A. INTRODUCTION

This transportation chapter examines the potential for the Proposed Action to result in significant adverse impacts on study area transportation systems, through a comparison of 2023 conditions with the Proposed Action (the With-Action condition) to conditions in the future without the Proposed Action (the No-Action condition).

As described in Chapter 1, "Project Description," the Applicant is proposing several discretionary actions to facilitate a new mixed-use predominantly residential development (the "proposed project") on an 8.7-acre waterfront site in the Astoria neighborhood of Queens Community District (CD) 1. The Proposed Action, which includes a zoning map amendment, a zoning text amendment, and a City Map amendment, along with other related land use actions, would facilitate a new approximately 2,189,068 gross square feet (gsf) mixed-use development on the project site. The proposed project would be comprised of approximately 1,689 dwelling units (DU), approximately 109,470 gsf of local retail space (including a 25,000 gsf supermarket), a site for an elementary school with approximately 456 seats (K-5), approximately 900 accessory parking spaces, and approximately 83,846 sf of publicly accessible open space. The project site is shown in Figure 1-1 in Chapter 1, "Project Description." It is anticipated that the proposed project would be completed in 2023.

The assessment of the Proposed Action's potential transportation impacts is based on the methodologies set forth in the *City Environmental Quality Review* (CEQR) *Technical Manual.*

B. PRINCIPAL CONCLUSIONS

Traffic

Weekday AM, midday, and PM peak hour traffic conditions were evaluated at 30 intersections generally bounded by Hoyt Avenue North to the north, Broadway to the south, 33rd Street to the east, and 4th Street to the west. These 30 intersections, where project generated trips are expected to be most concentrated, were analyzed for a reasonable worst-case development scenario (RWCDS) that assumes full completion of the nearby Halletts Point project, which has a 2022 Build Year. It should be noted that an analysis of Saturday peak hour conditions will be conducted between the Draft Environmental Impact Statement (DEIS) and the Final EIS (FEIS), as requested by the New York City Department of Transportation (NYCDOT). This analysis may result in additional significant adverse impacts. The findings of this additional analysis will be documented in the FEIS.

The traffic impact analysis indicates that there would be a potential for significant adverse impacts at 20 intersections during the weekday AM peak hour, nine intersections during the weekday midday peak hour, and 16 intersections during the weekday PM peak hour, as outlined in Table 13-1.

As the impacts shown in Table 13-1 would result from an increase of traffic volumes due to both the Proposed Action and the Halletts Point development, an additional impact analysis is included in this chapter as per guidance by the New York City Department of City Planning (DCP) and NYCDOT to determine whether these impacts would occur absent the Halletts Point development. As discussed in detail in Section G, "Traffic," the analysis of future conditions without accounting for the Halletts Point development shows that, although the majority of significant adverse impacts were identified at the same locations for both the future conditions, generally fewer impacts would occur absent the Halletts Point development. A total of 19 of the 30 analyzed intersections would be significantly adversely impacted in one or more peak hours as a result of the Proposed Action absent the Halletts Point development, while 22 of the 30 analyzed intersections would be impacted when accounting for the Halletts Point development.

Table 13-1: Summary of Impact Locations

Intersection	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour
1. 26th Ave & 4th St			
A. 26th Ave & 9th St			
2. 27th Ave & 4th St			X
3. 27th Ave & 8th St	X	X	X
4. 27th Ave & 12th St	X		X
5. 27th Ave & 14th St	X		
6. 27th Ave & 18th St			
7. Astoria Blvd & 21st St	X	X	X
8. Astoria Blvd & 23rd St	X		X
9. Astoria Blvd & Crescent St	X	X	X
10. Astoria Blvd & 27th St	X		
11. Astoria Blvd & 28th St			
12. Astoria Blvd & 29th St	X	X	X
13. Astoria Blvd & 30th St			
14. Astoria Blvd & 31st St	X		
15. Hoyt Ave S./Astoria Blvd & 33rd St	X	X	X
16. Hoyt Ave N. & 29th St	X		
17. Hoyt Ave N. & 31st St			
18. Astoria Blvd N. & 32nd St	X	X	X
19. Astoria Blvd & 8th St			X
20. 30th Ave & 14th St	X		
21. 30th Ave & 21st St	X		
22. Vernon Blvd & Welling Court/8th St	X	X	X
23. Astoria Blvd & 18th St			
24. Hoyt Ave N. & 21st St	X		X
25. Hoyt Ave S./Astoria Park S. & 21st St	X		X
26. 27th Ave & 9th St	X	X	X
27. Vernon Blvd & 31st Ave	X		X
28. Vernon Blvd & Broadway/11th St	X	X	X
29. 31st Ave & 21st St			

Notes:
X – denotes potential for significant adverse impact.

Transit

Subway

The project site is served by the N, Q, and F lines; the 30th Avenue Station is served by the N and Q lines, and the 21st Street-Queensbridge Station is served by the F line. Based on current station usage, the proximity to the project site, and the shuttle service to the 30th Avenue Station, it was estimated that the majority (approximately 80 percent) of subway riders would utilize the 30th Avenue Station via a shuttle, as noted above, while the remaining 20 percent would utilize the 21st Street-Queensbridge Station. Therefore, according to *CEQR Technical Manual* criteria, a detailed analysis of subway station elements was only warranted at the 30th Avenue Station. In addition, a subway line haul analysis was conducted for the three subway lines serving the project site. The results of the analysis of future conditions indicate that the Proposed Action would result in significant adverse impacts on the 30th Avenue Station's northwest street stair during the PM peak hour. Due to the high volumes of Manhattan-bound morning commuter traffic, significant adverse impacts to the 30th Avenue Station's northbound fare array are anticipated during the AM peak hour. Potential mitigation measures for these significant adverse subway station element impacts are discussed in Chapter 20, "Mitigation." While the Manhattan-bound Q line would operate over capacity in future With-Action conditions, as the Proposed Action would add less than 5 passengers per car (the CEQR impact criterion), no significant adverse subway line haul impact would result.

Bus

In addition to new bus riders resulting from the Proposed Action, the level of new bus demand on the analyzed local bus route Q103 would include project-generated F line subway riders that are expected to take the Q103 bus to and from the 21st Street-Queensbridge Station. The results of the bus transit impact analysis indicate that the Q103 route would experience significant adverse impacts in the southbound direction during both the weekday AM and PM peak hours, as well as in the northbound direction during the PM peak hour. Potential mitigation measures for these significant adverse bus impacts are discussed in Chapter 20, "Mitigation."

Pedestrians

The Proposed Action would not result in any significant adverse impacts to sidewalks, corner areas or crosswalks. A total of 11 existing sidewalks, three corners, and one crosswalk in the vicinity of the project site and close to the 30th Avenue subway station were selected for analysis in the three peak hours. Four additional future sidewalk elements on the project site were analyzed for the With-Action condition only. The results of the analysis of future conditions with the Proposed Action indicate that all analyzed sidewalks, corners, and crosswalks would operate at acceptable levels of service during the weekday AM, midday, and PM peak hours under With-Action conditions. As noted above, as requested by NYCDOT, an analysis of Saturday peak conditions will be conducted between the DEIS and the FEIS and may result in additional significant adverse impacts. The findings of this additional analysis will be documented in the FEIS.

Pedestrian and Vehicular Safety Evaluation

As shown in Section J, "Pedestrian and Vehicular Safety Evaluation," none of the analyzed study area intersections exceeded one pedestrian and/or bicyclist injury crash in one or more years from 2010-2012 or reached the *CEQR Technical Manual* threshold for the total number of crashes per year. Therefore, based on the accident data presented below in Table 13-45, a significant safety impact on

pedestrian/bicyclist and vehicular safety is not anticipated. In addition, no pedestrian and vehicular safety concerns are anticipated on future project site streets. However, the Applicant will work with NYCDOT to implement required school signage and other typical safety features applied in proximity to schools where necessary.

Parking

As discussed below in Section K, "Parking," the maximum parking demand, which is expected to occur from 8-9 PM, as well as the overnight demand, are expected to be accommodated by new parking spaces that would be created as part of the proposed project as well as on-street parking in the immediate vicinity. Therefore, no significant adverse parking impacts are expected.

C. PRELIMINARY ANALYSIS METHODOLOGY

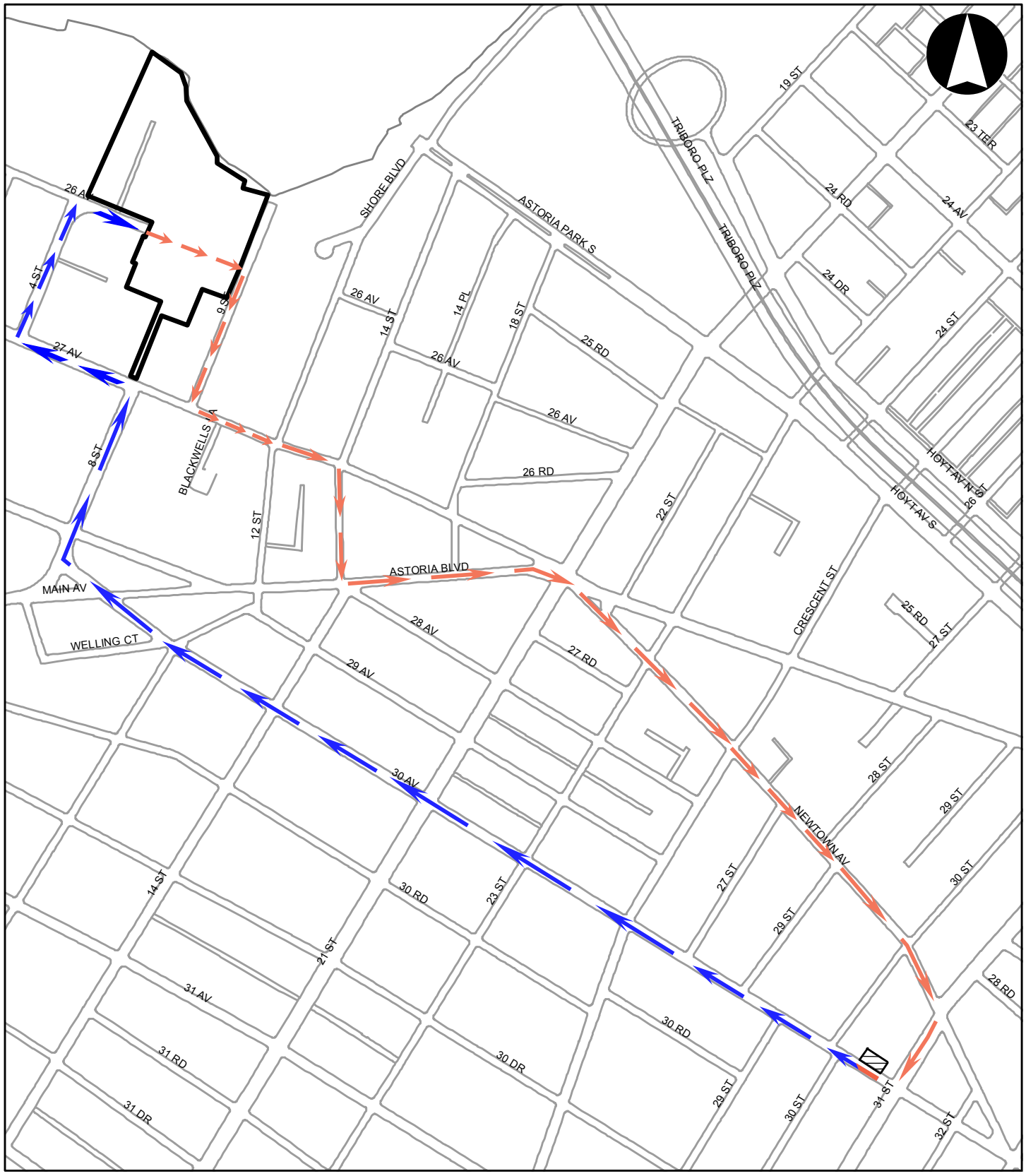
The *CEQR Technical Manual* describes a two-level screening procedure for the preparation of a "preliminary analysis" to determine if quantified analyses of transportation conditions are warranted. As discussed in the following sections, the preliminary analysis begins with a trip generation (Level 1) analysis to estimate the amount of person and vehicle trips expected to be generated by the proposed project. By *CEQR Technical Manual* guidelines, 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 to be performed to estimate the incremental trips that could be incurred at specific transportation elements and to identify potential locations for further analyses. If the trip assignments show that the proposed project would generate 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 sidewalk, corner area, or crosswalk, further quantified operational analyses may be warranted to assess the potential for significant adverse impacts on traffic, transit, pedestrian, parking, and vehicular pedestrian safety. The results of the two-level screening assessments are described in the following.

D. LEVEL 1 SCREENING ASSESSMENT

A Level 1 screening assessment was conducted to estimate the volume of person and vehicle trips by mode expected to be generated by the proposed project during the weekday AM, midday, and PM peak hours. These estimates were then compared to the *CEQR Technical Manual* analysis thresholds of 50 peak hour vehicle trips, 200 peak hour subway/rail or bus riders, and 200 peak hour pedestrian trips to determine if a Level 2 screening and/or quantified operational analyses were warranted.

The Level 1 screening assessment relies on the project's proposed uses. As discussed in Chapter 1, "Project Description", the proposed project would include residential, local retail, supermarket and school uses. The proposed project's program is shown in Table 13-2 below. As detailed in Chapter 1, "Project Description" and as also shown in Figures 1-1 and 1-2, the project site is spread over several upland and waterfront blocks with substantial street frontages. The Proposed Action would have four garages with a total of 900 parking spaces and access/egress points on 26th Avenue, 4th Street, and 9th Street. It should be noted that the proposed project would also provide a shuttle service to the 30th Avenue subway station, located at 30th Avenue and 31st Street, southwest of the project site. The anticipated shuttle route is shown

Proposed Shuttle Bus Route



Project Site

Shuttle Route to Station

Shuttle Route from Station

Shuttle Pick up/ Drop off at 30th Avenue Station

in Figure 13-1. For transit analysis purposes, it is assumed that the existing Q18/Q102 bus stop would be lengthened west to accommodate the shuttle bus, potentially with a second berth for the shuttle bus.

Table 13-2: Astoria Cove Program

Land Use	Programming
Residential	1,689 DU[1]
Local Retail	84,470 gsf
Supermarket	25,000 gsf
Elementary School	456 seats
Accessory Parking	900 spaces
Open Space	1.92 acres

Notes:
[1]Includes an additional 21 dwelling units as a result of the FAR credit of 20,000 sf potentially to be awarded by a FRESH supermarket usage; 1,668 dwelling units with a generic supermarket.

It also should be noted that while a FRESH supermarket certification will likely be pursued in the future, per the guidance of DCP, the transportation analyses will assume a RWCDS that includes a generic supermarket usage. In general, a RWCDS with a FRESH supermarket and corresponding bonus (residential) floor area is the appropriate analysis basis as most of the density-related analyses are more sensitive to the number of dwelling units and/or residential population. However, for conservative purposes the transportation analyses is based on a RWCDS with a generic supermarket and less residential floor area (1,668 DU) as this program is expected to generate substantially more vehicular traffic, as discussed below.

Tables 13-3 and 13-4 show the transportation planning factors used for the travel demand forecast of the proposed project in the weekday AM, midday, and PM peak hours for the program with FRESH supermarket and with a generic supermarket usage, respectively. These include trip generation rates, temporal and directional distributions, mode choice factors, and vehicle occupancy rates for each of the land uses. Given the size and anticipated programming of the proposed project's open space, it is anticipated that the majority of associated trips would be generated by other project site uses or linked to other project generated trips. As such, the discussion below focuses on the residential, commercial, and school land uses.

Transportation Planning Factors

Local Retail

As shown above in Table 13-2, the Proposed Action would result in the development of 84,470 sf of local retail. The trip generation rates and temporal distributions for the local retail component were based on the *CEQR Technical Manual*. The modal splits, in/out splits, and vehicle occupancy rates were based on the *Dutch Kills Rezoning and Related Actions FEIS* (2008).

Table 13-3: Transportation Planning Assumptions (FRESH Supermarket)

Land Use:	Local Retail	Residential	FRESH Supermarket	PS School	PS Staff	Existing Industrial
Size/Units:	84,470 gsf	1,523 DU*	25,000 gsf	456 seats	35 staff	-194,700 gsf
Trip Generation:	(1)	(1)	(5)	(9)	(9)	(7)
Weekday	205	8.075	205	2	2	NA
	per 1,000 gsf	per DU	per 1000 gsf	per student	per staff	
Temporal Distribution:	(1)	(1)	(5)	(9)	(9)	(7)
AM	3.0%	10.0%	3.0%	50%	50%	NA
MD	19.0%	5.0%	12.0%	0%	0%	NA
PM	10.0%	11.0%	10.0%	5%	50%	NA
	(2)	(3)	(5)	(10)	(8)	(7)
Modal Splits:	AM/MD/PM	AM/MD/PM	AM/MD/PM	Outsider Internal	AM/MD/PM	AM/MD/PM
Auto/Auto-dropoff	2.0%	32.4%	4.0%	5.0% 0.0%	57.0%	NA
Taxi	3.0%	0.5%	3.0%	0.0% 0.0%	1.0%	NA
Subway/Shuttle	6.0%	55.4%	5.0%	0.0% 0.0%	18.0%	NA
Bus	6.0%	3.2%	5.0%	0.0% 0.0%	11.0%	NA
Schoolbus				5.0% 0.0%		NA
Walk/Ferry/Other	83.0%	8.5%	83.0%	5.0% 85.0%	13.0%	NA
	100.0%	100.0%	100.0%	15.0% 85.0%	100.0%	NA
	(2)	(4)	(5)	(9)	(9)	(7)
In/Out Splits:	In Out	In Out	In Out	In Out	In Out	In Out
AM	50% 50%	20.0% 80.0%	45% 55%	100% 0%	100% 0%	NA NA
MD	50% 50%	50.0% 50.0%	46% 54%	0% 0%	0% 100%	NA NA
PM	50% 50%	65.0% 35.0%	47% 53%	0% 100%	0% 100%	NA NA
Vehicle Occupancy:	(2)	(3)	(5)	(9)	(8)	(7)
	Weekday	Weekday	Weekday	Weekday	Weekday	Weekday
Auto	2.00	1.11	1.65	1.3	1.20	NA
Taxi	2.00	1.4	1.40	1.3	1.20	NA
Truck Trip Generation:	(1)	(1)	(5)	(6)		(7)
	0.35	0.06	0.35	6.25		NA
	per 1,000 sf	per DU	per 1,000 sf	students/bus		
	(1)	(1)	(5)			(7)
AM	8.0%	12.0%	10.0%			NA
MD	11.0%	9.0%	8.0%			NA
PM	2.0%	2.0%	5.0%			NA
	In Out	In Out	In Out			In Out
AM	50.0% 50.0%	50.0% 50.0%	50.0% 50.0%			NA NA
MD	50.0% 50.0%	50.0% 50.0%	50.0% 50.0%			NA NA
PM	50.0% 50.0%	50.0% 50.0%	50.0% 50.0%			NA NA

Notes:
(1) *CEQR Technical Manual*
(2) *Dutch Kills Rezoning and Related Actions FEIS* (2008)
(3) Modal split and vehicle occupancy rates based on 2007-2011 ACS Journey to Work data (census tracts 81,83,91,97,101,103,105)
(4) Based on *ITE Trip Generation Handbook, 8th Edition*, Land Use Code (220) Apartment.
(5) *The Food Retail Expansion to Support Health (FRESH) Food Store Program EAS* (2009)
(6) Based on data from survey conducted by PHA (October 2012) on P.S. 35, Hollis, Queens.
(7) Vehicular travel demand was based on counts in 2013. Credit for transit and pedestrian trips are not being taken for conservative purposes.
(8) Modal split and vehicle occupancy data based on 2000 Census Reverse Journey to Work data (census tracts 87, 91) in Queens.
(9) *Brownsville Ascend Charter School Assessment* (2011).
(10) *Halletts Point FEIS* (2013).
(11) Instructed by DCP to use CEQR local retail delivery truck trip generation rate.
* 166 residential units in upland area in No-Action condition (1,689 DUs in With-Action condition) for net increment of 1,523.

Table 13-4: Transportation Planning Assumptions (Generic Supermarket)

Land Use:	Local Retail	Residential	Supermarket			PS School		PS Staff	Existing Industrial
Size/Units:	84,470 gsf	1,502 DU*	25,000 gsf			456 seats		35 staff	-194,700 gsf
Trip Generation:	(1)	(1)	(1)			(9)		(9)	(7)
Weekday	205	8.075	175			2		2	NA
	per 1,000 sf	per DU	per 1000 gsf			per student		per staff	
Temporal Distribution:	(1)	(1)	(5)			(9)		(9)	(7)
AM	3.0%	10.0%	5.0%			50%		50%	NA
MD	19.0%	5.0%	6.0%			0%		0%	NA
PM	10.0%	11.0%	10.0%			5%		50%	NA
	(2)	(3)	(5)			(10)		(8)	(7)
Modal Splits:	AM/MD/PM	AM/MD/PM	AM	MD	PM	Outsider	Internal	AM/MD/PM	AM/MD/PM
Auto/Auto-dropoff	2.0%	32.4%	61.0%	68.0%	67.0%	5.0%	0	57.0%	NA
Taxi	3.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0	1.0%	NA
Subway/Shuttle	6.0%	55.4%	1.0%	0.0%	0.0%	0.0%	0	18.0%	NA
Bus	6.0%	3.2%	5.0%	5.0%	3.0%	0.0%	0	11.0%	NA
Schoolbus						5.0%	0		NA
Walk/Ferry/Other	83.0%	8.5%	33.0%	27.0%	30.0%	5.0%	85%	13.0%	NA
	100.0%	100.0%	100.0%	100.0%	100.0%	15.0%	85.0%	100.0%	NA
	(2)	(4)	(5)			(9)		(9)	(7)
In/Out Splits:	In Out	In Out	In Out			In Out		In Out	In Out
AM	50% 50%	20.0% 80.0%	57% 43%			100% 0%		100% 0%	NA NA
MD	50% 50%	50.0% 50.0%	50% 50%			0% 0%		0% 100%	NA NA
PM	50% 50%	65.0% 35.0%	52% 48%			0% 100%		0% 100%	NA NA
Vehicle Occupancy:	(2)	(3)	(5)			(9)		(8)	(7)
	Weekday	Weekday	AM	MD	PM	Weekday		Weekday	Weekday
Auto	2.00	1.11	1.12	1.32	1.34	1.3		1.20	NA
Taxi	2.00	1.4				1.3		1.20	NA
Truck Trip Generation:	(1)	(1)	(11)			(6)			(7)
	0.35	0.06	0.35			6.25			NA
	per 1,000 sf	per DU	per 1,000 sf			students/bus			
	(1)	(1)	(1)						(7)
AM	8.0%	12.0%	8.0%						NA
MD	11.0%	9.0%	11.0%						NA
PM	2.0%	2.0%	2.0%						NA
	In Out	In Out	In Out						In Out
AM	50.0% 50.0%	50.0% 50.0%	50.0% 50.0%						NA NA
MD	50.0% 50.0%	50.0% 50.0%	50.0% 50.0%						NA NA
PM	50.0% 50.0%	50.0% 50.0%	50.0% 50.0%						NA NA

Notes:
(1) *CEQR Technical Manual*
(2) *Dutch Kills Rezoning and Related Actions FEIS* (2008)
(3) Modal split and vehicle occupancy rates based on 2007-2011 ACS Journey to Work data (census tracts 81,83,91,97,101,103,105)
(4) Based on *ITE Trip Generation Handbook, 8th Edition*, Land Use Code (220) Apartment.
(5) Based on 1525 Albany Avenue Pathmark Supermarket Survey
(6) Based on data from survey conducted by PHA (October 2012) on P.S. 35, Hollis, Queens.
(7) Vehicular travel demand was based on counts in 2013. Credit for transit and pedestrian trips are not being taken for conservative purposes.
(8) Modal split and vehicle occupancy data based on 2000 Census Reverse Journey to Work data (census tracts 87, 91) in Queens.
(9) *Brownsville Ascend Charter School Assessment* (2011).
(10) *Halletts Point FEIS* (2013).
(11) Instructed by DCP to use CEQR local retail delivery truck trip generation rate.
* 166 residential units in upland area in No-Action condition (1,668 DUs in With-Action condition) for net increment of 1,502.

Residential

As also shown in Table 13-2, in the RWCDS with FRESH supermarket and generic supermarket usage scenarios, the proposed project would include 1,689 and 1,668 residential units, respectively, as the Floor Area Ratio (FAR) available for residential development would be increased with FRESH supermarket usage. It should be noted that credit was assumed for the 166 residential units that would be developed on the project site in the future without the Proposed Action, resulting in a net increment of 1,523 and 1,502 residential units in the program with FRESH supermarket and generic supermarket usage scenarios, respectively (see Tables 13-3 and 13-4).

The trip generation rates and temporal distributions for the residential component were based on the *CEQR Technical Manual*. The modal splits and vehicle occupancy rates were based on 2007-2011 ACS Journey to Work data for census tracts 81, 83, 91, 97, 101, 103, and 105 in Queens, which were deemed appropriate by DCP for representing travel characteristics of the proposed project's future residents. As shown in Tables 13-3 and 13-4, the predominant mode choices for future residents are expected to be the subway (55.4 percent) and private auto (32.4 percent). The directional in/out splits were based on the *ITE Trip Generation Handbook, 8th Edition*, Land Use Code (220) Apartments.

FRESH Supermarket

As discussed above, the proposed project would include a 25,000 sf FRESH supermarket. The trip generation rates, modal splits, directional in/out splits and vehicle occupancies are all based on the *Food Retail Expansion to Support Health (FRESH) Food Store Program EAS* (2009). As noted above, while the RWCDS with a FRESH supermarket forms the appropriate basis for most of the density-related analyses presented in this EIS, the RWCDS with a generic supermarket was conservatively used for the transportation analysis as it is expected to generate more vehicular traffic based its transportation planning factors described in the following.

Generic Supermarket

The trip generation rates and temporal distribution for truck trips for the 25,000 sf generic supermarket components were based on the *CEQR Technical Manual*, while the temporal distribution for person trips, modal splits, and directional in/out splits were based on the *1525 Albany Avenue Supermarket Survey* (2009). As shown in Table 13-4, private auto is expected to be the predominant mode choice for the generic supermarket use, with auto shares of 61 percent, 68 percent, and 67 percent in the weekday AM, midday, and PM peak periods, respectively, while for the FRESH supermarket the auto share is assumed to only be 4 percent (see Table 13-3). Therefore, as noted above, the RWCDS with the generic supermarket with its higher auto share and consequently greater vehicular traffic was conservatively used for the detailed transportation analyses presented in this chapter.

Public School Students

As shown earlier in Table 13-2, the Proposed Action would also result in a public elementary school with 456 seats. The trip generation rates, temporal distributions, directional in/out splits, and vehicle occupancy rates for the public school student component were based on the *Brownsville Ascend Charter School Assessment* (2011). The modal splits were based on the *Halletts Point FEIS* (2013). It should be noted that 85 percent of students are expected to come from the new residential developments included in the proposed project, who would all walk to/from school, while 15 percent of students from outside of the project site would visit the new school by auto drop-off, school bus, and on foot. The number of students

per school bus was based on an October 2012 survey conducted by PHA at P.S. 35 in Hollis, Queens. A 90 percent attendance rate was assumed for all students.

Public School Staff

The proposed school is also expected to generate new trips by approximately 35 staff members. The trip generation rates, temporal distributions, and directional in/out splits for school staff were also based on the *Brownsville Ascend Charter School Assessment* (2011), while the modal splits and vehicle occupancy rates were based on 2000 Census Reverse Journey to Work data for census tracts 87 and 91 in Queens.

Existing Industrial Land Uses

As shown in Tables 13-3 and 13-4, credit was taken for 194,700 sf of existing industrial land uses, which are expected to continue to occupy a portion of the project site in the future without the Proposed Action. In coordination with NYCDOT, vehicular travel demand was forecasted based on counts conducted by PHA in November 2013.

Travel Demand Forecast

Table 13-5 summarizes the results of the travel demand forecast for the vehicular traffic resulting from the Proposed Action based on the factors shown below in Tables 13-6 and 13-7 for a RWCDS with a FRESH supermarket and a RWCDS with a generic supermarket, respectively.

Table 13-5: Travel Demand Forecast Summary Comparison—RWCDS with FRESH Supermarket vs. RWCDS with Generic Supermarket

Peak Hour	Net Incremental Vehicle Trips						Difference (Variant 2 – Variant 1)
	FRESH Supermarket (Variant 1)			Generic Supermarket[1] (Variant 2)			
	In	Out	Total	In	Out	Total	
AM	124	334	458	169	365	534	76
MD	150	146	296	185	180	365	69
PM	304	197	501	373	260	633	132

Note:
[1] Used for the detailed transportation analyses presented in this chapter

As discussed above, the transportation analysis is based on the RWCDS with a generic supermarket due to its higher project-generated vehicular traffic. As shown in Table 13-5, the RWCDS scenario with a generic supermarket would result in 76, 69, and 132 more net incremental vehicle trips than the RWCDS with the FRESH supermarket during the weekday AM, midday, and PM peak periods, respectively. Therefore, the following detailed transportation analyses are based on a RWCDS with a generic supermarket.

Table 13-6: Travel Demand Forecast (FRESH Supermarket)

Land Use:		Local Retail		Residential		FRESH Supermarket		PS School				PS Staff		Existing Industrial			
Size/Units:		84,470	gsf	1,523	DU	25,000	gsf	456	seats			35	staff	-194,700	gsf	Total	
Peak Hour Trips:																	
	AM	390		1,230		115		412				35		NA		2,182	
	MD	2,468		615		463		0				0		NA		3,546	
	PM	1,300		1,354		385		42				35		NA		3,116	
Person Trips:								Off-site		On-site							
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	Auto	4	4	80	319	2	2	21	0	0	0	20	0	NA	NA	127	325
	Taxi	6	6	1	5	2	2	0	0	0	0	0	0	NA	NA	9	13
	Subway	12	12	136	545	2	3	0	0	0	0	6	0	NA	NA	156	560
	Bus	12	12	8	31	2	4	0	0	0	0	4	0	NA	NA	26	47
	Schoolbus							20	0	0	0			NA	NA	20	0
	Walk/Other	161	161	21	84	43	53	21	0	350	0	5	0	NA	NA	601	298
	Total	195	195	246	984	51	64	62	0	350	0	35	0	NA	NA	939	1,243
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	Auto	25	25	100	100	8	10	0	0	0	0	0	0	NA	NA	133	135
	Taxi	37	37	2	2	7	7	0	0	0	0	0	0	NA	NA	46	46
	Subway	74	74	170	170	11	13	0	0	0	0	0	0	NA	NA	255	257
	Bus	74	74	10	10	11	13	0	0	0	0	0	0	NA	NA	95	97
	Schoolbus							0	0	0	0			NA	NA	0	0
	Walk/Other	1,024	1,024	26	25	176	207	0	0	0	0	0	0	NA	NA	1,226	1,256
	Total	1,234	1,234	308	307	213	250	0	0	0	0	0	0	NA	NA	1,755	1,791
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PM	Auto	13	13	285	154	7	8	0	3	0	0	0	20	NA	NA	305	198
	Taxi	20	20	4	2	5	6	0	0	0	0	0	0	NA	NA	29	28
	Subway	39	39	488	263	9	11	0	0	0	0	0	6	NA	NA	536	319
	Bus	39	39	28	15	9	11	0	0	0	0	0	4	NA	NA	76	69
	Schoolbus							0	0	0	0			NA	NA	0	0
	Walk/Other	539	539	75	40	150	169	0	3	0	36	0	5	NA	NA	764	792
	Total	650	650	880	474	180	205	0	6	0	36	0	35	NA	NA	1,710	1,406
Vehicle Trips :																	
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	Auto (Total)	2	2	72	287	2	2	16	16	0	0	17	0	-18	-8	91	299
	Taxi	3	3	1	4	1	2	0	0	0	0	0	0	0	0	5	9
	Taxi Balanced	6	6	5	5	3	3	0	0	0	0	0	0	0	0	14	14
	Shuttle/Schoolbus			11	11			3	3	0	0			0	0	14	14
	Truck	1	1	5	5	1	1	0	0	0	0	0	0	-2	0	5	7
	Total	9	9	93	308	6	6	19	19	0	0	17	0	-20	-8	124	334
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	Auto (Total)	13	13	90	90	5	6	0	0	0	0	0	0	-11	-15	97	94
	Taxi	19	19	1	1	4	5	0	0	0	0	0	0	0	0	24	25
	Taxi Balanced	38	38	2	2	9	9	0	0	0	0	0	0	0	0	49	49
	Shuttle/Schoolbus			0	0			0	0					0	-1	0	-1
	Truck	1	1	4	4	1	1	0	0	0	0	0	0	-2	-2	4	4
	Total	52	52	96	96	15	16	0	0	0	0	0	0	-13	-18	150	146
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PM	Auto (Total)	7	7	257	139	4	5	2	2	0	0	0	17	-5	-16	265	154
	Taxi	10	10	3	1	4	4	0	0	0	0	0	0	0	0	17	15
	Taxi Balanced	20	20	4	4	8	8	0	0	0	0	0	0	0	0	32	32
	Shuttle/Schoolbus			10	10			0	0					-3	0	7	10
	Truck	0	0	1	1	0	0	0	0	0	0	0	0	-1	0	0	1
	Total	27	27	272	154	12	13	2	2	0	0	0	17	-9	-16	304	197

	Total			Q103 Bus Demand*		
Total Vehicle	In	Out	Total	In	Out	Total
AM	124	334	458	40	128	168
MD	150	146	296	83	83	166
PM	304	197	501	132	87	219

Notes:
25% link trips applied to retail and supermarket uses
80% of resident subway users will be shuttled to subway station at 30th Avenue and 31st Street
10% absentee rate applied for students of the public school.
* 20% of subway demand added to Q103 bus trips.

Table 13-7: Travel Demand Forecast (Generic Supermarket)

Land Use:		Local Retail		Residential		Supermarket		PS School				PS Staff		Existing Industrial			
Size/Units:		84,470 gsf		1,502 DU		25,000 gsf		456 seats				35 staff		-194,700 gsf		Total	
Peak Hour Trips:																	
	AM	390		1,214		165		412				35		NA		2,216	
	MD	2,468		606		198		0				0		NA		3,272	
	PM	1,300		1,334		329		42				35		NA		3,040	
Person Trips:								Off-site		On-site							
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	Auto	4	4	79	315	57	43	21	0	0	0	20	0	NA	NA	181	362
	Taxi	6	6	1	5	0	0	0	0	0	0	0	0	NA	NA	7	11
	Subway	12	12	135	538	1	1	0	0	0	0	6	0	NA	NA	154	551
	Bus	12	12	8	31	5	5	0	0	0	0	4	0	NA	NA	29	48
	Schoolbus							20	0	0	0			NA	NA	20	0
	Walk/Other	161	161	21	81	30	23	21	0	350	0	5	0	NA	NA	588	265
	Total	195	195	244	970	93	72	62	0	350	0	35	0	NA	NA	979	1,237
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	Auto	25	25	98	98	67	67	0	0	0	0	0	0	NA	NA	190	190
	Taxi	37	37	2	2	0	0	0	0	0	0	0	0	NA	NA	39	39
	Subway	74	74	168	168	0	0	0	0	0	0	0	0	NA	NA	242	242
	Bus	74	74	10	10	6	6	0	0	0	0	0	0	NA	NA	90	90
	Schoolbus							0	0	0	0			NA	NA	0	0
	Walk/Other	1,024	1,024	25	25	26	26	0	0	0	0	0	0	NA	NA	1,075	1,075
	Total	1,234	1,234	303	303	99	99	0	0	0	0	0	0	NA	NA	1,636	1,636
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PM	Auto	13	13	281	151	115	106	0	3	0	0	0	20	NA	NA	409	293
	Taxi	20	20	4	2	0	0	0	0	0	0	0	0	NA	NA	24	22
	Subway	39	39	480	259	0	0	0	0	0	0	0	6	NA	NA	519	304
	Bus	39	39	28	15	5	5	0	0	0	0	0	4	NA	NA	72	63
	Schoolbus							0	0	0	0			NA	NA	0	0
	Walk/Other	539	539	74	40	50	48	0	3	0	36	0	5	NA	NA	663	671
	Total	650	650	867	467	170	159	0	6	0	36	0	35	NA	NA	1,687	1,353
Vehicle Trips :																	
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	Auto (Total)	2	2	71	284	51	39	16	16	0	0	17	0	-18	-8	139	333
	Taxi	3	3	1	4	0	0	0	0	0	0	0	0	0	0	4	7
	Taxi Balanced	6	6	5	5	0	0	0	0	0	0	0	0	0	0	11	11
	Shuttle/Schoolbus			11	11			3	3	0	0			0	0	14	14
	Truck	1	1	5	5	1	1	0	0	0	0	0	0	-2	0	5	7
	Total	9	9	92	305	52	40	19	19	0	0	17	0	-20	-8	169	365
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	Auto (Total)	13	13	88	88	51	51	0	0	0	0	0	0	-11	-15	141	137
	Taxi	19	19	1	1	0	0	0	0	0	0	0	0	0	0	20	20
	Taxi Balanced	38	38	2	2	0	0	0	0	0	0	0	0	0	0	40	40
	Shuttle/Schoolbus			0	0			0	0					0	-1	0	-1
	Truck	1	1	4	4	1	1	0	0	0	0	0	0	-2	-2	4	4
	Total	52	52	94	94	52	52	0	0	0	0	0	0	-13	-18	185	180
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PM	Auto (Total)	7	7	253	136	85	79	2	2	0	0	0	17	-5	-16	342	225
	Taxi	10	10	3	1	0	0	0	0	0	0	0	0	0	0	13	11
	Taxi Balanced	20	20	4	4	0	0	0	0	0	0	0	0	0	0	24	24
	Shuttle/Schoolbus			10	10			0	0					-3	0	7	10
	Truck	0	0	1	1	0	0	0	0	0	0	0	0	-1	0	0	1
	Total	27	27	268	151	85	79	2	2	0	0	0	17	-9	-16	373	260

	Total			Q103 Bus Demand*		
	Total Vehicle	In	Out	Total	In	Out	Total
	AM	169	365	534	40	127	167
	MD	185	180	365	78	78	156
	PM	373	260	633	127	81	208

Notes:
25% link trips applied to retail and supermarket uses
80% of resident subway users will be shuttled to subway station at 30th Avenue and 31st Street
10% absentee rate applied for students of the public school.
* 20% of subway demand added to Q103 bus trips.

As shown in Table 13-7 the Proposed Action would result in an increase of 2,216, 3,272, and 3,040 person trips in the weekday AM, midday, and PM peak hours, respectively. Table 13-7 also shows that, compared to the No-Action condition, there would be an increase of approximately 534, 365, and 633 vehicle trips during the weekday AM, midday, and PM peak hours respectively. Vehicles include automobiles, school buses, shuttles, taxis, and trucks. Compared to the No-Action condition, the Proposed Action would generate approximately 705, 484, and 823 additional subway trips and 77, 180, and 135 new bus trips during the weekday AM, midday, and PM peak hours, respectively. Net pedestrian trips (including walk/other, subway and bus trips) would total 1,635, 2,814, and 2,292 during these time periods, respectively. Of these total pedestrian trips, 853, 2,150, and 1,334 would be walk-only trips during the weekday AM, midday, and PM peak hours, respectively, compared to No-Action conditions.

As these numbers of peak hour trips generated by the Proposed Action would exceed the *CEQR Technical Manual* analysis thresholds for vehicular traffic, transit trips, and pedestrian trips (including walk-only, subway and bus trips) during one or more of the peak hours, a Level 2 screening assessment was undertaken to identify specific locations where additional detailed analyses may be warranted.

E. LEVEL 2 SCREENING ASSESSMENT

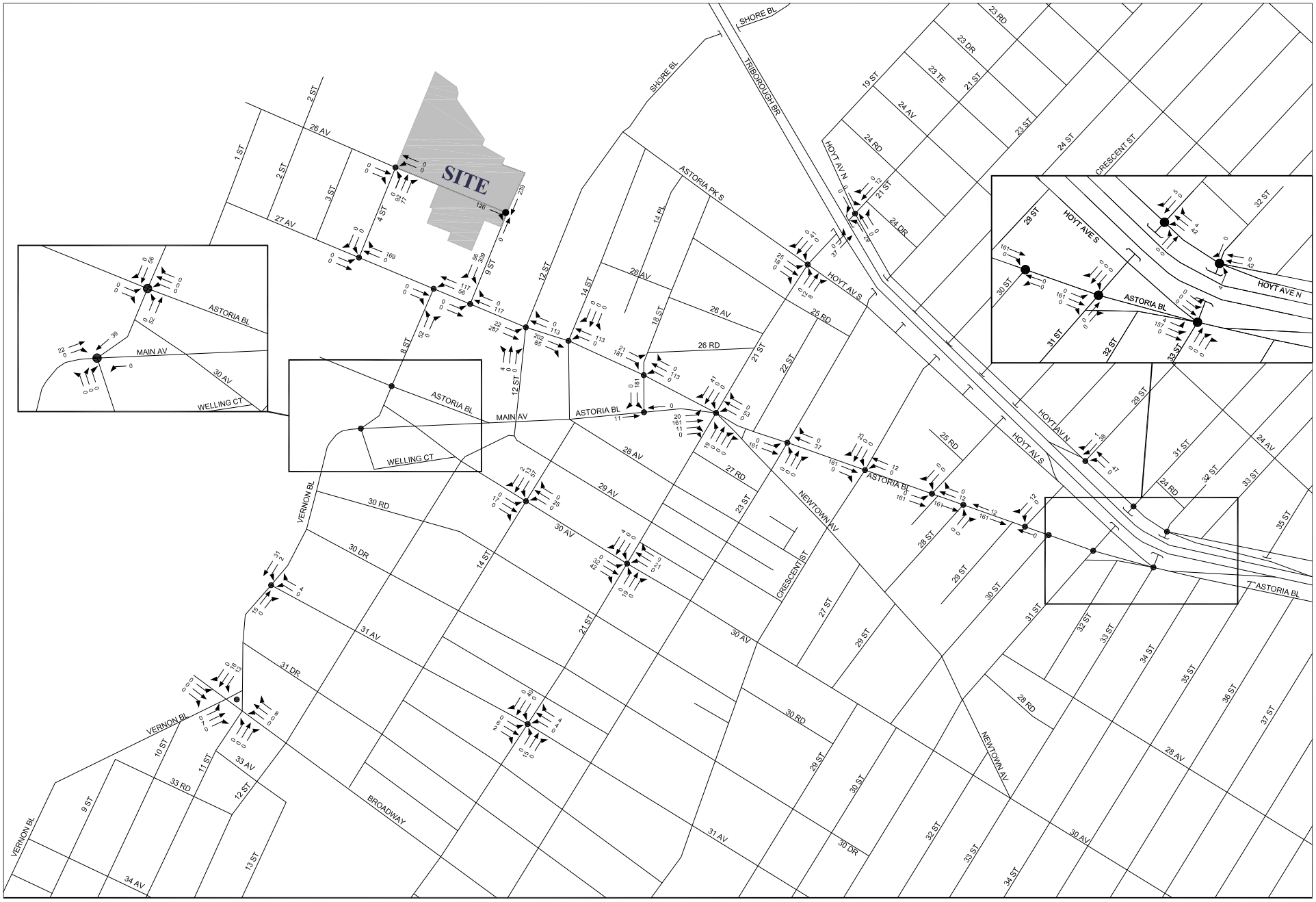
A Level 2 screening assessment involves the assignment and distribution of project-generated trips to the study area street network, transit facilities, and pedestrian elements, and the identification of specific locations where the incremental increase in demand may potentially exceed the *CEQR Technical Manual* analysis thresholds and therefore require a quantitative analysis. These assignments are discussed below for each mode.

Traffic

Figures 13-2, 13-3, and 13-4 show the assignment of vehicle trips (including auto, taxi, school bus, shuttle, and truck trips) generated by the proposed project to and from the project site during the weekday AM, midday, and PM peak hours, respectively. Based on the project-generated traffic shown in Figures 13-2 through 13-4 and in coordination with DCP and NYCDOT, 30 intersections within the study area were selected for detailed analysis to assess for potential significant adverse impacts as a result of the proposed project. These intersections are generally located within the vicinity of the project site and along the primary routes to and from the project site.

The 30 intersections selected for detailed analysis are listed below and their locations are also depicted in Figure 13-5. Of these intersections, 18 are currently signalized and 11 are unsignalized; one additional intersection (26th Avenue and 9th Street) does not exist under existing conditions and would be developed under future No-Action and With-Action conditions.

