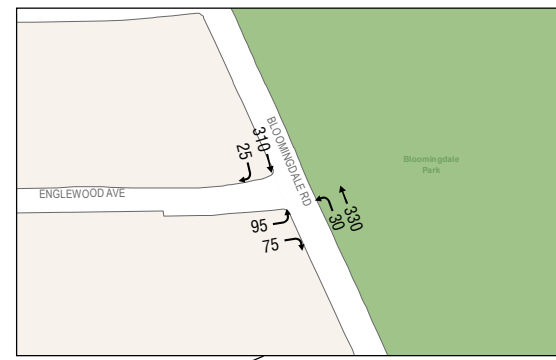
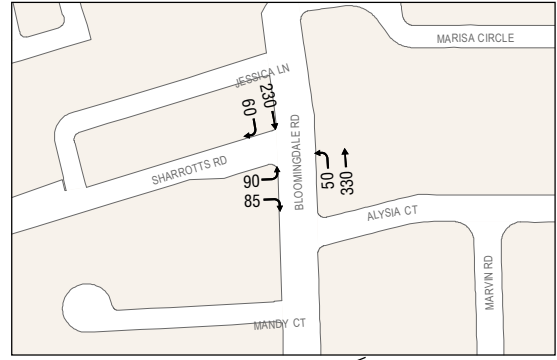
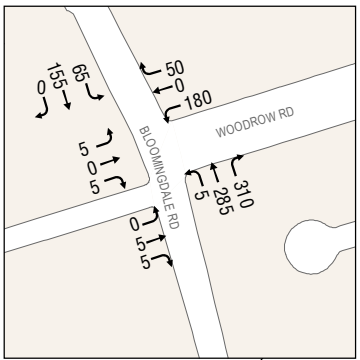
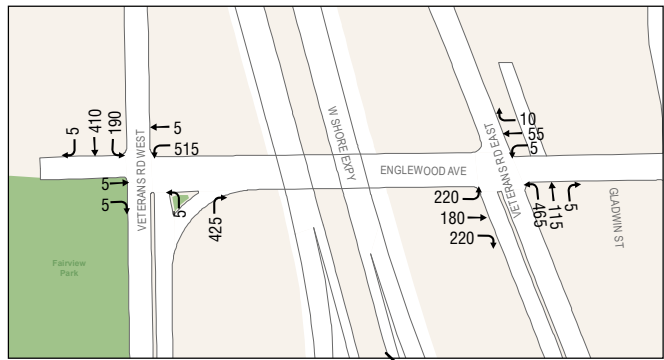


Project Site

2016 Existing Traffic Volumes
Weekday Midday Peak Hour
Figure 12-8a

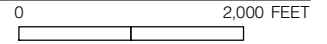
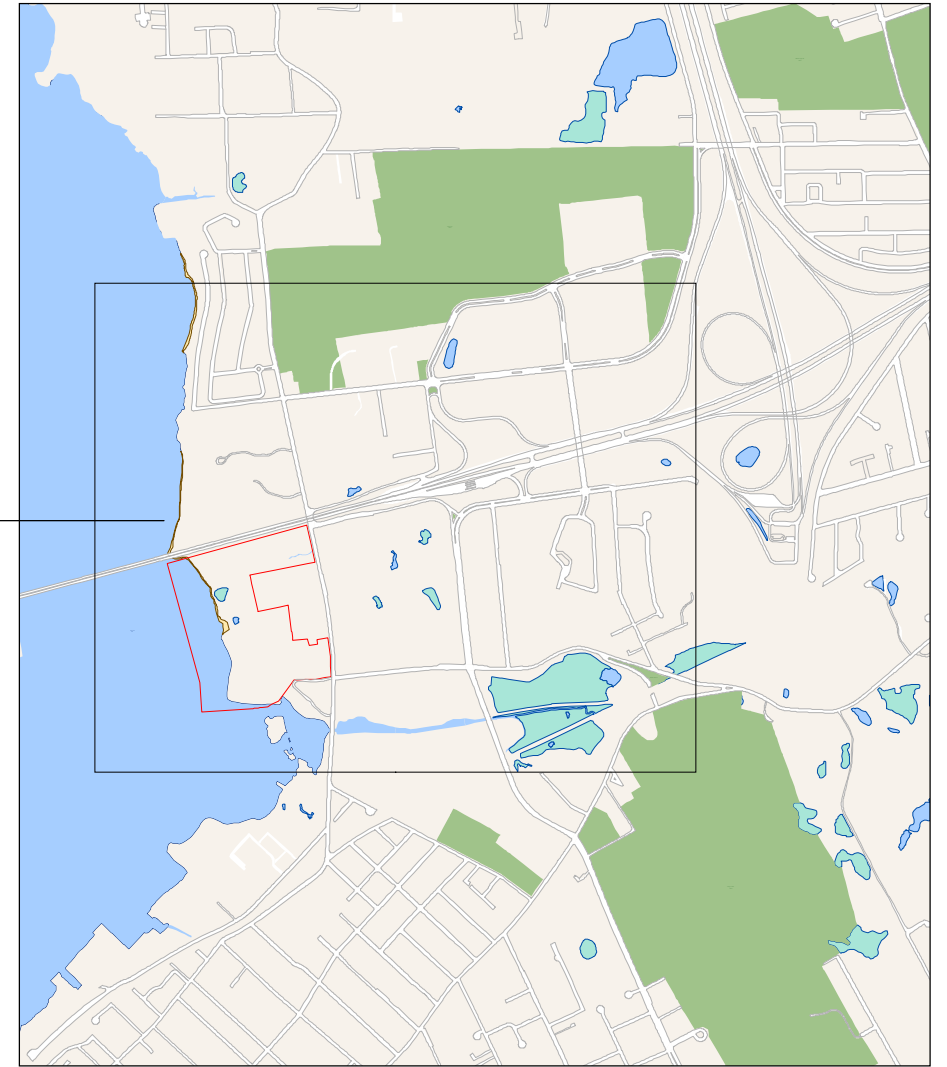
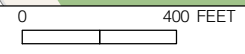


 Project Site

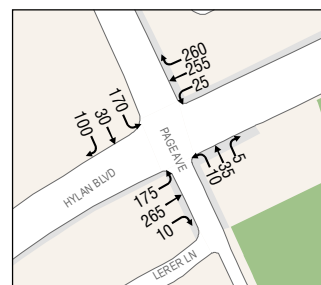
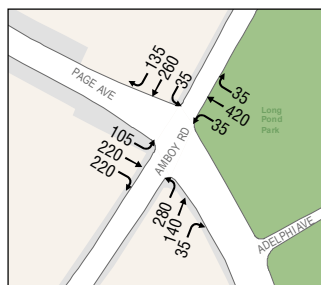
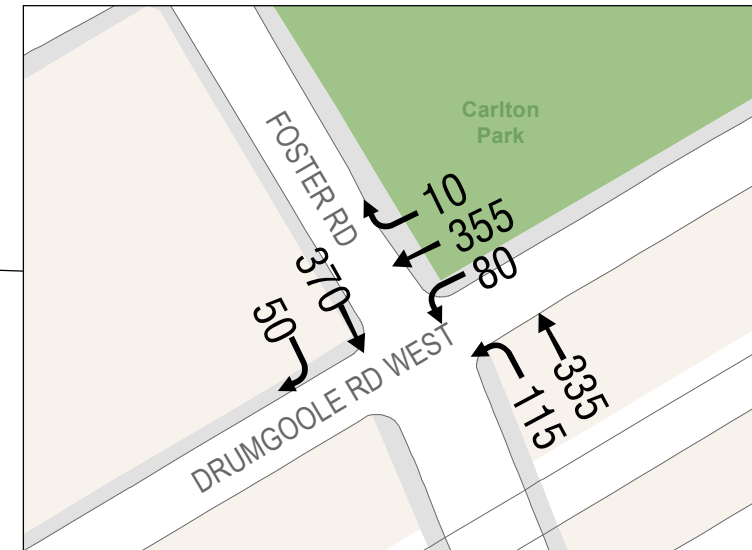
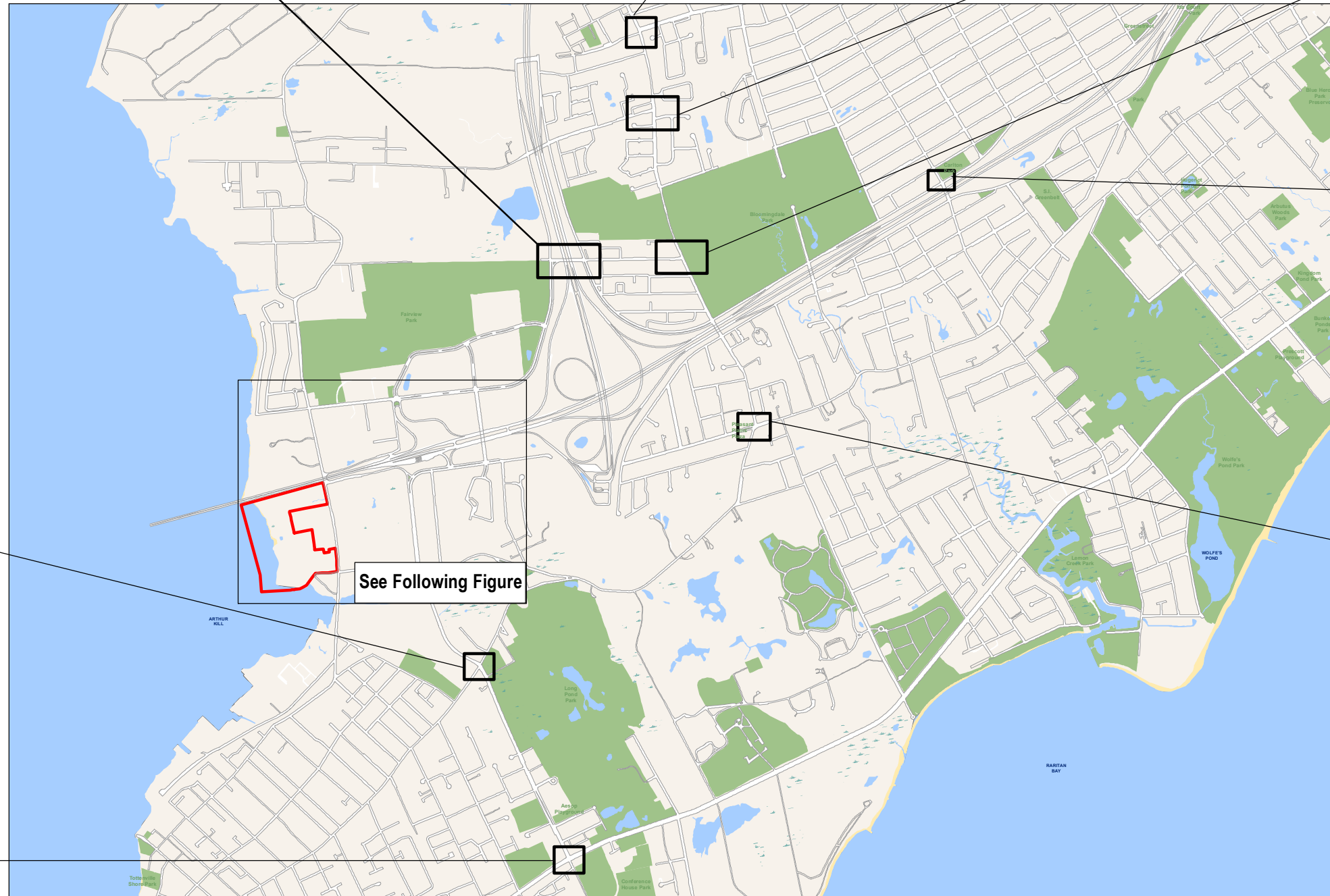
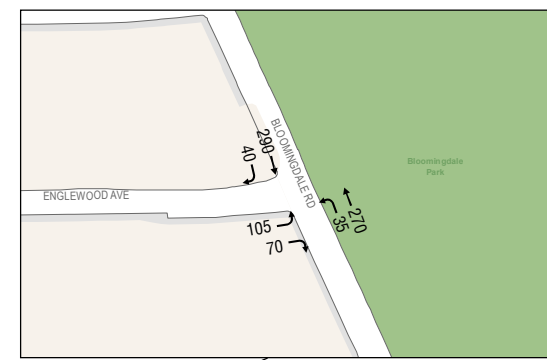
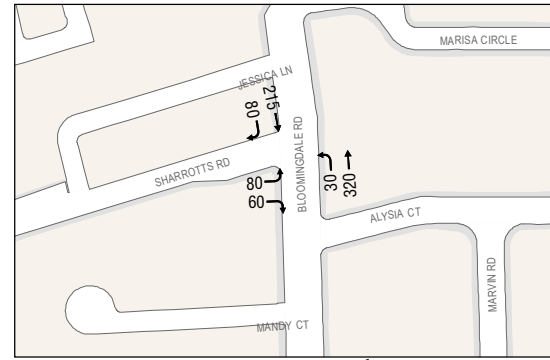
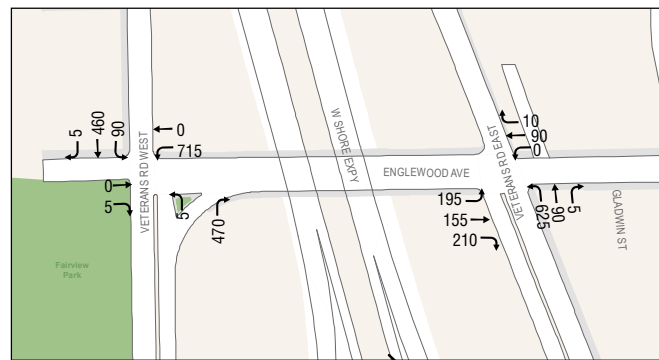


Project Site

2016 Existing Traffic Volumes
Weekday PM Peak Hour
Figure 12-9a

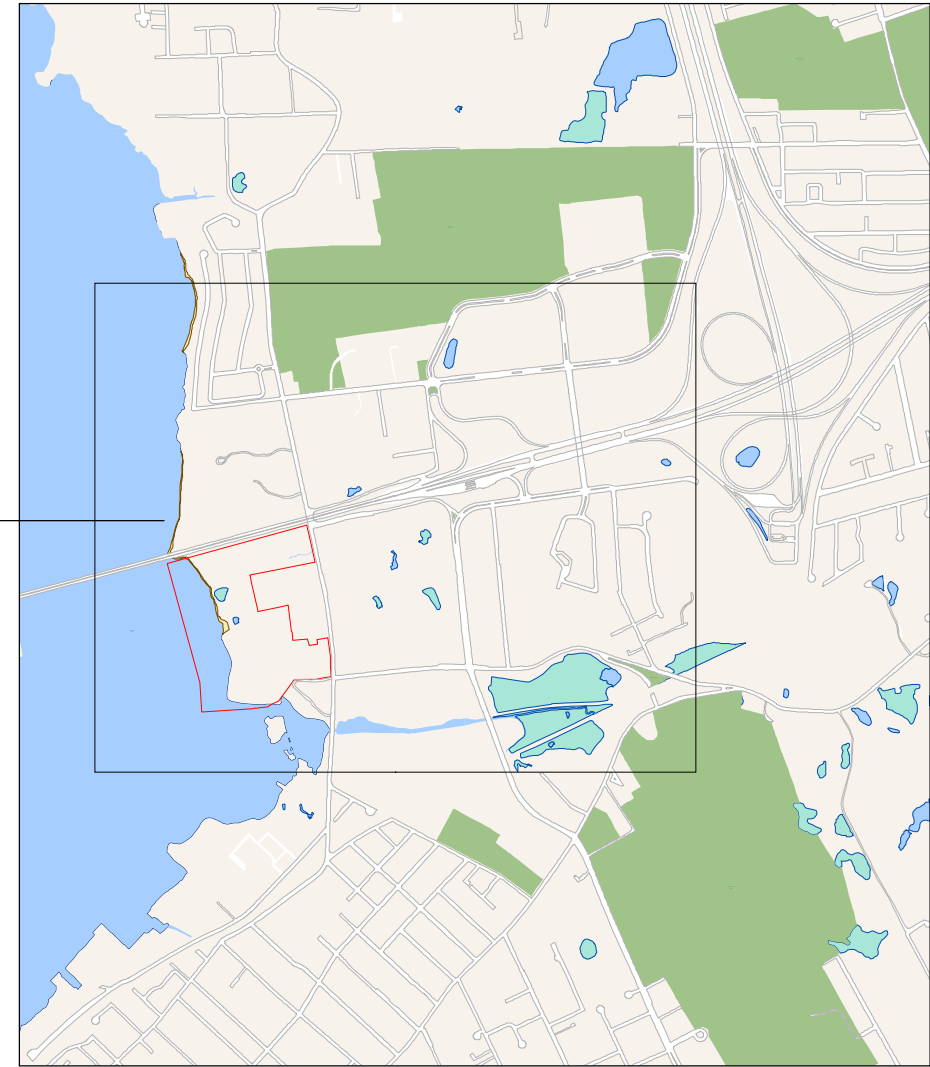
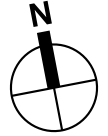


 Project Site



Project Site

2016 Existing Traffic Volumes
Saturday Peak Hour
Figure 12-10a



 Project Site

2016 Existing Traffic Volumes
Saturday Peak Hour
Figure 12-10b

Table 12-7
Summary of 2016 Existing Traffic Analysis Results

Level of Service	Analysis Peak Hours			
	Weekday AM	Weekday Midday	Weekday PM	Saturday
Signalized Intersections				
Lane Groups at LOS A/B/C	77	79	71	69
Lane Groups at LOS D	7	8	11	17
Lane Groups at LOS E	6	3	7	4
Lane Groups at LOS F	0	0	1	0
Total	90	90	90	90
Lane Groups with v/c ≥ 0.90	4	3	6	8
Unsignalized Intersections				
Lane Groups at LOS A/B/C	4	4	4	4
Lane Groups at LOS D	0	0	0	0
Lane Groups at LOS E	0	0	0	0
Lane Groups at LOS F	0	0	0	0
Total	4	4	4	4
Lane Groups with v/c ≥ 0.90	0	0	0	0

Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.

Table 12-8
2016 Existing Conditions Level of Service Analysis

Intersection	Weekday AM				Weekday Midday				Weekday PM				Saturday			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Signalized Intersections																
Bloomington Road & Woodrow Road/School Driveway																
Eastbound (School Driveway)	L	0.02	24.4	C	L	0.01	24.3	C	L	0.01	24.3	C	L	0.00	0.0	A
	TR	0.02	24.4	C	TR	0.01	24.3	C	TR	0.01	24.4	C	TR	0.00	0.0	A
Eastbound (Woodrow Road)	LTR	0.57	76.3	E	LTR	0.50	59.2	E	LTR	0.50	59.2	E	LTR	0.37	46.9	D
Westbound	L	0.46	32.7	C	L	0.56	35.6	D	L	0.67	40.9	D	L	0.75	45.3	D
	R	0.36	29.7	C	R	0.17	26.3	C	R	0.17	26.3	C	R	0.21	27.0	C
Northbound	LT	0.39	13.1	B	LT	0.29	11.8	B	LT	0.42	13.4	B	LT	0.38	13.8	B
	R	0.26	11.7	B	R	0.30	12.0	B	R	0.28	11.8	B	R	0.23	12.1	B
Southbound	L	0.20	11.4	B	L	0.11	10.1	B	L	0.16	10.8	B	L	0.17	11.6	B
	TR	0.20	10.9	B	TR	0.25	11.2	B	TR	0.17	10.4	B	TR	0.21	11.6	B
	Intersection	17.6	B	Intersection	17.3	B	Intersection	18.1	B	Intersection	20.2	C				
Bloomington Road & Sharrotts Road																
Eastbound	LR	0.58	22.1	C	LR	0.53	21.5	C	LR	0.58	20.6	C	LR	0.58	21.9	C
Northbound	LT	0.29	5.0	A	LT	0.27	4.6	A	LT	0.46	7.9	A	LT	0.36	5.5	A
Southbound	TR	0.26	4.9	A	TR	0.29	4.7	A	TR	0.32	6.4	A	TR	0.29	5.0	A
	Intersection	8.6	A	Intersection	7.8	A	Intersection	10.0	B	Intersection	8.3	A				
Bloomington Road & Englewood Road																
Eastbound	LR	0.24	21.5	C	LR	0.14	20.8	C	LR	0.37	22.0	C	LR	0.36	22.0	C
Northbound	LT	0.34	9.6	A	LT	0.25	8.7	A	LT	0.42	10.3	B	LT	0.36	9.7	A
Southbound	TR	0.49	11.3	B	TR	0.28	8.9	A	TR	0.40	10.1	B	TR	0.40	10.1	B
	Intersection	12.1	B	Intersection	10.4	B	Intersection	12.6	B	Intersection	12.5	B				
Veterans Road East & Englewood Avenue																
Eastbound	LTR	0.33	17.8	B	LTR	0.65	21.7	C	LTR	1.05	66.9	E	LTR	0.96	44.8	D
Westbound	LTR	0.16	8.0	A	LTR	0.12	8.6	A	LTR	0.14	6.7	A	LTR	0.21	7.6	A
Northbound	LTR	0.38	11.8	B	LTR	0.43	12.3	B	LTR	0.47	12.7	B	LTR	1.00	14.0	B
	Intersection	13.1	B	Intersection	16.1	B	Intersection	40.6	D	Intersection	26.5	C				
Veterans Road West & Hotel Driveway/ Englewood Avenue																
Eastbound	TR	0.02	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B
Westbound	L	0.41	16.2	B	L	0.50	18.1	B	L	0.48	17.3	B	L	0.69	21.5	C
	LT	0.42	16.5	B	LT	0.51	18.4	B	LT	0.51	18.1	B	LT	0.69	21.5	C
Northbound	L	0.02	10.4	B	L	0.02	10.4	B	L	0.02	10.5	B	L	0.02	10.4	B
	R	0.08	10.8	B	R	0.26	12.4	B	R	0.31	13.0	B	R	0.33	13.1	B
Southbound	LTR	0.23	11.6	B	LTR	0.22	11.5	B	LTR	0.34	12.4	B	LTR	0.31	12.1	B
	Intersection	13.5	B	Intersection	14.4	B	Intersection	14.2	B	Intersection	16.1	B				

Table 12-8 (cont'd)
2016 Existing Conditions Level of Service Analysis

Intersection	Weekday AM				Weekday Midday				Weekday PM				Saturday			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Arthur Kill Road & Allentown Lane/ Veterans Road West																
Eastbound	LTR	0.03	10.4	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B
Westbound	LTR	0.60	18.6	B	LTR	0.61	18.2	B	LTR	0.88	33.9	C	LTR	0.92	39.9	D
Northbound	LTR	0.59	7.2	A	LTR	0.62	7.8	A	LTR	0.66	9.4	A	LTR	0.76	11.7	B
Southbound	LTR	0.37	13.9	B	LTR	1.04	69.3	E	LTR	0.84	30.4	C	LTR	0.77	26.9	C
	Intersection	12.4	B	Intersection	32.0	C	Intersection	23.7	C	Intersection	25.1	C	Intersection	25.1	C	
Arthur Kill Road & North Bridge Street																
Westbound	LR	0.65	22.1	C	LR	0.55	19.5	B	LR	0.76	25.8	C	LR	0.73	24.5	C
Northbound	T	0.43	6.4	A	T	0.45	10.7	B	T	0.46	8.2	A	T	0.50	9.8	A
Southbound	T	0.36	10.0	B	T	0.42	7.6	A	T	0.57	11.7	B	T	0.52	11.8	B
	Intersection	13.0	B	Intersection	12.3	B	Intersection	15.3	B	Intersection	15.1	B	Intersection	15.1	B	
Arthur Kill Road & Richmond Valley Road																
Westbound	LR	0.46	21.5	C	LR	0.66	26.6	C	LR	0.77	30.9	C	LR	0.81	33.9	C
Northbound	TR	0.65	12.1	B	TR	0.46	9.1	A	TR	0.63	11.5	B	TR	0.65	11.9	B
Southbound	LT	0.67	15.4	B	LT	0.66	13.3	B	LT	1.05	56.6	E	LT	1.04	57.8	E
	Intersection	14.7	B	Intersection	14.9	B	Intersection	34.6	C	Intersection	34.2	C	Intersection	34.2	C	
Page Avenue & Richmond Valley Road																
Eastbound	L	0.18	21.6	C	L	0.24	22.5	C	L	0.27	23.1	C	L	0.38	25.4	C
	TR	0.20	21.6	C	TR	0.27	22.4	C	TR	0.26	22.3	C	TR	0.26	22.3	C
Westbound	LTR	0.22	21.8	C	LTR	0.25	22.1	C	LTR	0.33	23.2	C	LTR	0.34	23.2	C
Northbound	L	0.26	13.8	B	L	0.48	16.7	B	L	0.52	17.9	B	L	0.72	25.4	C
	TR	0.64	17.6	B	TR	0.51	14.2	B	TR	0.57	16.3	B	TR	0.66	17.9	B
Southbound	LTR	0.34	10.4	B	LTR	0.41	11.3	B	LTR	0.49	13.5	B	LTR	0.52	13.4	B
	Intersection	16.0	B	Intersection	15.3	B	Intersection	16.9	B	Intersection	18.3	B	Intersection	18.3	B	
Page Avenue/ Boscombe Avenue & South Bridge Street / Gas Station																
Eastbound	LT	0.73	36.7	D	LT	0.62	30.9	C	LT	0.84	43.6	D	LT	0.82	42.3	D
	R	0.06	20.6	C	R	0.06	20.6	C	R	0.15	21.6	C	R	0.12	21.3	C
Westbound	LTR	0.09	20.9	C	LTR	0.08	20.9	C	LTR	0.08	20.9	C	LTR	0.09	21.0	C
Northbound	TR	0.32	11.7	B	TR	0.33	8.8	A	TR	0.38	10.2	B	TR	0.42	11.9	B
Southbound	LT	0.40	12.5	B	LT	0.46	13.3	B	LT	0.57	15.0	B	LT	0.55	14.7	B
	Intersection	18.0	B	Intersection	15.3	B	Intersection	19.4	B	Intersection	19.4	B	Intersection	19.4	B	
Boscombe Avenue & The Route 440 Ramps																
Eastbound	L	1.05	77.9	E	L	0.92	48.4	D	L	1.05	79.1	E	L	1.02	69.7	E
	TR	0.19	3.6	A	TR	0.23	3.9	A	TR	0.24	3.9	A	TR	0.35	4.6	A
Westbound	LT	0.70	45.8	D	LT	0.68	44.7	D	LT	0.81	51.9	D	LT	0.82	53.1	D
	R	0.24	26.6	C	R	0.73	40.6	D	R	0.65	37.1	D	R	0.76	36.5	D
Northbound	LTR	0.43	79.1	E	LTR	0.44	70.0	E	LTR	0.69	116.6	F	LTR	0.00	0.0	A
Southbound	LT	0.70	69.0	E	LT	0.40	53.5	D	LT	0.54	58.5	E	LT	0.30	49.8	D
	R	0.21	12.4	B	R	0.16	11.8	B	R	0.25	12.8	B	R	0.21	12.3	B
	Intersection	51.2	D	Intersection	37.1	D	Intersection	49.5	D	Intersection	42.4	D	Intersection	42.4	D	
Veterans Road West & Tyrellan Avenue																
Eastbound	LTR	0.21	15.9	B	LTR	0.45	38.7	D	LTR	0.47	40.5	D	LTR	0.57	39.9	D
Westbound	LTR	0.69	34.8	C	LTR	0.57	31.9	C	LTR	0.75	36.9	D	LTR	0.78	37.7	D
Northbound	LTR	0.38	24.8	C	LTR	0.67	31.6	C	LTR	0.63	30.0	C	LTR	0.90	39.1	D
Southbound	LTR	0.16	22.2	C	LTR	0.67	30.5	C	LTR	0.52	27.0	C	LTR	0.69	30.7	C
	Intersection	28.2	C	Intersection	32.7	C	Intersection	33.6	C	Intersection	36.6	D	Intersection	36.6	D	
Veterans Road West & North Bridge Street/ Bricktown Way																
Eastbound	L	0.18	22.5	C	L	0.31	25.0	C	L	0.31	25.1	C	L	0.57	34.4	C
	TR	0.42	25.8	C	TR	0.52	27.8	C	TR	0.59	29.5	C	TR	0.65	31.4	C
Westbound	L	0.93	51.2	D	L	0.91	50.1	D	L	1.01	68.3	E	L	1.05	77.1	E
	T	0.37	11.0	B	T	0.41	12.3	B	T	0.44	10.0	B	T	0.56	10.6	B
	R	0.01	20.1	C	R	0.01	20.1	C	R	0.01	20.1	C	R	0.01	20.1	C
Northbound	LT	0.29	27.1	C	LT	0.25	26.4	C	LT	0.32	27.4	C	LT	0.42	29.1	C
	R	0.26	26.9	C	R	0.22	26.2	C	R	0.27	27.0	C	R	0.28	27.1	C
Southbound	L	0.02	27.4	C	L	0.05	27.8	C	L	0.03	27.6	C	L	0.09	28.2	C
	TR	0.20	29.8	C	TR	0.39	33.2	C	TR	0.38	32.9	C	TR	0.50	35.8	D
	Intersection	28.6	C	Intersection	28.5	C	Intersection	31.3	C	Intersection	33.1	C	Intersection	33.1	C	