1. 26th Avenue & 4th Street (unsignalized)
A. 26th Avenue & 9th Street (unsignalized; to be opened under future No-Action and future With-Action conditions)
2. 27th Avenue & 4th Street (unsignalized)
3. 27th Avenue & 8th Street (signalized)
4. 27th Avenue & 12th Street (unsignalized)
5. 27th Avenue & 14th Street (unsignalized)
6. 27th Avenue & 18th Street (unsignalized)
7. Astoria Boulevard & 21st Street (signalized)
8. Astoria Boulevard & 23rd Street (signalized)

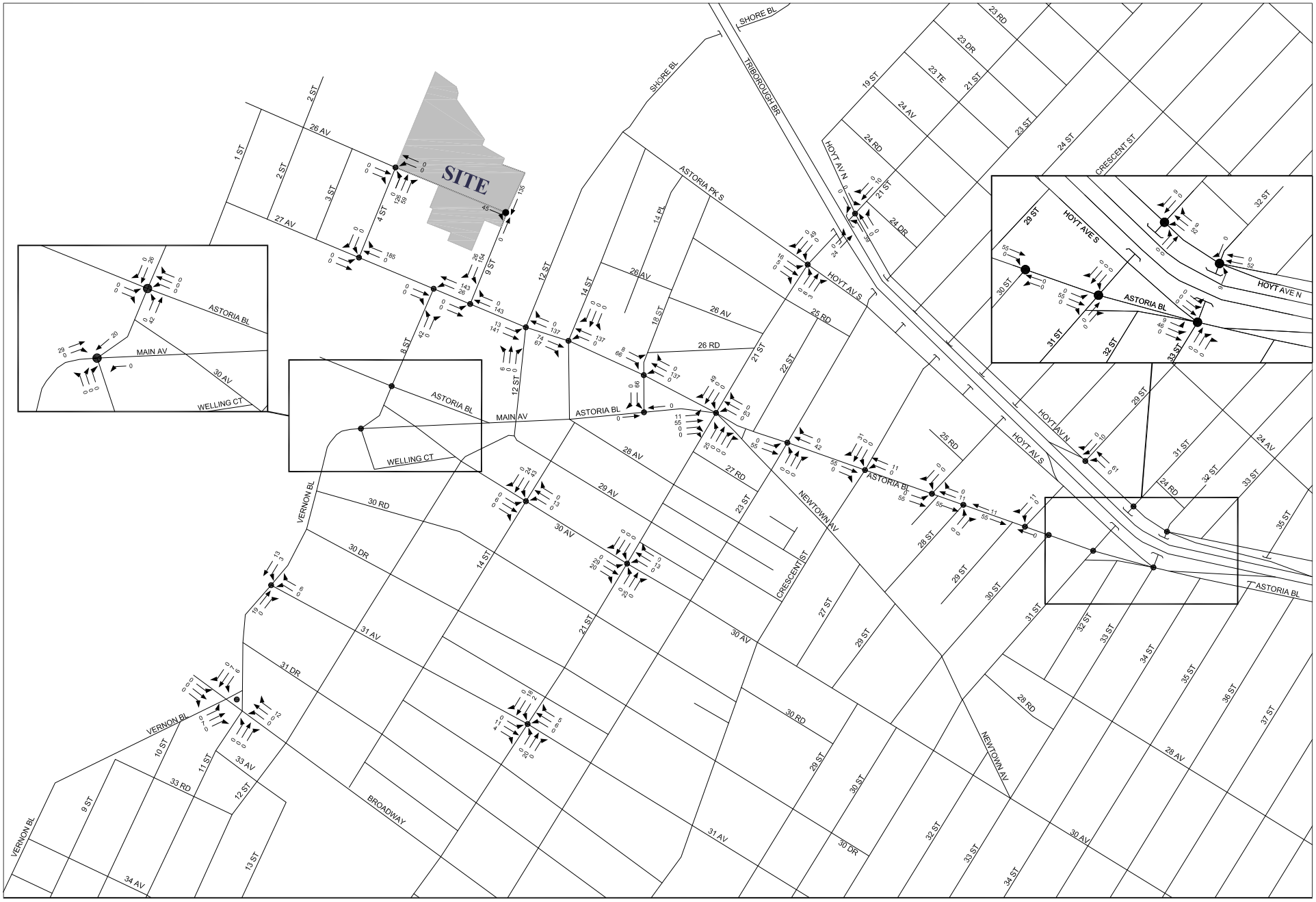


● Analyzed Locations

Astoria Cove

Figure 13-2

With-Action Increment Volumes - AM Peak Hour

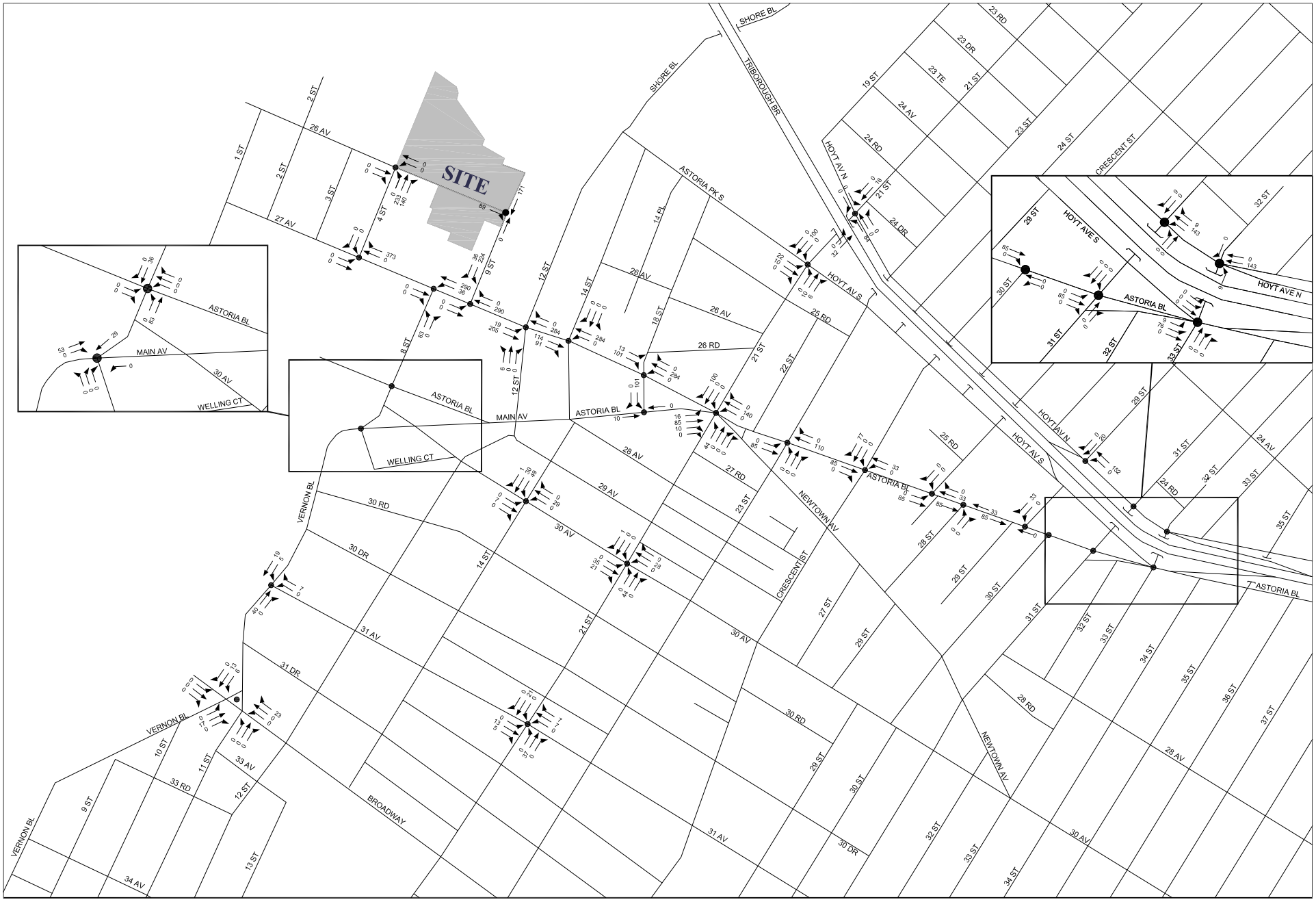


● Analyzed Locations

Astoria Cove

Figure 13-3

With-Action Increment Volumes - Midday Peak Hour



● Analyzed Locations

Astoria Cove

Figure 13-4

With-Action Increment Volumes - PM Peak Hour



● Analyzed Locations

Astoria Cove

Figure 13-5

Traffic Analysis Locations

9. Astoria Boulevard & Crescent Street (signalized)
10. Astoria Boulevard & 27th Street (signalized)
11. Astoria Boulevard & 28th Street (unsignalized)
12. Astoria Boulevard & 29th Street (signalized)
13. Astoria Boulevard & 30th Street (unsignalized)
14. Astoria Boulevard & 31st Street (signalized)
15. Hoyt Avenue South/Astoria Boulevard & 33rd Street (signalized)
16. Hoyt Avenue North & 29th Street (signalized)
17. Hoyt Avenue North & 31st Street (signalized)
18. Astoria Boulevard North & 32nd Street (signalized)
19. Astoria Boulevard & 8th Street (signalized)
20. 30th Avenue & 14th Street (unsignalized)
21. 30th Avenue & 21st Street (signalized)
22. Vernon Boulevard & Welling Court/8th Street (signalized)
23. Astoria Boulevard & 18th Street (unsignalized)
24. Hoyt Avenue North & 21st Street (signalized)
25. Hoyt Avenue South/Astoria Park South & 21st Street (signalized)
26. 27th Avenue & 9th Street (unsignalized)
27. Vernon Boulevard & 31st Avenue (unsignalized)
28. Vernon Boulevard & Broadway & 11th Street (signalized)
29. 31st Avenue & 21st Street (signalized)

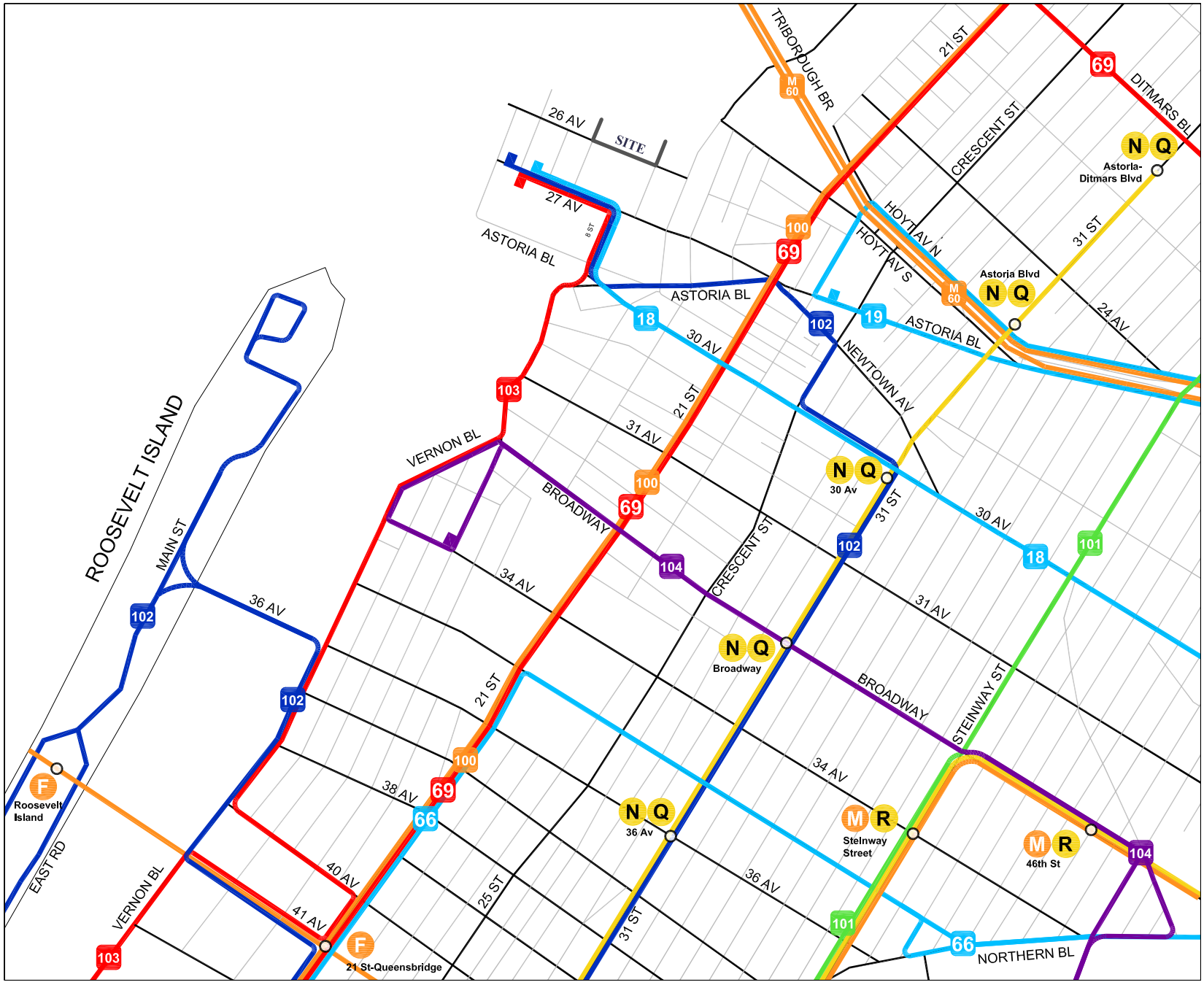
Transit

Subway

As shown earlier in Table 13-7, new peak hour subway trips would be 705, 484, and 823 in the weekday AM, midday and PM peak hours, respectively. According to the general thresholds used by the Metropolitan Transportation Authority—New York City Transit (NYCT) and specified in the *CEQR Technical Manual*, a Level 2 screening assessment is required if a Proposed Action is projected to result in 200 or more peak hour subway trips.

Project generated peak hour subway trips were assigned to the 30th Avenue (N and Q lines) Station and 21st Street-Queensbridge (F line) Station (see Figure 13-6), with the majority of trips allotted to the former. NYCT ridership data shows that the 30th Avenue Station serves nearly twice as many weekday riders as the 21st Street-Queensbridge Station. Considering current station usage, the proximity of stations to the project site, and the shuttle service to the 30th Avenue Station, it was estimated that 80 percent of subway riders would utilize the 30th Avenue Station via shuttle, while the remaining 20 percent would utilize the 21st Street-Queensbridge Station. Therefore, approximately 564, 387, and 658 new subway riders would use the 30th Avenue station during the weekday AM, midday, and PM peak hours, respectively, while ridership would increase by 141, 96, and 165 subway trips at the 21st Street-Queensbridge Station during these peak hours, respectively.

Based on a detailed assignment of these project-generated subway trips to available area subway lines and specific station entrance elements, it was determined that the northwest station-to-street staircase, the platform stairs, and the fare-array elements within the control area at the 30th Avenue (N and Q lines) Station would require detailed analyses as the increment in subway riders would exceed the 200 trips per hour per subway station *CEQR Technical Manual* threshold.



Astoria Cove **Figure 13-6**

Study Area Subway Stations and Bus Routes

Line Haul Analysis Screening Assessment

In addition to the detailed analysis of station elements at the 30th Avenue N & Q subway station, an analysis of line haul conditions on each of the subway routes serving the project site (N, Q, and F) was also conducted.

Bus

According to general thresholds used by NYCT and specified in the *CEQR Technical Manual*, a detailed bus line haul analysis is generally not required if the project-generated increase in passengers assigned to a single bus line (in one direction) is fewer than 50 passengers. As shown in Figure 13-6, the local bus routes servicing the area, with stops near the project site, include the Q18, Q102, and Q103. As the project site is located some distances from the nearest subway stations, project-generated subway trips are expected to use bus-to-subway connections. As a shuttle bus service to and from the 30th Avenue (N and Q lines) Station would be provided for the project's future residences, all project-generated subway trips to this station would use the shuttle bus service. However, project-generated F line subway riders are expected to take the Q103 bus to and from the 21st Street-Queensbridge Station as this route provides a convenient and direct route to/from this station. As a result, the combined project generated increment in bus-only and bus-subway transfer ridership exceeds the *CEQR Technical Manual* threshold on only the Q103 bus route, as shown in Table 13-8. Therefore, a detailed bus line haul analysis for the Q103 bus route was performed for the AM and PM peak hours in both directions.

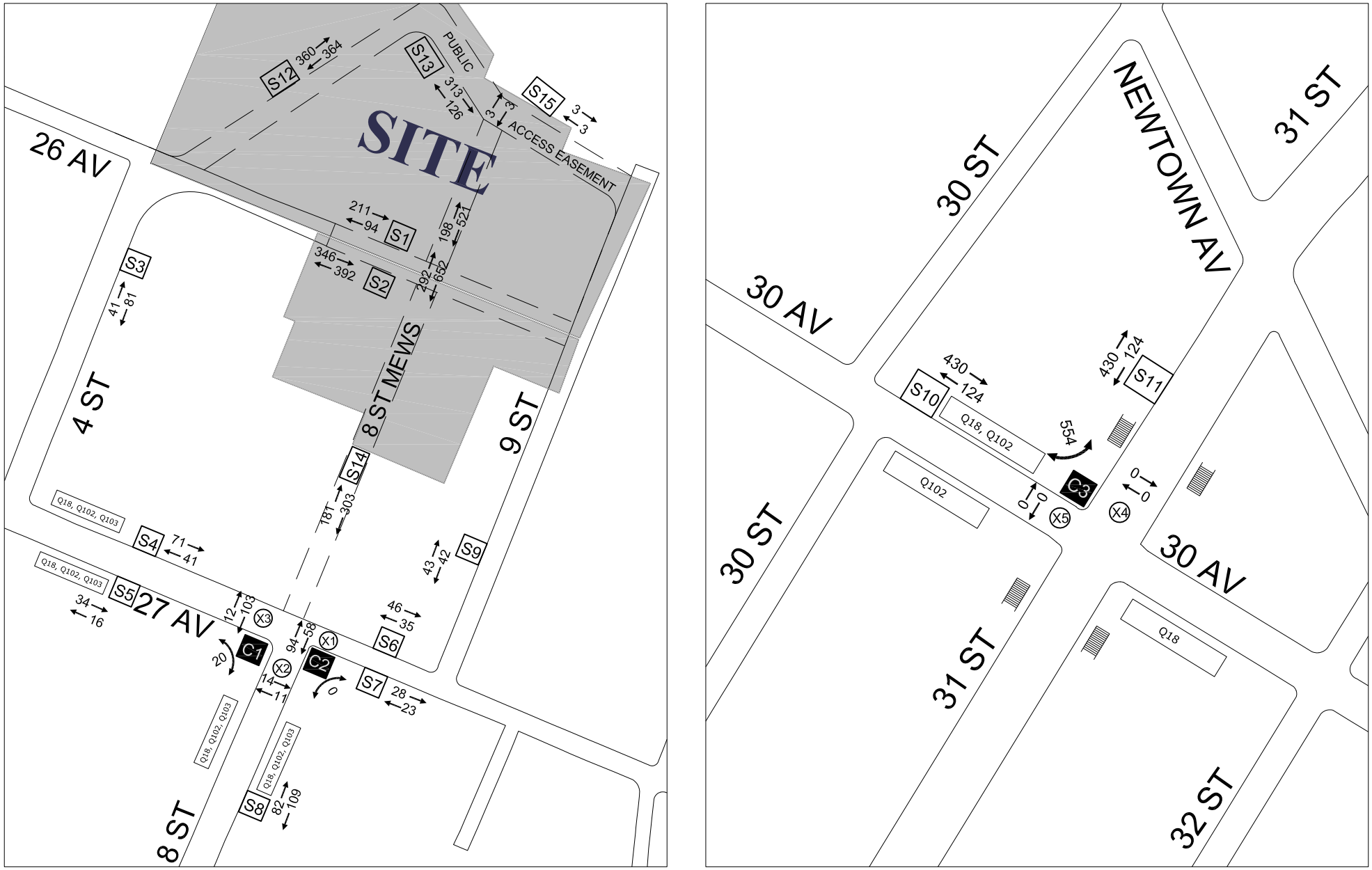
Table 13-8: Bus Line Haul Screening Analysis

Bus	Direction	Bus Only Trips		Subway Linked Bus Trips		Total Bus Trips		Screening Result
		AM	PM	AM	PM	AM	PM	
Q18	To Site	10	24	8	16	18	40	Screened Out
	From Site	16	21	5	19	21	40	
	Total	***26***	***45***	***13***	***35***	***39***	***80***	
Q102	To Site	9	24	8	16	17	40	Screened Out
	From Site	16	21	5	18	21	39	
	Total	***26***	***45***	***13***	***34***	***38***	***79***	
Q103	To Site	10	24	30	103	40	127	Requires detailed analysis
	From Site	16	21	111	60	127	81	
	Total	***26***	***45***	***141***	***163***	***167***	***208***	
Total		***77***	***135***	***167***	***232***	***244***	***367***	

Pedestrians

According to *CEQR Technical Manual* criteria, projected pedestrian volume increases of less than 200 pedestrians per hour at any pedestrian element would not typically be considered a significant impact, since that level of increase would not generally be noticeable and therefore would not require further analysis. As shown in Table 13-7 and as noted above, the proposed project would generate a total of 1,635, 2,814, and 2,292 new pedestrian trips (including walk-only, subway and bus trips) during the weekday AM, midday, and PM peak hours, respectively. Since the project-generated pedestrian trips would exceed the *CEQR Technical Manual* threshold for analysis during each of the peak hours, a Level 2 screening assessment is required.

The project-generated trips were assigned to pedestrian elements within the vicinity of the project site and the nearest subway stations. Based on the pedestrian trip increments shown in Figures 13-7, 13-8, and 13-



LEGEND

S4 Sidewalk

C2 Corner

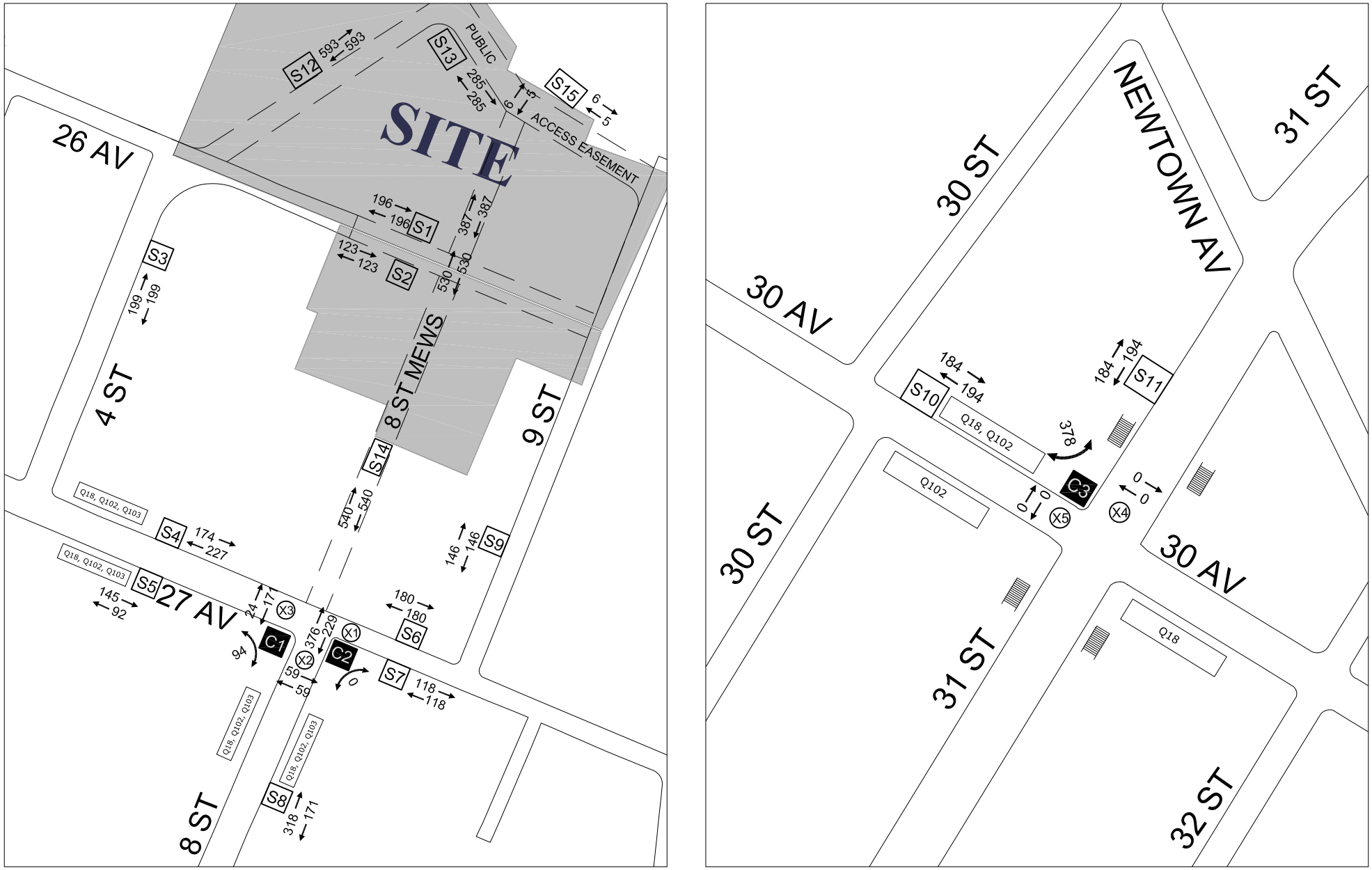
X1 Crosswalk

Proposed Road Geometry

Astoria Cove

Figure 13-7

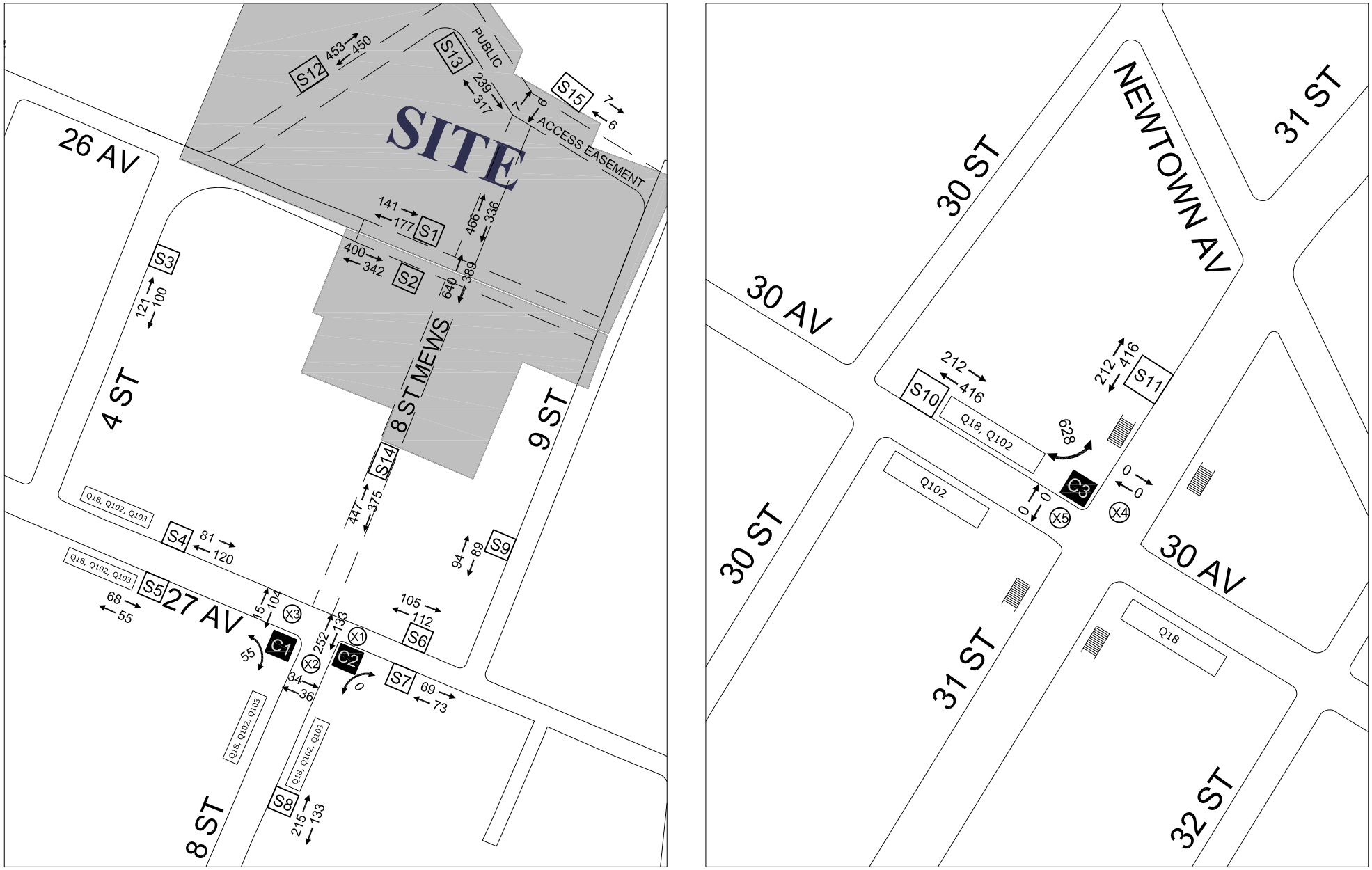
AM Peak Hour Pedestrian Increment



Astoria Cove

Figure 13-8

Midday Peak Hour Pedestrian Increment



LEGEND

S4 Sidewalk

C2 Corner

X1 Crosswalk

Proposed Road Geometry

Astoria Cove

Figure 13-9

PM Peak Hour Pedestrian Increment

9 for the weekday AM, midday, and PM peak periods, respectively, the following existing and proposed sidewalks, corner areas, and crosswalks at several area intersections were selected for a detailed analysis (see Figure 13-10). It should be noted that the sidewalk elements 12 through 15 are only included in the With-Action analysis as they would be created as part of the Proposed Action. No new signalized corners or crosswalks would be introduced on the project site as part of the Proposed Action, and therefore, a detailed analysis of new crosswalk and/or corner elements on the project site is unwarranted pursuant to CEQR.

Sidewalks

1. 26th Avenue east of 4th Street (north)
2. 26th Avenue east of 4th Street (south)
3. 27th Avenue between 4th Street and 8th Street (north)
4. 27th Avenue between 4th Street and 8th Street (south)
5. 27th Avenue between 8th Street and 9th Street (north)
6. 27th Avenue between 8th Street and 9th Street (south)
7. 30th Avenue between 30th Street and 31st Street (north)
8. 4th Street between 26th Avenue and 27th Avenue (east)
9. 8th Street between 27th Avenue and Astoria Boulevard (east)
10. 9th Street north of 27th Avenue (west)
11. 31st Street between Newtown Avenue and 30th Avenue (west)
12. 4th Street between 26th Avenue and the public access easement (west)
13. Public access easement between 4th Street and the 8th Street Mews (south)
14. 8th Street Mews south of 26th Avenue
15. Waterfront esplanade walkway/public access easement (north)

Corners

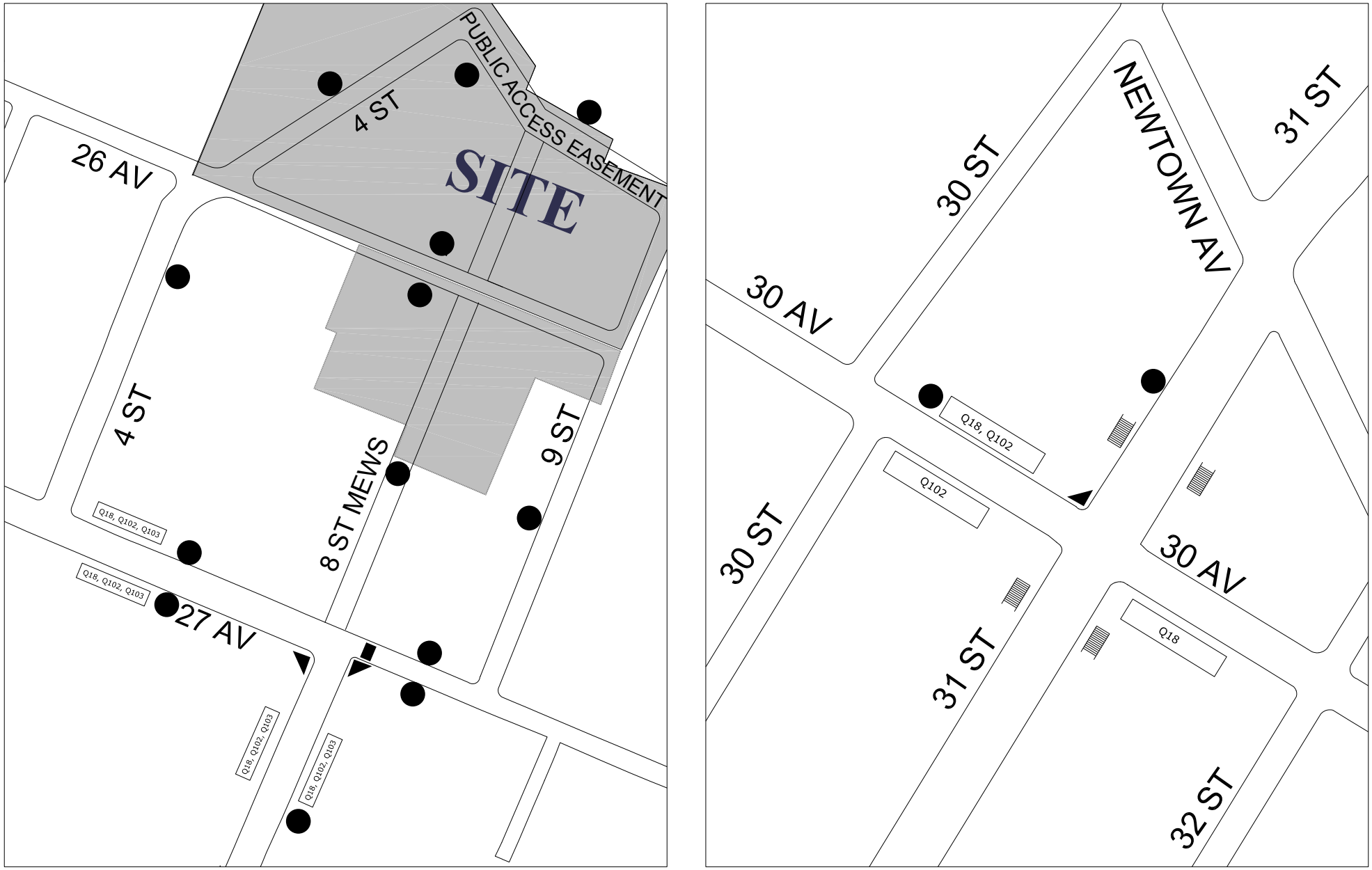
1. 27th Avenue and 8th Street (southeast)
2. 27th Avenue and 8th Street (southwest)
3. 30th Avenue and 31st Street (northwest)

Crosswalks

1. 27th Avenue and 8th Street (east)

Pedestrian and Vehicular Safety Evaluation

According to *CEQR Technical Manual* guidelines, sensitive land uses, including schools, require a detailed pedestrian and vehicular safety evaluation as increased traffic and pedestrian volumes generated by the proposed project may result in increasingly unsafe conditions at documented high-accident locations. In addition, as several new roadways would be created under the Proposed Action, a discussion of potential pedestrian and vehicular safety concerns at these project site locations is warranted. As discussed below in more detail, accident data was obtained from NYCDOT to identify these high-accident locations.



Astoria Cove

Figure 13-**10**

Pedestrian Analysis Locations

F. TRANSPORTATION ANALYSIS METHODOLOGY

Traffic

Analysis Methodology

The capacity analyses at study area intersections are based on the methodology presented in the *Highway Capacity Manual (HCM) Software HCS+ Version 5.5*. Traffic data required for these analyses include the hourly volumes on each approach and various other physical and operational characteristics. Field inventories were conducted to document the physical layout, lane markings, curbside parking regulations, and other relevant characteristics needed for the analysis.

The HCM methodology provides a volume-to-capacity (v/c) ratio for each signalized intersection approach. The v/c ratio represents the ratio of traffic volumes on an approach to the approach's carrying capacity. A ratio of less than 0.90 is generally considered indicative of non-congested conditions in dense urban areas; when higher than this value, the ratio reflects increasing congestion. At a v/c ratio of between 0.95 and 1.0, near-capacity conditions are reached and delays can become substantial. Ratios of greater than 1.0 indicate saturated conditions with queuing. The HCM methodology also expresses quality of flow in terms of level of service (LOS), which is based on the amount of delay that a driver typically experiences at an intersection. LOS range from A, with minimal delay (10 seconds or less per vehicle), to F, which represents long delays (greater than 80 seconds per vehicle).

For unsignalized intersections, the HCM methodology generally assumes that major street traffic is not affected by minor street flows. Left turns from the major street are assumed to be affected by the opposing (or oncoming) major street flow. Minor street traffic is obviously affected by all conflicting movements. Similar to signalized intersections, HCM methodology expresses the quality of flow at un-signalized intersections in terms of LOS based on the amount of delay that a driver experiences. This relationship differs somewhat from the criteria used for signalized intersections, primarily because drivers expect different levels of performance from the two different kinds of transportation facilities. For unsignalized intersections, LOS range from A, with minimal delay (10 seconds or less per vehicle), to F, which represents long delays (over 50 seconds per vehicle).

Table 13-9 shows the LOS/delay relationship for signalized and unsignalized intersections using the HCM methodology. LOS A, B, and C generally represent highly favorable to fair levels of traffic flow. At LOS D, the influence of congestion becomes noticeable. LOS E is considered to be the limit of acceptable delay, and LOS F is considered to be unacceptable to most drivers. In this study, a signalized lane grouping operating at LOS E or F or a v/c ratio of 0.90 or above is identified as congested.

Table 13-9: Intersection LOS Criteria

LOS	Average Delay per Vehicle (seconds)	
	Signalized Intersections	**Un-signalized Intersections**
A	0 - 10	0 - 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

Source: 2000 *Highway Capacity Manual.*

Significant Impact Criteria

The identification of significant adverse traffic impacts at analyzed intersections is based on criteria presented in the *CEQR Technical Manual*. According to *CEQR Technical Manual* criteria, if a lane group under the With-Action condition is within LOS A, B, C, or marginally acceptable LOS D (average control delay less than or equal to 45 seconds/vehicle for signalized intersections or less than or equal to 30.0 seconds/vehicle for un-signalized intersections), the impact is not considered significant. If the lane group LOS deteriorates from LOS A, B, or C in the No-Action condition to worse than mid-LOS D (i.e., delay greater than 45 seconds/vehicle at signalized intersections or 30.0 seconds/vehicle for un-signalized intersections) or to LOS E or F under the With-Action condition, then a significant traffic impact has occurred. For a lane group operating at LOS D under the No-Action condition, an increase of five or more seconds is considered significant if the With-Action delay exceeds mid-LOS D. For a lane group operating at LOS E under the No-Action condition, an increase in projected delay of 4 or more seconds is considered significant, and for a lane group operating at LOS F under the No-Action condition, an increase in projected delay of 3 or more seconds is considered significant. For unsignalized intersections, the same criteria used for signalized intersections would apply. Pursuant to CEQR, for a minor street to trigger a significant impact, 90 Passenger Car Equivalents (PCEs) in any peak hour must be identified in the future With-Action condition.

Transit

Subway

Analysis Methodology

The methodology presented in the *CEQR Technical Manual* for assessing subway station pedestrian circulation elements (stairs, escalators, and passageways), fare control elements (regular turnstiles, high entry/exit turnstiles [HEETs], and high exit turnstiles) compares existing and projected pedestrian volumes with the element's design capacity to yield a v/c ratio. All analyses reflect pedestrian flow volumes over a 15-minute interval during each peak hour.

The estimated v/c ratio is compared to NYCT criteria to determine an LOS for the operation of an element. Table 13-10 shows the LOS and corresponding v/c ratios for all subway station elements. Six levels of service are defined with letters A through F. LOS A is representative of free flow conditions without pedestrian conflicts and LOS F depicts severe congestion and queuing.

Table 13-10: LOS Criteria for Subway Station Elements

LOS	Description	V/C Ratio
A	Free Flow	0.00 to 0.45
B	Fluid Flow	0.45 to 0.70
C	Fluid, somewhat restricted	0.70 to 1.00
D	Crowded, walking speed restricted	1.00 to 1.33
E	Congested, some shuffling and queuing	1.33 to 1.67
F	Severely congested, queued	> 1.67

Source: *CEQR Technical Manual*

Stairways and Passageways

Under *CEQR Technical Manual* guidelines, the capacity of a stairway or passageway is determined based on four factors: the NYCT guideline capacity, the effective width, and surging and counter-flow factors, if applicable. NYCT guideline capacity is 10 passengers per foot per minute (pfm) for stairs and 15 pfm for passageways. The effective width of a stair or passageway is the actual width adjusted to reflect pedestrian avoidance of sidewalls and center handrails, if present. A surging factor is applied to existing pedestrian volumes to reflect conditions where pedestrian flows tend to be concentrated (or surged) during shorter periods within the 15-minute analysis interval. This factor, which is based on the size of the station and the proximity of the pedestrian element to the station platforms, can reduce the calculated capacity by up to 25 percent. Lastly, a friction (or counter-flow) factor reducing calculated capacity by 10 percent is applied where opposing pedestrian flows use the same stair or passageway. No friction factor is applied if the flow is all or predominantly in one direction.

Escalators and Turnstiles

By contrast with stairways and passageways, under *CEQR Technical Manual* guidelines the capacity of an escalator or turnstile is determined based on only two factors: the NYCT guideline capacity for a 15-minute interval and a surging factor of up to 25 percent.

Line Haul

An analysis of line haul capacity addresses the ability of trains to accommodate passenger loads. The analysis determines whether there is sufficient capacity per car per train to handle existing and projected future transit loads at the maximum load point of a subway line or at the location where the addition of project-generated passengers to No-Action passenger volumes would be greatest. Line haul capacity analyses are based on per-car practical guidelines used by NYCT. These are 110 passengers per car for a 51-foot subway car, 145 passengers per car for a 60-foot car, and 175 passengers per car for a 75-foot car.

Significant Impact Criteria

The *CEQR Technical Manual* identifies a significant impact for stairways and passageways in terms of the minimum width increment threshold (WIT) based on the minimum amount of additional capacity that would be required to restore conditions to either their No-Action v/c ratio or to a v/c ratio of 1.00 (LOS C/D), whichever is greater. Stairways that are substantially degraded in level of service or that experience the formation of extensive queues are classified as significantly impacted. Significant adverse stairway or passageway impacts are typically considered to have occurred once the thresholds shown in Table 13-11 are reached or exceeded.

For turnstiles, escalators, and high-wheel exit gates, the *CEQR Technical Manual* defines a significant impact as an increase from a No-Action v/c ratio of below 1.00 to a v/c ratio of 1.00 or greater. Where a facility is already at a v/c ratio of 1.00 or greater, a 0.01 change in v/c ratio is also considered significant.

For subway line haul conditions, *CEQR Technical Manual* criteria specify that any increases in load levels that remain within practical capacity limits are generally not considered significant impacts. However, projected increases from a No-Action to a With-Action condition that exceeds practical capacity may be considered significant impacts if the Proposed Action generates five or more additional passengers per car.

Table 13-11: Significant Impact Thresholds for Stairways and Passageways

With-Action V/C Ratio	WIT for Significant Impact (inches)	
	Stairway	Passageway
1.00-1.09	8	13
1.10-1.19	7	11.5
1.20-1.29	6	10
1.30-1.39	5	8.5
1.40-1.49	4	6
1.50-1.59	3	4.5
≥1.6	2	3

Source: *CEQR Technical Manual*

Bus

Analysis Methodology

The operating conditions for bus service are measured in terms of the number of passengers carried per bus at the maximum load point for each route. This is determined by dividing the peak hour passenger count by the number of buses during that hour. The bus load levels are compared with the loading guidelines of 54 passengers for a 40-foot standard bus and 85 passengers for a 60-foot articulated bus. The bus analyses focus on the weekday AM and PM commuter peak hours as it is during these periods that overall demand on the bus system is usually highest.

Significant Impact Criteria

According to the *CEQR Technical Manual* and NYCT and MTA Bus Company guidelines, additional bus service along a route is recommended when load levels exceed maximum guideline capacity at the route's maximum load point. A significant impact is considered at the route's maximum load point where an increase in bus load levels would exceed the maximum capacity. NYCT's and MTA Bus Company's general policy is to provide additional bus service where demand warrants increased service, taking into account fiscal and operational constraints.

Pedestrians

Analysis Methodology

Peak 15-minute pedestrian flow conditions during the weekday AM and PM peak hours are analyzed using the 2000 *Highway Capacity Manual* methodology and procedures outlined in the *CEQR Technical Manual*. Using this methodology, the congestion level of pedestrian facilities is determined by considering pedestrian volume, measuring the sidewalk or crosswalk width, determining the available pedestrian capacity and developing a ratio of volume flows to capacity conditions. The resulting ratio is then compared with LOS standards for pedestrian flow, which define a qualitative relationship at a certain pedestrian traffic concentration level. The evaluation of street crosswalks and corners is more complicated as these spaces cannot be treated as corridors due to the time incurred waiting for traffic lights. To effectively evaluate these facilities, a "time-space" analysis methodology is employed which takes into consideration the traffic light cycle at intersections.

LOS standards are based on the average area available per pedestrian during the analysis period, typically expressed as a 15-minute peak period. LOS grades from A to F are assigned, with LOS A representative of free flow conditions without pedestrian conflicts and LOS F depicting significant capacity limitations and inconvenience. Table 13-12 defines the LOS criteria for pedestrian crosswalk/corner area and sidewalk conditions, as based on the *Highway Capacity Manual* methodology.

The analysis of sidewalk conditions includes a "platoon" factor in the calculation of pedestrian flow to more accurately estimate the dynamics of walking. "Platooning" is the tendency of pedestrians to move in bunched groups or "platoons" once they cross a street where cross traffic required them to wait for a signal. Platooning generally results in a level of service one level poorer than that determined for average flow rates.

Table 13-12: Pedestrian Crosswalk/Corner Area and Sidewalk Levels of Service Descriptions

LOS	Description	Crosswalk/Corner Area and Non-Platoon Sidewalk Criteria (sf/ped)	Platoon Sidewalk Criteria (sf/ped)
A	(Unrestricted)	> 60	> 530
B	(Slightly Restricted)	>40 – 60	> 90 - 530
C	(Restricted but fluid)	> 24 – 40	> 40 - 90
D	(Restricted, necessary to continuously alter walking stride and direction)	> 15 – 24	> 23 - 40
E	(Severely restricted)	> 8 – 15	> 11 - 23
F	(Forward progress only by shuffling; no reverse movement possible)	≤ 8	≤ 11

Notes: Based on average conditions for 15 minutes
sf/ped = square feet of area per pedestrian
Sources: 2000 *Highway Capacity Manual*, 2014 *CEQR Technical Manual*

Significant Impact Criteria

Sidewalks

As the project site is not located within a Central Business District (CBD), *CEQR Technical Manual* criteria define a significant adverse sidewalk impact to have occurred under platoon conditions if the average pedestrian space under the No-Action condition is greater than 44.3 sf/ped of effective sidewalk width, and the average pedestrian space under the With-Action condition is less than or equal to 40.0 sf/ped (LOS D or worse). If the average pedestrian space under the With-Action condition is greater than 40.0 sf/ped (LOS C or better), the impact should not be considered significant. If the No-Action pedestrian space is between 6.4 and 44.3 sf/ped, a decrease in the average pedestrian space under the With-Action condition should be considered significant based on Table 13-13, which shows a sliding-scale that identifies what decrease in pedestrian space is considered a significant impact for a given pedestrian space value in the No-Action condition. If the decrease in average pedestrian space is less than the value indicated in Table 13-13, the impact is not considered significant. If the average pedestrian space under the No-Action condition is less than 6.4 sf/ped, then a decrease in pedestrian space greater than or equal to 0.3 sf/ped under the With-Action condition should be considered significant.

Table 13-13: Significant Impact Criteria for Sidewalks with Platooned Flow in a Non-CBD Location

No-Action Condition Pedestrian Space (sf/ped)			With-Action Condition Pedestrian Space Reduction to be Considered a Significant Impact (sf/ped)
> 44.3			With Action Condition ≤ 40.0
43.5	to	44.3	Reduction ≥ 4.3
42.5	to	43.4	Reduction ≥ 4.2
41.6	to	42.4	Reduction ≥ 4.1
40.6	to	41.5	Reduction ≥ 4.0
39.7	to	40.5	Reduction ≥ 3.9
38.7	to	39.6	Reduction ≥ 3.8
37.8	to	38.6	Reduction ≥ 3.7
36.8	to	37.7	Reduction ≥ 3.6
35.9	to	36.7	Reduction ≥ 3.5
34.9	to	35.8	Reduction ≥ 3.4
34.0	to	34.8	Reduction ≥ 3.3
33.0	to	33.9	Reduction ≥ 3.2
32.1	to	32.9	Reduction ≥ 3.1
31.1	to	32.0	Reduction ≥ 3.0
30.2	to	31.0	Reduction ≥ 2.9
29.2	to	30.1	Reduction ≥ 2.8
28.3	to	29.1	Reduction ≥ 2.7
27.3	to	28.2	Reduction ≥ 2.6
26.4	to	27.2	Reduction ≥ 2.5
25.4	to	26.3	Reduction ≥ 2.4
24.5	to	25.3	Reduction ≥ 2.3
23.5	to	24.4	Reduction ≥ 2.2
22.6	to	23.4	Reduction ≥ 2.1
21.6	to	22.5	Reduction ≥ 2.0
20.7	to	21.5	Reduction ≥ 1.9
19.7	to	20.6	Reduction ≥ 1.8
18.8	to	19.6	Reduction ≥ 1.7
17.8	to	18.7	Reduction ≥ 1.6
16.9	to	17.7	Reduction ≥ 1.5
15.9	to	16.8	Reduction ≥ 1.4
15.0	to	15.8	Reduction ≥ 1.3
14.0	to	14.9	Reduction ≥ 1.2
13.2	to	13.9	Reduction ≥ 1.1
12.1	to	13.0	Reduction ≥ 1.0
11,2	to	12.0	Reduction ≥ 0.9
10.2	to	11.1	Reduction ≥ 0.8
9.3	to	10.1	Reduction ≥ 0.7
8.3	to	9.2	Reduction ≥ 0.6
7.4	to	8.2	Reduction ≥ 0.5
6.4	to	7.3	Reduction ≥ 0.4
< 6.4			Reduction ≥ 0.3

Source: 2014 *CEQR Technical Manual*

Table 13-14: Significant Impact Criteria for Corners and Crosswalks in a Non-CBD Location

No-Action Condition Pedestrian Space (sf/ped)			With-Action Condition Pedestrian Space Reduction to be Considered a Significant Impact (sf/ped)
> 26.6			With Action Condition ≤ 24.0
25.8	to	26.6	Reduction ≥ 2.6
24.9	to	25.7	Reduction ≥ 2.5
24	to	24.8	Reduction ≥ 2.4
23.1	to	23.9	Reduction ≥ 2.3
22.2	to	23	Reduction ≥ 2.2
21.3	to	22.1	Reduction ≥ 2.1
20.4	to	21.2	Reduction ≥ 2.0
19.5	to	20.3	Reduction ≥ 1.9
18.6	to	19.4	Reduction ≥ 1.8
17.7	to	18.5	Reduction ≥ 1.7
16.8	to	17.6	Reduction ≥ 1.6
15.9	to	16.7	Reduction ≥ 1.5
15	to	15.8	Reduction ≥ 1.4
14.1	to	14.9	Reduction ≥ 1.3
13.2	to	14	Reduction ≥ 1.2
12.3	to	13.1	Reduction ≥ 1.1
11.4	to	12.2	Reduction ≥ 1.0
10.5	to	11.3	Reduction ≥ 0.9
9.6	to	10.4	Reduction ≥ 0.8
8.7	to	9.5	Reduction ≥ 0.7
7.8	to	8.6	Reduction ≥ 0.6
6.9	to	7.7	Reduction ≥ 0.5
6	to	6.8	Reduction ≥ 0.4
5.1	to	5.9	Reduction ≥ 0.3
< 5.1			Reduction ≥ 0.2

Source: 2014 *CEQR Technical Manual*

Corner Areas and Crosswalks

For non-CBD areas, *CEQR Technical Manual* criteria define a significant adverse corner area or crosswalk impact to have occurred if the average pedestrian space under the No-Action condition is greater than 26.6 square feet/pedestrian (sf/ped) and, under the With-Action condition, the average pedestrian space decreases to 24 sf/ped or less (LOS D or worse). If the pedestrian space under the With-Action condition is greater than 24 sf/ped (LOS C or better), the impact should not be considered

significant. If the average pedestrian space under the No-Action condition is between 5.1 and 26.6 sf/ped, a decrease in pedestrian space under the With-Action condition should be considered significant based on Table 13-14 which shows a sliding-scale that identifies what decrease in pedestrian space is considered a significant impact for a given amount of pedestrian space in the No-Action condition. If the decrease in pedestrian space is less than the value in Table 13-14, the impact is not considered significant. If the average pedestrian space under the No-Action condition is less than 5.1 sf/ped, then a decrease in pedestrian space greater than or equal to 0.2 sf/ped should be considered significant.