Table 12-8 (cont'd)
2016 Existing Conditions Level of Service Analysis

Intersection	Weekday AM				Weekday Midday				Weekday PM				Saturday			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Page Avenue & Amboy Road																
Eastbound	LTR	1.05	75.6	E	LTR	0.73	28.8	C	LTR	0.94	49.1	D	LTR	1.02	71.5	E
Westbound	LTR	0.98	69.2	E	LTR	0.64	31.2	C	LTR	0.96	58.9	E	LTR	0.87	45.0	D
Northbound	L	0.35	23.8	C	L	0.16	19.4	B	L	0.42	31.1	C	L	0.25	22.1	C
	TR	0.68	28.4	C	TR	0.53	24.2	C	TR	0.72	31.2	C	TR	0.70	29.1	C
Southbound	L	0.20	25.5	C	L	0.39	27.0	C	L	0.63	36.7	D	L	0.64	42.7	D
	TR	0.68	35.4	D	TR	0.62	30.5	C	TR	0.85	36.2	D	TR	0.76	37.6	D
	Intersection	52.4	D		Intersection	28.4	C		Intersection	43.5	D		Intersection	45.3	D	
Page Avenue & Hylan Boulevard																
Eastbound	L	0.71	28.9	C	L	0.26	14.0	B	L	0.62	25.3	C	L	0.43	17.6	B
	TR	0.31	13.6	B	TR	0.10	11.6	B	TR	0.14	12.0	B	TR	0.15	12.0	B
Westbound	L	0.07	11.7	B	L	0.02	11.0	B	L	0.02	11.0	B	L	0.06	11.4	B
	TR	0.35	14.1	B	TR	0.24	12.9	B	TR	0.33	13.9	B	TR	0.25	13.0	B
Northbound	LTR	0.20	34.4	C	LTR	0.08	32.6	C	LTR	0.16	33.8	C	LTR	0.13	33.3	C
Southbound	L	0.60	45.8	D	L	0.46	40.4	D	L	0.53	42.7	D	L	0.60	44.9	D
	TR	0.27	35.4	D	TR	0.21	34.5	C	TR	0.28	35.5	D	TR	0.31	36.1	D
	Intersection	21.3	C		Intersection	19.7	B		Intersection	21.2	C		Intersection	21.0	C	
Bloomington Road & Amboy Road & Pleasant Plains Avenue																
Eastbound	LTR	0.11	14.9	B	LTR	0.04	14.3	B	LTR	0.07	14.6	B	LTR	0.05	14.4	B
Westbound	L	0.35	18.3	B	L	0.41	19.2	B	L	0.52	21.5	C	L	0.58	22.9	C
	T	0.04	14.2	B	T	0.02	14.0	B	T	0.03	14.2	B	T	0.02	14.0	B
	R	0.22	16.1	B	R	0.15	15.4	B	R	0.21	16.0	B	R	0.14	15.3	B
Northbound	LTR	0.49	20.2	C	LTR	0.47	19.7	B	LTR	0.76	28.3	C	LTR	0.67	24.7	C
Southbound	L	0.68	30.5	C	L	0.23	17.1	B	L	0.43	22.6	C	L	0.32	19.4	B
	TR	0.46	19.4	B	TR	0.37	17.9	B	TR	0.48	19.8	B	TR	0.46	19.4	B
	Intersection	20.6	C		Intersection	18.3	B		Intersection	22.8	C		Intersection	21.6	C	
Drumgoole Road West & Foster Road																
Westbound	L	0.29	20.1	C	L	0.16	18.4	B	L	0.19	18.8	B	L	0.16	18.4	B
	TR	0.70	30.2	C	TR	0.48	23.6	C	TR	0.78	34.3	C	TR	0.69	29.5	C
Northbound	L	0.69	35.6	D	L	0.26	14.4	B	L	0.53	20.9	C	L	0.46	19.5	B
	T	0.46	16.2	B	T	0.35	14.7	B	T	0.49	16.7	B	T	0.44	15.9	B
Southbound	TR	0.65	19.8	B	TR	0.28	13.8	B	TR	0.41	15.4	B	TR	0.47	16.3	B
	Intersection	22.5	C		Intersection	17.0	B		Intersection	21.9	C		Intersection	20.1	C	
Unsignalized Intersections																
North Bridge Street & The Route 440 Off-Ramp																
Westbound	L	0.62	20.4	C	L	0.40	15.5	C	L	0.70	24.9	C	L	0.63	22.9	C
Southbound	T	0.25	0.0	A	T	0.26	0.0	A	T	0.27	0.0	A	T	0.30	0.0	A
Arthur Kill Road & South Bridge Street																
Northbound	TR	0.42	0.0	A	TR	0.42	0.0	A	TR	0.48	0.0	A	TR	0.51	0.0	A
Southbound	LT	0.19	4.5	A	LT	0.24	5.6	A	LT	0.38	9.6	A	LT	0.40	9.7	A
Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service																

Arthur Kill Road

- Southbound approach at the intersection of Arthur Kill Road and Allentown Lane/Veterans Road West (LOS E with a v/c ratio of 1.04 and a delay of 69.3 seconds per vehicle [spv] during the weekday midday peak hour);
- Westbound approach at the intersection of Arthur Kill Road and Allentown Lane/Veterans Road West (LOS D with a v/c ratio of 0.92 and a delay of 39.9 spv during the Saturday peak hour);
- Southbound approach at the intersection of Arthur Kill Road and Richmond Valley Road (LOS E with a v/c ratio of 1.05 and a delay of 56.6 spv during the weekday PM peak hour; LOS E with a v/c ratio of 1.04 and a delay of 57.8 spv during the Saturday peak hour);

Page Avenue/Boscombe Avenue

- Eastbound left-turn at the intersection of Boscombe Avenue and the Route 440 Ramps (LOS E with a v/c ratio of 1.05 and a delay of 77.9 spv during the weekday AM peak hour; LOS D with a v/c ratio of 0.92 and a delay of 48.4 spv during the weekday midday peak hour; LOS E with a v/c ratio of 1.05 and a delay of 79.1 spv during the weekday PM peak hour; LOS E with a v/c ratio of 1.02 and a delay of 69.7 spv during the Saturday peak hour);
- Westbound left-turn/through at the intersection of Boscombe Avenue and the Route 440 Ramps (LOS D with a v/c ratio of 0.70 and a delay of 45.8 spv during the weekday AM peak hour; LOS D with a v/c ratio of 0.81 and a delay of 51.9 spv during the weekday PM peak hour; LOS D with a v/c ratio of 0.82 and a delay of 53.1 spv during the Saturday peak hour);
- Northbound approach at the intersection of Boscombe Avenue and the Route 440 Ramps (LOS E with a v/c ratio of 0.43 and a delay of 79.1 spv during the weekday AM peak hour; LOS E with a v/c ratio of 0.44 and a delay of 70.0 spv during the weekday midday peak hour; LOS F with a v/c ratio of 0.69 and a delay of 116.6 spv during the weekday PM peak hour);
- Southbound left-turn/through at the intersection of Boscombe Avenue and the Route 440 Ramps (LOS E with a v/c ratio of 0.70 and a delay of 69.0 spv during the weekday AM peak hour; LOS D with a v/c ratio of 0.40 and a delay of 53.5 spv during the weekday midday peak hour; LOS E with a v/c ratio of 0.54 and a delay of 58.5 spv during the weekday PM peak hour; LOS D with a v/c ratio of 0.30 and a delay of 49.8 spv during the Saturday peak hour);
- Eastbound approach at the intersection of Page Avenue and Amboy Road (LOS E with a v/c ratio of 1.05 and a delay of 75.6 spv during the weekday AM peak hour; LOS D with a v/c ratio of 0.94 and a delay of 49.1 spv during the weekday PM peak hour; LOS E with a v/c ratio of 1.02 and a delay of 71.5 spv during the Saturday peak hour);
- Westbound approach at the intersection of Page Avenue and Amboy Road (LOS E with a v/c ratio of 0.98 and a delay of 69.2 spv during the weekday AM peak hour; LOS E with a v/c ratio of 0.96 and a delay of 58.9 spv during the weekday PM peak hour);
- Southbound left-turn at the intersection of Page Avenue and Hylan Boulevard (LOS D with a v/c ratio of 0.60 and a delay 45.8 spv during the weekday AM peak hour);

Veterans Road West

- Northbound approach at the intersection of Veterans Road West and Tyrellan Avenue (LOS D with a v/c ratio of 0.90 and a delay of 39.1 spv during the Saturday peak hour);
- Westbound left-turn at the intersection of Veterans Road West and North Bridge Street/Bricktown Way (LOS D with a v/c ratio of 0.93 and a delay of 51.2 spv during the weekday AM peak hour; LOS D with a v/c ratio of 0.91 and a delay of 50.1 spv during the weekday midday peak hour; LOS E with a v/c ratio of 1.01 and a delay of 68.3 spv during the weekday PM peak hour; LOS E with a v/c ratio of 1.05 and a delay of 77.1 spv during the Saturday peak hour);

Bloomingtondale Road

- Eastbound (Woodrow Road) approach at the intersection of and Bloomingtondale Road and Woodrow Road/P.S. 62 School Driveway (LOS E with v/c ratio of 0.57 and a delay of 76.3 spv during the weekday AM peak hour; LOS E with v/c ratio of 0.50 and a delay of 59.2 spv during the weekday midday peak hour; LOS E with a v/c ratio of 0.50 and a delay of 59.2

- during the weekday PM peak hour; LOS D with a v/c ratio of 0.37 and a delay of 46.9 spv during the Saturday peak hour);
- Westbound left-turn at the intersection of Bloomingdale Road and Woodrow Road/P.S. 62 School Driveway (LOS D with a v/c ratio of 0.75 and a delay of 45.3 spv during the Saturday peak hour);

Veterans Road East

- Eastbound approach at the intersection of Veterans Road East and Englewood Avenue (LOS E with a v/c ratio of 1.05 and a delay 66.9 spv during the weekday PM peak hour; LOS D with a v/c ratio of 0.96 and a delay of 44.8 spv during the Saturday peak hour); and
- Northbound approach at the intersection of Veterans Road East and Englewood Avenue (LOS B with a v/c ratio of 1.00 and a delay of 14.0 spv during the Saturday peak hour).

THE FUTURE WITHOUT THE PROPOSED PROJECT

The No Action condition was developed by increasing existing (2016) traffic levels by the expected growth in overall travel through and within the study area. As per *CEQR Technical Manual* guidelines, an annual background growth rate of 1.00 percent was assumed (year 2016 to year 2019). A total of 18 development projects expected to occur in the No Action condition (No Build projects) were identified as being planned for the ½-mile study area (see **Figure 12-11**). However, some of these planned projects are modest in size and would be very modest traffic generators. After reviewing the development programs for each of the planned projects, it was determined that background growth will address the increase in traffic levels for 9 of the small- to moderate-sized projects in the study area. For the other No Build projects, including development components that are anticipated to be completed by 2019 for the Charleston Mixed Use Development, person and vehicle trips were determined and incorporated into the No-Action analysis. In addition, though P.S. 62 was completed and operating prior to the collection of existing data, the phased enrollment increase for the school was included in the No Action analysis. **Table 12-9** and Figure 12-11 summarize the projects that were accounted for in this future 2019 baseline, including those that were considered as part of the study area background growth.

CHANGES TO THE STUDY AREA STREET NETWORK

In addition to the development projects noted above, the New York City Department of Design and Construction (DDC) Capital Project HWR00509, which includes roadway improvements and widening at the intersection of Amboy Road and Page Avenue was included in the No Action analysis. Also, roadway improvement mitigation measures from the 2013 *Charleston Mixed Use FEIS* were incorporated into the No Action analysis for the intersection of Boscombe Avenue and the Route 440 Ramps which was completed in summer of 2016. Additional roadway improvement mitigation measures proposed from the 2013 *Charleston Mixed Use FEIS* for Phase I development of that project were not incorporated into the No Action analysis as a Traffic Mitigation Monitoring Plan was included to verify whether the additional roadway improvements measures identified would be warranted. As a result, none of the identified mitigation measures are guaranteed and conservatively were not assumed to occur in the No Action analysis.



Proposed Development Site
 Study Area (1/2-Mile boundary)

1 No Build Project

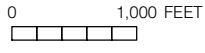


Table 12-9
No Build Projects Expected to be Complete by 2019

Map Ref. No. ¹	Project Name/ Address	Development Program	Transportation Assumptions	Status/ Build Year ²
Development Projects Within ½-Mile				
1	Charleston Mixed-Use Development (Fairview Park)	195,000 gsf retail, 15,000 gsf library, 23 acres open space	Transportation assumptions from <i>Charleston Mixed Use FEIS</i> (2013)	56,000 gsf of retail completed fall of 2015. Remaining development program expected to be completed by 2019.
3	4830 Arthur Kill Road	14,674 gsf office	Transportation assumptions from <i>CEQR Technical Manual, New Stapleton Waterfront Development Project FEIS</i> (2005), and U.S. Census Bureau American Community Survey 2006-2010 Reverse Journey to Work estimates	Under Construction
4	3040 Veterans Road West	51,020 gsf retail	Transportation assumptions from <i>CEQR Technical Manual and Charleston Mixed Use FEIS</i> (2013)	2018
7	4885-4895 Arthur Kill Road	11,707 gsf retail	See project site 4, above	Under Construction
8	Arthur Kill Station	New SIRR Station replacing Atlantic and Nassau Stations	Included in background growth	2016
9	3139 Veterans Road West	5,098 gsf retail	Included in background growth	Under Construction
10	237 Richmond Valley Road	7,647 gsf medical office	Included in background growth	Recently completed
11	ShopRite (3010 Veterans Road West)	69,625 gsf supermarket	Transportation assumptions from <i>CEQR Technical Manual, Charleston Mixed Use FEIS</i> (2013), and <i>Astoria Cove FEIS</i> (2014)	Completed and opened June 2016, shortly after traffic data collection
12	2875 Veterans Road West	16,251 gsf retail	See project site 4, above	Under Construction
13	200 Boscombe Avenue	70 residential units	Transportation assumptions from <i>CEQR Technical Manual, Charleston Mixed-Use FEIS</i> (2013), and U.S. Census Bureau American Community Survey 2010-2014 Journey to Work estimates	Under Construction
14	245 Page Avenue	Mixed commercial/residential: 2,500 gsf retail, 17 units	Transportation assumptions from <i>CEQR Technical Manual and Charleston Mixed Use FEIS</i> (2013)	Under Construction
15	249 Richmond Valley Road	3,000 gsf retail	Included in background growth	Recently completed
16	88 Craig Avenue	2 residential units	Included in background growth	Under Construction
17	90 Craig Avenue	2 residential units	Included in background growth	Under Construction
18	P.S. 62R (Crabtree) – Staten Island Block 7092, Lots 39 and 75	67,000 gsf primary school (444 seats, 34 staff)	Transportation assumptions from <i>P.S. 62R FEIS</i> (2011)	Completed- Phased enrollment through 2020
Notes:				
1. See Figure 12-11.				
2. Projects that are currently under construction are assumed to be complete by 2019; projects for which an expected date of completion is not available are assumed to be complete by the Proposed Project's Build year of 2019.				
Sources: DCP; NYC Dept. of Buildings.				

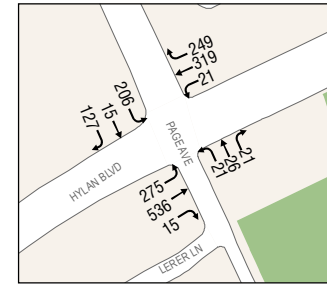
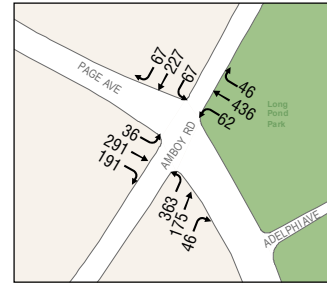
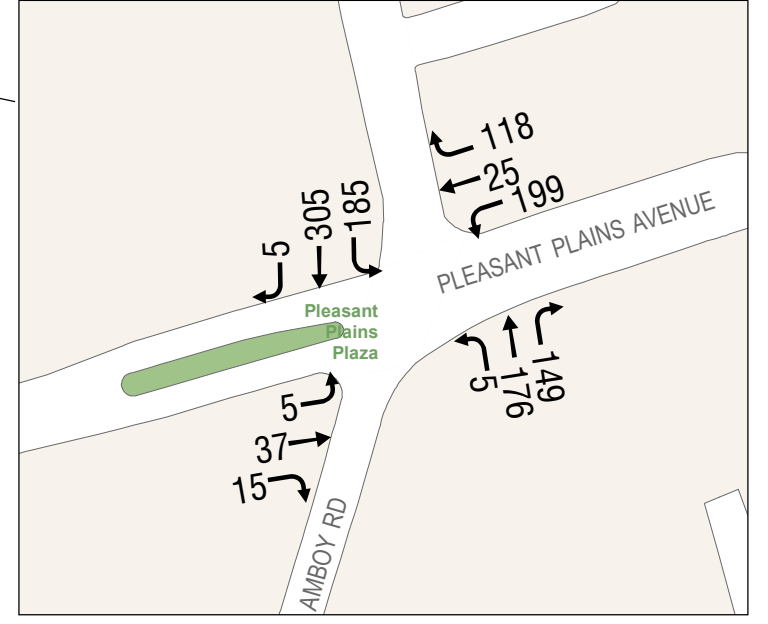
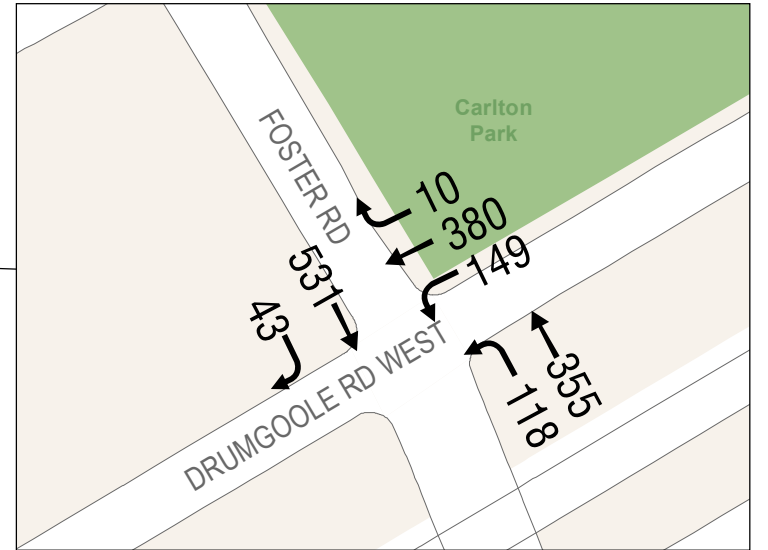
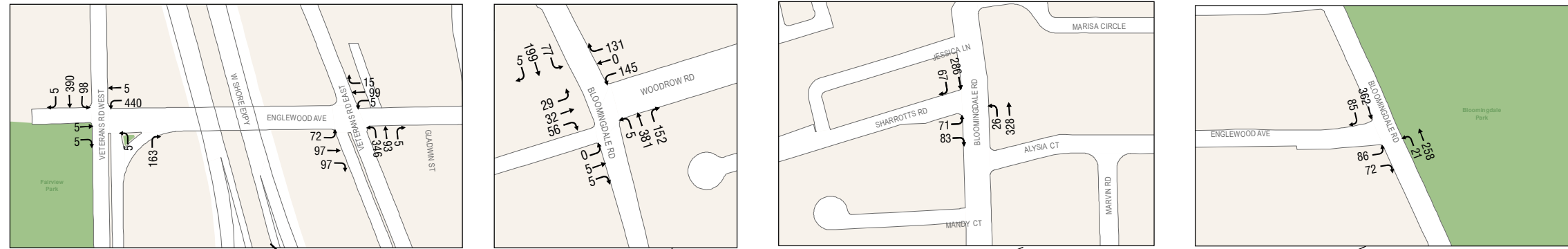
TRAFFIC OPERATIONS

The No Action condition traffic volumes are shown in **Figures 12-12** through **Figure 12-15** for the weekday AM, midday, PM, and Saturday peak hours. The No Action condition traffic volumes were projected by layering on top of the existing traffic volumes the following: background growth and trips generated by discrete No Build projects in the area. A summary of the 2019 No Action condition traffic analysis results is presented in **Table 12-10**. Details on level-of-service, v/c ratios, and average delays are presented in **Table 12-11**.

Table 12-10
Summary of 2019 No Action Traffic Analysis Results

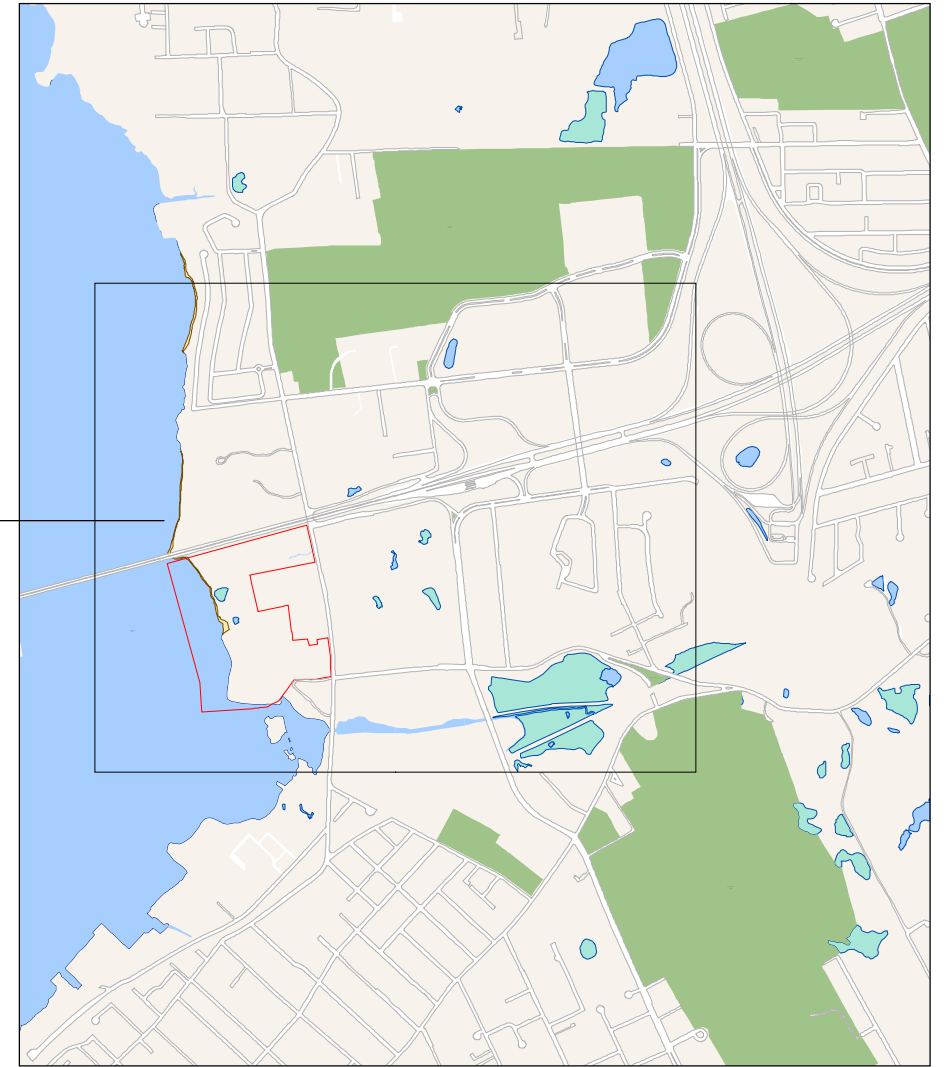
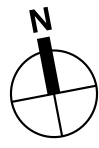
Level of Service	Analysis Peak Hours			
	Weekday AM	Weekday Midday	Weekday PM	Saturday
Signalized Intersections				
Lane Groups at LOS A/B/C	74	71	61	61
Lane Groups at LOS D	11	9	9	11
Lane Groups at LOS E	6	7	7	5
Lane Groups at LOS F	3	7	17	17
Total	94	94	94	94
Lane Groups with v/c ≥ 0.90	6	14	25	26
Unsignalized Intersections				
Lane Groups at LOS A/B/C	3	4	3	3
Lane Groups at LOS D	1	0	0	0
Lane Groups at LOS E	0	0	0	0
Lane Groups at LOS F	0	0	1	1
Total	4	4	4	4
Lane Groups with v/c ≥ 0.90	0	0	1	1

Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.