Pedestrian and Vehicular Safety Evaluation

Under *CEQR Technical Manual* guidelines, an evaluation of vehicular and pedestrian safety is needed for locations within the traffic and pedestrian study areas that have been identified as high accident locations. These are defined as locations where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes have occurred in any consecutive 12 months of the most recent three-year period for which data are available. For these locations, accident trends would be identified to determine whether projected vehicular and pedestrian traffic would further impact safety, or whether existing unsafe conditions could adversely impact the flow of the projected new trips. 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 should be identified and coordinated with NYCDOT.

Parking

The parking analysis identifies the extent to which on- and off-street parking is available and utilized under existing and future conditions and estimates the parking demand resulting from the proposed project during peak periods. 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 the Proposed Acton.

G. TRAFFIC

Existing Conditions

Study Area Network

Due to the proximity of the Astoria Cove project site to the Halletts Point project site to the west, many intersections included as part of this traffic analysis overlap with the intersections analyzed as part of the Halletts Point FEIS. Therefore at the request of DCP, the 2011 existing conditions traffic network presented as part of the Halletts Point FEIS traffic analyses was utilized to create a baseline traffic network for this EIS. Traffic data was collected at the following three intersections identified for analysis in this EIS as these locations were not included in the Halletts Point FEIS baseline network: 26th Avenue at 4th Street (unsignalized), 30th Avenue at 14th Street (unsignalized), and 30th Avenue at 21st Street (signalized). The 2012 baseline traffic volume network was developed by combining the baseline Halletts Point FEIS network with traffic count data collected and existing street conditions recorded at the three additional analyzed intersections. Lastly, a one year background growth rate (*CEQR Technical Manual* guideline suggests a rate of 0.5 percent be applied for the first five years of background growth) was applied to the baseline Halletts Point FEIS 2011 traffic network, supplemented with the additional data discussed above, to create the 2012 representative traffic network analyzed in this EIS.

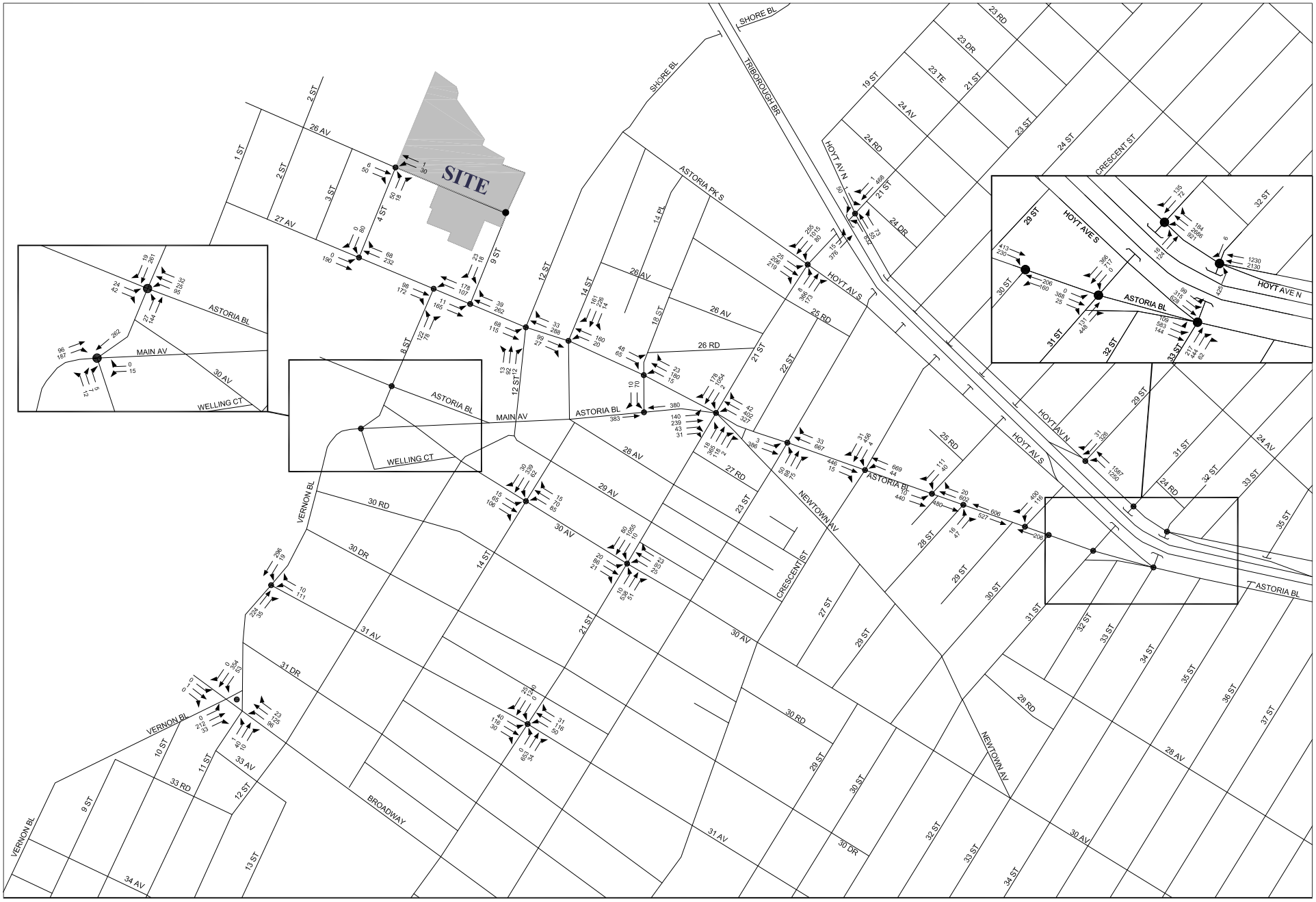
Twenty-nine existing intersections within the primary traffic study area (bounded by Hoyt Avenue North to the north, Broadway to the south, 33rd Street to the east, and 4th Street to the west) were included in the detailed traffic analysis discussed below. Of these 29 intersections, which are shown in Figure 13-5, currently 18 are signalized and 11 are unsignalized.

Existing traffic volumes for the weekday AM, midday, and PM peak hours at analyzed intersections are shown in Figures 13-11, 13-12, and 13-13, respectively.
The roadway network around the project site generally consists of a grid of local streets within the Astoria neighborhood in Western Queens. The network provides access to major City and regional connections, including the Grand Central Parkway (GCP), the Robert F. Kennedy Bridge (RFK Bridge), the Brooklyn-Queens Expressway (BQE), and the Ed Koch Queensboro/59th Street Bridge to the south. The study area's key north-south roadways include Vernon Boulevard, 21st Street, and 31st Street. Key east-west roadways within the study area include Hoyt Avenue, GCP, Astoria Boulevard, and 27th Avenue.

Vernon Boulevard is a two-way north-south street along the East River waterfront in Queens. The roadway extends from Borden Avenue in Hunter's Point (to the south) to Main Avenue in Astoria (to the north). Vernon Boulevard between Main Avenue and Broadway is traversed by approximately 250 to 300 vehicles per hour (vph), 200 to 300 vph, and 300 to 500 vph in the northbound direction in the AM, midday, and PM peak hours, respectively. Southbound vehicular volumes are approximately 300 to 400, 200 to 250, and 200 to 300 vph in the AM, midday, and PM peak hours, respectively. Within the study area, the road operates with one travel lane and a buffered bike lane in each direction. In addition, Vernon Boulevard is a local truck route and has local bus service with the Q103, which provides weekday-only service between Astoria and Hunters Point. Curbside parking is found in the northbound direction.

21st Street is also a two-way north-south street that runs between Hunter's Point (from Borden Avenue in the south) and Astoria (from 20th Avenue in the north). The roadway provides direct access to the Ed Koch Queensboro Bridge and the Queens Midtown Tunnel. 21st Street between 24th Drive and 31st Avenue is traversed in the northbound direction, by approximately 500 to 700 vph, 350 to 850 vph, and 650 to 1,200 vph in the weekday AM, midday, and PM peak hours, respectively. For the southbound direction, volumes are 1,100 to 1,350 vph, 550 to 900 vph, and 700 to 1,000 vph in the AM, midday and PM peak hours, respectively. Within the study area, and south of the RFK Bridge, 21st Street operates with two lanes and a parking lane in each direction. North of the RFK Bridge, it provides one lane, a Class II bike lane, and a parking lane in each direction. In addition, 21st Street is a local truck route and is served by multiple local bus routes: the Q66, which provides daily service between Flushing and Long Island City; the Q69, which operates daily between Long Island City and Jackson Heights; and the Q100, which provides limited-stop service between Long Island City and Riker's Island.

31st Street is a two-way north-south street extending from Northern Boulevard and 40th Avenue near Queens Plaza (in the south) to 20th Avenue in Astoria (to the north). 31st Street generally carries approximately 200 to 500 vehicles during the weekday peak hours in both northbound and southbound directions. As 31st Street intersects Hoyt Avenue North and Hoyt Avenue South at Triborough Plaza, the range in northbound and southbound vehicle volume increases to 550 to 750 vph and 600 to 1,100 vph, respectively during all peak hours. The on- and off-ramp connections to the RFK Bridge and GCP are located at this junction. The road typically consists of one travel lane and a parking lane in each direction. Elevated tracks and stations for the N/Q subway lines are located directly above the roadway. In addition, 31st Street is served by the Q102 local bus route, which operates daily between Roosevelt Island and Astoria.

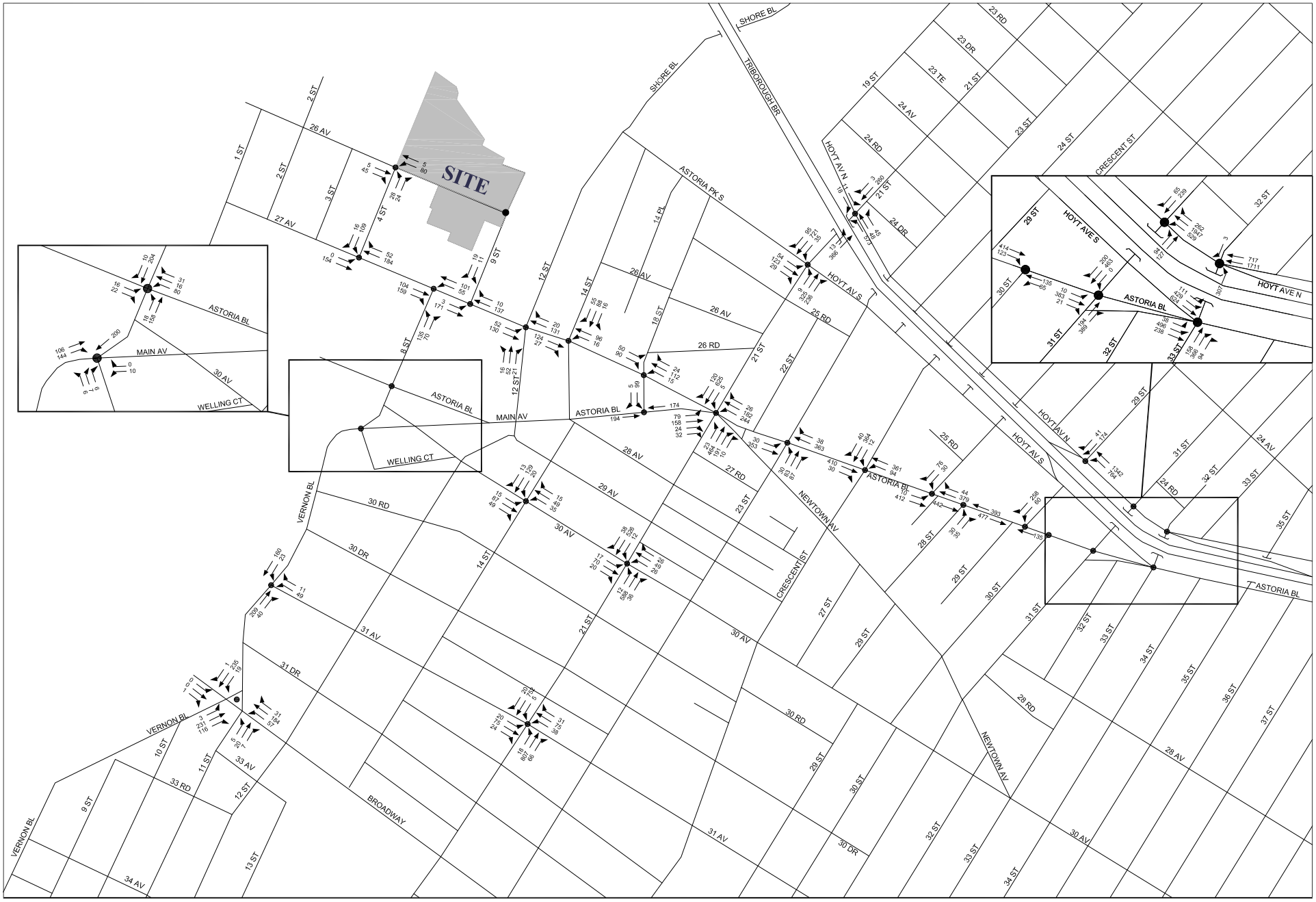


● Analyzed Locations

Astoria Cove

Figure 13-11

Existing Volumes - AM Peak Hour

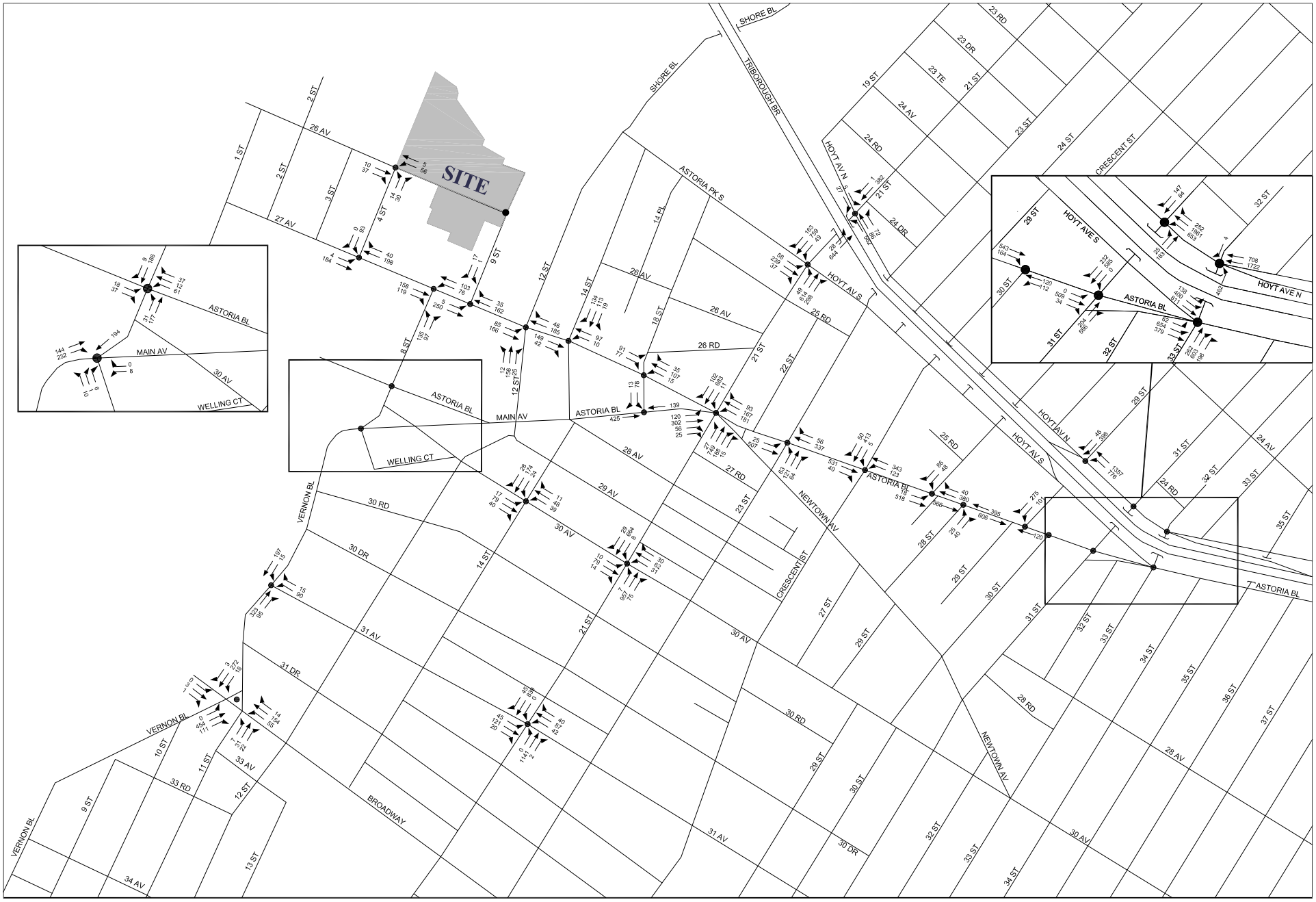


● Analyzed Locations

Astoria Cove

Figure 13-12

Existing Volumes - Midday Peak Hour



● Analyzed Locations

Astoria Cove

Figure 13-13

Existing Volumes - PM Peak Hour

Hoyt Avenue, a designated truck route, operates as Hoyt Avenue North in the westbound direction and Hoyt Avenue South in the eastbound direction. Hoyt Avenue South carries approximately 350 to 750 vph west of 29th Street and 1,050 to 1,450 vph between 29th and 33rd Streets. West of 29th Street, Hoyt Avenue North carries approximately 950 to 1,600 vph during the AM peak hour and 650 to 1,400 vph during the midday and PM peak hours. Between 29th and 31st Streets, volumes along Hoyt Avenue North are approximately 2,800 vph in the AM peak hour and 2,100 vph in the midday and PM peak hours. West of 32nd Street, the roadway functions as a service road to the GCP and typically provides three to four travel lanes to traffic; more at GCP merge/diverge points. Additionally, a parking lane and a Class II bike lane are provided in each direction. Hoyt Avenue is served by the Q19 local bus route, which operates daily between Flushing and Astoria, as well as the M60, which provides daily service between Morningside Heights, Manhattan, and LaGuardia Airport.

The GCP is a major east-west parkway with three lanes in each direction. The highway extends from the RFK Bridge in the west to Long Island in the east where it becomes the Northern State Parkway at the Queens-Nassau County border. The GCP carries heavy traffic between the Bronx and Manhattan and between Queens and Long Island, as well as providing direct connection to LaGuardia Airport in East Elmhurst, Queens. The GCP is also a truck route between the RFK Bridge and the BQE.

Astoria Boulevard is an east-west thoroughfare running between the Astoria Houses Campus in the west to access points to the GCP and Whitestone Expressway in the east. The roadway is one-way eastbound west of 31st Street. East of 31st Street, Astoria Boulevard functions as the eastbound and westbound service road to the GCP after merging with Hoyt Avenue South and Hoyt Avenue North, respectively. Approximately, 200 to 500 vph in the eastbound direction and 125 to 375 vph in the westbound direction travel along Astoria Boulevard between 8th and 21st Streets. Between 21st and 31st Streets, traffic volumes increase to 400 to 700 vph and 250 to 750 vph in the eastbound and westbound directions, respectively. Astoria Boulevard is also a local truck route and is served by the Q19 local bus route, which operates daily between Flushing and Astoria, and the M60, which provides daily service between Morningside Heights, Manhattan, and LaGuardia Airport.

27th Avenue is a two-way east-west road that runs between 1st Street from the west and 21st Street to the east where it merges with Astoria Boulevard. The street provides one travel lane in each direction with parking typically on either side. Between 18th and 21st Streets, 27th Avenue is one-way westbound only. 27th Avenue serves as the primary east-west access route to the peninsula the project site is located in. Between 4th Street and 21st Street, 27th Avenue has eastbound traffic volumes ranging from approximately 100 to 250 vph in the AM and PM peak hours and 150 to 275 in the midday peak hour. Westbound traffic volumes range from approximately 175 to 325 vph, 100 to 250 vph, and 150 to 300 vph in the AM, midday, and PM peak hours, respectively.

8th Street is a two-way street with one travel lane, a parking lane, and a Class II bike lane in each direction. It is the primary north-south access to the peninsula and extends between 27th Avenue to the north and Main Avenue to the south. During all weekday peak hours, traffic volumes along 8th Street range from approximately 175 to 200 vph and 200 to 300 vph in the northbound and southbound directions, respectively. 8th is served by multiple local bus routes: the Q18, which operates daily between Maspeth and Astoria; the Q102, which operates daily between Roosevelt Island and Astoria; and the Q103, which provides weekday-only service between Astoria and Hunters Point.

Additional designated truck routes within the study area include 29th Street, 24th Avenue, Broadway, and the RFK Bridge.

Existing traffic volumes are generally low along 26th Avenue, 4th Street and 9th Street, the project site's main roadway frontages.

Intersection Capacity Analysis

Table 13-15 summarizes the existing lane group LOS during the weekday AM, midday, and PM peak periods. During the AM peak hour, ten individual lane groups operate at LOS E and three operate at LOS F. During the midday peak hour, one traffic movement operates at LOS E and one operates at LOS F, while during the PM peak hour eight individual traffic movements operate at LOS E and none operate at LOS F.

Table 13-15: Existing Lane Group LOS Summary

	Weekday AM Peak Hour	**Weekday Midday Peak Hour**	**Weekday PM Peak Hour**
Overall LOS A/B/C	64	85	72
Overall LOS D	25	16	22
Overall LOS E	10	1	8
Overall LOS F	3	1	0
No. of movements at LOS E or F of approximately 102 movements analyzed	13	2	8

Table 13-16 shows the detailed v/c ratios, delays, and LOS by movement at each of the 29 analyzed existing intersections in each peak hour and identifies those movements that are considered congested in one or more peak hour (i.e., movements operating at LOS E or F and/or with a high v/c ratio–0.90 and above). These congested locations are listed in the following.

27th Avenue and 12th Street (unsignalized)

- Northbound shared left-turn/through/right-turn (PM)

Astoria Boulevard and 21st Street

- Eastbound left-turn (AM)
- Westbound left-turn (AM and PM)
- Northbound shared left-turn/through/right-turn (midday and PM)
- Southbound shared left-turn/through/right-turn (AM and midday)

Astoria Boulevard and Crescent Street

- Westbound shared left-turn/through (midday and PM)
- Southbound shared left-turn/through/right-turn (AM, midday, and PM)

Astoria Boulevard and 29th Street

- Eastbound through (AM and PM)

Astoria Boulevard and 31st Street

Eastbound shared left-turn/through/right-turn (AM and PM)

Table 13-16: 2012 Existing Conditions–LOS at Analyzed Intersections

Intersection	Lane Group	AM Peak Hour V/C Ratio	AM Peak Hour Delay (sec/veh)	AM Peak Hour LOS	Midday Peak Hour V/C Ratio	Midday Peak Hour Delay (sec/veh)	Midday Peak Hour LOS	PM Peak Hour V/C Ratio	PM Peak Hour Delay (sec/veh)	PM Peak Hour LOS
1. 26th Avenue & 4th Street	WB-LT	0.03	7.7	A	0.07	7.9	A	0.05	7.9	A
(Unsignalized-Two Way Stop)	NB-LR	0.10	10.1	B	0.08	10.3	B	0.06	9.5	A
2. 27th Avenue & 4th Street	EB-LT	NA	10.0	A	NA	9.6	A	NA	9.8	A
(Unsignalized-All Way Stop)	WB-T	NA	11.1	B	NA	10.4	B	NA	10.5	B
	WB-R	NA	7.9	A	NA	8.1	A	NA	8.0	A
	SB-LR	NA	9.8	A	NA	9.8	A	NA	9.5	A
3. 27th Avenue & 8th Street	EB-TR	0.59	18.5	B	0.54	17.2	B	0.48	15.6	B
	WB-LT	0.81	30.7	C	0.55	18.4	B	0.41	14.9	B
	NB-L	0.41	24.5	C	0.30	22.3	C	0.33	22.9	C
	NB-R	0.26	22.0	C	0.28	22.4	C	0.30	22.6	C
4. 27th Avenue & 12th Street	EB-LT	0.07	8.6	A	0.05	8.0	A	0.08	8.4	A
(Unsignalized-Two Way Stop)	NB-LTR	0.43	25.5	D	0.24	15.9	C	0.69	38.3	E *
5. 27th Avenue & 14th Street	EB-TR	NA	10.6	B	NA	9.2	A	NA	9.9	A
(Unsignalized-All Way Stop)	WB-LT	NA	12.1	B	NA	9.0	A	NA	9.6	A
	SB-LTR	NA	16.8	C	NA	9.2	A	NA	10.5	B
6. 27th Avenue & 18th Street	EB-LTR	0.05	9.2	A	0.04	8.1	A	0.07	8.0	A
(Unsignalized-Two Way Stop)	WB-LTR	0.01	7.5	A	0.01	7.5	A	0.01	7.6	A
7. Astoria Boulevard & 21st Street	EB-L	0.82	59.3	E *	0.25	34.6	C	0.45	41.9	D
	EB-TR	0.82	52.5	D	0.38	36.1	D	0.75	47.7	D
	WB-L	0.95	57.8	E *	0.81	49.3	D	0.83	58.3	E *
	WB-TR	0.72	42.7	D	0.36	35.0	D	0.69	48.1	D
	NB-LTR	0.80	35.7	D	1.05	69.9	E *	1.02	46.2	D *
	SB-LTR	1.05	60.8	E *	0.97	49.1	D *	0.87	34.4	C
8. Astoria Boulevard & 23rd Street	EB-LT	0.64	20.1	C	0.61	16.5	B	0.69	21.1	C
	WB-TR	0.81	24.4	C	0.66	15.3	B	0.63	18.4	B
	NB-LTR	0.48	33.0	C	0.53	27.8	C	0.57	35.3	D
9. Astoria Boulevard & Crescent Street	EB-TR	0.72	24.0	C	0.63	17.3	B	0.82	27.9	C
	WB-LT	0.86	27.5	C	0.98	31.1	C *	0.99	38.6	D *
	SB-LTR	1.05	66.5	E *	1.03	54.2	D *	1.00	50.7	D *
10. Astoria Boulevard & 27th Street	EB-LT	0.54	15.2	B	0.44	13.6	B	0.57	15.7	B
	WB-TR	0.76	19.6	B	0.62	16.3	B	0.52	14.3	B
	SB-LR	0.75	38.8	D	0.47	34.1	C	0.71	38.0	D
11. Astoria Boulevard & 28th Street	NB-LR	0.32	20.8	C	0.30	18.9	C	0.25	17.4	C
(Unsignalized-Two Way Stop)										
12. Astoria Boulevard & 29th Street	EB-T	0.97	65.6	E *	0.75	24.9	C	0.97	58.4	E *
	WB-T	0.42	27.1	C	0.22	13.4	B	0.21	20.2	C
	SB-L	0.17	16.9	B	0.12	18.0	B	0.16	19.5	B
	SB-R	0.65	26.9	C	0.58	26.2	C	0.48	25.1	C

Table 13-16 (continued): 2012 Existing Conditions–LOS at Analyzed Intersections

Intersection	Lane Group	AM Peak Hour V/C Ratio	AM Peak Hour Delay (sec/veh)	AM Peak Hour LOS	Midday Peak Hour V/C Ratio	Midday Peak Hour Delay (sec/veh)	Midday Peak Hour LOS	PM Peak Hour V/C Ratio	PM Peak Hour Delay (sec/veh)	PM Peak Hour LOS
13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop)	WB-LT	0.26	11.3	B	0.08	9.2	A	0.17	10.4	B
14. Astoria Boulevard & 31st Street	EB-LTR	0.90	44.5	D *	0.85	31.7	C	0.96	46.4	D *
	NB-T	0.49	41.2	D	0.51	33.2	C	0.49	41.0	D
	NB-R	0.63	15.3	B	0.50	8.5	A	0.79	21.4	C
	SB-T	0.86	31.4	C	0.62	19.1	B	0.67	21.8	C
	SB-R	0.53	19.0	B	0.29	14.1	B	0.30	14.9	B
15. Hoyt Avenue S./Astoria Boulevard 33rd Street	Astoria Blvd (EB-LT)	0.91	50.4	D *	0.92	44.5	D *	1.05	73.9	E *
	NB-TR	1.05	78.6	E *	0.77	37.3	D	1.05	69.4	E *
	NB-R	1.04	79.3	E *	0.76	40.7	D	1.04	69.9	E *
	Hoyt Ave (EB-LT)	0.54	25.6	C	0.67	26.7	C	0.73	35.1	D
16. Hoyt Avenue N. & 29th Street	WB-L	0.71	11.6	B	0.54	11.5	B	0.41	12.3	B
	WB-LT	0.71	11.3	B	0.50	10.8	B	0.56	14.1	B
	SB-R	0.99	90.5	F *	0.49	34.5	C	0.78	49.8	D
17. Hoyt Avenue N. & 31st Street	WB-L	1.02	87.8	F *	1.01	83.2	F *	0.42	16.0	B
	WB-T	0.90	21.6	C *	0.71	17.2	B	0.68	20.1	C
	WB-R	0.31	10.2	B	0.61	19.6	B	0.65	23.6	C
	NB-LT	0.28	35.6	D	-	-	-	0.28	28.1	C
	NB-DefL	-	-	-	0.50	29.3	C	-	-	-
	NB-T	-	-	-	0.22	21.1	C	-	-	-
	SB-T	0.26	36.0	D	0.44	24.1	C	0.15	26.5	C
	SB-R	0.69	53.7	D	0.24	21.9	C	0.46	33.6	C
18. Astoria Boulevard N. & 32nd Street	WB-Main-T	0.51	8.6	A	0.35	7.8	A	0.31	9.1	A
	WB-Ramp-T	1.05	81.1	F *	0.92	22.0	C *	0.89	23.5	C
	NB-L	0.56	43.7	D	0.33	28.5	C	0.50	38.4	D
	SB-R	0.03	38.0	D	0.02	25.9	C	0.02	33.3	C
	Overall									
19. Astoria Boulevard & 8th Street	EB-LR	0.25	28.5	C	0.12	26.4	C	0.26	28.6	C
	WB-L	0.26	28.5	C	0.25	28.5	C	0.16	27.0	C
	WB-TR	0.20	27.7	C	0.15	27.0	C	0.15	26.9	C
	NB-LT	0.34	15.1	B	0.31	14.8	B	0.40	15.5	B
	SB-TR	0.50	17.9	B	0.31	15.1	B	0.29	14.8	B
20. 30th Avenue & 14th Street (Unsignalized-All Way Stop)	EB-LTR	NA	11.5	B	NA	8.7	A	NA	9.1	A
	WB-LTR	NA	12.3	B	NA	8.7	A	NA	9.0	A
	SB-LTR	NA	22.3	C	NA	9.2	A	NA	10.6	B
21. 30th Avenue & 21st Street	EB-LTR	0.41	36.1	D	0.30	33.5	C	0.32	33.9	C
	WB-LTR	0.43	36.7	D	0.33	34.2	C	0.41	36.2	D
	NB-LTR	0.47	13.9	B	0.48	14.1	B	0.71	19.1	B
	SB-LTR	0.69	18.1	B	0.37	12.4	B	0.42	13.1	B
22. Vernon Boulevard & Welling Court/ 8th Street	EB-LT	0.96	47.1	D *	0.79	37.7	D	1.04	66.2	E *
	WB-TR	0.03	21.0	C	0.03	21.0	C	0.04	21.1	C
	NB-LTR	0.24	31.2	C	0.14	28.9	C	0.08	28.2	C
	SB-R	0.73	36.2	D	0.55	31.3	C	0.47	29.5	C

Table 13-16 (continued): 2012 Existing Conditions–LOS at Analyzed Intersections

Intersection	Lane Group	AM Peak Hour V/C Ratio	AM Peak Hour Delay (sec/veh)	AM Peak Hour LOS		Midday Peak Hour V/C Ratio	Midday Peak Hour Delay (sec/veh)	Midday Peak Hour LOS	PM Peak Hour V/C Ratio	PM Peak Hour Delay (sec/veh)	PM Peak Hour LOS	
23. Astoria Boulevard & 18th Street (Unsignalized-Two Way Stop)	SB-LR	0.30	20.8	C		0.20	12.7	B	0.21	14.3	B	
24. Hoyt Avenue N. & 21st Street	EB-L	0.02	40.4	D		0.11	42.0	D	0.09	41.7	D	
	EB-R	0.36	47.1	D		0.13	42.3	D	0.17	43.0	D	
	WB-L	0.89	43.3	D		0.67	38.0	D	0.59	36.4	D	
	WB-TR	0.24	14.7	B		0.16	14.1	B	0.27	15.5	B	
	NB-L	0.27	30.4	C		0.10	25.1	C	0.16	25.8	C	
	NB-T	1.00	75.1	E	*	0.74	41.1	D	1.05	78.2	E	*
	SB-TR	0.97	47.2	D	*	0.55	32.7	C	0.73	37.6	D	
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-L	0.12	29.9	C		0.21	31.5	C	0.17	30.7	C	
	EB-TR	1.02	61.1	E	*	0.40	35.3	D	0.73	43.2	D	
	NB-LTR	0.52	14.6	B		0.41	13.1	B	0.86	22.5	C	
	SB-LTR	0.98	33.2	C	*	0.59	15.5	B	0.84	23.6	C	
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.2	A		0.00	7.7	A	0.01	7.8	A	
	SB-LR	0.11	12.0	B		0.07	10.0	A	0.04	9.7	A	
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.49	23.5	C		0.20	15.0	B	0.37	19.8	C	
	SB-LT	0.02	8.1	A		0.03	7.9	A	0.02	8.4	A	
28. Vernon Boulevard & Broadway/ 11th Street	EB-LTR	0.01	28.2	C		0.02	26.1	C	0.03	33.2	C	
	WB-LTR	1.01	56.0	E	*	0.86	43.8	D	0.82	50.8	D	
	NB(Vernon Blvd)-LT	0.24	7.8	A		0.25	8.2	A	0.44	9.0	A	
	NB(Vernon Blvd)-R	0.04	6.4	A		0.16	7.5	A	0.12	6.3	A	
	NB(11 Street)-LTR	0.36	40.8	D		0.21	32.8	C	0.32	38.0	D	
	SB-LTR	0.96	45.8	D	*	0.51	26.2	C	0.57	28.0	C	
29. 31st Avenue & 21st Street	EB-LTR	0.64	43.9	D		0.33	34.2	C	0.48	34.4	C	
	WB-LTR	0.56	40.0	D		0.40	35.5	D	0.40	32.0	C	
	NB-TR	0.43	13.2	B		0.58	15.6	B	0.69	20.8	C	
	SB-TR	0.78	20.7	C		0.50	14.4	B	0.57	18.1	B	

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec/veh - Seconds per Vehicle
LOS - Level of Service
* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)
Analysis is based on the 2010 *Highway Capacity Manual* methodology (HCS+, version 5.5)

Hoyt Avenue South/Astoria Boulevard and 33rd Street

- Eastbound shared left-turn/through on Astoria Boulevard (AM, midday, and PM)
- Northbound shared through/right-turn (AM and PM)
- Northbound right-turn (AM and PM)

Hoyt Avenue North and 29th Street

- Southbound right-turn (AM)

Hoyt Avenue North and 31st Street

- Westbound left-turn (AM and midday)

- Westbound through (AM)

Astoria Boulevard North and 32nd Street

- Westbound through from off-ramp (AM and midday)

Vernon Boulevard and Welling Court/8th Street

- Eastbound shared left-turn/through (AM and PM)

Hoyt Avenue North and 21st Street

- Northbound through (AM and PM)
- Southbound shared through/right-turn (AM)

Hoyt Avenue South/Astoria Park South and 21st Street

- Eastbound shared through/right-turn (AM)
- Southbound shared left-turn/through/right-turn (AM)

Vernon Boulevard and Broadway/11th Street

- Westbound shared left-turn/through/right-turn (AM)
- Southbound shared left-turn/through/right-turn (AM)

Future without the Proposed Action (No-Action Condition)

As impact analyses are based on the incremental change to expected future conditions as a result of a proposed project, a future without the Proposed Action condition, the 2023 No-Action condition, was developed. The 2023 No-Action condition incorporates changes to the study area's traffic network as a result of general background growth and traffic demand and traffic operation changes associated with developments anticipated to be completed by 2023.

As per *CEQR Technical Manual* guidelines, an annual background growth rate of 0.5 percent was assumed for the first five years (2012 - 2017) and 0.25 percent for the remaining years (2018 - 2023). In addition, a total of 67 projects/developments are planned or proposed within or just beyond the study area. It was determined that background growth would account for the increase in travel demand for 36 of the 67 No-Action projects as these are small projects. 2023 No-Action traffic volumes were determined by adding the background growth and estimated volume increments associated with the remaining 31 more substantial No-Action projects to the existing 2012 baseline traffic volume network. These 31 No-Action projects include, but are not limited to, the sites included as part of the Astoria Rezoning, Phase I of the Cornell NYC Tech development, the Roosevelt Island Southtown:Main Street project, and the Halletts Point development.

Traffic Improvements

Operational changes at two analysis intersections are expected in the future as a result of the implementation of traffic mitigation measures proposed in the *Cornell NYC Tech FEIS* (2012) for its Phase I (2018 Build Year) development. These measures are assumed to be in place by the proposed project's 2023 Build Year, therefore they have been incorporated into the No-Action traffic analysis.

The traffic network analyzed for the No-Action condition also includes the mitigation measures that would be implemented at several of the 29 intersections analyzed in this chapter as part of the Halletts Point Rezoning project. In addition to signal timing changes, parking regulation changes, and lane

restriping, these mitigation measures, which are described in detail in the Chapter 22, "Mitigation" of the *Halletts Point Rezoning FEIS* (2013), include installations of signals at four of the currently unsignalized intersections: 27th Avenue at 4th Street; 27th Avenue at 12th Street; 27th Avenue at 14th Street; and Astoria Boulevard at 18th Street. Table 13-17 presents a summary of the mitigation measures proposed for the *Cornell NYC Tech FEIS* and *Halletts Point Rezoning FEIS* at the study area intersections, which have been incorporated into the No-Action traffic analysis.

Table 13-17: No-Action Traffic Mitigation Measures

Intersection	Halletts Mitigation Measures	Cornell Mitigation Measures[1]
2. 27th Avenue & 4th Street	- Installing a traffic signal	
3. 27th Avenue & 8th Street	- Daylighting 27th Avenue (AM, MD, and PM) - Restripting (27th Avenue - Modifying signal timing (AM only)	
4. 27th Avenue & 12th Street	- Installing a traffic signal	
5. 27th Avenue & 14th Street	- Installing a traffic signal	
6. 27th Avenue & 18th Street	- Installing a traffic signal	
7. Astoria Boulevard & 21st Street	- Daylighting 21st Street (AM, MD, and PM) - Restriping 21st Street	- Modifying signal timing (AM, MD, and PM)
8. Astoria Boulevard & 23rd Street	- Modifying signal timing (PM only)	
14. Astoria Boulevard & 31st Street	- Daylighting Astoria Boulevard (AM,MD, and PM) - Restriping Astoria Boulevard	
15. Hoyt Avenue South/Astoria Boulevard & 33rd Street	-Modifying signal timing (MD only)	
16. Hoyt Avenue North & 29th Street	- Modifying signal timing (AM only)	
19. Astoria Boulevard & 8th Street	- Restriping Astoria Boulevard - Daylighting Astoria Boulevard (AM, MD, and PM) - Modifying signal timing (AM and PM)	
22. Vernon Boulevard & Welling Court/8th Street	-Modifying signal timing (AM and MD)	
23. Astoria Boulevard & 18th Street	-Installing a traffic signal	
24. Hoyt Avenue North & 21st Street	- Modifying signal timing (MD and PM)	
25. Hoyt Avenue South/Astoria Park South & 21st Street	- Modifying signal timing (AM and MD) -Daylighting (PM only)	- Modifying signal timing (AM only) - Restriping Hoyt Avenue South
28. Vernon Boulevard & Broadway/11th Street	- Daylighting Broadway (AM and PM) -Modifying signal timing (MD only)	

Notes:
[1] Reflects only 2018 Build Year mitigation measures.
Sources: *Halletts Point Rezoning FEIS* (2013); *Cornell NYC Tech FEIS* (2012).

In addition, in conjunction with the No-Action as-of-right residential development on the project site's upland parcels, the currently unimproved and inaccessible portion of 26th Avenue is expected to be built-out in the future without the Proposed Action, thereby providing access to 9th Street. For the purposes of the traffic analysis, it is assumed that 26th Avenue would operate one-way eastbound with one travel lane and on-street parking on both sides. The resulting new intersection at 26th Avenue and 9th Street would be two-way stop controlled and is included in the detailed intersection capacity analyses for both the No-Action and With-Action conditions.

Intersection Capacity Analysis

Figures 13-14, 13-15, and 13-16 show the expected No-Action weekday AM, midday, and PM peak hour traffic volumes, respectively. Table 13-18 below shows a summary comparison of the individual lane group LOS for existing and future No-Action conditions.

As shown in Table 13-18, under the No-Action condition with the above-described traffic improvements in place, seven individual traffic movements would operate at LOS E and 19 would operate at LOS F in the AM peak hour under the No-Action condition. During the midday peak hour, three individual traffic movements would operate at LOS E and three would operate at LOS F, while six and 12 individual traffic movements would operate at LOS E and LOS F, respectively, in the PM peak hour under the No-Action condition.

Table 13-18: Lane Group LOS Summary Comparison—Existing vs. No-Action Conditions

	Existing Conditions			**2023 No-Action Condition**		
	Weekday AM Peak Hour	**Weekday Midday Peak Hour**	**Weekday PM Peak Hour**	**Weekday AM Peak Hour**	**Weekday Midday Peak Hour**	**Weekday PM Peak Hour**
Overall LOS A/B/C	64	85	72	57	80	65
Overall LOS D	25	16	22	26	23	28
Overall LOS E	10	1	8	7	3	5
Overall LOS F	3	1	0	19	3	12
No. of movements at LOS E or F	13	2	8	26	6	17

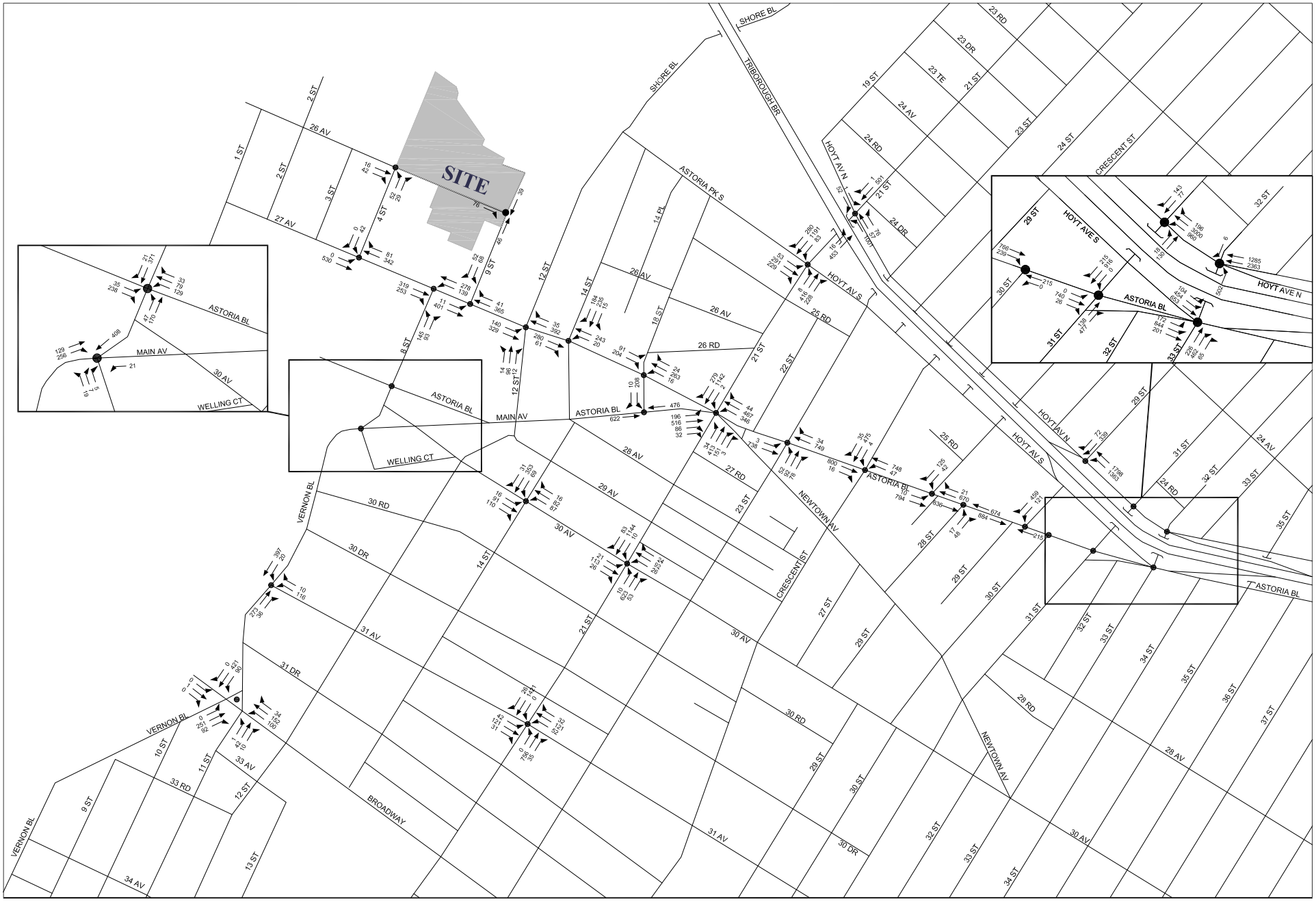
Table 13-19 shows the detailed v/c ratios, delays, and LOS by movement at the analyzed intersections in each peak hour under the No-Action condition and identifies those movements that would congested in one or more peak hours. As shown in Table 13-19, many of the movements that are congested under existing conditions would continue to operate at the same level of service with slight increases in v/c ratios and delays under the No-Action condition. The intersections where newly congested movements would occur under the No-Action condition, or where the level of service of currently congested movements would degrade, are discussed in the following.

27th Avenue & 8th Street:

- The westbound approach would deteriorate from LOS C under existing conditions to LOS F under the No-Action condition in the AM peak hour, and from LOS B to LOS F in both the midday and PM peak hours.

Astoria Boulevard & 21st Street:

- The eastbound left-turn movement would deteriorate from LOS E under existing conditions to LOS F under the No-Action condition in the AM peak hour.
- The eastbound through/right movement would deteriorate from LOS D under existing conditions to LOS F under the No-Action condition in both the AM and PM peak hours.
- Both the westbound through/right movement and northbound approach would deteriorate from LOS D under existing conditions to LOS E under the No-Action condition in the PM peak hour.

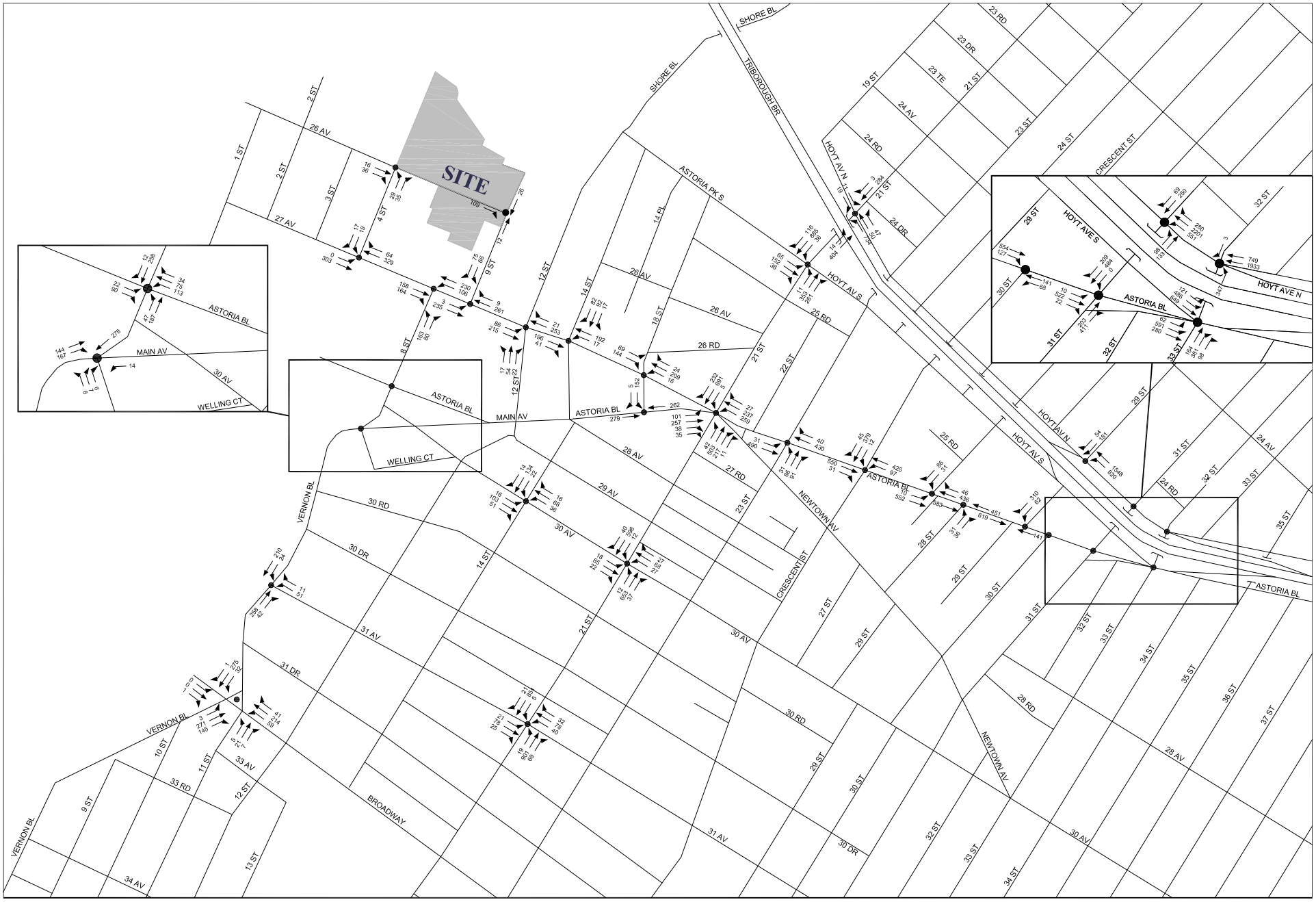


● Analyzed Locations

Astoria Cove

Figure 13-14

No-Action Volumes - AM Peak Hour

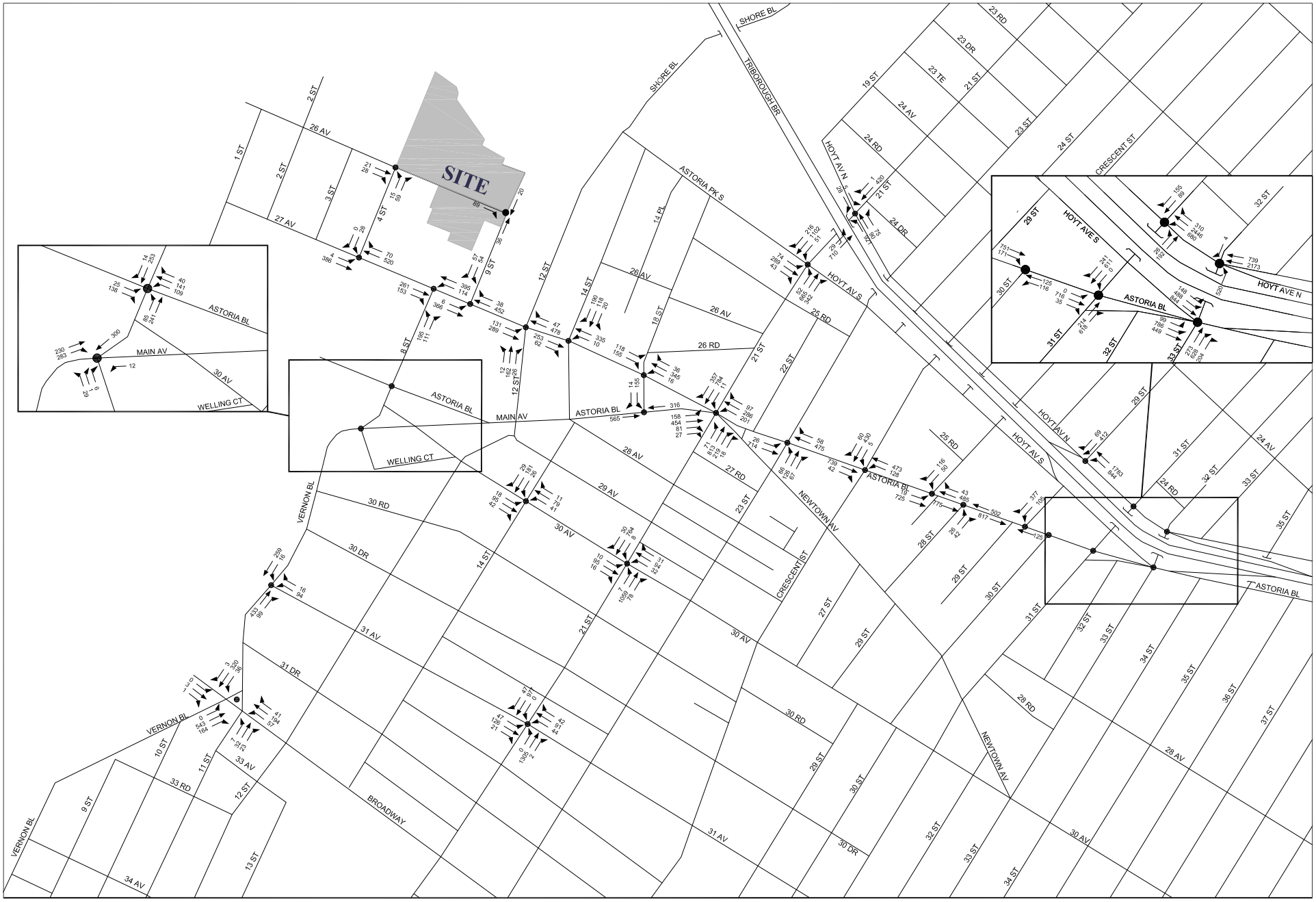


● Analyzed Locations

Astoria Cove

Figure 13-15

No-Action Volumes - Midday Peak Hour



● Analyzed Locations

Astoria Cove

Figure 13-16

No-Action Volumes - PM Peak Hour

Table 13-19: 2023 Future No-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		EXISTING			NO-ACTION				EXISTING			NO-ACTION				EXISTING			NO-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
1. 26th Avenue & 4th Street	WB-LT	0.03	7.7	A	-	-	-		0.07	7.9	A	-	-	-		0.05	7.9	A	-	-	-	
(Unsignalized-Two Way Stop)	NB-LR	0.10	10.1	B	0.11	9.7	A		0.08	10.3	B	0.08	9.4	A		0.06	9.5	A	0.09	9.3	A	
A. 26th Avenue & 9th Street	EB-R	-	-	-	0.09	8.9	A		-	-	-	0.13	8.9	A		-	-	-	0.10	8.8	A	
(Unsignalized-Two Way Stop)																						
2. 27th Avenue & 4th Street	EB-LT	NA	10.0	A	0.78	22.4	C		NA	9.6	A	0.45	14.1	B		NA	9.8	A	0.56	15.0	B	
(Existing Unsignalized-All Way Stop)	WB-T	NA	11.1	B	0.44	13.7	B		NA	10.4	B	0.43	13.1	B		NA	10.5	B	0.65	15.6	B	
(No-Action Signalized)	WB-R	NA	7.9	A	0.25	12.2	B		NA	8.1	A	0.27	12.5	B		NA	8.0	A	0.29	11.8	B	
	SB-LR	NA	9.8	A	0.10	20.4	C		NA	9.8	A	0.09	20.3	C		NA	9.5	A	0.08	21.6	C	
3. 27th Avenue & 8th Street	EB-T	-	-	-	0.53	14.9	B		-	-	-	0.24	11.9	B		-	-	-	0.36	13.2	B	
	EB-R	-	-	-	0.66	21.2	C		-	-	-	0.61	22.5	C		-	-	-	0.42	15.9	B	
	EB-TR	0.59	18.5	B		17.4	B		0.54	17.2	B		17.2	B		0.48	15.6	B		14.1	B	
	WB-LT	0.81	30.7	C	1.32	179.6	F	*	0.55	18.4	B	1.25	151.3	F	*	0.41	14.9	B	1.22	138.6	F	*
	NB-L	0.41	24.5	C	0.52	28.4	C		0.30	22.3	C	0.36	23.3	C		0.33	22.9	C	0.48	25.8	C	
	NB-R	0.26	22.0	C	0.57	34.6	C		0.28	22.4	C	0.73	47.7	D		0.30	22.6	C	0.75	47.4	D	
4. 27th Avenue & 12th Street	EB-LT	0.07	8.6	A	0.64	9.9	A		0.05	8.0	A	0.47	11.2	B		0.08	8.4	A	0.54	8.2	A	
(Existing Unsignalized-Two Way Stop)	WB-TR	-	-	-	0.47	6.2	A		-	-	-	0.41	10.4	B		-	-	-	0.66	8.8	A	
(No-Action Signalized)	NB-LTR	0.43	25.5	D	0.57	43.1	D		0.24	15.9	C	0.28	27.3	C		0.69	38.3	E	*	0.86	65.8	E	*
5. 27th Avenue & 14th Street	EB-TR	NA	10.6	B	0.61	19.4	B		NA	9.2	A	0.33	11.5	B		NA	9.9	A	0.45	15.7	B	
(Existing Unsignalized-All Way Stop)	WB-LT	NA	12.1	B	0.66	22.9	C		NA	9.0	A	0.29	11.0	B		NA	9.6	A	0.57	16.6	B	
(No-Action Signalized)	SB-LTR	NA	16.8	C	0.89	41.0	D		NA	9.2	A	0.52	28.5	C		NA	10.5	B	0.79	36.0	D	
6. 27th Avenue & 18th Street	EB-LTR	0.05	9.2	A	0.10	9.5	A		0.04	8.1	A	0.06	8.3	A		0.07	8.0	A	0.12	9.1	A	
(Unsignalized-Two Way Stop)	WB-LTR	0.01	7.5	A	0.02	7.8	A		0.01	7.5	A	0.01	7.7	A		0.01	7.6	A	0.01	7.8	A	
7. Astoria Boulevard & 21st Street	EB-L	0.82	59.3	E	*	1.20	156.4	F	*	0.25	34.6	C	0.33	36.9	D	0.45	41.9	D	0.61	46.8	D	
	EB-TR	0.82	52.5	D	1.70	365.9	F	*	0.38	36.1	D	0.61	41.5	D	0.75	47.7	D	1.13	118.0	F	*
	WB-L	0.95	57.8	E	*	1.01	69.0	E	*	0.81	49.3	D	0.86	53.2	D	0.83	58.3	E	*	0.92	68.3	E	*
	WB-TR	0.72	42.7	D	0.82	45.2	D		0.36	35.0	D	0.46	36.4	D	0.69	48.1	D	0.99	73.3	E	*
	NB-LT	-	-	-	0.71	31.5	C		-	-	-	0.79	38.2	D	-	-	-	1.10	80.8	F	*
	NB-R	-	-	-	0.37	24.7	C		-	-	-	0.65	36.1	D	-	-	-	0.44	22.9	C	
	NB-LTR	0.80	35.7	D		29.8	C		1.05	69.9	E	*	37.6	D	1.02	46.2	D	*	68.8	E	*
	SB-LT	-	-	-	0.86	30.8	C		-	-	-	0.76	38.1	D	-	-	-	0.77	29.6	C	
	SB-R	-	-	-	0.59	26.9	C		-	-	-	0.75	39.7	D	-	-	-	0.80	33.1	C	
	SB-LTR	1.05	60.8	E	*		30.0	C	0.97	49.1	D	*	38.5	D	0.87	34.4	C		30.6	C	
8. Astoria Boulevard & 23rd Street	EB-LT	0.64	20.1	C	1.21	127.5	F	*	0.61	16.5	B	0.81	23.1	C	0.69	21.1	C	0.95	35.5	D	*
	WB-TR	0.81	24.4	C	0.91	29.7	C	*	0.66	15.3	B	0.77	17.4	B	0.63	18.4	B	0.84	22.7	C	
	NB-LTR	0.48	33.0	C	0.50	33.5	C		0.53	27.8	C	0.56	28.5	C	0.57	35.3	D	0.61	37.4	D	

Table 13-19 (continued): 2023 Future No-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		EXISTING			NO-ACTION			EXISTING			NO-ACTION			EXISTING			NO-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
9. Astoria Boulevard & Crescent Street	EB-TR	0.72	24.0	C	1.28	159.6	F *	0.63	17.3	B	0.83	25.1	C	0.82	27.9	C	1.11	88.2	F *
	WB-LT	0.86	27.5	C	1.24	139.4	F *	0.98	31.1	C *	1.27	143.1	F *	0.99	38.6	D *	1.53	267.6	F *
	SB-LTR	1.05	66.5	E *	1.11	89.1	F *	1.03	54.2	D *	1.09	73.8	E *	1.00	50.7	D *	1.07	74.4	E *
10. Astoria Boulevard & 27th Street	EB-LT	0.54	15.2	B	0.96	38.2	D *	0.44	13.6	B	0.59	16.2	B	0.57	15.7	B	0.79	22.1	C
	WB-TR	0.76	19.6	B	0.84	23.0	C	0.62	16.3	B	0.71	18.3	B	0.52	14.3	B	0.65	16.8	B
	SB-LR	0.75	38.8	D	0.83	41.1	D	0.47	34.1	C	0.53	34.9	C	0.71	38.0	D	0.88	42.7	D
11. Astoria Boulevard & 28th Street (Unsignalized-Two Way Stop)	NB-LR	0.32	20.8	C	0.70	68.0	F *	0.30	18.9	C	0.42	28.3	D	0.25	17.4	C	0.41	30.1	D
12. Astoria Boulevard & 29th Street	EB-T	0.97	65.6	E *	1.63	328.2	F *	0.75	24.9	C	0.97	48.8	D *	0.97	58.4	E *	1.30	179.5	F *
	WB-T	0.42	27.1	C	0.44	27.5	C	0.22	13.4	B	0.23	13.5	B	0.21	20.2	C	0.22	20.3	C
	SB-L	0.17	16.9	B	0.18	17.0	B	0.12	18.0	B	0.12	18.1	B	0.16	19.5	B	0.16	19.5	B
	SB-R	0.65	26.9	C	0.75	31.3	C	0.58	26.2	C	0.70	30.5	C	0.48	25.1	C	0.66	30.4	C
13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop)	WB-LT	0.26	11.3	B	0.00	12.9	B	0.08	9.2	A	0.10	10.1	B	0.17	10.4	B	0.23	12.6	B
14. Astoria Boulevard & 31st Street	EB-LTR	0.90	44.5	D *	0.83	37.5	D	0.85	31.7	C	0.57	22.4	C	0.96	46.4	D *	0.75	34.8	C
	NB-T	0.49	41.2	D	0.52	41.8	D	0.51	33.2	C	0.54	33.7	C	0.49	41.0	D	0.52	41.6	D
	NB-R	0.63	15.3	B	0.67	16.5	B	0.50	8.5	A	0.53	8.9	A	0.79	21.4	C	0.84	24.2	C
	SB-T	0.86	31.4	C	1.10	85.7	F *	0.62	19.1	B	0.65	19.8	B	0.67	21.8	C	0.69	22.8	C
	SB-R	0.53	19.0	B	0.30	14.9	B	0.29	14.1	B	0.31	14.3	B	0.30	14.9	B	0.31	15.1	B
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	0.91	50.4	D *	1.32	192.2	F *	0.92	44.5	D *	1.02	62.4	E *	1.05	73.9	E *	1.17	121.1	F *
	NB-TR	1.05	78.6	E *	1.09	94.2	F *	0.77	37.3	D	0.81	38.6	D	1.05	69.4	E *	1.09	86.7	F *
	NB-R	1.04	79.3	E *	1.08	92.9	F *	0.76	40.7	D	0.79	42.6	D	1.04	69.9	E *	1.08	86.6	F *
	Hoyt Ave (EB-LT)	0.54	25.6	C	0.63	27.1	C	0.67	26.7	C	0.78	30.4	C	0.73	35.1	D	0.87	41.3	D
16. Hoyt Ave N. & 29th Street	WB-L	0.71	11.6	B	0.80	14.6	B	0.54	11.5	B	0.57	12.0	B	0.41	12.3	B	0.45	12.7	B
	WB-LT	0.71	11.3	B	0.82	14.6	B	0.50	10.8	B	0.58	11.7	B	0.56	14.1	B	0.74	17.5	B
	SB-R	0.99	90.5	F *	1.03	98.5	F *	0.49	34.5	C	0.53	35.5	D	0.78	49.8	D	0.85	54.2	D
17. Hoyt Ave N. & 31st Street	WB-L	1.02	87.8	F *	1.06	101.1	F *	1.01	83.2	F *	1.05	95.0	F *	0.42	16.0	B	0.44	16.3	B
	WB-T	0.90	21.6	C *	1.01	37.4	D *	0.71	17.2	B	0.80	19.5	B	0.68	20.1	C	0.85	25.4	C
	WB-R	0.31	10.2	B	0.34	10.4	B	0.61	19.6	B	0.66	21.5	C	0.65	23.6	C	0.72	26.8	C
	NB-DefL	-	-	-	-	-	-	0.50	29.3	C	0.54	31.1	C	-	-	-	-	-	-
	NB-T	-	-	-	-	-	-	0.22	21.1	C	0.23	21.2	C	-	-	-	-	-	-
	NB-LT	0.28	35.6	D	0.30	35.9	D	-	-	-	-	-	-	0.28	28.1	C	0.29	28.3	C
	SB-T	0.26	36.0	D	0.28	36.3	D	0.44	24.1	C	0.46	24.4	C	0.15	26.5	C	0.15	26.6	C
	SB-R	0.69	53.7	D	0.74	57.8	E *	0.24	21.9	C	0.26	22.2	C	0.46	33.6	C	0.49	34.6	C

Table 13-19 (continued): 2023 Future No-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		EXISTING				NO-ACTION			EXISTING				NO-ACTION			EXISTING				NO-ACTION		
		V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.51	8.6	A		0.53	8.9	A	0.35	7.8	A		0.37	7.9	A	0.31	9.1	A		0.32	9.2	A	
	WB(Ramp)-T	1.05	81.1	F	*	1.17	127.2	F	*	0.92	22.0	C	*	1.03	45.5	D	*	0.89	23.5	C		1.13	84.7	F	*
	NB-L	0.56	43.7	D		0.66	45.3	D		0.33	28.5	C		0.38	29.0	C		0.50	38.4	D		0.57	39.2	D	
	SB-R	0.03	38.0	D		0.03	38.0	D		0.02	25.9	C		0.02	25.9	C		0.02	33.3	C		0.02	33.3	C	
19. Astoria Boulevard & 8th Street	EB-L	-	-	-		0.16	24.6	C		-	-	-		0.09	26.1	C		-	-	-		0.17	29.0	C	
	EB-R	-	-	-		0.77	44.4	D		-	-	-		0.27	29.0	C		-	-	-		0.66	40.6	D	
	EB-LR	0.25	28.5	C			41.4	D		0.12	26.4	C			28.4	C		0.26	28.6	C			39.1	D	
	WB-L	0.26	28.5	C		0.32	26.9	C		0.25	28.5	C		0.36	30.6	C		0.16	27.0	C		0.31	31.0	C	
	WB-TR	0.20	27.7	C		0.34	27.3	C		0.15	27.0	C		0.34	30.3	C		0.15	26.9	C		0.50	35.3	D	
	NB-LT	0.34	15.1	B		0.52	20.2	C		0.31	14.8	B		0.46	17.2	B		0.40	15.5	B		0.87	27.7	C	
	SB-TR	0.50	17.9	B		0.74	27.0	C		0.31	15.1	B		0.40	16.3	B		0.29	14.8	B		0.39	15.1	B	
20. 30th Avenue & 14th Street	EB-LTR	NA	11.5	B		NA	13.0	B		NA	8.7	A		NA	9.1	A		NA	9.1	A		NA	9.6	A	
(Unsignalized-All Way Stop)	WB-LTR	NA	12.3	B		NA	13.4	B		NA	8.7	A		NA	9.1	A		NA	9.0	A		NA	9.5	A	
	SB-LTR	NA	22.3	C		NA	28.5	D		NA	9.2	A		NA	9.5	A		NA	10.6	B		NA	11.4	B	
21. 30th Avenue & 21st Street	EB-LTR	0.41	36.1	D		0.52	39.0	D		0.30	33.5	C		0.35	34.5	C		0.32	33.9	C		0.37	35.1	D	
	WB-LTR	0.43	36.7	D		0.48	38.0	D		0.33	34.2	C		0.39	35.6	D		0.41	36.2	D		0.50	38.8	D	
	NB-LTR	0.47	13.9	B		0.53	15.0	B		0.48	14.1	B		0.53	14.9	B		0.71	19.1	B		0.78	21.7	C	
	SB-LTR	0.69	18.1	B		0.75	19.8	B		0.37	12.4	B		0.42	13.0	B		0.42	13.1	B		0.48	13.9	B	
22. Vernon Boulevard & Welling Court/	EB-LT	0.96	47.1	D	*	1.18	116.5	F	*	0.79	37.7	D		0.91	45.7	D	*	1.04	66.2	E	*	1.43	229.6	F	*
8th Street	WB-TR	0.03	21.0	C		0.04	21.1	C		0.03	21.0	C		0.04	21.1	C		0.04	21.1	C		0.06	21.3	C	
	NB-LTR	0.24	31.2	C		0.33	36.1	D		0.14	28.9	C		0.17	31.0	C		0.08	28.2	C		0.18	29.5	C	
	SB-R	0.73	36.2	D		1.01	68.7	E	*	0.55	31.3	C		0.71	35.1	D		0.47	29.5	C		0.72	37.9	D	
23. Astoria Boulevard & 18th Street	EB-T	-	-	-		0.91	39.6	D	*	-	-	-		0.41	23.1	C		-	-	-		0.76	31.5	C	
(Existing Unsignalized-Two Way Stop)	WB-T	-	-	-		0.66	27.1	C		-	-	-		0.41	22.9	C		-	-	-		0.44	22.2	C	
(No-Action Signalized)	SB-LR	0.30	20.8	C		0.46	25.0	C		0.20	12.7	B		0.32	22.1	C		0.21	14.3	B		0.32	22.0	C	
24. Hoyt Avenue N. & 21st Street	EB-L	0.02	40.4	D		0.02	40.4	D		0.11	42.0	D		0.12	44.0	D		0.09	41.7	D		0.11	43.9	D	
	EB-R	0.36	47.1	D		0.37	47.5	D		0.13	42.3	D		0.15	44.5	D		0.17	43.0	D		0.19	45.3	D	
	WB-L	0.89	43.3	D		1.07	78.5	E	*	0.67	38.0	D		0.81	41.3	D		0.59	36.4	D		0.97	58.9	E	*
	WB-TR	0.24	14.7	B		0.25	14.8	B		0.16	14.1	B		0.17	14.2	B		0.27	15.5	B		0.30	16.9	B	
	NB-L	0.27	30.4	C		0.31	32.3	C		0.10	25.1	C		0.12	25.4	C		0.16	25.8	C		0.17	24.7	C	
	NB-T	1.00	75.1	E	*	1.20	143.8	F	*	0.74	41.1	D		0.81	46.3	D		1.05	78.2	E	*	1.12	99.0	F	*
	SB-TR	0.97	47.2	D	*	1.04	65.0	E	*	0.55	32.7	C		0.60	34.1	C		0.73	37.6	D		0.77	37.9	D	

Table 13-19 (continued): 2023 Future No-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		EXISTING				NO-ACTION			EXISTING			NO-ACTION				EXISTING				NO-ACTION			
		V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-L	0.12	29.9	C		-	-	-	0.21	31.5	C	-	-	-		0.17	30.7	C		-	-	-	
	EB-TR	1.02	61.1	E	*	-	-	-	0.40	35.3	D	-	-	-		0.73	43.2	D		-	-	-	
	EB-LTR	-	-	-		0.84	41.9	D	-	-	-	0.36	32.0	C		-	-	-		0.58	37.9	D	
	NB-LT	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-		0.72	16.8	B	
	NB-R	-	-	-		-	-	-	-	-	-	-	-	-		-	-	-		0.51	13.3	B	
	NB-LTR	0.52	14.6	B		0.60	14.2	B	0.41	13.1	B	0.48	15.0	B		0.86	22.5	C			15.7	B	
	SB-LTR	0.98	33.2	C	*	1.11	75.4	E	*	0.59	15.5	B	0.73	19.8	B		0.84	23.6	C		0.99	38.1	D	*
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.2	A		0.02	8.5	A	0.00	7.7	A	0.01	8.1	A		0.01	7.8	A		0.01	8.8	A	
	SB-LR	0.11	12.0	B		0.56	29.6	D	0.07	10.0	A	0.43	15.9	C		0.04	9.7	A		0.60	31.2	D	
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.49	23.5	C		0.66	38.2	E	*	0.20	15.0	B	0.25	17.7	C		0.37	19.8	C		0.51	29.2	D	
	SB-LT	0.02	8.1	A		0.02	8.3	A	0.03	7.9	A	0.03	8.1	A		0.02	8.4	A		0.02	8.9	A	
28. Vernon Boulevard & Broadway/11th Street	EB-LTR	0.01	28.2	C		0.01	28.2	C	0.02	26.1	C	0.02	25.4	C		0.03	33.2	C		0.03	33.2	C	
	WB-LT	-	-	-		0.87	38.9	D	-	-	-	-	-	-		-	-	-		0.77	47.0	D	
	WB-R	-	-	-		0.21	29.9	C	-	-	-	-	-	-		-	-	-		0.24	35.8	D	
	WB-LTR	1.01	56.0	E	*		37.7	D	0.86	43.8	D	0.96	55.5	E	*	0.82	50.8	D			45.1	D	
	NB (Vernon Blvd)-LT	0.24	7.8	A		0.28	8.2	A	0.25	8.2	A	0.29	9.0	A		0.44	9.0	A		0.52	10.1	B	
	NB (Vernon Blvd)-R	0.04	6.4	A		0.11	6.8	A	0.16	7.5	A	0.21	8.3	A		0.12	6.3	A		0.18	6.7	A	
	NB (11th Street)-LTR	0.36	40.8	D		0.38	41.1	D	0.21	32.8	C	0.22	32.8	C		0.32	38.0	D		0.33	38.2	D	
	SB-LTR	0.96	45.8	D	*	1.36	195.9	F	*	0.51	26.2	C	0.67	31.5	C		0.57	28.0	C		0.88	45.4	D	
29. 31st Avenue & 21st Street	EB-LTR	0.64	43.9	D		0.67	45.6	D	0.33	34.2	C	0.34	34.5	C		0.48	34.4	C		0.50	35.0	D	
	WB-LTR	0.56	40.0	D		0.58	41.1	D	0.40	35.5	D	0.42	35.9	D		0.40	32.0	C		0.42	32.4	C	
	NB-TR	0.43	13.2	B		0.50	14.2	B	0.58	15.6	B	0.64	17.0	B		0.69	20.8	C		0.79	24.2	C	
	SB-TR	0.78	20.7	C		0.89	26.8	C	0.50	14.4	B	0.57	15.5	B		0.57	18.1	B		0.66	20.0	B	

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec/veh - Seconds per Vehicle
LOS - Level of Service
* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)
Analysis is based on the 2010 *Highway Capacity Manual* methodology (HCS+, version 5.5)

Astoria Boulevard & 23rd Street:

- The eastbound approach would deteriorate from LOS C under existing conditions to LOS F under the No-Action condition in the AM peak hour and from LOS C to LOS D in the PM peak hour.
- The westbound approach would deteriorate from and uncongested LOS C under existing conditions to a congested LOS C (v/c ratio greater than 0.90) under the No-Action condition in the AM peak hour.

Astoria Boulevard & Crescent Street

- The eastbound approach would deteriorate from LOS C under existing conditions to LOS F under the No-Action condition in both the AM and PM peak hours.
- The westbound approach would deteriorate from LOS C under existing conditions to LOS F under the No-Action condition in both the AM and midday peak hours and from LOS D to LOS F in the PM peak hour.
- The southbound approach would deteriorate from LOS E under existing conditions to LOS F under the No-Action condition in the AM peak hour and from LOS D to LOS E in both the midday and PM peak hours.

Astoria Boulevard & 27th Street

- The eastbound approach would deteriorate from LOS B under existing conditions to LOS D under the No-Action condition in the AM peak hour.

Astoria Boulevard & 28th Street (unsignalized)

- The northbound approach would deteriorate from LOS C under existing conditions to LOS F under the No-Action condition in the AM peak hour.

Astoria Boulevard & 29th Street

- The eastbound approach would deteriorate from LOS E under existing conditions to LOS F under the No-Action condition in both the AM and PM peak hours and from LOS C to LOS D in the midday peak hour.

Astoria Boulevard & 31st Street

- The southbound through movement would deteriorate from LOS C under existing conditions to LOS F under the No-Action condition in the AM peak hour.

Hoyt Avenue South/Astoria Boulevard & 33rd Street

- The eastbound approach would deteriorate from LOS D under existing conditions to LOS F under the No-Action condition in the AM peak hour, from LOS D to LOS E in the midday peak hour, and from LOS E to LOS F in the PM peak hour.
- Both the northbound through/right and right-turn movements would deteriorate from LOS E under existing conditions to LOS F under the No-Action condition in both the AM and PM peak hours.

Hoyt Avenue North & 31st Street

- The westbound through movement would deteriorate from LOS C under existing conditions to LOS D under the No-Action condition in the AM peak hour.
- The southbound right-turn movement would deteriorate from LOS D under existing conditions to LOS E under the No-Action condition in the AM peak hour.

Astoria Boulevard & 32nd Street:

- The westbound through movement at the ramp would deteriorate from LOS C under existing conditions to LOS D under the No-Action condition in the midday peak hour and from LOS C to LOS F in the PM peak hour.

Vernon Boulevard & Welling Court/8th Street

- The eastbound approach would deteriorate from LOS D under existing conditions to LOS F under the No-Action condition in the AM peak hour, from an uncongested LOS D to a congested LOS D (delay greater than 45 seconds) in the midday peak hour, and from LOS E to LOS F in the PM peak hour.
- The southbound approach would deteriorate from LOS D under existing conditions to LOS E under the No-Action condition in the AM peak hour.

Astoria Boulevard & 18th Street:

- The eastbound approach would operate at LOS D at a v/c ratio of 0.91 in the AM peak hour under the No-Action condition.

Hoyt Avenue North & 21st Street

- The westbound left-turn movement would deteriorate from LOS D under existing conditions to LOS E under the No-Action condition in both the AM and PM peak hours.
- The northbound through movement would deteriorate from LOS E under existing conditions to LOS F under the No-Action condition in both the AM and PM peak hours.
- The southbound approach would deteriorate from LOS D under existing conditions to LOS E under the No-Action condition in the AM peak hour.

Hoyt Avenue South/Astoria Park South & 21st Street

- The southbound approach would deteriorate from LOS C under existing conditions to LOS E under the No-Action condition in the AM peak hour and from LOS C to LOS D in the PM peak hour.

Vernon Boulevard & 31st Street

- The westbound approach would deteriorate from LOS C under existing conditions to LOS E under the No-Action condition in the AM peak hour.

Vernon Boulevard & Broadway/11th Street

- The westbound approach would deteriorate from LOS D under existing conditions to LOS E under the No-Action condition in the midday peak hour.
- The southbound approach would deteriorate from LOS D under existing conditions to LOS F under the No-Action condition in the AM peak hour.

Future with the Proposed Action (With-Action Condition)

As discussed earlier, under the transportation RWCDS, the Proposed Action would result in the development of approximately 1,668 residential units, 84,470 sf of local retail, a 25,000 sf supermarket and a site for a public elementary school with 456 seats. 900 accessory off-street parking spaces would also be provided to accommodate project generated parking demand. The Proposed Action is anticipated to be completed in 2023. As discussed above in Section E, "Level 2 Screening Assessment," the Proposed Action is expected to generate a total of 534, 365, and 633 net vehicle trips in the AM, midday, and PM

peak hours, respectively. The assignments of the projected vehicle trip increments generated during these peak hours are shown in Figures 13-2, 13-3, and 13-4, respectively. Proposed changes to the roadway network and traffic circulation improvements as well as the effect that the Proposed Action would have on traffic operations, are discussed in the following.

Proposed Roadway Network and Traffic Circulation Improvements

As noted in Chapter 1, "Project Description" and as shown in Figure 1-4 in Chapter 1, the Proposed Action includes changes to the street network to better facilitate access to the project site. As discussed above, under the 2023 No-Action condition, 26th Avenue is expected to be built-out and extend to 9th Street, operating eastbound one-way between 4th and 9th Streets. This configuration would not change with the Proposed Action. However, the Proposed Action includes layby lanes for drop-off/pick-ups and parking along the south side of 26th Avenue between 4th and 9th Streets. In addition, 4th Street would be extended north to the waterfront and its northern end would be connected to 9th Street's northern terminus by a public access easement that would allow for vehicles to travel one-way eastbound from 4th Street to 9th Street. It should be noted that with the extension of 4th Street, the stop control at the intersection of 26th Avenue and 4th Street would be modified. While operating as a T-intersection with a two-way stop control and 26th Avenue as the major road under existing conditions, the new, four-legged intersection would operate with an all-way stop control.[1]

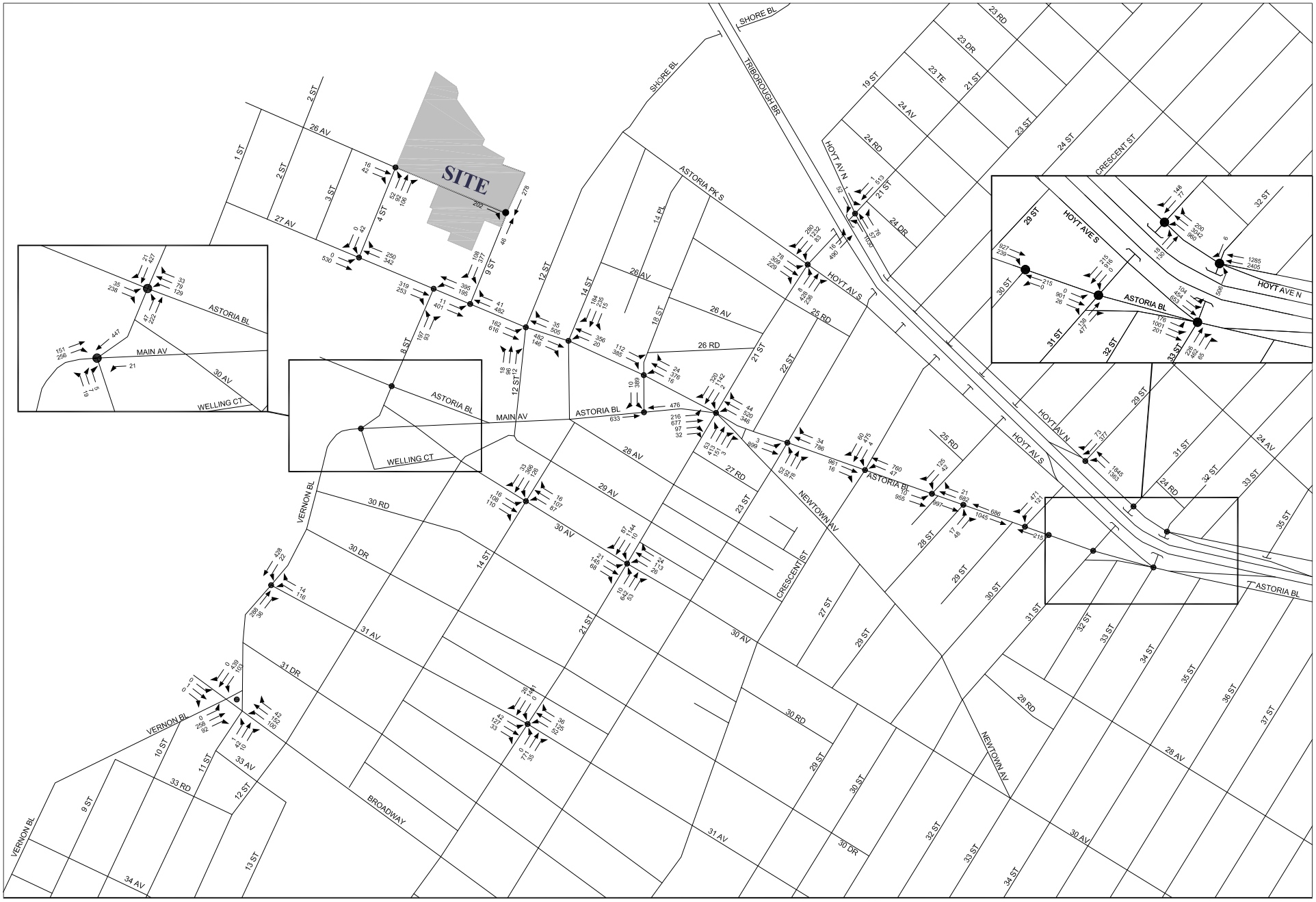
Intersection Capacity Analysis

Figures 13-17, 13-18, and 13-19 show the traffic network volumes under the With-Action condition for the weekday AM, midday, and PM peak hours, respectively. The volumes shown are the sum of the net incremental traffic generated by the Proposed Action and the No-Action traffic network.

Table 13-20 shows a summary comparison of the individual lane group LOS for future No-Action and With-Action conditions. As shown in Table 13-20, five individual traffic movements would operate at LOS E and 27 would operate at LOS F in the AM peak hour under the With-Action condition. During the midday peak hour, three individual traffic movements would operate at LOS E and six would operate at LOS F, while 10 and 17 individual traffic movements would operate at LOS E and LOS F, respectively, in the PM peak hour under the With-Action condition.

Table 13-21 shows the detailed v/c ratios, delays, and LOS by movement at all analyzed intersections in each peak hour under the With-Action condition and identifies those movements that are considered impacted in one or more peak hours. As shown in Table 13-21, one or more approaches or lane groups at a total of 22 of the 30 analyzed intersections would experience significant adverse impacts in one or more peak hour as a result of the Proposed Action. 20 intersections would experience significant adverse impacts in the AM peak hour, 9 intersections would experience significant adverse impacts in the midday peak hour, while 16 intersections would experience significant adverse impacts in the PM peak hour, as shown earlier in more detail in Table 13-1 (refer to Table 13-1). Potential measures to mitigate these significant adverse impacts are discussed in Chapter 20, "Mitigation."

[1] A preliminary all-way stop control warrant was prepared for the subject intersection in accordance with Section 2B.07 of the *Manual on Uniform Traffic Control Devices (MUTCD)* and determined that future With-Action traffic conditions would warrant the installation of an all-way stop control. The warrant study is currently being reviewed by NYCDOT.

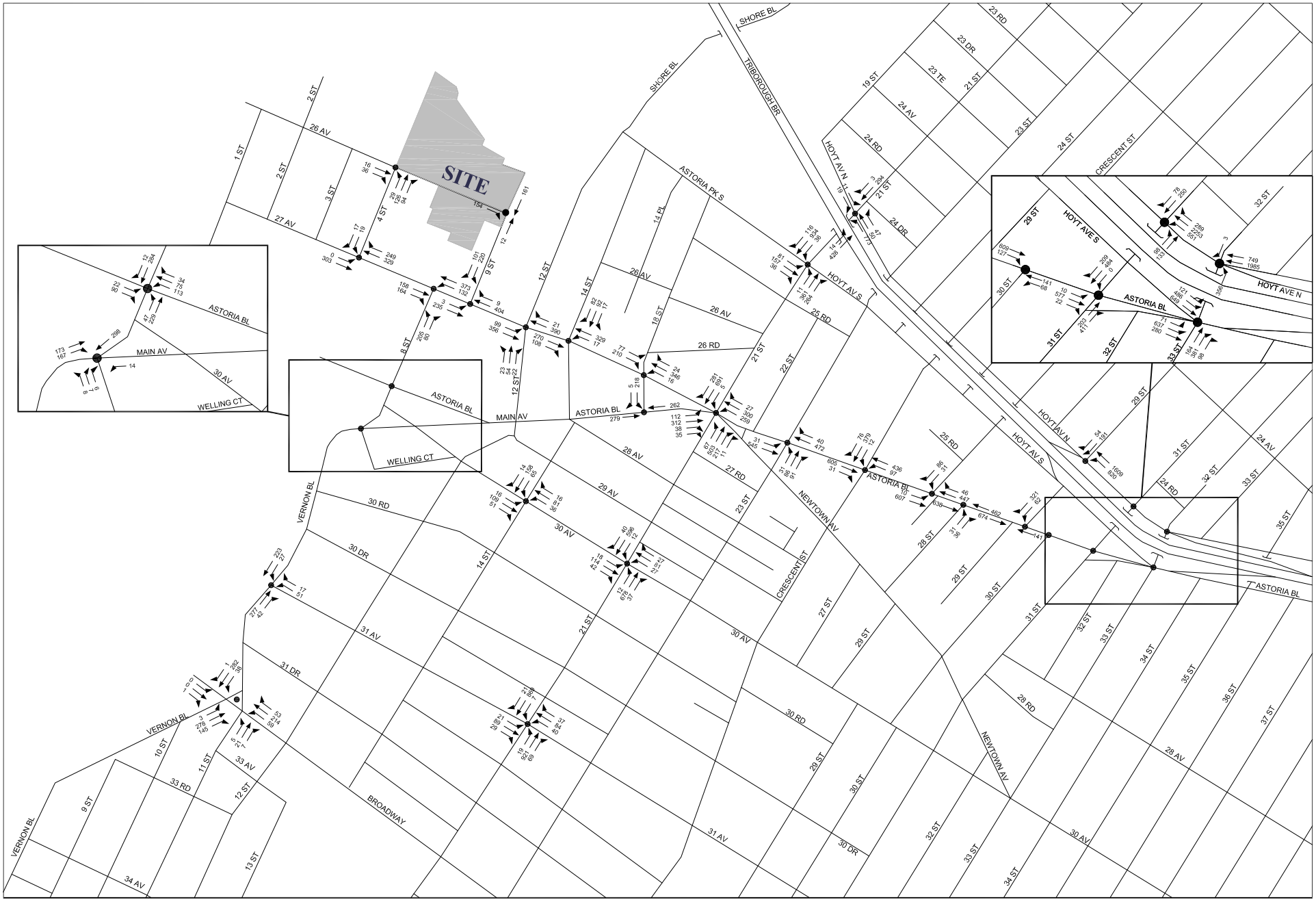


● Analyzed Locations

Astoria Cove

Figure 13-17

With-Action Volumes - AM Peak Hour

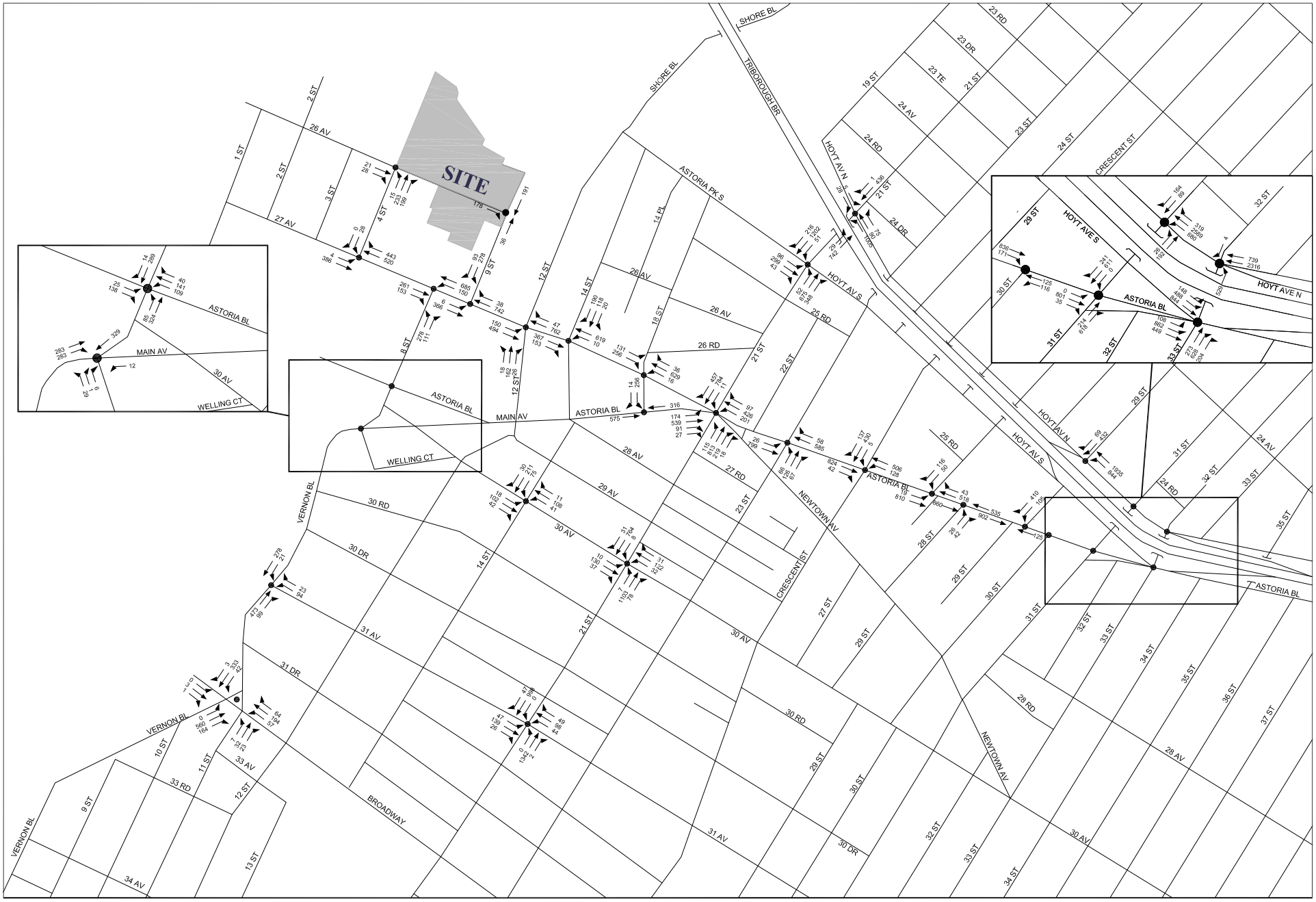


● Analyzed Locations

Astoria Cove

Figure 13-18

With-Action Volumes - Midday Peak Hour



● Analyzed Locations

Astoria Cove

Figure 13-19

With-Action Volumes - PM Peak Hour

Table 13-20: Lane Group LOS Summary Comparison—No-Action vs. With-Action Conditions

	2023 No-Action Condition			2023 With-Action Condition		
	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour
Overall LOS A/B/C	57	80	65	52	78	59
Overall LOS D	26	23	28	27	24	27
Overall LOS E	7	3	5	5	3	10
Overall LOS F	19	3	12	27	6	17
Number of intersections with significant adverse impacts	--	--	--	20	9	16
No. of movements at LOS E or F	26	6	17	32	9	27

Alternate Traffic Impact Analysis without Halletts Point Development

As the traffic study area would experience increased volumes due to both the Proposed Action and the Halletts Point Rezoning project, an additional analysis was conducted to determine whether the impacts disclosed in Table 13-21 would also occur absent the Halletts Point development. It should be noted that for this alternate analysis neither the traffic volumes generated by the Halletts Point development nor the mitigation measures identified in the 2013 *Halletts Point Rezoning FEIS* (see Table 13-17) were accounted for. All other assumptions used to develop the future traffic networks are the same as discussed above.