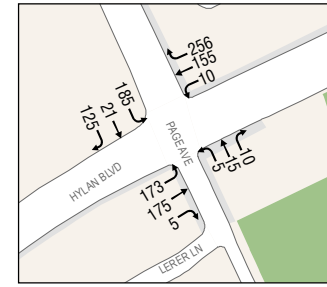
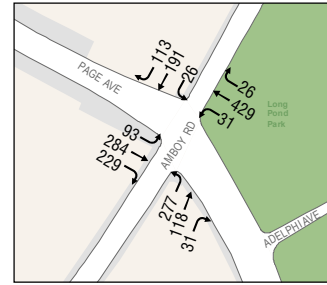
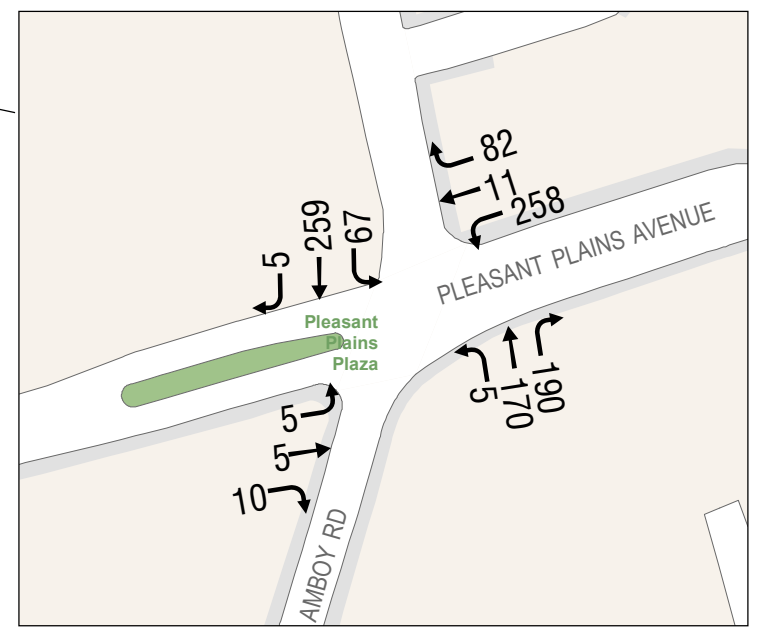
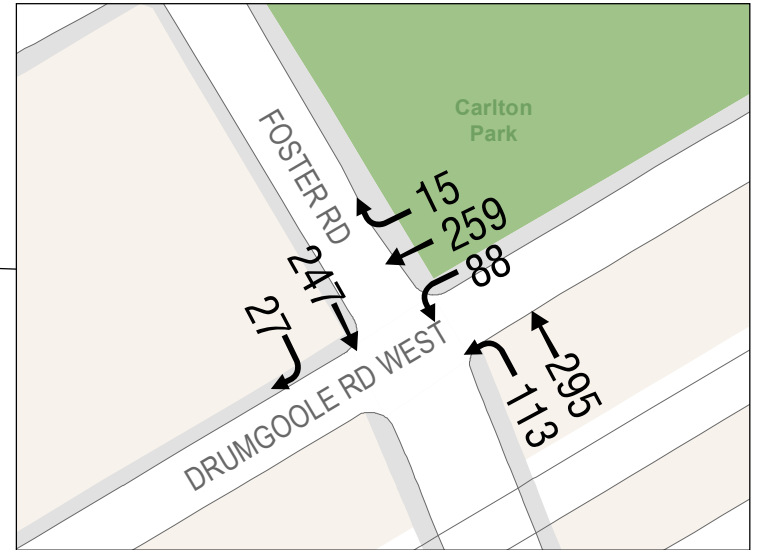
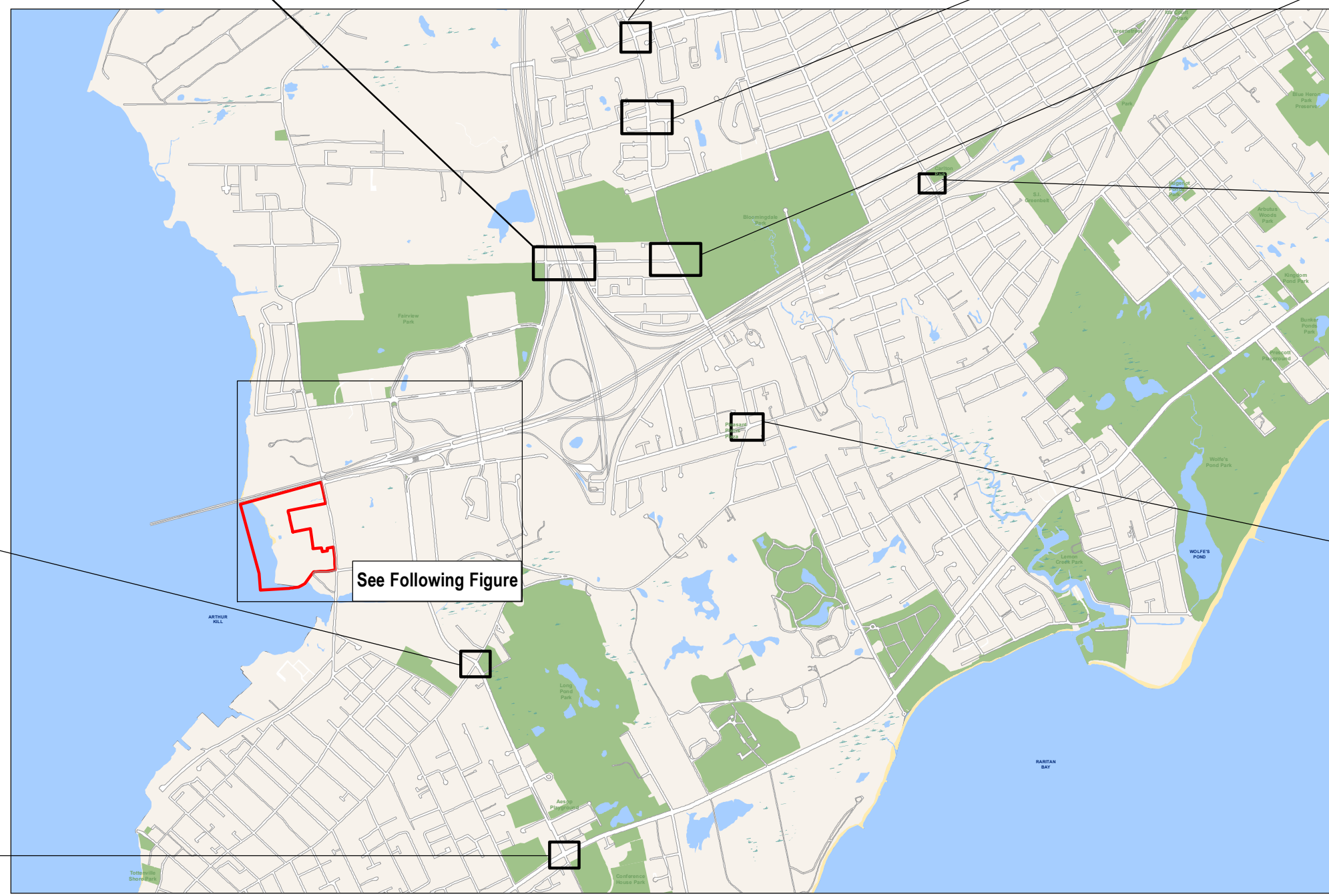
Project Site

2019 No Action Traffic Volumes
Weekday AM Peak Hour
Figure 12-12a



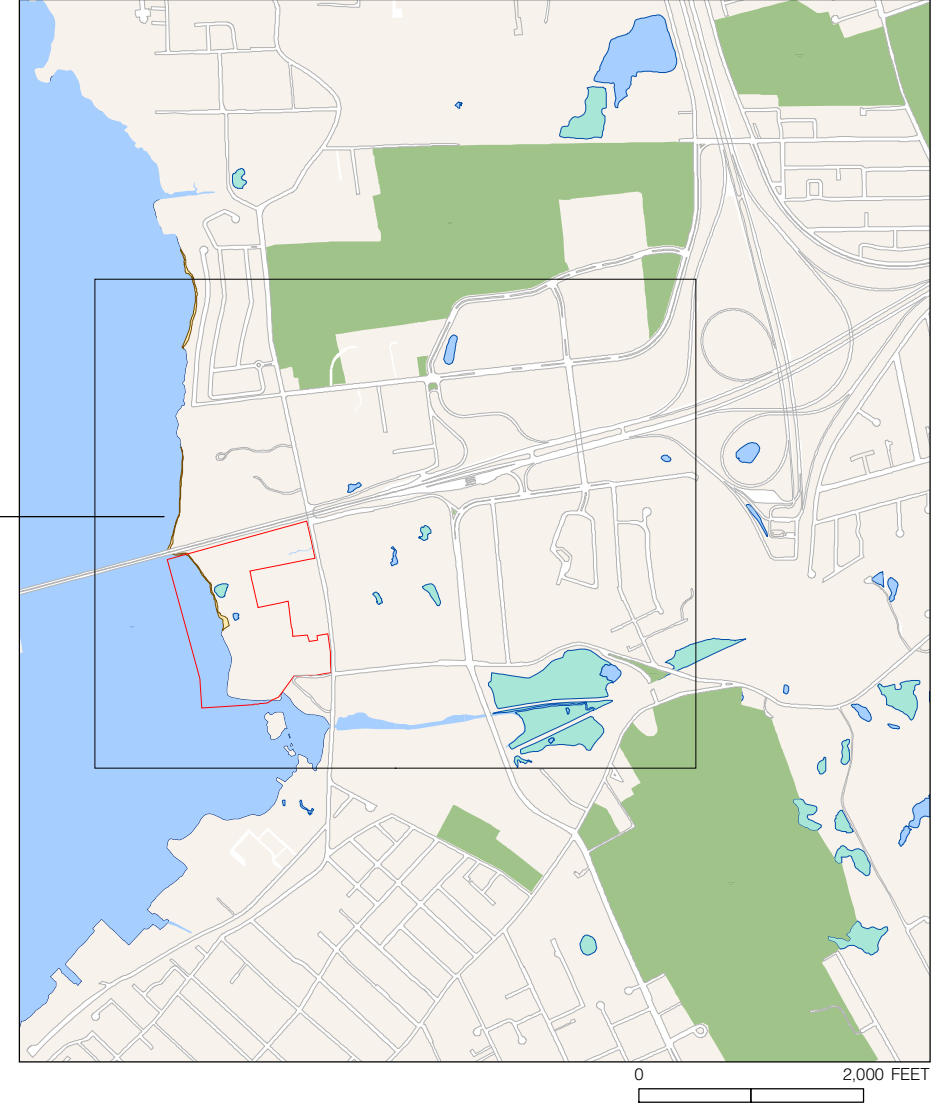
 Project Site

2019 No Action Traffic Volumes
Weekday AM Peak Hour
Figure 12-12b



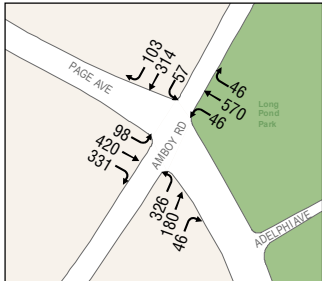
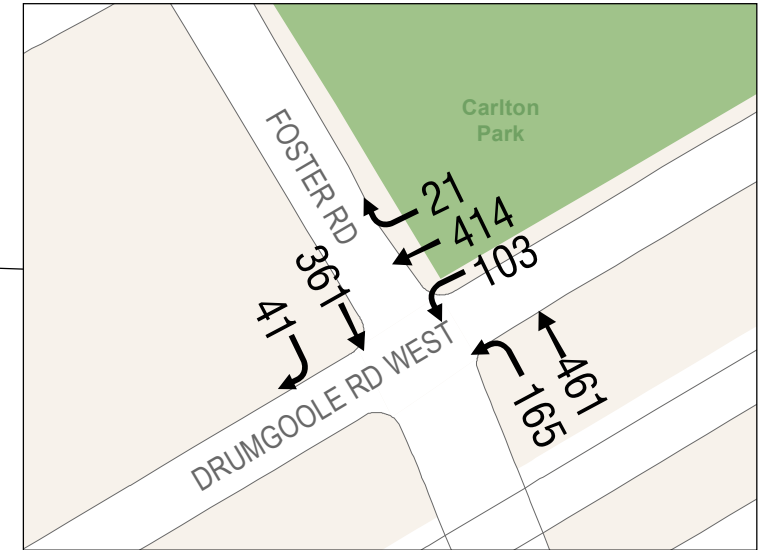
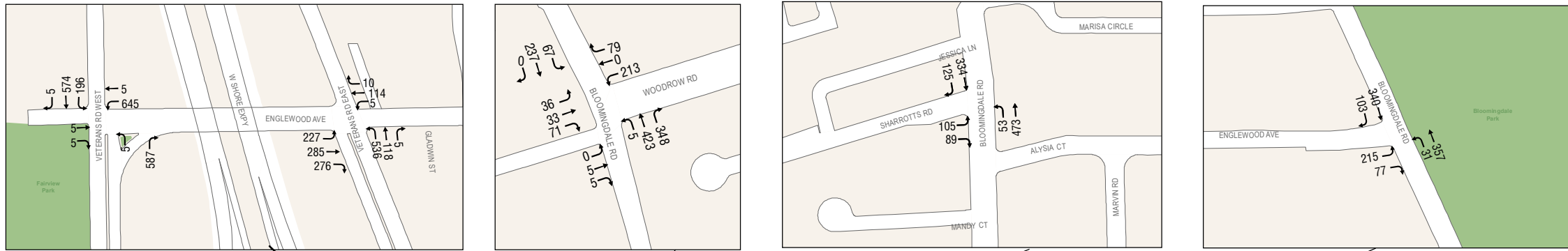
Project Site

2019 No Action Traffic Volumes
Weekday Midday Peak Hour
Figure 12-13a



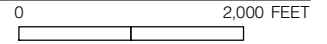
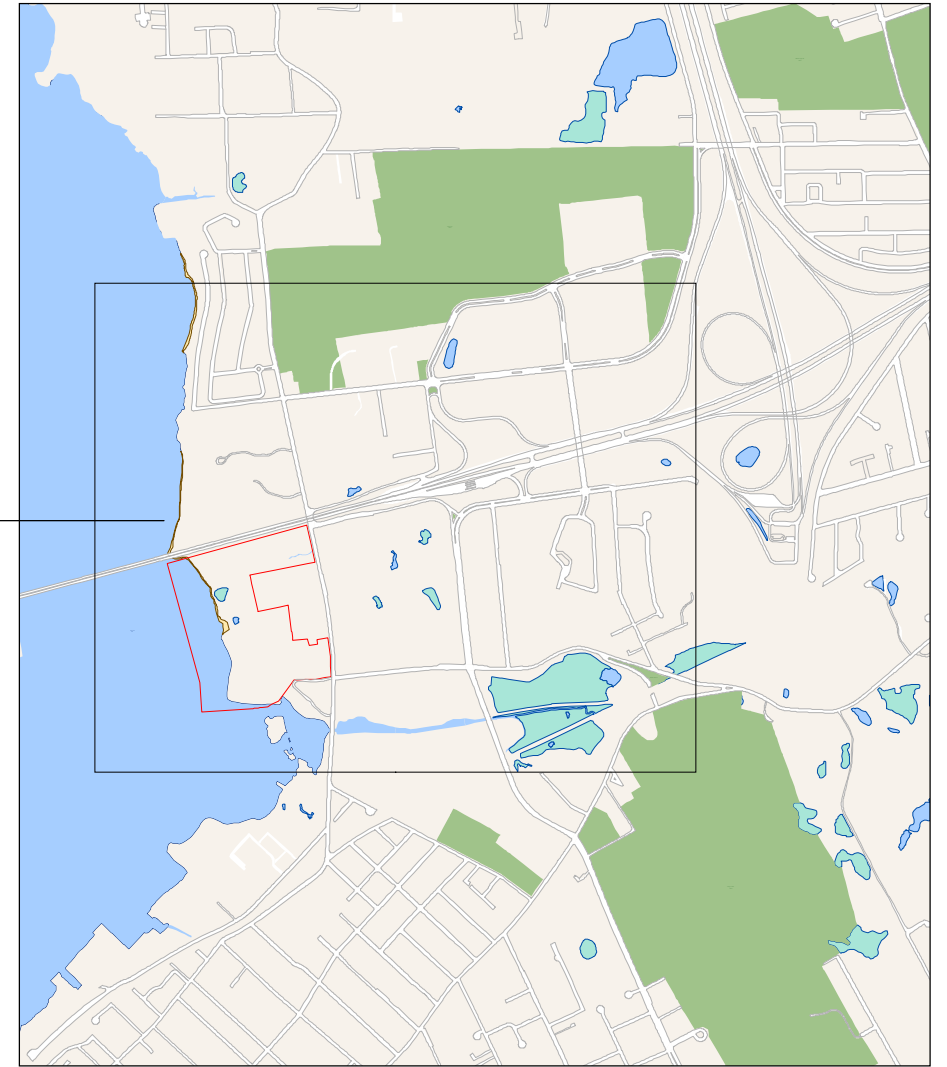
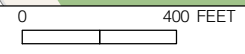
 Project Site

2019 No Action Traffic Volumes
 Weekday Midday Peak Hour
 Figure 12-13b

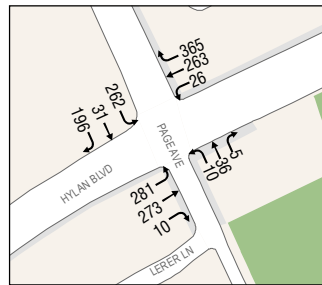
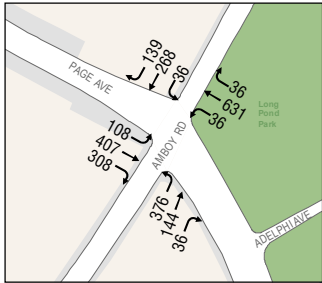
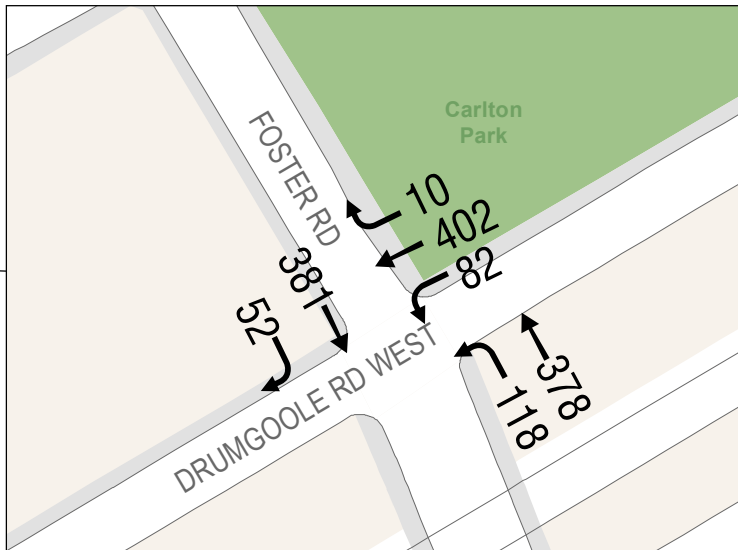
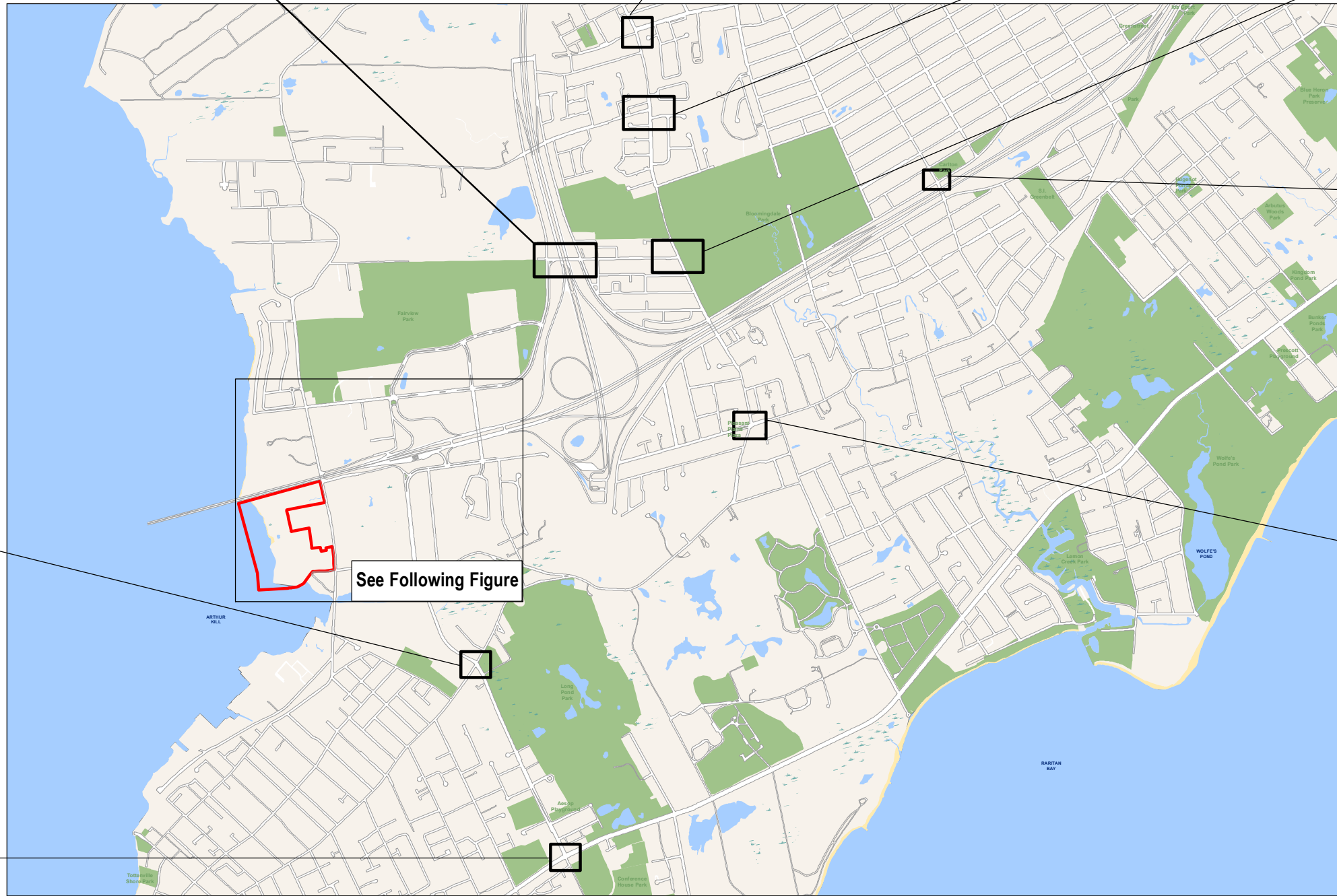
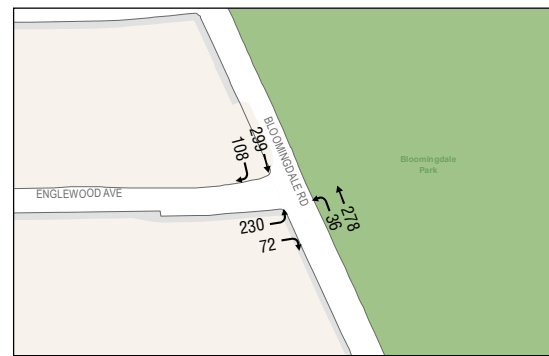
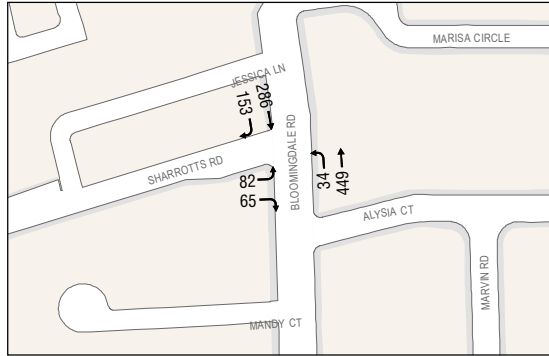
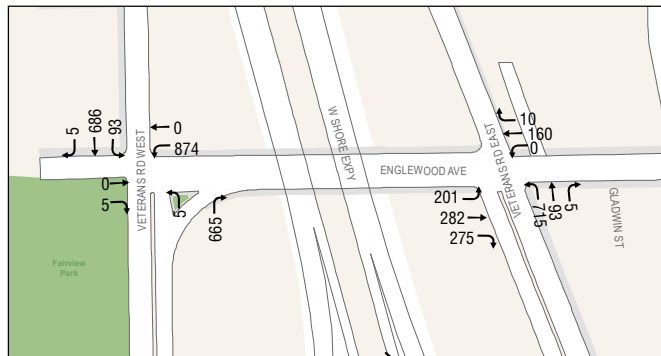


Project Site

2019 No Action Traffic Volumes
Weekday PM Peak Hour
Figure 12-14a

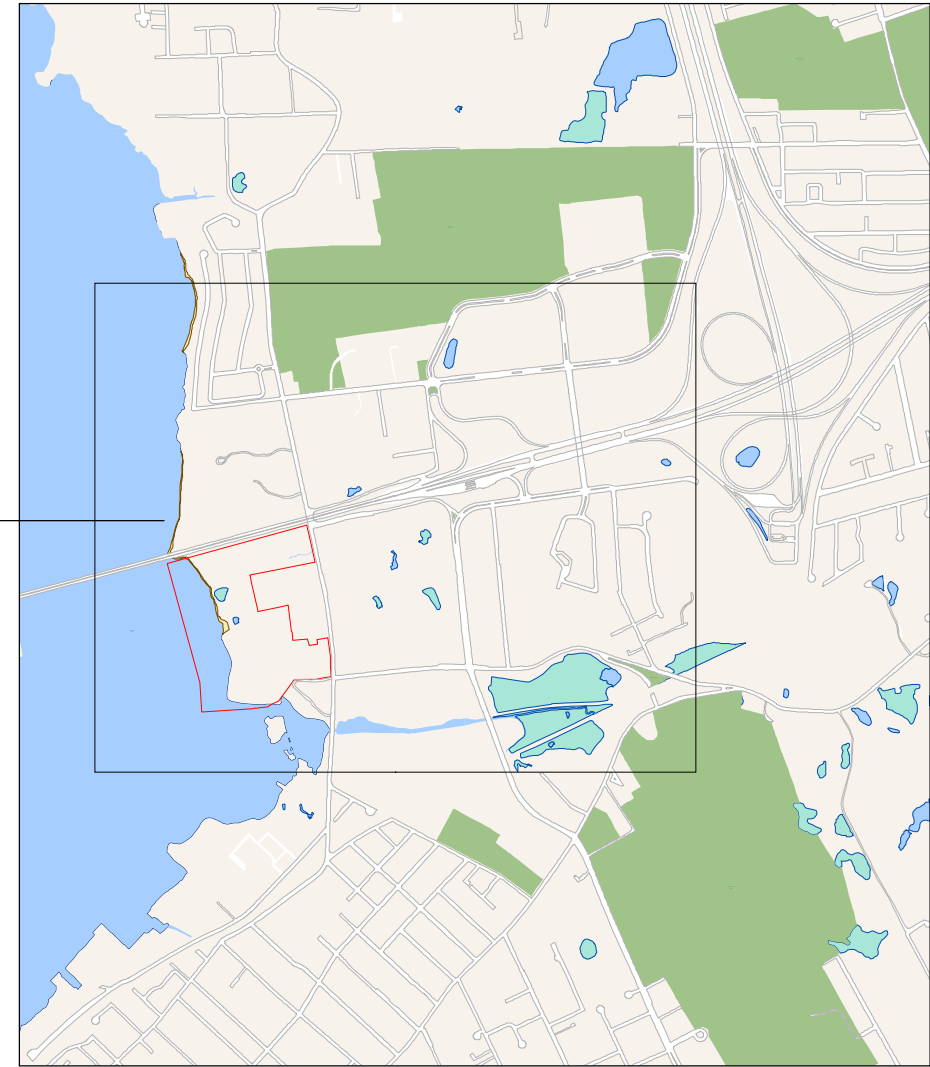
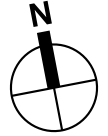