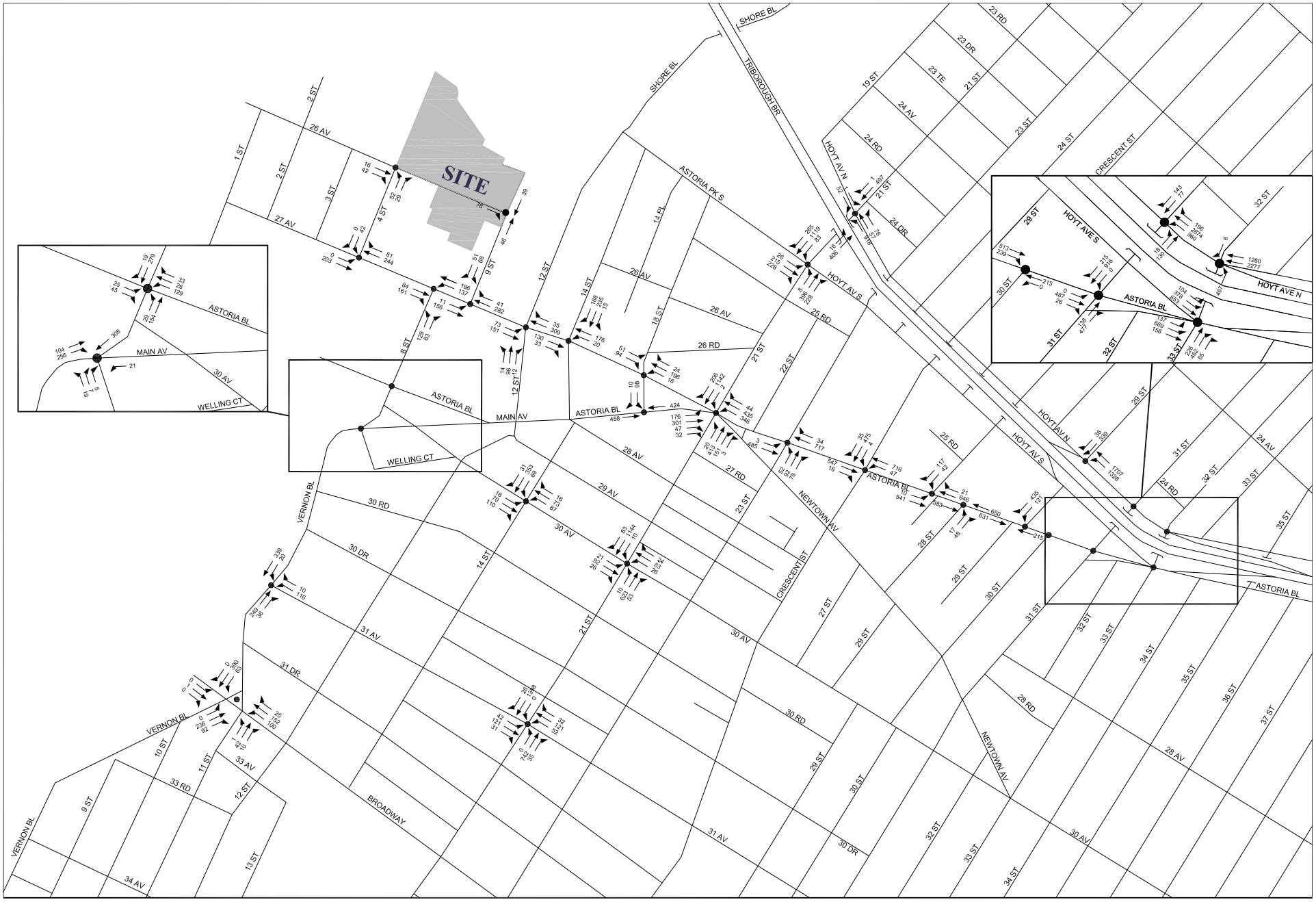
Alternate No-Action Condition Intersection Capacity Analysis

Figures 13-20, 13-21, and 13-22 show the expected weekday AM, midday, and PM peak hour traffic volumes for alternate No-Action condition without the Halletts Point development. Table 13-22 below shows a summary comparison of the individual lane group LOS for existing and the alternate future No-Action conditions. As shown in Table 13-22, seven individual traffic movements would operate at LOS E and 16 would operate at LOS F in the AM peak hour under the alternate No-Action condition. During the midday peak hour, five individual traffic movements would operate at LOS E and two would operate at LOS F, while four and ten individual traffic movements would operate at LOS E and LOS F, respectively, in the PM peak hour under the alternate No-Action condition.

Table 13-23 shows the detailed v/c ratios, delays, and LOS by movement at all analyzed intersections in each peak hour under the alternate No-Action condition and identifies those movements that would congested in one or more peak hour. As shown in Table 13-23, many of the movements that are congested under existing conditions would continue to operate at the same level of service with slight increases in v/c ratios and delays under the alternate No-Action condition. The intersections where newly congested movements would occur under the alternate No-Action condition, or where the level of service of currently congested movements would degrade, are discussed in the following.

27th Avenue & 8th Street:

- In the AM peak hour, the westbound approach would deteriorate from LOS C under existing conditions to LOS E under the alternate No-Action condition.

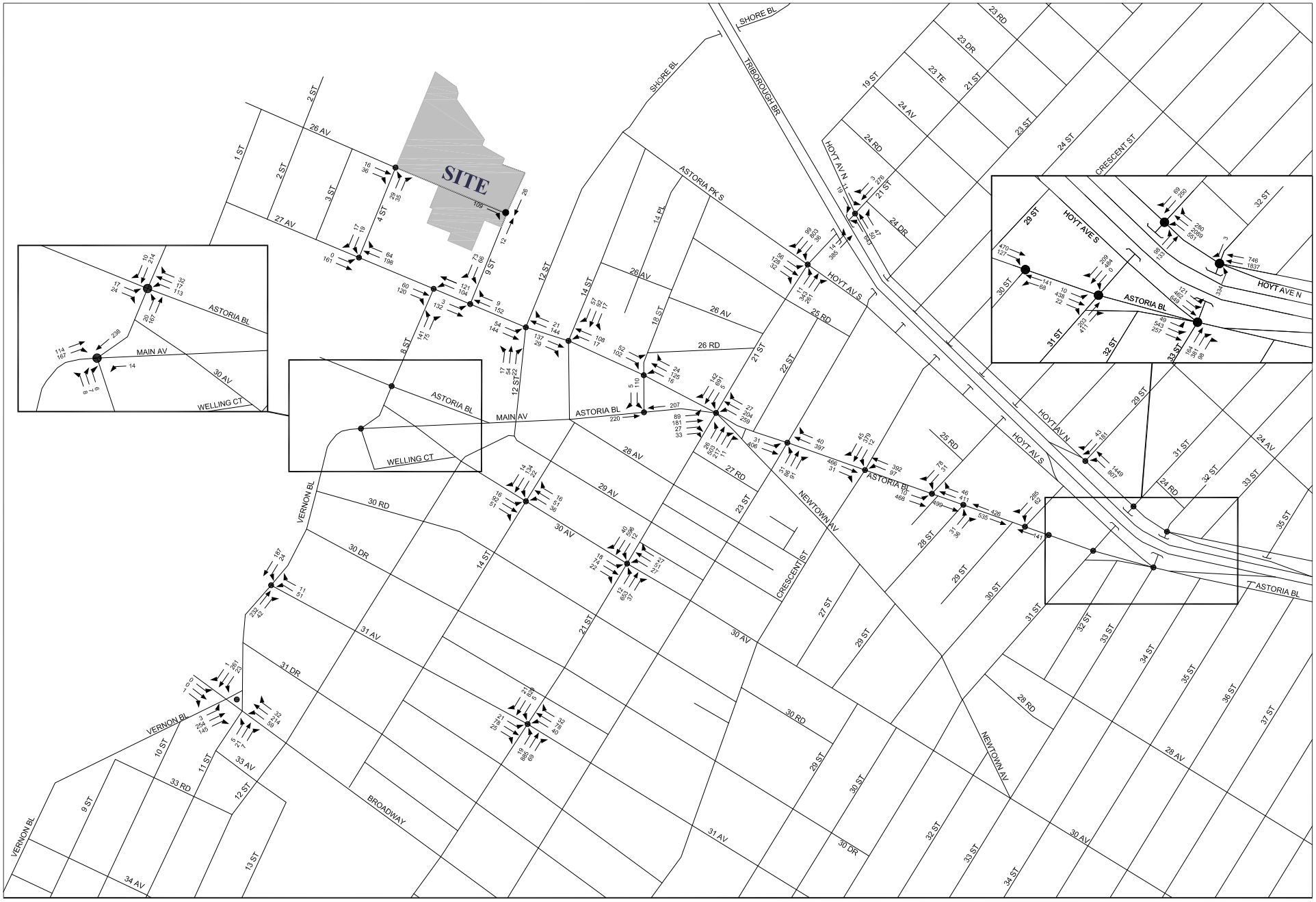


● Analyzed Locations

Astoria Cove

Figure 13- 20

Alternate No-Action Volumes - AM Peak Hour

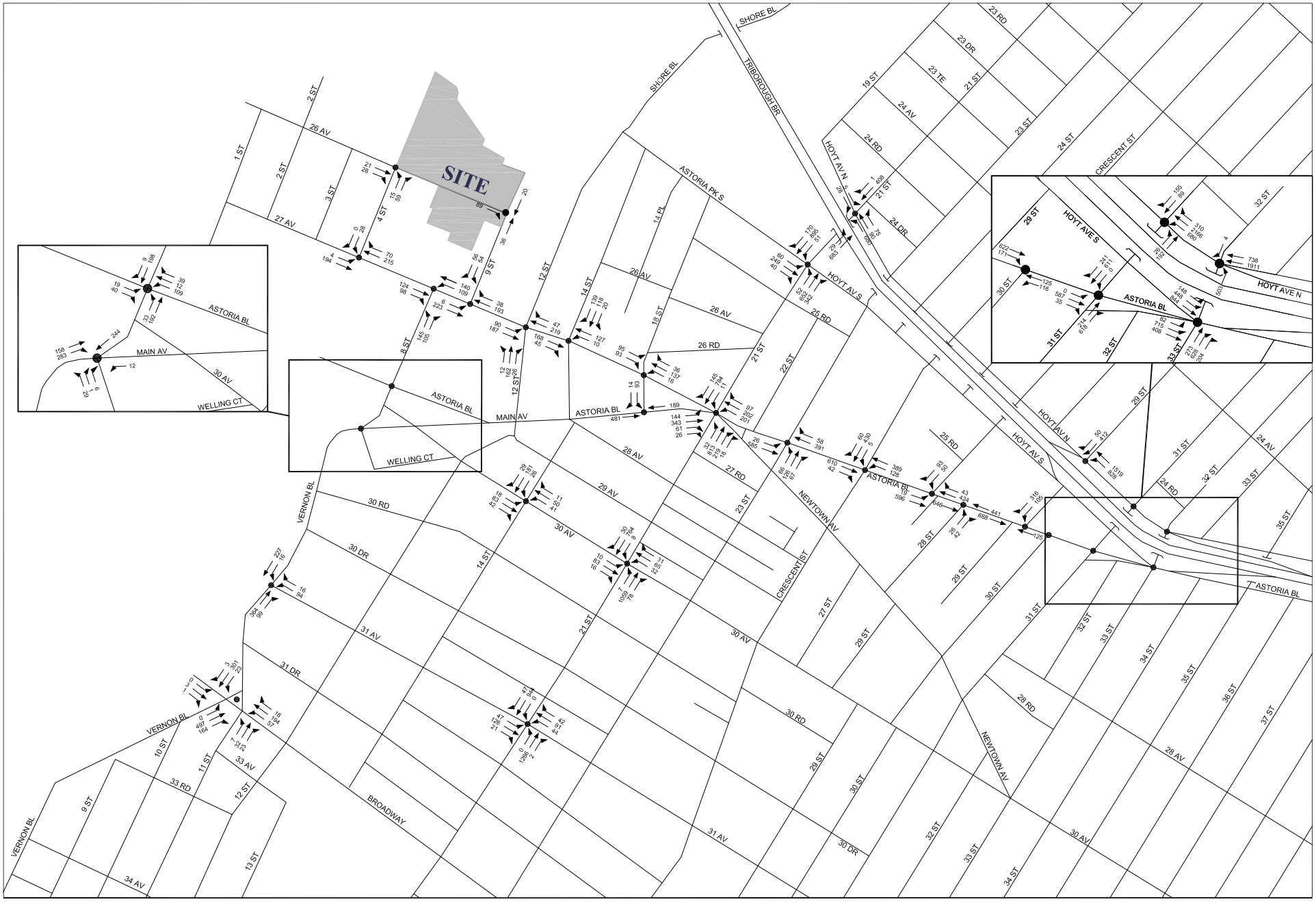


● Analyzed Locations

Astoria Cove

Figure 13-21

Alternate No-Action Volumes - Midday Peak Hour



Astoria Cove

Figure 13-22

Alternate No-Action Volumes - PM Peak Hour

Table 13-21: 2023 Future With-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
1. 26th Avenue & 4th Street	EB-LTR	-	-	-	NA	7.9	A	-	-	-	NA	7.7	A	-	-	-	NA	8.2	A
(Unsignalized-Two Way Stop)	NB-LR	0.11	9.7	A	NA	9.3	A	0.08	9.4	A	NA	9.0	A	0.09	9.3	A	NA	11.9	B
A. 26th Avenue & 9th Street	EB-R	0.09	8.9	A	0.37	13.3	B	0.13	8.9	A	0.23	10.5	B	0.10	8.8	A	0.28	11.3	B
(Unsignalized-Two Way Stop)																			
2. 27th Avenue & 4th Street	EB-LT	0.78	22.4	C	0.78	22.4	C	0.45	14.1	B	0.45	14.1	B	0.56	15.0	B	0.56	15.0	B
(Existing Unsignalized-All Way Stop)	WB-T	0.44	13.7	B	0.44	13.7	B	0.43	13.1	B	0.43	13.1	B	0.65	15.6	B	0.65	15.6	B
(No-Action Signalized)	WB-R	0.25	12.2	B	0.68	22.3	C	0.27	12.5	B	0.89	38.7	D	0.29	11.8	B	1.42	216.9	F *
	SB-LR	0.10	20.4	C	0.10	20.4	C	0.09	20.3	C	0.09	20.3	C	0.08	21.6	C	0.08	21.6	C
3. 27th Avenue & 8th Street	EB-T	0.53	14.9	B	0.53	14.9	B	0.24	11.9	B	0.24	11.9	B	0.36	13.2	B	0.36	13.2	B
	EB-R	0.66	21.2	C	0.66	21.2	C	0.61	22.5	C	0.61	22.5	C	0.42	15.9	B	0.42	15.9	B
	WB-LT	1.32	179.6	F	1.87	417.7	F *	1.25	151.3	F	1.72	354.1	F *	1.22	138.6	F	1.91	437.1	F *
	NB-L	0.52	28.4	C	0.71	35.2	D	0.36	23.3	C	0.45	25.1	C	0.48	25.8	C	0.68	32.0	C
	NB-R	0.57	34.6	C	0.57	34.6	C	0.73	47.7	D	0.73	47.7	D	0.75	47.4	D	0.75	47.4	D
4. 27th Avenue & 12th Street	EB-LT	0.64	9.9	A	1.10	70.9	E *	0.47	11.2	B	0.77	19.4	B	0.54	8.2	A	0.99	40.5	D
(Existing Unsignalized-Two Way Stop)	WB-TR	0.47	6.2	A	0.60	7.4	A	0.41	10.4	B	0.61	13.9	B	0.66	8.8	A	1.01	35.0	C
(No-Action Signalized)	NB-LTR	0.57	43.1	D	0.59	44.1	D	0.28	27.3	C	0.30	27.7	C	0.86	65.8	E	0.90	70.6	E *
5. 27th Avenue & 14th Street	EB-TR	0.61	19.4	B	1.15	95.3	F *	0.33	11.5	B	0.54	14.1	B	0.45	15.7	B	0.77	21.2	C
(Existing Unsignalized-All Way Stop)	WB-LT	0.66	22.9	C	1.27	157.2	F *	0.29	11.0	B	0.47	13.0	B	0.57	16.6	B	1.02	41.0	D
(No-Action Signalized)	SB-LTR	0.89	41.0	D	0.89	41.0	D	0.52	28.5	C	0.52	28.5	C	0.79	36.0	D	0.79	36.0	D
6. 27th Avenue & 18th Street	EB-LTR	0.10	9.5	A	0.13	9.6	A	0.06	8.3	A	0.08	9.0	A	0.12	9.1	A	0.18	11.2	B
(Unsignalized-Two Way Stop)	WB-LTR	0.02	7.8	A	0.02	8.3	A	0.01	7.7	A	0.01	7.8	A	0.01	7.8	A	0.02	8.1	A
7. Astoria Boulevard & 21st Street	EB-L	1.20	156.4	F	1.22	165.5	F *	0.33	36.9	D	0.36	37.7	D	0.61	46.8	D	0.67	48.9	D
	EB-TR	1.70	365.9	F	2.08	535.6	F *	0.61	41.5	D	0.69	44.0	D	1.13	118.0	F	1.29	186.0	F *
	WB-L	1.01	69.0	E	1.01	69.0	E	0.86	53.2	D	0.86	53.2	D	0.92	68.3	E	0.91	66.7	E
	WB-TR	0.82	45.2	D	0.90	48.2	D	0.46	36.4	D	0.56	38.0	D	0.99	73.3	E	1.26	172.6	F *
	NB-LT	0.71	31.5	C	0.80	35.2	D	0.79	38.2	D	0.95	44.7	D	1.10	80.8	F	1.28	160.1	F *
	NB-R	0.37	24.7	C	0.37	24.7	C	0.65	36.1	D	0.65	36.1	D	0.44	22.9	C	0.44	22.9	C
	SB-LT	0.86	30.8	C	0.85	30.7	C	0.76	38.1	D	0.76	38.1	D	0.77	29.6	C	0.77	29.6	C
	SB-R	0.59	26.9	C	0.67	28.4	C	0.75	39.7	D	0.91	47.9	D *	0.80	33.1	C	1.02	62.3	E *
8. Astoria Boulevard & 23rd Street	EB-LT	1.21	127.5	F	1.47	243.1	F *	0.81	23.1	C	0.89	28.8	C	0.95	35.5	D	1.06	63.7	E *
	WB-TR	0.91	29.7	C	0.95	34.1	C	0.77	17.4	B	0.84	19.0	B	0.84	22.7	C	1.01	37.9	D
	NB-LTR	0.50	33.5	C	0.50	33.5	C	0.56	28.5	C	0.56	28.5	C	0.61	37.4	D	0.61	37.4	D

Table 13-21 (continued): 2023 Future With-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
9. Astoria Boulevard & Crescent Street	EB-TR	1.28	159.6	F	1.53	270.4	F *	0.83	25.1	C	0.91	32.0	C	1.11	88.2	F	1.23	136.4	F *
	WB-LT	1.24	139.4	F	1.41	213.7	F *	1.27	143.1	F	1.35	181.2	F *	1.53	267.6	F	1.74	362.6	F *
	SB-LTR	1.11	89.1	F	1.19	124.6	F *	1.09	73.8	E	1.18	115.8	F *	1.07	74.4	E	1.33	188.3	F *
10. Astoria Boulevard & 27th Street	EB-LT	0.96	38.2	D	1.15	100.0	F *	0.59	16.2	B	0.65	17.4	B	0.79	22.1	C	0.88	27.5	C
	WB-TR	0.84	23.0	C	0.85	23.8	C	0.71	18.3	B	0.72	18.8	B	0.65	16.8	B	0.69	17.7	B
	SB-LR	0.83	41.1	D	0.83	41.1	D	0.53	34.9	C	0.53	34.9	C	0.88	42.7	D	0.88	42.7	D
11. Astoria Boulevard & 28th Street (Unsignalized-Two Way Stop)	NB-LR	0.70	68.0	F	0.95	139.4	F	0.42	28.3	D	0.48	33.8	D	0.41	30.1	D	0.49	39.5	E
12. Astoria Boulevard & 29th Street	EB-T	1.63	328.2	F	1.93	460.9	F *	0.97	48.8	D	1.06	72.4	E *	1.30	179.5	F	1.44	238.1	F *
	WB-T	0.44	27.5	C	0.44	27.5	C	0.23	13.5	B	0.23	13.5	B	0.22	20.3	C	0.22	20.3	C
	SB-L	0.18	17.0	B	0.18	17.0	B	0.12	18.1	B	0.12	18.1	B	0.16	19.5	B	0.16	19.5	B
	SB-R	0.75	31.3	C	0.77	32.3	C	0.70	30.5	C	0.72	31.7	C	0.66	30.4	C	0.71	32.9	C
13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop)	WB-LT	0.00	12.9	B	0.00	15.0	B	0.10	10.1	B	0.11	10.5	B	0.23	12.6	B	0.25	13.7	B
14. Astoria Boulevard & 31st Street	EB-LTR	0.83	37.5	D	1.00	53.0	D *	0.57	22.4	C	0.62	23.2	C	0.75	34.8	C	0.84	36.9	D
	NB-T	0.52	41.8	D	0.52	41.8	D	0.54	33.7	C	0.54	33.7	C	0.52	41.6	D	0.52	41.6	D
	NB-R	0.67	16.5	B	0.67	16.5	B	0.53	8.9	A	0.53	8.9	A	0.84	24.2	C	0.84	24.2	C
	SB-T	1.10	85.7	F	1.10	85.7	F	0.65	19.8	B	0.65	19.8	B	0.69	22.8	C	0.69	22.8	C
	SB-R	0.30	14.9	B	0.30	14.9	B	0.31	14.3	B	0.31	14.3	B	0.31	15.1	B	0.31	15.1	B
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.32	192.2	F	1.49	269.1	F *	1.02	62.4	E	1.09	83.5	F *	1.17	121.1	F	1.24	154.2	F *
	NB-TR	1.09	94.2	F	1.09	94.2	F	0.81	38.6	D	0.81	38.6	D	1.09	86.7	F	1.09	86.7	F
	NB-R	1.08	92.9	F	1.08	92.9	F	0.79	42.6	D	0.79	42.6	D	1.08	86.6	F	1.08	86.6	F
	Hoyt Ave (EB-LT)	0.63	27.1	C	0.63	27.1	C	0.78	30.4	C	0.78	30.4	C	0.87	41.3	D	0.87	41.3	D
16. Hoyt Ave N. & 29th Street	WB-L	0.80	14.6	B	0.80	14.6	B	0.57	12.0	B	0.57	12.0	B	0.45	12.7	B	0.45	12.7	B
	WB-LT	0.82	14.6	B	0.84	15.1	B	0.58	11.7	B	0.61	12.0	B	0.74	17.5	B	0.80	19.3	B
	SB-R	1.03	98.5	F	1.13	130.5	F *	0.53	35.5	D	0.56	36.0	D	0.85	54.2	D	0.88	57.3	E
17. Hoyt Ave N. & 31st Street	WB-L	1.06	101.1	F	1.06	101.1	F	1.05	95.0	F	1.05	95.0	F	0.44	16.3	B	0.44	16.3	B
	WB-T	1.01	37.4	D	1.02	41.5	D	0.80	19.5	B	0.82	20.2	C	0.85	25.4	C	0.90	28.2	C
	WB-R	0.34	10.4	B	0.34	10.5	B	0.66	21.5	C	0.68	22.3	C	0.72	26.8	C	0.74	28.0	C
	NB-DefL	-	-	-	-	-	-	0.54	31.1	C	0.54	31.1	C	-	-	-	-	-	-
	NB-T	-	-	-	-	-	-	0.23	21.2	C	0.23	21.2	C	-	-	-	-	-	-
	NB-LT	0.30	35.9	D	0.30	35.9	D		26.0	C		26.0	C	0.29	28.3	C	0.29	28.3	C
	SB-T	0.28	36.3	D	0.28	36.3	D	0.46	24.4	C	0.46	24.4	C	0.15	26.6	C	0.15	26.6	C
	SB-R	0.74	57.8	E	0.77	60.1	E	0.26	22.2	C	0.29	22.7	C	0.49	34.6	C	0.52	35.5	D

Table 13-21 (continued): 2023 Future With-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.53	8.9	A	0.53	8.9	A	0.37	7.9	A	0.37	7.9	A	0.32	9.2	A	0.32	9.2	A
	WB(Ramp)-T	1.17	127.2	F	1.19	136.2	F *	1.03	45.5	D	1.06	54.9	D *	1.13	84.7	F	1.20	116.1	F *
	NB-L	0.66	45.3	D	0.67	45.4	D	0.38	29.0	C	0.39	29.1	C	0.57	39.2	D	0.58	39.3	D
	SB-R	0.03	38.0	D	0.03	38.0	D	0.02	25.9	C	0.02	25.9	C	0.02	33.3	C	0.02	33.3	C
19. Astoria Boulevard & 8th Street	EB-L	0.16	24.6	C	0.16	24.6	C	0.09	26.1	C	0.09	26.1	C	0.17	29.0	C	0.17	29.0	C
	EB-R	0.77	44.4	D	0.77	44.4	D	0.27	29.0	C	0.27	29.0	C	0.66	40.6	D	0.66	40.6	D
	WB-L	0.32	26.9	C	0.32	26.9	C	0.36	30.6	C	0.36	30.6	C	0.31	31.0	C	0.31	31.0	C
	WB-TR	0.34	27.3	C	0.34	27.3	C	0.34	30.3	C	0.34	30.3	C	0.50	35.3	D	0.50	35.3	D
	NB-LT	0.52	20.2	C	0.66	23.6	C	0.46	17.2	B	0.53	18.5	B	0.87	27.7	C	1.04	59.0	E *
	SB-TR	0.74	27.0	C	0.84	32.8	C	0.40	16.3	B	0.43	16.9	B	0.39	15.1	B	0.44	15.9	B
20. 30th Avenue & 14th Street	EB-LTR	NA	13.0	B	NA	15.5	C	NA	9.1	A	NA	9.7	A	NA	9.6	A	NA	10.5	B
(Unsignalized-All Way Stop)	WB-LTR	NA	13.4	B	NA	16.3	C	NA	9.1	A	NA	9.8	A	NA	9.5	A	NA	10.7	B
	SB-LTR	NA	28.5	D	NA	60.5	F *	NA	9.5	A	NA	10.9	B	NA	11.4	B	NA	15.4	C
21. 30th Avenue & 21st Street	EB-LTR	0.52	39.0	D	0.77	51.2	D *	0.35	34.5	C	0.48	37.8	D	0.37	35.1	D	0.55	39.9	D
	WB-LTR	0.48	38.0	D	0.55	40.3	D	0.39	35.6	D	0.42	36.5	D	0.50	38.8	D	0.58	41.5	D
	NB-LTR	0.53	15.0	B	0.55	15.3	B	0.53	14.9	B	0.54	15.2	B	0.78	21.7	C	0.81	23.0	C
	SB-LTR	0.75	19.8	B	0.75	19.9	B	0.42	13.0	B	0.42	13.0	B	0.48	13.9	B	0.48	13.9	B
22. Vernon Boulevard & Welling Court/	EB-LT	1.18	116.5	F	1.26	152.3	F *	0.91	45.7	D	0.99	58.7	E *	1.43	229.6	F	1.59	300.3	F *
8th Street	WB-TR	0.04	21.1	C	0.04	21.1	C	0.04	21.1	C	0.04	21.1	C	0.06	21.3	C	0.06	21.3	C
	NB-LTR	0.33	36.1	D	0.33	36.1	D	0.17	31.0	C	0.17	31.0	C	0.18	29.5	C	0.18	29.5	C
	SB-R	1.01	68.7	E	1.11	99.9	F *	0.71	35.1	D	0.76	37.8	D	0.72	37.9	D	0.79	42.2	D
23. Astoria Boulevard & 18th Street	EB-T	0.91	39.6	D	0.93	41.5	D	0.41	23.1	C	0.41	23.1	C	0.76	31.5	C	0.77	32.0	C
(Existing Unsignalized-Two Way Stop)	WB-T	0.66	27.1	C	0.66	27.1	C	0.41	22.9	C	0.41	22.9	C	0.44	22.2	C	0.44	22.2	C
(No-Action Signalized)	SB-LR	0.46	25.0	C	0.83	41.9	D	0.32	22.1	C	0.44	24.7	C	0.32	22.0	C	0.50	25.8	C
24. Hoyt Avenue N. & 21st Street	EB-L	0.02	40.4	D	0.02	40.4	D	0.12	44.0	D	0.12	44.0	D	0.11	43.9	D	0.11	43.9	D
	EB-R	0.37	47.5	D	0.37	47.5	D	0.15	44.5	D	0.15	44.5	D	0.19	45.3	D	0.19	45.3	D
	WB-L	1.07	78.5	E	1.10	90.7	F *	0.81	41.3	D	0.85	43.5	D	0.97	58.9	E	1.06	82.3	F *
	WB-TR	0.25	14.8	B	0.25	14.8	B	0.17	14.2	B	0.17	14.2	B	0.30	16.9	B	0.30	16.9	B
	NB-L	0.31	32.3	C	0.32	33.1	C	0.12	25.4	C	0.12	25.5	C	0.17	24.7	C	0.17	24.8	C
	NB-T	1.20	143.8	F	1.30	184.4	F *	0.81	46.3	D	0.86	51.1	D	1.12	99.0	F	1.17	119.4	F *
	SB-TR	1.04	65.0	E	1.06	73.8	E *	0.60	34.1	C	0.62	34.7	C	0.77	37.9	D	0.80	39.4	D

Table 13-21 (continued): 2023 Future With-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-LTR	0.84	41.9	D	0.93	44.9	D		0.36	32.0	C	0.40	32.6	C		0.58	37.9	D	0.63	39.0	D	
	NB-LT	-	-	-	-	-	-		-	-	-	-	-	-		0.72	16.8	B	0.75	17.7	B	
	NB-R	-	-	-	-	-	-		-	-	-	-	-	-		0.51	13.3	B	0.52	13.4	B	
	NB-LTR	0.60	14.2	B	0.63	14.7	B		0.48	15.0	B	0.49	15.1	B			15.7	B		16.3	B	
	SB-LTR	1.11	75.4	E	1.15	90.7	F	*	0.73	19.8	B	0.76	20.8	C		0.99	38.1	D	1.05	56.1	E	*
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.02	8.5	A	0.01	8.9	A		0.01	8.1	A	0.00	8.6	A		0.01	8.8	A	0.01	10.1	B	
	SB-LR	0.56	29.6	D	2.35	651.8	F	*	0.43	15.9	C	1.01	79.1	F	*	0.60	31.2	D	2.53	744.3	F	*
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.66	38.2	E	0.72	45.7	E	*	0.25	17.7	C	0.28	18.6	C		0.51	29.2	D	0.59	36.0	E	*
	SB-LT	0.02	8.3	A	0.02	8.3	A		0.03	8.1	A	0.03	8.2	A		0.02	8.9	A	0.03	9.0	A	
28. Vernon Boulevard & Broadway/11th Street	EB-LTR	0.01	28.2	C	0.01	28.2	C		0.02	25.4	C	0.02	25.4	C		0.03	33.2	C	0.03	33.2	C	
	WB-LT	0.87	38.9	D	0.87	38.9	D		-	-	-	-	-	-		0.77	47.0	D	0.77	47.0	D	
	WB-R	0.21	29.9	C	0.23	30.3	C		-	-	-	-	-	-		0.24	35.8	D	0.37	37.9	D	
	WB-LTR	0.00	37.7	D		37.6	D		0.96	55.5	E	1.01	67.6	E	*	0.00	45.1	D		44.9	D	
	NB (Vernon Blvd)-LT	0.28	8.2	A	0.29	8.3	A		0.29	9.0	A	0.30	9.1	A		0.52	10.1	B	0.54	10.4	B	
	NB (Vernon Blvd)-R	0.11	6.8	A	0.11	6.8	A		0.21	8.3	A	0.21	8.3	A		0.18	6.7	A	0.18	6.7	A	
	NB (11th Street)-LTR	0.38	41.1	D	0.38	41.1	D		0.22	32.8	C	0.22	32.8	C		0.33	38.2	D	0.33	38.2	D	
	SB-LTR	1.36	195.9	F	1.46	241.9	F	*	0.67	31.5	C	0.72	33.5	C		0.88	45.4	D	1.01	70.5	E	*
29. 31st Avenue & 21st Street	EB-LTR	0.67	45.6	D	0.70	47.3	D		0.34	34.5	C	0.38	35.4	D		0.50	35.0	D	0.54	36.3	D	
	WB-LTR	0.58	41.1	D	0.61	42.0	D		0.42	35.9	D	0.45	36.7	D		0.42	32.4	C	0.45	33.2	C	
	NB-TR	0.50	14.2	B	0.51	14.3	B		0.64	17.0	B	0.65	17.3	B		0.79	24.2	C	0.81	25.2	C	
	SB-TR	0.89	26.8	C	0.91	29.0	C		0.57	15.5	B	0.59	15.8	B		0.66	20.0	B	0.67	20.4	C	

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec/veh - Seconds per Vehicle
LOS - Level of Service
* - Denotes a significant adverse impact.
Analysis is based on the 2010 *Highway Capacity Manual* methodology (HCS+, version 5.5)

Table 13-22: Lane Group Level of Service Summary Comparison–Existing vs. Alternate No-Action Condition

	Existing Conditions			2023 Alternate No-Action Condition without Halletts Point Development		
	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour
Overall LOS A/B/C	64	85	72	55	81	67
Overall LOS D	25	16	22	23	14	20
Overall LOS E	10	1	8	7	5	4
Overall LOS F	3	1	0	16	2	10
No. of movements at LOS E or F	13	2	8	23	7	14

27th Avenue & 12th Street (unsignalized):

- In the PM peak hour, the northbound approach would deteriorate from LOS E under existing conditions to LOS F under the alternate No-Action condition.

Astoria Boulevard & 21st Street:

- The eastbound left-turn movement would deteriorate from LOS E under existing conditions to LOS F under the alternate No-Action condition in the AM peak hour.
- The eastbound through/right movement would deteriorate from LOS D under existing conditions to LOS F under the alternate No-Action condition in the AM peak hour and from LOS D to LOS E in the PM peak hour.
- The northbound approach would deteriorate from LOS D under existing conditions to LOS E under the alternate No-Action condition in the AM peak hour, from LOS E to LOS F in the midday peak hour, and from LOS D to LOS F in the PM peak hour.
- The southbound approach would deteriorate from LOS E under existing conditions to LOS F under the alternate No-Action condition in the AM peak hour, from LOS D to LOS E in the midday peak hour, and from LOS C to LOS D in the PM peak hour.

Astoria Boulevard & Crescent Street

- The eastbound approach would deteriorate from LOS C under existing conditions to LOS D under the alternate No-Action condition in the PM peak hour.
- The westbound approach would deteriorate from LOS C under existing conditions to LOS D under the alternate No-Action condition in the AM peak hour, from LOS C to LOS E in the midday peak hour, and from LOS D to LOS F in the PM peak hour.
- The southbound approach would deteriorate from LOS E under existing conditions to LOS F under the alternate No-Action condition in the AM peak hour and from LOS D to LOS E in both the midday and PM peak hours.

Astoria Boulevard & 29th Street

- The eastbound approach would deteriorate from LOS E under existing conditions to LOS F under the alternate No-Action condition in both the AM and PM peak hours.

Table 13-23: Alternate 2023 Future No-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		EXISTING			NO-ACTION				EXISTING			NO-ACTION				EXISTING			NO-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
1. 26th Avenue & 4th Street	WB-LT	0.03	7.7	A	-	-	-		0.07	7.9	A	-	-	-		0.05	7.9	A	-	-	-	
(Unsignalized-Two Way Stop)	NB-LR	0.10	10.1	B	0.11	9.7	A		0.08	10.3	B	0.08	9.4	A		0.06	9.5	A	0.09	9.3	A	
A. 26th Avenue & 9th Street	EB-R	-	-	-	0.09	8.9	A		-	-	-	0.13	8.9	A		-	-	-	0.10	8.8	A	
(Unsignalized-Two Way Stop)																						
2. 27th Avenue & 4th Street	EB-LT	NA	10.0	A	NA	9.9	A		NA	9.6	A	NA	9.1	A		NA	9.8	A	NA	9.6	A	
(Unsignalized-All Way Stop)	WB-T	NA	11.1	B	NA	11.0	B		NA	10.4	B	NA	9.9	A		NA	10.5	B	NA	10.2	B	
	WB-R	NA	7.9	A	NA	7.9	A		NA	8.1	A	NA	7.8	A		NA	8.0	A	NA	8.0	A	
	SB-LR	NA	9.8	A	NA	9.3	A		NA	9.8	A	NA	8.4	A		NA	9.5	A	NA	8.8	A	
3. 27th Avenue & 8th Street	EB-TR	0.59	18.5	B	0.54	17.2	B		0.54	17.2	B	0.38	14.1	B		0.48	15.6	B	0.39	14.0	B	
	WB-LT	0.81	30.7	C	0.98	57.1	E	*	0.55	18.4	B	0.89	41.5	D		0.41	14.9	B	0.59	19.3	B	
	NB-L	0.41	24.5	C	0.43	24.9	C		0.30	22.3	C	0.31	22.6	C		0.33	22.9	C	0.36	23.4	C	
	NB-R	0.26	22.0	C	0.28	22.3	C		0.28	22.4	C	0.30	22.7	C		0.30	22.6	C	0.33	23.1	C	
4. 27th Avenue & 12th Street	EB-LT	0.07	8.6	A	0.08	8.7	A		0.05	8.0	A	0.06	8.1	A		0.08	8.4	A	0.09	8.5	A	
(Unsignalized-Two Way Stop)	NB-LTR	0.43	25.5	D	0.51	31.3	D		0.24	15.9	C	0.26	16.9	C		0.69	38.3	E	*	0.79	52.9	F	*
5. 27th Avenue & 14th Street	EB-TR	NA	10.6	B	NA	11.9	B		NA	9.2	A	NA	9.5	A		NA	9.9	A	NA	10.6	B	
(Unsignalized-All Way Stop)	WB-LT	NA	12.1	B	NA	13.3	B		NA	9.0	A	NA	9.2	A		NA	9.6	A	NA	10.3	B	
	SB-LTR	NA	16.8	C	NA	20.0	C		NA	9.2	A	NA	9.5	A		NA	10.5	B	NA	11.2	B	
6. 27th Avenue & 18th Street	EB-LTR	0.05	9.2	A	0.06	9.3	A		0.04	8.1	A	0.04	8.1	A		0.07	8.0	A	0.08	8.1	A	
(Unsignalized-Two Way Stop)	WB-LTR	0.01	7.5	A	0.01	7.5	A		0.01	7.5	A	0.01	7.6	A		0.01	7.6	A	0.01	7.7	A	
7. Astoria Boulevard & 21st Street	EB-L	0.82	59.3	E	*	1.08	111.5	F	*	0.25	34.6	C	0.29	36.1	D		0.45	41.9	D	0.56	45.3	D	
	EB-TR	0.82	52.5	D		1.03	85.1	F	*	0.38	36.1	D	0.45	37.9	D		0.75	47.7	D	0.87	55.1	E	*
	WB-L	0.95	57.8	E	*	1.01	69.0	E	*	0.81	49.3	D	0.86	53.2	D		0.83	58.3	E	*	0.92	68.3	E	*
	WB-TR	0.72	42.7	D		0.77	43.9	D		0.36	35.0	D	0.40	35.6	D		0.69	48.1	D	0.79	52.1	D	
	NB-LTR	0.80	35.7	D		0.99	56.0	E	*	1.05	69.9	E	*	1.21	136.0	F	*	1.02	46.2	D	*	1.23	138.8	F	*
	SB-LTR	1.05	60.8	E	*	1.13	94.1	F	*	0.97	49.1	D	*	1.06	72.6	E	*	0.87	34.4	C		1.02	54.1	D	*
8. Astoria Boulevard & 23rd Street	EB-LT	0.64	20.1	C	0.80	25.3	C		0.61	16.5	B	0.69	18.5	B		0.69	21.1	C	0.80	24.6	C	
	WB-TR	0.81	24.4	C	0.87	27.2	C		0.66	15.3	B	0.72	16.3	B		0.63	18.4	B	0.72	20.2	C	
	NB-LTR	0.48	33.0	C	0.50	33.5	C		0.53	27.8	C	0.56	28.4	C		0.57	35.3	D	0.60	36.2	D	

Table 13-23 (continued): Alternate 2023 Future No-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		EXISTING			NO-ACTION			EXISTING			NO-ACTION			EXISTING			NO-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
9. Astoria Boulevard & Crescent Street	EB-TR	0.72	24.0	C	0.88	33.9	C	0.63	17.3	B	0.72	19.6	B	0.82	27.9	C	0.93	38.6	D *
	WB-LT	0.86	27.5	C	1.01	48.0	D *	0.98	31.1	C *	1.11	75.0	E *	0.99	38.6	D *	1.20	119.5	F *
	SB-LTR	1.05	66.5	E *	1.10	88.2	F *	1.03	54.2	D *	1.09	73.8	E *	1.00	50.7	D *	1.07	73.5	E *
10. Astoria Boulevard & 27th Street	EB-LT	0.54	15.2	B	0.66	17.9	B	0.44	13.6	B	0.50	14.5	B	0.57	15.7	B	0.65	17.5	B
	WB-TR	0.76	19.6	B	0.81	21.7	C	0.62	16.3	B	0.67	17.4	B	0.52	14.3	B	0.57	15.3	B
	SB-LR	0.75	38.8	D	0.79	39.7	D	0.47	34.1	C	0.49	34.3	C	0.71	38.0	D	0.76	39.1	D
11. Astoria Boulevard & 28th Street (Unsignalized-Two Way Stop)	NB-LR	0.32	20.8	C	0.43	28.6	D	0.30	18.9	C	0.35	22.4	C	0.25	17.4	C	0.31	21.2	C
12. Astoria Boulevard & 29th Street	EB-T	0.97	65.6	E *	1.17	127.2	F *	0.75	24.9	C	0.84	30.6	C	0.97	58.4	E *	1.10	96.4	F *
	WB-T	0.42	27.1	C	0.44	27.5	C	0.22	13.4	B	0.23	13.5	B	0.21	20.2	C	0.22	20.3	C
	SB-L	0.17	16.9	B	0.18	17.0	B	0.12	18.0	B	0.12	18.1	B	0.16	19.5	B	0.16	19.5	B
	SB-R	0.65	26.9	C	0.71	29.1	C	0.58	26.2	C	0.64	28.1	C	0.48	25.1	C	0.55	26.8	C
13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop)	WB-LT	0.26	11.3	B	0.00	10.5	B	0.08	9.2	A	0.09	9.6	A	0.17	10.4	B	0.19	11.2	B
14. Astoria Boulevard & 31st Street	EB-LTR	0.90	44.5	D *	1.11	98.1	F *	0.85	31.7	C	0.97	43.8	D *	0.96	46.4	D *	1.09	86.5	F *
	NB-T	0.49	41.2	D	0.52	41.8	D	0.51	33.2	C	0.54	33.7	C	0.49	41.0	D	0.52	41.6	D
	NB-R	0.63	15.3	B	0.67	16.5	B	0.50	8.5	A	0.53	8.9	A	0.79	21.4	C	0.84	24.2	C
	SB-T	0.86	31.4	C	1.10	85.7	F *	0.62	19.1	B	0.65	19.8	B	0.67	21.8	C	0.69	22.8	C
	SB-R	0.53	19.0	B	0.30	14.9	B	0.29	14.1	B	0.31	14.3	B	0.30	14.9	B	0.31	15.1	B
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	0.91	50.4	D *	1.05	77.8	E *	0.92	44.5	D *	1.02	62.1	E *	1.05	73.9	E *	1.16	117.8	F *
	NB-TR	1.05	78.6	E *	1.09	94.2	F *	0.77	37.3	D	0.81	38.6	D	1.05	69.4	E *	1.09	86.7	F *
	NB-R	1.04	79.3	E *	1.08	92.9	F *	0.76	40.7	D	0.79	42.6	D	1.04	69.9	E *	1.08	86.6	F *
	Hoyt Ave (EB-LT)	0.54	25.6	C	0.59	26.4	C	0.67	26.7	C	0.71	27.5	C	0.73	35.1	D	0.78	36.4	D
16. Hoyt Ave N. & 29th Street	WB-L	0.71	11.6	B	0.76	12.6	B	0.54	11.5	B	0.56	11.9	B	0.41	12.3	B	0.44	12.6	B
	WB-LT	0.71	11.3	B	0.76	12.2	B	0.50	10.8	B	0.54	11.2	B	0.56	14.1	B	0.63	15.2	B
	SB-R	0.99	90.5	F *	1.04	104.0	F *	0.49	34.5	C	0.51	34.9	C	0.78	49.8	D	0.82	51.8	D

Table 13-23 (continued): Alternate 2023 Future No-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		EXISTING				NO-ACTION			EXISTING				NO-ACTION			EXISTING				NO-ACTION		
		V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	
17. Hoyt Ave N. & 31st Street	WB-L	1.02	87.8	F	*	1.06	101.1	F	*	1.01	83.2	F	*	1.05	95.0	F	*	0.42	16.0	B		0.44	16.3	B	
	WB-T	0.90	21.6	C	*	0.97	28.0	C	*	0.71	17.2	B		0.76	18.4	B		0.68	20.1	C		0.76	21.9	C	
	WB-R	0.31	10.2	B		0.33	10.4	B		0.61	19.6	B		0.65	21.1	C		0.65	23.6	C		0.71	26.4	C	
	NB-DefL	0.28	35.6	D		-	-	-		-	-	-		0.53	30.8	C		-	-	-		-	-	-	
	NB-T	-	-	-		-	-	-		0.50	29.3	C		0.23	21.2	C		-	-	-		-	-	-	
	NB-LT	-	-	-		0.30	35.9	D		0.22	21.1	C		-	-	-		0.28	28.1	C		0.29	28.3	C	
	SB-T	0.26	36.0	D		0.28	36.3	D		0.44	24.1	C		0.46	24.4	C		0.15	26.5	C		0.15	26.6	C	
	SB-R	0.69	53.7	D		0.73	56.5	E	*	0.24	21.9	C		0.26	22.1	C		0.46	33.6	C		0.48	34.4	C	
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.51	8.6	A		0.53	8.8	A		0.35	7.8	A		0.37	7.9	A		0.31	9.1	A		0.32	9.2	A	
	WB(Ramp)-T	1.05	81.1	F	*	1.13	109.3	F	*	0.92	22.0	C	*	0.98	31.9	C	*	0.89	23.5	C		0.99	38.1	D	*
	NB-L	0.56	43.7	D		0.61	44.5	D		0.33	28.5	C		0.36	28.8	C		0.50	38.4	D		0.55	39.0	D	
	SB-R	0.03	38.0	D		0.03	38.0	D		0.02	25.9	C		0.02	25.9	C		0.02	33.3	C		0.02	33.3	C	
19. Astoria Boulevard & 8th Street	EB-LR	0.25	28.5	C		0.26	28.8	C		0.12	26.4	C		0.13	26.5	C		0.26	28.6	C		0.28	29.0	C	
	WB-L	0.26	28.5	C		0.35	30.2	C		0.25	28.5	C		0.35	30.6	C		0.16	27.0	C		0.29	29.3	C	
	WB-TR	0.20	27.7	C		0.20	27.8	C		0.15	27.0	C		0.16	27.0	C		0.15	26.9	C		0.15	27.0	C	
	NB-LT	0.34	15.1	B		0.37	15.5	B		0.31	14.8	B		0.33	15.1	B		0.40	15.5	B		0.43	16.0	B	
	SB-TR	0.50	17.9	B		0.53	18.5	B		0.31	15.1	B		0.33	15.3	B		0.29	14.8	B		0.31	15.0	B	
20. 30th Avenue & 14th Street	EB-LTR	NA	11.5	B		NA	12.1	B		NA	8.7	A		NA	8.9	A		NA	9.1	A		NA	9.3	A	
(Unsignalized-All Way Stop)	WB-LTR	NA	12.3	B		NA	12.9	B		NA	8.7	A		NA	8.8	A		NA	9.0	A		NA	9.1	A	
	SB-LTR	NA	22.3	C		NA	26.5	D		NA	9.2	A		NA	9.4	A		NA	10.6	B		NA	11.0	B	
21. 30th Avenue & 21st Street	EB-LTR	0.41	36.1	D		0.45	37.2	D		0.30	33.5	C		0.32	33.9	C		0.32	33.9	C		0.34	34.3	C	
	WB-LTR	0.43	36.7	D		0.45	37.2	D		0.33	34.2	C		0.34	34.5	C		0.41	36.2	D		0.42	36.6	D	
	NB-LTR	0.47	13.9	B		0.53	15.0	B		0.48	14.1	B		0.53	14.9	B		0.71	19.1	B		0.78	21.7	C	
	SB-LTR	0.69	18.1	B		0.75	19.8	B		0.37	12.4	B		0.42	13.0	B		0.42	13.1	B		0.48	13.9	B	
22. Vernon Boulevard & Welling Court	EB-LT	0.96	47.1	D	*	1.21	132.9	F	*	0.79	37.7	D		0.90	45.7	D	*	1.04	66.2	E	*	1.22	136.0	F	*
/8th Street	WB-TR	0.03	21.0	C		0.04	21.1	C		0.03	21.0	C		0.04	21.1	C		0.04	21.1	C		0.06	21.3	C	
	NB-LTR	0.24	31.2	C		0.28	32.0	C		0.14	28.9	C		0.15	29.1	C		0.08	28.2	C		0.18	29.5	C	
	SB-R	0.73	36.2	D		0.85	44.3	D		0.55	31.3	C		0.65	34.6	C		0.47	29.5	C		0.59	32.6	C	
23. Astoria Boulevard & 18th Street	SB-LR	0.30	20.8	C		0.51	32.5	D		0.20	12.7	B		0.24	13.9	B		0.21	14.3	B		0.29	17.2	C	
(Unsignalized-Two Way Stop)																									

Table 13-23 (continued): Alternate 2023 Future No-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		EXISTING			NO-ACTION			EXISTING			NO-ACTION			EXISTING			NO-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
24. Hoyt Avenue N. & 21st Street	EB-L	0.02	40.4	D	0.02	40.4	D	0.11	42.0	D	0.11	42.0	D	0.09	41.7	D	0.09	41.8	D
	EB-R	0.36	47.1	D	0.37	47.5	D	0.13	42.3	D	0.13	42.4	D	0.17	43.0	D	0.17	43.1	D
	WB-L	0.89	43.3	D	0.98	52.8	D *	0.67	38.0	D	0.75	40.3	D	0.59	36.4	D	0.71	39.6	D
	WB-TR	0.24	14.7	B	0.25	14.8	B	0.16	14.1	B	0.17	14.2	B	0.27	15.5	B	0.29	15.7	B
	NB-L	0.27	30.4	C	0.31	32.2	C	0.10	25.1	C	0.11	25.3	C	0.16	25.8	C	0.18	26.1	C
	NB-T	1.00	75.1	E *	1.08	98.0	F *	0.74	41.1	D	0.78	43.5	D	1.05	78.2	E *	1.12	101.6	F *
	SB-TR	0.97	47.2	D *	1.03	61.9	E *	0.55	32.7	C	0.58	33.6	C	0.73	37.6	D	0.78	39.9	D
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-L	0.12	29.9	C				0.21	31.5	C				0.17	30.7	C			
	EB-TR	1.02	61.1	E *				0.40	35.3	D				0.73	43.2	D			
	EB-LTR		57.8	E *	0.61	36.3	D		33.9	C	0.33	32.8	C		40.7	D	0.47	34.6	C
	NB-LTR	0.52	14.6	B	0.61	15.8	B	0.41	13.1	B	0.45	13.6	B	0.86	22.5	C	1.01	42.5	D *
	SB-LTR	0.98	33.2	C *	1.10	72.7	E *	0.59	15.5	B	0.64	16.6	B	0.84	23.6	C	0.99	42.6	D *
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.2	A	0.01	8.2	A	0.00	7.7	A	0.00	7.8	A	0.01	7.8	A	0.01	7.9	A
	SB-LR	0.11	12.0	B	0.34	15.3	C	0.07	10.0	A	0.33	12.1	B	0.04	9.7	A	0.33	14.2	B
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.49	23.5	C	0.58	29.7	D	0.20	15.0	B	0.23	16.4	C	0.37	19.8	C	0.44	23.4	C
	SB-LT	0.02	8.1	A	0.02	8.2	A	0.03	7.9	A	0.03	8.0	A	0.02	8.4	A	0.02	8.6	A
28. Vernon Boulevard & Broadway/ 11th Street	EB-LTR	0.01	28.2	C	0.01	28.2	C	0.02	26.1	C	0.02	26.1	C	0.03	33.2	C	0.03	33.2	C
	WB-LTR	1.01	56.0	E *	1.13	99.5	F *	0.86	43.8	D	0.96	55.7	E *	0.82	50.8	D	0.97	69.3	E *
	NB (Vernon Blvd)-LT	0.24	7.8	A	0.26	8.0	A	0.25	8.2	A	0.27	8.4	A	0.44	9.0	A	0.48	9.5	A
	NB (Vernon Blvd)-R	0.04	6.4	A	0.11	6.8	A	0.16	7.5	A	0.20	7.8	A	0.12	6.3	A	0.18	6.7	A
	NB (11th Street)-LTR	0.36	40.8	D	0.38	41.1	D	0.21	32.8	C	0.22	32.8	C	0.32	38.0	D	0.33	38.2	D
	SB-LTR	0.96	45.8	D *	1.08	80.8	F *	0.51	26.2	C	0.58	27.9	C	0.57	28.0	C	0.66	30.7	C
29. 31st Avenue & 21st Street	EB-LTR	0.64	43.9	D	0.67	45.6	D	0.33	34.2	C	0.34	34.5	C	0.48	34.4	C	0.50	35.0	D
	WB-LTR	0.56	40.0	D	0.58	41.1	D	0.40	35.5	D	0.42	35.9	D	0.40	32.0	C	0.42	32.4	C
	NB-TR	0.43	13.2	B	0.49	14.0	B	0.58	15.6	B	0.63	16.7	B	0.69	20.8	C	0.77	23.2	C
	SB-TR	0.78	20.7	C	0.85	24.1	C	0.50	14.4	B	0.55	15.2	B	0.57	18.1	B	0.64	19.5	B

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec/veh - Seconds per Vehicle
LOS - Level of Service
* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)
Analysis is based on the 2010 *Highway Capacity Manual* methodology (HCS+, version 5.5)

Astoria Boulevard & 31st Street

- The eastbound approach would deteriorate from LOS D under existing conditions to LOS F under the alternate No-Action condition in both the AM and PM peak hours and from LOS C to LOS D in the midday peak hour.
- The southbound through movement would deteriorate from LOS C under existing conditions to LOS F under the alternate No-Action condition in the AM peak hour.

Hoyt Avenue South/Astoria Boulevard & 33rd Street

- The eastbound approach would deteriorate from LOS D under existing conditions to LOS E under the alternate No-Action condition in both the AM and midday peak hours and from LOS E to LOS F in the PM peak hour.
- Both the northbound through/right and right-turn movements would deteriorate from LOS E under existing conditions to LOS F under the alternate No-Action condition in both the AM and PM peak hours.

Hoyt Avenue North & 31st Street

- The southbound right-turn movement would deteriorate from LOS D under existing conditions to LOS E under the alternate No-Action condition in the AM peak hour.

Astoria Boulevard & 32nd Street:

- The westbound through movement at the ramp would deteriorate from LOS C under existing conditions to LOS D under the alternate No-Action condition in the PM peak hour.

Vernon Boulevard & Welling Court/8th Street

- The eastbound approach would deteriorate from LOS D under existing conditions to LOS F under the alternate No-Action condition in the AM peak hour, from an uncongested LOS D to a congested LOS D (delay greater than 45 seconds) in the midday peak hour, and from LOS E to LOS F in the PM peak hour.

Hoyt Avenue North & 21st Street

- The westbound left-turn movement would deteriorate from an uncongested LOS D under existing conditions to a congested LOS D (delay greater than 45 seconds) under the alternate No-Action condition in the AM peak hour.
- The northbound through movement would deteriorate from LOS E under existing conditions to LOS F under the alternate No-Action condition in both the AM and PM peak hours.
- The southbound approach would deteriorate from LOS D under existing conditions to LOS E under the alternate No-Action condition in the AM peak hour.

Hoyt Avenue South/Astoria Park South & 21st Street

- The northbound approach would deteriorate from LOS C under existing conditions to LOS D under the alternate No-Action condition in the PM peak hour.
- The southbound approach would deteriorate from LOS C under existing conditions to LOS E under the alternate No-Action condition in the AM peak hour and from LOS C to LOS D in the PM peak hour.

Vernon Boulevard & Broadway/11th Street

- The westbound approach would deteriorate from LOS E under existing conditions to LOS F under the alternate No-Action condition in the AM peak hour and from LOS D to LOS E in both the midday and PM peak hours.
- The southbound approach would deteriorate from LOS D under Existing conditions to LOS F under the alternate No-Action condition in the AM peak hour.

Alternate With-Action Condition Intersection Capacity Analysis

Figures 13-23, 13-24, and 13-25 show the traffic network volumes under the alternate With-Action condition (absent the Halletts Point development) for the weekday AM, midday, and PM peak hours, respectively. The volumes shown are the sum of the net incremental traffic generated by the Proposed Action and the alternate No-Action traffic network described above.

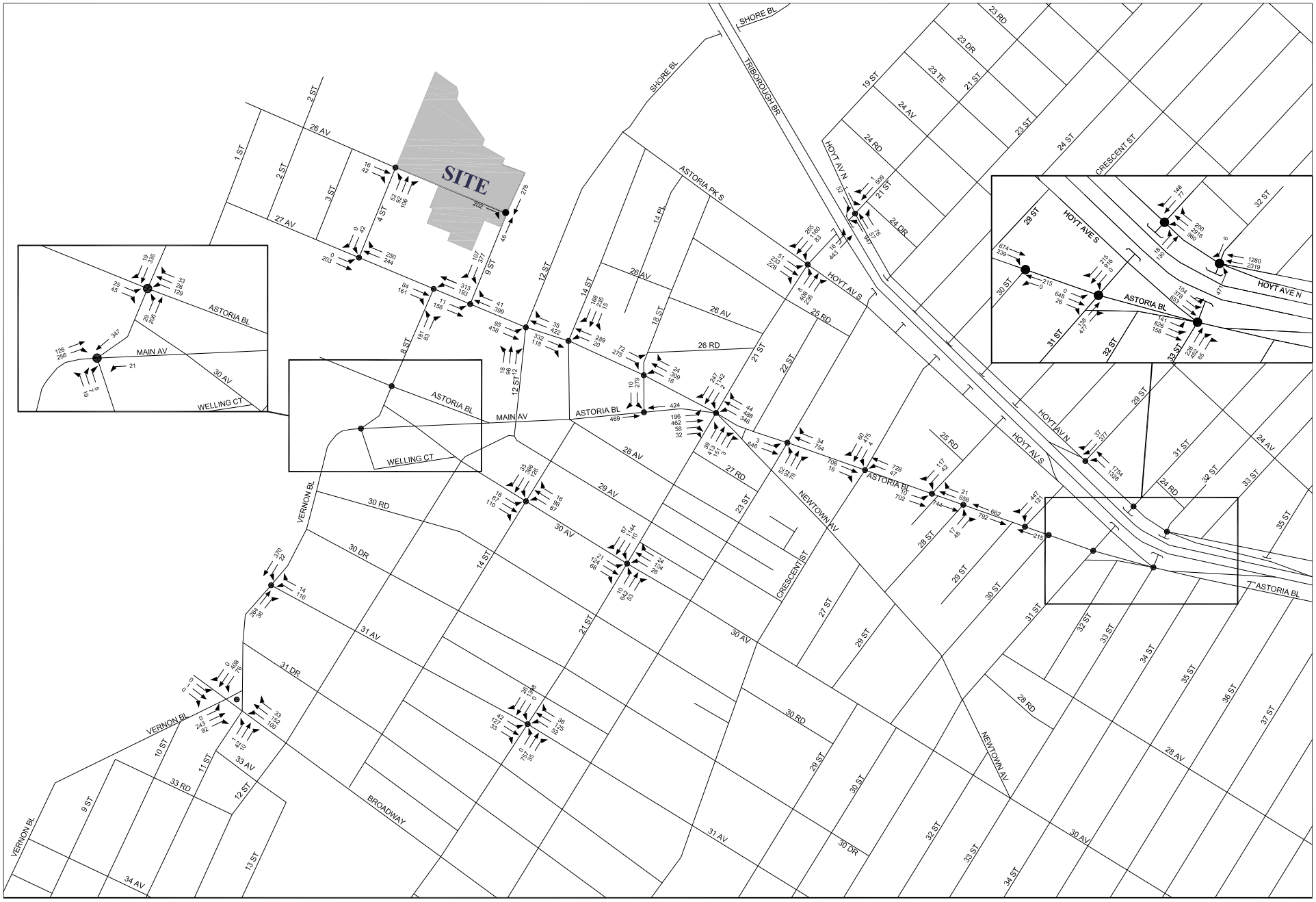
Table 13-24 shows a summary comparison of the individual lane group LOS for the alternate future No-Action and With-Action conditions. As shown in Table 13-24, nine individual traffic movements would operate at LOS E and 27 would operate at LOS F in the AM peak hour under the alternate With-Action condition. During the midday peak hour, three individual traffic movements would operate at LOS E and seven would operate at LOS F, while six and 17 individual traffic movements would operate at LOS E and LOS F, respectively, in the PM peak hour under the alternate With-Action condition.

Table 13-25 provides a summary comparison of the impacts disclosed previously for the RWCDS that assumes the completion of the Halletts Point development and those identified in for the alternate With-Action condition analysis.

Table 13-26 shows the detailed v/c ratios, delays, and LOS by movement at all analyzed intersections in each peak hour under the alternate With-Action condition and identifies those movements that are considered impacted in one or more peak hours. As shown in Table 13-26, one or more approach or lane group at a total of 19 of the 30 analyzed intersections would experience significant adverse impacts in one or more peak hours as a result of the Proposed Action. 19 intersections would experience significant adverse impacts in the AM peak hour, eight intersections would experience significant adverse impacts in the midday peak hour, and 14 intersections would experience significant adverse impacts in the PM peak hour, as shown in Table 13-25. Potential measures to mitigate these significant adverse impacts are discussed in Chapter 20, "Mitigation."

Table 13-24: Lane Group LOS Summary Comparison—Alternate No-Action vs. With-Action Conditions

	2023 Alternate No-Action Condition			2023 Alternate With-Action Condition		
	Weekday AM Peak Hour	**Weekday Midday Peak Hour**	**Weekday PM Peak Hour**	**Weekday AM Peak Hour**	**Weekday Midday Peak Hour**	**Weekday PM Peak Hour**
Overall LOS A/B/C	55	81	67	50	72	58
Overall LOS D	23	14	20	16	21	21
Overall LOS E	7	5	4	9	3	6
Overall LOS F	16	2	10	27	7	17
Number of intersections with significant adverse impacts	--	--	--	19	8	14
No. of movements at LOS E or F	23	7	14	36	10	23

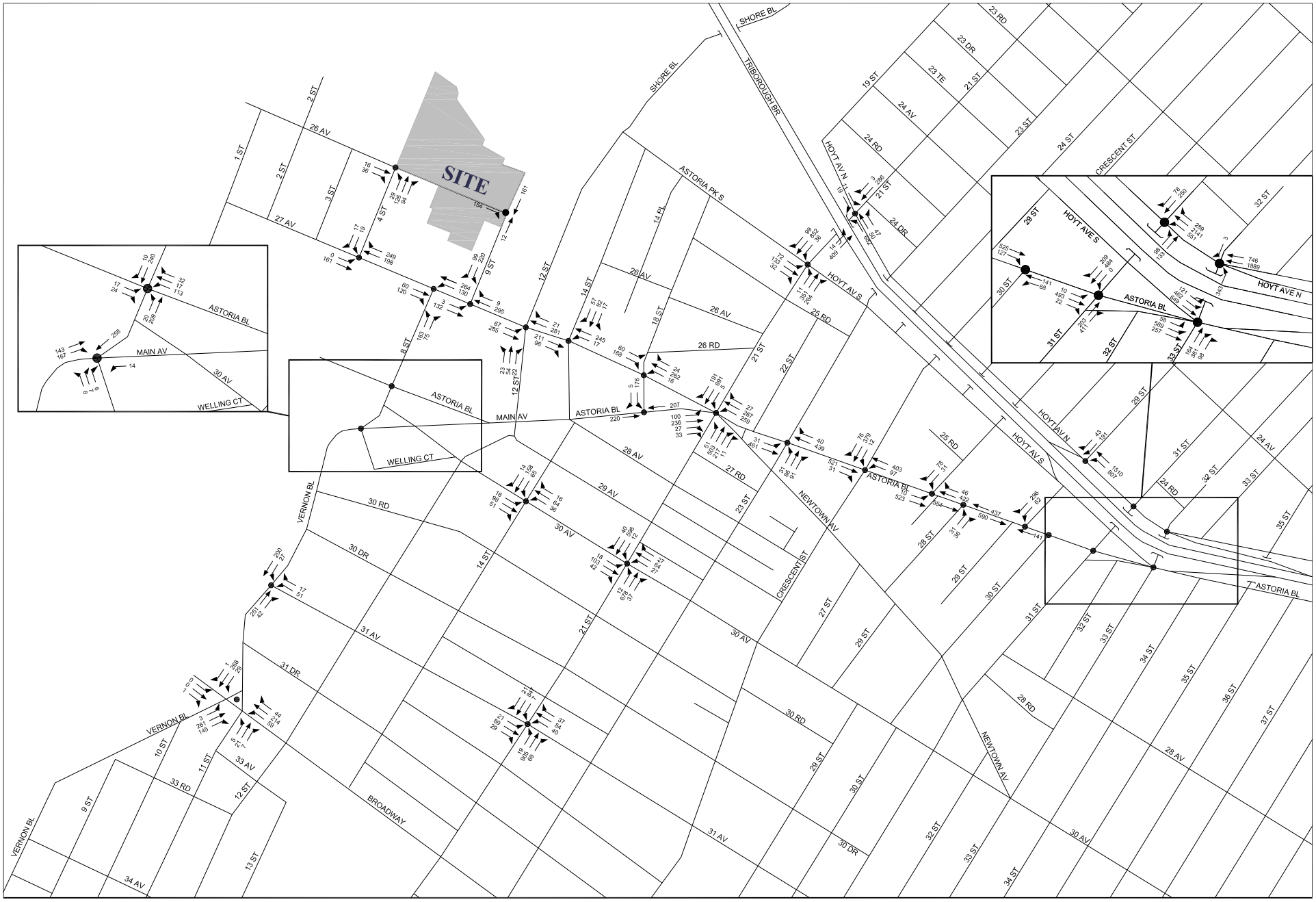


● Analyzed Locations

Astoria Cove

Figure 13-23

Alternate With-Action Volumes - AM Peak Hour

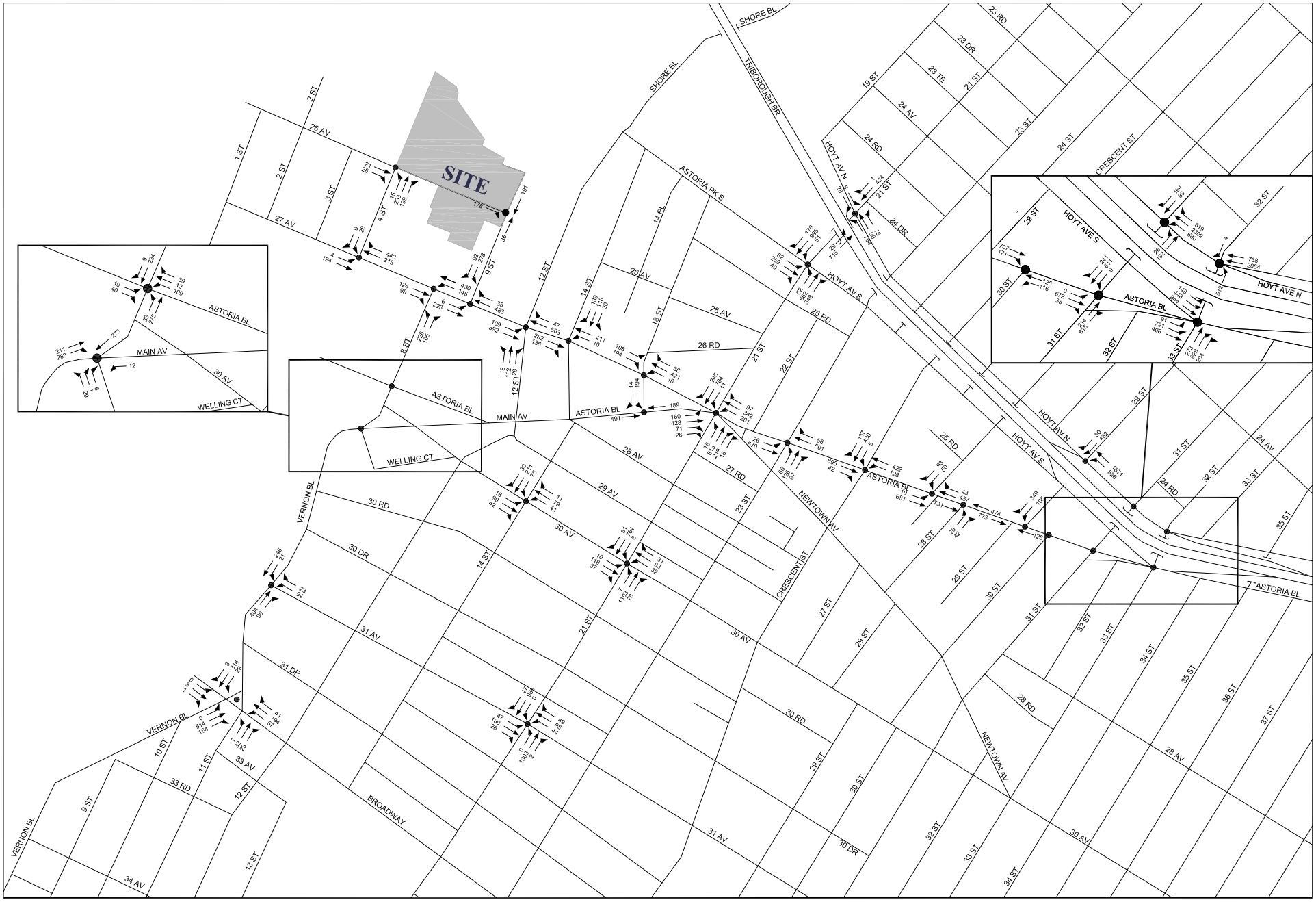


● Analyzed Locations

Astoria Cove

Figure 13-24

Alternate With-Action Volumes - Midday Peak Hour



Astoria Cove **Figure 13-25**

Alternate With-Action Volumes - PM Peak Hour

Table 13-25: Comparison of Impact Locations—Future with Halletts Point vs. Future without Halletts Point

Intersection	Weekday AM Peak Hour		Weekday Midday Peak Hour		Weekday PM Peak Hour	
	With-Action Condition	Alternate With-Action Condition	With-Action Condition	Alternate With-Action Condition	With-Action Condition	Alternate With-Action Condition
1. 26th Ave & 4th St						
A. 26th Ave & 9th St						
2. 27th Ave & 4th St					X	
3. 27th Ave & 8th St	X	X	X	X	X	X
26. 27th Ave & 9th St	X	X	X		X	X
4. 27th Ave & 12th St	X	X		X	X	X
5. 27th Ave & 14th St	X	X				X
6. 27th Ave & 18th St						
7. Astoria Blvd & 21st St	X	X	X	X	X	X
8. Astoria Blvd & 23rd St	X	X			X	
9. Astoria Blvd & Crescent St	X	X	X	X	X	X
10. Astoria Blvd & 27th St	X					
11. Astoria Blvd & 28th St						
12. Astoria Blvd & 29th St	X	X	X		X	X
13. Astoria Blvd & 30th St						
14. Astoria Blvd & 31st St	X	X		X		X
15. Hoyt Ave S./Astoria Blvd & 33rd St	X	X	X	X	X	X
16. Hoyt Ave N. & 29th St	X	X				
17. Hoyt Ave N. & 31st St						
18. Astoria Blvd N. & 32nd St	X	X	X		X	X
19. Astoria Blvd & 8th St					X	
20. 30th Ave & 14th St	X	X				
21. 30th Ave & 21st St	X	X				
22. Vernon Blvd & Welling Court/8th St	X	X	X	X	X	X
23. Astoria Blvd & 18th St		X				
24. Hoyt Ave N. & 21st St	X	X			X	X
25. Hoyt Ave S./Astoria Park S. & 21st St	X	X			X	X
27. Vernon Blvd & 31st Ave	X				X	
28. Vernon Blvd & Broadway/11th St	X	X	X	X	X	X
29. 31st Ave & 21st St						

Notes:
With-Action Condition: with Halletts Point Development
Alternate With-Action Condition: without Halletts Point development
Bold – denotes where an intersection is signalized in With-Action condition and unsignalized in Alternate With-Action condition
X – denotes potential for significant adverse impact.

Table 13-26: Alternate 2023 Future With-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
1. 26th Avenue & 4th Street	EB-LTR	-	-	-	NA	7.9	A		-	-	-	NA	7.7	A		-	-	-	NA	8.2	A	
(Unsignalized-Two Way Stop)	NB-LR	0.11	9.7	A	NA	9.3	A		0.08	9.4	A	NA	9.0	A		0.09	9.3	A	NA	11.9	B	
A. 26th Avenue & 9th Street	EB-R	0.09	8.9	A	0.37	13.3	B		0.13	8.9	A	0.23	10.5	B		0.10	8.8	A	0.28	11.3	B	
(Unsignalized-Two Way Stop)																						
2. 27th Avenue & 4th Street	EB-LT	NA	9.9	A	NA	10.1	B		NA	9.1	A	NA	9.3	A		NA	9.6	A	NA	10.1	B	
(Unsignalized-All Way Stop)	WB-T	NA	11.0	B	NA	11.0	B		NA	9.9	A	NA	9.9	A		NA	10.2	B	NA	10.3	B	
	WB-R	NA	7.9	A	NA	9.4	A		NA	7.8	A	NA	9.2	A		NA	8.0	A	NA	13.3	B	
	SB-LR	NA	9.3	A	NA	9.6	A		NA	8.4	A	NA	8.7	A		NA	8.8	A	NA	9.4	A	
3. 27th Avenue & 8th Street	EB-TR	0.54	17.2	B	0.54	17.2	B		0.38	14.1	B	0.38	14.1	B		0.39	14.0	B	0.39	14.0	B	
	WB-LT	0.98	57.1	E	1.46	237.9	F	*	0.89	41.5	D	1.34	188.3	F	*	0.59	19.3	B	1.26	154.6	F	*
	NB-L	0.43	24.9	C	0.61	29.5	C		0.31	22.6	C	0.40	24.1	C		0.36	23.4	C	0.56	27.8	C	
	NB-R	0.28	22.3	C	0.28	22.3	C		0.30	22.7	C	0.30	22.7	C		0.33	23.1	C	0.33	23.1	C	
4. 27th Avenue & 12th Street	EB-LT	0.08	8.7	A	0.12	9.4	A		0.06	8.1	A	0.08	8.7	A		0.09	8.5	A	0.14	10.0	B	
(Unsignalized-Two Way Stop)	NB-LTR	0.51	31.3	D	1.14	192.2	F	*	0.26	16.9	C	0.47	32.1	D	*	0.79	52.9	F	2.04	562.5	F	*
5. 27th Avenue & 14th Street	EB-TR	NA	11.9	B	NA	92.8	F	*	NA	9.5	A	NA	14.1	B		NA	10.6	B	NA	30.5	D	*
(Unsignalized-All Way Stop)	WB-LT	NA	13.3	B	NA	35.8	E	*	NA	9.2	A	NA	12.7	B		NA	10.3	B	NA	36.1	E	*
	SB-LTR	NA	20.0	C	NA	52.3	F	*	NA	9.5	A	NA	11.3	B		NA	11.2	B	NA	17.5	C	
6. 27th Avenue & 18th Street	EB-LTR	0.06	9.3	A	0.08	9.4	A		0.04	8.1	A	0.05	8.5	A		0.08	8.1	A	0.12	9.5	A	
(Unsignalized-Two Way Stop)	WB-LTR	0.01	7.5	A	0.02	8.0	A		0.01	7.6	A	0.01	7.7	A		0.01	7.7	A	0.01	7.9	A	
7. Astoria Boulevard & 21st Street	EB-L	1.08	111.5	F	1.11	122.3	F	*	0.29	36.1	D	0.32	36.8	D		0.56	45.3	D	0.62	47.1	D	
	EB-TR	1.03	85.1	F	1.43	247.8	F	*	0.45	37.9	D	0.53	39.6	D		0.87	55.1	E	1.04	84.0	F	*
	WB-L	1.01	69.0	E	1.01	69.0	E		0.86	53.2	D	0.86	53.2	D		0.92	68.3	E	0.91	66.7	E	
	WB-TR	0.77	43.9	D	0.85	46.0	D		0.40	35.6	D	0.50	37.1	D		0.79	52.1	D	1.07	94.9	F	*
	NB-LTR	0.99	56.0	E	1.18	124.1	F	*	1.21	136.0	F	1.55	287.3	F	*	1.23	138.8	F	1.76	374.2	F	*
	SB-LTR	1.13	94.1	F	1.17	112.1	F	*	1.06	72.6	E	1.14	108.5	F	*	1.02	54.1	D	1.17	112.1	F	*
8. Astoria Boulevard & 23rd Street	EB-LT	0.80	25.3	C	1.06	67.4	E	*	0.69	18.5	B	0.77	21.3	C		0.80	24.6	C	0.91	31.6	C	
	WB-TR	0.87	27.2	C	0.91	30.2	C		0.72	16.3	B	0.79	17.7	B		0.72	20.2	C	0.89	25.2	C	
	NB-LTR	0.50	33.5	C	0.50	33.5	C		0.56	28.4	C	0.56	28.4	C		0.60	36.2	D	0.60	36.2	D	

Table 13-26 (continued): Alternate 2023 Future With-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
9. Astoria Boulevard & Crescent Street	EB-TR	0.88	33.9	C	1.14	99.3	F *	0.72	19.6	B	0.79	22.8	C	0.93	38.6	D	1.05	66.6	E *
	WB-LT	1.01	48.0	D	1.05	60.3	E *	1.11	75.0	E	1.19	109.7	F *	1.20	119.5	F	1.37	195.7	F *
	SB-LTR	1.10	88.2	F	1.19	124.6	F *	1.09	73.8	E	1.18	115.8	F *	1.07	73.5	E	1.32	185.9	F *
10. Astoria Boulevard & 27th Street	EB-LT	0.66	17.9	B	0.85	25.7	C	0.50	14.5	B	0.56	15.6	B	0.65	17.5	B	0.74	20.2	C
	WB-TR	0.81	21.7	C	0.83	22.4	C	0.67	17.4	B	0.69	17.8	B	0.57	15.3	B	0.61	16.0	B
	SB-LR	0.79	39.7	D	0.79	39.7	D	0.49	34.3	C	0.49	34.3	C	0.76	39.1	D	0.76	39.1	D
11. Astoria Boulevard & 28th Street (Unsignalized-Two Way Stop)	NB-LR	0.43	28.6	D	0.58	47.1	E	0.35	22.4	C	0.39	25.8	D	0.31	21.2	C	0.37	26.2	D
12. Astoria Boulevard & 29th Street	EB-T	1.17	127.2	F	1.46	253.2	F *	0.84	30.6	C	0.93	40.4	D	1.10	96.4	F	1.23	150.1	F *
	WB-T	0.44	27.5	C	0.44	27.5	C	0.23	13.5	B	0.23	13.5	B	0.22	20.3	C	0.22	20.3	C
	SB-L	0.18	17.0	B	0.18	17.0	B	0.12	18.1	B	0.12	18.1	B	0.16	19.5	B	0.16	19.5	B
	SB-R	0.71	29.1	C	0.73	30.0	C	0.64	28.1	C	0.66	29.0	C	0.55	26.8	C	0.60	28.6	C
13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop)	WB-LT	0.00	10.5	B	0.00	11.9	B	0.09	9.6	A	0.10	9.9	A	0.19	11.2	B	0.22	12.0	B
14. Astoria Boulevard & 31st Street	EB-LTR	1.11	98.1	F	1.45	245.5	F *	0.97	43.8	D	1.08	74.3	E *	1.09	86.5	F	1.24	148.9	F *
	NB-T	0.52	41.8	D	0.52	41.8	D	0.54	33.7	C	0.54	33.7	C	0.52	41.6	D	0.52	41.6	D
	NB-R	0.67	16.5	B	0.67	16.5	B	0.53	8.9	A	0.53	8.9	A	0.84	24.2	C	0.84	24.2	C
	SB-T	1.10	85.7	F	1.10	85.7	F	0.65	19.8	B	0.65	19.8	B	0.69	22.8	C	0.69	22.8	C
	SB-R	0.30	14.9	B	0.30	14.9	B	0.31	14.3	B	0.31	14.3	B	0.31	15.1	B	0.31	15.1	B
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.05	77.8	E	1.22	147.0	F *	1.02	62.1	E	1.08	83.6	F *	1.16	117.8	F	1.24	154.0	F *
	NB-TR	1.09	94.2	F	1.09	94.2	F	0.81	38.6	D	0.81	38.6	D	1.09	86.7	F	1.09	86.7	F
	NB-R	1.08	92.9	F	1.08	92.9	F	0.79	42.6	D	0.79	42.6	D	1.08	86.6	F	1.08	86.6	F
	Hoyt Ave (EB-LT)	0.59	26.4	C	0.59	26.4	C	0.71	27.5	C	0.71	27.5	C	0.78	36.4	D	0.78	36.4	D
16. Hoyt Ave N. & 29th Street	WB-L	0.76	12.6	B	0.76	12.6	B	0.56	11.9	B	0.56	11.9	B	0.44	12.6	B	0.44	12.6	B
	WB-LT	0.76	12.2	B	0.78	12.6	B	0.54	11.2	B	0.57	11.5	B	0.63	15.2	B	0.69	16.4	B
	SB-R	1.04	104.0	F	1.15	140.3	F *	0.51	34.9	C	0.53	35.4	D	0.82	51.8	D	0.85	54.3	D

Table 13-26 (continued): Alternate 2023 Future With-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
17. Hoyt Ave N. & 31st Street	WB-L	1.06	101.1	F	1.06	101.1	F	1.05	95.0	F	1.05	95.0	F	0.44	16.3	B	0.44	16.3	B
	WB-T	0.97	28.0	C	0.98	30.6	C	0.76	18.4	B	0.78	18.9	B	0.76	21.9	C	0.81	23.5	C
	WB-R	0.33	10.4	B	0.34	10.5	B	0.65	21.1	C	0.67	21.8	C	0.71	26.4	C	0.73	27.5	C
	NB-DefL	-	-	-	-	-	-	0.53	30.8	C	0.53	30.8	C	-	-	-	-	-	-
	NB-T	-	-	-	-	-	-	0.23	21.2	C	0.23	21.2	C	-	-	-	-	-	-
	NB-LT	0.30	35.9	D	0.30	35.9	D	-	-	-	-	-	-	0.29	28.3	C	0.29	28.3	C
	SB-T	0.28	36.3	D	0.28	36.3	D	0.46	24.4	C	0.46	24.4	C	0.15	26.6	C	0.15	26.6	C
	SB-R	0.73	56.5	E	0.75	58.7	E	0.26	22.1	C	0.29	22.7	C	0.48	34.4	C	0.51	35.3	D
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.53	8.8	A	0.53	8.8	A	0.37	7.9	A	0.37	7.9	A	0.32	9.2	A	0.32	9.2	A
	WB(Ramp)-T	1.13	109.3	F	1.15	118.0	F *	0.98	31.9	C	1.01	38.8	D	0.99	38.1	D	1.07	60.4	E *
	NB-L	0.61	44.5	D	0.62	44.6	D	0.36	28.8	C	0.37	28.9	C	0.55	39.0	D	0.56	39.1	D
	SB-R	0.03	38.0	D	0.03	38.0	D	0.02	25.9	C	0.02	25.9	C	0.02	33.3	C	0.02	33.3	C
19. Astoria Boulevard & 8th Street	EB-LR	0.26	28.8	C	0.26	28.8	C	0.13	26.5	C	0.13	26.5	C	0.28	29.0	C	0.28	29.0	C
	WB-L	0.35	30.2	C	0.35	30.2	C	0.35	30.6	C	0.35	30.6	C	0.29	29.3	C	0.29	29.3	C
	WB-TR	0.20	27.8	C	0.20	27.8	C	0.16	27.0	C	0.16	27.0	C	0.15	27.0	C	0.15	27.0	C
	NB-LT	0.37	15.5	B	0.47	17.1	B	0.33	15.1	B	0.40	16.1	B	0.43	16.0	B	0.56	18.0	B
	SB-TR	0.53	18.5	B	0.63	20.8	C	0.33	15.3	B	0.36	15.8	B	0.31	15.0	B	0.36	15.7	B
20. 30th Avenue & 14th Street	EB-LTR	NA	12.1	B	NA	14.1	B	NA	8.9	A	NA	9.4	A	NA	9.3	A	NA	10.1	B
(Unsignalized-All Way Stop)	WB-LTR	NA	12.9	B	NA	15.3	C	NA	8.8	A	NA	9.4	A	NA	9.1	A	NA	10.1	B
	SB-LTR	NA	26.5	D	NA	54.0	F *	NA	9.4	A	NA	10.7	B	NA	11.0	B	NA	14.6	B
21. 30th Avenue & 21st Street	EB-LTR	0.45	37.2	D	0.70	47.1	D *	0.32	33.9	C	0.45	37.0	D	0.34	34.3	C	0.51	38.7	D
	WB-LTR	0.45	37.2	D	0.52	39.1	D	0.34	34.5	C	0.38	35.4	D	0.42	36.6	D	0.51	38.9	D
	NB-LTR	0.53	15.0	B	0.55	15.3	B	0.53	14.9	B	0.54	15.2	B	0.78	21.7	C	0.81	23.0	C
	SB-LTR	0.75	19.8	B	0.75	19.9	B	0.42	13.0	B	0.42	13.0	B	0.48	13.9	B	0.48	13.9	B
22. Vernon Boulevard & Welling Court	EB-LT	1.21	132.9	F	1.30	171.8	F *	0.90	45.7	D	0.98	59.5	E *	1.22	136.0	F	1.37	204.2	F *
/8th Street	WB-TR	0.04	21.1	C	0.04	21.1	C	0.04	21.1	C	0.04	21.1	C	0.06	21.3	C	0.06	21.3	C
	NB-LTR	0.28	32.0	C	0.28	32.0	C	0.15	29.1	C	0.15	29.1	C	0.18	29.5	C	0.18	29.5	C
	SB-R	0.85	44.3	D	0.96	59.7	E *	0.65	34.6	C	0.71	36.9	D	0.59	32.6	C	0.66	34.9	C
23. Astoria Boulevard & 18th Street	SB-LR	0.51	32.5	D	1.43	253.4	F *	0.24	13.9	B	0.38	15.9	C	0.29	17.2	C	0.60	27.2	D
(Unsignalized-Two Way Stop)																			

Table 13-26 (continued): Alternate 2023 Future With-Action Condition–LOS at Analyzed Intersections

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
24. Hoyt Avenue N. & 21st Street	EB-L	0.02	40.4	D	0.02	40.4	D	0.11	42.0	D	0.11	42.0	D	0.09	41.8	D	0.09	41.8	D
	EB-R	0.37	47.5	D	0.37	47.5	D	0.13	42.4	D	0.13	42.4	D	0.17	43.1	D	0.17	43.1	D
	WB-L	0.98	52.8	D	1.01	59.8	E *	0.75	40.3	D	0.79	41.9	D	0.71	39.6	D	0.80	42.9	D
	WB-TR	0.25	14.8	B	0.25	14.8	B	0.17	14.2	B	0.17	14.2	B	0.29	15.7	B	0.29	15.7	B
	NB-L	0.31	32.2	C	0.32	32.8	C	0.11	25.3	C	0.12	25.4	C	0.18	26.1	C	0.18	26.3	C
	NB-T	1.08	98.0	F	1.17	133.9	F *	0.78	43.5	D	0.83	47.3	D	1.12	101.6	F	1.17	123.0	F *
	SB-TR	1.03	61.9	E	1.06	71.0	E *	0.58	33.6	C	0.60	34.2	C	0.78	39.9	D	0.81	41.6	D
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-LTR	0.61	36.3	D	0.69	37.6	D	0.33	32.8	C	0.37	33.4	C	0.47	34.6	C	0.52	35.5	D
	NB-LTR	0.61	15.8	B	0.63	16.4	B	0.45	13.6	B	0.46	13.8	B	1.01	42.5	D	1.07	62.7	E *
	SB-LTR	1.10	72.7	E	1.14	88.9	F *	0.64	16.6	B	0.67	17.3	B	0.99	42.6	D	1.07	66.2	E *
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.2	A	0.01	8.7	A	0.00	7.8	A	0.00	8.2	A	0.01	7.9	A	0.01	8.9	A
	SB-LR	0.34	15.3	C	1.43	232.7	F *	0.33	12.1	B	0.73	27.4	D	0.33	14.2	B	1.36	210.9	F *
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.58	29.7	D	0.64	34.6	D	0.23	16.4	C	0.26	17.2	C	0.44	23.4	C	0.51	27.7	D
	SB-LT	0.02	8.2	A	0.02	8.2	A	0.03	8.0	A	0.03	8.1	A	0.02	8.6	A	0.02	8.8	A
28. Vernon Boulevard & Broadway/ 11th Street	EB-LTR	0.01	28.2	C	0.01	28.2	C	0.02	26.1	C	0.02	26.1	C	0.03	33.2	C	0.03	33.2	C
	WB-LTR	1.13	99.5	F	1.17	115.9	F *	0.96	55.7	E	1.01	68.8	E *	0.97	69.3	E	1.08	99.5	F *
	NB (Vernon Blvd)-LT	0.26	8.0	A	0.27	8.1	A	0.27	8.4	A	0.28	8.5	A	0.48	9.5	A	0.49	9.7	A
	NB (Vernon Blvd)-R	0.11	6.8	A	0.11	6.8	A	0.20	7.8	A	0.20	7.8	A	0.18	6.7	A	0.18	6.7	A
	NB (11th Street)-LTR	0.38	41.1	D	0.38	41.1	D	0.22	32.8	C	0.22	32.8	C	0.33	38.2	D	0.33	38.2	D
	SB-LTR	1.08	80.8	F	1.22	136.6	F *	0.58	27.9	C	0.62	29.2	C	0.66	30.7	C	0.75	34.6	C
29. 31st Avenue & 21st Street	EB-LTR	0.67	45.6	D	0.70	47.3	D	0.34	34.5	C	0.38	35.4	D	0.50	35.0	D	0.54	36.3	D
	WB-LTR	0.58	41.1	D	0.61	42.0	D	0.42	35.9	D	0.45	36.7	D	0.42	32.4	C	0.45	33.2	C
	NB-TR	0.49	14.0	B	0.50	14.2	B	0.63	16.7	B	0.64	17.0	B	0.77	23.2	C	0.79	24.1	C
	SB-TR	0.85	24.1	C	0.87	25.7	C	0.55	15.2	B	0.57	15.6	B	0.64	19.5	B	0.65	19.8	B

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec/veh - Seconds per Vehicle
LOS - Level of Service
* - Denotes a significant adverse impact.
Analysis is based on the 2010 *Highway Capacity Manual* methodology (HCS+, version 5.5)

H. TRANSIT

Existing Conditions

Subway

As discussed above in Section E, "Level 2 Screening Assessment", the northwest street-to-station staircase, the platform stairs, and the fare-array elements within the control area at the 30th Avenue N & Q subway line station would require detailed analyses as the increment in subway riders would exceed the 200 trips per hour *CEQR Technical Manual* threshold at these elements. As shown in Figure 13-26, which provides a schematic layout of the 30th Avenue Station, there are four stairs at each of the four corners at the intersection of 30th Avenue and 31st Street that lead from street level up to the control area. There are two sets of three turnstiles to the east and west of the agent booth, which are adjacent to the northbound and southbound platforms, respectively. Beyond these turnstiles, four stairs leading up to the platform level can be accessed. The two platform stairs east of the agent booth (P7-P8 and P3-P4) connect to the Queens-bound platform, while the two platform stairs west of the agent booth (P5-P6 and P1-P2) connect to the Manhattan-bound platform.