 Project Site



Project Site

2019 No Action Traffic Volumes
Saturday Peak Hour
Figure 12-15a



 Project Site

2019 No Action Traffic Volumes
Saturday Peak Hour
Figure 12-15b

**Table 12-11
2019 No Action Condition Level of Service Analysis**

Intersection	Weekday AM				Weekday Midday				Weekday PM				Saturday			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Signalized Intersections																
Bloomington Road & Woodrow Road & School Driveway																
Eastbound (School Driveway)	L	0.09	25.3	C	L	0.01	24.3	C	L	0.08	25.1	C	L	0.00	0.0	A
	TR	0.34	29.5	C	TR	0.01	24.3	C	TR	0.29	27.9	C	TR	0.00	0.0	A
Eastbound (Woodrow Road)	LTR	0.57	76.3	E	LTR	0.50	59.2	E	LTR	0.50	59.2	E	LTR	0.37	46.9	D
Westbound	L	0.61	39.0	D	L	0.65	39.7	D	L	0.90	65.3	E	L	0.90	62.7	E
	R	0.49	32.9	C	R	0.18	26.5	C	R	0.27	27.9	C	R	0.22	27.1	C
Northbound	LT	0.52	15.3	B	LT	0.39	13.0	B	LT	0.62	17.2	B	LT	0.51	15.9	B
	R	0.29	12.1	B	R	0.34	12.5	B	R	0.38	13.1	B	R	0.32	13.2	B
Southbound	L	0.25	12.2	B	L	0.12	10.4	B	L	0.23	12.1	B	L	0.21	12.3	B
	TR	0.26	11.4	B	TR	0.35	12.4	B	TR	0.25	11.3	B	TR	0.33	13.0	B
	Intersection		20.6	C	Intersection		18.2	B	Intersection		23.7	C	Intersection		23.9	C
Bloomington Road & Sharrots Road																
Eastbound	LR	0.62	23.0	C	LR	0.55	21.6	C	LR	0.61	20.5	C	LR	0.59	22.2	C
Northbound	LT	0.39	6.1	A	LT	0.38	5.4	A	LT	0.67	11.6	B	LT	0.50	6.9	A
Southbound	TR	0.40	6.1	A	TR	0.40	5.7	A	TR	0.52	8.9	A	TR	0.44	6.3	A
	Intersection		9.1	A	Intersection		7.9	A	Intersection		12.1	B	Intersection		8.8	A
Bloomington Road & Englewood Road																
Eastbound	LR	0.38	23.7	C	LR	0.32	22.2	C	LR	0.65	24.5	C	LR	0.60	23.8	C
Northbound	LT	0.38	10.0	B	LT	0.26	8.7	A	LT	0.46	10.8	B	LT	0.38	9.9	A
Southbound	TR	0.61	13.3	B	TR	0.34	9.5	A	TR	0.56	12.3	B	TR	0.52	11.6	B
	Intersection		14.2	B	Intersection		12.2	B	Intersection		15.1	B	Intersection		14.6	B
Veterans Road East & Englewood Avenue																
Eastbound	LTR	0.46	18.8	B	LTR	0.87	31.6	C	LTR	1.32	174.9	F	LTR	1.31	166.6	F
Westbound	LTR	0.24	6.8	A	LTR	0.19	7.6	A	LTR	0.25	6.1	A	LTR	0.35	7.8	A
Northbound	LTR	0.43	12.3	B	LTR	0.89	13.0	B	LTR	0.52	13.4	B	LTR	1.15	15.2	B
	Intersection		13.6	B	Intersection		21.0	C	Intersection		99.2	F	Intersection		82.2	F
Veterans Road West & Hotel Driveway/ Englewood Avenue																
Eastbound	TR	0.02	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B
Westbound	L	0.51	17.8	B	L	0.60	19.3	B	L	0.60	19.4	B	L	0.85	28.5	C
	LT	0.52	18.1	B	LT	0.61	19.8	B	LT	0.64	20.5	C	LT	0.85	28.5	C
Northbound	L	0.02	10.4	B	L	0.02	10.4	B	L	0.03	10.6	B	L	0.03	10.6	B
	R	0.13	11.2	B	R	0.37	13.6	B	R	0.43	14.5	B	R	0.46	15.0	B
Southbound	LTR	0.29	11.9	B	LTR	0.32	12.2	B	LTR	0.43	13.1	B	LTR	0.44	13.2	B
	Intersection		14.3	B	Intersection		15.2	B	Intersection		15.6	B	Intersection		19.3	B
Arthur Kill Road & Allentown Lane/ Veterans Road West																
Eastbound	LTR	0.03	10.4	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B
Westbound	LTR	0.91	39.1	D	LTR	1.02	59.6	E	LTR	1.47	240.4	F	LTR	1.65	318.2	F
Northbound	LTR	0.87	17.7	B	LTR	0.97	30.4	C	LTR	1.11	69.2	E	LTR	1.37	180.5	F
Southbound	LTR	0.72	25.7	C	LTR	1.90	435.4	F	LTR	1.90	436.4	F	LTR	2.50	706.7	F
	Intersection		26.3	C	Intersection		156.1	F	Intersection		220.0	F	Intersection		333.8	F
Arthur Kill Road & North Bridge Street																
Westbound	LR	0.75	25.9	C	LR	0.73	24.8	C	LR	0.93	41.4	D	LR	0.97	48.1	D
Northbound	T	0.59	9.0	A	T	0.64	13.8	B	T	0.70	12.1	B	T	0.80	15.0	B
Southbound	T	0.49	11.9	B	T	0.58	10.6	B	T	0.79	14.1	B	T	0.79	14.4	B
	Intersection		15.2	B	Intersection		15.9	B	Intersection		21.3	C	Intersection		24.1	C
Arthur Kill Road & Richmond Valley Road																
Westbound	LR	0.65	26.4	C	LR	0.93	47.4	D	LR	1.08	84.9	F	LR	1.19	125.4	F
Northbound	TR	0.74	14.3	B	TR	0.56	10.3	B	TR	0.75	14.7	B	TR	0.78	15.8	B
Southbound	LT	1.28	155.0	F	LT	1.30	157.0	F	LT	2.60	735.1	F	LT	3.06	940.8	F
	Intersection		68.2	E	Intersection		79.4	E	Intersection		341.1	F	Intersection		404.7	F
Page Avenue & Richmond Valley Road																
Eastbound	L	0.21	22.1	C	L	0.27	23.1	C	L	0.31	24.0	C	L	0.44	27.1	C
	TR	0.30	22.9	C	TR	0.45	25.5	C	TR	0.49	26.2	C	TR	0.50	26.3	C
Westbound	LTR	0.30	22.8	C	LTR	0.30	22.8	C	LTR	0.40	24.4	C	LTR	0.42	24.7	C
Northbound	L	0.50	19.3	B	L	0.87	43.0	D	L	1.16	110.4	F	L	1.65	319.9	F
	TR	0.75	22.5	C	TR	0.62	19.3	B	TR	0.72	18.8	B	TR	0.83	22.6	C
Southbound	LTR	0.41	11.5	B	LTR	0.49	13.5	B	LTR	0.66	18.5	B	LTR	0.77	20.4	C
	Intersection		19.0	B	Intersection		21.4	C	Intersection		29.6	C	Intersection		57.8	E

Table 12-11 (cont'd)
2019 No Action Condition Level of Service Analysis

Intersection	Weekday AM				Weekday Midday				Weekday PM				Saturday			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Page Avenue/ Boscombe Avenue & South Bridge Street / Gas Station																
Eastbound	LT	0.77	38.9	D	LT	0.70	34.1	C	LT	0.94	58.4	E	LT	0.92	53.6	D
	R	0.07	20.7	C	R	0.08	20.8	C	R	0.17	21.9	C	R	0.14	21.5	C
Westbound	LTR	0.09	21.0	C	LTR	0.09	20.9	C	LTR	0.09	20.9	C	LTR	0.09	21.0	C
	TR	0.39	13.9	B	TR	0.39	10.9	B	TR	0.48	14.1	B	TR	0.52	15.8	B
Northbound	LT	0.48	13.7	B	LT	0.57	15.1	B	LT	0.72	18.6	B	LT	0.70	18.2	B
	Intersection	19.2		B	Intersection	17.1		B	Intersection	24.3		C	Intersection	23.6		C
Boscombe Avenue & The Route 440 Ramps																
Eastbound	L	1.11	101.1	F	L	1.00	64.9	E	L	1.14	112.1	F	L	1.11	97.8	F
	TR	0.29	4.2	A	TR	0.31	4.4	A	TR	0.37	4.7	A	TR	0.50	5.9	A
Westbound	LT	0.89	61.0	E	LT	0.90	61.7	E	LT	1.13	124.0	F	LT	1.15	129.0	F
	R	0.42	30.0	C	R	1.23	156.3	F	R	1.17	130.6	F	R	1.32	189.6	F
Northbound	LTR	0.43	79.1	E	LTR	0.44	70.0	E	LTR	0.69	116.6	F	LTR	0.00	0.0	A
	LT	0.80	79.8	E	LT	0.57	60.2	E	LT	0.72	70.2	E	LT	0.48	54.4	D
Southbound	R	0.23	12.5	B	R	0.17	11.9	B	R	0.26	12.9	B	R	0.22	12.4	B
	Intersection	61.0		E	Intersection	76.0		E	Intersection	91.3		F	Intersection	104.6		F
Veterans Road West & Tyrellan Avenue																
Eastbound	LTR	0.39	29.8	C	LTR	0.97	43.2	D	LTR	1.13	47.8	D	LTR	1.34	79.6	E
	LTR	0.83	40.9	D	LTR	0.71	35.3	D	LTR	0.95	52.9	D	LTR	1.00	62.8	E
Westbound	LTR	0.60	28.8	C	LTR	2.07	81.8	F	LTR	1.43	131.6	F	LTR	2.08	212.5	F
	LTR	0.35	24.4	C	LTR	1.21	135.8	F	LTR	1.21	138.1	F	LTR	1.64	323.7	F
Southbound	LTR	0.35	24.4	C	LTR	1.21	135.8	F	LTR	1.21	138.1	F	LTR	1.64	323.7	F
	Intersection	33.1		C	Intersection	80.5		F	Intersection	93.3		F	Intersection	178.7		F
Veterans Road West & North Bridge Street/ Bricktown Way																
Eastbound	L	0.79	46.4	D	L	1.02	91.9	F	L	1.40	234.1	F	L	2.58	758.3	F
	TR	0.55	28.7	C	TR	0.76	36.5	D	TR	0.84	42.5	D	TR	0.96	58.0	E
Westbound	L	1.18	119.1	F	L	1.70	341.5	F	L	2.21	555.0	F	L	2.79	818.8	F
	T	0.42	9.4	A	T	0.51	9.8	A	T	0.53	6.4	A	T	0.70	7.6	A
Northbound	R	0.03	28.9	C	R	0.03	38.0	D	R	0.04	8.4	A	R	0.04	9.0	A
	LT	0.45	29.9	C	LT	0.53	31.4	C	LT	0.57	32.6	C	LT	0.81	43.2	D
Southbound	R	0.30	27.5	C	R	0.30	27.4	C	R	0.35	28.3	C	R	0.38	28.7	C
	L	0.25	30.4	C	L	0.32	31.6	C	L	0.45	34.0	C	L	0.51	35.4	D
TR	TR	0.60	38.9	D	TR	0.97	76.6	E	TR	1.19	145.7	F	TR	1.43	244.4	F
	Intersection	42.8		D	Intersection	75.6		E	Intersection	123.5		F	Intersection	236.8		F
Page Avenue & Amboy Road																
Eastbound	L	0.99	63.1	E	L	0.72	27.5	C	L	1.04	76.6	E	L	1.29	171.5	F
	TR	0.32	14.4	B	TR	0.17	12.6	B	TR	0.30	13.0	B	TR	0.23	13.3	B
Westbound	L	0.29	26.7	C	L	0.08	21.7	C	L	0.21	23.7	C	L	0.13	22.3	C
	TR	0.75	38.8	D	TR	0.57	29.2	C	TR	0.85	43.9	D	TR	0.87	45.4	D
Northbound	L	0.27	21.2	C	L	0.14	18.8	B	L	0.29	24.2	C	L	0.26	22.3	C
	T	0.78	32.8	C	T	0.69	28.5	C	T	0.90	44.8	D	T	0.95	50.2	D
Southbound	R	0.10	17.9	B	R	0.06	17.5	B	R	0.11	19.2	B	R	0.08	17.6	B
	L	0.27	26.9	C	L	0.58	34.5	C	L	1.33	226.8	F	L	1.57	328.2	F
TR	T	0.51	28.7	C	T	0.50	24.3	C	T	0.68	29.8	C	T	0.73	31.4	C
	R	0.44	27.5	C	R	0.45	23.7	C	R	0.62	29.1	C	R	0.56	27.1	C
Intersection	Intersection	34.5		C	Intersection	25.8		C	Intersection	47.7		D	Intersection	68.9		E
	Page Avenue & Hylan Boulevard															
Eastbound	L	1.00	74.8	E	L	0.45	17.9	B	L	1.12	115.6	F	L	0.81	38.6	D
	TR	0.32	13.7	B	TR	0.10	11.6	B	TR	0.15	12.0	B	TR	0.15	12.0	B
Westbound	L	0.07	11.7	B	L	0.02	11.0	B	L	0.02	11.0	B	L	0.06	11.4	B
	TR	0.39	14.7	B	TR	0.29	13.5	B	TR	0.38	14.5	B	TR	0.29	13.5	B
Northbound	LTR	0.21	34.6	C	LTR	0.08	32.6	C	LTR	0.17	33.9	C	LTR	0.14	33.4	C
	L	0.75	55.0	D	L	0.68	49.0	D	L	0.80	57.6	E	L	0.92	74.2	E
Southbound	TR	0.38	37.6	D	TR	0.37	37.3	D	TR	0.48	39.5	D	TR	0.56	41.6	D
	Intersection	30.7		C	Intersection	23.5		C	Intersection	39.9		D	Intersection	31.4		C

Table 12-11 (cont'd)
2019 No Action Condition Level of Service Analysis

Intersection	Weekday AM				Weekday Midday				Weekday PM				Saturday			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Bloomington Road & Amboy Road & Pleasant Plains Avenue																
Eastbound	LTR	0.11	15.0	B	LTR	0.04	14.3	B	LTR	0.07	14.6	B	LTR	0.06	14.4	B
Westbound	L	0.47	20.5	C	L	0.52	21.5	C	L	0.67	26.2	C	L	0.77	30.8	C
	T	0.04	14.2	B	T	0.02	14.1	B	T	0.03	14.2	B	T	0.02	14.0	B
	R	0.22	16.2	B	R	0.16	15.4	B	R	0.21	16.0	B	R	0.15	15.3	B
Northbound	LTR	0.58	22.2	C	LTR	0.61	22.7	C	LTR	0.94	46.1	D	LTR	0.86	35.5	D
Southbound	L	0.77	38.6	D	L	0.28	18.3	B	L	0.55	28.8	C	L	0.42	22.9	C
	TR	0.48	19.8	B	TR	0.41	18.6	B	TR	0.53	20.7	C	TR	0.52	20.4	C
	Intersection		22.8	C	Intersection		20.3	C	Intersection		31.3	C	Intersection		28.3	C
Drumgoole Road West & Foster Road																
Westbound	L	0.30	20.2	C	L	0.17	18.5	B	L	0.19	18.8	B	L	0.16	18.4	B
	TR	0.76	33.0	C	TR	0.54	24.9	C	TR	0.87	41.9	D	TR	0.78	33.9	C
Northbound	L	0.77	45.7	D	L	0.28	14.6	B	L	0.56	22.1	C	L	0.49	20.6	C
	T	0.49	16.8	B	T	0.39	15.3	B	T	0.54	17.7	B	T	0.50	16.8	B
Southbound	TR	0.67	20.5	C	TR	0.29	13.9	B	TR	0.42	15.5	B	TR	0.49	16.5	B
	Intersection		24.3	C	Intersection		17.6	B	Intersection		24.7	C	Intersection		21.9	C
Unsignalized Intersections																
North Bridge Street & The Route 440 Off-Ramp																
Westbound	L	0.74	27.0	D	L	0.62	22.4	C	L	0.92	50.6	F	L	0.94	56.6	F
Southbound	T	0.27	0.0	A	T	0.29	0.0	A	T	0.30	0.0	A	T	0.33	0.0	A
Arthur Kill Road & South Bridge Street																
Northbound	TR	0.52	0.0	A	TR	0.56	0.0	A	TR	0.65	0.0	A	TR	0.72	0.0	A
Southbound	LT	0.23	6.0	A	LT	0.31	8.0	A	LT	0.51	16.6	C	LT	0.55	18.7	C
Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service																

Based on the analysis results presented in Table 12-11, the majority of the approaches/lane-groups will operate at the same LOS as in the existing conditions. The following approaches/lane-groups are expected to operate at deteriorated LOS when compared to the existing conditions:

Arthur Kill Road

- Westbound approach at the intersection of Arthur Kill Road and Allentown Lane/Veterans Road West will deteriorate to LOS E with a v/c ratio of 1.02 and a delay of 59.6 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.47 and a delay of 240.4 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.65 and a delay of 318.2 spv during the Saturday peak hour.
- Northbound approach at the intersection of Arthur Kill Road and Allentown Lane/Veterans Road West will deteriorate to LOS E with a v/c ratio of 1.11 and a delay of 69.2 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.37 and a delay of 180.5 spv during the Saturday peak hour.
- Southbound approach at the intersection of Arthur Kill Road and Allentown Lane/Veterans Road West will deteriorate to LOS F with a v/c ratio of 1.90 and a delay of 435.4 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.90 and a delay of 436.4 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 2.50 and a delay of 706.7 spv during the Saturday peak hour.
- Westbound approach at the intersection of Arthur Kill Road and North Bridge Street will deteriorate to LOS D with a v/c ratio of 0.97 and a delay of 48.1 spv during the Saturday peak hour.

- Westbound approach at the intersection of Arthur Kill Road and Richmond Valley Road will deteriorate to LOS D with a v/c ratio of 0.93 and a delay of 47.4 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.08 and a delay of 84.9 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.19 and a delay of 125.4 spv during the Saturday peak hour.
- Southbound approach at the intersection of Arthur Kill Road and Richmond Valley Road will deteriorate to LOS F with a v/c ratio of 1.28 and a delay of 155.0 spv during the weekday AM peak hour, will deteriorate to LOS F with a v/c ratio of 1.30 and a delay of 157.0 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 2.60 and a delay of 735.1 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 3.06 and a delay of 940.8 spv during the Saturday peak hour.

Page Avenue/Boscombe Avenue

- Northbound left-turn at the intersection of Page Avenue and Richmond Valley Road will deteriorate to LOS F with a v/c ratio of 1.16 and a delay of 110.4 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.65 and a delay of 319.9 spv during the Saturday peak hour.
- Eastbound left-turn/through at the intersection of Page Avenue/Boscombe Avenue and South Bridge Street/Gas Station will deteriorate to LOS E with a v/c ratio of 0.94 and a delay of 58.4 spv during the weekday PM peak hour, and will deteriorate to beyond mid-LOS D with a v/c ratio of 0.92 and a delay of 53.6 spv during the Saturday peak hour.
- Eastbound left-turn at the intersection of Boscombe Avenue and the Route 440 Ramps will deteriorate to LOS F with a v/c ratio of 1.11 and a delay of 101.1 spv during the weekday AM peak hour, will deteriorate to LOS E with a v/c ratio of 1.00 and a delay of 64.9 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.14 and a delay of 112.1 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.11 and a delay of 97.8 spv during the Saturday peak hour.
- Westbound left-turn/through at the intersection of Boscombe Avenue and the Route 440 Ramps will deteriorate to LOS E with a v/c ratio of 0.89 and a delay of 61.0 spv during the weekday AM peak hour, will deteriorate to LOS E with a v/c ratio of 0.90 and a delay of 61.7 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.13 and a delay of 124.0 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.15 and a delay of 129.0 spv during the Saturday peak hour.
- Westbound right-turn at the intersection of Boscombe Avenue and the Route 440 Ramps will deteriorate to LOS F with a v/c ratio of 1.23 and a delay of 156.3 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.17 and a delay of 130.6 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.32 and a delay of 189.6 spv during the Saturday peak hour.
- Southbound left-turn/through at the intersection of Boscombe Avenue and the Route 440 Ramps will deteriorate to LOS E with a v/c ratio of 0.57 and a delay of 60.2 spv during the weekday midday peak hour.
- Eastbound left-turn at the intersection of Page Avenue and Amboy Road will deteriorate to LOS E with a v/c ratio of 1.04 and a delay of 76.6 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.29 and a delay of 171.5 spv during the Saturday peak hour.

Riverside Galleria EIS

- Northbound through at the intersection of Page Avenue and Amboy Road will deteriorate to LOS D with a v/c ratio of 0.95 and a delay of 50.2 spv during the Saturday peak hour.
- Southbound left-turn at the intersection of Page Avenue and Amboy Road will deteriorate to LOS F with a v/c ratio of 1.33 and a delay of 226.8 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.57 and a delay of 328.2 spv during the Saturday peak hour.
- Eastbound left-turn at the intersection of Page Avenue and Hylan Boulevard will deteriorate to LOS E with a v/c ratio of 1.00 and a delay of 74.8 spv during the weekday AM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.12 and a delay of 115.6 spv during the weekday PM peak hour.
- Southbound left-turn at the intersection of Page Avenue and Hylan Boulevard will deteriorate to beyond mid-LOS D with a v/c ratio of 0.68 and a delay of 49.0 spv during the weekday midday peak hour, will deteriorate to LOS E with a v/c ratio of 0.80 and a delay of 57.6 spv during the weekday PM peak hour, and will deteriorate to LOS E with a v/c ratio of 0.92 and a delay of 74.2 spv during the Saturday peak hour.

Veterans Road West

- Eastbound approach at the intersection of Veterans Road West and Tyrellan Avenue will deteriorate beyond mid-LOS D with a v/c ratio of 1.13 and a delay of 47.8 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.34 and a delay of 79.6 spv during the Saturday peak hour.
- Westbound approach at the intersection of Veterans Road West and Tyrellan Avenue will deteriorate to beyond mid-LOS D with a v/c ratio of 0.95 and a delay of 52.9 spv during the weekday PM peak hour, and will deteriorate to LOS E with a v/c ratio of 1.00 and a delay of 62.8 spv during the Saturday peak hour.
- Northbound approach at the intersection of Veterans Road West and Tyrellan Avenue will deteriorate to LOS F with a v/c ratio of 2.07 and a delay of 81.8 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.43 and a delay of 131.6 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 2.08 and a delay of 212.5 spv during the Saturday peak hour.
- Southbound approach at the intersection of Veterans Road West and Tyrellan Avenue will deteriorate to LOS F with a v/c ratio of 1.21 and a delay of 135.8 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.21 and a delay of 138.1 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.64 and a delay of 323.7 spv during the Saturday peak hour.
- Eastbound left-turn at the intersection of Veterans Road West and North Bridge Street/ Bricktown Way will deteriorate to LOS D with a v/c ratio of 0.79 and a delay of 46.4 spv during the weekday AM peak hour, will deteriorate to LOS F with a v/c ratio of 1.02 and a delay of 91.9 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.40 and a delay of 234.1 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 2.58 and a delay of 758.3 spv during the Saturday peak hour.
- Eastbound through/right-turn at the intersection of Veterans Road West and North Bridge Street/ Bricktown Way will deteriorate to LOS E with a v/c ratio of 0.96 and a delay of 58.0 spv during the Saturday peak hour.

- Westbound left-turn at the intersection of Veterans Road West and North Bridge Street/ Bricktown Way will deteriorate to LOS F with a v/c ratio of 1.18 and a delay of 119.1 spv during the weekday AM peak hour, will deteriorate to LOS F with a v/c ratio of 1.70 and a delay of 341.5 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 2.21 and a delay of 555.0 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 2.79 and a delay of 818.8 spv during the Saturday peak hour.
- Southbound through/right-turn at the intersection of Veterans Road West and North Bridge Street/ Bricktown Way will deteriorate to LOS E with a v/c ratio of 0.97 and a delay of 76.6 spv during the weekday midday peak hour, will deteriorate to LOS F with a v/c ratio of 1.19 and a delay of 145.7 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.43 and a delay of 244.4 spv during the Saturday peak hour.
- Westbound approach at the unsignalized intersection of North Bridge Street and the Route 440 Off-Ramp will deteriorate to LOS F with a v/c ratio of 0.92 and a delay of 50.6 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 0.94 and a delay of 56.6 spv during the Saturday peak hour.

Bloomingtondale Road

- Westbound left-turn at the intersection of Bloomingtondale Road and Woodrow Road/P.S. 62 School Driveway will deteriorate to LOS E with a v/c ratio of 0.90 and a delay of 65.3 spv during the weekday PM peak hour, and will deteriorate to LOS E with a v/c ratio of 0.90 and a delay of 62.7 spv during the Saturday peak hour.
- Northbound approach at the intersection of Bloomingtondale Road and Amboy Road/ Pleasant Plains Avenue will deteriorate to LOS D with a v/c ratio of 0.94 and a delay of 46.1 spv during the weekday PM peak hour.

Veterans Road East

- Eastbound approach at the intersection of Veterans Road East and Englewood Road will deteriorate to LOS F with a v/c ratio of 1.32 and a delay of 174.9 spv during the weekday PM peak hour, and will deteriorate to LOS F with a v/c ratio of 1.31 and a delay of 166.6 spv during the Saturday peak hour.

Drumgoole Road West

- Northbound left-turn at the intersection of Drumgoole Road West and Foster Road will deteriorate to beyond mid-LOS D with a v/c ratio of 0.77 and a delay of 45.7 spv during the weekday AM peak hour.

THE FUTURE WITH THE PROPOSED PROJECT

PROPOSED PROJECT

The Project Site would be developed into a commercial center composed of 589,619 gross square foot (gsf) of destination and smaller scale retail, supermarket, restaurant, cinema, and small office use as well as 1,721 accessory parking spaces. The Proposed Project would result in approximately 648, 1,917, 1,903, and 2,719 incremental vehicle trips during the weekday AM, midday, and PM, and Saturday peak hours, respectively. The incremental auto trips were assigned to the Proposed Project's parking spaces. Taxi trips were assigned to enter the Project Site and drop-off/pick-up along the Project Site's internal private drives. All delivery trips were assigned to the Project Site via NYCDOT-designated truck routes.

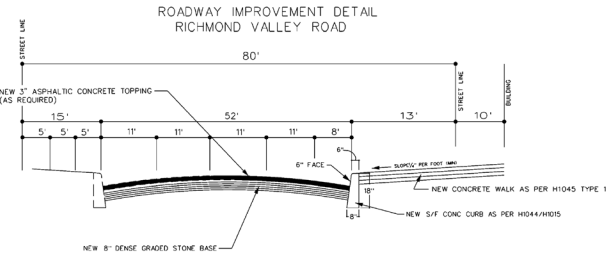
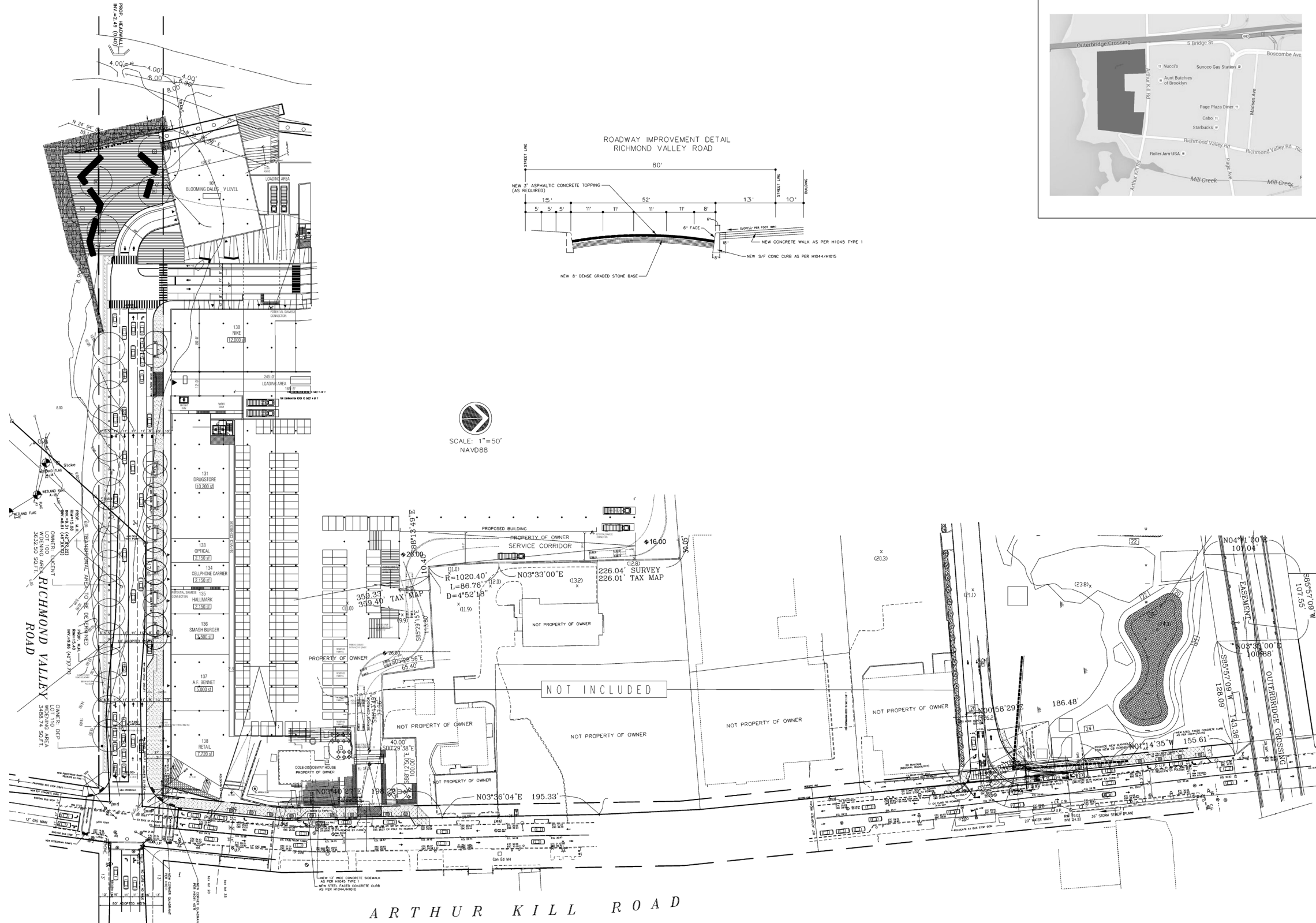
Traffic Operations

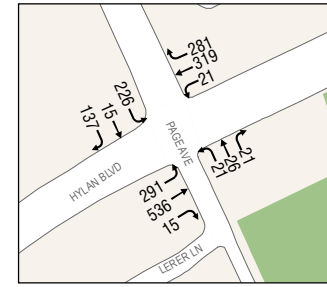
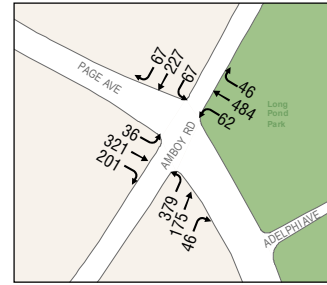
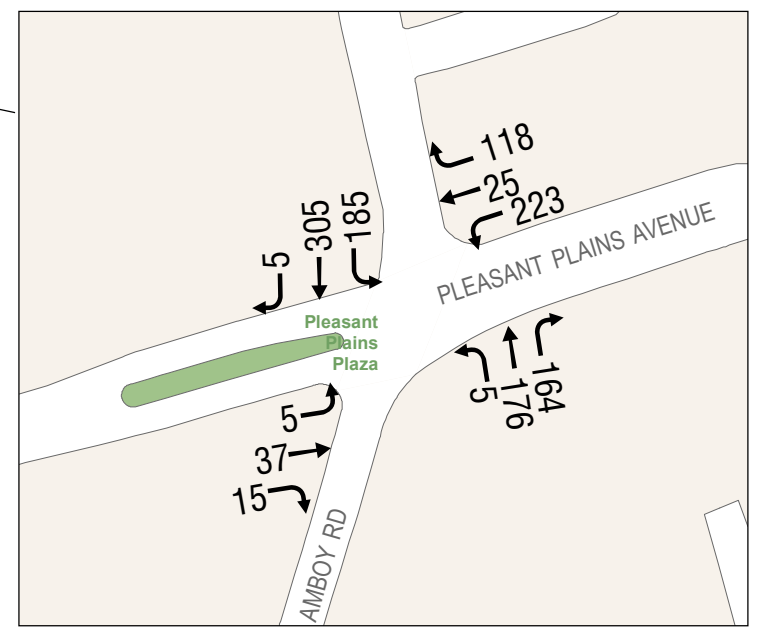
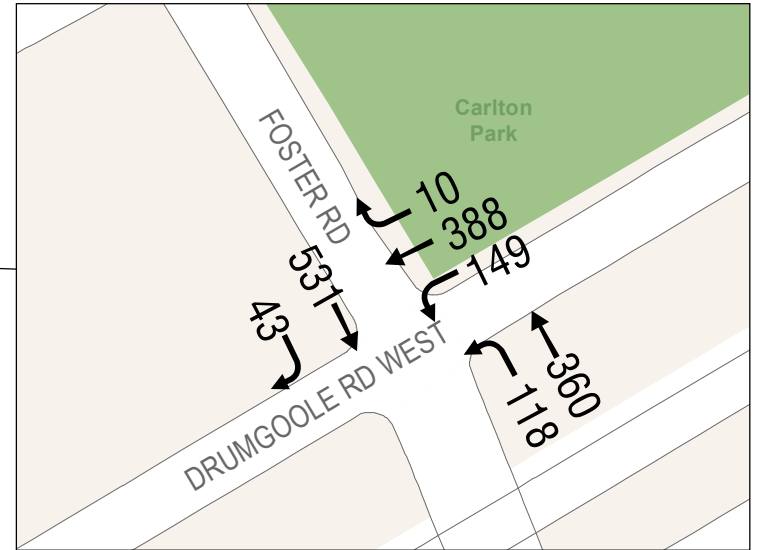
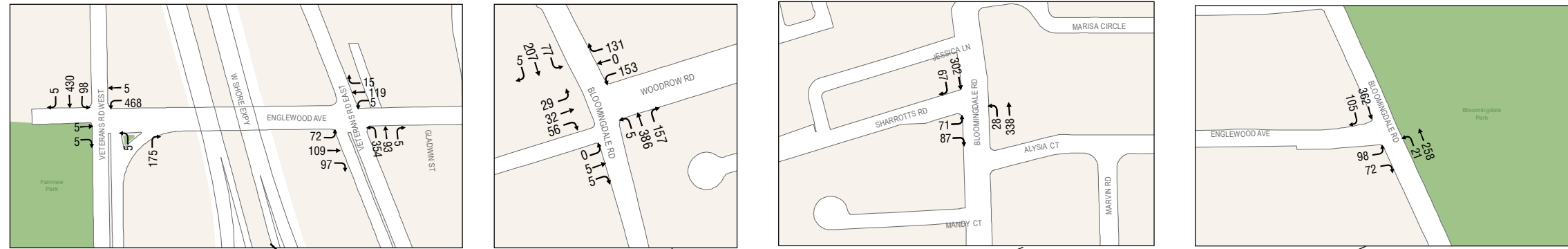
As part of the Proposed Project, the approaches of the intersection of Richmond Valley and Arthur Kill Road would be widened to provide additional turning lanes. As shown in **Figure 12-16**, the southbound approach would be striped as a 12-foot left-turn only lane and a 13-foot shared through/right-turn lane, the westbound approach would be striped as an 11-foot left-turn only lane and an 11-foot shared through/right-turn lane, and the northbound approach would be striped as an 11-foot left-turn only lane and an 11-foot shared through/right-turn lane. The new eastbound approach would be striped with an 11-foot left-turn only lane and an 11-foot shared through/right-turn lane. Crosswalks would be provided across all approaches and the traffic signal would be upgraded to accommodate the new eastbound approach and turning lanes.

Also as part of the Proposed Project, two new intersections would be created along Arthur Kill Road, north of Richmond Valley Road and would serve as additional access and egress points from the Project Site. As shown in Figure 12-16, at approximately 100 feet north of Richmond Valley Road along Arthur Kill Road, an entrance only private drive, providing access to the Proposed Project's parking facility and loading docks, would be provided. The private drive would be unsignalized and accommodate only the southbound right-turn movement from Arthur Kill Road. At approximately 100 feet south of South Bridge Street on Arthur Kill Road, a third access point would be provided to the Project Site. The southbound approach would be widened to provide an 11-foot channelized right-turn only lane into the Project Site. The northbound approach would be striped as a through only lane, with northbound left-turns into the project site being prohibited. The new eastbound approach would be striped as a 11-foot left-turn lane and a 11-foot right-turn lane. A crosswalk would be provided across the eastbound and northbound approaches and the new intersection would be signalized. The applicant would be responsible for the design and installation of the proposed signal at this driveway, if found warranted by NYCDOT. These geometric changes have been incorporated into the With Action condition analysis.

The Proposed Project would also include ADA compliant sidewalks along Arthur Kill Road adjacent to the property line of the Proposed Site where a sidewalk does not currently exist to improve pedestrian facilities along Arthur Kill Road. There are currently no bicycle facilities along Arthur Kill Road; however, the segment of Arthur Kill Road from Arden Avenue to Barnard Avenue has been identified by NYCDOT as a potential future protected bike lane.

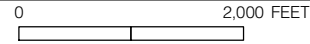
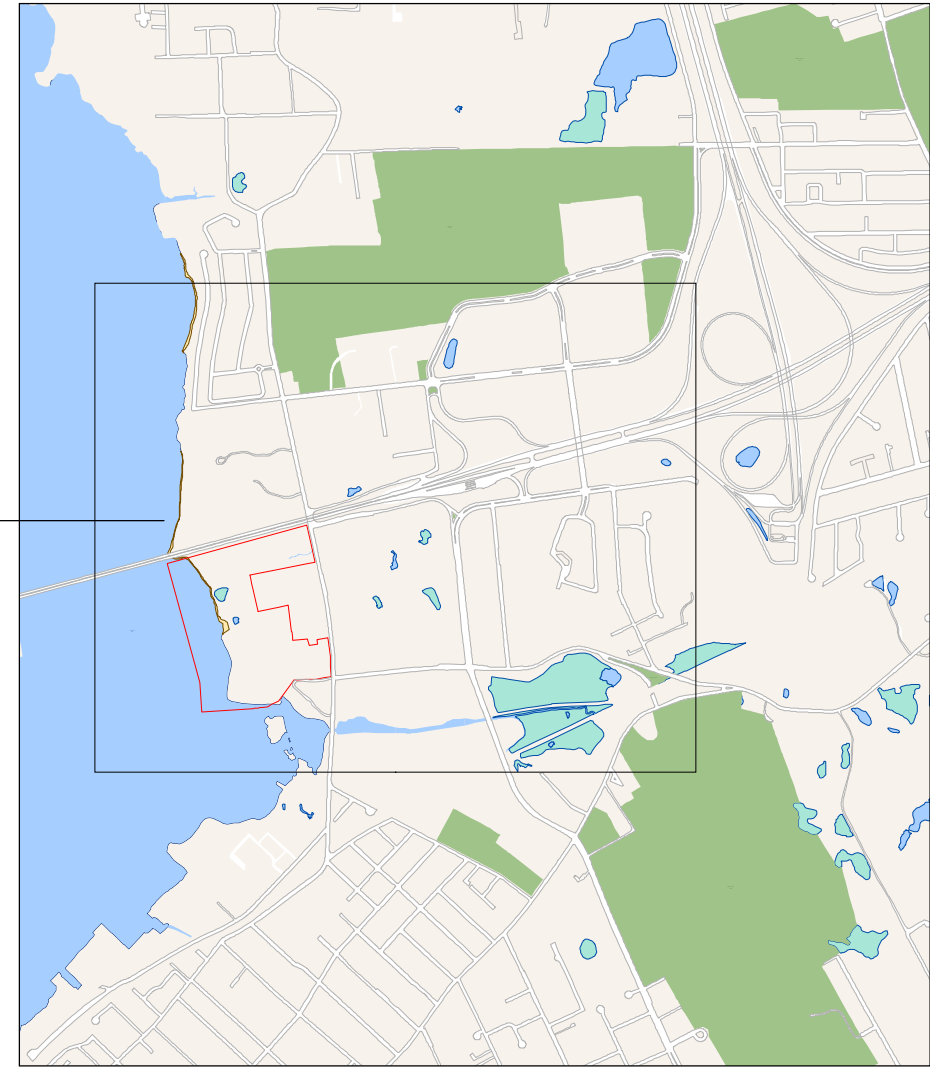
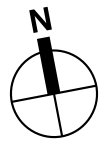
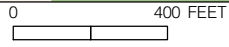
The 2019 With Action condition traffic volumes are shown in **Figures 12-17** through **12-20** for the weekday AM, midday, PM, and Saturday peak hours. The 2019 With Action traffic volumes were constructed by layering on top of the No Action condition traffic volumes the incremental vehicle trips shown in Figures 12-2 through 12-5. A summary of the 2019 With Action condition traffic analysis results is presented in **Table 12-12**.



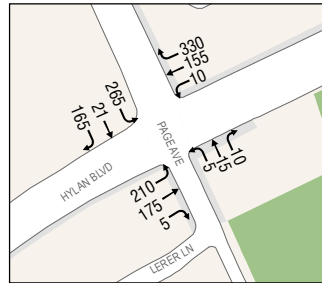
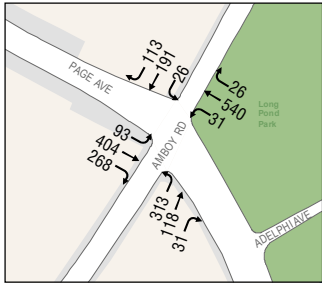
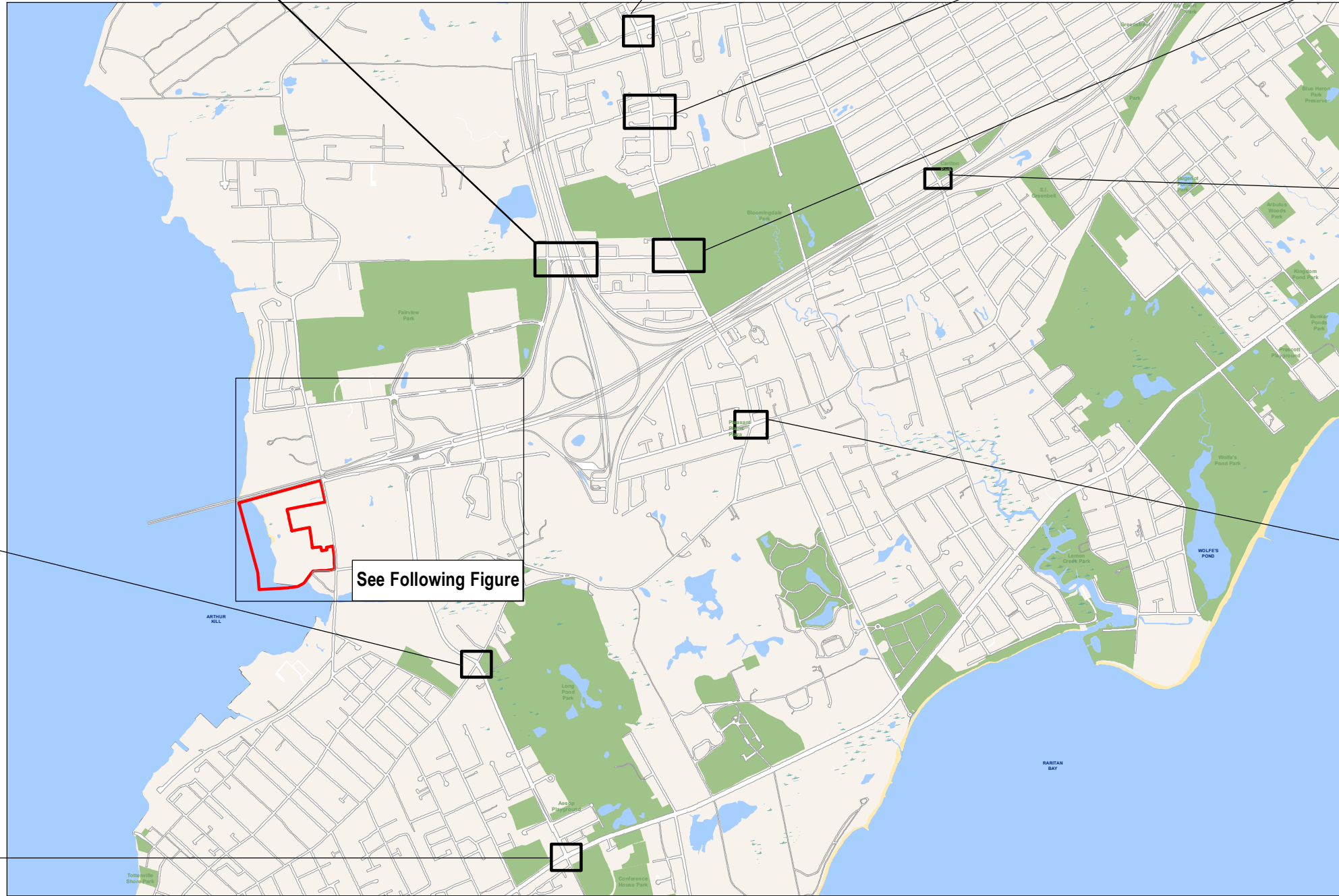
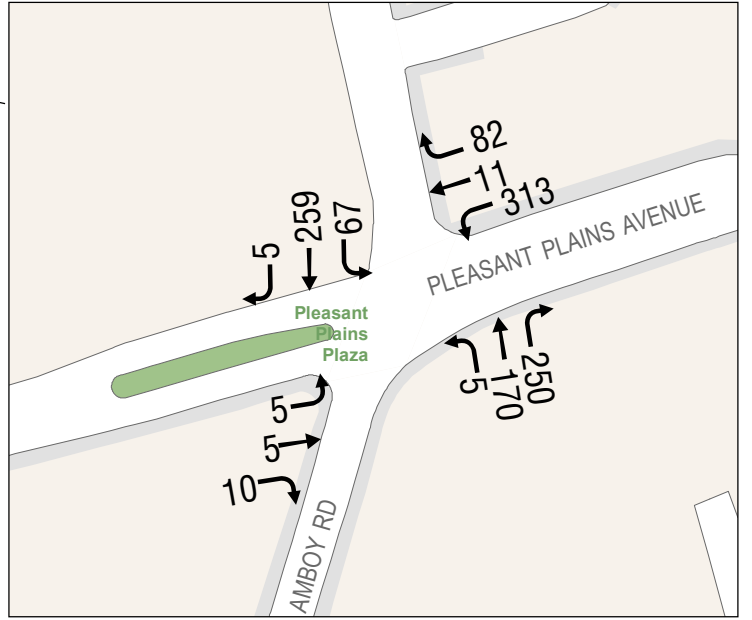
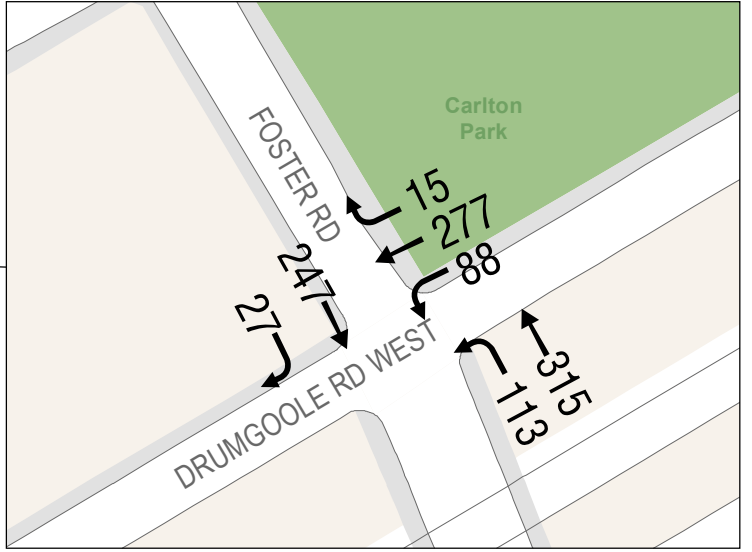
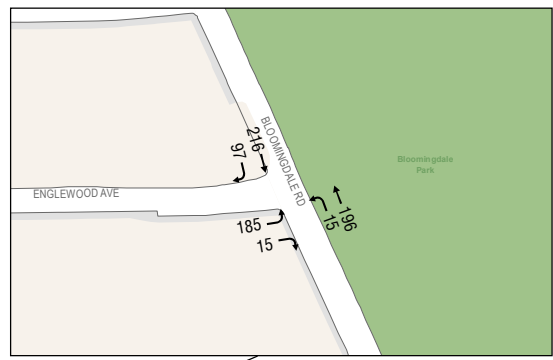
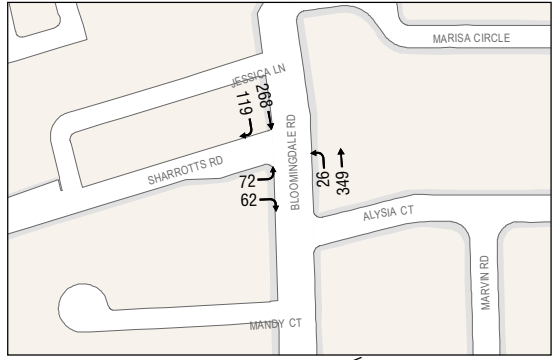
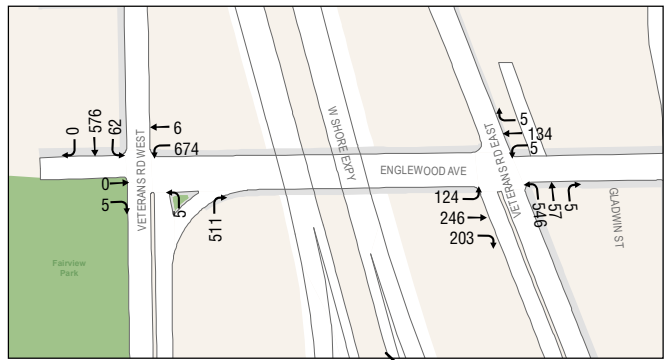


Project Site

2019 With Action Traffic Volumes
Weekday AM Peak Hour
Figure 12-17a

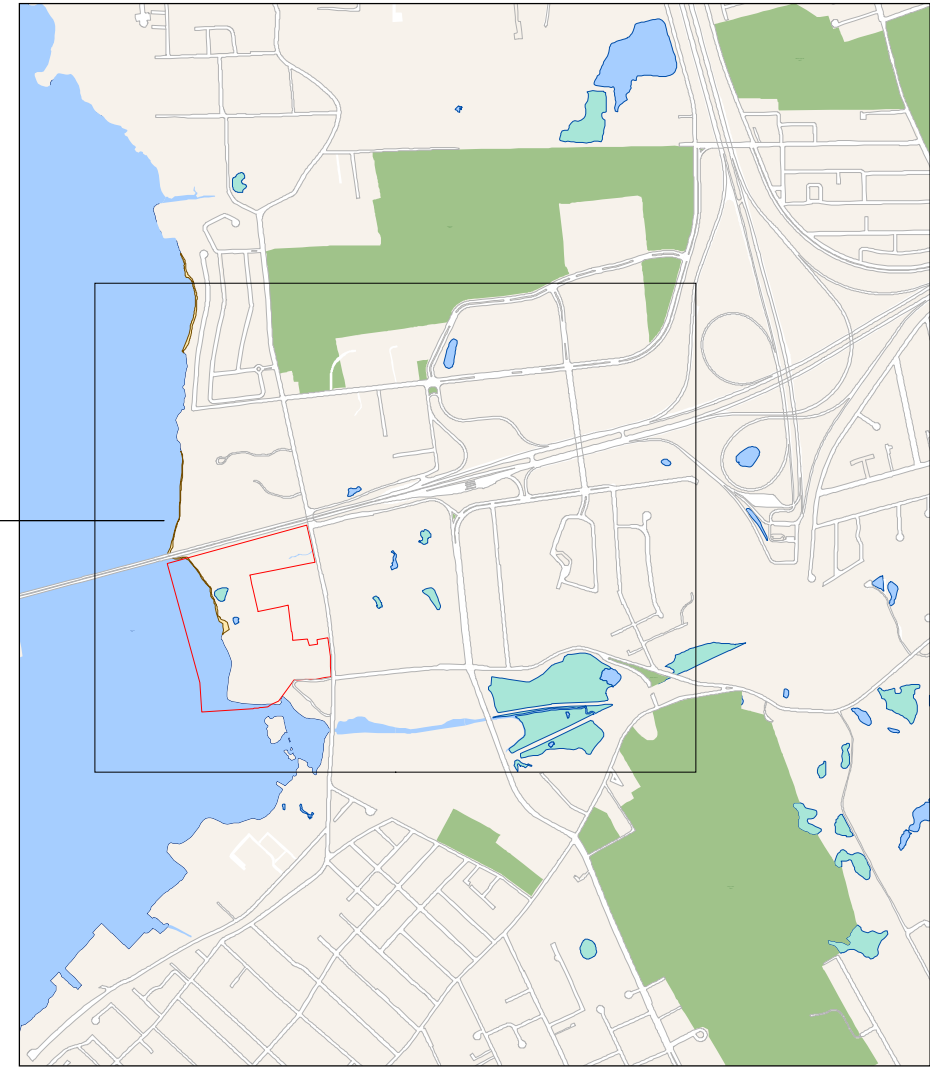
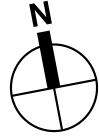


 Project Site



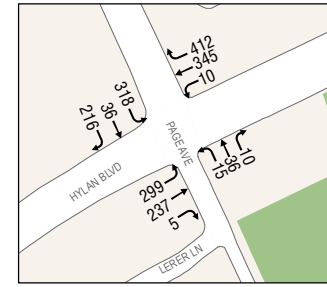
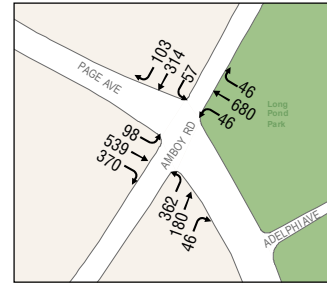
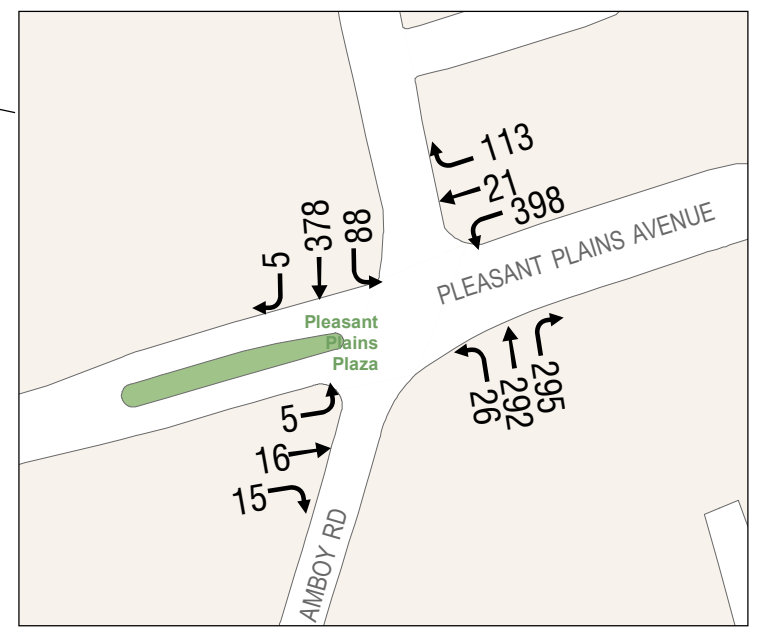
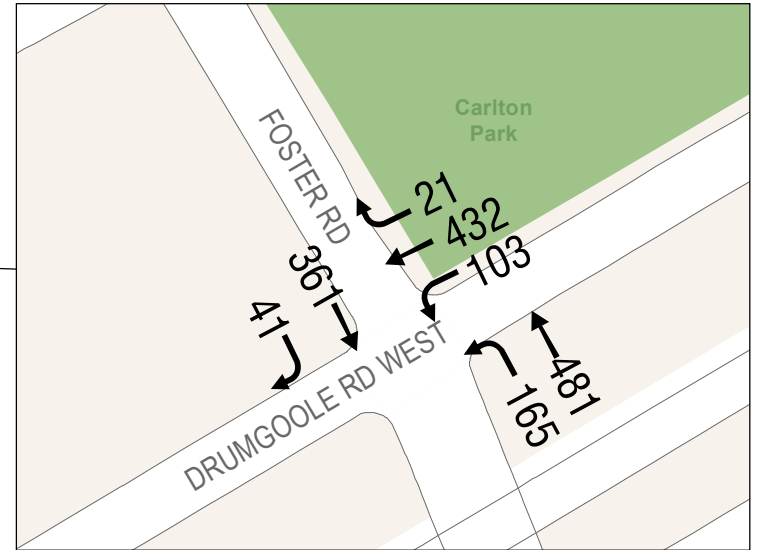
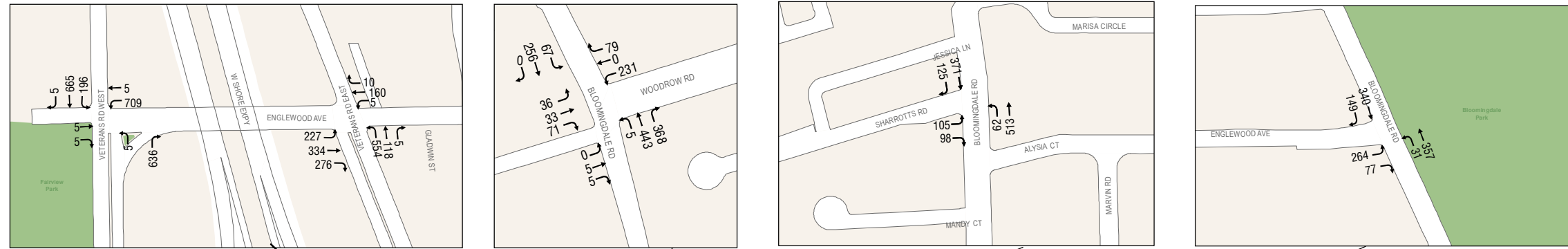
Project Site