As also shown in Figures 13-1 and 13-26, for transit analysis purposes, it is assumed that the proposed shuttle would drop off/pick up subway riders at the northwest corner of 30th Avenue and 31st Street. Because of the activity of the Q18 and Q102 bus stop, located at this corner, it is assumed that the bus stop would be lengthened west, potentially providing a second berth for the shuttle bus. The street-to-station stair at the northwest corner (S3-M3) would consequently be used by the majority of project generated subway riders and is therefore the only street staircase that requires a detailed analysis, as noted above. Although the six turnstiles in the control area provide equal access to all four platform stairs, they are conservatively analyzed as two separate sets of three turnstiles. Out of the four platform staircases, P5-P6 and P1-P2 are analyzed in the AM peak hour when commuter traffic is highest going to the Manhattan bound platform, while in the PM peak hour, P7-P8 and P3-P4 are analyzed based on the reverse commuter traffic primarily coming from the Queens-bound platform.

Table 13-27 summarizes the existing weekday AM and PM peak hour operating conditions and the results of the capacity analysis for street-to-station stair S3-M3 and platform stairs P1-P2, P3-P4, P5-P6, and P7-P8. Table 13-28 illustrates the peak period operating conditions for the 30th Avenue Station northbound and southbound turnstiles. It should be noted that the detailed transit analyses focus on the weekday AM and PM peak hours as it is during these periods that overall demand on the transit network is typically highest.

Existing service levels for the analyzed station elements were determined using the peak 15-minute volumes developed from stair usage and fare array counts conducted on October 18, 2012, June 12, 2013, and March 13, 2014.

As shown in Table 13-27 and Table 13-28, all analyzed subway station elements currently operate at LOS C or better during the weekday AM and PM peak hours.

30th Avenue Subway Station Layout

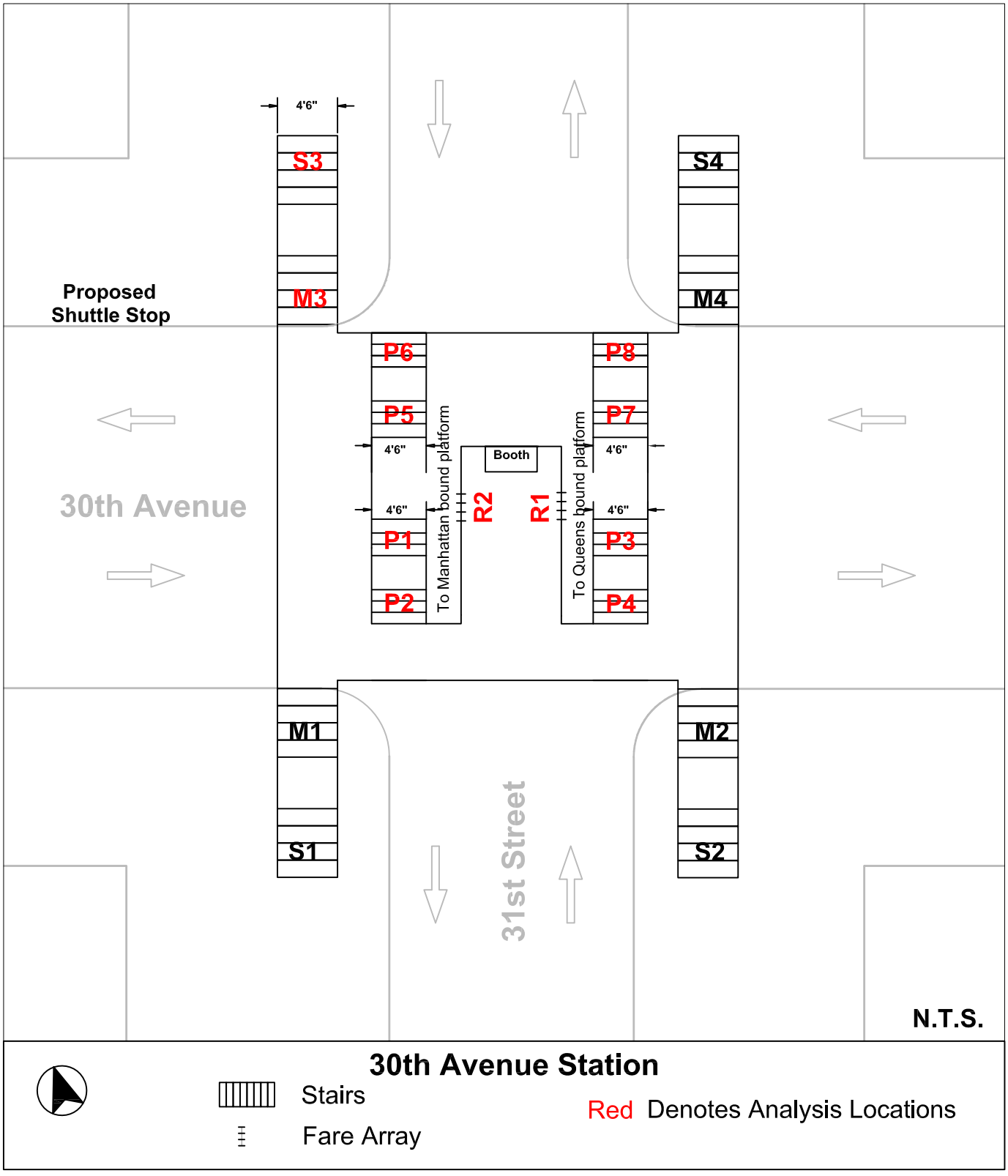


Table 13-27: 2012 Existing Subway Stair Analysis

Peak Hour	Stairway	Total Width (feet)	Effective Width (feet)	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
				Up	Down	Up	Down			
AM	S3-M3 (northwest)	5.0	4.0	196	60	1.0	0.8	0.9	0.50	B
	P5-P6 (northwest)	5.0	4.0	344	3	1.0	0.75	1.0	0.58	B
	P1-P2 (southwest)	5.0	4.0	482	10	1.0	0.75	1.0	0.83	C
PM	S3-M3 (northwest)	5.0	4.0	53	143	1.0	0.8	0.9	0.43	A
	P7-P8 (northeast)	5.0	4.0	6	237	1.0	0.75	1.0	0.54	B
	P3-P4 (southeast)	5.0	4.0	6	300	1.0	0.75	1.0	0.68	B

Notes: Methodology based on *CEQR Technical Manual* guidelines; Volumes based on data collected in October 2012, June 2013, and March 2014.

Table 13-28: 2012 Existing Subway Fare Array Analysis

Peak Hour	Station	Direction	Control Element	Quantity	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
					In[1]	Out[2]	In[1]	Out[2]			
AM	30th Avenue	Northbound	Two-way Turnstile	3	32	113	1.0	0.8	0.9	0.11	A
		Southbound	Two-way Turnstile	3	826	13	1.0	0.8	1.0	0.66	B
PM	30th Avenue	Northbound	Two-way Turnstile	3	12	537	1.0	0.8	1.0	0.36	A
		Southbound	Two-way Turnstile	3	218	13	1.0	0.8	0.9	0.20	A

Notes: Methodology based on *CEQR Technical Manual* guidelines; volumes based on data collected in October 2012 and June 2013.
[1] "In" refers to system entries.
[2] "Out" refers to system exits.

Line Haul

Line haul is the volume of transit riders passing a defined point on a given transit route. For subway routes in New York City to and from Queens, line haul is typically measured either at East River bridge and tunnel crossings or at the actual maximum load point on each subway route (the point where the trains carry the greatest number of passengers during the peak hour). 2011 and 2012 maximum load point ridership for the F, N, and Q subway lines were provided by NYCT. As shown in the 13-29, the maximum load points for the F line are the Roosevelt Island and Lexington Avenue/63rd Street Stations in the AM and PM peak hours, respectively; the maximum load points for the N and Q lines are the Queensboro Plaza and Lexington Avenue/59th Street Stations in the AM and PM peak hours, respectively. The peak direction of travel for these lines is Manhattan-bound in the AM peak hour and Queens-bound in the PM peak hour.

The line haul analysis presented in Table 13-29 focuses on the peak direction of travel in each hour. Existing conditions for each subway route are reported in terms of a v/c ratio, which is determined by dividing the number of peak hour passengers traveling through the maximum load point by the line haul capacity provided. Line haul capacity is based on the practical capacity per subway car multiplied by the number of subway cars crossing the maximum point in the peak hour. As shown in Table 13-29, no subway route is currently operating at or above capacity (a v/c ratio equal to or greater than 1.00) in either

peak hour based on the NYCT 2011 and 2012 ridership data. V/c ratios in the AM peak hour are higher than in the PM peak hour, as peak demand is typically more concentrated in the AM. F trains typically carry the highest number of passengers with 18,001 Manhattan-bound riders in the AM peak hour and 16,964 Queens-bound riders in the PM. However, due to the lower existing peak hour capacity of the N and Q subway lines, the v/c ratios for these lines are slightly higher than the F line v/c ratio in the AM peak hour.

Table 13-29: Existing Subway Line Haul Conditions

Route	Peak Direction	Maximum Load Point (leaving station)	Average Trains per hour	Cars per hour	Peak Hour Capacity[1]	Passengers per hour	V/C Ratio
Weekday AM Peak Hour							
F	Manhattan-bound	Roosevelt Island	15.1	151	21,895	18,001	0.82
N	Manhattan-bound	Queensboro Plaza	7.8	78	11,310	10,260	0.91
Q	Manhattan-bound	Queensboro Plaza	7.6	76	11,020	10,168	0.92
Weekday PM Peak Hour							
F	Queens-bound	Lexington Av/63 St	15.0	150	21,750	16,964	0.78
N	Queens-bound	Lexington Av/59 St	7.4	74	10,730	6,496	0.61
Q	Queens-bound	Lexington Av/59 St	6.6	66	9,570	5,499	0.57

Source: NYCT (2011 and 2012)
Notes:
[1] Capacity based on NYCT guideline capacity of 145 passengers per car for 60' cars.

Bus

As discussed previously, only the Q103 local bus route is expected to experience 50 or more new peak hour trips in one direction and therefore requires a detailed analysis pursuant to *CEQR Technical Manua*l guidelines. The Q103 provides weekday only service between a southern terminus at Vernon Boulevard and Borden Avenue in Long Island City and a northern Terminus at 27th Avenue and 2nd Street in close proximity to the project site (see Figure 13-6). The weekday operating hours are approximately 5:30 AM – 8:00 PM.

Table 13-30 shows the existing number of buses and ridership at the maximum load point in each direction for the analyzed Q103 in the AM and PM peak hours. As shown in Table 13-30, the Q103 route currently operates with available capacity during both the AM and PM peak hours. The average number of peak hour passengers per bus ranges from 11 on the southbound Q103 in the PM to 39 on the southbound Q103 in the AM.

Table 13-30: 2012 Existing Conditions Bus Line-Haul Analysis

Peak Hour	Route	Direction	Maximum Load Point	Peak Hour Buses	Peak Hour Passengers	Average Passengers per Bus	Available Capacity[1]
AM	Q103	NB	40th Avenue & 12th Street	2	36	18	72
		SB	Vernon Boulevard & 31st Avenue	2	78	39	30
PM	Q103	NB	40th Avenue & 12th Street	3	42	14	120
		SB	40th Avenue & 12th Street	3	33	11	129

Notes:
[1]Available capacity based on NYCT loading guidelines of 54 passengers per standard bus.

Future without the Proposed Action (No-Action Condition)

Subway

The results of the analyses of subway station stair and turnstiles at the 30th Avenue Station under the No-Action condition are shown in Tables 13-31 and 13-32, respectively. Estimates of peak hour volumes in the No-Action condition were developed by applying the *CEQR Technical Manual* recommended annual background growth rates to existing volumes and incorporating subway trips associated with large No-Action developments in the study area, such as the Halletts Point development, as well as the as-of-right No-Action development on the project site. New subway riders generated by smaller No-Action sites were accounted for in background growth. As shown in Tables 13-31 and 13-32, all analyzed subway station street stairs and fare arrays would operate at LOS C or better during the weekday AM and PM peak hours. As indicated in Table 13-31, the southwest platform stair (P1-P2) would deteriorate to LOS D during the weekday AM peak hour with a v/c ratio of 1.05. All other analyzed platform stairs would operate at LOS C.

Table 13-31: 2023 No-Action Subway Stair Analysis

Peak Hour	Stairway	Total Width (feet)	Effective Width (feet)	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
				Up	Down	Up	Down			
AM	S3-M3 (northwest)	5.0	4.0	233	122	1.0	0.8	0.9	0.71	C
	P5-P6 (northwest)	5.0	4.0	466	6	1.0	0.75	1.0	0.79	C
	P1-P2 (southwest)	5.0	4.0	610	15	1.0	0.75	1.0	1.05	D
PM	S3-M3 (northwest)	5.0	4.0	70	363	1.0	0.8	0.9	0.97	C
	P7-P8 (northeast)	5.0	4.0	11	345	1.0	0.75	1.0	0.79	C
	P3-P4 (southeast)	5.0	4.0	12	410	1.0	0.75	1.0	0.93	C

Notes: Methodology based on *CEQR Technical Manual* guidelines; volumes based on data collected in October 2012, June 2013, and March 2014, annual background growth rates, the *Halletts Point Rezoning FEIS*, and projected No-Action project site development.

Table 13-33 shows the anticipated line haul conditions at the maximum load points on subway routes serving the project site in the 2023 future without the Proposed Action. The data in Table 13-33 reflects background growth and the addition of demand from the nearby Halletts Point development, based on the subway assignment presented in the 2013 *Halletts Point Rezoning FEIS.* As under existing conditions, no subway routes are expected to be operating over capacity in either analyzed peak hour in the 2023 No-Action condition, and F trains would remain the most utilized of the three analyzed subway lines, with 18,948 Manhattan-bound passengers in the AM peak hour and 17,852 Queens-bound passengers in the

PM peak hour. V/c ratios would increase in the 2023 No-Action condition, with the highest v/c ratio (0.99) anticipated on the Manhattan-bound Q line in the AM peak hour (compared to 0.92 under existing conditions).

Table 13-32: 2023 No-Action Subway Fare Array Analysis

Peak Hour	Station	Direction	Control Element	Quantity	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
					In[1]	Out[2]	In[1]	Out[2]			
AM	30th Avenue	Northbound	Two-way Turnstile	3	52	173	1.0	0.8	0.9	0.17	A
		Southbound	Two-way Turnstile	3	1,076	21	1.0	0.8	1.0	0.87	C
PM	30th Avenue	Northbound	Two-way Turnstile	3	23	755	1.0	0.8	1.0	0.51	B
		Southbound	Two-way Turnstile	3	336	31	1.0	0.8	0.9	0.32	A

Notes: Methodology based on *CEQR Technical Manual* guidelines; volumes based on data collected in October 2012 and June 2013, annual background growth rates, the *Halletts Point Rezoning FEIS*, and projected No-Action project site development.
[1] "In" refers to system entries.
[2] "Out" refers to system exits.

Table 13-33: 2023 No-Action Subway Line Haul Conditions

Route	Peak Direction	Maximum Load Point (leaving station)	Average Trains per hour	Cars per hour	Peak Hour Capacity[1]	No-Action Passengers per Hour	V/C Ratio
Weekday AM Peak Hour							
F	Manhattan-bound	Roosevelt Island	15.1	151	21,895	18,959	0.87
N	Manhattan-bound	Queensboro Plaza	7.8	78	11,310	11,022	0.97
Q	Manhattan-bound	Queensboro Plaza	7.6	76	11,020	10,926	0.99
Weekday PM Peak Hour							
F	Queens-bound	Lexington Av/63 St	15	150	21,750	17,862	0.82
N	Queens-bound	Lexington Av/59 St	7.4	74	10,730	7,076	0.66
Q	Queens-bound	Lexington Av/59 St	6.6	66	9,570	6,037	0.63

Source: NYCT (2011 and 2012)
Notes:
[1] Capacity based on NYCT guideline capacity of 145 passengers per car for 60' cars.

Bus

The result of the analysis of the Q103 bus route under the No-Action condition is shown in Table 13-34. Estimates of peak hour volumes in the No-Action condition were developed by applying the *CEQR Technical Manual* recommended annual background growth rates to existing volumes and incorporating bus trips associated with larger No-Action developments in the study area, such as Halletts Point, as well

as the No-Action as-of-right residential development on the project site. As shown in Table 13-34, existing levels of bus service would not be sufficient to provide adequate supply to meet the projected demand in the 2023 No-Action condition on the northbound and southbound Q103 route in both the AM and PM peak hours. This route would require additional capacity, which could be provided by either increasing the number of standard buses or converting the Q103 route to articulated bus service. As shown in Table 13-34, based on a loading guideline of 54 passengers per standard bus, one additional standard bus per hour would need to be added in the northbound direction in the AM peak hour, as well as three additional buses in the PM peak hour to accommodate projected No-Action demand. In the southbound direction, five buses would need to be added in the AM peak hour and one in the PM peak hour.

Table 13-34: 2023 No-Action Condition Bus Line-Haul Analysis

Peak Hour	Route	Direction	Maximum Load Point	2023 Peak Hour Passengers	No-Action Condition with Current Service Levels			No-Action Condition with Potential Service Adjustments		
					Peak Hour Buses	Average Passengers per Bus	Available Capacity[1]	Peak Hour Buses[2]	Average Passengers per Bus	Available Capacity[1]
AM	Q103	NB	40th Avenue & 12th Street	113	2	57	-5	3	38	49
		SB	Vernon Boulevard & 31st Avenue	369	2	185	-261	7	53	9
PM	Q103	NB	40th Avenue & 12th Street	314	3	105	-152	6	52	10
		SB	40th Avenue & 12th Street	190	3	64	-28	4	48	26

Note:
[1] Available capacity based on NYCT loading guidelines of 54 passengers per standard bus.
[2] Assumes service levels adjusted to address capacity shortfalls during the 2012 through 2023 period.

Future with the Proposed Action (With-Action Condition)

Subway

As shown earlier in Table 13-7, the Proposed Action is expected to generate a net total of 705 and 823 new subway trips in the AM and PM peak hours, respectively. As discussed above, based on current station usage, the proximity to the project site, and the proposed shuttle service that would be provided to the 30th Avenue Station, 80 percent of project-generated subway trips are expected to use the 30th Avenue Station and were assigned to the analyzed stair and fare arrays. As shown in Table 13-35, 173 and 266 new subway riders would use street stair S3-M3. During the AM peak hour, platform stairs P5-P6 and P1-P2 would each experience approximately 64 and 65 new peak 15-minute trips, respectively, while during the PM peak hour, platform stairs P7-P8 and P3-P4 would each experience an increase of approximately 62 and 63 peak 15-minute trips, respectively. Pedestrian peak 15-minute traffic flows would increase by 47 and 125 trips at the northbound fare array in the AM and PM peak hours, respectively, as shown in Table 13-36. The southbound fare array would experience 129 and 81 new trips as a result of the Proposed Action in the AM and PM peak hours, respectively.

Table 13-35: 2023 With-Action Subway Stair Analysis

Peak Hour	Stairway	Total Width (feet)	Effective Width (feet)	15-Minute Project Increment		Peak 15-Minute Volumes		Surging Factor[1]		Friction Factor	V/C Ratio	LOS	WIT (in.)	WIT Impact Threshold (in.)
				Up	Down	Up	Down	Up	Down					
AM	S3-M3 (northwest)	5.0	4.0	134	39	367	161	0.9	0.8	0.9	1.13	D	6.14	7
	P5-P6 (northwest)	5.0	4.0	63	1	529	7	0.95	0.75	1.0	0.94	C	N/A	N/A
	P1-P2 (southwest)	5.0	4.0	63	2	673	17	0.95	0.75	1.0	1.22	D	4.99	6
PM	S3-M3 (northwest)	5.0	4.0	64	130	134	493	0.9	0.8	0.9	1.42	E	20.01	4
	P7-P8 (northeast)	5.0	4.0	3	59	14	404	0.95	0.75	1.0	0.92	C	N/A	N/A
	P3-P4 (southeast)	5.0	4.0	3	60	15	470	0.95	0.75	1.0	1.07	D	3.40	8

Note: Methodology based on *CEQR Technical Manual* guidelines; volumes based on data collected in October 2012, June 2013, and March 2013, annual background growth rates, the *Halletts Point Rezoning FEIS*, projected No-Action project site development, and the With-Action project increment.
N/A – not applicable because the With-Action v/c ratio is smaller than 1.00.
[1] Surging factors adjusted to account for potential surge from the proposed shuttle bus, per NYCT guidance.

Table 13-36: 2023 With-Action Subway Fare Array Analysis

Peak Hour	Station	Direction	Control Element	Quantity	15-Minute Project Increment		Peak 15-Minute Volumes		Surging Factor[3]		Friction Factor	V/C Ratio	LOS
					In[1]	Out[2]	In_1	Out[2]	In[1]	Out[2]			
AM	30th Avenue	Northbound	Two-way Turnstile	3	11	36	63	209	0.95	0.80	0.9	0.21	A
		Southbound	Two-way Turnstile	3	126	3	1,202	24	0.95	0.80	1.0	1.02	D
PM	30th Avenue	Northbound	Two-way Turnstile	3	6	119	29	874	0.95	0.80	1.0	0.59	B
		Southbound	Two-way Turnstile	3	70	11	406	42	0.95	0.80	0.9	0.41	A

Note: Methodology based on *CEQR Technical Manual* guidelines
[1] "In" refers to system entries.
[2] "Out" refers to system exits.
[1] Surging factors adjusted to account for potential surge from the proposed shuttle bus, per NYCT guidance.

As shown in Table 13-35, street stair S3-M3 would deteriorate from LOS C conditions in both peak hours under the No-Action condition, to LOS D and LOS E in the AM and PM peak hours in the future with the Proposed Action, due to the anticipated pedestrian volumes at this stair from the adjacent bus stop and proposed shuttle stop. As the resultant WIT in the AM peak hour (6.14 inches) would be less than the CEQR threshold for a significant impact (7 inches), no significant adverse impact would result during this peak analysis hour. As the resultant WIT at street stair S3-M3 during the PM peak hour (20.01 inches) would exceed the CEQR impact threshold of 4 inches, a significant adverse impact would result. Potential mitigation measures are discussed in Chapter 20, "Mitigation."

No significant adverse impacts to the analyzed platform stairs would occur as a result of the Proposed Action. As indicated in Table 13-35, platform stair P5-P6 would operate at LOS C during the AM and PM peak hours, respectively, and platform stair P1-P2 would continue to operate at LOS D during the AM peak hour, as under the No-Action condition. During the PM peak hour, platform stair P3-P4 would deteriorate from LOS C under No-Action conditions to LOS D in With-Action conditions, with a

resultant v/c ratio of 1.07. As the WIT at platform stair P3-P4 would be 3.40 inches (less than the CEQR impact threshold of 8 inches), no significant adverse impact would result.

As shown in Table 13-36, the northbound fare array at the 30th Avenue Station would continue to operate at LOS B or better under the With-Action condition in both the AM and PM peak hours. In addition, the southbound far array would continue to operate at LOS A during the PM peak hour. As discussed above, the morning commuter rush hour results in heavy pedestrian volumes at the southbound fare array, which would operate with a v/c ratio of 1.02 (LOS D) in the AM peak hour under the With-Action condition. As the Proposed Action would result in the southbound fare array deteriorating from a v/c ratio less than 1.0 (0.87) to a v/c ratio of 1.0 or greater (1.02) a significant adverse impact would result pursuant to CEQR. However, it should be noted that the fare array analysis conservatively assumes that all Manhattan-bound morning commuters would use the fare array closest to the northbound platform. If a portion of the anticipated morning commuters were to enter through the fare array that is closer to the southbound platform (which also provides access to the northbound platform), conditions at the northbound fare array would improve. Potential mitigation measures are discussed in Chapter 20, "Mitigation."

Table 13-37 compares the anticipated 2023 No-Action and With-Action line haul conditions of the F, N, and Q lines. As previously stated, the Proposed Action is expected to generate a net total of 705 and 823 new subway trips in the AM and PM peak hours, respectively. 80 percent of these project-generated subway trips are expected to use the 30th Avenue Station (split evenly between the N and the Q lines), and the remaining 20 percent would travel via the F line. Anticipated origins/destinations were determined based on ACS data. As shown in Table 13-37, the F and N lines would operate below capacity in their peak directions in the AM and PM peak hours, and the Q line would operate below capacity in its peak direction in the PM peak hour. In the AM peak hour, Manhattan-bound Q trains would operate with a v/c ratio of 1.01, compared to a v/c ratio of 0.99. However, pursuant to CEQR impact criteria, projected increases from a No-Action condition to a With-Action condition that exceeds practical capacity may be considered significant impacts if the proposed action generates five or more additional passengers per car. As shown in Table 13-37, the Proposed Action would generate less than three additional riders per car on the F, N, and Q lines in their peak directions in the AM and PM peak hours. As such, while Manhattan-bound Q trains are expected to operate over capacity in the AM peak hour in future With-Action conditions, since the Proposed Action would add only 2.66 additional riders per car, no significant adverse impact would result.

Bus

As shown earlier in Table 13-7, the Proposed Action is expected to generate 77 and 135 new bus trips during the weekday AM and PM peak hours, respectively. As shown in Table 13-38, demand on the Q103 route is expected to increase by approximately 41 northbound trips and 126 southbound trips in the AM peak hour and by 128 northbound and 82 southbound trips in the PM peak hour. It should be noted that these trips include project-generated subway riders that are expected to utilize the Q103 bus route to transfer to/from the 21st Street-Queensbridge station.

As shown in Table 13-38, based on projected levels of service in the No-Action condition, the Proposed Action would result in a capacity shortfall of 117 spaces on the northbound Q103 service in the PM peak hour. The southbound Q103 service would also experience capacity shortfalls of 118 spaces in the AM peak hour and 55 spaces in the PM peak hour. Therefore, significant adverse impacts are expected on the northbound Q103 in the PM peak hour and on the southbound Q103 in both the AM and PM peak hours, based on *CEQR Technical Manual* impact criteria. Q103 service would require additional capacity, which could be provided by either increasing the number of standard buses or converting the Q103 route to

articulated bus service. Potential mitigation measures for these significant adverse bus impacts are discussed in Chapter 20, "Mitigation."

Table 13-37: 2023 Subway Line Haul Analysis—No-Action Condition vs. With-Action Condition

Route	Peak Direction	Maximum Load Point (leaving station)	Average Trains per hour	Cars per hour	Peak Hour Capacity	No-Action Condition		With-Action Condition		
						Passengers per hour	V/C Ratio	Passengers per hour	V/C Ratio	New riders per car
Weekday AM Peak Hour										
F	Manhattan-bound	Roosevelt Island	15.1	151	21,895	18,959	0.87	19,061	0.87	0.68
N	Manhattan-bound	Queensboro Plaza	7.8	78	11,310	11,022	0.97	11,224	0.99	2.59
Q	Manhattan-bound	Queensboro Plaza	7.6	76	11,020	10,926	0.99	11,128	1.01	2.66
Weekday PM Peak Hour										
F	Queens-bound	Lexington Av/63 St	15	150	21,750	17,862	0.82	17,957	0.83	0.63
N	Queens-bound	Lexington Av/59 St	7.4	74	10,730	7,076	0.66	7,267	0.68	2.58
Q	Queens-bound	Lexington Av/59 St	6.6	66	9,570	6,037	0.63	6,228	0.65	2.89

Table 13-38: 2023 With-Action Condition Bus Line-Haul Analysis

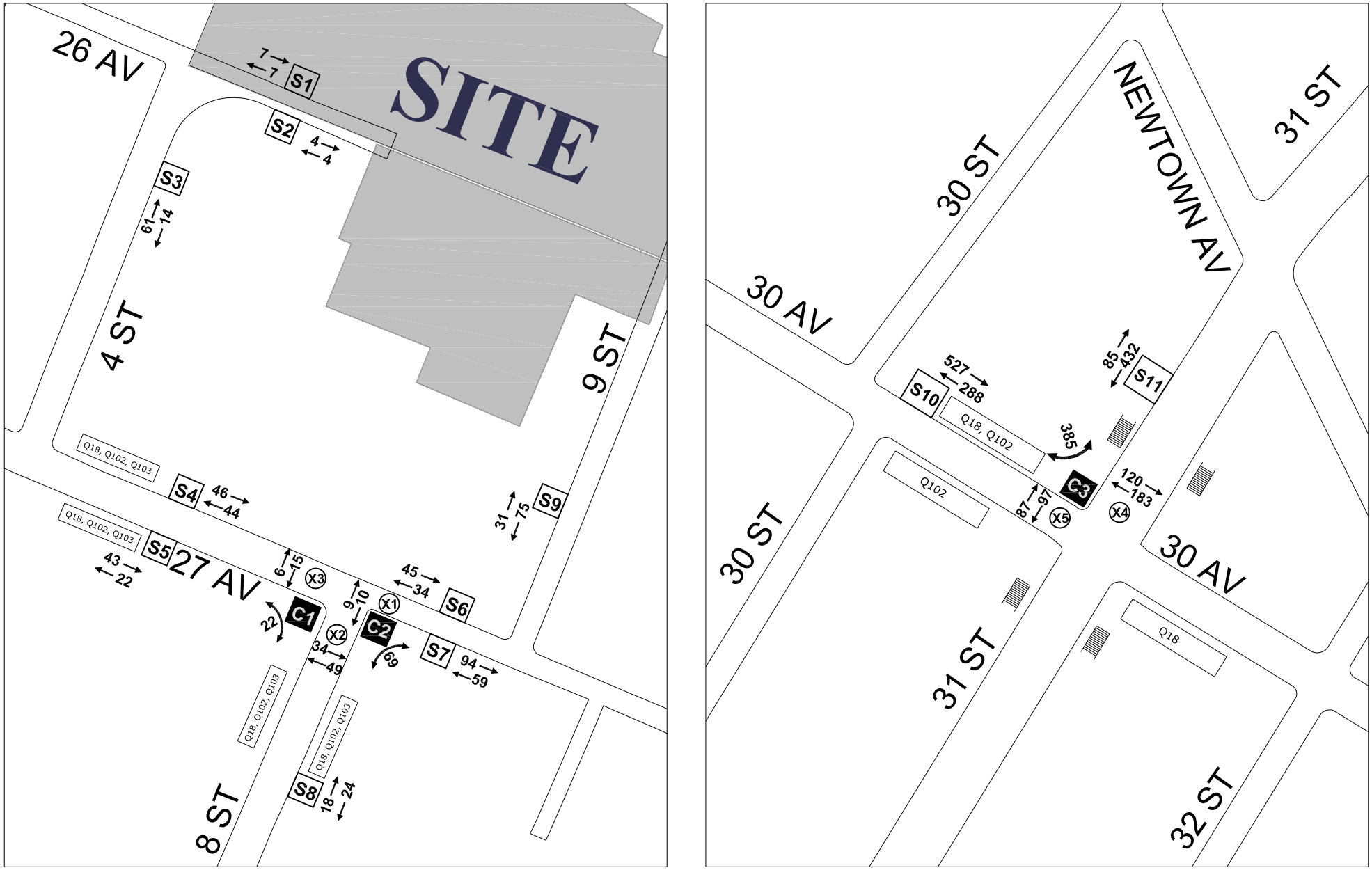
Peak Hour	Route	Direction	Maximum Load Point	Peak Hour Buses[1]	No-Action Available Capacity[2]	Project Increment	With-Action Available Capacity[1]
AM	Q103	NB	40th Avenue & 12th Street	3	49	40	9
		SB	Vernon Boulevard & 31st Avenue	7	9	127	-118
PM	Q103	NB	40th Avenue & 12th Street	6	10	127	-117
		SB	40th Avenue & 12th Street	4	26	81	-55

Note:
[1] Assumes service levels adjusted to address capacity shortfalls in the No-Action condition.
[2] Available capacity based on NYCT loading guidelines of 54 passengers per standard bus.

I. PEDESTRIANS

Existing Conditions

As discussed previously in Section E, "Level 2 Screening Assessment," a total of 11 existing sidewalks, three corner areas and one crosswalk where project-generated pedestrian trips are expected to exceed the 200-trip *CEQR Technical Manual* threshold in one or more peak hours have been selected for analysis. As shown in Figure 13-10, these analyzed existing pedestrian elements are primarily located along 26th and 27th Avenues in proximity to the project site as well as in the vicinity of the 30th Avenue subway station. Figures 13-27, 13-28, and 13-29 show the existing pedestrian volumes along the analyzed pedestrian elements for the weekday AM, midday, and PM peak hours, respectively. Tables 13-39 through 13-41 show existing average pedestrian space (in square feet per pedestrian) and LOS at analyzed



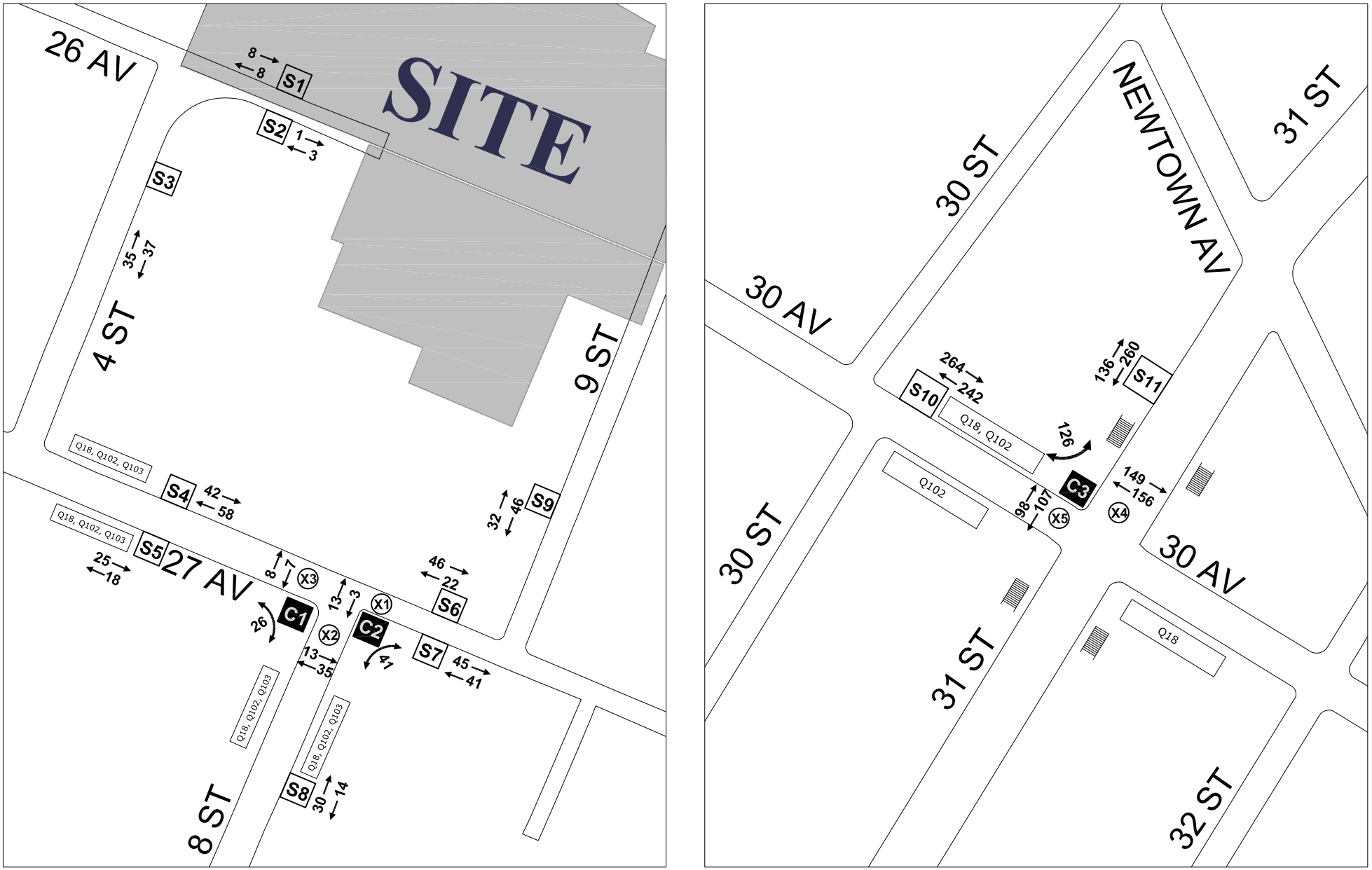
LEGEND

S4	Sidewalk
C2	Corner
X1	Crosswalk

Astoria Cove

Figure 13-27

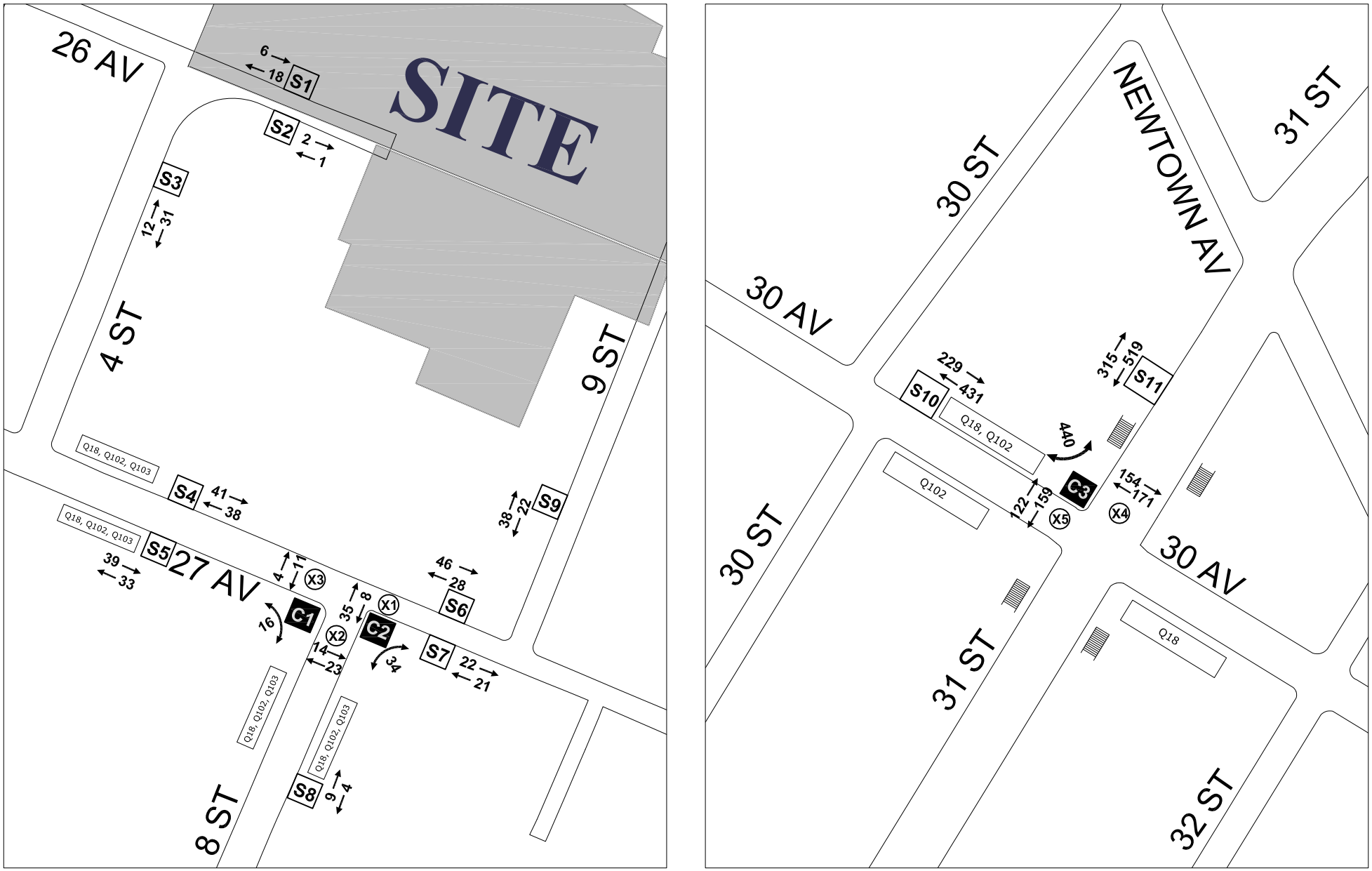
Existing AM Peak Hour Pedestrian Volumes



Astoria Cove

Figure 13-28

Existing Midday Peak Hour Pedestrian Volumes



LEGEND

S4 Sidewalk

C2 Corner

X1 Crosswalk

Astoria Cove

Figure 13-29

Existing PM Peak Hour Pedestrian Volumes

sidewalks, corners, and crosswalks, respectively. Peak 15-minute volumes are also provided for all analyzed sidewalks and corner locations.

As shown below in Tables 13-39, 13-40, and 13-41, all analyzed pedestrian elements are currently operating at LOS C or better, which is attributable to the currently underdeveloped character of the study area and wide sidewalks along the major corridors.

Table 13-39: 2012 Existing Conditions Sidewalk Analysis

No.	Location	Effective Width (feet)	Peak 15-Minute Volumes			Average Pedestrian Space (ft^2/ped)			Platoon-Adjusted Level of Service		
			AM	MD	PM	AM	MD	PM	AM	MD	PM
S1	26th Avenue between 4th Street & 8th Street (north)	11.0	5	5	12	6930.0	6930.0	2,887.5	A	A	A
S2	26th Avenue between 4th Street & 8th Street (south)	12.0	3	2	1	12663.0	18900.0	3,800.0	A	A	A
S3	4th Street between 26th Avenue & 27th Avenue (east)	12.0	22	30	18	1713.6	1260.0	2,109.8	A	A	A
S4	27th Avenue between 4th Street & 8th Street (north)	6.5	33	33	25	530.4	533.5	702.0	A	A	A
S5	27th Avenue between 4th Street & 8th Street (south)	5.5	19	13	27	785.9	1146.5	552.7	A	A	A
S6	27th Avenue between 8th Street & 9th Street (north)	3.5	35	28	24	267.9	339.0	393.3	B	B	B
S7	27th Avenue between 8th Street & 9th Street (south)	7.5	48	25	15	423.5	810.0	1,356.3	B	A	A
S8	8th Street between 27th Avenue & Astoria Boulevard (east)	7.5	42	18	10	482.1	1122.9	2056.1	B	A	A
S9	9th Street between 27th Avenue & the water (west)	7.0	43	23	16	515.8	961.1	1381.8	B	A	A
S10	30th Avenue between 30th Street & 31st Street (north)	9.5	287	139	179	89.1	184.4	142.8	C	B	B
S11	31st Street between 30th Avenue & Newtown Avenue (west)	10.5	147	113	213	192.9	251.9	133.1	B	B	B

Notes: Methodology based on *CEQR Technical Manual* guidelines.

Table 13-40: 2012 Existing Conditions Corner Analysis

No.	Location	Curb Radius (feet)	Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	MD	PM	AM	MD	PM
C1	27th Avenue & 8th Street (southwest)	12.0	925.2	1262.0	1545.6	A	A	A
C2	27th Avenue & 8th Street (southeast)	12.0	601.2	1036.6	684.0	A	A	A
C3	30th Avenue & 31st Street (northwest)	6.0	263.0	422.3	262.5	A	A	A

Notes: Methodology based on *CEQR Technical Manual* guidelines.

Table 13-41: 2012 Existing Conditions Crosswalk Analysis

No.	Location	Peak 15-Minute Volumes			Average Pedestrian Space (ft^2/ped)			Level of Service		
		AM	MD	PM	AM	MD	PM	AM	MD	PM
X1	27h Avenue & 8th Street (east)	9	11	24	779.9	645.4	282.6	A	A	A

Future without the Proposed Action (No-Action Condition)

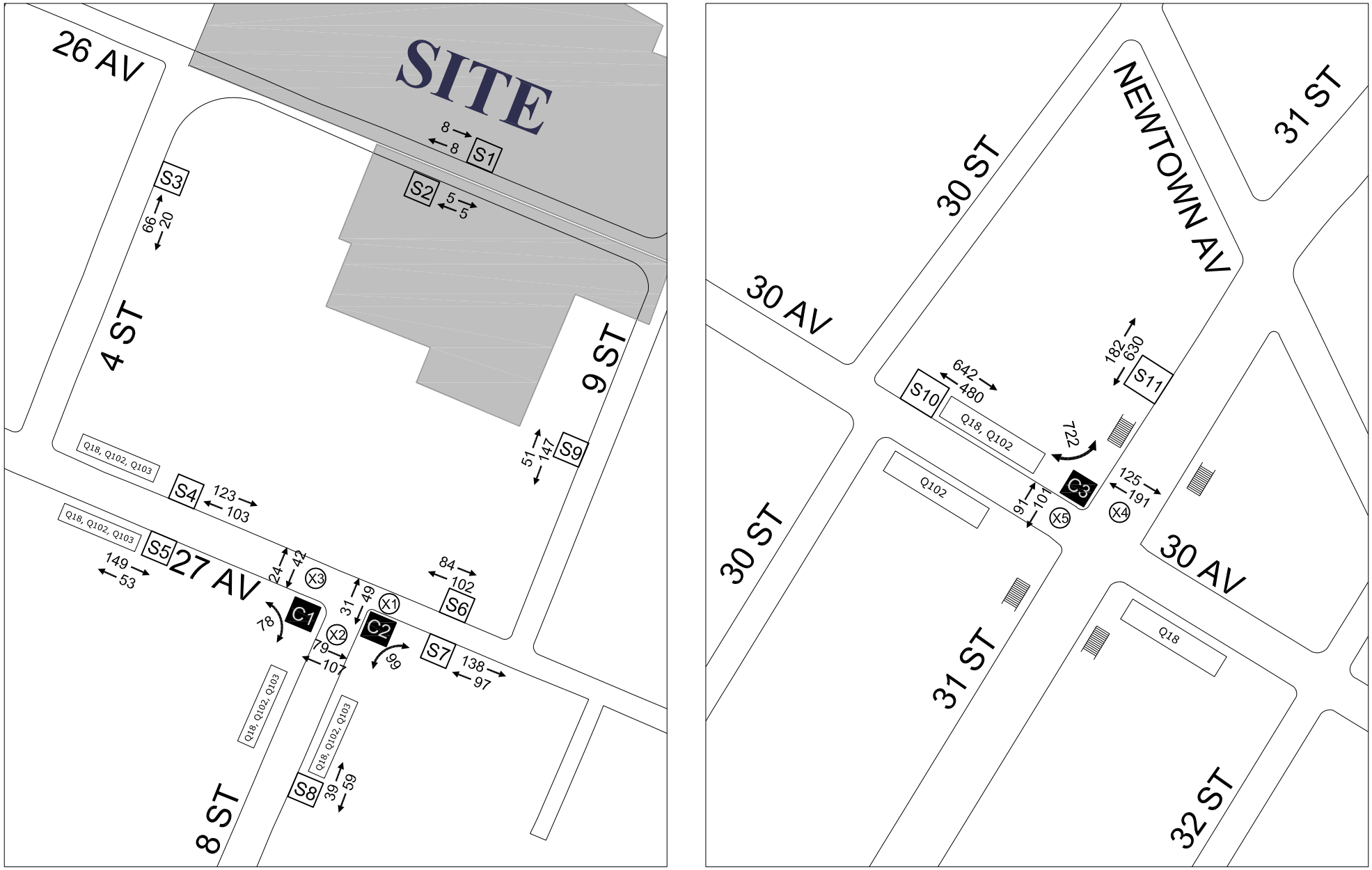
Estimates of peak hour volumes in the No-Action condition were developed by applying the *CEQR Technical Manual* recommended annual background growth rates to existing volumes and incorporating pedestrian trips associated with larger No-Action sites such as the Halletts Point development. New pedestrian trips generated by smaller No-Action sites were accounted for in the background growth. Figures 13-30, 13-31, and 13-32 show the resulting No-Action pedestrian volumes along the analyzed pedestrian elements for the weekday AM, midday, and PM peak hours, respectively. It should be noted that, as shown in Figures 13-30, 13-31, and 13-32, both the north and south sidewalks on 26th Avenue east of 4th Street would be extended to 9th Street in the 2023 No-Action condition.