2019 With Action Traffic Volumes
 Weekday Midday Peak Hour
Figure 12-18a



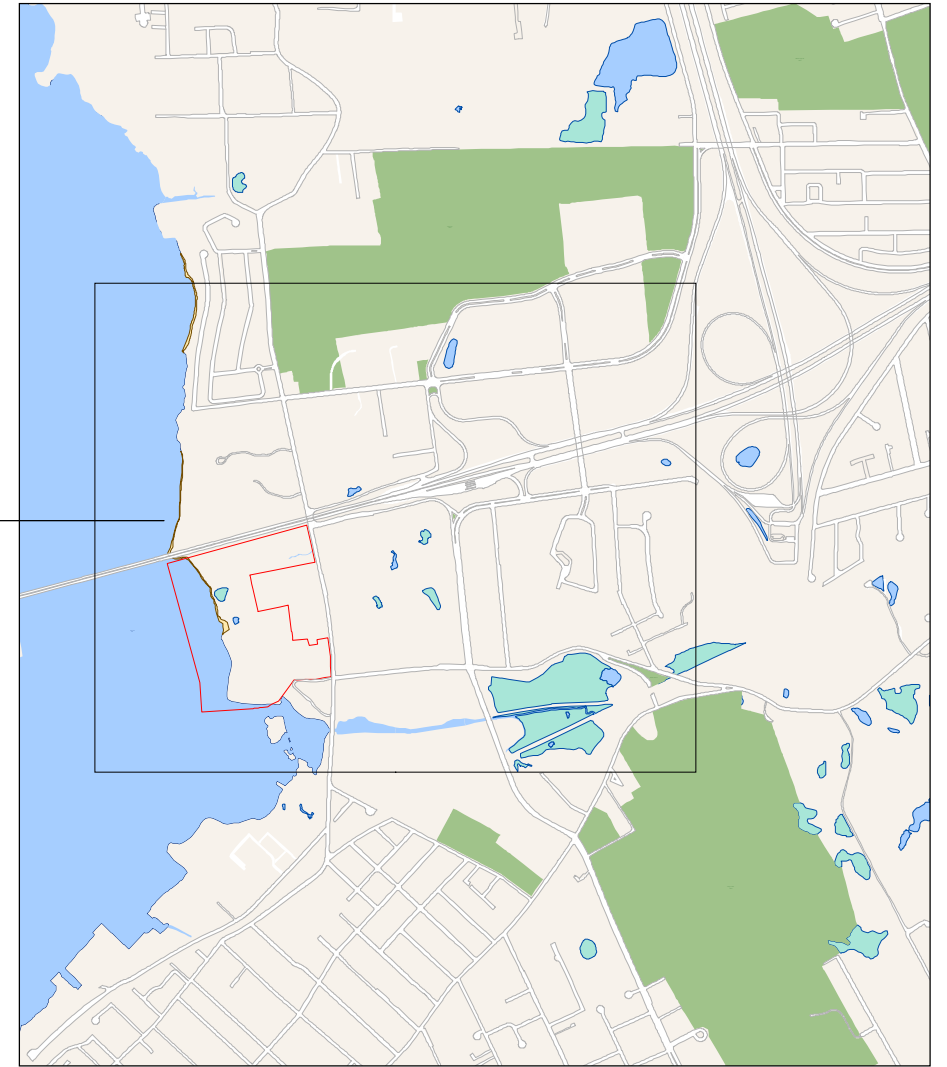
 Project Site

2019 With Action Traffic Volumes
Weekday Midday Peak Hour
Figure 12-18b

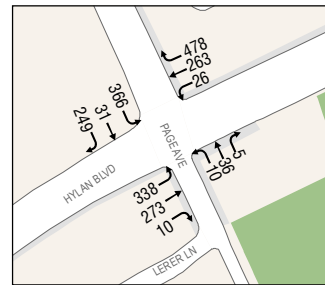
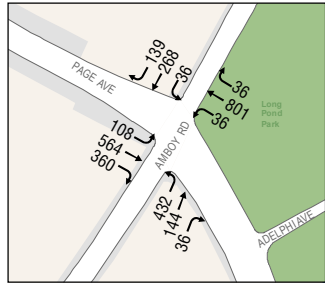
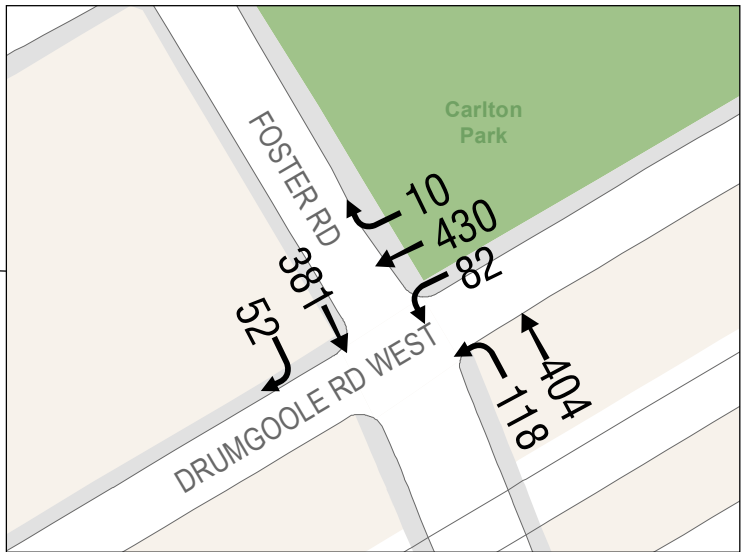
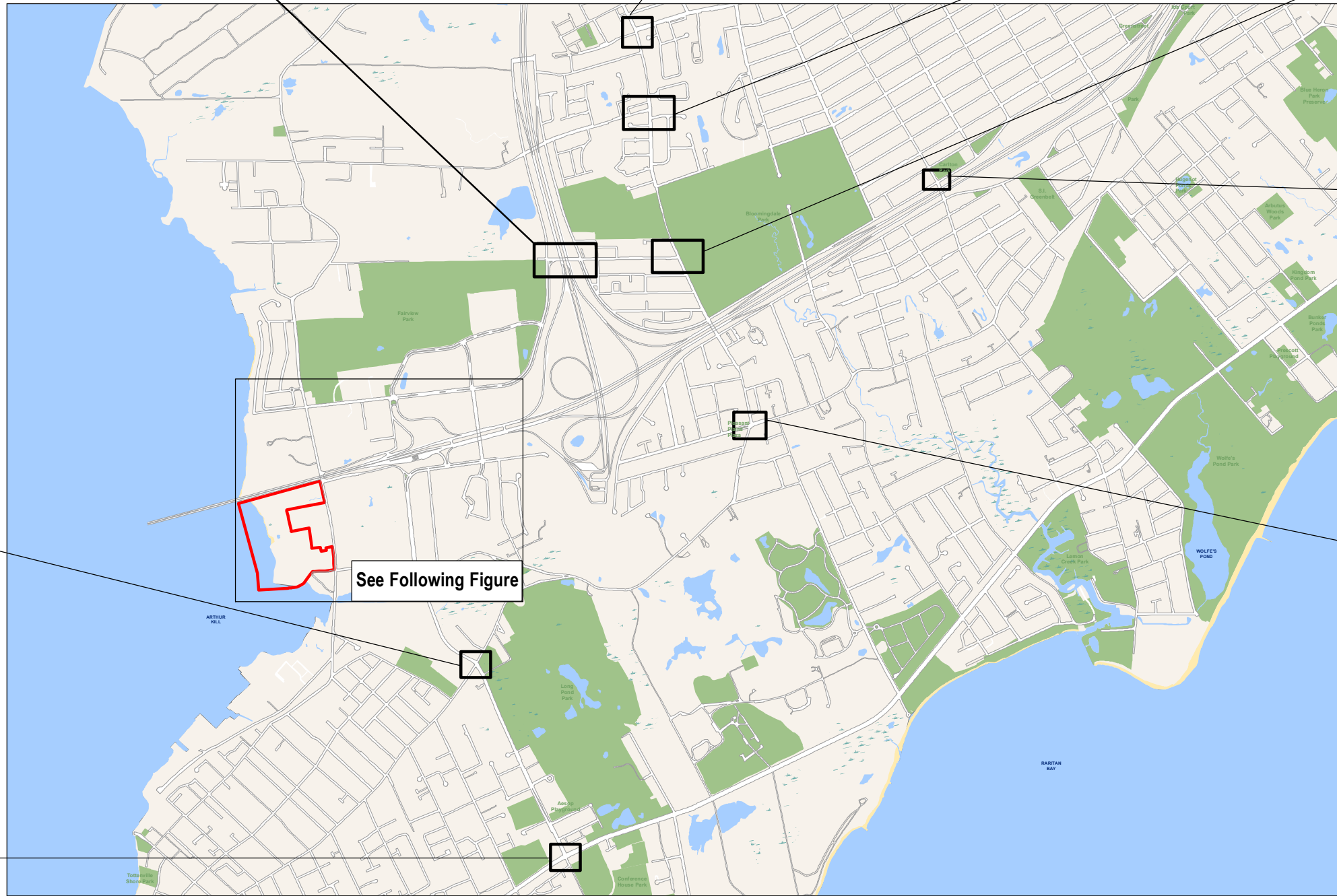
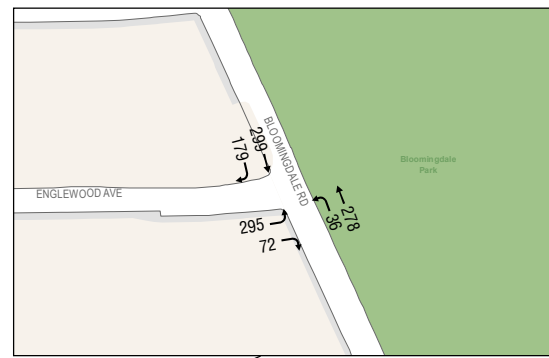
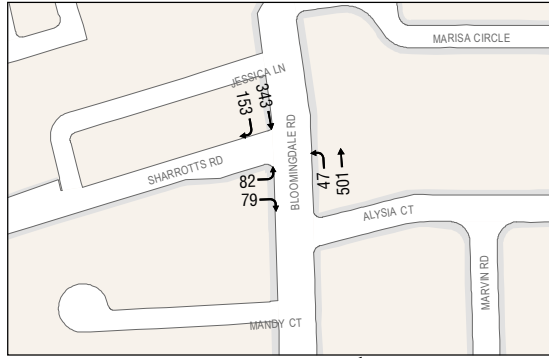
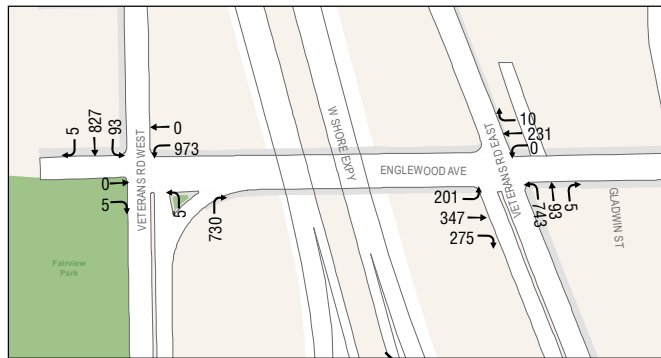


Project Site

2019 With Action Traffic Volumes
Weekday PM Peak Hour
Figure 12-19a

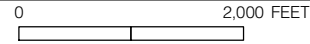
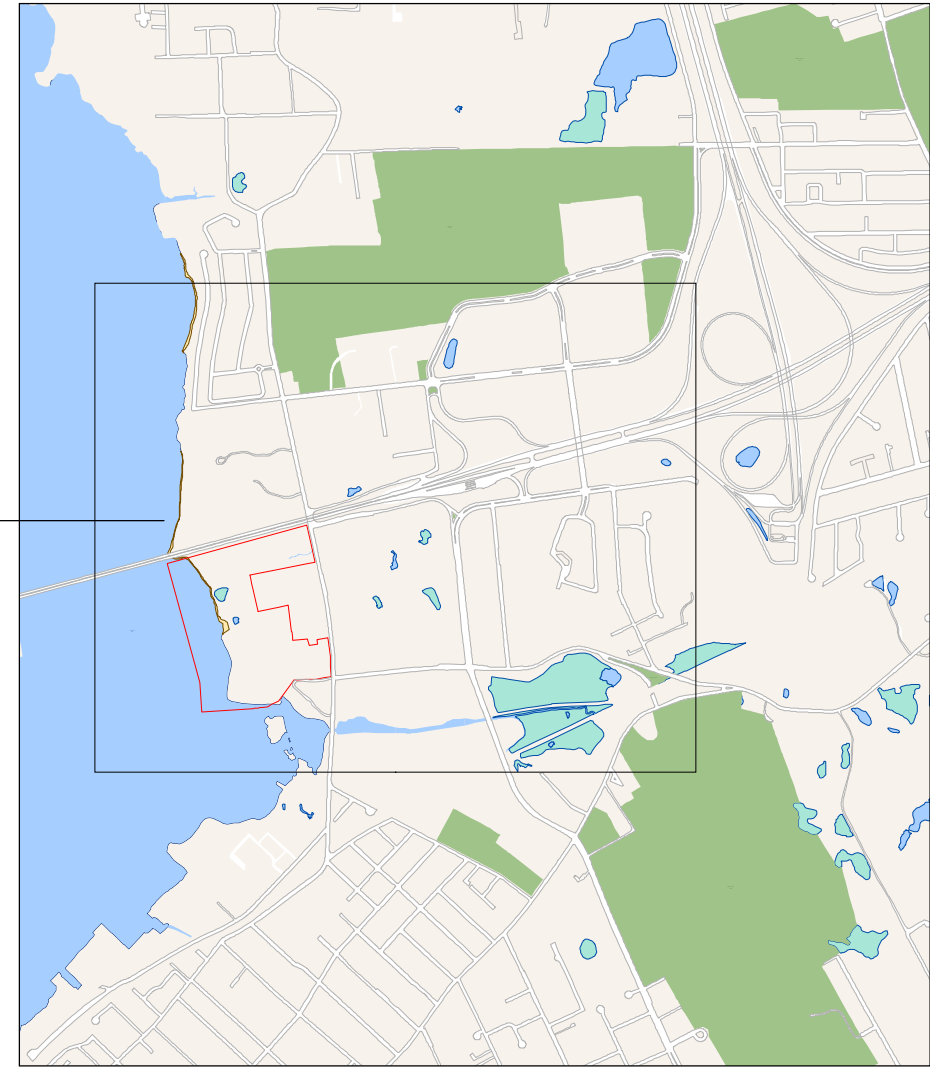
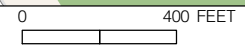
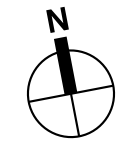


 Project Site



Project Site

2019 With Action Traffic Volumes
Saturday Peak Hour
Figure 12-20a



 Project Site

2019 With Action Traffic Volumes
 Saturday Peak Hour
Figure 12-20b

Table 12-12

Summary of 2019 With Action Traffic Analysis Results

Level of Service	Analysis Peak Hours			
	Weekday AM	Weekday Midday	Weekday PM	Saturday
Signalized Intersections				
Lane Groups at LOS A/B/C	77	68	60	52
Lane Groups at LOS D	13	12	8	15
Lane Groups at LOS E	9	6	5	4
Lane Groups at LOS F	5	18	31	33
Total	104	104	104	104
Lane Groups with v/c \geq 0.90	11	27	38	45
Number of intersections with significant impacts	9	10	13	13
Unsignalized Intersections				
Lane Groups at LOS A/B/C	3	2	2	2
Lane Groups at LOS D	0	0	0	0
Lane Groups at LOS E	0	0	0	0
Lane Groups at LOS F	1	2	2	2
Total	4	4	4	4
Lane Groups with v/c \geq 0.90	1	2	3	3
Number of intersections with significant impacts	1	2	2	2

Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.

Significant Adverse Impacts

Details on LOS, v/c ratios, and average delays are presented in **Table 12-13**. As discussed below, significant adverse traffic impacts were identified at 35 approaches/lane groups (of 15 different intersections). Potential measures that can be implemented to mitigate these significant adverse traffic impacts are discussed in Chapter 20, “Mitigation,” intersections not mitigated are discussed in Chapter 21, “Unavoidable Adverse Impacts.”

Arthur Kill Road

- Westbound approach at the intersection of Arthur Kill Road and Allentown Lane/Veterans Road West would deteriorate from LOS D (with a v/c ratio of 0.91 and a delay of 39.1 spv) to LOS F (with a v/c ratio of 1.09 and a delay of 82.4 spv), from LOS E (with a v/c ratio of 1.02 and a delay of 59.6 spv) to LOS F (with a v/c ratio of 1.35 and a delay of 185.0 spv), within LOS F (from a v/c ratio of 1.47 and a delay of 240.4 spv to a v/c ratio of 1.84 and a delay of 402.4 spv), and within LOS F (from a v/c ratio of 1.65 and a delay of 318.2 spv to a v/c ratio of 2.23 and a delay of 577.6 spv), increases in delay of more than five seconds, four seconds, three seconds and three seconds, during the weekday AM, midday, PM and Saturday peak hours, respectively. These projected increases in delay constitute significant adverse impacts;
- Northbound approach at the intersection of Arthur Kill Road and Allentown Lane/Veterans Road West would deteriorate from LOS C (with a v/c ratio of 0.97 and a delay of 30.4 spv) to LOS F (with a v/c ratio of 1.18 and a delay of 96.4 spv), from LOS E (with a v/c ratio of 1.11 and a delay of 69.2 spv) to LOS F (with a v/c ratio of 1.31 and a delay of 152.0 spv), and within LOS F (from a v/c ratio of 1.37 and a delay of 180.5 spv to a v/c ratio of 1.66 and a delay of 307.5 spv), increases in delay of more than five seconds, four seconds, and three seconds, during the weekday midday, PM and Saturday peak hours, respectively. These projected increases in delay constitute significant adverse impacts;
- Southbound approach at the intersection of Arthur Kill Road and Allentown Lane/Veterans Road West would deteriorate within LOS F (from a v/c ratio of 1.90 and a delay of 435.4

spv to a v/c ratio of 2.45 and a delay of 684.4 spv), within LOS F (from a v/c ratio of 1.90 and a delay of 436.4 spv to a v/c ratio of 2.44 and a delay of 676.1 spv), and within LOS F (from a v/c ratio of 2.50 and a delay of 706.7 spv to a v/c ratio of 3.51 and a delay of 1161.5 spv), increases in delays of more than three seconds, during the weekday midday, PM and Saturday peak hours, respectively. These projected increases in delay constitute significant adverse impacts;

- Westbound approach at the intersection of Arthur Kill Road and North Bridge Street would deteriorate from LOS C (with a v/c ratio of 0.75 and a delay of 25.9 spv) to LOS E (with a v/c ratio of 1.05 and a delay of 70.8 spv), from LOS C (with a v/c ratio of 0.73 and a delay of 24.8 spv) to LOS F (with a v/c ratio of 1.52 and a delay of 262.3 spv), from LOS D (with a v/c ratio of 0.93 and a delay of 41.4 spv) to LOS F (with a v/c ratio of 1.62 and a delay of 303.7 spv) and from LOS D (with a v/c ratio of 0.97 and a delay of 48.1 spv) to LOS F (with a v/c ratio of 2.01 and a delay of 481.4 spv), increases in delays of more than five seconds, during the weekday AM, midday, PM and Saturday peak hours, respectively. These projected increases in delay constitute significant adverse impacts;
- Southbound approach at the intersection of Arthur Kill Road and North Bridge Street would deteriorate from LOS B (with a v/c ratio of 0.79 and a delay of 14.4 spv) to LOS E (with a v/c ratio of 1.13 and a delay of 76.5 spv), an increase in delay of more than five seconds, during the Saturday peak hour. This projected increase in delay constitutes a significant adverse impact;
- The new eastbound left-turn at the intersection of Arthur Kill Road and Richmond Valley would operate with LOS F (with a v/c ratio of 1.03 and a delay of 127.9 spv), LOS F (with a v/c ratio of 1.02 and a delay of 130.0 spv), and LOS F (with a v/c ratio of 1.35 and a delay of 248.9 spv), operating above capacity, during the weekday midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- The new eastbound through/right-turn at the intersection of Arthur Kill Road and Richmond Valley would operate with LOS D (with a v/c ratio of 0.88 and a delay of 53.4 spv), LOS F (with a v/c ratio of 1.08 and a delay of 108.3 spv), and LOS F (with a v/c ratio of 1.63 and a delay of 337.8 spv), operating above capacity, during the weekday midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- With the change in lane group configurations from the No Action Condition to the With Action Condition at the westbound approach at the intersection of Arthur Kill Road and Richmond Valley Road, lane groups could not be directly compared. Instead, the No Action approach delay was compared with the With Action approach delay. The overall westbound approach would deteriorate from LOS C (with a delay of 26.4 spv) to LOS E (with a delay of 63.7 spv), from LOS D (with a delay of 47.4 spv) to LOS F (with a delay of 92.6 spv), within LOS F (from a delay of 84.9 spv to a delay of 190.0 spv), and within LOS F (from a delay of 125.4 spv to a delay of 223.8 spv), increases in delay of more than five seconds, five seconds, three seconds, and three seconds, during the weekday AM, midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;

Table 12-13
2019 No Action and With Action Conditions Level of Service Analysis

Intersection	Weekday AM								Weekday Midday								Weekday PM								Saturday							
	2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Signalized Intersections																																
Bloomington Road & Woodrow Road & School Driveway																																
Eastbound (School Driveway)	L	0.09	25.3	C	L	0.09	25.3	C	L	0.01	24.3	C	L	0.01	24.3	C	L	0.08	25.1	C	L	0.08	25.1	C	L	0.00	0.0	A	L	0.00	0.0	A
	TR	0.34	29.5	C	TR	0.34	29.5	C	TR	0.01	24.3	C	TR	0.01	24.3	C	TR	0.29	27.9	C	TR	0.29	27.9	C	TR	0.00	0.0	A	TR	0.00	0.0	A
Eastbound (Woodrow Road)	LTR	0.57	76.3	E	LTR	0.57	76.3	E	LTR	0.50	59.2	E	LTR	0.50	59.2	E	LTR	0.50	59.2	E	LTR	0.50	59.2	E	LTR	0.37	46.9	D	LTR	0.37	46.9	D
	Westbound	L	0.61	39.0	D	L	0.64	40.6	D	L	0.65	39.7	D	L	0.72	43.9	D	L	0.90	65.3	E	L	0.97	80.3	F+	L	0.90	62.7	E	L	1.02	87.9
Westbound	R	0.49	32.9	C	R	0.49	32.9	C	R	0.18	26.5	C	R	0.18	26.5	C	R	0.27	27.9	C	R	0.27	27.9	C	R	0.22	27.1	C	R	0.22	27.1	C
	Northbound	LT	0.52	15.3	B	LT	0.53	15.4	B	LT	0.39	13.0	B	LT	0.42	13.4	B	LT	0.62	17.2	B	LT	0.65	18.0	B	LT	0.51	15.9	B	LT	0.54	16.5
Northbound	R	0.29	12.1	B	R	0.30	12.2	B	R	0.34	12.5	B	R	0.37	12.9	B	R	0.38	13.1	B	R	0.41	13.5	B	R	0.32	13.2	B	R	0.36	13.8	B
	Southbound	L	0.25	12.2	B	L	0.25	12.3	B	L	0.12	10.4	B	L	0.13	10.4	B	L	0.23	12.1	B	L	0.24	12.4	B	L	0.21	12.3	B	L	0.22	12.6
Southbound	TR	0.26	11.4	B	TR	0.27	11.5	B	TR	0.35	12.4	B	TR	0.37	12.7	B	TR	0.25	11.3	B	TR	0.27	11.5	B	TR	0.33	13.0	B	TR	0.37	13.4	B
	Intersection	20.6	C	Intersection	20.8	C	Intersection	18.2	B	Intersection	19.3	B	Intersection	23.7	C	Intersection	26.2	C	Intersection	23.9	C	Intersection	29.3	C								
Bloomington Road & Sharrots Road																																
Eastbound	LR	0.62	23.0	C	LR	0.62	23.2	C	LR	0.55	21.6	C	LR	0.57	21.8	C	LR	0.61	20.5	C	LR	0.62	20.4	C	LR	0.59	22.2	C	LR	0.63	23.1	C
	Northbound	LT	0.39	6.1	A	LT	0.41	6.3	A	LT	0.38	5.4	A	LT	0.45	6.2	A	LT	0.67	11.6	B	LT	0.75	14.6	B	LT	0.50	6.9	A	LT	0.59	8.4
Southbound	TR	0.40	6.1	A	TR	0.42	6.4	A	TR	0.40	5.7	A	TR	0.45	6.3	A	TR	0.52	8.9	A	TR	0.57	9.8	A	TR	0.44	6.3	A	TR	0.50	7.2	A
	Intersection	9.1	A	Intersection	9.3	A	Intersection	7.9	A	Intersection	8.4	A	Intersection	12.1	B	Intersection	13.7	B	Intersection	8.8	A	Intersection	9.9	A								
Bloomington Road & Englewood Road																																
Eastbound	LR	0.38	23.7	C	LR	0.41	24.3	C	LR	0.32	22.2	C	LR	0.42	23.1	C	LR	0.65	24.5	C	LR	0.76	25.9	C	LR	0.60	23.8	C	LR	0.73	25.3	C
	Northbound	LT	0.38	10.0	B	LT	0.38	10.0	B	LT	0.26	8.7	A	LT	0.26	8.8	A	LT	0.46	10.8	B	LT	0.46	10.9	B	LT	0.38	9.9	A	LT	0.38	10.0
Southbound	TR	0.61	13.3	B	TR	0.64	14.0	B	TR	0.34	9.5	A	TR	0.40	10.2	B	TR	0.56	12.3	B	TR	0.63	13.7	B	TR	0.52	11.6	B	TR	0.63	13.6	B
	Intersection	14.2	B	Intersection	14.8	B	Intersection	12.2	B	Intersection	13.3	B	Intersection	15.1	B	Intersection	16.4	B	Intersection	14.6	B	Intersection	16.2	B								
Veterans Road East & Englewood Avenue																																
Eastbound	LTR	0.46	18.8	B	LTR	0.48	19.1	B	LTR	0.87	31.6	C	LTR	0.95	41.3	D	LTR	1.32	174.9	F	LTR	1.43	220.3	F+	LTR	1.31	166.6	F	LTR	1.62	304.5	F+
	Westbound	LTR	0.24	6.8	A	LTR	0.28	7.2	A	LTR	0.19	7.6	A	LTR	0.28	7.3	A	LTR	0.25	6.1	A	LTR	0.34	7.2	A	LTR	0.35	7.8	A	LTR	0.50	9.3
Northbound	LTR	0.43	12.3	B	LTR	0.43	12.3	B	LTR	0.89	13.0	B	LTR	0.92	13.1	B	LTR	0.52	13.4	B	LTR	0.88	13.6	B	LTR	1.15	15.2	B	LTR	1.19	15.7	B
	Intersection	13.6	B	Intersection	13.7	B	Intersection	21.0	C	Intersection	25.2	C	Intersection	99.2	F	Intersection	122.6	F	Intersection	82.2	F	Intersection	142.5	F								

Table 12-13 (cont'd)
2019 No Action and With Action Conditions Level of Service Analysis

Intersection	Weekday AM								Weekday Midday								Weekday PM								Saturday							
	2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Veterans Road West & Hotel Driveway/ Englewood Avenue																																
Eastbound	TR	0.02	10.3	B	TR	0.02	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B	TR	0.01	10.3	B
Westbound	L	0.51	17.8	B	L	0.53	18.1	B	L	0.60	19.3	B	L	0.67	20.5	C	L	0.60	19.4	B	L	0.66	20.7	C	L	0.85	28.5	C	L	0.94	39.0	D
	LT	0.52	18.1	B	LT	0.56	18.9	B	LT	0.61	19.8	B	LT	0.68	21.1	C	LT	0.64	20.5	C	LT	0.70	22.2	C	LT	0.85	28.5	C	LT	0.94	39.0	D
Northbound	L	0.02	10.4	B	L	0.02	10.4	B	L	0.02	10.4	B	L	0.02	10.5	B	L	0.03	10.6	B	L	0.03	10.7	B	L	0.03	10.6	B	L	0.04	10.8	B
	R	0.13	11.2	B	R	0.13	11.2	B	R	0.37	13.6	B	R	0.41	14.2	B	R	0.43	14.5	B	R	0.47	15.1	B	R	0.46	15.0	B	R	0.51	15.7	B
Southbound	LTR	0.29	11.9	B	LTR	0.31	12.1	B	LTR	0.32	12.2	B	LTR	0.37	12.6	B	LTR	0.43	13.1	B	LTR	0.48	13.6	B	LTR	0.44	13.2	B	LTR	0.51	13.9	B
Intersection		14.3	B	Intersection		14.6	B	Intersection		15.2	B	Intersection		15.9	B	Intersection		15.6	B	Intersection		16.4	B	Intersection		19.3	B	Intersection		23.4	C	
Arthur Kill Road & Allentown Lane/ Veterans Road West																																
Eastbound	LTR	0.03	10.4	B	LTR	0.03	10.5	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B	LTR	0.04	10.5	B
Westbound	LTR	0.91	39.1	D	LTR	1.09	82.4	F+	LTR	1.02	59.6	E	LTR	1.35	185.0	F+	LTR	1.47	240.4	F	LTR	1.84	402.4	F+	LTR	1.65	318.2	F	LTR	2.23	577.6	F+
Northbound	LTR	0.87	17.7	B	LTR	0.93	22.2	C	LTR	0.97	30.4	C	LTR	1.18	96.4	F+	LTR	1.11	69.2	E	LTR	1.31	152.0	F+	LTR	1.37	180.5	F	LTR	1.66	307.5	F+
Southbound	LTR	0.72	25.7	C	LTR	0.79	30.5	C	LTR	1.90	435.4	F	LTR	2.45	684.4	F+	LTR	1.90	436.4	F	LTR	2.44	676.1	F+	LTR	2.50	706.7	F	LTR	3.51	1161.5	F+
Intersection		26.3	C	Intersection		45.1	D	Intersection		156.1	F	Intersection		277.8	F	Intersection		220.0	F	Intersection		363.4	F	Intersection		333.8	F	Intersection		566.8	F	
Arthur Kill Road & North Bridge Street																																
Westbound	LR	0.75	25.9	C	LR	1.05	70.8	E+	LR	0.73	24.8	C	LR	1.52	262.3	F+	LR	0.93	41.4	D	LR	1.62	303.7	F+	LR	0.97	48.1	D	LR	2.01	481.4	F+
Northbound	T	0.59	9.0	A	T	0.63	20.7	C	T	0.64	13.8	B	T	0.79	11.8	B	T	0.70	12.1	B	T	0.84	21.3	C	T	0.80	15.0	B	T	1.00	41.8	D
Southbound	T	0.49	11.9	B	T	0.61	12.9	B	T	0.58	10.6	B	T	0.80	13.7	B	T	0.79	14.1	B	T	1.00	25.1	C	T	0.79	14.4	B	T	1.13	76.5	E+
Intersection		15.2	B	Intersection		36.6	D	Intersection		15.9	B	Intersection		109.5	F	Intersection		21.3	C	Intersection		125.6	F	Intersection		24.1	C	Intersection		219.3	F	
Arthur Kill Road & Richmond Valley Road																																
Eastbound					L	0.18	36.3	D					L	1.03	127.9	F+					L	1.02	130.0	F+					L	1.35	248.9	F+
					TR	0.32	40.2	D					TR	0.88	53.4	D+					TR	1.08	108.3	F+					TR	1.63	337.8	F+
Westbound	LR	0.65	26.4	C	L	0.27	36.2	D	LR	0.93	47.4	D	L	0.64	47.7	D	LR	1.08	84.9	F	L	1.29	209.8	F+	LR	1.19	125.4	F	L	0.45	30.3	C
					TR	0.90	71.5	E+					TR	1.08	100.6	F+					TR	1.28	183.6	F+					TR	1.46	257.7	F+
Northbound					L	0.06	13.2	B					L	0.24	24.2	C					L	0.43	38.0	D					L	0.66	55.0	D
	TR	0.74	14.3	B	TR	0.88	36.4	D	TR	0.56	10.3	B	TR	0.84	41.9	D	TR	0.75	14.7	B	TR	1.15	118.3	F+	TR	0.78	15.8	B	TR	1.28	172.3	F+
Southbound	LT	1.28	155.0	F	L	0.85	51.7	D	LT	1.30	157.0	F	L	1.66	367.9	F	LT	2.60	735.1	F	L	1.39	237.3	F	LT	3.06	940.8	F	L	2.02	509.4	F
					TR	0.52	15.5	B					TR	0.72	43.2	D					TR	0.83	34.2	C					TR	0.96	55.6	E
Intersection		68.2	E	Intersection		37.8	D	Intersection		79.4	E	Intersection		95.5	F	Intersection		341.1	F	Intersection		124.1	F	Intersection		404.7	F	Intersection		222.1	F	

Table 12-13 (cont'd)
2019 No Build and Build Conditions Level of Service Analysis

Intersection	Weekday AM								Weekday Midday								Weekday PM								Saturday								
	2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build				
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	
Page Avenue & Richmond Valley Road																																	
Eastbound	L	0.21	22.1	C	L	0.47	27.6	C	L	0.27	23.1	C	L	1.37	215.8	F+	L	0.31	24.0	C	L	1.36	211.7	F+	L	0.44	27.1	C	L	2.36	652.8	F+	
	TR	0.30	22.9	C	TR	0.41	24.7	C	TR	0.45	25.5	C	TR	0.90	47.3	D+	TR	0.49	26.2	C	TR	0.91	48.9	D+	TR	0.50	26.3	C	TR	1.01	69.8	E+	
Westbound	LTR	0.30	22.8	C	LTR	0.34	23.5	C	LTR	0.30	22.8	C	LTR	0.54	28.0	C	LTR	0.40	24.4	C	LTR	0.94	63.4	E+	LTR	0.42	24.7	C	LTR	1.15	125.2	F+	
Northbound	L	0.50	19.3	B	L	0.73	25.6	C	L	0.87	43.0	D	L	1.52	270.9	F+	L	1.16	110.4	F	L	1.99	468.7	F+	L	1.65	319.9	F	L	3.19	1015.7	F+	
	TR	0.75	22.5	C	TR	0.75	22.8	C	TR	0.62	19.3	B	TR	0.62	20.2	C	TR	0.72	18.8	B	TR	0.72	17.9	B	TR	0.83	22.6	C	TR	0.83	23.7	C	
Southbound	LTR	0.41	11.5	B	LTR	0.43	11.8	B	LTR	0.49	13.5	B	LTR	0.53	14.9	B	LTR	0.66	18.5	B	LTR	0.71	19.8	B	LTR	0.77	20.4	C	LTR	0.83	23.6	C	
	Intersection	19.0	B	Intersection	20.7	C	Intersection	21.4	C	Intersection	85.5	F	Intersection	29.6	C	Intersection	105.5	F	Intersection	57.8	E	Intersection	273.1	F	Intersection	19.0	B	Intersection	20.7	C	Intersection	21.4	C
Page Avenue/ Boscombe Avenue & South Bridge Street / Gas Station																																	
Eastbound	LT	0.77	38.9	D	LT	0.95	61.6	E+	LT	0.70	34.1	C	LT	1.37	208.5	F+	LT	0.94	58.4	E	LT	1.65	330.2	F+	LT	0.92	53.6	D	LT	1.91	448.4	F+	
	R	0.07	20.7	C	R	0.09	20.9	C	R	0.08	20.8	C	R	0.13	21.4	C	R	0.17	21.9	C	R	0.23	22.6	C	R	0.14	21.5	C	R	0.20	22.2	C	
Westbound	LTR	0.09	21.0	C	LTR	0.09	21.0	C	LTR	0.09	20.9	C	LTR	0.17	22.5	C	LTR	0.09	20.9	C	LTR	0.13	21.7	C	LTR	0.09	21.0	C	LTR	0.17	22.3	C	
Northbound	TR	0.39	13.9	B	TR	0.43	13.4	B	TR	0.39	10.9	B	TR	0.53	8.6	A	TR	0.48	14.1	B	TR	0.61	11.9	B	TR	0.52	15.8	B	TR	0.71	13.2	B	
Southbound	LT	0.48	13.7	B	LT	0.50	14.0	B	LT	0.57	15.1	B	LT	0.62	16.2	B	LT	0.72	18.6	B	LT	0.77	20.4	C	LT	0.70	18.2	B	LT	0.78	20.8	C	
	Intersection	19.2	B	Intersection	24.5	C	Intersection	17.1	B	Intersection	61.7	E	Intersection	24.3	C	Intersection	93.8	F	Intersection	23.6	C	Intersection	130.5	F	Intersection	19.2	B	Intersection	24.5	C	Intersection	17.1	B
Boscombe Avenue & The Route 440 Ramps																																	
Eastbound	L	1.11	101.1	F	L	1.32	183.6	F+	L	1.00	64.9	E	L	1.83	413.7	F+	L	1.14	112.1	F	L	1.86	424.5	F+	L	1.11	97.8	F	L	2.13	543.8	F+	
	TR	0.29	4.2	A	TR	0.29	4.2	A	TR	0.31	4.4	A	TR	0.31	4.4	A	TR	0.37	4.7	A	TR	0.37	4.7	A	TR	0.50	5.9	A	TR	0.50	5.9	A	
Westbound	LT	0.89	61.0	E	LT	0.89	61.0	E	LT	0.90	61.7	E	LT	0.90	61.7	E	LT	1.13	124.0	F	LT	1.13	124.0	F	LT	1.15	129.0	F	LT	1.15	129.0	F	
	R	0.42	30.0	C	R	0.42	30.0	C	R	1.23	156.3	F	R	1.23	156.3	F	R	1.17	130.6	F	R	1.17	130.6	F	R	1.32	189.6	F	R	1.32	189.6	F	
Northbound	LTR	0.43	79.1	E	LTR	0.43	79.1	E	LTR	0.44	70.0	E	LTR	0.44	70.0	E	LTR	0.69	116.6	F	LTR	0.69	116.6	F	LTR	0.00	0.0	A	LTR	0.00	0.0	A	
Southbound	LT	0.80	79.8	E	LT	0.80	79.8	E	LT	0.57	60.2	E	LT	0.57	60.2	E	LT	0.72	70.2	E	LT	0.72	70.2	E	LT	0.48	54.4	D	LT	0.48	54.4	D	
	R	0.23	12.5	B	R	0.25	12.8	B	R	0.17	11.9	B	R	0.22	12.4	B	R	0.26	12.9	B	R	0.31	13.5	B	R	0.22	12.4	B	R	0.30	13.3	B	
	Intersection	61.0	E	Intersection	97.8	F	Intersection	76.0	E	Intersection	221.1	F	Intersection	91.3	F	Intersection	221.7	F	Intersection	104.6	F	Intersection	274.7	F	Intersection	61.0	E	Intersection	97.8	F	Intersection	76.0	E
Veterans Road West & Tyrellan Avenue																																	
Eastbound	LTR	0.39	29.8	C	LTR	0.41	29.8	C	LTR	0.97	43.2	D	LTR	0.97	47.2	D	LTR	1.13	47.8	D	LTR	1.13	55.3	E+	LTR	1.34	79.6	E	LTR	1.34	105.8	F+	
Westbound	LTR	0.83	40.9	D	LTR	0.92	49.5	D+	LTR	0.71	35.3	D	LTR	0.90	46.3	D+	LTR	0.95	52.9	D	LTR	1.13	105.8	F+	LTR	1.00	62.8	E	LTR	1.28	170.0	F+	
Northbound	LTR	0.60	28.8	C	LTR	0.60	28.8	C	LTR	2.07	81.8	F	LTR	2.07	81.8	F	LTR	1.43	131.6	F	LTR	1.43	131.6	F	LTR	2.08	212.5	F	LTR	2.08	212.5	F	
Southbound	LTR	0.35	24.4	C	LTR	0.35	24.4	C	LTR	1.21	135.8	F	LTR	1.21	135.8	F	LTR	1.21	138.1	F	LTR	1.21	138.1	F	LTR	1.64	323.7	F	LTR	1.64	323.7	F	
	Intersection	33.1	C	Intersection	37.0	D	Intersection	80.5	F	Intersection	80.9	F	Intersection	93.3	F	Intersection	107.9	F	Intersection	178.7	F	Intersection	205.9	F	Intersection	33.1	C	Intersection	37.0	D	Intersection	80.5	F

Table 12-13 (cont'd)
2019 No Action and With Action Conditions Level of Service Analysis

Intersection	Weekday AM								Weekday Midday								Weekday PM								Saturday									
	2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build					
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS		
Veterans Road West & North Bridge Street/ Bricktown Way																																		
Eastbound	L	0.79	46.4	D	L	1.00	88.7	F+	L	1.02	91.9	F	L	1.90	463.0	F+	L	1.40	234.1	F	L	2.70	816.4	F+	L	2.58	758.3	F	L	5.84	2237.2	F+		
	TR	0.55	28.7	C	TR	0.61	30.6	C	TR	0.76	36.5	D	TR	0.99	66.7	E+	TR	0.84	42.5	D	TR	1.05	82.6	F+	TR	0.96	58.0	E	TR	1.23	150.1	F+		
Westbound	L	1.18	119.1	F	L	1.31	168.2	F+	L	1.70	341.5	F	L	2.96	900.7	F+	L	2.21	555.0	F	L	2.74	794.6	F+	L	2.79	818.8	F	L	2.79	815.5	F		
	T	0.42	9.4	A	T	0.57	9.5	A	T	0.51	9.8	A	T	0.80	10.9	B	T	0.53	6.4	A	T	0.83	6.9	A	T	0.70	7.6	A	T	1.16	81.3	F+		
Northbound	R	0.03	28.9	C	R	0.03	19.2	B	R	0.03	38.0	D	R	0.03	16.3	B	R	0.04	8.4	A	R	0.04	3.8	A	R	0.04	9.0	A	R	0.04	3.3	A		
	LT	0.45	29.9	C	LT	0.45	29.9	C	LT	0.53	31.4	C	LT	0.53	31.4	C	LT	0.57	32.6	C	LT	0.57	32.6	C	LT	0.81	43.2	D	LT	0.81	43.2	D		
Southbound	R	0.30	27.5	C	R	0.30	27.5	C	R	0.30	27.4	C	R	0.30	27.4	C	R	0.35	28.3	C	R	0.35	28.3	C	R	0.38	28.7	C	R	0.38	28.7	C		
	L	0.25	30.4	C	L	0.25	30.4	C	L	0.32	31.6	C	L	0.32	31.6	C	L	0.45	34.0	C	L	0.45	34.0	C	L	0.51	35.4	D	L	0.51	35.4	D		
Intersection		42.8	D	Intersection	53.0	D	Intersection	75.6	E	Intersection	166.3	F	Intersection	123.5	F	Intersection	214.9	F	Intersection	236.8	F	Intersection	436.2	F										
Page Avenue & Amboy Road																																		
Eastbound	L	0.99	63.1	E	L	1.03	74.2	E+	L	0.72	27.5	C	L	0.87	42.2	D	L	1.04	76.6	E	L	1.15	114.7	F+	L	1.29	171.5	F	L	1.48	253.0	F+		
	TR	0.32	14.4	B	TR	0.32	14.4	B	TR	0.17	12.6	B	TR	0.20	13.0	B	TR	0.30	13.0	B	TR	0.30	13.0	B	TR	0.23	13.3	B	TR	0.23	13.3	B		
Westbound	L	0.29	26.7	C	L	0.29	26.7	C	L	0.08	21.7	C	L	0.09	21.8	C	L	0.21	23.7	C	L	0.21	23.7	C	L	0.13	22.3	C	L	0.13	22.3	C		
	TR	0.75	38.8	D	TR	0.75	38.8	D	TR	0.57	29.2	C	TR	0.65	32.2	C	TR	0.85	43.9	D	TR	0.85	43.9	D	TR	0.87	45.4	D	TR	0.87	45.4	D		
Northbound	L	0.27	21.2	C	L	0.30	22.0	C	L	0.14	18.8	B	L	0.23	21.6	C	L	0.29	24.2	C	L	0.56	43.8	D	L	0.26	22.3	C	L	0.56	47.6	D+		
	T	0.78	32.8	C	T	0.87	39.4	D	T	0.69	28.5	C	T	0.87	39.0	D	T	0.90	44.8	D	T	1.07	85.1	F+	T	0.95	50.2	D	T	1.20	132.7	F+		
Southbound	R	0.10	17.9	B	R	0.10	17.9	B	R	0.06	17.5	B	R	0.06	17.4	B	R	0.11	19.2	B	R	0.11	19.2	B	R	0.08	17.6	B	R	0.08	17.6	B		
	L	0.27	26.9	C	L	0.36	31.6	C	L	0.58	34.5	C	L	1.05	112.1	F+	L	1.33	226.8	F	L	1.52	295.7	F+	L	1.57	328.2	F	L	1.57	306.4	F		
Intersection		34.5	C	Intersection	38.0	D	Intersection	25.8	C	Intersection	34.1	C	Intersection	47.7	D	Intersection	64.7	E	Intersection	68.9	E	Intersection	102.2	F										
Page Avenue & Hylan Boulevard																																		
Eastbound	L	1.00	74.8	E	L	1.12	110.6	F+	L	0.45	17.9	B	L	0.62	23.7	C	L	1.12	115.6	F	L	1.43	241.0	F+	L	0.81	38.6	D	L	1.16	128.9	F+		
	TR	0.32	13.7	B	TR	0.32	13.7	B	TR	0.10	11.6	B	TR	0.10	11.6	B	TR	0.15	12.0	B	TR	0.15	12.0	B	TR	0.15	12.0	B	TR	0.15	12.0	B		
Westbound	L	0.07	11.7	B	L	0.07	11.7	B	L	0.02	11.0	B	L	0.02	11.0	B	L	0.02	11.0	B	L	0.02	11.0	B	L	0.06	11.4	B	L	0.06	11.4	B		
	TR	0.39	14.7	B	TR	0.42	15.0	B	TR	0.29	13.5	B	TR	0.35	14.1	B	TR	0.38	14.5	B	TR	0.41	14.9	B	TR	0.29	13.5	B	TR	0.34	14.0	B		
Northbound	LTR	0.21	34.6	C	LTR	0.21	34.6	C	LTR	0.08	32.6	C	LTR	0.08	32.6	C	LTR	0.17	33.9	C	LTR	0.17	33.9	C	LTR	0.14	33.4	C	LTR	0.14	33.4	C		
Southbound	L	0.75	55.0	D	L	0.82	62.0	E+	L	0.68	49.0	D	L	0.97	84.2	F+	L	0.80	57.6	E	L	1.06	107.5	F+	L	0.92	74.2	E	L	1.29	193.7	F+		
	TR	0.38	37.6	D	TR	0.41	38.2	D	TR	0.37	37.3	D	TR	0.48	39.6	D	TR	0.48	39.5	D	TR	0.57	41.9	D	TR	0.56	41.6	D	TR	0.69	46.4	D		
Intersection		30.7	C	Intersection	37.7	D	Intersection	23.5	C	Intersection	33.2	C	Intersection	39.9	D	Intersection	70.0	E	Intersection	31.4	C	Intersection	70.4	E										

Table 12-13 (cont'd)
2019 No Action and With Action Conditions Level of Service Analysis

Intersection	Weekday AM								Weekday Midday								Weekday PM								Saturday								
	2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build				2019 No Build				2019 Build				
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	
Bloomington Road & Amboy Road & Pleasant Plains Avenue																																	
Eastbound	LTR	0.11	15.0	B	LTR	0.11	15.0	B	LTR	0.04	14.3	B	LTR	0.04	14.3	B	LTR	0.07	14.6	B	LTR	0.07	14.6	B	LTR	0.06	14.4	B	LTR	0.06	14.4	B	
Westbound	L	0.47	20.5	C	L	0.52	21.7	C	L	0.52	21.5	C	L	0.63	24.6	C	L	0.67	26.2	C	L	0.78	31.6	C	L	0.77	30.8	C	L	0.96	51.9	D+	
	T	0.04	14.2	B	T	0.04	14.2	B	T	0.02	14.1	B	T	0.02	14.1	B	T	0.03	14.2	B	T	0.03	14.2	B	T	0.02	14.0	B	T	0.02	14.0	B	
	R	0.22	16.2	B	R	0.22	16.2	B	R	0.16	15.4	B	R	0.16	15.4	B	R	0.21	16.0	B	R	0.21	16.0	B	R	0.15	15.3	B	R	0.15	15.3	B	
Northbound	LTR	0.58	22.2	C	LTR	0.61	23.0	C	LTR	0.61	22.7	C	LTR	0.72	26.4	C	LTR	0.94	46.1	D	LTR	1.05	72.4	E+	LTR	0.86	35.5	D	LTR	0.99	56.7	E+	
Southbound	L	0.77	38.6	D	L	0.80	41.5	D	L	0.28	18.3	B	L	0.32	19.5	B	L	0.55	28.8	C	L	0.62	34.4	C	L	0.42	22.9	C	L	0.48	26.3	C	
	TR	0.48	19.8	B	TR	0.48	19.8	B	TR	0.41	18.6	B	TR	0.41	18.6	B	TR	0.53	20.7	C	TR	0.53	20.7	C	TR	0.52	20.4	C	TR	0.52	20.4	C	
	Intersection	22.8	C	Intersection	23.6	C	Intersection	20.3	C	Intersection	22.6	C	Intersection	31.3	C	Intersection	43.6	D	Intersection	28.3	C	Intersection	42.9	D	Intersection	28.3	C	Intersection	42.9	D	Intersection	42.9	D
Drumgoole Road West & Foster Road																																	
Westbound	L	0.30	20.2	C	L	0.30	20.2	C	L	0.17	18.5	B	L	0.17	18.5	B	L	0.19	18.8	B	L	0.19	18.8	B	L	0.16	18.4	B	L	0.16	18.4	B	
	TR	0.76	33.0	C	TR	0.77	33.9	C	TR	0.54	24.9	C	TR	0.58	25.8	C	TR	0.87	41.9	D	TR	0.91	46.5	D	TR	0.78	33.9	C	TR	0.83	37.8	D	
Northbound	L	0.77	45.7	D	L	0.77	45.7	D	L	0.28	14.6	B	L	0.28	14.6	B	L	0.56	22.1	C	L	0.56	22.1	C	L	0.49	20.6	C	L	0.49	20.6	C	
	T	0.49	16.8	B	T	0.50	16.9	B	T	0.39	15.3	B	T	0.42	15.7	B	T	0.54	17.7	B	T	0.57	18.2	B	T	0.50	16.8	B	T	0.53	17.5	B	
Southbound	TR	0.67	20.5	C	TR	0.67	20.5	C	TR	0.29	13.9	B	TR	0.29	13.9	B	TR	0.42	15.5	B	TR	0.42	15.5	B	TR	0.49	16.5	B	TR	0.49	16.5	B	
	Intersection	24.3	C	Intersection	24.5	C	Intersection	17.6	B	Intersection	18.1	B	Intersection	24.7	C	Intersection	26.3	C	Intersection	21.9	C	Intersection	23.2	C	Intersection	21.9	C	Intersection	23.2	C	Intersection	23.2	C
Arthur Kill Road & Project Driveway																																	
Eastbound					L	0.19	17.2	B					L	0.76	30.3	C					L	0.87	54.2	D					L	1.21	150.4	F	
					R	0.04	15.7	B					R	0.15	16.8	B					R	0.17	27.8	C					R	0.24	29.6	C	
Northbound					T	0.78	19.4	B					T	0.90	15.0	B					T	0.90	23.9	C					T	0.98	35.0	C	
Southbound					T	0.74	12.0	B					T	0.87	10.7	B					T	1.00	40.1	D					T	1.02	44.5	D	
					R	0.14	1.1	A					R	0.30	1.2	A					R	0.29	1.2	A					R	0.45	1.9	A	
	Intersection				Intersection	14.5	B	Intersection			Intersection	13.4	B	Intersection			Intersection	30.4	C	Intersection			Intersection	46.6	D	Intersection			Intersection	46.6	D		
Unsignalized Intersections																																	
North Bridge Street & The Route 440 Off-Ramp																																	
Westbound	L	0.74	27.0	D	L	1.13	104.9	F+	L	0.62	22.4	C	L	1.72	354.0	F+	L	0.92	50.6	F	L	1.93	446.4	F+	L	0.94	56.6	F	L	2.58	739.2	F+	
Southbound	T	0.27	0.0	A	T	0.28	0.0	A	T	0.29	0.0	A	T	0.33	0.0	A	T	0.00	0.0	A	T	0.33	0.0	A	T	0.33	0.0	A	T	0.37	0.0	A	
Arthur Kill Road & South Bridge Street																																	
Northbound	TR	0.52	0.0	A	TR	0.60	0.0	A	TR	0.56	0.0	A	TR	0.85	0.0	A	TR	0.65	0.0	A	TR	0.94	0.0	A	TR	0.72	0.0	A	TR	1.12	0.0	A	
Southbound	LT	0.23	6.0	A	LT	0.32	14.3	B	LT	0.31	8.0	A	LT	0.95	91.2	F+	LT	0.51	16.6	C	LT	2.54	770.9	F+	LT	0.55	18.7	C	LT	5.60	302.7	F+	
Notes: L = Left Turn, T = Through, R = Right Turn, LOS = Level of Service + Denotes a significant adverse traffic impact.																																	