Tables 13-42 through 13-44 show the forecasted No-Action average pedestrian space (square feet per pedestrian) and LOS along the analyzed sidewalks, corners, and crosswalks during the weekday AM, midday, and PM peak hours. Peak 15-minute volumes are also provided for all analyzed sidewalks and corner locations. As shown in the tables, all sidewalks would continue to operate at LOS C or better during each of the analyzed peak hours, while all analyzed corners and crosswalks would continue to operate at LOS A in all three peak hours under the No-Action condition.

Future with the Proposed Action (With-Action Condition)

As discussed above in Section E, "Level 2 Screening Assessment," compared to the No-Action condition, the Proposed Action is expected to generate a net total of 1,635, 2,814, and 2,292 pedestrian trips (including walk-only, subway, and bus trips) during the weekday AM, midday, and PM peak hours, respectively. Pursuant to CEQR, passive open space typically generates 49 person trips per day per acre, while active open space typically generates 139 person trips per day per acre. Out of the total generated person trips, 80 percent are walk-only trips. Conservatively applying the higher trip generation rate for active open space, a maximum of 267 person trips per day are anticipated, which would result in approximately 214 pedestrian trips along the waterfront esplanade distributed throughout the day.

The assignment of these trips to the analyzed pedestrian elements is shown above in Figures 13-8, 13-9, and 13-10. The incremental pedestrian volumes were added to the projected No-Action volumes (see Figures 13-30, 13-31, and 13-32) to develop the With-Action pedestrian volumes for analysis. Figures 13-33, 13-34, and 13-35 show the With-Action pedestrian volumes for the weekday AM, midday, and PM peak hours, respectively.



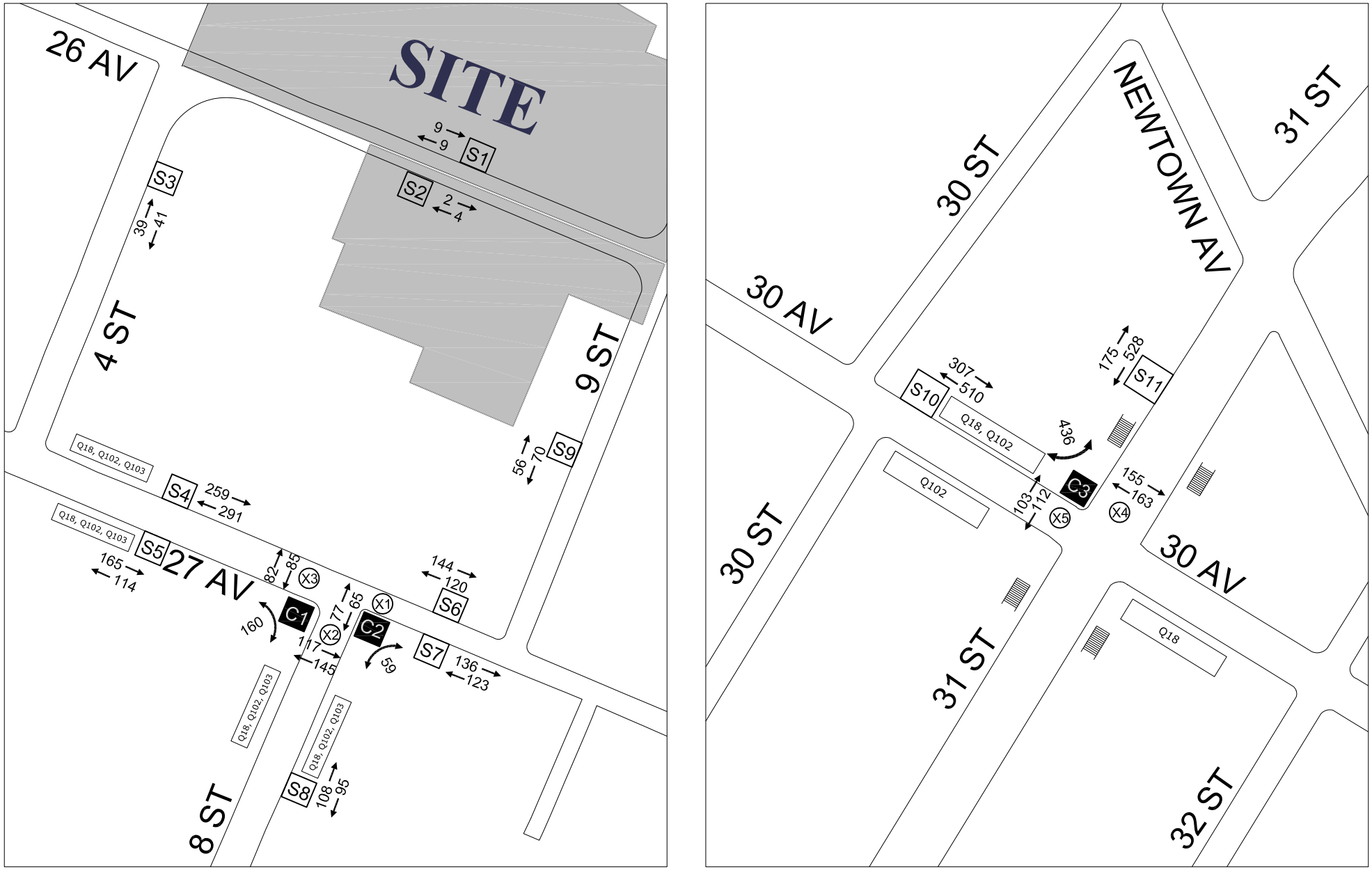
LEGEND

S4	Sidewalk
C2	Corner
X1	Crosswalk

Astoria Cove

Figure 13-**30**

No-Action AM Peak Hour Pedestrian Volumes



LEGEND

S4 Sidewalk

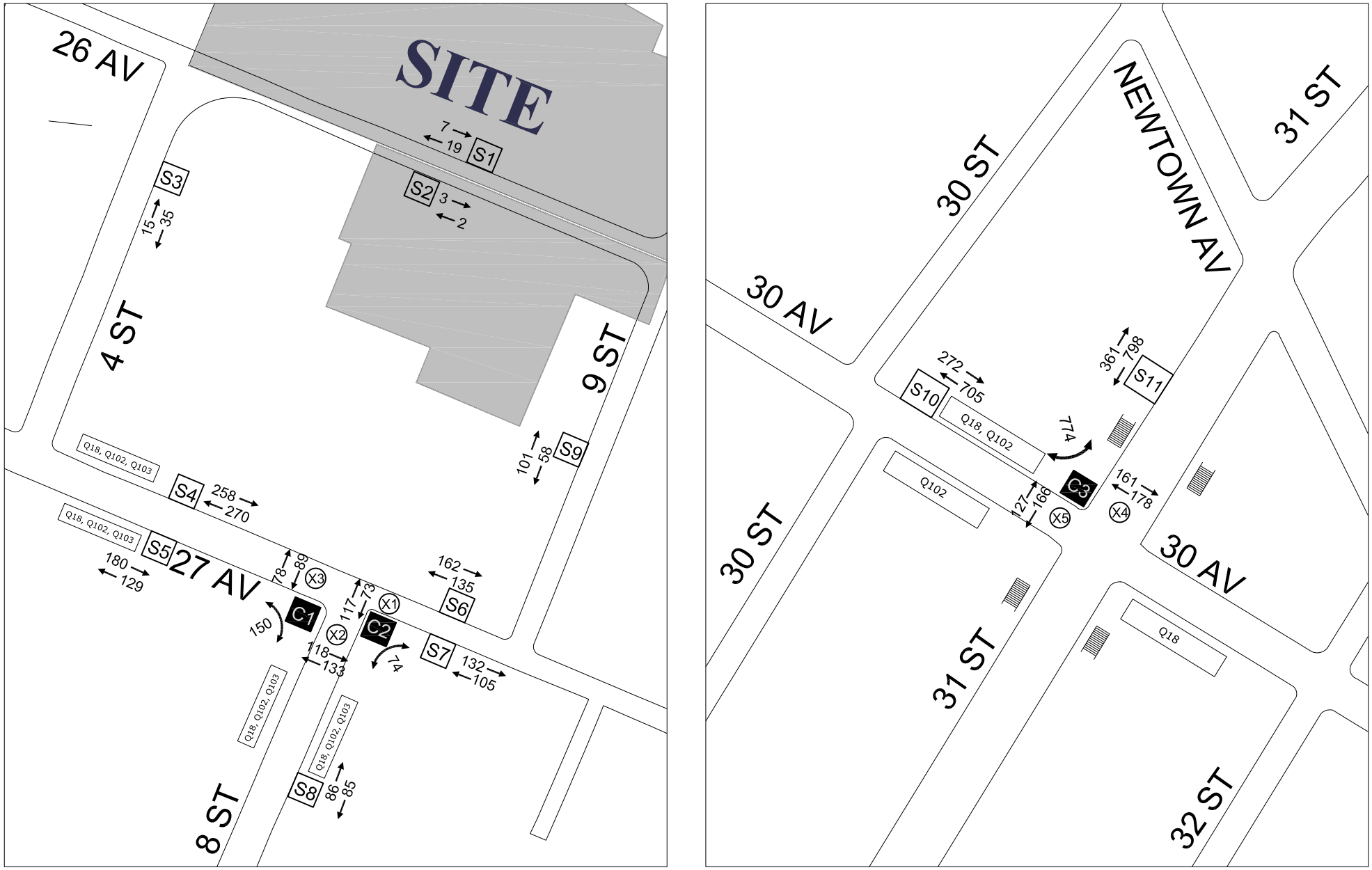
C2 Corner

X1 Crosswalk

Astoria Cove

Figure 13-**31**

No-Action Midday Peak Hour Pedestrian Volumes



LEGEND

S4 Sidewalk

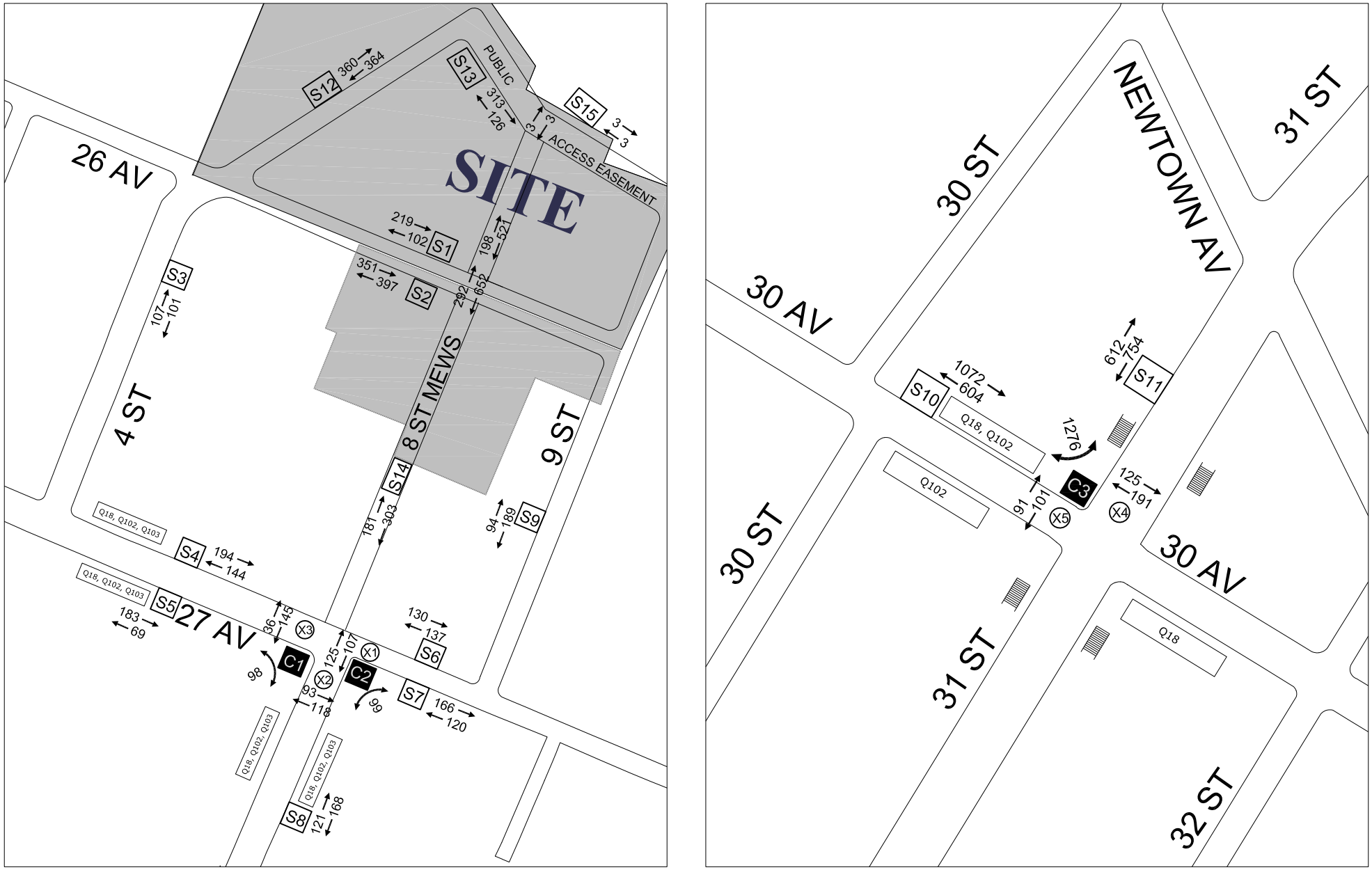
C2 Corner

X1 Crosswalk

Astoria Cove

Figure 13-**32**

No-Action PM Peak Hour Pedestrian Volumes



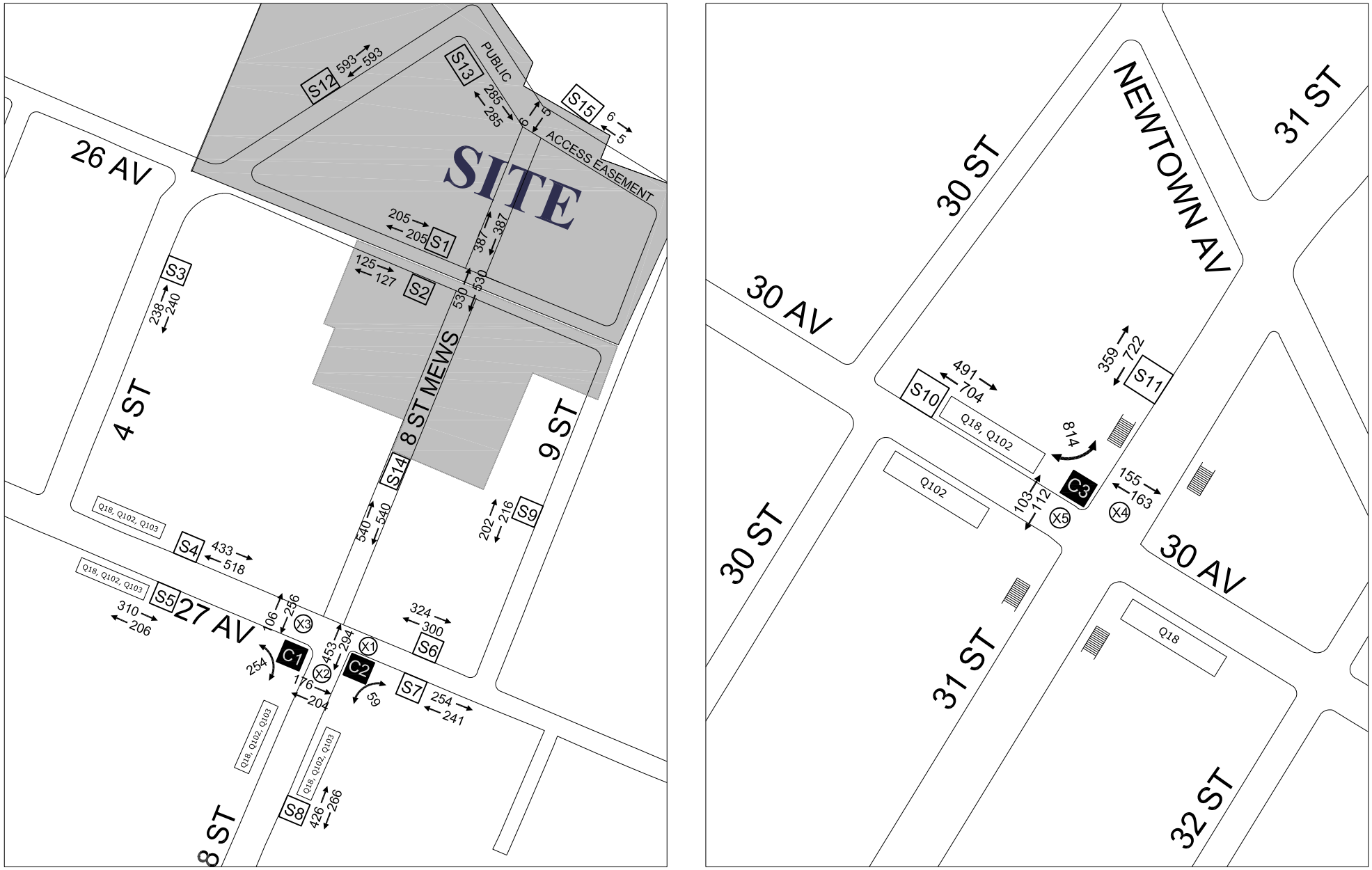
LEGEND

S4	Sidewalk
C2	Corner
X1	Crosswalk

Astoria Cove

Figure 13-33

With-Action AM Peak Hour Pedestrian Volumes



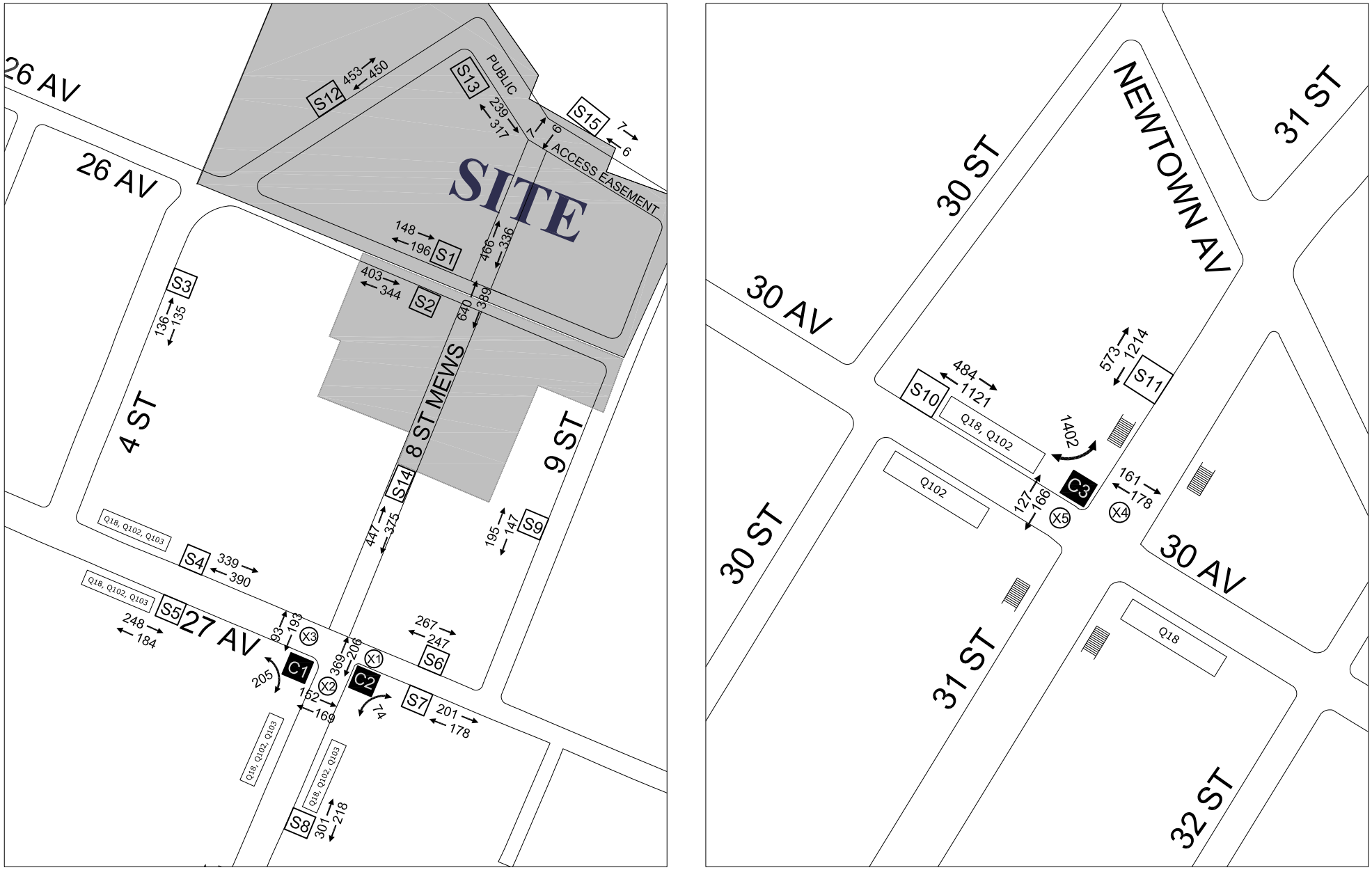
LEGEND

- S4 Sidewalk
- C2 Corner
- X1 Crosswalk

Astoria Cove

Figure 13-34

With-Action Midday Peak Hour Pedestrian Volumes



LEGEND

S4 Sidewalk

C2 Corner

X1 Crosswalk

Astoria Cove

Figure 13-35

With-Action PM Peak Hour Pedestrian Volumes

Table 13-42: 2023 No-Action Condition Sidewalk Analysis

No.	Location	Effective Width (feet)	Peak 15-Minute Volumes			Average Pedestrian Space (ft^2/ped)			Platoon-Adjusted Level of Service		
			AM	MD	PM	AM	MD	PM	AM	MD	PM
S1	26th Avenue between 4th Street & 9th Street (north)[1]	11.0	6	6	13	6063.7	6160.0	2665.4	A	A	A
S2	26th Avenue between 4th Street & 9th Street (south)[1]	12.0	4	3	2	10130.4	12600.0	22680.0	A	A	A
S3	4th Street between 26th Avenue & 27th Avenue (east)	12.0	25	33	21	1494.4	1134.0	1814.4	A	A	A
S4	27th Avenue between 4th Street & 8th Street (north)	6.5	71	172	165	248.4	101.9	106.1	B	B	B
S5	27th Avenue between 4th Street & 8th Street (south)	5.5	59	84	97	252.8	176.6	153.6	B	B	B
S6	27th Avenue between 8th Street & 9th Street (north)	3.5	53	83	93	162.4	114.3	101.6	B	B	B
S7	27th Avenue between 8th Street & 9th Street (south)	7.5	73	75	74	275.7	268.9	273.3	B	B	B
S8	8th Street between 27th Avenue & Astoria Boulevard (east)	7.5	31	63	53	661.2	319.1	378.9	A	B	B
S9	9th Street between 27th Avenue & the water (west)	7.0	62	37	42	356.3	594.9	521.4	B	A	B
S10	30th Avenue between 30th Street & 31st Street (north)	9.5	351	224	265	72.8	114.1	96.4	C	B	B
S11	31st Street between 30th Avenue & Newtown Avenue (west)	10.5	231	200	296	122.7	141.8	95.6	B	B	B

Notes: Methodology based on *CEQR Technical Manual* guidelines.
[1] Sidewalks would be extended to 9th Street under No-Action conditions.

Table 13-43: 2023 No-Action Condition Corner Analysis

No.	Location	Curb Radius (feet)	Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	MD	PM	AM	MD	PM
C1	27th Avenue & 8th Street (southwest)	12.0	399.5	228.2	236.5	A	A	A
C2	27th Avenue & 8th Street (southeast)	12.0	359.3	283.5	250.0	A	A	A
C3	30th Avenue & 31st Street (northwest)	6.0	198.1	284.1	195.0	A	A	A

Notes: Methodology based on *CEQR Technical Manual* guidelines.

Table 13-44: 2023 No-Action Condition Crosswalk Analysis

No.	Location	Peak 15-Minute Volumes			Average Pedestrian Space (ft^2/ped)			Level of Service		
		AM	MD	PM	AM	MD	PM	AM	MD	PM
X1	27h Avenue & 8th Street (east)	25	44	60	245.8	154.7	110.3	A	A	A

As described above in Section G, "Traffic'" there are several roadway network and traffic circulation improvements that are included in the Proposed Action. These measures would also result in new pedestrian elements along the proposed extension of 4th Street north of 26th Avenue, as well as along the proposed waterfront public access easement, which would provide a connection along the waterfront between 4th and 9th Streets. Additionally, the proposed 8th Street Mews would provide a pedestrian connection between 27th Avenue to the south and the public access easement along the waterfront to the north. Out of these new pedestrian elements, which are shown in Figures 13-33, 13-34, and 13-35, those that are expected to experience the highest concentration of project-generated pedestrian trips were selected as additional analysis locations to determine if they could accommodate the anticipated project-generated demand. As shown in Table 13-45 the additional future pedestrian analysis locations are the following: the west sidewalk along 4th Street between 26th Avenue and the public easement access (S12); the south sidewalk along the public access easement between 4th Street and the 8th Street Mews (S13); the 8th Street Mews south of 26th Avenue (S14), where the narrowest point would be located; and the waterfront esplanade north of the public access easement (S15). As no new signalized intersections would be created on the project site as part of the Proposed Action, a detailed pedestrian analysis of the new corner or crosswalk elements on the project site is unwarranted, pursuant to CEQR.

Tables 13-45 through 13-27 show the With-Action average pedestrian space and LOS along the analyzed sidewalks, corners, and crosswalks during the weekday AM, midday, and PM peak hours. Peak 15-minute project increments and peak 15-minute total With-Action pedestrian volumes are also provided for all analyzed sidewalks and corner locations. As shown in Table 13-45, all sidewalks and crosswalks, including the pedestrian elements that would be created as part of the Proposed Action, would operate at LOS C or better during each of the analyzed peak hours, while all analyzed corners would operate at LOS A in the future with the Proposed Action during each of the analyzed peak hours. Therefore, no significant adverse impacts would occur along the analyzed sidewalks, corners, and crosswalks would be during any of the peak hours.

J. PEDESTRIAN AND VEHICULAR SAFETY EVALUATION

Under *CEQR Technical Manual* guidelines, an evaluation of pedestrian and vehicular safety is needed for locations within the traffic and pedestrian study areas that have been identified as high accident locations. These locations are defined as locations where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes have occurred in any consecutive twelve months of the most recent three-year period for which data are available.[2]

Table 13-48 shows summary accident data for the years 2010 through 2012 that were obtained from the NYCDOT. This is the most recent three-year period for which data are available. The table shows the total number of crashes each year and the numbers of crashes each year involving pedestrians and cyclists at intersections in proximity to the project site where the majority of new vehicular and pedestrian trips would be concentrated. As shown in Table 13-48, no intersections were found to have experienced a total of 48 or more crashes or to have experienced five or more pedestrian and/or bicyclist injury crashes in one or more years; therefore, none of the intersections are considered high accident locations. As also shown in Table 13-48, none of the intersections exceeded one pedestrian and/or bicyclist injury crash in one or more years. Therefore, based on the accident data presented in Table 13-48, no safety problems are anticipated.

[2] Reportable accidents are defined as those involving injuries, fatalities, and/or $1,000 or more in property damage.

Table 13-45: 2023 With-Action Condition Sidewalk Analysis

No.	Location	Effective Width (feet)	15-Minute Project Increment			Peak 15-Minute Volumes			Flow Rate (PMF)			Platoon-Adjusted Level of Service		
			AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM
S1	26th Avenue between 4th Street & 8th Street (north)	11.0	94	122	95	100	128	108	345.3	270.3	322.2	B	B	B
S2	26th Avenue between 4th Street & 8th Street (south)	12.0	230	76	231	234	79	233	161.5	479.9	161.7	B	B	B
S3	4th Street between 26th Avenue & 27th Avenue (east)	12.0	36	116	64	61	149	85	617.8	252.9	446.3	A	B	A
S4	27th Avenue between 4th Street & 8th Street (north)	6.5	35	125	63	106	297	228	166.0	58.6	76.7	B	C	C
S5	27th Avenue between 4th Street & 8th Street (south)	5.5	14	71	38	73	155	135	202.6	95.3	109.8	B	B	B
S6	27th Avenue between 8th Street & 9th Street (north)	3.5	25	112	68	83	195	161	113.0	47.9	58.4	B	C	C
S7	27th Avenue between 8th Street & 9th Street (south)	7.5	16	69	44	89	144	118	226.5	140.5	170.8	B	B	B
S8	8th Street between 27th Avenue & Astoria Boulevard (east)	7.5	59	153	109	90	216	162	224.1	93.4	124.7	B	B	B
S9	9th Street between 27th Avenue & the water (west)	7.0	26	86	49	88	123	91	249.2	179.2	242.3	B	B	B
S10	30th Avenue between 30th Street & 31st Street (north)	9.5	173	104	171	524	328	436	48.5	77.8	58.4	C	C	C
S11	31st Street between 30th Avenue & Newtown Avenue (west)	10.5	157	107	160	388	307	456	72.7	92.0	61.8	C	B	C
S12	4th Street between 26th Avenue & the public access easement (west)	7.5	226	371	282	226	371	282	104.1	63.2	83.8	B	C	C
S13	Public access easement between 4th Street & 8th Street Mews (south)	9.0	137	178	174	137	178	174	206.5	158.9	163.0	B	B	B
S14	8th Street Mews south of 26th Avenue	6.0	151	338	257	151	338	257	124.7	55.4	73.1	B	C	C
S15[1]	Waterfront esplanade walkway/public access easement (north)	9.0	137	178	174	137	178	174	206.5	158.9	163.0	B	B	B

Notes: Methodology based on *CEQR Technical Manual* guidelines.
[1] For conservative analysis purposes, the higher S13 pedestrian volumes have been analyzed on the S15 sidewalk.

Table 13-46: 2023 With-Action Condition Corner Analysis

No.	Location	Curb Radius (feet)	Average Pedestrian Space (ft^2/ped)			Level of Service		
			AM	MD	PM	AM	MD	PM
C1	27th Avenue & 8th Street (southwest)	12.0	267.8	132.7	163.6	A	A	A
C2	27th Avenue & 8th Street (southeast)	12.0	235.9	98.6	123.7	A	A	A
C3	30th Avenue & 31st Street (northwest)	6.0	144.7	202.2	134.7	A	A	A

Table 13-47: 2023 With-Action Condition Crosswalk Analysis

No.	Location	15-Minute Project Increment			Peak 15-Minute Volumes			Average Pedestrian Space (ft^2/ped)			Level of Service		
		AM	MD	PM	AM	MD	PM	AM	MD	PM	AM	MD	PM
X1	27h Avenue & 8th Street (east)	47	190	119	72	234	179	83.0	27.0	34.4	A	C	C

Table 13-48: Summary Accident Data 2010-2012

Intersection		Pedestrian Injury Accidents			Bicycle Injury Accidents			Total Pedestrian/Bicyclist Injury Accidents			Total Accidents (Reportable + Non-Reportable		
		2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Hoyt Avenue North at	21st Street	0	0	0	0	0	0	0	0	0	0	5	0
	29th Street	0	0	0	0	0	0	0	0	0	0	0	0
	31st Street	0	0	0	0	0	0	0	0	0	5	10	2
	32nd Street	0	0	0	0	0	0	0	0	0	2	0	0
Astoria Park S. / Hoyt Avenue S. at	21st Street	0	0	1	1	0	0	1	0	1	5	0	5
26th Avenue at	4th Street	0	0	0	0	0	0	0	0	0	0	0	0
27th Avenue at	4th Street	0	0	0	0	0	0	0	0	0	0	0	1
	8th Street	0	0	0	0	0	0	0	0	0	0	0	1
	9th Street	0	0	0	0	0	0	0	0	0	0	0	0
	12 Street	0	0	0	0	0	0	0	0	0	0	0	0
	14th Street	0	0	0	0	0	0	0	0	0	0	0	0
	18th Street	0	0	0	0	0	0	0	0	0	1	1	1
Astoria Boulevard at	8th Street	0	1	0	0	0	0	0	1	0	0	1	1
	18th Street	0	0	0	0	0	0	0	0	0	0	0	0
	21st Street	0	0	0	0	0	0	0	0	0	4	4	3
	23rd Street	0	0	0	0	0	0	0	0	0	1	2	1
	Crescent Street	0	0	0	0	0	1	0	0	1	1	1	3
	27th Street	0	0	0	0	0	0	0	0	0	0	1	1
	28th Street	0	0	0	0	0	0	0	0	0	1	1	0
	29th Street	0	0	0	0	0	0	0	0	0	2	0	0
	30th Street	0	0	0	0	0	0	0	0	0	1	1	0
	31st Street	0	0	0	0	0	0	0	0	0	7	9	9
	33rd Street	0	0	0	0	0	0	0	0	0	6	5	7
30th Avenue at	14th Street	0	0	0	0	0	0	0	0	0	0	0	0
	21st Street	0	1	0	0	0	0	0	1	0	1	1	0
31st Avenue at	21st Street	0	0	0	0	0	0	0	0	0	3	0	0
Vernon Blvd / Main Avenue at	8th Street / Welling Ct.	0	0	0	0	0	0	0	0	0	0	0	0
	11th Street / Broadway	0	0	1	0	0	0	0	0	1	4	2	1
	31st Avenue	0	0	0	0	0	0	0	0	0	2	0	0

Source: New York State Department of Motor Vehicles (NYSDMV)/NYCDOT

It should also be noted that the proposed project would include new streets and sidewalks as well as loading docks for the future building occupants. Truck trips to the proposed project's loading docks would be minimal, with a maximum of 14 total in/out truck trips during the weekday AM peak hour (refer to Table 13-7), and are therefore not expected to interfere with pedestrian operations on adjacent sidewalks. During the weekday midday peak hour (the period during which pedestrian trips would be the highest), the project site location that would experience the greatest combined pedestrian and vehicular volumes would be the proposed 26th Avenue mid-block crossing at the 8th Street Mews. It is anticipated that approximately 1,060 pedestrians would cross 26th Avenue (combined north and south directions) at this location and a total of approximately 154 vehicles are expected in the eastbound movement. Pedestrian and vehicular volumes at all other project site crosswalks would be lower, comparatively. Traffic calming measures to reduce pedestrian and vehicular conflicts have been incorporated into the design of the proposed project and include installing all-way stop controls and crosswalks at the 4th Street extension and pedestrian bulb-outs at the midblock crossing along 26th Avenue. Similar measures could be installed along the waterfront public access easement to further minimize future pedestrian and bicycle safety concerns, and will be implemented, where necessary, in consultation with NYCDOT.

In addition, the proposed project would include a site for a 456-seat elementary school, which would therefore result in an increase in the number of school children using crosswalks in the vicinity of the project site during the weekday AM and PM peak periods at the start and end of each school day. Measures to ensure and enhance pedestrian safety in the vicinity of the school have been incorporated into the proposed project's design and include making 26th Avenue eastbound to the west of 9th Street to allow buses to drop students off directly adjacent to the Building 5 school and creating layby lanes for drop-off/pick-ups and parking along the south side of 26th Avenue between 4th and 9th Streets. The Applicant will work with NYCDOT and the New York City School Construction Authority (SCA) to implement required school signage and other typical safety features, such as high-visibility crosswalks, where necessary.

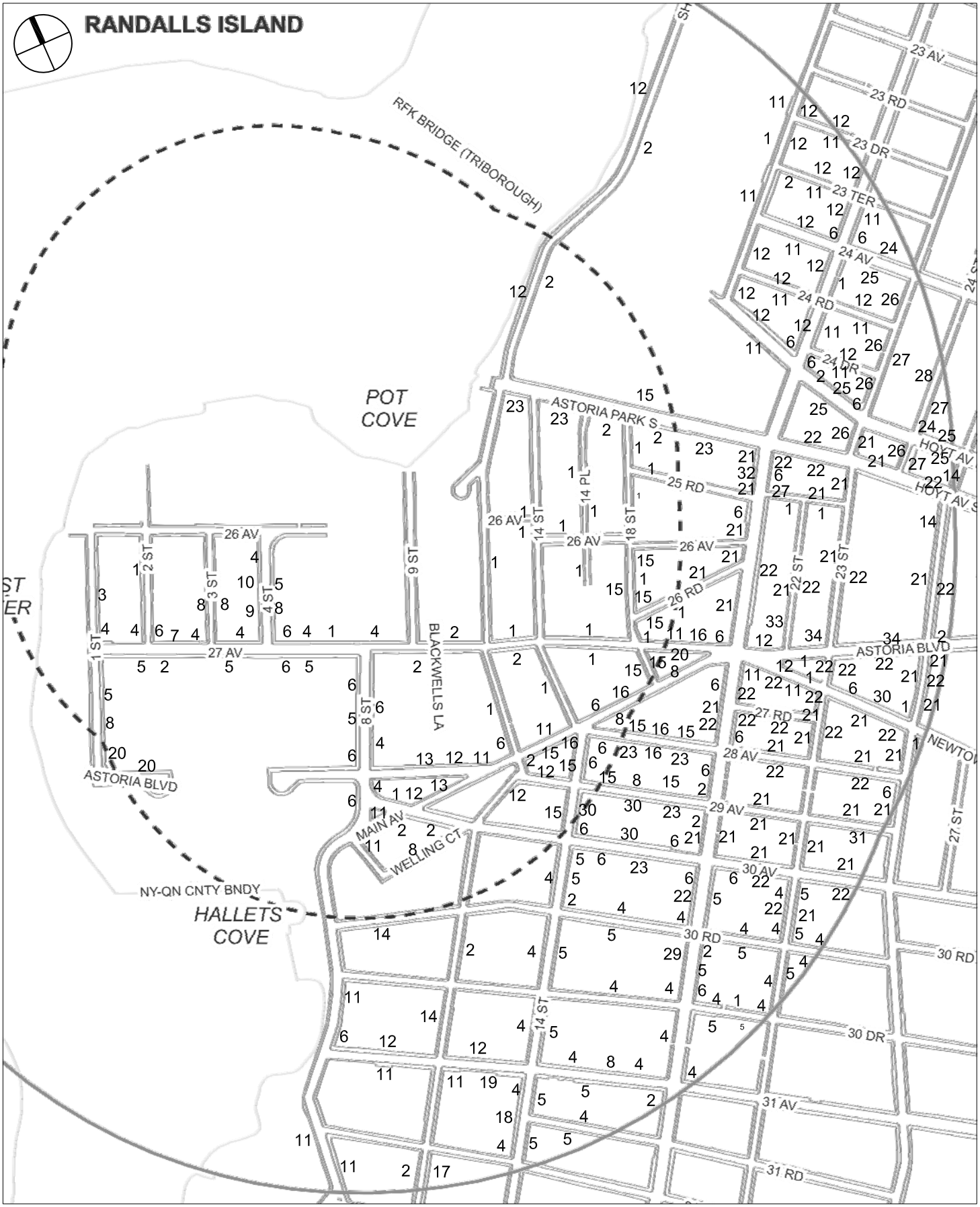
K. PARKING

Existing Conditions

As preliminary analyses indicated that parking demand could exceed the available accessory off-street parking capacity in the late evening and overnight hours, a detailed evening/overnight parking inventory of the area surrounding the project site was conducted on a typical weekday. The parking inventory encompassed two study areas: a ¼-mile radius (approximately a five-minute walk) from the project site, as recommended by CEQR guidelines; and a ½-mile radius (approximately a ten-minute walk) from the project site, which is the extent to which drivers would generally go to find available parking. As shown in Figure 13-36, the ¼-mile study area is generally bounded by Astoria Park South to the north, 18th and 14th Streets to the west, 30th Road to the south, and the East River to the west. The ½-mile study area is generally bounded by 23rd Drive and 24th Avenue to the north, Crescent and 23rd Streets to the east, and 31st Drive.

On-street parking regulations, capacity, and occupancy were inventoried for the study areas on a block-by-block basis and are shown in Table 13-49. Several streets within the study areas have no posted parking regulations on either side of the street, and alternate side parking for street cleaning is regulated on many streets.

Area Parking Regulations



1/4 Mile Study Area — 1/2 Mile Study Area

1 - Refer to Table 13-36

Miles

0 0.125 0.25

Table 13-49: Study Area Parking Regulations

No.[1]	Parking Regulation
1	No Parking Anytime
2	No Standing Anytime
3	No Standing Except Trucks Loading/Unloading Except Sun
4	No Parking Street Cleaning 11:30AM-1PM Mon & Thurs
5	No Parking Street Cleaning 11:30AM-1PM Tues & Fri
6	No Standing Handicap Bus Stop
7	No Engine Idling
8	No Parking 8AM-6PM Mon-Fri
9	No Standing 7AM-4PM Mon- Fri
10	No Standing 7AM-4PM Except Trucks Loading/Unloading Mon-Fri
11	No Parking Street Cleaning 11:30AM-1PM Tues
12	No Parking Street Cleaning 11:30AM-1PM Mon
13	No Parking Street Cleaning 11:00AM-2PM Mon
14	No Parking 7AM-7PM Mon-Fri
15	No Parking Street Cleaning 9:30AM-11AM Mon & Thurs
16	No Parking 8AM-6PM Except Sun
17	No Standing 8AM-5PM Mon-Fri
18	No Standing Except Farmers Market Vehicles 8AM-6PM Wed July-December
19	No Standing 8AM-6PM Mon-Fri Except Authorized Vehicles
20	No Parking 7AM-6PM Except Sunday
21	No Parking Street Cleaning 8:30AM-10AM Mon & Thurs
22	No Parking Street Cleaning 8:30AM-10AM Tues & Fri
23	No Parking Street Cleaning 9:30AM-11AM Tues & Fri
24	No Parking Street Cleaning 8:30-10AM Tuesday
25	No Parking Street Cleaning 8:30-10AM Monday
26	No Parking Street Cleaning 9:30-11AM Monday
27	No Parking Street Cleaning 9:30-11AM Tuesday
28	No Parking Street Cleaning 8-11AM Monday
29	No Parking 8AM-5PM Except Sunday
30	No Parking 7AM-4PM School Days
31	No Parking Street Cleaning 8-11AM Tues & Fri
32	No Parking 10:30AM-Noon Tues
33	No Parking 7-10AM Mon-Fri
34	No Parking 7-9AM Mon-Fri

Notes:
[1] Refer to Figure 13-36.

Table 13-50, below, presents the on-street parking occupancy within a ¼-mile and a ½-mile of the project site. As indicated in the table, there are approximately 991 parking spaces within a ¼-mile of the project site, 88.3 percent of which were occupied in the evening/overnight hours. Considering the additional 2,143 parking spaces within a ½-mile of the project site, there are approximately 285 parking spaces available in the evening/overnight hours within a ten-minute walk of the project site. There are no public off-street parking facilities within the parking study area.

Table 13-50: Existing On-Street Parking Conditions

Study Area	Capacity	Occupied Spaces	Available Spaces	Parking Utilization (%)
¼-Mile Radius	991	875	116	88.3
¼- to ½-Mile Radius	2,143	1,974	169	92.1
Total	***3,134***	***2,849***	***285***	***90.9***

Future without the Proposed Action (No-Action Condition)

Under the 2023 No-Action condition, background growth in the study area is expected to increase the demand for on-street parking demand. The same background growth rate assumed for traffic—0.5 percent per year for the first five year and 0.25 percent per year for each additional year until 2023—was applied to determine 2023 No-Action parking demand. As a result of this growth, on-street parking occupancy is expected to reach 91.4 percent in the ¼-mile study area and 94.1 percent in the ½-mile study area during the evening/overnight hours, decreasing the number of available spaces by 31 spaces in the ¼-mile study area and a total of 101 spaces in the ½-mile study area (see Table 13-51).

Table 13-51: 2023 No-Action On-Street Parking Conditions

Study Area	Capacity	Occupied Spaces	Available Spaces	Parking Utilization (%)
¼-Mile Radius	991	906	85	91.4
¼- to ½-Mile Radius	2,143	2,044	99	95.4
Total	***3,134***	***2,950***	***184***	***94.1***

Future with the Proposed Action (With-Action Condition)

As shown earlier in Table 13-2, the RWCDS includes approximately 900 required accessory on-site parking spaces. In addition, with the build-out of 26th Avenue and the establishment of 4th Street, approximately 60 new on-street parking spaces would be created, resulting in a total supply of 960 new parking spaces.

Table 13-52 shows the 24-hour parking accumulation that is expected to be generated by each land use included in the Proposed Action. Parking demand generated by residential developments was forecasted based on the average vehicles per household ratio from the 2007-2011 American Community Survey, while parking demand from the local retail, supermarket, and school land uses were derived from the respective auto trip forecast, as shown earlier in Table 13-7.

As shown in Table 13-52, the overnight demand is expected to total 1,001 parking spaces, while the maximum demand is expected to total 1,027 parking spaces from 8 – 9 PM. During this peak period, the Proposed Action would result in a shortfall of approximately 67 parking spaces when parking demand, as well as in shortfall of approximately 41 overnight parking spaces. As indicated in Table 13-53, peak parking demand could be absorbed by available on-street spaces within the ¼-mile parking study area. Therefore, it is not expected that the Proposed Action would result in a significant adverse parking impact.

Table 13-52: Weekday Parking Accumulation Forecast

	Local Retail		Supermarket		Residential[1]		School Staff		Total Accumulation
	In	Out	In	Out	In	Out	In	Out	
12-1 AM	0	0	0	0	7	7	0	0	1,001
1-2	0	0	0	0	7	7	0	0	1,001
2-3	0	0	0	0	7	7	0	0	1,001
3-4	0	0	0	0	7	7	0	0	1,001
4-5	0	0	0	0	7	7	0	0	1,001
5-6	0	0	13	9	14	41	0	0	978
6-7	0	0	27	9	34	118	0	0	912
7-8	0	0	36	22	41	122	0	0	845
8-9	2	2	51	39	79	315	17	0	638
9-10	2	1	67	36	71	107	0	0	634
10-11	5	3	72	54	71	123	0	0	602
11-12	5	5	72	72	75	103	0	0	574
12-1 PM	13	13	51	51	98	98	0	0	574
1-2	6	5	80	98	100	102	0	0	555
2-3	6	4	89	107	105	100	0	0	544
3-4	5	5	80	107	150	90	0	0	577
4-5	5	5	89	85	254	147	0	0	688
5-6	7	7	85	79	281	151	0	17	807
6-7	3	6	44	45	198	99	0	0	902
7-8	3	5	18	27	179	79	0	0	991
8-9	2	2	9	18	106	61	0	0	1,027
9-10	1	1	0	18	34	39	0	0	1,004
10-11	0	0	0	10	23	23	0	0	994
11-12	0	0	0	0	20	13	0	0	1,001
								Overnight Demand	1,001

Sources: Local retail temporal distribution based on the 2004 *No. 7 Subway Extension – Hudson Yards Rezoning and Development Program FGEIS;* supermarket temporal distribution based on the 2005 *Van Courtland Center EAS;* residential temporal distribution based on 2005 *Brooklyn Bridge Park FEIS;* school staff temporal distribution based on typical school staff working hours.
Notes: 25% link trip credit applied to Retail and Supermarket land use.
[1] No credit was taken for the 166 residential units in upland area in No-Action condition.

Table 13-53: 2023 With-Action Parking Conditions

Location	Capacity	Occupied Spaces	Available Spaces	Parking Utilization (%)
Project Site Off-Street	900	900	0	100
Project Site On-Street	60	60	0	100
¼-Mile Radius	991	973	18	98.2
¼- to ½-Mile Radius	2,143	2,044	99	95.4
Total	***4,094***	***3,977***	***117***	***97.1***