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- Northbound through/right-turn at the intersection of Arthur Kill Road and Richmond Valley Road would deteriorate from LOS B (with a v/c ratio of 0.75 and a delay of 14.7 spv) to LOS F (with a v/c ratio of 1.15 and a delay of 118.3 spv), from LOS B (with a v/c ratio of 0.78 and a delay of 15.8 spv) to LOS F (with a v/c ratio of 1.28 and a delay of 172.3 spv), increases in delays of more than five seconds, during the weekday PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- The southbound approach at the unsignalized intersection of Arthur Kill Road and South Bridge Street would deteriorate from LOS A (with a v/c ratio of 0.31 and a delay of 8.0 spv) to LOS F (with a v/c ratio of 0.95 and a delay of 91.2 spv), from LOS C (with a v/c ratio of 0.51 and a delay of 16.6 spv) to LOS F (with a v/c ratio of 2.54 and a delay of 770.9 spv), and from LOS C (with a v/c ratio of 0.55 and a delay of 18.7 spv) to LOS F (with a v/c ratio of 5.60 and a delay of 302.7 spv), increases in delays of more than five seconds, during the weekday midday, PM and Saturday peak hours. These projected delays constitute significant adverse impacts ;

Page Avenue/Boscombe Avenue

- Eastbound left-turn at the intersection of Page Avenue and Richmond Valley Road would deteriorate from LOS C (with a v/c ratio of 0.27 and a delay of 23.1 spv) to LOS F (with a v/c ratio of 1.37 and a delay of 215.8 spv), from LOS C (with a v/c ratio of 0.31 and a delay of 24.0 spv) to LOS F (with a v/c ratio of 1.36 and a delay of 211.7 spv), from LOS C (with a v/c ratio of 0.44 and a delay of 27.1 spv) to LOS F (with a v/c ratio of 2.36 and a delay of 652.8 spv), increases in delays of more than five seconds, during the weekday midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Eastbound through/right-turn at the intersection of Page Avenue and Richmond Valley Road would deteriorate from LOS C (with a v/c ratio of 0.45 and a delay of 25.5 spv) to LOS D (with a v/c ratio of 0.90 and a delay of 47.3 spv), from LOS C (with a v/c ratio of 0.49 and a delay of 26.2 spv) to LOS D (with a v/c ratio of 0.91 and a delay of 48.9 spv), from LOS C (with a v/c ratio of 0.50 and a delay of 26.3 spv) to LOS E (with a v/c ratio of 1.01 and a delay of 69.8 spv), increases in delays of more than five seconds, during the weekday midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Westbound approach at the intersection of Page Avenue and Richmond Valley Road would deteriorate from LOS C (with a v/c ratio of 0.40 and a delay of 24.4 spv) to LOS E (with a v/c ratio of 0.94 and a delay of 63.4 spv), and from LOS C (with a v/c ratio of 0.42 and a delay of 24.7 spv) to LOS F (with a v/c ratio of 1.15 and a delay of 125.2 spv), increases in delays of more than five seconds, during the weekday PM and Saturday peak hours. These projected delays constitute significant adverse impacts;
- Northbound left-turn at the intersection of Page Avenue and Richmond Valley Road would deteriorate from LOS D (with a v/c ratio of 0.87 and a delay of 43.0 spv) to LOS F (with a v/c ratio of 1.52 and a delay of 270.9 spv), within LOS F (from a v/c ratio of 1.16 and a delay of 110.4 spv to a v/c ratio of 1.99 and a delay of 468.7 spv), and within LOS F (from a v/c ratio of 1.65 and a delay of 319.9 spv to a v/c ratio of 3.19 and a delay of 1015.7 spv), increases in delays of more than five seconds, three seconds and three seconds, during the weekday midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;

- Eastbound left-turn/through at the intersection of Page Avenue/ Boscombe Avenue and South Bridge Street would deteriorate from LOS D (with a v/c ratio of 0.77 and a delay of 38.9 spv) to LOS E (with a v/c ratio of 0.95 and a delay of 61.6 spv), from LOS C (with a v/c ratio of 0.70 and a delay of 34.1 spv) to LOS F (with a v/c ratio of 1.37 and a delay of 208.5 spv), from LOS E (with a v/c ratio of 0.94 and a delay of 58.4 spv) to LOS F (with a v/c ratio of 1.65 and a delay of 330.2 spv), and from LOS D (with a v/c ratio of 0.92 and a delay of 53.6 spv) to LOS F (with a v/c ratio of 1.91 and a delay of 448.4 spv), increases in delays of more than five seconds, five seconds, four seconds and five seconds, during the weekday AM, midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Eastbound left-turn at the intersection of Boscombe Avenue and the Route 440 Ramps would deteriorate within LOS F (from a v/c ratio of 1.11 and a delay of 101.1 spv to a v/c ratio of 1.32 and a delay of 183.6 spv), from LOS E (with a v/c ratio of 1.00 and a delay of 64.9 spv) to LOS F (with a v/c ratio of 1.83 and a delay of 413.7 spv), within LOS F (from a v/c ratio of 1.14 and a delay of 112.1 spv to a v/c ratio of 1.86 and a delay of 424.5 spv), and within LOS F (from a v/c ratio of 1.11 and a delay of 97.8 spv to a v/c ratio of 2.13 and a delay of 543.8 spv), increases in delays of more than three seconds, four seconds, three seconds and three seconds, during the weekday AM, midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Eastbound left-turn at the intersection of Page Avenue and Amboy Road would deteriorate within LOS E (from a v/c ratio of 0.99 and a delay of 63.1 spv to a v/c ratio of 1.03 and a delay of 74.2 spv), from LOS E (with a v/c ratio of 1.04 and a delay of 76.6 spv) to LOS F (with a v/c ratio of 1.15 and a delay of 114.7 spv), and within LOS F (from a v/c ratio of 1.29 and a delay of 171.5 spv to a v/c ratio of 1.48 and a delay of 253.0 spv), increases in delays of more than four seconds, four seconds, and three seconds, during the weekday AM, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Northbound left-turn at the intersection of Page Avenue and Amboy Road would deteriorate from LOS C (with a v/c ratio of 0.26 and a delay of 22.3 spv) to LOS D (with a v/c ratio of 0.56 and a delay of 47.6 spv), an increase in delay of more than five seconds, during the Saturday peak hour. This projected increase in delay constitutes a significant adverse impact;
- Northbound through at the intersection of Page Avenue and Amboy Road would deteriorate from LOS D (with a v/c ratio of 0.90 and a delay of 44.8 spv) to LOS F (with a v/c ratio of 1.07 and a delay of 85.1 spv), and from LOS D (with a v/c ratio of 0.95 and a delay of 50.2 spv) to LOS F (with a v/c ratio of 1.20 and a delay of 132.7 spv), increases in delays of more than five seconds, during the weekday PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Southbound left-turn at the intersection of Page Avenue and Amboy Road would deteriorate from LOS C (with a v/c ratio of 0.58 and a delay of 34.5 spv) to LOS F (with a v/c ratio of 1.05 and a delay of 112.1 spv) and within LOS F (from a v/c ratio of 1.33 and a delay of 226.8 spv to a v/c ratio of 1.52 and a delay of 295.7 spv), increases in delays of more than five seconds and three seconds, during the weekday midday and PM peak hours, respectively. These projected delays constitute significant adverse impacts;
- Southbound through at the intersection of Page Avenue and Amboy Road would deteriorate from LOS C (with a v/c ratio of 0.73 and a delay of 31.4 spv) to LOS D (with a v/c ratio of

1.01 and a delay of 48.7 spv), an increase in delay of more than five seconds, during the Saturday peak hour. These projected delays constitute significant adverse impacts;

- Eastbound left-turn at the intersection of Page Avenue and Hylan Boulevard would deteriorate from LOS E (with a v/c ratio of 1.00 and a delay of 74.8 spv) to LOS F (with a v/c ratio of 1.12 and a delay of 110.6 spv), within LOS F (from a v/c ratio of 1.12 and a delay of 115.6 spv to a v/c ratio of 1.43 and a delay of 241.0 spv), and from LOS D (with a v/c ratio of 0.81 and a delay of 38.6 spv) to LOS F (with a v/c ratio of 1.16 and a delay of 128.9 spv), increases in delays of more than four seconds, three seconds and five seconds, during the weekday AM, PM and Saturday peak hours. These projected delays constitute significant adverse impacts;
- Southbound left-turn at the intersection of Page Avenue and Hylan Boulevard would deteriorate from LOS D (with a v/c ratio of 0.75 and a delay of 55.0 spv) to LOS E (with a v/c ratio of 0.82 and a delay of 62.0 spv), from LOS D (with a v/c ratio of 0.68 and a delay of 49.0 spv) to LOS F (with a v/c ratio of 0.97 and a delay of 84.2 spv), from LOS E (with a v/c ratio of 0.80 and a delay of 57.6 spv) to LOS F (with a v/c ratio of 1.06 and a delay of 107.5 spv) from LOS E (with a v/c ratio of 0.92 and a delay of 74.2 spv) to LOS F (with a v/c ratio of 1.29 and a delay of 193.7 spv), increases in delays of more than five seconds, five seconds, four seconds and four seconds, during the weekday AM, midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;

Veterans Road West

- Eastbound approach at the intersection of Veterans Road West and Tyrellan Avenue would deteriorate from LOS D (with a v/c ratio of 1.13 and a delay of 47.8 spv) to LOS E (with a v/c ratio of 1.13 and a delay of 55.3 spv) and within LOS F (from a v/c ratio of 1.34 and a delay of 79.6 spv to a v/c ratio of 1.34 and a delay of 105.8 spv), increases in delay of more than five seconds and three seconds, during the weekday PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Westbound approach at the intersection of Veterans Road West and Tyrellan Avenue will deteriorate within LOS D (from a v/c ratio of 0.83 and a delay of 40.9 spv to a v/c ratio of 0.92 and a delay of 49.5 spv), within LOS D (from a v/c ratio of 0.71 and a delay of 35.3 spv to a v/c ratio of 0.90 and a delay of 46.3 spv), from LOS D (with a v/c ratio of 0.95 and a delay of 52.9 spv) to LOS F (with a v/c ratio of 1.13 and a delay of 105.8 spv) and from LOS E (with a v/c ratio of 1.00 and a delay of 62.8 spv) to LOS F (with a v/c ratio of 1.28 and a delay of 170.0 spv), increases and delays of more than five seconds, five seconds, five seconds and four seconds, during the weekday AM, midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Eastbound left-turn at the intersection of Veterans Road West and North Bridge Street/ Bricktown Way would deteriorate from LOS D (with a v/c ratio of 0.79 and a delay of 46.4 spv) to LOS F (with a v/c ratio of 1.00 and a delay of 88.7 spv), within LOS F (from a v/c ratio of 1.02 and a delay of 91.9 spv to a v/c ratio of 1.90 and a delay of 463.0 spv), within LOS F (from a v/c ratio of 1.40 and a delay of 234.1 spv to a v/c ratio of 2.70 and a delay of 816.4 spv), and within LOS F (from a v/c ratio of 2.58 and a delay of 758.3 spv to a v/c ratio of 5.84 and a delay of 2237.2 spv), increases in delays of more than five seconds, three seconds, three seconds, and three seconds, during the

weekday AM, midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;

- Eastbound through/right-turn at the intersection of Veterans Road West and North Bridge Street/ Bricktown Way would deteriorate from LOS D (with a v/c ratio of 0.76 and a delay of 36.5 spv) to LOS E (with a v/c ratio of 0.99 and a delay of 66.7 spv), from LOS D (with a v/c ratio of 0.84 and a delay of 42.5 spv) to LOS F (with a v/c ratio of 1.05 and a delay of 82.6 spv) and from LOS E (with a v/c ratio of 0.96 and a delay of 58.0 spv) to LOS F (with a v/c ratio of 1.23 and a delay of 150.1 spv), increases in delays of more than five seconds, five seconds and four seconds, during the weekday midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;
- Westbound left-turn at the intersection of Veterans Road West and North Bridge Street/ Bricktown Way would deteriorate within LOS F (from a v/c ratio of 1.18 and a delay of 119.1 spv to a v/c ratio of 1.31 and a delay of 168.2 spv), within LOS F (from a v/c ratio of 1.70 and a delay of 341.5 spv to a v/c ratio of 2.96 and a delay of 900.7 spv), within LOS F (from a v/c ratio of 2.21 and a delay of 555.0 spv to a v/c ratio of 2.74 and a delay of 794.6 spv), increase in delays of more than three seconds, during the weekday AM, midday and PM peak hours, respectively. These projected delays constitute significant adverse impacts;
- Westbound through at the intersection of Veterans Road West and North Bridge Street/ Bricktown Way would deteriorate from LOS A (with a v/c ratio of 0.70 and a delay of 7.6 spv) to LOS F (with a v/c ratio of 1.16 and a delay of 81.3 spv), an increase in delay of more than five seconds, during the Saturday peak hour. This projected delay constitutes a significant adverse impact;
- Westbound approach at the unsignalized intersection of North Bridge Street and the Route 440 Off-Ramp would deteriorate from LOS D (with a v/c ratio of 0.74 and a delay of 27.0 spv) to LOS F (with a v/c ratio of 1.13 and a delay of 104.9 spv), from LOS C (with a v/c ratio of 0.62 and a delay of 22.4 spv) to LOS F (with a v/c ratio of 1.72 and a delay of 354.0 spv), within LOS F (from a v/c ratio of 0.92 and a delay of 50.6 spv to a v/c ratio of 1.93 and a delay of 446.4 spv), and within LOS F (from a v/c ratio of 0.94 and a delay of 56.6 spv to a v/c ratio of 2.58 and a delay of 739.2 spv), increases in delays of more than five seconds, five seconds, three seconds and three seconds, during the weekday AM, midday, PM and Saturday peak hours, respectively. These projected delays constitute significant adverse impacts;

Bloomingtondale Road

- Westbound left-turn at the intersection of Bloomingtondale Road and Woodrow Road/P.S. 62 School Driveway would deteriorate from LOS E (with a v/c ratio of 0.90 and a delay of 65.3 spv) to LOS F (with a v/c ratio of 0.97 and a delay of 80.3 spv), and from LOS E (with a v/c ratio of 0.90 and a delay of 62.7 spv) to LOS F (with a v/c ratio of 1.02 and a delay of 87.9 spv), increases in delay of more than four seconds, during the weekday PM and Saturday peak hours, respectively. These projected increases in delay constitute significant adverse impacts;
- Westbound left-turn at the intersection of Bloomingtondale Road and Amboy Road/ Pleasant Plains Avenue would deteriorate from LOS C (with a v/c ratio of 0.77 and a delay of 30.8 spv) to LOS D (with a v/c ratio of 0.96 and a delay of 51.9 spv), an increase in delay of more than five seconds, during the Saturday peak hour. This projected delay constitutes a significant adverse impact;

- Northbound approach at the intersection of Bloomingdale Road and Amboy Road/ Pleasant Plains Avenue would deteriorate from LOS D (with a v/c ratio of 0.94 and a delay of 46.1 spv) to LOS E (with a v/c ratio of 1.05 and a delay of 72.4 spv), and from LOS D (with a v/c ratio of 0.86 and a delay of 35.5 spv) to LOS E (with a v/c ratio of 0.99 and a delay of 56.7 spv), increases in delays of more than five seconds during the weekday PM and Saturday peak hours, respectively. These projected increases in delay constitute significant adverse impacts; and

Veterans Road East

- Eastbound approach at the intersection of Veterans Road East and Englewood Road would deteriorate within LOS F (from a v/c ratio of 1.32 and a delay of 174.9 spv to a v/c ratio of 1.43 and a delay of 220.3 spv), within LOS F (from a v/c ratio of 1.31 and a delay of 166.6 spv to a v/c ratio of 1.62 and a delay of 304.5 spv), increases in delay of more than three seconds, during the weekday PM and Saturday peak hours, respectively. These projected increases in delay constitute significant adverse impacts.

E. TRANSIT

BUS SERVICE

The S78 bus route carries passengers between Bricktown Mall and the St. George Ferry Terminal (via Hylan Boulevard), connecting with the S74 and S84 at Bricktown Mall.

Based on the travel demand estimates and the availability and service frequencies of the bus routes in the study area, it was determined that the S78 route would experience more than 50 peak hour bus trips in one direction—the *CEQR Technical Manual* recommended threshold for undertaking a quantified bus analysis during the PM peak hour. Therefore, a detailed bus line-haul analysis was conducted to address potential transit impacts on the bus system associated with the Proposed Project. **Table 12-14** provides a summary of the NYCT S78 route. This routes use standard buses with a guideline capacity of 54 passengers per bus.

**Table 12-14
Local Bus Route Serving The Study Area**

Bus Route	Start Point	End Point	Routing in Study Area	Freq. of Bus Service (Headway in Minutes)			
				AM	Afternoon	PM	Saturday
S78 (EB/WB)	Bricktown Mall	St George Ferry Terminal	Arthur Kill Road from Veterans Road West to Richmond Valley Road	15/15	15/15	15/15	30/15

Source: MTA NYCT Bus Timetables (2016)

2016 EXISTING CONDITIONS—BUS LINE-HAUL OPERATIONS

To assess the potential impact on the S78 bus route, the latest weekday bus ridership data was obtained from NYCT. As shown in **Table 12-15**, the S78 bus route operates within the guideline capacity during the weekday PM peak hour.

Table 12-15
2016 Existing Bus Line-Haul Analysis

Route- Direction	Maximum Load Point	Hourly Volume	Buses/ Hour	Passengers per Bus	Capacity/ Bus	Capacity Shortfall
PM Peak Hour						
S78- Eastbound	Hylan Boulevard and Norway Avenue	161	4	41	54	No
S78- Westbound	Tompkins Avenue and Vanderbilt Avenue	116	4	29	54	No

Source: NYCT S78 Ridership Data (May 2015)

2019 NO ACTION CONDITION—BUS LINE-HAUL LEVELS

Estimates of peak hour bus volumes in the No Action condition were developed by applying the *CEQR Technical Manual* recommended annual background growth rates as previously mentioned. In addition, trips associated with No Action projects were incorporated into the future No Action bus volumes.

As shown in **Table 12-16**, the S78 route would continue to operate within the guideline capacity during the weekday PM peak hour.

Table 12-16
2019 No Action Bus Line-Haul Analysis

Route- Direction	Maximum Load Point	Hourly Volume	Buses/ Hour	Passengers per Bus	Capacity/ Bus	Capacity Shortfall
PM Peak Hour						
S78- Eastbound	Hylan Boulevard and Norway Avenue	171	4	43	54	No
S78- Westbound	Tompkins Avenue and Vanderbilt Avenue	124	4	31	54	No

2019 WITH ACTION CONDITION—BUS LINE-HAUL LEVELS

Peak period bus ridership for the With Action condition was generated by adding the incremental trips associated with the Proposed Project to the With Action bus line-haul volumes.

As described in Section E, “Transportation Analysis Methodologies,” impacts on bus line-haul levels are considered significant if a proposed action would result in operating conditions above guideline capacities. As shown in **Table 12-17**, the S78 route would continue to operate within the guideline capacity and there would not be a significant adverse bus line-haul impact.

Table 12-17
2019 With Action Bus Line-Haul Analysis

Route- Direction	Maximum Load Point	Hourly Volume	Buses/ Hour	Passengers per Bus	Capacity/ Bus	Capacity Shortfall
PM Peak Hour						
S78- Eastbound	Hylan Boulevard and Norway Avenue	161	4	46	54	No
S78- Westbound	Tompkins Avenue and Vanderbilt Avenue	116	4	33	54	No

TRAIN SERVICE

In January 2017, the new Arthur Kill Road station of the Staten Island Railway (SIR) opened providing an improved transit facility serving southwest Staten Island. The new Arthur Kill Road Station, located on Arthur Kill Road between Lions Street and Barnard Avenue, is located

approximately a ½ mile south of the Proposed Project site. Although the transit trips through the new station are not expected to exceed the *CEQR Technical Manual* threshold requiring a detailed transit analysis, and thus there would not be a significant impact on the facility due to the Proposed Project, improved transit facilities with the new station will also bicycle racks and a new, relocated S78 bus stop in front of the station. Together, and over time, the new station with these improvements could incentivize patrons and employees of the Proposed Project to use these enhanced transit services as an alternative mode of travel to and from the Proposed Project.

F. PEDESTRIANS

The Proposed Project would also include ADA compliant sidewalks throughout the proposed Project Site, including along Richmond Valley Road and along Arthur Kill Road adjacent to the property line of the Proposed Project. Currently, there are no sidewalks along these streets. These sidewalk improvements would therefore support pedestrian circulation within the site as well as access to the S78 bus.

G. VEHICULAR AND PEDESTRIAN SAFETY EVALUATION

Crash data for the study area intersections were obtained from NYSDOT for the time period between January 1, 2013 and December 31, 2015. The data obtained quantify the total number of reportable crashes (involving fatality, injury, or more than \$1,000 in property damage), fatalities, and injuries during the study period, as well as a yearly breakdown of vehicular crashes with pedestrians and bicycles at each location.

During the January 1, 2013 and December 31, 2015 three-year period, a total of 63 reportable and non-reportable crashes, zero fatalities, 39 injuries, and zero pedestrian/bicyclist-related crashes occurred at the study area intersections. **Table 12-18** depicts total crash characteristics by intersection during the study period, as well as a breakdown of pedestrian and bicycle crashes by year and location. A rolling total of crash data identifies no intersections as high crash locations in the 2013 to 2015 period. As no high crash locations were identified, the Proposed Project's generated demand is not expected to exacerbate existing pedestrian or vehicle safety conditions.

H. PARKING ASSESSMENT

The Proposed Project would include 1,721 accessory parking spaces, including on-street and off-street parking within the Project Site. In the With Action condition, as shown in **Table 12-19**, a maximum of 1,202 and 1,476 or 69 percent and 85 percent of accessory parking spaces in the Project Site would be utilized in the peak weekday and Saturday parking hours, respectively. Because the on-site accessory parking utilization levels are within the Proposed Project's parking capacity, a detailed on-street and off-street parking analysis is not warranted, and the Proposed Project is not expected to result in the potential for a parking shortfall or significant adverse parking impacts.

**Table 12-18
Accident Summary**

Intersection		Study Period					Accidents by Year					
North-South Roadway	East-West Roadway	All Accidents by Year			Total Fatalities	Total Injuries	Pedestrian			Bicycle		
		2013	2014	2015			2013	2014	2015	2013	2014	2015
Arthur Kill Road	Sharrotts Road	1	0	1	0	0	0	0	0	0	0	0
Arthur Kill Road	Veterans Road West	4	1	1	0	8	0	0	0	0	0	0
Rte. 440 WB On Ramp	N. Bridge Street	0	0	0	0	0	0	0	0	0	0	0
Rte. 440 WB Off Ramp	N. Bridge Street	0	0	0	0	0	0	0	0	0	0	0
Arthur Kill Road	S. Bridge Street	1	0	0	0	1	0	0	0	0	0	0
Page Avenue	S. Bridge Street	0	0	0	0	0	0	0	0	0	0	0
Rte. 440 EB Ramps	Boscombe Ave	0	0	0	0	0	0	0	0	0	0	0
Arthur Kill Road	Richmond Valley Road	4	1	1	0	4	0	0	0	0	0	0
Page Avenue	Richmond Valley Road	1	2	2	0	0	0	0	0	0	0	0
Page Avenue	Amboy Road	3	3	5	0	7	0	0	0	0	0	0
Page Avenue	Hylan Boulevard	0	0	0	0	0	0	0	0	0	0	0
Bloomingdale Rd	Woodrow Road	2	0	0	0	2	0	0	0	0	0	0
Bloomingdale Rd	Sharrotts Road	2	1	1	0	3	0	0	0	0	0	0
Veterans Road West	Englewood Ave	0	0	0	0	0	0	0	0	0	0	0
Veterans Road East	Englewood Ave	2	0	0	0	0	0	0	0	0	0	0
Bloomingdale Rd	Englewood Ave	1	0	1	0	1	0	0	0	0	0	0
Maguire Avenue	Amboy Road	2	0	1	0	0	0	0	0	0	0	0
Veterans Road West	Tyrellan Avenue	5	2	1	0	5	0	0	0	0	0	0
Foster Road	Drumgoole Road West	1	3	0	0	3	0	0	0	0	0	0
Bloomingdale Rd	Amboy Road / Pleasant Plains Ave	1	0	0	0	1	0	0	0	0	0	0
Sharrott Avenue	Hylan Boulevard	2	0	0	0	2	0	0	0	0	0	0
Sharrott Avenue	Amboy Road	0	2	1	0	2	0	0	0	0	0	0
Richmond Valley Road	Amboy Road	0	0	1	0	0	0	0	0	0	0	0
Arthur Kill Road	Project Driveway	0	0	0	0	0	0	0	0	0	0	0

Source: NYSDOT January 1, 2013 to December 31, 2015 accident data.

Table 12-19

Proposed Project Incremental Parking Demand and Utilization

Hour	Weekday ⁽¹⁾					Saturday ⁽¹⁾				
	In	Out	Total	Parking Demand	Parking Utilization	In	Out	Total	Parking Demand	Parking Utilization
12 AM - 01 AM	0	0	0	0	0%	0	0	0	0	0%
01 AM - 02 AM	0	0	0	0	0%	0	0	0	0	0%
02 AM - 03 AM	0	0	0	0	0%	0	0	0	0	0%
03 AM - 04 AM	0	0	0	0	0%	0	0	0	0	0%
04 AM - 05 AM	0	0	0	0	0%	0	0	0	0	0%
05 AM - 06 AM	0	0	0	0	0%	0	0	0	0	0%
06 AM - 07 AM	0	0	0	0	0%	0	0	0	0	0%
07 AM - 08 AM	240	174	414	66	4%	223	19	242	204	12%
08 AM - 09 AM	386	236	622	216	12%	592	378	970	418	24%
09 AM - 10 AM	361	54	415	523	30%	849	364	1,213	903	52%
10 AM - 11 AM	725	311	1,036	937	54%	815	640	1,455	1,078	62%
11 AM - 12 PM	961	696	1,657	1,202	69%	950	747	1,697	1,281	74%
12 PM - 01 PM	895	970	1,865	1,127	65%	989	950	1,939	1,320	76%
01 PM - 02 PM	2,279	2,279	4,558	1,127	65%	1,387	1,280	2,667	1,427	82%
02 PM - 03 PM	1,117	1,162	2,279	1,082	63%	1,237	1,188	2,425	1,476	85%
03 PM - 04 PM	667	783	1,450	966	56%	1,164	1,261	2,425	1,379	80%
04 PM - 05 PM	974	1,098	2,072	842	49%	1,004	1,178	2,182	1,205	70%
05 PM - 06 PM	895	970	1,865	767	44%	781	917	1,698	1,069	62%
06 PM - 07 PM	580	871	1,451	476	28%	757	699	1,456	1,127	65%
07 PM - 08 PM	218	404	622	290	17%	795	1,145	1,940	777	45%
08 PM - 09 PM	62	145	207	207	12%	495	476	971	796	46%
09 PM - 10 PM	0	207	207	0	0%	87	398	485	485	28%
10 PM - 11 PM	0	0	0	0	0%	0	485	485	0	0%
11 PM - 12 AM	0	0	0	0	0%	0	0	0	0	0%
				1,202	69%				1,476	85%

Notes:
(1) Based on the temporal and directional distributions from the 2013 *Charleston Mixed-Use Development FEIS* and *ITE Trip Generation Manual, 9th Edition* (Lane Use Code 820)

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